Design Guides
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June 1, 2023

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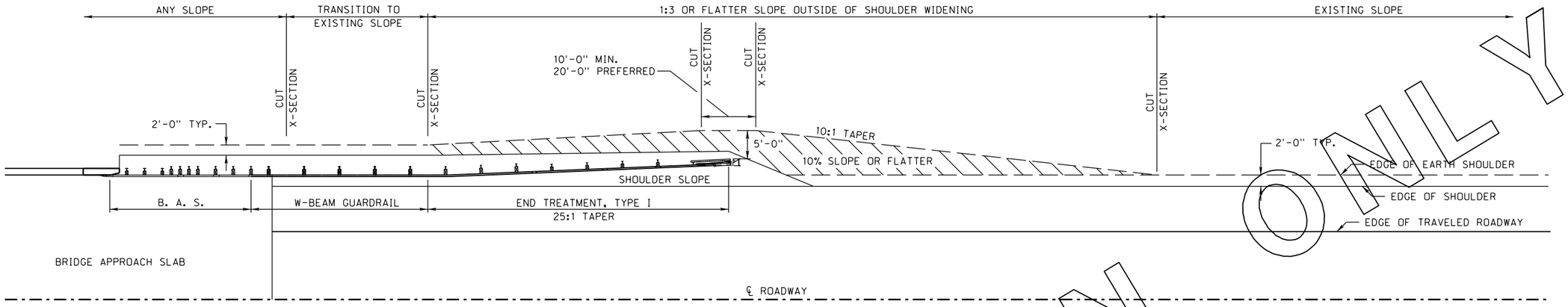
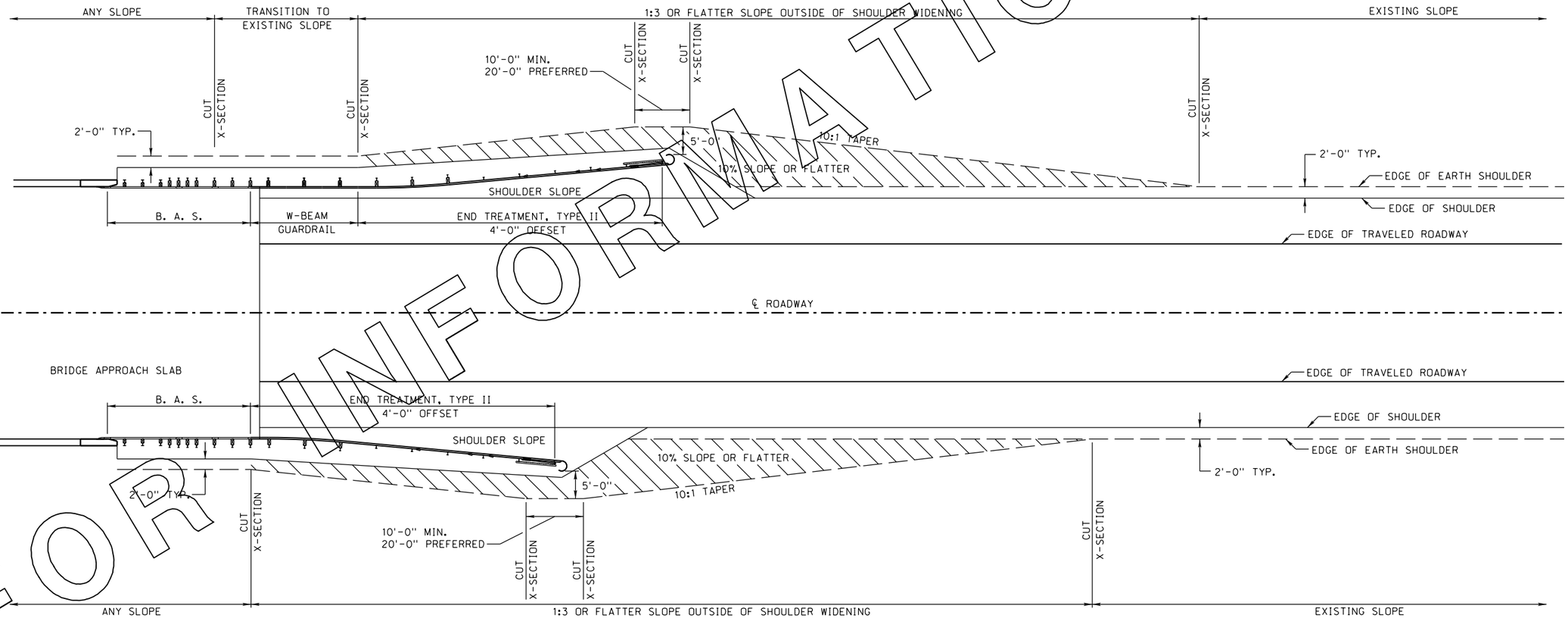


GRADING FOR GUARDRAIL END TREATMENT, TYPE I FOR 3R PROJECTS



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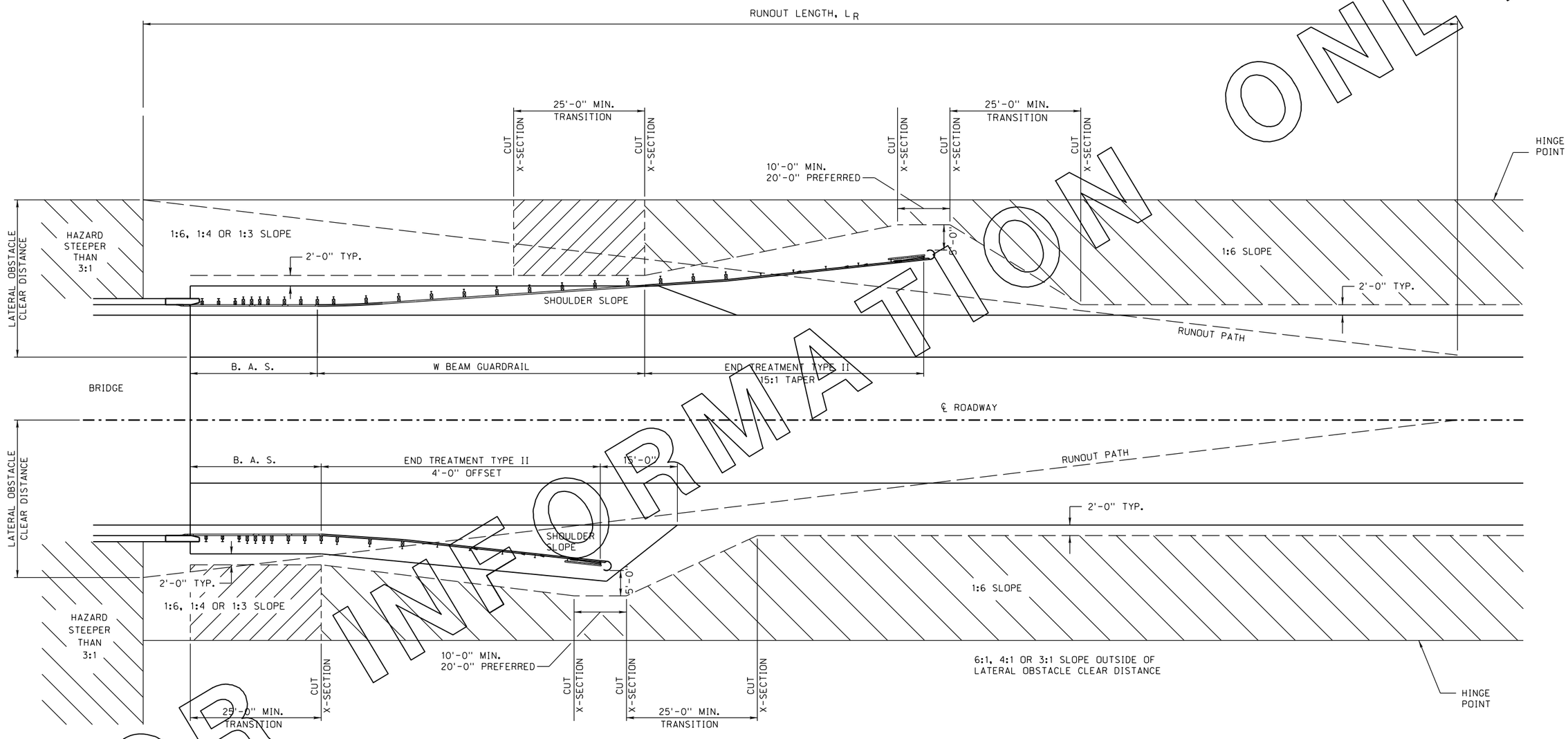

EARTHWORK FOR GUARDRAIL END TREATMENT, TYPE II
(NEW & RECONSTRUCTED PROJECTS)

NOTE: SLOPES ARE H:V

ROADWAY DESIGN DIVISION
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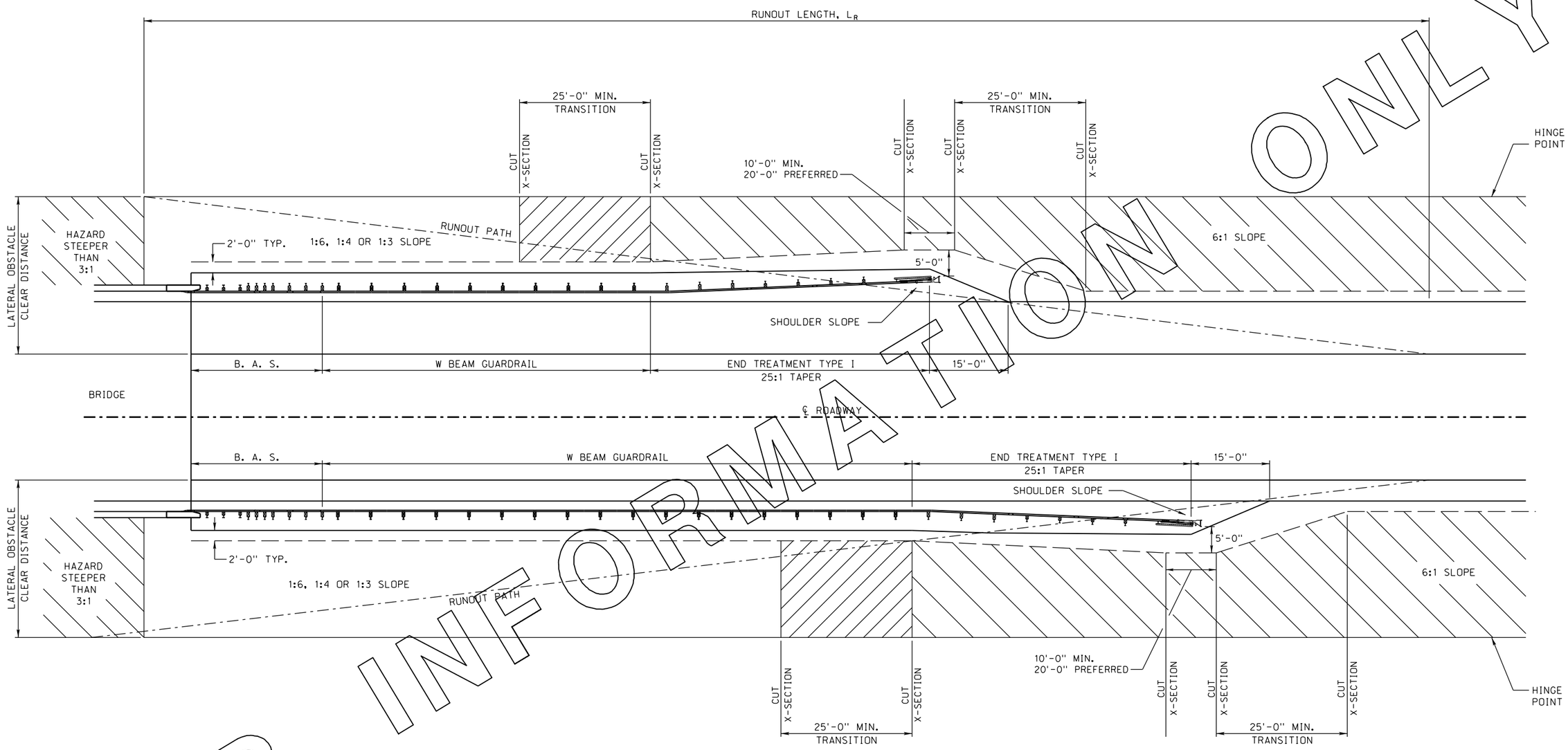
SHEET 1 OF 1



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

NOTE: SLOPES ARE V:H

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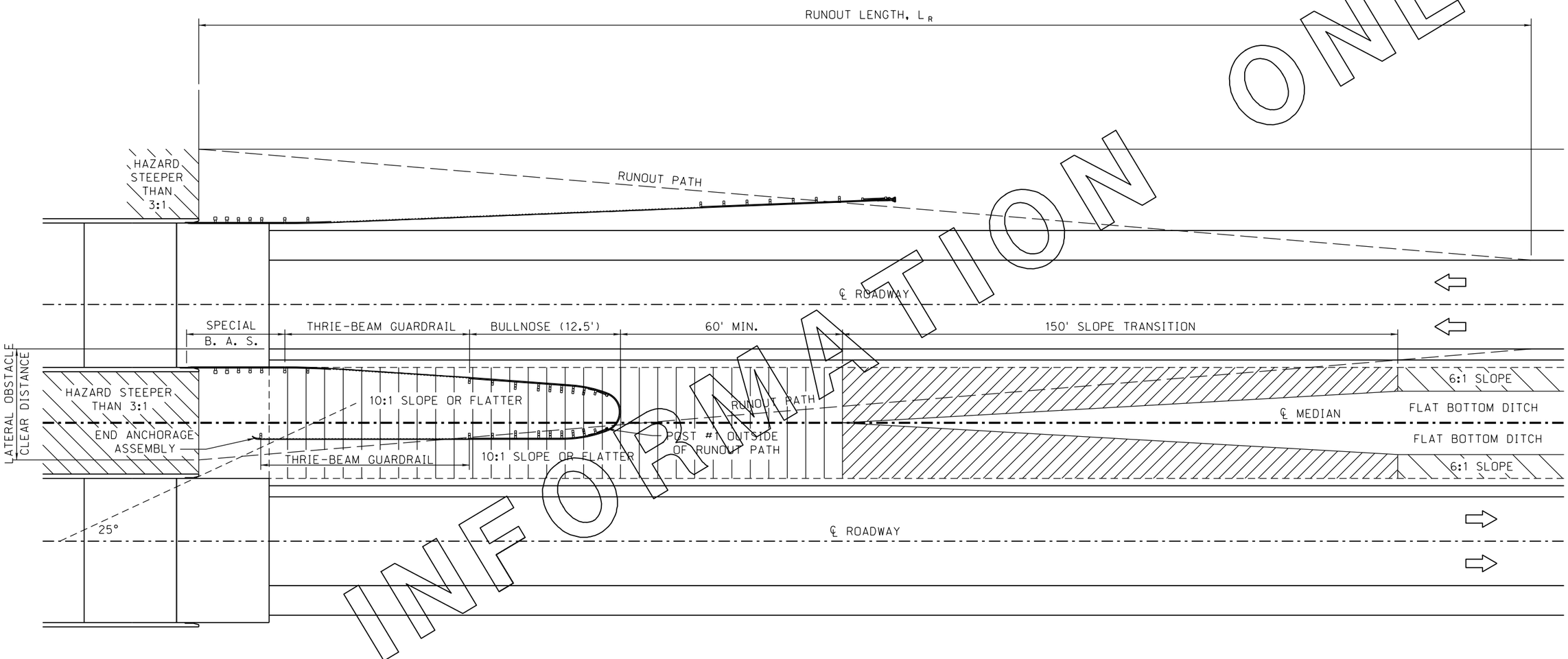
PROJECT NO.	SHEET NO.

C.N.



EARTHWORK FOR BULLNOSE GUARDRAIL ON NEW AND RECONSTRUCTED PROJECTS

NOTE: SLOPES ARE H:V

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SHEET 1 OF 1

PROJECT NO.	SHEET NO.

C.N.

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)

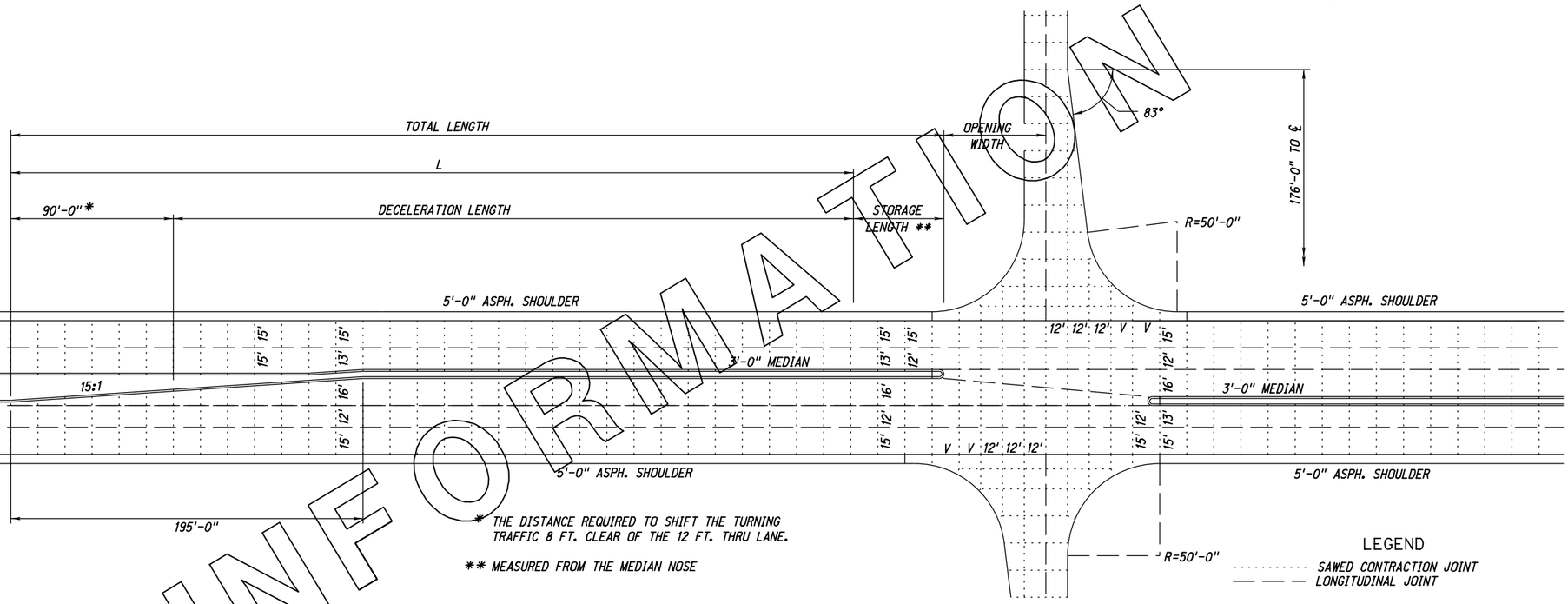
(1) INCLUDES A DECELERATION LENGTH OF 290 FT. BASED ON A SPEED REDUCTION IN THE TURN LANE OF 55 MPH (SEE "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS"). THIS LENGTH ASSUMES A 10 MPH SPEED REDUCTION IN THE THRU LANE.

(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.



TYPICAL JOINT LAYOUT

MEDIAN BREAK FOR A 14 FT. RAISED MEDIAN

NOTES:

16'-6" TRANSVERSE JOINT SPACING IS THE STANDARD SPACING REGARDLESS OF THE PAVEMENT THICKNESS.

V VARIES FROM 10'-0" TO MAXIMUM 16'-6".

VARIABLE SPACING IS USED AROUND INTERSECTIONS AND LARGE DRIVEWAYS WHICH ARE TIED TO THE CONCRETE LANES OR SHOULDERS TO MATCH THE JOINTS.

FOR DETAILS NOT SHOWN, SEE STANDARD PLAN 329.

ROADWAY DESIGN DIVISION
Computer: NDOTDESIGN134
Date: 17-APR-2020 13:53
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SHEET 1 OF 2

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)

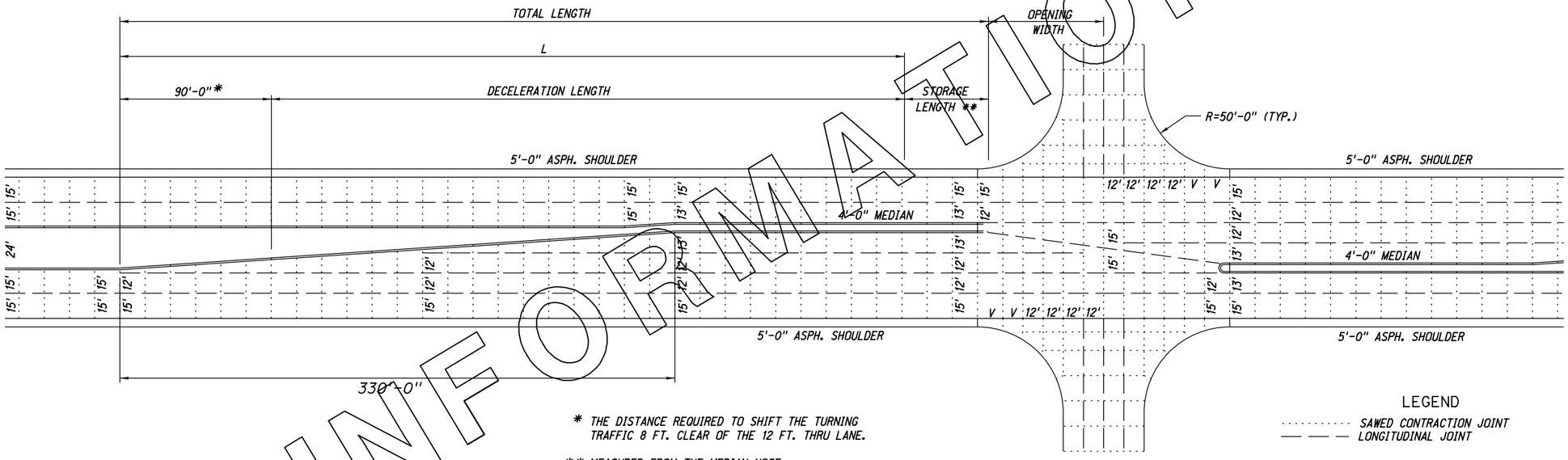
(1) INCLUDES A DECELERATION LENGTH OF 290 FT. BASED ON A SPEED REDUCTION IN THE TURN LANE OF 55 MPH (SEE "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS"). THIS LENGTH ASSUMES A 10 MPH SPEED REDUCTION IN THE THRU LANE.

(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 CONDITIONS AND DESIGN VEHICLE USED.

(5) THE TRAFFIC ENGINEERING DIVISION SHALL BE CONSULTED FOR THE REQUIRED TOTAL LENGTH.



TYPICAL JOINT LAYOUT

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

NOTES:

16'-6" TRANSVERSE JOINT SPACING IS THE STANDARD SPACING REGARDLESS OF THE PAVEMENT THICKNESS.

V VARIES FROM 10'-0" TO MAX. 16'-6".

VARIABLE SPACING IS USED AROUND INTERSECTIONS AND LARGE DRIVEWAYS WHICH ARE TIED TO THE CONCRETE LANES OR SHOULDERS TO MATCH THE JOINTS.

FOR DETAILS NOT SHOWN, SEE STANDARD PLAN 329.

ROADWAY DESIGN DIVISION
Computer: NDDOTDESIGN134
Date: 17-APR-2020 13:53
File: 32906e00.dgn
SHEET 2 OF 2

Project Number

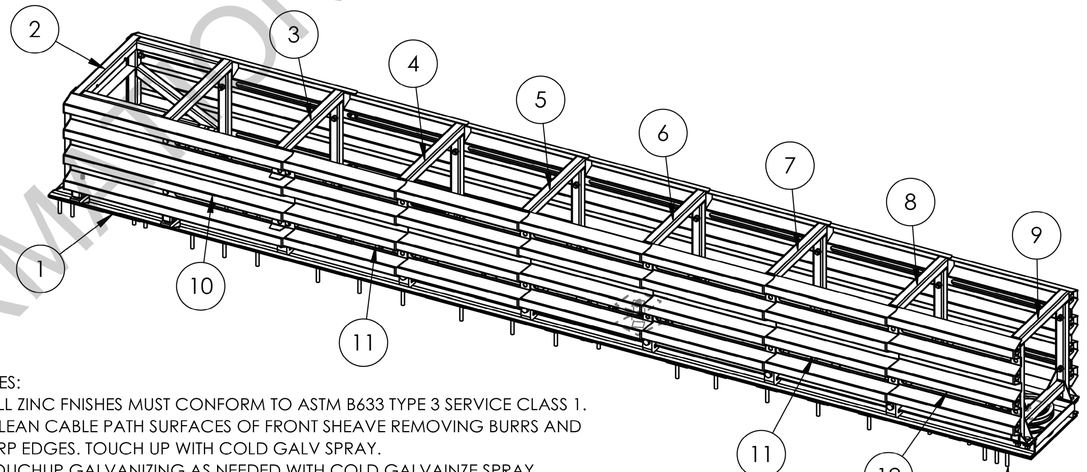
C.N.

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 TL3 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	BOLT HEX 3/4 NC X 4" GALV A325	A325	412523	HB 3/4-10 4 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 34-10 2.5 A325 GAL
20	4	BEVEL WASHER 3/4 GALV	DUCTILE IRON	412531	MCM-CARR# 91152A036
21	10	LOCK WASHER, ½ 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 (C)
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 & SPELTER SOCKET SCI100G	AS SPECIFIED	271014	P2021886
28	1	TL2 & TL3 MOBILE SHEAVE ASSEMBLY	AS SPECIFIED	412680	ET-01-05
29	1	LOCATING PIN, CYLINDER RAM	CR 1045	412522	ET-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 ZINC PLATED	GR8	412555	HN 1-8 GR8 ZN
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 A36 STEEL	265243	ET-01-17
49	1	HEX BOLT 3/8-16 X 1 PLTD	GR5	412562	HXBFT 38-16 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 38-16 GR5 ZN
52	1	HEX BOLT 3/8-16 X 3/4 FULL THREAD PLTD	GR5	412543	HXBFT 38-16 .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 34-10 A325 GAL
59	1	SCI100GM TL3 SMART CUSHION ASSEMBLY CHECK SHEET	PAPER		ET-00-01-2



NOTES:
1) ALL ZINC FNISHES 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 GALVANIZING, BURRS OR SHARP EDGES.
5) APPLY MARRINE GRADE ANTI-SEIZE 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 DURRING 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		CORRENTION 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		DOCUMENATION UPDATE	NA	02/04/21	CC
BA		MODELED AND REDRAWN IN SOLIDWORKS	20220122	09/16/2022	CAC

Hill and Smith Inc.
www.hillandsmith.com

Dimensional Tolerances Unless Otherwise Specified:
.xx ± .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: 1 of 3
Drawing Scale: 1:20
Rev. BA

SMART CUSHION

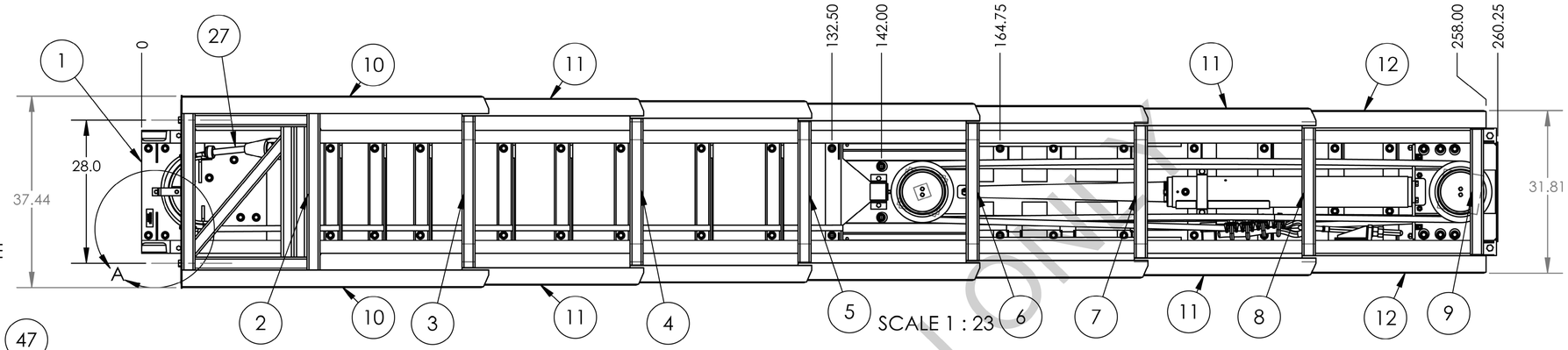
NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway Design Division

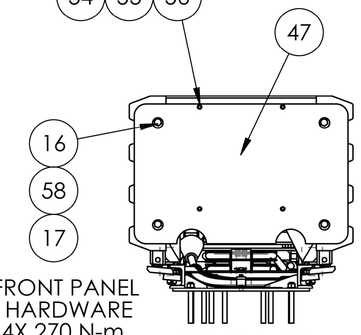
COMPUTER: BG04194534
DATE: 11-MAY-2023 11:05
FILE: 7752 6 R0.dgn

Project Number

C.N.

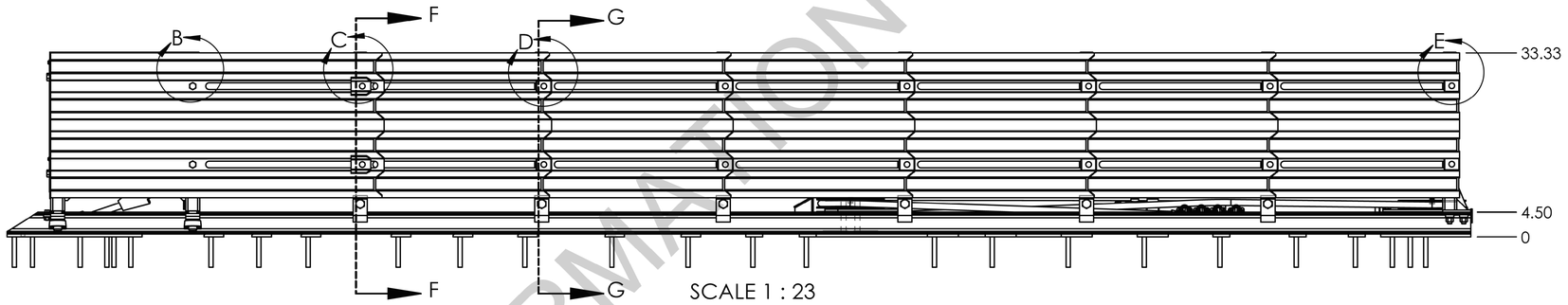


DELINEATOR HARDWARE
4X 12 N-m (9 FT-LB)



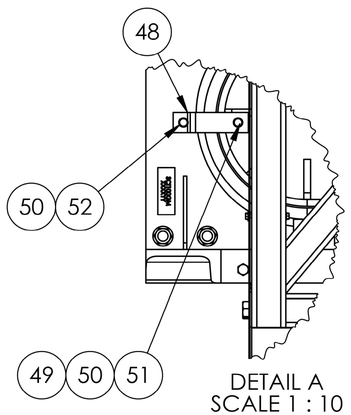
FRONT PANEL HARDWARE
4X 270 N-m
(200 FT-LB)

SCALE 1 : 23



SCALE 1 : 23

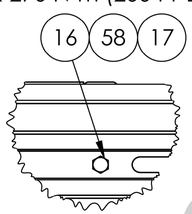
GROUND ANCHOR KIT
48X 170 N-m (125 FT-LB)



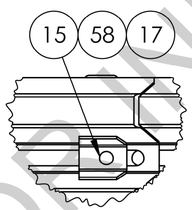
DETAIL A
SCALE 1 : 10

CABLE KEEPER HARDWARE
31 N-m (23 FT-LB)

SIDE PANEL HARDWARE
4X 270 N-m (200 FT-LB)

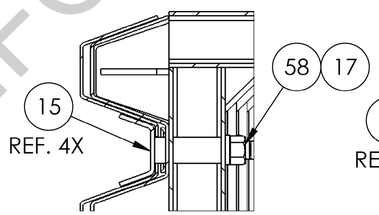


DETAIL B
SCALE 1 : 10

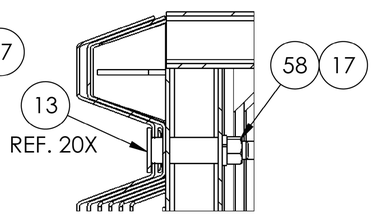


DETAIL C
SCALE 1 : 10

SIDE PANEL HARDWARE
4X 270 N-m (200 FT-LB)

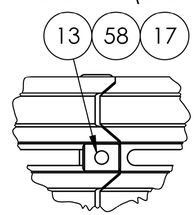


SECTION F-F
SCALE 1 : 6



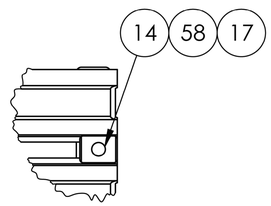
SECTION G-G
SCALE 1 : 6

SIDE PANEL HARDWARE
20X 270 N-m (200 FT-LB)



DETAIL D
SCALE 1 : 10

SIDE PANEL HARDWARE
4X 270 N-m (200 FT-LB)



DETAIL E
SCALE 1 : 10

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		CORRENTION 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		DOCUMENATION UPDATE	NA	02/04/21	CC
BA		MODELED AND REDRAWN IN SOLIDWORKS	20220122	09/16/2022	CAC

Dimensional Tolerances Unless Otherwise Specified:
.xx ± .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

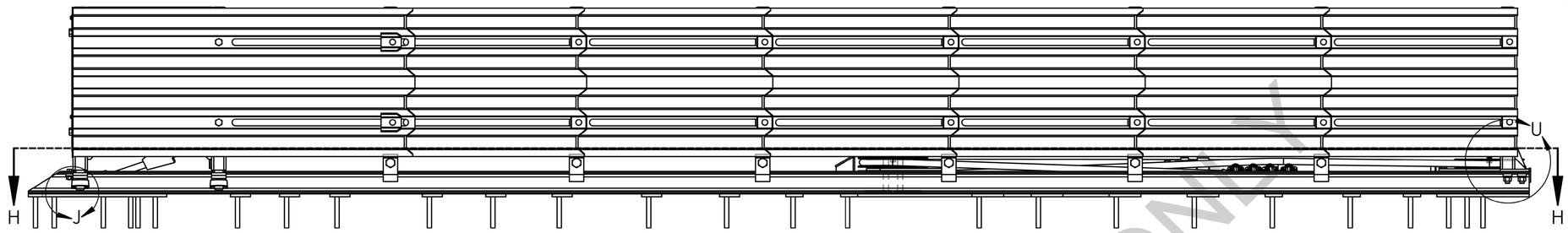
Drawn By: DTH
JDE Item: 270128
Date Created: 03/05/2019
Product Family: RS
Page: 2 of 3
Drawing Scale: 1:20
Rev.
BA

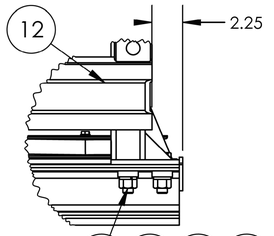
SMART CUSHION

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway Design Division

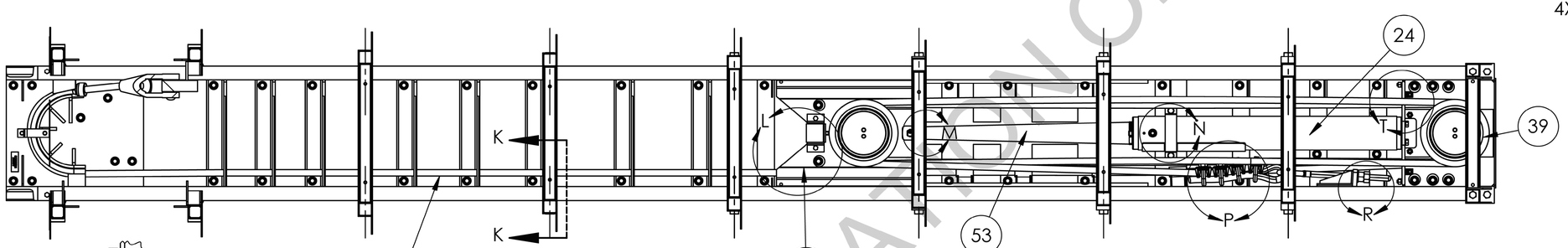
COMPUTER: BG04194534
DATE: 11-MAY-2023 11:06
FILE: 7752 6 R0.dgn





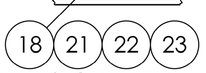
TERMINAL BRACE HARDWARE
4X 270 N-m (200 FT-LB)

DETAIL U
SCALE 1 : 10



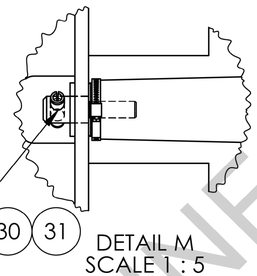
SECTION H-H

INSTALL CYLINDER BOOT WITH VELCRO FACING DOWN.

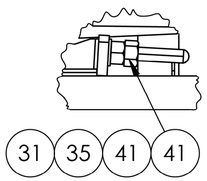


SLED STOP HARDWARE
2X 100 N-m (75 FT-LB)

DETAIL J
SCALE 1 : 10

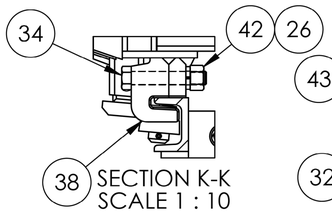


DETAIL M
SCALE 1 : 5

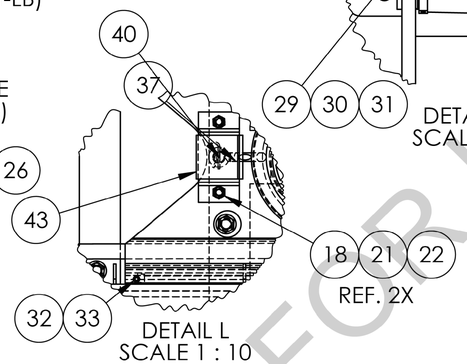


DETAIL R
SCALE 1 : 10

SIDE GUIDE HARDWARE
12X 920 N-m (680 FT-LB)

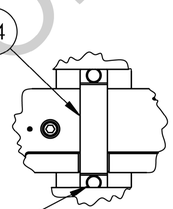


SECTION K-K
SCALE 1 : 10



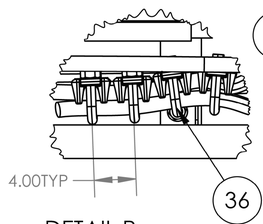
REF. 2X

DETAIL L
SCALE 1 : 10



CYLINDER STRAP HARDWARE
2X 180 N-m (130 FT-LB)

DETAIL N
SCALE 1 : 10

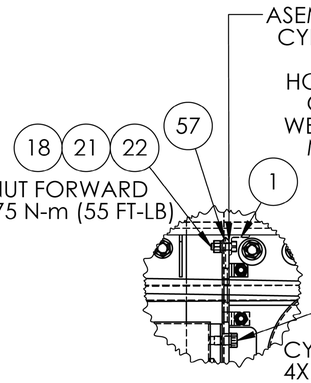


DETAIL P
SCALE 1 : 10

4x 305 N-m(225 FT-LB)

INSTALL CLIPS SUCH THAT MOBILE FRAMES DO NOT TOUCH AS THEY PASS OVER.
4 CLIPS EVENLY SPACED 4" ON CENTER LOCATED ON CABLE TAIL.

ASEMBLY GAP BETWEEN CYLINDER BASE PLATE (ITEM 57) AND HORIZONTAL PLATES ON BASE FRAME WELDMENT (ITEM 01) MUST BE ≤0.125".



NUT FORWARD
6X 75 N-m (55 FT-LB)

CYLINDER HARDWARE
4X 180 N-m (130 FT-LB)

DETAIL T
SCALE 1 : 10

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	ECN#	DATE	APPROVED
AT		+GALV ON ITEMS 16,17,23,49,52,53,59,60,61,63	NA	07/24/10	JAR
AU		CORRENTION 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		DOCUMENATION UPDATE	NA	02/04/21	CC
BA		MODELED AND REDRAWN IN SOLIDWORKS	20220122	09/16/2022	CAC

Hill and Smith Inc.
www.hillandsmith.com

Dimensional Tolerances Unless Otherwise Specified:
.xx ± .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

SMART CUSHION

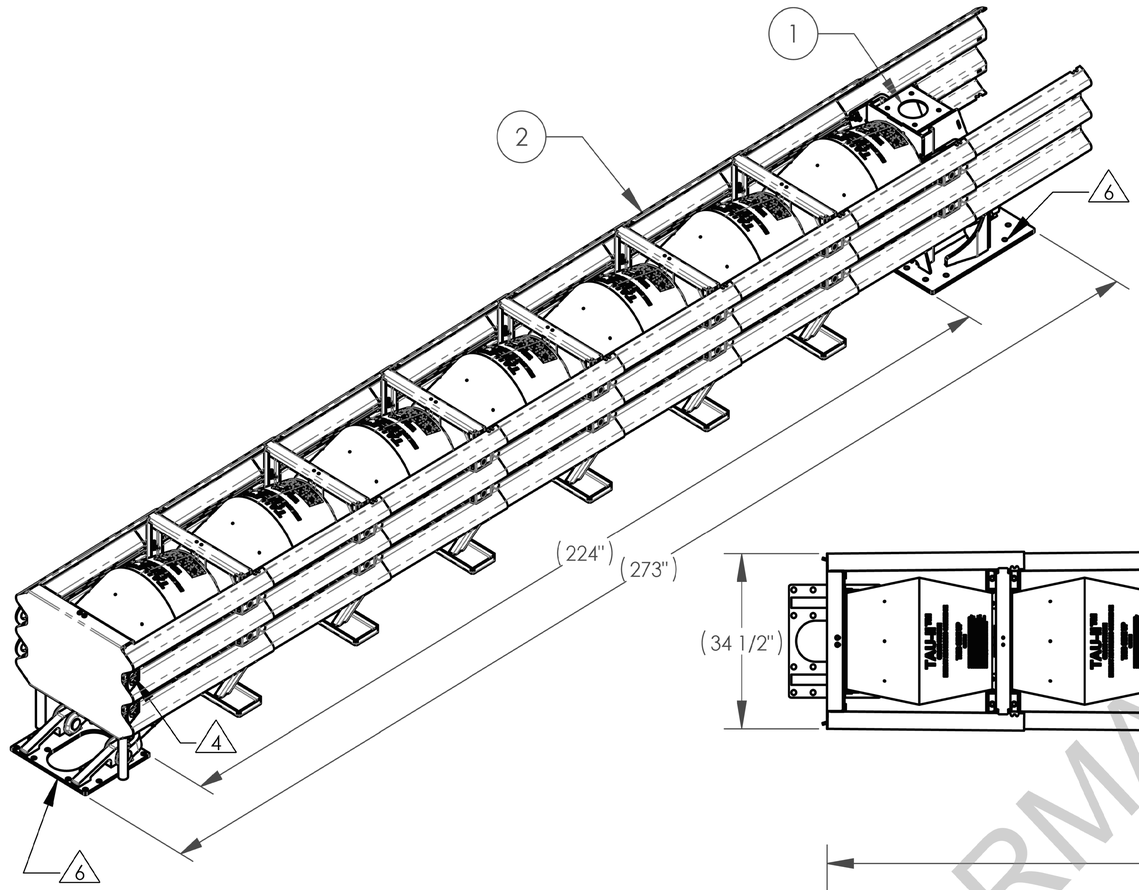
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

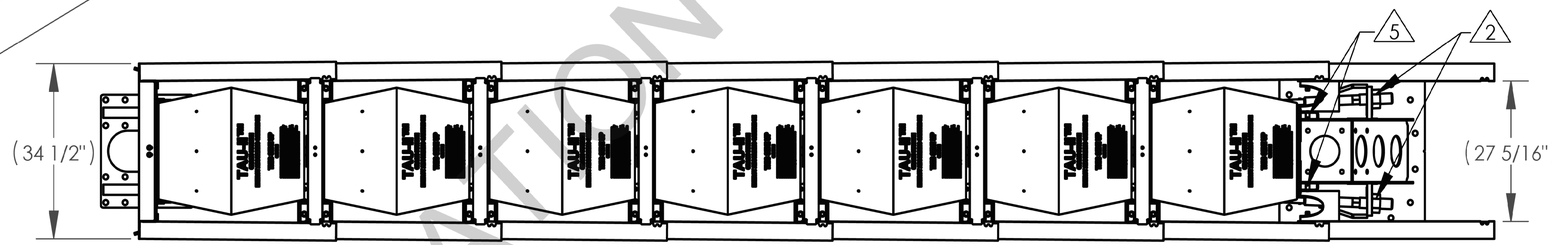
Roadway Design Division

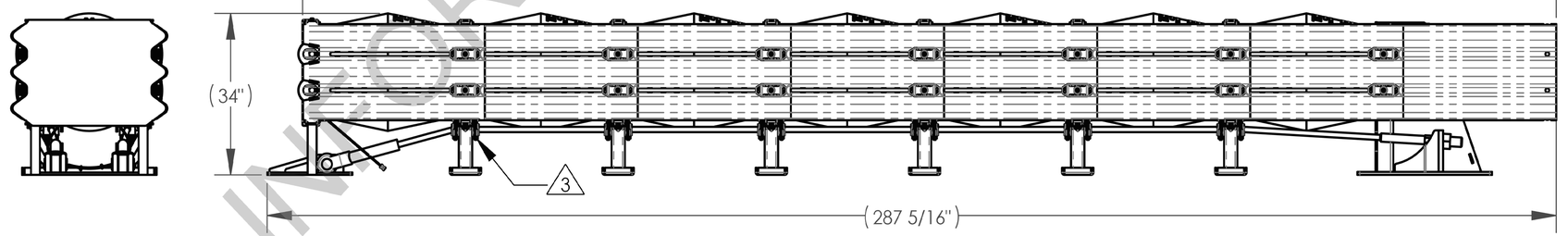
COMPUTER: BG0419M534
DATE: 11-MAY-2023 11:06
FILE: 7752 6 R0.dgn

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

* NOT 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 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 120 FT-LB [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.

APPROVALS

DRAWN BY:	JTL
DRAWN DATE:	01/14/19
APPR'D BY:	GAD
APPR'D DATE:	01/14/19

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:

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

INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-1994

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

REV	ECN#	DATE
A	3962	01/14/19

LINDSAY TRANSPORTATION SOLUTIONS
180 River Road
Rio Vista, CA 94571
Tel: 888-800-3691
www.barriersystemsinc.com

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

SIZE	DWG NO.	REV.
B	30TM100CC	A

SCALE 1:30 SHEET 1 OF 1

1 OF 2

Project Number

C.N.

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

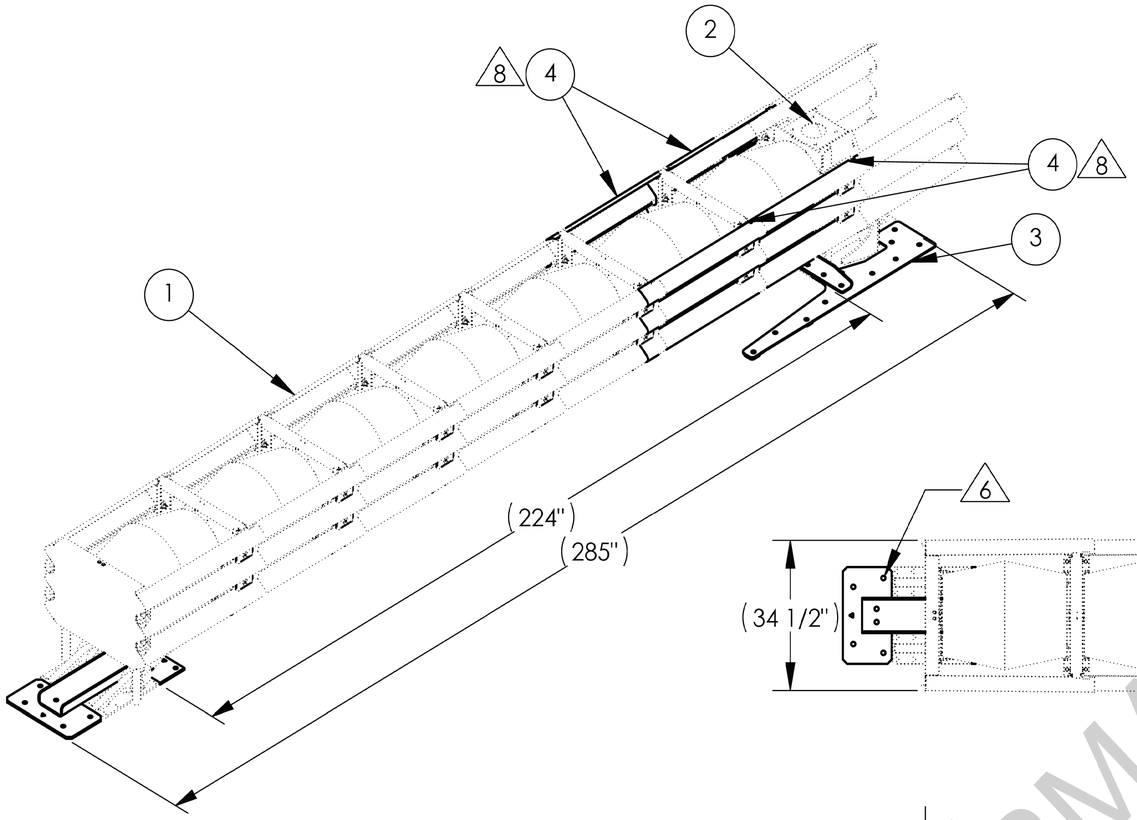
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

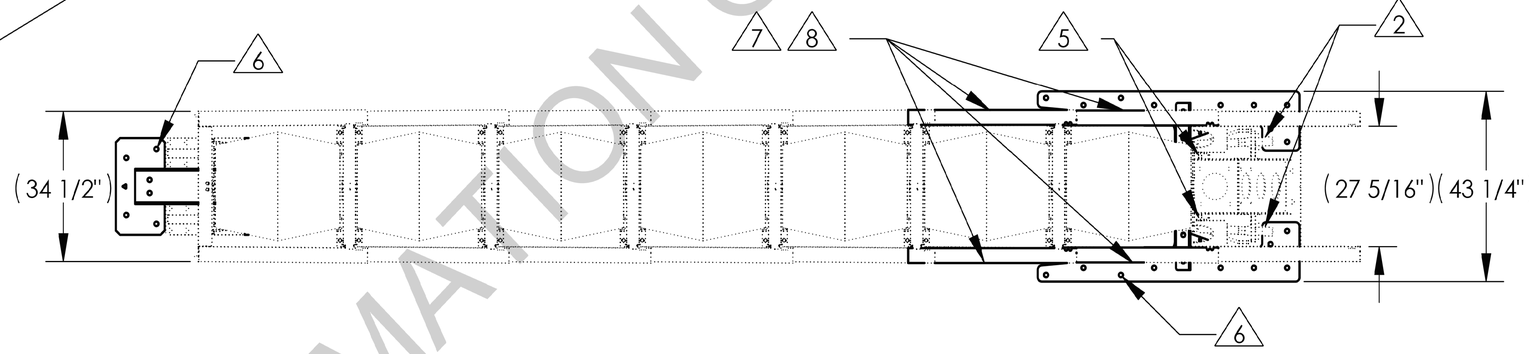
Roadway Design Division

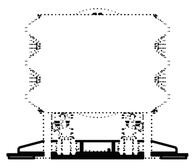
COMPUTER: BG04191M534 DATE: 11-MAY-2023 11:08 FILE: 7753 6 R0.dgn

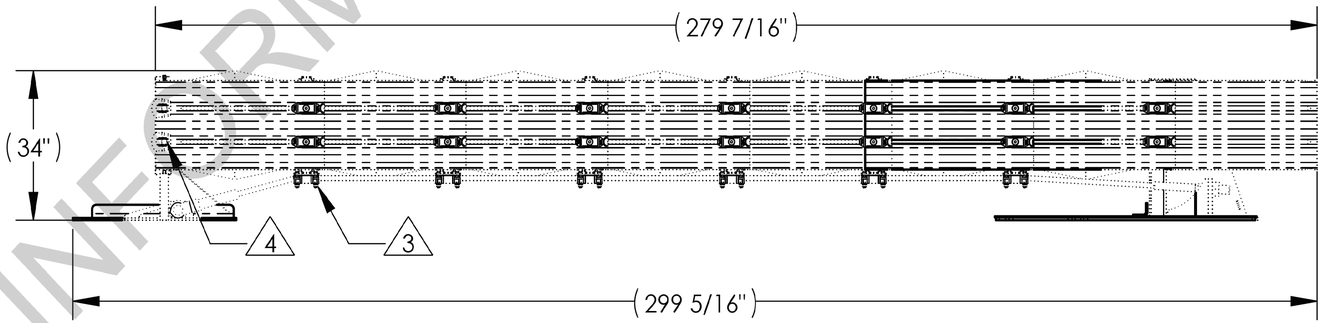
	ITEM	PART NO.	Description	QTY.	UOM
	1	30TM100	30" TAU-M TL-3,SYSTEM COMPONENTS	1	EA
	2	COBM30	COMPACT BACKSTOP, 30", TAU-M	1	EA
	3	ACOBM	ASPHALT ANCHOR PACKAGE, COBM30	1	EA
	4	BSI-1708019-00	SLIDING PANEL, GALVANIZED, TAU-M	4	EA
*	5	BSI-1803016-00	SLIDER SHIM, GEOMET, TAU-M	8	EA

* NOT SHOWN









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.

APPROVALS

DRAWN BY:	JTL
DRAWN DATE:	01/14/19
APPR'D BY:	GAD
APPR'D DATE:	01/14/19

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:
FRACTIONS ±1/16 DECIMAL .XX = ±.03 .XXX = ±.010 ANGLES ±1/2°
INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-1994

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

REV	ECN#	DATE
A	3963	01/14/19

LINDSAY TRANSPORTATION SOLUTIONS
180 River Road
Rio Vista, CA 94571
Tel: 888-800-3691
www.barriersystemsinc.com

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

SIZE	DWG NO.	REV.
B	30TM100CA	A

SCALE 1:35 SHEET 1 OF 1

NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

Roadway Design Division

2 OF 2

Project Number

C.N.

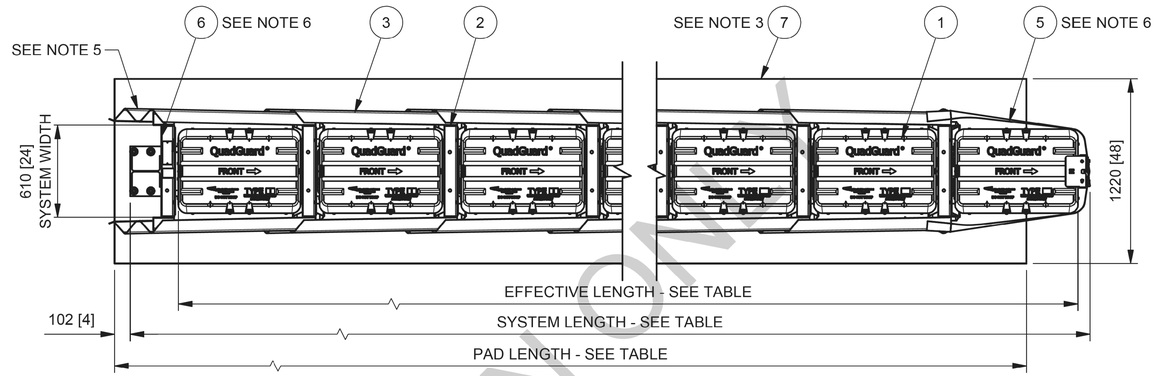
30" TAU-M TL-3, COMPACT BACKSTOP ASPHALT

COMPUTER: BG0419M534
DATE: 11-MAY-2023 11:09
FILE: 7753 6 R0.dgn

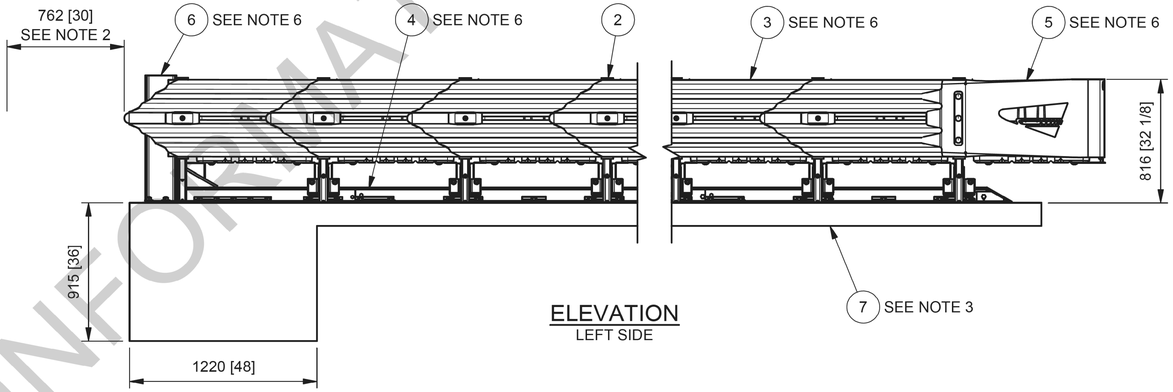
Project Number

C.N.

QUADGUARD M10 SYSTEM W/TENSION STRUT BACKUP



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 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.
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 ABOVE 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 M10 SYSTEM TO THE OBJECT BEING SHIELDED.
6. BACKUP, MONORAIL, AND NOSE ASSEMBLIES ARE NOT INCLUDED IN MODEL NUMBER, ORDER SEPARATELY.
7. 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

1. CARTRIDGE
2. DIAPHRAGM
3. FENDER PANEL
4. MONORAIL
5. NOSE
6. BACKUP
7. CONCRETE PAD

REFERENCES

SERIAL NO. _____
SALES ORDER _____
EH PROJECT _____
DESIGN SPEED SEE TABLE
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

DRAWN: D. Standridge | DATE: 4/21/2010
CHECKED: ST | DATE: 6/27/2010
MODEL: SEE TABLE
TRAFFIC DIRECTION: UNIDIRECTIONAL
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND QMS-SE-003 UNLESS OTHERWISE SPECIFIED.
DO NOT SCALE DRAWING

REVISION DESCRIPTION	ECO	DATE	REV	BY	CHK
ADDED MODEL PARTS NOS TO TABLE 3, BAY LENGTH WAS 3.96, 6 BAY LENGTH WAS 6.71	7121	4/9/20	J	DK	BRE
DIAPHRAGM ASSY WAS 625650, FENDER PANEL ASSY WAS 608236, UPDATED NOTES	7573	4/21/21	K	JMS	RCB
UPDATED NOTE DIMS TO XX mm [X"] FORMAT, UPDATED BORDER AND LOGO	8146	9/15/22	L	JMS	RCB

QUADGUARD® M10 SYSTEM
W/ TENSION STRUT BACKUP

VALTIR

DRAWING: QGMTSCVR-U | REV: L | SHEET: 1 of 1

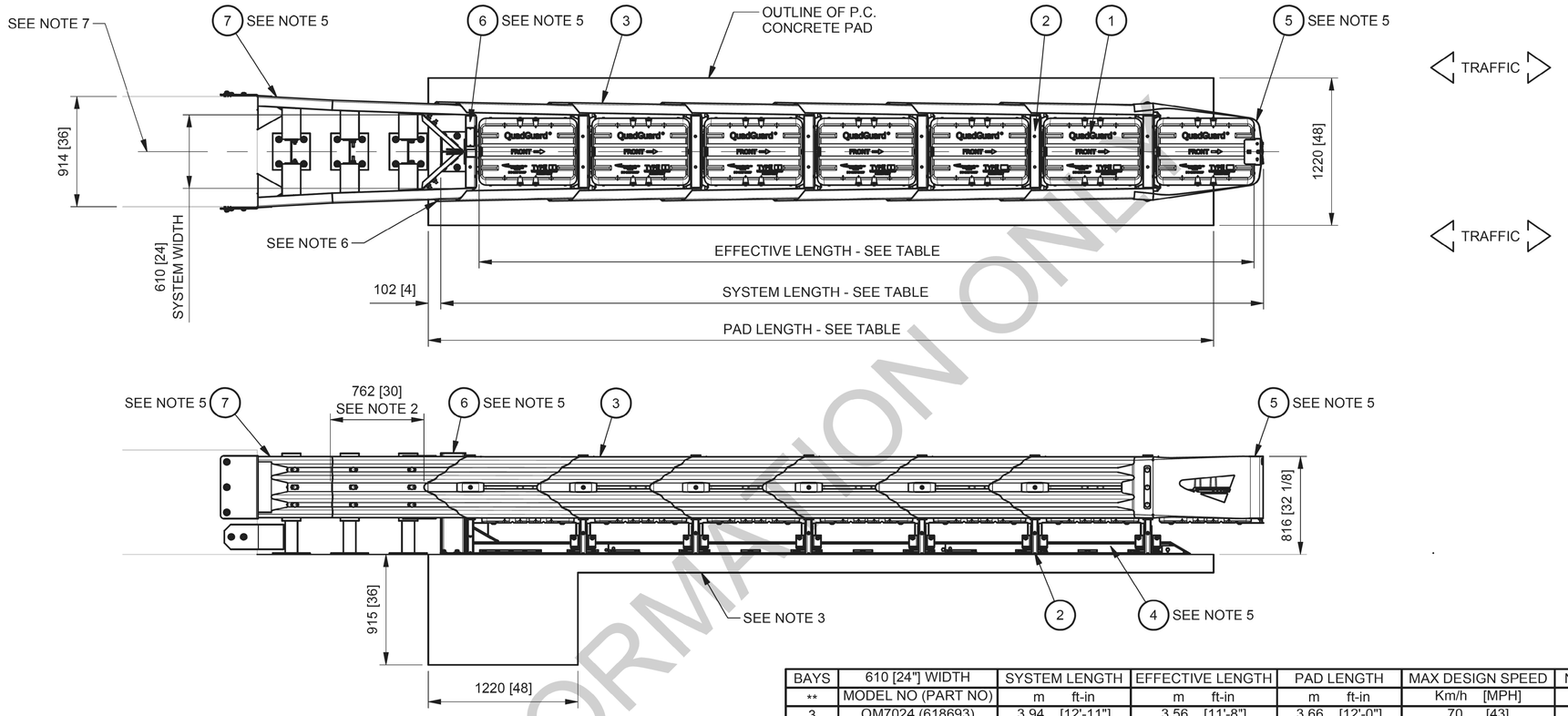
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

Roadway Design Division

Project Number

C.N.

QUADGUARD M10 SYSTEM W/TENSION STRUT BACKUP



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

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.
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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 SEE TABLE
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

DRAWN: M. Leschinsky DATE: 6/7/2022
CHECKED: DATE:
MODEL: SEE TABLE
TRAFFIC DIRECTION: BIDIRECTIONAL
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND QMS-SE-003 UNLESS OTHERWISE SPECIFIED.
DO NOT SCALE DRAWING

REVISION DESCRIPTION	ECO	DATE	REV	BY	CHK
INITIAL RELEASE	8096	-	-	-	-

QUADGUARD® M10 SYSTEM
W/ TENSION STRUT BACKUP AND
36" WIDENING VERTICAL WALL TRANSITION

VALTIR

DRAWING: QGMTSCVR-T36VB REV: - SHEET: 1 of 1

NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

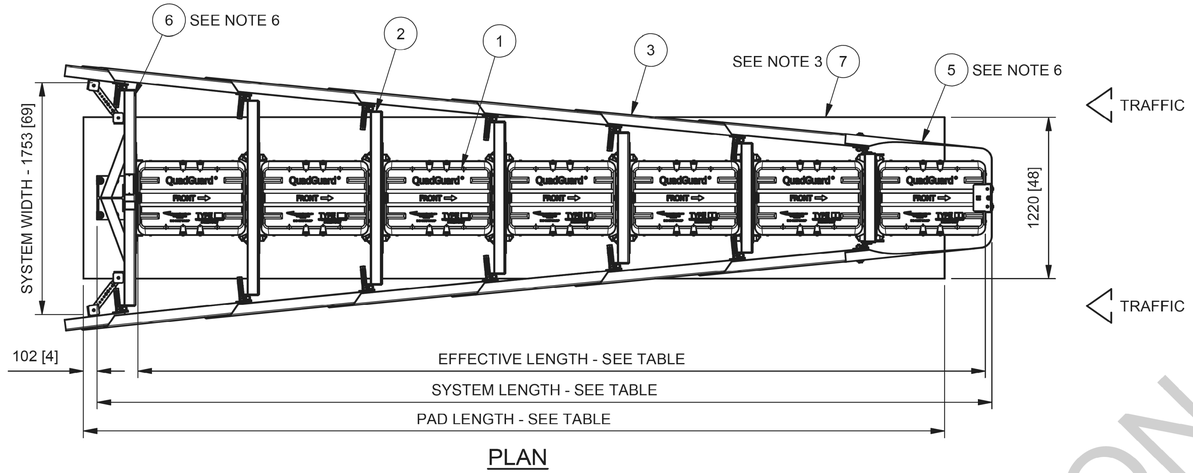
Roadway Design Division

COMPUTER: BG04194534
DATE: 11-MAY-2023 15:41
FILE: 7754 6 R1.dgn

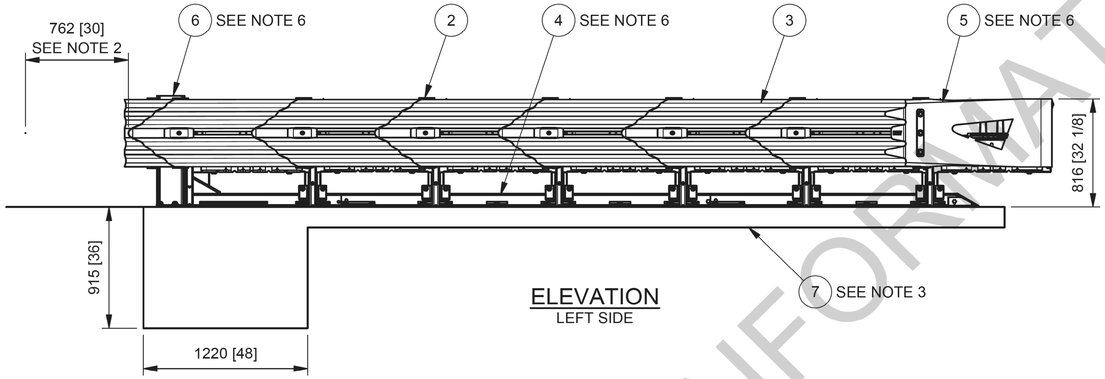
Project Number

C.N.

QUADGUARD M10 SYSTEM W/TENSION STRUT BACKUP



PLAN



ELEVATION
LEFT SIDE

BAYS	1753 [69"] WIDTH	SYSTEM LENGTH		EFFECTIVE LENGTH		PAD LENGTH		MAX DESIGN SPEED		NO. OF CARTRIDGES	
	MODEL #	m	ft-in	m	ft-in	m	ft-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

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.

KEY

1. CARTRIDGE
2. DIAPHRAGM
3. FENDER PANEL
4. MONORAIL
5. NOSE ASSEMBLY
6. BACKUP
7. CONCRETE PAD

REFERENCES

SERIAL NO. _____
SALES ORDER _____
EH PROJECT _____
DESIGN SPEED SEE TABLE
NOSE TYPE _____
NO. OF UNITS _____

DIAPHRAGM ASSY	627534
DIAPHRAGM SHIM KIT	627518
NOSE ASSY	627522
FENDER PANEL ASSY	627753
BACKUP ASSY	627528
MONORAIL ASSY	625637
CONCRETE PAD	618686

DRAWN: D. Standridge	DATE: 4/21/2010	MODEL: SEE TABLE			
CHECKED: ST	DATE: 6/28/2010	TRAFFIC DIRECTION: UNIDIRECTIONAL			
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND QMS-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING			
REVISION DESCRIPTION		ECO	DATE	REV	BY	CHK
CHG: NOTES 4 & 7		7285	7/9/20	H	DPH	RCB
FENDER PANEL REF WAS 608241, CHANGE NOTE 5		7587	2/12/21	I	DK	BRE
UPDATED TO NEW LOGO AND BORDER,UPDATED DIMS, IN NOTES, UPDATED NOTE 5		8149	7/28/22	J	JMS	RCB

QUADGUARD® M WIDE SYSTEM
W/ TENSION STRUT BACKUP

VALTIR

DRAWING: QFMTSCVR-U REV: J SHEET: 1 of 1

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Roadway Design Division

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FILE: 7754 6 R1.dgn

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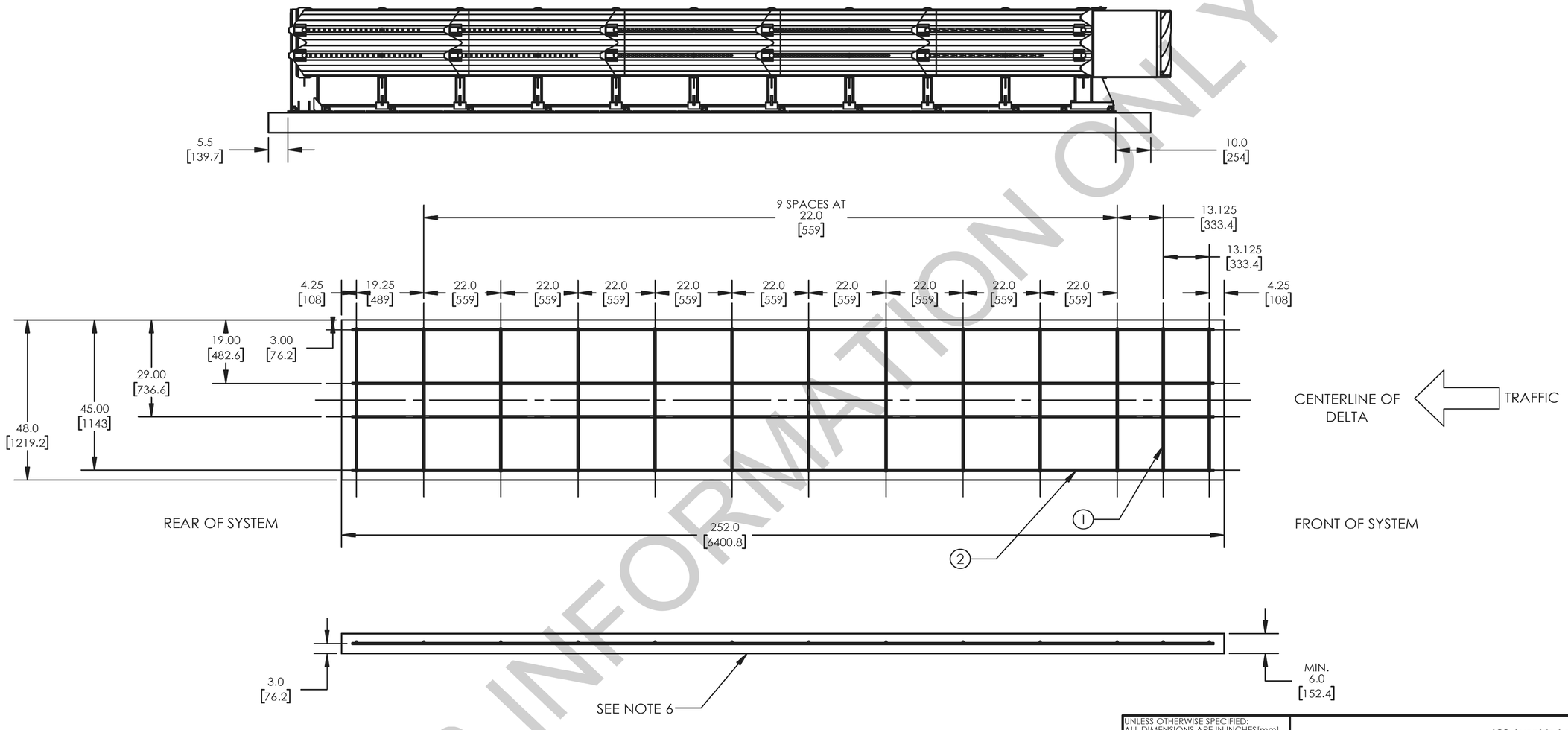
Item No.	Length	QTY.
1	43 in. (1092 mm)	13
2	246 in. (6248 mm)	4



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 Equivant
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°

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San Clemente, CA 92673
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FAX (949) 361-9205
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TITLE:

Delta Rebar Foundation Detail

DRAWN BY: Robby Ramirez	DATE: 02/11/21	
CHECKED BY: GM	DATE: 02/11/21	
APPROVED BY: GM	DATE: 02/11/21	

SIZE	DRAWING NO.	REV
B	1105	A1

SHEET 1 OF 1

TRAFFIX DELTA CRASH CUSHION

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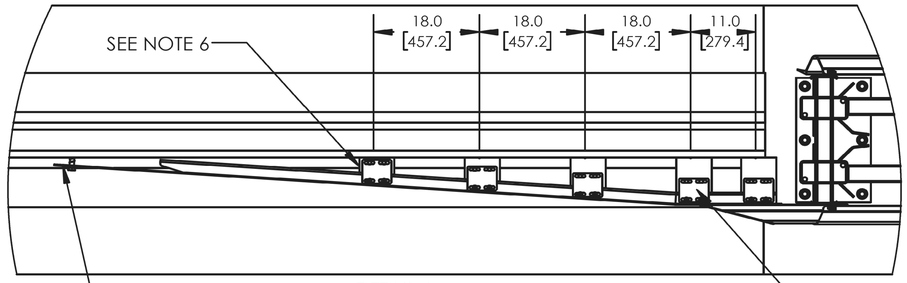
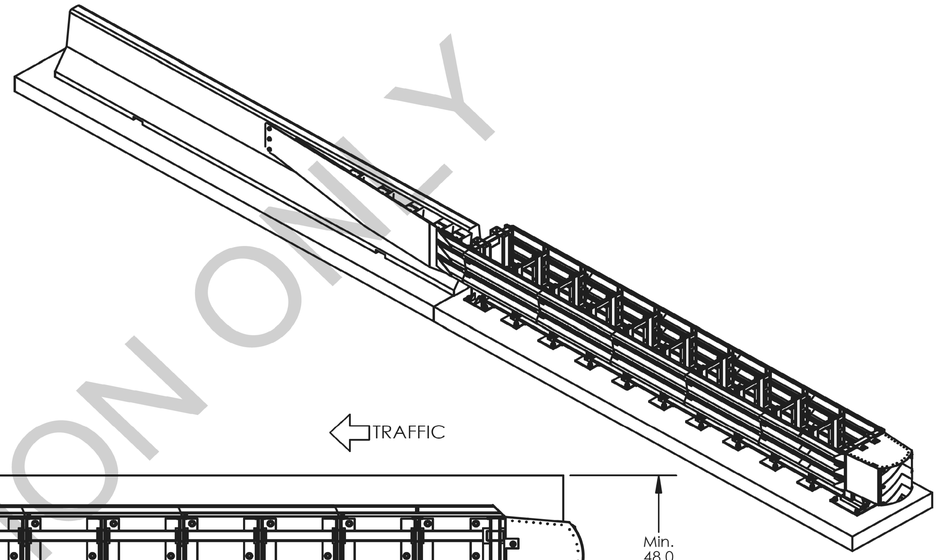
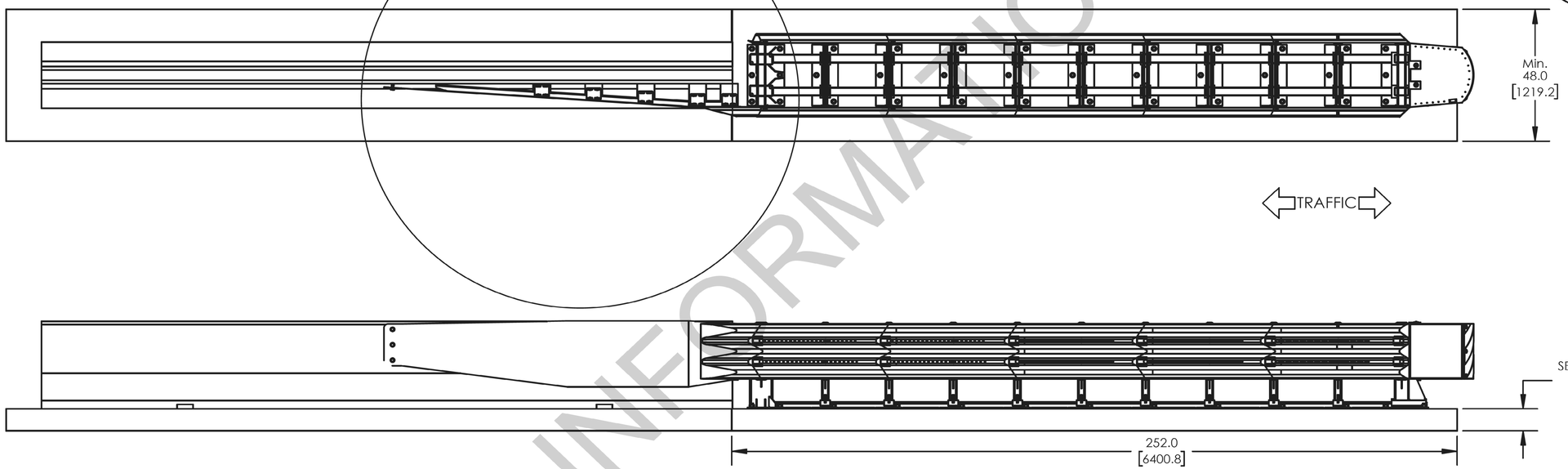


DETAIL A
SCALE 1 : 24

TORQUE ANCHOR BOLTS TO FORM TRASITION TO BARRIER PROFILE

BLOCKOUTS TO BE FIELD TRIMMED





6. ONCE GAP BETWEEN THE TRANASITION 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 OBSTRUCTION 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 [28 MPA] IN 28 DAYS.
1. UNITS: INCHES [mm]
NOTES: UNLESS OTHERWISE SPECIFIED

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

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TITLE:
Delta Transition to Safety Shape

DRAWN BY: Robby Ramirez	DATE: 02/15/21	SIZE B	DRAWING NO. 1106
CHECKED BY: GM	DATE: 02/15/21		REV A1
APPROVED BY: GM	DATE: 02/15/21		SHEET 1 OF 1

TRAFFIX DELTA CRASH CUSHION

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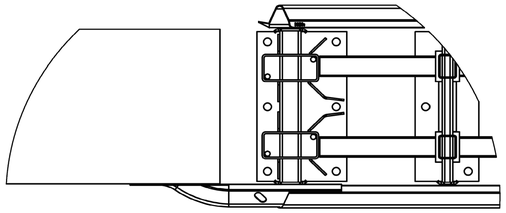
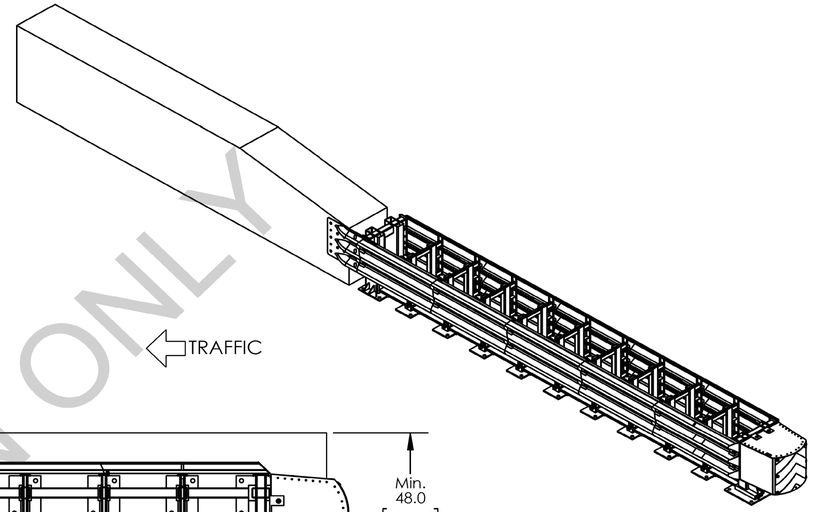
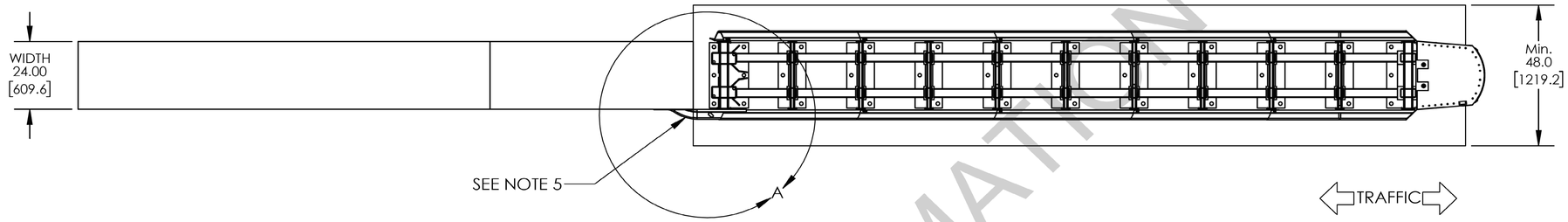
Project Number

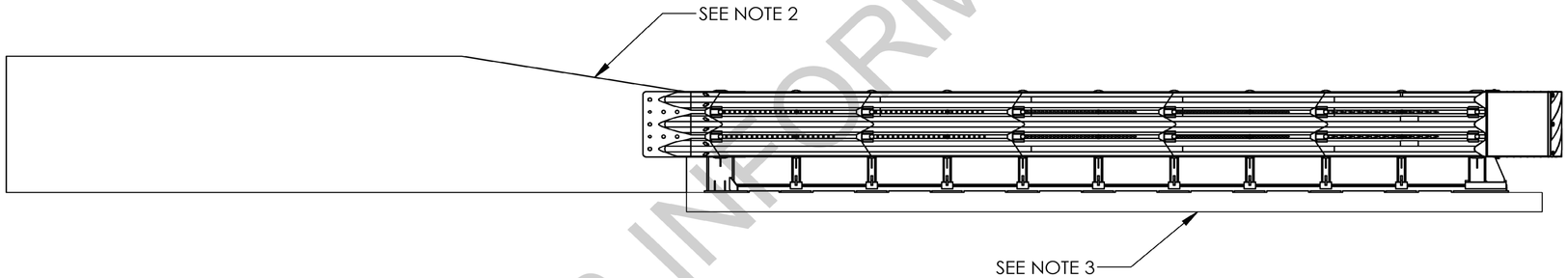
C.N.



DETAIL A
SCALE 1 : 20







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 Recommened That The Barrier Be Trimmed at a 6:1 Ratio If The Barrier Height Exceedes 32 in. (812 mm)
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°

DRAWN BY: Robby Ramirez	DATE: 02/15/21
CHECKED BY: GM	DATE: 02/15/21
APPROVED BY: GM	DATE: 02/15/21

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

TITLE:
Delta Bridge Shoe Transition

SIZE	DRAWING NO.	REV
B	1107	A1

SHEET 1 OF 1

TRAFFIX DELTA CRASH CUSHION

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Roadway Design Division

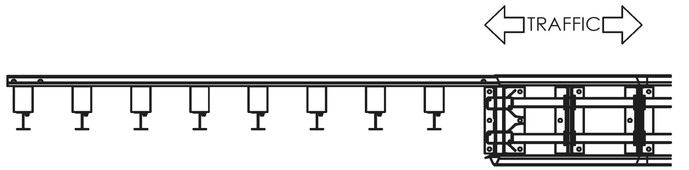
COMPUTER: BG04191M534
DATE: 11-MAY-2023 11:21
FILE: 7755 6 R0.dgn

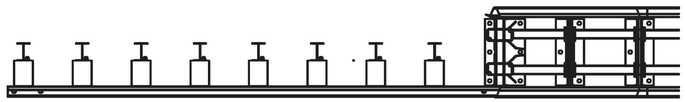
Project Number

C.N.

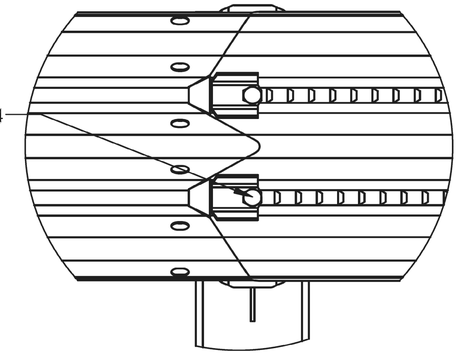
TRAFFIX DELTA CRASH CUSHION

APPROVED THRIE BEAM TRANSITION TO RIGID BARRIER

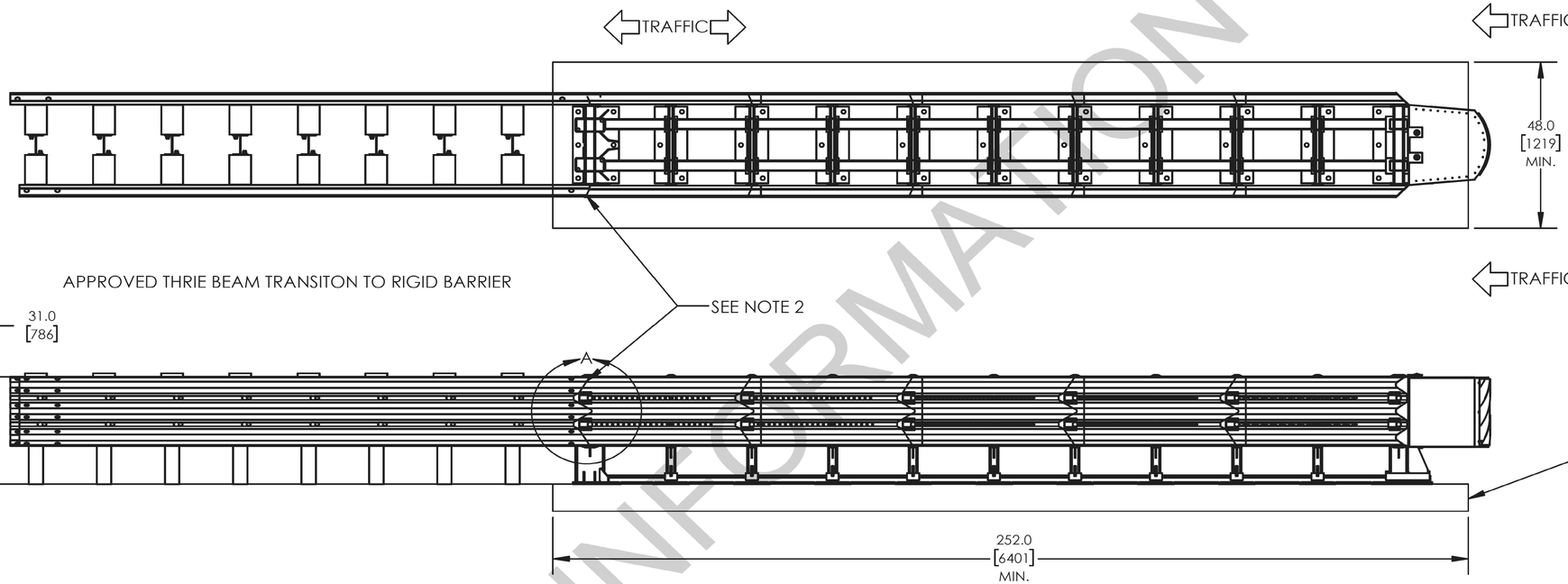




ALTERNATE CONFIGURATIONS



DETAIL A
SCALE 1 : 10



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/X ± 1/16" [1.6mm]
DECIMAL: X.X ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

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(949) 361-5663
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TITLE:
Delta Thrie Beam Transition

DRAWN BY: Robby Ramirez	DATE: 02/10/23	SIZE B	DRAWING NO. 1108	REV A
CHECKED BY: FA	DATE: 02/10/23			
APPROVED BY: FA	DATE: 02/10/23			SHEET 1 OF 1

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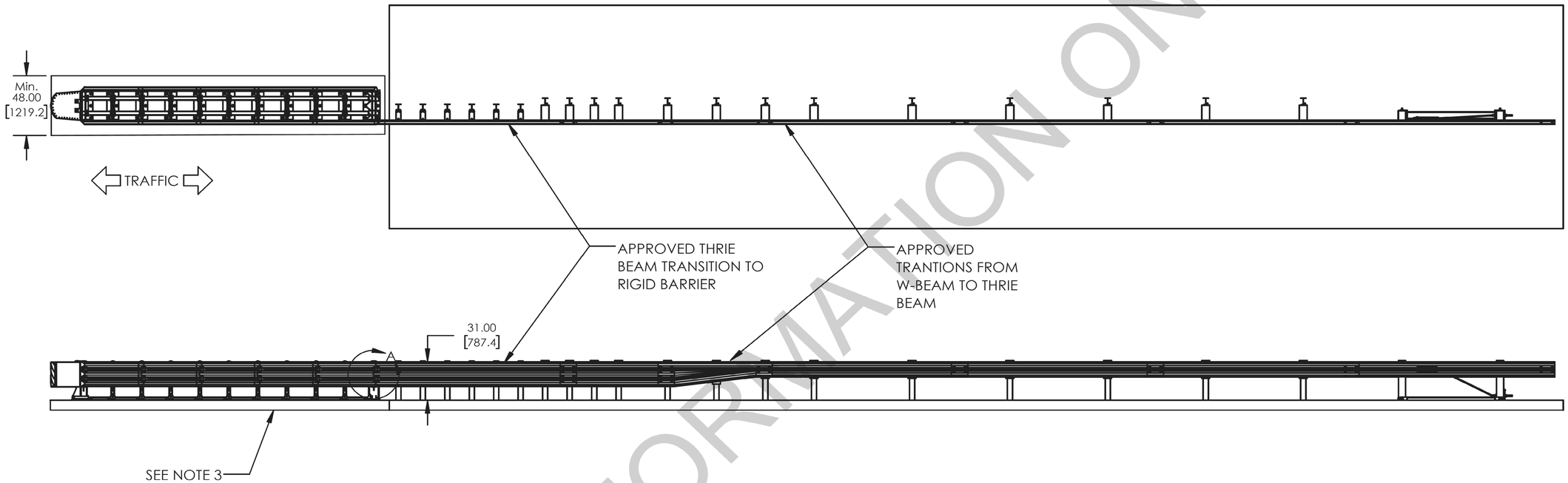
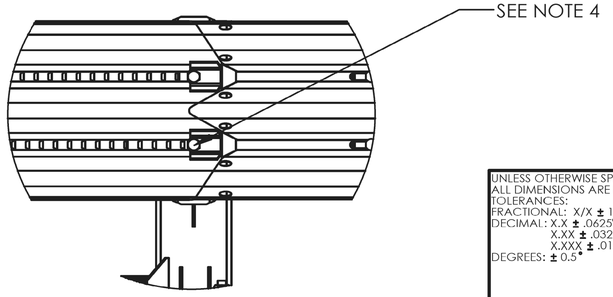
Roadway Design Division

COMPUTER: BG0419M534
DATE: 11-MAY-2023 11:21
FILE: 7755 6 R0.dgn

Project Number

C.N.





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/X ± 1/16" [1.6mm]
DECIMAL: X.X ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

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TITLE:
Delta Transition to W-Beam

DRAWN BY: Robby Ramirez	DATE: 02/16/21	SIZE B	DRAWING NO. 1109
CHECKED BY: GM	DATE: 02/16/21		REV A
APPROVED BY: GM	DATE: 02/16/21		SHEET 1 OF 1

TRAFFIX DELTA CRASH CUSHION

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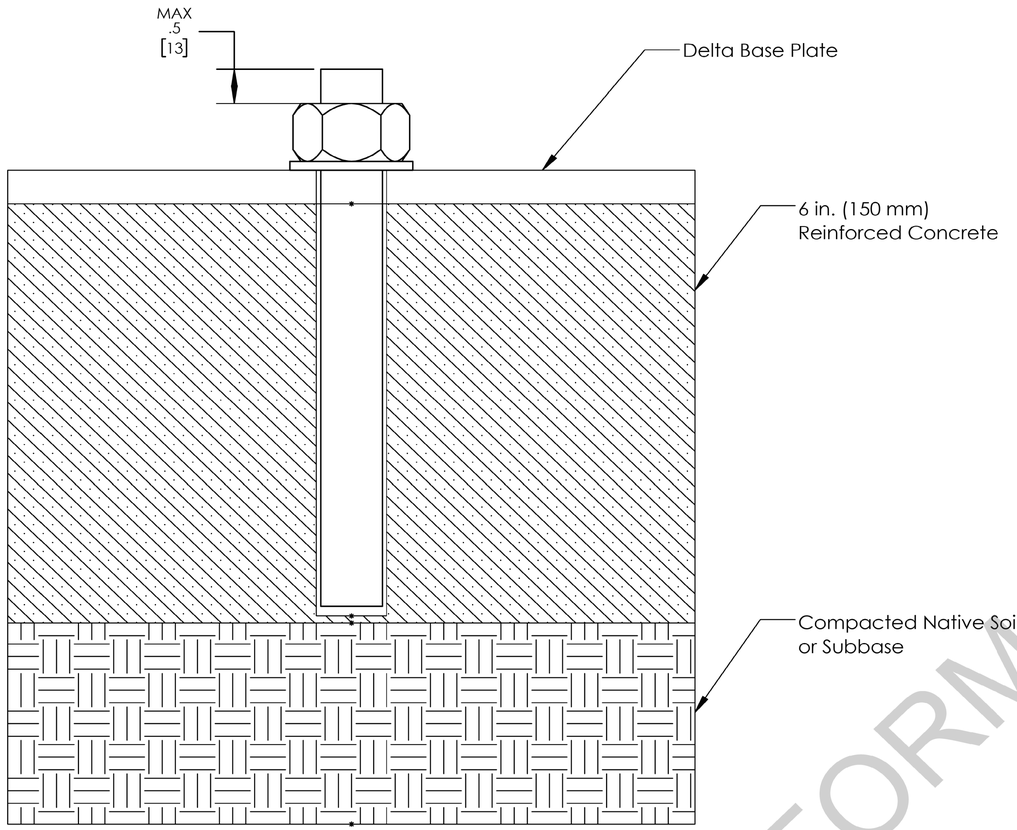
COMPUTER: BG0419M534
DATE: 11-MAY-2023 11:21
FILE: 7755 6 R0.dgn

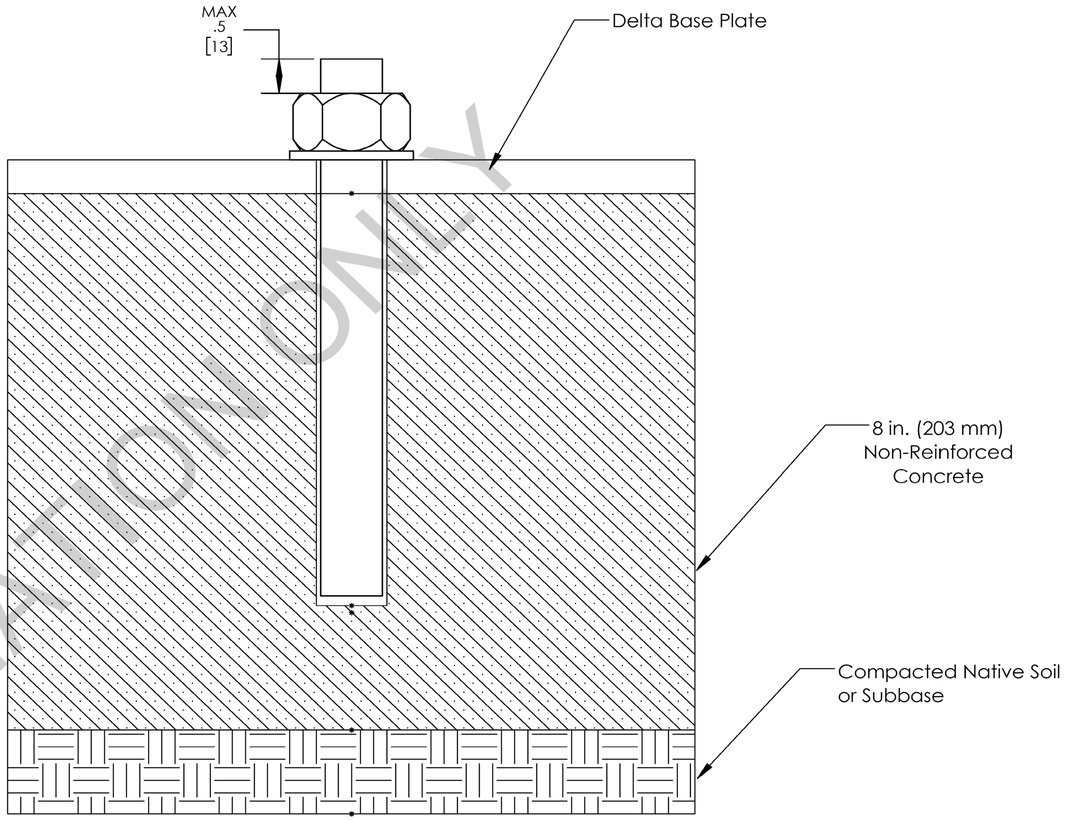
Project Number

C.N.

TRAFFIX DELTA CRASH CUSHION



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: X/X ± 1/16" [1.6mm]
DECIMAL: X.X ± .0625"
X.XX ± .032"
X.XXX ± .015"
DEGREES: ± 0.5°

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TITLE:

Delta Foundation Examples

DRAWN BY: Robby Ramirez	DATE: 03/16/21		
CHECKED BY: GM	DATE: 03/16/21	SIZE B	DRAWING NO. 1110
APPROVED BY: GM	DATE: 03/16/21		REV A1
			SHEET 1 OF 2

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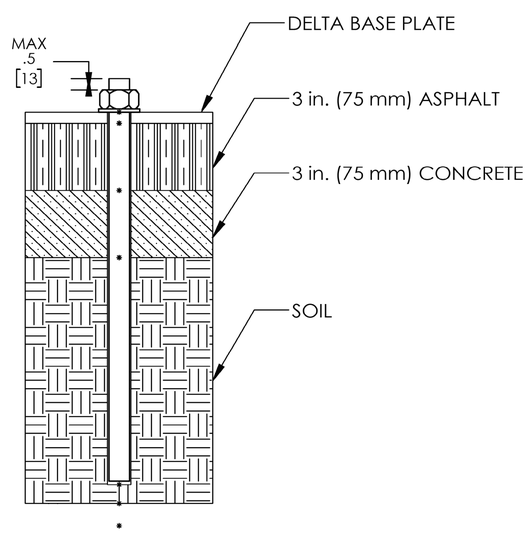
COMPUTER: BG0419M534

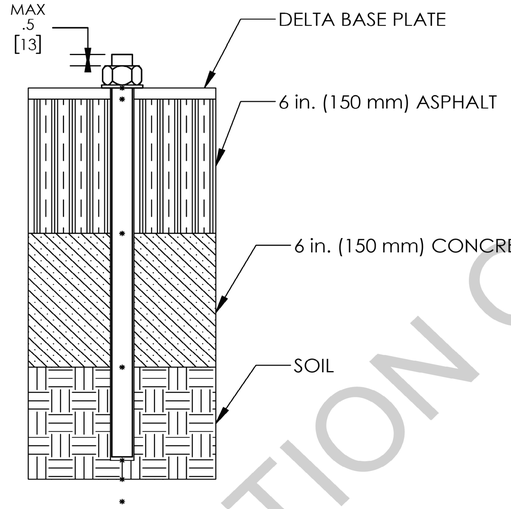
DATE: 11-MAY-2023 11:22

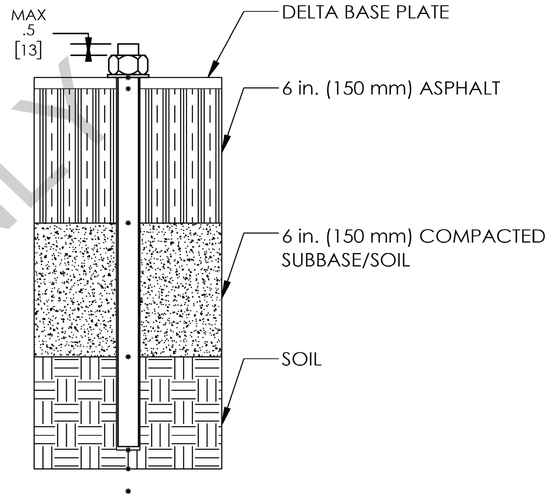
FILE: 7755 6 R0.dgn

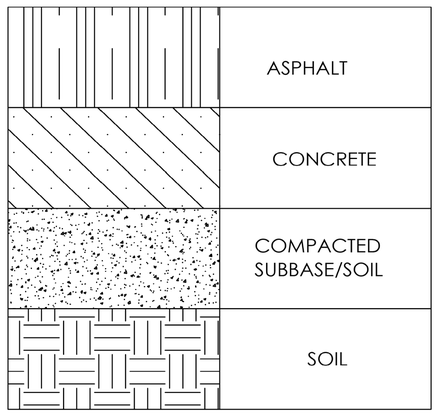
Project Number

C.N.









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 (28 MPa) in 28 Days.
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°

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TITLE:

Delta Foundation Examples

DRAWN BY: Robby Ramirez	DATE: 03/16/21	SIZE B	DRAWING NO. 1110	REV A1
CHECKED BY: GM	DATE: 03/16/21			
APPROVED BY: GM	DATE: 03/16/21			SHEET 2 OF 2

TRAFFIX DELTA CRASH CUSHION

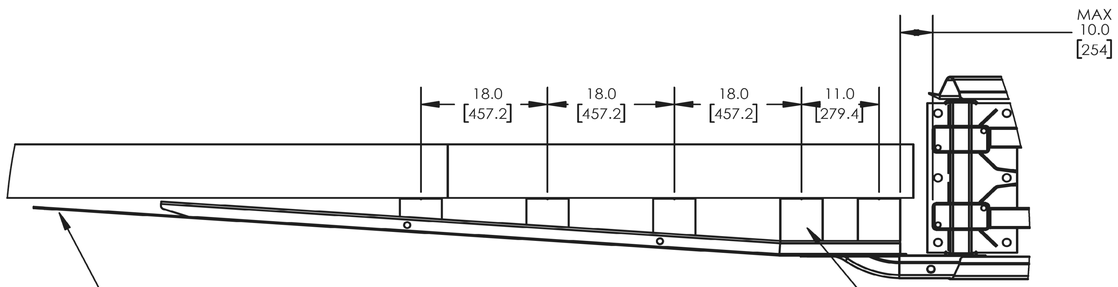
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

Roadway Design Division

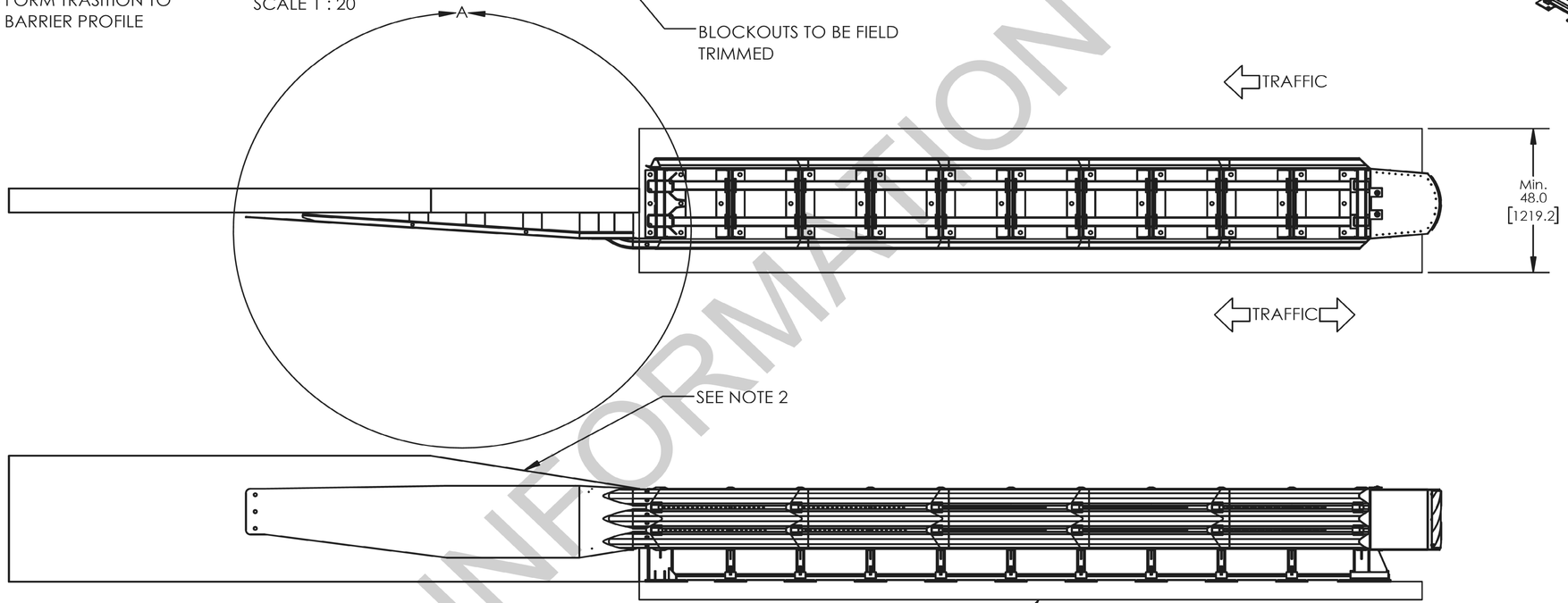
COMPUTER: BG0419M534
DATE: 11-MAY-2023 11:22
FILE: 7755 6 R0.dgn

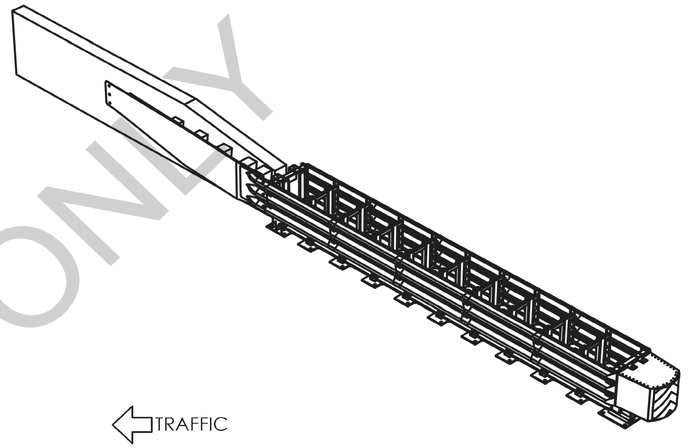
Project Number

C.N.



DETAIL A
SCALE 1 : 20





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 Recommened That The Barrier Be Trimmed at a 6:1 Ratio If The Barrier Height Exceedes 32 in. (812 mm)
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°

DRAWN BY: Robby Ramirez	DATE: 02/15/21
CHECKED BY: GM	DATE: 02/15/21
APPROVED BY: GM	DATE: 02/15/21

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

SIZE	DRAWING NO.	REV
B	1111	A

SHEET 1 OF 1

TRAFFIX DELTA CRASH CUSHION

NEBRASKA
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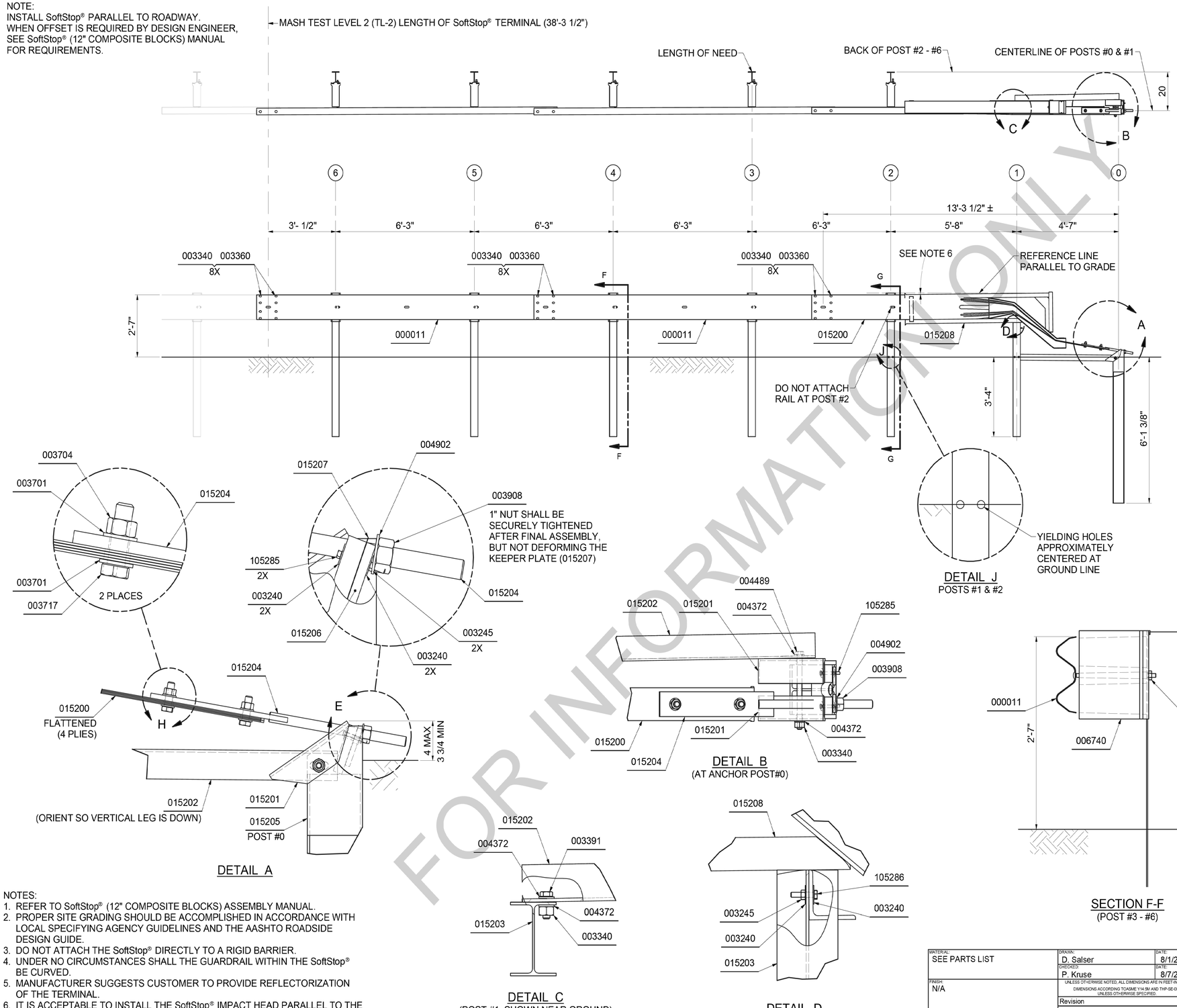
DEPARTMENT OF TRANSPORTATION

Roadway Design Division

COMPUTER: BG0419M534
DATE: 11-MAY-2023 11:22
FILE: 7755 6 R0.dgn

NOTE:
INSTALL SoftStop® PARALLEL TO ROADWAY.
WHEN OFFSET IS REQUIRED BY DESIGN ENGINEER, SEE SoftStop® (12" COMPOSITE BLOCKS) MANUAL FOR REQUIREMENTS.



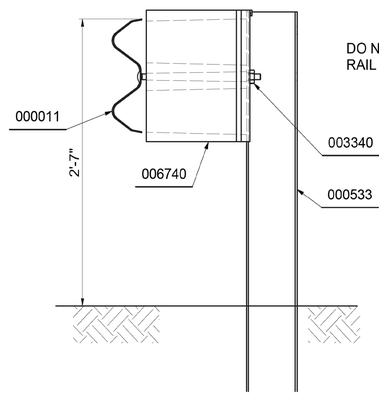
DETAIL A

DETAIL B
(AT ANCHOR POST#0)

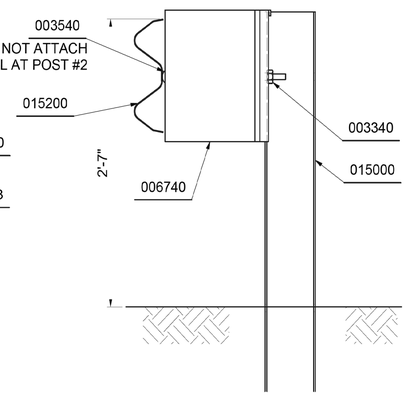
DETAIL C
(POST #1, SHOWN NEAR GROUND)

DETAIL D
(POST #1)

DETAIL J
POSTS #1 & #2



SECTION F-F
(POST #3 - #6)



SECTION G-G
(POST #2)

PARTS LIST		
PART NO.	QTY.	DESCRIPTION
000011	2	12/12'6/3'1.5/S
000533	4	6'-0" POST / W6 x 8.5#
006740	5	COMPOSITE BLOCK 12X6X14
015000	1	6'0 SYT PST/8.5/31" GR HT
015200	1	SFST-ANCHOR G.RAIL 12'-6"
015202	1	SFST-ANGLE STRUT
015203	1	SFST-POST#1 SYTP
015204	1	SFST-ANCHOR PADDLE
015205	1	SFST-POST#0
015208	1	STSP IMPACT HEAD
		HARDWARE KIT 626787
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 NUT A563 DH
003717	2	3/4"X2.5" HEX BOLT A325
003908	1	1" HVY HEX NUT A563 DH
004372	4	5/8" WASHER F436
004489	1	5/8"X9" HEX BOLT A325
004902	1	1" ROUND WASHER F436
105285	2	5/16" X 2.5" HEX BOLT GRD 5
105286	1	5/16" X 1.5" HEX BOLT GRD 5
015201	2	SFST-ANCHOR ANGLE
015206	1	SFST-PLATE WASHER
015207	1	SFST-KEEPER PLATE

NOTES:
1. REFER TO SoftStop® (12" COMPOSITE BLOCKS) ASSEMBLY MANUAL.
2. PROPER SITE GRADING SHOULD BE ACCOMPLISHED IN ACCORDANCE WITH LOCAL SPECIFYING AGENCY GUIDELINES AND THE AASHTO ROADSIDE DESIGN GUIDE.
3. DO NOT ATTACH THE SoftStop® DIRECTLY TO A RIGID BARRIER.
4. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop® BE CURVED.
5. MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF THE TERMINAL.
6. IT IS ACCEPTABLE TO INSTALL THE SoftStop® IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT. SEE SoftStop® ASSEMBLY MANUAL FOR SPECIFIC DETAILS.

MATERIAL: SEE PARTS LIST	DRAWN: D. Salser	DATE: 8/1/2019	TOLERANCES PER THP-SF-001, UNLESS OTHERWISE SPECIFIED.					SoftStop® TERMINAL, (12" BLOCKS) PLAN, ELEVATION & SECTION MASH TEST LEVEL 2 (TL-2) P/N: 500773
FINISH: N/A	CHECKED: P. Kruse	DATE: 8/7/2019	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN FEET-INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M AND THP-SE-033 UNLESS OTHERWISE SPECIFIED.					
			DO NOT SCALE DRAWING					
	Revision		ECO	Date	Rev	By	Chk.	
	INITIAL RELEASE		6841	8/1/19	-	DDS	/	
EST UNFINISHED WT: 0.0 lbs								DRAWING: SS 773 REV: - SHEET: 1 of 1

TRINITY HIGHWAY

1 OF 1

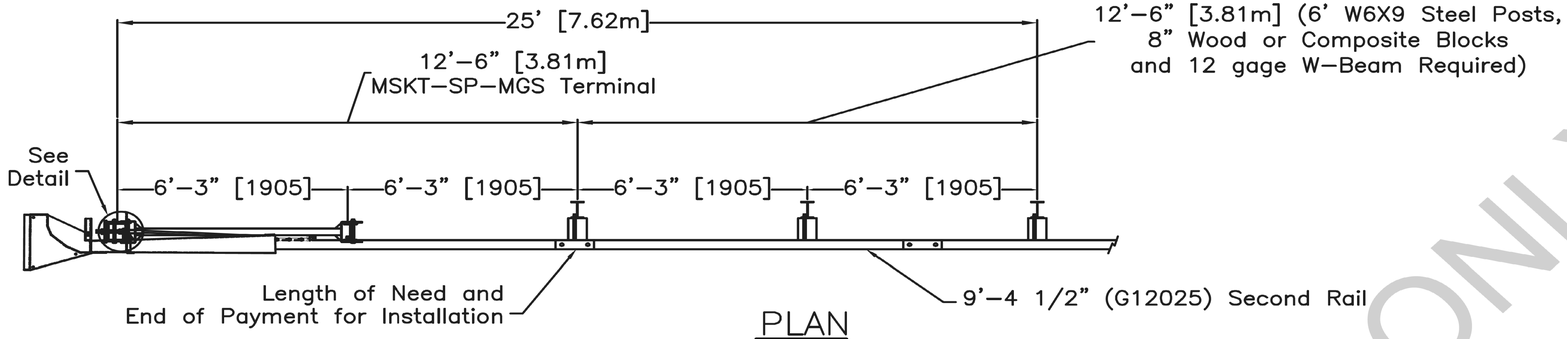
Project Number

C.N.

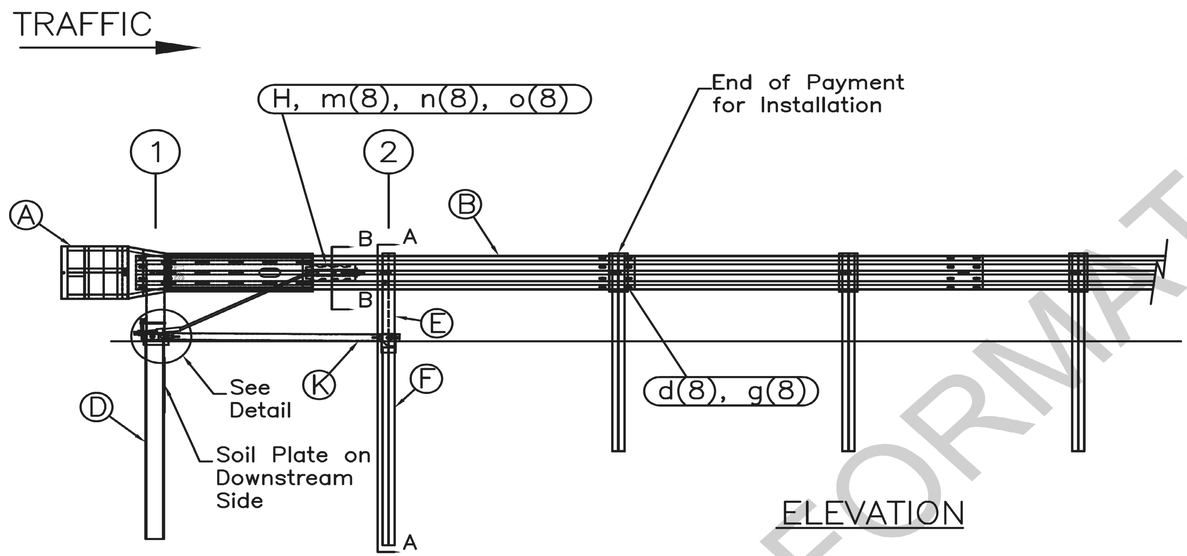
SOFTSTOP SYSTEM - TL-2

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

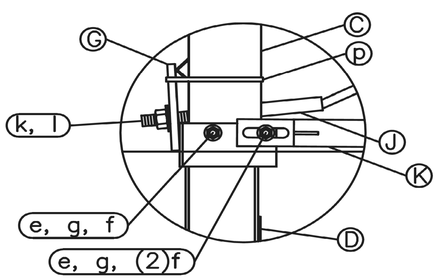
Roadway Design Division



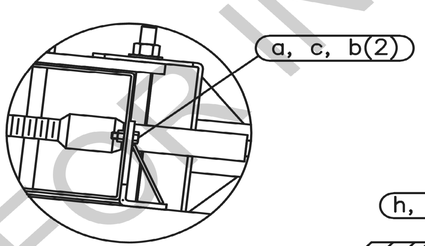
PLAN



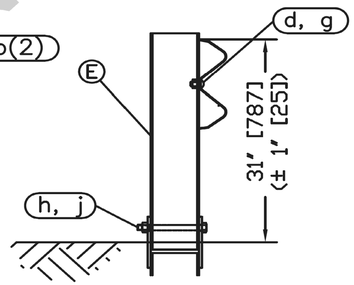
ELEVATION



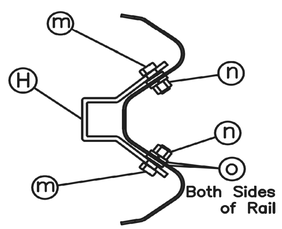
Post #1 Connection Detail



Impact Head Connection Detail



SECTION A–A
Post #2



SECTION B–B
Anchor Bracket

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 (6X6X⅛" 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 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

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.

RSI Road Systems, Inc.
Big Spring, TX
Phone: 432–263–2435
or Phone: 330–346–0721

MSKT-SP-MGS Terminal Test Level 2

Sheet: 1
Date: 07/30/16
By: JRR
Drawing Name: MSKT-SP-MGS-TL2
Scale: None
Rev: 0

1 OF 1
Project Number
C.N.

MSKT-SP-MGS TERMINAL TEST LEVEL 2

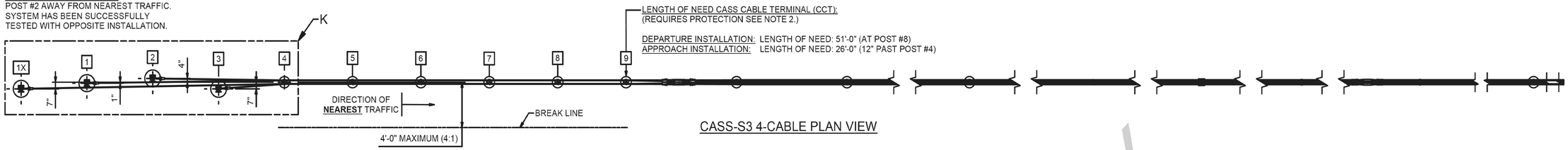
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION
Roadway Design Division

COMPUTER: BG0419M534
DATE: 12-MAY-2023 08:40
FILE: 7773 6 R1.dgn

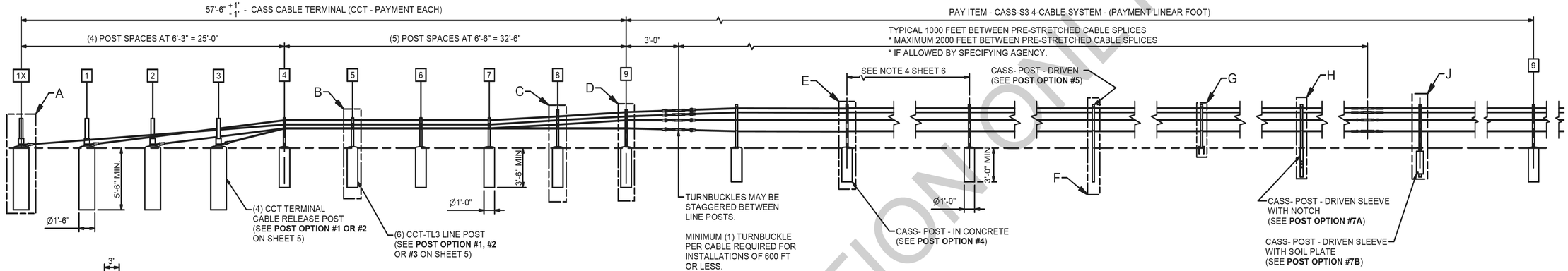
PREFERRED INSTALLATION: LOCATE POST #2 AWAY FROM NEAREST TRAFFIC. SYSTEM HAS BEEN SUCCESSFULLY TESTED WITH OPPOSITE INSTALLATION.

LENGTH OF NEED CASS CABLE TERMINAL (CCT):
(REQUIRES PROTECTION SEE NOTE 2.)

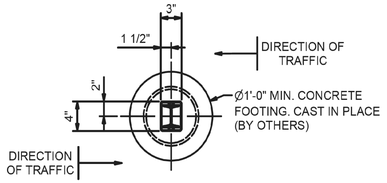
DEPARTURE INSTALLATION: LENGTH OF NEED: 51'-0" (AT POST #8)
APPROACH INSTALLATION: LENGTH OF NEED: 26'-0" (12" PAST POST #4)



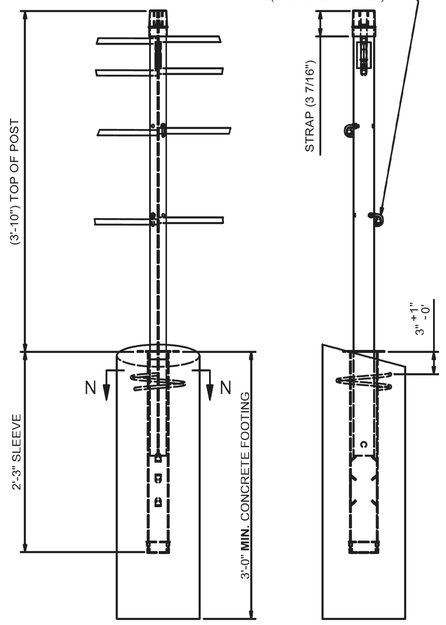
CASS-S3 4-CABLE PLAN VIEW



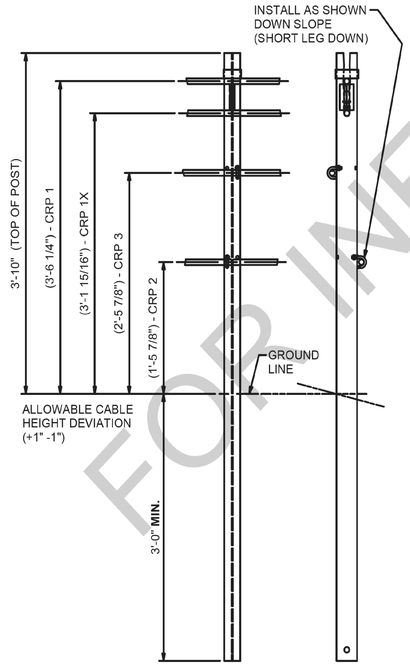
CASS-S3 4-CABLE ELEVATION VIEW
(TYPICAL LAY-OUT)



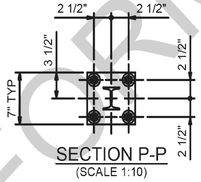
SECTION N-N
(SCALE 1:10)



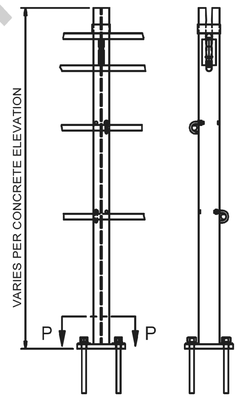
DETAIL E
(CASS POST IN CONCRETE)
(**POST OPTION #4** SHOWN)



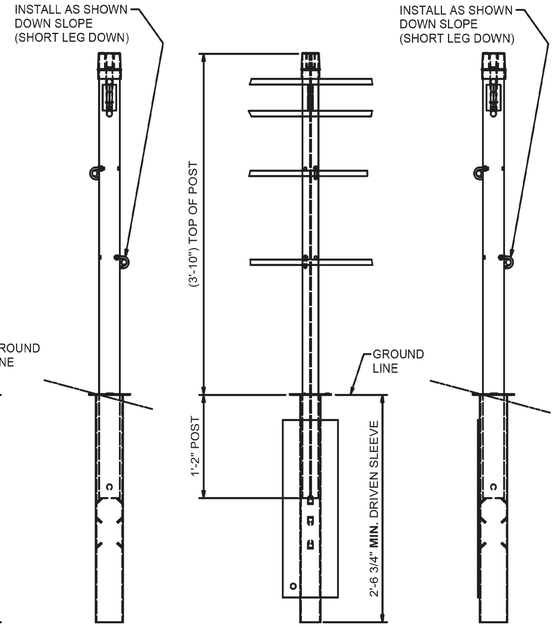
DETAIL F
(CASS POST - DRIVEN)
(**POST OPTION #5** SHOWN)



SECTION P-P
(SCALE 1:10)



DETAIL G
(CASS POST - BASE-PLATED)
(**POST OPTION #6** SHOWN)



DETAIL H
(CASS POST - DRIVEN SLEEVE)
(**POST OPTION #7A** SHOWN)

DETAIL J
(CASS POST DRIVEN SLEEVE - SOIL PLATE)
(**POST OPTION #7B** SHOWN)

OPTION	POST OPTIONS
1	TERMINAL POST 1 - 9 - IN CONCRETE
2	TERMINAL POST 1 - 9 - DRIVEN W/ SOIL PLATE
3	TERMINAL POST 4 - 9 - IN DRIVEN SLEEVE
4	SYSTEM POST - IN CONCRETE
5	SYSTEM POST - DRIVEN
6	SYSTEM POST - BASE-PLATED
7	SYSTEM POST - IN DRIVEN SLEEVE
	7A - DRIVEN SLEEVE - WITH NOTCH
	7B - DRIVEN SLEEVE - WITH SOIL PLATE

DRAWN: E. Sikkema	DATE: 1/25/2010	MODEL:			
CHECKED: G. Neece	DATE: 1/25/2010	TRAFFIC DIRECTION:			
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND QMS-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING			
REVISION DESCRIPTION	ECO	DATE	REV	BY	CHK
SH 1 NOTES: ADDED MASH APPROVED INFO. REV. B & C SKIPPED DUE TO VAULT MIGRATION	6849	11/19/19	D	EAS	BRE
FIXED TYPO'S SHEET 1 & 4 OF 5	7130	4/21/20	E	EAS	KWL
CHANGES PER ECO, ADDED SHEET 6 & UPDATED TITLE.	7649	2/22/23	F	EAS	RMV

CASS S3 4:1
OR FLATTER SLOPES

4-CABLE GUARDRAIL
SAFETY SYSTEM

DRAWING: SS 742 REV: F SHEET: 1 of 6

VALTIR

1 OF 3
Project Number
C.N.

CASS S3 4:1 4-CABLE GUARDRAIL SAFETY SYSTEM

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

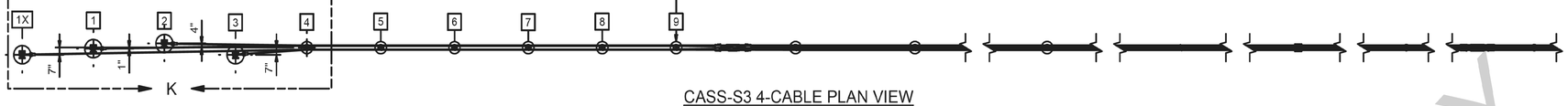
Roadway Design Division

COMPUTER: BG0419M534
DATE: 11-MAY-2023 09:42
FILE: 7780 6 R1.dgn

PREFERRED INSTALLATION: LOCATE POST #2 AWAY FROM NEAREST TRAFFIC. SYSTEM HAS BEEN SUCCESSFULLY TESTED WITH OPPOSITE INSTALLATION.

LENGTH OF NEED CASS CABLE TERMINAL (CCT):
(REQUIRES PROTECTION SEE NOTE 2.)

DEPARTURE INSTALLATION: LENGTH OF NEED: 51'-0" (AT POST #8)
APPROACH INSTALLATION: LENGTH OF NEED: 26'-0" (12" PAST POST #4)



CASS-S3 4-CABLE PLAN VIEW

DIRECTION OF NEAREST TRAFFIC

57'-6" +1' -1' - AASHTO MASH OR NCHRP 350 FHWA ELIGIBLE CASS CABLE TERMINAL (CCT - PAYMENT EACH)

PAY ITEM - CASS-S3 4-CABLE SYSTEM - (PAYMENT LINEAR FOOT)

TYPICAL 1000 FEET BETWEEN PRE-STRETCHED CABLE SPLICES (750 FEET FOR INSTALLATIONS USING STANDARD CABLE)
* MAXIMUM 2000 FEET BETWEEN PRE-STRETCHED CABLE SPLICES (1500 FEET FOR INSTALLATIONS USING STANDARD CABLE)

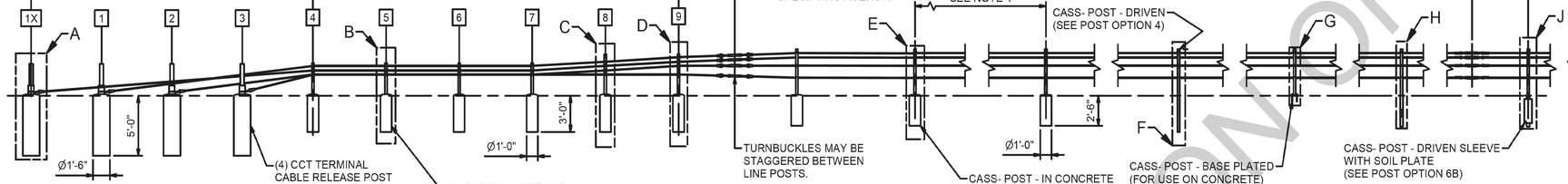
(4) POST SPACES AT 6'-3" = 25'-0"

(5) POST SPACES AT 6'-6" = 32'-6"

3'-0"

* IF ALLOWED BY SPECIFYING AGENCY.

SEE NOTE 4



(4) CCT TERMINAL CABLE RELEASE POST (SEE POST OPTION 1 OR 2 ON SHEET 5)

(6) CCT-TL3 LINE POST (SEE POST OPTION 1 OR 2 ON SHEET 4)

TURNBUCKLES MAY BE STAGGERED BETWEEN LINE POSTS.

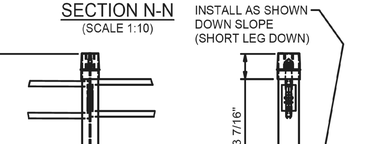
MINIMUM (1) TURNBUCKLE PER CABLE REQUIRED FOR INSTALLATIONS OF 600 FT OR LESS.

CASS- POST - IN CONCRETE (SEE POST OPTION 3)

CASS- POST - DRIVEN (SEE POST OPTION 4)

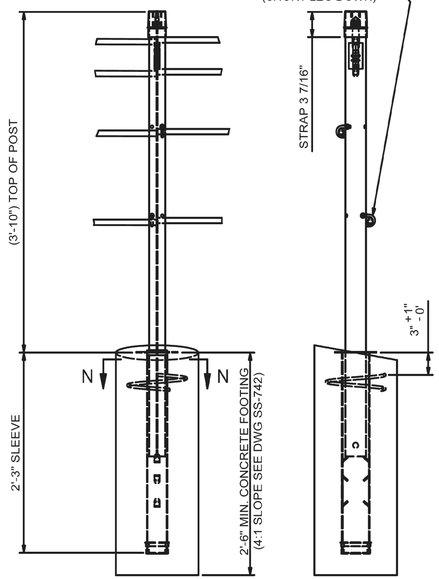
CASS- POST - BASE PLATED (FOR USE ON CONCRETE) (SEE POST OPTION 5)

CASS- POST - DRIVEN SLEEVE WITH SOIL PLATE (SEE POST OPTION 6B)

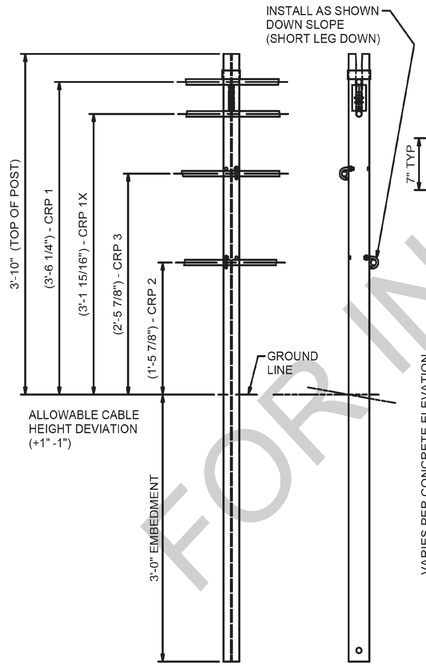


SECTION N-N
(SCALE 1:10)

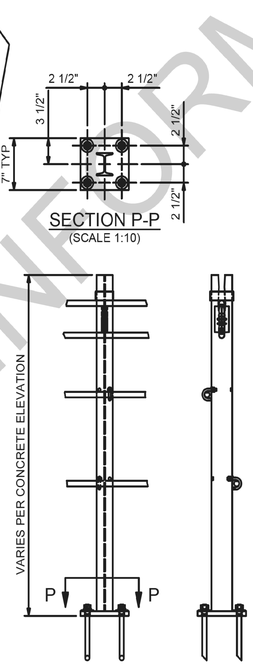
CASS-S3 4-CABLE ELEVATION VIEW
(TYPICAL LAY-OUT)



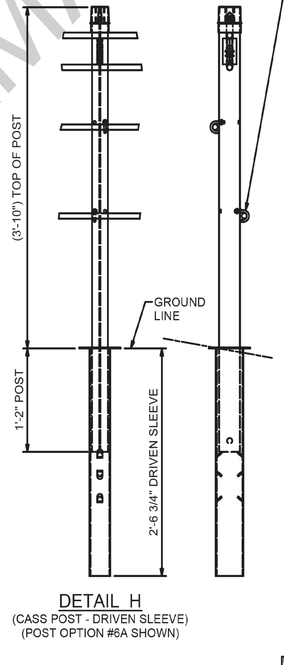
DETAIL E
(CASS POST IN CONCRETE)
(POST OPTION #3 SHOWN)



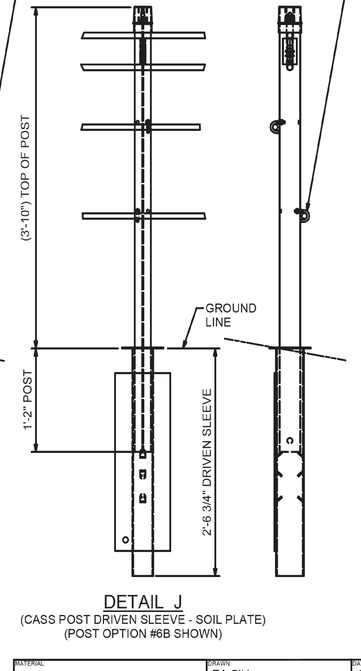
DETAIL F
(CASS POST - DRIVEN)
(POST OPTION #4 SHOWN)



DETAIL G
(CASS POST - BASE-PLATED)
(POST OPTION #5 SHOWN)



DETAIL H
(CASS POST - DRIVEN SLEEVE)
(POST OPTION #6A SHOWN)



DETAIL J
(CASS POST DRIVEN SLEEVE - SOIL PLATE)
(POST OPTION #6B SHOWN)

NOTES:

1. CASS-S3 4-CABLE (4:1) HAS BEEN SUCCESSFULLY TESTED AND DEEMED ELIGIBLE TO AASHTO MASH TEST LEVEL 4 WHEN INSTALLED ON FLAT TERRAIN OR AS AASHTO MASH TEST LEVEL 3 WHEN INSTALLED ON 4:1 OR FLATTER SLOPES. ADDITIONAL INFORMATION CAN BE FOUND IN FHWA LETTERS B-232/B-232A.

CASS-S3 4-CABLE (4:1) HAS BEEN SUCCESSFULLY TESTED AND DEEMED ELIGIBLE TO NCHRP REPORT 350 TEST LEVEL 4 WHEN INSTALLED ON 6:1 OR FLATTER SLOPES OR AS NCHRP REPORT 350 TEST LEVEL 3 WHEN INSTALLED ON 4:1 OR FLATTER SLOPES. ADDITIONAL INFORMATION CAN BE FOUND IN FHWA LETTER B-141F.

2. AN AASHTO MASH OR NCHRP REPORT 350 TL3 ELIGIBLE TERMINAL SHALL BE USED ON APPROACH AND DEPARTURE TERMINATIONS WHEN CASS-S3 4-CABLE (4:1) IS INSTALLED ON THE NATIONAL HIGHWAY SYSTEM.

CASS CABLE TERMINAL (CCT) HAS BEEN SUCCESSFULLY TESTED ON 10:1 OR FLATTER SLOPE AND DEEMED ELIGIBLE TO NCHRP REPORT 350 AS A TEST LEVEL 3 DEVICE.

IF A NON-CRASHWORTHY ANCHOR (CCA) IS USED TO TERMINATE THE CASS S3 4-CABLE SYSTEM, THE ANCHOR MUST BE EITHER SHIELDED OR LOCATED SO THAT A VEHICLE IMPACTING THE CABLE **CAN NOT** IMPACT THE NON-CRASHWORTHY ANCHOR.

3. CASS-S3 4-CABLE (4:1) SHALL BE INSTALLED ON SHOULDERS OR MEDIANS WITH CROSS SLOPES OF 4:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC. THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE. **CASS-S3 4-CABLE (4:1) MUST BE INSTALLED A MAXIMUM OF FOUR (4) FEET FROM THE BREAK POINT**. GRADING OF SITE AND/OR APPROPRIATE FILL MATERIALS MAY BE REQUIRED. THE DESIGNER/INSTALLER SHALL "FLATTEN" OR "ROUND" VARIOUS TOPOGRAPHICAL INCONSISTENCIES (INCLUDING VERTICAL SAG RADIUSES) THAT COULD INTERFERE WITH THE ABILITY OF THE INSTALLER TO CONSISTENTLY MAINTAIN THE DESIGN HEIGHT (IN RELATION TO THE TERRAIN) OF THE CABLES. PLEASE CONSULT THE CASS MANUAL(S) FOR INSTALLATIONS IN "DITCH SECTIONS". CASS-S3 4-CABLE (4:1) MAY BE LATERALLY TRANSFERRED AT A RATE NOT TO EXCEED 30:1.

4. CASS-S3 4-CABLE (4:1) POST SPACING MAY BE MODIFIED TO AVOID OBSTACLES THAT CONFLICT WITH THE INSTALLATION OF CASS-S3 4-CABLE (4:1) LINE POSTS. CASS-S3 4-CABLE (4:1) WAS CRASH TESTED WITH POST SPACINGS OF 10'-6" AND 21'-0" FOR NCHRP REPORT 350 AND AT 10'-6" (ONLY) FOR MASH. NO POST SPACE MAY EXCEED THE MAXIMUM/MINIMUM POST SPACING ALLOWED BY PROJECT ENGINEER. REDUCING OR INCREASING POST SPACING AFFECTS DEFLECTION.

5. POST FOUNDATIONS MAY BE DRILLED THROUGH EXISTING PAVEMENT. TRINITY MAY ALLOW THE USE OF ALTERNATE LINE POST FOOTINGS IF SYSTEM IS INSTALLED WITH AN ACCEPTABLE MOWSTRIP APPLICATION - PLEASE CONTACT TRINITY.

6. **FOR AESTHETIC PURPOSES** TRINITY RECOMMENDS ALL SLEEVES, DRIVEN POSTS, AND LOWER CABLE RELEASE POSTS TO BE INSTALLED REASONABLY PLUMB (APPROXIMATELY 1/8" PER FOOT).

7. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. PRIOR TO TENSIONING THE SYSTEM. TRINITY RECOMMENDS THE CONCRETE TO BE VIBRATED IN ACCORDANCE WITH THE LATEST APPLICABLE AGENCY SPECIFICATION.

8. CASS-S3 4-CABLE (4:1) SHALL BE INSTALLED IN WELL-DRAINED, COMPACTED, NCHRP REPORT 350 STANDARD SOILS. IF SOIL DOESN'T MEET THIS CLASSIFICATION, IF SOLID ROCK/CONCRETE IS ENCOUNTERED BELOW GRADE OR IF SOIL IS SUSCEPTABLE TO SEVERE FREEZE/THAW CYCLES, PLEASE CONTACT TRINITY ABOUT ALTERNATE FOOTING DESIGN(S). TRINITY SUGGESTS THE USE OF "MOW STRIPS" FOR EROSION PREVENTION AND EASE OF MAINTENANCE / INSTALLATION.

9. WHEN THE CASS-S3 4-CABLE (4:1) SYSTEM IS INSTALLED **ENTIRELY** ON A 4:1 TO 6:1 SLOPE, THE DEPTH OF THE CONCRETE FOOTINGS **SHALL** BE INCREASED BY 6" (SEE DRAWING SS742). ALL OTHER DIMENSIONS, VARIOUS SPECIFICATIONS AND SOIL QUALIFICATIONS REMAIN IN PLACE AND MUST BE FOLLOWED.

10. SEE SPECIFYING AGENCY (OR MUTCD) FOR PROPER "BARRIER" DELINEATION.

11. CONTACT TRINITY OR CONSULT THE DESIGN, INSTALLATION, OR REPAIR MANUAL(S) FOR ADDITIONAL INFORMATION.

TRINITY HIGHWAY PRODUCTS, LLC.
2525 STEMMONS FREEWAY PHONE: (800) 644-7976
DALLAS, TX 75207 EMAIL: PRODUCT.INFO@TRIN.NET

OPTION	CASS-TL3-S3 POST OPTIONS
1	CCT - TERMINAL POST 1 - 9 - IN CONCRETE
2	CCT -TERMINAL POST 1 - 9 - WITH SOIL PLATE
3	CASS-S3 POST - IN CONCRETE
4	CASS-S3 POST - DRIVEN
5	CASS-S3 POST - BASE-PLATED
6	CASS-S3 POST - IN DRIVEN SLEEVE
	6A - DRIVEN SLEEVE - WITH NOTCH
	6B - DRIVEN SLEEVE - WITH SOIL PLATE

CASS S3 6:1 4-CABLE GUARDRAIL SAFETY SYSTEM

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Roadway Design Division

MATERIAL:	DRAWN: EA Sikkema	DATE: 11/4/2010	TOLERANCES PER CEMC-THP-SF-001, UNLESS OTHERWISE SPECIFIED.				
FINISH:	CHECKED: GA Neece	DATE: 11/4/2010	DO NOT SCALE DRAWING				
	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN FEET-INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M AND THP-SE-003 UNLESS OTHERWISE SPECIFIED.		Revision	ECO	Date	Rev	By	Chk.
			SH 1 NOTES: ADDED MASH APPROVED INFO.	6849	11/19/19	B	EAS	BRE
			FIXED TYPO'S SHEET 1 & 4 OF 5.	7130	04/21/20	C	EAS	KWL
EST UNFINISHED WT: lbs								

CASS S3 (6:1 SLOPE) 4-CABLE GUARDRAIL SAFETY SYSTEM

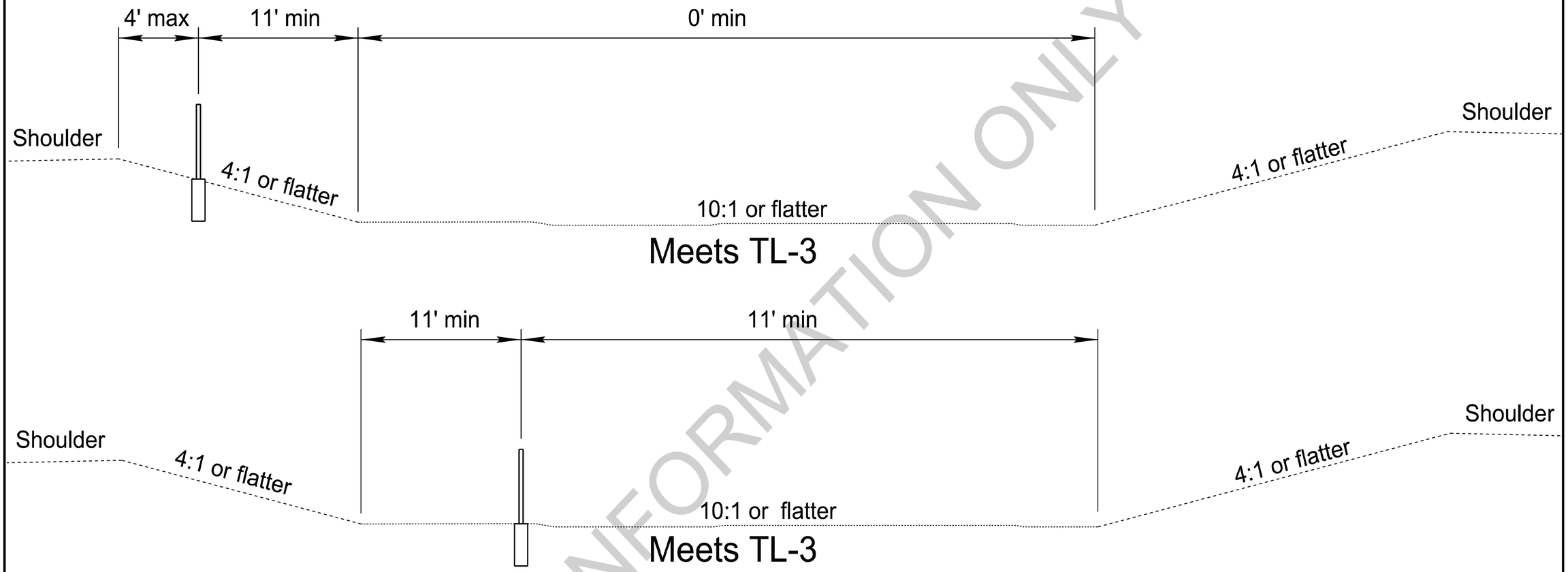
TRINITY HIGHWAY PRODUCTS

DRAWING: SS743 REV: C SHEET: 1 of 5

Project Number

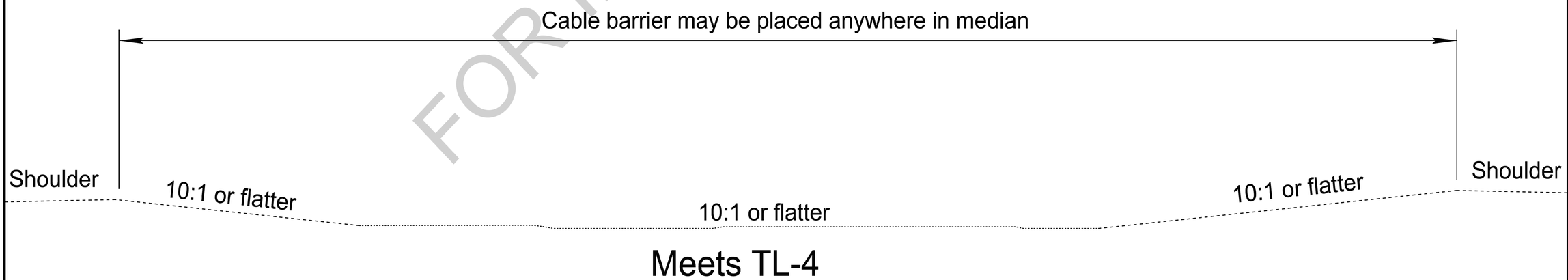
C.N.

Median Cable Barrier Placement Limits
Cass S3 4 wire system; 10.5' post spacing; concrete footings



Meets TL-3

Meets TL-3



Meets TL-4

CASS S3 MEDIAN CABLE BARRIER PLACEMENT LIMITS

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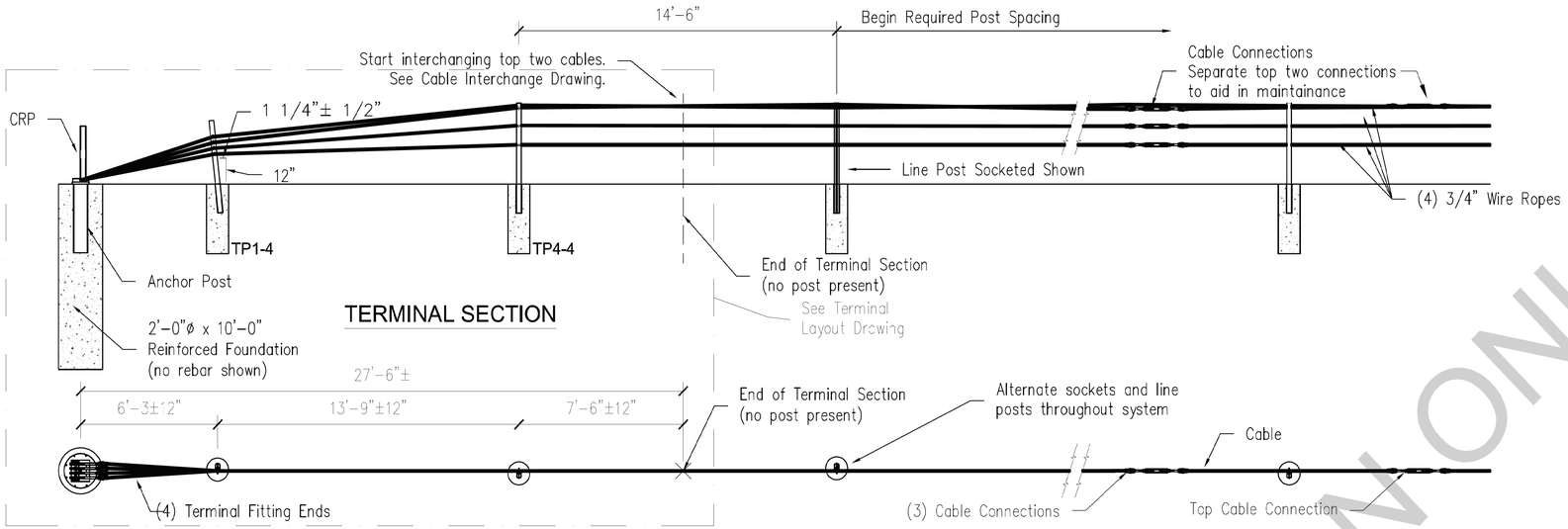
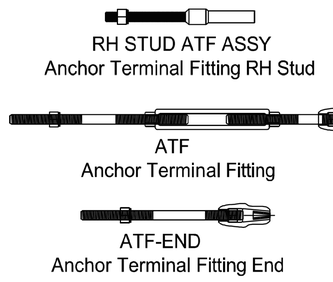
Roadway Design Division

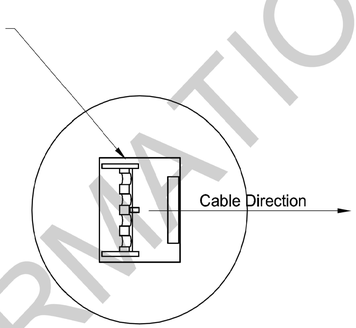
COMPUTER: BG0419M534
DATE: 11-MAY-2023 09:43
FILE: 7780 6 R1.dgn

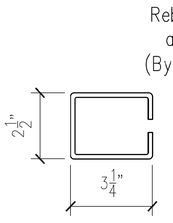


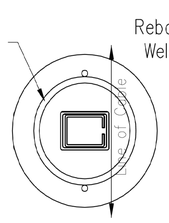
GENERAL NOTES:

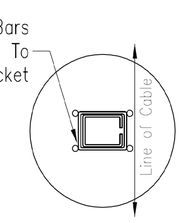
1. For additional information contact Gibraltar, Inc. at 1-833-715-0810 or see the manufacturer's product manual.
2. All concrete shall be per specification; minimum 2500 PSI.
3. The Cable Barrier System shall be installed on shoulders or on medians with slopes of 6:1 or flatter. If installed on slopes 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 8" 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) .

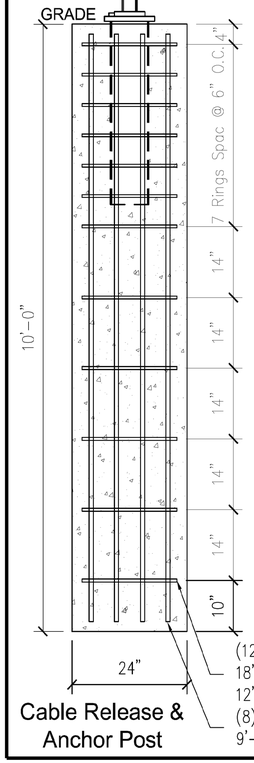


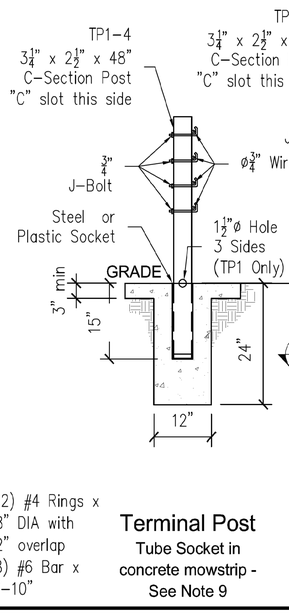


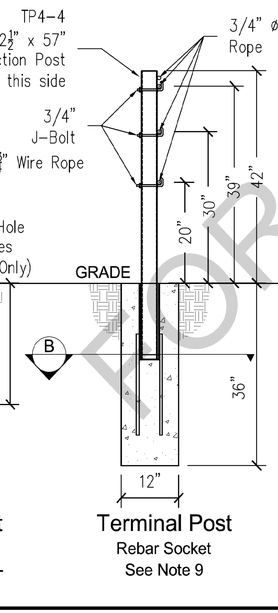


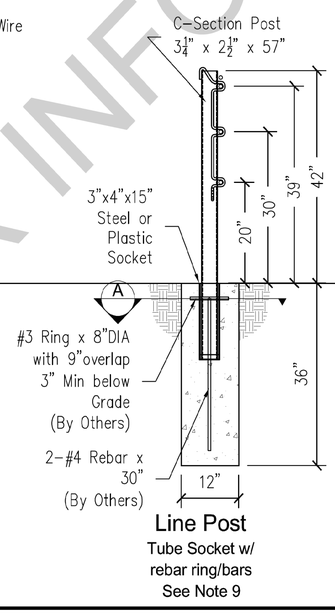


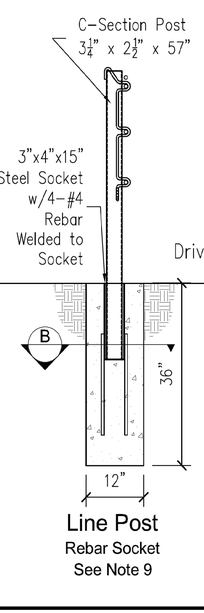


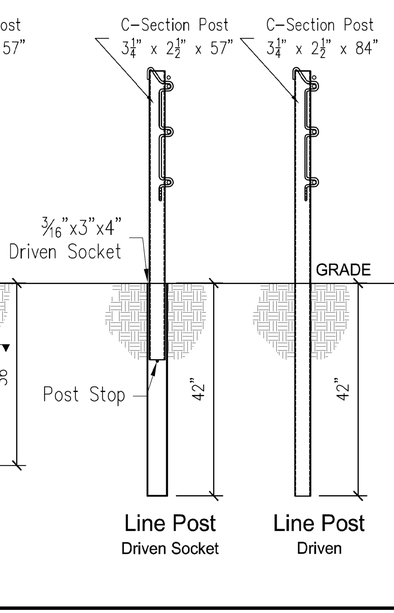












Cable Tension Chart*	
-10 °F	8600
0 °F	8200
10 °F	7800
20 °F	7400
30 °F	7000
40 °F	6600
50 °F	6200
60 °F	5800
70 °F	5400
80 °F	5000
90 °F	4600
100 °F	4200
110 °F	3800

*Allowable Deviation from Chart +/- 10%

PROPRIETARY TO GIBRALTAR

1 OF 1
Project Number
C.N.

MASH GIBRALTAR TL4 CABLE SYSTEM LAYOUT

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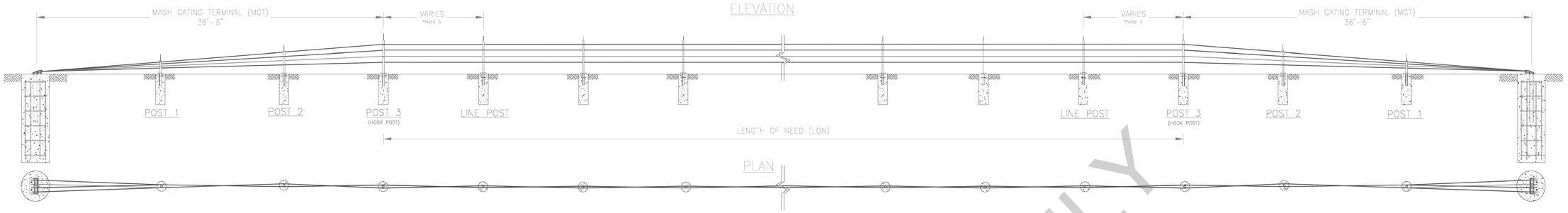
Roadway Design Division

MASH 2016 TL4 Cable System Layout	
Gibraltar Cable Barrier Systems	
Scale: NTS	Date: 8-26-21
Layout: ANSI B	Drafter: BH

COMPUTER: BG0419M534
DATE: 12-MAY-2023 08:51
FILE: 7783 6 R2.dgn



GENERAL NOTES:

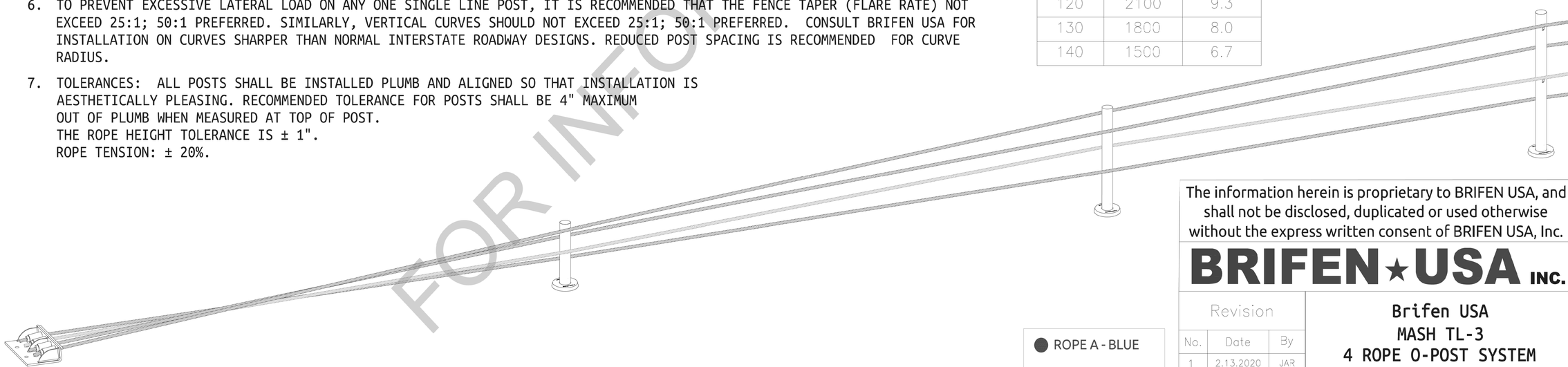
1. THE BRIFEN WIRE ROPE SAFETY FENCE SYSTEM (WRSF) 4 ROPE O-POST LENGTH OF NEED (LON) HAS BEEN SUCCESSFULLY TESTED TO MASH TL-3 CONDITIONS. REFER TO FHWA ELIGIBILITY LETTER (HSST/B-245A). THE BRIFEN MASH GATING TERMINAL (MGT) HAS BEEN SUCCESSFULLY TESTED TO MASH 2016, SECOND EDITION. REFER TO FHWA ELIGIBILITY LETTER (HSST1/CC-137).
2. PURSUANT TO MASH TESTING CRITERIA, ALL END TERMINAL TESTS ARE CONDUCTED ON LEVEL TERRAIN. PLACEMENT OF END TERMINALS ON SLOPES MAY RESULT IN NON CRASH WORTHY PERFORMANCE IN SOME CONDITIONS.
3. BRIFEN WRSF DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUALS SHOULD BE REVIEWED PRIOR TO STARTING INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. AT (866) 427-4336.
4. BRIFEN WRSF SHALL BE INSTALLED ON SMOOTH SURFACE WITHOUT DROP-OFFS, ABOVE GROUND OBSTRUCTIONS OR DEPRESSIONS THAT MAY INTERFERE WITH THE REASONABLE STABILITY, AND NORMAL SUSPENSION HEIGHT OF AN ERRANT VEHICLE AT CONTACT WITH THE FENCE.
5. BRIFEN WRSF DEFLECTION AND FOUNDATION TYPE SHALL BE AS SPECIFIED BY THE CONTRACTING AGENCY. THE PROJECT SPECIFICATIONS SHALL INDICATE A REQUIRED DEFLECTION BASED ON RESULTS OF FULL SCALE CRASH TESTS TO MASH TEST 3-11. THE DEFLECTION TABLE SHALL BE USED TO DETERMINE THE REQUIRED POST SPACING FOR THE SPECIFIED DEFLECTION. CONTACT BRIFEN USA FOR ADDITIONAL INFORMATION. POST SPACING MAY VARY WHEN ENCOUNTERING UNDERGROUND CONFLICTS AS LONG AS THE POST SPACING REMAINS BETWEEN 7' AND 21'. THIS MAY REQUIRE THE ADJUSTMENT OF SEVERAL POSTS BEFORE AND AFTER THE CONFLICT TO MINIMIZE THE VARIANCE OF POST SPACING.
6. TO PREVENT EXCESSIVE LATERAL LOAD ON ANY ONE SINGLE LINE POST, IT IS RECOMMENDED THAT THE FENCE TAPER (FLARE RATE) NOT EXCEED 25:1; 50:1 PREFERRED. SIMILARLY, VERTICAL CURVES SHOULD NOT EXCEED 25:1; 50:1 PREFERRED. CONSULT BRIFEN USA FOR INSTALLATION ON CURVES SHARPER THAN NORMAL INTERSTATE ROADWAY DESIGNS. REDUCED POST SPACING IS RECOMMENDED FOR CURVE RADIUS.
7. TOLERANCES: ALL POSTS SHALL BE INSTALLED PLUMB AND ALIGNED SO THAT INSTALLATION IS AESTHETICALLY PLEASING. RECOMMENDED TOLERANCE FOR POSTS SHALL BE 4" MAXIMUM OUT OF PLUMB WHEN MEASURED AT TOP OF POST.
THE ROPE HEIGHT TOLERANCE IS ± 1".
ROPE TENSION: ± 20%.

ROPE TENSION TABLE

ROPE TEMP (F°)	TENSION (LBS)	TENSION (kN)
0	5700	25.4
10	5400	24.0
20	5100	22.7
30	4800	21.4
40	4500	20.0
50	4200	18.7
60	3900	17.3
70	3600	16.0
80	3300	14.7
90	3000	13.3
100	2700	12.0
110	2400	10.7
120	2100	9.3
130	1800	8.0
140	1500	6.7

DEFLECTION TABLE

DEFLECTION (LF)	POST SPACING (_F)
8'-0"	7'-0"
8'-10"	10'-0"
9'-0"	10'-6"
10'-3"	15'-0"
11'-1"	18'-0"
11'-11"	21'-0"
*Note 5	



- ROPE A - BLUE
- ROPE B - PURPLE
- ROPE C - GREEN
- ROPE D - RED

BRIFEN ★ USA INC.

Revision		
No.	Date	By
1.	2.13.2020	JAR
2.	10.21.2020	JAR
3.	1.13.2021	JAR
4.	2.3.2021	JAR
5.	2.4.2022	JAR

Brifen USA
MASH TL-3
4 ROPE O-POST SYSTEM

Date	Drawn By	Scale
3.08.2021	JAR	None
MASH VERSION		Sheet No 1 OF 3
Dwg. No.	MASH-OP-002	

1 OF 2
Project Number
C.N.

BRIFEN MASH TL3

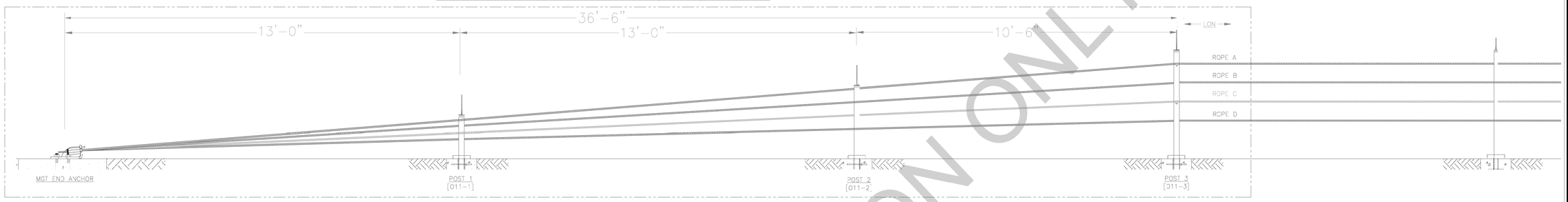
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

Roadway Design Division

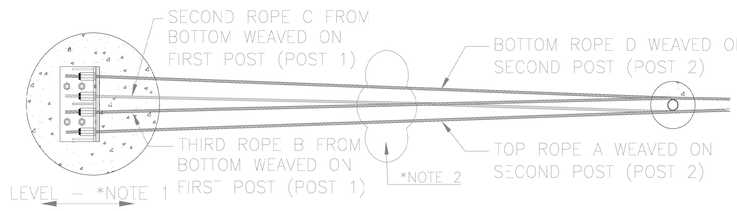
COMPUTER: BG0419M534
DATE: 12-MAY-2023 11:22
FILE: 7787 6 R1.dgn

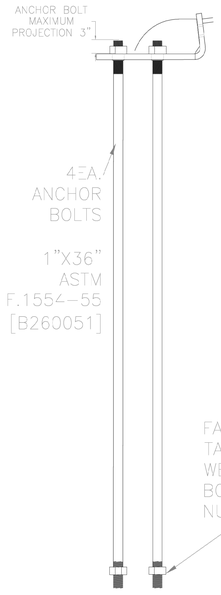
ELEVATION

MASH GATING TERMINAL (MGT) DETAIL



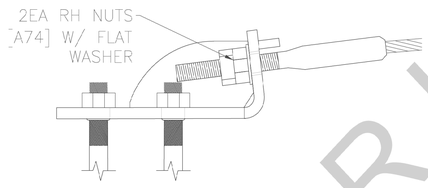
MGT END ANCHOR ROPE WEAVE DETAIL



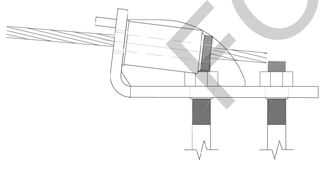


MGT END ANCHOR ASSEMBLY [MGT4]

MGT END ANCHOR CONNECTIONS



THREADED TERMINAL (STARTING ANCHOR) [A51R]



MECHANICAL FITTING (ENDING ANCHOR) [A71]

NOTE

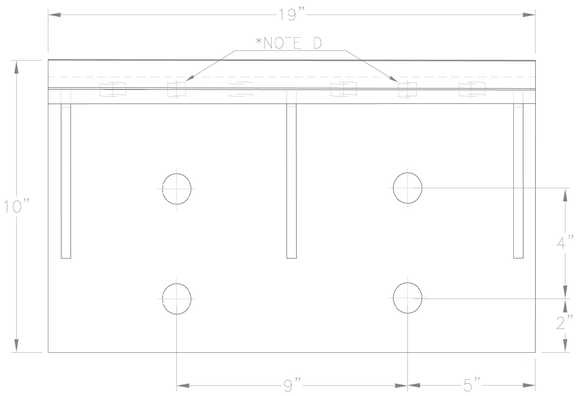
A. MASH GATING TERMINAL (MGT) END ANCHOR PLATE SHALL BE INSTALLED LEVEL (FRONT TO BACK WHEN VIEWED FROM THE END OF THE FENCE). IF MGT END ANCHOR IS PLACED ON A SLOPE, THE PLATE SHOULD BE INSTALLED TO MATCH THE SLOPE (LEFT TO RIGHT WHEN VIEWED FROM THE END OF THE FENCE).

B. SINCE ROPES ALTERNATE SIDES OF EACH SUCCESSIVE POST, THE TRAILING END TERMINAL MAY HAVE ROPES REVERSED DEPENDING ON ODD OR EVEN NUMBER OF POSTS IN FENCE.

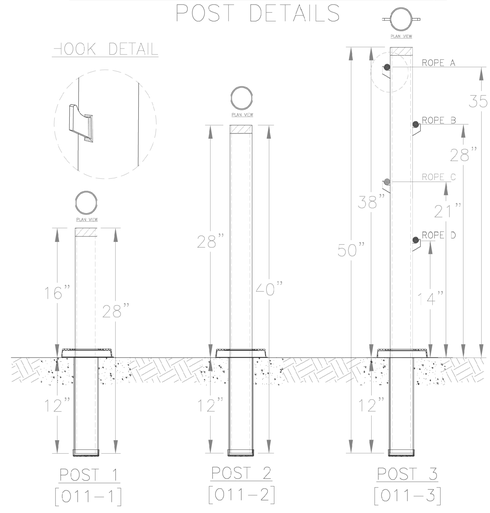
C. SIZE AND DESIGN OF MGT END ANCHOR, POST 1-3, AND LINE POST FOUNDATIONS (POST MOUNTING METHOD) ARE BEST DETERMINED BY PROJECT SPECIFIC SOIL INFORMATION AND GEOTECHNICAL EVALUATION. IF UNEXPECTED ROCK IS ENCOUNTERED, PLEASE CONTACT BRIFEN. BRIFEN RECOMMENDS F'C CONCRETE FOUNDATIONS ARE SPECIFIED, THE 28 DAY COMPRESSIVE STRENGTH SHALL BE A MINIMUM OF 3000 PSI. END TERMINAL FOUNDATION AND POST 1-3 FOUNDATIONS SHALL ALWAYS BE APPROPRIATE SIZED CONCRETE FOUNDATIONS.

D. THESE HOLES ARE FOR THE TEMPORARY EYE BOLT [T18] FOR A WINCH ATTACHMENT DURING INITIAL INSTALLATION ONLY.

MGT ANCHOR BOLT TEMPLATE



MASH GATING TERMINAL (MGT) POST DETAILS



BRIFEN ★ USA INC.

Revision		
No.	Date	By
1.	1.24.2020	JAR
2.	2.13.2020	JAR
3.	1.11.2021	JAR
4.	3.3.2021	JAR
5.	2.4.2022	JAR

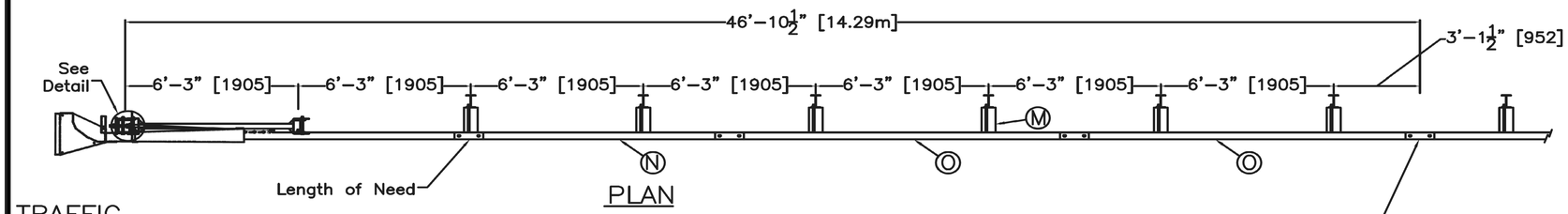
MASH TL-3
4 ROPE 0-POST SYSTEM
MGT DETAILS

Date	Drawn By	Scale
3.08.2021	JAR	None
MASH VERSION		Sheet No 2 OF 3
Dwg. No.	MASH-GP-002	

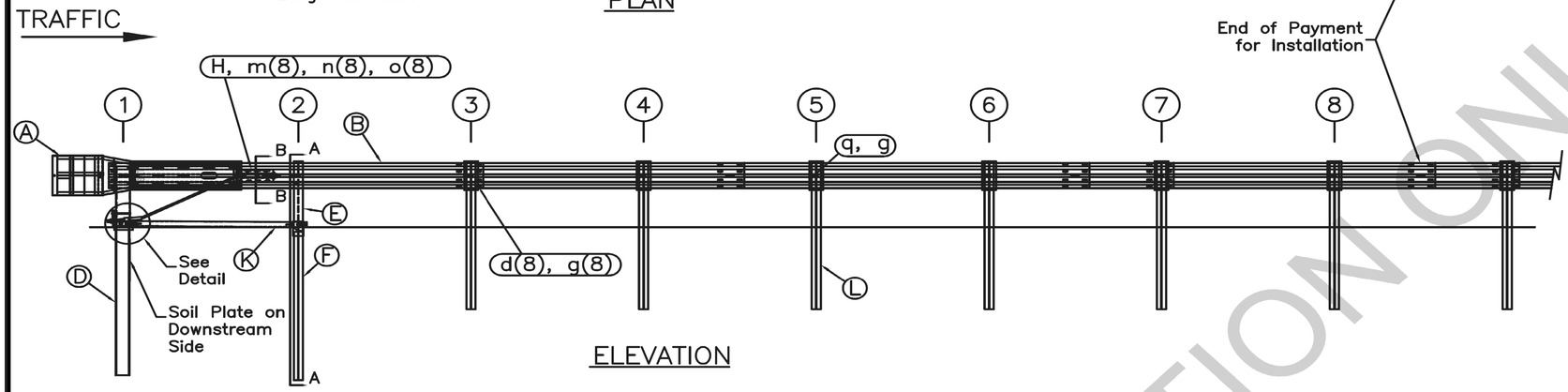
BRIFEN MASH TL3

NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

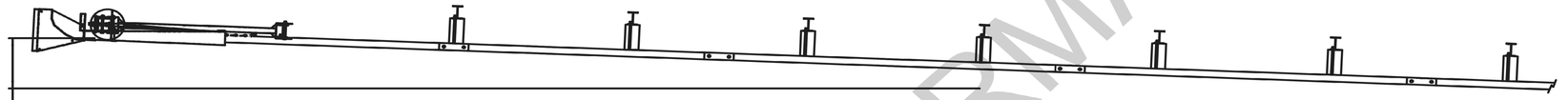
Roadway Design Division



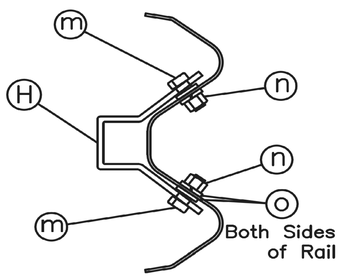
PLAN



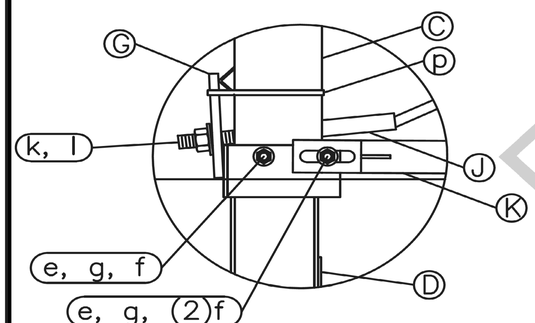
ELEVATION



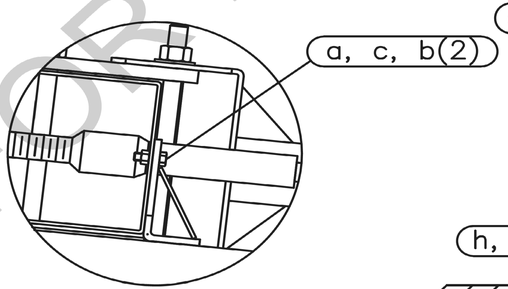
OPTIONAL FLARED INSTALLATION
25:1 maximum flare rate



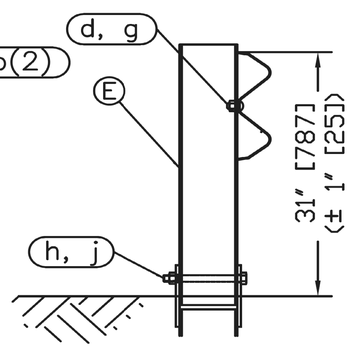
SECTION B–B
Anchor Bracket



Post #1 Connection Detail



Impact Head Connection Detail



SECTION A–A
Post #2

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 (6X6X⅛" 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
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.G.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.G.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: 432–263–2435
or Phone: 330–346–0721

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

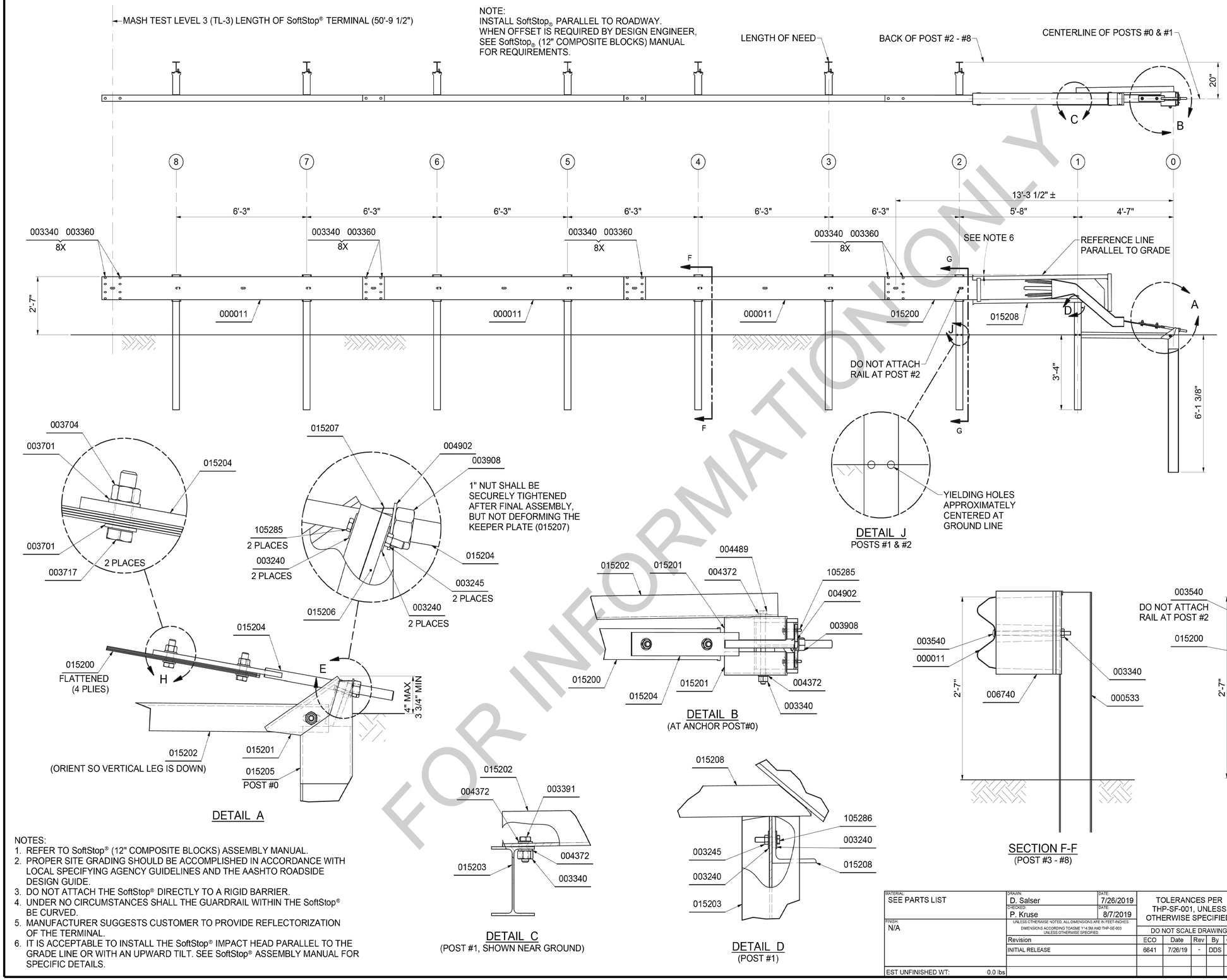
Drawing Name: MSKT-SP-MGS12
Scale: None
Sheet: 1
Date: 05/20/17
By: JRR
Rev: 0

1 OF 1
Project Number
C.N.

MSKT-SP-MGS SYSTEM - TL-3

NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION
Roadway Design Division

COMPUTER: BG0419M534
DATE: 12-MAY-2023 08:45
FILE: 7804 6 R2.dgn



PARTS LIST		
PART NO.	QTY.	DESCRIPTION
000011	3	12/12'6/3'1.5/S
000533	6	6'-0" POST / W6 x 8.5#
006740	7	COMPOSITE BLOCK 12X6X14
015000	1	6'0 SYT PST/8.5/31" GR HT
015200	1	SFST-ANCHOR G.RAIL 12'-6"
015202	1	SFST-ANGLE STRUT
015203	1	SFST-POST#1 SYTP
015204	1	SFST-ANCHOR PADDLE
015205	1	SFST-POST#0
015208	1	SFST-IMPACT HEAD
		HARDWARE KIT 626786:
003240	6	5/16 ROUND WASHER WIDE
003245	3	5/16 HEX NUT
003340	41	NUT,HX,5/8,G,RAIL
003360	32	5/8"X1.25" GR BOLT
003391	1	5/8"X1.75" HEX BOLT A325
003540	7	5/8"X14" GR BOLT A307
003701	4	3/4" ROUND WASHER F436
003704	2	3/4" HVY HEX NUT A563 DH
003717	2	3/4"X2.5" HEX BOLT A325
003908	1	1" HVY HEX NUT A563 DH
004372	4	5/8" WASHER F436
004489	1	5/8"X9" HEX BOLT A325
004902	1	1" ROUND WASHER F436
105285	2	5/16" X 2.5" HEX BOLT GRD 5
105286	1	5/16" X 1.5" HEX BOLT GRD 5
015201	2	SFST-ANCHOR ANGLE
015206	1	SFST-PLATE WASHER
015207	1	SFST-KEEPER PLATE

NOTES:
1. REFER TO SoftStop® (12" COMPOSITE BLOCKS) ASSEMBLY MANUAL.
2. PROPER SITE GRADING SHOULD BE ACCOMPLISHED IN ACCORDANCE WITH LOCAL SPECIFYING AGENCY GUIDELINES AND THE AASHTO ROADSIDE DESIGN GUIDE.
3. DO NOT ATTACH THE SoftStop® DIRECTLY TO A RIGID BARRIER.
4. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop® BE CURVED.
5. MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF THE TERMINAL.
6. IT IS ACCEPTABLE TO INSTALL THE SoftStop® IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT. SEE SoftStop® ASSEMBLY MANUAL FOR SPECIFIC DETAILS.

MATERIAL: SEE PARTS LIST	DRAWN: D. Salser	DATE: 7/26/2019	TOLERANCES PER THP-SF-001, UNLESS OTHERWISE SPECIFIED.					SoftStop® TERMINAL (12" BLOCKS) PLAN, ELEVATION & SECTION MASH TEST LEVEL 3 (TL-3) P/N: 500772
FINISH: N/A	CHECKED: P. Kruse	DATE: 8/7/2019	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN FEET-INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M AND THP-SE-003 UNLESS OTHERWISE SPECIFIED.					
			DO NOT SCALE DRAWING					
	Revision		ECO	Date	Rev	By	Chk.	
	INITIAL RELEASE		6641	7/26/19	-	DDS	/	
EST UNFINISHED WT: 0.0 lbs								DRAWING: SS 772 REV: - SHEET: 1 of 1

1 OF 2

Project Number

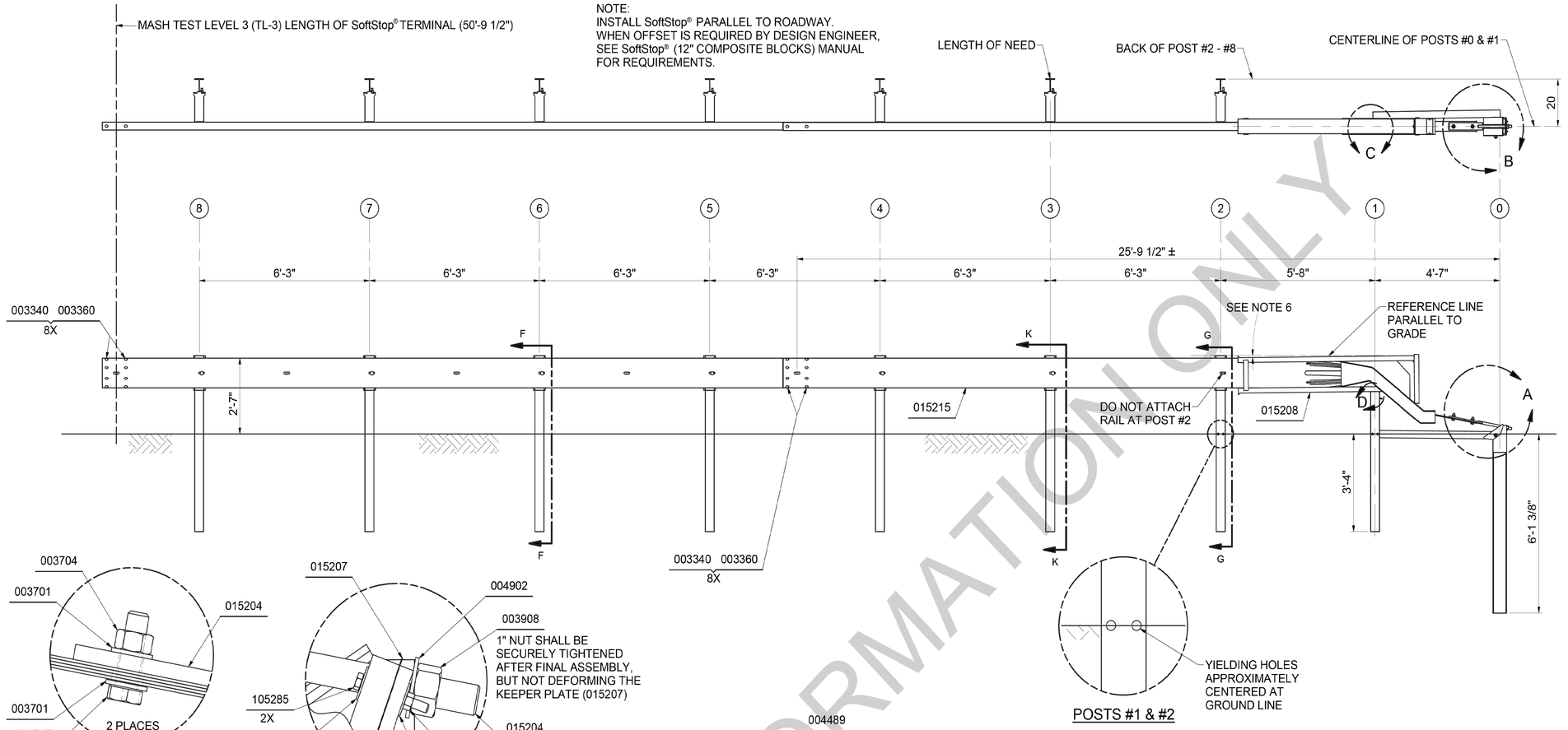
C.N.

SOFTSTOP SYSTEM

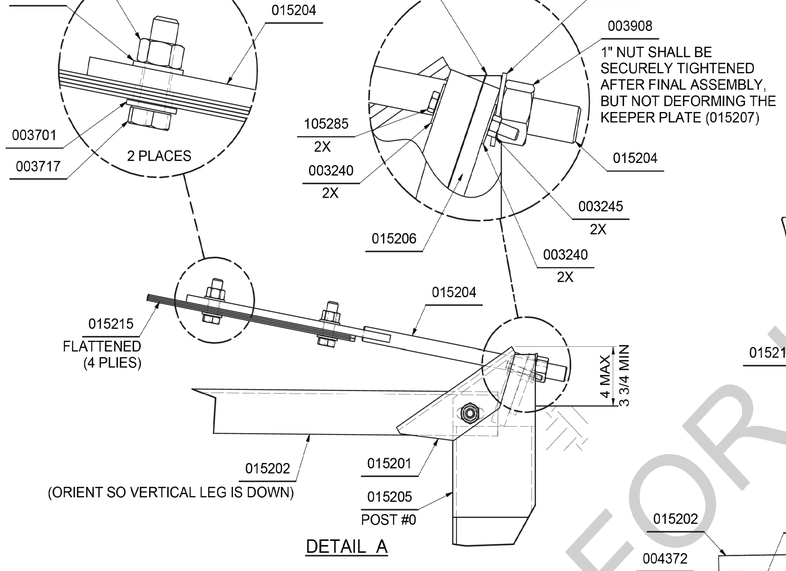
NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

Roadway Design Division

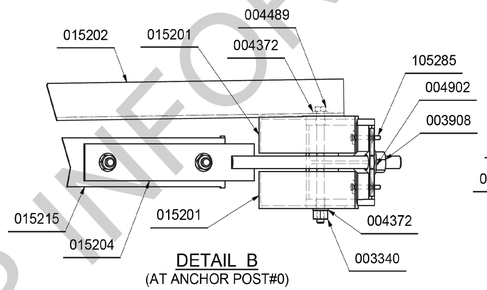
COMPUTER: BG0419M534
DATE: 12-MAY-2023 08:46
FILE: 7805 6 R2.dgn



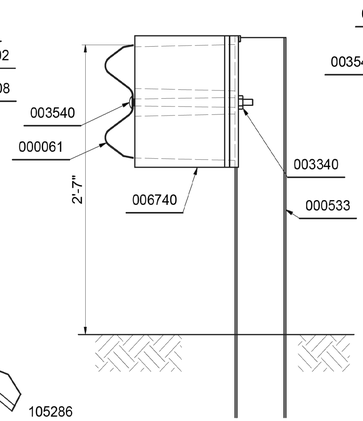
PARTS LIST		
PART NO.	QTY.	DESCRIPTION
000061	1	12/25'0"/3'1.5/S
000533	6	6'-0" POST / W6 x 8.5#
006740	7	COMPOSITE BLOCK 12X6X14
015000	1	6'0 SYT PST/8.5/31" GR HT
015202	1	SFST-ANGLE STRUT
015203	1	SFST-POST#1 SYTP
015204	1	SFST-ANCHOR PADDLE
015205	1	SFST-POST#0
015208	1	SFST-IMPACT HEAD
015215	1	SFST-ANCHOR G.RAIL 25'-0"
		HARDWARE KIT 626786
003240	6	5/16 ROUND WASHER WIDE
003245	3	5/16 HEX NUT
003340	25	NUT,HX,5/8,G,RAIL
003360	16	5/8"X1.25" GR BOLT
003391	1	5/8"X1.75" HEX BOLT A325
003540	7	5/8"X14" GR BOLT A307
003701	4	3/4" ROUND WASHER F436
003704	2	3/4" HVY HEX NUT A563 DH
003717	2	3/4"X2.5" HEX BOLT A325
003908	1	1" HVY HEX NUT A563 DH
004372	4	5/8" WASHER F436
004489	1	5/8"X9" HEX BOLT A325
004902	1	1" ROUND WASHER F436
105285	2	5/16" X 2.5" HEX BOLT GRD 5
105286	1	5/16" X 1.5" HEX BOLT GRD 5
015201	2	SFST-ANCHOR ANGLE
015206	1	SFST-PLATE WASHER
015207	1	SFST-KEEPER PLATE



DETAIL A



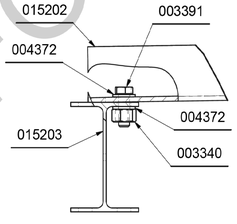
DETAIL B
(AT ANCHOR POST#0)



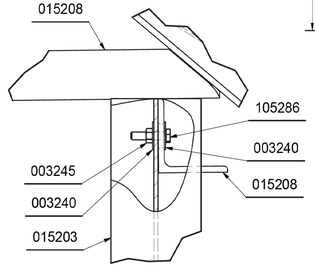
SECTION F-F
(POST #5 - #8)

SECTION K-K
(POSTS #3 & #4)

SECTION G-G
(POST #2)



DETAIL C
(POST #1, SHOWN NEAR GROUND)



DETAIL D
(POST #1)

NOTES:
1. REFER TO SoftStop® (12" COMPOSITE BLOCKS) ASSEMBLY MANUAL.
2. PROPER SITE GRADING SHOULD BE ACCOMPLISHED IN ACCORDANCE WITH LOCAL SPECIFYING AGENCY GUIDELINES AND THE AASHTO ROADSIDE DESIGN GUIDE.
3. DO NOT ATTACH THE SoftStop® DIRECTLY TO A RIGID BARRIER.
4. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop® BE CURVED.
5. MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF THE TERMINAL.
6. IT IS ACCEPTABLE TO INSTALL THE SoftStop® IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT. SEE SoftStop® ASSEMBLY MANUAL FOR SPECIFIC DETAILS.

MATERIAL: SEE PARTS LIST	DRAWN: D. Salser	DATE: 7/31/2019	TOLERANCES PER THP-SF-001, UNLESS OTHERWISE SPECIFIED.					SoftStop ®TERMINAL (12" BLOCKS) PLAN, ELEVATION & SECTION MASH TEST LEVEL 3 (TL-3) P/N: 500775
FINISH: N/A	CHECKED: P. Kruse	DATE: 8/7/2019	DO NOT SCALE DRAWING					
	UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN FEET-INCHES. DIMENSIONS ACCORDING TO ASME Y14.5M AND THP-SE-003 UNLESS OTHERWISE SPECIFIED.		Revision	ECO	Date	Rev	By	Chk.
			INITIAL RELEASE	6641	7/31/19	-	DDS	/
EST UNFINISHED WT: 0.0 lbs								

DRAWING: SS 775 REV: - SHEET: 1 of 1

2 OF 2

Project Number

C.N.

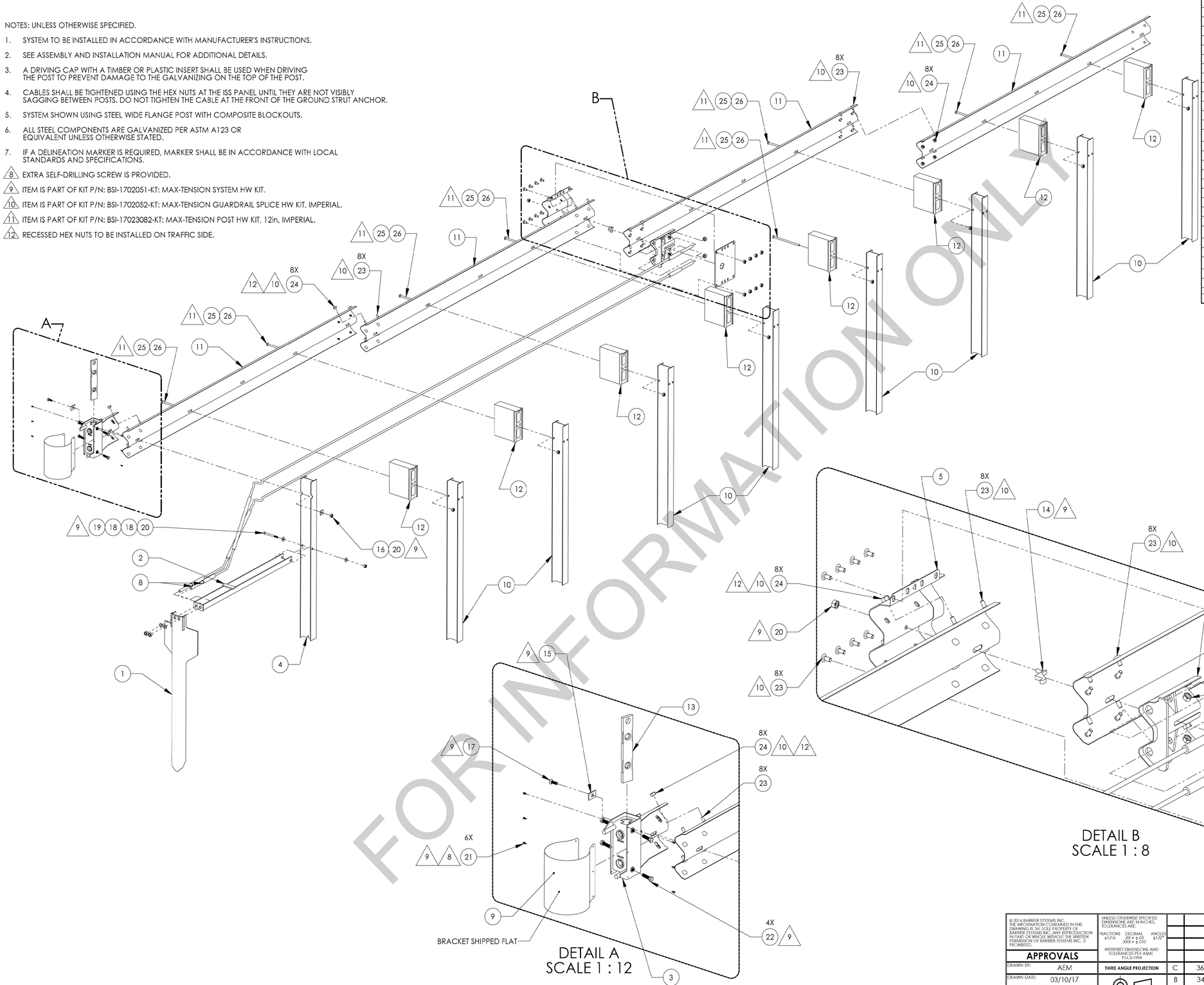
SOFTSTOP SYSTEM

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

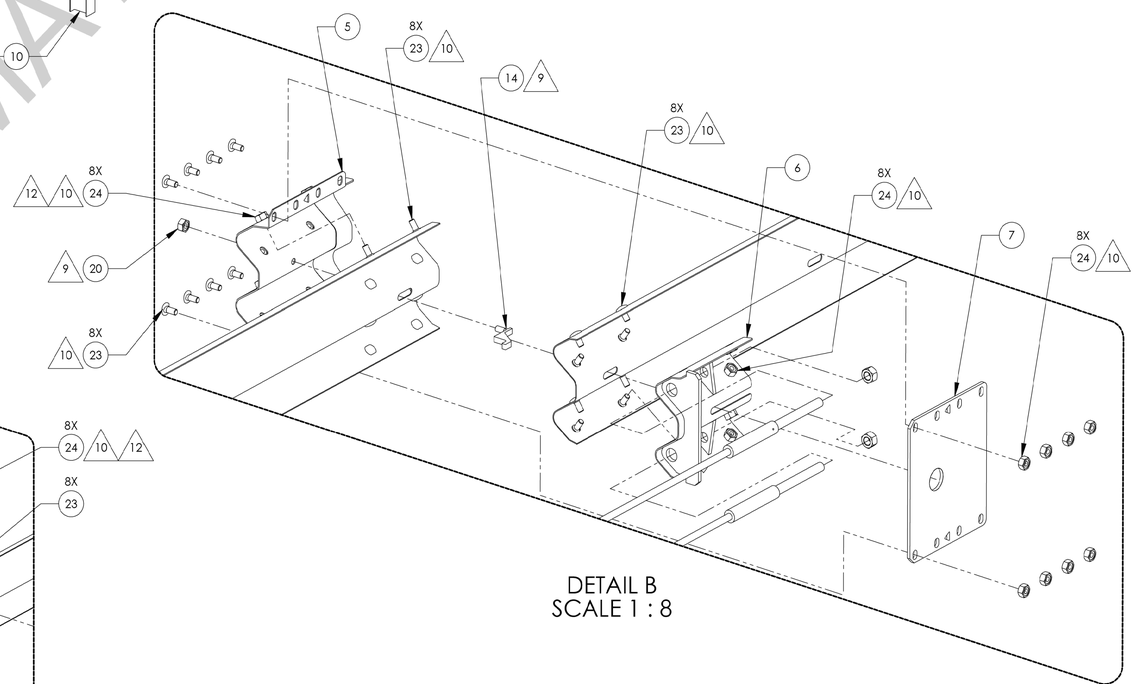
Roadway Design Division

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 DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH LOCAL STANDARDS AND SPECIFICATIONS.
8. EXTRA SELF-DRILLING SCREW IS PROVIDED.
9. ITEM IS PART OF KIT P/N: BSI-1702051-KT: MAX-TENSION SYSTEM HW KIT.
10. ITEM IS PART OF KIT P/N: BSI-1702052-KT: MAX-TENSION GUARDRAIL SPLICE HW KIT, IMPERIAL.
11. ITEM IS PART OF KIT P/N: BSI-17023082-KT: MAX-TENSION POST HW KIT, 12in, IMPERIAL.
12. RECESSED HEX NUTS TO BE INSTALLED ON TRAFFIC SIDE.



DETAIL A
SCALE 1 : 12



DETAIL B
SCALE 1 : 8

ITEM	PAR NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	Soil Anchor, Galvanized	1
2	BSI-1610061-00	Goundstrut, Galvanized	1
3	BSI-1610062-00	Impact Head, Chase Threads	1
4	BSI-1610063-00	Post, I-Beam, W6x9, 6ft, Galvanized	1
5	BSI-1610064-00	TSS Panel, Galvanized	1
6	BSI-1610065-00	ISS Panel, Galvanized	1
7	BSI-1610067-00	RSS Plate, Galvanized	1
8	BSI-1610069-00	Cable Assembly, MXTN	2
9	BSI-1701063-00	BRACKET, DELINEATION, MAX-TENSION	1
10	BSI-1012078-00	Line Post, X-Lite, Galvanized	8
11	BSI-4004386	W-Beam Guardrail Panel, RWM04a	4
12	BSI-4004446	W-Beam Composite Blockout, 12in	8
13	B061058	BSI, Cable Friction Plate	1
	BSI-1702051-KT: MAX-TENSION SYSTEM HW KIT		
14	BSI-1610066-00	Tooth, Geomet	1
15	4002051	Guardrail Wshr Rect AASHTO	1
16	BSI-1102027-00	WASHER,SQUARE,X-LITE,GALV	1
17	BSI-2001888	Bolt CH 5/8-11x2 Fully Threade	1
18	2001636	Wshr 5/8 F436 Struct MGal	2
19	BSI-2001886	Bolt CH 5/8-11x7,2in Threads,	1
20	4001116	Guardrail Nut Recessed 5/8-11	3
21	BSI-2001887	Screw SD,HH 1/4-20x3/4,410 SS	6
22	BSI-2001885	Bolt HH 3/4-10x3,Fully	4
	BSI-1702052-KT: MAX-TENSION GUARDRAIL SPLICE HW KIT, IMPERIAL		
23	4001115	Guardrail Bolt 5/8-11 x 1 1/4	48
24	4001116	Guardrail Nut Recessed 5/8-11	48
	BSI-1703082-KT: MAX-TENSION POST WH KIT, 12in, IMPERIAL		
25	BSI-2001897	Guardrail Bolt 5/8-11 x 14, Mgal	8
26	4001116	Guardrail Nut Recessed 5/8-11	8
27	MANMAX	MAX-Tension Installation Manual	1

APPROVALS

DRAWN BY:	AEM
DRAWN DATE:	03/10/17
APPR'D BY:	GAD
APPR'D DATE:	03/10/17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE:
FRACTIONS ±1/16 DECIMAL .XX ± .03 .XXX ± .010 ANGLES ±1/2°
INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-1994
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

REV	ECN#	DATE
C	3605	11/01/17
B	3412	04/26/17
A	3347	03/10/17

LINDSAY TRANSPORTATION SOLUTIONS
BARRIER SYSTEMS
180 River Road
Rio Vista, CA 94571
Tel: 888-800-3697
www.barriersystemsinc.com

TITLE: MAX-TENSION TANGENT, TL-3 SYSTEM IMPERIAL HW, STEEL POST, 12IN COMPOSITE BLOCKOUTS, 12'-6" PANELS

SIZE D | DWG NO. MT3SIS2C4 | REV. C

SCALE 1:20 | SHEET 1 OF 2

1 OF 2

Project Number

C.N.

MAX-TENSION SYSTEM

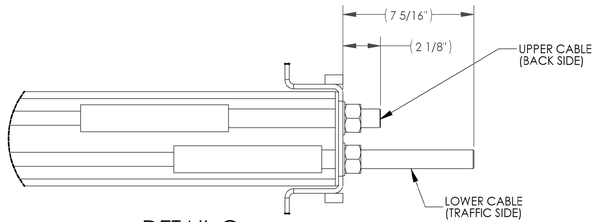
NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway Design Division

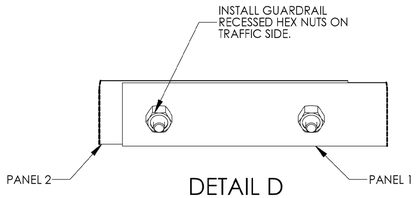
COMPUTER: BG0419M534

DATE: 12-MAY-2023 08:48

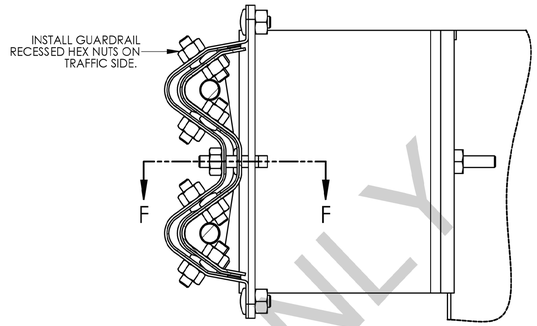
FILE: 7806 6 R1.dgn



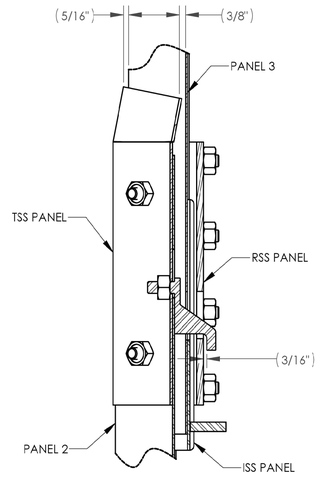
DETAIL C
SCALE 1 : 4



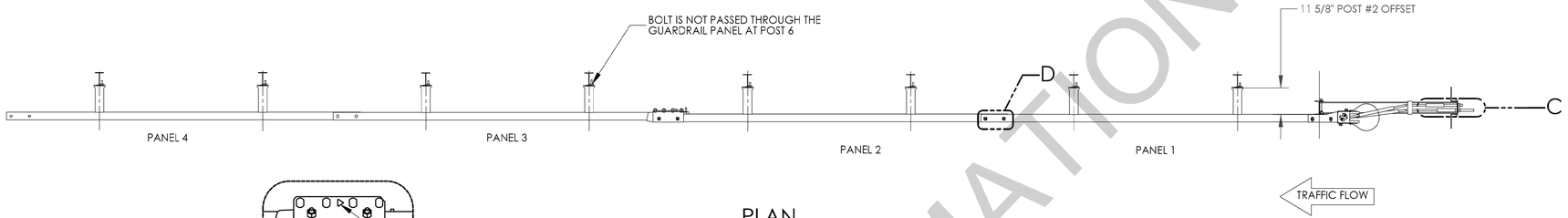
DETAIL D
SCALE 1 : 4



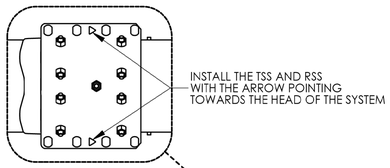
SECTION E-E
SCALE 1 : 4



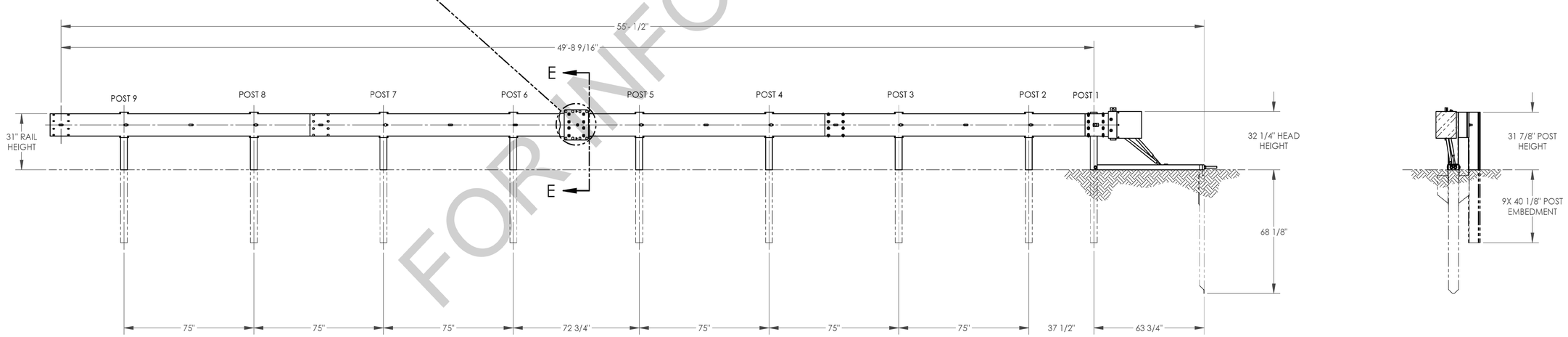
SECTION F-F
SCALE 1 : 4



PLAN



DETAIL G
SCALE 1 : 10



ELEVATION

Project Number

C.N.

MAX-TENSION SYSTEM

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

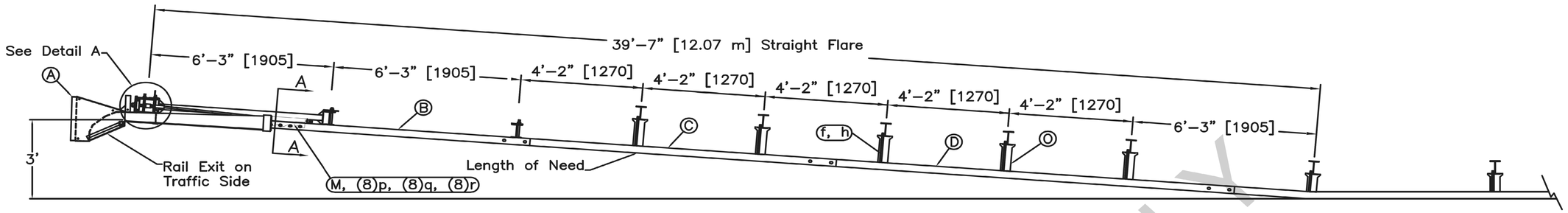
Roadway Design Division

SIZE	DWG NO.	REV.
D	MT3SIS2C4	C
SCALE 1:30		SHEET 2 OF 2

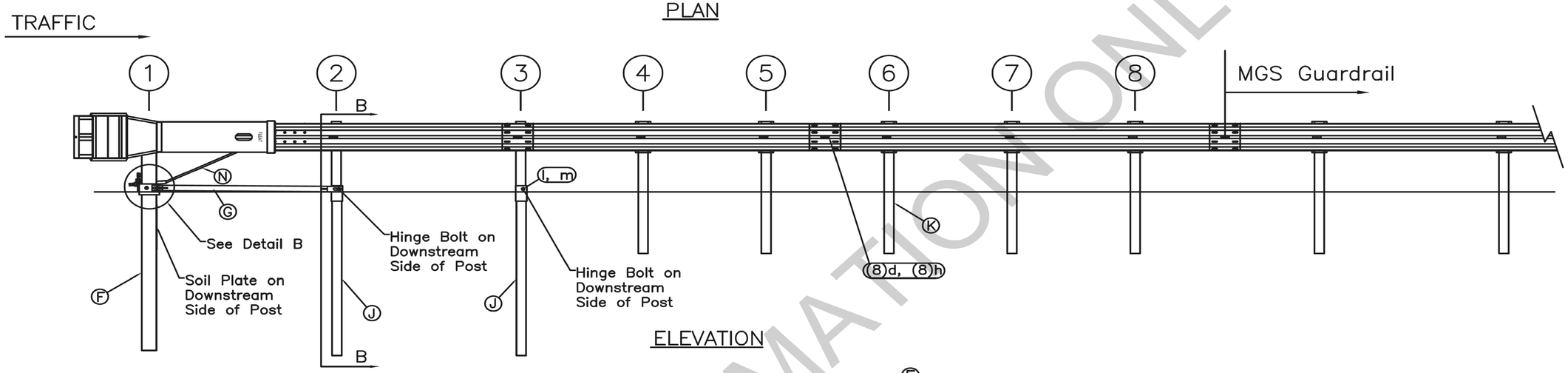
COMPUTER: BG0419M534
DATE: 12-MAY-2023 08:48
FILE: 7806 6 R1.dgn

Project Number

C.N.

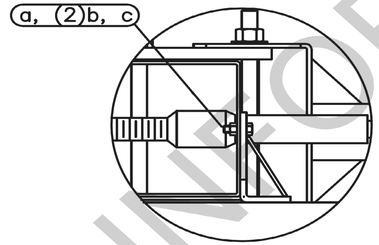


PLAN

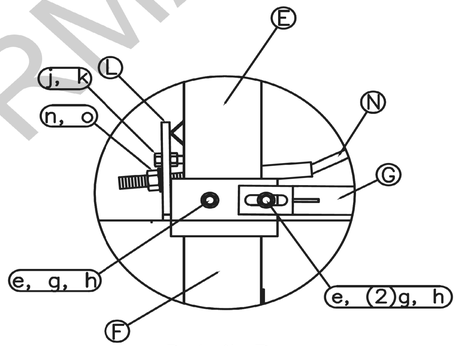


ELEVATION

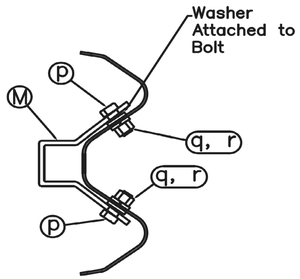
ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	FLEAT IMPACT HEAD	MF3000
B	1	FLEAT ANCHOR RAIL 12'–6"	SF1303
C	1	FLEAT SECOND RAIL 10'–5"	F1324
D	1	FLEAT THIRD RAIL 13'–6 1/2"	F1334
E	1	FIRST POST TOP (6X6X$\frac{1}{4}$" Tube)	MP1A
F	1	FIRST POST BOTTOM (6' W6X15)	MP1B
G	1	GROUND STRUT	MS785
H	2	HINGE POST UPPER	MHP2A
J	2	HINGED POST LOWER	HP2B
K	5	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 EQUIV.	P618
		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	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



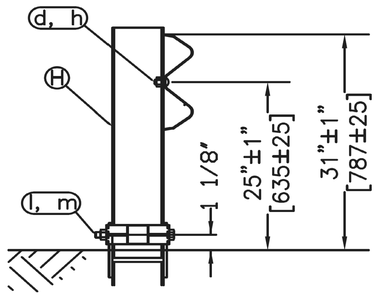
Detail A
Impact Head Connection



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.

R-SI
Road Systems, Inc.
Big Spring, TX
Phone: 432-263-2435
or Phone: 330-346-0721

MASH FLEAT Terminal
12" Blocks
TL-3 Standard Post System

Drawing Name: MFLT-12
Scale: None
Rev: 0
Sheet: 1
Date: 04/10/19
By: JRR

MASH FLEAT

NEBRASKA
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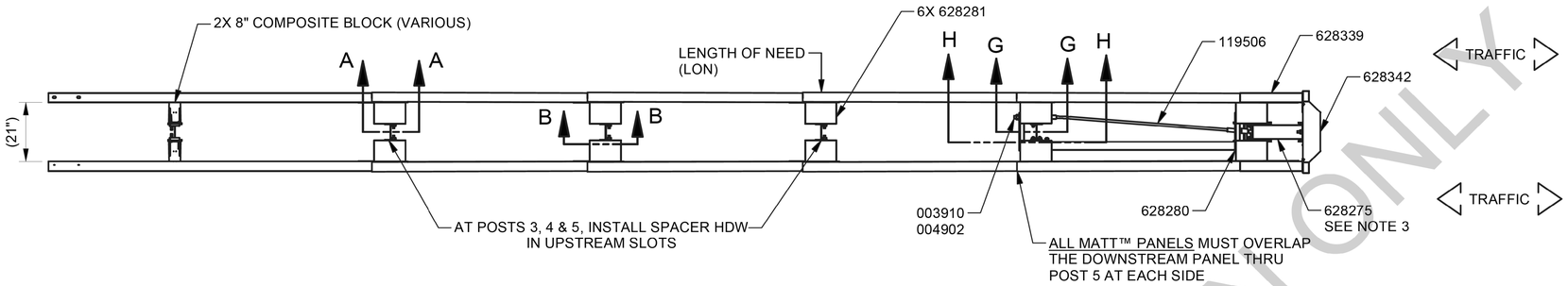
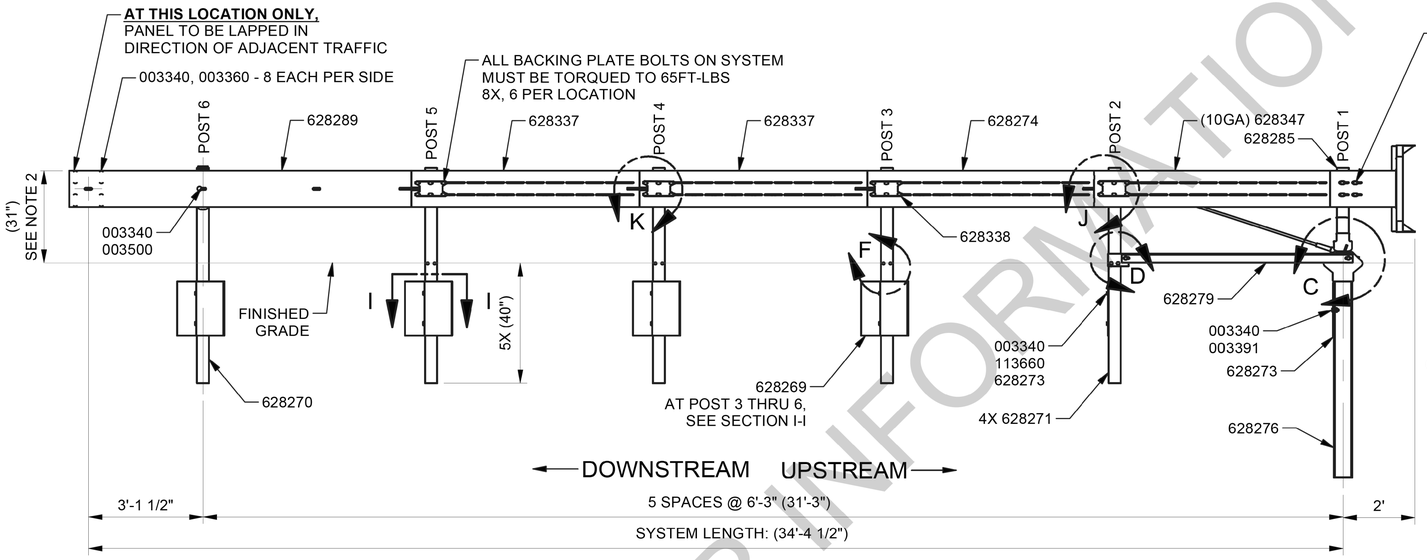
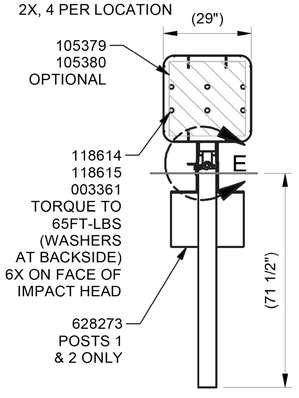
Roadway Design Division







PARTS LIST		
PART NO.	DESCRIPTION	QTY.
628276	MATT CR POST #1 BOTTOM	1
628271	6'0POST/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 3/4X7'5"/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 TUBE	1
628339	MATT 10G HEAD RAIL	2
628338	MATT BACKING PLATE	8
SEE NOTE 7 → 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,G	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 RADIUSED.
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.

DRAWN:	DATE:	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETERS [INCH] ACCORDING TO ASME Y14.5-2018 AND QMS-SE-003				
R. VENZON	1/19/2022					
CHECKED:	DATE:	DO NOT SCALE DRAWING				
K. WILSON	1/28/2022					
REVISION DESCRIPTION		ECO	DATE	REV	BY	CHK
INITIAL RELEASE		7978	-	-	-	-
UPDATE BORDER		8260	10/12/22	A	JM	KL

MATT™

MEDIAN ATTENUATING® TREND TERMINAL

VALTIR

DRAWING: SS 6288 REV: A SHEET: 1 of 2

MATT SYSTEM

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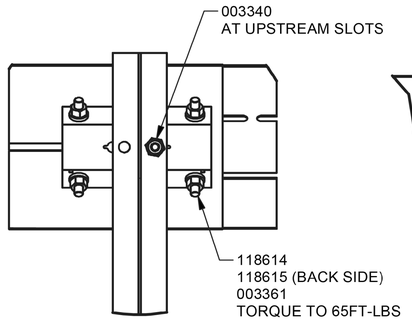
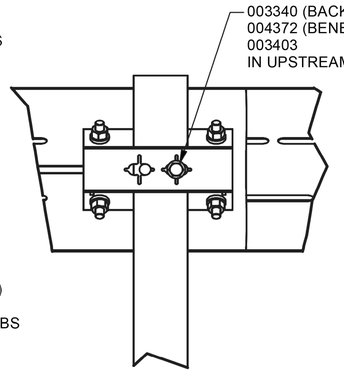
Roadway Design Division

COMPUTER: BG04194534
DATE: 11-MAY-2023 09:29
FILE: 7910 6 R0.dgn



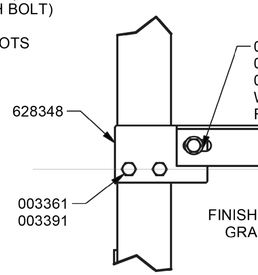
SECTION A-A

TYP AT SINGLE SPACERS ON POSTS 3,4,5
USE UPSTREAM SLOTS ONLY

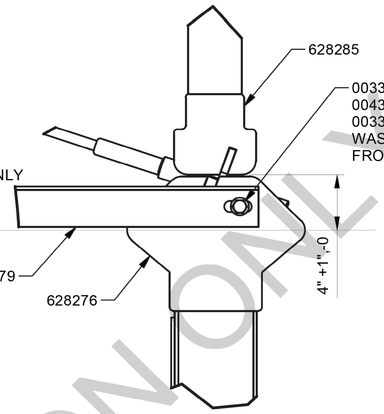


SECTION B-B

TYP AT SINGLE SPACERS ON POSTS 3,4,5
USE UPSTREAM SLOTS ONLY

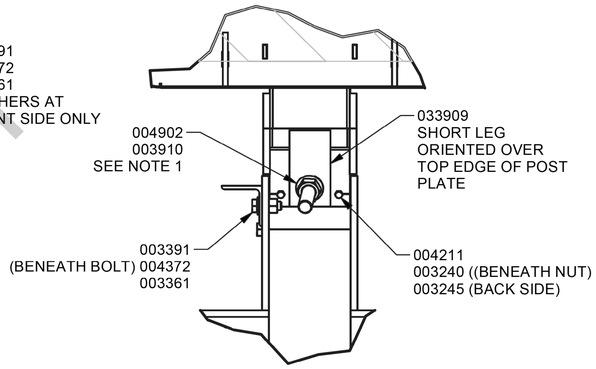


DETAIL D

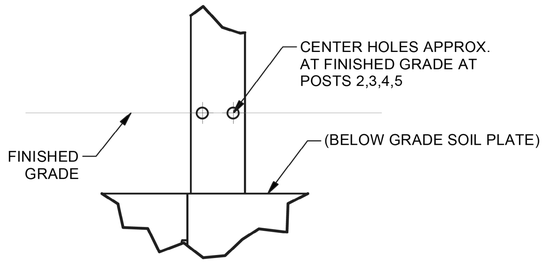


DETAIL C

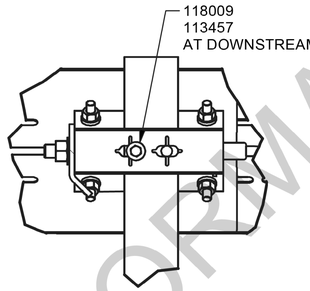
DOWNSTREAM ← → UPSTREAM



DETAIL E

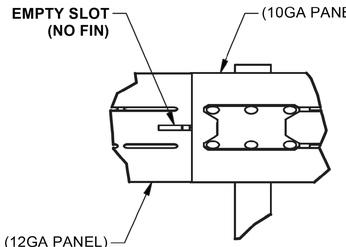


DETAIL F



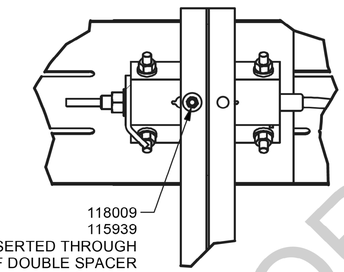
SECTION H-H

TYP AT DOUBLE SPACER ON POSTS 1 & 2



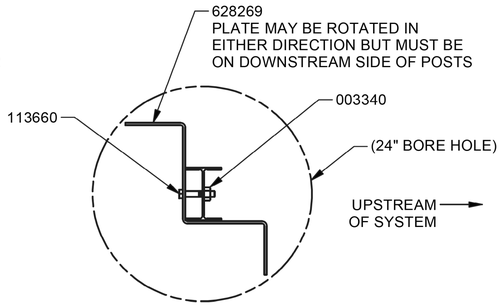
DETAIL J

POST 2 ONLY



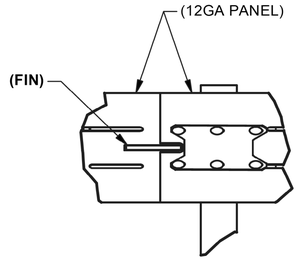
SECTION G-G

TYP AT DOUBLE SPACER ON POSTS 1 & 2



SECTION I-I

TYP POSTS 3 THRU 6



DETAIL K

TYP AT POSTS 3, 4, 5

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-003				
CHECKED: 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

VALTIR

DRAWING: SS 6288 | REV: A | SHEET: 2 of 2

MATT SYSTEM

NEBRASKA
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DEPARTMENT OF TRANSPORTATION

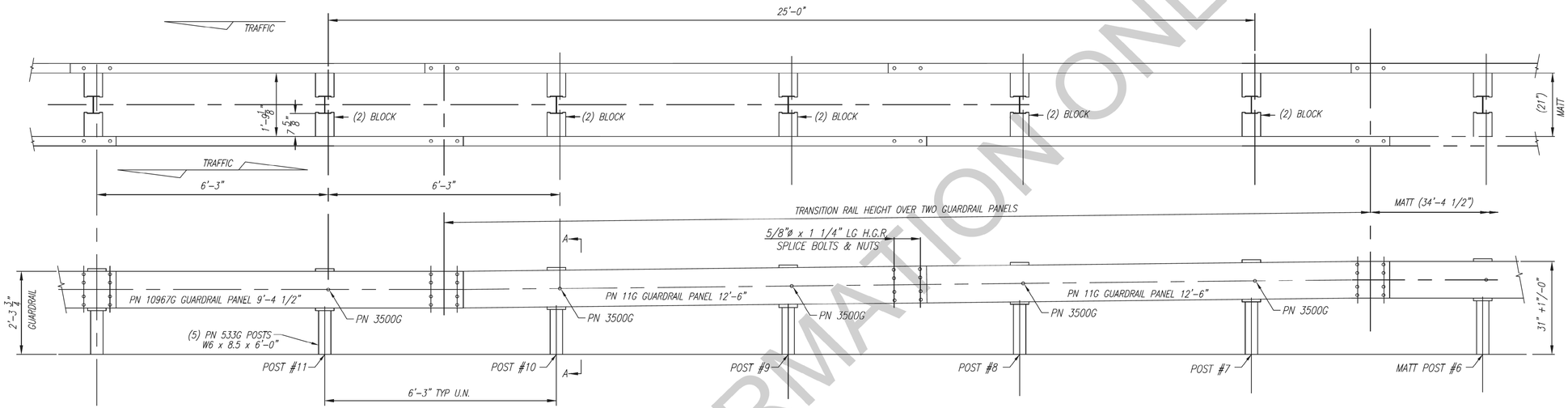
Roadway Design Division

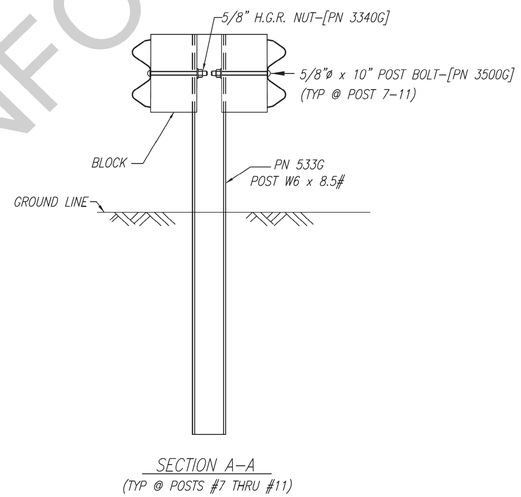
COMPUTER: BG04194534
DATE: 11-MAY-2023 09:30
FILE: 7910 6 R0.dgn

Project Number

C.N.

BILL OF MATERIAL		
PN	QTY	DESCRIPTION
11G	4	12/12'6/3'1.5/S (GUARDRAIL)
533G	5	LINE POST
3340G	58	5/8" HGR HEX NUT
3360G	48	5/8"ø x 1 1/4" SPLICE BOLT
3500G	10	5/8"ø x 10" GR BOLT A307
VARIOUS	10	COMPOSITE BLOCK 6 x 8 x 14" (NOM)
10967G	2	12/9'4.5/3'1.5/S (GUARDRAIL)





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

NOTE:
1. MATT TRANSITION DEVELOPED AND IN COMPLIANCE WITH FHWA GUIDANCE (FAQ#13).
2. LAP ALL SPLICES SHOWN WITHIN THIS DRAWING IN THE DIRECTION OF THE ADJACENT TRAFFIC, UNLESS INDICATED OTHERWISE BY APPROPRIATE SPECIFYING AGENCY.

DRAWN: J. MUSIAL	DATE: 4/25/22	MODEL: N/A				
CHECKED: A. COX	DATE: 4/28/22	TRAFFIC DIRECTION: UNI/BIDIRECTIONAL				
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS [INCH] DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND GMS-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING				
REVISION DESCRIPTION	ECO	DATE	REV	BY	CHK	
INITIAL RELEASE	8067	4/28/22	__	JM	AC	
UPDATE BORDER	8260	10/14/22	A	JM	KL	

MATT ™

MATT TRANSITION TO 27 3/4" GUARDRAIL BARRIER PLAN, ELEVATION & SECTIONS

VALTIR

DRAWING: SS 6287 REV: A SHEET: 1of1

MATT SYSTEM

NEBRASKA Good Life. Great Journey. DEPARTMENT OF TRANSPORTATION

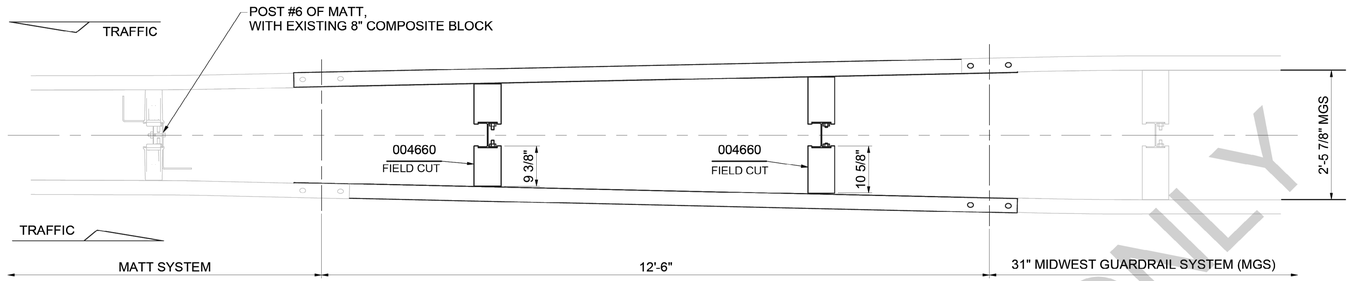
Roadway Design Division

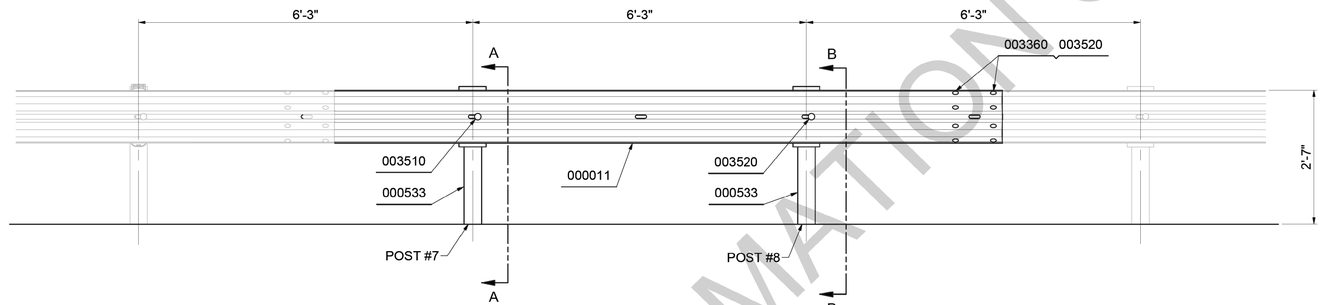
COMPUTER: BG0419M534

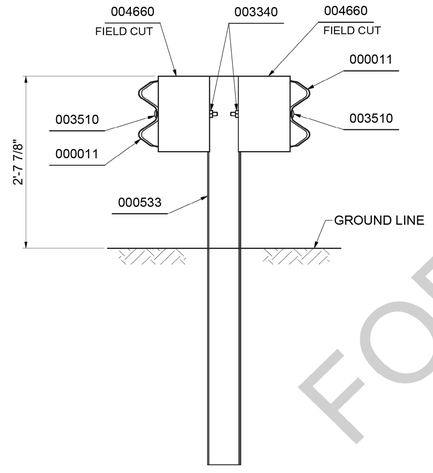
DATE: 11-MAY-2023 09:30

FILE: 7910 6 R0.dgn

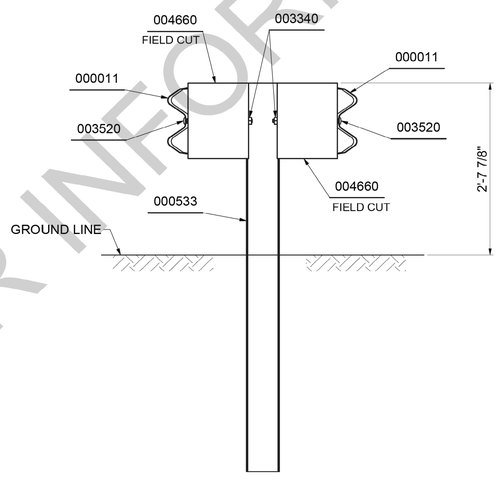
PARTS LIST		
PART NO.	QTY.	DESCRIPTION
000011	2	12/12'6/3'1.5/S
000533	2	6'-0" POST / W 6X8.5#
004660	4	WD BLK RTD 6X12.375X14
003340	20	NUT,HX,5/8,G,RAIL
003360	16	5/8"X1.25" GR BOLT
003510	2	BOLT,RAIL,5/8-11X11
003520	2	5/8"X12" GR BOLT A307



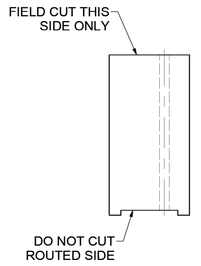




SECTION A-A
(TYP POST #7)



SECTION B-B
(TYP POST #8)



WOOD BLOCK
(P/N 004660)

NOTES:
1. DEVELOPED FROM INFORMATION CONTAINED IN THE AASHTO RDG, 4TH EDITION (PUBLISHED 2011), SECTION 5.6.3 FLARE RATE, TO INCLUDE TABLE 5-9, FOR MINIMUM FLARE RATES.
2. PROPER SITE GRADING MUST BE ACCOMPLISHED PRIOR TO ASSEMBLY AND IN ACCORDANCE WITH STATE/SPECIFYING AGENCY GUIDELINES AND/OR THE AASHTO ROADSIDE DESIGN GUIDE.

DRAWN: D. HAYES	DATE: 2/1/2022	MODEL: N/A					
CHECKED: A. COX	DATE: 2/23/2022	TRAFFIC DIRECTION: BIDIRECTIONAL					
UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN MILLIMETERS [INCH]. DIMENSIONS ACCORDING TO ASME Y14.5-2018 AND QMS-SE-003 UNLESS OTHERWISE SPECIFIED.		DO NOT SCALE DRAWING					
REVISION DESCRIPTION		ECO	DATE	REV	BY	CHK	
INITIAL RELEASE		7986	—	—	—	—	
UPDATE BORDER		8260	10/12/22	A	JM	KL	

MATT™
MATT TRANSITION TO
MGS MEDIAN BARRIER
(12" BLOCKS)

VALTIR

DRAWING: **SS 6289** REV: A SHEET: 1 of 1

MATT SYSTEM

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Roadway Design Division

COMPUTER: BG0419M534
DATE: 11-MAY-2023 09:30
FILE: 7910 6 R0.dgn