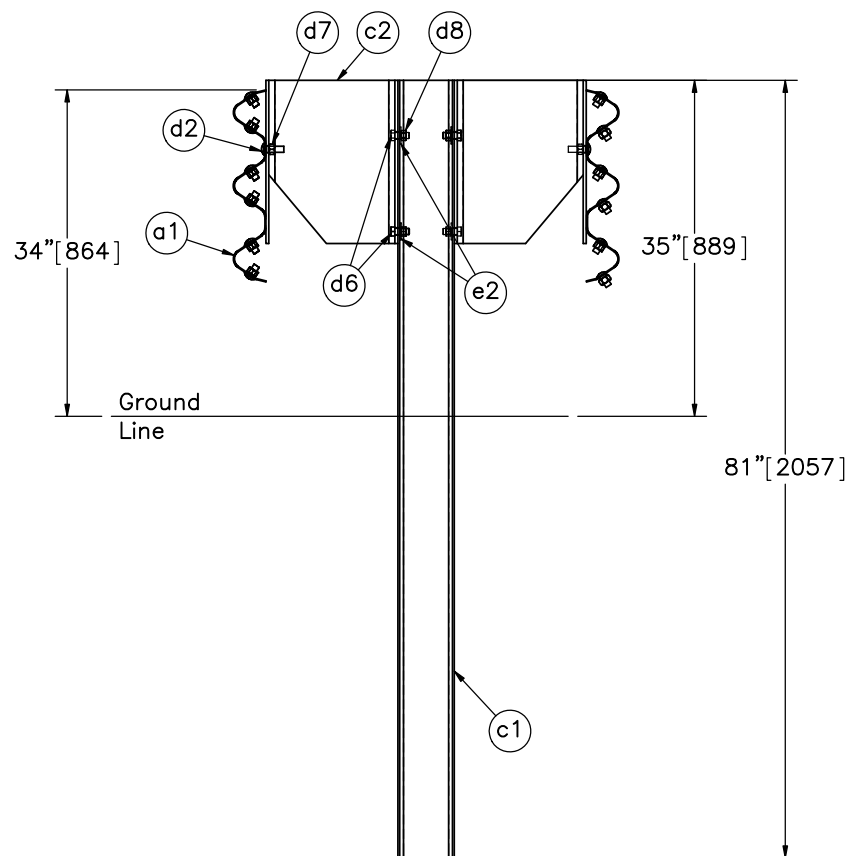
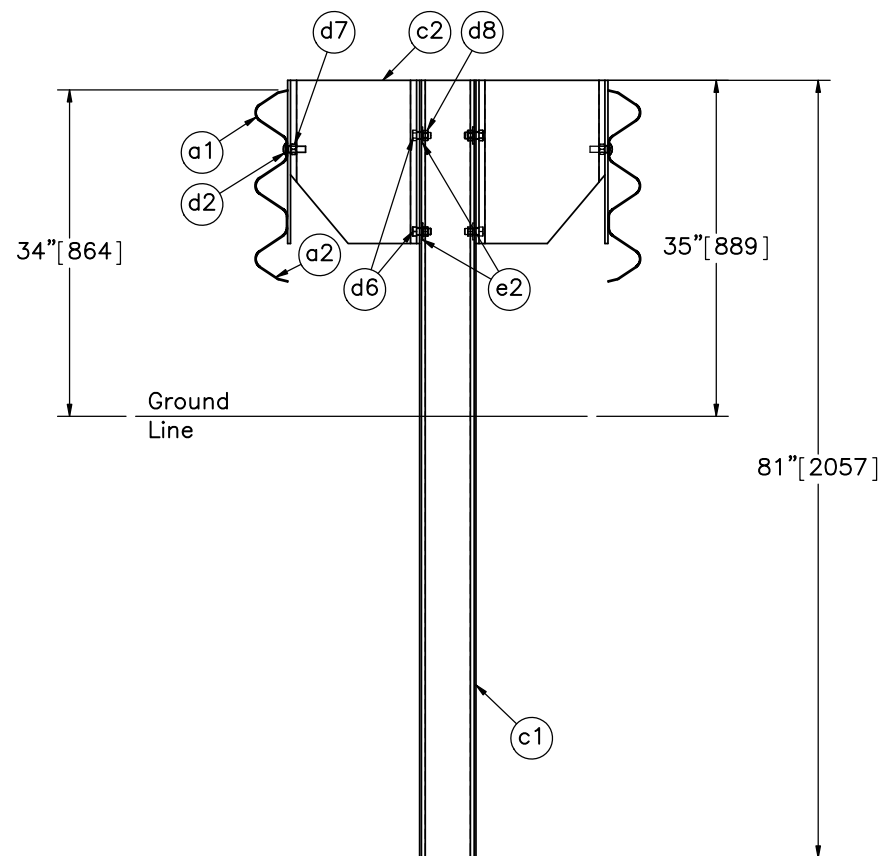




SECTION A-A
All Odd Post Nos. Excluding Post Nos. 1 & 29



SECTION B-B
All Even Post Nos. Excluding Post Nos. 2 & 28

Note: (1) Backup plates (part a2) are placed at non-splice post locations.
(2) Two post bolts (part d6) diagonally opposite (both sides) with washer (part e2) under post nut.



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Section Views

DWG. NAME.
MTB-2_R7

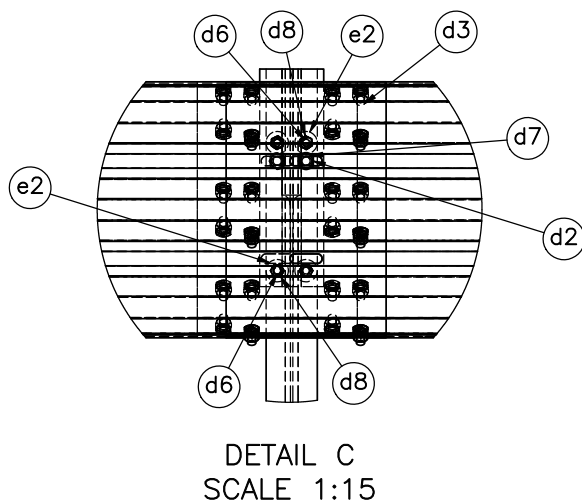
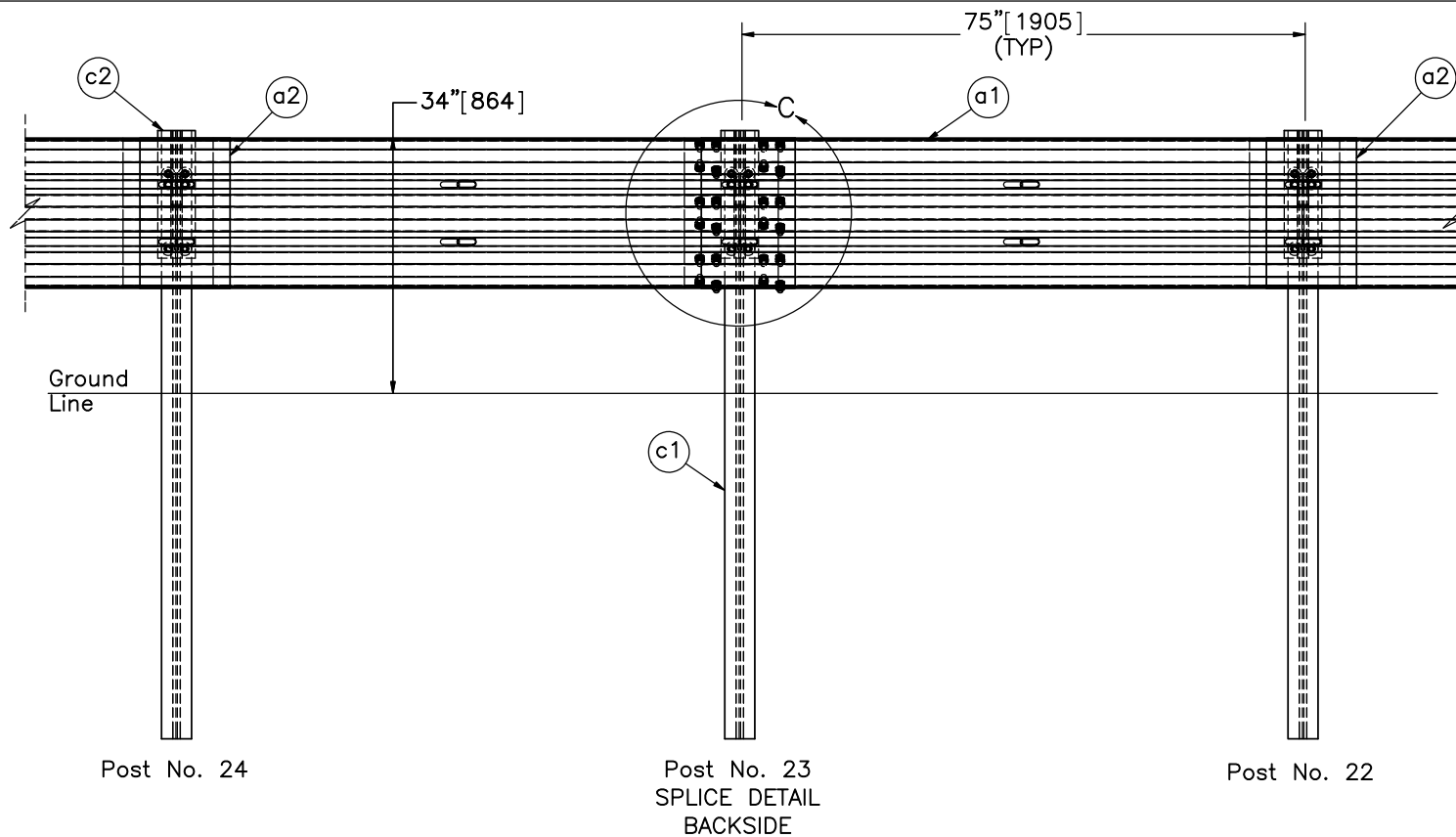
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UNITS: in./mm

SHEET:
2 of 13

DATE:
1/18/2019

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EK/AJS

REV. BY:
JEK/RWB/K
AL



- Note: (1) Guardrail bolts (part d2) on the upstream side of the web.
 (2) Upper blockout attachment bolt (part d6) on the downstream side of the web on the traffic side. Lower bolt on upstream side of the web on the traffic side.



Midwest Roadside
Safety Facility

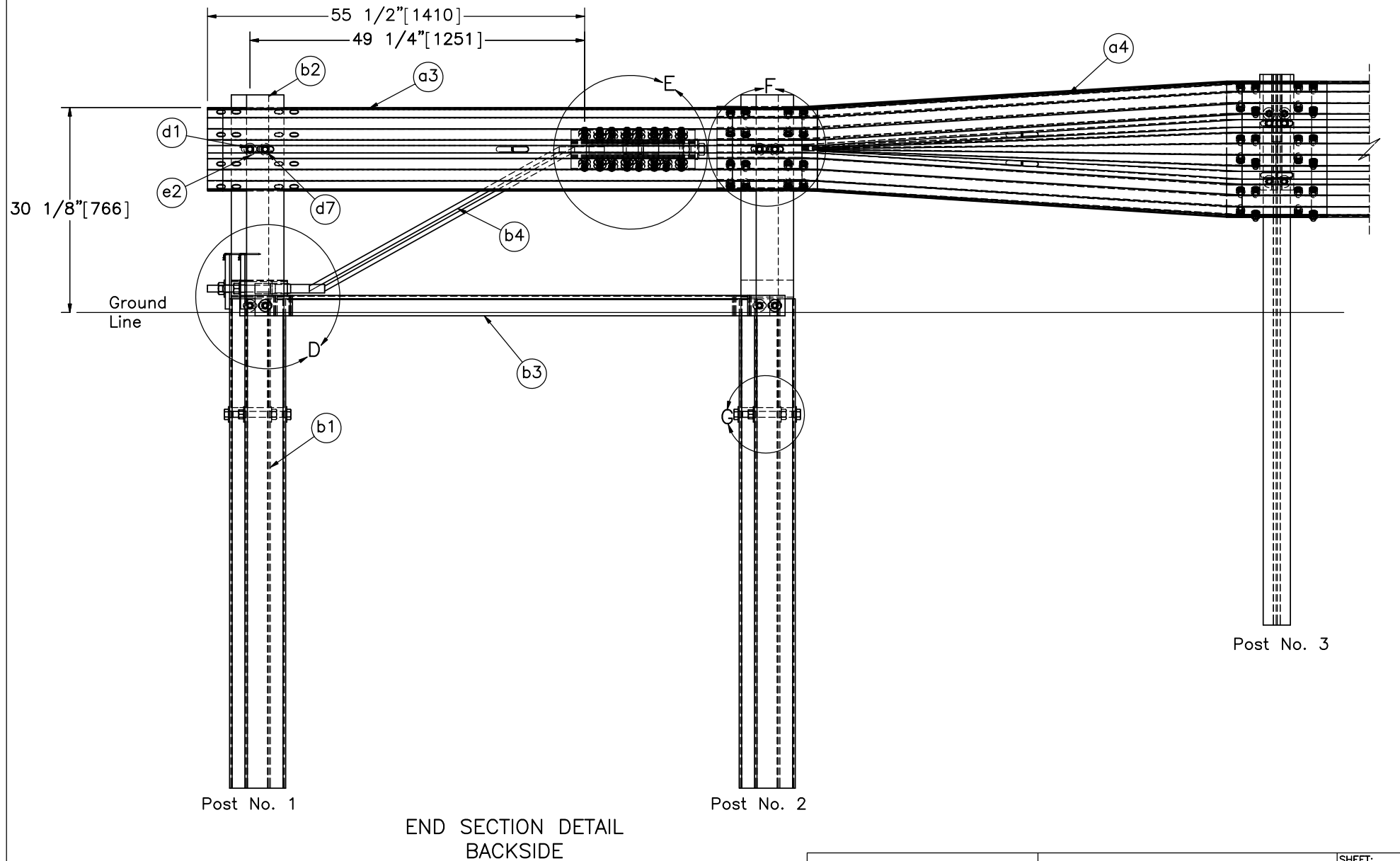
NJ/CA Modified
Thrie Beam
Test No. MTB-2

Splice and Post Detail

DWG. NAME.
MTB-2_R7

SCALE: 1:25
UNITS: in./mm

SHEET:
3 of 13
DATE:
1/18/2019
DRAWN BY:
GRL/MBD/J
EK/AJS
REV. BY:
JEK/RWB/K
AL



Note: (1) Downstream end section (post nos. 28 & 29) is mirrored.
 (2) BCT post (part b2) is modified to achieve 30 1/8" [765] rail height.
 (3) Front and backside rails are offset 2 1/4" [57] from each other.



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

End Section Details

DWG. NAME.
MTB-2_R7

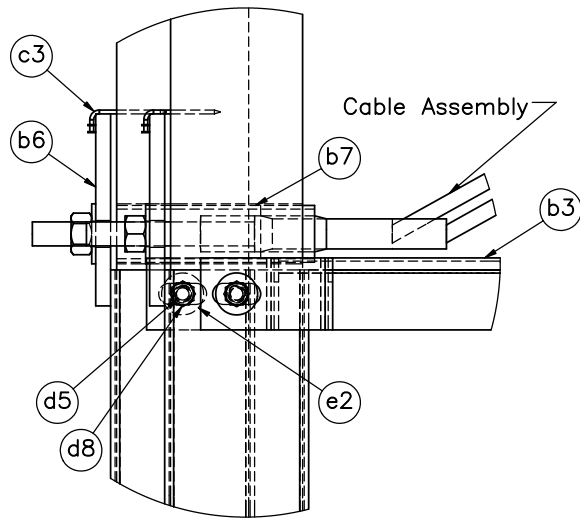
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SHEET:
4 of 13

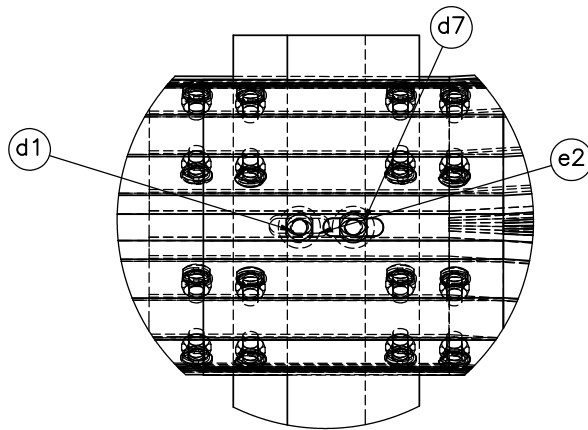
DATE:
1/18/2019

DRAWN BY:
GRL/MBD/J
EK/AJS

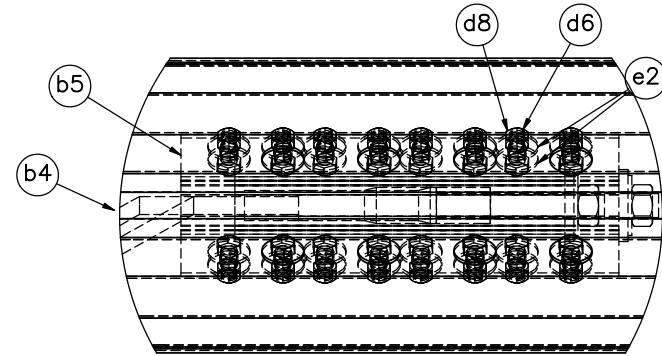
REV. BY:
JEK/RWB/K
AL



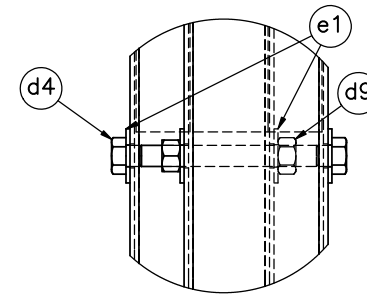
DETAIL D



DETAIL F



DETAIL E



DETAIL G

Note: (1) Additional washer (part e2) on the opposite side under the head of bolt (part d5).



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

BCT Anchor and Splice Details

DWG. NAME:
MTB-2_R7

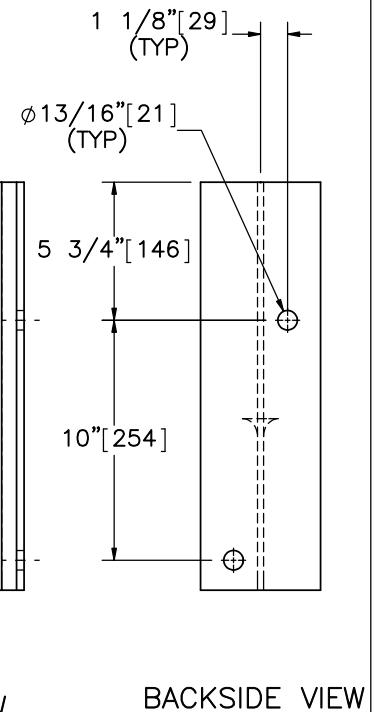
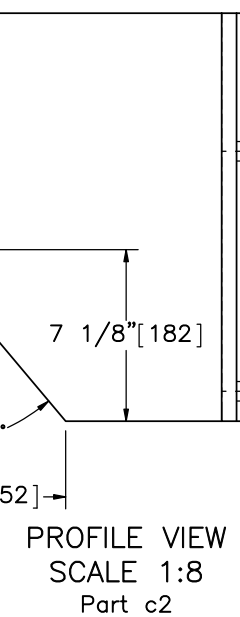
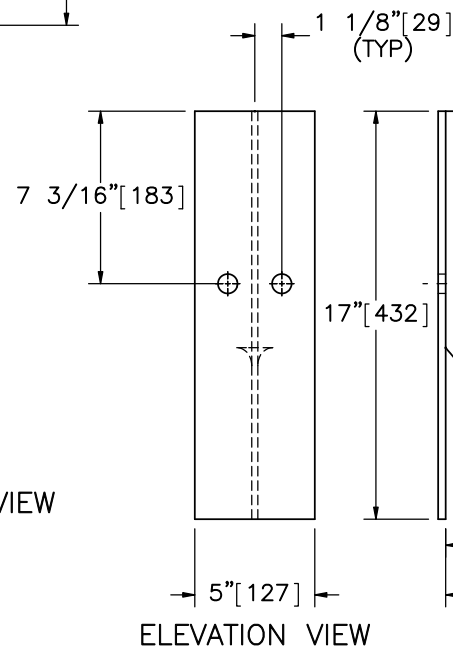
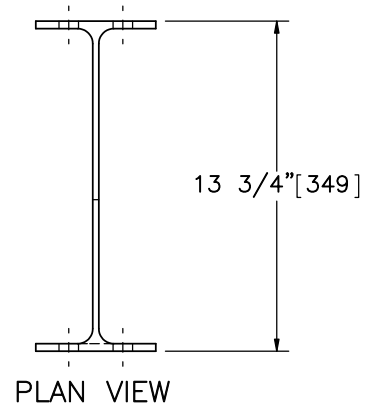
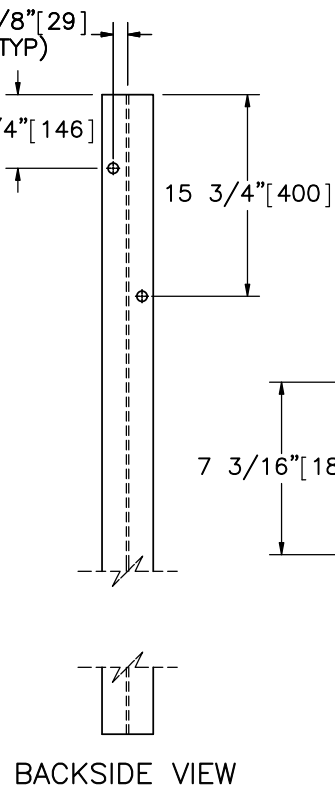
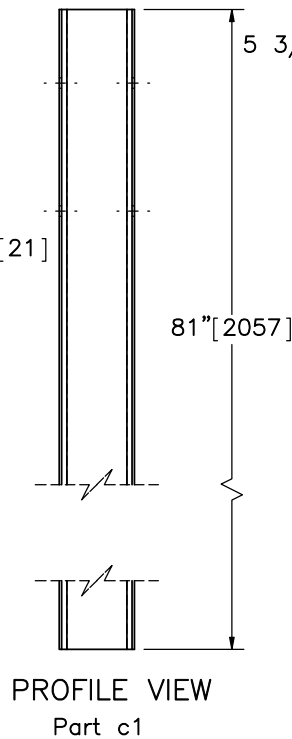
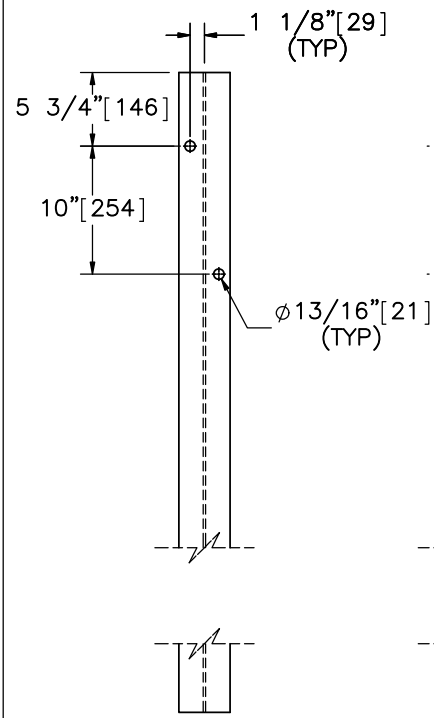
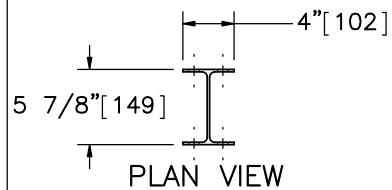
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UNITS: in./mm

SHEET:
5 of 13

DATE:
1/18/2019

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EK/AJS

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AL



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Post Nos. 3-27 Components

DWG. NAME.
MTB-2_R7

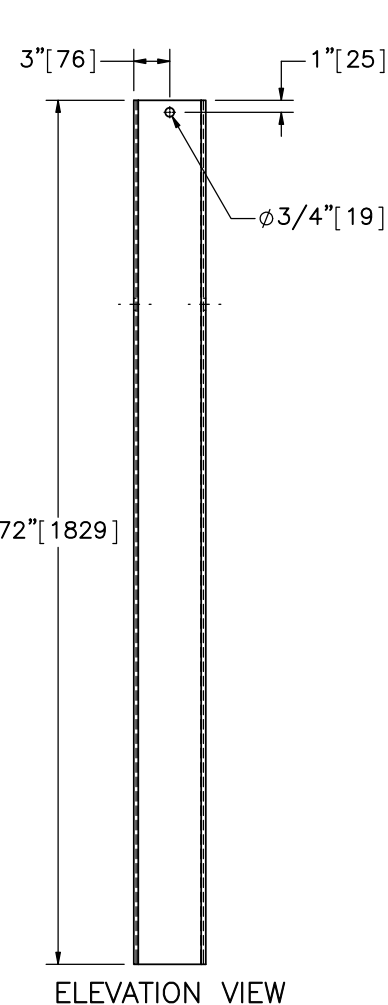
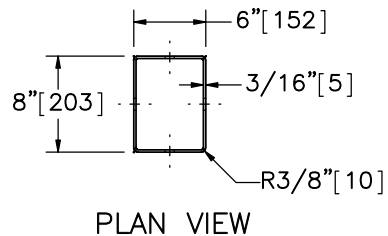
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SHEET:
6 of 13

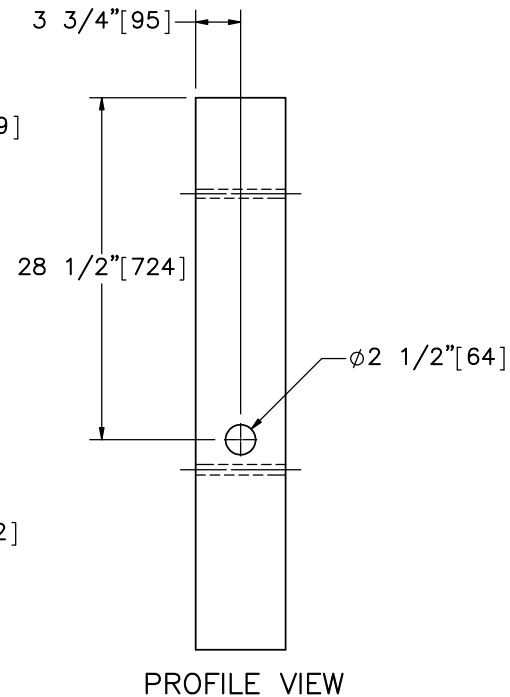
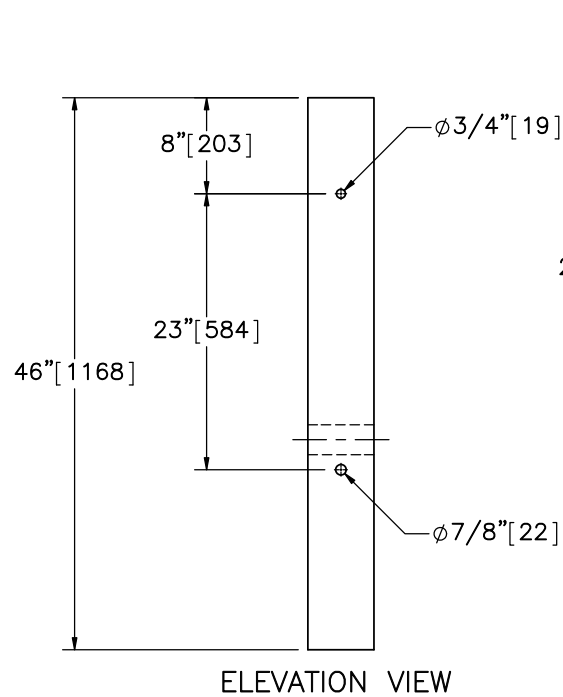
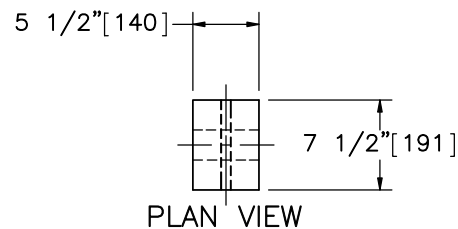
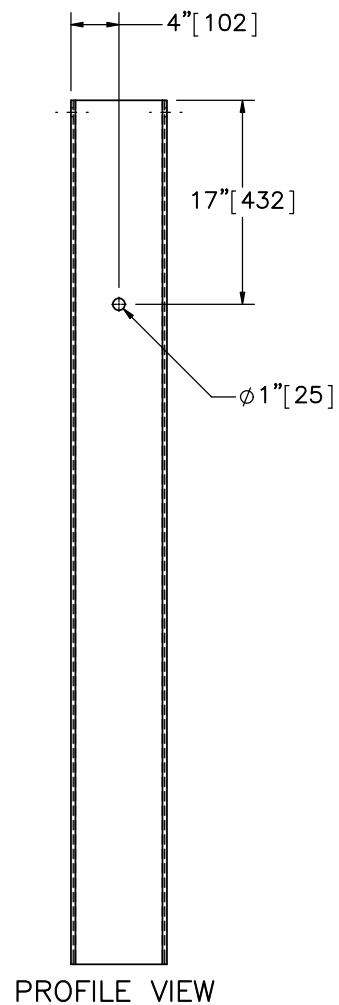
DATE:
1/18/2019

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EK/AJS

REV. BY:
JEK/RWB/K
AL



Part b1

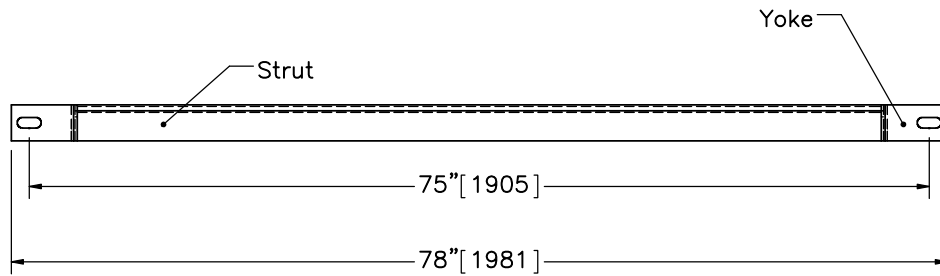
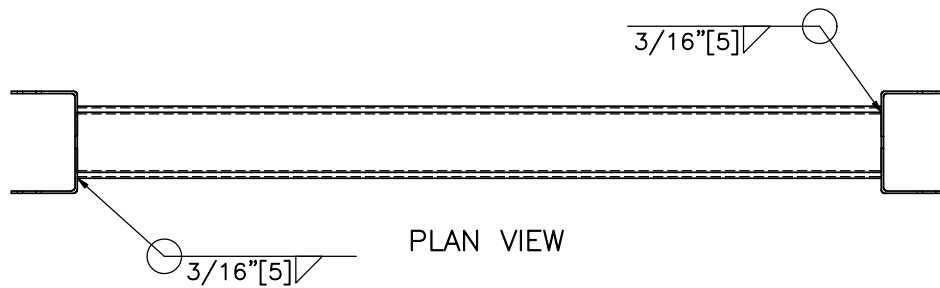


Part b2

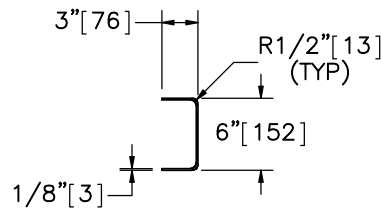
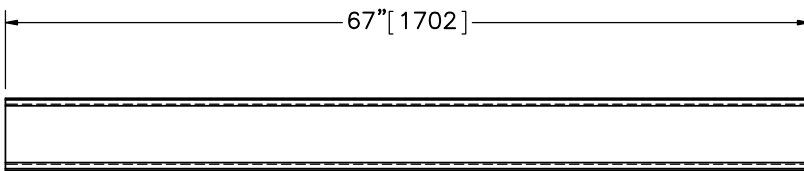
Note: (1) BCT post (part b2) is modified for new rail height.

	NJ/CA Modified Thrie Beam Test No. MTB-2		SHEET: 7 of 13
	Foundation Tube and BCT Timber Post Details		DATE: 1/18/2019
DWG. NAME: MTB-2_R7	SCALE: 1:16 UNITS: in.[mm]	REV. BY: JEK/RWB/KAL	

Midwest Roadside
Safety Facility

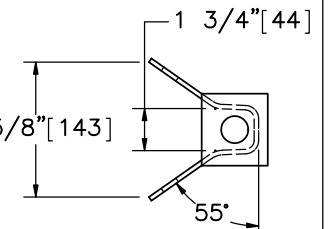
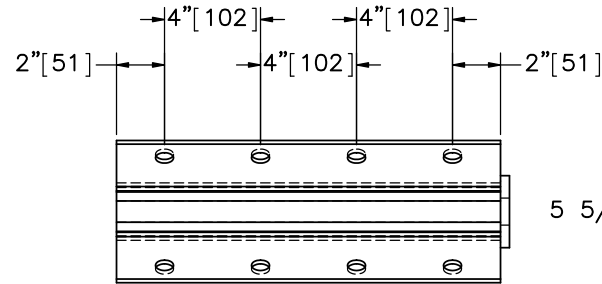
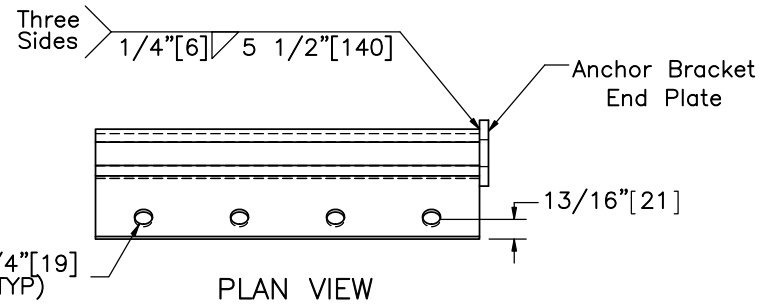


Part b3

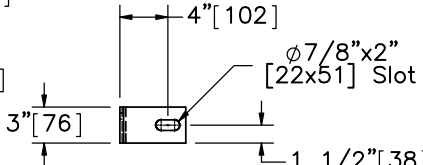
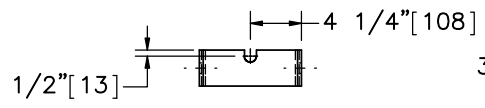
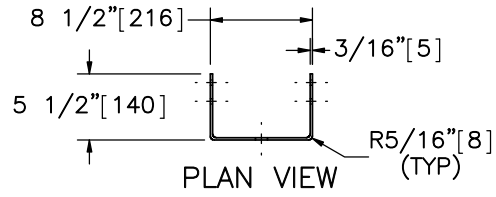


ELEVATION VIEW

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



SCALE 1:8
Part b5



Yoke



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Ground Strut Details

DWG. NAME.
MTB-2_R7

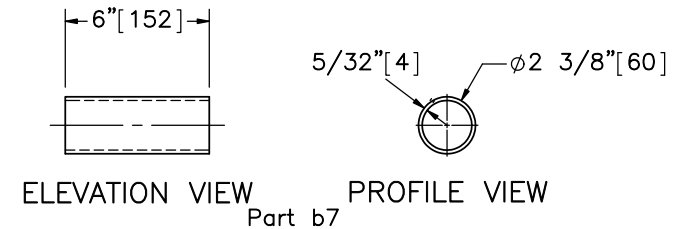
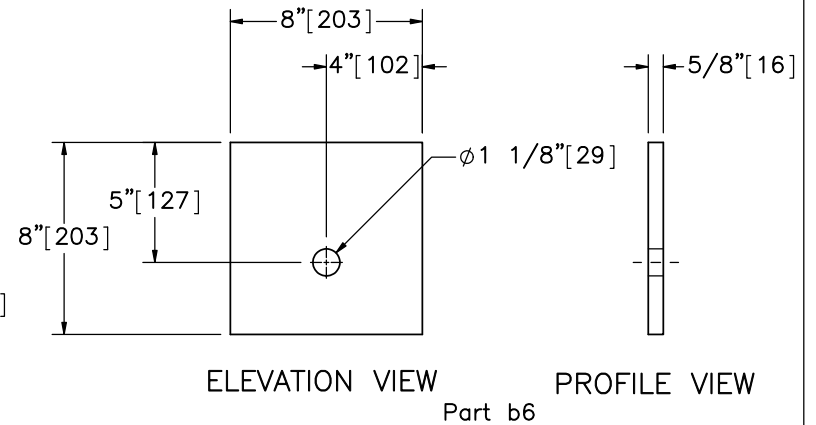
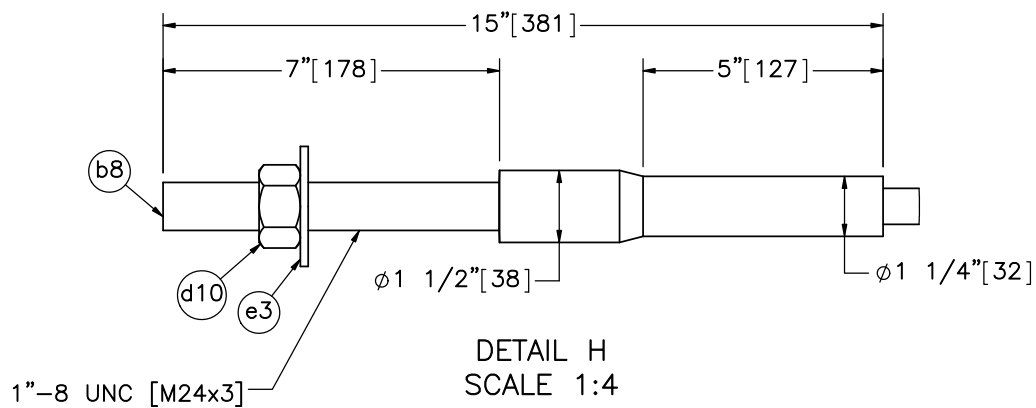
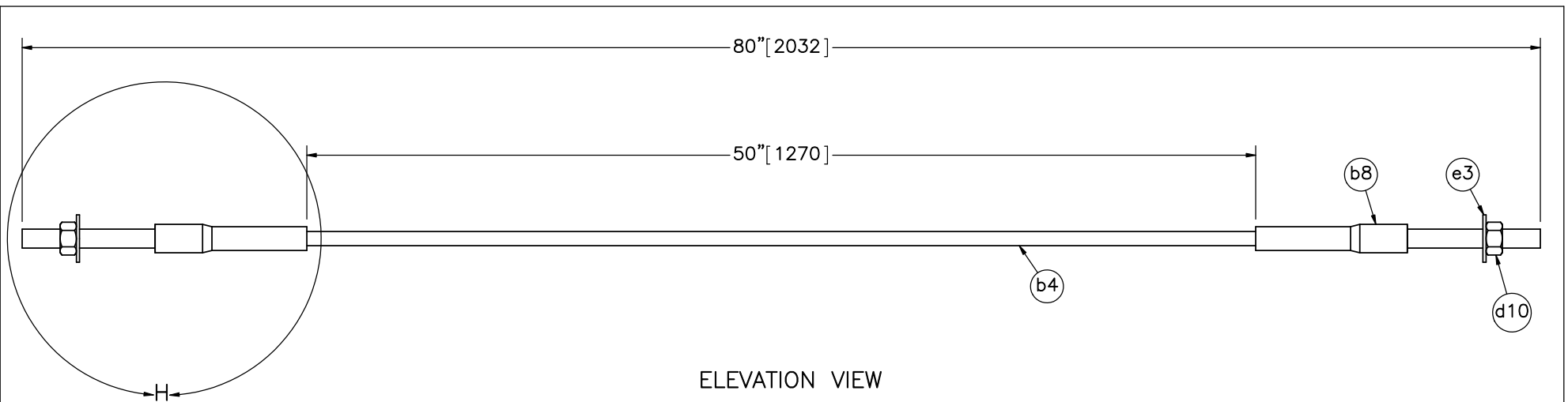
SCALE: 1:16
UNITS: in.[mm]

SHEET:
8 of 13

DATE:
1/18/2019

DRAWN BY:
GRL/MBD/J
EK/AJS

REV. BY:
JEK/RWB/K
AL



Item No.	QTY.	Description	Material Specification	Treatment Specification	Hardware Guide
—	4	Cable Assembly	—	—	FCA01
b4	1	3/4" [19] Dia. 6x19 WRC Wire Rope	ASTM A741 Type II	Class A Coating	—
b8	2	BCT Anchor Cable End Swaged Fitting	Fitting — ASTM A576 Gr. 1035 Stud — ASTM F568 Class C	Fitting — ASTM A153 Stud — ASTM A153 or B695	—
d10	2	1"-8 UNC [M24x3] Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FNX24a
e3	2	1" [25] Dia. Plain USS Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC24a



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Cable Assembly

DWG. NAME.
MTB-2_R7

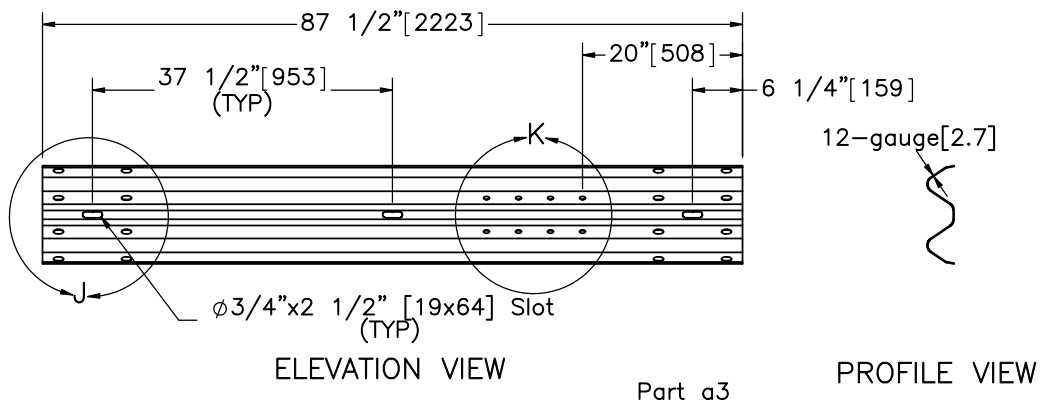
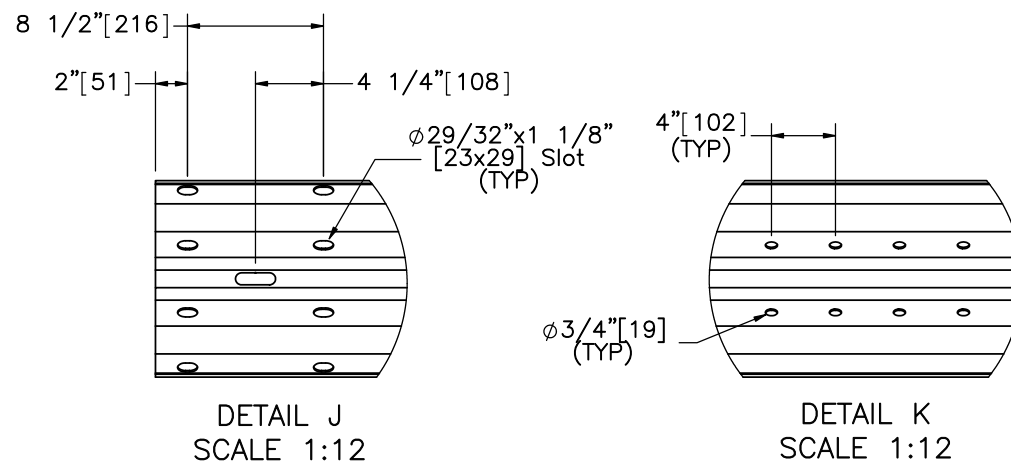
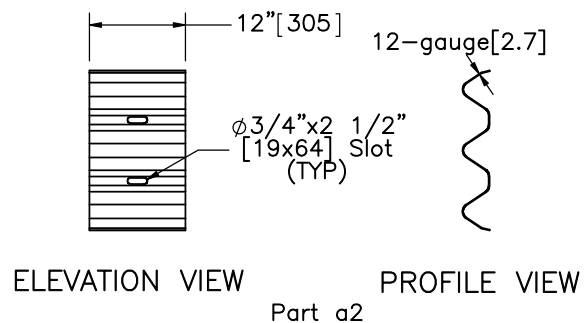
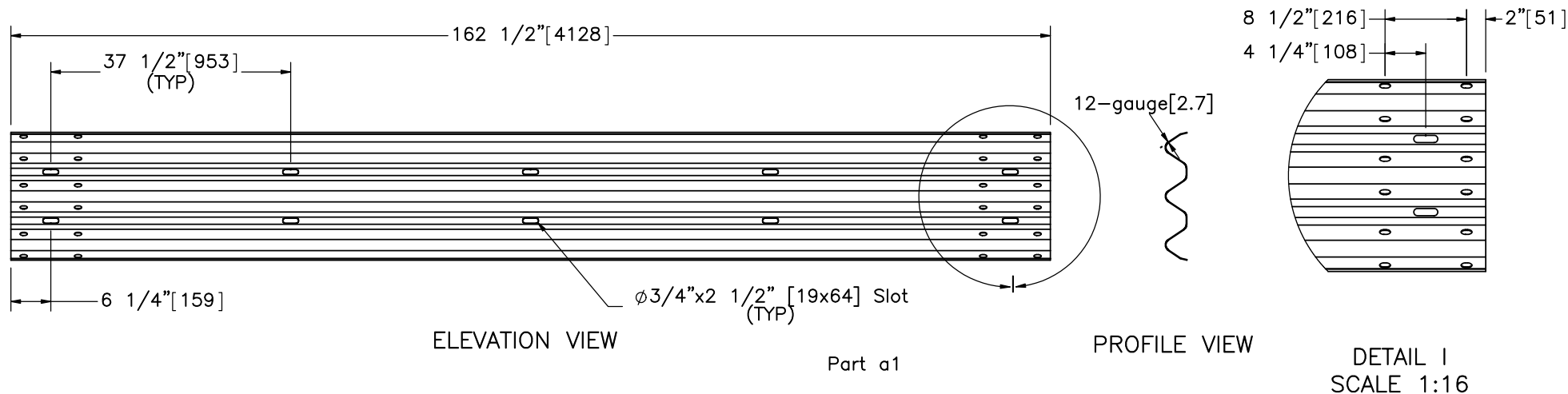
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UNITS: in./mm

REV. BY:
JEK/RWB/K
AL

SHEET:
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DATE:
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DRAWN BY:
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Note: (1) Backup plate (part a2) placed at non-splice posts.



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Guardrail Section Details

DWG. NAME.
MTB-2_R7

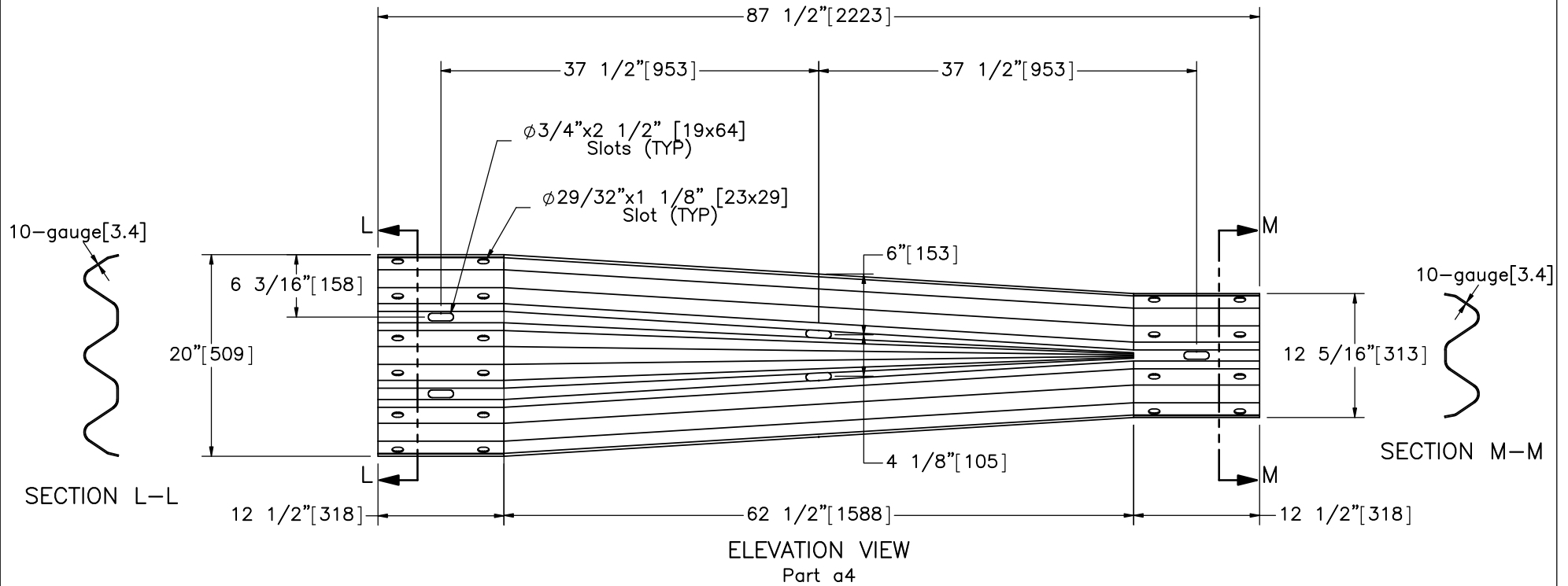
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UNITS: in./mm

SHEET:
10 of 13

DATE:
1/18/2019

DRAWN BY:
GRL/MBD/J
EK/AJS

REV. BY:
JEK/RWB/K
AL



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Rail Transition Details

DWG. NAME.
MTB-2_R7

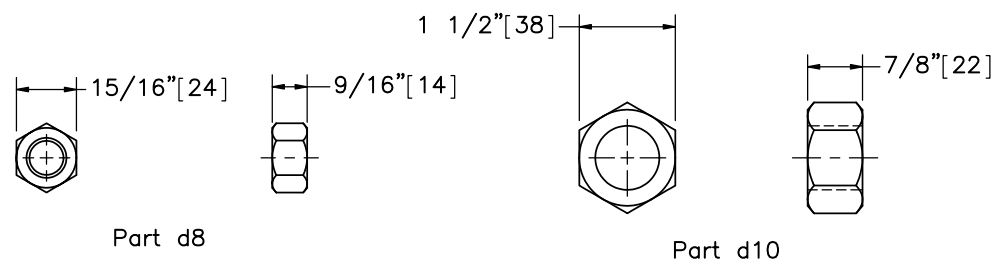
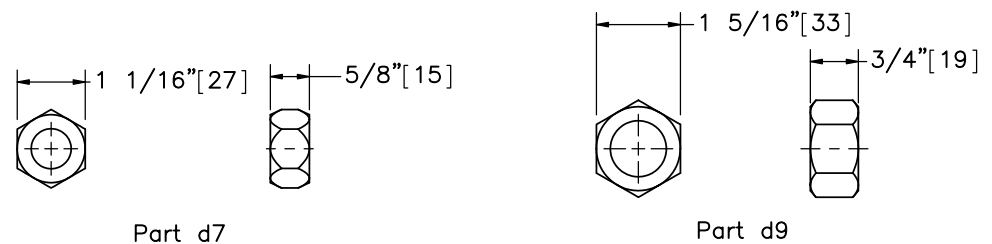
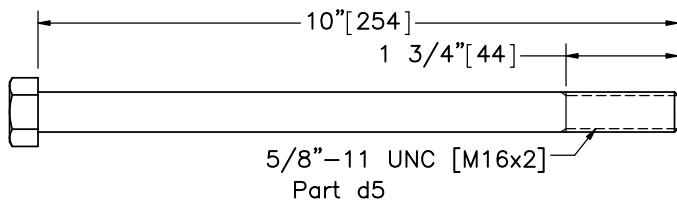
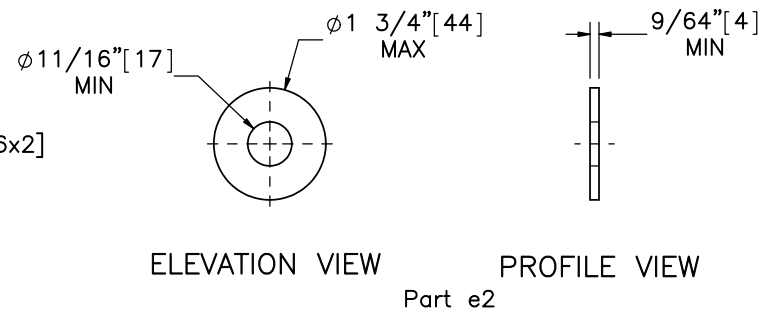
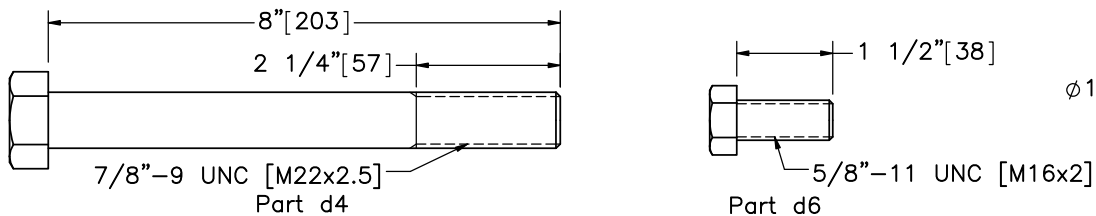
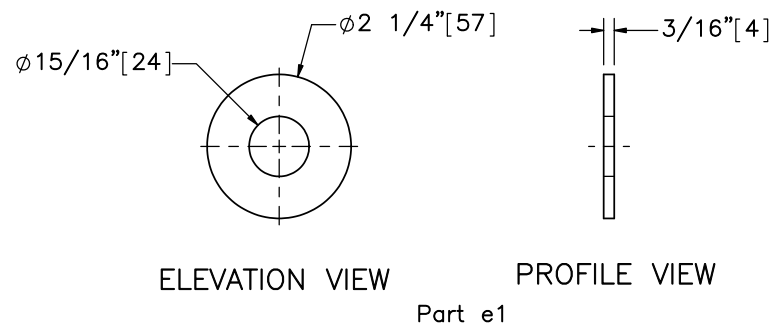
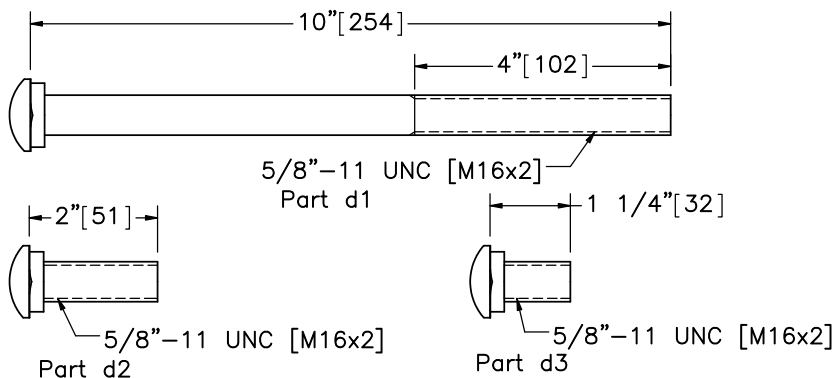
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UNITS: in./mm

SHEET:
11 of 13

DATE:
1/18/2019

DRAWN BY:
GRL/MBD/J
EK/AJS

REV. BY:
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Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Hardware

DWG. NAME.
MTB-2_R7

SCALE: 1:3
UNITS: in.[mm]

SHEET:
12 of 13

DATE:
1/18/2019

DRAWN BY:
GRL/MBD/J
EK/AJS

REV. BY:
JEK/RWB/K
AL

Item No.	QTY.	Description	Material Specification	Treatment Specification	Hardware Guide
a1	24	12'-6" [3,810] 12-gauge [2.7] Thrie Beam Section	AASHTO M180	ASTM A123 or A653	RTM04a
a2	24	12" [305] 12-gauge [2.7] Thrie Beam Backup Plate	AASHTO M180	ASTM A123 or A653	RTB01a
a3	4	6'-3" [3,810] 12-gauge [2.7] W-Beam MGS End Section	AASHTO M180	ASTM A123 or A653	-
a4	4	10-gauge [3.4] Symmetrical W-beam to Thrie Beam Transition	AASHTO M180	ASTM A123 or A653	RWT01b
b1	8	72" [1,829] Long Foundation Tube	ASTM A500 Gr. B	ASTM A123	PTE06
b2	8	BCT Timber Post - MGS Height - Not Standard	SYP Grade No. 1 or better (No knots 18" [457] above or below ground tension face)	-	-
b3	4	Ground Strut Assembly	ASTM A36	ASTM A123	PFP01
b4	4	3/4" [19] Dia. 6x19 IWRC Wire Rope	ASTM A741 Type II	Class A Coating	-
b5	4	Anchor Bracket Assembly	ASTM A36	ASTM A123	FPA01
b6	4	8"x8"x5/8" [203x203x16] Anchor Bearing Plate	ASTM A36	ASTM A123	FPB01
b7	4	2 3/8" [60] O.D. x 6" [152] Long BCT Post Sleeve	ASTM A53 Gr. B Schedule 40	ASTM A123	FMM02
b8	8	BCT Anchor Cable End Swaged Fitting	Fitting - ASTM A576 Gr. 1035 Stud - ASTM F568 Class C	Fitting - ASTM A153 Stud - ASTM A153 or B695	-
c1	25	W6x8.5 [W152x12.6], 81" [2,057] Long Steel Post	ASTM A36	ASTM A123	-
c2	50	W14x22 [356x32.7], 17" [432] Long Steel Blockout	ASTM A992	ASTM A123	-
c3	4	16D Double Head Nail	-	-	-
d1	8	5/8"-11 UNC [M16x2], 10" [254] Long Guardrail Bolt	ASTM A307 Gr. A	ASTM A153 or B695 Class 55 or F2329	FBB03
d2	50	5/8"-11 UNC [M16x2], 2" [51] Long Guardrail Bolt	ASTM A307 Gr. A	ASTM A153 or B695 Class 55 or F2329	FBB02
d3	344	5/8"-11 UNC [M16x2], 1 1/4" [32] Long Guardrail Bolt	ASTM A307 Gr. A	ASTM A153 or B695 Class 55 or F2329	FBB01
d4	8	7/8"-9 UNC [M22x2.5], 8" [203] Long Hex Head Bolt	ASTM A307 Gr. A or equivalent	ASTM A153 or B695 Class 55 or F2329	-
d5	8	5/8"-11 UNC [M16x2], 10" [254] Long Hex Head Bolt	ASTM A307 Gr. A or equivalent	ASTM A153 or B695 Class 55 or F2329	FBX16a
d6	132	5/8"-11 UNC [M16x2], 1 1/2" [38] Long Hex Head Bolt	ASTM A307 Gr. A or equivalent	ASTM A153 or B695 Class 55 or F2329	FBX16a
d7	402	5/8"-11 UNC [M16x2] Heavy Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FNX16b
d8	140	5/8"-11 UNC [M16x2] Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FNX16a
d9	8	7/8"-9 UNC [M22x2.5] Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FNX22a
d10	8	1"-8 UNC [M24x3] Hex Nut	ASTM A563A or equivalent	ASTM A153 or B695 Class 55 or F2329	FNX24a
e1	16	7/8" [22] Dia. Plain USS Washer	ASTM F844	ASTM A123 or A153 or F2329	-
e2	188	5/8" [16] Dia. Plain USS Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC16a
e3	8	1" [25] Dia. Plain USS Washer	ASTM F844	ASTM A123 or A153 or F2329	FWC24a



Midwest Roadside
Safety Facility

NJ/CA Modified
Thrie Beam
Test No. MTB-2

Bill of Materials

DWG. NAME.
MTB-2_R7

SCALE: 1:384
UNITS: in.[mm]

SHEET:
13 of 13

DATE:
1/18/2019

DRAWN BY:
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EK/AJS

REV. BY:
JEK/RWB/K
AL

REV.	DATE OF ISSUE	Page	NATURE OF CHANGES	REVIEWER	REVISED BY
0	8/17/2018	—	New drawing created from RNJ_CA_Modified_Thrie_Beam.	—	GRL
1	8/21/2018	1	Impact added. Notes 1, 2, & 4 modified.	JEK	MBD
		2	Parts hidden. Dimension line moved. Note 1 added.		
		3	Note 2 modified.		
		4	Labels moved.		
		6	Centerline moved. Dimensions added.		
		10	Part a2 correct profile view inserted.		
		BOM	Item no. d2 quantity changed.		
2	8/22/2018	2	Note added.	RWB	GRL
		3	Edit note.		
		BOM	Description: d1. Mtrl: d2-3.		
3	8/29/2018	—	Moved bolts (part d2) to the upstream side of the post.	JEK	GRL
		1	Note add.		
		3	Note edit.		
		4	Note add.		
4	10/17/2018	6	Part c1 hole edits.	RWB	JEK
5	11/2/2018	—	Standards updates throughout. Separation of bolts/nuts. Cable to individual components. Washer description updates.	KAL	JEK
6	1/11/2019	—	Spacing changes made to model.	JEK	AJS
7	1/18/2019	1	Note edit.	JEK	AJS
		4	Note edit.		
		5	Detail edit.		