

~ NOTES ~

- 1. TYPE 2M GUARDRAIL ANCHOR SHALL ONLY BE INSTALLED AT TRAILING ENDS WHEN LOCATED OUTSIDE THE CLEAR ZONE AREA OF OPPOSING TRAFFIC. THE LENGTH OF NEED (LON) OF THE GUARDRAIL IS ONLY OBTAINED AT THE FIFTH GUARDRAIL POST.
- 2. ALL HOLES IN WOOD POSTS ARE TO BE DRILLED BEFORE PRESERVATIVE TREATMENT IS APPLIED.
- 3. ALL CUTTING, DRILLING, AND WELDING OF STEEL COMPONENTS SHALL BE DONE BEFORE GALVANIZING.
- 4. THE FINISHED CABLE ASSEMBLY WILL NOT BE ACCEPTABLE UNLESS IT IS IN TENSION WITH NO SAG.

(6.) FOR END TERMINAL POSTS 1 AND 2 INSTALLED WITH FOUNDATION TUBES:

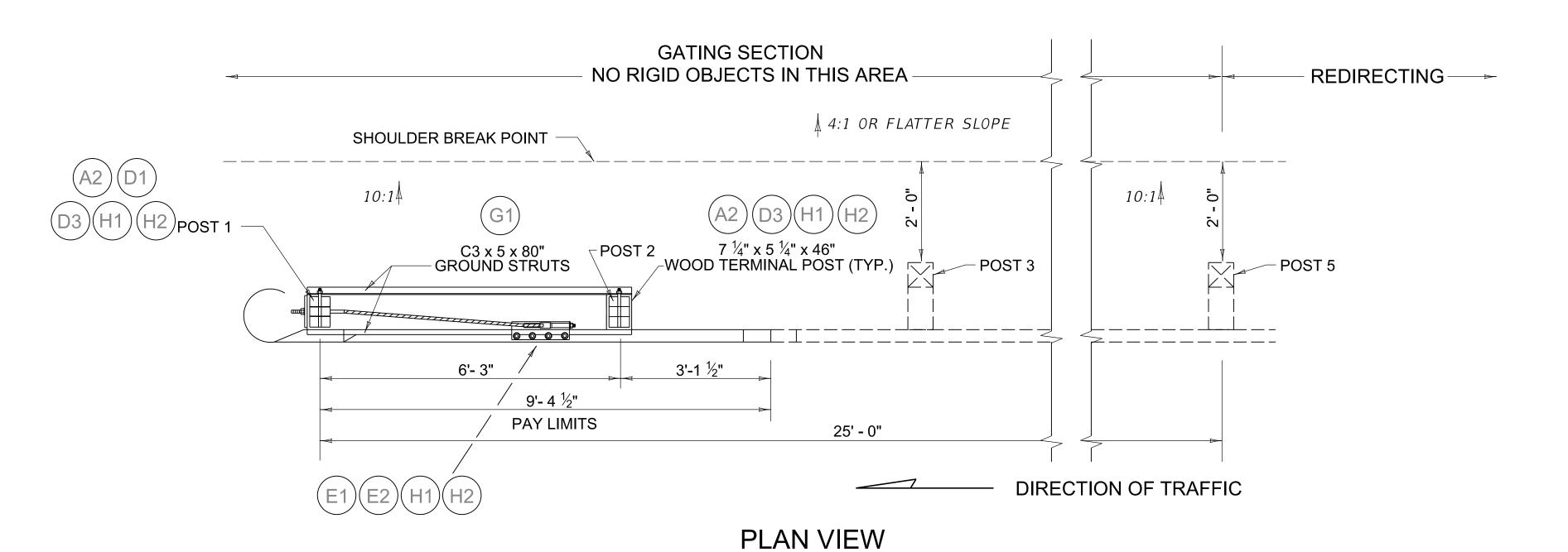
- 5. ALL HARDWARE SHALL CONFORM TO ASTM A307 UNLESS OTHERWISE SHOWN.
- *FOR TYPICAL SOILS, MINIMUM EMBEDMENT REQUIRED IS 68 1/4".

 *IF SOLID ROCK IS ENCOUNTERED AT 20" OR LESS DEPTH, DRILL A 12"-16"
 DIAMETER HOLE 2 INCHES DEEPER THAN REQUIRED AND INSTALL THE
 TUBE AT THE STANDARD HEIGHT.

 *IF SOLID ROCK DEPTH EXCEEDS 20 INCHES, DRILL A 12"-16" DIAMETER
 HOLE AT LEAST 36" DEEP. ADJUST THE TUBE LENGTH TO ENSURE THAT IT
 IS FULLY EMBEDDED IN THE 36-INCH DRILLED HOLE AND A MAXIMUM
 4-INCH PROJECTION ABOVE GRADE, TRIMMING AS NEEDED.
 BACKFILL WITH CUTTING SPOILS, PLACING GRANULAR MATERIAL OR SMALL
 ROCK (#9 OR #57 STONE) IN THE BOTTOM 2 INCHES FOR DRAINAGE.
- 7. WHEN CURB AND GUTTER ARE PRESENT WITH GUARDRAIL, BETWEEN POSTS 6 AND 7 OF THE TYPE 2M TERMINAL TRANSITION TO LIP CURB AND GUTTER OR ISLAND CURB AND GUTTER (SEE RPM-100). CONTINUE THE LIP OR ISLAND CURB AND GUTTER FOR 50 FEET BEYOND POST 1 OF THE TERMINAL.
- 8. COMPONENT DETAILS LABELED BY LETTER AND NUMBER (e.g., A1, H2) ARE DEFINED IN THE MATERIALS LIST ON SHEET 2.

BID ITEM AND UNIT TO BID
GUARDRAIL END TREATMENT TYPE 2M

EACH



THIS GUARDRAIL ANCHOR SHALL ONLY BE INSTALLED AT TRAILING ENDS WHEN LOCATED OUTSIDE THE

CLEAR ZONE AREA OF OPPOSING TRAFFIC.

TERMINAL SECTION NO. 1 (SEE RBR-010) 9'- 4 ½" LENGTH OF NEED (LON) POINT PAY LIMITS REDIRECTING 3'-1 ½" 3'-1 ½" 6'- 3" THE SHELF ANGLE BRACKET.
THE RAIL ELEMENT IS NOT
ATTACHED TO THE END POST) ANCHOR BRACKET 0 0 0 0 TERMINAL POST STRUTS SHALL BE ≤ 3 ¾" ABOVE FINISHED GRADE. **TERMINAL POST** ³/₄" DIA. X 6'-6" CABLE **BEARING** W/SWAG FITTINGS FINISHED GRADE PLATE **GROUND STRUT BOLT GROUND STRUT BOLT** C3 X 5 X 80" - GROUND STRUT A3)(H2) FOUNDATION TUBE BOLTS (TYPICAL) -POST 5 POST 1 POST 2 STEEL FOUNDATION PUBES WITH HARDWARE **ELEVATION VIEW**

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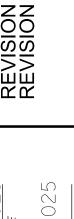
GUARDRAIL END TREATMENT

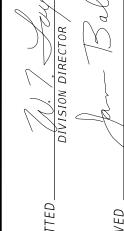
SHEET 001: GUARDRAIL END TREATMENT TYPE 2M (TRAILING END TERMINAL)

STANDARD DRAWING NUMBER RBR-025-07

ARRIER

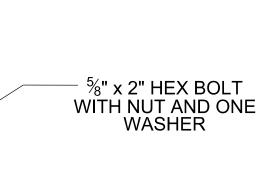


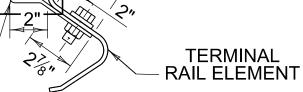






- 1" HEX NUT AND WASHER





2½"

34" DIA (6 x 19) GALVANIZED CABLE

SLOT FOR G2

SECTION A-A

(WASHER REMOVED)

SIDE VIEW

80"

75"

 $_{-}$ $^{3}\!\!4$ " x 2" $_{-}$ SLOTS(TYP)

GROUND STRUT

C3 x 5 x 80", GRADE A36

ANCHOR BRACKET ASSEMBLY DETAILS

11/4"

STANDARD SWAGE FITTING AND STUD

NOTE: CABLE TO BE SWAGE-CONNECTED

END PLATE-

3/16" STEEL BENT

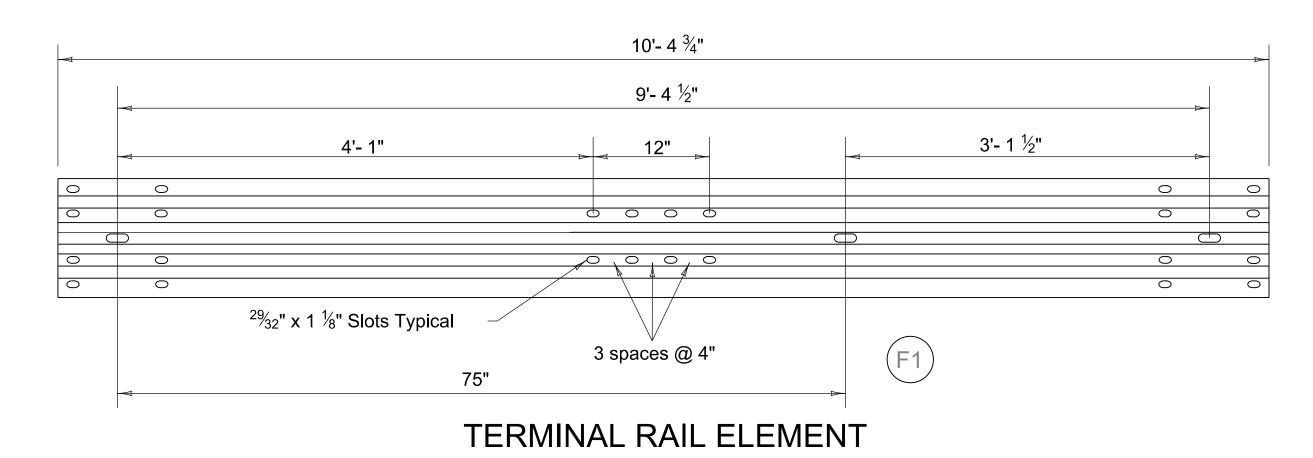
PLATE

1%"

END PLATE

(ANCHOR PLATE, (8) %" X 2" HEX HEAD BOLTS, NUTS, AND WASHERS)

FRONT VIEW



COMMONWEALTH OF KENTUCKY TEAM KENTUCKY DEPARTMENT OF HIGHWAYS

STANDARD SPECIFICATIONS, SECTION 814-GUARDRAIL SYSTEMS.

2 NAILS

DESCRIPTION

6" x 8" x 72" STEEL FOUNDATION

BOLT, & DIA. X 8" HEX FOR SOIL

16D DOUBLE HEAD NAIL (FOR

B" DIA. X 6'-6" CABLE W/ SWAGE

1" DIA. ANCHOR ASSEMBLY NUT

BOLT, BUTTON-HEAD $1\frac{1}{4}$ " (FOR

BOLT, BUTTON-HEAD 10" ($\frac{5}{8}$ " DIA.

BOLT, ⁵/₈" DIA. X 2" HEX FOR ANCHOR BRACKET ASSEMBLY

W-BEAM TERMINAL SECTION NO. 1

BOLT, $\frac{5}{8}$ " DIA. X 10" HEX FOR GROUND

STRUT ATTACHMENT TO TERMINAL POSTS

CONNECTING TERMINAL SECTION NO. 1)

7 ½" X 5 ½" X 46" WOOD

TERMINAL POST

FOUNDATION TUBE

BEARING PLATE

BCT POST SLEEVE

BEARING PLATE)

FITTINGS (BCT CABLE)

1" DIA. ANCHOR CABLE

SHELF ANGLE BRACKET

POST BOLT)

(12 GA.)

THE GUIDE.

WASHER, 5" FLAT

20 NUT, RECESSED GUARDRAIL

ANCHOR BRACKET

10" $4\frac{3}{4}$ " TERMINAL RAIL

ELEMENT (12 GA. W-BEAM)

C3 X 5 X 80" GROUND STRUT

ASSEMBLY WASHER

1 ½"

SHELF ANGLE BRACKET

HARDWARE

NA

NA

FBX16a

FPB01

FMM02

NA

FCA01

FWC24a

FNX24a

FBB01

FBB03

FPA01

FBX16a

RWM02a

RWE03a

FBX16a

FWC16a

FBB

NA

GUIDE 1

5" TO TOP OF PLATE

1 ½" DIA

QUANTITY

A3

C2

C3

D2

D3

E1

E2

F1

F2

G1

G2

H2

18

OpenRoads Designer v23.00.01.11

BEARING PLATE

8"x 8"x %" ዊ

GUARDRAIL END TREATMENT

SHEET 002: GUARDRAIL END TREATMENT TYPE 2M (TRAILING END TERMINAL)

NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

FRONT VIEW

1½"

1" HEX NUT -AND WASHER

SLOT FOR G2

1" DIA. x 7" STUD THREADED ENTIRE LENGTH

- $rac{3}{16}$ " STEEL

SIDE VIEW

BENT PLATE

2 - 16D NAILS (B3

_ 2" X 6" BCT POST SLEEVE (B2)

C3 X 5 X 80" (GROUND STRUT

- GROUND STRUT BOLT $(\mathsf{G2}$

END PLATE

END PLATE

HEX NUT FOR 1" DIA. STUD

3/4" DIA. HOLES (8 REQUIRED)

1" DIA. STUD

(B1)

BEARING PLATE

HEX NUT AND WASHER FOR 1" DIA. STUD

BEARING PLATE ASSEMBLY DETAIL

FRONT VIEW

MATERIAL DESCRIPTIONS 2,3

AASHTO M111/ASTM A123 ASTM A500 GRADE B OR ASTM A-501

SEE SPEC. SECTION 812.01.01 FOR ALTERNATIVE STEEL GRADES

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AASHTO M111/ASTM 123/ASTM A36 MIN. STRENGTH 36 KSI, SEE SPEC

SEE SPEC. SECTION 812.01.01 FOR ALTERNATIVE STEEL GRADES.

AASHTO M111/ASTM 123/ASTM A36 MIN. STRENGTH 36 KSI, SEE SPEC. SECTION 812.01.01 FOR ALTERNATIVE STEEL GRADES

SECTION 812.01.01 FOR ALTERNATIVE STEEL GRADES

SIDE VIEW

GROUND LINE

5/8" DIA. X 10" HEX HEAD BOLT RECESSED NUT,

AND %" FLAT

WASHER

¾" x 1" SLOTS (TYP)

TYPE 2M MATERIALS LIST

S4S FINISH ON 4 SIDES

AASHTO M232 CLASS D

ASTM A563, GRADE A OR BETTER

ASTM A563, GRADE A OR BETTER

ASTM A307

ASTM A307

RBR-010

ASTM A307

1 THE HARDWARE GUIDE NUMBER IS REFERENCED IN THE TASK FORCE 13 GUIDE TO STANDARDIZED ROADSIDE HARDWARE, AVAILABLE AT https://tf13.org/guides/. WHEN AASHTO AND ASTM MATERIAL SPECIFICATIONS ARE AVAILABLE FOR COMPONENT, THEY ARE LISTED IN

³ IF THERE ARE DISCREPANCIES IN MATERIAL OR DIMENSIONS BETWEEN THE TASK FORCE 13 GUIDE TO STANDARDIZED ROADSIDE

HARDWARE AND THIS STANDARD DRAWING SET, THE DETAILS IN THE STANDARD DRAWING SET SHALL TAKE PRECEDENCE.

² IF THE TASK FORCE 13 GUIDE TO STANDARDIZED ROADSIDE HARDWARE DOES NOT REFERENCE THE AASHTO AND ASTM SPECIFICATIONS, THEY ARE PROVIDED IN THE MATERIAL DESCRIPTIONS COLUMN. ADDITIONAL MATERIAL SPECIFICATIONS CAN BE FOUND IN KENTUCKY

> STANDARD DRAWING NUMBER RBR-025-07

Standard Drawing Reference Report

RBR-025-07
GUARDRAIL END TREATMENT TYPE 2M (TRAILING END TERMINAL)
Effective with the August 21, 2025 Letting

Design Notes

The Type 2M terminal is a non-proprietary terminal used to anchor 31" Midwest Guardrail System (MGS) W-beam guardrail. As a downstream trailing end terminal, it is crashworthy only in the direction of adjacent traffic. It is not designed to withstand impacts from the opposite direction. These terminals are typically installed beyond the clear zone of opposing traffic or at the downstream end of guardrail systems on one-way roadways. The Type 2M terminal has passed MASH Test Level 3 crash testing for impacts from the direction of adjacent traffic.

The Type 2M terminal provides structural support for the entire guardrail system. Inadequate grading at the terminal location may compromise the barrier's performance. Refer to drawing for grading details.

Type 2M terminals are fully gating from post 1 to post 5. This means that, during a crash, the terminal allows a vehicle to pass through the end of the barrier rather than redirect or contain it. Therefore, the terminal is not intended to shield fixed objects located within the gating zone, which extends perpendicular to posts 1 through 5. The terminal must be placed so that this area remains clear of obstacles. If fixed objects are present within the proposed gating zone, consider extending the guardrail to shift the gating zone beyond the fixed object.

For impacts occurring upstream of post 5, the guardrail system anchored by the Type 2M terminal is designed to redirect impacting vehicles. The Length of Need for the Type 2M begins at post 5. To ensure proper performance, no rigid objects should be placed adjacent to the barrier within the system's working width—60 inches for MGS—as these could compromise the guardrail's ability to redirect vehicles.

When curb and gutter are present with guardrail, between posts 6 and 7 of the Type 2M terminal transition to lip curb and gutter or island curb and gutter (see RPM-100). Continue the lip or island curb and gutter for 50 feet beyond post 1 of the terminal.

References

KYTC Standard Specifications for Road and Bridge Construction

- Section 719 Guardrail
- Section 814 Guardrail Systems

Highway Design Guidance Manual

- HD-800 ROADSIDE DESIGN
- HD-801.6 END TREATMENTS & CRASH CUSHIONS

Crash Test Reports

TTI REPORT 9-1002-6 MwRSF TRP-03-279-13 MwRSF TRP-03-469-24

Related Standard Drawings

RBB-002	GUARDRAIL AND BRIDGE END DRAINAGE FOR TWIN
	STRUCTURE
RBI-001	TYPICAL GUARDRAIL INSTALLATIONS
RBI-002	TYPICAL GUARDRAIL INSTALLATIONS
RBI-005	GUARDRAIL INSTALLATIONS AT BRIDGE COLUMNS
RBI-006	GUARDRAIL INSTALLATIONS AT SIGN SUPPORTS
RBR-001	STEEL BEAM GUARDRAIL ("W" BEAM)
RBR-010	GUARDRAIL TERMINAL SECTIONS
RBR-018	GUARDRAIL SYSTEM TRANSITION

Standard Drawing Revision History

Revision	Description of Changes	
RBR-025-06-S	 Renamed Guardrail End Treatment Type 2A to Type 2M (Trailing End Terminal) 	
DATE: 2025-07-16	Updated the design to a MASH-compliant terminal for use on the downstream trailing end of guardrail systems	