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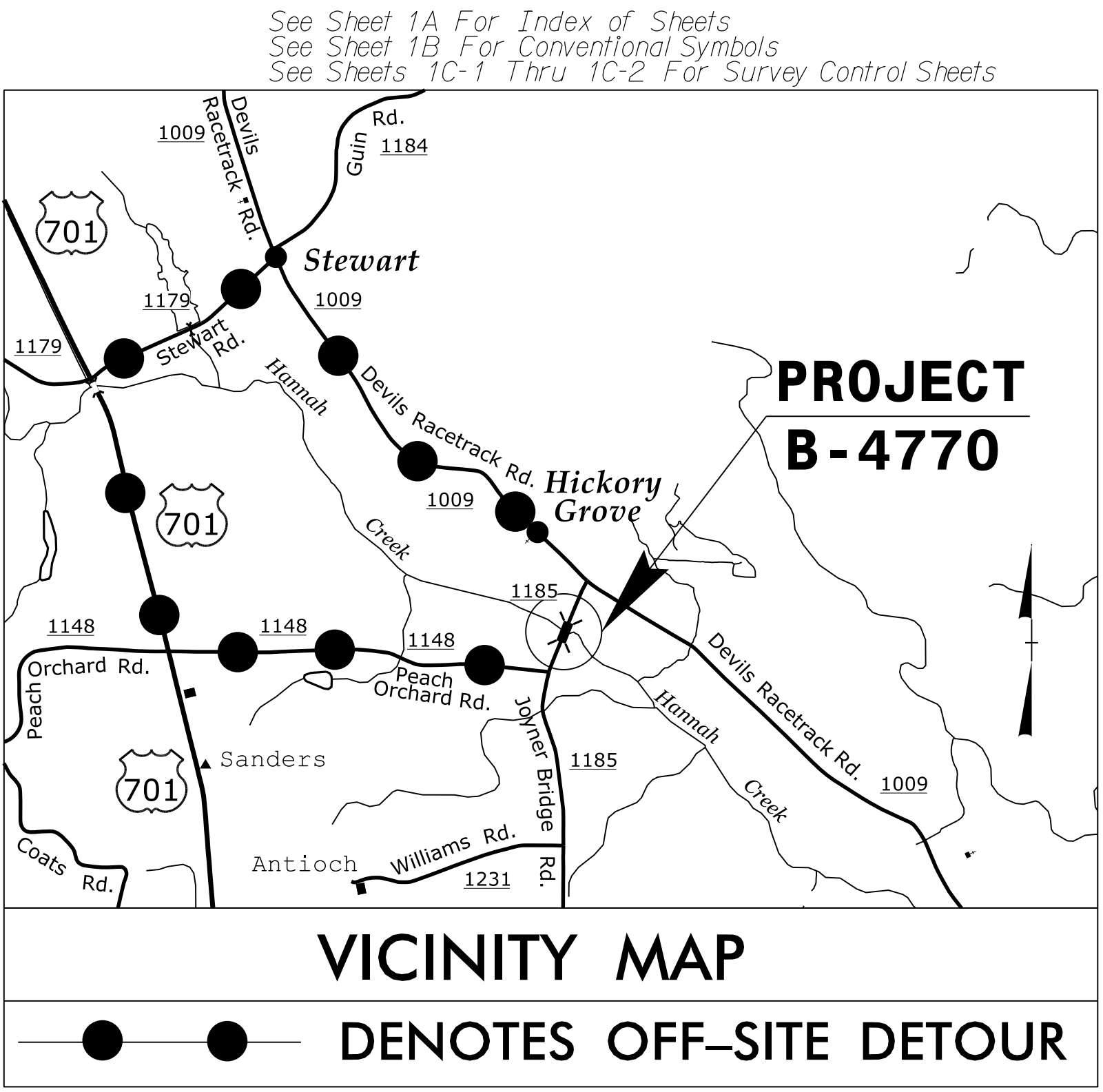
**This file or an individual page
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09/08/2017

29-JUN-2017 14:40
J:\B-4770\Roadway\Proj\B4770_Rdy_tsh.dgn
\$\$\$\$\$SERNAME\$\$\$\$\$

TIP PROJECT: B-4770

CONTRACT: C203944



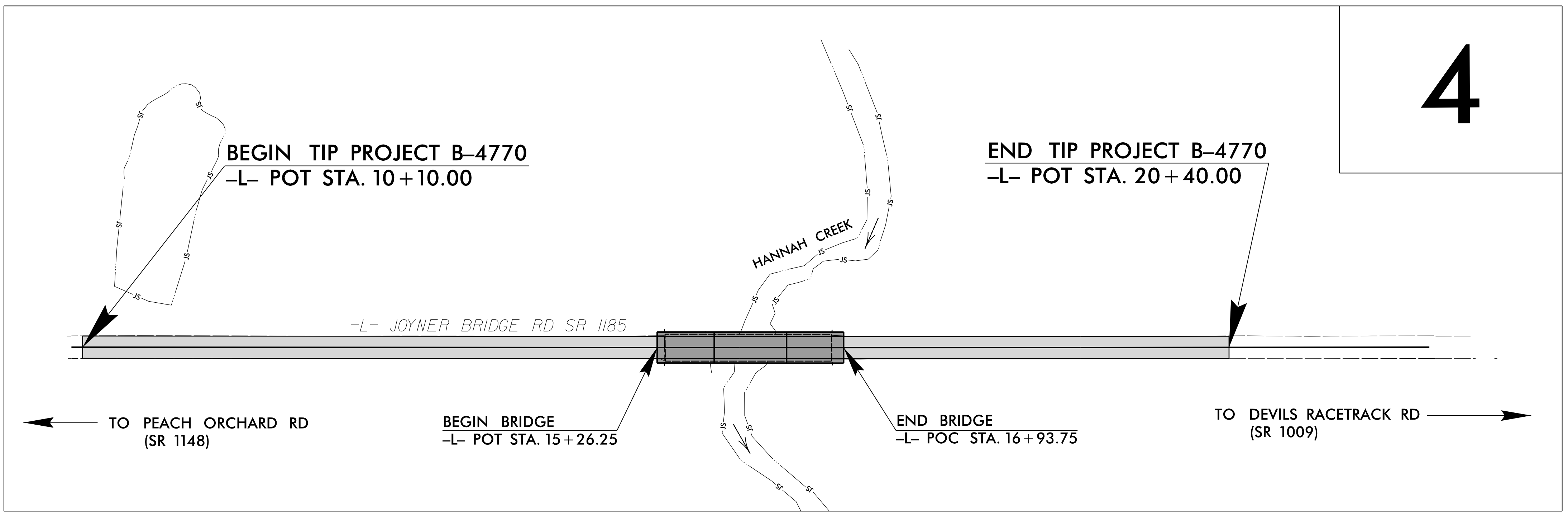
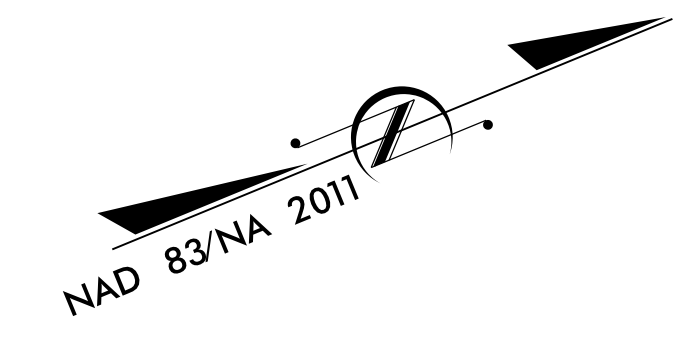
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

**LOCATION: BRIDGE NO. 32 OVER HANNAH CREEK
ON SR 1185 (JOYNER BRIDGE RD)**

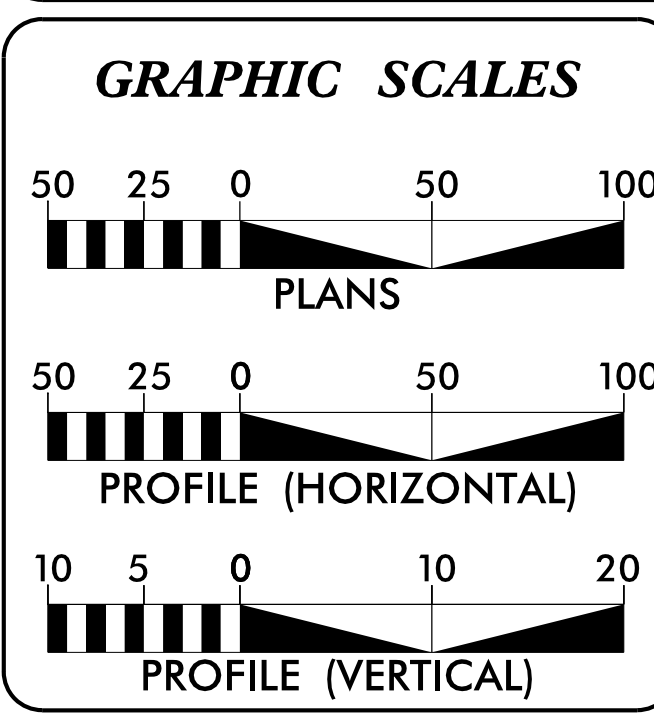
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-4770 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 38542.1.1 | BRZ-1185(2) | PE | |
| 38542.2.1 | | ROW | |
| 38542.3.1 | | CONSTR | |



NCDOT CONTACT: GARY LOVERING, PE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

| | |
|--------------------------|--------|
| ADT 2017 = | 440 |
| ADT 2037 = | 620 |
| K = | 10 % |
| D = | 60 % |
| T = | 5 % * |
| V = | 60 MPH |
| *(TTST = 2% + DUAL = 3%) | |
| FUNC CLASS = | LOCAL |
| SUBREGIONAL TIER | |

PROJECT LENGTH

| | | |
|--|---|-----------|
| LENGTH OF ROADWAY TIP PROJECT B-4770 | = | 0.163 MI. |
| LENGTH OF STRUCTURE TIP PROJECT B-4770 | = | 0.032 MI. |
| TOTAL LENGTH OF TIP PROJECT B-4770 | = | 0.195 MI. |

Prepared for the North Carolina Department of Transportation in the office of:

PARSONS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 25, 2016

LETTING DATE:
AUGUST 15, 2017

DAVID L. WILVER, PE
PROJECT ENGINEER

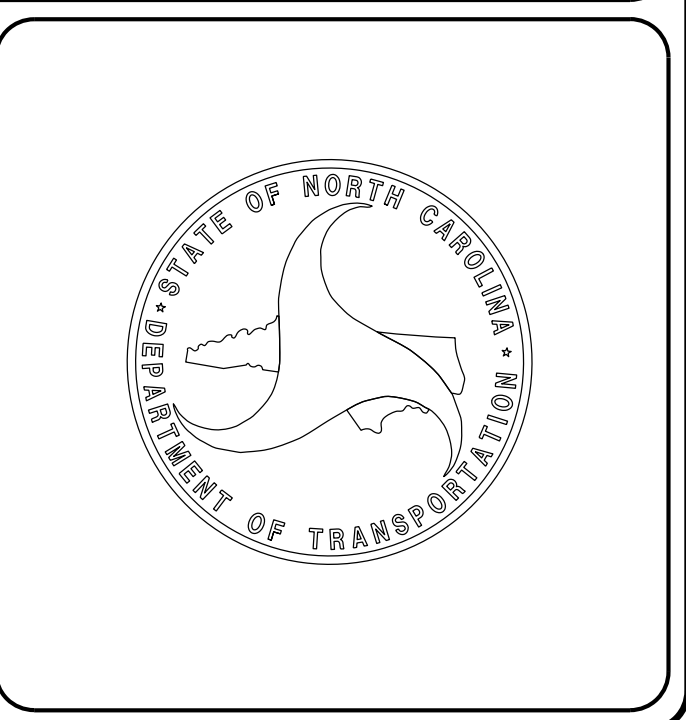
J. MATTHEW PICKENS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

SEAL 32581 5/2017
SIGNATURE: BROOK E. ANDERSON P.E.

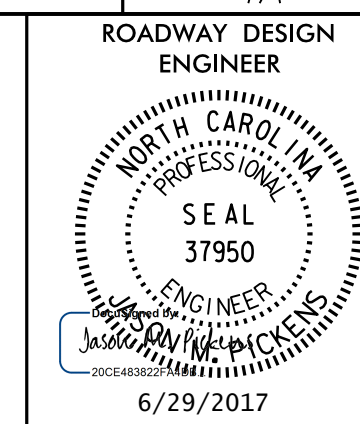
SEAL 37950 8/29/2017
SIGNATURE: JASON M. PICKENS P.E.



8/17/99

PLANS PREPARED BY :
PARSONS
 RALEIGH, NORTH CAROLINA, (919) 854-1345
 NC LICENSE NO. F-0246
 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

| | |
|---------------------------------|-----------------|
| PROJECT REFERENCE NO. B-4770 | SHEET NO. 1A |
|---------------------------------|-----------------|



**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

| | |
|------------------|---|
| | INDEX OF SHEETS |
| SHEET NUMBER | SHEET |
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 1C-1 THRU 1C-2 | SURVEY CONTROL SHEET |
| 2A-1 | PAVEMENT SCHEDULE AND TYPICAL SECTIONS |
| 2C-1 THRU 2C-14 | GUARDRAIL DETAILS |
| 2G-1 | STANDARD ROCK PLATING DETAIL |
| 3B-1 | ROADWAY SUMMARIES |
| 3D-1 | DRAINAGE SUMMARIES |
| 3G-1 | GEOTECHNICAL SUMMARIES |
| 4 | PLAN & PROFILE SHEET |
| TMP-1 THRU TMP-3 | TRANSPORTATION MANAGEMENT PLANS |
| PMP-1 | PAVEMENT MARKING PLAN |
| EC-1 THRU EC-5 | EROSION CONTROL PLANS |
| RF-1 | REFORESTATION DETAIL SHEET |
| SIGN-1 | SIGNING PLAN |
| UO-1 THRU UO-2 | UTILITIES BY OTHERS PLANS |
| X-1A | CROSS-SECTION SUMMARY SHEET |
| X-1 THRU X-6 | CROSS-SECTIONS |
| S-1 THRU S-21 | STRUCTURE PLANS |

GENERAL NOTES:

2012 SPECIFICATIONS
 EFFECTIVE: 01-17-2012
 REVISED: 01-24-2017

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

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.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE TELEPHONE, TV & INTERNET - CENTURYLINK, WATER - JOHNSTON COUNTY PUBLIC UTILITIES

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO. | TITLE |
|--|---|
| DIVISION 2 - EARTHWORK | |
| 200.02 | Method of Clearing - Method II |
| 225.02 | Guide for Grading Subgrade - Secondary and Local |
| 225.04 | Method of Obtaining Superelevation - Two Lane Pavement |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| DIVISION 4 - MAJOR STRUCTURES | |
| 422.11 | Bridge Approach Fills - Sub Regional Tier |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 8 - INCIDENTALS | |
| 806.01 | Concrete Right-of-Way Marker |
| 806.02 | Granite Right-of-Way Marker |
| 840.00 | Concrete Base Pad for Drainage Structures |
| 840.25 | Anchorage for Frames - Brick or Concrete or Precast |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 840.66 | Drainage Structure Steps |
| 846.01 | Concrete Curb, Gutter and Curb & Gutter |
| 846.04 | Drop Inlet Installation in Shoulder Berm Gutter |
| 876.02 | Guide for Rip Rap at Pipe Outlets |

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

| | |
|---------------------------------------|-------------|
| State Line | ----- |
| County Line | ----- |
| Township Line | ----- |
| City Line | ----- |
| Reservation Line | ----- |
| Property Line | ----- |
| Existing Iron Pin | ○ EIP |
| Computed Property Corner | ----- |
| Property Monument | □ ECM |
| Parcel/Sequence Number | ①23 |
| Existing Fence Line | -x-x-x- |
| Proposed Woven Wire Fence | ○ |
| Proposed Chain Link Fence | □ |
| Proposed Barbed Wire Fence | ◇ |
| Existing Wetland Boundary | --- WLB --- |
| Proposed Wetland Boundary | --- WLB --- |
| Existing Endangered Animal Boundary | --- EAB --- |
| Existing Endangered Plant Boundary | --- EPB --- |
| Existing Historic Property Boundary | --- HPB --- |
| Known Contamination Area: Soil | ☠-s-☠ |
| Potential Contamination Area: Soil | ☠-s-☠ |
| Known Contamination Area: Water | ☠-w-☠ |
| Potential Contamination Area: Water | ☠-w-☠ |
| Contaminated Site: Known or Potential | ☠? |

BUILDINGS AND OTHER CULTURE:

| | |
|-------------------------------|-----|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign | ○ S |
| Well | ○ W |
| Small Mine | ✕ |
| Foundation | □ |
| Area Outline | □ |
| Cemetery | □ |
| Building | □ |
| School | □ |
| Church | □ |
| Dam | ▬ |

HYDROLOGY:

| | |
|------------------------------------|--------------|
| Stream or Body of Water | ~~~~~ |
| Hydro, Pool or Reservoir | □ |
| Jurisdictional Stream | --- JS --- |
| Buffer Zone 1 | --- BZ 1 --- |
| Buffer Zone 2 | --- BZ 2 --- |
| Flow Arrow | ← |
| Disappearing Stream | → |
| Spring | ○ |
| Wetland | ▽ |
| Proposed Lateral, Tail, Head Ditch | ▬ |
| False Sump | ▽ |

RAILROADS:

| | |
|--------------------|---------------|
| Standard Gauge | ----- |
| RR Signal Milepost | ○ MILEPOST 35 |
| Switch | □ SWITCH |
| RR Abandoned | ----- |
| RR Dismantled | ----- |

RIGHT OF WAY & PROJECT CONTROL:

| | |
|---|-------|
| Secondary Horiz and Vert Control Point | ◆ |
| Primary Horiz Control Point | ○ |
| Primary Horiz and Vert Control Point | ◆ |
| Exist Permanent Easement Pin and Cap | ◇ |
| New Permanent Easement Pin and Cap | ◆ |
| Vertical Benchmark | ▲ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | ----- |
| New Right of Way Line | ----- |
| New Right of Way Line with Pin and Cap | ----- |
| New Right of Way Line with Concrete or Granite R/W Marker | ----- |
| New Control of Access Line with Concrete C/A Marker | ----- |
| Existing Control of Access | ----- |
| New Control of Access | ----- |
| Existing Easement Line | ----- |
| New Temporary Construction Easement | ----- |
| New Temporary Drainage Easement | ----- |
| New Permanent Drainage Easement | ----- |
| New Permanent Drainage / Utility Easement | ----- |
| New Permanent Utility Easement | ----- |
| New Temporary Utility Easement | ----- |
| New Aerial Utility Easement | ----- |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|------------|
| Existing Edge of Pavement | ----- |
| Existing Curb | ----- |
| Proposed Slope Stakes Cut | --- C --- |
| Proposed Slope Stakes Fill | --- F --- |
| Proposed Curb Ramp | --- CR --- |
| Existing Metal Guardrail | --- T --- |
| Proposed Guardrail | --- T --- |
| Existing Cable Guiderail | --- T --- |
| Proposed Cable Guiderail | --- T --- |
| Equality Symbol | ⊕ |
| Pavement Removal | ▨ |

VEGETATION:

| | |
|--------------|---|
| Single Tree | ☼ |
| Single Shrub | ☼ |

Note: Not to Scale *S.U.E. = *Subsurface Utility Engineering*

| | |
|------------|------------|
| Hedge | ~~~~~ |
| Woods Line | ~~~~~ |
| Orchard | ☼ ☼ ☼ ☼ |
| Vineyard | □ Vineyard |

EXISTING STRUCTURES:

| | |
|--|---------|
| MAJOR: | |
| Bridge, Tunnel or Box Culvert | CONC |
| Bridge Wing Wall, Head Wall and End Wall | CONC WW |
| MINOR: | |
| Head and End Wall | CONC HW |
| Pipe Culvert | ----- |
| Footbridge | ----- |
| Drainage Box: Catch Basin, DI or JB | □ CB |
| Paved Ditch Gutter | ----- |
| Storm Sewer Manhole | ⊙ |
| Storm Sewer | ----- |

UTILITIES:

| | |
|--------------------------------|-------|
| 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 LOS B (S.U.E.*) | ----- |
| U/G Power Line LOS C (S.U.E.*) | ----- |
| U/G Power Line LOS D (S.U.E.*) | ----- |

TELEPHONE:

| | |
|--|-------|
| Existing Telephone Pole | ● |
| Proposed Telephone Pole | ○ |
| Telephone Manhole | ⊙ |
| Telephone Pedestal | ⊠ |
| Telephone Cell Tower | ⊠ |
| U/G Telephone Cable Hand Hole | ----- |
| U/G Telephone Cable LOS B (S.U.E.*) | ----- |
| U/G Telephone Cable LOS C (S.U.E.*) | ----- |
| U/G Telephone Cable LOS D (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS B (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS C (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS D (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS B (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS C (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS D (S.U.E.*) | ----- |

WATER:

| | |
|--------------------------------|-------|
| Water Manhole | ⊙ |
| Water Meter | ○ |
| Water Valve | ⊗ |
| Water Hydrant | ⊕ |
| U/G Water Line LOS B (S.U.E.*) | ----- |
| U/G Water Line LOS C (S.U.E.*) | ----- |
| U/G Water Line LOS D (S.U.E.*) | ----- |
| Above Ground Water Line | ----- |

TV:

| | |
|---------------------------------------|-------|
| TV Pedestal | ⊠ |
| TV Tower | ⊗ |
| U/G TV Cable Hand Hole | ----- |
| U/G TV Cable LOS B (S.U.E.*) | ----- |
| U/G TV Cable LOS C (S.U.E.*) | ----- |
| U/G TV Cable LOS D (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS B (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS C (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS D (S.U.E.*) | ----- |

GAS:

| | |
|------------------------------|-------|
| Gas Valve | ◇ |
| Gas Meter | ⊕ |
| U/G Gas Line LOS B (S.U.E.*) | ----- |
| U/G Gas Line LOS C (S.U.E.*) | ----- |
| U/G Gas Line LOS D (S.U.E.*) | ----- |
| Above Ground Gas Line | ----- |

SANITARY SEWER:

| | |
|-------------------------------------|-------|
| Sanitary Sewer Manhole | ⊙ |
| Sanitary Sewer Cleanout | ⊕ |
| U/G Sanitary Sewer Line | ----- |
| Above Ground Sanitary Sewer | ----- |
| SS Forced Main Line LOS B (S.U.E.*) | ----- |
| SS Forced Main Line LOS C (S.U.E.*) | ----- |
| SS Forced Main Line LOS D (S.U.E.*) | ----- |

MISCELLANEOUS:

| | |
|--|--------|
| Utility Pole | ● |
| Utility Pole with Base | □ |
| Utility Located Object | ○ |
| Utility Traffic Signal Box | ⊠ |
| Utility Unknown U/G Line LOS B (S.U.E.*) | ----- |
| U/G Tank; Water, Gas, Oil | □ |
| Underground Storage Tank, Approx. Loc. | UST |
| A/G Tank; Water, Gas, Oil | □ |
| Geoenvironmental Boring | ⊕ |
| U/G Test Hole LOS A (S.U.E.*) | ⊕ |
| Abandoned According to Utility Records | AATUR |
| End of Information | E.O.I. |

SURVEY CONTROL SHEET B-4770

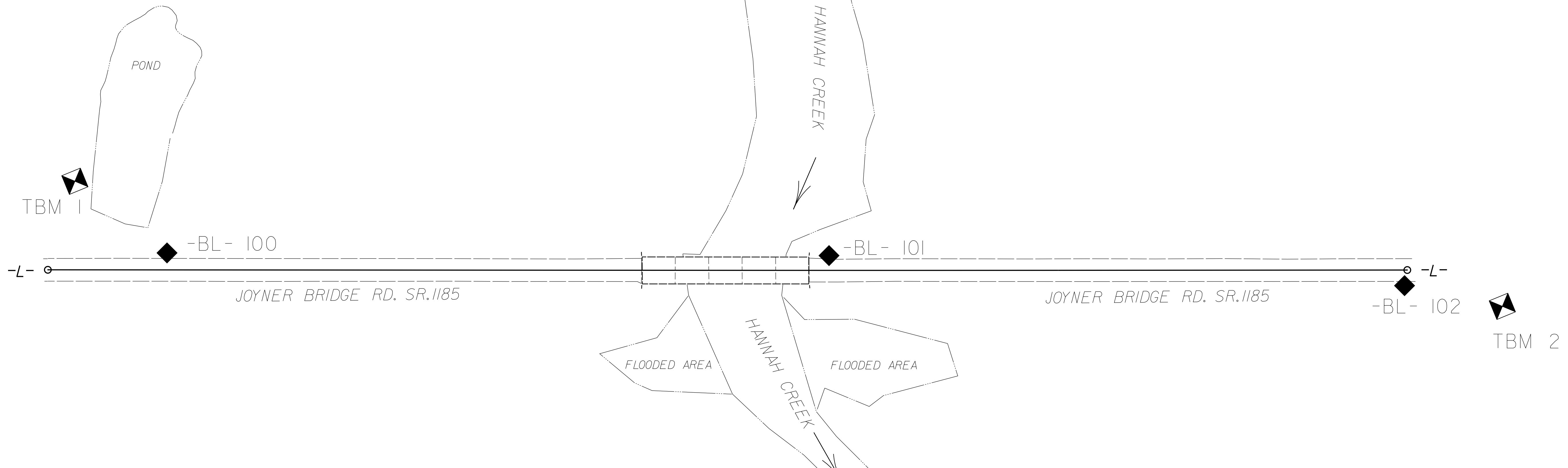
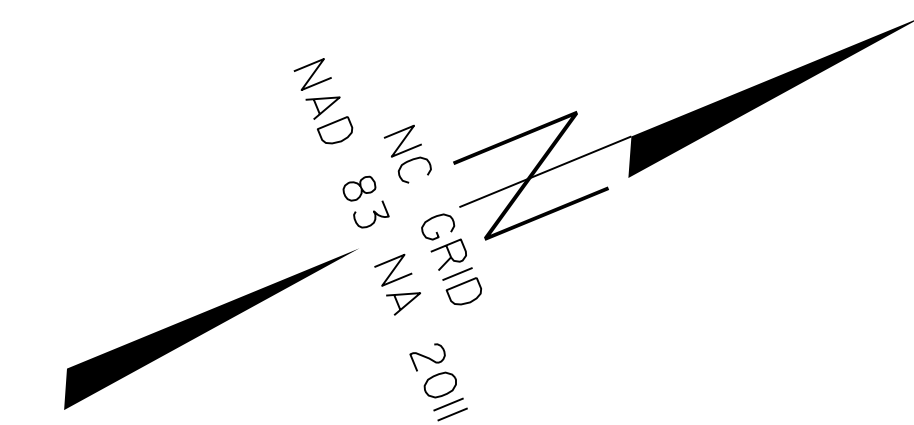
BASELINE DATA

| BL | POINT | DESC. | NORTH | EAST | ELEVATION | L STATION | OFFSET |
|-----|-------|---------|-------------|--------------|-----------|------------------------|----------|
| 2 | | B4770-2 | 595635.6400 | 2196763.8900 | 108.48 | OUTSIDE PROJECT LIMITS | |
| 100 | | BL-100 | 596109.3450 | 2196911.8890 | 106.85 | 11+06.92 | 15.27 LT |
| 101 | | BL-101 | 596657.8600 | 2197140.0930 | 106.77 | 17+01.01 | 13.31 LT |
| 102 | | BL-102 | 597125.2730 | 2197361.4910 | 108.05 | 22+17.50 | 13.95 RT |

BENCHMARK DATA

.....
TBM 1 ELEVATION = 103.31
N 596057 E 2196821
R/R IN BASE OF 12" PINE
.....

.....
TBM 2 ELEVATION = 111.29
N 597199 E 2197412
R/R IN BASE OF 18" PINE
.....



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4770-2"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 595635.640(ft) EASTING: 2196763.890(ft)
ELEVATION: 108.48(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987546

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4770-2" TO -L- STATION 10+00 IS
N18°12'19.40"E 388.48

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATIONPROJECT/](http://www.ncdot.gov/doh/preconstruct/highway/locationproject/)
THE FILES TO BE FOUND ARE AS FOLLOWS:
B4770_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

◆ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

20 JUN 2017 14:38
C:\B4770\PROJECT\B4770-1a-1c-1.dgn
11:58:58

SURVEY CONTROL SHEET B-4770

FINAL

| L | | | |
|------|----------|-------------|--------------|
| TYPE | STATION | NORTH | EAST |
| POT | 10+00.00 | 596004.6750 | 2196885.2610 |
| PC | 16+00.00 | 596559.3915 | 2197113.9301 |
| PT | 19+06.68 | 596843.0183 | 2197230.5851 |
| POT | 22+20.00 | 597132.8808 | 2197349.5356 |

| PERMANET EASEMENT | | | | |
|-------------------|----------|--------|--------------|---------------|
| ALIGN | STATION | OFFSET | NORTH | EAST |
| L | 14+00.00 | 50.00 | 596355.43025 | 2197083.93347 |
| L | 14+00.00 | 30.00 | 596363.05256 | 2197065.44293 |
| L | 18+00.00 | 50.00 | 596725.32867 | 2197236.30345 |
| L | 18+00.00 | 30.03 | 596732.92059 | 2197217.83230 |

| ROW MARKER IRON PIN AND CAP | | | | |
|-----------------------------|----------|--------|--------------|---------------|
| ALIGN | STATION | OFFSET | NORTH | EAST |
| L | 14+75.00 | 50.00 | 596424.76982 | 2197112.51711 |
| L | 14+75.00 | 30.00 | 596432.39212 | 2197094.02657 |
| L | 14+75.02 | -50.00 | 596462.90202 | 2197020.07288 |
| L | 14+75.03 | -30.00 | 596455.28798 | 2197038.56685 |
| L | 17+50.00 | -50.00 | 596717.11268 | 2197124.80234 |
| L | 17+50.00 | -29.94 | 596709.48258 | 2197143.35273 |
| L | 17+50.00 | 30.06 | 596686.65896 | 2197198.84173 |
| L | 17+50.00 | 50.00 | 596679.07304 | 2197217.28470 |

DATUM DESCRIPTION

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 N18°12'19.40"E 388.48

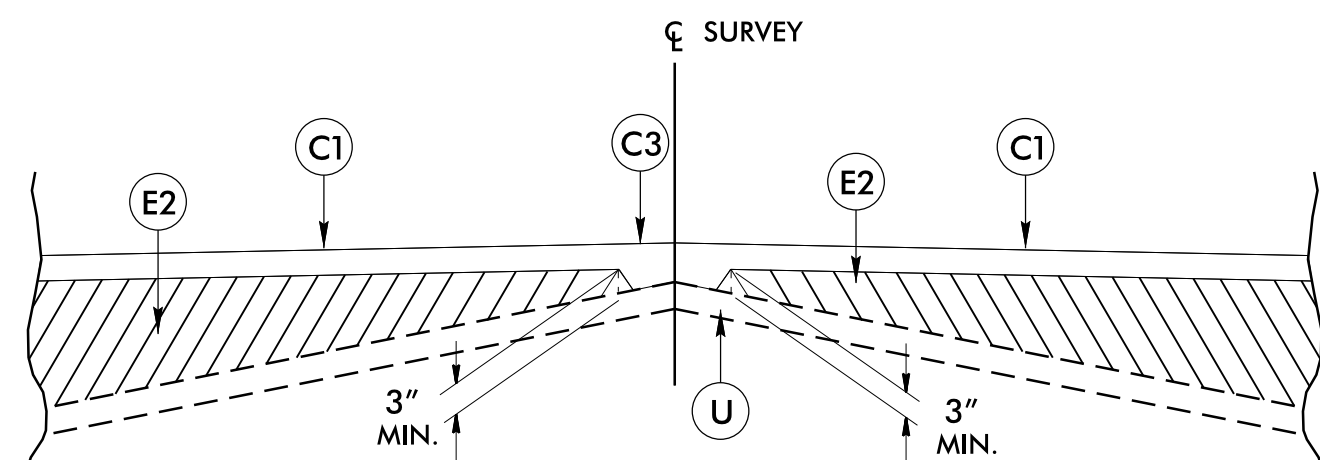
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

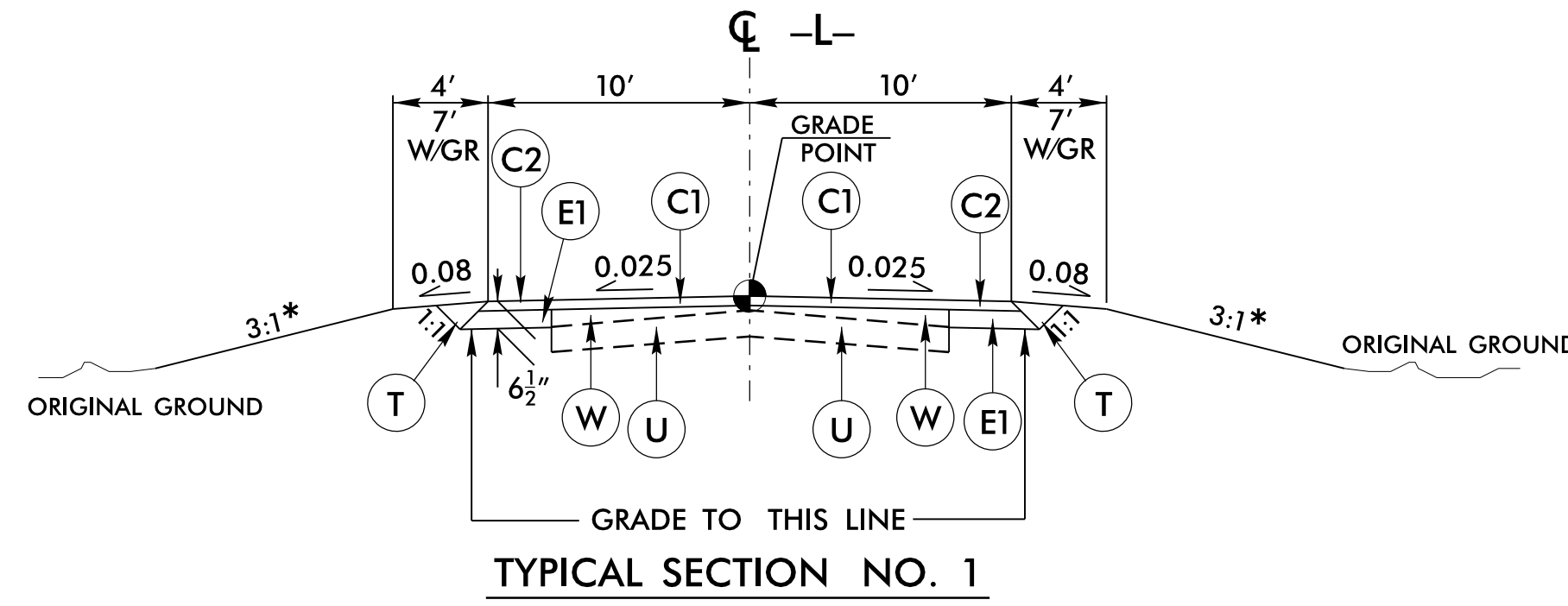
C:\Users\20714338\OneDrive\Projects\B4770-1\1c-2.dgn
 2024/07/20 10:58:36 AM
 10:58:36 AM

| PAVEMENT SCHEDULE | |
|-------------------|--|
| C1 | PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. |
| C2 | PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| C3 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH. |
| E1 | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| E2 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH. |
| R | SHOULDER BERM GUTTER. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING) |

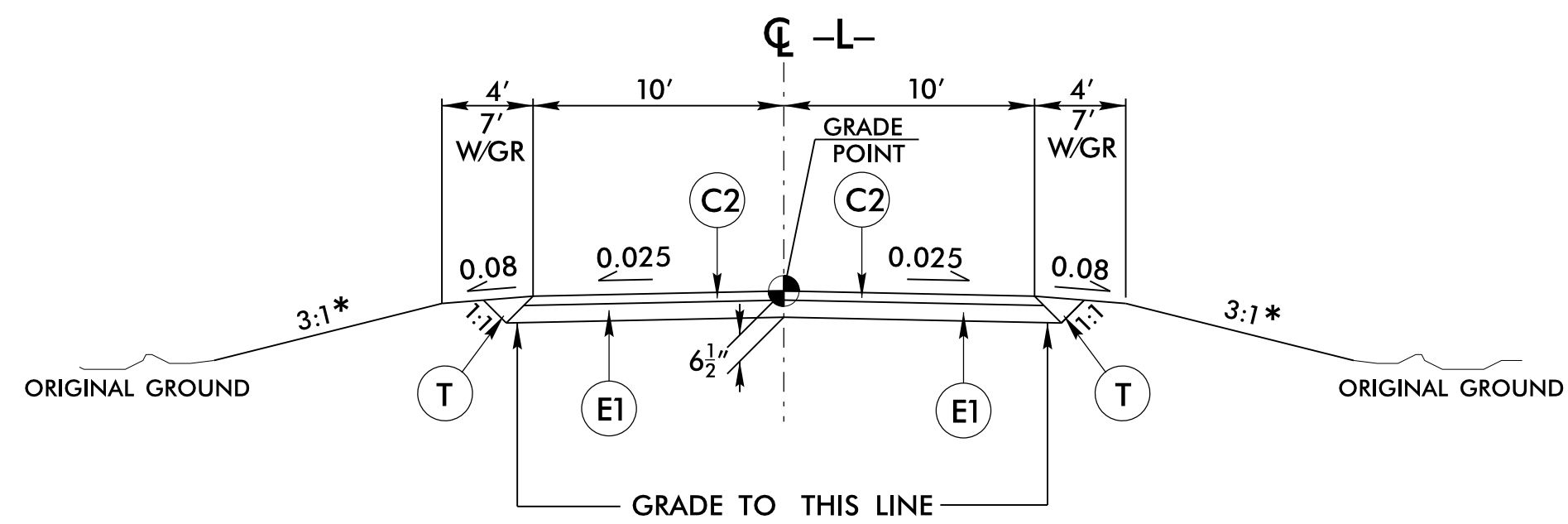
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



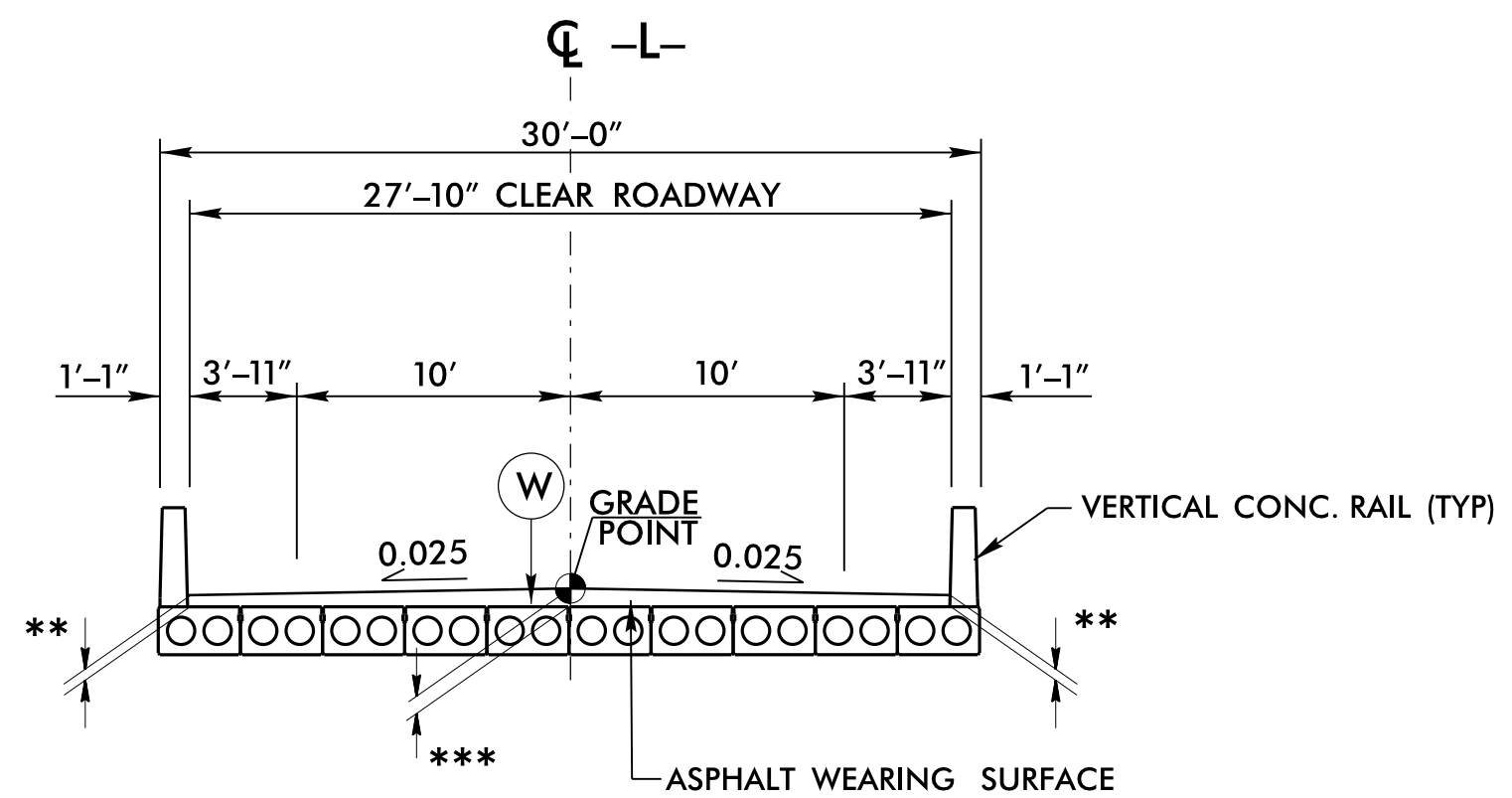
Detail Showing Method of Wedging



TYPICAL SECTION NO. 1



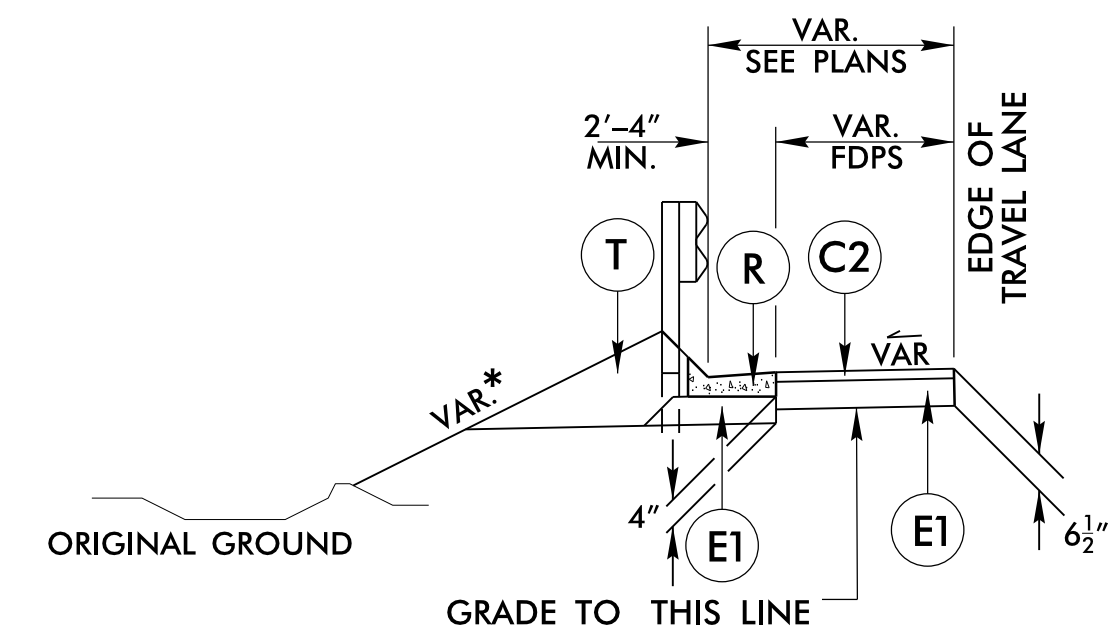
TYPICAL SECTION NO. 2



TYPICAL SECTION ON STRUCTURE

-L- STA. 15+26.25 TO -L- STA. 16+93.75

- ** { 2 3/4" @ C BRG. (SPAN "A" & "C")
- 3 1/2" @ C BRG. (SPAN "B")
- *** { 7" @ C BRG. (SPAN "A" & "C")
- 7 3/4" @ C BRG. (SPAN "B")



DETAIL SHOWING SHOULDER BERM GUTTER (SBG)

FROM "END APPROACH SLAB" (LT & RT) TO
 -L- STA. 17+18.00 (LT & RT)

USE TYPICAL SECTION NO. 1

-L- STA. 10+10.00 TO -L- STA. 12+00.00
 -L- STA. 18+00.00 TO -L- STA. 20+40.00

* -L- STA. 18+00.00 TO 19+50.00 FILL SLOPES VARY FROM 3:1 TO 1.5:1

USE TYPICAL SECTION NO. 2

-L- STA. 12+00.00 TO -L- STA. 15+26.25 (BEGIN BRIDGE)
 -L- STA. 16+93.75 (END BRIDGE) TO -L- STA. 18+00.00

* -L- STA. 12+00.00 TO 15+26.25 (BEGIN BRIDGE) FILL SLOPES VARY FROM 3:1 TO 1.5:1
 * -L- STA. 16+93.75 (END BRIDGE) TO 18+00.00 FILL SLOPES VARY FROM 3:1 TO 1.5:1

| | |
|--|------------------------------|
| PROJECT REFERENCE NO. B-4770 | SHEET NO. 2A-1 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

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RALEIGH, N.C.

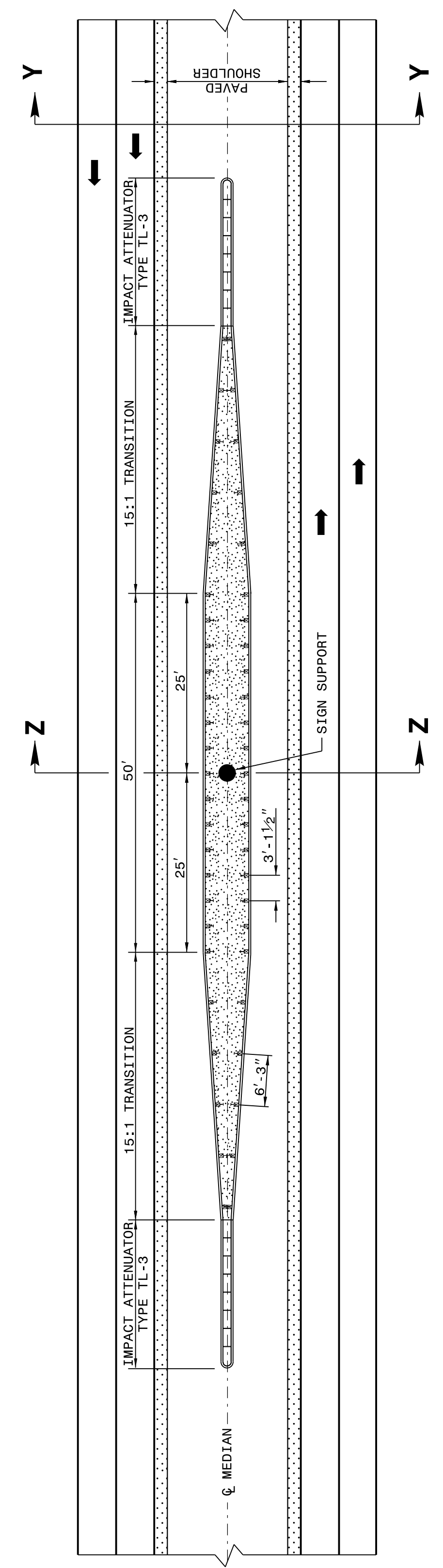
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 2 OF 11
862D01

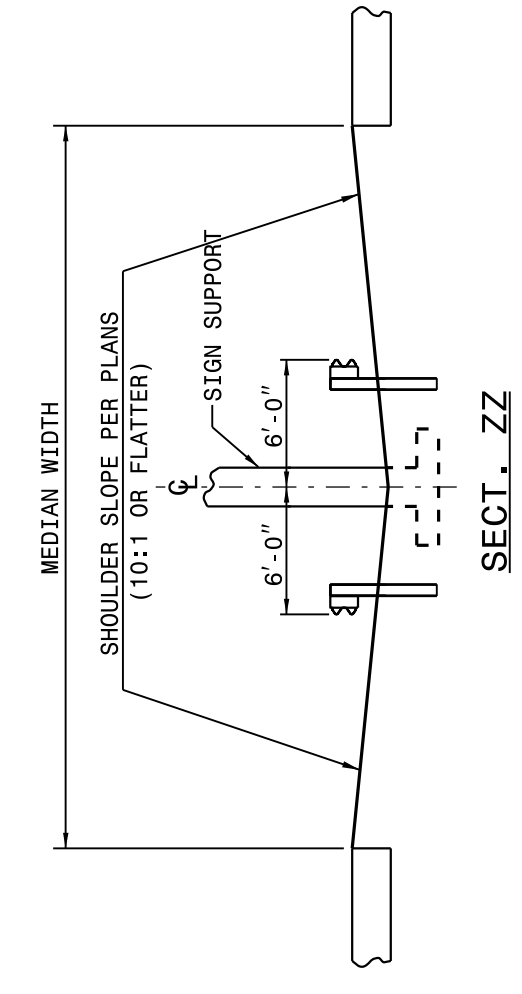
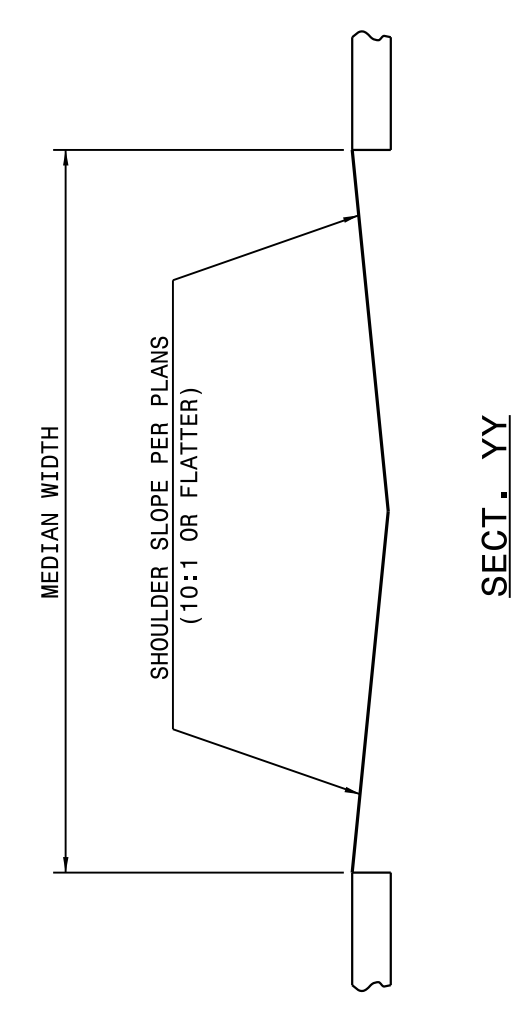
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 2 OF 11
862D01



NOTE SPECIAL LAYER OF PAVEMENT
 USE 3'-1 1/2" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.
 GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STANDARD 862D01 SHEET 1 OF 12).

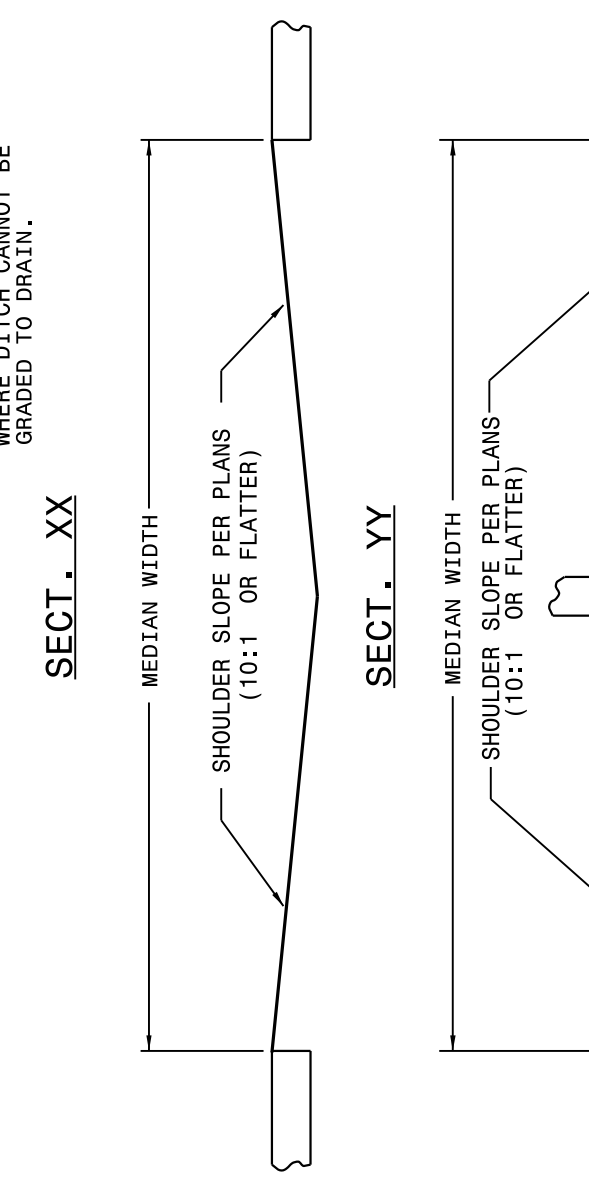
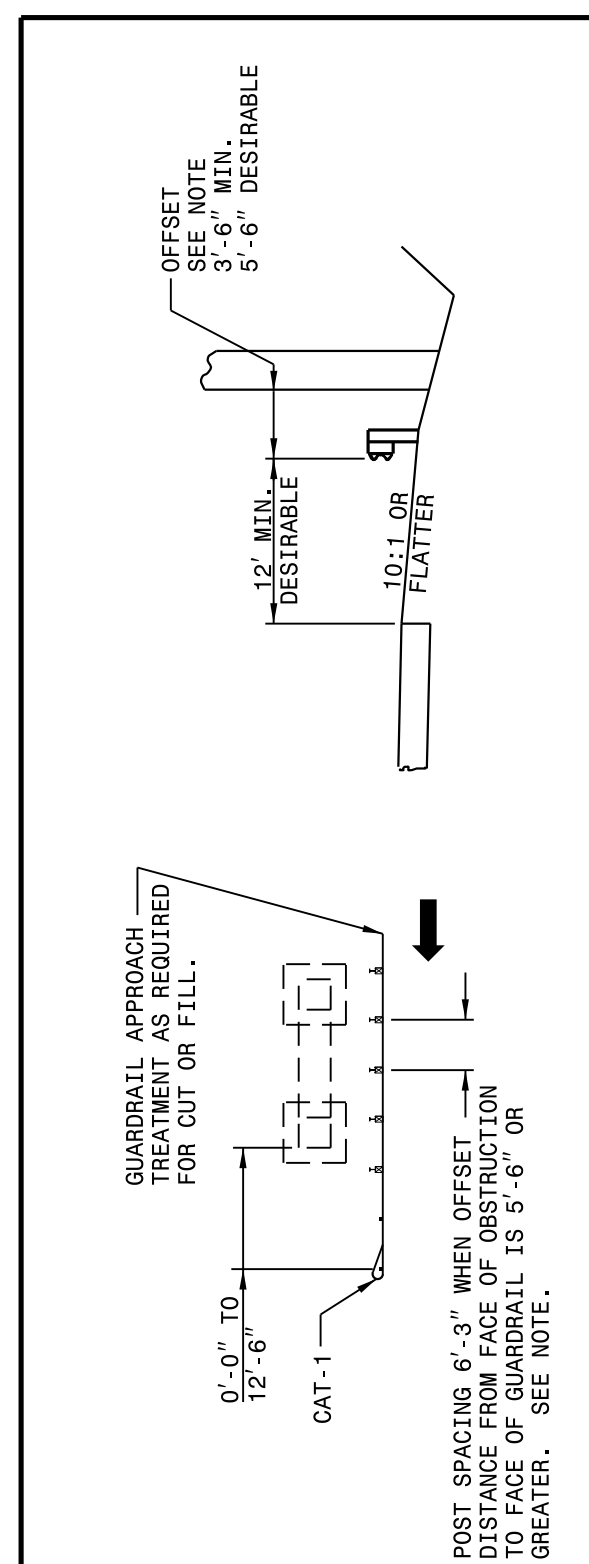
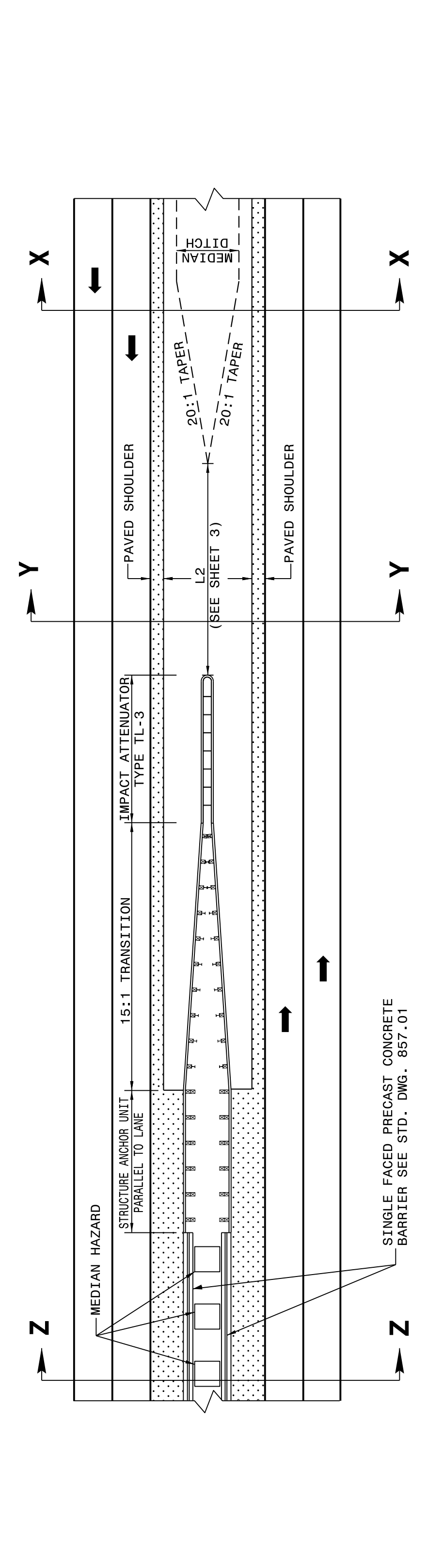


DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01



NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6", BEGIN 3'-1 1/2" POST SPACING AT POINT 26' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

DETAIL OF MEDIAN TREATMENT AT UNDERPASS

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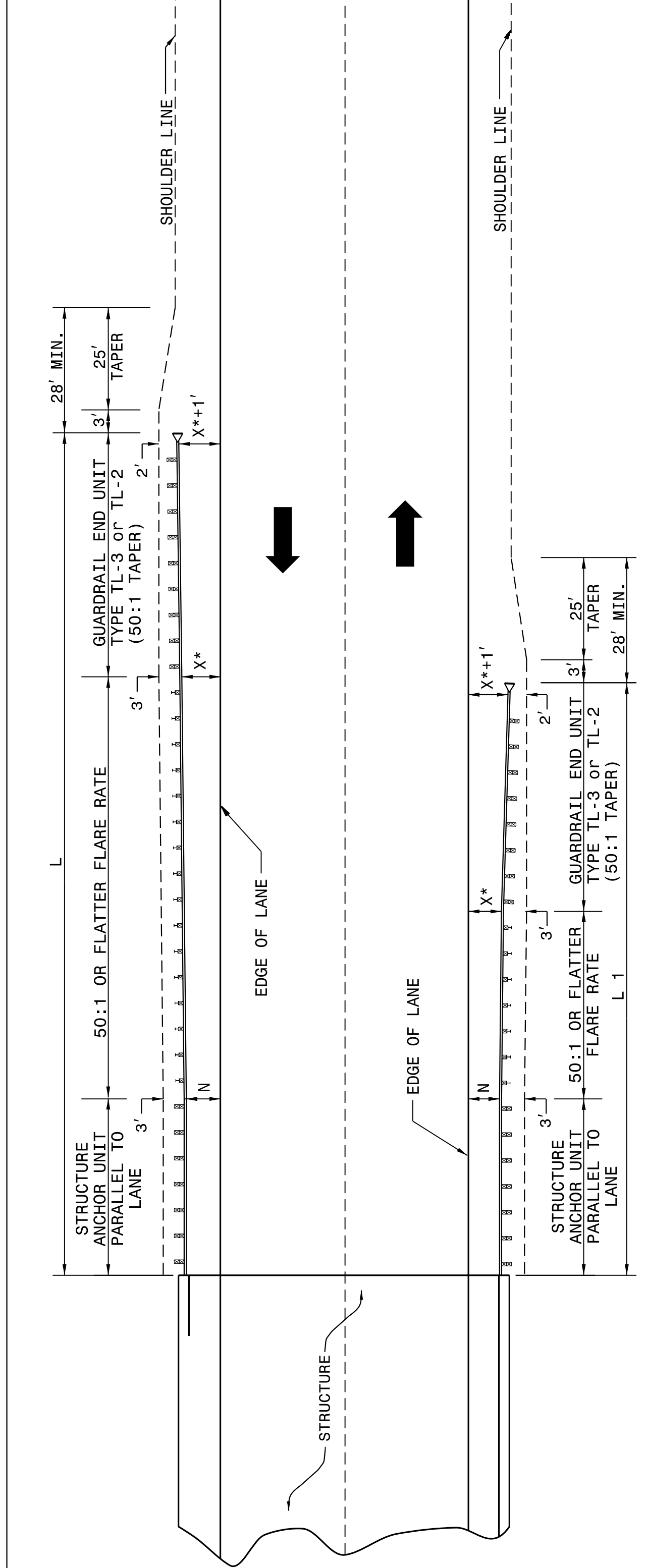
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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01



GUARDRAIL INSTALLATION AT BRIDGE APPROACHES FOR TWO-LANE, TWO-WAY TRAFFIC

| DESIGN SPEED (MPH) | "L" APPROACH LENGTH (FT.) | | "L" TRAILING LENGTH (FT.) | |
|--------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | DESIGN YEAR ADT OVER 2000 | CURRENT YEAR ADT 400-1000 | DESIGN YEAR ADT OVER 2000 | CURRENT YEAR ADT 400-1000 |
| 70 | 362.5' | 362.5' | 350.0' | 287.5' |
| 60 | 300.0' | 287.5' | 275.0' | 225.0' |
| 50 | 212.5' | 212.5' | 200.0' | 162.5' |
| 40 | 175.0' | 150.0' | 137.5' | 112.5' |
| X* | 8' | 6' | 4' | 4' |

* USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1).

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

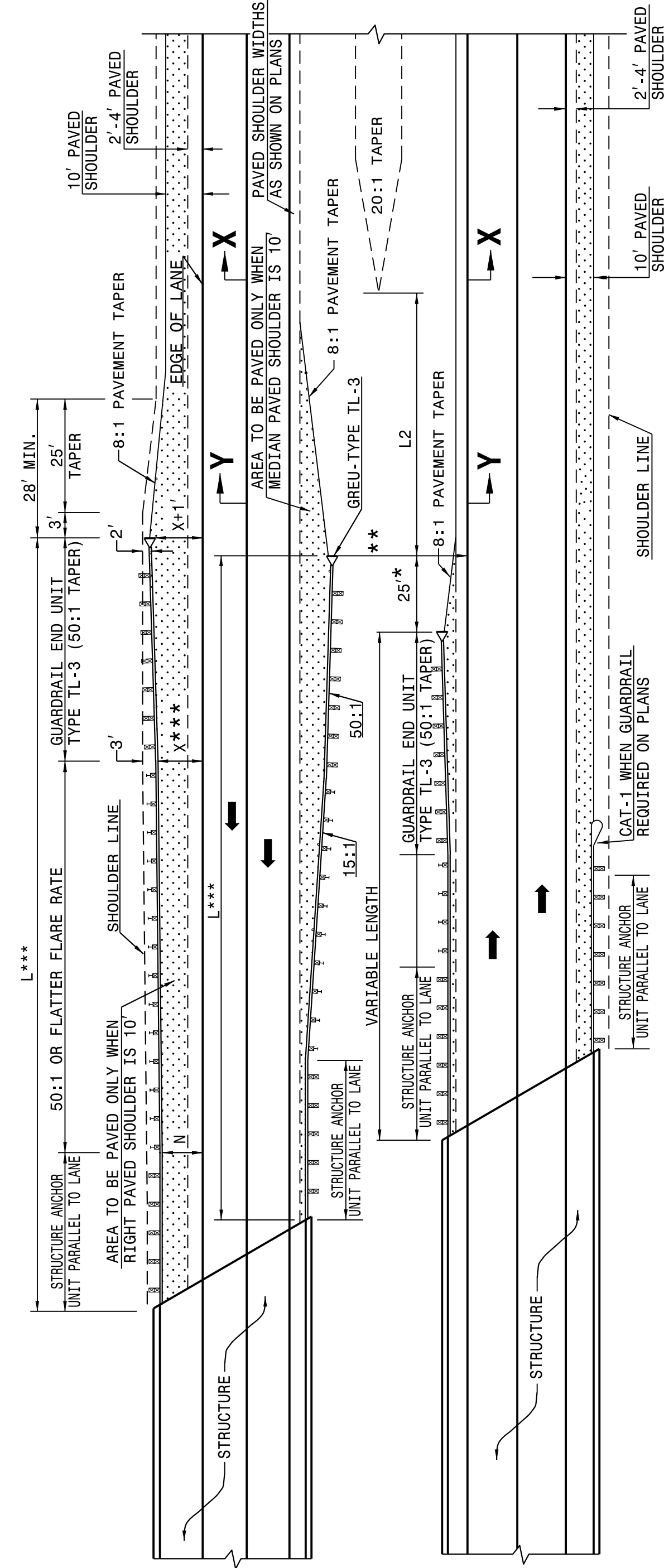
FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 3 OF 11
862D01



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DIMENSIONS FOR LENGTH OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

| MEDIAN WIDTH | -L-*** | | -L2- DIM. |
|--------------|--------|--------|-----------|
| | 60 MPH | 50 MPH | |
| 30' | 300.0' | 250.0' | 80.0' |
| 36' | 300.0' | 250.0' | 60.0' |
| 40' & ABOVE | 300.0' | 250.0' | 40.0' |

NOTES: * MINOR VARIATION TO THE 25'-0" DIMENSION IS PERMISSIBLE TO ACCOMMODATE THE 12'-6" IN GUARDRAIL LENGTHS.

** NO GUARDRAIL IS REQUIRED ON THE TRAILING END WHEN THIS DISTANCE EXCEEDS CLEAR ROADSIDE RECOVERY AREA FOR THE APPROPRIATE DESIGN SPEED.

*** BASED ON "X" OF 12' USE FLARE RATE AS THE CONTROL IF THE "X" DISTANCE IS NOT OBTAINED. ("X" IS BASED ON SHOULDER WIDTHS IN THE HIGHWAY DESIGN BRANCH MANUAL, PART 1, 1-4B, F1A).

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE. THE DESIGN LAYOUT FOR LENGTHS SHOWN ON THIS STANDARD ARE MINIMUM DESIGN LENGTHS. SEE SHEET 1 OF 12 FOR SECTIONS XX, YY

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

DETAIL OF GUARDRAIL APPROACHING DUAL LANE BRIDGES

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 11
862D01

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 3 OF 11
862D01

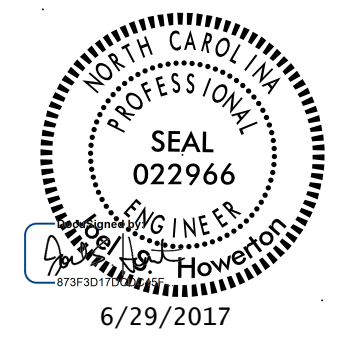
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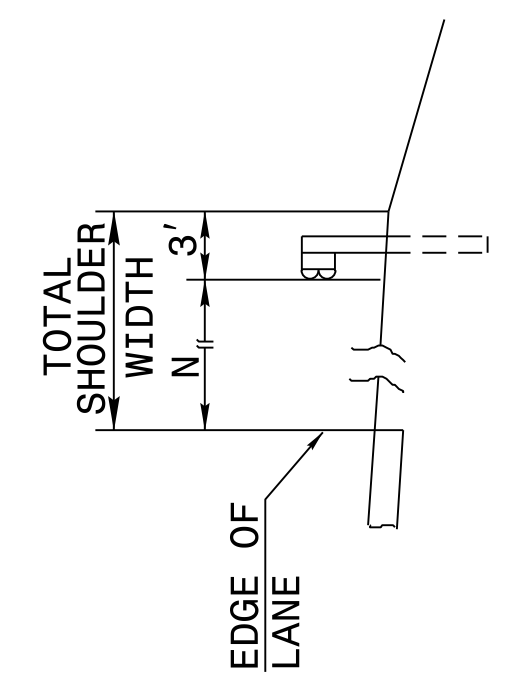
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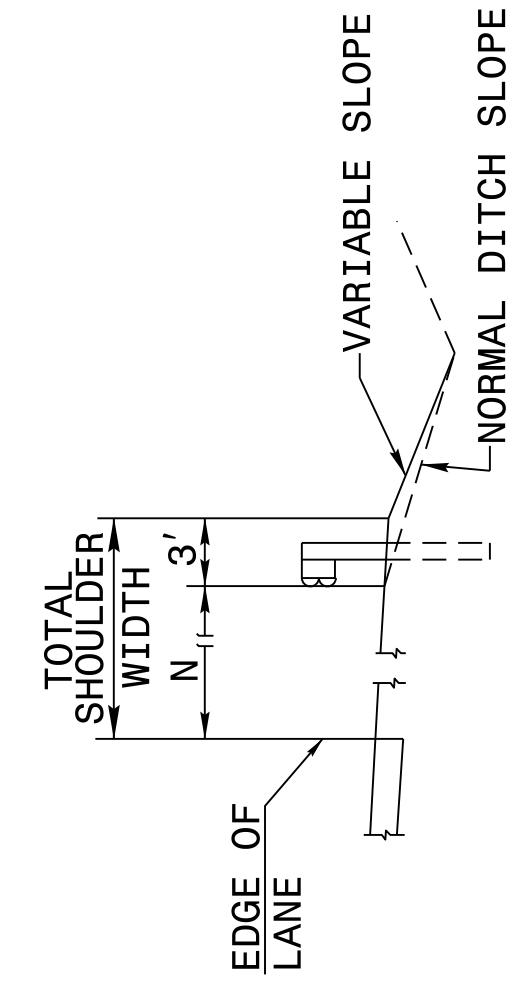


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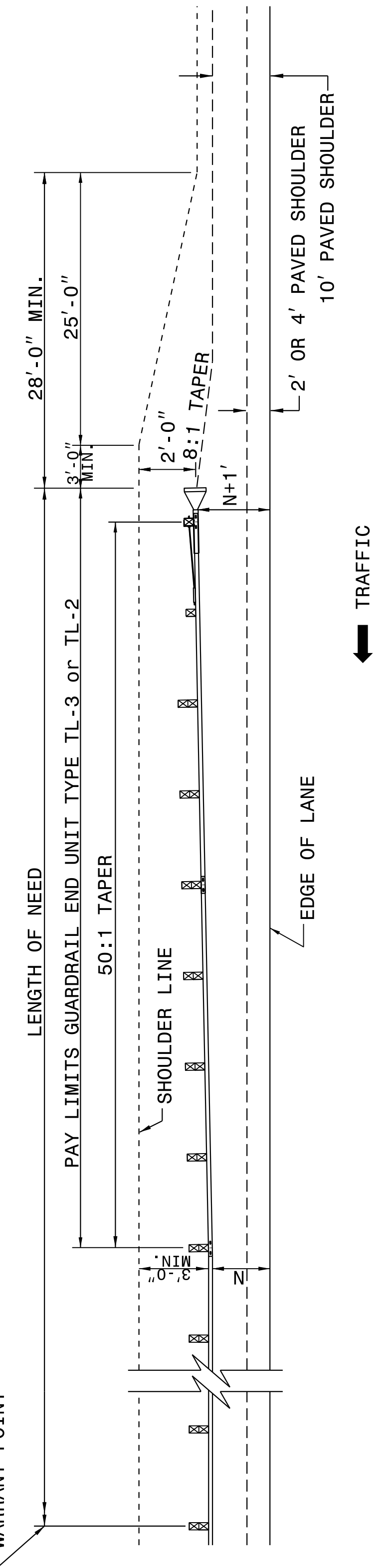


FILL SECTION



CUT SECTION

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

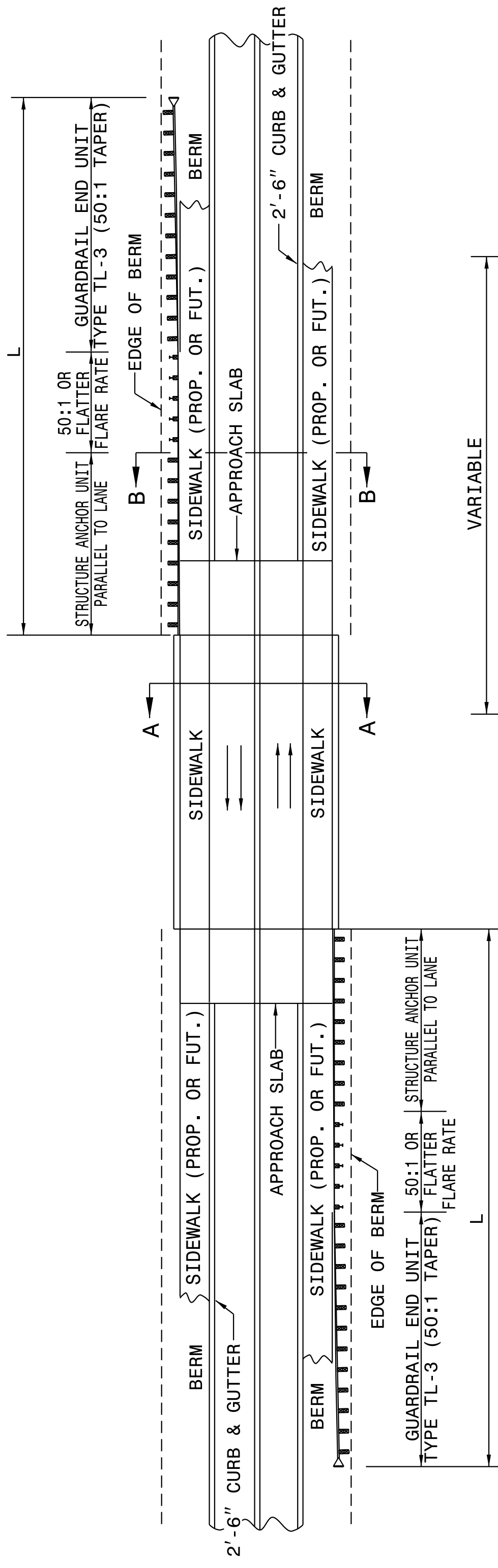
SHEET 6 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 11
862D01

STATE OF NORTH CAROLINA
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| | |
|--|------|
| MINIMUM GUARDRAIL LENGTHS "L" REQUIRED AT BRIDGE APPROACHES ON 2'-6" CONCRETE CURB AND GUTTER ROADWAYS | "L" |
| DESIGN SPEED (MPH) | 150' |
| | 225' |

NOTE: "L" VALUES ARE BASED ON NO HAZARDS OTHER THAN END OF BRIDGE BEING PRESENT WITHIN THE CLEAR ZONE.

SEE STD. 862D03 FOR STRUCTURE ANCHOR UNITS.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
 FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 5 OF 11
862D01

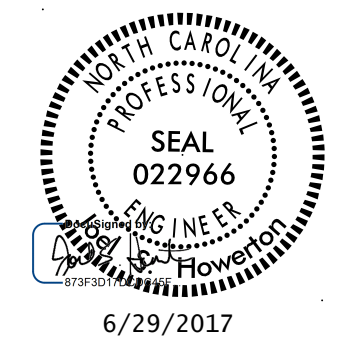
STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

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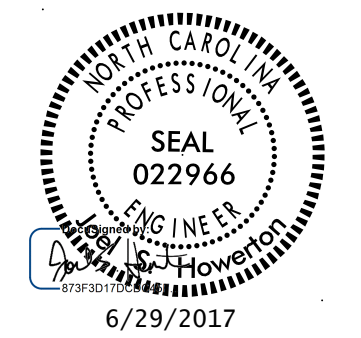
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| | | |
| ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT | | |
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| ROADWAY DETAIL DRAWING FOR GUARDRAIL PLACEMENT | | |
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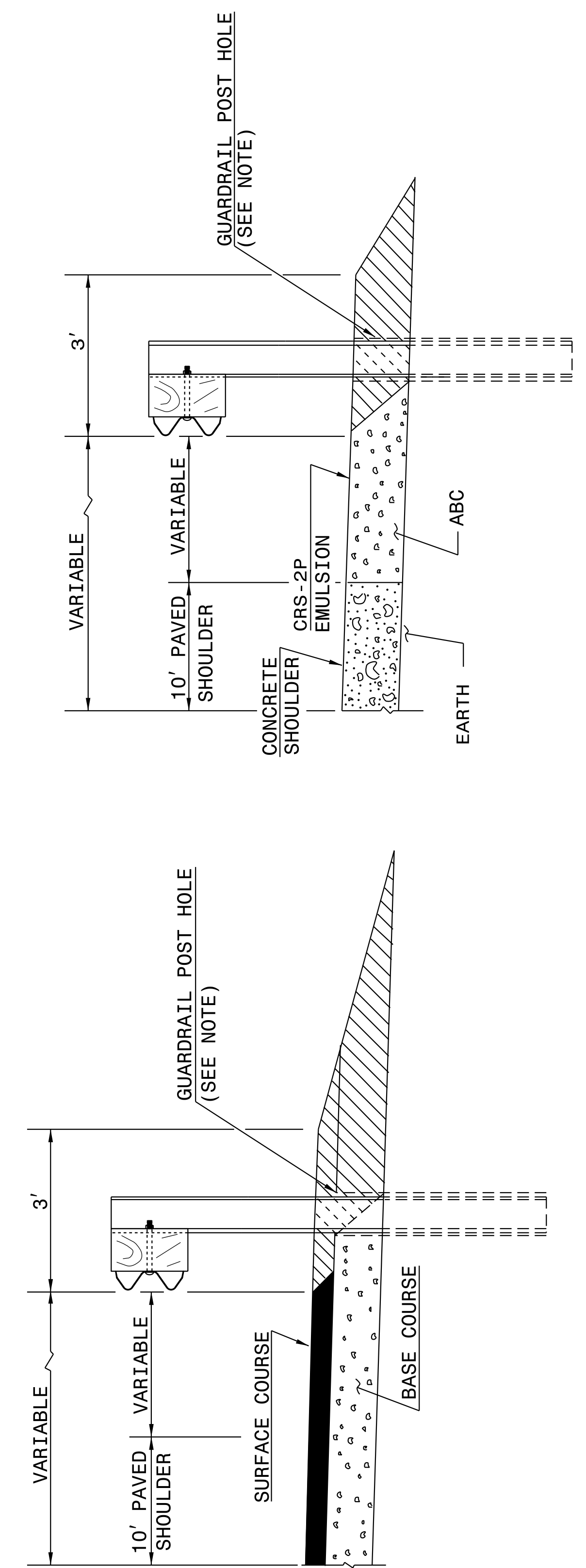
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| B-4770 | 2C-5 |

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ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 10 OF 11
862D01



FLEXIBLE PAVED SHOULDER

CONCRETE PAVED SHOULDER



EARTH MATERIAL

NOTE:
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

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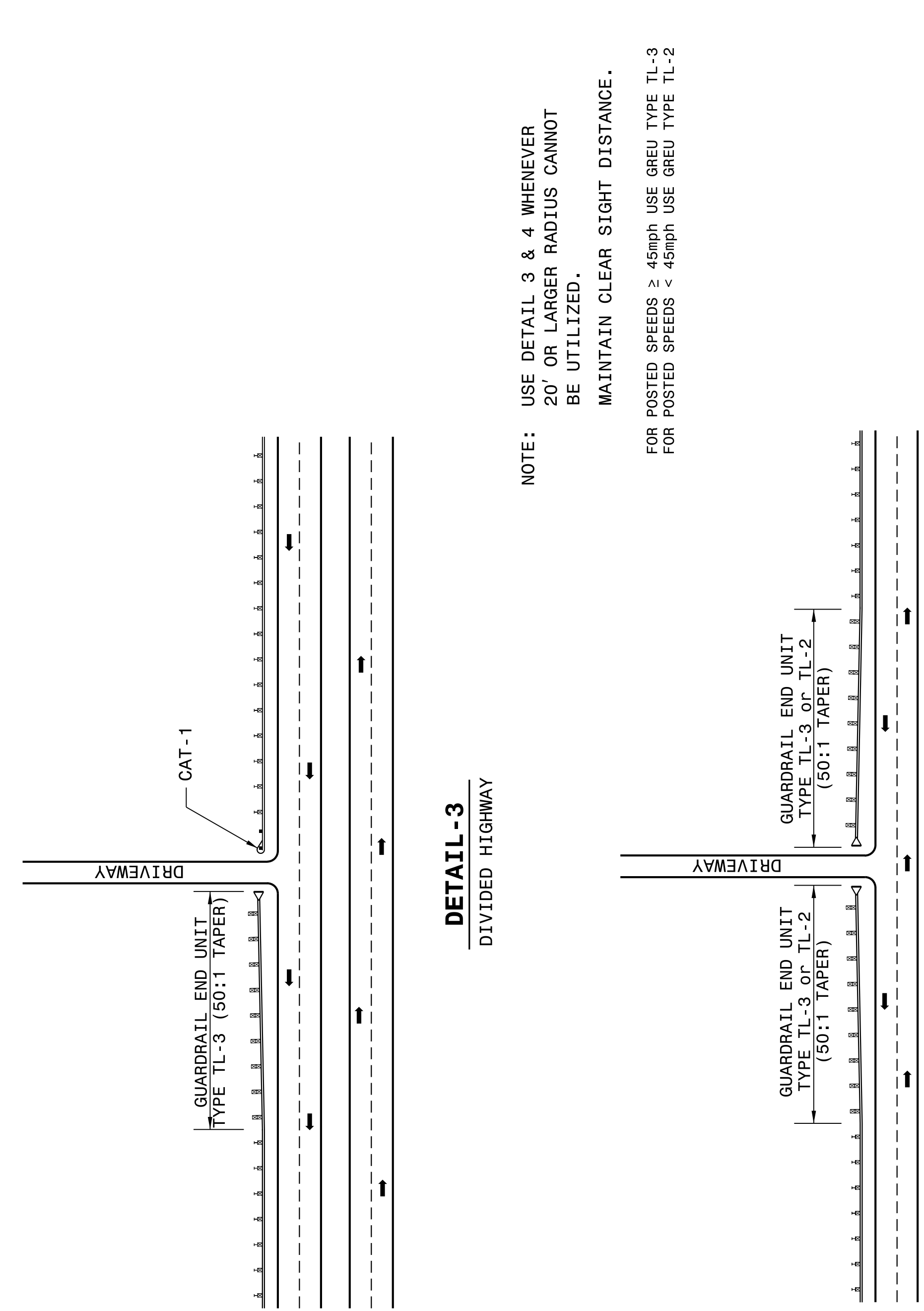
ENGLISH DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 10 OF 11
862D01

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 9 OF 11
862D01



DETAIL - 3
DIVIDED HIGHWAY

DETAIL - 4
UNDIVIDED HIGHWAY

NOTE: USE DETAIL 3 & 4 WHENEVER
20' OR LARGER RADIUS CANNOT
BE UTILIZED.
MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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GUARDRAIL PLACEMENT

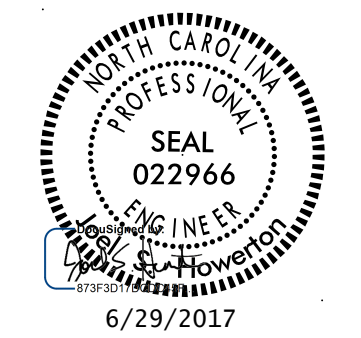
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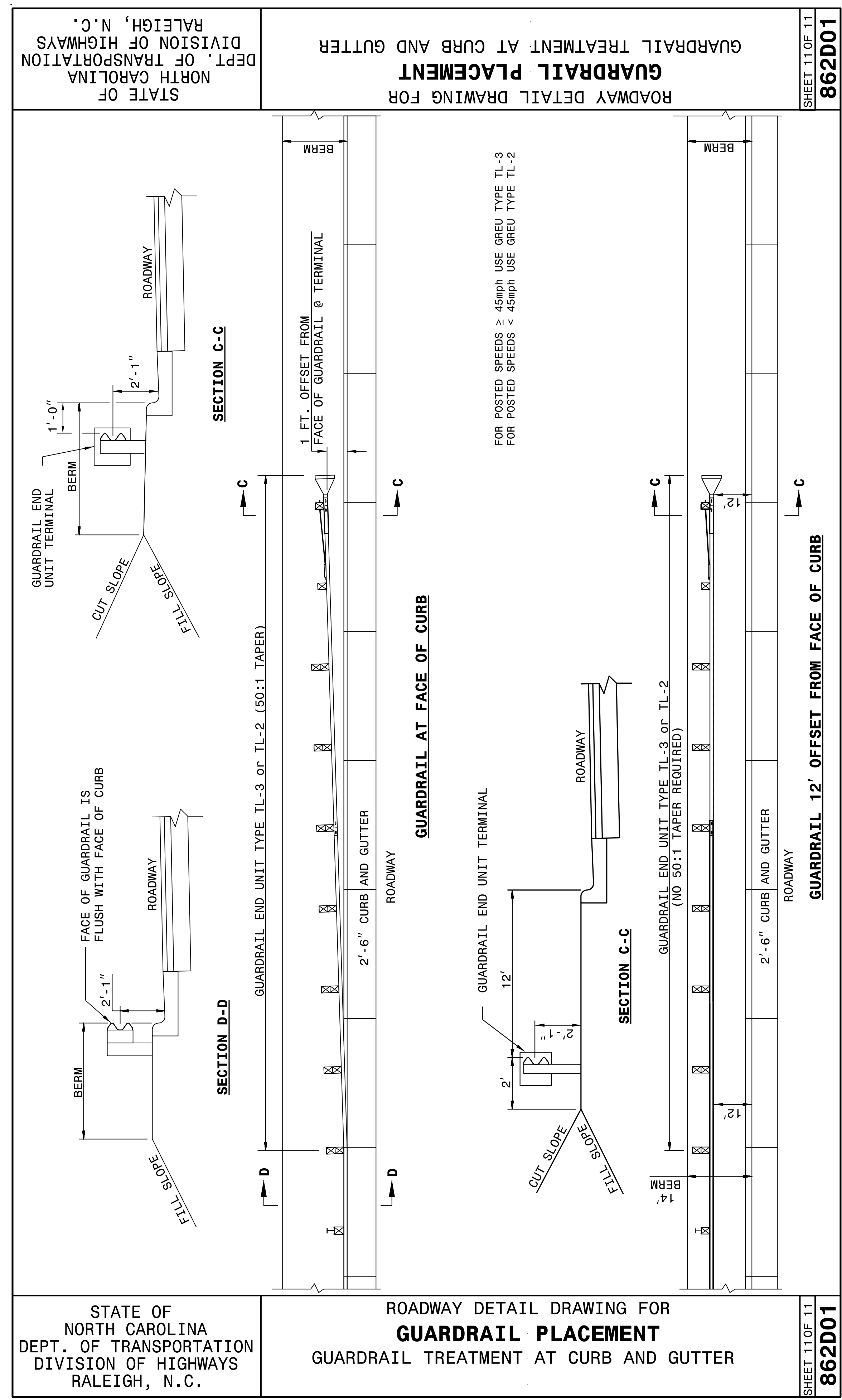
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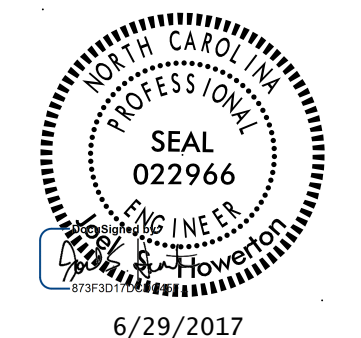
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 11 OF 11
862D01

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

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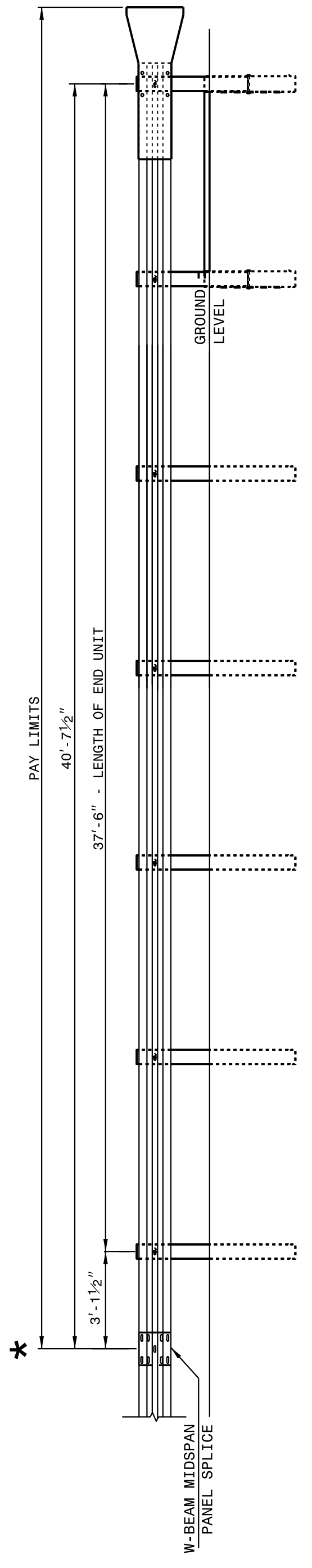
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02

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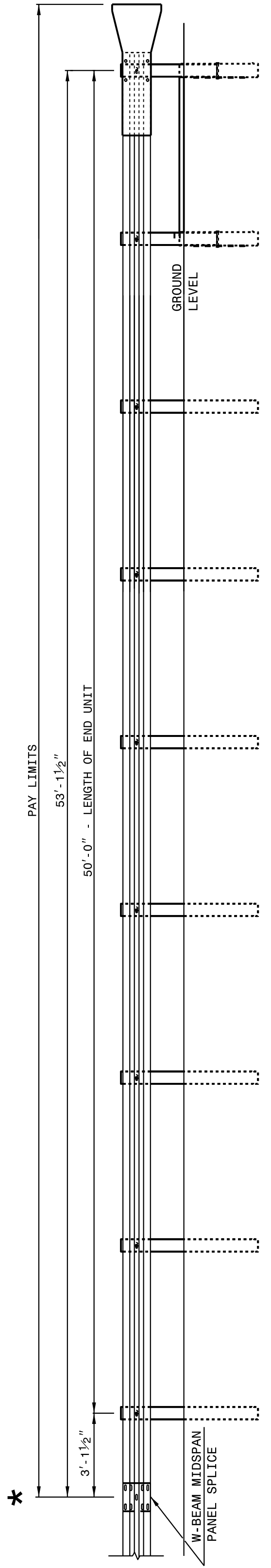
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 8
862D02



**FLARED AND TANGENT
ELEVATION VIEW**

* WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 2'-1" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 2'-1" HEIGHT. SEE 862.02, SHEET 4 OF 8 FOR TRANSITION DETAILS.



**FLARED AND TANGENT
ELEVATION VIEW**

APPROACH END UNITS

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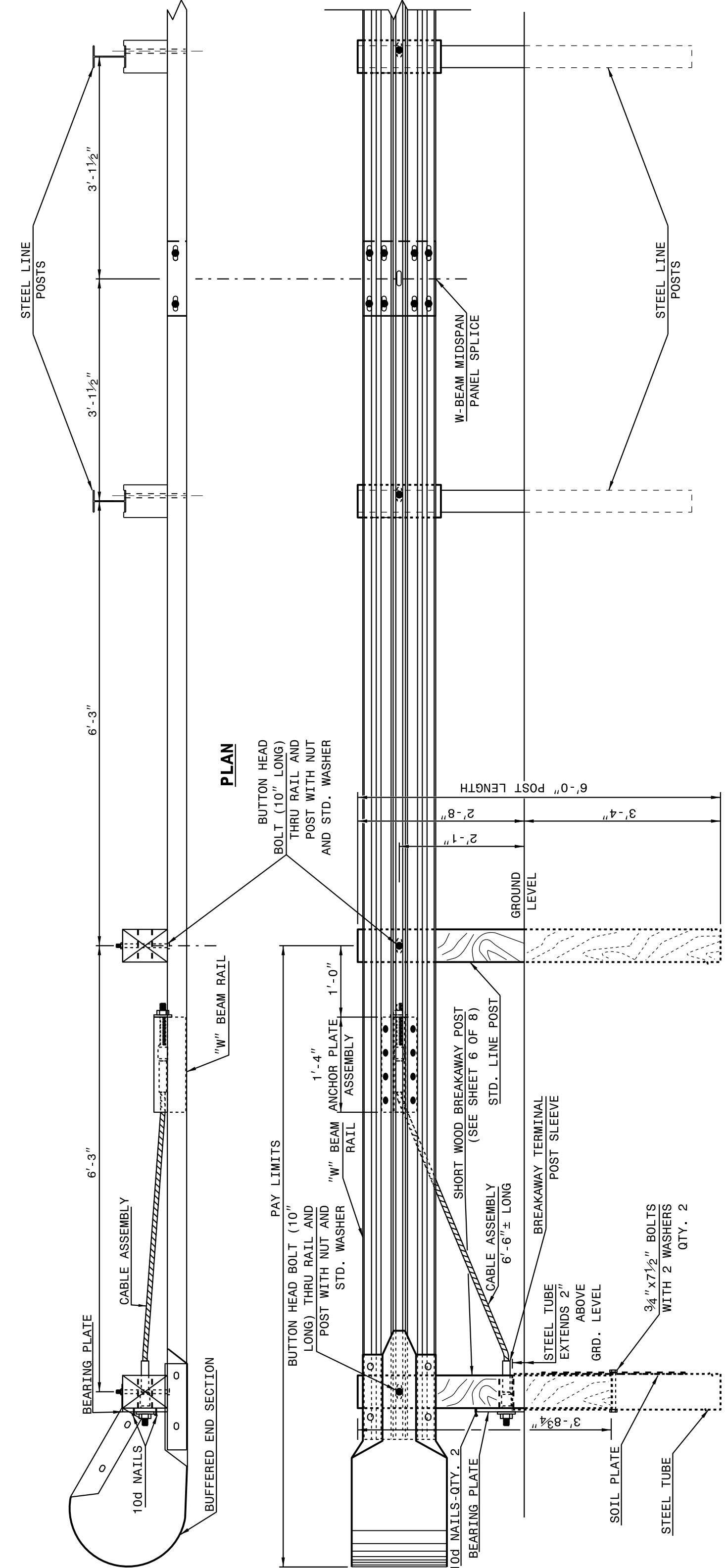
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 8
862D02



ELEVATION

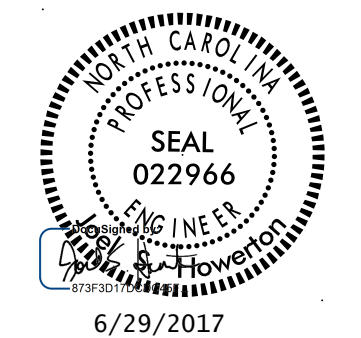
**TRAILING END UNIT ASSEMBLY
C.A.T.-1 SYSTEM**

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FILE SPEC.: DATE:



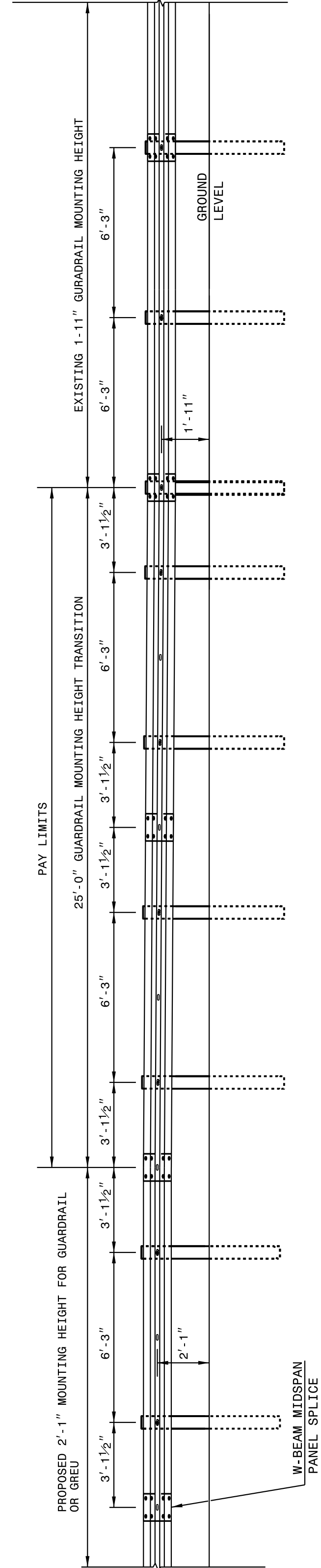
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STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 1'-11", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 2'-1" GUARDRAIL.



TRANSITION FROM OR 1'-11" TO 2'-1" W-BEAM GUARDRAIL MOUNTING HEIGHT

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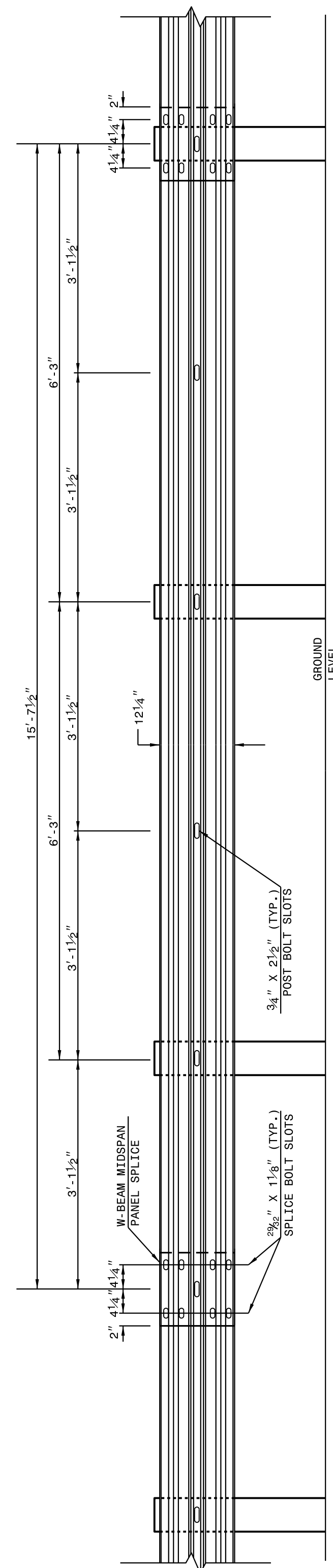
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 8
862D02

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02

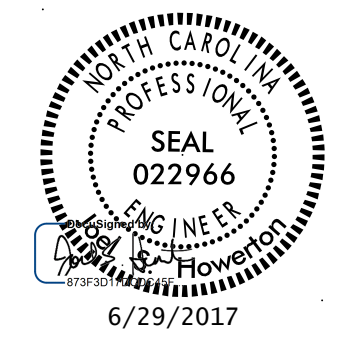


NOTE: USE 5-SPACE 15'-7 1/2" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT OR EXISTING GUARDRAIL THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN

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ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 8
862D02



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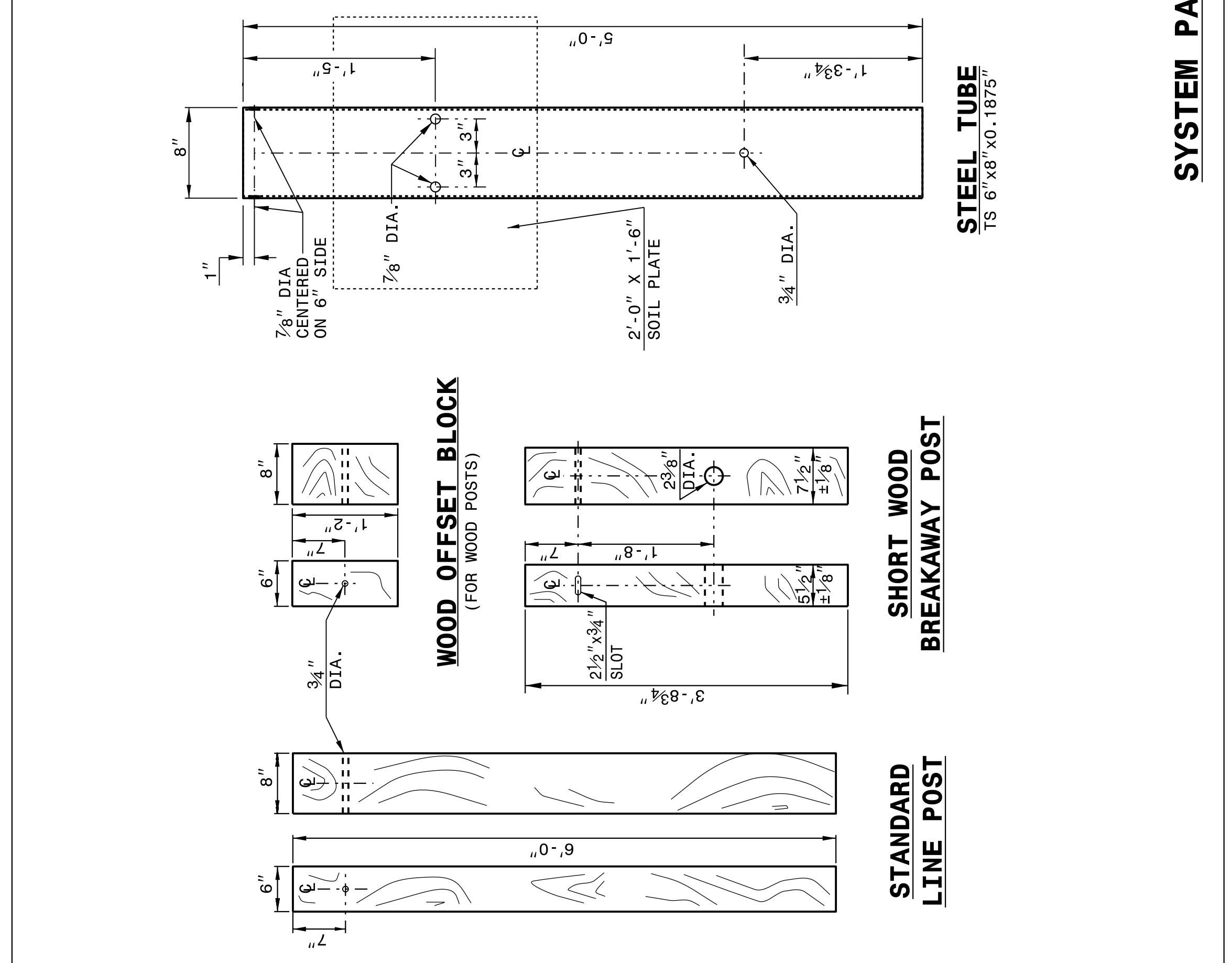
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

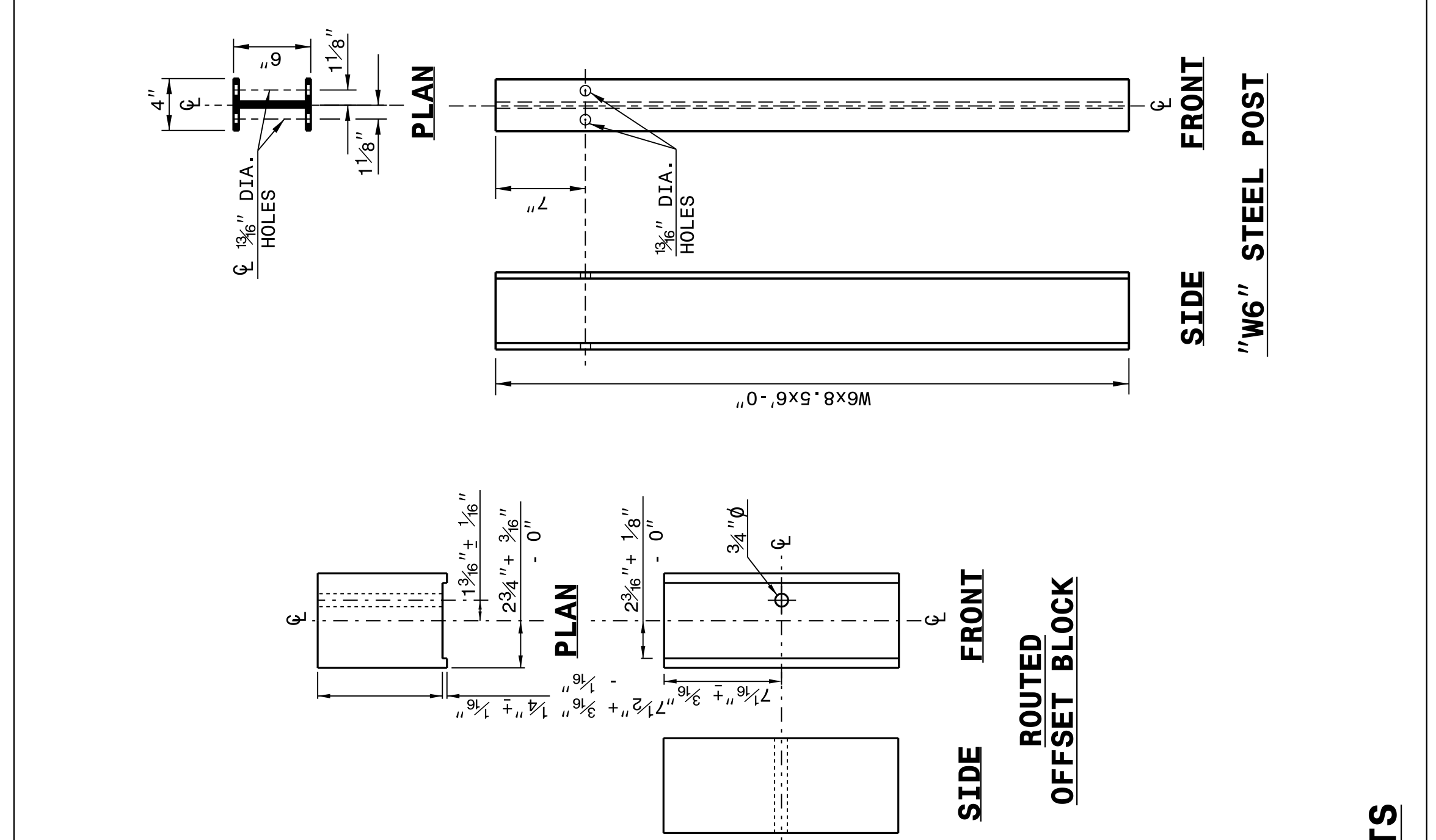


SYSTEM PARTS

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

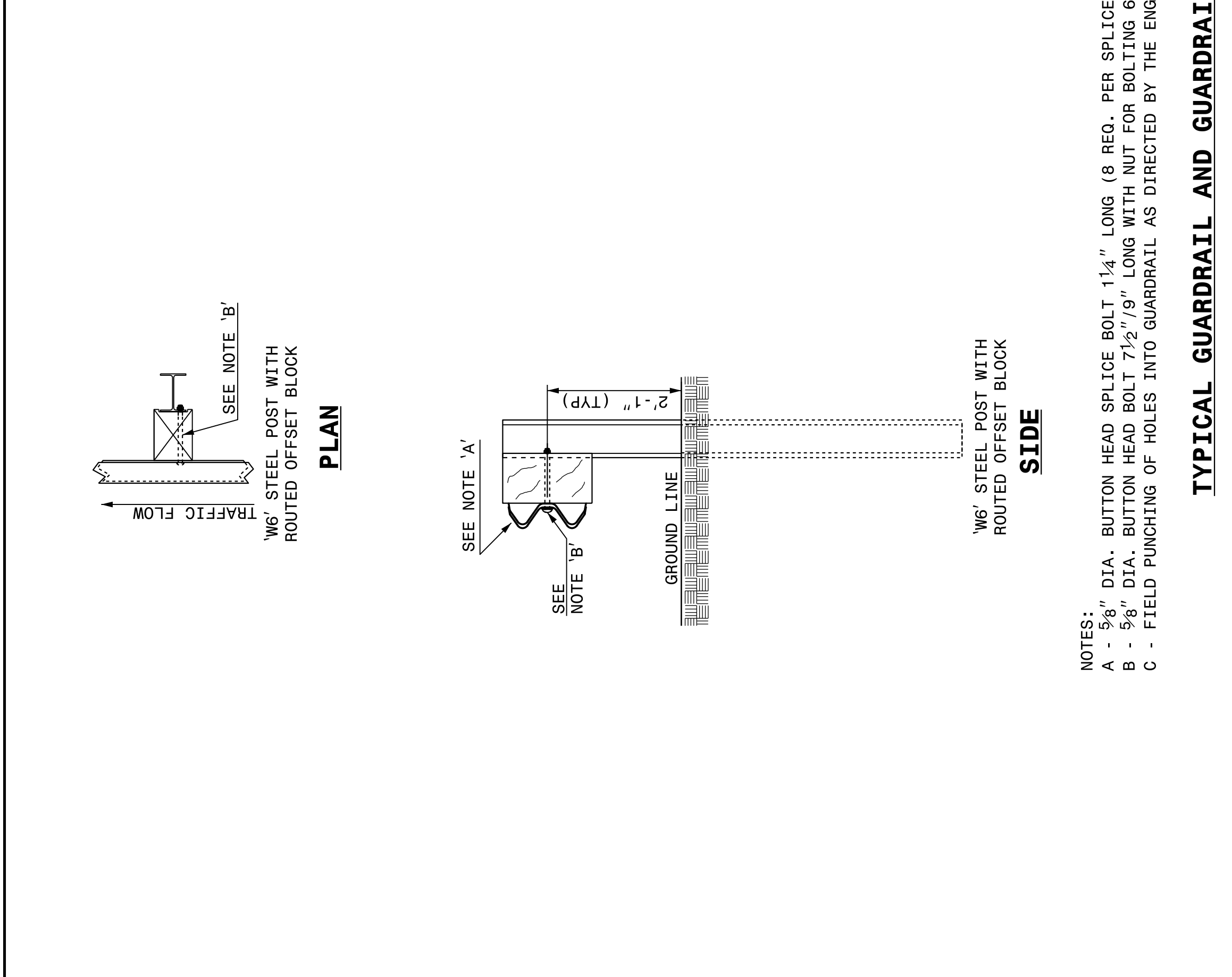
SHEET 6 OF 8
862D02



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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 8
862D02



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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 8
862D02

NOTES:
 A - 5/8" DIA. BUTTON HEAD SPLICE BOLT 1 1/4" LONG (8 REG. PER SPLICE JOINT).
 B - 3/8" 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.

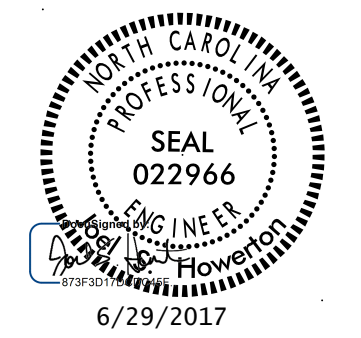
TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES

ORIGINAL BY: J HOWERTON DATE: 06-22-12
 MODIFIED BY: DATE:
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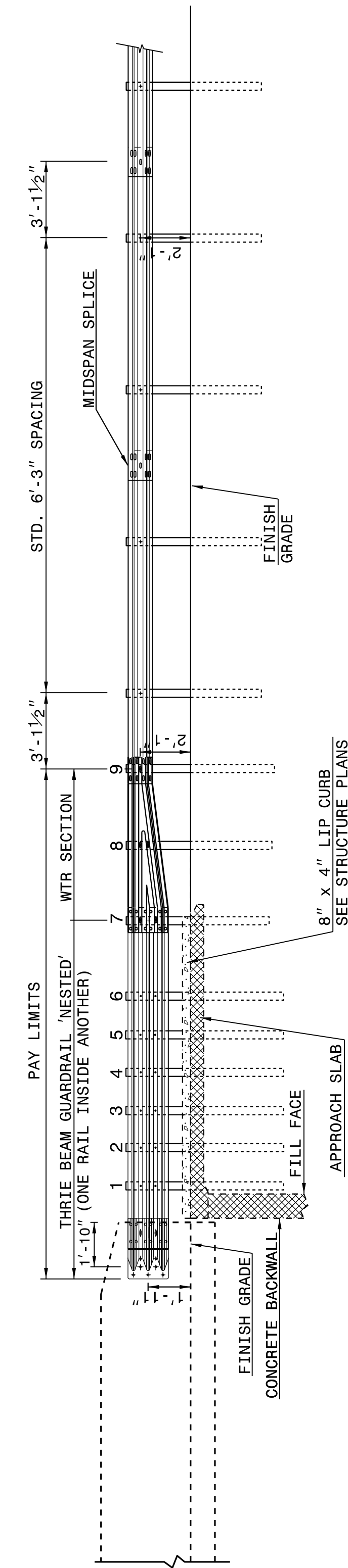
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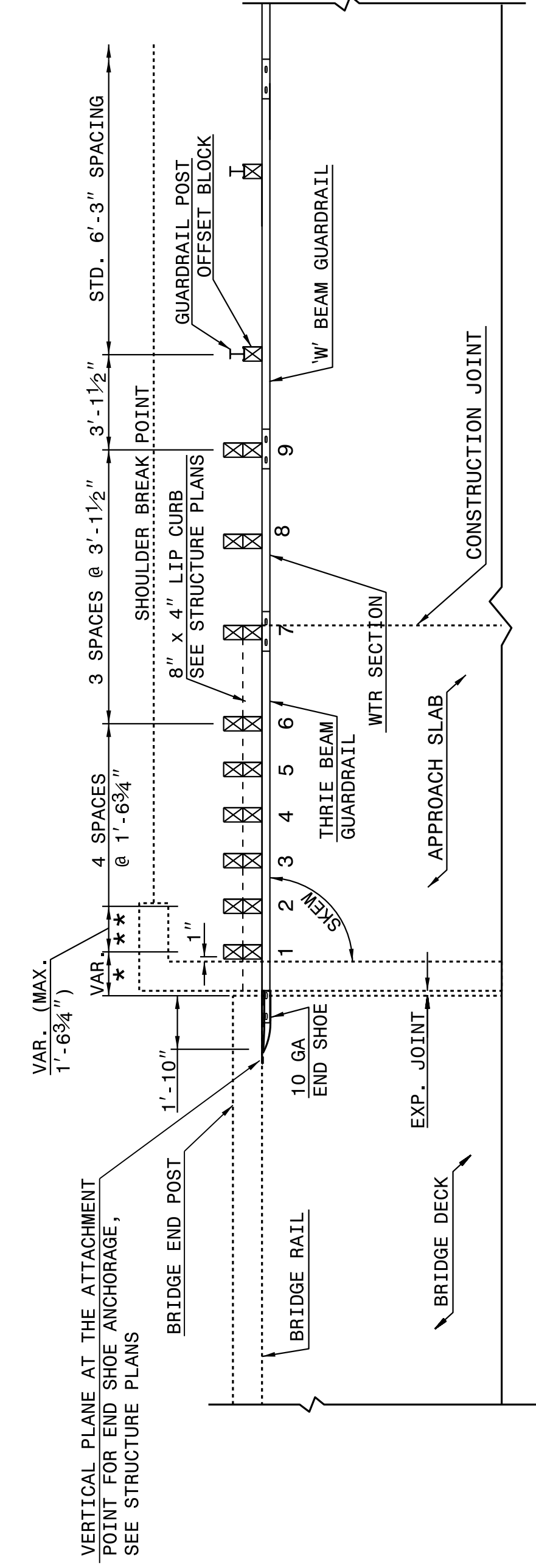
STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

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

SHEET 2 OF 7
862D03



NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.

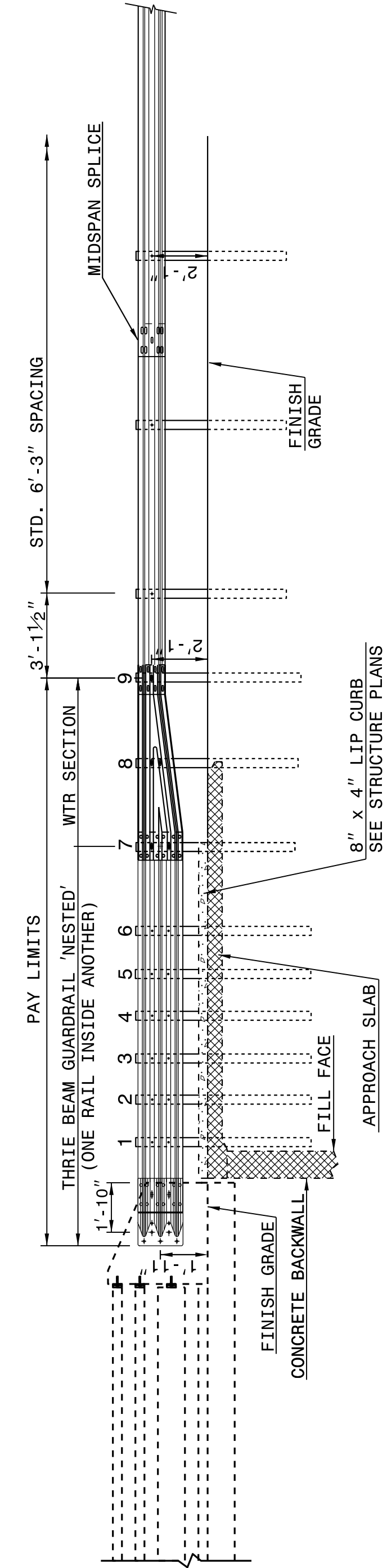


**GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
 RAIL ON BRIDGE - SUB REGIONAL TIER**

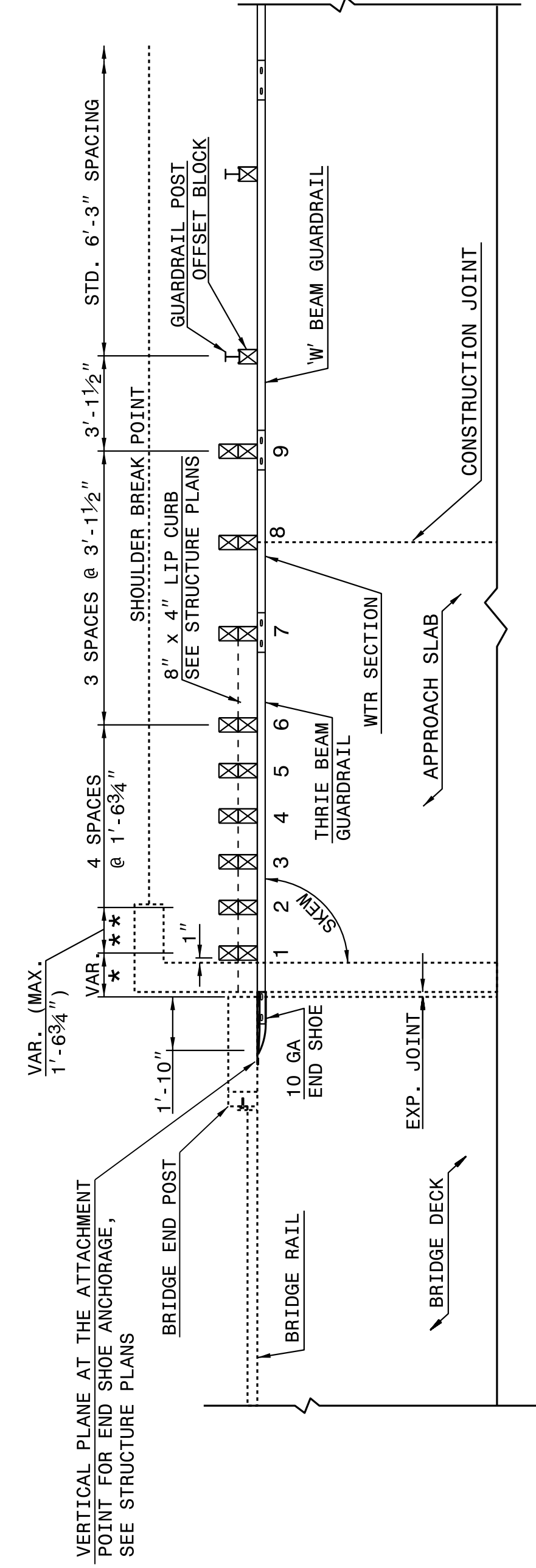
STATE OF NORTH CAROLINA
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 RALEIGH, N.C.

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

SHEET 1 OF 7
862D03



NOTE:
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 -SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



**GUARDRAIL ANCHOR UNIT, TYPE III
 FOR ATTACHMENT TO RAIL ON BRIDGE**

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

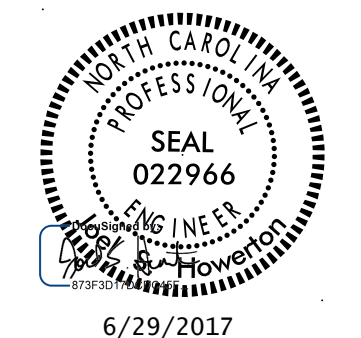
SHEET 1 OF 7
862D03

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ORIGINAL BY: J HOWERTON DATE: 06-22-12
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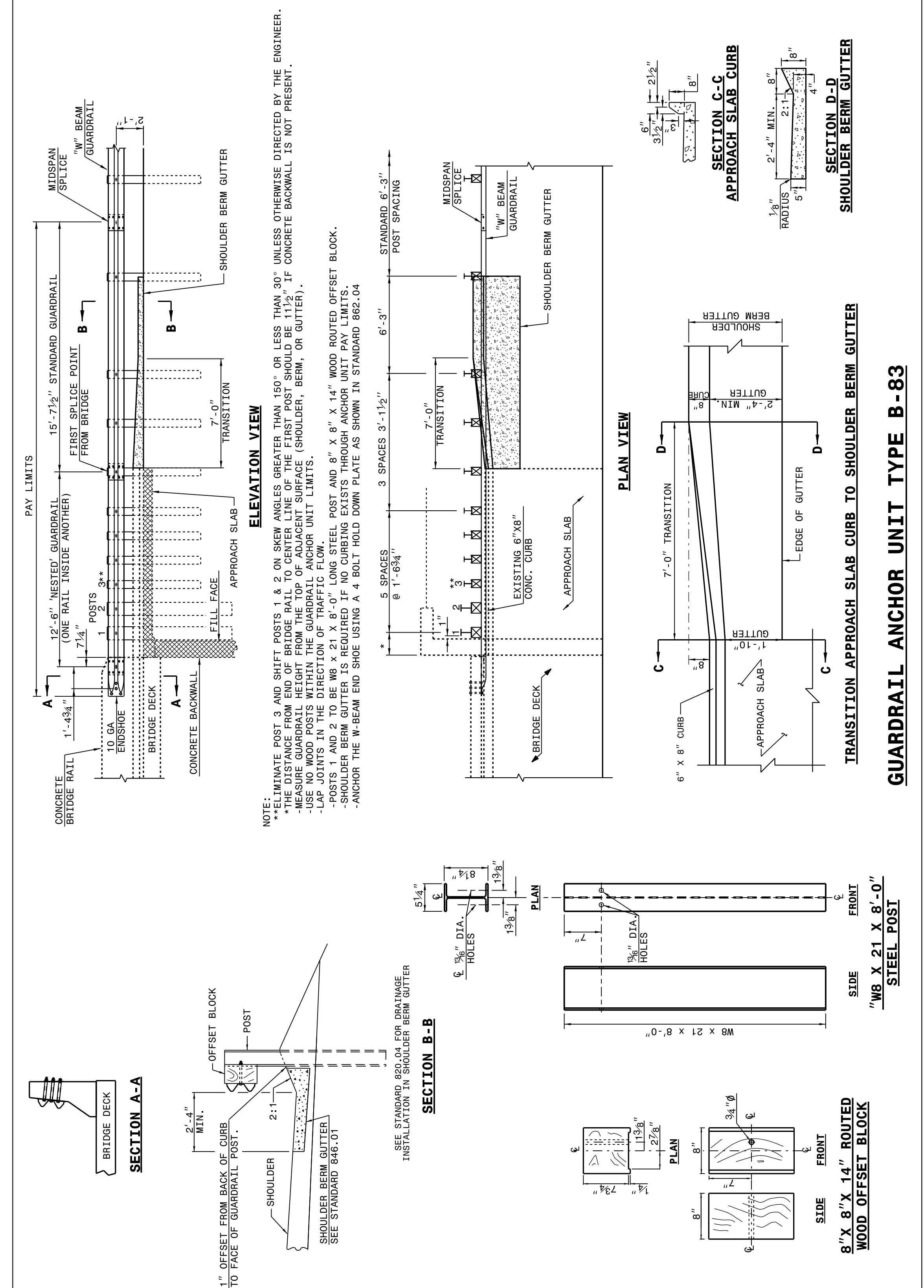


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ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT TYPE B-83

SHEET 6 OF 7 **862D03**



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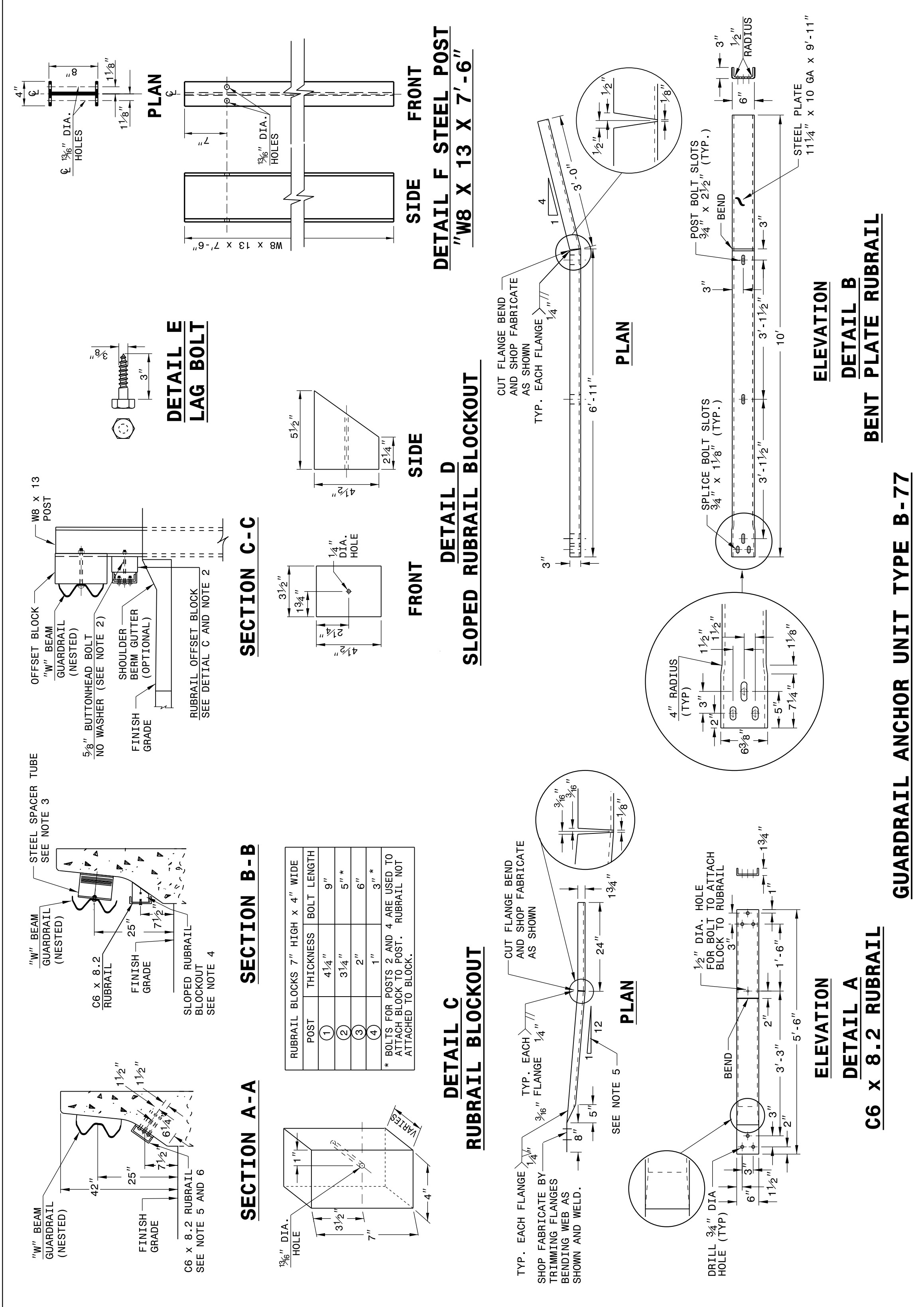
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SHEET 6 OF 7 **862D03**

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

ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNIT GUARDRAIL ANCHOR UNIT TYPE B-77 FOR F-SHAPE BARRIER

SHEET 5 OF 7 **862D03**



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ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNIT GUARDRAIL ANCHOR UNIT TYPE B-77 FOR F-SHAPE BARRIER

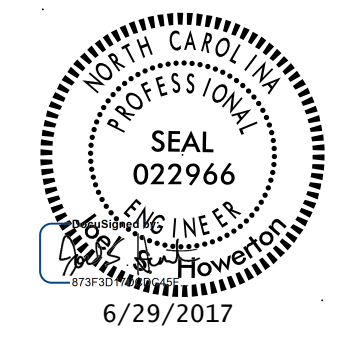
SHEET 5 OF 7 **862D03**

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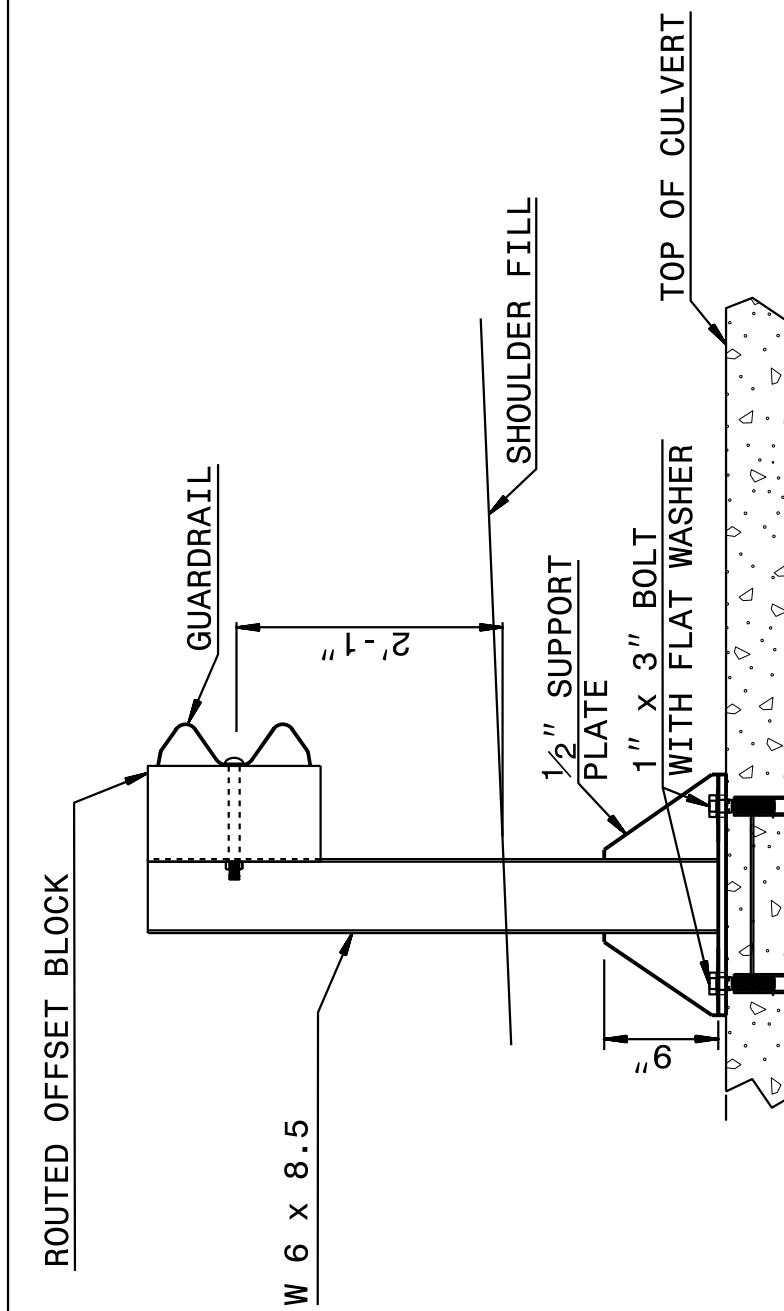
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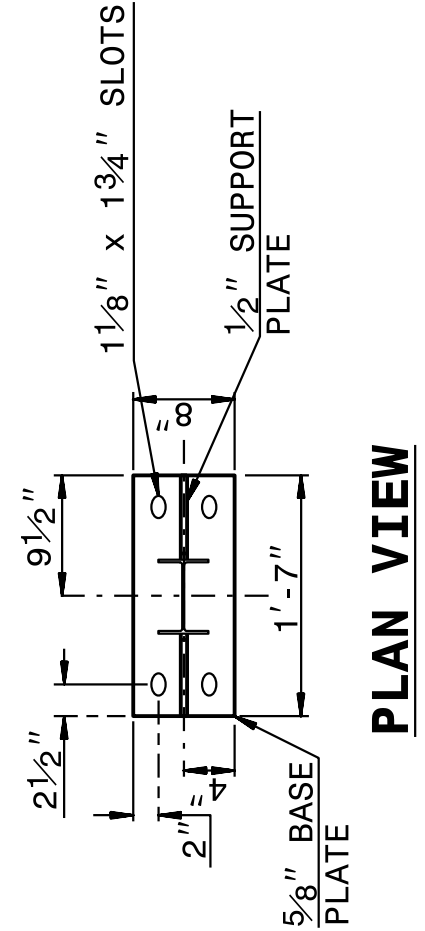
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 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

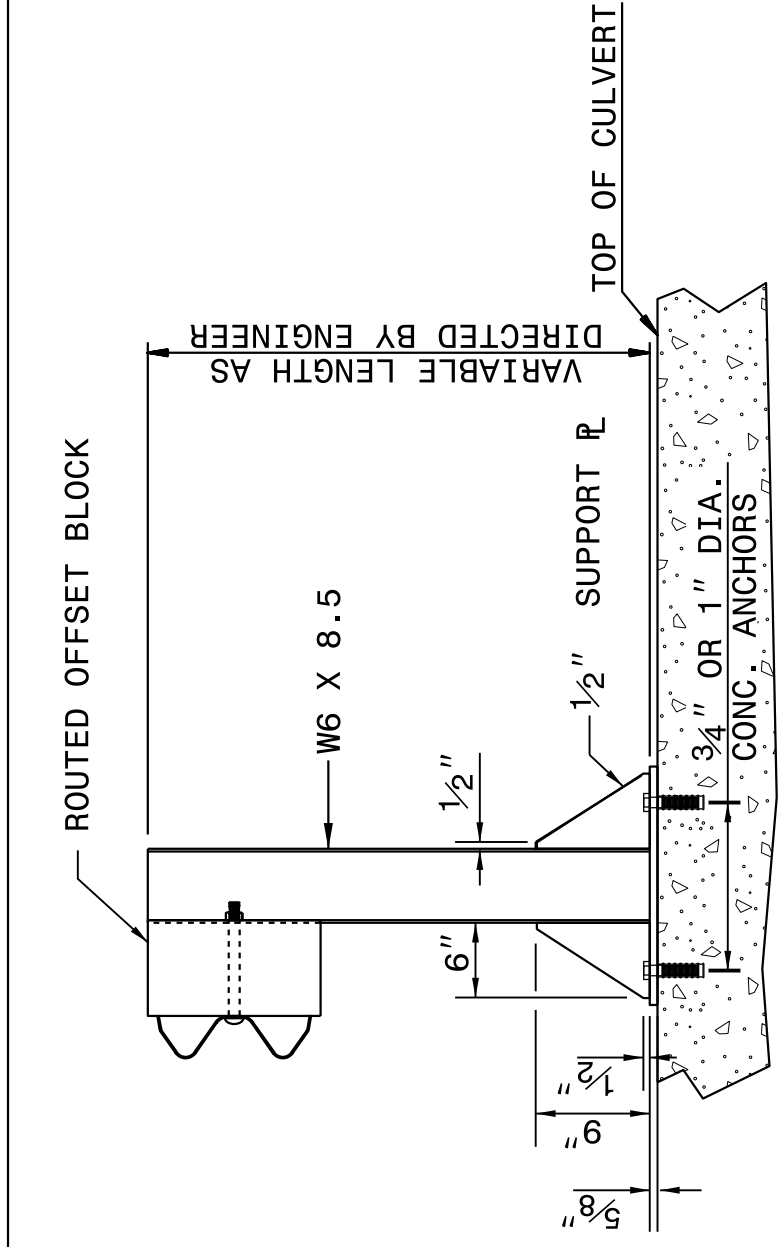
SHEET 7 OF 7
862D03



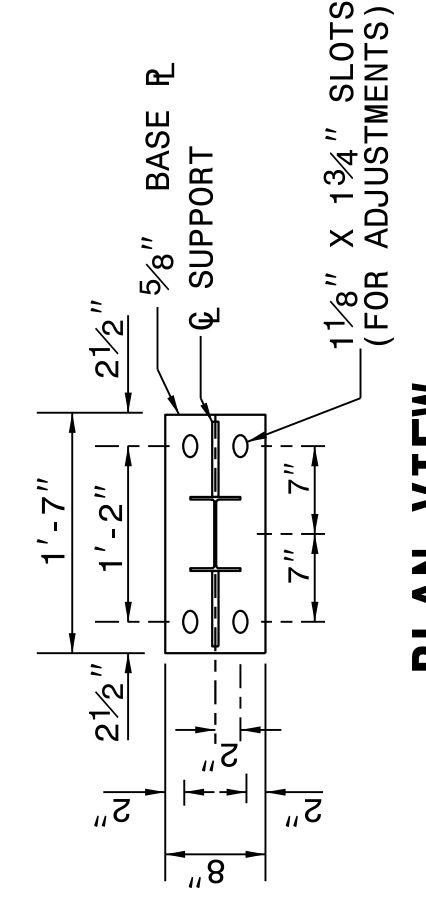
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW



PLAN VIEW

NOTES FOR:
 -GUARDRAIL POST ANCHORED TO STRUCTURE:
 -USE FULL LENGTH 1/4" BUTT WELDS AT ALL LOCATIONS OF CONTACT BETWEEN THE BASE PLATE, SUPPORT PLATES AND STEEL POST.
 -USE POST AND POST BASE PLATES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION TO CONFORM TO A.S.T.M. A-123.

NEW STRUCTURES:
 -ATTACH POST TO INSERT ASSEMBLY UNITS (USING ANCHOR BOLTS SUPPLIED WITH INSERTS) WHICH HAVE BEEN CAST INTO THE STRUCTURE DURING CONSTRUCTION.

EXISTING STRUCTURES:
 -USE CONCRETE ANCHORS CONSISTING OF A STUD BOLT WITH NUT AND WASHER. USE STUDS THREADED ON ONE END AND HAVING AN EXPANDED WEDGE ASSEMBLY POSITIONED AROUND A TAPERED AREA AT THE OTHER END. USE ANCHORS WHICH PROVIDE A MINIMUM SAFE HOLDING POWER OF 2875 LBS. FOR A 3/4" OR 1" DIAMETER BOLT. CALCULATE HOLDING POWER BASED ON 1/4 THE ACTUAL HOLDING POWER OF THE ANCHOR IN 3500 PSI CONCRETE AS DETERMINED BY AN APPROVED COMMERCIAL TESTING LABORATORY.

-USE ANCHORS GALVANIZED IN ACCORDANCE WITH A.S.T.M. A-153. SIZE HOLES FOR THE CONCRETE ANCHORS IN ACCORDANCE WITH THE ANCHOR MANUFACTURER'S RECOMMENDATIONS. DRILL HOLES WITH A CARBIDE OR DIAMOND TIPPED MASONRY BIT POWERED BY A ROTARY OR ROTARY IMPACT DRILL. NO OTHER IMPACT TOOLS WILL BE PERMITTED. DRILL HOLES VERTICALLY. FURNISH DOCUMENTATION OF HOLE SIZE RECOMMENDED FOR THE SPECIFIED ANCHOR TO THE ENGINEER BEFORE DRILLING HOLES. THOROUGHLY CLEAN HOLES FOR ANCHORS OF ALL CONCRETE CHIPS, DUST, GREASE, OIL, ETC. BEFORE ANCHORS ARE INSTALLED. REPAIR ALL DAMAGE CAUSED BY THIS WORK TO THE SATISFACTION OF THE ENGINEER.

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ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
 ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

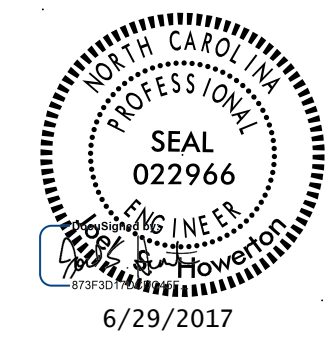
SHEET 7 OF 7
862D03

ANCHORAGE FOR GUARDRAIL POST ON BOX CULVERT

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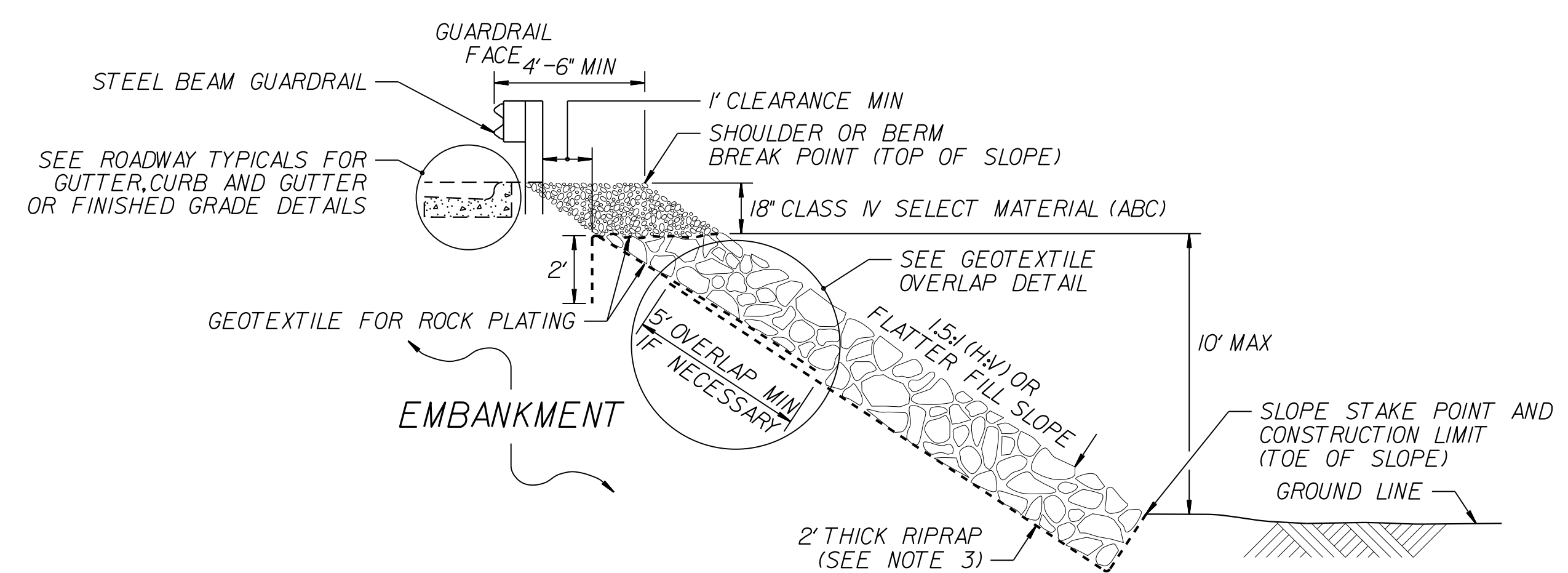
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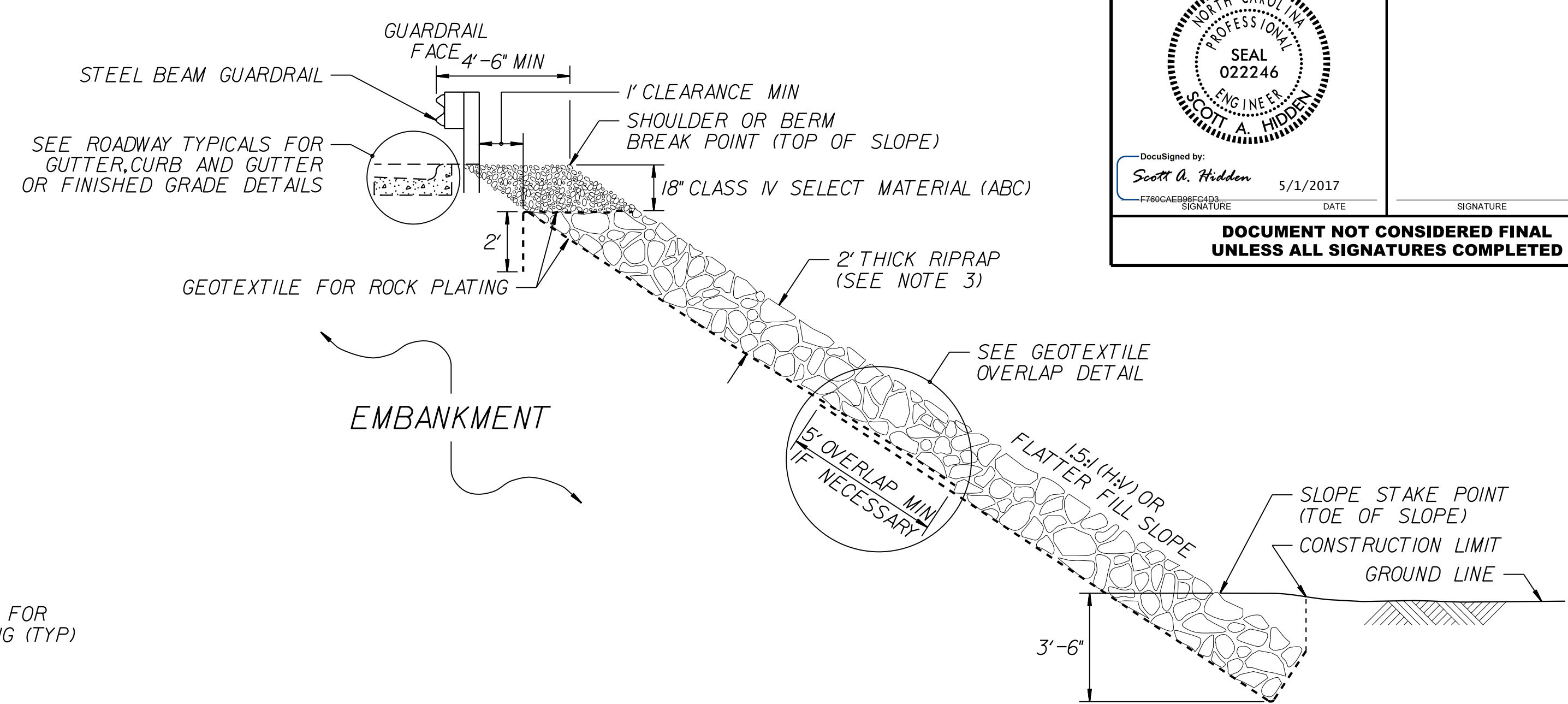
6/29/2017

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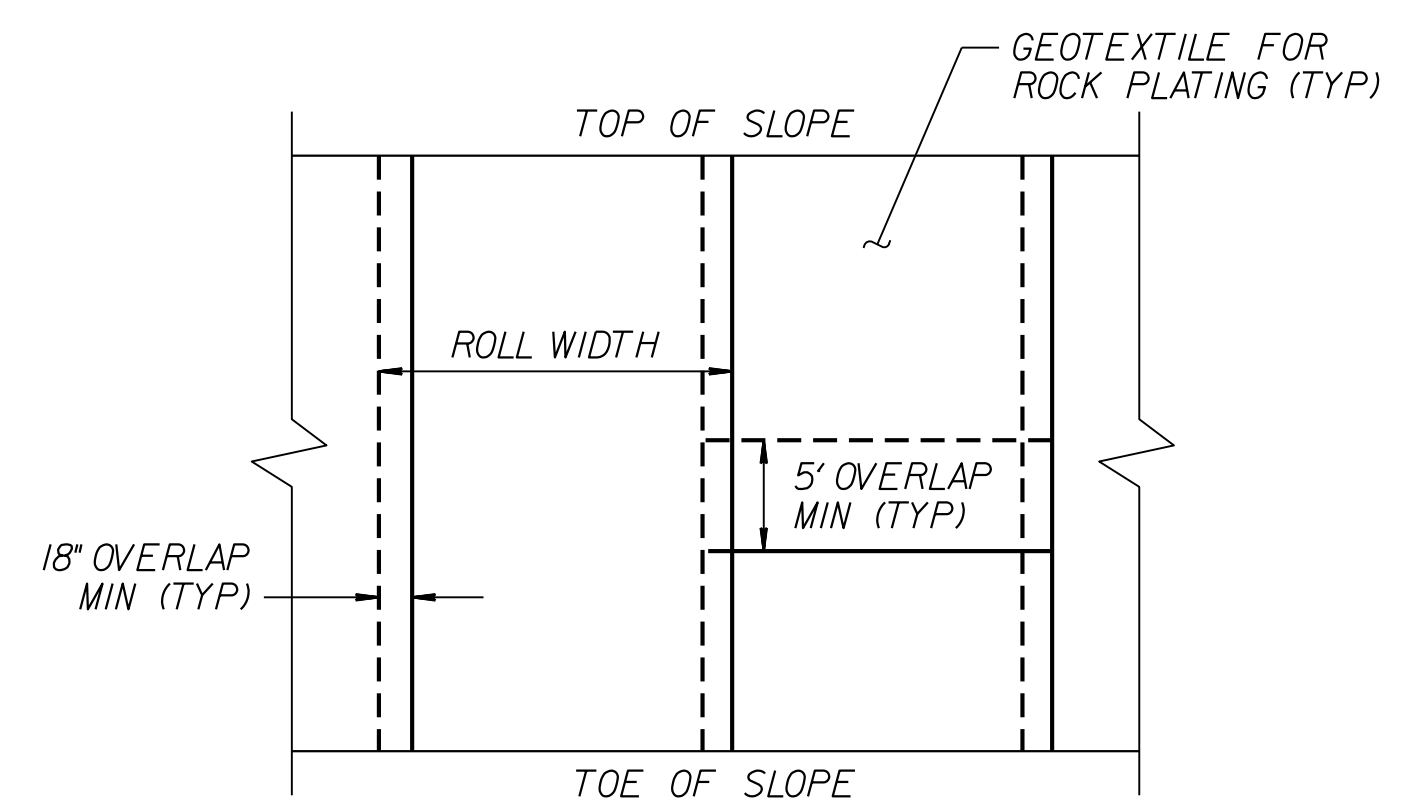
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| GEOTECHNICAL ENGINEER  DocuSigned by: Scott A. Hidden 5/1/2017 | ENGINEER DATE SIGNATURE |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



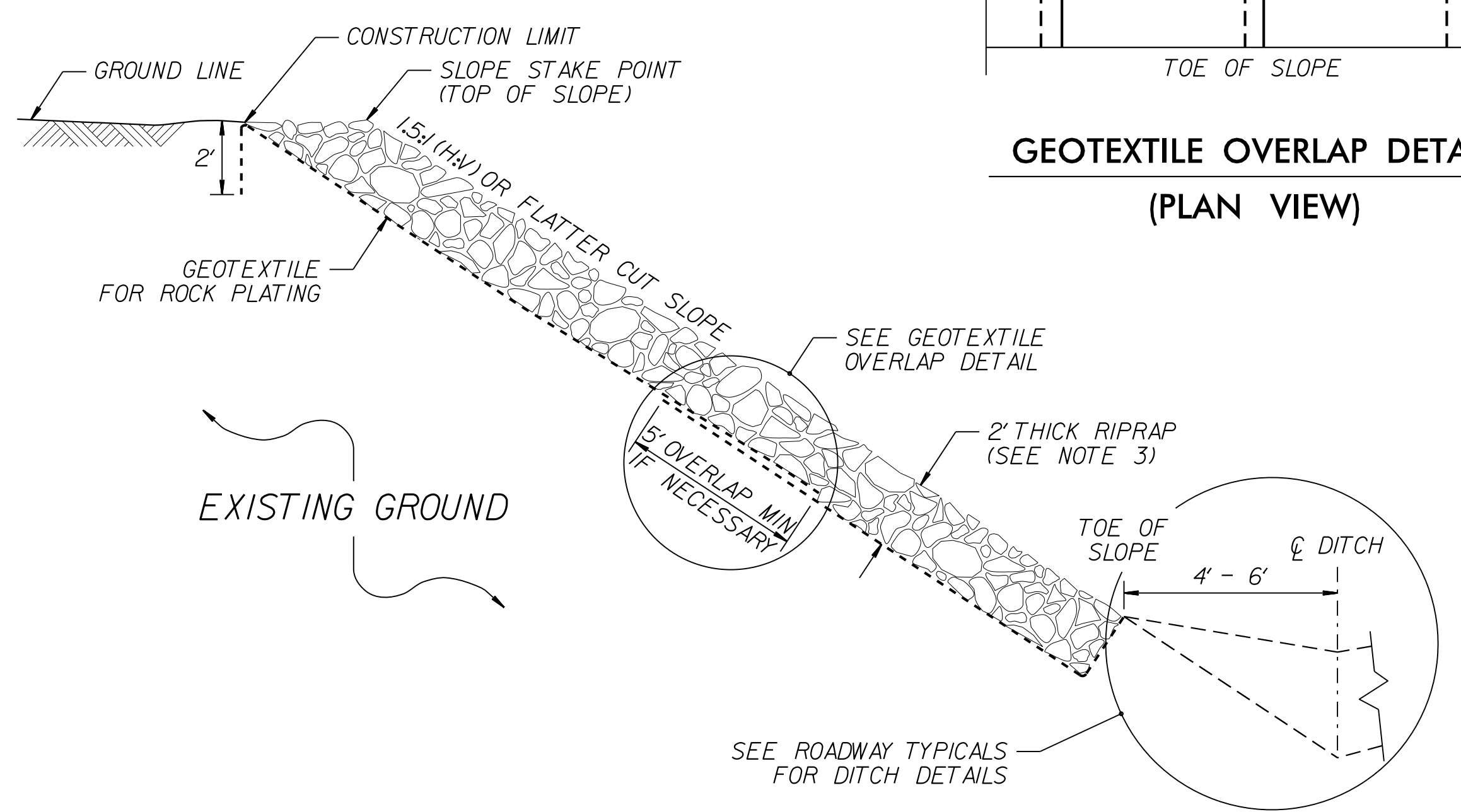
ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION



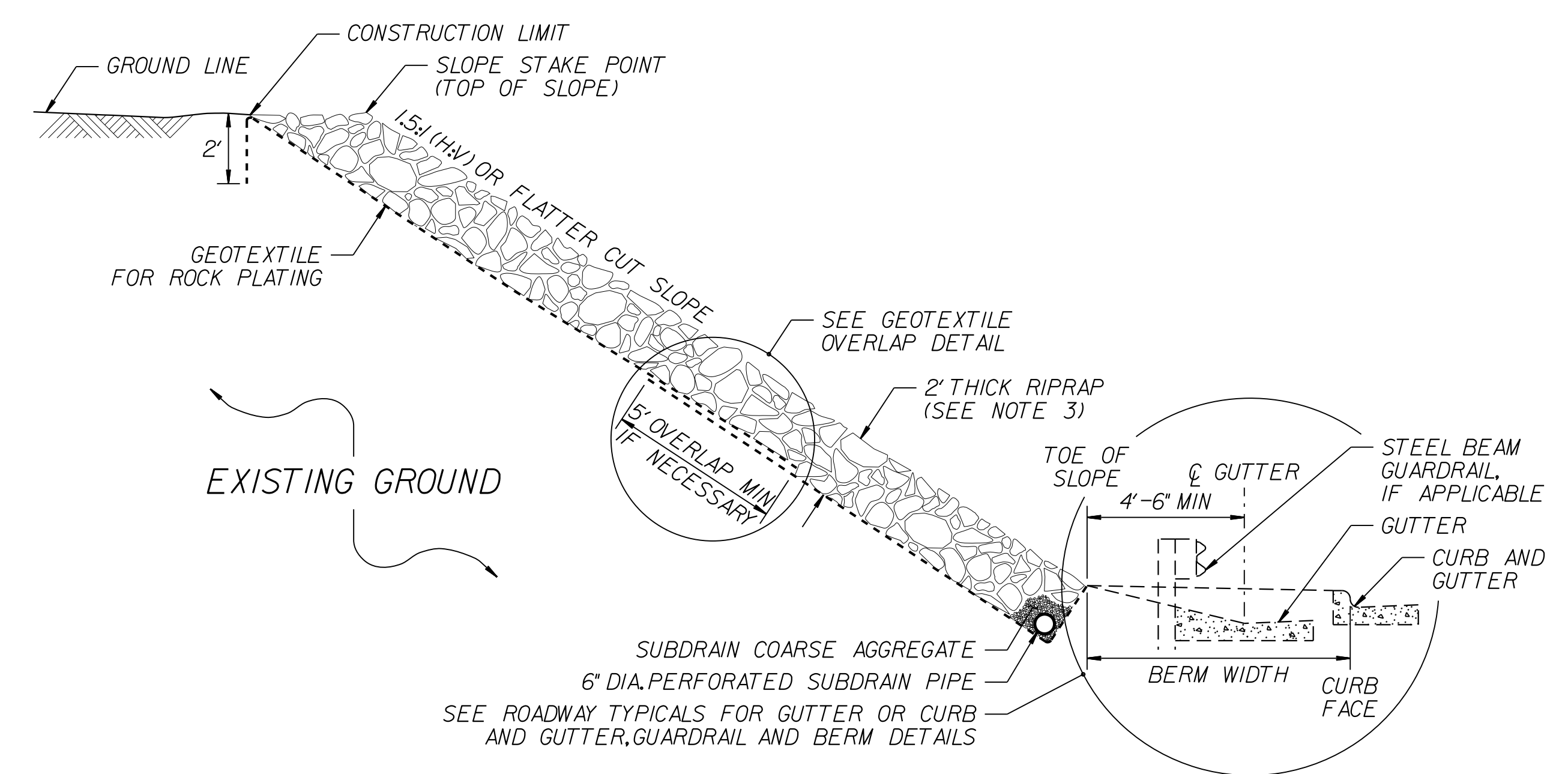
ROCK PLATING DETAIL NO. 2 – TYPICAL SECTION



**GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)**

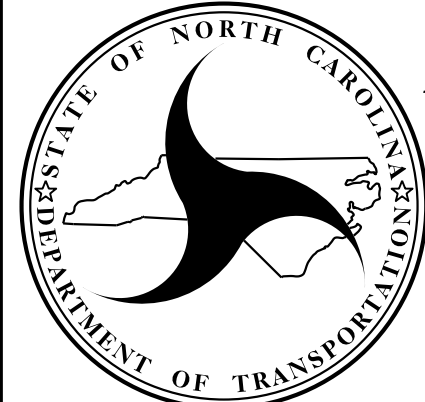


ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 – TYPICAL SECTION

- NOTES:**
1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
 2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
 3. USE CLASS 1, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

| | |
|--|--|
|  <p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS</p> <p>GEOTECHNICAL ENGINEERING UNIT</p> | <p>STANDARD DETAIL NO. 1802.01</p> |
| | <p>STANDARD ROCK PLATING</p> <p>DATE: 2-19-13</p> |

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

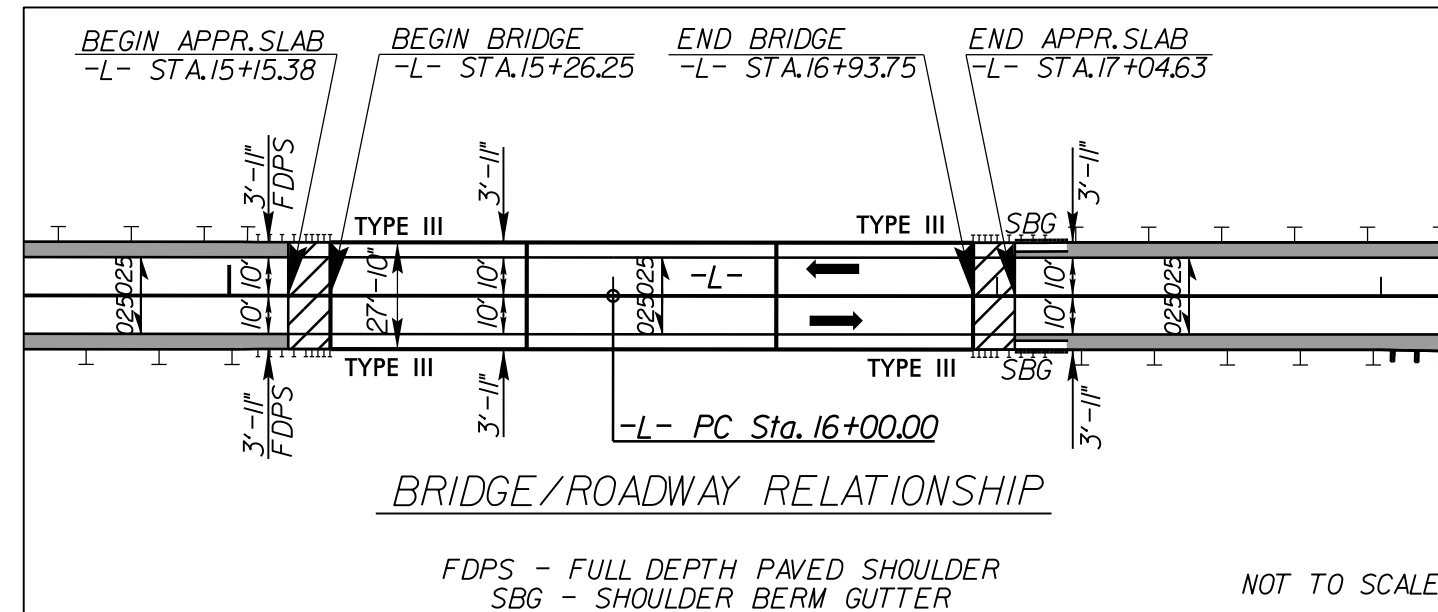
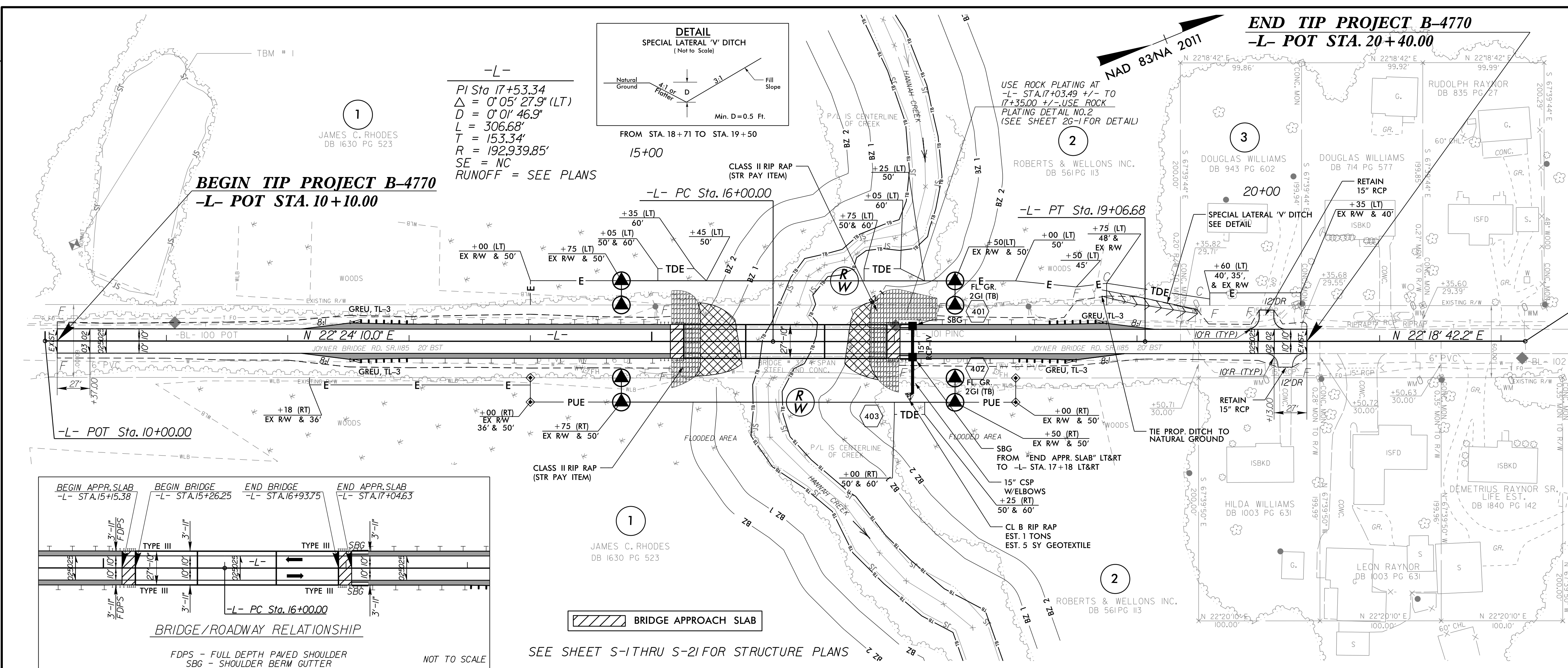
SUMMARY OF ROCK PLATING

| LINE | Beginning Slope (H:V) | Approx. Station | Ending Slope (H:V) | Approx. Station | Location LT/RT | Rock Plating Detail No. 1/2/3/4 | Riprap Class* 1/2/B | Rock Plating SY |
|------|-----------------------|-----------------|--------------------|-----------------|----------------|---------------------------------|---------------------|-----------------|
| L | 1.5:1 | 17+03.49 | 1.75:1 | 17+35.00 | LT | 2 | * | 100 |
| | | | | | | | | |
| | | | | | | | TOTAL SY: | 100 |

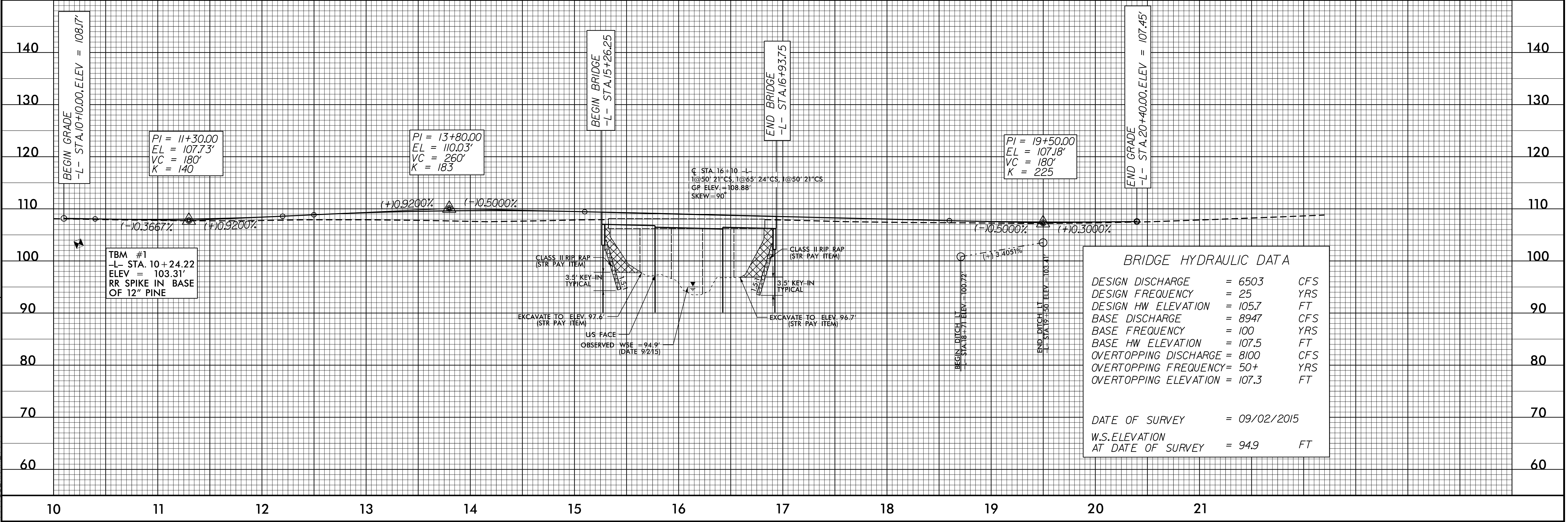
*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

8/17/19

| | |
|--|-----------------------|
| PROJECT REFERENCE NO. B-4770 | SHEET NO. 4 |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | SEAL 37950 |
| | |
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SEE SHEET S-1 THRU S-21 FOR STRUCTURE PLANS



| BRIDGE HYDRAULIC DATA | |
|----------------------------------|--------------|
| DESIGN DISCHARGE | = 6503 CFS |
| DESIGN FREQUENCY | = 25 YRS |
| DESIGN HW ELEVATION | = 105.7 FT |
| BASE DISCHARGE | = 8947 CFS |
| BASE FREQUENCY | = 100 YRS |
| BASE HW ELEVATION | = 107.5 FT |
| OVERTOPPING DISCHARGE | = 8100 CFS |
| OVERTOPPING FREQUENCY | = 50+ YRS |
| OVERTOPPING ELEVATION | = 107.3 FT |
| DATE OF SURVEY | = 09/02/2015 |
| W.S. ELEVATION AT DATE OF SURVEY | = 94.9 FT |

REVISIONS

05-JUL-2017 09:36
J:\B-4770\Roadway\Proj\B4770_rdy_psh_p1_04.dgn