



GUARD RAIL GENERAL NOTES:

1. DESIGN RAIL: THE LATEST EDITIONS OF THE AASHTO ROADSIDE DESIGN GUIDE (RDG) AND THE LADOTD BRIDGE DESIGN AND EVALUATION MANUAL (BDEM), PART II, VOLUME 4 - HIGHWAY SAFETY.
 2. GUARD RAIL LENGTH: TOTAL GUARD RAIL LENGTH AND LENGTH OF NEED SHALL BE BASED ON THE LATEST AASHTO ROADSIDE DESIGN GUIDE LENGTH OF NEED REQUIREMENTS. TOTAL LENGTH OF GUARD RAIL SHALL NOT BE LESS THAN 75'-0" BASED ON A LENGTH OF LENGTH OF NEED OF X=62'-6". A DESIGN WAIVER IS REQUIRED FOR GUARD RAIL LENGTHS NOT MEETING THESE REQUIREMENTS.
 3. FOR BRIDGES WITH GUARD RAILS IN URBAN AREAS WITH A DESIGN SPEED OF 45 MPH OR LESS, SEE DOTD EDSM NO. II.3.1.4 FOR DESIGN INFORMATION.
 4. FOR GUARD RAIL ON EXISTING HIGHWAYS, SEE DOTD EDSM NO. II.3.1.3 FOR DESIGN INFORMATION.
 5. EMBANKMENT WIDENING IS TO PROVIDE SLOPES NOT STEEPER THAN 10H:1V IN FRONT OF THE GUARD RAIL.
 6. ALL GUARD RAIL COMPONENTS SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFIC PLAN LAYOUT DETAILS, GUARD RAIL DESIGN DATA, PAY ITEMS, AND QUANTITY TABLES PROVIDED IN THE PROJECT PLANS.
 7. LONGITUDINAL DIMENSIONS FOR GUARD RAIL ARE MEASURED ALONG THE PROJECTED FACE OF RAILING.
 8. THE QUANTITY FOR THE EMBANKMENT WIDENING IS TO BE INCLUDED IN THE EMBANKMENT PAY ITEM QUANTITY FOR THE ROADWAY.
 9. A TANGENT END TREATMENT MAY BE USED AS AN ALTERNATE TO THE FLARED END TREATMENT. A ZERO FLARE RATE ($b/a=0$) IS REQUIRED WHEN THE TANGENT END TREATMENT IS USED AND THE LENGTH OF NEED "X" SHALL BE CALCULATED BASED ON A "ZERO" FLARE RATE.
 10. THE POINT WITHIN THE GUARD RAIL END TREATMENT WHERE THE LENGTH OF NEED TERMINATES MAY VARY WITH EACH TYPE OF GUARD RAIL END TREATMENT. THE 12'-6" LENGTH APPLIES TO MOST END TREATMENTS.
 11. RETROREFLECTIVE ADHESIVE SHEETING (12" X 2'-8")(TYPE III HIGH INTENSITY OBJECT MARKER PATTERN) SHALL BE APPLIED TO THE END TREATMENT NOSE. SEE THE LATEST LA. STANDARD SPECS. FOR ROADS AND BRIDGES FOR SPECIFICATIONS AND THE SHEETING MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION. FOR PATTERN DETAIL, SEE OBJECT MARKER STANDARD PLANS.
 12. GUARD RAIL INSTALLATIONS MAY BE PAVED BY USING CONCRETE PAVING OR ASPHALT CONCRETE. THE INCIDENTAL CONCRETE OR ASPHALT WILL BE USED IF A LAYOUT DETAIL, PAY ITEM, AND QUANTITY IS INDICATED IN THE PLANS. SEE SHEET II FOR REQUIRED POST DETAILS WHEN PAVING IS USED AROUND POSTS.
 13. GUARD RAIL END TREATMENTS SHALL BE SELECTED FROM THE DOTD APPROVED MATERIALS LIST (AML), AND SHALL BE AASHTO MASH, TEST LEVEL 3 (TL-3) UNLESS OTHERWISE NOTED IN THE PLANS. IF TEST LEVEL 2 (TL-2) GUARD RAIL END TREATMENTS ARE USED, A DESIGN WAIVER SHALL BE REQUIRED. IF MASH FLARED END TREATMENTS ARE NOT AVAILABLE, USE GUARD RAIL END TREATMENT, NCHRP 350 - 31" (TL-3 FLARED), WITH APPROVAL OF PROJECT ENGINEER.
 14. FLARED GUARD RAIL END TREATMENTS (12'-6" OR 18'-9"), (PAY ITEMS 704-10-00105 AND 704-10-00110) ARE GENERIC TEST LEVEL 2 (TL-2) NCHRP 350 SYSTEMS THAT CAN ONLY BE USED WITH PERMISSION FROM THE BRIDGE DESIGN ENGINEER ADMINISTRATOR AND AN APPROVED DESIGN WAIVER. SEE BRIDGE DESIGN SPECIAL DETAILS FOR THESE END TREATMENT DETAILS.
 15. GUARD RAIL DESIGN VARIABLES FOR STANDARD PLAN SHEETS:
 - L_1 = LENGTH OF TANGENT SECTION OF RAIL IN ADVANCE OF OBJECT. (FT)
 - L_2 = DISTANCE FROM EDGE OF TRAVEL LANE TO TANGENT SECTION OF RAIL. (FT)
 - L_3 = DISTANCE FROM EDGE OF TRAVEL LANE TO OBJECT OF CONCERN.
 - L_R = RUNOUT LENGTH (FT)
 - L_C = REQUIRED CLEAR ZONE (FT)
 - L_A = DISTANCE FROM THE EDGE OF THE TRAVEL LANE TO THE LATERAL EXTENT OF THE OBJECT. (FT)
 - $L_A = L_C$ FOR BRIDGE APPLICATIONS
 - X = CALCULATED LENGTH OF NEED (FT)
 - Y = DISTANCE FROM EDGE OF THE TRAVEL LANE TO THE BEGINNING OF THE LENGTH OF NEED.
 - Z = DISTANCE FROM EDGE OF THE TRAVEL LANE TO THE EDGE OF EMBANKMENT.
 - b/a = FLARE RATE (VERTICAL/HORIZONTAL)
- FOR CLEAR ZONE, RUNOUT, FLARE RATE, SHYLINE, AND HORIZONTAL CURVE ADJUSTMENTS, SEE LATEST AASHTO ROADSIDE DESIGN GUIDE AND THE DOTD BRIDGE DESIGN AND EVALUATION MANUAL.
16. STEEL POSTS MAY BE USED AS AN ALTERNATE TO WOOD POSTS, UNLESS SHOWN OTHERWISE.
 17. INTERMIXING OF STEEL AND WOOD POSTS IN ANY ONE SECTION OF THE GUARD RAIL SHALL NOT BE PERMITTED.
 18. ALL MATERIAL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
 19. GUARD RAIL HEIGHT TOLERANCE ALLOWED FOR INSTALLATION IS 1 INCH ABOVE AND 0.5 INCH BELOW THE SPECIFIED HEIGHT.
 20. GUARD RAIL TRAILING END ANCHORAGE SHALL BE USED TO ANCHOR DOWNSTREAM END OF GUARD RAIL ONLY WHEN TYPICAL GUARD RAIL END TREATMENTS ARE NOT REQUIRED.
 21. STANDARD COMPONENTS: STANDARD GUARD RAIL COMPONENTS, INCLUDING POSTS, PANELS, AND BOLT SYSTEM ARE BASED UPON ENGLISH UNIT CONVERSIONS OF THE AASHTO-AGC-ARTBA JOINT COMMITTEE TASK FORCE 13 REPORT: A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE.
 - *22. IF OFF-SYSTEM BRIDGE OR BOX CULVERT DETAILS ARE USED, THE PLANS MUST ALSO INCLUDE THE COMMON DETAILS (SHTS. I-11).

GUARD RAIL AND RELATED PAY ITEMS :

- | | |
|------------------|---|
| 202-02-14500 | REMOVAL OF GUARD RAIL, (LN FT) |
| 704-01-01000 | GUARD RAIL (SINGLE THRIE BEAM) (3'-1½" POST SPACING), (LN FT) |
| 704-01-01020 | GUARD RAIL (SINGLE THRIE BEAM) (6'-3" POST SPACING), (LN FT) |
| 704-01-02000 | GUARD RAIL (DOUBLE THRIE BEAM) (3'-1½" POST SPACING), (LN FT) |
| 704-01-02020 | GUARD RAIL (DOUBLE THRIE BEAM) (6'-3" POST SPACING), (LN FT) |
| 704-03-00200 | BLOCKED OUT GUARD RAIL - 31", (6'-3" POST SPACING), (LN FT) |
| 704-04-00200 | BLOCKED OUT GUARD RAIL - 31", (DOUBLE FACED, 6'-3" POST SPACING), (LN FT) |
| 704-05-00300 | GUARD RAIL ANCHOR SECTIONS - 31", (TRAILING END), (LN FT) |
| 704-06-00100 | GUARD RAIL BRIDGE ATTACHMENTS, (LN FT) |
| 704-06-00200 | GUARD RAIL BRIDGE ATTACHMENTS (SINGLE THRIE BEAM), (LN FT) |
| 704-07-00200 | GUARD RAIL TRANSITION, (DOUBLE THRIE BEAM), (LN FT) |
| 704-09-00100 | GUARD RAIL ANCHOR BLOCK, (EA.) |
| ⊕ 704-10-00105 | GUARD RAIL END TREATMENT (FLARED, 12'-6" LENGTH), (EA.) |
| ⊕ 704-10-00110 | GUARD RAIL END TREATMENT (FLARED, 18'-9" LENGTH), (EA.) |
| ⊙ 704-10-00120 | GUARD RAIL END TREATMENT, MASH, (TL-3 FLARED), (EA.) |
| ⊙ 704-10-00204 | GUARD RAIL END TREATMENT, MASH, (TL-2 TANGENT), (EA.) |
| ⊙ 704-10-00205 | GUARD RAIL END TREATMENT, MASH, (TL-3 TANGENT), (EA.) |
| ⊙ 704-10-00305 | GUARD RAIL END TREATMENT, MASH, (TL-3 BI-DIRECTIONAL), (EA.) |
| ⊙ 704-10-00310 | GUARD RAIL END TREATMENT, NCHRP 350 - 31" (TL-3 FLARED), (EA.) |
| 810-06-00100 | CONCRETE PIER PROTECTION SYSTEM (VEHICLE), (LN FT) |
| ⊙ SEE NOTE NO.13 | |
| ⊕ SEE NOTE NO.14 | |

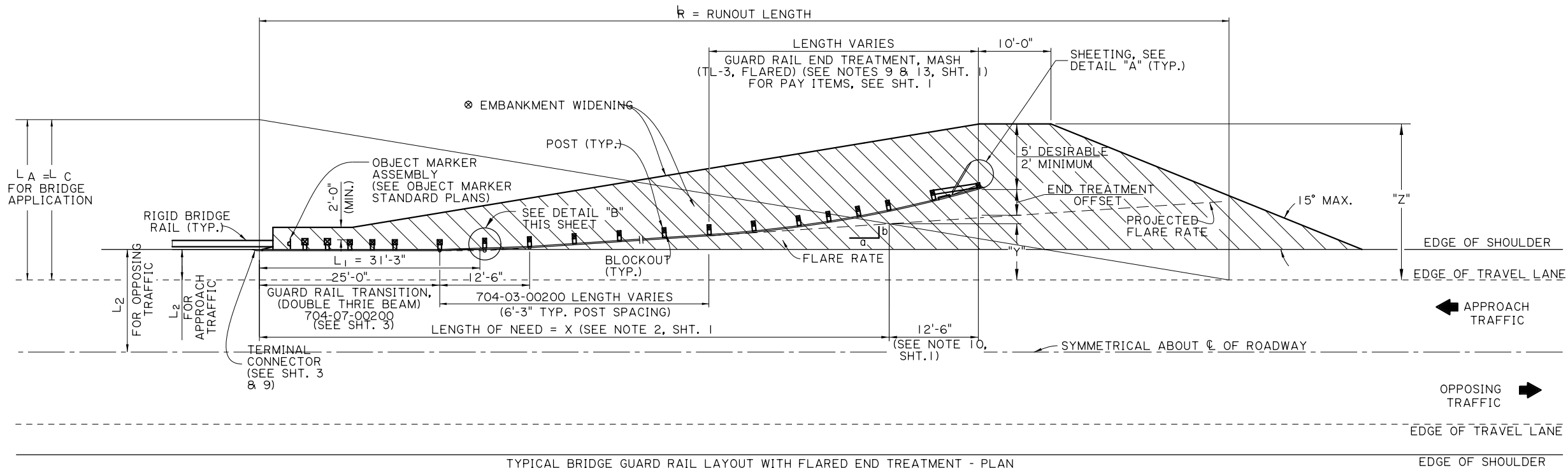
GUARD RAIL STANDARD PLAN INDEX		
	SERIES	DESCRIPTION
COMMON DETAILS	1 OF 11	GENERAL NOTES, PAY ITEMS, STANDARD PLAN INDEX
BRIDGE END AND NON-BRIDGE APPLICATIONS	2 OF 11	BRIDGE APPLICATION, TYPICAL LAYOUT
	3 OF 11	THRIE BEAM GUARD RAIL TRANSITION TO BRIDGE RAIL
	4 OF 11	NON BRIDGE APPLICATION, TYPICAL LAYOUT
	5 OF 11	NON BRIDGE APPLICATION, TYPICAL LAYOUT
	6 OF 11	TYPICAL DETAILS AND SECTIONS
	7 OF 11	TRAILING END DETAILS
	8 OF 11	TRAILING END DETAILS
	9 OF 11	RAIL STRUCTURAL DETAILS
	10 OF 11	GUARD RAIL POST AND BLOCK DETAILS
	11 OF 11	MISCELLANEOUS DETAILS, MOW STRIPS AND CONCRETE ANCHORS
* OFF - SYSTEM BRIDGE	1 OF 1	OFF-SYSTEM BRIDGE GUARD RAIL DETAILS
* BOX CULVERT DETAILS	1 OF 1	BOX CULVERT GUARD RAIL DETAILS



6/17/2026

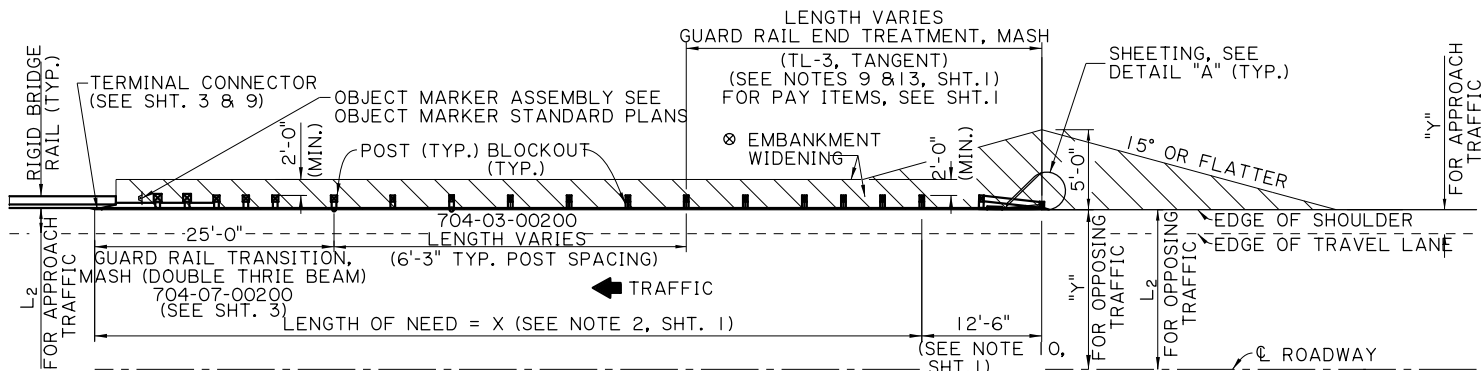
10:1

IP_FWP:q1273831\HIGHWAY GUARD RAIL (MASH)_2 of 11.dgn



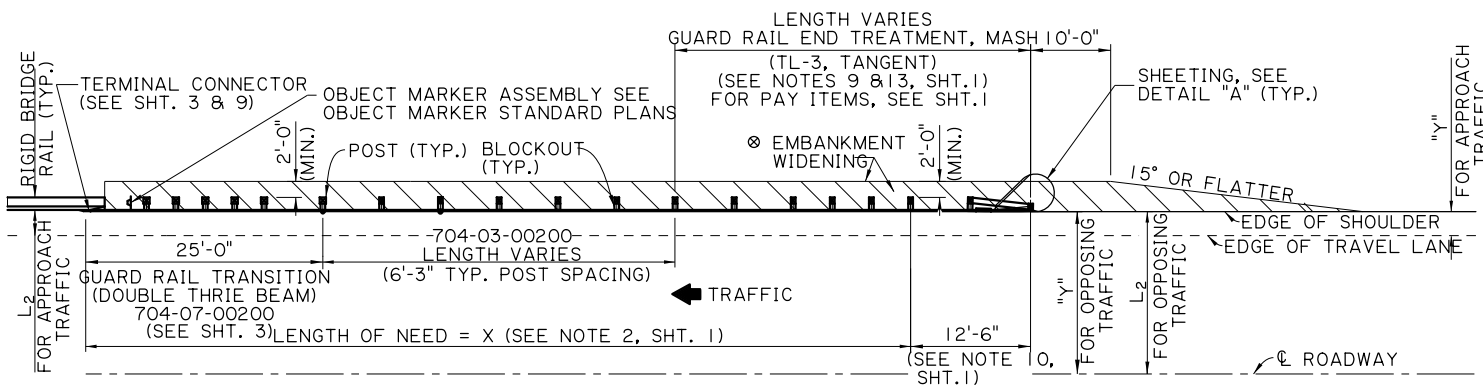
TYPICAL BRIDGE GUARD RAIL LAYOUT WITH FLARED END TREATMENT - PLAN

NOTE: LAYOUT SIMILAR FOR OTHER QUADRANTS OF BRIDGE END
SEE NOTES 5, 8, AND 12, SHT. 1.



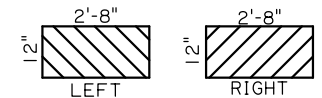
TYPICAL BRIDGE GUARD RAIL LAYOUT WITH TANGENT END TREATMENT - PREFERRED GRADING - PLAN

SEE NOTES 5, 8, AND 12, SHT. 1.

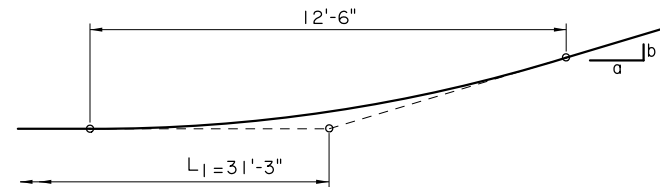


TYPICAL BRIDGE GUARD RAIL LAYOUT WITH TANGENT END TREATMENT - ALTERNATIVE GRADING - PLAN

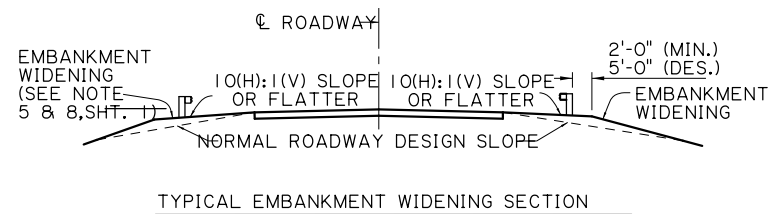
SEE NOTES 5, 8, AND 12, SHT. 1.



DETAIL "A"
RETROREFLECTIVE SHEETING
(SEE SHT. 1 NOTE 11)



DETAIL "B"



TYPICAL EMBANKMENT WIDENING SECTION

NOTES:

THE DETAILS SHOWN ON THIS SHEET SHALL BE USED TO CONNECT GUARD RAIL TO RIGID BRIDGE RAILS. DETAILS FOR CONNECTING TO A FLEXIBLE BRIDGE RAIL ARE SHOWN ON STANDARD PLAN GRR-06, "APPROACH GUARD RAIL FOR STRUCTURES WITH FLEXIBLE RAILS."

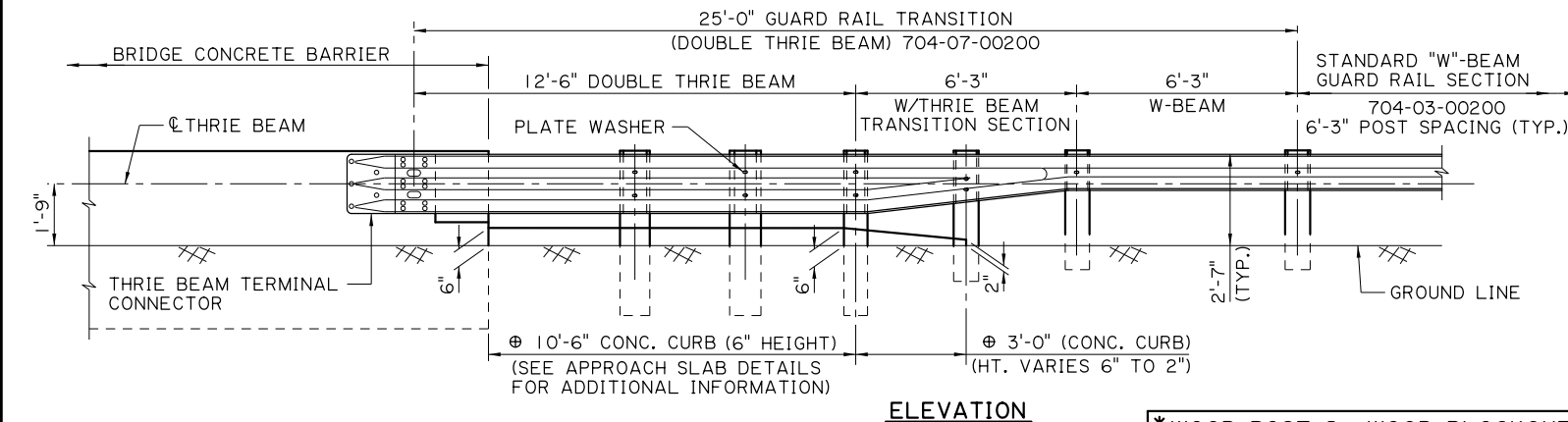
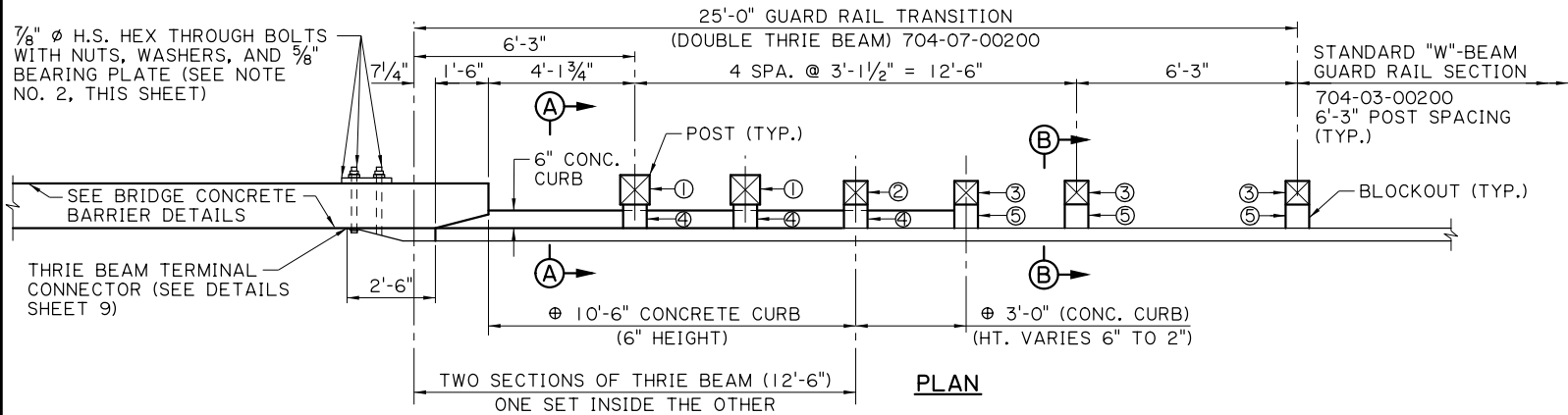
SHEET NUMBER		PARISH		CONTROL SECTION		STATE PROJECT	
DESIGN		CHECK		DETAIL		REVIEW	
P. FOSSIER		K. BRAUNER		J. DOUCET		C. GUIDRY	
APPROVED BY CHIEF ENGINEER:		DATE:		BY:		REVISION OR CHANGE ORDER DESCRIPTION	
6/29/2026							
HIGHWAY GUARD RAIL (MASH) BRIDGE APPLICATION (TYPICAL LAYOUT)		GR-MASH-ON		STANDARD PLAN			



10:1

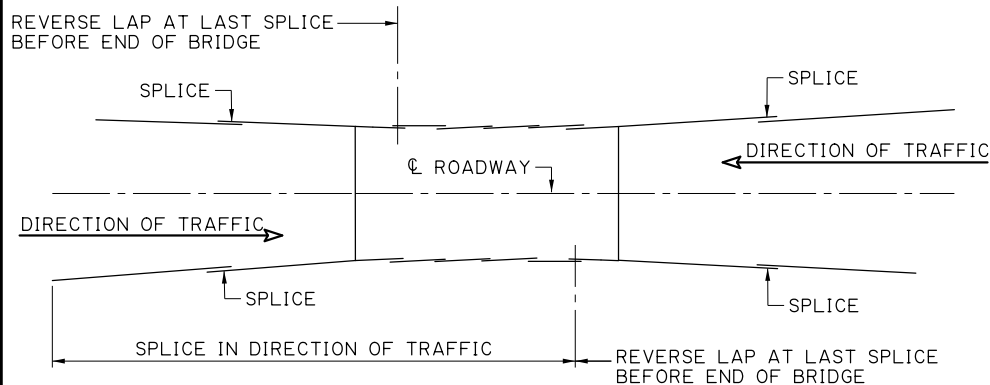
6/17/2026

IP_FWP:q1273831\HIGHWAY GUARD RAIL (MASH)_3 of 11.dgn



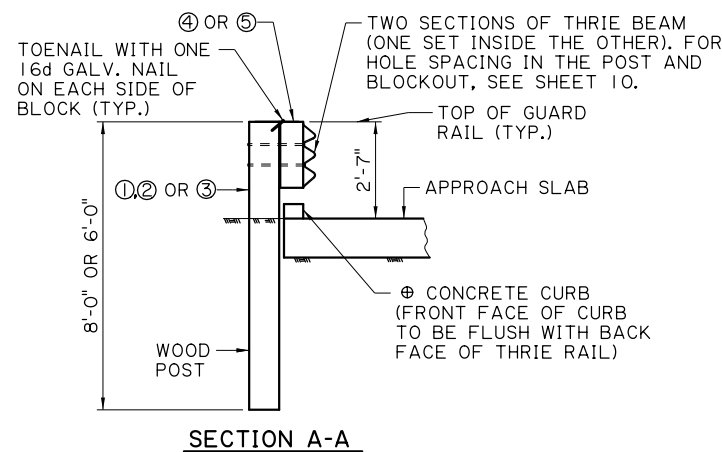
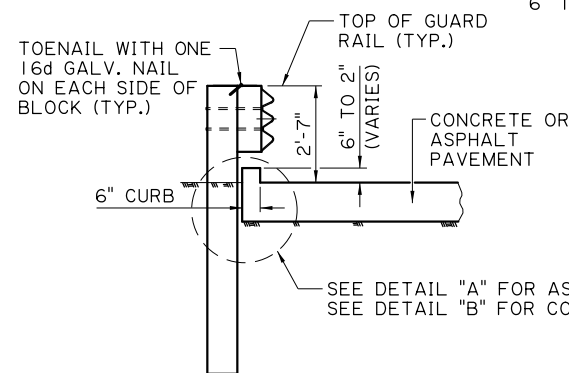
NOTES

- THIS GUARD RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO THE CONCRETE BARRIER SHAPE AS SHOWN. SEE BRIDGE BARRIER RAILING DETAILS FOR INFORMATION.
- 7/8" Ø H.S. BOLTS FOR CONCRETE BARRIER AND THRIE BEAM TERMINAL CONNECTOR SHALL BE ASTM A449. FOR 5/8" STEEL BEARING PLATE, SEE SHEET 9. GALVANIZING SHALL BE IN ACCORDANCE WITH ASTM A153.
- STEEL POST ALTERNATES: STEEL POSTS ARE ALLOWED AS AN ALTERNATE TO WOOD POSTS. USE W8 x 24 STEEL POST ALTERNATE FOR 10" x 10" WOOD POST. USE W6 x 25 STEEL POST ALTERNATE FOR 8" x 8" WOOD POST. USE SAME LENGTHS AS WOOD POSTS.
- BLOCKOUTS: USE WOOD BLOCKOUTS ONLY, STEEL AND RECYCLED BLOCKOUTS ARE NOT PERMITTED FOR THE GUARD RAIL TRANSITION. ALL WOOD BLOCKOUTS ARE REQUIRED TO BE ROUTED WHEN USED WITH STEEL POSTS. SEE SHEET 10.
- INTERMIXING OF STEEL AND WOOD POSTS IN THE GUARD RAIL TO BRIDGE RAIL TRANSITION SECTION IS NOT ALLOWED.
- FOR GUARD RAIL TRANSITIONS CONSTRUCTED WITH NEW APPROACH SLABS, CONCRETE CURBS SHALL BE USED AND PAID FOR WITH THE APPROACH SLAB PAY ITEM. FOR GUARD RAIL TRANSITIONS CONSTRUCTED WHEN THE APPROACH SLAB OR PAVEMENT IS EXISTING AND A NEW CURB IS NEEDED, THE ASPHALT CURB ALTERNATE DETAIL SHALL BE USED ON ASPHALT PAVEMENTS, AND PAID FOR UNDER 707-04-00100, "ASPHALT CURB" OR AS INDICATED IN THE PLANS. ON EXISTING CONCRETE PAVEMENTS, THE CONCRETE CURB ALTERNATE DETAIL SHALL BE USED AND PAID FOR UNDER 707-01-00100, "CONCRETE CURB" OR AS INDICATED IN THE PLANS.
- THE USE OF THIS BRIDGE BARRIER TRANSITION HAS ONLY BEEN APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, THEIR CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.



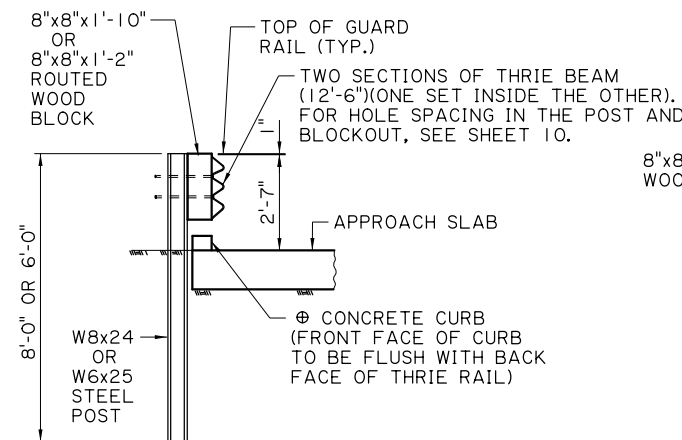
*WOOD POST & WOOD BLOCKOUT FOR GUARD RAIL TRANSITION	
NO.	SIZE (WIDTHxDEPTHxLENGTH)
①	10" x 10" x 8'-0" POST
②	8" x 8" x 8'-0" POST
③	8" x 8" x 6'-0" POST
④	8" x 8" x 1'-10" BLOCKOUT
⑤	8" x 8" x 1'-2" BLOCKOUT

*SEE NOTE FOR STEEL POST ALTERNATE



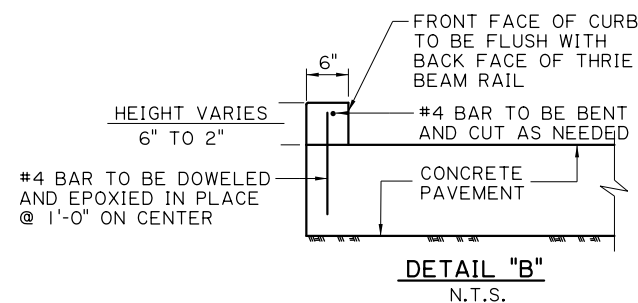
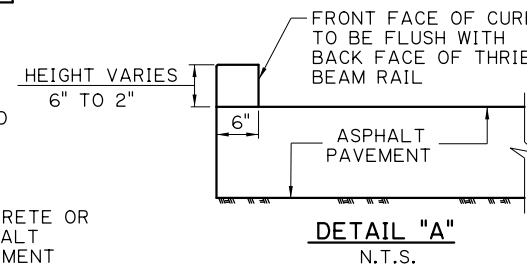
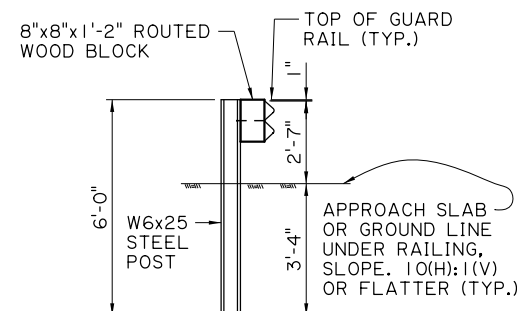
WOOD POST & WOOD BLOCKOUT

(POST & BLOCKOUT SIZE VARY IN TRANSITION, SEE PLAN VIEW)

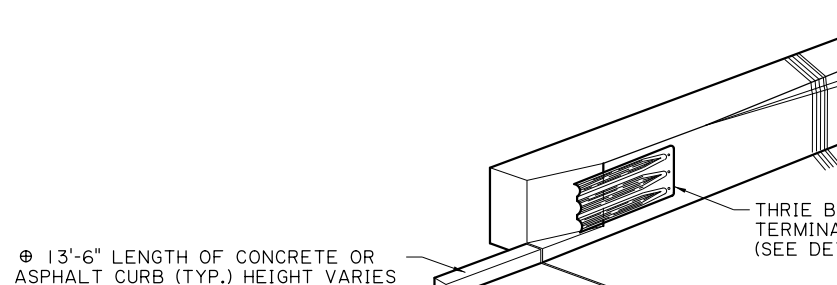


STEEL POST & ROUTED WOOD BLOCKOUT ALTERNATE

(POST & BLOCKOUT SIZE VARY IN TRANSITION, SEE PLAN VIEW)



*CURB ALTERNATE FOR EXISTING PAVEMENTS - SECTION A-A



NOTE: FOR TRANSITION LENGTH & DETAILS OF THE CONCRETE BARRIER, SEE BRIDGE BARRIER RAILING DETAILS.

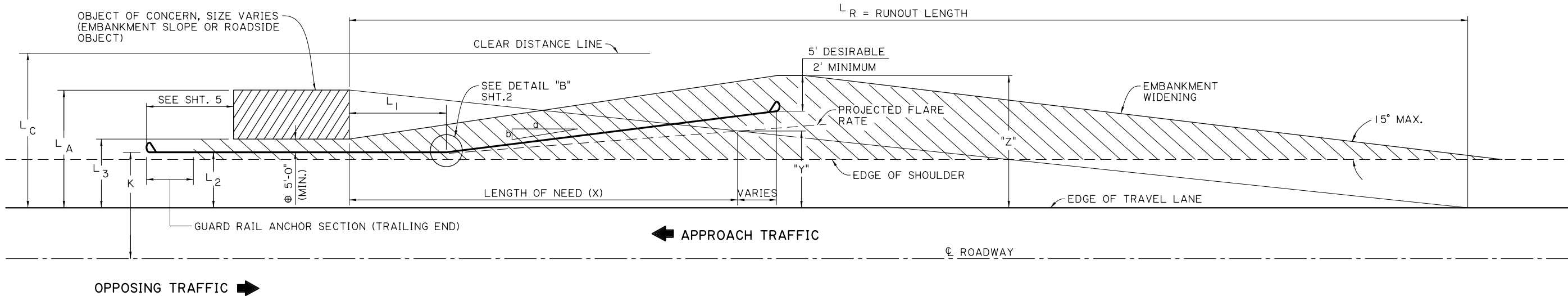
SHEET NUMBER		PARISH		CONTROL SECTION		STATE PROJECT	
DESIGN		CHECK		DETAIL		REVIEW	
P. FOSSIER		K. BRAUNER		J. DOUCET		C. GUIDRY	
3		11		3		11	
APPROVED BY CHIEF ENGINEER:		DATE: 6/29/2026		BY		DATE	
REVISION OR CHANGE ORDER DESCRIPTION		NO.		DATE		NO.	
HIGHWAY GUARD RAIL (MASH) THRIE BEAM GUARD RAIL TRANSITION TO BRIDGE RAIL		GR-MASH-ON		STANDARD PLAN			



10:1

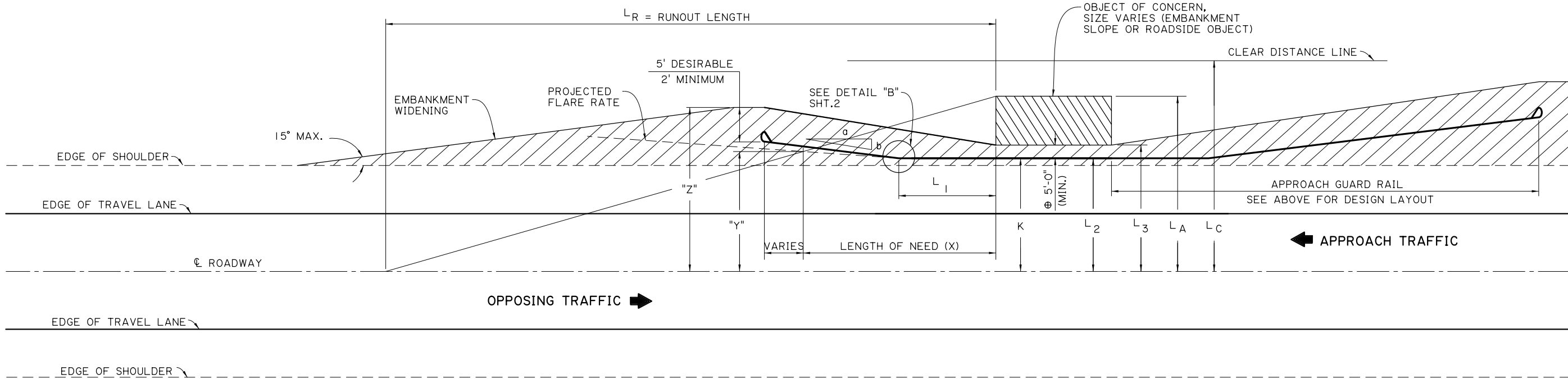
6/17/2026

IP_FWP:d1273831\HIGHWAY GUARD RAIL (MASH)_4 of 11.dgn



GUARD RAIL LAYOUT FOR SHOULDER APPLICATIONS - APPROACH VARIABLES
(GUARD RAIL OUTSIDE OF OPPOSING TRAFFIC'S CLEAR ZONE ; $K > L_c$)
N.T.S.

⊕ MINIMUM DISTANCE MEASURED FROM BACK FACE OF GUARD RAIL TO FRONT FACE OF OBJECT OF CONCERN.
LAYOUT FOR TANGENT GUARD RAIL SECTIONS AND END TREATMENTS SIMILAR. FOR EMBANKMENT WIDENING DETAILS, SEE SHT. NO. 2.



GUARD RAIL LAYOUT FOR SHOULDER APPLICATIONS - OPPOSING VARIABLES
(GUARD RAIL INSIDE OF OPPOSING TRAFFIC'S CLEAR ZONE ; $K < L_c$)
N.T.S.

SHEET NUMBER		PARISH		CONTROL SECTION		STATE PROJECT	
DESIGN	CHECK	P. FOSSIER	K. BRAUNER	DETAIL	CHECK	J. DOUCET	K. BRAUNER
APPROVED BY CHIEF ENGINEER:		REVIEW		REVIEW		REVIEW	
DATE: 6/29/2026		SERIES # 4 OF 11		C. GUIDRY			
REVISION OR CHANGE ORDER DESCRIPTION		BY		DATE		NO.	
HIGHWAY GUARD RAIL (MASH) NON-BRIDGE APPLICATION (TYPICAL LAYOUT)		GR-MASH-ON		STANDARD PLAN		DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT	

ELEVATION - NON-BRIDGE END APPLICATION
FOR POST, BLOCKOUTS AND GUARD RAIL DETAILS, SEE SHTS. 6, 9, 10, & 11
N.T.S.

6/17/2026

10:29



IP_FWP:q1273831\HIGHWAY GUARD RAIL (MASH)_6 of 11.dgn

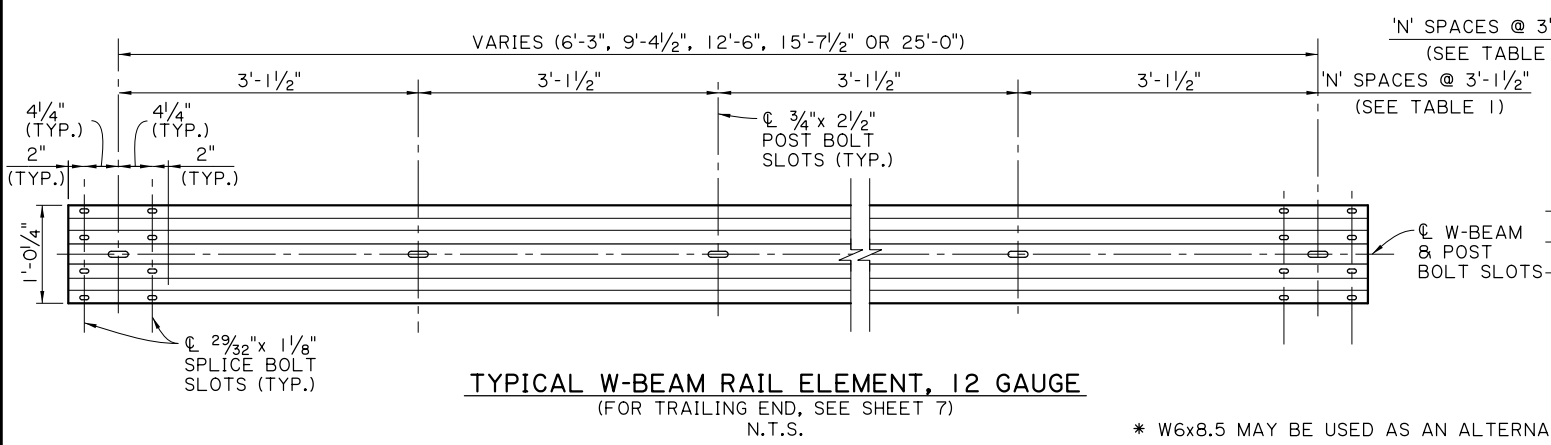
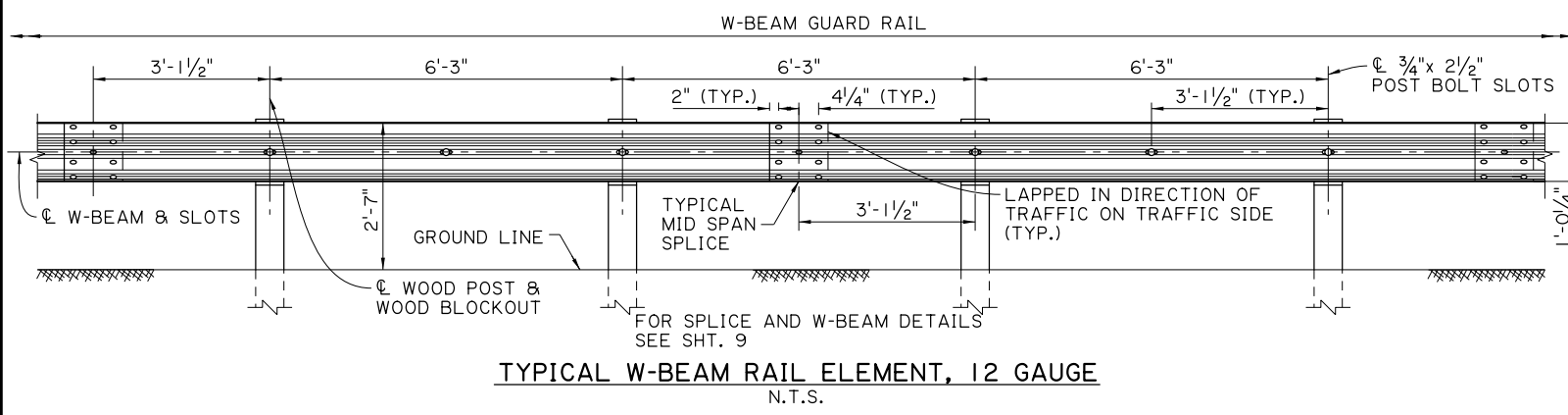
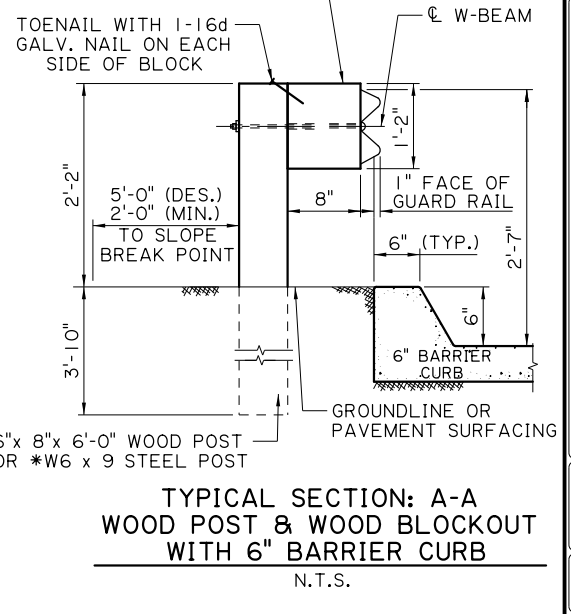
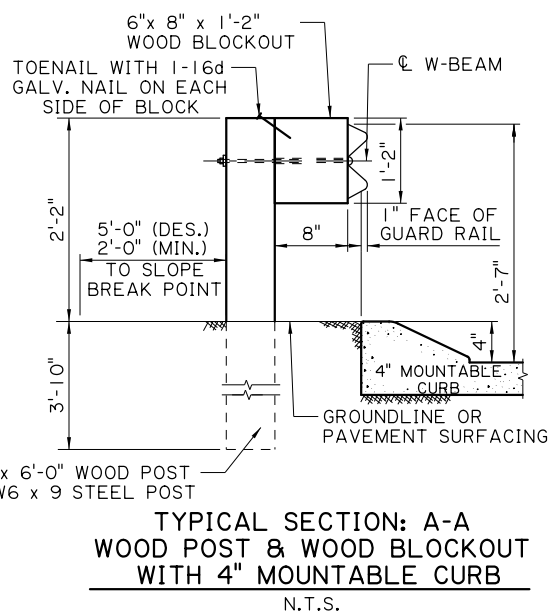
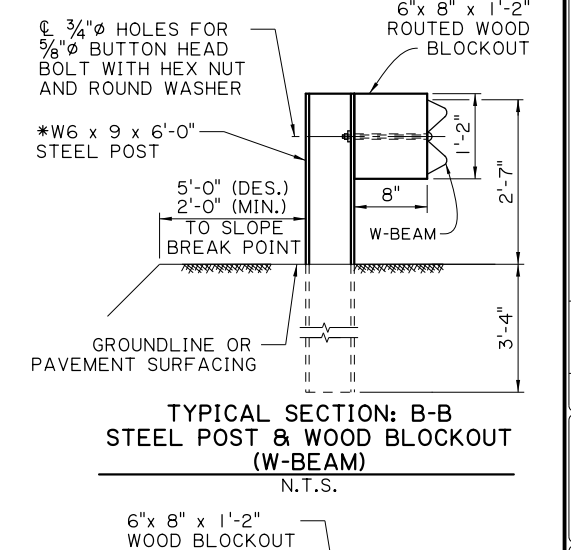
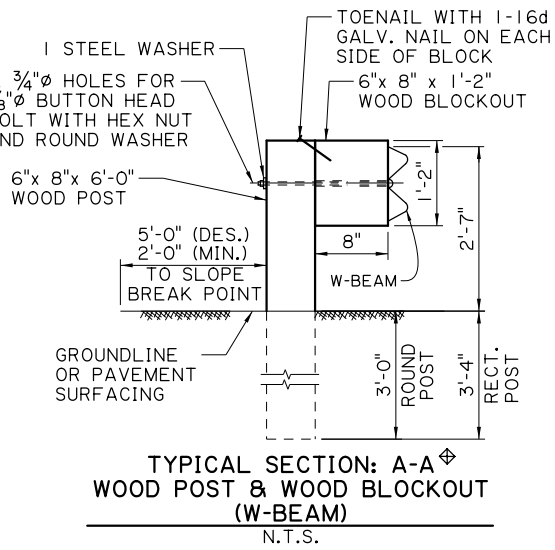
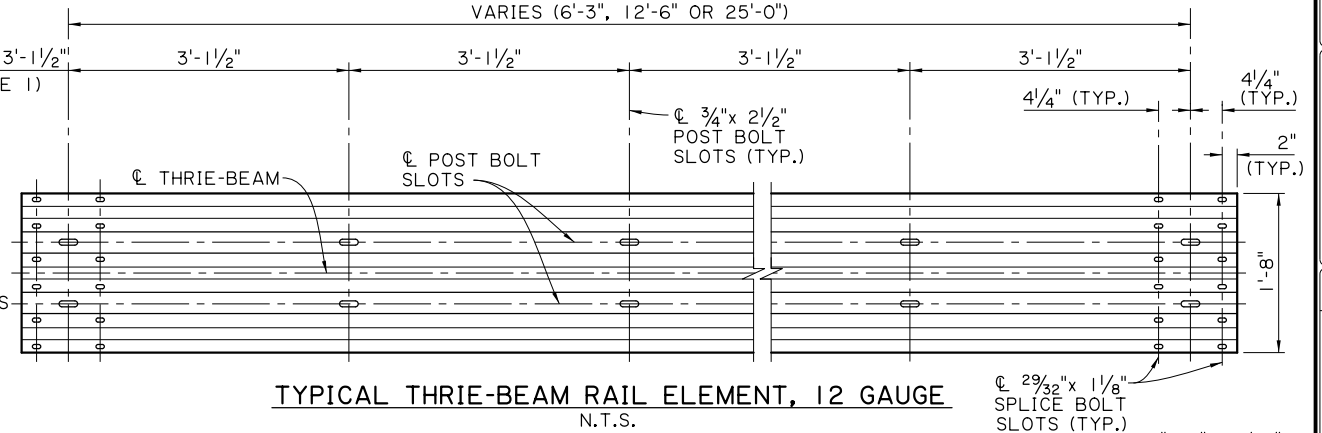
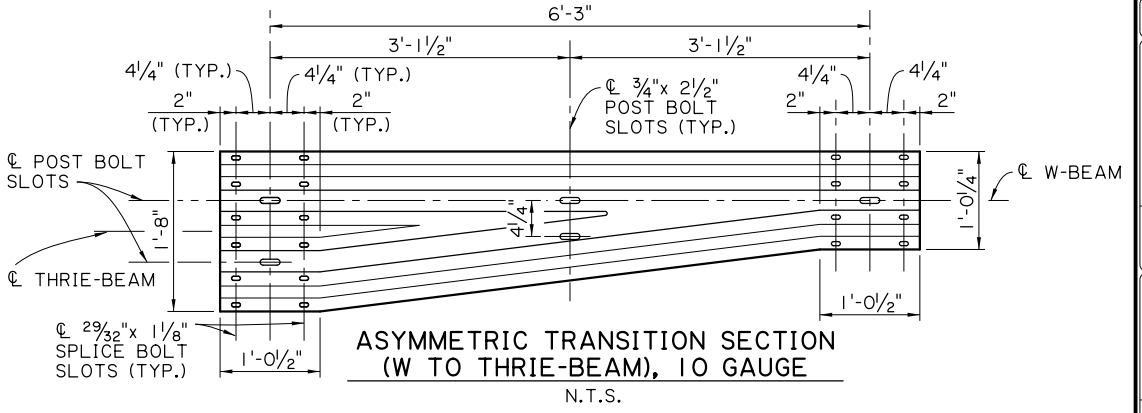
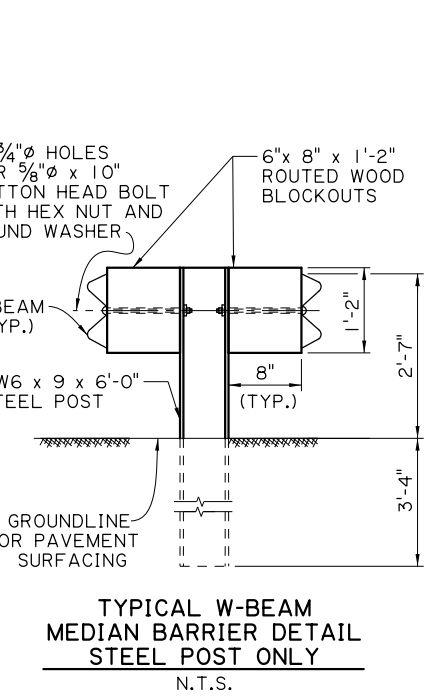
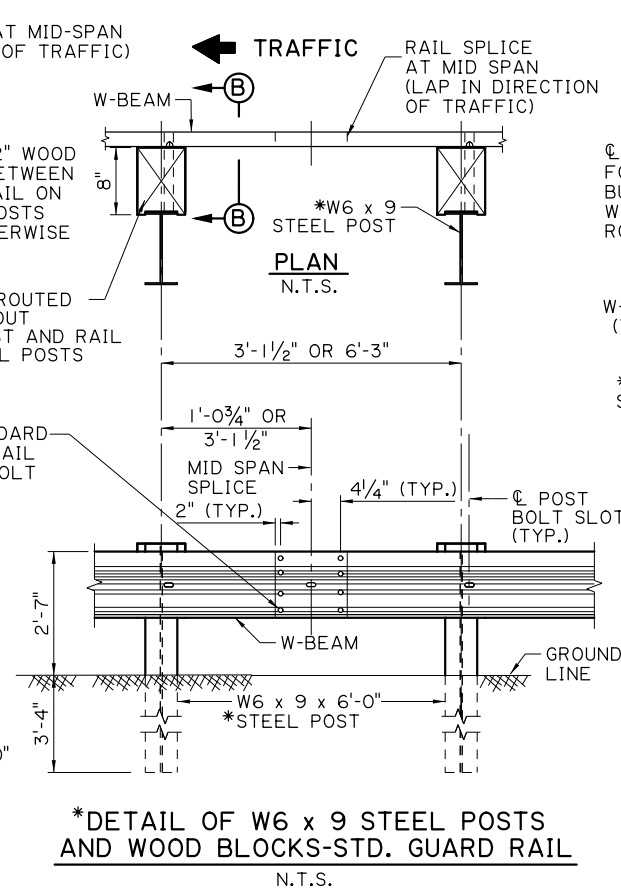
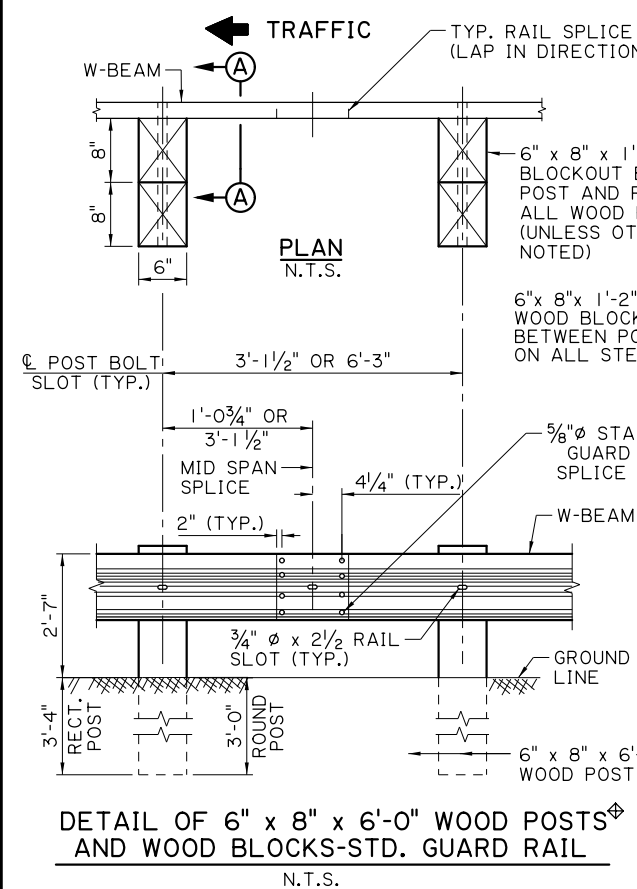


TABLE 1: ELEMENT SUMMARY TABLE:

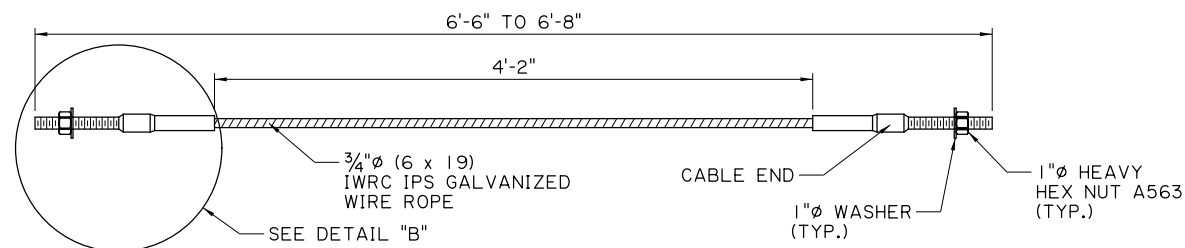
PANEL TYPE	NUMBER OF SPACES 'N'	GAUGE
6'-3" W-BEAM	2	12
9'-4 1/2" W-BEAM	3	12
12'-6" W-BEAM	4	12
15'-7 1/2" W-BEAM	5	12
25'-0" W-BEAM	8	12

PANEL TYPE	NUMBER OF SPACES 'N'	GAUGE
6'-3" THRIE-BEAM	2	12
12'-6" THRIE-BEAM	4	12
25'-0" THRIE-BEAM	8	12
THRIE-BEAM TRANSITION	2	10

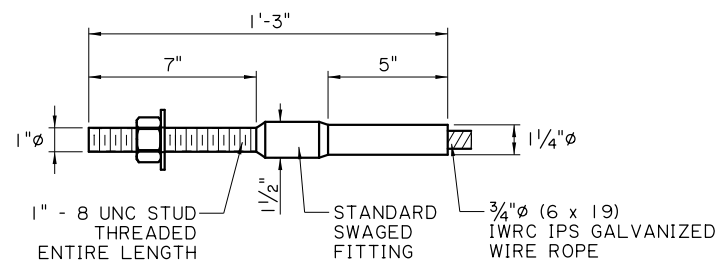
* W6x8.5 MAY BE USED AS AN ALTERNATE.



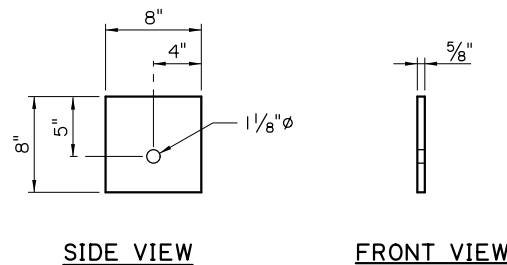
SHEET NUMBER		PARISH		CONTROL SECTION		STATE PROJECT	
DESIGN		CHECK		DETAIL		REVIEW	
P. FOSSIER		K. BRAUNER		J. DOUCET		C. GUIDRY	
6 OF 11		6 OF 11		6 OF 11		6 OF 11	
APPROVED BY CHIEF ENGINEER:		DATE: 6/29/2026		BY:		DATE:	
REVISION OR CHANGE ORDER DESCRIPTION		NO.		DATE		GR-MASH-ON	
HIGHWAY GUARD RAIL (MASH) TYPICAL DETAILS AND SECTIONS		DOTD		LOUISIANA DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE		STANDARD PLAN	



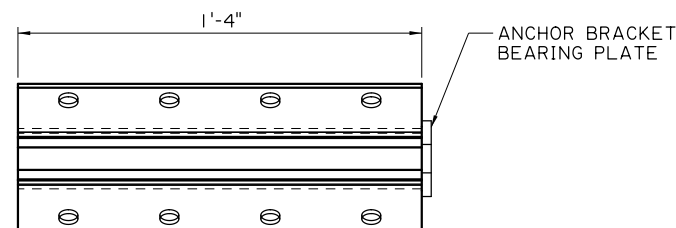
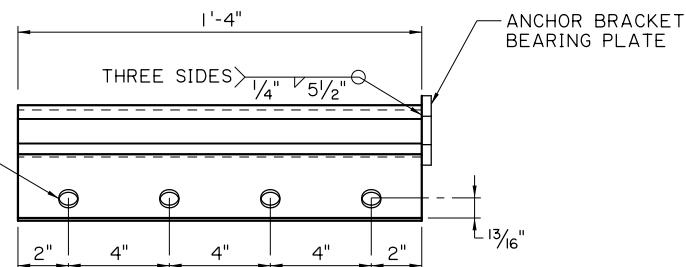
BCT ANCHOR CABLE
N.T.S.



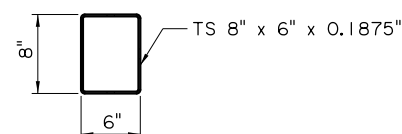
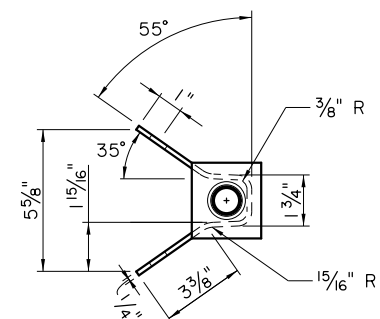
DETAIL "B"



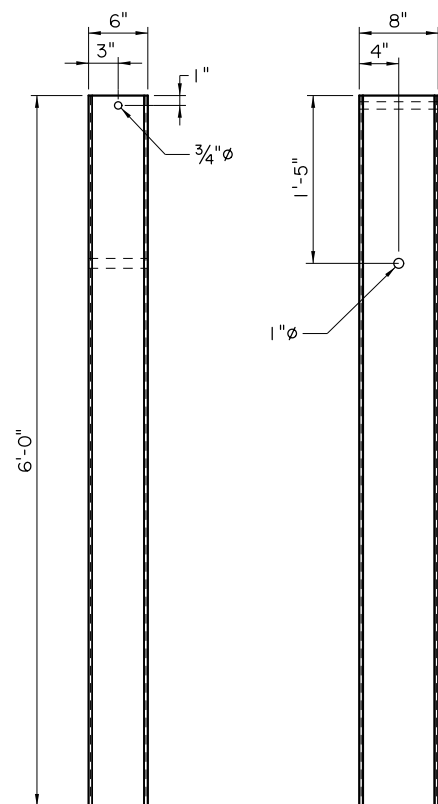
ANCHOR CABLE
BEARING PLATE
N.T.S.



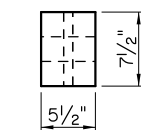
STEEL ANCHOR BRACKET
N.T.S.



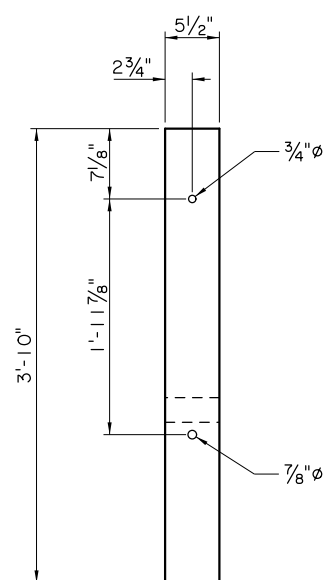
PLAN VIEW



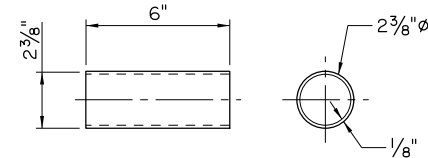
FRONT VIEW



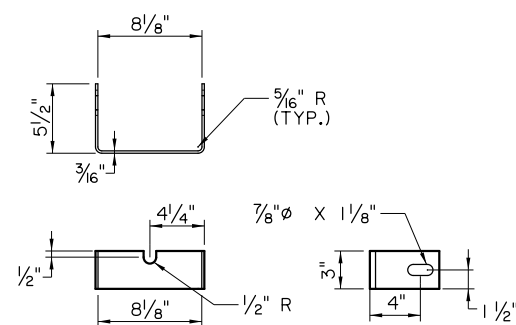
PLAN VIEW



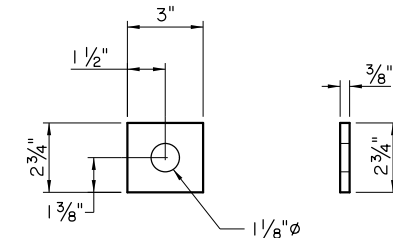
FRONT VIEW



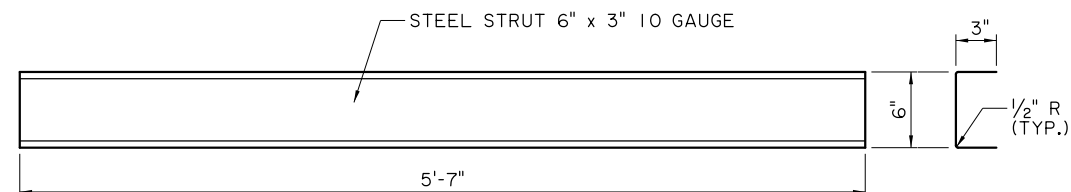
2 3/8" Ø POST SLEEVE
N.T.S.



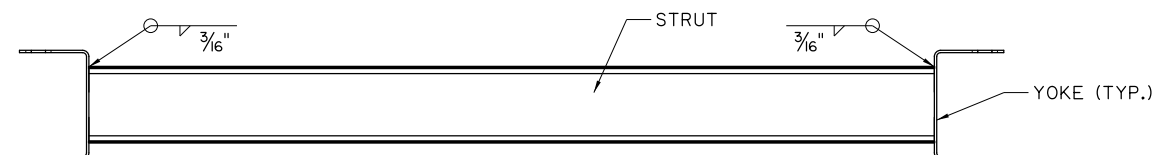
YOKE DETAIL
N.T.S.



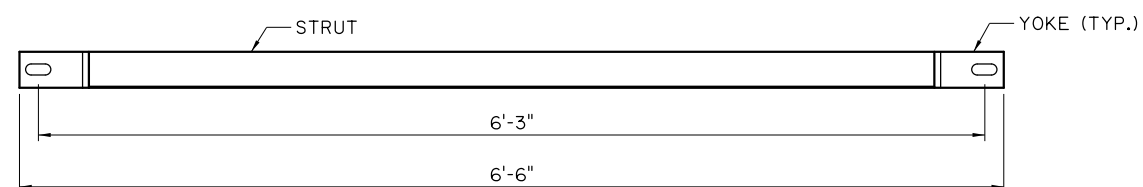
ANCHOR BRACKET
BEARING PLATE
N.T.S.



STRUT - PLAN VIEW
N.T.S.



PLAN VIEW



FRONT VIEW
GROUND STRUT DETAIL
N.T.S.

NOTES:

FOUNDATION TUBE BOLTS ARE 7/8" DIAMETER ASTM A307 HEX HEAD BOLT. FOUNDATION TUBE BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 7/8" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

ANCHOR BRACKET AND GROUND STRUT BOLTS ARE 5/8" DIAMETER
ASTM A307 HEX HEAD BOLTS AND REQUIRE ASTM A563 A NUTS AND
TWO ASTM F844 5/8" DIAMETER FLAT WASHERS EACH. INSTALL ONE
WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

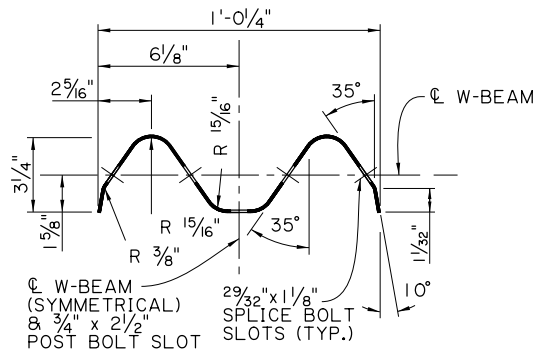
[illegible]



11:0

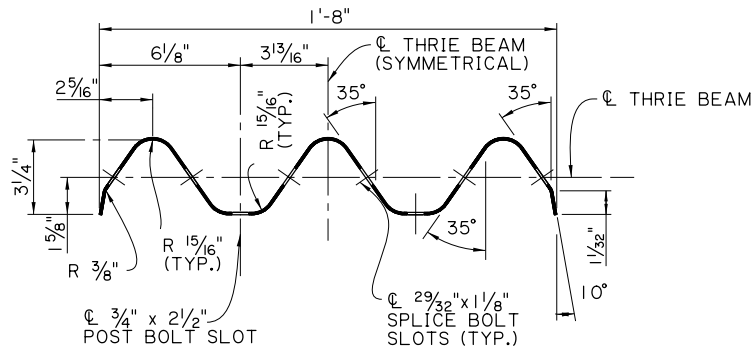
6/17/2026

IP_FWP:d1273831\HIGHWAY GUARD RAIL (MASH)_9 of 11.dgn



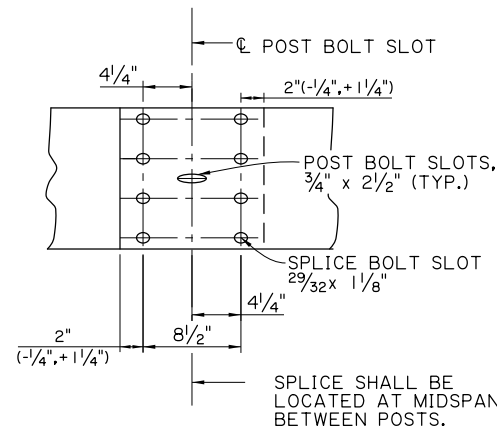
TYPICAL W BEAM

N.T.S.



TYPICAL THRIE BEAM

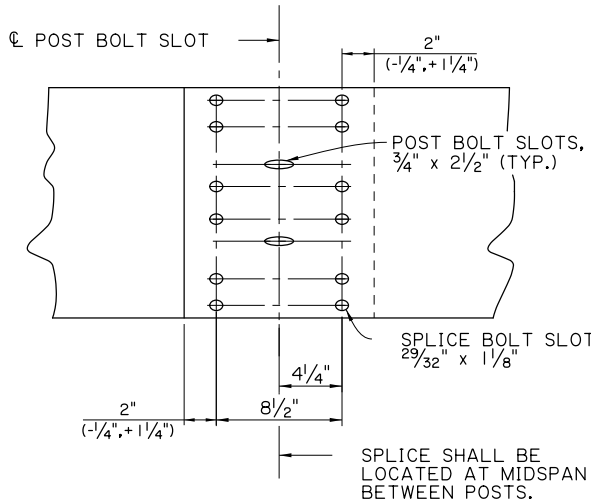
N.T.S.



TYPICAL W-BEAM SPLICE DETAIL - ELEVATION

5/8" ϕ x 1 1/4" BUTTON HEAD OVAL SHOULDER BOLTS WITH 5/8" ϕ RECESSED HEX NUTS-TOTAL 8 PER SPLICE. LAP IN DIRECTION OF TRAFFIC.

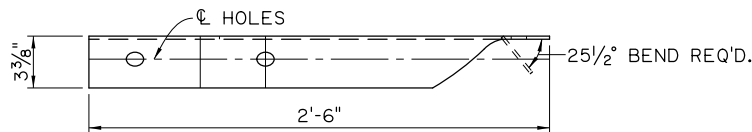
N.T.S.



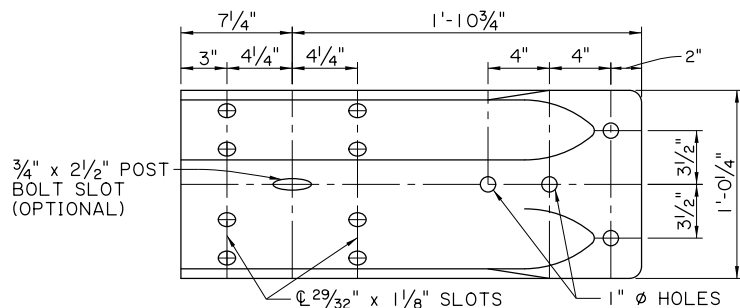
TYPICAL THRIE BEAM SPLICE DETAIL - ELEVATION

5/8" ϕ x 1 1/4" BUTTON HEAD OVAL SHOULDER BOLTS WITH 5/8" ϕ RECESSED HEX NUTS-TOTAL 12 PER SPLICE. LAP IN DIRECTION OF TRAFFIC.

N.T.S.



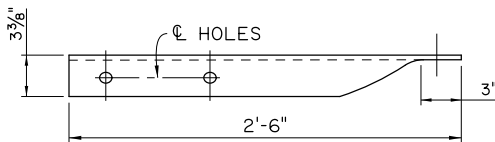
PLAN



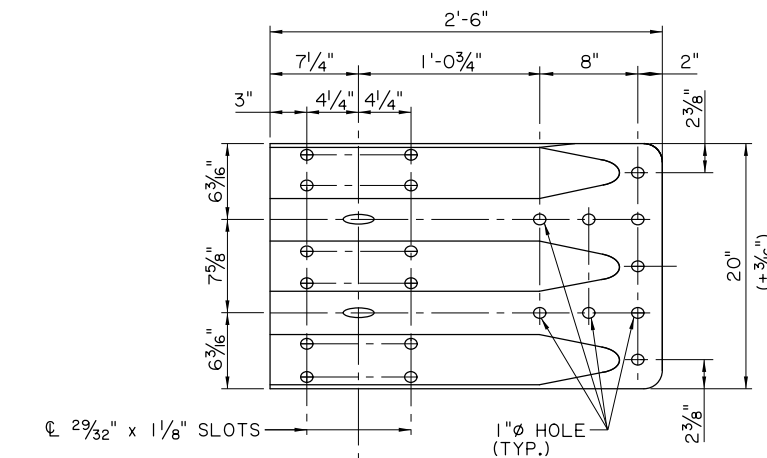
ELEVATION

TYPICAL W BEAM TERMINAL CONNECTOR, 10 GAUGE

N.T.S.



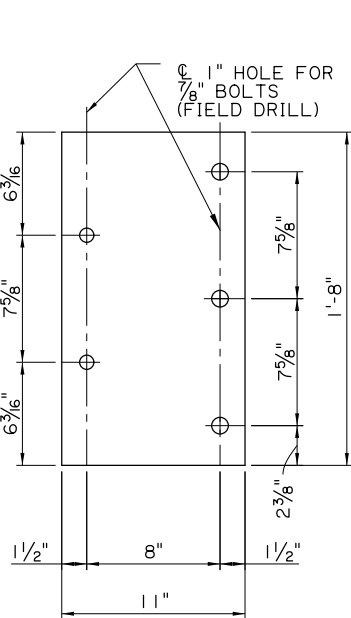
PLAN



ELEVATION

TYPICAL THRIE BEAM TERMINAL CONNECTOR, 10 GAUGE

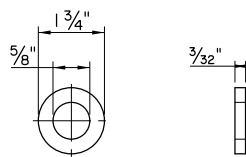
N.T.S.



5/8" ϕ BEARING PLATE

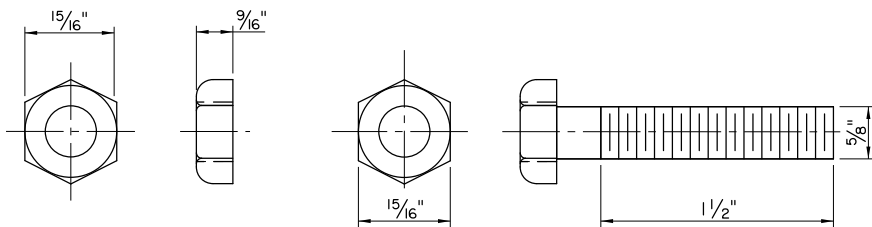
(FOR ANCHORING THRIE BEAM TO CONCRETE BARRIER RAIL)

N.T.S.



5/8" ϕ POST BOLT WASHERS

N.T.S.



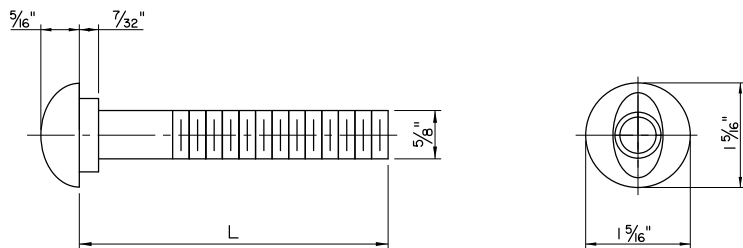
NUT

BOLT

5/8" ϕ HEX BOLT & HEX NUT

(FOR FASTENING THE ANCHOR BRACKET TO RAIL IN TRAILING END)

N.T.S.



5/8" ϕ BUTTON HEAD BOLT

N.T.S.



5/8" ϕ RECESS NUT

N.T.S.

5/8" ϕ BUTTON HEAD NUT	
L	THREAD LENGTH
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
1'-6"	4"
1'-8"	4"

NOTES:

5/8" ϕ BUTTON HEAD BOLTS:

(1 1/4" LENGTH): THIS BOLT IS USED TO SPLICE RAIL ELEMENTS USED IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(2" LENGTH): THIS BOLT IS FOR FASTENING RAILS TO STEEL POSTS WHEN USED IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(10" LENGTH): THIS BOLT IS USED FOR FASTENING RAILS TO WOOD BLOCK AND STEEL POST IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(1'-6" LENGTH): THIS BOLT IS FOR FASTENING WOOD BLOCKS & WOOD POSTS IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(1'-8" LENGTH): THIS BOLT IS FOR FASTENING NESTED THRIE BEAM TO WOOD BLOCKS AND POST AT THE FIRST TWO POST LOCATIONS IN THE GUARD RAIL TRANSITION AT THE ENDS OF RIGID (CONCRETE) STRUCTURES, UNLESS OTHERWISE SHOWN IN THE PLANS.

5/8" ϕ BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 307 GRADE "A" AND NUTS SHALL BE IN ACCORDANCE WITH ASTM A 563 GRADE "A" OR BETTER. BOLTS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

STEEL POST & PLATES:

ALL STEEL POSTS AND PLATES SHALL CONFORM TO ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 123, NO PUNCHING, DRILLING OR CUTTING WILL BE PERFORMED AFTER GALVANIZING.

NOTES:

1. ALL RAIL COMPONENTS EXCEPT THE W AND THRIE BEAM TERMINAL CONNECTORS AND THE W TO THRIE BEAM TRANSITION SHALL MEET AASHTO M 180, CLASS "A" (12 GAUGE) METAL THICKNESS WITH A TYPE II COATING. THE W BEAM AND THRIE BEAM TERMINAL CONNECTORS AND TRANSITION SECTIONS SHALL BE CLASS "B" (10 GAUGE) METAL THICKNESS WITH TYPE II COATING.

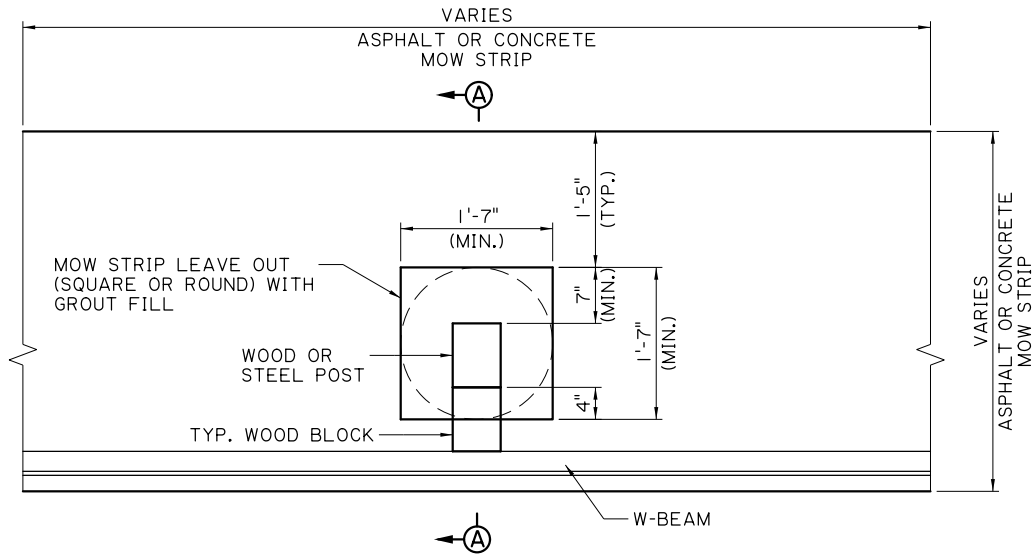
SHEET NUMBER		PARISH		CONTROL SECTION		STATE PROJECT	
P. FOSSIER		K. BRAUNER		J. DOUCET		K. BRAUNER	
CHECK		DETAIL		CHECK		REVIEW	
DESIGN		REVIEW		SERIES # 9		OF 11	
APPROVED BY CHIEF ENGINEER:		DATE: 6/29/2026		BY		DATE	
REVISION OR CHANGE ORDER DESCRIPTION		NO.		DATE		GR-MASH-ON	
HIGHWAY GUARD RAIL (MASH) RAIL STRUCTURAL DETAILS		STANDARD PLAN		DOTD		LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT	



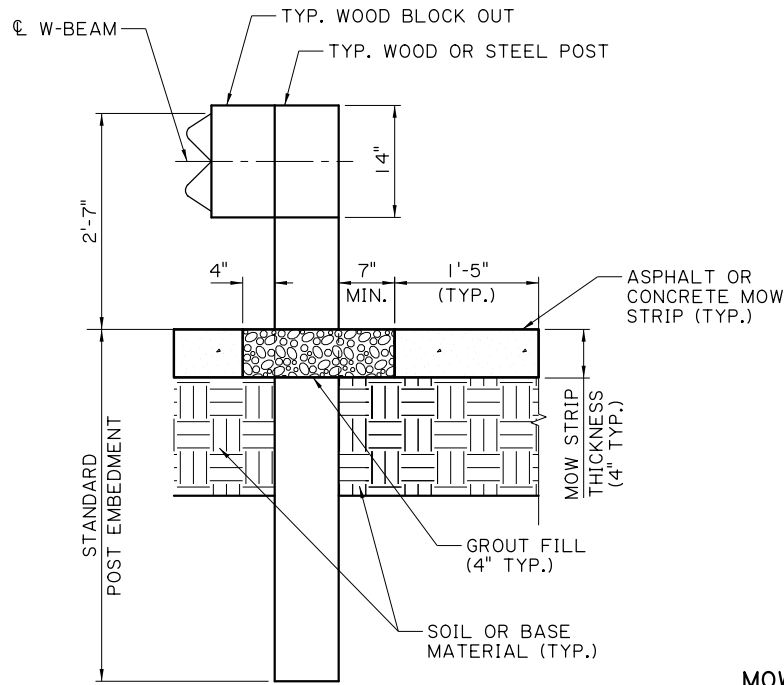
13:2

6/17/2026

IP_FWP:g1273831\HIGHWAY GUARD RAIL (MASH)_11 of 11.dgn



PLAN



SECTION A-A

ASPHALT OR CONCRETE MOW STRIPS
N.T.S.

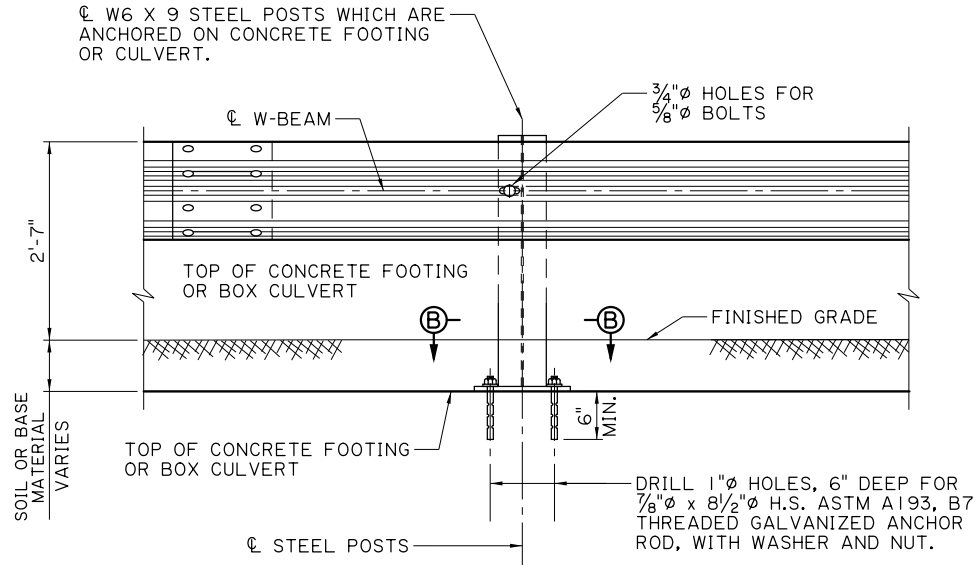
MOW STRIP NOTES:

ALL GUARD RAIL POSTS LOCATED WITHIN CONCRETE OR ASPHALT MOW STRIPS SHALL MEET INSTALLATION REQUIREMENTS SHOWN ON THIS SHEET.

THE LEAVE OUTS SHALL BE FILLED WITH A GROUT MIXTURE CONSISTING OF: 2719 POUNDS SAND, 188 POUNDS TYPE I OR II CEMENT, AND 550 POUNDS OF WATER PER CUBIC YARD WITH A 28 DAY COMPRESSIVE STRENGTH OF 230 PSI OR LESS. PROVIDE GROUT WITH A CONSISTENCY THAT WILL FLOW INTO AND COMPLETELY FILL ALL VOIDS.

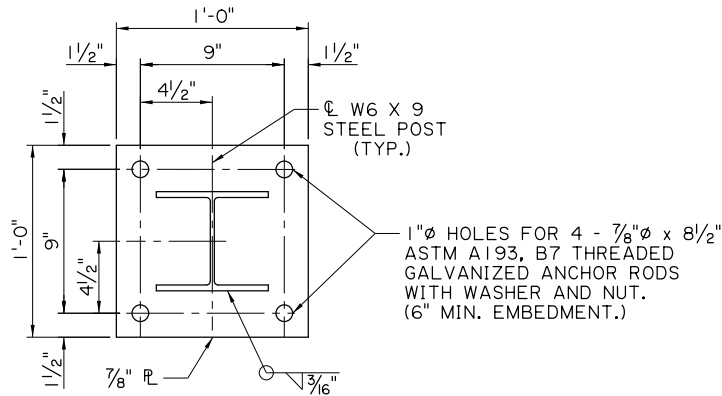
ALL LABOR AND MATERIALS TO PLACE GROUT FILL SHALL BE INCLUDED IN PAYMENT FOR CONCRETE OR ASPHALT PAVING PAY ITEMS.

THE USE OF 6" X 8" RECTANGULAR TIMBER POSTS IN MOW STRIPS HAS ONLY BEEN APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, THEIR CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.



GALVANIZED STEEL BASE PLATE & STEEL POST

SPECIAL POST WITH BASE PLATE TO BE USED WHEN REQUIRED EMBEDMENT OF CONVENTIONAL POST IN SOIL CANNOT BE OBTAINED, FOR BOX CULVERTS OR OTHER CONCRETE FOOTINGS.



SECTION B-B

ANCHOR ROD INSTALLATION

ALL HOLES DRILLED INTO AN EXISTING CONCRETE STRUCTURE SHALL BE CLEANED WITH COMPRESSED AIR AND MAKE THEM FREE OF ANY OIL OR RESIDUE. THREADED RODS TO BE ANCHORED USING THE HILTI RE500 EPOXY ANCHORING SYSTEM. PLACE ANCHOR BOLT IN HOLE IMMEDIATELY AND WAIT FOR THE MANUFACTURER'S CURE TIME. COST FOR LABOR, MATERIAL AND INSTALLMENT OF BASE PLATE & ANCHOR ROD TO BE PAID FOR AS PART OF GUARD RAIL PAY ITEM.

SHEET NUMBER		PARISH		CONTROL SECTION		STATE PROJECT	
DESIGN		CHECK		DETAIL		REVIEW	
K. BRAUNER		B. ALLEN		K. BRAUNER		C. GUIDRY	
11		11		11		11	
APPROVED BY CHIEF ENGINEER:		DATE:		REVISION OR CHANGE ORDER DESCRIPTION		BY	