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09, 08, / 99

TIP PROJECT: B-5400

CONTRACT: C204077

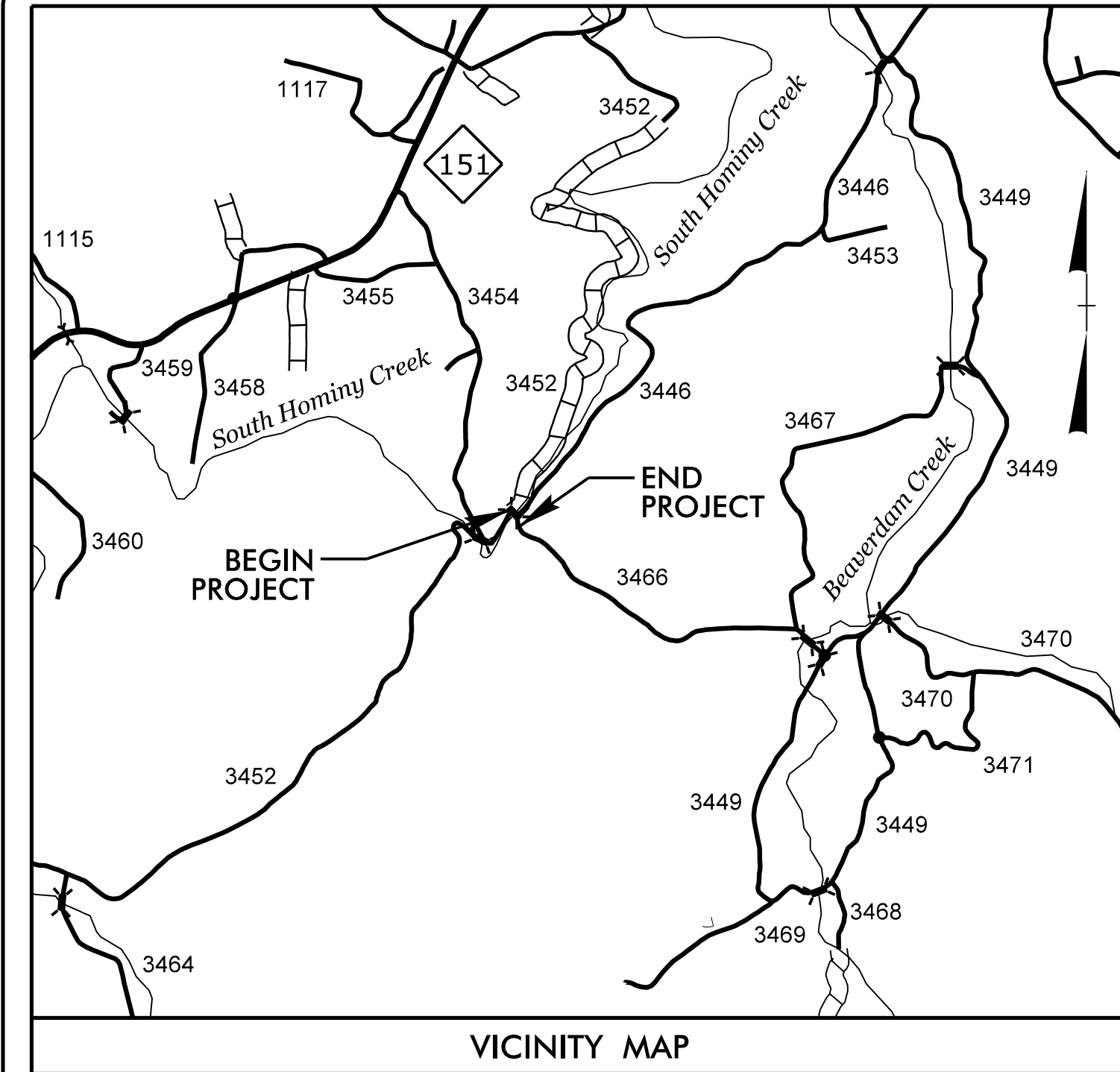
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

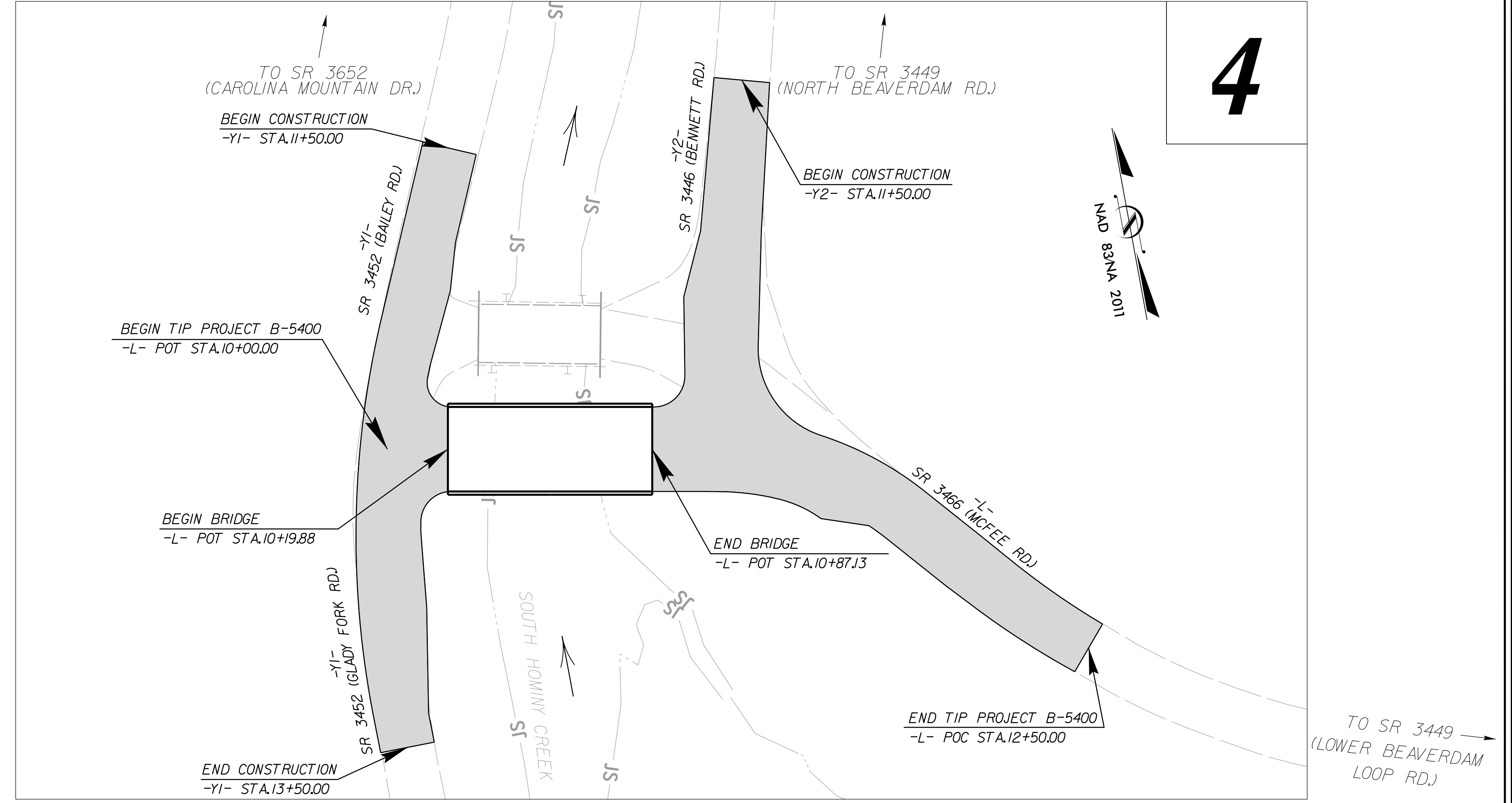
**LOCATION: BRIDGE NO. 259 OVER SOUTH HOMINY CREEK
ON SR 3466 (MCFEE RD.)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5400	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46115.1.1	BRZ-3466(2)	PE	
46115.2.1	N/A	ROW & UTILITY	
46115.3.1	BRZ-3466(2)	CONSTRUCTION	

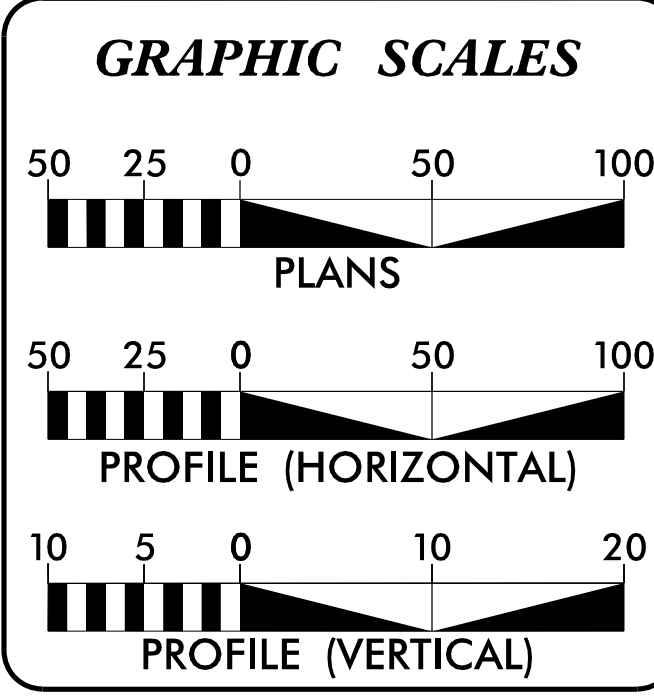


See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



4

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DESIGN DATA

2018 ADT = 656
2038 ADT = 878
K = 10%
D = 65%
T = 7% *
V = 30 MPH
(TTST 2% + DUAL 5%)
FUNC. CLASS. = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5400	= 0.034 mi.
LENGTH STRUCTURES TIP PROJECT B-5400	= 0.013 mi.
TOTAL LENGTH TIP PROJECT B-5400	= 0.047 mi.

Prepared in the Offices of:

421 FAYETTEVILLE ST., STE 400
RALEIGH, NC 27601
T 919.380.8750

NC FIRM LICENSE No. F-1148
1151 SE Cary Parkway, Suite 101
Cary, NC 27518
(919) 557-4029

2018 STANDARD SPECIFICATIONS

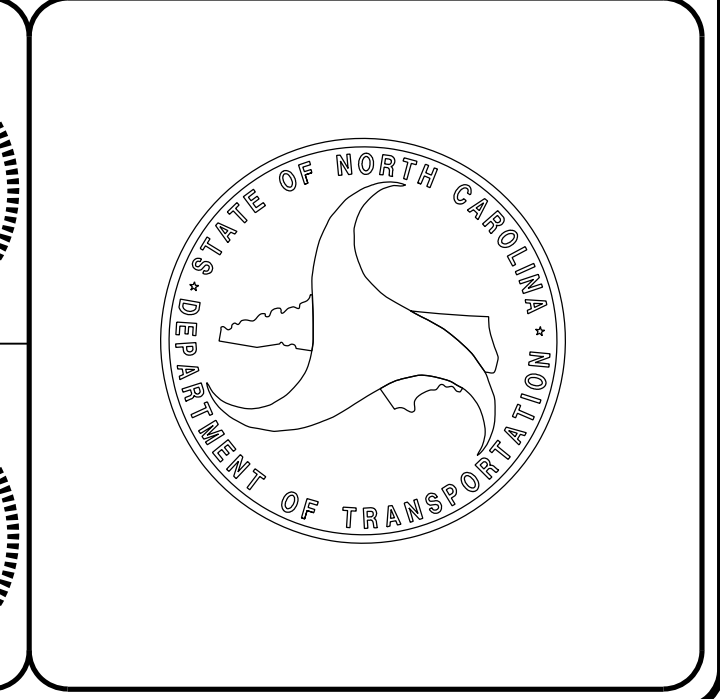
RIGHT OF WAY DATE: JUNE 19, 2017	ANDY YOUNG, PE PROJECT ENGINEER
LETTING DATE: JUNE 19, 2018	MICHAEL BURNS, PE PROJECT DESIGN ENGINEER
	DAVID STUTTS, PE NCDOT CONTACT

HYDRAULICS ENGINEER
4/10/2018

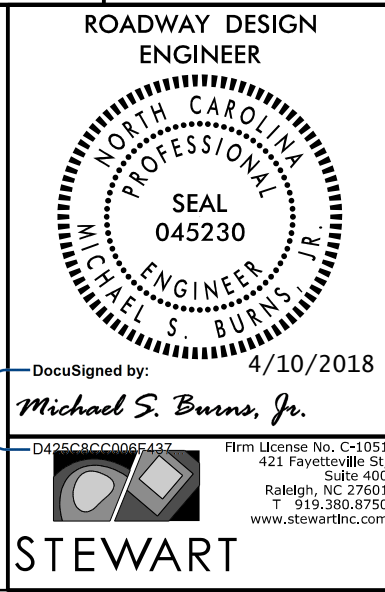
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Frank F. Fleming
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ROADWAY DESIGN ENGINEER
4/10/2018

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Michael S. Burns, Jr.
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SIGNATURE: _____ P.E.



3/19/2018
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US:EK:mburns



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SHEET NUMBER	INDEX OF SHEETS SHEET	2018 ROADWAY ENGLISH STANDARD DRAWINGS	EFF. 01-16-2018 REV.
1	TITLE SHEET	The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:	
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS		
1B	CONVENTIONAL SYMBOLS		
1C-1 THRU 1C-2	SURVEY CONTROL SHEETS		
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS		
2B-1	ROADWAY ALIGNMENT AND CURVE DATA		
2C-1	SHOP CURVED GUARDRAIL ANCHOR UNIT DETAIL		
2C-2	TEMPORARY SHOP CURVED GUARDRAIL ANCHOR UNIT DETAIL		
2C-3	TYPE III ANCHOR UNIT DETAIL		
2C-4	GUARDRAIL INSTALLATION DETAIL		
2C-5	AT-1 ANCHOR UNIT DETAIL		
2C-6	MODIFIED CONCRETE FLUME DETAIL		
2G-1	TEMPORARY SHORING DETAIL		
3B-1	ROADWAY SUMMARIES		
3D-1	DRAINAGE SUMMARY		
3G-1	GEOTECHNICAL SUMMARIES		
4	PLAN SHEET		
5	PROFILE SHEET		
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS		
PMP-1	PAVEMENT MARKING PLANS		
EC-1 THRU EC-5	EROSION CONTROL PLANS		
RF-1	REFORESTATION PLANS		
SIGN-1 THRU SIGN-3	SIGNING PLANS		
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-15	STRUCTURE PLANS		

GENERAL NOTES: 2018 SPECIFICATIONS EFFECTIVE: 01-16-2018 REVISED:

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 11.

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.

SUBSURFACE DRAINS:
SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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
AT&T - Communications
City of Asheville - Water
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.

ROCK
ROCK IS ANTICIPATED WITHIN 6' OF GRADE. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

8/17/99

3/28/2018 11:51:58 AM B:\5400_Rd\1\esh_1A.dgn
MSE Burns

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	○ EP
Computed Property Corner	-----
Property Monument	◻ ECM
Parcel/Sequence Number	⑩23
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 RW Marker	-----
New Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	----- E
New Temporary Construction Easement	----- E
New Temporary Drainage Easement	----- TDE
New Permanent Drainage Easement	----- PDE
New Permanent Drainage / Utility Easement	----- DUE
New Permanent Utility Easement	----- PUE
New Temporary Utility Easement	----- TUE
New Aerial Utility Easement	----- AUE

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	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
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	○ S
Storm Sewer	----- S

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

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.*)	----- T
U/G Telephone Cable LOS C (S.U.E.*)	----- T
U/G Telephone Cable LOS D (S.U.E.*)	----- T
U/G Telephone Conduit LOS B (S.U.E.*)	----- TC
U/G Telephone Conduit LOS C (S.U.E.*)	----- TC
U/G Telephone Conduit LOS D (S.U.E.*)	----- TC
U/G Fiber Optics Cable LOS B (S.U.E.*)	----- T FO
U/G Fiber Optics Cable LOS C (S.U.E.*)	----- T FO
U/G Fiber Optics Cable LOS D (S.U.E.*)	----- T FO

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	----- A/G Water

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊕
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	----- 2UTL
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-5400 (FINAL)

PROJECT REFERENCE NO.	SHEET NO.
B-5400	1C-1
Location and Surveys	

GPS POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS1	GPS1 (B5400-1)	659030.9229	898255.0845	2189.75	OUTSIDE PROJECT LIMITS	
GPS2	GPS2 (B5400-2)	659769.2750	898504.8570	2194.57	OUTSIDE PROJECT LIMITS	

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	658000.2304	897620.1670	2187.35	10+25.45	67.16 LT
2	BL-2	657866.0906	897651.6132	2189.21	11+39.54	11.41 RT
3	BL-3	657662.3211	897748.9333	2190.49	13+66.45	11.39 RT

BY POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
5	BY-5	658122.1296	897745.3790	2187.96	10+10.25	16.29 LT
1	BL-1	658000.2304	897620.1670	2187.35	11+39.54	12.19 LT
4	BY-4	657797.4486	897465.7792	2189.68	14+43.46	12.46 LT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
6	BY1-6	658067.6369	897817.5695	2183.43	10+26.49	13.42 LT
2	BL-2	657866.0906	897651.6132	2189.21	OUTSIDE PROJECT LIMITS	

.....
 BM1 ELEVATION = 2185.95
 N 658061 E 897707
 Y1 STATION 10+77.09 19.23' LEFT
 R/R SPIKE SET IN ROOT OF 14" POPLAR

.....
 BM2 ELEVATION = 2189.22
 N 657751 E 897672
 L STATION 12+56.93 24.19' RIGHT
 R/R SPIKE SET IN ROOT OF 12" WALNUT

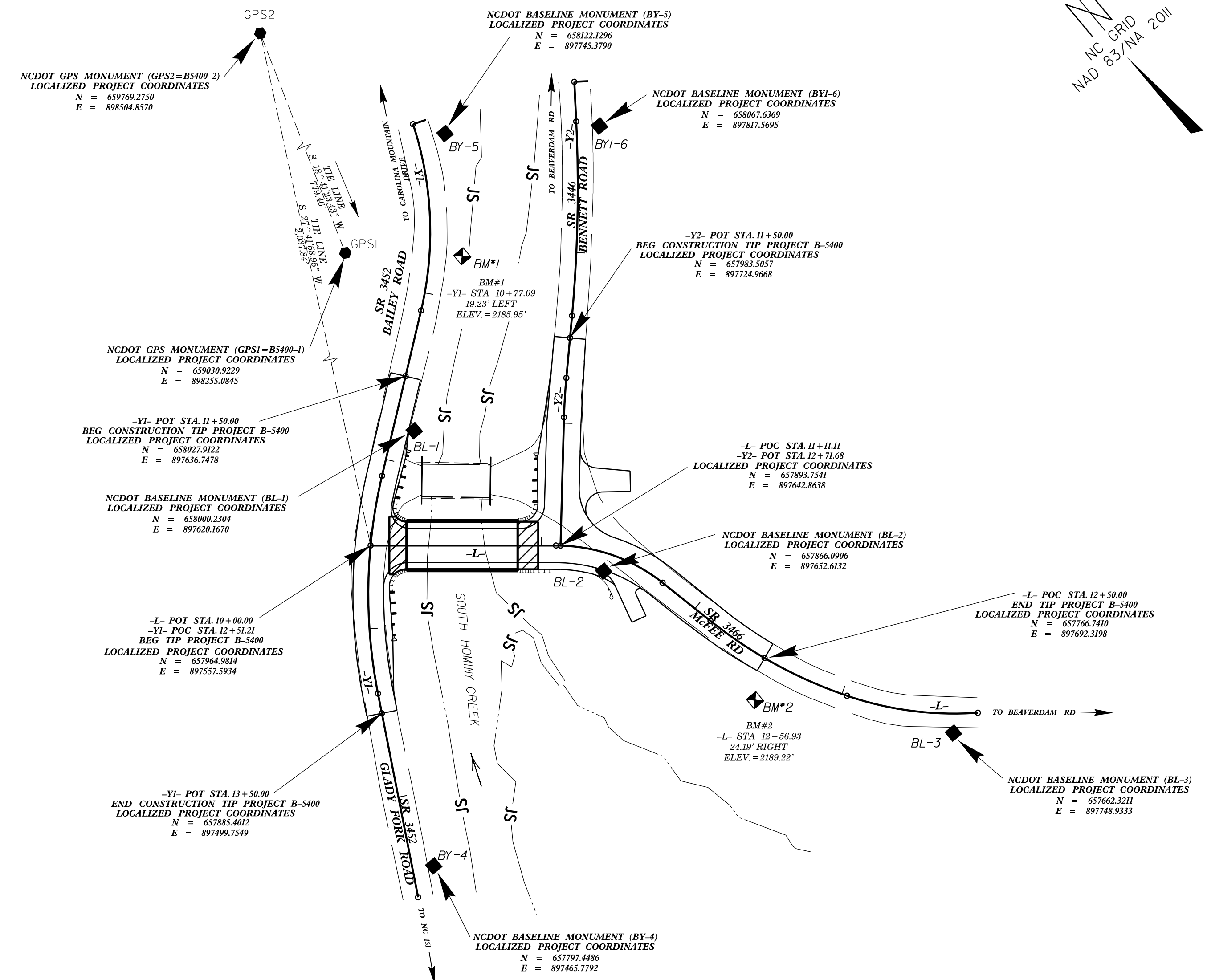
NOTES:

- INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM).

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 TIP####_LS_CONTROL_DATE.HTML

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



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS2 (B-5400-2)" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 659769.2750(ft) EASTING: 898504.8570(ft) ELEVATION: 2194.57(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997823

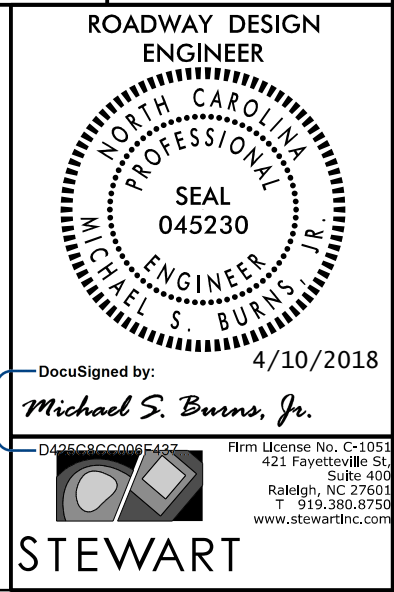
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS2 (B-5400-2)" TO -L- STATION 10+00 IS
 S 27°41'58.95" W 2,037.84'

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

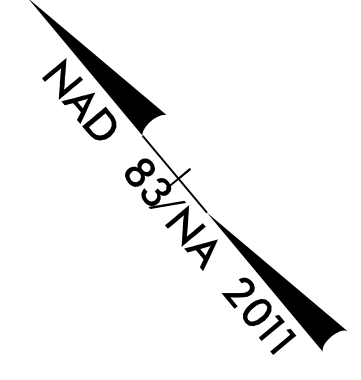
NOTE: DRAWING NOT TO SCALE

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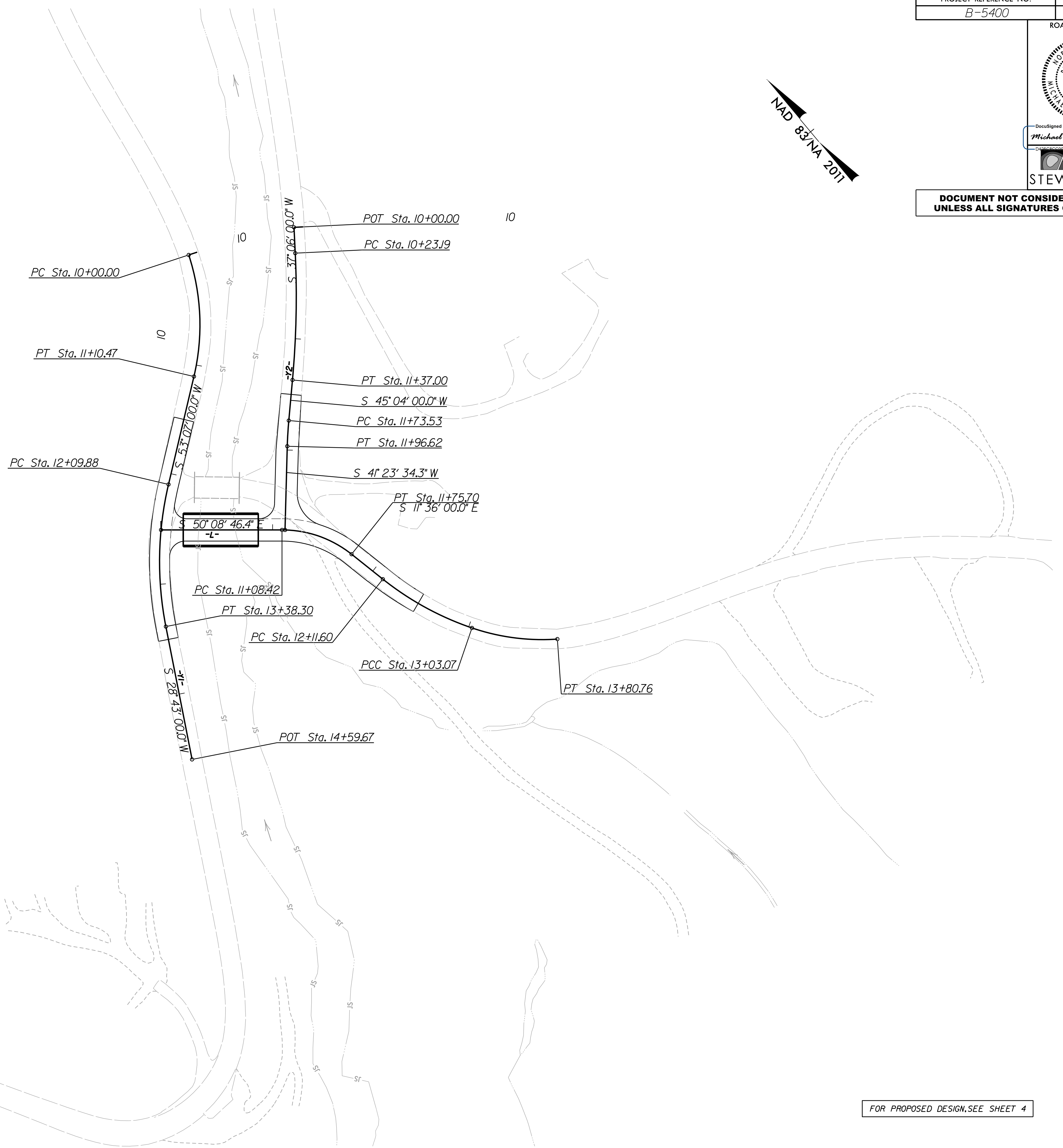
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-L-		
PI Sta 11+43.39 Δ = 38° 32' 46.4" (RT) D = 57' 17" 44.8" L = 67.28' T = 34.97' R = 100.00' S _e = 2% Runoff = 30'	PI Sta 12+57.79 Δ = 19° 39' 59.8" (LT) D = 21' 30' 00.0" L = 91.47' T = 46.19' R = 266.49'	PI Sta 13+42.44 Δ = 22° 55' 02.9" (LT) D = 29' 30' 00.0" L = 77.69' T = 39.37' R = 194.22'
-Y1-		
PI Sta 10+56.67 Δ = 31° 29' 00.0" (RT) D = 28' 30' 00.0" L = 110.47' T = 56.67' R = 201.04'	PI Sta 12+75.08 Δ = 24° 24' 00.0" (LT) D = 19' 00' 00.0" L = 128.42' T = 65.20' R = 301.56'	
-Y2-		
PI Sta 10+80.19 Δ = 7° 58' 00.0" (RT) D = 7' 00' 00.0" L = 113.81' T = 57.00' R = 818.51'	PI Sta 11+85.08 Δ = 3° 40' 25.7" (LT) D = 15' 54' 55.8" L = 23.08' T = 11.55' R = 360.00' S _e = 2% Runoff = 30'	



FOR PROPOSED DESIGN, SEE SHEET 4

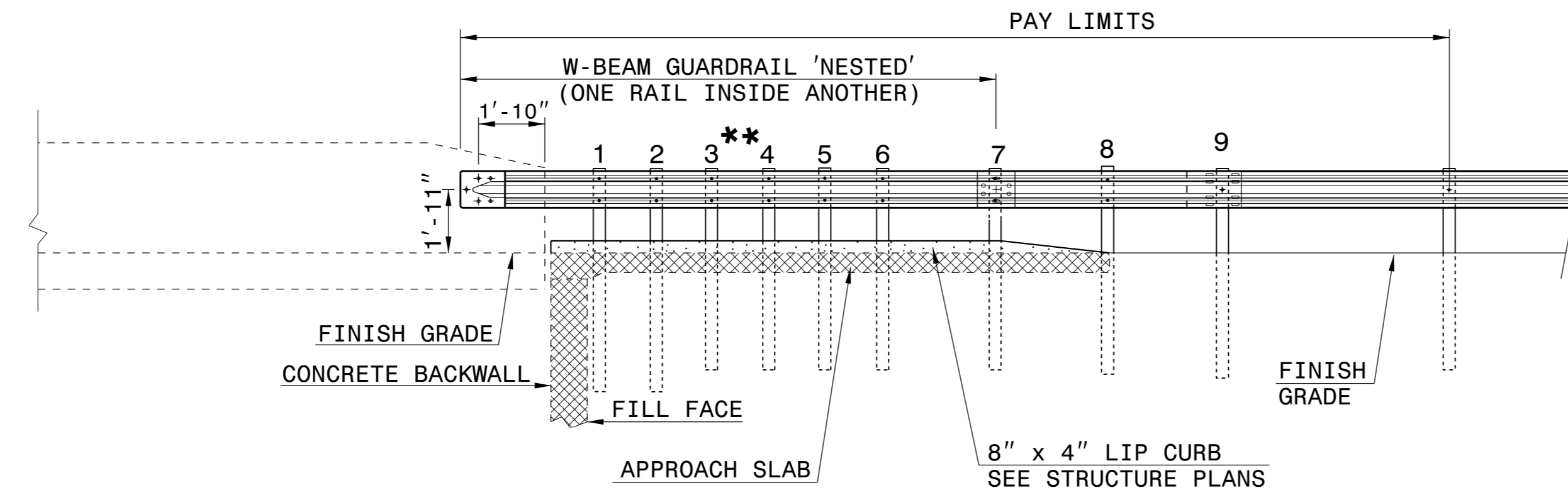
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STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**MODIFIED B-83 - SHOP CURVED
 STRUCTURE ANCHOR UNIT**

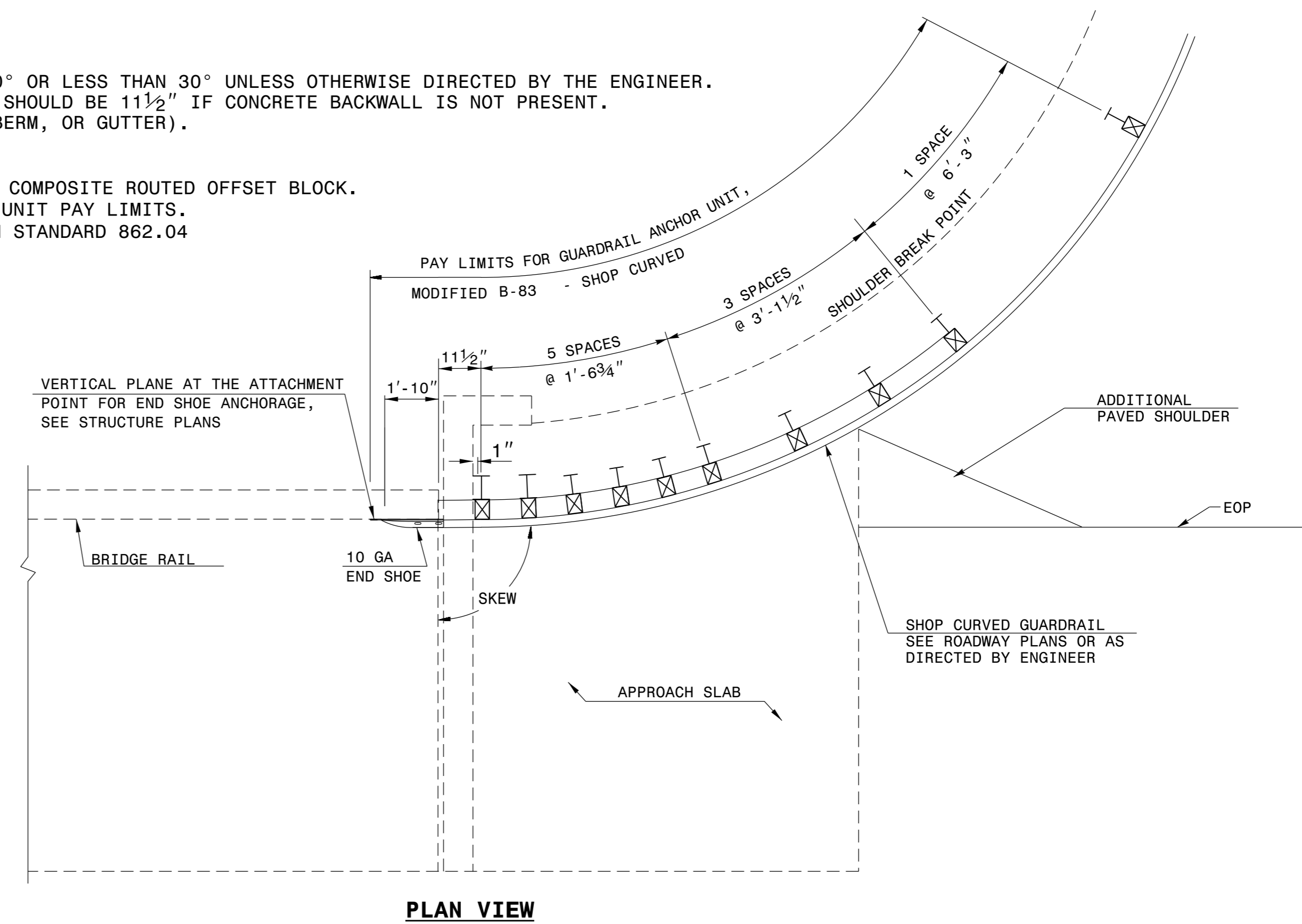
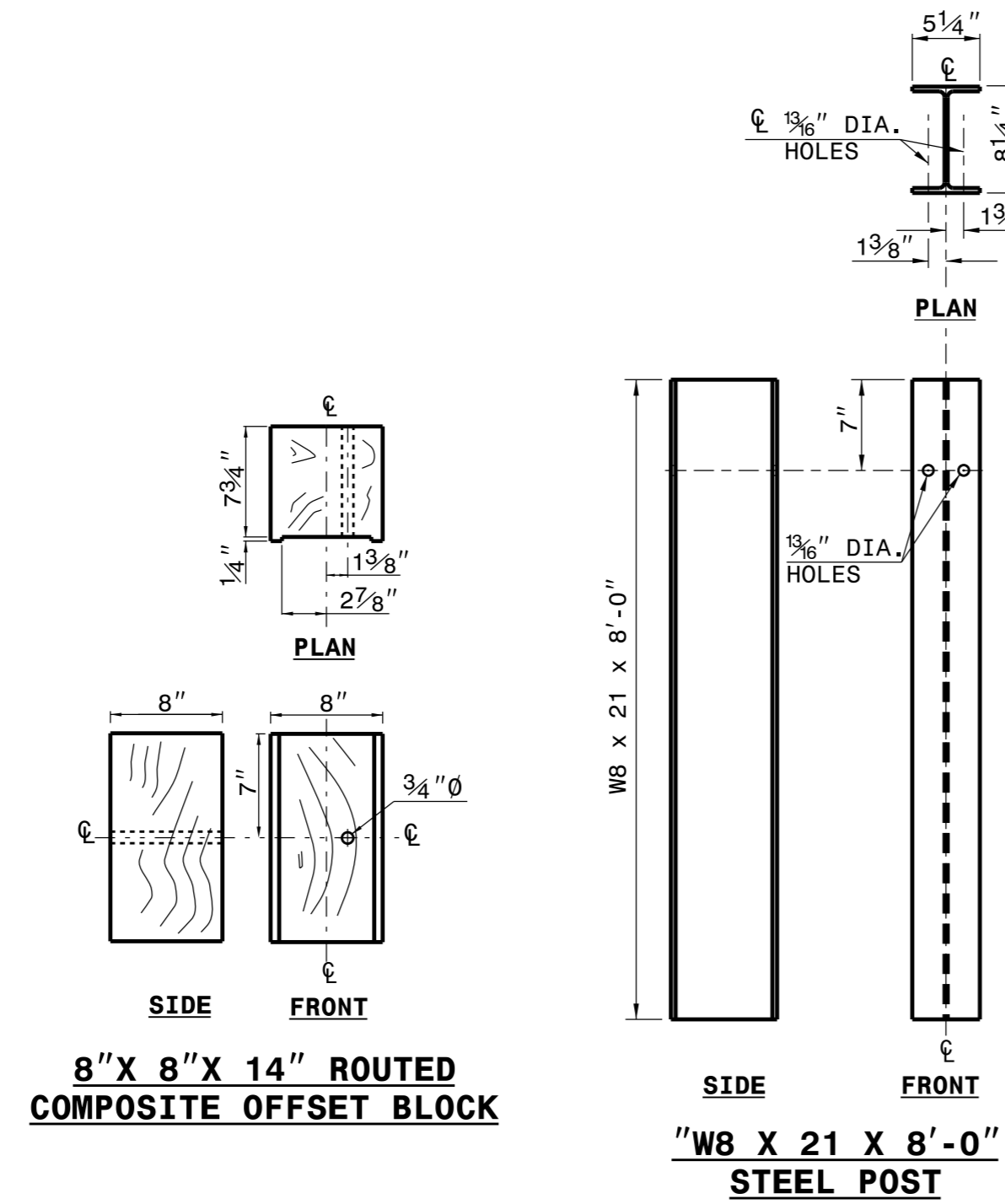
SHEET 1 OF 1
MOD B-83



ELEVATION

NOTE:

- **ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON 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.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- POSTS 1 AND 2 TO BE W8 x 21 x 8'-0" LONG STEEL POST AND 8" x 8" x 14" COMPOSITE ROUTED OFFSET BLOCK.
- SHOULDER BERM GUTTER IS REQUIRED IF NO CURBING EXISTS THROUGH ANCHOR UNIT PAY LIMITS.
- ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE AS SHOWN IN STANDARD 862.04



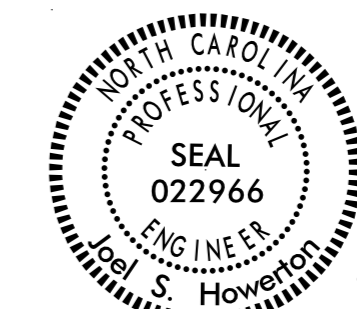
PLAN VIEW

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

ENGLISH DETAIL DRAWING FOR
**MODIFIED B-83 - SHOP CURVED
 STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
MOD B-83

**GUARDRAIL ANCHOR UNIT, MODIFIED B-83 - SHOP CURVED
 FOR ATTACHMENT TO RAIL ON BRIDGE**



DocuSigned by:
 Joel S. Howerton
 873F3D17DC0C45F...

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 UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS & DEVELOPMENT UNIT
 STANDARDS AND SPECIAL DESIGN**
 Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

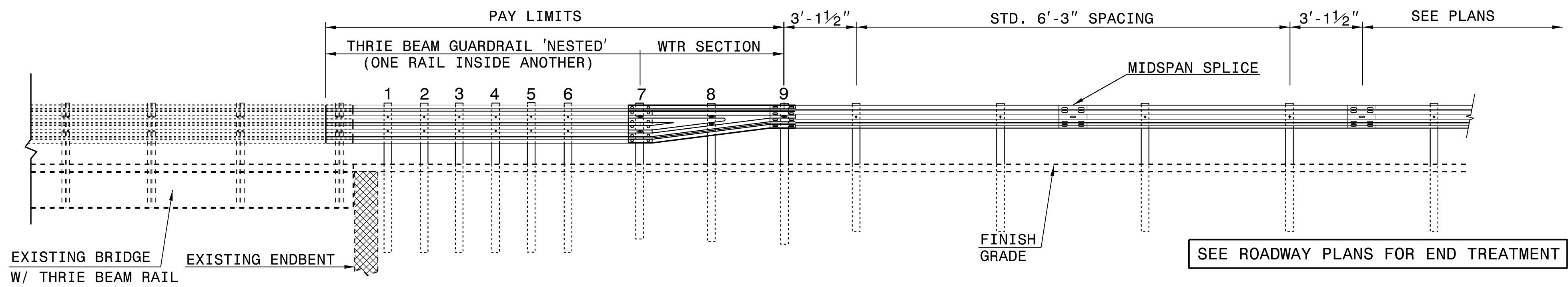
ORIGINAL BY: _____	DATE: _____
MODIFIED BY: rnbritt	DATE: 01-05-2017
CHECKED BY: jhowerton	DATE: 01-05-2017
FILE SPEC: details/rb/eng/bridge/b5400 modified_b83.dgn	

5/14/99
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**TEMPORARY TYPE III MODIFIED- SHOP CURVED
STRUCTURE ANCHOR UNIT**

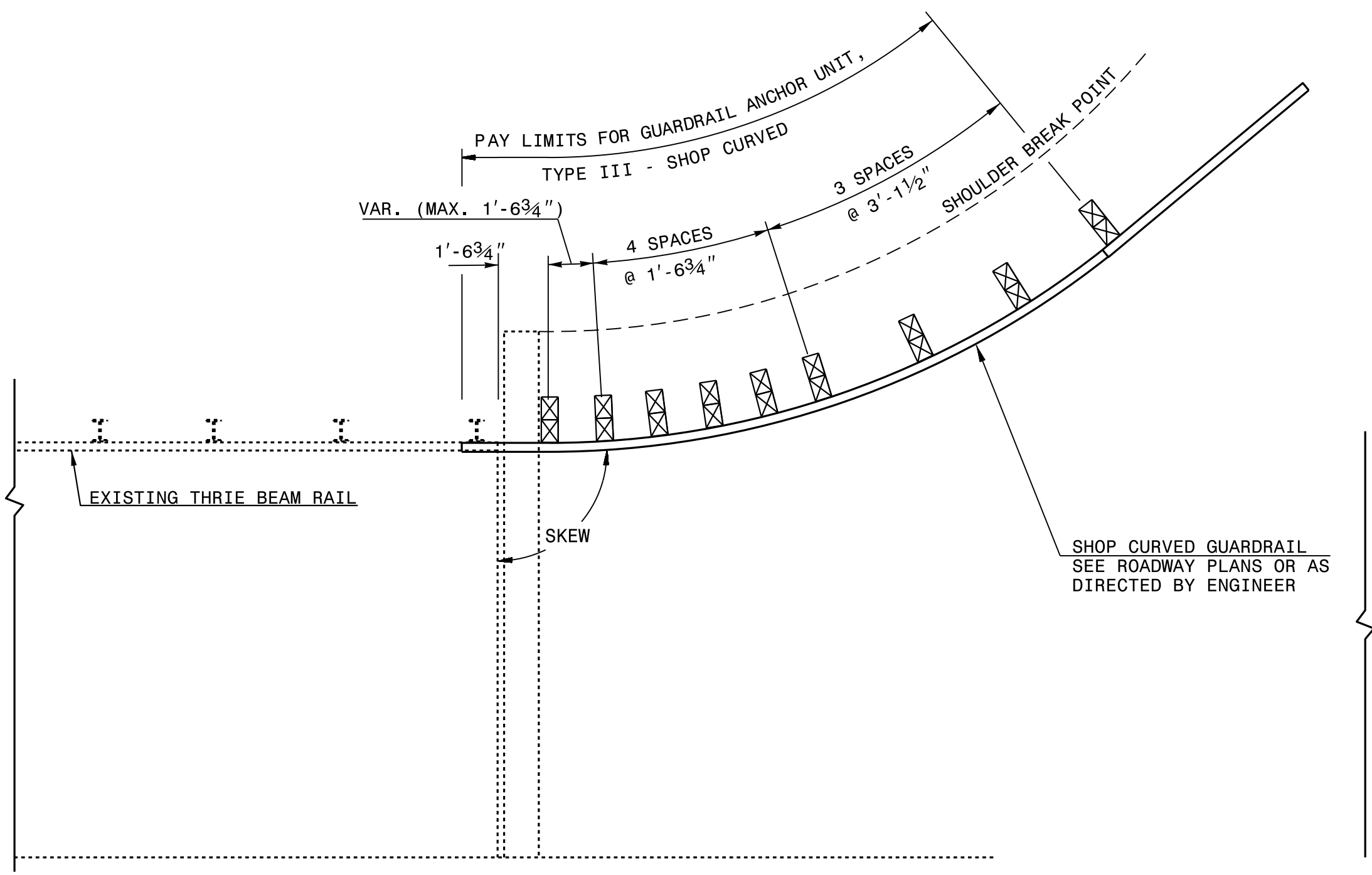
SHEET 1 OF 1
TYPE III SC



ELEVATION

NOTE:

- *POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- CONNECT TYPE III MODIFIED TO EXISTING THRIE BEAM BRIDGE RAIL AT THE FIRST BRIDGE RAIL POST.
- MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
- USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE STANDARD 862.03 SHEET 2 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

**GUARDRAIL ANCHOR UNIT, TEMPORARY TYPE III MODIFIED- SHOP CURVED
FOR ATTACHMENT TO RAIL ON BRIDGE**

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

ENGLISH DETAIL DRAWING FOR
**TEMPORARY TYPE III MODIFIED- SHOP CURVED
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
TYPE III SC

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: K.A.Kempf DATE: 3-07-18
CHECKED BY: DATE:
FILE SPEC.: jhowerton\guardrail\31inguardrail\typeiiiisc.dgn



DocuSigned by:
Joel S. Howerton
873F3D17DCDC45F

4/10/2018

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5/14/99

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

NOTE:

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- *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 3 FOR POST SECTIONS 1 THRU 9.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
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 1 OF 7
862D03

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

NOTE:

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- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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- LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
- SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

DocuSigned by:
Paul S. Howerton
873F3D17DCD045F

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AND DEVELOPMENT UNIT**
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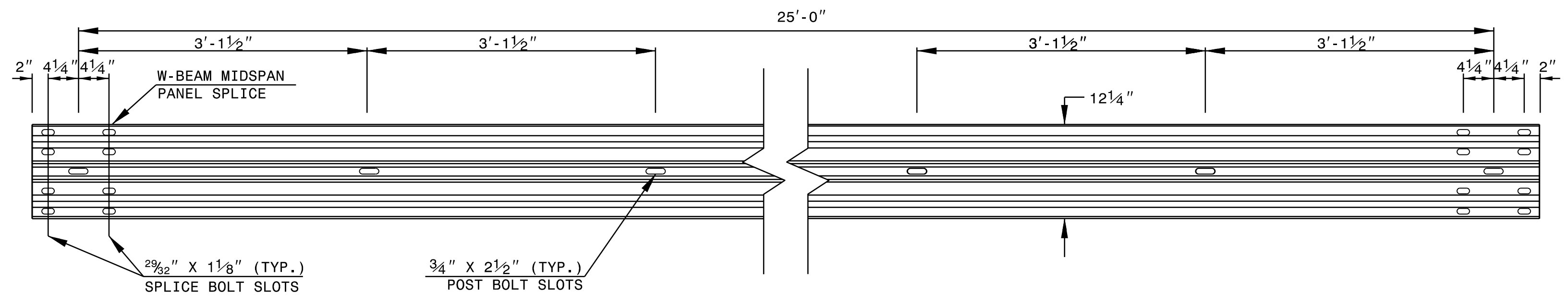
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MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

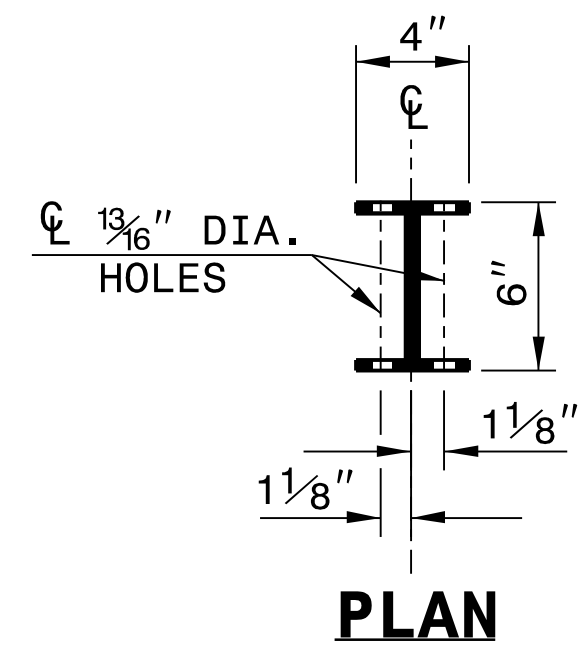
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

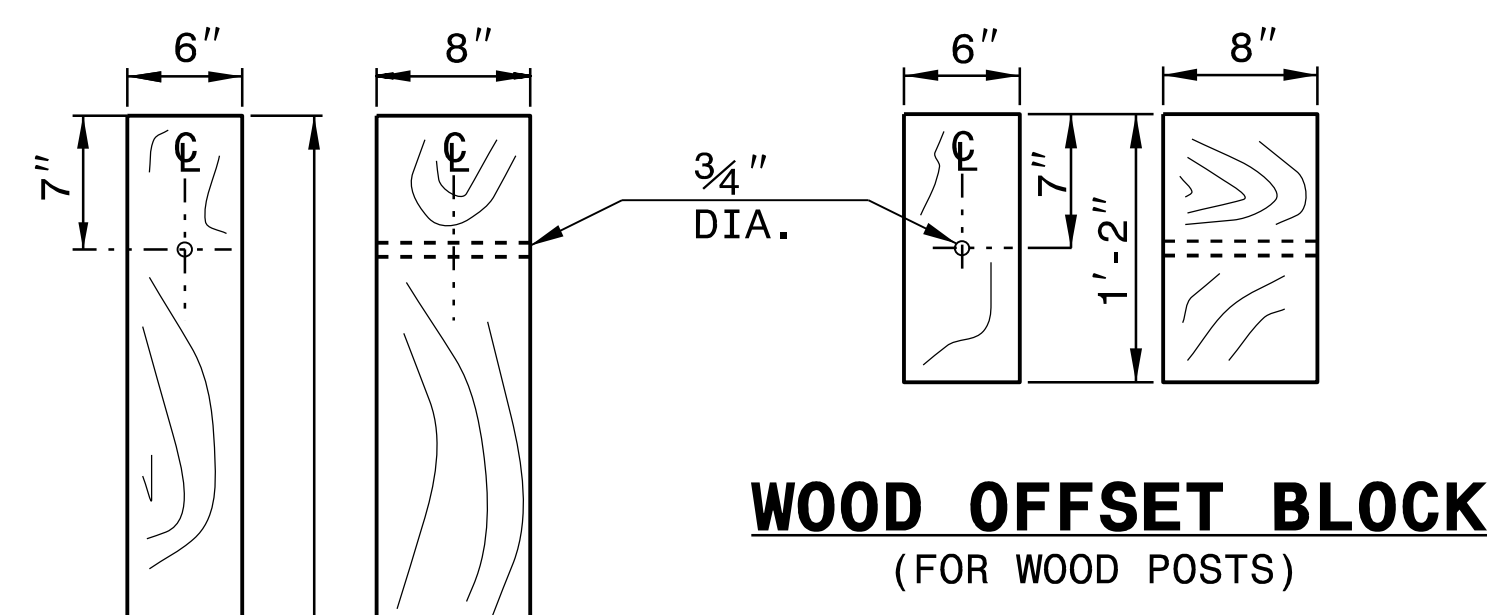
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



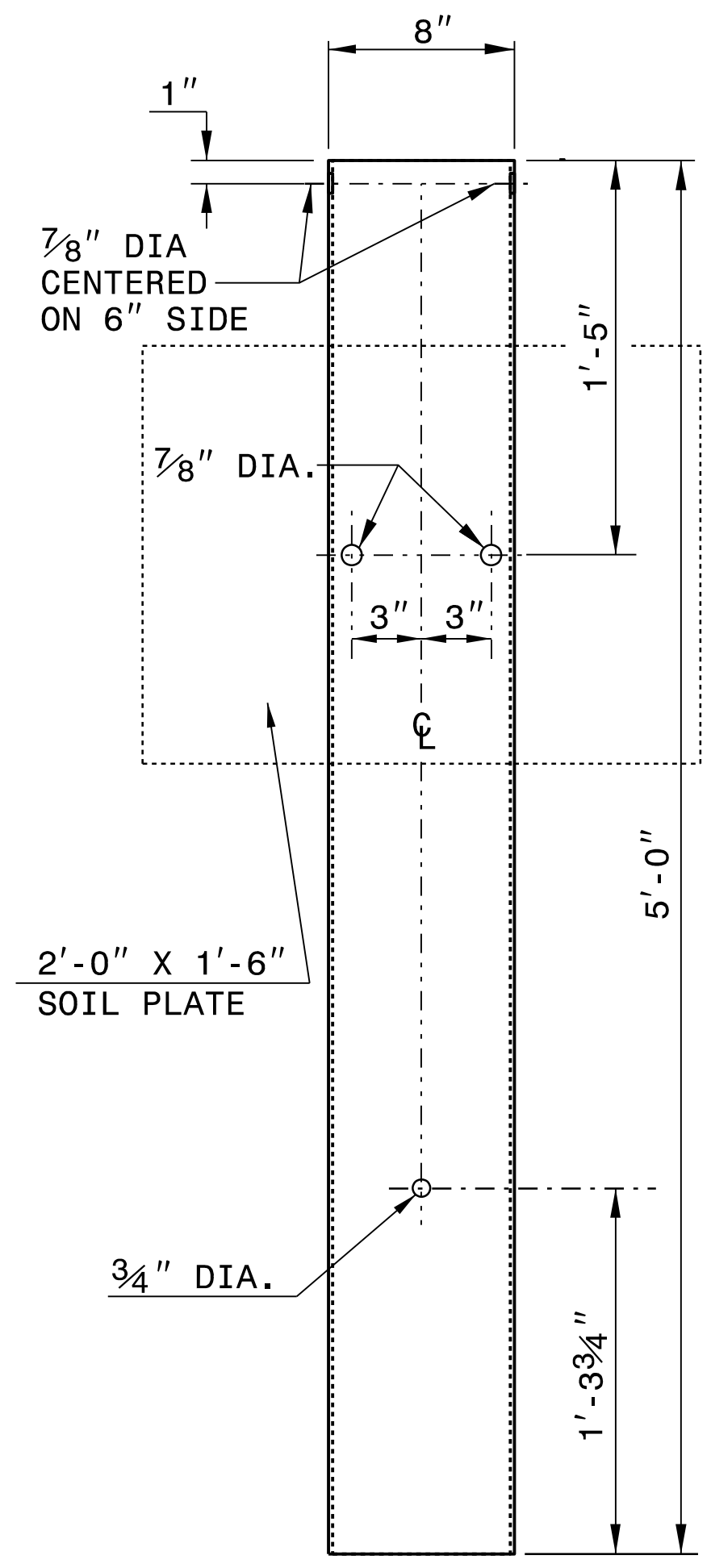
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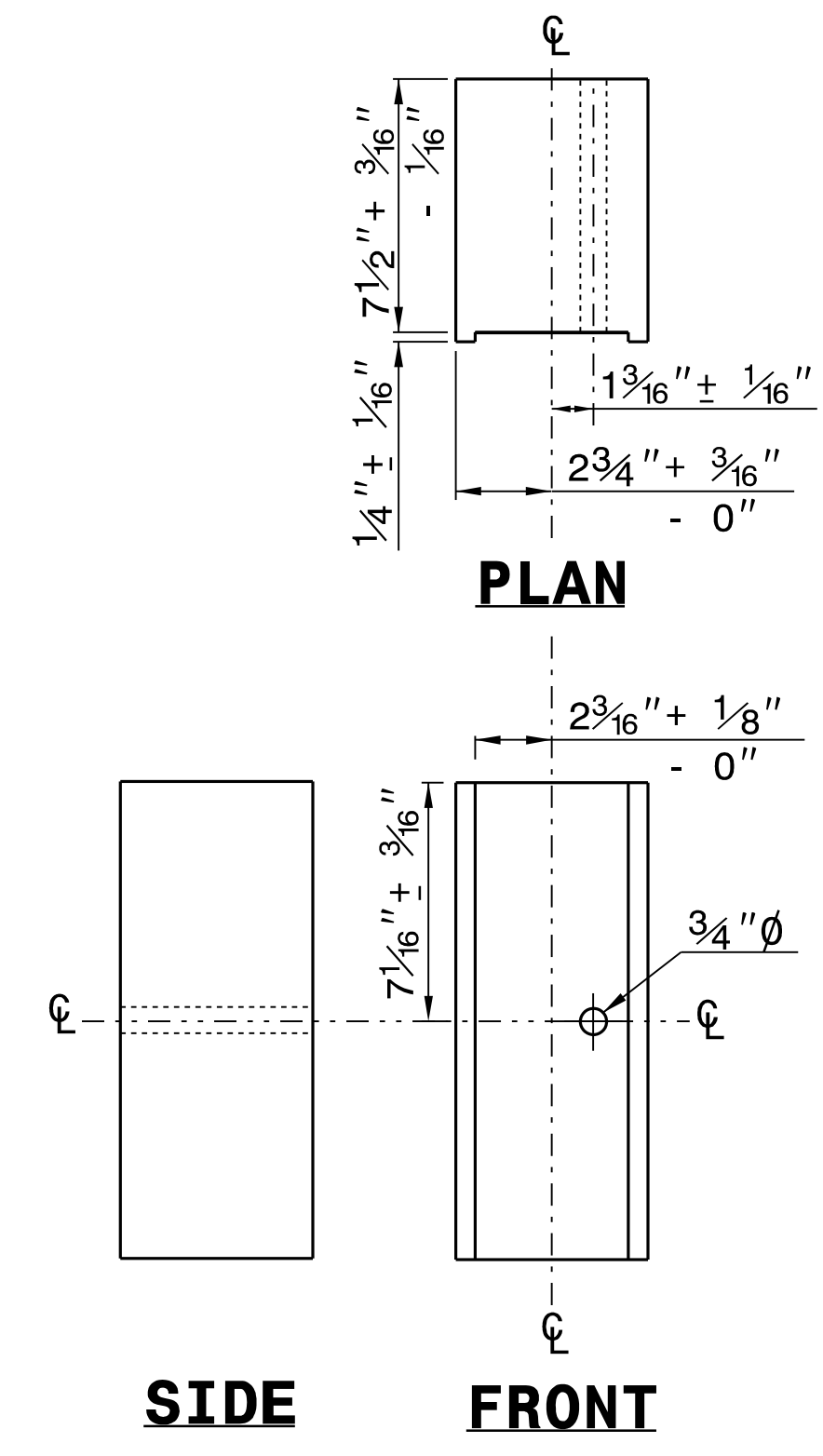
**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

**STANDARD
LINE POST**

**SHORT WOOD
BREAKAWAY POST**



**STEEL TUBE
TS 6"x8"x0.1875"**

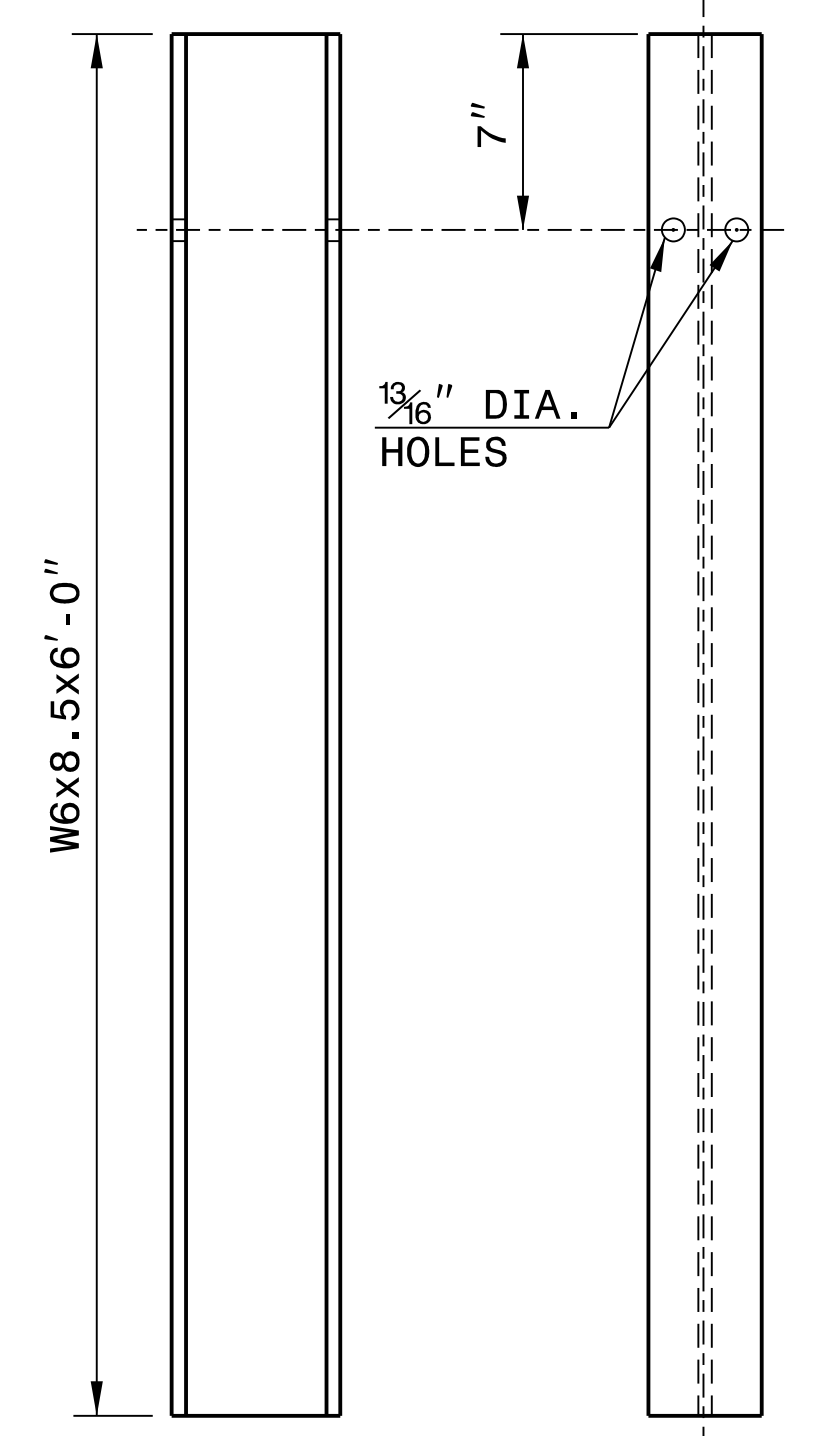


PLAN

SIDE

FRONT

**ROUTED
OFFSET BLOCK**



SIDE

FRONT

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



DocuSigned by:
Joel S. Howerton
873F3D17DC0C45F

**CONTRACTS STANDARDS
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Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

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

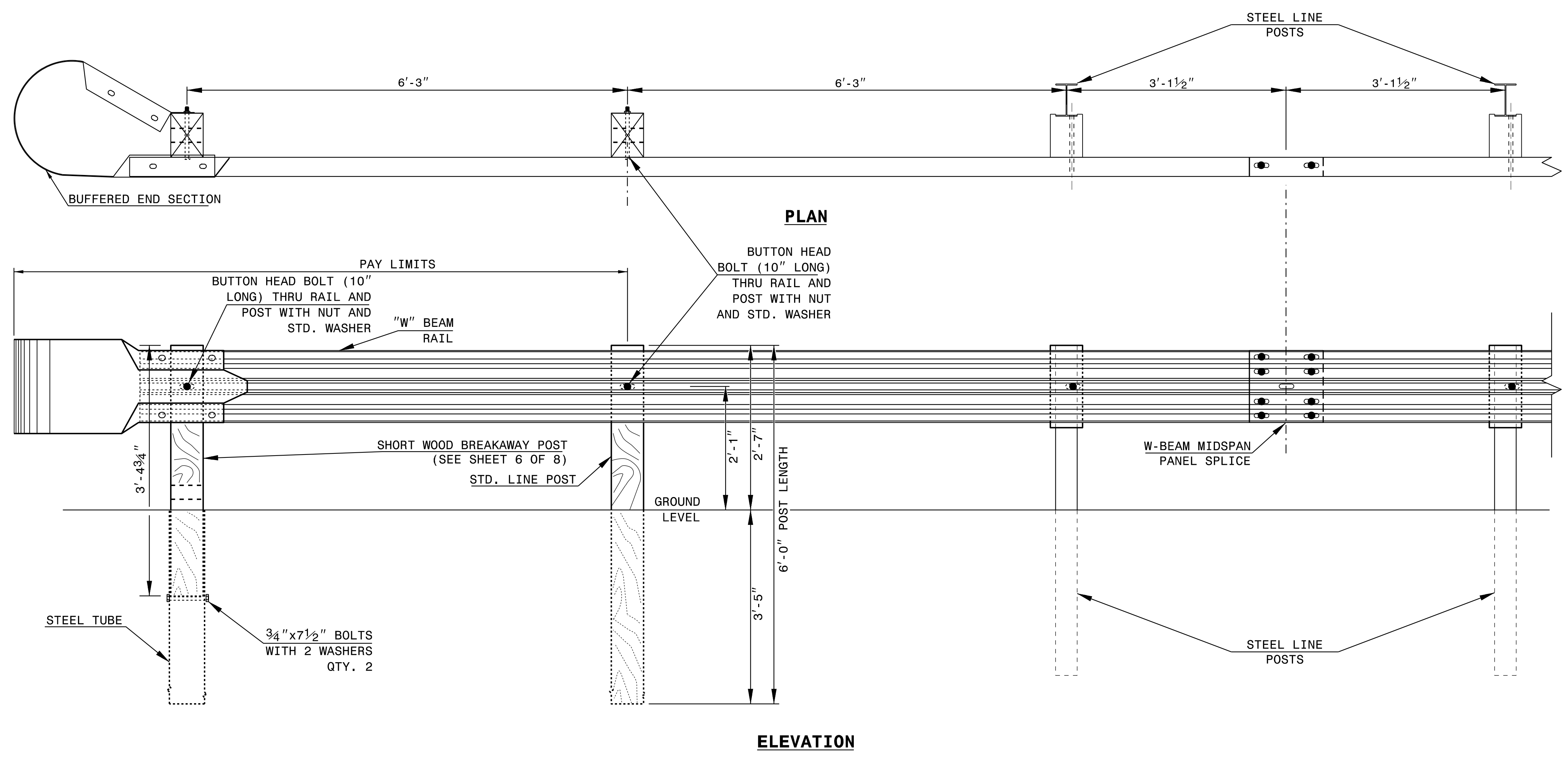
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY
A.T. - 1 SYSTEM



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Joel S. Howerton
873F3D17DCDC45F

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A.T. - 1 SYSTEM

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

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

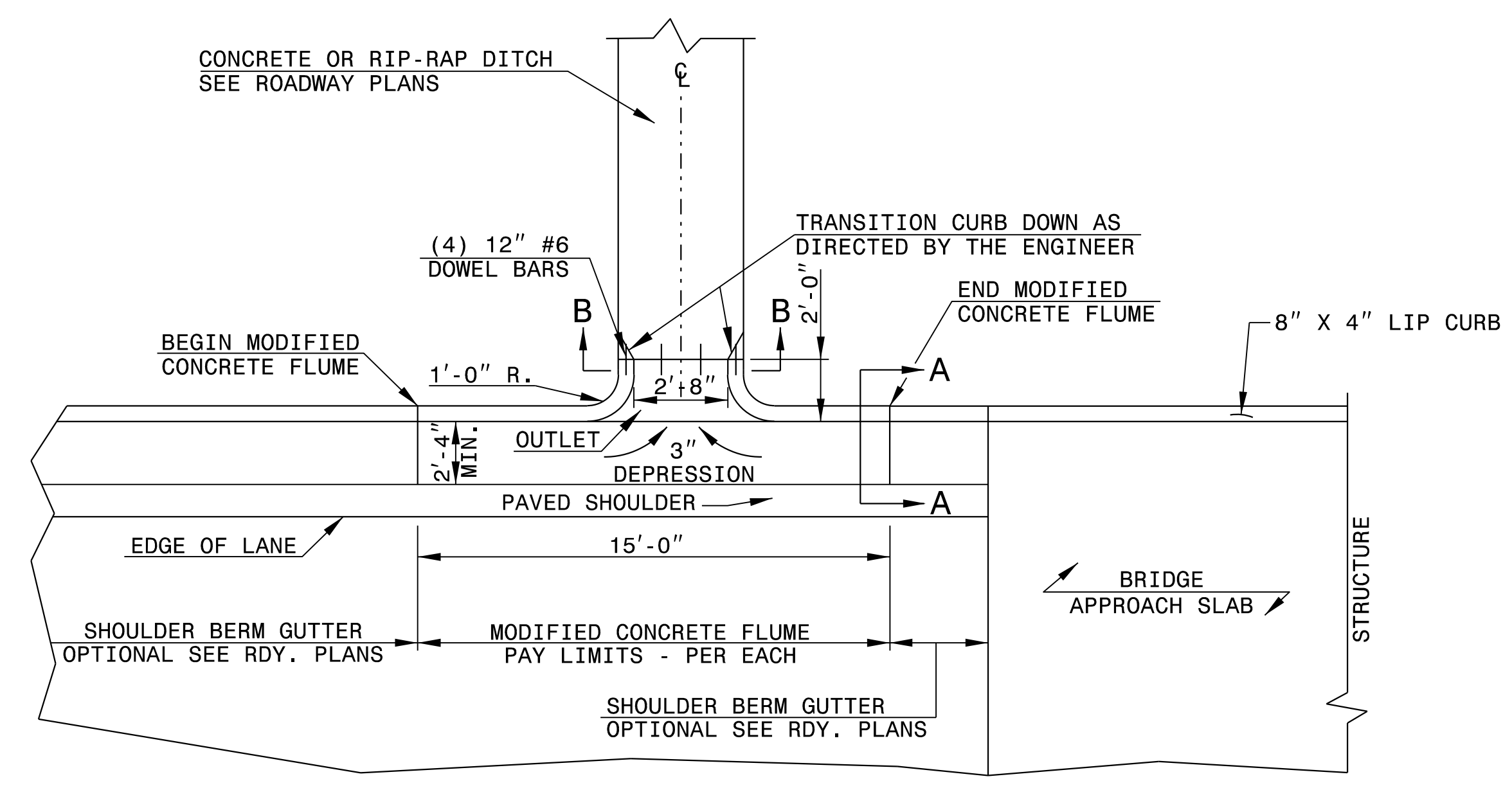
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
 WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

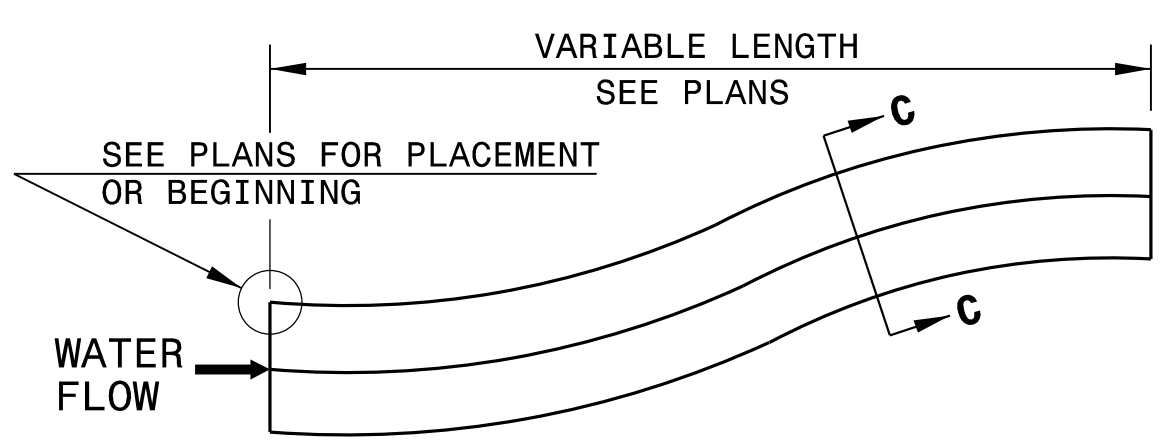
STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
 WITH CONCRETE OR RIP-RAP DITCH

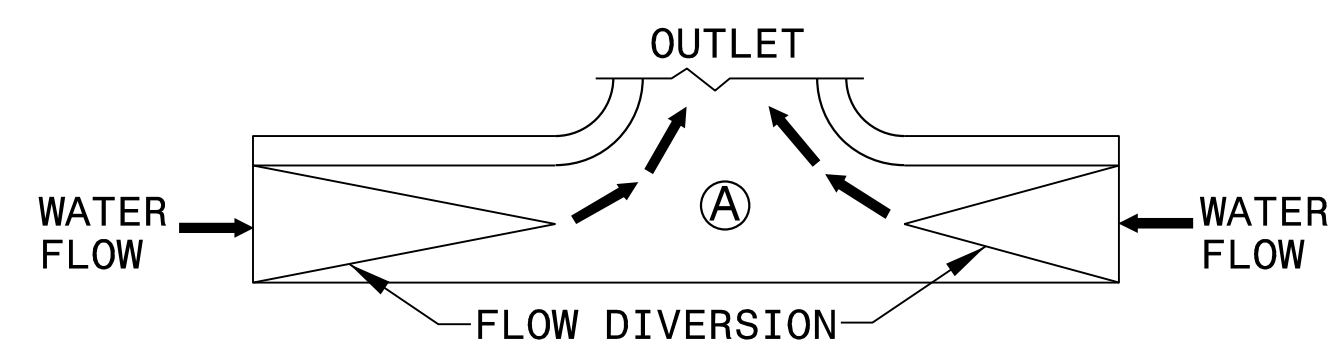
SHEET 1 OF 1
MODFLMDTCH



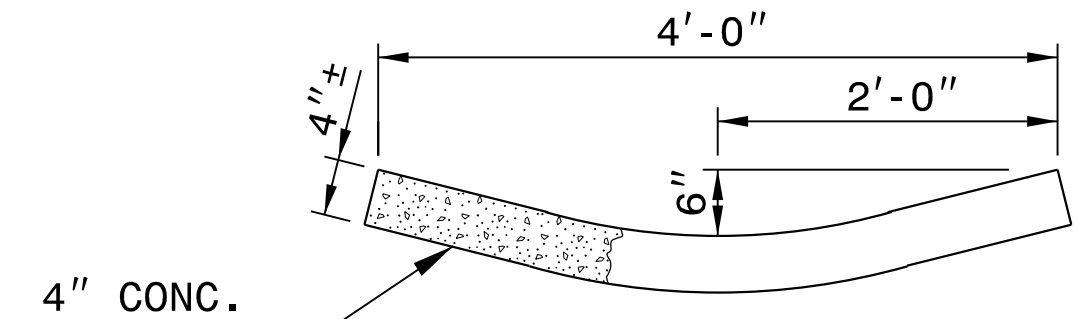
PLAN VIEW



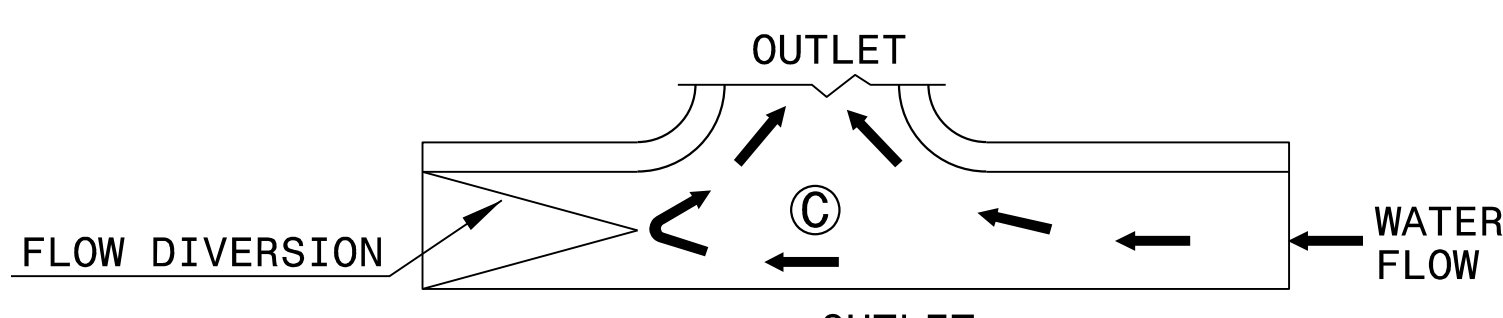
DOWNGRADE OR SAG



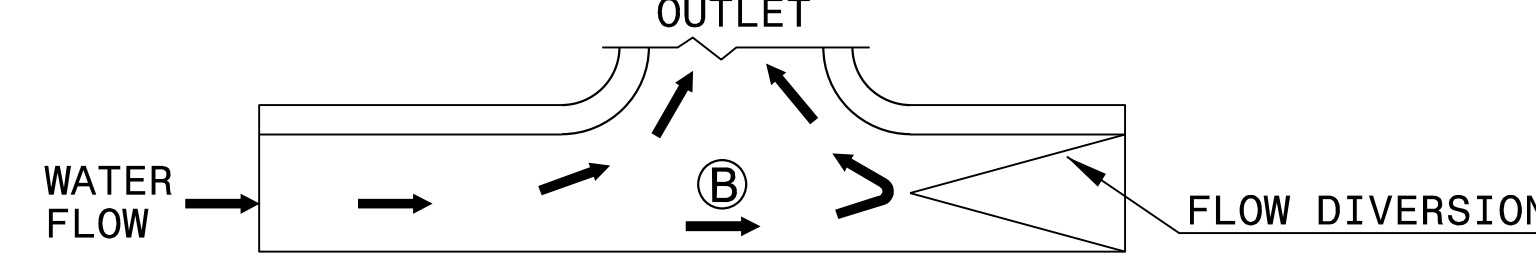
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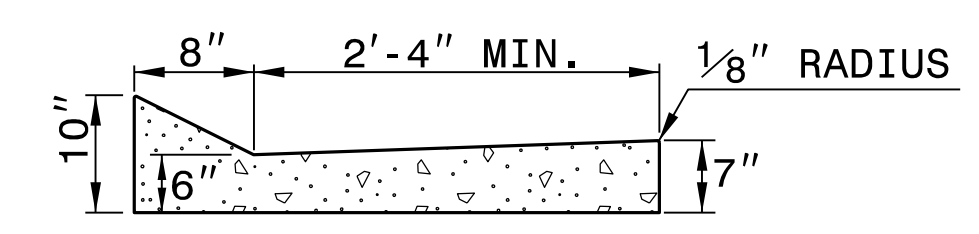
SECTION C-C



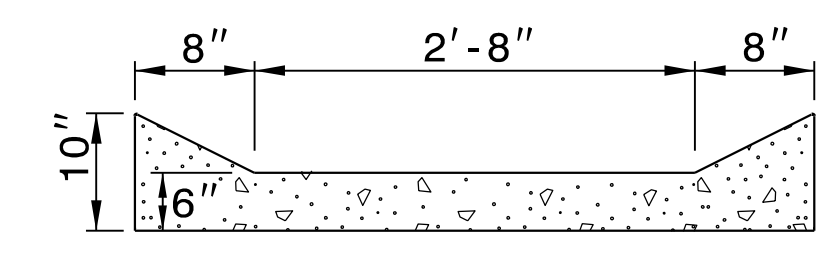
FLOW DIVERSION EXAMPLES



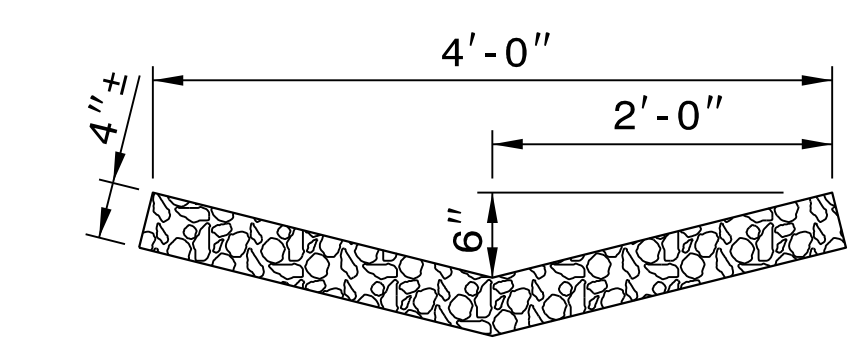
DOWN GRADE



SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

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UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
 MODIFIED BY: J.S. Howerton DATE: October 2017
 CHECKED BY: DATE:
 FILE SPEC.: w:\details\stand\modifiedflume.dgn



DocuSigned by:
J.S. Howerton
873F3D17DCDC45F

4/10/2018

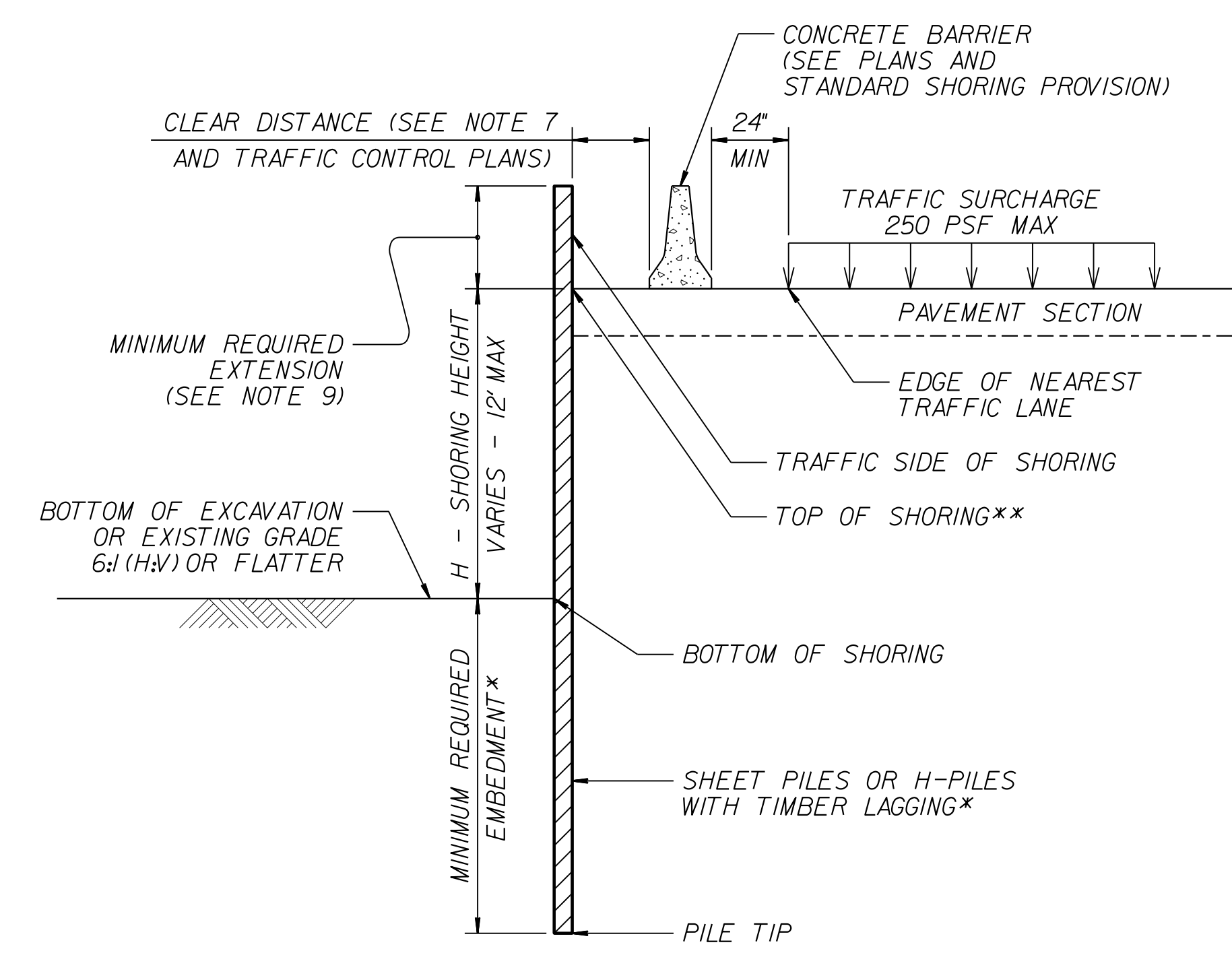
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ³ /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5	
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5	

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

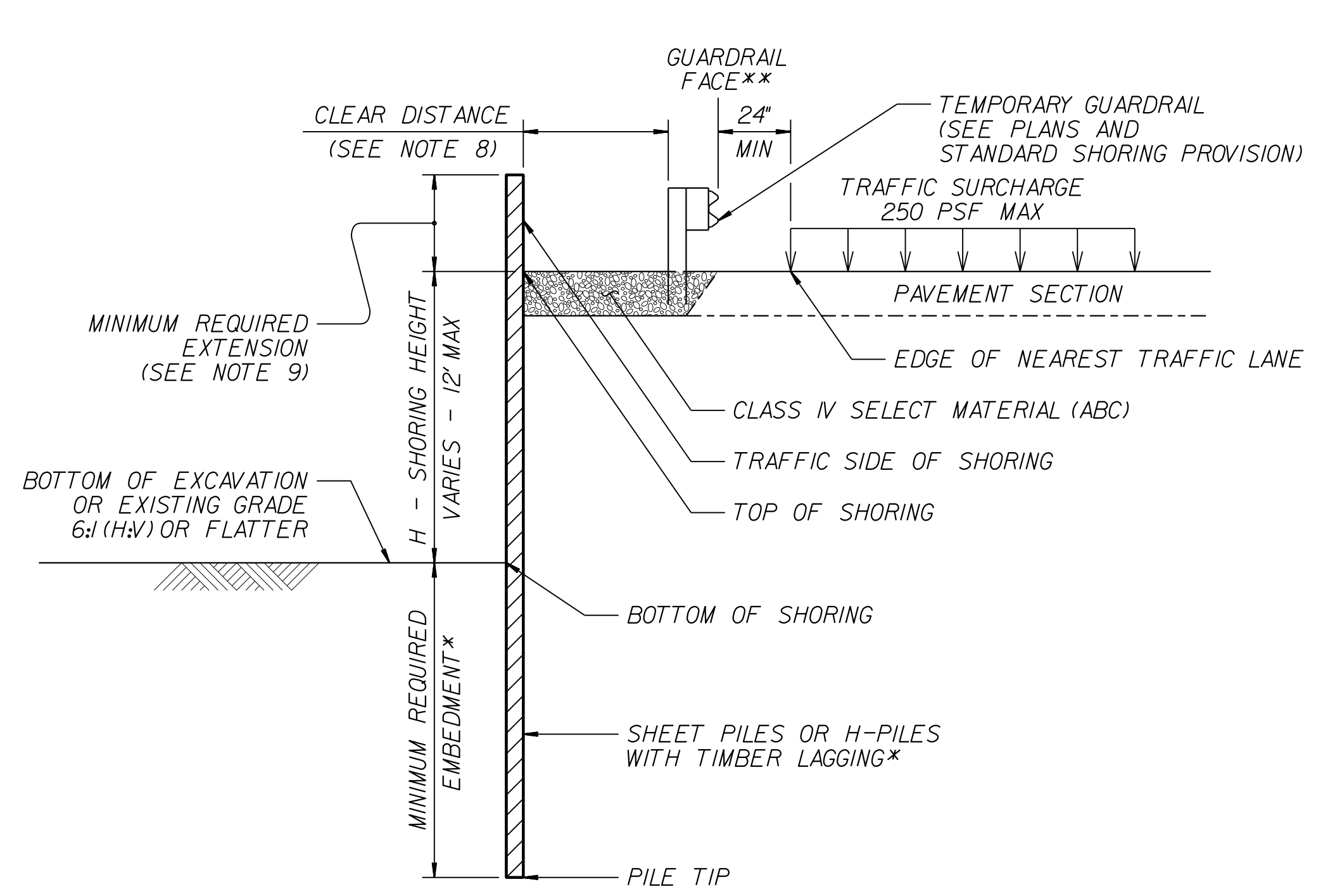
*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

NOTES:

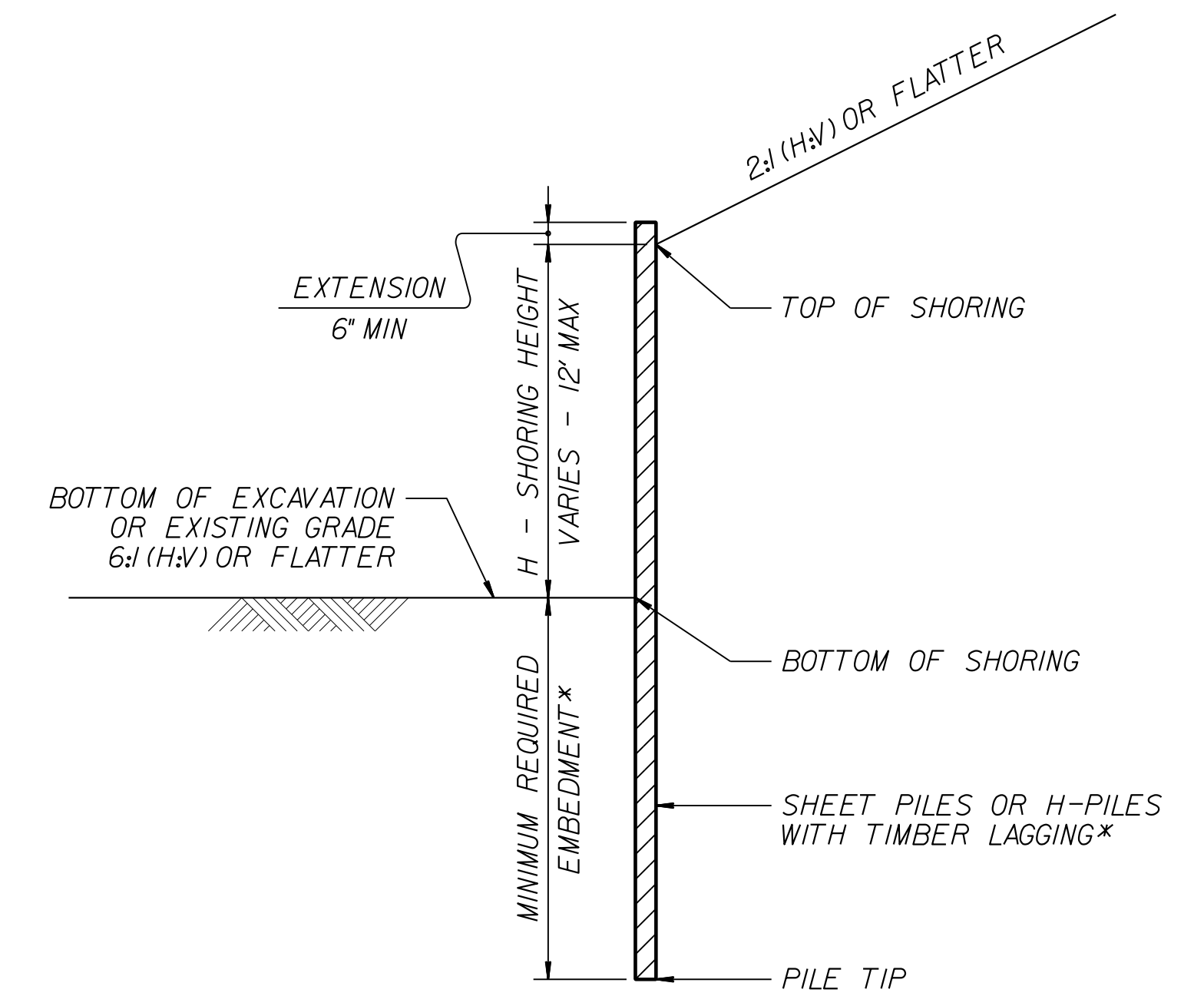
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
- SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:
connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



CONCRETE BARRIER
**TOP OF SHORING =
EDGE OF PAVEMENT



TEMPORARY GUARDRAIL
**GUARDRAIL FACE =
EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING
(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING
(SURCHARGE CASE)
*SEE TABLE ABOVE.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

STANDARD
TEMPORARY SHORING

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
SUMMARY NO. 1					
-L- Sta. 10+09.00	-L- Sta. 10+19.88 (BR)	0	30	30	
-L- Sta. 10+87.13 (BR)	-L- Sta. 12+50.00	8	293	285	
SUBTOTAL:		8	323	315	
SUMMARY NO. 2					
-Y2- Sta. 11+50.00	-Y2- Sta. 12+50.00	7	0		7
SUBTOTAL:		7	0		7
TOTAL:		15	323	315	7
WASTE IN LEIU OF BORROW				-7	-7
PROJECT TOTAL:		15	323	308	0
EST. 5% REPLACE TOPSOIL ON BORROW PIT				15	
GRAND TOTAL:		15	323	323	0
SAY:		20		340	

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	10+10.00	10+30.00	LT	35.79			
-L-	10+70.00	10+98.00	LT	68.70			
-L-	11+22.00	11+65.84	LT	40.51			
TOTAL:				145.00			
SAY:				150.00			

UNDERCUT EXCAVATION = 450 CY (Contingency)
 SELECT GRANULAR MATERIAL = 400 CY (Contingency)
 GEOTEXTILE FOR SOIL STABILIZATION = 200 SY (Contingency)
 (Total square yards of Geotextile for Soil Stabilization is only the contingent quantity and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.)

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.

REVISIONS

N = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

TEMPORARY GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS							IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS			
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	Type III Mod.	B-77	GREU, TL-3	Temp. GREU, TL-2	CAT-1	AT-1	Type III	B-77 SC	G					NG		
-Y1-	12+17	13+05	LT	50'	37.5'		12+17	13+05	1'	4'	25'		1																	SEE SHEET 2C-2 FOR TYPE III MODIFIED ANCHOR UNIT
-L-	10+70	11+44	RT	75'			10+70	11+44	1'	4'	25'		1																SEE SHEET 2C-2 FOR TYPE III MODIFIED ANCHOR UNIT	
SUBTOTAL:				125'	37.5'								2																	
TEMP. GREU, TL-2 (2 @ 25')				50'																										
TEMP. TYPE III MODIFIED (2 @ 18.75')					37.5'																									
TOTAL:				75'	0'									2																
SAY:				87.5'	0'									2																

N = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS							IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS				
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-2	M-350	TYPE B-83 SHOP CURVED	TYPE III	AT-1	BIC	G					NG			
-L- / -Y1-	11+95.60 (-Y1-)	10+19.88 (-L-)	LT	50'				10+19.88	VARIES	7'-6"																				SEE DETAIL SHEET 2C-1 FOR B-83 SHOP CURVED	
-L- / -Y1-	13+04.25 (-Y1-)	10+19.88 (-L-)	RT	50'			10+19.88		VARIES	7'-6"	25'		0.5'																SEE DETAIL SHEET 2C-1 FOR B-83 SHOP CURVED		
-L- / -Y2-	10+87.13 (-L-)	12+21.86 (-Y2-)	LT	50'			10+87.13		3'-11"	6'-11"	25'		0.5'																SEE DETAIL SHEET 2C-1 FOR B-83 SHOP CURVED		
-L-	10+87.13	11+49.63	RT	43.75'	18.75'		10+87.13		3'-11"	6'-11"		6.25'		0.5'															SEE DETAIL SHEET 2C-3 FOR TYPE III/SEE DETAIL SHEET 2C-5 FOR AT-1		
SUBTOTAL:				193.75'																											
LESS ANCHOR DEDUCTIONS:																															
GREU, TL-2 (3 @ 25')				75'																											
B-83 SHOP CURVED (3 @ 25')				75'																											
TYPE III (1 @ 18.75')				18.75'																											
AT-1 (1 @ 6.25')					6.25'																										
TOTAL:				25'	12.5'																										
SAY:				25'	12.5'																										
ADDITIONAL GUARDRAIL POSTS = 5 EA																															

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REVISIONS

SUMMARY OF SUBSURFACE DRAINAGE

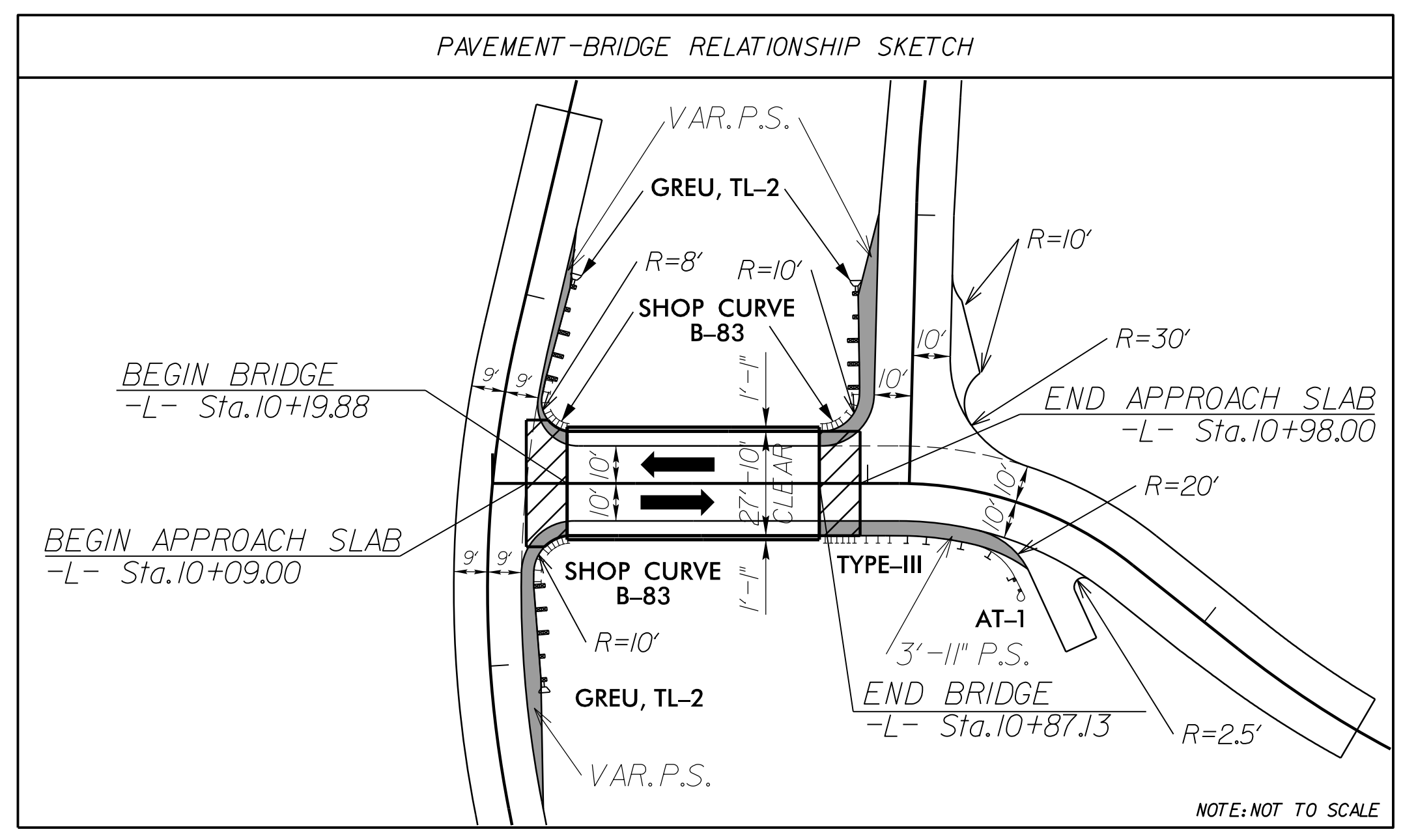
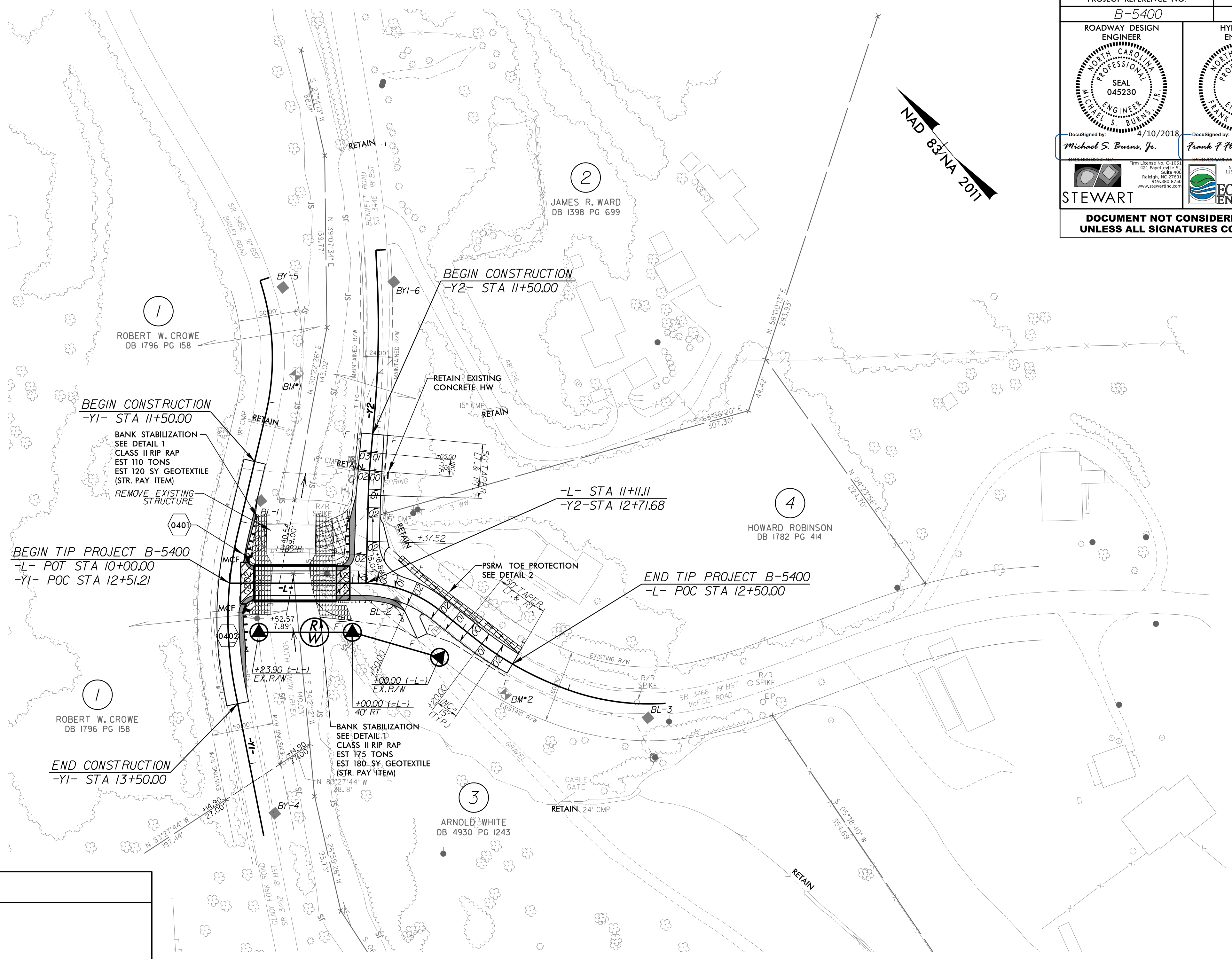
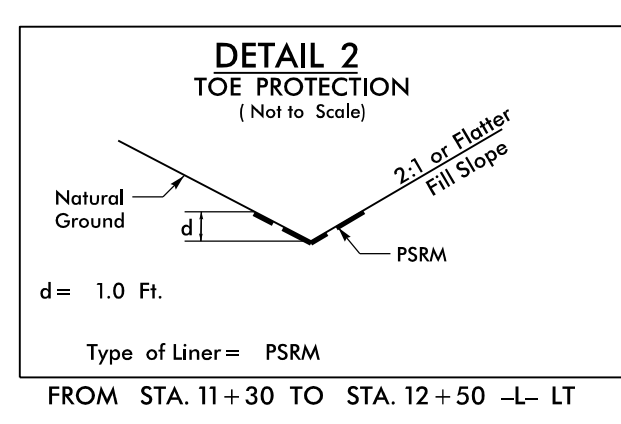
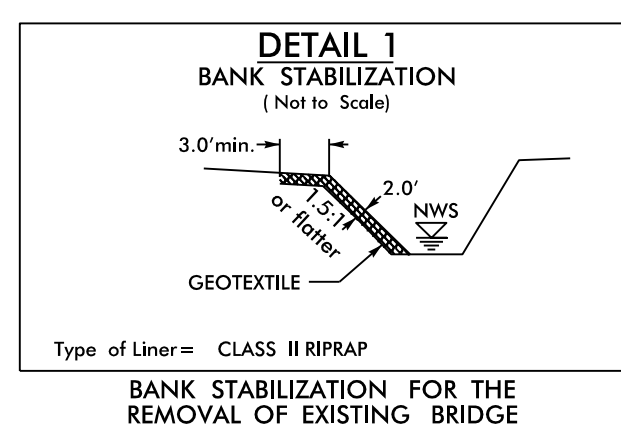
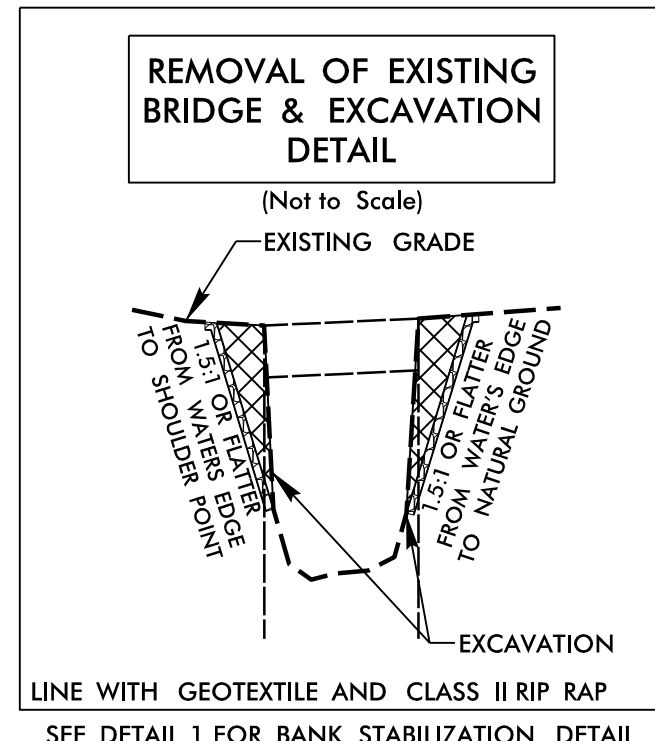
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	18"	100	200	400		
TOTAL CY/TONS/SY:					100	200	400*	0	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization
 *Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.



2018/2038 AVERAGE ANNUAL DAILY TRAFFIC

	-Y1- SR 3452 (BAILEY RD)	537 685	-Y2- SR 3446 (BENNETT RD)	
119 192	← 119 192	656 878	437 585	← 100 319 392
537 685	← 537 685			← -L- SR 3466 (MCFEE RD)
	-Y1- SR 3452 (GLADY FORK RD)			
				2018 2038 AADT

FOR ALIGNMENT AND CURVE DATA, SEE SHEET 2B-1

FOR -L- PROFILE, SEE SHEET 5

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-15

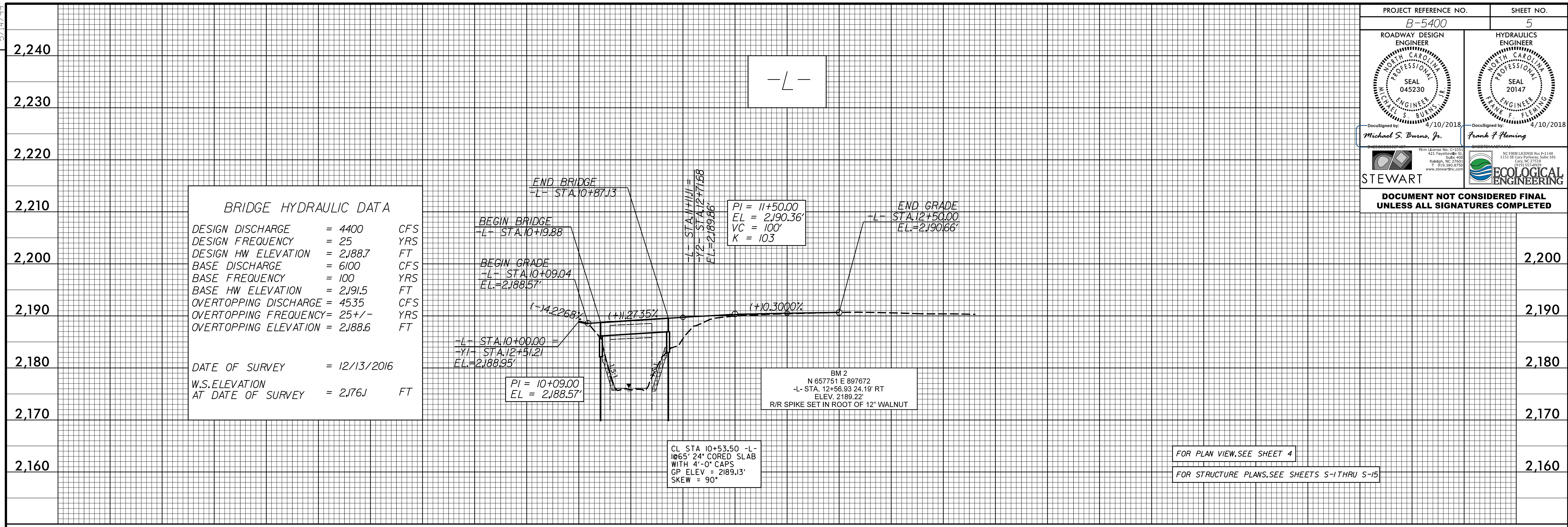
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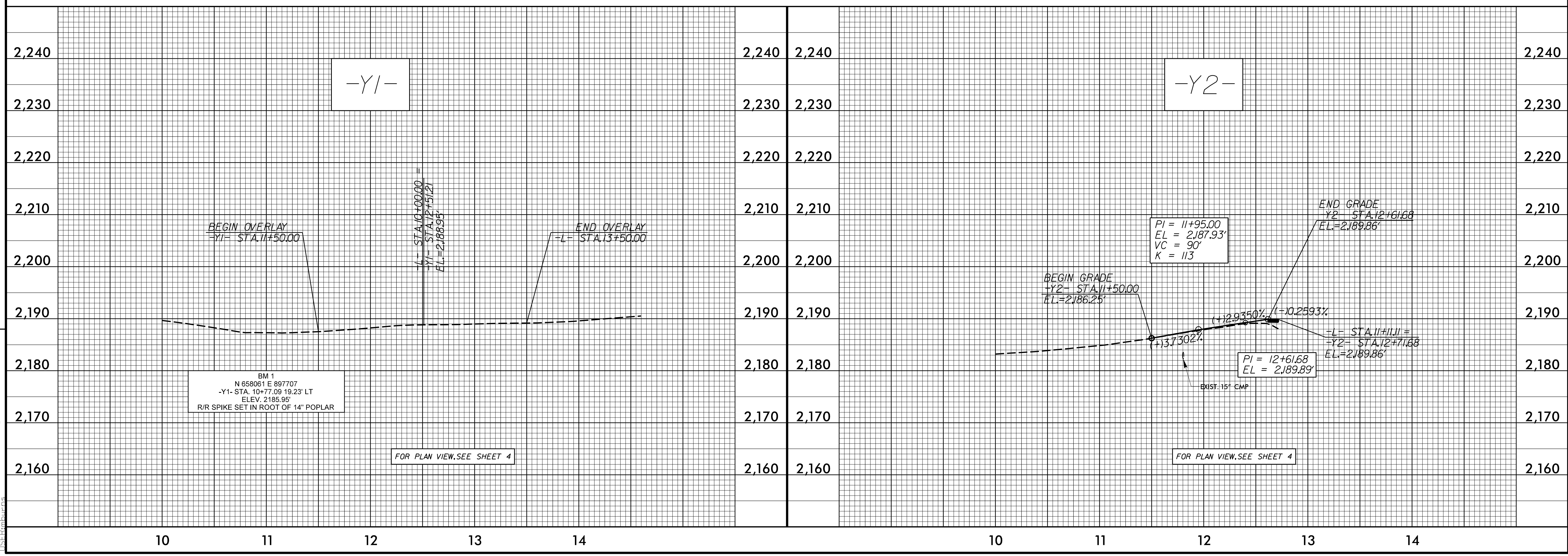
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JTB

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PROJECT REFERENCE NO. B-5400	SHEET NO. 5
ROADWAY DESIGN ENGINEER MICHAEL S. BURNS, JR. SEAL 045230 NORTH CAROLINA PROFESSIONAL ENGINEERS	HYDRAULICS ENGINEER FRANK F. FLEMING SEAL 20147 NORTH CAROLINA PROFESSIONAL ENGINEERS
DocuSigned by: Michael S. Burns, Jr. 4/10/2018	DocuSigned by: Frank F. Fleming 4/10/2018
STEWART	ECOLOGICAL ENGINEERING
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