PLAN VIEW

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T-1 (SEE NOTES, SHEET 7 OF 7)

GUARDRAIL, TYPE T
6'-3" TYPICAL POST SPACING

GUARDRAIL, TYPE MGS-8 *

* SEE STANDARD PLAN R-60-SERIES FOR POST SPACING AND GUARDRAIL LAYOUT TO TRANSITION FROM GUARDRAIL, TYPE MGS-8 TO GUARDRAIL ANCHORAGE, BRIDGE DETAILS T-1, T-4 & T-6

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL T-2 (SEE NOTES, SHEET 7 OF 7)

GUARDRAIL, TYPE B
6'-3" TYPICAL POST SPACING

ELEVATION VIEW

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

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 STANDARD PLAN FOR**

**GUARDRAIL ANCHORAGE, BRIDGE, DETAILS**

**NEW DETAILS FOR CONNECTING GUARDRAIL TO FILLER WALLS**

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**APPENDIX POST SPACING REQUIREMENTS**

<table>
<thead>
<tr>
<th>DISTANCE FROM ANCHOR BOLTS TO FIRST POST</th>
<th>7'-11½&quot;</th>
<th>9'-6¾&quot;</th>
<th>11'-4½&quot;</th>
<th>12'-8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF 1'-6½&quot; POST SPACINGS</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>NUMBER OF 3'-1½&quot; POST SPACINGS</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

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**PLAN VIEW**

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

**ELEVATION VIEW**

- **GUARDRAIL, TYPE T**

**ELEVATION VIEW**

- **GUARDRAIL, TYPE MGS-8**

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**NOTE:** FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST ANCHORAGE POST CAN BE INSTALLED FULL DEPTH 1'-3" FROM BRIDGE PIER.

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

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**SEE APPROACH POST SPACING REQUIREMENTS CHART**

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**THREE BEAM TERMINAL CONNECTOR**

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**THREE BEAM TERMINAL CONNECTOR**

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**ELEVATION VIEW**

- **TO BE USED WITH GUARDRAIL, TYPE T & TYPE MGS-8**

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**SEE APPROACH POST SPACING REQUIREMENTS CHART**

---

**6'-3" TYPICAL POST SPACING**

---

**GUARDRAIL, TYPE T**

---

**SEE STANDARD PLAN R-60-SERIES FOR POST SPACING AND GUARDRAIL LAYOUT TO TRANSITION FROM GUARDRAIL, TYPE MGS-8 TO GUARDRAIL ANCHORAGE, BRIDGE DETAILS T-1, T-4 & T-6**

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**THREE BEAM TERMINAL CONNECTOR**

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**THREE BEAM TERMINAL CONNECTOR**

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**ELEVATION VIEW**

- **TO BE USED WITH GUARDRAIL, TYPE B**

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**DETAILS FOR CONNECTING GUARDRAIL TO FILLER WALLS**

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**MICHIGAN DEPARTMENT OF TRANSPORTATION**

**BUREAU OF DEVELOPMENT STANDARD PLAN FOR**

**GUARDRAIL ANCHORAGE, BRIDGE, DETAILS**

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**F.H.W.A. APPROVAL**

**R-67-G**

**SHEET 4 OF 7**

**8-9-2017 PLAN DATE**
HIGH STRENGTH 7/8" 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.

BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS & FILLER WALLS

<table>
<thead>
<tr>
<th>GUARDRAIL</th>
<th>BOLT LENGTH</th>
<th>MINIMUM THREAD LENGTH</th>
<th>NUMBER REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 4</td>
<td>13 1/2&quot;</td>
<td>4&quot;</td>
<td>5</td>
</tr>
<tr>
<td>TYPE 5</td>
<td>11 1/2&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>AESTHETIC  PARAPET WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>FILLER WALL</td>
<td>WALL THICKNESS + 2&quot;</td>
<td>2&quot;</td>
<td>5</td>
</tr>
</tbody>
</table>

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

** THE USE OF 7/8" 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.

GUARDRAIL POST SECTIONS FOR GUARDRAIL ANCHORAGE, BRIDGE

NOTE: ADHESIVE ANCHORS SHALL BE SELECTED FROM THE QUALIFIED PRODUCTS LIST OF THE MATERIALS SAMPLING GUIDE.
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.

ALL POSTS USED TO CONSTRUCT GUARDRAIL ANCHORAGE, BRIDGE SHALL BE 7'-0" LONG.

THE THRIE BEAM TERMINAL CONNECTOR AND SPECIAL END SHOE SHALL BE THE SAME MATERIAL AS ADJACENT RUN OF GUARDRAIL, EXCEPT THAT THEY 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.

STANDARD SPLICE 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 UPSETTING THE FIRST THREAD ON THE OUTSIDE OF THE NUT WITH A CENTER PUNCH OR COLD CHISEL, SO THAT IT WILL NOT LOOSEN.

SEE THE CURRENT STANDARD PLAN R-32-SERIES FOR APPROACH CURB AND GUTTER AND DOWNSPOUT HEADER.

GUARDRAIL ANCHORAGE, BRIDGE, DETAILS T-1, T-2, T-5, AND T-6 REQUIRE THAT THE THRIE BEAM TERMINAL CONNECTOR BE ATTACHED TO THE \( \frac{5}{8} \) 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.