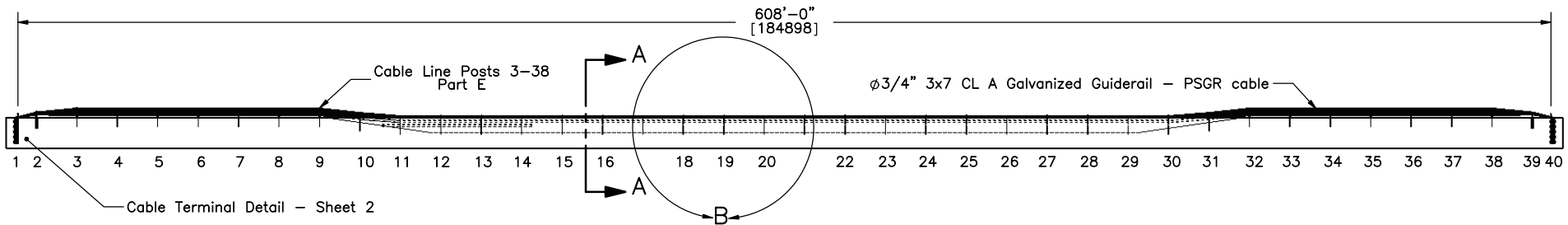
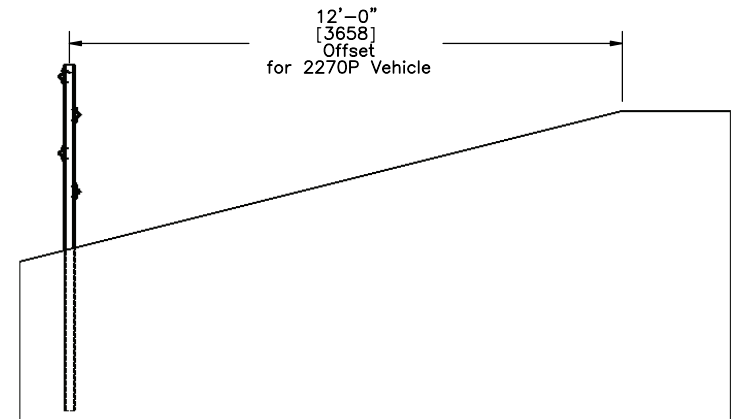


PLAN VIEW

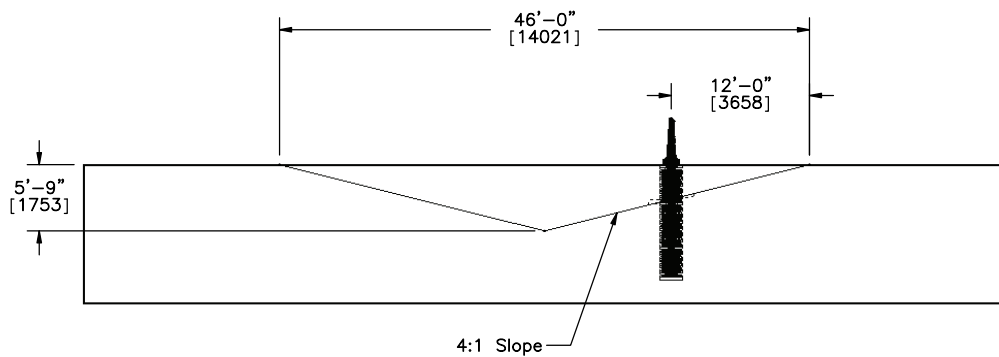


PROFILE VIEW

Note: Post nos. 15-28 placed in 18" [457] diameter hole backfilled and tamped in NCHRP 350 soil.



SECTION A-A



END VIEW



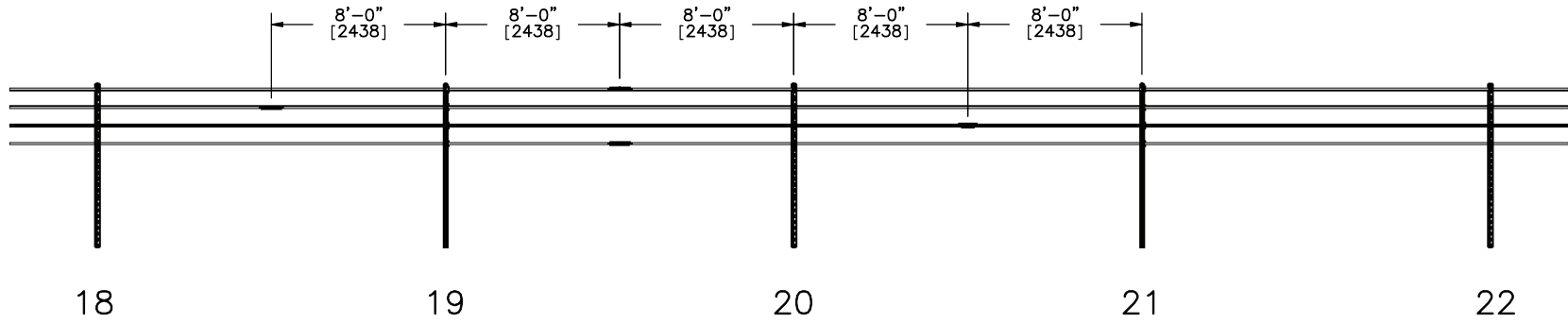
Midwest Roadside Safety Facility

4-Cable Median Barrier System Layout - 2270P

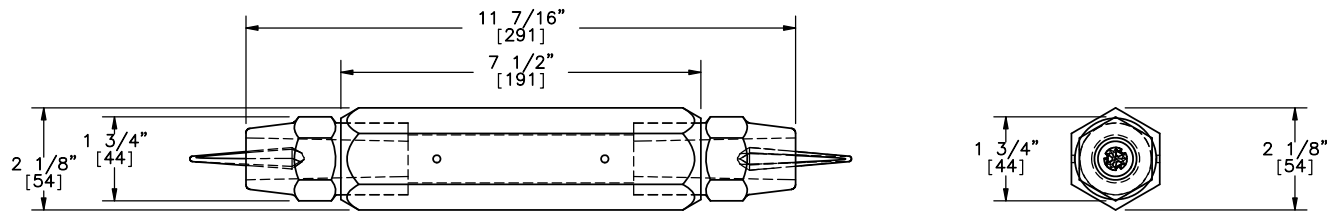
SHEET: 1 of 16  
 DATE: 11/16/2011  
 DRAWN BY: CSS/CME/PAJ/NAJ/MDM/DMA/JGP  
 REV. BY: RKF/KAP

DWG. NAME: CableMedianBarrier-Pickup\_R20\_dual

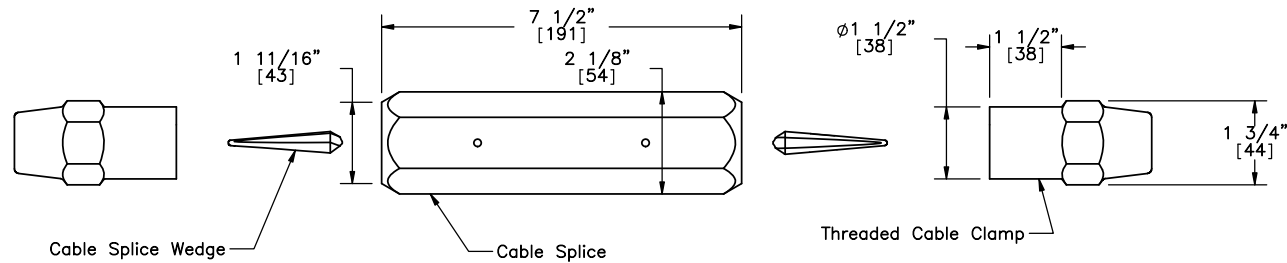
SCALE: 1:750  
 UNITS: In,[mm]



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



Cable Splice Detail  
 Part G



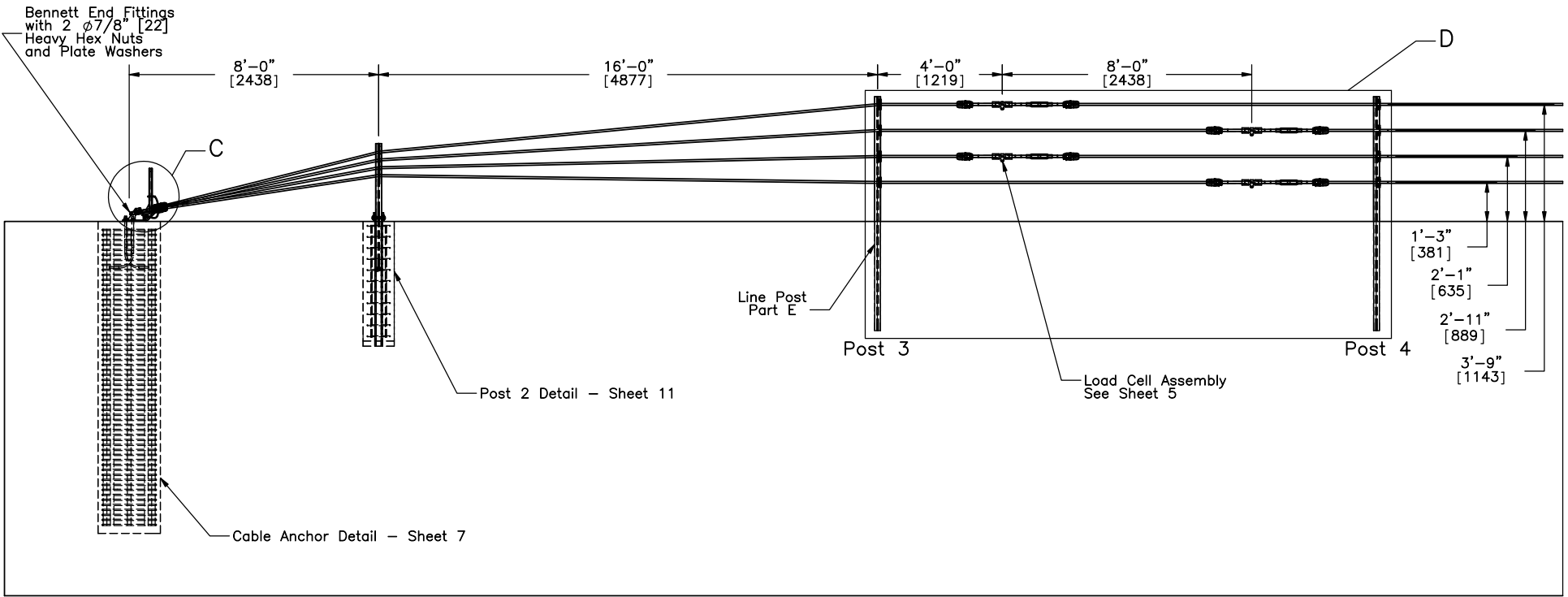
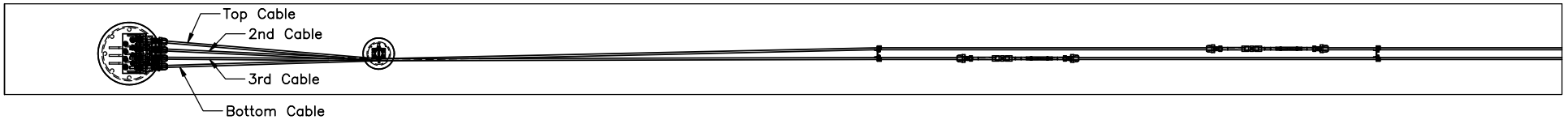
Cable Splice Exploded View

NOTE: Bottom splice should have been located between post nos. 21 and 22, but due to the length of cable available, it was placed between post nos. 19 and 20.



Midwest Roadside  
 Safety Facility

4-Cable Median Barrier		SHEET: 2 of 16
Cable Splice Location and Detail		DATE: 11/16/2011
DWG. NAME: CableMedianBarrier-Pickup_R20_dual		DRAWN BY: CSS/CME/FAJ/ NAJ/MDM/DMA/ JGP
SCALE: 1:100	UNITS: In.[mm]	REV. BY: RKF/KAP



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



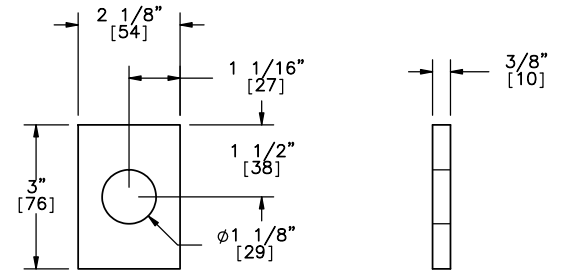
Midwest Roadside Safety Facility

4-Cable Median Barrier  
Cable Terminal Detail  
As Built

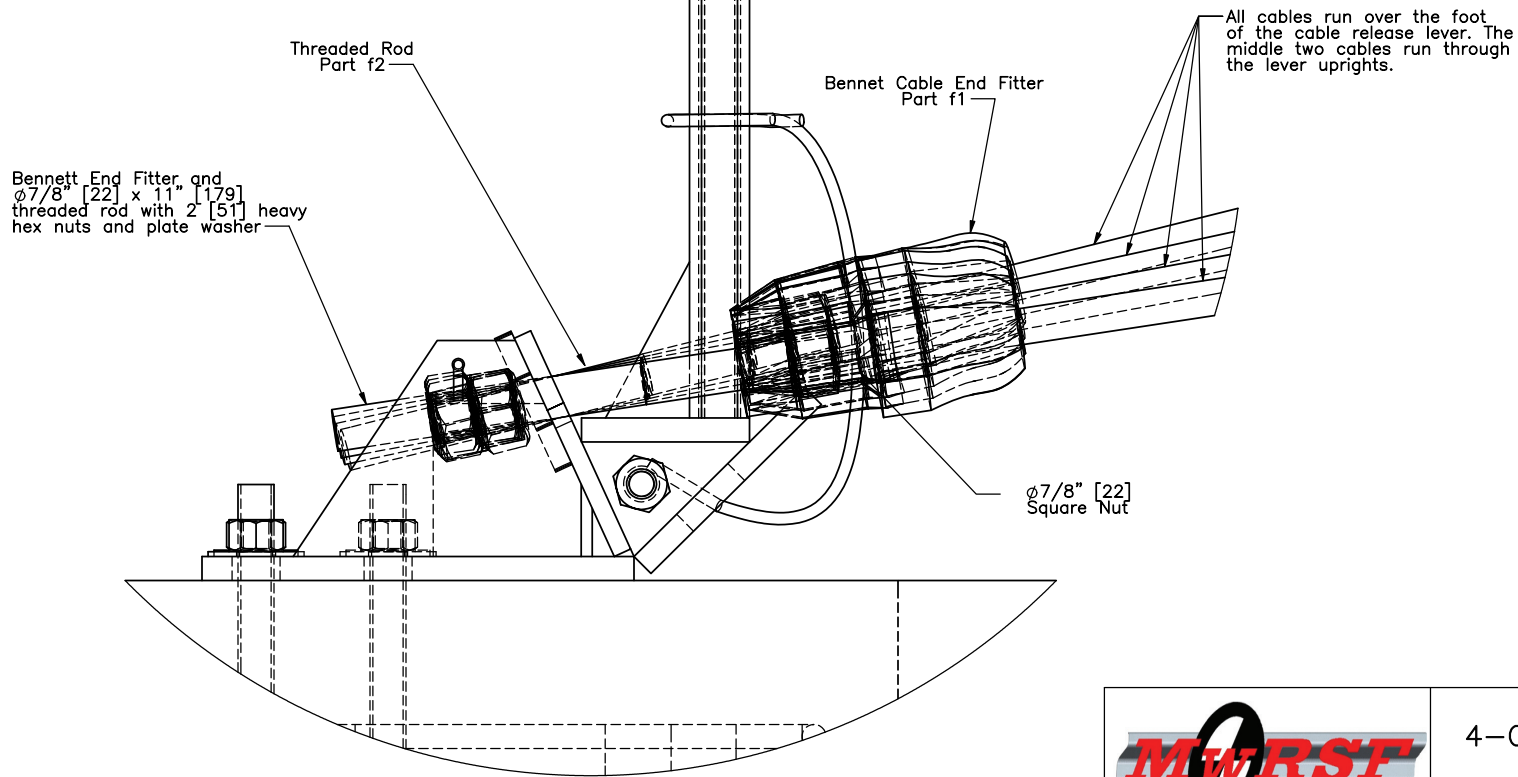
SHEET:  
3 of 16  
DATE:  
11/16/2011  
DRAWN BY:  
CSS/CME/EA  
J/NW/NDM/  
DMH/JGP  
REV. BY:  
RKF/KAP

DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

SCALE: 1:60  
UNITS: In,[mm]



Cable Anchor Plate Washer



DETAIL C  
SCALE 1 : 4



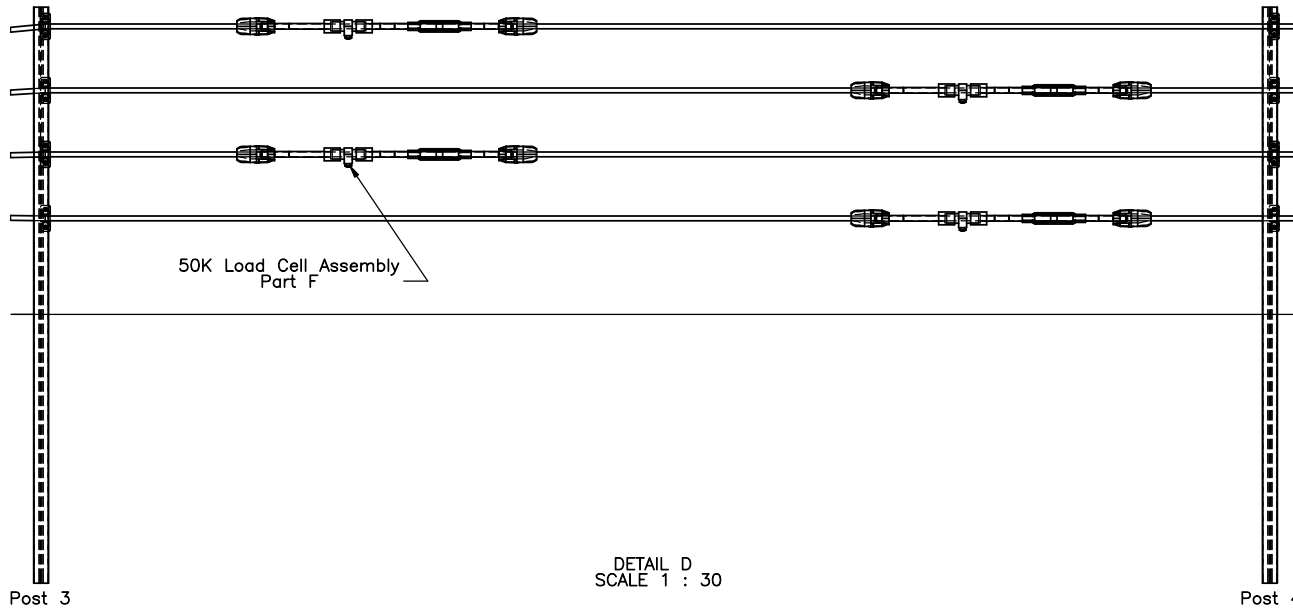
Midwest Roadside  
Safety Facility

4-Cable Median Barrier  
Cable Anchor Details

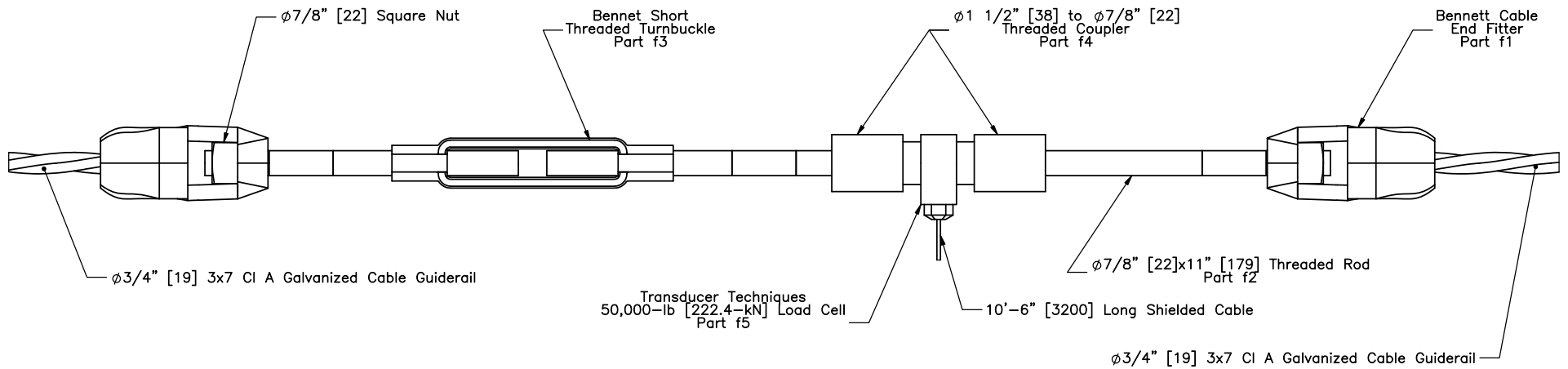
SHEET:  
4 of 16  
DATE:  
11/16/2011  
DRAWN BY:  
CSS/CME/EAJ/  
NJJ/MDM/DMA/  
JGP  
REV. BY:  
RKF/KAP

DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

SCALE: 1:4  
UNITS: In.[mm]



DETAIL D  
SCALE 1 : 30



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



Midwest Roadside  
Safety Facility

4-Cable Median Barrier

Load Cell and Strongback  
Configuration  
Part F

DWG. NAME.  
CableMedianBarrier-Pickup\_R20\_dual

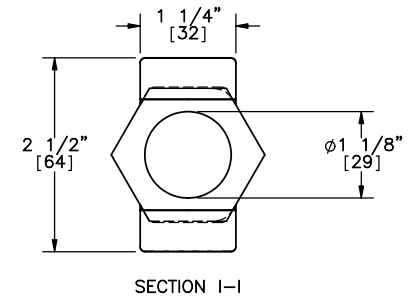
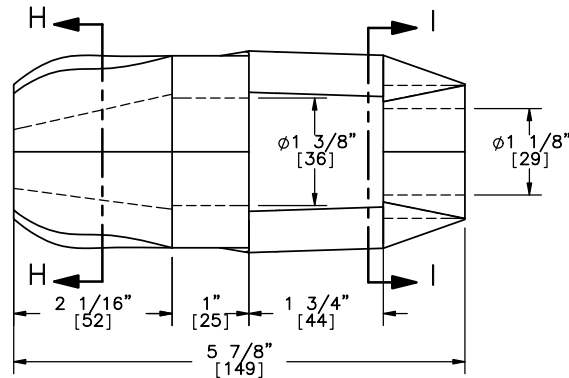
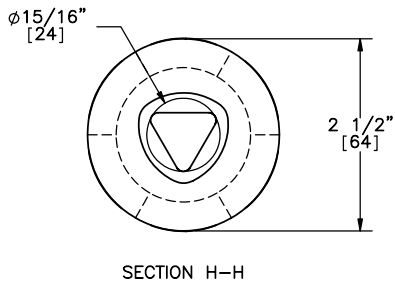
SCALE: 1:25  
UNITS: In,[mm]

SHEET:  
5 of 16

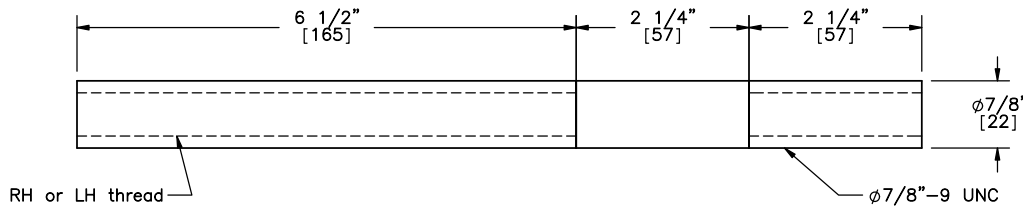
DATE:  
11/16/2011

DRAWN BY:  
CSS/QME/EAJ/  
MJK/MDM/GMH  
/JGP

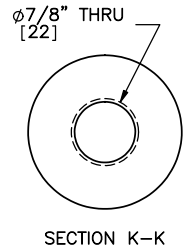
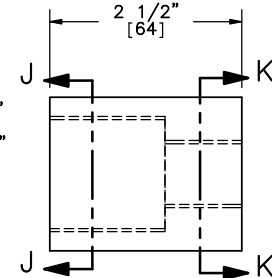
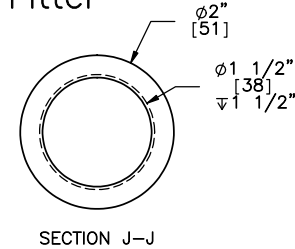
REV. BY:  
RKF/KAP



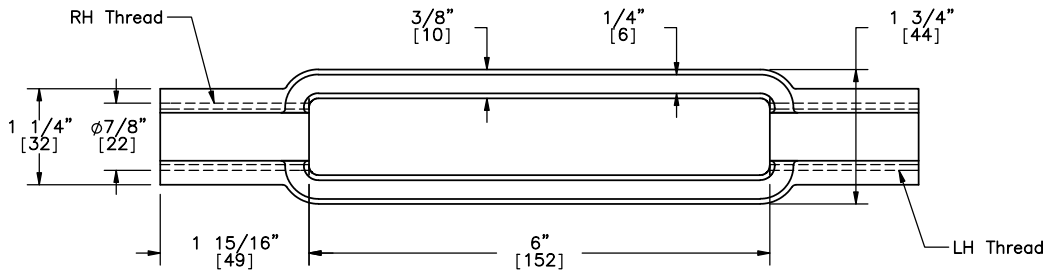
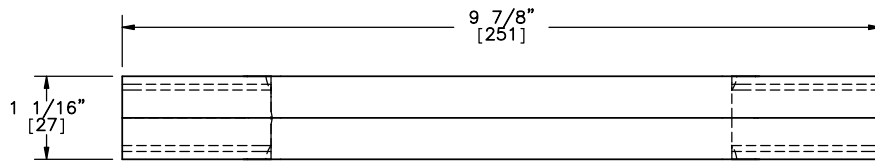
Bennett Cable End Fitter  
Part f1



Threaded Rod  
Part f2

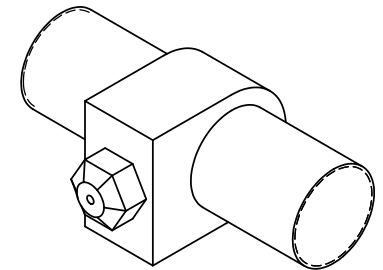
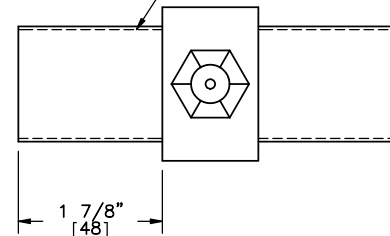


Load Cell-Threaded Rod Coupler  
Part f4



Bennett Threaded Short Turnbuckle  
Part f3

1 1/2-12 [M36-2.1] UNF  
Threaded Both Sides



Transducer Techniques  
50,000-lb [222.4-kN] Rated Load Cell  
Part f5



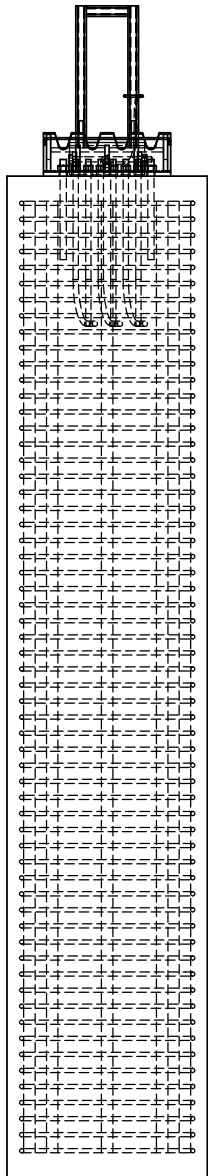
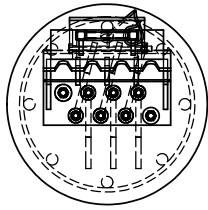
Midwest Roadside  
Safety Facility

4-Cable Median Barrier  
Load Cell Assembly  
Component Details

DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

SCALE: 1:2.5  
UNITS: In, [mm]  
and mm

SHEET:  
6 of 16  
DATE:  
11/16/2011  
DRAWN BY:  
CSS/OME/EAJ/  
MJK/MDM/GMH/  
JGP  
REV. BY:  
RKF/KAP



Steel Fabricators Inc.  
Cable Anchor Bracket  
Part A

$\phi 3/4"$  [19] A449 Hook  
Bolts with heavy hex  
nut and washer

10'-0"  
[3048]

$\phi 2'-0"$   
[610]

Brass Keeper Rod  
 $\phi 3/16"$  [4.8] x 16"  
[406] long. Bend ends  
of rod to secure.

Cable Release Lever  
Part B

Lever Retaining Cable:  
 $\phi 1/4"$  [6.4], 7x19  
galvanized aircraft cable,  
36" [914] long with 3  
 $1/2"$  [39] long loops  
and 1" [25] clips.

$\phi 5/8"$  [16] Gr. 5 Hex  
Head Bolt 9  $1/2"$  [241]  
long with washer and nut.

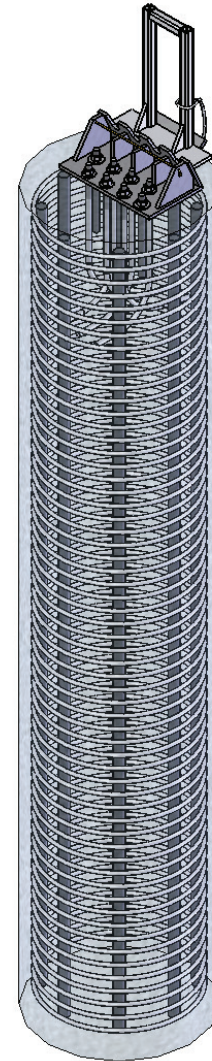
Concrete

NOTE:

Brass rod to be placed after  
all cables are installed and  
tensioned. Slide rod through the  
 $1/4"$  [6.4] holes in Anchor  
Bracket, leaving a minimum of  
1" [25] on each side of 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  
and 3" [76] clear cover top and  
bottom.
- (3) Eight No. 11 Longitudinal bars.
- (4) 60 - No. 4 hoops with an inner  
diameter of 20" [508] evenly  
spaced between clear cover.
- (5) Six No. 6 standard J-hook anchor  
studs having a length of 27" [686]  
and a development length of  
14  $3/8"$  [365]. Two additional  
threaded rods,  $\phi 3/4"$  [19] x 12"  
[305] long, in the corner holes,  
with 10  $1/2"$  [267] embedment depth.
- (6) Concrete mix for anchor 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

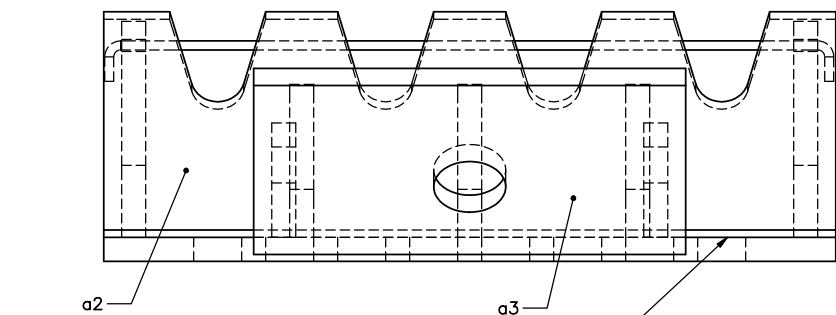
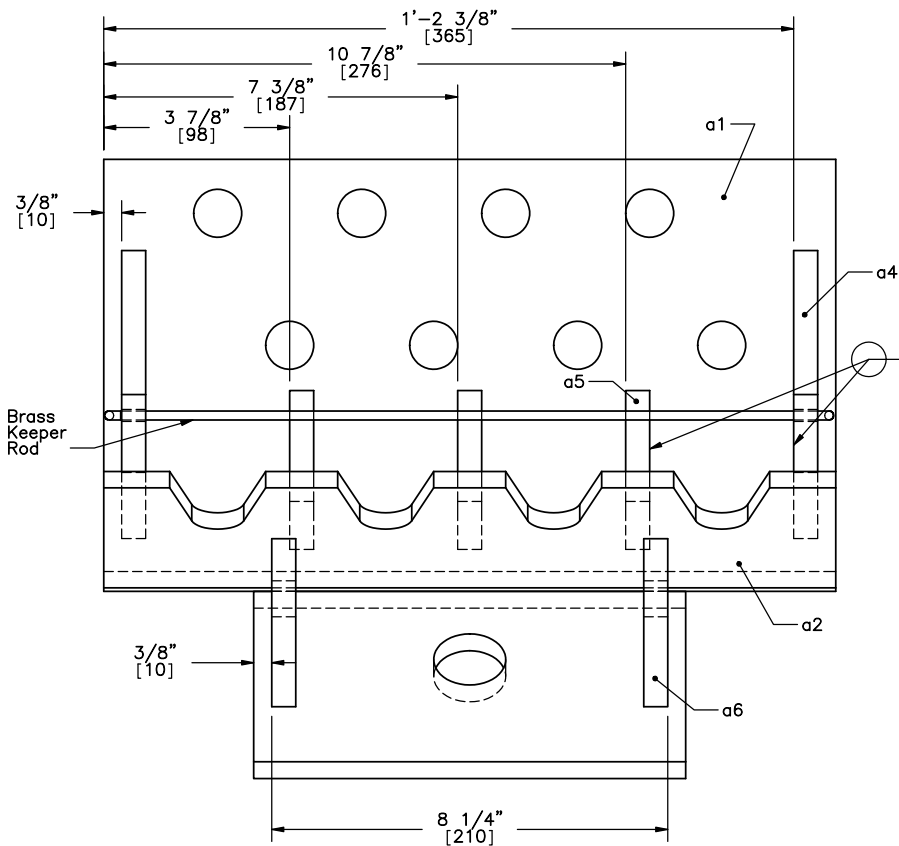
DATE:  
11/16/2011

DRAWN BY:  
CSS/CME/FAJ/  
NAJ/MDK/DWH  
/JGP

REV. BY:  
RKF/KAP

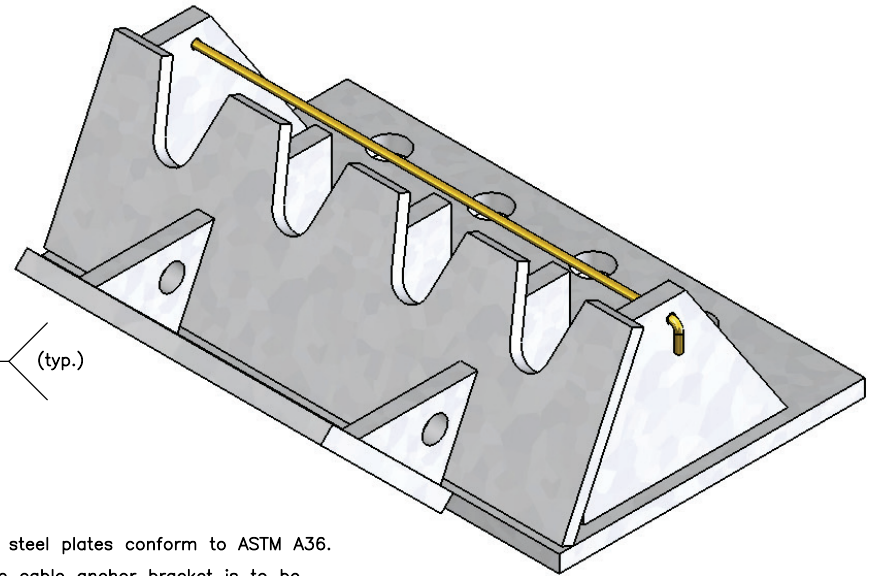
DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

SCALE: 1:23  
UNITS: In./[mm]

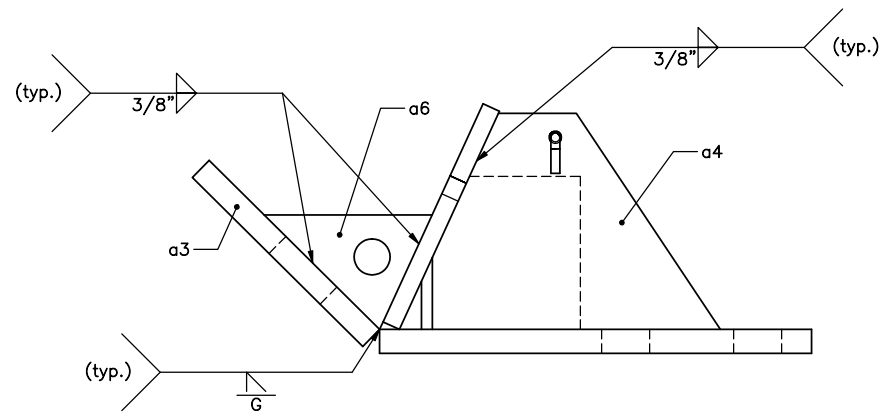


(typ.)  $\frac{3}{8}$ " [10]  
 $\frac{1}{8}$ " [3]

Part A



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



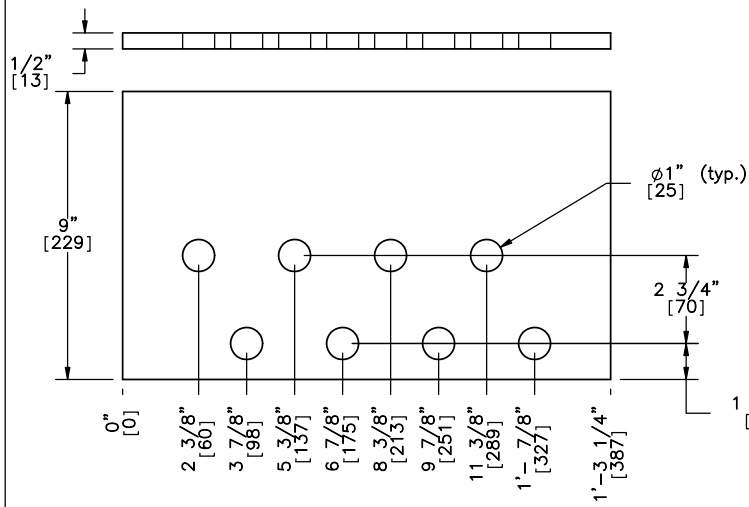
Midwest Roadside  
 Safety Facility

4-Cable Median Barrier  
 Cable Anchor Bracket  
 Part A

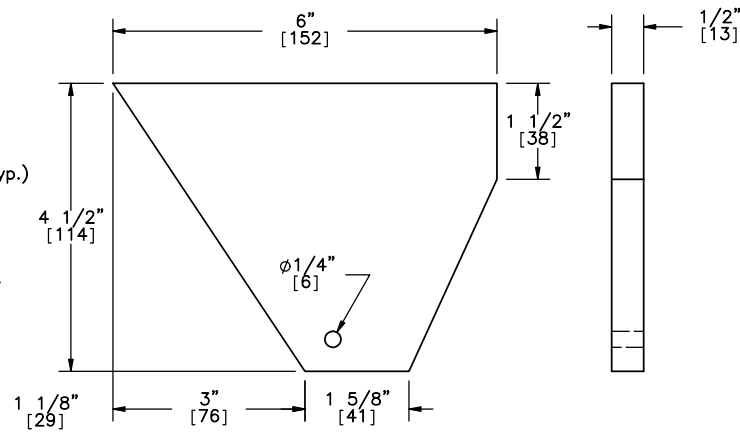
SHEET:  
 8 of 16  
 DATE:  
 11/16/2011  
 DRAWN BY:  
 CSS/QMS/EA  
 JZ/KLW/KDM/  
 DMH/JGP  
 REV. BY:  
 RKF/KAP

DWG. NAME:  
 CableMedianBarrier-Pickup\_R20\_dual  
 SCALE: 1:4  
 UNITS: In.[mm]



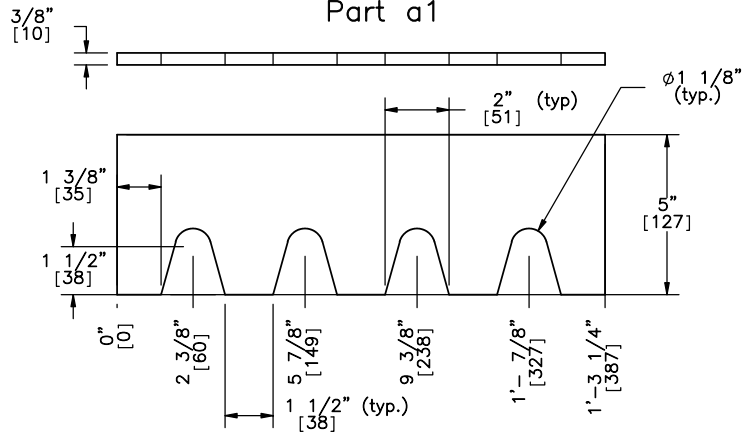


Steel Fabricators  
Anchor Bracket Base Plate  
Part a1

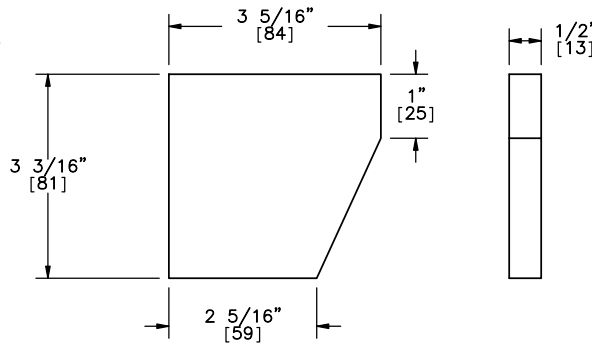


Anchor Bracket Plate  
Part a4

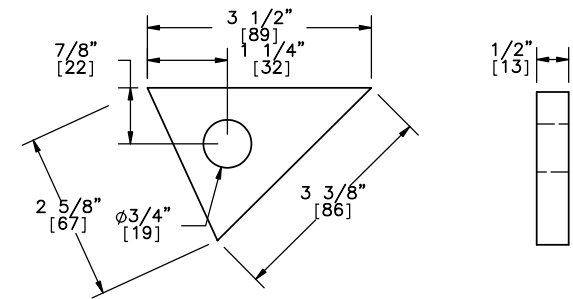
Note: (1) All steel plates conform to ASTM A36.



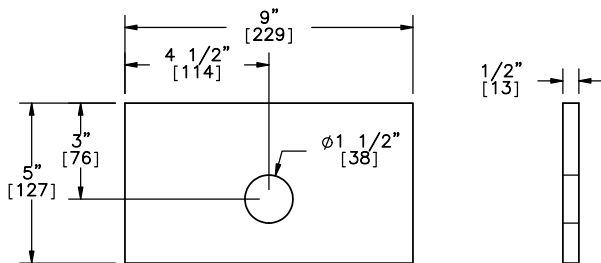
Anchor Bracket Plate  
Part a2



Anchor Bracket Plate  
Part a5



Anchor Bracket Plate  
Part a6



Anchor Bracket Plate  
Part a3



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/FAJ/  
NAJ/MDK/DWH/  
JGP

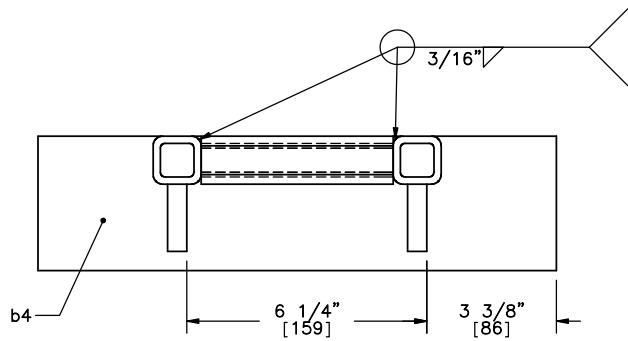
REV. BY:  
RKF/KAP

DWG. NAME.

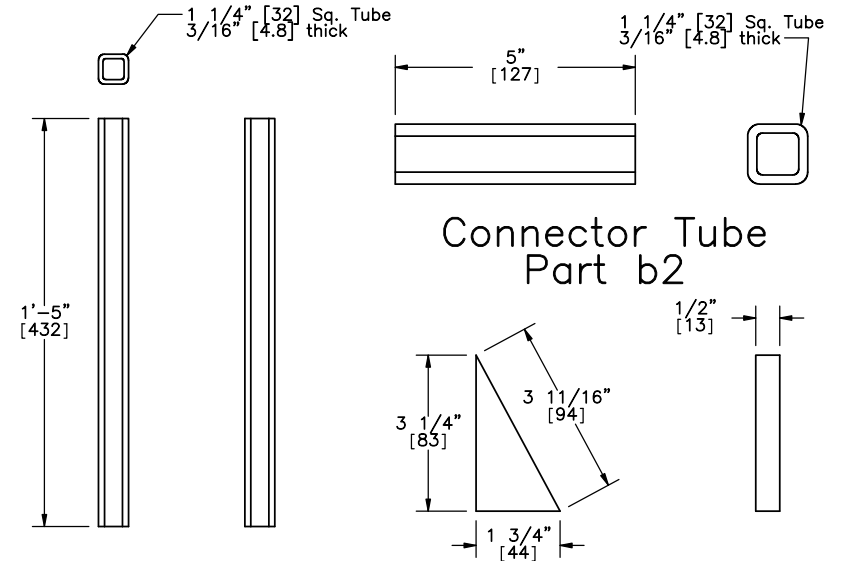
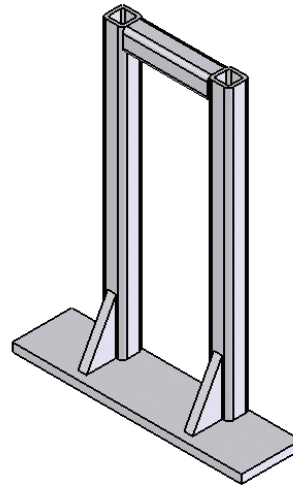
CableMedianBarrier-Pickup\_R20\_dual

SCALE: 1:6

UNITS: In,[mm]



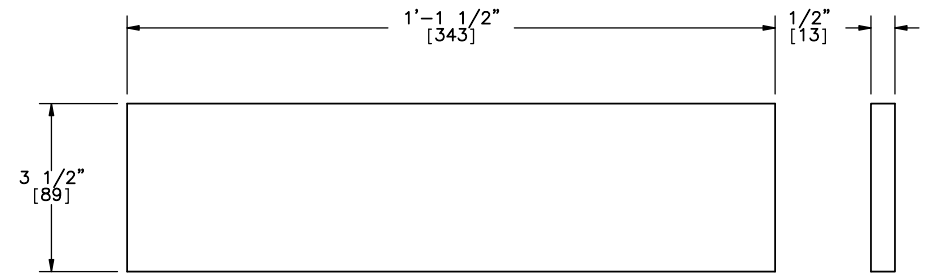
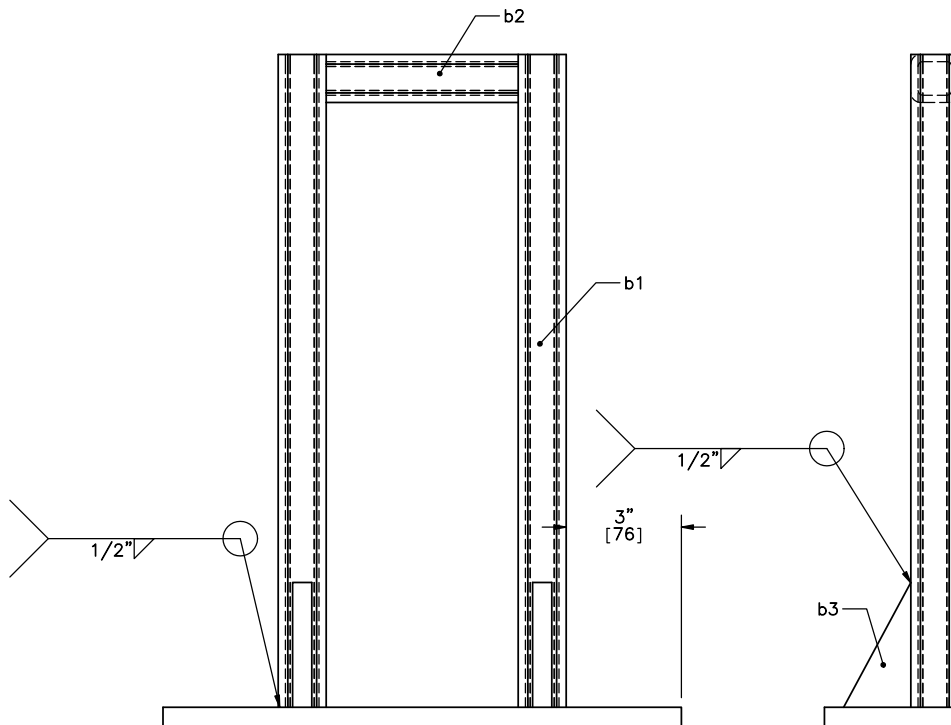
- NOTE:
- (1) The kicker lever should be flush with the top of the kicker plate.
  - (2) The 3 1/4" [83] leg of the kicker plate gusset should line up with the kicker lever.
  - (3) The bottom of the cable release lever should rest upon part a6.
  - (4) All steel plates conform to ASTM A36.
  - (5) All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



Kicker Lever Part b1

Connector Tube Part b2

Kicker Plate Gusset Part b3



Kicker Plate Part b4

Rivers Metal Products Inc.  
Cable Release Lever  
Part B



Midwest Roadside  
Safety Facility

4-Cable Median Barrier

Cable Release Lever  
Part B

SHEET:  
10 of 16

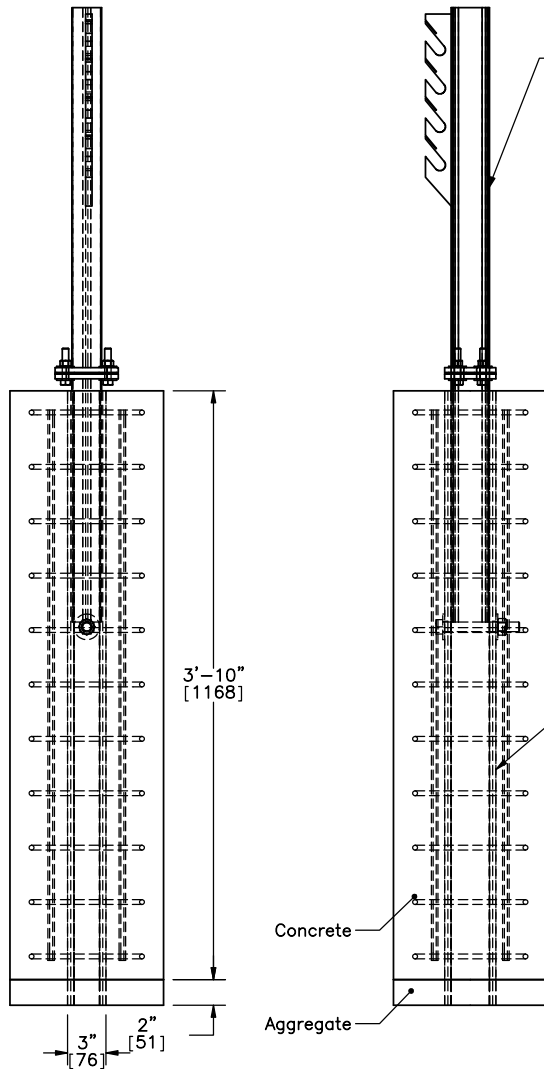
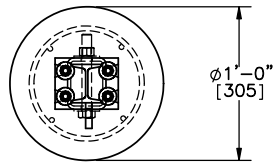
DATE:  
11/16/2011

DRAWN BY:  
GSS/GME/EA  
J/KW/JDM/  
DMR/JGP

REV. BY:  
RKF/KAP

DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

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



Hanger Assembly  
Part C

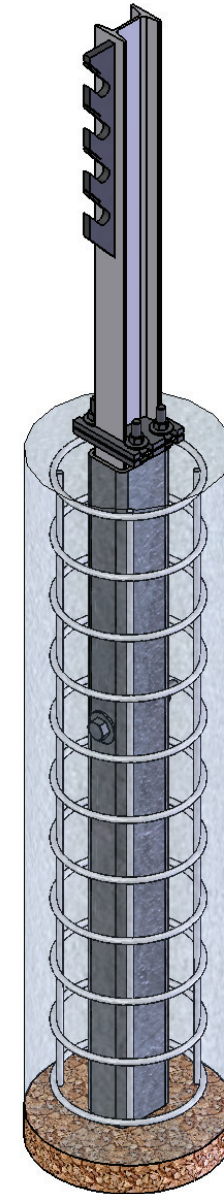
2nd Post Foundation Tube Assembly  
Part D

Concrete

Aggregate

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<sub>c</sub> of 4000 psi [27.6 MPa].



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



Midwest Roadside  
Safety Facility

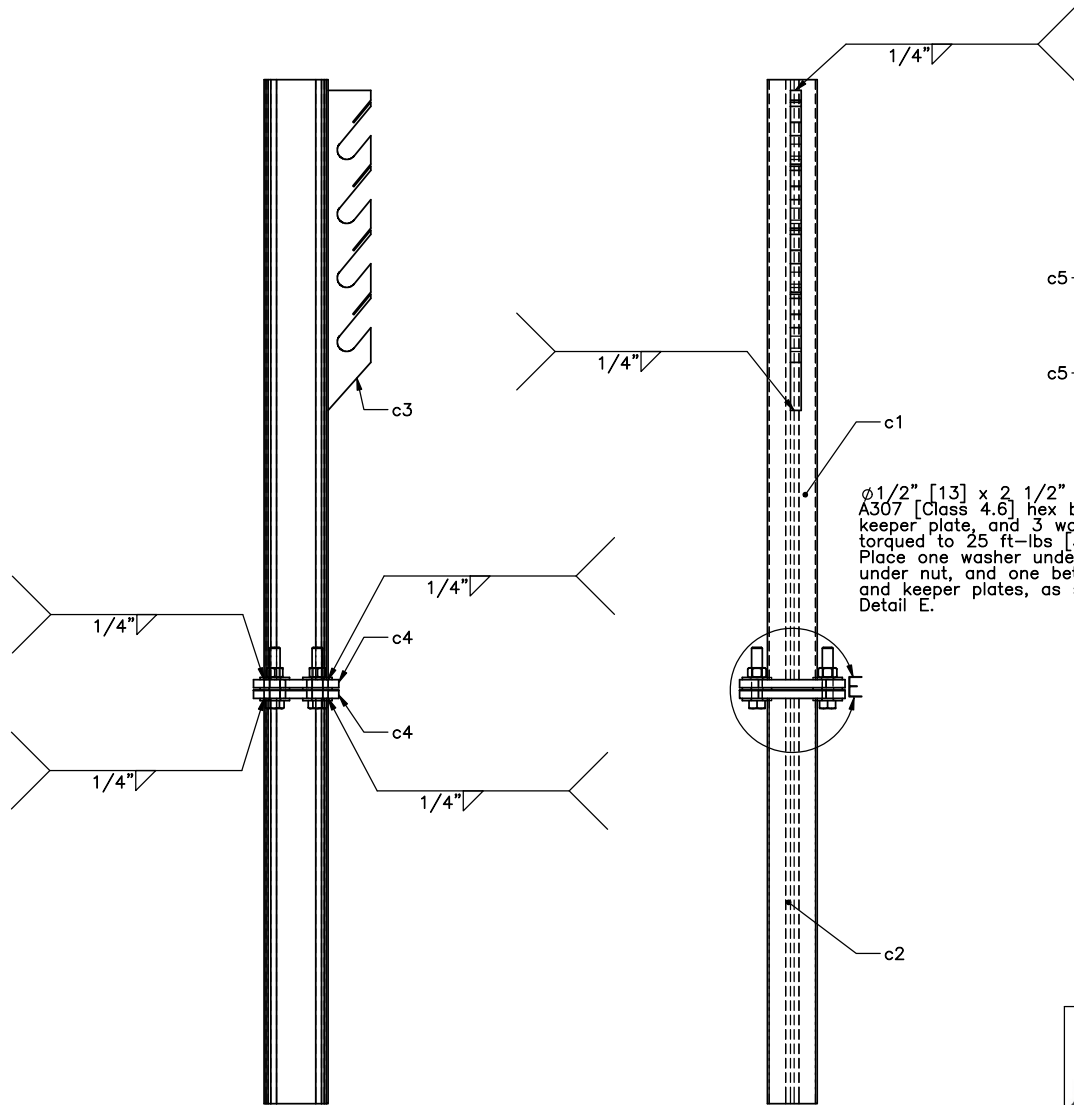
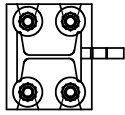
4-Cable Median Barrier

Second Post Detail  
Post Nos. 2 & 39  
As Built

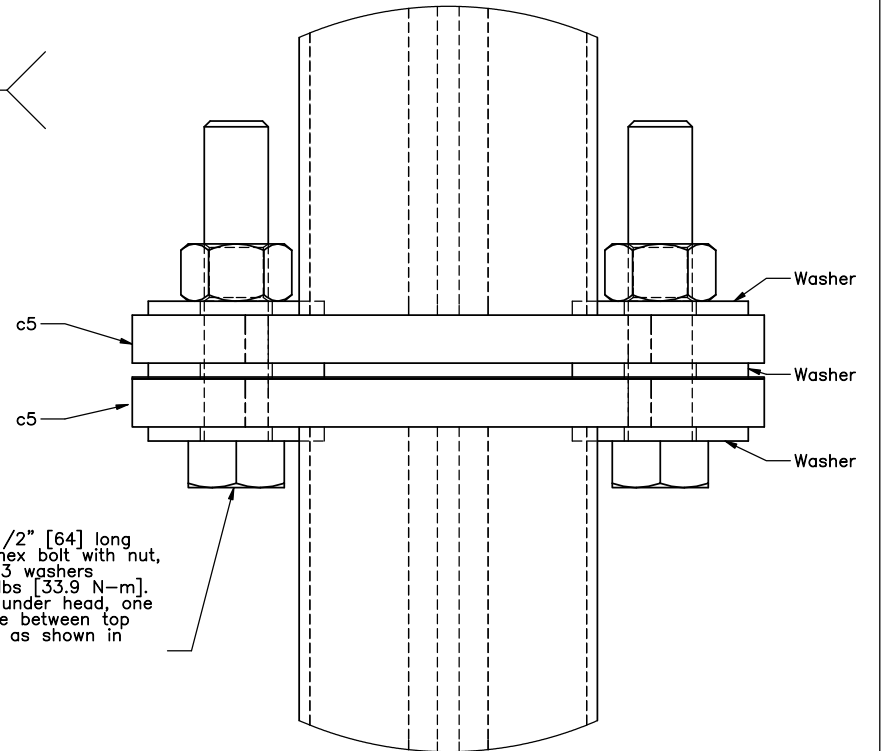
DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

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

SHEET:  
11 of 16  
DATE:  
11/16/2011  
DRAWN BY:  
CSS/OME/EA  
J/MW/NDM/  
DMR/JGP  
REV. BY:  
RKF/KAP



Part C



$\phi 1/2"$  [13] x  $2 1/2"$  [64] long  
 A307 [Class 4.6] hex bolt with nut,  
 keeper plate, and 3 washers  
 torqued to 25 ft-lbs [33.9 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

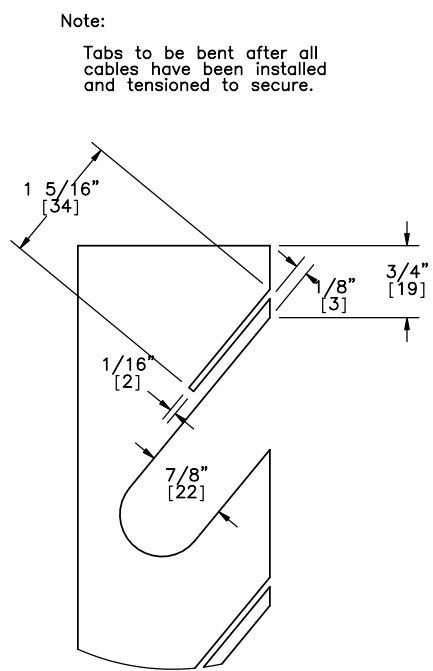
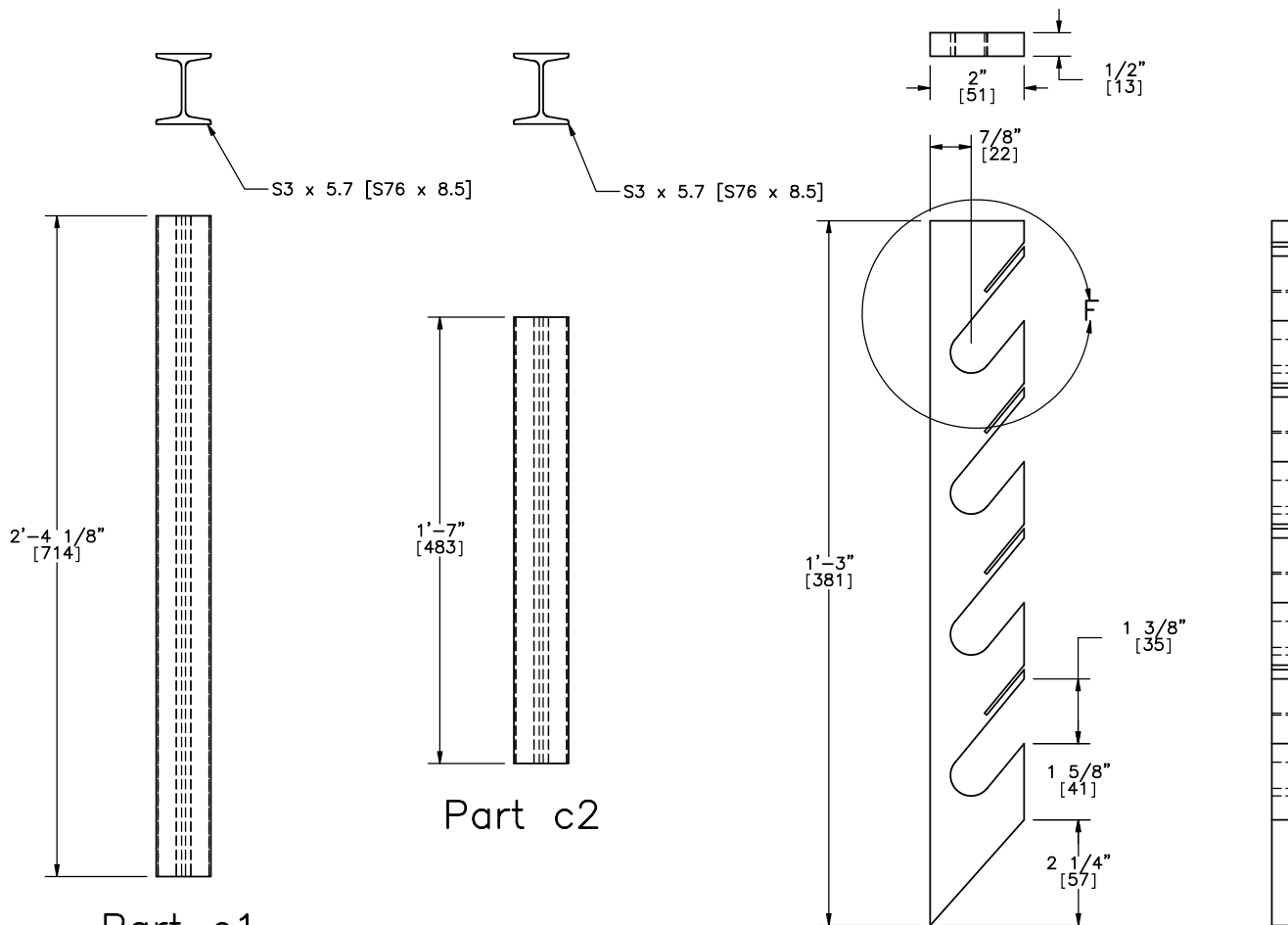
DATE:  
 11/16/2011

DRAWN BY:  
 CSS/GME/EA  
 J/KAW/NDM/  
 DMH/JGP

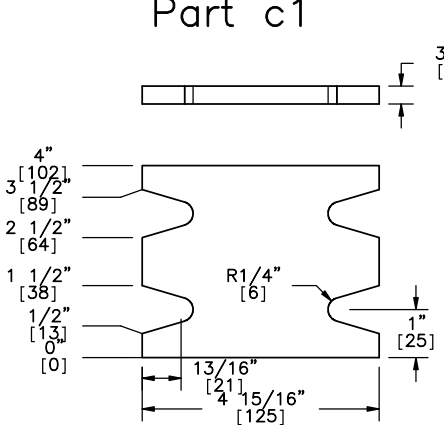
DWG. NAME:  
 CableMedianBarrier-Pickup\_R20\_dual

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

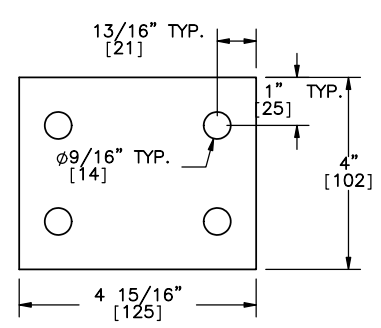
REV. BY:  
 RKF/KAP



28 Gauge [0.38] A36 Steel



Part c4

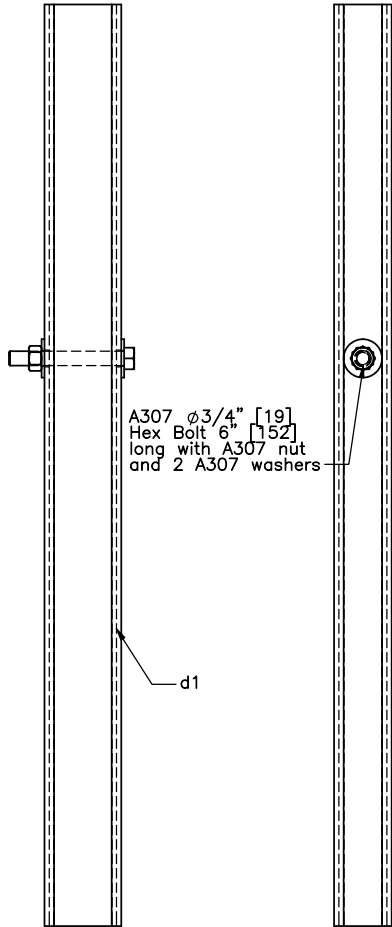
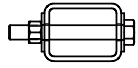


Part c5

Part c3

Midwest Roadside Safety Facility

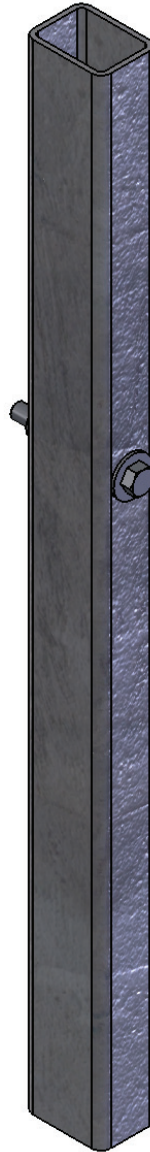
4-Cable Median Barrier		SHEET: 13 of 16
Cable Hanger Assembly Post Nos. 2 & 39 Part C Details		DATE: 11/16/2011
DWG. NAME: CableMedianBarrier-Pickup_R20_dual		DRAWN BY: GSS/CME/EA J/NAW/ADW/ DMH/JGP
SCALE: 1:8	REV. BY: RKF/KAP	UNITS: In./mm



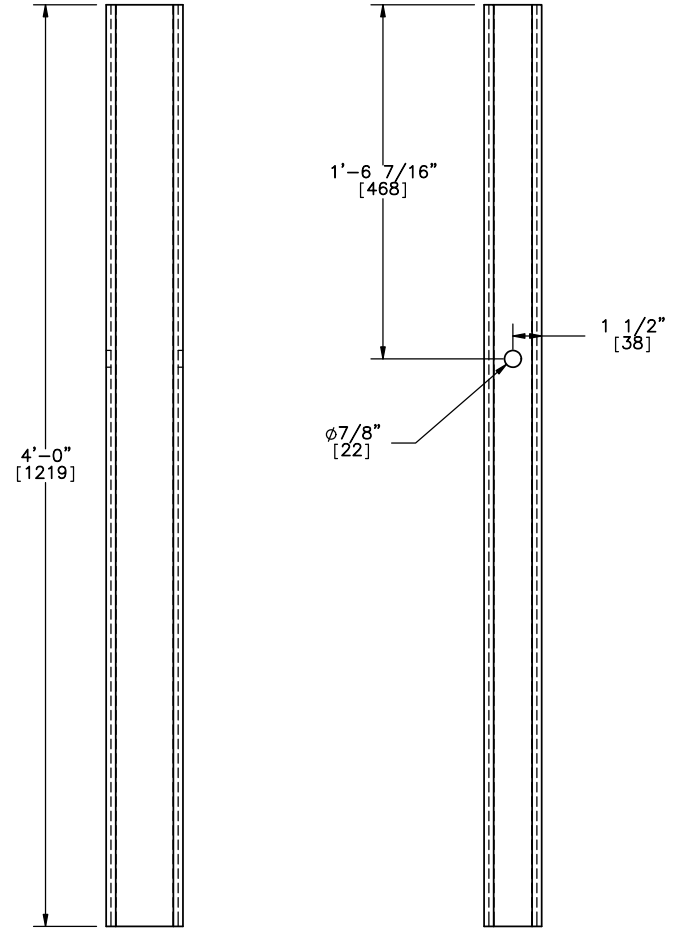
A307  $\phi 3/4"$  [19]  
Hex Bolt 6" [152]  
long with A307 nut  
and 2 A307 washers

d1

Part D



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



4'-0"  
[1219]

1'-6 7/16"  
[468]

1 1/2"  
[38]

$\phi 7/8"$   
[22]

Part d1



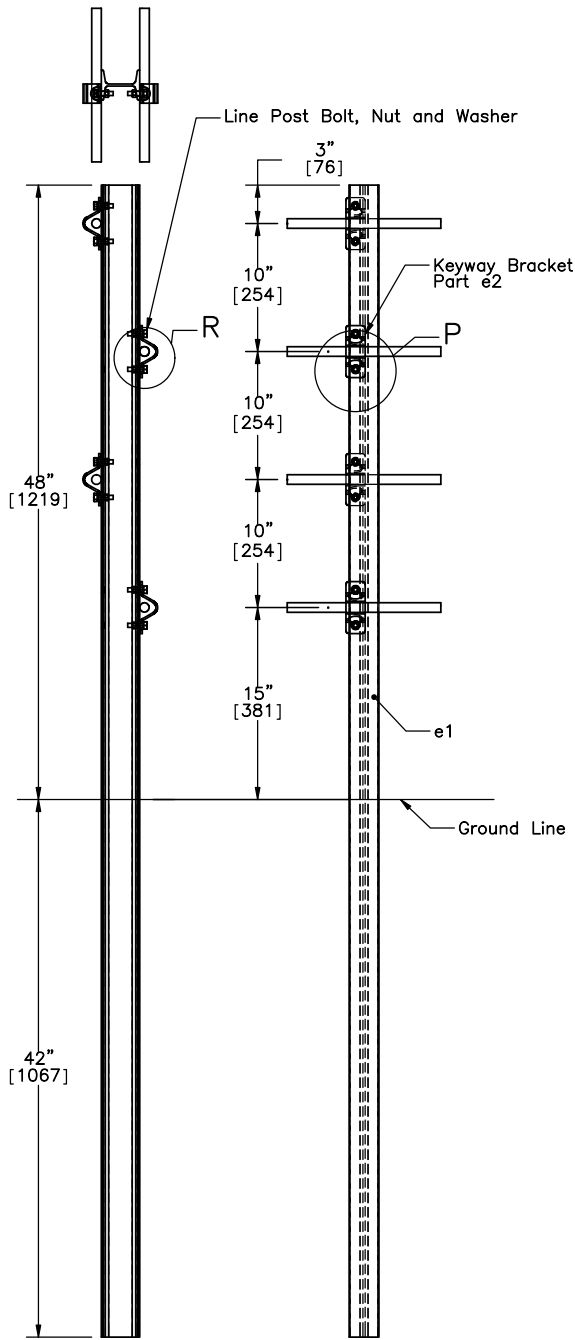
Midwest Roadside  
Safety Facility

4-Cable Median Barrier  
Foundation Tube Assembly  
Post Nos. 2 & 39  
Part D

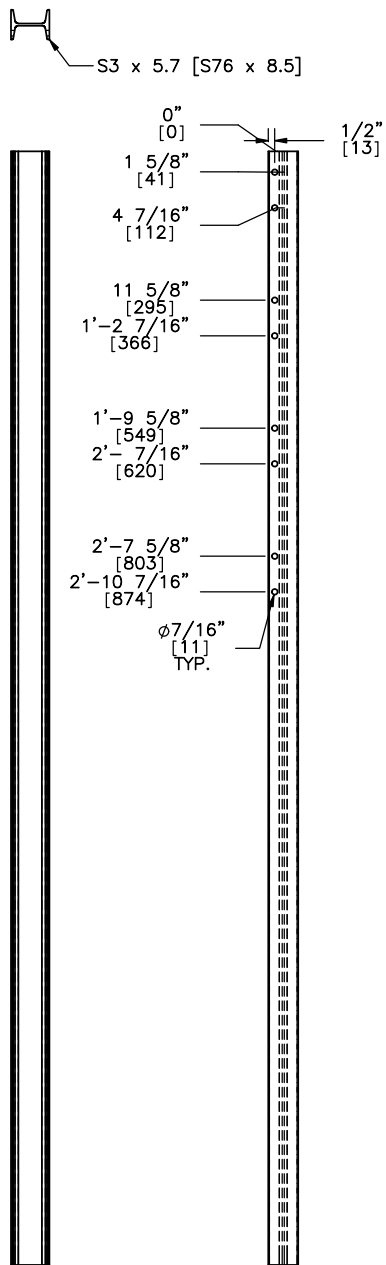
SHEET:  
14 of 16  
DATE:  
11/16/2011  
DRAWN BY:  
CSS/QWE/FAJ/  
NAJ/MDK/DWH/  
JGP  
REV. BY:  
RKF/KAP

DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

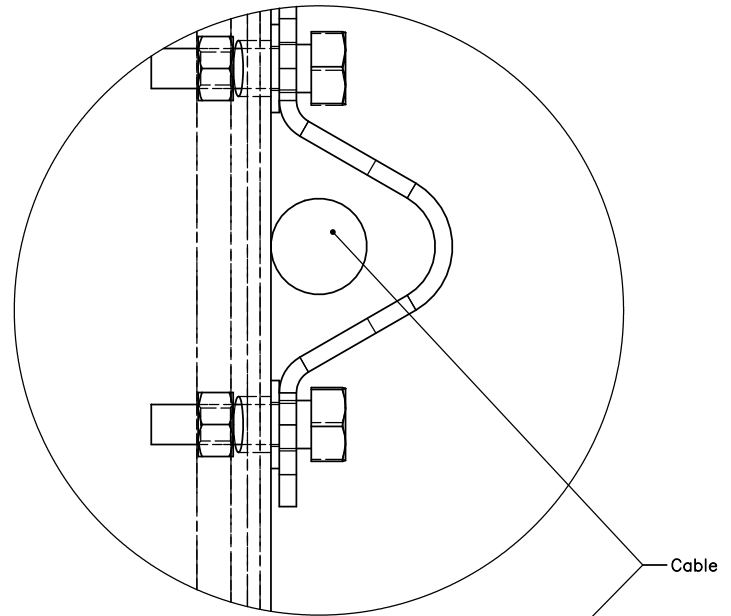
SCALE: 1:10  
UNITS: In.[mm]



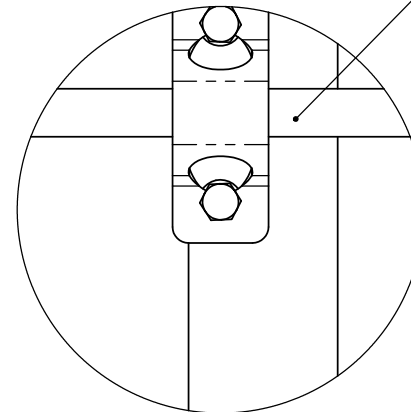
Part E



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

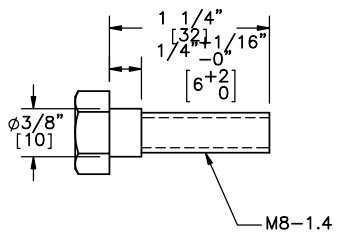
DATE:  
11/16/2011

DRAWN BY:  
CSS/CME/EAJ/  
MJW/MDN/DMH/  
JGP

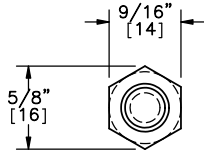
DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

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

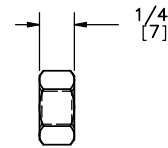
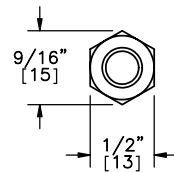
REV. BY:  
RKF/KAP



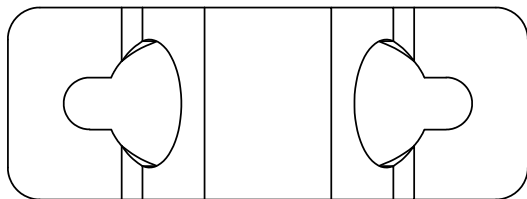
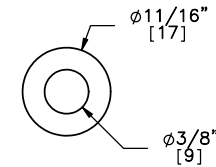
Hex Shoulder Bolt 0.3125-18x1.25 [M8-1.4x32]



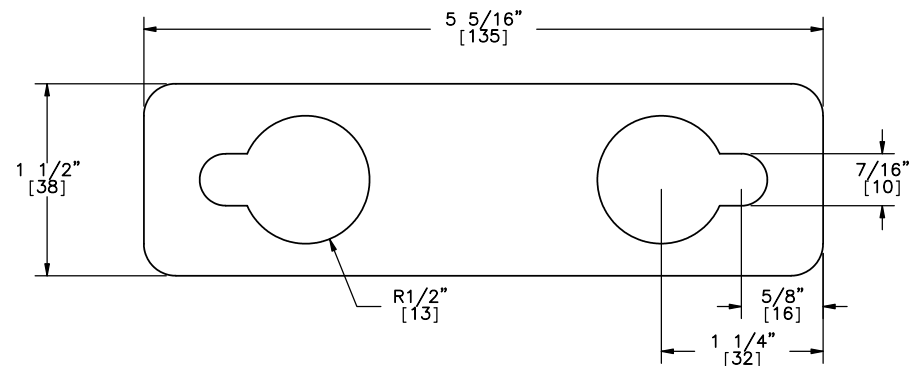
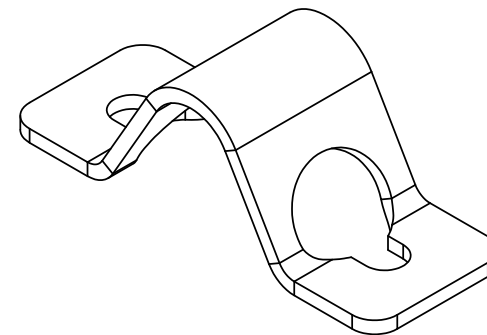
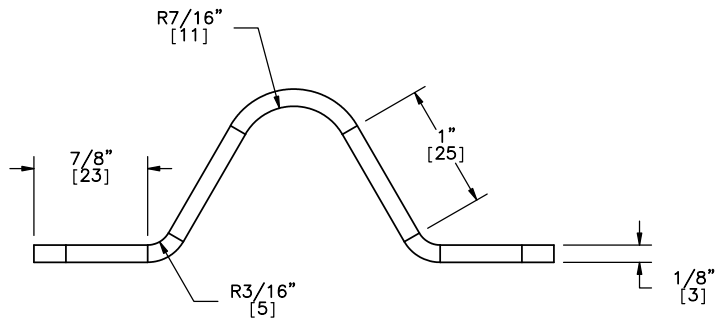
5/16" [8] Hex Nut



SAE FW 0.3125 [8]



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

SHEET:  
16 of 16

DATE:  
11/16/2011

DRAWN BY:  
CSS/QME/FAJ/  
NJJ/NDK/DWH/  
JGP

DWG. NAME:  
CableMedianBarrier-Pickup\_R20\_dual

SCALE: 1:1.5  
UNITS: In.[mm]

REV. BY:  
RKF/KAP