

Barrier segments 1 and 10 are anchored to concrete tarmac through the pin anchor recesses with 1" [25] diameter ASTM A36 steel pins (Part a2) inserted into 1 1/4" [32] diameter pre-drilled holes in the concrete tarmac.

- Notes:
- (1) Place 1" [25] diameter steel pins (Part a2) into every pin anchor recess (9 each) of barrier segments 1 and 10.
 - (2) Test shall be performed according to test designation no. 3-11 of MASH.
 - (3) The critical impact location is 51 3/16" [1300] upstream from the centerline of the joint between barrier nos. 4 and 5.
 - (4) NJDOT Precast Concrete Curb and Construction Barrier curb will be referred to as Portable Concrete Barrier (PCB).
 - (5) The system is NJDOT Type 4 (Alternate B) barrier with joint class A, as specified in the 2013 NJDOT *Roadway Design Guide*, and connection type A, as specified in the 2015 NJDOT *Roadway Design Manual*.



Midwest Roadside
Safety Facility

NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

System Layout

DWG. NAME.
NJPCB-3_R15

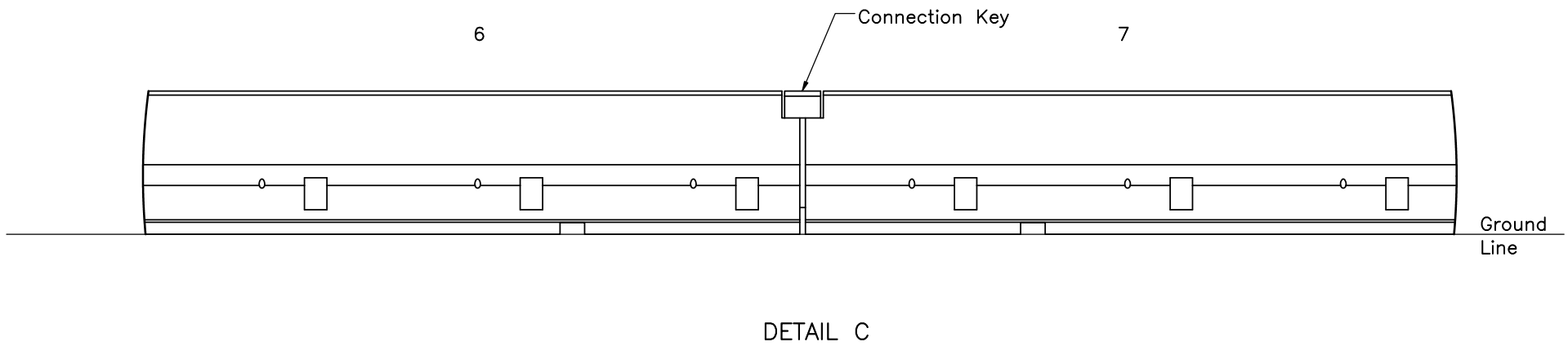
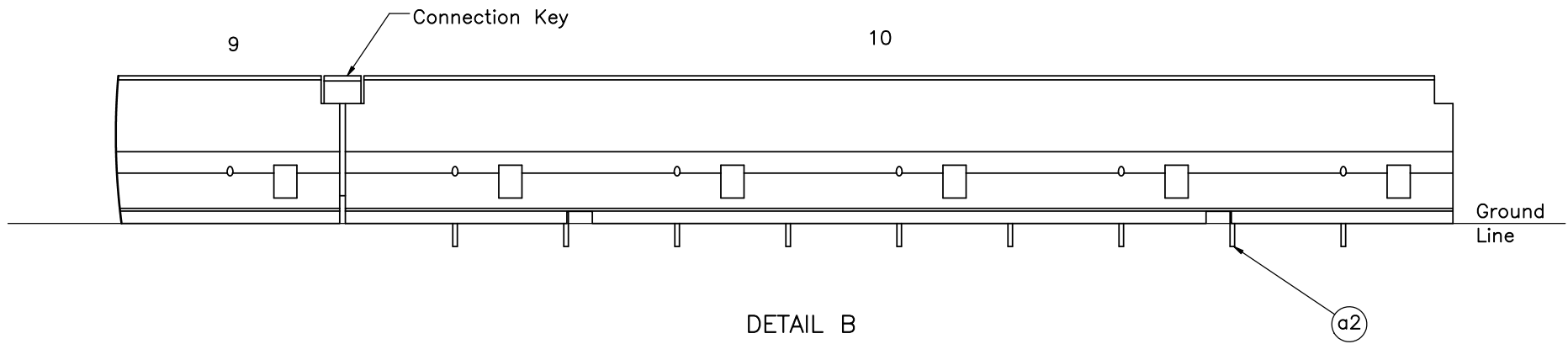
SCALE: 1:245
UNITS: In./[mm]

SHEET:
1 of 14

DATE:
10/30/2018

DRAWN BY:
EMR/TJD/JE
K/MES

REV. BY:
KAL/TJD/RK
F/JCH/SB



Midwest Roadside
Safety Facility

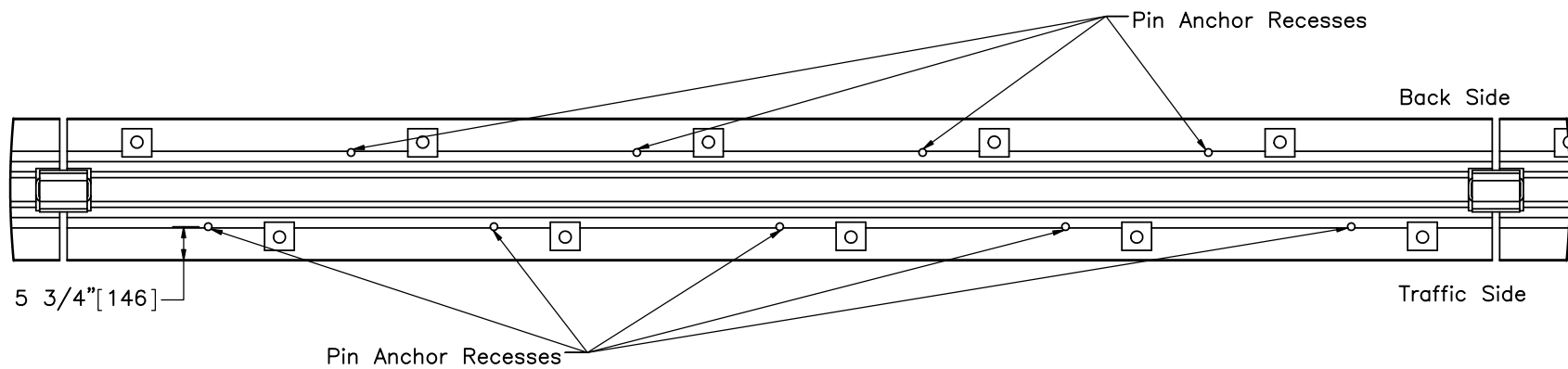
NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

Barrier Pin Details

DWG. NAME:
NJPCB-3_R15


SCALE: 1:35
UNITS: In.[mm]

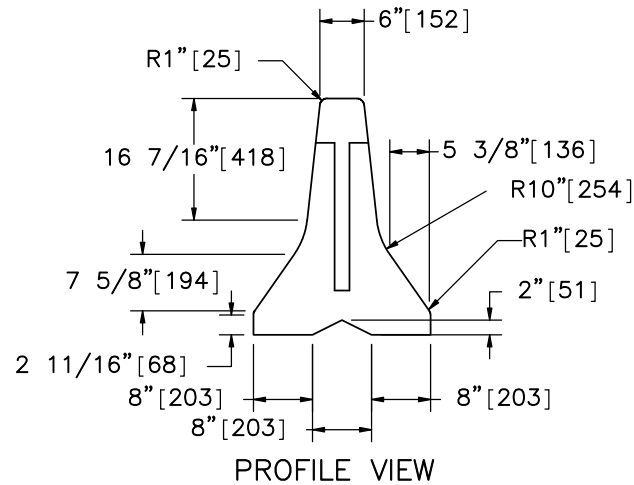
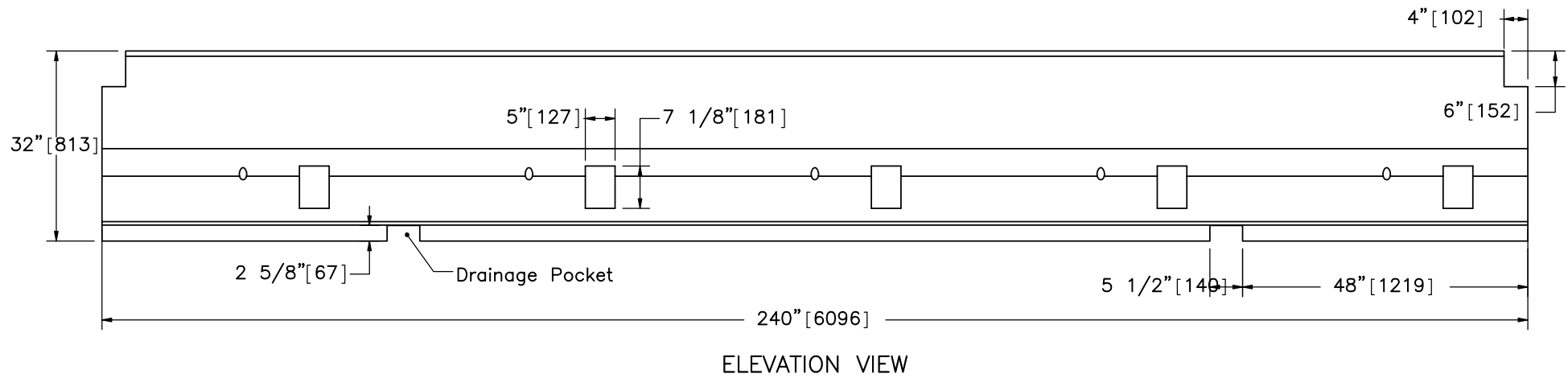
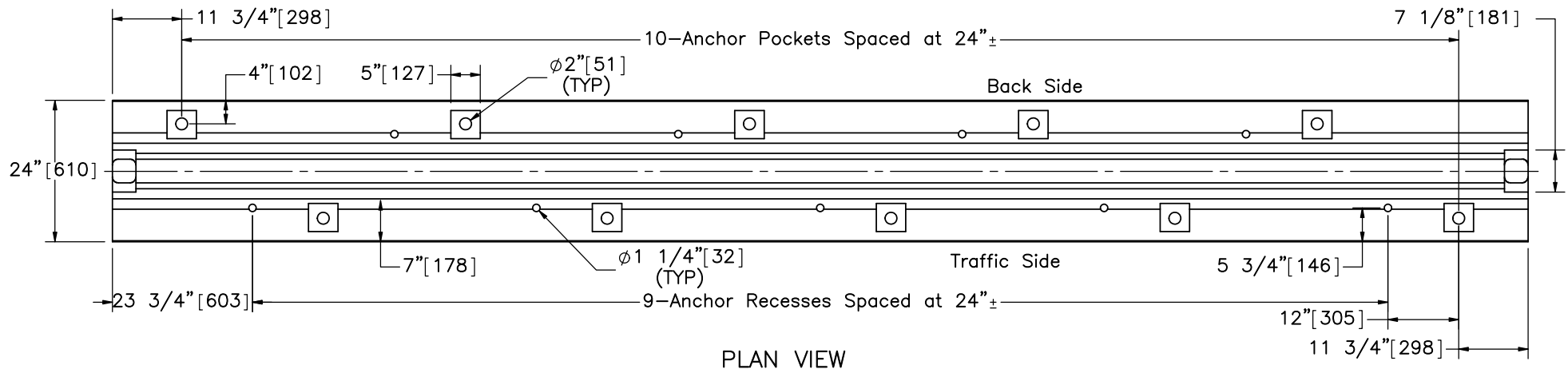
SHEET:
2 of 14
DATE:
10/30/2018
DRAWN BY:
EMR/TJD/JE
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DETAIL D

Note: (1) Traffic side of barrier contains the five pin anchor recesses, and the back side of barrier contains the four pin anchor recesses.

 Midwest Roadside Safety Facility	NJ Free Standing Portable Concrete Barrier Test NJPCB-3		SHEET: 3 of 14
	Pin Hole Locations		DATE: 10/30/2018
DWG. NAME: NJPCB-3_R15	SCALE: 1:30 UNITS: In.[mm]	DRAWN BY: EMR/TJD/JE K/MES	
		REV. BY: KAL/TJD/RK F/JCH/SB	



- Notes: (1) Concrete has a minimum 28-day compressive strength of 3.7 ksi [25.5 MPa].
 (2) Two 2 5/8" x 5 1/2" [67 x 140] drainage pockets required in segments 12' [3658] long or greater.



Midwest Roadside Safety Facility

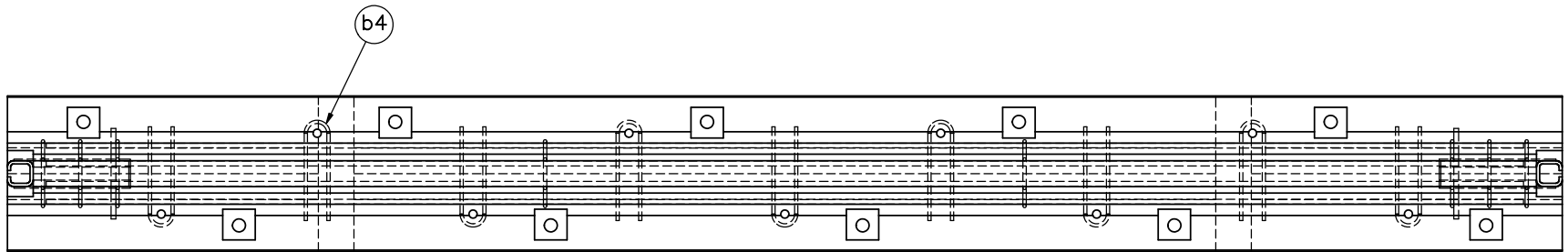
NJ Free Standing Portable Concrete Barrier Test NJPCB-3

Concrete Barrier Segment

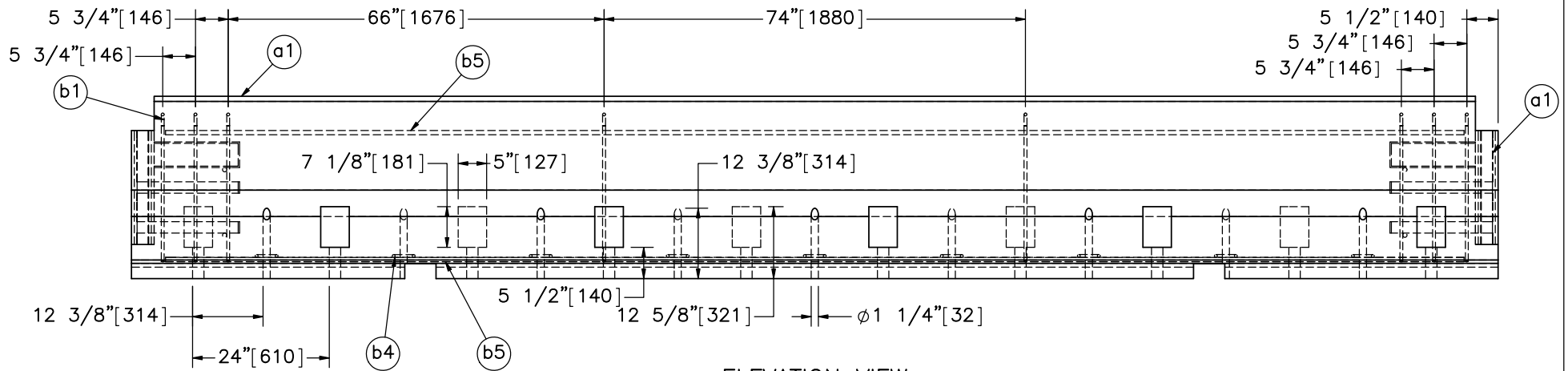
DWG. NAME:
NJPCB-3_R15

SCALE: 1:26
UNITS: In./mm

SHEET:
4 of 14
DATE:
10/30/2018
DRAWN BY:
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REV. BY:
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PLAN VIEW



ELEVATION VIEW



Midwest Roadside
Safety Facility

NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

Reinforcement Details

DWG. NAME:
NJPCB-3_R15

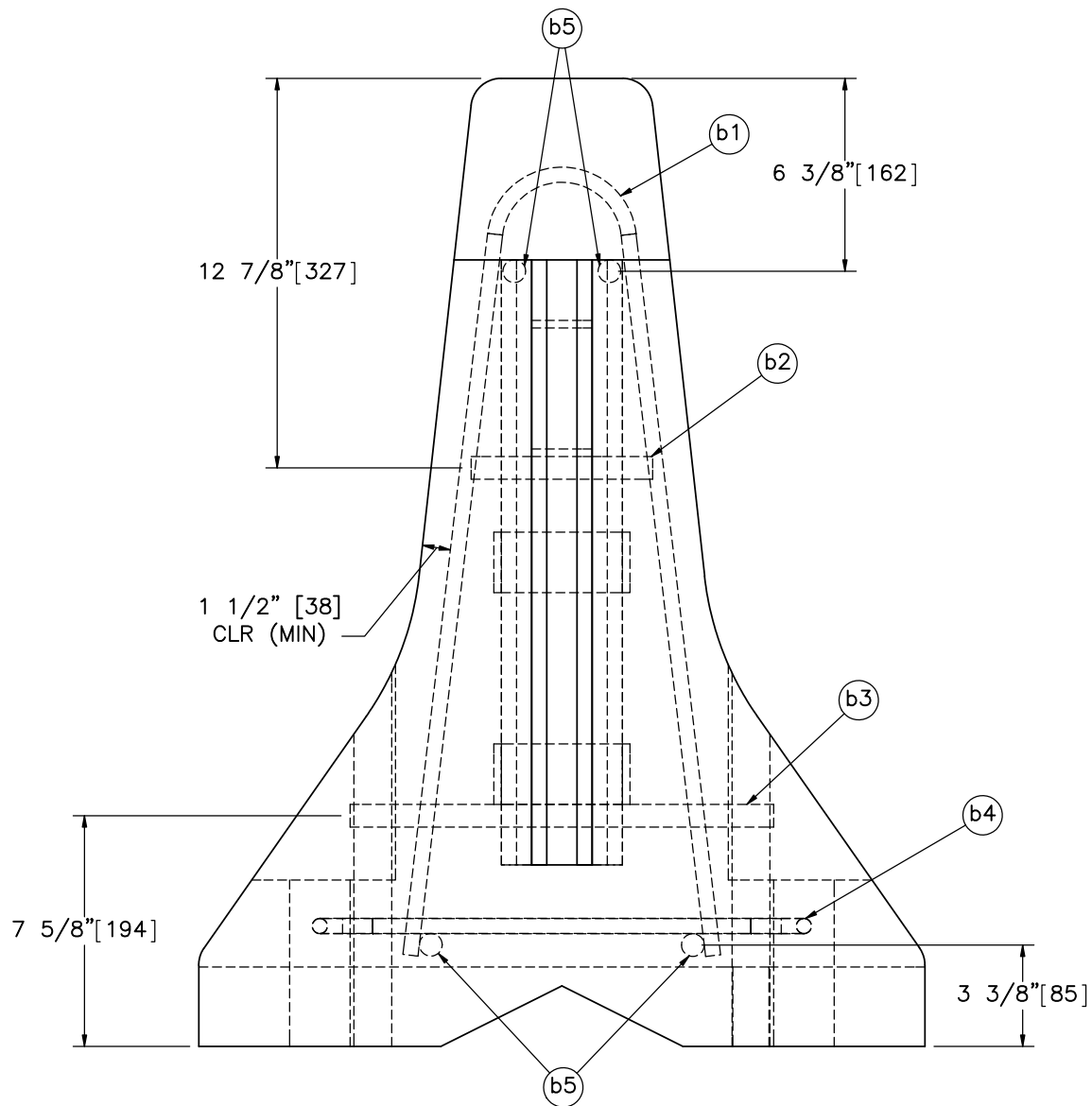
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SHEET:
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DATE:
10/30/2018

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Midwest Roadside
Safety Facility

NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

Reinforcement Details – End
View

DWG. NAME:
NJPCB-3_R15

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

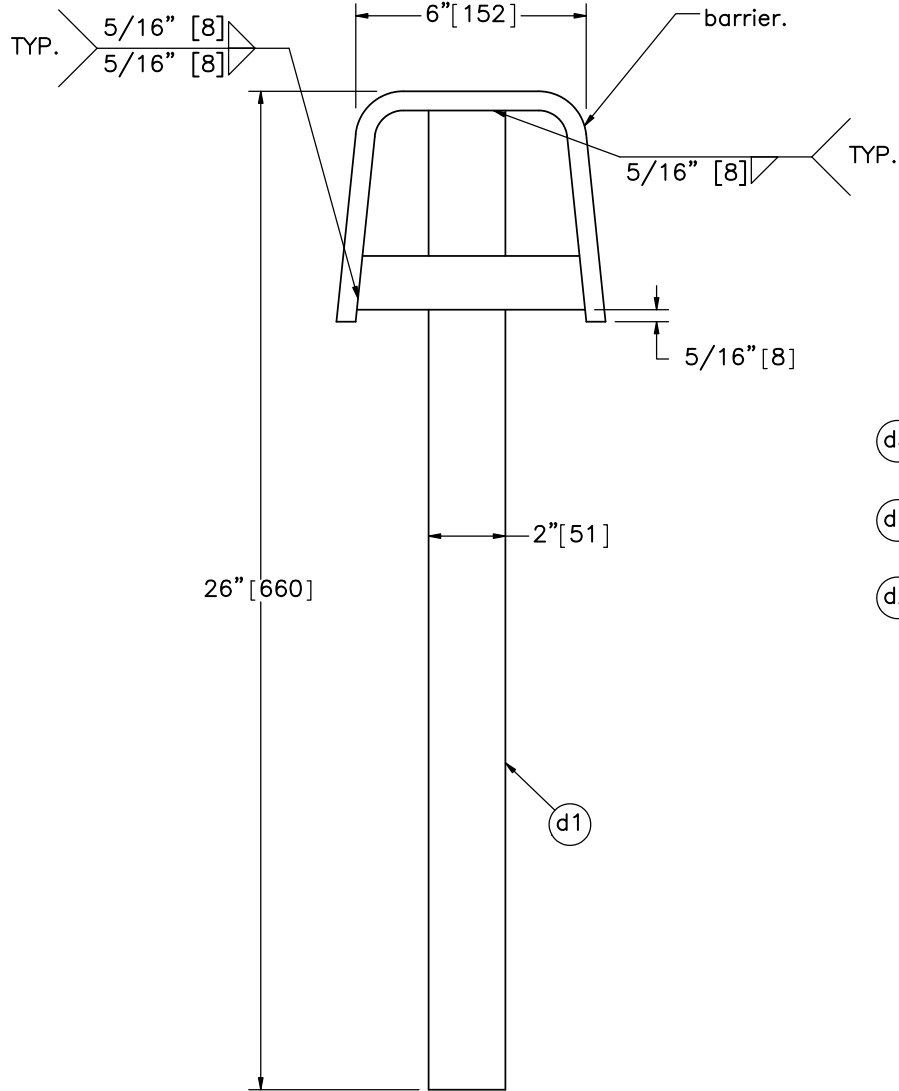
SHEET:
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DATE:
10/30/2018

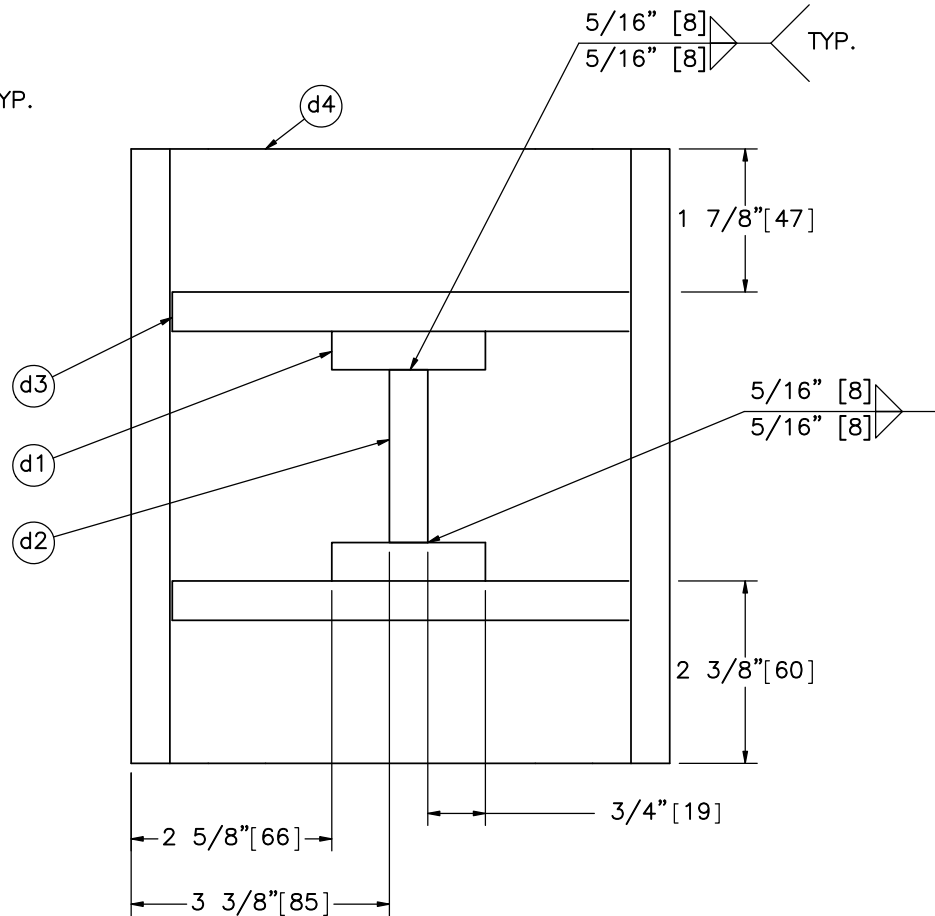
DRAWN BY:
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K/MES

REV. BY:
KAL/TJD/RK
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This cover plate shall be installed so it is flush with the top of the barrier.



PROFILE VIEW



BOTTOM VIEW
SCALE 2:5



Midwest Roadside
Safety Facility

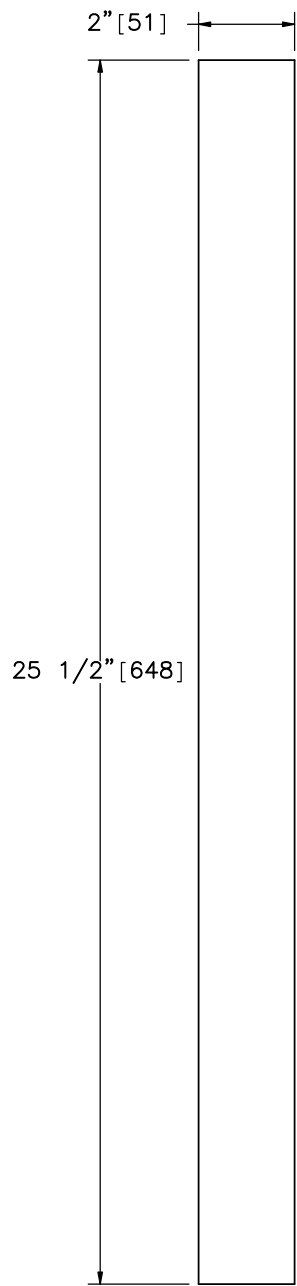
NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

Connection Key

DWG. NAME.
NJPCB-3_R15

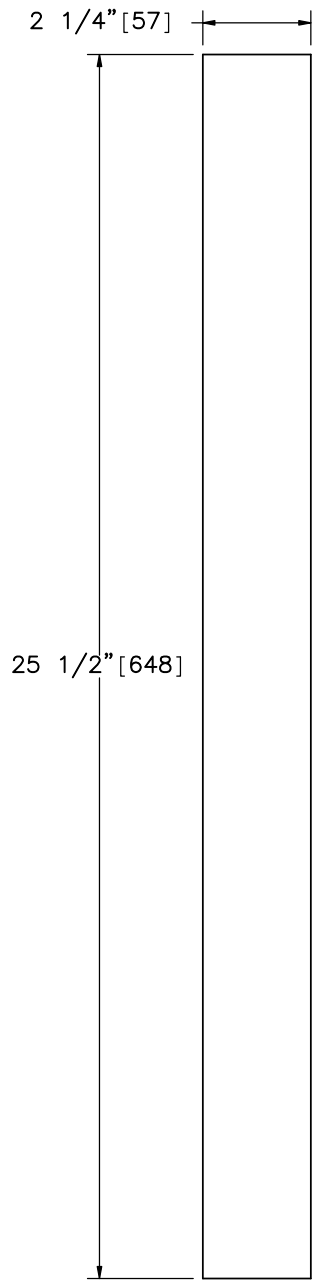
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UNITS: In./[mm]

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K/MES
REV. BY:
KAL/TJD/RK
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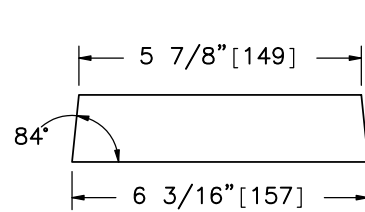
1/2" [13]

Part d1

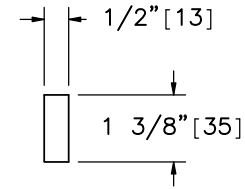


1/2" [13]

Part d2

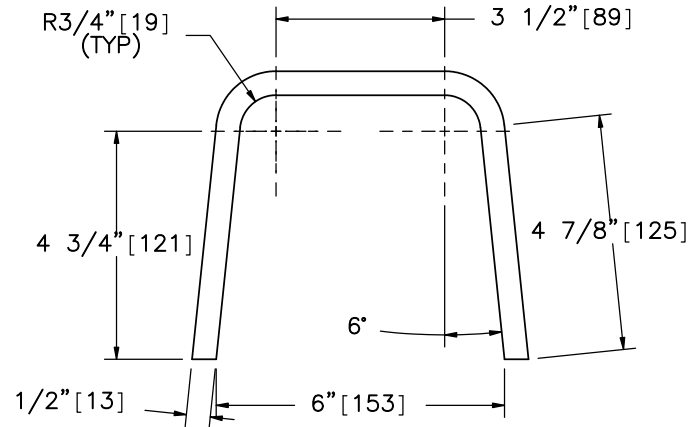


ELEVATION VIEW

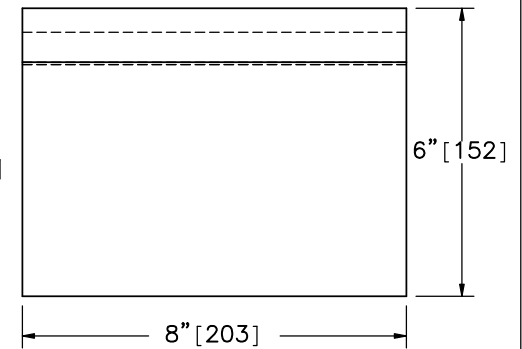


PROFILE VIEW

Part d3



ELEVATION VIEW



PROFILE VIEW

Part d4



Midwest Roadside
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NJ Free Standing
Portable Concrete Barrier
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Connection Key Components

DWG. NAME:
NJPCB-3_R15

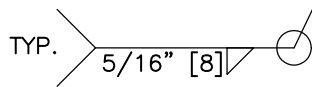
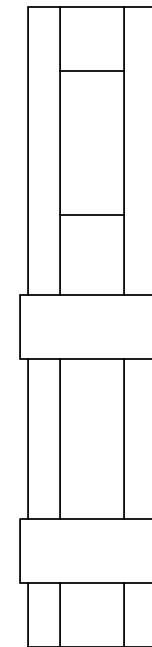
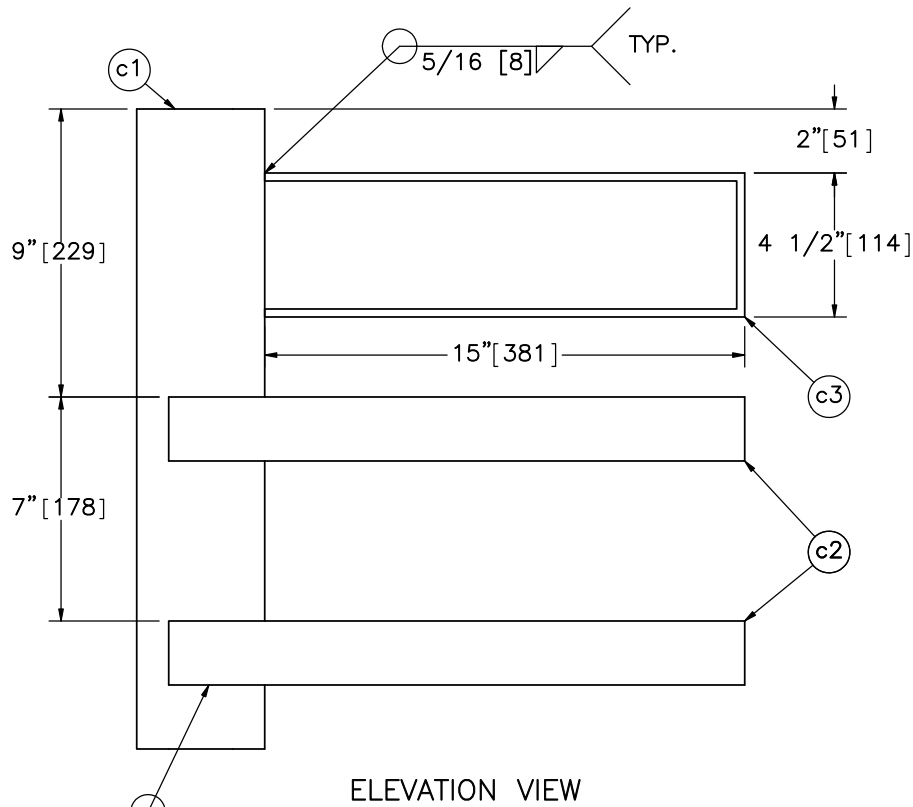
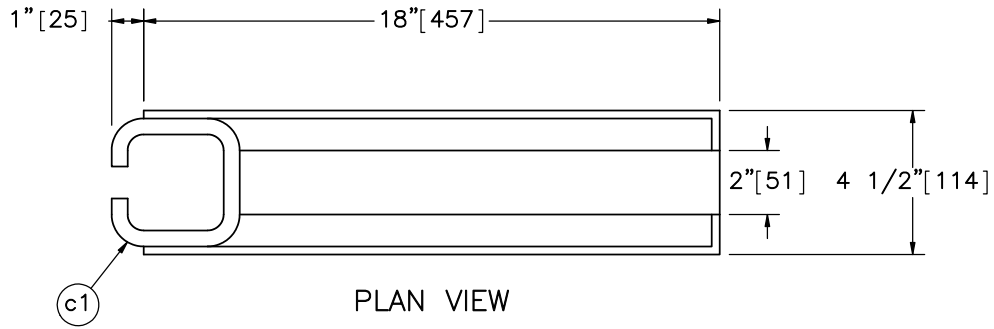
SCALE: 1:4
UNITS: In./[mm]

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DATE:
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Midwest Roadside
Safety Facility

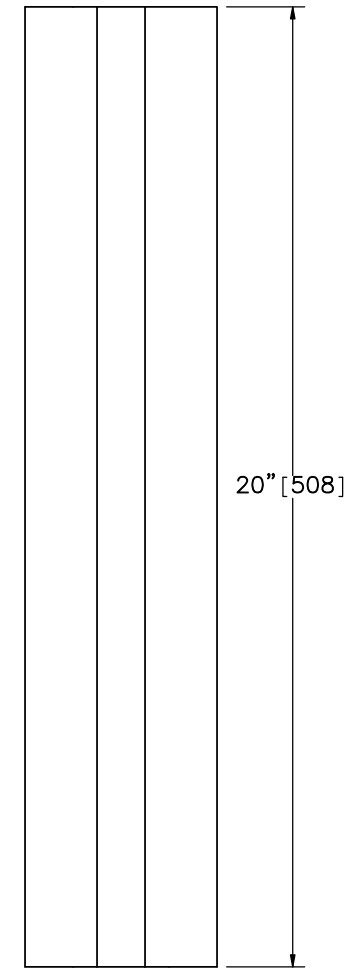
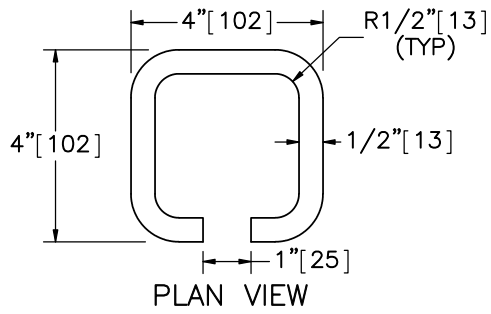
NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

Connection Socket

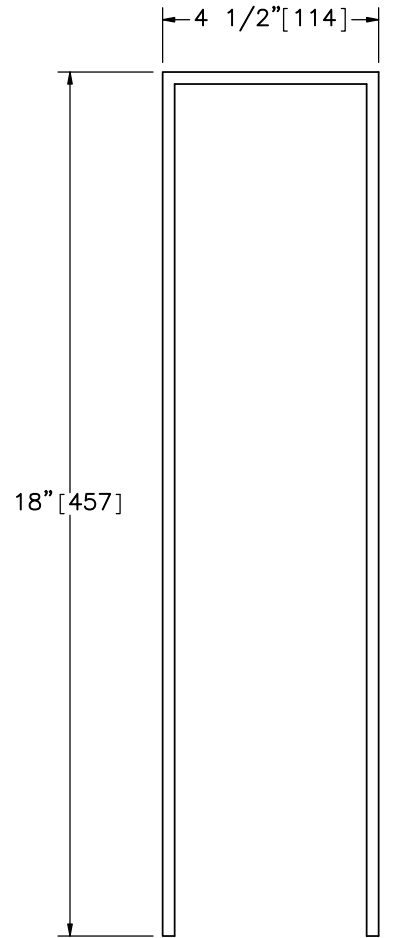
DWG. NAME.
NJPCB-3_R15

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

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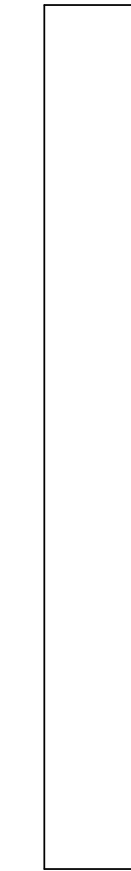
ELEVATION VIEW
Part c1



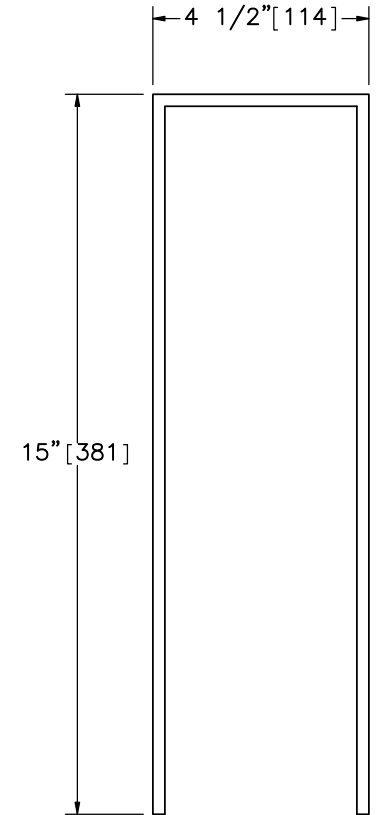
1/4" [6] 1/4" [6]

ELEVATION VIEW

Part c2



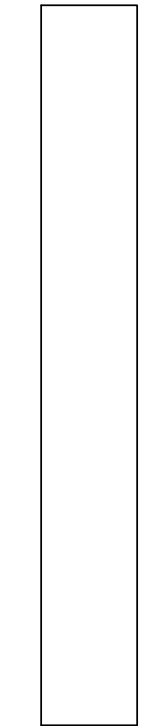
PROFILE VIEW



1/4" [6] 1/4" [6]

ELEVATION VIEW

Part c3



PROFILE VIEW



Midwest Roadside
Safety Facility

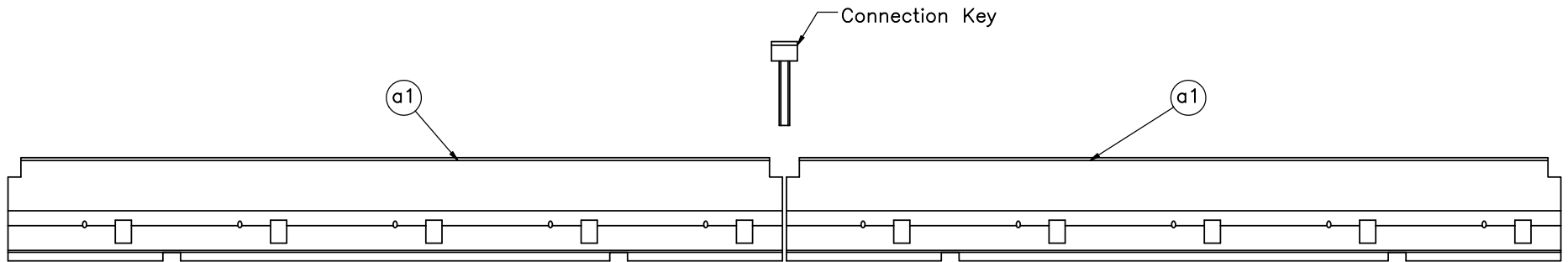
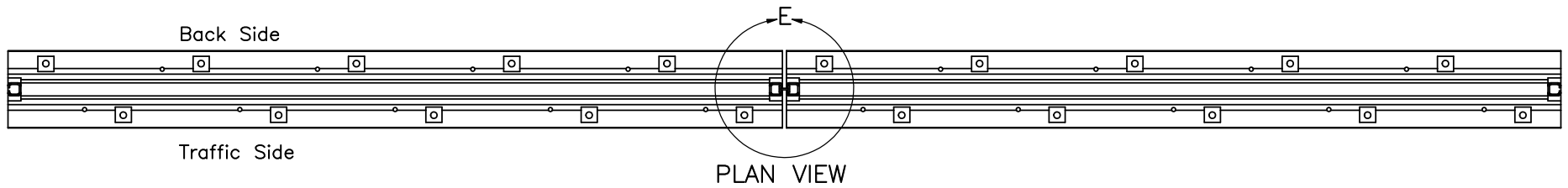
NJ Free Standing
Portable Concrete Barrier
Test NJPCB-3

Connection Socket Components

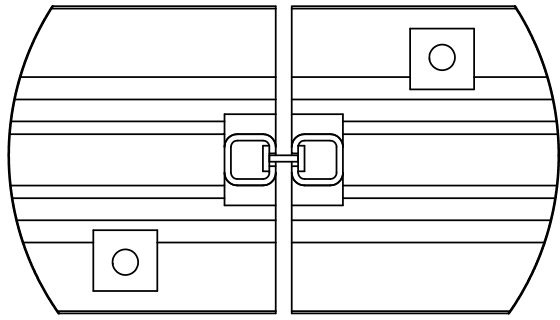
DWG. NAME:
NJPCB-3_R15

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

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10/30/2018
DRAWN BY:
EMR/TJD/JE
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REV. BY:
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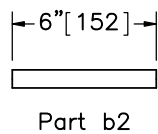
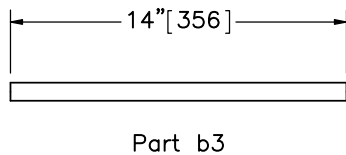
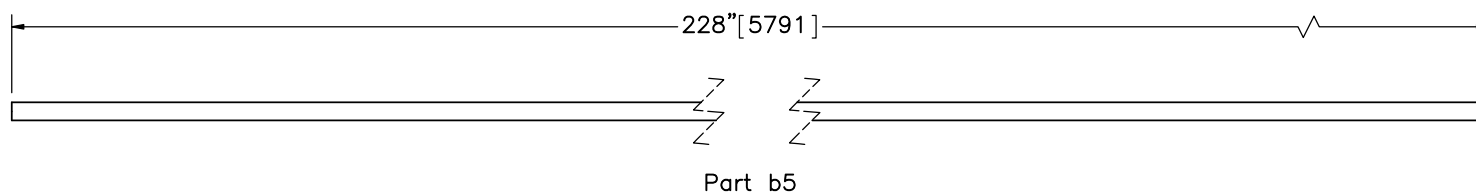
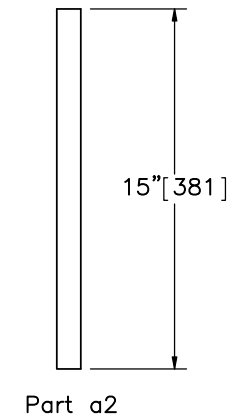
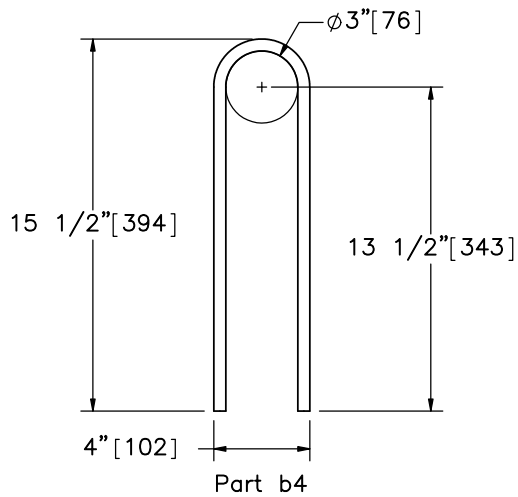
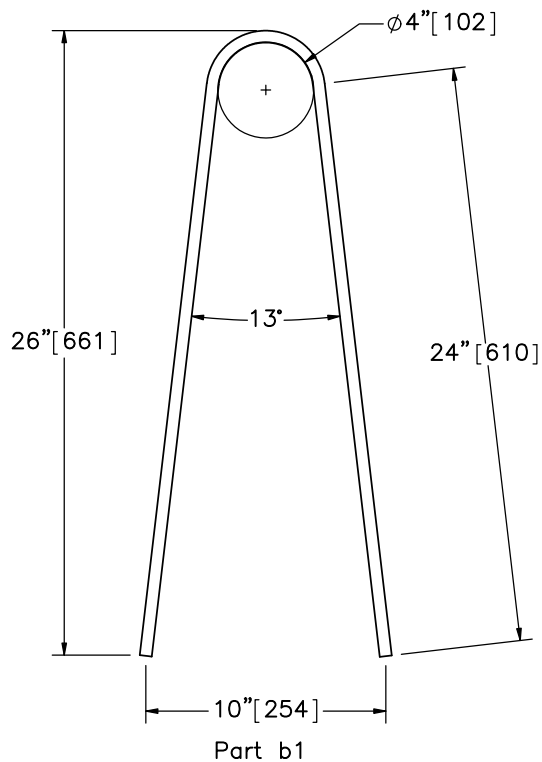
ELEVATION VIEW



DETAIL E
SCALE 1 : 15

- Notes: (1) Curved cover plate and stiffeners not shown in Plan View and Detail E.
- (2) Groundline and vertical anchors at toe of barrier not shown for clarity.

 Midwest Roadside Safety Facility	NJ Free Standing Portable Concrete Barrier Test NJPCB-3		SHEET: 11 of 14
	Connection Key Placement		DATE: 10/30/2018
DWG. NAME: NJPCB-3_R15	SCALE: 1:50 UNITS: In./mm	DRAWN BY: EMR/TJD/JE K/MES	REV. BY: KAL/TJD/RK F/JCH/SB



BILL OF BARS				
ITEM NO.	QTY.	BAR SIZE	UNBENT LENGTH	MATERIAL SPEC.
a2	18	Ø1" [25]	15" [381]	A36
b1	80	#4 [13]	59" [1499]	A615 Gr. 60
b2	20	#6 [19]	6" [152]	A615 Gr. 60
b3	20	#6 [19]	14" [356]	A615 Gr. 60
b4	90	#4 [13]	37" [940]	A615 Gr. 60
b5	40	#6 [19]	19'-0" [5791]	A615 Gr. 60

Note: (1) Quantities in Bill of Bars represent a system with ten barriers.



Midwest Roadside Safety Facility

NJ Free Standing Portable Concrete Barrier Test NJPCB-3


Bill of Bars

DWG. NAME:
NJPCB-3_R15

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


SHEET:
12 of 14
DATE:
10/30/2018
DRAWN BY:
EMR/TJD/JE
K/MES
REV. BY:
KAL/TJD/RK
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- (1) Minimum concrete clear cover for reinforcement steel shall be 1 1/2" [38 mm].
- (2) All end segments shall be pinned.
- (3) After a segment has been placed and the connection key inserted, pull the unit in a direction parallel to its longitudinal axis to remove any slack in the joint.
- (4) The portable concrete barrier shall be cast in steel forms.
- (5) The portable concrete barrier shall be barrier segments of 20 feet [6,096 mm]. However, other lengths may be used to meet field conditions. The number and placement of the b2 and b3 reinforcement steel will vary with the length of the barrier segment as shown on the table of variable reinforcement steel. The b5 reinforcement steel shall be 10" [254 mm] shorter than the nominal length of the barrier segments.
- (6) Reinforcing shown is the minimum required. Additional reinforcing necessary for handling shall be the option and responsibility of the contractor.
- (7) Welding and fabrication of steel structures shall be in accordance with sections 1 thru 6 of the ANSI/AASHTO/AWS D1.5 bridge welding code and section 10 of the ANSI/AWS D1 structural welding code. Surfaces to be welded shall be free of scale, slag, rust, moisture, grease or any other material that will prevent proper welding or produce objectional fumes. Welding shall be shielded metal arc welding using properly dried 5/32" [4 mm] dia. E7018 electrodes.
- (8) The length of the pins shall be such that a minimum embedment length of 5" [127 mm] is obtained when embedded into concrete pavement. When anchor pins are in place, they shall not project above the plane of the concrete surface of the barrier. Holes in bridge decks shall be 1 1/4" [32 mm] diameter maximum and made with a core drill or any other approved rotary drilling device that does not impart an impact force.
- (9) Use connection key in every joint. Pin end segments with pins in every anchor pin recess.

	NJ Free Standing Portable Concrete Barrier Test NJPCB-3		SHEET: 13 of 14
			DATE: 10/30/2018
Midwest Roadside Safety Facility	General Notes		DRAWN BY: EMR/TJD/JE K/MES
	DWG. NAME: NJPCB-3_R15	SCALE: None UNITS: In.[mm]	REV. BY: KAL/TJD/RK F/JCH/SB

Item No.	QTY.	Description	Material Spec	Galvanization Spec
a1	10	Concrete Barrier Segment – NJDOT Type 4 Barrier (Alternate B)	Min. f'c = 3,700 psi [25.5 MPa]	–
a2	18	1" [25] Dia., 15" [381] Long Anchor Steel Pin	ASTM A36	ASTM A123*
b1	80	1/2" [13] Dia., 59" [1,499] Long Bent Rebar	ASTM A615 Gr. 60	–
b2	20	3/4" [19] Dia., 6" [152] Long Rebar	ASTM A615 Gr. 60	–
b3	20	3/4" [19] Dia., 14" [356] Long Rebar	ASTM A615 Gr. 60	–
b4	90	1/2" [13] Dia., 37" [940] Long Bent Rebar	ASTM A615 Gr. 60	–
b5	40	3/4" [19] Dia., 228" [5,791] Long Rebar	ASTM A615 Gr. 60	–
c1	20	4"x4"x1/2" [102x102x13] x 20" [508] Long Tube	ASTM A500 Gr. B or C	–
c2	40	40 1/2"x2"x1/4" [1,029x51x6] Bent Steel Plate	ASTM A36	–
c3	20	34 1/2"x2"x1/4" [876x51x6] Bent Steel Plate	ASTM A36	–
d1	18	25 1/2"x2"x1/2" [648x51x13] Steel Plate	ASTM A36	–
d2	9	25 1/2"x2 1/4"x1/2" [648x57x13] Steel Plate	ASTM A36	–
d3	18	6 3/16"x1 3/8"x1/2" [157x35x13] Steel Plate – Stiffener	ASTM A36	–
d4	9	17"x8"x1/2" [432x203x13] Bent Steel Plate – Top Plate	ASTM A36	–

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

 Midwest Roadside Safety Facility	NJ Free Standing Portable Concrete Barrier Test NJPCB-3	SHEET: 14 of 14
	Bill of Materials	DATE: 10/30/2018
DWG. NAME: NJPCB-3_R15	SCALE: None UNITS: In.[mm]	DRAWN BY: EMR/TJD/JE K/MES
		REV. BY: KAL/TJD/RK F/JCH/SB

REV	DATE OF ISSUE	Page	NATURE OF CHANGES	REVIEWER	REVISED BY
0	1/29/2016	-	Made NJPCB-3 Using NJPCB-1_R7	-	EMR
1	2/4/2016	13	Note edit.	KAL	EMR
		14	Note edit.		
2	2/10/2016	1	Note edits. Dimension deleted.	KAL	EMR
		14	Item description edits.		
3	2/15/2016	1	Note edits. Item number added.	KAL/TJD	EMR
		2	Item number added. Item description removed.		
		4	Dimension edits. Note edits.		
		5	Dimension edit. Note edit.		
		7	Note edits. Note added. Weld description edit.		
		8	Scale edits. Note removed. Dimension edit.		
		9	Note edits.		
		10	Note edits. Dimensions added.		
		11	Notes deleted. Note added.		
		12	Table column removed. Table column moved. Table rows removed. Table rows moved. Item number edits. Table column width edits. Table title edit. Table column header edits. Bar bend circles added. Dimensions removed. Dimensions added. Drawings added. Quantity edits.		
13	Note edit.				
14	Quantity edits. Item number edit. Item description edits. Material Specification edit. Rows moved.				
4	2/16/2016	1	Changed numbering of barriers and direction of impact to match test conditi	KAL	TJD
		3	Changed pin hole to pin anchor recesses.		
		5	Fixed overlap of dimensions.		
		8	Fixed font in part text. Removed view in part c4.		
		10	Fixed font in part text.		
12	Fixed font in part text. Removed scaling of part 6B3 added a broken view.				
5	2/17/2016	1	Note edits.	RKF	EMR
		2	Note edit.		
		3	Note edits.		
		8	Note edits.		
		10	Note edits.		

		11	Note added.		
		12	Note edits.		
6	3/8/2016	1	Note edits	JCH	TJD
		3	Note edit.		
		4	Note edit.		
		14	Bill of materials edit.		
7	3/10/2016	1	Added note 5.	SB	TJD
		4	Added radii to drawing.		
		14	Bill of materials edit.		
8	3/17/2016	5	Note edits.	SB	TJD
		6	Note edits.		
		12	Note edits. Bill of bars edits.		
		14	Bill of materials edit.		
9	3/24/2016	1	Updated title.	SB	TJD
10	5/20/2016	11	Note edit.	SB	TJD
		12	Bill of bars title edit.		
11	5/25/2016	11	Note edit.	KAL	TJD
		13	Changed sheet scale.		
		14	Bill of materials edit.		
12	1/18/2017	-	Template, font sizes, dual dimension placement, conventions updated throughout. Part renumbering. Dimension shifts throughout.	JEK	JEK
13	5/26/2017	14	Edited galvanization spec for part nos. a2, c1, c2, c3, d1, d2, d3, and d4. Added note.	KAL	MES
14	6/5/2017	14	Edited galvanization spec for part nos. b1 through b5.	JEK	DTM
15	10/30/2018	1	Note edit.	JEK	DJW