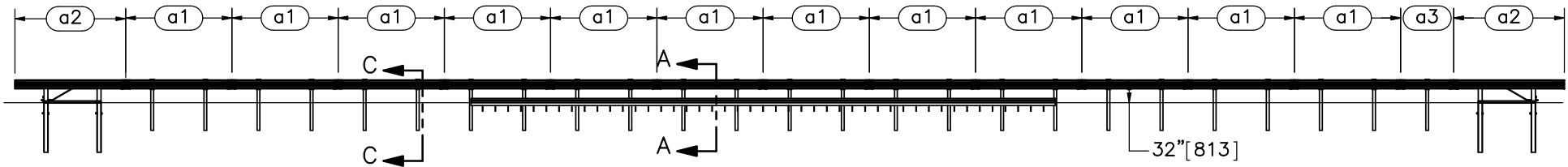



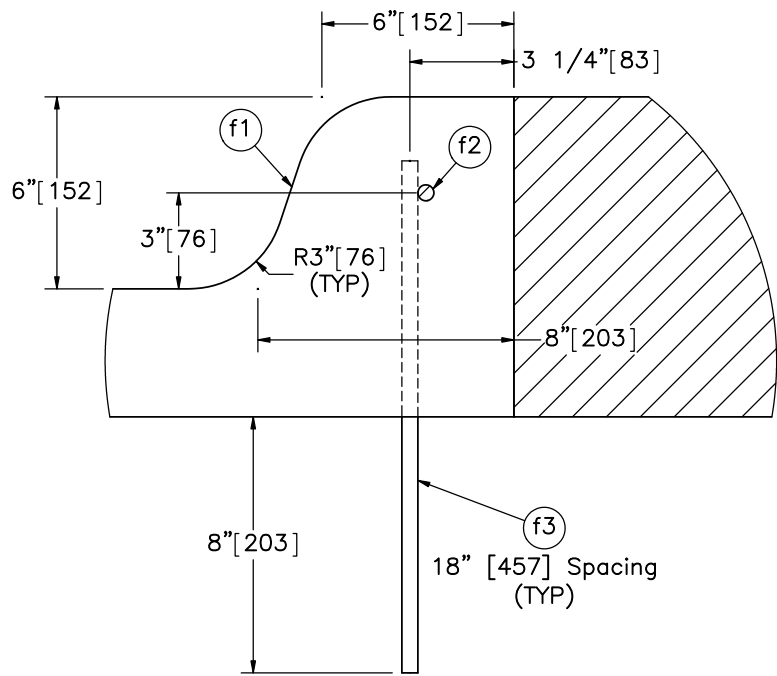
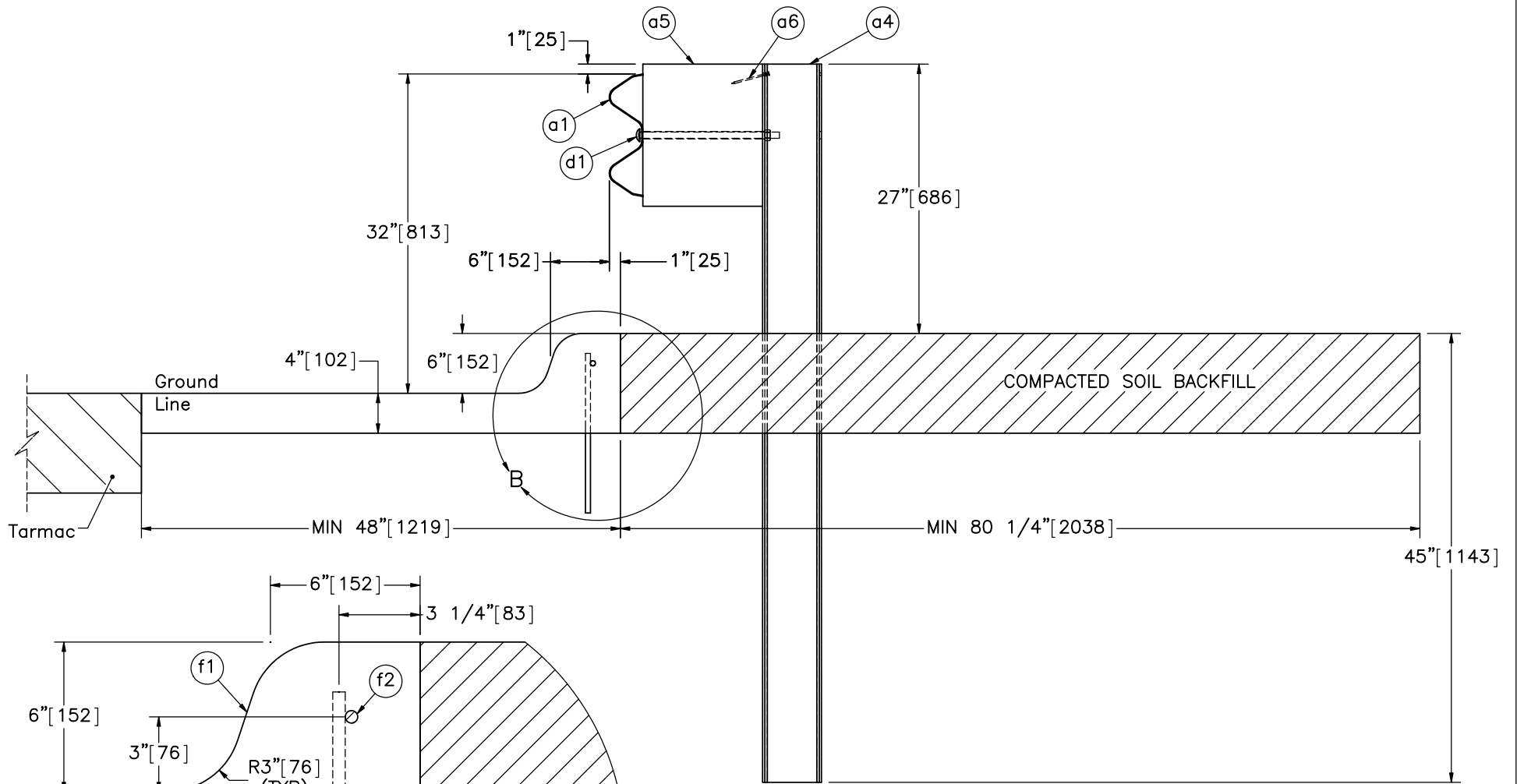
PLAN VIEW



ELEVATION VIEW

- Notes: (1) Test shall be performed according to test designation no. 3-10 of MASH.
 (2) The impact location is 89" [2,261] upstream of the center of the splice between post nos. 14 and 15.
 (3) BCT anchors are placed in $\phi 3'$ [914] holes, then backfilled and tamped with soil.
 (4) Critical region is between post nos. 10 and 18.
 (5) Soil backfill to extend at least 5' [1,524] behind posts.

 Midwest Roadside Safety Facility	MGS with Curb Test No. MGSC-7	SHEET: 1 of 13
	System Layout	DATE: 10/17/2017
DWG. NAME: MGSPost-Curb-7_R2	SCALE: 1:220 UNITS: In.[mm]	DRAWN BY: DTM/JEK
		REV. BY: JEK



SCALE 1 : 6



Midwest Roadside Safety Facility

MGS with Curb
Test No. MGSC-7

Post Detail

DWG. NAME:
MGSPost-Curb-7_R2

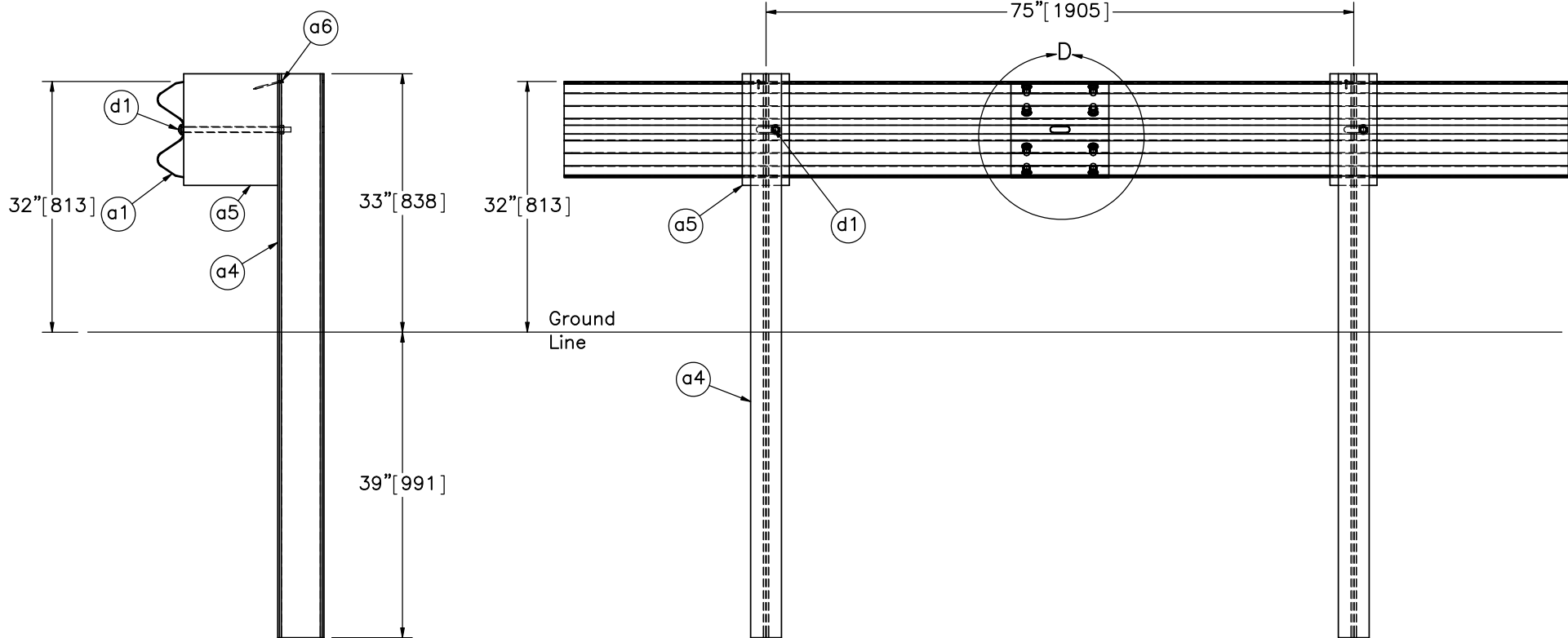
SCALE: 1:15
UNITS: In.[mm]

SHEET:
2 of 13

DATE:
10/17/2017

DRAWN BY:
DTM/JEK

REV. BY:
JEK

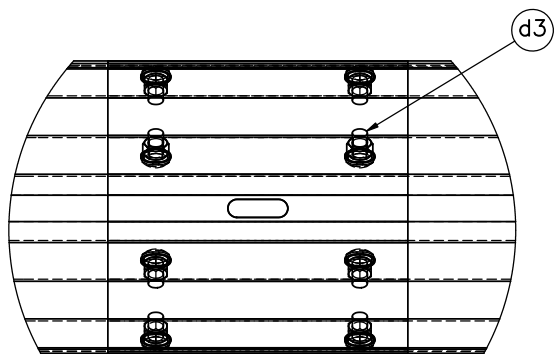


SECTION C-C

Post 23

SPLICE DETAIL
BACKSIDE

Post 22



DETAIL D
SCALE 1 : 8

Note: (1) Guardrail bolts (part d1) on the upstream side of the web.



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

Splice and Post Detail

DWG. NAME.
MGSPost-Curb-7_R2

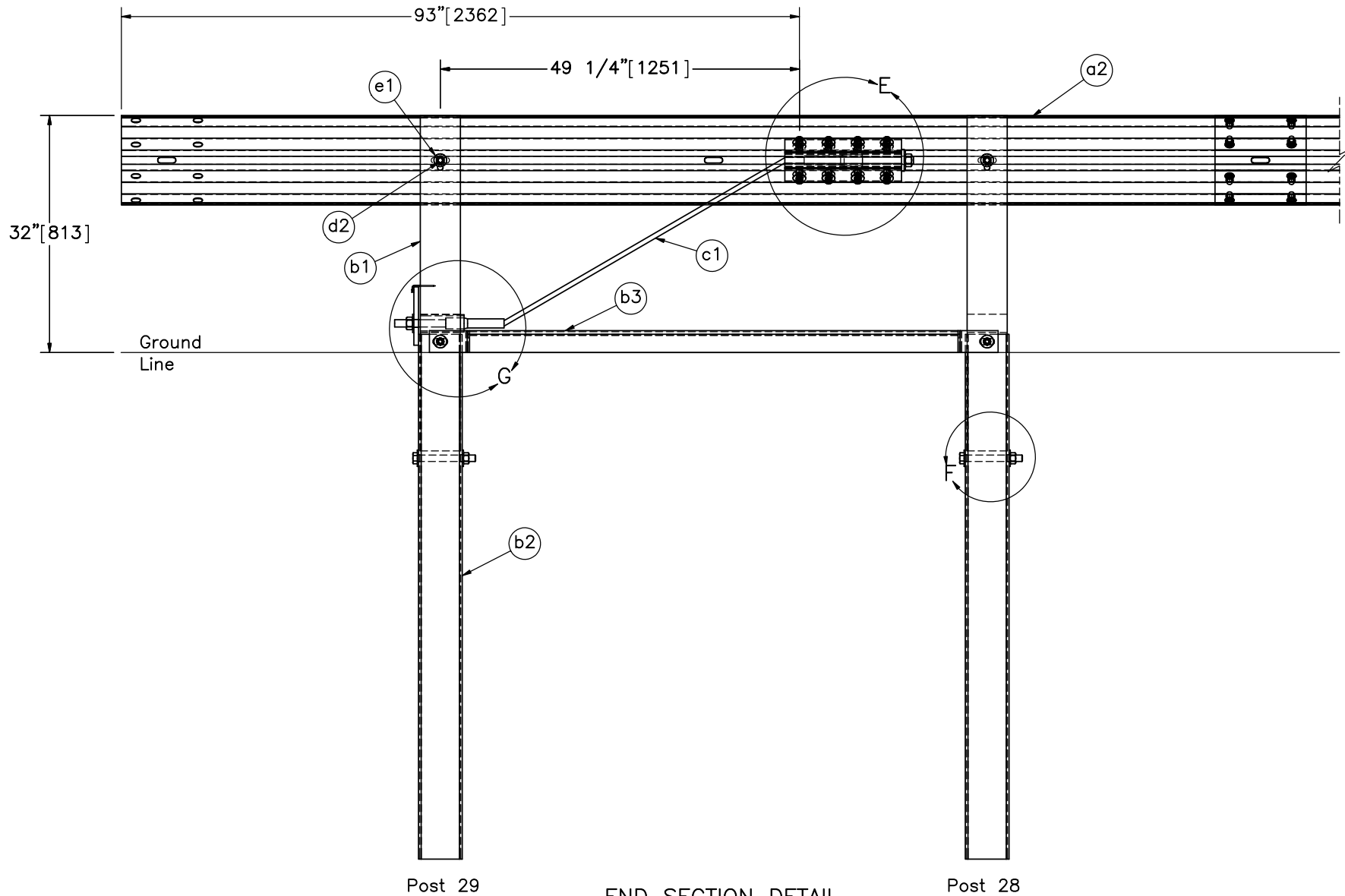
SCALE: 1:20
UNITS: In.[mm]

SHEET:
3 of 13

DATE:
10/17/2017

DRAWN BY:
DTM/JEK

REV. BY:
JEK



Post 29

Post 28

END SECTION DETAIL
BACKSIDE (TYP)

Note: (1) Downstream end section (post nos. 1 & 2) is mirrored.



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

End Section Detail

DWG. NAME.
MGSPost-Curb-7_R2

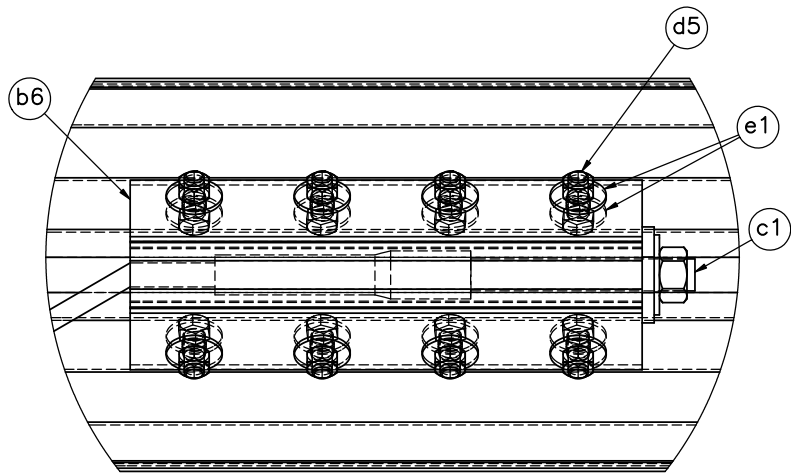
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UNITS: In.[mm]

SHEET:
4 of 13

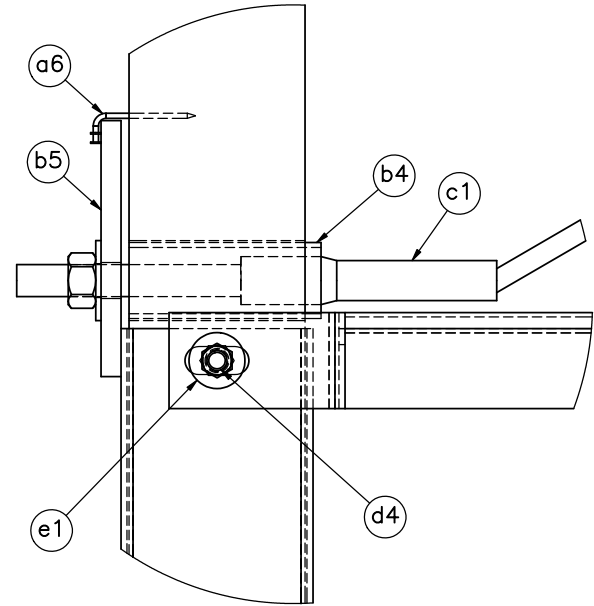
DATE:
10/17/2017

DRAWN BY:
DTM/JEK

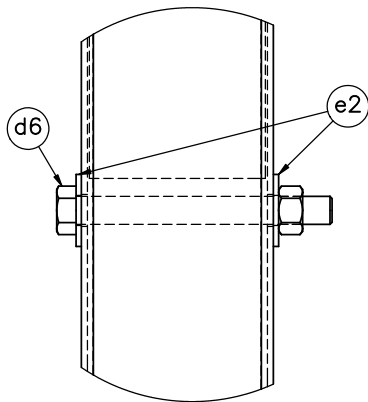
REV. BY:
JEK



DETAIL E



DETAIL G



DETAIL F

Note: (1) Additional washer (part e1) on the opposite side under the head of bolt (part d4).



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

BCT Anchor Detail

DWG. NAME.
MGSPost-Curb-7_R2

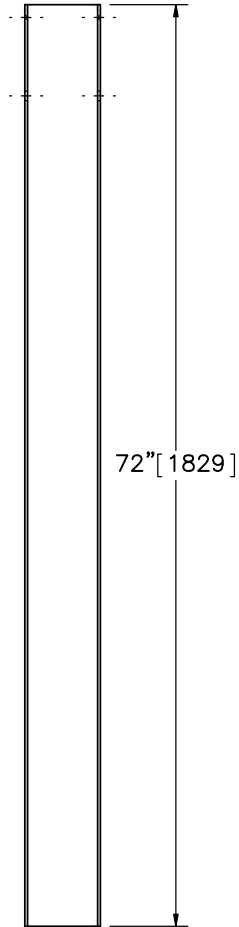
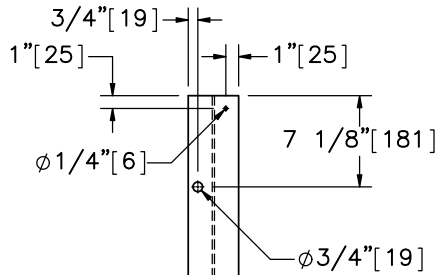
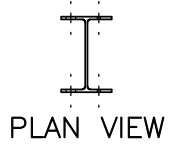
SCALE: 1:6
UNITS: In.[mm]

SHEET:
5 of 13

DATE:
10/17/2017

DRAWN BY:
DTM/JEK

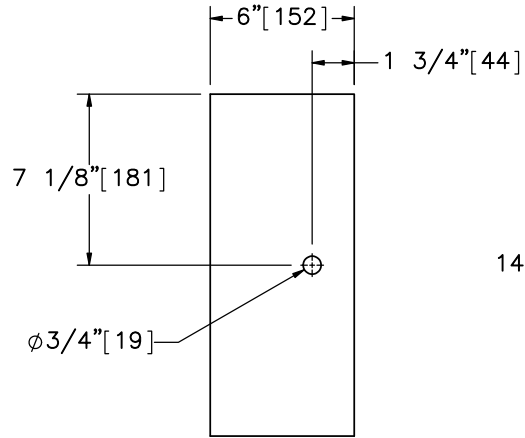
REV. BY:
JEK



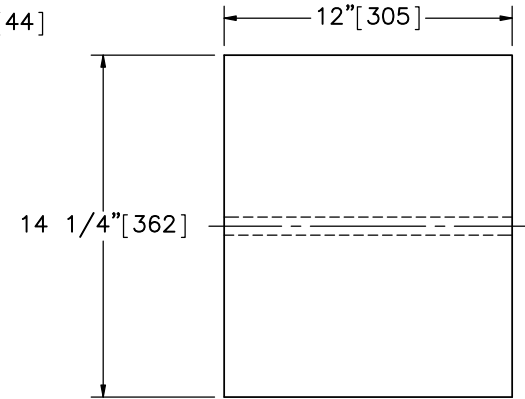
ELEVATION VIEW

PROFILE VIEW

Part a4

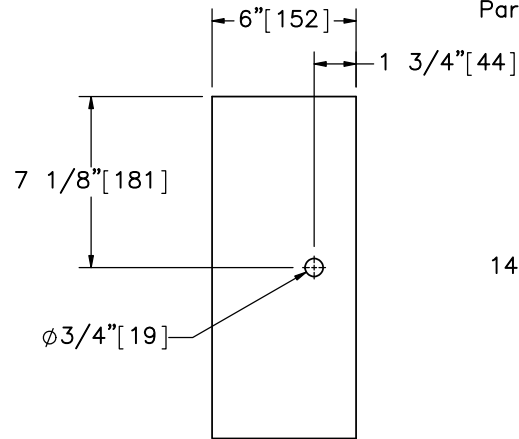


ELEVATION VIEW

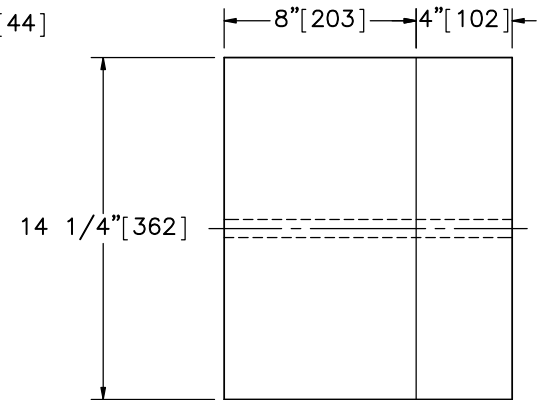


PROFILE VIEW

SCALE 1:8
Part a5



ELEVATION VIEW



PROFILE VIEW

SCALE 1:8

Alternate Blockout Option -
6"x4"x14 1/4" [152x102x362] Blockout
with 6"x8"x14 1/4" [152x203x362] Blockout



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

Post Nos. 3-27 Components

DWG. NAME.
MGSPost-Curb-7_R2

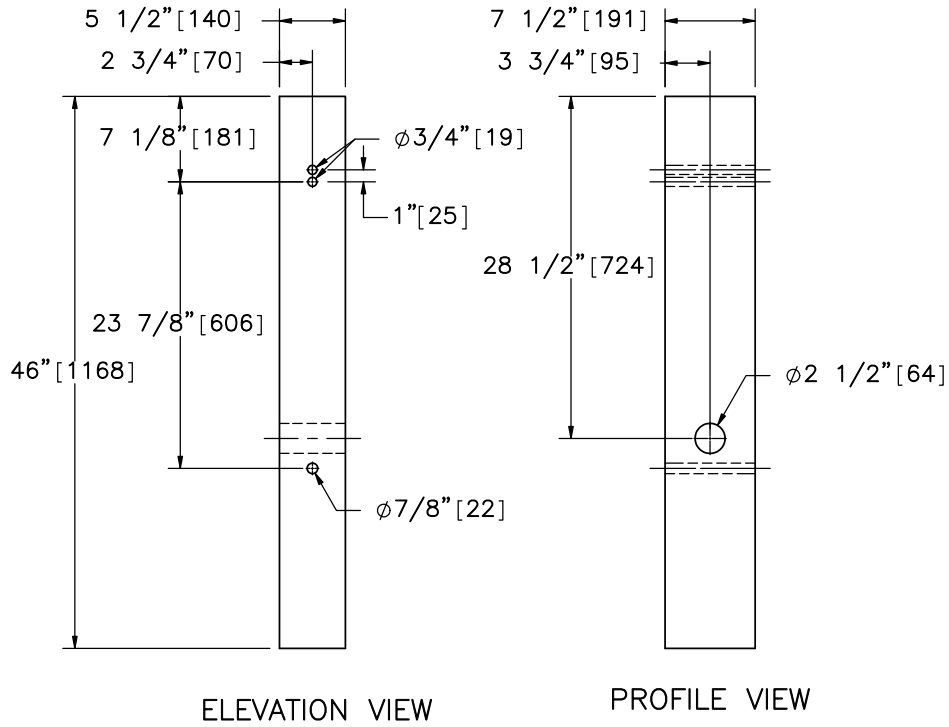
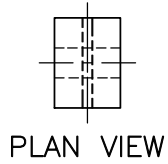
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UNITS: In.[mm]

SHEET:
6 of 13

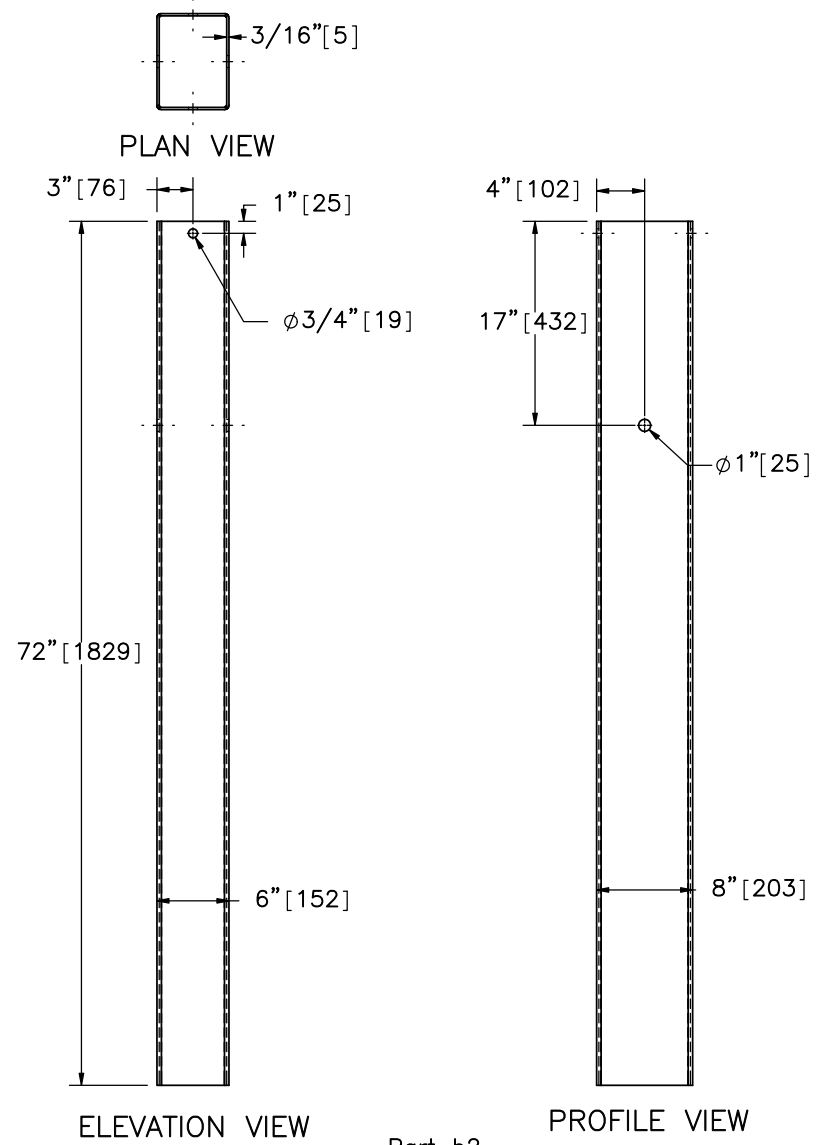
DATE:
10/17/2017

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DTM/JEK

REV. BY:
JEK



Part b1



Part b2



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

BCT Timber Post &
Foundation Tube Detail

DWG. NAME.
MGSPost-Curb-7_R2

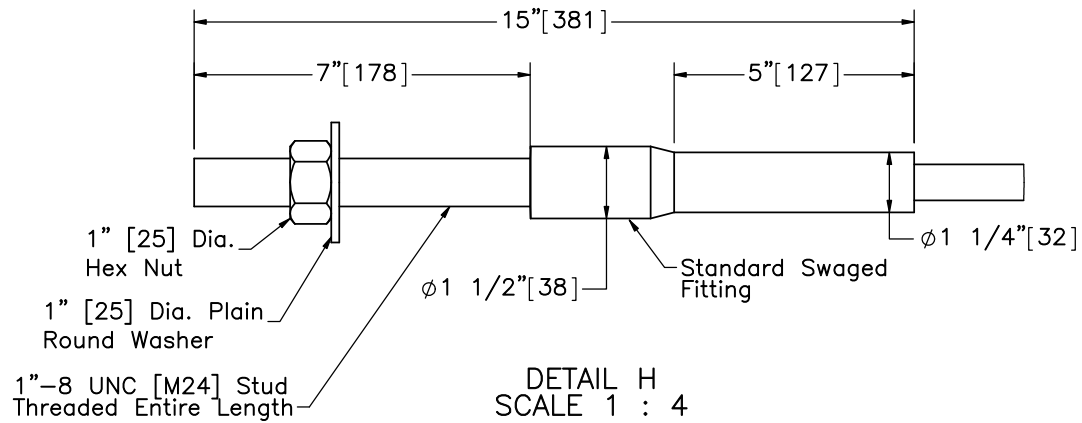
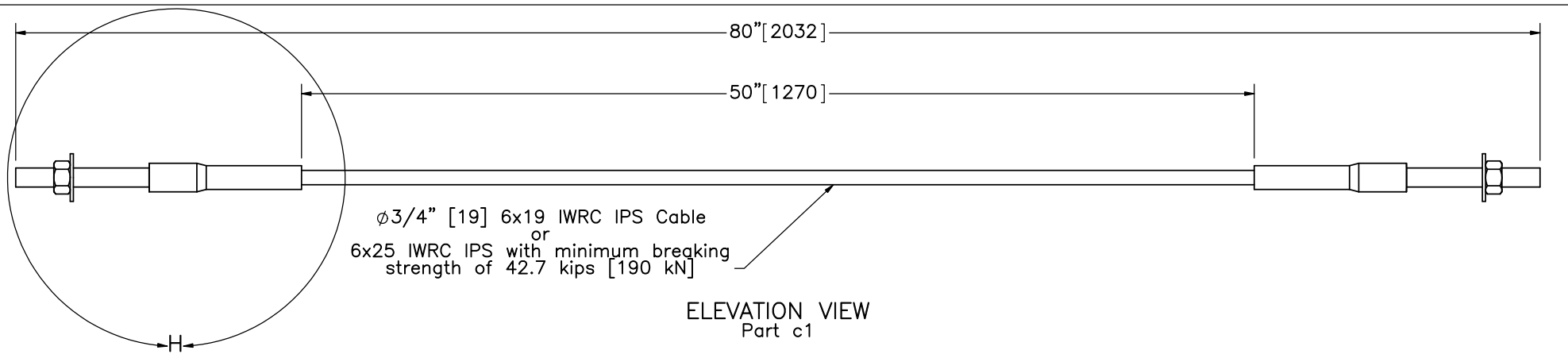
SCALE: 1:16
UNITS: In.[mm]

SHEET:
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DATE:
10/17/2017

DRAWN BY:
DTM/JEK

REV. BY:
JEK



Midwest Roadside Safety Facility

MGS with Curb
Test No. MGSC-7

BCT Anchor Cable

DWG. NAME.
MGSPost-Curb-7_R2

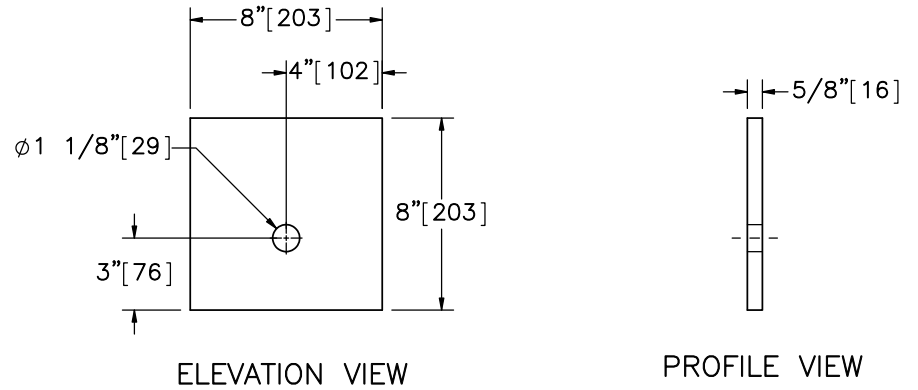
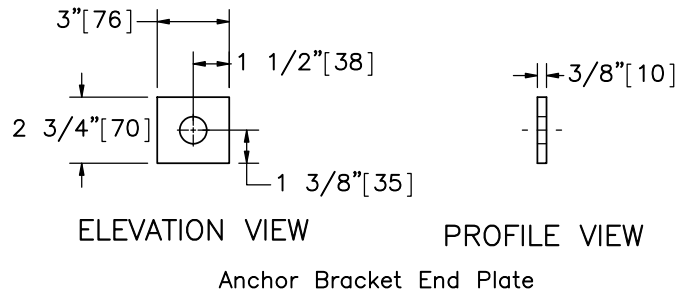
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UNITS: In.[mm]

SHEET:
8 of 13

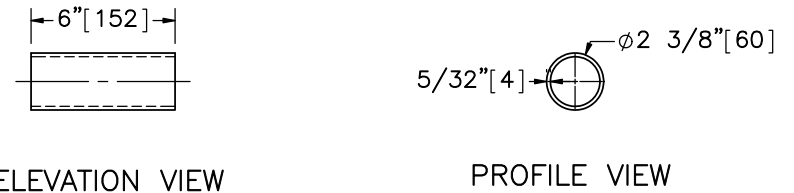
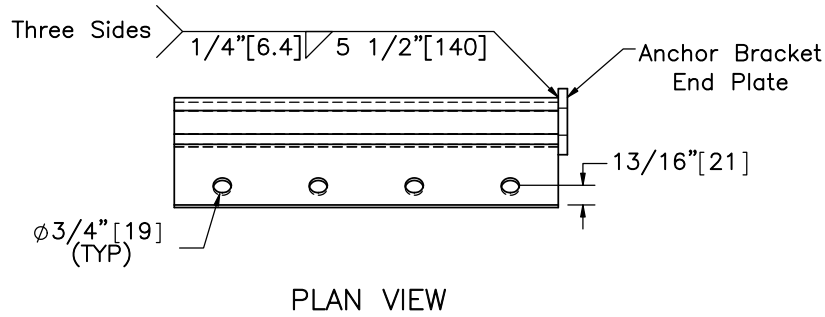
DATE:
10/17/2017

DRAWN BY:
DTM/JEK

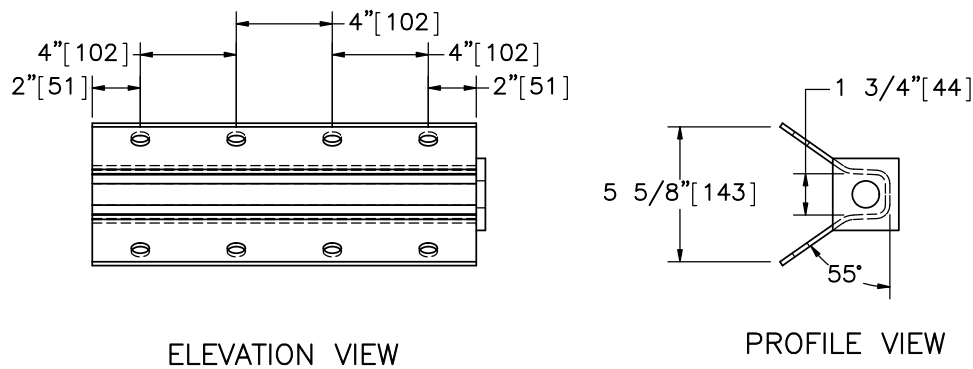
REV. BY:
JEK




Part b5

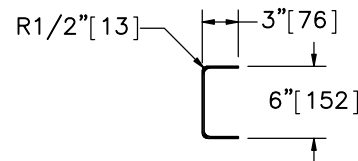
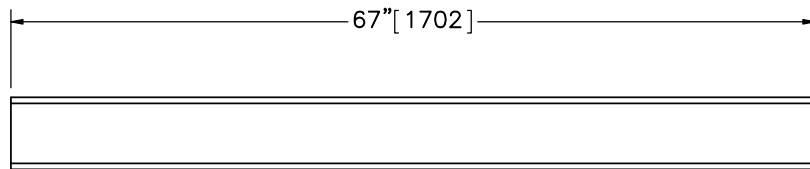
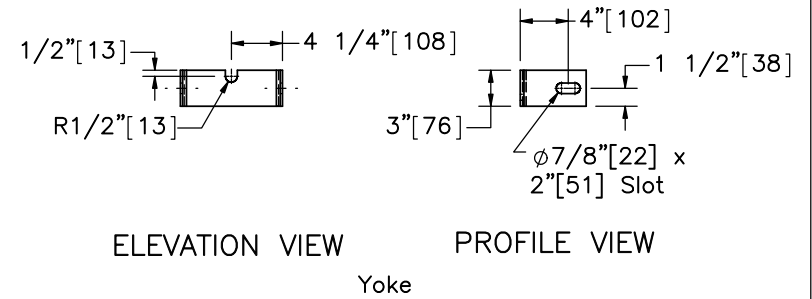
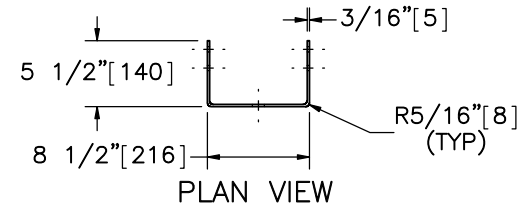
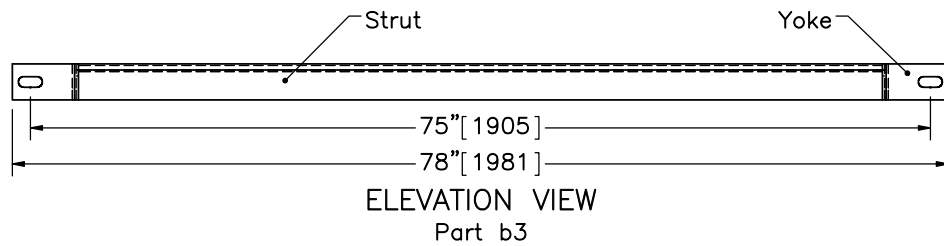
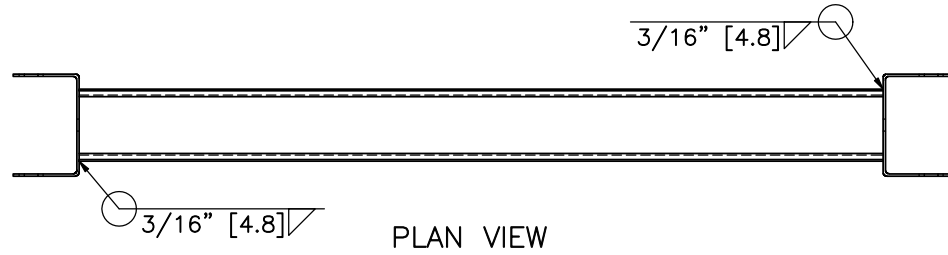


Part b4



Part b6

	MGS with Curb Test No. MGSC-7	SHEET: 9 of 13	
	Midwest Roadside Safety Facility	BCT Post Components & Anchor Bracket	DATE: 10/17/2017
DWG. NAME: MGSPost-Curb-7_R2		SCALE: 1:8 UNITS: In.[mm]	DRAWN BY: DTM/JEK
			REV. BY: JEK



ELEVATION VIEW

PROFILE VIEW

6"x3" [152x76] 10 Gauge [3.4] Strut



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

Ground Strut Details

DWG. NAME.
MGSPost-Curb-7_R2

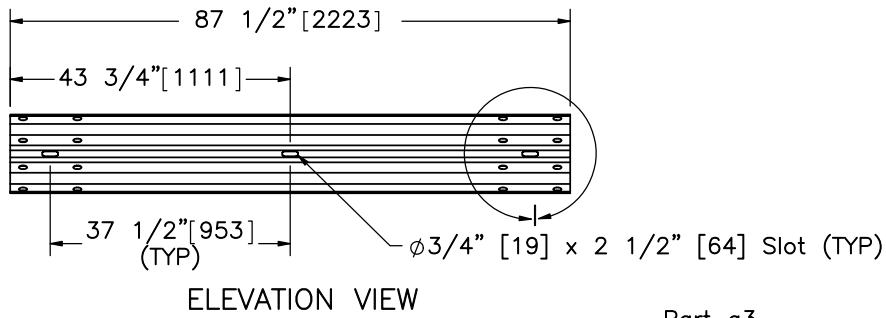
SCALE: 1:16
UNITS: In.[mm]

SHEET:
10 of 13

DATE:
10/17/2017

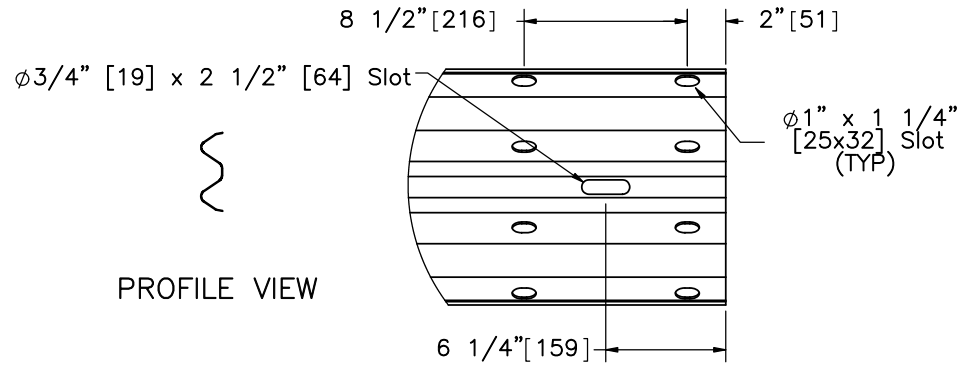
DRAWN BY:
DTM/JEK

REV. BY:
JEK



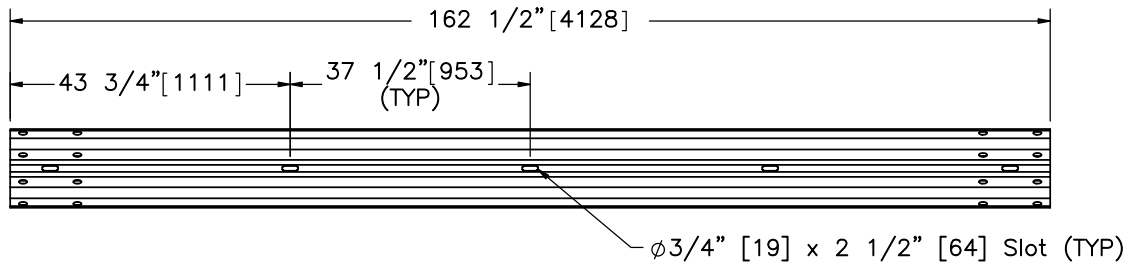
ELEVATION VIEW

Part a3

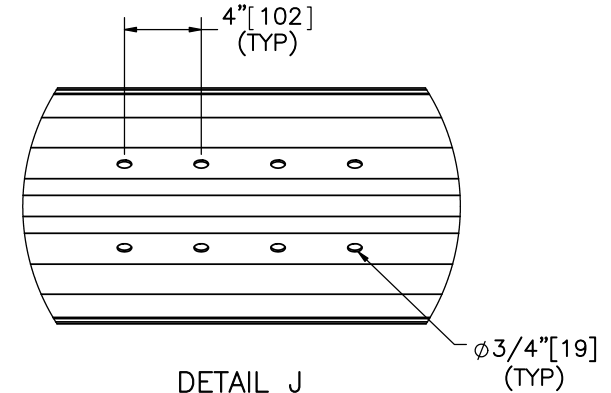


PROFILE VIEW

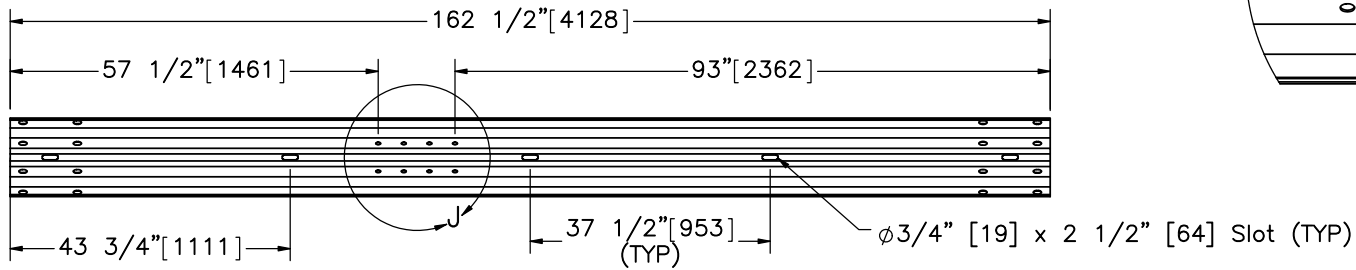
DETAIL I
 SCALE 1 : 10



ELEVATION VIEW
 Part a1



DETAIL J
 SCALE 1 : 10



ELEVATION VIEW
 Part a2



Midwest Roadside
 Safety Facility

MGS with Curb
 Test No. MGSC-7

Rail Section Details

DWG. NAME.
 MGSPost-Curb-7_R2

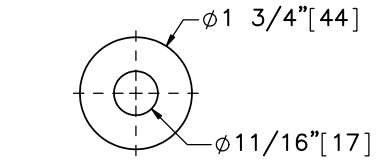
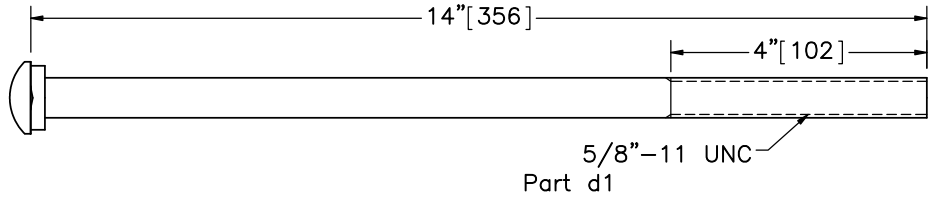
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 UNITS: In.[mm]

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DATE:
 10/17/2017

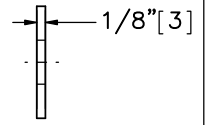
DRAWN BY:
 DTM/JEK

REV. BY:
 JEK

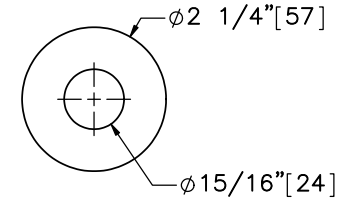
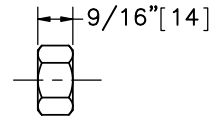
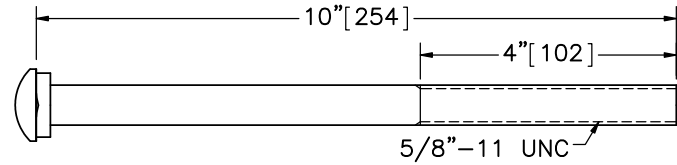


ELEVATION VIEW

Part e1

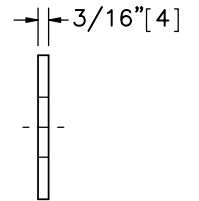


PROFILE VIEW

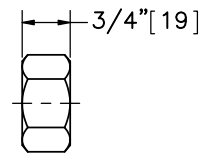
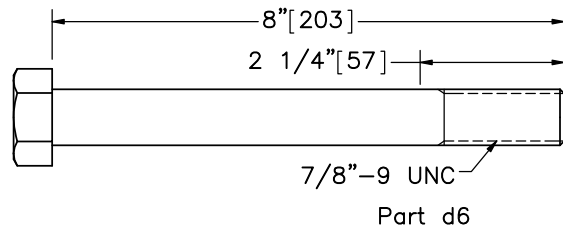
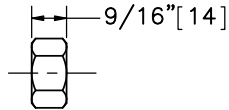
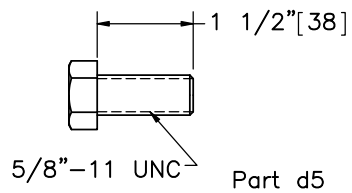
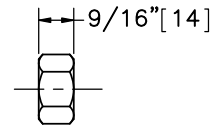
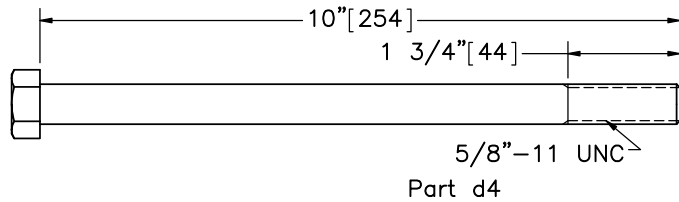
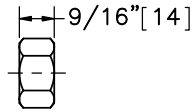
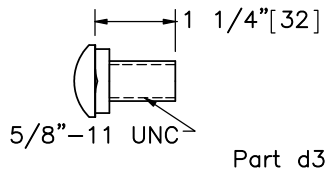


ELEVATION VIEW

Part e2



PROFILE VIEW



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

Hardware

DWG. NAME.
MGSPost-Curb-7_R2

SCALE: 1:3
UNITS: In.[mm]

SHEET:
12 of 13

DATE:
10/17/2017

DRAWN BY:
DTM/JEK

REV. BY:
JEK

Item No.	QTY.	Description	Material Specification	Galvanization Specification	Hardware Guide
a1	12	12'-6" [3,810] 12 gauge [2.7] W-Beam MGS Section	AASHTO M180	ASTM A123 or A653	RWM04a
a2	2	12'-6" [3,810] 12 gauge [2.7] W-Beam MGS End Section	AASHTO M180	ASTM A123 or A653	RWM14a
a3	1	6'-3" [1,905] 12 gauge [2.7] W-Beam MGS Section	AASHTO M180	ASTM A123 or A653	RWM04a
a4	25	W6x8.5 [W152x12.6] or W6x9 [W152x13.4], 72" Long [1,829] Steel Post	ASTM A992 Min. 50 ksi [345 MPa]	ASTM A123	PWE06
a5	25	6"x12"x14 1/4" [152x305x368] Timber Blockout for Steel Posts	SYP Grade No.1 or better	-	PDB10a
a6	25	16D Double Head Nail	-	-	-
b1	4	BCT Timber Post - MGS Height	SYP Grade No. 1 or better (No knots 18" [457] above or below ground tension face)	-	PDF01
b2	4	72" [1829] Long Foundation Tube	ASTM A500 Gr. B	ASTM A123	PTE06
b3	2	Ground Strut Assembly	ASTM A36	ASTM A123	PFPO2
b4	2	2 3/8" [60] O.D. x 6" [152] Long BCT Post Sleeve	ASTM A53 Gr. B Schedule 40	ASTM A123	FMM02
b5	2	8"x8"x5/8" [203x203x16] Anchor Bearing Plate	ASTM A36	ASTM A123	FPB01
b6	2	Anchor Bracket Assembly	ASTM A36	ASTM A123	FPA01
c1	2	BCT Anchor Cable	-	-	FCA01
d1	25	5/8" [16] Dia. UNC, 14" [356] Long Guardrail Bolt and Nut	Bolt - ASTM A307 Gr. A Nut - ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBB06
d2	4	5/8" [16] Dia. UNC, 10" [254] Long Guardrail Bolt and Nut	Bolt - ASTM A307 Gr. A Nut - ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBB03
d3	112	5/8" [16] Dia. UNC, 1 1/4" [32] Long Guardrail Bolt and Nut	Bolt - ASTM A307 Gr. A Nut - ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBB01
d4	4	5/8" [16] Dia. UNC, 10" [254] Long Hex Head Bolt and Nut	Bolt - ASTM A307 Gr. A Nut - ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBX16a
d5	16	5/8" [16] Dia. UNC, 1 1/2" [38] Long Hex Head Bolt and Nut	Bolt - ASTM A307 Gr. A Nut - ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBX16a
d6	4	7/8" [22] Dia. UNC, 8" [203] Long Hex Head Bolt and Nut	Bolt - ASTM A307 Gr. A Nut - ASTM A563A	ASTM A153 or B695 Class 55 or F2329	-
e1	44	5/8" [16] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC16a
e2	8	7/8" [22] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	-
f1	1	Curb	f'c = 4,000 psi [27.6 MPa]	-	-
f2	1	#4 Rebar 819" [20,803] Long	ASTM A615 Gr. 60	-	-
f3	45	#4 Rebar 16" [406] Long	ASTM A615 Gr. 60	-	-



Midwest Roadside
Safety Facility

MGS with Curb
Test No. MGSC-7

Bill of Materials

DWG. NAME.
MGSPost-Curb-7_R2

SCALE: None
UNITS: In.[mm]

SHEET:
13 of 13

DATE:
10/17/2017

DRAWN BY:
DTM/JEK

REV. BY:
JEK

REV.	DATE OF ISSUE	Page	NATURE OF CHANGES	REVIEWER	REVISED BY
0	9/25/2017	-	Drawing created from OmitPost-Curb-1_R6.	-	DTM
1	9/25/2017	3	Revised post nos. on splice detail.	JEK	DTM
		4	Revised post nos. on end section detail view.		
		7	Added arrow for second hole on part b1.		
		13	Revised spec to specification for materials and galvanization.		
2	10/17/2017	-	Test name/drawing name change.	KAL	JEK