



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

Request for Quotation

RFQ NUMBER
8512C2031

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
ALAN CUMMINGS
304-558-2402

VENDOR
 *709022004 800-380-1718
M H CORBIN INC
8420 ESTATES COURT

PLAIN CITY OH 43064

SHIP TO
DIVISION OF HIGHWAYS
TRAFFIC ENGINEERING DIVISION
BUILDING 5, ROOM A550
1900 KANAWHA BOULEVARD EAST
CHARLESTON, WV
25305-0430

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
01/24/2012				
BID OPENING DATE: 02/29/2012		BID OPENING TIME 01:30PM		

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		570-28	<i>see attached</i>	
				ENERGY ABSORPTION SYSTEM/MAINTENANCE		
				OPEN END CONTRACT		
<p>THE WEST VIRGINIA STATE PURCHASING DIVISION FOR THE AGENCY, THE WEST VIRGINIA DIVISION OF HIGHWAYS, IS SOLICITING BIDS FOR AN OPEN END CONTRACT TO PROVIDE MATERIALS REQUIRED FOR THE MAINTENANCE, REPLACEMENT, OR INSTALLATION OF ENERGY ABSORPTION SYSTEM GREAT (GUARDRAIL ENERGY ABSORBING TERMINAL) ATTENUATING DEVICES, ENERGY ABSORPTION SYSTEM QUADGUARD ATTENUATING DEVICES, ENERGY ABSORPTION SYSTEM QUADGUARD II ATTENUATING DEVICES, ENERGY ABSORPTION SYSTEM QUADGUARD HS ATTENUATING DEVICES, AND TRINITY INDUSTRIES TRACC ATTENUATING DEVICES PER THE ATTACHED SPECIFICATIONS.</p> <p>TECHNICAL QUESTIONS CONCERNING THIS SOLICITATION MUST BE SUBMITTED IN WRITING TO ALAN CUMMINGS IN THE WEST VIRGINIA STATE PURCHASING DIVISION VIA FAX AT 304-558-4115 OR VIA EMAIL AT ALAN.W.CUMMINGS@WV.GOV.</p> <p>DEADLINE FOR TECHNICAL QUESTIONS IS 02/16/12 AT THE CLOSE OF BUSINESS.</p> <p>ANY TECHNICAL QUESTIONS RECEIVED WILL BE ANSWERED BY FORMAL ADDENDUM TO BE ISSUED BY THE PURCHASING DIVISION AFTER THE DEADLINE HAS LAPSED.</p> <p>EXHIBIT 3</p>						

RECEIVED
 2012 FEB -7 AM 11:52
 WV PURCHASING
 DIVISION

SEE REVERSE SIDE FOR TERMS AND CONDITIONS			
SIGNATURE <i>Alan Cummings</i>	TELEPHONE 614-873-5216	DATE 2-6-12	
TITLE VP	FEIN 31-1192248	ADDRESS CHANGES TO BE NOTED ABOVE	

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

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. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
4. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, 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.
5. Payment may only be made after the delivery and acceptance of goods or services.
6. Interest may be paid for late payment in accordance with the *West Virginia Code*.
7. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
8. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
9. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
10. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern the purchasing process.
11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
12. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
13. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, is available online at www.state.wv.us/admin/purchase/vrc/hipaa.html and is hereby made part of the agreement provided that the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
14. **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. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.
15. **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, and the West Virginia Insurance Commission. 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.
16. **ANTITRUST:** In submitting a bid to any agency for the State of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the State of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, or person or entity submitting a bid for the same material, supplies, equipment or services and is in all respects fair and without collusion or Fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division. Complete all sections of the quotation form.
2. 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. Unit prices shall prevail in case of discrepancy. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
4. 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: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130
5. Communication during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited (W.Va. C.S.R. §148-1-6.6).



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 304-558-2402**

VENDOR

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

SUPPLIER

DIVISION OF HIGHWAYS
 TRAFFIC ENGINEERING DIVISION
 BUILDING 5, ROOM A550
 1900 KANAWHA BOULEVARD EAST
 CHARLESTON, WV
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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
01/24/2012				

BID OPENING DATE: **02/29/2012** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UCP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>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 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, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT 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. 01/17/2012</p> <p>EXHIBIT 10</p> <p style="text-align: right;">REQUISITION NO.:</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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<p>LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON AWARD 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 BY THE STATE OF WEST VIRGINIA, ITS AGENCIES, OR POLITICAL SUBDIVISIONS, THE TERMS, CONDITIONS, AND PRICING SET FORTH HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.</p> <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 SERVICES 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</p>						

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<p>.....</p> <p>DATE</p>						
<p>NOTE: THIS ADDENDUM ACKNOWLEDGEMENT SHOULD BE SUBMITTED WITH THE BID.</p> <p>REV. 09/21/2009</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>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> <p>BUYER: ALAN CUMMINGS - FILE 33</p>						
SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
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V E N D O R	*709022004	800-380-1718
	M H CORBIN INC	
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S H I P T O	DIVISION OF HIGHWAYS
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<p>ADDENDUM ACKNOWLEDGEMENT</p> <p>I HEREBY ACKNOWLEDGE RECEIPT OF THE FOLLOWING CHECKED ADDENDUM(S) AND HAVE MADE THE NECESSARY REVISIONS TO MY PROPOSAL, PLANS AND/OR SPECIFICATION, ETC.</p> <p>ADDENDUM NO.'S:</p> <p>NO. 1</p> <p>NO. 2</p> <p>NO. 3</p> <p>NO. 4</p> <p>NO. 5</p> <p>I UNDERSTAND THAT FAILURE TO CONFIRM THE RECEIPT OF THE ADDENDUM(S) MAY BE CAUSE FOR REJECTION OF BIDS.</p> <p>VENDOR MUST CLEARLY UNDERSTAND THAT ANY VERBAL REPRESENTATION MADE OR ASSUMED TO BE MADE DURING ANY ORAL DISCUSSION HELD BETWEEN VENDOR'S REPRESENTATIVES AND ANY STATE PERSONNEL IS NOT BINDING. ONLY THE INFORMATION ISSUED IN WRITING AND ADDED TO THE SPECIFICATIONS BY AN OFFICIAL ADDENDUM IS BINDING.</p> <p>..... SIGNATURE</p> <p>..... COMPANY</p>						

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				RFQ. NO.:		8512C2031
				BID OPENING DATE:		02/29/12
				BID OPENING TIME:		1:30 P.M.
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID: ----- <i>614-873-8095</i> ----- CONTACT PERSON (PLEASE PRINT CLEARLY): ----- <i>Bill Corbin</i> ----- ANY INDIVIDUAL SIGNING THIS BID IS CERTIFYING THAT: (1) HE OR SHE IS AUTHORIZED BY THE BIDDER TO EXECUTE THE BID OR ANY DOCUMENTS RELATED THERETO ON BEHALF OF THE BIDDER, (2) THAT HE OR SHE IS AUTHORIZED TO BIND THE BIDDER IN A CONTRACTUAL RELATIONSHIP, AND (3) THAT THE BIDDER HAS PROPERLY REGISTERED WITH ANY STATE AGENCIES THAT MAY REQUIRE REGISTRATION. ***** THIS IS THE END OF RFQ 8512C2031 ***** TOTAL: _____						

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Specifications

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

1.0 DEFINITIONS

- A. The "Agency" shall be defined as the West Virginia Division of Highways
- B. The "Vendor" shall be defined as the successful bidder.
- C. The "Contract" shall be defined as the binding agreement that is entered into between the State of West Virginia and the Vendor to provide the services as herein specified.
- D. "Release Order" shall be defined as order placed against the Contract by the Agency.
- E. Mandatory Requirements: The terms "must", "will", "shall", "minimum", "maximum", or "is/are required" identify a mandatory item or factor. Decisions regarding compliance with any mandatory requirements shall be at the sole discretion of the State.

2.0 SCOPE OF WORK

Technical Requirements: The successful Vendor shall provide individual replacement components for Energy Absorption System GREAT (Guardrail Energy Absorbing Terminal) attenuating devices, Energy Absorption System Quadguard attenuating devices, Energy Absorption System Quadguard-II attenuating devices, Energy Absorption System Quadguard-HS attenuating devices, and Trinity Industries TRACC attenuating devices. The successful Vendor(s) shall also supply complete units upon request (excludes GREAT attenuating devices).

- 2.1 Complete descriptions of the individual parts are included as part of the bid schedule. The bid schedule also includes references to the appropriate manufacturer installation drawing, also included as part of this Contract for reference.

This Contract also includes items for the purchase of complete Quadguard, Quadguard-II, Quadguard-HS, and TRACC units for use at the Agency's discretion.

2.2 Freight

2.2.1 All shipments are to be FOB Destination.

2.2.2 The Vendor shall be responsible for all freight charges incurred as a result of the purchases under this Contract. For orders where expedited delivery is requested and authorized by the Agency, the Vendor may invoice for these charges provided that it will be given as a "pass through" cost to the Agency. No markup shall be permitted for expedited delivery. See Section 3.2.3 for more information. Note, the Agency understands that expedited delivery of GREAT system parts is normally not possible within the time frame stipulated. Therefore, any expedited delivery request associated with any Release Order which includes any parts for GREAT impact attenuating systems shall be disregarded. The Vendor shall not invoice for any extra freight charges for any such order regardless of the delivery turnaround time associated with any non-GREAT parts included as part of any such order, and the provisions of 2.3.2 shall apply.

2.3 Delivery

2.3.1 This Contract may be utilized by multiple recipients statewide, each having a unique delivery address.

2.3.2 Release Orders shall be delivered in full within a maximum of twenty-one (21) Calendar Days ARO. If the Vendor is unable to deliver in full within twenty-one (21) Calendar Days, the Vendor shall be subject to a \$50.00 per Calendar Day penalty at the purchasing organization's discretion for each Calendar Day beyond twenty-one (21) Calendar Days ARO. This penalty shall be assessed by subtracting the penalty from the payment due to the Vendor upon full delivery of the Release Order.

2.3.3 All large components shall be shipped adequately secured on pallets for ease in unloading. Large components shall be easily identifiable or the packaging shall be labeled indicating the contained parts. All accessory hardware and relatively small components shall be appropriately packaged and labeled. Any material delivered not meeting the above requirements shall be subject to being returned to the Vendor at the Vendor's expense. In this case, the Vendor shall be responsible for the shipment of the returned materials back to the purchasing organization, packaged as specified above. In addition, the provisions of 2.3.2 shall remain in effect. The order shall be considered "delivered in full" at the time of delivery of the returned materials back to the purchasing organization. Furthermore, the number of days for

completion of the order shall be calculated as specified in 2.3.2. If expedited delivery was requested for the order, the provisions of Section 3.2.3 shall apply to the entire order if the returned materials are not delivered back to the purchasing organization within ten (10) Calendar Days of the original receipt of the order by the Vendor.

2.3.4 Delivery is an integral part of this contract and failure to comply will be cause to initiate a WV-82, Vendor Performance Form. This form will officially notify the West Virginia Division of Purchasing and the Vendor of unsatisfactory performance in the execution of this contract and the requirements herein.

3.0 ORDERING AND INVOICING

3.1 Release Orders

3.1.1 For all orders, the Agency will issue to the Vendor a WV-39 Release Order. Issuance of the Release Order shall contain the type of merchandise to be purchased and shall serve as the authorization to process the order.

3.2 Payment

3.2.1 The State of West Virginia currently utilizes a VISA purchasing card program which is issued through a local bank. The Vendor must accept the State of West Virginia purchasing card for payment of all orders placed against this Contract.

3.2.2 The Vendor must supply a credit card receipt, sales receipt, or cash register receipt. In addition, all orders shall be shipped with an itemized packing list(s). The packing list(s) shall show all items included in the shipment as well as items on backorder. Charges must not be applied until all merchandise on the WV-39 Release Order is received in full by the Agency.

3.2.3 For orders where expedited delivery has been requested by the Agency per Section 2.2.2, the Vendor may add actual shipping costs (prepaid) to the invoice as a separate item. In this case, the Vendor shall attach a copy of the freight bill to the invoice sent to the Agency. All such orders shall be delivered in full within ten (10) Calendar Days ARO. If any such order is not received in full within ten (10) Calendar Days ARO, the Vendor may not add shipping costs as described above to the invoice and the order will be treated as a normal non-expedited order with the provisions of Section 2.3.2 to apply.

4.0 AWARD

4.1 Contract Sections

4.1.1 This Contract shall be awarded in its' entirety. The Vendor shall be required to provide a bid for all Items listed with the exception of any items intentionally left blank by the Agency on the RFQ bid sheet.

NOTE: VENDOR SHOULD TYPE BID SCHEDULES

The "Bid Schedule" is available for download on Purchasing's Web site at www.state.wv.us/admin/purchase

BID SCHEDULE

Quantities listed in this RFQ are approximations only. 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. Award will be based on lowest total cost.

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
Energy Absorption Systems GREAT Attenuators					
GREAT panels and parts					
1	1	GREAT three-beam fender panel w/ connection to diaphragm hardware, mushroom bolt assembly, and deflector assembly	5	\$890.10	311000
2	1	GREAT complete mushroom bolt and deflector assembly	5	\$67.08	312000
3	1	GREAT concrete block backup deflector panel w/ connection to fender panel hardware	14	\$7.93	313000
4	1	GREAT concrete block backup side panel w/ connection to fender panel hardware	8	\$152.22	NA
5	1	GREAT steel backup side panel w/ connection to backup hardware	11, 12	\$161.25	NA
6	1	GREAT extension panel w/ connection to backup and thrie to w-beam panel hardware	14	\$219.30	314000
7	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	\$1,290.00	315000
.8	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	\$1,290.00	316000
9	1	GREAT thrie beam to w-beam transition panel w/ connection to extension panel and w-beam hardware	14	\$325.08	317000
GREAT diaphragms and parts					
10	1	GREAT 24" diaphragm w/ cable guide assembly and cable guide connection h/w	4	\$1,288.71	321000
11	1	GREAT 30" diaphragm w/ cable guide assembly and cable guide connection h/w	4	\$1,380.30	322000
GREAT restraining cables and parts					
12	1	GREAT 5 bay restraining cable w/ connection hardware and 6 ea. 3x3x1/4 washer bars	6	\$2,270.40	331000
13	1	GREAT 6 bay restraining cable w/ connection hardware and 6 ea. 3x3x1/4 washer bars	6	\$2,334.90	332000
14	1	GREAT 7 bay restraining cable w/ connection hardware and 6 ea. 3x3x1/4 washer bars	6	\$2,401.98	333000

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
15	1	GREAT cable guide assembly w/ connection to diaphragm hardware	4	\$52.89	NA
16	1	GREAT front anchor plate for restraining cable w/ connection to foundation MP-3 anchors	6	\$387.00	NA
17	1	GREAT rear anchor plate for restraining cable w/ connection to foundation MP-3 anchors	6	\$387.00	NA
GREAT nose cover and parts					
18	1	GREAT nose cover w/ connection to diaphragm hardware (does not include legs)	3	\$763.68	341000
19	1	GREAT nose support legs (2 ea.) w/ tabs and connection to nose cover hardware	3	\$59.34	342000
GREAT chain rail assemblies and parts					
20	1	GREAT 8 ft. 11 in. "A" chain rail section w/ proof coil chains	7	\$1,186.80	NA
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21	1	GREAT 18 ft. "B" chain rail section w/ proof coil chains	7	\$2,463.90	NA
23	1	GREAT 9 ft. "B" or "C" chain rail section w/ proof coil chains	7	\$692.10	351000
24	1	GREAT 3 ft. "C" chain rail section w/ proof coil chains	7	\$535.35	352000
25	1	GREAT 6 ft. "C" chain rail section w/ proof coil chains	7	\$632.10	353000
26	1	GREAT proof coil chain w/ devis & keeper pin	7	\$44.38	354000
GREAT backups and parts					
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GREAT cartridges and parts					
41	1	GREAT Hexcam II Type 51 cartridge	NA	\$833.34	371000
42	1	GREAT concrete block backup cartridge support bracket	8	\$77.40	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
43	1	GREAT NJ barrier metal backup cartridge support bracket w/ connection hardware	11	\$296.70	NA
		Energy Absorption Systems Quadguard Attenuators			
		Quadguard 24" to 36" units			
		Quadguard diaphragms and parts (24" to 36")			
44	1	Quadguard 24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15	\$730.14	811100
45	1	Quadguard 30" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15	\$806.25	811200
46	1	Quadguard 36" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15	\$864.30	811300
		Quadguard nose cover and parts (24" to 36")			
47	1	Quadguard yellow belt nose cover w/ cartridge support bracket, nose support legs, nose attachment brackets, pull-out brackets, and connection to diaphragm hardware (fits 24" and 30" units)	16	\$1,519.62	812100
48	1	Quadguard yellow belt nose cover w/ cartridge support bracket, nose support legs, nose attachment brackets, pull-out brackets, and connection to diaphragm hardware (fits 36" units)	16	\$1,519.62	812100
		Quadguard backups and parts (24" to 36")			
49	1	Quadguard 24" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19	\$1,990.47	NA
50	1	Quadguard 30" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19	\$2,038.20	NA
51	1	Quadguard 36" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19	\$2,115.60	NA
52	1	Quadguard concrete block backup 24" front face w/ side panel and side panel connection hardware.	20	\$1,135.20	NA
53	1	Quadguard concrete block backup 30" front face w/ side panel and side panel connection hardware.	20	\$1,190.67	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
54	1	Quadguard concrete block backup 36" front face w/ side panel and side panel connection hardware.	20	\$1,270.65	NA
Quadguard panels and parts (24" to 36")					
55	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	\$870.75	814100
56	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	\$870.75	814200
57	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	\$870.75	814300
58	1	Quadguard quad beam to three beam transition panel w/ diagonal brace, diagonal brace connection hardware, and connection to post #2 bar washers (24" unit)	24	\$806.26	814400
59	1	Quadguard quad beam to three beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (30" unit)	24	\$806.26	814500
60	1	Quadguard quad beam to three beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (36" unit)	24	\$806.26	814600
Quadguard 69" and 90" units					
Quadguard diaphragms and parts (69" and 90" units)					
61	1	Quadguard 26.50" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$810.12	821100
62	1	Quadguard 26.95" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$980.40	821110
63	1	Quadguard 32.80" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,019.10	821120

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
64	1	Quadguard 35.94" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,074.57	821130
65	1	Quadguard 39.09" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,096.21	821140
66	1	Quadguard 42.24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,154.55	821150
67	1	Quadguard 45.39" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (NOTE: For 120" units, use Item #89)	26	\$1,180.35	821160
68	1	Quadguard 48.54" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,190.67	821170
69	1	Quadguard 50.12" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,210.02	821180
70	1	Quadguard 51.69" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,219.05	821190
71	1	Quadguard 54.84" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,230.66	821200
72	1	Quadguard 57.99" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,238.40	821210
73	1	Quadguard 59.57" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,270.65	821220
74	1	Quadguard 61.14" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,280.97	821230
75	1	Quadguard 64.29" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,315.80	821240
76	1	Quadguard 68.07" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,354.50	821250
77	1	Quadguard 70.59" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,385.46	821260
78	1	Quadguard 73.74" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,406.10	821270

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
79	1	Quadguard 76.89" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,425.45	821280
80	1	Quadguard 80.04" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,477.05	821290
		Quadguard nose cover and parts. (69" and 90" units)			
81	1	Quadguard 69" yellow belt nose cover w/ cartridge support bracket, nose attachment brackets, pullout brackets, nose attachment hardware, pullout bracket hardware, and nose attachment bracket hardware (fits 69" 3-7 bay units)	27	\$1,638.30	822100
82	1	Quadguard 90" yellow belt nose cover w/ cartridge support bracket, nose attachment brackets, pullout brackets, nose attachment hardware, pullout bracket hardware, and nose attachment bracket hardware (fits 69" to 90" units)	27	\$1,638.30	822100
		Quadguard backups and parts (69" and 90")			
83	1	Quadguard tension strut backup w/ side panel, hinge plates, telespar struts, cartridge support bracket, support bracket locking bar, and connection hardware (69" unit)	29	\$2,483.25	NA
84	1	Quadguard tension strut backup w/ side panel, hinge plates, telespar struts, cartridge support bracket, support bracket locking bar, and connection hardware. (90" unit)	29	\$2,599.35	NA
85	1	Quadguard concrete block backup front face w/ hinge plate, side panel, telespar struts, and connection hardware. (69" unit)	30	\$1,615.08	NA
86	1	Quadguard concrete block backup front face w/ hinge plate, side panel, telespar struts, and connection hardware. (90" unit)	30	\$1,704.21	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEETS(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
87	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	\$748.20	824100
88	1	Quadguard quad beam to three beam transition panel w/ pivot support bracket, support bracket hardware, and connection to post #2 bar washers (69" and 90" units)	32	\$825.60	824200
Quadguard 120" units					
Quadguard diaphragms and parts (120" units)					
89	1	Quadguard 45.39" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	35	\$1,244.85	841100
NA	NA	Quadguard 57.99" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides USE LINE ITEM 72	26	NA	NA
NA	NA	Quadguard 70.59" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides USE LINE ITEM 77	26	NA	NA
90	1	Quadguard 82.68" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,689.90	841200
91	1	Quadguard 95.31" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$1,950.48	841250
92	1	Quadguard 108" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$2,205.90	841300
Quadguard backups and parts (120" units)					
93	1	Complete Quadguard tension strut backup w/ center section, right section, left section, side panels, hinge plates, telespar struts, cartridge support bracket, locking bar, and all connection hardware	33	\$4,773.00	NA
94	1	Replacement 120" Quadguard tension strut backup right section w/ side panels, hinge plates, telespar struts, and all required connection h/w	33	\$1,238.40	NA
95	1	Replacement 120" Quadguard tension strut backup left section w/ side panels, hinge plates, telespar struts, and all required connection h/w	33	\$1,238.40	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEETS(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
96	1	Quaddguard nose cover and parts (120" units) Quaddguard 120" yellow belt nose cover w/ cartridge support bracket, nose attachment brackets, pullout brackets, nose attachment hardware, pullout bracket hardware, and nose attachment bracket hardware (fits 120" units)	27 (installation similar)	\$1,935.00	842100
Energy Absorption Systems Quaddguard - HS Attenuators					
Quaddguard-HS 24" to 36" units					
Quaddguard-HS diaphragms and parts (24" to 36")					
NOTE: SPECIAL DIAPHRAGMS AND DIAPHRAGM COMPONENTS FOR DIAPHRAGMS 1 THRU 3 FROM THE FRONT ARE LISTED BELOW. FOR ALL OTHER PARTS, USE					
97	1	Quaddguard-HS 24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34	\$970.08	851100
98	1	Quaddguard-HS 30" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34	\$1,055.22	851200
99	1	Quaddguard-HS 36" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34	\$1,109.40	851300
100	1	Diaphragm #3 bumper assembly with bumper and hardware (for 24" to 36" units)	62	\$516.00	NA
101	1	Diaphragm #2 bumper/spacer assembly with bumper spacer, and hardware (for 24" to 36" units)	62	\$454.08	NA
102	1	Diaphragm #1 spacer assembly with spacer and hardware (for 24" to 36" units)	62	\$406.35	NA
Quaddguard-HS nose covers (24" to 36")					
103	1	Quaddguard-HS yellow belt nose cover w/ nose attach brackets, pull-out brackets, and connection to diaphragm hardware (fits 24" and 30" units)	80/81	\$1,522.20	852100
104	1	Quaddguard-HS yellow belt nose cover w/ nose attach brackets, pull-out brackets, and connection to diaphragm hardware (fits 36" units)	80/81	\$1,522.20	852200
105	THIS ITEM NUMBER INTENTIONALLY LEFT BLANK				
106	THIS ITEM NUMBER INTENTIONALLY LEFT BLANK				

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
Quadguard common parts (all units)					
Quadguard panels and parts (all units)					
107	1	Quadguard mushroom bolt assembly	17	\$51.60	831100
108	1	Quadguard fender panel w/ connection to diaphragm hardware and mushroom bolt assembly	17	\$503.10	831200
109	1	Quadguard NJ barrier backup left side 4 inch offset transition panel w/ support bracket, and connection to support bracket hardware.	22	\$599.85	831300
110	1	Quadguard NJ barrier backup right side 4 inch offset transition panel w/ support bracket, and connection to support bracket hardware.	22	\$599.85	831400
111	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	\$806.25	NA
112	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	\$806.25	NA
Quadguard backups and parts (all units)					
113	1	Quadguard concrete block backup end shoe attachment w/connection to block MP-3 anchors	21	\$387.00	832100
114	1	Quadguard concrete block backup wheel deflector w/ connection to block MP-3 anchors	25	\$322.50	832200
Quadguard monorails and parts (all units)					
115	1	Quadguard one bay monorail section	18, 28	\$406.35	833100
116	1	Quadguard two bay monorail section	18, 28	\$930.09	833200
117	1	Quadguard three bay monorail section	18, 28	\$1,190.67	833300
118	1	Quadguard monorail end cap w/ connection to monorail hardware	18, 28	\$65.14	833400
Quadguard cartridges (all units)					
119	1	Quadguard type I cartridge	NA	\$680.50	834100
120	1	Quadguard type II cartridge	NA	\$612.75	834200
Quadguard miscellaneous parts (all units)					
121	1	Quadguard diaphragm cartridge support bracket	26	\$32.25	835100
122	1	Quadguard flex belt nose clamp	16 / 27 / 79	\$41.28	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard II Attenuators			
		Quadguard II 24" to 48" units			
		Quadguard II diaphragms and parts (24" to 48")			
NOTE: THE STANDARD 48" QUADGUARD DIAPHRAGM BELOW IS UNIQUE TO THE QUADGUARD II SYSTEM, BUT ONLY BASED ON ITS WIDTH. STANDARD QUADGUARD					
123	1	Quadguard-II 48" diaphragm w/ monorail guides, cartridge support brackets, monorail shims, and hardware for guides	15	\$1,244.85	861100
124	1	Quadguard II diaphragm shim for 24" to 48" diaphragms (2 ea. required for each diaphragm)	85	\$58.05	NA
		Quadguard II nose cover and parts (24" to 48")			
125	1	Quadguard II "narrow" yellow metal nose cover w/ cartridge support brackets and connection to diaphragm hardware (fits 24" to 48" units*) * see item 126 for additional part for 48" unit noses	82	\$599.85	862100
126	1	Quadguard II "narrow" yellow metal nose cover 12" spacer with connection hardware. (supplemental part required for nose covers used with 48" design width units)	83	\$619.20	862200
		Quadguard II 69" to 120" units			
		Quadguard II nose cover and parts (69" to 120")			
127	1	Quadguard II "wide" yellow metal nose cover w/ cartridge support brackets and connection to diaphragm hardware (fits 69" to 120" units)	84	\$625.65	863100
		Complete Quadguard Units			
128	1	Quadguard unit, 3-bay, 24" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA		NA
129	1	Quadguard unit, 3-bay, 30" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$9,313.75	NA
130	1	Quadguard unit, 3-bay, 36" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,010.40	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
131	1	Quadguard unit, 3-bay, 69" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$12,745.20	NA
132	1	Quadguard unit, 3-bay, 90" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$13,525.65	NA
133	1	Quadguard unit, 3-bay, 24" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,165.20	NA
134	1	Quadguard unit, 3-bay, 30" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,365.15	NA
135	1	Quadguard unit, 3-bay, 36" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,850.19	NA
136	1	Quadguard unit, 3-bay, 69" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$12,745.20	NA
137	1	Quadguard unit, 3-bay, 90" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$18,253.50	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
138	1	Quaddguard unit, 6-bay, 24" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$16,389.45	NA
139	1	Quaddguard unit, 6-bay, 30" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$16,886.10	NA
140	1	Quaddguard unit, 6-bay, 36" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$17,396.65	NA
141	1	Quaddguard unit, 6-bay, 69" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$20,949.60	NA
142	1	Quaddguard unit, 6-bay, 90" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$22,155.75	NA
143	1	Quaddguard unit, 6-bay, 120" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$33,766.75	NA
144	1	Quaddguard unit, 6-bay, 24" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$17,247.30	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
145	1	Quadguard unit, 6-bay, 30" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$17,731.05	NA
146	1	Quadguard unit, 6-bay, 36" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$18,240.60	NA
147	1	Quadguard unit, 6-bay, 69" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$20,949.60	NA
148	1	Quadguard unit, 6-bay, 90" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$22,149.30	NA
149	1	Quadguard unit, 6-bay, 120" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$33,765.75	NA
150	1	Quadguard-HS unit, 24" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$24,800.25	NA
151	1	Quadguard-HS unit, 30" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$25,380.75	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
152	1	Quadguard-HS unit, 36" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$26,199.90	NA
153	1	Quadguard-HS unit, 24" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$25,651.65	NA
154	1	Quadguard-HS unit, 30" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$26,232.15	NA
155	1	Quadguard-HS unit, 36" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$27,044.85	NA
156	1	Quadguard-II unit, 24" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$8,094.75	NA
157	1	Quadguard-II unit, 30" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$8,339.85	NA
158	1	Quadguard-II unit, 2-bay, 36" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$8,572.05	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
159	1	Quadguard-II unit, 2-bay, 48" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$8,933.25	NA
160	1	Quadguard-II unit, 2-bay, 24" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$9,049.35	NA
161	1	Quadguard-II unit, 2-bay, 30" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$9,288.00	NA
162	1	Quadguard-II unit, 2-bay, 36" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$9,507.30	NA
163	1	Quadguard-II unit, 2-bay, 48" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,023.30	NA
164	1	Quadguard-II unit, 5-bay, 24" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$15,699.30	NA
165	1	Quadguard-II unit, 5-bay, 30" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$15,996.00	NA

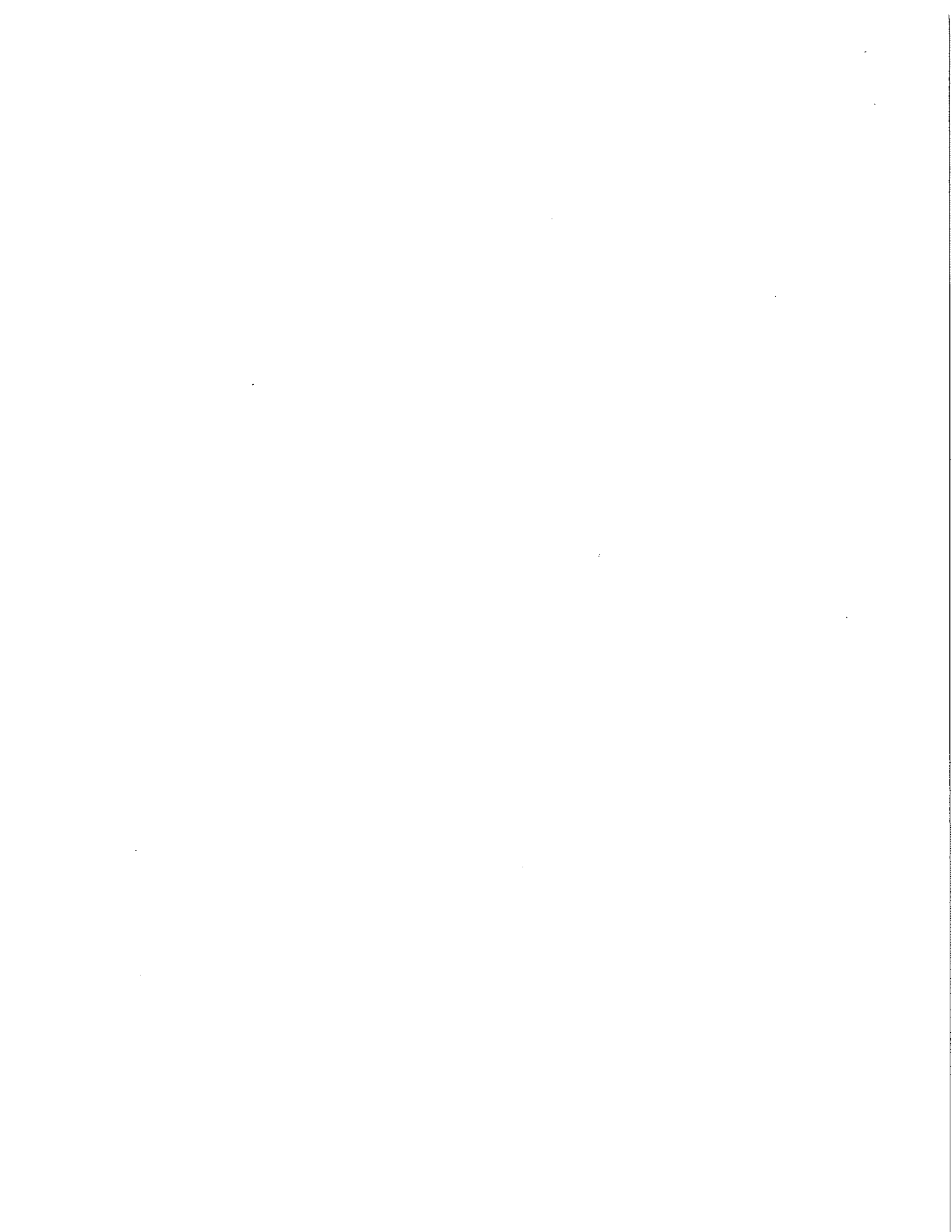
ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
166	1	Quadguard-II unit, 5-bay, 36" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$16,544.25	NA
167	1	Quadguard-II unit, 5-bay, 48" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$17,150.55	NA
168	1	Quadguard-II unit, 5-bay, 69" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$18,356.70	NA
169	1	Quadguard-II unit, 5-bay, 90" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$19,408.05	NA
170	1	Quadguard-II unit, 6-bay, 126" width, concrete backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$34,397.85	NA
171	1	Quadguard-II unit, 5-bay, 24" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$16,653.90	NA
172	1	Quadguard-II unit, 5-bay, 30" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$16,944.15	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
173	1	Quadguard-II unit, 5-bay, 36" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$17,492.40	NA
174	1	Quadguard-II unit, 5-bay, 48" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$18,240.60	NA
175	1	Quadguard-II unit, 5-bay, 69" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$19,317.75	NA
176	1	Quadguard-II unit, 5-bay, 90" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$20,356.20	NA
177	1	Quadguard-II unit, 6-bay, 126" width, tension strut backup installation (to include all parts, components, hardware, anchoring studs, and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$34,397.85	NA
Trinity Industries TRACC					
Attenuators					
TRACC common parts					
Base components					
178	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	\$1,925.67	NA
179	1	Left end shoe (part # 25955A) w/ attachment h/w	49, 50	\$150.76	NA
180	1	Right end shoe (part # 25954A) w/ attachment h/w	49, 50	\$150.76	NA
181	1	Front anchor weldment (part # 25956A) w/ attachment h/w.	49, 50	\$394.39	NA
182	1	3'-1" rear extension plate (part # 25961G) w/ attachment h/w (for 9-bay units)	49, 50	\$222.47	NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
183	1	2'-0 1/2" rear extension plate (part # 25995G) w/ attachment h/w (for 6-bay units)	55, 56	\$134.50	NA
		9-bay unit rip plate components			
184	1	Rip plate, stage 3, bottom (part # 25964G)	49, 50	\$219.63	211100
185	1	Rip plate, stage 3, middle (part # 25965G)	49, 50	\$215.82	211150
186	1	Rip plate, stage 3, top (part # 25966G)	49, 50	\$215.82	211200
187	1	Rip plate, stage 2, (part # 25963G)	49, 50	\$204.92	211250
		6-bay unit rip plate components			
188	1	Rip plate, stage 3, bottom (part # 25993G)	55, 56	\$211.46	211300
189	1	Rip plate, stage 3, middle (part # 25992G)	55, 56	\$211.46	211350
190	1	Rip plate, stage 3, top (part # 25991G)	55, 56	\$207.10	211400
191	1	Rip plate, stage 2, (part # 25990G)	55, 56	\$196.20	211450
		doubler plates			
192	1	doubler plate (part # 25960G) w/ removable bolts.	49, 50	\$938.60	211500
193	1	11-1/2" rear doubler plate for 6-bay unit only (part # 25996G) w/ removable bolts	55, 56	\$147.19	211550
		fender panels			
194	1	"two-bay" fender panel (part # 25973) w/ attachment to diaphragm and adjacent fender panel h/w	51, 52, 53, 54	\$342.92	212100
195	1	"one-bay" fender panel (part # 25974) w/ attachment to diaphragm and adjacent fender panel h/w	51, 52, 53, 54	\$329.27	212150
		sled and frames (diaphragms)			
196	1	24" frame (diaphragm) (part # 25971)	51, 52, 53, 54	\$417.83	213100
197	1	24" front sled (part # 25970) w/ shredder assembly (part # 25975) pre-assembled	51, 52, 53, 54	\$2,846.46	213150
198	1	shredder assembly (part # 25975) w/ hitch pin clip (part # 3253) and 3/4" x 2" devis pin (part # 4425)	51, 52, 53, 54	\$241.54	213200
199	1	24" end frame (part # 25972A) w/ connection to 24" concrete block h/w, 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	\$1,155.75	NA
200	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	\$827.02	NA
201	1	1-1/2" WT-Frame extension (part # 33406) w/ connection to frame h/w (33" units only)	57, 58	\$192.76	213250
202	1	3" WT-Frame extension (part # 33471) w/ connection to frame h/w (39" units only)	59, 60, 61	\$335.33	213300
203	1	WT-Joint plate (part # 33467) w/ 3x1/4" fender panel plate and connection h/w (39" units only)	59, 60, 61	\$145.01	213350

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEETS(S)	COST	(DOH USE ONLY) INVENTORY SUBCODE
204	1	Lower and Upper W-beam (part # PC33344A) w/ connection to end frame h/w & splice connection h/w	36, 37	\$1,195.86	214100
205	1	W-beam (part # PC105G) w/ splice connection h/w	36, 37	\$334.54	214150
206	1	Backup post (post #1) (part # PC564G) w/ connection to end frame h/w	36, 37	\$225.85	NA
207	1	Backup post (post #1) w/ end plate (part # PC33345A) w/ connection to end frame h/w	38	\$577.18	NA
208	1	Support post (post # 2, 3) (part # PC33393G)	36, 37	\$396.04	NA
209	1	Support post (post # 4-9) (part # PC33346G)	36, 37	\$174.40	NA
210	1	Wood block (part # PC6144B) w/ connection to support post and beam h/w	36, 37	\$82.07	NA
211	1	Wood block (part # PC6142B) w/ connection to support post and beam h/w	36, 37	\$81.92	NA
212	1	Wood block (part # PC6145B) w/ connection to support post and beam h/w	36, 37	\$54.17	NA
213	1	Wood block (part # PC6146B) w/ connection to support post and beam h/w	36, 37	\$50.71	NA
214	1	Wood block (part # PC6147B) w/ connection to support post and beam h/w	36, 37	\$51.49	NA
215	1	Wood block (part # PC6143B) w/ connection to support post and beam h/w	36, 37	\$52.84	NA
216	1	Wood block (part # PC6141B) w/ connection to support post and beam h/w	36, 37	\$53.02	NA
217	1	Right transition panel (part # PC33371A) w/ connection to end frame h/w and splice h/w	39, 40	\$963.08	214200
218	1	Left transition panel (part # PC33372A) w/ connection to end frame h/w and splice h/w	39, 40	\$963.08	214250
219	1	Backup post (post #1) (part # PC564G) w/ connection to end frame h/w	39, 40	\$226.37	NA
220	1	Backup post (post #1) w/ end plate (part # PC33345A) w/ connection to end frame h/w	41	\$557.70	NA
221	1	Steel Support post (post # 2-4) (part # PC33346G)	39, 40	\$261.60	NA
222	1	Wood block (part # PC6143) w/ connection to support post and beam h/w (for use w/ steel supports)	39, 40	\$52.84	NA
223	1	Wood Support post (post # 2-4) (part # PC6137B)	42	\$109.00	NA
224	1	Wood block (part # PC6138B) w/ connection to support post and beam h/w (for use with wood supports)	42	\$54.48	NA
225	1	24" concrete block end shoe (part # PC33367G) w/ connection to barrier h/w	43, 44	\$358.26	214300

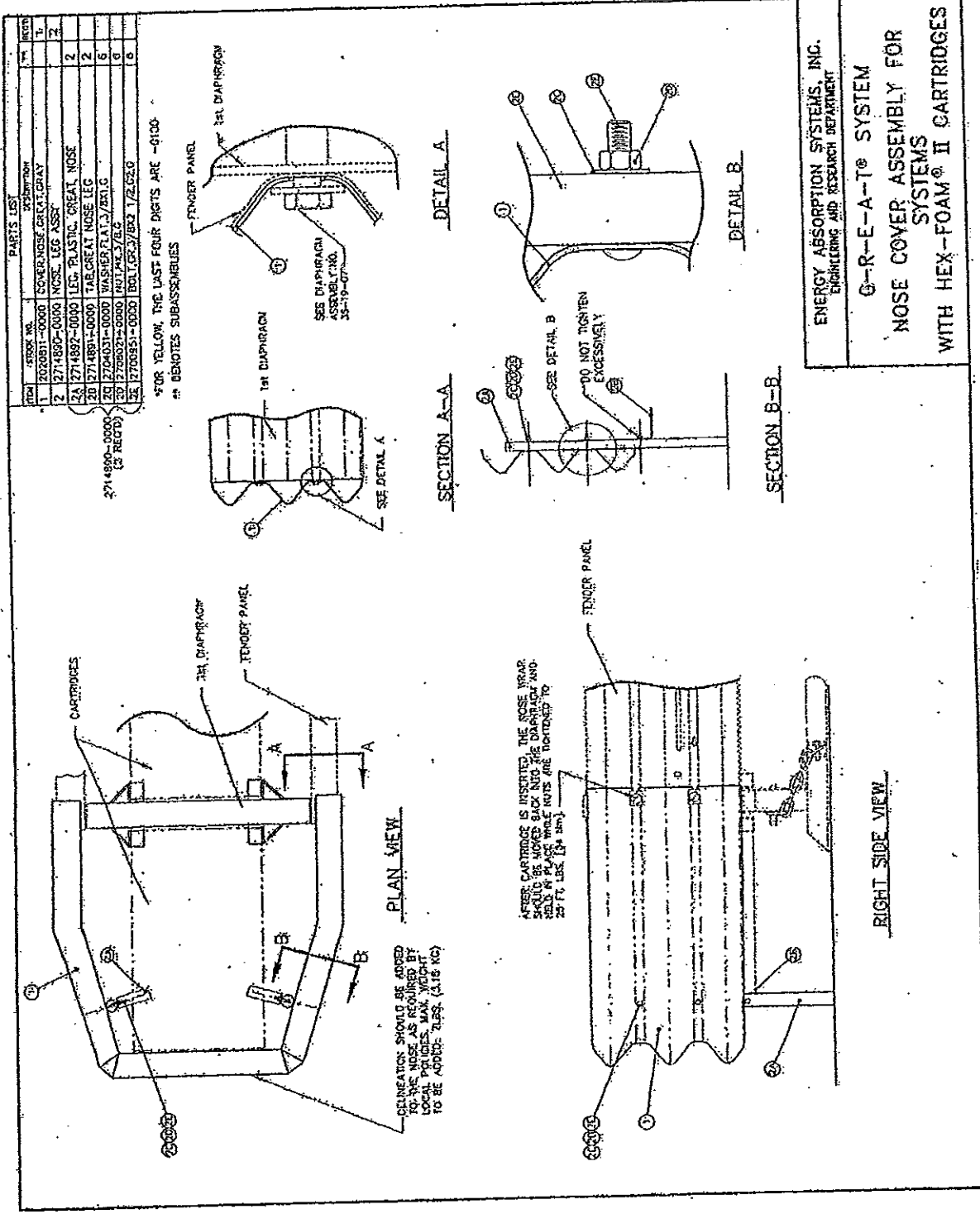
ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEETS)	COST	(DOH USE ONLY) INVENTORY SUBCODE
226	1	Lower W-beam (part # PC33360A) w/ connection to end frame h/w	45, 46	\$474.17	214350
227	1	Lower terminal (part # PC33380G) w/ connection to barrier and beam h/w	45, 46	\$223.36	214400
228	1	Upper 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	\$494.16	214450
229	1	Upper terminal (part # PC33380G) w/ connection to barrier and beam h/w	45, 46	\$223.36	214500
230	1	Lower W-beam (part # PC3360A) w/ connection to end frame h/w.	47, 48	\$327.00	214550
231	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	\$436.00	214600
232	1	Upper and Lower terminal (part # PC926G) w/ connection to barrier and beam h/w	47, 48	\$163.50	214650
233	1	1/2" cable clamp (part # 4324)	59, 60, 61	\$8.72	215100
234	1	Wt-cable clamp plate (part # 33470)	59, 60, 61	\$119.90	215150
235	1	1/2" cable (part # 6713)	59, 60, 61	\$337.90	215200
236	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	\$42.51	215250
237	1	TRACC plastic nose piece w/ attachment hardware (part # 6532B)	59	\$381.50	215300
238	1	TRACC unit, NCHRP-350 Test Level 2, 24" width, to be delivered pre-assembled (to include all anchoring studs and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,900.00	NA
239	1	TRACC unit, NCHRP-350 Test Level 3, 24" width, to be delivered pre-assembled (to include all anchoring studs and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$13,625.00	NA
240	1	TRACC unit, NCHRP-350 Test Level 2, 30" width, to be delivered pre-assembled (to include all anchoring studs and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$10,900.00	NA
241	1	TRACC unit, NCHRP-350 Test Level 3, 30" width, to be delivered pre-assembled (to include all anchoring studs and anchoring stud epoxy required for concrete installation) THIS ITEM MAY ONLY BE ORDERED BY THE TRAFFIC ENGINEERING DIVISION	NA	\$14,388.00	NA

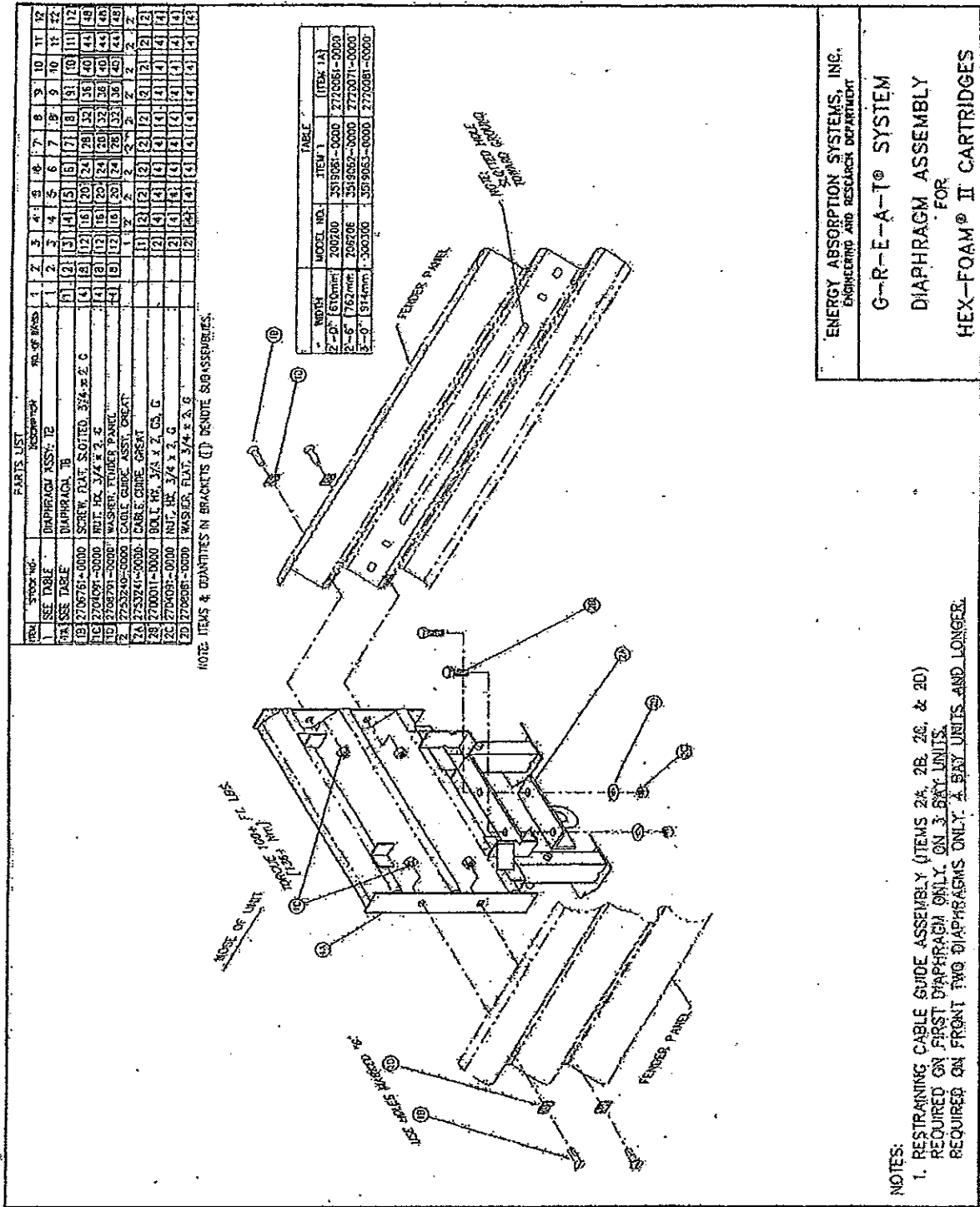


**PAGES 1 THROUGH 2
NOT INCLUDED AS
PART OF THIS**

REQUEST FOR QUOTATION







PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY. REQ.	1	2	3	4	5	6	7	8	9	10	11	12
1	SEE TABLE	DIAPHRAGM ASSY. 1E	1E	1	2	3	4	5	6	7	8	9	10	11	12
2A	SEE TABLE	DIAPHRAGM 1B	1B	1	2	3	4	5	6	7	8	9	10	11	12
1B	2706761-0000	SCREW, PLAT. SLOTTED, 3/4" x 2" C	1	1	2	3	4	5	6	7	8	9	10	11	12
1C	2704091-0000	FRIT, HD, 3/4" x 2" G	1	1	2	3	4	5	6	7	8	9	10	11	12
1D	2706791-0000	WASHER, FENDER PANEL	1	1	2	3	4	5	6	7	8	9	10	11	12
2	2725249-0000	CABLE GUIDE ASSY. ORGAT	1	1	2	3	4	5	6	7	8	9	10	11	12
2A	2725241-0000	CABLE GUIDE ORGAT	1	1	2	3	4	5	6	7	8	9	10	11	12
2B	2700011-0000	BOLT, HD, 3/4" x 2" GS, G	1	1	2	3	4	5	6	7	8	9	10	11	12
2C	2706091-0000	NUT, HD, 3/4" x 2" G	1	1	2	3	4	5	6	7	8	9	10	11	12
2D	2706801-0000	WASHER, PLAT, 3/4" x 2" G	1	1	2	3	4	5	6	7	8	9	10	11	12

NOTE: ITEMS & QUANTITIES IN BRACKETS () DENOTE SUB-ASSEMBLIES.

TABLE

WIDTH	MODEL NO.	ITEM 1	ITEM 1A
2'-0" (610mm)	200200	3519081-0000	2725861-0000
2'-6" (762mm)	208706	3519082-0000	2725871-0000
3'-0" (914mm)	300300	3519083-0000	2726081-0000

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

G-R-E-A-T® SYSTEM

DIAPHRAGM ASSEMBLY

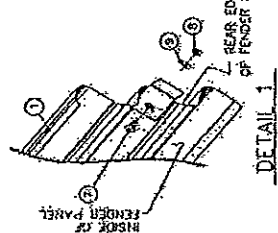
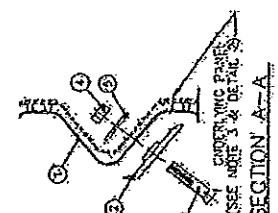
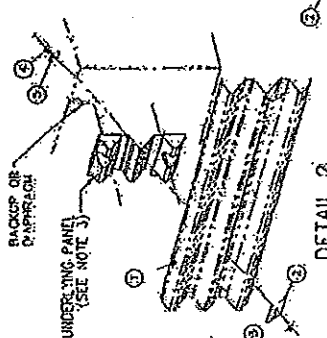
FOR
HEX-FOAM® II CARTRIDGES

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

PARTS LIST														
QTY	DESCRIPTION	USE OF PARTS	1	2	3	4	5	6	7	8	9	10	11	12
1	3138111-0000	PANEL, FB FENDER												
2	2708111-0000	WASHER, ALUMINUM FORGED, C												
3	2707111-0100	BOLTS, S/BX CRP ALLEN SOCKET												
4	2704111-0000	NUTS, CRP S7/8 C												
5	2708111-0000	WASHER, BULB HEAD, 20/21 A/C												
6	2736111-0000	DEFLECTOR, MUSHROOM BOLT												
7	2706111-0000	SCREW, FLAT HEAD, SLOTTED, C												
8	2704111-0000	NUTS, CRP 1/2 C												
9	2708111-0000	WASHER, FLAT, 20/21 S7/8 C												

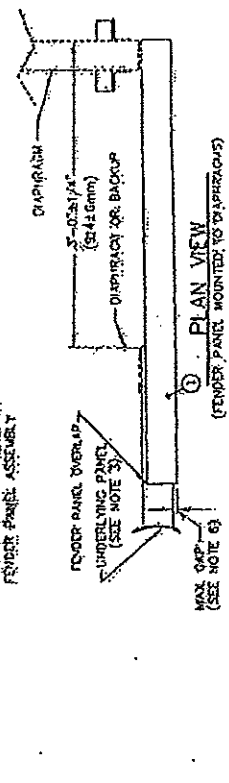
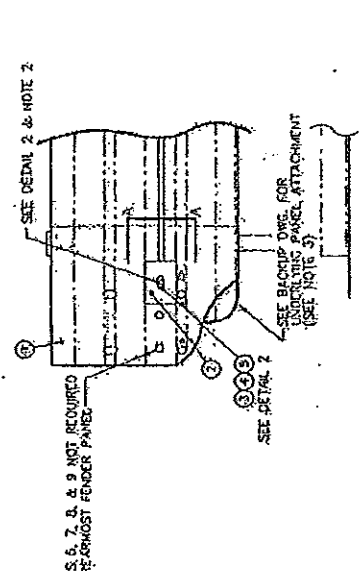
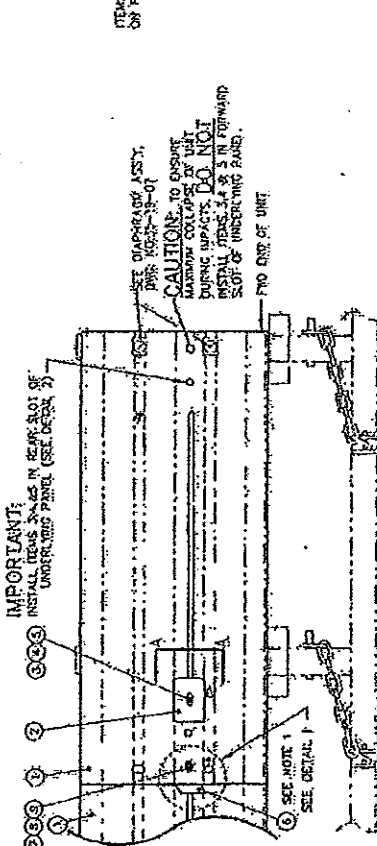
2730111-0000
BOAT ASS'Y (MUSHROOM)

2726111-0000
MUSHROOM BOLT
DEFLECTOR ASS'Y



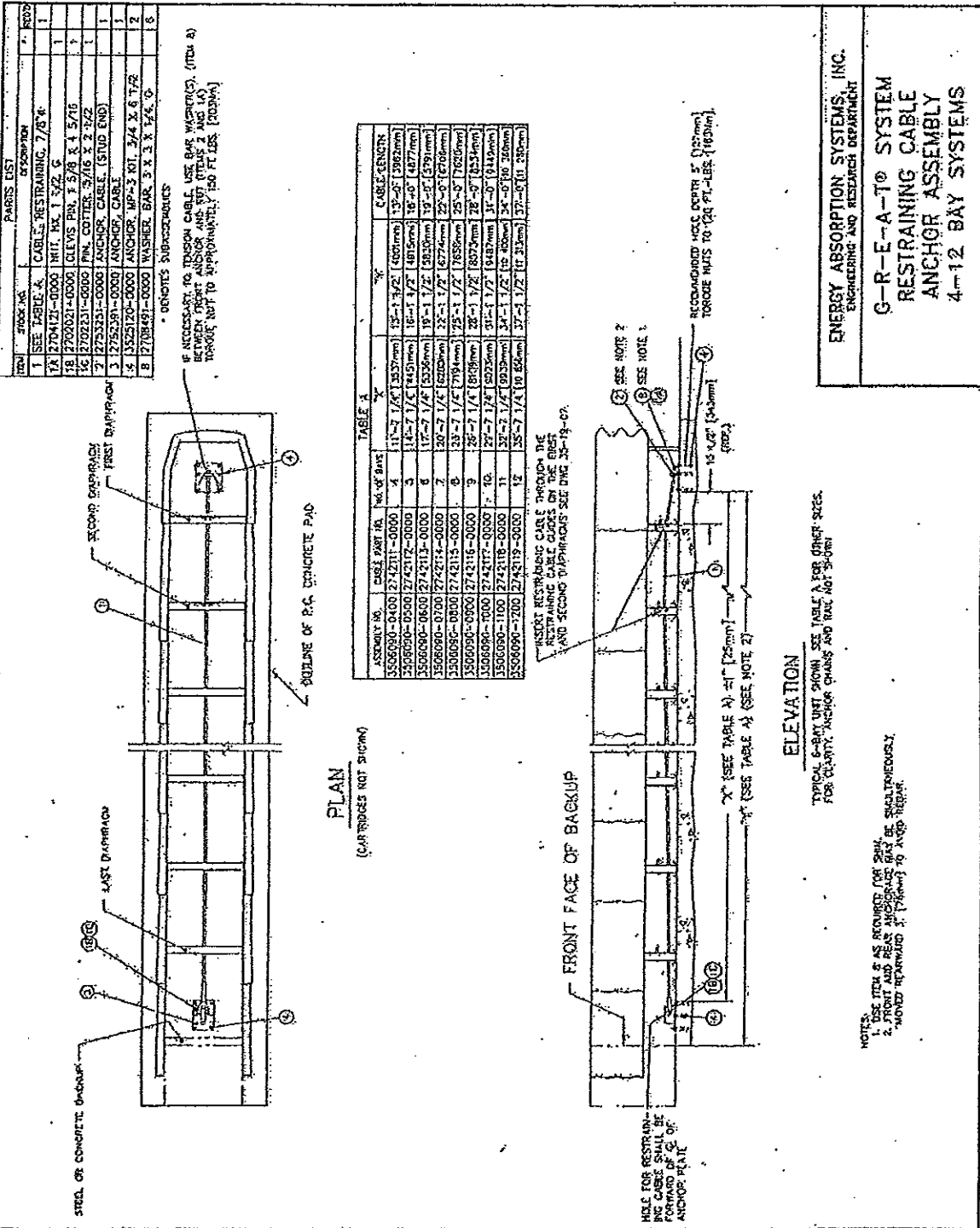
NOTES:

- ITEM 6 TO BE BOLTED TO ITEM 1, BEFORE ITEM 1 IS INSTALLED.
- ITEM 4 TO BE INSTALLED AND TIGHTENED, USING A 3/8" (8mm) ALLEN WRENCH AND TORQUE WRENCH TO 60' IN-LB (81.5 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 FITTED ON ALL EXCEPT THE LAST FENDER PANEL. THE MUSHROOM DEFLECTOR MUST BE FITTED TO THE FENDER PANELS TO CATCH ON THE MUSHROOM WASHERS (OR IN THE CASE OF THE LAST FENDER PANEL, IT COULD BE A BACKUP SIDE PANEL, EXTENSION PANEL, OR TRANSITION PANEL).
- WARNING: DO NOT FASTEN THE LAST FENDER PANEL RIGIDLY TO THE UNDERLYING PANELS BEHIND IT. THE MUSHROOM DEFLECTOR ASS'Y MUST BE ABLE TO MOVE TO ALLOW THE LAST FENDER PANEL TO BE CLOSED.
- MAXIMUM GAP: 3/4" (19mm) ON ANY SIDE MORE TRAFFIC APPROACHES FROM REAR (1/2" (13mm) MAX. ON ANY SIDE, WHERE TRAFFIC APPROACHES ROSE HEAD-ON).



ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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



PARTS LIST

ITEM	QTY	DESCRIPTION	REMARKS
1	1	CABLE RESTRAINING, 7/8" φ	
2	1	WASHER, 3/4" X 3/4" X 3/16"	
3	1	WASHER, 3/4" X 3/4" X 3/16"	
4	1	WASHER, 3/4" X 3/4" X 3/16"	
5	1	WASHER, 3/4" X 3/4" X 3/16"	
6	1	WASHER, 3/4" X 3/4" X 3/16"	
7	1	WASHER, 3/4" X 3/4" X 3/16"	
8	1	WASHER, 3/4" X 3/4" X 3/16"	

IF NECESSARY TO TENSION CABLE, USE BARS W/SPACERS, (ITEM A)
 AND TENSION WITH 4 TONS MINIMUM W/ SPACERS 2 AND 10"
 THROUGH AND TO APPROXIMATELY 150 P.S.I. (1034 kN)

TABLE A

ASSEMBLY NO.	CABLE PART NO.	NO. OF BAYS	CABLE LENGTH
3500090-0100	2742117-0000	4	11'-2 1/4" (3377mm)
3500090-0500	2742117-0000	5	14'-7 1/4" (4451mm)
3500090-0600	2742117-0000	6	17'-7 1/4" (5325mm)
3500090-0700	2742117-0000	7	20'-7 1/4" (6200mm)
3500090-0800	2742117-0000	8	23'-7 1/4" (7074mm)
3500090-0900	2742117-0000	9	26'-7 1/4" (7948mm)
3500090-1000	2742117-0000	10	29'-7 1/4" (8822mm)
3500090-1100	2742117-0000	11	32'-7 1/4" (9696mm)
3500090-1200	2742117-0000	12	35'-7 1/4" (10570mm)

INSTALL RESTRAINING CABLE THROUGH THE
 STEEL OR CONCRETE BACKUP AND
 AND SECOND DIAPHRAGMS SEE FIG. 20-19-C7.

RECOMMENDED HOLE DEPTH 5" (127mm)
 TORQUE NUTS TO 100 FT.-LBS. (136 Nm)

SEE NOTE 2
 SEE NOTE 1

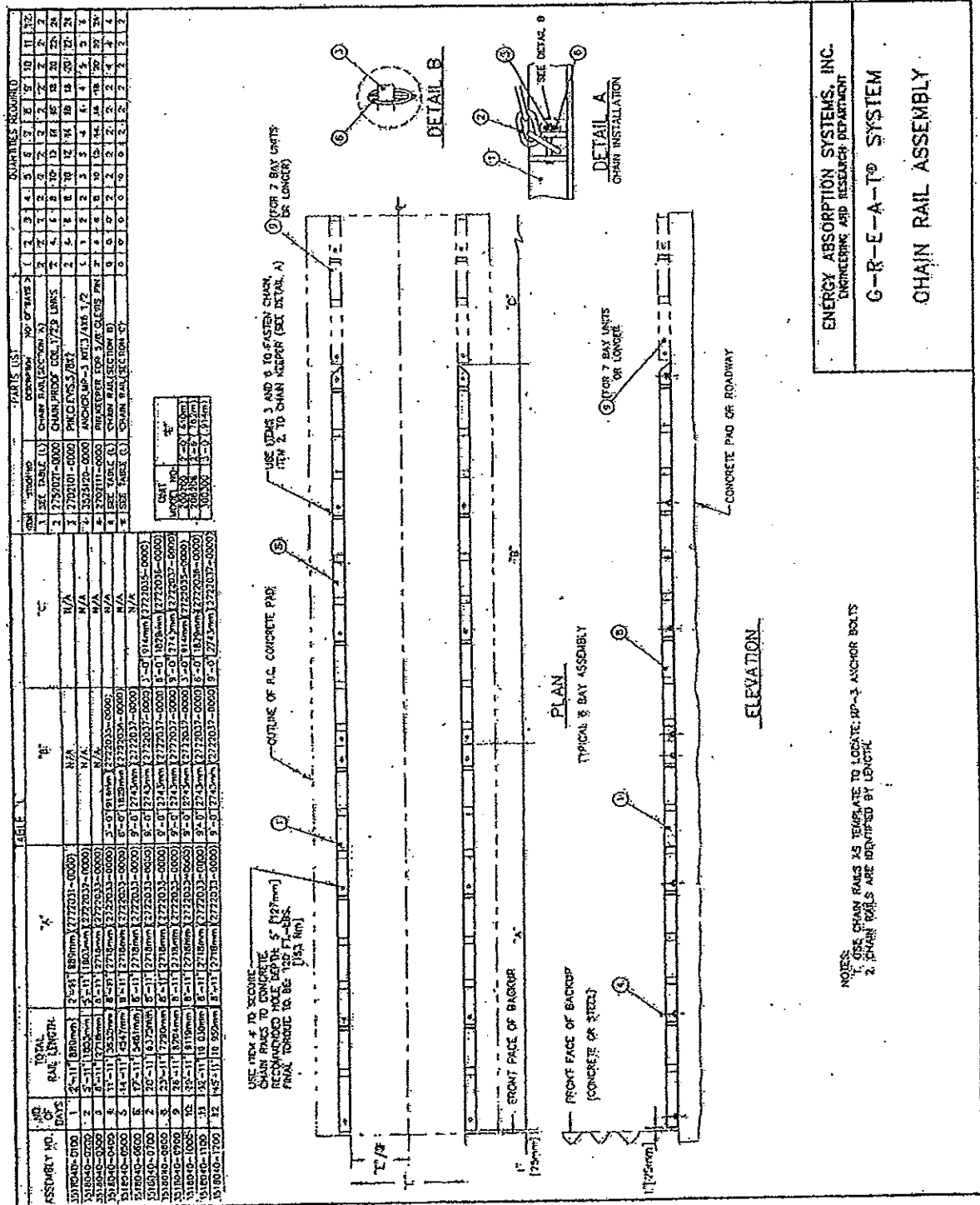
ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT

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

ELEVATION

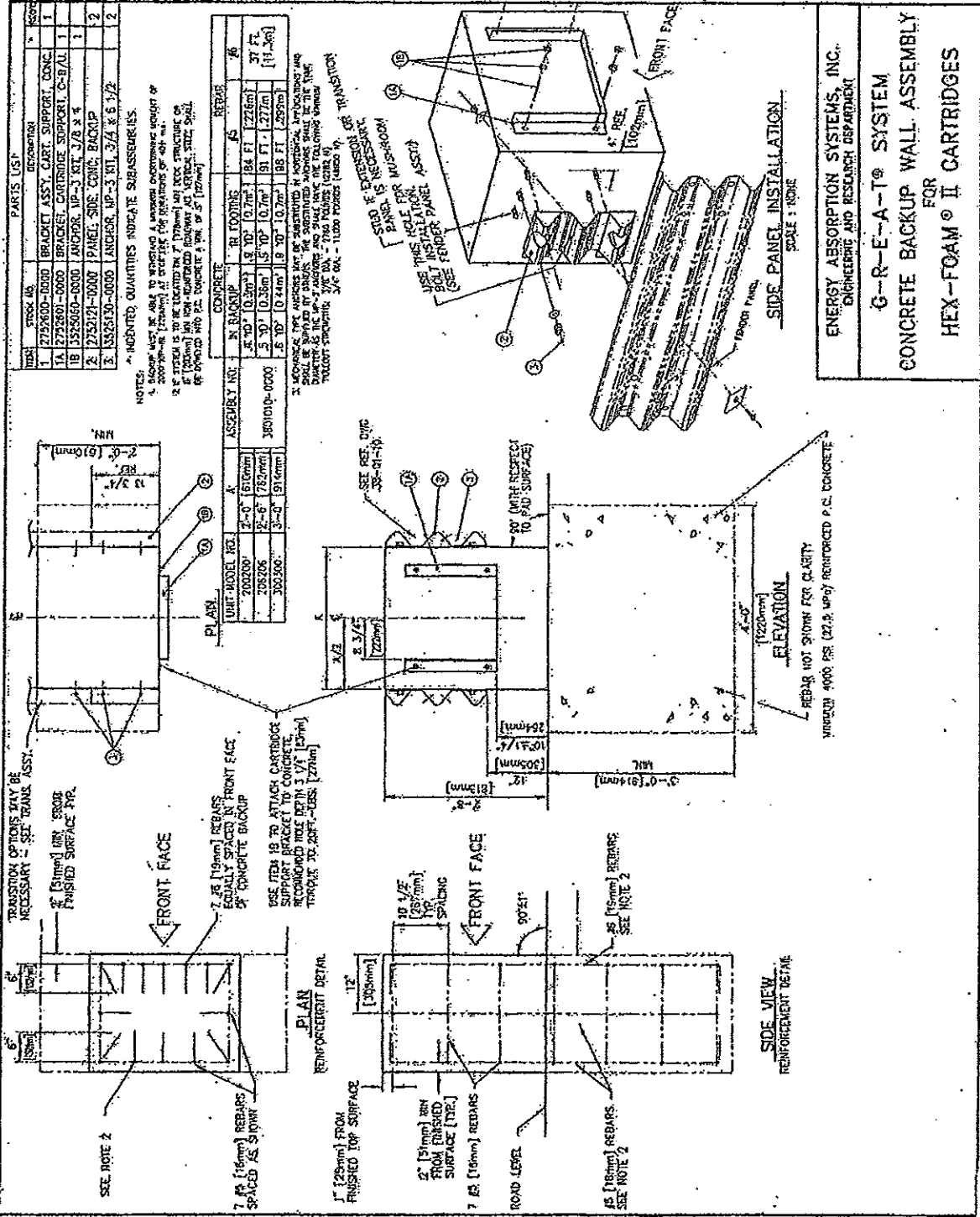
TYPICAL 6-BAY UNIT SHOWN. SEE TABLE A FOR OTHER SIZES.
 FOR CLARITY ANCHOR CHAINS AND NUTS NOT SHOWN

NOTES:
 1. USE ITEM 8 AS REQUIRED FOR 2ND,
 3. FRONT AND REAR ANCHORS MAY BE SIMULTANEOUSLY
 "MOVED REARWARD 5" (127mm) TO AVOID INTERFERENCE.



ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 C-R-E-A-T[®] SYSTEM
 CHAIN RAIL ASSEMBLY

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



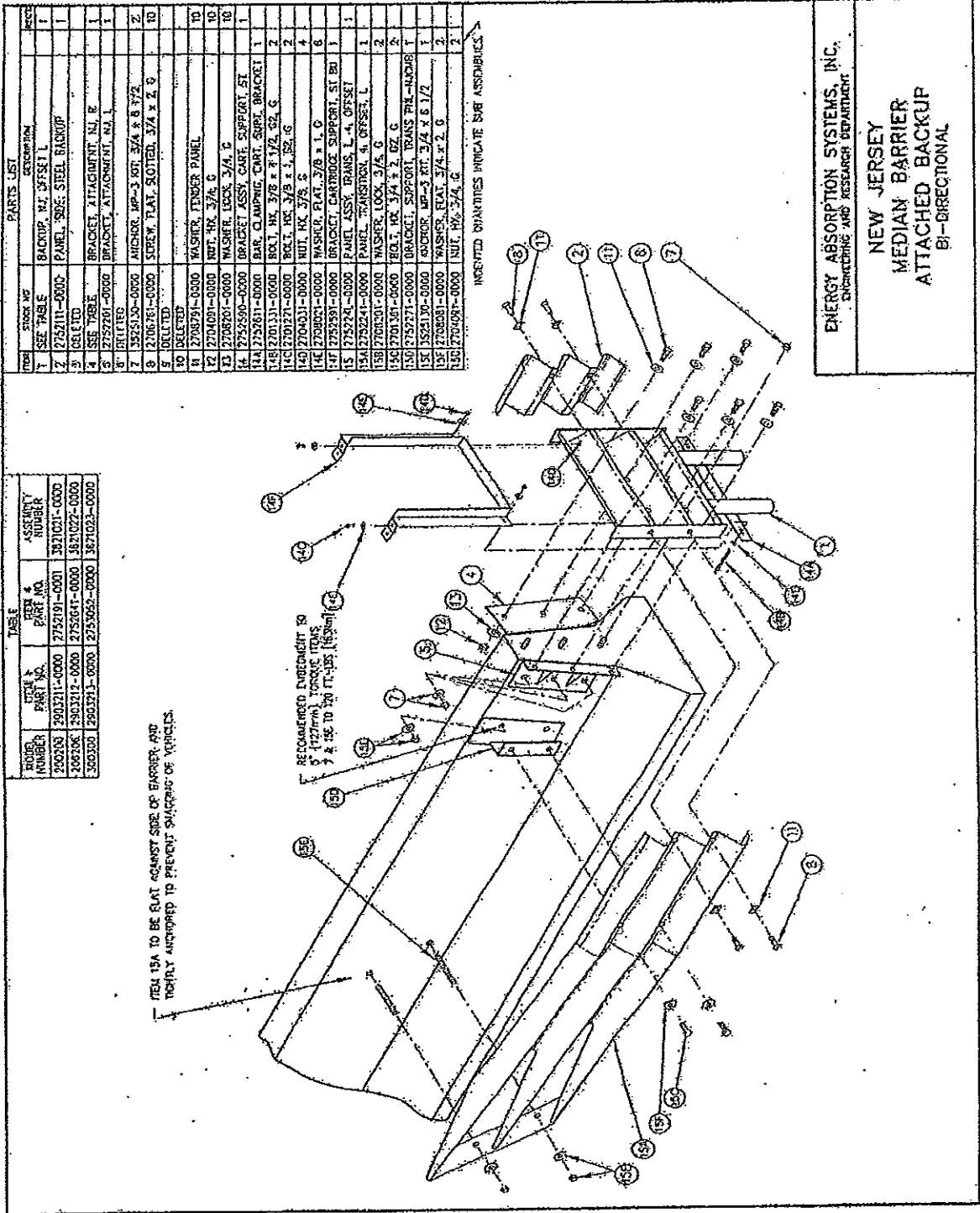
ITEM	QUANTITY	DESCRIPTION	UNIT
1	2725000	BRACKET ASSY. CART. SUPPORT, CONC.	EA
2	1772000	BRACKET, CARTRIDGE SUPPORT, C-B/AL	EA
3	1552000	ANCHOR, MP-3 KIT, 3/8\"/>	
4	2720121	PANEL, SIDS. CONC. BACKUP	EA
5	1552530	ANCHOR, MP-3 KIT, 3/4\"/>	

UNIT MODEL NO.	CONCRETE	REBAR	REBAR
702200	1.00	1.00	1.00
208206	1.00	1.00	1.00
300300	1.00	1.00	1.00

NOTES:
 1. BRACKET ASSY. IS TO BE INSTALLED AT SURFACE OF CONCRETE. BRACKET IS TO BE INSTALLED AT SURFACE OF CONCRETE. BRACKET IS TO BE INSTALLED AT SURFACE OF CONCRETE.
 2. BRACKET IS TO BE INSTALLED AT SURFACE OF CONCRETE. BRACKET IS TO BE INSTALLED AT SURFACE OF CONCRETE.
 3. BRACKET IS TO BE INSTALLED AT SURFACE OF CONCRETE. BRACKET IS TO BE INSTALLED AT SURFACE OF CONCRETE.

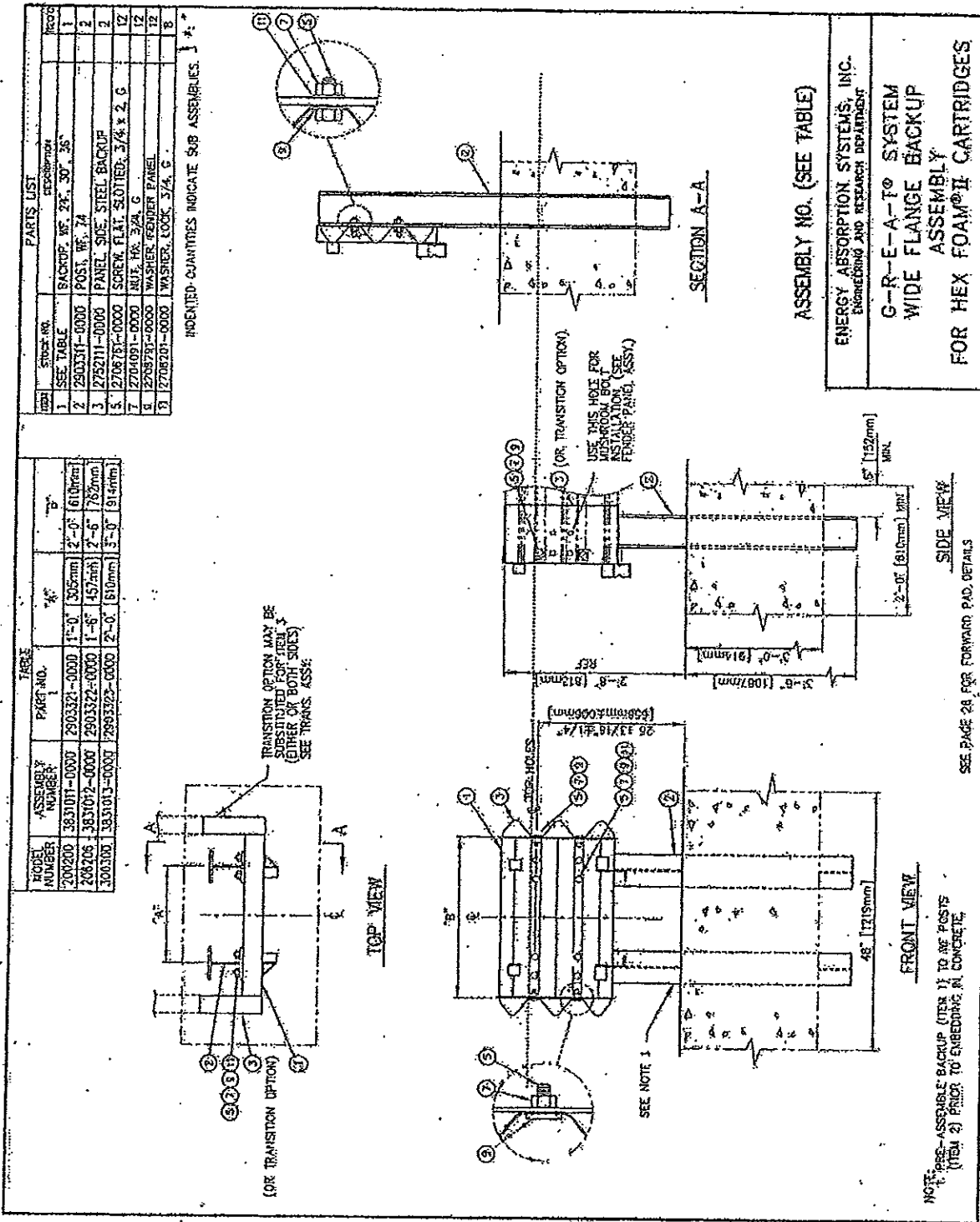
ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
G-R-E-A-T® SYSTEM
 FOR
CONCRETE BACKUP WALL ASSEMBLY
 FOR
HEX-FOAM® II CARTRIDGES





ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

NEW JERSEY
MEDIAN BARRIER
ATTACHED BACKUP
BI-DIRECTIONAL



ASSEMBLY NO.		PARTS LIST		QUANTITIES REQUIRED												
NO.	DESCRIPTION	QTY.	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13
1	241001-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
2	241002-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
3	241003-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
4	241004-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
5	241005-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
6	241006-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
7	241007-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
8	241008-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
9	241009-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
10	241010-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
11	241011-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
12	241012-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
13	241013-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
14	241014-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
15	241015-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
16	241016-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
17	241017-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
18	241018-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
19	241019-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
20	241020-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
21	241021-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
22	241022-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
23	241023-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
24	241024-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
25	241025-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
26	241026-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
27	241027-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
28	241028-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
29	241029-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1
30	241030-0000	1	1/2" x 1/4" x 1/8" (100mm)	1	1	1	1	1	1	1	1	1	1	1	1	1

RECOMMENDED HOLE DEPTH: 5" (127mm)
PANEL TORQUE TO 55 LBS-FEET (75Nm)

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

USE CHAIN RAES AS TEMPLATE FOR PLACEMENT OF CONCRETE ANCHOR BOLTS.

DETAIL A
(NO BRACE)

DETAIL B
SCALE 3/4"=1'-0"

DETAIL C
SCALE 3/4"=1'-0"

PLAN

ELEVATION
(SCALE 3/4"=1'-0")

NOTES:

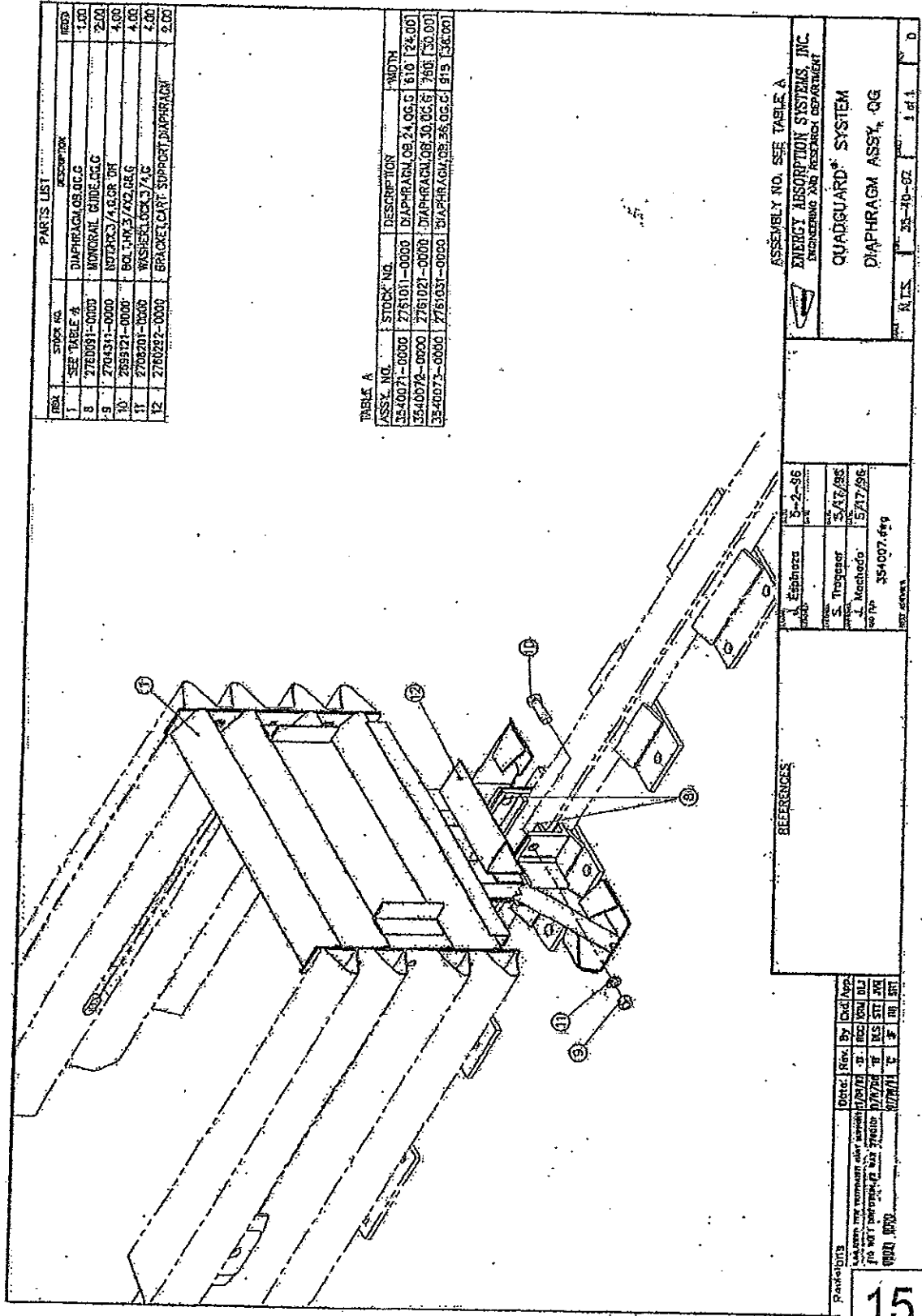
- USE CHAIN RAES AS TEMPLATE FOR PLACEMENT OF CONCRETE ANCHOR BOLTS.

SEE TABLE FOR ASSY NO.

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

G-R-A-T® SYSTEM
TENSION STRUT BACKUP &
CHAIN RAIL ASSEMBLY

**QUADGUARD SYSTEM
FOR NARROW HAZARDS**



PARTS LIST		
NO.	STOCK NO.	DESCRIPTION
1	SEE TABLE 'A'	DIAPHRAGM, 08.24, 08.26, 08.28, 08.30, 08.32, 08.34, 08.36, 08.38, 08.40, 08.42, 08.44, 08.46, 08.48, 08.50, 08.52, 08.54, 08.56, 08.58, 08.60, 08.62, 08.64, 08.66, 08.68, 08.70, 08.72, 08.74, 08.76, 08.78, 08.80, 08.82, 08.84, 08.86, 08.88, 08.90, 08.92, 08.94, 08.96, 08.98, 09.00
2	276031-0000	WASHER, 08.24, 08.26, 08.28, 08.30, 08.32, 08.34, 08.36, 08.38, 08.40, 08.42, 08.44, 08.46, 08.48, 08.50, 08.52, 08.54, 08.56, 08.58, 08.60, 08.62, 08.64, 08.66, 08.68, 08.70, 08.72, 08.74, 08.76, 08.78, 08.80, 08.82, 08.84, 08.86, 08.88, 08.90, 08.92, 08.94, 08.96, 08.98, 09.00
3	276032-0000	NUT, 08.24, 08.26, 08.28, 08.30, 08.32, 08.34, 08.36, 08.38, 08.40, 08.42, 08.44, 08.46, 08.48, 08.50, 08.52, 08.54, 08.56, 08.58, 08.60, 08.62, 08.64, 08.66, 08.68, 08.70, 08.72, 08.74, 08.76, 08.78, 08.80, 08.82, 08.84, 08.86, 08.88, 08.90, 08.92, 08.94, 08.96, 08.98, 09.00
4	276033-0000	BRACKET, CART SUPPORT, DIAPHRAGM

TABLE A

ASSY. NO.	STOCK NO.	DESCRIPTION	QTY
35-40071-0000	276101-0000	DIAPHRAGM, 08.24, 08.26, 08.28, 08.30, 08.32, 08.34, 08.36, 08.38, 08.40, 08.42, 08.44, 08.46, 08.48, 08.50, 08.52, 08.54, 08.56, 08.58, 08.60, 08.62, 08.64, 08.66, 08.68, 08.70, 08.72, 08.74, 08.76, 08.78, 08.80, 08.82, 08.84, 08.86, 08.88, 08.90, 08.92, 08.94, 08.96, 08.98, 09.00	1
35-40072-0000	276102-0000	DIAPHRAGM, 08.24, 08.26, 08.28, 08.30, 08.32, 08.34, 08.36, 08.38, 08.40, 08.42, 08.44, 08.46, 08.48, 08.50, 08.52, 08.54, 08.56, 08.58, 08.60, 08.62, 08.64, 08.66, 08.68, 08.70, 08.72, 08.74, 08.76, 08.78, 08.80, 08.82, 08.84, 08.86, 08.88, 08.90, 08.92, 08.94, 08.96, 08.98, 09.00	1
35-40073-0000	276103-0000	DIAPHRAGM, 08.24, 08.26, 08.28, 08.30, 08.32, 08.34, 08.36, 08.38, 08.40, 08.42, 08.44, 08.46, 08.48, 08.50, 08.52, 08.54, 08.56, 08.58, 08.60, 08.62, 08.64, 08.66, 08.68, 08.70, 08.72, 08.74, 08.76, 08.78, 08.80, 08.82, 08.84, 08.86, 08.88, 08.90, 08.92, 08.94, 08.96, 08.98, 09.00	1

ASSEMBLY NO. SEE TABLE A
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUADGUARD® SYSTEM
 DIAPHRAGM ASSY. QG

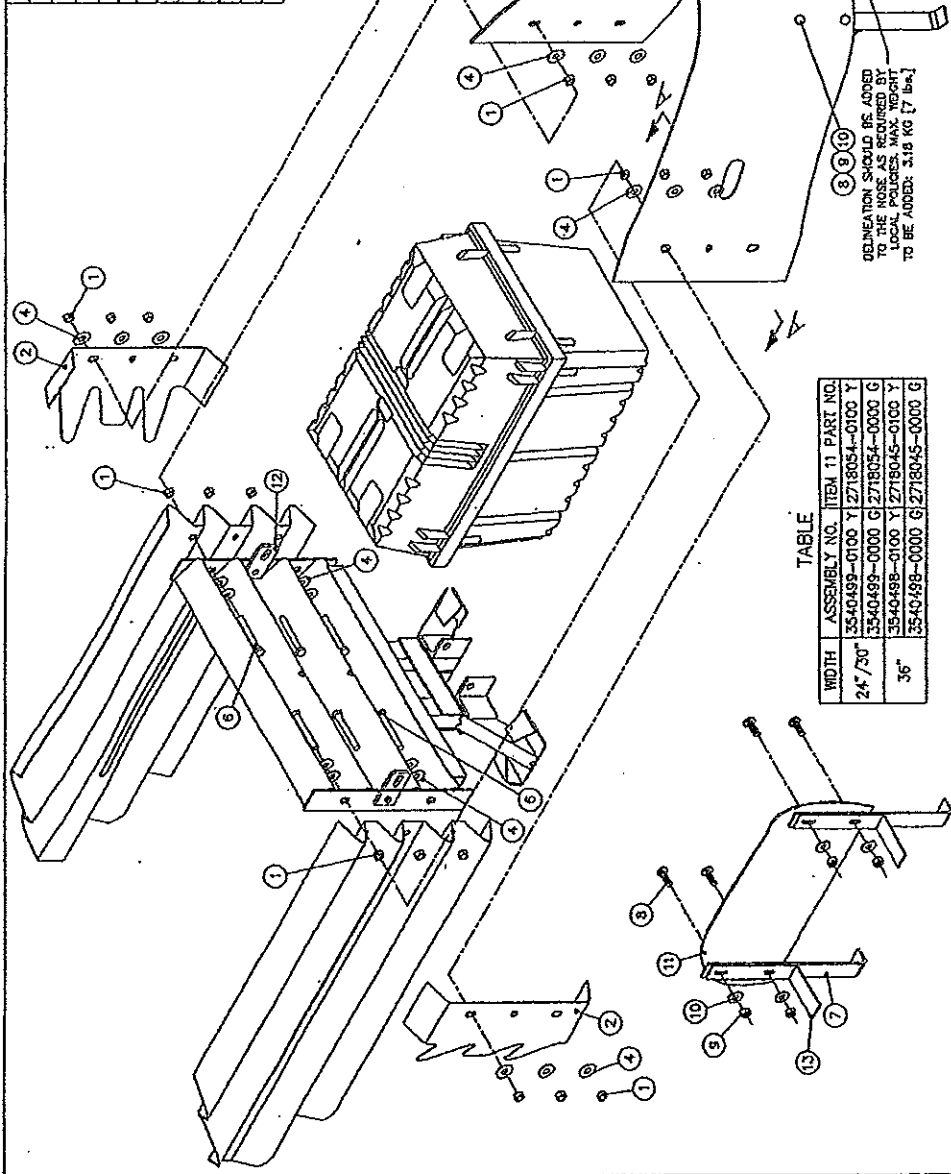
REFERENCES

NO.	DESCRIPTION	DATE
1	Epiphora	5-2-36
2	S. Treasurer	5/17/36
3	L. Machado	5/17/36

35-1007.dwg
 35-40073

Date	Rev.	By	App.
1/25/36	1	REC	DLJ
1/27/36	2	NS	JR
1/27/36	3	NS	JR

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	2704141-0000	NUT, HX. 5/8 G	18.0
2	2760504-0000	CLAMP, BELT, MC	2.00
4	2708291-0000	WASHER, FLAT, 5/8 X 1 3/4 G	20.0
6	2701994-0000	BOLT, HX. 5/8 X 3.5 G, ALL THREAD	6.00
7	2714853-0000	LEG, SUPPORT, 30 DEG BEND, FLEX BELT, QG, G	2.00
8	2700131-0000	BOLLY, 3/8 X 1 1/4 G, G	4.00
9	2704031-0000	NUT, HX. 3/8 G	4.00
10	2708021-0000	WASHER, FLAT, 3/8 X 1 G	4.00
11	SEE TABLE	BELT, NOSE GUARD, PARALLEL	1.00
12	2760251-0000	BRACKET, PULL OUT, QG	2.00
13	2714854-0000	CARTRIDGE, SUPPORT LEG BRACKET, ADJUSTABLE	2.00



WIDTH	ASSEMBLY NO.	ITEM 11 PART NO.
24" / 30"	3540499-0100 Y	2718054-0100 Y
36"	3540499-0000 G	2718054-0000 G
	3540498-0100 Y	2718045-0100 Y
	3540498-0000 G	2718045-0000 G

ASSEMBLY NO. (SEE TABLE)

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
NOSE ASSY, QG, 24, 30, 36 ALSO
QG CZ ON A PLATE, W/BELTING

DATE: 12/28/98
BY: D. Staus
CHECKED: SPT
DATE: 12/30/98
BY: SPT
DRAWING NO.: 3540499.dwg
REV. 1 of 1

Revisions

Date	Rev.	By	Chg. App.
10/01/03	D	LNC	RCB
4/13/01	C	DK	BB

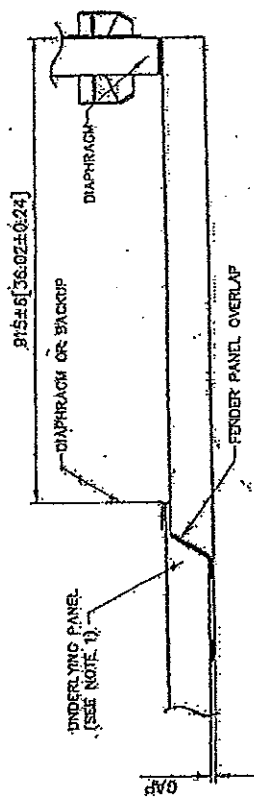
ITEM 7 WAS 2714852-0000, ADD ITEM 13
DRAWING WAS 3540498-0000
REVISION 11, ITEM 11 WAS 2708291-0000
SHAW-WALKER, INC.

16

ITEM	STDX. NO.	DESCRIPTION	REQD.
1	2760081-0000	PANEL FENDER O&G	1.00
2	2769231-0000	BOLT 3/8" x 5/8" x 2.00	2.00
3	2701911-0000	NUT 3/8" x 5/8" x 2.00	2.00
4	2708841-0000	WASHER W/SHROUD DAST O&G	1.00
5	2768501-0000	SCREW 1/2" x 3/8" x 1.00	1.00
6	2704111-0000	NUT 1/2" x 3/8" x 1.00	1.00
7	2708231-0000	WASHER FLAT 1/2" x 3/8" x 1.00	1.00
8	2021811-0000	BUSHING ELASTOMERIC 3/2" x 1/2" x 2.00	1.00

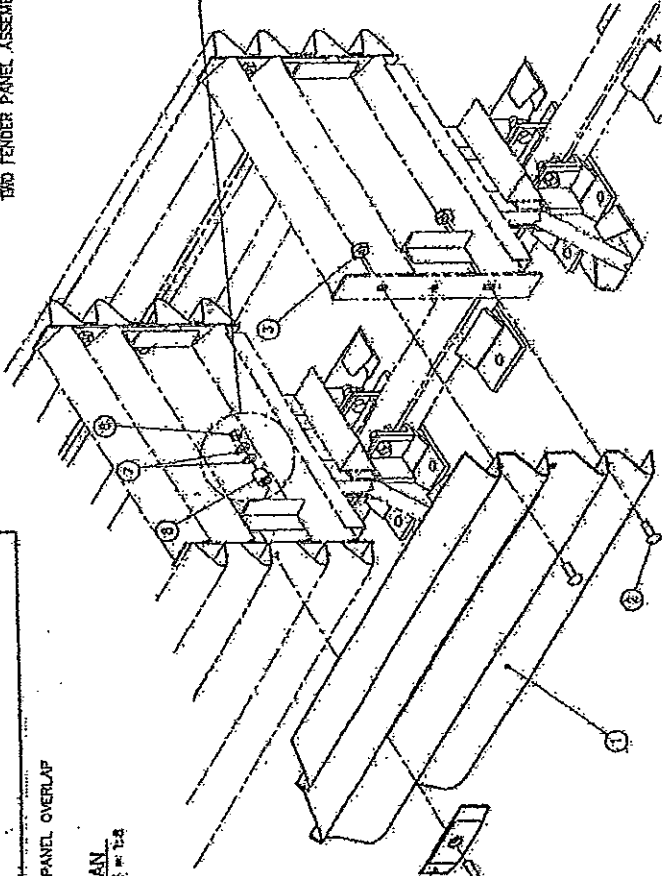
TWO FENDER PANEL ASSEMBLIES REQUIRED PER BAY.

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



PLAN
SCALE = 1:2

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



USE 4 3/8" NUTS W/SHROUDS DURING THE ASSEMBLY PROCESS.

- NOTES:
- 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.
 - UNITS OF MEASUREMENT ARE IN MILLIMETERS (INCHES), UNLESS OTHERWISE NOTED.

Revisions	Date	Rev.	By	Rec.	App.
1	10/11/85	1	J. Espinoza	J. Espinoza	J. Espinoza
2	10/11/85	2	S. Triguero	S. Triguero	S. Triguero
3	10/11/85	3	J. Mocherda	J. Mocherda	J. Mocherda

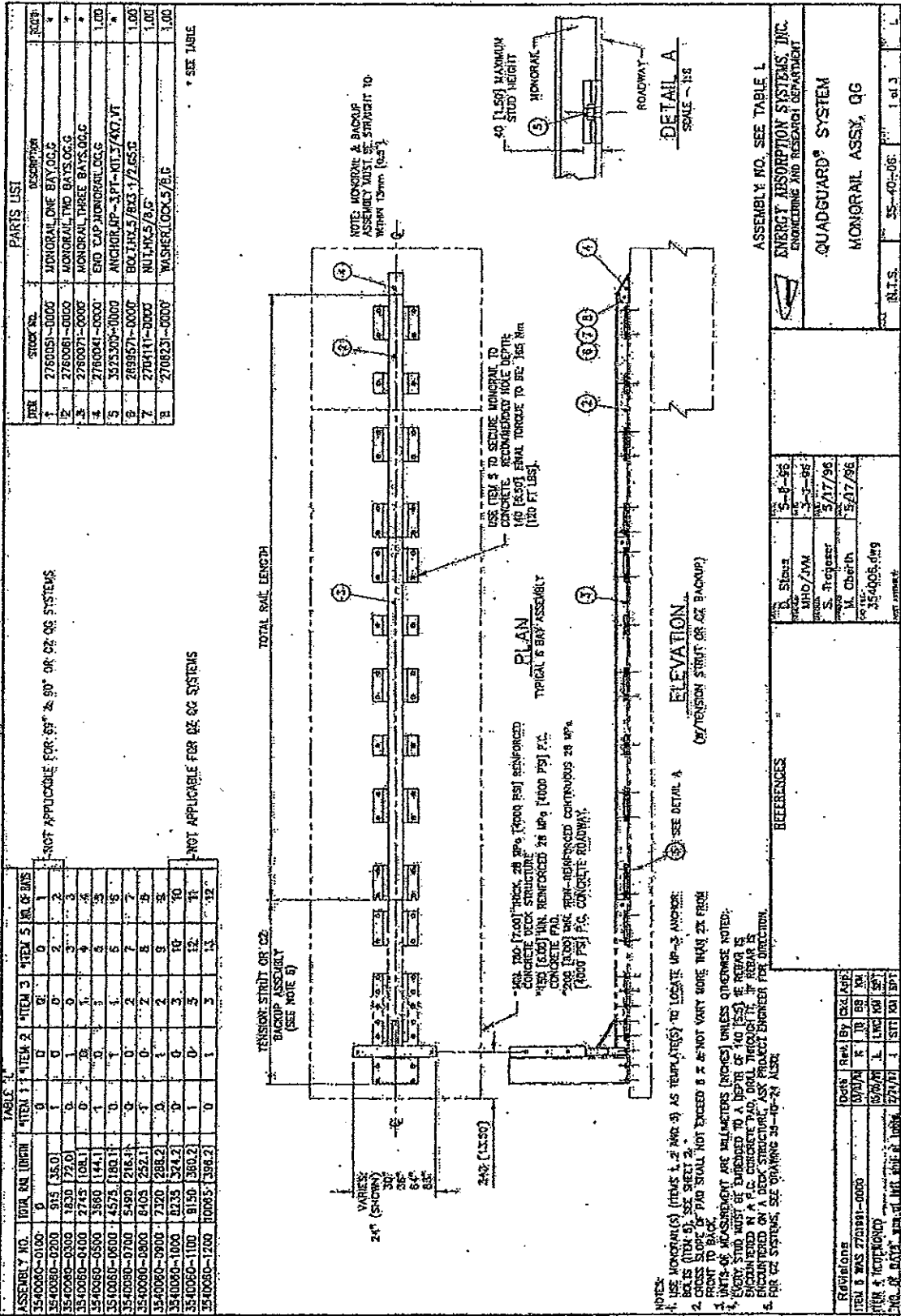
REFERENCES

Rev.	10/21/85
By	J. Espinoza
App.	J. Espinoza
Rev.	3/1/85
By	S. Triguero
App.	S. Triguero
Rev.	5/21/85
By	J. Mocherda
App.	J. Mocherda
Rev.	5/21/85
By	J. Mocherda
App.	J. Mocherda

ASSEMBLY NO. 3540040-0000
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUADGUARD® SYSTEM
 FENDER PANEL ASSY, QG.

**QUADGUARD SYSTEM
 FOR NARROW HAZARDS**

**QUADGUARD SYSTEM
FOR NARROW HAZARDS**



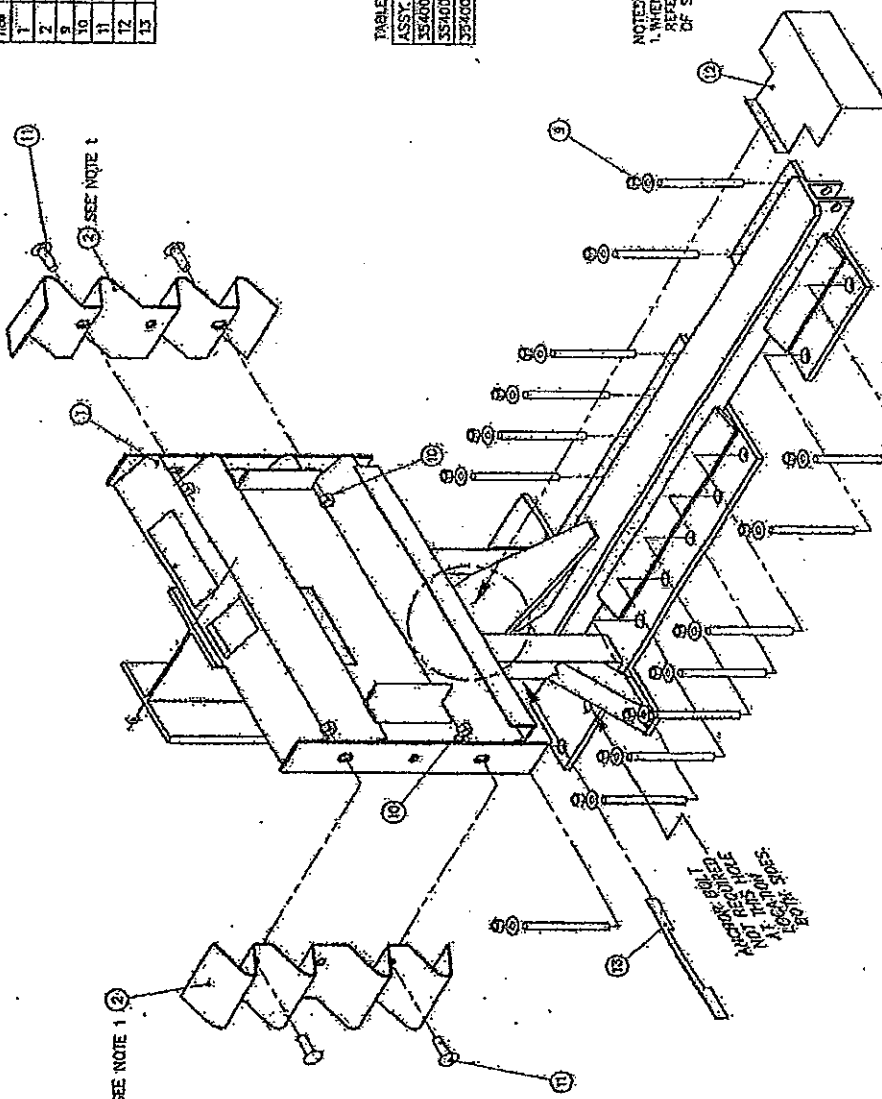
PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	BACKUP TS 06.G	1.00
2	2780141-0000	PANEL SIDE DRG.G	2.00
3	5883300-0000	ANCHOR BR. 3PT-NT.3/4X3/16	3.00
10	2704181-0000	NUT 1/4X3/8X.0400L	4.00
11	3699341-0000	BOLT 1/4X3/8X2.0	4.00
12	2780293-0000	BRACKET CARTRIDGE SUPPORT TS 9/A	1.00
13	2780294-0000	LOCKING BRG CARTRIDGE SUPPORT	1.00

TABLE A

ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
3540031-0000	2780011-0000	BACKUP TS.24.05.G	610 724.007
3540032-0000	2780021-0000	BACKUP TS.30.06.G	780 730.007
3540033-0000	2780031-0000	BACKUP TS.36.08.G	915 735.007

NOTES
 1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER REFER TO THE TRANSITION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL PART NO. 2780141-0000.



ASSEMBLY NO. SEE TABLE A

ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM

BACKUP ASSY, TS, QG

R.T.S. 35-40-03 1 of 1 E.

REFERENCES

S. LEWIS	4-22-86
J.M./R.H.O.	3-1-86
S. Troopcar	5/18/85
J. Machado	5/18/85
3540033.0WB	

Revisions

Date	Rev.	By	Revised For
02/07/85	E	MAC	REV. DCL
02/07/85	F	MAC	REV. DCL
07/07/87	D	MAC	REV. DCL

REVISED 1 AND/OR BOLT # ADDED NOTE
 DTY TO WAX 4

**QUADGUARD SYSTEM
 FOR NARROW HAZARDS**

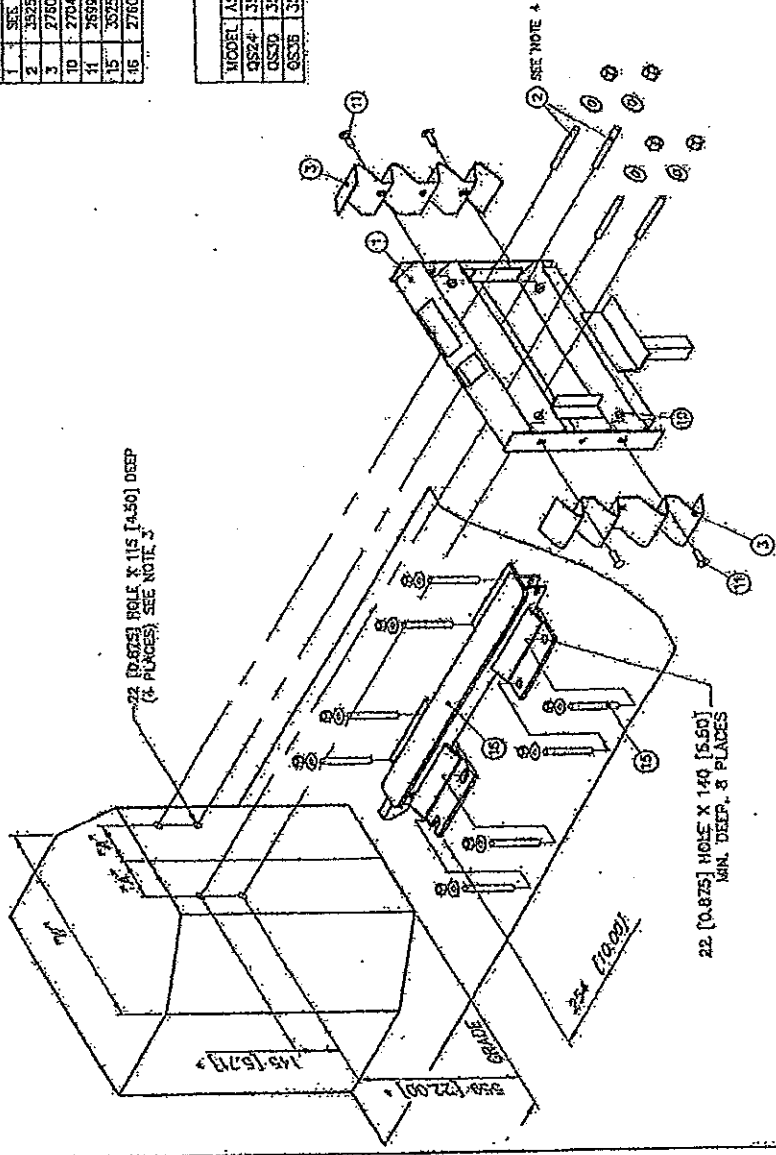
**QUADGUARD SYSTEM
FOR NARROW HAZARDS**

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	352510-0000	BACKUP CONCRETE FRONT FACE, DC	1.00
2	2760191-0000	ANCHOR PIP - 3/4" KILS / 48" L / 2" HCR	2.00
3	2760191-0000	PANEL, SIDE, O.C.C.	4.00
4	2760191-0000	NET, RX 3/4" X 5/8" RAIL	2.00
5	2699231-0000	BOLT, TRAK, 5/8" X 7.5"	4.00
6	2760051-0000	ANCHOR PIP - 3/4" KILS / 48" L / 2" HCR	2.00
7	2760051-0000	MONORAIL ONE END, O.C.C.	1.00

TABLE

MODEL	ASSEMBLY NO.	"W"	"H"	ITEM 1
3524	3540142-0000	160	140	2760191-0000
3525	3540142-0000	160	152	2760191-0000
3526	3540143-0000	174	152	2760201-0000



- NOTES:**
1. DIMENSIONS ARE IN HEMILETERS (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 USUALLY BE REQUIRED TO ACHIEVE PROPER ANCHOR INSTALLATION.
 4. STUDS LOCATED BY UPPER WALKER WILL NEED TO EXTEND APPROX. 37 (1.25) 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, 06

DATE: 11/15
REV: 35-10-16
1 of 1

DESIGNED BY	9/24/95
DRAWN BY	W. Krogs
CHECKED BY	S. Trapp
APPROVED BY	W. Kreis

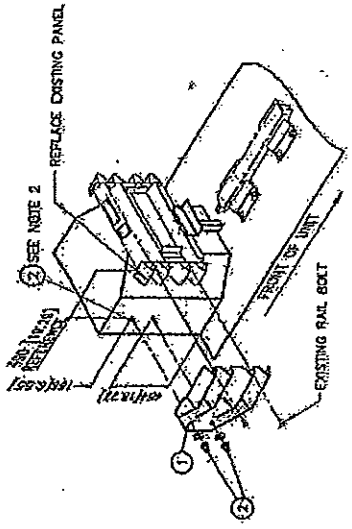
35-10-06

CONCRETE BACKUP, 06

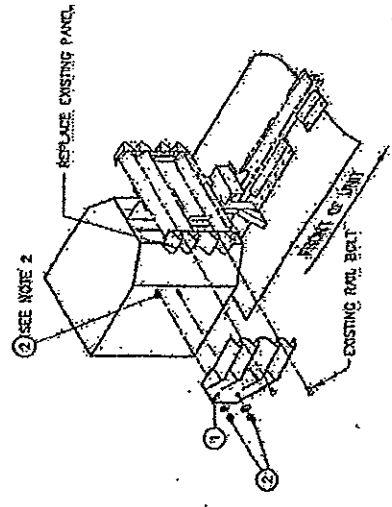
REVISED AND MODIFIED BY

DATE	BY	DESCRIPTION
11/15/95	W. Krogs	INITIAL DESIGN
11/15/95	S. Trapp	REVISION
11/15/95	W. Kreis	REVISION

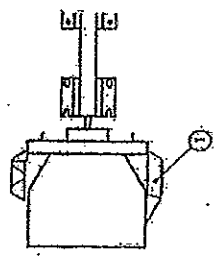
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	2740271-0000	SIDE PANEL END SHOE, Q.C.	1.00
2	3524150-0000	ANCHOR, WP-3PT R1.3/4X6 1/2 HOR	1.00



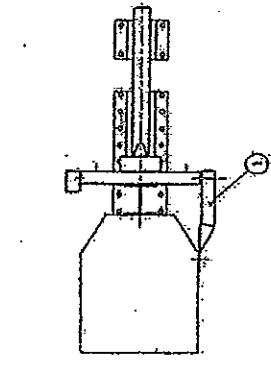
CONCRETE BACKUP



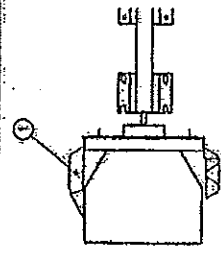
TENSION STIRRUP BACKUP



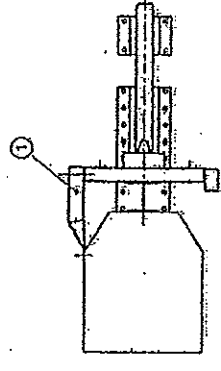
LEFT SIDE APPLICATION



LEFT SIDE APPLICATION



RIGHT SIDE APPLICATION



RIGHT SIDE APPLICATION

NOTES:
 1. DIMENSIONS ARE IN MILLIMETERS (INCHES).
 2. USE END SHOE AS TO REPLACE PPA OR TONGUE.
 3. USE END SHOE HOLE DEPTH 127 (5.00).
 4. END SHOE HOLE DEPTH 127 (5.00).
 5. ANCHOR STUDS END OF UNIT BE ALIGNED WITH
 OUTSIDE SURFACE OF ANCHORS. NOTE.

REVISION	DATE	BY	CHKD	APP'D
1	8/27/88	J. H. S.	J. H. S.	J. H. S.

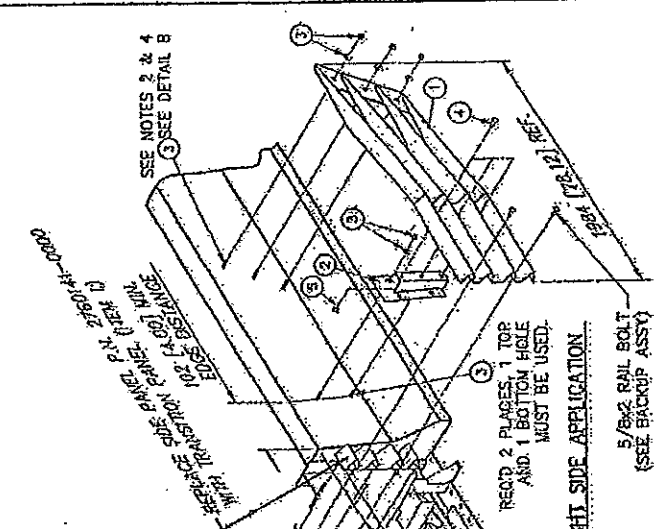
ASSEMBLY NO. 35-40150-0000
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT
QUADGUARD SM SYSTEM
END SHOE ASSY, Q.C.
REV. 1
DATE 8/27/88
BY J. H. S.
CHKD J. H. S.
APP'D J. H. S.

QUADGUARD SYSTEM FOR NARROW HAZARDS

QUADGUARD SYSTEM FOR NARROW HAZARDS

PARTS LIST

QTY	STOCK NO.	DESCRIPTION	RCFD
1	SEE TABLE	PANEL TRANSITION & OFFSET LOG	1.00
2	278031-0000	BRACKET SUPPORT & TRANS TO CAR	1.00
3	352530-0000	ANCHOR STUD-5PT. HTZ/ASB-1/2 NOR	5.00
4	289534-0000	BELT RAIL 5/8x2 C	3.00
5	2704181-0000	NUT, 5/8x2 C, RAIL	3.00



RIGHT SIDE APPLICATION

5/8x2 RAIL BOLT (SEE BACKUP ASSY)

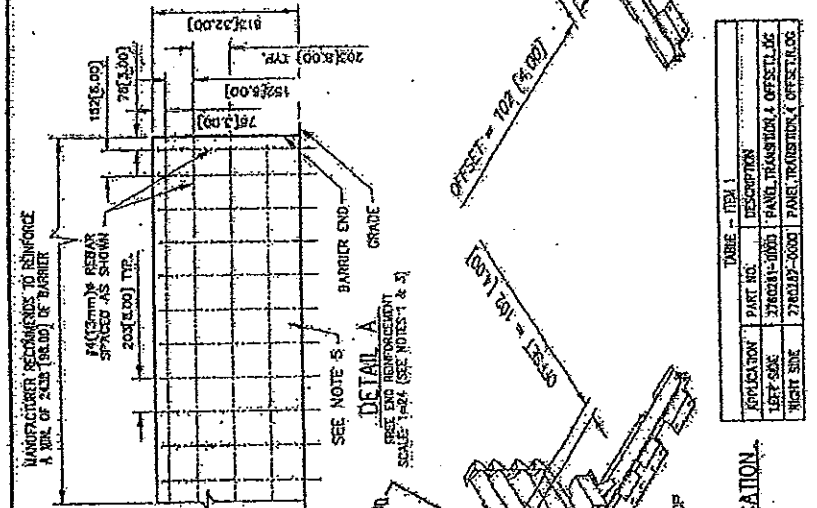
REC'D 2 PLACES, 1 TOP AND 1 BOTTOM HOLE MUST BE USED.

LEFT ASSEMBLY NO. 35-4018-0000
RIGHT ASSEMBLY NO. 35-4018-0000

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

TRANSITION ASSY, 4 OFFSET, OG

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



LEFT SIDE APPLICATION

5/8x2 RAIL BOLT (SEE BACKUP ASSY)

REC'D 2 PLACES, 1 TOP AND 1 BOTTOM HOLE MUST BE USED.

MANUFACTURER RECOMMENDS TO REINFORCE A MIN. OF 2x3 (6x10) IN BARRIER

1. THE CONCRETE BARRIER REINFORCEMENT SHOWN IN DETAIL 'A' IS RECOMMENDED TO ENSURE ADEQUATE DIAPHRAGM INTEGRITY FOR PROPER IMPACT PERFORMANCE. IT IS APPROPRIATE FOR A STANDARD SAFETY SHAPED BARRIER WITH A 618 (24.00) BASE AND A 150 (6.00) TOP. VARIATIONS MAY BE REVIEWED AND DETERMINATIONS MADE AS TO REASONABLE EQUIVALENCE BY PROJECT ENGINEER.

2. USE TRANSITION PANEL AS TEMPLATE FOR DRILLING. RECOMMENDED HOLE DEPTH 127 (5.00) FINAL TORQUE JOE BE 100Nm (734-65) (TYP).

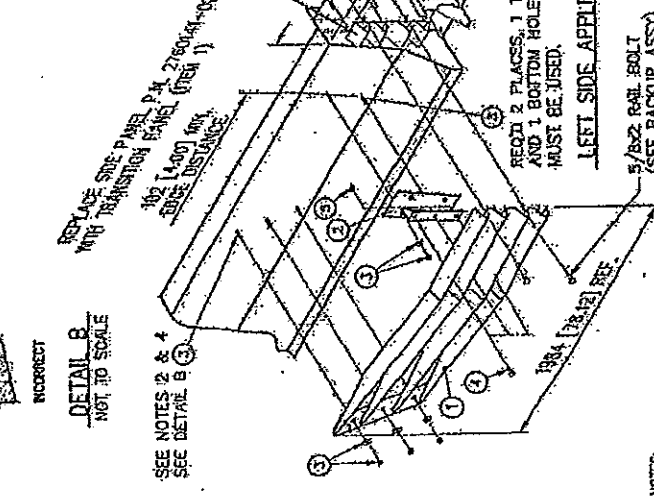
3. IMPACT FORCES SHOULD BE TRANSFERRED INTO TOWER. END OF THE BARRIER. ADEQUATE ANCHORAGE IS REQUIRED FOR PROPER IMPACT PERFORMANCE.

4. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR. W/RT. SEE DETAIL B.

REV. N.T.S.S. 35-4018.003

REFERENCE

REV.	DATE	BY	DESCRIPTION
1	8/21/06	J. Epifanio	REV. 1
2	8/22/06	B. WELCH	REV. 2
3	8/22/06	B. Burpee	REV. 3
4	8/29/06	S. Turner	REV. 4



NOTES

1. THE CONCRETE BARRIER REINFORCEMENT SHOWN IN DETAIL 'A' IS RECOMMENDED TO ENSURE ADEQUATE DIAPHRAGM INTEGRITY FOR PROPER IMPACT PERFORMANCE. IT IS APPROPRIATE FOR A STANDARD SAFETY SHAPED BARRIER WITH A 618 (24.00) BASE AND A 150 (6.00) TOP. VARIATIONS MAY BE REVIEWED AND DETERMINATIONS MADE AS TO REASONABLE EQUIVALENCE BY PROJECT ENGINEER.

2. USE TRANSITION PANEL AS TEMPLATE FOR DRILLING. RECOMMENDED HOLE DEPTH 127 (5.00) FINAL TORQUE JOE BE 100Nm (734-65) (TYP).

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

4. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR. W/RT. SEE DETAIL B.

REVISED THIS: 07/24/06

REVISIONS:

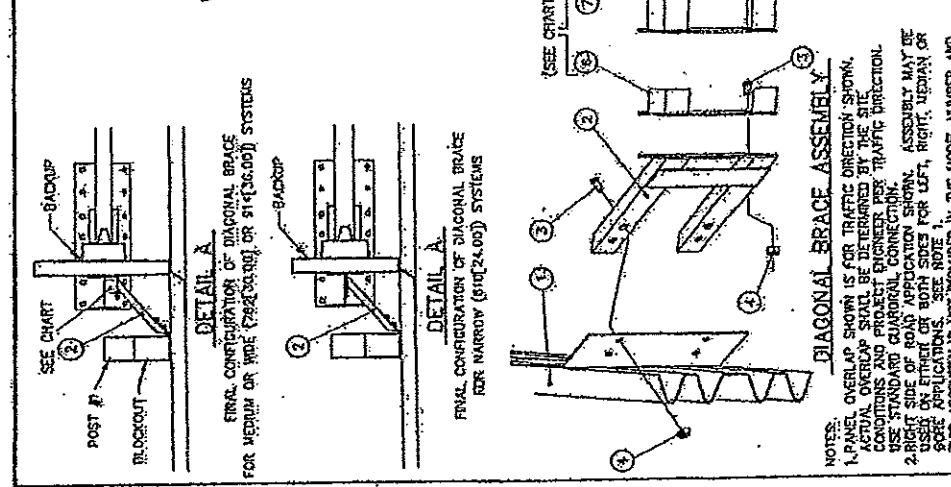
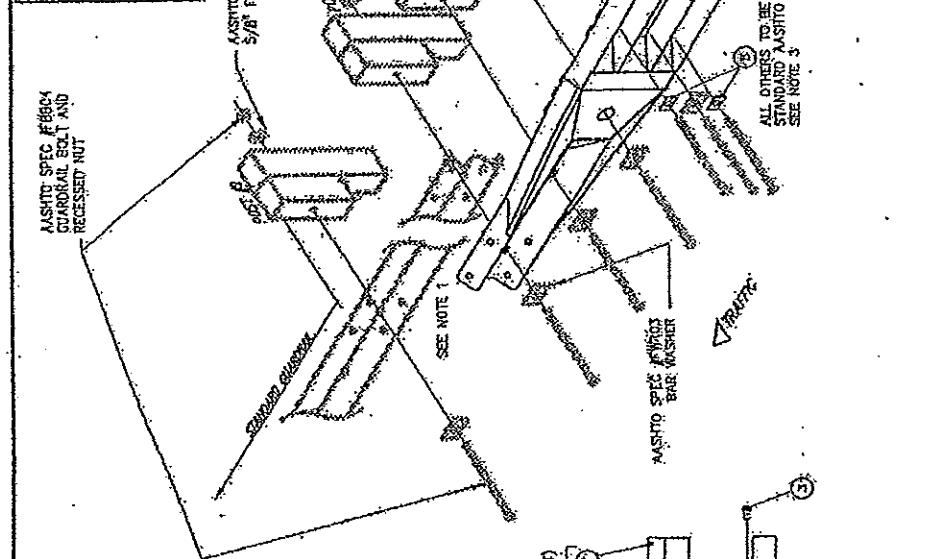
Rev.	By	Date
1	J. Epifanio	07/24/06
2	B. WELCH	07/24/06
3	B. Burpee	07/24/06
4	S. Turner	07/24/06

PARTS LIST		REQD	
ITEM	STOCK NO.	N	M
1	2760321-0000	1	1
2	2760341-0000	1	1
3	2760344-0000	4	6
4	2760345-0000	4	6
5	2760871-0000	2	2
6	2760342-0000	0	1
7	2760343-0000	0	1

SYSTEM WIDTH	ASSEMBLY #	BLOCKOUT
6'0" (24.00)	N 354027N-0000	NOT REQD
7'0" (28.00)	M 354027M-0000	ITEM 6*
8'0" (32.00)	W 354027W-0000	ITEM 7*

*SEE PARTS LIST ABOVE FOR QTY REQD

POST #1 IS NOT BORED DIRECTLY TO TRANSITION PANEL COURTESY HOLES AS SHOWN.



ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT	
TRANSITION ASSEMBLY, QUAD-BEAM TO W-BEAM	
K.T.S.	35-40-21
1 of 2	C

T. Brasse	09/20/95
JMG	9/21/95
SKB	10/04/95
J. Machado	10/14/95
35107.dwg	

REFERENCES

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, MEDIAN OR SOPE APPLICATIONS. SEE NOTE 1.
- THIS ASSEMBLY IS NOT INCLUDED IN THE 1995B, NUMBER, AND MUST BE ORDERED SEP AR4161.
- ENERGY ABSORPTION SYSTEMS, INC. SUPPLIES THE STOCK ITEMS SHOWN IN THE PARTS LIST. ALL OTHER COMPONENTS OF THE DOWNSTREAM GUARDRAIL ARE STANDARD HIGHWAY MATERIALS AND MAY BE OBTAINED FROM YOUR LOCAL HIGHWAY SUPPLY VENDOR.

Revisions	Date	Rev	By	CHK	APP
ADDED #62 FOR MED. & WIDE SYSTEMS	10/1/95	1	JMG	A	SKB
UPDATED CHAIRSIDE SUPPORT BRACKETS/ANCHOR	8/1/95	5	SKB	SKB	SKB
CHANGED CHAIRSIDE SUPPORT BRACKETS/ANCHOR	8/1/95	6	SKB	SKB	SKB

QUADGUARD SYSTEM FOR NARROW HAZARDS

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	RECD		
			N	W	
1	2760531-0000	Diagonal brace to thrie-beam trans. panel	1	1	1
2	2760541-0000	Diagonal brace	1	1	1
3	2769341-0000	Bottom rail	4	0	0
4	2704191-0000	Nut, hex. 5/8" dia.	4	6	6
5	2708871-0000	Washer, dia. 1/2" x 1/4" thick	2	2	2
6	270542-0000	Diagonal brace blockout, 3'	0	1	0
7	276923-0000	Diagonal brace blockout, 6'	0	0	1

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

SEE PARTS LIST ABOVE FOR CITY RECD.

SYSTEM WIDTH	ASSEMBLY #	BLOCKOUT
50' (24.00')	N	3540221-0000
75' (30.00')	B	3540223-0000
87 1/2' (38.00')	W	3540224-0000

SEE PARTS LIST ABOVE FOR CITY RECD.

DIAGONAL BRACE ASSEMBLY

SEE CHART

DETAIL A

GENERAL CONFIGURATION OF DIAGONAL BRACE FOR MEDIUM & WIDE (78x130.00) OR 87x130.00 SYSTEMS

DETAIL B

SPLIT CONFIGURATION OF DIAGONAL BRACE FOR NARROW (61x124.00) SYSTEMS

NOTES:

- PANEL OVERLAP SHOWN IS FOR TRAFFIC DIRECTION STOP. OTHER OVERLAP SHALL BE DETERMINED BY THE SITE OFFICIALS.
- USE STITCHED GUARDRAIL CONNECTIONS.
- RIGHT SIDE OF ROAD APPLICATION SHOWN. ASSEMBLY MAY BE USED ON EITHER OR BOTH SIDES FOR LEFT, RIGHT, MEDIAN OR CONC. APPLICATIONS. SEE NOTE 1.
- THIS ASSEMBLY IS NOT INCLUDED IN THE MODEL NUMBER AND MUST BE ORDERED SEPARATELY.
- ENERGY ABSORPTION SYSTEMS, INC. SUPPLIES THE STUDY ITEMS SHOWN IN THE PARTS LIST. ALL OTHER COMPONENTS ARE THE PROPERTY OF THE MANUFACTURER AND ARE NOT TO BE USED FOR OTHER APPLICATIONS UNLESS THEY ARE SPECIFICALLY APPROVED BY THE SUPPLIER.

REFERENCES:

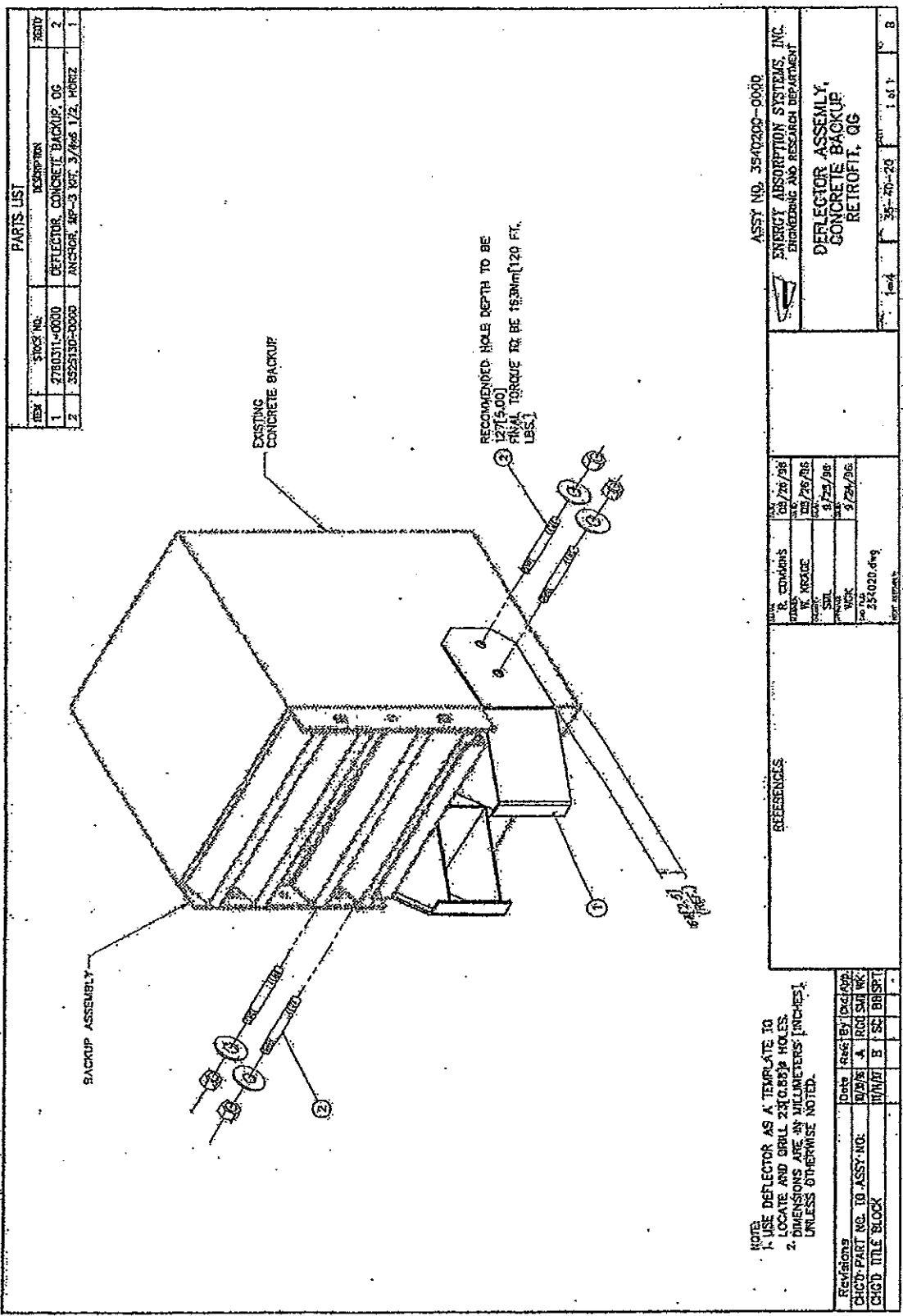
T. Brace	106/23/PB
27A	39/21/PB
SKL	18/14/PB
M & B Hardware	10/16/PB
Part No.	354022-000

Revised:	Date:	Rev:	By:	Check:

USED FOR:	FOR RECD. & MFG. SYSTEMS	N/W/E	A	#	REV	BY	DATE

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

GUARDRAIL SYSTEM FOR NARROW HAZARDS



PARTS LIST			
ITEM	QUANTITY	DESCRIPTION	UNIT
1	1	DEFLECTOR CONCRETE BACKUP, CG	2
2	1	ANCHOR, 1/2" DIA, 3" LONG	1

ASSY NO. 354020-0080
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 DEFLECTOR ASSEMBLY,
 CONCRETE BACKUP,
 RETROFIT, CG

REV.	DATE	BY	CHKD.
1	08/26/96	W. KACOE	W. KACOE
2	08/26/96	S. L. ...	...
3	09/23/96	...	...
4	09/24/96	...	...

REFERENCES

NOTE:
 1. USE DEFLECTOR AS A TEMPLATE TO LOCATE AND DRILL 24(0.95) HOLES.
 2. DIMENSIONS ARE IN MILLIMETERS (INCHES), UNLESS OTHERWISE NOTED.

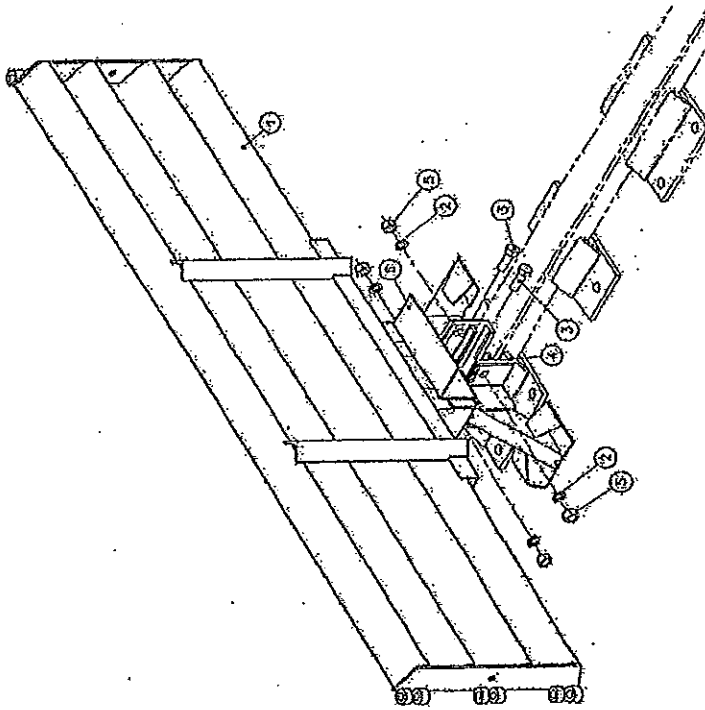
Rev'd By	Date	By	Check
W. KACOE	08/26/96	W. KACOE	W. KACOE
S. L. ...	08/26/96	...	...
...	09/23/96	...	...
...	09/24/96	...	...

CHGD PART NO. TO ASSY NO. 354020-0080
 CHGD TITLE BLOCK

**QUADGUARD SYSTEM
 FOR NARROW HAZARDS**

**QUADGUARD SYSTEM
FOR WIDE HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	DIAPHRAGM ASSY, QG	1.00
2	2708207-0000	WASHER LOCK 3/4G	4.00
3	2769721-0000	BOLT PK 3/4x2.58G	4.00
4	2760091-0000	UNIFORM CODE OSG	2.00
5	2705341-0000	NUT PK 3/4 LGR DH	3.00
6	2760297-0000	BRACKET CARTRIDGE SUPPORT DIAPHRAGM	2.00



ASSEMBLY NO.	DESCRIPTION	REF. PART NO.
3540340-0673	DIAPHRAGM ASSY QG 0673	2761041-0673
3540340-0753	DIAPHRAGM ASSY QG 0753	2761041-0753
3540340-0833	DIAPHRAGM ASSY QG 0833	2761041-0833
3540340-0913	DIAPHRAGM ASSY QG 0913	2761041-0913
3540340-0993	DIAPHRAGM ASSY QG 0993	2761041-0993
3540340-1073	DIAPHRAGM ASSY QG 1073	2761041-1073
3540340-1153	DIAPHRAGM ASSY QG 1153	2761041-1153
3540340-1233	DIAPHRAGM ASSY QG 1233	2761041-1233
3540340-1313	DIAPHRAGM ASSY QG 1313	2761041-1313
3540340-1393	DIAPHRAGM ASSY QG 1393	2761041-1393
3540340-1473	DIAPHRAGM ASSY QG 1473	2761041-1473
3540340-1553	DIAPHRAGM ASSY QG 1553	2761041-1553
3540340-1633	DIAPHRAGM ASSY QG 1633	2761041-1633
3540340-1713	DIAPHRAGM ASSY QG 1713	2761041-1713
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**

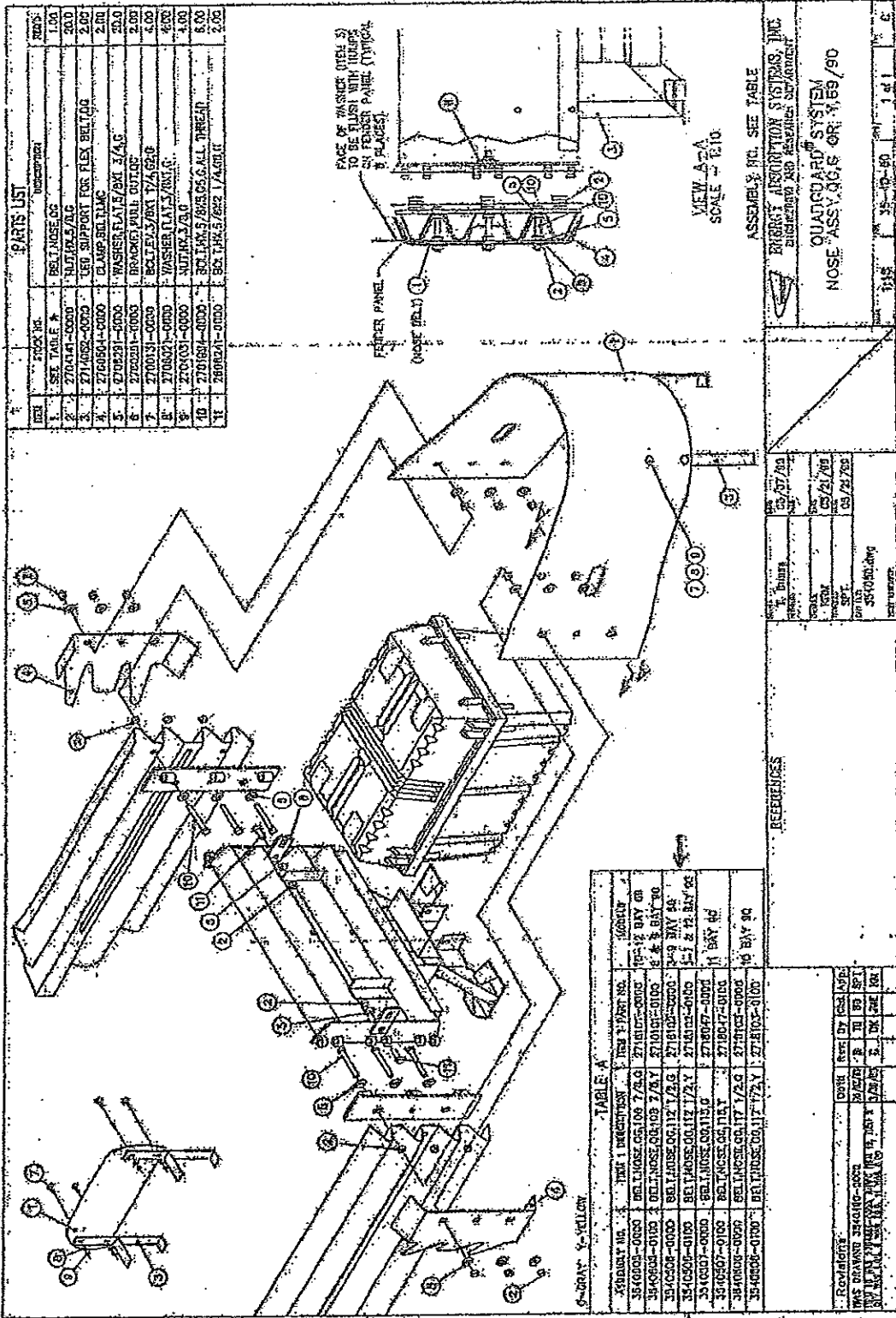
DATE	BY	DESCRIPTION
5/12/97	D. Stora	
5/13/97	J. Machado	
7/2/87	J. Machado	
7/7/87	J. Machado	

3540340-0000.dwg
 J. Machado
 3540340-0000.dwg
 J. Machado

REFERENCES:

Revision	Date	By	Code	Appr.
1	5/12/97	D. Stora	DES	STI
2	5/13/97	J. Machado	ENR	MM
3	7/2/87	J. Machado	ENR	MM
4	7/7/87	J. Machado	ENR	MM

REV ENG TO DRAWN SHEET 2



PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	BELT NOSE CG	1.00
2	2700441-0000	BLU/AL 5/16	20.0
3	2714052-0000	LED SUPPORT FOR FLEX BELT CG	2.00
4	2700504-0000	ELAS BELT LINC	2.00
5	2700291-0000	WASHER FLAT 3/8X 1/4 C	20.0
6	2700291-0000	BRACKETS FOR OUTLINE	2.00
7	2700131-0000	BELT 1/2 X 3/8X 1/4 62.0	4.00
8	2700021-0000	WASHER FLAT 3/8X 1/4 C	40.00
9	2700031-0000	AUTOMATIC	1.00
10	2701601-0000	BOLTS 1/2 X 3/8X 3/4 ALL THREAD	8.00
11	2800241-0000	BOX THK 1/2 X 1/4 60.0	2.00

TABLE A

QUARTICORD NO.	ITEM 1 DESCRIPTION	ITEM 2/3/4/5/6	QTY
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10
3540008-0100	BELT NOSE CG 1/2 X 3/8	2716105-0100	10 BAY 10

REVISIONS

NO.	DATE	BY	CHK	APP	DESCRIPTION
1	05/27/90	...	...	...	...
2	05/21/90	...	...	...	...
3	05/21/90	...	...	...	...

ASSEMBLY, R/C. SEE TABLE

EROMET PROTECTION SYSTEMS, INC.
DISCUSSION AND ASSEMBLY INSTRUCTIONS

QUARTICORD SYSTEM
NOSE ASSEMBLY QCS OR: 1/85/90

1 of 1

**QUADGUARD SYSTEM
FOR WIDE HAZARDS**

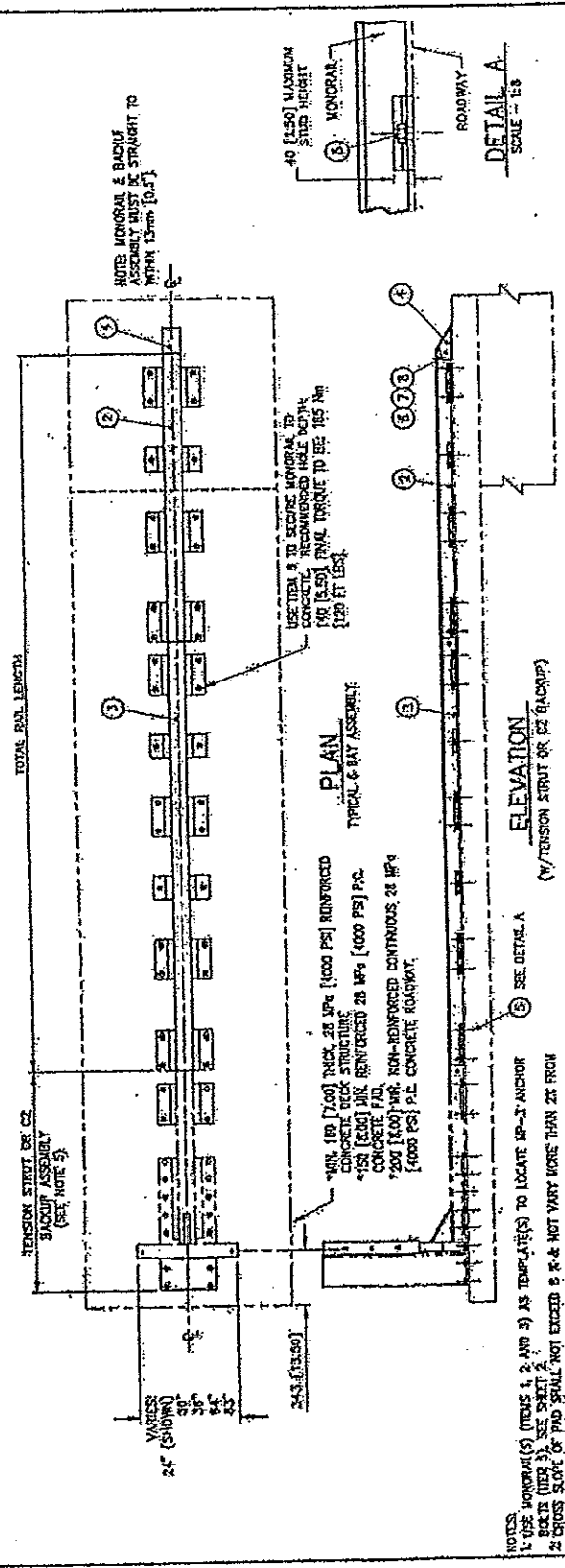
TABLE 1							
ASSEMBLY NO.	RAIL RAIL LENGTH	ITEM 1	ITEM 2	ITEM 3	ITEM 4	ITEM 5	NO. OF RIS
35-0060-0100	0	0	0	0	0	0	0
35-0060-0200	915 (35.0)	1	0	0	2	2	2
35-0060-0300	1830 (72.0)	0	0	0	3	3	3
35-0060-0400	2745 (108.1)	0	0	1	4	4	4
35-0060-0500	3660 (144.1)	1	0	1	5	5	5
35-0060-0600	4575 (180.1)	0	1	1	6	6	6
35-0060-0700	5490 (216.1)	0	0	2	7	7	7
35-0060-0800	6405 (252.1)	1	0	2	8	8	8
35-0060-0900	7320 (288.2)	0	1	2	9	9	9
35-0060-1000	8235 (324.2)	0	0	3	10	10	10
35-0060-1100	9150 (360.2)	1	0	3	11	11	11
35-0060-1200	10065 (396.2)	0	1	3	12	12	12

NOT APPLICABLE FOR 60' & 90' OR 12' OF SYSTEMS

NOT APPLICABLE FOR 12' OF SYSTEMS

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	2760051-0000	MONORAIL ONE BAYS/CG	1
2	2760061-0000	MONORAIL TWO BAYS/CG	1
3	2760071-0000	MONORAIL THREE BAYS/CG	1
4	2760081-0000	END CAP MONORAIL/CG	1.00
5	3525300-0000	ANCHOR BOLT 3/4" DIA. x 12" L	1.00
6	2689571-0000	BOLT W/ LOCK W/ 1/2" DIA. x 12" L	1.00
7	2704161-0000	NUT W/ LOCK W/ 1/2" DIA. x 12" L	1.00
8	2708231-0000	WASHER LOCK W/ 1/2" DIA. x 12" L	1.00

* SEE TABLE



ASSEMBLY NO. SEE TABLE L

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM

MONORAIL ASSY, CG

DATE: 10/25/84
BY: J. J. O'NEILL
CHECKED: J. J. O'NEILL

REV. 1 OF 3

35-4006-dwg

REFERENCES:

1. USE MONORAIL(S) (ITEMS 1, 2 AND 3) AS TEMPORARY(S) TO LOCATE MP-35 ANCHOR BOLTS (ITEM 5). SEE SHEET 2.
2. CROSS SLOPE OF PAD SHALL NOT EXCEED 2% & NOT VARY MORE THAN 28 FROM FRONT TO BACK.
3. POINTS OF MEASUREMENT ARE MILLIMETERS (INCHES) UNLESS OTHERWISE NOTED.
4. EVERY STUD MUST BE EMBEDDED TO A DEPTH OF 180 (54) FT MINIMUM IN CONCRETE BY A P.C. CONCRETE PAD, DOWN THROUGH THE REINFORCEMENT AND INCORPORATED BY A DEEP STRUCTURAL ANCHOR.
5. FOR CZ SYSTEMS, SEE DRAWING 35-40-05-100.

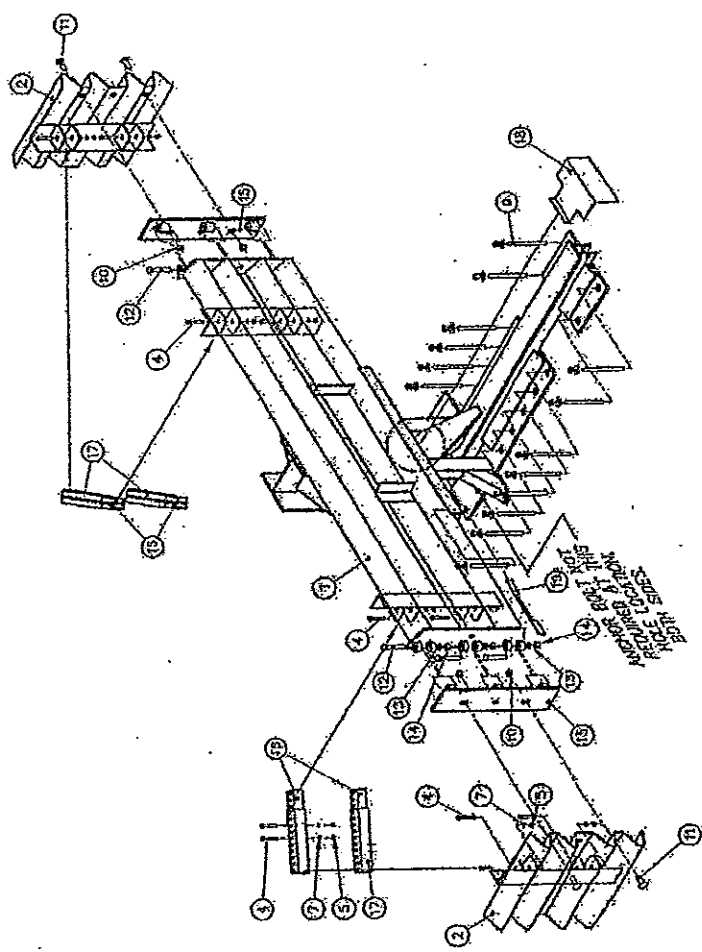
PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	BACKUP TS. 1/2" X 1/2" X 1/2" WIDE	1.00
2	2760471-0000	PANEL SIDE, OG WIDE	2.00
3	2698601-0000	BOLT HEX 3/8" X 3/2" 262 GALL. THREAD	16.0
4	2760403-0000	BOLT HEX 3/8" X 3/2" 262 GALL. THREAD	16.0
5	2760801-0000	WASHER LOCK 3/8"	16.0
6	3523300-0000	ANCHOR W/ 3/8" X 3/4" X 1/2" KIT 3/4" X 1/2"	3.00
7	2704181-0000	NUT HEX 5/8" O.D.	4.00
8	2693341-0000	BOLT HEX 5/8" X 3/4"	4.00
9	2701891-0000	BOLT HEX 5/8" X 3/4"	4.00
10	2708231-0000	WASHER LOCK 5/8"	6.00
11	2704141-0000	NUT HEX 3/4"	6.00
12	2760435-0000	HINGE PLATE FENDER PANEL, OG	2.00
13	2760301-0000	TEL ST 1 3/4" X 3/4" X 1/2" GALV. STEEL	4.00
14	2760302-0000	TEL ST 2 1/2" X 1/2" GALV. STEEL LONG	4.00
15	2760293-0000	BRACKET, CARTRIDGE SUPPORT, TS B/C	1.00
16	2760294-0000	LOCKING BAR, CART SUPPORT, OG	1.00

TABLE A

ASST. NO.	STOCK NO.	DESCRIPTION	WIDTH
1	2760451-0000	BACKUP TS, 6" X 6" WIDE	1820 [84"]
2	3540392-0000	BACKUP TS, 6" X 6" WIDE	2100 [84"]

NOTES:
 1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER REFER TO THE TRANSITION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL PART NO. 2760451-0000.



ASSEMBLY NO. SEE TABLE A

ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT	
QUADGUARD® SYSTEM	
BACKUP ASSY, TS, OG WIDE	
DATE: 11/20	REV: 3540390-0000
BY: J. Meachado	1 of 1

REFERENCES

REV	DATE	BY	DESCRIPTION
1	7/7/97	D. Stover	
2	8/2/97	J. Meachado	
3	7/13/97	B. Keppel	
4	7/17/97	J. Meachado	

3540390-0000.dwg
 LAST REVISION

REVISIONS

REV	DATE	BY	DESCRIPTION
1	11/20/99	E. [unclear]	REVISED TO MATCH REV 15 W/ 2760451-0000
2	11/20/99	D. [unclear]	REVISED TO MATCH REV 15 W/ 2760451-0000

QUADGUARD SYSTEM
FOR WIDE HAZARDS

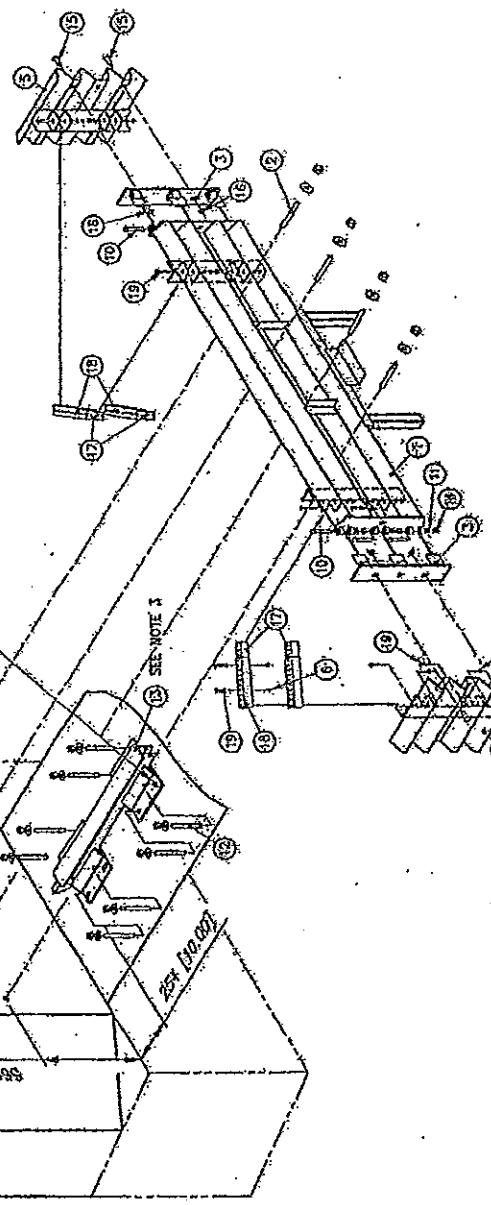
**QUADGUARD SYSTEM
FOR WIDE HAZARDS**

TABLE

ASSY. NO.	ITER #	DESCRIPTION	WIDTH
354040-0000	2780451-0000	BACKUP FACE CONG. W/CSG	1820 [64"]
354040-0000	2780451-0000	BACKUP FACE CONG. W/CSG	2100 [83"]

PARTS LIST

ITEM	QTY	DESCRIPTION	UNIT
1	1	BACKUP FACE CONG. W/CSG	1.00
2	352535-0000	ANCHOR, WP-3PT KIT, 3/4X 1/2 HOR	1.00
3	278045-0000	WING PLATE, FENDER PANEL, CGC	2.00
4	2780471-0000	PANEL, SIDE, CG WIDE, G	2.00
5	2780431-0000	NUT, HK, 3/8, G	16.0
6	2780481-0000	BOLT, HK, 5/8, G, 6.0	6.00
7	2780421-0000	WASHER, LOCK, 5/8, G	6.00
8	3525300-0000	ANCHOR, WP-3PT KIT, 3/4X 1/2	2.00
9	2780451-0000	HORIZONTAL WING BAY, CGC	1.00
10	2780411-0000	NUT, HK, 5/8, G	6.00
11	2780411-0000	BOLT, TRAIL, 5/8X 1/4, G	4.00
12	2780411-0000	NUT, HK, 5/8, G, 6.0	6.00
13	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
14	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
15	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
16	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
17	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
18	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
19	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
20	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
21	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
22	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
23	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
24	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
25	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
26	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
27	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
28	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
29	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
30	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
31	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
32	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
33	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
34	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
35	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
36	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
37	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
38	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
39	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
40	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
41	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
42	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
43	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
44	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
45	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
46	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
47	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
48	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
49	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
50	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
51	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
52	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
53	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
54	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
55	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
56	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
57	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
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59	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
60	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
61	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
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66	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
67	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
68	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
69	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
70	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
71	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
72	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
73	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
74	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
75	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
76	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
77	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
78	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
79	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
80	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
81	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
82	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
83	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
84	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
85	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
86	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
87	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
88	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
89	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
90	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
91	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
92	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
93	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
94	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
95	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
96	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
97	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
98	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
99	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00
100	2780411-0000	TRAIL, 5/8X 1/4, G, 6.0	4.00



NOTES:
 1. DIMENSIONS ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE NOTED.
 2. THIS DRAWING IS THE PROPERTY OF ENERGY ABSORPTION SYSTEMS, INC. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED IN THE TITLE BLOCK.
 3. A REBAR CUTTING BIT WILL LIKELY BE REQUIRED TO MAKE PROPER INSTALLATION.

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

BACKUP ASSY, CONCRETE, WIDE

DATE	1/25	354040-0000	1 of 1
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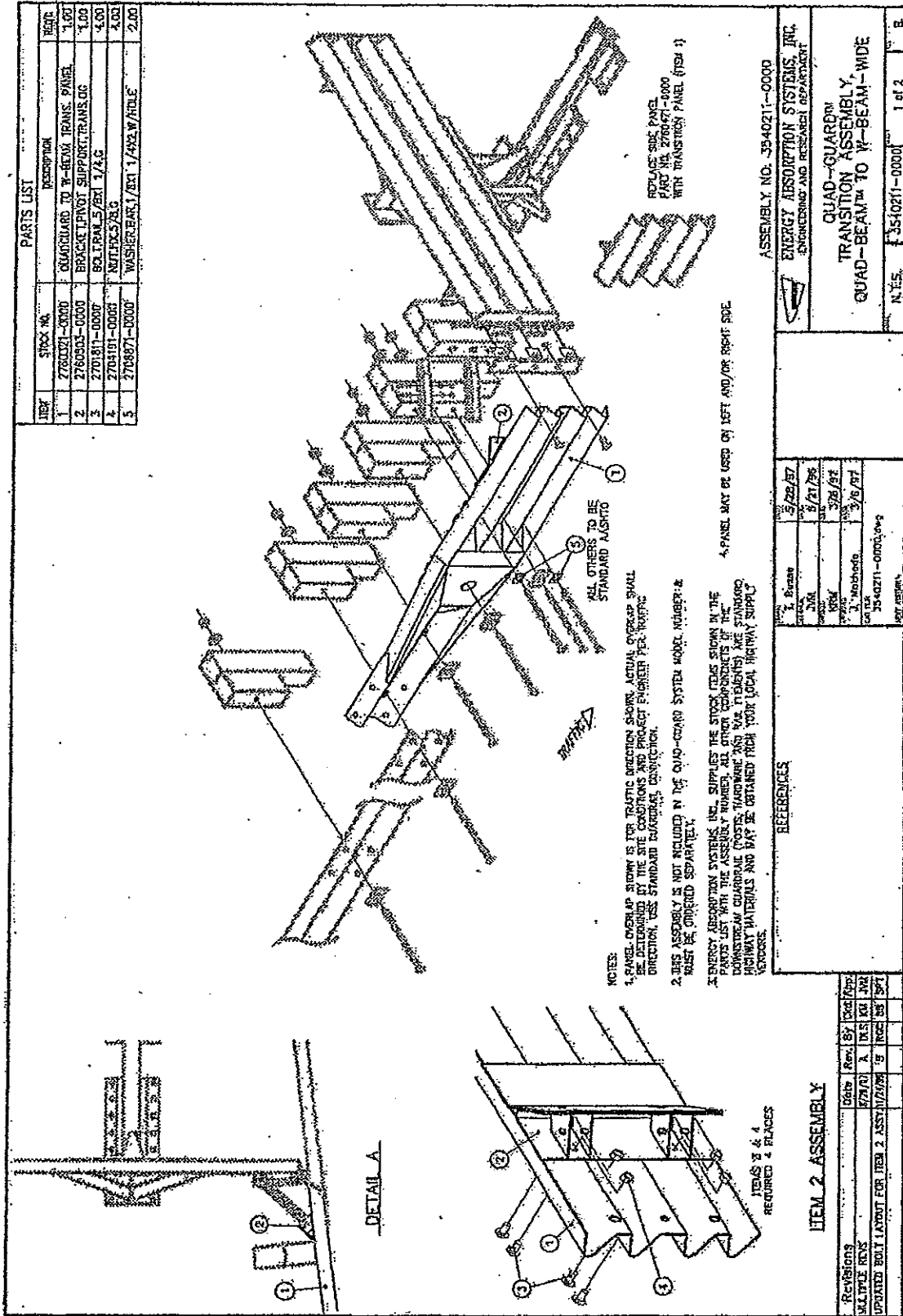
DATE	1/18/97	354040-0000.dwg
BY	D. Slank	
CHKD	J. Meachdo	
DATE	5/27/97	
BY	S. Kohnert	
DATE	3/17/97	
BY	S. Trostler	
DATE	3/13/97	
BY		
DATE	354040-0000.dwg	

CONCRETE BACKUP, CG WIDE
 35-40-41

REFERENCES

REV	DATE	BY	CHK	APP
1	12/26/94	B	LAC	BMK
2	7/27/95	B	CLS	RM
3	12/9/95	C	TSE	RM

**QUADGUARD SYSTEM
FOR WIDE HAZARDS**

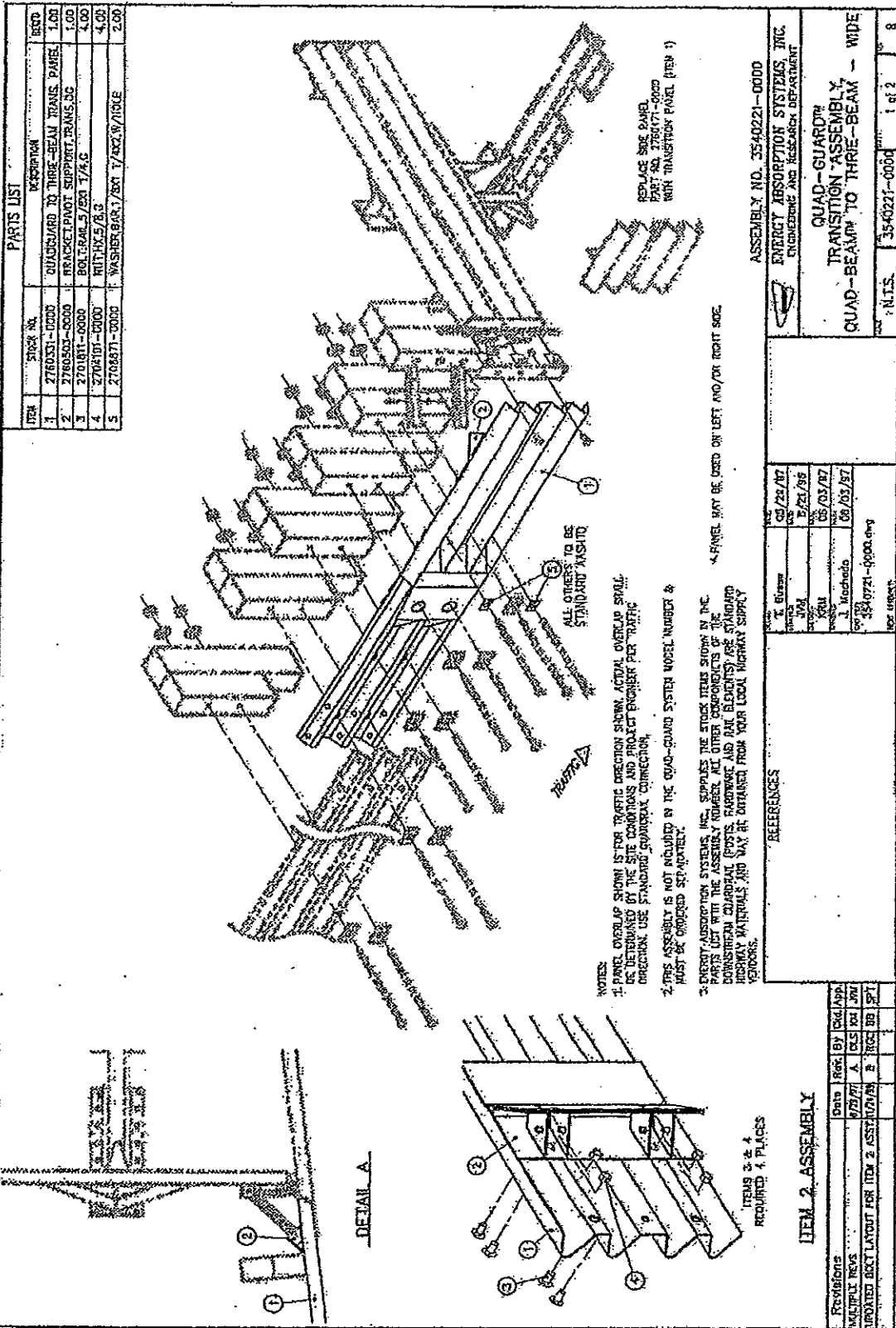


PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	2760301-0000	QUADGUARD TO W-BEAM TRANS. PANEL	1.00
2	2760303-0000	BRACKET/POST SUPPORT/TRANS. OG	1.00
3	2701811-0000	92.1 PANEL 5/8" X 1/4" C	4.00
4	2701911-0000	NUT/PCS 7/8" C	4.00
5	2709807-0000	WASHER/EAK 1/8" X 1/4" X 1/4" W/HOLE	2.00

QUADGUARD SYSTEM FOR WIDE HAZARDS

ITEM	STOCK NO.	DESCRIPTION	QTY
1	2760531-0000	QUADGUARD TO THREE-BEAM TRANS. PANEL	1.00
2	2760503-0000	BRACKET/PAD TO SUPPORT TRANS. NO.	1.00
3	2701811-0000	ROD BRACK. 5/8" DIA. 1/4" L.	4.00
4	2701811-0000	NUT/WASHER 5/8"	4.00
5	2708871-0000	WASHER BAR, 1/2" DIA. 24" L.	2.00



NOTES:
 1. PANEL OVERLAP SHOWN IS FOR TRAFFIC DIRECTION SHOWN. ACTUAL OVERLAP SHALL BE DETERMINED BY THE SITE CONDITIONS AND PROJECT ENGINEER PER TRAFFIC DIRECTION. USE STANDARD CONDUIT CONNECTION.
 2. THIS ASSEMBLY IS NOT INCLUDED IN THE QUAD-GUARD SYSTEM MODEL NUMBER & MUST BE ORDERED SEPARATELY.
 3. 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, FRAMEWORK AND JAW ELEMENTS) ARE STANDARD HIGHWAY MATERIALS AND MAY BE OBTAINED FROM YOUR LOCAL HIGHWAY SUPPLY VENDORS.

*PANEL MAY BE USED ON LEFT AND/OR RIGHT SOE.

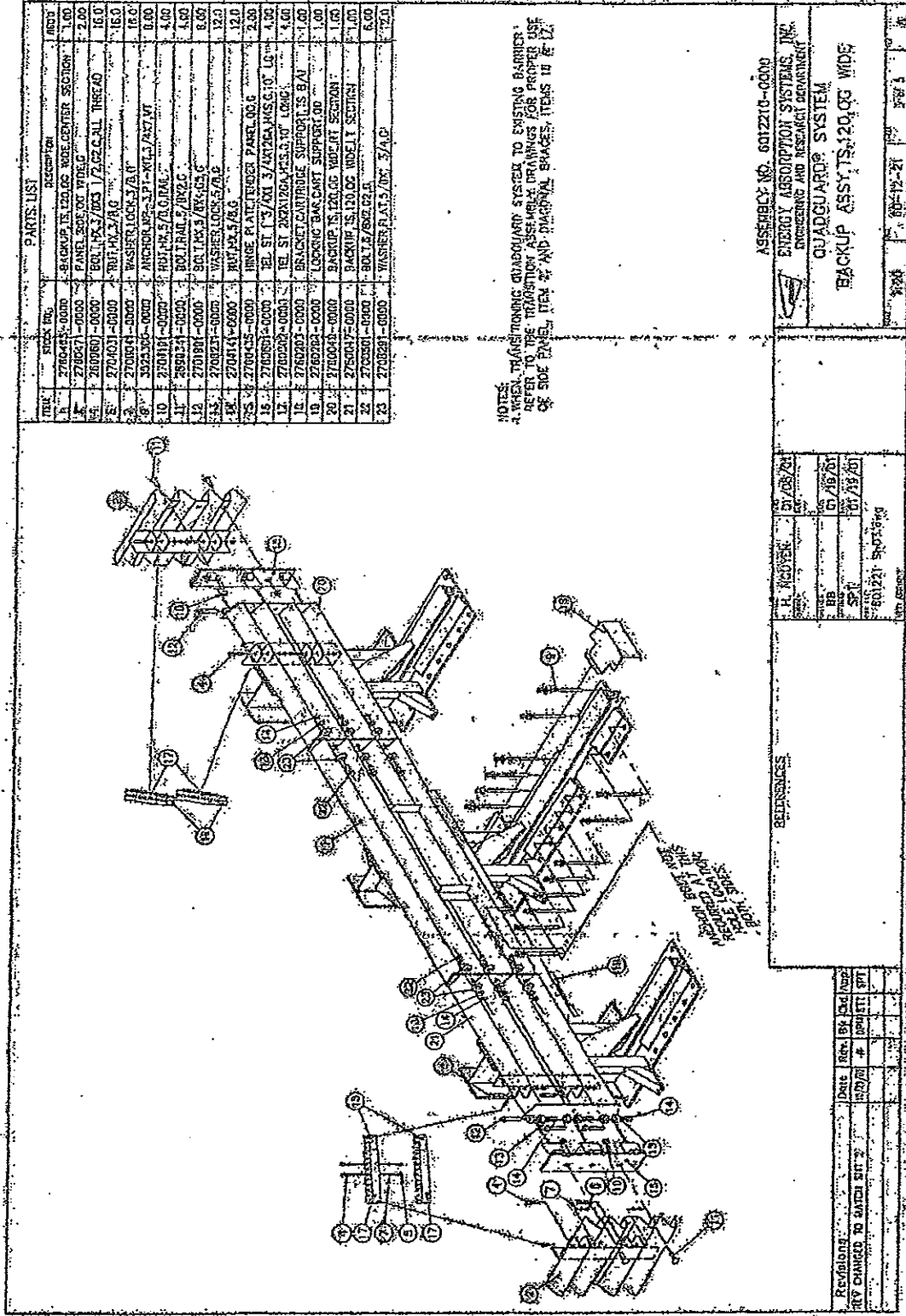
REPLACE SOE PANEL PART NO. 2760531-0000 WITH TRANSITION PANEL (SEE 1)

ASSEMBLY NO. 3540221-0000
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUAD-GUARD™
 TRANSITION ASSEMBLY
 QUAD-BEAM™ TO THREE-BEAM™ - WIDE

DATE	BY	DESCRIPTION
03/22/87	J. Graves	DESIGN
05/21/87	J. Graves	REVISED
05/03/87	J. Graves	REVISED
06/03/87	J. Graves	REVISED

REFERENCES:
 ITEM 2 - ASSEMBLY
 REQUIRED 4 PLACES

Revisions	Date	Rev. By	Checked By
1	6/27/87	A	CLS
2	ASST/UN	B	RCB
3	BB	SPT	



PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	2760448-0000	BACKUP IS. 120.00 WIDE CENTER SECTION	1.00
2	2760447-0000	PANEL SIDE END W/SLC	2.00
3	2600860-0000	BRK. PK. 3/16 X 1/2 C2 C-11 THREADED	16.00
4	2760443-0000	BRK. PK. 3/16	16.00
5	2760444-0000	WASHER LOCK 5/16 D	16.00
6	3522305-0000	ANCHOR BR. 3/16 X 1/2 X 3/4 D	8.00
7	2760441-0000	BOL. PK. 5/16 D	4.00
8	2760442-0000	BOL. PK. 5/16 X 1/2 C	4.00
9	2760445-0000	WASHER LOCK 5/16 D	8.00
10	2760446-0000	BRK. PK. 3/16 X 1/2 C	12.00
11	2760447-0000	BRK. PK. 3/16 X 1/2 C	12.00
12	2760448-0000	BRK. PK. 3/16 X 1/2 C	12.00
13	2760449-0000	BRK. PK. 3/16 X 1/2 C	12.00
14	2760450-0000	BRK. PK. 3/16 X 1/2 C	12.00
15	2760451-0000	BRK. PK. 3/16 X 1/2 C	12.00
16	2760452-0000	BRK. PK. 3/16 X 1/2 C	12.00
17	2760453-0000	BRK. PK. 3/16 X 1/2 C	12.00
18	2760454-0000	BRK. PK. 3/16 X 1/2 C	12.00
19	2760455-0000	BRK. PK. 3/16 X 1/2 C	12.00
20	2760456-0000	BRK. PK. 3/16 X 1/2 C	12.00
21	2760457-0000	BRK. PK. 3/16 X 1/2 C	12.00
22	2760458-0000	BRK. PK. 3/16 X 1/2 C	12.00
23	2760459-0000	BRK. PK. 3/16 X 1/2 C	12.00

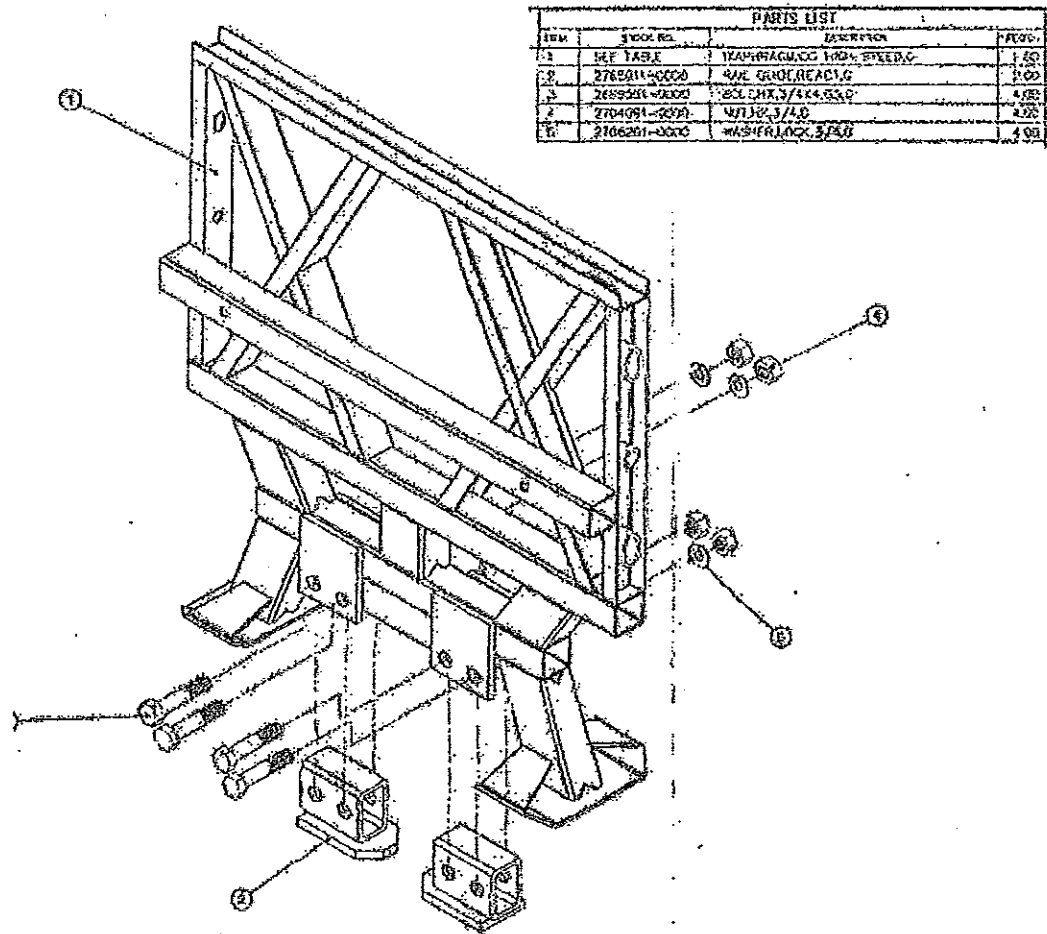
NOTES:
 1. WHEN TRANSMITTING QUADGUARD SYSTEM TO EXISTING BARRIERS, REFER TO THE TRANSMISSION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL, ITEM 21 AND DIAGONAL BRACES, ITEMS 18 & 17.

ASSEMBLY NO. 6012210-0000
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUADGUARD SYSTEM
 BACKUP ASSY. 120.00 WIDE

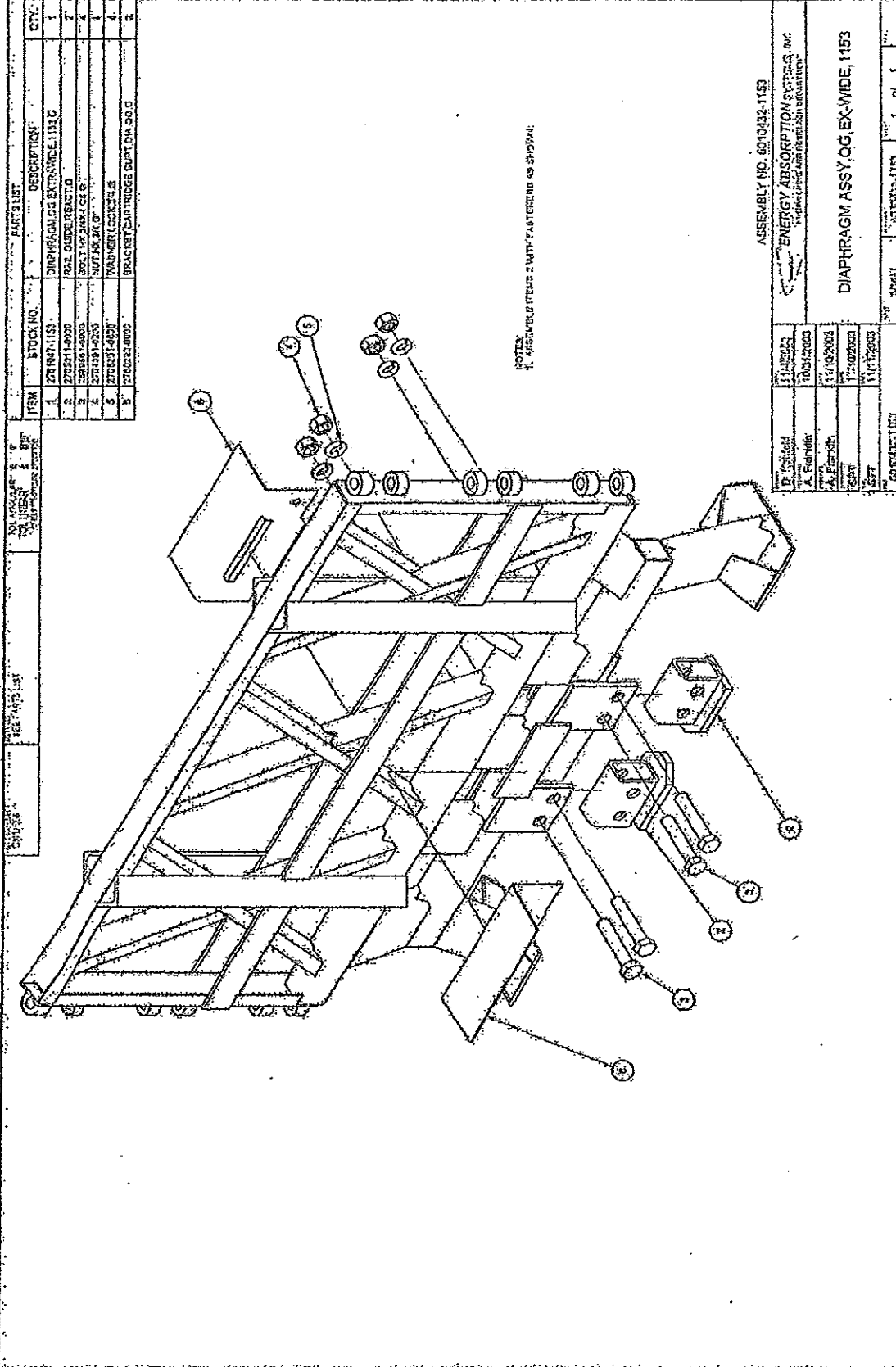
REVISED: 07/05/70
 BY: H. MEDVEK
 DATE: 05/16/70
 BY: SPY
 DATE: 07/19/70
 6012210-0000
 H. MEDVEK

REFERENCES

Rev/long	Date	Rev.	By	Ord/Imp
REV CHANGED TO MATCH SHIT 2	05/20/70	#	SPY	



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



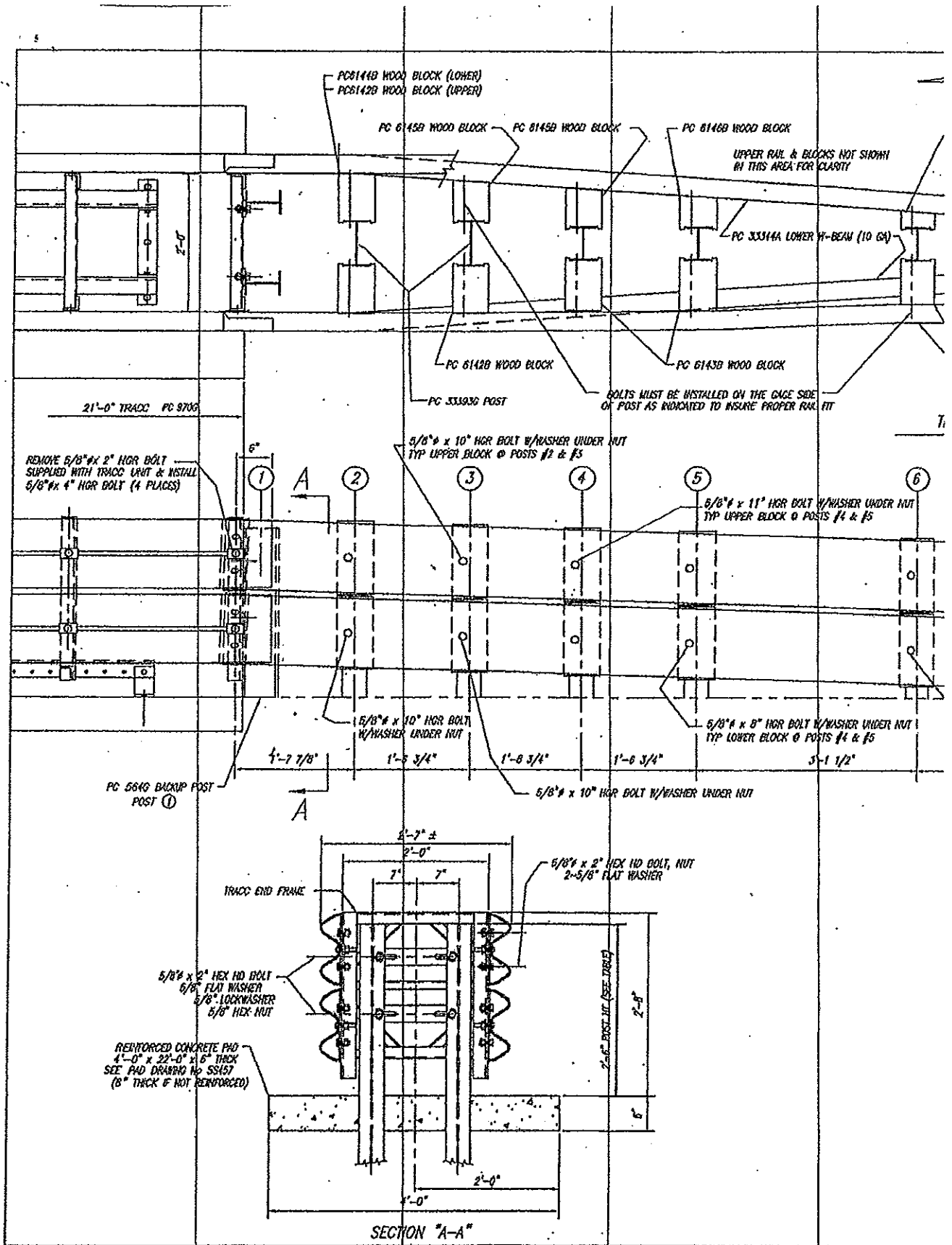
ITEM	BUCK NO.	DESCRIPTION	QTY.
1	123187-1153	DIAPHRAGM EX-WIDE, 1153	1
2	272611-0000	ISA, COVER BRACKET	2
3	272612-0000	ISA, END BRACKET	4
4	272613-0000	ISA, BRACKET	4
5	272614-0000	ISA, BRACKET	4
6	272615-0000	ISA, BRACKET	2

ASSEMBLY NO. 601002-1153

ENERGY ABSORPTION SYSTEMS, INC.
1153-1153-1153-1153-1153

DIAPHRAGM ASSY, OG, EX-WIDE, 1153

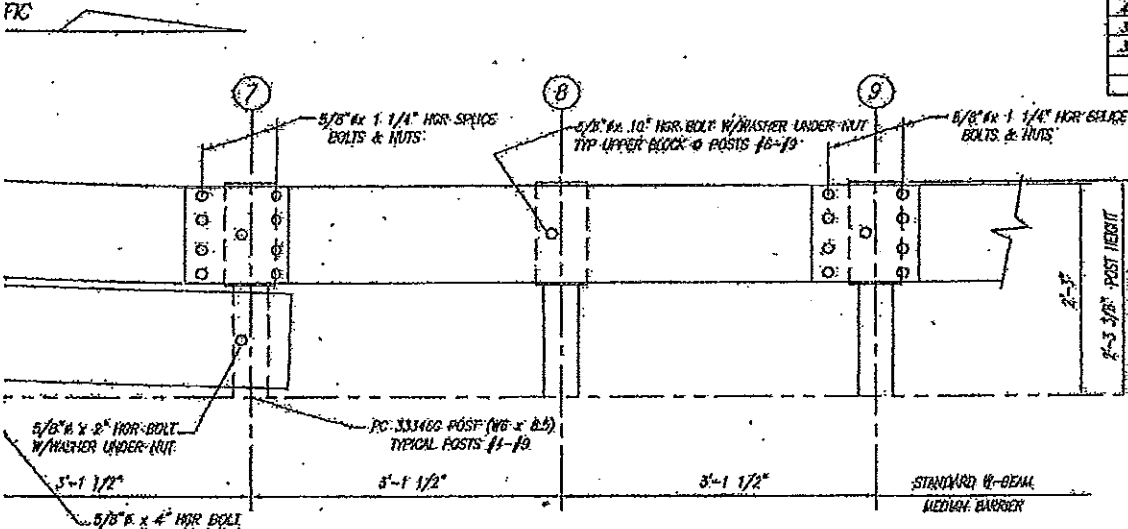
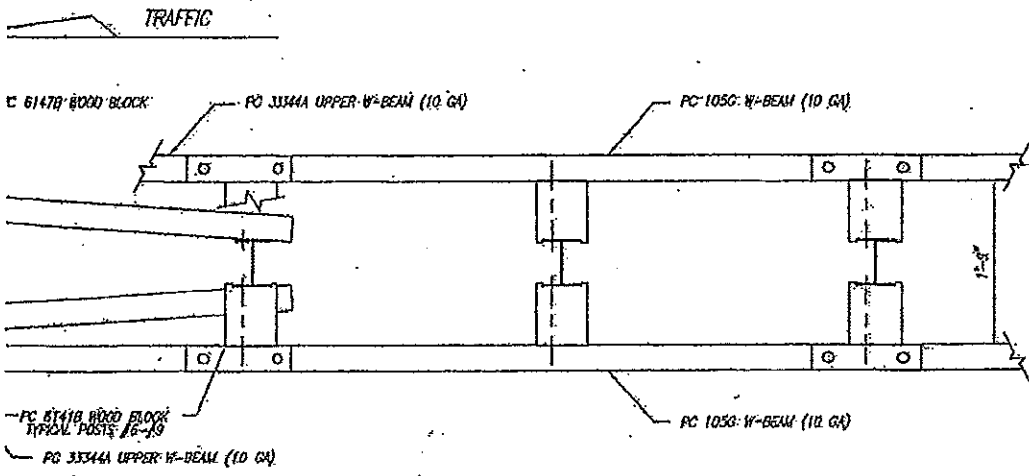
D. H. H. H.	11/1/2000	10/1/2000	11/1/2000	11/1/2000	11/1/2000
A. A. A. A.	10/1/2000	11/1/2000	11/1/2000	11/1/2000	11/1/2000
A. A. A. A.	11/1/2000	11/1/2000	11/1/2000	11/1/2000	11/1/2000
A. A. A. A.	11/1/2000	11/1/2000	11/1/2000	11/1/2000	11/1/2000



MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 37

TRACC TRANSITION BILL OF MATERIALS

PRODUCT CODE	QTY	DESCRIPTION
1050	2	10/6.3/TRACC (GUARDRAIL)
5846	2	BACKUP POST (WS x 8.5 x 6'-6")
33344A	4	10/12.6/TRACC (GUARDRAIL)
33393C	2	POST WS x 13 x 7'-6"
33346G	6	POST WS x 8.5 x 6'-6"
6141B	8	RTO WD BLOCK 1'-1 (6 x 8)
6142B	4	RTO WD-BLOCK 1'-1 (6 x 8.3/4)
6143B	4	RTO WD-BLOCK 1'-1 (6 x 9 1/4)
6144B	2	RTO TPRD WD-BLK 1'-1 (6 x 8 9/16)
6145B	4	RTO TPRD WD-BLK 1'-1 (6 x 7 1/4)
6146B	2	RTO TPRD WD-BLK 1'-1 (6 x 5.16/16)
6147B	2	RTO TPRD WD-BLK 1'-1 (6 x 3.3/8)
HARDWARE		
3510C	4	5/8" x 11" HR POST BOLT
3500G	16	5/8" x 10" HR POST BOLT
3400C	4	5/8" x 6" HR POST BOLT
4430C	6	5/8" x 4" HR POST BOLT
3400G	2	5/8" x 2" HR POST BOLT
3360G	32	5/8" x 1 1/4" HR SPUCE BOLT
3340C	60	5/8" HR HEX NUT
3320G	32	5/8" FLAT WASHER 10 HR POST BOLT
3404G	12	5/8" x 2" HEX HD BOLT (A328)
4372G	20	5/8" WASHER
3310G	4	5/8" LOCKWASHER
3361G	12	5/8" HEX. NUT



POST HEIGHT TABLE

POST NO	HEIGHT
①	2'-5"
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"

REV	BY	DATE	REMARKS
1	JT	5-7-01	REVISED POSTS #2 & #3 AND LENGTH OF W/STROKE

TRACC

TRACC TRANSITION TO W-BEAM MEDIAN BARRIER PLAN, ELEVATION & SECTIONS (ALL DRIVEN POSTS)

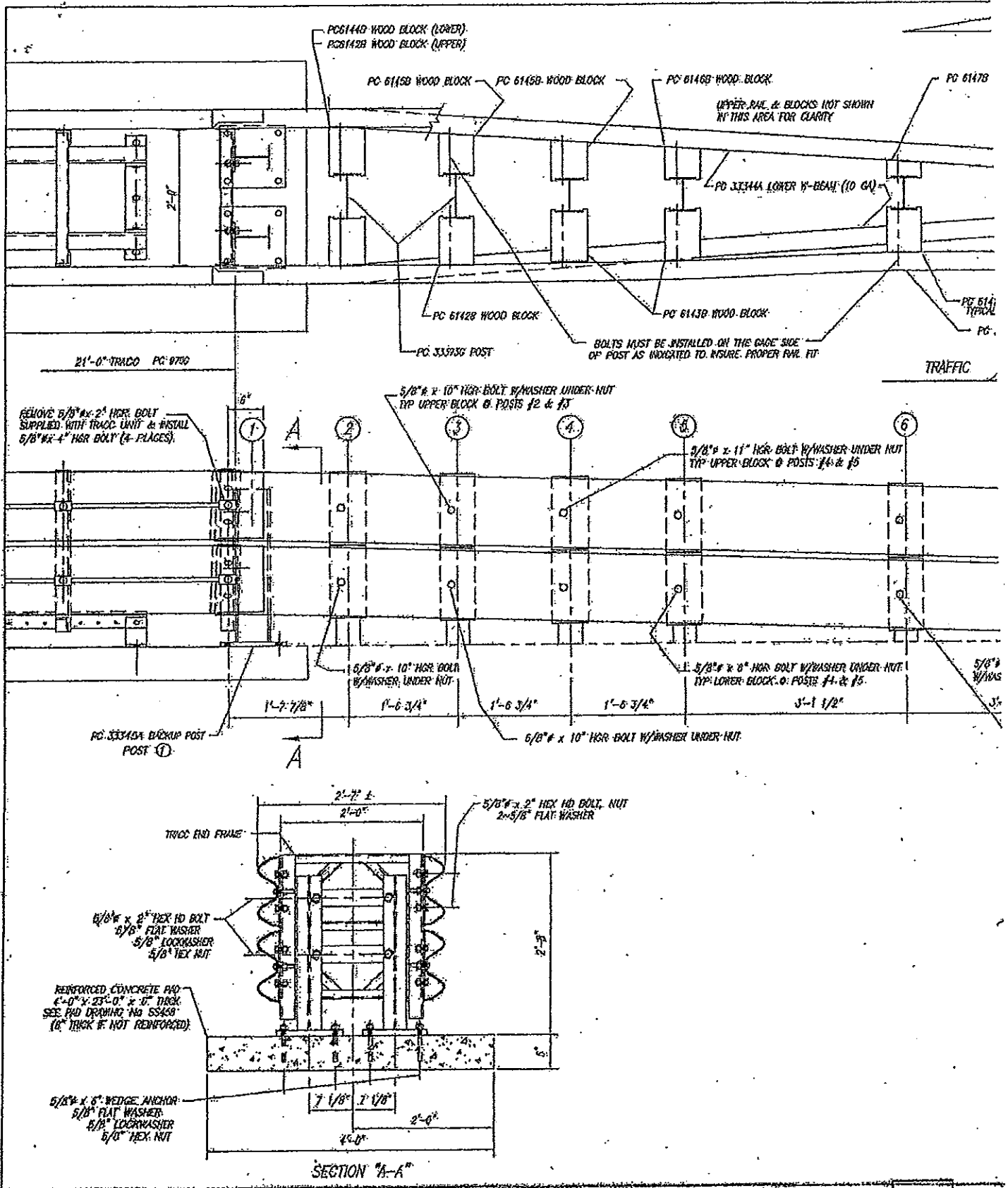
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75350

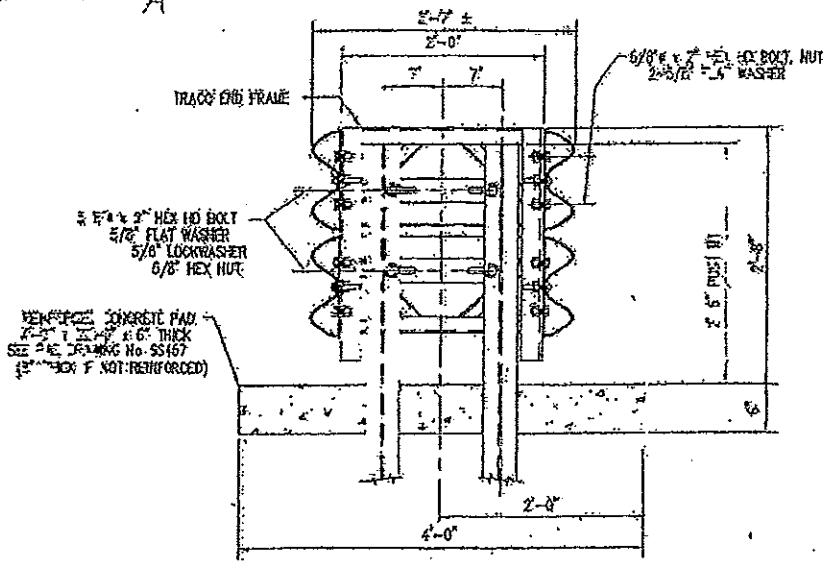
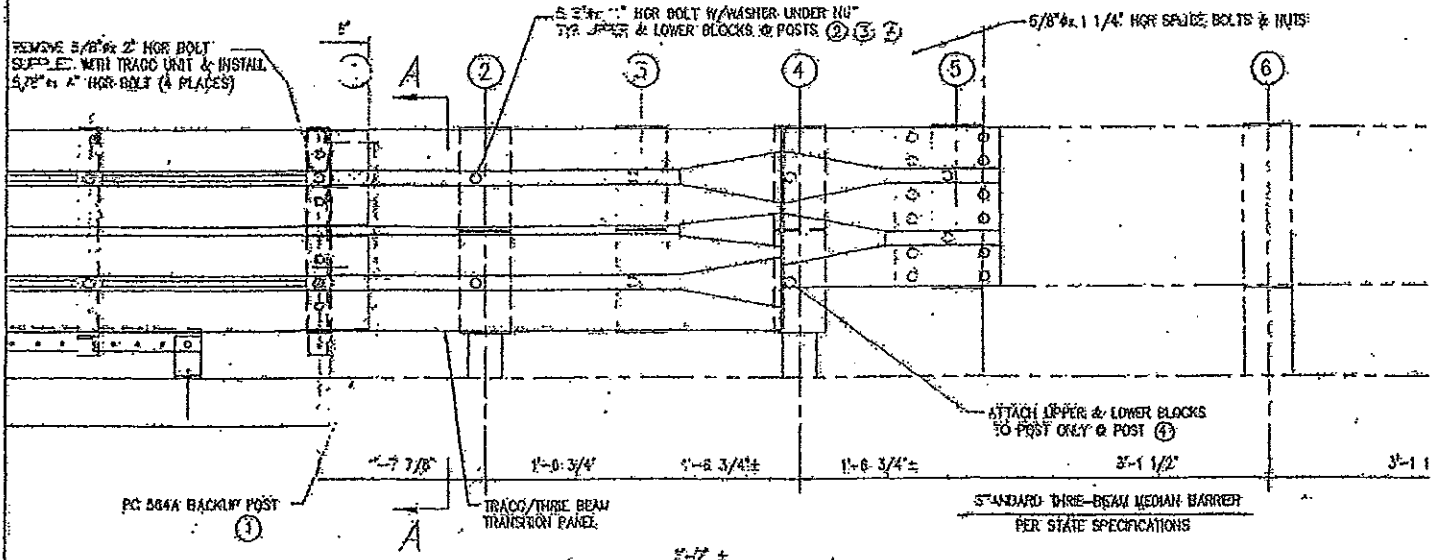
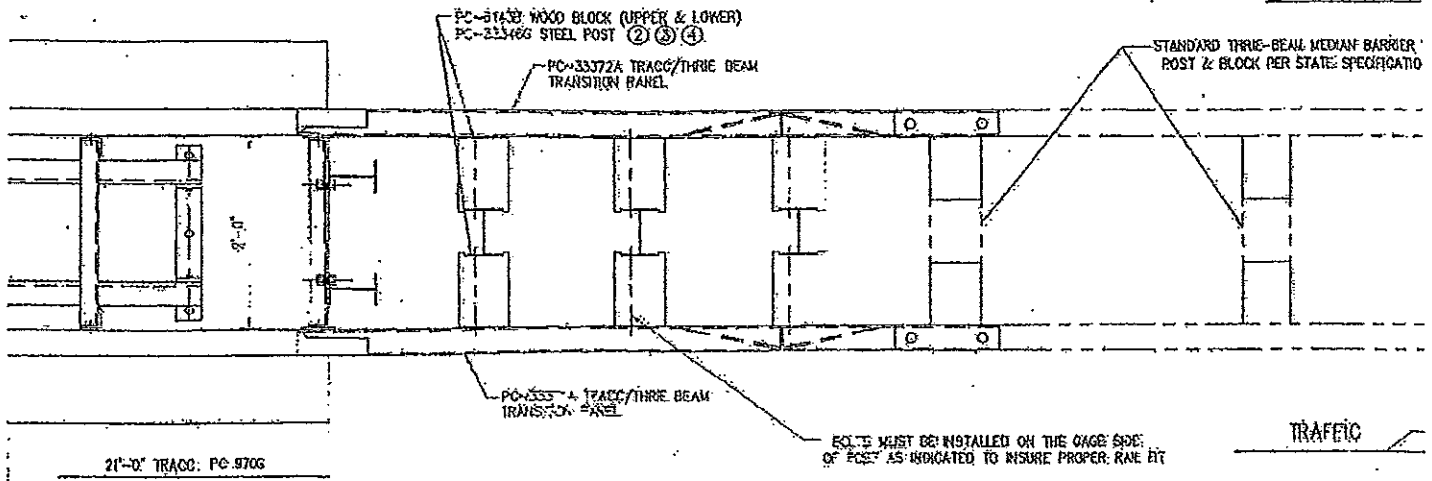
DATE: 8/18/00
 DWS, PLS # 55455-01E
 SHEET: ET OF 1
 DRAWING NO: SS 453

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37

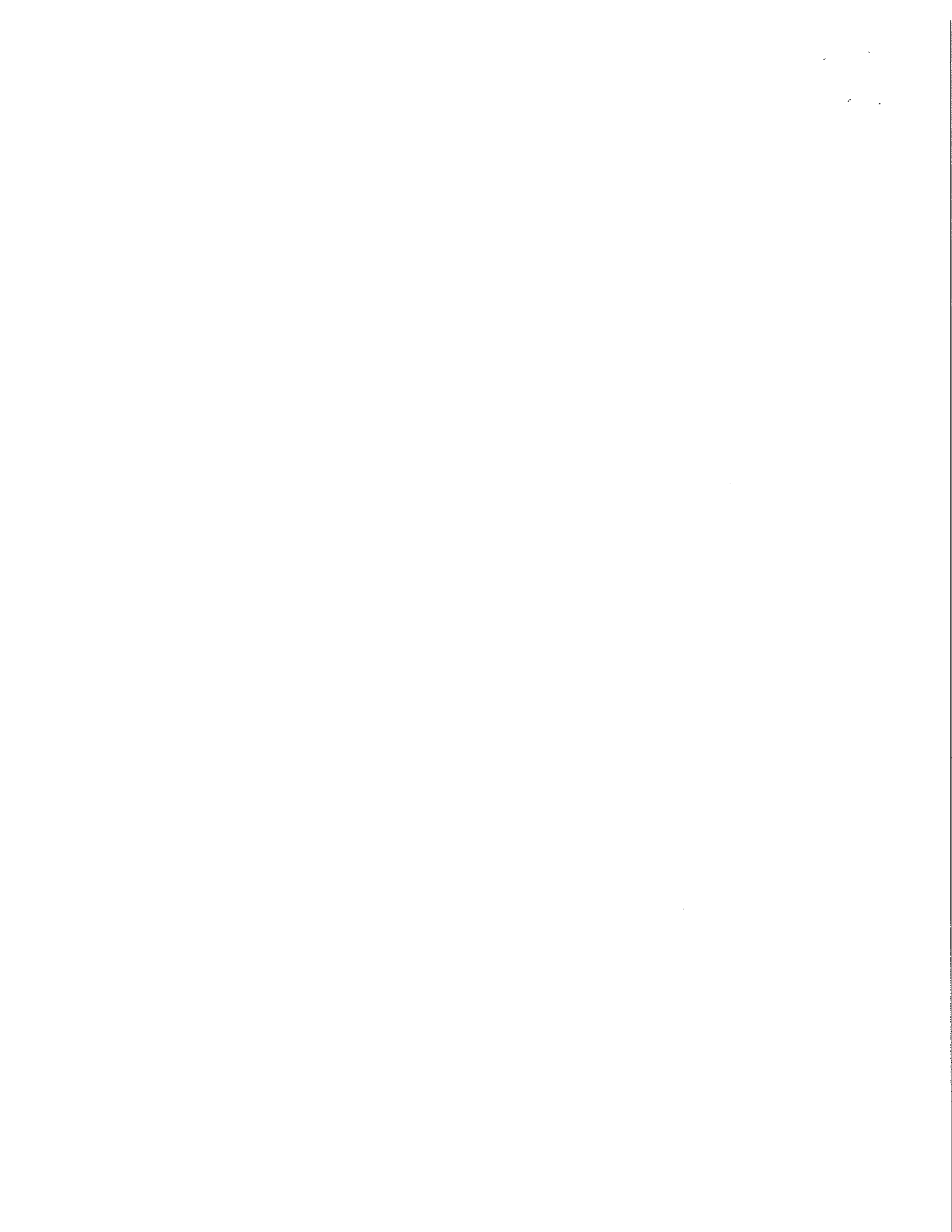
MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 36



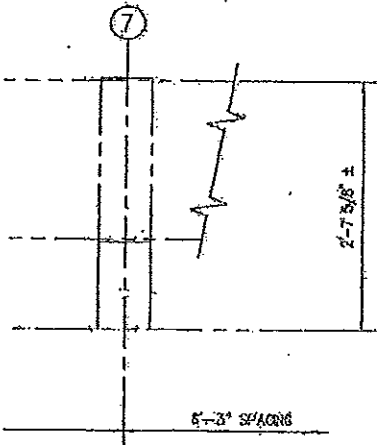
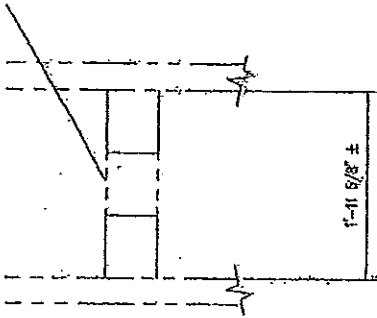


39

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 40



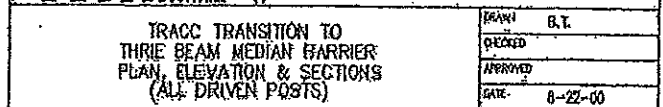
TRAFFIC



TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
5646	2	POST HG x 8.6 x 6'-6"
61438	12	RTD WD BLOCK 1'-1 (6 x 9 1/4)
333466	3	POST HG x 8.5 x 0'-6"
33371A	1	BRACC/THRE BEAM TRANSITION PANEL
33372A	1	TRACC/THRE BEAM TRANSITION PANEL
HARDWARE		
4432G	4	5/8"Ø x 4" HGR POST BOLT
3510G	12	5/8"Ø x 1 1/4" HGR POST BOLT
33600	24	5/8"Ø x 1 1/4" HGR SPLICE BOLT
3340G	36	5/8" HGR HEX NUT
3300G	12	5/8" FLAT WASHER (Ø HGR POST BOLTS)
3404G	12	5/8"Ø x 2" HEX HD BOLT (A325)
4322G	20	5/8" WASHER
3310G	4	5/8" LOCKWASHER
3361G	12	5/8" HEX NUT

REV. CHECKED BY DATE. RELEASE



TRACC TRANSITION TO
THRE BEAM MEDIAN BARRIER
PLAN, ELEVATION & SECTIONS
(ALL DRIVEN POSTS)

DRAWN	B.T.
CHECKED	
APPROVED	
DATE	8-22-00
DWG. QTY	SB454-DIE
SHEET	ET OF 1
DRAWING NO.	SS. 454
REV	0

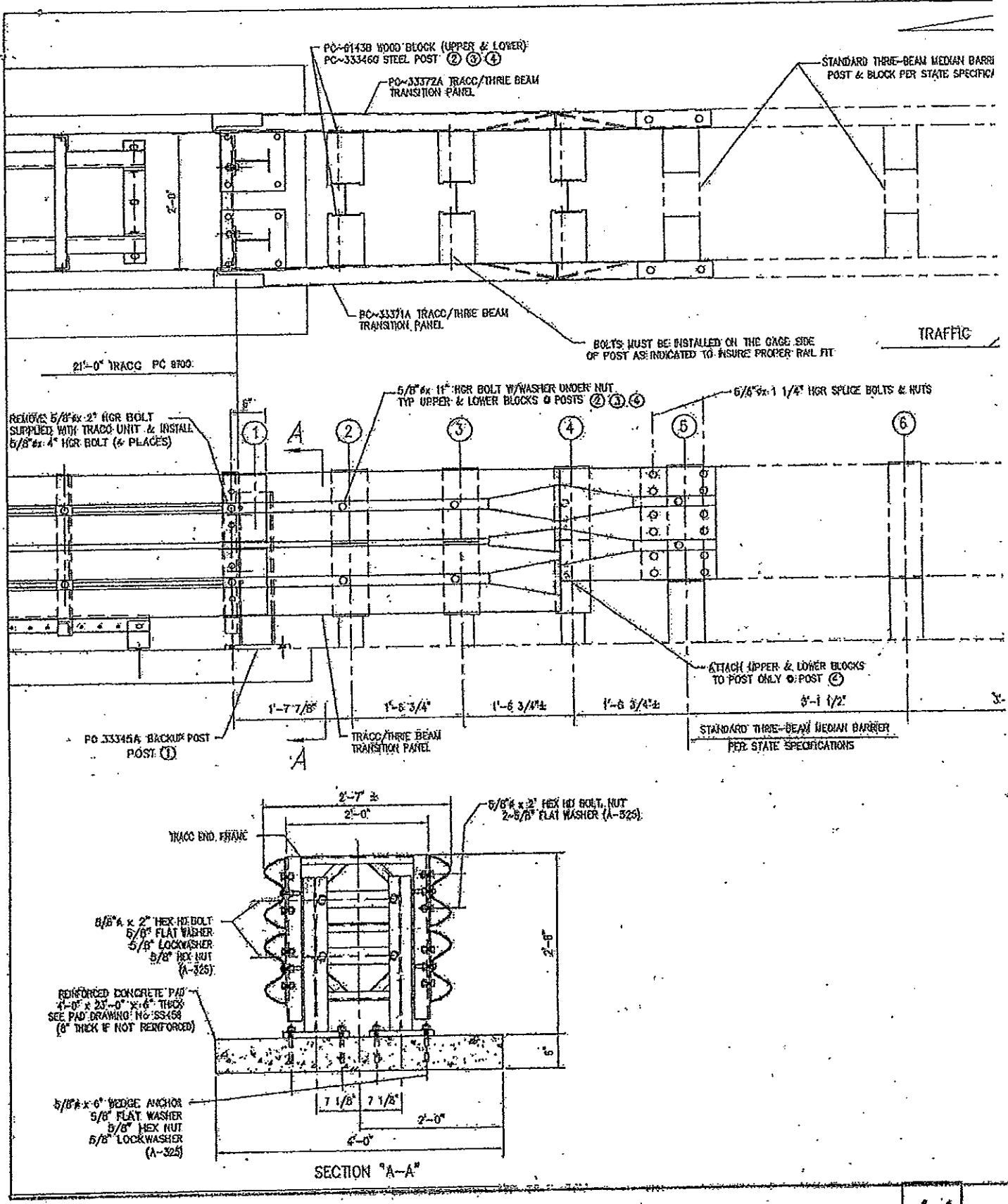
TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS
2625 STEMMONS-FREEMAN, DALLAS, TX 75386

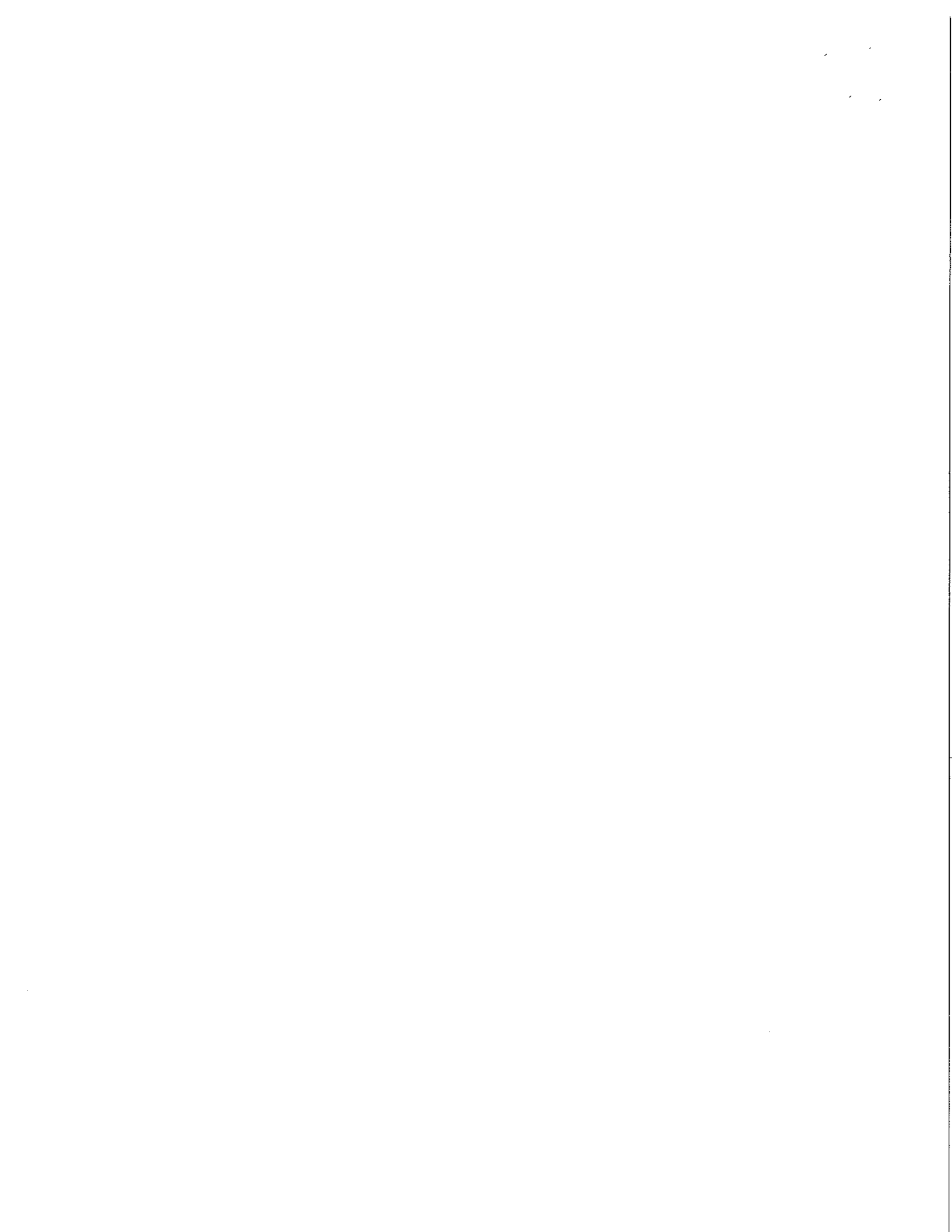
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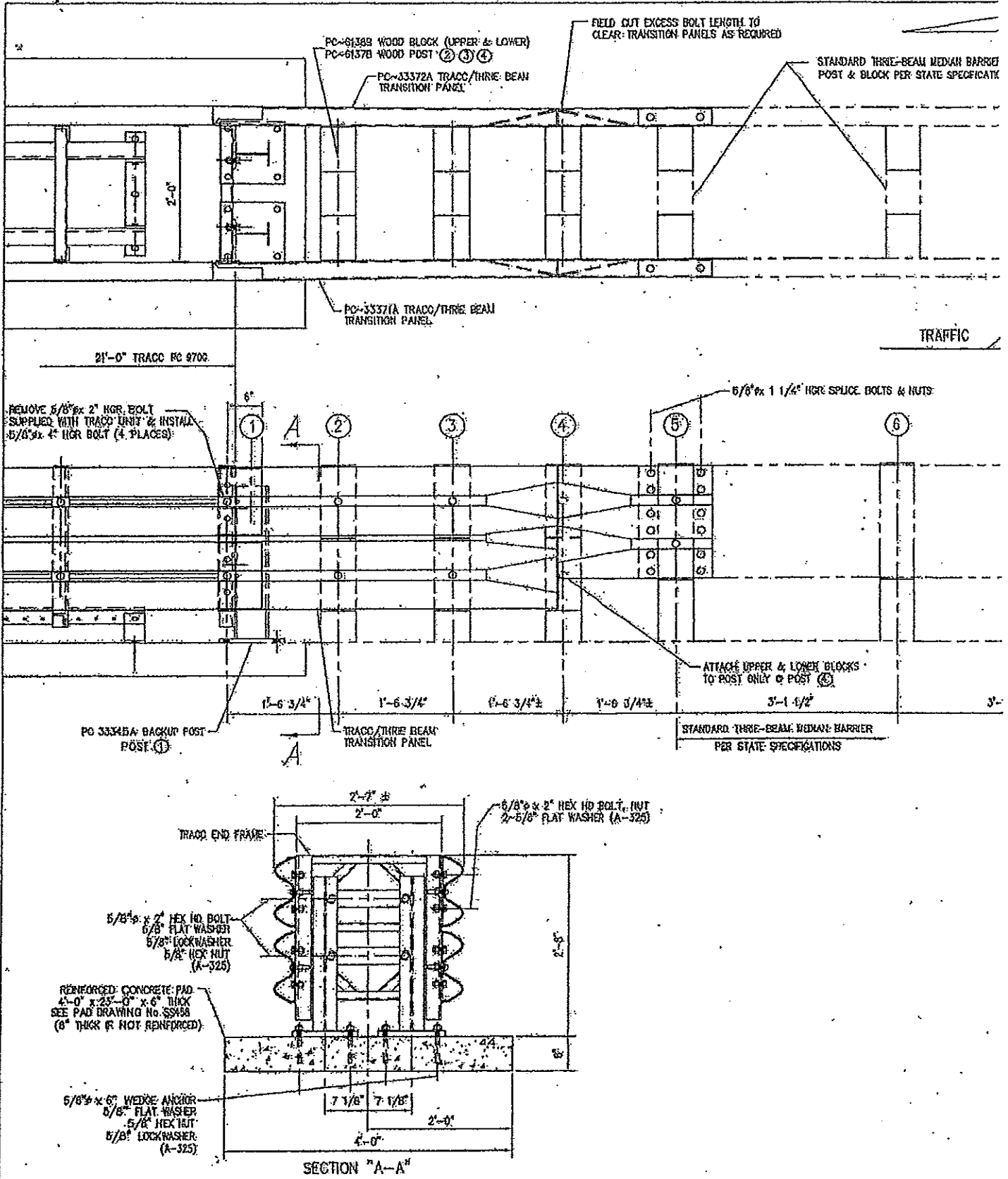
40

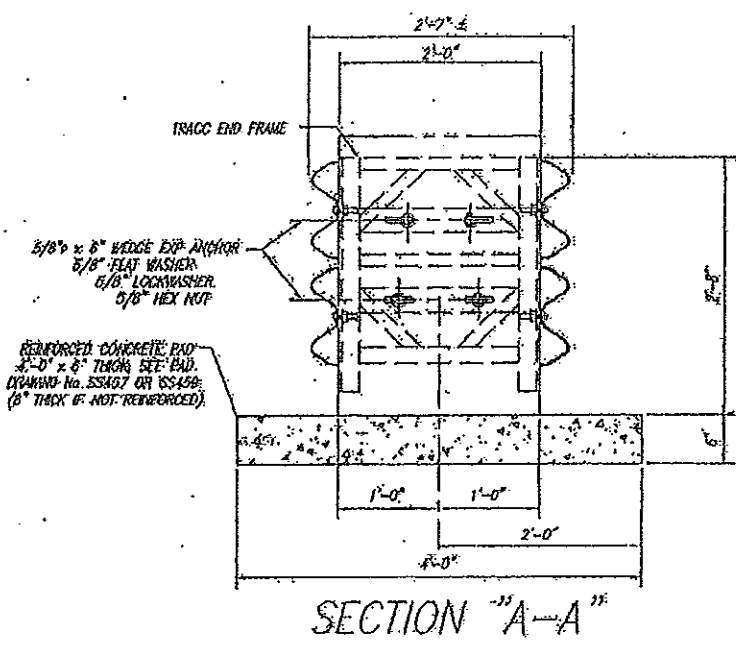
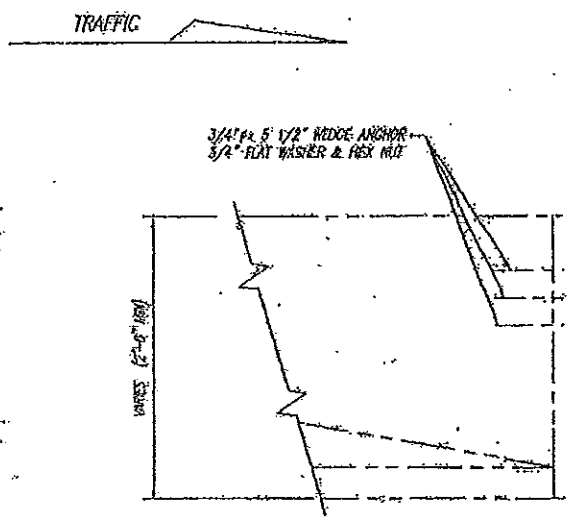
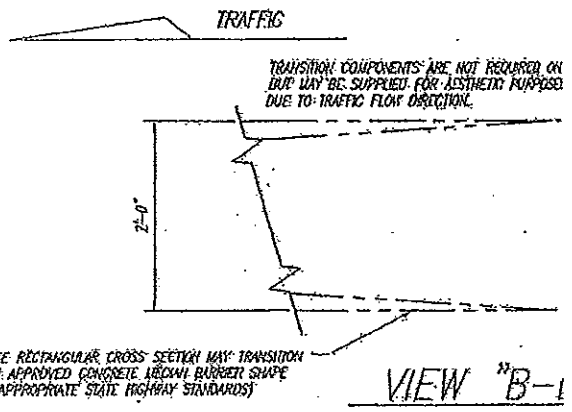
MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 39





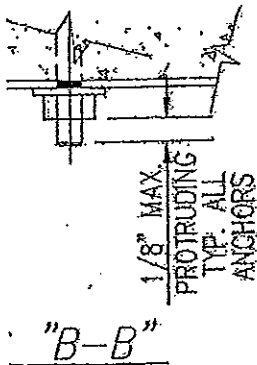
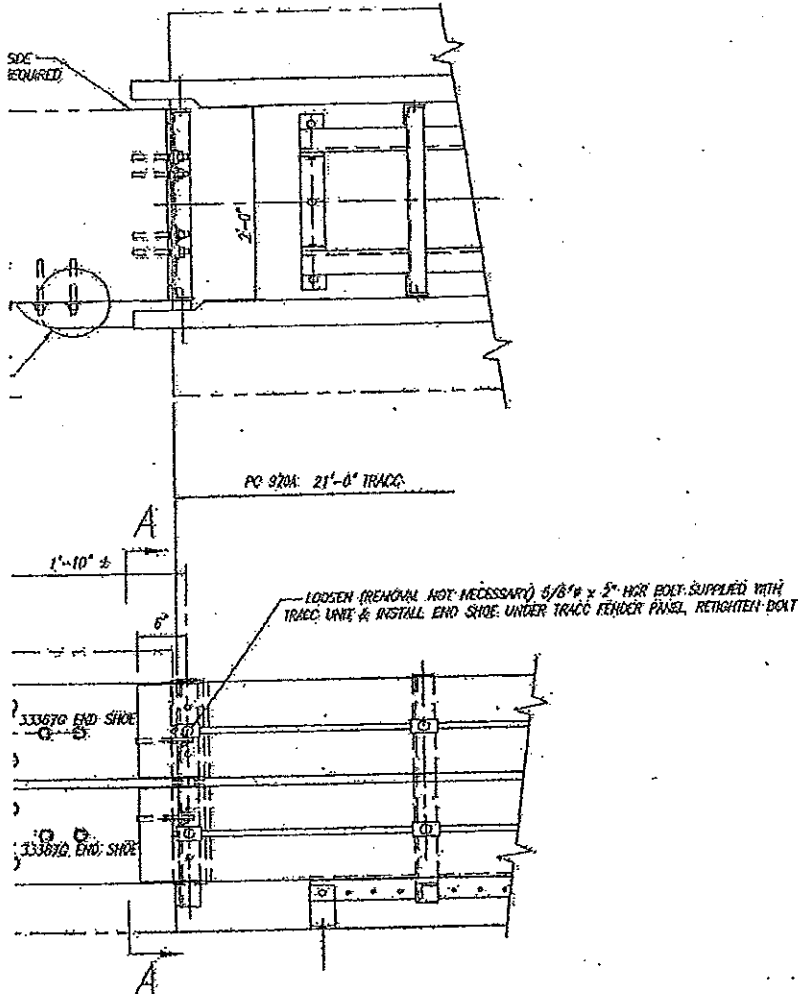






SECTION "A-A"

TRACC TRANSITION BILL OF MATERIAL		
PRODUCT CODE	QTY	DESCRIPTION
333670	2	TRACC LOCK END SHOE
HARDWARE		
33105	4	5/8" LOCKWASHER
44516	4	5/8" x 6" WEDGE EXP ANCHOR
46886	8	3/4" x 6 1/2" WEDGE EXP ANCHOR

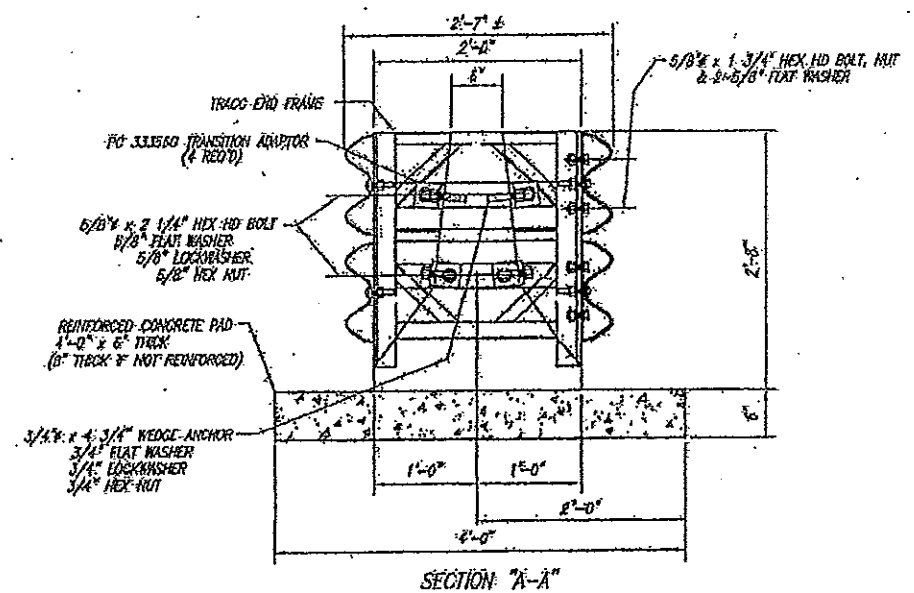
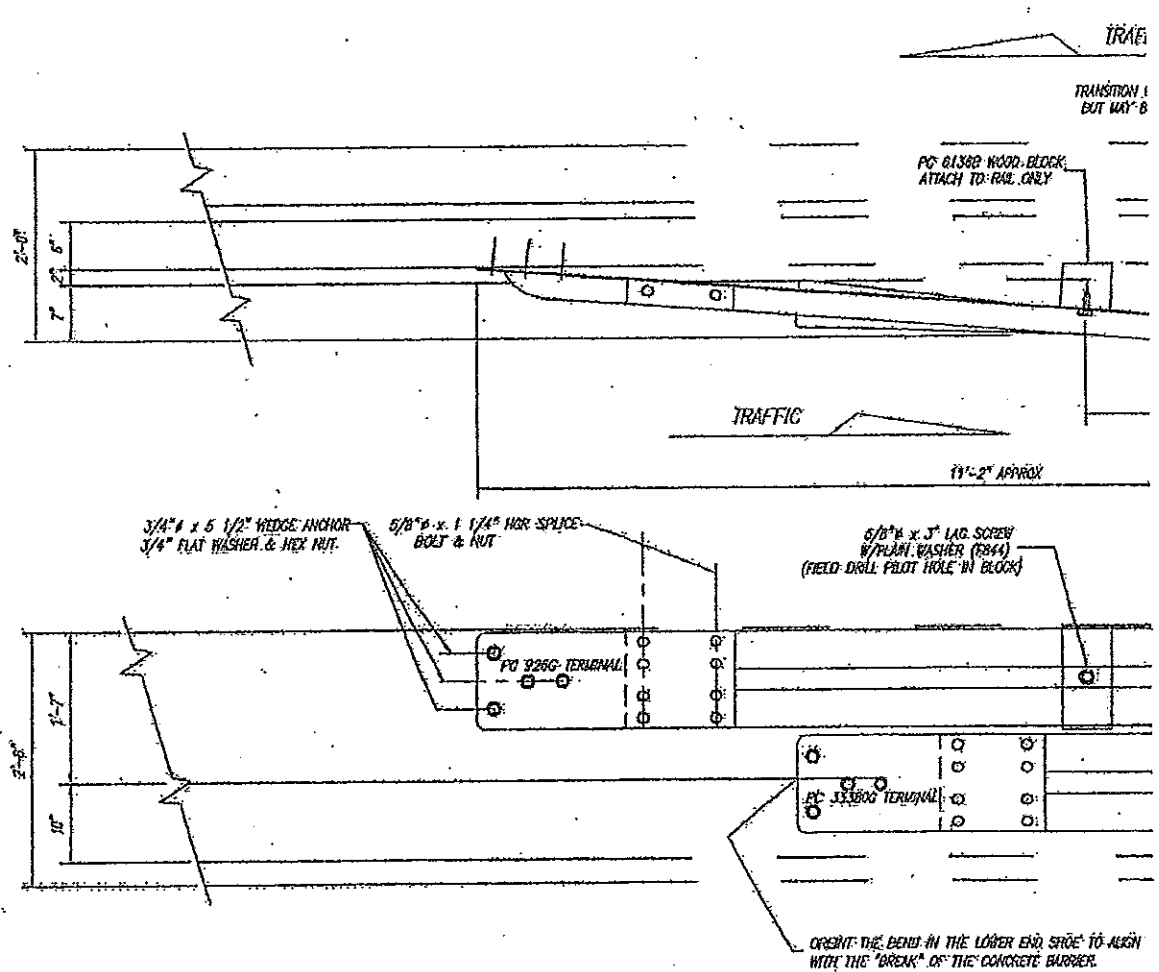


1	B.I.	L.H.	11/19/03	ADDED EXPANSION BOLT VIEW B-B
REV	CHG	BY	DATE	REMARKS
TRACC TRANSITION TO VERTICAL CONCRETE WALL, PIER, PARAPET OR BARRIER PLAN, ELEVATION & SECTIONS				DRAWN B.I. CHECKED APPROVED DATE 9-7-00 DWG FILE # S3456-DIE SHEET 1 OF 1 DRAWING NO. SS 450
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEWARTS FREEWAY, DALLAS, TX 75356				

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44

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 43

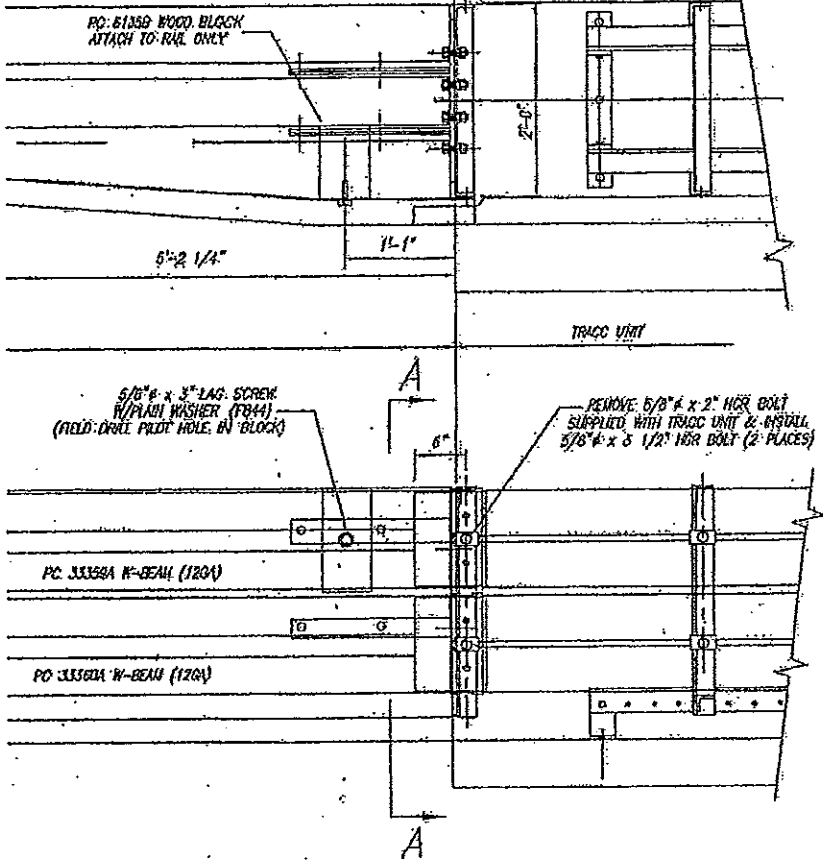


45

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 46

C

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



TRACC TRANSITION BILL OF MATERIAL		
PRODUCT CODE	QTY	DESCRIPTION
828G	1	10/END SHOE/EXTRA HOLE (UPPER)
8135B	1	TAPERED HD BLK 1'-1" (6 x 8 1/2)
8135B	1	TAPERED HD BLK 1'-1" (6 x 5 3/4)
33358C	4	TRANSITION ADAPTOR PLATE
33358A	1	12/10.0/TRACC (UPPER GUARDRAIL)
33360A	1	12/6.10.5/TRACC (LOWER GUARDRAIL)
33360C	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
4412C	2	5/8" x 3" LAG SCREW
8306G	2	5/8" x 2 1/4" HEX HD BOLT (A325)
3381G	4	5/8" x 1 3/4" HEX HD BOLT (A325)
3303G	2	5/8" WASHER (F844)
3310G	16	5/8" HGR NUT
4372G	12	5/8" WASHER (F438)
3310G	4	5/8" LOCKWASHER
3381G	8	5/8" HEX NUT (A563-0H)
4688G	8	3/4" x 5 1/2" WEDGE ANCHOR
8135B	8	3/4" x 4 3/4" WEDGE ANCHOR
4689G	8	3/4" LOCKWASHER
3701G	16	3/4" WASHER
3710G	16	3/4" HEX NUT

REV	DATE	BY	REVISIONS
0	5-20-03	ISAR	UPDATED PART NUMBERS
1	5-18-02	LH	CHANGED BRICK POSITION ON TOP PANEL. ADDED LOWER END SHOE NOTE
2	8-2-00	BT	DELETED PC4111, PC33361 & 42, ADDED PC829 & PC33360. ENL OTF HARDWARE
3	5-29-00	BT	DELETED PC4621, ADDED PC4612
4	11-5-99	BT	DELETED PC4136, 8174, 5307 & 4416, MOVED POSSES, 8135 & 4412
5	5-30-99	BT	DELETED PC33370 & 33388, ADDED 2 MORE POSSES, CHG DET A-A & NDR

TRACC

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

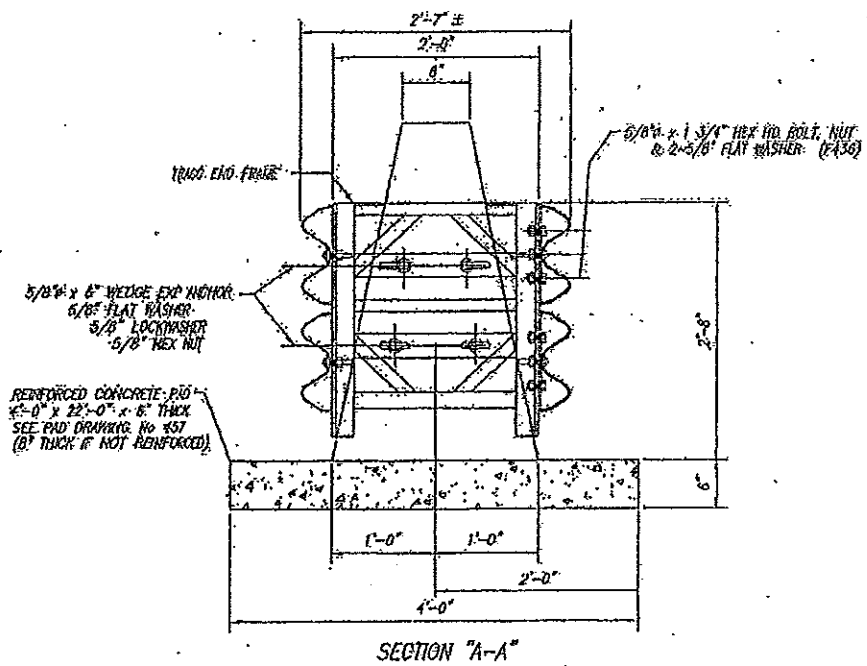
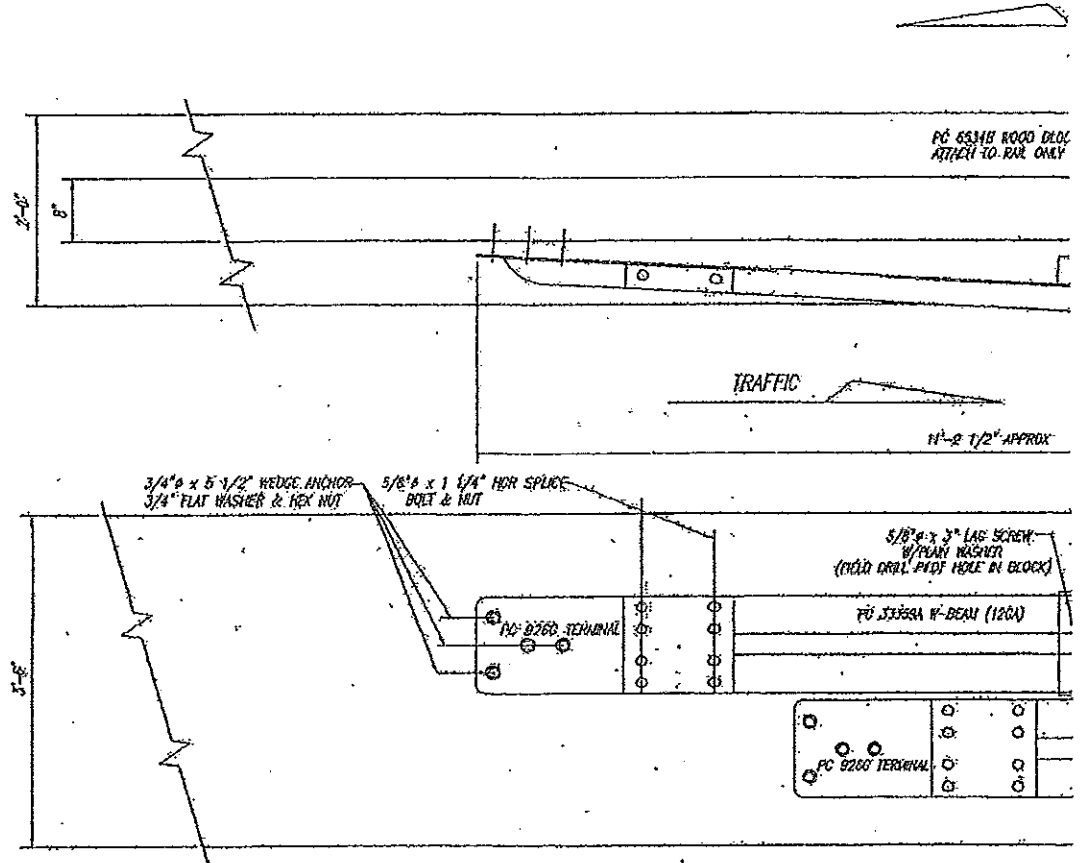
TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS

DRAWN	BT
CHECKED	
APPROVED	
DATE	05/10/02
ENG. FILE #	65461-01E
SHEET	05 OF 1
DATE	05/10/02

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46

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 45

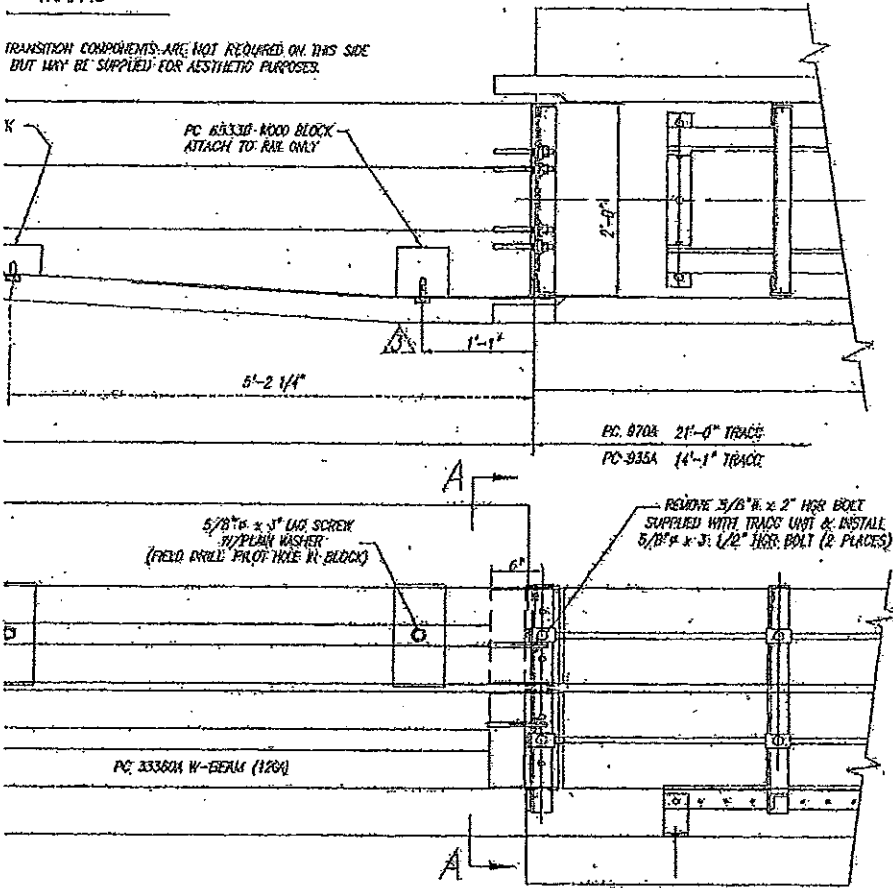


47

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 48

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
526C	2	10' END SHOE
6533F	1	TAPERED HD BLK 1'-1" (6 1/8 x 8)
6534F	1	TAPERED HD BLK 1'-1" (6 x 3 3/4)
33358A	1	12/10" TRACC (UPPER GUARDRAIL)
33360A	1	12/6" TRACC (LOWER GUARDRAIL)
HARDWARE		
3365G	16	5/8" x 1 1/4" HGR SPLICE BOLT
3391G	4	5/8" x 1 3/4" HEX BOLT
3435S	2	5/8" x 3 1/2" HGR POST BOLT
4412S	2	5/8" x 3" LAG SCREW
3390G	6	5/8" WASHER (F414)
3340G	16	5/8" HGR NUT
4372G	8	5/8" WASHER (F438)
3310G	4	3/8" LOCKWASHER
3381G	8	5/8" HEX NUT (A583 D1)
4481G	4	5/8" x 6" WEDGE EXP ANCHOR
4628G	8	3/4" x 5 1/2" WEDGE EXP ANCHOR
3701G	8	3/4" WASHER
3710G	8	3/4" HEX NUT

4	LH	08/27/03	REVISED QUANTITY OF 3/4" NUTS/WASHERS
3	BT	01/29/03	CHANGED BLOCK LOCATION
2	LH	01/21/03	CHANGED BLOCKS & THEIR LOCATION ON TOP PANEL
1	BT	8-2-00	DELETED PC33351 & PC 4717, ADDED PC6226, CHG QTY HARDWARE

REV. SHEET BY DATE REVISIONS

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

DRAWN BY: BT

CHECKED:

APPROVED:

DATE: 11/25/99

DWG FILE # 55462-01E

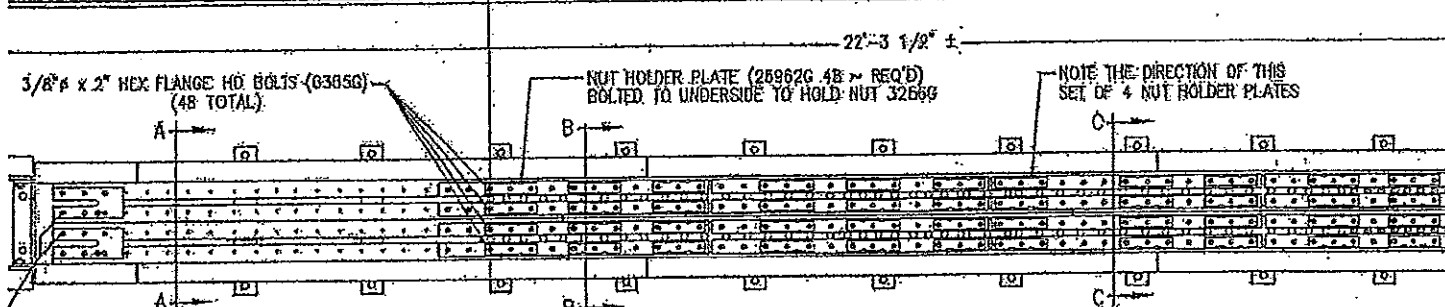
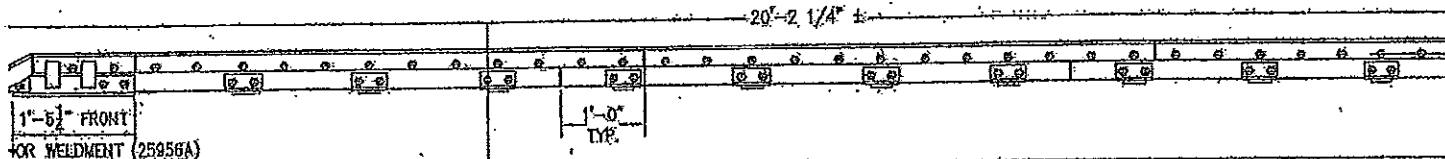
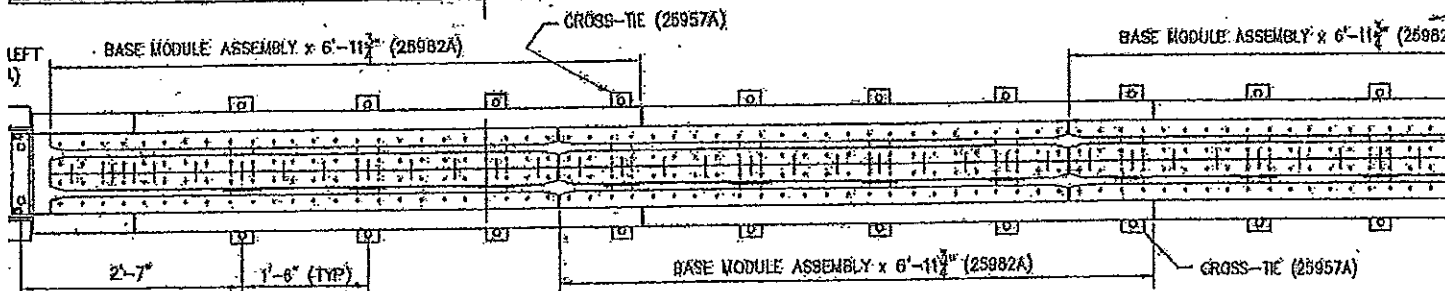
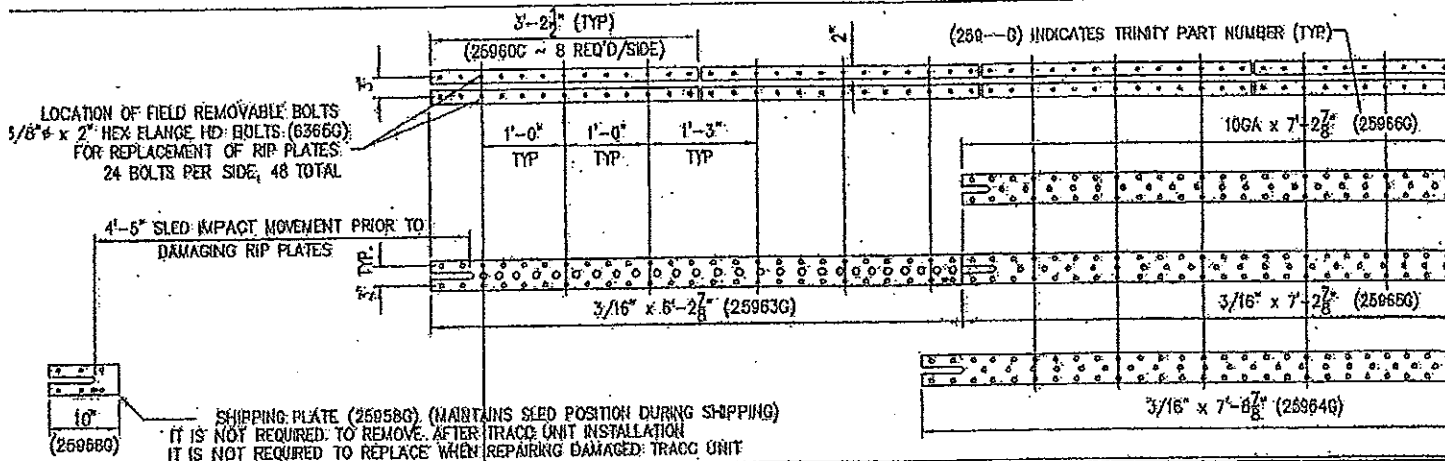
SHEET: 41 OF 4

DRAWING NO: SS 462

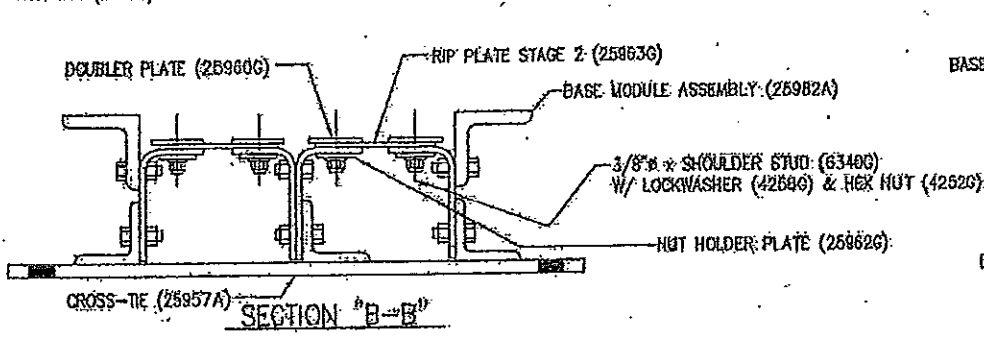
REV: 4

TRINITY INDUSTRIES, INC.
 HIGHWAY SAFETY PRODUCTS
 2525 STEWARTS FREEWAY, DALLAS, TX 75258

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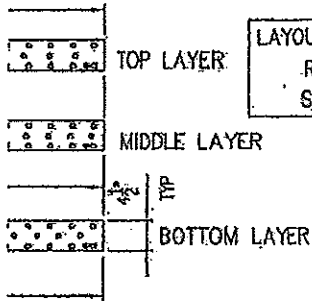


$\frac{3}{8}" \times 2"$ HEX FLANGE HD BOLT (63856) W/ LOCKWASHER (42586)
 HEX NUT (42526)



MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 50

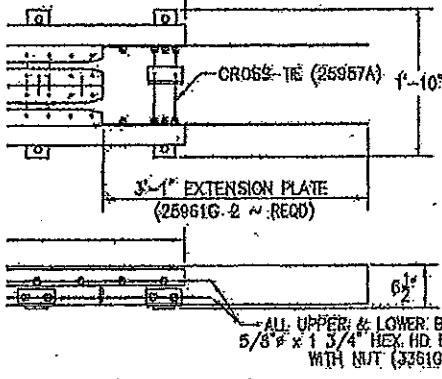
DOUBLER PLATES



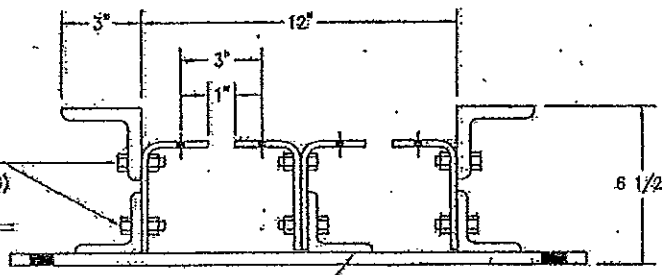
LAYOUT SCHEMATIC, TOP VIEW
RIP PLATES FOR ONE
SIDE OF TRACC BASE

TRACC BASE (25981A) BILL OF MATERIALS				
Part #	Description	Qty	WT. EACH (#)	TOTAL WT.
03258G	3/8" Shoulder Nut	48	0.030	1.44
03361G	5/8" Heavy Hex Nut (A863 DH)	40	0.120	4.8
03391G	5/8" x 1 3/4" Hex Head Bolt (A826)	40	0.210	8.4
04252G	3/8" Hex Nut	180	0.030	5.4
04256G	3/8" Lock Washer	180	0.008	1.08
06340G	3/8" X 1 1/2" Shoulder Stud	178	0.060	10.68
06366G	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
25980G	Doublers	16	8.500	136
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 8, Top	2	15.000	30
25982A	Base Module Assembly	3	328.000	987
			TOTAL WEIGHT	1498.80

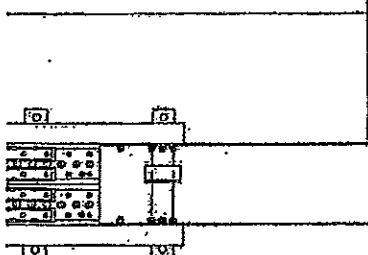
NOTE:
SEE DRAWING PN 25982 FOR ASSEMBLY
OF BASE MODULE COMPONENTS.



TRACC BASE ASSEMBLY
WITHOUT RIP PLATES
AND DOUBLER PLATES

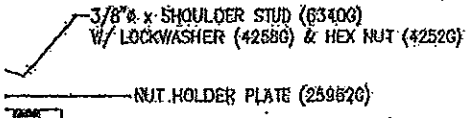


SECTION "A-A"



COMPLETE TRACC BASE ASSEMBLY
WITH RIP PLATES AND DOUBLERS

ES STAGE 3
(TOP) (25986G)
(MIDDLE) (25986G)
(BOTTOM) (25984G)



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

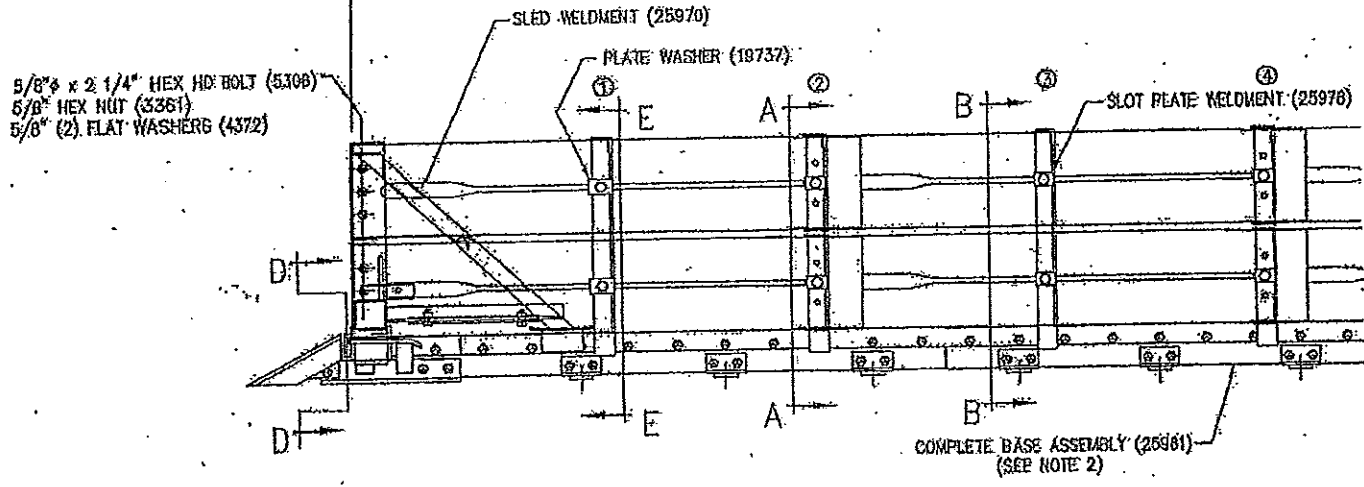
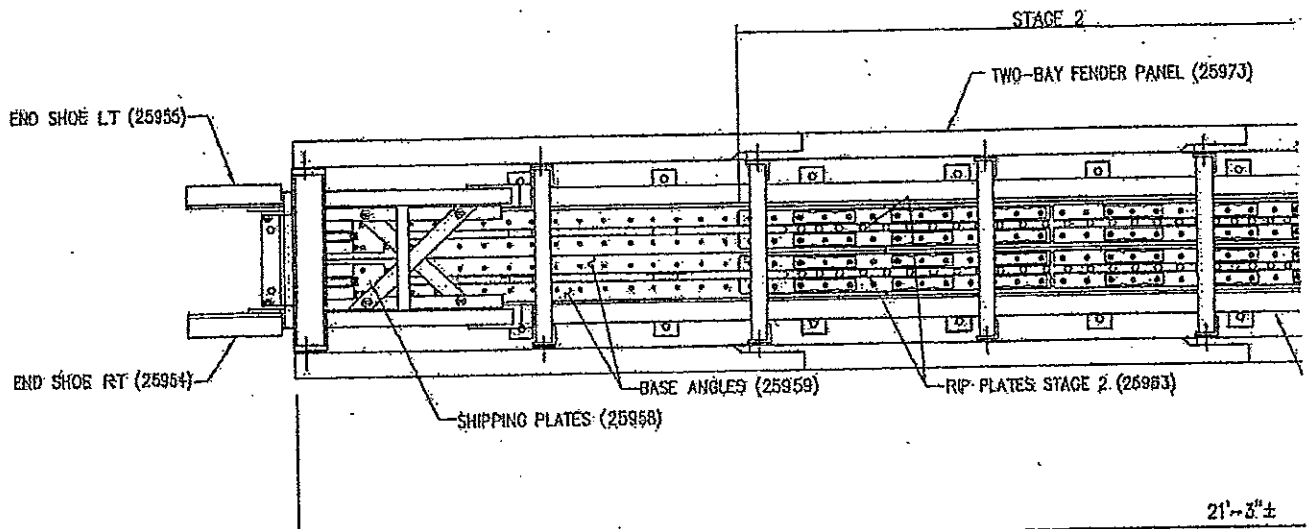
TRACC
CRASH-CUSHION ATTENUATING TERMINAL
ASSEMBLED BASE UNIT
PN. 25981

<p>TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75207</p>	<p>DATE: 04/22/05 DRAWN BY: BT/AH CHECKED BY: B.T. APPROVED: DATE: 04/22/05 DRAWN FILE # SS1001-01E DRAWN BY: E.L. OF T DRAWING NO. SS 1001/PN 25981 REV. 2</p>
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50

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 49



TRACC. BILL OF MATERIAL (PN 25980).

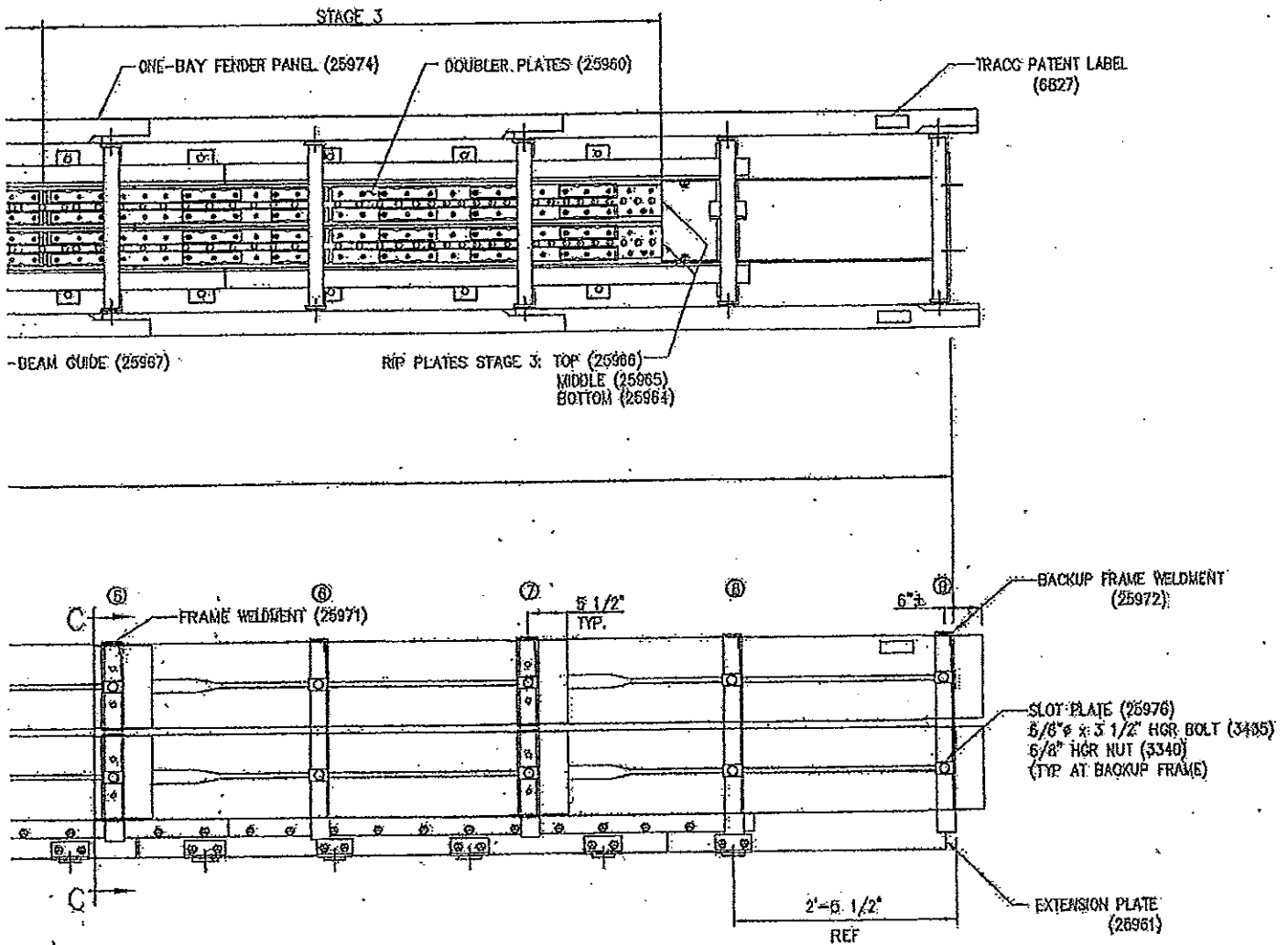
PART NUMBER	QTY	DESCRIPTION	WT/EA
19737G	12	1/4"x3"x2 1/4" TRACC WSHR	0.5#
25970A	1	SLED WELDMENT	185#
25971A	8	FRAME WELDMENT	60#
25972A	1	BACKUP FRAME WELDMENT	74#
25973A	16	TWO - BAY FENDER PANEL	49#
25974A	4	ONE - BAY FENDER PANEL	28#
25975A	2	SHREDDER ASSEMBLY	6#
25976A	32	SLOT PLATE	0.4#
25981A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

SHOP HARDWARE (GALV A163)

PART NUMBER	QTY	DESCRIPTION	MATL SPEC
32530	2	HITCH PIN CLIP	
33400	32	5/8" HGR NUT	A563 GR. A
3361B	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	A32A
6827B	2	TRACC PATENT LABEL	

51

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 52



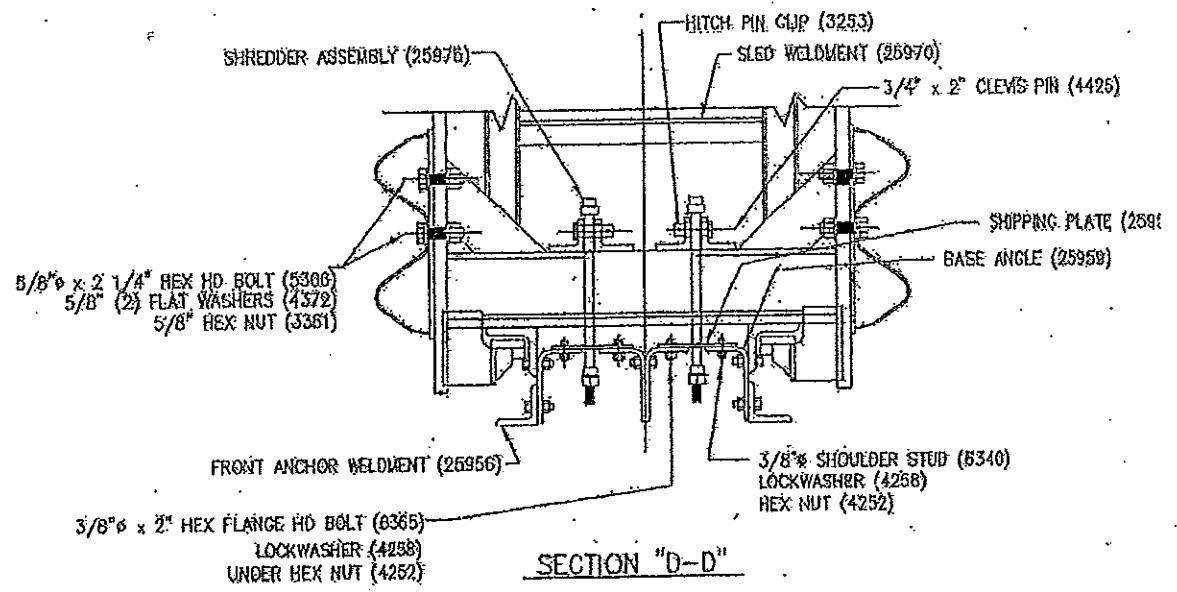
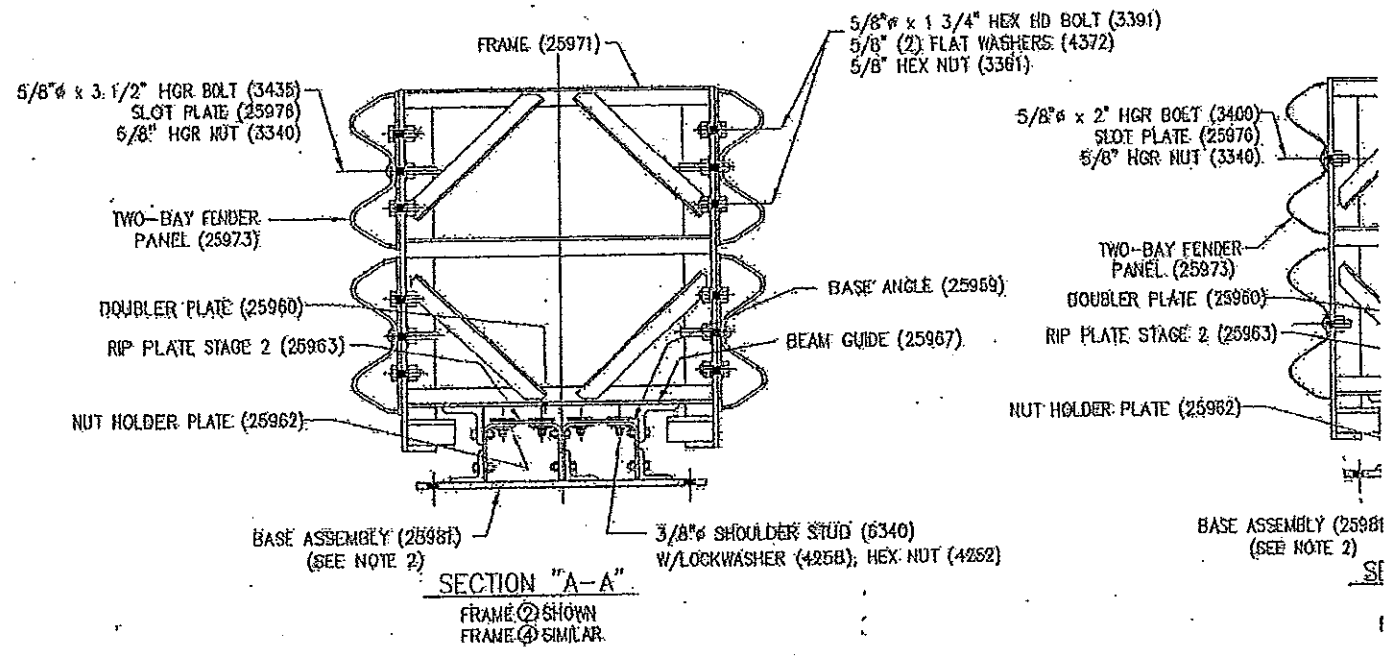
- NOTES:
 1.) FOR SECTIONAL VIEWS SEE SHEET E2 OF 2;
 2.) SEE DRAWING: SS1001 (PN 25961) FOR ASSEMBLY OF ALL BASE COMPONENTS.

REV	DATE	BY	CHKD	DATE	REMARKS
1	6/18/05	SAR			FIXED WEIGHT & ADDED STAGES 2 & 3
TRACC CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION, & SECTION SHOP ASSEMBLY DETAILS PN 25980					
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2825 STEVENS FREEWAY, DALLAS, TX 75207					DRAWN LH CHECKED BT APPROVED DATE 05/11/05 DWF FILE: SS1002-01E SHEET: E1 OF 2 DRAWING NO: SS1002-PN 25980

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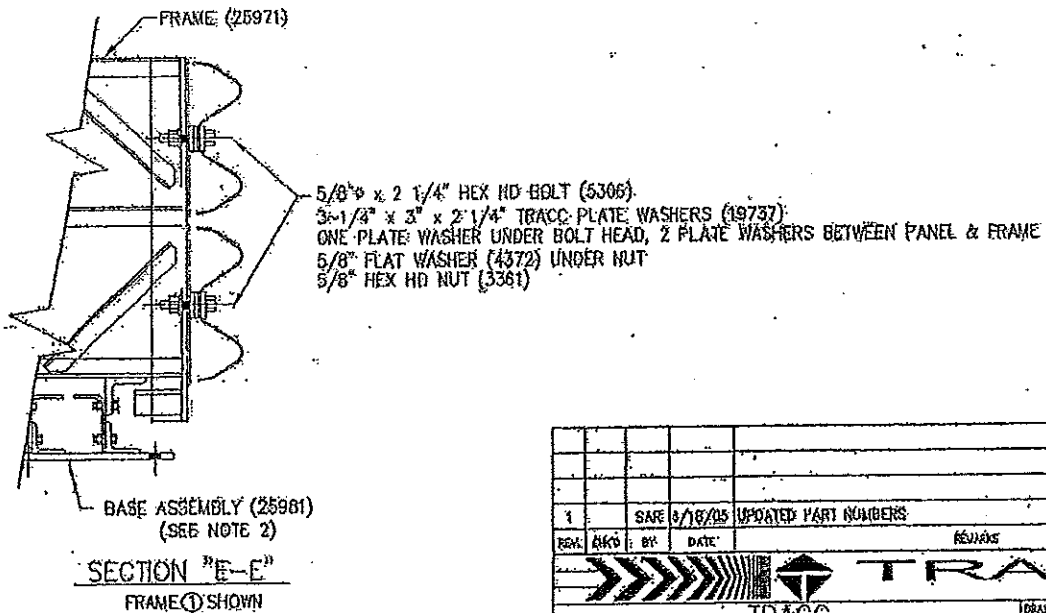
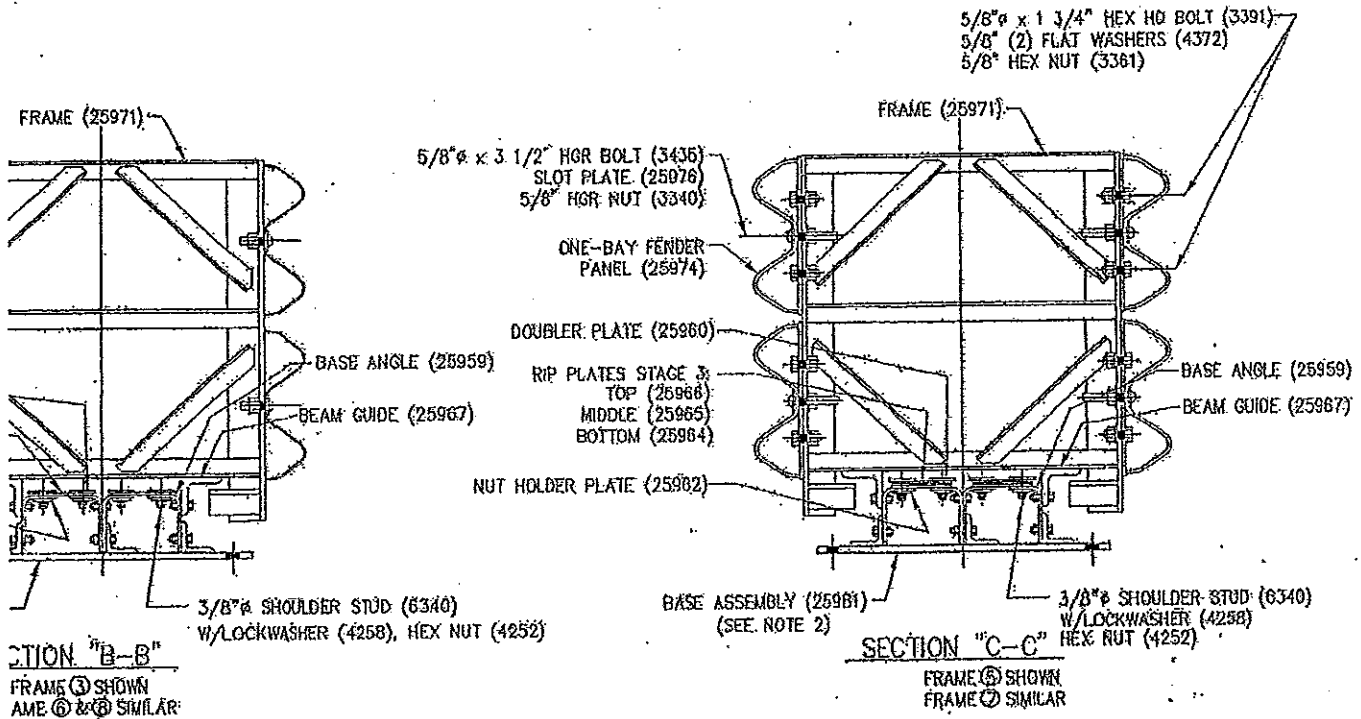
52

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 51



NOTES:
1.) FOR PLAN & ELEV
2.) SEE DRAWING 5511
OF ALL BASE COM

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 54



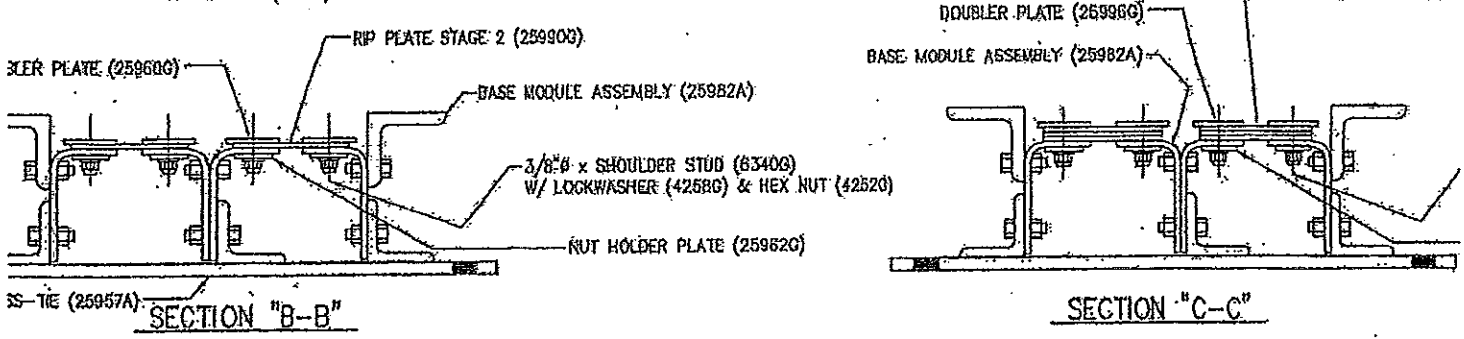
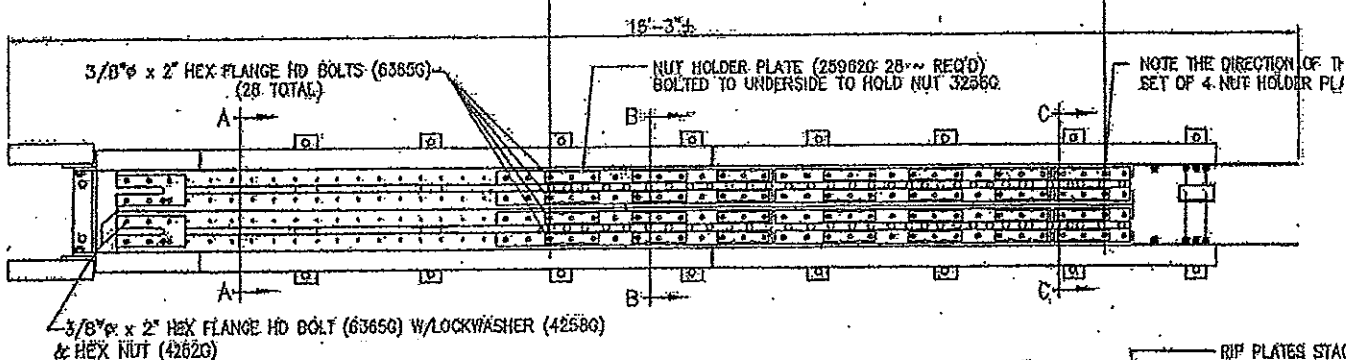
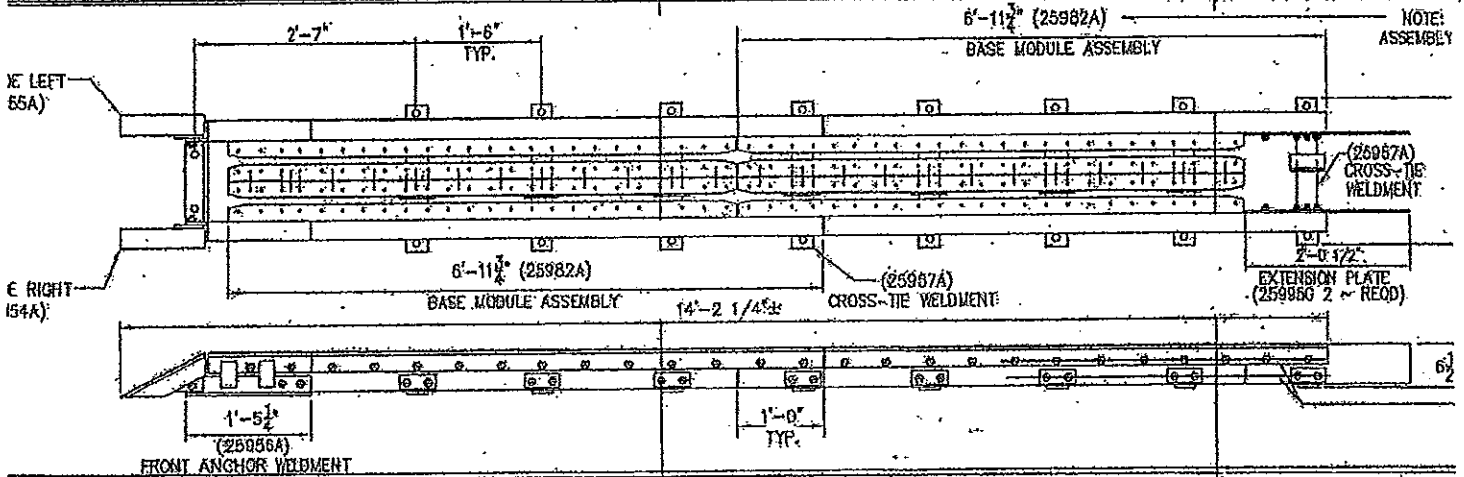
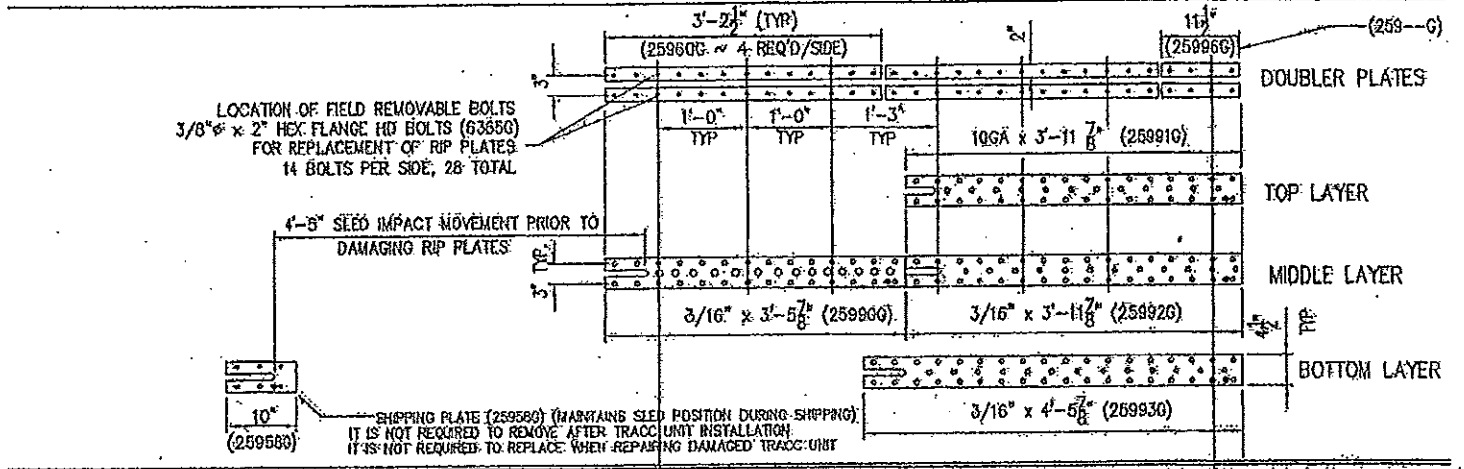
FOR MORE SEE SHEET E1 OF 2.
 (1) (PN 25981) FOR ASSEMBLY
 DETAILS.

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1	SAF	01/18/05	UPDATED PART NUMBERS	
REV	DATE	BY	DATE	REVISIONS
TRACC CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION & SECTIONS SHOP ASSEMBLY DETAILS PN 25980				DRAWN L.H. CHECKED E.T. APPROVED DATE 05/11/05 DGN FILE: S51002-02E SHEET E2 OF 2 DRAWING NO.
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS				REV

54

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 53



55

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 56

INDICATES TRINITY PART NUMBER (TYP)

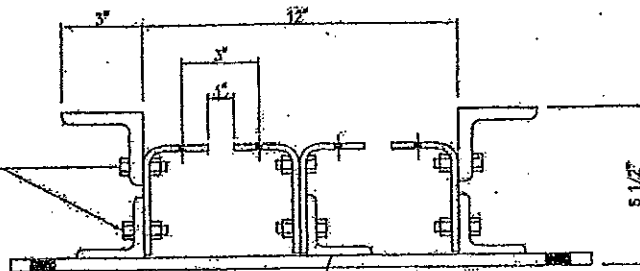
SHORTTRACC BASE (25994A) BILL OF MATERIALS

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 (1 1/2")	4	2.5	10
			TOTAL WEIGHT	997

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

DRAWING PN 25982 FOR
BASE MODULE COMPONENTS

TRACC BASE ASSEMBLY
WITHOUT RIP PLATES
AND DOUBLER PLATES



ALL UPPER & LOWER BOLTS ARE
5/8" x 1 3/4" HEX HD BOLT (3391G)
WITH NUT (33618)

SECTION "A-A"
BASE MODULE ASSEMBLY
(25982A)

COMPLETE TRACC BASE ASSEMBLY
WITH RIP PLATES AND DOUBLERS.

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

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

NUT HOLDER PLATE (25962G)

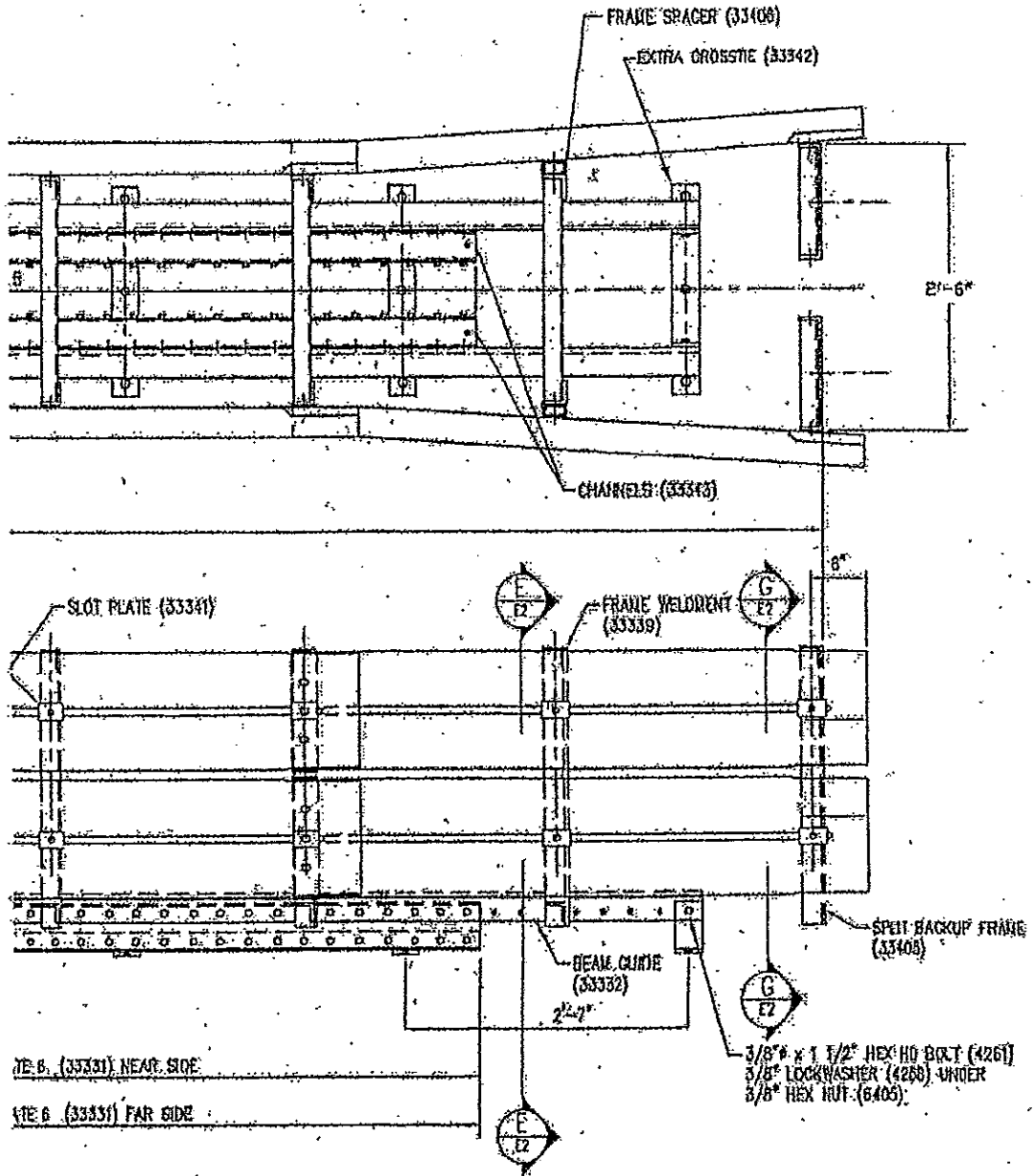
COPYRIGHT © 2003 TRINITY INDUSTRIES, INC.

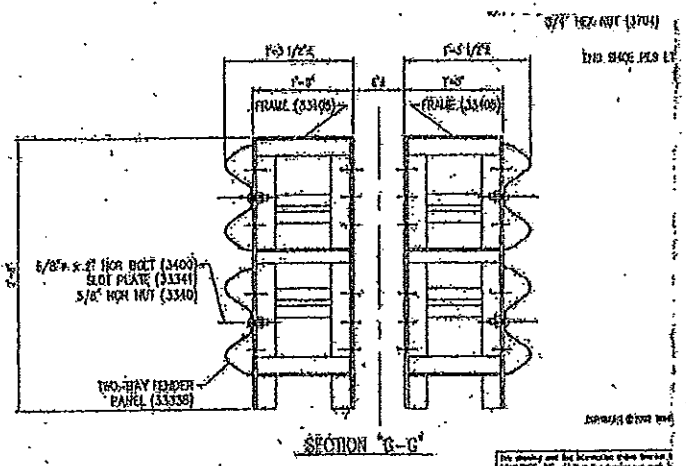
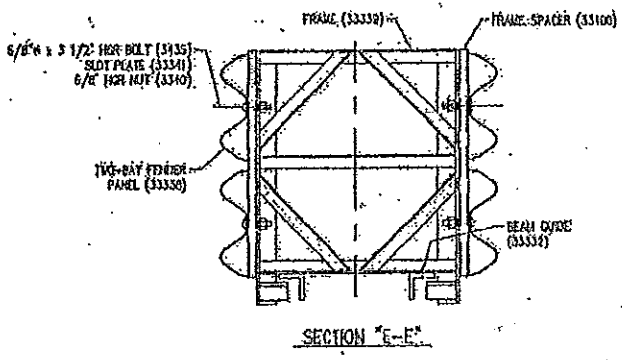
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REV.	QKD	BY	DATE	REMARKS
1		SAR	6/17/03	UPDATED PART NUMBERS
SHORTTRACC CRASH-CUSHION ATTENUATING TERMINAL ASSEMBLED BASE UNIT PN 25994				DRAWN LH CHECKED B.T. APPROVED DATE 05/16/05 ENCL FILE # SSI004-01E DESIGNED BY ET OF I DRAWING NO. SC 1004701-25994 REV. 1
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEAKHONS FREEWAY, DALLAS, TX 75207				

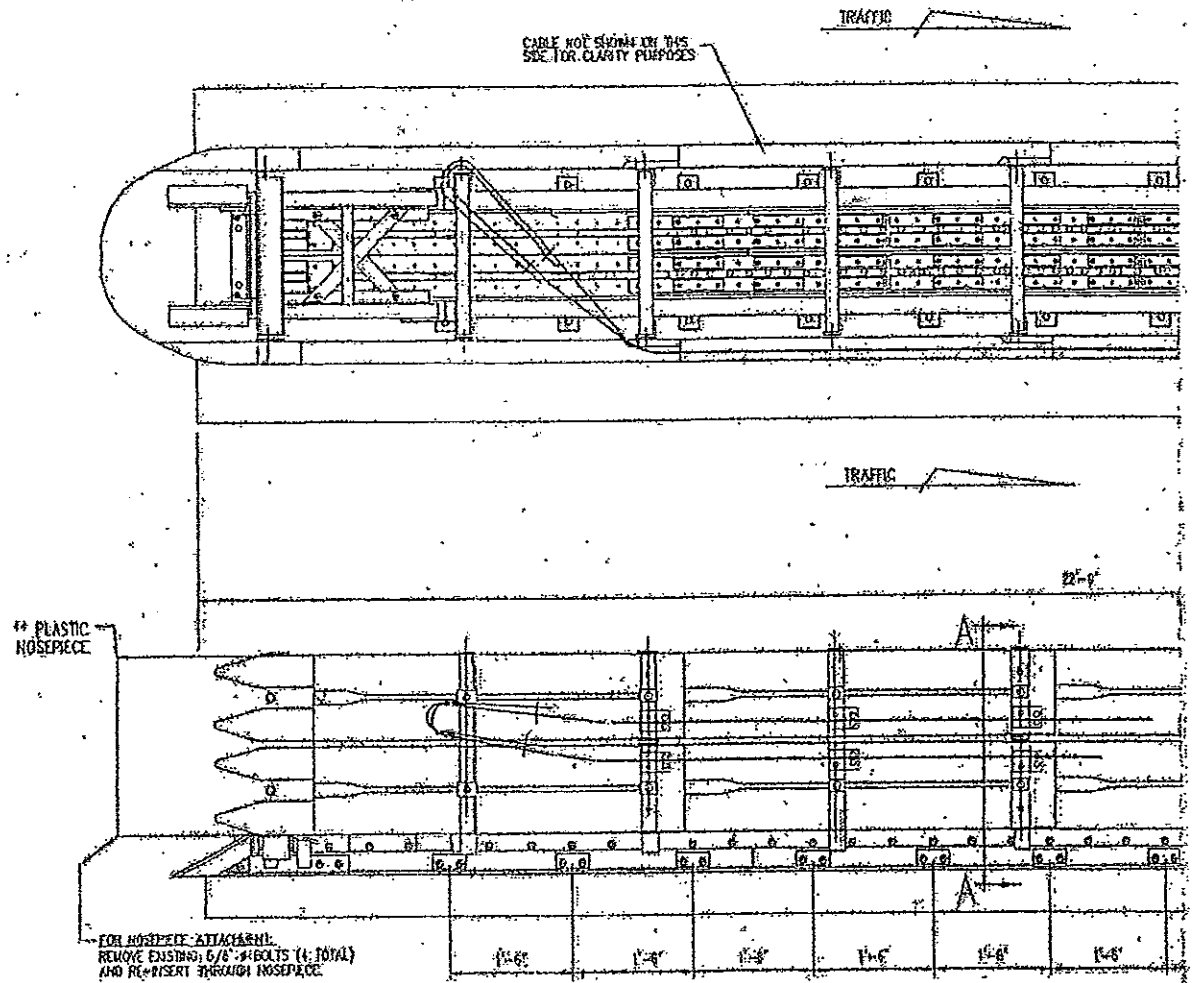
56

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 55





THE DRAWING AND THE INFORMATION CONTAINED HEREIN ARE UNCLASSIFIED, EXCEPT WHERE SHOWN OTHERWISE, AND ARE IN THE PUBLIC DOMAIN.



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

WIDE TRACER BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
5905A	1	39" WIDE TRACER UNIT ASS'LY
6668B	2	REFLECTIVE TAPE
6531B	1	YELLOW PLASTIC NOSEPIECE

OPTIONAL TRACER ANCHOR ITEMS

PRODUCT CODE	DESCRIPTION
6205B	ADHESIVE DISPENSER
6207B	NOZLE KIT #1150 (NOZZLE)
6208B	FILLER KIT #1150 (FILLER RUG)
6209B	BT, TE-CO-11/16-1/2 (11/16" x 6")

EACH TRACER UNIT SHIPS 100% ASSEMBLED
(REACTIVE NOSE INSTALLED AFTER PLACEMENT)

* EACH CARTRIDGE INCLUDES 1 EACH KIT (TUBER BY 100 CARTRIDGE/NOZZLE)
1 FILLER KIT BY 100 (FILLER RUG)

**** ANCHOR HARDWARE - (CONCRETE BASE)**

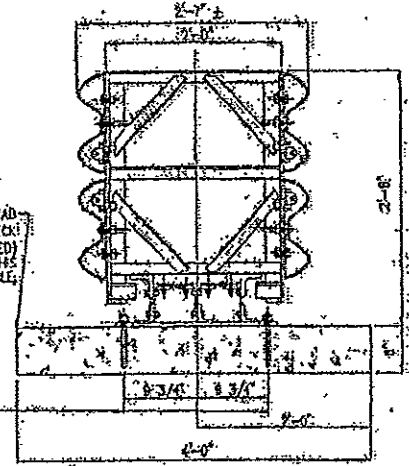
6204B	26	5/8" x 2 1/16" ANCHOR STUD
6316B	26	5/8" LOCKWASHER
6351B	26	5/8" HEX NUT
6352C	26	5/8" FLAT WASHER
6209B	2	ADHESIVE KIT #1150 (CARTRIDGE)

*** ANCHOR HARDWARE - (ASPHALT BASE)**

6599C	76	5/8" x 1-1/8" ALL THD ROD
6316C	26	5/8" LOCKWASHER
6351C	26	5/8" HEX NUT
6352C	26	5/8" FLAT WASHER
6209B	2	ADHESIVE KIT #1150 (CARTRIDGE)

* SEE PRODUCT MANUAL

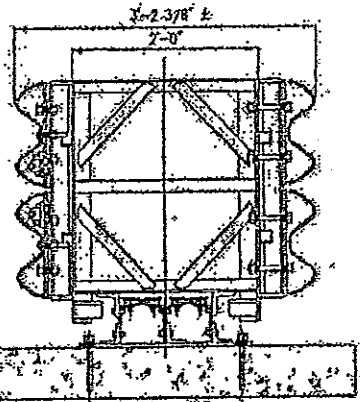
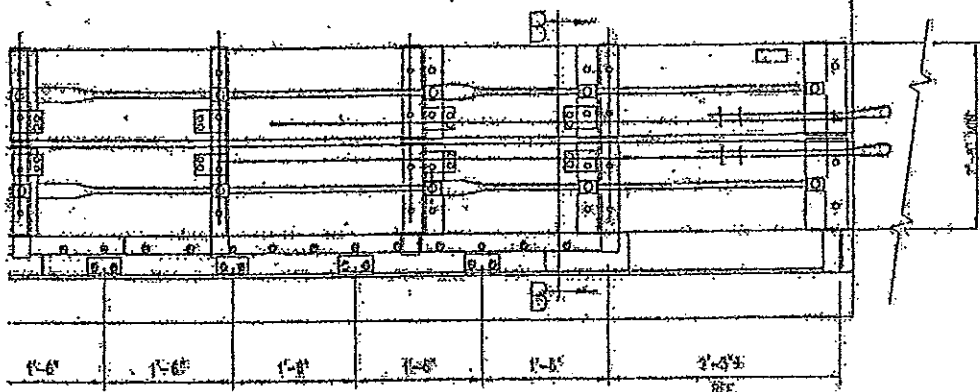
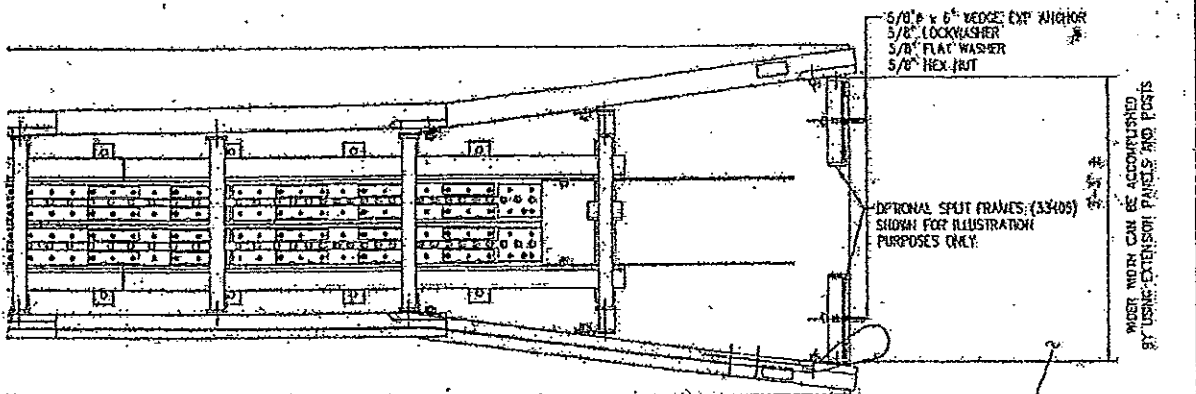
REINFORCED CONCRETE PAD
4'-0" x 27'-0" x 6" THICK
(6" THICK IF NOT REINFORCED)
REINFORCEMENT DRAWINGS FOR THIS
PAD AND OTHER SIZE ARE AVAILABLE



ADHESIVE ANCHORED
5/8" x 2 1/16" ANCHOR STUD
5/8" FLAT WASHER
5/8" LOCKWASHER
5/8" HEX NUT

SECTION A-A

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 60



ADHESIVE ANCHORED:
 5/8" x 7-1/16" ANCHOR STUDS
 5/8" FLAT WASHER
 5/8" LOCKWASHER
 5/8" HEX NUT

SECTION "B-B"
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5/8" x 5" VEGEET EXT. NUT/ROD
 5/8" LOCKWASHER
 5/8" FLAT WASHER
 5/8" HEX NUT

OPTIONAL SPLIT FRAMES (33405) SHOWN FOR ILLUSTRATION PURPOSES ONLY.

WIDER WIDTH CAN BE ACCOMPLISHED BY USING EXTERIOR PANELS AND POSTS

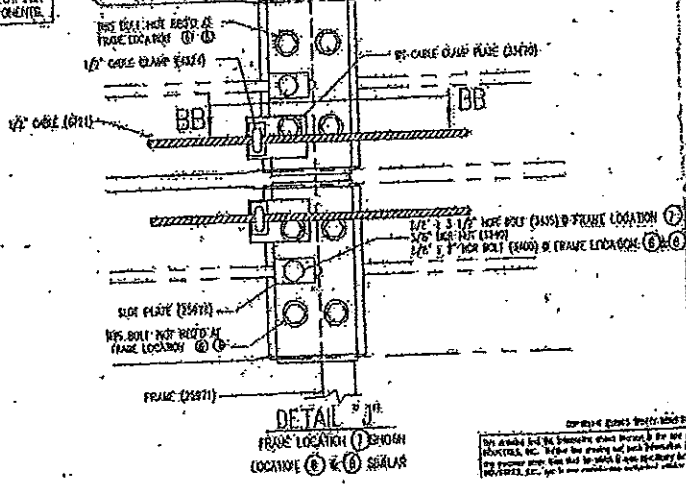
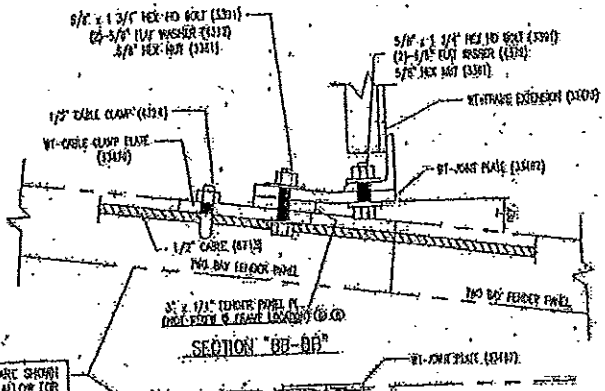
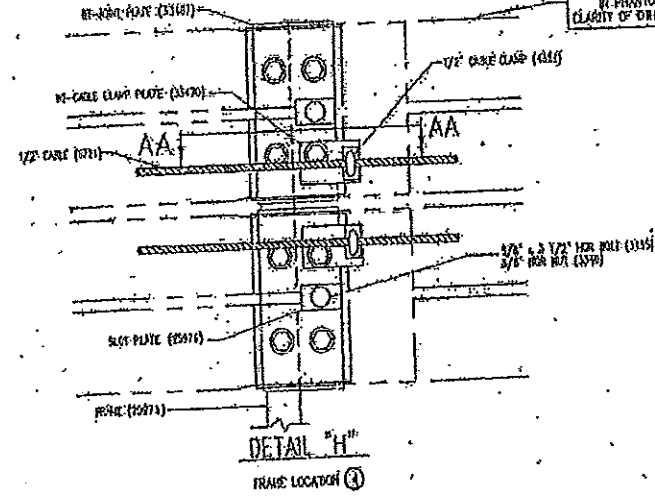
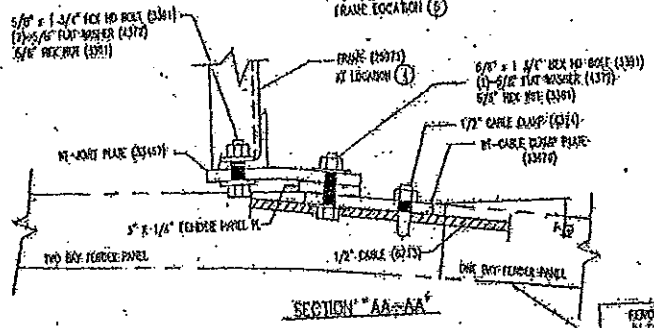
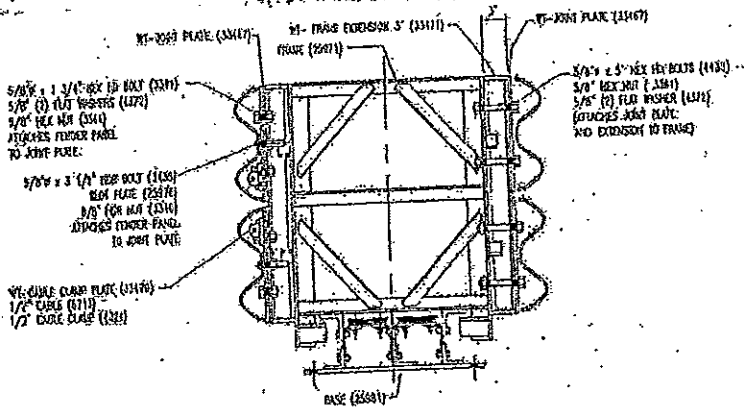
ATTACHMENT SHOWN IS TO SHAPES WITH RECTANGULAR CROSS SECTIONS SUCH AS: PERS., PARAPETS AND MODIFIED CONCRETE BARRIER. TRAFFIC FLOW IS UNIDIRECTIONAL.

FOUNDATION NOTE:
 6" REINFORCED CONCRETE PAD IS SHOWN.

- OTHER OPTIONS ARE:
- a) 8" THICK UNREINFORCED CONCRETE
 - b) 4" THICK ASPHALT
 - c) 2" THICK (MIN) ASPHALT OVER 3" (MIN) CONCRETE
 - d) 6" THICK ASPHALT OVER 6" CONCRETE SUBBASE

		DRAW: DJH CHECK: C.C. APPROVED: DATE: 10-26-05 OR: TRF 551021-01E SHEET: ET OF 1 NUMBER: SS1021 REV: 1
30" WIDE TRACC DOUBLE FLARE GRASS-CUSHION & ALTERNATING TERRAZZO PLAN, ELEVATION & SECTIONS (UNIDIRECTIONAL OR DIRECT ATTACHMENT)		
TRINITY HIGHWAY SAFETY PRODUCTS, INC. 2525 STEWARTS FREEWAY, DALLAS, TX 75267		

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET



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

COMPANY QUOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE TRUSS AND ALL CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE TRUSS AND ALL CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE TRUSS AND ALL CONNECTIONS.

QuadGuard® HS

Installation (cont'd.)

9) Install Bumper Assembly

- A. Use 1/2" x 3" bolts, 1/2" flat washers and 1/2" nuts to attach bumper to front of diaphragm 3. Hang cartridge support bracket onto the lower rear of diaphragm 3 as shown in Figure 29.

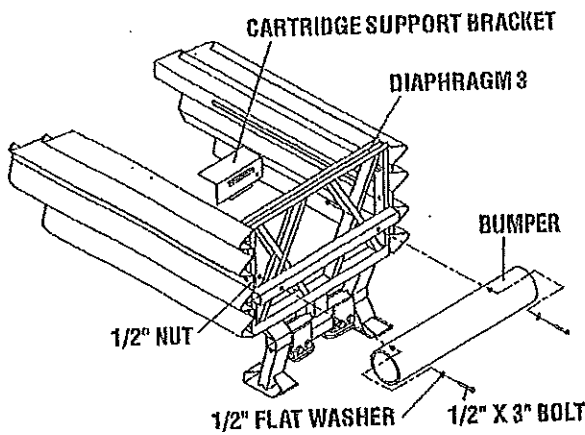


Figure 29

Bumper and Cartridge Support Bracket Installation (Diaphragm 3)

- B. Using 1/2" x 8" bolts, 1/2" flat washers and 1/2" nuts, attach bumper to front, and spacer to rear of diaphragm 2 as shown in Figure 30.

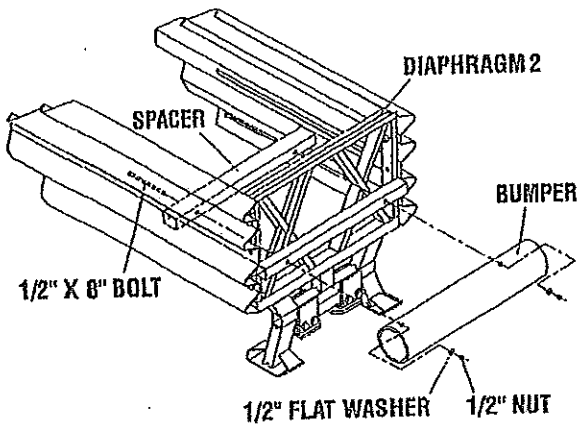


Figure 30

Bumper and Spacer Installation (Diaphragm 2)

- C. Using 1/2" x 8" bolts and 1/2" nuts, attach spacer to rear of diaphragm 1 as shown in Figure 31.

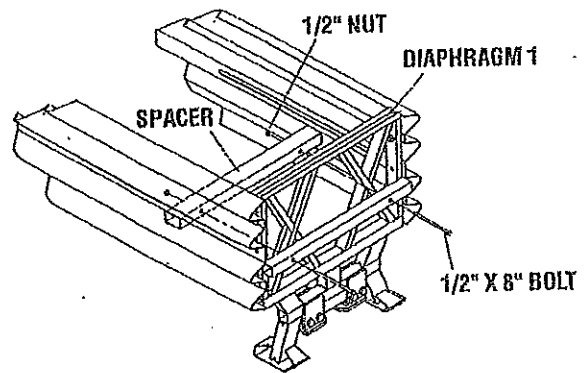


Figure 31

Spacer Installation (Diaphragm 1)

10) Install End Cap

Install end cap to the monorail as shown in Figure 32 and the monorail assembly drawing.

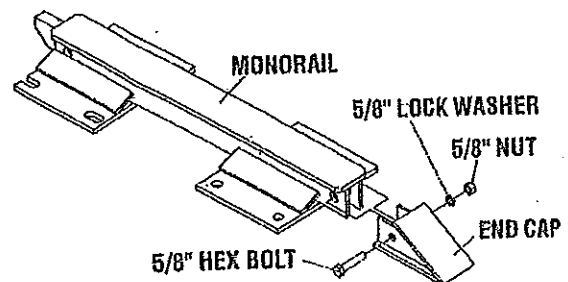


Figure 32

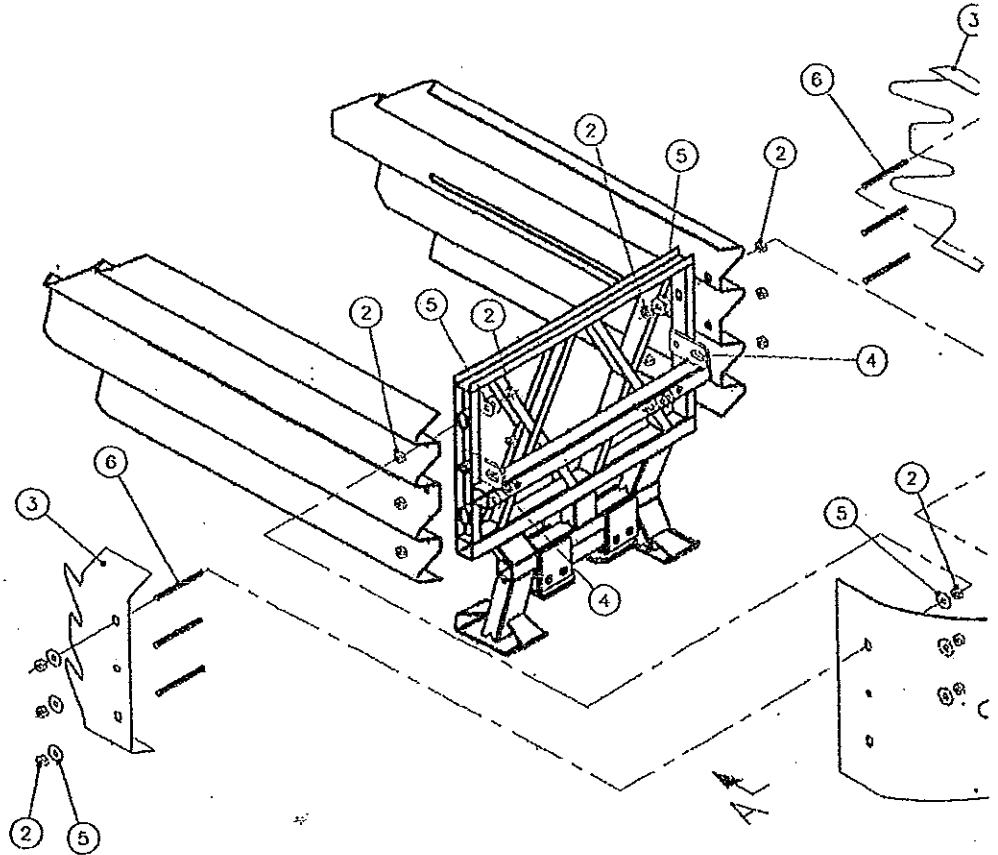
Monorail End Cap Installation



PAGES 63 THROUGH 79
NOT INCLUDED AS
PART OF THIS
CONTRACT



QuadGuard® HS



SYSTEM
24" OR
36

REFERENCES

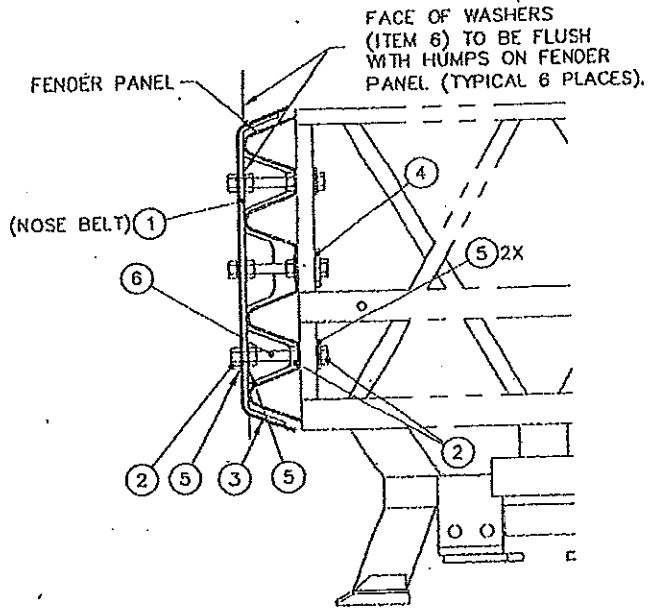
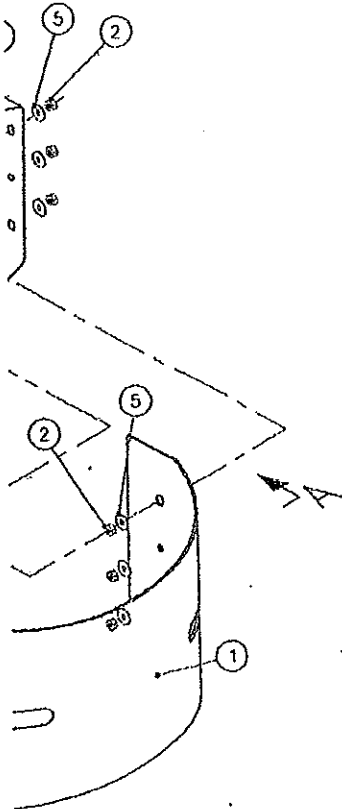
Revisions	Date	Rev.	By	Ckd.	App.
ITEM 6 WAS 2701024-0000, ITEM 2 WAS 18.0	4/17/02	A	DDW	JME	DMO



80

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	BELT, NOSE, OG CEN	1.00
2	2704141-0000	NUT, HX, 5/8, G	24.0
3	2760504-0000	CLAMP, BELT, LMC	2.00
4	2760251-0000	BRACKET, PULL OUT, OG	2.00
5	2708291-0000	WASHER, FLAT, 5/8 X 1 3/4, G	20.0
6	2699016-0000	ROD, THREADED, 5/8 X 6, G5, G	6.00

* 0 = GRAY, 1 = YELLOW




VIEW A-A
SCALE - 1:10

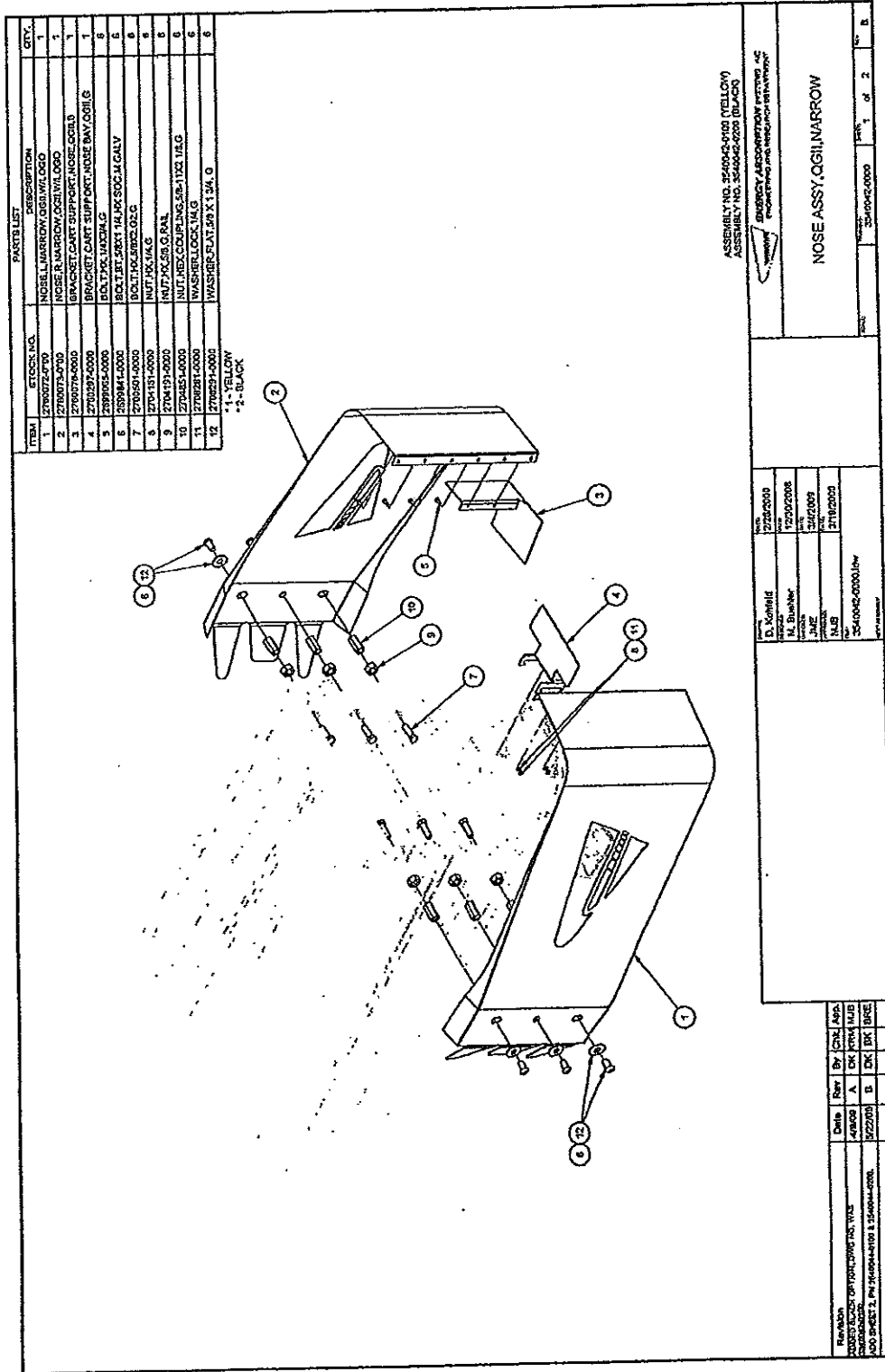
TABLE

WIDTH	BELT LENGTH	COLOR	ASSY NO.	ITEM 1 PART NO.
30"	1524	GRAY	3540611-0000	2718106-0000
	1524	YELLOW	3540611-0100	2718106-0100
	1780	GRAY	3540612-0000	2718108-0000
	1780	YELLOW	3540612-0100	2718108-0100

ASSEMBLY NO. = SEE TABLE

DESIGNED BY: D. Webber DATE: 7/26/01	 ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT QUADGUARD HIGH SPEED SYSTEM NOSE ASSY
CHECKED BY: Bret Eckert DATE: 7/26/01	
APPROVED BY: JME DATE: 10/12/01	
APPROVED BY: Bret Eckert DATE: 10/12/01	
CAD FILE: 354061.dwg	SCALE: 1:15
NEXT ASSEMBLY:	PART: 35-40-61
	SHEET: 1 of 1
	REV: A

45 81



ITEM	ITEM NO.	DESCRIPTION	QTY.
1	270027-0000	NOSE & NARROW LOG W/ LOGO	1
2	270077-0000	NOSE & NARROW LOG W/ LOGO	1
3	270077-0000	BRACKET CART SUPPORT NOSE LOGS	1
4	270027-0000	BRACKET CART SUPPORT NOSE LOGS	1
5	209905-0000	SOCKET W/ SHIM G	6
6	209904-0000	SOCKET W/ SHIM G	6
7	270050-0000	BOLT HEX. S&S 1/4 X 3/4	6
8	270050-0000	BOLT HEX. S&S 1/4 X 3/4	6
9	270413-0000	NUT HEX. S&S 1/4	6
10	270413-0000	NUT HEX. S&S 1/4	6
11	270028-0000	WASHER LOCK W/ G	6
12	270028-0000	WASHER LOCK W/ G	6

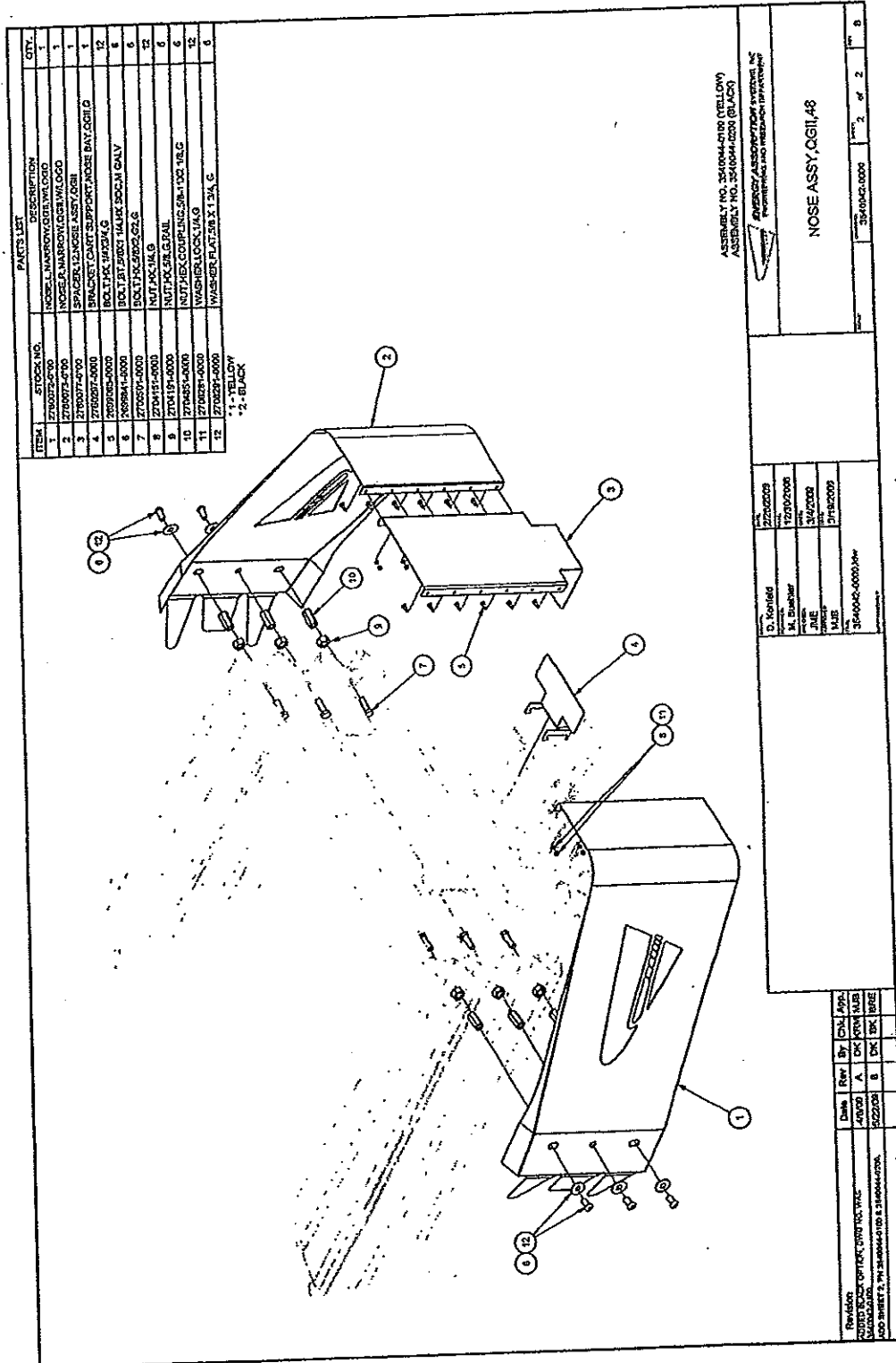
*1 - YELLOW
 **2 - BLACK

ASSEMBLY NO. 26494-0000 (YELLOW)
 ASSEMBLY NO. 26494-0000 (BLACK)

ENERGY ASSOCIATION
 ELECTRICITY DELIVERY
 NOSE ASSY, QIGI, NARROW

DATE	270027-0000
BY	H. B. Baker
CHKD	JAMES
DATE	2/18/2003

DATE	REV	BY	CHK	APP
4/20/03	A	DK	KVM	MJB
5/22/03	B	DK	DK	DKSE



ITEM	STOCK NO.	DESCRIPTION	QTY.
1	270027-0000	NOSE, NARROW, CGII, W/L DCG	1
2	270027-0000	NOSE, NARROW, CGII, W/L DCG	1
3	270027-0000	SPACER, 1/2 ANGLE ASST, DCH	1
4	270027-0000	BRACKET, CART SUPPORT, NOSE BAY, CHILD	1
5	260025-0000	1/2 X 1/4 X 1/4 IN. G	12
6	260025-0000	1/2 X 1/4 X 1/4 IN. 1/4 IN. GALV	6
7	270027-0000	1/2 X 1/4 X 1/4 IN. 1/4 IN. G	6
8	270027-0000	1/2 X 1/4 X 1/4 IN. 1/4 IN. G	6
9	270119-0000	NUT, 1/4 X 1/4 IN. G	6
10	270027-0000	NUT, 1/4 X 1/4 IN. G	6
11	270027-0000	WASHER, LOCK, 1/4 IN. G	12
12	270027-0000	WASHER, FLAT, 5/8 X 1 1/4 IN. G	6

*1 - YELLOW
*2 - BLACK

ASSEMBLY NO. 3541004-0100 (YELLOW)
ASSEMBLY NO. 3541004-0200 (BLACK)

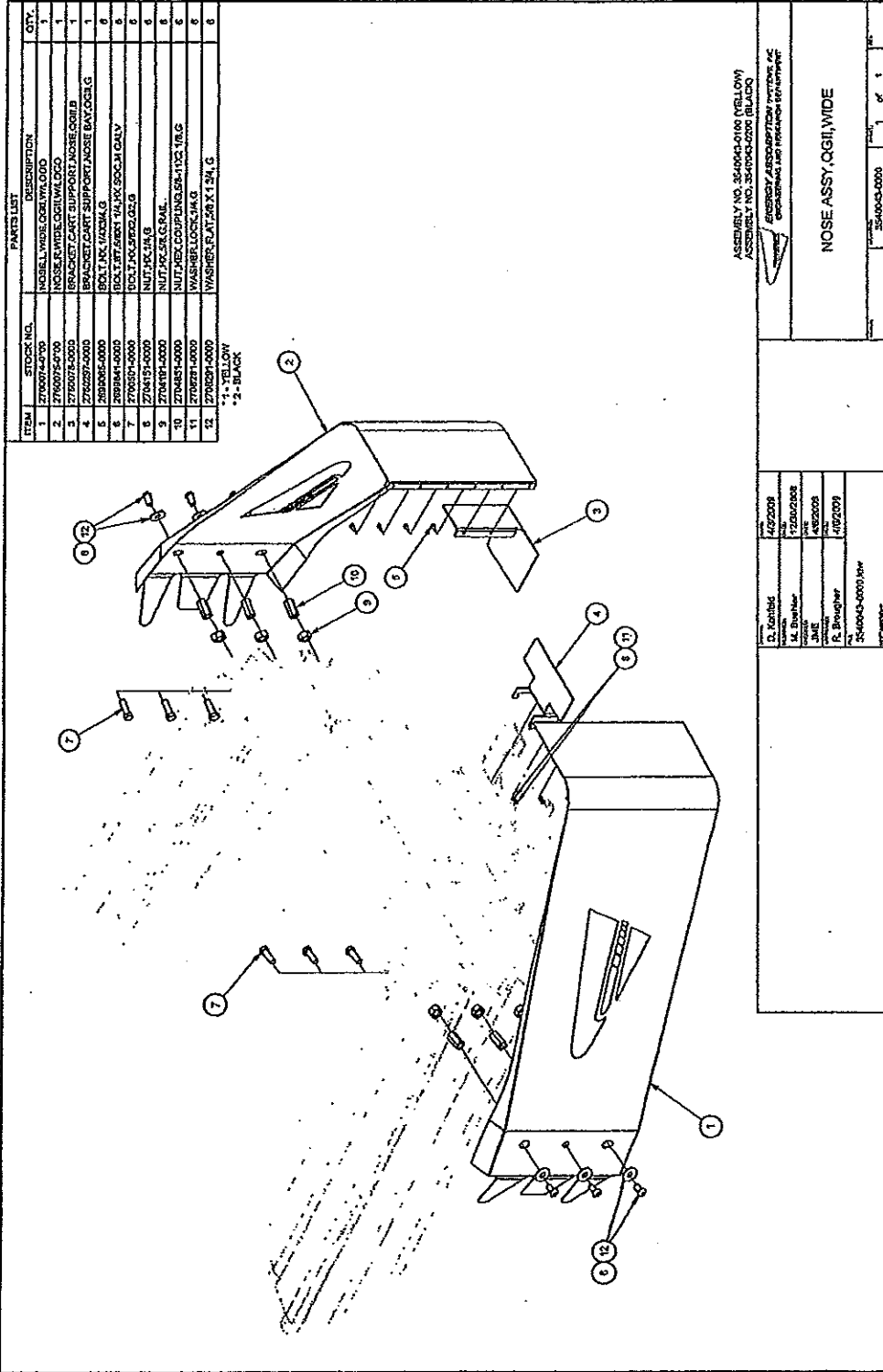
NOSE ASSY, CGII, 48

270027-0000
1703/0206
3/8/2009
JULIE
MJE
354000-0000-000

Rev.	Date	By	App.
A	4/10/09	DK	DK
B	8/22/09	DK	DK

Revision:
270027-0000
270027-0000
270027-0000

2 of 2



ITEM	STOCK NO.	DESCRIPTION	QTY.
1	2760074-700	NOSE ASSEMBLY	1
2	2760074-700	NOSE ROLLER	1
3	2760074-700	NUT	1
4	2760074-700	WASHER	1
5	2760074-700	BRACKET PART SUPPORT NOSE ROLLER	1
6	2760074-700	ROLL PIN	1
7	2760074-700	ROLL PIN	1
8	2760074-700	BRACKET PART SUPPORT NOSE ROLLER	1
9	2760074-700	NUT	1
10	2760074-700	WASHER	1
11	2760074-700	WASHER	1
12	2760074-700	WASHER	1

1 - YELLOW
2 - BLACK

ASSEMBLY NO. 25-4004-0108 (YELLOW)
ASSEMBLY NO. 25-4004-0109 (BLACK)

DATE	4/27/2009
BY	JHE
CHKD	JHE
DATE	4/27/2009
BY	JHE
CHKD	JHE

ITEM	25-4004-0108	1	of	1
NOSE ASSY, QGII WIDE				

D. Korbals
S. Korbals
S. Korbals
S. Korbals
S. Korbals
S. Korbals
S. Korbals
S. Korbals

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with West Virginia Code, §5A-3-37. (Does not apply to construction contracts). West Virginia Code, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the West Virginia Code. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

- 1. Application is made for 2.5% resident vendor preference for the reason checked: 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, Bidder is a partnership, association or corporation resident vendor and 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 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, Bidder is a 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; or,
2. Application is made for 2.5% resident vendor preference for the reason checked: 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,
3. Application is made for 2.5% resident vendor preference for the reason checked: Bidder is a nonresident vendor employing a 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 Bidder's 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; or,
4. Application is made for 5% resident vendor preference for the reason checked: Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked: Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked: Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of 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) reject the bid; 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.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of 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.

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 contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: _____ Signed: _____
Date: _____ Title: _____

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

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.

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

WITNESS THE FOLLOWING SIGNATURE

Vendor's Name: _____

Authorized Signature: _____ Date: _____

State of _____

County of _____, to-wit:

Taken, subscribed, and sworn to before me this ____ day of _____, 20__.

My Commission expires _____, 20__.

AFFIX SEAL HERE

NOTARY PUBLIC _____

