

09/05/19

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

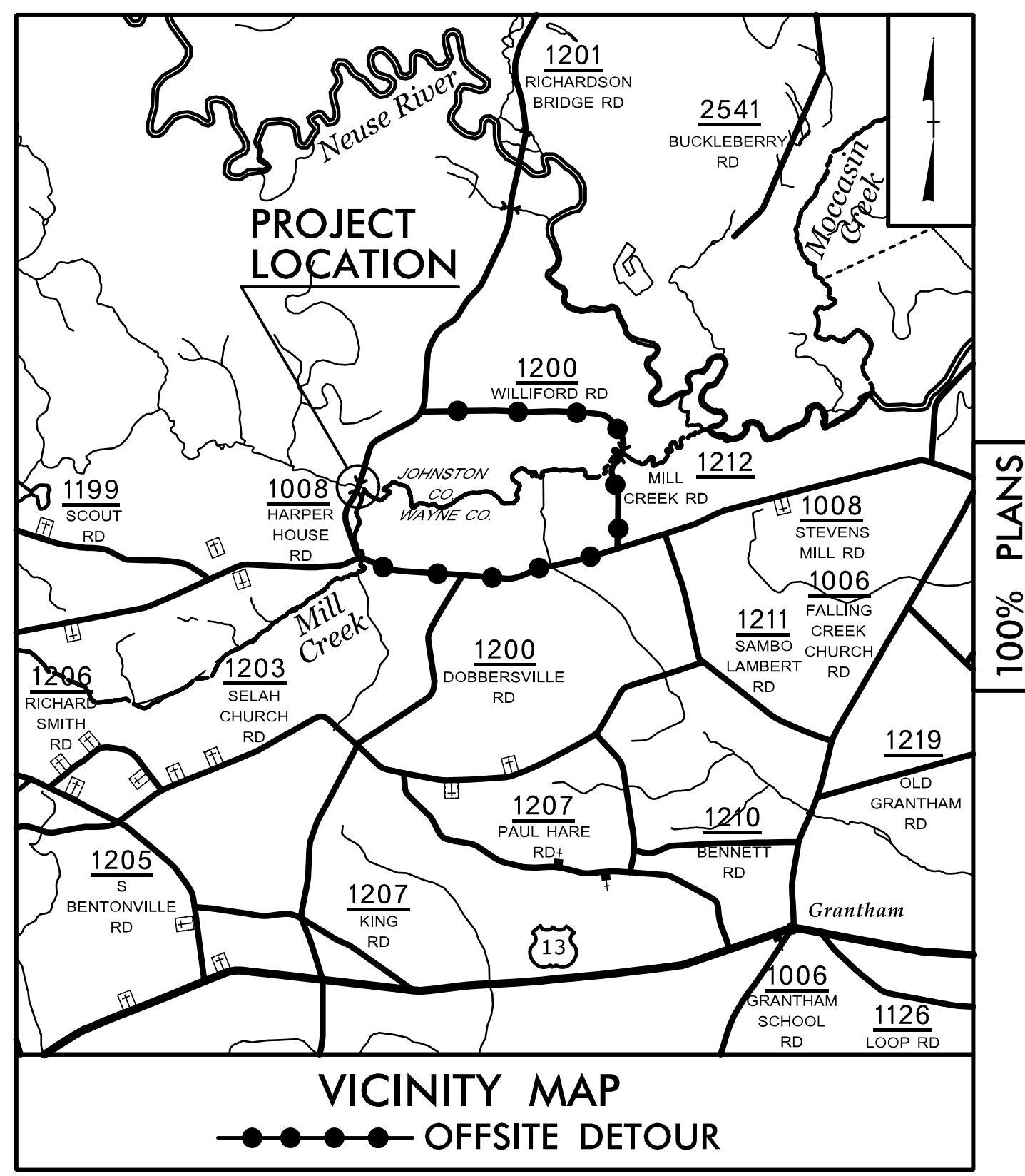
**LOCATION: REPLACE BRIDGE #11 OVER MILL CREEK
ON SR 1201 (RICHARDSON BRIDGE RD.)**

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE AND PAVING

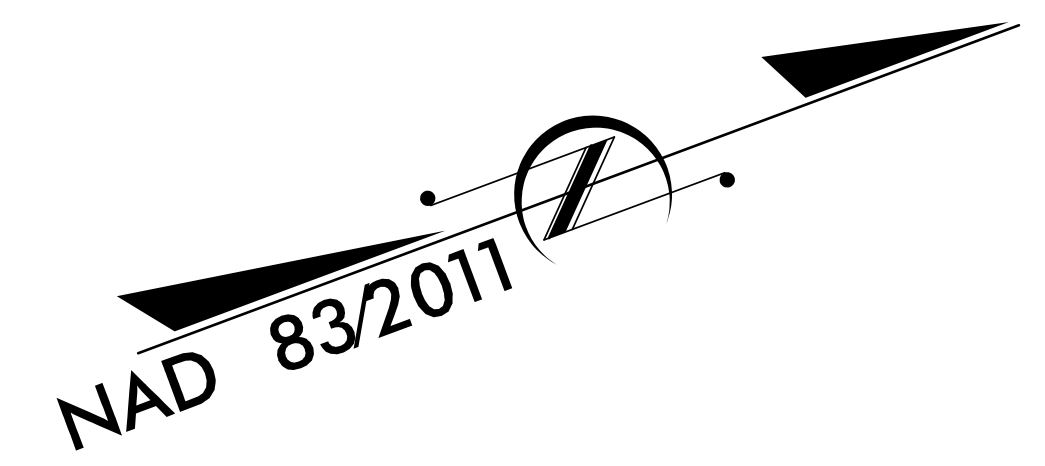
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4771	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38543.1.1	BRZ-1200(6)	PE	
38543.2.1		RW, UTL.	
38543.3.1		CONST.	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: B-4771



100% PLANS



CONTRACT: C203903

TO HARPER HOUSE RD.
(SR 1008)

BEGIN BRIDGE
-L- POT STA. 15 + 93.25

END BRIDGE
-L- POT STA. 17 + 70.75

4

-L- SR 1201

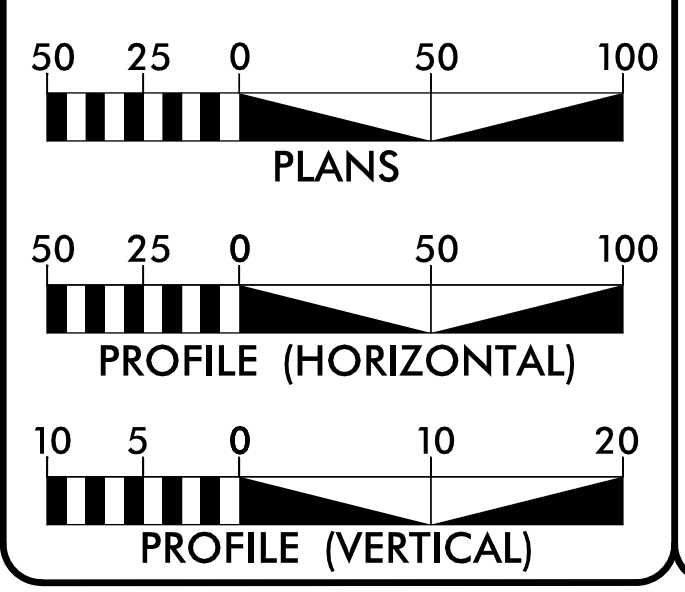
RICHARDSON BRIDGE RD.

TO WILLIFORD RD (SR 1200)

-L- POC STA. 14 + 00.00
BEGIN TIP PROJECT B-4771

-L- POC STA. 19 + 25.00
END TIP PROJECT B-4771

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 441
ADT 2037 = 618
K = 11 %
D = 55 %
T = 13 % *
V = 60 MPH
* (TTST 4% + DUAL 9%)
FUNCT CLASS = MINOR COLLECTOR
SUB-REGIONAL TIER DESIGN

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4771 = 0.065 mile
LENGTH STRUCTURES TIP PROJECT B-4771 = 0.034 mile
TOTAL LENGTH TIP PROJECT B-4771 = 0.099 mile

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

TGS ENGINEERS
706 HILLSBOROUGH ST SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 26, 2016

LETTING DATE:
MAY 16, 2017

BURKE EVANS, PE
PROJECT ENGINEER

TRAVIS COOK, EI
PROJECT DESIGN ENGINEER

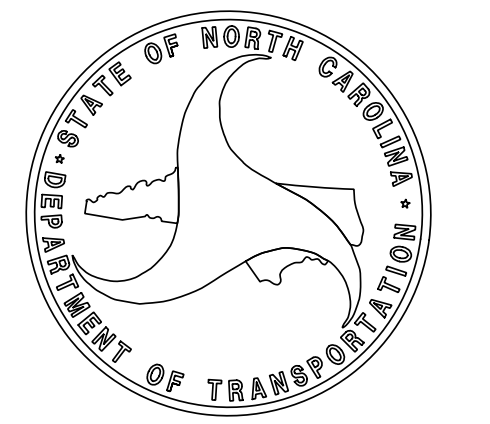
GARY LOVERING, PE
PROJECT ENGINEER
NCDOT ROADWAY DESIGN

HYDRAULICS ENGINEER

DocuSigned by:
David Petty
3/16/2017
SEAL 038697
DAVID B. PETTY
P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by:
David Burke Evans
3/16/2017
SEAL 019724
DAVID BURKE EVANS
P.E.



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	_____ X
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	_____
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	_____

EXISTING STRUCTURES:

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

UTILITIES:

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.	_____
A/G Tank; Water, Gas, Oil	_____
Geoenvironmental Boring	_____
U/G Test Hole LOS A (S.U.E.*)	_____
Abandoned According to Utility Records	_____
End of Information	_____

SURVEY CONTROL SHEET B-4771

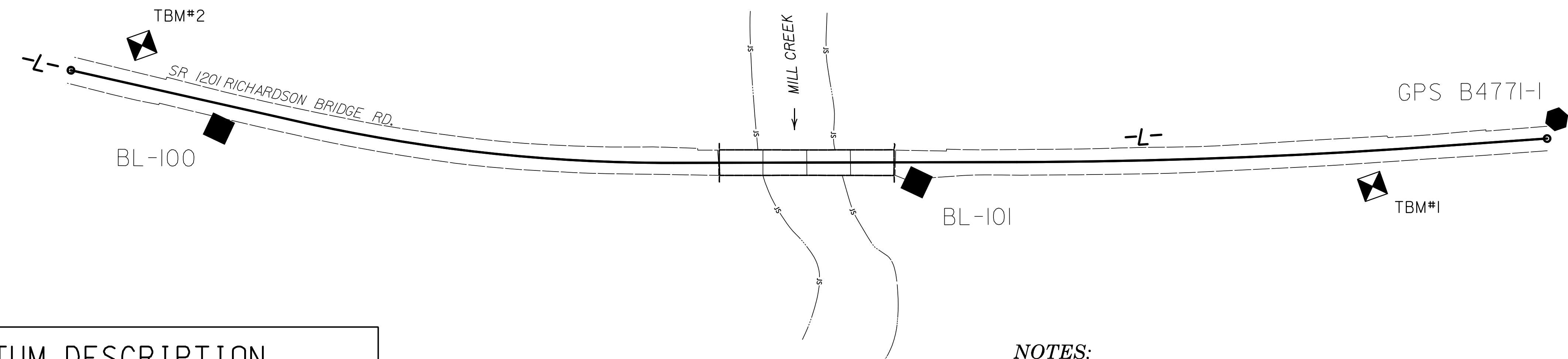
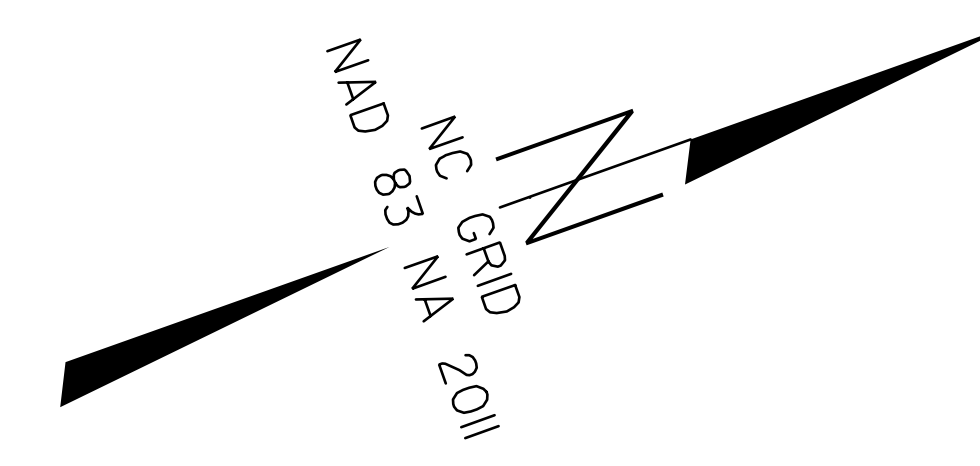
BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	100	BL-100	579792.6310	2233523.1700	86.42	11+44.26	22.27 RT
	101	BL-101	580378.1700	2233783.9630	86.59	17+82.92	18.27 RT
	1	GPS B4771-1	580950.1250	2233926.5940	84.31	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

TBM1 ELEVATION = 87.04'
 N 580771 E 2233928
 L STATION 21+99.18 33' RIGHT
 RR SPIKE IN POWER POLE

TBM2 ELEVATION = 82.62
 N 579752 E 2233428
 L STATION 10+58.84 36' LEFT
 RR SPIKE IN POWER POLE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B4771-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 580950.125(ft) EASTING: 2233926.594(ft) ELEVATION: 84.31(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987525 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4771-1" TO -L- STATION 10+00 IS S 21°30'13.53"W 1362.33 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:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4771_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

6/2/09
 I:\0\2017
 x:\ncdot\ab-4771\roadway\proj\b4771_1s_1c1.dgn
 15:18:16

SURVEY CONTROL SHEET B-4771

FINAL

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+60.32	45.00	580159.39909	2233734.92206
L	15+60.32	30.00	580164.40152	2233720.78078
L	15+60.32	-45.00	580189.41368	2233650.07440
L	15+60.32	-30.00	580184.41125	2233664.21568
L	18+00.00	30.00	580390.36055	2233800.71309
L	18+00.00	45.00	580385.35812	2233814.85436
L	18+00.00	-30.00	580410.37028	2233744.14799
L	18+00.00	-45.00	580415.37271	2233730.00671

		L	
TYPE	STATION	NORTH	EAST
POT	10+00.00	579682.6290	2233427.2180
PC	12+12.95	579862.5815	2233541.0748
PT	15+60.32	580174.4064	2233692.4982
PC	18+74.70	580470.7890	2233797.3427
PT	22+50.03	580828.6275	2233910.3479
POT	23+61.36	580935.8675	2233940.2315

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+75.00	45.00	580077.47984	2233703.37709
L	14+75.00	30.00	580083.24622	2233689.53381
L	19+00.00	45.00	580479.84817	2233848.21770
L	19+00.00	30.00	580484.78525	2233834.05347

DATUM DESCRIPTION

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THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987525

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B4771-1" TO -L- STATION 10+00 IS
S 21°30'13.53"W 1362.33

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

NOTES:

1. 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:
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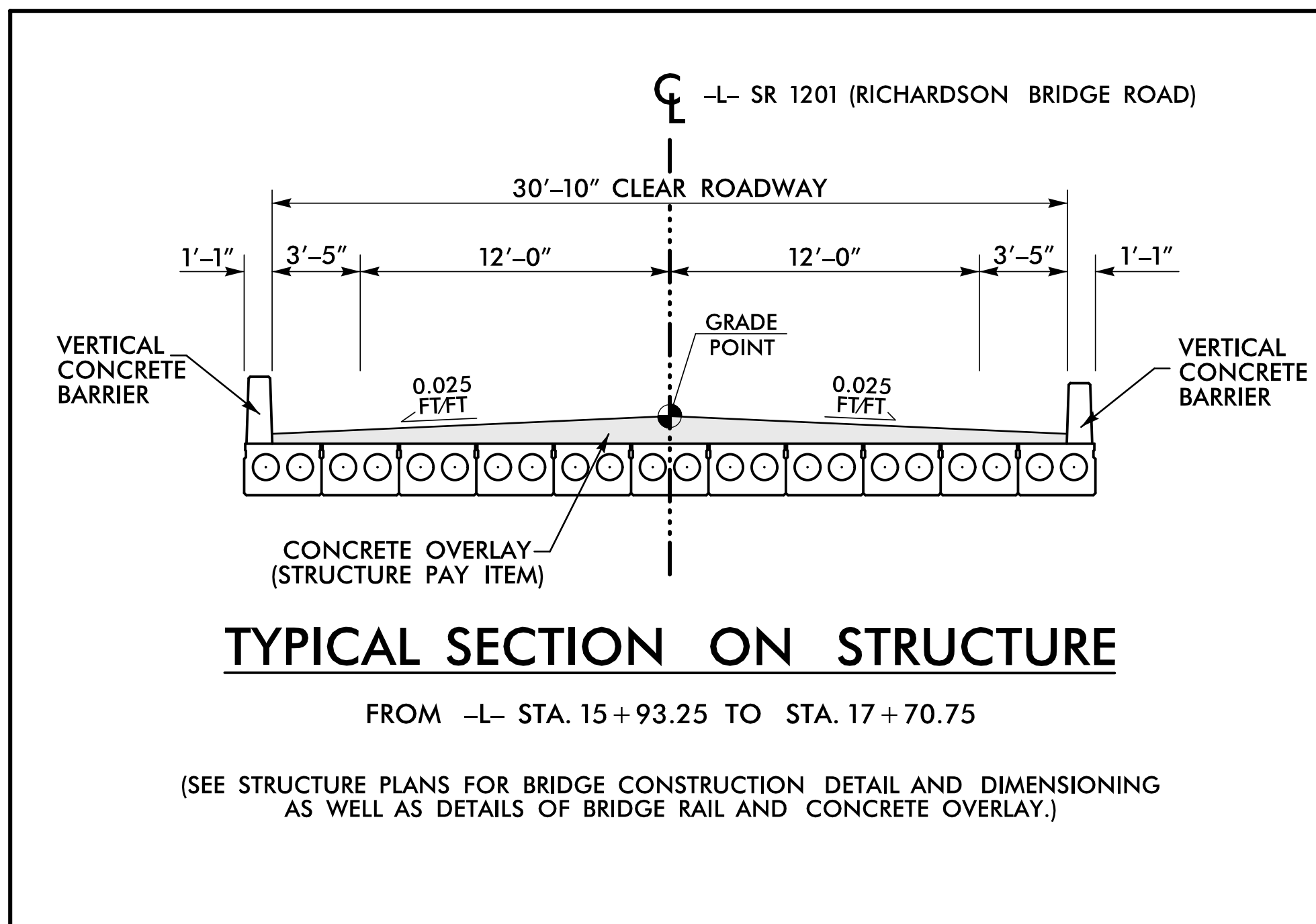
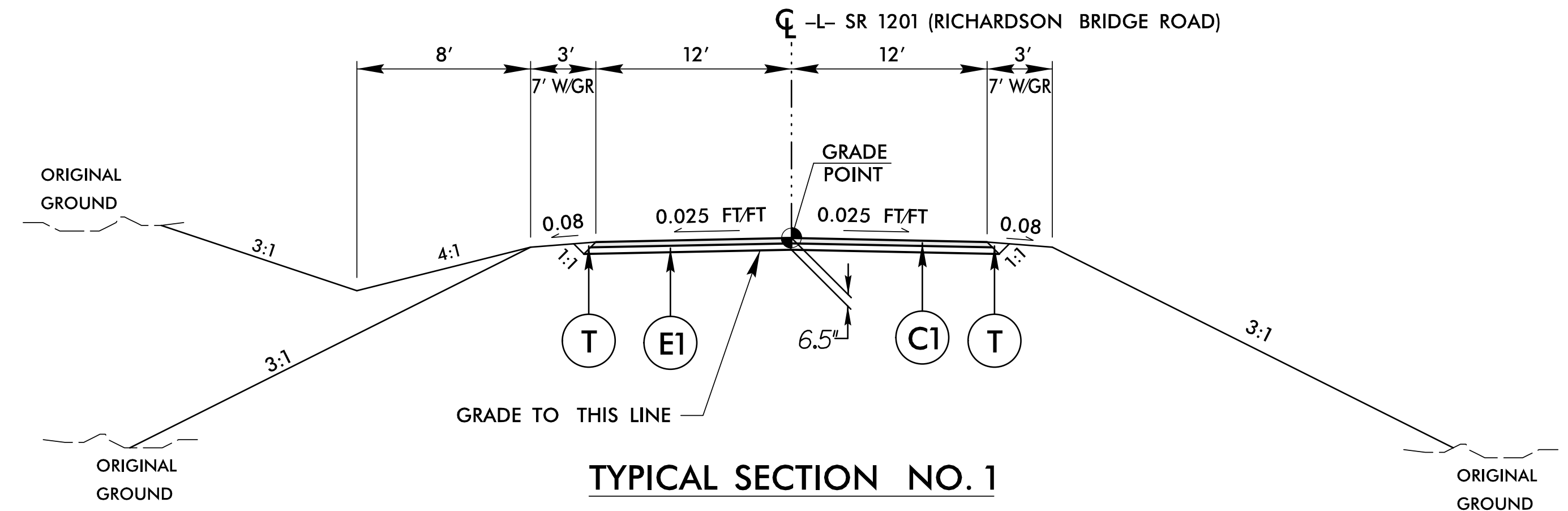
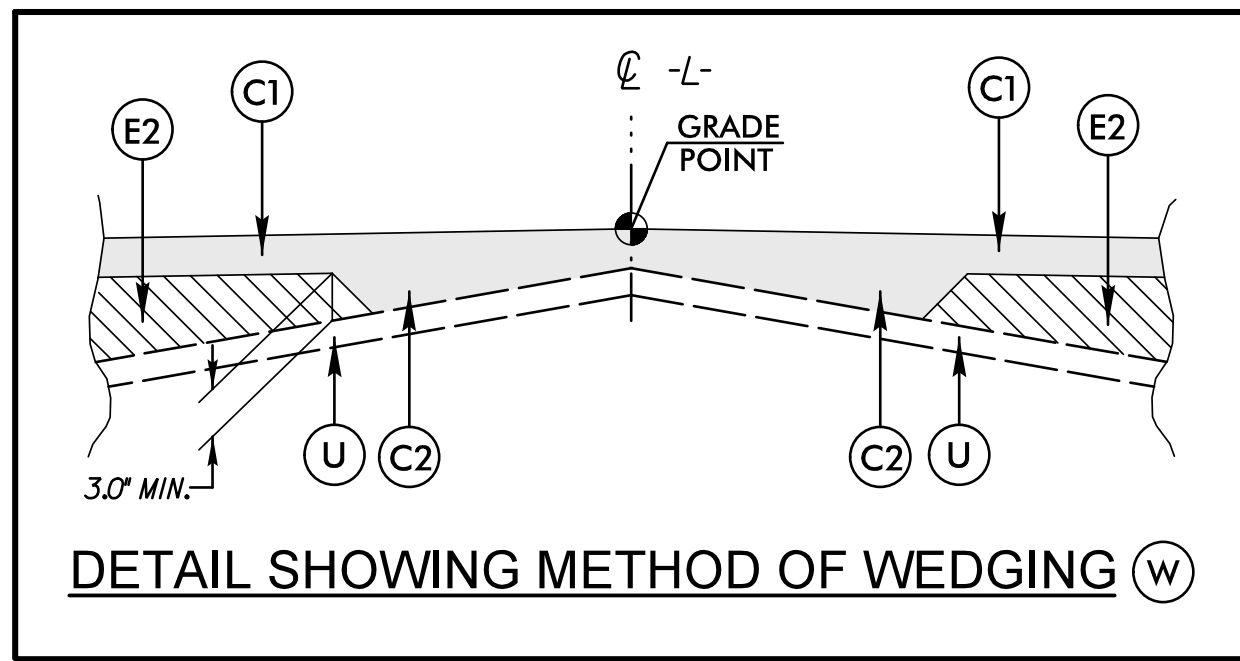
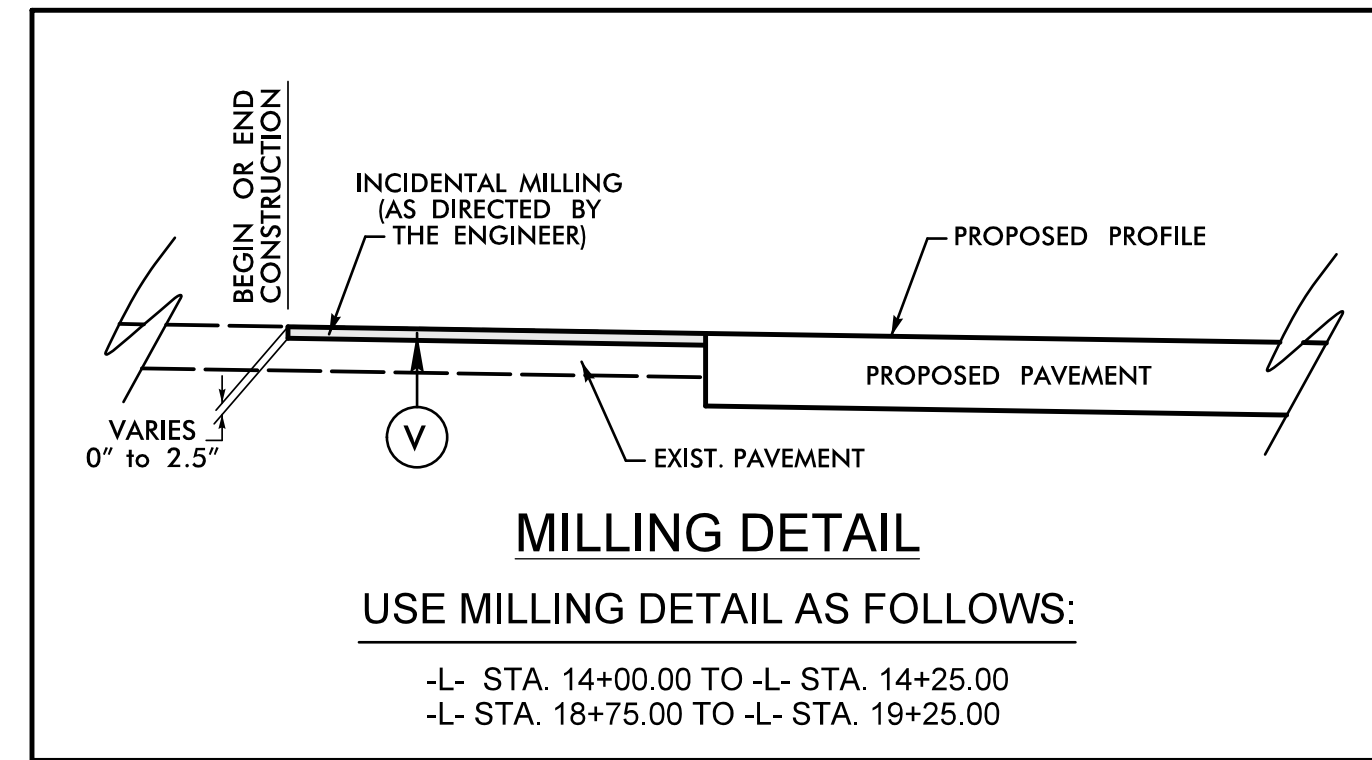
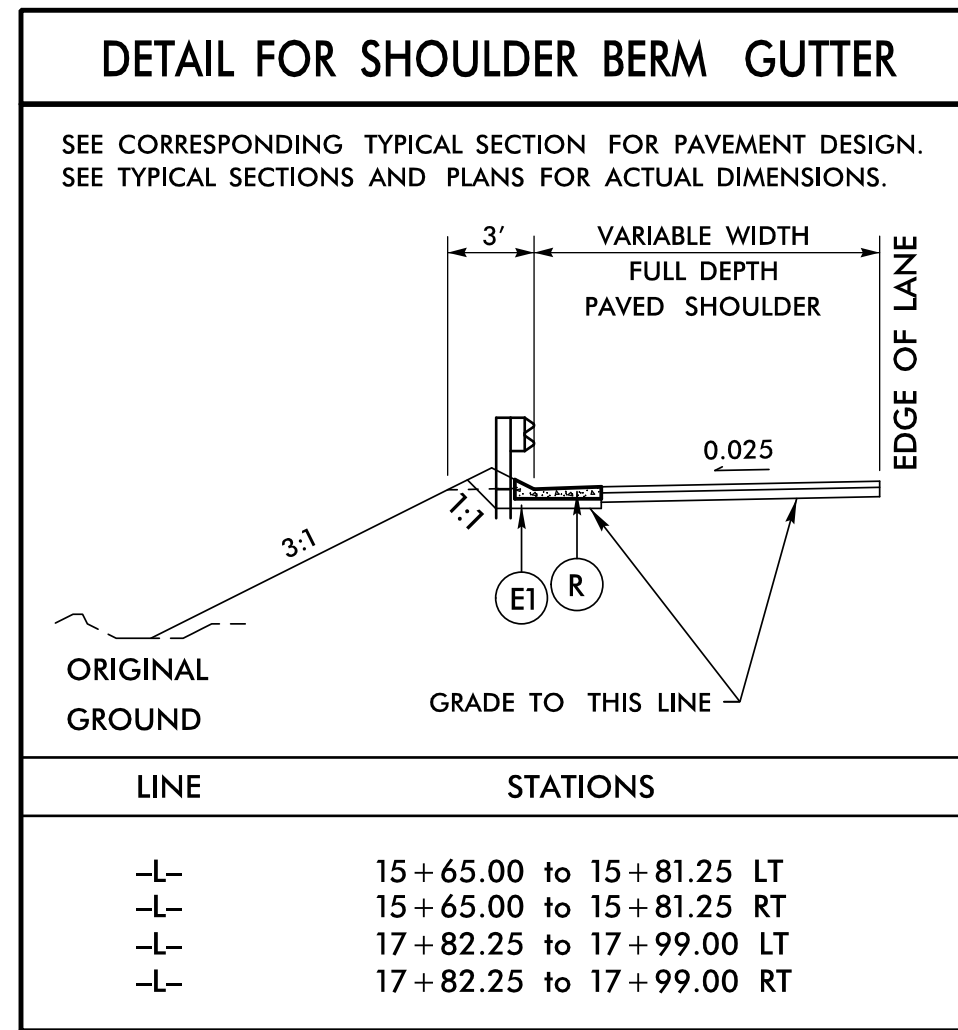
● INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO. B-4771	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
 TGS ENGINEERS 706 HILLSBOROUGH ST., SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PAVEMENT SCHEDULE	
FINAL PAVEMENT DESIGN: OCTOBER 2, 2015	
C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS PER SQUARE YARD IN EACH OF TWO LAYERS.
C2	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.0" OR GREATER THAN 1.5" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS PER SQUARE YARD.
E2	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3.0" OR GREATER THAN 5.5" IN DEPTH.
R	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	AS NEEDED
W	WEDGING (VARIABLE DEPTH ASPHALT PAVEMENT, SEE DETAIL ON THIS SHEET)

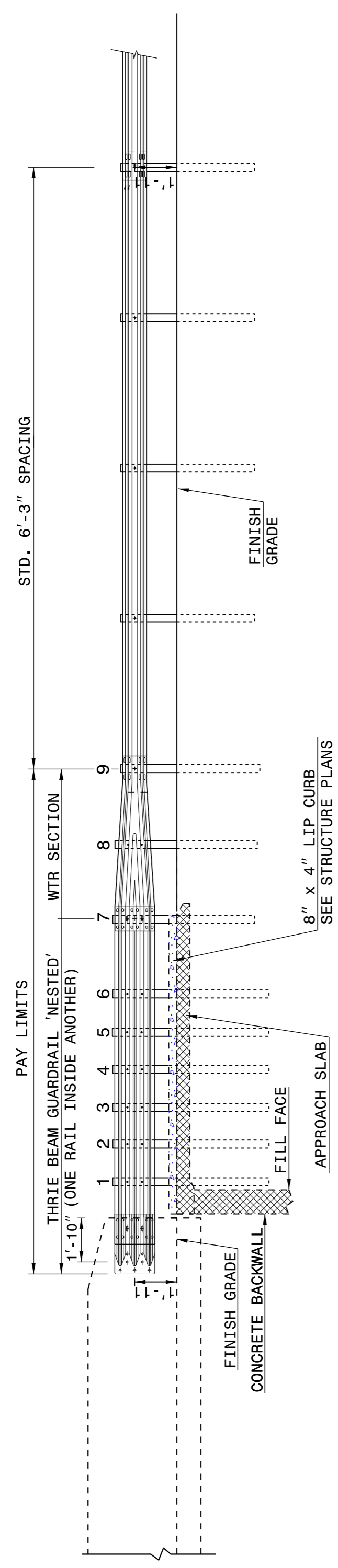
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



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

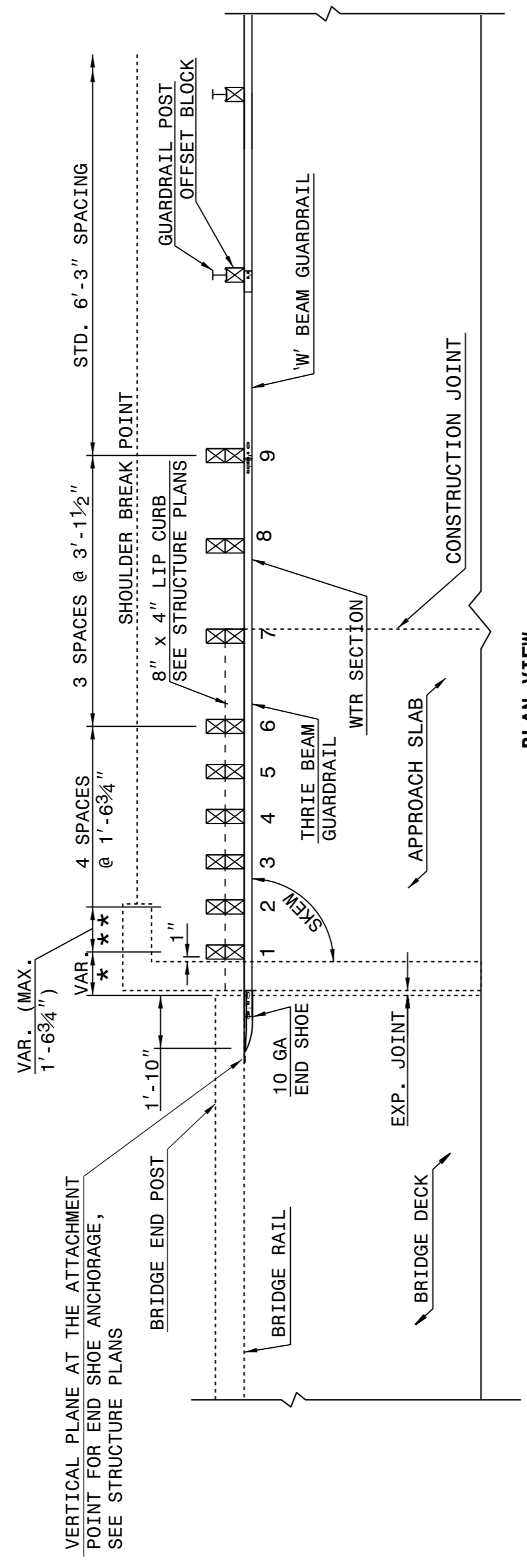
ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 862d03



ELEVATION

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 11 1/2". 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.



PLAN VIEW

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

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

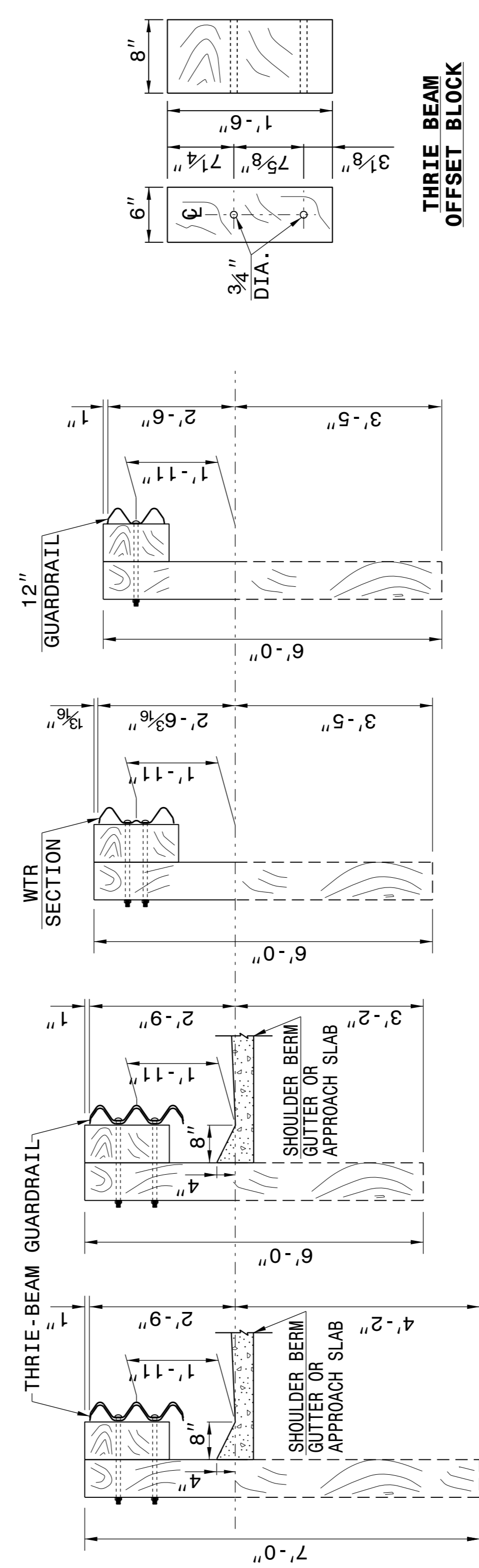
ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7 862d03

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

ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7 862d03

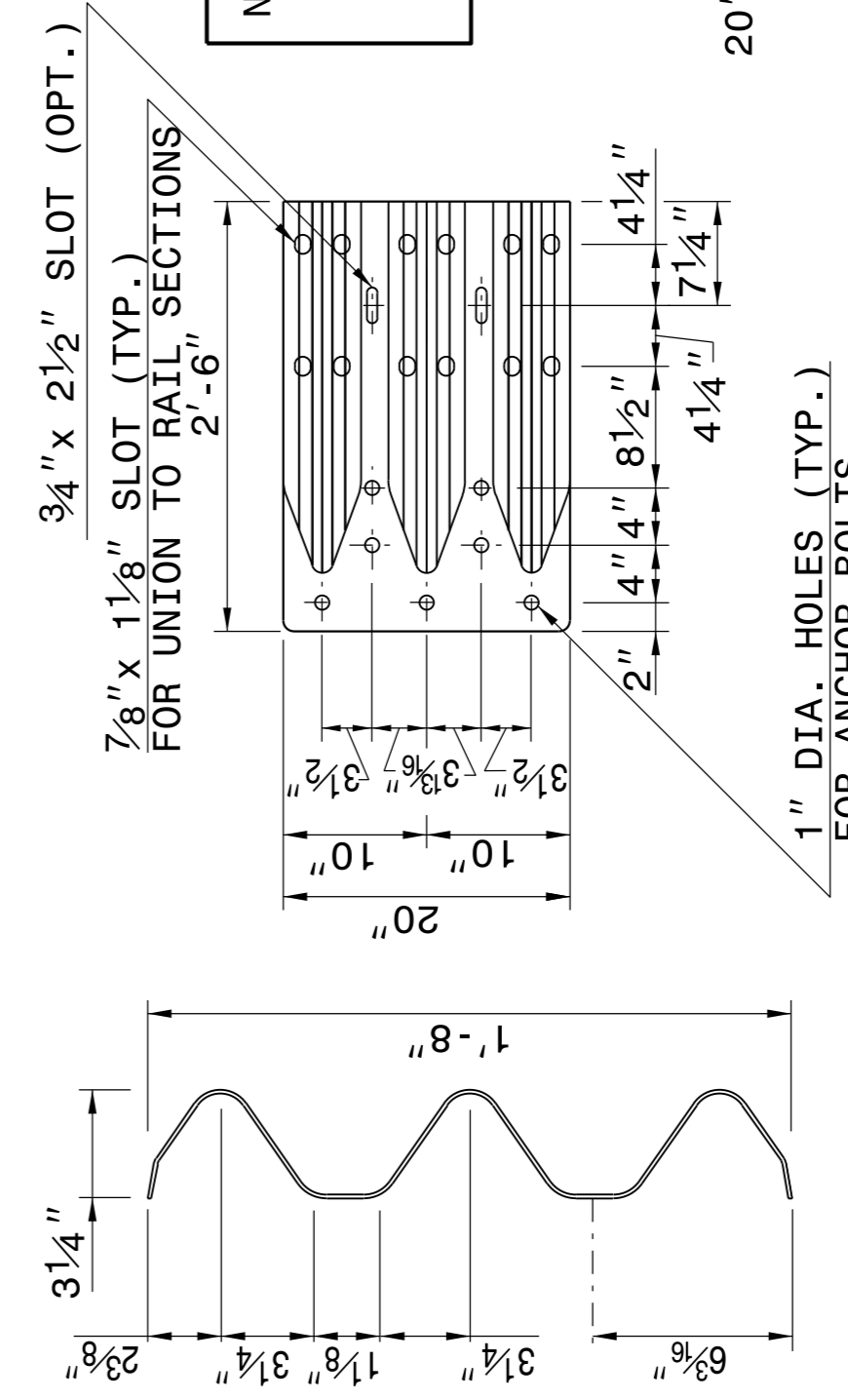


SECTION OF WTR BEAM POST 9

SECTION OF WTR BEAM POST 8

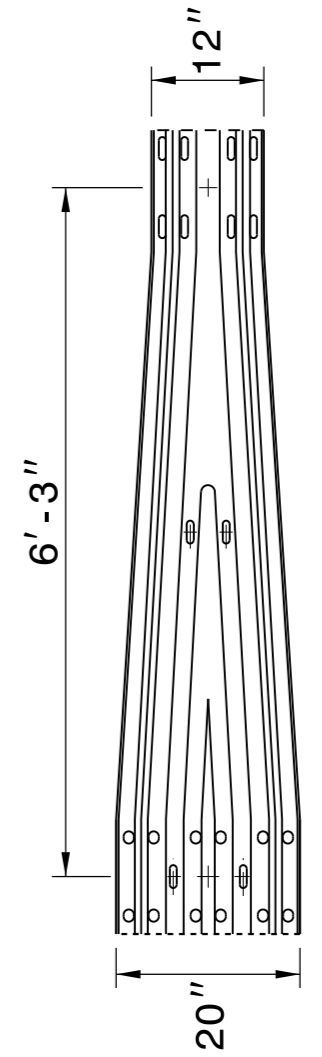
SECTION OF THRIE BEAM POST 7

SECTION OF THRIE BEAM POSTS 1 THRU 6



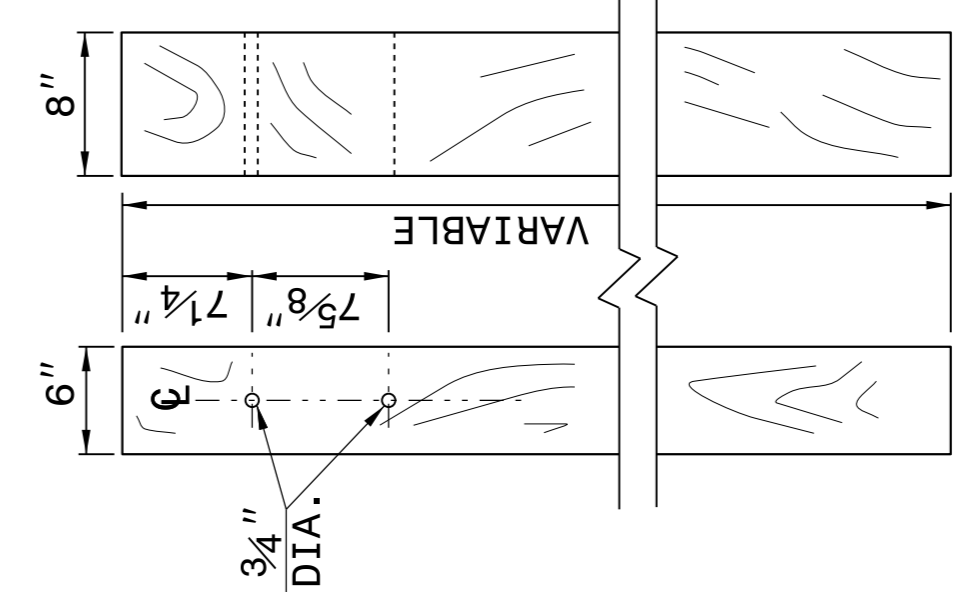
THRIE-BEAM SECTION

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION ELEVATION VIEW

THRIE BEAM OFFSET BLOCK



THRIE BEAM LINE POST

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

ENGLISH DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7 862d03

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



DocuSigned by: Joel Howerton 878F3D1VDC04SE 3/16/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 06-22-12 MODIFIED BY: DATE: CHECKED BY: DATE: FILE SPEC.: DATE:

6/21/2020

COMPUTED BY: DBE DATE: 7/12/16
 CHECKED BY: ARM DATE: 7/12/16

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
 B-4771 3B-1

SUMMARY OF EARTHWORK
 IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- 14+25.00 TO 15+93.25 (BEGIN BRIDGE)	64		9		55
-L- 17+70.25 (END BRIDGE) TO 19+25.00	22		86	64	
SUBTOTAL	86		95	64	55
WASTE TO REPLACE BORROW				-55	-55
PROJECT TOTAL	86		95	9	0
GRAND TOTAL	86			9	
SAY	90			10	

PAVEMENT REMOVAL SUMMARY
 IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SY
-L-	14+25	16+01.59 (EX. BRIDGE)	CL	477
-L-	17+63.22 (EX. BRIDGE)	18+75	CL	299
TOTAL:				776
SAY:				800

APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

ESTIMATED UNDERCUT = 200 CY (CONTINGENCY, AS DIRECTED BY THE ENGINEER)
 SELECT GRANULAR MATERIAL = 200 CY

SUMMARY OF SHOULDER BERM GUTTER
 IN LINEAR FEET

STATION TO STATION	LOCATION	LF
-L- STA. 15+65.00 to 15+81.25	LT	16.25
-L- STA. 15+65.00 to 15+81.25	RT	16.25
-L- STA. 17+82.25 to 17+99.00	LT	16.75
-L- STA. 17+82.25 to 17+99.00	RT	16.75
TOTAL		66
SAY		70

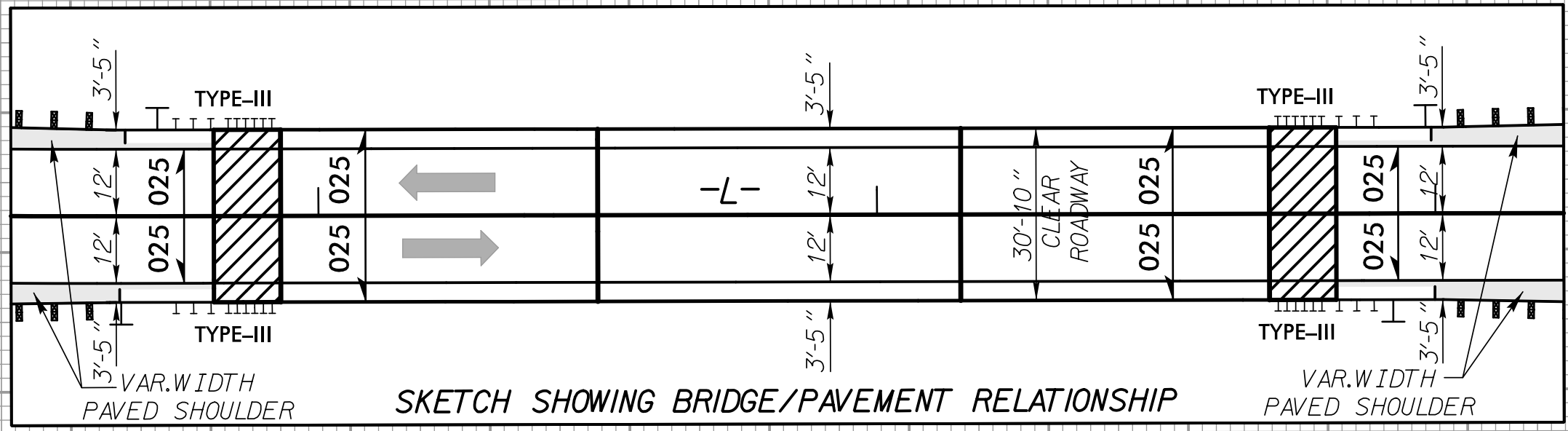
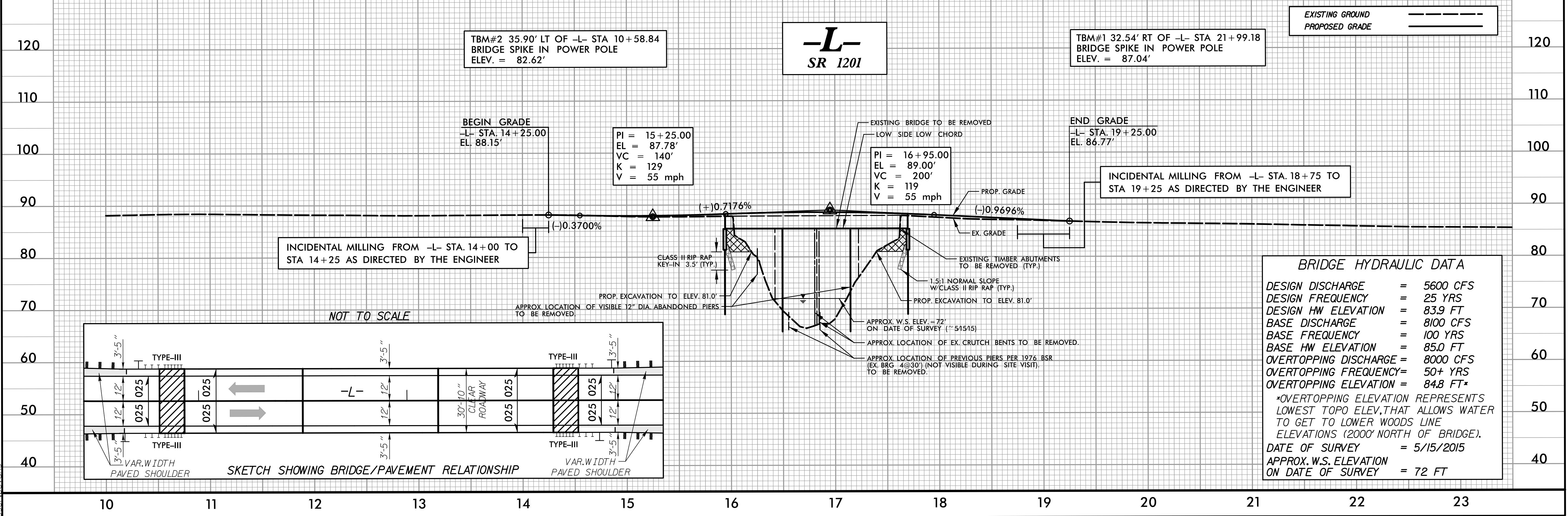
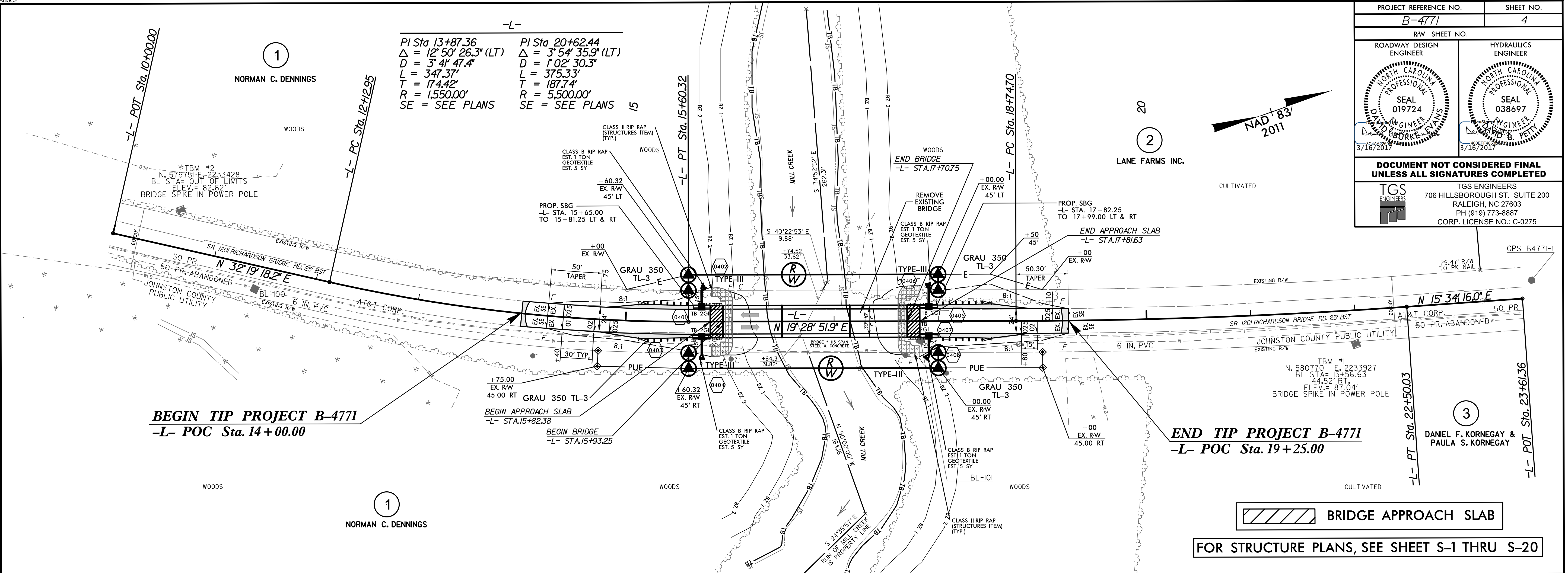
GUARDRAIL SUMMARY

"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.
 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			REMOVE EXISTING GUARDRAIL (LF)	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE III	GRAU 350 (TL-3)	EA	G	NG					
-L-	15+12.00	15+93.25	LT	81.25'				15+93.25	VAR.	VAR.	50'		1'				1							
-L-	15+12.00	15+93.25	RT	81.25'			15+93.25		VAR.	VAR.	50'		1'				1							
-L-	15+52.00	16+02.00	RT																			50		
-L-	17+70.25	18+51.50	LT	81.25'			17+70.25		VAR.	VAR.	50'		1'				1							
-L-	17+70.25	18+51.50	RT	81.25'			17+70.25		VAR.	VAR.	50'		1'				1							
SUBTOTAL (LF)				325'													4							
LESS ANCHORS (LF)				275'													18.75'							
TOTAL (LF)				50'													75'							50
SAY (LF)				50'													200'							50
ADDITIONAL GUARDRAIL POSTS: SAY 5 EA											TOTAL ANCHORS (EA)		ANCHOR UNIT LENGTH (LF)		DEDUCTION PER TYPE (LF)		TOTAL DEDUCTION (LF)							
																	275'							

PROJECT REFERENCE NO. B-4771	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 706 HILLSBOROUGH ST., SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275	



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