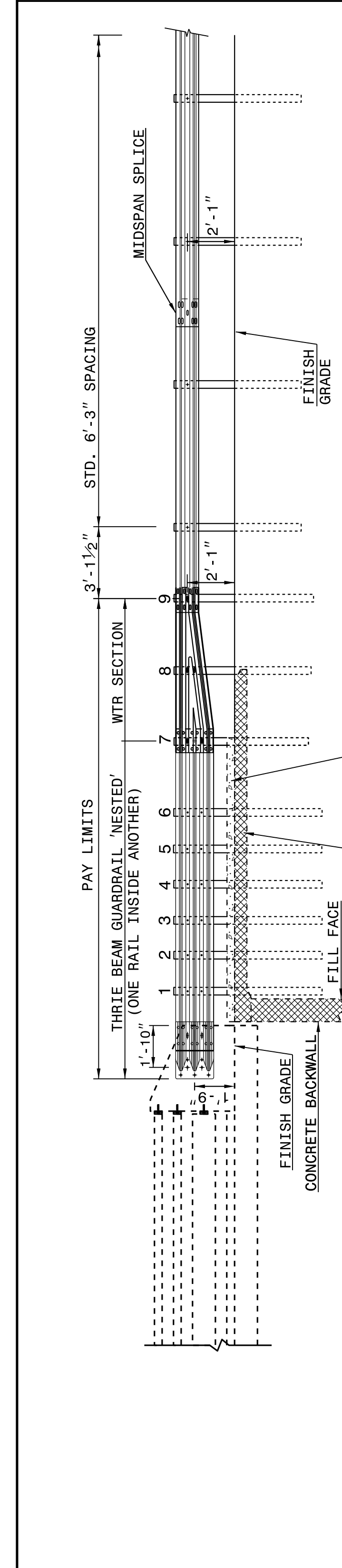
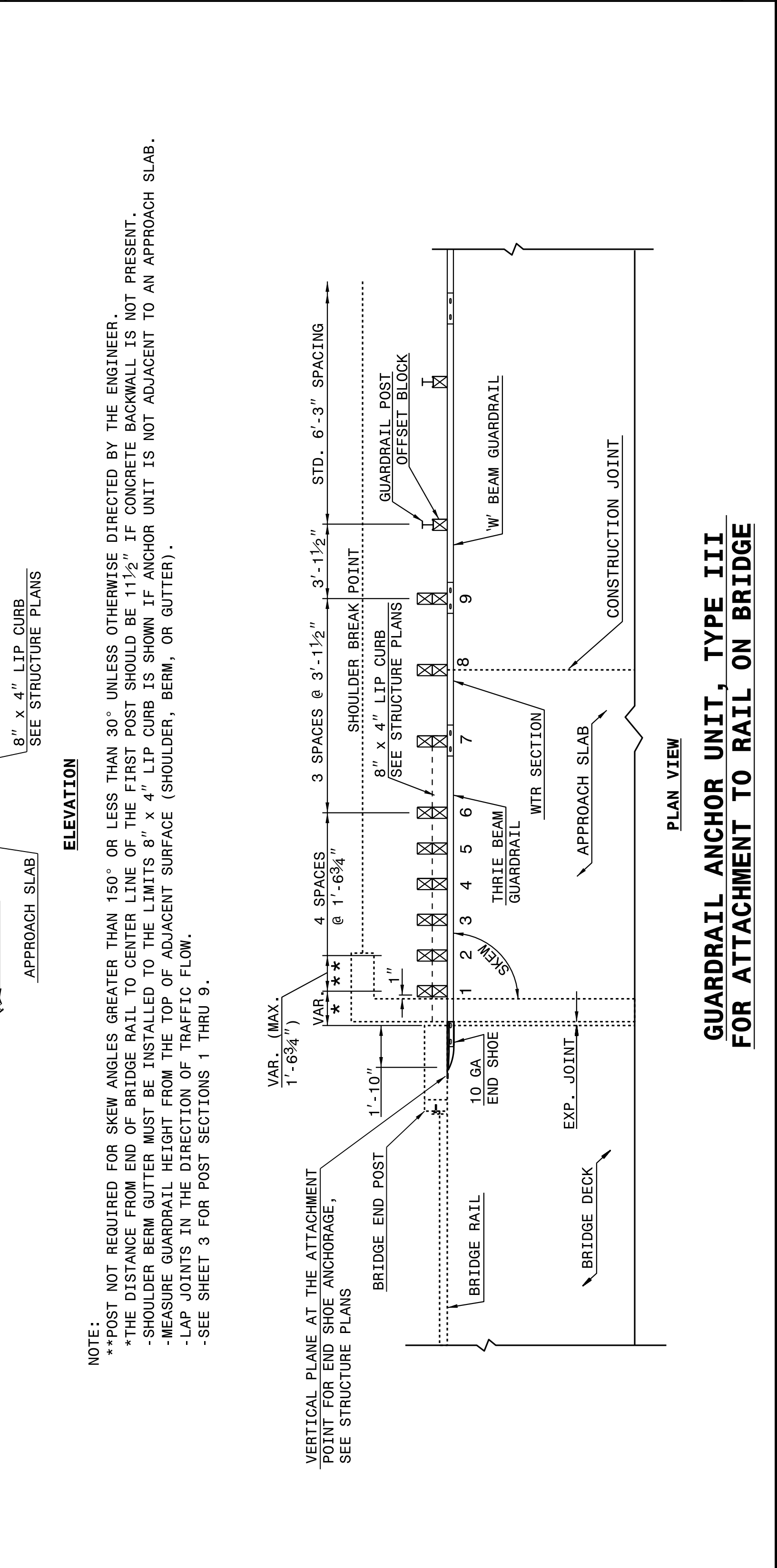


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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE



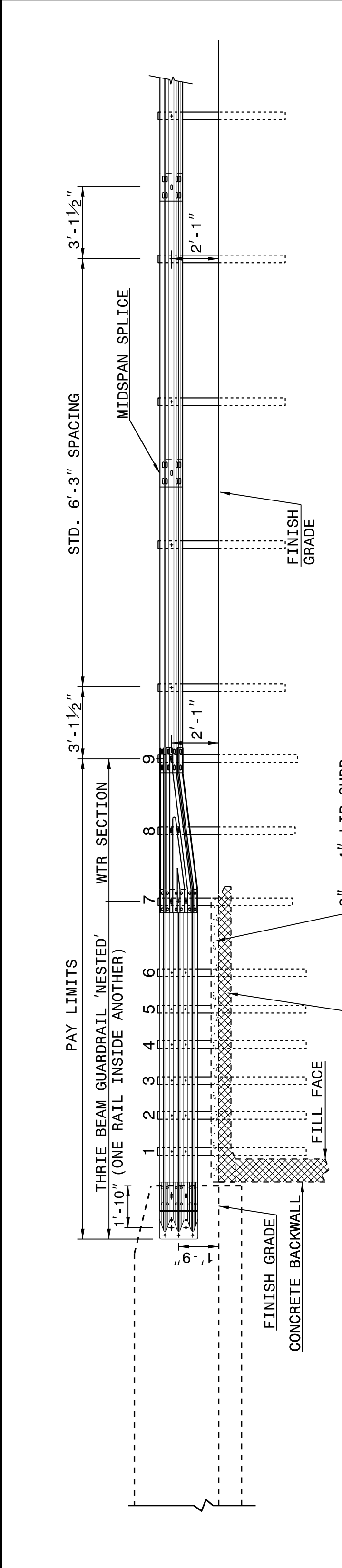
SHEET 1 OF 7 862D03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

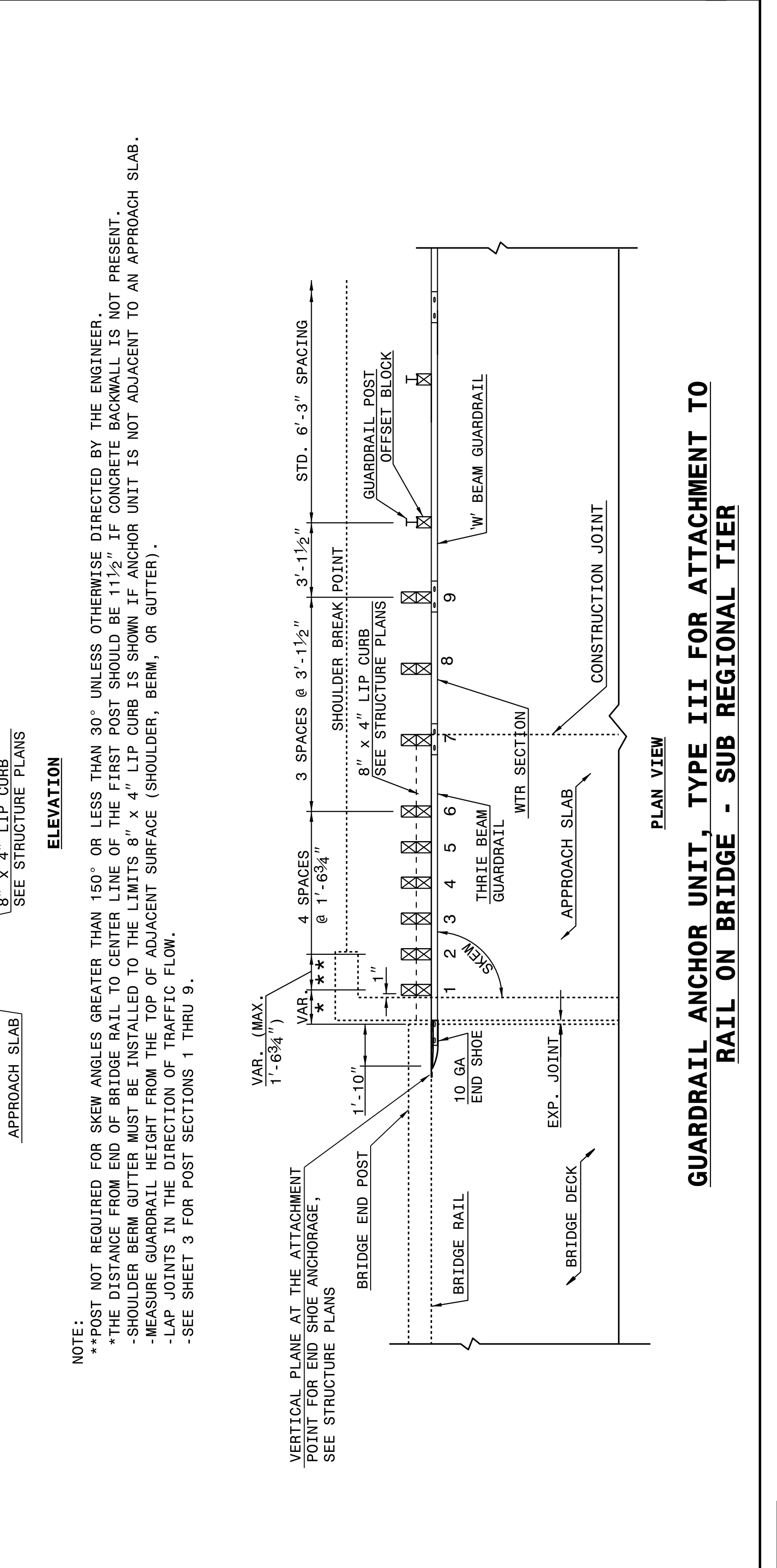
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 862D03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.



ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER



SHEET 2 OF 7 862D03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 862D03

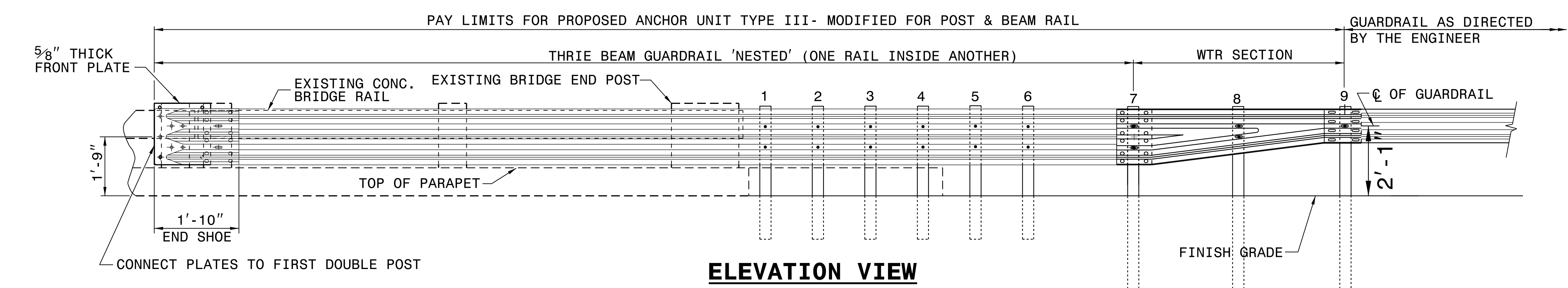


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

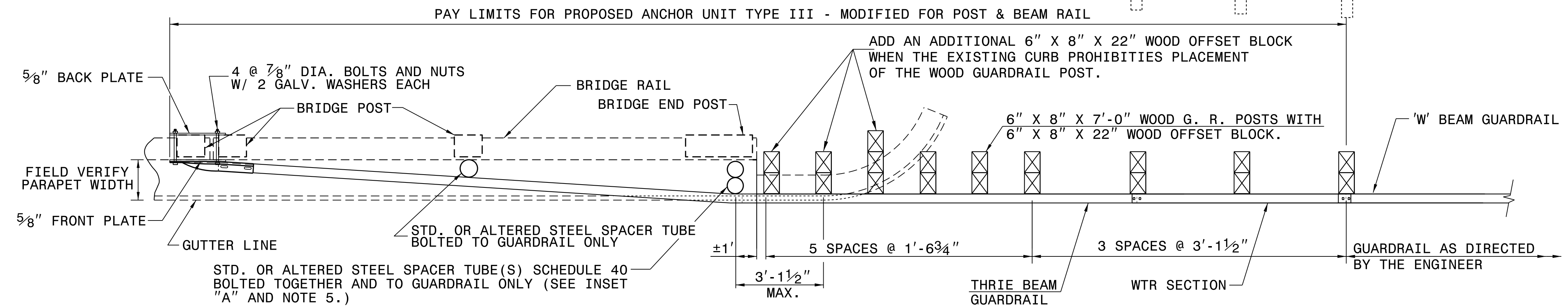
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

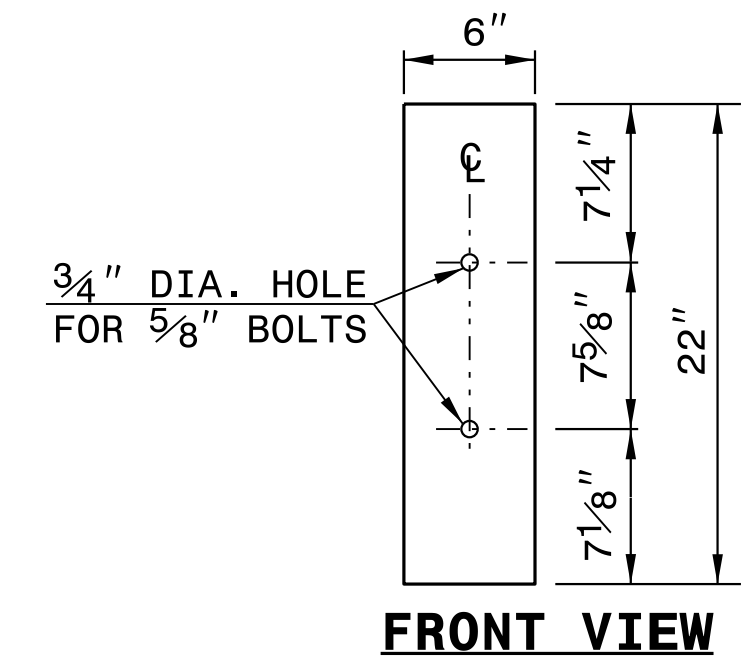
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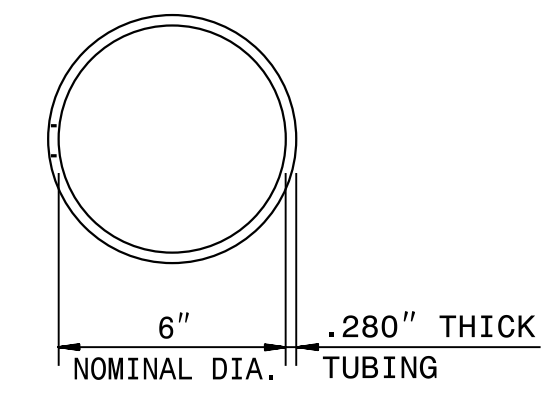
ELEVATION VIEW



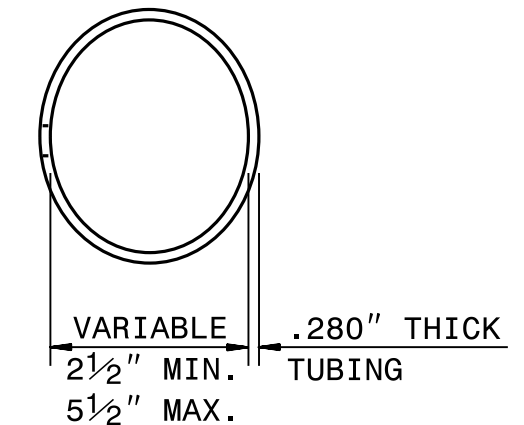
PLAN VIEW



FRONT VIEW

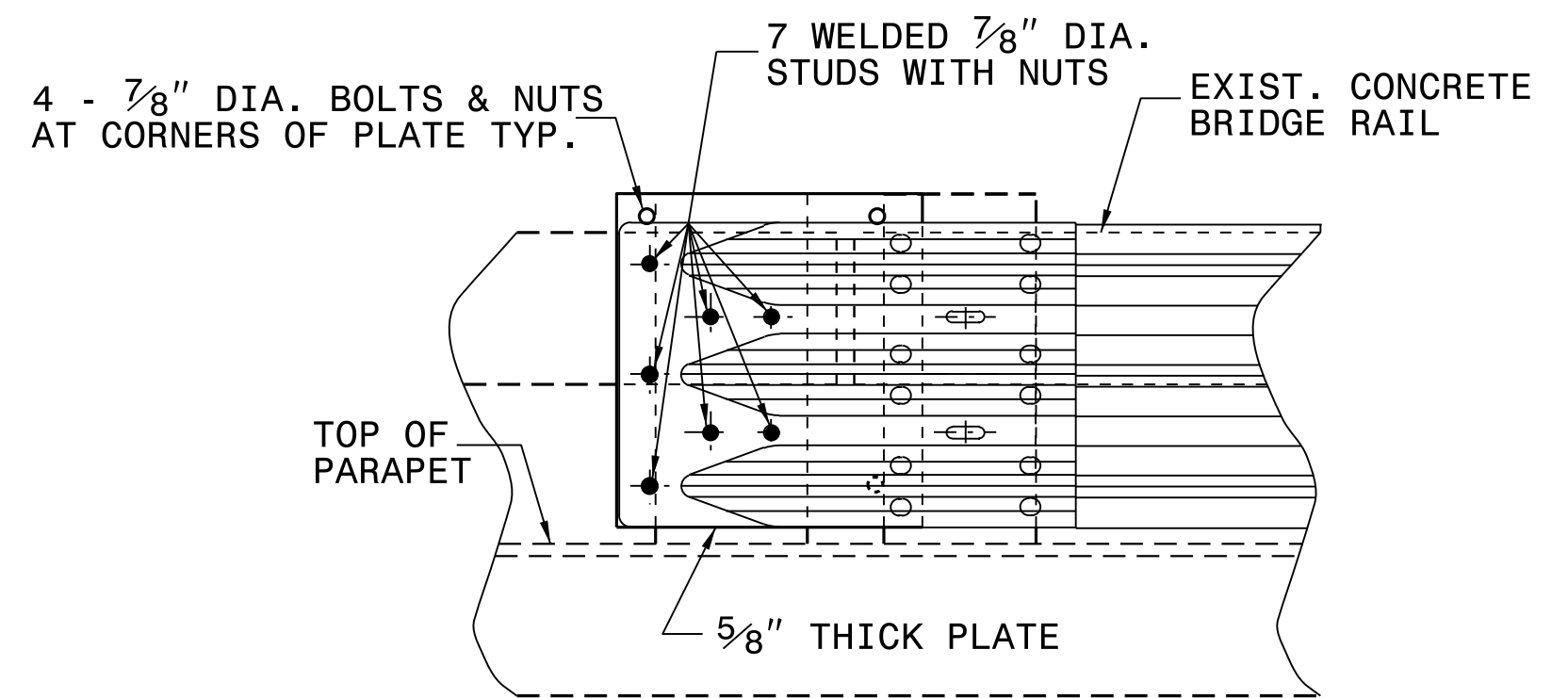


PLAN VIEW

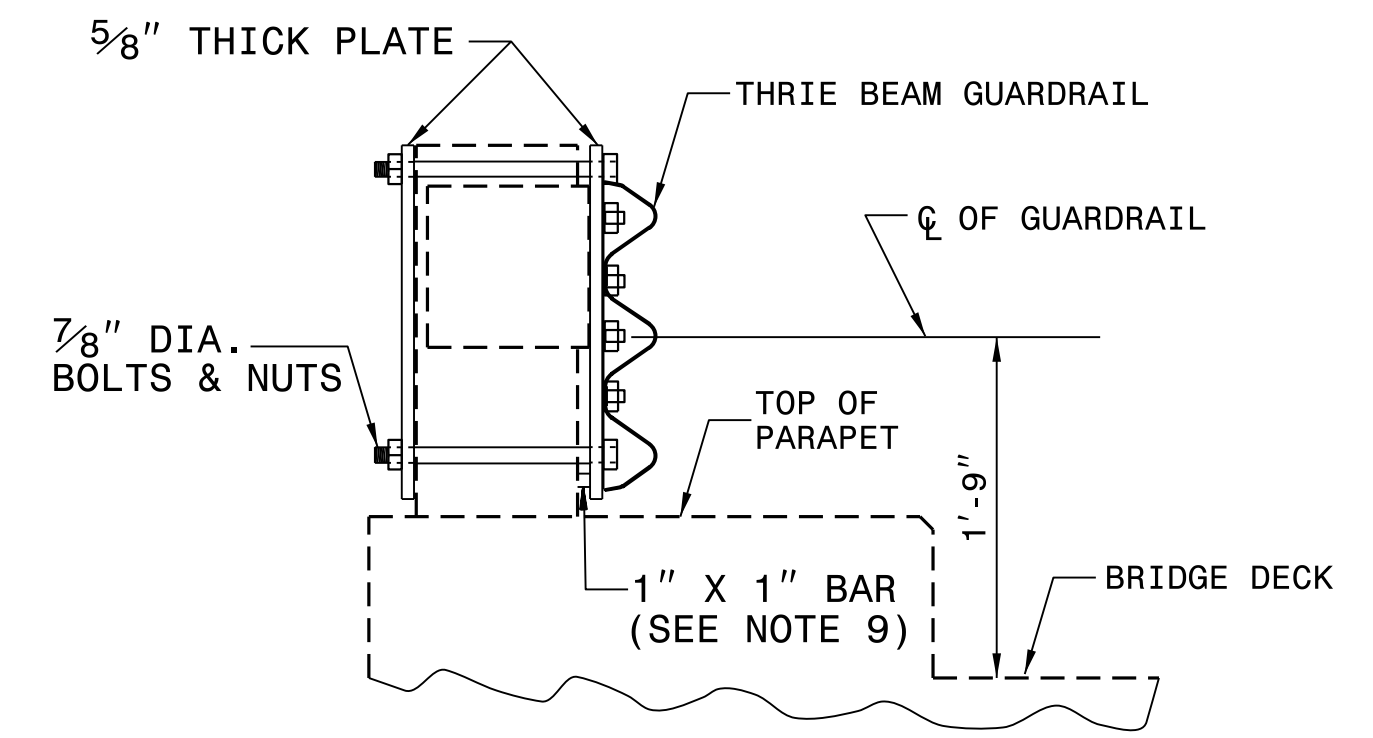


PLAN VIEW INSET "A"

STEEL SPACER TUBE



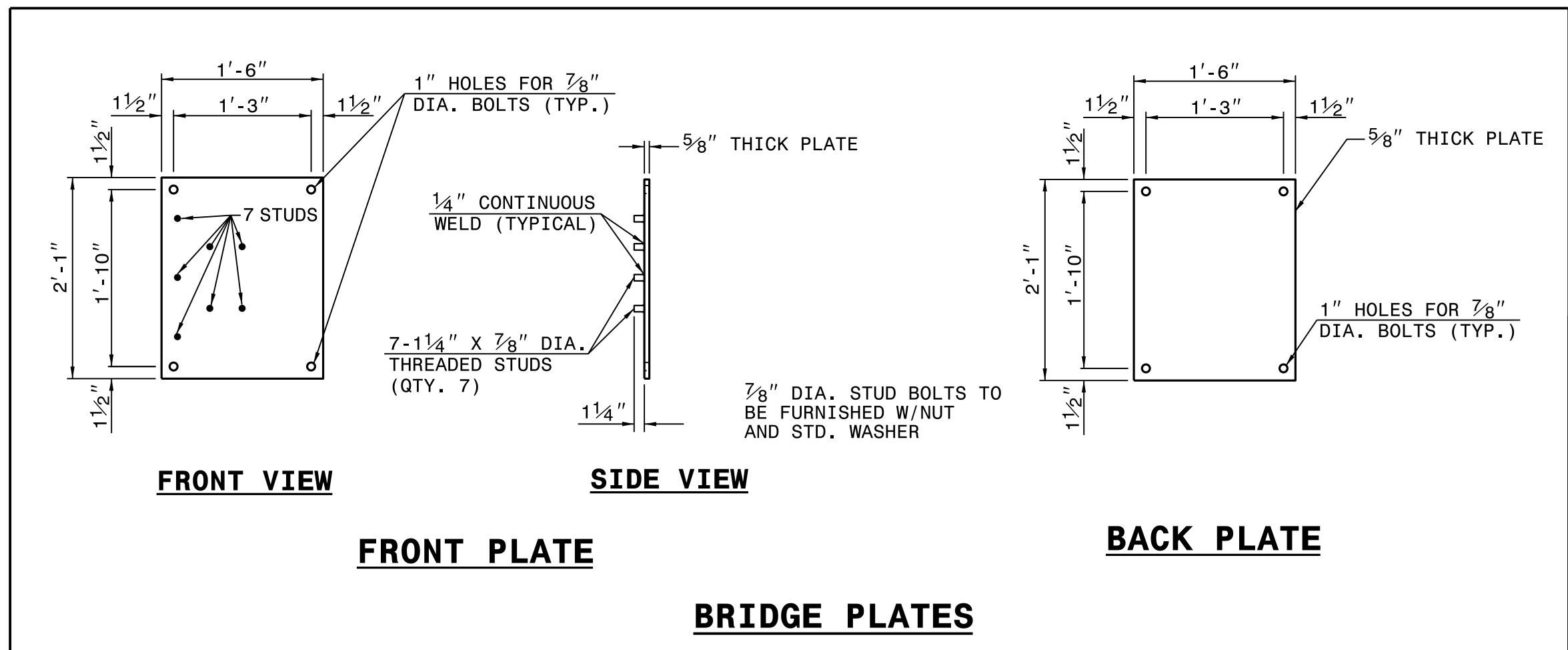
ELEVATION VIEW



SECTION VIEW

GENERAL NOTES:

1. 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.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. 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.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. 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.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STANDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



FRONT VIEW

SIDE VIEW

FRONT PLATE

BACK PLATE

BRIDGE PLATES



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TYPE III MODIFIED FOR POST AND BEAM RAIL

ORIGINAL BY: E.E. WARD DATE: 01-03
MODIFIED BY: JS Howerton DATE: 01-18
CHECKED BY: DATE:
FILE SPEC.: s:\details\stand\bpii original.dgn

24-JAN-2018 14:51 S:\Contracts\Special\Details\stand\bp_iii original.dgn J:\power\ton AT_CSD-292595

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

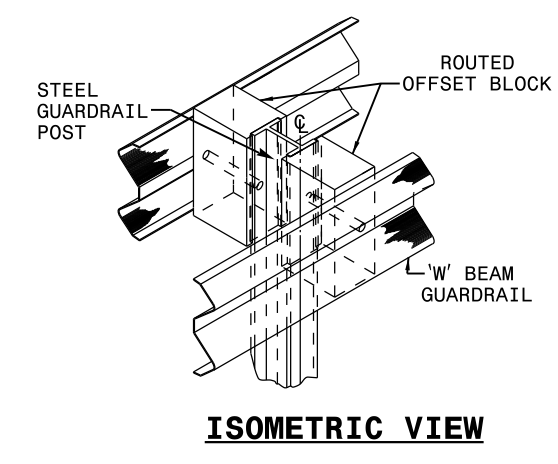
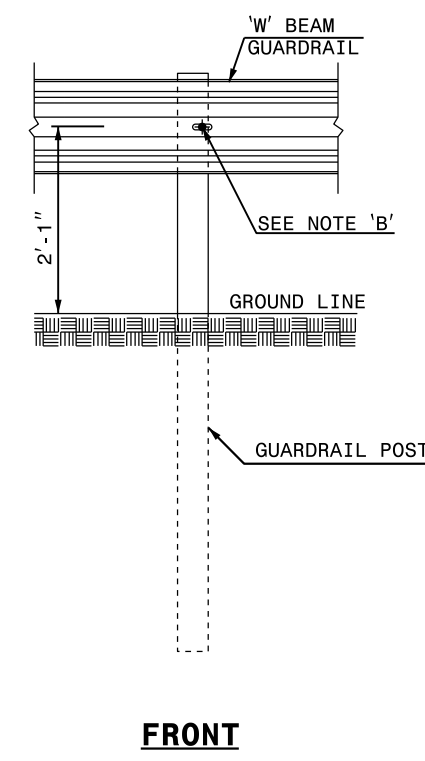
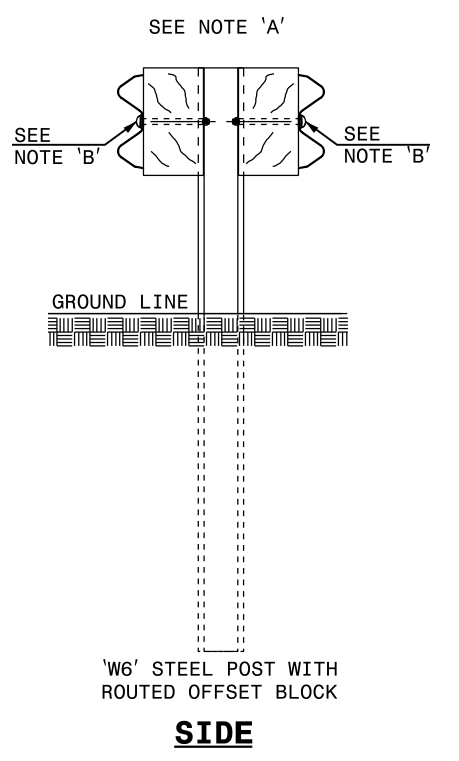
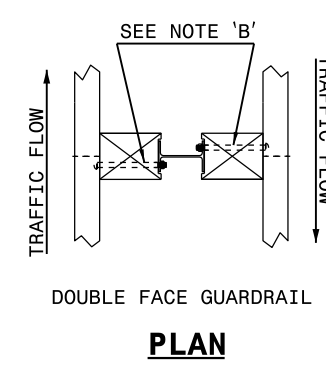
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
DOUBLE FACED W-BEAM

SHEET OF
862D01

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
DOUBLE FACED W-BEAM

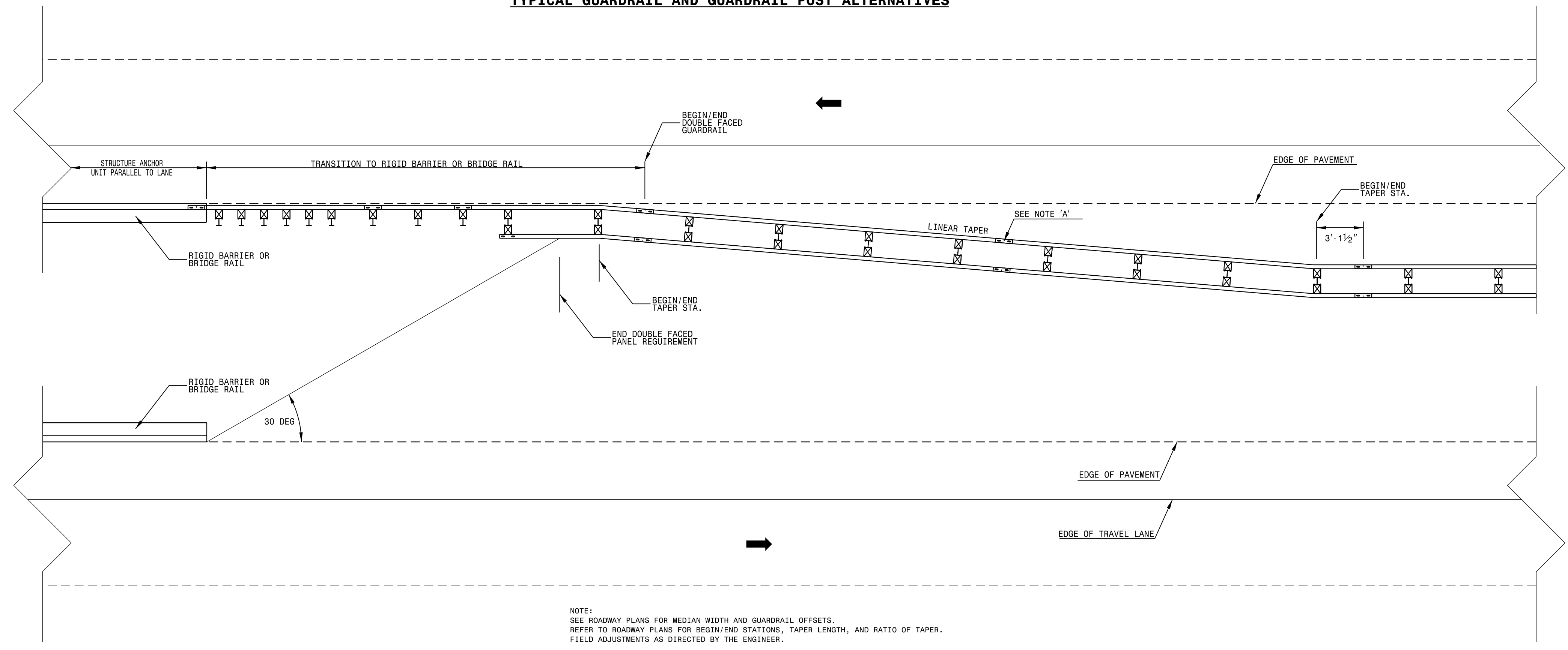
SHEET OF
862D01



DRAWING NOT TO SCALE

NOTES:
A - 5/8" DIA. BUTTON HEAD SPLICE BOLT 1 1/4" LONG (8 REQ. PER SPLICE JOINT).
B - 5/8" DIA. BUTTON HEAD BOLT 7 1/2"/9" LONG WITH NUT FOR BOLTING 6"/8" ROUTED OFFSET BLOCK TO STEEL POSTS.
C - FIELD PUNCHING OF HOLES INTO GUARDRAIL AS DIRECTED BY THE ENGINEER.

TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES



NOTE:
SEE ROADWAY PLANS FOR MEDIAN WIDTH AND GUARDRAIL OFFSETS.
REFER TO ROADWAY PLANS FOR BEGIN/END STATIONS, TAPER LENGTH, AND RATIO OF TAPER.
FIELD ADJUSTMENTS AS DIRECTED BY THE ENGINEER.

APPROACH TO RIGID BARRIER OR BRIDGE RAIL



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GUARDRAIL PLACEMENT DOUBLE FACED W-BEAM

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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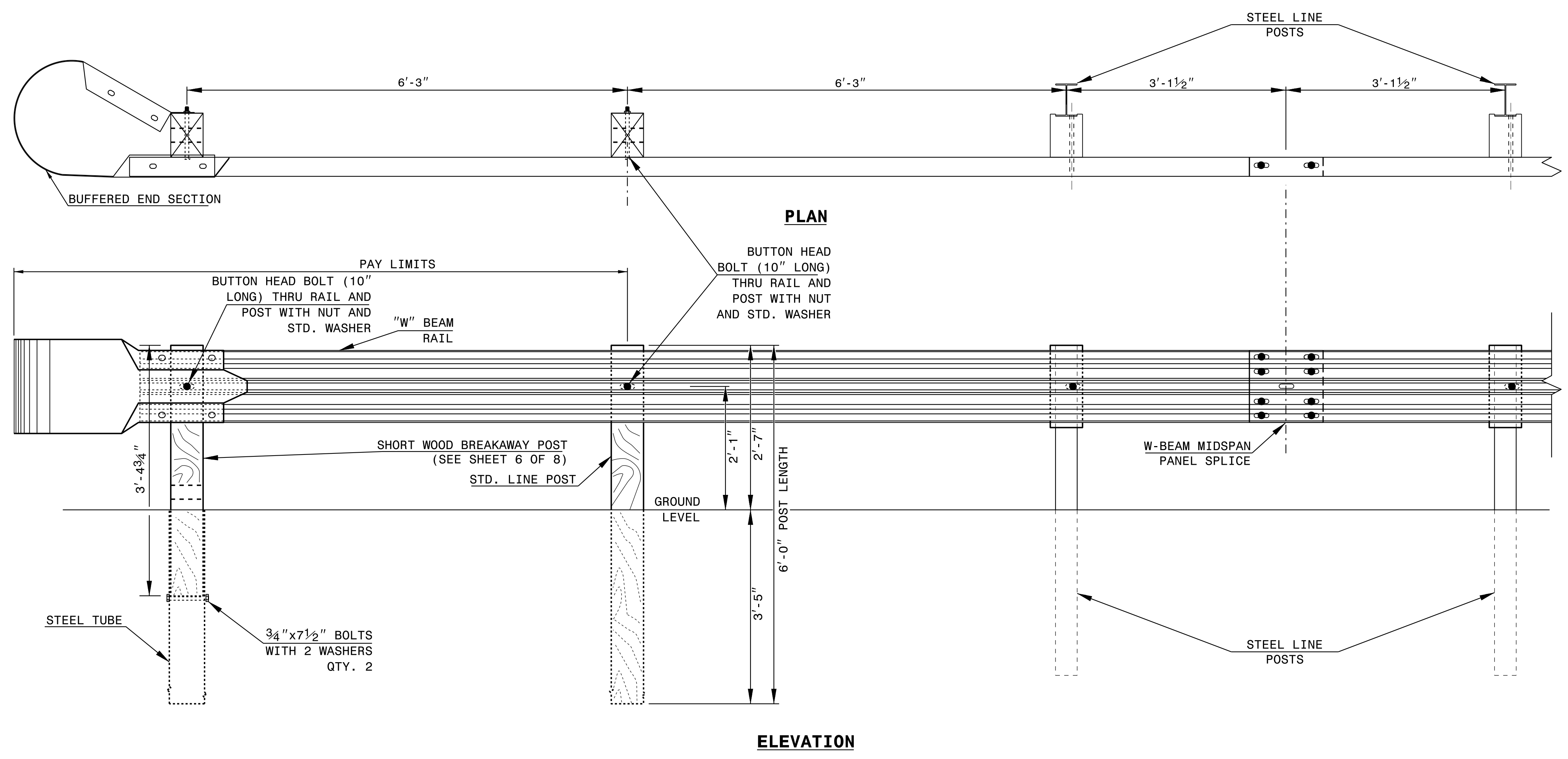
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM



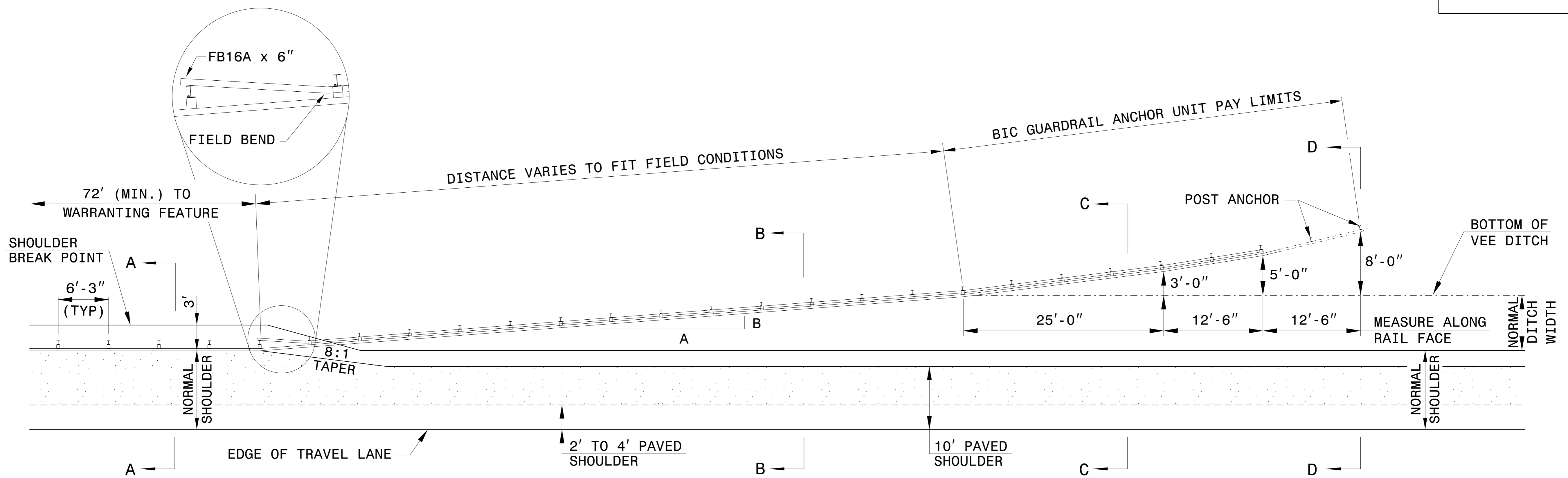
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AND DEVELOPMENT UNIT**
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A.T. - 1 SYSTEM

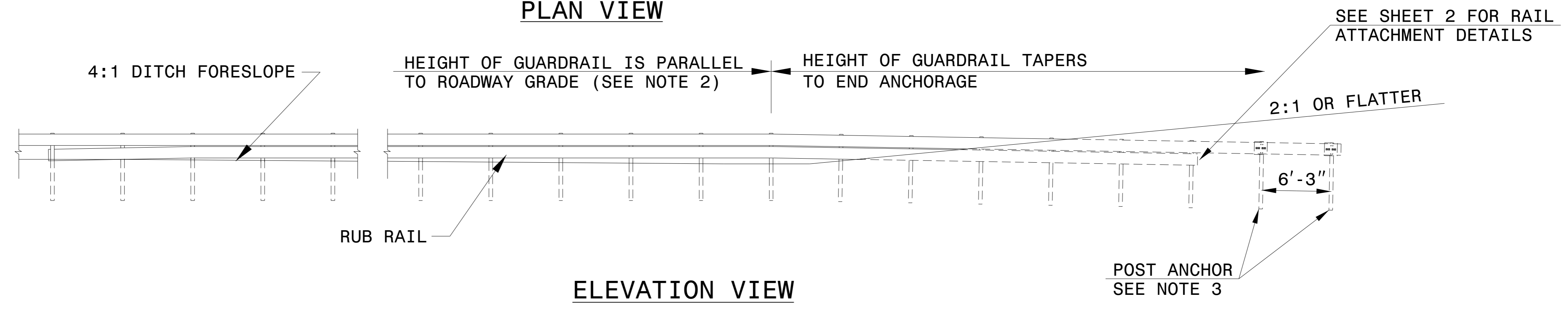
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5/14/99

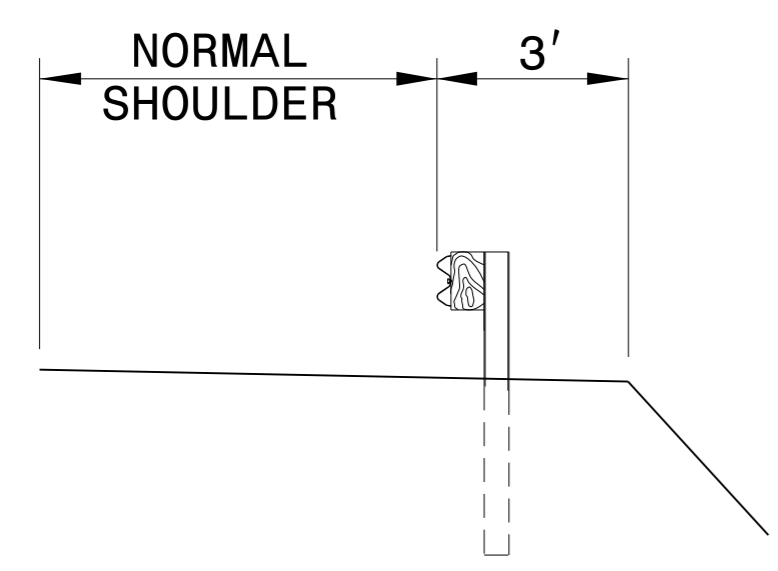


PLAN VIEW

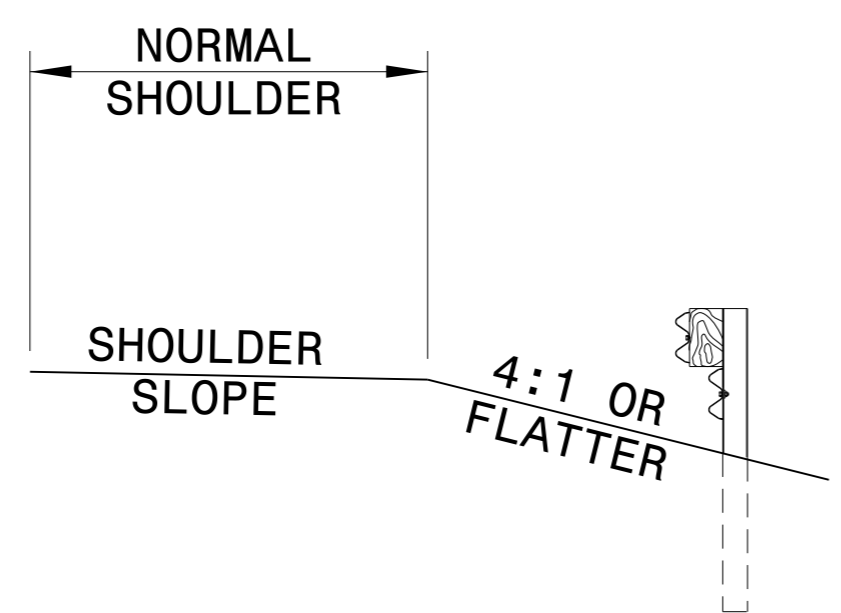
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≥ 60	13:1
55	12:1
50	11:1
45	10:1
40	9:1
30 or less	7:1



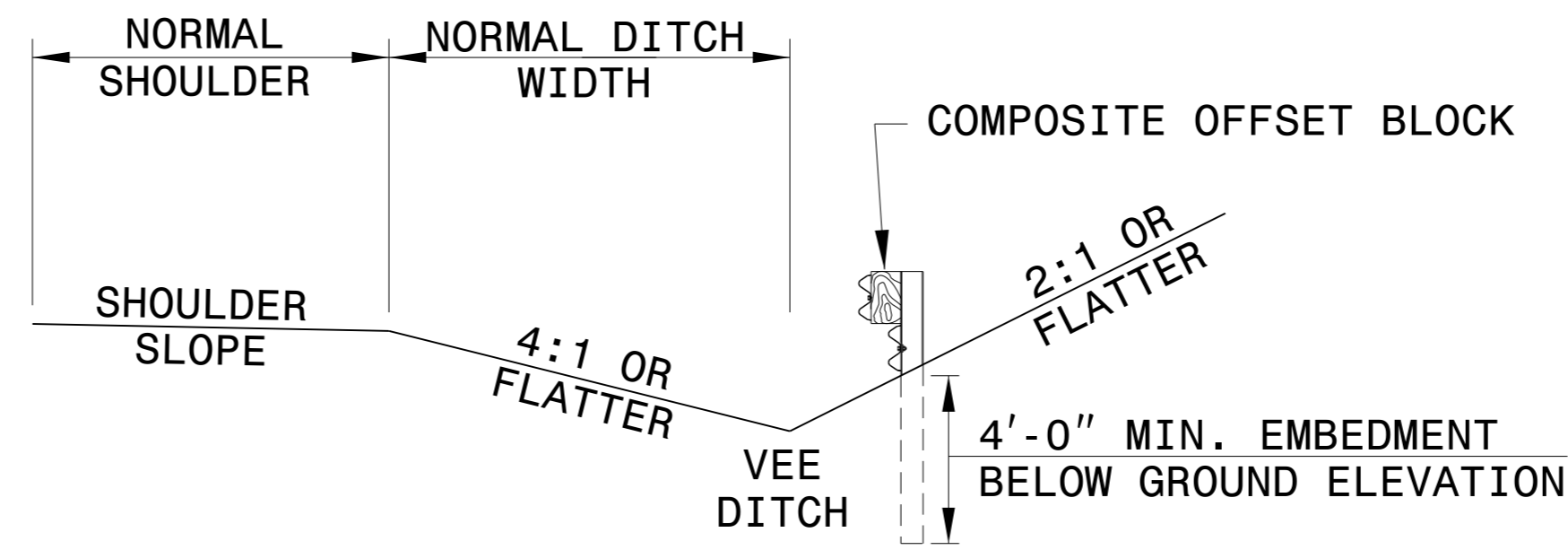
ELEVATION VIEW



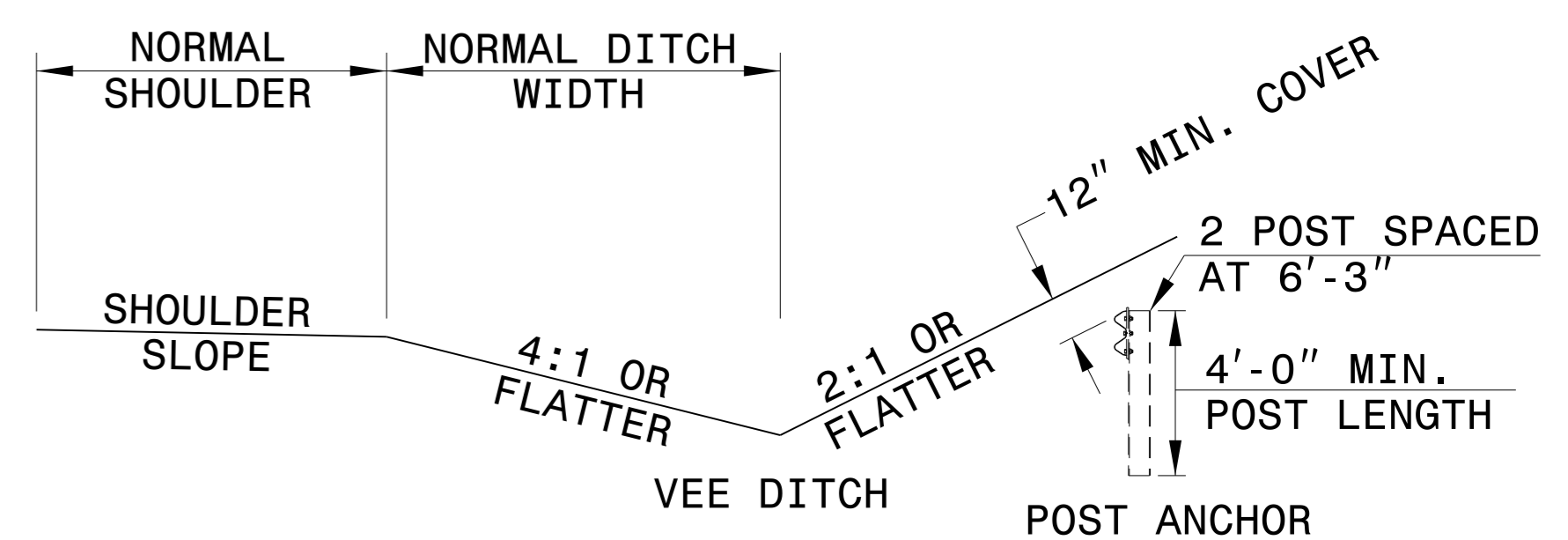
SECTION A-A



SECTION B-B
(WITH RUBRAIL)



SECTION C-C
(WITH RUBRAIL)



SECTION D-D

- NOTES:
- VARIABLE DITCH OFFSETS MAY BE USED TO FIT FIELD CONDITIONS.
 - HEIGHT OF GUARDRAIL MAY BE TAPERED DOWN IN ELEVATION TO MAINTAIN 3'-9" MAXIMUM HEIGHT.
 - ALL POSTS ARE 8'-0" IN LENGTH FROM WHERE THE GUARDRAIL FLARES AWAY FROM THE SHOULDER BACK TO THE DITCH FLOW LINE. GUARDRAIL POSTS BEYOND THE DITCH FLOW LINE MAY BE SHORTENED AS LONG AS A MINIMUM OF 4 FT. EMBEDMENT REMAINS BELOW THE EXISTING GROUND LINE. POST FOR POST ANCHOR MAY BE REDUCED TO 4 FT., ALL OF WHICH WILL BE BELOW GROUND.
 - REFER TO NCDOT STANDARD DRAWINGS 862.02 FOR GUARDRAIL INSTALLATION NOT COVERED IN THIS DETAIL AND INSTALL IN ACCORDANCE WITH SECTION 862 OF THE STANDARDS SPECIFICATIONS.
 - PAYMENT FOR ANY RUBRAIL INSTALLATION BEYOND BIC GUARDRAIL ANCHOR UNIT PAY LIMITS WILL BE INCIDENTAL TO PAYMENT FOR BIC ANCHOR UNIT.

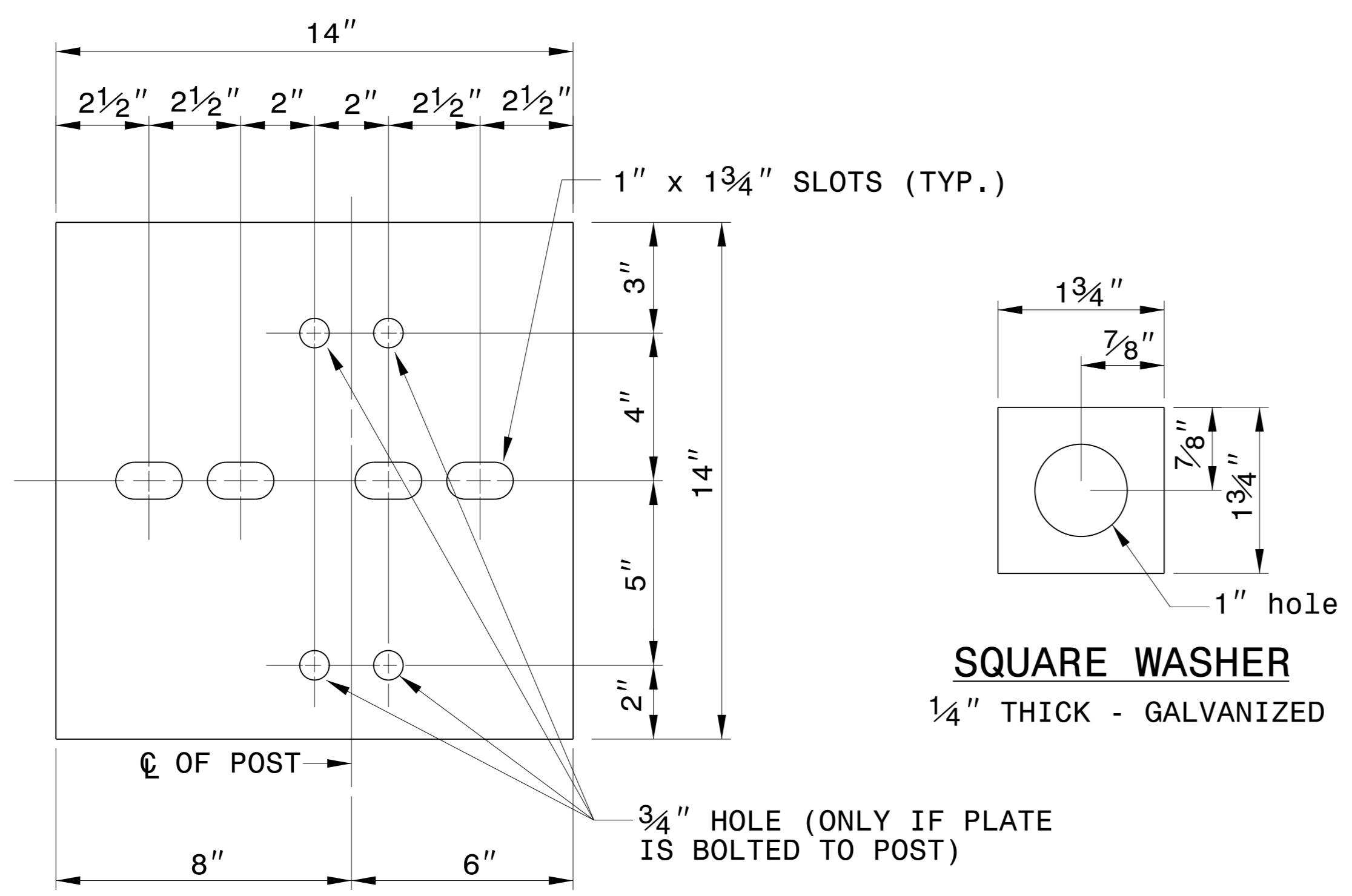
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Office 919-707-6950 FAX 919-250-4119

DETAIL OF GUARDRAIL BURIED IN CUT (BIC)

ORIGINAL BY: FHWA-G4 SYSTEM DATE: 8-13-98
MODIFIED BY: E.E. WARD DATE: 12-7-01
CHECKED BY: DATE:
FILE SPEC.: ericward/misc. guardrail/BIC.dgn

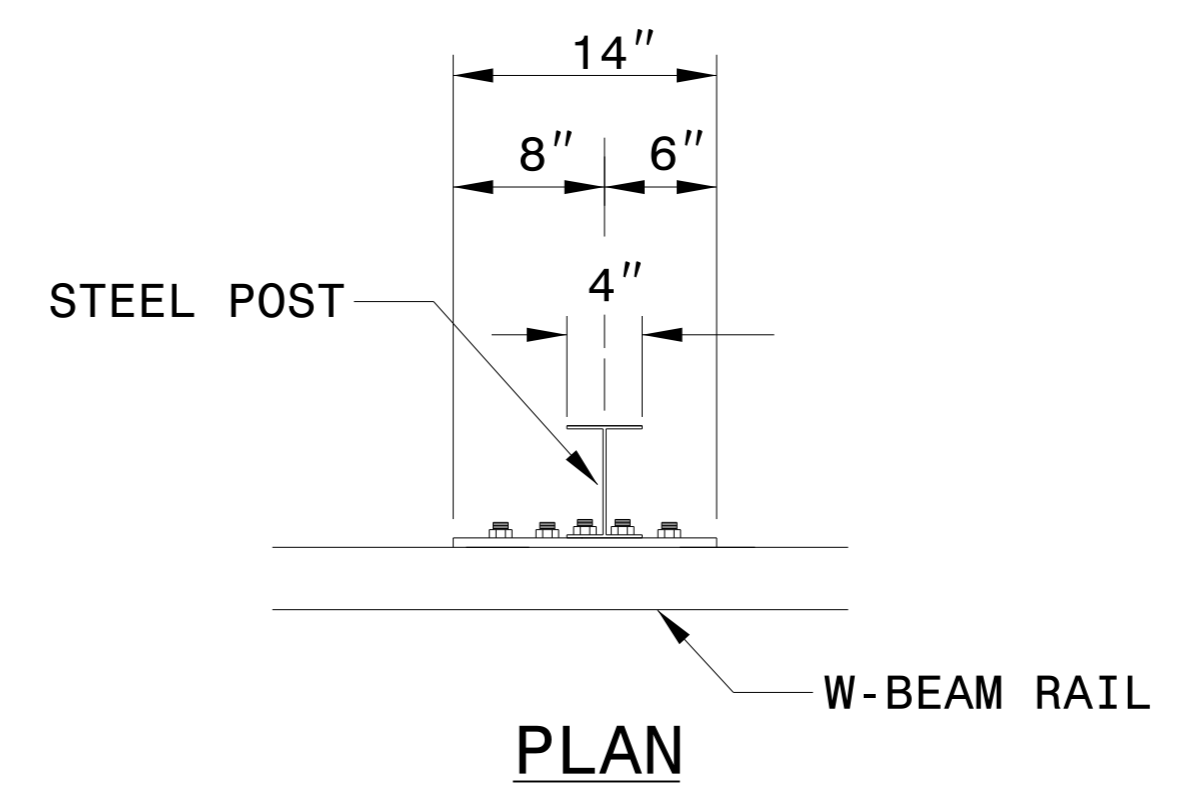
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5/14/99

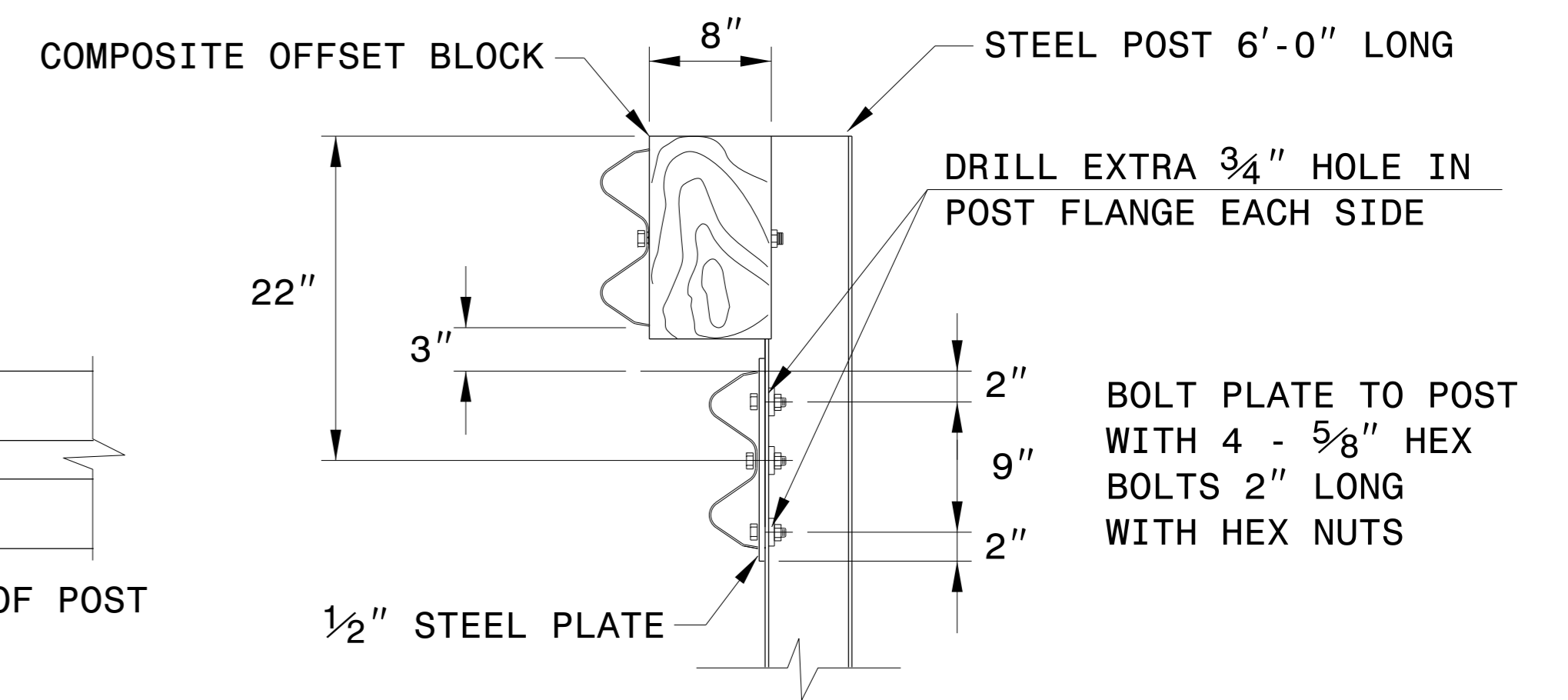
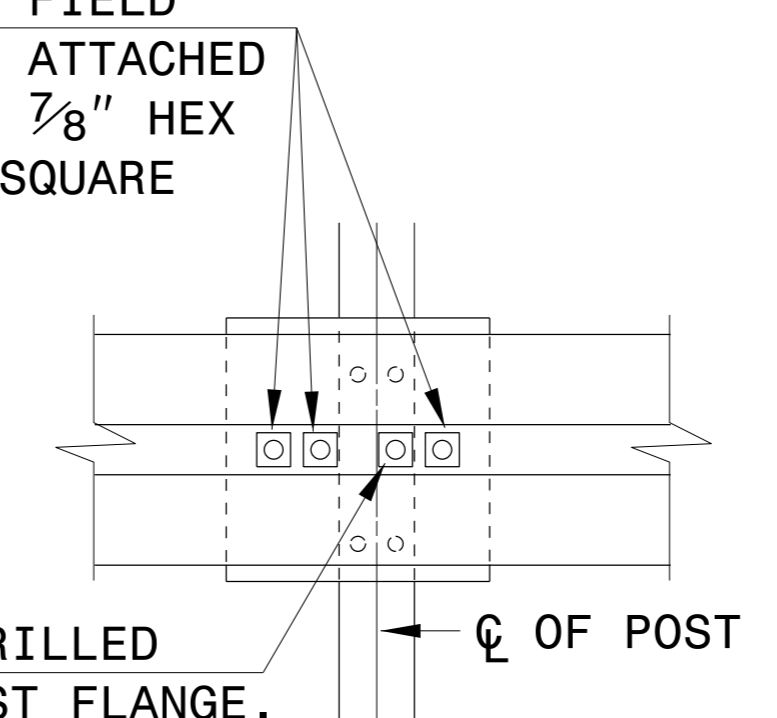


STEEL PLATE - 1/2"
GALVANIZED
WELDED OR BOLTED TO POST

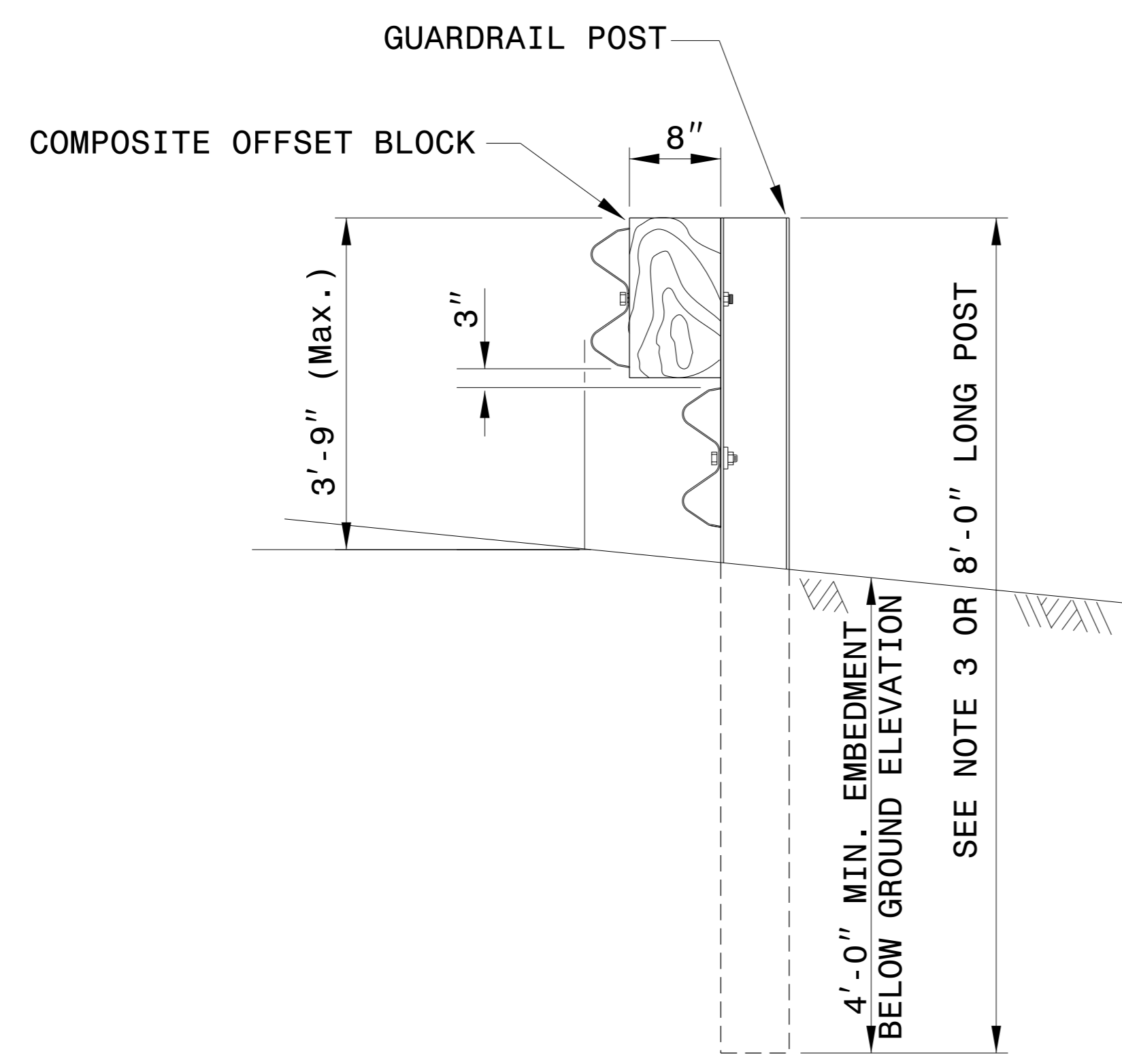
SQUARE WASHER
1/4" THICK - GALVANIZED



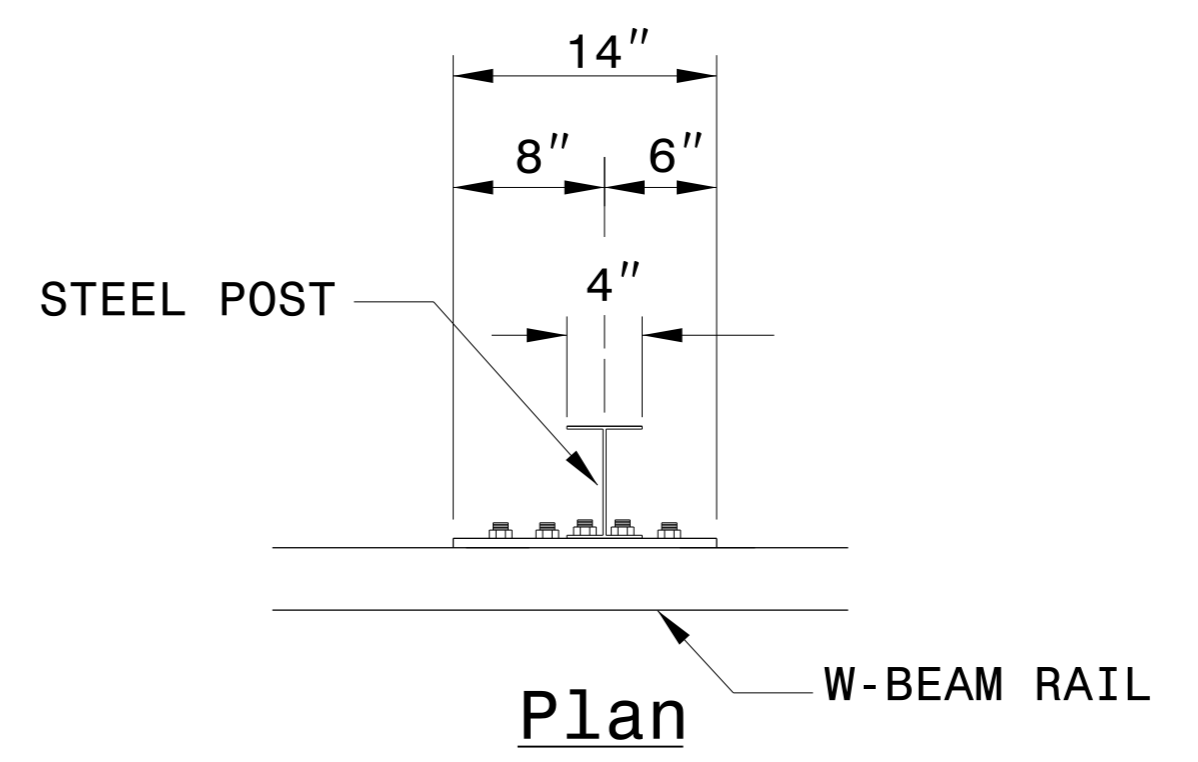
3 - 7/8" HOLES TO BE FIELD DRILLED IN RAIL AND ATTACHED TO STEEL PLATE WITH 7/8" HEX BOLTS 2" LONG WITH SQUARE WASHER



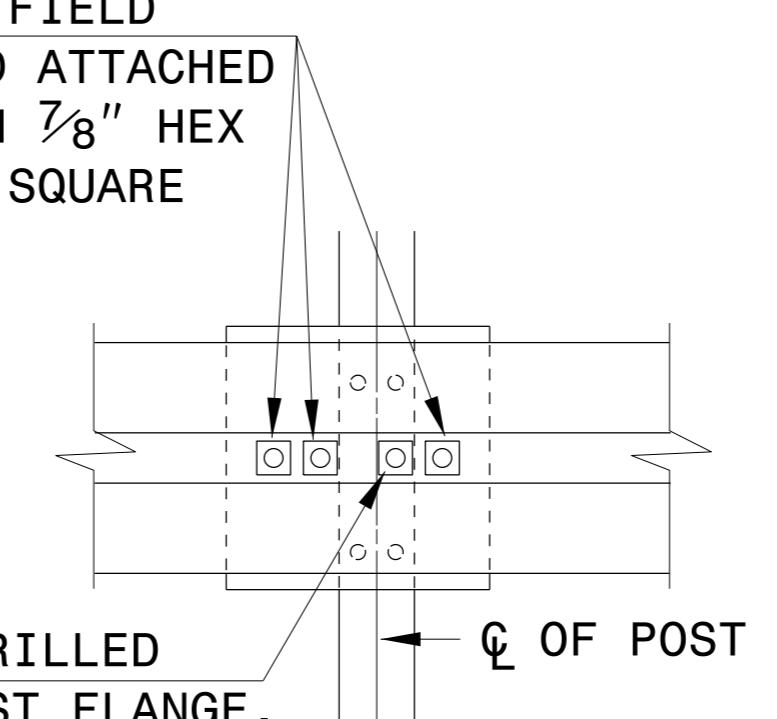
RUBRAIL ANCHOR DETAILS



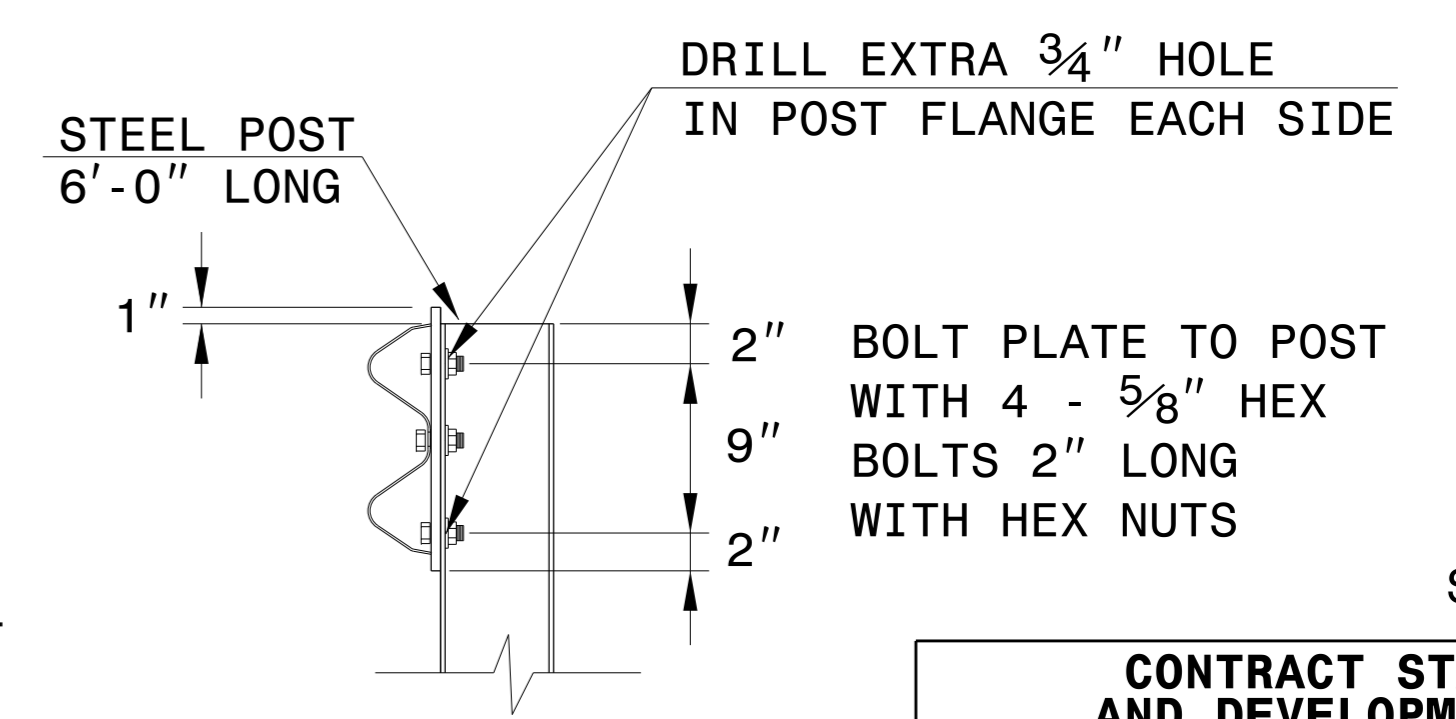
RAIL ATTACHMENT DETAIL



3 - 1" HOLES TO BE FIELD DRILLED IN RAIL AND ATTACHED TO STEEL PLATE WITH 7/8" HEX BOLTS 2" LONG WITH SQUARE WASHER



POST ANCHOR DETAILS



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DETAIL OF GUARDRAIL BURIED IN CUT (BIC)

ORIGINAL BY: FHWA-G4 SYSTEM DATE: 8-13-98
MODIFIED BY: E.E. WARD DATE: 12-7-01
CHECKED BY: DATE:
FILE SPEC.: ericward/misc. guardrail/BIC.dgn

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