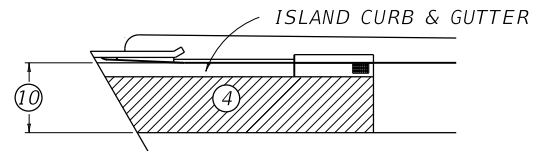


~ NOTES ~

- ⑦ VARIABLE LENGTH, SEE APPLICABLE "BRIDGE END CONNECTOR" DRAWINGS.
- ⑧ SHOWN FOR FILL CONDITION. LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT.
- 9. TO TERMINATE GUARDRAIL INSTALLATION:
 - A. ALL FILLS; ALSO SOLID ROCK CUTS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL, USE END TREATMENT TYPE 1 OR 4A.
 - B. SOLID ROCK CUTS WITHOUT ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL, USE END TREATMENT TYPE 2A.
 - C. EARTH CUTS AND SOFT ROCK CUTS, USE END TREATMENT TYPE 3.
- ⑩ USE ISLAND CURB AND GUTTER AND SAME PAVEMENT AS SHOWN ON MAINLINE DESIGN, (SEE DETAIL A).
- 11. NO ANGLES PERMITTED IN NORMAL GUARDRAIL ALIGNMENT.
- 12. THIS ILLUSTRATION IS FOR TWO-WAY TRAFFIC FLOW. FOR ONE-WAY TRAFFIC FLOW, MAKE THE FOLLOWING ALTERATIONS:
 - APPROACH END OF STRUCTURE-
 - A. NO PAVEMENT TAPER REQUIRED
 - B. ALIGN FACE OF GUARDRAIL WITH STRUCTURE GUTTERLINE
 - EXIT END OF STRUCTURE-
 - A. PAVEMENT TAPER REQUIRED FOR BOTH OUTSIDE LANES
 - B. FOR GUARDRAIL ALIGNMENT SEE BRIDGE END CONNECTOR DRAWINGS

ITEM	STD. DWG. NO. (CURRENT EDITION)
① STEEL W BEAM GUARDRAIL - S FACE	RBR-001
② BRIDGE END CONNECTORS	RBC-SERIES
③ END TREATMENT TYPE 1, 2A, 3 OR 4A (NOTE 9)	RBR-SERIES
DRAINAGE ITEMS (WHEN REQUIRED)	
④ BRIDGE END DRAINAGE AREA (NOTE 10)	
⑤ CURB BOX INLET TYPE B	RDB-SERIES
⑥ ISL. HEADER CURB OR ISL. CURB AND GUTTER	RPM-SERIES



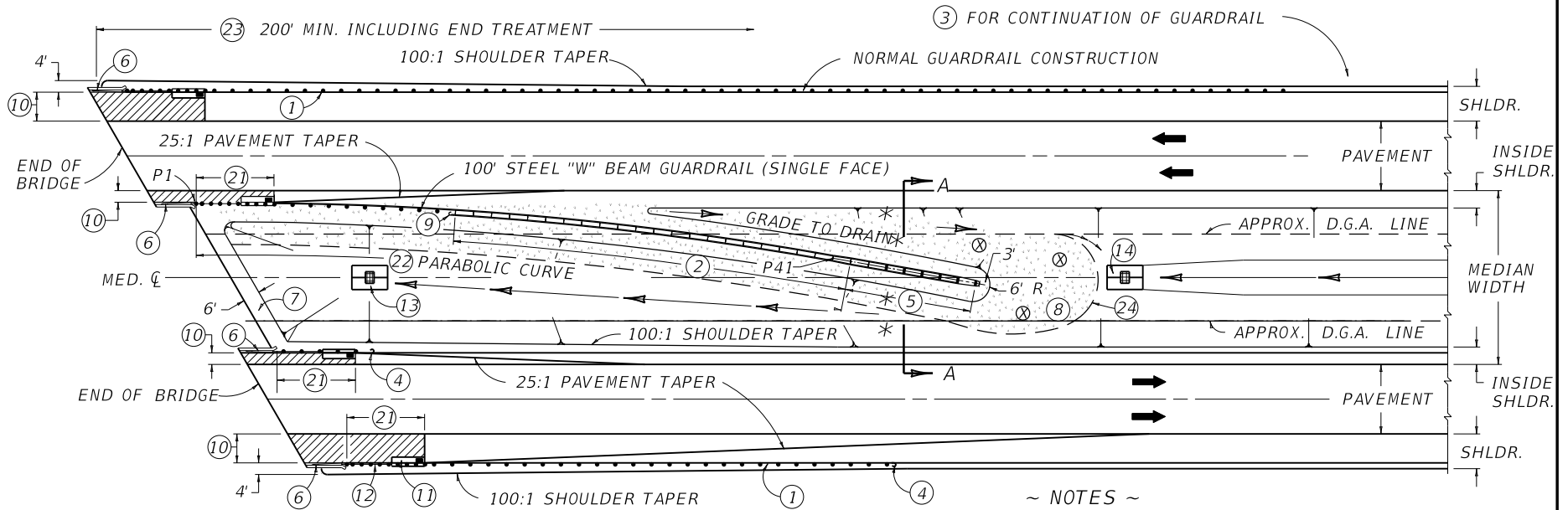
DETAIL A

USE WITH CUR. STD. DWGS.
RBC-005 RBC-006 RBR-001

KENTUCKY
DEPARTMENT OF HIGHWAYS
GUARDRAIL AND
BRIDGE END DRAINAGE
FOR SINGLE STRUCTURES

STANDARD DRAWING NO. RBB-001-09

SUBMITTED *[Signature]* DATE 02-26-20
APPROVED *[Signature]* DATE 02-26-20

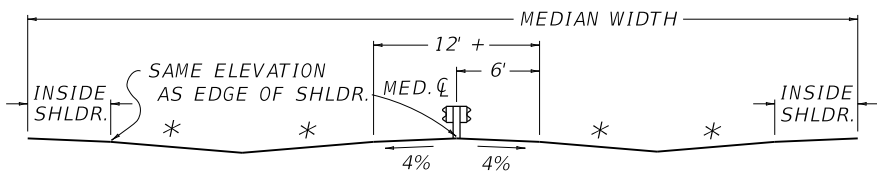


~ NOTES ~

- 15. NO ANGLES PERMITTED IN NORMAL GUARDRAIL ALIGNMENT.
- 16. TO TERMINATE GUARDRAIL INSTALLATION:
 - A. ALL FILLS; ALSO SOLID ROCK CUTS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL, USE END TREATMENT TYPE 1 OR 4A.
 - B. SOLID ROCK CUTS WITHOUT ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL, USE END TREATMENT TYPE 2A.
 - C. EARTH CUTS AND SOFT ROCK CUTS, USE END TREATMENT TYPE 3.
- 17. USE ROADWAY OR BORROW EXCAVATION, OR EMBANKMENT IN PLACE.
- 18. WHEN THIS DIMENSION IS 6'-0" OR LESS USE ISLAND CURB AND GUTTER AND SAME PAVEMENT AS SHOWN ON MAINLINE DESIGN, (SEE DETAIL A).
- 19. FLATTEN SLOPES AND ELIMINATE INLET WHEN MEDIAN SLOPES AWAY FROM BRIDGE. (SEE PLANS FOR TYPE)
- 20. LOCATE AS CLOSE TO GUARDRAIL AS SLOPE WILL PERMIT. (SEE PLANS FOR TYPE)
- 21. VARIABLE LENGTH. SEE APPLICABLE "BRIDGE END CONNECTOR" DRAWINGS (RBC SERIES).
- 22. SEE STD. DWG. **RBB-003**, CURRENT EDITION, FOR MEDIAN GUARDRAIL POST ALIGNMENT.
- 23. SHOWN FOR FILL CONDITION. REDUCE LENGTH SHOULD FIELD CONDITIONS WARRANT.
- 24. ROUND SLOPES IN ACCORDANCE WITH CURRENT STD. DWG. **RGX-001**.

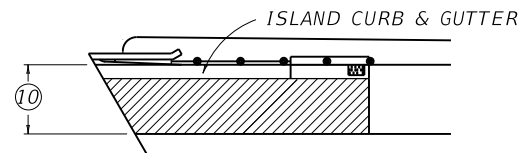
ITEM	STD. DWG. NO. (CURRENT EDITION)
① STEEL W BEAM GUARDRAIL - S FACE (NOTE 15)	
② 137'-6" STEEL W BEAM GUARDRAIL - D FACE	
③ END TREATMENT TYPE 1, 2A, 3 OR 4A (NOTE 16)	
④ END TREATMENT TYPE 2A	
⑤ CRASH CUSHION TYPE IX-A	RBE-SERIES
⑥ BRIDGE END CONNECTORS	RBC-SERIES
⑦ 6' EARTH DIKE	RGX-SERIES
⑧ GUARDRAIL EARTH BERM (NOTE 17)	RBC-SERIES
⑨ TERMINAL SECTION NO. 1	RBR-SERIES
DRAINAGE ITEMS (WHEN REQUIRED)	
⑩ BRIDGE END DRAINAGE AREA (NOTE 18) (TYP.)	
⑪ CURB BOX INLET TYPE B	RDB-SERIES
⑫ ISL. HEADER CURB OR ISL. CURB AND GUTTER	RPM-SERIES
⑬ DROP BOX INLET (NOTE 19)	
⑭ DROP BOX INLET (NOTE 20)	RDB-SERIES

USE WITH CUR. STD. DWGS.
RBB-003 RBC-005 RBC-006



SECTION A-A

* SLOPES 12:1 DESIRABLE, 6:1 MINIMUM
⊗ SLOPES 12:1 OR FLATTER REQUIRED



DETAIL A

**KENTUCKY
DEPARTMENT OF HIGHWAYS**

**GUARDRAIL AND
BRIDGE END DRAINAGE
FOR TWIN STRUCTURES**

STANDARD DRAWING NO. **RBB-002-09**

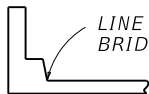
SUBMITTED	<i>[Signature]</i>	12-01-15
DESIGNED BY	DATE	
APPROVED	<i>[Signature]</i>	12-01-15
STATE HIGHWAY ENGINEER	DATE	

CALCULATIONS FOR MEDIAN GUARDRAIL LOCATION (DEPRESSED MEDIANS)

POST NUMBER	36'		40'		50'		60'		64'		84'	
	DISTANCE	OFFSET	DISTANCE	OFFSET	DISTANCE	OFFSET	DISTANCE	OFFSET	DISTANCE	OFFSET	DISTANCE	OFFSET
P_1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P_9	25.0	0.1	25.0	0.1	25.0	0.2	25.0	0.2	25.0	0.3	25.0	0.4
P_{13}	50.0	0.5	50.0	0.6	50.0	0.8	50.0	1.0	50.0	1.1	50.0	1.5
P_{17}	75.0	1.1	75.0	1.3	75.0	1.8	75.0	2.2	75.0	2.4	74.9	3.3
P_{21}	100.0	2.0	100.0	2.3	99.9	3.1	99.9	3.9	99.9	4.3	99.8	5.9
P_{25}	124.9	3.2	124.9	3.7	124.9	4.9	124.8	6.2	124.8	6.7	124.6	9.2
P_{29}	149.9	4.6	149.9	5.3	149.8	7.1	149.7	8.9	149.6	9.6	149.2	13.2
P_{33}	174.9	6.2	174.8	7.2	174.6	9.6	174.4	12.1	174.4	13.0	173.8	17.9
P_{37}	199.8	8.1	199.7	9.4	199.5	12.6	199.2	15.8	199.0	17.0	198.2	23.4
P_{41}	224.7	10.3	224.6	11.9	224.3	15.9	223.8	19.9	223.6	21.5	222.4	29.5

DISTANCE IN ABOVE CHART REFERS TO POINTS ALONG AN EXTENDED LINE AT VARIOUS DISTANCES IN FEET FROM A POINT ON FACE OF GUARDRAIL AT LOCATION OF CENTERLINE OF POST NUMBER P1.
 OFFSET REFERS TO DISTANCE IN FEET AT 90 DEGREES FROM POINTS ALONG AN EXTENDED LINE TO FACE OF GUARDRAIL AT CORRESPONDING LISTED POST NUMBER.

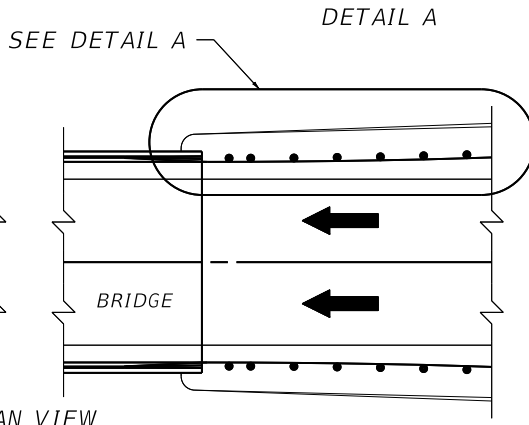
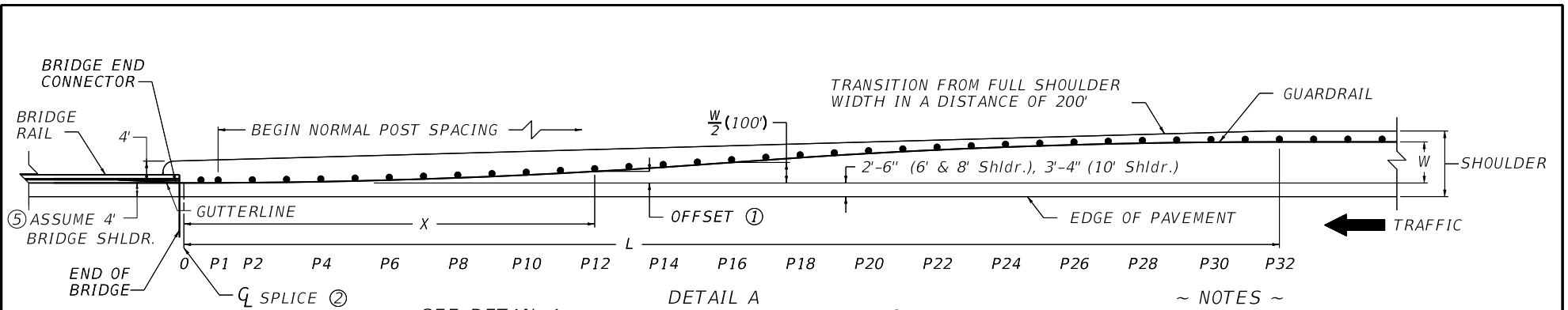
USE WITH CURRENT STD. DWG.
RBB-002



LINE EXTENDED FROM THIS POINT ON GUTTERLINE OF BRIDGE PARALLELING EDGE OF PAVEMENT.

KENTUCKY
DEPARTMENT OF HIGHWAYS
LAYOUT OF GUARDRAIL AT
TWIN STRUCTURES
(DEPRESSED MEDIAN)

STANDARD DRAWING NO. RBB-003-03
 SUBMITTED *[Signature]* 12-01-15
DIRECTOR, BUREAU OF DESIGN DATE
 APPROVED *[Signature]* 12-01-15
STATE HIGHWAY ENGINEER DATE



- ~ NOTES ~
- ① OFFSETS SHOWN ARE CALCULATED FROM FACE OF GUARDRAIL (TANGENT EXTENDED FROM BRIDGE). OFFSET DIMENSIONS SHOWN ARE FOR 6 FOOT USABLE SHOULDERS, WITH W EQUAL TO 7.5 FEET.
 - ② DISTANCES ARE FROM CENTER LINE OF SPLICE. SEE CURRENT STANDARD DRAWING [RBC-002](#) FOR DETAILS.
 3. CALCULATIONS FROM 0 FEET TO 100 FEET ARE BASED ON THE FOLLOWING FORMULA: $OFFSET = \left(\frac{X}{L/2}\right)^2 \times \frac{W}{2}$
FROM 100 FEET TO 200 FEET THE PROCEDURE IS AS FOLLOWS, FOR EXAMPLE AT P28: 7.5 FEET MINUS 0.23 FEET = 7.27 FEET, ETC.
 4. THE ENGINEER SHALL USE THE OFFSET FORMULA AND CALCULATE OFFSETS NEEDED FOR FIELD CONDITIONS DIFFERENT THAN THAT SHOWN IN THE CHART.
 - ⑤ BRIDGE SHOULDER WIDTH VARIES PER KYTC & AASHTO GUIDANCE.

6' USABLE SHOULDER
GUARDRAIL FLARE DIMENSIONS

POST NUMBER	DISTANCE OFFSET	
	FEET	
0	0	0
P1	6.25	0.01
P2	12.5	0.02
P4	25.0	0.08
P6	37.5	0.19
P8	50.0	0.34
P10	62.5	0.52
P12	75.0	0.75
P14	87.5	1.03
P16	100.0	1.34
P18	112.5	1.64
P20	125.0	1.92
P22	137.5	2.15
P24	150.0	2.33
P26	162.5	2.48
P28	175.0	2.59
P30	187.5	2.65
P32	200.0	2.67

8' USABLE SHOULDER
GUARDRAIL FLARE DIMENSIONS

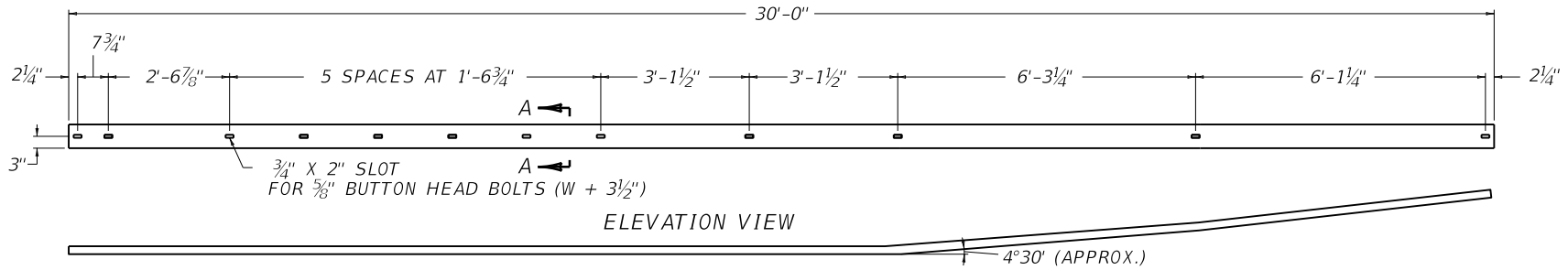
POST NUMBER	DISTANCE OFFSET	
	FEET	
0	0	0
P1	6.25	0.01
P2	12.5	0.04
P4	25.0	0.15
P6	37.5	0.33
P8	50.0	0.59
P10	62.5	0.91
P12	75.0	1.32
P14	87.5	1.79
P16	100.0	2.34
P18	112.5	2.88
P20	125.0	3.35
P22	137.5	3.76
P24	150.0	4.08
P26	162.5	4.34
P28	175.0	4.52
P30	187.5	4.63
P32	200.0	4.67

10' USABLE SHOULDER
GUARDRAIL FLARE DIMENSIONS

POST NUMBER	DISTANCE OFFSET	
	FEET	
0	0	0
P1	6.25	0.01
P2	12.5	0.05
P4	25.0	0.21
P6	37.5	0.47
P8	50.0	0.84
P10	62.5	1.30
P12	75.0	1.88
P14	87.5	2.56
P16	100.0	3.34
P18	112.5	4.11
P20	125.0	4.79
P22	137.5	5.37
P24	150.0	5.83
P26	162.5	6.20
P28	175.0	6.46
P30	187.5	6.62
P32	200.0	6.67

USE WITH CUR. STD. DWG.
[RBC-002](#)

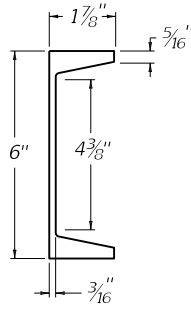
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL TRANSITION FROM NORMAL SHOULDER TO NARROW BRIDGE	
STANDARD DRAWING NO. RBB-010-06	
SUBMITTED <i>[Signature]</i>	DATE 02-26-20
APPROVED <i>[Signature]</i>	DATE 02-26-20



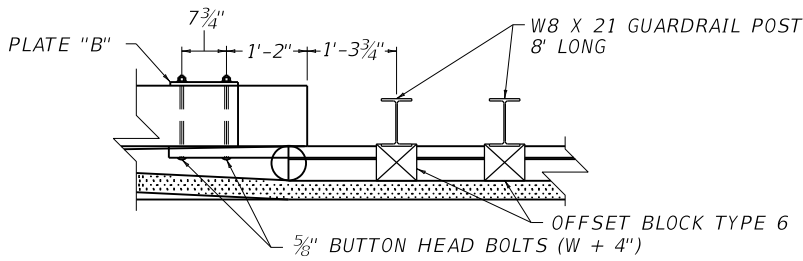
ELEVATION VIEW

PLAN VIEW

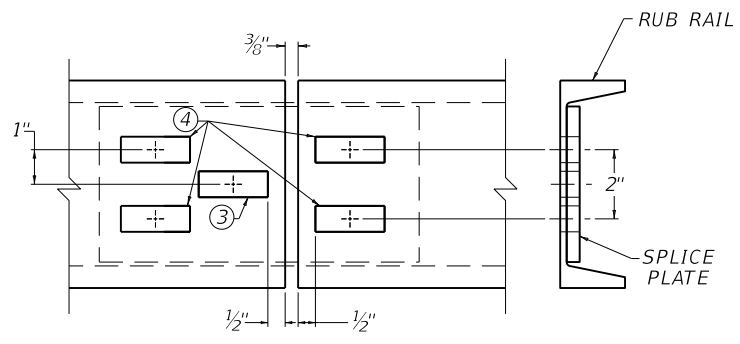
C6 X 8.2 RUB RAIL



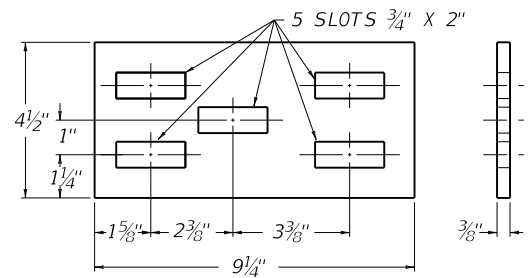
SECTION A-A



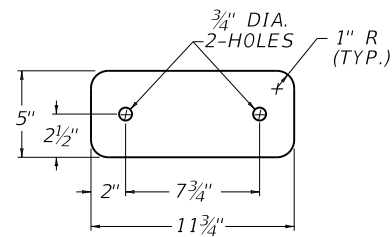
RUB RAIL ATTACHED TO CONCRETE PARAPET



RUB RAIL SPLICE (TYP.)



RUB RAIL SPLICE PLATE



5/8" STEEL PLATE "B"

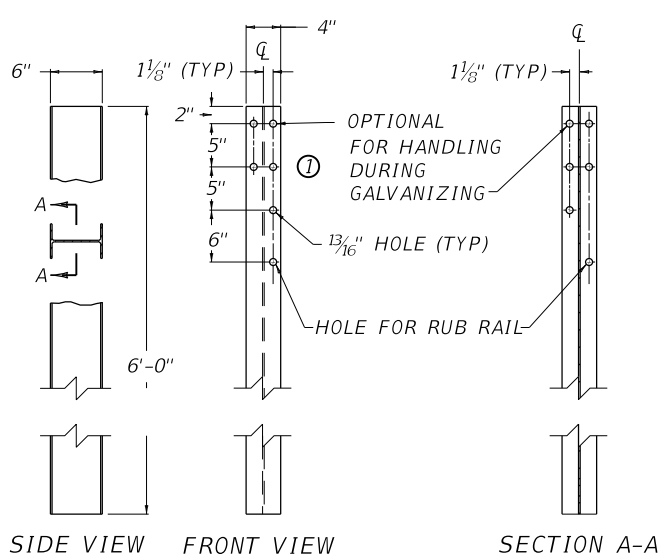
- ~ NOTES ~
- RUB RAIL IS DETAILED AS ONE CONTINUOUS PIECE, A SPLICE IS PERMITTED PROVIDING IT IS DONE AT A GUARDRAIL POST. SEE "RUB RAIL SPLICE" DETAIL.
 - MATERIAL REQUIREMENTS
ALL HARDWARE SHALL BE GALVANIZED. (AASHTO M-232)
5/8" STEEL PLATE "B" (AASHTO M-270)
3/8" STEEL PLATE "RUB RAIL SPLICE PLATE" (AASHTO M-270)
5/8" BUTTON HEAD BOLTS (AASHTO M-180)
5/8" HEAVY HEX NUTS (5/8" THICK) (AASHTO M-291)
5/8" FLAT WASHERS (1/8" THICK) (AASHTO M-293)
C6 X 8.2 RUB RAIL (AASHTO M160 AND M270)
GRADE 36, GALVANIZED ACCORDING TO AASHTO M111 AFTER PUNCHING AND CUTTING ARE COMPLETE.
 - THIS SLOT FOR BOLTING RAIL AND SPLICE PLATE TO GUARDRAIL POST WITH A 5/8" X 3 1/2" BUTTON HEAD BOLT AND HEX HEAD NUT.
 - THESE SLOTS FOR BOLTING RAIL TO SPLICE PLATE WITH A 5/8" X 1 1/2" BUTTON HEAD BOLT AND HEX HEAD NUT.

~ MAINTENANCE NOTES ~

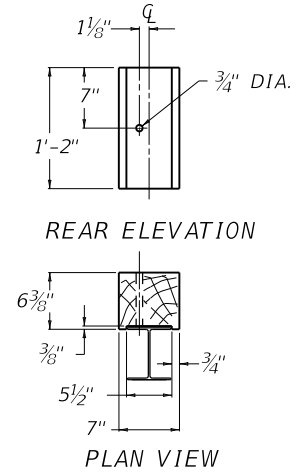
- NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
- FOR NEW CONSTRUCTION, REFER TO BHS-013 AND BHS-014 FOR THRIE-BEAM CONNECTIONS.
- USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.

USE WITH CUR. STD. DWG.
RBC-005 RBC-003

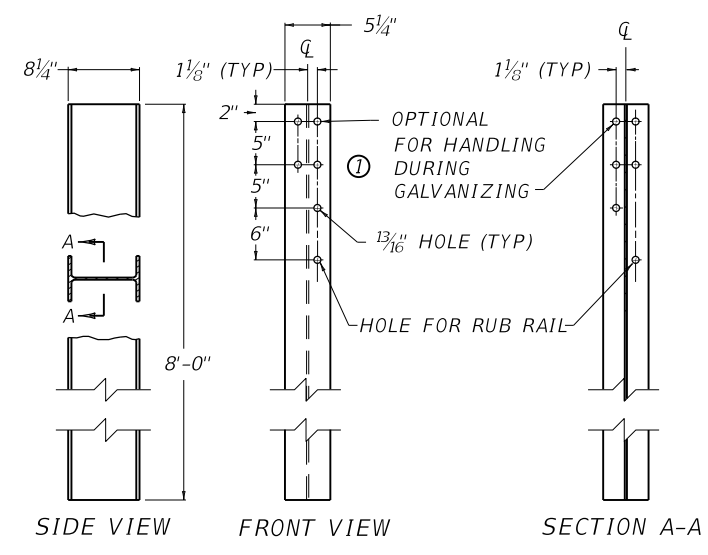
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL CONNECTOR TO BRIDGE END TYPE A COMPONENTS	
STANDARD DRAWING NO. RBC-002-04	
SUBMITTED <i>[Signature]</i>	12-01-15
DESIGNED BY <i>[Signature]</i>	DATE
APPROVED <i>[Signature]</i>	12-01-15
STATE HIGHWAY ENGINEER	DATE



~ W6 X 9.0 STEEL GUARDRAIL POST ~
(USED WITH C6 X 8.2 RUB RAIL)



OFFSET BLOCK TYPE 6
(TIMBER OR APPROVED COMPOSITE)



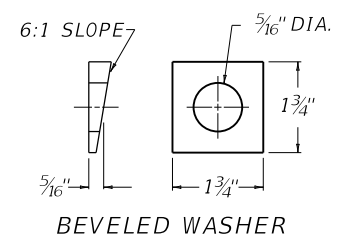
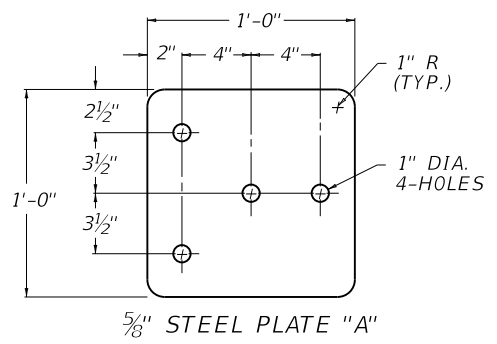
~ W8 X 21 STEEL GUARDRAIL POST ~

~ NOTES ~

① THESE HOLES ARE REQUIRED FOR ATTACHING RAIL.

~ MAINTENANCE NOTES ~

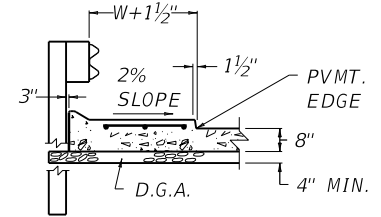
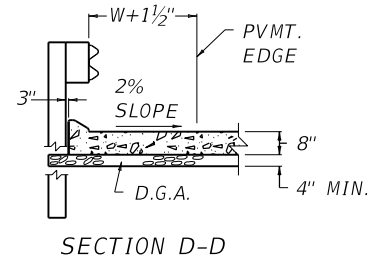
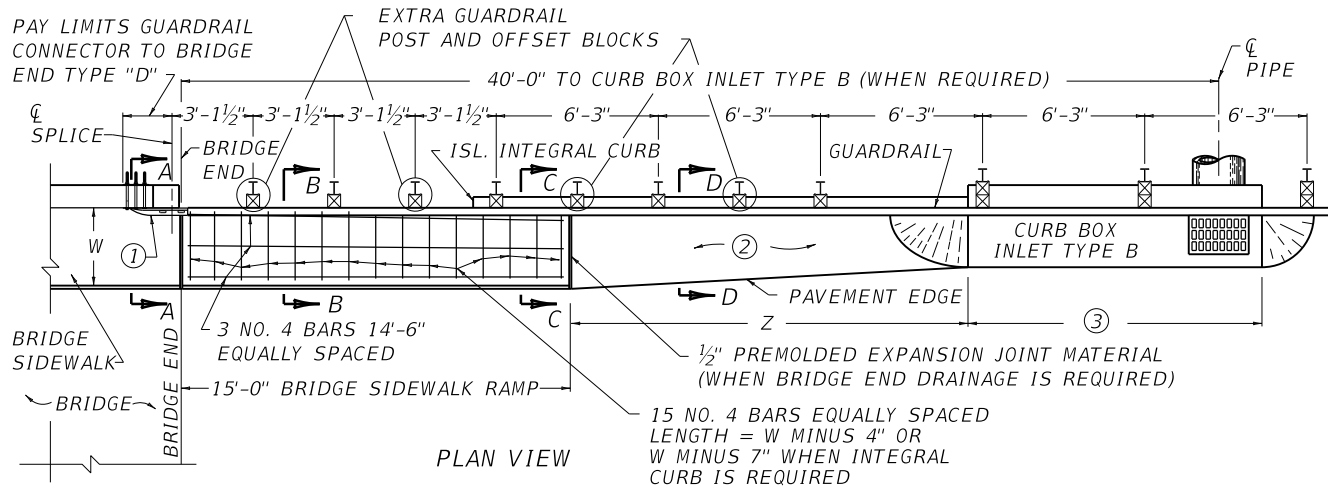
1. NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
2. FOR NEW CONSTRUCTION, REFER TO [BHS-013](#) AND [BHS-014](#) FOR THRIE-BEAM CONNECTIONS.
3. USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.



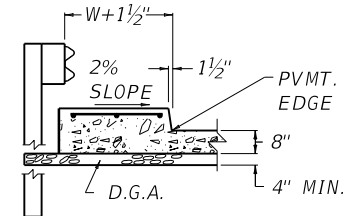
USE WITH CUR. STD. DWGS.
[RBC-002](#) [RBC-005](#) [RBC-006](#)

KENTUCKY
DEPARTMENT OF HIGHWAYS
GUARDRAIL CONNECTOR
TO BRIDGE END
TYPE A AND A-1
COMPONENTS

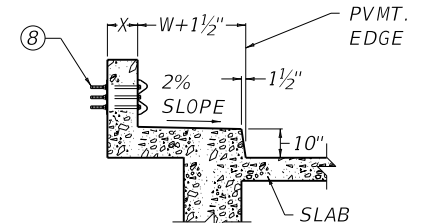
STANDARD DRAWING NO. RBC-003-09
SUBMITTED *[Signature]* DATE 02-26-20
APPROVED *[Signature]* DATE 02-26-20
DESIGNER
ENGINEER



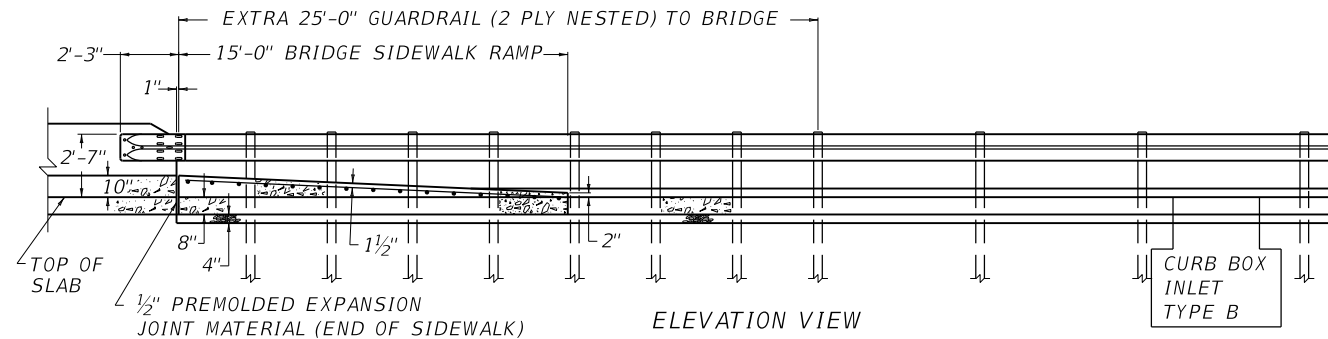
SECTION C-C



SECTION B-B



SECTION A-A (THRU BRIDGE)



ELEVATION VIEW

~ NOTES ~

SEE CURRENT STANDARD DRAWING NUMBER RBC-004N FOR ALL NOTES AND APPLICABLE MAINTENANCE NOTES.

NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.

FOR NEW CONSTRUCTION, REFER TO BHS-013 AND BHS-014 FOR THRIE-BEAM CONNECTIONS.

APPROXIMATE QUANTITIES

"W"	SIDEWALK RAMP	GUTTER PAVING	STEEL REINFORCEMENT	ISLAND INTEGRAL CURB
	CUBIC YARDS	CLASS "A" CONC.	LBS.	LINEAR FEET
2'-6"	1.9	0.1	51	19'-6"
3'-0"	2.3		56	
3'-6"	2.7		61	
4'-0"	3.1		66	

USE WITH CUR. STD. DWG. RDB-280

KENTUCKY DEPARTMENT OF HIGHWAYS

GUARDRAIL CONNECTOR TO BRIDGE END TYPE "D"

STANDARD DRAWING NO. RBC-004-08

SUBMITTED *[Signature]* DATE 02-26-20

APPROVED *[Signature]* DATE 02-26-20

DATE 02-26-20

~NOTES~

~MAINTENANCE NOTES~

- ① TERMINAL SECTION NO. 2
- ② APPROX. QUANTITY PER LIN. FT. Z DIMENSION.
- ③ 6'-4" WHEN L= 5'-0" (Z= 20'-4")
- ★ 11'-4" WHEN L= 10'-0" (Z= 15'-4")
- 16'-4" WHEN L= 15'-0" (Z= 10'-4")
- 21'-4" WHEN L= 20'-0" (Z= 5'-4")

- ★ 10'-0" LENGTH IS USED MOST FREQUENTLY.
- 4. GUARDRAIL CONNECTOR TO BRIDGE END TYPE "D" SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND SHALL INCLUDE TERMINAL SECTION NO. 2, EXTRA GUARDRAIL POST AND OFFSET BLOCKS, EXTRA GUARDRAIL, BRIDGE SIDEWALK RAMP (INCLUDING CLASS "A" CONCRETE, STEEL REINF. AND STRUCTURE EXCAVATION) ALL COMPLETELY INSTALLED.
- 5. THIS DRAWING DEPICTS GUARDRAIL CONNECTED TO A POST AT THE END OF THE BRIDGE. WHEN A BRIDGE WING EXTENDS BEYOND THE END OF THE BRIDGE, THE GUARDRAIL SHALL BE MOVED BACK AND CONNECTED IN A CORRESPONDING MANNER.
- 6. THE GUARDRAIL CONNECTOR TO BRIDGE END TYPE "D" SHALL BE APPLIED ON EACH END OF THE BRIDGE, WHERE A SIDEWALK EITHER EXISTS OR IS PROPOSED, ON THE STRUCTURE AND NOT ON THE ROADWAY. THIS IS ONLY APPLICABLE TO RURAL STRUCTURES THAT HAVE TWO DIRECTIONAL TRAFFIC WITH SIDEWALK.
- 7. SEE STANDARD DRAWING NO. **RBR-SERIES** (CURRENT EDITION) FOR ALL OTHER APPLICABLE MATERIAL AND CONSTRUCTION REQUIREMENTS.

BID ITEMS AND UNIT TO BID	
GUARDRAIL CONNECTOR TO BRIDGE END TY D	EACH
ISLAND INTEGRAL CURB (AS REQUIRED)	LF
DGA BASE (AS REQUIRED)	TON
CONCRETE-CLASS A (AS REQUIRED)	CUYD
CURB BOX INLET TYPE B (AS REQUIRED)	EACH

- ⑧ CONNECT GUARDRAIL TO BRIDGE END WITH :
 - 4- $\frac{7}{8}$ " (LTH. = "Z" PLUS 3") HEX HEAD BOLTS
 - OR 4- $\frac{7}{8}$ " (LENGTH = "Z" PLUS 4") STEEL
 - THREADED RODS WITH 4 NUTS FOR THE BOLTS AND 8 NUTS
 - FOR THE RODS AND WITH 8 FLAT WASHERS FOR EITHER.
 - FORM 1" HOLES FOR THE $\frac{7}{8}$ " BOLTS WITH PLASTIC
 - PIPE IN PROPOSED BRIDGE ENDS.
 - DRILL 1" HOLES FOR THE $\frac{7}{8}$ " BOLTS THROUGH EXISTING
 - BRIDGE ENDS.
 - BOTH THE $\frac{7}{8}$ " BOLTS AND STEEL THREADED RODS SHALL
 - HAVE A MINIMUM OF 50,000 LBS. TENSILE STRENGTH
 - AT THEIR NARROWEST POINT.
 - ALL HARDWARE SHALL BE GALVANIZED IN ACCORDANCE
 - WITH ASTM A153.

- 1. NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
- 2. FOR NEW CONSTRUCTION, REFER TO **BHS-013** AND **BHS-014** FOR THRIE-BEAM CONNECTIONS.
- 3. USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.

KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL CONNECTOR TO BRIDGE END TYPE "D" NOTES	
STANDARD DRAWING NO. RBC-004N	
SUBMITTED DATE 02-26-20	<small>DESIGNER DIVISION OF DESIGN</small>
APPROVED DATE 02-26-20	<small>REGISTERED PROFESSIONAL ENGINEER</small>

~ NOTES ~

1. GENERAL

- a. SEE CUR. STD. DWGS. IN THE **RBB**, **RBI**, **RBR**, AND **RPM-SERIES** FOR OTHER RELATED GUARDRAIL DETAILS AND BRIDGE PLANS FOR BRIDGE WING DETAIL.
- b. SEE CUR. STD. DWG. **RDB-SERIES** FOR CURB BOX INLET TYPE B.
- c. GUARDRAIL CONNECTOR TO BRIDGE END TYPE A IS FOR USE ON BOTH BRIDGE ENDS OF AN UNDIVIDED HIGHWAY AND ON THE APPROACH BRIDGE ENDS OF A DIVIDED HIGHWAY.

2. MATERIAL REQUIREMENTS

ALL HARDWARE SHALL BE GALVANIZED. (AASHTO M-232)
 $\frac{5}{8}$ " STEEL PLATE "A" AND "B" (AASHTO M-270)
 $\frac{7}{8}$ " HEX HEAD BOLTS OR STEEL THREADED RODS (LENGTH AS SHOWN)
 $\frac{7}{8}$ " HEAVY HEX NUTS ($\frac{7}{8}$ " THICK) (AASHTO M-291)
 $\frac{7}{8}$ " FLAT WASHERS ($\frac{3}{16}$ " THICK) (AASHTO M-293)
 $\frac{7}{8}$ " BEVELED WASHERS ($\frac{5}{16}$ " MEAN THICKNESS) (AASHTO M-293)
BOTH THE BOLT AND THREADED ROD SHALL HAVE A MINIMUM OF 50,000 LBS. TENSILE STRENGTH AT THE NARROWEST POINT.

3. CONSTRUCTION METHODS

- a. ELIMINATE EXTRA OFFSET BLOCKS WHEN CURB BOX INLET TYPE B IS NOT REQUIRED.
- b. HOLES TO BE FORMED THROUGH BRIDGE WING WITH 1" I.D. PLASTIC PIPE FOR $\frac{7}{8}$ " BOLTS AND $\frac{3}{4}$ " I.D. PLASTIC PIPE FOR $\frac{3}{8}$ " BOLTS, PIPE SHALL REMAIN IN PLACE.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- a. GUARDRAIL CONNECTOR TO BRIDGE END TYPE A SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND INCLUDES: TERMINAL SECTION NO. 2; ALL ITEMS WHICH ARE IN ADDITION TO THE NORMAL INSTALLATION OF STEEL BEAM GUARDRAIL (EXTRA POSTS, OFFSET BLOCKS, RAIL ELEMENTS, SPACER TUBE, HARDWARE, RUB RAIL, ETC.), AND OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION AS DETAILED. STEEL "W" BEAM GUARDRAIL (SINGLE FACE) AND ISLAND HEADER CURB ARE SEPARATE BID ITEMS WHICH ARE ALWAYS REQUIRED. CURB BOX INLET TYPE B IS A SEPARATE BID ITEM THAT WILL BE USED WHEN REQUIRED FOR BRIDGE END DRAINAGE.

BID ITEMS AND UNIT TO BID	
GUARDRAIL CONNECTOR TO BRIDGE END TY A	EACH
GUARDRAIL-STEEL "W" BEAM-S FACE	LF
ISLAND HEADER CURB TYPE 1 OR 2	LF
CURB BOX INLET TYPE B (AS REQUIRED)	EACH

- b. THE PLASTIC PIPE AND COST OF FORMING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR BRIDGE SUPERSTRUCTURE CONCRETE.

⑤ ISLAND HEADER CURB. TRANSITION FROM ISLAND CURB SHAPE TO SHAPE ON BRIDGE WING WITHIN 7'-3". LENGTH OF CURB VARIABLE (22'-3" WHEN L=5'-0") (17'-3" WHEN L=10'-0") (12'-3" WHEN L=15'-0") (7'-3" WHEN L=20'-0"). ON APPROACH END CONSTRUCT 25'-0" OF ISLAND HEADER CURB EVEN WHEN CURB BOX INLET TYPE B IS NOT REQUIRED.

⑥ 6'-4" WHEN L=5'-0"
11'-4" WHEN L=10'-0" ★
16'-4" WHEN L=15'-0"
21'-4" WHEN L=20'-0"

⑦ $\frac{5}{8}$ " X $3\frac{1}{2}$ " BUTTON HEAD BOLT,
HEX HEAD NUT.



8. CURB BOX NOT REQUIRED UNLESS NEEDED FOR DRAINAGE.

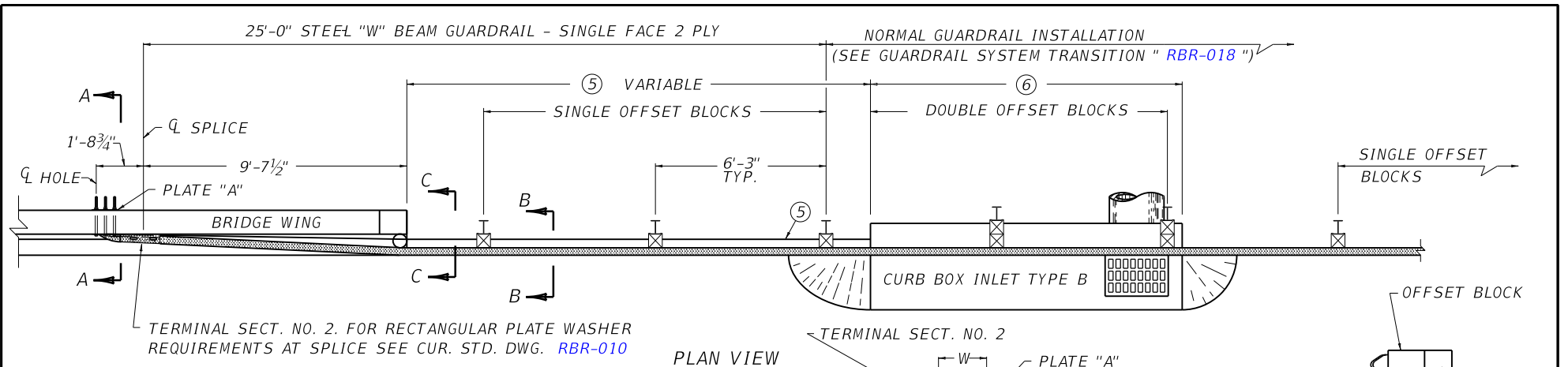
★ 10'-0" LENGTH IS REQUIRED UNLESS OTHERWISE NOTED.

L EQUALS THROAT LENGTH OF BOX.

~ MAINTENANCE NOTES ~

- 1. NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
- 2. FOR NEW CONSTRUCTION, REFER TO **BHS-013** AND **BHS-014** FOR THRIE-BEAM CONNECTIONS.
- 3. USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.

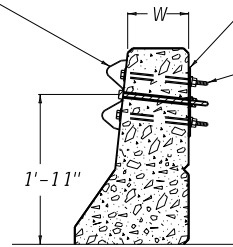
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL CONNECTOR TO BRIDGE END TYPE A NOTES	
STANDARD DRAWING NO. RBC-005N	
SUBMITTED 	DATE 02-26-20
APPROVED 	DATE 02-26-20



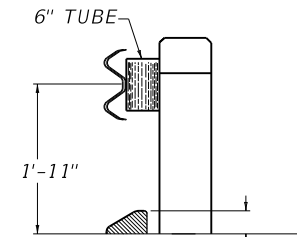
TERMINAL SECT. NO. 2. FOR RECTANGULAR PLATE WASHER REQUIREMENTS AT SPLICE SEE CUR. STD. DWG. **RBR-010**

PLAN VIEW

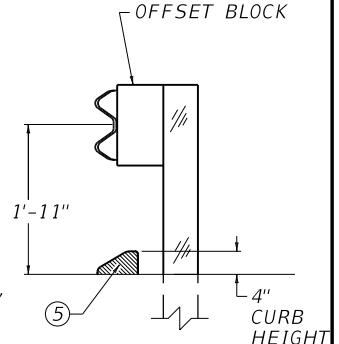
TERMINAL SECT. NO. 2



SECTION A-A



SECTION C-C



SECTION B-B

1. GENERAL

- a. SEE CUR. STD. DWGS. IN THE **RBB**, **RBI**, **RBR**, AND **RPM-SERIES** FOR OTHER RELATED GUARDRAIL DETAILS AND BRIDGE PLANS FOR BRIDGE WING DETAIL.
- b. SEE CUR. STD. DWG. **RDB-SERIES** FOR CURB BOX INLET TYPE B.
- c. GUARDRAIL CONNECTOR TO BRIDGE END TYPE A-1 IS FOR USE ON THE EXIT END OF A DIVIDED HIGHWAY.

2. MATERIAL REQUIREMENTS

- ALL HARDWARE SHALL BE GALVANIZED. (AASHTO M-232)
- 5/8" STEEL PLATE "A" (AASHTO M-270)
- 7/8" HEX HEAD BOLTS OR STEEL THREADED RODS (LENGTH AS SHOWN)
- 7/8" HEAVY HEX NUTS (7/8" THICK) (AASHTO M-291)
- 7/8" FLAT WASHERS (3/16" THICK) (AASHTO M-293)
- 7/8" BEVELED WASHERS (5/16" MEAN THICKNESS) (AASHTO M-293)
- BOTH THE BOLT AND THREADED ROD SHALL HAVE A MINIMUM OF 50,000 LBS. TENSILE STRENGTH AT THE NARROWEST POINT.

3. CONSTRUCTION METHODS

- a. ELIMINATE EXTRA OFFSET BLOCKS WHEN CURB BOX INLET TYPE B IS NOT REQUIRED.
- b. HOLES TO BE FORMED THROUGH BRIDGE WING WITH 1" I.D. PLASTIC PIPE FOR 7/8" BOLTS. PLASTIC PIPE SHALL REMAIN IN PLACE.

4. METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- a. GUARDRAIL CONNECTOR TO BRIDGE END TYPE A-1 SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, WHICH INCLUDES TERMINAL SECT. NO. 2, RAIL ELEMENTS, SPACER TUBE, HARDWARE AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. STEEL "W" BEAM GUARDRAIL (SINGLE FACE) AND ISLAND HEADER CURB ARE SEPARATE BID ITEMS WHICH ARE ALWAYS REQUIRED. CURB BOX INLET TYPE B IS A SEPARATE BID ITEM THAT WILL BE USED WHEN REQUIRED FOR BRIDGE END DRAINAGE.

BID ITEMS AND UNIT TO BID	
GUARDRAIL CONNECTOR TO BRIDGE END TY A-1	EACH
GUARDRAIL-STEEL "W" BEAM-S FACE	LF
ISLAND HEADER CURB TYPE 1 OR 2	LF
CURB BOX INLET TYPE B (AS REQUIRED)	EACH

- b. THE PLASTIC PIPE AND COST OF FORMING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR BRIDGE SUPERSTRUCTURE CONCRETE.

- ⑤ ISLAND HEADER CURB. TRANSITION FROM ISLAND CURB SHAPE TO SHAPE ON BRIDGE WING WITHIN 7'-3". LENGTH OF CURB VARIABLE (22'-3" WHEN L=5'-0") (17'-3" WHEN L=10'-0") (12'-3" WHEN L=15'-0") (7'-3" WHEN L=20'-0"). ON THE APPROACH END CONSTRUCT 25'-0" OF ISLAND HEADER CURB EVEN WHEN CURB BOX INLET TYPE B IS NOT REQUIRED.

- ⑥ 6'-4" WHEN L=5'-0"
- 11'-4" WHEN L=10'-0" ★
- 16'-4" WHEN L=15'-0"
- 21'-4" WHEN L=20'-0"

7. CURB BOX NOT REQUIRED UNLESS NEEDED FOR DRAINAGE.

- ★ 10'-0" LENGTH IS REQUIRED UNLESS OTHERWISE NOTED.
- L EQUALS THROAT LENGTH OF BOX.

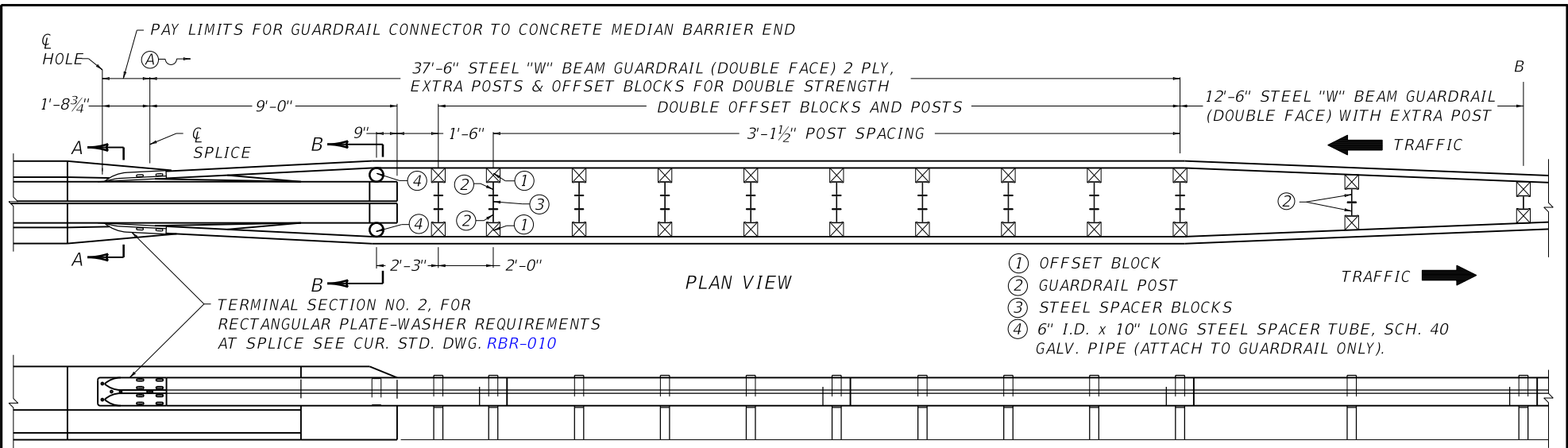
USE WITH CUR. STD. DWGS.
BHS-008 RBC-002 RBC-003 RBR-010

KENTUCKY
DEPARTMENT OF HIGHWAYS
GUARDRAIL CONNECTOR
TO BRIDGE END
TYPE A-1

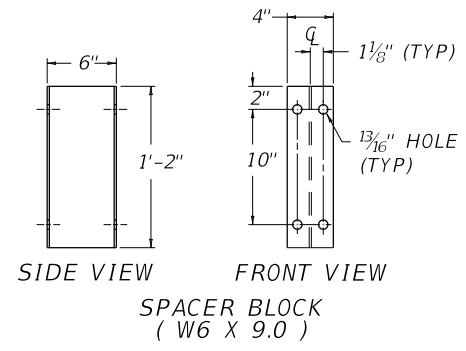
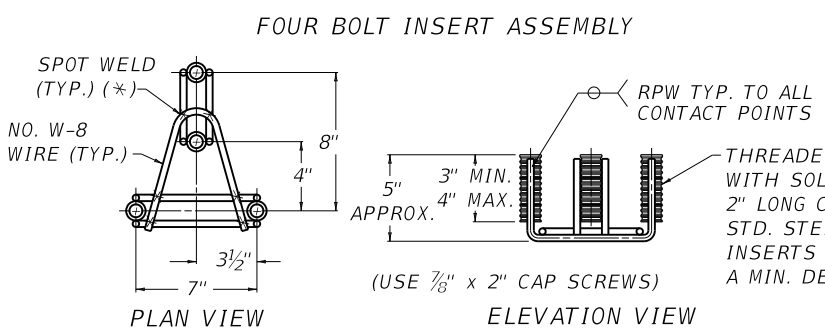
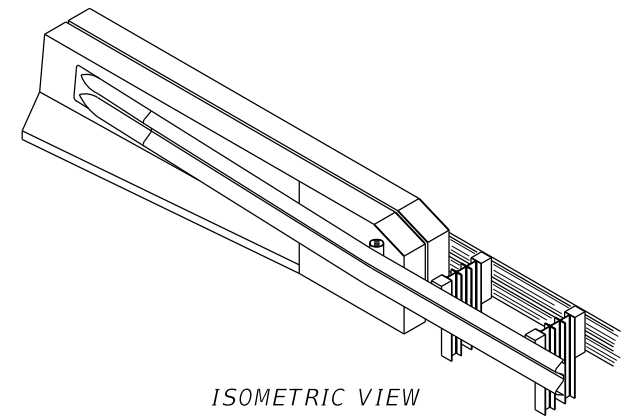
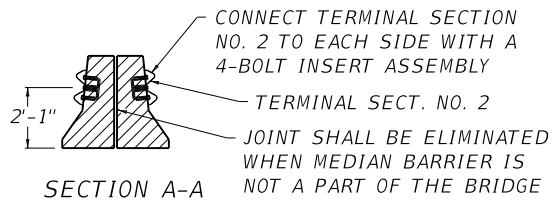
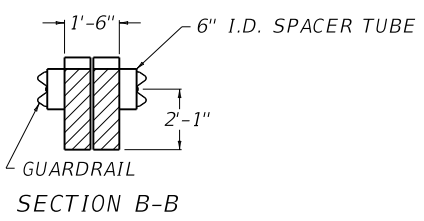
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SUBMITTED *[Signature]* DATE 02-26-20
APPROVED *[Signature]* DATE 02-26-20

~ MAINTENANCE NOTES ~

- 1. NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
- 2. FOR NEW CONSTRUCTION, REFER TO **BHS-013** AND **BHS-014** FOR THRIE-BEAM CONNECTIONS.
- 3. USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.



- ① OFFSET BLOCK
- ② GUARDRAIL POST
- ③ STEEL SPACER BLOCKS
- ④ 6" I.D. x 10" LONG STEEL SPACER TUBE, SCH. 40 GALV. PIPE (ATTACH TO GUARDRAIL ONLY).



~ NOTES ~


SEE CURRENT STANDARD DRAWING NUMBER RBC-100N FOR ALL NOTES AND APPLICABLE MAINTENANCE NOTES.

NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.

USE WITH CUR. STD. DWG. **RBR-010**

KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL CONNECTOR TO CONCRETE MEDIAN BARRIER END	
STANDARD DRAWING NO. RBC-100-05	
SUBMITTED	DATE 02-26-20
APPROVED	DATE 02-26-20

~ NOTES ~

1. GUARDRAIL CONNECTOR TO CONCRETE MEDIAN BARRIER END SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH AND INCLUDES TERMINAL SECTION NO. 2, ADDITIONAL POSTS, ADDITIONAL OFFSET BLOCKS, ADDITIONAL RAIL ELEMENTS, HARDWARE, ETC., AND OTHER INCIDENTALS AS SHOWN BETWEEN POINTS (A) AND (B) NECESSARY TO COMPLETE THE INSTALLATION AS DETAILED.
 2. THE STEEL "W" BEAM GUARDRAIL (DOUBLE FACE), IS A SEPARATE BID ITEM AND SHALL BEGIN PAYMENT AT POINT (A).
 3. THE 4-BOLT INSERT ASSEMBLY INSTALLATION SHALL BE INCIDENTAL TO THE COST OF THE BRIDGE SUPERSTRUCTURE CONCRETE OR CONCRETE MEDIAN BARRIER END AS APPLICABLE.
 4. 4-BOLT ASSEMBLIES:
 - (a) THE $\frac{7}{8}$ " x 2" CAP SCREWS WITH STANDARD STEEL WASHERS SHALL BE GALVANIZED AND CONFORM TO ASTM A-325.
 - (b) NO. W-8 GAGE WIRE, COLD DRAWN CONFORMING TO ASTM A-82.
 - (c) STEEL INSERTS SHALL CONFORM TO ASTM A-108 GRADES C1008 AND C1010 OR B1113.
 5. SEE CUR. STD. DWGS. IN THE *RBI*, *RBE*, AND *RBR-SERIES* AS APPLICABLE.
 6.  SEE BRIDGE PLANS FOR CONSTRUCTION DETAILS WHEN APPLICABLE.
- BID ITEMS AND UNIT TO BID
- | | |
|--|------|
| GUARDRAIL CONNECTOR TO CONCRETE MEDIAN BARRIER END | EACH |
| GUARDRAIL-STEEL W BEAM-D FACE | LF |


~ MAINTENANCE NOTES ~

1. NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
2. USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.

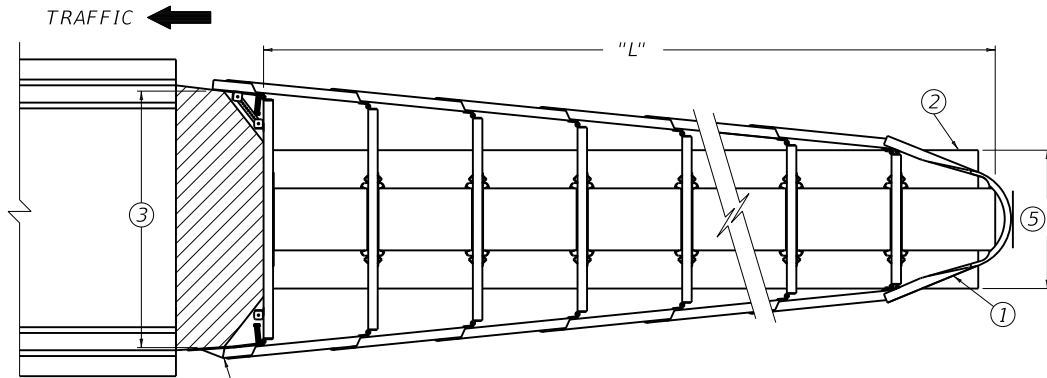
KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL CONNECTOR
TO CONCRETE MEDIAN
BARRIER END NOTES

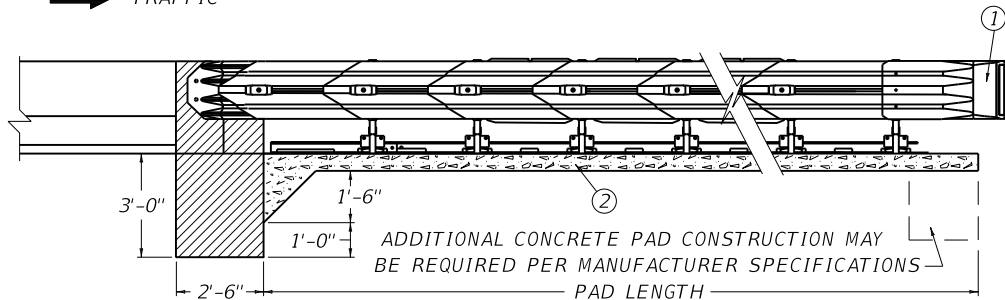
STANDARD DRAWING NO. RBC-100N

SUBMITTED  02-26-20
DATE

APPROVED  02-26-20
DATE

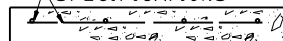


~ PLAN ~



~ ELEVATION ~

REINFORCEMENT PER MANUFACTURER SPECIFICATIONS



~ CONCRETE PAD SECTION ~
(PER MANUFACTURER SPECIFICATIONS)

REFER TO NOTES ⑤

~ NOTES ~

- ① NOSE ASSEMBLY (OBJECT MARKER TYPE 1 AS REQUIRED)
- ② 6" CONCRETE PAD PER MANUFACTURER SPECIFICATIONS.
- ③ MEDIUM WIDTH = 70 1/2", APPROX. 2.8 CU. YD. CONC. AND 265 LBS. OF STEEL FOR MED. BACKUP.
WIDE WIDTH = 91 1/2", APPROX. 3.8 CU. YD. CONC. AND 299 LBS. OF STEEL FOR WIDE BACKUP.

- 4. THE CONTRACT UNIT PRICE SHALL BE CRASH CUSHION TYPE VII, CLASS **B**, **C**, **A**.
 - CLASS **B** OR **C**, AS REQUIRED
 - TEST LEVEL 2 (TL2) OR TEST LEVEL 3 (TL3), AS REQUIRED.
 - △ EITHER **M** MEDIUM, OR **W** WIDE, OR **S** SPECIAL WIDE UNITS
- ⑤ THE CONCRETE PAD, PAD EXCAVATION AND STEEL REINFORCEMENT, INSTALLED IN PLACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CRASH CUSHION TYPE VI. DIMENSION AND REINFORCEMENT SPECIFICATIONS FOR CONCRETE PADS ARE TO BE PROVIDED BY THE MANUFACTURER. THE PAD WILL NOT BE REQUIRED WHEN THE UNIT IS CONSTRUCTED ON RIGID PAVEMENT.
- 6. THE CROSS SLOPE ON THE PAD OR PAVEMENT SHALL BE PER MANUFACTURER SPECIFICATIONS.
- 7. WHEN INSTALLED ON A STRUCTURE, DETAILS FOR ANCHORAGE SHALL BE DEVELOPED AND SHOWN ELSEWHERE ON THE PLANS.
- 8. SPECIAL WIDTH UNITS ARE AVAILABLE FROM THE MANUFACTURERS. WHEN SPECIAL WIDE UNITS ARE REQUIRED DETAILS OF THE UNIT SHALL BE DEVELOPED AND SHOWN ELSEWHERE ON THE PLANS.
- ⑨ CRASH CUSHIONS ARE TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS, INCLUDING THE CONCRETE PAD. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
- 10. CONCRETE PAD AND BELOW GRADE ANCHOR SHALL BE PLACED MONOLITHICALLY.
- ⑪ END SHOE MAY BE ELIMINATED WITH ONE WAY TRAFFIC.
- 12. THE CRASH CUSHION TYPE VII MAY ALSO BE UTILIZED FOR TEMPORARY USE AND CONSTRUCTION ZONES (CLASS BT).
- 13. A CRASH CUSHION TYPE VII CLASS B IS TO BE USED IN AREAS WHERE CRASH HISTORY IS NOT KNOWN TO BE SEVERE.
- 14. A CRASH CUSHION TYPE VII CLASS C IS CONSIDERED A SEVERE USE CRASH CUSHION.

ADDITIONAL BID ITEMS AND UNIT TO BID
OBJECT MARKER TYPE 1 (AS REQUIRED) EACH

CLASS	SPEED (MPH)	ATTENUATOR			SUGGESTED ADT* RANGE (P.C.P.L.) **
		MODEL	PRODUCT NAME	LENGTH	
B	45 & LESS	TL2	3-BAY QUADGUARD M10	12'-0"	UP TO 12,000
	OVER 45	TL3	5-BAY QUADGUARD M10	18'-0"	
C	OVER 45	TL3	SCI100GM	23'-0"	8,000 AND OVER
			QUADGUARD ELITE M10	26'-7"	

* AVERAGE DAILY TRAFFIC
** PASSENGER CARS PER LANE

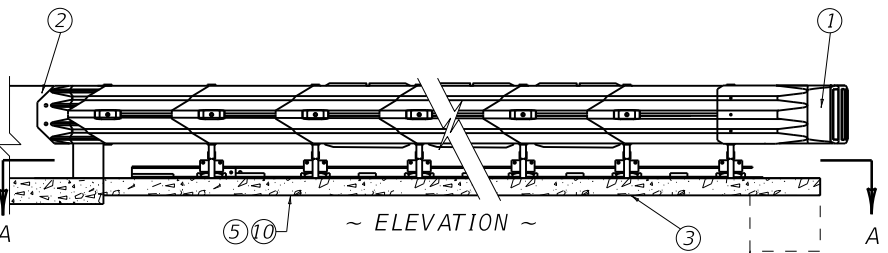
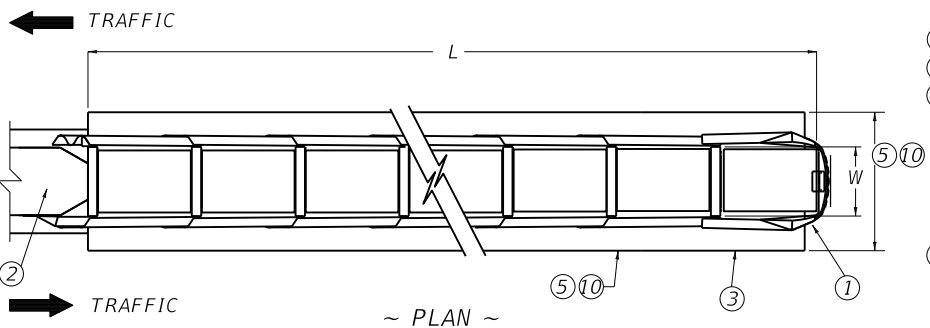
**KENTUCKY
DEPARTMENT OF HIGHWAYS**

**CRASH CUSHION
TYPE VII
CLASS B AND C
(ONE & TWO DIRECTION)**

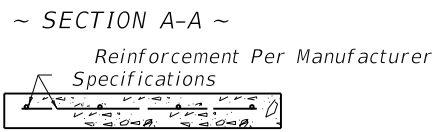
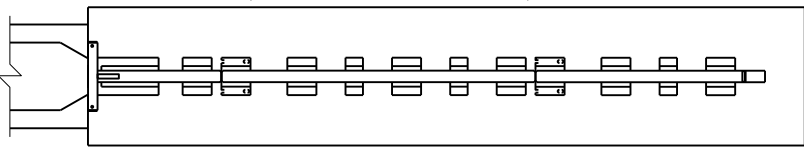
STANDARD DRAWING NO. RBE-040-11

SUBMITTED DATE 02-26-20

APPROVED ENGINEER DATE 02-26-20



Additional Concrete Pad Construction may be Required Per Manufacturer Specifications



~ CONCRETE PAD SECTION ~
(Per Manufacturer Specifications)
Refer to Notes ⑤

~ NOTES ~

- ① NOSE ASSEMBLY (OBJECT MARKER TYPE 1 AS REQUIRED)
- ② BACKUP
- ③ 6" CONCRETE PAD PER MANUFACTURER SPECIFICATIONS.
- 4. CRASH CUSHION TYPE VI , CLASS A , B , C
 - A CLASS B OR C, AS REQUIRED
 - B EITHER TEST LEVEL 2 (TL2) OR TEST LEVEL 3 (TL3),AS REQUIRED.
 - C SEE "CONNECTION DETAILS OF CRASH CUSHION TYPE VI TO DOUBLE FACE GUARDRAIL".
- ⑤ THE CONCRETE PAD, PAD EXCAVATION AND STEEL REINFORCEMENT, INSTALLED IN PLACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CRASH CUSHION TYPE VI. DIMENSION AND REINFORCEMENT SPECIFICATIONS FOR CONCRETE PADS ARE TO BE PROVIDED BY THE MANUFACTURER. THE PAD WILL NOT BE REQUIRED WHEN THE UNIT IS CONSTRUCTED ON RIGID PAVEMENT.
- 6. CRASH CUSHION TYPE VI MAY BE USED AT THE END OF: CONCRETE MEDIAN BARRIER, BRIDGE PIERS AND STEEL "W" BEAM GUARDRAIL (DOUBLE FACE).
- 7. WHEN CRASH CUSHION TYPE VI CONNECTS TO: CONCRETE MEDIAN BARRIER OR BRIDGE PIER THE CONTRACT UNIT PRICE SHALL INCLUDE: CRASH CUSHION TYPE VI, ALL HARDWARE, ADDITIONAL RAIL ELEMENTS, POST, CONCRETE PAD AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION.
- 8. THIS DRAWING DEPICTS A CONNECTION OF CRASH CUSHION TYPE VI TO CONCRETE MEDIAN BARRIER END. FOR THIS APPLICATION SEE CURRENT STD. DWG. RBE-065 " CONCRETE MEDIAN BARRIER END ".
- 9. WHEN CRASH CUSHION TYPE VI CONNECTS TO DOUBLE FACE GUARDRAIL SEE CURRENT SEPIA 018 "CONNECTION DETAILS OF CRASH CUSHION TYPE VI TO DOUBLE FACE GUARDRAIL".
- ⑩ CRASH CUSHIONS ARE TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS, INCLUDING THE CONCRETE PAD. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
- 11. THE CRASH CUSHION TYPE VI MAY ALSO BE UTILIZED FOR TEMPORARY USE AND CONSTRUCTION ZONES (CLASS BT).
- 12. A CRASH CUSHION TYPE VI CLASS B IS TO BE USED IN AREAS WHERE CRASH HISTORY IS NOT KNOWN TO BE SEVERE.
- 13. A CRASH CUSHION TYPE VI CLASS C IS CONSIDERED A SEVERE USE CRASH CUSHION.

ADDITIONAL BID ITEMS AND UNIT TO BID
OBJECT MARKER TYPE 1 (AS REQUIRED) EACH

CLASS	SPEED (MPH)	ATTENUATOR			SUGGESTED ADT* RANGE (P.C.P.L.) **
		MODEL	PRODUCT NAME	LENGTH	
B	45 & LESS	TL2	UNIVERSAL TAU-M	14'-2"	UP TO 12,000
			3-BAY QUADGUARD M10	12'-0"	
	OVER 45	TL3	UNIVERSAL TAU-M	22'-9"	
			5-BAY QUADGUARD M10	18'-0"	
C	OVER 45	TL3	SCI100GM	23'-0"	8,000 AND OVER
			QUADGUARD ELITE M10	26'-7"	

W= 2'-0" (INSIDE BAY WIDTH)

* AVERAGE DAILY TRAFFIC
** PASSENGER CARS PER LANE

USE WITH CUR. STD. DWG.
RBE-065 RBC-110

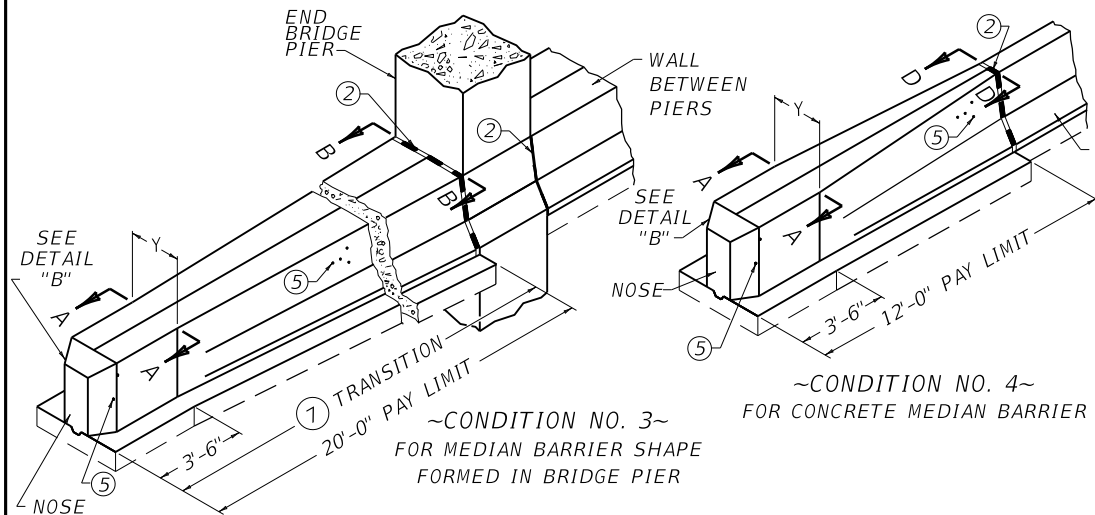
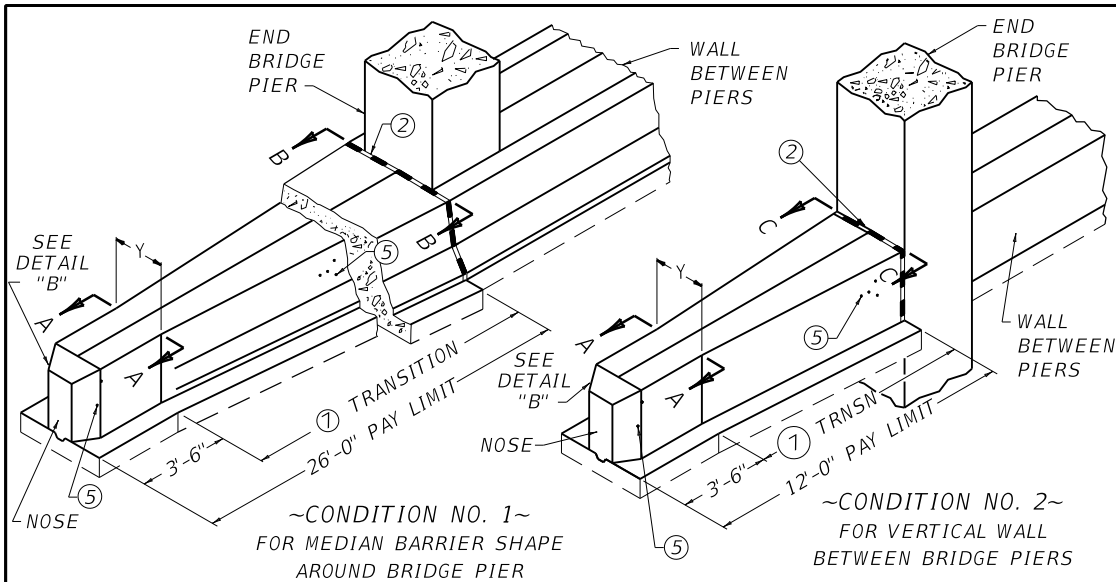
KENTUCKY
DEPARTMENT OF HIGHWAYS

CRASH CUSHION
TYPE VI A B C
(ONE & TWO DIRECTION)

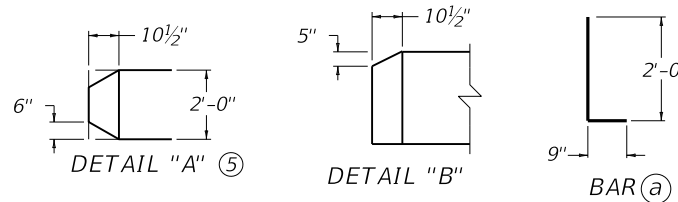
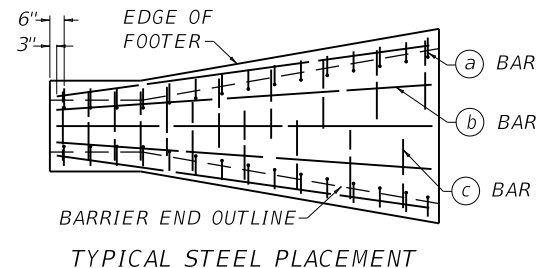
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SUBMITTED [Signature] DATE 02-26-20

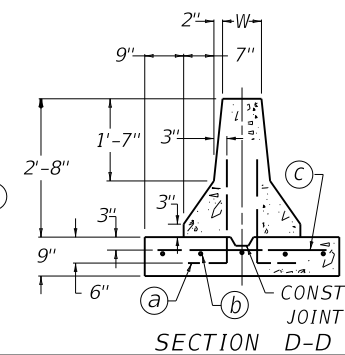
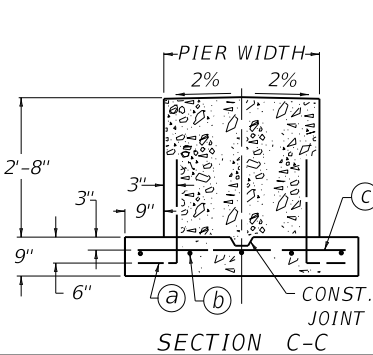
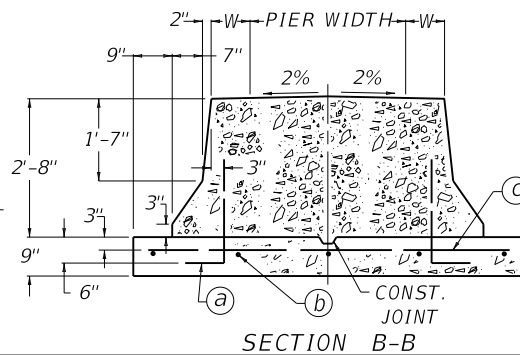
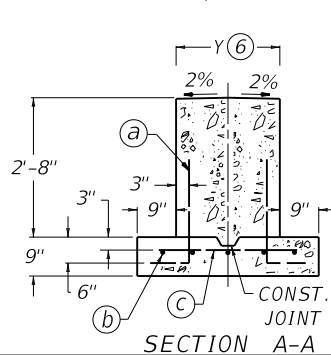
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~ NOTES ~
SEE CURRENT STANDARD DRAWING NUMBER RBE-065N
FOR ALL NOTES AND APPLICABLE MAINTENANCE NOTES.



CONDITION NO.	W	NO. 5 STEEL REINFORCEMENT BARS						CUBIC YARD (4) CLASS "A" CONC.		
		BAR (a)		BAR (b)		BAR (c)		Y=2'-0"	Y=1'-6"	
		QTY.	LGTH.	QTY.	LGTH.	QTY.	LGTH.			
1	6"	52			25'-6"	26		354	11.56	10.19
2	-	24			11'-6"	12		163	4.07	3.58
3	-	40	2'-9"	5	19'-6"	20	2'-8"	272	7.70	6.96
4	9"	24			11'-6"	12		163	3.38	2.89
	12"								3.51	3.03



USE WITH CUR. STD. DWG.
RBE-060 RBC-100

KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE MEDIAN
BARRIER END

STANDARD DRAWING NO. RBE-065-08

SUBMITTED *[Signature]* DIRECTOR, BUREAU OF DESIGN 12-01-15
APPROVED *[Signature]* STATE HIGHWAY ENGINEER 12-01-15

~ NOTES ~

1. THE CONTRACT UNIT PRICE SHALL INCLUDE ALL MATERIALS, TOOLS, FORMS, LABOR, EXCAVATION, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THIS DRAWING.
- ② 1/2" PREMOLDED EXPANSION JOINT MATERIAL REQUIRED.
3. STEEL REINFORCING BARS SHALL BE EVENLY SPACED AS SHOWN AND SHALL BE GRADE 40 MINIMUM.
- ④ CONCRETE QUANTITIES FOR CONDITION NO.'S. 1, 2, AND 3 ARE BASED ON A BRIDGE PIER WIDTH OF 3'-0".
- ⑤ USE DETAIL "A" FOR ENERGY ABSORPTION SYSTEM'S QUADGUARD CRASH CUSHION ALTERNATE. ALL OTHER CONNECTIONS REQUIRE A SQUARE NOSE.
- ⑥ Y=2'-0" FOR CRASH CUSHION TYPE VI, AND Y=1'-6" FOR GUARDRAIL CONNECTOR TO CONCRETE MEDIAN BARRIER END.

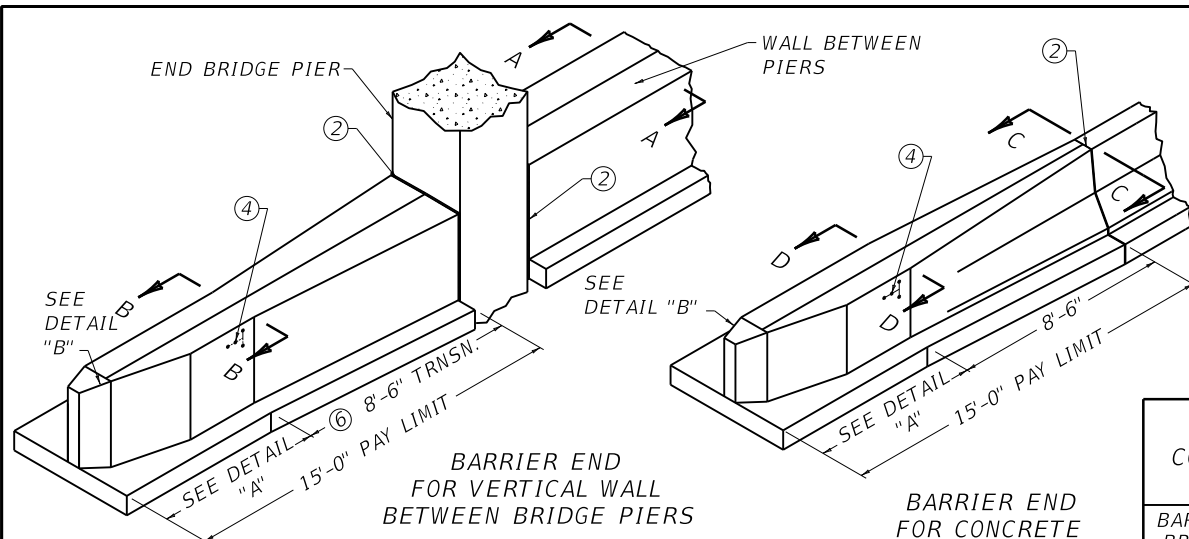
WHEN THE CONCRETE MEDIAN BARRIER END IS PLACED AT A PIER WIDER THAN 3'-0" THE BARRIER END TRANSITION SHALL BE CONSTRUCTED ON A 12:1 MIN. TAPER AND ADDITIONAL CONCRETE AND STEEL QUANTITIES SHALL BE CALCULATED.

BID ITEMS AND UNIT TO BID:
STEEL REINFORCEMENT LB
CONCRETE-CLASS A CUYD

~ MAINTENANCE NOTES ~

1. NOT FOR NEW CONSTRUCTION, ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.
2. USE 3500 PSI CONCRETE FOR REPAIRS TO EXISTING JERSEY SHAPES.

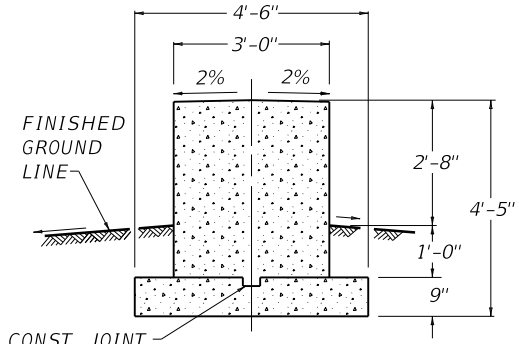
KENTUCKY DEPARTMENT OF HIGHWAYS	
CONCRETE MEDIAN BARRIER END NOTES	
STANDARD DRAWING NO. RBE-065N	
SUBMITTED _____	DATE 02-26-20
<i>[Signature]</i> DESIGNER	
APPROVED _____	DATE 02-26-20
<i>[Signature]</i> ENGINEER	



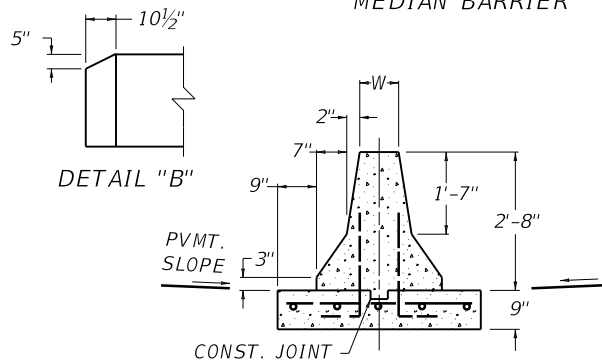
~ NOTES ~
 SEE CURRENT STANDARD DRAWING NUMBER RBE-070N FOR ALL NOTES AND APPLICABLE MAINTENANCE NOTES.

CONDITION	NO. 5 STEEL REINF. BARS						POUNDS OF STEEL	CU. YDS. CLASS "A" CONC.
	Ⓐ BAR		Ⓑ BAR		Ⓒ BAR			
	QTY.	LGTH.	QTY.	LGTH.	QTY.	LGTH.		
BARRIER END AT BRIDGE PIERS								⑤
9" WALL	30	2'-9"	5	14'-4"	15	2'-3"	196	5.73
12" WALL								3.71
14" WALL								3.87
								3.96

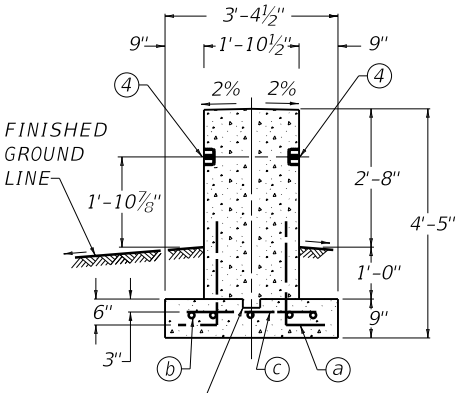
QUANTITIES FOR ONE CONCRETE MEDIAN BARRIER END



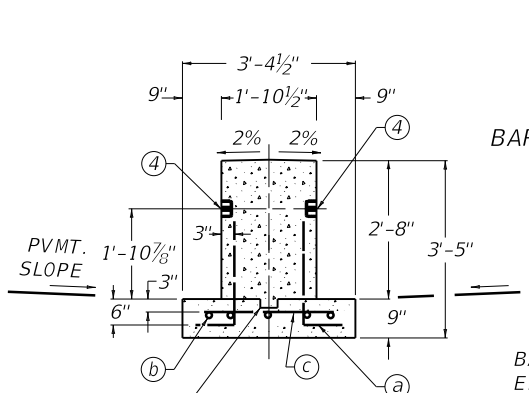
SECTION A-A
(WALL BETWEEN BRIDGE PIERS)



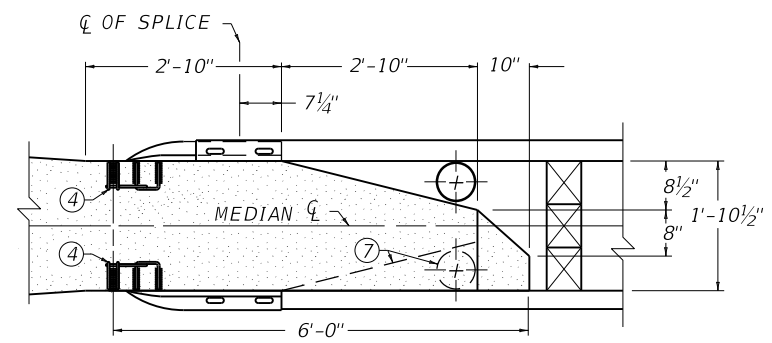
SECTION C-C



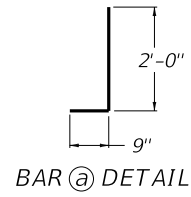
SECTION B-B



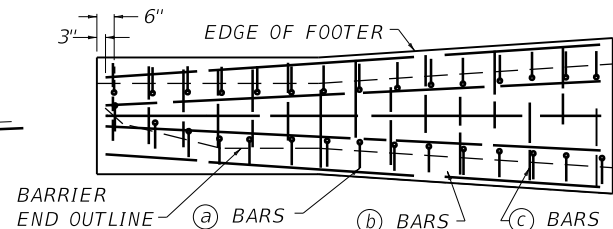
SECTION D-D



DETAIL "A"



BAR @ DETAIL



TYPICAL STEEL PLACEMENT

USE WITH CUR. STD. DWG.
 RBC-100 RBE-200

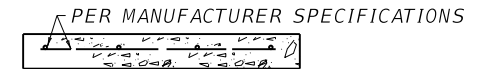
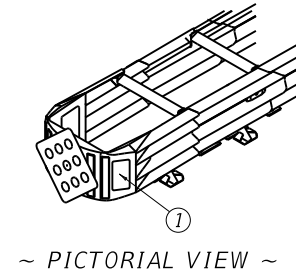
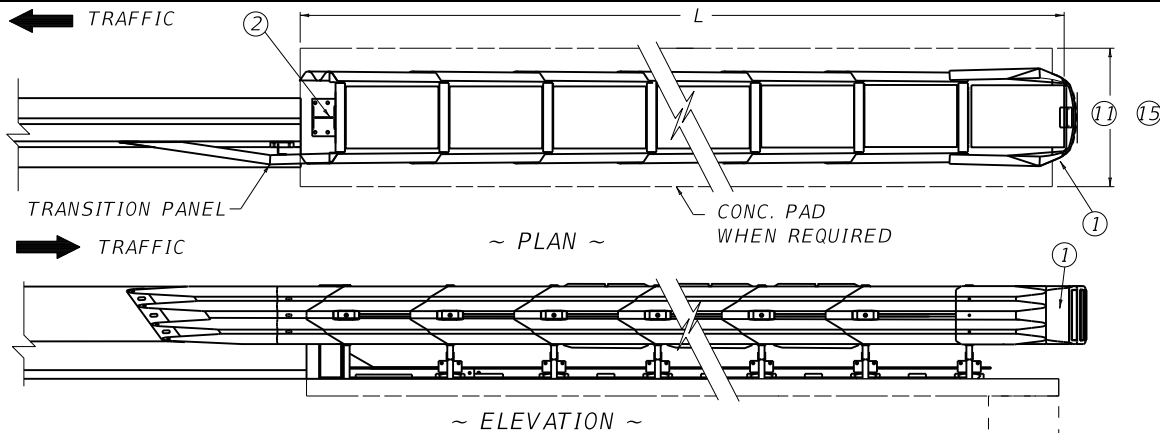
KENTUCKY
 DEPARTMENT OF HIGHWAYS

CONCRETE MEDIAN
 BARRIER END FOR CRASH
 CUSHION TYPE IX

STANDARD DRAWING NO. RBE-070-07

SUBMITTED *[Signature]* 12-01-15
DESIGNED BY DATE

APPROVED *[Signature]* 12-01-15
STATE HIGHWAY ENGINEER DATE



~ CONCRETE PAD SECTION ~
(PER MANUFACTURER SPECIFICATIONS)
REFER TO NOTES ⑪ ⑭

~ NOTES ~

Additional Concrete Pad Construction may be Required Per Manufacturer Specifications

- ① NOSE ASSEMBLY (OBJECT MARKER TYPE 1 AS NECESSARY)
- ② CONSTRUCTION ZONE BACKUP
- 3. CRASH CUSHION TYPE VI , CLASS B, ☆ , △
 - ☆ EITHER TEST LEVEL 2 (TL2) OR TEST LEVEL 3 (TL3),AS REQUIRED.
 - △ SEE "CONNECTION DETAILS OF CRASH CUSHION TYPE VI TO DOUBLE FACE GUARDRAIL".
- 4. CRASH CUSHION TYPE VI-BT IS DEPICTED ATTACHED TO A CONCRETE BARRIER (TEMPORARY).
- 5. WHEN CRASH CUSHION TYPE VI-BT IS ATTACHED TO STEEL "W" BEAM GUARDRAIL (DOUBLE FACE), ALL APPLICABLE DETAILS SHOWN ON RBC-110 , "CONNECTION DETAIL OF CRASH CUSHION TYPE VI TO DOUBLE FACE GUARDRAIL" SHALL BE REQUIRED.
- 6. WHEN CRASH CUSHION TYPE VI-BT IS ATTACHED TO STEEL "W" BEAM GUARDRAIL (DOUBLE FACE), THE TRANSITION PANEL SHALL BE ELIMINATED.
- 7. IN A TWO-WAY TRAFFIC SITUATION FOR A 6" OR 9" TOP WIDTH WALL THE UNIT SHALL BE OFFSET FROM THE CENTERLINE OF THE WALL AS SHOWN IN THE PLAN VIEW. FOR A 12" TOP WIDTH WALL, THE UNIT SHALL BE CENTERED ON THE END OF THE BARRIER.
- 8. FOR ONE-WAY APPROACH TRAFFIC THE UNIT SHALL BE CENTERED ON THE END OF THE BARRIER.
- 9. THE COMPLETE INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF ENERGY ABSORPTIONS INC. OR TRINITY INDUSTRIES INC.
- 10. ANCHORAGE DEVICES TO SECURE THE CRASH CUSHION TO THE EXISTING SURFACE SHALL BE SHOWN ON APPROVED SHOP DRAWINGS.
- 11. THE CONCRETE PAD, PAD EXCAVATION AND STEEL REINFORCEMENT, INSTALLED IN PLACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CRASH CUSHION TYPE VI. DIMENSION AND REINFORCEMENT SPECIFICATIONS FOR CONCRETE PADS ARE TO BE PROVIDED BY THE MANUFACTURER. THE PAD WILL NOT BE REQUIRED WHEN UNIT IS CONSTRUCTED ON RIGID PAVEMENT.
- 12. THE PAD WILL NOT BE REQUIRED WHEN THE UNIT IS CONSTRUCTED ON EXISTING PAVEMENT OR BRIDGES AND THE COST OF ANCHORING SHALL BE INCLUDED IN THE UNIT PRICE OF THE CRASH CUSHION.
- 13. USE WITH CUR. STD. DWG. RBC-110 WHEN CONNECTING TO DOUBLE FACE GUARDRAIL.
- 14. CRASH CUSHIONS ARE TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS, INCLUDING THE CONCRETE PAD. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP DRAWINGS TO THE CONTRACTOR WITH EACH INSTALLATION.

A TYPE VI-CLASS C CAN BE USED AT THE CONTRACTOR'S DISCRETION.

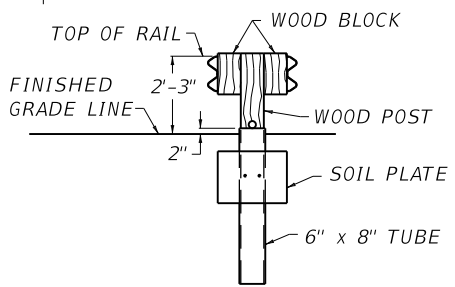
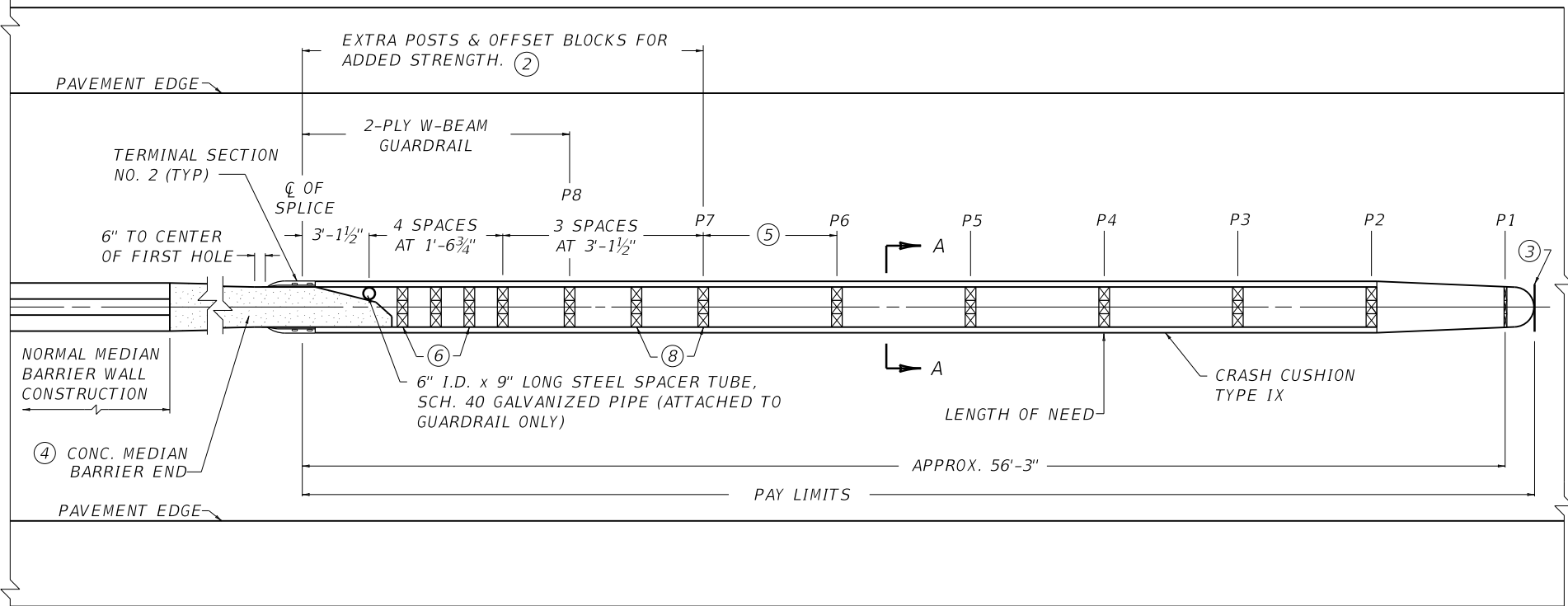
THE TRACC AND SHORTRACC CRASH CUSHIONS CAN ALSO BE USED FOR TEMPORARY SITUATIONS, BUT CANNOT BE LEFT IN PLACE AS A PERMANENT INSTALL. PER DESIGN MEMO 03-19, WORK ZONE DEVICES MANUFACTURED PRIOR TO DEC. 31, 2019 AND ARE IN GOOD WORKING ORDER, CAN BE USED UNTIL JUNE 30, 2024 PROVIDED THEY MEET THE SPECIFICATIONS IN SECTION 509 OF THE KENTUCKY STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

CLASS	SPEED (MPH)	ATTENUATOR		
		MODEL	PRODUCT NAME	LENGTH
B	45 & LESS	TL2	UNIVERSAL TAU-M	14'-2"
			3-BAY QUADGUARD M10	12'-0"
	OVER 45	TL3	UNIVERSAL TAU-M	22'-9"
			5-BAY QUADGUARD M10	18'-0"

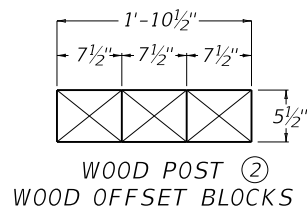
USE WITH CUR. STD. DWG.
RBC-110 RBE-060

KENTUCKY DEPARTMENT OF HIGHWAYS	
CRASH CUSHION TYPE VI-BT	
STANDARD DRAWING NO. RBE-100-11	
SUBMITTED	DATE
APPROVED	DATE

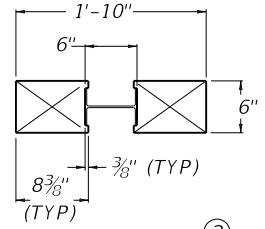
← TRAFFIC



SECTION A-A



WOOD POST ②
WOOD OFFSET BLOCKS



STEEL POST ②
(WOOD OFFSET OR
COMPOSITE OFFSET BLOCKS)

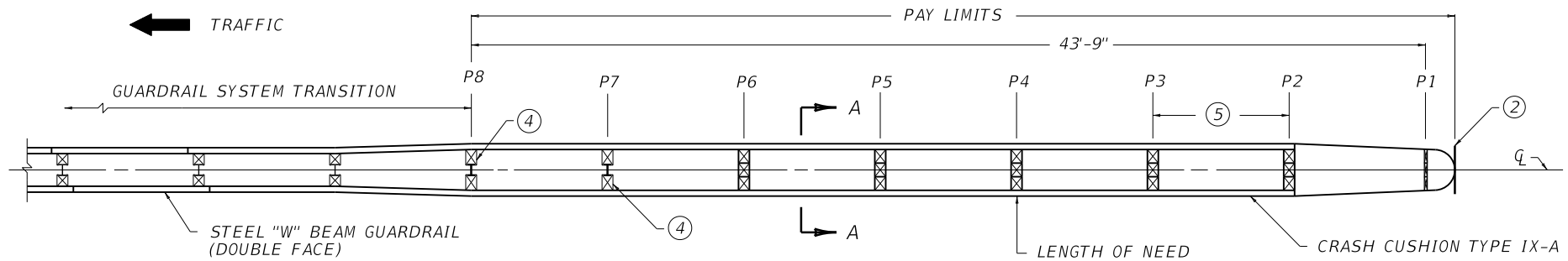
TRAFFIC → ⑪ PLAN VIEW

~ NOTES ~

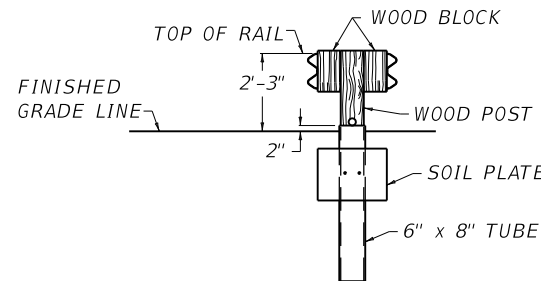
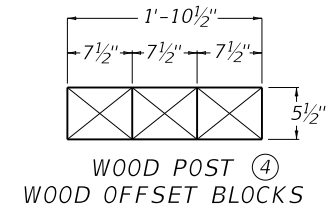
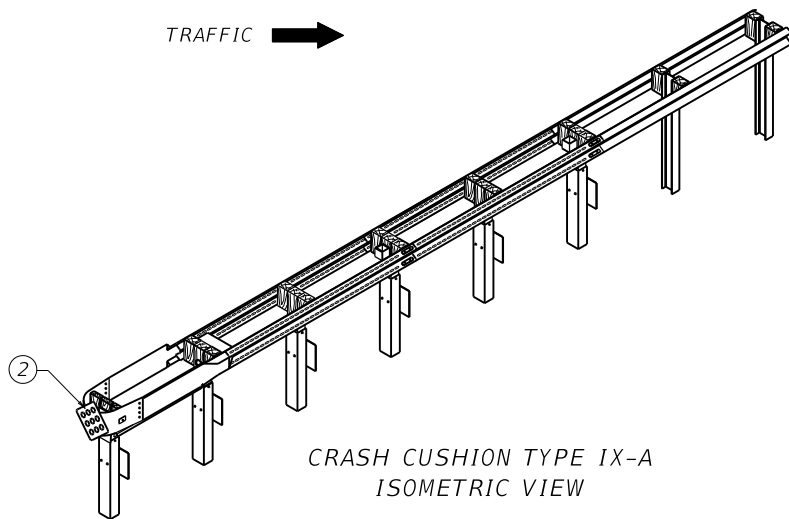
1. CRASH CUSHION TYPE IX SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND INCLUDES TERMINAL SECTIONS NO. 2, POST, RAIL ELEMENTS, SPACER TUBE, OBJECT MARKER TYPE 1, HARDWARE, AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION AS DETAILED.
- ② POSTS AND OFFSET BLOCKS MAY BE WOOD OR STEEL POSTS AND WOOD OR COMPOSITE OFFSET BLOCKS.
- ③ OBJECT MARKER TYPE 1, (SEE CURRENT MUTCD MANUAL FOR DETAILS) CENTER HORIZ. AND VERT.
- ④ SEE CUR. STD. DWG. [RBE-070](#) FOR DETAILS OF CRASH CUSHION BARRIER END.
- ⑤ POST P1 THROUGH P7 ARE SPACED 6'-3" ON CENTER.
- ⑥ GUARDRAIL NOT REQUIRED TO BE ATTACHED TO POST AT THESE LOCATIONS.
7. CRASH CUSHION TYPE IX IS A PATENTED (ONE SOURCE) PRODUCT MANUFACTURED BY TRINITY INDUSTRIES, INC. OF DALLAS TX.
- ⑧ BACK-UP PLATES REQUIRED AT THESE POSTS.
9. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
10. FOR NON-PAVEMENT APPLICATIONS SEE ROADWAY PLANS FOR GRADING DETAILS
- ⑪ SEE [RBE-070](#) FOR ALTERNATE END DEPENDENT ON TRAFFIC DIRECTION. BID ITEM AND UNIT TO BID CRASH CUSHION TYPE IX EACH

USE WITH CUR. STD. DWG. [RBE-070](#)

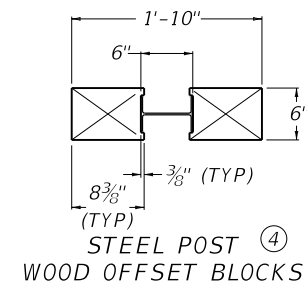
KENTUCKY DEPARTMENT OF HIGHWAYS	
CRASH CUSHION TYPE IX	
STANDARD DRAWING NO. RBE-200-07	
SUBMITTED <i>[Signature]</i>	DATE 02-26-20
APPROVED <i>[Signature]</i>	DATE 02-26-20



PLAN VIEW



SECTION A-A



~ NOTES ~

1. CRASH CUSHION TYPE IX-A SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND INCLUDES POSTS, RAIL ELEMENTS, OBJECT MARKER TYPE 1, HARDWARE, AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION AS DETAILED.
 - ② OBJECT MARKER TYPE 1, (SEE CURRENT MUTCD MANUAL FOR DETAILS) CENTER HORIZ. AND VERT.
 3. CRASH CUSHION TYPE IX-A IS A PATENTED (ONE SOURCE) PRODUCT MANUFACTURED BY TRINITY INDUSTRIES, INC. OF DALLAS, TX.
 - ④ AT POST P7 AND P8 THE POSTS AND OFFSET BLOCKS MAY BE WOOD OR STEEL POST AND WOOD OFFSET BLOCKS.
 - ⑤ POST P1 THROUGH P8 ARE SPACED 6'-3" ON CENTER.
 6. BACK-UP PLATES REQUIRED AT POST P7.
 7. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
 8. FOR NON-PAVEMENT APPLICATIONS SEE ROADWAY PLANS FOR GRADING DETAILS.
- BID ITEM AND UNIT TO BID
- CRASH CUSHION TYPE IX-A
- EACH

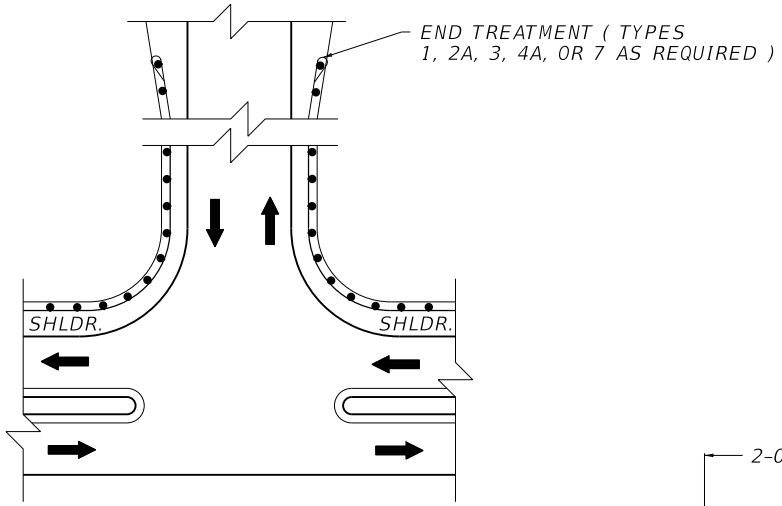
KENTUCKY
DEPARTMENT OF HIGHWAYS

CRASH CUSHION
TYPE IX-A

STANDARD DRAWING NO. RBE-205-07

SUBMITTED *[Signature]* DATE 02-26-20

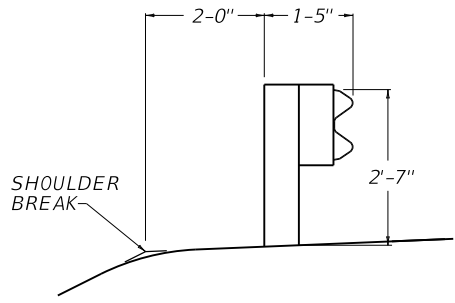
APPROVED *[Signature]* DATE 02-26-20



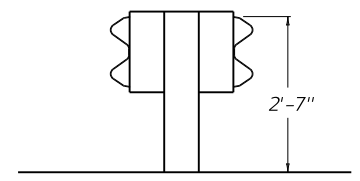
APPROACH ROADS

~ NOTES ~

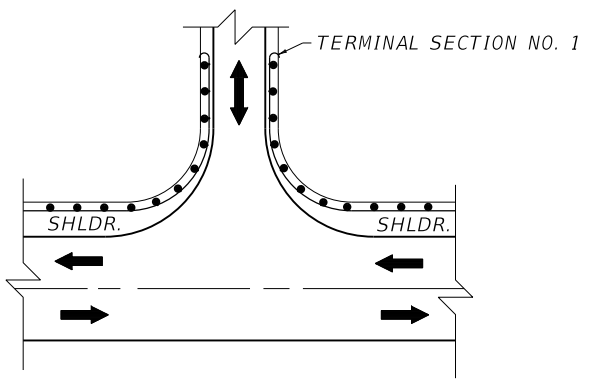
1. FOR END TREATMENT TYPE 4A USE CUR. STD. DWG. [RBR-035](#) FOR OFFSETS.
2. THE MINIMUM LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET: (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).



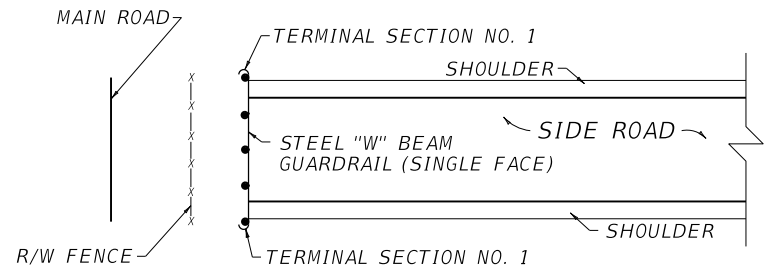
NORMAL GUARDRAIL INSTALLATION



TYPICAL DOUBLE FACE GUARDRAIL INSTALLATION



ENTRANCES



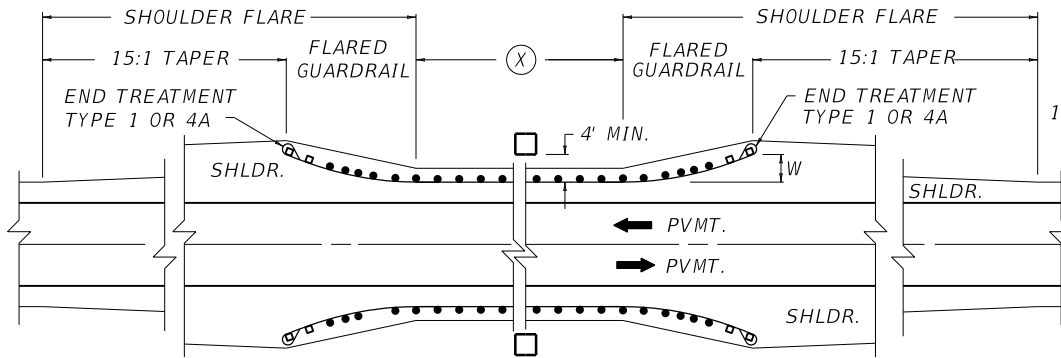
GUARDRAIL USED AS A BARRICADE

USE WITH CUR. STD. DWG.
[RBI-002](#) [RBR-035](#)

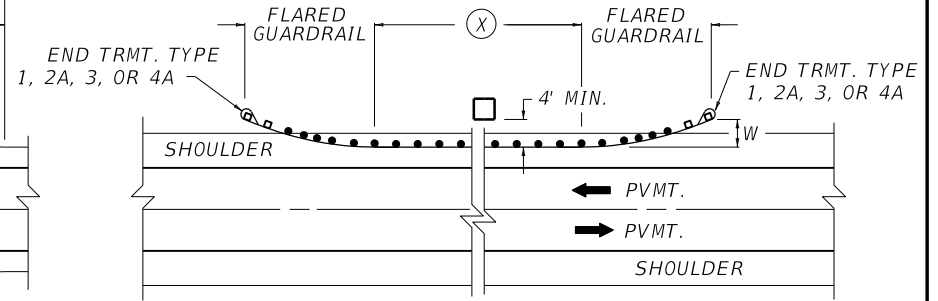
KENTUCKY
 DEPARTMENT OF HIGHWAYS

TYPICAL GUARDRAIL
 INSTALLATIONS

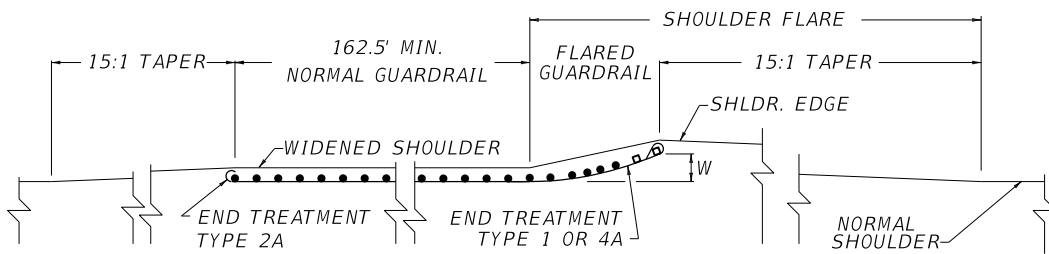
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SUBMITTED <i>[Signature]</i>	DATE <i>02-26-20</i>
APPROVED <i>[Signature]</i>	DATE <i>02-26-20</i>
DESIGNER	ENGINEER



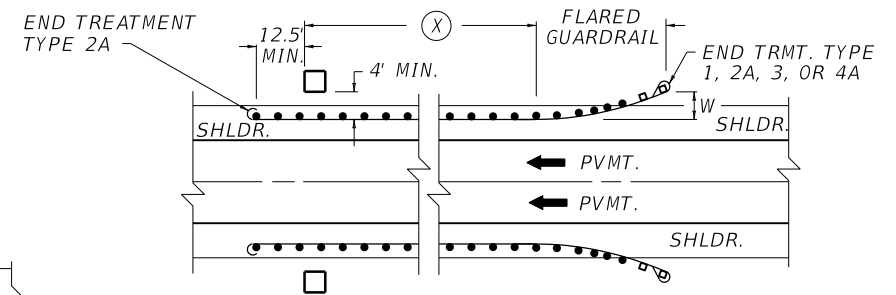
AT A FIXED OBJECT - TWO WAY TRAFFIC (FILL)
FIGURE 1



AT A FIXED OBJECT - TWO WAY TRAFFIC (CUT)
FIGURE 4



ONE DIRECTION TRAFFIC-FOR SHOULDERS LESS THAN 12' (FILL)
FIGURE 2



AT A FIXED OBJECT - ONE WAY TRAFFIC (CUT)
FIGURE 5

~ NOTES ~

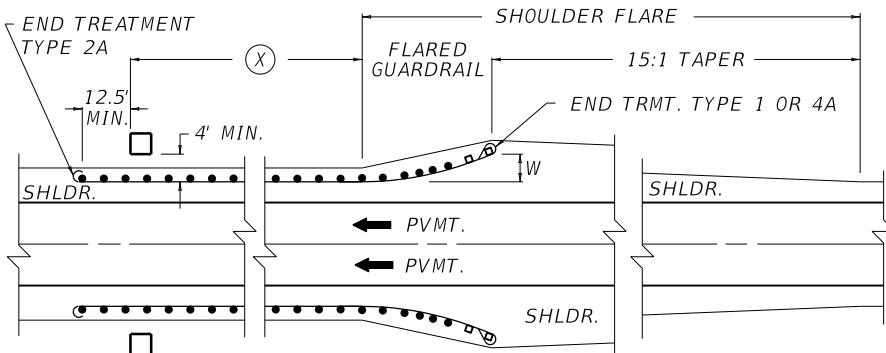
GENERAL APPLICATION OF END TREATMENTS

- (a.) ALL FILLS; ALSO SOLID ROCK CUTS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL, USE END TREATMENT TYPE 1 OR 4A.
- (b.) SOLID ROCK CUTS WITHOUT ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL, USE END TREATMENT TYPE 2A.
- (c.) EARTH CUTS AND SOFT ROCK CUTS, USE END TREATMENT TYPE 3.
- (X) NORMAL GUARDRAIL INSTALLATION. FOR FIXED OBJECTS, SPECIFY "X" IN 12'-6" INCREMENTS.

- FIXED OBJECTS SUCH AS (PIERS, NEAR OR AT GRADE CULVERTS, POST, OR POLE LOCATED IN THE SAFETY ZONE AND NOT HAVING BREAKAWAY FEATURE). SEE APPROPRIATE CURRENT STANDARD DRAWING FOR PROPER OFFSET "W".

THE MINIMUM LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).

USE WITH CUR. STD. DWGS.
RBI-003 RBI-004 RBR-030
RBR-035

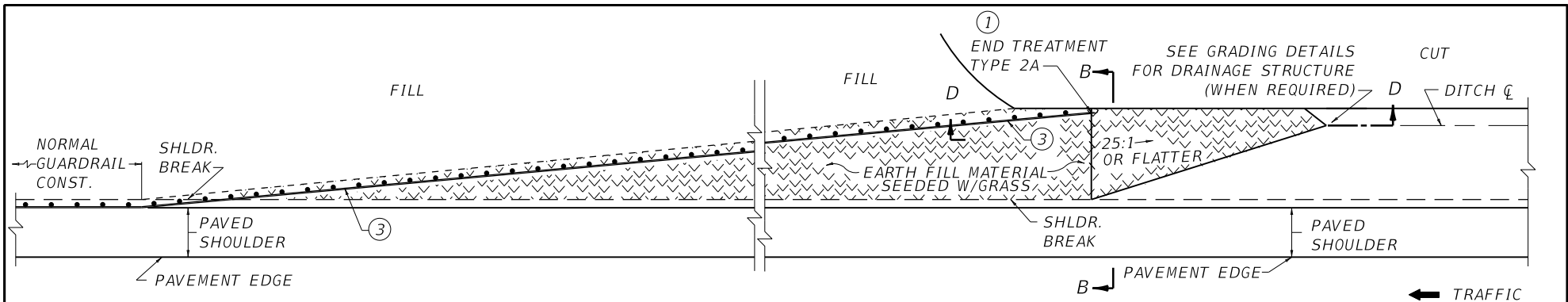


AT A FIXED OBJECT - ONE WAY TRAFFIC (FILL)
FIGURE 3

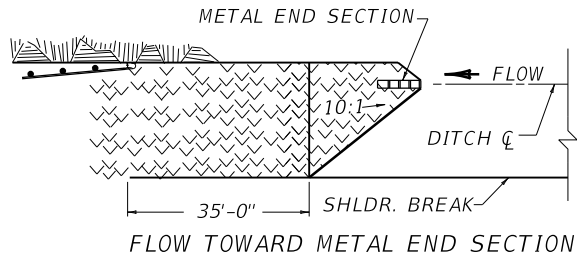
KENTUCKY
DEPARTMENT OF HIGHWAYS

TYPICAL GUARDRAIL
INSTALLATIONS

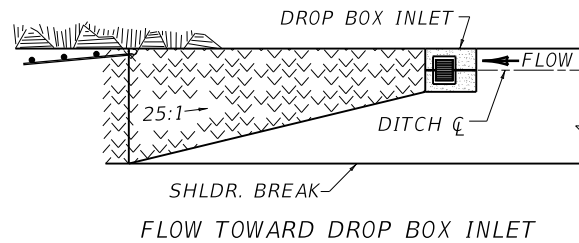
STANDARD DRAWING NO. RBI-002-07
SUBMITTED *[Signature]* DIRECTOR/CHIEF OF DESIGN 12-01-15
APPROVED *[Signature]* STATE HIGHWAY ENGINEER 12-01-15



DETAIL OF GUARDRAIL FOR FILL TO SOLID ROCK CUT SECTION



FLOW TOWARD METAL END SECTION



FLOW TOWARD DROP BOX INLET

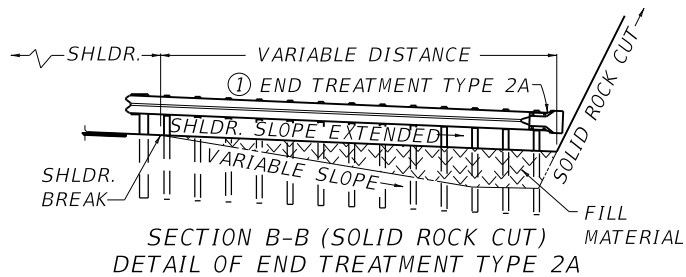
GRADING DETAILS

~ NOTES ~

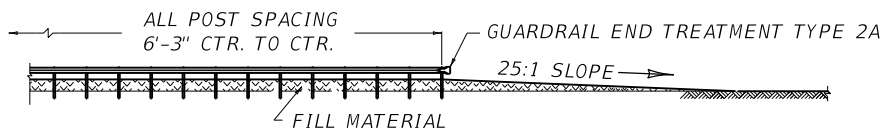
- ① SOLID ROCK CUTS WITHOUT AN ADEQUATE RECOVERY ZONE.
2. INTENDED USE: FOR END TREATMENTS AGAINST SOLID ROCK CUTS ONLY. END TREATMENT SHALL NOT ABUT LOOSE ROCK. FOR INSTALLATION WHERE SOLID ROCK IS NOT ENCOUNTERED SEE CURRENT STANDARD DRAWING **RBR-030**.

BID ITEMS AND UNIT TO BID:

GUARDRAIL END TREATMENT TYPE 2A	EACH
ROADWAY OR BORROW EXCAVATION,	
OR EMBANKMENT IN PLACE	CUYD
DRAINAGE STRUCTURE BID SEPARATELY.	



SECTION B-B (SOLID ROCK CUT)
DETAIL OF END TREATMENT TYPE 2A

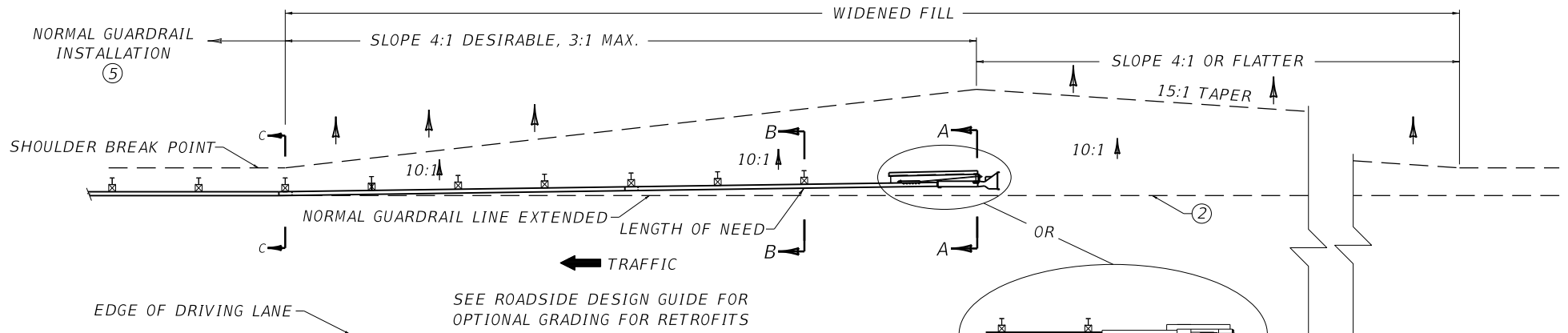


SECTION D-D (GUARDRAIL END TREATMENT TYPE 2A)

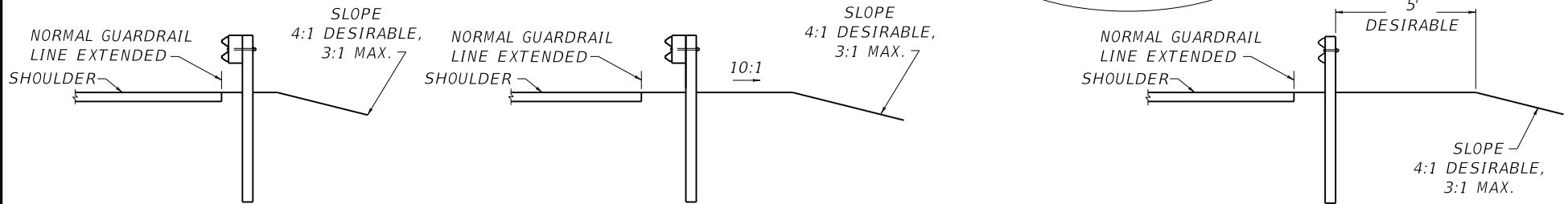
	③		
DESIGN SPEED	70+ MPH	60 MPH	50 MPH OR LESS
FLARE RATES	15:1	13:1	11:1

USE WITH CUR. STD. DWGS.
RBI-001 RBI-002 RDB-005
RBR-030

KENTUCKY DEPARTMENT OF HIGHWAYS	
TYPICAL INSTALLATION FOR GUARDRAIL END TREATMENT TYPE 2A	
STANDARD DRAWING NO. RBI-003-09	
SUBMITTED <i>[Signature]</i>	12-01-15
DIRECTOR OF DESIGN	DATE
APPROVED <i>[Signature]</i>	12-01-15
STATE HIGHWAY ENGINEER	DATE



SEE ROADSIDE DESIGN GUIDE FOR
OPTIONAL GRADING FOR RETROFITS



SECTION C-C

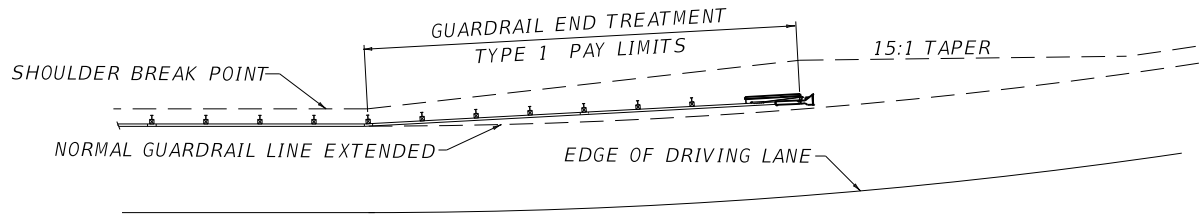
SECTION B-B

SECTION A-A

~ NOTES ~

BID ITEMS AND UNIT TO BID:
GUARDRAIL END TREATMENT TYPE 1 EACH
ROADWAY OR BORROW EXCAVATION, CUYD
OR EMBANKMENT IN PLACE

1. THE MINIMUM LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).
- ② GUARDRAIL EXTRUDER EDGE CLOSEST TO TRAFFIC SHALL BE PLACED ON NORMAL GUARDRAIL LINE EXTENDED.
- ③ END TREATMENT TYPE 1 MAY BE ATTACHED TO CURVED GUARDRAIL PROVIDED CURVE IS A 550' RADIUS OR MORE. END TREATMENT TYPE 1 SHALL BE INSTALLED ON A STRAIGHT LINE TAPER WITHIN THE PAY LIMITS.
4. INTENDED USE: FILLS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL.
- ⑤ FOR MAINTENANCE AND REPAIR PROJECTS, USE "GUARDRAIL SYSTEM TRANSITION" (RBR-018), TO TRANSITION BACK TO 27" OR 29" GUARDRAIL HEIGHT, IF ONLY THE TERMINAL IS PROPOSED TO BE REPLACED.

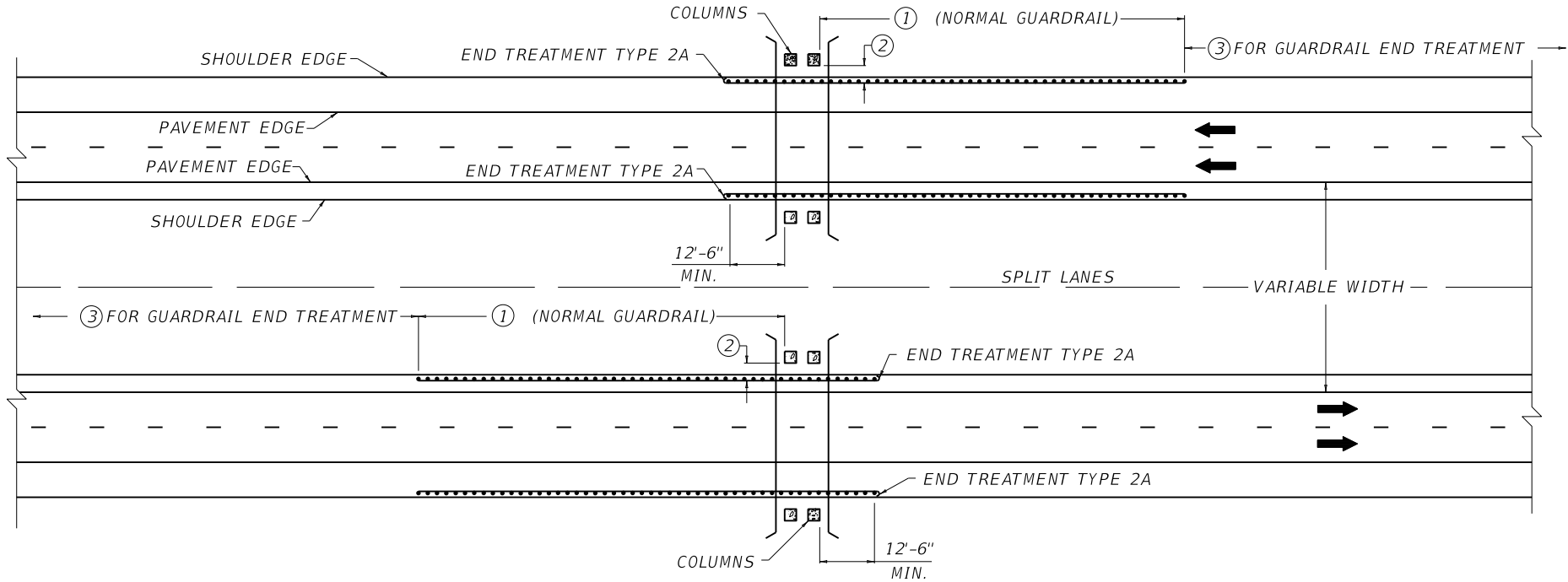


GUARDRAIL END TREATMENT TYPE 1
INSTALLED ON A CURVE ③

USE WITH CUR. STD. DWG.
RBR-020

KENTUCKY
DEPARTMENT OF HIGHWAYS
INSTALLATION OF
GUARDRAIL
END TREATMENT
TYPE 1

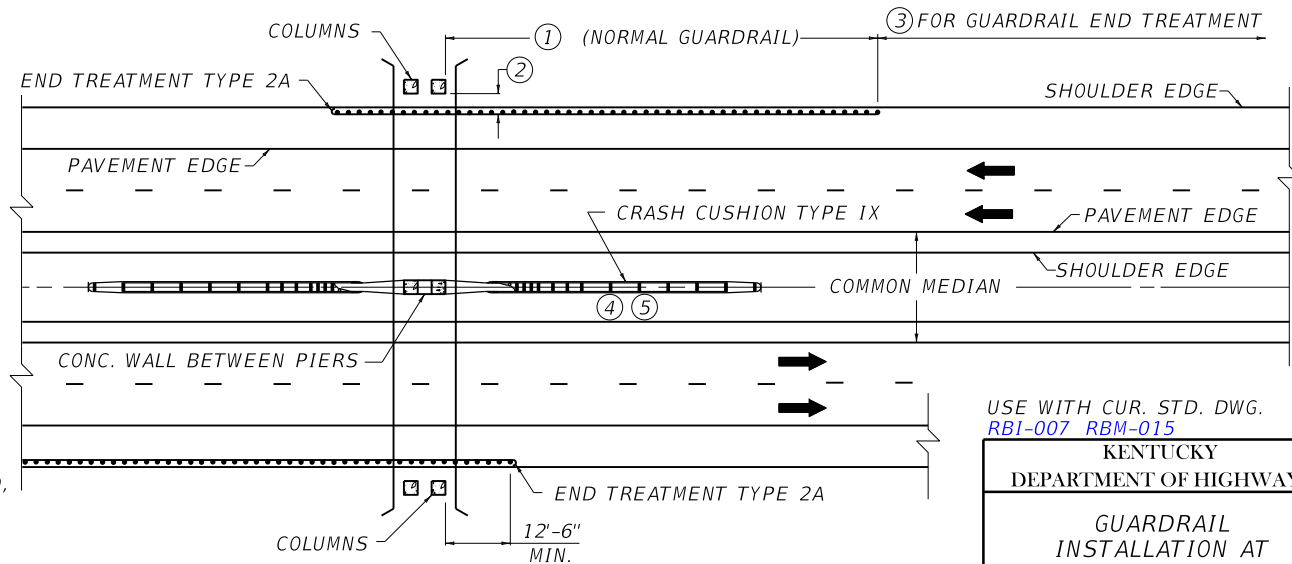
STANDARD DRAWING NO. RBI-004-06
SUBMITTED *[Signature]* DATE 02-26-20
APPROVED *[Signature]* DATE 02-26-20
DATE



~ NOTES ~

- ① THE MIN. LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).
- ② 4'-0" OR MORE FROM NORMAL GUARDRAIL ALIGNMENT. HOWEVER, IF COLUMNS, PIERS, ABUTMENTS, ETC. ARE LOCATED IN THE CLEAR ZONE DISTANCE OR 30'-0" WHICHEVER IS GREATER FROM THE EDGE OF A THROUGH TRAVEL LANE, GUARDRAIL SHALL NOT BE REQUIRED.
- ③ TO TERMINATE GUARDRAIL INSTALLATION:
 - A. ALL FILLS, ALSO SOLID ROCK CUTS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL; USE END TREATMENT TYPE 1 OR 4A.
 - B. SOLID ROCK CUTS WITHOUT ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL; USE END TREATMENT TYPE 2A.
 - C. EARTH CUTS AND SOFT ROCK CUTS; USE END TREATMENT TYPE 3.
- ④ SEE CUR. STD. DWG. [RBI-007](#) OR CUR. STD. DWG. [RBI-009](#) AS APPLICABLE.
- ⑤ WHEN CONCRETE MEDIAN BARRIER WALL IS REQUIRED, SEE CUR. STD. DWG. [RBM-015](#) FOR APPLICABLE DETAILS.

LOCATION OF GUARDRAIL WITH VARIABLE WIDTH MEDIAN



LOCATION OF GUARDRAIL WITH CONSTANT WIDTH MEDIAN

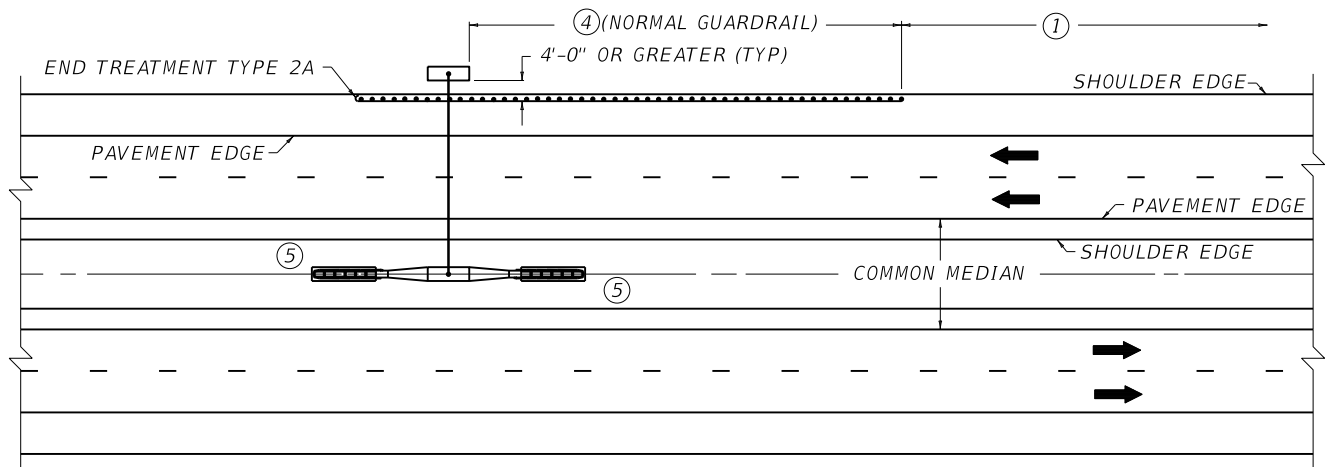
USE WITH CUR. STD. DWG.
[RBI-007](#) [RBM-015](#)

KENTUCKY
DEPARTMENT OF HIGHWAYS

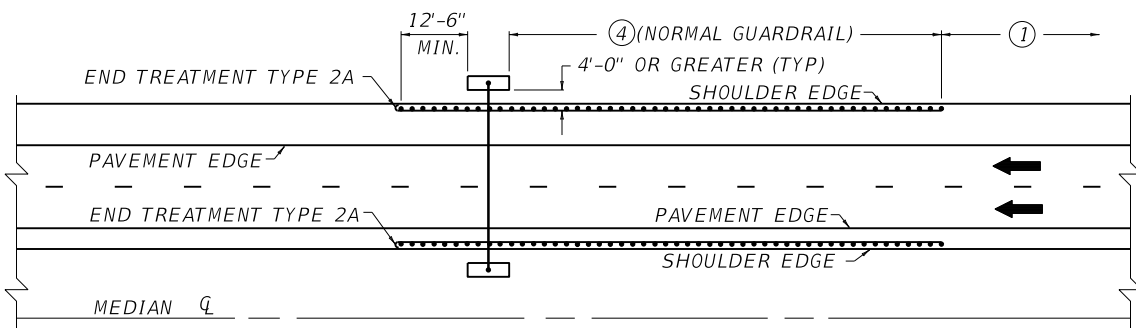
GUARDRAIL
INSTALLATION AT
BRIDGE COLUMNS

STANDARD DRAWING NO. [RBI-005-08](#)

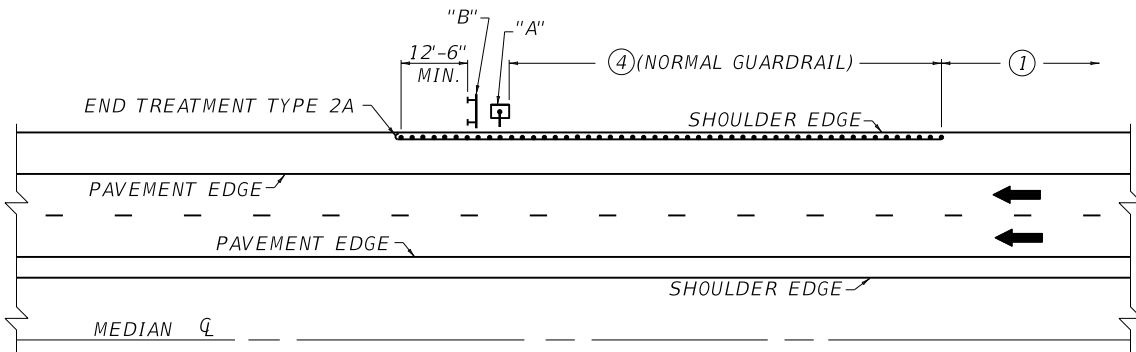
SUBMITTED	<i>[Signature]</i>	12-01-15
DIRECTOR'S SIGNATURE OF DESIGN	<i>[Signature]</i>	DATE
APPROVED	<i>[Signature]</i>	12-01-15
STATE HIGHWAY ENGINEER		DATE



TYPICAL GUARDRAIL INSTALLATIONS FOR OVERHEAD SIGN SUPPORT - TRUSS (RAISED MEDIAN)



TYPICAL GUARDRAIL INSTALLATIONS FOR OVERHEAD SIGN SUPPORT - TRUSS (DEPRESSED MEDIAN)



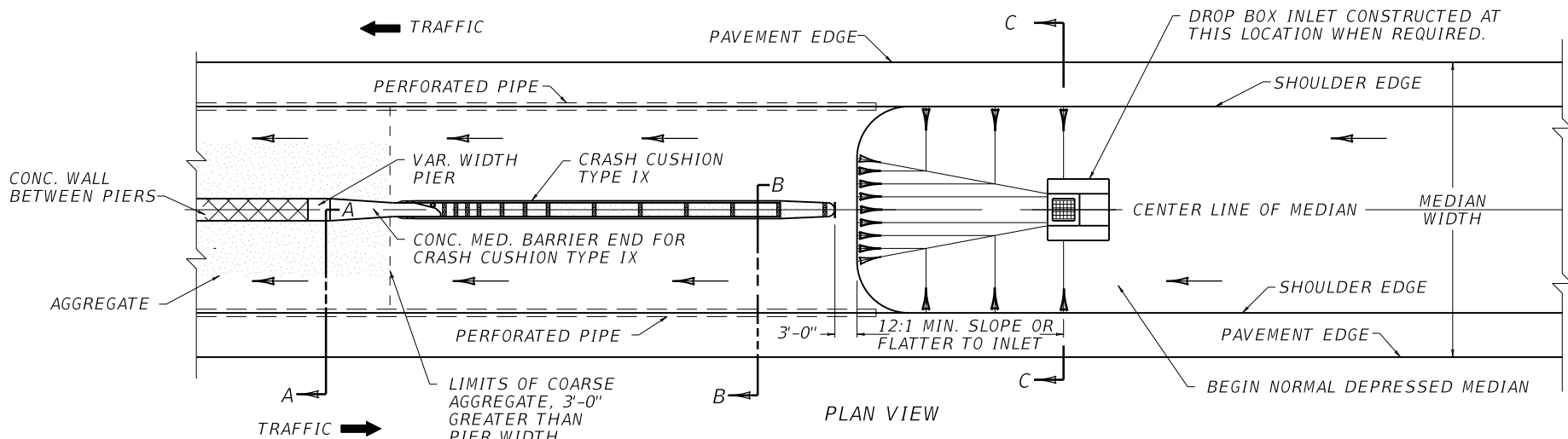
TYPICAL GUARDRAIL INSTALLATIONS FOR "A" CANTILEVER SIGN SUPPORT OR "B" OVERHEAD SIGN SUPPORT

~ NOTES ~

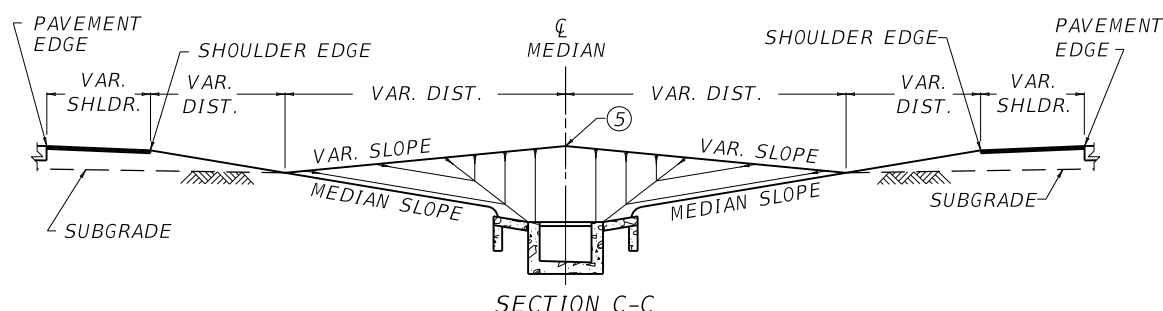
- ① TO TERMINATE GUARDRAIL INSTALLATION:
 - A. ALL FILLS, ALSO SOLID ROCK CUTS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL; USE END TREATMENT TYPE 1 OR 4A.
 - B. SOLID ROCK CUTS WITHOUT ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL; USE END TREATMENT TYPE 2A.
 - C. EARTH CUTS AND SOFT ROCK CUTS; USE END TREATMENT TYPE 3.
2. IF GAPS OF 200 FEET OR LESS SHOULD OCCUR BETWEEN SECTIONS OF GUARDRAIL, THE GUARDRAIL SHALL BE EXTENDED THROUGH SUCH GAPS TO PROVIDE A COUNTINUOUS SECTION.
3. GUARDRAIL INSTALLATION IS NOT NECESSARY FOR SIGNS MOUNTED ON:
 - A. CHANNEL POST IN TYPE "B" OR "C" BASES.
 - B. TYPE "B" BREAKAWAY BEAMS.
 - C. SIGNS MOUNTED IN CAST ALUMINUM SHOES. (SEE SIGN PLAN).
- ④ THE MIN. LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).
- ⑤ WHEN CONCRETE BARRIER WALL IS REQUIRED SEE CUR. STD. DWG. [RBM-015](#) FOR APPLICABLE DETAILS.

USE WITH CUR. STD. DWG. [RBM-015](#)

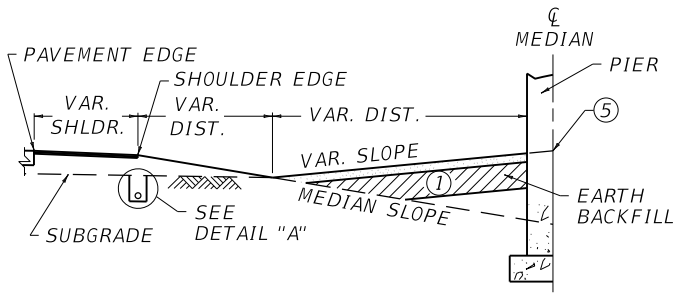
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL INSTALLATION AT SIGN SUPPORTS	
STANDARD DRAWING NO. RBI-006-07	
SUBMITTED <i>[Signature]</i>	12-01-15
DESIGNED BY <i>[Signature]</i>	DATE
APPROVED <i>[Signature]</i>	12-01-15
STATE HIGHWAY ENGINEER	DATE



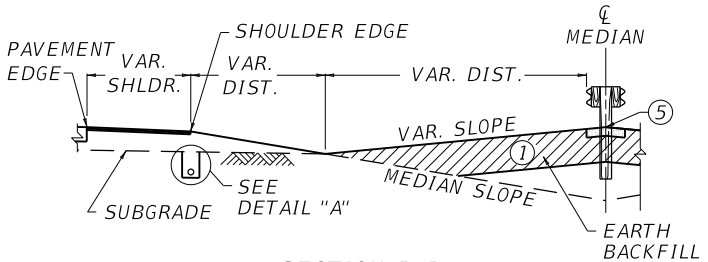
PLAN VIEW



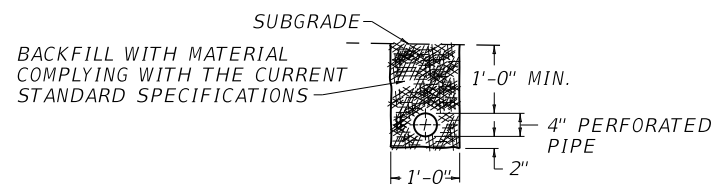
SECTION C-C



SECTION A-A



SECTION B-B



DETAIL "A"

~ NOTES ~

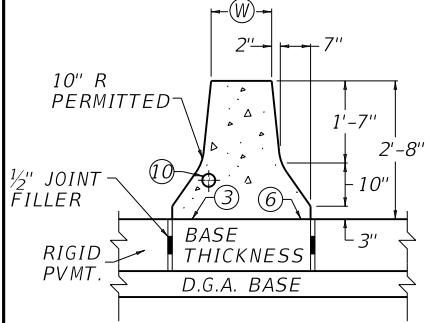
- BID ITEMS AND UNIT TO BID:
- CRASH CUSHION TYPE IX EACH
 - CONC MED BAR END FOR CRASH CUSHION TY IX EACH
 - CONCRETE-CLASS A CUYD
 - ROADWAY OR BORROW EXCAVATION OR EMBANKMENT-IN-PLACE CUYD
 - CRUSHED AGGREGATE SIZE NO 57 TON
 - PERFORATED PIPE HEADWALL TY (VARIES WITH SLOPE)-4 IN EACH
 - PERFORATED PIPE-4 IN EACH

- ① WHEN SOLID ROCK IS ENCOUNTERED, THIS MATERIAL SHALL BE REMOVED AND BACKFILLED WITH EARTH (ROADWAY OR BORROW EXCAVATION OR EMBANKMENT-IN-PLACE), A DEPTH OF 2'-0".
2. WHEN CRASH CUSHION TYPE IX IS INSTALLED AT THE SUMMIT OF A VERTICAL CURVE, 4" PERFORATED PIPE SHALL BE PLACED AS DETAILED IN BOTH DIRECTIONS. CONSTRUCT A PERFORATED PIPE HEADWALL AT EACH OUTLET OR EXTEND PIPE TO A BOX INLET. WHEN PERFORATED PIPE IS PLACED IN A SAG VERTICAL CURVE, IT SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
3. AREA IN DEPRESSED MEDIAN SHALL BE GRADED IN ORDER TO PROVIDE COMPLETE DRAINAGE.
4. THIS DRAWING DEPICTS THE APPLICATION OF MATERIALS NECESSARY TO COMPLETE THE INSTALLATION.
- ⑤ THIS POINT SAME ELEVATION AS INSIDE PAVEMENT EDGE.
6. 6" OF CRUSHED AGGREGATE SIZE NO. 57 (LOOSE DEPTH).

USE WITH CUR. STD. DWG.
RBE-070 RBE-200 RDP-010

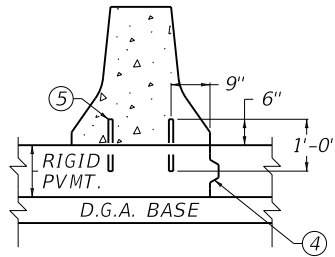
KENTUCKY	
DEPARTMENT OF HIGHWAYS	
CRASH CUSHION TYPE IX INSTALLATION AT MEDIAN PIERS (DEPRESSED MEDIAN)	
STANDARD DRAWING NO. RBE-007-09	
SUBMITTED	12-01-15
DESIGNED BY	DATE
APPROVED	12-01-15
STATE HIGHWAY ENGINEER	DATE

TYPE 9A,
12A OR 14A



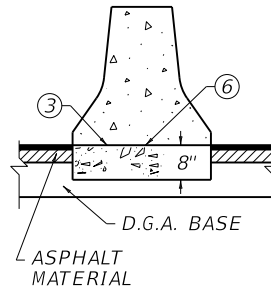
NEW RIGID PAVEMENT

TYPE 9B,
12B OR 14B



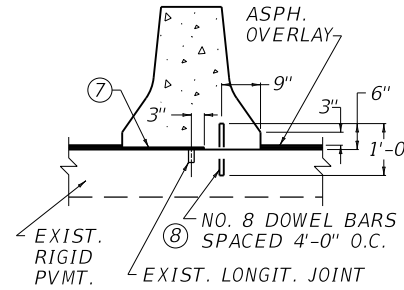
NEW FLEXIBLE PAVEMENT

TYPE 9C,
12C OR 14C



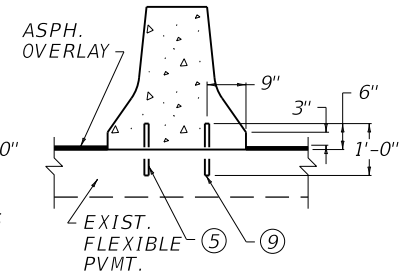
NEW FLEXIBLE PAVEMENT

TYPE 9D,
12D OR 14D



NEW FLEXIBLE
OVERLAY OVER
EXISTING RIGID
PAVEMENT

TYPE 9E,
12E OR 14E



NEW FLEXIBLE
OVERLAY OVER
EXISTING FLEXIBLE
PAVEMENT

~ NOTES ~

BID ITEM AND UNIT TO BID

CONC MEDIAN BARRIER TYPE \oplus \oplus LF

\oplus 9, 12, OR 14 DEPENDING ON W

\oplus A, B, C, D, OR E DEPENDING ON PAVEMENT TYPE.

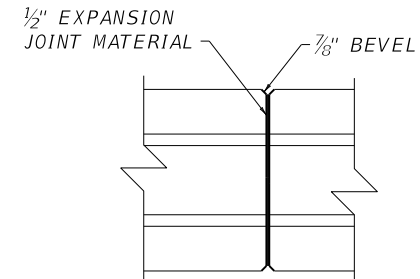
1. FOR WALLS IN TRANSITION AND SEPARATE SEGMENT WALLS, SEE CUR. STD. DWG. RBM-015. FOR APPROPRIATE BID ITEMS.
2. THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR CONCRETE MEDIAN BARRIER INCLUDING THE BASE IN TYPES A AND C SHALL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.
3. WHEN A CONSTRUCTION JOINT IS USED, DOWEL BARS WILL BE REQUIRED AS SHOWN WITH TYPE 9B, 12B, OR 14B BARRIER. SEE NOTE 5.
4. LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS IS REQUIRED AND SHALL BE PLACED AT THE LOCATION SHOWN OR MAY BE INSTALLED AT THE CORRESPONDING POINT ON THE OPPOSITE SIDE OF THE BARRIER, AT THE OPTION OF THE CONTRACTOR. IT SHALL BE REQUIRED ON THE LOW SIDE OF A SUPERELEVATED SECTION.
5. NO. 8 DOWEL BARS SPACED 4'-0" O.C. AND STAGGERED 2'-0".
6. CONSTRUCTION JOINT PERMITTED WHEN FIXED FORMS OR SLIP FORMS ARE USED.
7. POLYETHYLENE (6 MILS THICK) BOND BREAKER.
8. PAVEMENT SHALL BE DRILLED AND BARS GROUTED.
9. BARS SHALL BE EITHER DRILLED AND GROUTED OR DRIVEN.
10. 3" RACEWAY (TYPICAL) SEE ELSEWHERE IN THE PLANS FOR LOCATION AND PAYMENT FOR RACEWAY WHEN REQUIRED.

APPROXIMATE QUANTITIES PER LINEAR FOOT

TYPE	CONC. - CU YD			STEEL - POUNDS		
	(W)					
	9"	12"	14"	9"	12"	14"
A	0.18	0.20	0.21	▲ 1.34	▲ 1.34	▲ 1.34
B	0.13	0.15	0.16	1.34	1.34	1.34
C	0.18	0.20	0.21	▲ 1.34	▲ 1.34	▲ 1.34
D	0.14	0.16	0.17	0.67	0.67	0.67
E	0.14	0.16	0.17	1.34	1.34	1.34

▲ WHEN REQUIRED

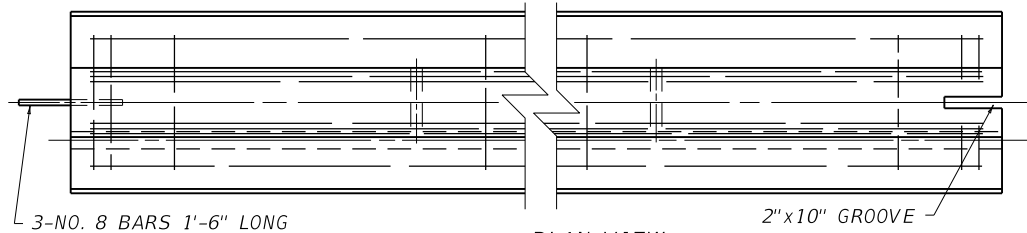
CONCRETE QUANTITIES SHOWN INCLUDE 8" BASE THICKNESS FOR TYPE A, BUT DO NOT INCLUDE QUANTITIES NECESSARY FOR ASPHALT OVERLAY THICKNESS SHOWN FOR TYPE D AND E.



EXPANSION JOINT DETAIL

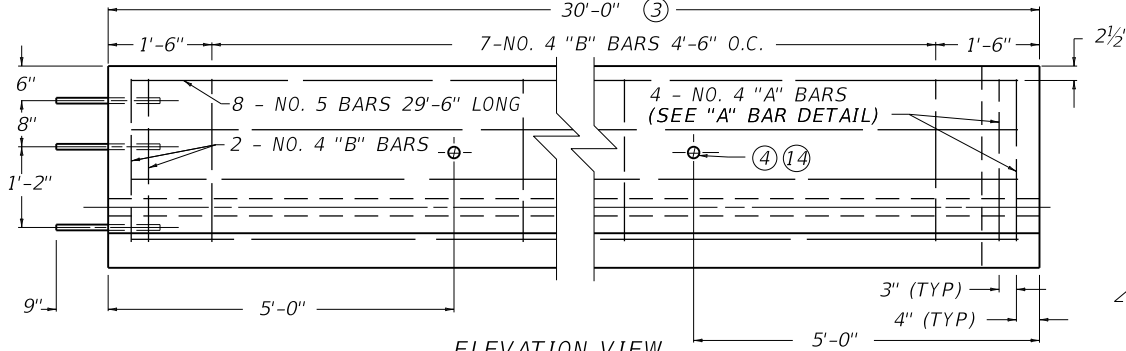
USE WITH CUR. STD. DWG.
RBM-015

KENTUCKY DEPARTMENT OF HIGHWAYS	
CONCRETE MEDIAN BARRIER FIXED-FORM OR SLIP-FORM (PERMANENT)	
STANDARD DRAWING NO. RBM-001-11	
SUBMITTED <i>[Signature]</i>	DATE 02-26-20
APPROVED <i>[Signature]</i>	DATE 02-26-20
ENGINEER	



PLAN VIEW

2"x10" GROOVE



ELEVATION VIEW

~ NOTES ~

NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.

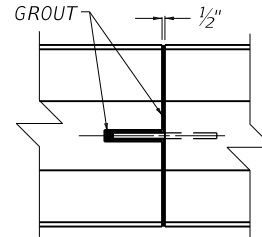
BID ITEM AND UNIT TO BID:

CONCRETE MEDIAN BARRIER TYPE \oplus \oplus LF

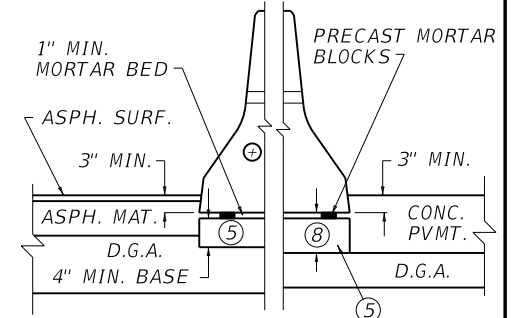
\oplus 9 OR 12 OR 14 DEPENDING ON "W".

\oplus A OR C DEPENDING ON PAVEMENT TYPE (SEE CUR. STD. DWG. RBM-001 FOR TYPE).

1. WITH FLEXIBLE PAVEMENT THE CONTRACT UNIT PRICE PER LINEAR FOOT SHALL INCLUDE THE BASE, ALL CONCRETE, LABOR, REINFORCING STEEL AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE PERMANENT INSTALLATION.
2. WITH RIGID PAVEMENT THE CONTRACT UNIT PRICE PER LINEAR FOOT SHALL INCLUDE, THE BASE, ALL CONCRETE, LABOR, REINFORCING STEEL AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE PERMANENT INSTALLATION.
- ③ SHORTER SECTIONS MAY BE PERMITTED IF APPROVED IN WRITING BY THE ENGINEER.
- ④ 2" DIA. LIFTING HOLE - 2 REQUIRED AT EACH SECTION. FORMED WITH 2" P.V.C. PIPE OR EQUAL.
- ⑤ SEE ELSEWHERE IN THE PLANS FOR BASE REQUIREMENTS.
- ⑥ 9" WIDE TOP WITH 2'-3" WIDE BASE, OR 12" WIDE TOP WITH 2'-6" WIDE BASE OR 14" WIDE TOP 2'-8" WIDE BASE. (TAPER NOT INCLUDED IN BASE WIDTH).
- ⑦ OTHER METHODS OF ANCHORAGE WILL BE ACCEPTABLE IF APPROVED IN WRITING BY THE ENGINEER.
- ⑧ PAVEMENT THICKNESS MINUS 3".
- ⑨ THE RACEWAY SHALL BE TIED TO EACH OF THE "A" AND "B" BARS TO PREVENT SAG. SEE ELSEWHERE IN THE PLANS FOR SIZE, LOCATION, AND PAYMENT FOR RACEWAY WHEN REQUIRED.
10. PLACE ALL STEEL REINFORCEMENT A CLEAR DISTANCE OF 2" MIN. FROM OUTSIDE FACE OF WALL, EXCEPT WHERE SHOWN OTHERWISE.
11. SHOP DRAWINGS SHALL BE APPROVED PRIOR TO MANUFACTURE.
- ⑫ WHEN THE "X" DIMENSION EQUALS 10" THE BAR SHALL BE TURNED DOWN 6" ("Z" DIMENSION) AND AN ADDITIONAL LONGITUDINAL BAR SHALL BE ADDED AT THE BOTTOM OF THE TURN DOWN ("Z" DIMENSION) AND TO THE "Y" PORTION OF THE BAR. FOR EACH 6" INCREMENT OF THE "X" DIMENSION ABOVE 10", AN ADDITIONAL LONGITUDINAL BAR SHALL BE ADDED IN THE "Z" AND "Y" PORTION OF THE BAR.
- ⑬ THE "Z" DIMENSION SHALL INCREASE INCH FOR INCH WHEN THE "X" DIMENSION EXCEEDS 10".
- ⑭ LIFTING BARS SHALL BE REQUIRED TO PREVENT SPALLING OF CONCRETE AROUND HOLES.
15. WHEN THE PRECAST WALL IS USED IN PERMANENT CONSTRUCTION THE LIFTING HOLES SHALL BE FILLED WITH GROUT.

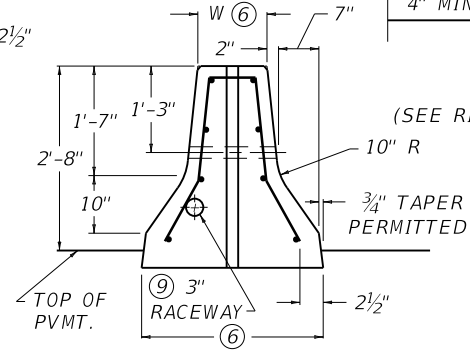


CONNECTION DETAIL

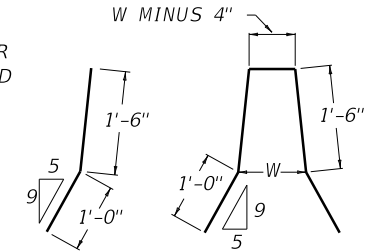


PAVEMENT DETAIL ⑦

(SEE RIGHT ELEVATION FOR DIMENSIONS)



RIGHT ELEVATION VIEW



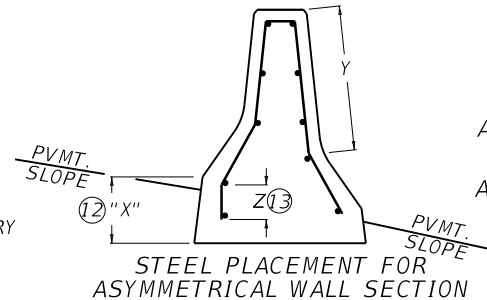
DETAIL OF "A" BAR

DETAIL OF "B" BAR

APPROX. REINF./30' SECTION
289 LBS.

APPROX. CU. YD. CONC./LIN. FT.
9" WIDE TOP = 0.16
12" WIDE TOP = 0.18
14" WIDE TOP = 0.20

APPROX. WEIGHT/30' SECTION
BASED ON 150 LBS./CU. FT
9" WIDE TOP = 9.8 TONS
12" WIDE TOP = 11.1 TONS
14" WIDE TOP = 12.1 TONS



STEEL PLACEMENT FOR ASYMMETRICAL WALL SECTION

USE WITH CUR. STD. DWG.
RBM-001

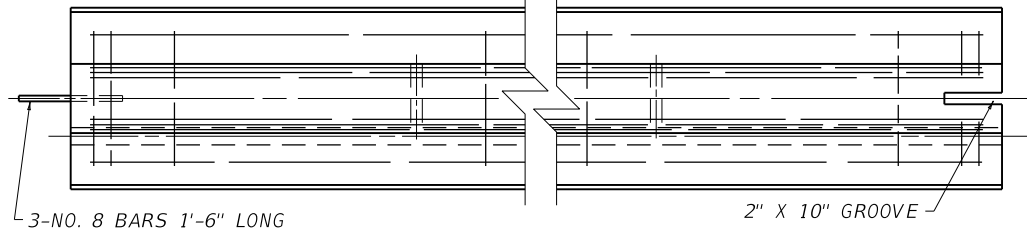
KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE MEDIAN
BARRIER PRECAST
(PERMANENT - NEW
PAVEMENT)

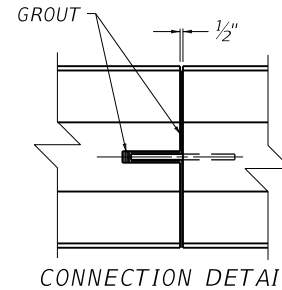
STANDARD DRAWING NO. RBM-003-12

SUBMITTED *[Signature]* DATE 02-26-20

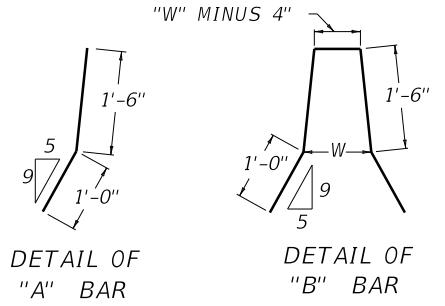
APPROVED *[Signature]* DATE 02-26-20



PLAN VIEW

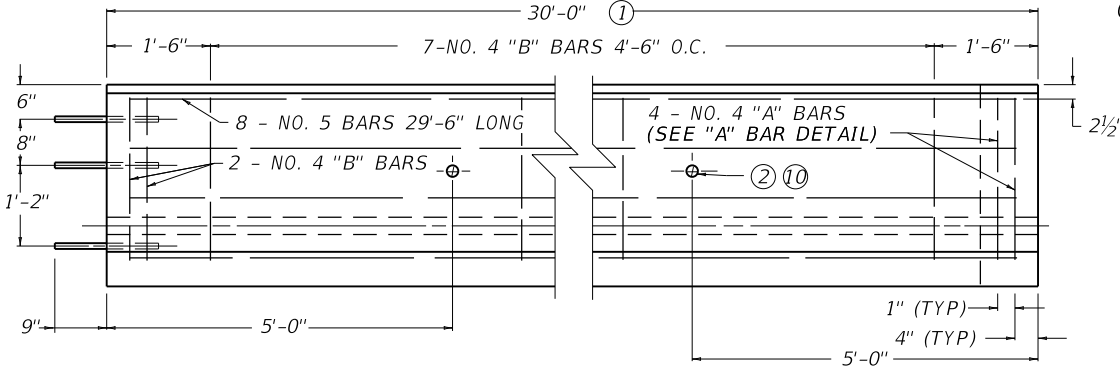


CONNECTION DETAIL

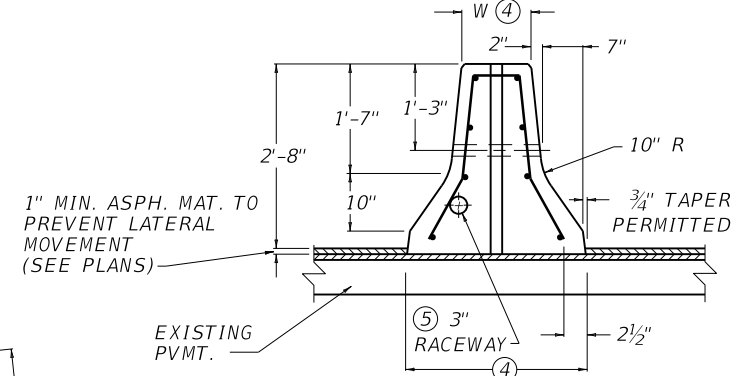


DETAIL OF "A" BAR

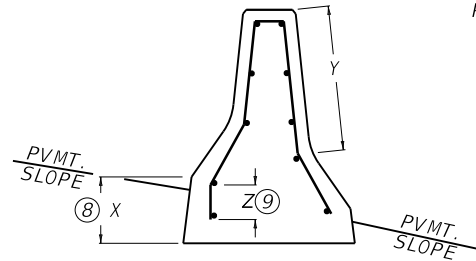
DETAIL OF "B" BAR



ELEVATION VIEW



RIGHT ELEVATION VIEW



STEEL PLACEMENT FOR ASYMMETRICAL WALL SECTION

APPROX. REINF./30' SECTION
289 LBS.

APPROX. CU. YD. CONC./LIN. FT.

9" WIDE TOP = 0.14
12" WIDE TOP = 0.16
14" WIDE TOP = 0.17

APPROX. WEIGHT/30' SECTION
BASED ON 150 LBS./CU. FT.

9" WIDE TOP = 8.1 TONS
12" WIDE TOP = 9.7 TONS
14" WIDE TOP = 10.6 TONS

~ NOTES ~

NOT FOR NEW CONSTRUCTION. ONLY USE FOR REPAIRING OR RESTORING EXISTING HARDWARE.

BID ITEM AND UNIT TO BID:
CONCRETE MEDIAN BARRIER TYPE \oplus \oplus LF

- \oplus 9 OR 12 OR 14 DEPENDING ON "W".
- \oplus D OR E DEPENDING ON PAVEMENT TYPE. (SEE CUR. STD. DWG. RBM-001 FOR TYPE).

- ① SHORTER SECTIONS MAY BE PERMITTED IF APPROVED IN WRITING BY THE ENGINEER.
- ② 2" DIA. LIFTING HOLE - 2 REQUIRED AT EACH SECTION. FORMED WITH 2" P.V.C. PIPE OR EQUAL.
3. SEE ELSEWHERE IN THE PLANS FOR BASE REQUIREMENTS.
- ④ 9" WIDE TOP WITH 2'-3" WIDE BASE OR 12" WIDE TOP WITH 2'-6" BASE. 14" WIDE TOP WITH 2'-8" WIDE BASE. (TAPER NOT INCLUDED IN BASE WIDTH).
- ⑤ THE RACEWAY SHALL BE TIED TO EACH OF THE "A" AND "B" BARS TO PREVENT SAG. SEE ELSEWHERE IN THE PLANS FOR SIZE, LOCATION, AND PAYMENT FOR RACEWAY WHEN REQUIRED.
6. PLACE ALL STEEL REINFORCEMENT A CLEAR DISTANCE OF 2" MIN. FROM OUTSIDE FACE OF WALL, EXCEPT WHERE SHOWN OTHERWISE.
7. SHOP DRAWINGS SHALL BE APPROVED PRIOR TO MANUFACTURE.
- ⑧ WHEN THE "X" DIMENSION EQUALS 10" THE BAR SHALL BE TURNED DOWN 6" ("Z" DIMENSION) AND AN ADDITIONAL LONGITUDINAL BAR SHALL BE ADDED AT THE BOTTOM OF THE TURN DOWN ("Z" DIMENSION) AND TO THE "Y" PORTION OF THE BAR. FOR EACH 6" INCREMENT OF THE "X" DIMENSION ABOVE 10" AN ADDITIONAL LONGITUDINAL BAR SHALL BE ADDED IN THE "Z" AND "Y" PORTION OF THE BAR.
- ⑨ THE "Z" DIMENSION SHALL INCREASE INCH FOR INCH WHEN THE "X" DIMENSION EXCEEDS 10".
- ⑩ LIFTING BARS SHALL BE REQUIRED TO PREVENT SPALLING OF CONCRETE AROUND HOLES.
11. WHEN THE PRECAST WALL IS USED IN PERMANENT CONSTRUCTION THE LIFTING HOLES SHALL BE FILLED WITH GROUT.

USE WITH CUR. STD. DWG.
RBM-001

KENTUCKY DEPARTMENT OF HIGHWAYS	
CONCRETE MEDIAN BARRIER PRECAST (PERMANENT - EXISTING PAVEMENT)	
STANDARD DRAWING NO. RBM-006-11	
SUBMITTED <i>[Signature]</i>	DATE 02-26-20
APPROVED <i>[Signature]</i>	DATE 02-26-20

~ NOTES ~

BID ITEM AND UNIT TO BID:
 CONCRETE MEDIAN BARRIER TYPE \oplus \oplus \star LF

\oplus 9, 12, OR 14 DEPENDING ON "W"

\oplus A, B, C, D OR E DEPENDING ON PAVEMENT APPLICATION.

\star 1 = SOLID SEGMENT - DENOTES BARRIER WALL WITH:

a. TRANSITION FROM "W" WIDTH TO MAX. WIDTH OF 4'.

b. CONSTANT WIDTH WALL GREATER THAN "W" WIDE BUT NOT GREATER THAN 4' WIDE. (EX.: WALL BETWEEN BRDG. PIERS).

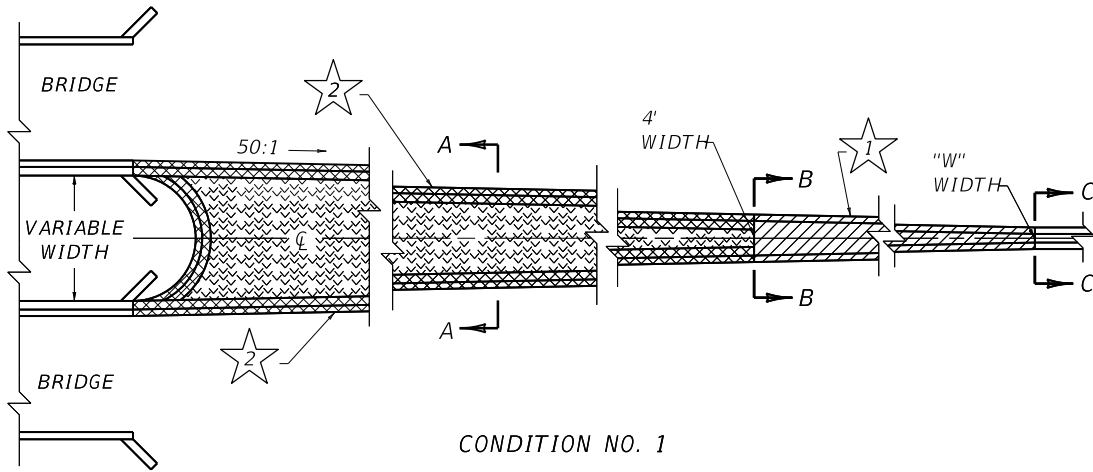
2 = SEPARATE SEGMENT

THE METHOD OF MEASUREMENT FOR CONCRETE MEDIAN BARRIER FOR EACH TYPE WILL BE IN LINEAR FEET MEASURED ALONG THE TOP CENTERLINE OF THE BARRIER.

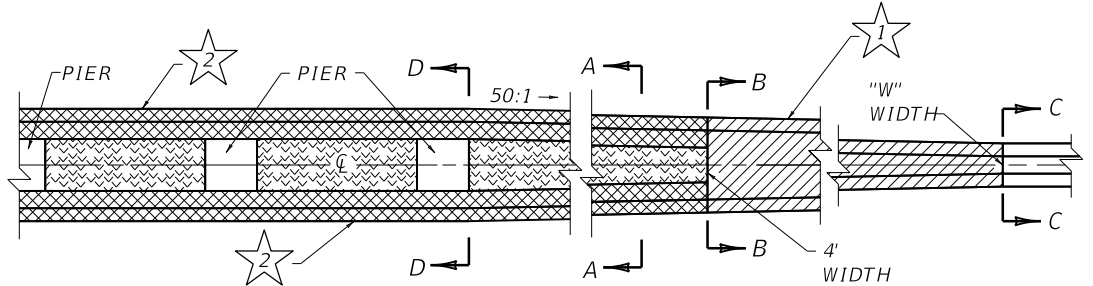
1. TRANSITION CONDITION NO. 1, 2 AND 3 ALONG WITH SYMMETRICAL AND ASYMMETRICAL BARRIER SECTIONS ARE DEPICTED ON THIS DRAWING FOR ILLUSTRATION PURPOSES ONLY AT STRUCTURES AND FIXED OBJECTS. (SEE PLANS FOR ADDITIONAL DETAILS)
2. ALL PAVEMENT, FILL MATERIAL, PIPE DRAINAGE (EXCLUSIVE OF WEEP HOLE PIPE) PLACED BETWEEN SEGMENTS OF THE BARRIER SHALL BE SHOWN SEPARATELY OR INCLUDED WITH OTHER LIKE PAY ITEMS ON THE PROJECT.
3. FOR APPLICATION DETAILS TO NEW OR EXISTING PAVEMENT SEE CUR. STD. DWG. RBM-001.

④ SEE ELSEWHERE IN PLANS FOR SIZE, LOCATION AND PAYMENT FOR RACEWAY WHEN REQUIRED.

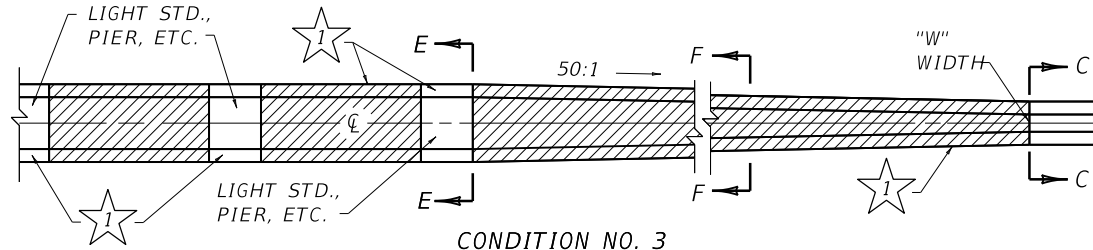
⑤ 4" PIPE FOR WEEP HOLES SPACED ON 20' CENTERS AND STAGGERED 10' WITH EACH WALL.



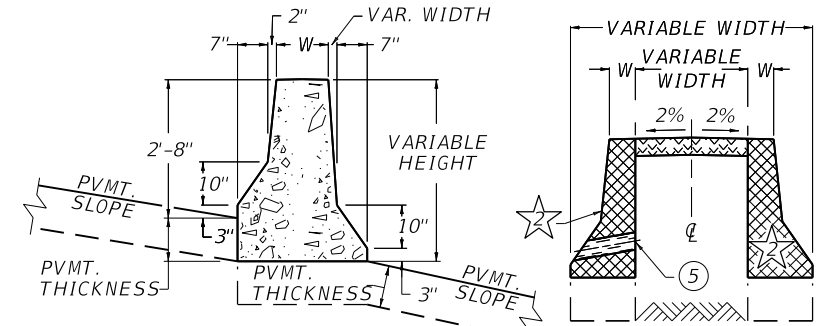
CONDITION NO. 1



CONDITION NO. 2

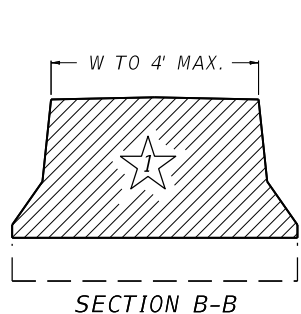


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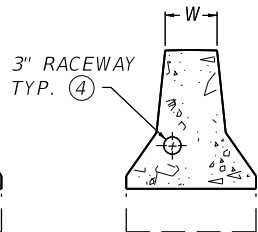


ASYMMETRICAL WALL SECTION

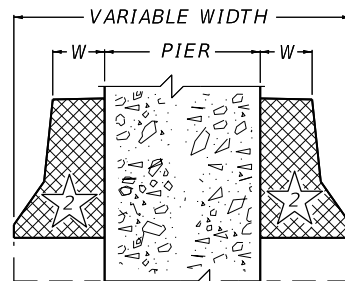
SECTION A-A



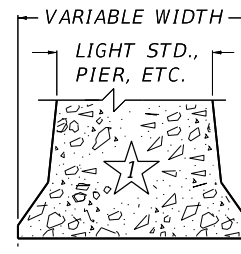
SECTION B-B



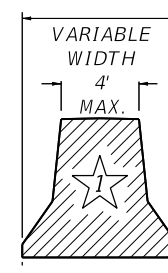
NORMAL SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

VARIABLE WIDTH USE WITH CUR. STD. DWG. RBM-001

KENTUCKY
 DEPARTMENT OF HIGHWAYS
 CONCRETE MEDIAN BARRIER
 SYMMETRICAL & ASYMMETRICAL
 SEPARATE & TRANSITION
 DETAILS

STANDARD DRAWING NO. RBM-015-06

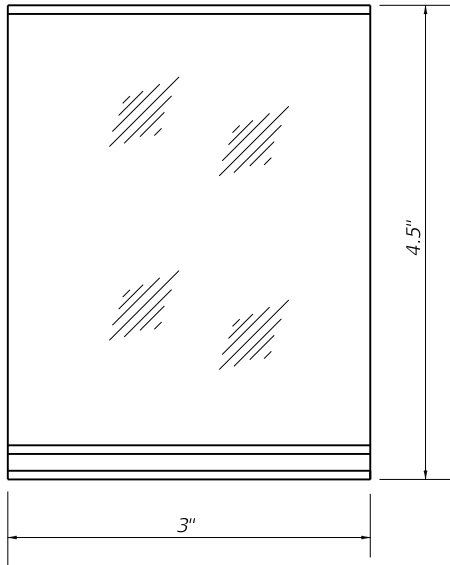
SUBMITTED *[Signature]* 12-01-15
 ORIGINAL DATE
 APPROVED *[Signature]* 12-01-15
 STATE HIGHWAY ENGINEER DATE

~ NOTES ~

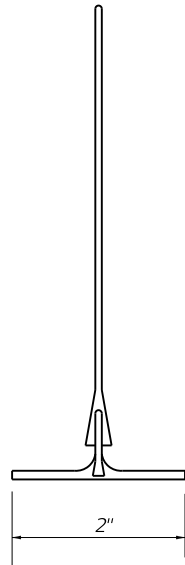
BID ITEM AND UNIT TO BID

DELINEATOR FOR BARRIER WALL - M/W	EACH
DELINEATOR FOR BARRIER WALL - M/Y	EACH
DELINEATOR FOR BARRIER WALL - B/Y	EACH
DELINEATOR FOR BARRIER WALL - B/W	EACH

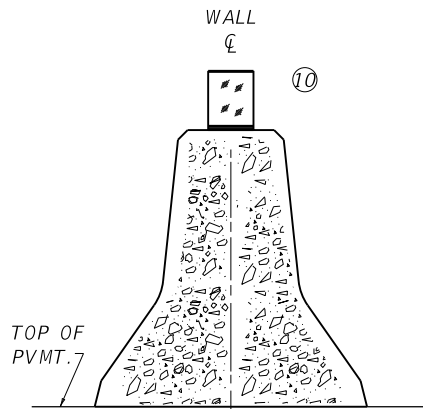
1. BARRIER WALL DELINEATORS SHALL BE REQUIRED ON ALL BARRIER WALLS.
2. DELINEATORS SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR ONE COMPLETE INSTALLATION.
3. THE COLOR OF DELINEATORS SHALL MATCH THE COLOR OF THE EDGELINE THAT THEY SUPPLEMENT. IN GENERAL, DELINEATORS ON BARRIER WALL ALONG THE LEFT SIDE OF DRIVING LANES SHALL BE YELLOW, AND DELINEATORS ON BARRIER WALL ALONG THE RIGHT SIDE OF DRIVING LANES SHALL BE WHITE. DELINEATORS IN BOTH DIRECTIONS ON A TWO-LANE, TWO-WAY ROADWAY SHALL BE BI-DIRECTIONAL WHITE.
4. TYPES OF DELINEATORS PERMITTED SHALL BE FROM THE LIST OF APPROVED MATERIALS. THE DELINEATOR SHAPE AND DIMENSIONS ARE FOR ILLUSTRATION PURPOSES ONLY.
5. THE DELINEATOR UNIT SHALL HAVE THE REFLECTIVE SURFACE INSTALLED FACING TRAFFIC.
6. DELINEATORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
7. DELINEATORS SHALL BE ATTACHED TO CONCRETE MEDIAN BARRIER WITH AN APPROVED ADHESIVE.
8. DELINEATOR SHEETING SHALL BE TYPE IX, YELLOW OR WHITE.
9. DELINEATORS SHOULD BE MOUNTED AT A HEIGHT OF APPROXIMATELY 4' ABOVE PAVEMENT. WHEN CONCRETE BARRIERS EXTEND ACROSS BRIDGE STRUCTURES IN LIEU OF STEEL BEAM GUARDRAIL, DELINEATORS SHALL BE INSTALLED AT THE SAME VERTICAL ALIGNMENT AS ON THE GUARDRAIL.
10. FOR BARRIER WALLS 50" OR LESS IN HEIGHT, DELINEATORS MAY BE INSTALLED ON TOP OF THE BARRIER WALL. FOR MEDIAN BARRIER WALLS 50" OR LESS IN HEIGHT THAT SEPARATE TWO-WAY TRAFFIC, BI-DIRECTIONAL YELLOW DELINEATORS MAY BE INSTALLED ON THE TOP OF THE BARRIER WALL IN LIEU OF SIDE-MOUNTED MONO-DIRECTIONAL YELLOW DELINEATORS.



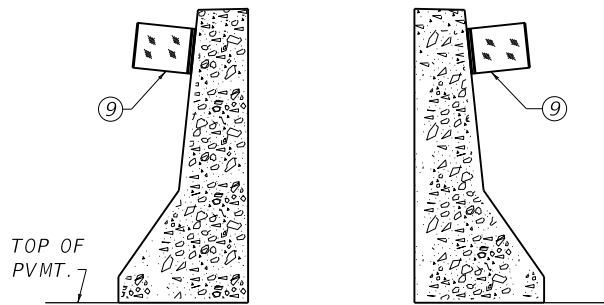
FRONT ELEVATION



SIDE ELEVATION



NORMAL (SOLID) WALL SECTION



(SEPARATE SEGMENT) WALL SECTION

APPROXIMATE DELINEATOR SPACING

TANGENT	100'
CURVE	50'

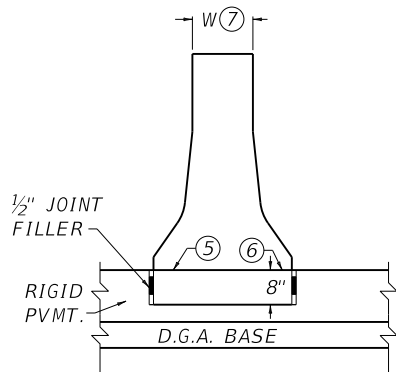
SPACING SHOULD BE ADJUSTED IN CURVES SO THAT SEVERAL DELINEATORS ARE ALWAYS SIMULTANEOUSLY VISIBLE TO THE ROAD USER.

KENTUCKY
DEPARTMENT OF HIGHWAYS

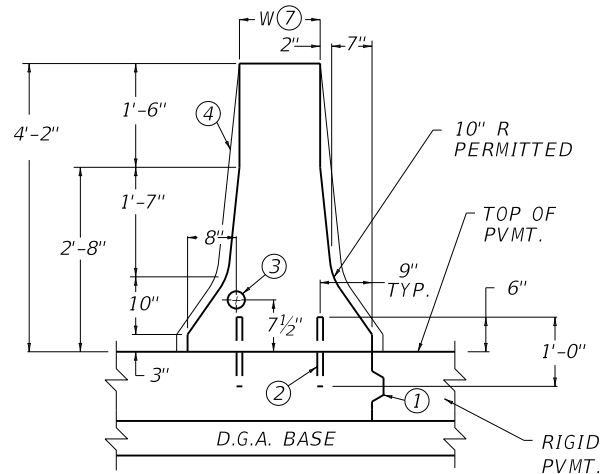
DELINEATORS FOR
CONCRETE BARRIERS

STANDARD DRAWING NO. RBM-020-09

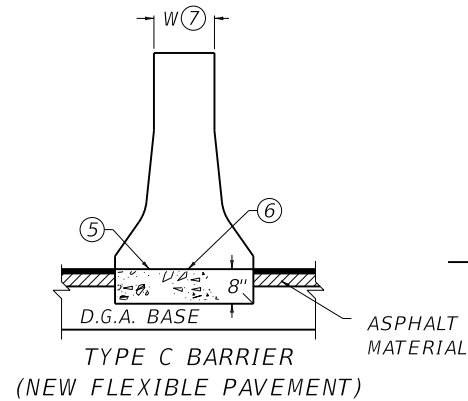
SUBMITTED	<i>William P. Gabel</i>	12-01-15
	DIRECTOR, DIVISION OF DESIGN	DATE
APPROVED	<i>John</i>	12-01-15
	STATE HIGHWAY ENGINEER	DATE



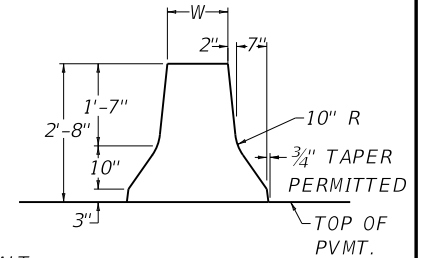
TYPE A BARRIER
(NEW RIGID PAVEMENT)



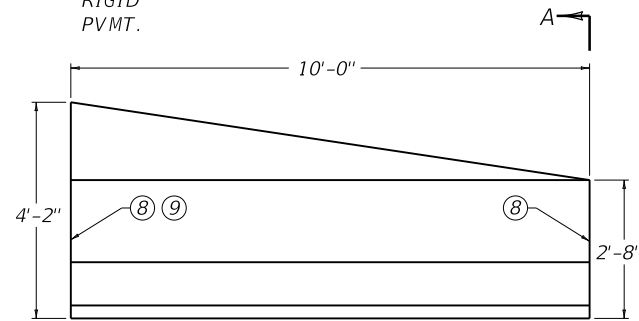
TYPE B BARRIER
(NEW RIGID PAVEMENT)



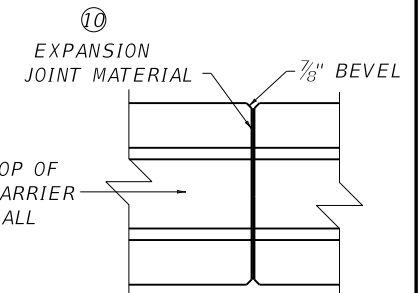
TYPE C BARRIER
(NEW FLEXIBLE PAVEMENT)



SECTION A-A



WALL TRANSITION
(ELEVATION VIEW)



EXPANSION JOINT DETAIL

~ NOTES ~

THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR "CONCRETE MEDIAN BARRIER TYPE $\star \oplus$ 50" SHALL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

\star 12 OR 14 DEPENDING ON "W".

\oplus A, B OR C DEPENDING ON PAVEMENT TYPE.

- ① LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS IS REQUIRED AND SHALL BE PLACED AT THE LOCATION SHOWN OR MAY BE INSTALLED AT THE CORRESPONDING POINT ON THE OPPOSITE SIDE OF THE BARRIER, AT THE OPTION OF THE CONTRACTOR. IT SHALL BE REQUIRED ON THE LOW SIDE OF A SUPERELEVATED SECTION.
- ② NO. 8 DOWEL BARS SPACED 4'-0" O.C. AND STAGGERED 2'-0".
- ③ 3" RACEWAY (TYPICAL). SEE ELSEWHERE IN THE PLANS FOR LOCATION AND PAYMENT FOR RACEWAY WHEN REQUIRED.
- ④ WALL MAY BE FIXED-FORMED AS DEPICTED BY PHANTOM LINES.
- ⑤ WHEN A CONSTRUCTION JOINT IS USED, DOWEL BARS WILL BE REQUIRED AS SHOWN WITH TYPE B BARRIERS.
- ⑥ CONSTRUCTION JOINT PERMITTED WHEN FIXED FORMS OR SLIP FORMS ARE USED.
- ⑦ A 14" WALL WITH 3" RACEWAY IS REQUIRED WHEN THE ROADWAY WILL BE LIGHTED FROM THE MEDIAN.
- ⑧ THE WALL TRANSITION DETAILED IS FOR A FIXED-FORM OR SLIP-FORM WALL. SEE CURRENT STANDARD DRAWING RBM-053 FOR CONNECTION DETAILS, STEEL PLACEMENT, LIFTING HOLE DIMENSIONS, ETC. WHEN WALL IS PRECAST.
- ⑨ SEE TYPE B BARRIER DETAIL FOR WALL DIMENSIONS.
- ⑩ TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED PER STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

APPROX. QUANTITIES PER LINEAR FOOT

TYPE	12" WALL		14" WALL	
	CONC. IN CU. YDS.	STEEL IN POUNDS	CONC. IN CU. YDS.	STEEL IN POUNDS
A	0.27	Δ 1.34	0.30	Δ 1.34
B	0.21	1.34	0.23	1.34
C	0.27	Δ 1.34	0.30	Δ 1.34

Δ WHEN REQUIRED

CONCRETE QUANTITIES SHOWN INCLUDE 8" BASE THICKNESS FOR TYPE A AND TYPE C. THE CONTRACTOR IS RESPONSIBLE FOR ADDITIONAL CONCRETE QUANTITIES.

USE WITH CUR. STD. DWG.
RBM-053

KENTUCKY
DEPARTMENT OF HIGHWAYS

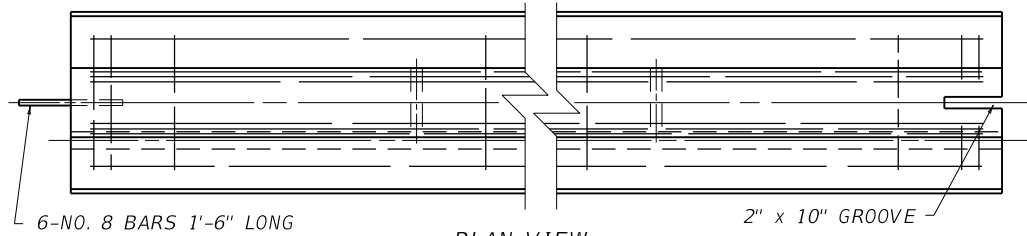
CONCRETE MEDIAN BARRIER
FIXED-FORM OR SLIP-FORM
(PERMANENT)
(50" TALL WALL)

STANDARD DRAWING NO. RBM-050-02

SUBMITTED: *[Signature]* DATE: 02-26-20

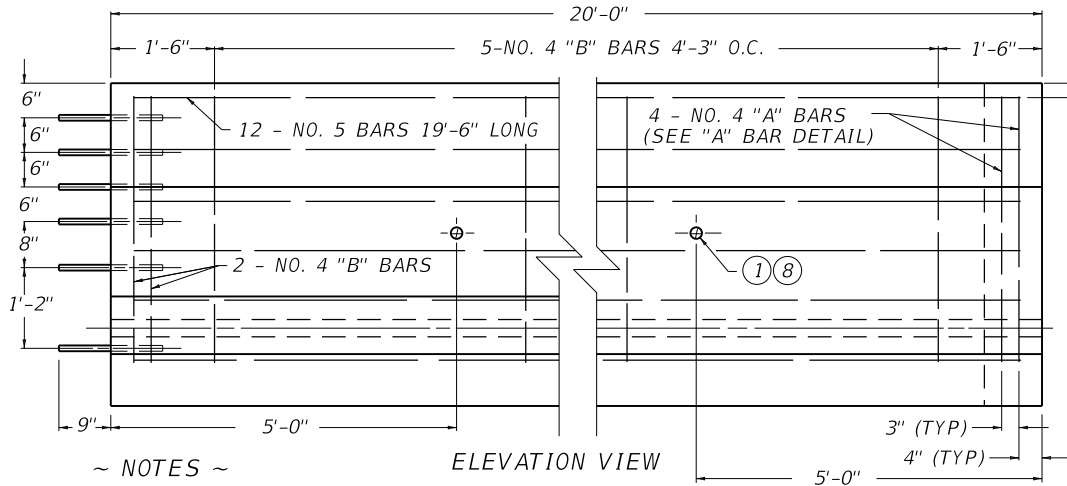
APPROVED: *[Signature]* DATE: 02-26-20

ENGINEER

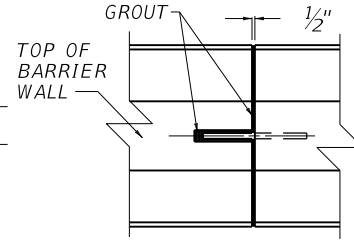


PLAN VIEW

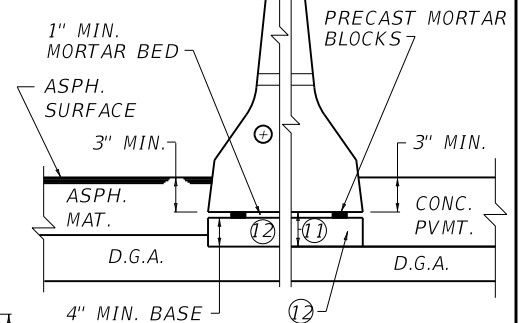
2" x 10" GROOVE



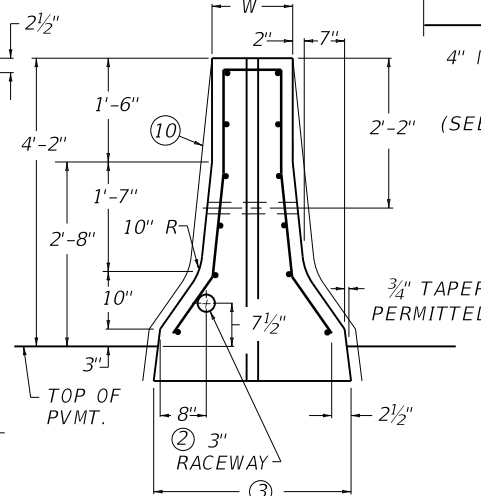
ELEVATION VIEW



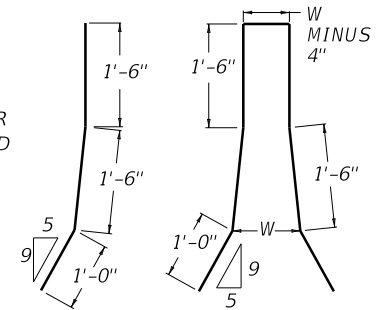
CONNECTION DETAIL



PAVEMENT DETAIL
(SEE RIGHT ELEVATION FOR DIMENSIONS)



RIGHT ELEVATION VIEW

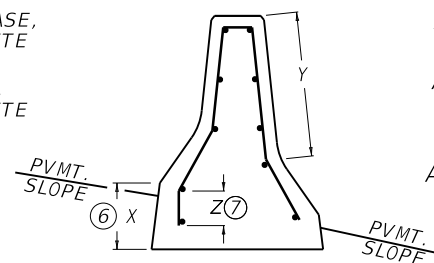


DETAIL OF "A" BAR
DETAIL OF "B" BAR

~ NOTES ~

BID ITEM AND UNIT TO BID:

- A. CONCRETE MEDIAN BARRIER TYPE $\star \oplus$ 50
- \star 12 OR 14 DEPENDING ON "W".
- \oplus A OR C DEPENDING ON PAVEMENT TYPE. SEE CURRENT STANDARD DRAWING RBM-050 FOR PAVEMENT TYPE.
- B. WITH FLEXIBLE PAVEMENT THE CONTRACT UNIT PRICE PER LINEAR FOOT SHALL INCLUDE THE BASE, ALL CONCRETE, LABOR, REINFORCING STEEL AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE PERMANENT INSTALLATION.
- C. WITH RIGID PAVEMENT THE CONTRACT UNIT PRICE PER LINEAR FOOT SHALL INCLUDE, THE BASE, ALL CONCRETE, LABOR, REINFORCING STEEL AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE PERMANENT INSTALLATION.
- ① 2" DIA. LIFTING HOLE - 2 REQUIRED AT EACH SECTION. FORMED WITH 2" P.V.C. PIPE OR EQUAL.
- ② THE RACEWAY SHALL BE TIED TO EACH OF THE A AND B BARS TO PREVENT SAG. SEE ELSEWHERE IN THE PLANS FOR LOCATION AND PAYMENT FOR RACEWAY WHEN REQUIRED.
- ③ 12" W WITH 2'-6" WIDE BASE OR 14" W WITH 2'-8" BASE (TAPER NOT INCLUDED IN BASE WIDTH).
- 4. PLACE ALL STEEL REINFORCEMENT A CLEAR DISTANCE OF 2" MIN. FROM OUTSIDE FACE OF WALL, EXCEPT WHERE SHOWN OTHERWISE.
- 5. SHOP DRAWINGS SHALL BE APPROVED PRIOR TO MANUFACTURE.
- ⑥ WHEN THE "X" DIMENSION EQUALS 10" THE BAR SHALL BE TURNED DOWN 6" ("Z" DIMENSION) AND AN ADDITIONAL LONGITUDINAL BAR SHALL BE ADDED AT THE BOTTOM OF THE TURN DOWN ("Z" DIMENSION) AND TO THE "Y" PORTION OF THE BAR. FOR EACH 6" INCREMENT OF THE "X" DIMENSION ABOVE 10" AN ADDITIONAL LONGITUDINAL BAR SHALL BE ADDED IN THE "Z" AND "Y" PORTION OF THE BAR.
- ⑦ THE "Z" DIMENSION SHALL INCREASE INCH FOR INCH WHEN THE "X" DIMENSION EXCEEDS 10".
- ⑧ LIFTING BARS SHALL BE REQUIRED TO PREVENT SPALLING OF CONCRETE AROUND HOLES.
- 9 THE LIFTING HOLES SHALL BE FILLED WITH GROUT WHEN COMPLETE.
- ⑩ WALL MAY BE FORMED AS DEPICTED BY PHANTOM LINES.
- ⑪ PAVEMENT THICKNESS MINUS 3".
- ⑫ SEE ELSEWHERE IN PLANS FOR BASE REQUIREMENTS.
- 13. SEE CURRENT STANDARD DRAWING RBM-050 FOR WALL TRANSITION WHEN APPLICABLE.



STEEL PLACEMENT FOR
ASYMMETRICAL WALL SECTION

APPROX. REINF./20' SECTION
296 LBS.

APPROX. CU. YD. CONC./LIN. FT.

12" WIDE TOP = 0.23
14" WIDE TOP = 0.26

APPROX. WEIGHT/20' SECTION
BASED ON 150 LBS./CU. FT.

12" WIDE TOP = 9.3 TONS
14" WIDE TOP = 10.4 TONS

USE WITH CUR. STD. DWG.
RBM-050

NOT FOR NEW CONSTRUCTION. ONLY USE
FOR REPAIRING OR RESTORING
EXISTING HARDWARE.

KENTUCKY DEPARTMENT OF HIGHWAYS CONCRETE MEDIAN BARRIER PRECAST (PERMANENT) (50" TALL WALL)	
STANDARD DRAWING NO. RBM-053-02	
SUBMITTED	DATE 02-26-20
APPROVED	DATE 02-26-20

~ NOTES ~

1. TRANSITION CONDITION NO. 1, 2 AND 3 ALONG WITH SYMMETRICAL AND ASYMMETRICAL BARRIER SECTIONS ARE DEPICTED ON THIS DRAWING FOR ILLUSTRATION PURPOSES ONLY AT STRUCTURES AND FIXED OBJECTS. (SEE PLANS FOR ADDITIONAL DETAILS)
2. ALL PAVEMENT, FILL MATERIAL, PIPE DRAINAGE (EXCLUSIVE OF WEEP HOLE PIPE) PLACED BETWEEN SEGMENTS OF THE BARRIER SHALL BE SHOWN SEPARATELY OR INCLUDED WITH OTHER LIKE PAY ITEMS ON THE PROJECT.
3. FOR APPLICATION DETAILS SEE CURRENT STANDARD DRAWING **RBM-050** THE METHOD OF MEASUREMENT FOR CONCRETE MEDIAN BARRIER FOR EACH TYPE WILL BE IN LINEAR FEET MEASURED ALONG THE TOP CENTERLINE OF THE BARRIER.

BID ITEM AND UNIT TO BID

CONCRETE MEDIAN BARRIER TYPE ⊕ ⊕ ☆ (50) LF

⊕ 12, OR 14 DEPENDING ON "W"

⊕ A, B OR C DEPENDING ON PAVEMENT APPLICATION.

☆ 1 = SOLID SEGMENT- DENOTES BARRIER WALL WITH:

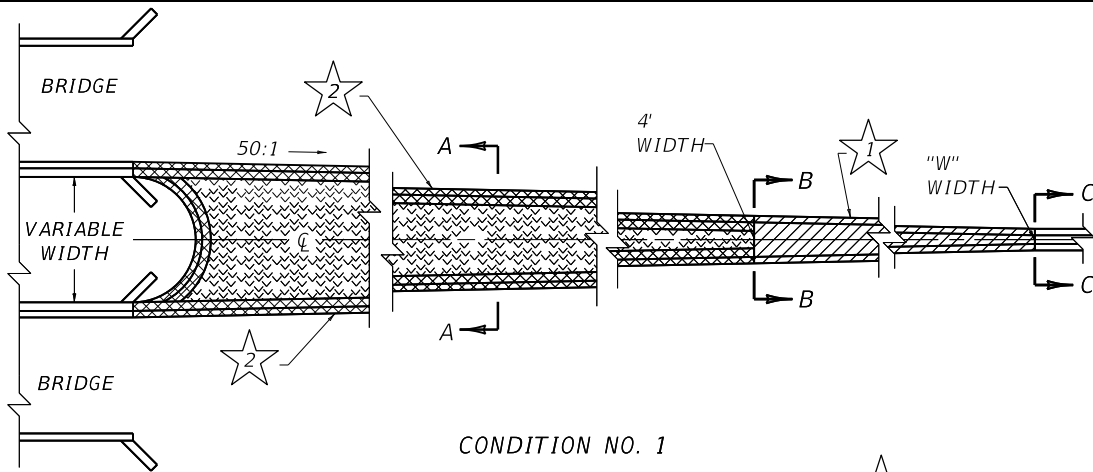
- a. TRANSITION FROM "W" WIDTH TO MAX. WIDTH OF 4'.
- b. CONSTANT WIDTH WALL GREATER THAN "W" WIDE BUT NOT GREATER THAN 4' WIDE. (EX.: WALL BETWEEN BRDG. PIERS).

2 = SEPARATE SEGMENT

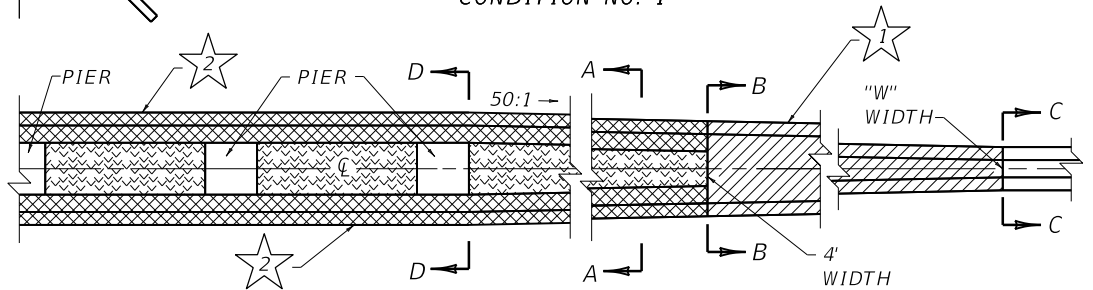
④ SEE ELSEWHERE IN PLANS FOR LOCATION AND PAYMENT FOR RACEWAY WHEN REQUIRED.

⑤ 4" PIPE FOR WEEP HOLES SPACED ON 20' CENTERS AND STAGGERED 10' WITH EACH WALL.

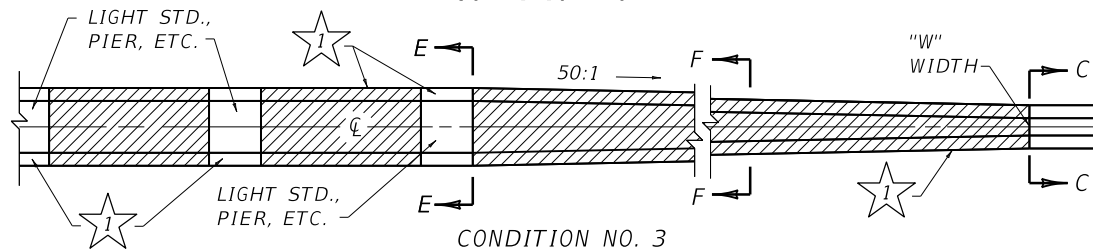
⑥ VARIABLE WIDTH



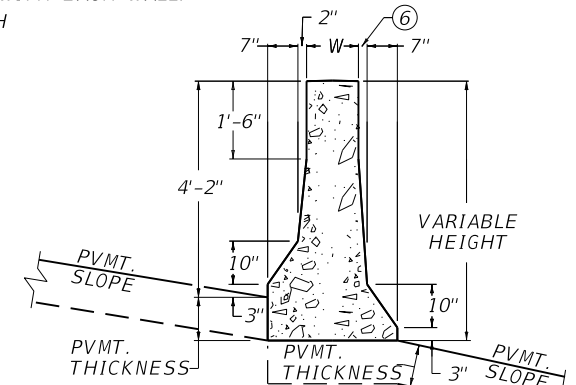
CONDITION NO. 1



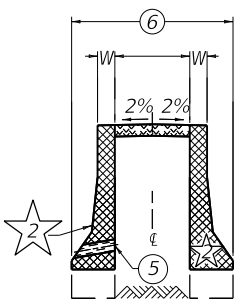
CONDITION NO. 2



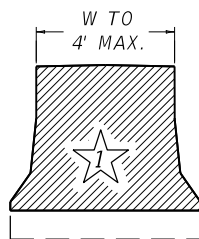
CONDITION NO. 3



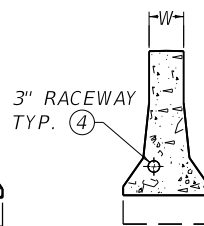
ASYMMETRICAL WALL SECTION



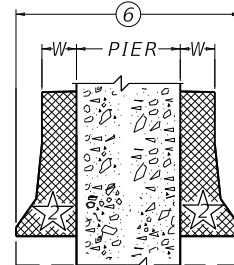
SECTION A-A



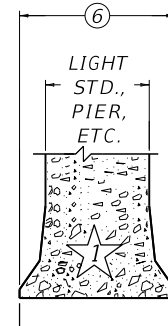
SECTION B-B



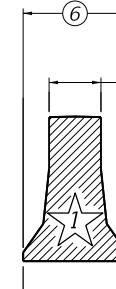
NORMAL SECTION C-C



SECTION D-D



SECTION E-E



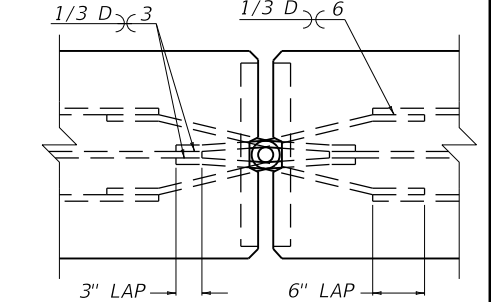
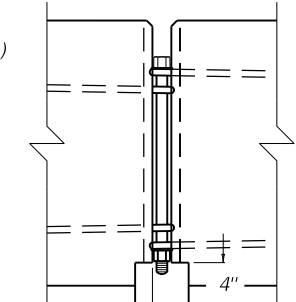
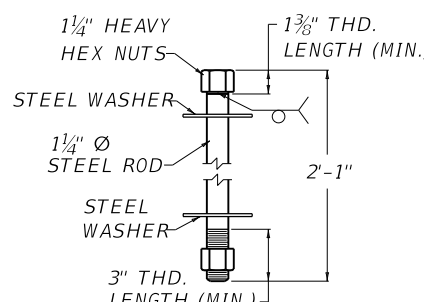
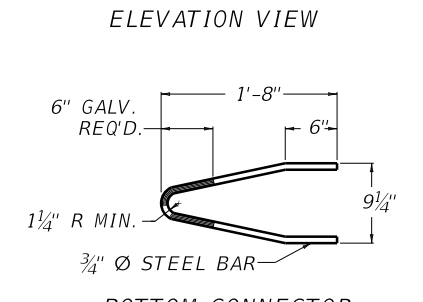
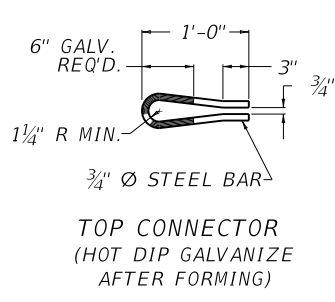
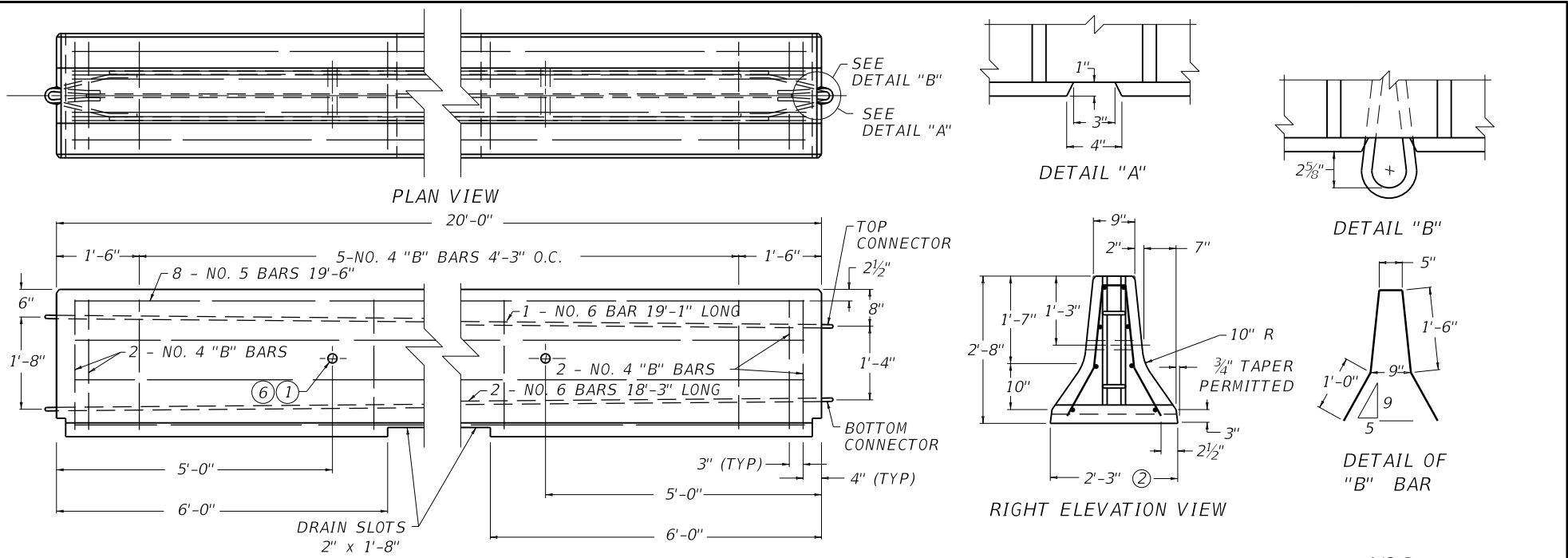
SECTION F-F

USE WITH CUR. STD. DWG. **RBM-050**

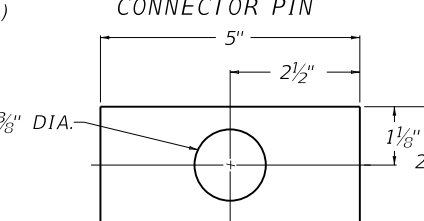
KENTUCKY
DEPARTMENT OF HIGHWAYS
CONCRETE MEDIAN BARRIER
SYMMETRICAL & ASYMMETRICAL
SEPARATE & TRANSITION
DETAILS (50" TALL WALL)

STANDARD DRAWING NO. **RBM-060-01**

SUBMITTED *[Signature]* 12-01-15
ORIGINATOR/DATE OF DESIGN DATE
APPROVED *[Signature]* 12-01-15
STATE HIGHWAY ENGINEER DATE



- ~ NOTES ~
- BID ITEM AND UNIT TO BID
CONCRETE BARRIER WALL TYPE 9T LF
- 2" DIA. LIFTING HOLE - 2 REQUIRED FOR EACH SECTION. FORMED WITH 2" P.V.C. PIPE OR EQUAL.
 - TAPER NOT INCLUDED IN BASE WIDTH.
 - SHOP DRAWINGS SHALL BE APPROVED PRIOR TO MANUFACTURE.
 - BASED ON 150 LBS./CU. FT.
 - PLACE ALL STEEL REINFORCEMENT A CLEAR DISTANCE OF 2" MIN. FROM OUTSIDE FACE OF WALL, EXCEPT WHERE SHOWN OTHERWISE.
 - LIFTING BARS SHALL BE REQUIRED TO PREVENT SPALLING OF CONCRETE AROUND HOLES.
 - PREVIOUS WALL MANUFACTURED ACCORDING TO STANDARD DRAWING RBM-115 MAY STILL BE USED. ANY NEW BARRIER WALL TYPE 9T MANUFACTURED SHALL COMPLY TO THIS STANDARD DRAWING.
 - A PERMISSIBLE ALTERNATE FOR THE PIN AND LOOP CONNECTOR IS JJ HOOK MANUFACTURED BY EASI-SET INDUSTRIES OUT OF MIDLAND, VA. SEE MANUFACTURER'S SHOP DRAWINGS FOR DETAILS ON JJ HOOK CONNECTOR AND RECOMMENDED REINFORCEMENT. THE BARRIER WALL'S DIMENSIONS, SHAPE, LENGTH AND THE DRAIN SLOT DIMENSIONS AND LOCATIONS SHALL MATCH THIS DRAWINGS CURRENT DIMENSIONS. (1) (6)



APPROXIMATE QUANTITIES

20'		
REINF.	CONC.	WEIGHT (4)
LBS.	CU. YD./FT.	TONS
195	0.12	5.0

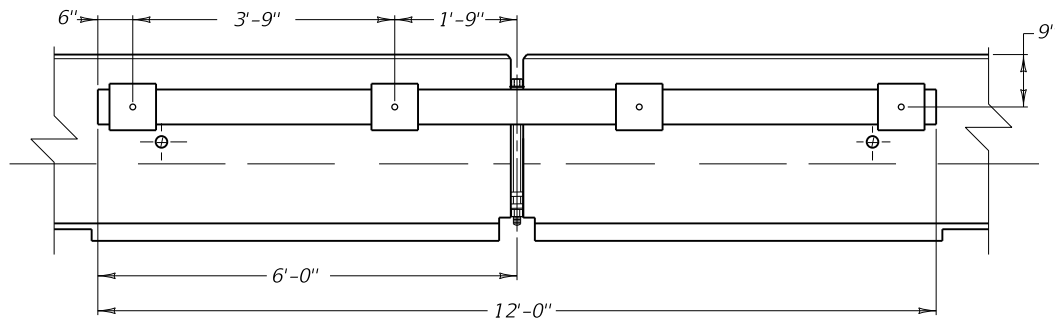
USE WITH CUR. STD. DWG.
RBM-120

KENTUCKY
DEPARTMENT OF HIGHWAYS

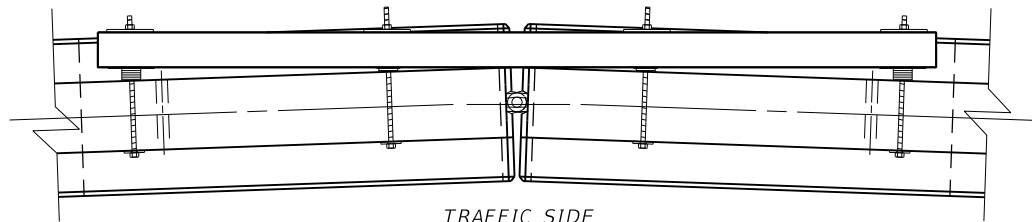
CONCRETE BARRIER
WALL TYPE 9T
(TEMPORARY)

STANDARD DRAWING NO. RBM-115-10

SUBMITTED *[Signature]* DIRECTOR OF DESIGN 12-01-15 DATE
APPROVED *[Signature]* STATE HIGHWAY ENGINEER 12-01-15 DATE

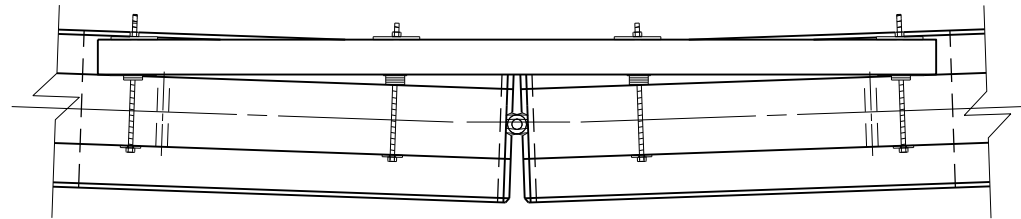


ELEVATION VIEW



TRAFFIC SIDE

PLAN VIEW

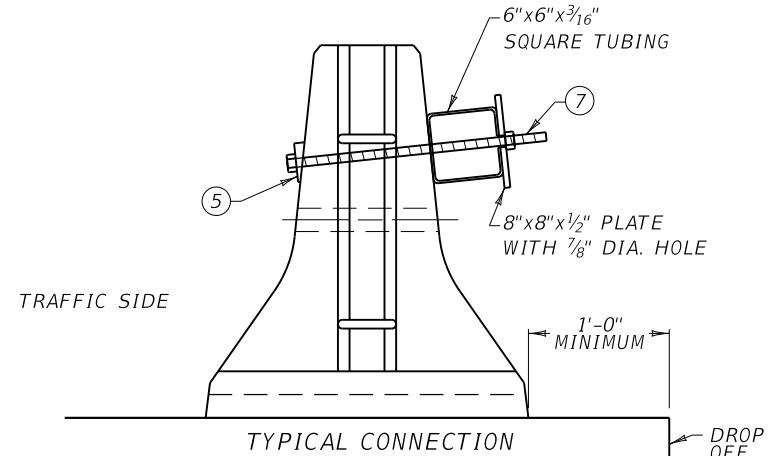


TRAFFIC SIDE

PLAN VIEW

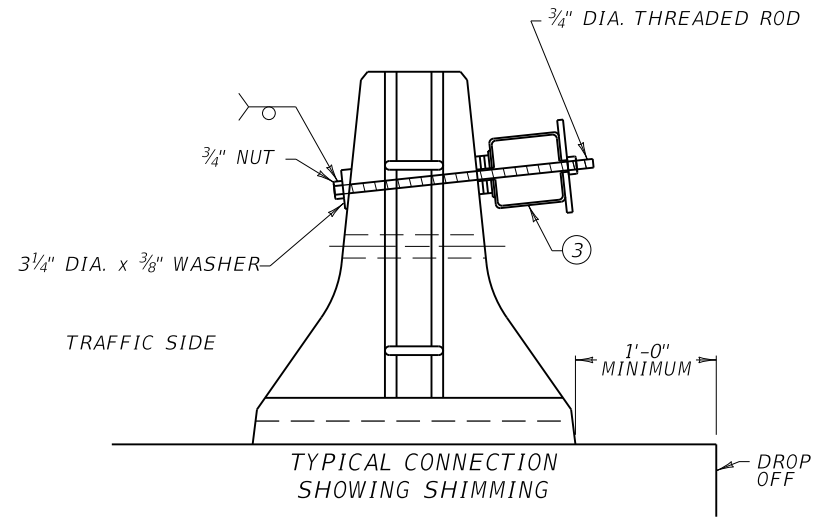
~ NOTES ~

1. STIFFENED BARRIER WALL IS REQUIRED IN WORK ZONES WHEN THE EDGE OF THE WALL FURTHEST FROM TRAFFIC IS LOCATED WITHIN 3'-0" OF THE BRIDGE DECK EDGE PARALLEL TO THE DIRECTION OF TRAFFIC. MAY ALSO BE USED IN OTHER TEMPORARY SITUATIONS WHERE SUBSTANTIAL DROP OFFS EXIST. MAINTAIN 1'-0" MINIMUM FROM EDGE OF BARRIER TO DROP OFF.
2. STIFFENER SHALL BE INSTALLED WHEN BARRIER IS SET AND BEFORE EXPOSED TO TRAFFIC.
- ③ SQUARE TUBING SHALL BE 50 GRADE STRUCTURAL STEEL.
4. WHEN BARRIER WALL SECTIONS ARE PLACED ON A RADIUS, THE AREA BETWEEN THE SQUARE TUBING AND BARRIER WALL SHALL BE SHIMMED AS SHOWN ABOVE. SHIM SHALL CONSIST OF ONE SQUARE PLATE (4" NEAR END OF BARRIER WALL SECTION, 8" NEAR END OF TUBING SECTIONS) $\frac{3}{16}$ " THICK WITH AS MANY $\frac{3}{4}$ " DIA. x $\frac{3}{8}$ " THICK WASHERS AS NEEDED.
- ⑤ BEVEL WASHER TO BE PARALLEL WITH PLANE OF BARRIER AND BOLT HEAD. (TYP.)
6. ALL MATERIALS, LABOR INVOLVED WITH THIS PROCESS TO BE INCIDENTAL TO LINEAR FEET OF WALL.
- ⑦ ROD PERPENDICULAR TO BARRIER WALL SURFACE. (TYP.)



TRAFFIC SIDE

TYPICAL CONNECTION



TRAFFIC SIDE

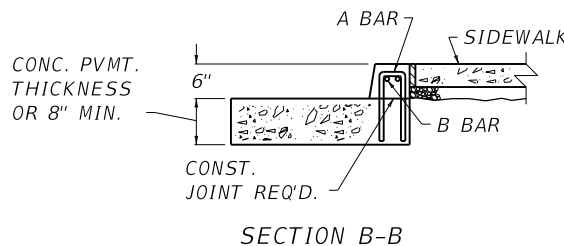
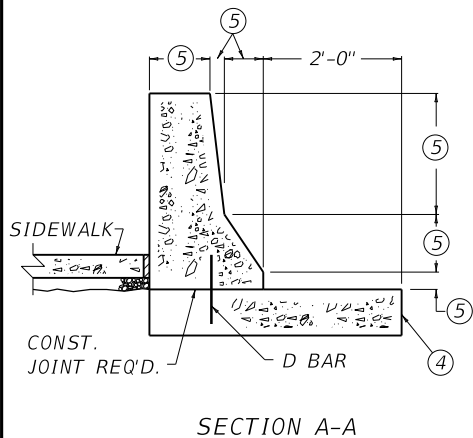
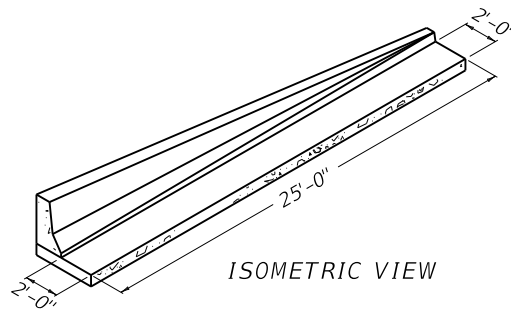
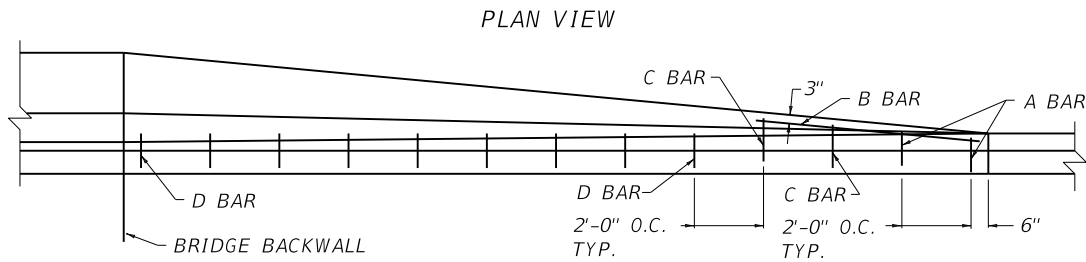
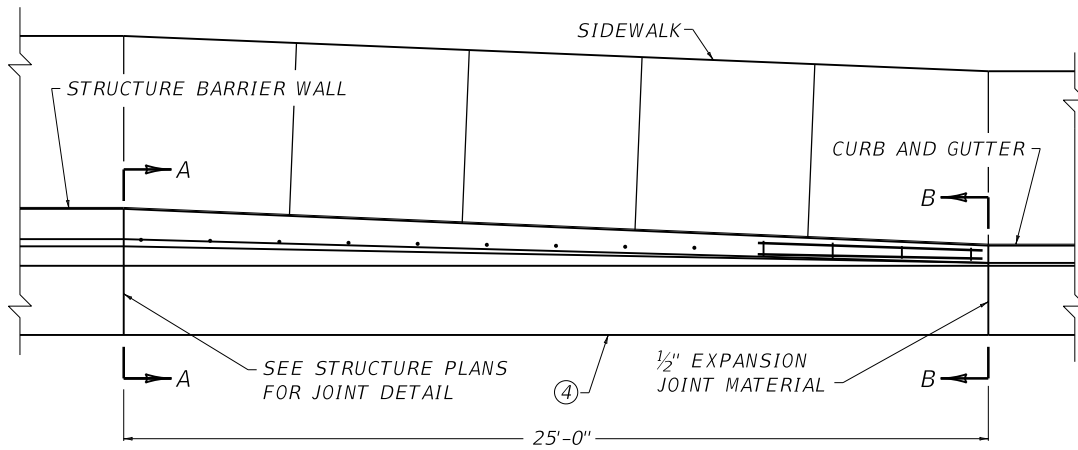
TYPICAL CONNECTION
SHOWING SHIMMING

USE WITH CUR. STD. DWG.
RBM-115

KENTUCKY
DEPARTMENT OF HIGHWAYS

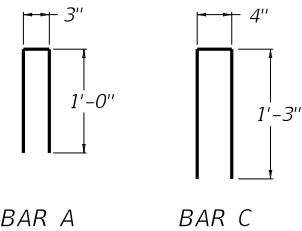
BOX BEAM STIFFENING
PF TEMPORARY
CONCRETE BARRIER

STANDARD DRAWING NO. RBM-120-02
SUBMITTED: *John Adair* 02-26-20
APPROVED: *[Signature]* 02-26-20
DATE: 02-26-20



~ NOTES ~

- BID ITEM AND UNIT TO BID
CURB TO BARRIER WALL TRANS EACH
1. THE CONTRACT UNIT PRICE EACH FOR THE CURB TO BARRIER WALL TRANSITION SHALL INCLUDE CONCRETE, FORMS, STEEL REINFORCEMENT, EXPANSION JOINT MATERIAL, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION.
 2. FOR ILLUSTRATION PURPOSES THE DETAILS DEPICT THE CURB TO BARRIER WALL TRANSITION CONNECTING TO A STANDARD CURB, HOWEVER THE CURB TO BARRIER WALL TRANSITION MAY BE CONSTRUCTED TO MATCH ANY ADJOINING CURB.
 3. THE AMOUNT OF CLASS "A" CONCRETE REQUIRED FOR A TRANSITION SECTION WITH A 10½" WIDE TOP IS APPROXIMATELY 2.61 CU. YDS.
 - ④ WHEN THE CURB TO BARRIER WALL TRANSITION ABUTS RIGID PAVEMENT A LONGITUDINAL SAWED CONSTRUCTION JOINT SHALL BE INSTALLED IN ACCORDANCE WITH CUR. STD. DWG. [RPS-010](#).
 - ⑤ SEE STRUCTURE PLANS FOR DIMENSIONS.
 6. CURB TO BARRIER WALL TRANSITION NOT FOR USE ON APPROACH ENDS ON HIGH SPEED N.H.S.



BILL OF REINFORCEMENT				
BAR	QTY.	SIZE	LENGTH	TOTAL LBS. OF STEEL
A	2	5	2'-2"	48
B	2	5	6'-6"	
C	2	5	2'-9"	
D	9	8	1'-0"	

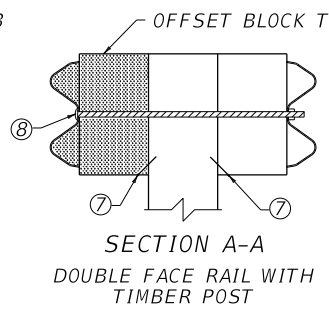
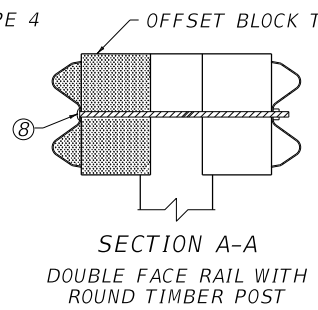
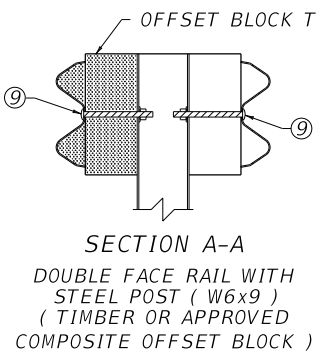
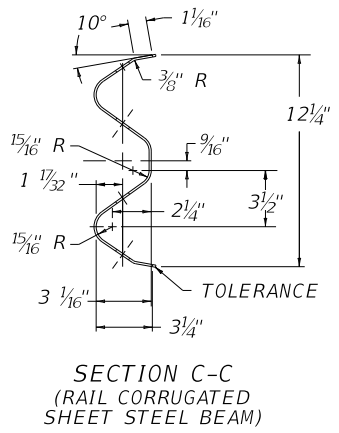
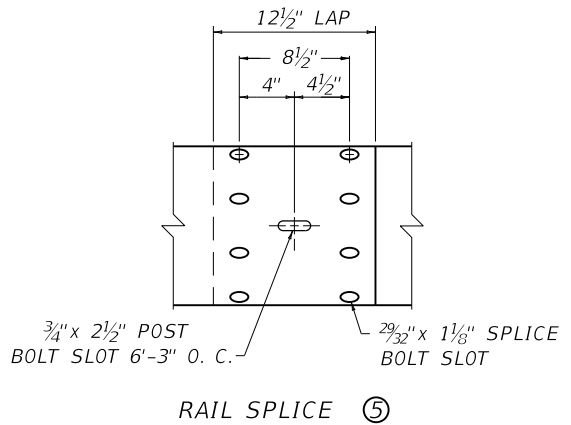
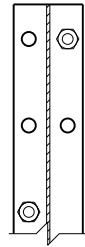
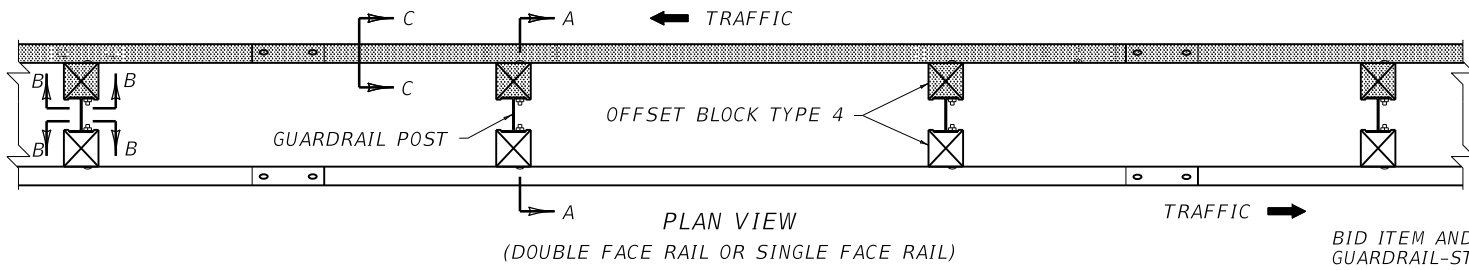
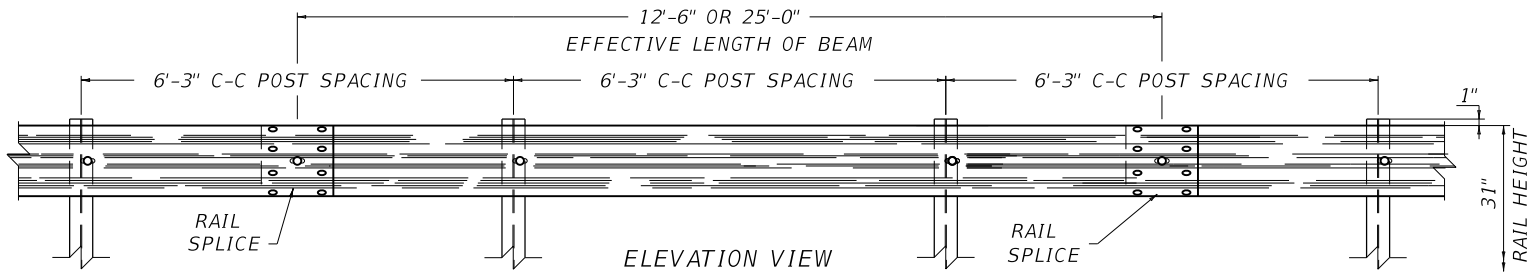
USE WITH CUR. STD. DWG. [RPS-010](#)

KENTUCKY
DEPARTMENT OF HIGHWAYS

CURB TO BARRIER
WALL TRANSITION

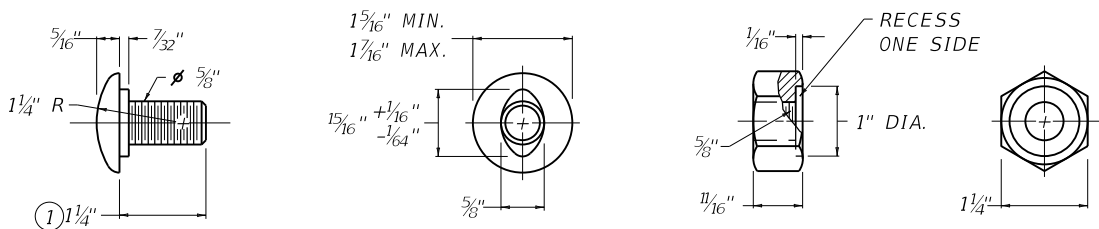
STANDARD DRAWING NO. RBM-130-05

SUBMITTED *[Signature]* DIRECTOR, BUREAU OF DESIGN 12-01-15
APPROVED *[Signature]* STATE HIGHWAY ENGINEER 12-01-15



- ~ NOTES ~
- BID ITEM AND UNIT TO BID
GUARDRAIL-STEEL W BEAM-S FACE LF
OR
GUARDRAIL-STEEL W BEAM-D FACE LF
- DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE AND ACCEPTED MANUFACTURING PRACTICES.
 - THE RAIL ELEMENT SHALL COMPLY WITH AASHTO M-180 -CLASS A, TYPE II.
 - ALL LAPS SHALL BE PLACED IN THE DIRECTION OF TRAFFIC FLOW.
 - TOLERANCE + 1/4", -1/4"
 - 8-5/8" x 1" LONG BUTTON HEAD BOLTS AND HEX HEAD RECESS NUTS REQUIRED FOR EACH RAIL SPLICE.
 - LENGTH EQUALS POST AND BLOCK WIDTH PLUS 2" FOR BOLT OR 2 1/4" FOR THREADED ROD.
 - GALVANIZED STEEL 10d COMMON COATED NAIL (DRIVE NAIL AT THE TOP OR BOTTOM CENTER OF BLOCK AND POST AFTER BOLT IS INSTALLED).
 - 5/8" x 6" STEEL THREADED ROD AND TWO (2) HEX HEAD NUTS OR 5/8" x 6" BUTTON OR HEX HEAD BOLT AND HEX HEAD NUT.
 - 5/8" x 8" BUTTON HEAD BOLT, HEX HEAD RECESS NUT AND ONE 3/8" ROUND WASHER (TYP.). BOLT SHALL HAVE A MINIMUM THREAD LENGTH OF 2".
- REQUIRED FOR DOUBLE RAIL
10. BOTH 12'-6" AND 25' LENGTHS OF "W" BEAM GUARDRAIL SECTIONS WILL BE PERMITTED UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

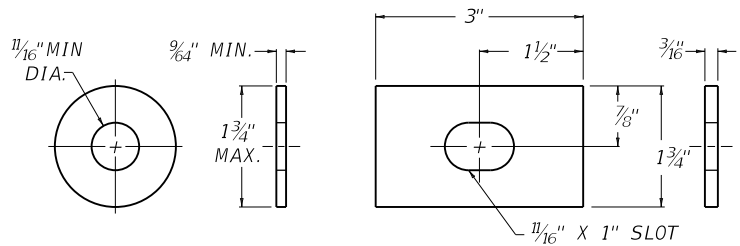
KENTUCKY DEPARTMENT OF HIGHWAYS	
STEEL BEAM GUARDRAIL ("W" BEAM)	
STANDARD DRAWING NO. RBR-001-13	
SUBMITTED	DATE
APPROVED	DATE



5/8" BUTTON HEAD BOLT AND RECESSED NUT

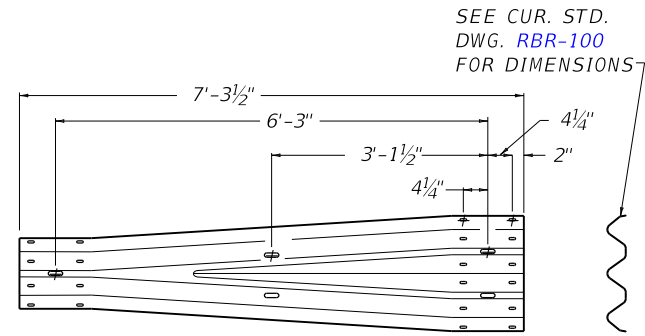
~ NOTES ~

- ① RAIL BOLT SIMILAR EXCEPT LENGTH.
 - ② THE THRIE BEAM TO "W" BEAM CONNECTOR SHALL COMPLY WITH AASHTO M-180 CLASS A, TYPE 2 EXCEPT WHERE IT IS IN CONFLICT WITH THIS DETAIL.
- BID ITEM AND UNIT TO BID
THRIE BEAM TO W BEAM CONNECTOR EACH



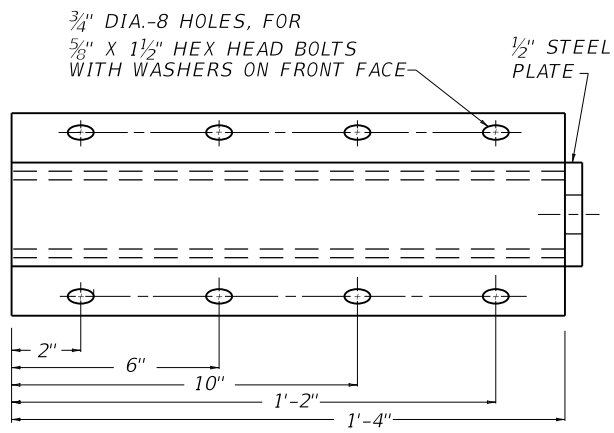
ROUND WASHER AND RECTANGULAR PLATE WASHER

SEE CUR. STD. DWG. RBR-001 FOR DIMENSIONS

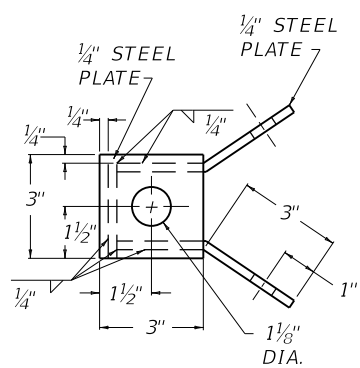


SEE CUR. STD. DWG. RBR-100 FOR DIMENSIONS

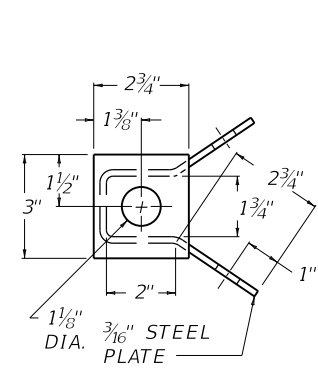
THRIE BEAM TO "W" BEAM CONNECTOR ②



RAIL ANCHOR ASSEMBLY



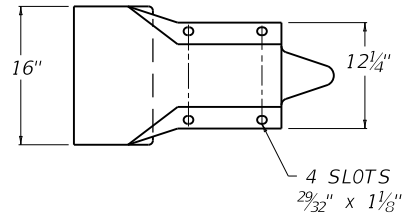
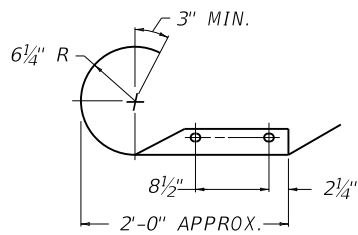
ALTERNATE NO. 1



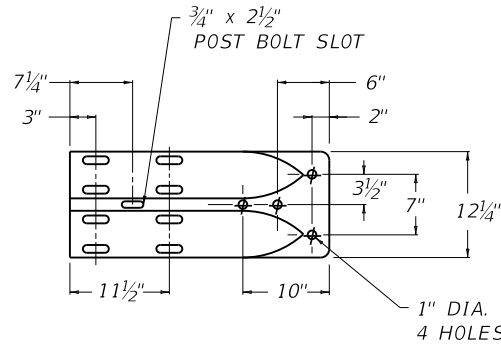
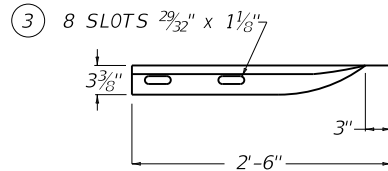
ALTERNATE NO. 2

USE WITH CUR. STD. DWG. RBR-001 RBR-100

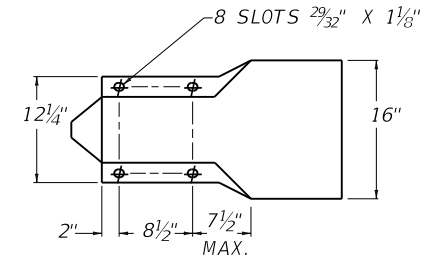
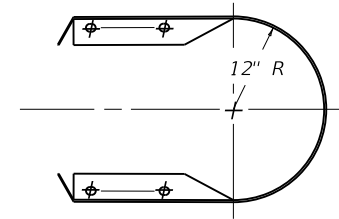
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL COMPONENTS	
STANDARD DRAWING NO. RBR-005-11	
SUBMITTED	12-01-15
DESIGNED BY	DATE
APPROVED	12-01-15
STATE HIGHWAY ENGINEER	DATE



TERMINAL SECTION NO. 1



TERMINAL SECTION NO. 2



TERMINAL SECT. NO. 3

~ NOTES ~

BID ITEM AND UNIT TO BID

GUARDRAIL TERMINAL SECTION NO 1	EACH
GUARDRAIL TERMINAL SECTION NO 2	EACH
GUARDRAIL TERMINAL SECTION NO 3	EACH

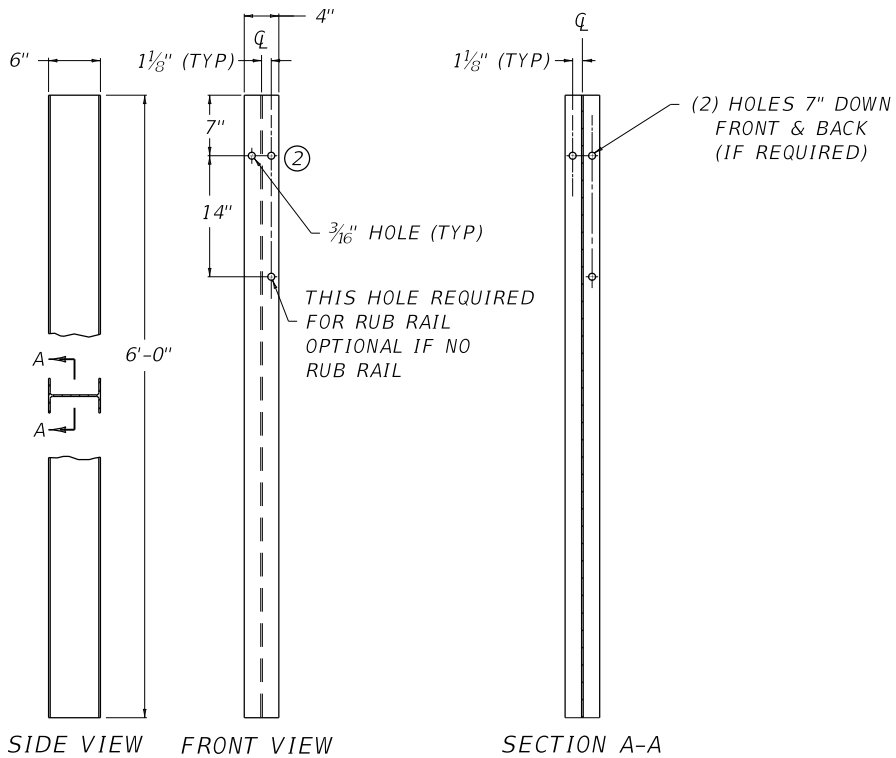
1. TERMINAL SECTIONS SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID EACH COMPLETE AND INSTALLED, EXCEPT WHEN INCIDENTAL TO OTHER BID ITEMS.
2. TERMINAL SECTIONS SHALL COMPLY WITH AASHTO M-180 AS FOLLOWS:
 - A. TERMINAL SECTIONS NO. 1, 3, -CLASS A OR B, TYPE 2
 - B. TERMINAL SECTION NO. 2-CLASS B, TYPE 2
- ③ WHEN SLOTTED HOLES ARE EXPOSED (8) EIGHT RECTANGULAR FLAT WASHERS SHALL BE REQUIRED - 2" SPLICE BOLTS ARE TO BE USED IF NEEDED.
4. TERMINAL SECTIONS ARE INTENDED FOR USE WITH OTHER GUARDRAIL COMPONENTS AND SYSTEMS.

KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL
TERMINAL SECTIONS

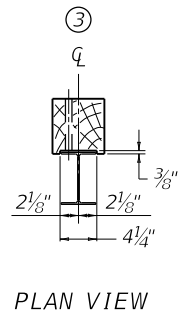
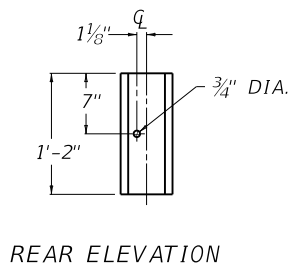
STANDARD DRAWING NO. RBR-010-06

SUBMITTED	<i>William P. Gabel</i>	12-01-15
	DIRECTOR, DEPT. OF DESIGN	DATE
APPROVED	<i>[Signature]</i>	12-01-15
	STATE HIGHWAY ENGINEER	DATE

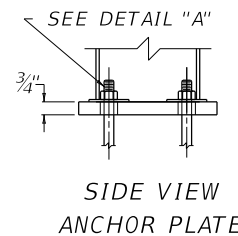
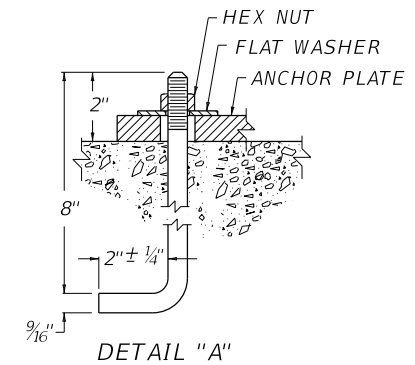
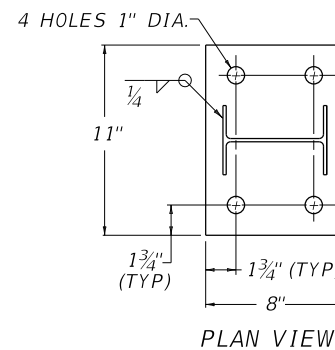


~ W6 X 9.0 STEEL POST ① ~

- ~ NOTES ~
- ① W6 X 8.5 IS AN ACCEPTABLE ALTERNATE.
 - ② THESE HOLES ARE REQUIRED FOR ATTACHING RAIL.
 - ③ TIMBER OR COMPOSITE BLOCKOUTS MAY BE USED WITH STEEL POST.



OFFSET BLOCK TYPE 4
6" X 8" (Nominal Size)
(TIMBER OR APPROVED COMPOSITE)
(FOR USE WITH STEEL POST ONLY)



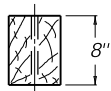
KENTUCKY
DEPARTMENT OF HIGHWAYS

STEEL
GUARDRAIL POSTS

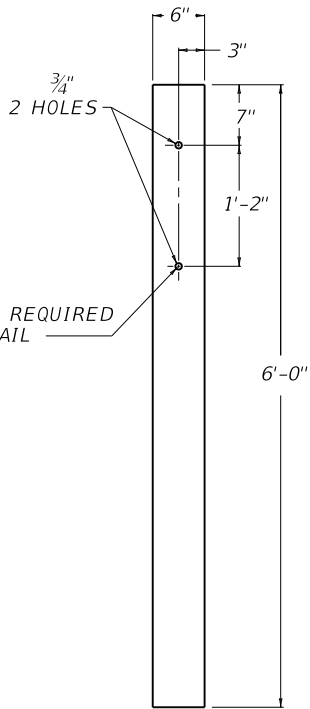
STANDARD DRAWING NO. RBR-015-06

SUBMITTED *[Signature]* DATE 02-26-20

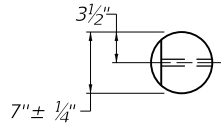
APPROVED *[Signature]* ENGINEER DATE 02-26-20



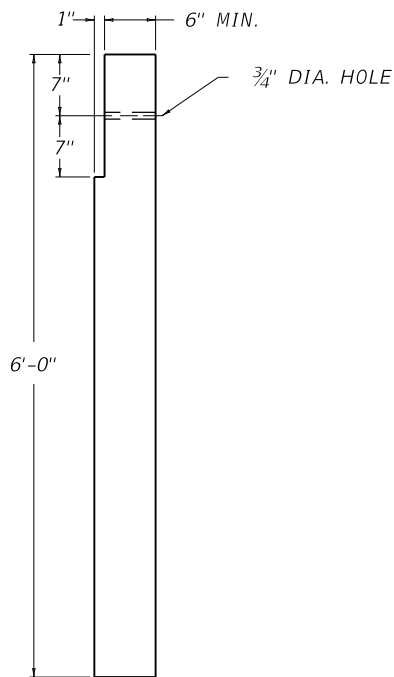
PLAN VIEW



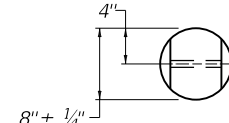
FRONT ELEVATION
6"x8" TIMBER POST



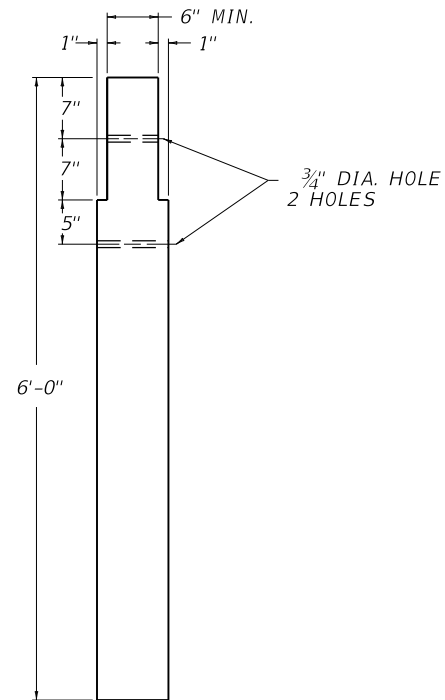
PLAN VIEW



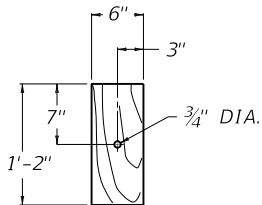
7" ROUND TIMBER POST
(SINGLE FACE RAIL)



PLAN VIEW



8" ROUND TIMBER POST
(DOUBLE FACE RAIL)



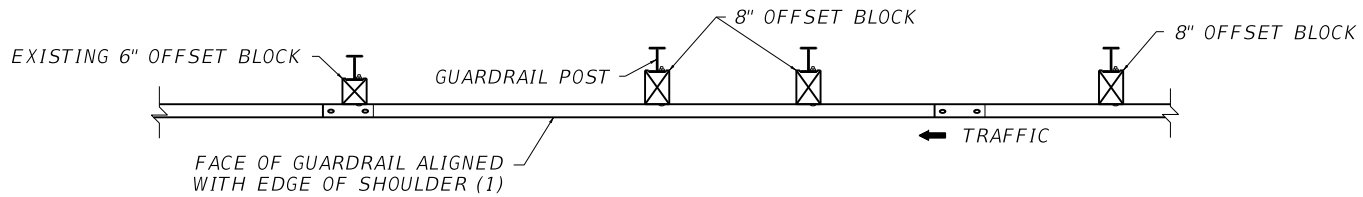
FRONT ELEVATION
OFFSET BLOCK TYPE 3
(6" X 8" TIMBER)
(FOR USE WITH RECTANGULAR
AND ROUND POSTS)

KENTUCKY
DEPARTMENT OF HIGHWAYS

TIMBER
GUARDRAIL POSTS

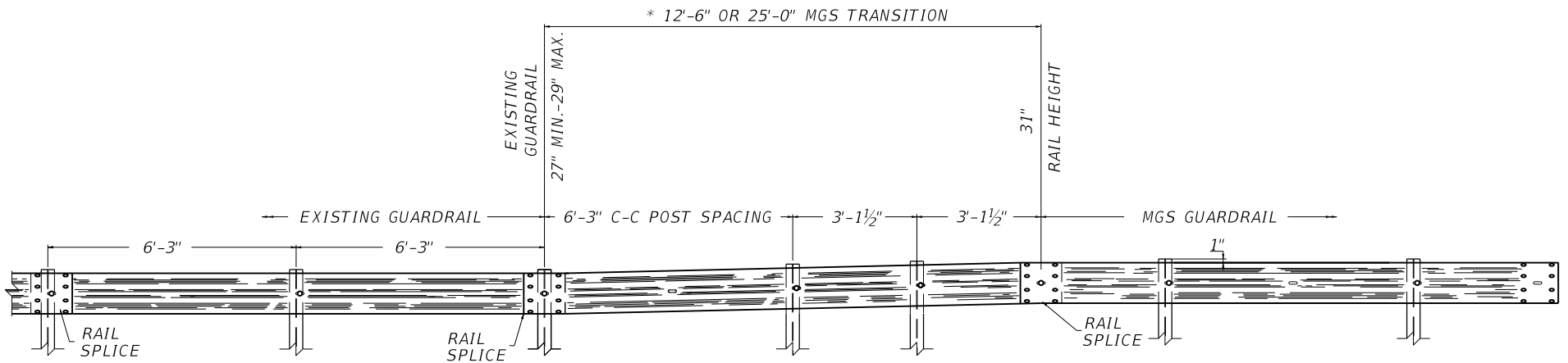
STANDARD DRAWING NO. RBR-016-05

SUBMITTED	<i>[Signature]</i>	12-01-15
DIRECTOR	DATE	DATE
APPROVED	<i>[Signature]</i>	12-01-15
STATE HIGHWAY ENGINEER	DATE	DATE



PLAN VIEW

* 12'-6" TRANSITION FROM 29" TO 31" SHOWN,
25'-0" REQUIRED FOR 27" TO 31" TRANSITION.



ELEVATION VIEW

~ NOTES ~

1) WHERE POST OFFSET IS CONSTRAINED, AND WHEN THE EXISTING SHOULDER IS WIDER THAN 4 FEET, THE EXISTING SHOULDER MAY BE REDUCED UP TO 2 INCHES TO ACCOMMODATE THE 8 INCH BLOCKS OF THE MGS GUARDRAIL. WHERE SITE CONSTRAINTS PROHIBIT THE POST FROM BEING PLACED AT LEAST 6 INCHES IN FRONT OF THE SLOPE BREAK POINT, USE 7 FOOT POSTS.

2) MGS TRANSITION FROM EXISTING GUARDRAIL SHALL BE COMPLETED OUTSIDE THE 50 FEET MGS END TERMINAL LIMITS.

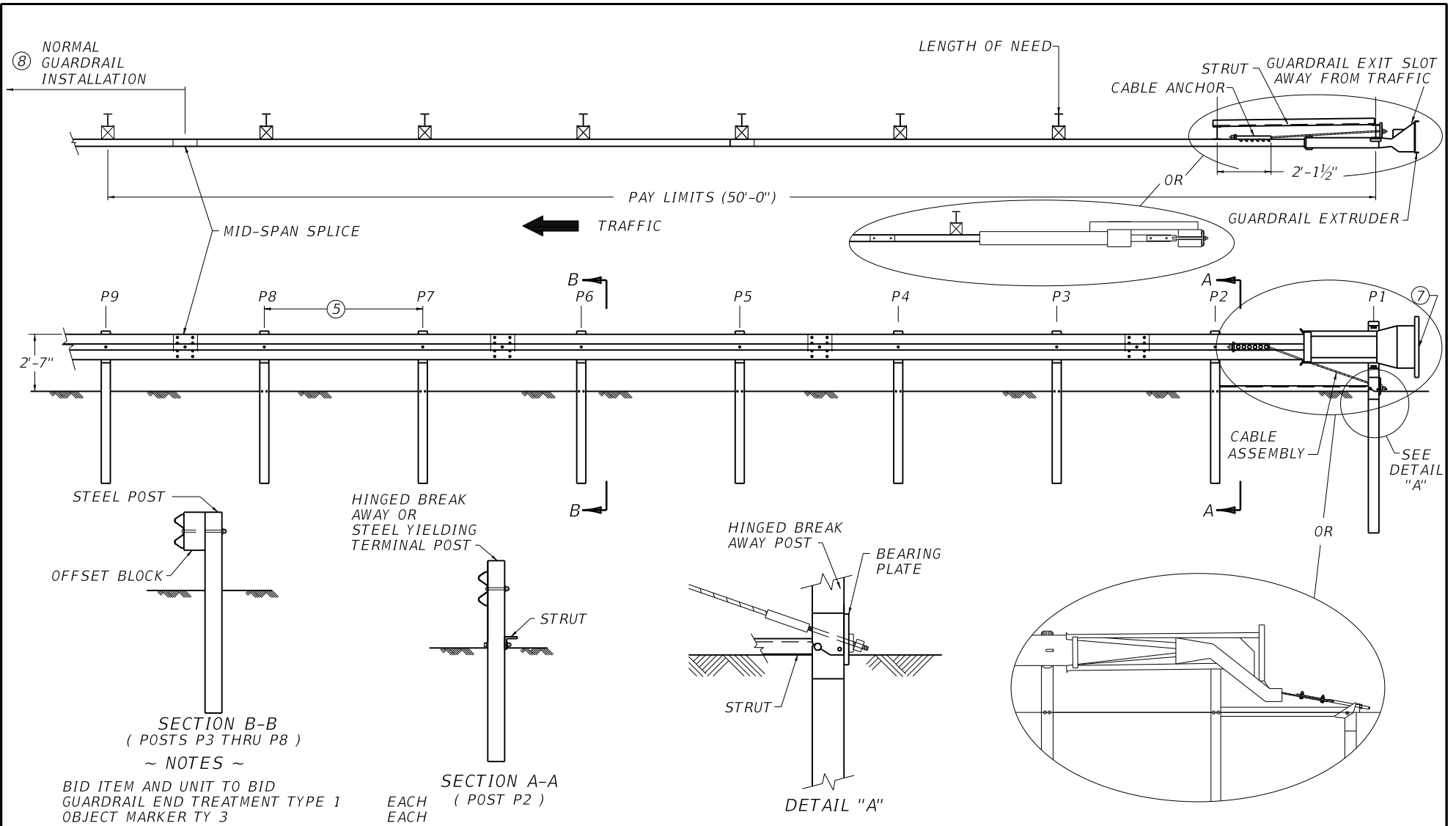
KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL SYSTEM
TRANSITION

STANDARD DRAWING NO. **RBR-018**

SUBMITTED *[Signature]* DATE 02-26-20

APPROVED *[Signature]* ENGINEER DATE 02-26-20



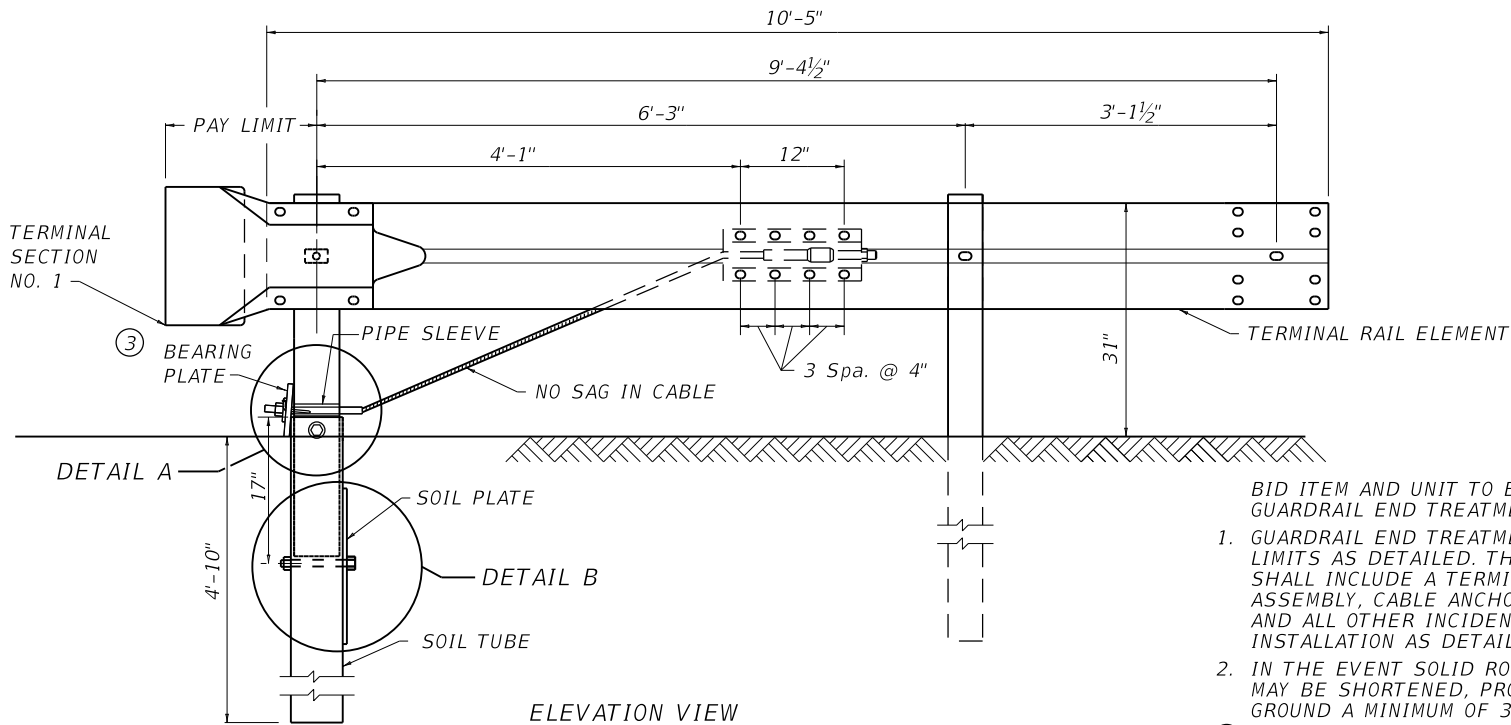
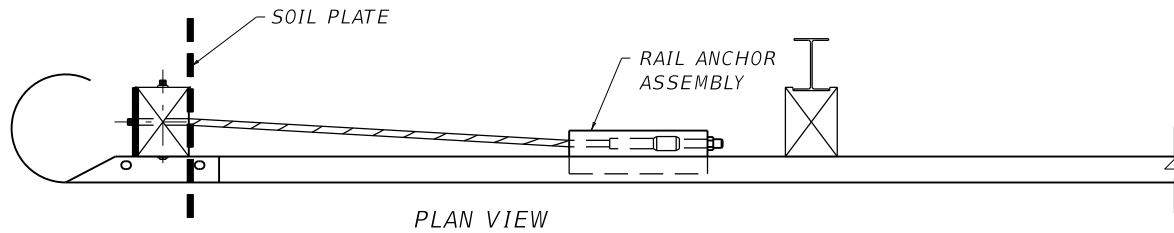
BID ITEM AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 1 EACH (POSTS P3 THRU P8)
 OBJECT MARKER TY 3 EACH

BID ITEM AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 1 EACH (POST P2)

1. GUARDRAIL END TREATMENT TYPE 1 SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND INCLUDES POSTS, RAIL ELEMENTS, GUARDRAIL EXTRUDER AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION AS DETAILED.
2. PERMISSIBLE ALTERNATES FOR GUARDRAIL END TREATMENT TYPE 1 ARE PATENTED ITEMS: SOFT-STOP MANUFACTURED BY TRINITY INDUSTRIES OF DALLAS, TEXAS OR MSKT MANUFACTURED BY ROAD SYSTEMS INC. OF BIG SPRINGS, TEXAS.
3. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
4. THE COMPLETED INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE MANUFACTURER (SEE SHOP DRAWINGS).
- ⑤ POSTS P1 THROUGH P9 ARE SPACED 6'-3" ON CENTER.
6. INTENDED USE: AREAS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND END TREATMENT.
- ⑦ OBJECT MARKER TYPE 3 (SEE CURRENT MUTCD MANUAL FOR DETAILS)
- ⑧ FOR MAINTENANCE AND REPAIR PROJECTS, USE "GUARDRAIL SYSTEM TRANSITION" (RBR-018) TO TRANSITION BACK TO 27" OR 29" GUARDRAIL HEIGHT, IF ONLY THE TERMINAL IS PROPOSED TO BE REPLACED.

USE WITH CUR. STD. DWG.
 RBI-004

KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL END TREATMENT TYPE 1	
STANDARD DRAWING NO. RBR-020-07	
SUBMITTED	DATE
<i>[Signature]</i>	02-26-20
FOR DIVISION OF DESIGN	
APPROVED	DATE
<i>[Signature]</i>	02-26-20
FOR DIVISION OF ENGINEERING	



~ NOTES ~

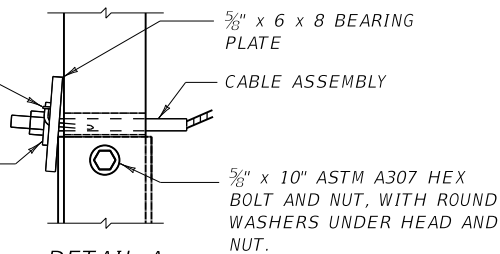
BID ITEM AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 2A EACH

1. GUARDRAIL END TREATMENT TYPE 2A SHALL BE TO THE PAY LIMITS AS DETAILED. THE CONTRACT UNIT BID IS EACH AND SHALL INCLUDE A TERMINAL SECTION NO. 1, RAIL ANCHOR ASSEMBLY, CABLE ANCHOR ASSEMBLY, SOIL TUBE, SOIL PLATE AND ALL OTHER INCIDENTALS NECESSARY FOR A COMPLETE INSTALLATION AS DETAILED.
2. IN THE EVENT SOLID ROCK IS ENCOUNTERED, THE SOIL TUBE MAY BE SHORTENED, PROVIDED IT EXTENDS INTO THE SOLID GROUND A MINIMUM OF 3 FEET.

③ INSTALL BEARING PLATE SO THAT THE "V" OPENING IS AT THE TOP.

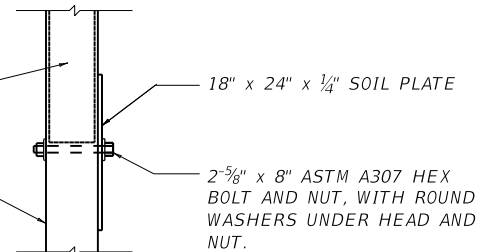
2-16d NAILS TO PREVENT PLATE ROTATION (THRU 5/16" DIA. HOLES IN PLATE AND BENT)

3/8" x 3" x 4" PLATE WASHER



DETAIL A

46" CRT POST
 5" STEEL SOIL TUBE



DETAIL B

USE WITH CUR. STD. DWGS.
 RBI-002 RBI-003 RBR-010
 RBI-001

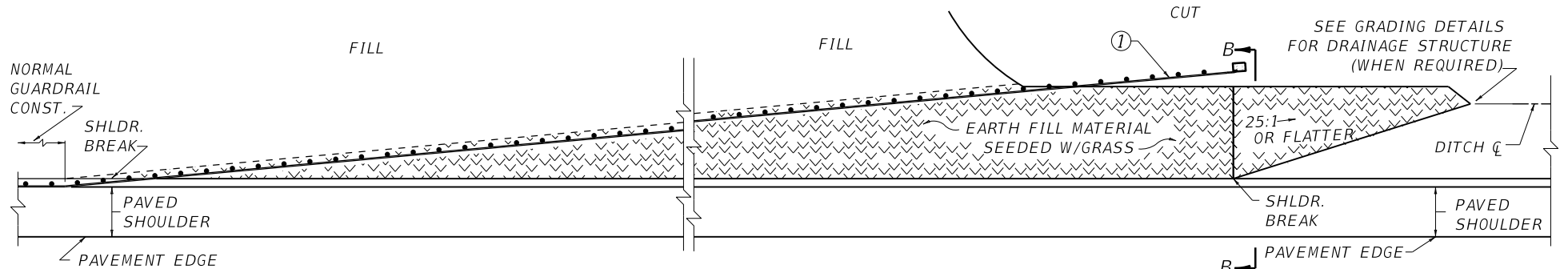
KENTUCKY
 DEPARTMENT OF HIGHWAYS

GUARDRAIL
 END TREATMENT
 TYPE 2A

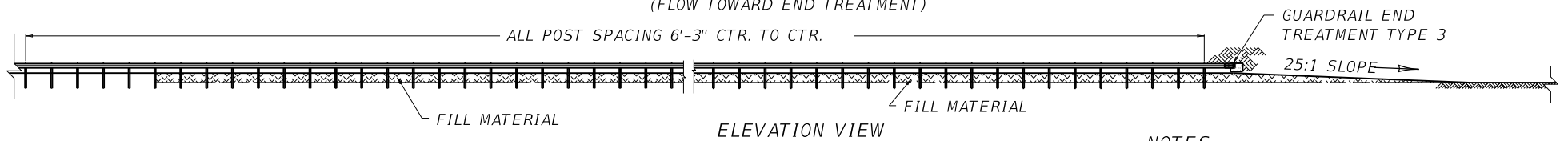
STANDARD DRAWING NO. RBR-025-06

SUBMITTED *[Signature]* DATE 02-26-20

APPROVED *[Signature]* ENGINEER DATE 02-26-20



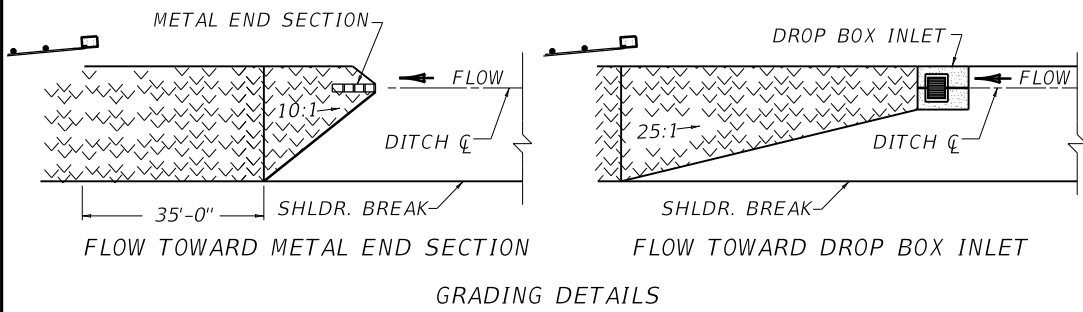
PLAN VIEW
(FLOW TOWARD END TREATMENT)



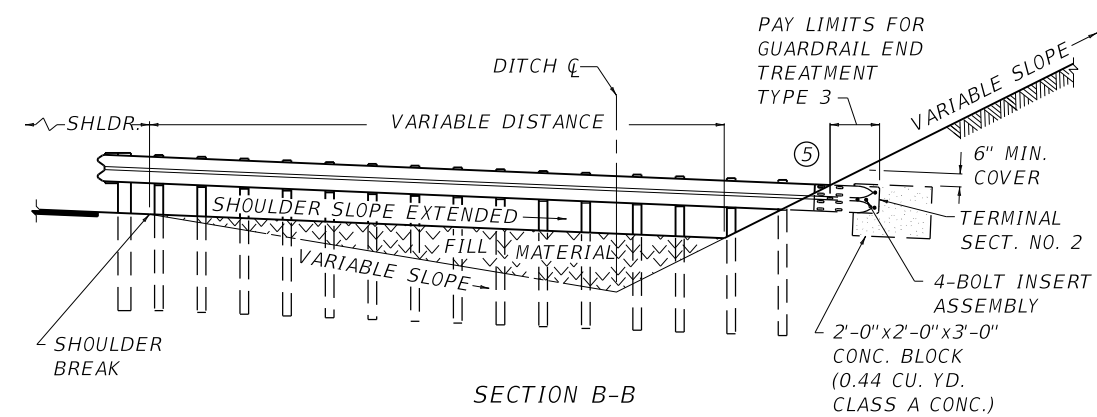
ELEVATION VIEW

~ NOTES ~

1. BID ITEMS AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 3 EACH
 ROADWAY OR BORROW EXCAVATION, CU. YD.
 OR EMBANKMENT IN PLACE EACH
 DRAINAGE STRUCTURE BID SEPARATELY
2. THE CONTRACT UNIT PRICE FOR GUARDRAIL END TREATMENT TYPE 3 SHALL INCLUDE THE CONCRETE BLOCK, TERMINAL SECTION NO. 2, FOUR BOLT INSERT ASSEMBLY AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK.
3. OFFSET BLOCKS MAY BE ELIMINATED ON ANY POST THAT IS COMPLETELY BELOW GRADE.
4. SEE CUR. STD. DWG. [RBC-100](#) FOR 4-BOLT INSERT ASSEMBLY DETAILS.
5. SEE CUR. STD. DWG. [RBR-032](#) FOR ALTERNATE END ANCHOR.



GRADING DETAILS



SECTION B-B

① FLARE RATES			
DESIGN SPEED	70+ MPH	60 MPH	50 MPH OR LESS
FLARE RATES	15:1	13:1	11:1

USE WITH CUR. STD. DWGS.
[RBC-100](#) [RDB-005](#) [RBR-032](#)

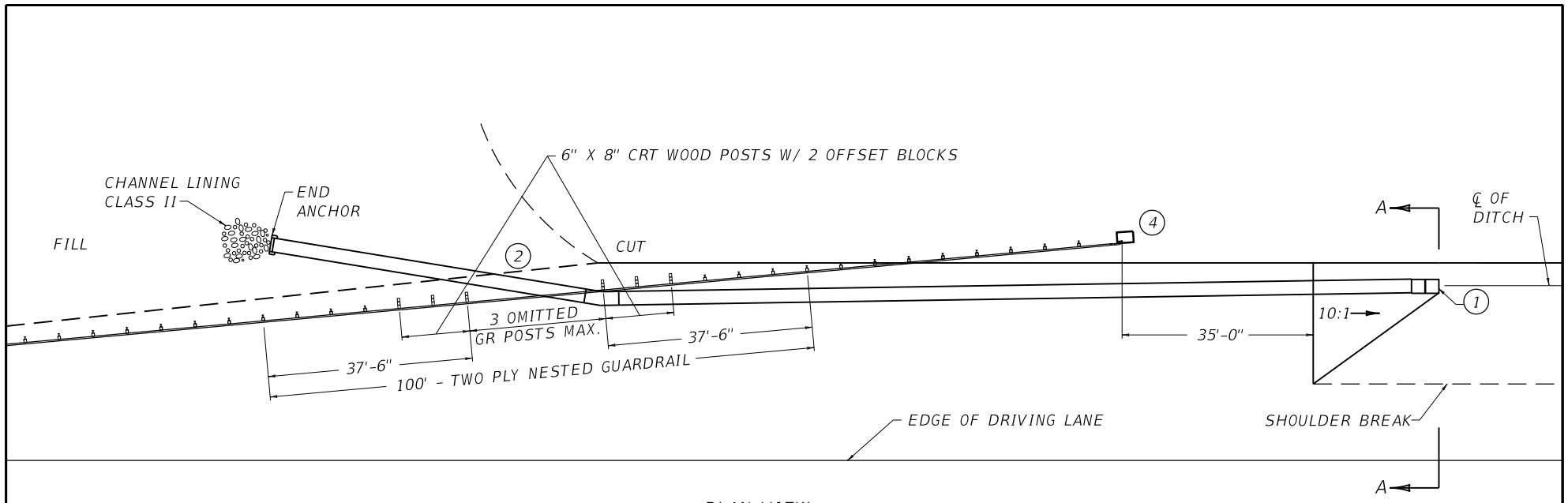
KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL END
TREATMENT TYPE 3

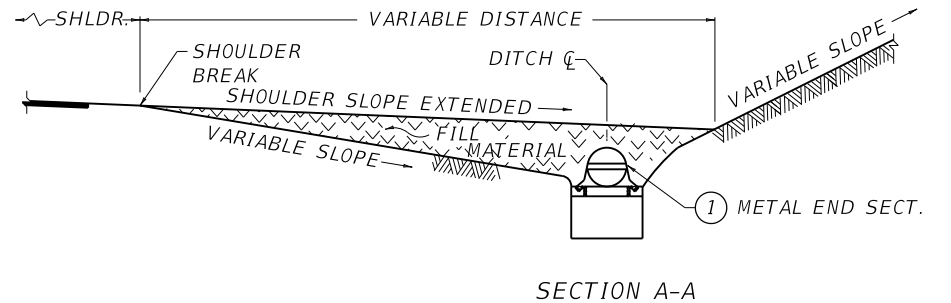
STANDARD DRAWING NO. [RBR-030-05](#)

SUBMITTED *[Signature]* DIRECTOR'S SIGNATURE OF DESIGN 12-01-15 DATE

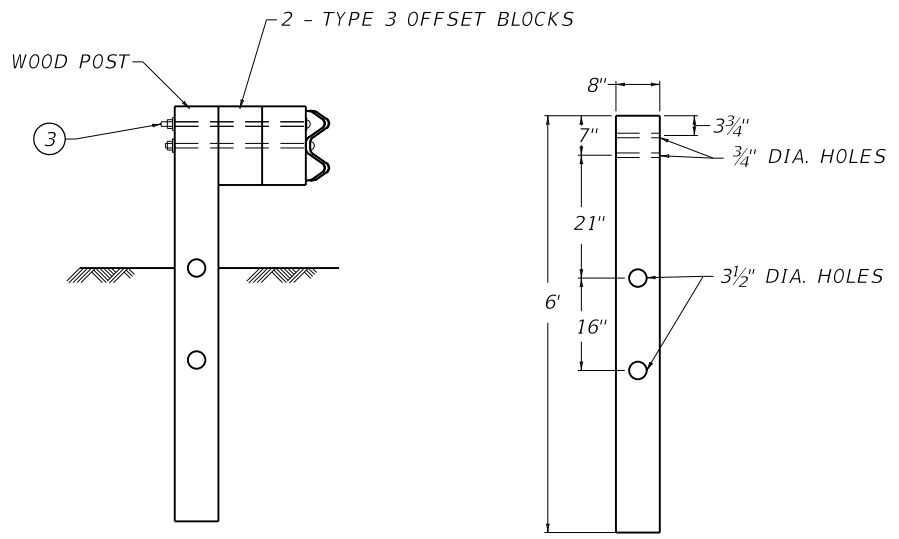
APPROVED *[Signature]* STATE HIGHWAY ENGINEER 12-01-15 DATE



PLAN VIEW



SECTION A-A



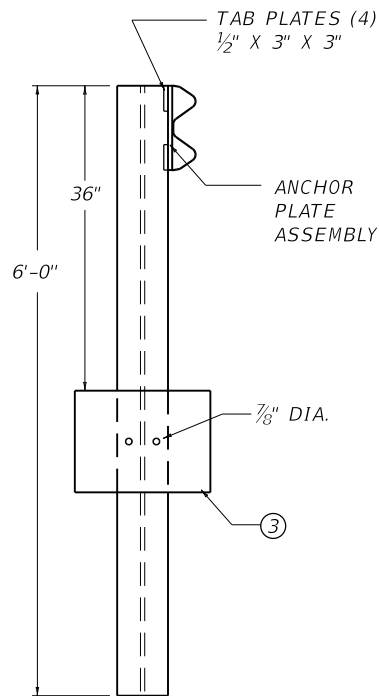
6" X 8" CRT WOOD POST
W/ 2 OFFSET BLOCKS

6" X 8" CRT WOOD POST

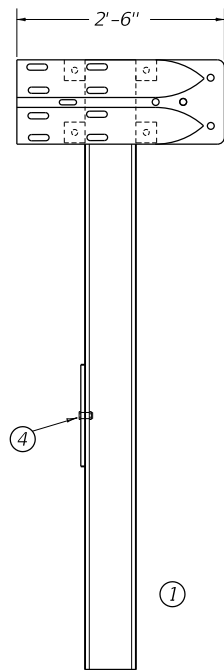
- ~ NOTES ~
- BID ITEMS AND UNIT TO BID
 - CHANNEL LINING CLASS II TON
 - END ANCHOR CUYD
 - PIPE LF
 - METAL END SECTION EACH
 - SEE CURRENT STANDARD DRAWING [RBR-030](#) FOR OTHER BID ITEMS.
 - ① SEE CURRENT STANDARD DRAWING [RDB-150](#) AND [RDB-160](#) FOR METAL END SECTIONS.
 - ② A MINIMUM DISTANCE OF 5'-0" BEHIND THE RAIL SHALL BE CLEAR OF ANY FIXED OBJECT HAZARDS.
 - ③ 1 - 5/8" DIA. BOLT WITH TWO ROUND WASHERS.
 - ④ SEE CURRENT STANDARD DRAWING [RBR-032](#) FOR ALTERNATE END ANCHOR.

USE WITH CUR. STD. DWGS.
[RBR-030](#) [RBR-032](#) [RDB-150](#)
[RDB-160](#) [RDX-060](#) [RDX-065](#)

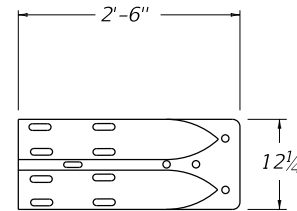
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL END TREATMENT TYPE 3 PIPE DRAINAGE DETAIL	
STANDARD DRAWING NO. RBR-031-01	
SUBMITTED <i>[Signature]</i> <small>DIRECTOR OF DESIGN</small>	12-01-15 <small>DATE</small>
APPROVED <i>[Signature]</i> <small>STATE HIGHWAY ENGINEER</small>	12-01-15 <small>DATE</small>



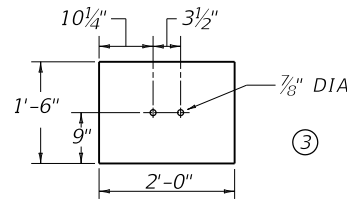
SIDE VIEW



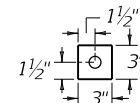
FRONT VIEW



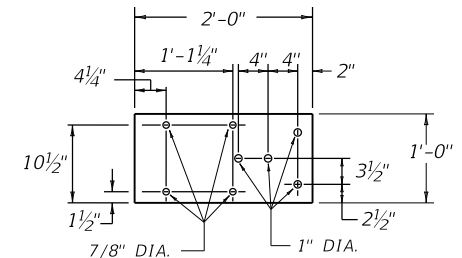
TERMINAL SECTION NO. 2



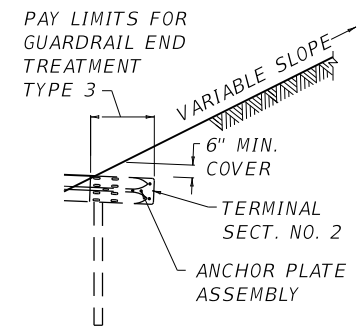
SOIL PLATE



TAB PLATE



ANCHOR PLATE ASSMEBLY (2)



ELEVATION VIEW

~ NOTES ~

5. OFFSET BLOCKS MAY BE ELIMINATED ON ANY POST THAT IS COMPLETELY BELOW GRADE.
6. SEE CUR. STD. DWG. [RBR-001](#) , [RBR-005](#) , [RBR-010](#) AND [RBR-015](#) FOR APPLICABLE DETAILS AND SPECIFICATIONS.
7. GUARDRAIL END TREATMENT TYPE 3 SHALL BE TO THE PAY LIMITS AS DETAILED AND THE CONTRACT UNIT PRICE EACH SHALL INCLUDE TERMINAL SECTION NO. 2, GUARDRAIL ANCHOR POST, 4-BOLT ASSEMBLY PLATE, SOIL PLATE, HARDWARE, LABOR, EXCAVATION AND ALL INCIDENTALS NECESSARY FOR THE INSTALLATION.

BID ITEM AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 3
 ROADWAY OR BORROW EXCAVATION, OR EMBANKMENT-IN-PLACE EACH
 CUYD

BILL OF MATERIAL		
NO.	QTY.	DESCRIPTION
①	1	W6x15 W-BEAM W/TAB PLATES (4 EA)
②	1	2' x 1' x 1/2" PLATE
③	1	2' x 18" x 1/4" PLATE
④	2	3/4" DIA. x 2" HEAVY HEX HD BOLT w/NUT & (2) FLAT WASHERS

USE WITH CUR. STD. DWGS.
[RBR-001](#) [RBR-005](#) [RBR-010](#)
[RBR-015](#) [RBR-030](#) [RBR-031](#)

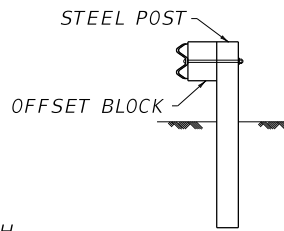
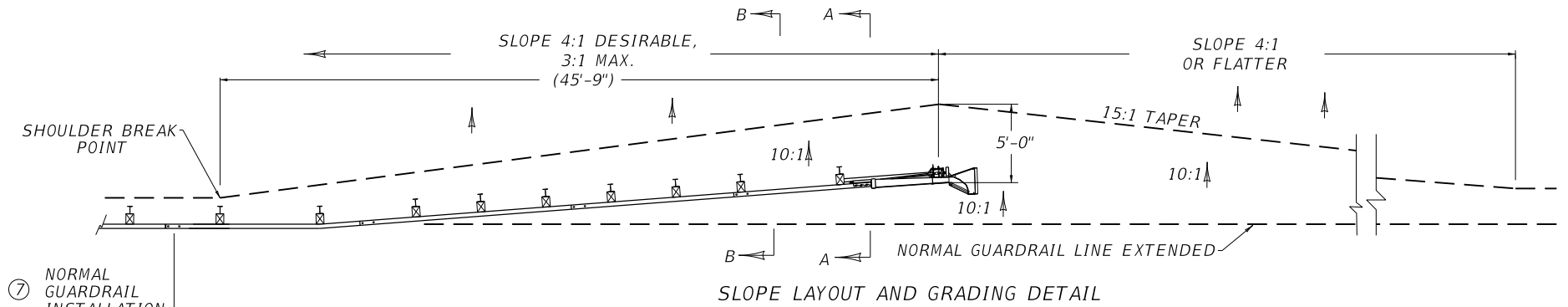
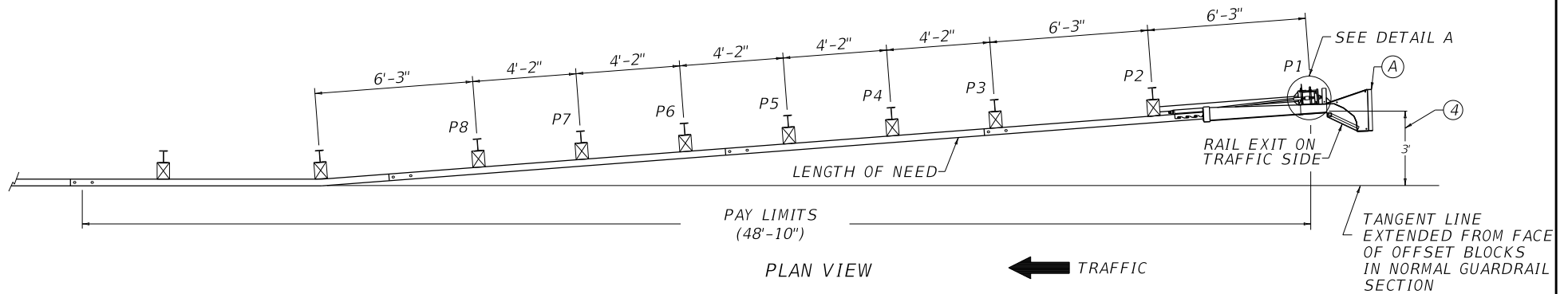
KENTUCKY
 DEPARTMENT OF HIGHWAYS

GUARDRAIL END
 TREATMENT TYPE 3
 ALTERNATE ANCHOR

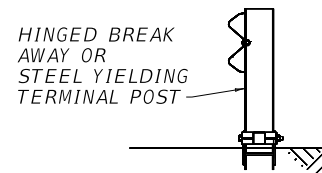
STANDARD DRAWING NO. [RBR-032](#)

SUBMITTED *[Signature]* 12-01-15
 DIVISION CHIEF OF DESIGN DATE

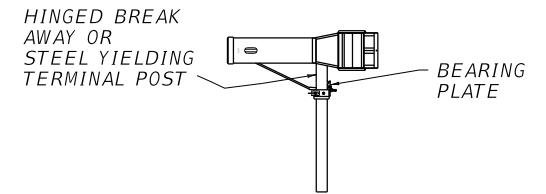
APPROVED *[Signature]* 12-01-15
 STATE HIGHWAY ENGINEER DATE



SECTION B-B
(POSTS P3 THRU P8)



SECTION A-A
POST #2



DETAIL "A"
(ENLARGED VIEW P1)

~ NOTES ~

- BID ITEMS AND UNIT TO BID:
 GUARDRAIL END TREATMENT TYPE 4A EACH
 ROADWAY OR BORROW EXCAVATION OR CUYD
 EMBANKMENT-IN-PLACE EACH
 OBJECT MARKER TY 3 EACH
1. INTENDED USE: AREAS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL.
 2. PERMISSIBLE ALTERNATES FOR GUARDRAIL END TREATMENT TYPE 4A ARE PATENTED ITEMS: MFLEAT MANUFACTURED BY ROAD SYSTEMS INC. OF BIG SPRINGS, TEXAS.
 3. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
 4. SYSTEM OFFSET OF 3'-0" SHALL BE MEASURED FROM FACE OF OFFSET BLOCK AT NORMAL GUARDRAIL SECTION TO FACE OF POST AT P1.
 5. OBJECT MARKER TYPE 3 (SEE CURRENT MUTCD MANUAL FOR DETAILS).
 6. THE COMPLETED INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE MANUFACTURER. (SEE SHOP DRAWINGS)
 7. FOR MAINTENANCE AND REPAIR PROJECTS, USE GUARDRAIL SYSTEM TRANSITION [RBR-018](#), TO TRANSITION BACK TO 27" OR 29" GUARDRAIL HEIGHT, IF ONLY THE TERMINAL IS PROPOSED TO BE REPLACED.

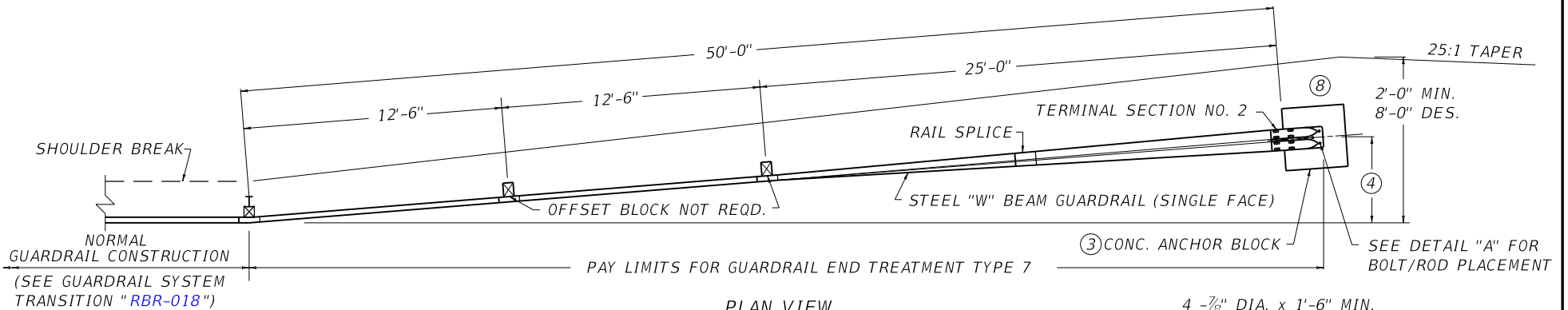
KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL
END TREATMENT
TYPE 4A

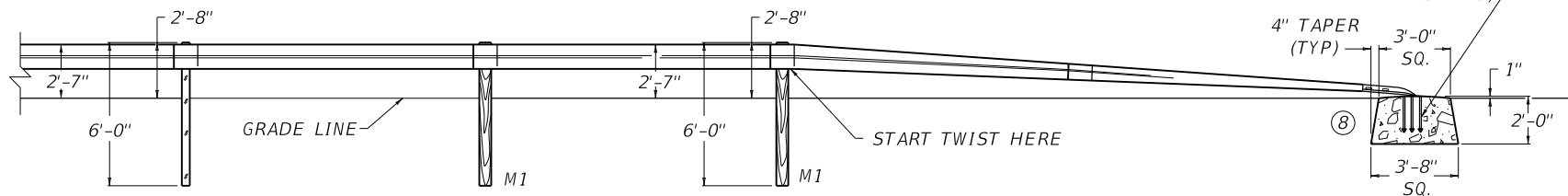
STANDARD DRAWING NO. RBR-035-12

SUBMITTED *[Signature]* DATE 02-26-20

APPROVED *[Signature]* ENGINEER DATE 02-26-20

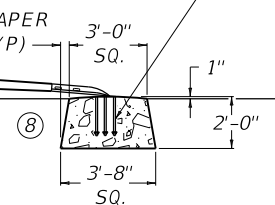


PLAN VIEW



ELEVATION VIEW

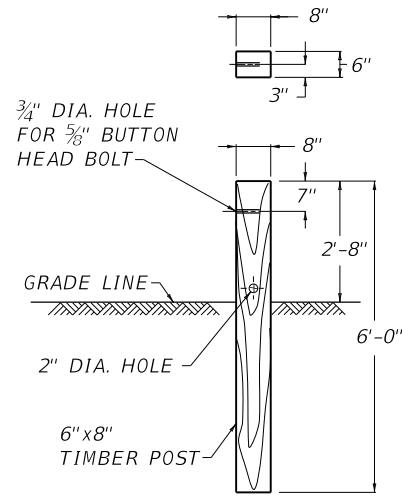
4 - 7/8" DIA. x 1'-6" MIN. ANCHOR BOLTS
 ---OR---
 THREADED RODS (HEX NUTS AND FLAT WASHERS)



DETAIL "A"

~ NOTES ~

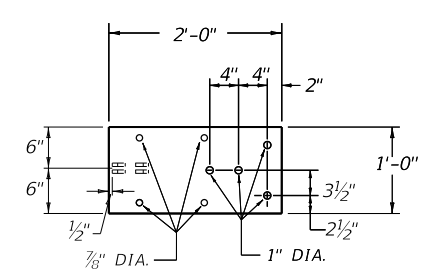
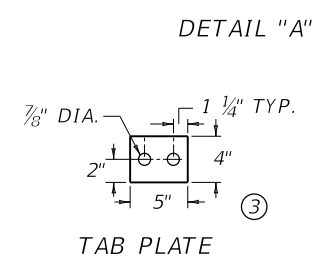
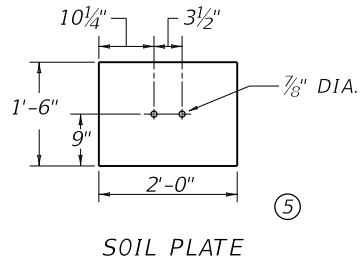
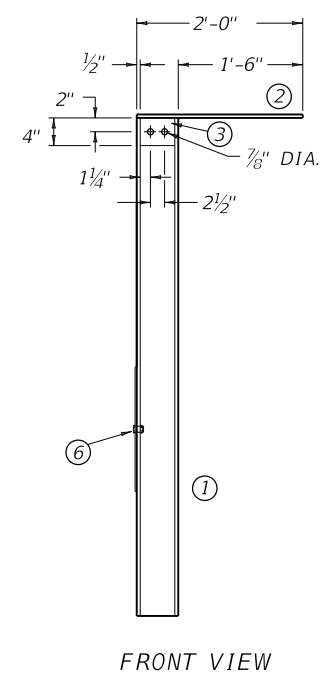
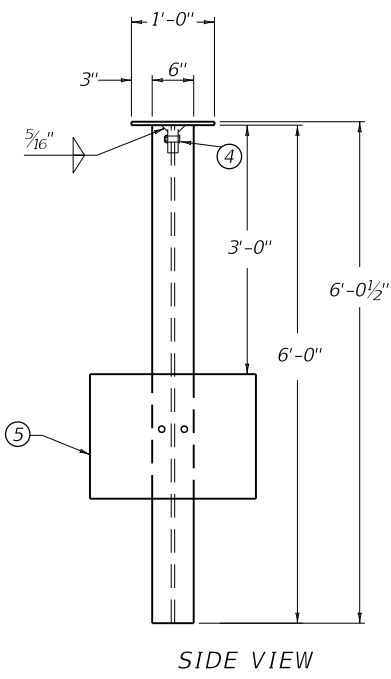
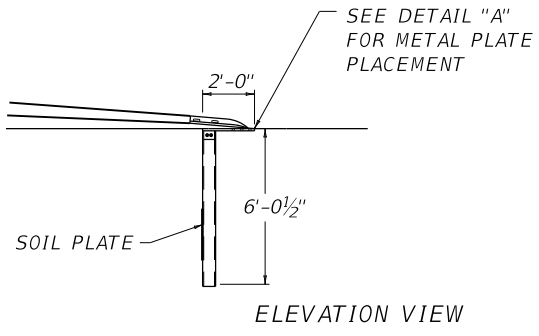
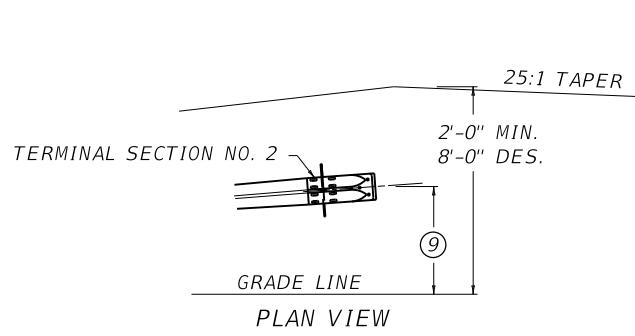
- BID ITEM AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 7 EACH
- GUARDRAIL END TREATMENT TYPE 7 SHALL BE TO THE PAY LIMITS AS DETAILED AND THE CONTRACT UNIT PRICE EACH SHALL INCLUDE TERMINAL SECTION NO. 2, STEEL "W" BEAM GUARDRAIL (SINGLE FACE), GUARDRAIL POSTS M1, CONCRETE ANCHOR BLOCK, EXCAVATION, LABOR, HARDWARE AND INCIDENTALS NECESSARY FOR THE INSTALLATION.
 - SPLICE BOLTS AT TERMINAL SECTION NO. 2 SHALL BE LOOSELY TIGHTENED AND CENTERED TO ALLOW MAXIMUM MOVEMENT DUE TO EXPANSION. ONE (1) 1/2" ROUND WASHER AND ONE (1) RECTANGULAR PLATE WASHER REQUIRED FOR EACH SPLICE BOLT, AT TERMINAL SECTION NO. 2.
 - THE CONCRETE ANCHOR BLOCK MAY BE PRECAST OR CAST-IN-PLACE. WHEN THE CONCRETE ANCHOR BLOCK IS CAST-IN-PLACE FORMING OF THE SIDES SHALL BE REQUIRED.
 - THE DESIREABLE OFFSET DISTANCE FROM THE NORMAL GUARDRAIL LINE SHALL BE 4'-0". THE MINIMUM OFFSET DISTANCE FROM THE NORMAL GUARDRAIL LINE IS ZERO FEET.
 - SEE CUR. STD. DWG. [RBR-001](#), [RBR-005](#), [RBR-010](#), AND [RBR-015](#) FOR APPLICABLE DETAILS AND SPECIFICATIONS.
 - APPROX. QUANTITY FOR ANCHOR BLOCK: 0.83 CU. YD. CLASS "A" CONCRETE FOR TYPE 7 INSTALLATION.
 - THIS GUARDRAIL END TREATMENT IS NOT FOR USE ON APPROACH END ON HIGH SPEED NHS ROUTES ABOVE 35 MPH.
 - SEE CUR. STD. DWG. [RBR-051](#) FOR ALTERNATE END ANCHOR.



M1 POST DETAIL

USE WITH CUR. STD. DWG.
[RBR-001](#) [RBR-005](#) [RBR-010](#)
[RBR-015](#) [RBR-051](#)

KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL END TREATMENT TYPE 7	
STANDARD DRAWING NO. RBR-050-08	
SUBMITTED <i>[Signature]</i>	DATE 02-26-20
APPROVED <i>[Signature]</i>	DATE 02-26-20
ENGINEER	



~ NOTES ~

- BID ITEM AND UNIT TO BID
 GUARDRAIL END TREATMENT TYPE 7 EACH
- GUARDRAIL END TREATMENT TYPE 7 SHALL BE TO THE PAY LIMITS AS DETAILED AND THE CONTRACT UNIT PRICE EACH SHALL INCLUDE TERMINAL SECTION NO. 2, STEEL "W" BEAM GUARDRAIL (SINGLE FACE), GUARDRAIL POSTS M1, STEEL ANCHOR PLATE AND POST, SOIL PLATE, TAB PLATES, EXCAVATION, LABOR, HARDWARE AND ALL INCIDENTALS NECESSARY FOR THE INSTALLATION.
 - SPLICE BOLTS AT TERMINAL SECTION NO. 2 SHALL BE LOOSELY TIGHTENED AND CENTERED TO ALLOW MAXIMUM MOVEMENT DUE TO EXPANSION. ONE (1) 1/16" ROUND WASHER AND (1) RECTANGULAR PLATE WASHER REQUIRED FOR EACH SPLICE BOLT, AT TERMINAL SECTION NO. 2.
 - THE DESIREABLE OFFSET DISTANCE FROM THE NORMAL GUARDRAIL LINE SHALL BE 4'-0". THE MINIMUM OFFSET DISTANCE FROM THE NORMAL GUARDRAIL LINE IS ZERO FEET.
 - SEE CUR. STD. DWG. RBR-001 , RBR-005 , RBR-010 AND RBR-015 FOR APPLICABLE DETAILS AND SPECIFICATIONS.
 - LEAVE CLEARANCE IN BETWEEN TAB PLATES FOR GALVANIZED W6 x 15 W-BEAM POST.

BILL OF MATERIAL		
NO.	QTY.	DESCRIPTION
①	1	W6x15 W-BEAM
②	1	2' x 1' x 1/2" ANCHOR PLATE ASSEMBLY
③	2	4" x 5" x 1/2" TAB PLATE
④	2	3/4" DIA. x 2 1/2" HEAVY HEX HD BOLT w/NUT & (2) FLAT WASHERS
⑤	1	2' x 18" x 1/4" SOIL PLATE
⑥	2	3/4" DIA. x 2" HEAVY HEX HD BOLT w/NUT & (2) FLAT WASHERS

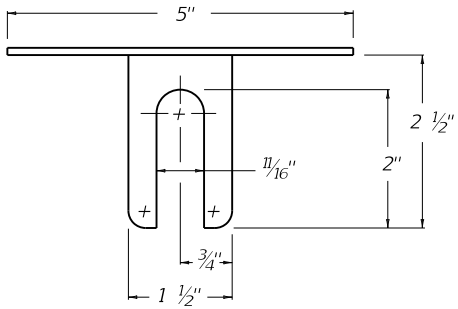
USE WITH CUR. STD. DWG.
 RBR-001 RBR-005 RBR-010
 RBR-015 RBR-050

KENTUCKY
 DEPARTMENT OF HIGHWAYS

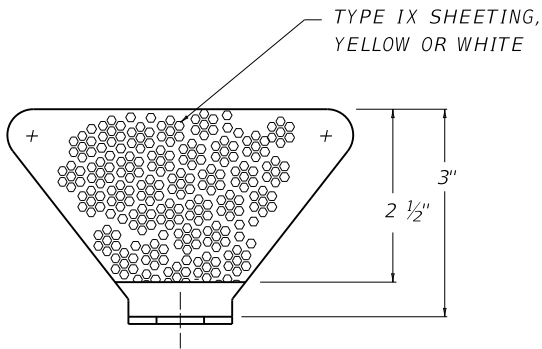
GUARDRAIL END
 TREATMENT TYPE 7
 ALTERNATE ANCHOR

STANDARD DRAWING NO. RBR-051-01
 SUBMITTED *[Signature]* DATE 02-26-20
 APPROVED *[Signature]* DATE 02-26-20
 ENGINEER

~ NOTES ~

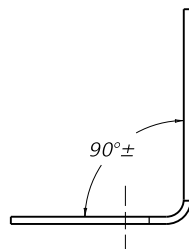


PLAN VIEW

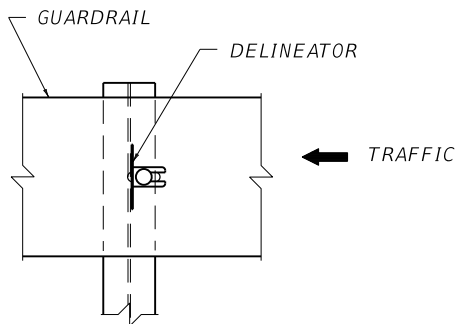


FRONT VIEW

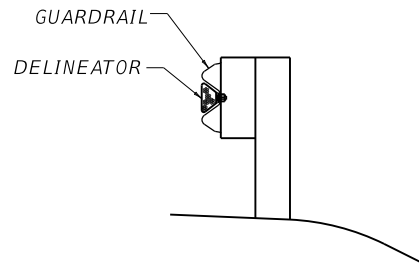
DIMENSIONS SHOWN ARE FOR ONE VERSION OF A WEB-MOUNTED GUARDRAIL DELINEATOR. DELINEATORS WITH ALTERNATE DIMENSIONS MAY BE CONSIDERED FOR INCLUSION ON THE APPROVED PRODUCTS LIST.



SIDE VIEW

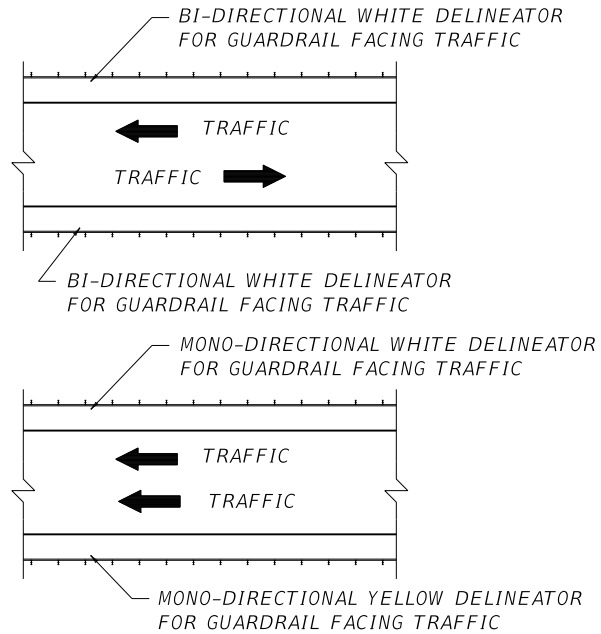


FRONT VIEW



SIDE VIEW

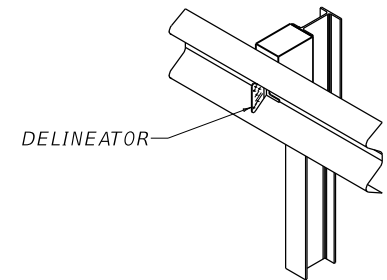
- BID ITEMS AND UNIT TO BID
- | | |
|------------------------------|------|
| DELINEATOR FOR GUARDRAIL B/W | EACH |
| DELINEATOR FOR GUARDRAIL M/W | EACH |
| DELINEATOR FOR GUARDRAIL M/Y | EACH |
1. DELINEATORS SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE EACH AND SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR ONE COMPLETE INSTALLATION.
 2. DELINEATOR SHAPE AND DIMENSIONS ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY. TYPES OF DELINEATORS PERMITTED SHALL BE FROM THE LIST OF APPROVED MATERIALS.
 3. GUARDRAIL DELINEATORS SHALL BE REQUIRED ON ALL GUARDRAIL.
 4. DELINEATORS SHALL NOT BE INSTALLED WITHIN THE PAY LIMITS OF THE END TREATMENT.
 5. DELINEATORS SHALL BE MANUFACTURED FROM 12 GA. GALVANIZED STEEL.
 6. DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MANUFACTURER'S TOLERANCES.
 7. WHEN CONCRETE BARRIERS EXTEND ACROSS BRIDGE STRUCTURES IN LIEU OF STEEL BEAM GUARDRAIL, DELINEATORS SHALL BE INSTALLED AT SAME VERTICAL ALIGNMENT AS ON THE GUARDRAIL, AND DELINEATORS SHALL COMPLY WITH CURRENT STANDARD DRAWING [RBM-020](#).
 8. DELINEATORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



PLACEMENT OF DELINEATORS FOR GUARDRAIL

APPROXIMATE DELINEATOR SPACING	
TANGENT	100'
CURVE	50'

SPACING SHOULD BE ADJUSTED IN CURVES SO THAT SEVERAL DELINEATORS ARE ALWAYS SIMULTANEOUSLY VISIBLE TO THE ROAD USER.



ISOMETRIC VIEW

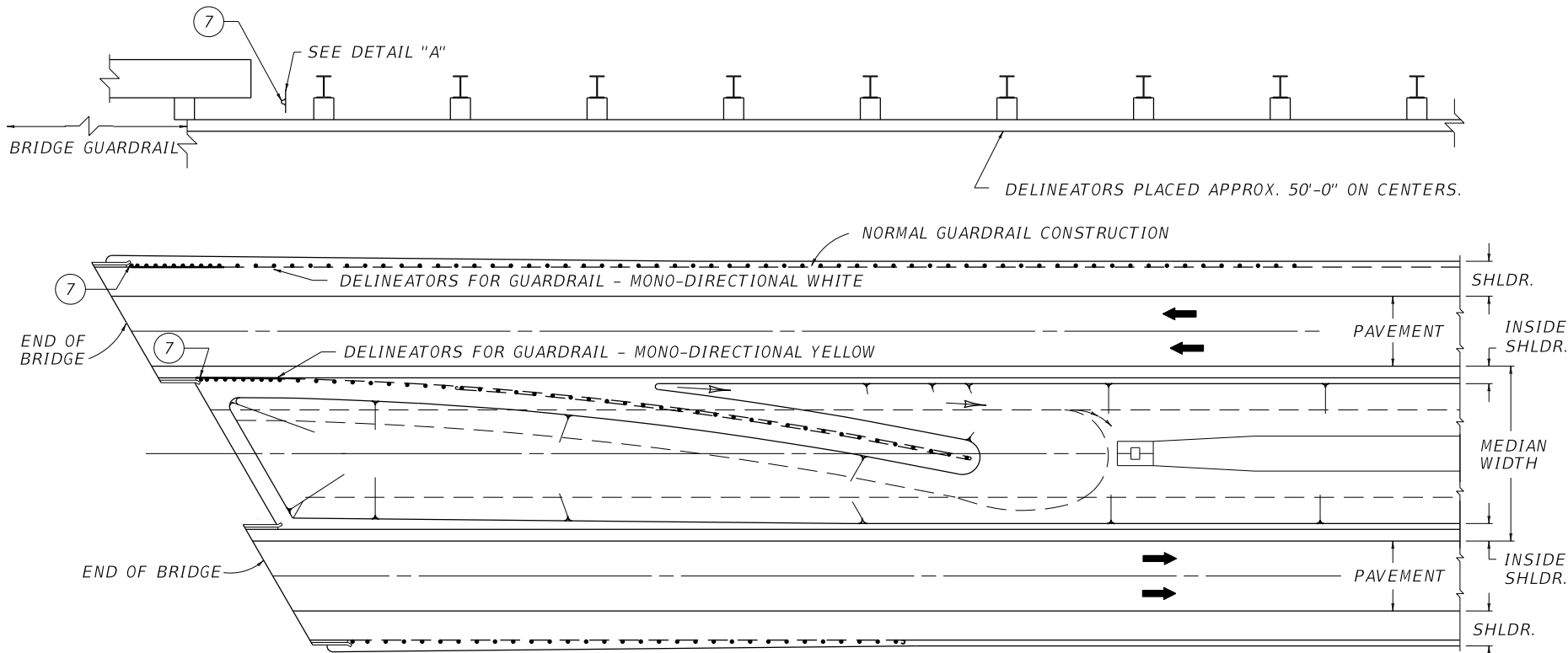
USE WITH CUR. STD. DWGS.
[RBM-020](#) [RBR-060](#)

KENTUCKY
DEPARTMENT OF HIGHWAYS

DELINEATORS
FOR GUARDRAIL

STANDARD DRAWING NO. RBR-055-01

SUBMITTED	<i>[Signature]</i>	DATE	02-26-20
APPROVED	<i>[Signature]</i>	DATE	02-26-20

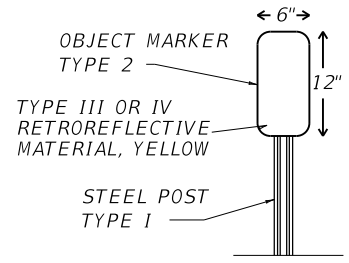
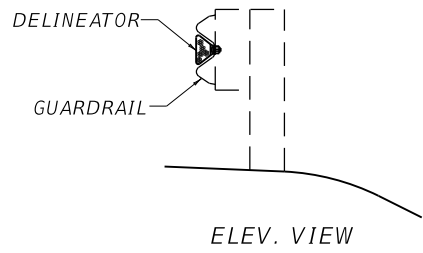


~ NOTES ~

BID ITEMS AND UNIT TO BID

DELINEATORS FOR CONCRETE BARRIERS	
DELINEATOR FOR BARRIER - WHITE	EACH
DELINEATOR FOR BARRIER - YELLOW	EACH
DELINEATORS ON GUARDRAIL	
DELINEATOR FOR GUARDRAIL M/W	EACH
DELINEATOR FOR GUARDRAIL M/Y	EACH
OBJECT MARKER TYPE 2	EACH
STEEL POST TYPE 1	LF

1. DELINEATOR SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR ONE COMPLETE INSTALLATION.
2. THE DELINEATORS SHALL BE YELLOW IN COLOR WHEN THE BARRIER IS PLACED IN THE MEDIAN AND/OR ON THE LEFT SIDE OF THE DRIVING LANE. THE DELINEATORS SHALL BE WHITE IN COLOR WHEN THE BARRIER IS PLACED ON THE RIGHT SIDE OF THE DRIVING LANE.
3. DELINEATORS SHALL BE APPLIED 300 FEET IN ADVANCE OF AND THROUGHOUT THE LENGTH OF ALL BRIDGES THAT DO NOT HAVE FULL WIDTH SHOULDERS. SPACING ON BRIDGES AND 300 FEET IN ADVANCE OF BRIDGES SHALL BE 50 FEET ON CENTERS. THE FIRST DELINEATOR ON THE GUARDRAIL SHALL BE PLACED 50 FEET FROM THE DELINEATOR AT THE END OF THE BRIDGE. DELINEATORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. DELINEATORS SHALL NOT BE INSTALLED WITHIN THE PAY LIMITS OF THE END TREATMENT.
5. WHEN CONCRETE BARRIERS EXTEND ACROSS NARROW SHOULDER WIDTH STRUCTURES IN LIEU OF STEEL BEAM GUARDRAIL, DELINEATORS SHALL BE INSTALLED AT SAME VERTICAL ALIGNMENT AS ON THE GUARDRAIL AND DELINEATORS SHALL COMPLY WITH CURRENT STANDARD DRAWING [RBM-020](#).
6. GUARDRAIL DELINEATORS SHALL COMPLY WITH CURRENT STANDARD DRAWING [RBR-055](#).
7. SEE SECTION 718 OF THE CURRENT STANDARD SPECIFICATIONS FOR "OBJECT MARKER TYPE 2".

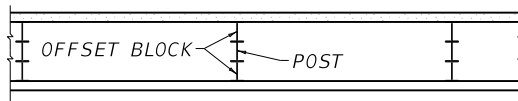


OBJECT MARKER TYPE 2
DETAIL "A" ⑦

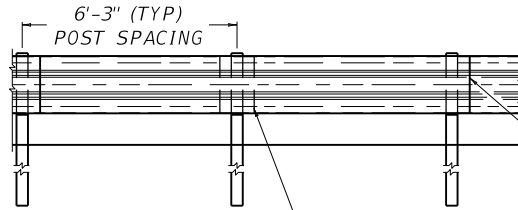
PRIMARY USE:
(PAVEMENT REHABILITATION PROJECTS)

USE WITH CUR. STD. DWGS.
[RBM-020](#) [RBR-055](#)

KENTUCKY DEPARTMENT OF HIGHWAYS	
DELINEATORS AT NARROW SHOULDER BRIDGES	
STANDARD DRAWING NO. RBR-060	
SUBMITTED <i>[Signature]</i>	12-01-15 DATE
APPROVED <i>[Signature]</i>	12-01-15 DATE
<small>STATE HIGHWAY ENGINEER</small>	<small>DATE</small>

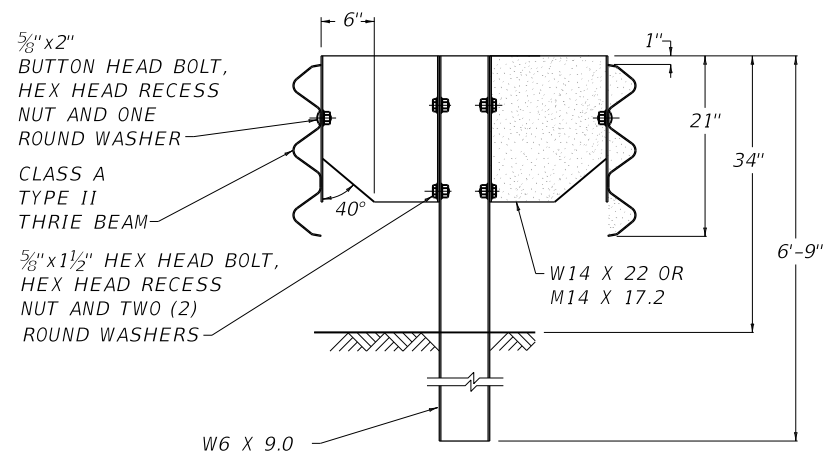


PLAN VIEW

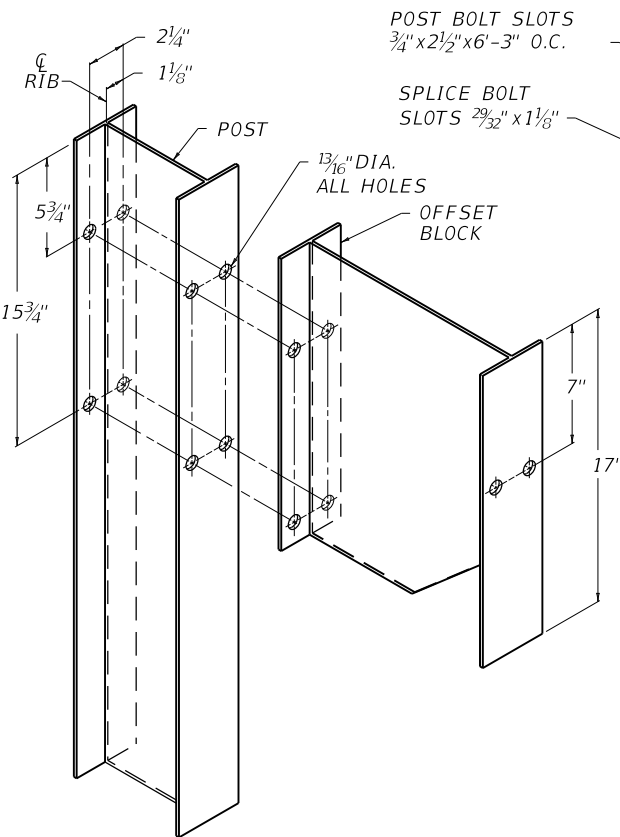


ELEVATION VIEW

ALL LAPS SHALL BE IN DIRECTION OF TRAFFIC FLOW
 BACK-UP PLATE (LOCATE AT INTERMEDIATE POSTS WHERE SPLICES DO NOT OCCUR)



NEW CONSTRUCTION

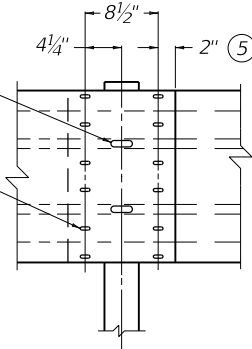


POST & OFFSET BLOCK DETAIL

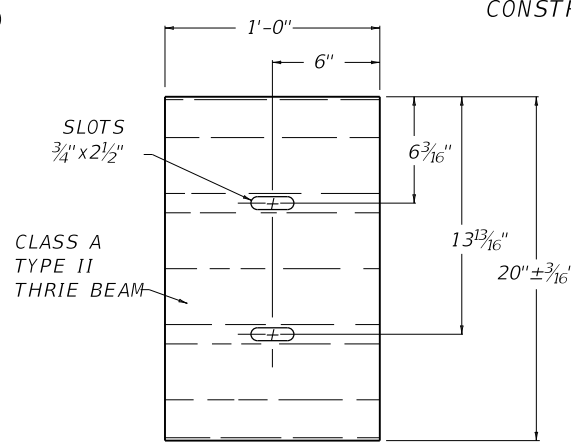
POST BOLT SLOTS
 $\frac{3}{4}'' \times 2\frac{1}{2}'' \times 6'-3''$ O.C.

SPLICE BOLT SLOTS
 $\frac{29}{32}'' \times 1\frac{1}{8}''$

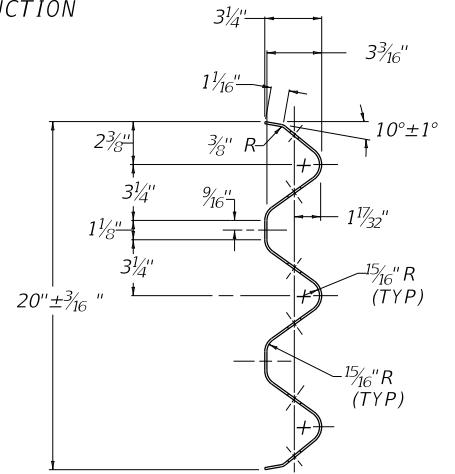
$\frac{13}{16}''$ DIA. ALL HOLES
 OFFSET BLOCK



④ RAIL SPLICE



BACK-UP PLATE



SECTION OF RAIL ELEMENT & BACK-UP PLATE

~ NOTES ~

BID ITEM AND UNIT TO BID
 GUARDRAIL THRIE BEAM LF

- DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE AND ACCEPTED MANUFACTURING PRACTICES.
- THE SAME TYPE OF RAIL ELEMENT, POST, FASTENINGS AND ACCESSORIES SHALL BE USED THROUGHOUT THE WORK.
- CONNECT OFFSET BLOCK TO STEEL POST WITH TWO DIAGONALLY LOCATED BLOTS.
- $12\frac{5}{8}'' \times 1\frac{1}{4}''$ BUTTON HEAD BOLTS AND HEX HEAD RECESS NUTS.
- TOLERANCE $+ 1\frac{1}{4}'', -\frac{3}{16}''$
- AASHTO M-180 SHALL APPLY EXCEPT WHERE IN CONFLICT WITH THIS DRAWING.
 [Symbol] REQUIRED FOR DOUBLE RAIL NOT REQUIRED FOR SINGLE RAIL.

USE WITH CUR. STD. DWG.
 RBR-005

KENTUCKY
 DEPARTMENT OF HIGHWAYS

STEEL BEAM
 GUARDRAIL
 (THRIE BEAM)

STANDARD DRAWING NO. RBR-100-07

SUBMITTED: [Signature] 12-01-15
 DIRECTOR OF DESIGN DATE
 APPROVED: [Signature] 12-01-15
 STATE HIGHWAY ENGINEER DATE