DETAILS FOR CONNECTING GUARDRAIL TO BRIDGE BARRIER RAILINGS, TYPE 4, 2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE, OR 3 TUBE WITH PICKETS (WITHOUT EXPANSION AT BACKWALL)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T1 (SEE NOTES, SHEET 20)

THRIE BEAM TERMINAL CONNECTOR
THRIE BEAM EXPANSION SECTION
BRIDGE BARRIER RAILING

GUARDRAIL TYPE T
6'-3" TYPICAL POST SPACING

GUARDRAIL TYPE MGS-8 *

THRIE BEAM EXPANSION SECTION 10 GAUGE
10'-7¼" POST SPACING
3'-6" POST SPACING
3'-6" POST SPACING

THRIE BEAM TERMINAL CONNECTOR
THRIE BEAM EXPANSION SECTION
BRIDGE BARRIER RAILING

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T2 (SEE NOTES, SHEET 20)

THRIE BEAM TERMINAL CONNECTOR
THRIE BEAM EXPANSION SECTION
BRIDGE BARRIER RAILING

GUARDRAIL TYPE B
6'-3" TYPICAL POST SPACING

THRIE BEAM TERMINAL CONNECTOR
THRIE BEAM EXPANSION SECTION
BRIDGE BARRIER RAILING

* SEE STANDARD PLAN R-60-SERIES FOR POST SPACING AND GUARDRAIL LAYOUT TO TRANSITION FROM GUARDRAIL TYPE MGS-8 TO GUARDRAIL ANCHORAGE, BRIDGE DETAILS T1, T4 & T6

** SEE STANDARD PLAN R-60-SERIES FOR GUARDRAIL HEIGHT INFORMATION

FOR TYPE MGS-8 GUARDRAIL DETAILS FOR CONNECTING GUARDRAIL TO BRIDGE BARRIER RAILINGS, TYPE 4, 2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE, OR 3 TUBE WITH PICKETS (WITHOUT EXPANSION AT BACKWALL)
DETAILS FOR CONNECTING GUARDRAIL TO BRIDGE BARRIER RAILINGS, TYPE 5
(WITHOUT EXPANSION AT BACKWALL)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT SPECIAL DETAIL FOR
GUARDRAIL ANCHORAGE, BRIDGE, DETAILS
FOR EXISTING BRIDGE BARRIER RAILINGS

ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE B)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T3 (SEE NOTES, SHEET 20)
GUARDRAIL, TYPE B

ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T4
GUARDRAIL, TYPE T

ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T3 (SEE NOTES, SHEET 20)
GUARDRAIL, TYPE B

ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T4
GUARDRAIL, TYPE T

ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T3 (SEE NOTES, SHEET 20)
GUARDRAIL, TYPE B

ELEVATION VIEW
(TO BE USED WITH GUARDRAIL, TYPE T)

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T4
GUARDRAIL, TYPE T
NOTE: FILLER WALL END BLOCK MAY BE Omitted when first anchorage post can be installed full depth 1'-3" from Bridge Pier.

FILLER WALL END BLOCK

INSTALL BOLTS THROUGH FILLER WALL. (SEE CHART FOR BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS AND FILLER WALLS, SHEET 5 OF 7.)

PLAN VIEW

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T-6 (SEE NOTES, SHEET 7 OF 7)      GUARDRAIL, TYPE T

SEE APPROACH POST SPACING REQUIREMENTS CHART

THRIE BEAM TERMINAL CONNECTOR

ELEVATION VIEW

TO BE USED WITH GUARDRAIL, TYPE T!

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T-6 (SEE NOTES, SHEET 7 OF 7)      GUARDRAIL, TYPE B

SEE APPROACH POST SPACING REQUIREMENTS CHART

THRIE BEAM TERMINAL CONNECTOR

ELEVATION VIEW

TO BE USED WITH GUARDRAIL, TYPE B!

DETAILS FOR CONNECTING GUARDRAIL TO FILLER WALLS

APPROACH POST SPACING REQUIREMENTS

<table>
<thead>
<tr>
<th>Distance from Anchor</th>
<th>7'-1½&quot;</th>
<th>9'-6¼&quot;</th>
<th>11'-1½&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolts to First Post</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Number of 1'-6¾&quot;</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Post Spacings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3 or 4 Spaces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUMBER OF 3'-1½&quot;</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>POST SPACINGS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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</table>

MIN. DEPTH 1'-3" FROM BRIDGE PIER. POST CAN BE INSTALLED FULL DEPTH 1'-3" FROM BRIDGE PIER.

MIN. POST  CAN BE INSTALLED FULL DEPTH 1'-3" FROM BRIDGE PIER.

NOTE: FILLER WALL END BLOCK MAY BE Omitted when first anchorage post can be installed full depth 1'-3" from Bridge Pier.

INSTALL BOLTS THROUGH FILLER WALL. (SEE CHART FOR BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS AND FILLER WALLS, SHEET 5 OF 7.)

PLAN VIEW

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T-6 (SEE NOTES, SHEET 7 OF 7)      GUARDRAIL, TYPE T

SEE APPROACH POST SPACING REQUIREMENTS CHART

THRIE BEAM TERMINAL CONNECTOR

ELEVATION VIEW

TO BE USED WITH GUARDRAIL, TYPE T!

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T-6 (SEE NOTES, SHEET 7 OF 7)      GUARDRAIL, TYPE B

SEE APPROACH POST SPACING REQUIREMENTS CHART

THRIE BEAM TERMINAL CONNECTOR

ELEVATION VIEW

TO BE USED WITH GUARDRAIL, TYPE B!

DETAILS FOR CONNECTING GUARDRAIL TO FILLER WALLS

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<tr>
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<td>POST SPACINGS</td>
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</table>
**GUARDRAIL POST SECTIONS FOR GUARDRAIL ANCHORAGE, BRIDGE**

**BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS & FILLER WALLS**

<table>
<thead>
<tr>
<th>BRIDGE RAILING</th>
<th>BOLT LENGTH</th>
<th>MINIMUM THREAD LENGTH</th>
<th>NUMBER REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 4</td>
<td>12.5&quot;</td>
<td>4&quot;</td>
<td>5</td>
</tr>
<tr>
<td>TYPE 5</td>
<td>11.5&quot;</td>
<td>4&quot;</td>
<td>4</td>
</tr>
<tr>
<td>2 TUBE</td>
<td>WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
</tr>
<tr>
<td>4 TUBE</td>
<td>WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
</tr>
<tr>
<td>3 TUBE WITH PICKETS</td>
<td>WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
</tr>
<tr>
<td>AESTHETIC PARAPET</td>
<td>WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
</tr>
<tr>
<td><strong>FILLER WALL</strong></td>
<td>WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
</tr>
</tbody>
</table>

**NOTE:**
- The use of "8" dia. adhesive anchored bolts embedded 8" to attach guardrail to filler walls will be allowed. Instead of bolting through the filler wall, in the following locations:
  1. At or near the joint line when a filler wall is a different thickness than the filler wall extension.
  2. In existing filler walls thicker than 1'-6".
  3. When conditions prohibit the use of bolts.

**SHORTER BOLT LENGTHS MAY BE USED PROVIDED THE BOLT EXTENDS 1/4" BEYOND THE NUT WHEN TIGHTENED.**

**GUARDRAIL POST SECTIONS FOR GUARDRAIL ANCHORAGE, BRIDGE**

**NOTE:** Adhesive anchors shall be selected from the Qualified Products List of the Materials Sampling Guide.

**HIGH STRENGTH 5/8" DIA. HEX HEAD BOLT AND NUTS SHALL BE USED TO CONNECT GUARDRAIL TO BRIDGE RAILINGS. WITH ROUND WASHERS ON FRONT AND SQUARE WASHERS ON BACK. (SEE CHART BELOW FOR LENGTHS AND NUMBER REQUIRED. WASHER DETAILS ARE SHOWN ON SHEET 6 OF 7.)**

**SECTION AT BRIDGE RAILINGS**
THREE BEAM EXPANSION SECTION

THREE BEAM TERMINAL CONNECTOR

SPECIAL END SHOE

ROUND WASHER FOR \( \frac{1}{8} \)" DIA. BOLTS

SQUARE WASHER FOR \( \frac{1}{8} \)" DIA. BOLTS

NEUTRAL AXIS

BRIDGE RAILING

F.A.W.A. APPROVAL

MICHIGAN DEPARTMENT OF TRANSPORTATION

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

FOR EXISTING BRIDGE BARRIER RAILINGS
BRIDGE SPANS A BRIDGE EXPANSION JOINT. SEE APPROPRIATE PLANS TO DETERMINE WHETHER GUARDRAIL ANCHORAGE, FILLER WALL END BLOCK. SEE THE CURRENT STANDARD PLAN R-55-SERIES FOR FILLER WALLS AND BE LAPPED IN EITHER DIRECTION.

TRAFFIC, EXCEPT FOR THE THRIE BEAM TERMINAL CONNECTOR WHICH MAY BE THE SAME MATERIAL AS ADJACENT RUN OF GUARDRAIL, AND SHALL NOT BE LIGHTER THAN 10 GAUGE (0.138").

SECTIONS OF THE THRIE BEAM ELEMENT REQUIRED TO BE TWISTED FOR USE IN ANCHORAGE SHALL BE FIELD BENT.

GUARDRAIL BEAM ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC, EXCEPT FOR THE THRIE BEAM TERMINAL CONNECTOR WHICH MAY BE LAPPED IN EITHER DIRECTION.

SPIECE BOLTS SHALL BE USED WHEN SPLICING THE THRIE BEAM TERMINAL CONNECTOR TO THE THRIE BEAM EXPANSION SECTION AND WHEN SPLICING THE SPECIAL END SHOE TO THE TRANSITION SECTION. THE SPLICE BOLT NUT SHALL BE INSTALLED FINGER-TIGHT AND SHALL FULLY ENGAGE THE SPLICE BOLT WITH A MINIMUM OF ONE THREAD EXTENDING BEYOND THE NUT. THIS SHALL BE FOLLOWED UP BY SETTING THE FIRST THREAD ON THE OUTSIDE OF THE NUT WITH A CENTER PUNCH OR COLD CHISEL, SO THAT IT WILL NOT LOOSEN.

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS T1, T2, AND T5 REQUIRE THAT THE THRIE BEAM TERMINAL CONNECTOR BE ATTACHED TO THE 1/2” x 5” LONG SLOTTED HOLES IN THE THRIE BEAM EXPANSION SECTION.

SEE APPROPRIATE PLANS TO DETERMINE WHETHER GUARDRAIL ANCHORAGE, BRIDGE SPANS A BRIDGE EXPANSION JOINT.

SEE THE CURRENT STANDARD PLAN R-55-SERIES FOR FILLER WALLS AND FILLER WALL END BLOCK.

SEE STANDARD PLAN R-54-SERIES FOR “CONCRETE BARRIER, SINGLE FACE, TYPE __”.

CONCRETE BARRIER, SINGLE FACE TRANSITION SECTION SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BARRIER, SINGLE FACE, TYPE __".

NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, REFLECTORS, AND HARDWARE, INCLUDING BOLTS, NUTS, AND WASHERS, SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.

BEAM ELEMENTS IDENTIFIED AS 12 GAUGE MUST MEET CLASS A REQUIREMENTS PER AASHTO M180. BEAM ELEMENTS IDENTIFIED AS 10 GAUGE MUST MEET CLASS B REQUIREMENTS PER AASHTO M180.

ALL POSTS USED TO CONSTRUCT GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T1 THROUGH T6, SHALL BE 7'-0" LONG STEEL POSTS (W6 x 8.5 OR W6 x 9) OR WOOD POSTS (6" x 8").

THE THRIE BEAM TERMINAL CONNECTOR AND SPECIAL END SHOE SHALL BE THE SAME MATERIAL AS ADJACENT RUN OF GUARDRAIL, AND SHALL NOT BE LIGHTER THAN 10 GAUGE (0.138").

SECTIONS OF THE THRIE BEAM ELEMENT REQUIRED TO BE TWISTED FOR USE IN ANCHORAGE SHALL BE FIELD BENT.

GUARDRAIL BEAM ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC, EXCEPT FOR THE THRIE BEAM TERMINAL CONNECTOR WHICH MAY BE LAPPED IN EITHER DIRECTION.

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GUARDRAIL ANCHORAGE, BRIDGE, DETAILS T1, T2, AND T5 REQUIRE THAT THE THRIE BEAM TERMINAL CONNECTOR BE ATTACHED TO THE 1/2” x 5” LONG SLOTTED HOLES IN THE THRIE BEAM EXPANSION SECTION.

SEE APPROPRIATE PLANS TO DETERMINE WHETHER GUARDRAIL ANCHORAGE, BRIDGE SPANS A BRIDGE EXPANSION JOINT.

SEE THE CURRENT STANDARD PLAN R-55-SERIES FOR FILLER WALLS AND FILLER WALL END BLOCK.

SEE STANDARD PLAN R-54-SERIES FOR “CONCRETE BARRIER, SINGLE FACE, TYPE __”.

CONCRETE BARRIER, SINGLE FACE TRANSITION SECTION SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BARRIER, SINGLE FACE, TYPE __".