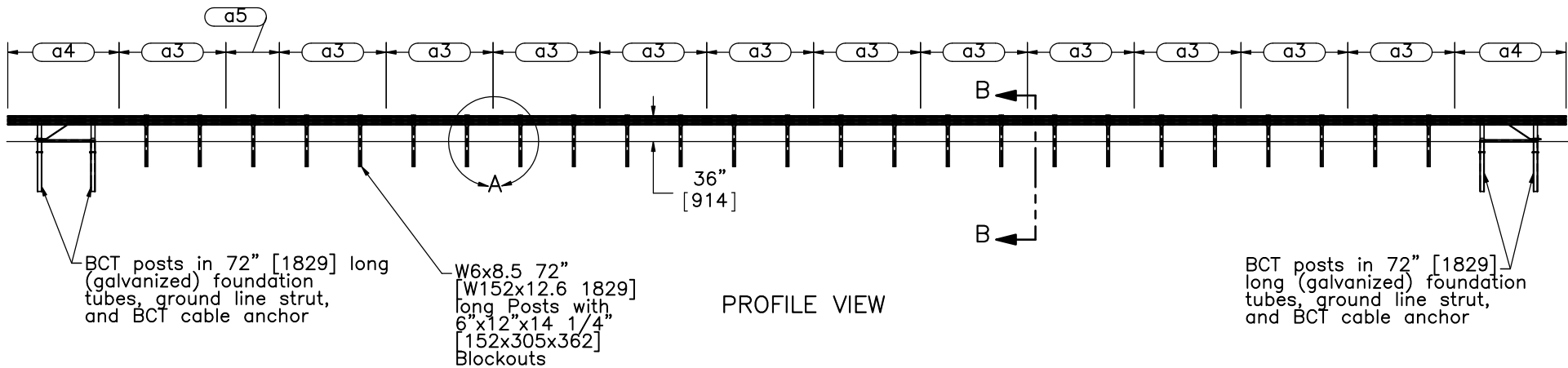


PLAN VIEW



PROFILE VIEW

- Notes:
- (1) Test no. MGS MRH-2 is to be performed according to test designation no. 3-10 of MASH.
 - (2) The impact location is 10' [3048] upstream from the centerline of post no. 15.
 - (3) The BCT anchor posts are placed in ϕ 3' [914] holes.
 - (4) Critical region located between post nos. 11 through 21.



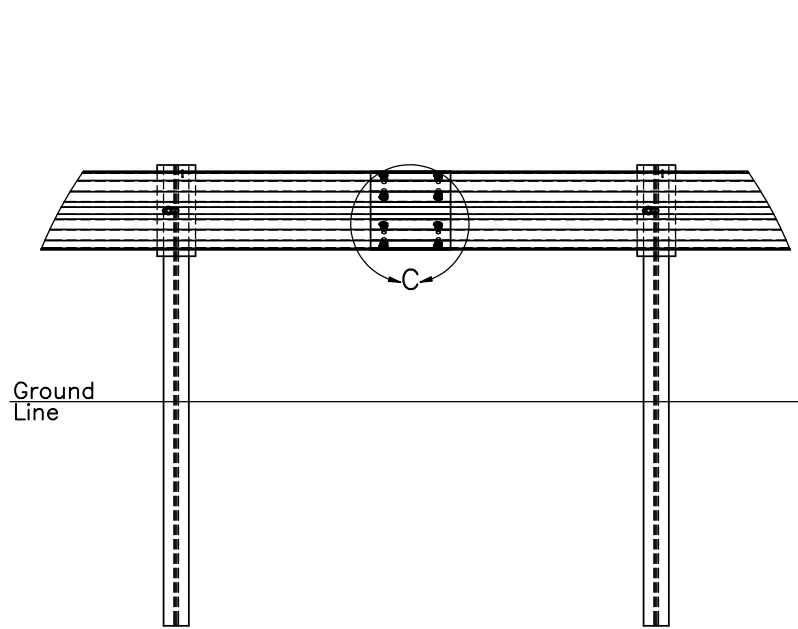
Midwest Roadside Safety Facility

MGS 36 in. Height
System Layout

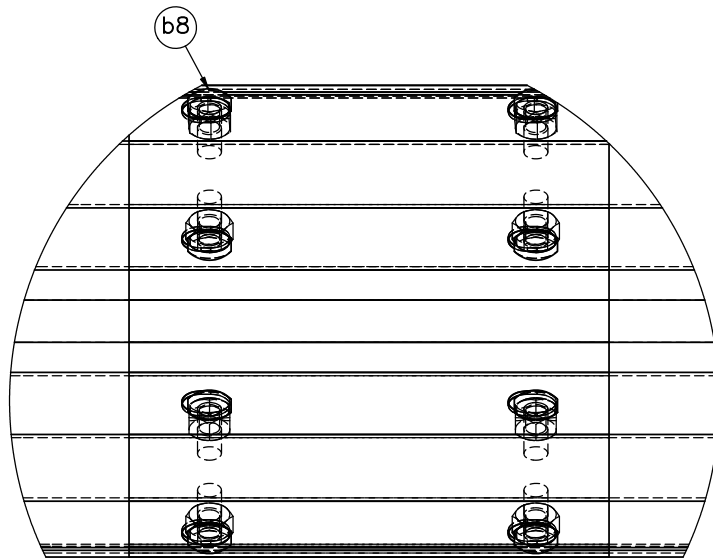
DWG. NAME:
MGS_36Ht_R3

SCALE: 1:220
UNITS: In./mm

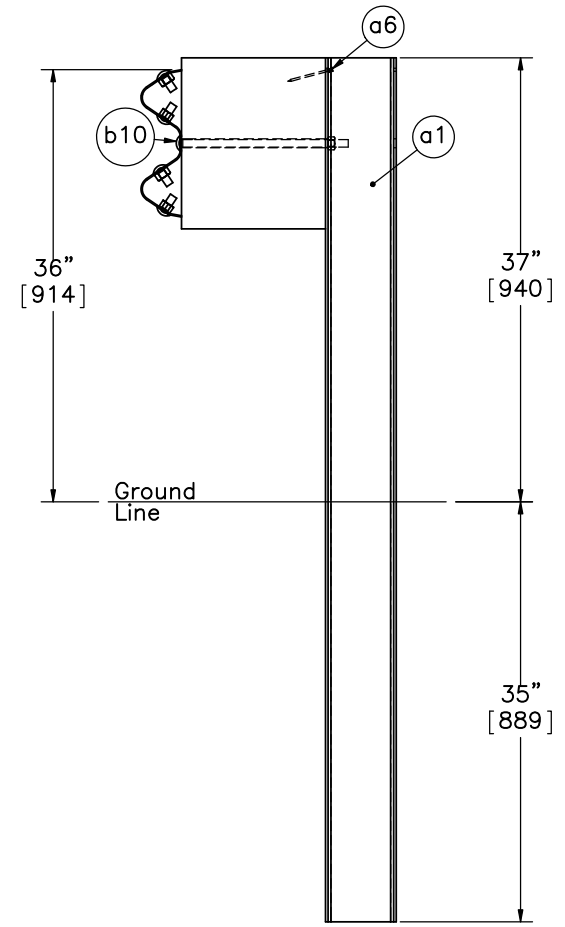
SHEET:
1 of 10
DATE:
7/13/2011
DRAWN BY:
MDM/DMH
REV. BY:
KAL



DETAIL A
SCALE 1 : 30



DETAIL C
SCALE 1 : 5



SECTION B-B



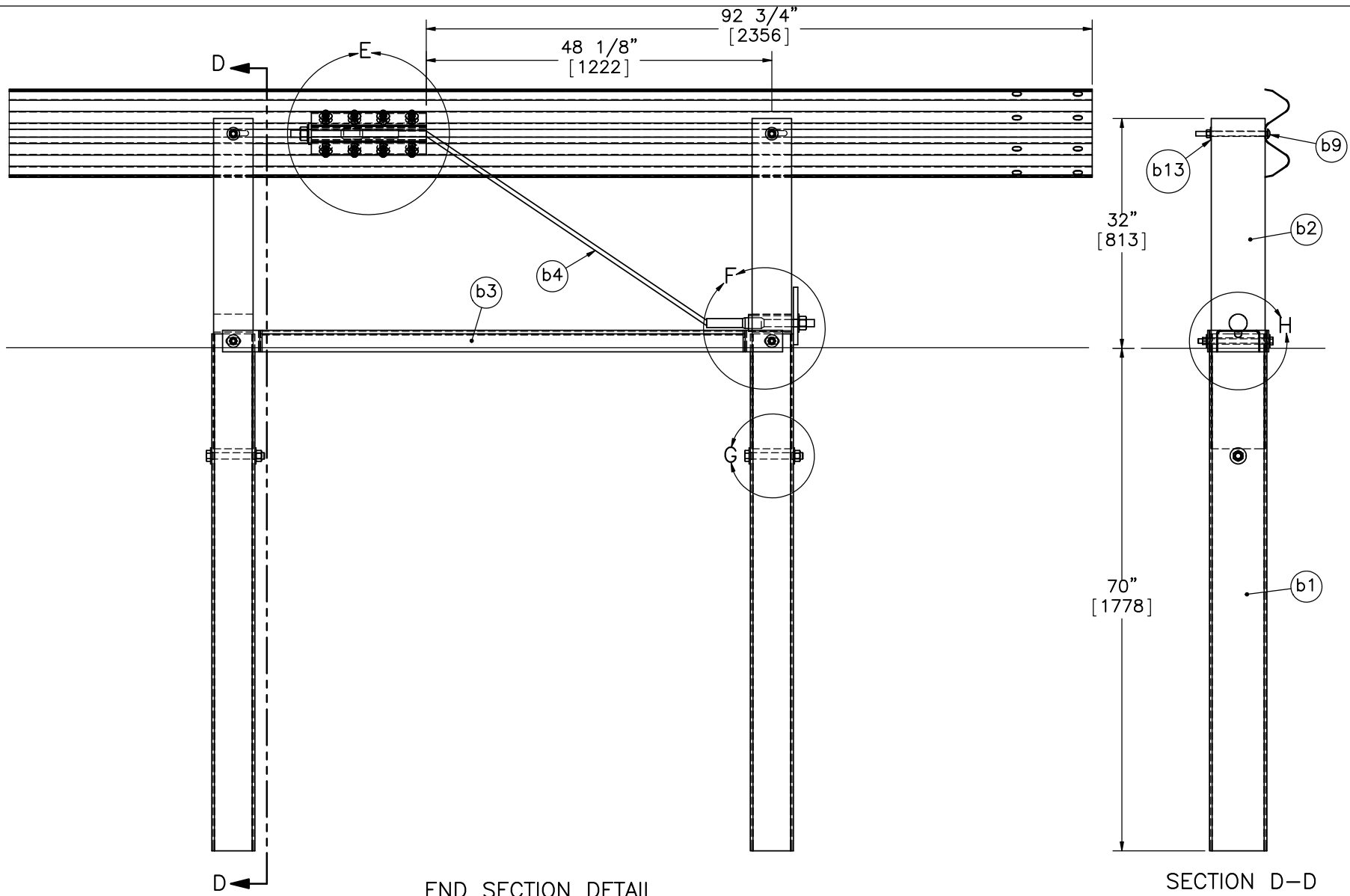
Midwest Roadside
Safety Facility

MGS 36 in. Height
Posts 3-27 Detail

DWG. NAME.
MGS_36Ht_R3

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

SHEET:
2 of 10
DATE:
7/13/2011
DRAWN BY:
MDM/DMH
REV. BY:
KAL



END SECTION DETAIL

SECTION D-D



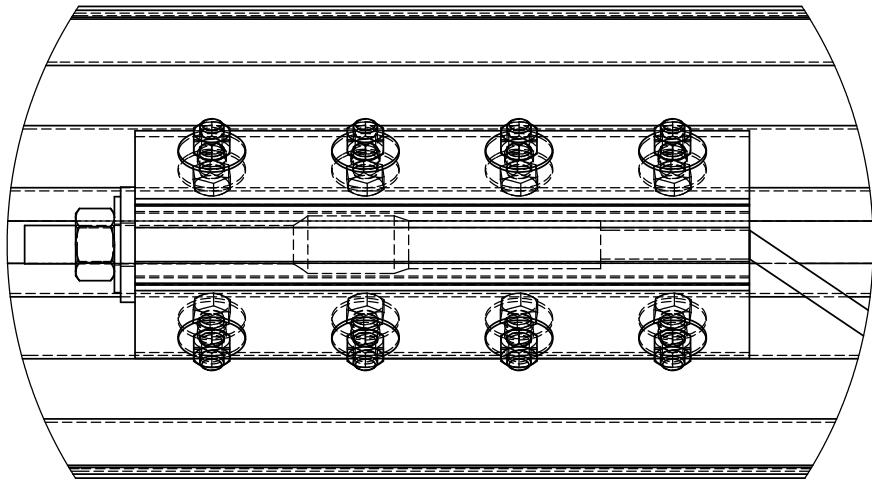
Midwest Roadside
Safety Facility

MGS 36 in. Height
End Rail Details

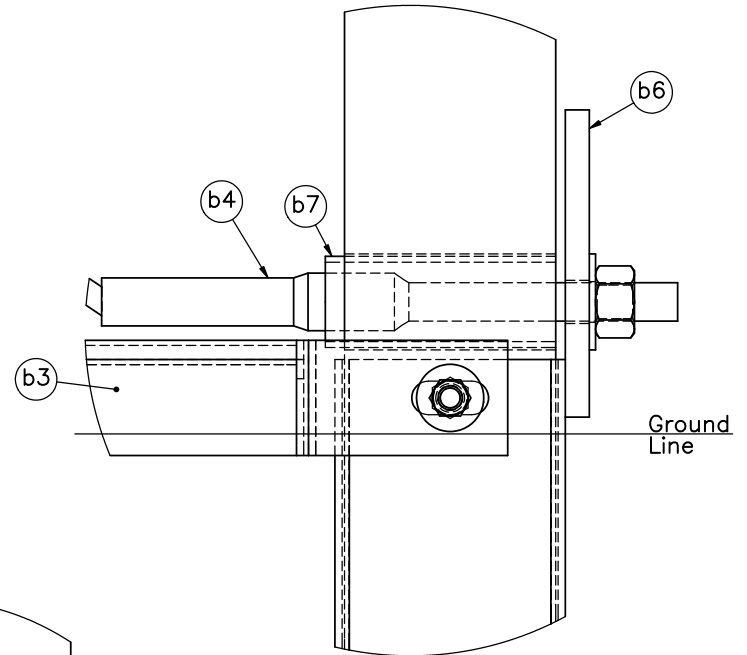
DWG. NAME.
MGS_36Ht_R3

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

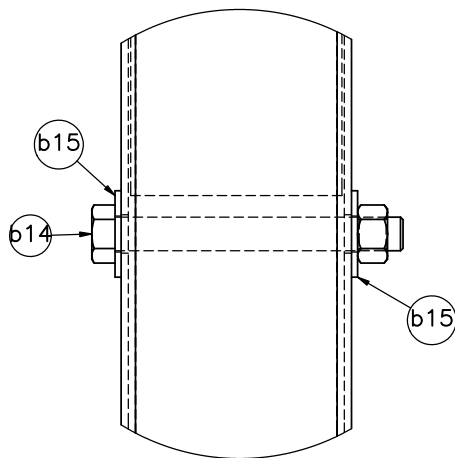
SHEET:
3 of 10
DATE:
7/13/2011
DRAWN BY:
MDM/DMH
REV. BY:
KAL



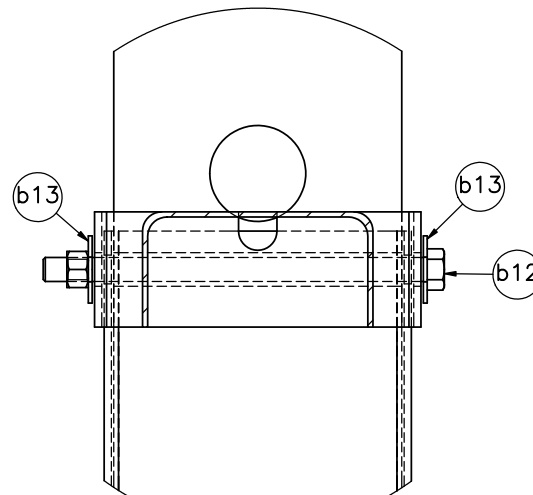
DETAIL E



DETAIL F



DETAIL G



DETAIL H



Midwest Roadside
Safety Facility

MGS 36 in. Height

BCT Timber Posts &
Foundation Tube Detail

SHEET:
4 of 10

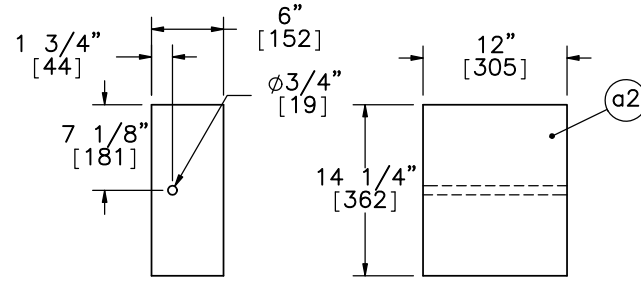
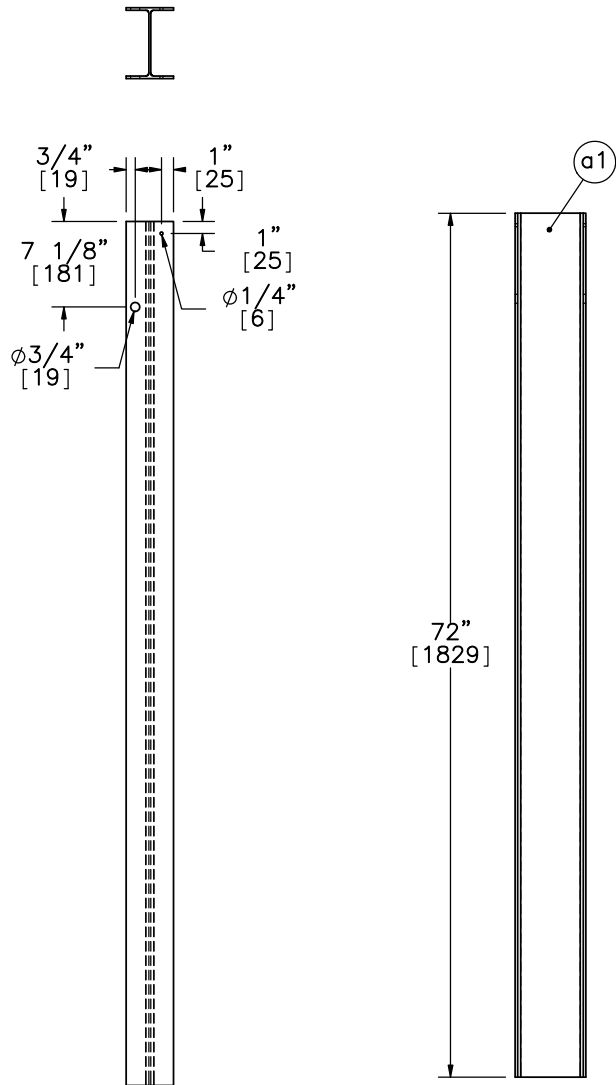
DATE:
7/13/2011

DRAWN BY:
MDM/DMH

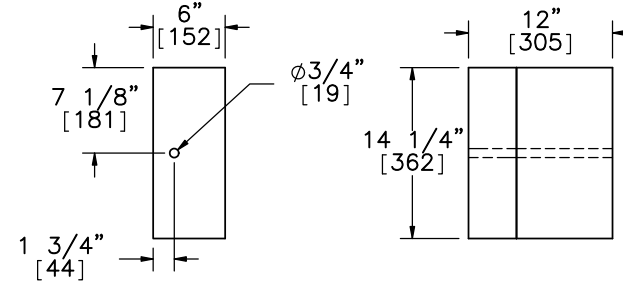
DWG. NAME:
MGS_36Ht_R3

SCALE: 1:5
UNITS: In.[mm]

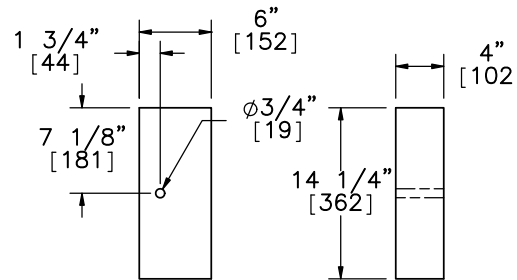
REV. BY:
KAL



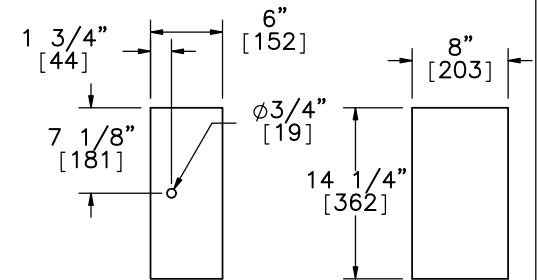
W-Beam Blockout



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



6"x4"x14 1/4"
 [152x102x362] Blockout



6"x8"x14 1/4"
 [152x203x362] Blockout

Line Post



Midwest Roadside
 Safety Facility

MGS 36 in. Height
 Post No. 3-27 Details

SHEET:
 5 of 10

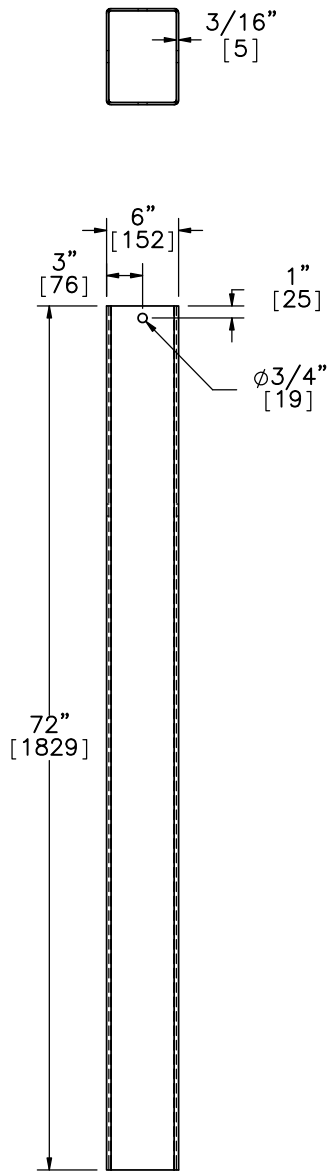
DATE:
 7/13/2011

DRAWN BY:
 MDM/DMH

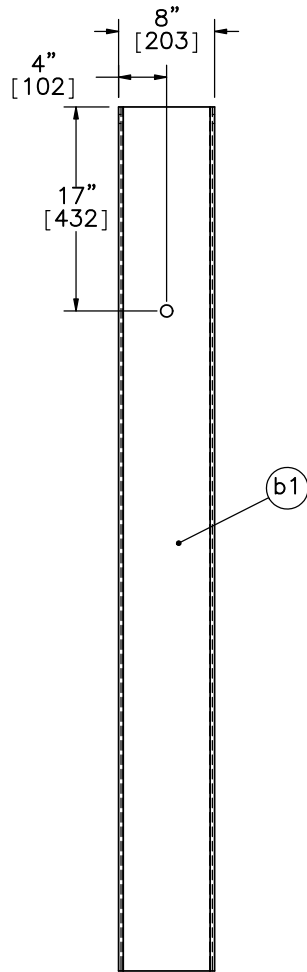
DWG. NAME:
 MGS_36Ht_R3

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

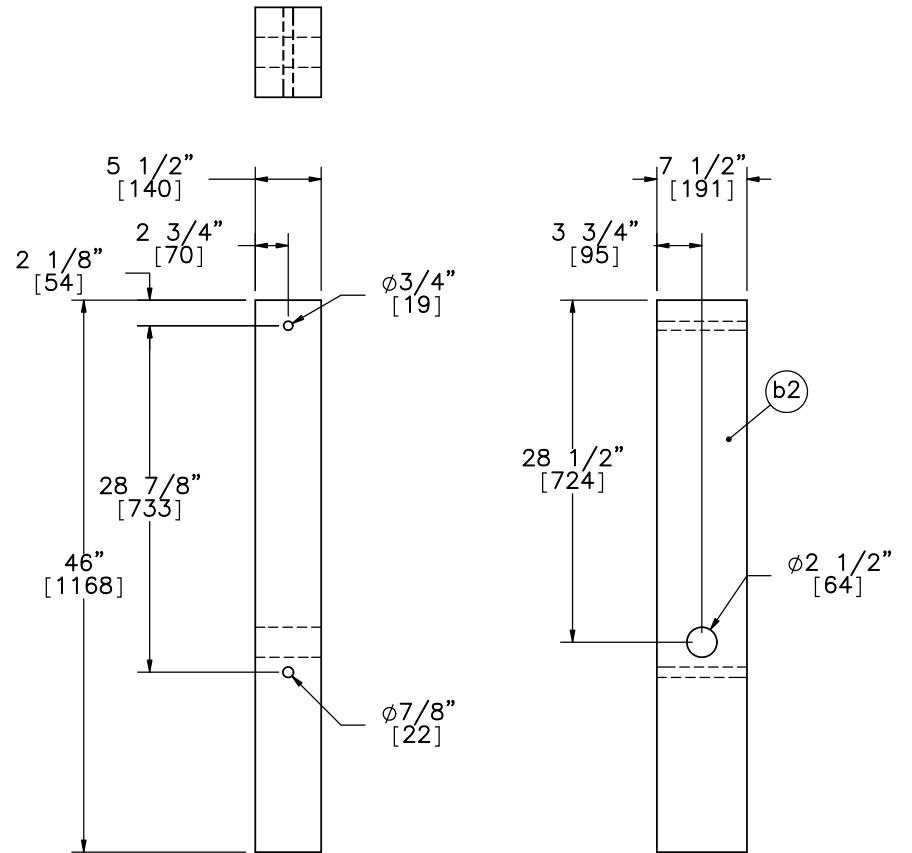
REV. BY:
 KAL



Foundation Tube



(b1)



BCT (MGS) Timber Post



Midwest Roadside
Safety Facility

MGS 36 in. Height

BCT Timber Post and
Foundation Tube

SHEET:
6 of 10

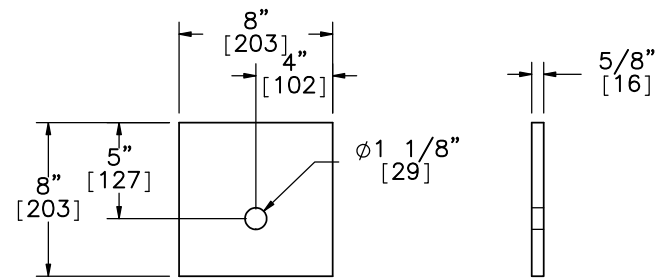
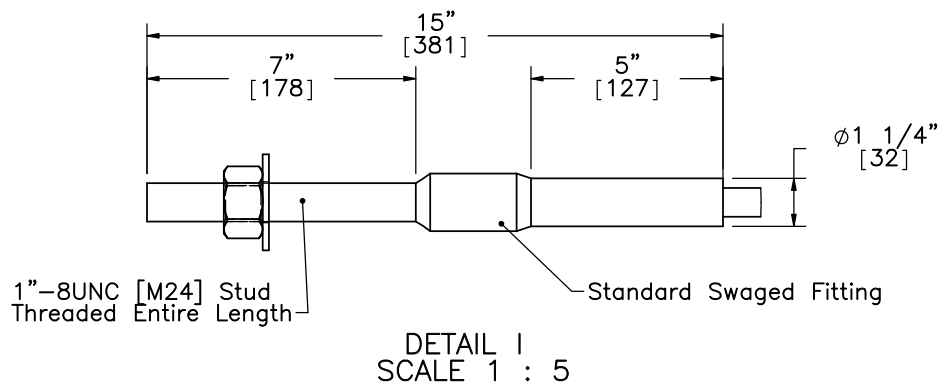
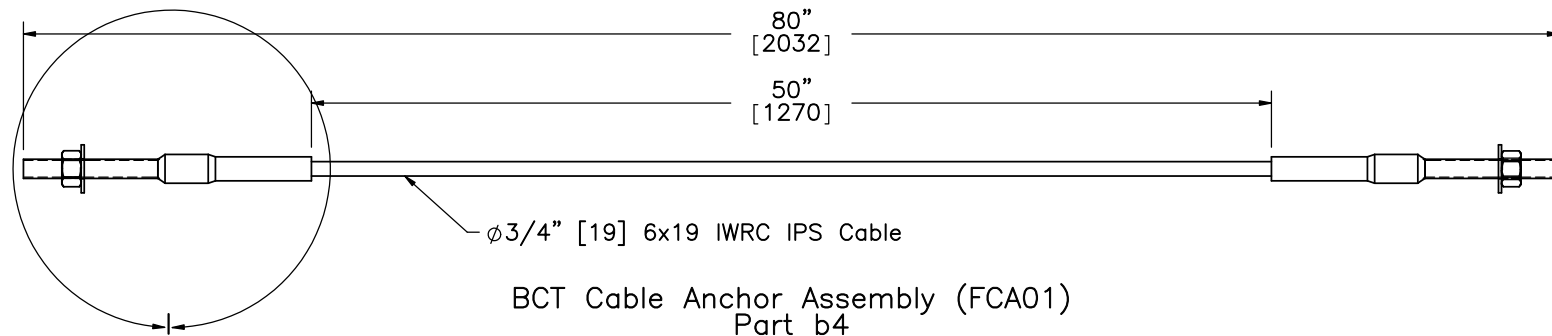
DATE:
7/13/2011

DRAWN BY:
MDM/DMH

DWG. NAME:
MGS_36Ht_R3

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

REV. BY:
KAL

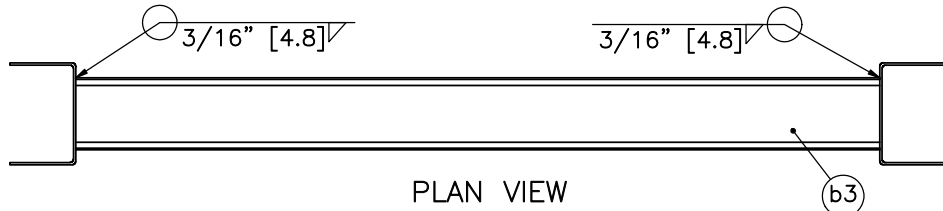


Anchor Cable End Plate
 Part b6

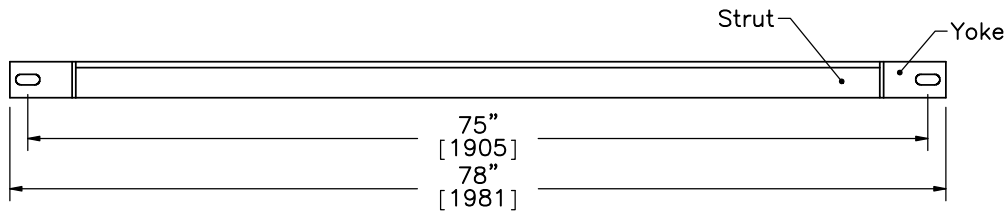
Note: (1) 6x25 IWRC IPS cables meet the minimum breaking strength of 42.7 kips [190 kN] and may be substituted for the 6x19 IWRC IPS cables.

Midwest Roadside
 Safety Facility

MGS 36 in. Height BCT Anchor Cable Detail	SHEET:	7 of 10
	DATE:	7/13/2011
	DRAWN BY:	MDM/DMH
DWG. NAME:	SCALE: 1:10	REV. BY:
MGS_36Ht_R3	UNITS: In.[mm]	KAL

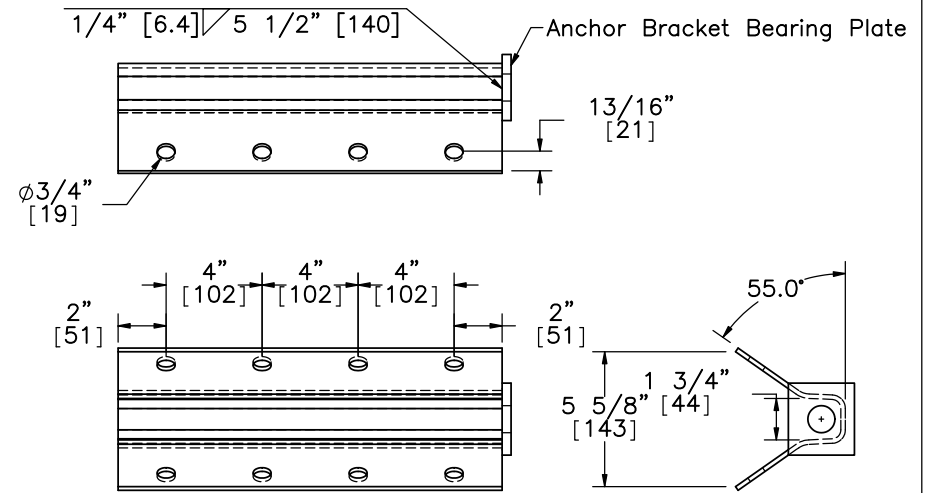


PLAN VIEW

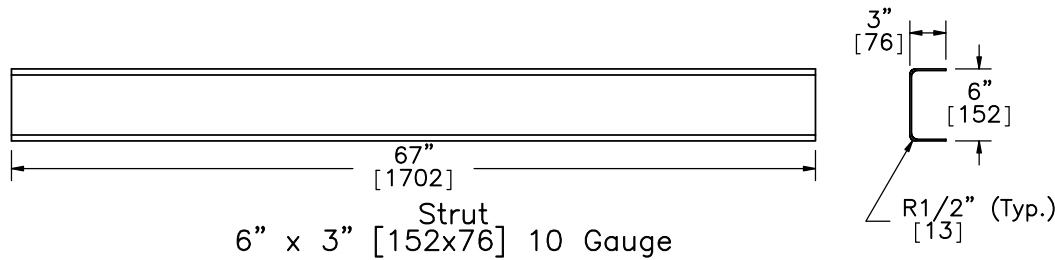


FRONT VIEW

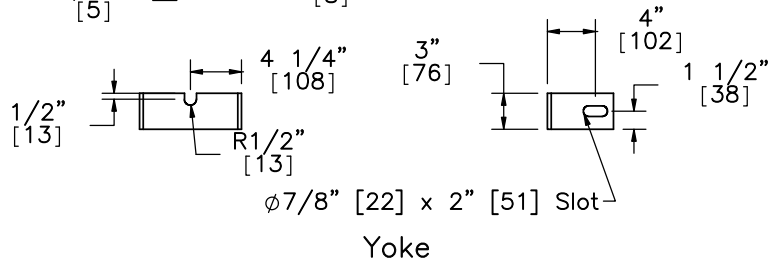
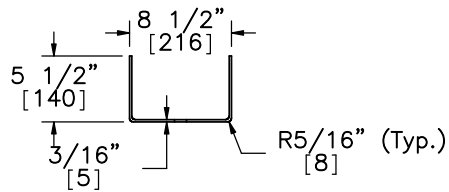
Strut and Yoke Assembly



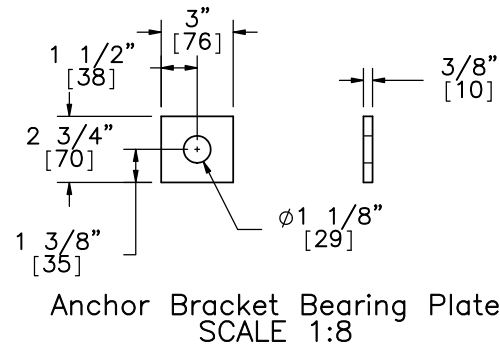
Anchor Bracket
(FPA01)
Part b5
SCALE 1:8



6" x 3" [152x76] 10 Gauge
Strut



Yoke



Anchor Bracket Bearing Plate
SCALE 1:8



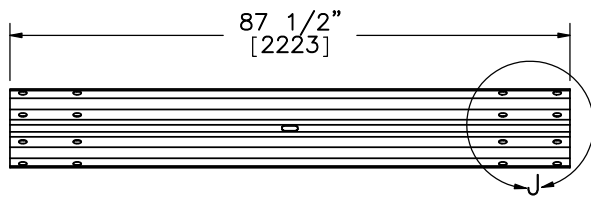
Midwest Roadside
Safety Facility

MGS 36 in. Height
Ground Strut &
Anchor Bracket Details

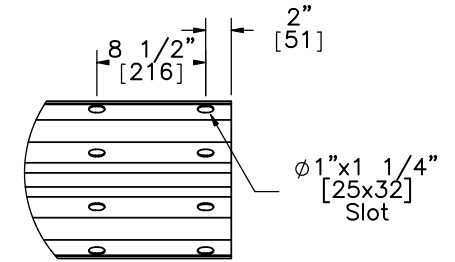
DWG. NAME:
MGS_36Ht_R3

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

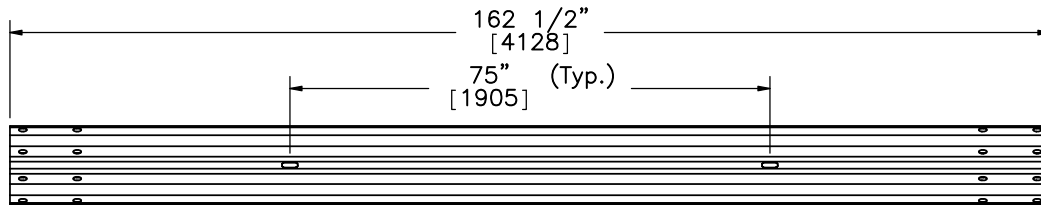
SHEET:
8 of 10
DATE:
7/13/2011
DRAWN BY:
MDM/DMH
REV. BY:
KAL



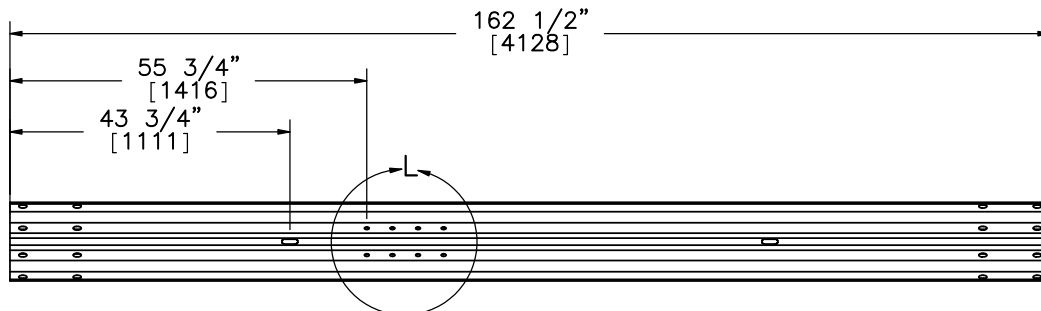
6'-3" [1905] W-Beam Section, 12 gauge [2.7]
Part a5



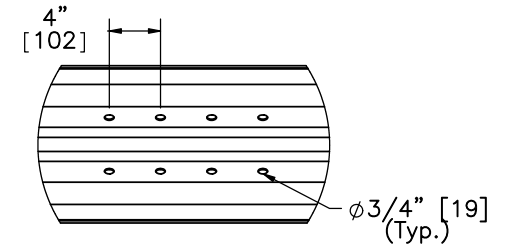
DETAIL J
SCALE 1 : 15



12'-6" [3810] W-Beam Section, 12 gauge [2.7]
Part a3



12'-6" [3810] W-Beam Section, 12 gauge [2.7], End Section
Part a4



DETAIL L
SCALE 1 : 15



Midwest Roadside
Safety Facility

MGS 36 in. Height
Rail Section Details

DWG. NAME:
MGS_36Ht_R3

SCALE: 1:31
UNITS: In.[mm]

SHEET:
9 of 10
DATE:
7/13/2011
DRAWN BY:
MDM/DMH

REV. BY:
KAL

Midwest Guardrail System at 36" Rail Height

Item No.	QTY.	Description	Material Specification	Hardware Guide
a1	25	W6x8.5 72in [W152x12.6 1829] long steel post	ASTM A36 Steel	PWE06
a2	25	6"x12"x14 1/4" [152x305x362] Blockout	SYP Grade No.1 or better	PDB10a-b
a3	12	12'-6" [3810] W-Beam MGS Section	12 gauge [2.7] AASHTO M180	RWM04a
a4	1	12'-6" [3810] W-Beam MGS End Section	12 gauge [2.7] AASHTO M180	RWM14a
a5	1	6'-3" [1905] W-Beam MGS Section	12 gauge [2.7] AASHTO M180	RWM01a
a6	25	16D Double Head Nail	-	-
b1	4	72" [1829] Foundation Tube	ASTM A500 Grade B	PTE06
b2	4	BCT Timber Post -MGS Height	SYP Grade No. 1 or better (No knots, 18" [457] above or below ground tension face)	PDF01
b3	2	Strut and Yoke Assembly	ASTM A36 Steel Galvanized	-
b4	2	BCT Cable Anchor Assembly	ø3/4" [19] 6x19 IWRC IPS Galvanized Wire Rope	FCA01-02
b5	2	Anchor Bracket Assembly	ASTM A36 Steel	FPA01
b6	2	8"x8"x5/8" [203x203x16] Anchor Bearing Plate	ASTM A36 Steel	FPB01
b7	2	2 3/8" [60] O.D.x 6" [152] long BCT Post Sleeve	ASTM A53 Grade B Schedule 40	FMM02
b8	112	5/8"Dia. x 1 1/2" [M16 x 38] Guardrail Bolt and Nut	ASTM A307 Steel	FBB01
b9	4	5/8"Dia. x 10" [M16 x 254] long Guardrail Bolt and Nut	ASTM A307 Steel	FBB03
b10	25	5/8"Dia. x 14" [M16 x 356] long Guardrail Bolt and Nut	ASTM A307 Steel	FBB06
b11	16	5/8"Dia. x 1 1/2" [M16 x 38] long Hex Head Bolt and Nut	ASTM A307 Steel	FBX16a
b12	4	5/8"Dia. x 10" [M16 x 254] long Hex Head Bolt and Nut	ASTM A307 Steel	FBX16a
b13	44	5/8"Dia. [16] Flat Washer	ASTM F436 Grade 1	FWC14a
b14	4	3/4"Dia. x 7 1/2" [M20 x 191] long Hex Head Bolt and Nut	ASTM A325 Steel	FBX22a
b15	8	3/4"Dia. [19] Flat Washer	ASTM F436 Grade 1	FWC22a



Midwest Roadside Safety Facility

MGS 36 in. Height

Bill of Materials

SHEET:
10 of 10

DATE:
7/13/2011

DRAWN BY:
MDM/DMH

DWG. NAME:
MGS_36Ht_R3

SCALE: None
UNITS: In.[mm]

REV. BY:
KAL