

- Notes: (1) Test shall be performed according to test designation no. 3-11 of MASH.  
 (2) The impact location is 51 3/16" [1,300] upstream of the joint between barrier nos. 9 and 10.  
 (3) Use native soil fill under asphalt.  
 (4) The ends of the barrier should be pulled until there is no slack in the joints.



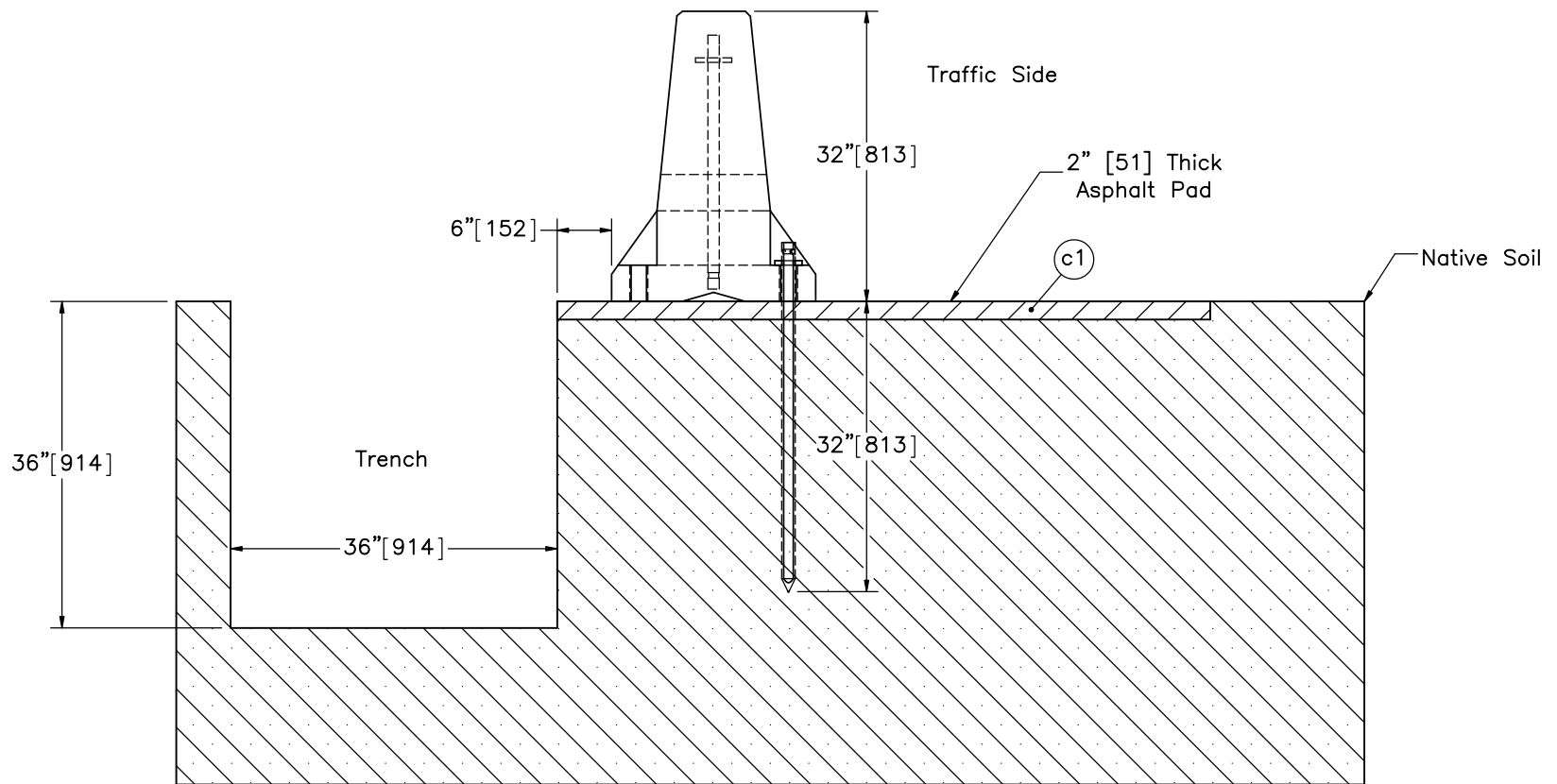
Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2  
System Layout

DWG. NAME.  
WITD-2\_R12

SCALE: 1:270  
UNITS: in.[mm]

SHEET:  
1 of 11  
DATE:  
1/14/2019  
DRAWN BY:  
MES/JEK/  
DTM  
REV. BY:  
JCH/RWB/  
JEK/KAL



SECTION A-A



Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2

System Profile

DWG. NAME.  
WITD-2\_R12

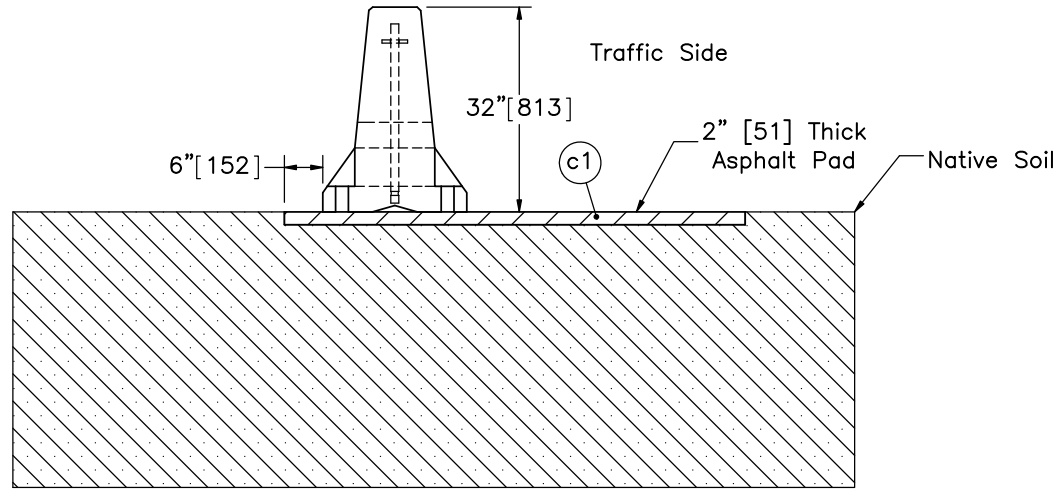
SCALE: 1:20  
UNITS: in.[mm]

SHEET:  
2 of 11

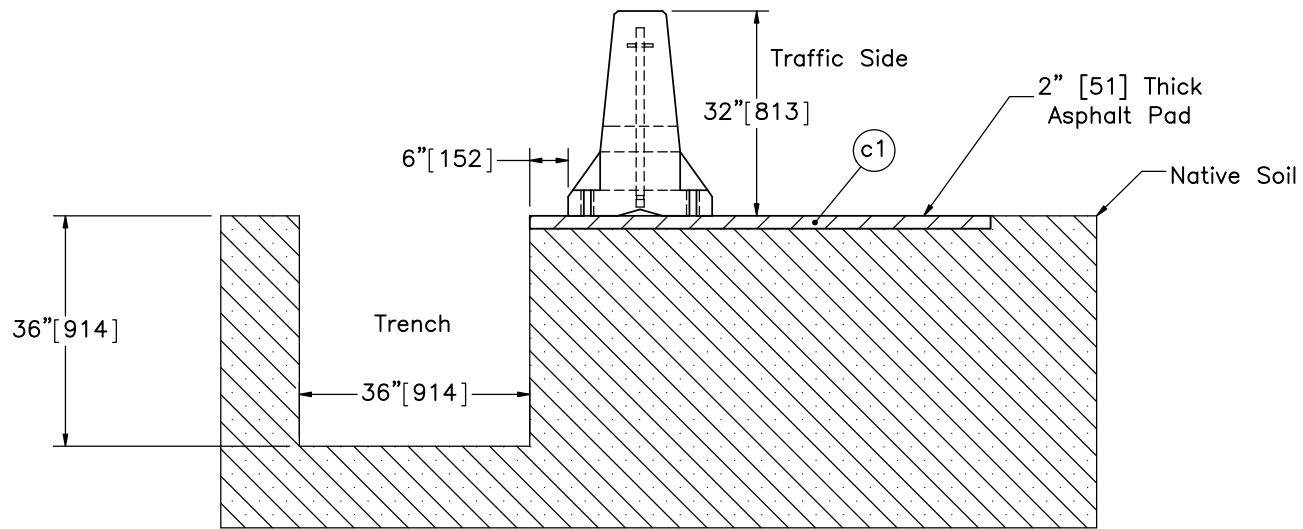
DATE:  
1/14/2019

DRAWN BY:  
MES/JEK/  
DTM

REV. BY:  
JCH/RWB/  
JEK/KAL



SECTION B-B



SECTION C-C



Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-

Down

Test No. WITD-2

System Profile

DWG. NAME.  
WITD-2\_R12

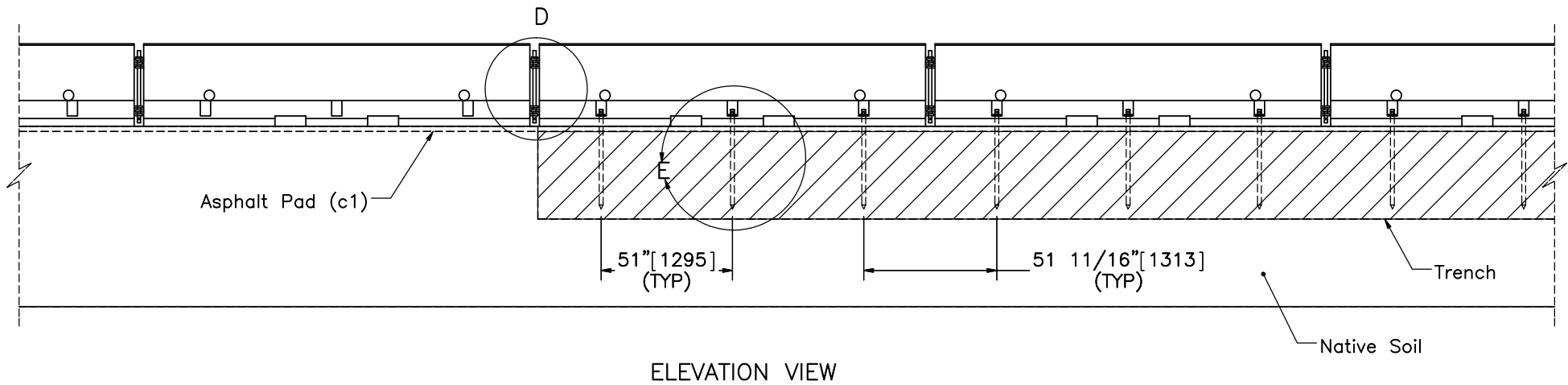
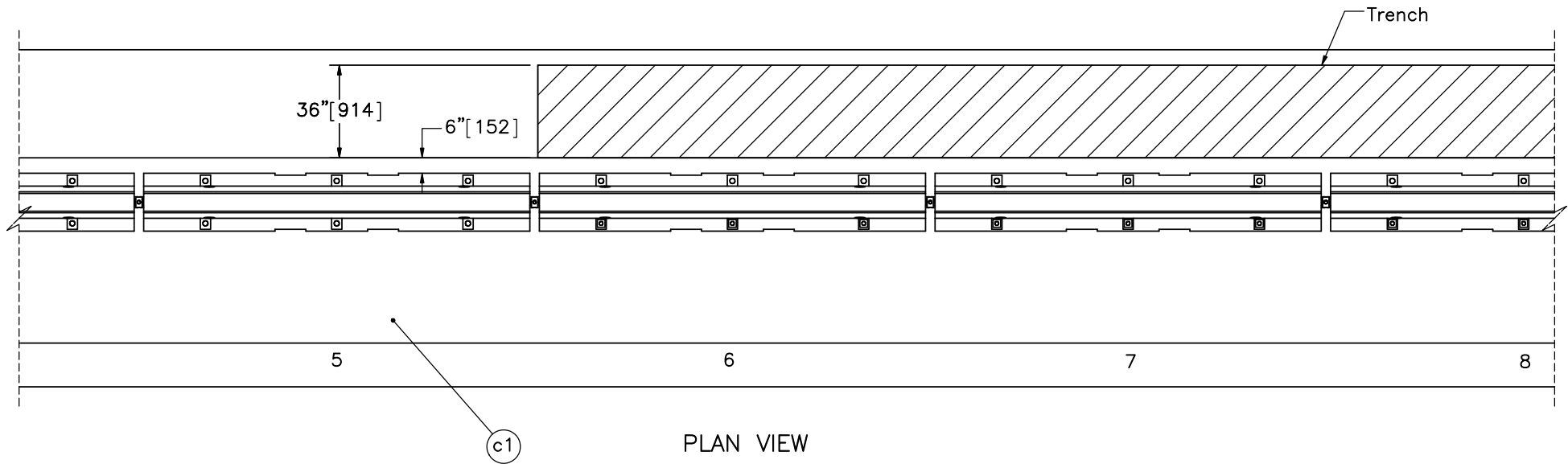
SCALE: 1:30  
UNITS: in.[mm]

SHEET:  
3 of 11

DATE:  
1/14/2019

DRAWN BY:  
MES/JEK/  
DTM

REV. BY:  
JCH/RWB/  
JEK/KAL



Note: (1) Barrier nos. 6-14 are anchored in all traffic-side bolt pockets.



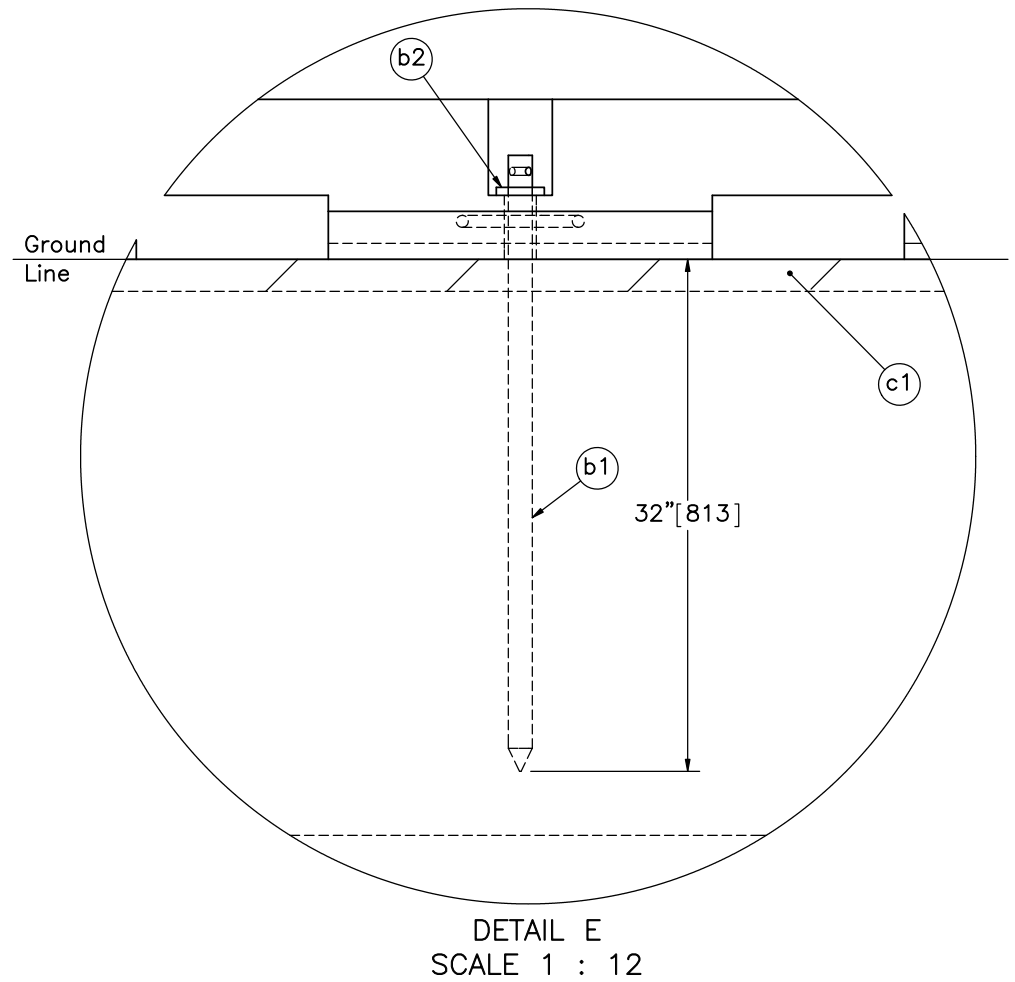
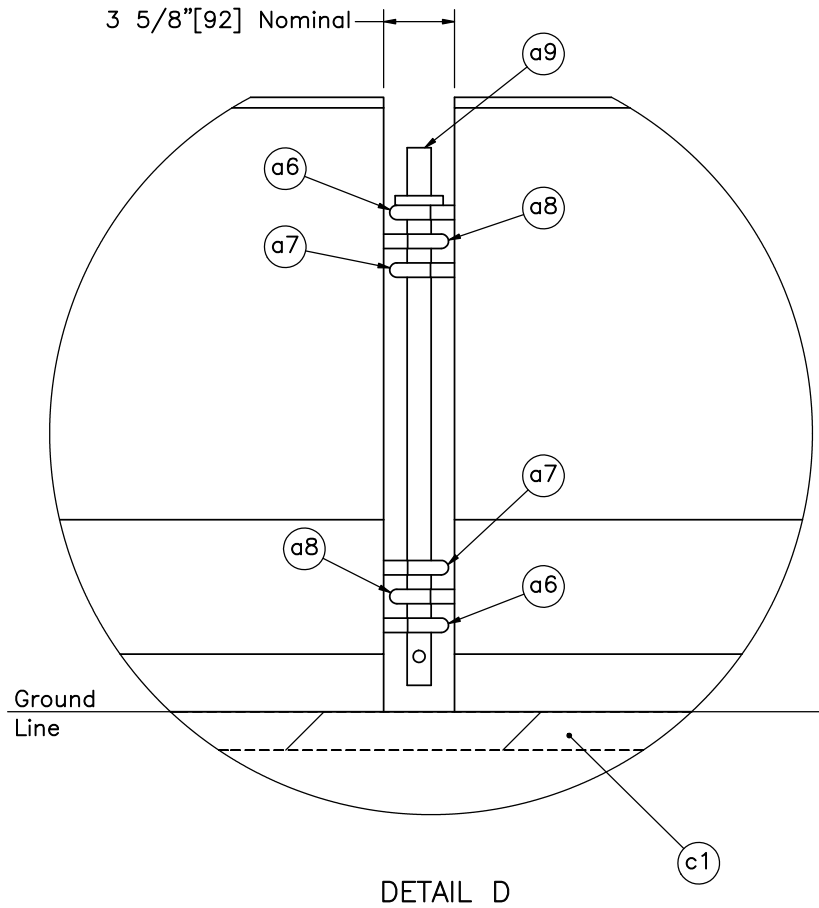
Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2  
Concrete Barrier Assembly

DWG. NAME.  
WITD-2\_R12

SCALE: 1:60  
UNITS: in.[mm]

SHEET:  
4 of 11  
DATE:  
1/14/2019  
DRAWN BY:  
MES/JEK/  
DTM  
REV. BY:  
JCH/RWB/  
JEK/KAL



Note: (1) Barrier nos. 6-14 are anchored in all traffic-side bolt pockets.



Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2

Connection and Anchorage  
Details

DWG. NAME:  
WITD-2\_R12

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

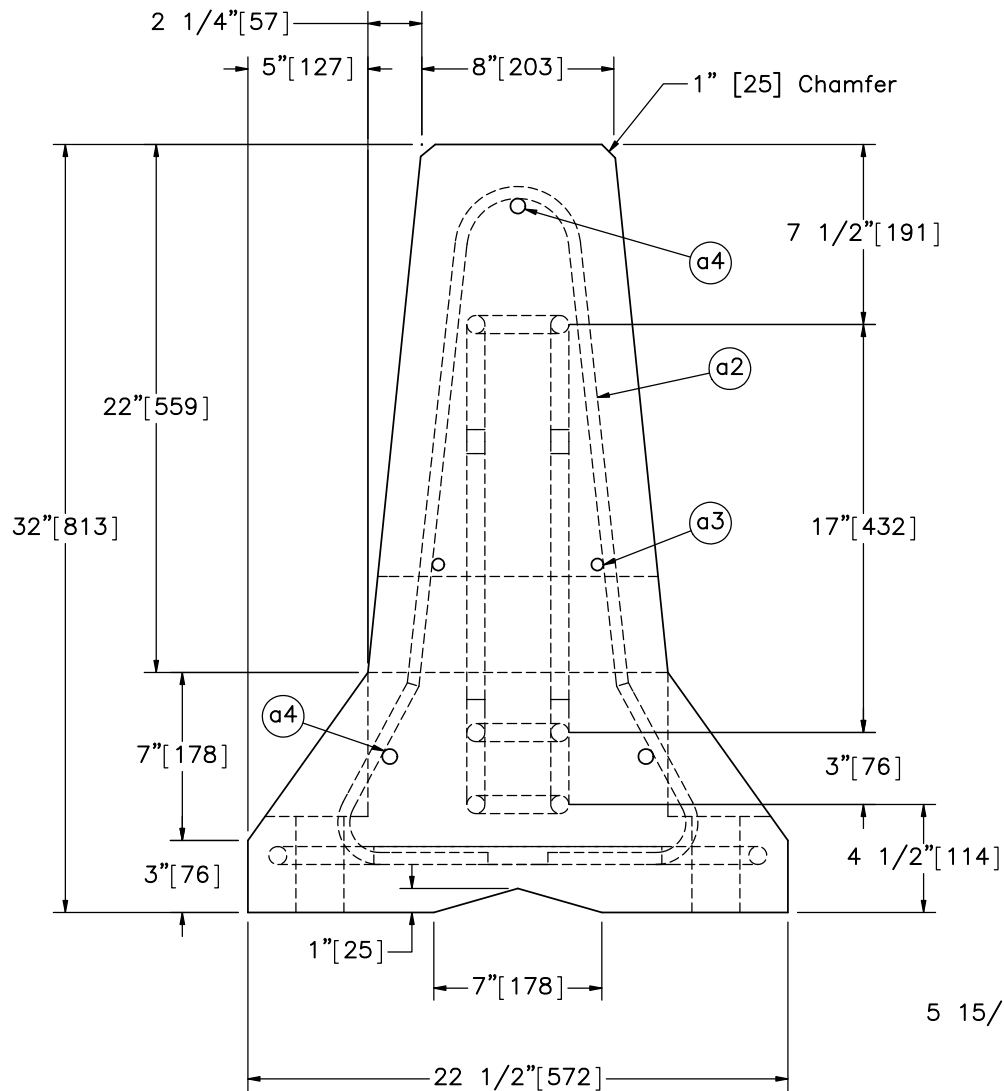
SHEET:  
5 of 11

DATE:  
1/14/2019

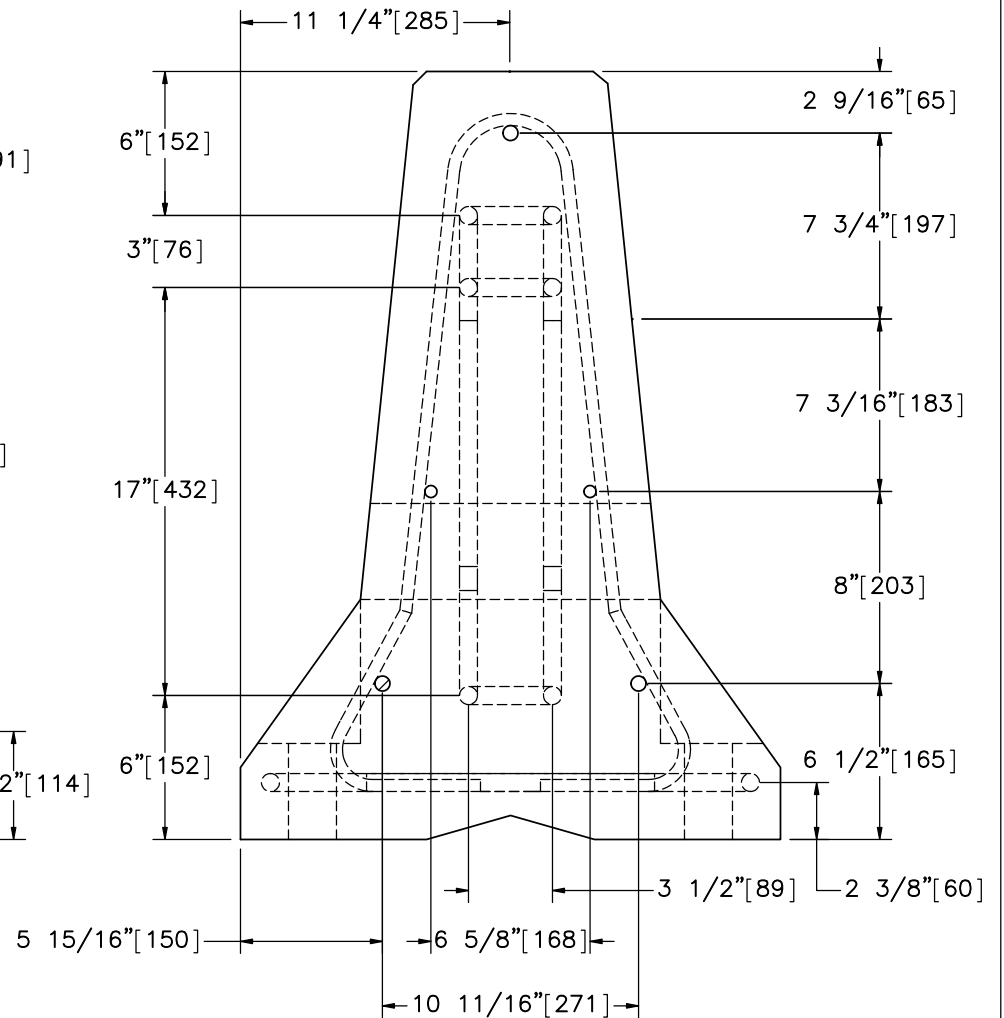
DRAWN BY:  
MES/JEK/  
DTM

REV. BY:  
JCH/RWB/  
JEK/KAL





SECTION F-F



SECTION G-G

Note: (1) 2" [51] clear cover used for all reinforcement.



Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2

Portable Concrete Barrier  
Details

DWG. NAME:  
WITD-2\_R12

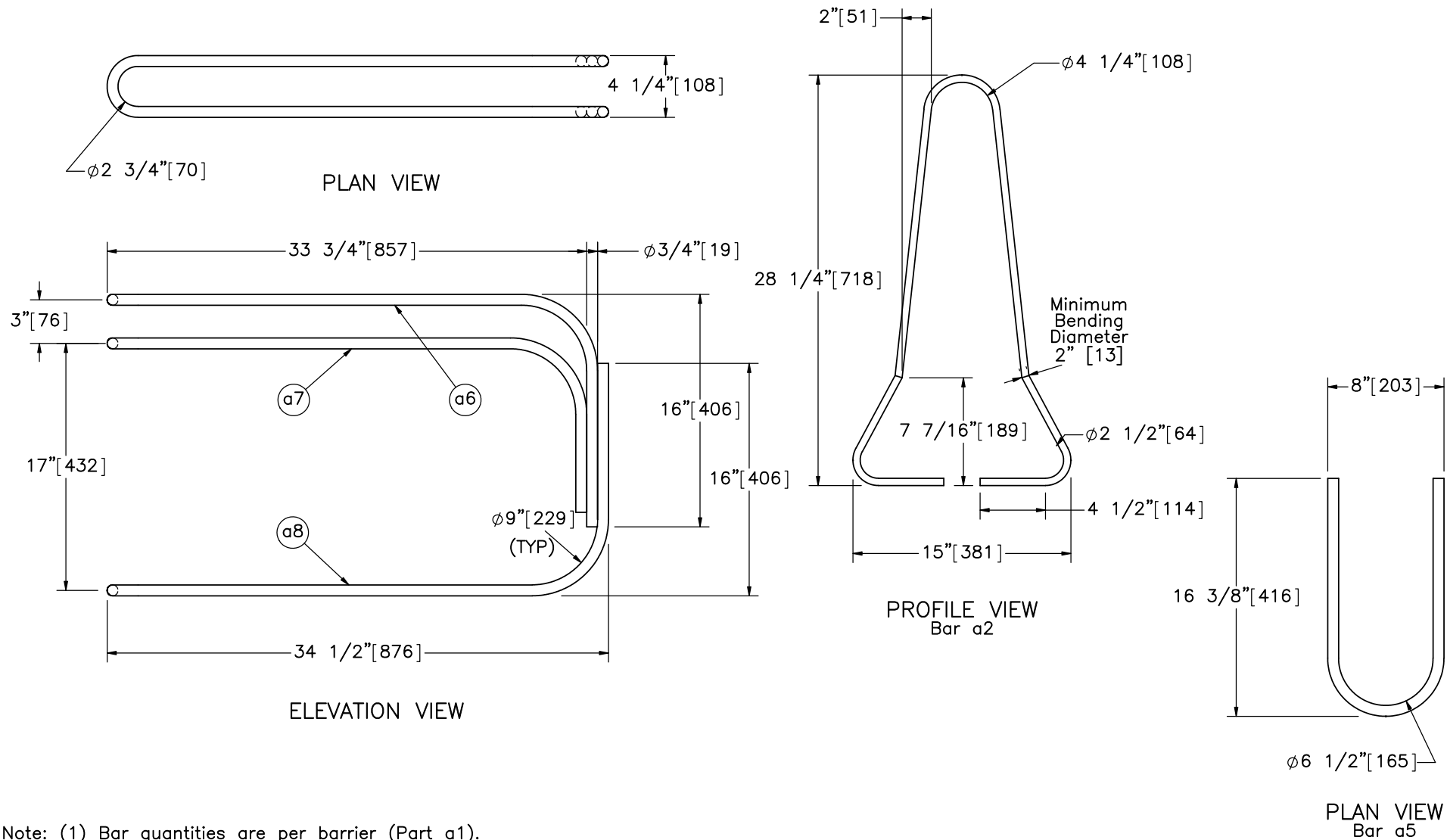
SCALE: 1:8  
UNITS: in.[mm]

SHEET:  
7 of 11

DATE:  
1/14/2019

DRAWN BY:  
MES/JEK/  
DTM

REV. BY:  
JCH/RWB/  
JEK/KAL



Note: (1) Bar quantities are per barrier (Part a1).

Bill of Bars				
Bar	QTY	Size	Total Length	Material
a2	12	#4	72"[1829]	A615 Gr.60
a3	2	#4	146"[3708]	A615 Gr.60
a4	3	#5	146"[3708]	A615 Gr.60
a5	6	#6	35"[889]	A615 Gr.60
a6	2	#6	101"[2565]	A709 Gr.70 or A706 Gr.60
a7	2	#6	91"[2311]	A709 Gr.70 or A706 Gr.60
a8	2	#6	102"[2591]	A709 Gr.70 or A706 Gr.60



Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2

Portable Concrete Barrier Rebar  
Details

DWG. NAME:  
WITD-2\_R12

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

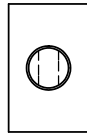
SHEET:  
8 of 11

DATE:  
1/14/2019

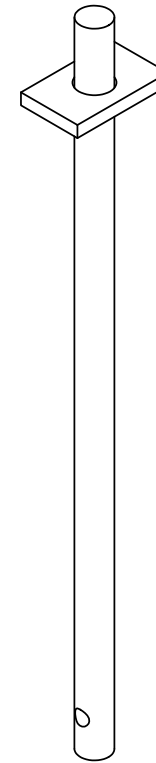
DRAWN BY:  
MES/JEK/  
DTM

REV. BY:  
JCH/RWB/  
JEK/KAL

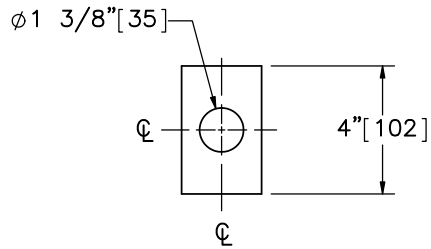




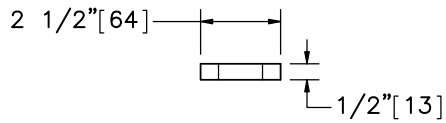
PLAN VIEW



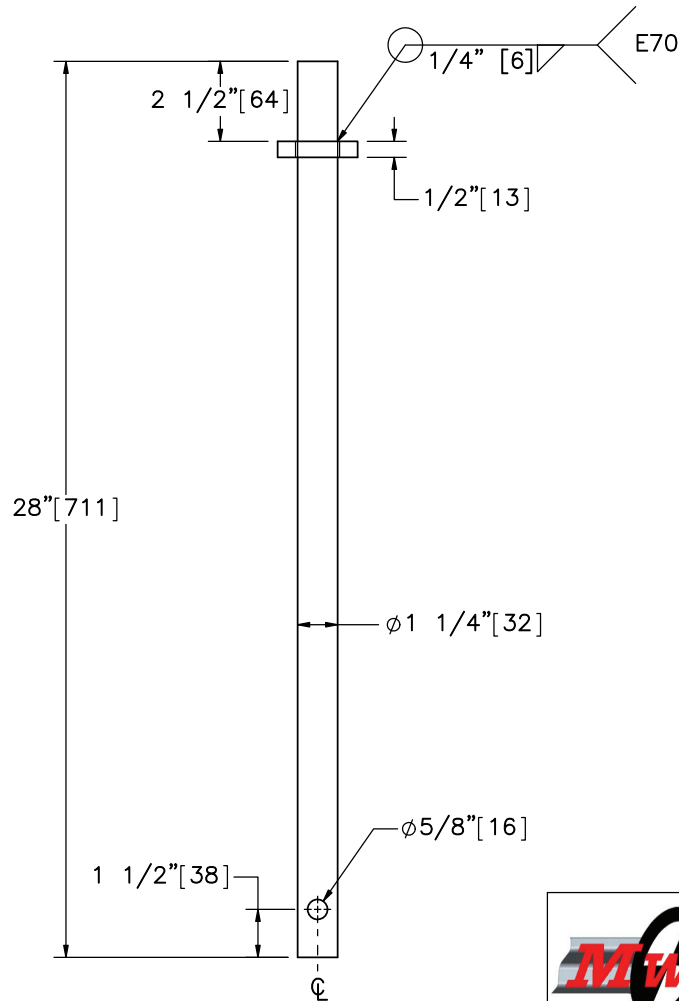
ISOMETRIC VIEW



PLAN VIEW



ELEVATION VIEW  
PLATE



ELEVATION VIEW  
Part a9



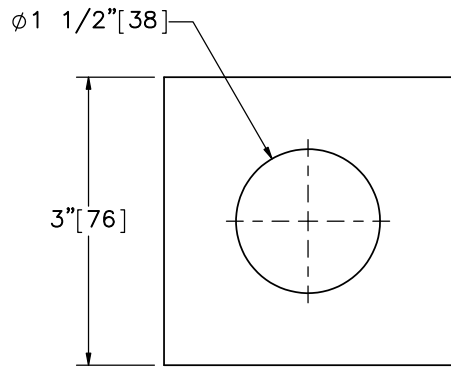
Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2  
Connector Pin Details

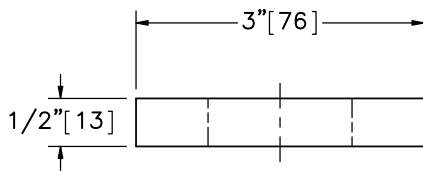
DWG. NAME.  
WITD-2\_R12

SCALE: 1:6  
UNITS: in.[mm]

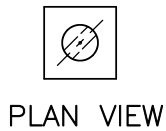
SHEET:  
9 of 11  
DATE:  
1/14/2019  
DRAWN BY:  
MES/JEK/  
DTM  
REV. BY:  
JCH/RWB/  
JEK/KAL



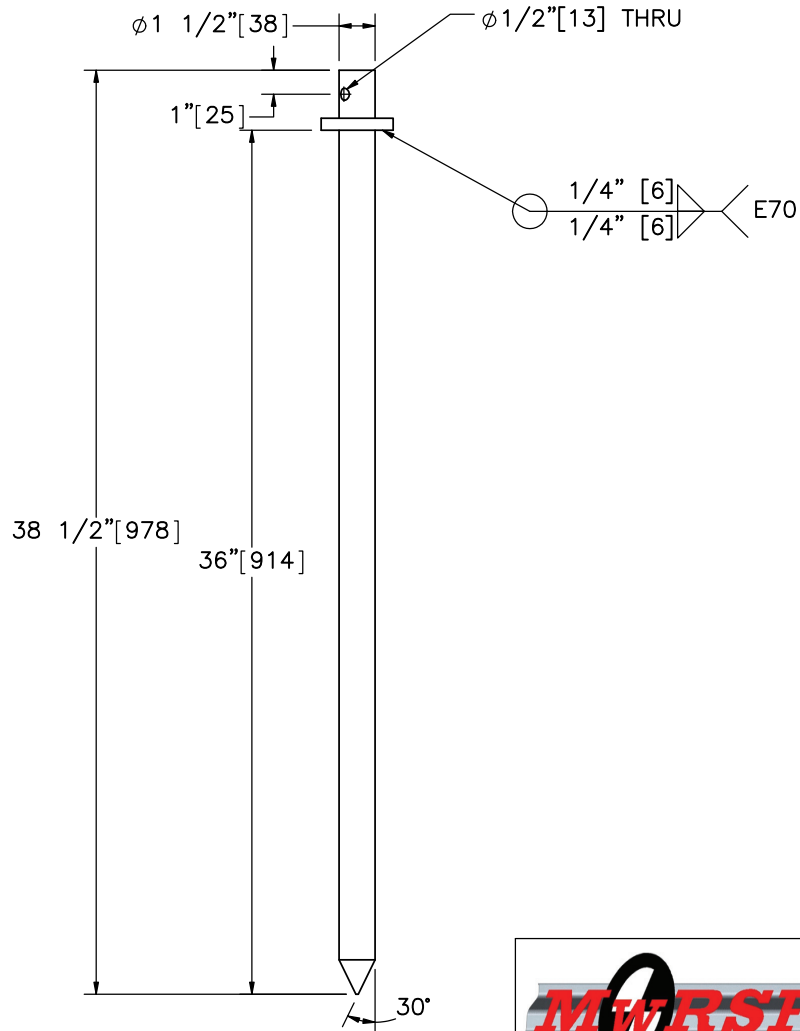
PLAN VIEW



ELEVATION VIEW  
SCALE 1:2  
Part b2



PLAN VIEW



ELEVATION VIEW  
Part b1



ISOMETRIC VIEW



Midwest Roadside  
Safety Facility

WI PCB Anchorage Tie-  
Down  
Test No. WITD-2

Anchor Pin Details

DWG. NAME.  
WITD-2\_R12

SCALE: 1:8  
UNITS: in.[mm]

SHEET:  
10 of 11

DATE:  
1/14/2019

DRAWN BY:  
MES/JEK/  
DTM


REV. BY:  
JCH/RWB/  
JEK/KAL

Item No.	QTY.	Description	Material Specification	Galvanization Specification	Hardware Guide
a1	16	Portable Concrete Barrier	Min f'c = 5,000 psi [34.5 MPa]	–	SWC09
a2	192	1/2" [13] Dia., 72" [1829] Long Form Bar	ASTM A615 Gr. 60	–	SWC09*
a3	32	1/2" [13] Dia., 146" [3708] Long Longitudinal Bar	ASTM A615 Gr. 60	–	SWC09*
a4	48	5/8" [16] Dia., 146" [3708] Long Longitudinal Bar	ASTM A615 Gr. 60	–	SWC09*
a5	96	3/4" [19] Dia., 36" [914] Long Anchor Loop Bar	ASTM A615 Gr. 60	–	SWC09*
a6	32	3/4" [19] Dia., 101" [2565] Long Connection Loop Bar	ASTM A709 Gr. 70 or A706 Gr. 60	–	SWC09*
a7	32	3/4" [19] Dia., 91" [2311] Long Connection Loop Bar	ASTM A709 Gr. 70 or A706 Gr. 60	–	SWC09*
a8	32	3/4" [19] Dia., 102" [2591] Long Connection Loop Bar	ASTM A709 Gr. 70 or A706 Gr. 60	–	SWC09*
a9	15	1 1/4" [32] Dia., 28" [711] Long Connector Pin	ASTM A36	–	FMW02
b1	27	1 1/2" [38] Dia., 38 1/2" [978] Long Anchor Pin	ASTM A36	ASTM A123 ***	FRS01
b2	27	3"x3"x1/2" [76x76x13] Washer Plate	ASTM A36	ASTM A123 ***	FRS01**
c1	1	2400"x72"x2" [60,960x183x51] Asphalt Pad	NE SPS Mix with 52–34 Grade Binder	–	–

\* Included in SWC09 hardware guide designation.

\*\* Included in FRS01 hardware guide designation.

\*\*\* Component does not need to be galvanized for testing purposes.

	WI PCB Anchorage Tie– Down Test No. WITD–2		SHEET: 11 of 11
			DATE: 1/14/2019
Midwest Roadside Safety Facility		Bill of Materials	DRAWN BY: MES/JEK/ DTM
DWG. NAME: WITD–2_R12		SCALE: 1:768 UNITS: in.[mm]	REV. BY: JCH/RWB/ JEK/KAL

REV.	DATE OF ISSUE	Page	NATURE OF CHANGES	REVIEWER	REVISED BY
0	3/31/2017	-	Originated from WIPCBA-1_R4. Removed threaded anchor rods. Added drive pins to the traffic side of barrier nos. 5-13. Added asphalt pad. Changed trench size. Removed epoxy.	-	MES
1	4/18/2017	1	Edited notes and dimensions	RWB	MES
		2	Added sheet with Section View A-A and Section View B-B.		
		3	Added ground in plan view. Added dimensions. Changed view names.		
		4	Called out part no. b2.		
		6	Added dimensions.		
		9	Change washer plate part no.		
2	4/20/2017	-	Test name change.	JEK	MES
		-	Document name change.		
		1	Edited notes and dimensions.		
		2	Edited notes and dimensions.		
		3	Shifted barrier nos.		
		4	Edited notes and dimensions.		
		10	Edited material spec of part nos. a2-a8. Edited notes.		
3	5/1/2017	-	Section/detail lettering. New page (3).	RWB	JEK
		1	Select dimension unit edits. New section.		
		2	Scale change. Page title edit. Section B moved to new page.		
		4	Asphalt and hatch added to plan view. Asphalt, ground, trench added to elevation view. General shift.		
		5	Asphalt and ground added to views. General shift.		
		11	Material: c1.		
4	5/10/2017	10	Dim add.	RWB	JEK
5	5/25/2017	BOM	Galv: a9, b1-2.	RWB	JEK
6	7/14/2017	All	Reversed barrier orientation and corrected views accordingly.	JCH	DTM
7	7/17/2017	2	Revised section view.	JEK	DTM
		3	Revised section views.		
8	7/17/2017	-	Changed pin orientation in model.	RWB	DTM
9	11/15/2017	1	Extended the asphalt pad to the full length of the barrier. Edited dimension note. Added note 4.	JCH	MES

10	11/27/2017	1	Barrier 1 moved to downstream end of system. Impact point shifted to barrier 9. Pins removed from barrier 5 and installed in barrier 14. Revised note 2 to reflect impact point change.	RWB	DTM
		4	Revised note.		
		5	Revised note.		
11	11/28/2017	1	Renumbered barrier 1 to barrier 17.	JEK	DTM
		4	Moved dimension, note, and numbering.		
		5	Moved c1 and b2 bubbles.		
		11	Changed spec to specification.		
12	1/14/2019	10	Page title edit.	KAL	JEK