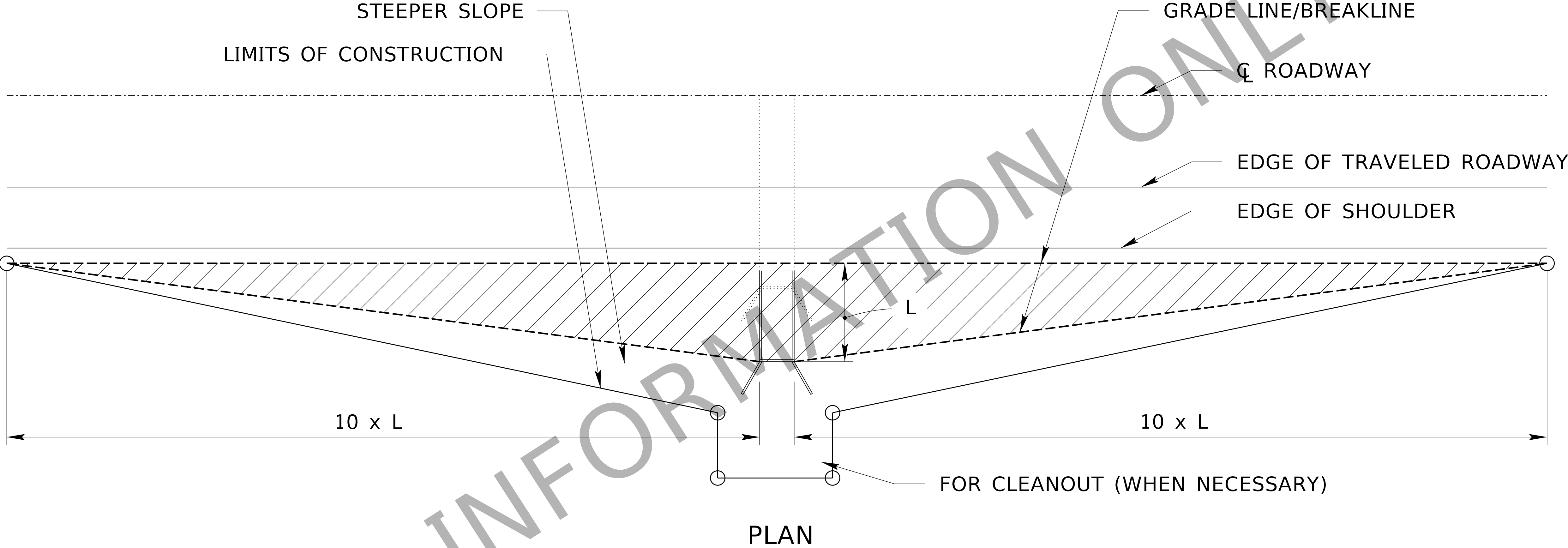


Design Guides

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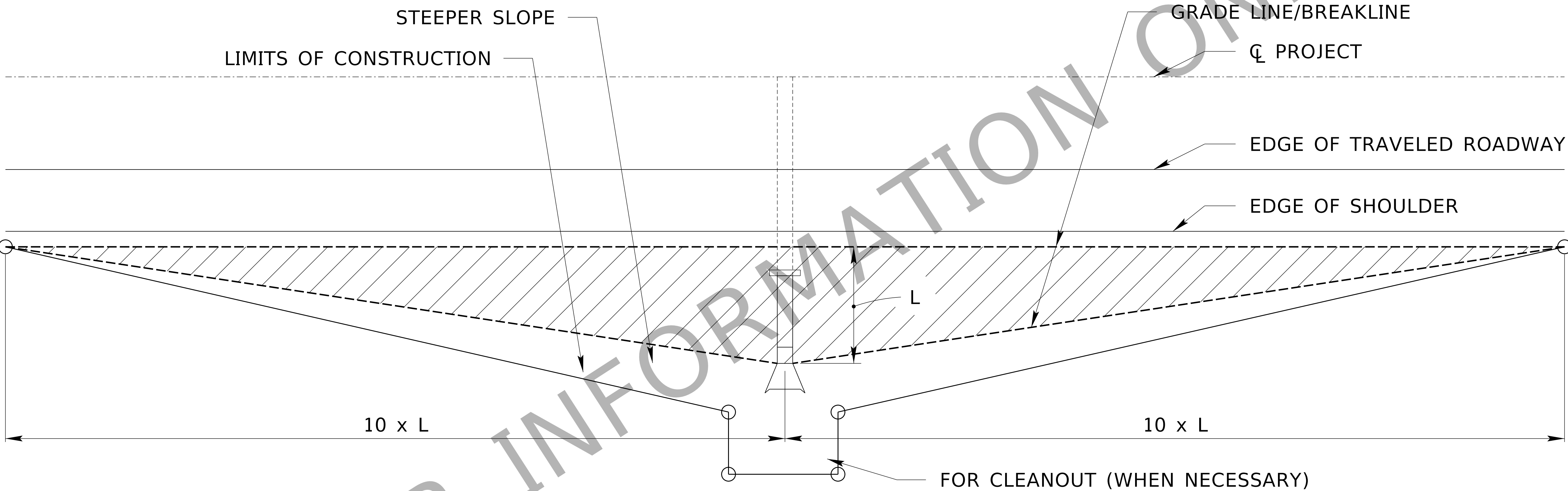
August 1, 2025

Plan No.	Title	Comments
1400 6 R0	Grading for Box Culvert Extensions	OCT 2024 - NEW PLAN
1401 6 R0	Grading for Culvert Extensions	OCT 2024 - NEW PLAN
1700 6 R4	Earthwork and Surfacing around Guardrail for 3R Projects	
1710 6 R4	Earthwork for Guardrail New and Reconstruction Projects	
1711 6 R2	Earthwork for Guardrail on New and Reconstructed Projects, Parallel Installation	
1712 6 R0	Earthwork for Bullnose on New and Reconstructed Projects	
3290 6 R0	Median Break	
	Impact Attenuators (For Information Only)	
7752 6 R0	Smart Cushion	
7753 6 R0	TAU-M	
7754 6 R1	Quadguard M10 System w/Tension Strut Backup	
Sheet 1 of 3	M10 System Narrow w/Tension Strut Backup	
Sheet 2 of 3	M10 System Narrow w/Tension Strut Backup	
Sheet 3 of 3	M10 System Narrow w/Tension Strut Backup	
7755 6 R0	TraFFix Delta Crash Cushion	
	TL-2 Low Speed (For Information Only)	
7771 6 R2	Softspot TL-2	
7773 6 R1	MSKT-SP-MGS-Terminal Test Level 2	
	High Tension Cable Guardrail (For Information Only)	
7780 6 R1	Cass 3-Cable Guardrail Safety System	
7783 6 R2	MASH Gibraltar TL7 Cable System Layout	
7787 6 R1	Brifen MASH TL-3	
	Guardrail End Treatment, Type I (For Information Only)	
7804 6 R2	MSKT-SP-MGS Terminal TL-3	
7805 6 R2	SoftStop System TL-3	
7806 6 R1	Max Tension TL-3 System	
	Guardrail End Treatment, Type II (For Information Only)	
7901 6 R2	MASH FLEAT Terminal 12" Blocks TL-3 Standard Post System	
	Guardrail End Treatment, Median Barrier (For Information Only)	
7910-6-R0	MATT System	



GRADING FOR BOX CULVERT EXTENSIONS

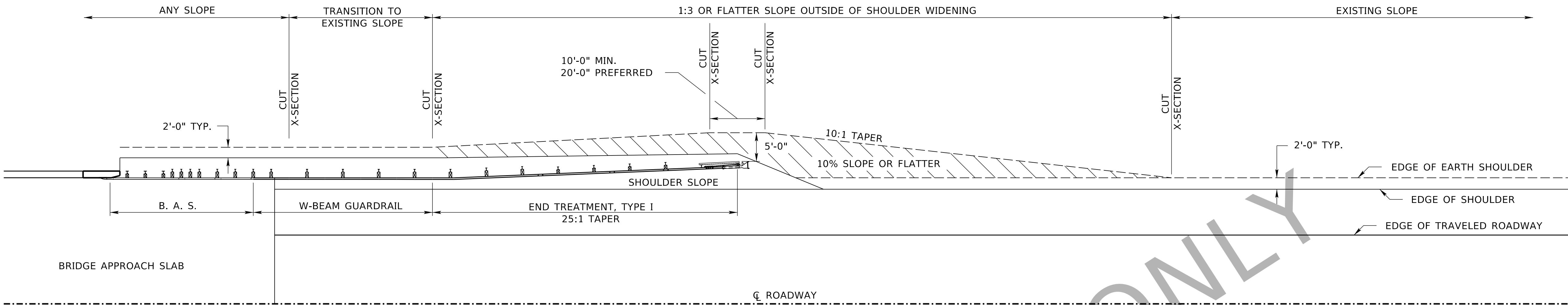
GRADING FOR BOX CULVERT EXTENSIONS
DESIGN GUIDE



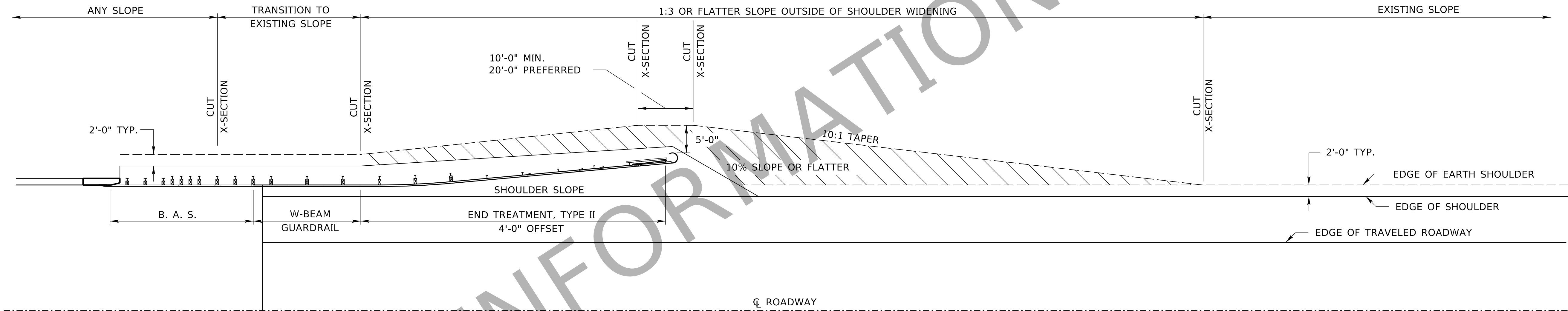
PLAN

L = LENGTH FROM SHOULDER TO END OF EXTENSION

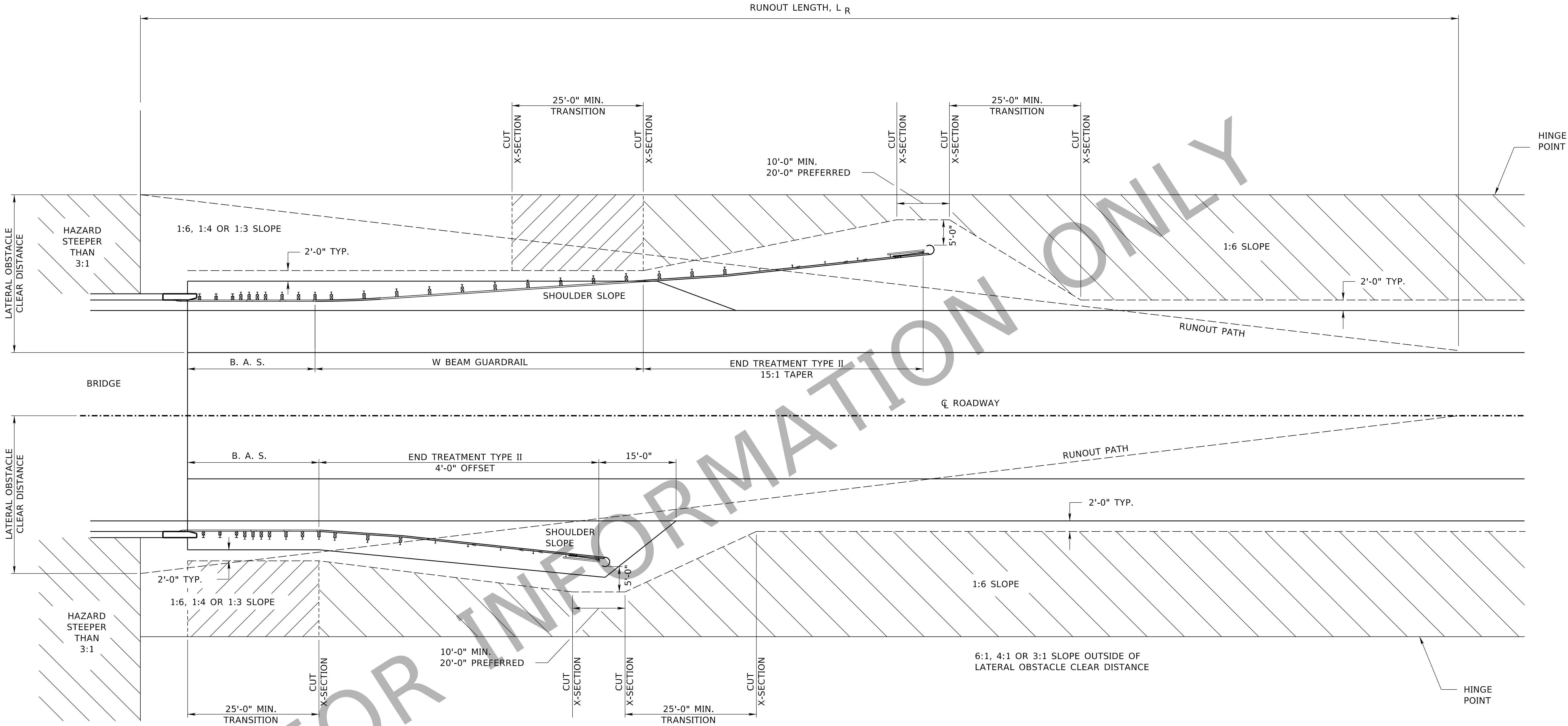
GRADING FOR CULVERT EXTENSIONS



GRADING FOR GUARDRAIL END TREATMENT, TYPE I
FOR 3R PROJECTS



GRADING FOR GUARDRAIL END TREATMENT, TYPE II
FOR 3R PROJECTS

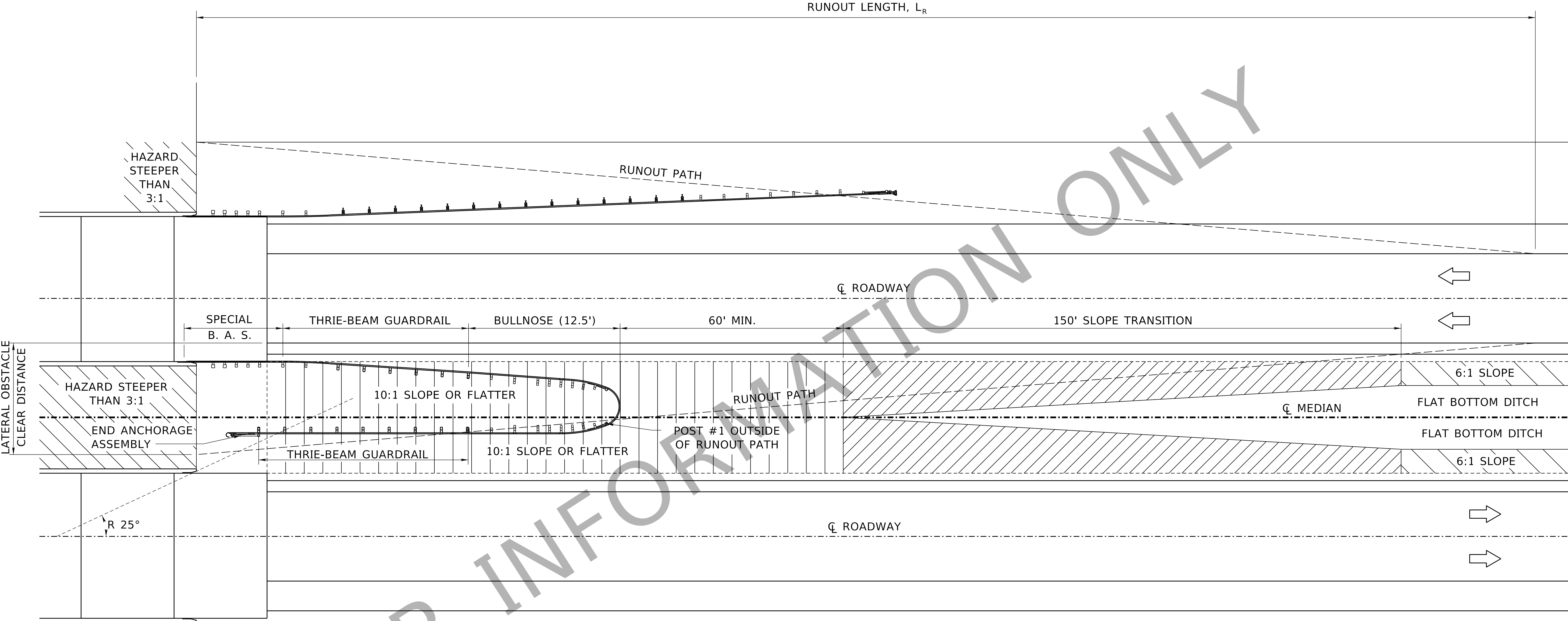


EARTHWORK FOR GUARDRAIL END TREATMENT, TYPE II
(NEW & RECONSTRUCTED PROJECTS)

NOTE: SLOPES ARE H:V

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COMPUTER: BG0419M187
DATE: 10-SEP-2024 14:53
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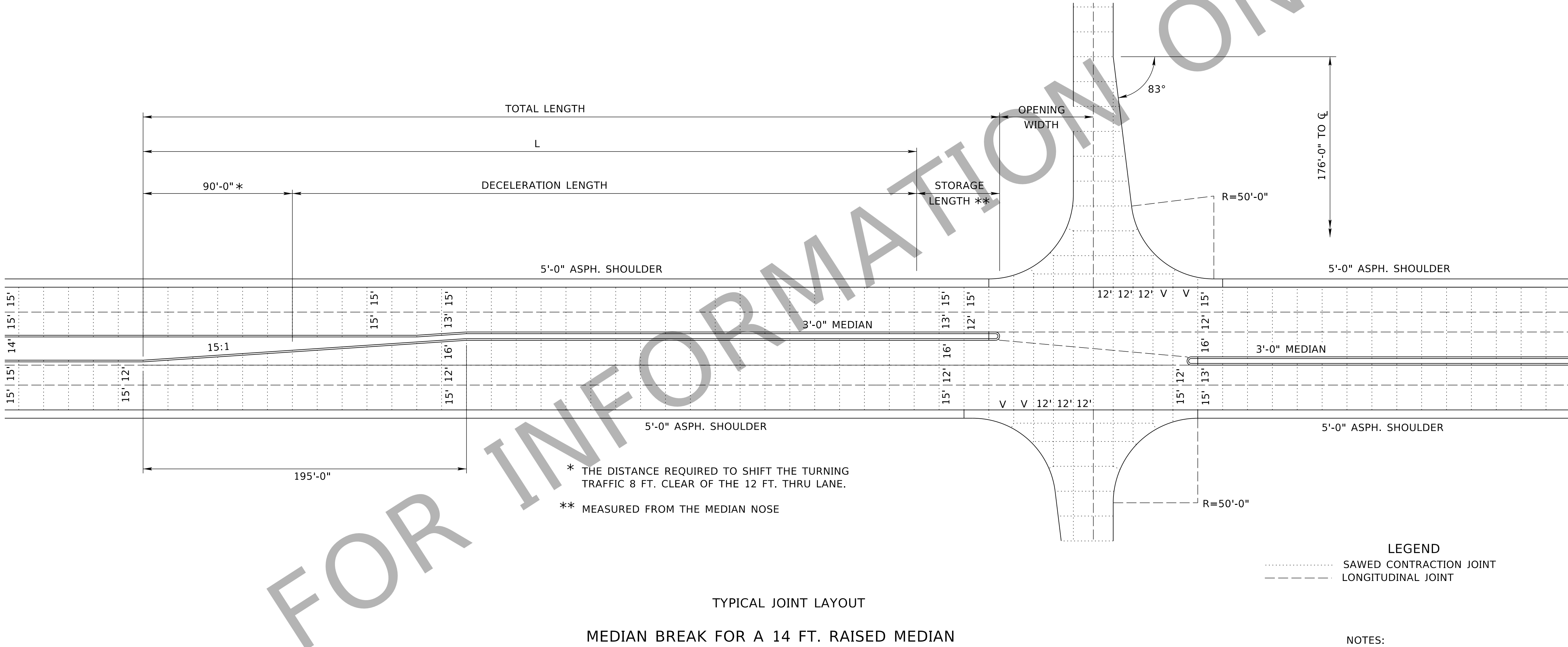
EARTHWORK FOR BULLNOSE GUARDRAIL ON NEW AND RECONSTRUCTED PROJECTS

NOTE: SLOPES ARE H:V

1 OF 1
Project Number
C.N.
EARTHWORK FOR BULLNOSE ON NEW AND RECONSTRUCTED PROJECTS DESIGN GUIDE
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION
Roadway Design Division

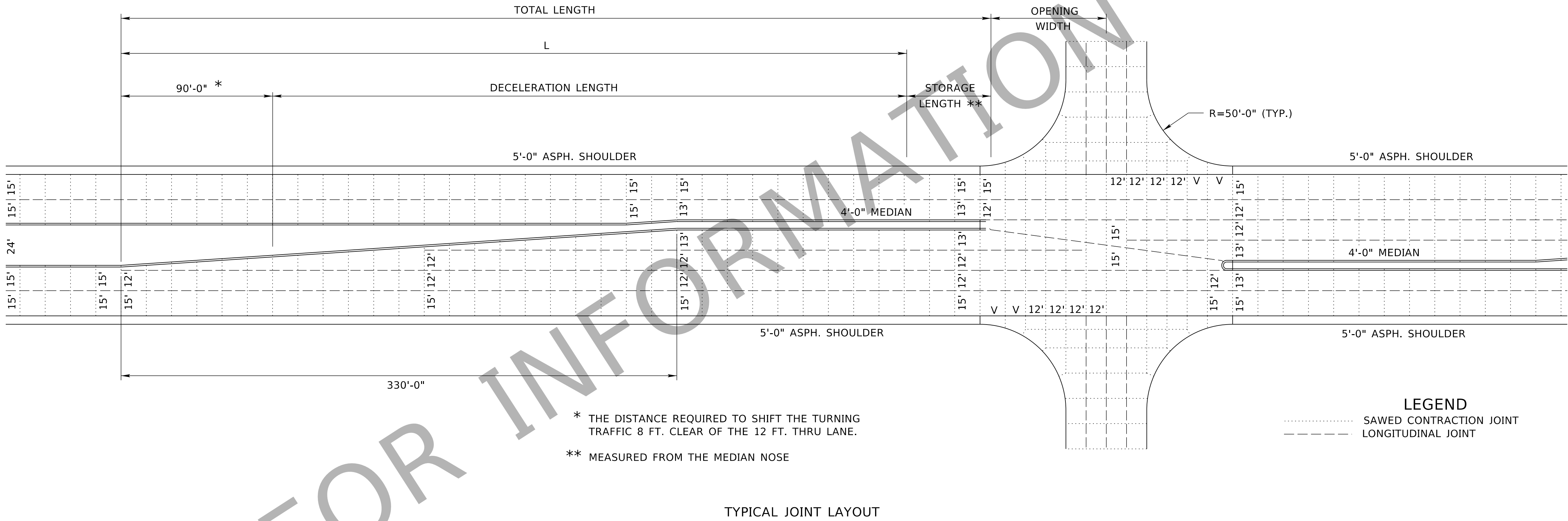
MINIMUM MEDIAN VALUES		
	HIGH-SPEED 4 IN. CURB	LOW-SPEED 6 IN. CURB
DESIGN VEHICLE	WB-62	WB-62
L	410 FT. ①	240 FT. ②
STORAGE LENGTH	③	③
OPENING WIDTH	56 FT. ④	56 FT. ④
TOTAL LENGTH	⑤	⑤

- ① INCLUDES A DECELERATION LENGTH OF 290 FT. BASED ON A SPEED REDUCTION IN THE TURN LANE OF 55 MPH (SEE "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS"). THIS LENGTH ASSUMES A 10 MPH SPEED REDUCTION IN THE THRU LANE.
- ② INCLUDES A DECELERATION LENGTH OF 120 FT. BASED ON A SPEED REDUCTION IN THE TURN LANE OF 35 MPH (SEE "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS"). THIS LENGTH ASSUMES A 10 MPH SPEED REDUCTION IN THE THRU LANE.
- ③ THE MINIMUM STORAGE LENGTH SHOULD BE 50 FT. (PROVIDING STORAGE FOR TWO CARS AT 25 FT./CAR) OR 100 FT. IF THE PERCENTAGE OF TRUCKS EXCEEDS 10% (PROVIDING STORAGE FOR ONE CAR AT 25 FT./CAR AND ONE TRUCK AT 75 FT./TRUCK).
- ④ BASED ON THE GIVEN DESIGN VEHICLE AND A TWO-LANE ROADWAY INTERSECTING AT A 90° ANGLE. THE OPENING WIDTH AND INTERSECTION GEOMETRY SHALL BE DETERMINED BASED ON THE ACTUAL APPROACH ROAD GEOMETRICS AND DESIGN VEHICLE USED.
- ⑤ THE TRAFFIC ENGINEERING DIVISION SHALL BE CONSULTED FOR THE REQUIRED TOTAL LENGTH IF IT IS ANTICIPATED THAT THE INTERSECTION WILL BE SIGNALIZED IN THE NEAR FUTURE. THE TRAFFIC ENGINEERING SHOULD BE CONSULTED FOR THE TOTAL LENGTH IF THE MAINLINE TRAFFIC VOLUME IS OVER 9000 ADT, IF THE OPPOSING PEAK HOUR VOLUME IS OVER 500, AND/OR IF THE PEAK HOUR TURNING TRAFFIC VOLUME IS 100 VPH OR GREATER. TRAFFIC ENGINEERING SHOULD ALSO BE CONSULTED FOR THE TOTAL LENGTH AT COMMERCIAL DRIVEWAYS.



MINIMUM MEDIAN VALUES		
	HIGH-SPEED 4 IN. CURB	LOW-SPEED 6 IN. CURB
DESIGN VEHICLE	WB-62	WB-62
L	410 FT. ①	240 FT. ②
STORAGE LENGTH	③	③
OPENING WIDTH	56 FT. ④	56 FT. ④
TOTAL LENGTH	⑤	⑤

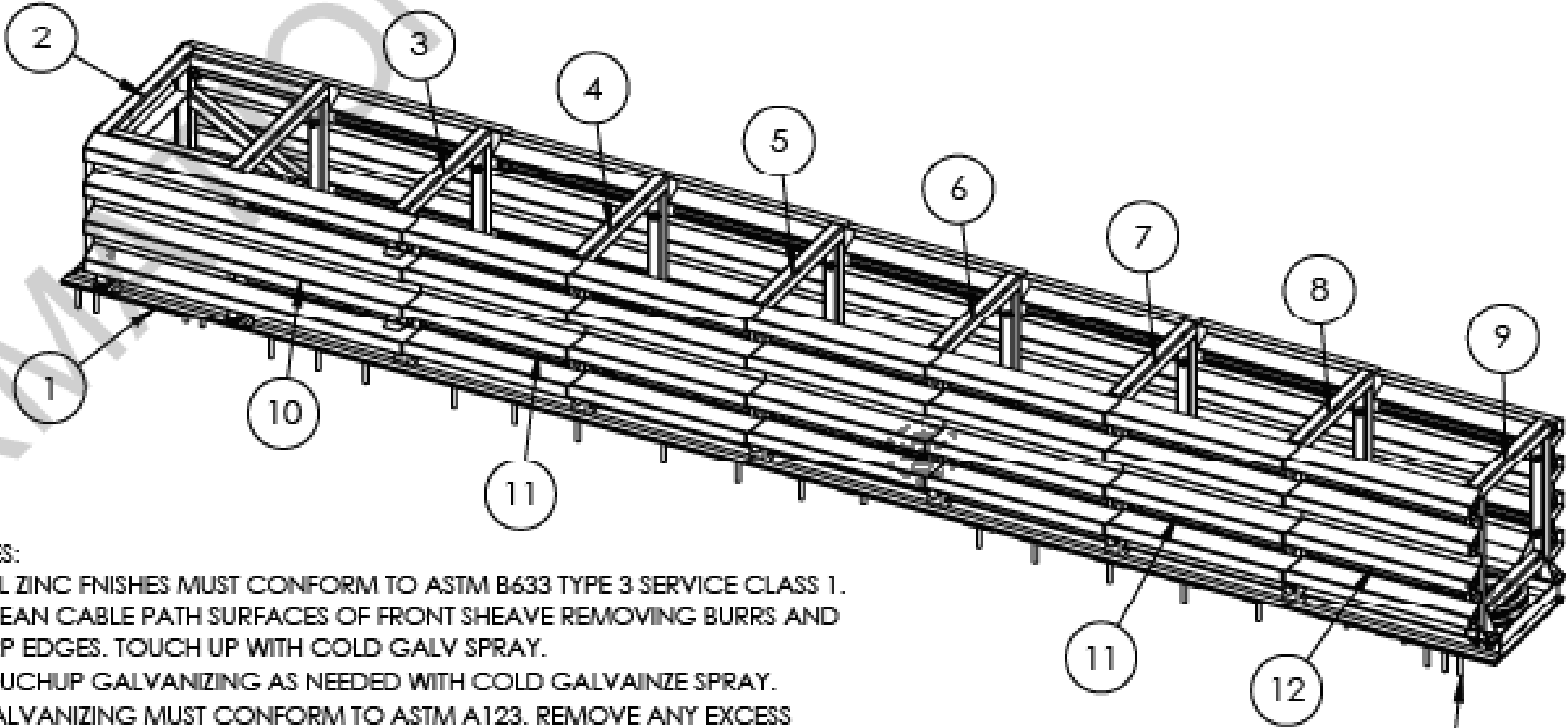
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- ④ BASED ON THE GIVEN DESIGN VEHICLE AND A TWO-LANE ROADWAY INTERSECTING AT A 90° ANGLE. THE OPENING WIDTH AND INTERSECTION GEOMETRY SHALL BE DETERMINED BASED ON THE ACTUAL APPROACH ROAD CONDITIONS AND DESIGN VEHICLE USED.
- ⑤ THE TRAFFIC ENGINEERING DIVISION SHALL BE CONSULTED FOR THE REQUIRED TOTAL LENGTH.



MEDIAN BREAK FOR A 24 FT. RAISED MEDIAN, DUEL LEFT-TURN LANES

BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL	JDE ITEM PART NUMBER
1	1	TL3 SYSTEM BASE FRAME WELDMENT - GALVANIZED	AS SPECIFIED	412520 ET-01-01
2	1	ASSEMBLY GALVANIZED WELDMENT FRONT MOBILE	AS SPECIFIED	274649 ET-02-01
3	1	GALVANIZED TL2 MOBILE FRAME #1 WELDMENT	AS SPECIFIED	272214 ET-02-02
4	1	TL3 GALVANIZED MOBILE FRAME #2	AS SPECIFIED	272215 ET-02-03
5	1	GALVANIZED TL3 MOBILE FRAME #3 WELDMENT	AS SPECIFIED	272216 ET-02-04
6	1	TL2 & TL3 MOBILE FRAME #4	AS SPECIFIED	272217 ET-02-05
7	1	GALVANIZED TL2&3 MOBILE FRAME #5 WELDMENT	AS SPECIFIED	272218 ET-02-06
8	1	GALVANIZED TL2&3 MOBILE FRAME #6 WELDMENT	AS SPECIFIED	272219 ET-02-07
9	1	TL2 & TL3 TERMINAL BRACE	AS SPECIFIED	270770 ET-02-08
10	2	GALVANIZED TL2 AND TL3 FRONT PANEL	AS SPECIFIED	273402 ET-03-02
11	10	GALVANIZED TL2 & TL3 MID PANEL	A1011 GR-60	273401 ET-03-01
12	2	GALVANIZED TL2 & TL3 REAR PANELS	A1011 GR-60	273399 ET-03-03
13	20	GALVANIZED SIDE KEEPER MID	AS SPECIFIED	272593 ET-04-01
14	4	GALVANIZED SIDE KEEPER REAR	AS SPECIFIED	272595 ET-04-03
15	4	GALVANIZED SIDE KEEPER FRONT	AS SPECIFIED	272597 ET-04-04
16	8	ROIT HEX 3/4 NC X 4" GALV A325	A325	412523 HR 3/4-10 & A325 GAL
17	40	LOCKWASHER 3/4 BOLT GALV	PLAIN CARBON STEEL	412528 LW 0.75 .0765-1.264 GAL
18	10	HEX NUT 1/2-13 (DIAMETRAL OVER TAP .018" AFTER GALV)	A194-2H	412529 HN 1/2-13 GR5 GAL
19	4	HEX BOLT 3/4-10 X 2.5 A325 GALV	A325	412530 HXBFT 3/4-10 2.5 A325 GAL
20	4	BEVEL WASHER 3/4 GALV	DUCTILE IRON	412531 MCM-CARR# 91152A036
21	10	LOCK WASHER, 1/2 HDG, STD	PLAIN CARBON STEEL	412533 SLW .125 .512-.869
22	10	HEX BOLT 1/2-NC X 1 1/2 LONG GALV	GR5	412557 HXB 12-13 1.5 GR5 GALV
23	2	BEVEL WASHER 1/2 GALV	DUCTILE IRON	412535 MCM-CARR# 91152A033
24	1	RCOS PISTON 3X36	AS SPECIFIED	271759 BPM 04 95 98 (JC)
25	4	HEX BOLT 5/8-18 X 1-1/4 LONG PLTD	GR5	412536 HB 5/8-18
26	12	SPRING LOCK WASHER 1.0 STD PLTD	PLAIN CARBON STEEL	412537 SLW 1 1.015-1.691 STL ZN
27	1	CABLE, RESIN & SHELTER SOCKET SC1100G	AS SPECIFIED	271014 P2021886
28	1	TL2 & TL3 MOBILE SHEAVE ASSEMBLY	AS SPECIFIED	412680 ET-01-05
29	1	LOCATING PIN, CYLINDRICAL DAM	CR 1045	412522 FT-05-02
30	1	SPRING PIN 1/2"x2" PLATED	1050-1095 SPRING STEEL	412545 MCM-CARR# 90692A668
31	2	STRUCTURAL WASHER .177 1.062,-2.0 STL GAL	F436 TYPE1	412546 MCM-CARR# 98119A038
32	2	HEX BOLT 1/4-20 X 1-3/4 PLTD	GR8	412547 HXBFT 2520 1.75 GR8 ZN
33	2	NUT HEX 1/4-20 PLTD	GR8	412549 HN 2520 GR8 ZN
34	12	HEX BOLT 1-8 X 5.5 PLTD	GR8	412550 HXB 1-8 5.5 GR8 ZN
35	1	CROSBY 4037 EYE 1 X 24	AS SPECIFIED	270671 CROSBY 4037 EYE 100X2400
36	4	CROSBY G-450_1_13_1010257 OR EQUIV.	AS SPECIFIED	271405 1010257
37	1	CROSBY ANCHOR SHAKLES 1018115	AS SPECIFIED	412551 1018115
38	12	GALVANIZED GUIDE	ASTM A36 STEEL	272271 ET-04-02
39	1	TL2 & TL3 STATIC SHEAVE ASSEMBLY	AS SPECIFIED	412681 ET-01-12
40	1	HAIRPIN COTTER PIN ZINC-PLATED	1050-1095 SPRING STEEL	412552 MCM-CARR# 98335A069
41	2	1-8 HEX NUT GALV	A194-2H	412556 HN 1-8 A194-2H GALV
42	12	HEAVY HEX NUT 1-8 7UNC PLATED	GR8	412555 HN 1-8 GR8 7UN
43	1	GALVANIZED RAMP WELDMENT	AS SPECIFIED	412521 ET-01-14
44	1	GALVANIZED CYLINDER STRAP WELDMENT	AS SPECIFIED	274915 ET-01-15
45	2	HEX BOLT 5/8-UNC X 1 1/4 PLTD	GR5	412559 HXBFT 5/8-11 1.25 GR5 PLTD

BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	MATERIAL	JDE ITEM PART NUMBER
46	6	5/8-LOCK WASHER	PLAIN CARBON STEEL	412560 SLW .156 .647-1.079 GAL
47	1	DELINEATOR PANEL (YELLOW)	3003-H14	273378 ET-01-16
48	1	BRACKET, CABLE	ASTM A26 STEEL	265242 ET-01-17
49	1	HEX BOLT 3/8-16 X 1 PLTD	GR5	412562 HXBFT 3/8-16 1 GR5 PLTD
50	2	3/8 SPRING LOCK WASHER STD GALV	PLAIN CARBON STEEL	412574 FLW .375 .385-.683 STL GAL
51	1	HEX NUT 3/8-16 PLATED	GR5	412564 HN 3/8-16 GR5 ZN
52	1	HEX BOLT 3/8-16 X 3/4 FULL THREAD PLTD	GR5	412543 HXBFT 3/8-16 .75 GR5 ZN
53	1	BOOT CYLINDER TL3	AS SPECIFIED	270707 ET-01-18
54	4	1/4-20 X 3 HEX BOLT PLTD	GR5	412569 HXB 1.25 3 GR5 ZN
55	4	1/4 FLAT WASHER PLTD ZN	GR5	412570 FWL 0.25 .312-.734 GR5
56	4	LOCK NUT 1/4-20 SERRATED FLANGE PLTD	GR5	412571 MCM-CARR# 99904A101
57	1	GALVANIZED CYLINDER BASE PLATE	AS SPECIFIED	412525 ET-01-13
58	40	HEX NUT 3/4-NC GALV A325	PLAIN CARBON STEEL	412527 HN 3/4-10 A325 GAL
59	1	SC1100GM TL3 SMART CUSHION ASSEMBLY CHECK SHEET	PAPER	ET-00-01-2



- NOTES:
- 1) ALL ZINC FINISHES MUST CONFORM TO ASTM B633 TYPE 3 SERVICE CLASS 1.
 - 2) CLEAN CABLE PATH SURFACES OF FRONT SHEAVE REMOVING BURRS AND SHARP EDGES. TOUCH UP WITH COLD GALV SPRAY.
 - 3) TOUCHUP GALVANIZING AS NEEDED WITH COLD GALVAINZE SPRAY.
 - 4) GALVANIZING MUST CONFORM TO ASTM A123. REMOVE ANY EXCESS CALVANIZING, BURRS OR SHARP EDGES.
 - 5) APPLY MARRINE GRADE ANTI-SIZE TO SHEAVE COVER BOLTS FRONT AND BACK & CABLE KEEPER BOLTS ITEMS #49, #52.
 - 6) SLIDE MOBILE SHEAVE ASSEMBLY, FRONT MOBILE FRAME, AND ALL MOBILE FRAMES TO FULLY COLLAPSED POSITION DURING ASSEMBLY TO CHECK FOR PROPER CLEARANCES AND OPERATION.
 - 7) ALL WELDS TO CONFORM TO LATEST AWS D1.1 WELDING CODE.
 - 8) CHECK CYLINDER FOR CORRECT FLUID LEVEL.
 - 9) SEE INSTALLATION MANUAL FOR DRILL AND EPOXY REQUIREMENTS.

ANCHOR KITS NOT INCLUDED; KITS VARY
TL3 SMART CUSHION ANCHOR KITS:
9401 - TL3 CONCRETE ANCHOR KIT 270667
9402 - TL3 ASPHALT ANCHOR KIT 270663

REVISION HISTORY				
REV	ZONE	DESCRIPTION	ECN#	DATE APPROVED
AT		+GALV ON ITEMS 16,17,23,49,52,53,59,60,61,63	NA	07/24/10 JAR
AU		CORRECTION TO NOTES 3&5	NA	07/28/10 JAR
AV		CHG ITEM 55&57 TO GALVANIZED	NA	04/30/11 JAR
AW		CHG CABLE TO RRL	NA	03/01/17 PE
AX		CORRECT DEPICTION - WELDMENT BACK PLATE	NA	11/24/17 PE
AY		DOCUMENTATION UPDATE	NA	02/04/21 CC
BA		MODELED AND REDRAWN IN SOLIDWORKS	20220122	09/16/2022 CAC



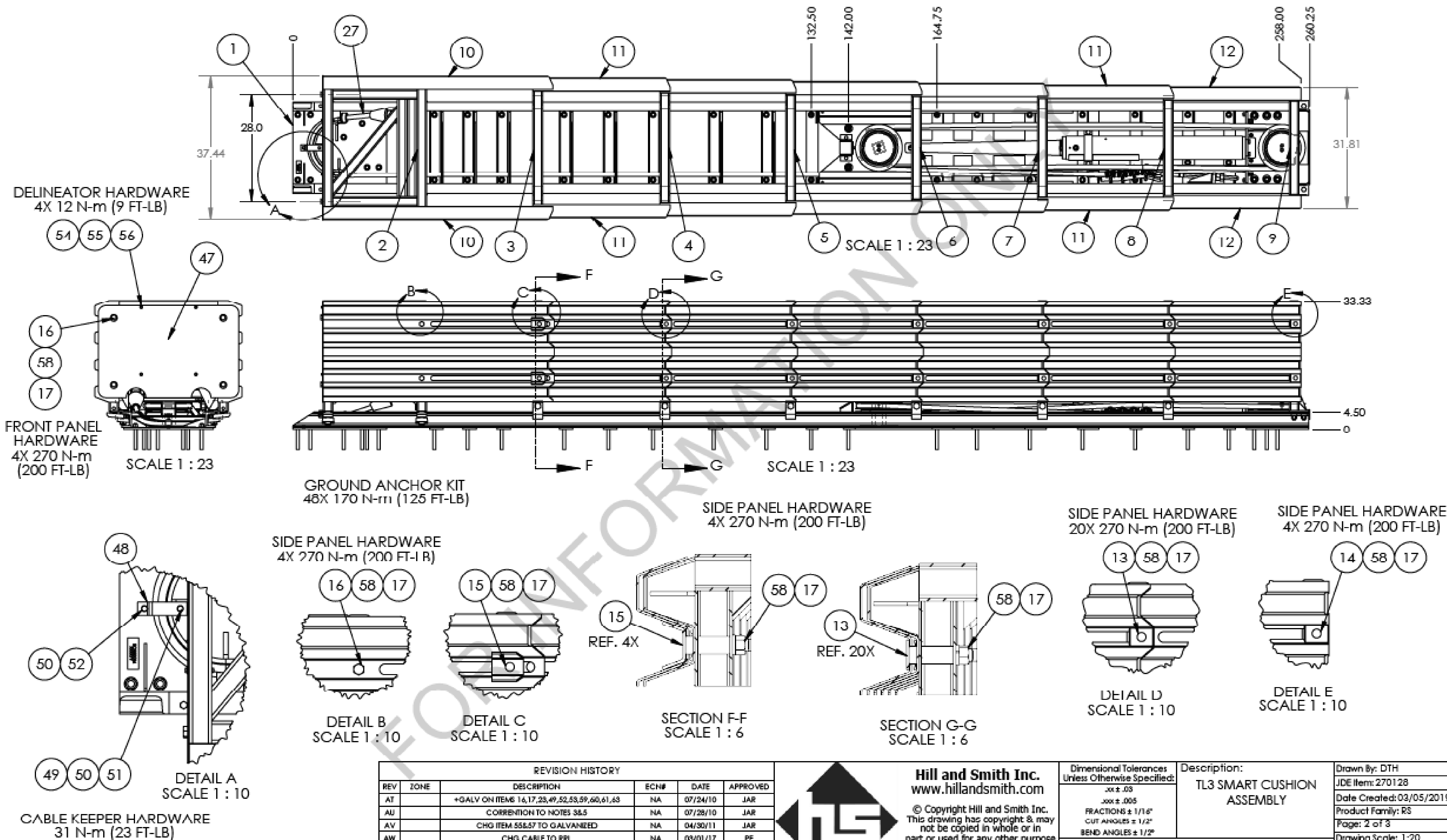
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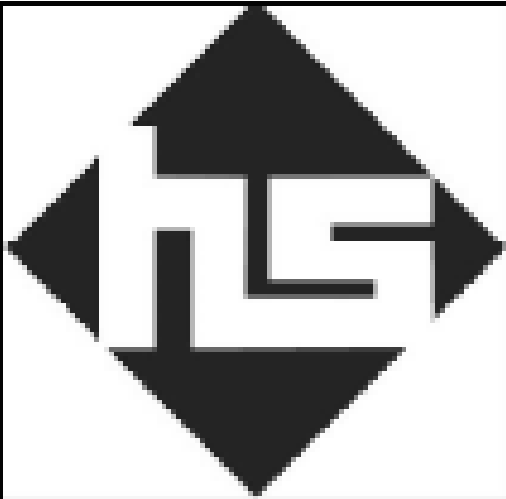
Dimensional Tolerances Unless Otherwise Specified:
.001 ± .003
.001 ± .005
FRACTIONS ± 1/16"
CUT ANGLES ± 1/2°
BEND ANGLES ± 1/2°
Material: As Specified
Finish: AS SPECIFIED
Weight: 3489.556 lb

Description:
TL3 SMART CUSHION ASSEMBLY
Part Number:
ET-00-01

Drawn By: DTH
JDE Item: 270128
Date Created: 03/05/2019
Product Family: RS
Page: 1 of 3
Drawing Scale: 1:20
Rev.
BA



REVISION HISTORY					
REV	ZONE	DESCRIPTION	ECN#	DATE	APPROVED
AT		+GALV ON ITEMS 16,17,23,49,52,53,59,60,61,63	NA	07/24/10	JAR
AU		CORRECTION TO NOTES 3&5	NA	07/28/10	JAR
AV		CHG ITEM 55&57 TO GALVANIZED	NA	04/30/11	JAR
AW		CHG CABLE TO RRL	NA	03/01/17	PE
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BA		MODELED AND REDRAWN IN SOLIDWORKS	20220122	09/16/2022	CAC



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Dimensional Tolerances
Unless Otherwise Specified:
DIM ± .03
HOLE ± .005
FRACTIONS ± 1/16"
CUT ANGLES ± 1/2"
BEND ANGLES ± 1/2"
Material: As Specified
Finish: AS SPECIFIED
Weight: 3489.556 lb

Description:
TL3 SMART CUSHION
ASSEMBLY

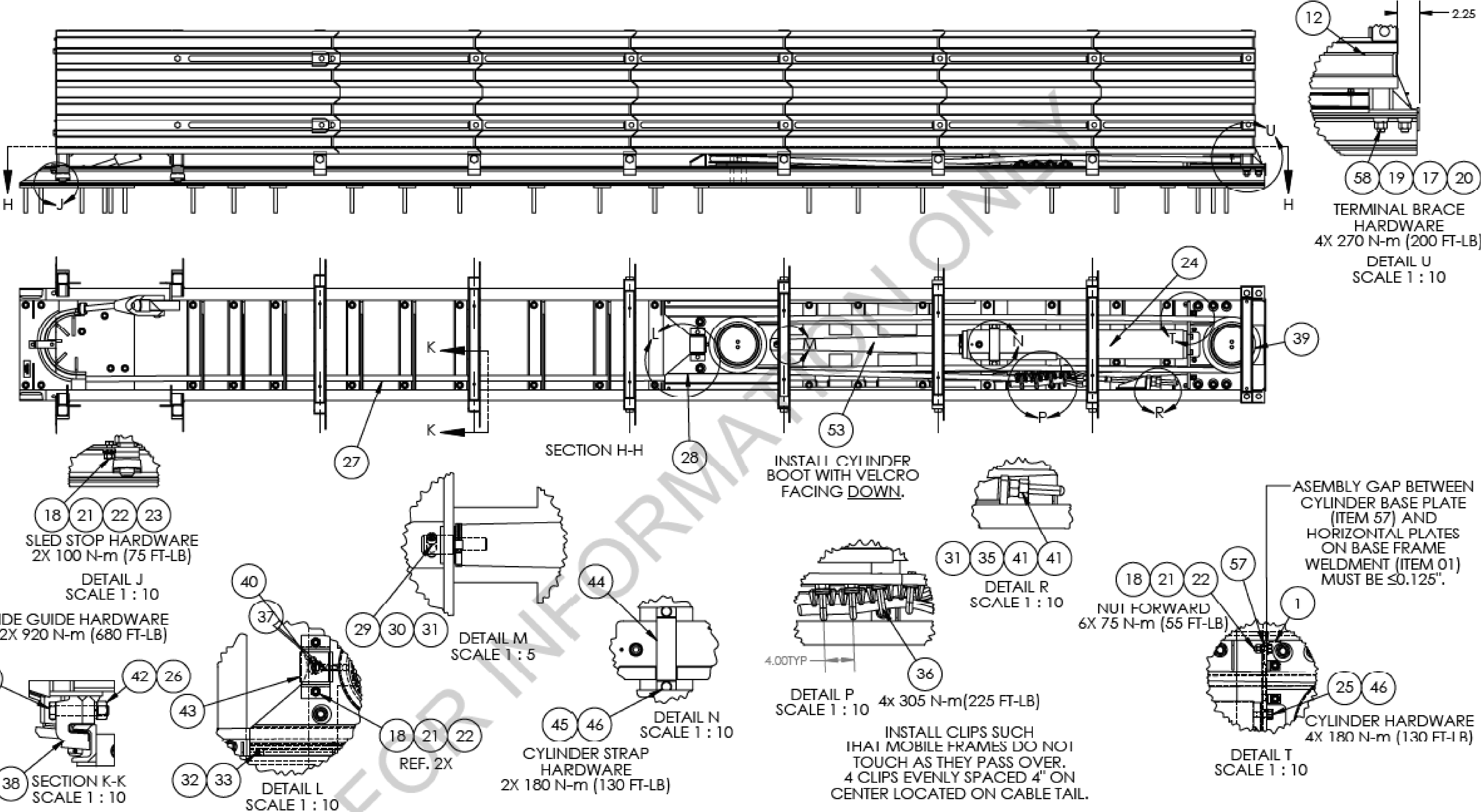
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ET-00-01

Drawn By: DTH
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Date Created: 03/05/2019
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Page: 2 of 3
Drawing Scale: 1:20
Rev.
BA

SMART CUSHION
DESIGN GUIDE

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

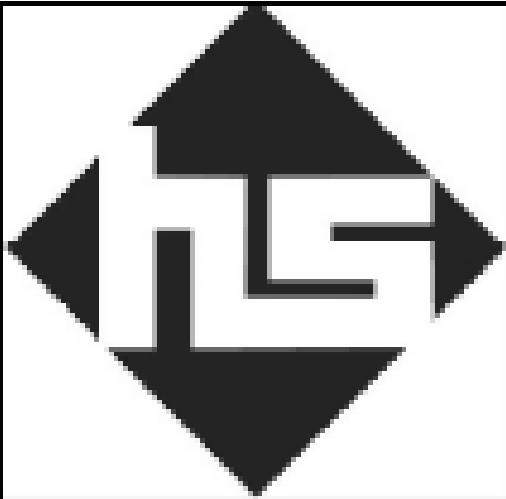
Roadway
Design
Division



CABLE ROUTING(TOP SHEAVE IS #1):

- 1) FROM FRONT FIXED SHEAVE TO REAR 3
- 2) TO FRONT MOBILE 3 UP TO REAR 2
- 3) TO FRONT MOBILE 2 UP TO REAR 1
- 4) TO FRONT MOBILE 1 TO ADJUSTER.
- 5) CABLE SHOULD NOT HAVE ANY SLACK AFTER ASSEMBLY.

REVISION HISTORY					
REV	ZONE	DESCRIPTION	ECH#	DATE	APPROVED
AT		+GALV ON ITEMS 16,17,23,49,52,53,59,60,61,63	NA	07/24/10	JAR
AU		CORRECTION TO NOTES 3&5	NA	07/28/10	JAR
AV		CHG ITEM 55&57 TO GALVANIZED	NA	04/30/11	JAR
AW		CHG CABLE TO RRL	NA	03/01/17	PE
AX		CORRECT DEPICTION - WELDMENT BACK PLATE	NA	11/24/17	PE
AY		DOCUMENTATION UPDATE	NA	02/04/21	CC
BA		MODELED AND REDRAWN IN SOLIDWORKS	20220122	09/16/2022	CAC



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Dimensional Tolerances Unless Otherwise Specified:	
XXX ± .03	
XXX ± .005	
FRACTIONS ± 1/16"	
CUT ANGLES ± 1/2°	
BEND ANGLES ± 1/2°	
Material: As Specified	
Finish: AS SPECIFIED	
Weight: 3489.556 lb	

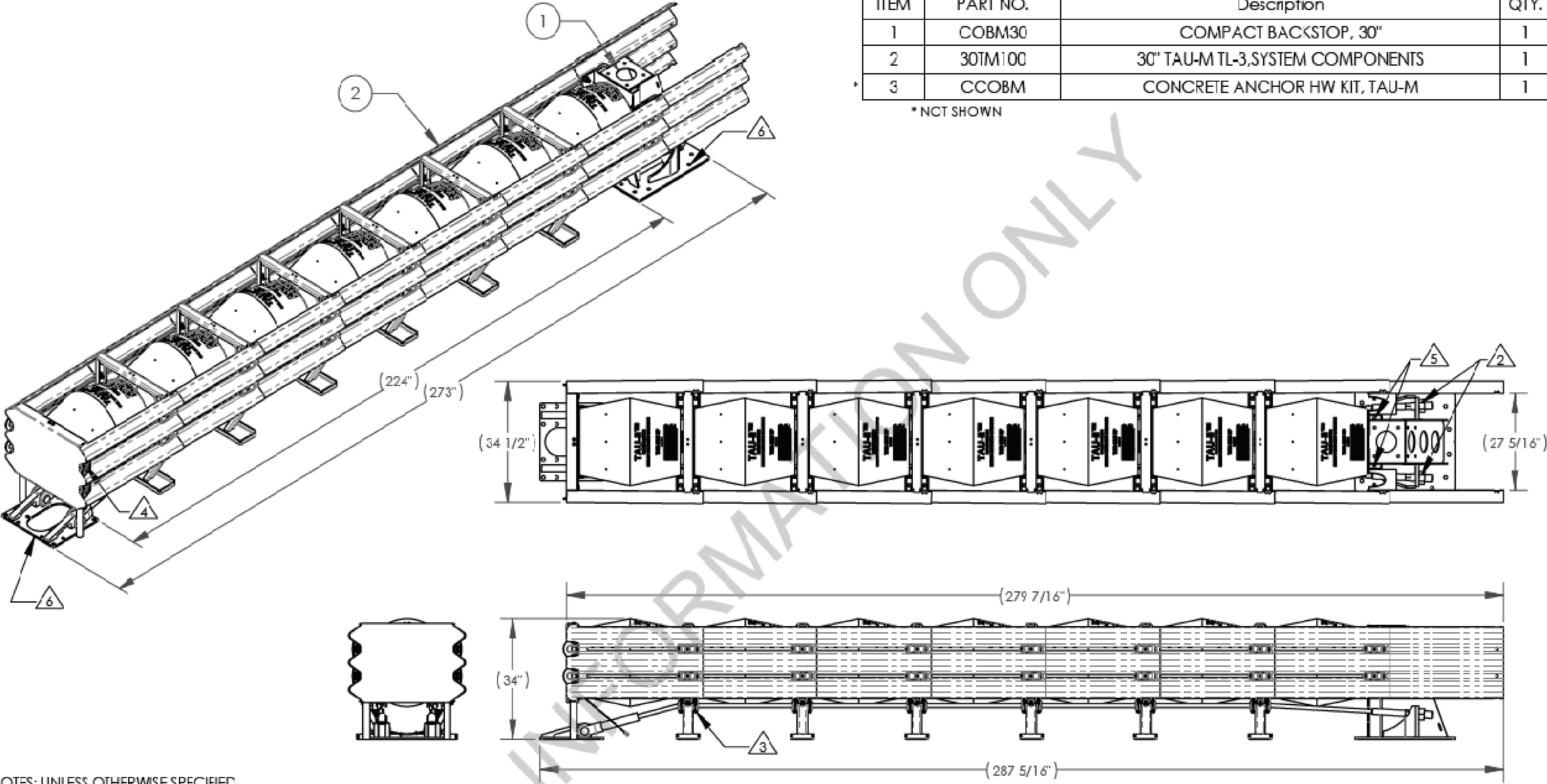
Description:
TL3 SMART CUSHION
ASSEMBLY

Part Number:
ET-00-01

Drawn By: DTH	
JDE Item: 270128	
Date Created: 03/05/2019	
Product Family: RS	
Page: 3 of 3	
Drawing Scale: 1:20	
Rev.	BA

ITEM	PART NO.	Description	QTY.	1 OF 2
1	COBM30	COMPACT BACKSTOP, 30"	1	Project Number
2	30TM100	30" TAU-M TL-3,SYSTEM COMPONENTS	1	
3	CCOBM	CONCRETE ANCHOR HW KIT, TAU-M	1	C.N.

* NCT SHOWN



- NOTES: UNLESS OTHERWISE SPECIFIED.
- 1. ITEM 3 NOT SHOWN.
 - 2. TORQUE NUT TO 500 FT-LB [680 N-m].
 - 3. TORQUE CABLE GUIDES TO 30 FT-LBS [48 N-m].
 - 4. TORQUE TCW HOOKS TO 120 FT-LB [160 N-m].
 - 5. TORQUE END PANEL MOUNTS TO 70 FT-LBS [95 N-m].
 - 6. TORQUE ANCHOR BOLTS TO 120 FT-LBS [160 N-m].

7. SPECIFICATIONS:
- 1. ALL STEEL COMPONENTS ARE ASTM A36 EQUIVALENT OR STRONGER UNLESS OTHERWISE STATED.
 - 2. ALL STEEL COMPONENTS ARE NOT DIPPED GALVANIZED PER ASTM A-123 UNLESS OTHERWISE SPECIFIED.
 - 3. ALL FASTENERS ARE GRADE 5 OR EQUIVALENT AND GALVANIZED UNLESS OTHERWISE SPECIFIED.

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:

FRACTIONS	DECIMAL	ANGLES
±1/16	.XX = ±.03 .XXX = ±.010	±1/2°

INTERPRET DIMENSIONS AND
TOLERANCES PER ASME
Y14.5-1994

APPROVALS

DRAWN BY:	JTL
DRAWN DATE:	01/14/19
APPRD BY:	GAD
APPRD DATE:	01/14/19

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

REV	ECN#	DATE

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Tel: 888-800-3691
www.barriersystemsinc.com

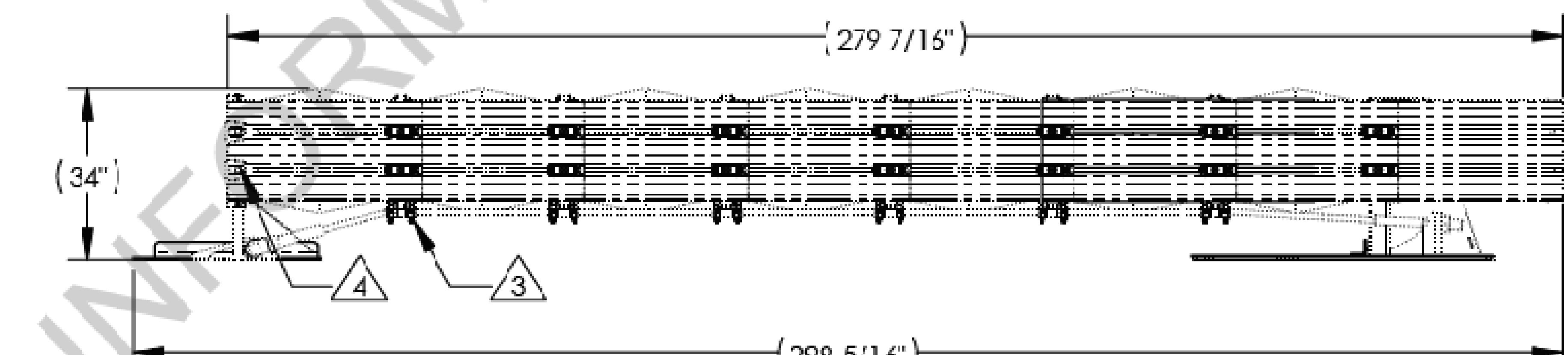
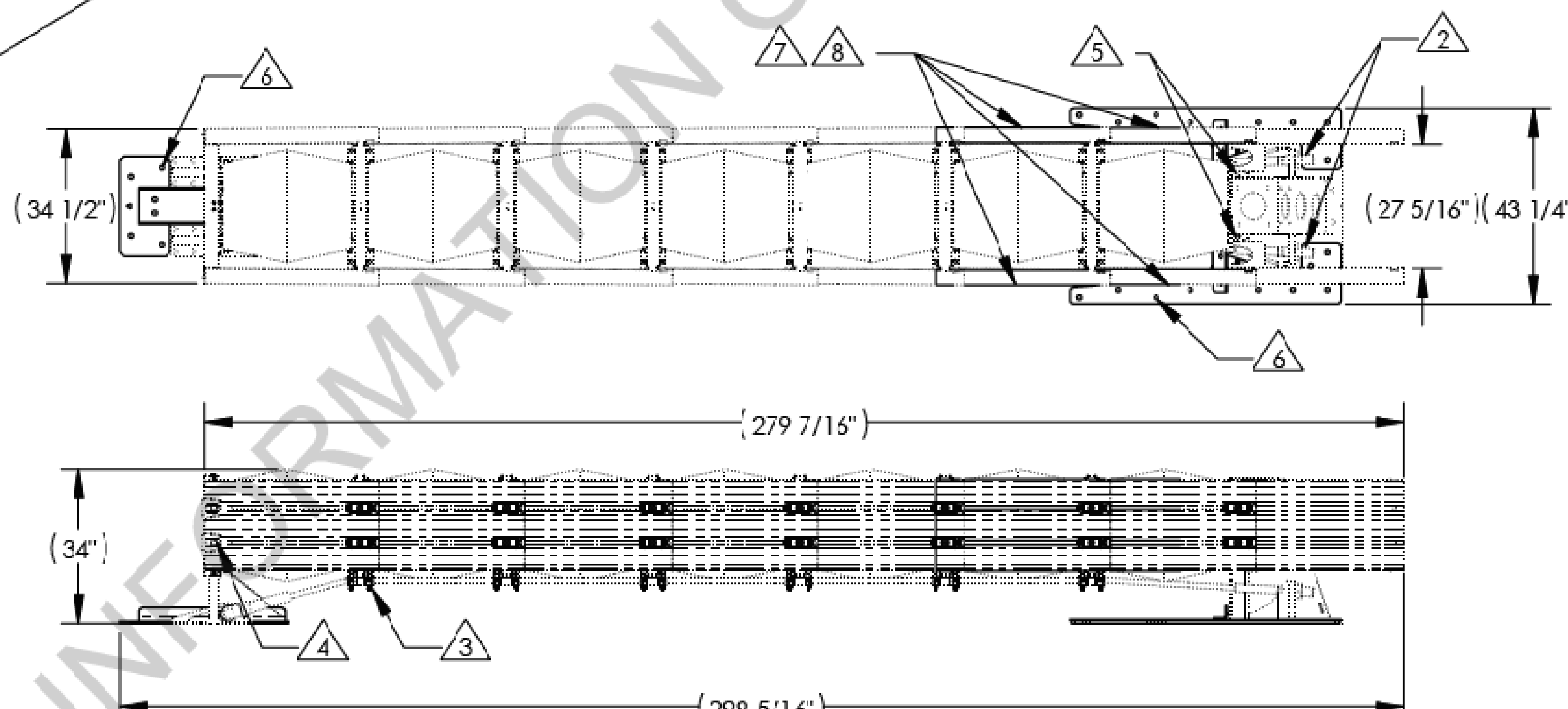
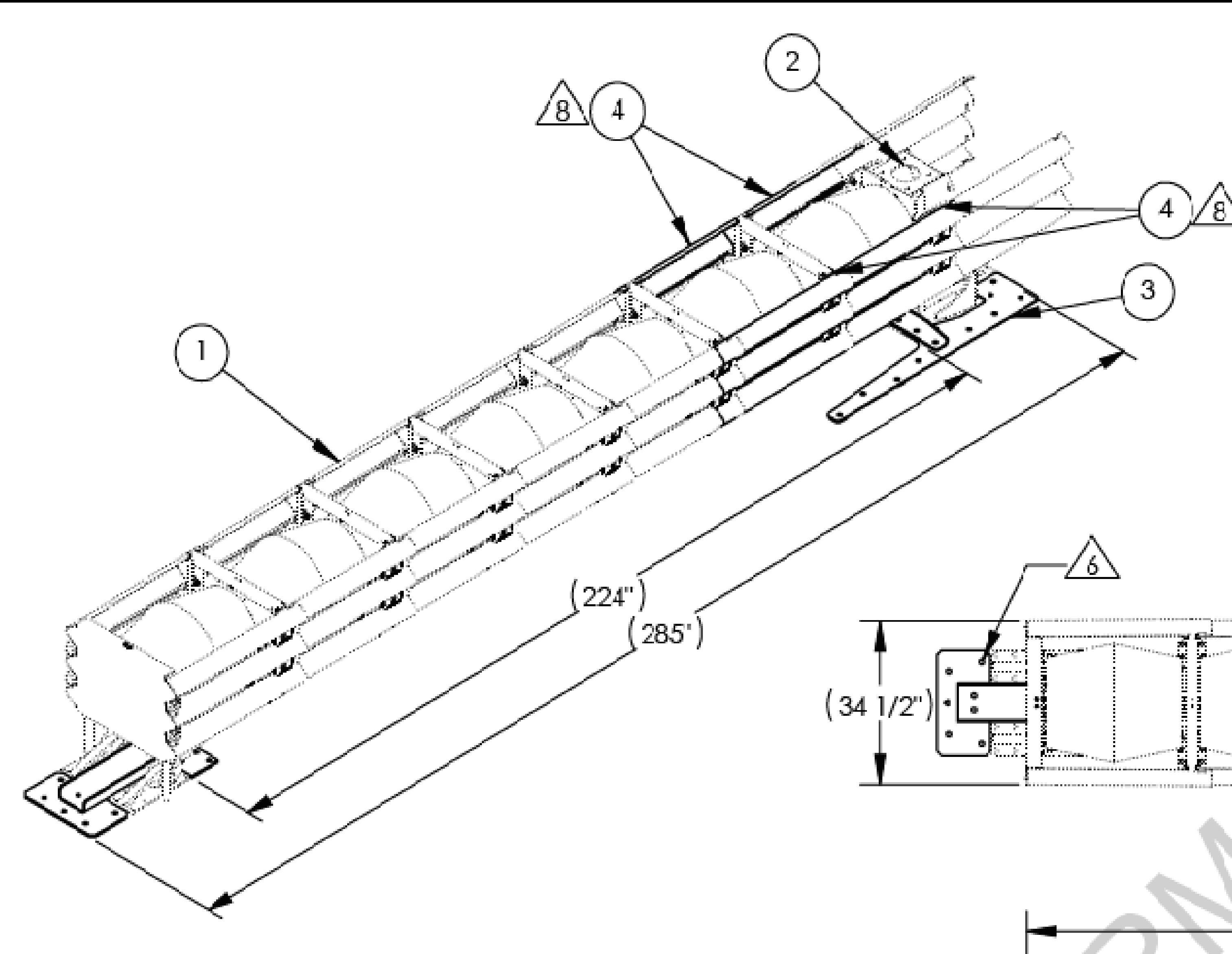
TITLE
**30" TAU-M TL-3, COMPACT BACKSTOP
CONCRETE**

SIZE B	DWG NO. 30TM100CC	REV. A
SCALE 1:30	SHEET 1 OF 1	

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway
Design
Division

30" TAU-M TL-3, COMPACT BACKSTOP CONCRETE
DESIGN GUIDE



NOTES: UNLESS OTHERWISE SPECIFIED.

1. ITEM 3 NOT SHOWN.

2. TORQUE NUT TO 120 FT-LB [160 N-m].

3. TORQUE CABLE GUIDES TO 30 FT-LBS [48 N-m].

4. TORQUE TOW HOOKS TO 120 FT-LB [160 N-m].

5. TORQUE END PANEL MOUNTS TO 70 FT-LBS [95 N-m].

6. TORQUE ANCHOR BOLTS TO 5 FT-LBS [8 N-m].

7. NEST (2) PANELS ON LAST (2) BAYS ON BOTH SIDES.

8. STACK SLIDER SHIMS ON LAST (2) BAYS ON BOTH SIDES.

9. SPECIFICATIONS:

1. ALL STEEL COMPONENTS ARE ASTM A36 EQUIVALENT OR STRONGER UNLESS OTHERWISE STATED.

2. ALL STEEL COMPONENTS ARE NOT DIPPED GALVANIZED PER ASTM A-123 UNLESS OTHERWISE SPECIFIED.

3. ALL FASTENERS ARE GRADE 5 OR EQUIVALENT AND GALVANIZED UNLESS OTHERWISE SPECIFIED.

ITEM	PART NO.	Description	QTY.	UOM
1	30TM100	30" TAU-M TL-3,SYSTEM COMPONENTS	1	EA
2	COBM30	COMPACT BACKSTOP, 30", TAU-M	1	EA
3	ACOBM	ASPHALT ANCHOR PACKAGE, COBM30	1	EA
4	BSI-1708019-00	SLIDING PANEL, GALVANIZED, TAU-M	4	EA
5	BSI-1803016-00	SLIDER SHIM, GEOMET, TAU-M	8	EA

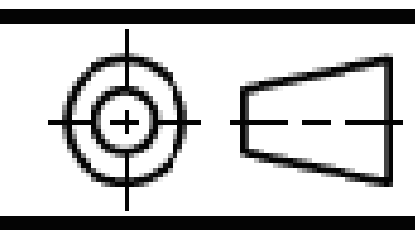
* NOT SHOWN

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BARRIER SYSTEMS INC. ANY REPRODUCTION
IN PART OR WHOLE WITHOUT THE WRITTEN
PERMISSION OF BARRIER SYSTEMS INC. IS
PROHIBITED.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:
FRACTIONS DECIMAL ANGLES
±1/16 .XX = ±.03 ±1/2°
.XXX = ±.010

INTERPRET DIMENSIONS AND
TOLERANCES PER ASME
Y14.5-1994

THIRD ANGLE PROJECTION



DO NOT SCALE DRAWING

LINDSAY™

TRANSPORTATION SOLUTIONS

180 River Road
Folsom, CA 95630
Tel: 888-800-3691
www.barriersystemsinc.com

TITLE

30" TAU-M TL-3, COMPACT BACKSTOP
ASPHALT

DRAWN BY: JTL

DRAWN DATE: 01/14/19

APPROD BY: GAD

APPROD DATE: 01/14/19

REV

ECN#

DATE

SIZE B

DWG NO. 30TM100CA

SCALE 1:35

REV. A

SHEET 1 OF 1

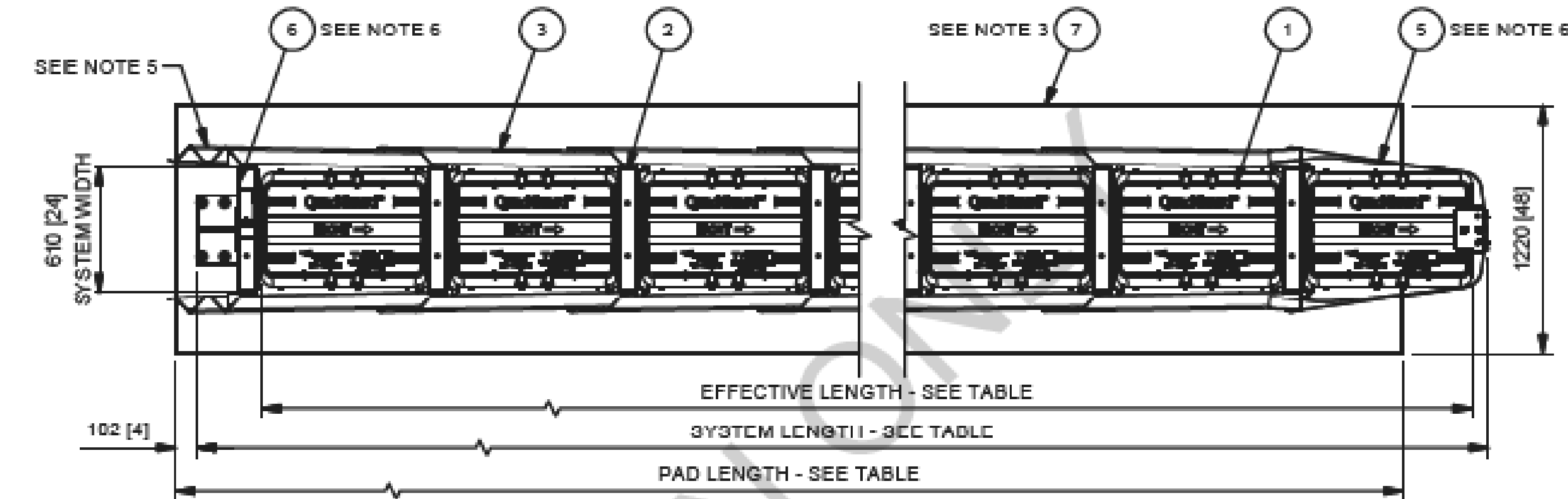
NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway
Design
Division

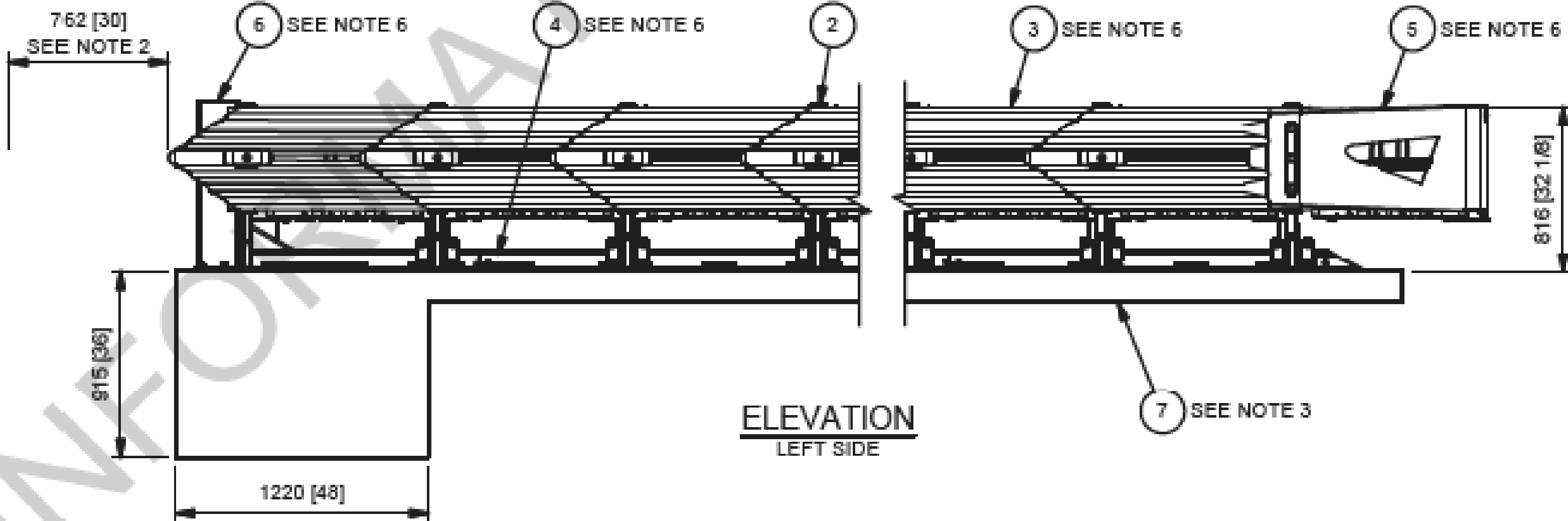
30" TAU-M TL-3, COMPACT BACKSTOP ASPHALT
DESIGN GUIDE

2 OF 2

2 OF 2 7753 6 R0

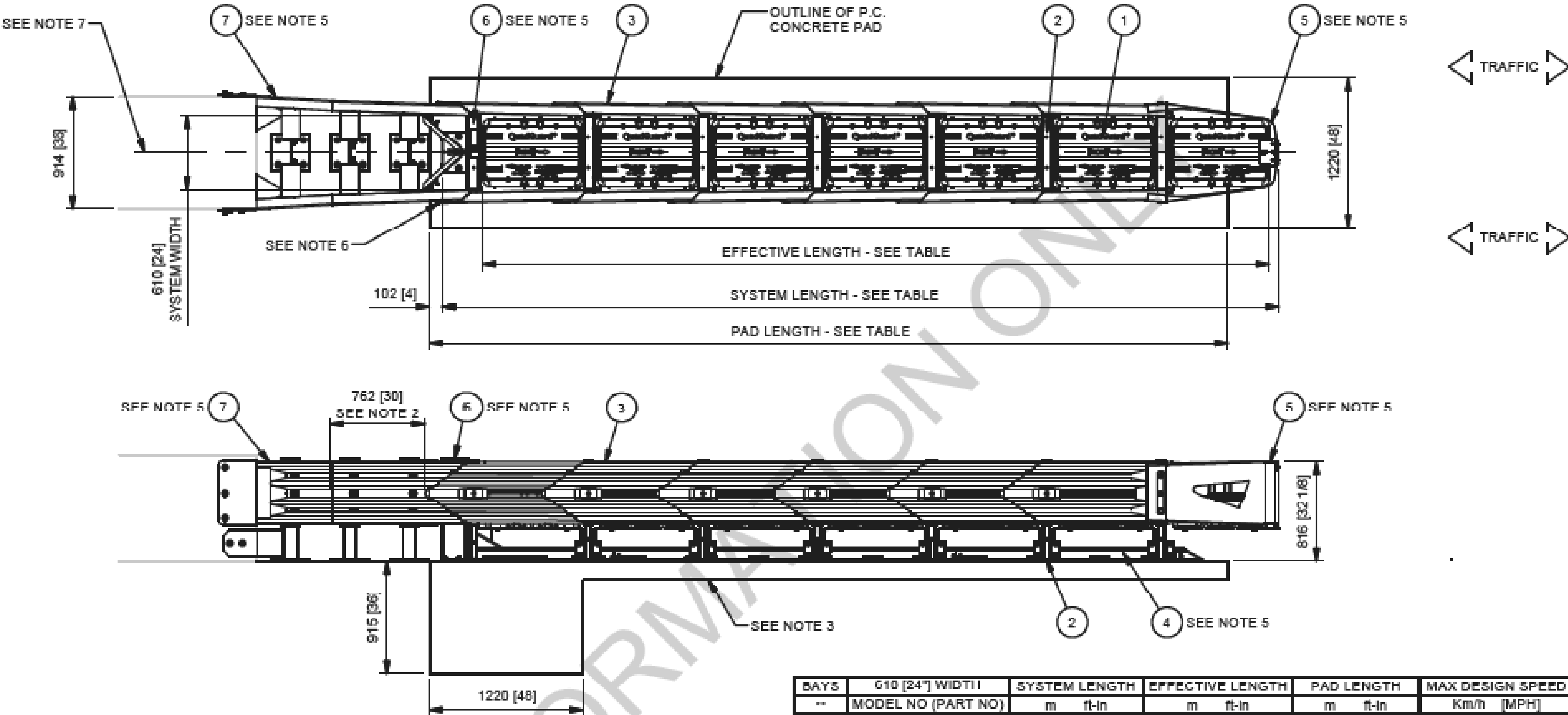


- NOTES:
- IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 mm [30"] MIN.
 - 152 mm [6"] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 mm [8"] MIN. NON-REINFORCED 28MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m [12'-0"] WIDE BY 15.24 m [50'-0"] LONG. ANCHOR BLOCK IS NOT REQUIRED WHEN USING 203 mm [8"] CONCRETE PAD INSTALLED AGAINST AN IMMOVABLE STRUCTURE SUCH AS A CONCRETE WALL OR ABUTMENT.
 - SEE THE "QUADGUARD M10 SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323-6374.
 - WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY AN ADEQUATE TRANSITION FROM THE QUADGUARD M10 SYSTEM TO THE OBJECT BEING SHIELDED.
 - BACKUP, MONORAIL, AND NOSE ASSEMBLIES ARE NOT INCLUDED IN MODEL NUMBER, ORDER SEPARATELY.
 - THE QUADGUARD M10 3-BAY SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 2. THE QUADGUARD M10 6-BAY SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 3.



BAYS	610 [24"] WIDTH	SYSTEM LENGTH	EFFECTIVE LENGTH	PAD LENGTH	MAX DESIGN SPEED	NO. OF CARTRIDGES
--	MODEL NO (PART NO)	m ft-in	m ft-in	m ft-in	Km/h [MPH]	TYPE I TYPE II
3	QM7024 (618693)	3.94 [12'-11"]	3.56 [11'-8"]	3.66 [12'-0"]	70 [43]	3 1
6	QM10024 (617607)	6.68 [21'-11"]	6.30 [20'-8"]	6.40 [21'-0"]	100 [62]	4 3

KEY		REFERENCES		DIAPHRAGM ASSY		D. Standridge		DATE		MODEL		QUADGUARD® M10 SYSTEM		W/ TENSION STRUT BACKUP		VALTIR	
① CARTRIDGE	⑥ BACKUP	SERIAL NO.	_____	DIAPHRAGM SHIM KIT	627889	CHIEF	ST	4/21/2010	TRAFFIC DIRECTION	SEE TABLE	UNIDIRECTIONAL	DO NOT SCALE DRAWING		ECO DATE REV BY CHK		DRAWING: QGMTSCVR-U	
② DIAPHRAGM	⑦ CONCRETE PAD	SALES ORDER	_____	NOSE ASSY	627518	DATE	6/27/2010	6/27/2010	7121	4/9/20	J	DK	BRE	REV L	SHEET 1 of 1		
③ FENDER PANEL		EH PROJECT	_____	FENDER PANEL ASSY	626814	UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS (MM) DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND AMS-5000 UNLESS OTHERWISE SPECIFIED.		REVISION DESCRIPTION		7573		4/21/21		K		JMS	
④ MONORAIL		DESIGN SPEED	SEE TABLE	BACKUP ASSY	627756												
⑤ NOSE		NOSE TYPE	_____	MONORAIL ASSY	625637	UPDATED NOTE DIMS TO XX mm [X"] FORMAT, UPDATED BORDER AND LOGO		8146		9/15/22		L		JMS		RCB	
		NO. OF UNITS	_____	CONCRETE PAD	618686												



BAYS	G10 [24"] WIDTH I	SYSTEM LENGTH		EFFECTIVE LENGTH		PAD LENGTH		MAX DESIGN SPEED		NO. OF CARTRIDGES	
	MODEL NO (PART NO)	m	ft-in	m	ft-in	m	ft-in	Km/h	MPH	TYPE I	TYPE II
3	QM7024 (618693)	3.94	[12'-11"]	3.56	[11'-8"]	3.66	[12'-0"]	70	[43]	3	1
6	QM10024 (617607)	6.68	[21'-11"]	6.30	[20'-8"]	6.40	[21'-0"]	100	[62]	4	3

- NOTES:

1. IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.

2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 mm [30"] MIN.

3. 152 mm [6"] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 mm [8"] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m [12'-0"] WIDE BY 15.24 m [50'-0"] LONG. ANCHOR BLOCK IS NOT REQUIRED WHEN USING 203 mm [8"] CONCRETE PAD INSTALLED AGAINST AN IMMOVABLE STRUCTURE SUCH AS A CONCRETE WALL OR ABUTMENT.
4. SEE THE "QUADGUARD M10 SYSTEM PRODUCT MANUAL", FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF CURRENT MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323-6374.

5. BACKUP, MONORAIL, TRANSITION AND NOSE ASSEMBLIES NOT INCLUDED IN MODEL NUMBER, ORDER SEPARATELY. TRANSITIONS AND HARDWARE ARE ACCESSORY ITEMS.

6. TRANSITION PANEL SHALL BE ANGLED SUCH THAT MAXIMUM GAP FROM FENDER PANEL OVERLAP DOES NOT EXCEED 20 mm [3/4"].
7. CAUTION: CENTERLINE OF QUADGUARD M10 SYSTEM AND POSTS SHALL BE PARALLEL WITH CENTERLINE OF VERTICAL WALL ± 1".

8. THE QUADGUARD M10 3 BAY SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 2. THE QUADGUARD M10 6-BAY SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 3.

KEY

① CARTRIDGE

② DIAPHRAGM

③ FENDER PANEL

④ MONORAIL

⑤ NOSE

⑥ BACKUP

⑦ TRANSITION

REFERENCES

SERIAL NO.

SALES ORDER

EH PROJECT

DESIGN SPEED

NOSE TYPE

NO. OF UNITS

DIAPHRAGM ASSY 627889

DIAPHRAGM SHIM KIT 627518

NOSE ASSY 626814

FENDER PANEL ASSY 627756

BACKUP ASSY 627448

MONORAIL ASSY 625637

CONCRETE PAD 618686

TRANSITION ASSY 628330

DESIGN: M. Leschinsky

DATE: 6/7/2022

PROJECT: SEE TABLE

CHECKED: DATE: TRAFFIC DIRECTION: BIDIRECTIONAL

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS (INCH) DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND GDS-SE-000 UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DRAWING

REVISION DESCRIPTION ECO DATE REV BY CHK

INITIAL RELEASE 8096 - - - -

DRAWING: QGMTSCVR-T36VB

REV: -

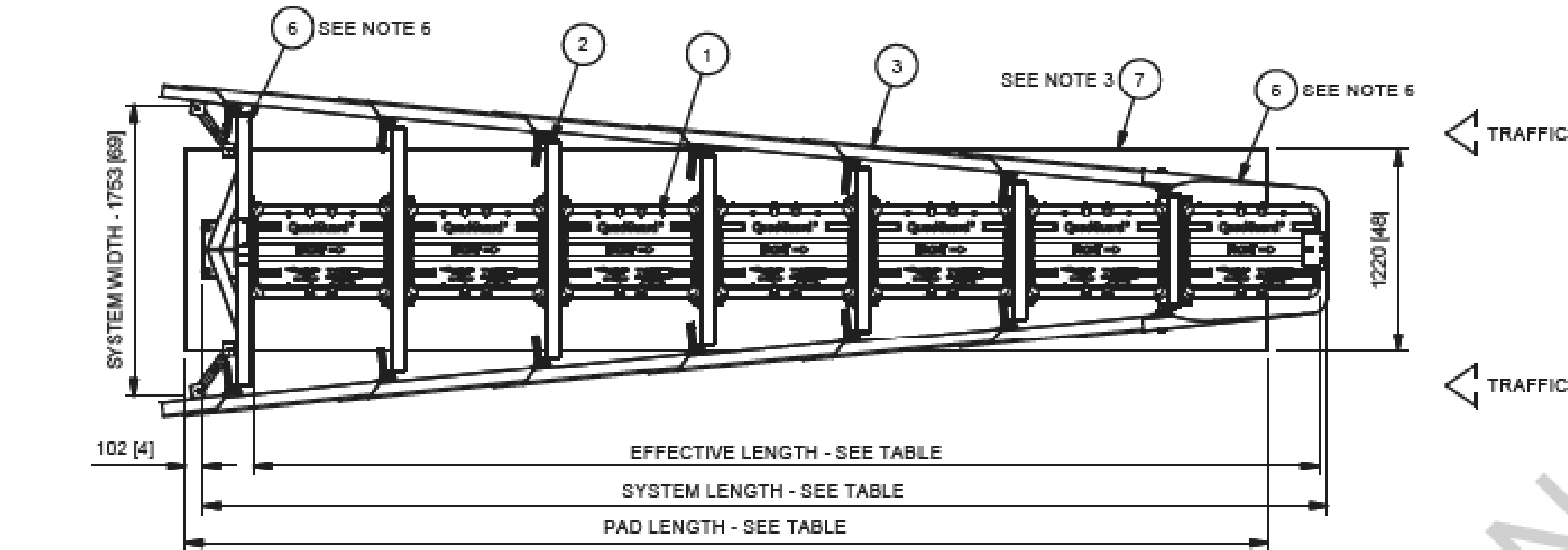
SHEET: 1 of 1

QUADGUARD® M10 SYSTEM

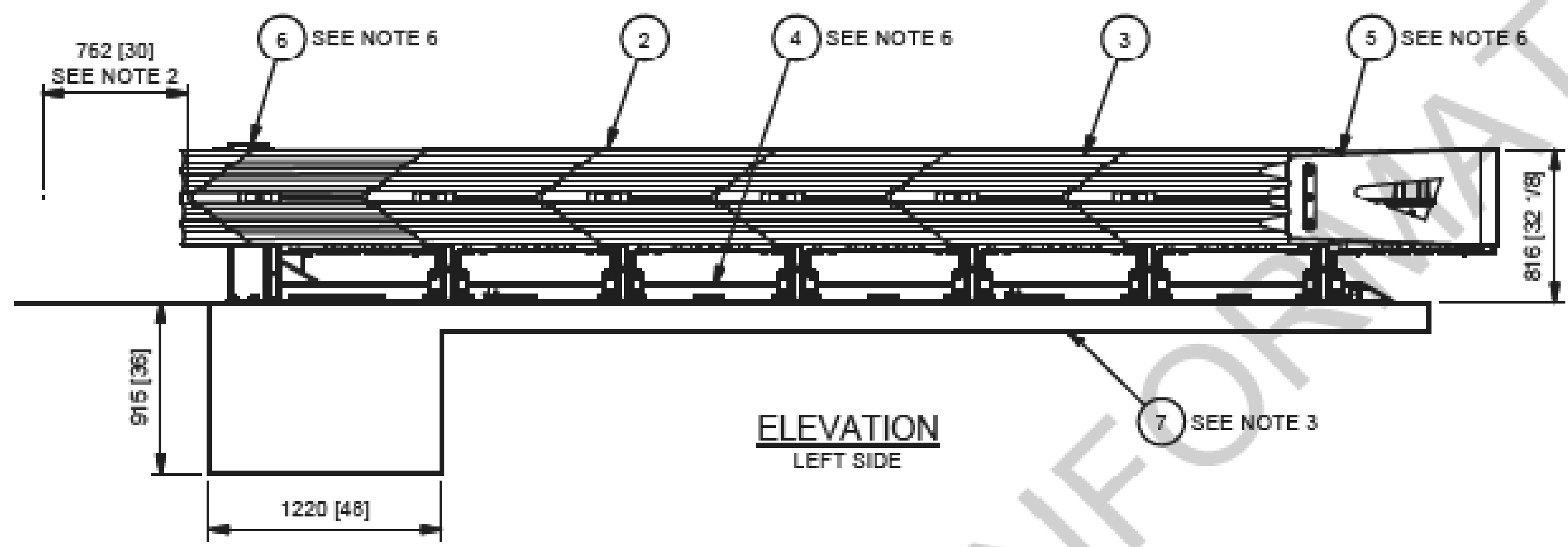
W/ TENSION STRUT BACKUP AND

36" WIDENING VERTICAL WALL TRANSITION

VALTIR



PLAN



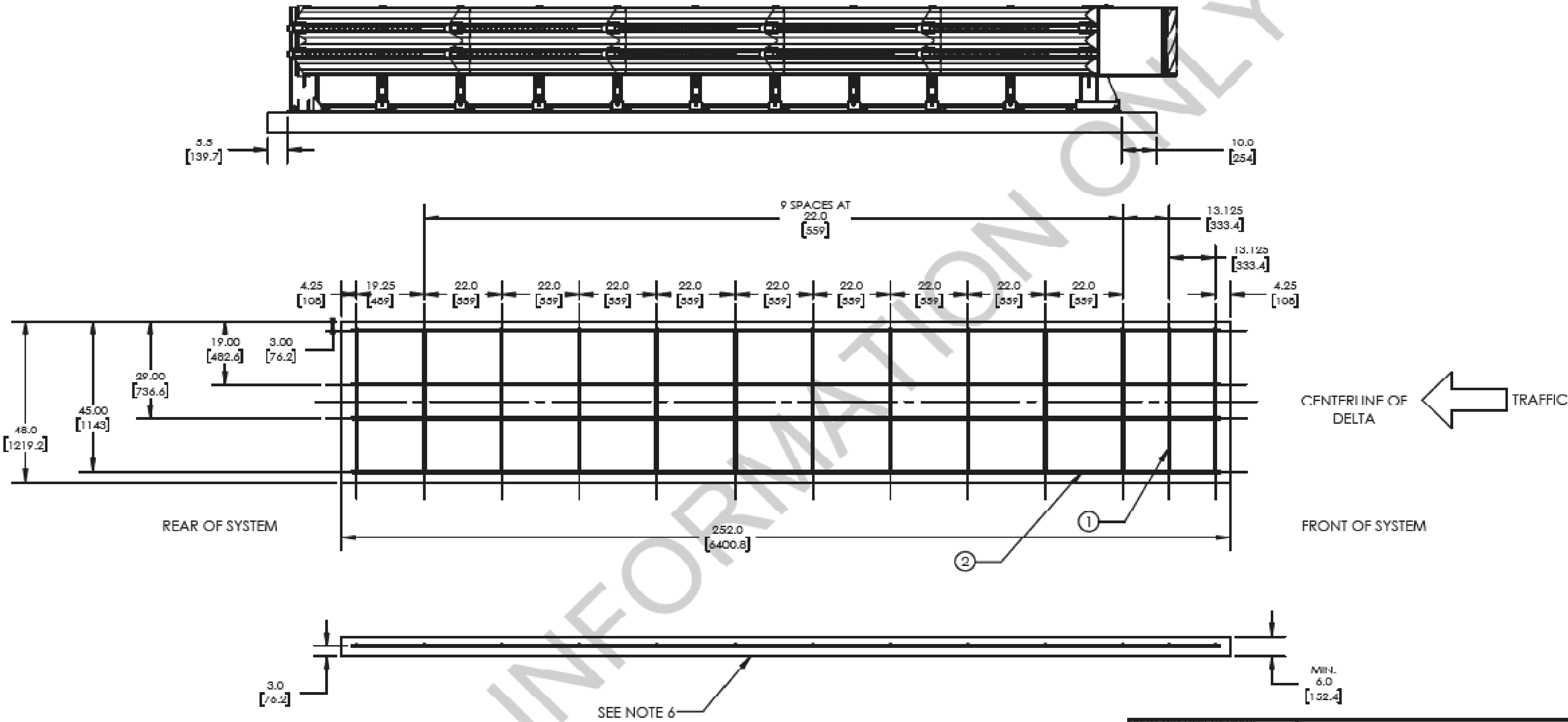
ELEVATION
LEFT SIDE

- NOTES:
- 1. IN COMPLIANCE WITH THE AASHTO 2011 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 - 2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 mm [30"] MIN.
 - 3. 152 mm [6"] MIN. REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE PAD OR 203 mm [8"] MIN. NON-REINFORCED 28 MPa [4000 PSI] P.C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m [12'-0"] WIDE BY 15.24 m [50'-0"] LONG. ANCHOR BLOCK IS NOT REQUIRED WHEN USING 203 mm [8"] CONCRETE PAD INSTALLED AGAINST AN IMMOVABLE STRUCTURE SUCH AS A CONCRETE WALL OR ABUTMENT.
 - 4. SEE THE "QUADGUARD M WIDE SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF CURRENT MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323-6374.
 - 5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY AN ADEQUATE TRANSITION FROM THE QUADGUARD M WIDE SYSTEM TO THE OBJECT BEING SHIELDED.
 - 6. BACKUP, MONORAIL, AND NOSE ASSEMBLIES ARE NOT INCLUDED IN MODEL NUMBER, ORDER SEPARATELY.
 - 7. THE QUADGUARD M WIDE 6-BAY SYSTEM HAS BEEN TESTED TO MASH TEST LEVEL 3.

BAYS	1753 [69"] WIDTH	SYSTEM LENGTH	EFFECTIVE LENGTH	PAD LENGTH	MAX DESIGN SPEED	NO. OF CARTRIDGES
	MODEL #	mft-in	mft-in	mft-in	Km/h [MPH]	TYPE I TYPE II
6	QM10069 (627515)	6.71 [22'-0"]	6.30 [20'-8"]	6.40 [21'-0"]	100 [62]	4 3

KEY		REFERENCES		DIAPHRAGM ASSY		D. Standridge		DATE		MODEL		QUADGUARD® M WIDE SYSTEM		W/ TENSION STRUT BACKUP		DRAWING	
① CARTRIDGE	⑥ BACKUP	SERIAL NO.		627534		4/21/2010		SEE TABLE		TRAFFIC DIRECTION: UNIDIRECTIONAL		DO NOT SCALE DRAWING		DRAWING		QFMTSCVR-U	
② DIAPHRAGM	⑦ CONCRETE PAD	SALES ORDER		627518		6/28/2010											
③ FENDER PANEL		EH PROJECT		627522						UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS (INCH) DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND GDS-SE-000 UNLESS OTHERWISE SPECIFIED.		REV BY CHK		REV J		SHEET 1 of 1	
④ MONORAIL		DESIGN SPEED	SEE TABLE	627553													
⑤ NOSE ASSEMBLY		NOSE TYPE		627528						FENDER PANEL REF WAS 808241, CHANGE NOTE 5 UPDATED TO NEW LOGO AND BORDER, UPDATED DIMS. IN NOTES, UPDATED NOTE 5		7285 7/9/20 H DPH RCB		7587 2/12/21 I DK BRE		8149 7/28/22 J JMS RCB	
		NO. OF UNITS		625637													
				618686													

Item No.	Length	QTY.
1	43 in. (1092 mm)	13
2	246 in. (6248 mm)	4



6. If Foundation is Thicker than 8 in. (200 mm) Rebar is Not Required
5. Rebar to be Tied Using Standard Construction Methods
4. 4000 PSI (28 MPa) Minimum Compressive Strength at 28 Days
3. Concrete Spacers can be Used to Keep Rebar 3 in. (75 mm) From Base of Foundation
2. Rebar Shall be Minimum #4 (13 mm) or Equivalent
1. Units: Inches [mm]
NOTES: Unless Otherwise Specified

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES (mm).
TOLERANCES:
FRACTIONAL: X/X ± 1/16" (1.6mm)
DECIMAL: X.X ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

**TraFFix
Devices Inc.**

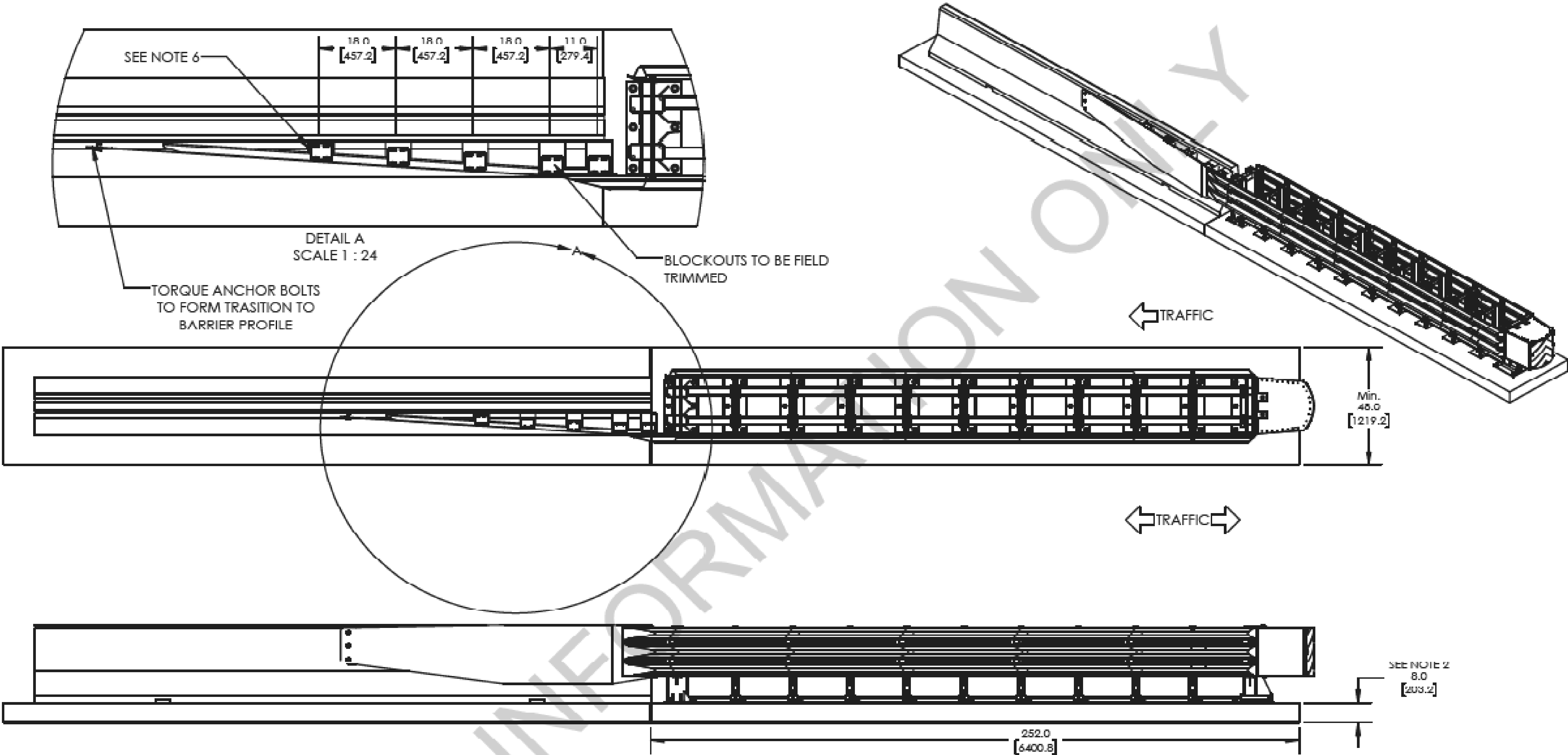
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
**Delta Rebar
Foundation Detail**

DRAWN BY: MOBBY KAMMEZ	DATE: 02/11/23
CHECKED BY: GM	DATE: 02/11/23
APPROVED BY: GM	DATE: 02/11/23

SIZE B	DRAWING NO. 1105	REV A1
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SHEET 1 OF 1



6. ONCE GAP BETWEEN THE TRANSITION C-CHANNEL AND BARRIER IS REDUCED TO 2.5 IN [65 MM] A BLOCKOUT IS NO LONGER RECOMMENDED.
5. REAR FENDER PANELS MUST BE ABLE TO TELESCOPE REARWARD WITHOUT ORSTRUCTION FOR 35 IN [890 mm]
4. TRANSITION PANEL MUST BE LAPPED UNDER THE REAR 45N FENDER PANEL IN ORDER FOR THE DELTA TO PROPERLY OPERATE.
3. BLOCKOUTS TO BE SUPPLIED BY OTHERS
2. FOUNDATION REQUIREMENTS: 6 IN. (150 mm) REINFORCED OR 8 IN. (200 mm) NON-REINFORCED PC CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI [20 MPa] IN 20 DAYS.
1. UNITS: INCHES [mm]
NOTES: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES [mm].

TraFFix
Devices Inc.



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San Clemente, CA 92673
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FAX (949) 361-9205
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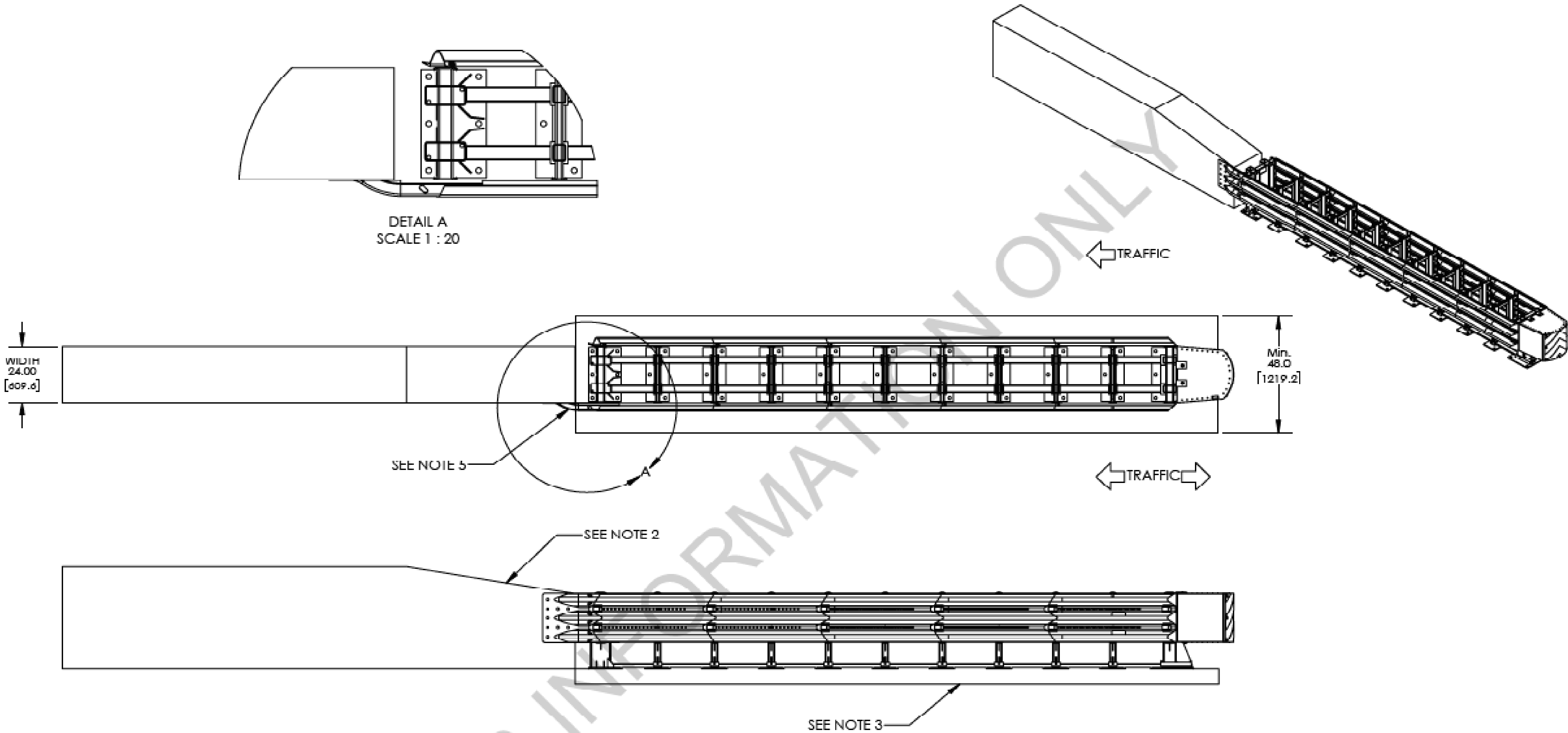
TITLE:
Delta Transition to
Safety Shape

SIZE
B

DRAWING NO.
1106

REV
A1

SHEET 1 OF 1



5. Barrier Edge to be Tangent to the Inner edge of The Delta Diaphragms/ Backup Structure
4. Transition Panel Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate. Rear Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
3. Foundation Requirements: 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non reinforced PC Concrete Having a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
2. It is Recommended That The Barrier Be Trimmed at a 6:1 Ratio If The Barrier Height Exceeds 32 in. (812 mm)
1. Units: Inches [mm]
- NOTES: Unless Otherwise Specified**

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES (mm).

TOLERANCES:
FRACTIONAL: XXX ± 1/16" (1.6mm)
DECIMAL: X.XX ± .0625"
X.XXX ± .032"
X.XXXX ± .015"

DEGREES: ± 0.5°

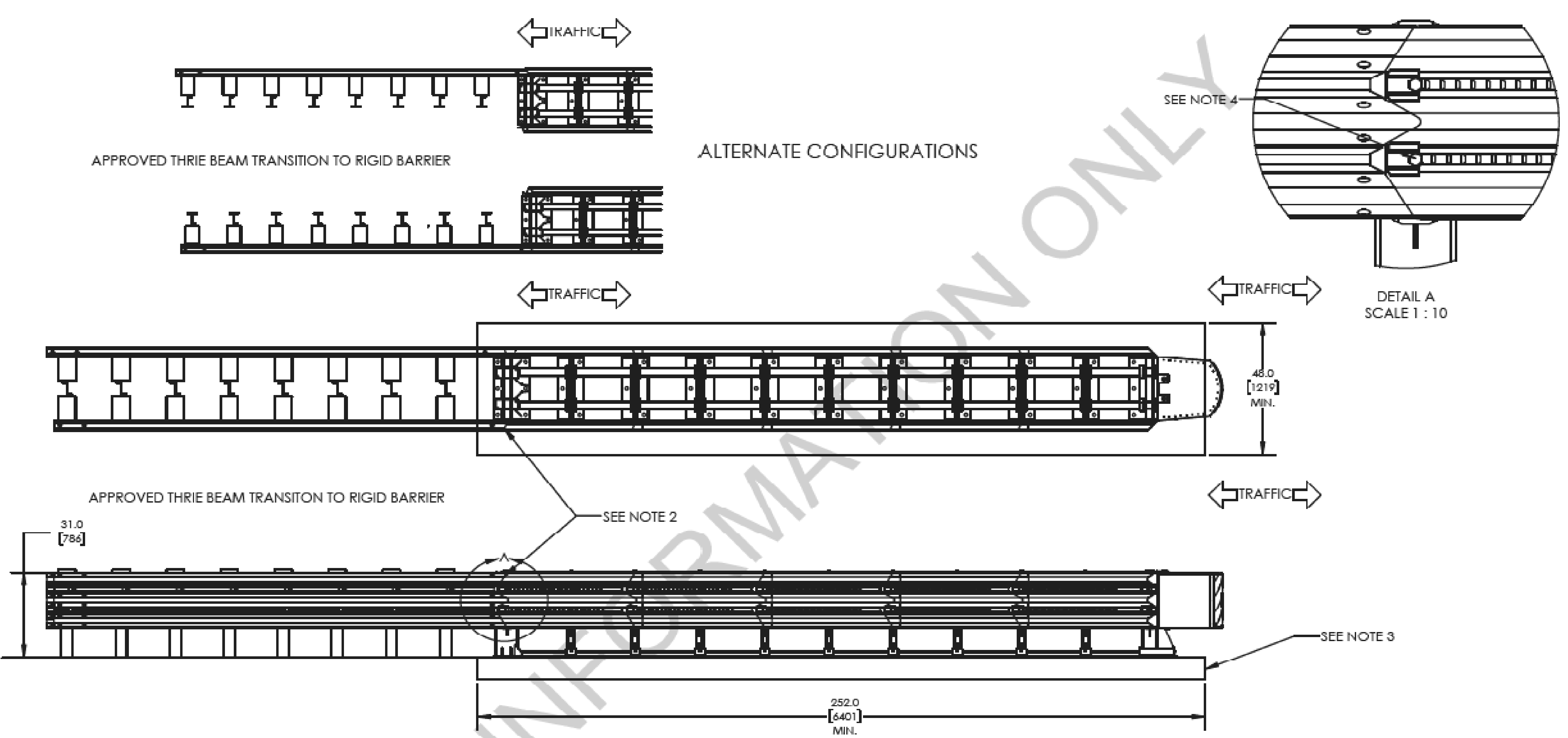
**Traffix
Devices Inc.**

160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
Delta Bridge Shoe Transition

DRAWN BY: Robby Ramirez	DATE: 02/15/21	SIZE B	DRAWING NO. 1107	REV A1
CHECKED BY: GM	DATE: 02/16/21			
APPROVED BY: GM	DATE: 02/15/21			

SHEET 1 OF 1



5. Gaurdrail, Posts, Blockouts, and Related Hardware to be Supplied by Others.
4. Bent Washer Assemblies are Used to Fasten Thrie Beam Panels to the Delta
3. Foundation Requirements. 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non-reinforced PC Concrete Having a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
2. Thrie Beam Transition Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate. The Rear 45N Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
1. Units: Inches [mm]
- NOTES: Unless Otherwise Specified

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES[mm].
TOLERANCES:
FRACTIONAL: X/XX ± 1/16" (1.6mm)
DECIMAL: X.XX ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

TrafFix
Devices Inc.

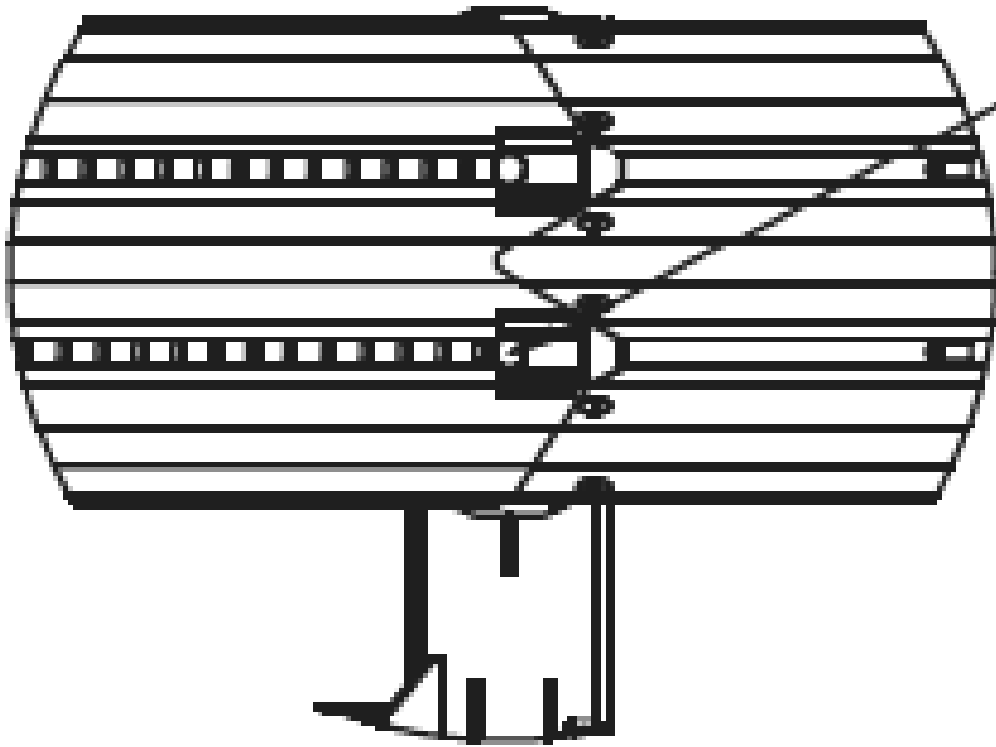
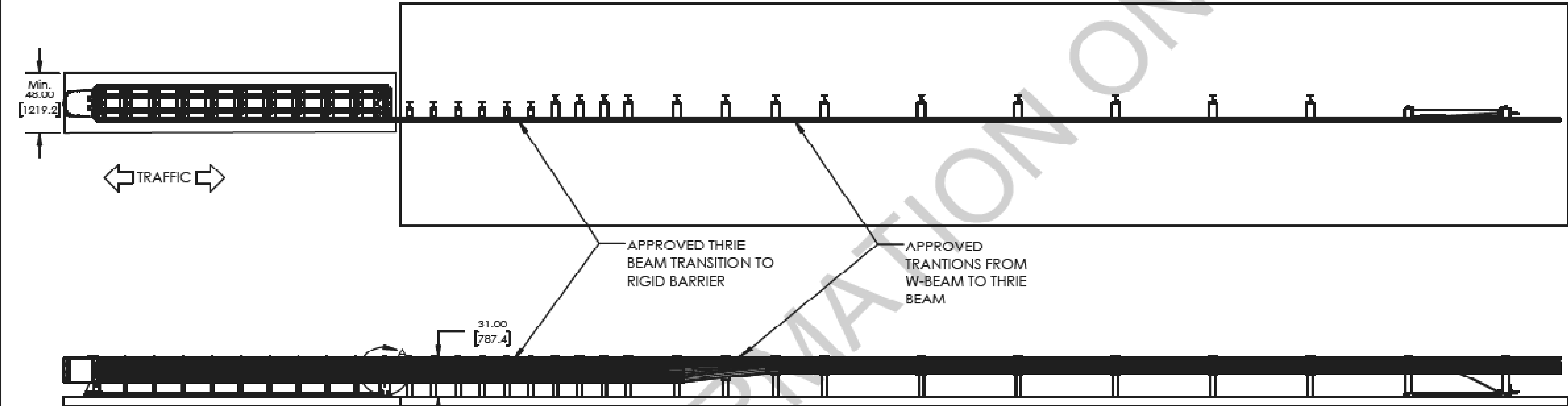
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
**Della Thrie Beam
Transition**

SIZE B	DRAWING NO. 1108	REV A
------------------	----------------------------	-----------------

DRAWN BY: MOBBY KAMMEZ	DATE: 02/10/23
CHECKED BY: FA	DATE: 02/10/23
APPROVED BY: FA	DATE: 02/10/23

SHEET 1 OF 1



DETAIL A
SCALE 1 : 15

5. Gaurdrail, Posts, Blockouts, and Related Hardware to be Supplied by Others.
4. Bent Washer Assemblies are Used to Fasten Thrie Beam Panels to the Delta
3. Foundation Requirements. 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non-reinforced PC Concrete Having a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
2. Thrie Beam Transition Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate. The 45N Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
1. Units: Inches [mm]
- NOTES: Unless Otherwise Specified**

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES[mm].
TOLERANCES:
FRACTIONAL: X/XX ± 1/16" (1.6mm)
DECIMAL: X.XX ± .0625"
X.XX ± .032"
X.XXX ± .010"
DEGREES: ± 0.5°

**TrafFix
Devices Inc.**

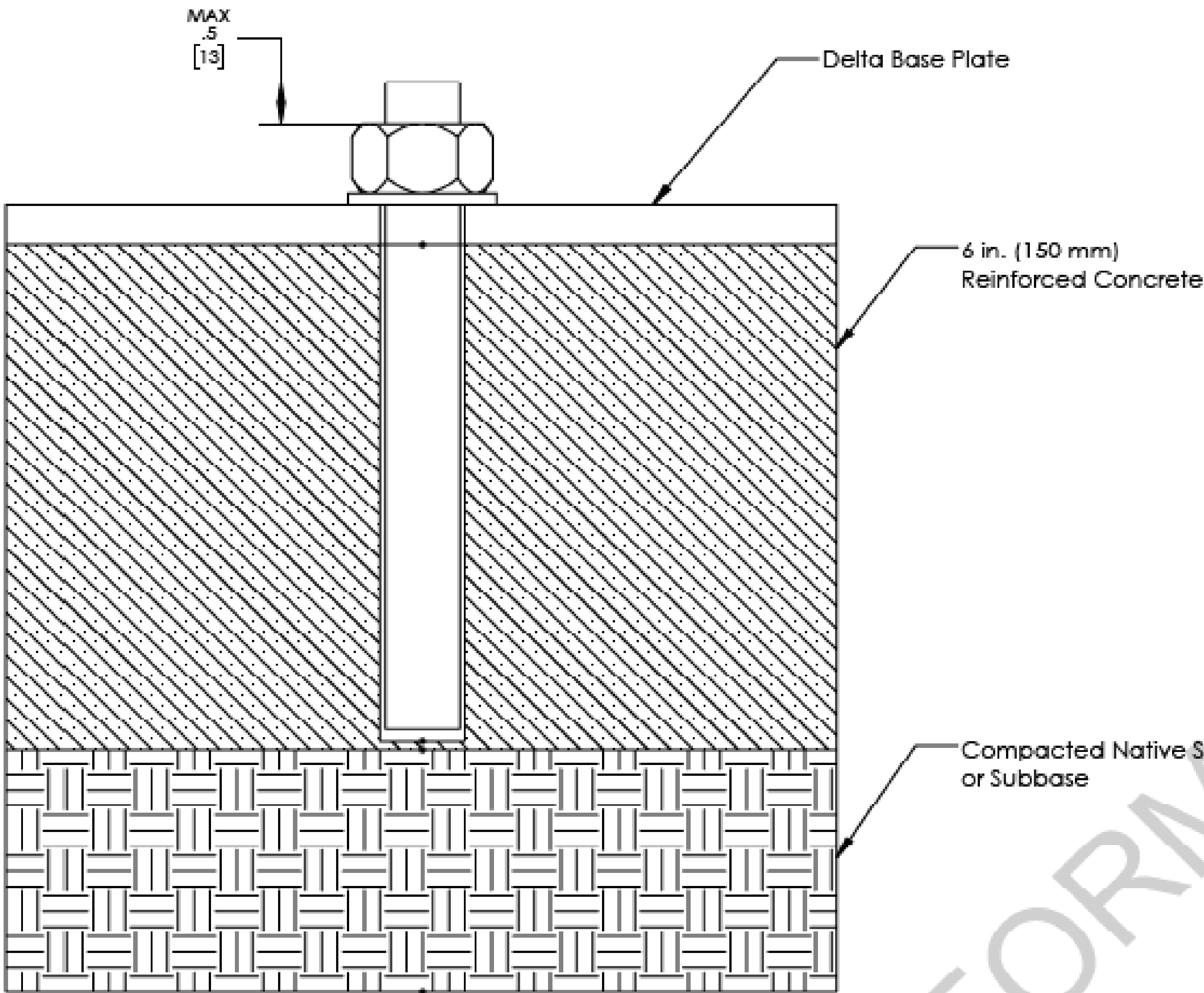
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
**Delta Transition to
W Beam**

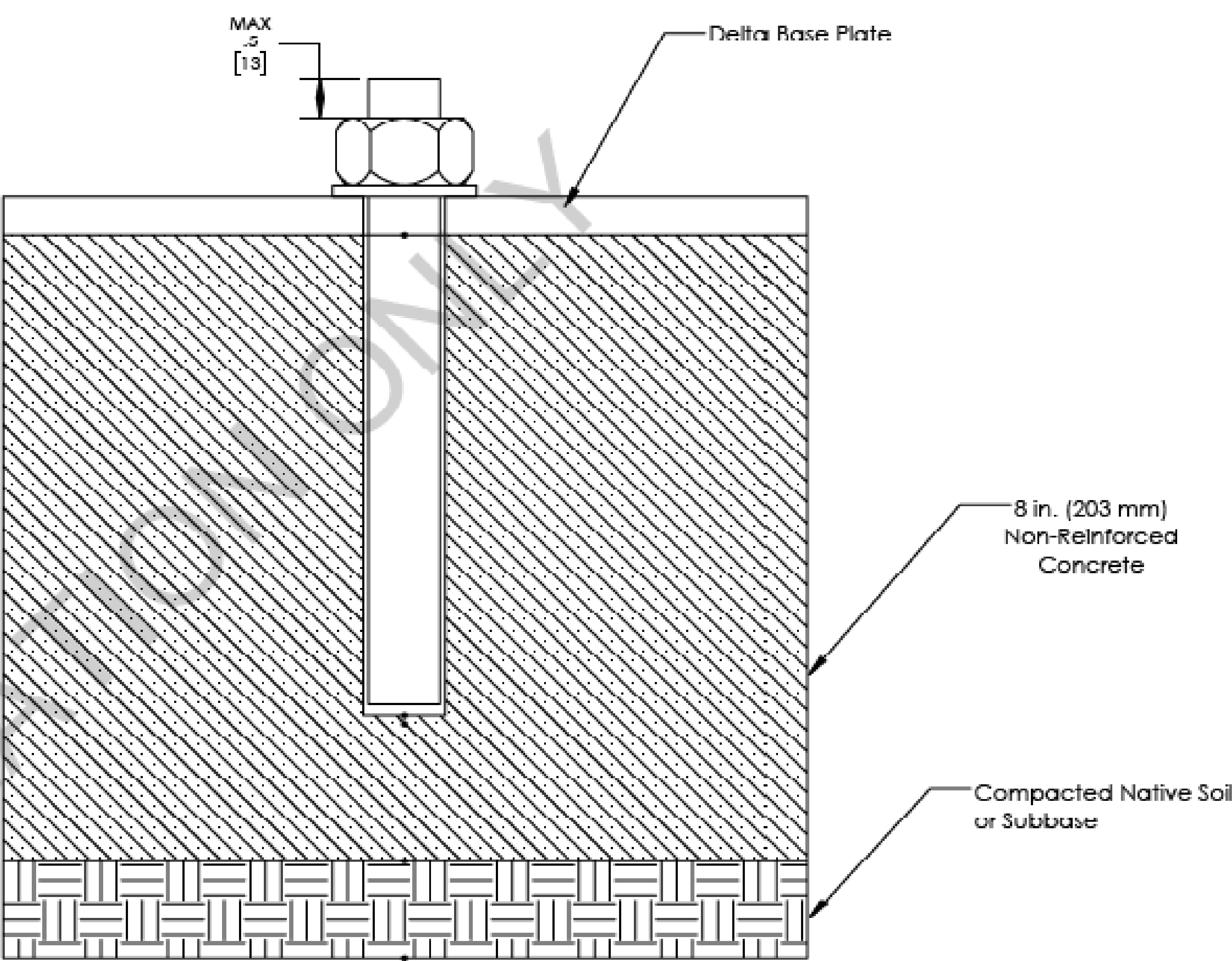
DRAWN BY: MOBBY KAMMEE	DATE: 02/16/21
CHECKED BY: GM	DATE: 02/16/21
APPROVED BY: GM	DATE: 02/16/21

SIZE B	DRAWING NO. 1109	REV A
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SHEET 1 OF 1

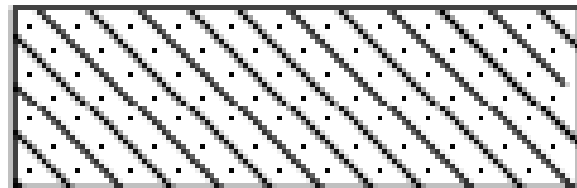
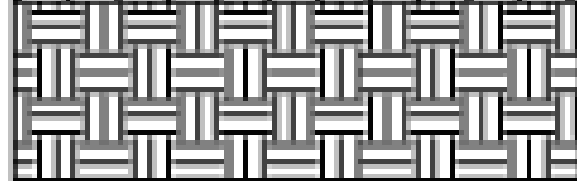


6 IN. (150 mm) MIN REINFORCED
CONCRETE PAD
*SEE SUGGESTED REBAR LAYOUT IN
INSTALLATION MANUAL



8 in. (203 mm) MIN NON-REINFORCED CONCRETE PAD

LEGEND

	CONCRETE
	SOIL/ SUBBASE

3. Anchor Rod Shall not Extend More Than .5 in. (13 mm) Past Anchor Nut.
2. Concrete Shall Have a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
1. Units: Inches [mm]
NOTES: Unless Otherwise Specified

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES (mm).
TOLERANCES:
FRACTIONAL: XX ± 1/16" (1.6mm)
DECIMAL: XX ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

TraFFix
Devices Inc. 

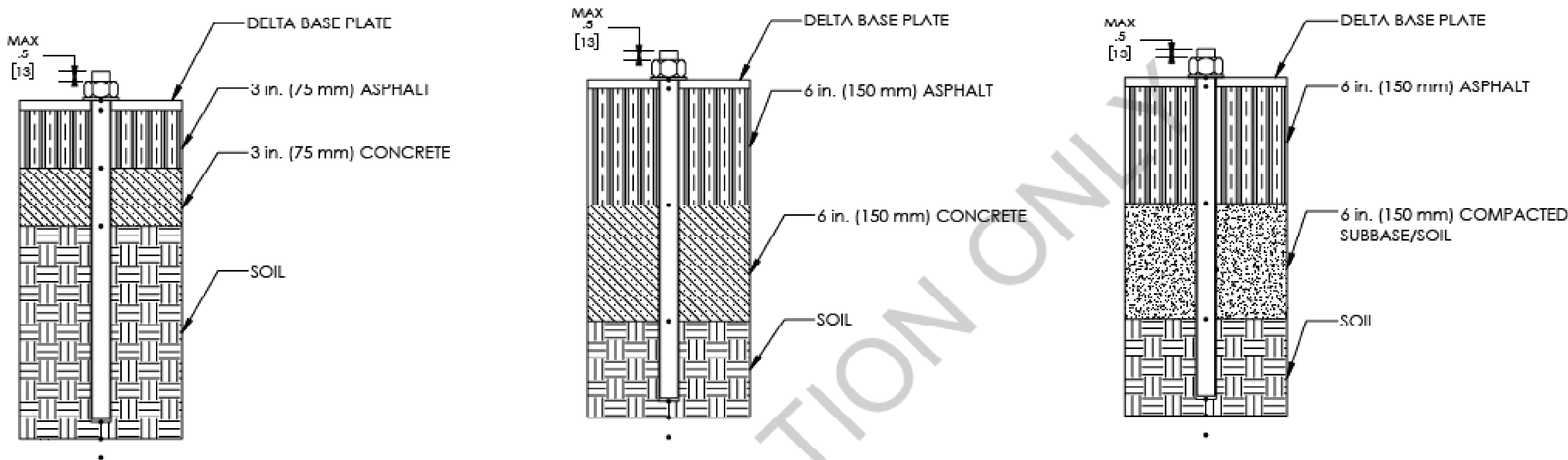
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
**Delta Foundation
Examples**

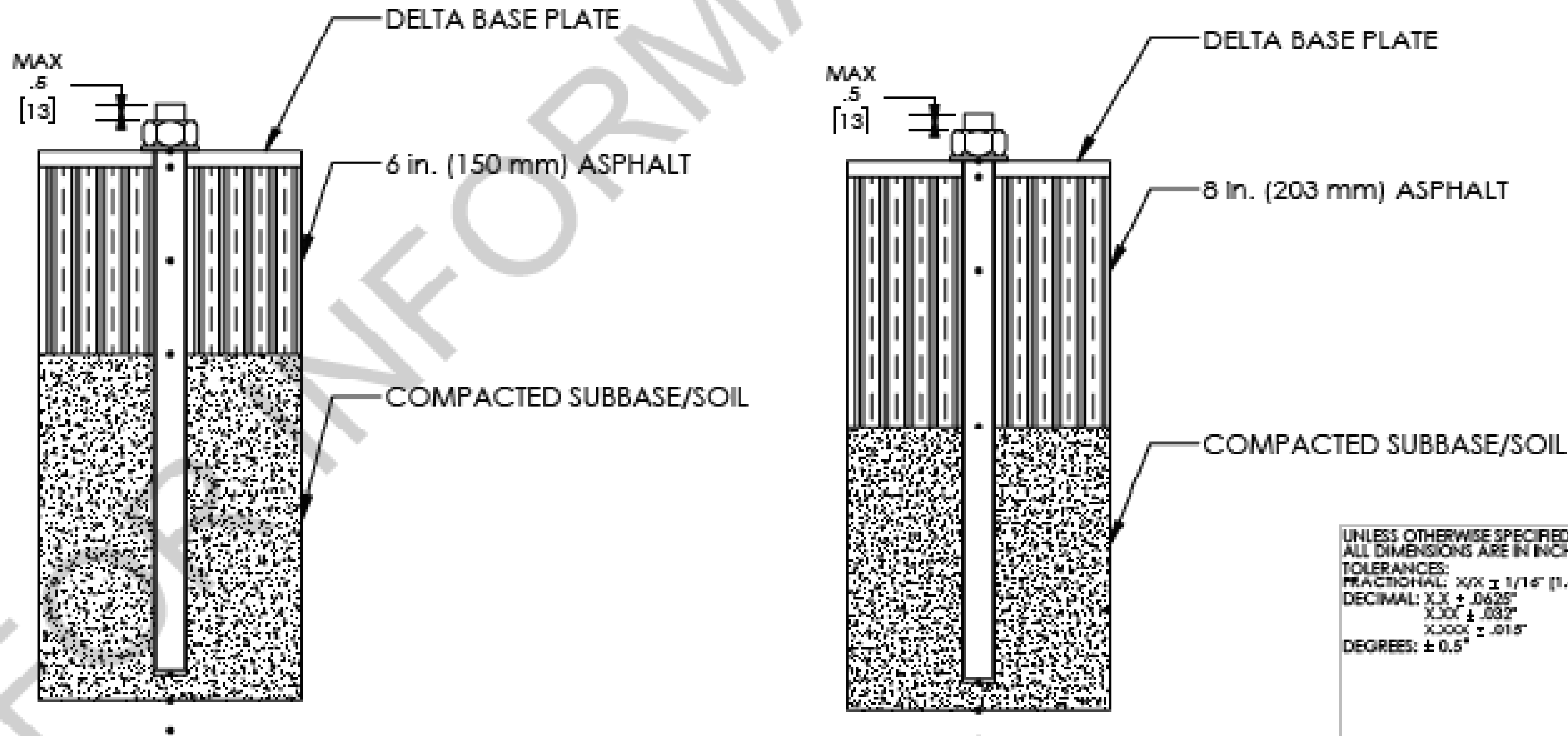
DRAWN BY: Robby Ramirez	DATE: 08/16/21
CHECKED BY: GM	DATE: 09/14/21
APPROVED BY: GM	DATE: 09/16/21

SIZE B	DRAWING NO. 1110	REV A1
------------------	---------------------	------------------

SHEET 1 OF 2



	ASPHALT
	CONCRETE
	COMPACTED SUBBASE/SOIL
	SOIL



4. Anchor Rod Shall not Extend More Than .5 in. (13 mm) Past Anchor Nut.
3. The Above are Examples of Different Road Types, Actual Road Composition will Depend on Subgrade Soil Conditions, Traffic Flow, and Several Other Factors.
2. Concrete Shall Have a Minimum Compressive Strength of 4000 PSI (20 MPa) in 20 Days.
1. Units: Inches [mm]
NOTES: Unless Otherwise Specified

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES (mm).
TOLERANCES:
FRACTIONAL: XX ± 1/16" (1.6mm)
DECIMAL: XX ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

TraFFix
Devices Inc.

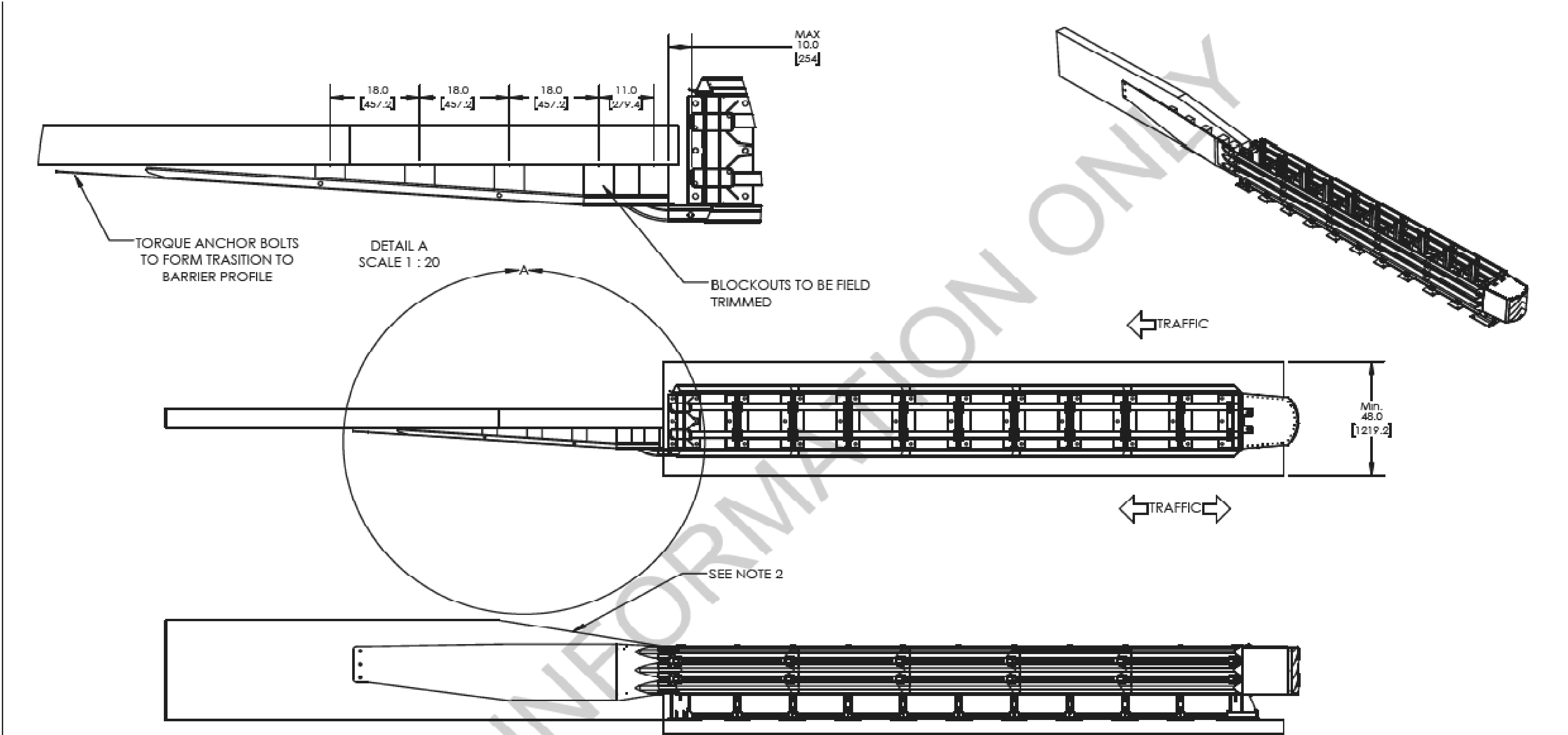
160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

TITLE:
Delta Foundation Examples

DRAWN BY: Robby Ramirez	DATE: 03/16/21
CHECKED BY: GM	DATE: 03/16/21
APPROVED BY: GM	DATE: 03/16/21

SIZE B	DRAWING NO. 1110	REV A1
------------------	----------------------------	------------------

SHEET 2 OF 2



- 6. Rear Fender Panels Must be able to Telescope Rearward Without Obstruction for 35 in. (890 mm).
 - 5. Transition Panel Must Nest Under the Rear 45N Fender Panel in Order for the Delta to Properly Operate.
 - 4. Blockouts To Be Supplied By Others
 - 3. Foundation Requirements: 6 in. (150 mm) Reinforced or 8 in. (200 mm) Non reinforced PC Concrete Having a Minimum Compressive Strength of 4000 PSI (28 MPa) in 28 Days.
 - 2. It is Recommended That The Barrier Be Trimmed at a 6:1 Ratio If The Barrier Height Exceeds 32 in. (812 mm)
 - 1. Units: Inches [mm]
- NOTES: Unless Otherwise Specified**

UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES (mm).
TOLERANCES:
FRACTIONAL: X/8 ± 1/16" (1.6mm)
DECIMAL: X.X ± .0625"
X.XX ± .032"
X.XXX ± .010"
DEGREES: ± 0.5°

**TraFFix
Devices Inc.**

160 Avenida La Pata
San Clemente, CA 92673
(949) 361-5663
FAX (949) 361-9205
www.traffixdevices.com

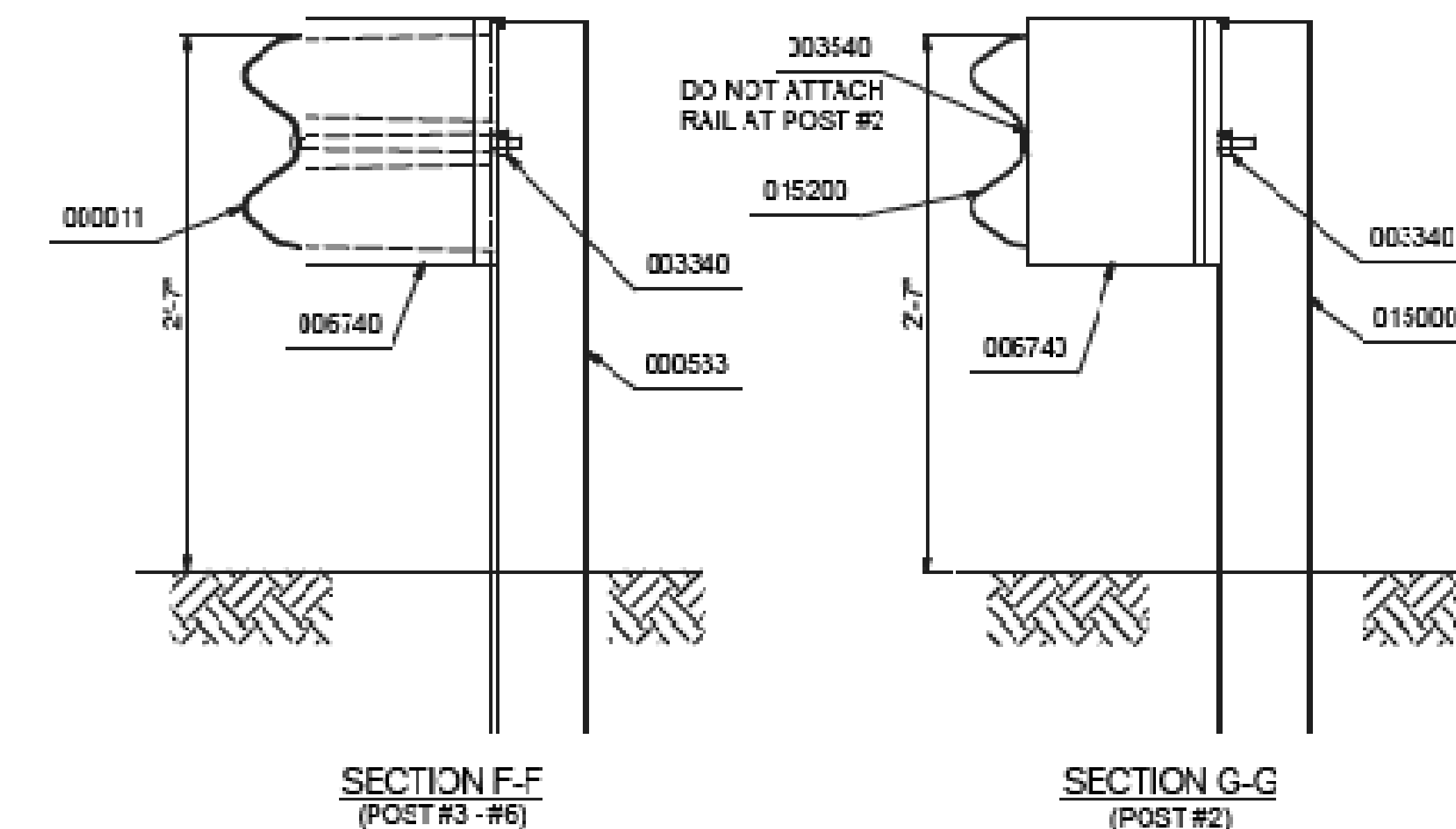
TITLE:
**Delta Transition to
Vertical Shape**

DRAWN BY: MOBBY KAMMER	DATE: 02/15/21
CHECKED BY: GM	DATE: 02/15/21
APPROVED BY: GM	DATE: 02/15/21

SIZE B	DRAWING NO. 1111	REV A
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SHEET 1 OF 1

← NASH TEST LEVEL 2 (TL-2) LENGTH OF SoftStop® TERMINAL (38'-3 1/2")



- | | | | | | | | | | |
|----------------------------------|--|---|--|---|--|--|--|---|--|
| GENERAL
SEE PARTS LIST | | DESIGN
D. Salter
DATE
8/1/2019 | | TOLERANCES PER
TH-P-87-001, UNLESS
OTHERWISE SPECIFIED. | | SoftStop® TERMINAL, (12" BLOCKS)
PLAN, ELEVATION & SECTION
MASH TEST LEVEL 2 (TL-2)
P/N: 500773 | |  | |
| PARTS
N/A | | CHECKED
P. Kruse
DATE
8/1/2019 | | DONOT SCALE DRAWING | | | | | |
| | | REVISION
INITIAL RELEASE | | ECO
6841 | | Date
3/1/19 | | Rev
- | |
| | | | | | | By
DCE | | Chk.
/ | |
| EXT. UNFINISHED CUT: | | 0.019 | | | | 500773 | | REV: - | |

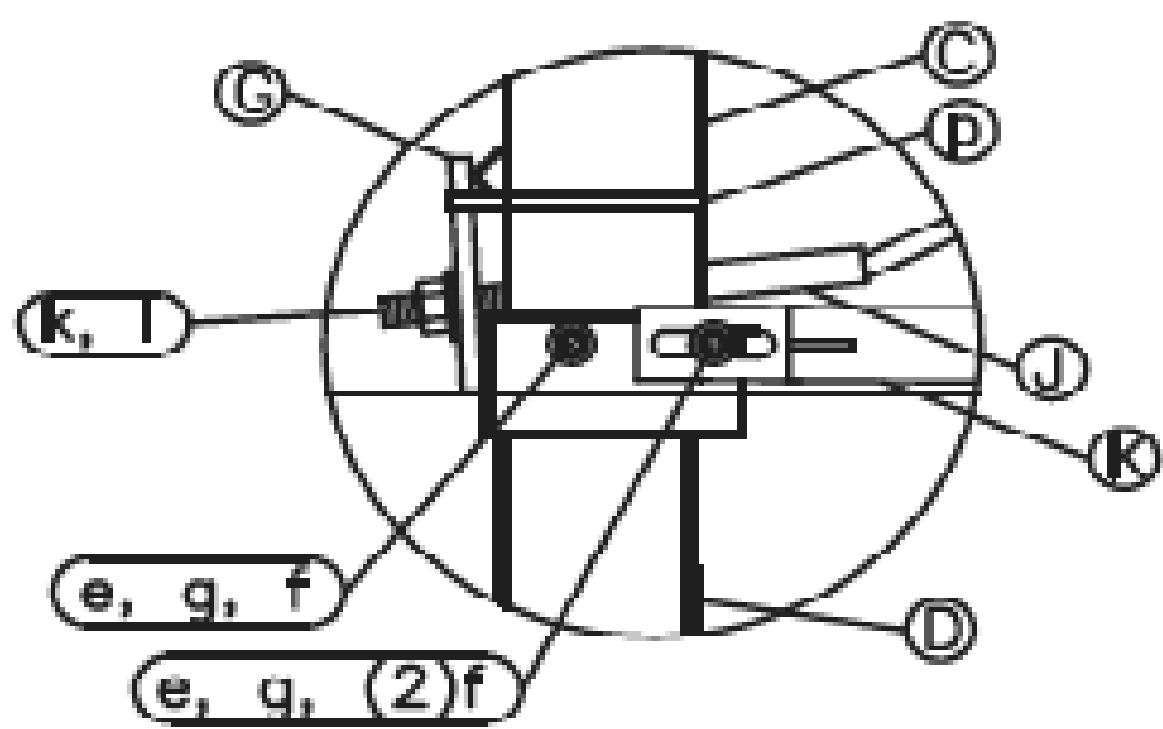
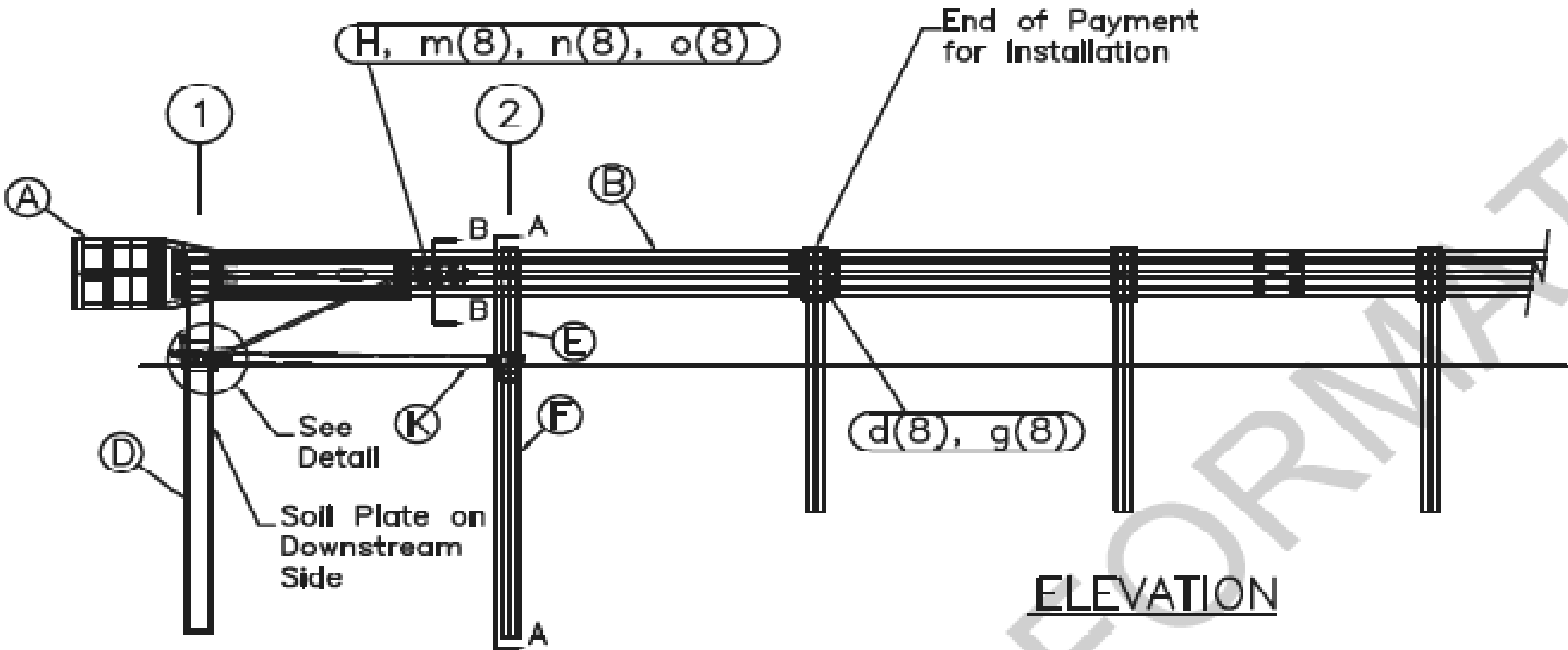
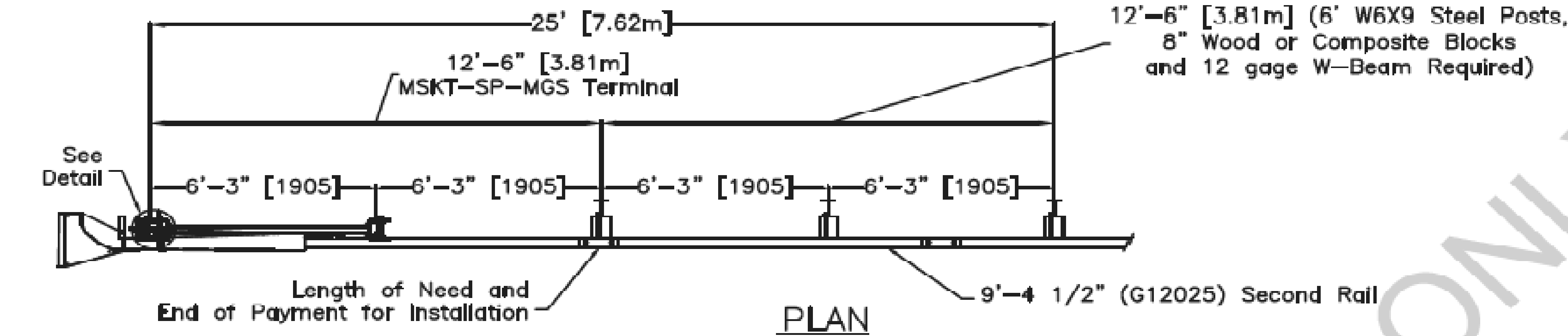
PARTS LIST		
PART NO.	QTY.	DESCRIPTION
000011	2	12/12"63"1 5/8"
005533	4	6"-0" POST / W6 X 8.5#
006740	5	COMPOSITE BLOCK 2X6X14
015000	1	6"0 SYT PST/8 5/31" GR HT
015200	1	SF3T-ANCHOR G RAIL 12'-6"
015202	1	SF3T-ANGLE STRUT
015203	1	SF3T-POST#1 SYTP
015204	1	SF3T-ANCHOR PADDLE
015205	1	SF3T-POST#0
015206	1	ST3P IMPACT HEAD
		HARDWARE KIT 626737
003240	6	5/16 ROUND WASHER WIDE
003245	3	5/16 HEX NUT
003340	31	NUT,HX,5/8,G.RAIL
003360	24	5/8"X1.25" GR BOLT
003391	1	5/8"X1.75" HEX BOLT A325
003540	5	5/8"X14" GR BOLT A307
003701	4	3/4" ROUND WASHER F436
003704	2	3/4" Hvy HEX NU" A563 DH
003717	2	3/4"X2.5" HEX BOLT A325
003908	1	1" Hvy HEX NJT A563 DH
004372	4	5/8" WASHER F436
004489	1	5/8"X9" HEX BOLT A325
004902	1	1" ROLND WASHER F436
105285	2	5/16" X 2.5" HEX BOLT GRD 5
105296	1	5/16" X 1.5" HEX BOLT GRD 5
015201	2	SF3T-ANCHOR ANGLE
015206	1	SF3T-PLATE WASHER
015207	1	SF3T-KEEPER PLATE

.N.

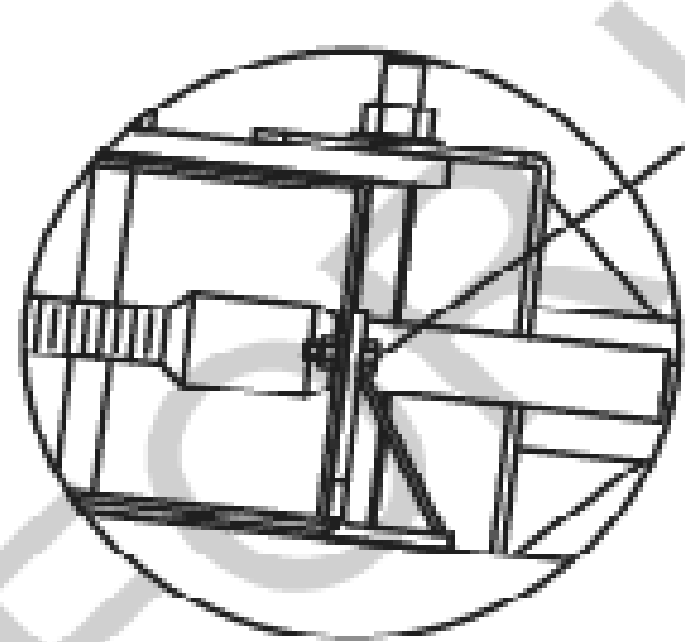
Roadway
Design
Division

ITEM QTY		BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	FIRST POST TOP (6X6X $\frac{1}{2}$ " Tube)	MTPHP1A
D	1	FIRST POST BOTTOM (6" W6X15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS785
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	9	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia. x 9 HEX BOLT GRD 5	B580904A
f	3	5/8 WASHER	W050
g	11	5/8 Dia. H.G.R NUT	N050
h	1	3/4 Dia. x 6 1/2 HEX BOLT GRD A448	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST

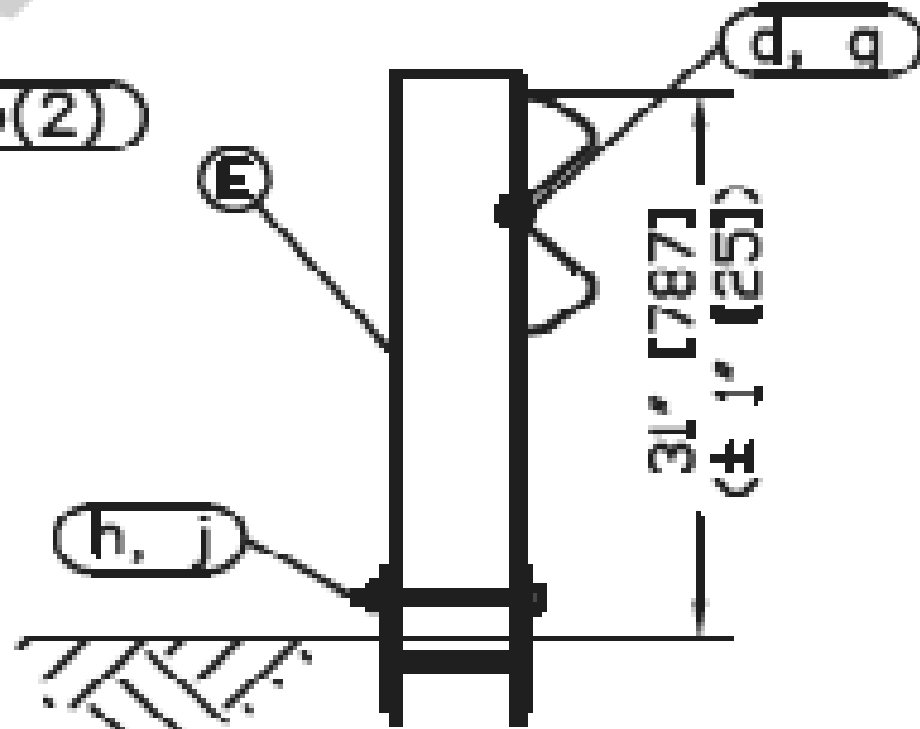
1 OF 1
Project Number
C.N.



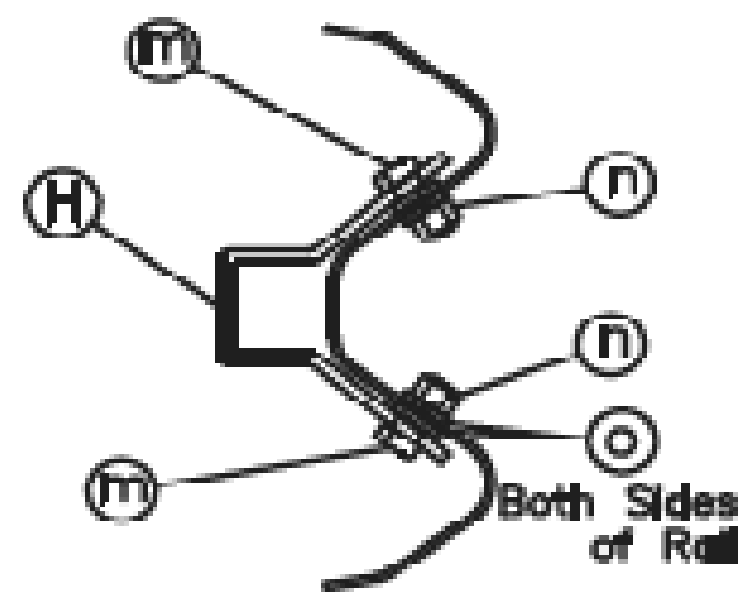
Post #1 Connection Detail



Impact Head Connection Detail



SECTION A-A
Post #2



SECTION B-B
Anchor Bracket

- GENERAL NOTES:
1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 2. The lower sections of the Posts 1&2 shall not protrude more than 4 in [100] above the ground (measured along a 5' [1.5m] cord). Site grading may be necessary to meet this requirement.
 3. The lower section of the hinged post should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
 4. When competent rock is encountered, a 12" [300] Ø post hole, 20 in. [500] deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" [60] deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
 5. The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

MSKT-SP-MGS TERMINAL TEST LEVEL 2
DESIGN GUIDE

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway
Design
Division

RSI
Road Systems, Inc.

Big Spring, TX
Phone: 409-263-8438
or Email: 350-340-0721

MSKT-SP-MGS
Terminal
Test Level 2

Drawing Name: MSKT-SP-MGS-TL2

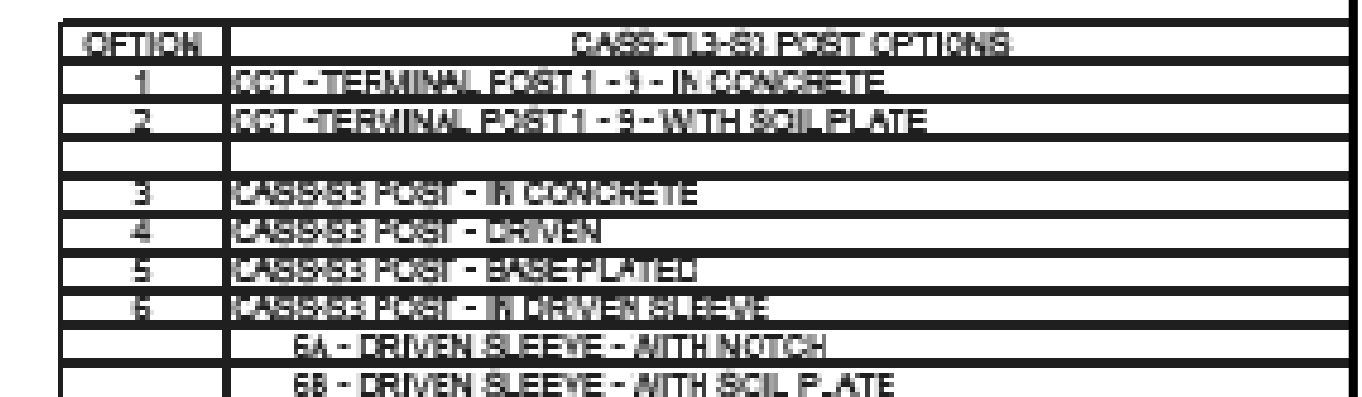
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Sheet: 1

Date: 07/30/16

By: JRR

Rev: 0

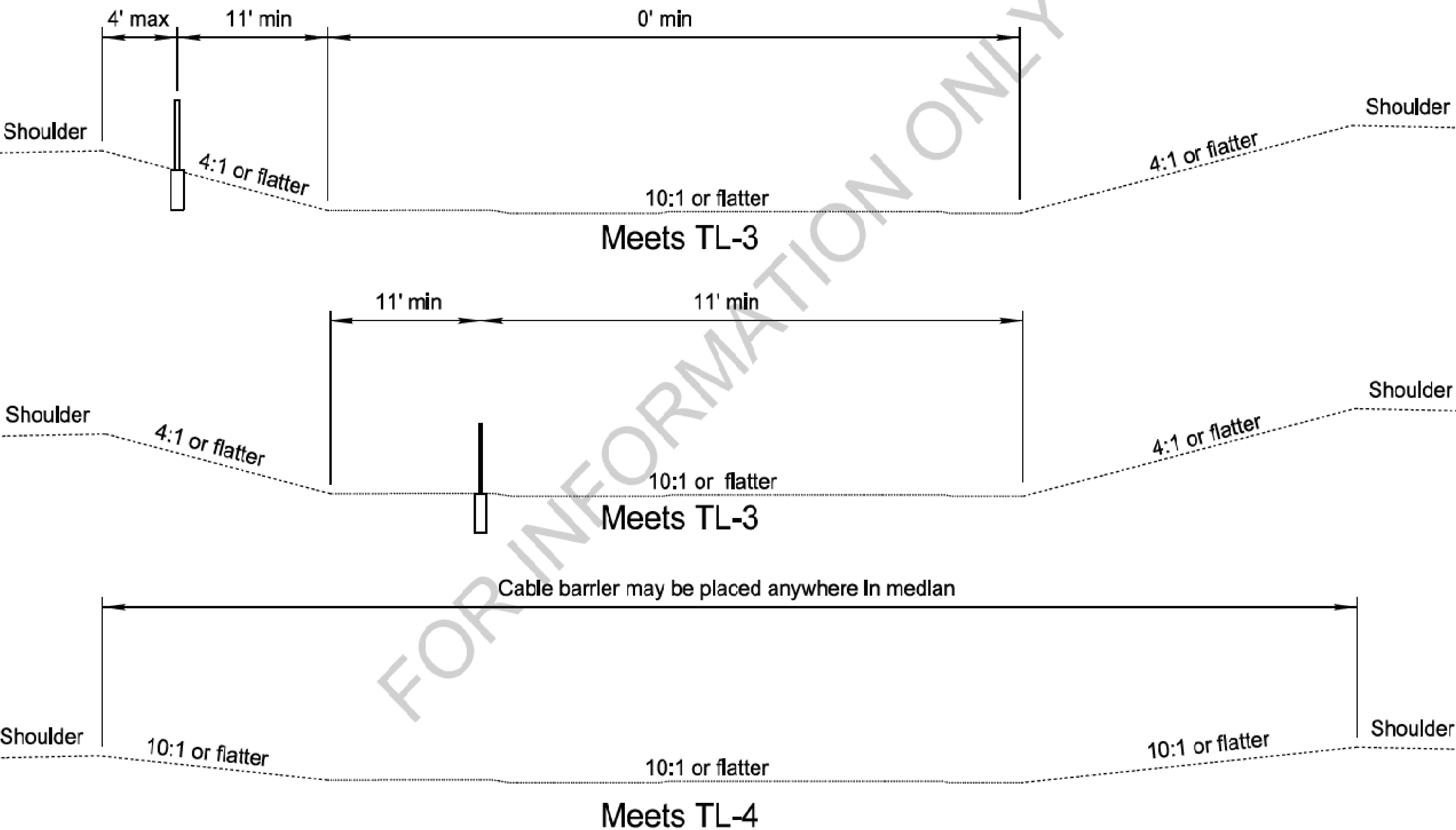


PROJECT	DESIGN	DATE	TOLERANCES PER CEMC-THP-SF-001, UNLESS OTHERWISE SPECIFIED.					CASS S3 (6:1 SLOPE) 4-CA3ILE GUARDRAIL SAFETY SYSTEM	
	DRAWN	DATE							
SHEET	DESIGN	DATE	DONOT SCALE DRAWING						
	DRAWN	DATE							
SHEET	DESIGN	DATE	ECO	Date	Rev	By	Chk		
	DRAWN	DATE	ECO	Date	Rev	By	Chk		
SHEET	DESIGN	DATE	ECO	Date	Rev	By	Chk		
	DRAWN	DATE	ECO	Date	Rev	By	Chk		
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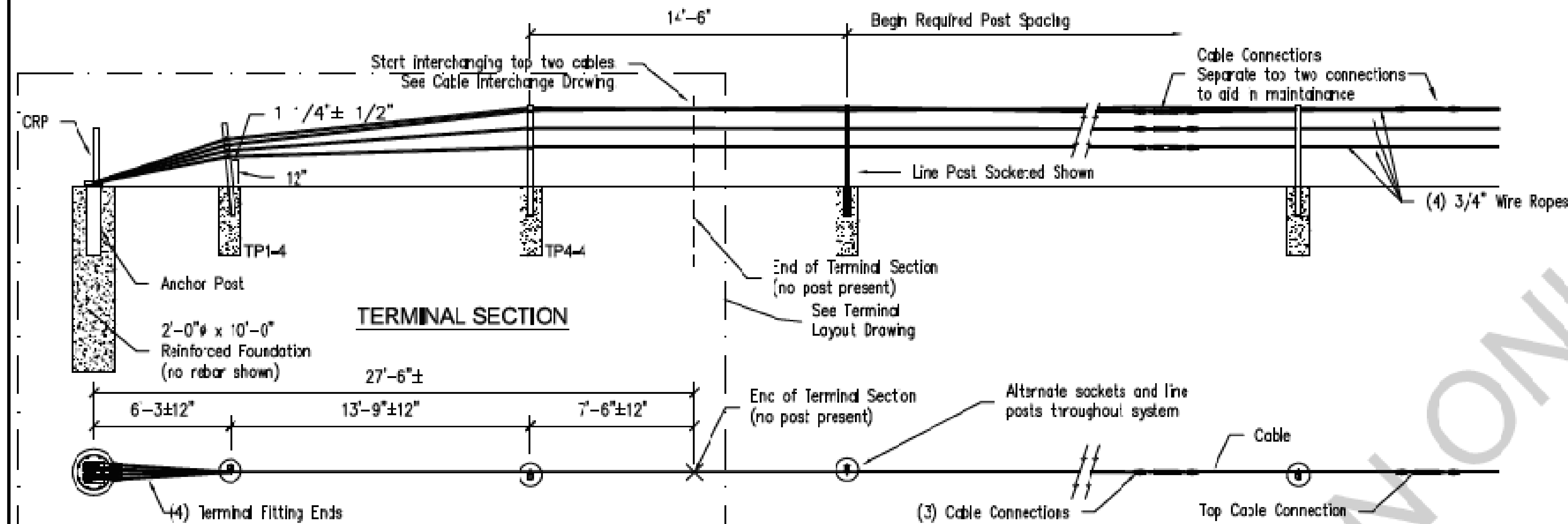
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Median Cable Barrier Placement Limits

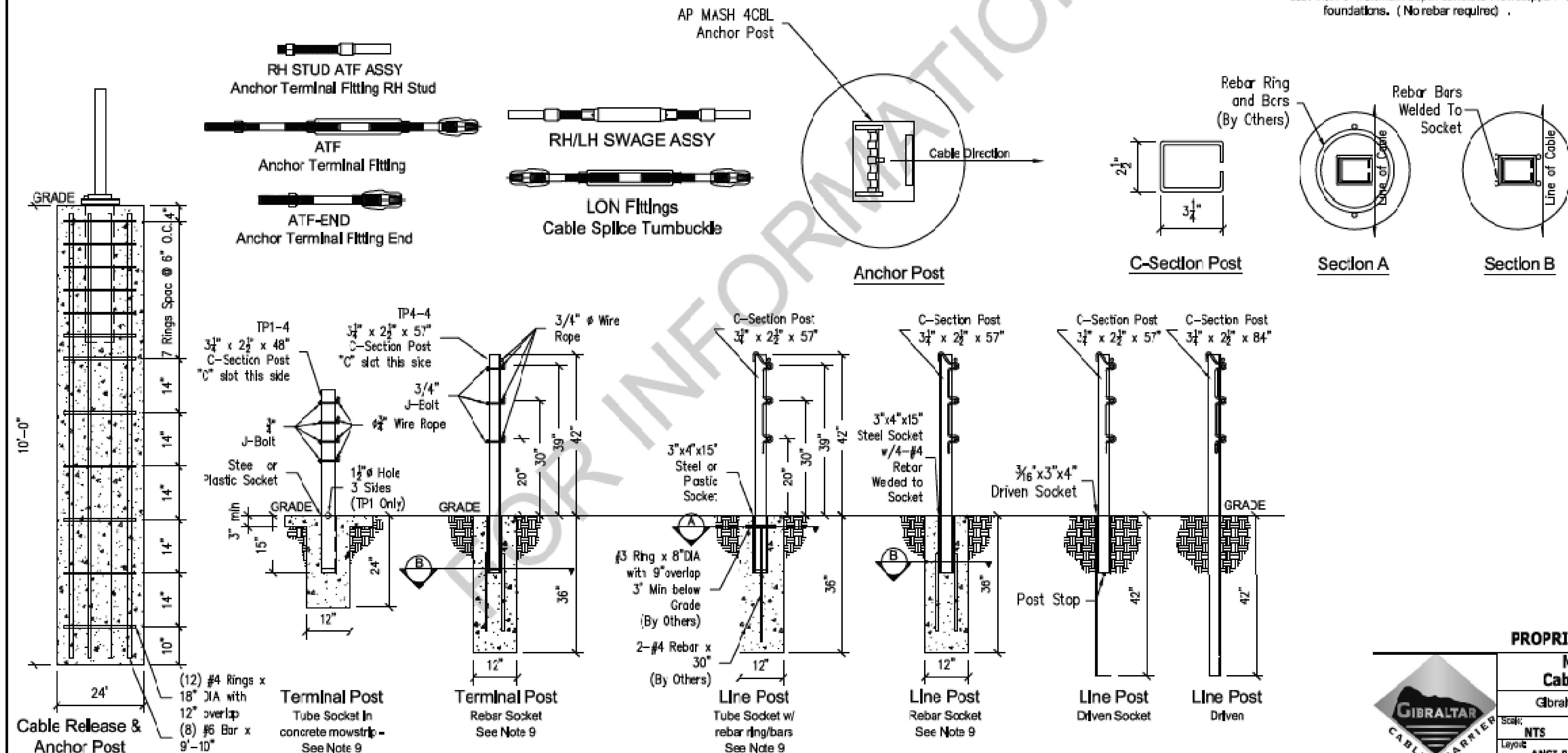
Cass S3 4 wire system; 10.5' post spacing; concrete footings



3 OF 3
Project Number
C.N.
CASS S3 MEDIAN CABLE BARRIER PLACEMENT LIMITS DESIGN GUIDE
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION
Roadway Design Division



- ### GENERAL NOTES:
1. For additional information contact Gibraltar, Inc. at 1-833-715-3810 or see the manufacturer's product manual.
 2. All concrete shall be per specification; minimum 2500 PSI.
 3. The Cable Barrier System shall be installed on shoulders or on medians with slopes of 6:1 or flatter. If installed on slopes steeper than 6:1 up to 4:1 the TL-4 system performs as a TL-3 and Gibraltar must be contacted for various guidelines related to placement and post spacing.
 4. The Cable Barrier System is accepted by the FHWA Test Level - 4.
 5. See the specification for delineation.
 6. Rock Clause: Where solid rock is encountered:
 - 6.A. For socketed post, continue digging 12" diameter, 15" deep into rock or the required plan depth, whichever comes first.
 - 6.B. For driven post, core drill a 4" diameter hole 18" deep into rock or the required plan depth, whichever comes first.
 - 6.C. For Anchor post, continue digging 24" diameter, 30" deep into rock or the required plan depth, whichever comes first.
 7. The Gibraltar cable barrier system shall be installed in standard compacted soil. Soil must be well drained.
 8. All non-welded rebar by others.
 9. Line and Terminal Post Foundation Reinforcement Options
 - 9.A. Without mowstrip, 36" Deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long or 30" welded rebar socket.
 - 9.B. With 4" minimum depth hot mix asphalt, 30" deep x 12" diameter foundations with #3 rebar ring x 3" diameter with two #4 rebar vertical bars 30" long or 30" welded rebar socket.
 - 9.C. With 3" minimum depth concrete mowstrip, 24" deep x 12" diameter foundations. (No rebar required).



-10 °F	8600
0 °F	8200
10 °F	7800
20 °F	7400
30 °F	7000
40 °F	6600
50 °F	6200
60 °F	5800
70 °F	5400
80 °F	5000
90 °F	4600
100 °F	4200
110 °F	3800

*Allowable Deviation from Chart $\pm 10\%$

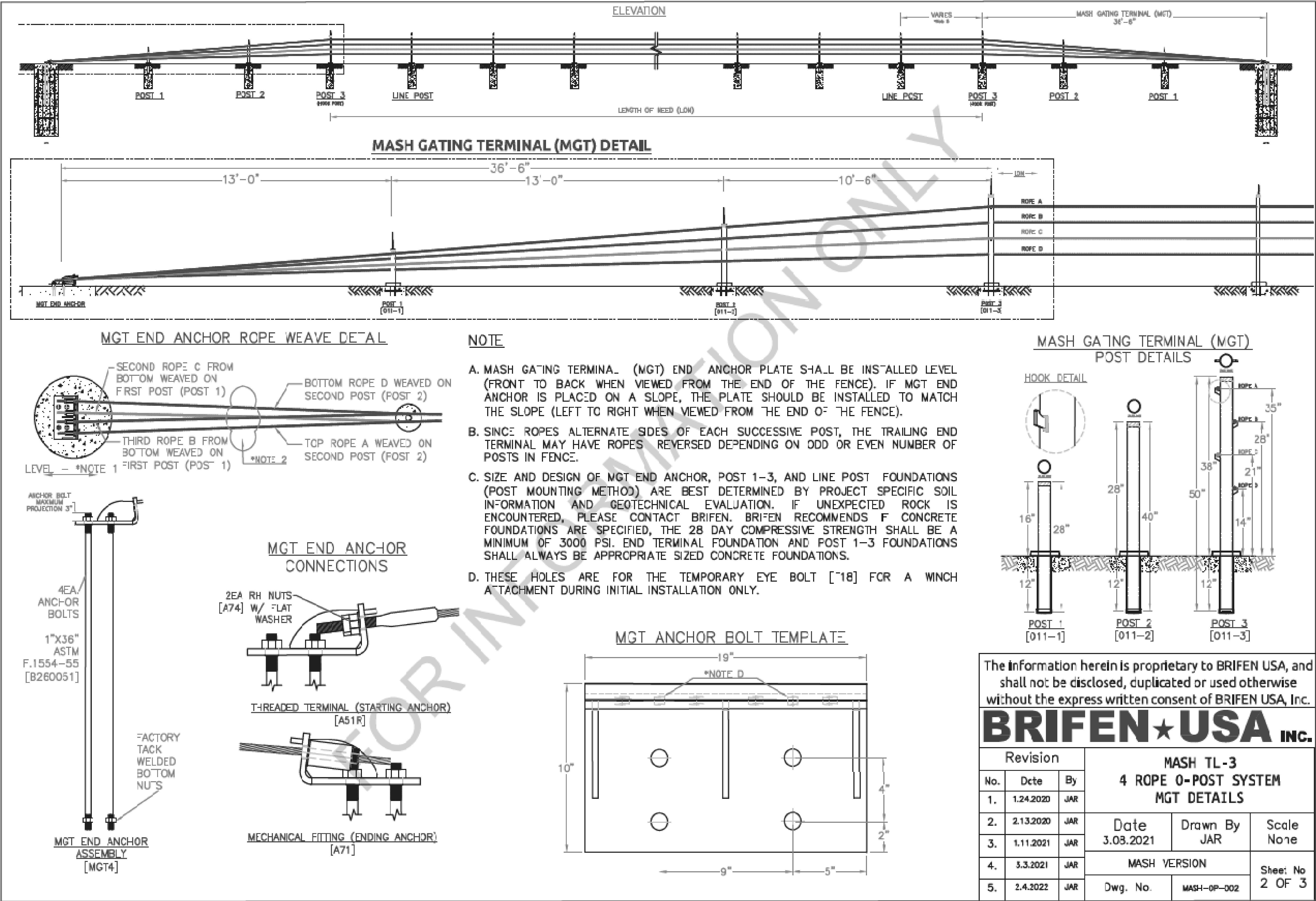
PROPRIETARY TO GIBRALTAR

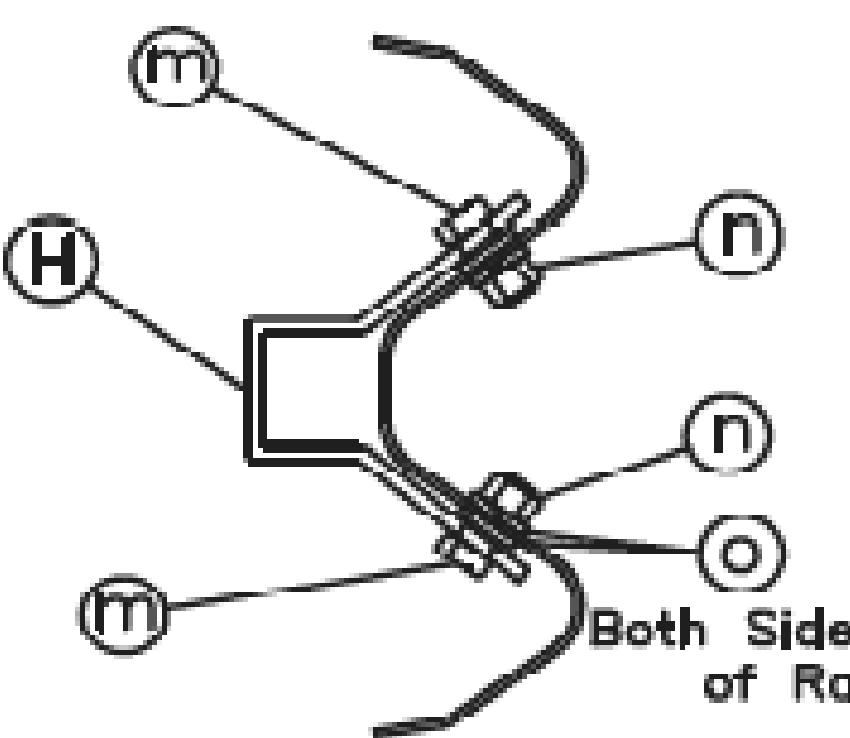
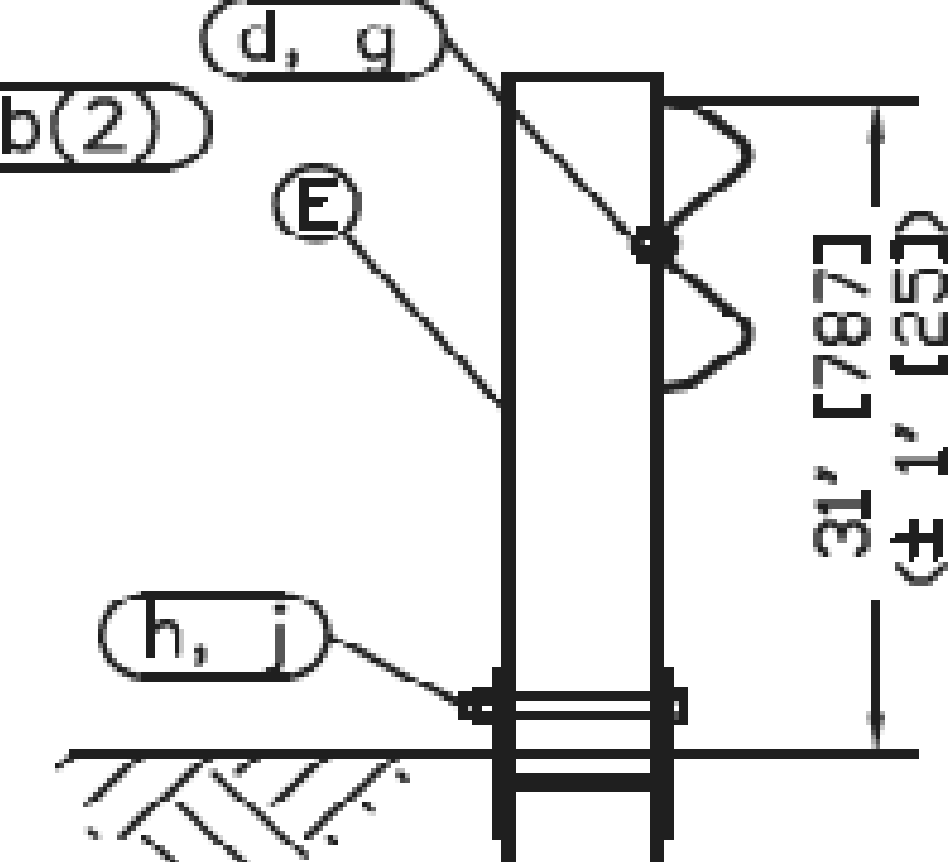
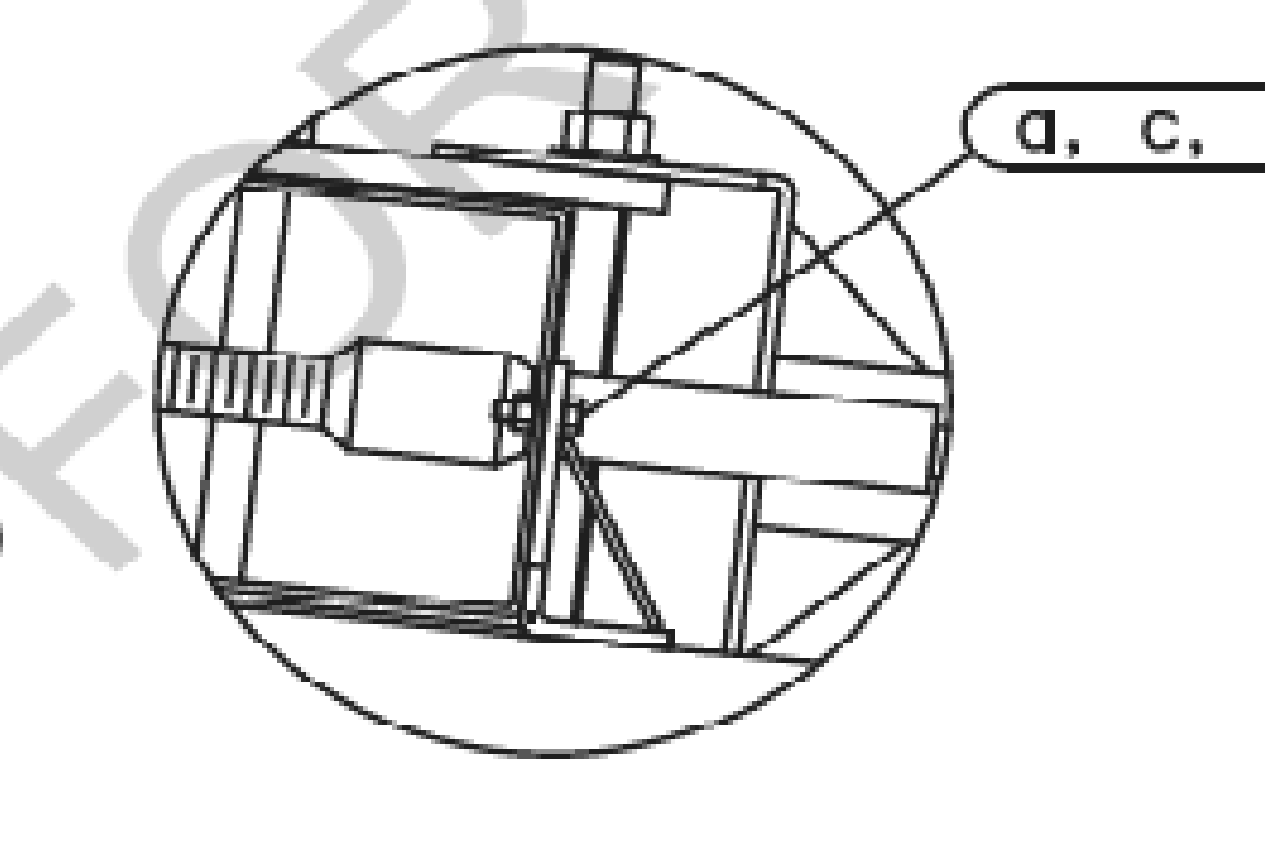
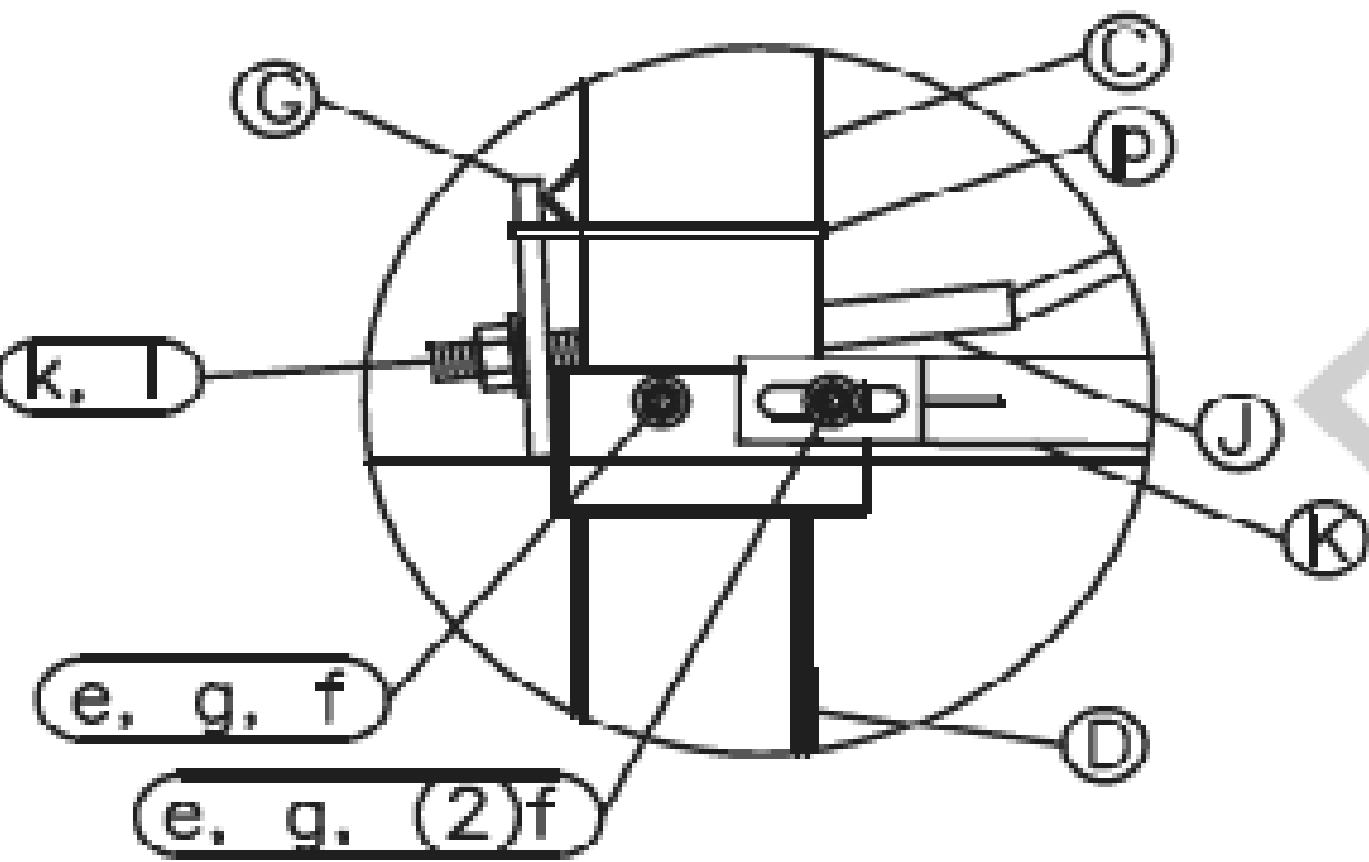
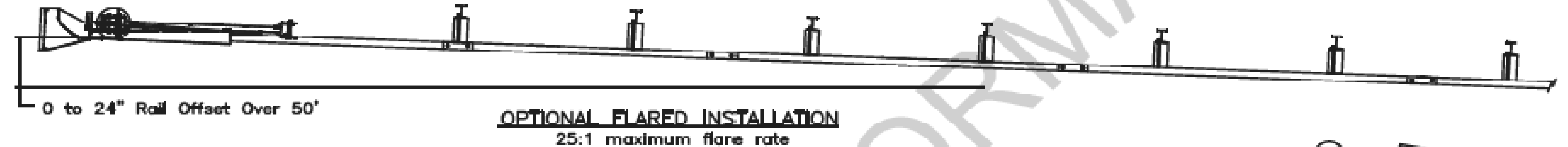
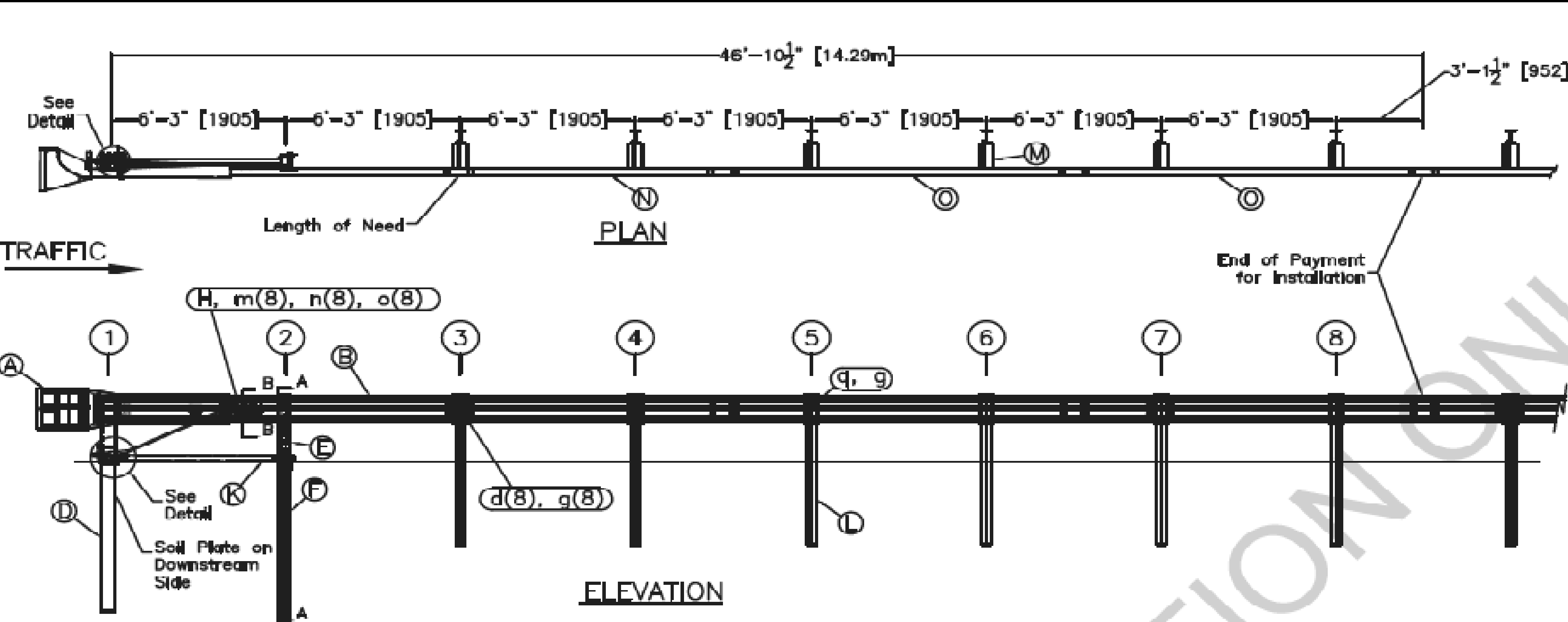
MASH 2016 TL4 Cable System Layout

Gibraltar Cable Barrier Systems

Scale:	NTS	Date:	8-26-21
Layout:	ANSI B	Drafter:	BH







ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SP1303
C	1	FIRST POST TOP (6X6X8" Tube)	MTPHP1A
D	1	FIRST POST BOTTOM (6" W6X15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UMP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS7R5
L	6	6x9 (6x8.5) STEEL POST	P621
M	6	RECYCLED PLASTIC BLOCK OR EQUIV.	P618
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	25	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia. x 9 HEX BOLT A449	B580904A
f	3	5/8 WASHER	W050
g	33	5/8 Dia. H.C.R. NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 14" H.C.R. BOLT	B581402

- GENERAL NOTES:
1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 2. The lower sections of the Posts 1&2 shall not protrude more than 4 in [100] above the ground (measured along a 5' [1.5m] cord longitudinal to the system). Site grading may be necessary to meet this requirement.
 3. The lower section of the hinged post should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
 4. When competent rock is encountered, a 12" [300] Ø post hole, 20 in, [500] deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" [60] deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
 5. The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

RSI
Road Systems, Inc.

Big Spring, TX
Phone: 409-263-8438
or Email: 350-340-0721

MSKT-SP-MGS
Terminal (12" Blocks)
Test Level 3

Drawing Name: MSKT-SP-MGS12
Scale: None

Sheet: 1
Date: 06/20/17
By: JRR
Rev: 0

1 OF 1

Project Number

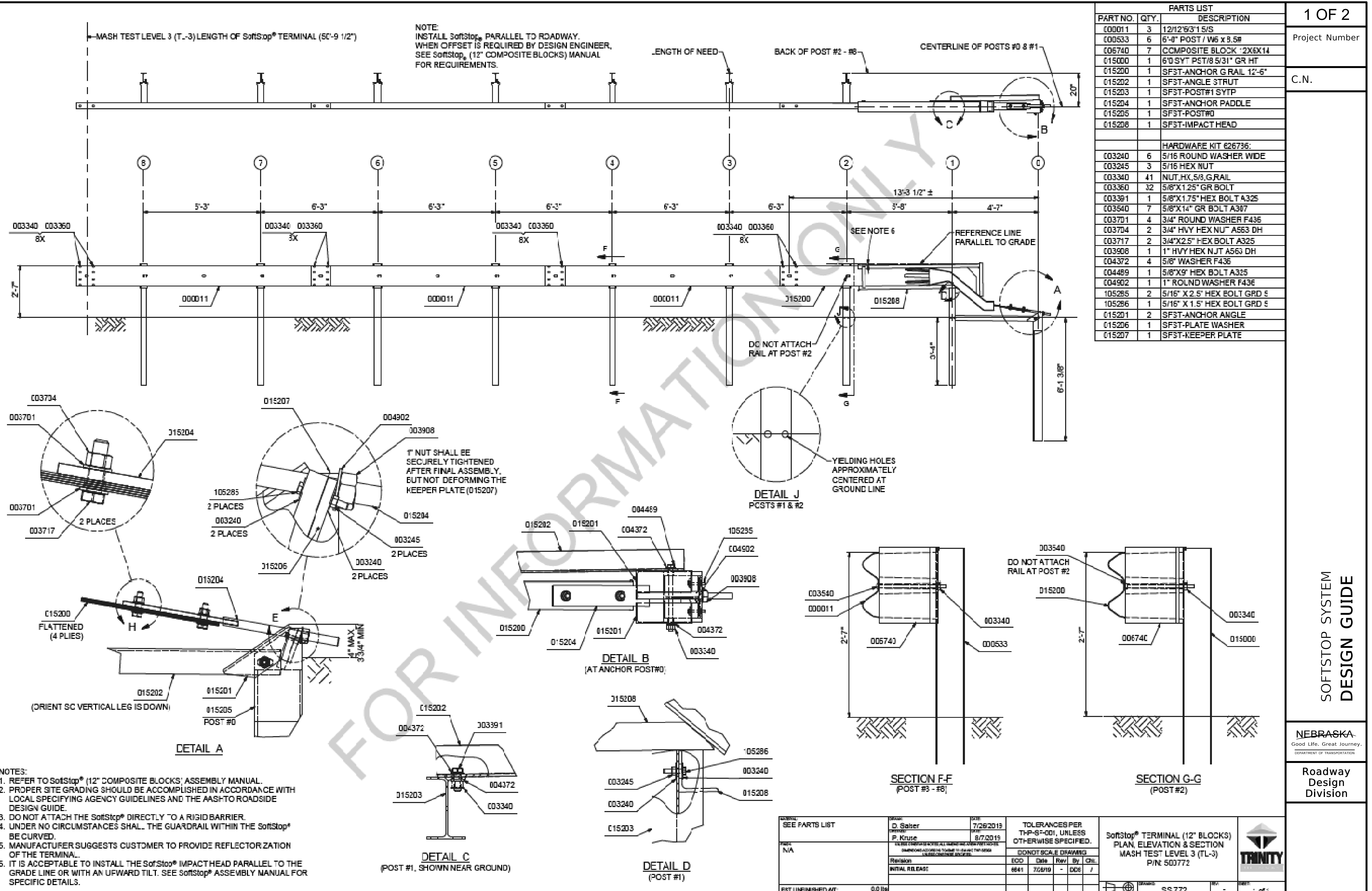
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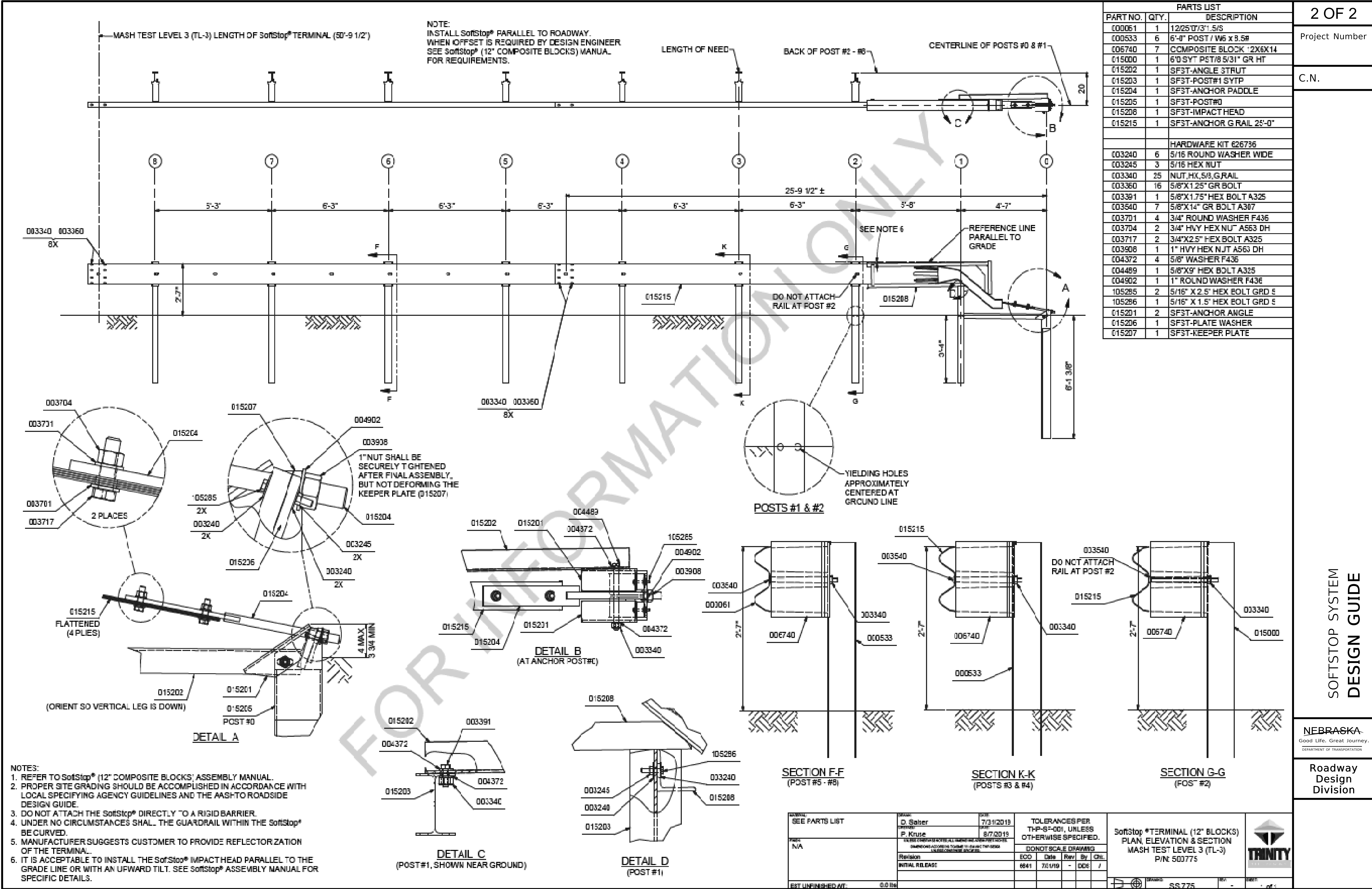
MSKT-SP-MGS SYSTEM - TL-3

DESIGN GUIDE

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway Design Division





NOTES: UNLESS OTHERWISE SPECIFIED:

1. SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. SEE ASSEMBLY AND INSTALLATION MANUAL FOR ADDITIONAL DETAILS.
3. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING THE POST TO PREVENT DAMAGE TO THE GALVANIZING ON THE TOP OF THE POST.
4. CABLES SHALL BE TIGHTENED USING THE HEX NUTS AT THE ISS PANEL UNTIL THEY ARE NOT VISIBLY SAGGING BETWEEN POSTS. DO NOT TIGHTEN THE CABLE AT THE FRONT OF THE GROUND STRUT ANCHOR.
5. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
6. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
7. IF A DISLINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH LOCAL STANDARDS AND SPECIFICATIONS.

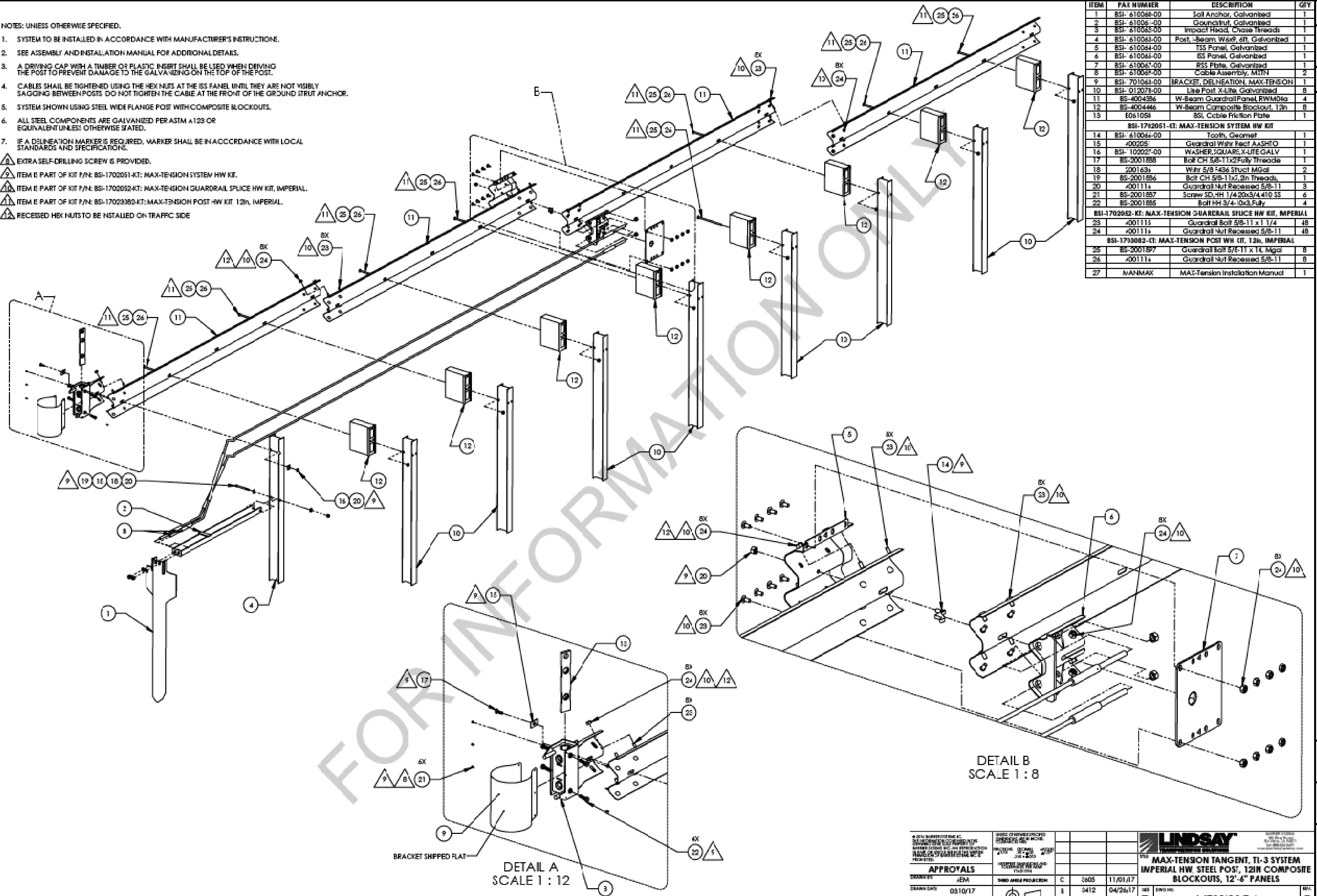
 EXTRA SELF-DRILLING SCREW IS PROVIDED.

 ITEM IS PART OF KIT P/N: BS-1702051-KT: MAX-TENSION SYSTEM HW KIT.

 ITEM E PART OF KIT P/N: BSI-1702052-KT: MAX-TENSION GUARDRAIL SPLICE HW KIT, IMPERIAL.

 ITEM IS PART OF KIT P/N: BS-17023082-KT:MAX-TENSION POST HW KIT 12in, IMPERIAL.

RECESSED HEX NUTS TO BE INSTALLED ON TRAFFIC SIDE



ITEM	PART NUMBER	DESCRIPTION	QTY
1	B51-610068-00	Self Anchor, Galvanized	1
2	B51-610066-00	Groundnut, Galvanized	1
3	B51-610063-00	Impact Head, Chase Threads	1
4	B51-610063-00	Post, 1/2" Beam, W/6" Elft, Galvanized	1
5	B51-610064-00	TSS Panel, Galvanized	1
6	B51-610066-00	B51 Panel, Galvanized	1
7	B51-610067-00	B51 Plate, Galvanized	1
8	B51-610069-00	Cable Assembly, MTN	2
9	B51-701043-00	BRACKET, DELTATION, MAX-TENSION	1
10	B51-012078-00	Life Post X-Life, Galvanized	8
11	B5-4004386	W-Beam Guardrail Panel, RWMGA	4
12	B5-4004446	W-Beam Composite Blockout, 12in	8
13	E061058	B51, CSCI Friction Plate	1
B51-17W2051-KT: MAX-TENSION SYSTEM HW KIT			
14	B51-610064-00	Tooth, Gromet	1
15	400205	Guardrail W/br Rest Asst/H	1
16	B51-100202-00	WASHER, SQUARE, X-LIFE GALV	1
17	B5-3001888	Bolt CH 5/8-11x23 Fully Threaded	1
18	200163	W/br 5/8-1436 3/ruet MGAL	2
19	B5-2001886	Bolt CH 5/8-11x23n Threads,	1
20	400111a	Guardrail Nut Recessed 5/8-11	3
21	B5-2001887	Screw SD, H 1/4-20x3/4 410 SS	6
22	B5-2001886	Bolt HH 3/4-10x33 Fully	4
B51-1702053-KT: MAX-TENSION GUARDRAIL SLUICE HW KIT, IMPERIAL			
23	400111s	Guardrail Bolt 5/8-11 x 1 1/4	48
24	400111s	Guardrail Nut Recessed 5/8-11	48
B51-1703082-KT: MAX-TENSION POST W/ KT, 12in, IMPERIAL			
25	B5-2001897	Guardrail Bolt 5/8-11 x 1 1/4, MGAL	8
26	400111s	Guardrail Nut Recessed 5/8-11	8
27	NANMAX	MAX-Tension Installation Manual	1

1 OF 2

Project Number

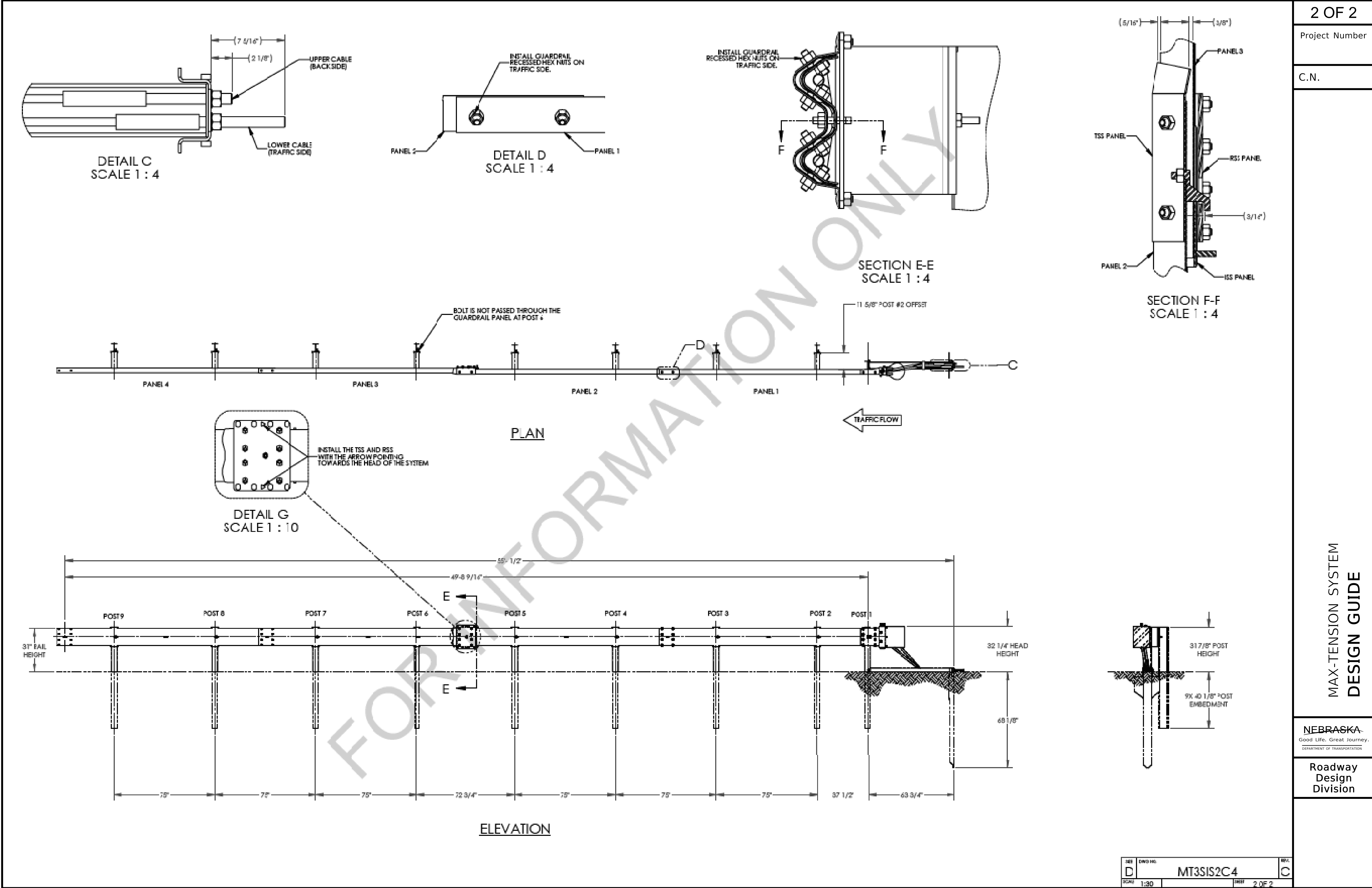
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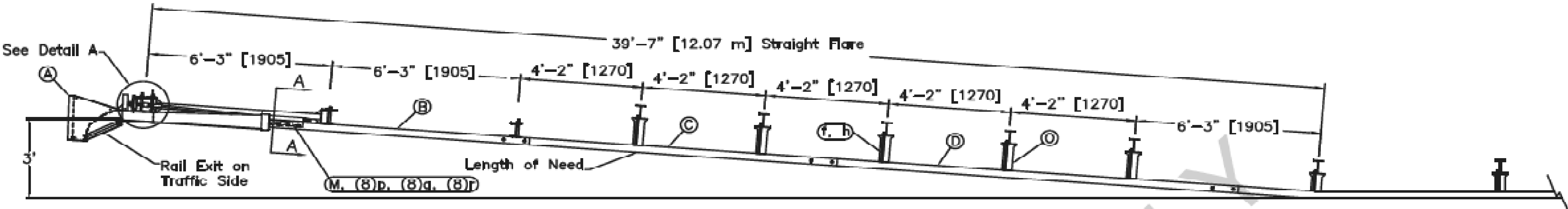
MAX-10 EXTENSION SYSTEM DESIGN GUIDE

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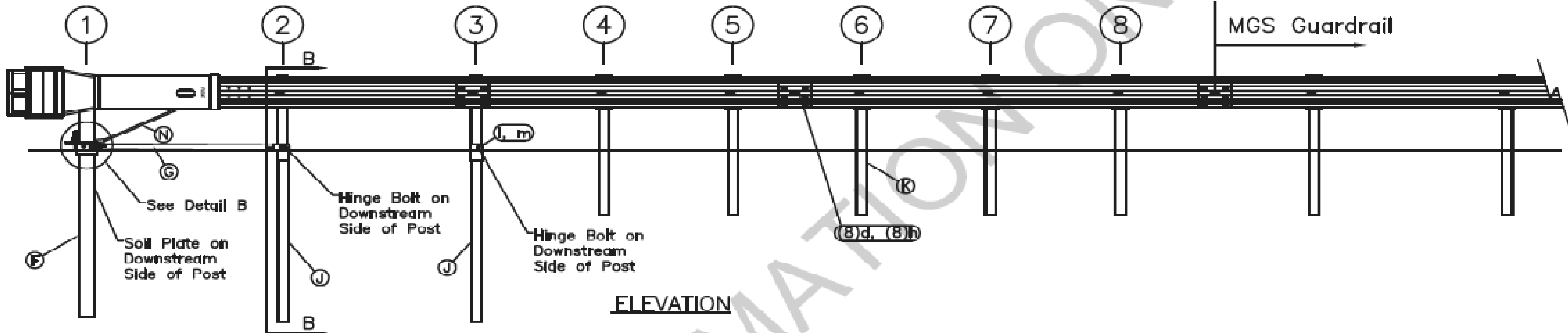
4. PER SUBMITTAL: ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE. ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.		SHEET OF REVISIONS REVISION NO. 1 DATE 10/10/17		 LINDSAY ENGINEERING 1000 N. 10th St. Suite 100 Phoenix, AZ 85006 (602) 998-1000 www.lindsayeng.com		MAX-TECH TANGENT, TI-3 SYSTEM IMPERIAL HW. STEEL POST, 12IN COMPOSITE BLOCKOUTS, 12'-6" PANELS		DRAWN BY: JEM DATE: 05/10/17 CHECKED BY: 61AD DATE: 06/01/17		REV. 1 DATE: 10/10/17 BY: JEM	
APPROVALS DRAWN BY: JEM DATE: 05/10/17 CHECKED BY: 61AD DATE: 06/01/17		THIRD APPROVAL C 3405 11/01/17 B 3412 04/24/17 A 3347 03/15/17		REV. 1 DATE: 10/10/17 BY: JEM		MT3SIS2C4		1 OF 2		C	





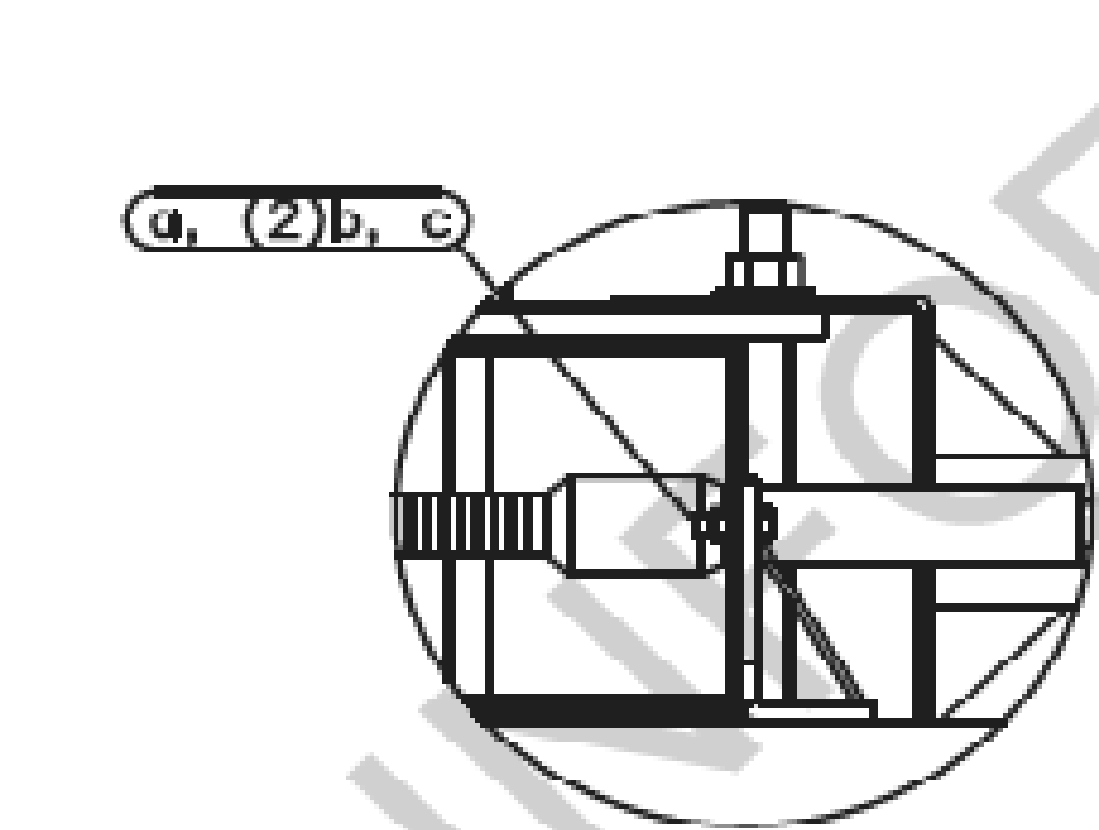
PLAN

TRAFFIC

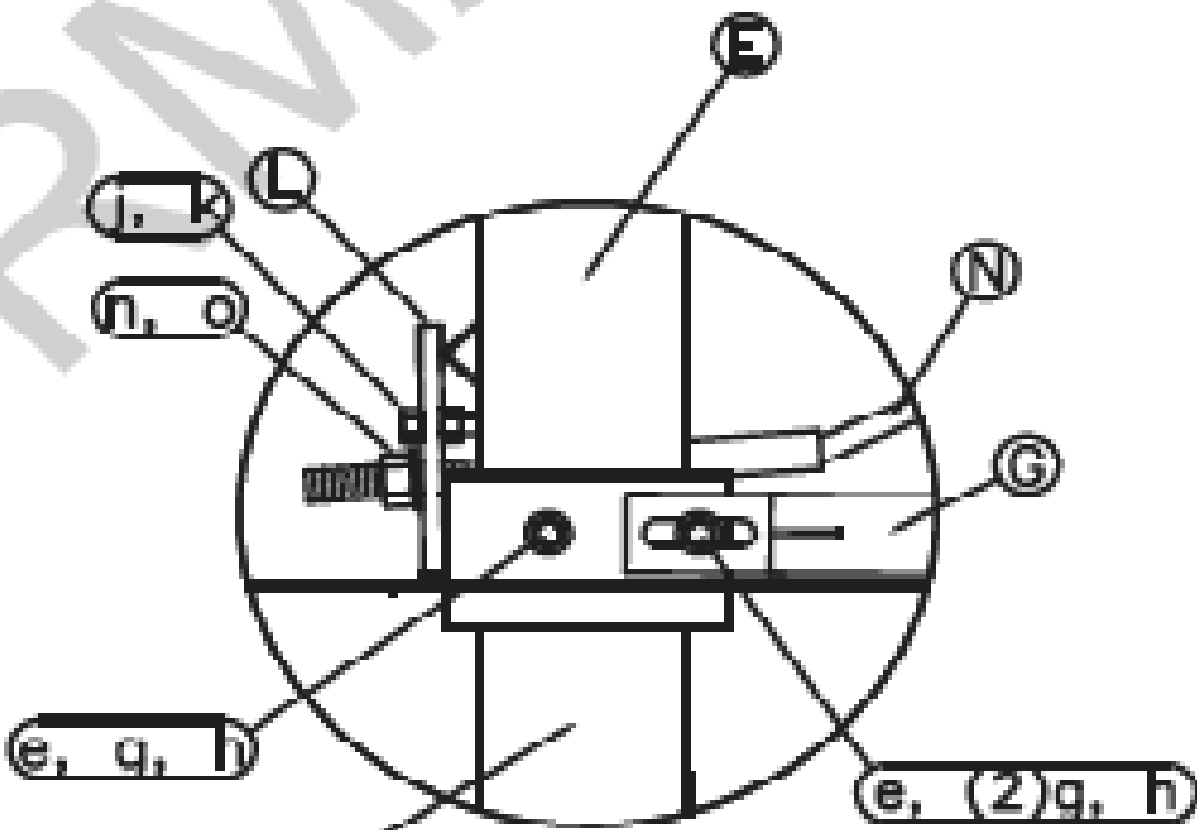


ELEVATION

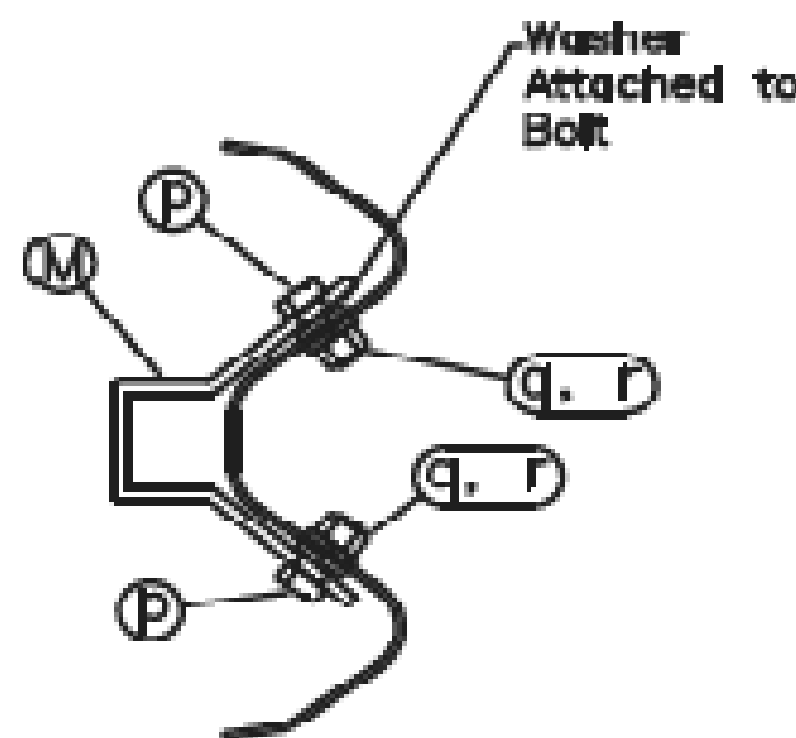
ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	FLEAT IMPACT HEAD	MF3000
B	1	FLEAT ANCHOR RAIL 12'-6"	SF1303
C	1	FLEAT SECOND RAIL 10'-6"	IF1324
D	1	FLEAT THIRD RAIL 13'-6 1/2"	IF1334
E	1	FIRST POST TOP (6X6X4" Tube)	MP1A
F	1	FIRST POST BOTTOM (6" W6X15)	MP1B
G	1	GROUND STRUT	MS7R5
H	2	HINGE POST UPPER	MHP2A
J	2	HINGED POST LOWER	MP2B
K	6	STEEL LINE POST 6"	P621
L	1	MASH BEARING PLATE	ME750
M	1	CABLE ANCHOR BOX	S760
N	1	BCT CABLE ANCHOR ASSEMBLY	E770
O	5	RECYCLED PLASTIC BLOCK OR EDUV.	P618
HARDWARE (ALL DIMENSIONS IN INCHES)			
d	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	18	5/8 x 1 1/4 SPLICE BOLT	B580122
e	2	5/8 x 9 HEX BOLT GRD 5	B580904A
f	5	5/8 x 14 H.G.R. BOLT	B581402
g	3	5/8 WASHER	W050
h	25	5/8 H.G.R. NUT	N050
j	1	5/8 x 5" BOLT FULL THREAD GRD A449	B580504A
k	1	5/8 HEX NUT	N055
l	2	3/4 x 8 1/2 HEX BOLT GRD A449	B340854A
m	2	3/4 HEX NUT	N030
n	2	1 ANCHOR CABLE HEX NUT	N100
o	2	1 ANCHOR CABLE WASHER	W100
p	8	1/2 RSI SHOULDER BOLT W/WASHER	SB12A
q	8	1/2 STRUCTURAL NUT	N012A
r	8	1/2 STRUCTURAL WASHER	W012A



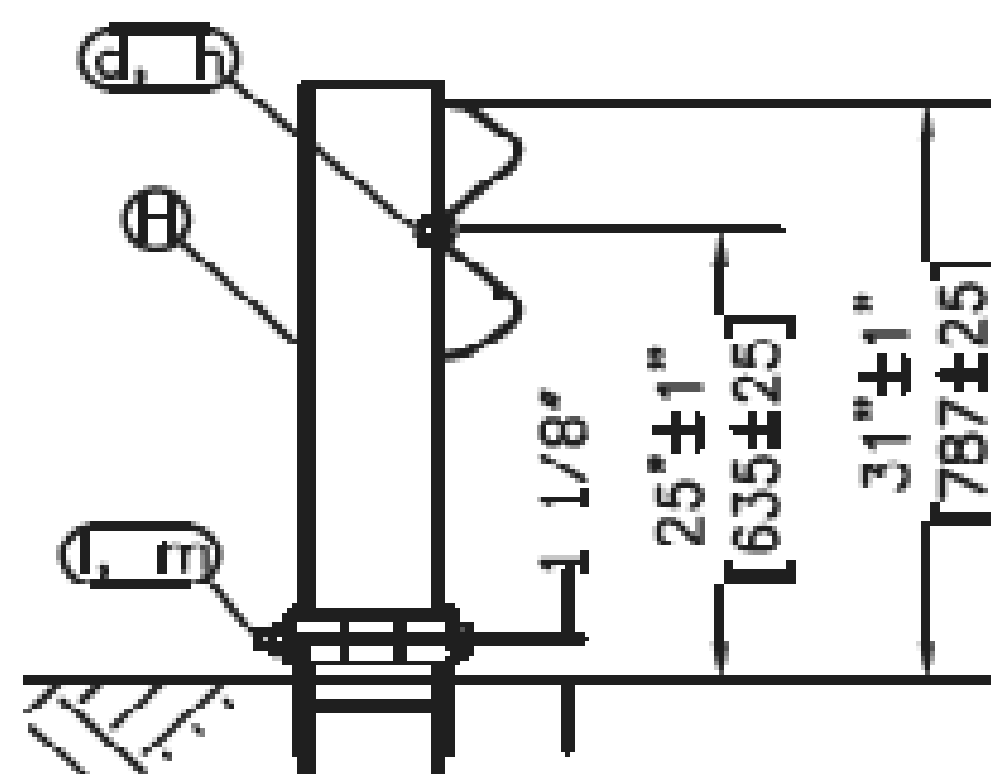
Detail A
Impact Head Connection



Detail B
Post #1 Connection



SECTION A-A
Anchor Bracket



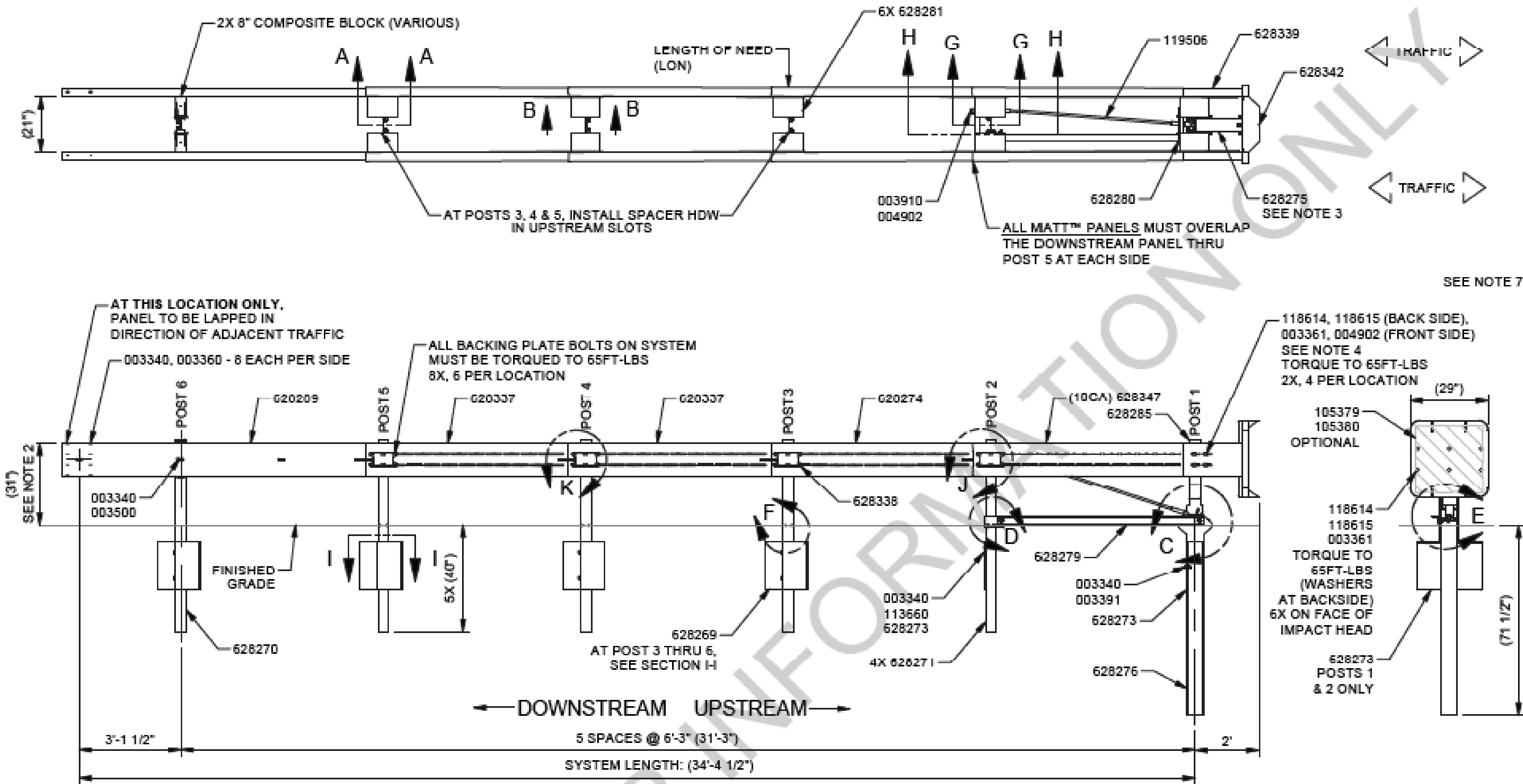
SECTION B-B
Post #2

GENERAL NOTES:

1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
2. The lower sections of the Posts 1, 2 & 3 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
3. The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
4. When competent rock is encountered, a 12" Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
5. The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.



MASH FLEAT Terminal 12" Blocks TL-3 Standard Post System		Sheet: 1
Drawing Name: MFLT-12		Date: 04/10/19
Scale: None		By: JRR
		Rev: 0



PARTS LIST		
PART NO.	DESCRIPTION	QTY.
628276	MATT CR POST #1 BOTTOM	1
628271	6'0 POST/W6X8.5/7/S PL/SYT	4
628285	MATT CR POST #1 TOP	1
628280	MATT DOUBLE SPACER	2
628281	MATT SINGLE SPACER	6
628279	MATT ANGLE GROUND STRUT	1
003340	5/8" GR HEX NUT	36
033909	CRP-CBL BRKT FOR CRP PST	1
119506	CBL 3/4X75"/DBL SWG	1
003910	1" HEX NUT A563	2
628289	MATT 12G TRANS,W FIN 4	2
628337	MATT 12G INT,W FIN-3	4
628274	MATT 12G,W/O FIN-2	2
628342	MATT IMPACT HEAD	1
628275	MATT HEAD TUB	1
628339	MATT 10G HEAD RAIL	2
628338	MATT BACKING PLATE	8
118614	BOLT,RAIL,5/8X2,A325/G5,G	62
118615	WASHER,FLAT,5/8,THICK,G	62
003361	5/8" HVY HEX NUT A563 DH	66
003360	5/8"X1.25" GR BOLT	16
003391	5/8"X1.75" HEX BOLT A325	6
004211	5/16"X1.75 HXBTA307 1-1/8	2
003240	WASHER,FLAT,5/16 W,TY A,G	2
003245	5/16" HEX NUT A563	2
628348	MATT STRUT ADAPTER PLATE	1
628347	MATT 10G FRONT,W/O FIN-1	2
004902	1" ROUND WASHER F436	10
004372	WASHER,FLAT,5/8,HRD,TY1,G	8
003403	5/8"X2" HEX BOLT A307	6
628270	6'0 POST/W6X8.5/7/S PL	1
003500	5/8"X10" GR BOLT A307	2
113660	BOLT,HX,5/8X3 1/2,G5,G	10
628273	1/4"X18"X24" SOIL PL/4 H	2
628269	1/4"X15"X17" SOIL PL/MULT	4
118009	WASHER,FLAT,1/2X1 3/8,C	8
115939	NUT,HX,1/2,A563,G	4
113457	BOLT,HX,1/2X1 1/2,G2,G	4
VARIOUS	8" NOM DEPTH COMPOSITE BLOCKS	2
SEE TABLE	OPTIONAL DELINEATION	REF

TABLE	
PART NO.	DESCRIPTION
105379	REF 25X25 BLK/YEL MEDIAN
105380	REFL 25X25 BLK/YEL GORE

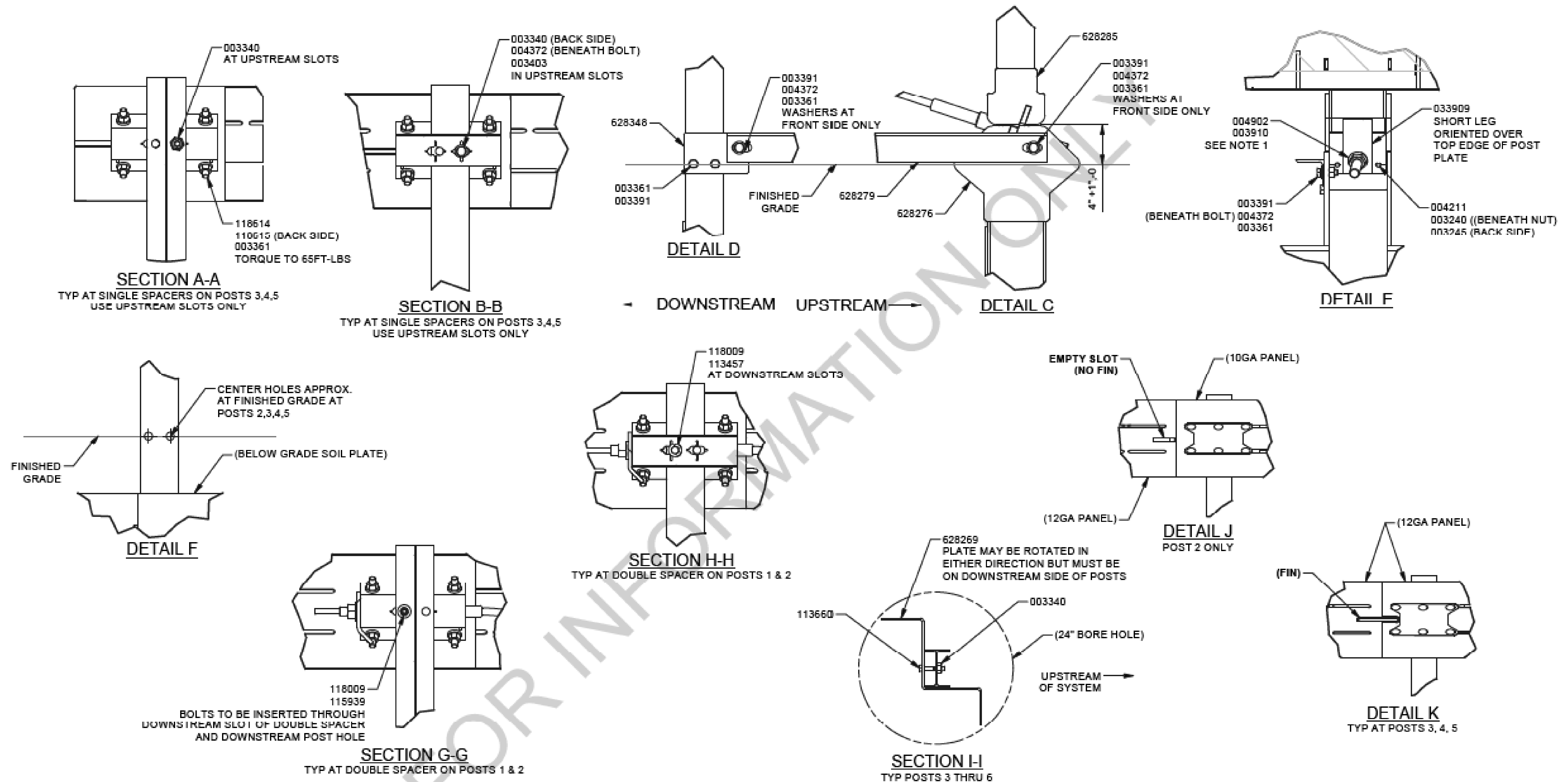
- NOTES:
1. PROPER SITE GRADING MUST BE ACCOMPLISHED BEFORE ASSEMBLY AND IN ACCORDANCE WITH STATE/SPECIFYING AGENCY GUIDELINES AND/OR THE AASHTO ROADSIDE DESIGN GUIDE.
 2. GUARDRAIL INSTALLATION HEIGHT TO BE 31" ABOVE FINISHED GRADE, +1", -0".
 3. PRIOR TO TIGHTENING HARDWARE PUSH IMPACT HEAD UNTIL P/N 628275 TOUCHES UPPER PORTION OF POST 1.
 4. ENSURE 004902 IS APPROXIMATELY CENTERED WITH P/N 118614 PRIOR TO TIGHTENING
 5. THE INTEGRATED FINS IN THE PROVIDED MATT™ GUARDRAIL PANELS ARE ALWAYS POSITIONED UPSTREAM.
 6. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL PANELS WITHIN THE MATT™ BE CURVED OR RADIUSSED.
 7. ALL 62 LOCATIONS OF 118614 MUST BE TORQUED TO 65FT-LBS.
 8. ALL FASTENERS NOT REQUIRED TO BE TORQUED SHALL BE TIGHTENED TO A SNUG POSITION WITH A MINIMUM OF 2 BOLT THREADS PROTRUDING BEYOND THE NUT.

DESIGNED BY R. VENZON	DATE 1/19/2022	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS (INCH) ACCORDING TO ASME Y14.5-2018 AND GMS-02-025			
CHECKED BY K. WILSON	DATE 1/28/2022	DO NOT SCALE DRAWING			
REVISION DESCRIPTION	ECO	DATE	REV	BY	CHK
INITIAL RELEASE	7978	-	-	-	-
UPDATE BORDER	8260	10/12/22	A	JM	KL

MATT™
MEDIAN ATTENUATING® TREND
TERMINAL



SS 6288	REV: A	SHEET: 1 of 2
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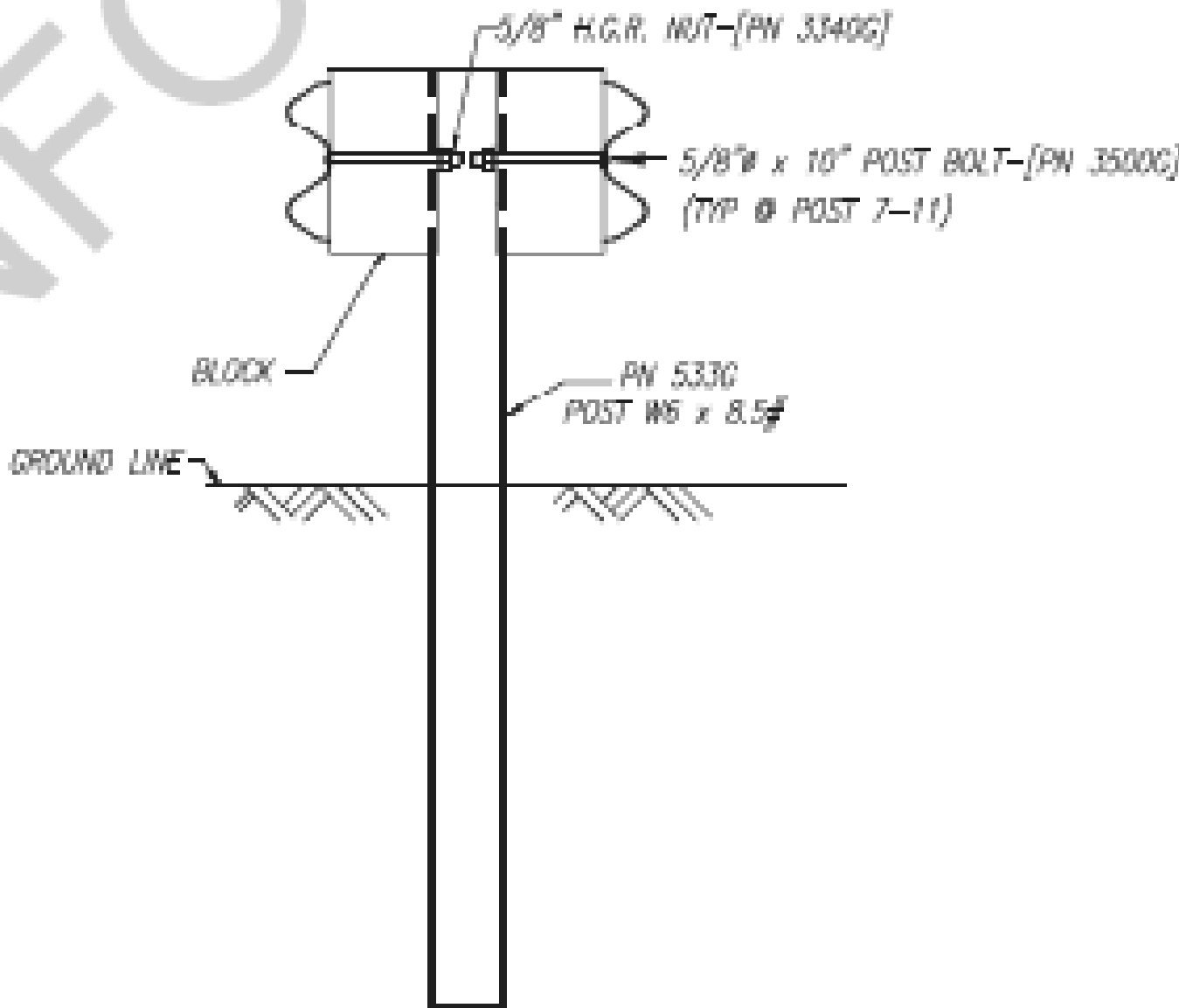
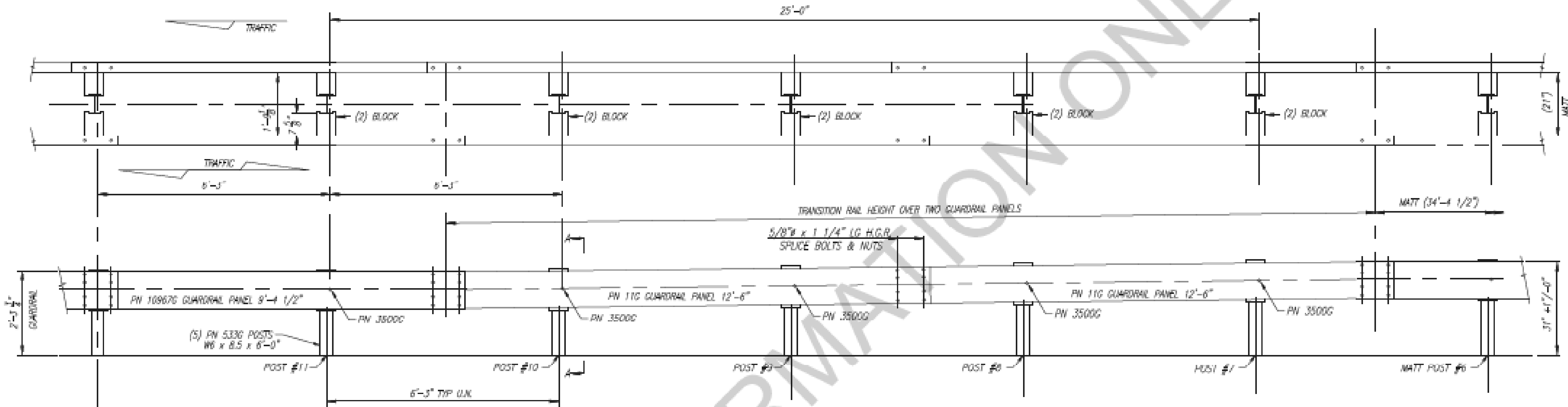


NOTES:

1. TIGHTEN CABLE UNTIL TAUT. CABLE IS CONSIDERED TAUT WHEN IT DOES NOT DEFLECT MORE THAN 1" WHEN PRESSURE IS APPLIED BY HAND IN AN UP AND DOWN DIRECTION. RESTRAIN THE CABLE WITH PIPE WRENCH OR LOCKING PLIERS WHILE TIGHTENING NUT WITH A WRENCH TO PREVENT CABLE FROM TWISTING.
2. GUARDRAIL INSTALLATION HEIGHT TO BE 31" ABOVE FINISHED GRADE, +1", -0".
3. REFER TO MATT™ ASSEMBLY MANUAL FOR ADDITIONAL DETAILS.
4. ONLY ATTACH THE MATT™ DIRECTLY TO OTHER STRONG POST DOUBLE SIDED W-BEAM GUARDRAIL SYSTEMS, SEE MANUAL FOR DETAILS.

DRAWN: R. VENZON		DATE: 1/19/2022		UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS (INCH) ACCORDING TO ASME Y14.5-2018 AND QMS-SE-023				 MATT™		 VALTIR	
CHECKED: K. WILSON		DATE: 1/26/2022									
REVISION DESCRIPTION				ECO	DATE	REV	BY	CHK	 MATT™ MEDIAN ATTENUATING® TREND TERMINAL		
INITIAL RELEASE				7978	-	-	-	-			
UPDATE BORDER				8260	10/12/22	A	JM	KL			
									 DRAWING: SS 6288		
									REV: A		
									SHEET: 2 of 2		

BILL OF MATERIAL		
PW	QTY	DESCRIPTION
11G	4	12/12/6/31.5/S (GUARDRAIL)
533G	5	LINE POST
334UG	28	5/8" HUB HEX NUT
336UG	48	5/8" x 1 1/4" SPICE BOLT
3500G	10	5/8" x 10" GR BOLT A307
V4RM11G	10	COMPOSITE BLOCK 8 x 8 x 14" (NOM)
10967G	2	12/9/4.5/31.5/S (GUARDRAIL)



SECTION A-A
(TYP @ POSTS #7 THRU #11)

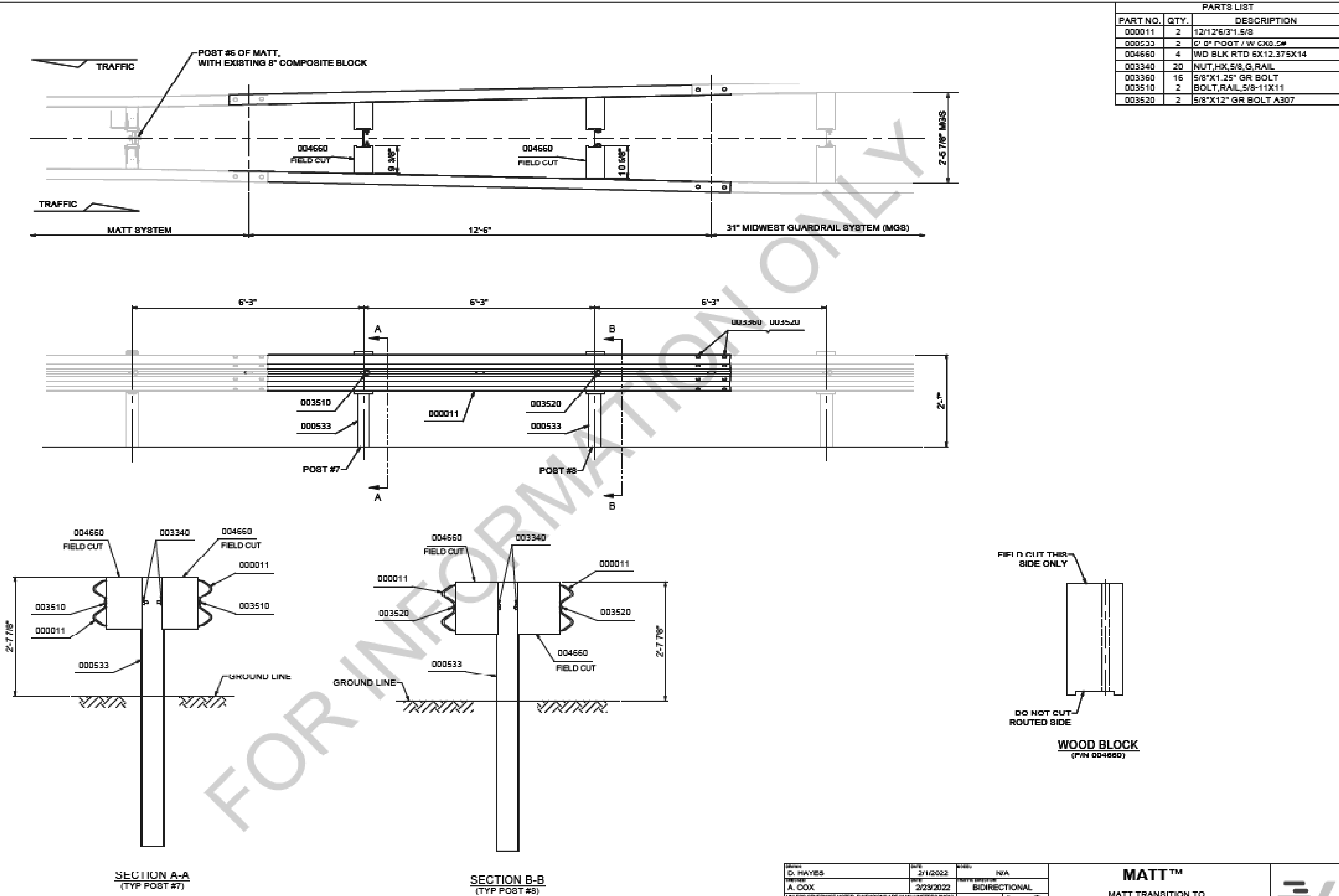
NOTE:
1. MATT TRANSITION DEVELOPED AND IN COMPLIANCE WITH FHWA GUIDANCE (F424R13).
2. LAP ALL SPIKES SHOWN WITHIN THIS DRAWING IN THE DIRECTION OF THE ADJACENT TRAFFIC, UNLESS INDICATED OTHERWISE BY APPROPRIATE SPECIFYING AGENCY.

DESIGN: J. MUSIAL	DATE: 4/25/22	SCALE: N/A	MATT™					
DRAWN: A. COX	DATE: 4/26/22	REVISION: UNIDIRECTIONAL	MATT TRANSITION					
DIMENSIONS ACCORDING TO ASME Y14.5 (2018) AND ASME Y14.100 (2018) UNLESS OTHERWISE SPECIFIED.			TO 27 3/4" GUARDRAIL BARRIER PLAN, ELEVATION & SECTIONS					
REVISION DESCRIPTION			ECO	DATE	REV	BY	CHK	
INITIAL RELEASE			0007	4/26/22	—	JM	AC	
UPDATE BORDER			0200	10/14/22	A	JM	RL	
88 8287							A	1 of 1

MATT SYSTEM
DESIGN GUIDE

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DESIGNED BY D. HAYES	DATE 2/1/2022	CHECKED BY A. COX	DATE 2/23/2022	PROJECT N/A	REVISIONS BIDIRECTIONAL
REVISION DESCRIPTION				REV	DATE
INITIAL RELEASE				7888	10/1/2022
UPDATE ORDER				6280	10/1/2022
DRAWN BY A. COX				DATE 10/1/2022	REV A
PROJECT MATT™ MATT TRANSITION TO MGS MEDIAN BARRIER (12" BLOCKS)				REV A	DATE 10/1/2022