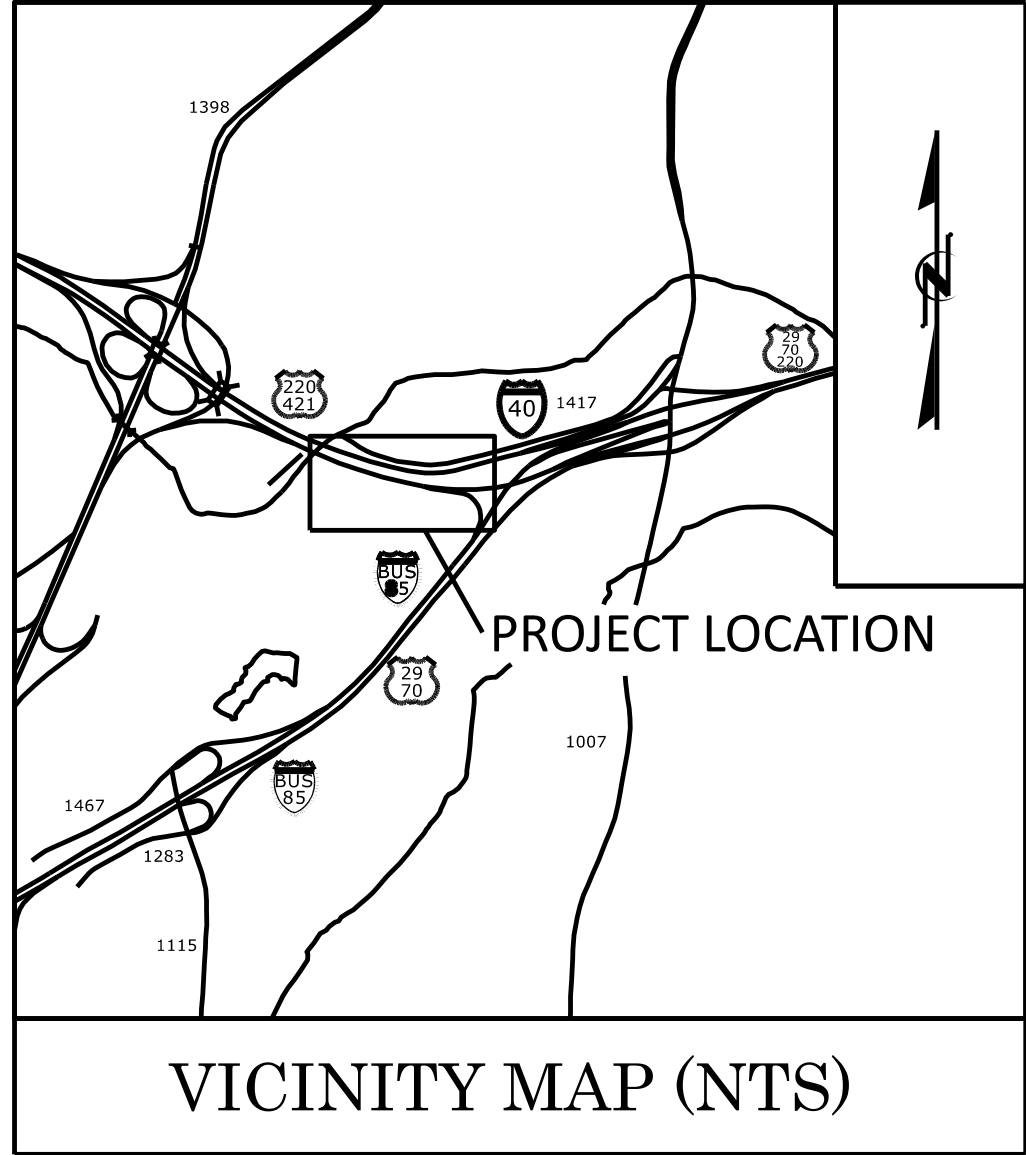


TIP PROJECT: HS-2007K

CONTRACT: DG00664

See Sheet 1A For Index of Sheets



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
GUILFORD COUNTY

LOCATION: I-40 WESTBOUND MEDIAN FROM BUFFALO CREEK BRIDGE EASTWARD  
AND I-40 EASTBOUND EXIST 219 TO US 29 SOUTHBOUND IN GREENSBORO

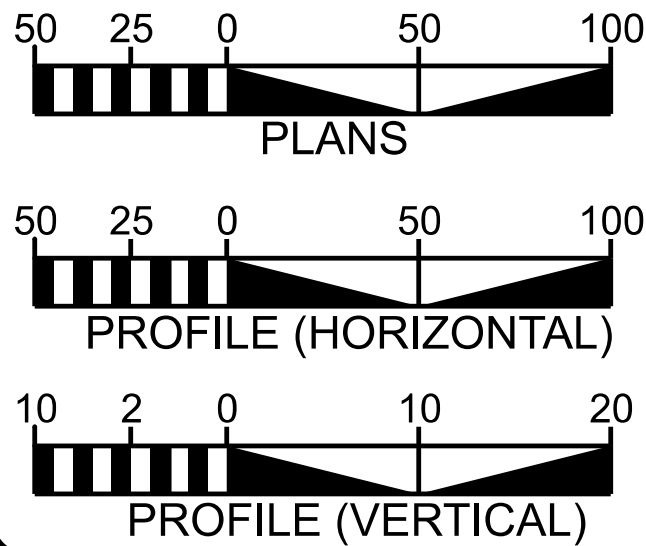
TYPE OF WORK: GUARDRAIL INSTALLATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HS-2007K	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
49317.1.12	4931720	PE	
49317.3.12	4931720	CONST.	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

AADT 2025 = 91,500  
AADT 2045 = 102,000  
K = N/A %  
D = N/A %  
T = N/A % \*  
V = N/A MPH  
\* TTST = DUAL  
FUNC CLASS =  
INTERSTATE  
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY HS-2007K = 0.378 MILES  
TOTAL LENGTH OF HS-2007K = 0.378 MILES

Prepared in the Office of:  
DIVISION OF HIGHWAYS  
1584 Yanceyville St. Greensboro, NC 27405

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
N/A

LETTING DATE:  
JUNE 19, 2025

NEIL KEARNS  
PROJECT ENGINEER

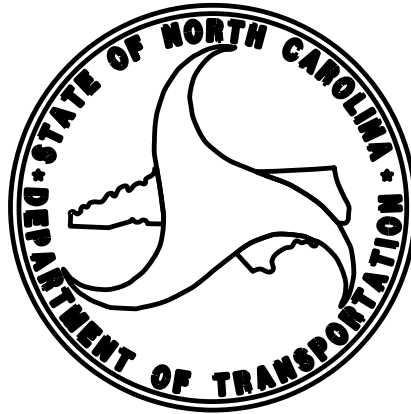
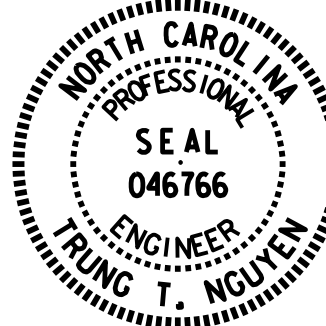
BONNIE CAUDILL  
PROJECT DESIGN ENGINEER

TRUNG NGUYEN, P.E.  
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.  
ROADWAY DESIGN ENGINEER

Signed by: Trung Nguyen  
046766  
P.E.  
SIGNATURE:





INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	TYPICAL SECTIONS
3B-1	ROADWAY SUMMARIES
4	PLAN SHEET
EC-1 THRU EC-3	EROSION CONTROL PLANS
S-1 THRU S-3	ROADWAY STANDARD DETAILS IN LIEU OF STANDARDS

EFF. 01-16-2024  
REV.

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 2 - EARTHWORK

225.01 Guide for Grading Subgrade - Interstate and Freeway

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

560.02 Method of Shoulder Construction - High Side of Superelevated Curve - Method II

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

GENERAL NOTES:

2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024

REVISED:

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

HS-2007K

4RD1001A

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
GUILFORD COUNTY

DIVISION 7  
ROADWAY DESIGN  
ENGINEER

Siobhán T. Noyes

PREPARED BY











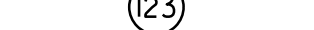
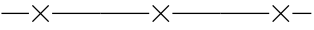
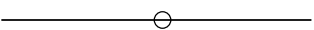
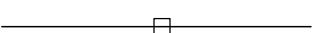







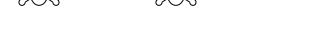











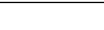
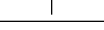
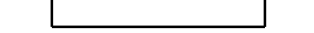
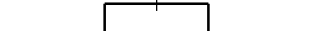



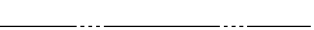
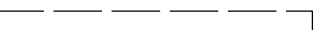




Trung Nguyen

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REVISIONS

*Note: Not to Scale*


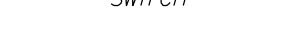
**BOUNDARIES AND PROPERTY:**

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin (EIP)	
Computed Property Corner	
Existing Concrete Monument (ECM)	
Parcel / Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	
<b>BUILDINGS AND OTHER CULTURE:</b>	
Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	
<b>HYDROLOGY:</b>	
Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	















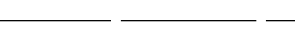

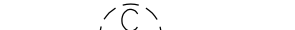








# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS




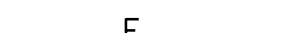










**RAILROADS:**



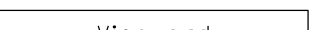
Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

**RIGHT OF WAY & PROJECT CONTROL:**

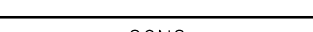
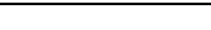







Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

**ROADS AND RELATED FEATURES:**

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
<b>VEGETATION:</b>	
Single Tree	
Single Shrub	
Hedge	














Woods Line	
Orchard	
Vineyard	

**EXISTING STRUCTURES:**















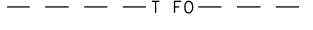
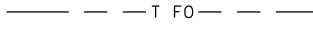
MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

**UTILITIES:**










*\* SUE - Subsurface Utility Engineering  
LOS - Level of Service - A,B,C or D (Accuracy)*

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line Test Hole (SUE - LOS A)*	
U/G Power Line (SUE - LOS B)*	
U/G Power Line (SUE - LOS C)*	
U/G Power Line (SUE - LOS D)*	











**TELEPHONE:**

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Test Hole (SUE - LOS A)*	
U/G Telephone Cable (SUE - LOS B)*	
U/G Telephone Cable (SUE - LOS C)*	
U/G Telephone Cable (SUE - LOS D)*	
U/G Telephone Conduit (SUE - LOS B)*	
U/G Telephone Conduit (SUE - LOS C)*	
U/G Telephone Conduit (SUE - LOS D)*	
U/G Fiber Optics Cable (SUE - LOS B)*	
U/G Fiber Optics Cable (SUE - LOS C)*	
U/G Fiber Optics Cable (SUE - LOS D)*	








**WATER:**

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE - LOS A)*	
U/G Water Line (SUE - LOS B)*	
U/G Water Line (SUE - LOS C)*	
U/G Water Line (SUE - LOS D)*	
Above Ground Water Line	









**TV:**

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Test Hole (SUE - LOS A)*	
U/G TV Cable (SUE - LOS B)*	
U/G TV Cable (SUE - LOS C)*	
U/G TV Cable (SUE - LOS D)*	
U/G Fiber Optic Cable (SUE - LOS B)*	
U/G Fiber Optic Cable (SUE - LOS C)*	
U/G Fiber Optic Cable (SUE - LOS D)*	








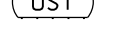



**GAS:**

Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE - LOS A)*	
U/G Gas Line (SUE - LOS B)*	
U/G Gas Line (SUE - LOS C)*	
U/G Gas Line (SUE - LOS D)*	
Above Ground Gas Line	

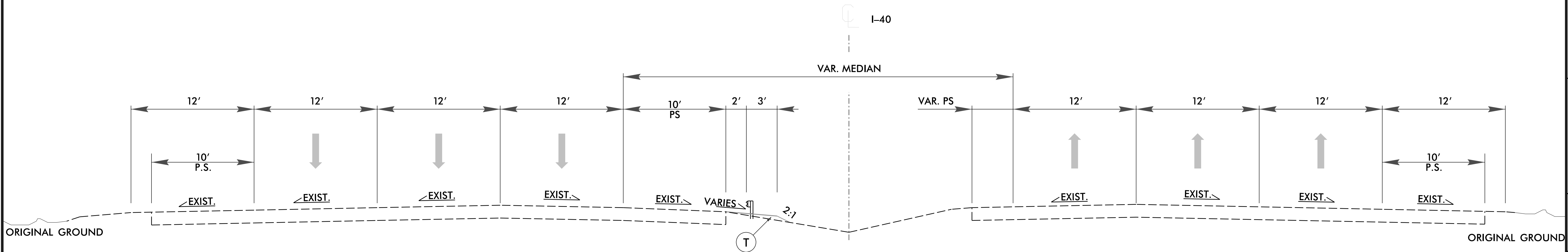
**SANITARY SEWER:**

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE - LOS A)*	
SS Force Main Line (SUE - LOS B)*	
SS Force Main Line (SUE - LOS C)*	
SS Force Main Line (SUE - LOS D)*	

**MISCELLANEOUS:**

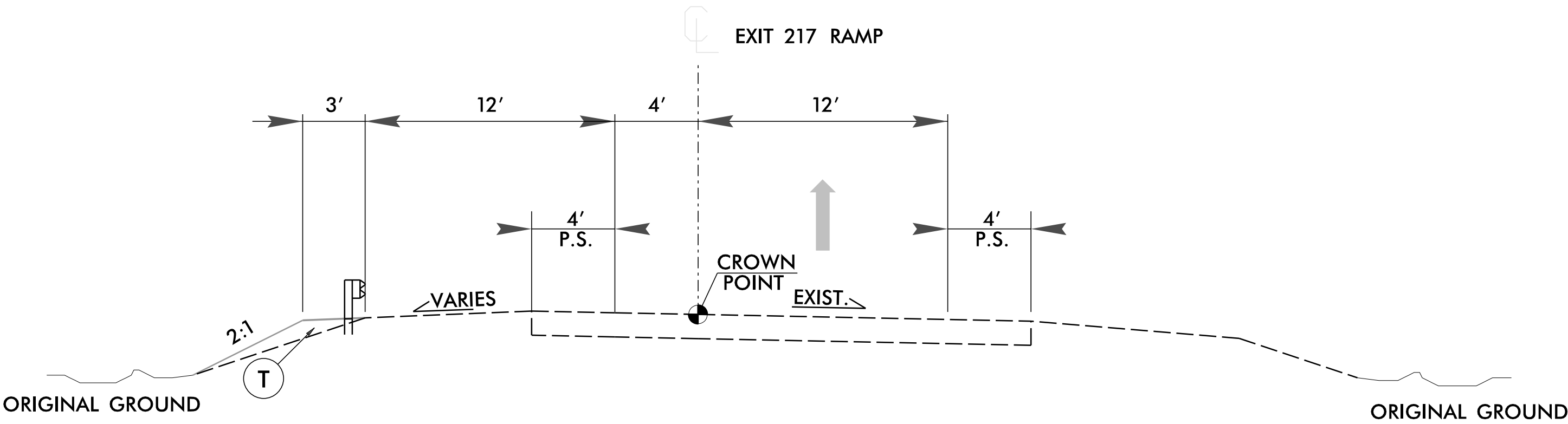
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE - LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenviromental Boring	
Abandoned According to Utility Records	
End of Information	

PAVEMENT SCHEDULE	
(FINAL PAVEMENT DESIGN)	
T	EARTH MATERIAL.



## TYPICAL SECTION NO. 1

1-40



## TYPICAL SECTION NO. 2

EXIT 219 RAMP

The logo for the North Carolina Department of Transportation (NCDOT) is displayed. It features the text "NORTH CAROLINA" and "DEPARTMENT OF TRANSPORTATION" above a map of North Carolina. Below the map, the text "DIVISION 7" is visible. To the right of the map is a large, stylized "7". Below the map, the text "ROADWAY DESIGN ENGINEER" is printed. At the bottom is a circular professional seal for a "NORTH CAROLINA PROFESSIONAL ENGINEER". The seal contains the text "SEAL", the number "046766", and the name "THOMAS J. HENNING". The seal also includes the text "REGISTERED PROFESSIONAL ENGINEER" and "NORTH CAROLINA". The seal number "046766" is printed below the seal.

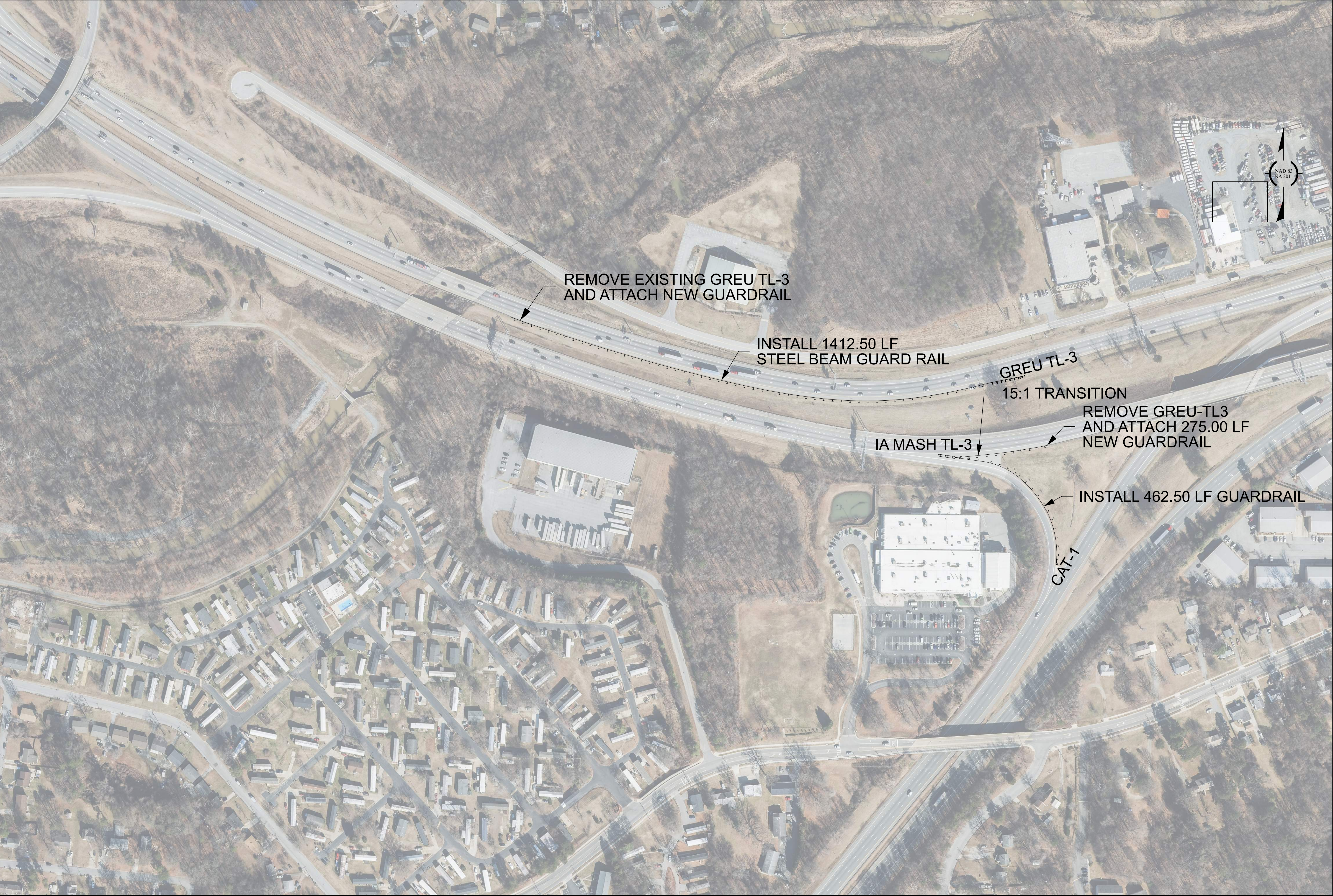
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REVISIONS





HS-2007K

4R01004

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
GUILFORD COUNTY

DIVISION 7  
ROADWAY DESIGN  
ENGINEER

NORTH CAROLINA  
PROFESSIONAL  
SEAL  
046766  
ENGINEER  
TRUNG T. NGUYEN  
11/14/2025

PREPARED BY

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UNLESS ALL SIGNATURES COMPLETED

REVISIONS



## GUARDRAIL SUMMARY

[illegible]

## SUMMARY OF EARTHWORK (CY)

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
EXIT 219 RAMP	21		75	54	
WB I-40	23		83	60	
SUBTOTAL	44		158	114	
TOTAL	44		158	114	
MATERIAL FOR SHOULDER CONSTRUCTION					
LOSS DUE TO CLEARING & GRUBBING					
ADDITIONAL UNDERCUT					
ROCK WASTE TO REPLACE BORROW					
ADJUST FOR ROCK WASTE					
WASTE IN LIEU OF BORROW					
PROJECT TOTAL	44		158	114	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				6	
GRAND TOTAL	44		158	120	
SAY	100			150	

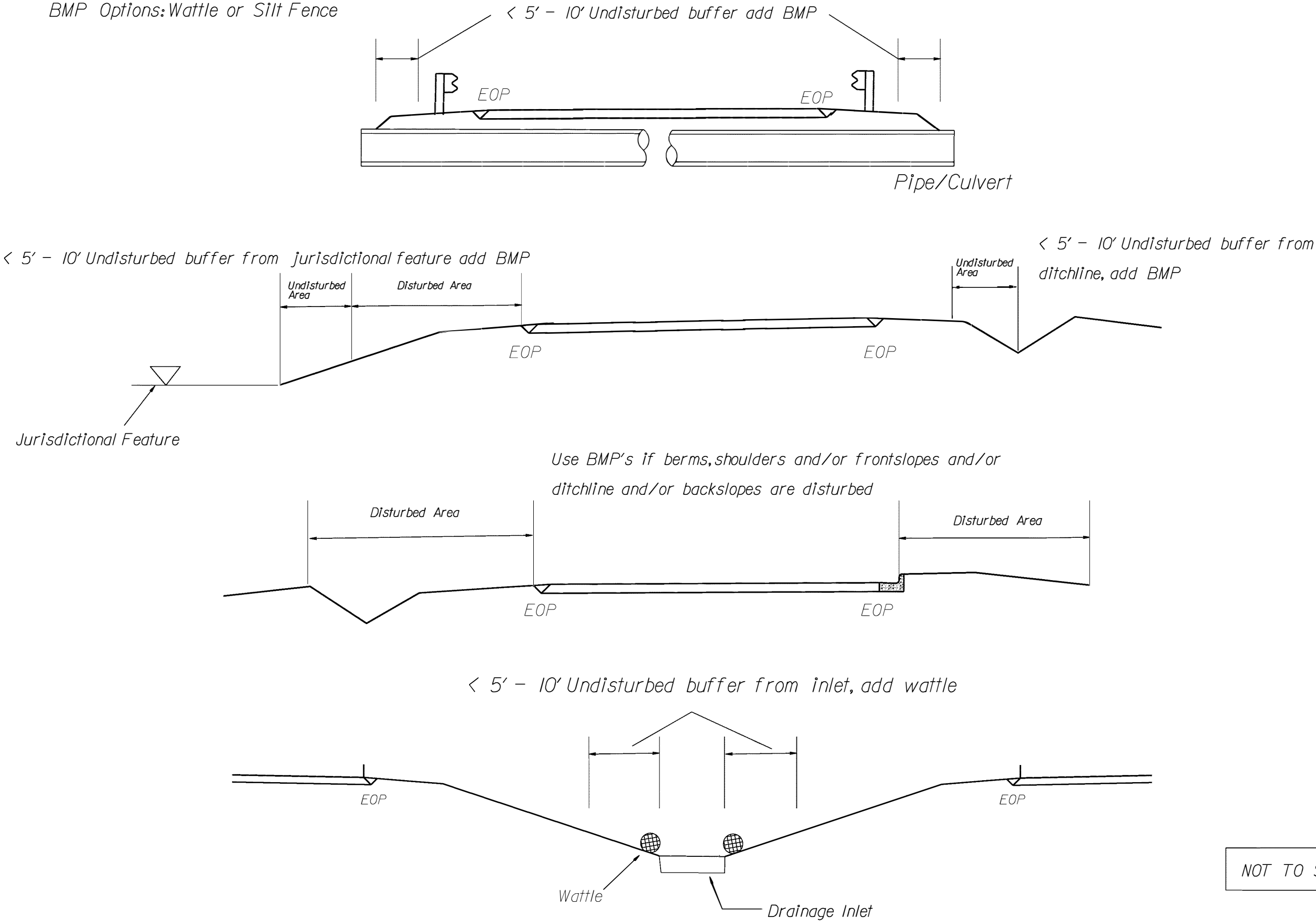
<p>NOTE: Earthwork quantities are calculated by the Engineer. These earthwork quantities are based in part on subsurface data provided by the Engineer.</p>
<p>NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."</p>

## REVISIONS

NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle or Silt Fence

# EROSION CONTROL DETAIL



NOT TO SCALE

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

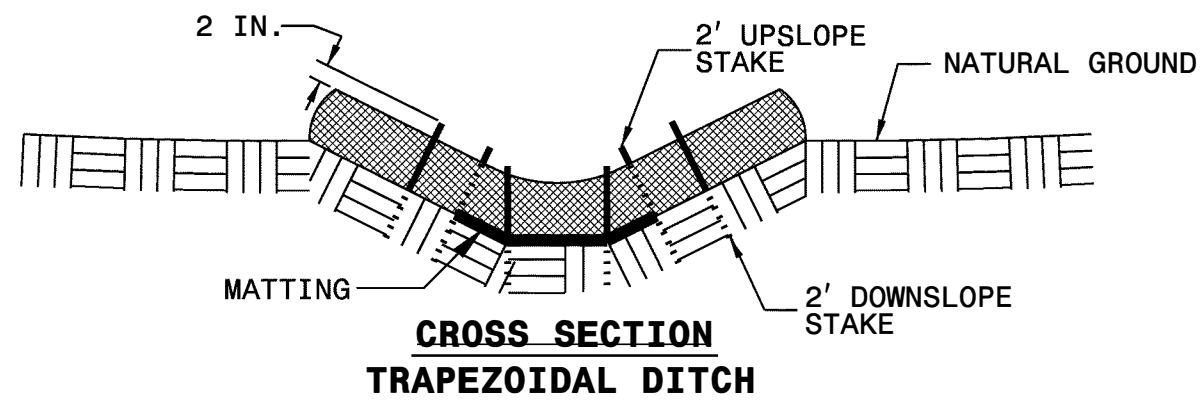
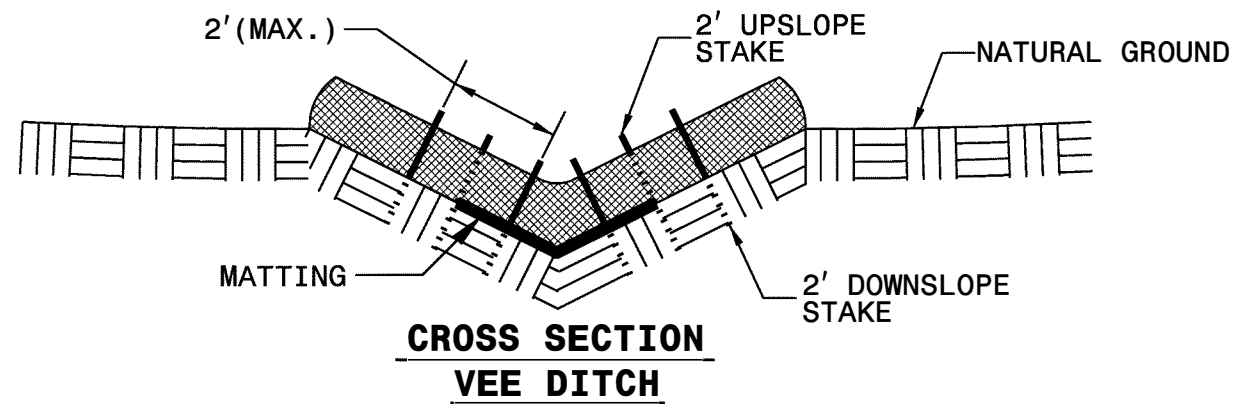
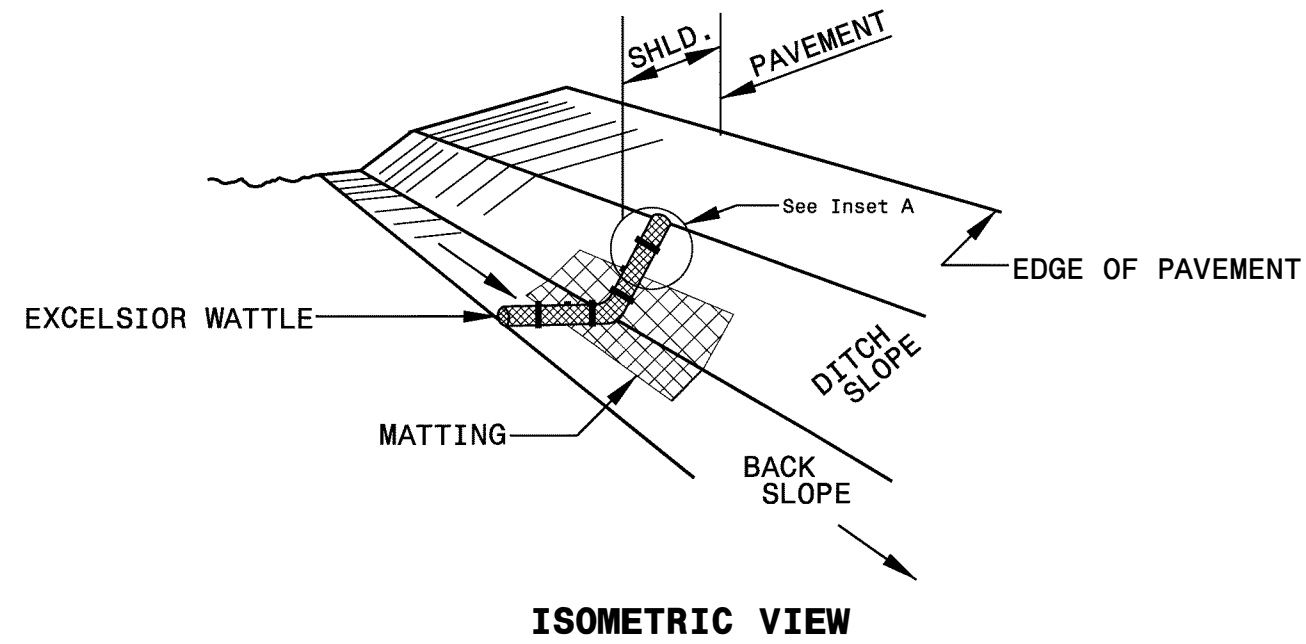
SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (Hqw) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND Hqw ZONES.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY  
WITH THE REGULATIONS SET FORTH BY THE  
NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011  
ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND  
NATURAL RESOURCES DIVISION OF WATER QUALITY.



# WATTLE DETAIL



## NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

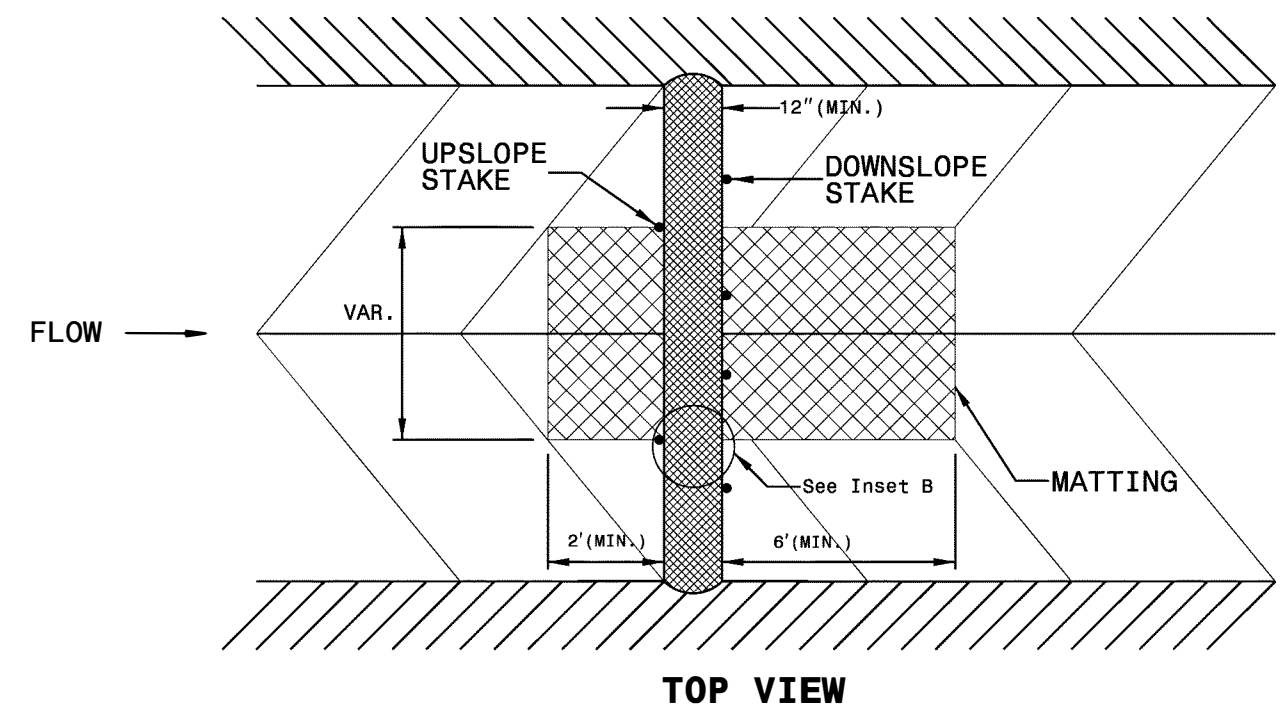
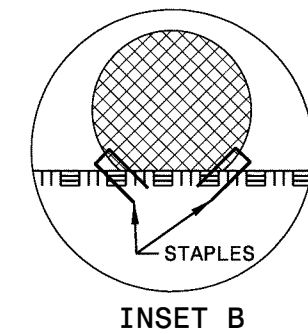
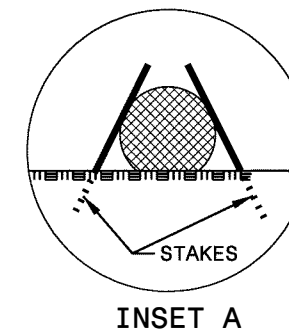
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

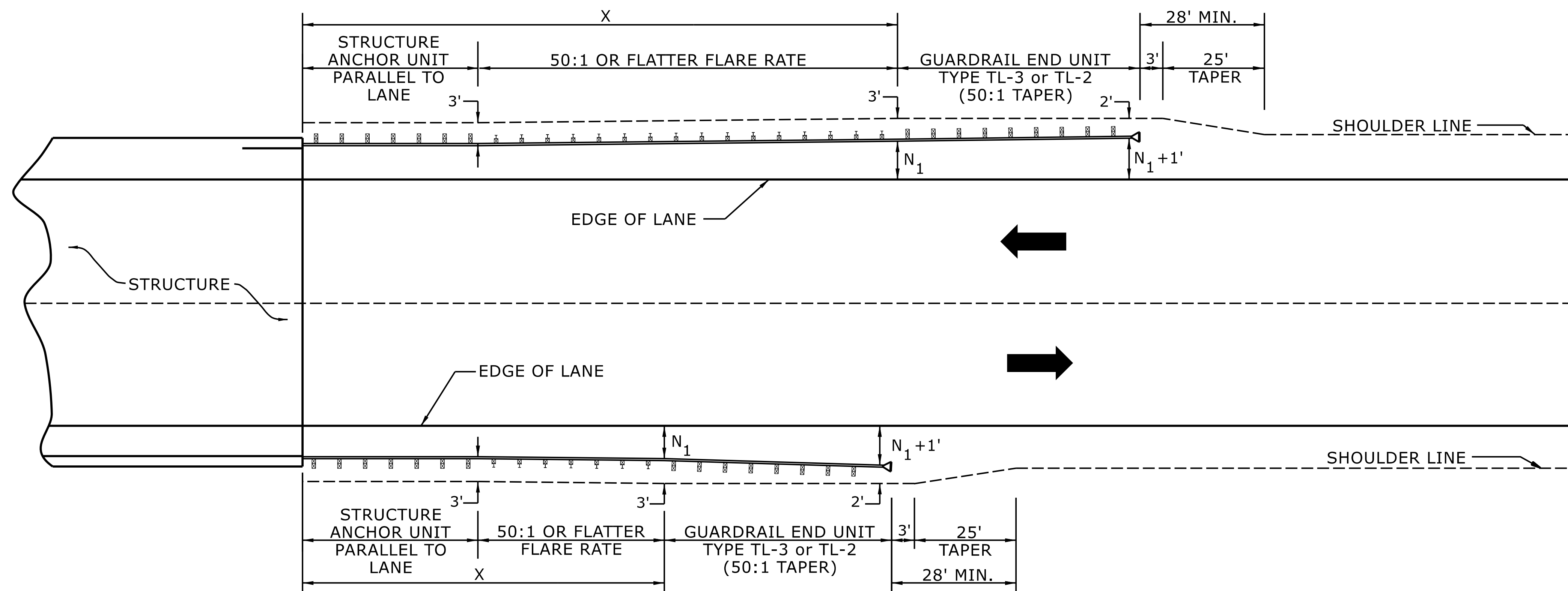
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.







USE FLARE RATE AS THE CONTROL IF THE "N<sub>1</sub>" DISTANCE IS NOT OBTAINED.  
("N<sub>1</sub>" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 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**



Signed by:  
*Ronald Elton Davenport, Jr.*  
06/19/2025

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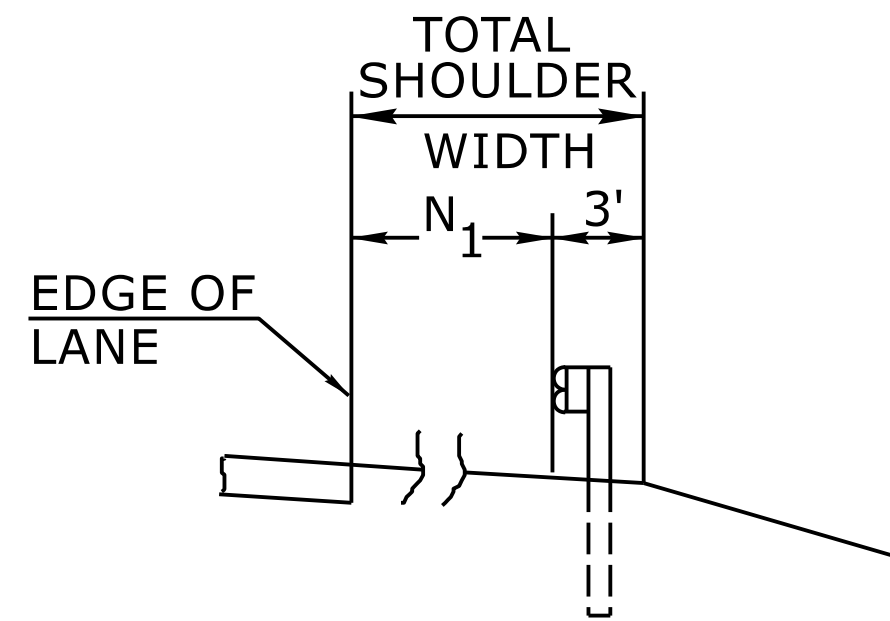
**CONTRACTS STANDARDS  
AND DEVELOPMENT UNIT**

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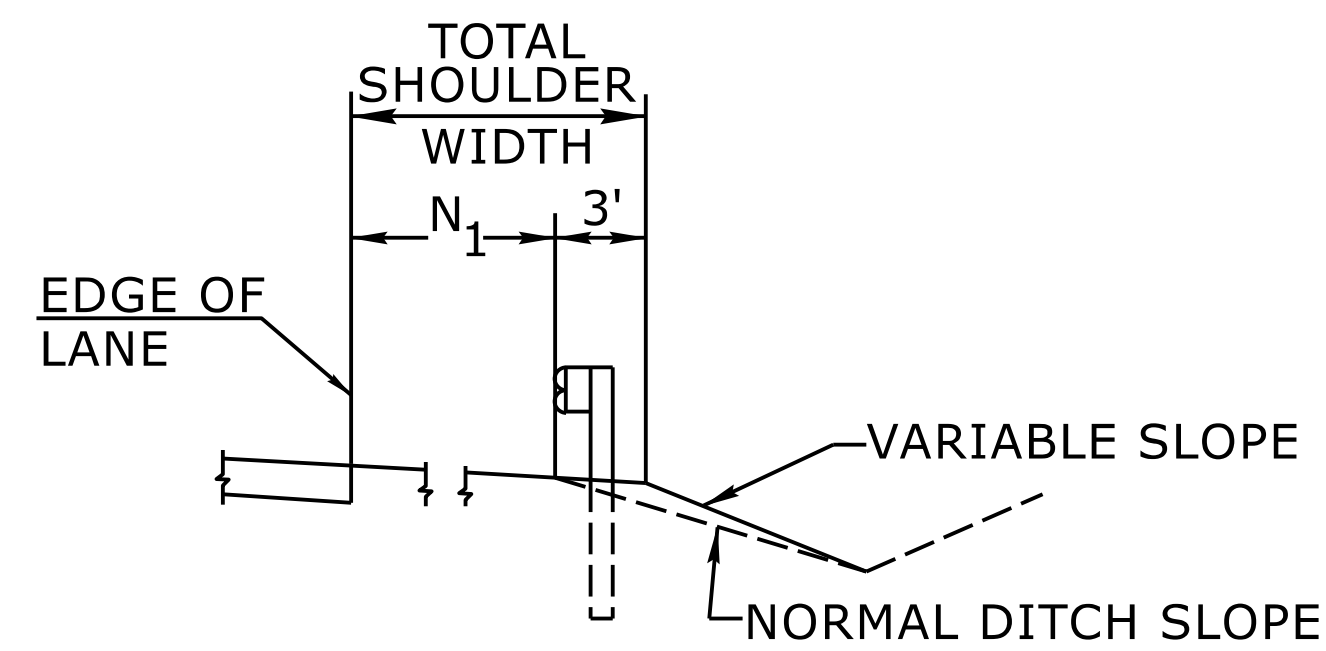
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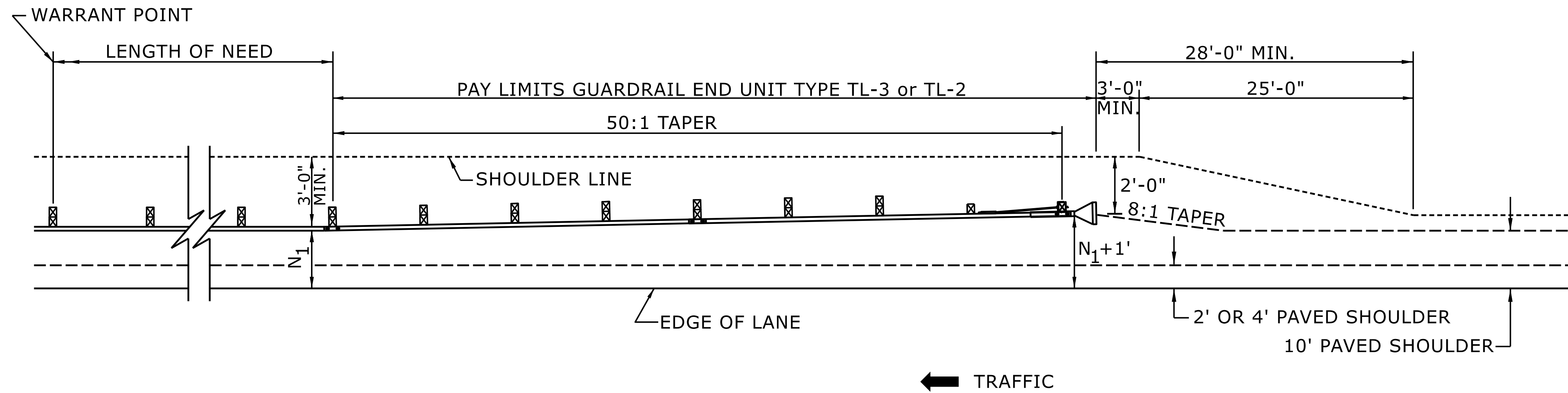


FILL SECTION



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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 6 OF 15  
**862D01**

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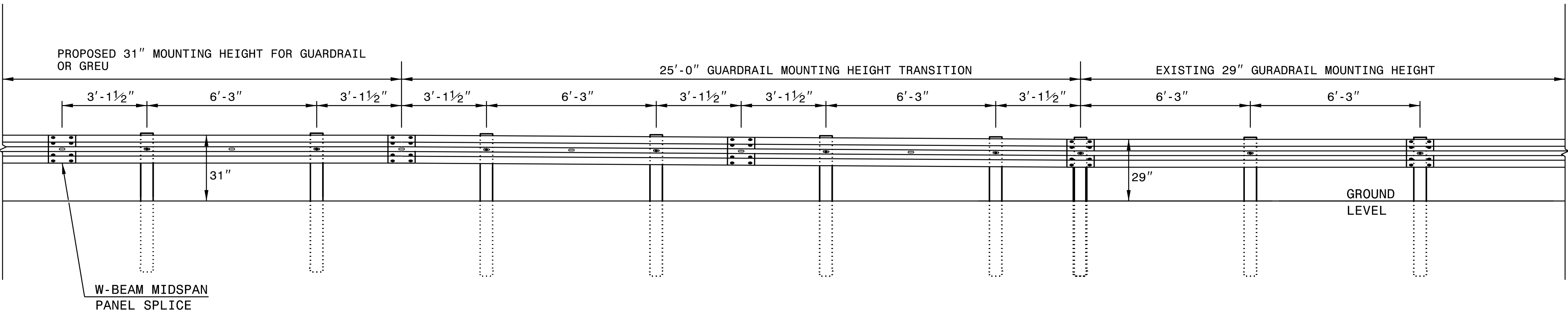
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NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL,  
FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31" GUARDRAIL.



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**



Signed by:  
*Ronald Elton Davenport, Jr.*  
-SAES4860C2484AS-  
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