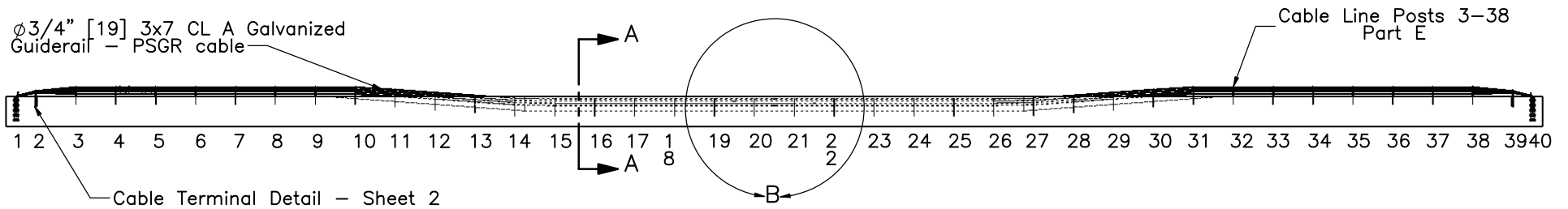
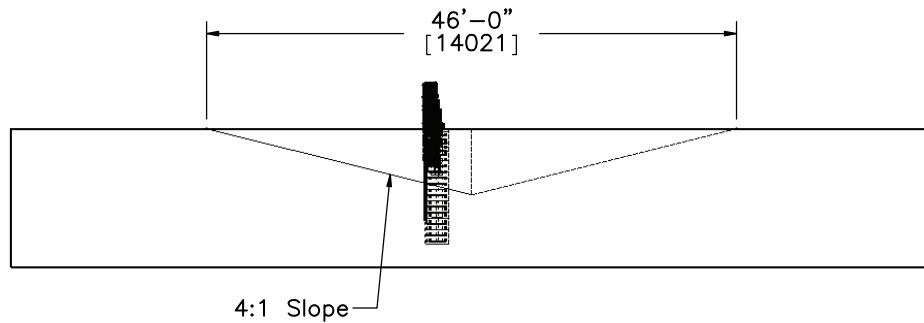


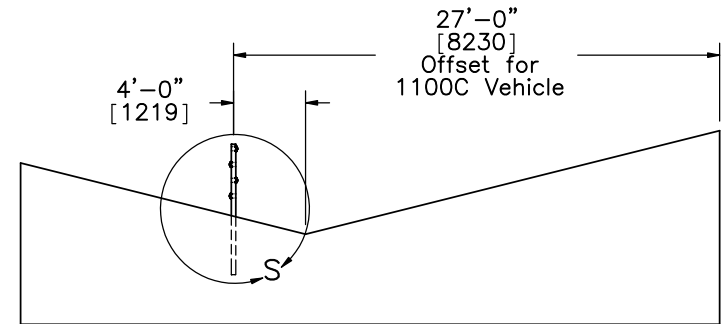
PLAN VIEW



PROFILE VIEW



END VIEW



SECTION A-A

- NOTE:(1) Post Nos. 1-9 and 32-40 are flared over 1 ft [305] to account for post nos. 1 and 40 being offset 3 ft [914] instead of 4 ft [1219].
- (2) Impact point at 5'-4" ft [1626] downstream of post no. 17 was used to allow for the potential maximum underride of the vehicle.



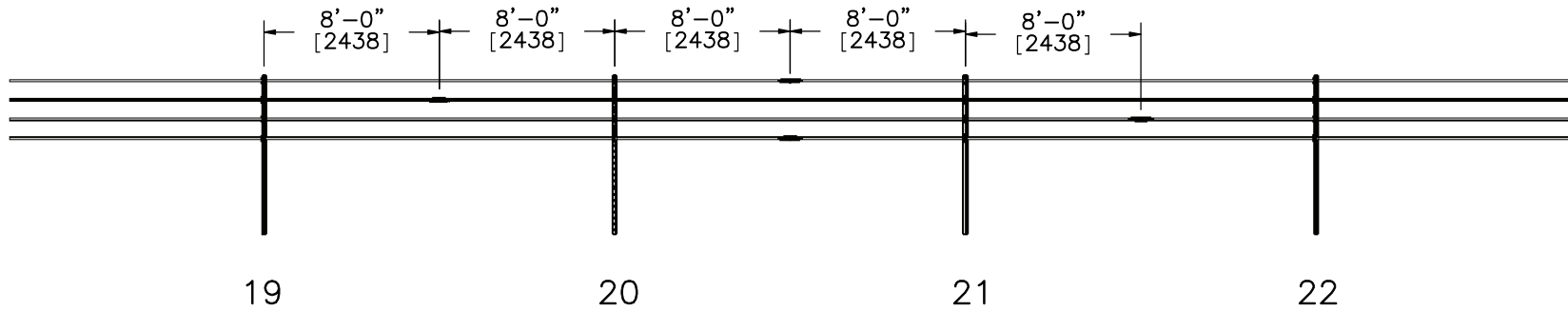
Midwest Roadside Safety Facility

4-Cable Median Barrier System Layout - 1100C

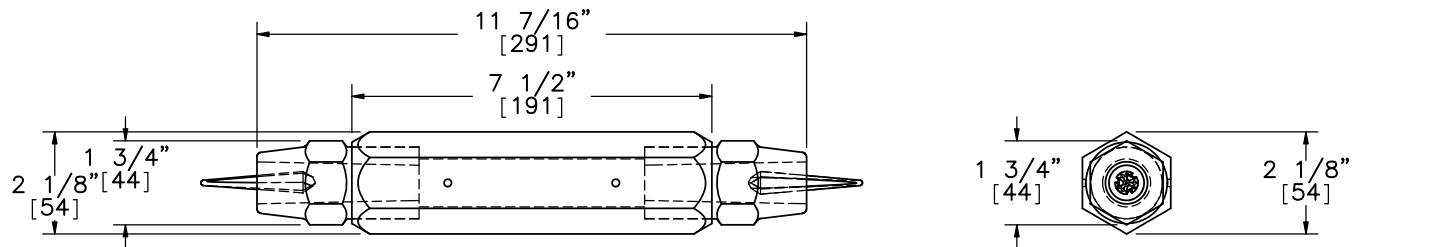
DWG. NAME. CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:750 UNITS: In,[mm]

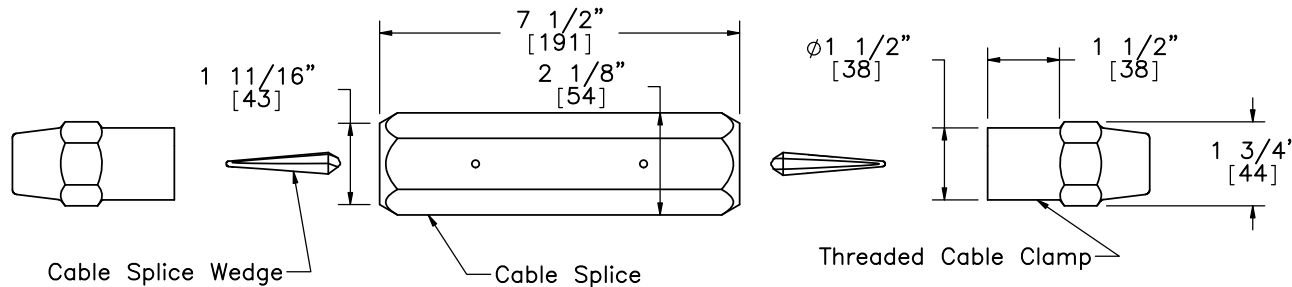
SHEET: 1 of 16
DATE: 11/16/2011
DRAWN BY: CSS/CME/RJT/MJW/JGP
REV. BY: RKF/KAP



DETAIL B
 Brifen Cable Splice Location Detail
 (Ground Not Shown)



Cable Splice Detail
 Part G

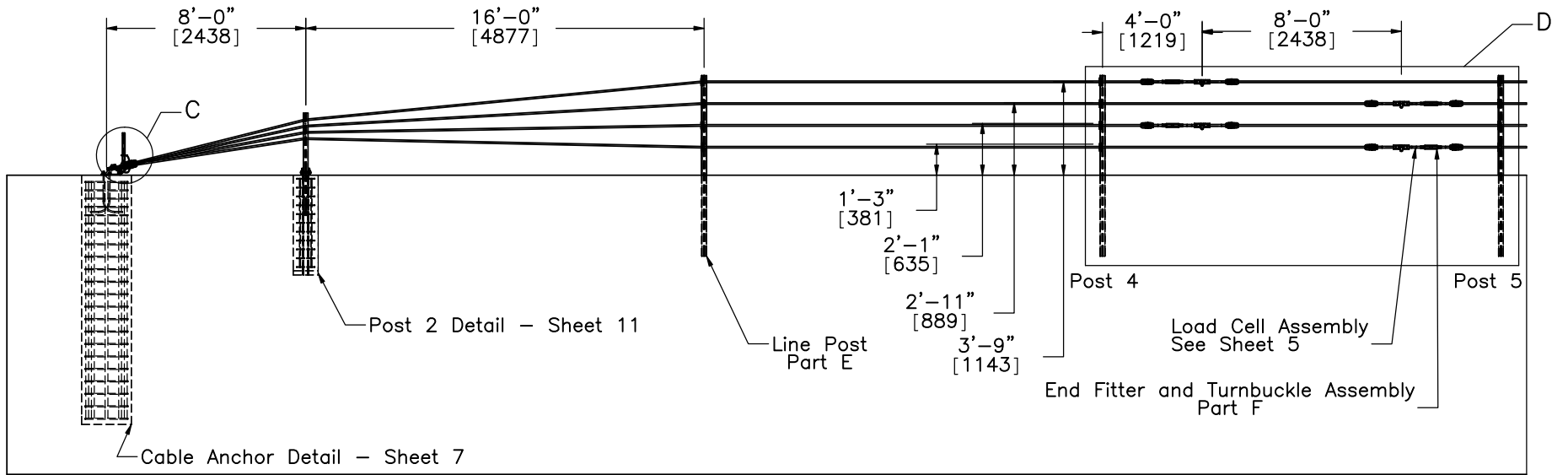
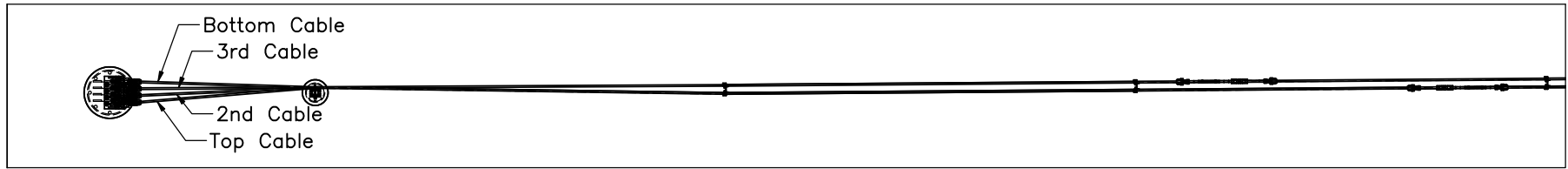


Cable Splice Exploded View



Midwest Roadside
 Safety Facility

4-Cable Median Barrier Cable Splice Location and Detail	SHEET: 2 of 16
	DATE: 11/16/2011
	DRAWN BY: CJS/CME/ RJT/MJW/ JGP
DWG. NAME: CableMedianBarrier-SmallCar_R7_dual	SCALE: 1:100 UNITS: In,[mm]
	REV. BY: RKF/KAP



NOTE: Slip base posts in terminal were omitted due to cost considerations.



Midwest Roadside Safety Facility

4-Cable Median Barrier

Cable Terminal Detail
As Built

SHEET:
3 of 16

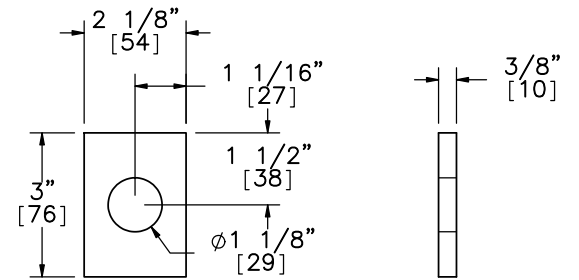
DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

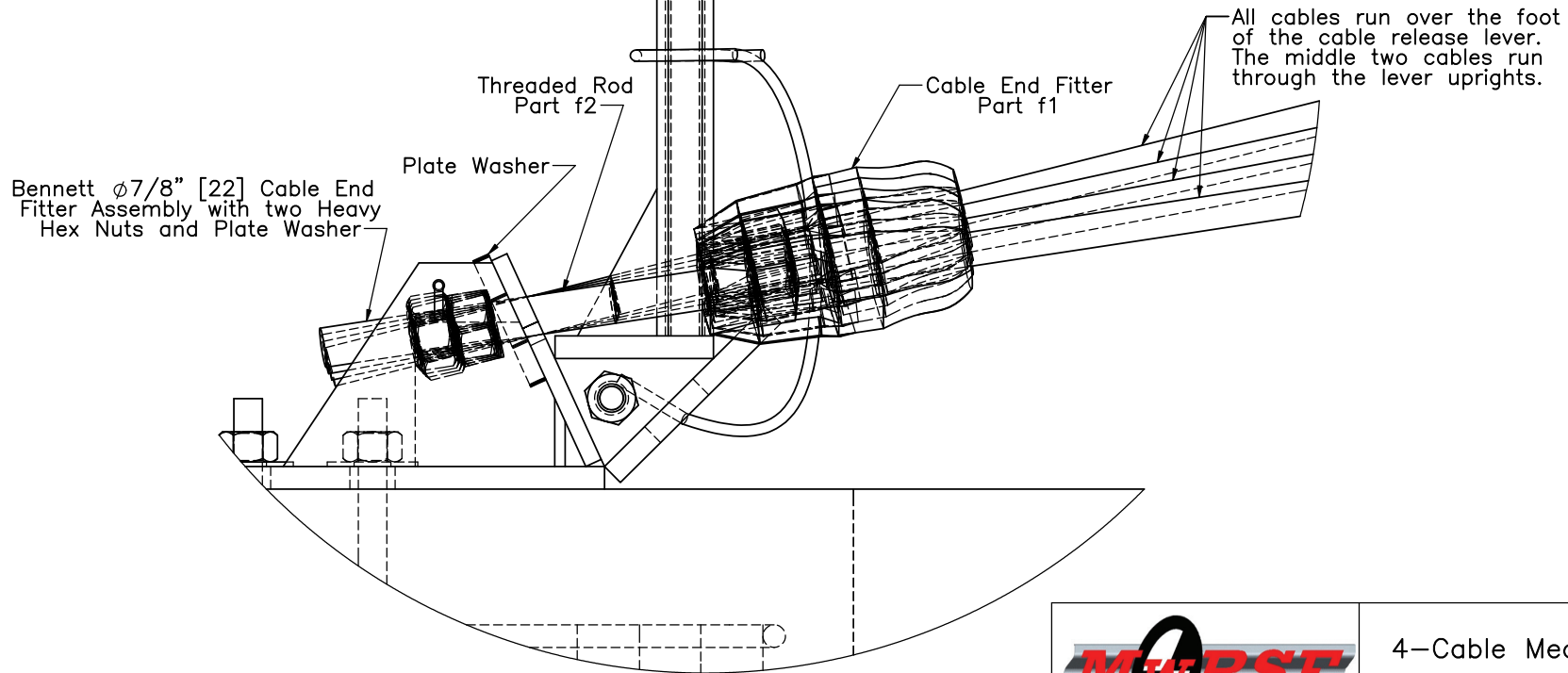
DWG. NAME:
CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:78
UNITS: In,[mm]

REV. BY:
RKF/KAP



Cable Anchor Plate Washer



DETAIL C
SCALE 1 : 4

All cables run over the foot of the cable release lever. The middle two cables run through the lever uprights.



Midwest Roadside
Safety Facility

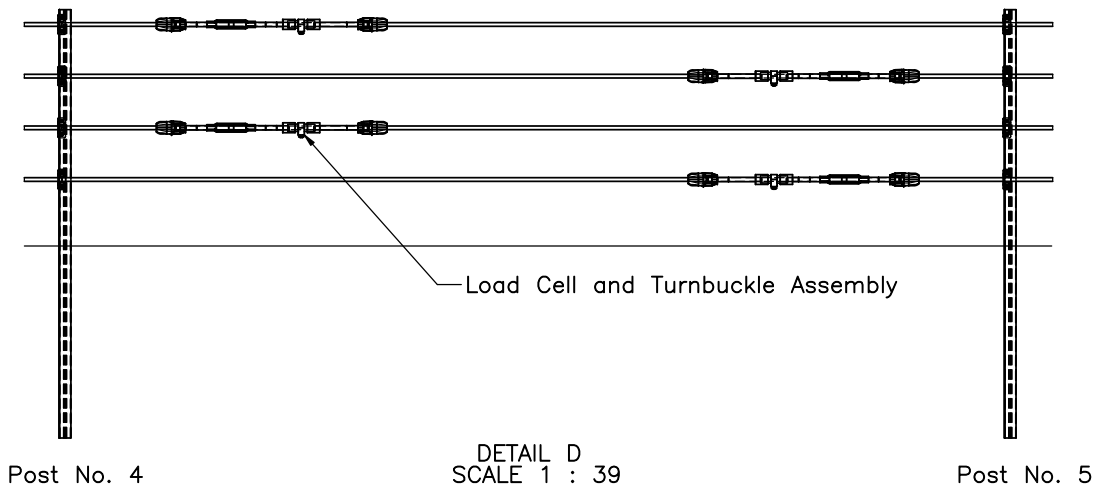
4-Cable Median Barrier
Cable Anchor Details

SHEET:
4 of 16

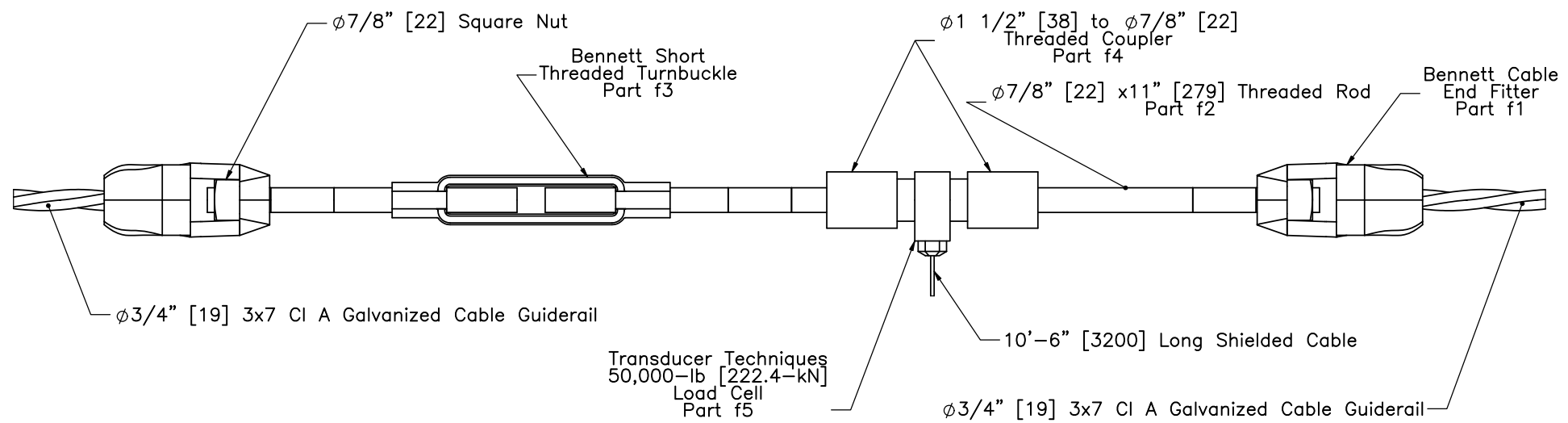
DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP


DWG. NAME: CableMedianBarrier-SmallCar_R7_dual	SCALE: 1:4 UNITS: In.[mm]	REV. BY: RKF/KAP
---	------------------------------	---------------------

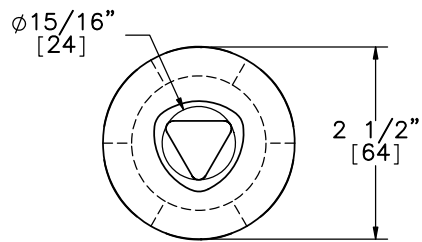


DETAIL D
SCALE 1 : 39

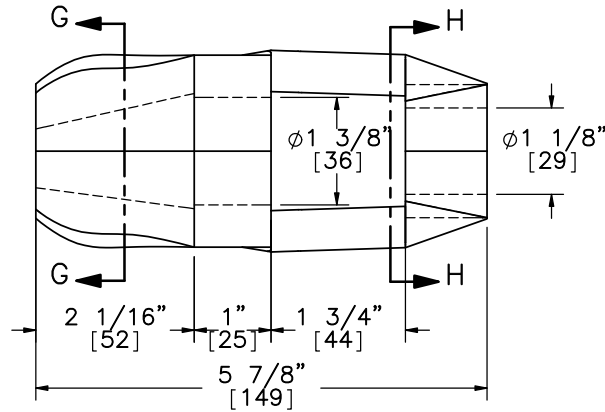


NOTE: Two RH-threaded rods and one LH-threaded rod required for load cell and turnbuckle assembly

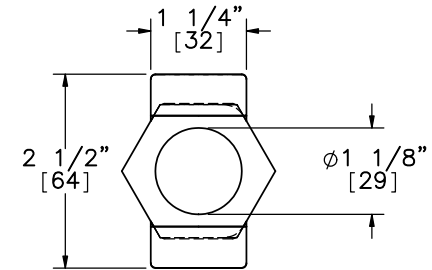
 Midwest Roadside Safety Facility	4-Cable Median Barrier Load Cell and Turnbuckle Configuration Part F	SHEET: 5 of 16
	DWG. NAME: CableMedianBarrier-SmallCar_R7_dual	SCALE: 1:25 UNITS: In,[mm]
		REV. BY: RKF/KAP



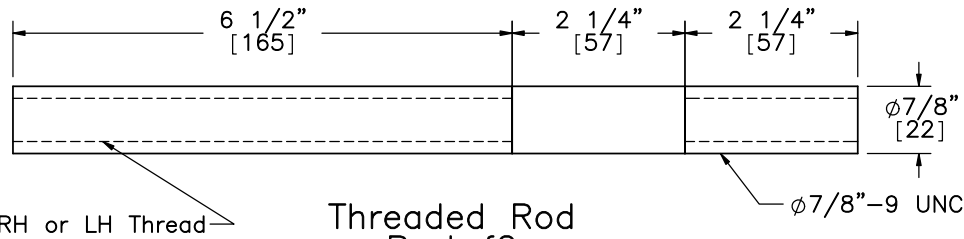
SECTION G-G



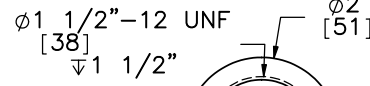
Bennet Cable End Fitter
Part f1



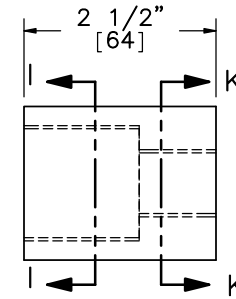
SECTION H-H



Threaded Rod
Part f2

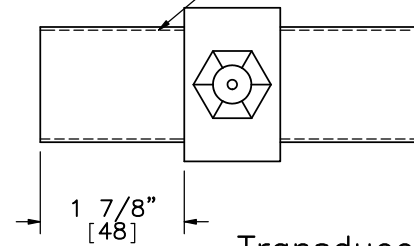


SECTION I-I

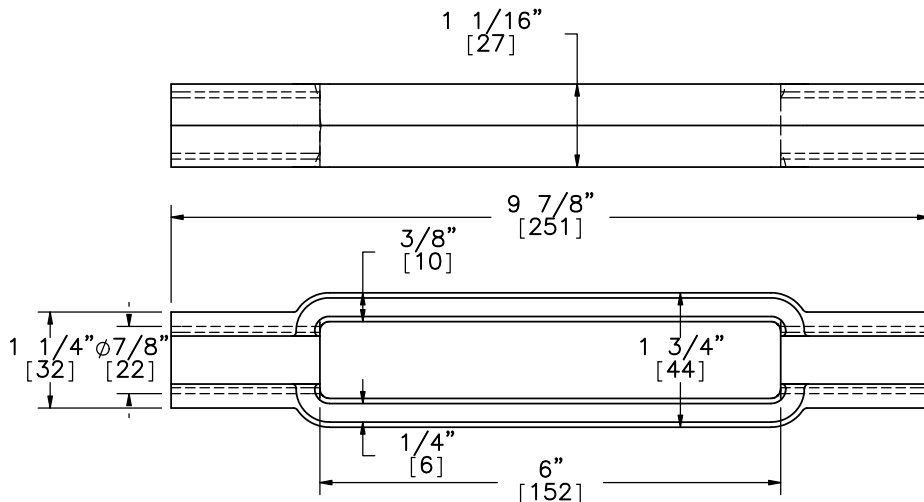


SECTION K-K

1 1/2-12 UNF
Threaded Both Sides



Transducer Techniques
50000-lb Rated Load Cell
Part f5



Bennett Threaded Turnbuckle
Part f3

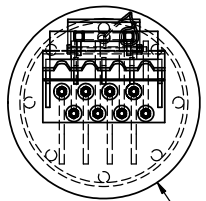


Midwest Roadside
Safety Facility

4-Cable Median Barrier
Load Cell Assembly
Component Details

SHEET:
6 of 16
DATE:
11/16/2011
DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

DWG. NAME: CableMedianBarrier-SmallCar_R7_dual
SCALE: 1:2
UNITS: In, [mm] and mm
REV. BY: RKF/KAP



Ø2'-0"
[610]

Brass Keeper Rod
Ø3/16" [4.8] x 16" [406]
long. Bend ends of rod
to secure.

Steel Fabricators Inc.
Cable Anchor Bracket
Part A

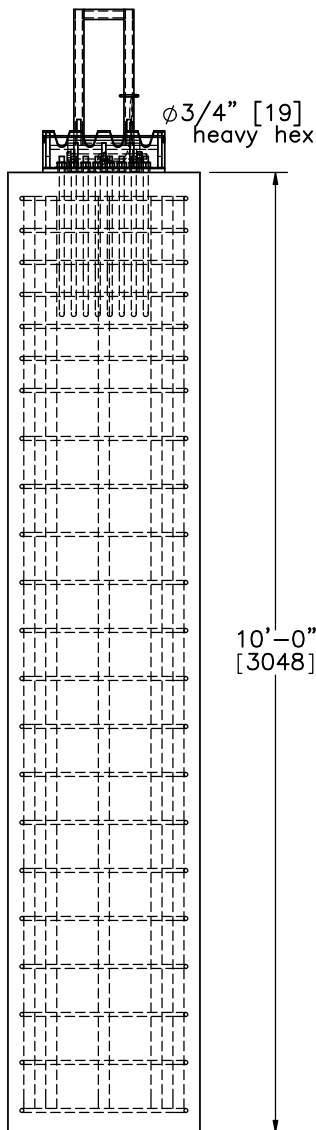
Ø3/4" [19] A449 hook bolts with
heavy hex nuts and washers

Cable Release Lever
Part B

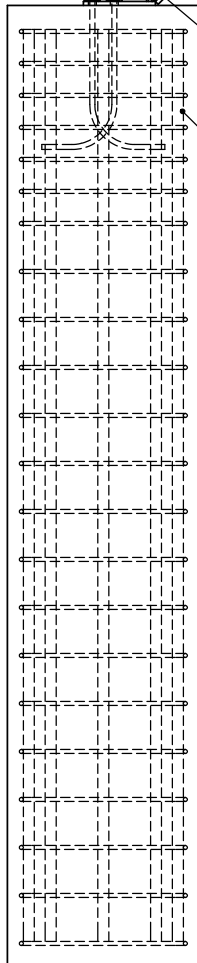
Aircraft Retaining Cable:
Ø1/4" [6.4] 7x19 galvanized
aircraft cable, 36" [914] long
with 3 1/2" [89] long loops
and 1" [25] clips

Ø5/8" [16] hex bolt 9 1/2"
[241] long with washer and nut

Concrete



10'-0"
[3048]

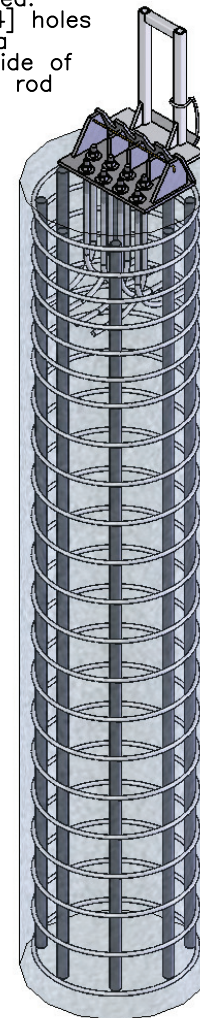


NOTE:

Brass rod to be placed after all cables are installed and tensioned. Slide rod through the 1/4" [6.4] holes in the Anchor Bracket, leaving a minimum of 1" [25] on each side of the Anchor Bracket. Bend brass rod down on each side of Anchor Bracket to secure.

NOTE:

- (1) Grade 60 reinforcement.
- (2) 1 1/2" [38] clear cover on sides, 3" [76] on top clear cover, and 2 1/2" [64] clear cover on bottom.
- (3) Eight No. 11 longitudinal bars.
- (4) 22 - No. 4 hoops with an inner diameter of 20" [508] at 4" [102] spacing for the top 24" [610] and subsequently at 6" [152] spacing until bottom clear cover.
- (5) Eight No. 6 standard J-hook anchor studs having a length of 27" [686] and a development length of 14 3/8" [365].
- (6) Concrete mix for anchor and posts shall provide a minimum f'c of 4000 psi [27.6 MPa].



Midwest Roadside
Safety Facility

4-Cable Median Barrier

Cable Anchor Detail
Post Nos. 1 & 40
As Built

SHEET:
7 of 16

DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

DWG. NAME.

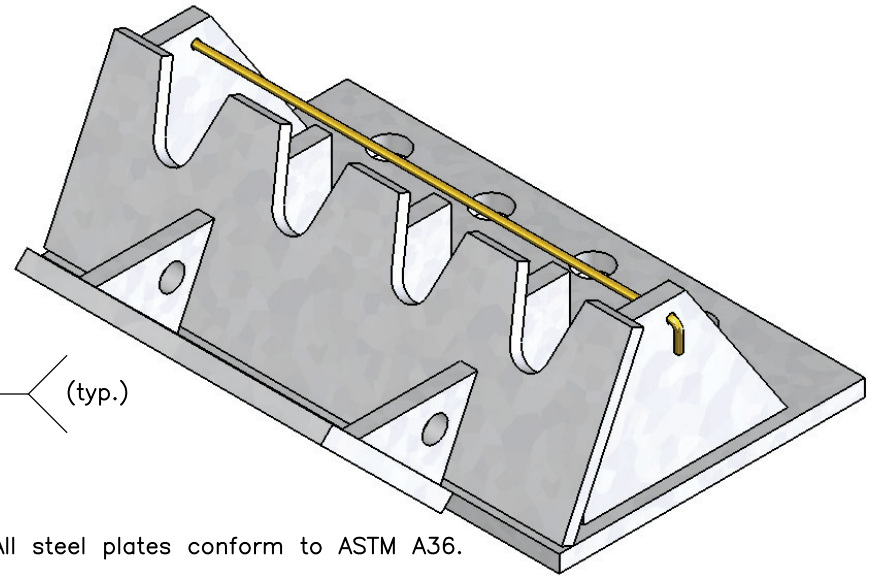
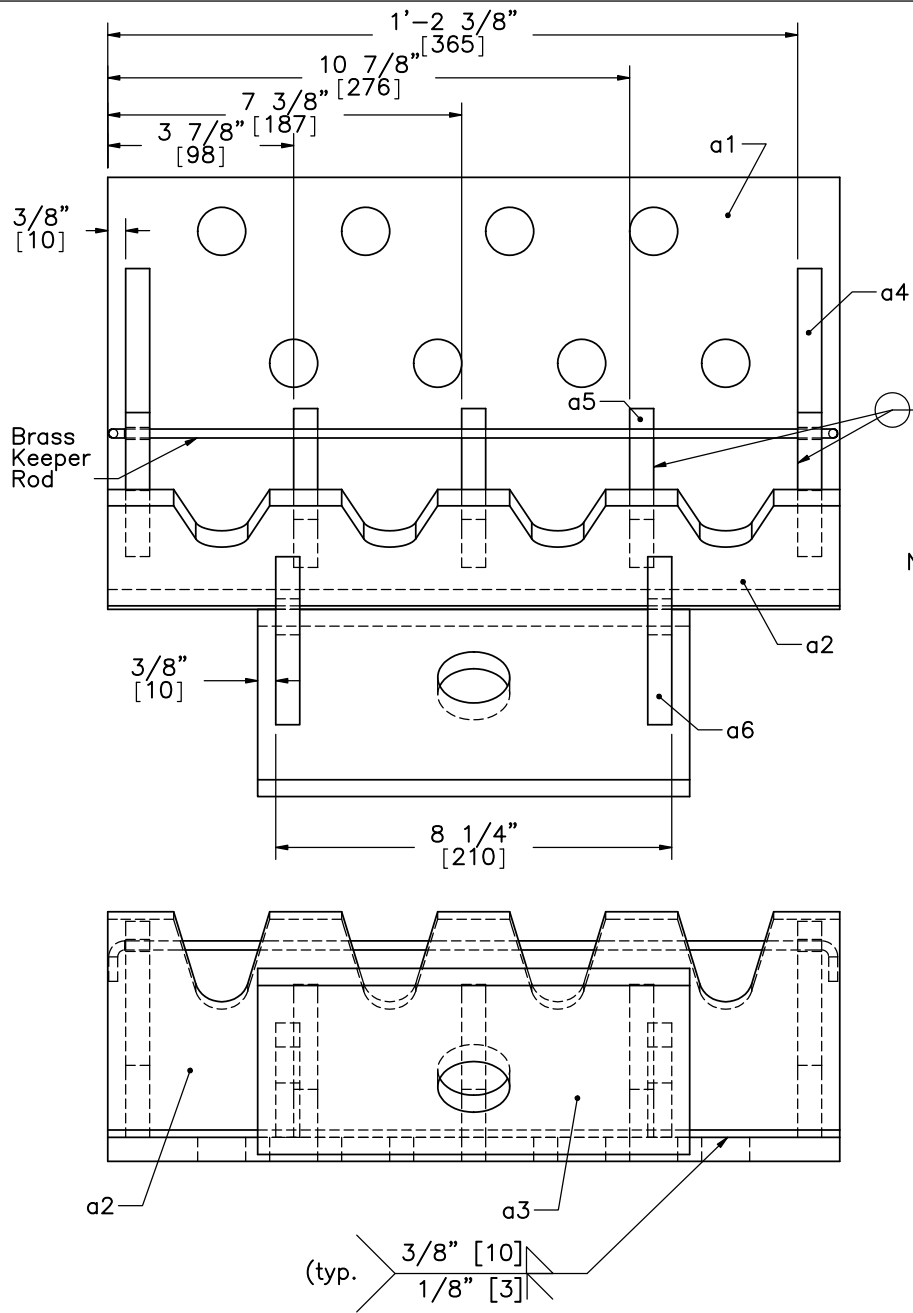
CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:24

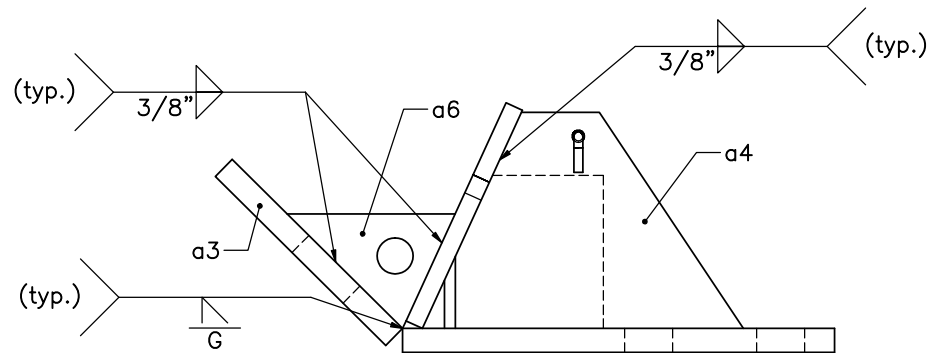
UNITS: In.[mm]

REV. BY:

RKF/KAP



- Notes: (1) All steel plates conform to ASTM A36.
 (2) The cable anchor bracket is to be galvanized following fabrication.



Part A

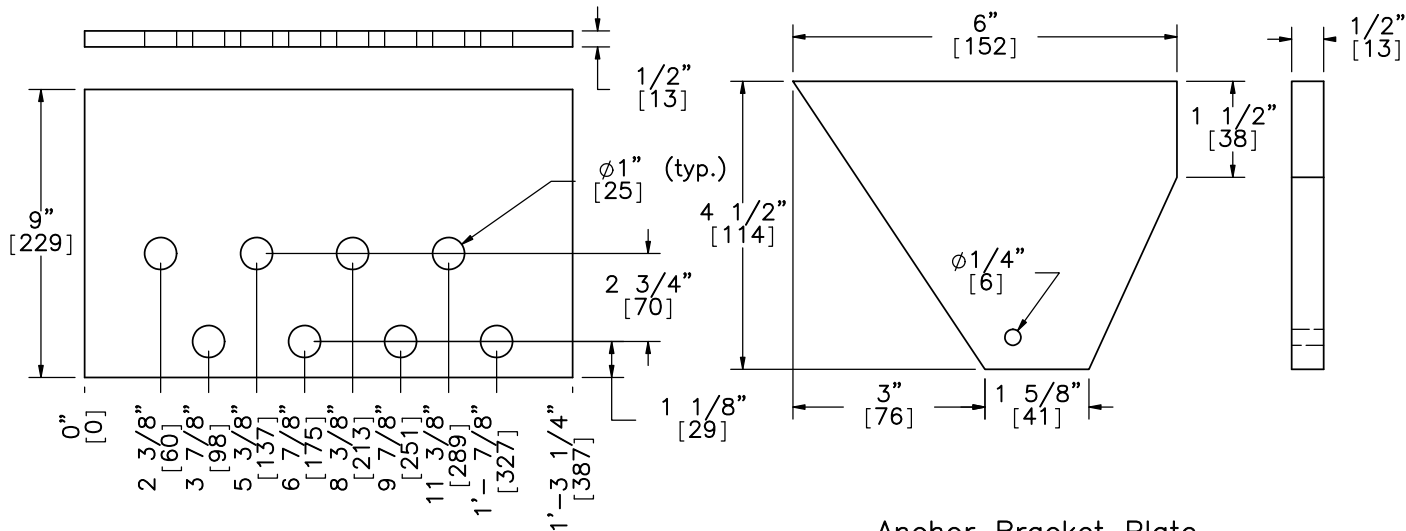


Midwest Roadside Safety Facility

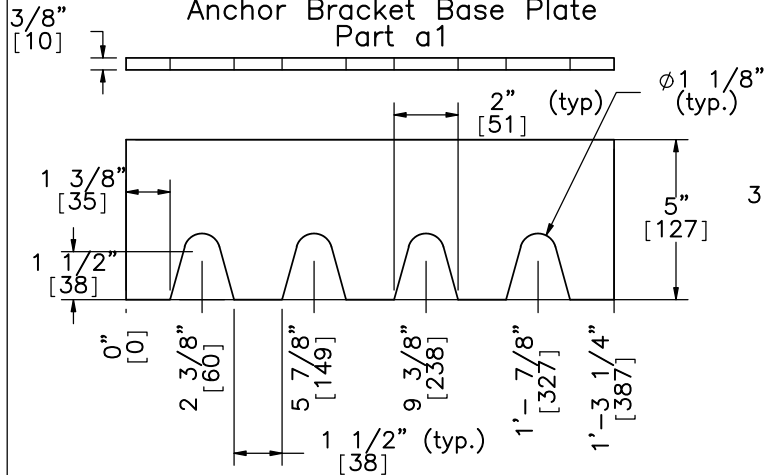
4-Cable Median Barrier
 Cable Anchor Bracket
 Part A

SHEET: 8 of 16
 DATE: 11/16/2011
 DRAWN BY: CSS/CME/RJT/MJW/JGP
 REV. BY: RKF/KAP

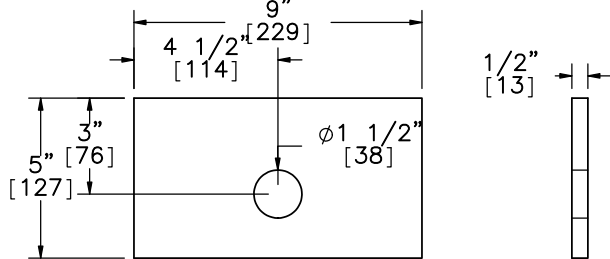
DWG. NAME: CableMedianBarrier-SmallCar_R7_dual
 SCALE: 1:4
 UNITS: In.[mm]



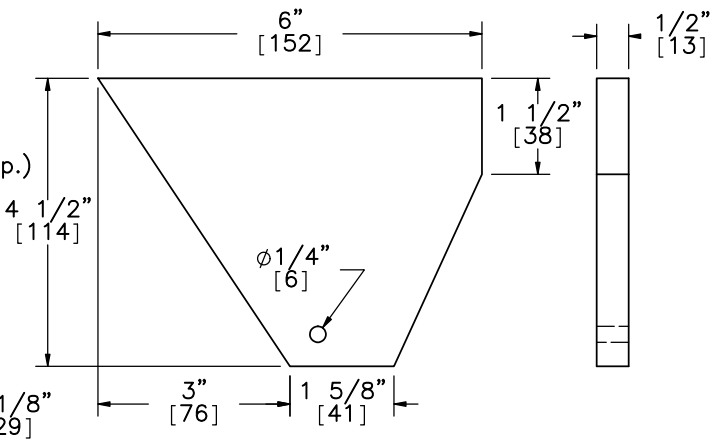
Steel Fabricators Inc.
Anchor Bracket Base Plate
Part a1



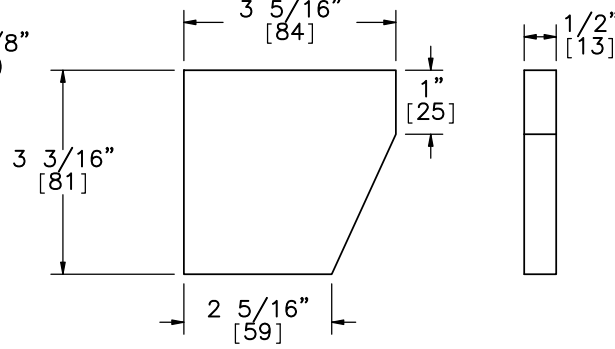
Anchor Bracket Plate
Part a2



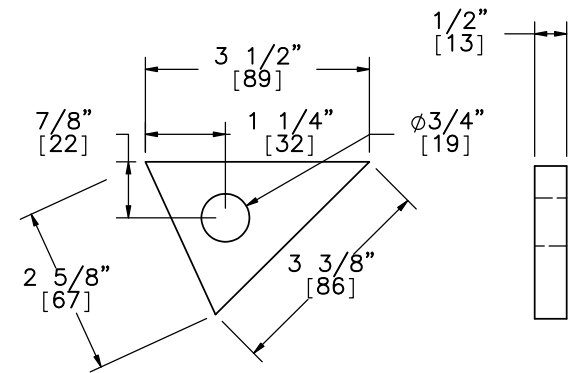
Anchor Bracket Plate
Part a3



Anchor Bracket Plate
Part a4



Anchor Bracket Plate
Part a5



Anchor Bracket Plate
Part a6

Note: (1) All steel plates conform to ASTM A36.



Midwest Roadside
Safety Facility

4-Cable Median Barrier

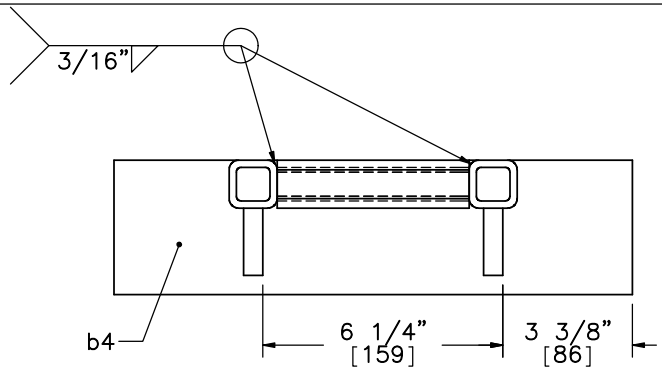
Cable Anchor Bracket
Part A Details

SHEET:
9 of 16

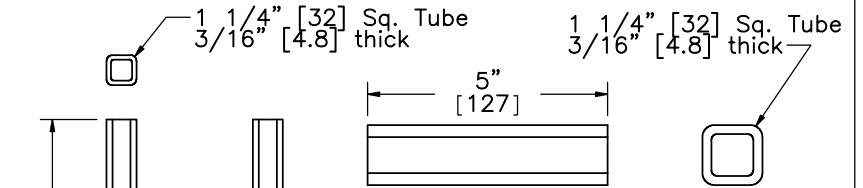
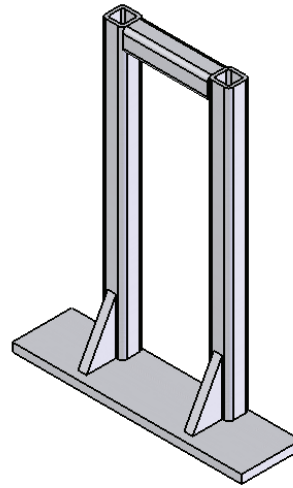
DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

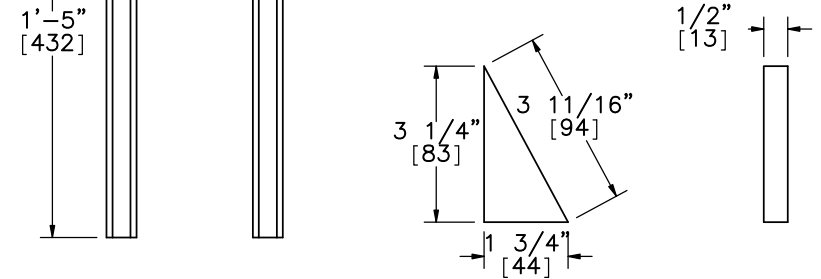
DWG. NAME: CableMedianBarrier-SmallCar_R7_dual
SCALE: 1:6
UNITS: In,[mm]
REV. BY: RKF/KAP



- NOTE:
- (1) The kicker lever should be flush with the top of the kicker plate.
 - (2) The 3 1/4" [83] leg of the kicker plate gusset should line up with the kicker lever.
 - (3) The bottom of the cable release lever should rest upon part a6.
 - (4) All steel plates conform to ASTM A36.
 - (5) All steel tubing conforms to ASTM A500 Grade B.

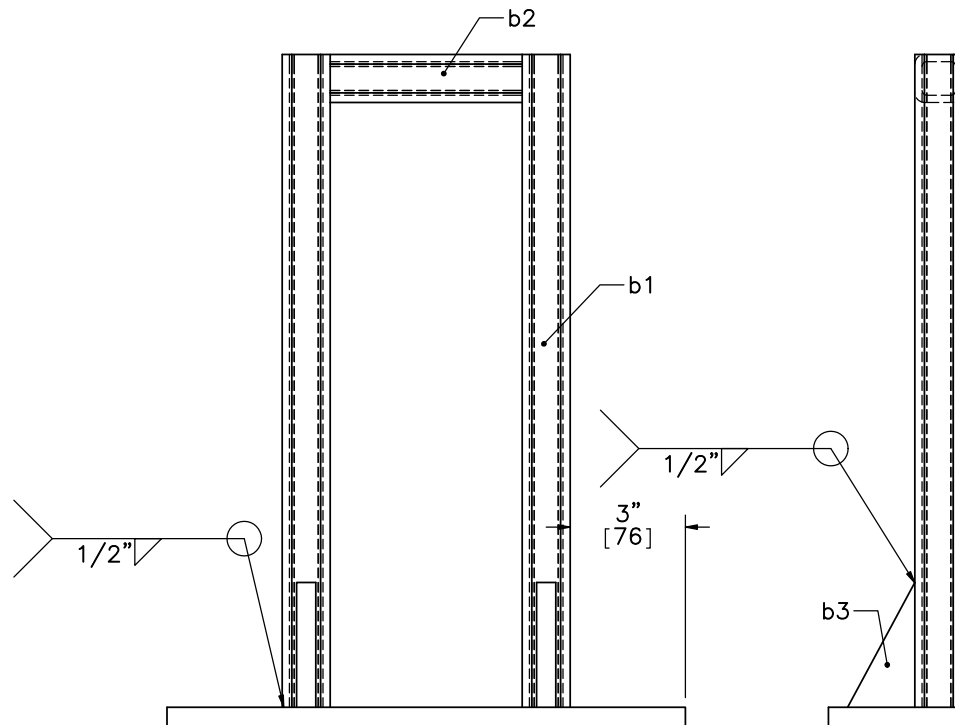


Connector Tube Part b2

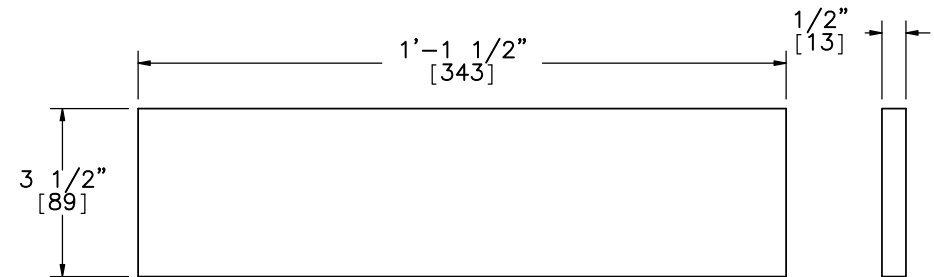


Kicker Lever Part b1

Kicker Plate Gusset Part b3



Rivers Metal Products, Inc.
Cable Release Lever Part B



Kicker Plate Part b4

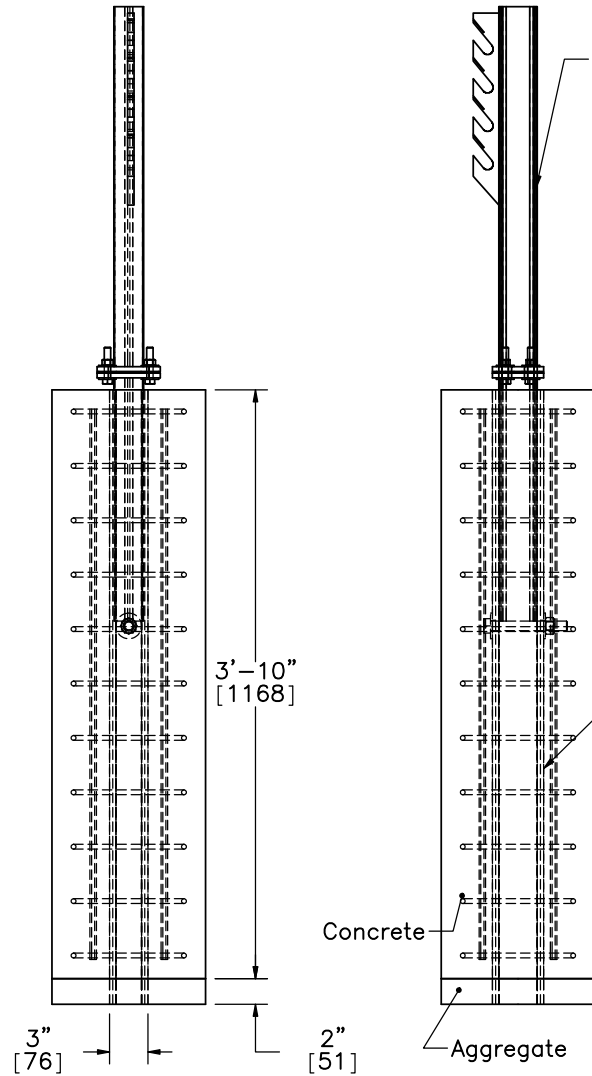
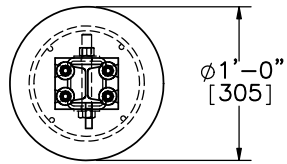


Midwest Roadside Safety Facility

4-Cable Median Barrier
Cable Release Lever Part B

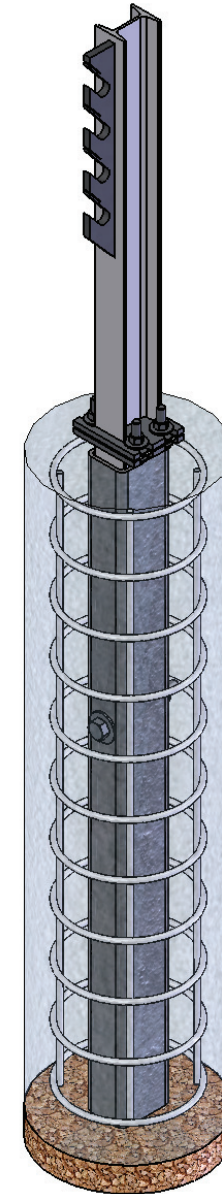
SHEET: 10 of 16
DATE: 11/16/2011
DRAWN BY: CSS/CME/RJT/MJW/JGP
REV. BY: RKF/KAP

DWG. NAME: CableMedianBarrier-SmallCar_R7_dual
SCALE: 1:8
UNITS: In.[mm]



Note:

- (1) Grade 60 Reinforcement.
- (2) 1 1/2" [38] clear cover.
- (3) 11 No. 3 hoops with an inner diameter of 7 1/4" [184] and a vertical spacing of 4 1/4" [108].
- (4) 4 No. 3 longitudinal bars.
- (5) Concrete mix for anchor posts shall provide a minimum f'_c of 4000 psi [27.6 MPa].



River Metal Products, Inc.
Cable Support Post
Post 2 & 39 Only



Midwest Roadside
Safety Facility

4-Cable Median Barrier

Second Post Detail
Post Nos. 2 & 39
As Built

DWG. NAME.

CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:15

UNITS: In.[mm]

SHEET:

11 of 16

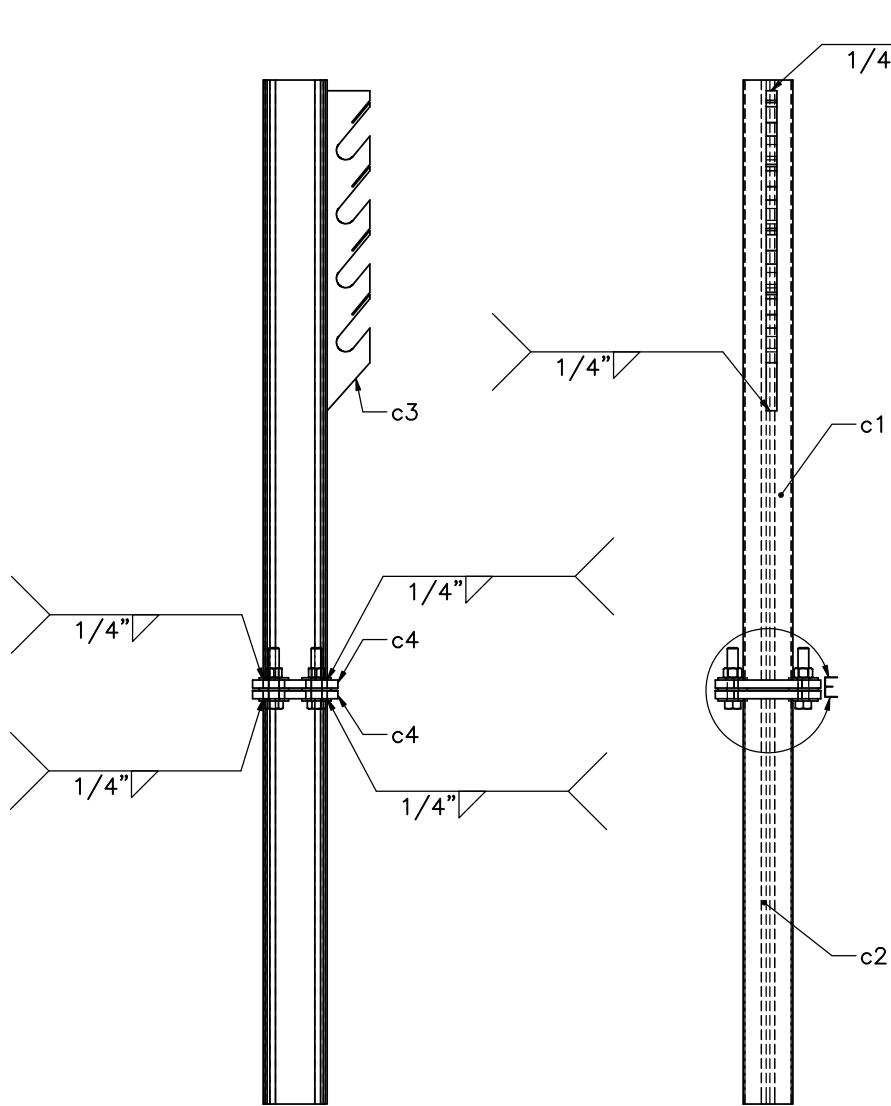
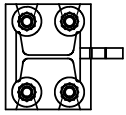
DATE:

11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

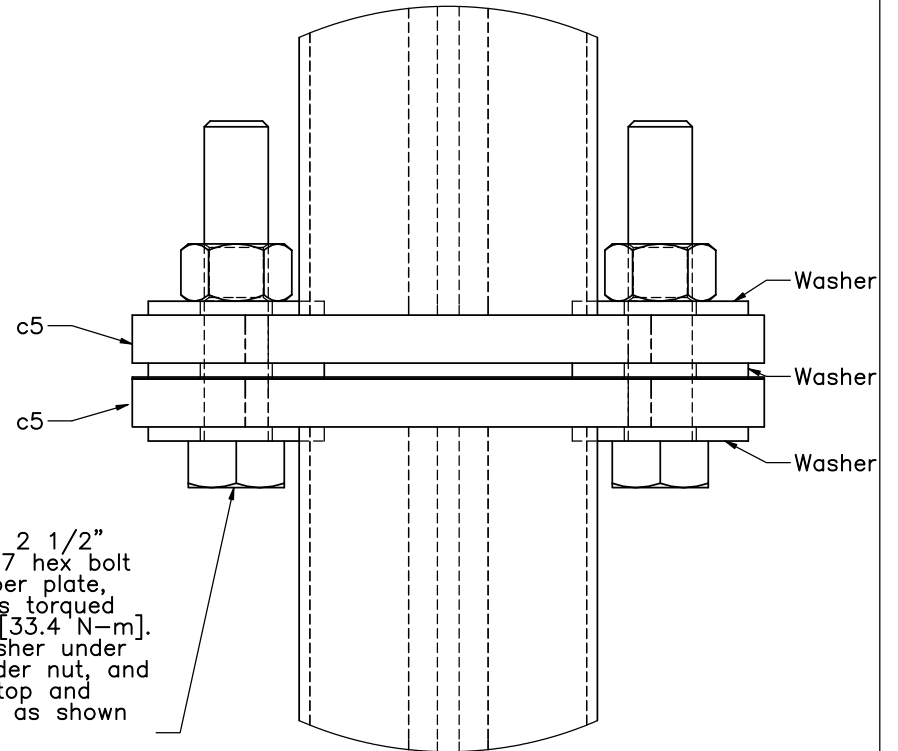
REV. BY:

RKF/KAP



Part C

$\phi 1/2"$ [13] x $2 1/2"$ [64] long A307 hex bolt with nut, keeper plate, and 3 washers torqued to 25 ft-lbs [33.4 N-m]. Place one washer under head, one under nut, and one between top and keeper plates, as shown in Detail E.



DETAIL E



Midwest Roadside Safety Facility

4-Cable Median Barrier

Cable Hanger Assembly
Post Nos. 2 & 39
Part C

SHEET:
12 of 16

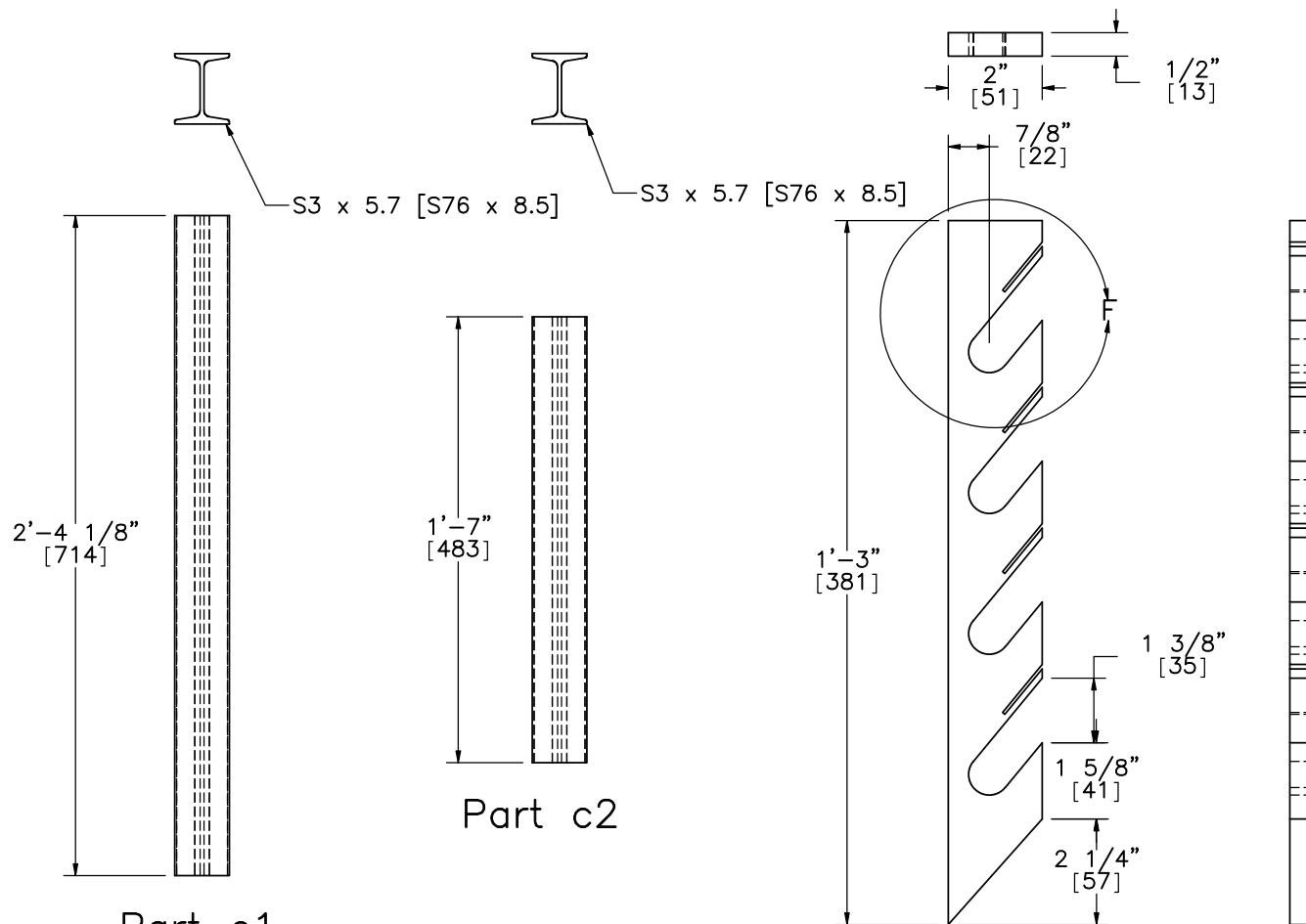
DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

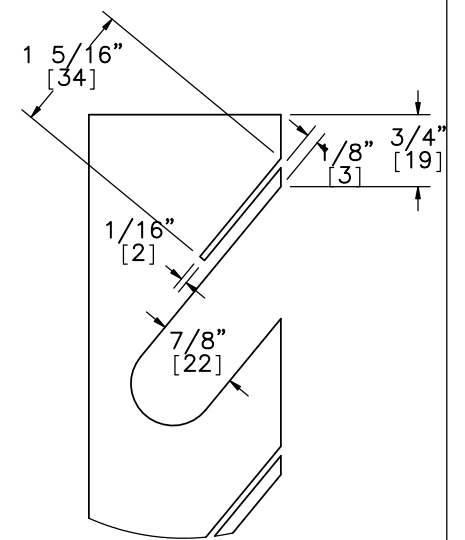
DWG. NAME:
CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:9
UNITS: In,[mm]

REV. BY:
RKF/KAP



Note:
 Tabs to be bent after all cables have been installed and tensioned to secure.

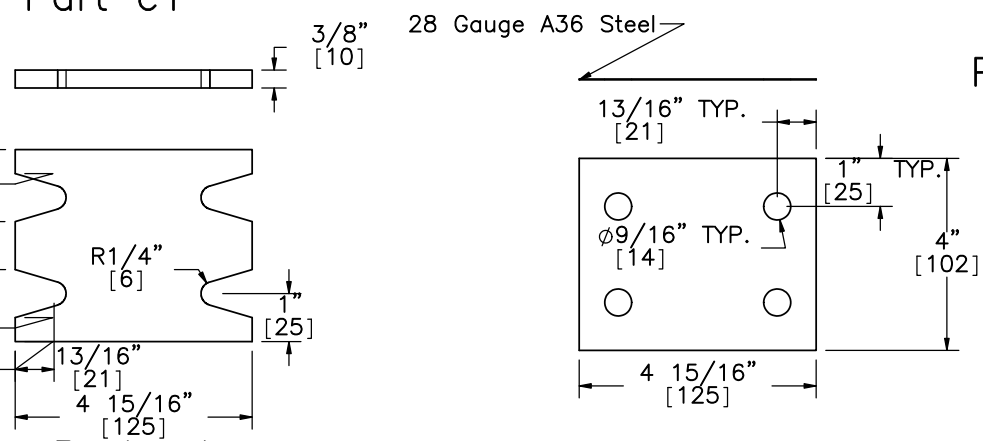


DETAIL F

Part c1

Part c2

Part c3

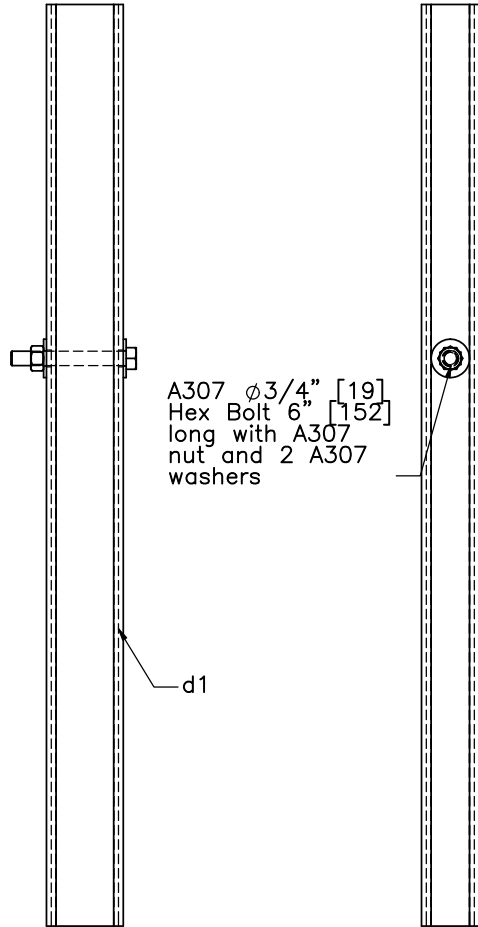
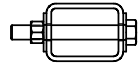


Part c4

Part c5

Midwest Roadside Safety Facility

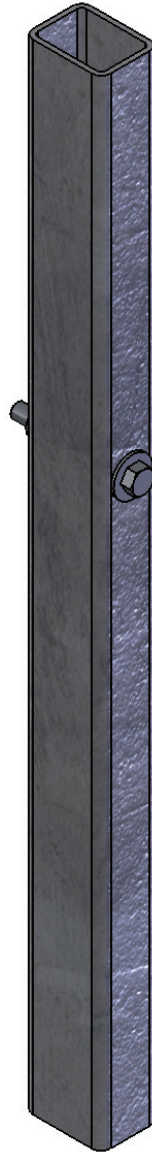
4-Cable Median Barrier Cable Hanger Assembly Post Nos. 2 & 39 Part C Details	SHEET: 13 of 16
	DATE: 11/16/2011
	DRAWN BY: CSS/CME/ RJT/MJW/ JGP
DWG. NAME: CableMedianBarrier-SmallCar_R7_dual	SCALE: 1:8 UNITS: In,[mm]
	REV. BY: RKF/KAP



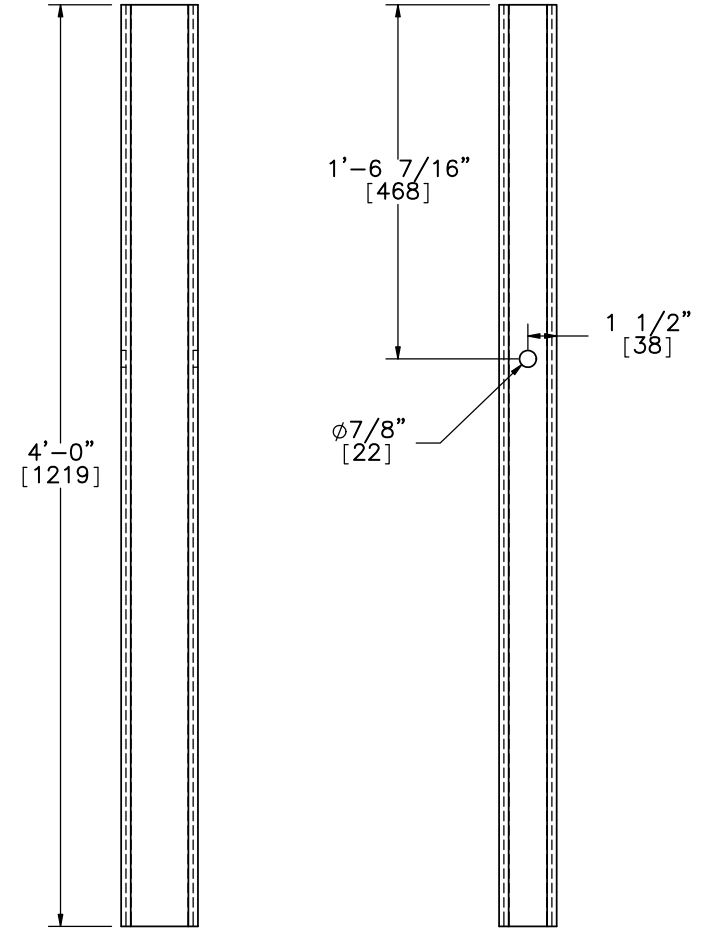
A307 $\phi 3/4"$ [19]
Hex Bolt 6" [152]
long with A307
nut and 2 A307
washers

d1

Part D



4" [102] x 3" [76] x 1/4" [6.3] tube
ASTM A500 Grade B



4'-0"
[1219]

1'-6 7/16"
[468]

$\phi 7/8"$
[22]

1 1/2"
[38]

Part d1



Midwest Roadside
Safety Facility

4-Cable Median Barrier

Foundation Tube Assembly
Post Nos. 2 & 39
Part D

SHEET:
14 of 16

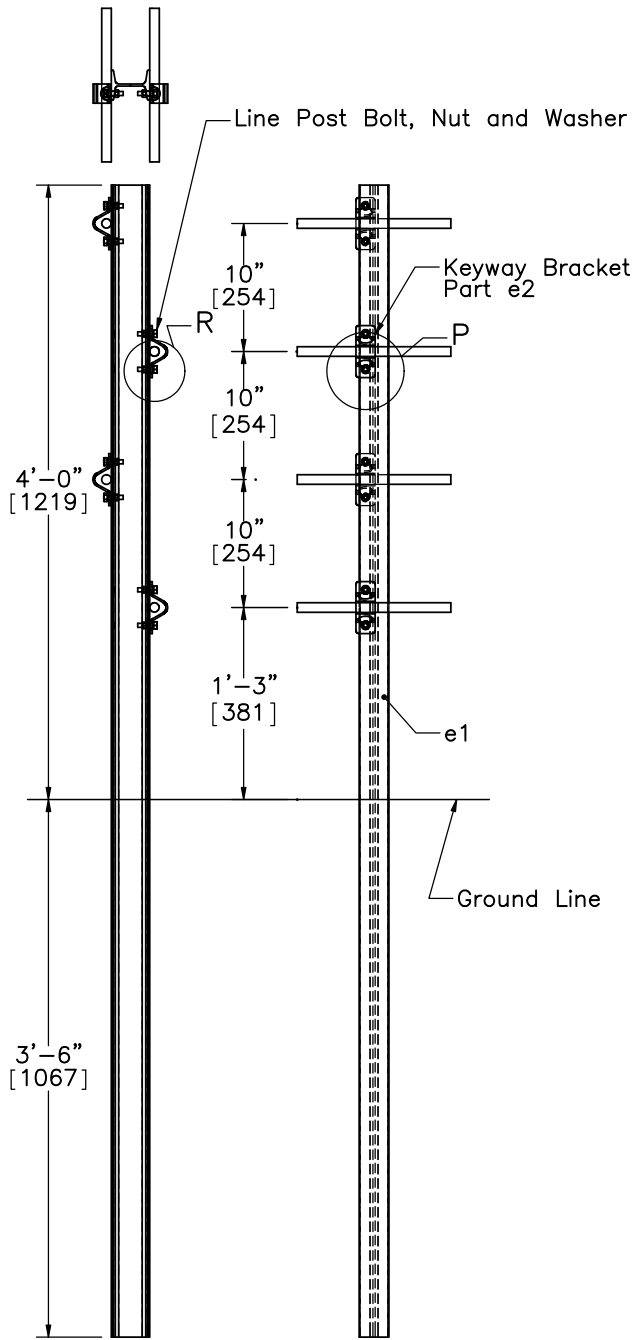
DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

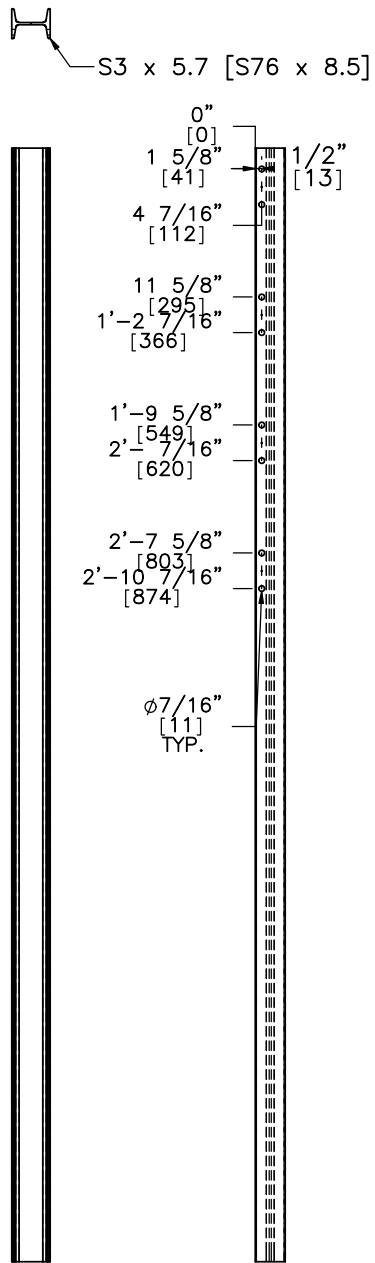
DWG. NAME:
CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:10
UNITS: In,[mm]

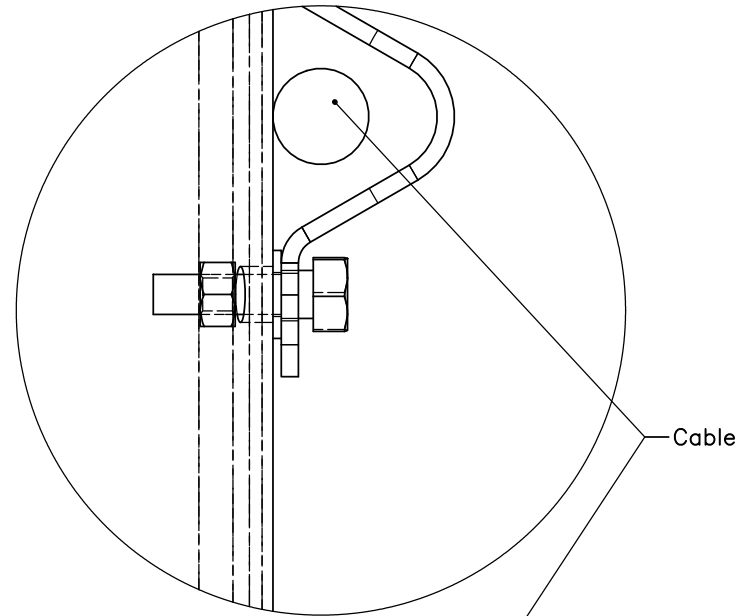
REV. BY:
RKF/KAP



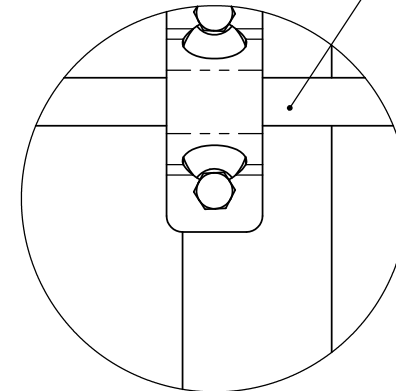
Part E



Part e1



DETAIL R
SCALE 1 : 1.5



DETAIL P
SCALE 1 : 3



Midwest Roadside Safety Facility

4-Cable Median Barrier

Cable Support Post
Post Nos. 3-38
Part E

SHEET:
15 of 16

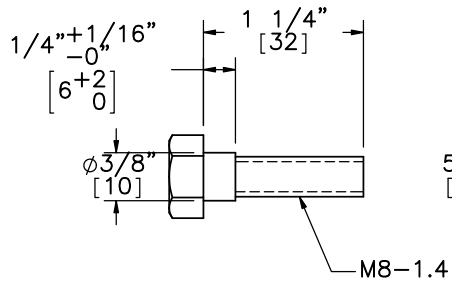
DATE:
11/16/2011

DRAWN BY:
CSS/CME/
RJT/MJW/
JGP

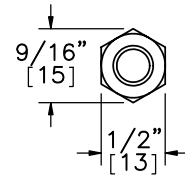
DWG. NAME:
CableMedianBarrier-SmallCar_R7_dual

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

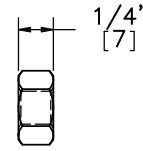
REV. BY:
RKF/KAP



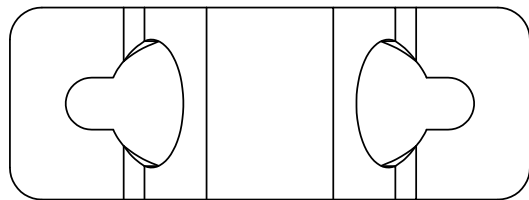
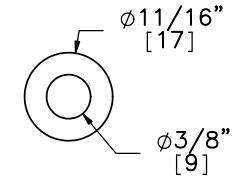
Hex Shoulder Bolt 0.3125-18x1.25 [M8-1.4x32]



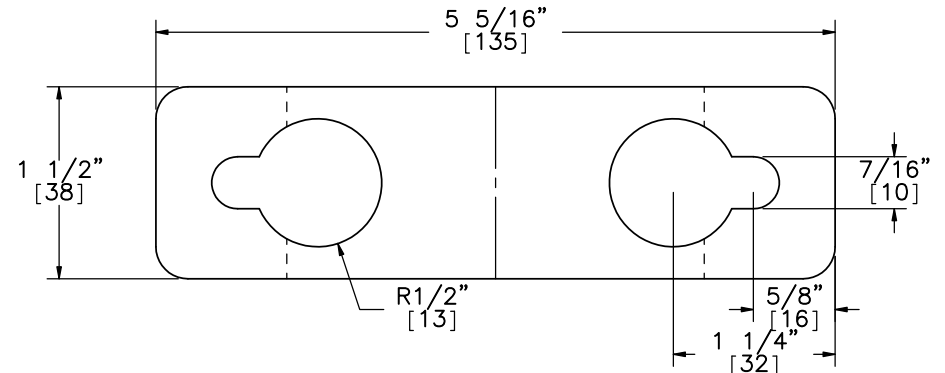
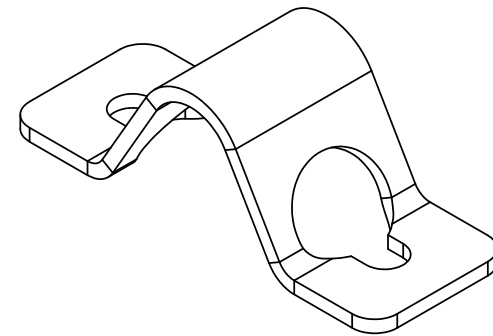
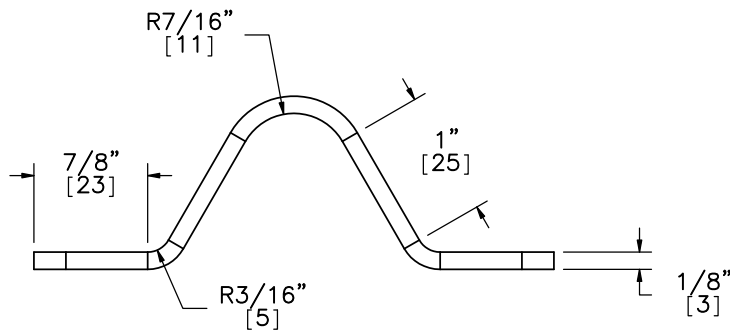
5/16" [8] Hex Nut



SAE FW 0.3125 [9]



Keyway Bracket with Bends



Keyway Bracket Flat Pattern



Midwest Roadside
Safety Facility

4-Cable Median Barrier

Shoulder Bolt, Nut,
and SAE Washer Detail
Keyway Bracket Detail

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DATE:
11/16/2011

DRAWN BY:
GSS/CME/
RJT/MJW/
JGP

DWG. NAME.

CableMedianBarrier-SmallCar_R7_dual

SCALE: 1:1.5

UNITS: In.[mm]

REV. BY:

RKF/KAP