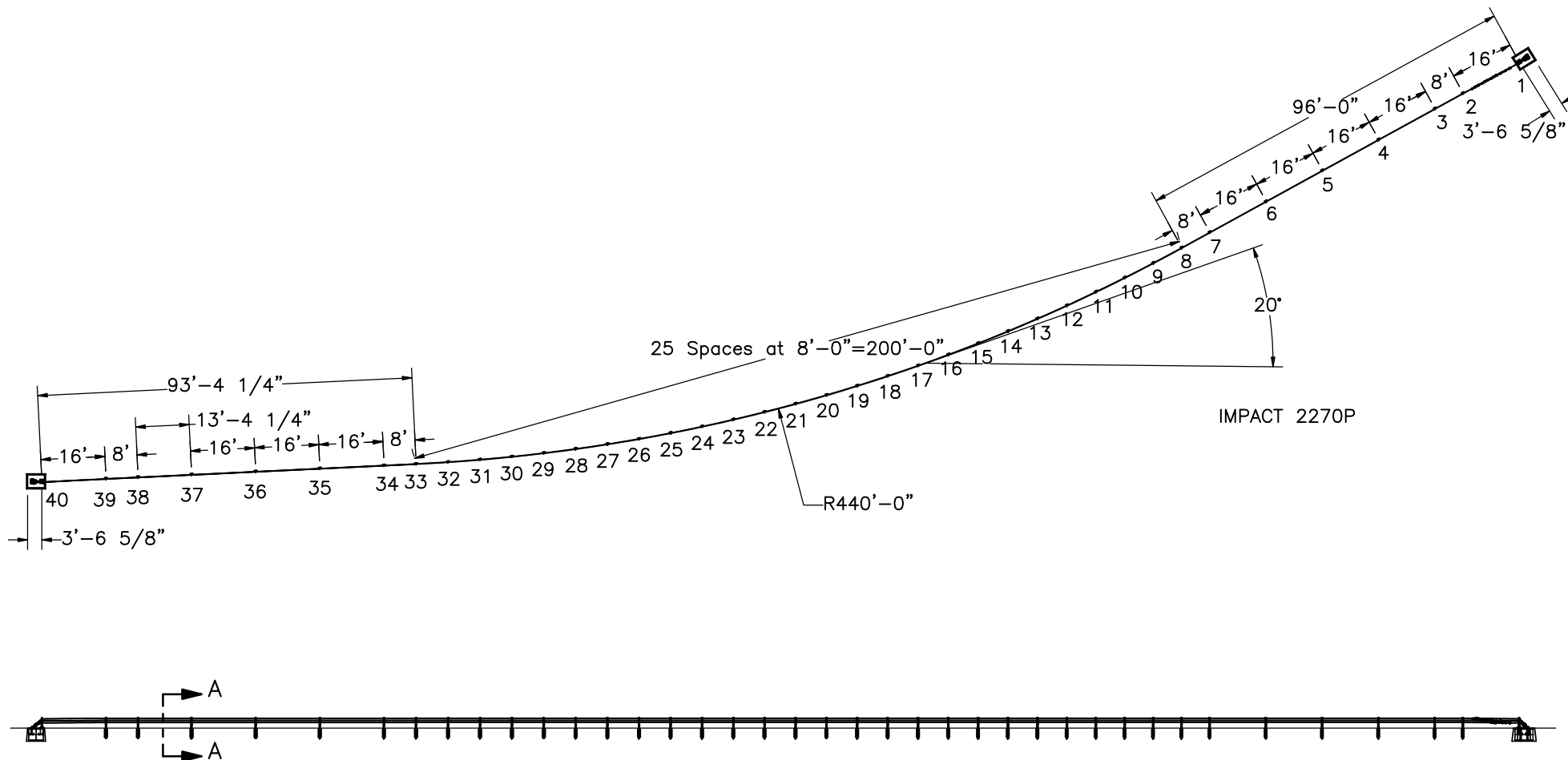




- Notes: (1) Impact coordinates are $x=127'-3 \frac{5}{16}"$, $y=23'-0 \frac{15}{16}"$ from center of post no. 33.
- (2) Impact takes place 2' upstream of post no. 17 20° from tangent and 70' downstream of post no. 8.
- (3) Post hole diameter is 18".



Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
System Layout

DWG. NAME.
NY curved cable-440-29in-R3

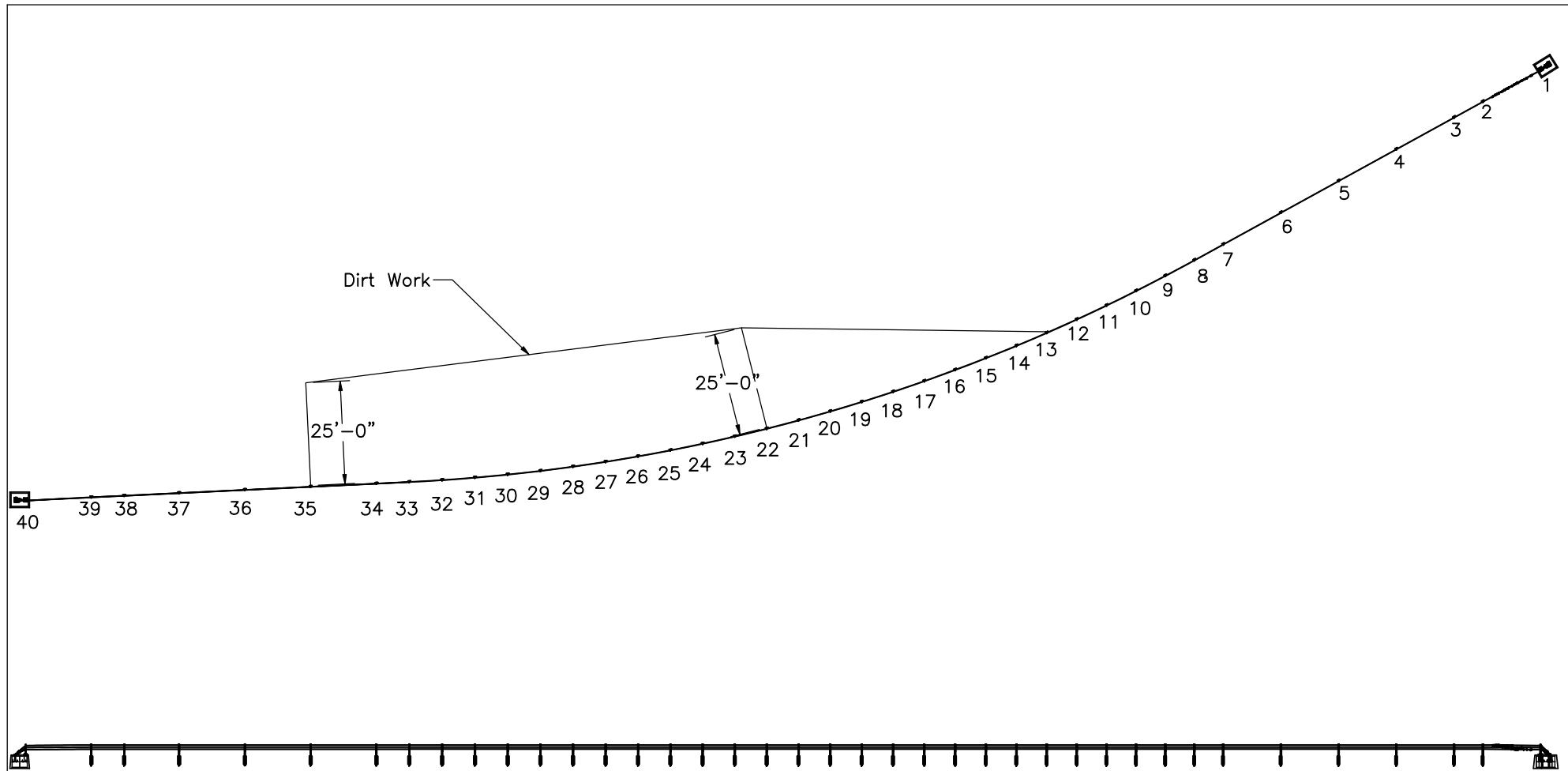
SCALE: 1:460
UNITS: Inches

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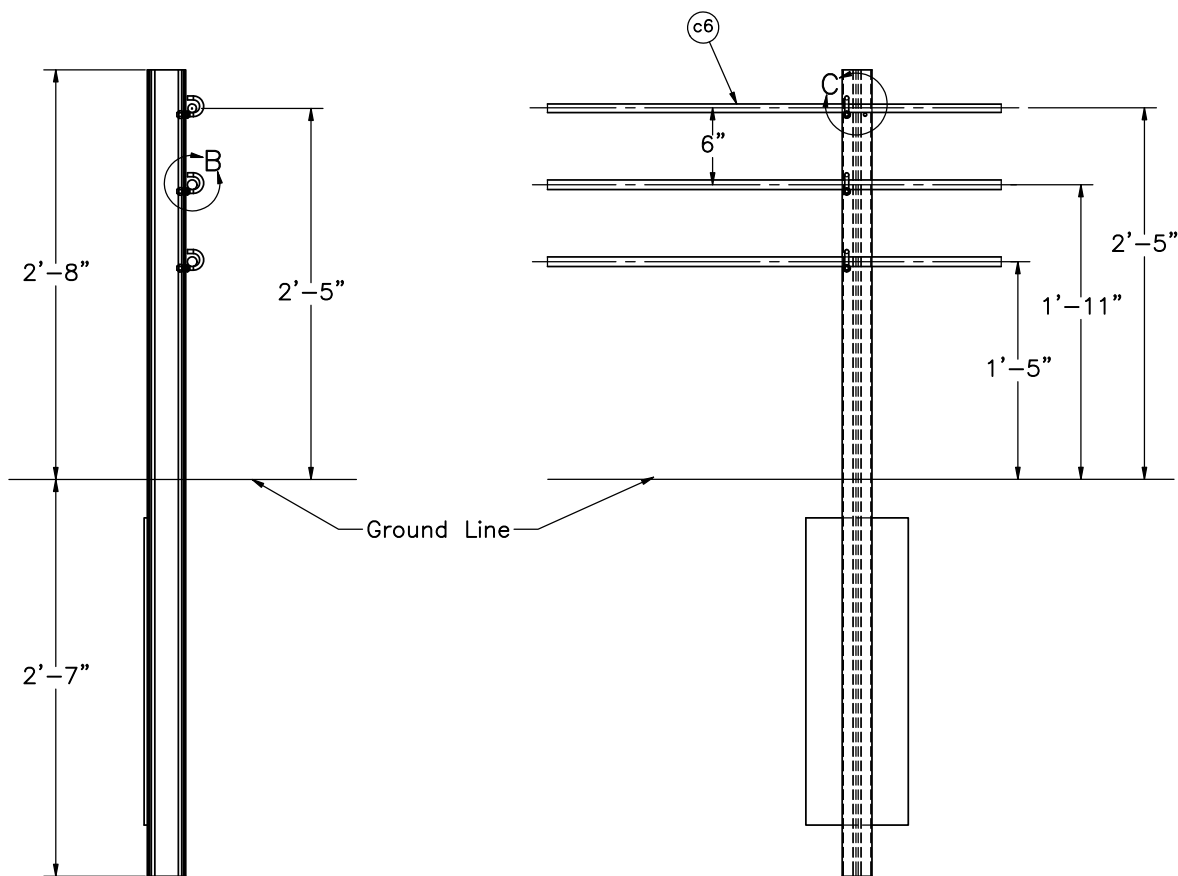
DRAWN BY:
MDM/CWP/
JGP

REV. BY:
KAL/CLM/
TH



- NOTE: (1) Critical region extends from post no. 6 to post no. 35.
 (2) Dirt work needs to extend 25' behind the back face of post no. 35, 25' perpendicular to the back face of post no. 22, and to the centerline of post no. 13.

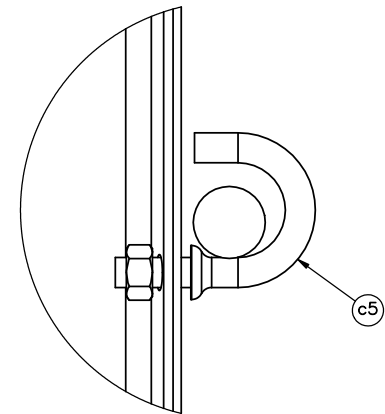
	NY Curved Cable— 440' Radius—29 in System Layout		SHEET: 2 of 14
	Midwest Roadside Safety Facility		DATE: 1/31/2013
DWG. NAME: NY curved cable—440—29in—R3		SCALE: 1:440 UNITS: Inches	DRAWN BY: MDM/CWP/ JGP
			REV. BY: KAL/CLM/ TH



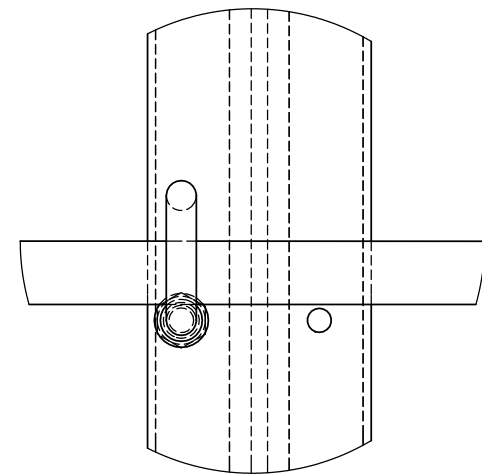
Downstream View

SECTION A-A

Front View



DETAIL B
SCALE 1 : 2



DETAIL C
SCALE 1 : 2



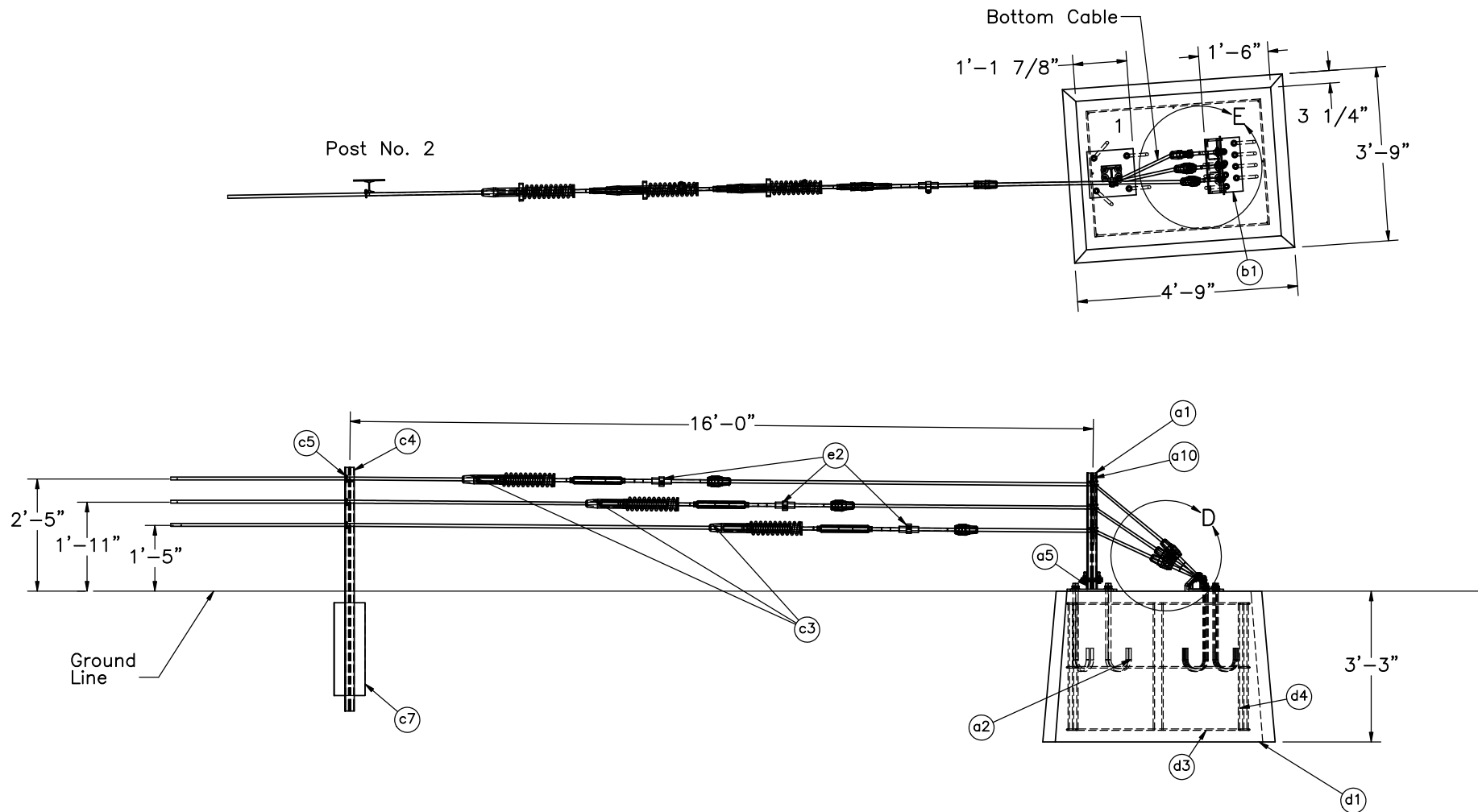
Midwest Roadside
Safety Facility

NY Curved Cable—
440' Radius—29 in
S3x5.7 Post Assembly

DWG. NAME.
NY curved cable—440—29in—R3

SCALE: 1:15
UNITS: Inches

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DRAWN BY:
MDM/CWP/
JGP
REV. BY:
KAL/CLM/
TH



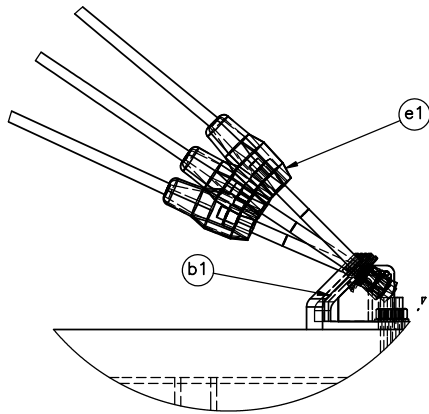
Midwest Roadside
Safety Facility

NY Curved Cable—
440' Radius—29 in
Cable Terminal Detail

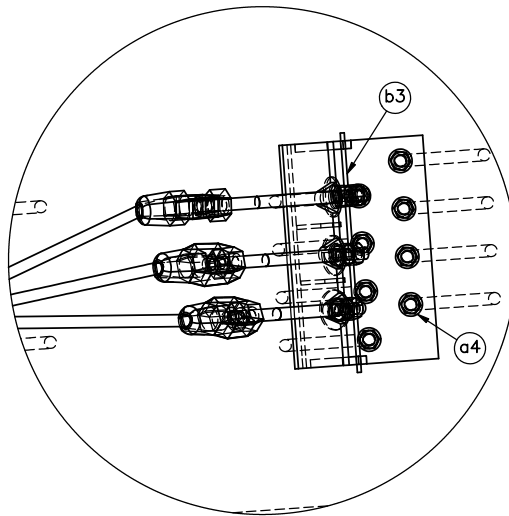
DWG. NAME.
NY curved cable—440—29in—R3

SCALE: 1:40
UNITS: Inches

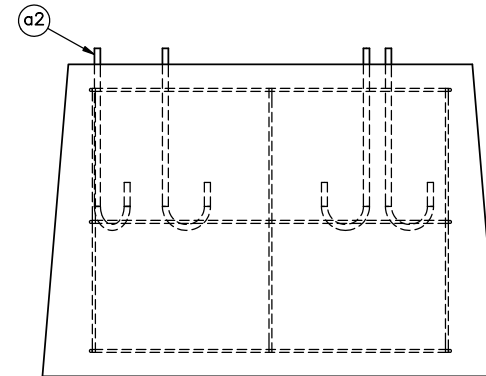
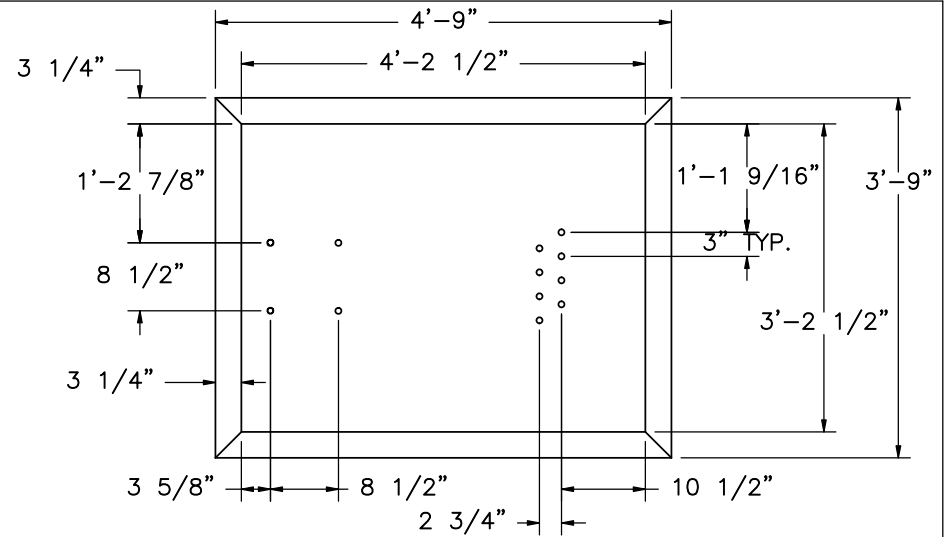
SHEET:
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JGP
REV. BY:
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TH



DETAIL D
SCALE 1 : 12



DETAIL E
SCALE 1 : 12



Concrete Anchor Block and
Hooked Anchor Studs
Parts a2 and d1



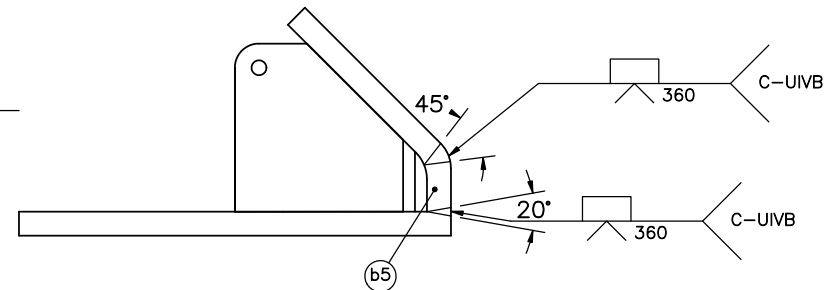
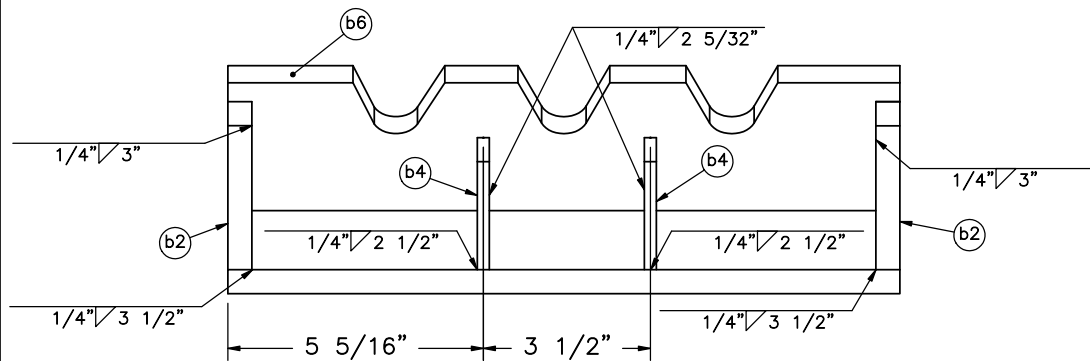
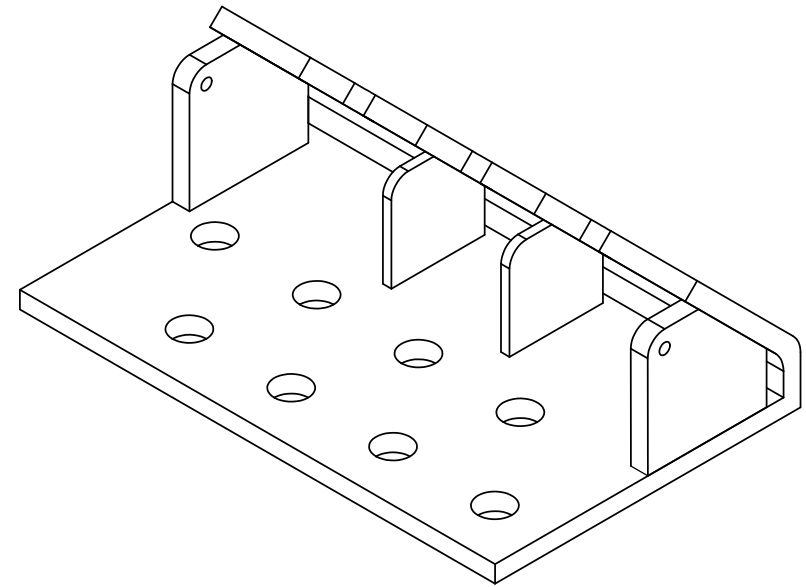
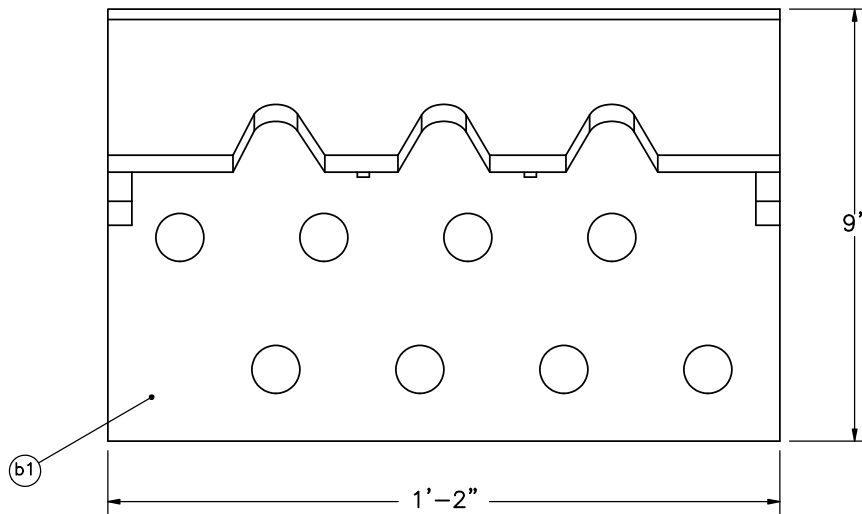
Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
Anchor Details

DWG. NAME.
NY curved cable-440-29in-R3

SCALE: 1:24
UNITS: Inches

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JGP
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TH



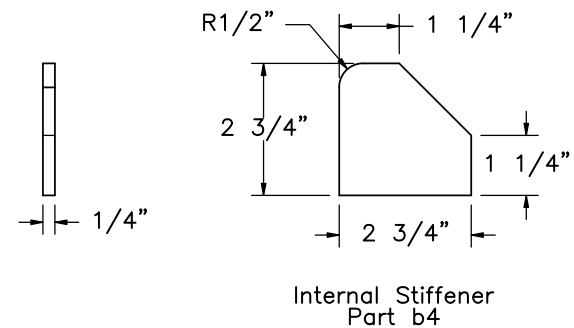
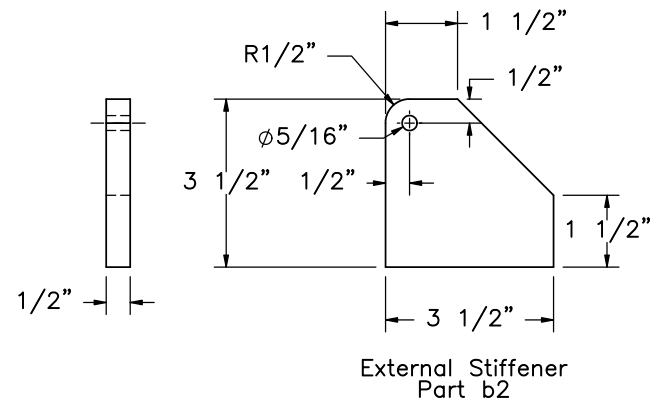
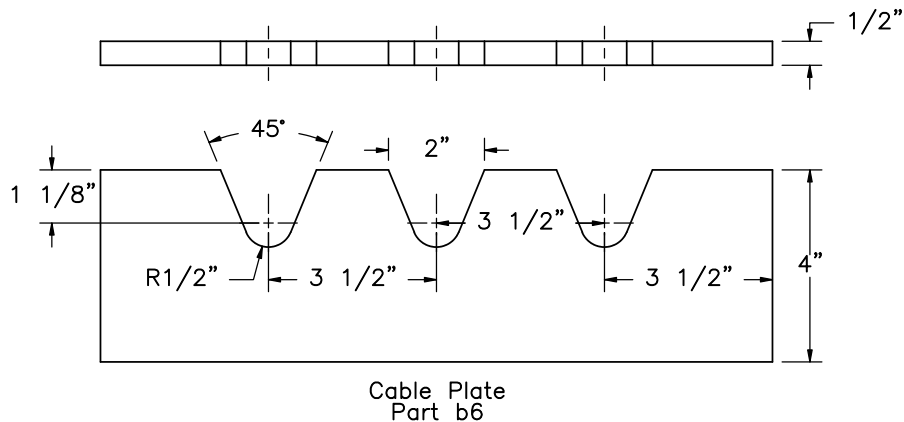
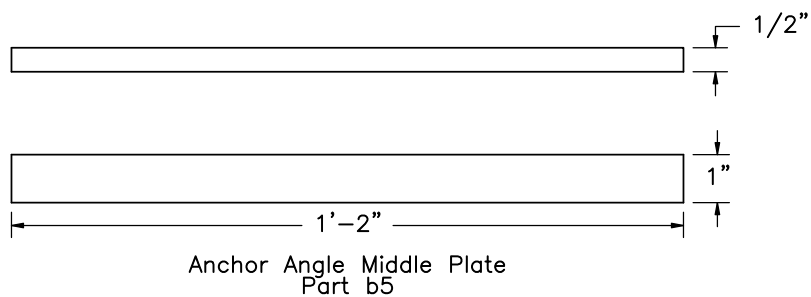
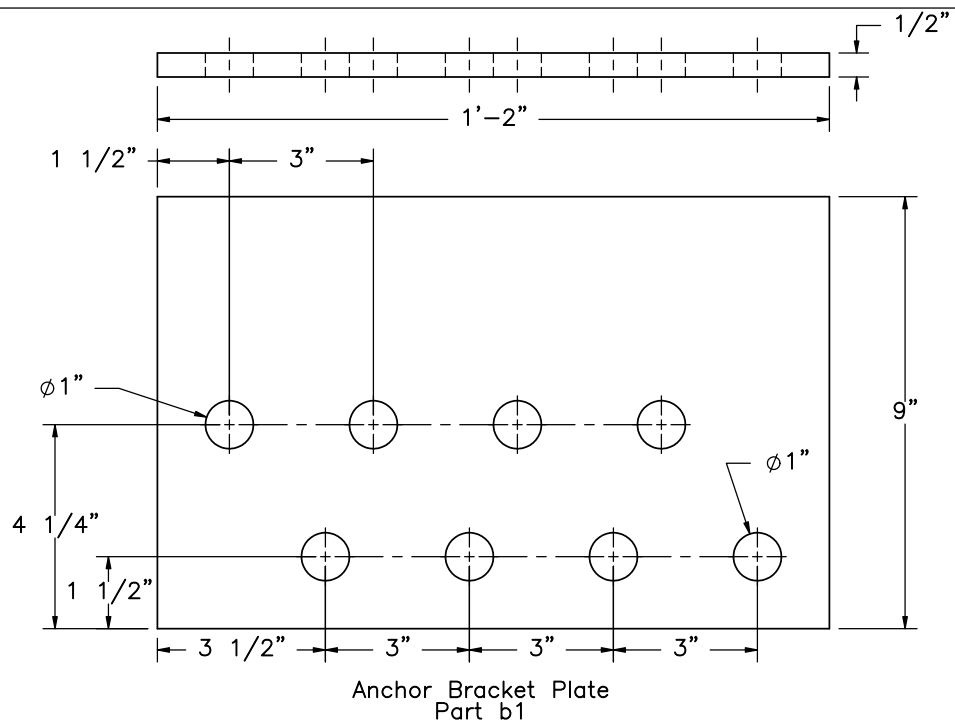
Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
Welded Plate Anchor
Angle Detail

DWG. NAME.
NY curved cable-440-29in-R3

SCALE: 1:4
UNITS: Inches

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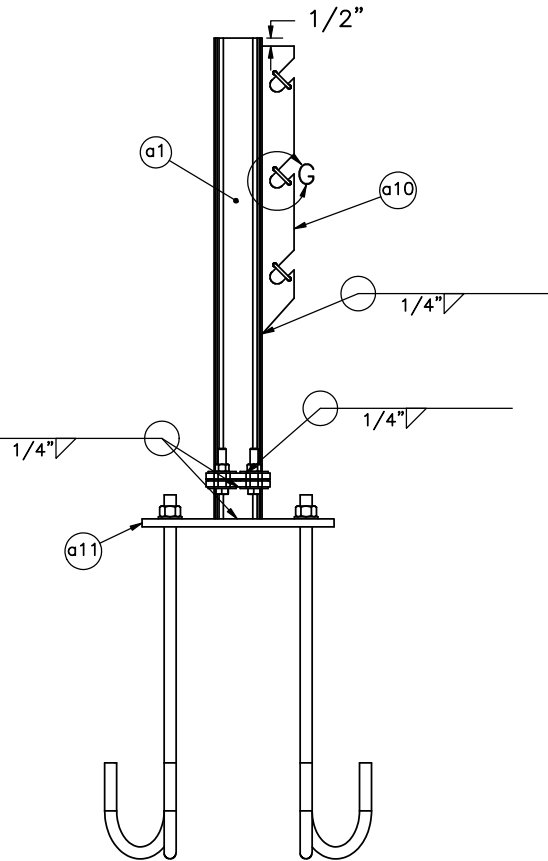
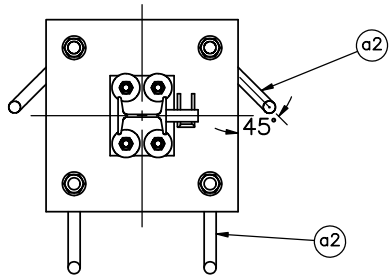
Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
Welded Plate Anchor
Angle Components

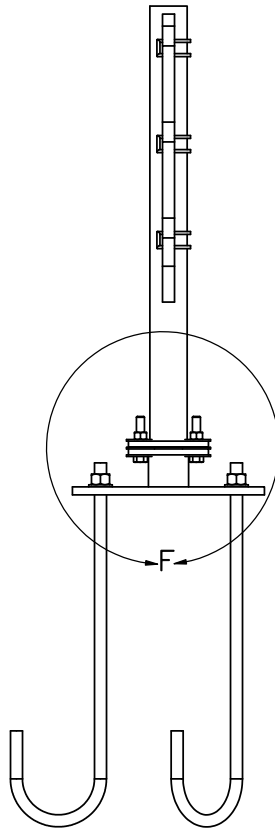
DWG. NAME.
NY curved cable-440-29in-R3

SCALE: 1:4
UNITS: Inches

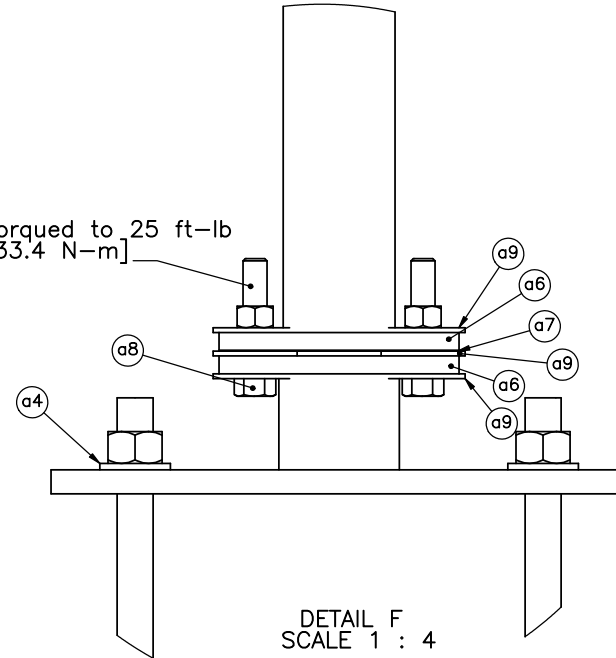
SHEET:
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DATE:
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JGP
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TH



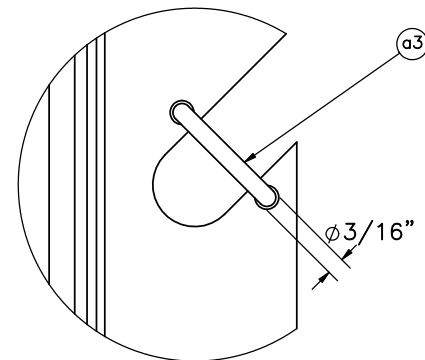
Post nos. 1 and 40



Torqued to 25 ft-lb
[33.4 N-m]



DETAIL F
SCALE 1 : 4



DETAIL G
SCALE 1 : 2



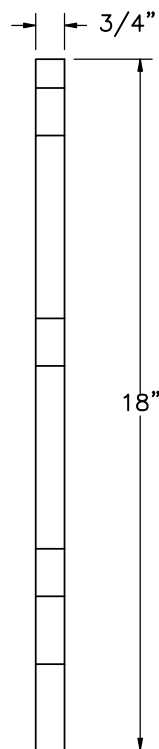
Midwest Roadside
Safety Facility

NY Curved Cable—
440' Radius—29 in
Anchor Post Assembly

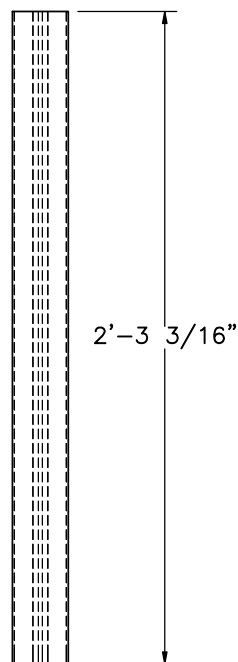
DWG. NAME.
NY curved cable—440—29in—R3

SCALE: 1:12
UNITS: Inches

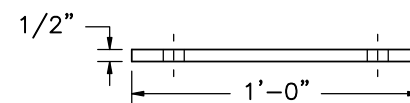
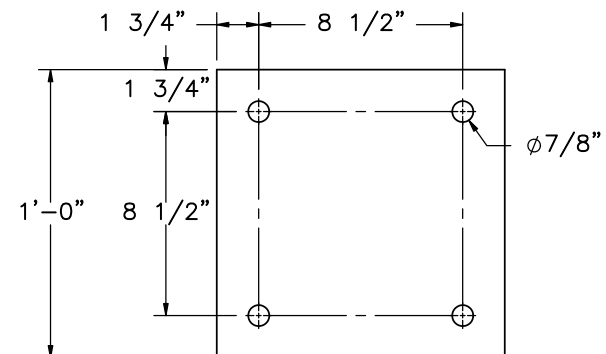
SHEET:
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DRAWN BY:
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JGP
REV. BY:
KAL/CLM/
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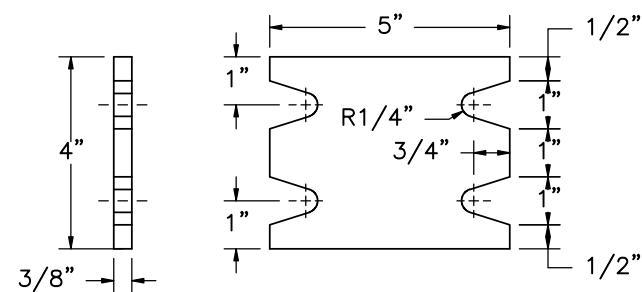
2"



Upper Anchor Post
Part a1



Anchor Post Base
Part a11



Slip Impact Base
Part a6

Midwest Roadside
Safety Facility

NY Curved Cable—
440' Radius—29 in
Anchor Post Components

DWG. NAME.

NY curved cable-440-29in-R3

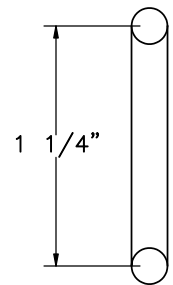
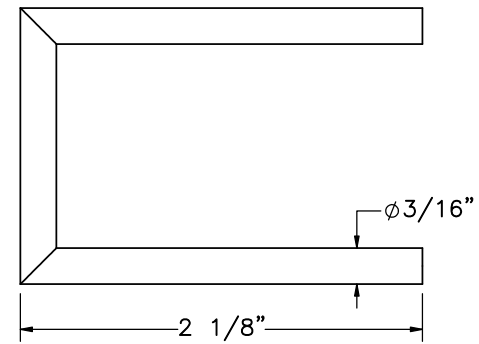
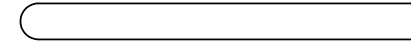
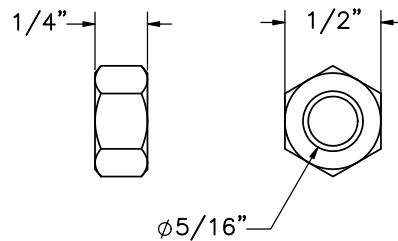
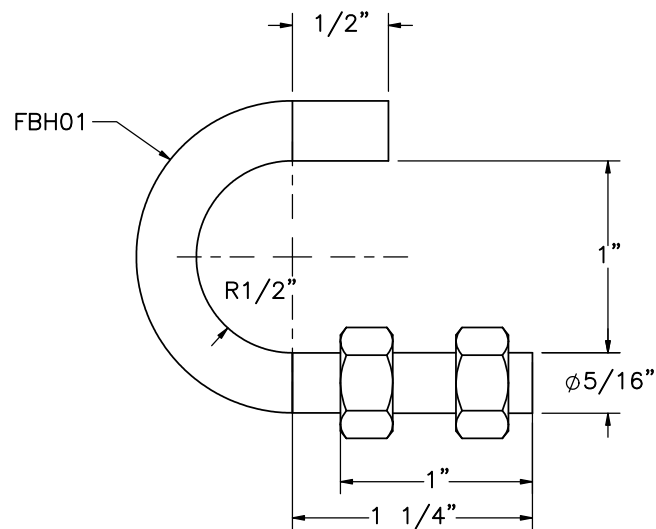
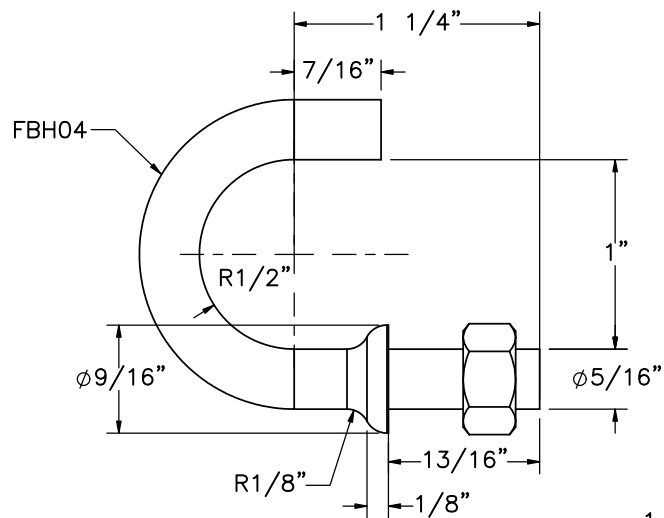
SCALE: None
UNITS: Inches

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JGP

	REV. BY:
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Part a3

Note: (1) Either FBH01 or FBH04 can be utilized for the New York Curved Cable System.



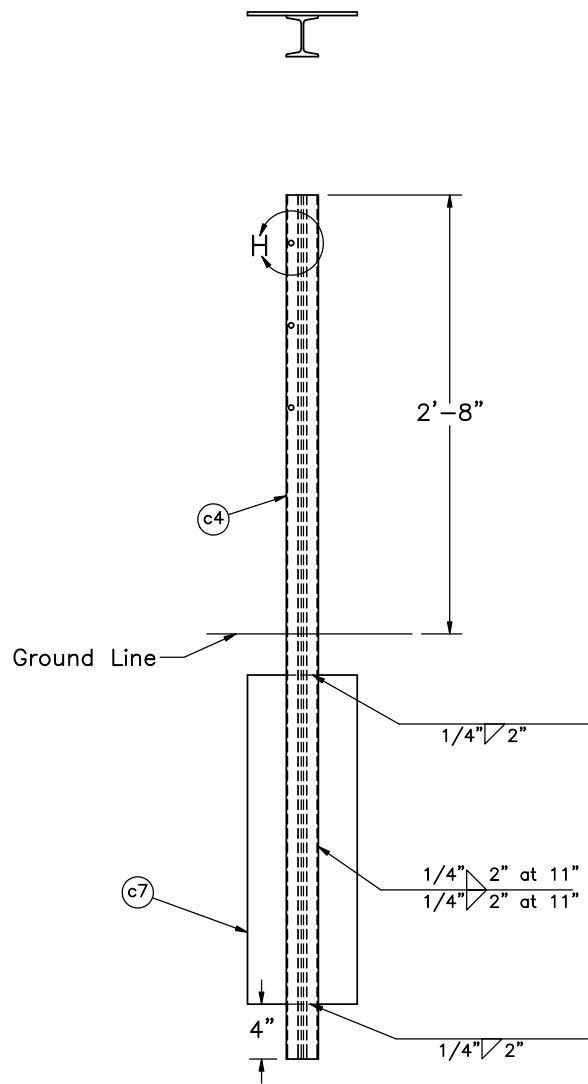
Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
J-Bolt and Brass Rod
Details

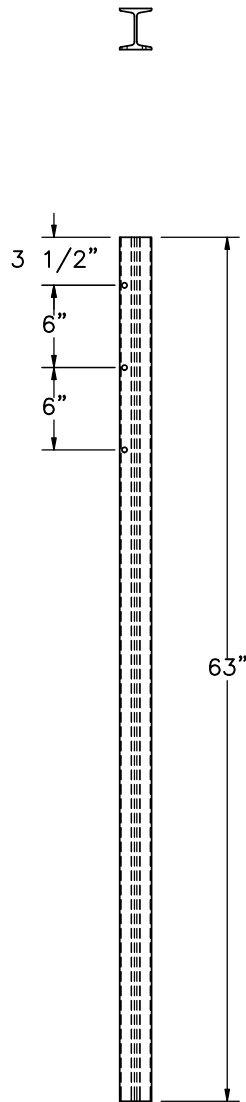
DWG. NAME.
NY curved cable-440-29in-R3

SCALE: 1:1
UNITS: Inches

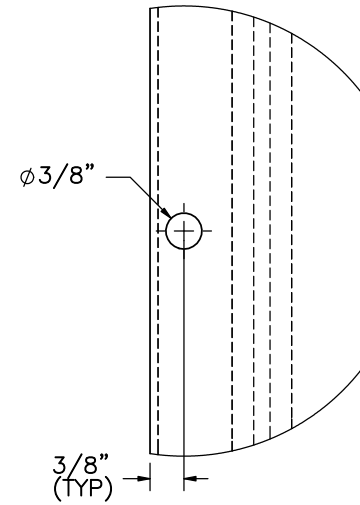
SHEET:
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DATE:
1/31/2013
DRAWN BY:
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JGP
REV. BY:
KAL/CLM/
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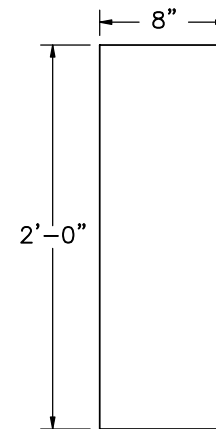
Line Post
Assembly
FRONT VIEW



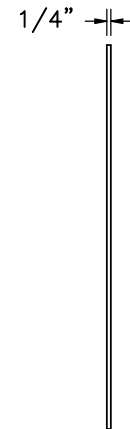
S3x5.7 Post
c4



DETAIL H
SCALE 1 : 2



Soil Plate
Part c7



NOTE: (1) Soil plate on non-impact side



Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
Line Post

DWG. NAME.
NY curved cable-440-29in-R3

SCALE: 1:14
UNITS: Inches

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JGP
REV. BY:
KAL/CLM/
TH

New York Curved Cable System				
Item No.	QTY.	Description	Material Spec	Hardware Guide
a1	2	S3x5.7 27 3/16" long Anchor Post	ASTM A36 Galvanized	—
a2	24	Hooked Anchor J-Bolt and Nut	ASTM A36 and ASTM A-563 DH Galvanized	FRH20a
a3	6	Ø3/16" 5 1/4" Long Brass Rod	Brass	—
a4	36	Ø3/4" Plain Round Washer-OD 1.5"	Grade 2 Galvanized	FWC20a
a5	2	S3x7.5 Anchor Post Stub	ASTM A36 Galvanized	—
a6	4	Slip Impact Base	ASTM A36 Galvanized	—
a7	2	4"x5" 28 Gauge Keeper Plate	ASTM A36 Galvanized	—
a8	8	Ø1/2" x2 1/2" Long Bolt and Nut	Grade 2 Galvanized	FBX14a
a9	24	Ø1/2" Narrow Washer-OD 1"	Grade 2 Galvanized	FWC12a
a10	2	3/4" Anchor Post Support Plate	A707 Grade 36 Galvanized	—
a11	2	Anchor Post Base	A709 Grade 36 Galvanized	—
b1	2	Anchor Bracket Plate	ASTM A709 Grade 36 Galvanized	—
b2	4	1/2" Thick External Stiffener	ASTM A709 Grade 36 Galvanized	—
b3	2	Ø1/4"x15" Brass Rod	Brass	—
b4	4	1/4" Thick Internal Stiffener	ASTM A709 Grade 36 Galvanized	—
b5	2	Anchor Angle Middle Plate	ASTM A709 Grade 36 Galvanized	—
b6	2	Cable Plate	ASTM A709 Grade 36 Galvanized	—
c2	6	Ø3/4" Plain Round Washer-OD 2"	Grade 2 Galvanized	FWC20a
c3	3	Compensating Cable End Assembly	ASTM A27 Galvanized	RCE01 & RCE03
c4	38	S3x5.7 63 in. long Line Post	ASTM A36 Galvanized	—
c5	114	Cable Hook Bolt and Nuts	ASTM F568 Class 4.6 and Grade A307 Galvanized	FBH04
c6	1	Ø3/4" Cable Approx. 392'	AASHTO M30 Type 1 Class A Galvanized	RCM01
c7	38	2'x8"x0.25" Soil Plate	ASTM A36 Galvanized	—
d1	2	Concrete Anchor Block	3000 psi Compressive Strength	—
d2	12	#3 Rebar 32.5" long	Grade 60	—
d3	12	#3 Rebar 44.5" long	Grade 60	—
d4	16	#3 Rebar 33" long	Grade 60	—
e1	12	Cable Wedge	ASTM A47 Grade 32510	FMM01
e2	3	50,000-lb Load Cell	N/A	—



Midwest Roadside
Safety Facility

NY Curved Cable—
440' Radius—29 in
Bill of Materials

DWG. NAME.

NY curved cable—440—29in—R3

SCALE: None

UNITS: Inches

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DATE:
1/31/2013

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- (1) All posts shall be s3x5.7 rolled steel section. The anchor post stub shall be s3x7.5. Where the rail is parallel to the edge of the pavement, every sixth post starting with the first shall be reflectorized. Do not reflectorize posts in the intermediate anchorage section, typical approach and terminal section, or when used as a median barrier.
- (2) Reflectors shall be aluminum alloy 1/16" thick with reflective sheeting. The reflective sheeting shall be white when installed on the right side of traffic and fluorescent yellow when on the left.
- (3) 3/4" round wire cable shall consist of three strands (7 wires per strand) and have a minimum tensile strength of 25,000 lbf.
- (4) Cable ends shall be fabricated from malleable iron or cast steel. The cable splice and wedge shall be fabricated from malleable iron or ASTM A536 ductile.
- (5) All cable ends and splices shall be designed to use the wedge shown on sheet 15 and shall develop the full strength of the 3/4" round cable (25000 lbs.). The cables, ends, and splices shall be hot dipped galvanized as indicated in material specification for cable guide rail. The wedge shall not be galvanized.
- (6) Stagger cable splices, provide a minimum of 20' between any pair. Provide a minimum of 100' between cable splices on the same cable.
- (7) Alternate designs for the steel turnbuckle cable end assembly or spring cable end assembly shall be submitted for approval.
- (8) For arrangement of spring cable end assemblies (compensating device) and turnbuckle cable end assemblies, the following criteria shall apply:
 - Length of cable runs up to 1000'-use compensating device (RCE01) on one end, and turnbuckle (RCE03) on the other end of each individual cable.
 - Length of cable runs 1000' to 2000'-use compensating device (RCE01) on the ends of each individual cable.
 - Length of cable runs over 2000'-start a new stretch by interlacing at last parallel post (see typical intermediate anchorage details).

Prior to final acceptance by the state, the following values shall be used to tighten the turnbuckles, depending on the temperature at the time of adjustment.

Temperature (degrees Farenheit)													
120	109	99	89	79	69	59	49	39	29	19	9	-1	-20
to	to	to	to	to	to	to	to	to	to	to	to	to	to
110	100	90	80	70	60	50	40	30	20	10	0	-19	-29
Spring Compression from Unloaded Position in Each Spring-Measured in Inches													
1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/2

- (9) The concrete anchor shall be set into the excavation as detailed. The bottom of the anchor shall have a full and even bearing on the surface under it. The top shall be back filled in accordance with the requirements of 203-3.15 "fill and back fill at structures, culverts, pipes, conduits, and direct burial cables."
- (10) Do not install cable guide railing on curves with a centerline radius of less than 440'.
- (11) Curbs greater than 3" high are not to be retained or placed if design, posted, or operating speed exceeds 35 mph. Rail mounting height is to be measured from pavement if offset between pavement and curb is less than or equal to 9" and from ground beneath rail if offset > 9".
- (12) Lifting devices, if embedded in concrete, shall be rated by their manufacturer as having a "safe working load" of four tons for the one piece anchor and two tons for each of the halves of the two piece anchor unit.
- (13) At all locations where the cable is connected to a cable socket with a wedge type connection, one wire of the wire rope shall be crimped over the base of the wedge to hold it firmly in place.



Midwest Roadside
Safety Facility

NY Curved Cable-
440' Radius-29 in
Notes

DWG. NAME.

NY curved cable-440-29in-R3

SCALE: None

UNITS: Inches

SHEET:
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DATE:
1/31/2013

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