

**C. A. RASMUSSEN, INC.**

General Engineering Contractors
License No. 254681 A

Valencia Commerce Center
28548 Livingston Avenue
Valencia, CA 91355-4171
Telephone 661.367.9040
Fax 661.367.9097
www.carasmussen.com

VIA FAX AND OVERNIGHT

July 18, 2014

California Department of Transportation
Attn: Office Engineer, MS 43
1727 30th Street
Sacramento, CA 95816-8041

(916) 227-6299 tel
(916) 227-6282 fax

Re: 07-295604; 07-LA-5-R19.2/R28.9
Response to Bid Protest

Bid Date: June 26, 2014

C. A. Rasmussen, Inc. ("Rasmussen") is in receipt of your letter dated July 11, informing us of the bid protest filed by Security Paving Company, Inc. ("Security Paving") for the above-referenced contract. Rasmussen disagrees with the claims made by Security Paving, and asks that Caltrans find their protest lacks merit and confirm C. A. Rasmussen, Inc. as the lowest responsible bidder.

In its protest, Security Paving alleges that Rasmussen made impermissible changes to its completed Subcontractor Listing form submitted following its Bid Day Subcontractor List, claiming inconsistencies with the description of work being performed by Crown Fence, Cindy Trump, Inc. ("Cindy Trump") and FBD Vanguard Construction, Inc. ("Vanguard"). The bid items are consistent, based on the following:

- 1) Rasmussen listed Crown Fence as its "Guardrail, Fence & Related - Portion" subcontractor, to perform Bid Item Nos. 19, 20, 81, 82, and Nos. 84 through 93. It is common practice for guardrail and fence subcontractors to also furnish and install permanent crash cushions since the work is related. Of the five scope letters and quotes received from guardrail and fence subcontractors, 100 percent of them quoted the crash cushions because that work is related to guardrail and fencing. The scope letter and quotes received from these guardrail and fencing subcontractors are attached for your reference.

Also, guardrail, crash cushions and alternate crash cushions are all covered under Caltrans Specification Section 83, Railings and Barriers. This demonstrates precedence that Caltrans considers crash cushions related to guardrail as they fall under the same specification section.

07-295604: Response to Bid Protest

Page 2

Further, many of the crash cushions are composed of guardrail shapes, thus they are factored into that scope of work. Crash cushions and alternative crash cushions are designed to be attached to various types of blunt ends, including guardrails. We have attached an installation manual for crash cushions, showing how they are composed of guardrail components and can easily be attached to guardrail ends.

- 2) Rasmussen listed Cindy Trump as its "Coldmill - Portion" subcontractor, to perform Bid Item Nos. 24 and 28. Security Paving claims that Bid Item No. 24, "Remove Asphalt Concrete Dike," is not related to the description of work "Coldmill," nor Bid Item No. 28, "Cold Plane Asphalt Concrete Pavement." This is not the case. Per the contract special provisions, Section 15-2.02B(3) Cold Planing Asphalt Concrete Pavement and Section 15-2.02F Remove Asphalt Concrete Dikes are directly related to one another, and are simultaneously performed in one operation. The special provisions and Caltrans specifications do not specify a method to employ for removal of asphalt concrete dike. Historically on Caltrans projects, this is always done concurrently with the asphalt grinding operation.

The grinder used for coldmilling is capable of grinding dike and asphalt at the same time; its high-precision leveling system ensures the exact milling depths. The milling machine comprises a depth regulator component that is used directly at the operations platform that controls the right- and left-milling depths.

Removing asphalt concrete dike while cold planing is common on all jobs - such as this one - in which the grinder can access the dike within the limits of the cold planers drum. This technical application is done to create a cost savings for the contractor, subcontractor and agency, alike.

Coldmilling operation applications include but are not limited to large scale surface course rehabilitation, curb cutting, asphalt dike removal, pavement texturing, traffic lane stripe removal, full-depth asphalt removal and fine mill grind. Each of these are discussed under the Caltrans specification Section 15.

- 3) Rasmussen listed Vanguard to perform "JPCP(RSC), Slab Replacement, Spall Repair, Barrier Rail, Minor Concrete (Minor Structures), Remove Concrete Pavement and Base, Traffic Control & Related - Portion" for Bid Item Nos. 5, 17, 25, 51, 52, 59-62, 65, 94-99, and 112. Each of the bid items for which Vanguard is listed is directly related to the scope of work that Vanguard has proposed to provide, which is inclusive of all listed bid item descriptions in Column 4. We listed Vanguard for the complete scope they quoted as their bid items are so integrally related.

Vanguard is performing multiple concrete items of work. Bid Item No. 17 "Temporary Concrete Washout" is part of the Caltrans Standard Specifications Section 13 "Water Pollution Control," which is a general requirement and is related to poured-in-place concrete work. As Vanguard is placing concrete on this project, they will also be self-performing the portion of temporary concrete washouts that is an integral part of and related to their concrete work.

Bid Item No. 51 "Alternate Treated Base" is an integral part of, and related to the operations for Remove Concrete Pavement and Base and JPCP(RSC). All of this work must be completed integrally during the same night lane closures. Bid Item No. 51 "Alternate Treated Base" is a part of Section 28 "Concrete Bases," which refers to

07-295604: Response to Bid Protest

Page 3

lean concrete base rapid set. Furnishing and placing rapid set lean concrete base is related to furnishing and placing JPCP, which is also rapid set concrete.

Bid Item No. 52 "Replace Base" is an integral part of, and related to the operation for slab replacement. All of this work must be completed integrally during the same night lane closures. Bid Item No. 52 "Replace Base" is a part of Section 28 "Concrete Bases," which refers to lean concrete base rapid set. Removing, furnishing and placing the rapid set lean concrete base is integrally related to removing, furnishing and placing individual slabs that are also rapid set concrete.

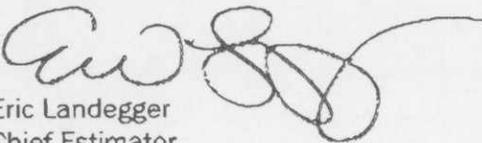
Bid Item No. 60 "Drill and Bond (Dowel Bar)" is covered under Section 41 "Concrete Pavement Repair," and is an integral part of the slab replacement Vanguard will be performing on this project (Section 41-9 "Slab Replacement"). Both items of work must be completed during the same night lane closures.

Of course, this evidence also demonstrates that Rasmussen did not engage in bid shopping or any other violation of the Subletting and Subcontracting Fair Practices Act. The bid items and bid prices awarded to these Subcontractors were the bid items and bid prices quoted to Rasmussen prior to bid opening. Also, Rasmussen awarded 100 percent of the scopes of work quoted by both Crown Fence and Vanguard.

In conclusion, Security Paving's claim that Rasmussen expanded the scope of work for subcontractors on the revised Subcontractor Listing form lacks merit. Rasmussen's bid is responsive and conforms to the instructions provided for submittal of the Subcontractor List form. We request that Caltrans confirm that Rasmussen's bid is in fact responsive and award the contract to us as the lowest responsive bidder.

Thank you in advance for your consideration and timely response on this matter.

Sincerely,



Eric Landegger
Chief Estimator
C. A. Rasmussen, Inc.

sk

Enc.

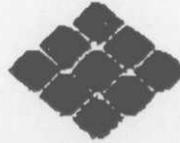
Received
Received:

C. A. RASMUSSEN INC.
CROWN FENCE

Jul 18 2014 03:38pm
Fax: 1-661-367-9097
Jul 20 2014 10:10am
Jun 26 2014 10:10am P001/001
Fax: 562-864-2529
P004/014

Midwest GR RPA
Phone: (562) 864-5177
Fax: (562) 864-2529
State Lic. 1315
SFENC RPA
26,3500

CROWN FENCE
12118 Bloomfield Ave
Santa Fe Springs CA 90670



Since 1923

PROJECT: Caltrans 07-295604 rte 5 TO: Prime Bidder
CONTACT: Joey Carso jcarso@crownfence.com ATTENTION: ESTIMATOR
DATE: 6/26/2014 FAX:

Plans & Specs: Yes Bondable: Yes
Installed: Yes Rate: 0.86%
Tax Included: Yes DBE/WBE: NO
Wage: Union Prevailing Addendum: 1,2

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
19	Treated Wood Waste	499000 lbs	\$ 0.12	\$ 59,880.00
20	Remove Guardrail	38700 LF	\$ 3.00	\$ 116,100.00
81	4' Chain Link Gate (Type CL-6)	3 EA	\$ 1,325.00	\$ 3,975.00
82	Midwest Guard Rail System (Wood Post)	28700 LF	\$ 22.00	\$ 631,400.00
84(F)	Chain Link Railing (Type 7 Modified)	350 LF	\$ 64.00	\$ 22,400.00
85	Single Thrie Beam Barrier	150 LF	\$ 35.00	\$ 5,250.00
85	Double Thrie Beam Barrier	650 LF	\$ 44.00	\$ 28,600.00
87(F)	Cable Railing	990 LF	\$ 16.00	\$ 15,840.00
88	Transition Railing (Type WB-31)	82 EA	\$ 3,080.00	\$ 252,560.00
89	End Anchor Assembly (Type SFT)	55 EA	\$ 680.00	\$ 37,400.00
90	Alternative In-Line Terminal System	44 EA	\$ 2,800.00	\$ 123,200.00
91	Alternative Flared Terminal System	57 EA	\$ 2,400.00	\$ 136,800.00
92	Crash Cushion (Type SCI-70GM)	1 EA	\$ 26,080.00	\$ 26,080.00
93	Alternative Crash Cushion	27 EA	\$ 33,890.00	\$ 915,030.00
Traffic Control Shifts Needed: 190 (SEE CLARIFICATION)				
			TOTAL	\$ 2,374,515.00

CLARIFICATIONS:

- Prime contractor to survey fence lines and stake/mark corner, end and gate post locations prior to installation.
- Concrete Pad/Block for Crash Cushion by others
- Crown Fence to provide post pockets to be installed and cleaned out correctly by others
- Crown Fence is willing to contract for all items except item(s) 91 & 92 (Crash Cushions) if general contractor decides to install themselves
- Above mentioned traffic control is figured based on locations; if multiple locations are available at once Crown Fence can mobilize with multiple crews to utilize lane closures provided

EXCLUSIONS:

- SWPPP / QC Plan / Safety Plan
- Engineering / Structural Calculations
- Electronic Shop / As Built Drawings
- Staking / Surveying / Pot-holing
- Location of Underground Utilities
- Permits / Licenses & Fees
- Traffic Control / Lane Closures
- Security / Flagger
- Masonary Walls / Cross Fences
- Dust Control
- Grading / Clearing & Grubbing
- Fence / Gate Grounding
- Core Drilling / Saw Cutting
- Concrete other than post footings
- Patching / Restoration
- Removal of Spalls
- Maintenance
- Gate Closures / Knox Box
- Panic Hardware / Specialty Locks
- Inspection / Testing Fees
- Asbestos Training / Costs
- Waiver of Subrogation Fees
- Bond Premium
- Builder's Risk Insurance
- Certified Welding
- Welding Inspection / Procedure

Crown will not be responsible for damage to underground facilities not properly and accurately located by those forces other than Crown's. For projects where some or all of the work is located within a site not serviced by Underground Service Alert, forces other than Crown's shall properly lay out, locate, and mark said facilities by any and all means available, and Crown assumes no responsibility therefore.

SFEWK

RPN
RPN



ACE FENCE COMPANY

727 NORTH GLENDORA AVENUE, LA PUENTE, CA 91744

PHONE (626) 333-0727 * FAX (626) 333-7643

CERTIFIED AS DBE/UDBE/SBE/MBE/WBE FIRM, UNION COMPANY, LACMTA Pre-Qualified to Bid

"Awarded Minority Contractor of the Year by the City of Los Angeles for Excellence in Quality and Services"

"We Are An Equal Opportunity Employer"

FAX QUOTE

TO : General Contractors
 FAX # :
 FROM : Michael Abernilla
 PROJECT : CADOT Cold Plane AC Pavement and Overlay (Contract No. 07-205804)
 From Main Street Undercrossing to Verdugo Avenue Undercrossing, In Los Angeles, Glendale and Burbank, In Los Angeles Co., CA
 BID DATE : 6/26/14 2:00 P.M.
 SPECS : per 2010 CALTRANS Plans & Specs

ATTN : Estimator
 DATE : 6/25/14
 PAGES : 1

ADDENDUM: 1 & 2

ITEM	DESCRIPTION	Unit	Qty	Unit Price	Amount
Proposal as follows:					
19.	TREATED WOOD WASTE	LB	489,000	\$ 0.17	\$ 84,830.00
20.	REMOVE GUARDRAIL	LF	38,700	\$ 6.75	\$ 261,225.00
30.	REMOVE CRASH CUSHION	EA	22	\$ 1,300.00	\$ 28,600.00
81	4' CHAIN LINK GATE (TYPE CL-8)	EA	3	\$ 1,200.00	\$ 3,600.00
82	MIDWEST GUARDRAIL SYSTEM (WOOD POST)	LF	26,700	\$ 25.00	\$ 717,500.00
84	CHAIN LINK RAILING (TYPE 7 MODIFIED)	LF	350	\$ 62.00	\$ 21,700.00
85	SINGLE THREE BEAM BARRIER	LF	150	\$ 33.00	\$ 4,950.00
86	DOUBLE THREE BEAM BARRIER	LF	650	\$ 37.00	\$ 24,050.00
87	CABLE RAILING	LF	880	\$ 18.00	\$ 15,840.00
88	TRANSITION RAILING (TYPE WB-31)	EA	82	\$ 3,180.00	\$ 261,580.00
89	END ANCHOR ASSEMBLY (TYPE SFT)	EA	55	\$ 665.00	\$ 38,575.00
90	ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	44	\$ 2,875.00	\$ 117,700.00
91	ALTERNATIVE FLARED TERMINAL SYSTEM	EA	57	\$ 2,040.00	\$ 118,280.00
92	CRASH CUSHION (TYPE SCI-70GM)	EA	1	\$ 23,400.00	\$ 23,400.00
93	ALTERNATIVE CRASH CUSHION (TYPE SCI 100GM)	EA	27	\$ 30,200.00	\$ 815,400.00
TOTAL BID AMOUNT:					\$ 2,639,230.00

- * ITEM # 84 & 87 - CORE DRILLING IS NOT INCLUDED, BY OTHERS. IF NEEDED, WE'LL PROVIDE POST POCKETS BUT LAY-OUT, INSTALL PLUMB & CLEAN OUT BY OTHERS.
- * ITEM # 88 - CONCRETE BARRIER, CORE DRILLING & PIPE SLEEVES IS NOT INCLUDED, BY OTHERS.
- * ITEM # 93 - PER TYPE & MODEL SPECIFIED ABOVE OTHERS WILL BE A CHANGE ORDER.
- * ITEM # 30, 82 & 83 - CONCRETE ANCHOR SLAB & BACK-UP BLOCK IS NOT INCLUDED, BY OTHERS.
- * THIS PROPOSAL IS BASED ON PAID PREVAILING WAGES AND CERTIFIED PAYROLL.
- * PLEASE REFER TO NOTES & EXCLUSIONS BELOW, IF YOU HAVE QUESTIONS PLEASE CALL

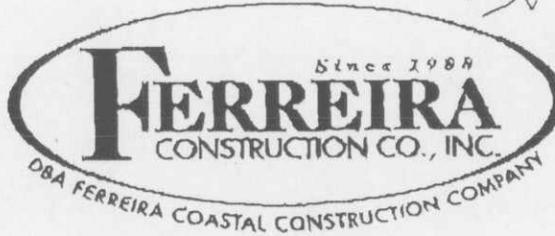
NOTE: PROPOSAL IS AS A PACKAGE UNLESS DISCUSSED PRIOR TO BID. OUR PROPOSAL IS PER LINE ITEM & NOT LUMP SUM UNLESS IT STATES OTHERWISE. AWARD MUST HAPPEN WITHIN 60 DAYS. COPY OF ACE FENCE COMPANY'S BID TO BE PART OF THE FINAL CONTRACT AGREEMENT. COPY OF GENERAL'S PAYMENT & PERFORMANCE BONDS TO BE ATTACHED TO THE CONTRACT AGREEMENT.

EXCLUDE: DELINEATOR; STAINING & PAINTING; MINOR CONCRETE OR ANY CONCRETE WORKS (except footings for item #1); VEGETATION CONTROL; DEMOLITION; CLEARING & GRUBBING; REMOVAL OF CONC, BARRIER, SLAB, VEGETATION OR ANY OBSTRUCTIONS; EXTRA DIRT FOR BACK-FILLING; GRADING; STAGING & LAY-OUT; ROCK DRILLING, CONCRETE CUTTING, BREAKING & CORE DRILLING; PAVEMENT REPAIR OR ASPHALT PATCHING; POT-HOLING OR LOCATING UTILITIES; MAINTENANCE OR REPAIR TO DAMAGES CAUSED BY OTHERS & TO UNMARKED UTILITY LINES; GROUNDING & ELECTRICAL WORKS; ENGINEERING OR STRUCTURAL CALCULATIONS; SURVEYS FOR ALIGNMENT & ELEVATIONS; COSTS FOR INSPECTIONS & TESTING; BOND COST; SWPPP; BEST MANAGEMENT PRACTICES; ASBESTOS & LEAD COMPLIANCE PLAN & ANY RELATED WORKS; PERMITS/FEEES; DUST CONTROL; K-RAILS; TEMPORARY FENCING & SAFETY RAILING; TRAFFIC CONTROL LIGHTING & SIGNS; FLAGMEN; LANE CLOSURE; HAULING OF SPOILS (spoils from our excavation are to be scattered in the immediate vicinity of our work, relocation of spoils will be considered a change order)

INSURANCE: GENERAL LIABILITY - \$ 1,000,000 - \$ 2,000,000 AGGREGATE; AUTOMOBILE - \$ 1,000,000; WORKMAN COMPENSATION - \$ 1,000,000. OCIP / CCIP PROJECTS - WC'S PREMIUMS ALREADY DEDUCTED. ADDITIONAL INSURANCE REQUIREMENTS ARE SUBJECT TO EXTRA PREMIUMS.

LICENSE # C-13 # 801674, EXP. 12-31-2016 - UNION
 SUBJECT TO ACCEPTANCE WITHIN 30 DAYS

SUNWCR RPN
SFEW RPN



SIGNATORY TO THE LABORERS, OPERATING ENGINEERS, AND TEAMSTERS UNIONS
Licenc #985180

BID DATE: 6/28/14
BID TIME: 2:00 P.M.

PROJECT NAME: Caltrans 07-295604
LOCATION: In Los Angeles County in Los Angeles, Glendale, and Burbank on Route 5

BOND RATE: 1%

ADDENDUMS NOTED: 1, 2

ITEM #	DESCRIPTION	QUANTITY	UM	UNIT PRICE	TOTAL
19	Treated Wood Waste	499000	LB	\$ 0.19	\$ 94,810.00
20	Remove Guardrail	38700	LF	\$ 4.20	\$ 162,540.00
81	4' Chain Link Gate (Type CL-5)	3	EA	\$ 1,236.00	\$ 3,708.00
82	Midwest Guardrail System (Wood Post)	28700	LF	\$ 20.13	\$ 577,731.00
84	Chain Link Railing (Type 7 Modified)	350	LF	\$ 75.10	\$ 26,285.00
85	Single Thrie Beam Barrier	150	LF	\$ 35.70	\$ 5,365.00
86	Double Thrie Beam Barrier	650	LF	\$ 39.40	\$ 25,610.00
87	Cable Railing	990	LF	\$ 17.60	\$ 17,424.00
88	Transition Railing (Type WB-31)	82	EA	\$ 2,927.00	\$ 240,014.00
89	End Anchor Assembly (Type SFT)	55	EA	\$ 700.00	\$ 38,500.00
90	Alternative In-Line Terminal System	44	EA	\$ 2,760.00	\$ 121,440.00
91	Alternative Flared Terminal System	57	EA	\$ 2,482.00	\$ 141,474.00
92	Crash Cushion (Type SCI-70GM)	1	EA	\$ 27,662.00	\$ 27,662.00
93	Alternative Crash Cushion	27	EA	\$ 39,114.00	\$ 1,056,078.00
TOTAL BID:				\$	2,538,631.00

- NOTE: Contract or Letter of intent required within 60 days of bid in order to hold pricing.
- NOTE: If we cannot use our Guardrail post driver, the pricing above is void.
- NOTE: For items 84 & 87, post pockets supplied by Ferreira installed correctly and cleaned by others.
- NOTE: Exclude concrete anchor block for items 88.
- NOTE: For all Guardrail items Ferreira will need approximately 175 working days to complete.
- NOTE: Concrete pad and anchors are excluded for items 92 & 93.
- NOTE: General to supply laydown yard for Ferreira.

EXCLUSIONS: TRAFFIC CONTROL, CONCRETE ANCHOR BLOCKS, REMOVAL OF CONCRETE ANCHORS, STAKING, GRADING, CLEARING & GRUBBING OF FENCE LINE, SURVEYING, SPOILS REMOVAL, MAINTENANCE OF INSTALLED FENCING OR MBGR, BOND FEES, PERMITS OR FEES, CORE-DRILLING, SAWCUTTING, EXTRA DIRT FOR BACKFILLING, LOCATION OF UNDERGROUND UTILITIES, PAINTING, ENGINEERING, GROUNDING, CONCRETE SLABS OR POTHOLEING.

Thank You,

Tom Lyons

Estimator / Project Manager

Ferreira Coastal Construction
15188 Vista Del Rio Ave.
Chino, CA 91710

Phone (909) 606-5000 Ext 25
Fax (909) 606-7711
E-mail lyons@ferreiraconstruction.com

Received

Jul 18 2014 03:39pm

C.A. RASMUSSEN INC.

Fax: 1-661-367-9097

Jul 18 2014 03:32pm P007/014
818 768 9719 P. 01/01

JUN-26-2014 11:29

ALCORN FENCE



ALCORN FENCE COMPANY

700 GLENOAKS BLVD P.O. BOX 1249 SUN VALLEY, CA 91352
(323) 875-1342 (818) 983-0650 FAX (818) 768-9719

Contractor License - 122954

SPRINK
SUMBER
RP N
RP N

PROJECT: CALTRANS NO. 07-205604
CONTACT: CARLOS PUNZALAN
DATE: 8/28/2014

CONTRACTOR: Prime Bidder of Record
ATTENTION: Estimator
FAX:

Plans & Specs: Yes No
Installed: Yes No
Tax Included: Yes No
Union: Yes No

Bondable: Yes No
Rate: _____
DB/MBE: Yes No
Addendum: 1 & 2

Alcorn Fence Company is signatory to Laborers, Operating Engineers and Cement Masons unions.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
19	DISPOSAL OF TREATED WOOD	499,000.00	LB.	\$0.03	\$14,970.00
20	REMOVE GUARDRAIL	38,700.00	L.F.	\$8.60	\$332,820.00
01	4' CHAIN LINK GATE (TYPE CL-6)	3.00	EA	\$1,216.00	\$3,648.00
02	MIDWEST GUARDRAIL SYSTEM (WOOD POST)	28,700.00	L.F.	\$21.60	\$619,920.00
04	CHAIN LINK RAILING (TYPE 7 MODIFIED)	360.00	L.F.	\$66.00	\$23,760.00
05	SINGLE THREE BEAM BARRIER (WOOD POST)	190.00	L.F.	\$22.30	\$4,237.00
06	DOUBLE THREE BEAM BARRIER (WOOD POST)	650.00	L.F.	\$34.70	\$22,555.00
07	CABLE RAILING	990.00	L.F.	\$14.00	\$13,860.00
08	TRANSITION RAILING (TYPE WB-31)	02.00	EA	\$3,386.00	\$6,772.00
09	END ANCHOR ASSEMBLY (TYPE SFT)	66.00	EA	\$655.00	\$43,230.00
90	ALTERNATIVE IN-LINE TERMINAL SYSTEM	44.00	EA	\$2,968.00	\$130,672.00
91	ALTERNATIVE FLARED TERMINAL SYSTEM	67.00	EA	\$2,292.00	\$153,444.00
02	CRASH CUSHION (TYPE SCI-70GM)	1.00	EA	\$23,360.00	\$23,360.00
93	ALTERNATIVE CRASH CUSHION	27.00	EA	\$29,480.00	\$795,960.00
TOTAL:					\$2,464,118.00

CLARIFICATIONS: Price is good for Sixty (60) Days

Bid contingent upon approval of surety on Bonded Projects
 Traffic control to be provided by Prime Contractor
 Item # 02 Crash Cushion Type SCI - 70 GM smart cushion, TL - 2 cushion. Concrete pad & Transition Rail is excluded.
 Item # 03 Crash Cushion Type SCI - 100 GM smart cushion, YL - J cushion. Concrete pad & Transition Rail is excluded.
 Installation of concrete barrier for transition anchor block, concrete pad, vegetation control minor concrete to be excluded
 Item # 04 per standard B11-52 post anchorage detail, post sleeves to be provided but install by others.
 Item # 07 per standard B11-47 post pocket detail, post sleeves to be provided but installed by others
 Prime Contractor to provide stock pile area on site for spalls-disposal of spalls by Others
 Prime Contractor shall move, relocate or adjust Temporary k-rail to allow for a 14' work zone during work shift to allow access for guard rail machine

Exclusions:
 Engineering and Staking
 Clearing and Grading
 Patching and Restoration
 Location of Underground Utilities
 Concrete Coring, Sawcutting, Drilling
 Bond Premium
 Concrete work, Asphalt work
 Vegetation Control
 Maintenance
 Permits

Alcorn shall notify Underground Service Alert forty-eight (48) business hours prior to any excavation. However, Alcorn shall not be responsible for damage to underground facilities not properly and accurately shown on contract plans, as-builts, and/or identified by forces other than Alcorn's. For work performed by subcontractor (Alcorn) on a Force Account basis, Subcontractor will be paid costs as computed under the applicable provisions of prime contract, plus 100% of the mark-ups allowed in the first three paragraphs of section 9-1.03A of the standard specifications. When prime contractor's retention is reduced by the owner, our retention shall be reduced accordingly.

Submitted by: CARLOS PUNZALAN

JUN-26-2014 THU 12:09 PM CORAL CONSTRUCTION

FAX NO. 5036820110

P. 01/01



CORAL
CONSTRUCTION COMPANY
SPECIALTY HIGHWAY AND GENERAL CONTRACTORS

SFENC

RPW

SMWGR

RPW

SUBCONTRACT PROPOSAL

PROJECT:		LOS ANGELES LOS ANGELES CO., CADOT 07-295604		BID DATE:		8/26/14	
PREPARED BY:		KRIS KARPSTEIN		ESTIMATE NO.:		140615C	
TERMS:				REFER		KRIS KARPSTEIN	
				INQUIRIES TO:		KRIS KARPSTEIN	
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL		
19	TREATED WOOD WASTE	499,000.000	LB	\$ 0.05	\$	24,950.00	
20	REMOVE GUARDRAIL	38,700.000	LF	\$ 4.00	\$	154,800.00	
30	REMOVE CRASH CUSHION	22.000	EA	\$ 1,000.00	\$	22,000.00	
65	MINOR CONCRETE (MINOR STRUCTURE)	212.000	CY	\$ 2,925.00	\$	620,100.00	
81	4' CHAIN LINK GATE (TYPE CL-6)	3.000	EA	\$ 1,050.00	\$	3,150.00	
82	MIDWEST GR SYSTEM (WOOD POST)	28,700.000	LF	\$ 24.00	\$	688,800.00	
84	CHAIN LINK RAILING (TYPE 7 MOD.)	350.000	LF	\$ 44.50	\$	15,575.00	
85	SINGLE THRIE BEAM BARRIER	150.000	LF	\$ 30.50	\$	4,575.00	
86	DOUBLE THRIE BEAM BARRIER	650.000	LF	\$ 38.00	\$	25,350.00	
87	CABLE RAILING	990.000	LF	\$ 33.00	\$	32,670.00	
88	TRANSITION RAILING (TYPE WB-31)	82.000	EA	\$ 3,975.00	\$	325,950.00	
89	END ANCHOR ASSEMBLY (TYPE SFT)	55.000	EA	\$ 625.00	\$	34,375.00	
90	ALTERNATIVE IN-LINE TERMINAL SYSTEM	44.000	EA	\$ 2,625.00	\$	115,500.00	
91	ALTERNATIVE FLARED TERMINAL SYSTEM	57.000	EA	\$ 2,150.00	\$	122,550.00	
92	CRASH CUSHION (TYPE SCI-70GM) (PARTIAL)	1.000	EA	\$ 26,000.00	\$	26,000.00	
93	ALTERNATIVE CRASH CUSHION (PARTIAL)	27.000	EA	\$ 31,000.00	\$	837,000.00	
112	MOBILIZATION	1.000	LS	\$ 294,432.00	\$	294,432.00	
					TOTAL	\$	3,347,777.00

TERMS AND CONDITIONS:

- 1 BOND EXCLUDED.
- 2 TRAFFIC CONTROL, SURVEY, AND ALL ELECTRICAL WORK EXCLUDED.
- 3 PROPOSAL ASSUMES MUTUALLY ACCEPTABLE SUBCONTRACT TERMS AND SCHEDULE.
- 4 RETAINAGE NOT TO EXCEED THE PERCENTAGE BEING WITHHELD BY OWNER.
- 5 AERIALY DEPOSITED LEAD SOIL MITIGATION EXCLUDED.
- 6 PROPOSAL EXCLUDES LIABILITY INSURANCE LIMITS IN EXCESS OF \$ 10.0 MM.
- 7 REMOVAL OF EXCESS MATERIAL EXCLUDED.
- 8 CLEANUP AND PREP FOR VEGETATION CONTROL IS EXCLUDED.
- 9 OFFHAUL OF ALL FOUNDATION SPOILS EXCLUDED.
- 10 PROPOSAL INCLUDES ONE MOBILIZATIONS. ADDITIONAL MOBS ARE \$7,500 EACH.
- 11 PROPOSAL ASSUMES A SECURE PROJECT LAY DOWN / STORAGE YARD WILL BE PROVIDED BY OTHERS AT NO COST TO CORAL CONSTRUCTION.

ABOVE PRICE QUOTED FOR IMMEDIATE ACCEPTANCE UNLESS OTHERWISE STATED; APPLY ONLY TO PROJECT SPECIFIED.

CORAL CONSTRUCTION COMPANY

BY:

Kris Karpstein

TITLE:

ESTIMATOR

DATE:

8/26/14



Fax

Scope Letter

Date: June 20, 2014

From: Eric Marksberry

Project 07-295604 Bid date: Thursday, June 26, 2014
On Route 5 in Los Angeles County: Los Angeles, Glendale and Burbank

C & W Construction Specialties Inc. will be bidding the following items:

- 20 REMOVE GUARDRAIL
- 81 4' CHAIN LINK GATE
- 82 MIDWEST GUARDRAIL SYSTEM
- 84 CHAIN LINK RAILING TYPE 7 MODIFIED
- 85 SINGLE THRIE BEAM BARRIER
- 86 DOUBLE THRIE BEAM BARRIER
- 87 CABLE RAILING
- 88 TRANSITION RAILING TYPE WB-31
- 89 END ANCHOR ASSEMBLY TYPE SFT
- 90 ALTERNATIVE IN-LINE TERMINAL SYSTEM
- 91 ALTERNATIVE FLARED TERMINAL SYSTEM
- 92 CRASH CUSION TYPE SCI-70GM
- 93 ALTERNATIVE CRASH CUSHION

THANK YOU!

C & W Construction Specialties, Inc.
2419 Palma Drive • Ventura, CA 93003 • Phone: (805) 642-0204 • Fax: (805) 642-7834
ericm@cwcs.us • Cell: (805) 258-3287 • www.highwayrail.com



SCI Products Inc.

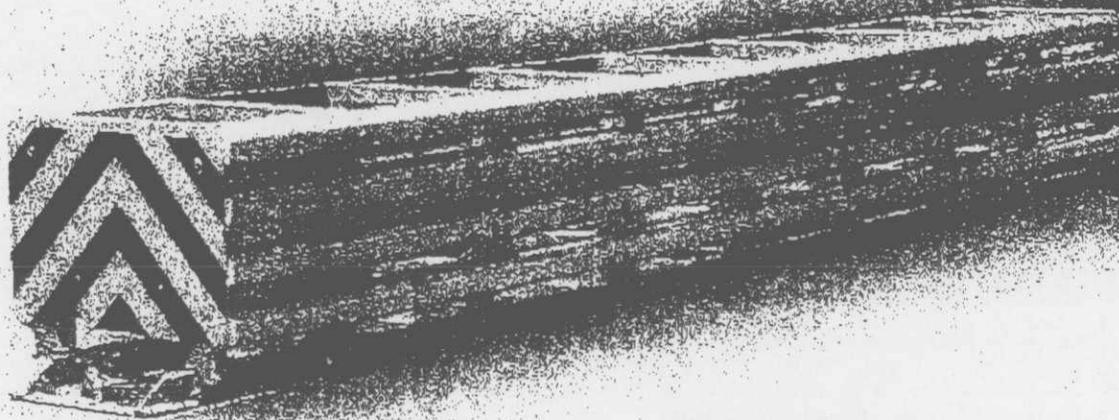
**SYSTEM AND SCHEMATIC
DESIGN AND INSTALLATION
MANUAL**

**The World's Only
Speed-Dependent
Crash Attenuator**



SMART CUSHION INNOVATIONS

NCHRP 350 Approved



Corporate Office:
635 Lucknow Road
Harrisburg, PA 17110
Telephone: 866-489-1234
www.protectionservices.com



Marketed and Distributed by

Protection Services Inc.

TABLE OF CONTENTS

OVERVIEW 1

 Product..... 1

 Maintenance..... 1

 Crash Performance 1

SPECIFICATIONS 2

 Description..... 2

 System Dimensions & Weight 2

DESIGN CRITERIA 2

 General..... 2

 Foundations 2

 Support Structure 3

 Location..... 3

 Transition Design..... 3

INSTALLATION..... 6

 Installation and Performance Statements..... 6

 Safety..... 6

 Equipment List Appendix B

 Site Preparation..... 6

 Foundations 6

 Placement of the Crash Cushion..... 7

 Anchor Installation..... 7

 Delineator Panel Attachment 8

 Transition Installation 8

 Final Inspection 8

RESETTING CRASH CUSHION AFTER IMPACT 9

 Site Preparation..... 9

 Re-Extension and Inspection after Frontal Impact 9

 Side Impact Inspection and Repair 10

 Cable Inspection and Replacement Procedure 11

 Cylinder Inspection 11

 Anchor Bolt Inspection 11

 Side Panel Inspection..... 12

 Side Guide Inspection 12

 Final Inspection 12

 Non-Repairable Impacts 12

APPENDICES

SCI Attenuator Parts List A

Equipment List B

Attenuators

SMART CUSHIONSM, TEST LEVEL 2 C

SMART CUSHIONSM, TEST LEVEL 3 D

Foundations

Foundation Test Level 2 E1

Foundation Test Level 3 E2

Layouts

Gore Assembly F

Gore Assembly Calculations F3

Transitions

Jersey/F Shape Barrier G

Concrete Block, 24" (610 mm) H

Concrete Block, 30" (762 mm) I

Concrete Block, 36" (915 mm) J

Concrete Block, 30" (762 mm), Flared K

Concrete Block, 36" (915 mm), Flared L

Thrie-Beam M

W-Beam (Reverse Direction Traffic Design) N

Jersey/F Shape, 36" (915 mm) Base X 32" (813 mm) Tall O

Jersey/F Shape, 36" (915 mm) Base X 42" (1067 mm) Tall P

Median Barrier, Single Slope Q

W-Beam 28" Tall (no reverse direction traffic design) R

W-Beam 32" Tall (no reverse direction traffic design) S

OVERVIEW

Product

The SMART CUSHION® impact attenuators are some of the many safety products manufactured and sold by SCI Products, Inc. They are NCHRP Report 350, Test Levels 2 and 3 (TL2 and TL3) compliant (Models SCI 70 GM and SCI 100 GM, respectively) and are fully redirective, non-gating, and bi-directional. SMART CUSHION® impact attenuators are used to help protect motorists from obstacles in both permanent and work zone locations. They can be attached to most types of median and roadside barriers.

The SMART CUSHION® attenuators use a patented system for stopping vehicles. The system is speed dependent and stops small and large vehicles by automatically regulating the stopping force exerted on a vehicle. Small vehicles are stopped more slowly than large vehicles to minimize the forces on the occupants and reduce the chance of injuries.

The SMART CUSHION® attenuators are slightly tapered from front to rear. This allows the side panel sections to collapse over the next section with minimum stress and damage. During collapse, the parts move freely past each other and do not become wedged upon impact.

Neither wide temperature variations nor temperature extremes affect the performance of SMART CUSHION® impact attenuators. The viscosity of the fluid in the shock-arresting cylinder has very little effect on performance.

Maintenance

SMART CUSHION® impact attenuators are low-maintenance units. In a two-year performance evaluation report submitted to the Federal Highway Administration, the average cost of parts to repair a SMART CUSHION® impact attenuator was \$39, excluding two catastrophic impacts. More than four out of five of the reported repairs only required two shear bolts costing under \$2. A trained, two-person maintenance crew can return most impacted SMART CUSHION® attenuators to full service within 30 – 60 minutes. This short repair time reduces the maintenance workers' exposure to traffic and minimizes motorist inconvenience. Side impacts usually result in no damage to the impact attenuator.

Crash Performance

The SMART CUSHION® impact attenuators broke new ground during NCHRP Report 350 crash testing. In the high-speed test, 100 kilometers per hour (63 miles per hour) the small vehicle's deceleration rate was significantly lower than any previously recorded value (-9.8 G's as compared to -13.4 G's). This means less impact forces on the vehicle's occupants and a reduced risk of injury occurrence and severity.

Another amazing fact is that all the tests were conducted on the same SMART CUSHION® unit over four consecutive days with no damage to non-expendable parts. The only parts replaced after each crash test were the two shear bolts, costing less than \$2 for each reset.

SPECIFICATIONS

Description

The SMART CUSHION® is a redirective, non-gating crash attenuator that consists of a base, supporting frames, a sled, side panels, a wire rope cable, sheaves, and a shock-arresting cylinder. The base is anchored to the mounting surface and provides support for the frames that are mounted on it. The support frames hold the side panels that provide a flat outer redirective surface for side impacts. The sled provides redirective support for side impacts and deceleration force for frontal impacts. The SMART CUSHION® telescopes rearward upon frontal impact and can be reset with minimal repair parts. It is NCHRP 350 Test Levels 2 and 3 approved.

System Dimensions & Weight

Table 1 – Dimensions & Weight

	SCI 70 GM	SCI 100 GM
Width	24" (610 mm)	24" (610 mm)
Length	13 ½ ft (4115 mm)	21 ½ ft (6550 mm)
Height	33" (840 mm)	33" (840 mm)
Weight	2465 lbs (1120 kg)	3450 lbs (1570 kg)
NCHRP 350, Test Level	2	3

DESIGN CRITERIA

General

SMART CUSHION® impact attenuators comply with NCHRP Report 350, TL2 and TL3, and are designed for work zone and permanent applications.

Foundations

Foundations must be a flat surface with longitudinal and cross slopes of 10:1 (horizontal: vertical) or less. SMART CUSHION® impact attenuators should not be located over drainage basins or expansion joints. Portland cement concrete foundation pads are preferred for permanent installations; asphaltic concrete foundation pads are appropriate for work zone installations. The following table describes the foundations that may be used. See Appendices for drawings.

Table 2 – Foundations

Pad Material and Thickness	Anchor Embedment
6" (150 mm) reinforced PCC ¹	5 ½" (140 mm)
8" (205 mm) non-reinforced PCC	5 ½" (140 mm)
3" (75 mm) AC ^{2,3} over 3" (75 mm) non-reinforced PCC	16 ½" (420 mm)
6" (150 mm) AC over compacted subgrade ³	16 ½" (420 mm)
8" (205 mm) AC ³	16 ½" (420 mm)

- Notes: 1. Portland cement concrete
 2. Asphaltic concrete
 3. Minimum compaction: 95% of optimal



C. A. RASMUSSEN, INC.

General Engineering Contractors
License No. 254681 A

Valencia Commerce Center
28548 Livingston Avenue
Valencia, CA 91355-4171
Telephone 661.367.9040
Fax 661.367.9097
www.carasmussen.com

VIA FAX AND OVERNIGHT

July 18, 2014

California Department of Transportation
Attn: Office Engineer, MS 43
1727 30th Street
Sacramento, CA 95816-8041

(916) 227-6299 tel
(916) 227-6282 fax

Re: 07-295604: 07-LA-5-R19.2/R28.9
Response to Bid Protest

Bid Date: June 26, 2014

C. A. Rasmussen, Inc. ("Rasmussen") is in receipt of your letter dated July 11, informing us of the bid protest filed by Security Paving Company, Inc. ("Security Paving") for the above-referenced contract. Rasmussen disagrees with the claims made by Security Paving, and asks that Caltrans find their protest lacks merit and confirm C. A. Rasmussen, Inc. as the lowest responsible bidder.

In its protest, Security Paving alleges that Rasmussen made impermissible changes to its completed Subcontractor Listing form submitted following its Bid Day Subcontractor List, claiming inconsistencies with the description of work being performed by Crown Fence, Cindy Trump, Inc. ("Cindy Trump") and FBD Vanguard Construction, Inc. ("Vanguard"). The bid items are consistent, based on the following:

- 1) Rasmussen listed Crown Fence as its "Guardrail, Fence & Related - Portion" subcontractor, to perform Bid Item Nos. 19, 20, 81, 82, and Nos. 84 through 93. It is common practice for guardrail and fence subcontractors to also furnish and install permanent crash cushions since the work is related. Of the five scope letters and quotes received from guardrail and fence subcontractors, 100 percent of them quoted the crash cushions because that work is related to guardrail and fencing. The scope letter and quotes received from these guardrail and fencing subcontractors are attached for your reference.

Also, guardrail, crash cushions and alternate crash cushions are all covered under Caltrans Specification Section 83, Railings and Barriers. This demonstrates precedence that Caltrans considers crash cushions related to guardrail as they fall under the same specification section.

07-295604: Response to Bid Protest
Page 2

Further, many of the crash cushions are composed of guardrail shapes, thus they are factored into that scope of work. Crash cushions and alternative crash cushions are designed to be attached to various types of blunt ends, including guardrails. We have attached an installation manual for crash cushions, showing how they are composed of guardrail components and can easily be attached to guardrail ends.

- 2) Rasmussen listed Cindy Trump as its "Coldmill - Portion" subcontractor, to perform Bid Item Nos. 24 and 28. Security Paving claims that Bid Item No. 24, "Remove Asphalt Concrete Dike," is not related to the description of work "Coldmill," nor Bid Item No. 28, "Cold Plane Asphalt Concrete Pavement." This is not the case. Per the contract special provisions, Section 15-2.02B(3) Cold Planing Asphalt Concrete Pavement and Section 15-2.02F Remove Asphalt Concrete Dikes are directly related to one another, and are simultaneously performed in one operation. The special provisions and Caltrans specifications do not specify a method to employ for removal of asphalt concrete dike. Historically on Caltrans projects, this is always done concurrently with the asphalt grinding operation.

The grinder used for coldmilling is capable of grinding dike and asphalt at the same time; its high-precision leveling system ensures the exact milling depths. The milling machine comprises a depth regulator component that is used directly at the operations platform that controls the right- and left-milling depths.

Removing asphalt concrete dike while cold planing is common on all jobs - such as this one - in which the grinder can access the dike within the limits of the cold planers drum. This technical application is done to create a cost savings for the contractor, subcontractor and agency, alike.

Coldmilling operation applications include but are not limited to large scale surface course rehabilitation, curb cutting, asphalt dike removal, pavement texturing, traffic lane stripe removal, full-depth asphalt removal and fine mill grind. Each of these are discussed under the Caltrans specification Section 15.

- 3) Rasmussen listed Vanguard to perform "JPCP(RSC), Slab Replacement, Spall Repair, Barrier Rail, Minor Concrete (Minor Structures), Remove Concrete Pavement and Base, Traffic Control & Related - Portion" for Bid Item Nos. 5, 17, 25, 51, 52, 59-62, 65, 94-99, and 112. Each of the bid items for which Vanguard is listed is directly related to the scope of work that Vanguard has proposed to provide, which is inclusive of all listed bid item descriptions in Column 4. We listed Vanguard for the complete scope they quoted as their bid items are so integrally related.

Vanguard is performing multiple concrete items of work. Bid Item No. 17 "Temporary Concrete Washout" is part of the Caltrans Standard Specifications Section 13 "Water Pollution Control," which is a general requirement and is related to poured-in-place concrete work. As Vanguard is placing concrete on this project, they will also be self-performing the portion of temporary concrete washouts that is an integral part of and related to their concrete work.

Bid Item No. 51 "Alternate Treated Base" is an integral part of, and related to the operations for Remove Concrete Pavement and Base and JPCP(RSC). All of this work must be completed integrally during the same night lane closures. Bid Item No. 51 "Alternate Treated Base" is a part of Section 28 "Concrete Bases," which refers to

07-295604: Response to Bid Protest

Page 3

lean concrete base rapid set. Furnishing and placing rapid set lean concrete base is related to furnishing and placing JPCP, which is also rapid set concrete.

Bid Item No. 52 "Replace Base" is an integral part of, and related to the operation for slab replacement. All of this work must be completed integrally during the same night lane closures. Bid Item No. 52 "Replace Base" is a part of Section 28 "Concrete Bases," which refers to lean concrete base rapid set. Removing, furnishing and placing the rapid set lean concrete base is integrally related to removing, furnishing and placing individual slabs that are also rapid set concrete.

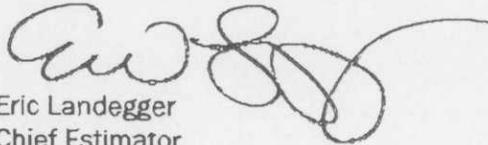
Bid Item No. 60 "Drill and Bond (Dowel Bar)" is covered under Section 41 "Concrete Pavement Repair," and is an integral part of the slab replacement Vanguard will be performing on this project (Section 41-9 "Slab Replacement"). Both items of work must be completed during the same night lane closures.

Of course, this evidence also demonstrates that Rasmussen did not engage in bid shopping or any other violation of the Subletting and Subcontracting Fair Practices Act. The bid items and bid prices awarded to these Subcontractors were the bid items and bid prices quoted to Rasmussen prior to bid opening. Also, Rasmussen awarded 100 percent of the scopes of work quoted by both Crown Fence and Vanguard.

In conclusion, Security Paving's claim that Rasmussen expanded the scope of work for subcontractors on the revised Subcontractor Listing form lacks merit. Rasmussen's bid is responsive and conforms to the instructions provided for submittal of the Subcontractor List form. We request that Caltrans confirm that Rasmussen's bid is in fact responsive and award the contract to us as the lowest responsive bidder.

Thank you in advance for your consideration and timely response on this matter.

Sincerely,

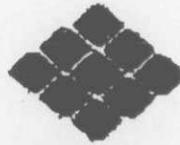


Eric Landegger
Chief Estimator
C. A. Rasmussen, Inc.

sk

Enc.

CROWN FENCE
12118 Bloomfield Ave
Santa Fe Springs CA 90670



Since 1923

S. Midwest CR RPA
Phone: (562) 864-5177 2,348,146⁰⁰
Fax: (562) 864-2529
State Lic. 1315
SFENCE RPA
263500

PROJECT: Caltrans 07-295604 rte 5 **TO:** Prime Bidder
CONTACT: Joey Carso jcarso@crownfence.com **ATTENTION:** ESTIMATOR
DATE: 6/26/2014 **FAX:**

Plans & Specs: Yes **Bondable:** Yes
Installed: Yes **Rate:** 0.86%
Tax Included: Yes **DBE/WBE:** NO

Wage: Union Prevailing

Addendum: 1,2

ITEM	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
19	Treated Wood Waste	499000 TBS	\$ 0.12	\$ 59,880.00
20	Remove Guardrail	38700 LF	\$ 3.00	\$ 116,100.00
81	4' Chain Link Gate (Type CL-6)	3 EA	\$ 1,325.00	\$ 3,975.00
82	Midwest Guard Rail System (Wood Post)	28700 LF	\$ 22.00	\$ 631,400.00
84(F)	Chain Link Railing (Type 7 Modified)	350 LF	\$ 64.00	\$ 22,400.00
85	Single Thrie Beam Barrier	150 LF	\$ 35.00	\$ 5,250.00
86	Double Thrie Beam Barrier	650 LF	\$ 44.00	\$ 28,600.00
87(F)	Cable Railing	990 LF	\$ 16.00	\$ 15,840.00
88	Transition Railing (Type WB-31)	82 EA	\$ 3,080.00	\$ 252,560.00
89	End Anchor Assembly (Type SFT)	55 EA	\$ 680.00	\$ 37,400.00
90	Alternative In-Line Terminal System	44 EA	\$ 2,800.00	\$ 123,200.00
91	Alternative Flared Terminal System	57 EA	\$ 2,400.00	\$ 136,800.00
92	Crash Cushion (Type SCI-70GM)	1 EA	\$ 26,080.00	\$ 26,080.00
93	Alternative Crash Cushion	27 EA	\$ 33,890.00	\$ 915,030.00
Traffic Control Shifts Needed: 190 (SEE CLARIFICATION)				
			TOTAL	\$ 2,374,515.00

CLARIFICATIONS:

- Prime contractor to survey fence lines and stake/mark corner, end and gate post locations prior to installation.
- Concrete Pad/Block for Crash Cushion by others
- Crown Fence to provide post pockets to be installed and cleaned out correctly by others
- Crown Fence is willing to contract for all items except item(s) 91 & 92 (Crash Cushions) if general contractor decides to install themselves
- Above mentioned traffic control is figured based on locations; if multiple locations are available at once Crown Fence can mobilize with multiple crews to utilize lane closures provided

EXCLUSIONS:

- SWPPP / QC Plan / Safety Plan
- Engineering / Structural Calculations
- Electronic Shop / As Built Drawings
- Staking / Surveying / Pot-holing
- Location of Underground Utilities
- Permits / Licenses & Fees
- Traffic Control / Lane Closures
- Security / Flagsman
- Masonry Walls / Cross Fences
- Dust Control
- Grading / Clearing & Grubbing
- Fence / Gate Grounding
- Core Drilling / Saw Cutting
- Concrete other than post footings
- Patching / Restoration
- Removal of Spoils
- Maintenance
- Gate Closures / Knox Box
- Panic Hardware / Specialty Locks
- Inspection / Testing Fees
- Asbestos Training / Costs
- Waiver of Subrogation Fees
- Bond Premium
- Builder's Risk Insurance
- Certified Welding
- Welding Inspection / Procedure

Crown will not be responsible for damage to underground facilities not properly and accurately located by those forces other than Crown's. For projects where some or all of the work is located within a site not serviced by Underground Service Alert, forces other than Crown's shall properly lay out, locate, and mark said facilities by any and all means available, and Crown assumes no responsibility therefore.

SFEK

RPN

RPN



ACE FENCE COMPANY

727 NORTH GLENDORA AVENUE, LA PUENTE, CA 91744

PHONE (626) 333-0727 * FAX (626) 333-7943

CERTIFIED AS DBE/UBBE/SBEMBE/WBE FIRM, UNION COMPANY, LACMTA Pre-Qualified to Bid

"Awarded Minority Contractor of the Year by the City of Los Angeles for Excellence in Quality and Services"
"We Are An Equal Opportunity Employer"

FAX QUOTE

TO : General Contractors
 FAX # :
 FROM : Michael Abanilla
 PROJECT : CADOT Cold Plane AC Pavement and Overlay (Contract No. 07-285804)
 From Main Street Undercrossing to Verdugo Avenue Undercrossing, in Los Angeles, Glendale and Burbank, In Los Angeles Co., CA
 BID DATE : 6/26/14 2:00 P.M.
 SPECS : per 2010 CALTRANS Plans & Specs

ATTN : Estimator
 DATE : 6/25/14
 PAGES : 1

ADDENDUM: 1 & 2

ITEM	DESCRIPTION	Unit	Qty	Unit Price	Amount
Proposal as follows:					
19	TREATED WOOD WASTE	LB	499,000	\$ 0.17	\$ 84,830.00
20	REMOVE GUARDRAIL	LF	38,700	\$ 6.75	\$ 261,225.00
30	REMOVE CRASH CUSHION	EA	22	\$ 1,300.00	\$ 28,600.00
81	4' CHAIN LINK GATE (TYPE CL-8)	EA	3	\$ 1,200.00	\$ 3,600.00
82	MIDWEST GUARDRAIL SYSTEM (WOOD POST)	LF	28,700	\$ 25.00	\$ 717,500.00
84	CHAIN LINK RAILING (TYPE 7 MODIFIED)	LF	350	\$ 62.00	\$ 21,700.00
85	SINGLE THREE BEAM BARRIER	LF	150	\$ 33.00	\$ 4,950.00
86	DOUBLE THREE BEAM BARRIER	LF	650	\$ 37.00	\$ 24,050.00
87	CABLE RAILING	LF	890	\$ 16.00	\$ 15,840.00
88	TRANSITION RAILING (TYPE WB-31)	EA	82	\$ 3,190.00	\$ 261,580.00
89	END ANCHOR ASSEMBLY (TYPE SFT)	EA	55	\$ 665.00	\$ 36,575.00
90	ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	44	\$ 2,675.00	\$ 117,700.00
91	ALTERNATIVE FLARED TERMINAL SYSTEM	EA	57	\$ 2,040.00	\$ 116,280.00
92	CRASH CUSHION (TYPE SCI-70GM)	EA	1	\$ 23,400.00	\$ 23,400.00
93	ALTERNATIVE CRASH CUSHION (TYPE SCI 100GM)	EA	27	\$ 30,200.00	\$ 815,400.00

TOTAL BID AMOUNT: \$ 2,629,230.00

- * ITEM # 84 & 87 - CORE DRILLING IS NOT INCLUDED, BY OTHERS. IF NEEDED, WE'LL PROVIDE POST POCKETS BUT LAY-OUT, INSTALL PLUMB & CLEAN OUT BY OTHERS.
- * ITEM # 88 - CONCRETE BARRIER, CORE DRILLING & PIPE SLEEVES IS NOT INCLUDED, BY OTHERS.
- * ITEM # 92 - PER TYPE & MODEL SPECIFIED ABOVE OTHERS WILL BE A CHANGE ORDER.
- * ITEM # 30, 82 & 93 - CONCRETE ANCHOR SLAB & BACK-UP BLOCK IS NOT INCLUDED, BY OTHERS.
- * THIS PROPOSAL IS BASED ON PAID PREVAILING WAGES AND CERTIFIED PAYROLL.
- * PLEASE REFER TO NOTES & EXCLUSIONS BELOW, IF YOU HAVE QUESTIONS PLEASE CALL.

NOTE: PROPOSAL IS AS A PACKAGE UNLESS DISCUSSED PRIOR TO BID. OUR PROPOSAL IS PER LINE ITEM & NOT LUMP SUM UNLESS IT STATES OTHERWISE. AWARD MUST HAPPEN WITHIN 90 DAYS. COPY OF ACE FENCE COMPANY'S BID TO BE PART OF THE FINAL CONTRACT AGREEMENT. COPY OF GENERAL'S PAYMENT & PERFORMANCE BONDS TO BE ATTACHED TO THE CONTRACT AGREEMENT.

EXCLUDE: DELINEATOR; STAINING & PAINTING; MINOR CONCRETE OR ANY CONCRETE WORKS (except toolings for item #1); VEGETATION CONTROL; DEMOLITION; CLEARING & GRUBBING; REMOVAL OF CONC. BARRIER, SLAB, VEGETATION OR ANY OBSTRUCTIONS; EXTRA DIRT FOR BACKFILLING; GRADING; STAKING & LAY-OUT; ROCK DRILLING, CONCRETE CUTTING, BREAKING & CORE DRILLING; PAVEMENT REPAIR OR ASPHALT PATCHING; POTHOLING OR LOCATING UTILITIES; MAINTENANCE OR REPAIR TO DAMAGES CAUSED BY OTHERS & TO UNMARKED UTILITY LINES; GROUNDING & ELECTRICAL WORKS; ENGINEERING OR STRUCTURAL CALCULATIONS; SURVEYS FOR ALIGNMENT & ELEVATIONS; COSTS FOR INSPECTIONS & TESTING; BOND COST; SWPPP; BEST MANAGEMENT PRACTICES; ASBESTOS & LEAD COMPLIANCE PLAN & ANY RELATED WORKS; PERMITS/FEES; DUST CONTROL; K-RAILS; TEMPORARY FENCING & SAFETY RAILING; TRAFFIC CONTROL, LIGHTING & SIGNS; FLAGMEN; LANE CLOSURE; HAULING OF SPOILS (spoils from our excavation are to be scattered in the immediate vicinity of our work, relocation of spoils will be considered a change order)

INSURANCE: GENERAL LIABILITY - \$ 1,000,000 - \$ 2,000,000 AGGREGATE; AUTOMOBILE - \$ 1,000,000; WORKMAN COMPENSATION - \$ 1,000,000. OCIP / CCIP PROJECTS - WC PREMIUMS ALREADY DEDUCTED. ADDITIONAL INSURANCE REQUIREMENTS ARE SUBJECT TO EXTRA PREMIUMS.

LICENSE # C-13 # 801874, EXP. 12-31-2016 - UNION
 SUBJECT TO ACCEPTANCE WITHIN 30 DAYS

SIMON RPN
SFRANC RPN



SIGNATORY TO THE LABORERS, OPERATING ENGINEERS, AND TEAMSTERS UNIONS
License #985180

BID DATE: 6/28/14
BID TIME: 2:00 P.M.

PROJECT NAME: Caltrans 07-295604
LOCATION: In Los Angeles County in Los Angeles, Glendale, and Burbank on Route 5

BOND RATE: 1%

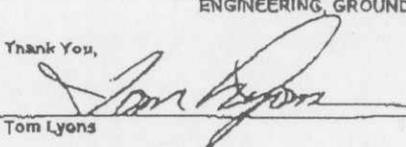
ADDENDUMS NOTED: 1, 2

ITEM #	DESCRIPTION	QUANTITY	UM	UNIT PRICE	TOTAL
19	Treated Wood Waste	499000	LB	\$ 0.19	\$ 94,810.00
20	Remove Guardrail	36700	LF	\$ 4.20	\$ 162,540.00
61	4' Chain Link Gate (Type CL-5)	3	EA	\$ 1,236.00	\$ 3,708.00
62	Midwest Guardrail System (Wood Post)	28700	LF	\$ 20.13	\$ 577,731.00
66	Chain Link Railing (Type 7 Modified)	350	LF	\$ 75.10	\$ 26,285.00
65	Single Thrie Beam Barrier	150	LF	\$ 35.70	\$ 5,355.00
66	Double Thrie Beam Barrier	650	LF	\$ 39.40	\$ 25,610.00
67	Cable Railing	990	LF	\$ 17.60	\$ 17,424.00
68	Transition Railing (Type WB-3T)	82	EA	\$ 2,827.00	\$ 240,014.00
69	End Anchor Assembly (Type SFT)	55	EA	\$ 700.00	\$ 38,500.00
90	Alternative In-Line Terminal System	44	EA	\$ 2,760.00	\$ 121,440.00
91	Alternative Flared Terminal System	57	EA	\$ 2,482.00	\$ 141,474.00
92	Crash Cushion (Type SCI-70GM)	1	EA	\$ 27,662.00	\$ 27,662.00
93	Alternative Crash Cushion	27	EA	\$ 39,114.00	\$ 1,056,078.00
TOTAL BID:				\$	2,538,631.00

NOTE: Contract or Letter of Intent required within 60 days of bid in order to hold pricing.
NOTE: If we cannot use our Guardrail post driver, the pricing above is void.
NOTE: For items 64 & 67, post pockets supplied by Ferreira installed correctly and cleaned by others.
NOTE: Exclude concrete anchor block for item 66.
NOTE: For all Guardrail items Ferreira will need approximately 175 working days to complete.
NOTE: Concrete pad and anchors are excluded for items 92 & 93.
NOTE: General to supply laydown yard for Ferreira.

EXCLUSIONS: TRAFFIC CONTROL, CONCRETE ANCHOR BLOCKS, REMOVAL OF CONCRETE ANCHORS, STAKING, GRADING, CLEARING & GRUBBING OF FENCE LINE, SURVEYING, SPOILS REMOVAL, MAINTENANCE OF INSTALLED FENCING OR MBR, BOND FEES, PERMITS OR FEES, CORE-DRILLING, SAWCUTTING, EXTRA DIRT FOR BACKFILLING, LOCATION OF UNDERGROUND UTILITIES, PAINTING, ENGINEERING, GROUNDING, CONCRETE SLABS OR POTHOLEING.

Thank You,


Tom Lyons

Estimator / Project Manager

Ferreira Coastal Construction
15188 Vista Del Rio Ave.
Chino, CA 91710

Phone (909) 606-5800 Ext. 25
Fax (909) 606-7711
E-mail tl Lyons@ferreiraconstruction.com

JUN 20 2014 11:29

C.A. RASMUSSEN INC. ALCORN FENCE



ALCORN FENCE COMPANY

9901 GLEN OAKS BLVD P.O. BOX 1249 SUN VALLEY, CA 91352
(323) 875-1342 (818) 983-0650 FAX (818) 768-9719

Contractor License - 122054

SEAN
SUBJECT
RP N
RP N

PROJECT: CALTRANS NO. 07-295604
CONTACT: CARLOS PUNZALAN
DATE: 6/26/2014

CONTRACTOR: _____
ATTENTION: _____
FAX: _____
Prime Bidder of Record
Estimator

Plans & Specs: Yes No
Installed: Yes No
Tax Included: Yes No
Union: Yes No

Bondable: Yes No
Rate: _____
DBE/WBE: Yes No
Addendum: 1 & 2

Alcorn Fence Company is signatory to Laborers, Operating Engineers and Cement Masons unions.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
18	DISPOSAL OF TREATED WOOD	499,000.00	LB.	\$0.03	\$44,310.00
20	REMOVE GUARDRAIL	38,700.00	L.F.	8.60	\$328,860.00
81	4' CHAIN LINK GATE (TYPE CL-6)	3.00	EA	\$1,216.00	\$3,646.00
82	MIDWEST GUARDRAIL SYSTEM (WOOD POST)	28,700.00	L.F.	\$21.60	\$619,920.00
84	CHAIN LINK RAILING (TYPE 7 MODIFIED)	360.00	L.F.	\$60.80	\$23,310.00
85	SINGLE THREE BEAM BARRIER (WOOD POST)	150.00	L.F.	\$22.30	\$3,345.00
86	DOUBLE THREE BEAM BARRIER (WOOD POST)	650.00	L.F.	\$34.70	\$22,656.00
87	CABLE RAILING	990.00	L.F.	\$14.00	\$13,860.00
88	TRANSITION RAILING (TYPE IWB-11)	82.00	EA	\$3,386.00	\$277,970.00
89	END ANCHOR ASSEMBLY (TYPE SFT)	66.00	EA	\$855.00	\$56,025.00
90	ALTERNATIVE IN-LINE TERMINAL SYSTEM	44.00	EA	\$2,968.00	\$130,064.00
91	ALTERNATIVE FLARED TERMINAL SYSTEM	67.00	EA	\$2,292.00	\$130,644.00
92	CRASH CUSHION (TYPE SCI-70GM)	1.00	EA	\$23,360.00	\$23,360.00
93	ALTERNATIVE CRASH CUSHION	27.00	EA	\$29,480.00	\$796,980.00
TOTAL:					\$2,454,110.00

CLARIFICATIONS: Price is good for 90 (90) Days

Big contingent upon approval of surety on Bonded Projects

Traffic control to be provided by Prime Contractor

Item # 82 Crash Cushion Type SCI - 70 GM smart cushion, TL - 2 cushion. Concrete pad & Transition Rail is excluded.

Item # 83 Crash Cushion Type SCI - 100 GM smart cushion, TL - 3 cushion. Concrete pad & Transition Rail is excluded.

Installation of concrete barrier for transition anchor block, concrete pad, vegetation control minor concrete is excluded

Item # 84 per standard B11-52 post anchorage detail, post sleeves to be provided but install by others.

Item # 87 per standard B11-57 post pocket detail, post sleeves to be provided but installed by others

Prime Contractor to provide stock pile area on site for spoils- disposal of spoils by Others

Prime Contractor shall move, relocate or adjust Temporary k-rail to allow for a 14' work zone during work shift to allow access for guard rail machine

Exclusions:

Engineering and Staking

Clearing and Grading

Patching and Restoration

Location of Underground Utilities

Concrete Coring, Sawcutting, Drilling

Bond Premium

Concrete works, Asphalt work

Vegetation Control

Maintenance

Permits

Alcorn shall notify Underground Service Alert forty-eight (48) business hours prior to any excavation. However, Alcorn shall not be responsible for damage to underground facilities not properly and accurately shown on contract plans, as-built, and/or identified by forces other than Alcorn's. For work performed by subcontractor (Alcorn) on a Force Account basis, Subcontractor will be paid costs as computed under the applicable provisions of prime contract, plus 100% of the mark-ups allowed in the first three paragraphs of section 9-1.03A of the standard specifications. When prime contractors retention is reduced by the owner, our retention shall be reduced accordingly.

Submitted by: CARLOS PUNZALAN



CORAL
CONSTRUCTION COMPANY
SPECIALTY HIGHWAY AND GENERAL CONTRACTORS

SFENC

RPN

SMWCR

RPN

SUBCONTRACT PROPOSAL

PROJECT:	LOS ANGELES LOS ANGELES CO., CADOT 07-295604	BID DATE:	8/26/14
		ESTIMATE NO:	140615C

PREPARED BY:	KRIS KARPSTEIN	REFER	
TERMS:		INQUIRIES TO:	KRIS KARPSTEIN

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
18	TREATED WOOD WASTE	499,000.000	LB	\$ 0.05	\$ 24,950.00
20	REMOVE GUARDRAIL	38,700.000	LF	\$ 4.00	\$ 154,800.00
30	REMOVE CRASH CUSHION	22.000	EA	\$ 1,000.00	\$ 22,000.00
65	MINOR CONCRETE (MINOR STRUCTURE)	212.000	CY	\$ 2,925.00	\$ 620,100.00
81	4' CHAIN LINK GATE (TYPE CL-6)	3.000	EA	\$ 1,050.00	\$ 3,150.00
82	MIDWEST GR SYSTEM (WOOD POST)	28,700.000	LF	\$ 24.00	\$ 688,800.00
84	CHAIN LINK RAILING (TYPE 7 MOD.)	350.000	LF	\$ 44.50	\$ 15,575.00
85	SINGLE THRIE BEAM BARRIER	150.000	LF	\$ 30.50	\$ 4,575.00
86	DOUBLE THRIE BEAM BARRIER	650.000	LF	\$ 39.00	\$ 25,350.00
87	CABLE RAILING	990.000	LF	\$ 33.00	\$ 32,670.00
88	TRANSITION RAILING (TYPE WB-31)	82.000	EA	\$ 3,975.00	\$ 325,950.00
89	END ANCHOR ASSEMBLY (TYPE SFT)	55.000	EA	\$ 625.00	\$ 34,375.00
90	ALTERNATIVE IN-LINE TERMINAL SYSTEM	44.000	EA	\$ 2,625.00	\$ 115,500.00
91	ALTERNATIVE FLARED TERMINAL SYSTEM	57.000	EA	\$ 2,150.00	\$ 122,550.00
92	CRASH CUSHION (TYPE SCI-70GM) (PARTIAL)	1.000	EA	\$ 26,000.00	\$ 26,000.00
93	ALTERNATIVE CRASH CUSHION (PARTIAL)	27.000	EA	\$ 31,000.00	\$ 837,000.00
112	MOBILIZATION	1.000	LS	\$ 294,432.00	\$ 294,432.00
TOTAL					\$ 3,347,777.00

TERMS AND CONDITIONS:

- 1 BOND EXCLUDED.
- 2 TRAFFIC CONTROL, SURVEY, AND ALL ELECTRICAL WORK EXCLUDED.
- 3 PROPOSAL ASSUMES MUTUALLY ACCEPTABLE SUBCONTRACT TERMS AND SCHEDULE.
- 4 RETAINAGE NOT TO EXCEED THE PERCENTAGE BEING WITHHELD BY OWNER.
- 5 AERIALY DEPOSITED LEAD SOIL MITIGATION EXCLUDED.
- 6 PROPOSAL EXCLUDES LIABILITY INSURANCE LIMITS IN EXCESS OF \$ 10.0 MM.
- 7 REMOVAL OF EXCESS MATERIAL EXCLUDED.
- 8 CLEANUP AND PREP FOR VEGETATION CONTROL IS EXCLUDED.
- 9 OFFHAUL OF ALL FOUNDATION SPOILS EXCLUDED.
- 10 PROPOSAL INCLUDES ONE MOBILIZATIONS. ADDITIONAL MOBS ARE \$7,500 EACH.
- 11 PROPOSAL ASSUMES A SECURE PROJECT LAY DOWN / STORAGE YARD WILL BE PROVIDED BY OTHERS AT NO COST TO CORAL CONSTRUCTION.

ABOVE PRICE QUOTED FOR IMMEDIATE ACCEPTANCE UNLESS OTHERWISE STATED; APPLY ONLY TO PROJECT SPECIFIED.

CORAL CONSTRUCTION COMPANY

BY:

Kris Karpstein

TITLE:

ESTIMATOR

DATE:

8/26/14



Fax

Scope Letter

Date: June 20, 2014

From: Eric Marksberry

Project 07-295604 Bid date: Thursday, June 26, 2014
On Route 5 in Los Angeles County: Los Angeles, Glendale and Burbank

C & W Construction Specialties Inc. will be bidding the following items:

- 20 REMOVE GUARDRAIL
- 81 4' CHAIN LINK GATE
- 82 MIDWEST GUARDRAIL SYSTEM
- 84 CHAIN LINK RAILING TYPE 7 MODIFIED
- 85 SINGLE THRIE BEAM BARRIER
- 86 DOUBLE THRIE BEAM BARRIER
- 87 CABLE RAILING
- 88 TRANSITION RAILING TYPE WB-31
- 89 END ANCHOR ASSEMBLY TYPE SFT
- 90 ALTERNATIVE IN-LINE TERMINAL SYSTEM
- 91 ALTERNATIVE FLARED TERMINAL SYSTEM
- 92 CRASH CUSION TYPE SCI-70GM
- 93 ALTERNATIVE CRASH CUSHION

THANK YOU!

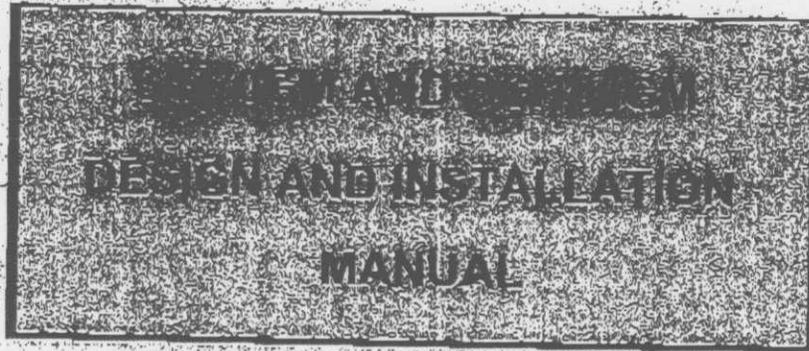
C & W Construction Specialties, Inc.

2419 Palma Drive • Ventura, CA 93003 • Phone: (805) 642-0204 • Fax: (805) 642-7834

ericm@cwcs.us • Cell: (805) 258-3287 • www.highwayrail.com



SCI Products Inc.



The World's Only

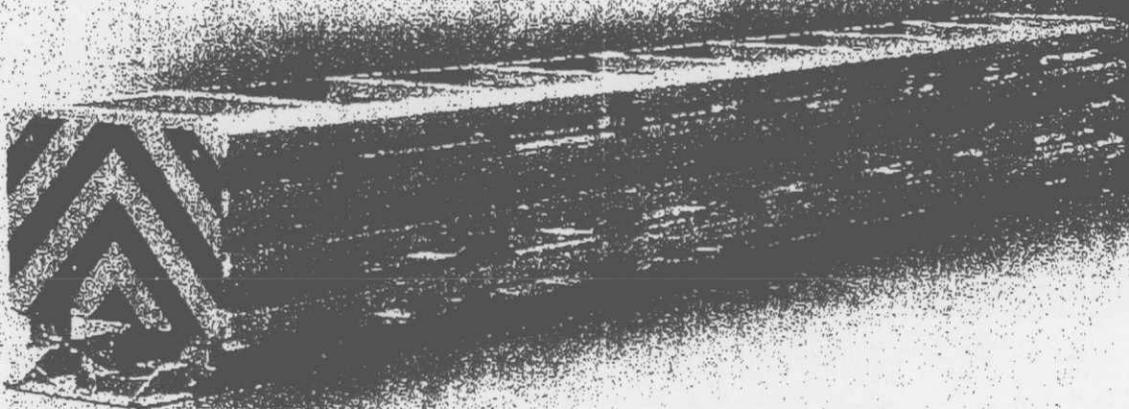
Speed-Dependent

Crash Attenuator



SMART CUSHION INNOVATIONS

NCHRP 350 Approved



Corporate Office:
635 Lucknow Road
Harrisburg, PA 17110
Telephone: 866-489-1234
www.protectionservices.com



Marketed and Distributed by

Protection Services Inc.

TABLE OF CONTENTS

OVERVIEW	1
Product.....	1
Maintenance.....	1
Crash Performance	1
SPECIFICATIONS	2
Description.....	2
System Dimensions & Weight	2
DESIGN CRITERIA	2
General.....	2
Foundations	2
Support Structure	3
Location.....	3
Transition Design.....	3
INSTALLATION.....	6
Installation and Performance Statements.....	6
Safety.....	6
Equipment List	Appendix B
Site Preparation.....	6
Foundations	6
Placement of the Crash Cushion.....	7
Anchor Installation.....	7
Delineator Panel Attachment	8
Transition Installation	8
Final Inspection	8
RESETTING CRASH CUSHION AFTER IMPACT	9
Site Preparation.....	9
Re-Extension and Inspection after Frontal Impact	9
Side Impact Inspection and Repair	10
Cable Inspection and Replacement Procedure	11
Cylinder Inspection	11
Anchor Bolt Inspection	11
Side Panel Inspection.....	12
Side Guide Inspection	12
Final Inspection	12
Non-Repairable Impacts.....	12

APPENDICES

SCI Attenuator Parts List A

Equipment List B

Attenuators

SMART CUSHION®, TEST LEVEL 2 C

SMART CUSHION®, TEST LEVEL 3 D

Foundations

Foundation Test Level 2 E1

Foundation Test Level 3 E2

Layouts

Gore Assembly F

Gore Assembly Calculations F3

Transitions

Jersey/F Shape Barrier G

Concrete Block, 24" (610 mm) H

Concrete Block, 30" (762 mm) I

Concrete Block, 36" (915 mm) J

Concrete Block, 30" (762 mm), Flared K

Concrete Block, 36" (915 mm), Flared L

Thrie-Beam M

W-Beam (Reverse Direction Traffic Design) N

Jersey/F Shape, 36" (915 mm) Base X 32" (813 mm) Tall O

Jersey/F Shape, 36" (915 mm) Base X 42" (1067 mm) Tall P

Median Barrier, Single Slope Q

W-Beam 28" Tall (no reverse direction traffic design) R

W-Beam 32" Tall (no reverse direction traffic design) S

OVERVIEW

Product

The SMART CUSHION® impact attenuators are some of the many safety products manufactured and sold by SCI Products, Inc. They are NCHRP Report 350, Test Levels 2 and 3 (TL2 and TL3) compliant (Models SCI 70 GM and SCI 100 GM, respectively) and are fully redirective, non-gating, and bi-directional. SMART CUSHION® impact attenuators are used to help protect motorists from obstacles in both permanent and work zone locations. They can be attached to most types of median and roadside barriers.

The SMART CUSHION® attenuators use a patented system for stopping vehicles. The system is speed dependent and stops small and large vehicles by automatically regulating the stopping force exerted on a vehicle. Small vehicles are stopped more slowly than large vehicles to minimize the forces on the occupants and reduce the chance of injuries.

The SMART CUSHION® attenuators are slightly tapered from front to rear. This allows the side panel sections to collapse over the next section with minimum stress and damage. During collapse, the parts move freely past each other and do not become wedged upon impact.

Neither wide temperature variations nor temperature extremes affect the performance of SMART CUSHION® impact attenuators. The viscosity of the fluid in the shock-arresting cylinder has very little effect on performance.

Maintenance

SMART CUSHION® impact attenuators are low-maintenance units. In a two-year performance evaluation report submitted to the Federal Highway Administration, the average cost of parts to repair a SMART CUSHION® impact attenuator was \$39, excluding two catastrophic impacts. More than four out of five of the reported repairs only required two shear bolts costing under \$2. A trained, two-person maintenance crew can return most impacted SMART CUSHION® attenuators to full service within 30 – 60 minutes. This short repair time reduces the maintenance workers' exposure to traffic and minimizes motorist inconvenience. Side impacts usually result in no damage to the impact attenuator.

Crash Performance

The SMART CUSHION® impact attenuators broke new ground during NCHRP Report 350 crash testing. In the high-speed test, 100 kilometers per hour (63 miles per hour) the small vehicle's deceleration rate was significantly lower than any previously recorded value (-9.8 G's as compared to -13.4 G's). This means less impact forces on the vehicle's occupants and a reduced risk of injury occurrence and severity.

Another amazing fact is that all the tests were conducted on the same SMART CUSHION® unit over four consecutive days with no damage to non-expendable parts. The only parts replaced after each crash test were the two shear bolts, costing less than \$2 for each reset.

SPECIFICATIONS

Description

The SMART CUSHION® is a redirective, non-gating crash attenuator that consists of a base, supporting frames, a sled, side panels, a wire rope cable, sheaves, and a shock-arresting cylinder. The base is anchored to the mounting surface and provides support for the frames that are mounted on it. The support frames hold the side panels that provide a flat outer redirective surface for side impacts. The sled provides redirective support for side impacts and deceleration force for frontal impacts. The SMART CUSHION® telescopes rearward upon frontal impact and can be reset with minimal repair parts. It is NCHRP 350 Test Levels 2 and 3 approved.

System Dimensions & Weight

Table 1 -- Dimensions & Weight

	SCI 70 GM	SCI 100 GM
Width	24" (610 mm)	24" (610 mm)
Length	13 ½ ft (4115 mm)	21 ½ ft (6550 mm)
Height	33" (840 mm)	33" (840 mm)
Weight	2465 lbs (1120 kg)	3450 lbs (1570 kg)
NCHRP 350, Test Level	2	3

DESIGN CRITERIA

General

SMART CUSHION® impact attenuators comply with NCHRP Report 350, TL2 and TL3, and are designed for work zone and permanent applications.

Foundations

Foundations must be a flat surface with longitudinal and cross slopes of 10:1 (horizontal: vertical) or less. SMART CUSHION® impact attenuators should not be located over drainage basins or expansion joints. Portland cement concrete foundation pads are preferred for permanent installations; asphaltic concrete foundation pads are appropriate for work zone installations. The following table describes the foundations that may be used. See Appendices for drawings.

Table 2 -- Foundations

Pad Material and Thickness	Anchor Embedment
6" (150 mm) reinforced PCC ¹	5 ½" (140 mm)
8" (205 mm) non-reinforced PCC	5 ½" (140 mm)
3" (75 mm) AC ^{2,3} over 3" (75 mm) non-reinforced PCC	16 ½" (420 mm)
6" (150 mm) AC over compacted subgrade ³	16 ½" (420 mm)
8" (205 mm) AC ³	16 ½" (420 mm)

- Notes:
1. Portland cement concrete
 2. Asphaltic concrete
 3. Minimum compaction: 95% of optimal

Concrete compressive strength shall be 4000 psi (28 MPa) at 28 days.

Foundation lengths may vary when using wide transitions.

Support Structure

SMART CUSHION® impact attenuators are self-supporting and do not require an additional support structure.

Location

The SMART CUSHION® impact attenuator's location determines its position and transition requirements.

1. **Approach Zone** – SMART CUSHION® impact attenuators should not be placed directly behind raised curbs. The longitudinal and cross slopes in front of the device should be 10:1 (horizontal: vertical) or less.
2. **Barrier Width** – SMART CUSHION® impact attenuators are 24" (610 mm) wide at the rear. Barriers 24" (610 mm) wide, or less, can be shielded without using a transition if there is no reverse direction traffic. Barriers that are wider than 24" (610 mm) and/or have reverse direction traffic require a transition, available from SCI Products, Inc.
3. **Barrier Height** – SMART CUSHION® impact attenuators are approximately 33 3/8" (848 mm) high. Barriers should be as high, or higher, than the SMART CUSHION® to provide the proper support and transition attachment.
4. **Barrier Shape** – SMART CUSHION® transitions allow for connection to many barrier shapes. A rectangular concrete block provides the most economical and simplest shape to connect to.

Transition Design

SMART CUSHION® impact attenuators can be attached to many different barrier shapes. The attenuators are designed for direct attachment to 24" wide barriers and Jersey/F-Shape barriers with base widths up to 27 1/2" (700 mm). **The SMART CUSHION® side panels move rearward beyond the end of the attenuator up to 30" (760 mm) upon impact.** This area is known as the travel zone. SMART CUSHION® transitions provide this travel zone in front of wider barriers and obstacles.

See appendices for SMART CUSHION® transition drawings. SCI Products, Inc. can make transitions for other applications. Contact us for details.

Transitions

Necessary Locations (see Figure 1 – Necessary Locations):

- There is reverse direction traffic within the clear zone.
- The barrier intrudes into the side panels' travel zone.

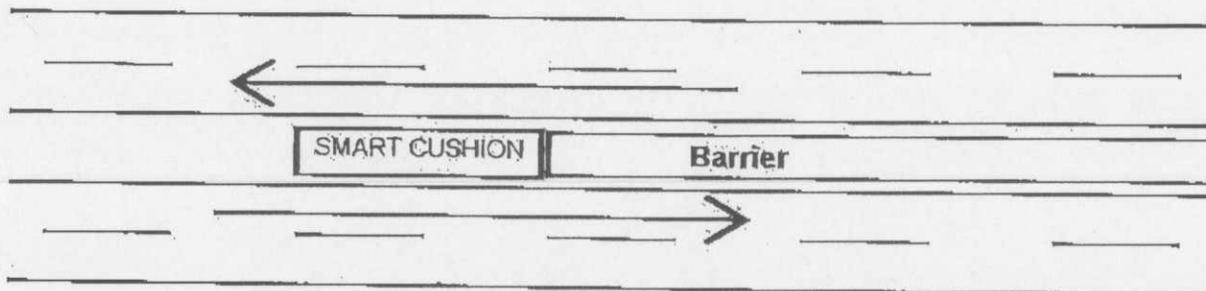


Figure 1 – Necessary Locations

Examples are median applications with bidirectional traffic, two lane roads with crossover potential, etc.

Unnecessary Locations (see Figure 2 – Unnecessary Locations):

- No reverse direction traffic within the clear zone.
- The barrier does not intrude into the side panels' travel zone.

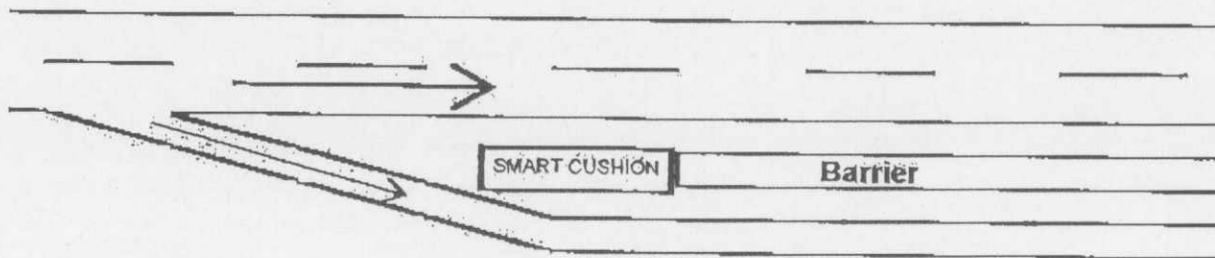


Figure 2 – Unnecessary Locations

Examples are traffic splits, shoulder applications with no crossover potential, one-way roads, etc.

Determining Side of Transition

The transition's side is determined by standing at the front of the attenuator looking rearward toward the barrier to choose between left and right.

Drawings

The following SMART CUSHION® transitions and layouts are available from SCI Products, Inc. Diagrams are shown in the Appendices as follows:

- Layout – Gore Assembly, Appendix F & F2 - Rigid design for wide obstacles.
- Layout – Gore Assembly Calculations, Appendix F3 - Used to calculate longitudinal distances and parts requirements.
- Transition - Jersey/F Shape, Appendix G - Used on standard Jersey/F shaped barriers with a 24" Base
- Transition - Concrete Block, 24", Appendix H - Used on 24" Concrete Block that must be 30" longitudinal length for our travel zone.
- Transition - Concrete Block, 30", Appendix I - Used on 30" Concrete Block and will extend our installation length 38".
- Transition - Concrete Block, 36", Appendix J - Used on 36" Concrete Block and will extend our installation length 53".
- Transition - Concrete Block, 30", Flared, Appendix K - Used on 30" Concrete Block/Pillars and will extend our installation length 54".
- Transition - Concrete Block, 36", Flared, Appendix L - Used on 36" Concrete Block/Pillars and will extend our installation length 71".
- Transition – Thrie-Beam Rigid Assembly, Appendix M - Rigid design for possible reverse direction impacts.
- Transition – W-Beam Rigid Assembly, Appendix N - Rigid design for possible reverse direction impacts.
- Transition – Jersey, 36" Base, Appendix O - Used on 32" high Jersey Shape that has a 19" starting width at the top of the barrier.
- Transition – Jersey, 36" Base, Appendix P - Used on 42" high Jersey Shape that has a 19" starting width at the top of the barrier.
- Transition – Single Slope Barrier, Appendix Q - Used on 42" and 48" Single Slope barrier up to 26" wide at the base.
- Transition – W-Beam 28" High, Appendix R – Connection to 28" high W beam Guardrail with no reverse direction traffic
- Transition – W-Beam 32" High, Appendix S – Connection to 32" high W beam Guardrail with no reverse direction traffic

Installation

Installation and Performance Statements

Proper performance within these limits depends on correct installation of the system on an approved foundation. Any crash cushion not installed according to the drawings and the requirements of this installation manual may present an unsafe condition and should be reinstalled accordingly.

Impacts with vehicles whose size or mass are outside of those tested according to NCHRP 350 or with vehicles traveling at speeds greater than those tested according to NCHRP 350 will not necessarily produce results within the test criteria. While the tests account for most crash conditions, they do not cover all situations. The crash cushion is in conformance with the requirements of NCHRP 350 Levels 2 & 3 but is not guaranteed to safely stop a vehicle in a situation not encompassed by the test conditions.

Safety

All work during installation, repair and inspection of the crash cushion should be performed according to federal, state and local laws.

Equipment List

See Appendix B

Site Preparation

Check to make sure there are no drains; expansion joints; or buried conduit, cables or utility lines in the footprint space where the attenuator will be placed. Remove any curbs or obstacles in front of or beside where attenuator will be installed for a minimum distance of 12 ft from any edge of the attenuator. Be sure to set up proper traffic control before beginning any installation or repair work at the site.

Foundations – (reference Appendices E1 and E2)

New foundations should be installed according to Appendix E – Foundation Drawing. Concrete should reach full cure strength before use. The surface of the foundation must be cleaned of all debris, dirt, mud, sand, etc., as the crash cushion must sit on a level plane, although cross slope of up to 10:1 (horizontal: vertical) is allowed.

Any of the following foundations will meet the minimum requirements:

- 6" reinforced concrete pad
- 8" non-reinforced concrete pad
- 3" asphalt over 3" of concrete
- 6" asphalt over 6" of compacted sub base
- 8" asphalt

Note: Concrete should be 28 MPa or 4000 psi minimum at full cure. The slope should not exceed 10:1.

Installing the crash cushion on an existing foundation may result in anchor bolt locations corresponding to rebar positions in the foundation. It may be necessary to use more elaborate drilling equipment than simply an impact drill with standard concrete bits.

Prior to installing the crash cushion on an existing foundation, the concrete must be thoroughly inspected for slope, signs of cracking, surface wear, shifting from original position, undercut of earth below or to the sides supporting the foundation, settling, and any other signs of age or deterioration which may make the foundation unusable. If any of these signs are evident, the foundation must be removed and a new one must be installed according to requirements stated. If prior bolt patterns are present, use proper engineering calculations to assure adequate strength in the new holes.

Placement of the Crash Cushion

Measure the correct distance and offset of the crash cushion according to the type of obstruction being shielded and the type of transition being used. The dimensions shown on the transition drawings may be used as a guide for this. System drawings are also available.

The crash cushion is shipped in one piece, fully assembled. Using a choked four-point attachment at the designated lift points on the appropriate panel support frames behind the sled, lift the crash cushion off the transporting vehicle with a boom or forklift of sufficient capacity and place it in the position marked on the foundation.

Once in place, double-check the measurements to be sure of the proper location of the crash cushion.

Warning: On a full collapse, the last set of side panels will telescope 30" beyond the last terminal brace at the rear of the crash cushion. All objects that may interfere with this motion can affect the performance of and cause undue damage to the crash cushion.

Anchor Installation

Embedment Requirements are as follows:

6" reinforced concrete pad – anchor embedment of 5 ½" and a torque value of 125 ft-lbs

8" non-reinforced concrete pad – anchor embedment of 5 ½" and a torque value of 125 ft-lbs

3" asphalt over 3" of concrete – anchor embedment of 16 ½" and a torque value of less than 10 ft-lbs

6" asphalt over 6" of compacted sub base – anchor embedment of 16 ½" and a torque value of less than 10 ft-lbs

8" asphalt – anchor embedment of 16 ½" and a torque value of less than 10 ft-lbs

Using the holes in the base as a template, drill 7/8" diameter holes to the proper depth as previously defined. If the crash cushion is being installed on an existing foundation and the drills are hitting rebar, use a core drill or rebar cutter to ensure that straight, vertical holes are made at each location. Take care that the holes do not break out the bottom of the foundation as this may result in loss of epoxy during anchor placement.

Once the holes are drilled, clean the hole of all debris using suitable means. To ensure epoxy adhesion, concrete holes MUST be cleaned with a bottle brush to remove embedded dust, and a final check conducted that all holes are clean of debris and dry. Inject the epoxy into each hole at an angle to avoid air entrapment. Use a sufficient amount of epoxy so that the hole will be filled when the bolt is inserted. Screw the nut on the anchor bolt flush with the end, put the washer on the stud, and immediately insert the anchor stud all the way to the bottom while turning the anchor. This method assures the anchor bolts are vertically plumb and the threads are coated with epoxy.

****Stud locations that can restrict the movement of the mobile sheaves should not project more than 1/2" above the nut after final torque is completed.**

There is a quantity of 48 anchors for the SCI 100 GM, TL-3 attenuator.

There is a quantity of 34 anchors for the SCI 70 GM, TL-2 attenuator.

The epoxy will be ready for bolt tightening after 30 minutes at 80 degrees F (27 degrees C). See the container label for other temperatures and bolt up times. After sufficient time has passed to allow the epoxy to cure, torque the anchor nuts to 170 N-m (125 ft-lbs). Substitute epoxy must match our specifications. Asphalt anchors are longer and should only be torqued to less than 10 ft-lbs.

Delineator Panel Attachment

Installation of the front delineation plate will be determined by the location of the attenuator and state regulations. A delineation plate is shipped with the yellow background applied and no striping. It is attached by four bolts. Applying the striping to the plate is easier while it is removed from the attenuator. Examples of the delineation plate are as follows:



Right Shoulder



Gore Area



Left Shoulder

Transition Installation

Transitions may be required. Any use of a crash cushion with a possible reverse direction impact will require a transition. In all applications, be sure to install the transition anchors that are exposed to traffic, so that there is no extension of the studs beyond the outside face of the nut. Refer to the transition drawings for details of the required anchor locations. For horizontal stud installation in concrete use mechanical anchors, or if using studs repeat the same epoxy installation process as the anchor bolts using plugs to retain the epoxy to secure the transition to the barrier. Transition drawings and parts explosions are in the appendices.

Final Inspection

After the anchor bolts have been tightened to the proper torque value, check that the crash cushion is not distorted in any way as might happen if the unit is secured to a foundation which is not an even surface. Check that the front section is pulled out to within 1" of the front stop bolts and that no part of the unit has been damaged by shipping and handling. Verify that all assembly

bolts are tight and have not come loose during shipping or installation. Finally, check that no tools or other equipment have been left within the crash cushion structure.

Resetting Crash Cushion after Impact

In the event of any impact, the crash cushion will require a full evaluation to determine the necessary repairs to return it to service. To do this, proceed as follows:

Site Preparation

Do not begin work until all accident debris has been cleared and the area declared safe and accessible by government authorities.

Re-Extension and Inspection after Frontal Impact



1. Remove the front delineator panel and attach pulling means to the **bottom brace** of the front sled.

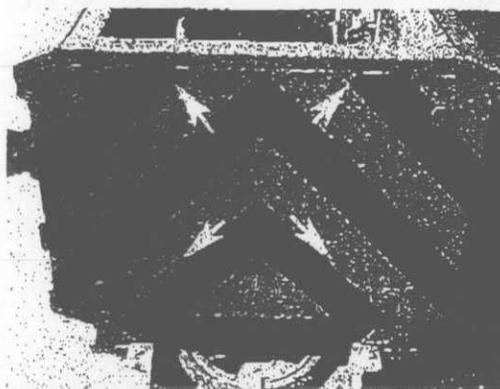
2. Use wire or strap on the bottom brace at the front of the sled to hold the spelter socket up in the air while pulling out or it will catch on the base frame cross braces.

3. Remove the front cable bracket that is located on the front sheave at the front of the attenuator.

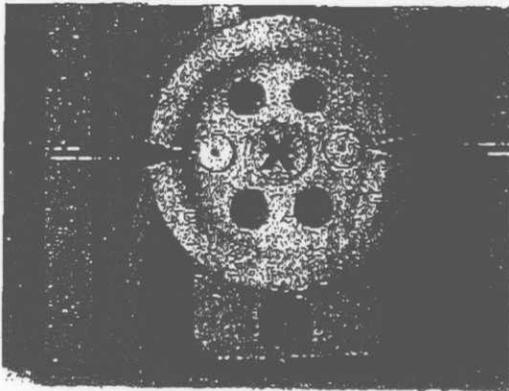
4. Pull the sled forward one to two feet to give you slack on the cable.

5. If necessary, use two long-handled flat screw drivers to break cable loose from the sheave at the front of the attenuator if the zinc coating has attached the cable to the sheave. Start feeding the cable out of the front of the unit.

6. Pull the sled out the rest of the way in **short smooth increments** so you can help feed the cable out the front of the attenuator. This will give you a cable loop in front of the attenuator. **When you are past the last cross brace, you will need to remove the strap or wire to allow the cable to follow the path into the front sheave.** The sled **must** be fully extended to replace the shear bolts. The sled should be less than 1" from the stop bolts in the front.



7. During frame pullout, inspect front part of the cable from the spelter socket, as it will be partially obscured after extension of the mobile frames and sheaves. **See the cable inspection procedure.**



8. Remove the front and rear sheave cover plates at each end of the cylinder by removing the two hex bolts that hold them down.

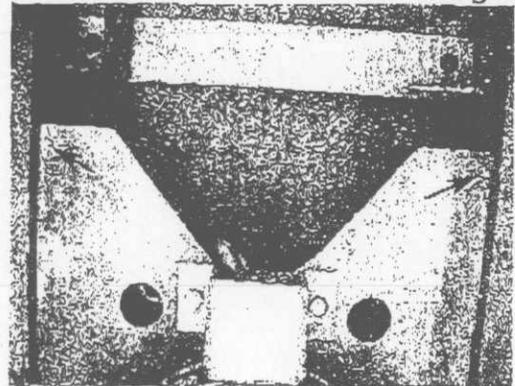
9. Remove the anti-rotation pins, which are the two outer pins, inserted through the holes in the sheaves from both the front and back sheaves. This will be easily done if you make a tool with a handle and a threaded $\frac{3}{8}$ " NC end to screw into the pins. SCI has a tool available for purchase for use during this step. **Caution: Do not remove the center pin. Also, the rear pins are longer than the front sheave pins and**

cannot be intermixed so leave them by their locations.

10. Remove shear bolt remnants in the holes on both sides of the mobile sheaves. These are grade 8 bolts so they can be difficult to remove without a 90 degree pry bar with a claw to pry out.

11. Attach a pulling means to the shackle on the mobile sheaves.

12. Slowly pull out the mobile sheaves. **Be sure the cable doesn't ride up over the front sheave while the slack is taken up, as it will be difficult to regain slack. Do not stand inside the cable loop or be in the pulling strap danger zone.**



13. Finish pulling out the mobile sheaves until you can see through the shear bolt holes **but do not put in the shear bolts yet.**

14. If the cable passes inspection, release any tension on your pulling strap and reinstall the anti-rotation pins in the front and back sheave assemblies and reinstall the cover plates for those sheaves using marine grade anti-seize on the bolt threads. The sheaves may be aligned by inserting a pry bar into the sheave holes. Work your way from the bottom up.

15. Put tension on your pulling strap and replace the two $\frac{1}{4}$ " Grade 8 shear bolts in the front corners of the mobile sheaves.

16. Inspect the cylinder, anchor bolts and side panels according to the procedures listed after this section.

Side Impact Inspection and Repair

17. Inspect and replace any damaged side panels.

18. Inspect and replace any damaged side keeper bolts on all panels. There are three styles of side keeper bolts. The winged style is for the panel connected to the sled and bolts through the first frame behind the sled. The center side keepers have a $\frac{1}{2}$ " shoulder while the last side keeper, which is bolted to the terminal frame, has a $\frac{1}{4}$ " shoulder.

19. Inspect and repair any damaged side guides.

Cable Inspection and Replacement Procedure

The cable should be visually inspected for damage. The most common sign of rope deterioration is broken wires. The wire must be clean and not under tension to perform a visual inspection. The visual inspection should include looking for broken wire strands, localized wear or crowns. A sharp awl or marlin spike can be used to separate wires to check if internal damage is present, indicated by loose wires or crowns. If internal inspection shows any damage to any core wires, the cable should be replaced. If there are more than six random broken wires in one rope lay or three broken wires in one strand in one rope lay, the wire rope should be replaced. A rope lay is the length along the rope in which one strand makes a complete revolution around the rope.

Inspect the spelter socket for broken wires, damaged eyes or other fatigue. Any signs of broken wires at the spelter socket will require a new cable.

Replacement of the cable may be required. The anti-rotation pins in the sheaves will need to be removed for this procedure. Remove the wire rope clips on the old cable and pull the unattached spelter socket out through the front of the attenuator. Feed the new cable through the front sheave bell reducer, wrap around the sheave and back to the bottom rear sheave. Insert a pry bar through the holes to the rear of the sheaves to help guide the cable around the sheave. The cable arrangement travel path is as follows: bottom rear sheave, bottom front sheave, middle rear sheave, middle front sheave, top rear sheave, and top front sheave to cable adjustment bolt. The cable path to the adjustment bolt should be above all other cables. The cable will be marked where the Cable Adjustment bend will be. Attach the spelter socket. Adjust the cable adjuster eyebolt all the way out and thread cable through the eye loop. Wrap cable back against itself with the mark at the bolt eye. Start wire rope clips on the ends of the large loop. Work the wire rope clips up by clamping the wire rope loop in front of the clips. Work the last clip up to 4" from the eyebolt loop, then position the other three wire rope clips back at 3" intervals. When the wire clips are all positioned, tighten them to 225 ft-lbs or 305 N-m.

Cylinder Inspection

The cylinder should be inspected for:

- Dented or swollen tube jacket
- Visible cracks in any welds and fluid leakage from the welds
- Piston rod surface damage, bending or fluid leakage in seal area
- If fully collapsed or over design impact speed, disconnect piston rod from the mobile sheave after the unit is pulled out and push the piston rod in checking for free movement.

If any of these inspections are suspect, replace cylinder and have it examined by the manufacturer. Current models have PTFE seals with an unlimited static life.

Anchor Bolt Inspection

Anchor bolts may come loose or be damaged upon impact. These bolts can be replaced by welding a nut or putting a double nut on them and backing them out of the hole. Drill out the old epoxy and reinstall new bolts with new epoxy.

Side Panel Inspection

Side Panels are designed to nest and collapse with minimal or no damage upon frontal impact. The side keepers sustain a shock upon impact. These side keepers should be replaced if there are any signs of fatigue, bending or other visible damage. Inspect the side panels for any bending or torn metal. If damage is found, any side panel is removable by removing four bolts. It may be necessary to remove the bolts on the panel upstream to slide out a panel located in the middle of the unit. The side keepers used to hold the large front sled panels are different than the side keepers on the center panels. Also, the side keeper used on the last terminal brace, which is the rearmost support, has a shorter shoulder ($\frac{1}{4}$ " vs. $\frac{1}{2}$ "), as it does not have a panel overlap. These shoulders must seat into the outer overlapping panel and pin the inside panel to the frames using a torque value of 270 N-m (200 ft-lbs). Be careful not to pin the edge of the outside panel as it will restrict free sliding of that panel.

Side Guide Inspection

At the bottom of each support frame, there are two guides to stabilize and guide collapse of the attenuator. Inspect each side guide for damage. These guide assemblies are very rugged. The guides should be inspected for any damage. If they are not damaged they can be reused. Upon frontal impact, these guides should be inspected for damage. The torque value for the side guides is 920 N-m (680 ft-lb). These side guides are stronger than the rail, so visually inspect the rail for crowns. Any crowning of the rail can be straightened.

Final Inspection

After the resetting of the crash cushion is complete, verify by visual inspection that all assembly bolts are tight and show no sign of damage. Finally, check that no tools and other equipment or debris have been left within the crash cushion structure. Verify that no other damage unrelated to the most recent impact has occurred and that no significant corrosion or other deterioration has taken place.

Non-Repairable Impacts

There can be instances where the impact is outside the scope of the crash cushion's design. This may render the crash cushion unsafe to reuse and it should be replaced.

APPENDIX A—SCI ATTENUATOR PARTS LIST

SCI CRASH CUSHION PARTS LIST				
Part No.	Description	Qty Per Unit TL2/TL3	Unit of Measure	Spare Parts Kit TL2/TL3
9400	Attenuator 24" wide w/Concrete Anchors TL3			
9450	Attenuator 24" Wide w/Asphalt Anchors TL3			
9451	Attenuator 24" wide w/Concrete Anchors TL2			
9452	Attenuator 24" wide w/Asphalt Anchors TL2			
9401	Bolt Concrete Anchor 3/4" x 7" TL3 *(included in P/N 9400)	*	KIT/48 pcs.	
9402	Bolt Asphalt Anchor 3/4" x 18" TL3 *(included in P/N 9450)	*	KIT/48 pcs.	
9453	Bolt Concrete Anchor 3/4" x 7" TL2 **(included in P/N 9451)	**	KIT/34 pcs.	
9454	Bolt Asphalt Anchor 3/4" x 18" TL2 **(included in P/N 9452)	**	KIT/34 pcs.	
9403	Bolt Cable Adjuster	1	EACH	
9404	Bolt Sled Side Panel	8	EACH	
9405	Bolt Front Stop	2	EACH	
9406	Bolt Shear	2	EACH	10/10
9407	Bolt Side Guide	12	EACH	
9408	Bolt Terminal Brace	4	EACH	
9409	Brace Terminal	1	EACH	
9410	Cable 1 1/8" with Spelter Socket TL3	1	EACH	
9455	Cable 1 1/8" with Spelter Socket TL2	1	EACH	
9411	Clip Wire Rope TL2 & TL3	4	EACH	
9412	Cylinder Shock Arresting TL3	1	EACH	
9445	Cylinder Shock Arresting TL2	1	EACH	
9413	Strap Cylinder TL3	1	EACH	
9448	Strap Cylinder TL2	1	EACH	
9414	Frame Mobile #1 TL3	0/1	EACH	
9415	Frame Mobile #2 TL3	0/1	EACH	
9416	Frame Mobile #3 TL3	0/1	EACH	
9417	Frame Mobile #4 TL2 & TL3	1	EACH	
9418	Frame Mobile #5 TL2 & TL3	1	EACH	
9419	Frame Mobile #6 TL2 & TL3	1	EACH	
9420	Guide Side TL2 & TL3	6/12	EACH	
9421	Keeper Side #3 (Sled Panels) TL2 & TL3	4	Each	4/4
9422	Keeper Side #1 (Side Panels) TL2 & TL3	8/20	EACH	6/6
9423	Keeper Side #2 (Rear Panels) TL2 & TL3	4	EACH	2/2
9424	Panel Delineator (Painted Yellow) TL3	0/1	EACH	0/1
9496	Panel Delineator (Painted Black) TL3		EACH	
9497	Panel Delineator Diamond Grade Chevron 6" stripes TL3		EACH	

SCI CRASH CUSHION PARTS LIST

Part No.	Description	Qty Per Unit TL2/TL3	Unit of Measure	Spare Parts Kit TL2/TL3
9498	Panel Delineator Diamond Grade Left 6" stripes TL3		EACH	
9499	Panel Delineator Diamond Grade Right 6" stripes TL3		EACH	
9456	Panel Delineator (Painted Yellow) TL2	1/0	EACH	1/0
9506	Panel Delineator (Painted Black) TL2		EACH	
9501	Panel Delineator Diamond Grade Chevron 6" stripes TL2		EACH	
9502	Panel Delineator Diamond Grade Left 6" stripes TL2		EACH	
9503	Panel Delineator Diamond Grade Right 6" stripes TL2		EACH	
9425	Panel Side TL2 & TL3	4/10	Each	3/3
9426	Panel Sled	2	EACH	2/2
9427	Panel Rear	2	EACH	1/1
9428	Sheave (pulley)	6	EACH	
9429	Sled (with guide rollers)24" TL3	0/1	EACH	
9457	Sled (with guide rollers) 24" TL2	1/0	EACH	
9439	Epoxy 28 oz. Cartridge and Nozzle ****	***	EACH	
9515	Epoxy Kit for TL3 Concrete Attenuator		EACH	
9516	Epoxy Kit for TL3 Asphalt Attenuator		EACH	
9517	Epoxy Kit for TL2 Concrete Attenuator		EACH	
9518	Epoxy Kit for TL2 Asphalt Attenuator		EACH	
9440	Nozzle Epoxy Mixing ****	***	EACH	
9441	Dispenser Epoxy	0	EACH	
9443	Boot Cylinder TL3	1	EACH	
9449	Boot Cylinder TL2	0	EACH	
9444	Spare Parts Kit TL3	0	EACH	
9458	Spare Parts Kit TL2	0	EACH	
9488	Reset Parts Kit TL3	0	EACH	
9489	Reset Parts Kit TL2	0	EACH	
9495	Tool Anti-Rotation Pin Removal	0	EACH	
9507	Anchor Drop-In	0	EACH	
9508	Pin Anti-Rotation Front	0	EACH	
9509	Pin Anti-Rotation Rear	0	EACH	
9510	Plate Sheave Cover	0	EACH	
9525	Cable Release Tool	0	EACH	

TRANSITIONS AND TRANSITION PARTS			
9431	Transition Jersey Barrier - Right	0	EACH
9432	Transition Jersey Barrier - Left	0	EACH
9433	Transition 24" Concrete - Left & Right	0	EACH
9437	Transition Thrie Beam - Right	0	EACH
9438	Transition Thrie Beam—Left	0	EACH
9511	Transition W Beam 28" High Right	0	EACH
9512	Transition W Beam 28" High Left	0	EACH
9513	Transition W Beam 32" High Right	0	EACH
9514	Transition W Beam 32" High Left	0	EACH
9459	Transition Assembly 30" Concrete Straight Connection	0	EACH
9460	Transition Assembly 36" Concrete Straight Connection	0	EACH
9461	Transition Assembly 30" Concrete Outside Connection	0	EACH
9462	Transition Assembly 36" Concrete Outside Connection	0	EACH
9475	Transition Assembly Gore to End of Flared Transition	0	EACH
9476	Transition Assembly Median Barrier 36B X 19T X 42H	0	EACH
9492	Transition Assembly Median Barrier 36B X 19T X 32H	0	EACH
9463	Transition 30" Concrete Straight Connection	0	EACH
9464	Transition 36" Concrete Straight Connection	0	EACH
9465	Transition 30" Concrete Outside Connection	0	EACH
9466	Transition 36" Concrete Outside Connection	0	EACH
9467	Transition Thrie Beam 10 Degree Flare - Right	0	EACH
9468	Transition Thrie Beam 10 Degree Flare - Left	0	EACH
9469	Transition Concrete Spanner Brace	0	EACH
9470	Transition Concrete #1 Tapered Spanner Brace	0	EACH
9471	Transition Concrete #2 Tapered Spanner Brace	0	EACH
9472	Transition Gore Tapered #1 Spanner Brace	0	EACH
9473	Transition Gore Tapered #2 Spanner Brace	0	EACH
9474	Thrie Beam Concrete Leg Brace	0	EACH
9477	Transition Median Barrier 36B X 19T X 42H Right	0	EACH
9478	Transition Median Barrier 36B X 19T X 42H - Left	0	EACH
9493	Transition Median Barrier 36B X 19T X 32H - Right	0	EACH
9494	Transition Median Barrier 36B X 19T X 32H - Left	0	EACH
9479	Transition Spanner Brace Median Barrier 36B	0	EACH
9480	Transition Rub Rail Median Barrier - Right	0	EACH
9481	Transition Rub Rail Median Barrier - Left	0	EACH
9490	Transition Single Slope 24-26 9/32" Wide Median Barrier - Right	0	EACH
9491	Transition Single Slope 24-26 9/32" Wide Median Barrier - Left	0	EACH
9504	Transition Profile B Right	0	EACH
9405	Transition Profile B Left	0	EACH
9524	Blockout	0	EACH

O = Optional

APPENDIX B—EQUIPMENT LIST

The following tools and equipment will be required to install and repair the Crash Cushion:

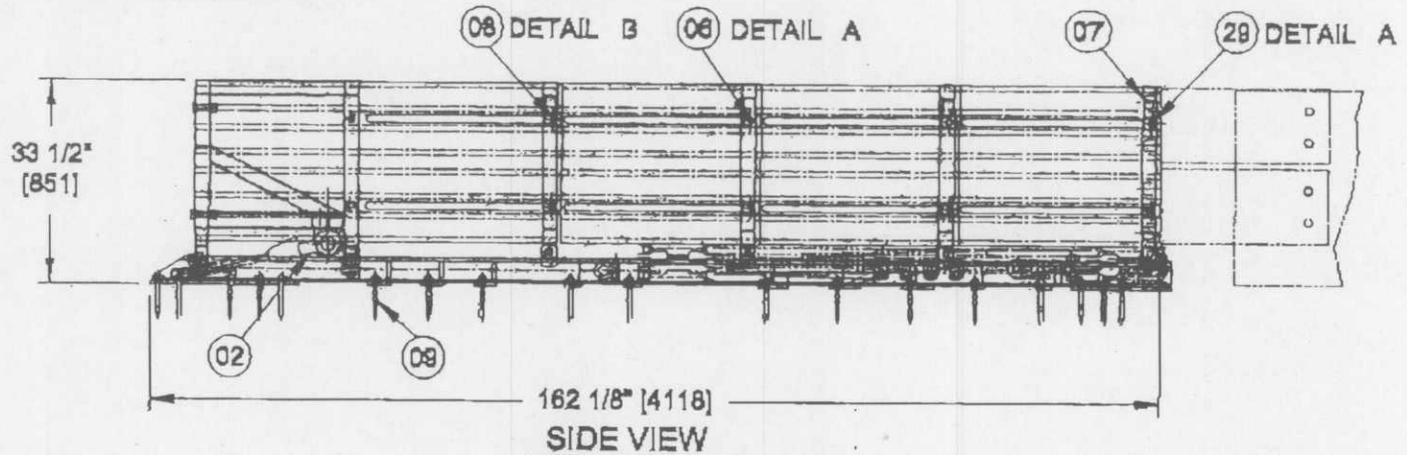
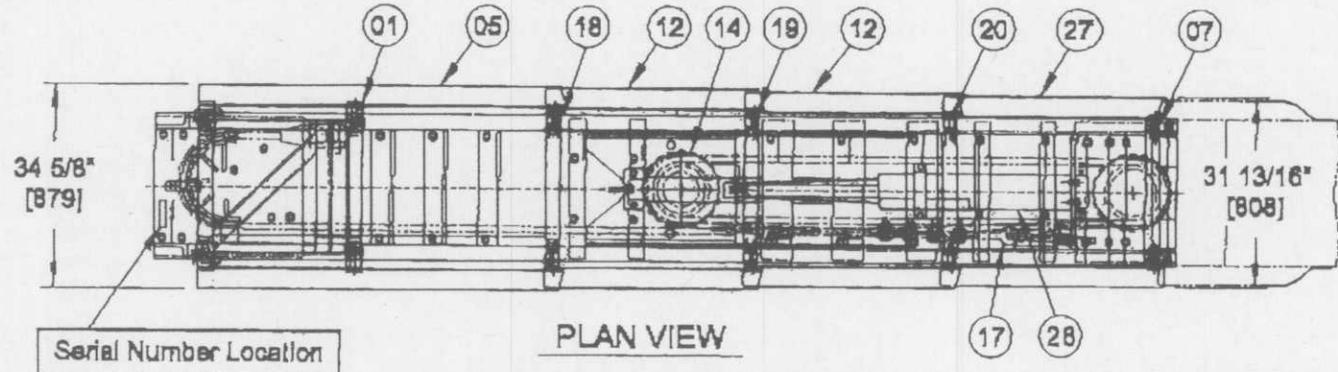
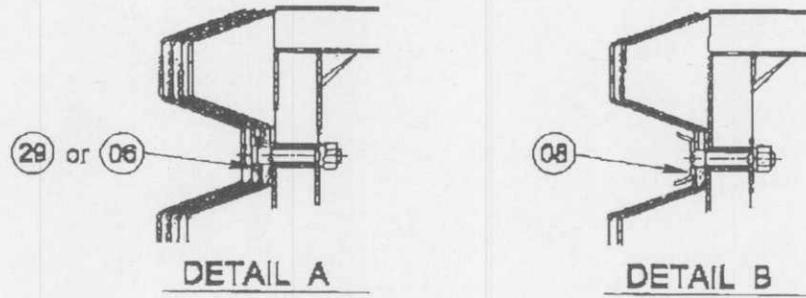
- Standard roadside work area safety equipment
- Personal safety equipment (gloves, latex gloves for epoxy, eye/face protection, etc.)
- Means of safely unloading 3500 lb
- Compressed air source/Vacuum
- 1" bottle brush (McMaster Carr # 73075T55)
- Safety goggles
- Four lifting slings or four-point sling
- Bosch rotary hammer drill 13 ½ amp #11263EVS Model 0 611 263 739 or equal
- 7/8" X 22" concrete drill bit for concrete installations or 7/8" X 28" drill bit for asphalt installations
- Renton rebar eater bit #RB-14 - 7/8" rebar cutter bit or equal
- 1" X 12" concrete drill bit for drop-in anchors on transitions
- Punch or setting tool for drop-in anchors.
- ½" electric drill for rebar bit and bottle brush (cordless will work for bottle brush)
- Epoxy dispenser for 28 oz dual cartridge system (should have spare in case of malfunction)
- Combination wrenches, deep sockets (Including 7/16" – 5/8", 1 ¼", 1 ½", 1 5/8") and 3+" extension
- Socket wrench and breaker bar
- Torque wrench (225 ft-lb capacity) with 3 ft extension
- Measuring and layout equipment (tape measure, chalk line, markers, etc.)
- 5 ft wedge and round-ended pry bar
- Loctite #34395 marine grade anti-seize
- Suitable pulling means (strap or chain)
- 2 long-handled flat screwdrivers
- Misc. small tools (hammers, pliers, screw drivers, vise grips, etc.)
- Bear claw pry bar to remove ¼" shear bolt remnants

This list is adequate for general installation and repair. However, depending on site conditions, additional tools and equipment may be required.

PARTS LIST

- 01 - Front Sled
- 02 - Cable Assembly
- 05 - Sled Panel
- 07 - Terminal Brace
- 09 - Anchor Bolts
- 12 - Side Panels
- 14 - Mobile Sheave Assembly
- 17 - Cable Adjuster Bolt
- 18-20 - Mobile Frames 4-6
- 26 - Cylinder
- 27 - Rear Panel
- 06, 08, 29 - Side Keepers

APPENDIX C - SMART CUSHION[®], TEST LEVEL 2



Received

C. A. RASMUSSEN INC.

Fax: 1-661-367-9097

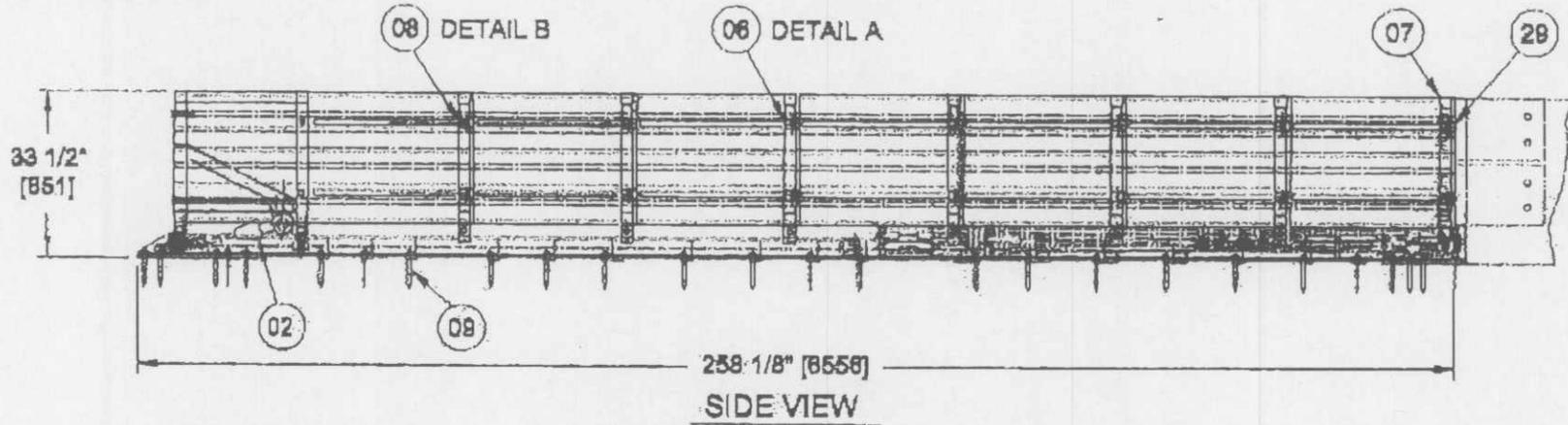
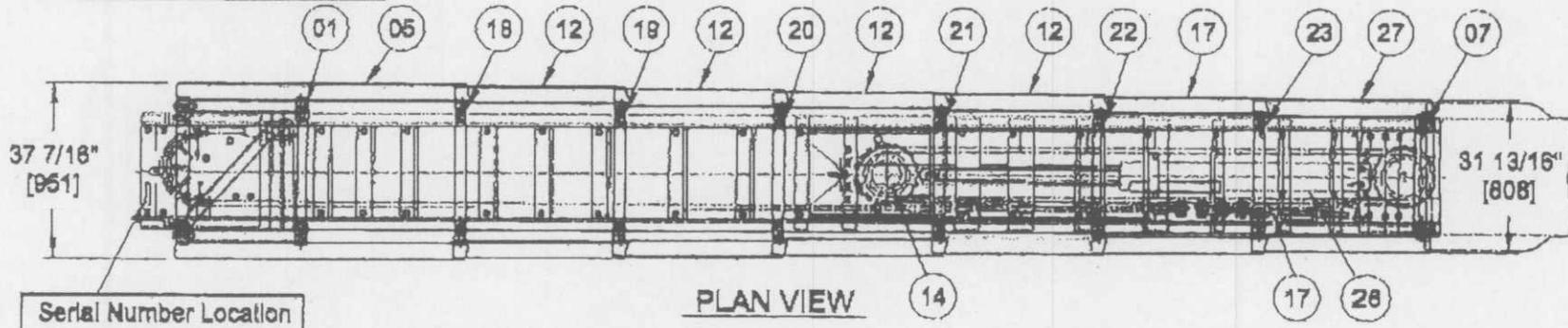
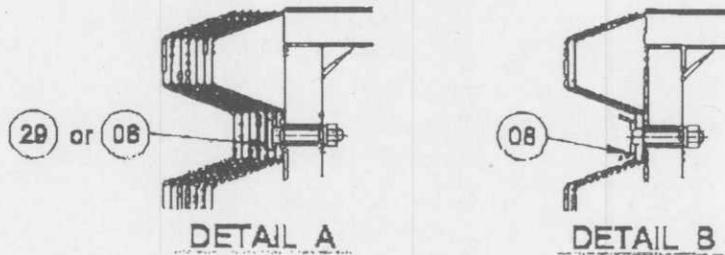
Jul 18 2014 03:51pm

Jul 18 2014 03:45pm P029/061

PARTS LIST

- 01 - Front Sled
- 02 - Cable Assembly
- 05 - Sled Panel
- 07 - Terminal Brace
- 09 - Anchor Bolts
- 12 - Side Panels
- 14 - Mobile Sheave Assembly
- 17 - Cable Adjuster Bolt
- 18-23 - Mobile Frames 1-6
- 26 - Cylinder
- 27 - Rear Panel
- 06, 08, 29 - Side Keepers

APPENDIX D - SMART CUSHION®, TEST LEVEL 3



Received
 C. A. RASMUSSEN INC.
 Fax: 1-661-367-9097
 Jul 18 2014 03:52pm
 Jul 18 2014 03:45pm
 P030/061

APPENDIX E1 - TEST LEVEL 2 FOUNDATION

Cross Slope at Top Surface not to Exceed 1 In 10
Foundation must be a Level Plane

***** Wide Hazards and Transitions may require
the foundation to be longer. See Transition Drawings.

SPECIFICATIONS

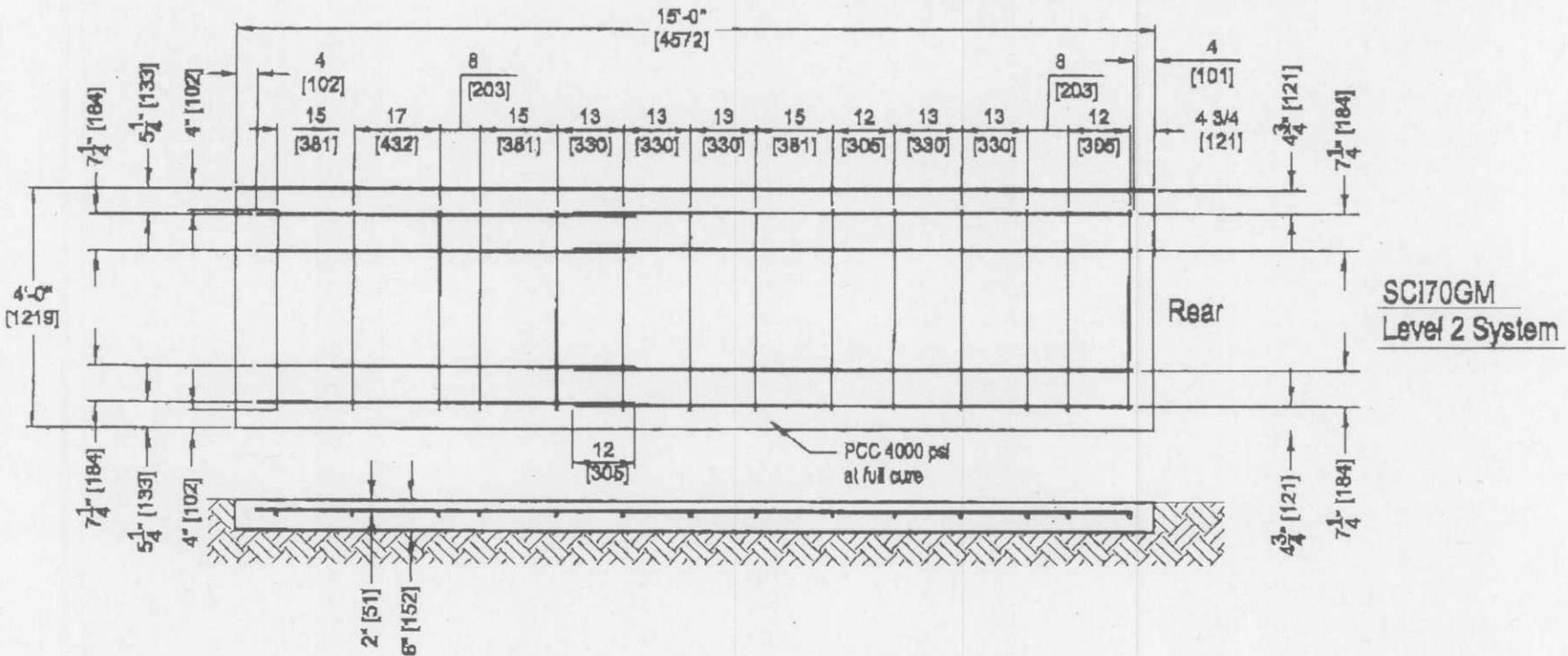
All reinforcing steel - straight #4 ASTM-A38

Embedment requirements:

- 6" reinforced concrete pad with anchor embedment of 5 1/2"
- 8" non-reinforced concrete pad with anchor embedment of 5 1/2"
- 3" asphalt over 3" concrete with anchor embedment of 16 1/2"
- 6" asphalt over 6" of compacted subbase with anchor embedment of 16 1/2"
- 8" asphalt with anchor embedment of 16 1/2"

The contractor shall furnish a certification for material installed to the following requirements:

- 6" reinforced concrete (PCC) sampling per ASTM C31-84, testing per ASTM C39-84
- 8" non-reinforced concrete (PCC) sampling per ASTM C31-84, testing per ASTM C39-84
- 3" asphalt over 3" concrete - Type SP 12.5 Level C or higher
- 6" asphalt over 6" of compacted subbase - same as above
- 8" asphalt (AC) - Type SP 12.5 Traffic Level C or higher



APPENDIX F - TRANSITION, GORE ASSEMBLY

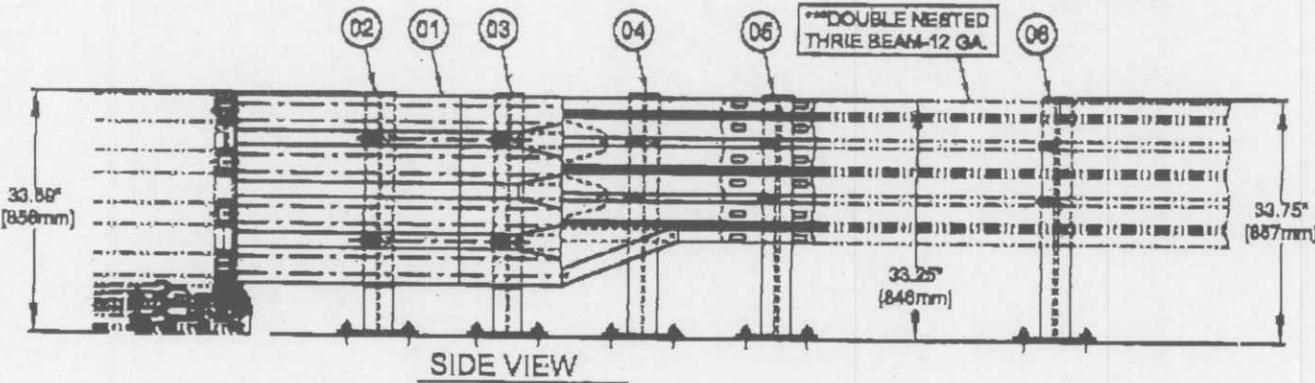
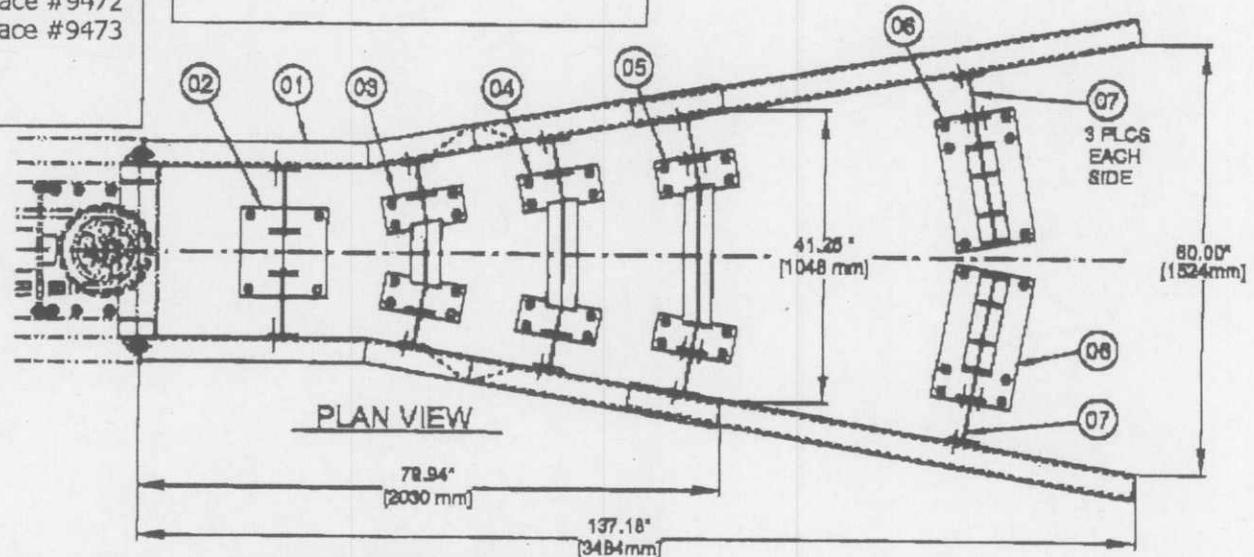
PARTS LIST

- Gore Assembly #9475
- 01 - Transition 10 Degree Flare Right #9467
- 01 - Transition 10 Degree Flare Left #9468
- 02 - Transition Concrete Spanner Brace #9469
- 03 - Transition Concrete #1 Spanner Brace #9470
- 04 - Transition Gore Tapered #1 Spanner Brace #9472
- 05 - Transition Gore Tapered #2 Spanner Brace #9473
- 06 - Thrie Beam Concrete Leg Brace #9474
- 07 - Thrie Beam Blockout (AASHTO PWB02)

*****SPLICE BOLTS AND
GUARDRAIL SUPPLIED BY
OTHERS*****

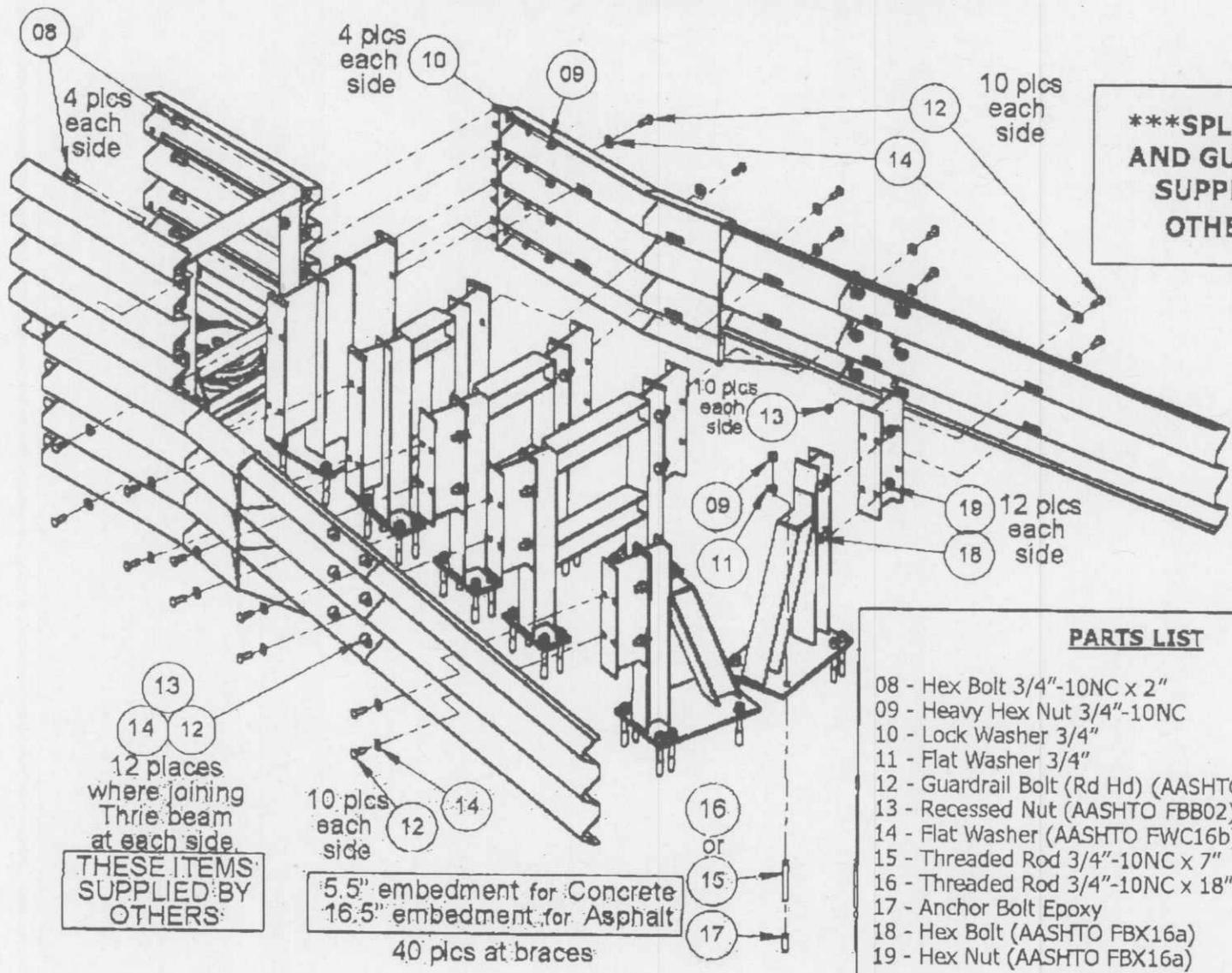
NOTES:

- 1) DIMENSIONS SHOWN ARE FOR 80" WIDTH
- 2) FOR EACH 1" OF WIDTH CHANGE,
ADD OR SUBTRACT THE FOLLOWING:
2.86" [73.15mm] TO LENGTH OF GUARDRAIL
2.84" [72.13mm] TO OVERALL LENGTH
- 3) ADD OR SUBTRACT ADDITIONAL POST ON
EACH SIDE FOR EACH 13" [330mm]
CHANGE IN WIDTH.
- 4) GUARDRAIL TERMINATION - YOU MUST ADD
THE GUARDRAIL OVERLAP LENGTH AND
TERMINATE PER STATE REGULATIONS.



The use of the (a) brace will be determined by whether the Thrie Beam can be attached to the obstruction or not. If the Thrie Beam distance from the last brace is 40 inches or less and can be attached, you will not need a brace at the obstruction. If you cannot attach to the obstruction, you may need a brace and drill holes in the Thrie Beam at the furthest rearward location.

APPENDIX F(2) - TRANSITION, GORE ASSEMBLY



*****SPLICE BOLTS AND GUARDRAIL SUPPLIED BY OTHERS*****

PARTS LIST

- 08 - Hex Bolt 3/4"-10NC x 2"
- 09 - Heavy Hex Nut 3/4"-10NC
- 10 - Lock Washer 3/4"
- 11 - Flat Washer 3/4"
- 12 - Guardrail Bolt (Rd Hd) (AASHTO FBB02)
- 13 - Recessed Nut (AASHTO FBB02)
- 14 - Flat Washer (AASHTO FWC16b)
- 15 - Threaded Rod 3/4"-10NC x 7"
- 16 - Threaded Rod 3/4"-10NC x 18"
- 17 - Anchor Bolt Epoxy
- 18 - Hex Bolt (AASHTO FBX16a)
- 19 - Hex Nut (AASHTO FBX16a)

Received
 C. A. RASMUSSEN INC. Fax: 1-661-367-9097 Jul 18 2014 03:53pm
 Jul 18 2014 03:46pm P034/061

APPENDIX F(3) - TRANSITION, GORE ASSEMBLY CALCULATIONS

SCI GM WIDE TRANSITION CALCULATIONS

Guardrail

12.6" Splice overlap at Transition end

Must add length for barrier overlap and end termination per state specifications

Longitudinal distance increases 2.84" for each 1" increase in width

Thrie Beam Length increases 2.88" for each 1" increase in width

Gore Width Inches	Additional Long. Distance Inches	Additional Long. Distance Feet	Thrie Beam Length Inches	Overall System Length Feet	Additional Brace Count
41	79.2	6.6	12.6	28.1	All 4 Spanner Braces # 9469, 9470, 9472, 9473
48	99.1	8.3	32.8	29.8	All 4 Spanner Braces # 9469, 9470, 9472, 9473
55	118.9	9.9	52.9	31.4	Add 2-Thrie Beam Concrete Leg Brace #9474
60	133.1	11.1	67.3	32.6	Add 2-Thrie Beam Concrete Leg Brace #9474
68	155.8	13.0	90.4	34.5	Add 4-Thrie Beam Concrete Leg Brace #9474
69	158.6	13.2	93.2	34.7	Add 4-Thrie Beam Concrete Leg Brace #9474
81	192.7	16.1	127.8	37.6	Add 6-Thrie Beam Concrete Leg Brace #9474
88	212.5	17.7	148.0	39.2	Add 6-Thrie Beam Concrete Leg Brace #9474
94	229.5	19.1	165.2	40.6	Add 8-Thrie Beam Concrete Leg Brace #9474
100	246.5	20.5	182.5	42.1	Add 8-Thrie Beam Concrete Leg Brace #9474
107	266.4	22.2	202.7	43.7	Add 10-Thrie Beam Concrete Leg Brace #9474
112	280.6	23.4	217.1	44.9	Add 10-Thrie Beam Concrete Leg Brace #9474
120	303.3	25.3	240.1	46.8	Add 12-Thrie Beam Concrete Leg Brace #9474
126	320.3	26.7	257.4	48.2	Add 12-Thrie Beam Concrete Leg Brace #9474
133	340.1	28.3	277.6	49.9	Add 14-Thrie Beam Concrete Leg Brace #9474

Received

C. A. RASMUSSEN INC.

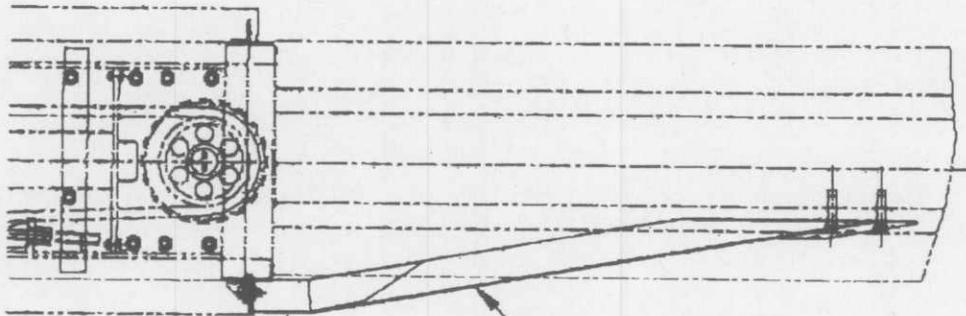
Fax: 1-661-367-9097

Jul 18 2014 03:53pm

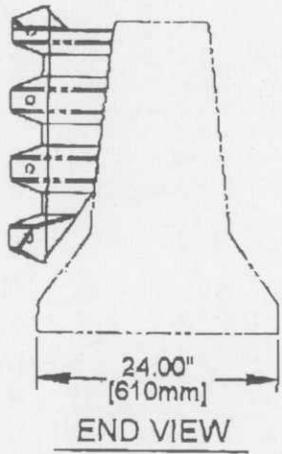
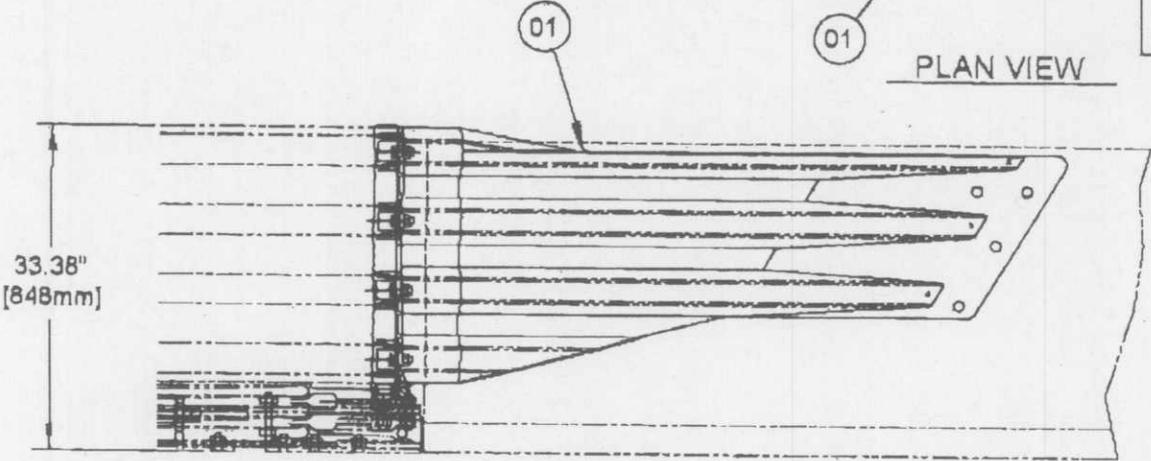
Jul 18 2014 03:46pm P035/061

APPENDIX G - TRANSITION, JERSEY/F SHAPE BARRIER

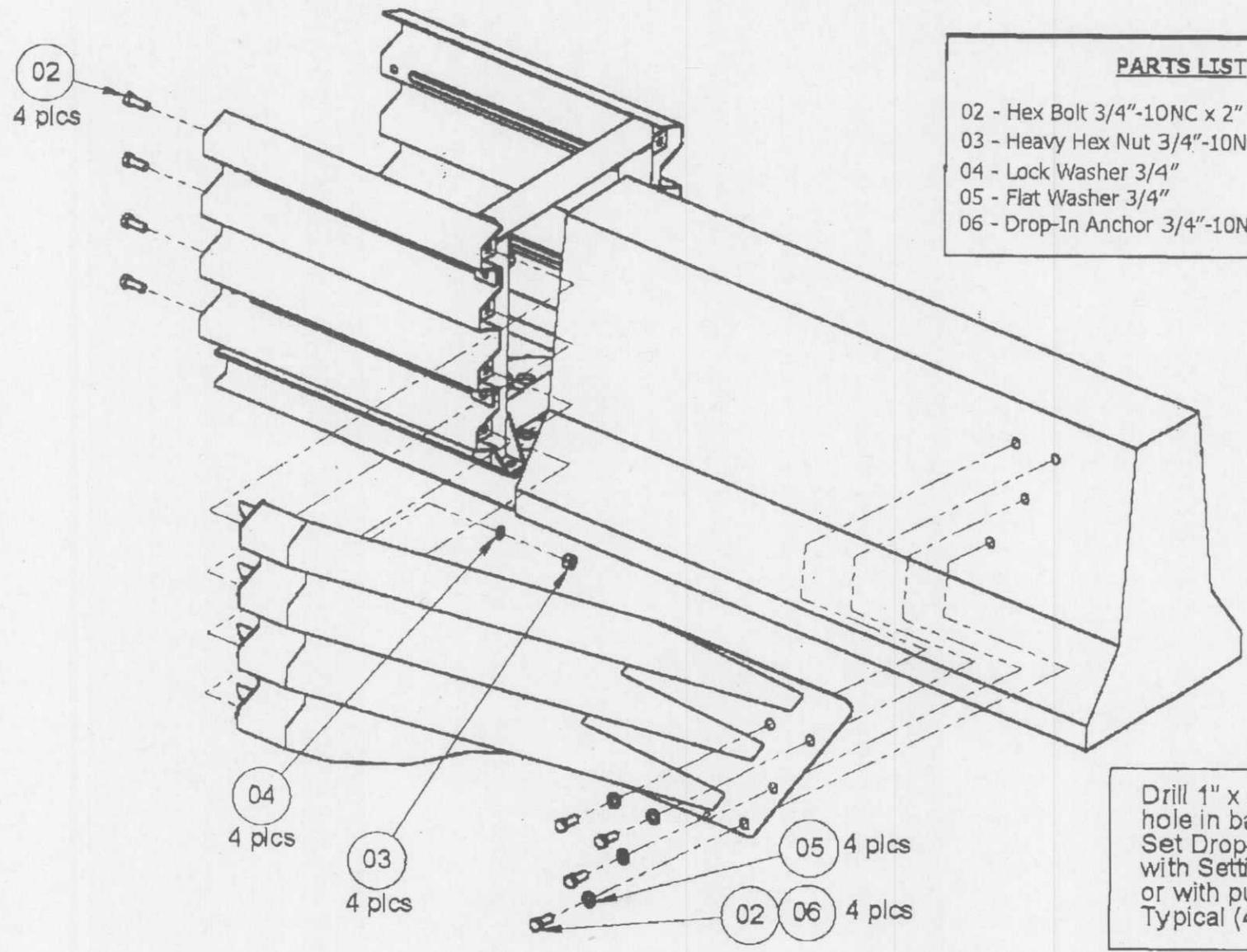
PARTS LIST	
01	Transition Jersey Barrier - Right #9431
01	Transition Jersey Barrier - Left #9432



Transition on one or both sides as required.



APPENDIX G(2) - TRANSITION, JERSEY/F SHAPE BARRIER



PARTS LIST	
02	- Hex Bolt 3/4"-10NC x 2"
03	- Heavy Hex Nut 3/4"-10NC
04	- Lock Washer 3/4"
05	- Flat Washer 3/4"
06	- Drop-In Anchor 3/4"-10NC x 3"

Drill 1" x 3 1/4" deep hole in barrier. Set Drop-In Anchor with Setting Tool or with punch. Typical (4) places.

02
4 pcs

04
4 pcs

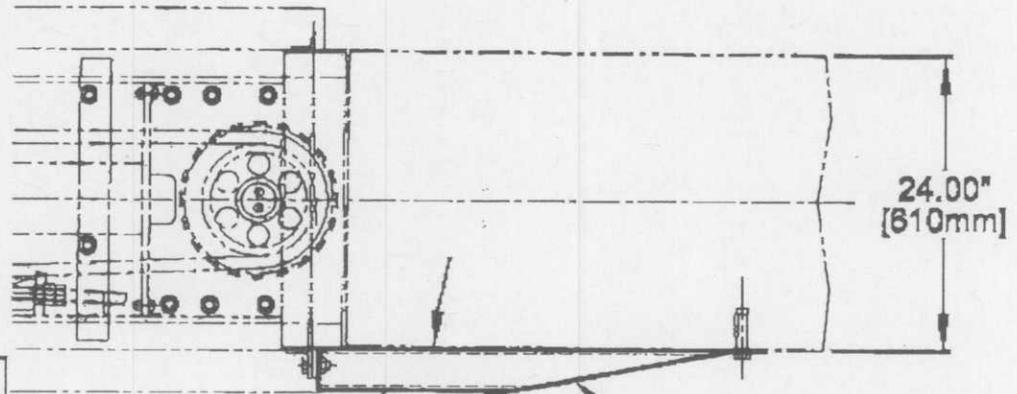
03
4 pcs

05 4 pcs

02 06 4 pcs

Received
C. A. RASMUSSEN INC. Jul 18 2014 03:54pm
Fax: 1-661-367-9097 Jul 18 2014 03:47pm P037/061

APPENDIX H - TRANSITION, CONCRETE BLOCK, 24 INCH (610mm)

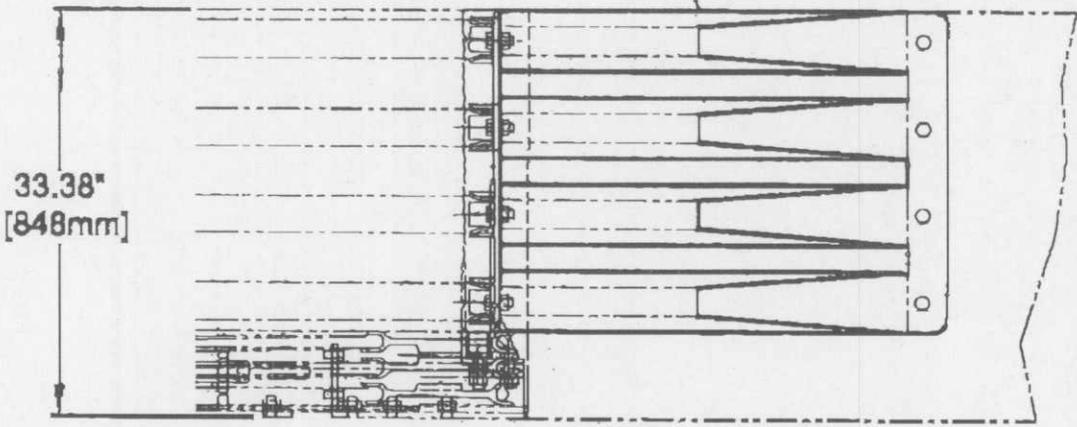


Transition on one or both sides as required.

PLAN VIEW

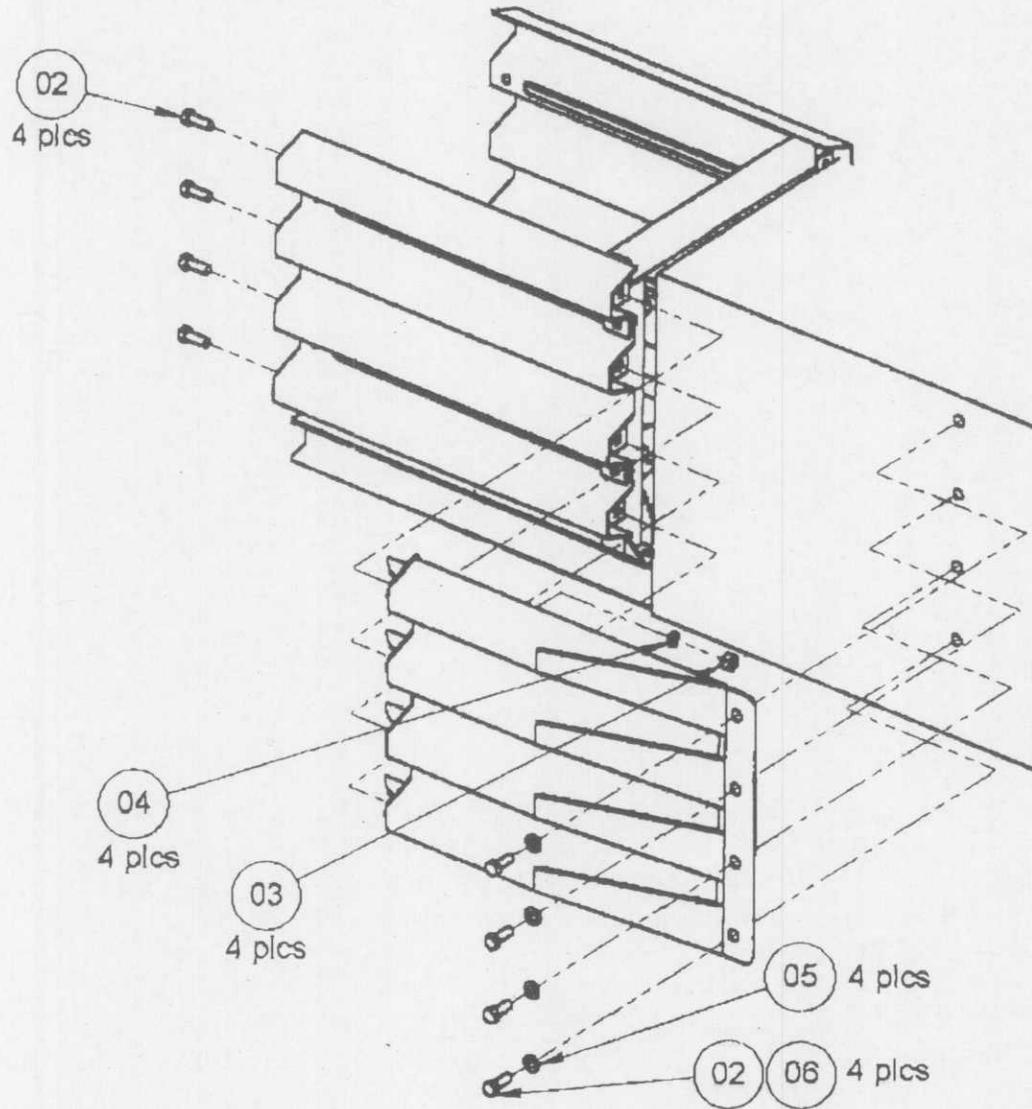
PARTS LIST
 Transition 24" Concrete Block Right or Left #9433

01



SIDE VIEW

APPENDIX H(2) - TRANSITION, CONCRETE BLOCK, 24 INCH (610mm)



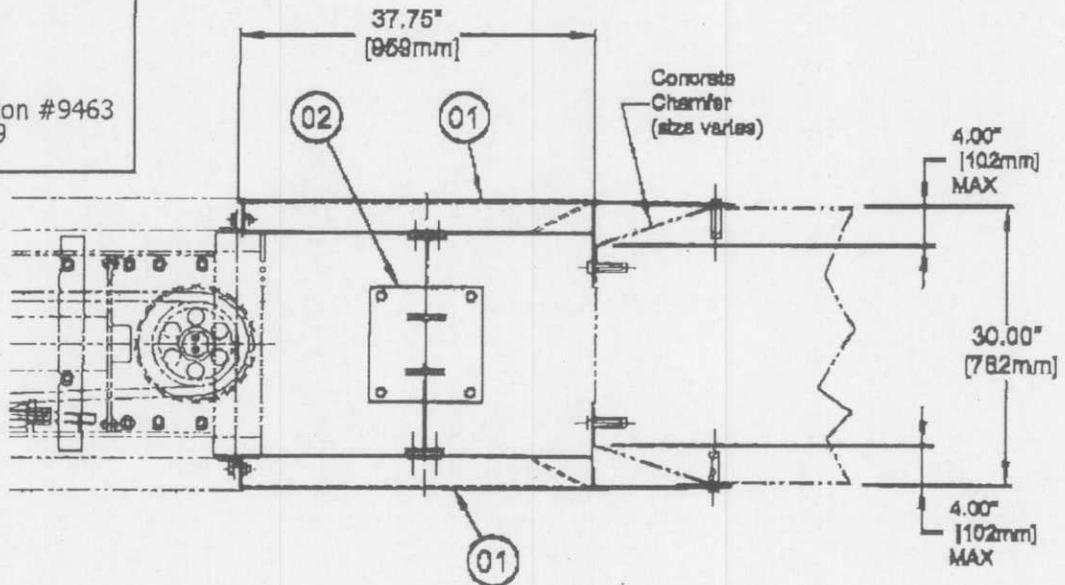
PARTS LIST	
02	Hex Bolt 3/4"-10NC x 2"
03	Heavy Hex Nut 3/4"-10NC
04	Lock Washer 3/4"
05	Flat Washer 3/4"
08	Drop-In Anchor 3/4"-10NC x 3"

Drill 1" x 3 1/4" deep hole in barrier.
Set Drop-In Anchor with Setting Tool or with punch.
Typical (4) places.

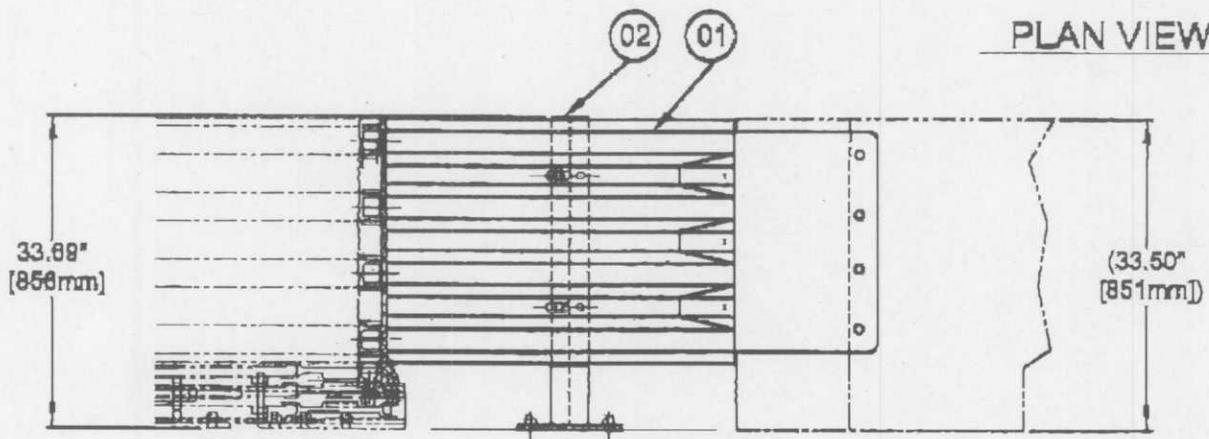
Received
C. A. RASMUSSEN INC.
Jul 18 2014 03:54pm
Fax: 1-661-367-9097
Jul 18 2014 03:47pm P039/061

APPENDIX I - TRANSITION, CONCRETE BLOCK, 30 INCH (762mm)

PARTS LIST	
Two Sided Full Assembly #9459	
01 -	Transition 30" Concrete Straight Connection #9463
02 -	Transition Concrete Spanner Brace #9469



PLAN VIEW



SIDE VIEW

USED FOR:
 1. Unchamfered Concrete Block
 2. Chamfered Concrete Block ***
 *** Chamfer limited to <4"

Received

C. A. RASMUSSEN INC.

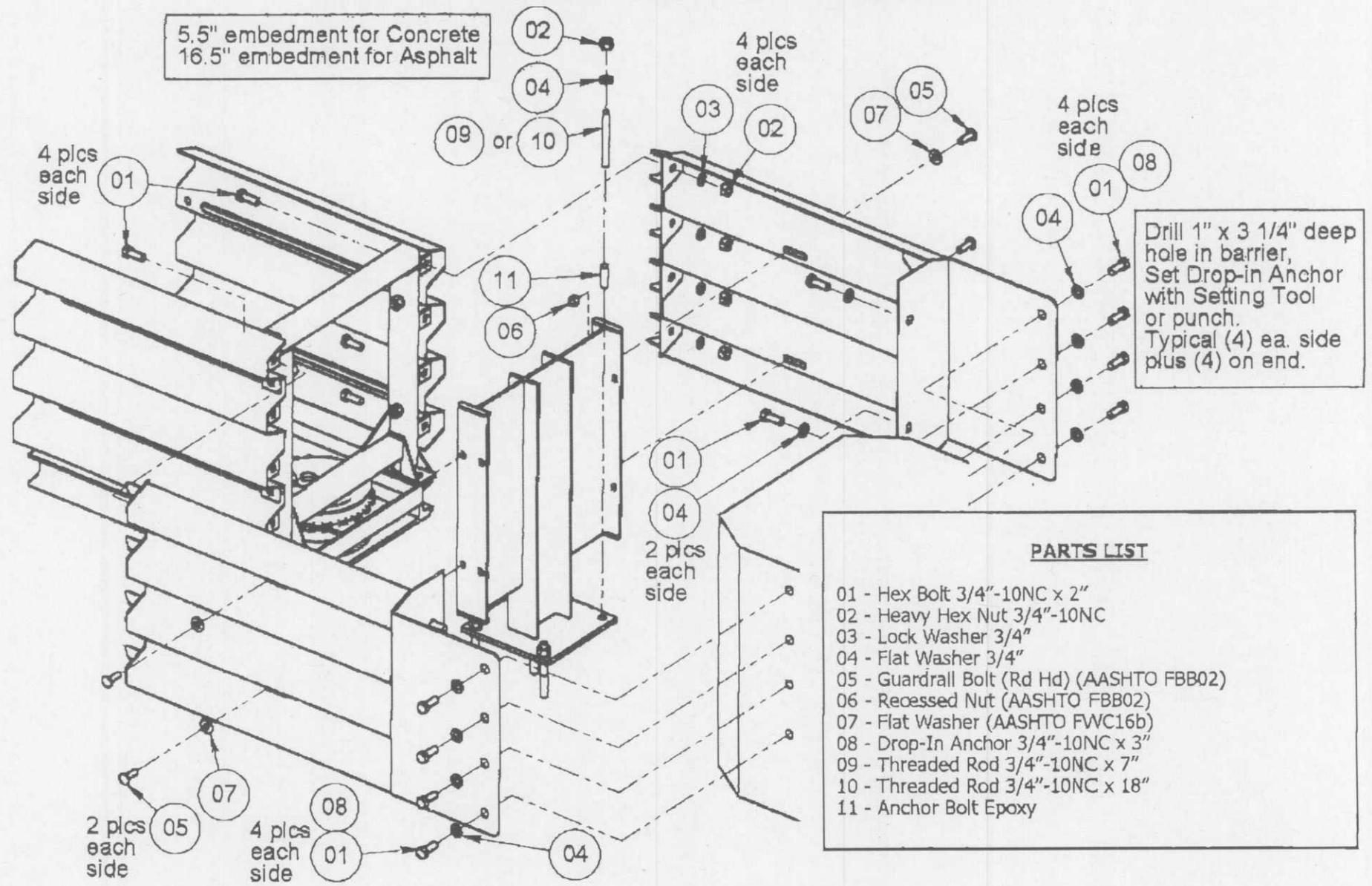
Fax: 1-661-361-9097

Jul 18 2014 03:54pm

Jul 18 2014 03:47pm

PO40/061

APPENDIX I(2) - TRANSITION, CONCRETE BLOCK, 30 INCH (762mm)



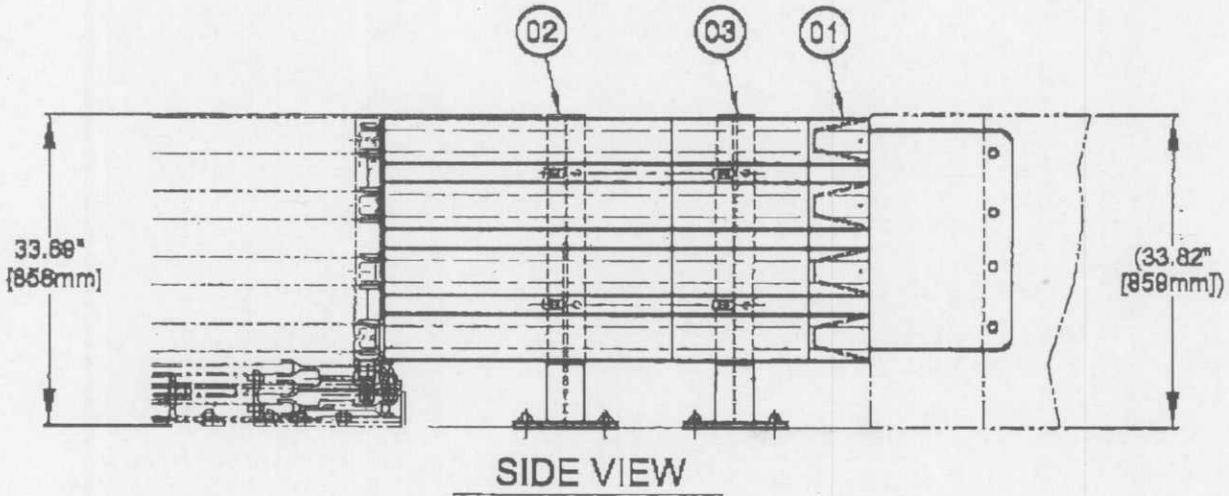
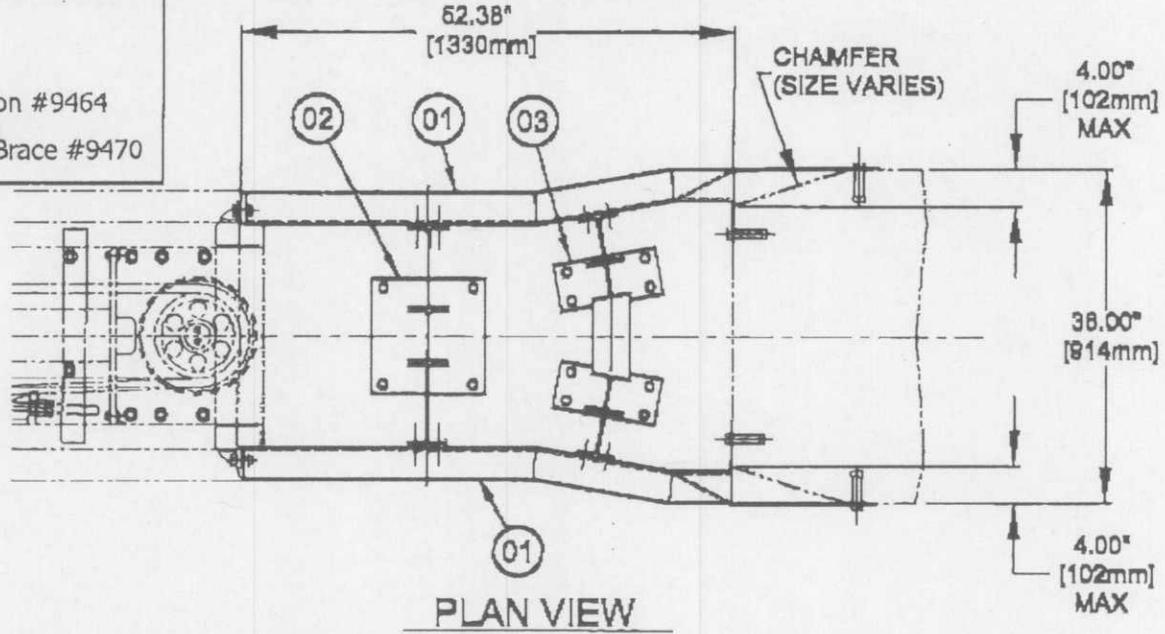
Drill 1" x 3 1/4" deep hole in barrier, Set Drop-in Anchor with Setting Tool or punch. Typical (4) ea. side plus (4) on end.

PARTS LIST	
01	Hex Bolt 3/4"-10NC x 2"
02	Heavy Hex Nut 3/4"-10NC
03	Lock Washer 3/4"
04	Flat Washer 3/4"
05	Guardrail Bolt (Rd Hd) (AASHTO FBB02)
06	Recessed Nut (AASHTO FBB02)
07	Flat Washer (AASHTO FWC16b)
08	Drop-In Anchor 3/4"-10NC x 3"
09	Threaded Rod 3/4"-10NC x 7"
10	Threaded Rod 3/4"-10NC x 18"
11	Anchor Bolt Epoxy

APPENDIX J - TRANSITION, CONCRETE BLOCK, 36 INCH (915mm)

PARTS LIST

- Two Sided Full Assembly #9460
- 01 - Transition 36" Concrete Straight Connection #9464
- 02 - Transition Concrete Spanner Brace #9469
- 03 - Transition Concrete #1 Tapered Spanner Brace #9470



USED FOR:

1. Unchamfered Concrete Block
2. Chamfered Concrete Block ***

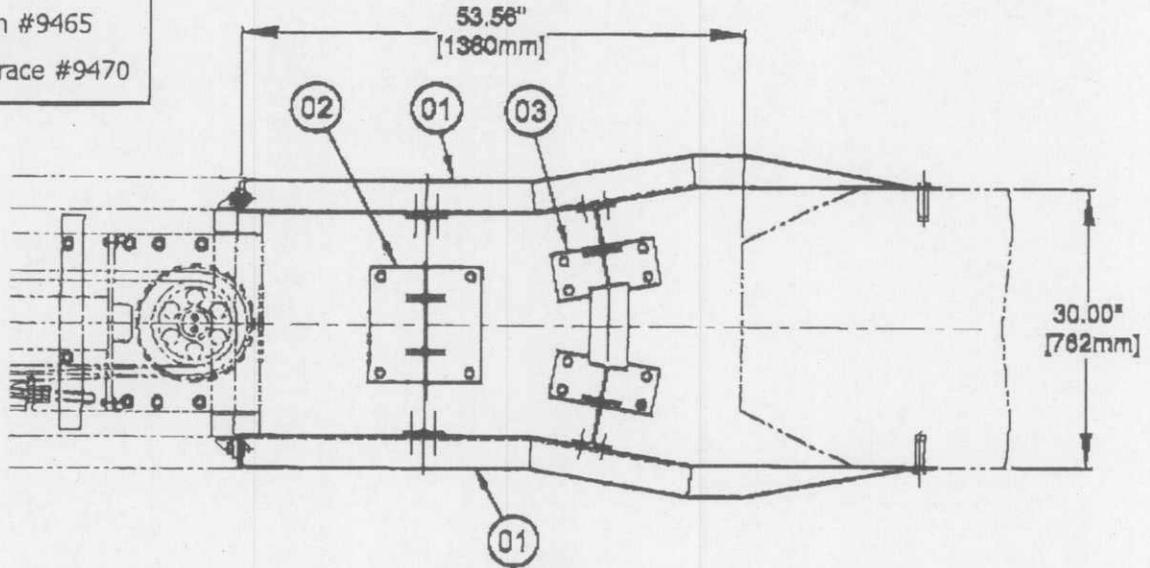
*** Chamfer limited to <4"

Received
 C. A. RASMUSSEN INC.
 Fax: 1-661-367-9097
 Jul 18 2014 03:55pm
 Jul 18 2014 03:48pm P042/061

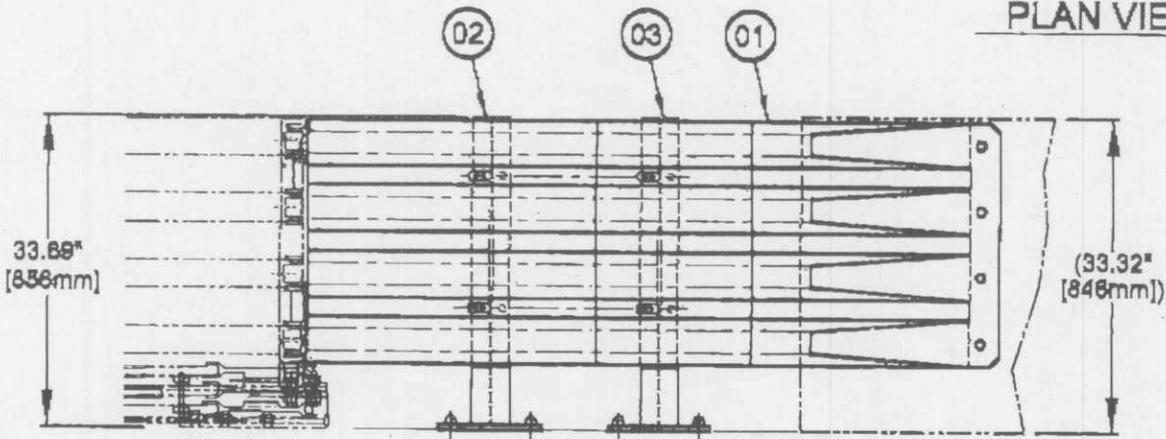
APPENDIX K - TRANSITION, CONCRETE BLOCK, 30 INCH (762mm) FLARED

PARTS LIST

- Two Sided Full Assembly #9461
- 01 - Transition 30" Concrete Outside Connection #9465
- 02 - Transition Concrete Spanner Brace #9469
- 03 - Transition Concrete #1 Tapered Spanner Brace #9470



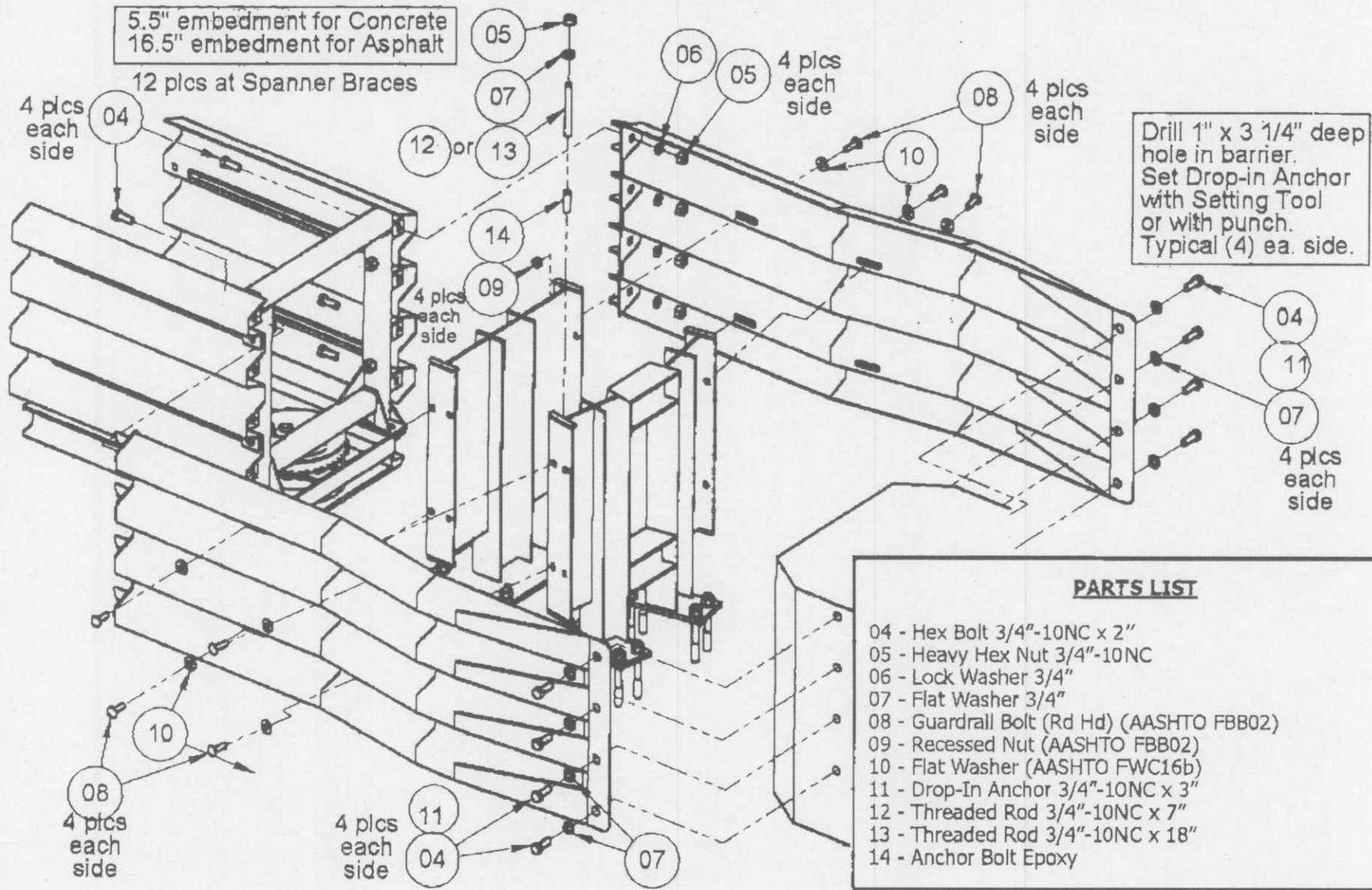
PLAN VIEW



SIDE VIEW

USED FOR:
 1. Unchamfered Concrete Block
 2. Chamfered Concrete Block ***
 ***Chamfer limited to <4°

APPENDIX K(2) - TRANSITION, CONCRETE BLOCK, 30 INCH (762mm) FLARED



PARTS LIST

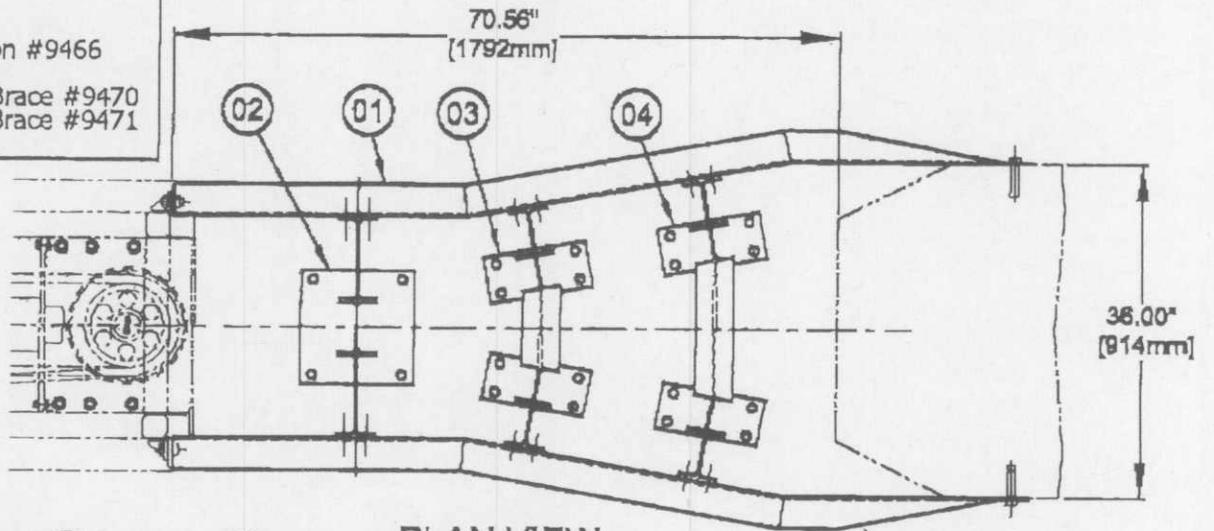
- 04 - Hex Bolt 3/4"-10NC x 2"
- 05 - Heavy Hex Nut 3/4"-10NC
- 06 - Lock Washer 3/4"
- 07 - Flat Washer 3/4"
- 08 - Guardrail Bolt (Rd Hd) (AASHTO FBB02)
- 09 - Recessed Nut (AASHTO FBB02)
- 10 - Flat Washer (AASHTO FWC16b)
- 11 - Drop-In Anchor 3/4"-10NC x 3"
- 12 - Threaded Rod 3/4"-10NC x 7"
- 13 - Threaded Rod 3/4"-10NC x 18"
- 14 - Anchor Bolt Epoxy

Received
 C. A. RASMUSSEN INC. Fax: 1-661-367-9997
 Jul 18 2014 03:55pm
 Jul 18 2014 03:49pm P045/061

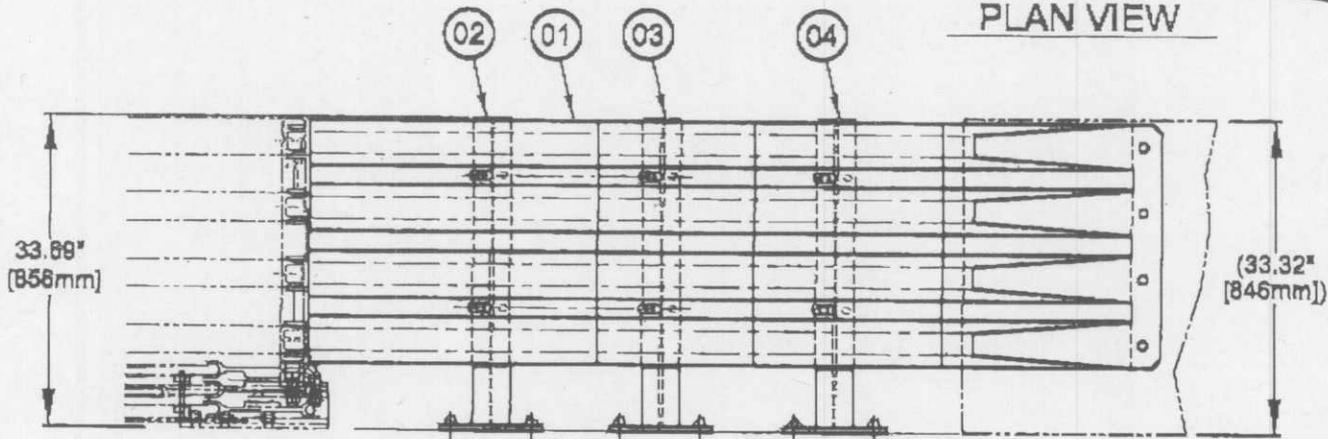
APPENDIX L - TRANSITION, CONCRETE BLOCK, 38 INCH (915mm) FLARED

PARTS LIST

- Two Sided Full Assembly #9462
- 01 - Transition 36" Concrete Outside Connection #9466
- 02 - Transition Concrete Spanner Brace #9469
- 03 - Transition Concrete #1 Tapered Spanner Brace #9470
- 04 - Transition Concrete #2 Tapered Spanner Brace #9471

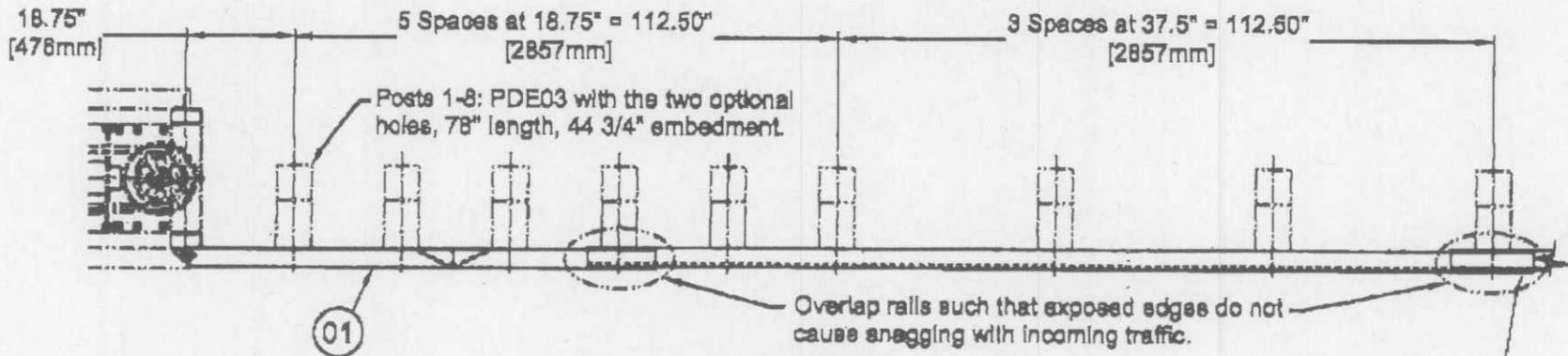


PLAN VIEW



SIDE VIEW

APPENDIX M - TRANSITION, THRIE BEAM

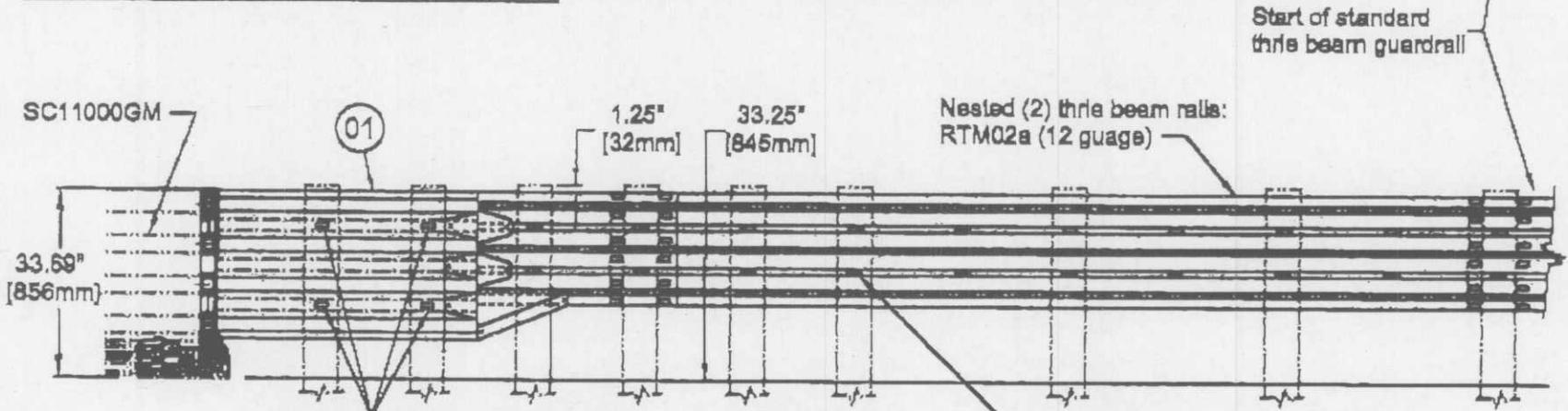


PLAN VIEW

PARTS LIST

- 01 - Transition Thrie & W Beam - Right #9437
- 01 - Transition Thrie & W Beam - Left #9438

*****GUARDRAIL, POSTS, BLOCKOUTS AND CONNECTION BOLTS SUPPLIED BY OTHERS*****



SIDE VIEW

Blockouts for posts 1 & 2: PDB01 (two per post), or use similar to Part 15 (figure 7) in original design.

Blockouts for posts 3 - 8: PDB02

Received

C. A. RASMUSSEN INC.

Fax: 1-661-367-9097

Jul 18 2014 03:49pm

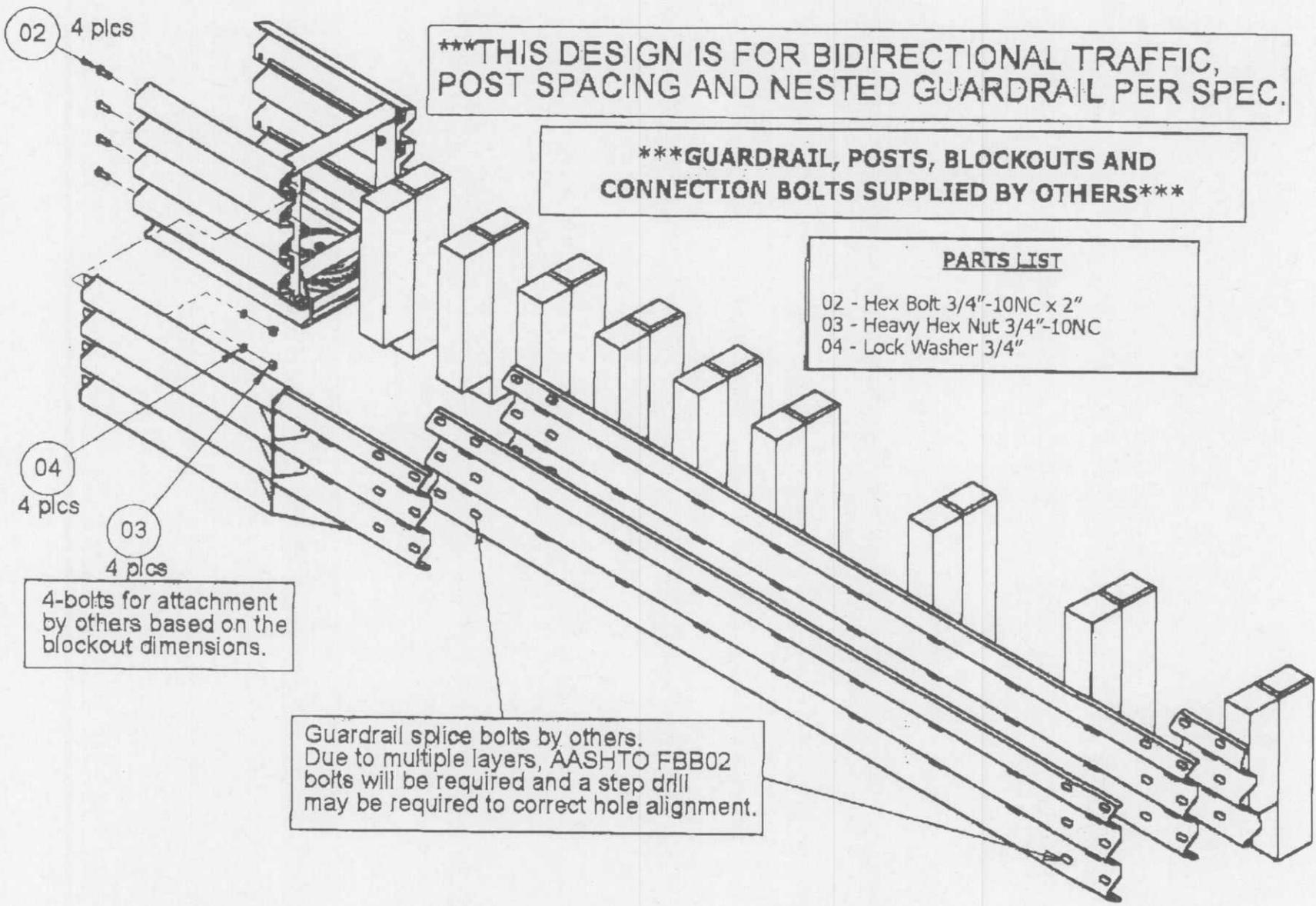
PO48/061

APPENDIX M(2) - TRANSITION, THRIE BEAM

*****THIS DESIGN IS FOR BIDIRECTIONAL TRAFFIC,
POST SPACING AND NESTED GUARDRAIL PER SPEC.**

*****GUARDRAIL, POSTS, BLOCKOUTS AND
CONNECTION BOLTS SUPPLIED BY OTHERS*****

- PARTS LIST**
- 02 - Hex Bolt 3/4"-10NC x 2"
 - 03 - Heavy Hex Nut 3/4"-10NC
 - 04 - Lock Washer 3/4"



04
4 plcs

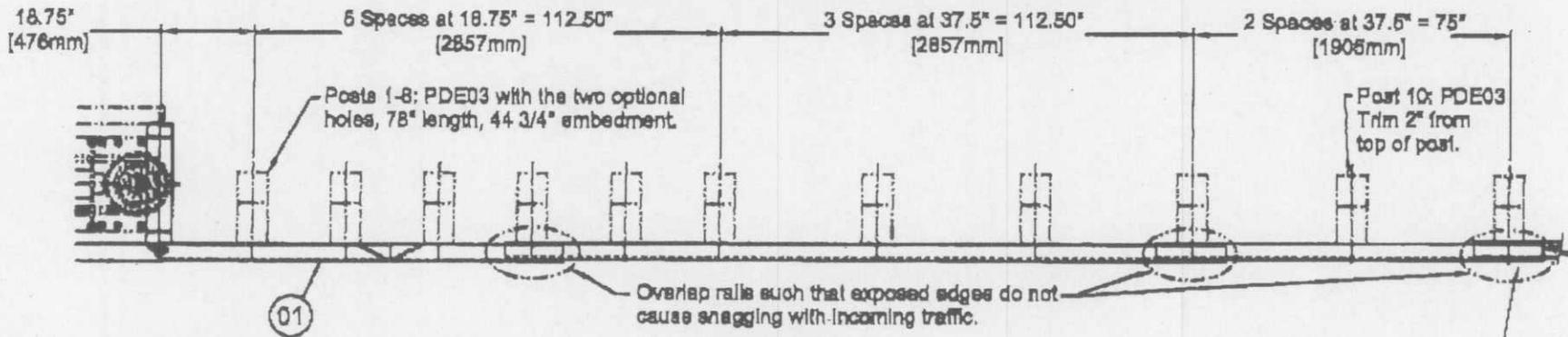
03
4 plcs

4-bolts for attachment
by others based on the
blockout dimensions.

Guardrail splice bolts by others.
Due to multiple layers, AASHTO FBB02
bolts will be required and a step drill
may be required to correct hole alignment.

Received
C.A. RASMUSSEN INC. Jul 18 2014 03:50pm
Fax: 1-661-367-9097 Jul 18 2014 03:50pm P049/061

APPENDIX N - TRANSITION, W BEAM
*****FOR USE WITH REVERSE DIRECTION TRAFFIC*****

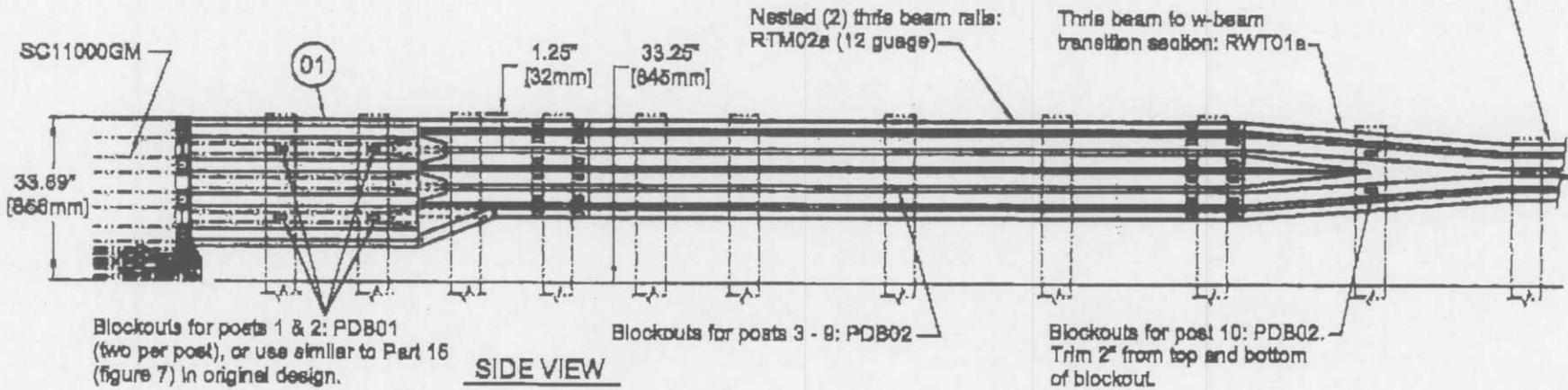


PLAN VIEW

PARTS LIST

01 - Transition Thrie & W Beam - Right #9437
01 - Transition Thrie & W Beam - Left #9438

*****GUARDRAIL, POSTS, BLOCKOUTS AND CONNECTION BOLTS SUPPLIED BY OTHERS*****



SIDE VIEW

Start of standard w-beam guardrail

Received
 C. A. RASMUSSEN INC.
 Jul 18 2014 03:57pm
 Fax: 1-661-367-9097
 Jul 18 2014 03:50pm P050/061

APPENDIX N(2) - TRANSITION, W BEAM

02 4 plcs

*****THIS DESIGN IS FOR BIDIRECTIONAL TRAFFIC.
POST SPACING AND NESTED GUARDRAIL PER SPEC.**

*****GUARDRAIL, POSTS, BLOCKOUTS AND
CONNECTION BOLTS SUPPLIED BY OTHERS*****

- PARTS LIST**
- 02 - Hex Bolt 3/4"-10NC x 2"
 - 03 - Heavy Hex Nut 3/4"-10NC
 - 04 - Lock Washer 3/4"

04 4 plcs

03 4 plcs

Guardrail splice bolts by others.
Due to multiple layers, AASHTO FBB02
bolts will be required and a step drill
may be required to correct hole alignment.

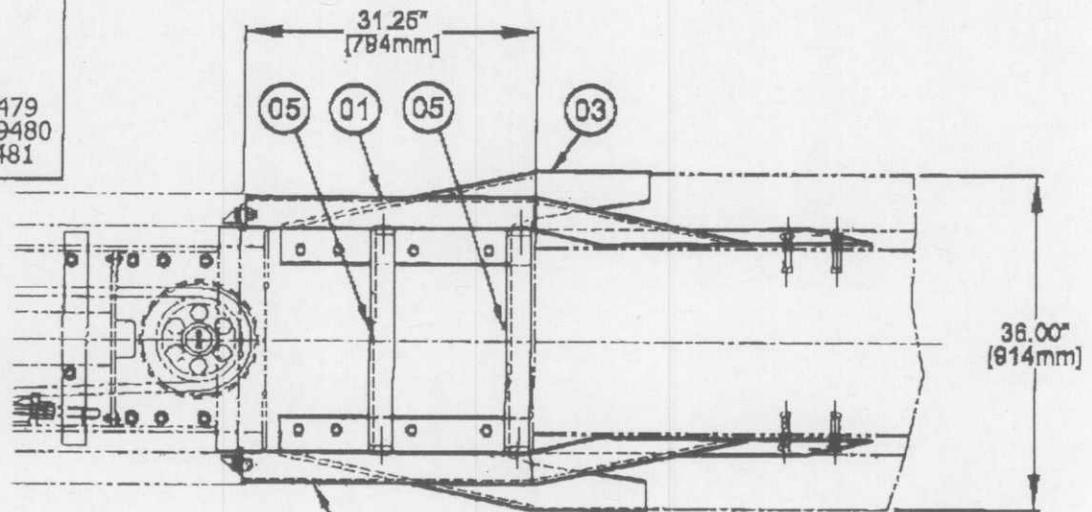
Received
C. A. RASMUSSEN INC.
Jul 18 2014 03:57pm
Fax: 1-661-367-9097
Jul 18 2014 03:50pm P051/061

APPENDIX O - TRANSITION, JERSEY/F SHAPE BARRIER - 36 INCH (915mm) BASE X 32 INCH (813mm) TALL

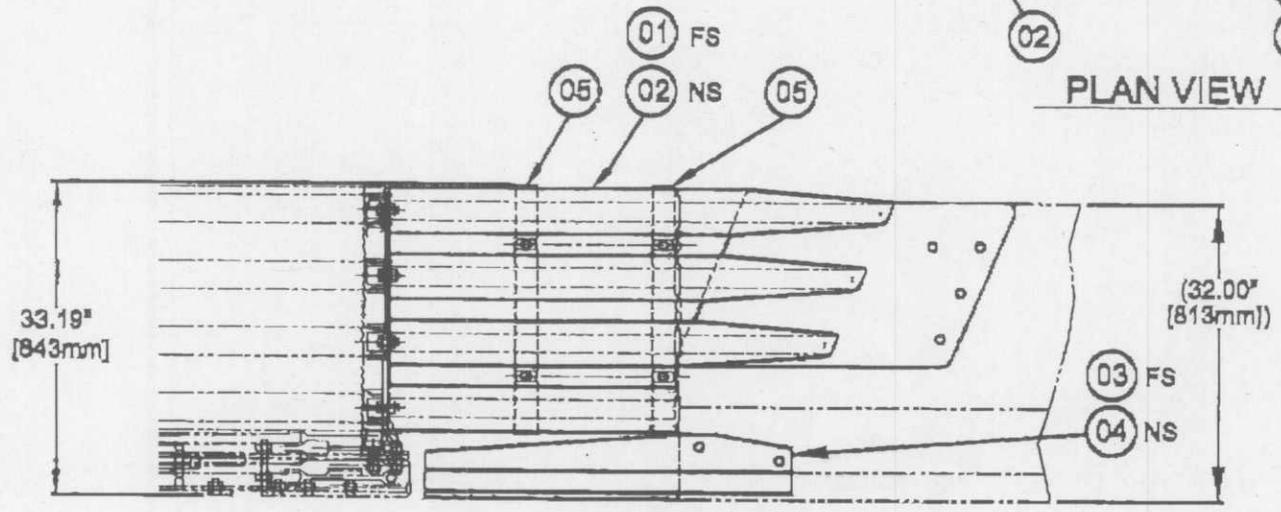
PARTS LIST

- Double Sided Median Barrier 36" Base:
 Two Sided Full Assembly #9492
 02 - Transition Median Barrier - Right #9493
 01 - Transition Median Barrier - Left #9494
 05 - Transition Spanner Brace Median Barrier #9479
 04 - Transition Rub Rail Median Barrier - Right #9480
 03 - Transition Rub Rail Median Barrier - Left #9481

Barrier width at top can have a variance from 19" - 21"



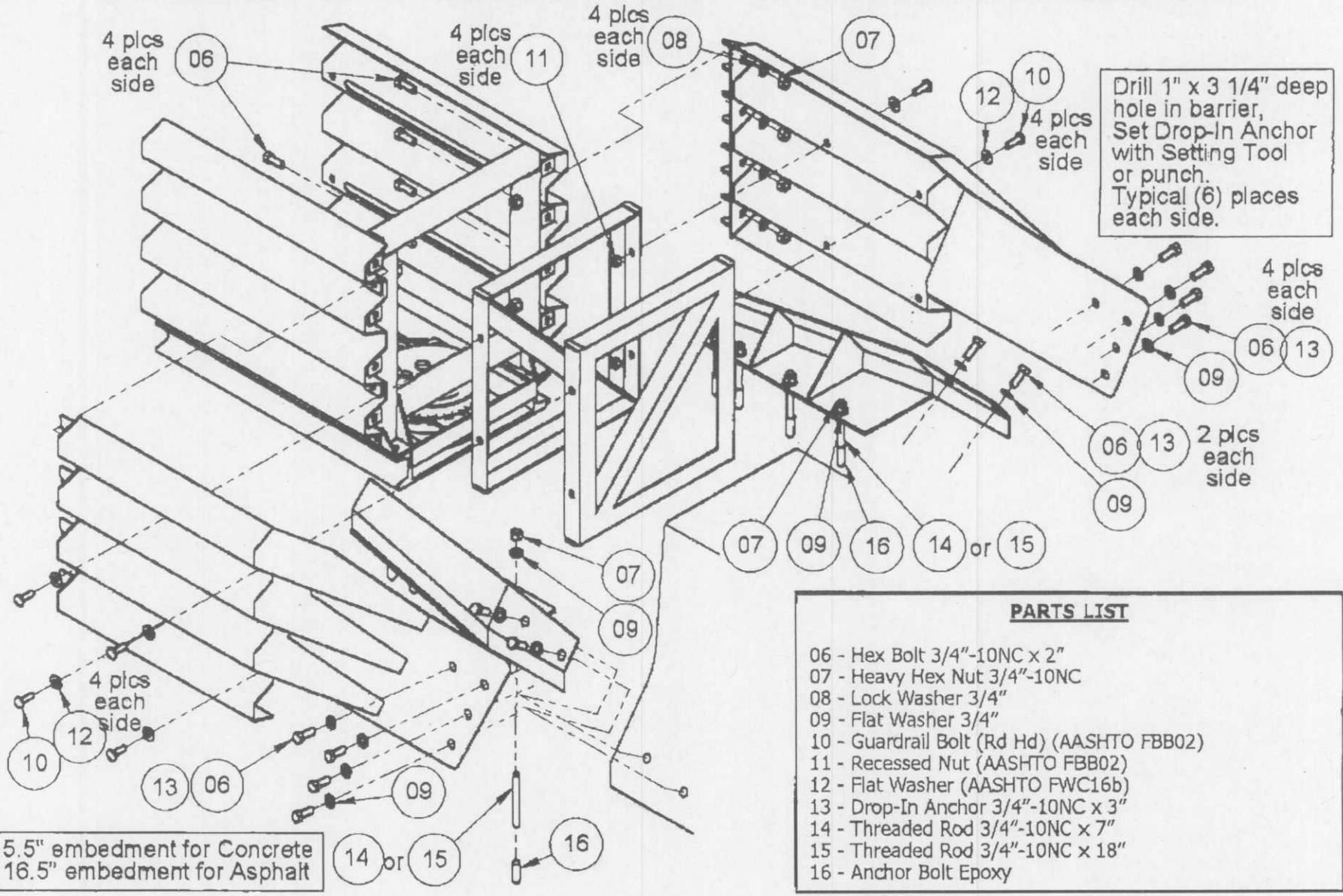
PLAN VIEW



SIDE VIEW

Received
 C. A. RASMUSSEN INC.
 Fax: 1-661-367-9097
 Jul 18 2014 03:57pm
 Jul 18 2014 03:50pm
 P052/061

APPENDIX O(2) - TRANSITION, JERSEY/F SHAPE BARRIER - 36 INCH (915mm) BASE X 32 INCH (813mm) TALL



Drill 1" x 3 1/4" deep hole in barrier, Set Drop-In Anchor with Setting Tool or punch. Typical (6) places each side.

5.5" embedment for Concrete
16.5" embedment for Asphalt

PARTS LIST	
06	Hex Bolt 3/4"-10NC x 2"
07	Heavy Hex Nut 3/4"-10NC
08	Lock Washer 3/4"
09	Flat Washer 3/4"
10	Guardrail Bolt (Rd Hd) (AASHTO FBB02)
11	Recessed Nut (AASHTO FBB02)
12	Flat Washer (AASHTO FWC16b)
13	Drop-In Anchor 3/4"-10NC x 3"
14	Threaded Rod 3/4"-10NC x 7"
15	Threaded Rod 3/4"-10NC x 18"
16	Anchor Bolt Epoxy

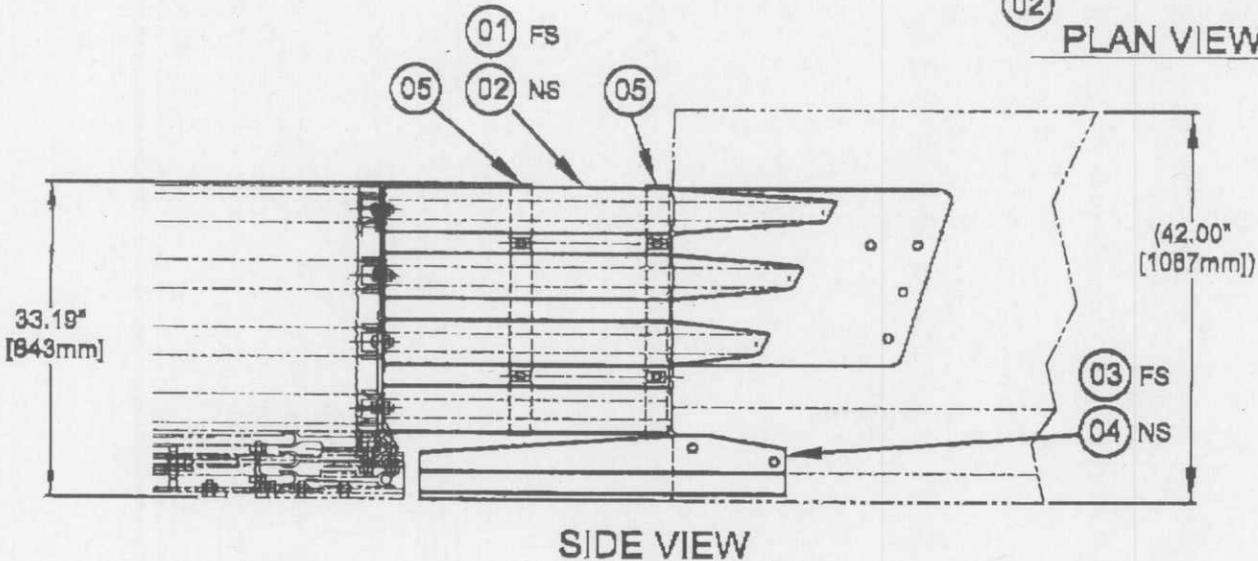
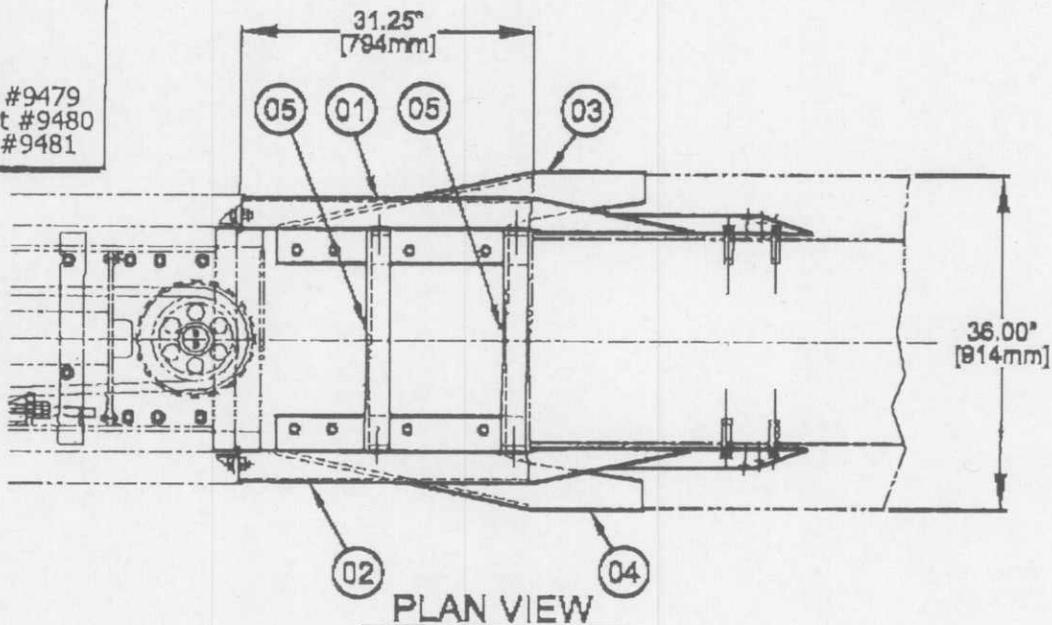
Received
C.A. RASMUSSEN INC. Fax: 1-661-367-9097 Jul 18 2014 03:57pm
Jul 18 2014 03:51pm P053/061

APPENDIX P - TRANSITION, JERSEY/F SHAPE BARRIER - 36 INCH (916mm) BASE X 42 INCH (1067mm) TALL

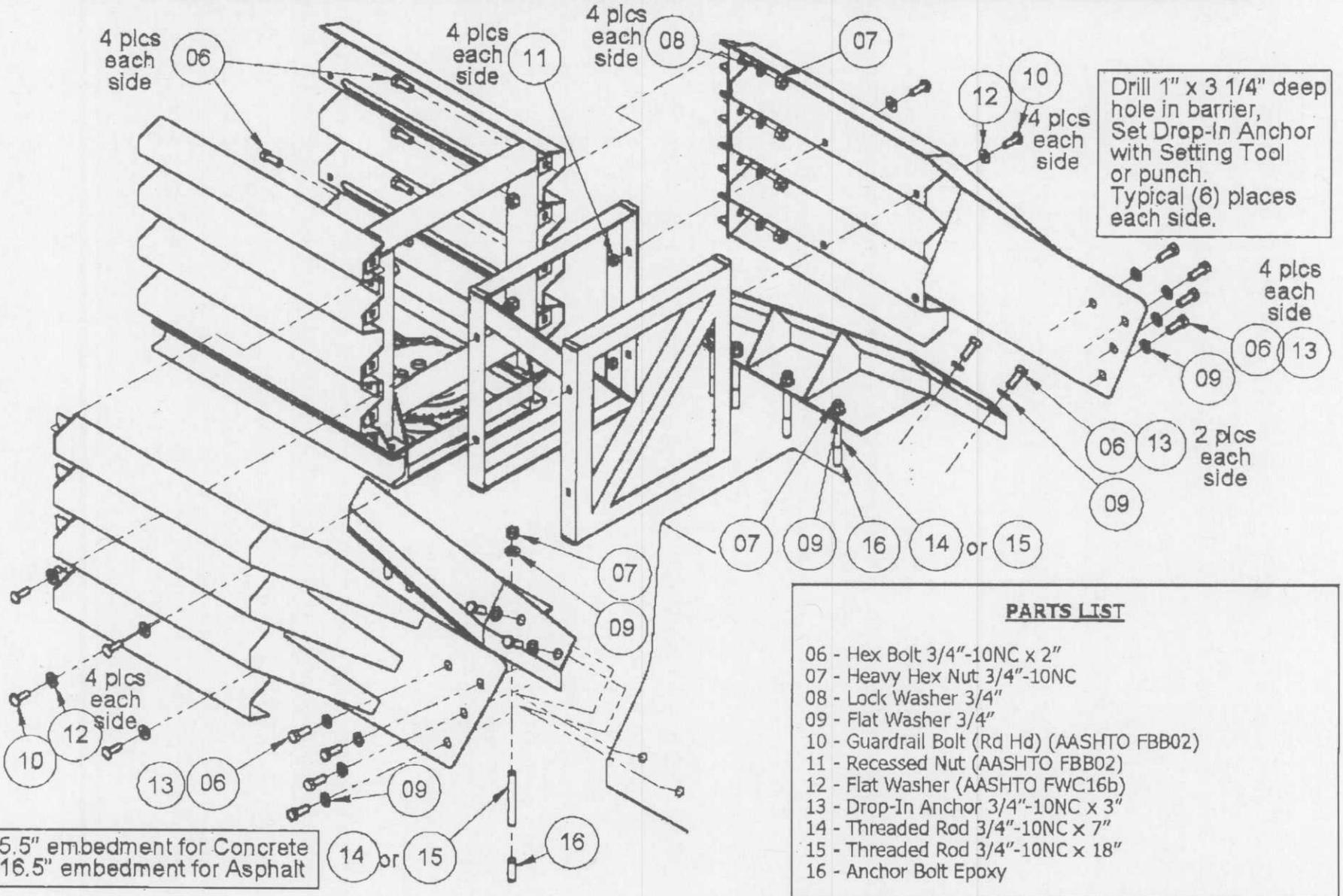
PARTS LIST

- Double Sided Median Barrier 36" Base:
 Two Sided Full Assembly #9476
 02 - Transition Median Barrier - Right #9477
 01 - Transition Median Barrier - Left #9478
 05 - Transition Spanner Brace Median Barrier #9479
 04 - Transition Rub Rail Median Barrier - Right #9480
 03 - Transition Rub Rail Median Barrier - Left #9481

Barrier width at top can have a variance from 19" - 21"



APPENDIX P(2) - TRANSITION, JERSEY/F SHAPE BARRIER - 36 INCH (915mm) BASE X 42 INCH (1067mm) TALL



Drill 1" x 3 1/4" deep hole in barrier, Set Drop-In Anchor with Setting Tool or punch. Typical (6) places each side.

PARTS LIST	
06	- Hex Bolt 3/4"-10NC x 2"
07	- Heavy Hex Nut 3/4"-10NC
08	- Lock Washer 3/4"
09	- Flat Washer 3/4"
10	- Guardrail Bolt (Rd Hd) (AASHTO FBB02)
11	- Recessed Nut (AASHTO FBB02)
12	- Flat Washer (AASHTO FWC16b)
13	- Drop-In Anchor 3/4"-10NC x 3"
14	- Threaded Rod 3/4"-10NC x 7"
15	- Threaded Rod 3/4"-10NC x 18"
16	- Anchor Bolt Epoxy

Received
 C. A. RASMUSSEN INC.
 Fax: 1-661-367-9097
 Jul 18 2014 03:58pm
 Jul 19 2014 03:51pm
 P055/061

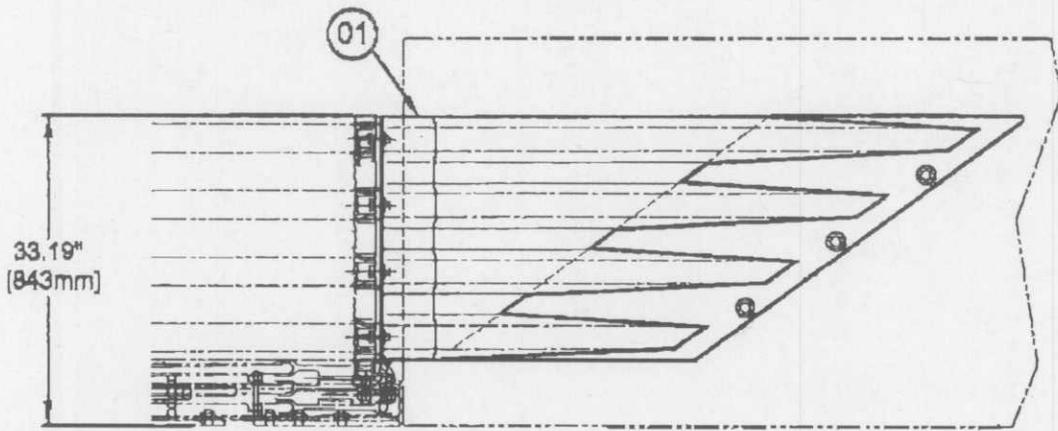
APPENDIX Q - TRANSITION, MEDIAN BARRIER - SINGLE SLOPE

PARTS LIST

- 01 - Transition Single Slope Median Barrier - Right #9490
- 01 - Transition Single Slope Median Barrier - Left #9491



PLAN VIEW



SIDE VIEW

Received

C. A. RASMUSSEN INC.

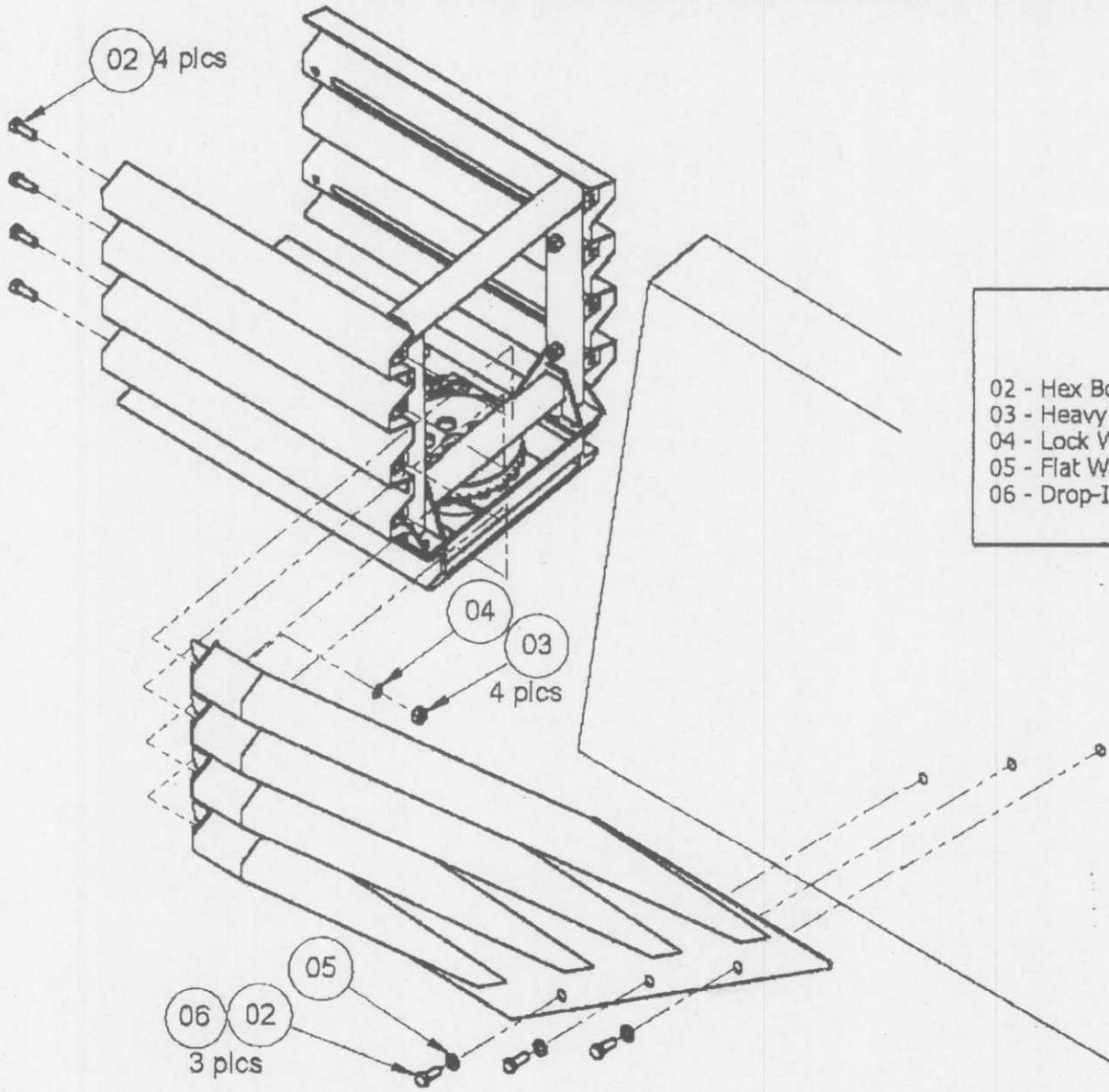
Fax: 1-661-367-9097

Jul 18 2014 03:58pm

Jul 18 2014 03:51pm

P056/061

APPENDIX Q(2) - TRANSITION, MEDIAN BARRIER - SINGLE SLOPE



- PARTS LIST**
- 02 - Hex Bolt 3/4"-10NC x 2"
 - 03 - Heavy Hex Nut 3/4"-10NC
 - 04 - Lock Washer 3/4"
 - 05 - Flat Washer 3/4"
 - 06 - Drop-In Anchor 3/4"-10NC x 3"

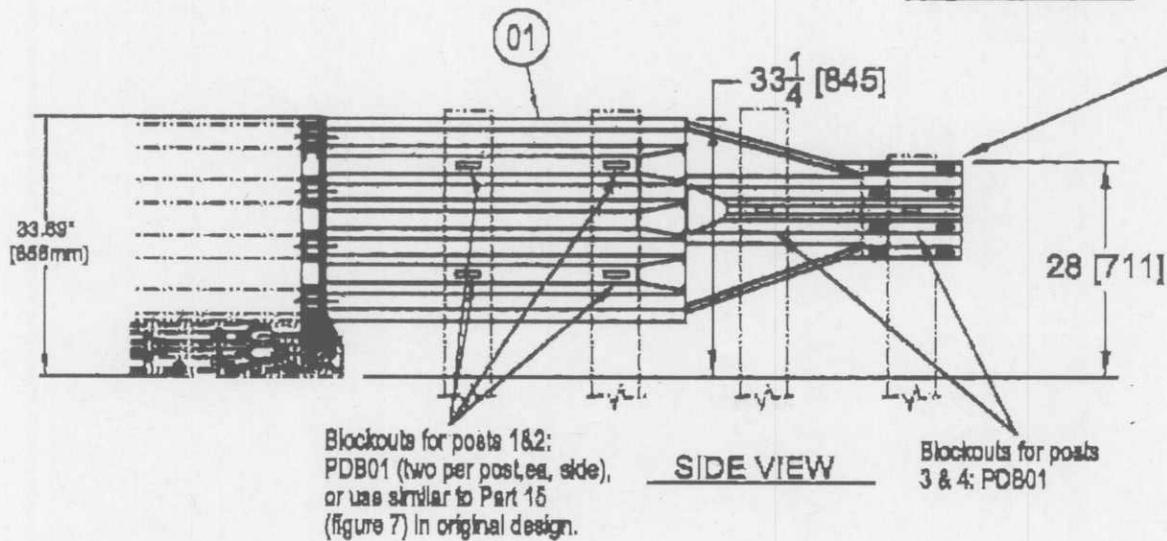
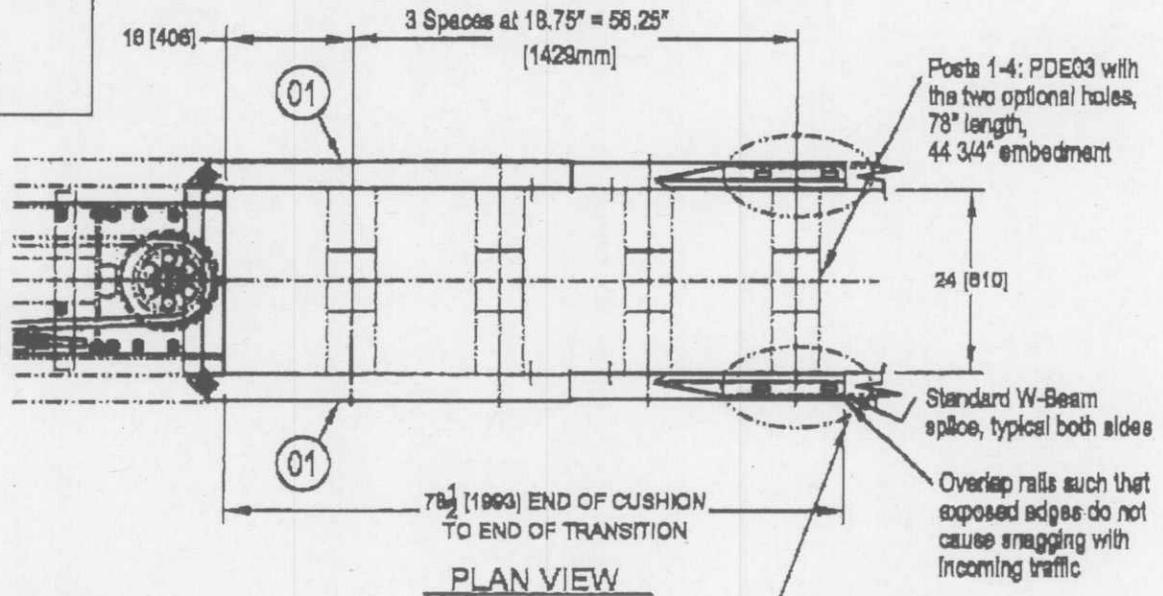
Drill 1" X 3 1/4" deep hole in barrier.
 Set Drop-In Anchor with Setting Tool or with punch.
 Typical (3) places.

APPENDIX R - TRANSITION, W-BEAM 28" HIGH
*****FOR USE WITH NO REVERSE DIRECTION TRAFFIC*****

PARTS LIST

01 - Transition W Beam - Right #9511
01 - Transition W Beam - Left #9512

*****ALL POSTS,
 BLOCKOUTS, AND
 CONNECTION BOLTS
 SUPPLIED BY OTHERS*****



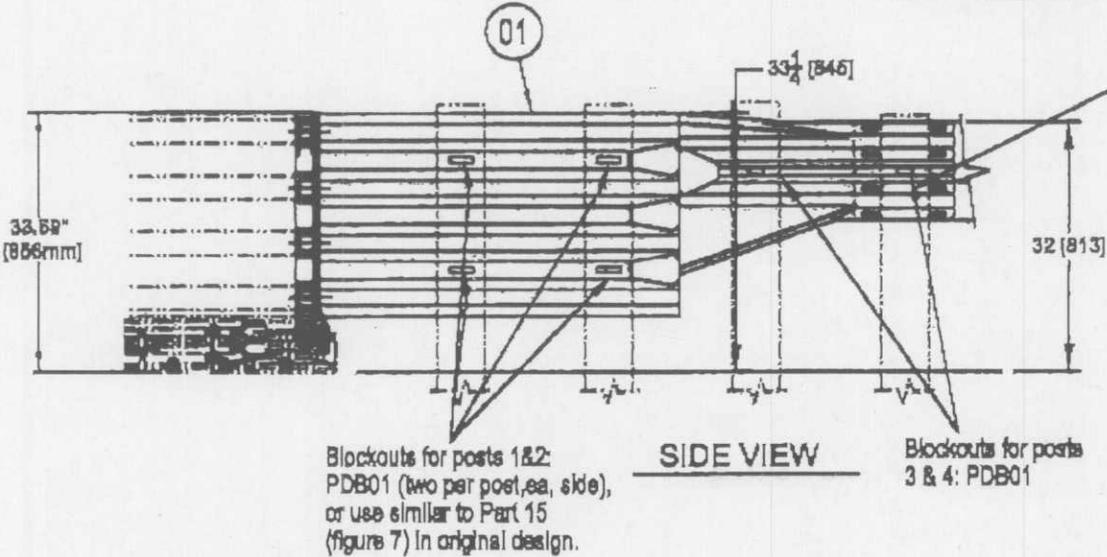
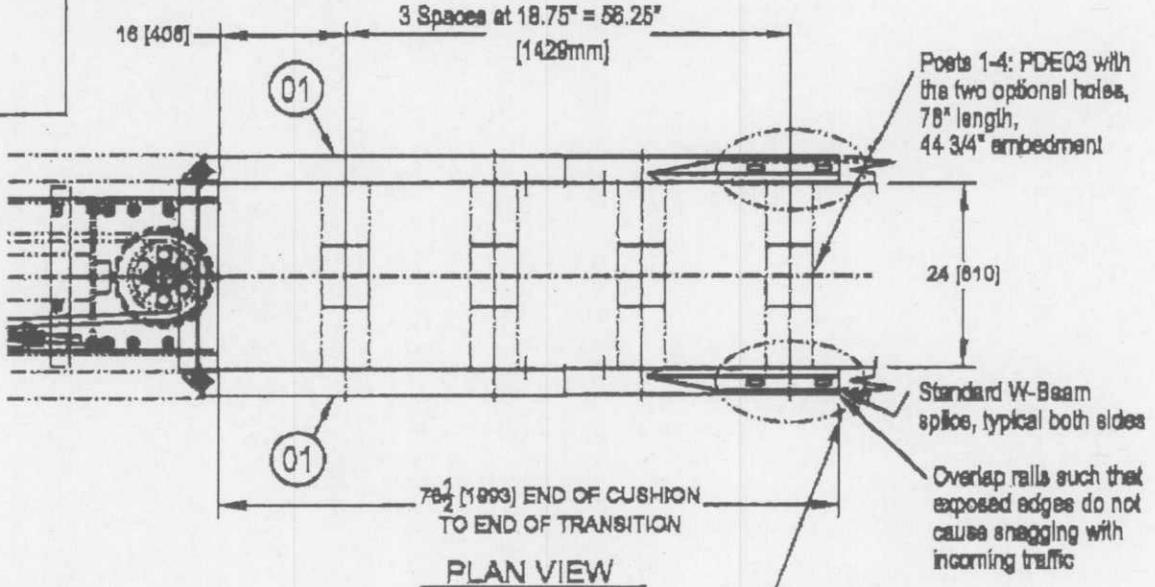
Received
 C. A. RASMUSSEN INC.
 Fax: 1-661-367-9097
 Jul 18 2014 03:58pm
 Jul 18 2014 03:52pm
 P056/061

APPENDIX S - TRANSITION, W-BEAM 32" HIGH
*****FOR USE WITH NO REVERSE DIRECTION TRAFFIC*****

PARTS LIST

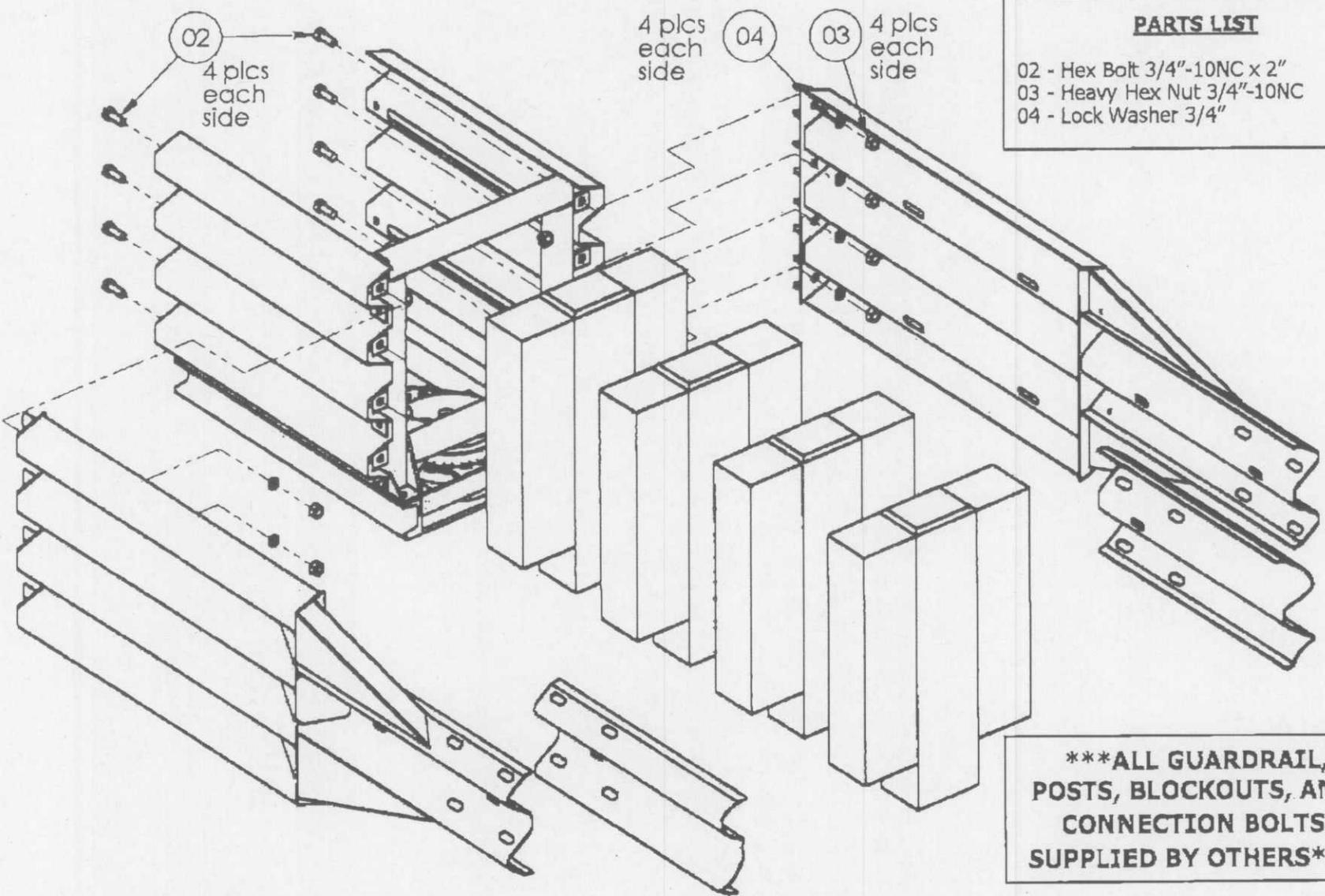
01 - Transition W Beam - Right #9513
01 - Transition W Beam - Left #9514

*****ALL POSTS,
 BLOCKOUTS, AND
 CONNECTION BOLTS
 SUPPLIED BY OTHERS*****



Received
 C. A. RASMUSSEN INC.
 Fax: 1-661-367-9097
 Jul 18 2014 03:59pm
 Jul 18 2014 03:52pm P059/061

APPENDIX R(2) & S(2) - TRANSITION, W-BEAM 28" & 32" HIGH



PARTS LIST

02	- Hex Bolt 3/4"-10NC x 2"
03	- Heavy Hex Nut 3/4"-10NC
04	- Lock Washer 3/4"

*****ALL GUARDRAIL,
POSTS, BLOCKOUTS, AND
CONNECTION BOLTS
SUPPLIED BY OTHERS*****

Received
C. A. RASMUSSEN INC.
Jul 18 2014 03:59pm
Fax: 1-661-367-9097
Jul 18 2014 03:52pm P060/061

