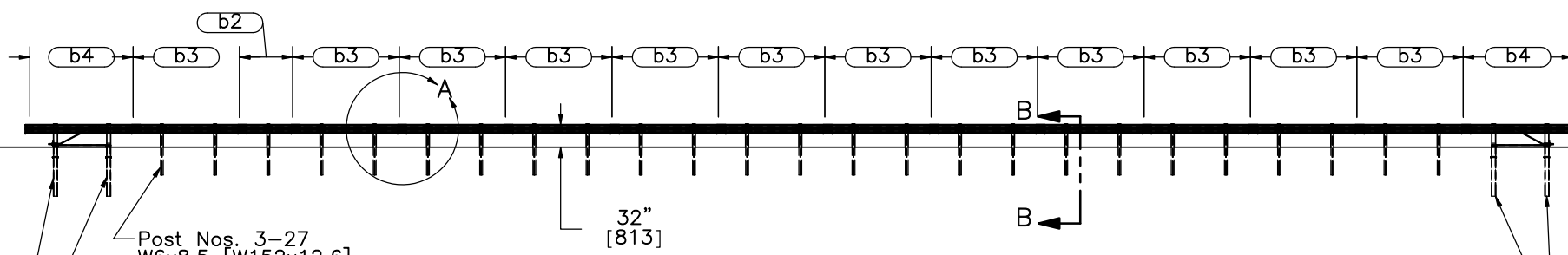


PLAN VIEW




ELEVATION VIEW

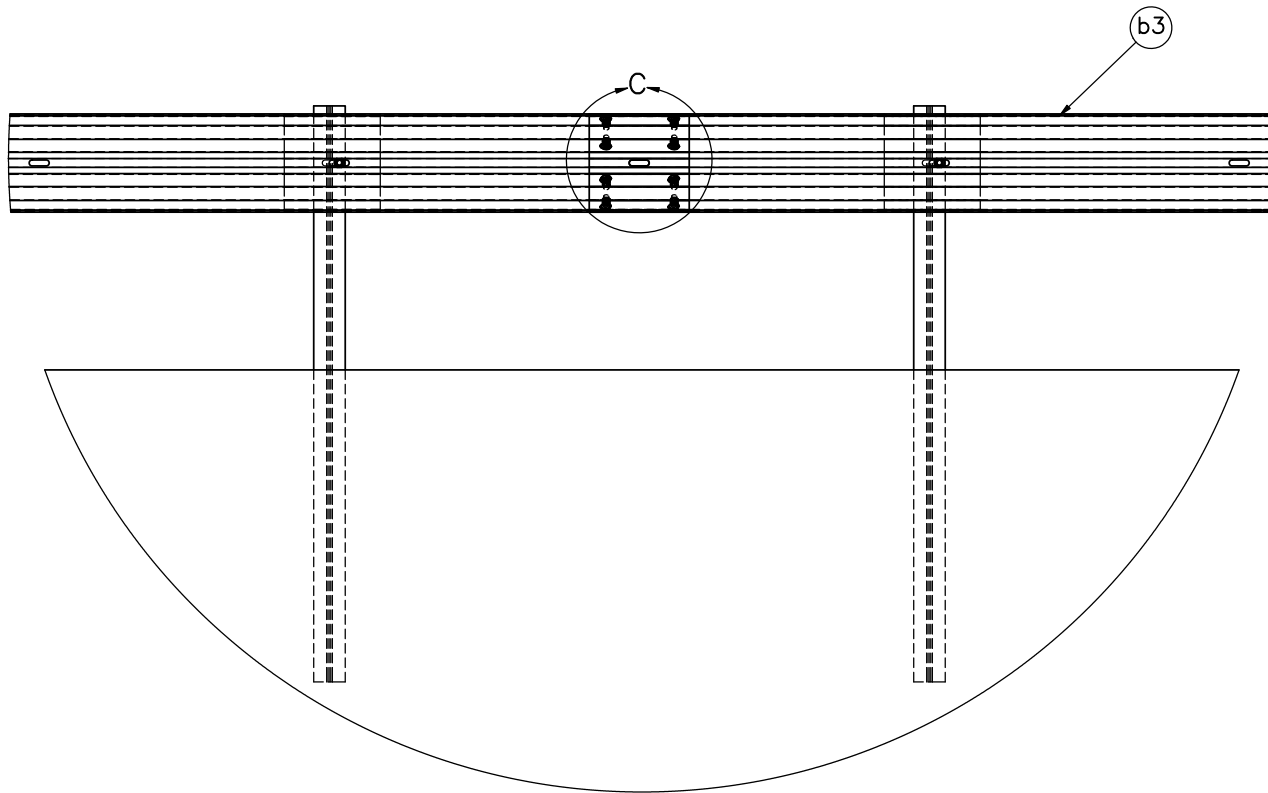
Post Nos. 3-27  
W6x8.5 [W152x12.6],  
6' [1829] Long with  
W-Beam Backup Plates,  
Part no. b8

BCT Posts in 6' [1829]  
Long (Galvanized) Foundation  
Tubes, Ground Line Strut,  
and BCT Cable Anchor

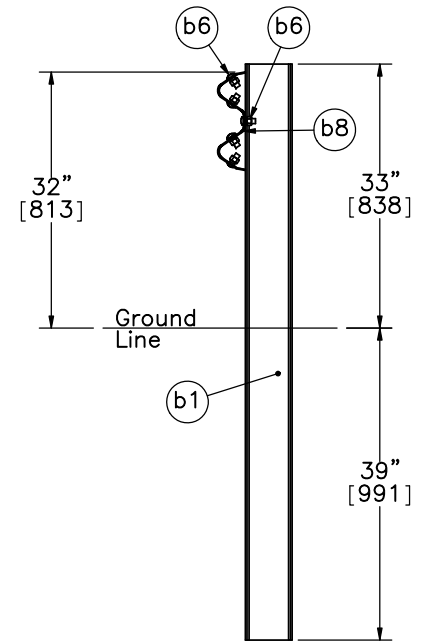
BCT Posts in 6' [1829]  
Long (Galvanized) Foundation  
Tubes, Ground Line Strut,  
and BCT Cable Anchor

- Note:
- (1) Impact locations are measured from the centerline of post no. 15. Impact for the 1100C crash test is located at 9'-3 1/2" [2832].
  - (2) The BCT anchor posts are placed in  $\phi$ 3' [914] holes.
  - (3) Critical region located between post nos. 11 and 20.

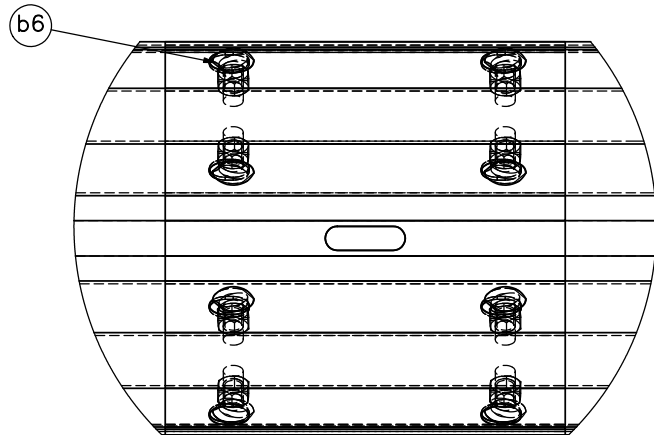
	MGS Without Blockouts System Layout		SHEET: 1 of 10
			DATE: 6/20/2010
Midwest Roadside Safety Facility	DWG. NAME: MGSNB-2_r1	SCALE: 1:235 UNITS: In.[mm]	DRAWN BY: MDM/DMH
		REV. BY: KAL/SKR	



DETAIL A



SECTION B-B



DETAIL C  
SCALE 1:6



Midwest Roadside  
Safety Facility

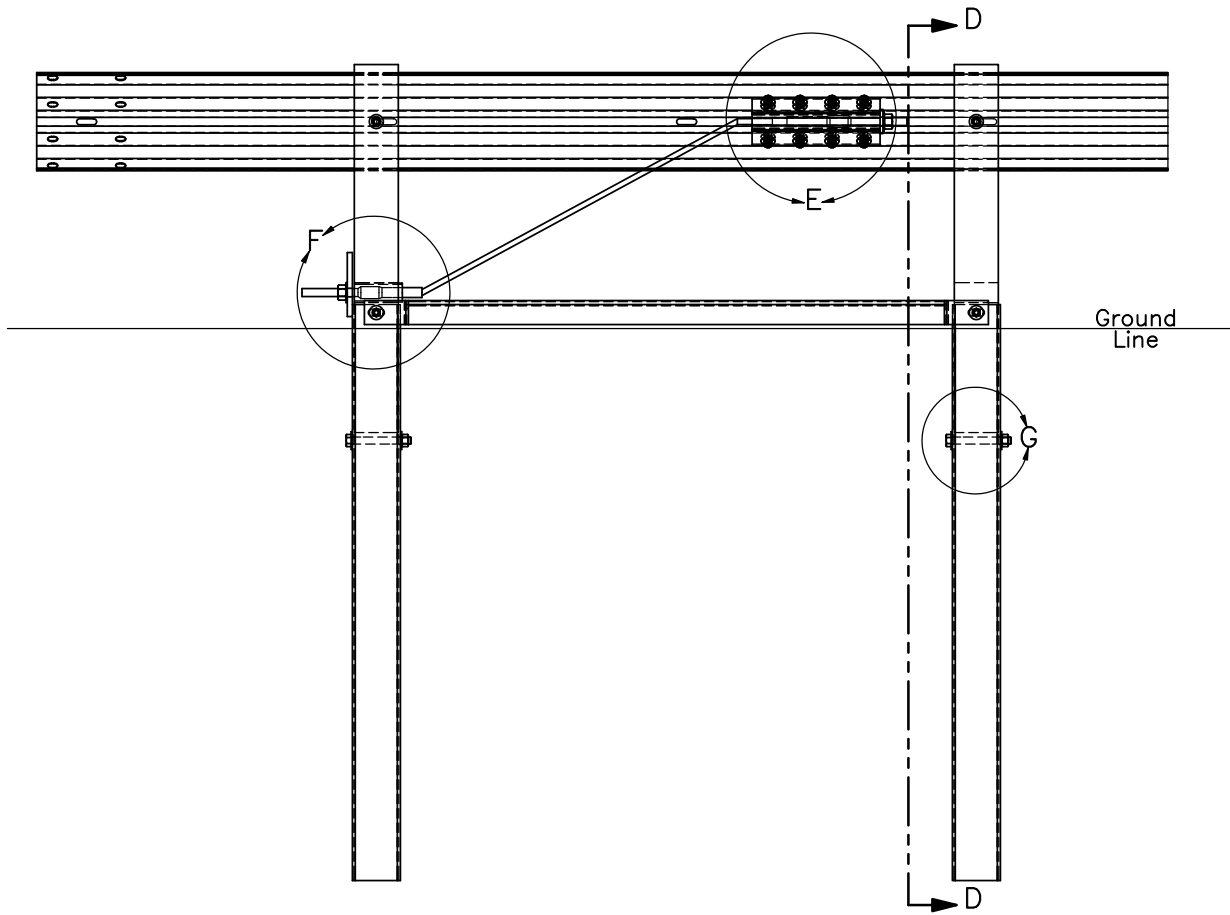
MGS Without Blockouts  
Post and Splice Details

SHEET:  
2 of 10  
DATE:  
6/20/2010  
DRAWN BY:  
MDM/DMH

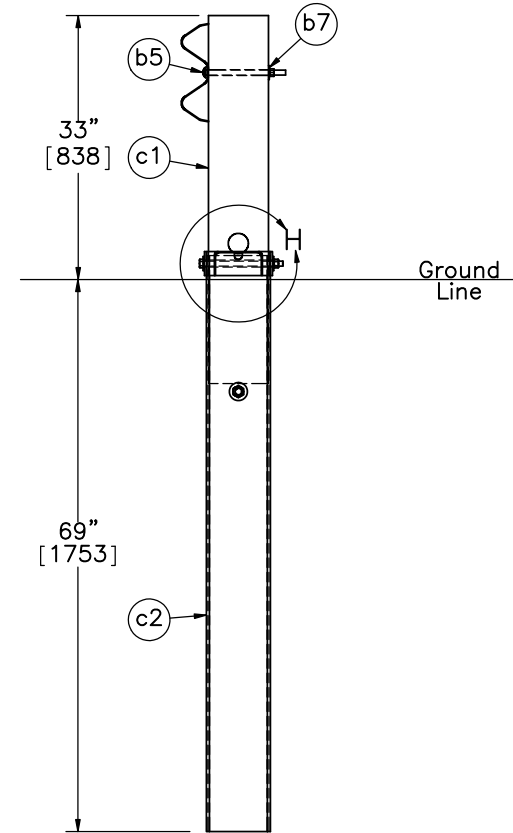
DWG. NAME:  
MGSNB-2\_r1

SCALE: 1:24  
UNITS: In.[mm]

REV. BY:  
KAL/SKR



END SECTION DETAIL



SECTION D-D



Midwest Roadside  
Safety Facility

MGS Without Blockouts  
End Rail Details

SHEET:  
3 of 10

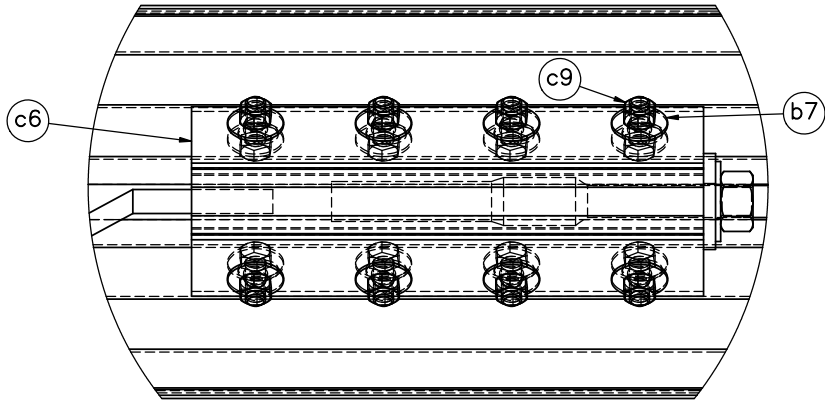
DATE:  
6/20/2010

DRAWN BY:  
MDM/DMH

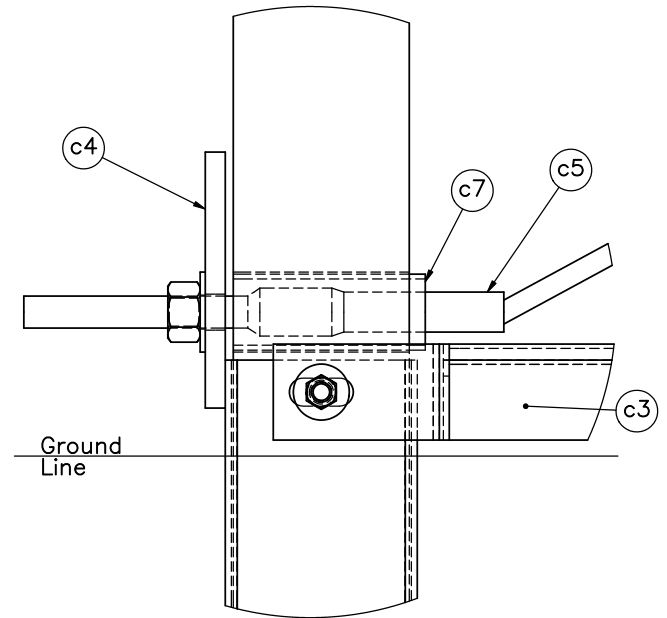
DWG. NAME:  
MGSNB-2\_r1

SCALE: 1:24  
UNITS: In.[mm]

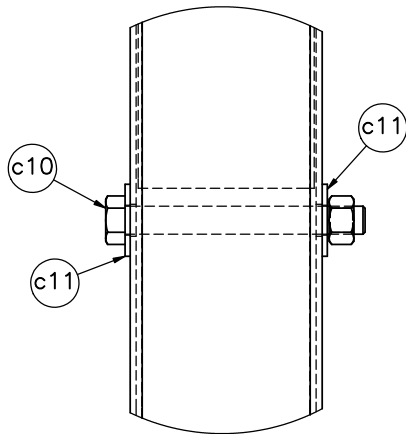
REV. BY:  
KAL/SKR



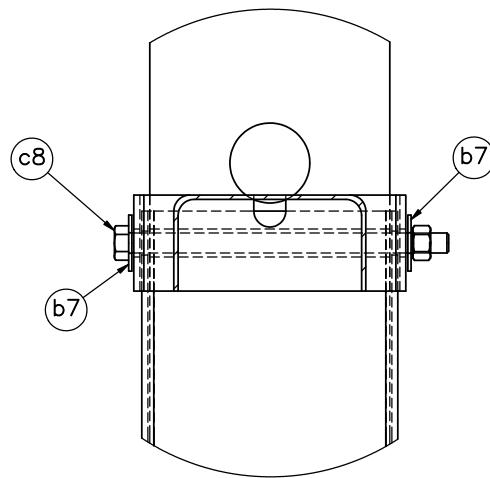
DETAIL E



DETAIL F



DETAIL G



DETAIL H



Midwest Roadside  
Safety Facility

MGS Without Blockouts  
Anchor Details

SHEET:  
4 of 10

DATE:  
6/20/2010

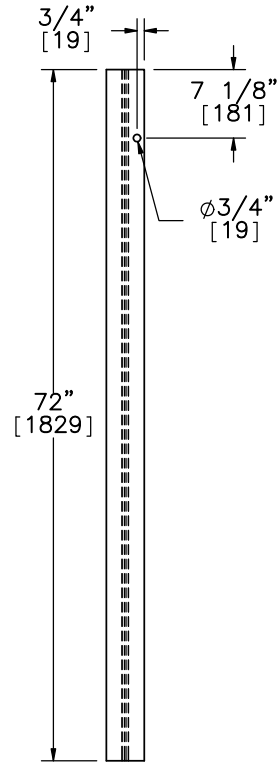
DRAWN BY:  
MDM/DMH

DWG. NAME:  
MGSNB-2\_r1

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

REV. BY:  
KAL/SKR

I



Line Post  
Part b1



Midwest Roadside  
Safety Facility

MGS Without Blockouts  
Post Nos. 3-27 Details

SHEET:  
5 of 10

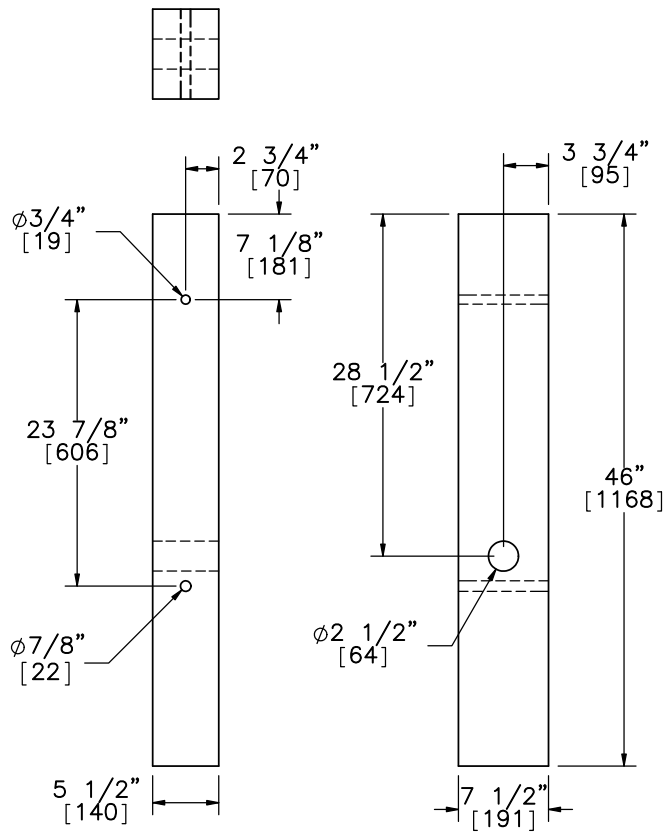
DATE:  
6/20/2010

DRAWN BY:  
MDM/DMH

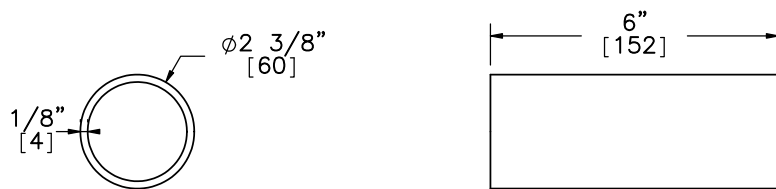
DWG. NAME:  
MGSNB-2\_r1

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

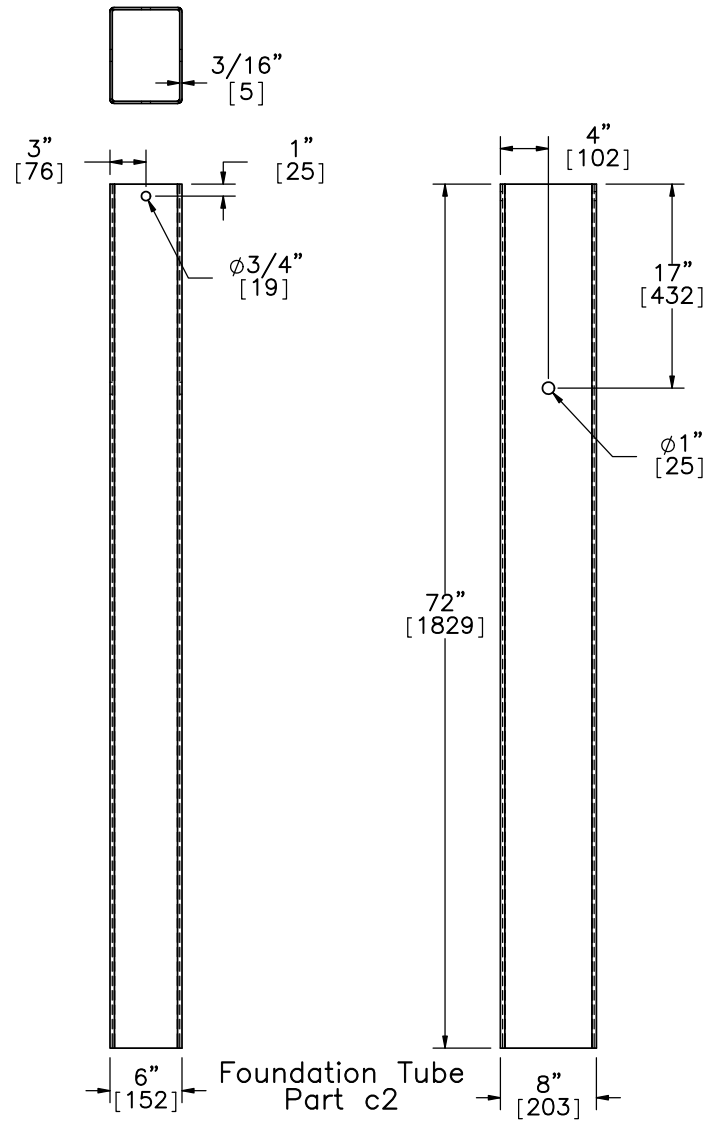
REV. BY:  
KAL/SKR



BCT MGS Timber Post  
Part c1



BCT Post Sleeve  
Part c7  
SCALE 1:4



Foundation Tube  
Part c2



Midwest Roadside  
Safety Facility

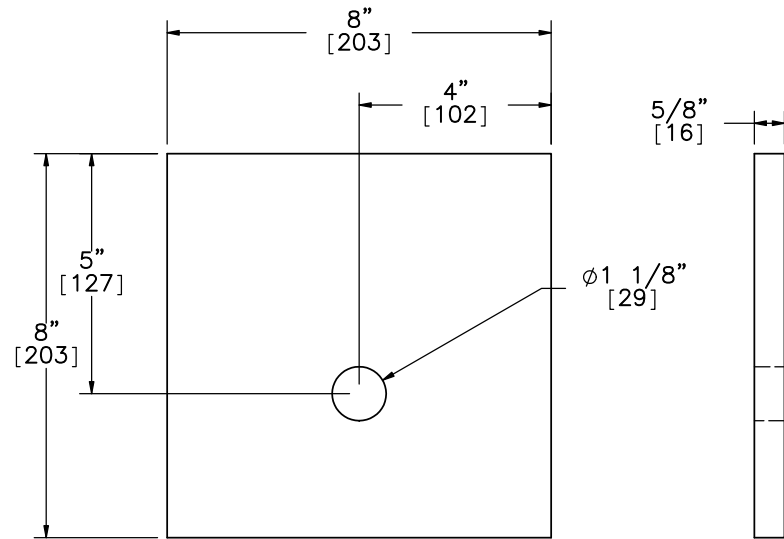
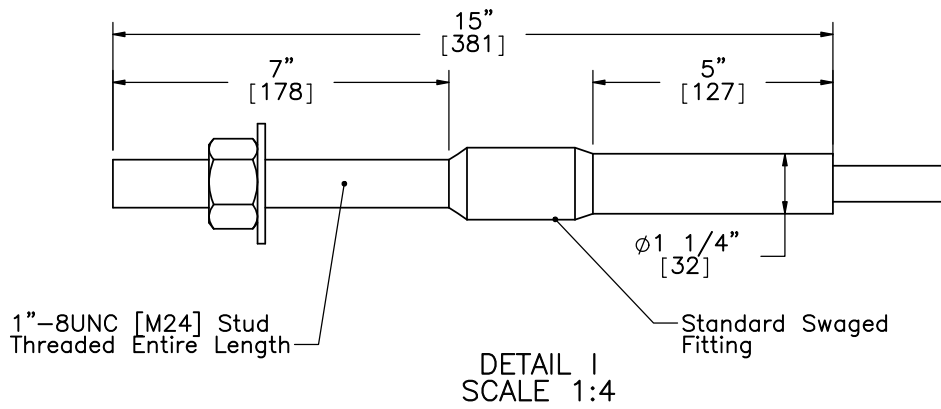
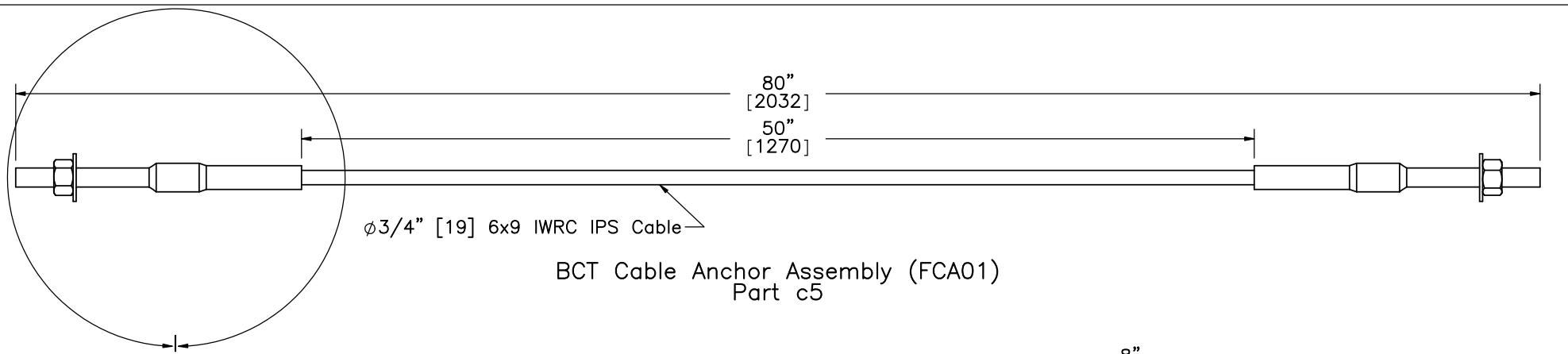
MGS Without Blockouts  
BCT Timber Post &  
Foundation Tube Details

DWG. NAME.  
MGSNB-2\_r1

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


SHEET:  
6 of 10  
DATE:  
6/20/2010  
DRAWN BY:  
MDM/DMH

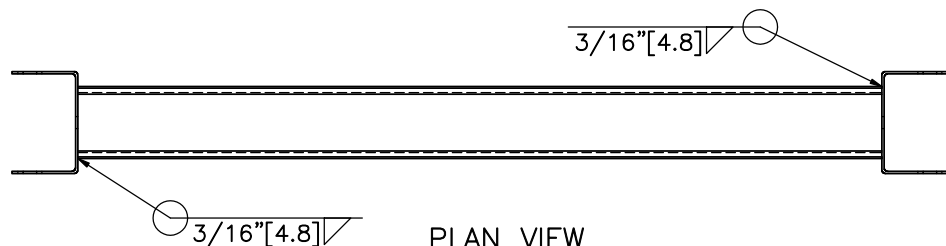
REV. BY:  
KAL/SKR



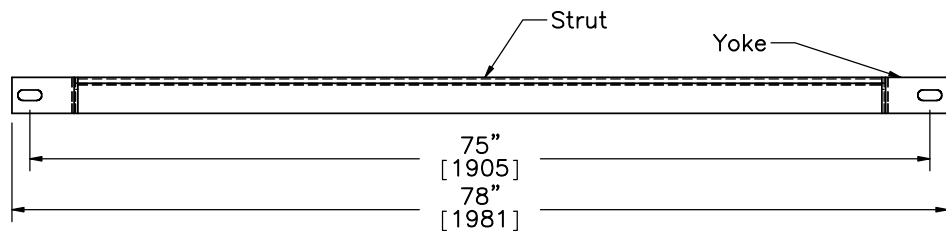
Anchor Bracket Bearing Plate  
Part c4

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 Without Blockouts BCT Anchor Cable		SHEET: 7 of 10
			DATE: 6/20/2010
		DWG. NAME: MGSNB-2_r1	DRAWN BY: MDM/DMH
		SCALE: 1:8 UNITS: In.[mm]	REV. BY: KAL/SKR

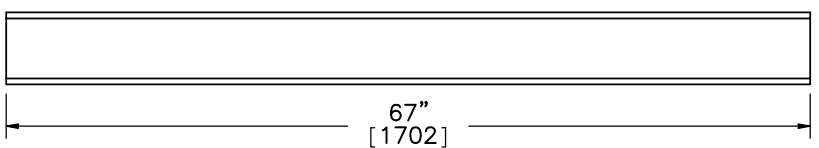


PLAN VIEW

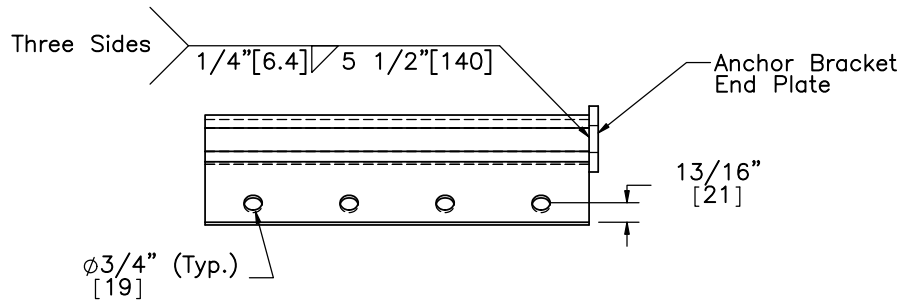


FRONT VIEW

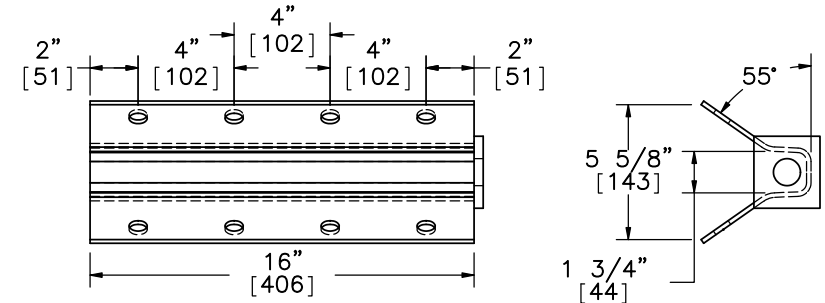
Strut and Yoke Assembly  
Part c3



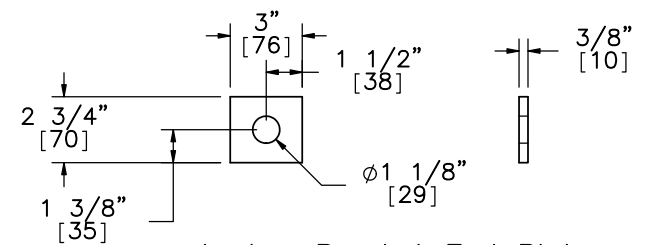
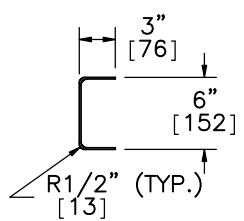
6" x 3" [152 x 76] 10 Gauge [3.4]  
Strut



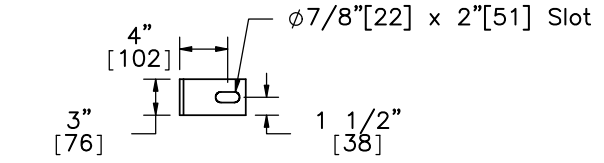
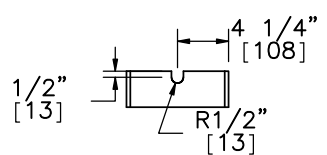
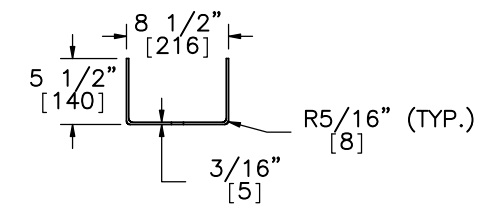
Three Sides  
 $\phi 3/4"$  (Typ.) [19]



Anchor Bracket  
(FPA01)  
Part c6  
SCALE 1:8



Anchor Bracket End Plate  
SCALE 1:8



Yoke



Midwest Roadside  
Safety Facility

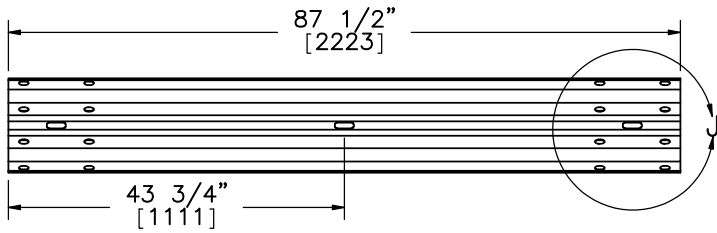
MGS Without Blockouts  
Ground Strut & Anchor  
Bracket Detail

SHEET:  
8 of 10  
DATE:  
6/20/2010  
DRAWN BY:  
MDM/DMH

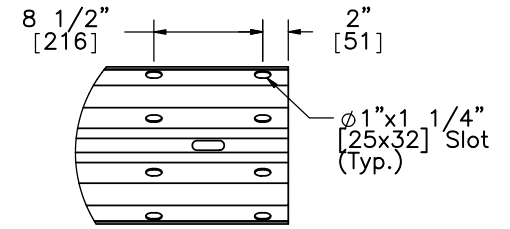
DWG. NAME:  
MGSNB-2\_r1

SCALE: 1:16  
UNITS: In.[mm]  
REV. BY:  
KAL/SKR

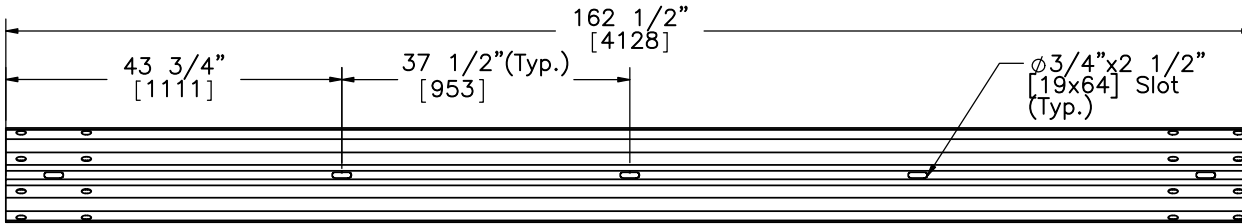




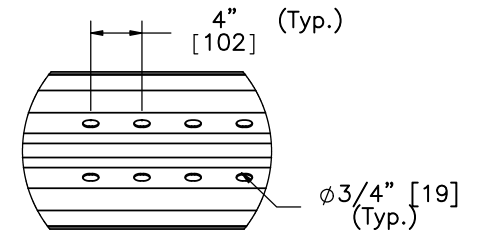
6'-3" [1905] W-Beam Section, 12 gauge [2.7]  
Part b2



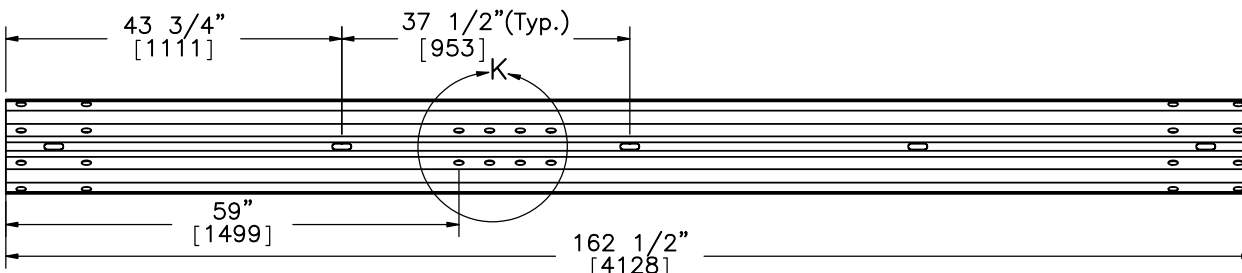
DETAIL J  
SCALE 1:15



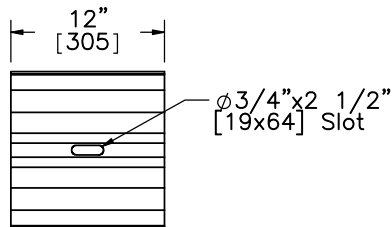
12'-6" [3810] W-Beam Section, 12 gauge [2.7]  
Part b3



DETAIL K  
SCALE 1:15



12'-6" [3810] W-Beam End Section, 12 gauge [2.7]  
Part b4



1'-0" [305] W-Beam Backup Plate, 12 gauge [2.7]  
Part b8  
SCALE 1:15



Midwest Roadside  
Safety Facility

MGS Without Blockouts

Rail Section Details

DWG. NAME:  
MGSNB-2\_r1

SCALE: 1:25  
UNITS: In.[mm]

SHEET:  
9 of 10  
DATE:  
6/20/2010  
DRAWN BY:  
MDM/DMH  
REV. BY:  
KAL/SKR

Item No.	QTY.	Description	Material Specifications and/or Grade	Hardware Guide
b1	25	W6x8.5 6' [W152x12.6 1829] Long Steel Post	ASTM A992 [345 MPa] (W6x9 A36 [248 Mpa])	—
b2	1	6'-3" W-Beam MGS Section	12 gauge [2.7] AASHTO M180	RWMO1a
b3	12	12'-6" W-Beam MGS Section	12 gauge [2.7] AASHTO M180	RWMO4a
b4	2	12'-6" W-Beam MGS End Section	12 gauge [2.7] AASHTO M180	RWMO4a
b5	4	5/8" Dia. x 10" [M16x254] Long Guardrail Bolt and Nut	ASTM A307	FBB03
b6	137	5/8" Dia. x 1 1/2" [M16x38] Long Guardrail Bolt and Nut	ASTM A307	FBB01
b7	44	5/8" [16] Dia. Flat Washer	ASTM A153	FWC16a
b8	25	W-Beam Backup Plate	12 ga. [2.7] AASHTO M180	RWB01a
c1	4	BCT Timber Post – MGS Height	SYP Grade No. 1 or better	PDF01
c2	4	72" [1829] Long Foundation Tube	ASTM A53 Grade B	PTE06
c3	2	Strut and Yoke Assembly	ASTM A36 Steel Galvanized	—
c4	2	8x8x5/8" [127x203x16] Anchor Cable Bearing Plate	ASTM A36 Steel	FPB01
c5	2	BCT Anchor Cable Assembly	ø3/4" [19] 6x19 IWRC IPS Galvanized Wire Rope	FCA01-02
c6	2	Anchor Bracket Assembly	ASTM A36 Steel	FPA01
c7	2	2 3/8" [60] O.D. x 6" [152] Long BCT Post Sleeve	ASTM A53 Grade B Schedule 40	FMM02
c8	4	5/8" Dia. x 10" [M16x254] Long Hex Head Bolt and Nut	ASTM A307	FBX16a
c9	16	5/8" Dia. x 1 1/2" [M16x38] Long Hex Head Bolt and Nut	ASTM A307	FBX16a
c10	4	7/8" Dia. x 7 1/2" [M22x191] Long Hex Head Bolt and Nut	ASTM A307	FBX22a
c11	8	7/8" [22] Dia. Flat Washer	ASTM A153	FWC22a



Midwest Roadside  
Safety Facility

MGS Without Blockouts

Bill of Materials

DWG. NAME.  
MGSNB-2\_r1

SCALE: None  
UNITS: In.[mm]

SHEET:  
10 of 10  
DATE:  
6/20/2010  
DRAWN BY:  
MDM/DMH  
REV. BY:  
KAL/SKR