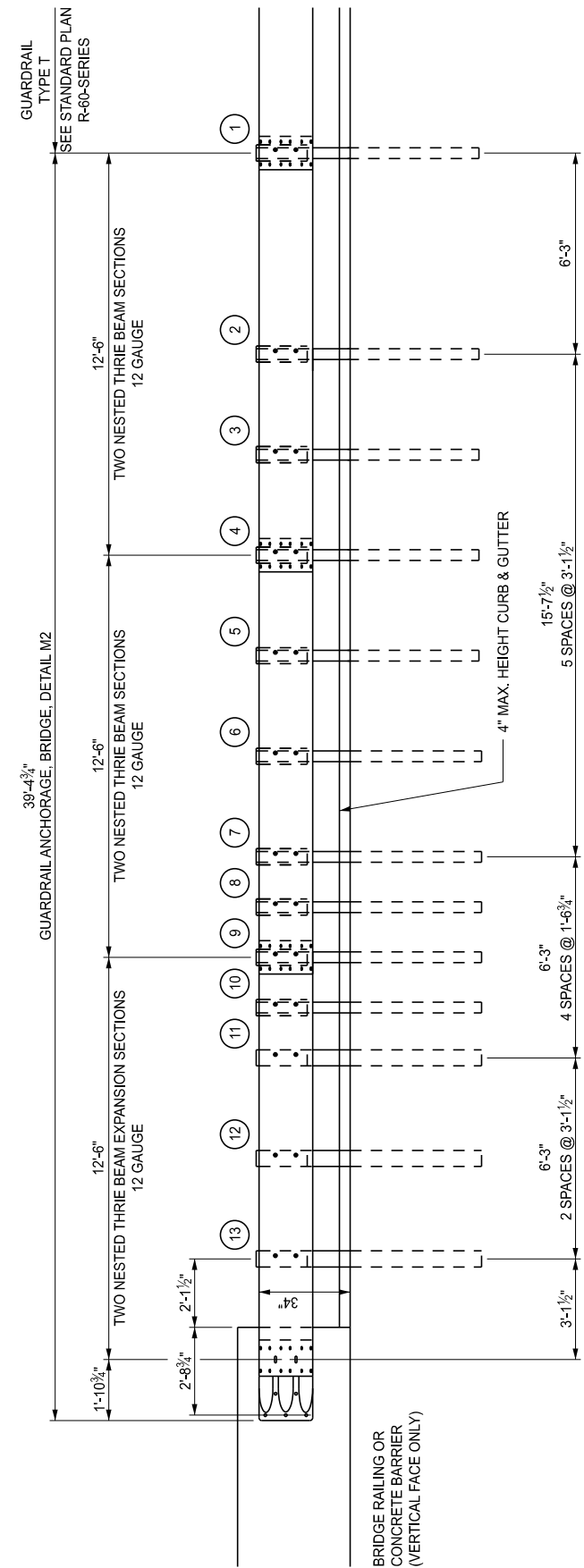


POST 1 THROUGH 9 - W6 x 9 OR W6 x 8.5 POST (6'-0\"/>

DETAILS FOR CONNECTING GUARDRAIL TYPE MGS-8 TO  
 2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE, 3 TUBE WITH PICKETS,  
 CONCRETE BLOCK RETROFIT, PIER BASE WALL,  
 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.



POST 1 THROUGH 10 - W6 x 9 OR W6 x 8.5 POST (7'-0\"/>

DETAILS FOR CONNECTING GUARDRAIL TYPE T TO  
 2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE, 3 TUBE WITH PICKETS,  
 CONCRETE BLOCK RETROFIT, PIER BASE WALL,  
 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.

APPROVED BY: \_\_\_\_\_  
 DIRECTOR, BUREAU OF FIELD SERVICES



DEPARTMENT DIRECTOR  
 BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR  
 GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

APPROVED BY: \_\_\_\_\_  
 DIRECTOR, BUREAU OF DEVELOPMENT

(SPECIAL DETAIL)  
 FHWA APPROVAL

04/03/2024  
 PLAN DATE

R-67-G

SHEET  
 1 OF 16



DEPARTMENT DIRECTOR  
 BRADLEY C. WIEFERICH, PE

STANDARD PLAN FOR  
 GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

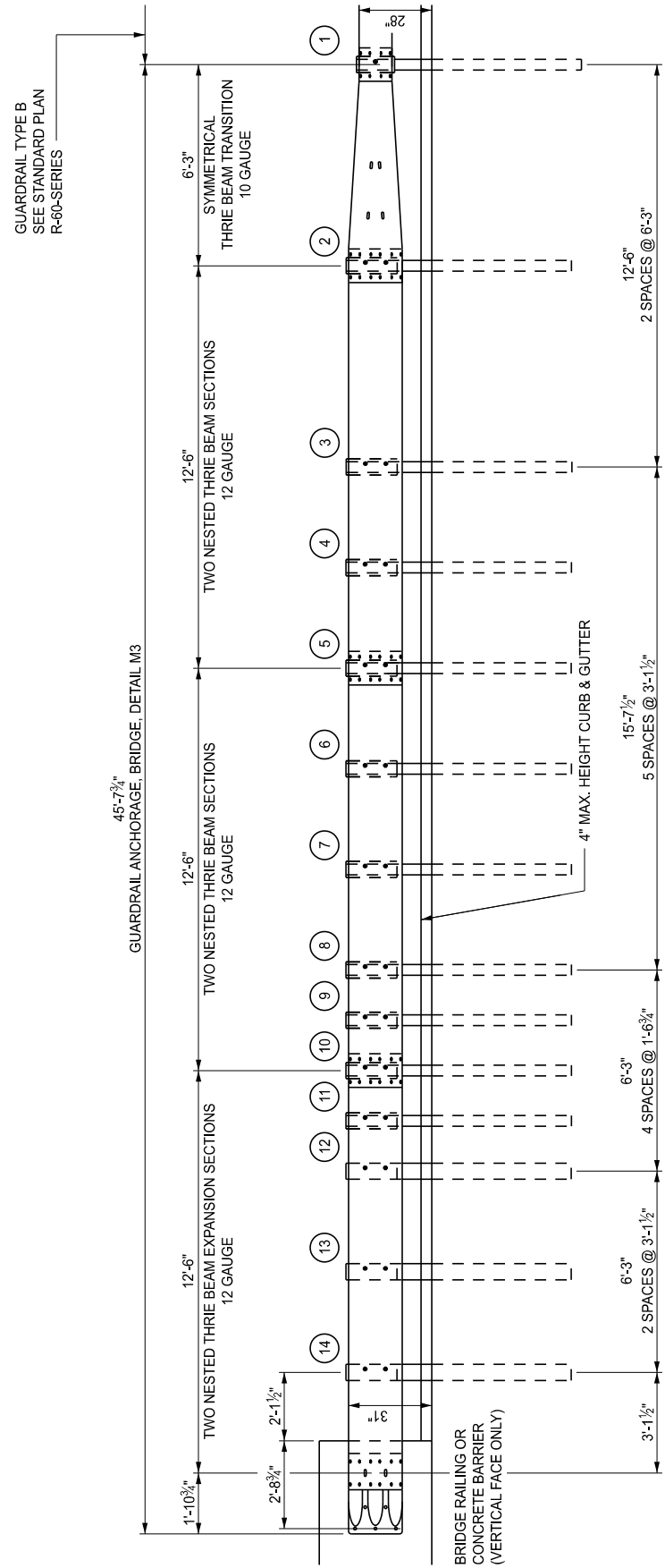
(SPECIAL DETAIL)  
 FHWA APPROVAL

04/03/2024  
 PLAN DATE

R-67-G

SHEET  
 2 OF 16

SECT



GUARDRAIL TYPE B  
SEE STANDARD PLAN  
R-60-SERIES

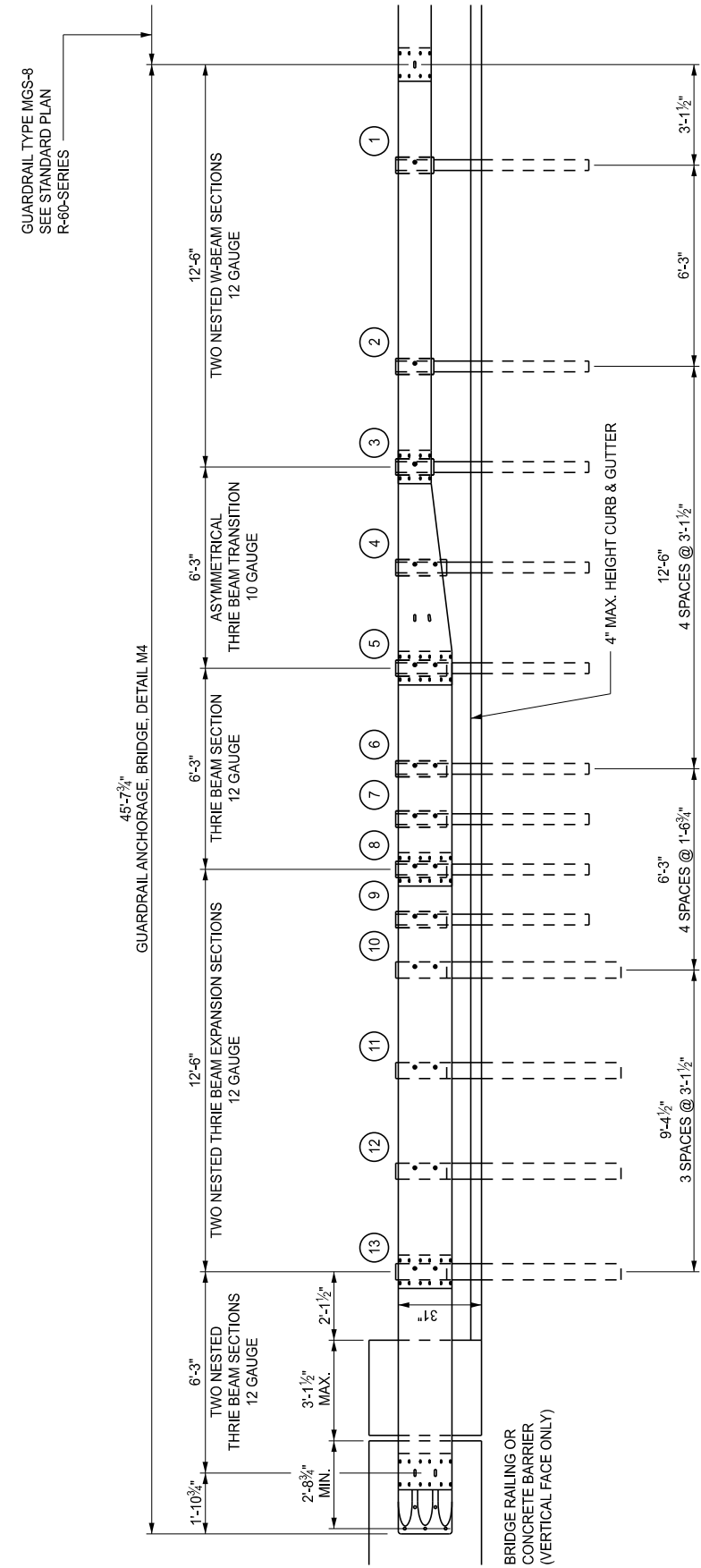
45-7 1/2"  
GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M3

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, PIER BASE WALL,  
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.

	STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			SHEET 3 OF 16
	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	



GUARDRAIL TYPE MGS-8  
SEE STANDARD PLAN  
R-60-SERIES

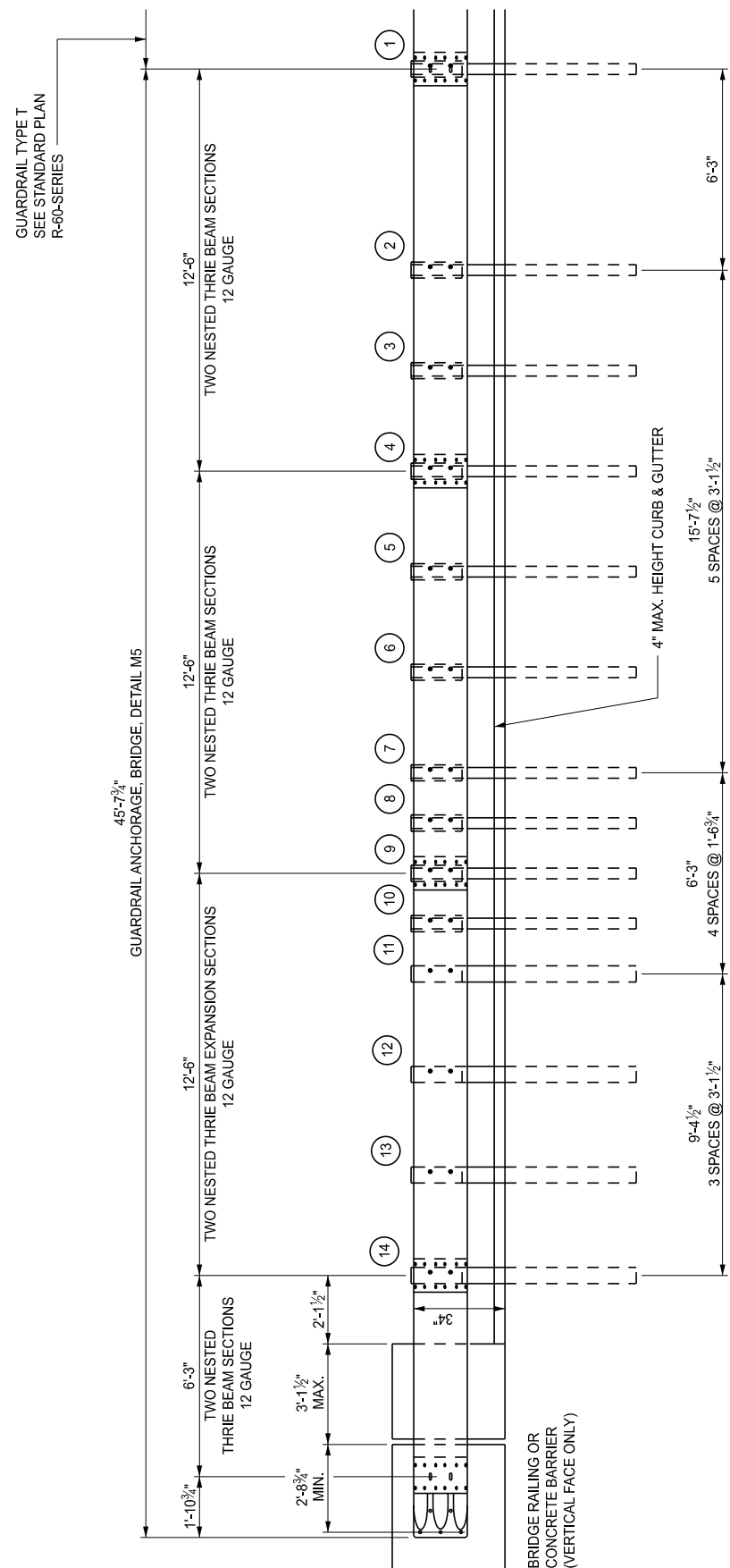
45-7 1/2"  
GUARDRAIL ANCHORAGE, BRIDGE, DETAIL M4

POST 1 THROUGH 9 - W6 x 9 OR W6 x 8.5 POST (6'-0" LONG) WITH 12" OFFSET BLOCK  
POST 10 THROUGH 13 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

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/END WALL OR SLEEPER SLAB)

\* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.

	STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			SHEET 4 OF 16
	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	

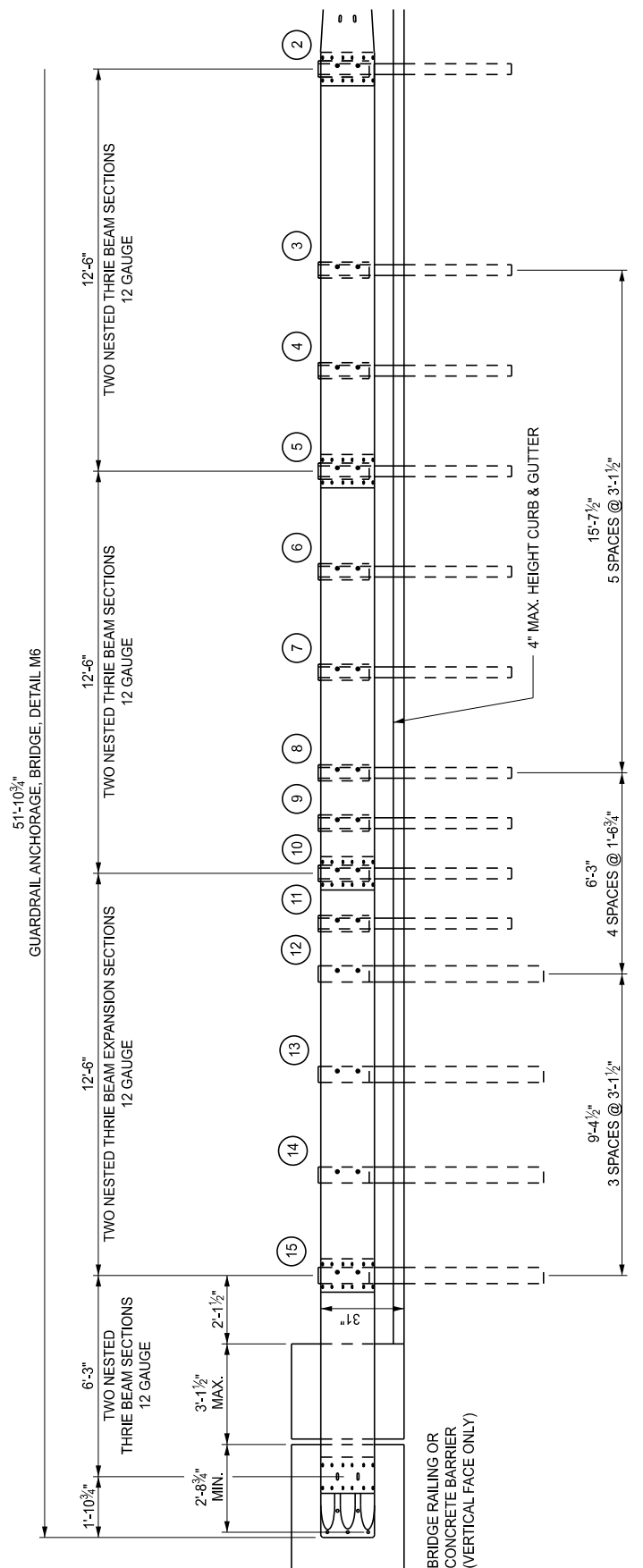


POST 1 THROUGH 10 - W6 x 9 OR W6 x 8.5 POST (7'-0" LONG) WITH 12" OFFSET BLOCK  
 POST 11 THROUGH 14 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

**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/END WALL OR SLEEPER SLAB)

\* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.

 Michigan Department of Transportation	STANDARD PLAN FOR			SHEET
	GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			
DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	

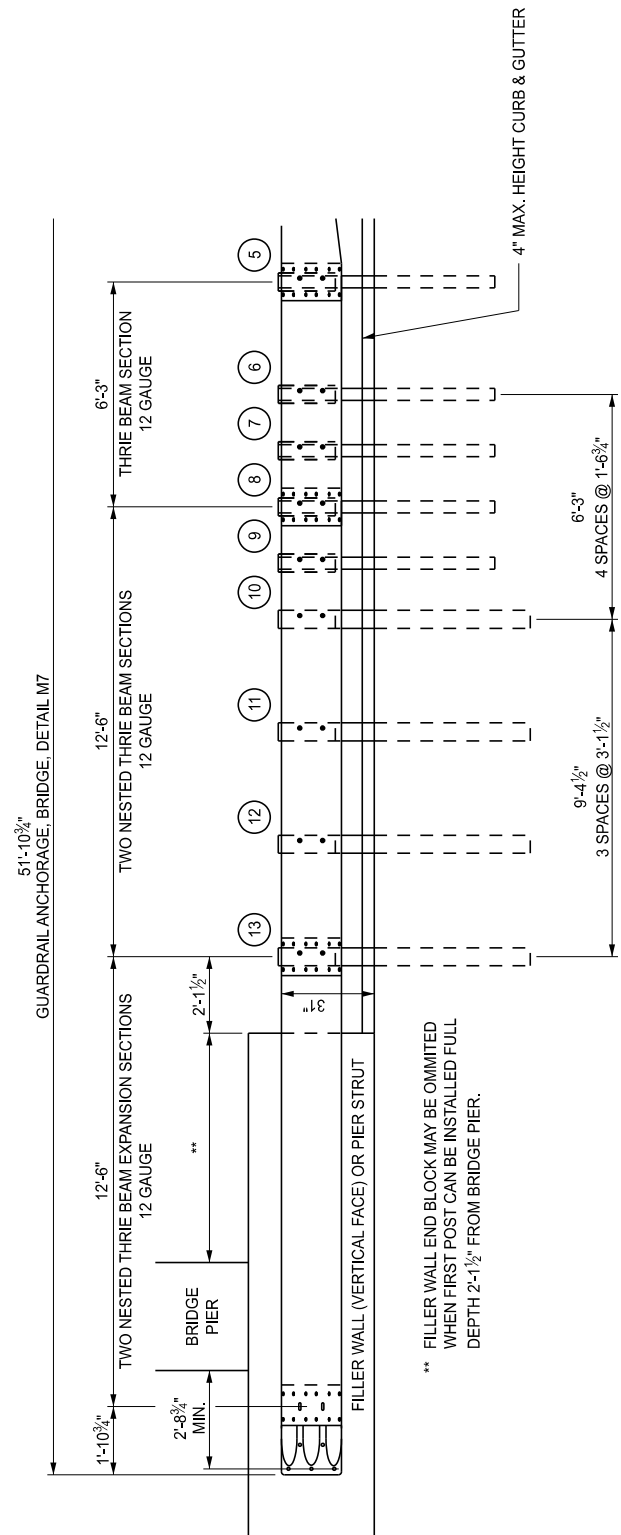


POST 1 THROUGH 11 - W6 x 9 OR W6 x 8.5 POST (6'-0" LONG) WITH 12" OFFSET BLOCK  
 POST 12 THROUGH 15 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

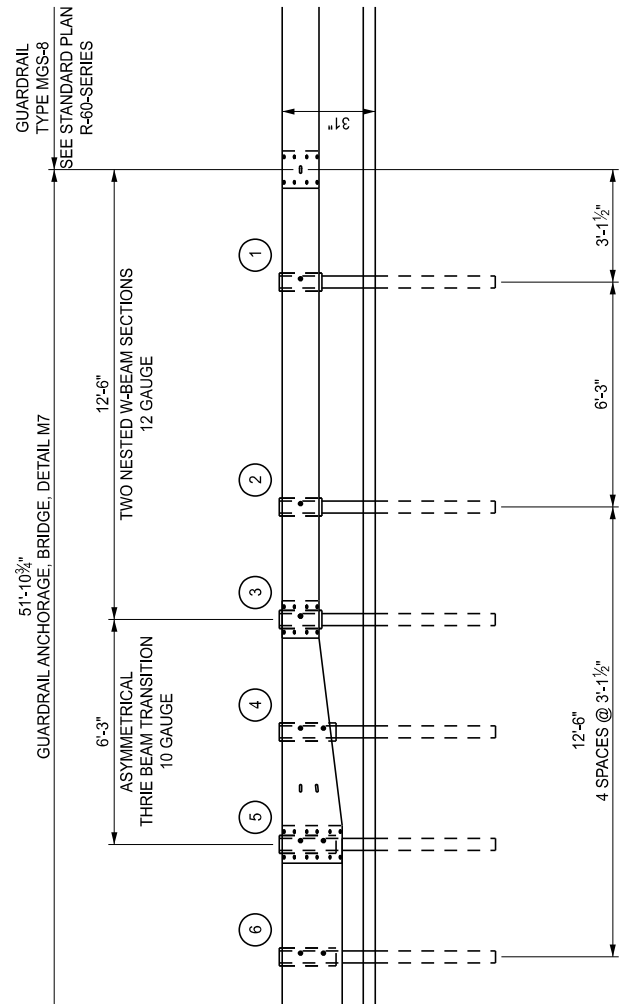
**DETAILS FOR CONNECTING GUARDRAIL TYPE B TO**  
 2-TUBE, 4-TUBE, AESTHETIC PARAPET TUBE,  
 3 TUBE WITH PICKETS, CONCRETE BLOCK RETROFIT,  
 TYPE 6\*, TYPE 7\*, OR SINGLE FACE CONCRETE BARRIER\*  
 (WITH EXPANSION AT BACKWALL/END WALL OR SLEEPER SLAB)

\* BARRIER ENDING MUST TRANSITION FROM SINGLE-SLOPE TO VERTICAL FACE IN ADVANCE OF END SHOE. ATTACHMENT TO VERTICAL FACE IS REQUIRED.

 Michigan Department of Transportation	STANDARD PLAN FOR			SHEET
	GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			
DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	

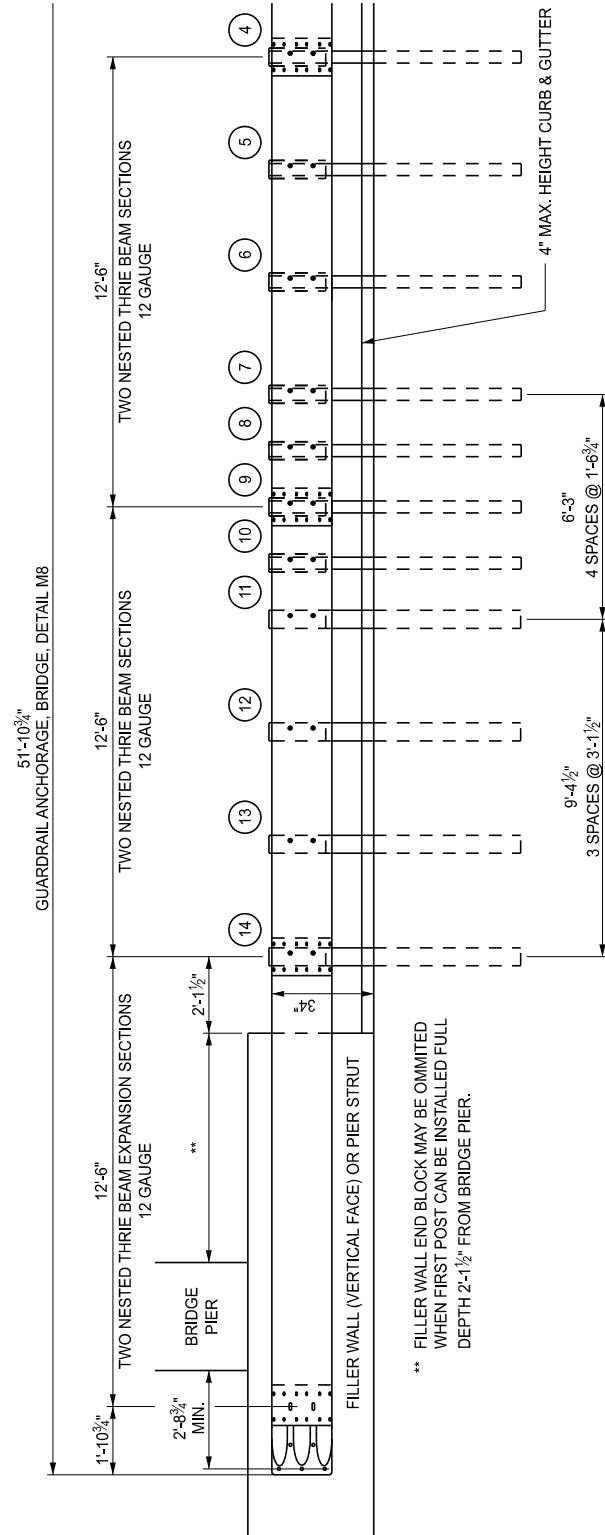


\*\* FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST POST CAN BE INSTALLED FULL DEPTH 2'-1 1/2" FROM BRIDGE PIER.

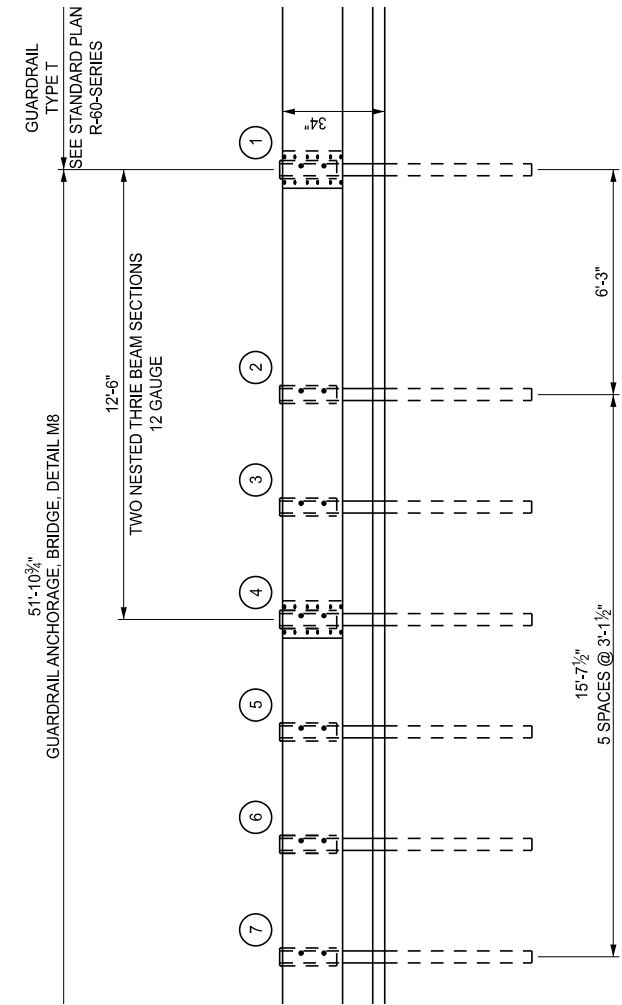


POST 1 THROUGH 9 - W6 x 9 OR W6 x 8.5 POST (6'-0" LONG) WITH 12" OFFSET BLOCK  
 POST 10 THROUGH 13 - W6 x 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

DETAILS FOR CONNECTING GUARDRAIL TYPE MGS-8 TO FILLER WALL OR PIER STRUT



\*\* FILLER WALL END BLOCK MAY BE OMITTED WHEN FIRST POST CAN BE INSTALLED FULL DEPTH 2'-1 1/2" 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 15 POST (7'-0" LONG) WITH 12" OFFSET BLOCK

DETAILS FOR CONNECTING GUARDRAIL TYPE T TO FILLER WALL OR PIER STRUT



STANDARD PLAN FOR  
 GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

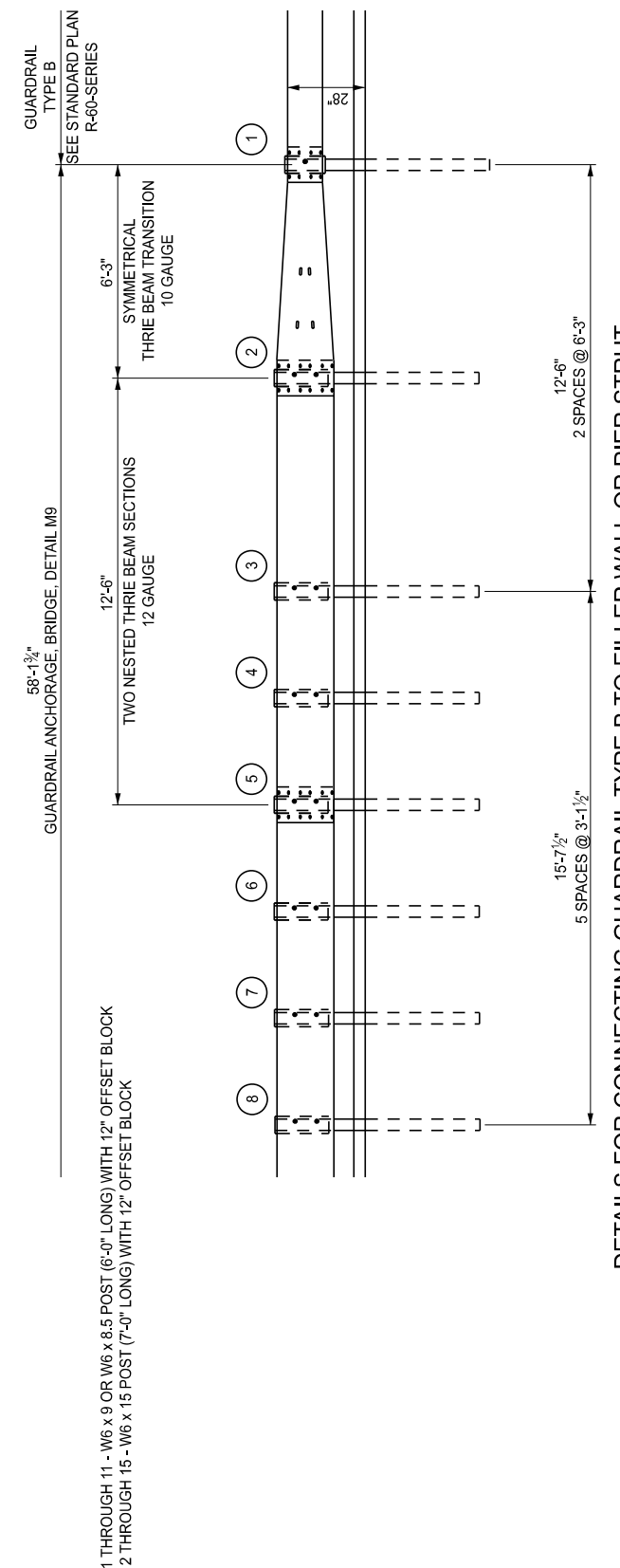
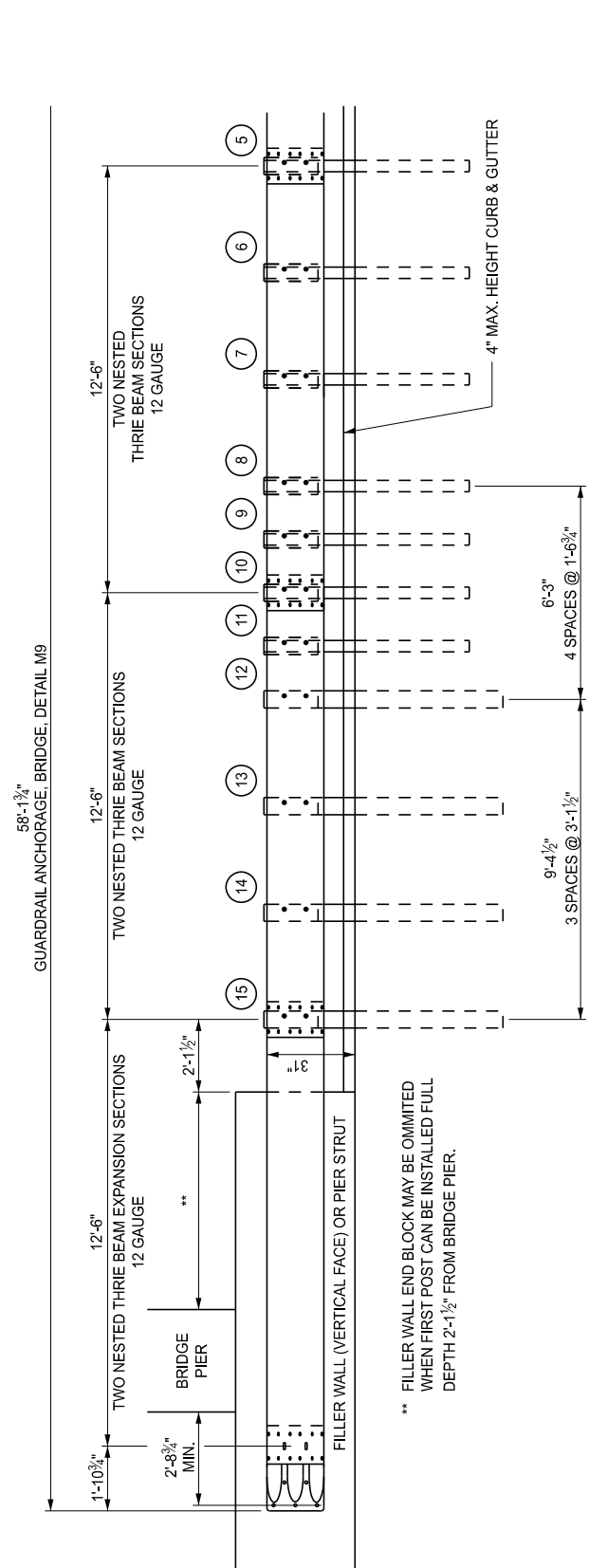
(SPECIAL DETAIL)	04/03/2024	R-67-G	SHEET 7 OF 16
FHWA APPROVAL	PLAN DATE		



STANDARD PLAN FOR  
 GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

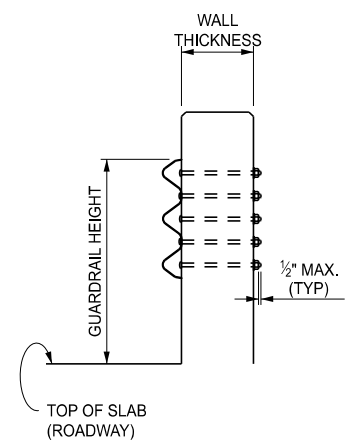
(SPECIAL DETAIL)	04/03/2024	R-67-G	SHEET 8 OF 16
FHWA APPROVAL	PLAN DATE		

SECT



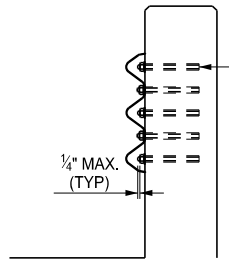
DETAILS FOR CONNECTING GUARDRAIL TYPE B TO FILLER WALL OR PIER STRUT

REFER TO GUARDRAIL ANCHORAGE BRIDGE, DETAIL M1 THROUGH M9 FOR GUARDRAIL HEIGHT.



BRIDGE RAILING & FILLER WALL

HIGH STRENGTH 3/8" 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 BOLT LENGTH REQUIRED.) WASHER DETAILS ARE SHOWN ON SHEET 11.

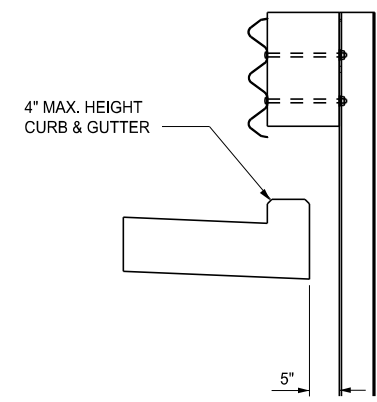


USE 3/8" DIA. ADHESIVE ANCHORED BOLTS EMBEDDED 8" TO ATTACH GUARDRAIL TO PIER BASE WALLS AND PIER STRUTS.  
 \*\* USE 3/8" DIA. ADHESIVE ANCHORED BOLTS EMBEDDED 8" INSTEAD OF BOLTING THROUGH THE FILLER WALL UNDER THE FOLLOWING CONDITIONS:

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

ALTERNATE CONSTRUCTION METHOD

APPLICABLE TO PIER BASE WALLS, PIER STRUTS AND FILLER WALLS MEETING CERTAIN CONDITIONS



POST DETAIL

BOLT REQUIREMENTS FOR CONNECTING GUARDRAIL TO BRIDGE RAILINGS			
BRIDGE RAILING	WALL THICKNESS	BOLT LENGTH	MINIMUM THREAD LENGTH
2 TUBE	1'-5 1/2"	1'-7 1/2"	4"
4 TUBE	1'-7"	1'-9"	4"
AESTHETIC PARAPET TUBE	1'-0"	1'-2"	4"
3 TUBE WITH PICKETS	1'-4 1/2"	1'-6 1/2"	4"
TYPE 6	1'-5 3/4" / 1'-6 3/4" ***	1'-7 3/4" / 1'-8 3/4" ***	4"
TYPE 7	1'-2 1/2" / 1'-3 1/2" ***	1'-4 1/2" / 1'-5 1/2" ***	4"
CONCRETE BLOCK RETROFIT	1'-3 3/4"	1'-5 3/4"	4"
FILLER WALL (WITH THROUGH BOLTS) **	VARIES	WALL THK + 2"	4"
PIER BASE WALL, PIER STRUT, FILLER WALL (WITH ADHESIVE ANCHORED BOLTS) **	VARIES	****	4"

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

\*\* REFER TO APPLICABLE NOTES UNDER ALTERNATE CONSTRUCTION METHOD TO DETERMINE APPLICABLE BOLTING METHOD FOR FILLER WALL

\*\*\* THICKNESS/LENGTH DEPENDENT UPON AESTHETIC TREATMENT ON RAILING

\*\*\*\* LENGTH TO PROVIDE 8" EMBEDMENT AND BOLT EXTENDING 1/4" MAXIMUM BEYOND NUT WHEN FULLY ENGAGED

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

MDOT Michigan Department of Transportation

STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE

(SPECIAL DETAIL) 04/03/2024 SHEET 9 OF 16

FHWA APPROVAL PLAN DATE R-67-G

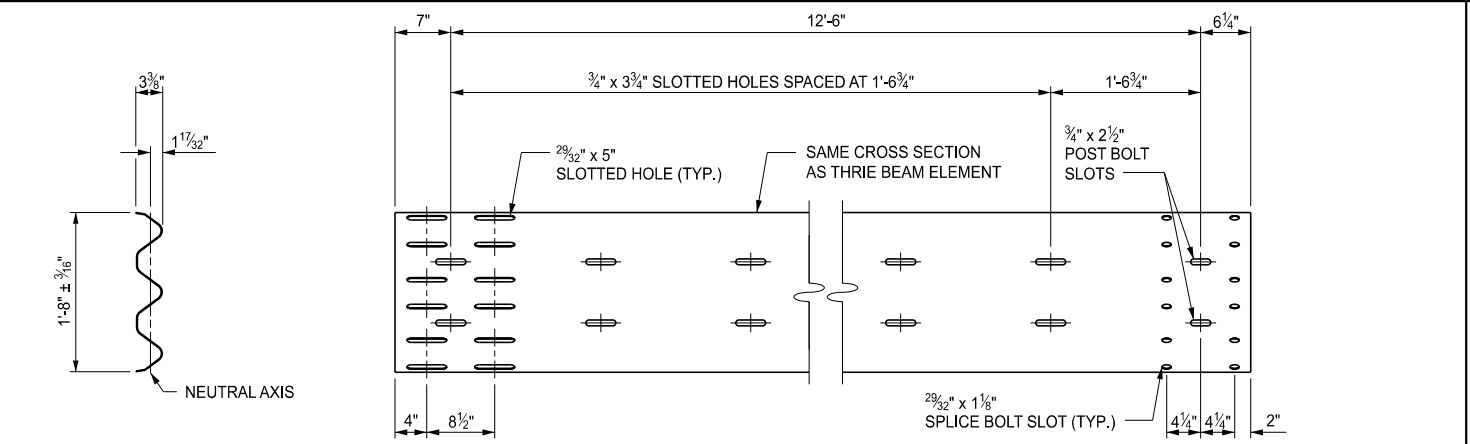
MDOT Michigan Department of Transportation

STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

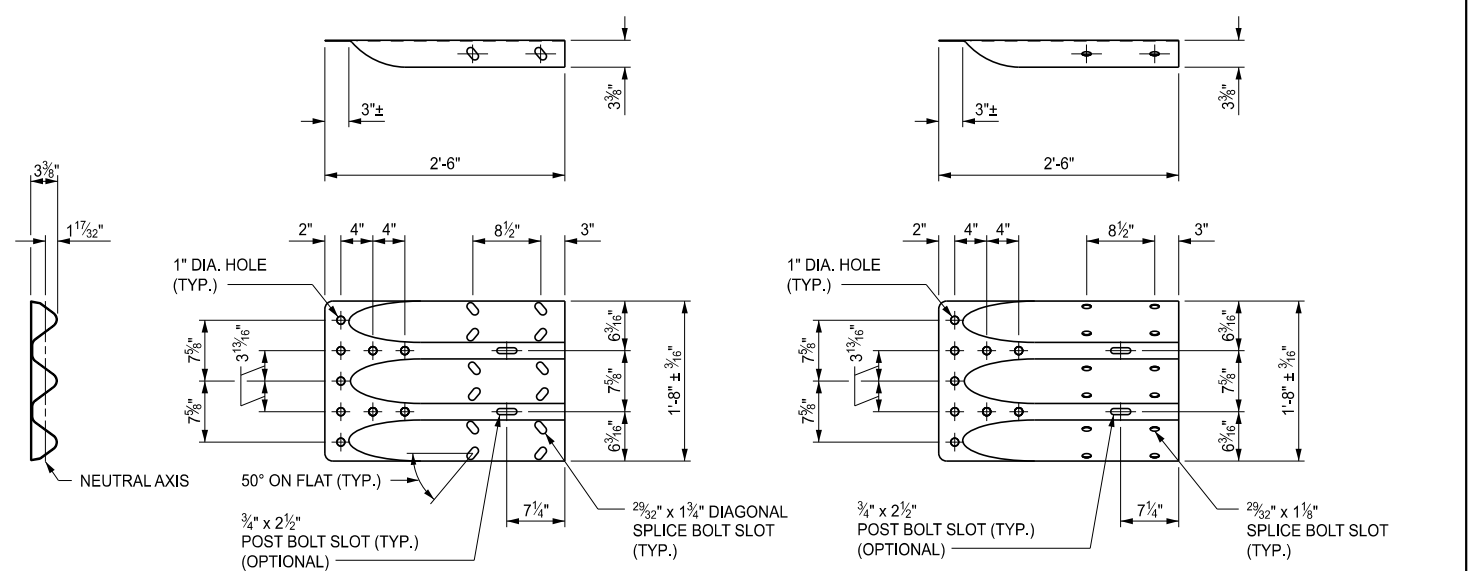
DEPARTMENT DIRECTOR BRADLEY C. WIEFERICH, PE

(SPECIAL DETAIL) 04/03/2024 SHEET 10 OF 16

FHWA APPROVAL PLAN DATE R-67-G

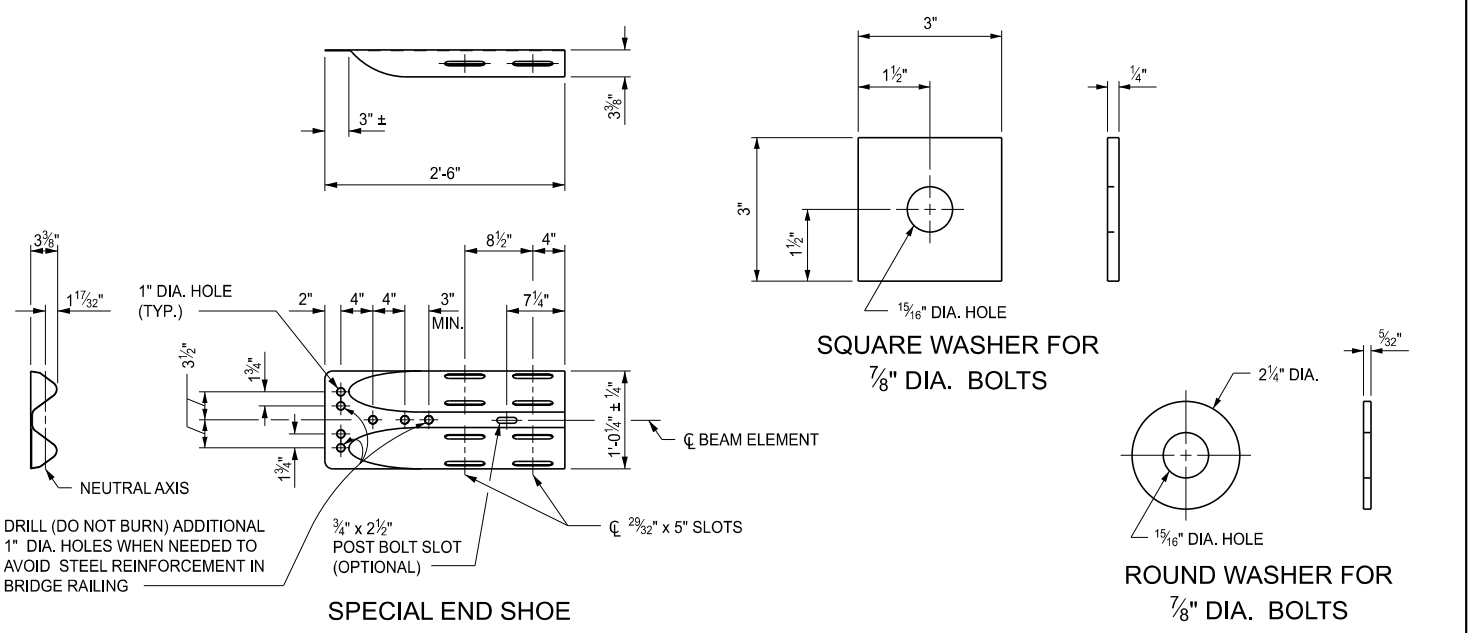


THRIE BEAM EXPANSION SECTION



OPTION 1  
THRIE BEAM TERMINAL CONNECTOR

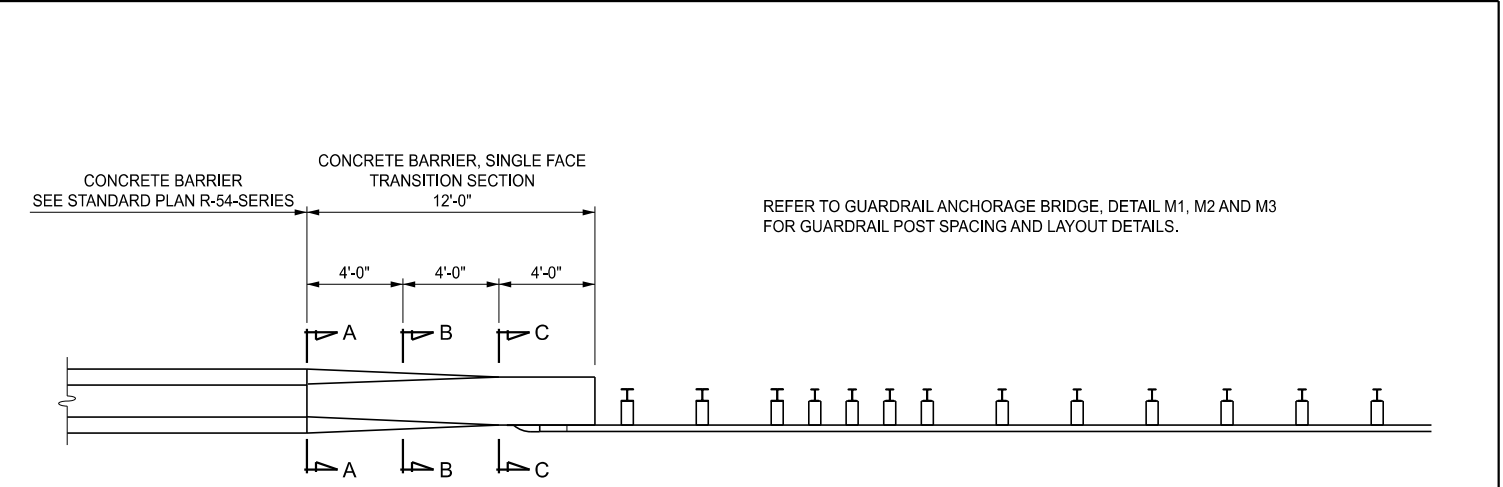
OPTION 2



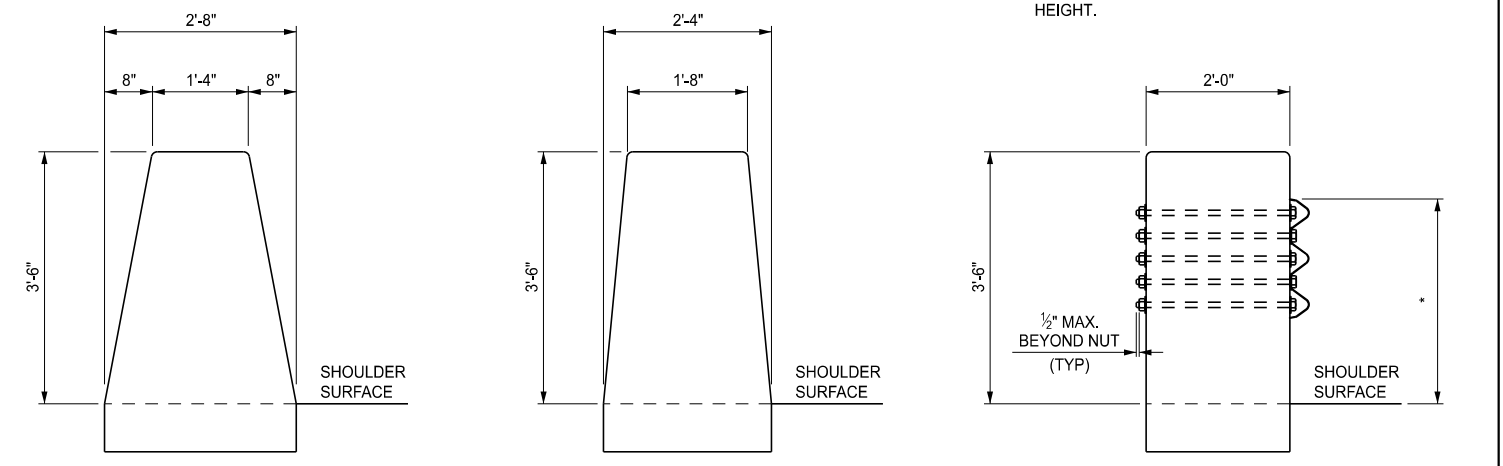
SPECIAL END SHOE

SQUARE WASHER FOR  
7/8" DIA. BOLTS

ROUND WASHER FOR  
7/8" DIA. BOLTS



PLAN VIEW



SECTION A-A

SECTION B-B  
UNIFORMLY TRANSITION THE BARRIER FACES  
FROM SINGLE SLOPE SHAPE TO VERTICAL WALL

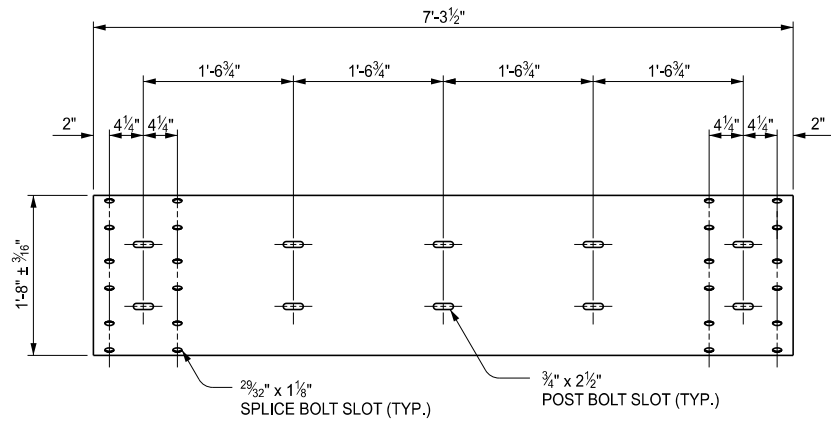
SECTION C-C  
HIGH STRENGTH 7/8" DIAMETER x 26" LONG HEX HEAD  
BOLTS WITH 2" MINIMUM THREAD LENGTH AND NUTS WITH  
ROUND WASHERS FRONT AND BACK SHALL BE USED TO  
CONNECT GUARDRAIL TO CONCRETE BARRIER, SINGLE FACE  
TRANSITION SECTION.

DETAILS FOR CONNECTING GUARDRAIL TO CONCRETE BARRIER, SINGLE FACE

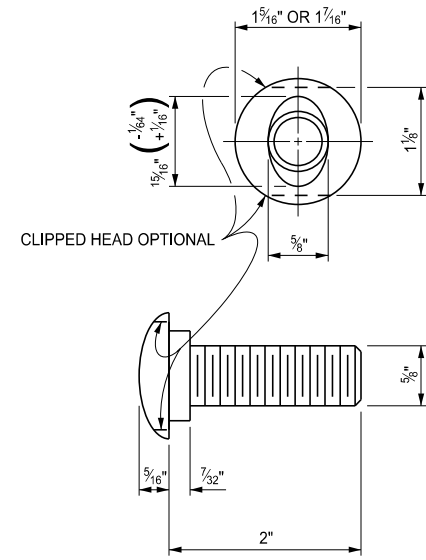
	STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			
	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	SHEET 11 OF 16

	STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			
	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	SHEET 12 OF 16

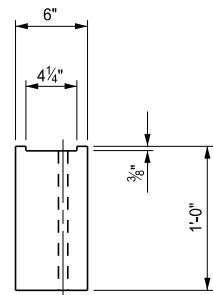
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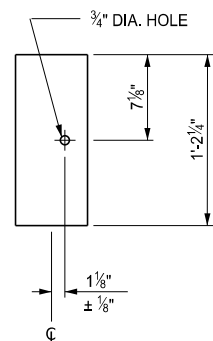
6'-3" THRIE BEAM SECTION



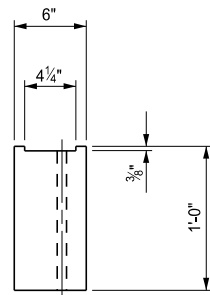
SPLICE BOLT  
FOR USE WITH NESTED  
GUARDRAIL BEAM ELEMENTS



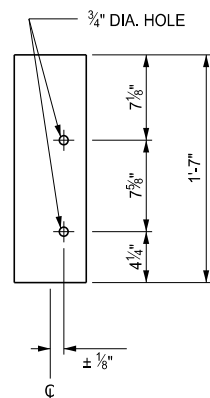
TOP



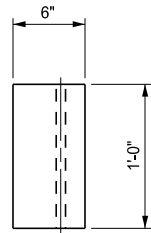
FRONT  
OFFSET BLOCK FOR  
W BEAM GUARDRAIL



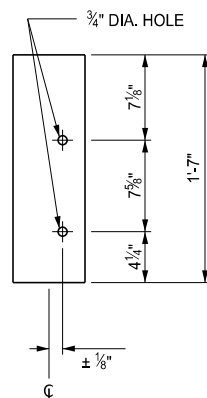
TOP



FRONT  
OFFSET BLOCK FOR  
THRIE BEAM GUARDRAIL  
FOR USE WITH W6 x 8.5 OR W6 x 9 POSTS



TOP



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



STANDARD PLAN FOR  
GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

DEPARTMENT DIRECTOR  
BRADLEY C. WIEFERICH, PE

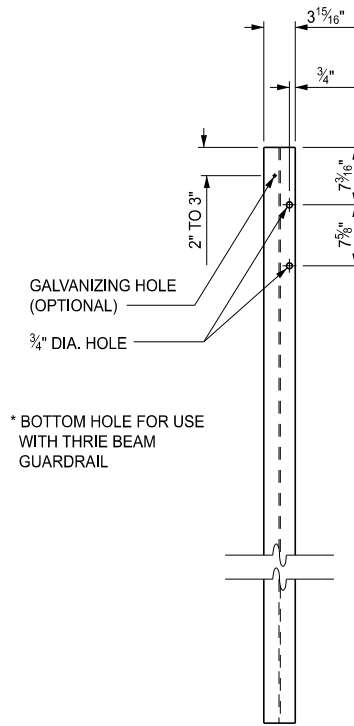
(SPECIAL DETAIL)  
FHWA APPROVAL

04/03/2024  
PLAN DATE

R-67-G

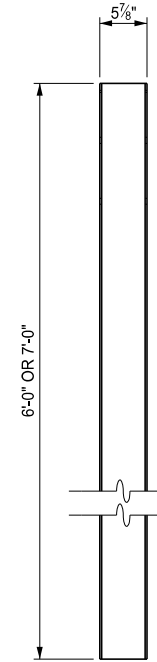
SHEET  
13 OF 16

I  
TOP



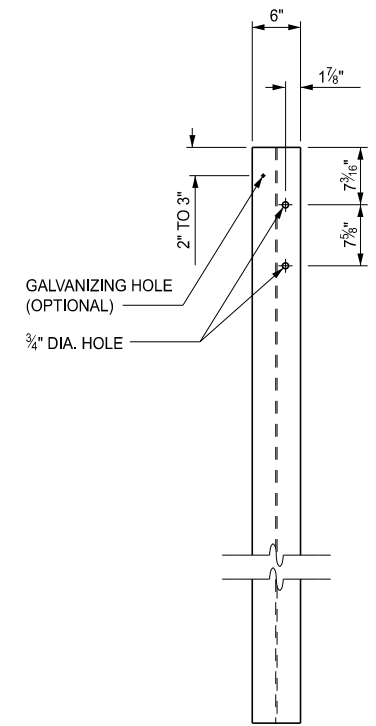
FRONT

W6 x 9 OR  
W6 x 8.5 POST



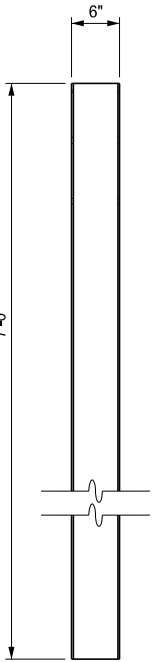
SIDE

I  
TOP



FRONT

W6 x 15 POST



SIDE



STANDARD PLAN FOR  
GUARDRAIL ANCHORAGE, BRIDGE, DETAILS

DEPARTMENT DIRECTOR  
BRADLEY C. WIEFERICH, PE

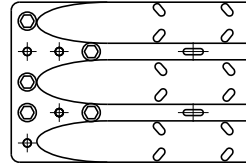
(SPECIAL DETAIL)  
FHWA APPROVAL

04/03/2024  
PLAN DATE

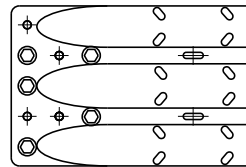
R-67-G

SHEET  
14 OF 16

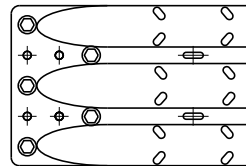
SECT



THRIE BEAM TERMINAL CONNECTOR  
BOLT LOCATION FOR  
GUARDRAIL ANCHORAGE TYPE M1, M3, M4, M6  
⊙ = REQUIRED BOLT LOCATION TO ANCHOR INTO CONCRETE



THRIE BEAM TERMINAL CONNECTOR  
BOLT LOCATION FOR  
GUARDRAIL ANCHORAGE TYPE M2, M5  
⊙ = REQUIRED BOLT LOCATION TO ANCHOR INTO CONCRETE



THRIE BEAM TERMINAL CONNECTOR  
BOLT LOCATION FOR  
GUARDRAIL ANCHORAGE TYPE M7, M8, M9  
⊙ = REQUIRED BOLT LOCATION TO ANCHOR INTO CONCRETE

NOTES:

ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, REFLECTORS, AND HARDWARE, (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR CONSTRUCTION AND TO 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 M 180. BEAM ELEMENTS IDENTIFIED AS 10 GAUGE MUST MEET CLASS B REQUIREMENTS PER AASHTO M 180.

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.

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 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 APPROPRIATE PLANS FOR PIER BASE WALL OR PIER STRUT.

SEE 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 "CONC BARRIER, SINGLE FACE, TYPE \_\_\_".

	STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			
	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	SHEET 15 OF 16

	STANDARD PLAN FOR GUARDRAIL ANCHORAGE, BRIDGE, DETAILS			
	(SPECIAL DETAIL) FHWA APPROVAL	04/03/2024 PLAN DATE	R-67-G	SHEET 16 OF 16 SECT