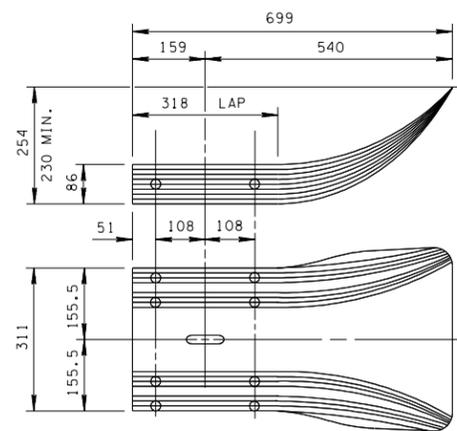


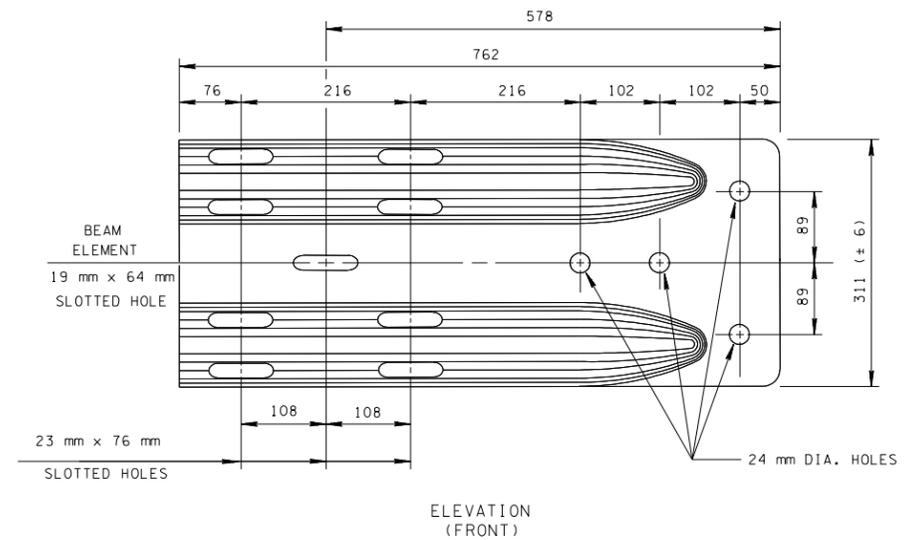
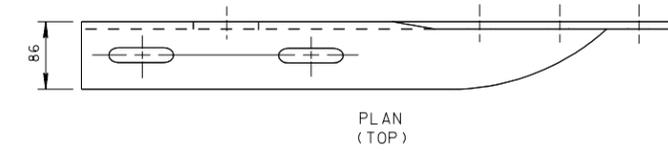
END ELEMENT FOR GUARDRAIL TERMINAL ANCHOR TYPE 21
(TO BE PERFORMED BY THE MANUFACTURER)

NOTES REGARDING END TERMINALS (EXCEPT MICHIGAN SHOE)

HOLE SPACING IS THE SAME AS FOR ELEMENT DETAILS. OTHER DIMENSIONS SHOWN MAY VARY SLIGHTLY ACCORDING TO MANUFACTURERS DETAILS. ALL END ELEMENTS SHALL BE 12 GAGE (2.67 mm THICK) STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M180, CLASS A, TYPE 2. RAIL MATERIAL SHALL HAVE A MINIMUM YIELD STRENGTH 345 MEGAPASCALS AND A TENSILE STRENGTH OF 483 MEGAPASCALS.



FLARED END ELEMENT
(TO BE PERFORMED BY THE MANUFACTURER)



TERMINAL ELEMENT FOR ANCHOR BLOCK AND BRIDGE CONNECTIONS

THIS TERMINAL IS COMMONLY KNOWN AS "MICHIGAN END SHOE"

"MICHIGAN END SHOE" TERMINALS END ELEMENT SHALL BE 10 GAGE (3.43 mm THICK) STEEL, MATERIAL AND GALVANIZING REQUIREMENTS OF AASHTO M180, CLASS B (3.43 mm NOMINAL) THICKNESS. TERMINAL END ELEMENT MATERIAL SHALL HAVE A MINIMUM YIELD STRENGTH OF 345 MEGAPASCALS AND A TENSILE STRENGTH OF 483 MEGAPASCALS.

BOLTS USED FOR ATTACHMENT OF TERMINAL ELEMENT TO BRIDGE RAIL OR GUARDRAIL TERMINAL ANCHOR, TYPE 12 OR CONCRETE MEDIAN BARRIER SHALL BE M22 HEX HEAD, CONFORMING TO THE REQUIREMENTS OF ASTM A307, WITH ROUND FLAT WASHER, 50 mm OUTSIDE DIAMETER X 4.2 mm THICK, PLACED UNDER BOLT HEAD BOLTS AND WASHERS TO BE GALVANIZED CONFORMING TO THE REQUIREMENTS OF ASTM A153.

SEE THE STRUCTURE PLANS AND BRM-2 SERIES BRIDGE REPAIR STANDARD DRAWINGS FOR ATTACHMENT TO BRIDGE RAIL.

SEE STANDARD DRAWING SM-GR-19 FOR ATTACHMENT TO GUARDRAIL TERMINAL ANCHOR TYPE 12 AND STEEL INSERT SPECIFICATIONS

SEE STANDARD DRAWINGS SM-MB-1 AND SM-MB-2 FOR ATTACHMENT TO CONCRETE MEDIAN BARRIER WALLS.

ALL TERMINAL ELEMENT JOINTS SHALL BE OVERLAPPED SO THAT THE OUTSIDE TERMINAL EDGE OF JOINT WILL BE FACED AWAY FROM APPROACHING TRAFFIC.

- REV. 11-1-95: CHANGED TO METRIC.
- REV. 7-29-98: DELETED TYPE 11 GUARDRAIL TERMINAL ANCHOR DETAIL AND MEDIAN DIVIDER END ELEMENT DETAILS.
- REV. 9-5-98: CHANGED LABELING FOR END ELEMENT FOR TYPE 21 GUARDRAIL TERMINAL.
- REV. 5-27-01: CORRECTED REFERENCES TO TYPE 12 AND 21 GUARDRAIL TERMINALS.
- REV. 9-5-03: CHANGED SPECIFICATION REQUIREMENTS FOR TERMINAL END ELEMENTS.
- REV. 6-30-05: LABELED YIELD STRENGTH AS MINIMUM VALUE.



ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

W-BEAM BARRIER
TERMINAL ELEMENT
DETAILS

11-1-95 SM-GR-15