
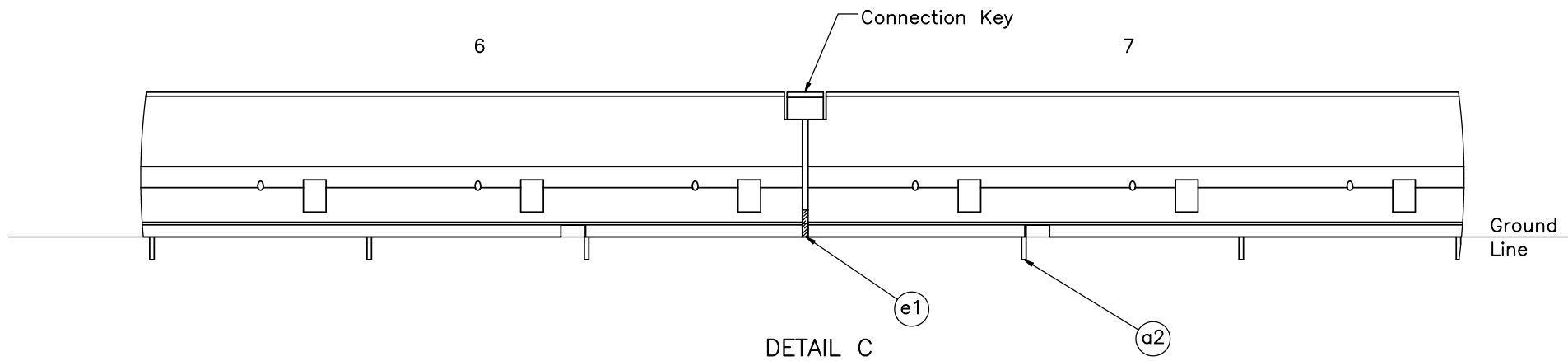
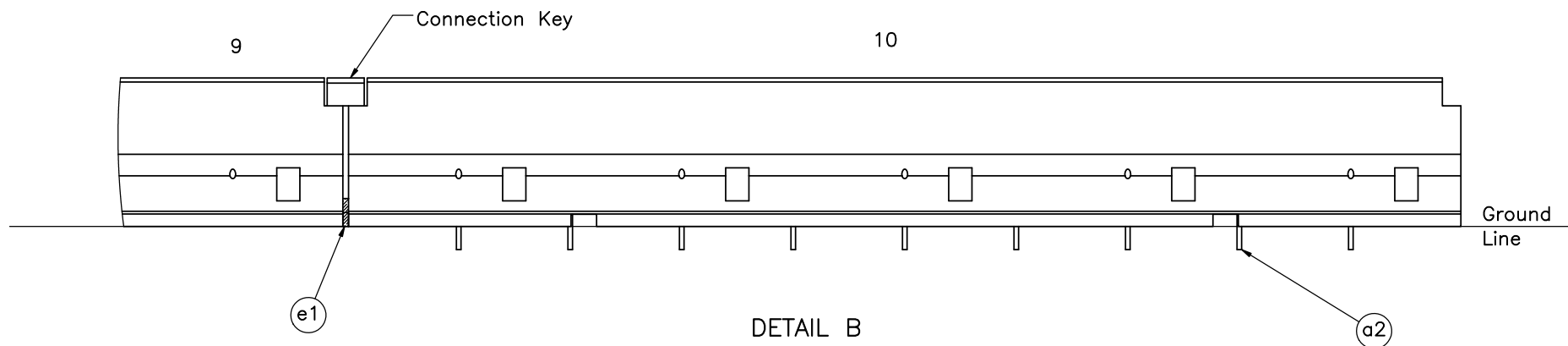


Barrier segments 1 and 10 are anchored to concrete tarmac through all pin anchor recesses with 1" [25] diameter ASTM A36 steel pins (Part a2) inserted into 1 1/4" [32] diameter pre-drilled holes in the concrete tarmac. Barrier segments 2-9 are anchored only through the non-traffic side pin anchor recesses.

- Notes: (1) Place 1" [25] diameter steel pins (Part a2) into every pin anchor recess (9 each) of barrier segments 1 and 10; and into every non-traffic side pin anchor recess (4 each) of barrier segments 2 through 9.
- (2) Place grout wedges (Part e1) at the toe of each barrier segment between adjacent barrier segments in every joint.
- (3) Test shall be performed according to test designation no. 3-11 of MASH.
- (4) The critical impact location is 51 3/16" [1300] upstream from the centerline of the joint between barrier nos. 4 and 5.
- (5) NJDOT Precast Concrete Curb and Construction Barrier curb will be referred to as Portable Concrete Barrier (PCB).
- (6) The system is NJDOT Type 4 (Alternate B) barrier corresponding to connection type C in the 2015 NJDOT *Roadway Design Manual*.

 Midwest Roadside Safety Facility	NJ Pinned Portable Concrete Barrier Test NJPCB-6		SHEET: 1 of 14
	System Layout		DATE: 10/30/2018
DWG. NAME: NJPCB-6_R5	SCALE: 1:245 UNITS: In.[mm]	DRAWN BY: JEK/MES/DTM/MBD	REV. BY: KAL/JEK



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Barrier Pin Details

DWG. NAME.
NJPCB-6_R5

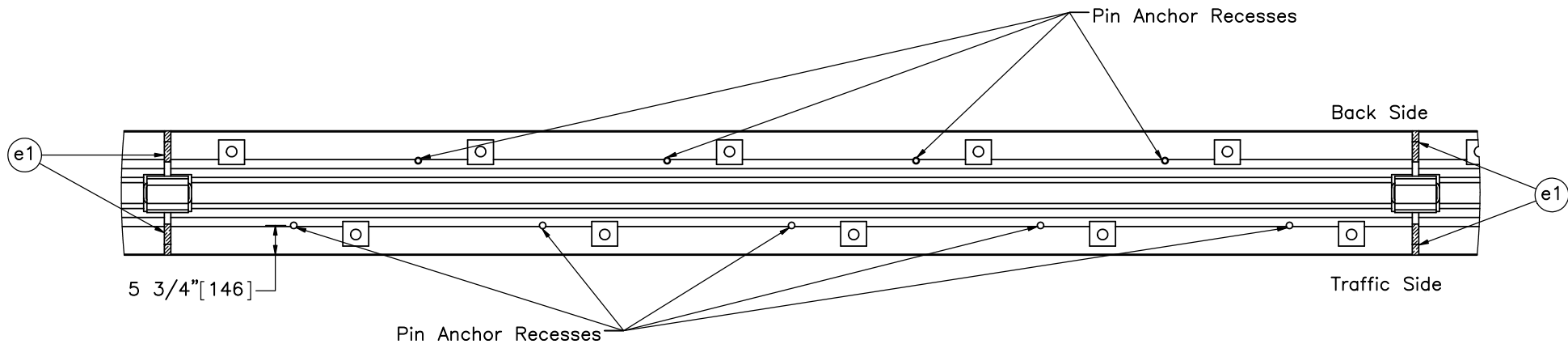
SCALE: 1:35
UNITS: In.[mm]

SHEET:
2 of 14

DATE:
10/30/2018


DRAWN BY:
JEK/MES/
DTM/MBD

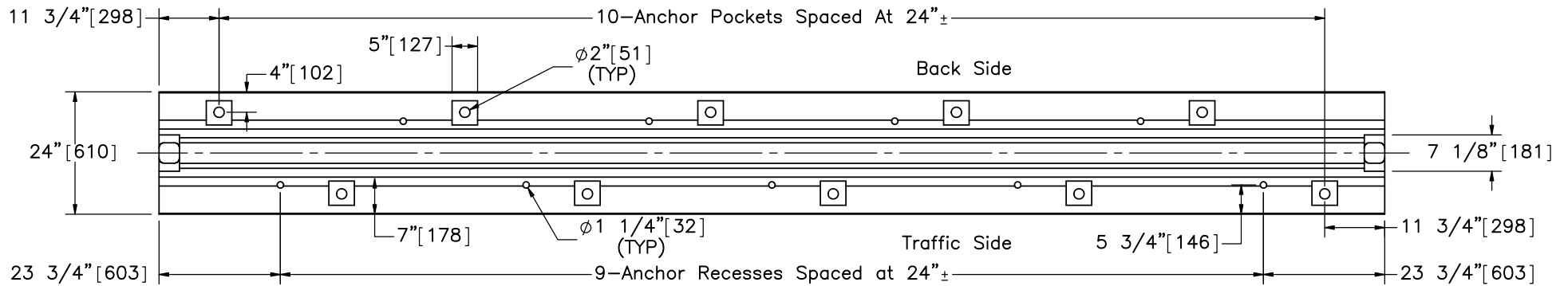
REV. BY:
KAL/JEK



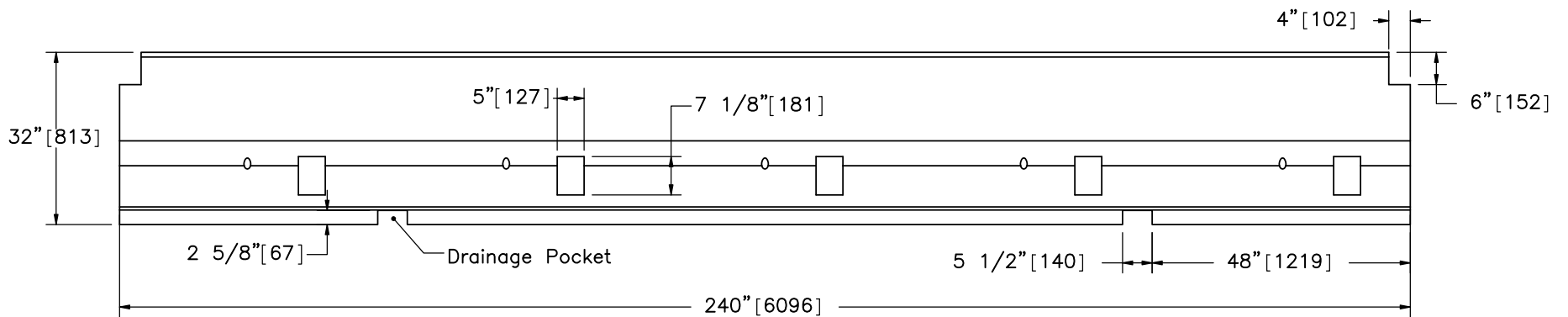
DETAIL D

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

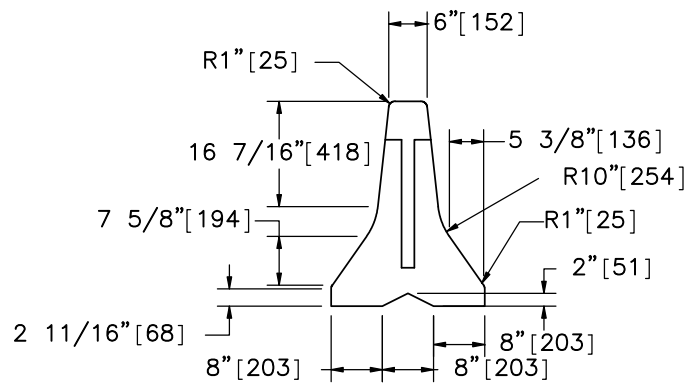
 Midwest Roadside Safety Facility	NJ Pinned Portable Concrete Barrier Test NJPCB-6 Pin Hole Locations		SHEET: 3 of 14
	DWG. NAME: NJPCB-6_R5	SCALE: 1:30 UNITS: In./mm	DATE: 10/30/2018 DRAWN BY: JEK/MES/ DTM/MBD REV. BY: KAL/JEK



PLAN VIEW



ELEVATION VIEW



PROFILE VIEW

- 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 mm x 140 mm] drainage pockets required in segments 12' [3658 mm] long or greater.



Midwest Roadside Safety Facility

NJ Pinned Portable Concrete Barrier Test NJPCB-6

Concrete Barrier Segment

DWG. NAME:
NJPCB-6_R5

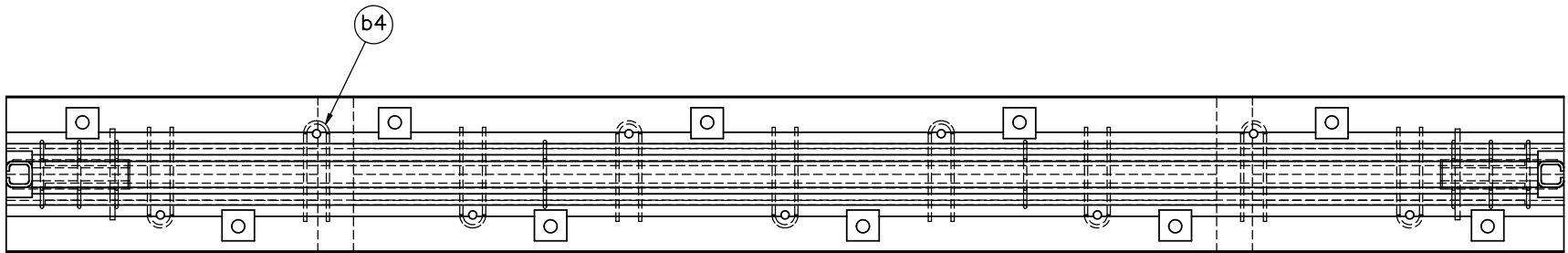
SCALE: 1:30
UNITS: In./[mm]

SHEET:
4 of 14

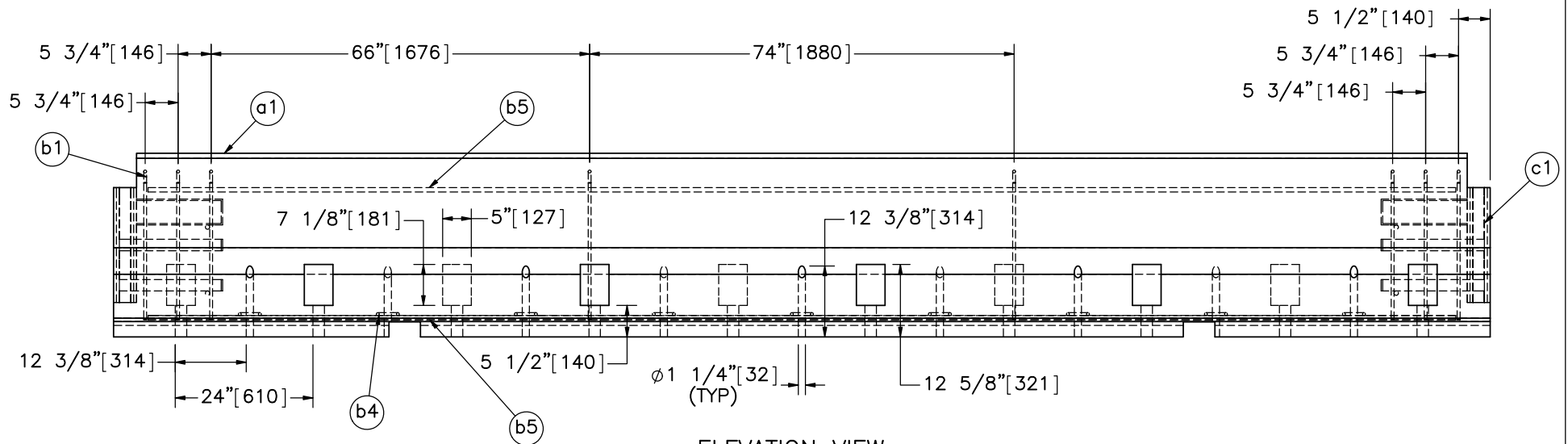
DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK



PLAN VIEW



ELEVATION VIEW



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Reinforcement Details

DWG. NAME:
NJPCB-6_R5

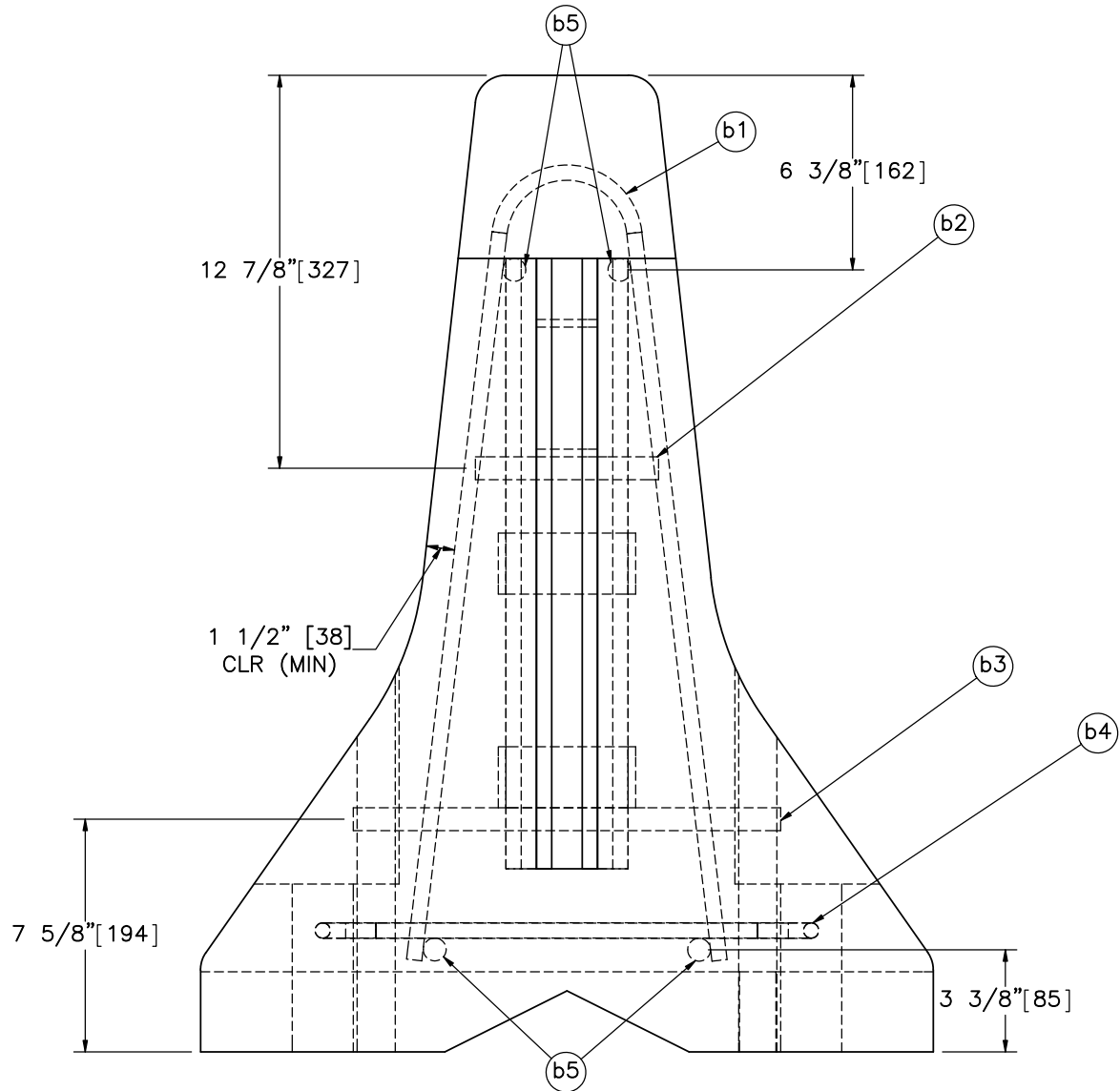
SCALE: 1:64
UNITS: In.[mm]

SHEET:
5 of 14

DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK



PROFILE VIEW



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Reinforcement Details – End
View

DWG. NAME:
NJPCB-6_R5

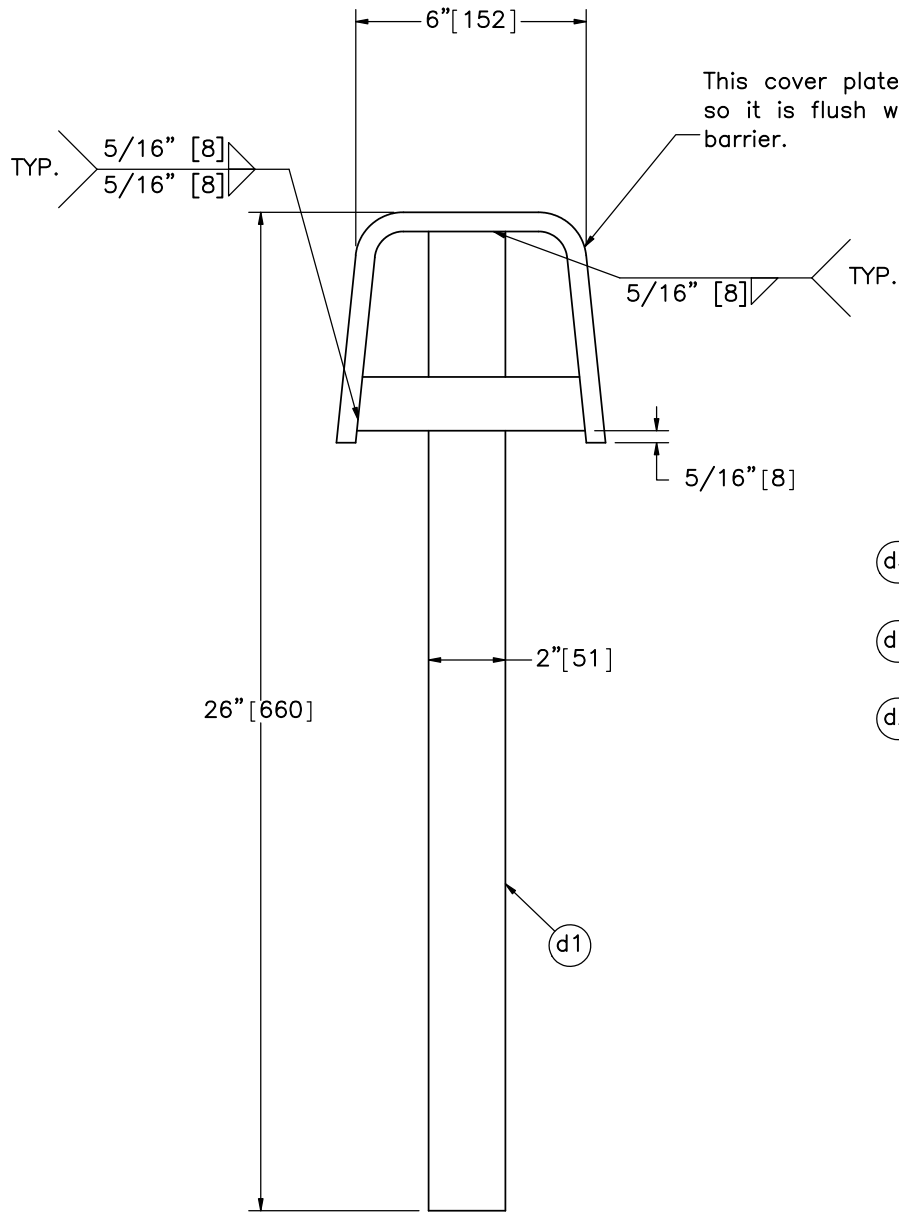
SCALE: 1:6
UNITS: In.[mm]

SHEET:
6 of 14

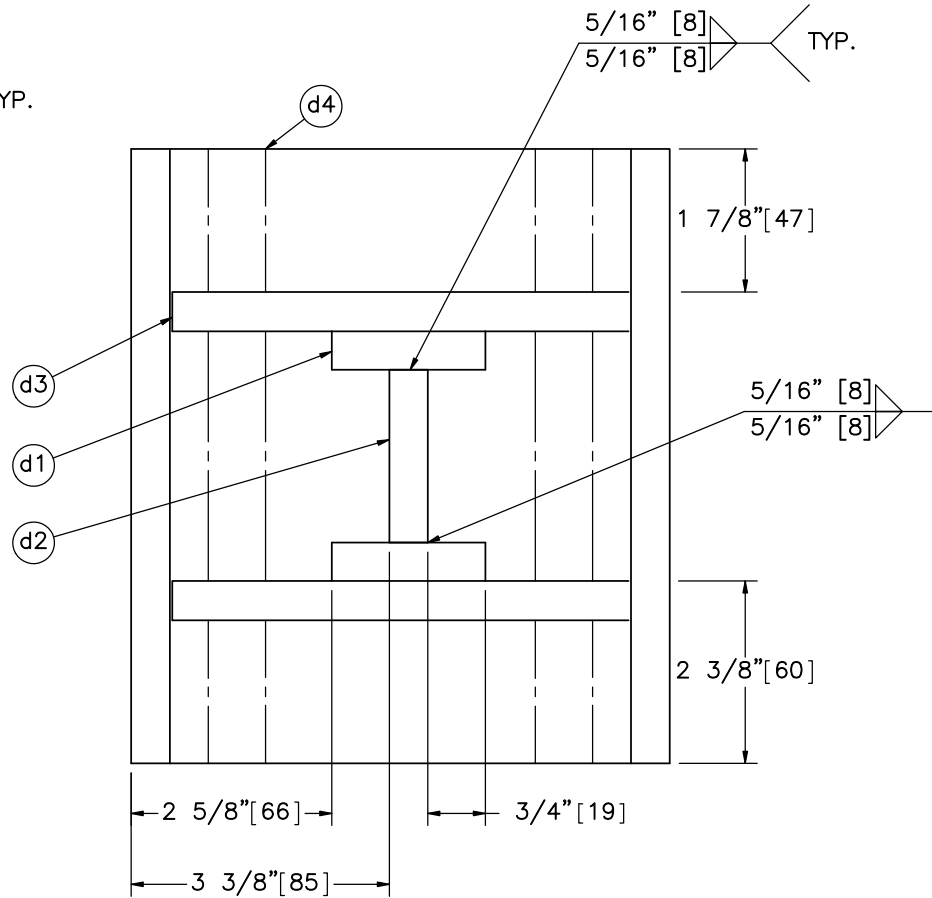
DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK



ELEVATION VIEW



BOTTOM VIEW
SCALE 2:5



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Connection Key

DWG. NAME.
NJPCB-6_R5

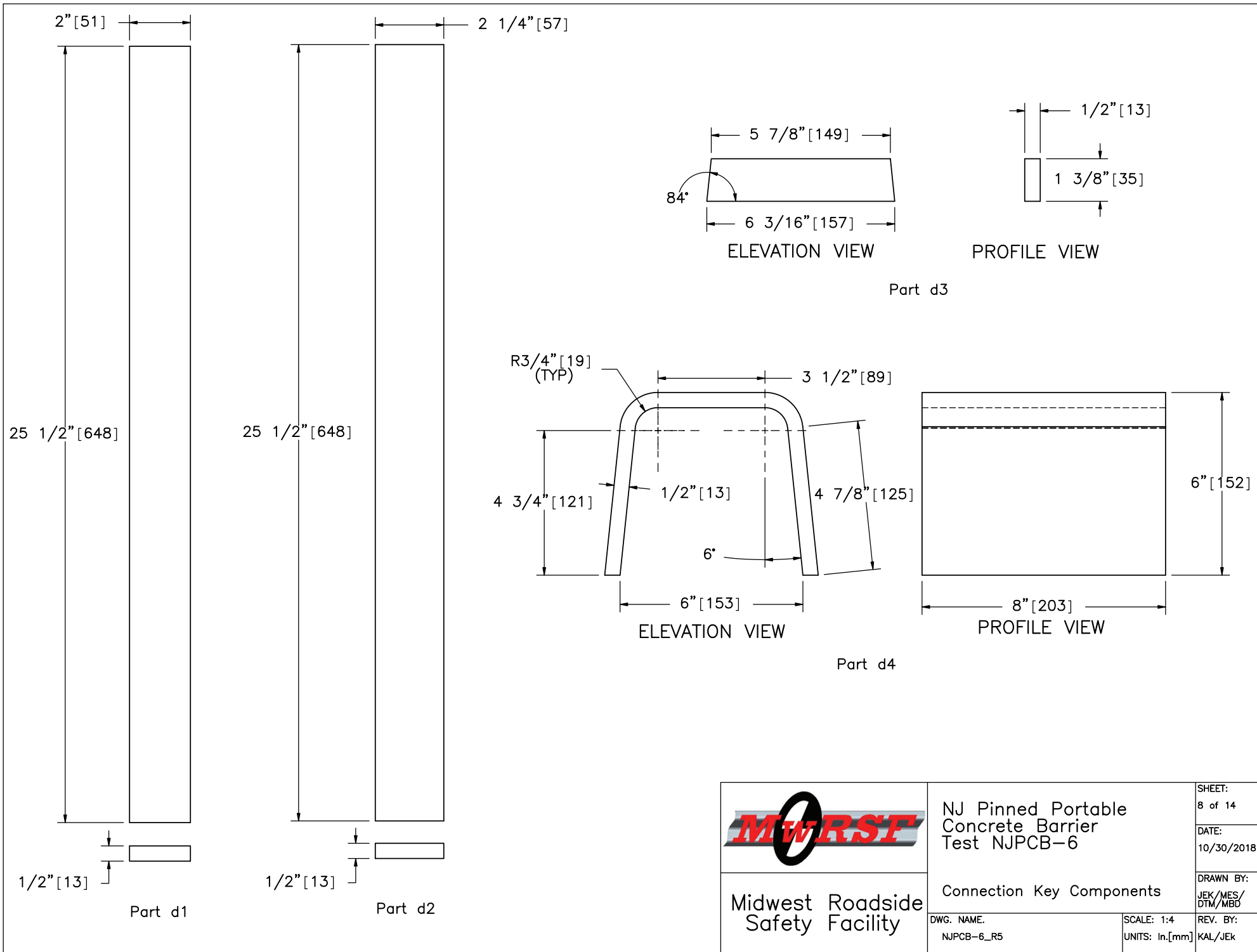
SCALE: 1:8
UNITS: In.[mm]

SHEET:
7 of 14

DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK



Midwest Roadside Safety Facility

NJ Pinned Portable Concrete Barrier Test NJPCB-6

Connection Key Components

DWG. NAME: NJPCB-6_R5

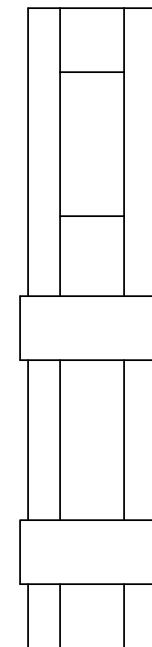
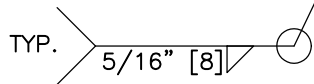
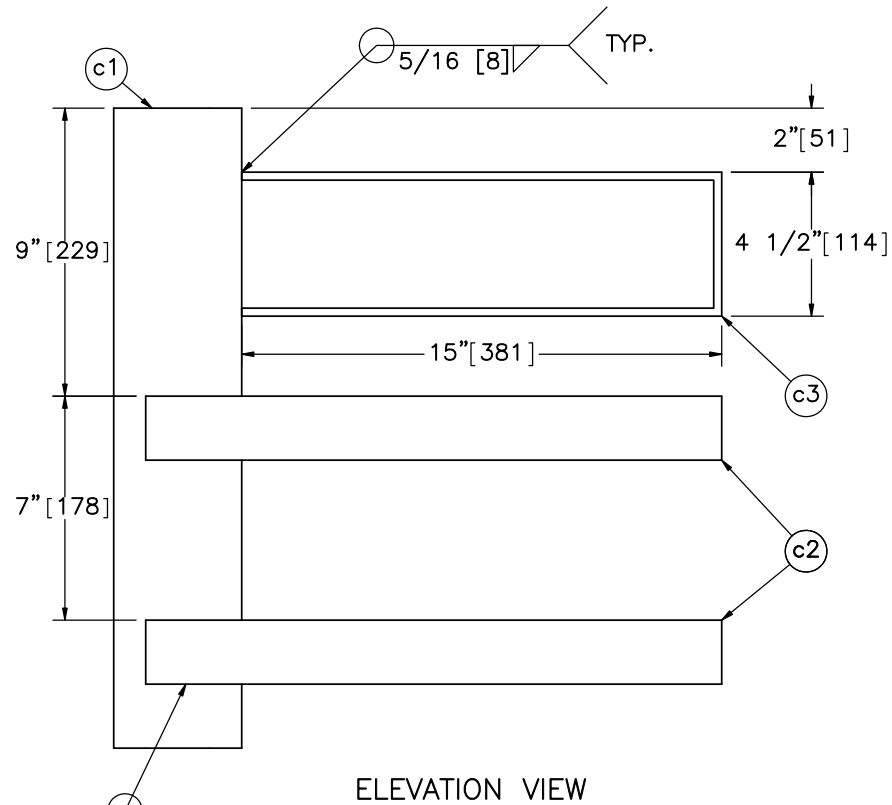
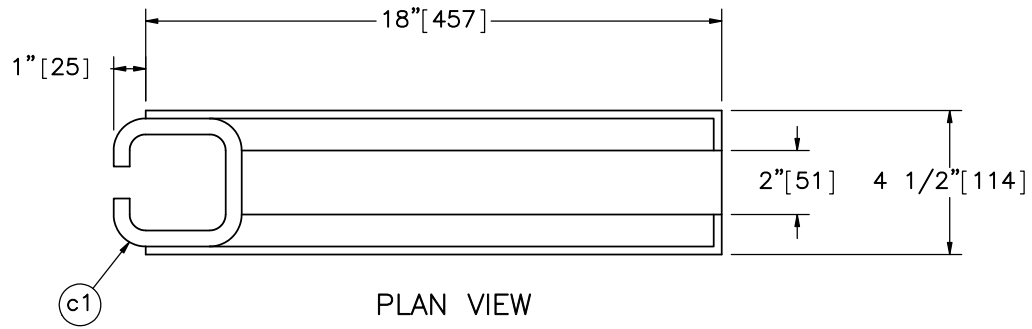
SCALE: 1:4
 UNITS: In.[mm]

SHEET: 8 of 14

DATE: 10/30/2018

DRAWN BY: JEK/MES/DTM/MBD

REV. BY: KAL/JEK



PROFILE VIEW



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Connection Socket

DWG. NAME.
NJPCB-6_R5

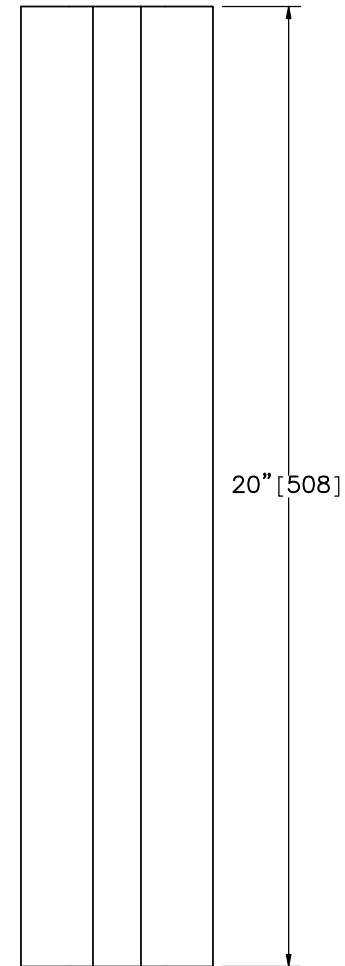
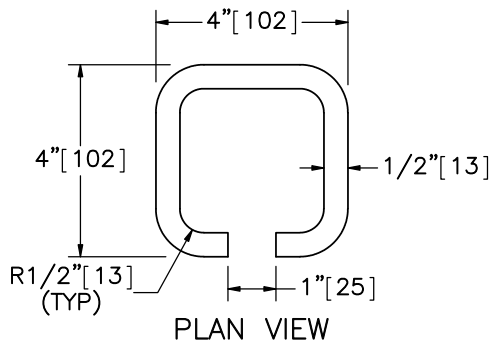
SCALE: 1:6
UNITS: In.[mm]

SHEET:
9 of 14

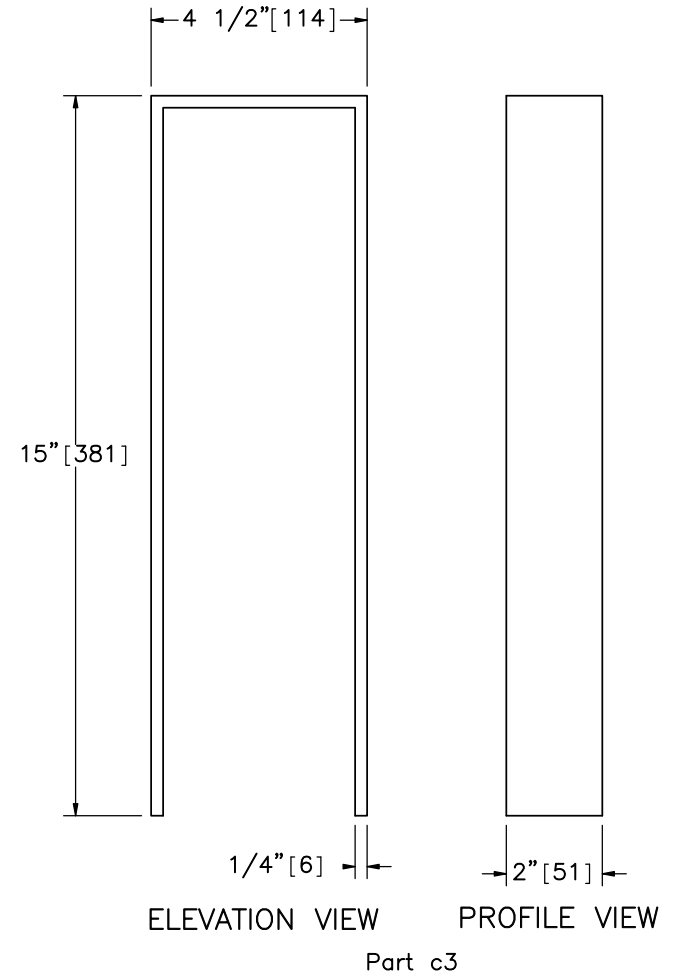
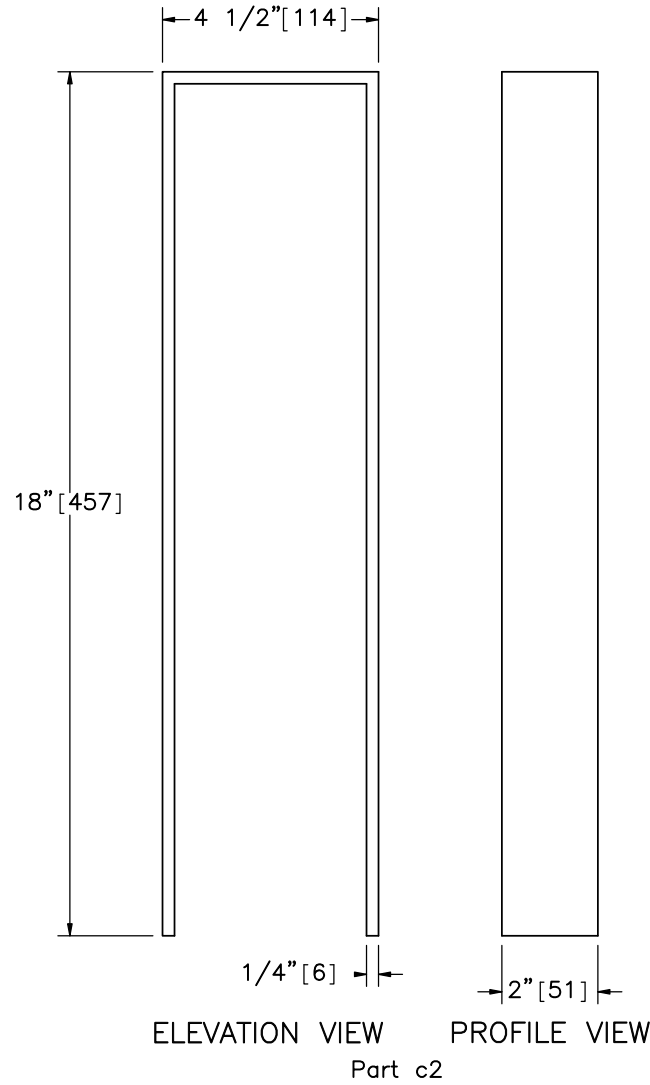
DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK



ELEVATION VIEW
Part c1



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Connection Socket Components

DWG. NAME:
NJPCB-6_R5

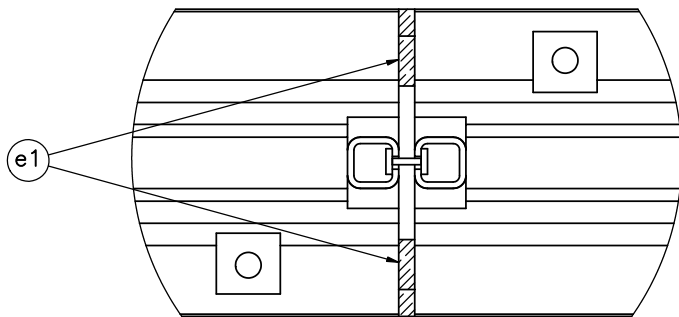
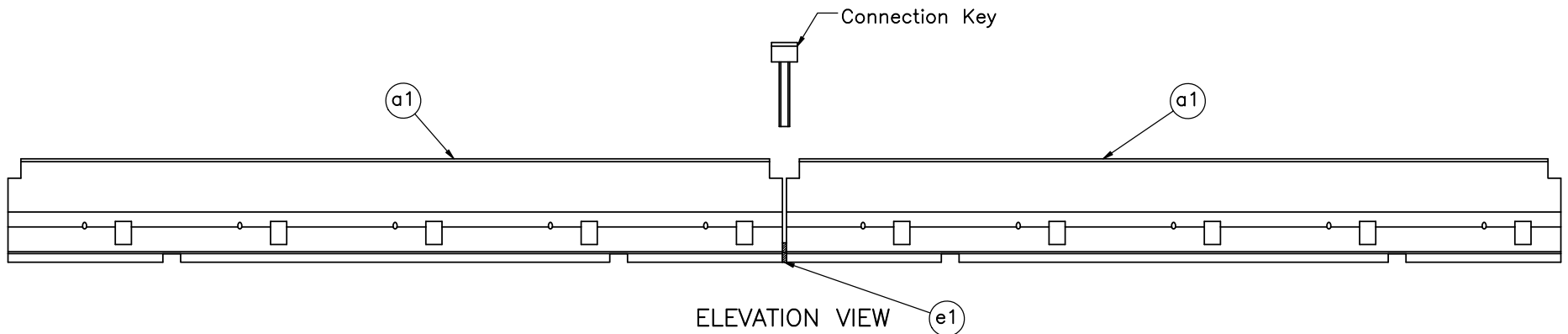
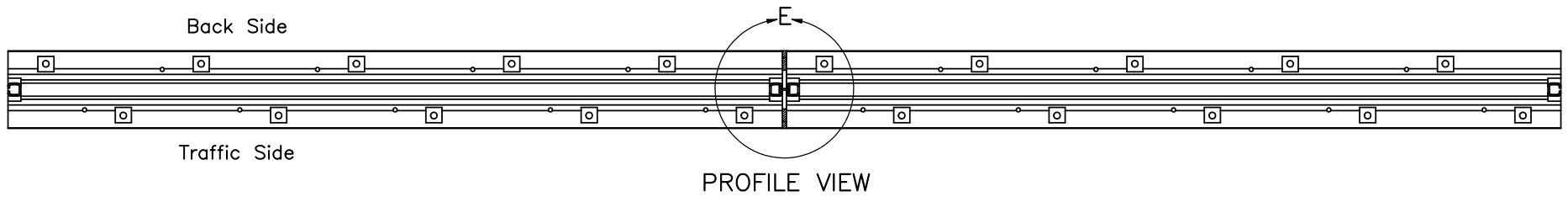
SCALE: 1:4
UNITS: In.[mm]

SHEET:
10 of 14

DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD


REV. BY:
KAL/JEK

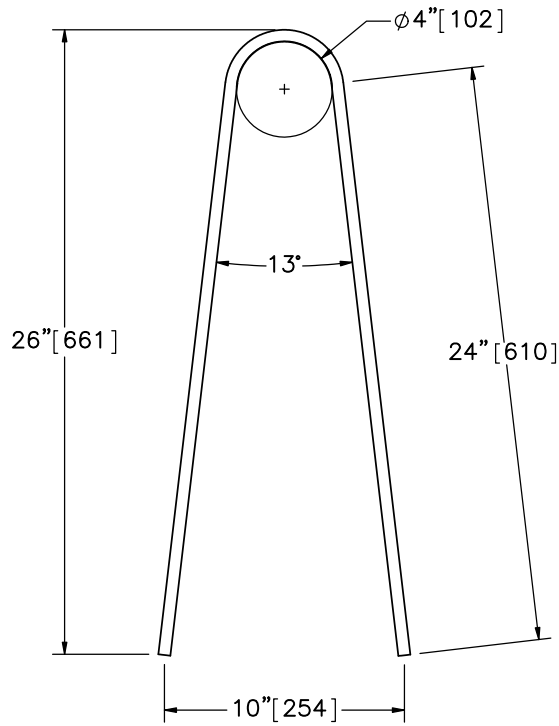


DETAIL E
SCALE 1 : 15

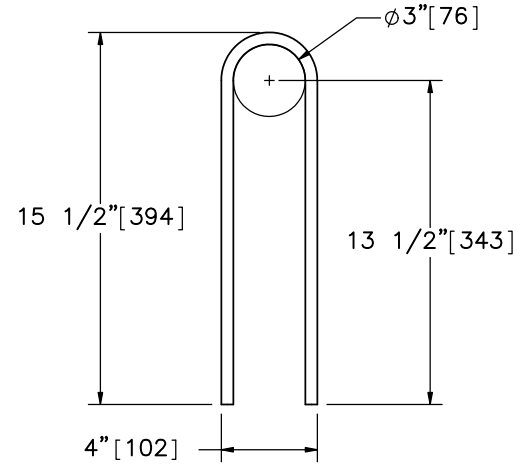
Notes: (1) Curved cover plate and stiffeners not shown in profile view and Detail E.

(2) Groundline and vertical anchors at toe of barrier not shown for clarity.

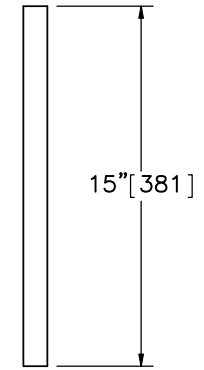
 Midwest Roadside Safety Facility	NJ Pinned Portable Concrete Barrier Test NJPCB-6		SHEET: 11 of 14
	Connection Key Placement		DATE: 10/30/2018
DWG. NAME: NJPCB-6_R5	SCALE: 1:50 UNITS: In./mm	DRAWN BY: JEK/MES/ DTM/MBD	REV. BY: KAL/JEK



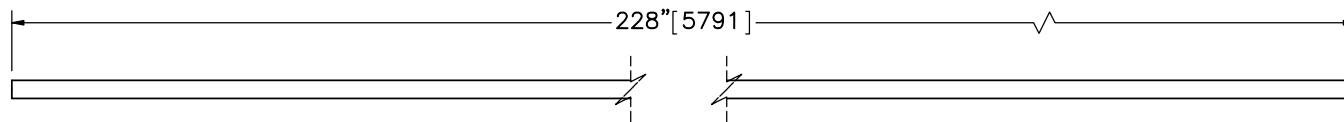
Part b1



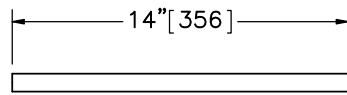
Part b4



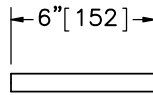
Part a2



Part b5



Part b3



Part b2

BILL OF BARS				
ITEM NO.	QTY.	BAR SIZE	UNBENT LENGTH	MATERIAL SPEC.
a2	50	Ø1" [25]	15" [381]	ASTM A36
b1	80	#4 [13]	59" [1499]	ASTM A615 Gr. 60
b2	20	#6 [19]	6" [152]	ASTM A615 Gr. 60
b3	20	#6 [19]	14" [356]	ASTM A615 Gr. 60
b4	90	#4 [13]	37" [940]	ASTM A615 Gr. 60
b5	40	#6 [19]	19'-0" [5791]	ASTM A615 Gr. 60

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



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Bill of Bars

DWG. NAME:
NJPCB-6_R5

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


SHEET:
12 of 14

DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK

- (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 non-shrink grout of a plastic consistency that is listed on the QPL and conforms to ASTM C 1107 with the following amendments:
 1. Ensure that the grout has a working time of at least 30 minutes from the time the water is added.
 2. Match the color of the hardened grout, where visible, to the color of the adjacent hardened concrete.
 3. Include 1-day strength tests as part of the performance requirements of ASTM C 1107.
 4. Ensure that the grout contains no more than 0.05 percent chlorides or 5.0 percent sulfates by weight.
 5. Minimum 1-day compressive strength of 1,000 psi [6.9 MPa].
- (10) Use connection key in every joint. Grout is placed at the toe of each barrier segment between adjacent barrier segments in every joint. Pin every segment in all non-traffic side anchor pin recesses, and pin both end segments in every anchor pin recess.

	NJ Pinned Portable Concrete Barrier Test NJPCB-6		SHEET: 13 of 14
			DATE: 10/30/2018
Midwest Roadside Safety Facility	General Notes		DRAWN BY: JEK/MES/ DTM/MBD
	DWG. NAME: NJPCB-6_R5	SCALE: None UNITS: In.[mm]	REV. BY: KAL/JEK

Item No.	QTY.	Description	Material Spec	Galvanization Spec
a1	10	Concrete Barrier Segment – NJDOT Type 4 Barrier (Alternate B)	f'c = 3,700 psi [25.5 MPa]	–
a2	50	1" [25] Dia., 15" [381] Long Steel Anchor Pin	ASTM A36	ASTM A123*
b1	80	1/2" [13] Dia., 59" [1499] 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" [5791] 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	–
e1	1	Non-Shrink Grout	Min. 1-day Compressive Strength 1,000 psi [6.9 MPa]	–

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



Midwest Roadside
Safety Facility

NJ Pinned Portable
Concrete Barrier
Test NJPCB-6

Bill of Materials

DWG. NAME:
NJPCB-6_R5

SCALE: None
UNITS: In./mm

SHEET:
14 of 14

DATE:
10/30/2018

DRAWN BY:
JEK/MES/
DTM/MBD

REV. BY:
KAL/JEK

REV.	DATE OF ISSUE	Page	NATURE OF CHANGES	REVIEWER	REVISED BY
0	12/19/2016	-	Originated from NJPCB-1_R13. Changed pin locations to all non-traffic side pin holes (and end barriers, all holes). Alternate dimension moved to right (from beneath), dimension shifts throughout. Page templates updated. Part renumbering throughout. Galvanization specs added.	-	JEK
1	4/4/2017	1	Anchor note edit.	KAL	JEK
		13	Note 10 edit.		
2	5/26/2017	14	Edited galvanization spec for part nos. a2, c1, c2, c3, d1, d2, d3 and d4.	KAL	MES
3	6/5/2017	14	Edited galvanization spec for part nos. b1 through b5.	JEK	DTM
4	2/27/2018	1	Note 6 edit.	KAL	JEK
		13	Note 9-5 edit.		
		14	Material: e1.		
5	10/30/2018	1	Note 6 edit.	JEK	MBD