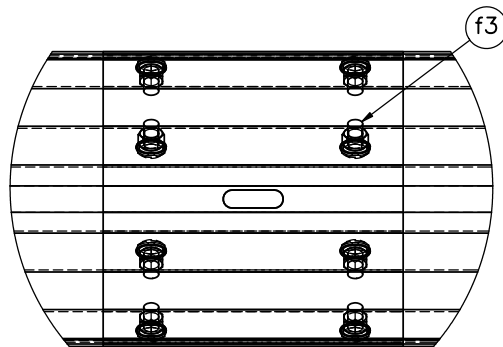



SECTION A-A

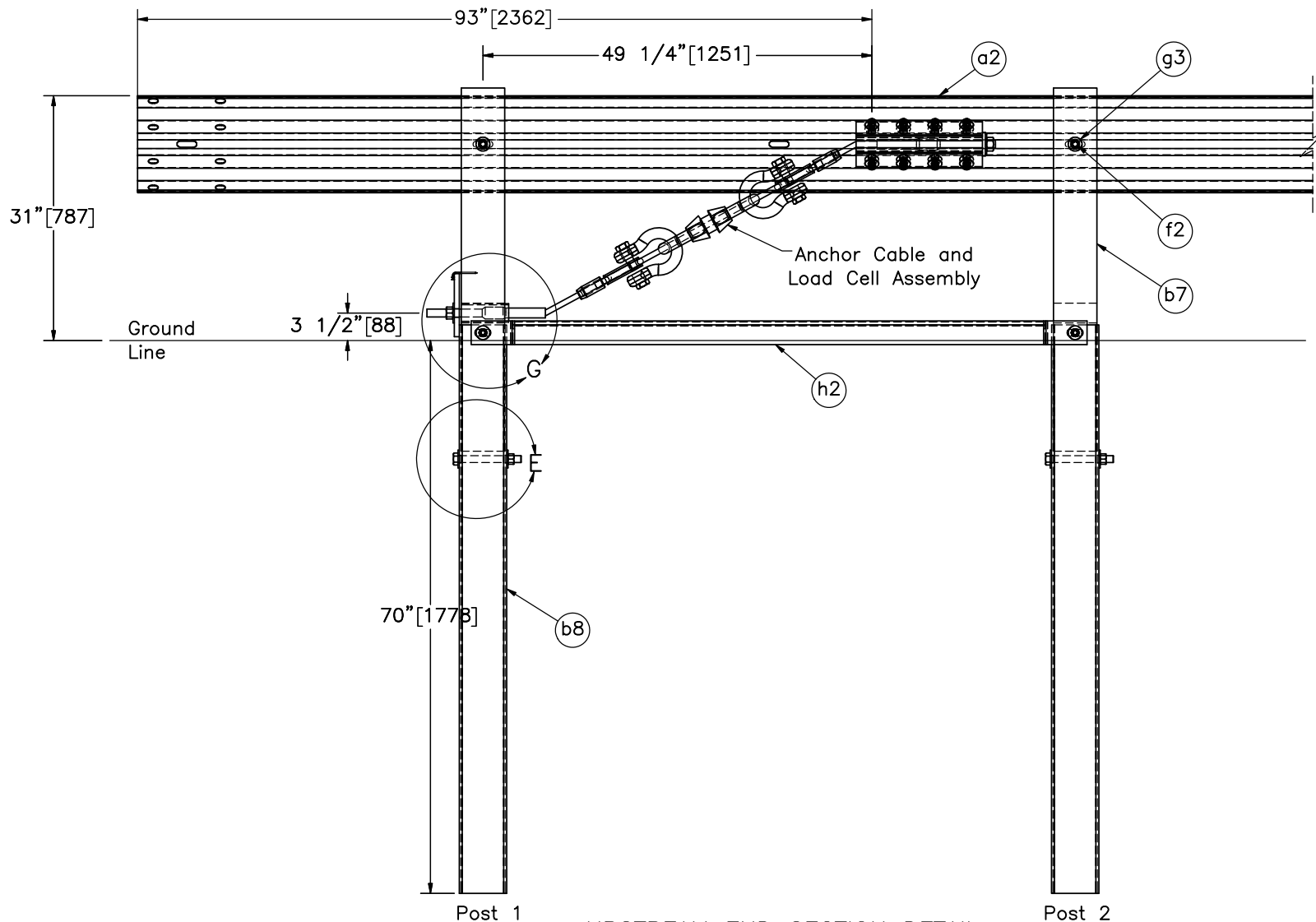
SPLICE DETAIL  
BACKSIDE



DETAIL B  
SCALE 1:8

Note: (1) Guardrail bolts (part f1) on the upstream side of the web.

	Steel Post Terminal Anchorage		SHEET: 2 of 30
	Test No. SPTA-1		DATE: 8/21/2020
Midwest Roadside Safety Facility	Splice & Post Detail		DRAWN BY: MKB/JDJ/JEK/SBW
	DWG. NAME: SPTA-1_R9	SCALE: 1:20 UNITS: In./[mm]	REV. BY: JEK/KAL/JCH



UPSTREAM END SECTION DETAIL  
BACKSIDE



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Upstream End Section Detail

DWG. NAME.  
SPTA-1\_R9

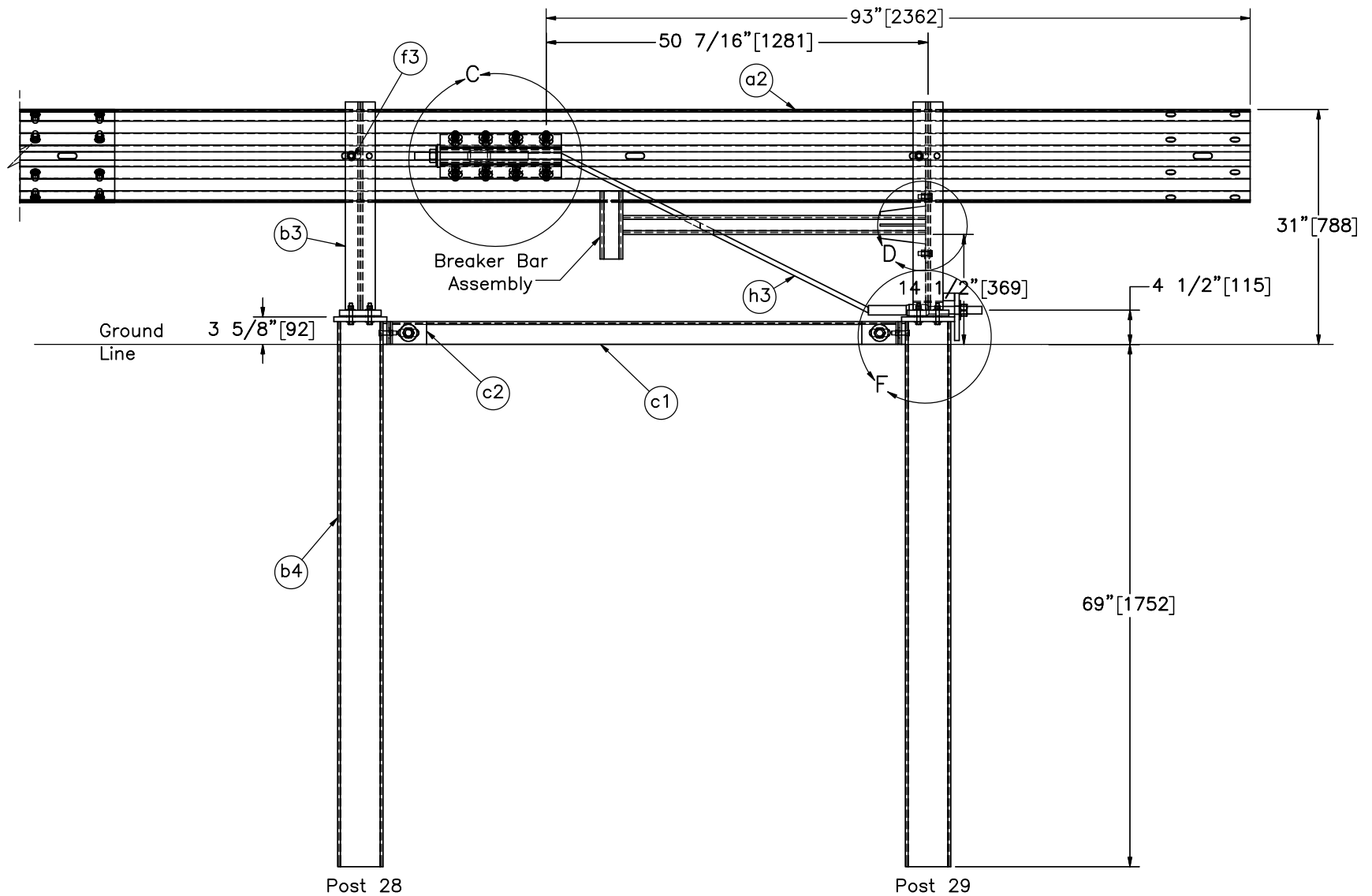
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SHEET:  
3 of 30

DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



DOWNSTREAM END SECTION DETAIL  
BACKSIDE



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream End Section Detail

DWG. NAME.  
SPTA-1\_R9

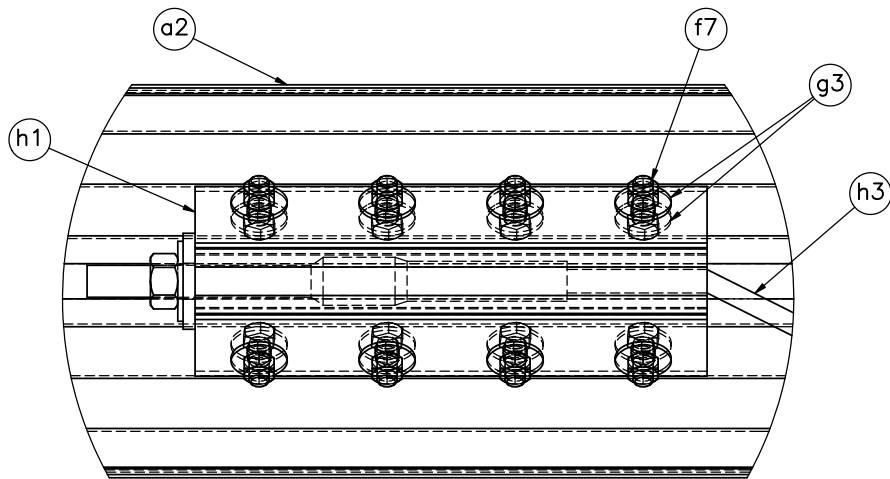
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SHEET:  
4 of 30

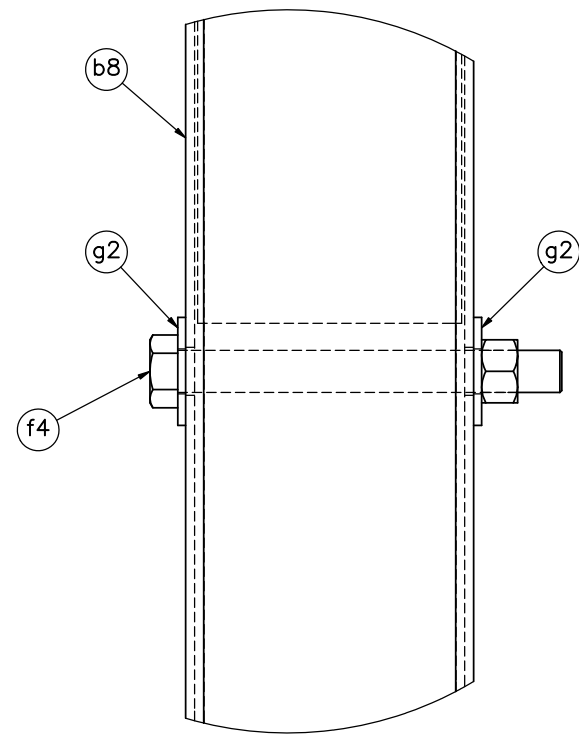
DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

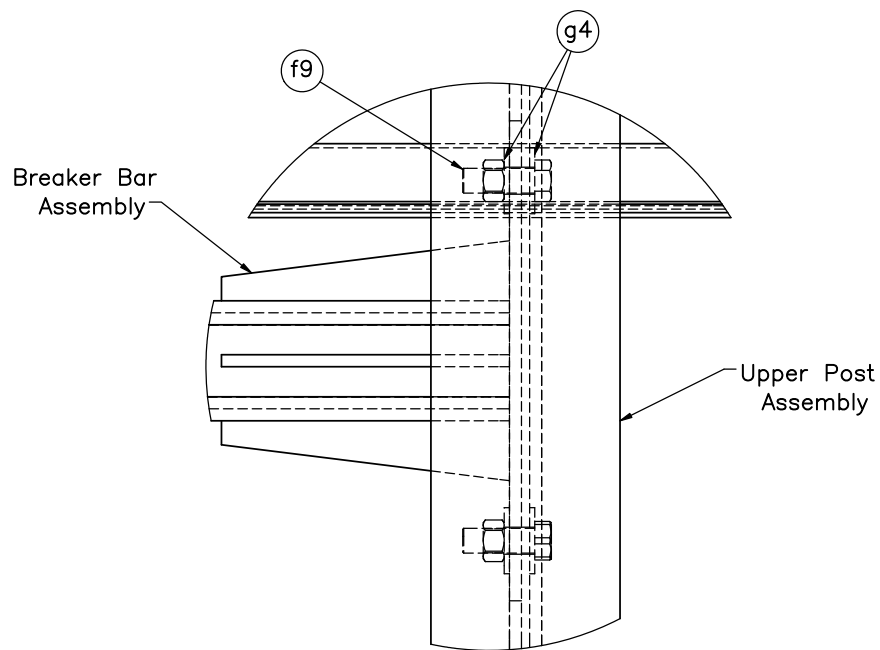
REV. BY:  
JEK/KAL/JC  
H



DETAIL C  
SCALE 1:6



DETAIL E



DETAIL D



Midwest Roadside  
Safety Facility

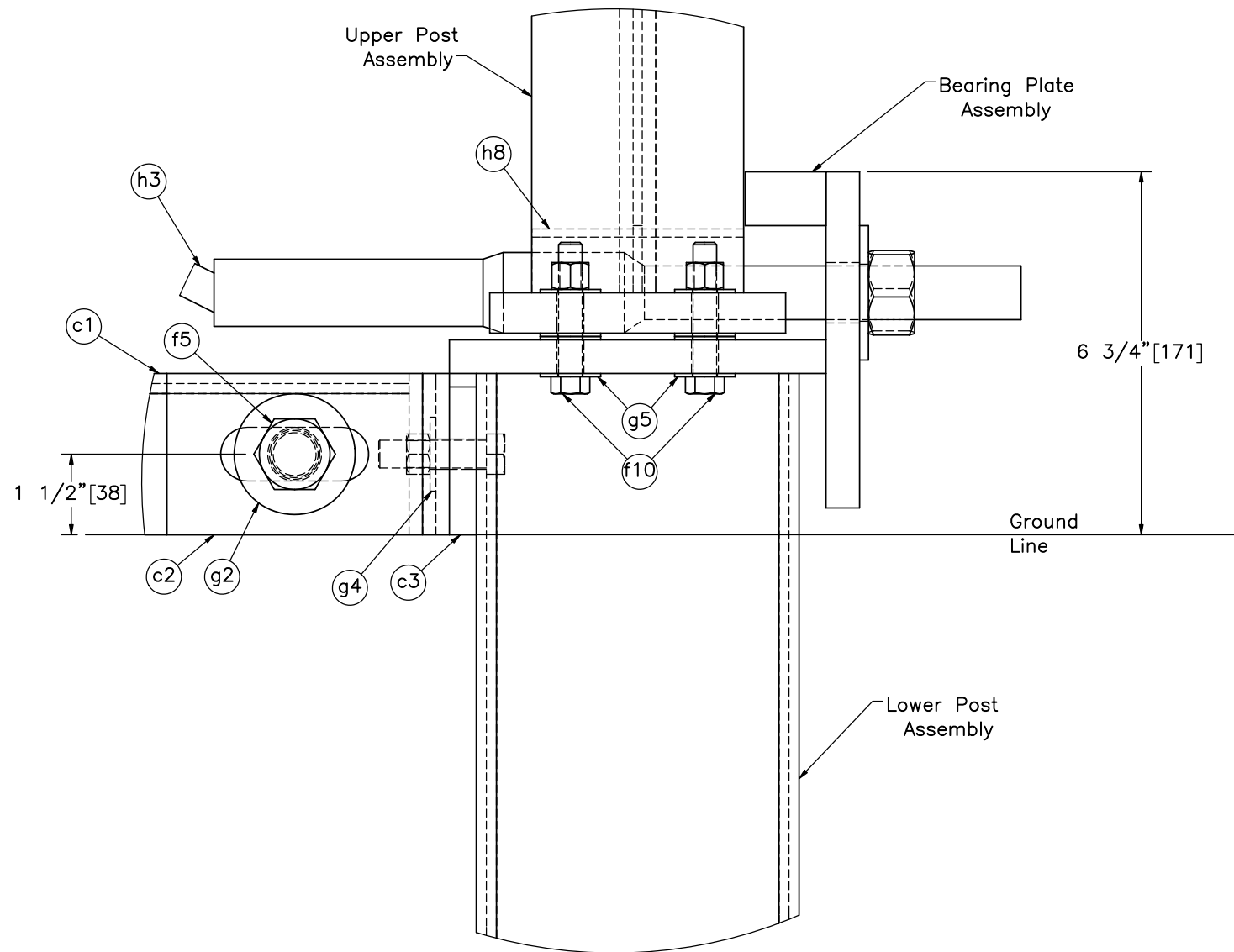
Steel Post Terminal  
Anchorage  
Test No. SPTA-1

End Section Details

DWG. NAME.  
SPTA-1\_R9

SCALE: 1:4  
UNITS: In./mm

SHEET:  
5 of 30  
DATE:  
8/21/2020  
DRAWN BY:  
MKB/JDJ/  
JEK/SBW  
REV. BY:  
JEK/KAL/JC  
H



DETAIL F

Note: Additional washer (part g2) on the opposite side under head of bolt or nut (part f5).



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream End Section Detail

DWG. NAME.  
SPTA-1\_R9

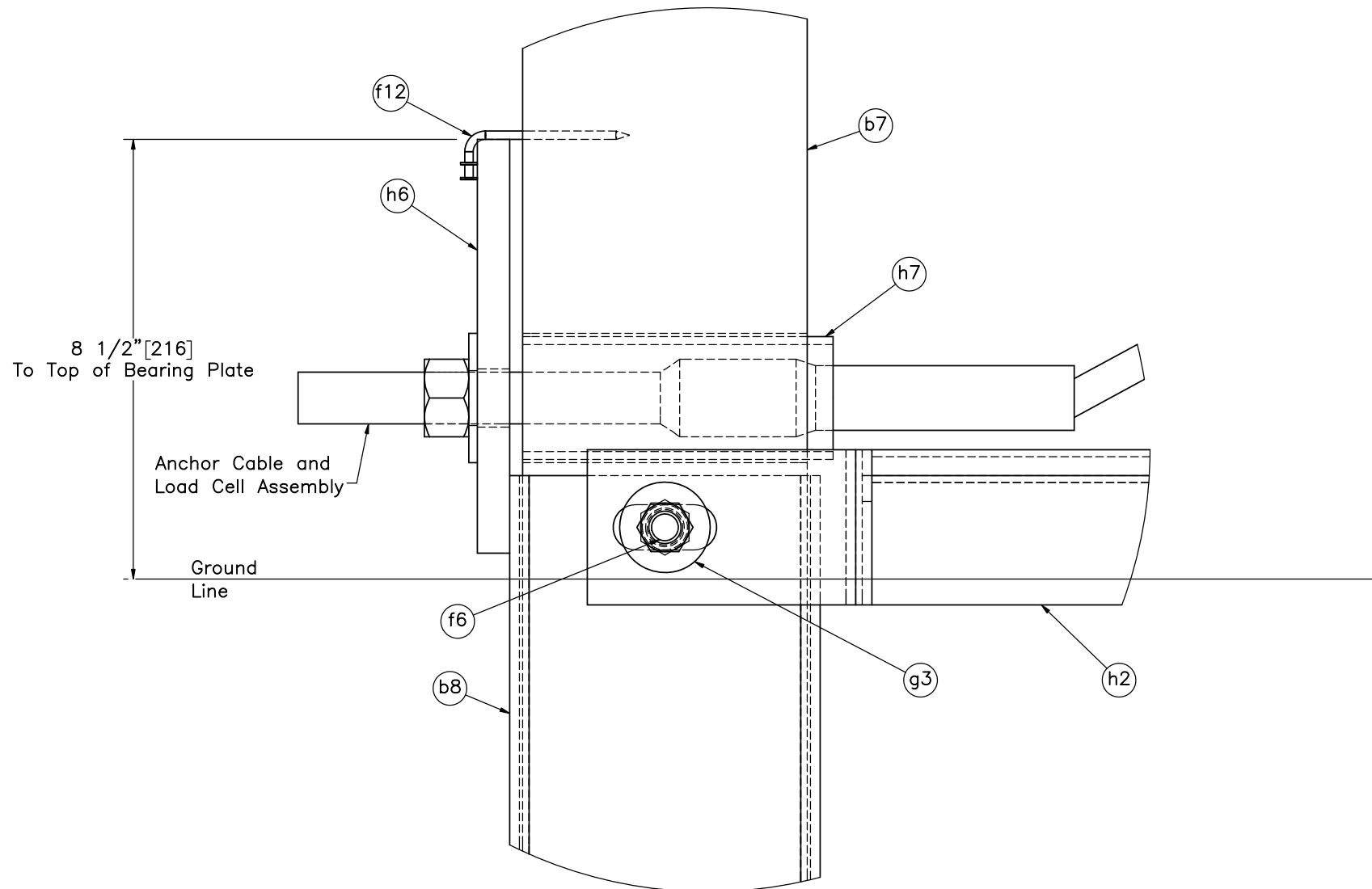
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UNITS: In.[mm]

SHEET:  
6 of 30

DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



DETAIL G

Note: (1) Additional washer (part g3) on the opposite side under head of bolt or nut (part f6).



Midwest Roadside  
Safety Facility

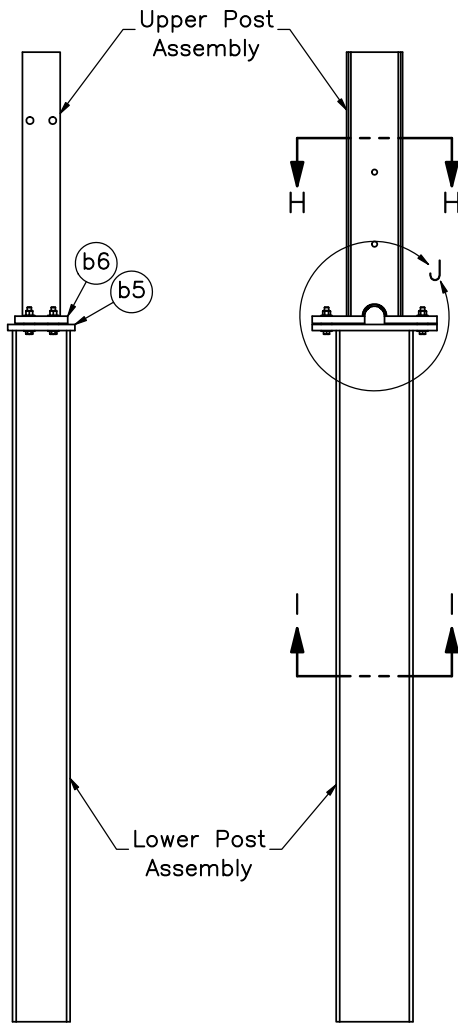
Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Upstream End Section Detail

DWG. NAME.  
SPTA-1\_R9

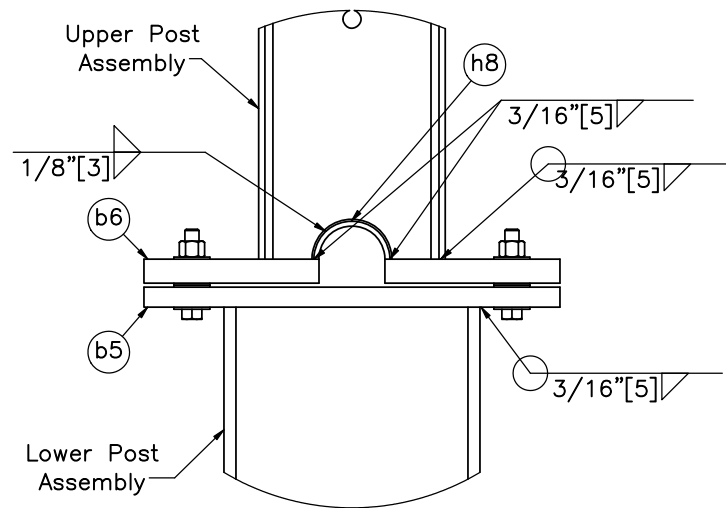
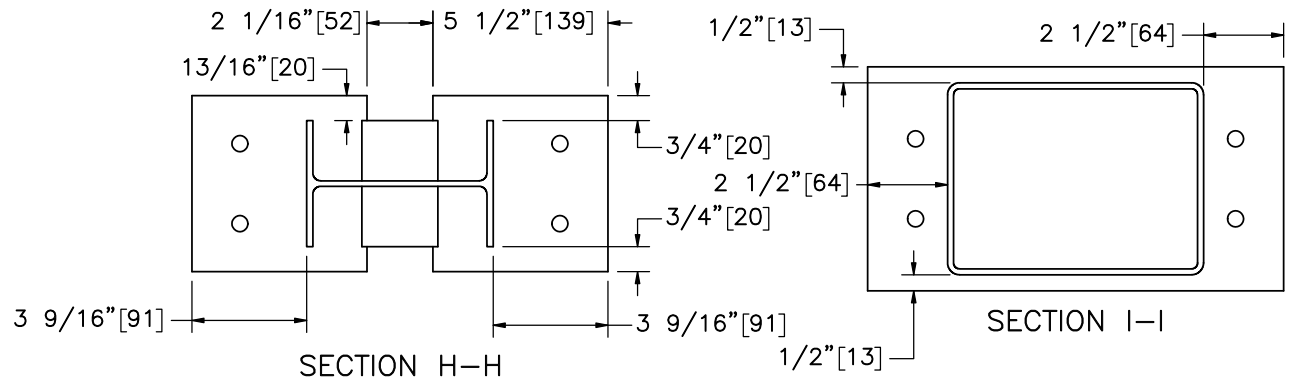
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SHEET:  
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DATE:  
8/21/2020  
DRAWN BY:  
MKB/JDJ/  
JEK/SBW  
REV. BY:  
JEK/KAL/JC  
H

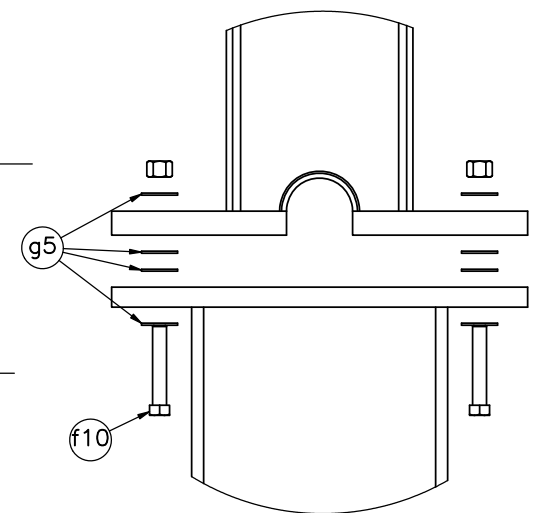


ELEVATION VIEW  
SCALE 1:20

PROFILE VIEW



DETAIL J



DETAIL J (EXPLODED)

- Notes:
- (1) Connection hardware hidden in Sections H and I for clarity.
  - (2) Lower post assembly hidden in Section H for clarity.
  - (3) Vertical through-bolts (part f10) are to be torqued to approximately 60–75 ft-lb [81.3–101.7 N-m].



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream Anchor Post  
Assembly

DWG. NAME.  
SPTA-1\_R9

SCALE: 1:6  
UNITS: In./mm

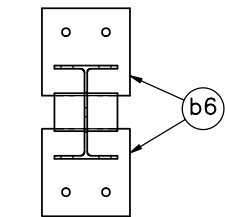
SHEET:  
8 of 30

DATE:  
8/21/2020

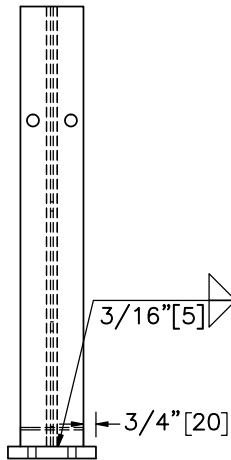
DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



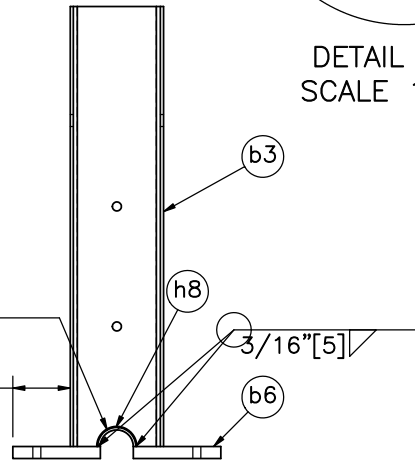


PLAN VIEW

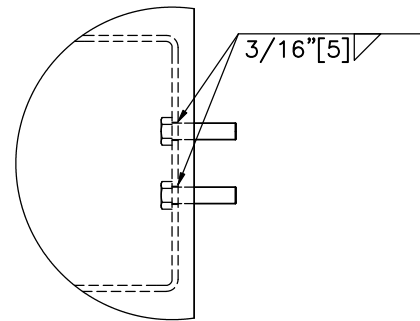


ELEVATION VIEW

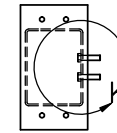
Upper Post Assembly



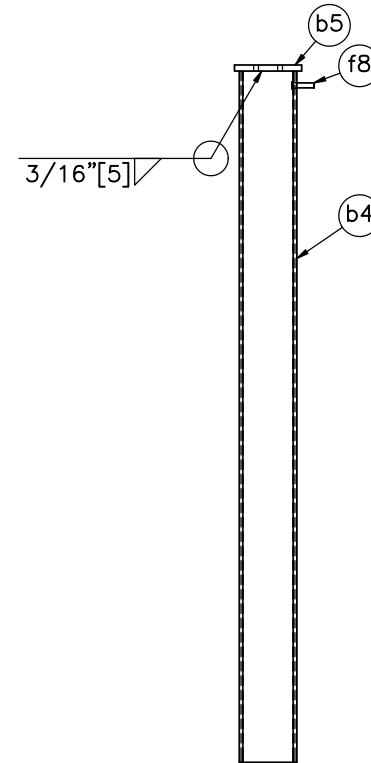
PROFILE VIEW



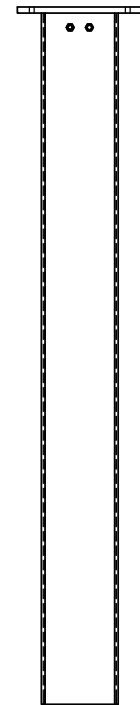
DETAIL K  
SCALE 1:6



PLAN VIEW



ELEVATION VIEW



PROFILE VIEW

Lower Post Assembly

Item No.	QTY.	Description	Material Specification	Treatment Specification	Hardware Guide
—	2	Lower Post Assembly	—	ASTM A123	—
b4	1	TS 8"x6"x3/16" [203x152x5], 72" [1,829] Long Foundation Tube	ASTM A500 Gr. B	—	—
b5	1	13"x7"x5/8" [330x178x16] Steel Plate	ASTM A36	—	—
f8	2	1/2"—13 UNC [M14x2], 2" [51] Long Hex Bolt and Nut	Bolt ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	—	FBX14a
—	2	Upper Post Assembly	—	ASTM A123	—
b3	1	W6x8.5 [W152x12.6] or W6x9 [W152x13.4], 27 1/2" [699] Long Steel Post	ASTM A992	—	—
b6	2	5 1/2"x5 1/2"x3/4" [140x140x19] Steel Plate	ASTM A36	—	—
h8	1	2 3/8" [60] O.D. x 3 15/16" [100] Long Post Sleeve	ASTM A53 Gr. B Schedule 40	—	FMM02



Midwest Roadside  
Safety Facility

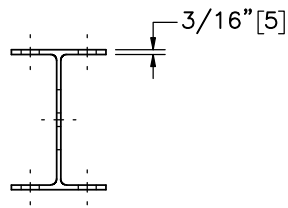
Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream Anchor Post  
Assembly Details

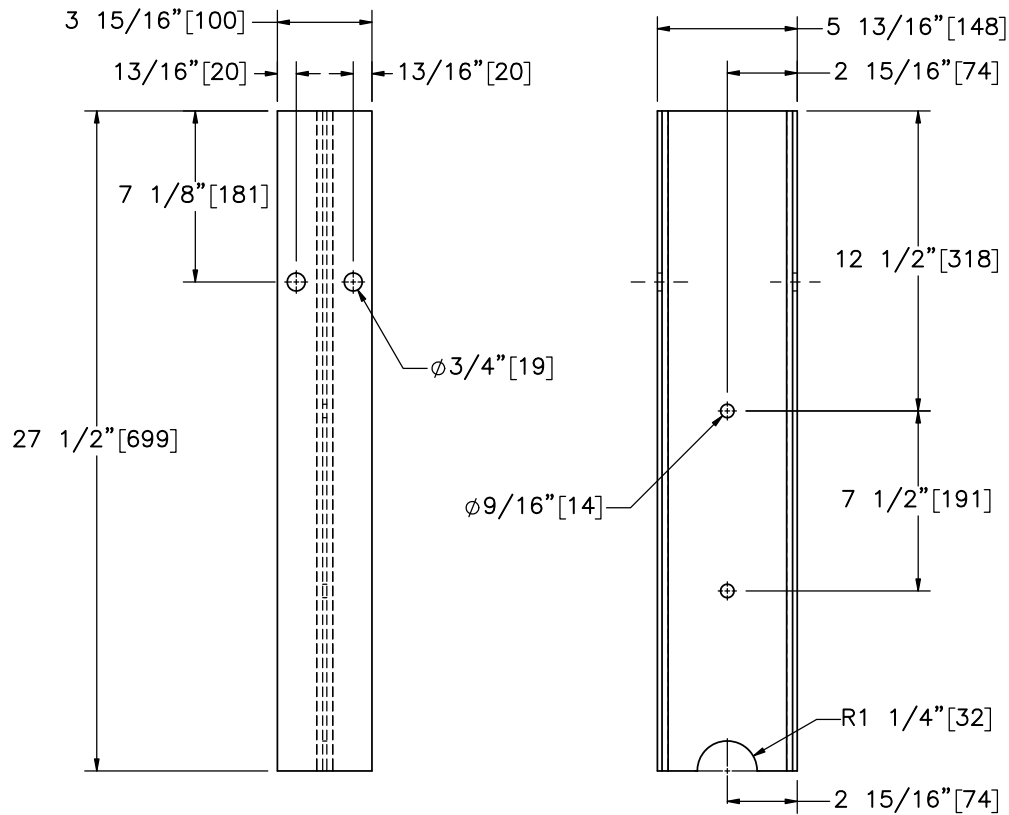
DWG. NAME:  
SPTA-1\_R9

SCALE: 1:12  
UNITS: In./mm

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DATE:  
8/21/2020  
DRAWN BY:  
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JEK/SBW  
REV. BY:  
JEK/KAL/JC  
H



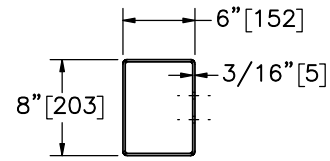
PLAN VIEW



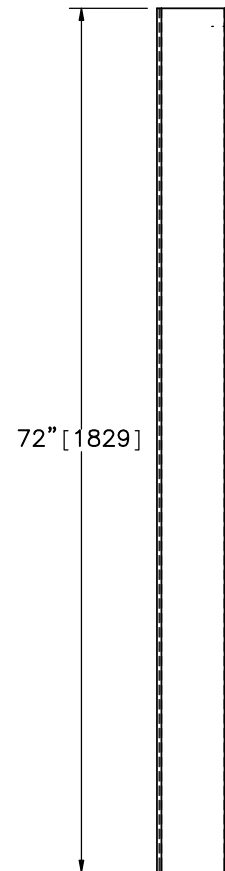
ELEVATION VIEW

PROFILE VIEW

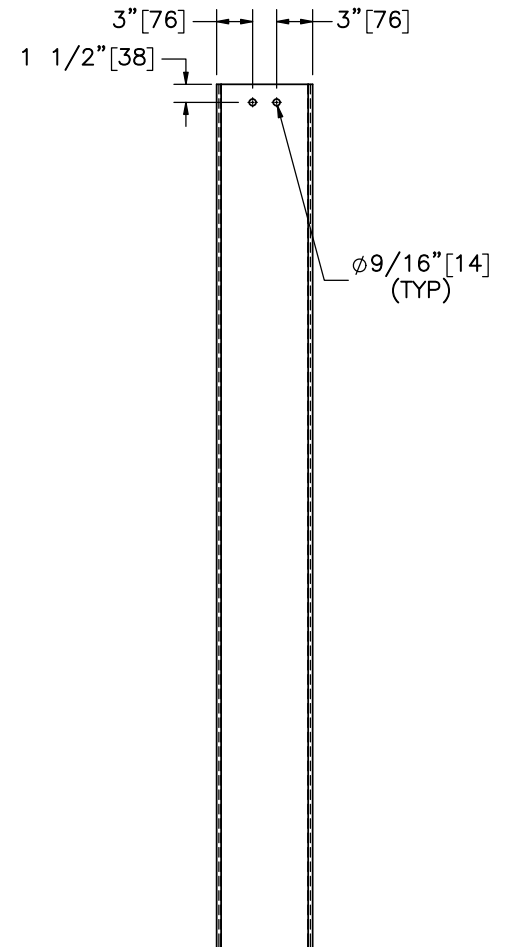
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Part b3



PLAN VIEW



ELEVATION VIEW



PROFILE VIEW

Part b4



Midwest Roadside  
Safety Facility

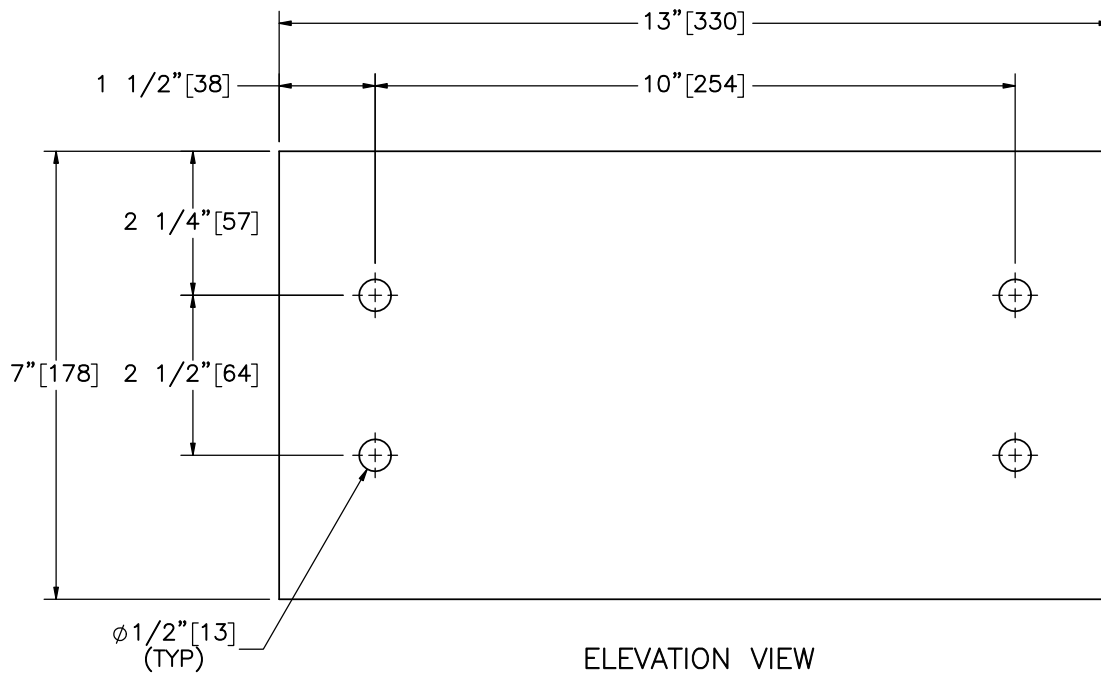
Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream Anchor Post &  
Foundation Tube Details

DWG. NAME.  
SPTA-1\_R9

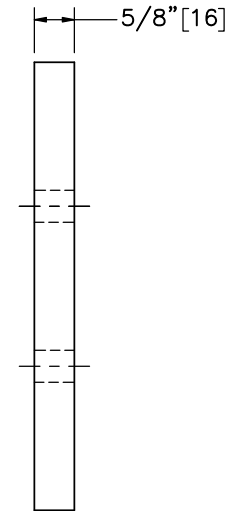
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SHEET:  
10 of 30  
DATE:  
8/21/2020  
DRAWN BY:  
MKB/JDJ/  
JEK/SBW  
REV. BY:  
JEK/KAL/JC  
H

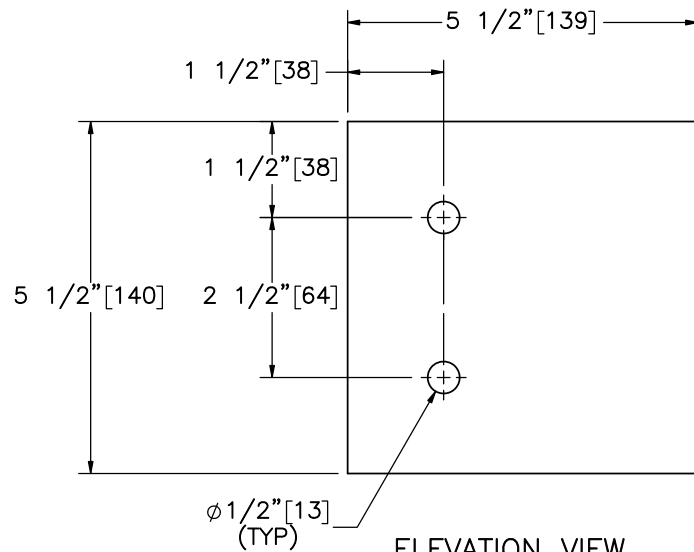


ELEVATION VIEW

Part b5

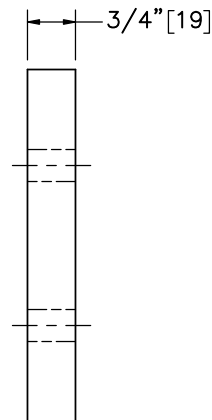


PROFILE VIEW



ELEVATION VIEW

Part b6



PROFILE VIEW



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream Anchor Post  
Components

DWG. NAME:  
SPTA-1\_R9

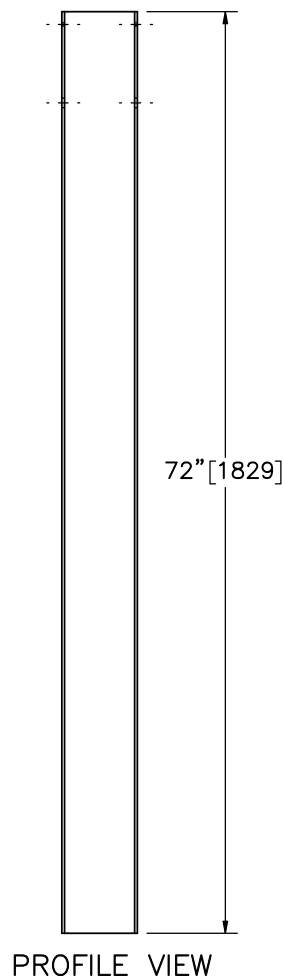
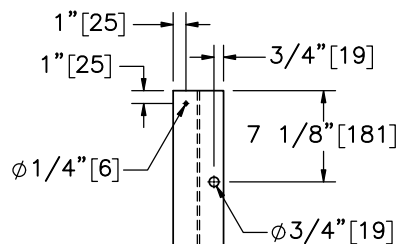
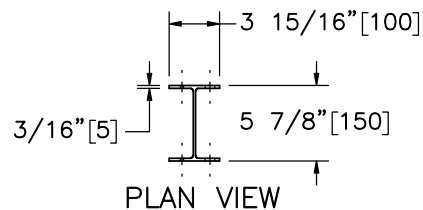
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SHEET:  
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DATE:  
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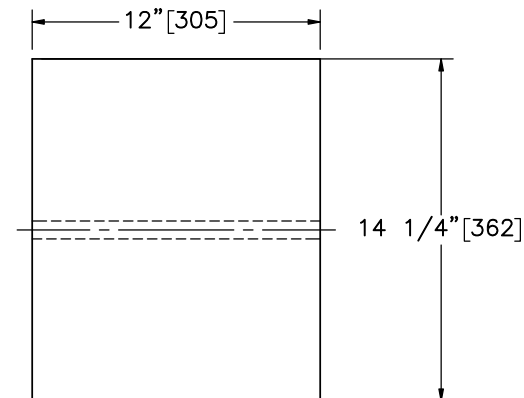
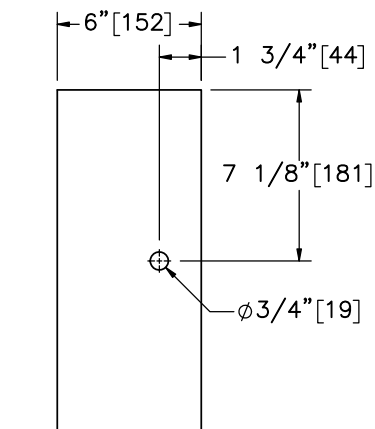
DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



ELEVATION VIEW

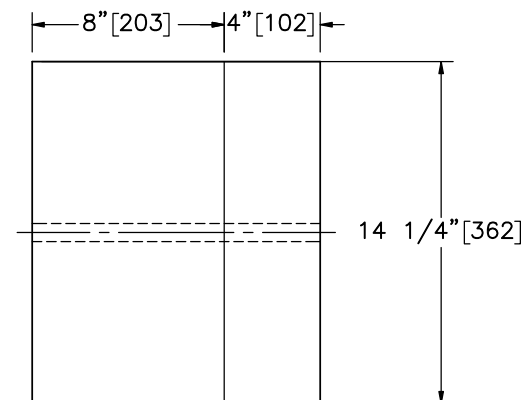
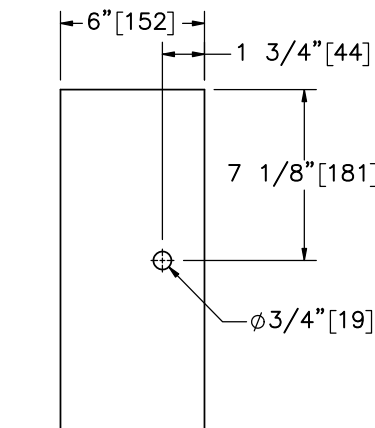
Part b1



ELEVATION VIEW

PROFILE VIEW

SCALE 1:8  
Part b2



ELEVATION VIEW

PROFILE VIEW

SCALE 1:8

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



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Post Nos. 3-27 Components

DWG. NAME.  
SPTA-1\_R9

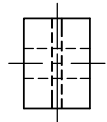
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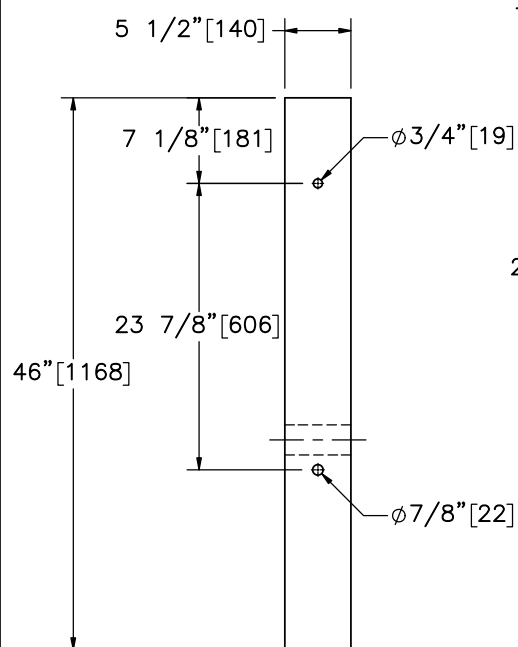
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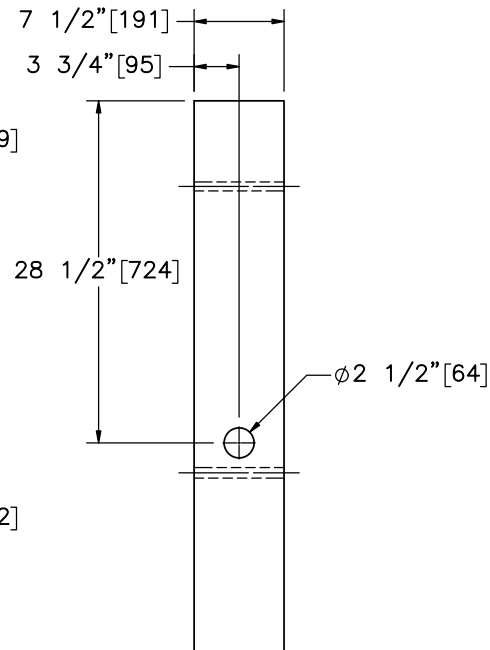
REV. BY:  
JEK/KAL/JC  
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PLAN VIEW

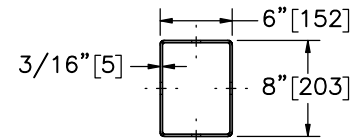


ELEVATION VIEW

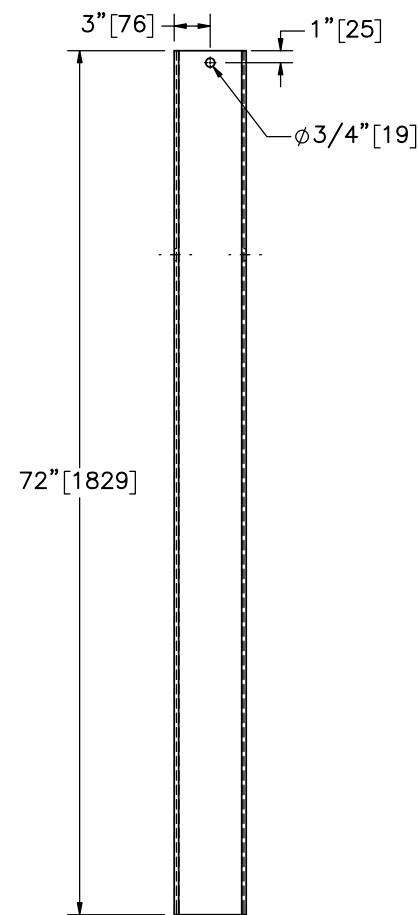


PROFILE VIEW

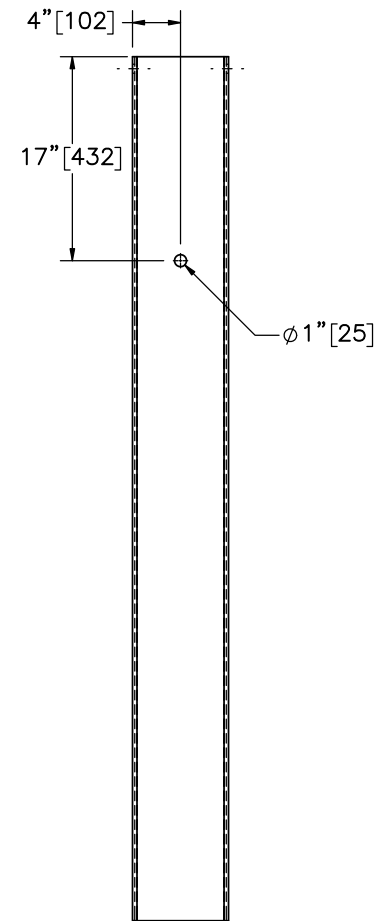
Part b7



PLAN VIEW



ELEVATION VIEW



PROFILE VIEW

Part b8



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Upstream Anchor Post &  
Foundation Tube Detail

DWG. NAME.  
SPTA-1\_R9

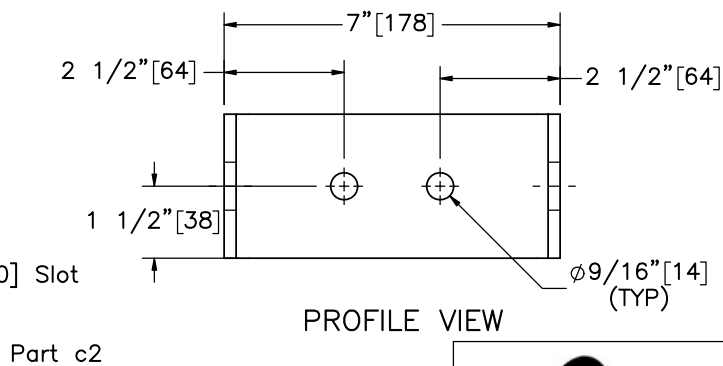
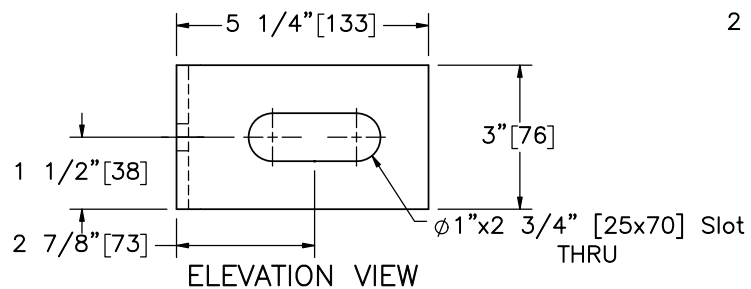
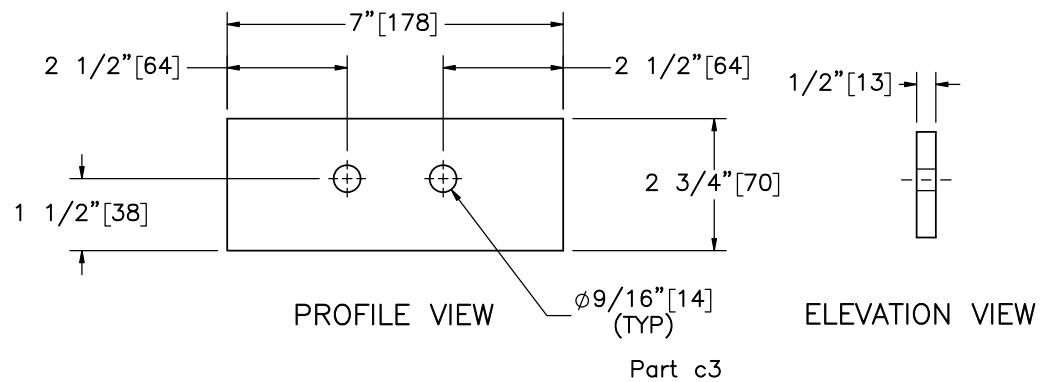
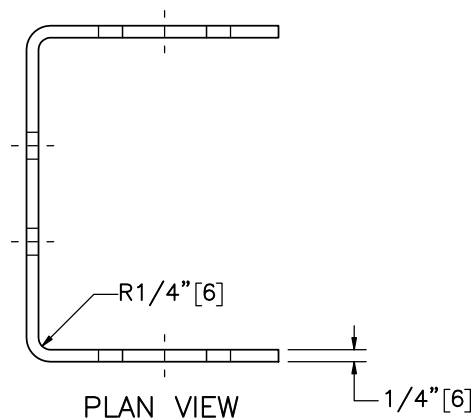
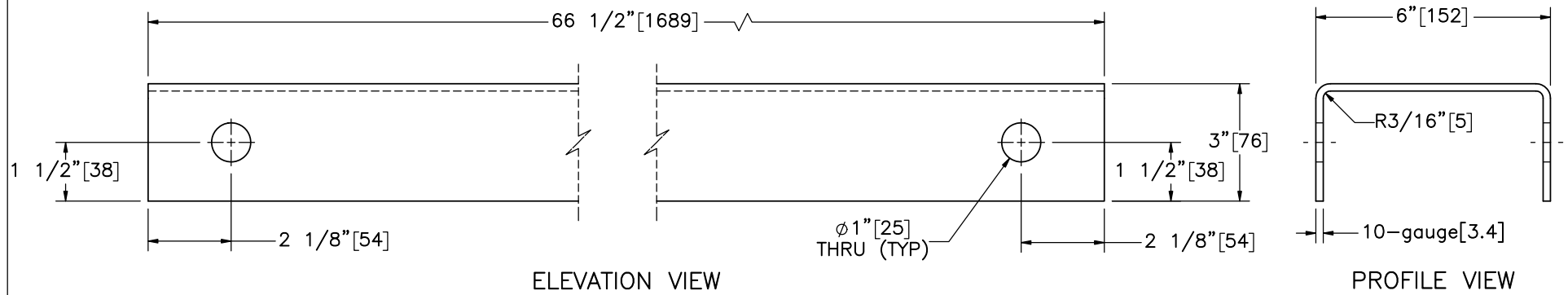
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UNITS: In./mm

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DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Downstream Ground Strut  
Components

DWG. NAME.  
SPTA-1\_R9

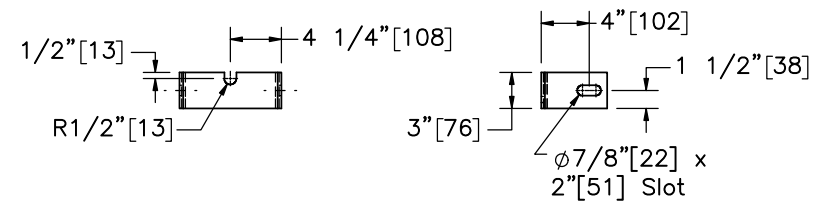
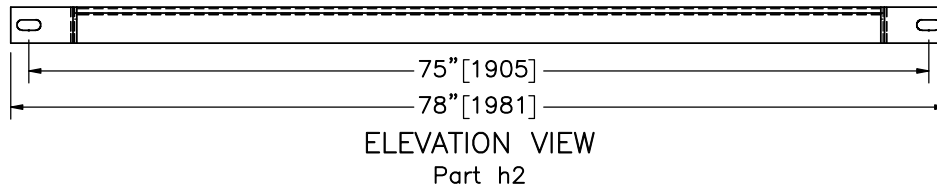
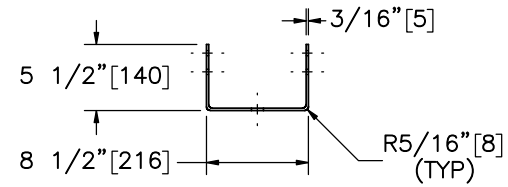
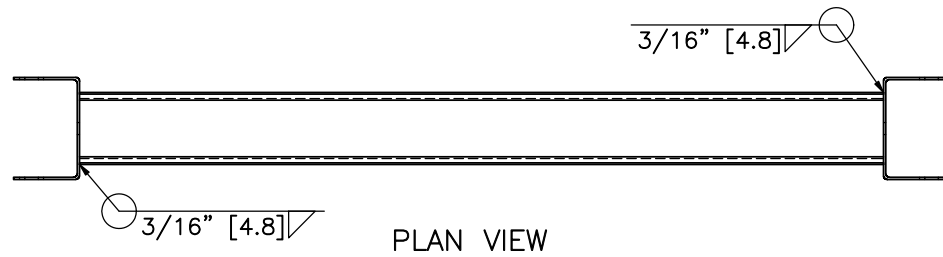
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SHEET:  
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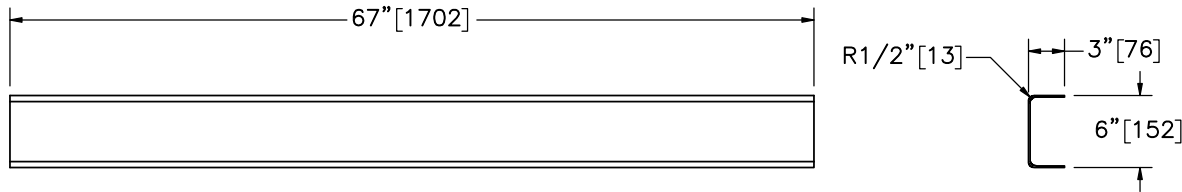
DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



PROFILE VIEW



ELEVATION VIEW

PROFILE VIEW

6"x3" [152x76] 10-Gauge [3.4] Strut



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Upstream Ground Strut Details

DWG. NAME.  
SPTA-1\_R9

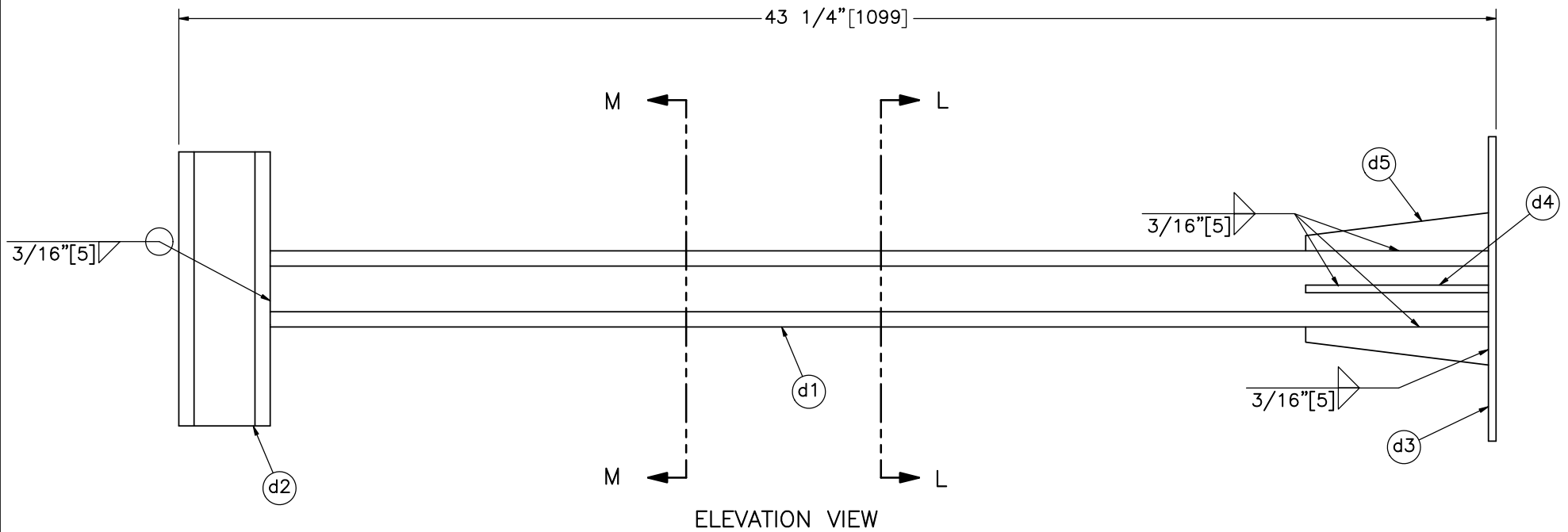
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SHEET:  
15 of 30

DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



Item No.	QTY.	Description	Material Specification	Treatment Specification
—	1	Breaker Arm Assembly	—	ASTM A123
d1	1	HSS 2 1/2"x2 1/2"x1/4" [64x64x6], 40" [1,016] Long Square Tube	ASTM A500 Gr. B	—
d2	1	HSS 3"x3"x1/4" [76x76x6], 9" [229] Long Square Tube	ASTM A500 Gr. B	—
d3	1	10"x4 1/2"x1/4" [254x114x6] Plate	ASTM A36	—
d4	2	6"x3/4"x1/4" [152x19x6] Gusset	ASTM A36	—
d5	2	6"x1 1/4"x1/4" [152x32x6] Gusset	ASTM A36	—



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Breaker Arm Assembly

DWG. NAME.  
SPTA-1\_R9

SCALE: 1:5  
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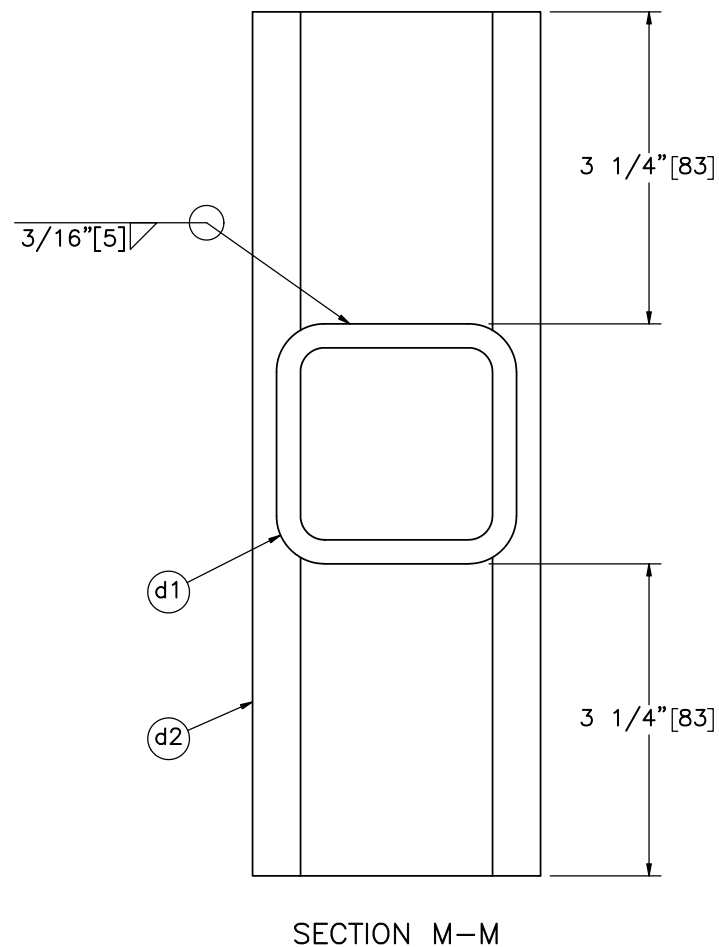
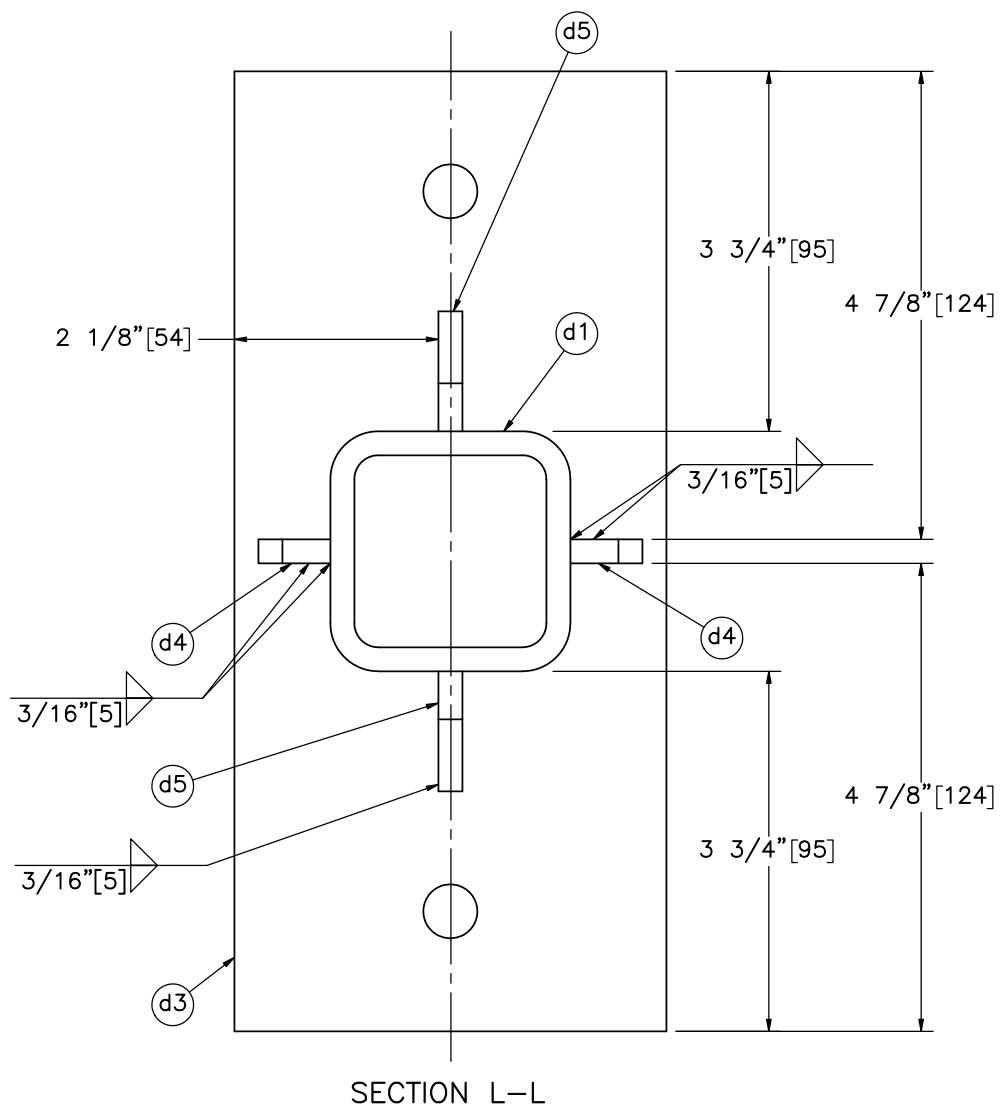
SHEET:  
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8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H





Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Breaker Arm Details

DWG. NAME.  
SPTA-1\_R9

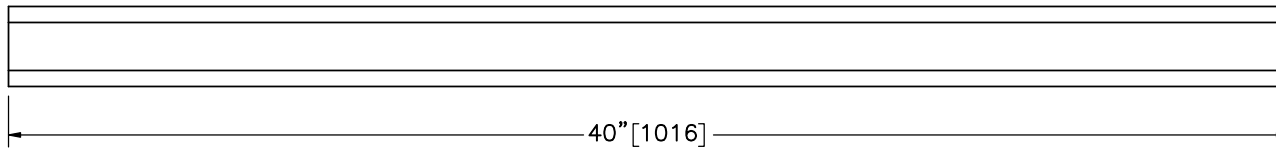
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SHEET:  
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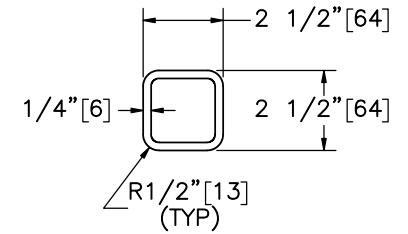
DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H

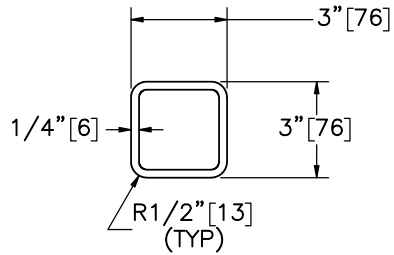


ELEVATION VIEW

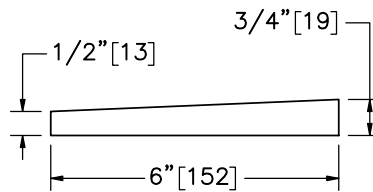


PROFILE VIEW

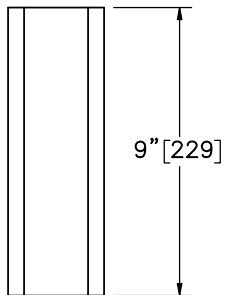
Part d1



PLAN VIEW

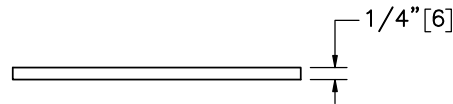


PLAN VIEW



ELEVATION VIEW

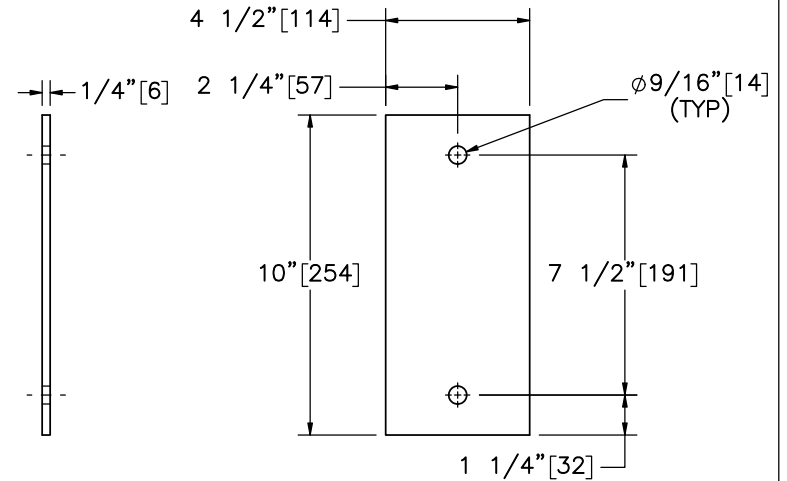
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ELEVATION VIEW

SCALE 1:4

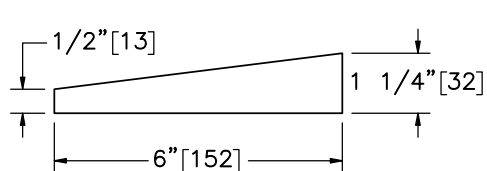
Part d4



ELEVATION VIEW

PROFILE VIEW

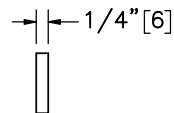
Part d3



ELEVATION VIEW

SCALE 1:4

Part d5



PROFILE VIEW



Midwest Roadside  
Safety Facility

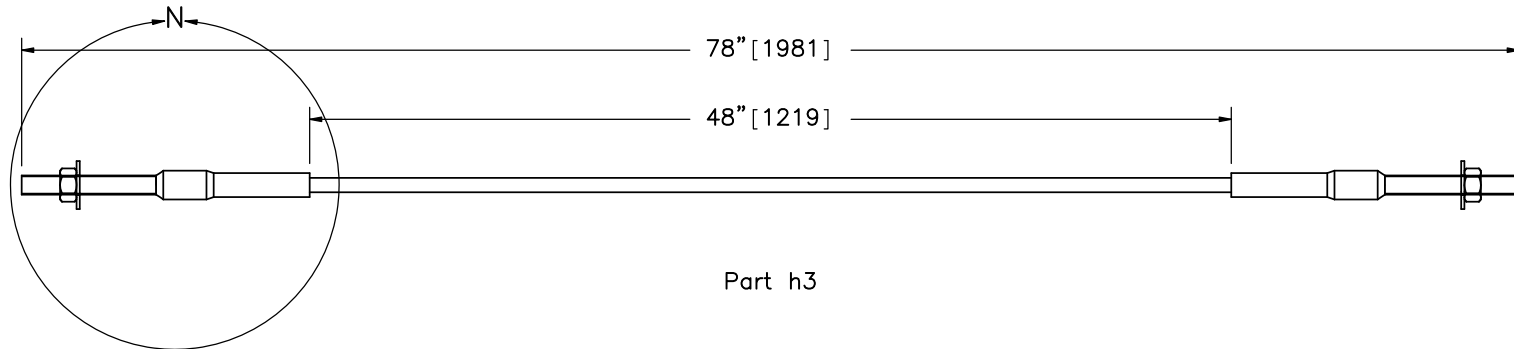
Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Breaker Arm Components

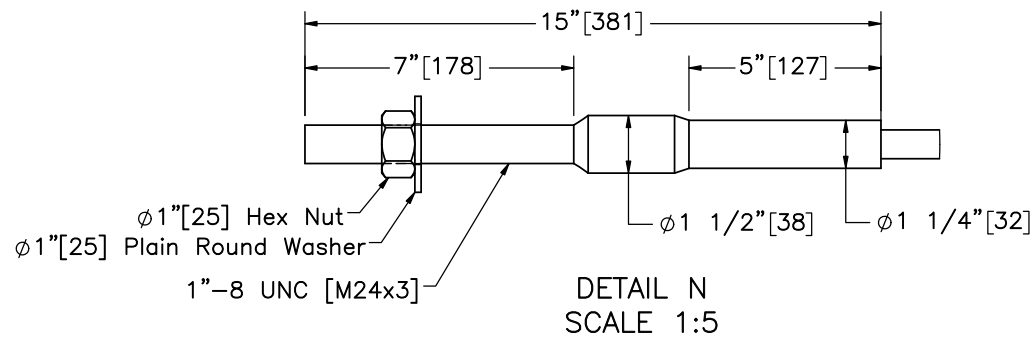
DWG. NAME.  
SPTA-1\_R9

SCALE: 1:6  
UNITS: In./mm

SHEET:  
18 of 30  
DATE:  
8/21/2020  
DRAWN BY:  
MKB/JDJ/  
JEK/SBW  
REV. BY:  
JEK/KAL/JC  
H



Part h3



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Anchor Cable Assembly

DWG. NAME.  
SPTA-1\_R9

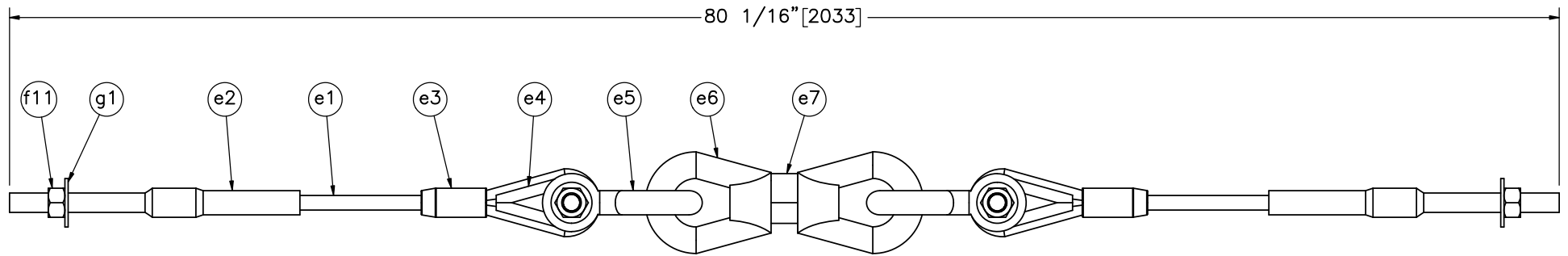
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SHEET:  
19 of 30

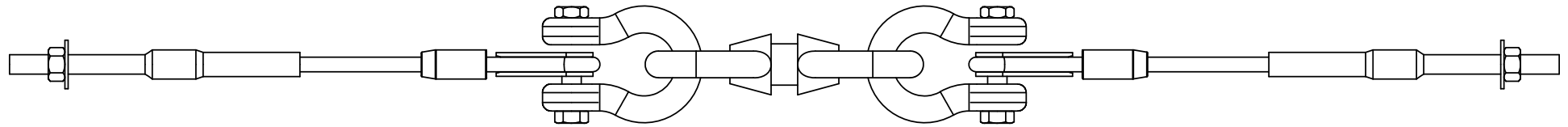
DATE:  
8/21/2020

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MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



PLAN VIEW



ELEVATION VIEW  
Anchor Cable and Load Cell Assembly

Item No.	QTY.	Description	Material Specification	Treatment Specification
—	1	Anchor Cable and Load Cell Assembly	—	—
e1	2	3/4" 6x19, 20" [508] Long IWRC IPS Wire Rope	IPS	ASTM A741 Type II Class A
e2	2	Anchor Cable End Swaged Fitting	Fitting — ASTM A576 Gr. 1035 Stud — ASTM F568 Class C	Fitting — ASTM A153 Stud — ASTM A153 or B695
e3	2	115-HT Mechanical Splice — 3/4" [19] Dia.	As Supplied	—
e4	2	Crosby Heavy Duty HT — 3/4" [19] Dia. Cable Thimble	Stock No. 1037773	As Supplied
e5	2	Crosby G2130 or S2130 Bolt Type Shackle — 1 1/4" [32] Dia. with thin head bolt, nut, and cotter pin, Grade A, Class 3	Stock Nos. 1019597 and 1019604 — As Supplied	—
e6	2	Chicago Hardware Drop Forged Heavy Duty Eye Nut — Drilled and Tapped 1 1/2" [38] Dia. — UNC 6 [M36x4]	Stock No. 107 — As Supplied	—
e7	1	TLL-50K-PTB Load Cell	—	—
f11	2	1"—8 UNC [M24x3] Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329
g1	2	1" [25] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Anchor Cable & Load Cell  
Assembly

DWG. NAME.  
SPTA-1\_R9

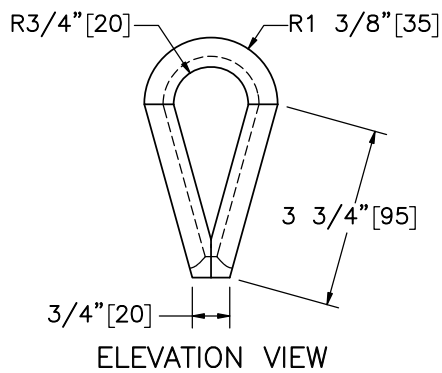
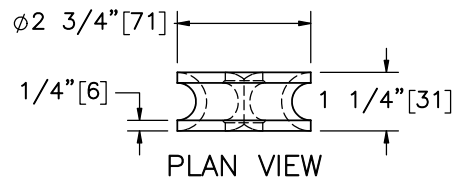
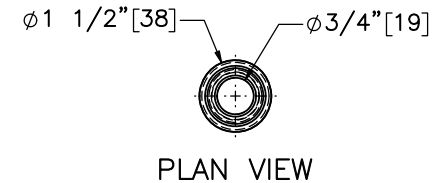
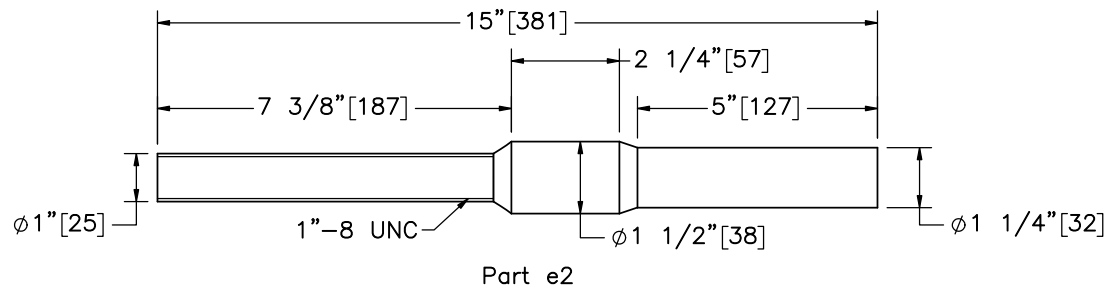
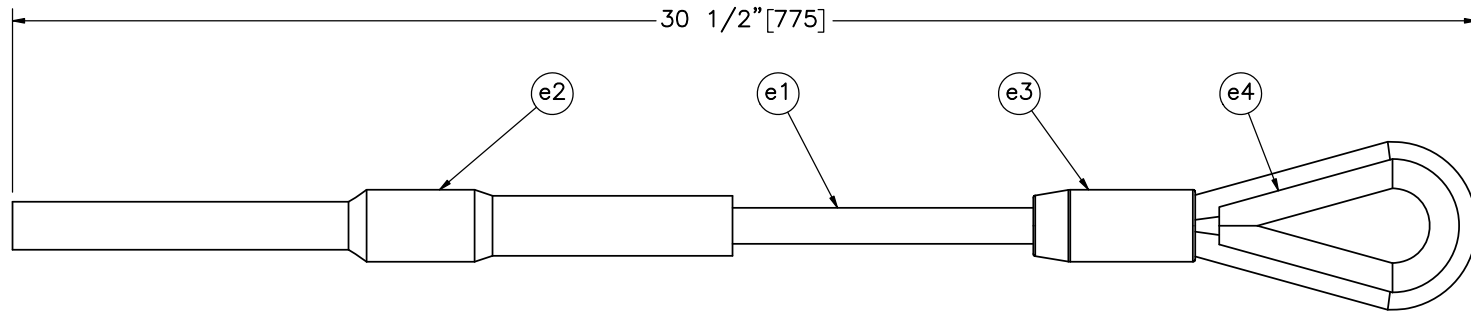
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UNITS: In./mm

SHEET:  
20 of 30

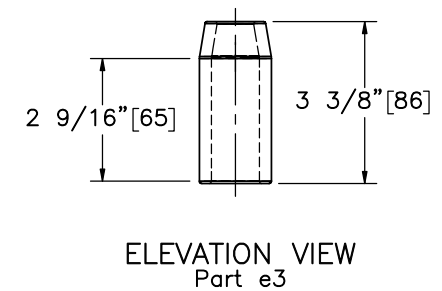
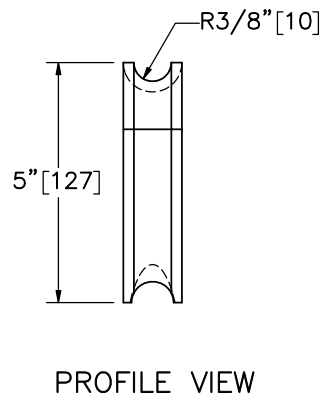
DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



Part e4



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Modified Anchor Cable

DWG. NAME.  
SPTA-1\_R9

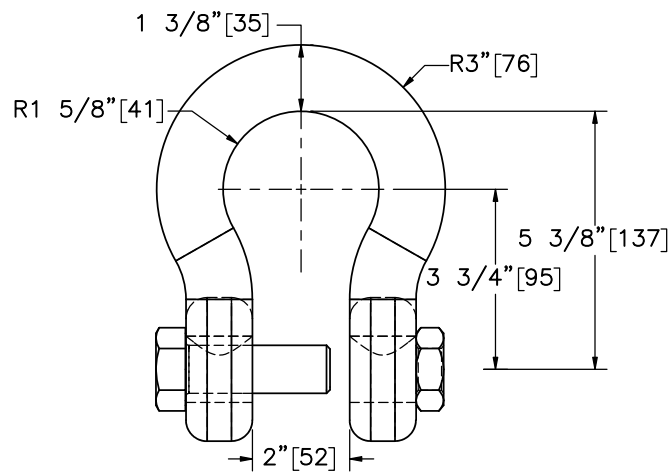
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SHEET:  
21 of 30

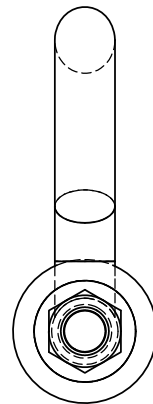
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8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

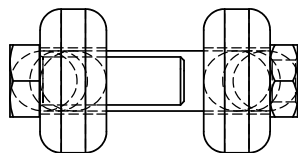
REV. BY:  
JEK/KAL/JC  
H



ELEVATION VIEW

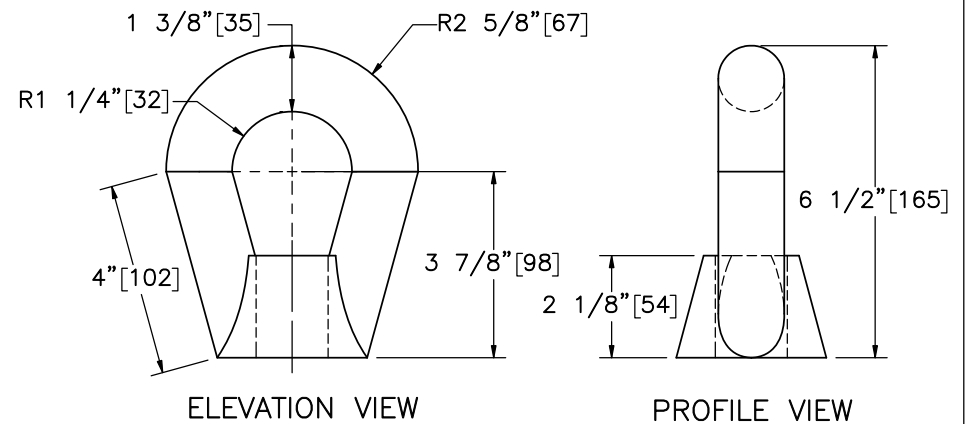


PROFILE VIEW



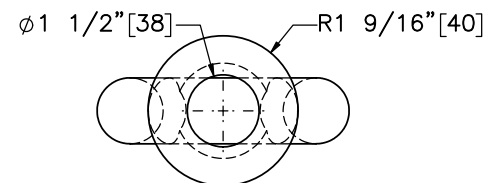
PLAN VIEW

Part e5



ELEVATION VIEW

PROFILE VIEW



PLAN VIEW

Part e6



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Shackle & Eye Nut Detail

DWG. NAME.  
SPTA-1\_R9

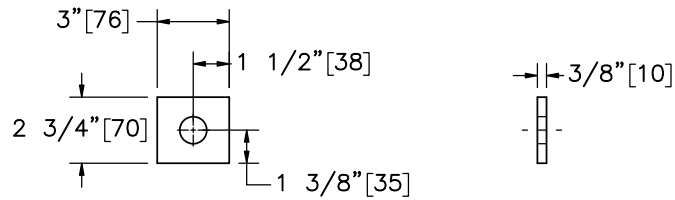
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SHEET:  
22 of 30

DATE:  
8/21/2020

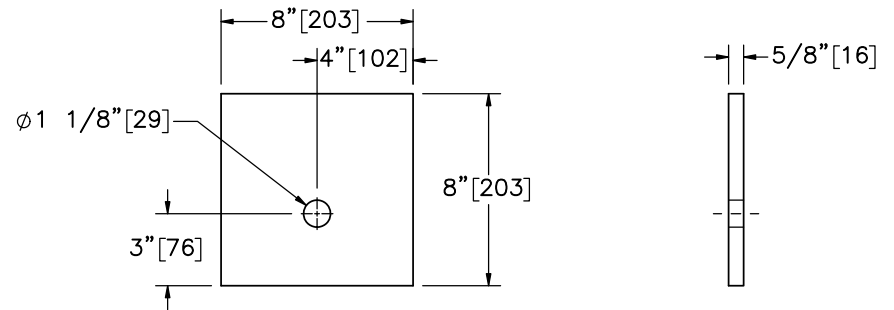
DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H



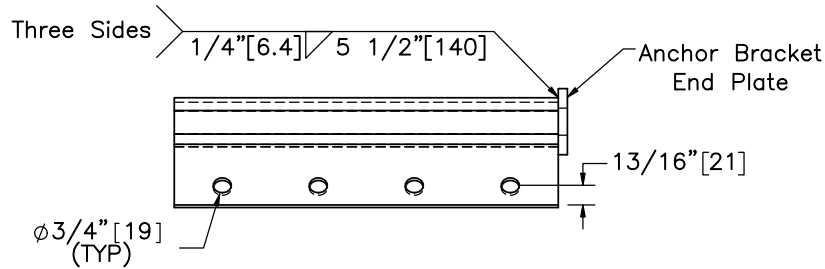
ELEVATION VIEW PROFILE VIEW

Anchor Bracket End Plate

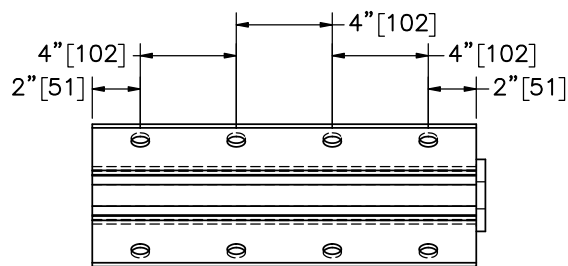


ELEVATION VIEW PROFILE VIEW

Part h6

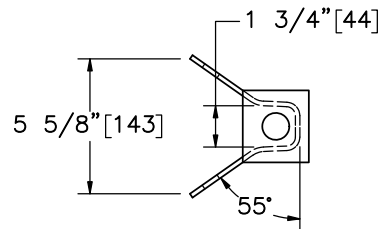


PLAN VIEW

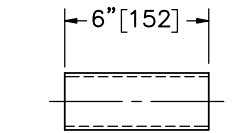


ELEVATION VIEW

Part h1

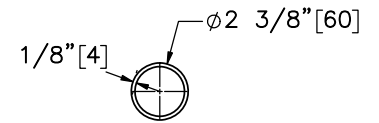


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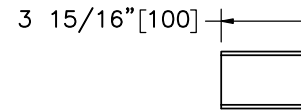


ELEVATION VIEW

Part h7

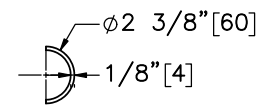


PROFILE VIEW



ELEVATION VIEW

Part h8



PROFILE VIEW



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Anchor Post Components &  
Anchor Bracket

DWG. NAME.  
SPTA-1\_R9

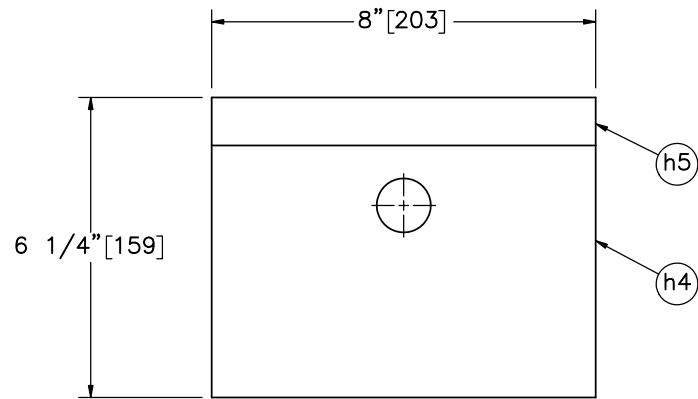
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SHEET:  
23 of 30

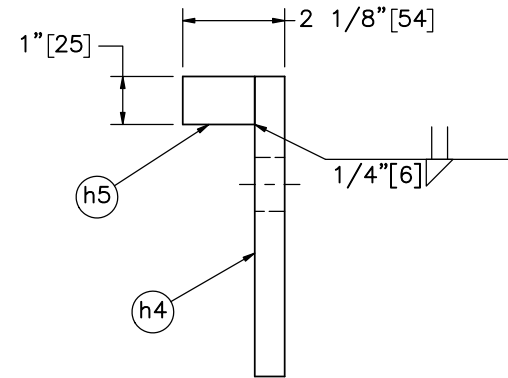
DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H

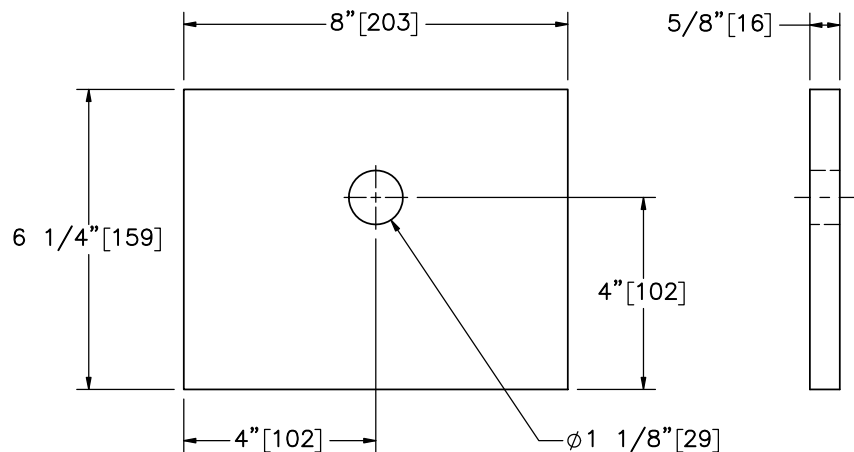


ELEVATION VIEW



PROFILE VIEW

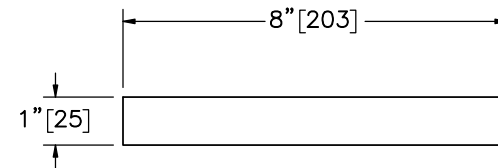
Bearing Plate Assembly



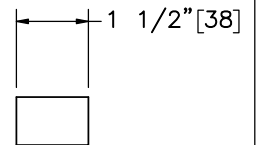
ELEVATION VIEW

PROFILE VIEW

Part h4




ELEVATION VIEW

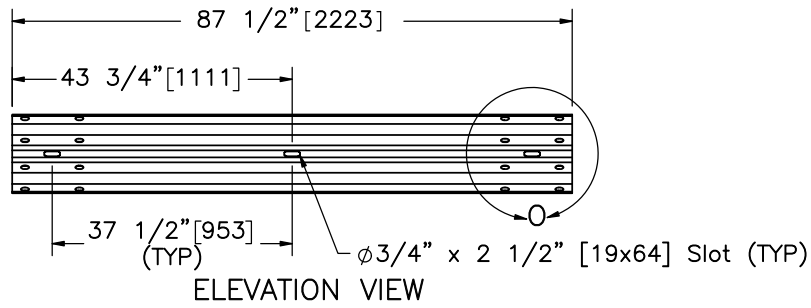


PROFILE VIEW

Part h5

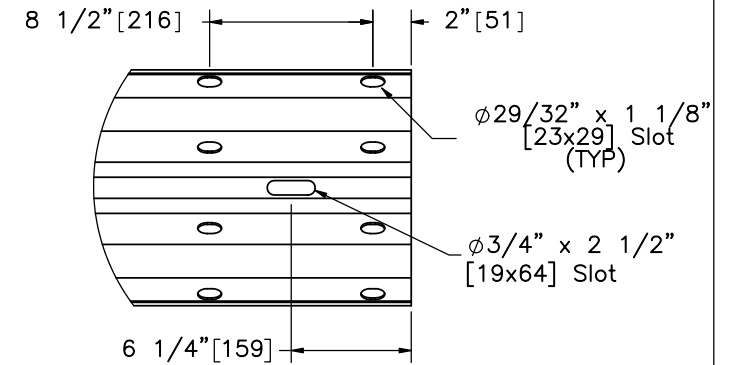
					  Midwest Roadside Safety Facility	Steel Post Terminal Anchorage		SHEET: 24 of 30	
Item No.	QTY.	Description	Material Specification	Treatment Specification		Test No. SPTA-1		DATE: 8/21/2020	
—	1	Bearing Plate Assembly	—	ASTM A123		Bearing Plate Assembly & Components		DRAWN BY: MKB/JDJ/JEK/SBW	
h4	1	8"x6 1/4"x5/8" [203x159x16] Bearing Plate Base	ASTM A36	—		DWG. NAME: SPTA-1_R9		SCALE: 1:4 UNITS: In.[mm]	REV. BY: JEK/KAL/JCH
h5	1	8"x1 1/2"x1" [203x38x25] Bearing Plate Flange	ASTM A36	—					



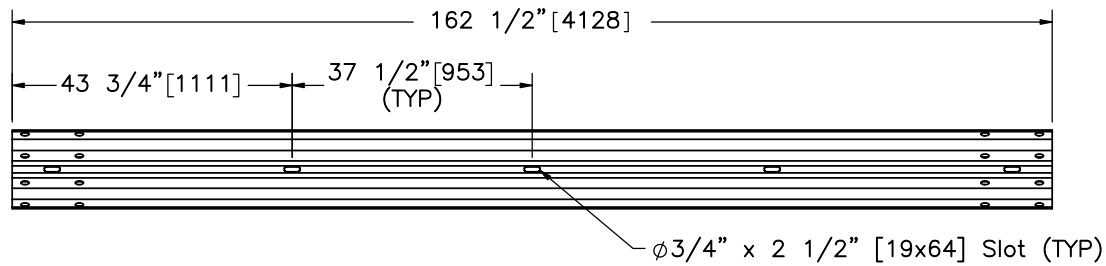


Part a3

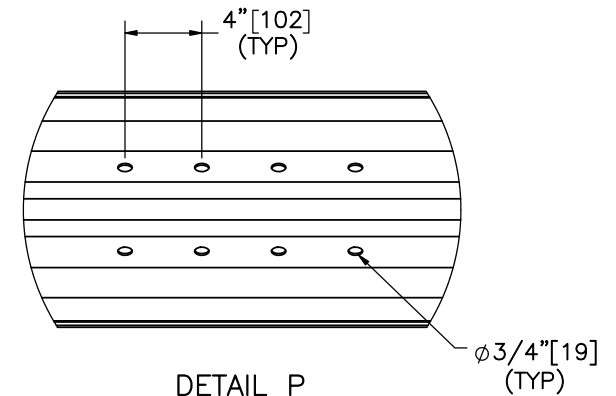
PROFILE VIEW



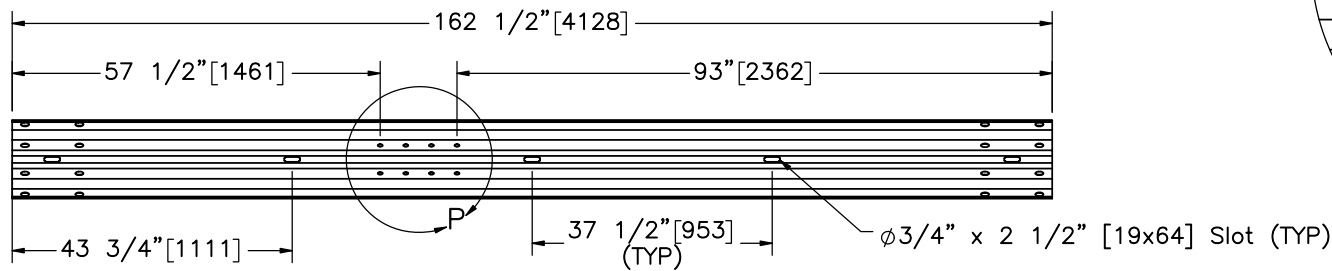
DETAIL O  
 SCALE 1:10



ELEVATION VIEW  
 Part a1



DETAIL P  
 SCALE 1:10



ELEVATION VIEW  
 Part a2



Midwest Roadside  
 Safety Facility

Steel Post Terminal  
 Anchorage  
 Test No. SPTA-1

Rail Section Details

DWG. NAME.  
 SPTA-1\_R9

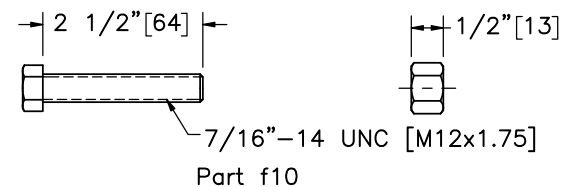
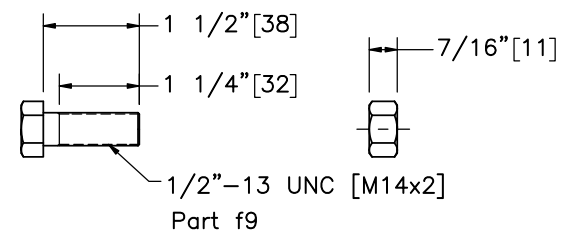
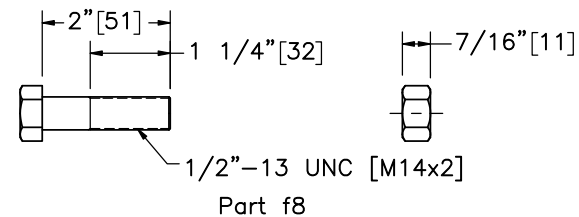
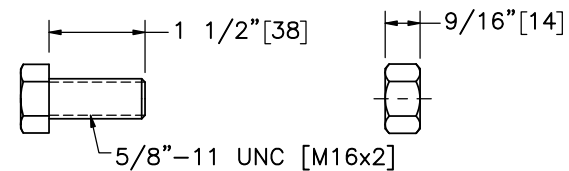
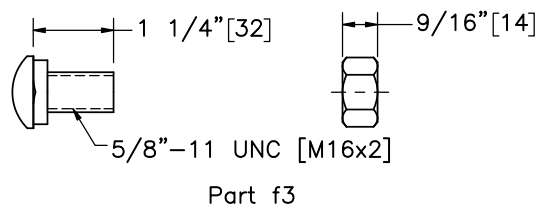
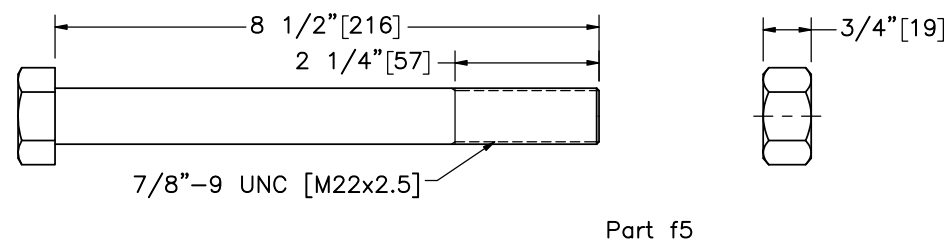
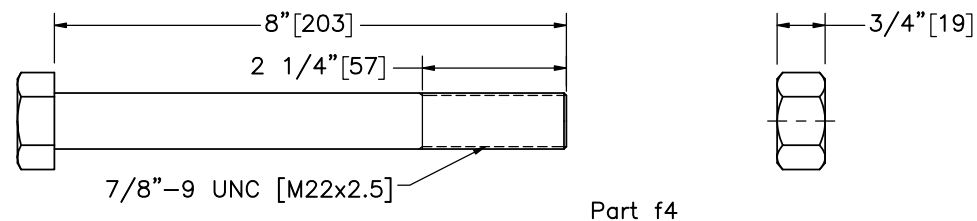
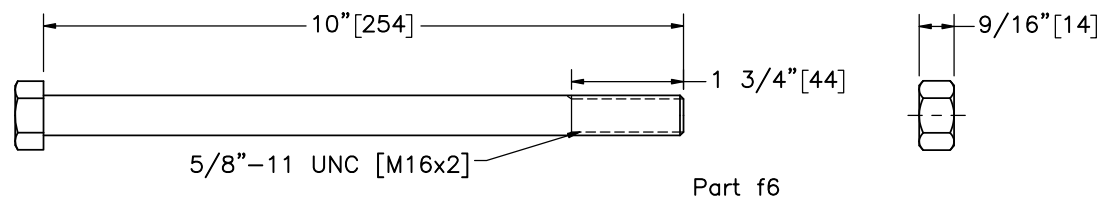
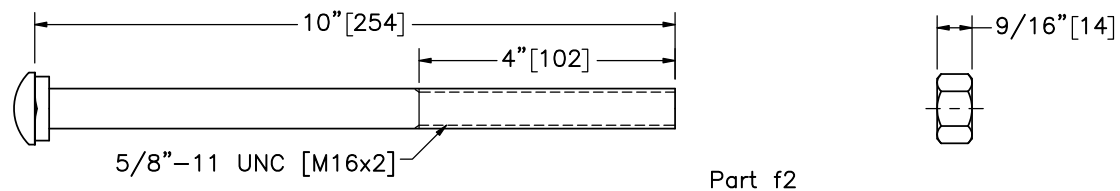
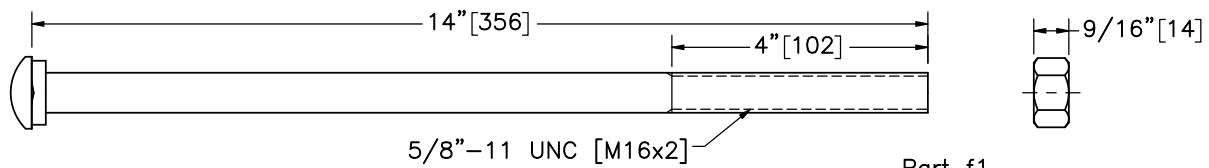
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SHEET:  
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DATE:  
 8/21/2020

DRAWN BY:  
 MKB/JDJ/  
 JEK/SBW

REV. BY:  
 JEK/KAL/JC  
 H



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Hardware

DWG. NAME.  
SPTA-1\_R9

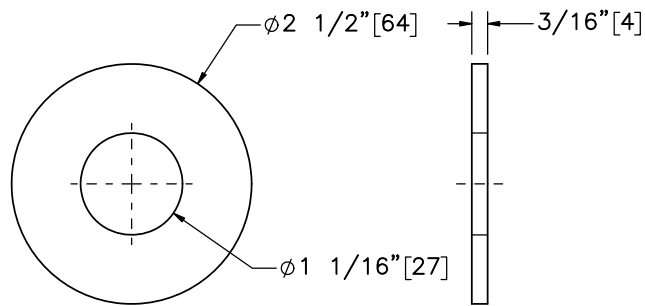
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SHEET:  
26 of 30

DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

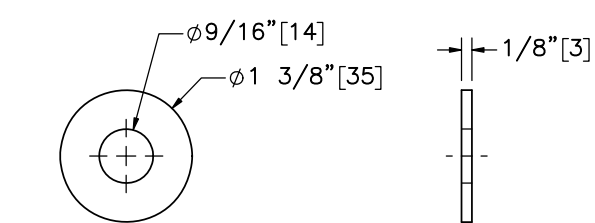
REV. BY:  
JEK/KAL/JC  
H



ELEVATION VIEW

PROFILE VIEW

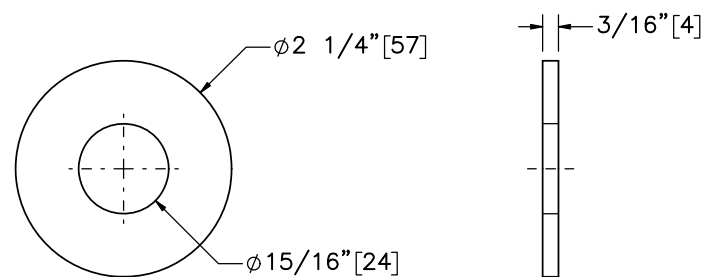
Part g1



ELEVATION VIEW

PROFILE VIEW

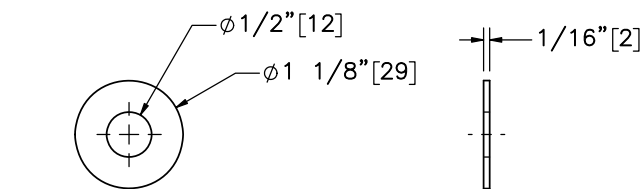
Part g4



ELEVATION VIEW

PROFILE VIEW

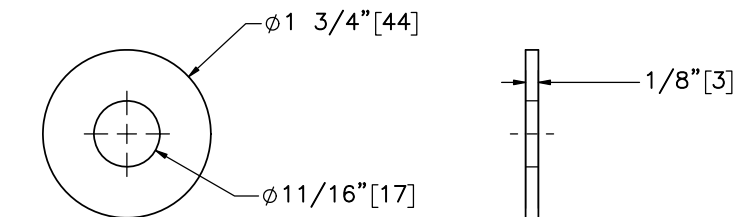
Part g2



ELEVATION VIEW

PROFILE VIEW

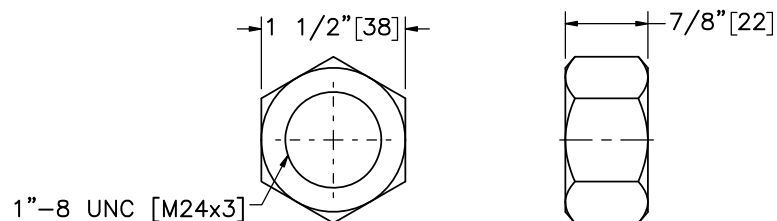
Part g5



ELEVATION VIEW

PROFILE VIEW

Part g3



ELEVATION VIEW

PROFILE VIEW

Part f11



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Hardware

DWG. NAME.  
SPTA-1\_R9

SCALE: 1:2  
UNITS: In.[mm]

SHEET:  
27 of 30

DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H

Item No.	QTY.	Description	Material Specification	Treatment Specification	Hardware Guide
a1	12	12'-6" [3,810] 12-gauge [2.7] W-Beam MGS Section	AASHTO M180	ASTM A123 or A653	RWM04a
a2	2	12'-6" [3,810] 12-gauge [2.7] W-Beam MGS End Section	AASHTO M180	ASTM A123 or A653	—
a3	1	6'-3" [1,905] 12-gauge [2.7] W-Beam MGS Section	AASHTO M180	ASTM A123 or A653	—
b1	25	W6x8.5 [W152x12.6] or W6x9 [W152x13.4], 72" Long [1,829] Steel Post	ASTM A992	ASTM A123	PWE06
b2	25	6"x12"x14 1/4" [152x305x368] Timber Blockout	SYP Grade No.1 or better	—	PDB10a
b3	2	W6x8.5 [W152x12.6] or W6x9 [W152x13.4], 27 1/2" [699] Long Steel Post	ASTM A992	—	—
b4	2	TS 8"x6"x3/16" [203x152x5], 72" [1,829] Long Foundation Tube	ASTM A500 Gr. B	—	—
b5	2	13"x7"x5/8" [330x178x16] Steel Plate	ASTM A36	—	—
b6	4	5 1/2"x5 1/2"x3/4" [140x140x19] Steel Plate	ASTM A36	—	—
b7	2	BCT Timber Post – MGS Height	SYP Grade No. 1 or better (No knots 18" [457] above or below ground tension face)	—	PDF01
b8	2	TS 8"x6"x3/16" [203x152x5], 72" [1,829] Long Foundation Tube	ASTM A500 Gr. B	ASTM A123	PTE06
c1	1	66 1/2"x11 3/4"x10-gauge [1,689x298x3.4] Bent Steel Channel Strut	ASTM A36	ASTM A123	—
c2	2	17"x3"x1/4" [432x76x6] Bent Steel Plate	ASTM A36	ASTM A123	—
c3	2	7"x2 3/4"x1/2" [178x70x13] Steel Plate	ASTM A36	ASTM A123	—
d1	1	HSS 2 1/2"x2 1/2"x1/4" [64x64x6], 40" [1,016] Long Square Tube	ASTM A500 Gr. B	—	—
d2	1	HSS 3"x3"x1/4" [76x76x6], 9" [229] Long Square Tube	ASTM A500 Gr. B	—	—
d3	1	10"x4 1/2"x1/4" [254x114x6] Plate	ASTM A36	—	—
d4	2	6"x3/4"x1/4" [152x19x6] Gusset	ASTM A36	—	—
d5	2	6"x1 1/4"x1/4" [152x32x6] Gusset	ASTM A36	—	—



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Bill of Materials

DWG. NAME.  
SPTA-1\_R9

SCALE: None  
UNITS: In./mm

SHEET:  
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DATE:  
8/21/2020

DRAWN BY:  
MKB/JDJ/  
JEK/SBW

REV. BY:  
JEK/KAL/JC  
H

Item No.	QTY.	Description	Material Specification	Treatment Specification	Hardware Guide
e1	2	3/4" 6x19, 20" [508] Long IWRC IPS Wire Rope	IPS	ASTM A741 Type II Class A	—
e2	2	Anchor Cable End Swaged Fitting	Fitting — ASTM A576 Gr. 1035 Stud — ASTM F568 Class C	Fitting — ASTM A153 Stud — ASTM A153 or B695	—
e3	2	115—HT Mechanical Splice — 3/4" [19] Dia.	As Supplied	—	—
e4	2	Crosby Heavy Duty HT — 3/4" [19] Dia. Cable Thimble	Stock No. 1037773	As Supplied	—
e5	2	Crosby G2130 or S2130 Bolt Type Shackle — 1 1/4" [32] Dia. with thin head bolt, nut, and cotter pin, Grade A, Class 3	Stock Nos. 1019597 and 1019604 — As Supplied	—	—
e6	2	Chicago Hardware Drop Forged Heavy Duty Eye Nut — Drilled and Tapped 1 1/2" [38] Dia. — UNC 6 [M36x4]	Stock No. 107 — As Supplied	—	—
e7	1	TLL—50K—PTB Load Cell	—	—	—
f1	25	5/8"—11 UNC [M16x2], 14" [356] Long Guardrail Bolt and Nut	Bolt — ASTM A307 Gr. A Nut — ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBB06
f2	2	5/8"—11 UNC [M16x2], 10" [254] Long Guardrail Bolt and Nut	Bolt — ASTM A307 Gr. A Nut — ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBB03
f3	114	5/8"—11 UNC [M16x2], 1 1/4" [32] Long Guardrail Bolt and Nut	Bolt — ASTM A307 Gr. A Nut — ASTM A563A	ASTM A153 or B695 Class 55 or F2329	FBB01
f4	2	7/8"—9 UNC [M22x2.5], 8" [203] Long Hex Head Bolt and Nut	Bolt — ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	—
f5	2	7/8"—9 UNC [M22x2.5], 8 1/2" [216] Long Hex Head Bolt and Nut	Bolt — ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	—
f6	2	5/8"—11 UNC [M16x2], 10" [254] Long Hex Head Bolt and Nut	Bolt — ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FBX16a
f7	16	5/8"—11 UNC [M16x2], 1 1/2" [38] Long Hex Head Bolt and Nut	Bolt — ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FBX16a
f8	4	1/2"—13 UNC [M14x2], 2" [51] Long Hex Bolt and Nut	Bolt — ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	—	FBX14a
f9	2	1/2"—13 UNC [M14x2], 1 1/2" [38] Long Hex Bolt and Nut	Bolt — ASTM A307 Gr. A or equivalent Nut — ASTM A563A or equivalent	ASTM A153 OR B695 Class 55 or F2329	FBX14a
f10	8	7/16"—14 UNC [M12x1.75], 2 1/2" [64] Long Fully Threaded Hex Tap Bolt and Nut	Bolt — ASTM A449 or equivalent Nut — ASTM A563DH or equivalent	ASTM A153 or B695 Class 55 or F2329	FBX12b
f11	2	1"—8 UNC [M24x3] Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FNX24a
f12	26	16D Double Head Nail	—	—	—

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

Steel Post Terminal  
Anchorage  
Test No. SPTA—1

Bill of Materials

DWG. NAME.

SPTA—1\_R9

SCALE: None

UNITS: In./mm

SHEET:  
29 of 30

DATE:  
8/21/2020

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JEK/SBW

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Item No.	QTY.	Description	Material Specification	Treatment Specification	Hardware Guide
g1	2	1" [25] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC24a
g2	8	7/8" [22] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	—
g3	38	5/8" [16] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC16a
g4	8	1/2" [13] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC14a
g5	32	7/16" [11] Dia. Plain Round Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC12a
h1	2	Anchor Bracket Assembly	ASTM A36	ASTM A123	FPA01
h2	1	Upstream Ground Strut	ASTM A36	ASTM A123	—
h3	1	Anchor Cable Assembly	—	—	FCA01
h4	1	8"x6 1/4"x5/8" [203x159x16] Bearing Plate Base	ASTM A36	—	—
h5	1	8"x1 1/2"x1" [203x38x25] Bearing Plate Flange	ASTM A36	—	—
h6	1	8"x8"x5/8" [203x203x16] Anchor Bearing Plate	ASTM A36	ASTM A123	FPB01
h7	1	2 3/8" [60] O.D. x 6" [152] Long BCT Post Sleeve	ASTM A53 Gr. B Schedule 40	ASTM A123	FMM02
h8	1	2 3/8" [60] O.D. x 3 15/16" [100] Long Post Sleeve	ASTM A53 Gr. B Schedule 40	ASTM A123	—



Midwest Roadside  
Safety Facility

Steel Post Terminal  
Anchorage  
Test No. SPTA-1

Bill of Materials

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SCALE: None  
UNITS: In.[mm]

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REV.	DATE OF ISSUE	Page	NATURE OF CHANGES	REVIEWER	REVISED BY
0	5/22/2018	–	Original created from drawings: MGSPost-Curb-8_R0, PostC4_R1, GLSC3_R12, SPArm_R5. Changes made according to email from Karla listing system details.	–	MKB
1	5/25/2018	–	General drawing sheet reordering. General reordering of Detail callouts. General item renumbering.	JEK	MKB
		1	Dim edit. Note edit. Span a3 moved in system.		
		2	Dim edit. Callout edit.		
		3	Dim edit. Previous anchor section replaced with MGS anchor section. Callout edit.		
		4	Dim edit. Callout edit.		
		5	Note add. Detail add.		
		6–7	Note edit. Callout edit.		
		9	New sheet showing upper and lower post weld assemblies.		
		13	New sheet showing MGS anchor posts.		
		15	New sheet showing ground strut for MGS anchor section.		
		19–20	Added BOM for sub-assemblies.		
		22	Removed details for Part e7.		
		23	Added post components associated with MGS anchor section.		
		24	New sheet showing Bearing Plate Assembly and components.		
		25	Callout edit.		
		26–27	Added hardware components associated with MGS anchor section.		
		BOM	New: b7,b8,c4,c5,f2,f5,f12,h2,h3,h4,h5. Description: f7,f8,f9. MaterialSpec: f9. TreatmentSpec: b3,b4,b5,d1,d2,d3,d4,d5,f7,f9. HWG: f7,f8,f10,g2,g5.		
2	6/5/2018	2	Edited detail B label. Removed part no. g3 washer.	JEK	JDJ
		3	Added dimensions.		
		4	Added dimensions.		
		5	Removed note. Decreased length of part no. f4.		
		6	Adjusted part callout.		
		7	Edited dimension.		
		8	Added scale note.		

2	6/5/2018	9	Added part no. h6 to upper post assembly. Removed all center lines and marks. Adjusted weld symbols. Added detail view K. Edited sub-assembly BOM.	JEK	JDJ
		10	Edited Dimensions. Edited part no. b3 label.		
		15	Edited sub-assembly BOM description.		
		16	Edited sheet title. Edited view label.		
		20	Adjusted row spacing on sub-assembly BOM.		
		24	Added part callouts. Edited description and material specification on sub-assembly BOM.		
		25	Edited detail O and detail P view labels.		
		26	Added part no. f5. Changed scale to 1:3.		
		BOM	Added part no. f5. Edited treatment specification for part nos. c4 and c5. Combined part nos. f11 and f12.		
3	6/6/2018	8	Removed spacing in weld notes. Adjusted exploded view.	JEK	JDJ
		9	Edited weld notes.		
		10	Edited dimensions.		
		24	Edited sub-assembly BOM.		
4	6/12/2018	3	Label edit.	KAL	JEK
		4	Dim add. Label add. Label edit. General shift.		
		5	Label edit.		
		6	Label remove. Label edit.		
		7	Note 1 edit. Dim edit. Label edit.		
		9	Tables merged.		
		15	Sub-assembly BOM removed. Ground strut treated as one part. Label edits. Sheet title edit.		
		19	Sub-assembly BOM removed. BCT anchor cable treated as one part. Label edits.		
		20	Nut and washer added to assembly.		
5	6/14/2018	—	Flipped system.	JCH	JDJ
		1	Dimension Edit.		



		12	Added hole to part no. b1. Dimension Edit.		
6	6/15/2018	1	Adjusted section view line.	JEK	JDJ
		2	Edited part callouts and detail view B.		
		9	Edited item number on upper post assembly BOM.		
		12	Removed hole. Changed orientation for part nos. b1, b2 and alternate blockout option.		
7	7/31/2018	8	Note 3 add.	KAL	JEK
8	8/21/2020	24	Edited weld note.	KAL	SBW
9	11/25/2020	8	Edited weld note on Detail J, changing weld size from 1/4" to 3/16"	KAL	CN
		9	Edited weld notes on Upper Post Assembly to match Detail J.		