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09/08/09

See Sheet 1A For Index of Sheets

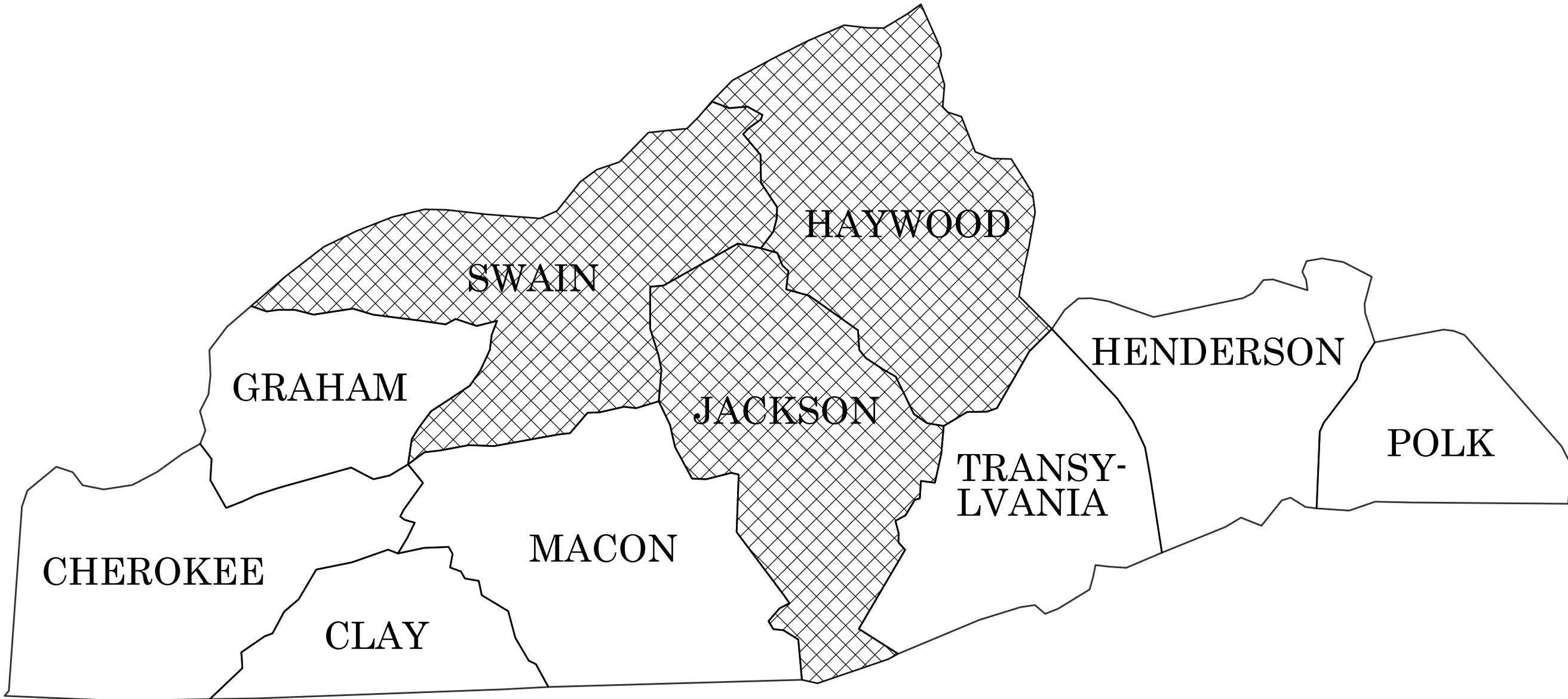
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

DIVISION 14

LOCATION: *VARIOUS LOCATIONS*  
*ACROSS DISTRICT 2 IN DIVISION 14*

TYPE OF WORK: *ID/IQ ON-CALL GUARDRAIL*  
*REPAIR & MAINTENANCE SERVICES*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DN12177638	1	9
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
GMR14.HAY.1P			
GMR14.HAY.2P			
GMR14.JAC.1P			
GMR14.JAC.2P			
GMR14.SWA.1P			
GMR14.SWA.2P			



CONTRACT: DN12177638

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
253 WEBSTER RD., SYLVA NC, 28779

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
N/A

LETTING DATE:  
JULY 22, 2025

WILLIAM WEDDLE, P.E.  
PROJECT ENGINEER

JAMES HOLLINGSWORTH P.E.  
PROJECT DESIGN ENGINEER



CONTRACT: DN12177638

# STATE OF NORTH CAROLINA

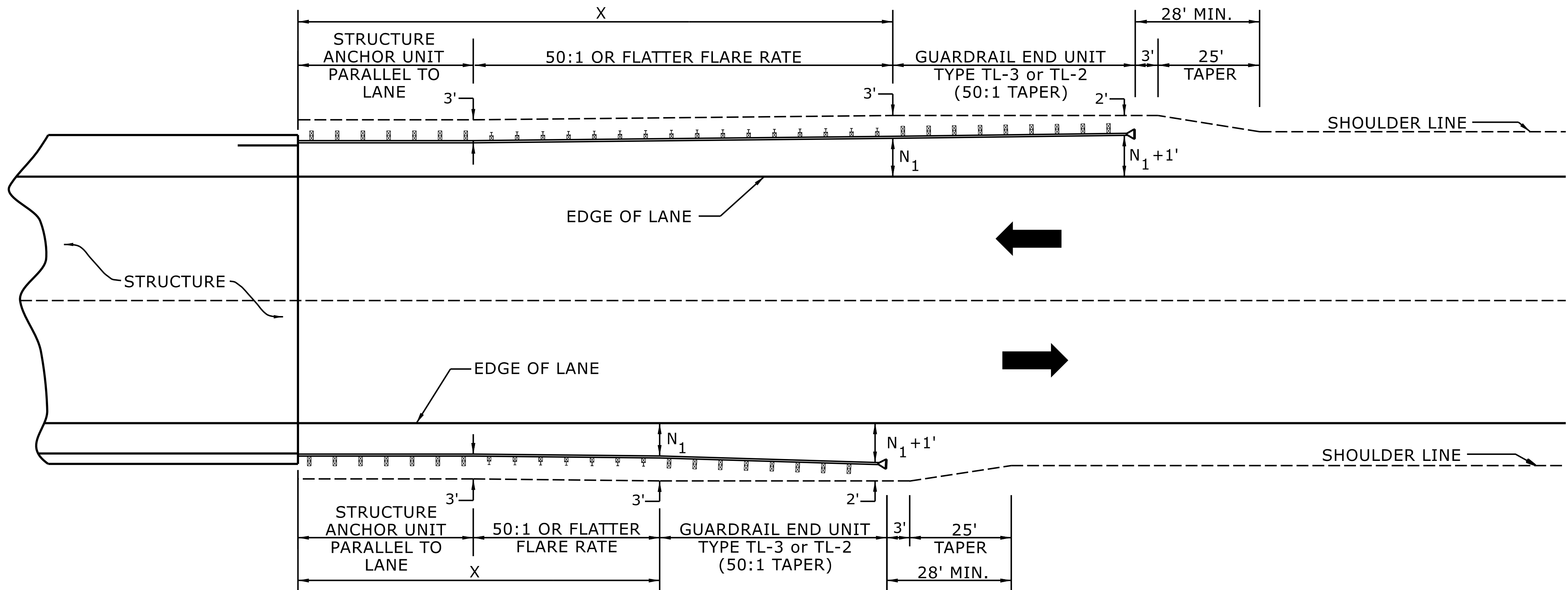
## DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DN12177638	1-A	2
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
GMR14.HAY.1P	N/A	CONSTRUCTION	
GMR14.HAY.2P		CONSTRUCTION	
GMR14.JAC.1P		CONSTRUCTION	
GMR14.JAC.2P		CONSTRUCTION	
GMR14.SWA.1P		CONSTRUCTION	
GMR14.SWA.2P		CONSTRUCTION	

### 2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit – N. C. Department of Transportation – Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 8 – INCIDENTALS	
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
862.04	Anchoring End of Guardrail – for B-77 and B-83 Anchor Units
865.01	Cable Guiderail



USE FLARE RATE AS THE CONTROL IF THE " $N_1$ " DISTANCE IS NOT OBTAINED.  
(" $N_1$ " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS  $\geq$  45MPH USE GREU TYPE TL-3  
FOR POSTED SPEEDS  $<$  45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED ( $X$ ) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

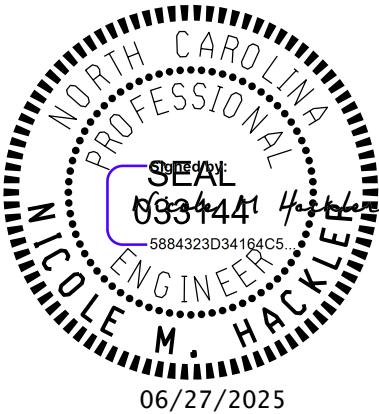
**LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS**

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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 4 OF 15

**862D01**



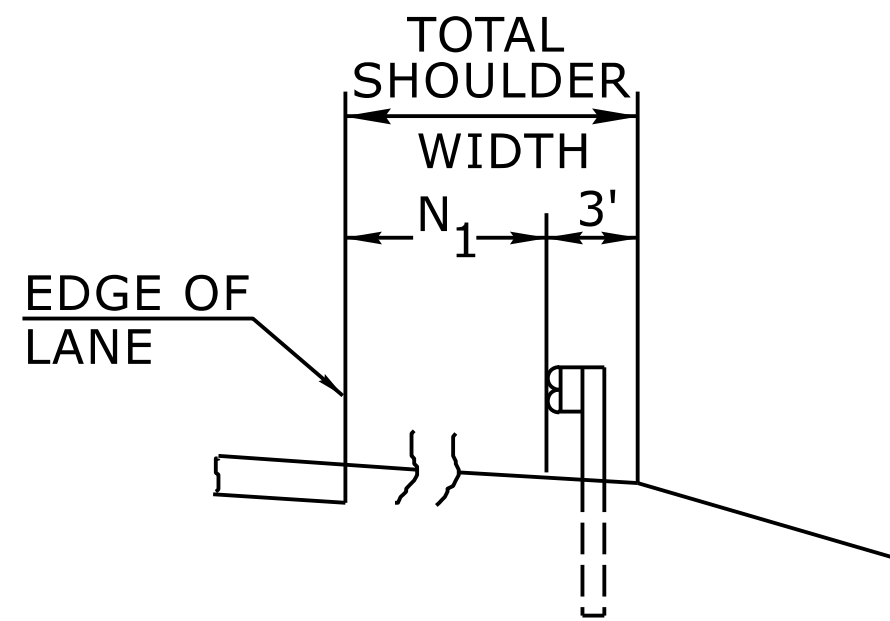
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**CONTRACTS STANDARDS  
AND DEVELOPMENT UNIT**

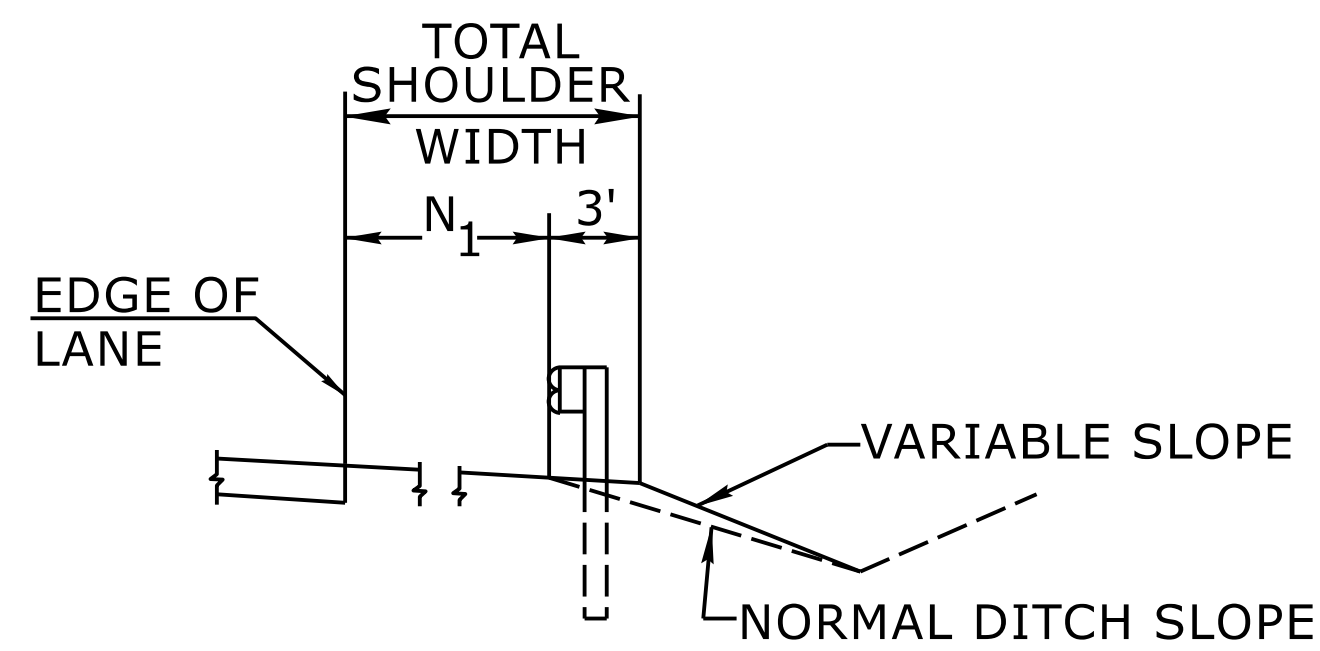
Office 919-707-6950 FAX 919-250-4119

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MODIFIED BY: DATE:   
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FILE SPEC.: DATE:

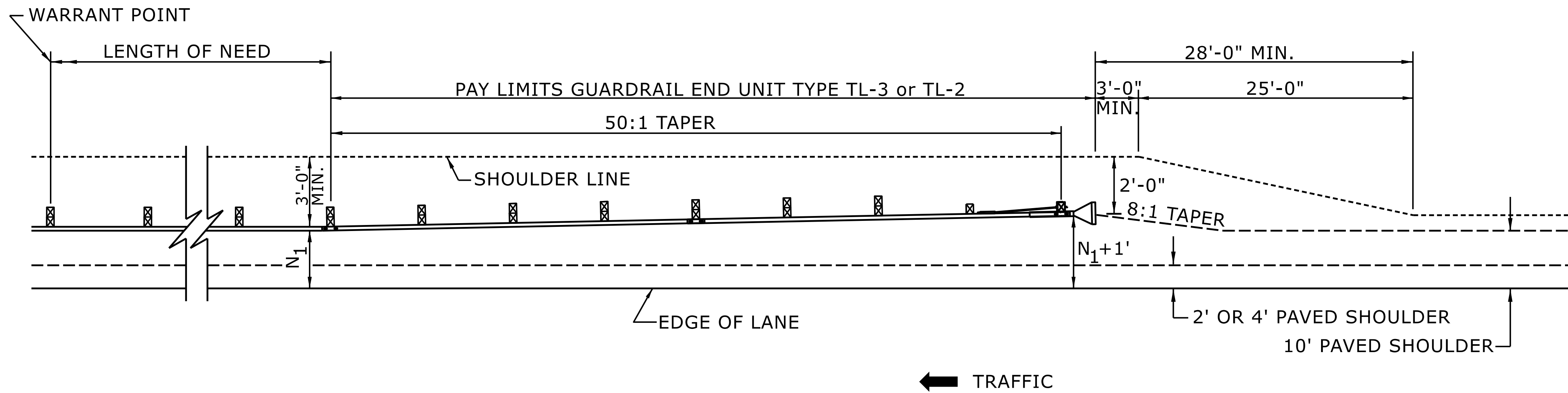


FILL SECTION



CUT SECTION

"N<sub>1</sub>"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



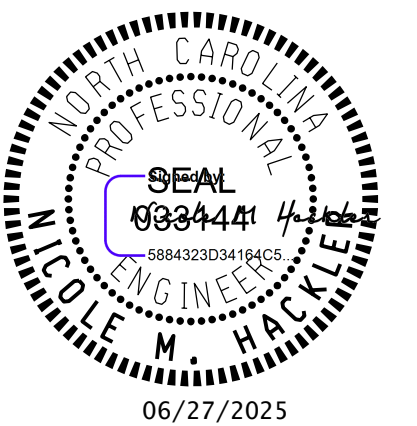
FOR POSTED SPEEDS  $\geq$  45mph USE GREU TYPE TL-3  
FOR POSTED SPEEDS  $<$  45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 6 OF 15  
**862D01**



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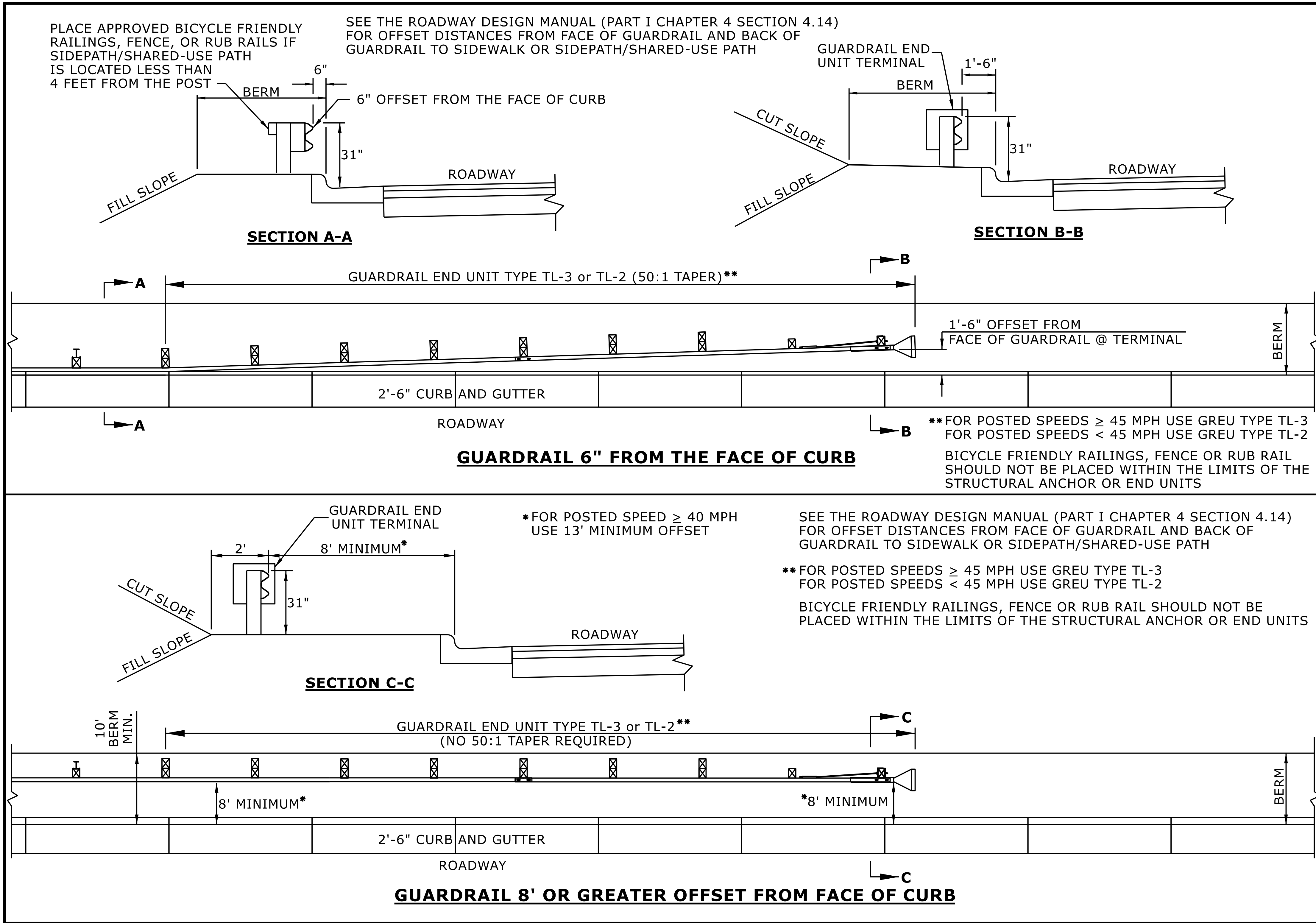
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FILE SPEC.:			

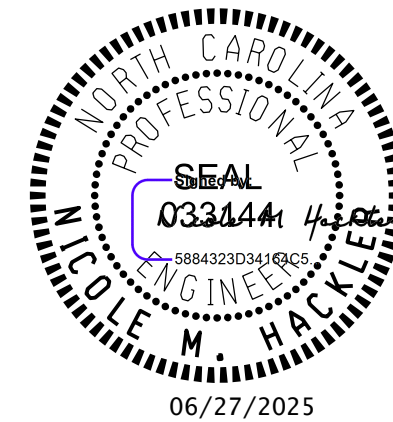




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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**  
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 12 OF 15  
**862D01**



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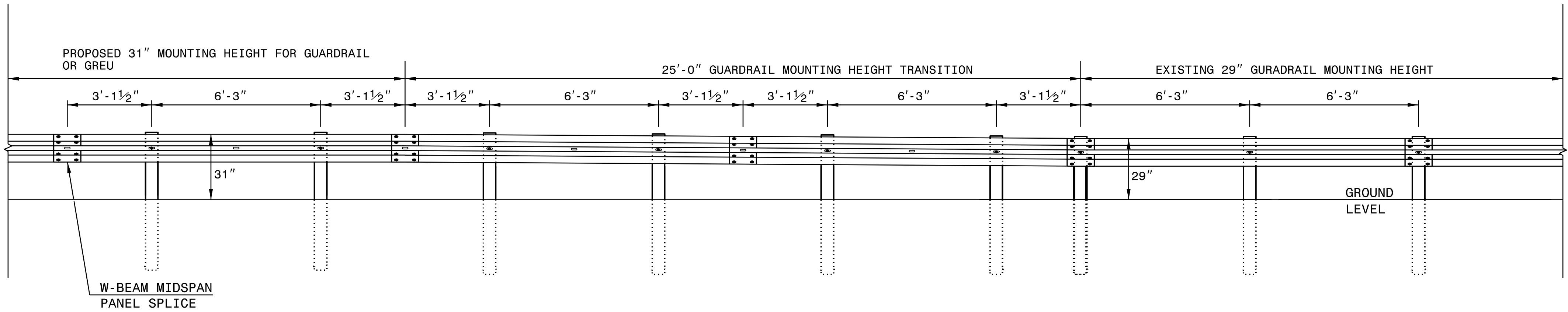
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NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31" GUARDRAIL.



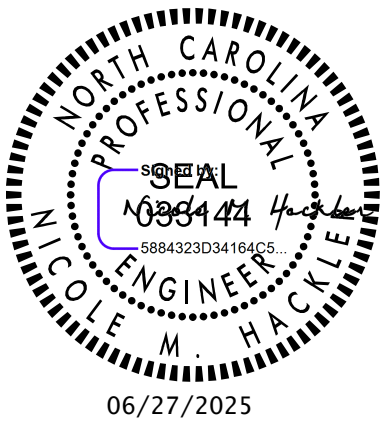
ELEVATION VIEW

TRANSITION FROM 29" TO 31" W-BEAM GUARDRAIL MOUNTING HEIGHT

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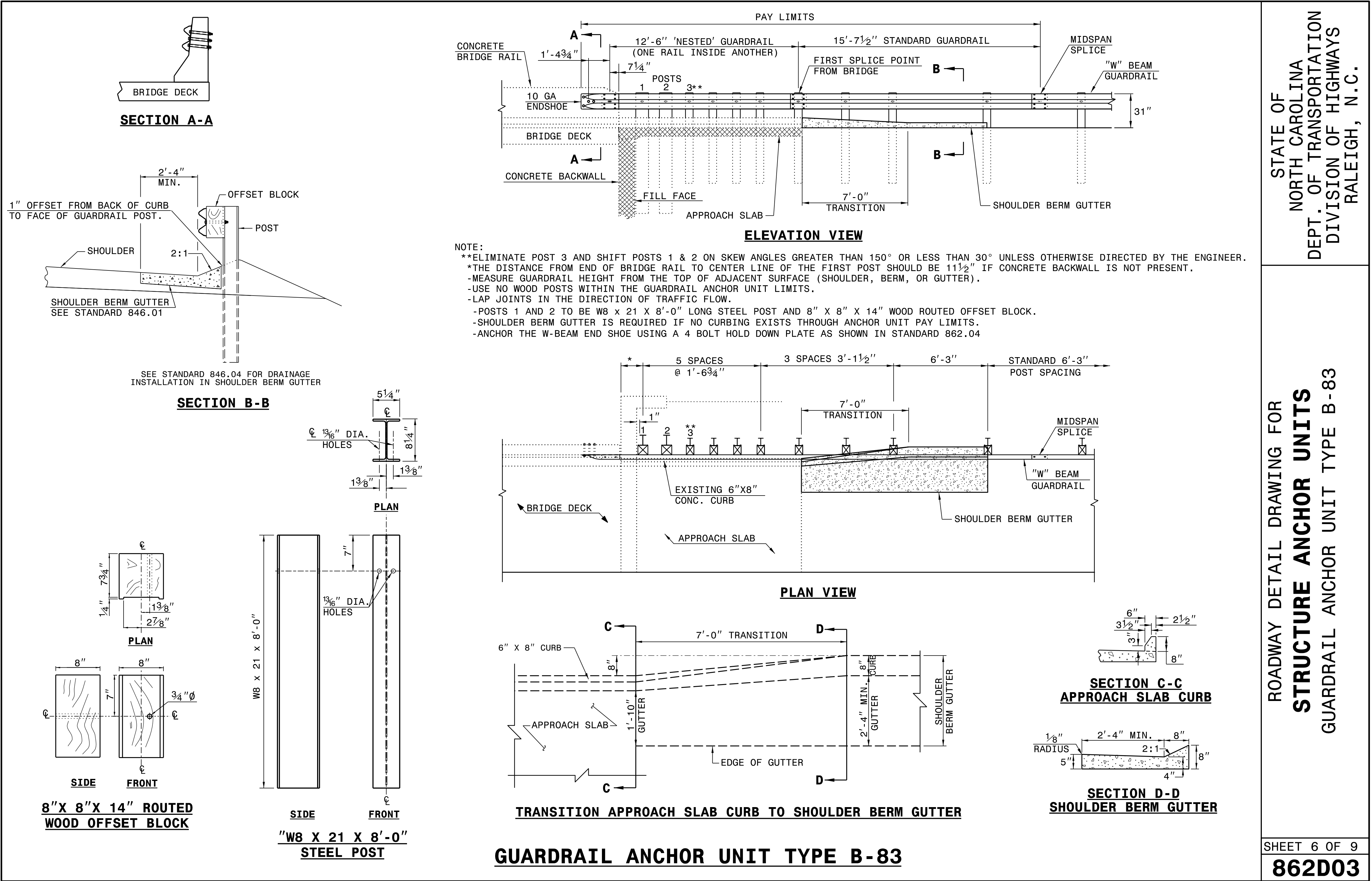
ROADWAY DETAIL DRAWING FOR  
GUARDRAIL INSTALLATION

SHEET 5 OF 9  
862D02



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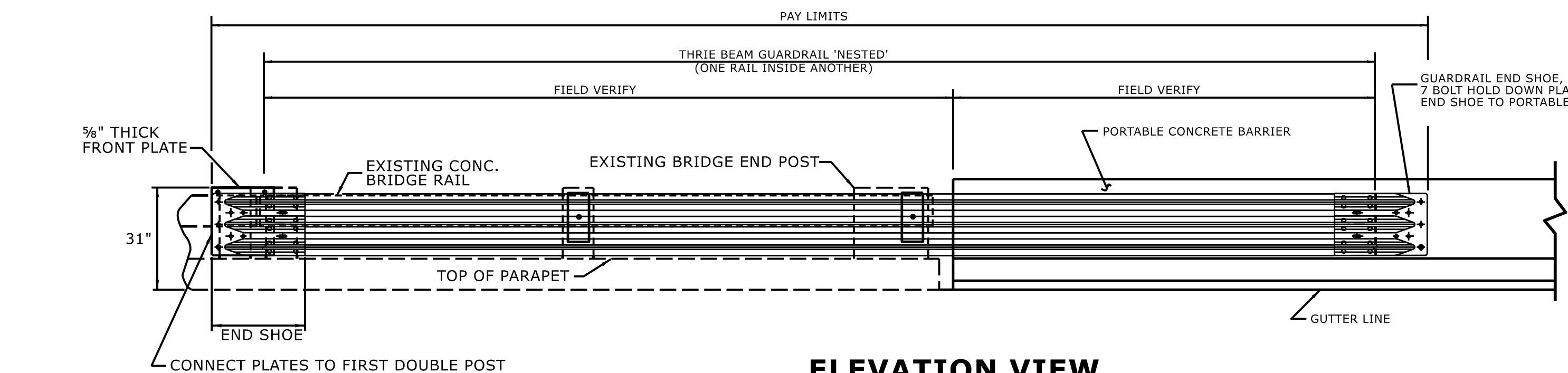


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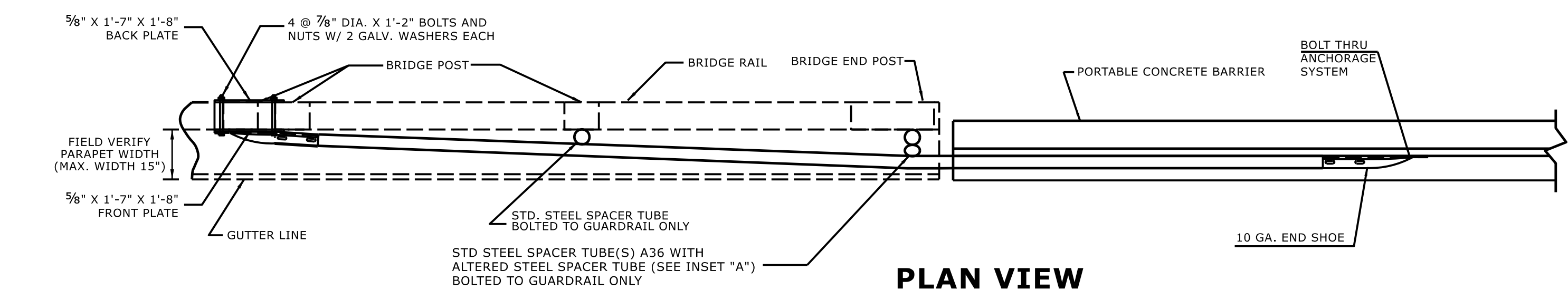
CONTRACTS STANDARDS  
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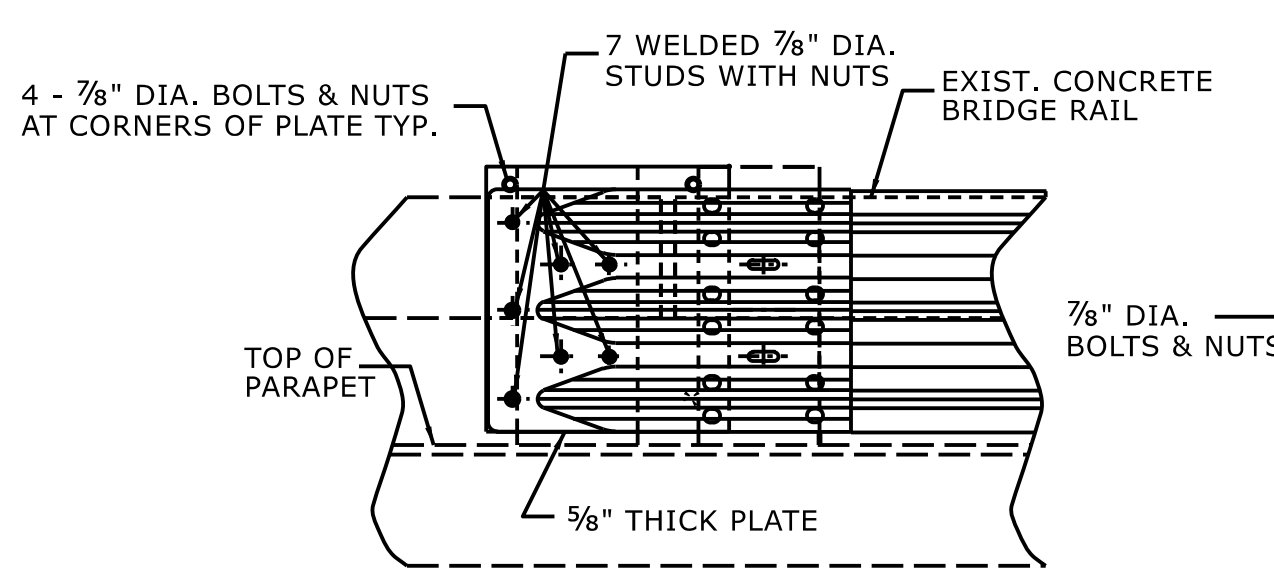
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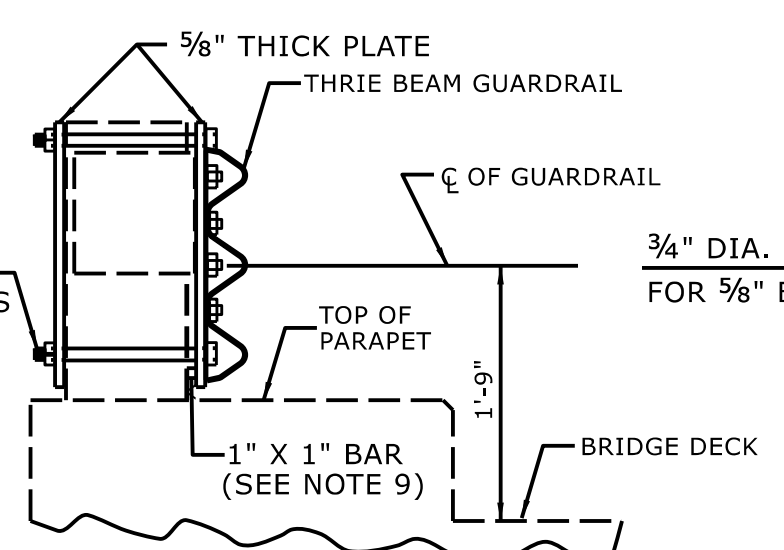
**ELEVATION VIEW**



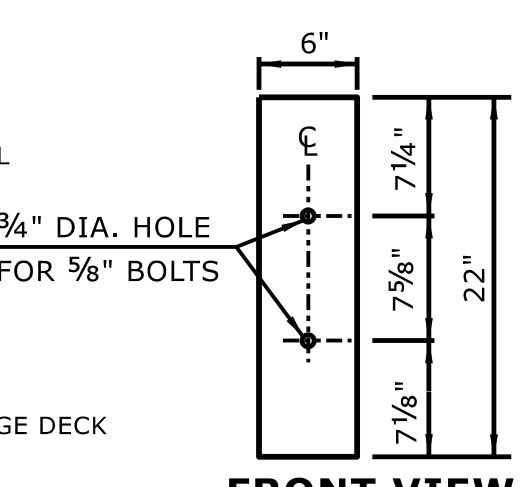
**PLAN VIEW**



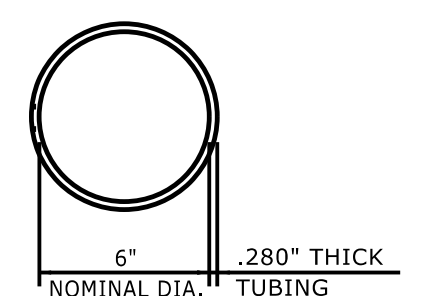
**ELEVATION VIEW**



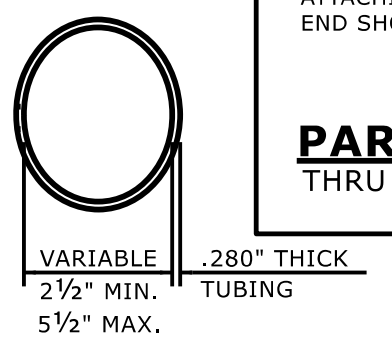
**SECTION VIEW**



**FRONT VIEW**

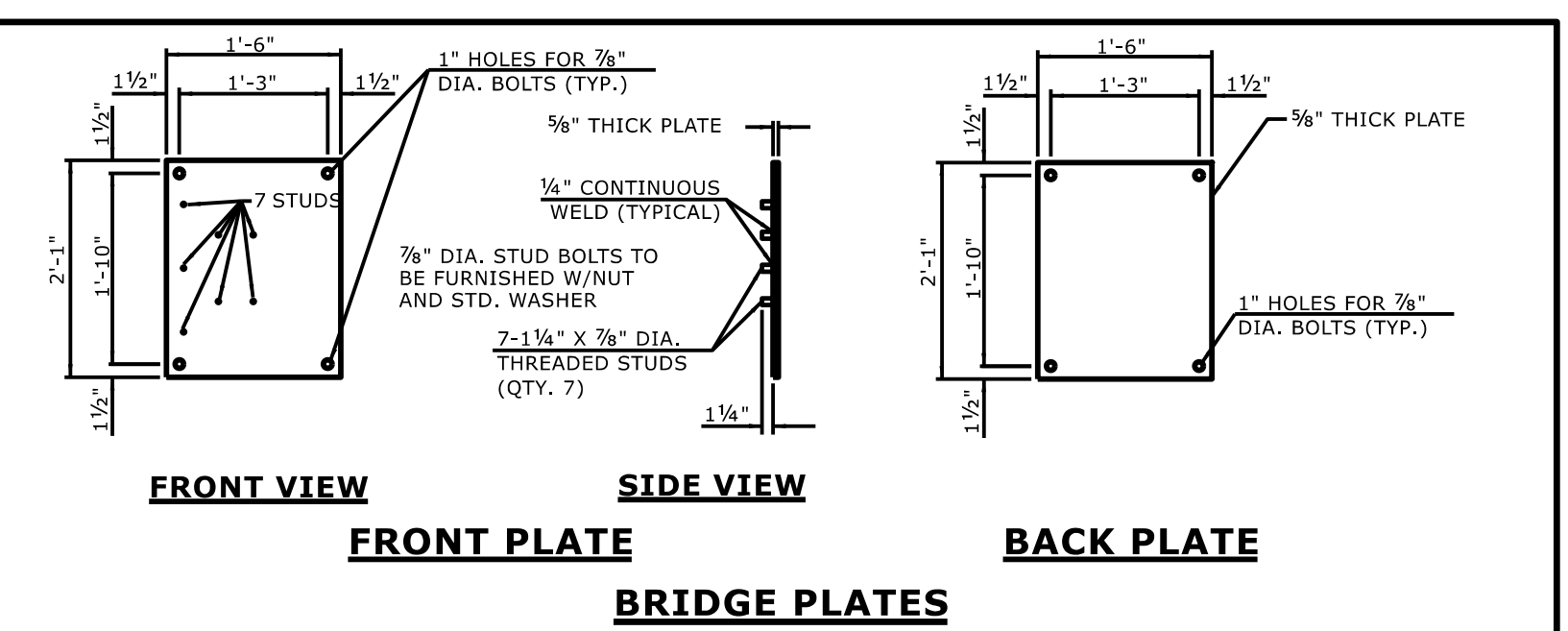


**PLAN VIEW**



**PLAN VIEW  
INSET "A"**

**STEEL SPACER TUBE**



**FRONT VIEW**

**SIDE VIEW**

**FRONT PLATE**

**BACK PLATE**

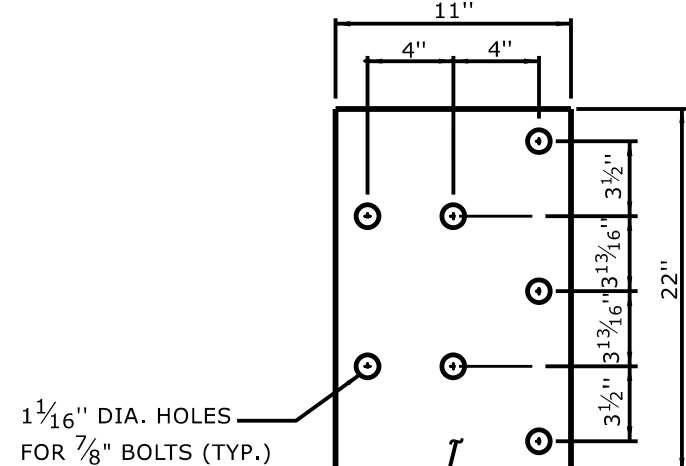
**BRIDGE PLATES**

**NOTES FOR 7 BOLT HOLD DOWN PLATE**

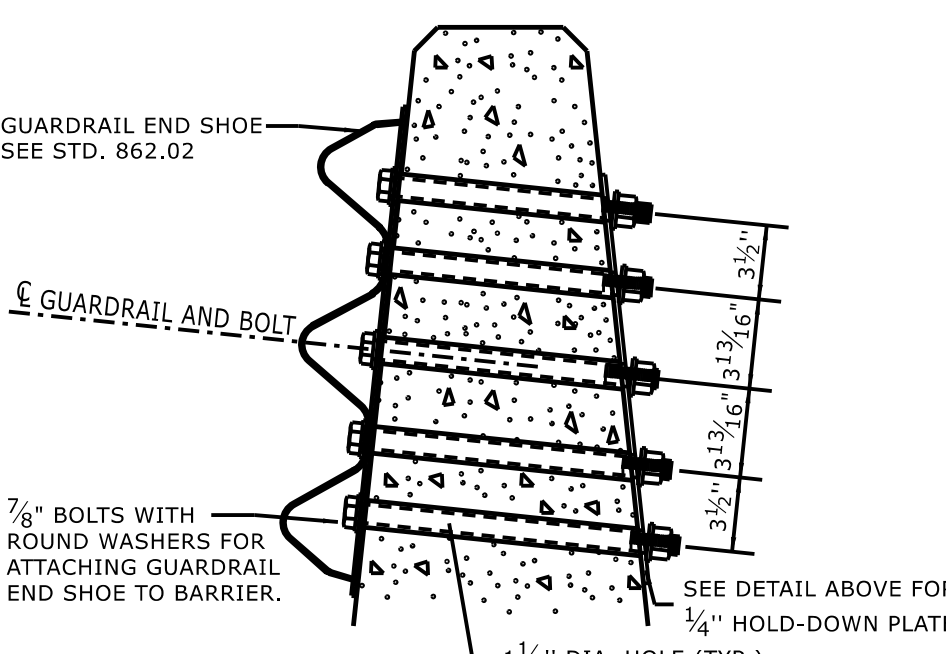
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1 1/4" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



**7 BOLT HOLD DOWN PLATE**



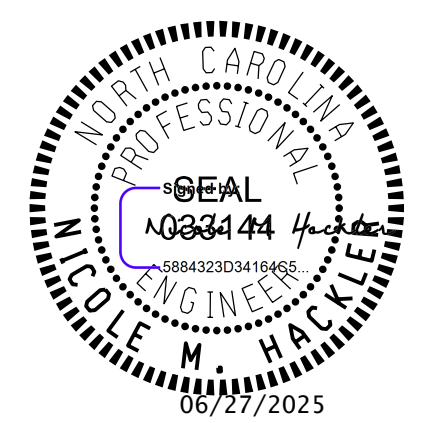
**PART SECTION OF BARRIER OR RAIL  
THRU END SHOE SECTION AND 7 BOLT HOLD DOWN PLATE**

- GENERAL NOTES:
- USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  - TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
  - USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  - ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
  - INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
  - DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
  - USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
  - ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
  - 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
  - PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
  - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  - SEE ROADWAY STANDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT

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ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
TEMPORARY ANCHOR UNIT TYPE THRIE-BEAM

SHEET 8 OF 9  
**862D03**



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