DETAILS FOR CONNECTING GUARDRAIL TYPE MGS-8 TO
2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE,
3 TUBE WITH PICKETS, CONCRETE BLOCK RETROFIT,
TYPE 6*, TYPE 7*, OR SINGLE FACE CONCRETE BARRIER*
(WITHOUT EXPANSION AT BACKWALL)

* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.
GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M2

TWO NESTED THRIE BEAM EXPANSION SECTIONs
12 GAUGE

TWO NESTED THRIE BEAM SECTIONs
12 GAUGE

TWO NESTED THRIE BEAM SECTIONs
12 GAUGE

BRIDGE RAILING OR CONCRETE BARRIER
(VERTICAL FACE ONLY)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

DETAILS FOR CONNECTING GUARDRAIL TYPE T TO
2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE,
3 TUBE WITH PICKETS, CONCRETE BLOCK RETROFIT,
TYPE 6*, TYPE 7*, OR SINGLE FACE CONCRETE BARRIER*
(WITHOUT EXPANSION AT BACKWALL)

* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.
GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M3

GUARDRAIL ANCHORAGE, BRIDGE, DETAIL W3

TWO NESTED THREE BEAM EXPANSION SECTIONS
12 GAUGE

TWO NESTED THREE BEAM SECTIONS
12 GAUGE

TWO NESTED THREE BEAM SECTIONS
12 GAUGE

SYMMETRICAL
THREE BEAM TRANSITION
10 GAUGE

GUARDRAIL TYPE B

POST 1 THROUGH 11 - W6 x 9 OR W6 x 8.5 POST (7'-0" LONG) WITH 12" OFFSET BLOCK
POST 12 THROUGH 14 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

4" MAX. HEIGHT CURB & GUTTER

3'-1½" 2 SPACES @ 3'-1½"

6'-3"

4" SPACES @ 1'-0½"

15'-7½" 5 SPACES @ 3'-1½"

12'-6"

POST 1 THROUGH 11 - W6 x 9 OR W6 x 8.5 POST (7'-0" LONG) WITH 12" OFFSET BLOCK
POST 12 THROUGH 14 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

DETAILS FOR CONNECTING GUARDRAIL TYPE B TO
2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE,
3 TUBE WITH PICKETS, CONCRETE BLOCK RETROFIT,
TYPE 6*, TYPE 7*, OR SINGLE FACE CONCRETE BARRIER*
(WITHOUT EXPANSION AT BACKWALL)

* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.
GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M4

45°-73°
GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M4

1'-10" 6'-3" 12'-6"
TWO NESTED THREE BEAM SECTIONS 12 GAUGE

2'-8½" 3'-1½" 2'-1½"
MIN. MAX. MIN.

13 12 11 10 9 8 7 6 5 4 3 2 1

GUARDRAIL TYPE MGS-8

12'-6" 1'-10"
TWO NESTED THREE BEAM SECTION 12 GAUGE

12'-6" 6'-3" 6'-3"
THREE BEAM SECTION 12 GAUGE

6'-3"
ASYMMETRICAL THREE BEAM TRANSITION 10 GAUGE

12'-6"
TWO NESTED W-BEAM SECTIONS 12 GAUGE

POST 1 THROUGH 9 - W6 x 9 OR W6 x 8.5 POST 16'-0" LONG) WITH 12" OFFSET BLOCK
POST 10 THROUGH 13 - W6 x 15 POST (17'-0" LONG) WITH 12" OFFSET BLOCK

9'-4½" 3 SPACES @ 3'-1½"
4 SPACES @ 1'-6½"

6'-3" 12'-6"
4 SPACES @ 3'-1½"
4 SPACES @ 3'-1½"
6'-3" 3'-1½"

4" MAX. HEIGHT CURB & GUTTER

DETAILS FOR CONNECTING GUARDRAIL TYPE MGS-8 TO
2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE,
3 TUBE WITH PICKETS, CONCRETE BLOCK RETROFIT,
TYPE 6*, TYPE 7*, OR SINGLE FACE CONCRETE BARRIER*
(WITH EXPANSION AT BACKWALL)

* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.
DETAILS FOR CONNECTING GUARDRAIL TYPE T TO
2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE,
3 TUBE WITH PICKETS, CONCRETE BLOCK RETROFIT,
TYPE 6*, TYPE 7*, OR SINGLE FACE CONCRETE BARRIER*
(WITH EXPANSION AT BACKWALL)

* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.
Details for connecting Guardrail Type B to
2-Tube, 4-Tube, Aesthetic Parapet Tube,
3 Tube with Pickets, Concrete Block Retrofit,
Type 6*, Type 7*, or Single Face Concrete Barrier*
*(with expansion at backwall)*

* Barrier ending must transition from single-slope to vertical face in advance of end shoe. Attachment to vertical face is required.
**FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST POST CAN BE INSTALLED FULL DEPTH 2'-11/2" FROM BRIDGE PIER.**

**MAX. HEIGHT CURB & GUTTER**

DETAILS FOR CONNECTING GUARDRAIL TYPE MGS-8 TO FILLER WALL
**GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M8**

**51'-10½" GUARDRAIL ANCHORAGE, BRIDGE, DETAIL MB**

**FILLER WALL (VERTICAL FACE)**

**12'-6"**

**TWo NESTED THREE BEAM EXPANSION SECTIONS**

**12 GAUGE**

**2'-0¾ MIN.**

**2'-1½"**

**BRIDGE PIER**

**14**

**13**

**12**

**11**

**10**

**9**

**8**

**7**

**6**

**5**

**4**

**5'-4½"**

**3 SPACES @ 3'-1½"**

**6'-3"**

**4 SPACES @ 1'-6½"**

**4" MAX. HEIGHT CURB & GUTTER**

**** FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST POST CAN BE INSTALLED FULL DEPTH 2'-1½" FROM BRIDGE PIER.**

**POST 0 THROUGH 10 - W6 x 9 OR W6 x 8.5 POST (7'-0" LONG) WITH 12" OFFSET BLOCK**

**POST 11 THROUGH 14 - W6 x 10 POST (7'-0" LONG) WITH 12" OFFSET BLOCK**

**GUARDRAIL TYPE T**

**51'-10½" GUARDRAIL ANCHORAGE, BRIDGE, DETAIL MB**

**12'-6"**

**TWo NESTED THREE BEAM SECTIONS**

**12 GAUGE**

**15'-7½"**

**5 SPACES @ 3'-1½"**

**6'-3"**

**DETAILS FOR CONNECTING GUARDRAIL TYPE T TO FILLER WALL**
DETAILS FOR CONNECTING GUARDRAIL TYPE B TO FILLER WALL

**FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST POST CAN BE INSTALLED FULL DEPTH 2'-1/2" FROM BRIDGE PIER.**

* * *

**FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST POST CAN BE INSTALLED FULL DEPTH 2'-1/2" FROM BRIDGE PIER.**

* * *

POST 1 THROUGH 11 - W6 x 9 OR W6 x 8.5 POST (6'-0" LONG) WITH 12" OFFSET BLOCK
POST 12 THROUGH 15 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK
REFER TO GUARDRAIL ANCHORAGE BRIDGE, DETAIL M1 THROUGH M9 FOR GUARDRAIL HEIGHT.

**BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS**

<table>
<thead>
<tr>
<th>BRIDGE RAILING</th>
<th>WALL THICKNESS</th>
<th>BOLT LENGTH</th>
<th>MINIMUM THREAD LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 TUBE</td>
<td>1'-5½&quot;-1'-7½&quot;</td>
<td>1'-5½&quot;-1'-7½&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>4 TUBE</td>
<td>1'-1&quot;-1'-3&quot;</td>
<td>1'-1&quot;-1'-3&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>AESTHETIC PARAPET TUBE</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>3 TUBE WITH PICKETS</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>TYPE 6</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>TYPE 7</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>1'-0&quot;-1'-2&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>CONCRETE BLOCK RETROFIT</td>
<td>1'-3½&quot;</td>
<td>1'-3½&quot;-1'-5½&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td><strong>FILLER WALL</strong></td>
<td>Varies</td>
<td>WALL THK + 2&quot;</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

SHORTER BOLT LENGTHS MAY BE USED PROVIDED THE BOLT EXTENDS ¼" BEYOND THE NUT WHEN TIGHTENED.

GUARDRAIL POST SECTIONS FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M1 THROUGH M9

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

F.H.W.A. APPROVAL: 11-6-2019
PLAN DATE: R-67-G
SHEET 10 OF 16
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Bureau of Development

Standard Plan for Bridge, Details

Guardrail Anchorage, Bridge, Details

F.H.W.A. Approval

Plan Date

R-67-G

Sheet

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SECTION A-A

UNIORMLY TRANSITION THE BARRIER FACES FROM SINGLE SLOPE SHAPE TO VERTICAL WALL

SECTION B-B

SECTION C-C

HIGH STRENGTH 3/8" DIAMETER x 26" LONG HEX HEAD BOLTS WITH 2" MINIMUM THREAD LENGTH AND NUTS WITH ROUND WASHERS FRONT AND BACK SHALL BE USED TO CONNECT GUARDRAIL TO CONCRETE BARRIER, SINGLE FACE TRANSITION SECTION.

DETAILS FOR CONNECTING GUARDRAIL TO CONCRETE BARRIER, SINGLE FACE

REFER TO GUARDRAIL ANCHORAGE BRIDGE, DETAIL M1, M2, AND M3 FOR GUARDRAIL POST SPACING AND LAYOUT DETAILS.
6'-3" THRIE BEAM SECTION

SPsplice BOLT
FOR USE WITH NESTED
GUARDRAIL BEAM ELEMENTS

TOP

OFFSET BLOCK FOR
W BEAM GUARDRAIL

FOR USE WITH W6 x 8.5 OR W6 x 9 POSTS

OFFSET BLOCK FOR
THRIE BEAM GUARDRAIL
FOR USE WITH W6 x 15 POSTS

TOP

TOP

TOP

FOR USE WITH W6 x 15 POSTS

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL ANCHORAGE,
BRIDGE, DETAILS

R-67-G SHEET 13 OF 16

F.H.W.A. APPROVAL 11-6-2019
THREE BEAM TERMINAL CONNECTOR
BOLT LOCATION FOR
GUARDRAIL ANCHORAGE TYPE M1, M3, M4, M6

THREE BEAM TERMINAL CONNECTOR
BOLT LOCATION FOR
GUARDRAIL ANCHORAGE TYPE M2, M5
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

GUARDRAIL ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF USE IN ANCHORAGE SHALL BE FIELD BENT.

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.

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.

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 __".