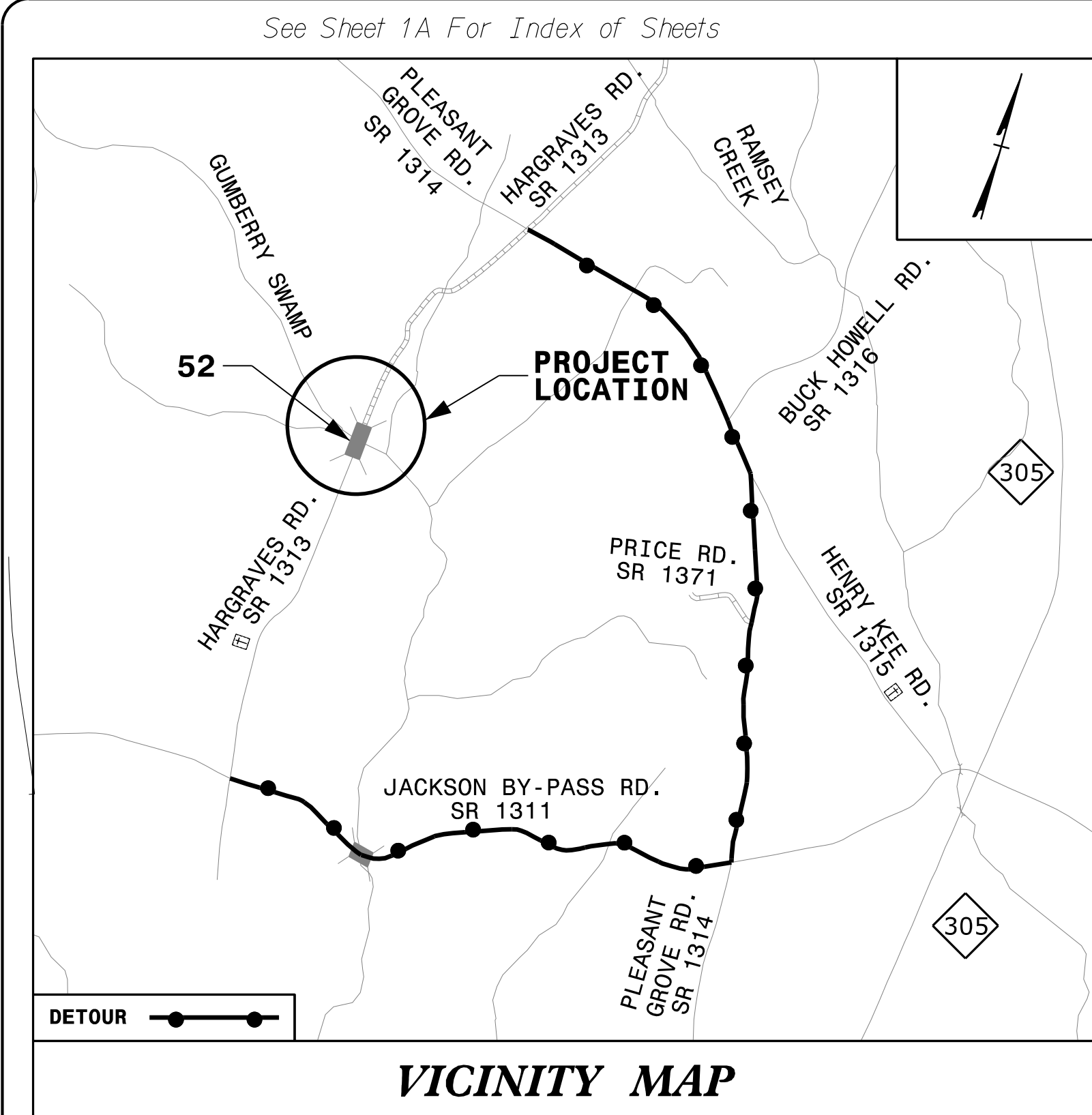


**TIP PROJECT: BR-0117**

**CONTRACT: C204529**

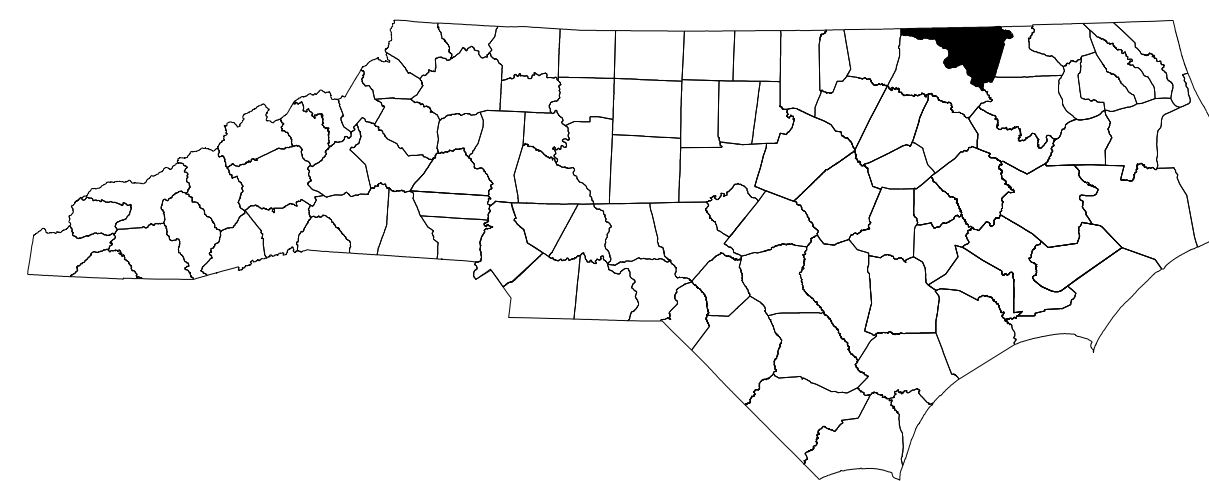


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

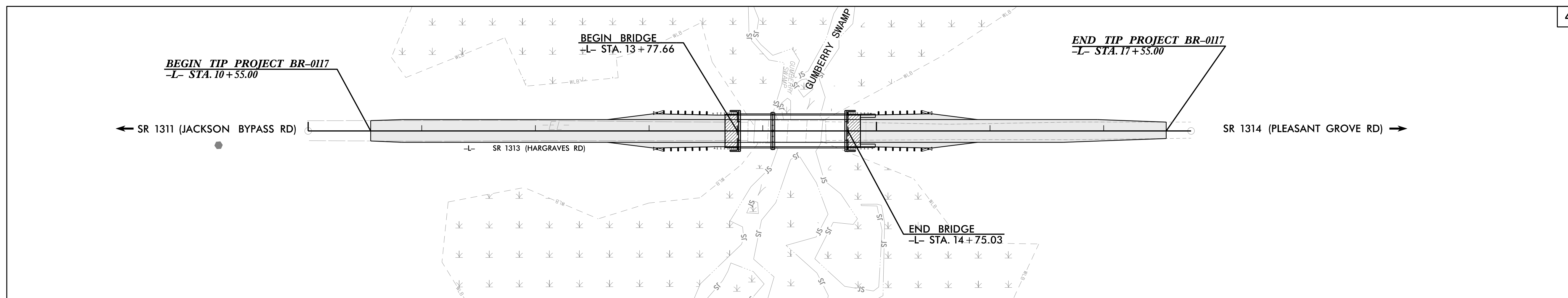
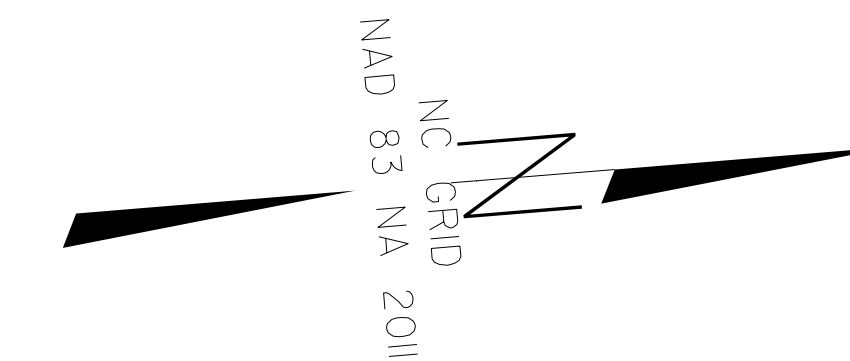
**NORTHAMPTON COUNTY**

**LOCATION: BRIDGE 650052 ON SR 1313 (HARGRAVES RD)  
OVER GUMBERRY SWAMP**

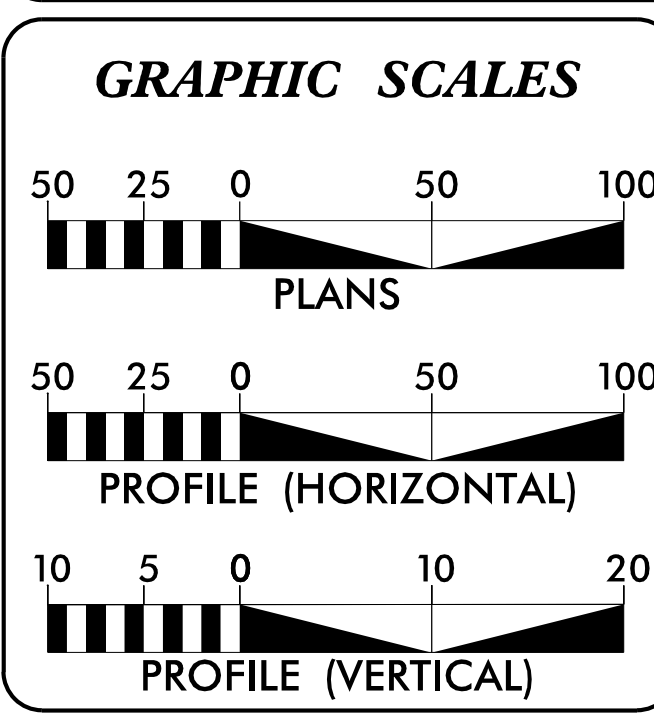
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE**



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0117	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
48826.1.1		PE	
48826.2.1		RW, UTILITIES	
48826.3.1	2020001	CONSTRUCTION	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2020 =	70
ADT 2040 =	170
T =	6 % *
V =	55 MPH
* TTST =	3% DUAL 3%
FUNC CLASS =	LOCAL RURAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT BR-0117	=	0.115 MILES
LENGTH STRUCTURES TIP PROJECT BR-0117	=	0.018 MILES
TOTAL LENGTH TIP PROJECT BR-0117	=	0.133 MILES

**NCDOT CONTACT:** DAVID STUTTS, PE  
SMU PROJECT MANAGER

**KCA**  
KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506  
301 Fayetteville St., Suite 1500  
Raleigh, NC 27601  
(919) 882-7839

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:** DECEMBER 18, 2019

**LETTING DATE:** NOVEMBER 17, 2020

**JOHN P. MAZERES, PE**  
PROJECT ENGINEER

**ALLEN J. MCSWAIN**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

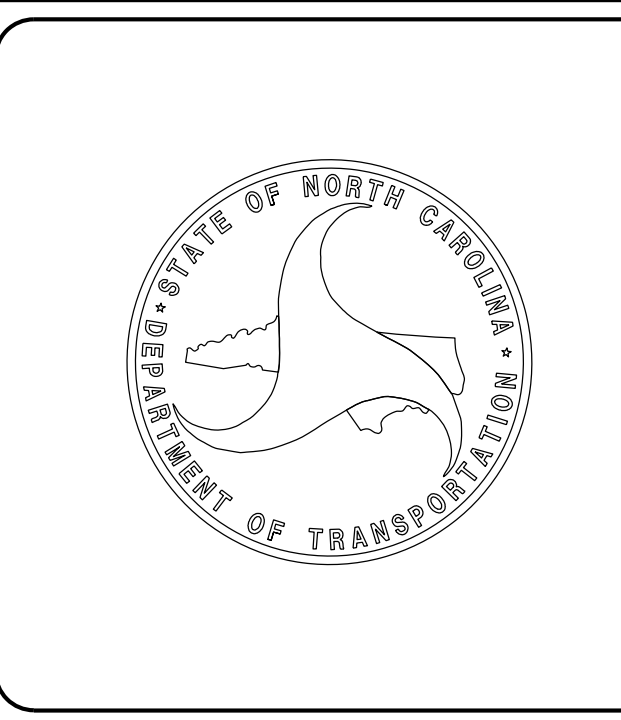
DocuSigned by: *Ali Tayebneid* 9/3/2020

**ALLEN J. MAZERES**  
P.E.

**ROADWAY DESIGN ENGINEER**

DocuSigned by: *John Mazer* 9/3/2020

**JOHN P. MAZERES**  
P.E.



8/17/19

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND ROADWAY TYPICAL SECTIONS
2A-2	PAVEMENT SCHEDULE AND STRUCTURE TYPICAL SECTIONS
2C-1 THRU 2C-2	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN AND PROFILE SHEET
4A	PLAN AND PROFILE SHEET - RW DETAIL SHEET
RW01 THRU RW04	RIGHT OF WAY TITLE, SURVEY CONTROL, PROPOSED ALIGNMENT, RIGHT OF WAY, AND PERMANENT EASEMENT CONTROL SHEETS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS-SECTIONS
S-1 THRU S-19	STRUCTURE PLANS

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

GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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 SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO 560.01.

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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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.

RIGHT-OF-WAY MARKERS:

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

PROJECT REFERENCE NO. <i>BR-0117</i>	SHEET NO. <i>1A</i>
ROADWAY DESIGN ENGINEER	
2/24/2020 Documented by <i>John P. Matzner</i>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PREPARED IN THE OFFICE OF: 	NC FIRM LICENSE No: C-1506 301 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919)882-7839

01-16-2018

2018 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, 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
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
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	METHOD OF PIPE INSTALLATION
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.02	BRIDGE APPROACH FILLS - TYPE II MODIFIED APPROACH FILL
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD I
<b>DIVISION 8 - INCIDENTALS</b>	
815.02	SUBSURFACE DRAINS
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES
840.25	ANCHORAGE FOR FRAMES
840.29	FRAMES AND NARROW SLOT FLAT GRATES
840.35	TRAFFIC BEARING GRATED DROP INLET
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURES
840.66	DRAINAGE STRUCTURE STEPS
846.01	CONCRETE CURB, GUTTER AND CURB AND GUTTER
846.04	DROP INLET INSTALLATION IN SHOULDER BERM GUTTER
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
862.03	STRUCTURE ANCHOR UNITS
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

19-FEB-2020 15:11 BR-0117\_Rdy\_psh\_gen\_notes.dgn ideborie

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

### 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	--- WLB ---
Proposed Lateral, Tail, Head Ditch	--- FLOW ---
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	○ R W
New Right of Way Line with Pin and Cap	○ R W ▲
New Right of Way Line with Concrete or Granite R/W Marker	▲ R W
New Control of Access Line with Concrete C/A Marker	△ C/A
Existing Control of Access	△ C/A
New Control of Access	△ C/A
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	--- 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	○ S
Storm Sewer	--- S ---

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
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	○ T
Telephone Pedestal	□ T
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	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	○
U/G Water Line LOS B (S.U.E.*)	--- W ---
U/G Water Line LOS C (S.U.E.*)	--- W ---
U/G Water Line LOS D (S.U.E.*)	--- W ---
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 ---

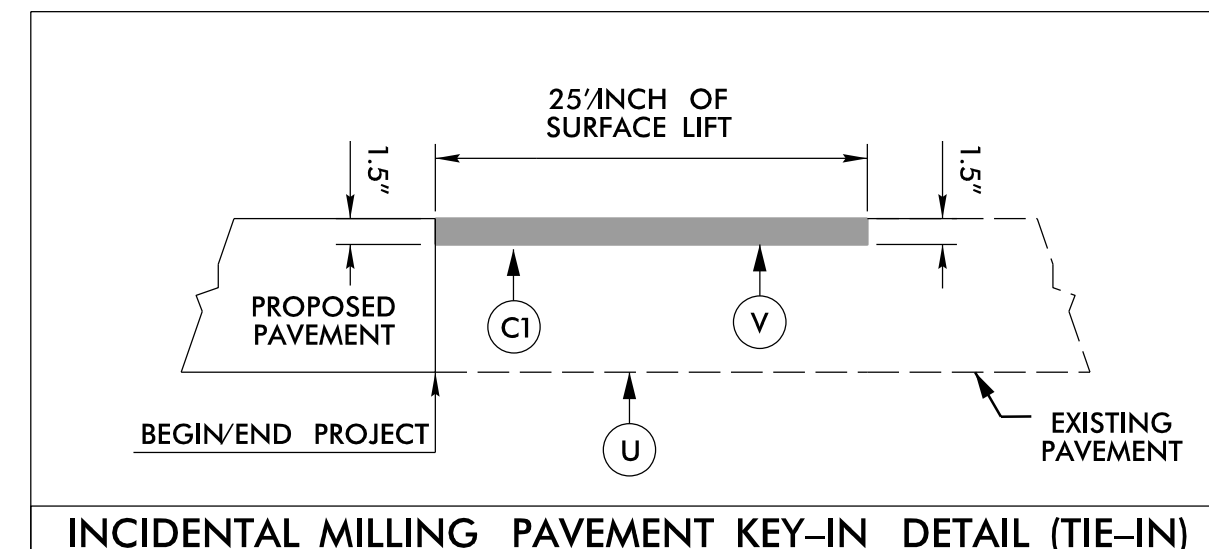
### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 7UTL ---
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	AATUR
End of Information	E.O.I.

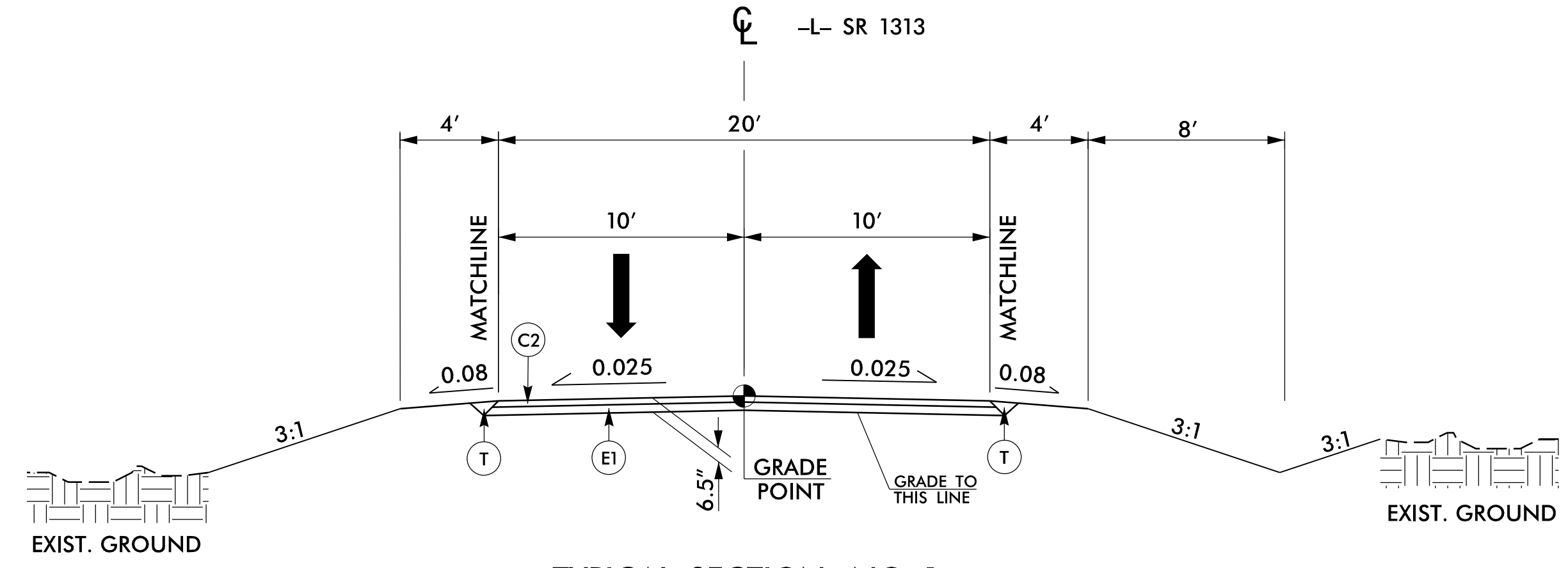
6/2/2019

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD. IN EACH OF THE TWO LAYERS.
C3	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110.0 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" OR TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING

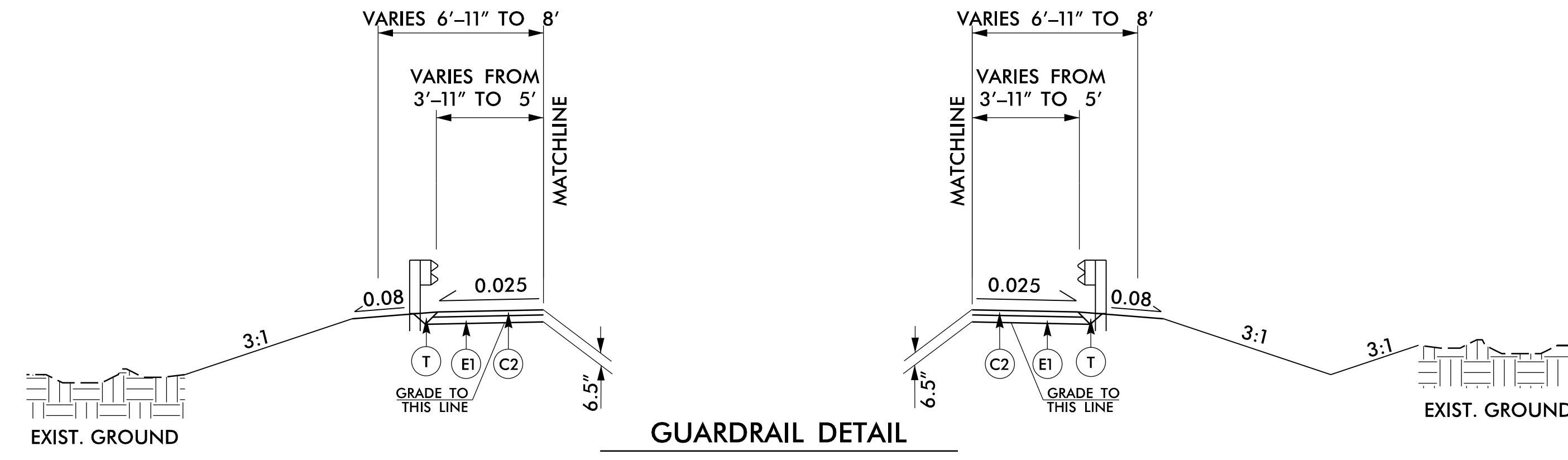
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE  
 NOTE: FINAL PAVEMENT DESIGN PER PAVEMENT DESIGN MEMO DATED 07/29/2019 FROM CLARK S. MORRISON, PhD, P.E.



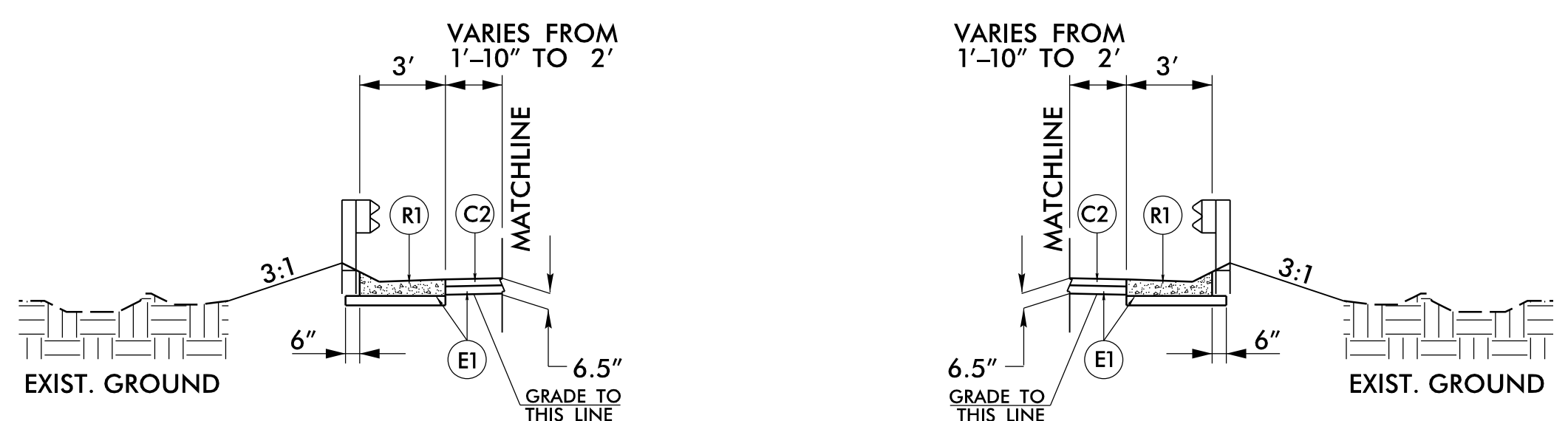
-L- STA. 10+17.50 TO STA. 10+55.00  
 STATION RANGES ARE APPROXIMATE ONLY.  
 GRADE AND MILLING LIMITS MAY BE ADJUSTED  
 BY THE ENGINEER TO ENSURE A PROPER TIE-IN.



**TYPICAL SECTION NO. 1**  
 -L- STA. 10+55.00 TO STA. 13+02.66  
 -L- STA. 15+48.90 TO STA. 17+55.00



**GUARDRAIL DETAIL**  
 TO BE USED WITH TYPICAL SECTION NO. 1  
 -L- STA. 13+02.66 TO STA. 13+77.66 (BEGIN BRIDGE)  
 -L- STA. 14+75.03 (END BRIDGE) TO STA. 15+48.90



**SHOULDER BERM GUTTER (SBG) DETAIL**  
 TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1  
 AND GUARDRAIL DETAIL  
 -L- STA. 14+85.91 TO -L- STA. 14+99.13 (LT)  
 -L- STA. 14+85.91 TO -L- STA. 14+99.03 (RT)

PROJECT REFERENCE NO. <i>BR-0117</i>	SHEET NO. <i>2A-1</i>
ROADWAY DESIGN ENGINEER <i>John P. Mayers</i>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
PREPARED IN THE OFFICE OF:	 NC FIRM LICENSE No: C-1506 501 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919)882-7839

2/24/2020

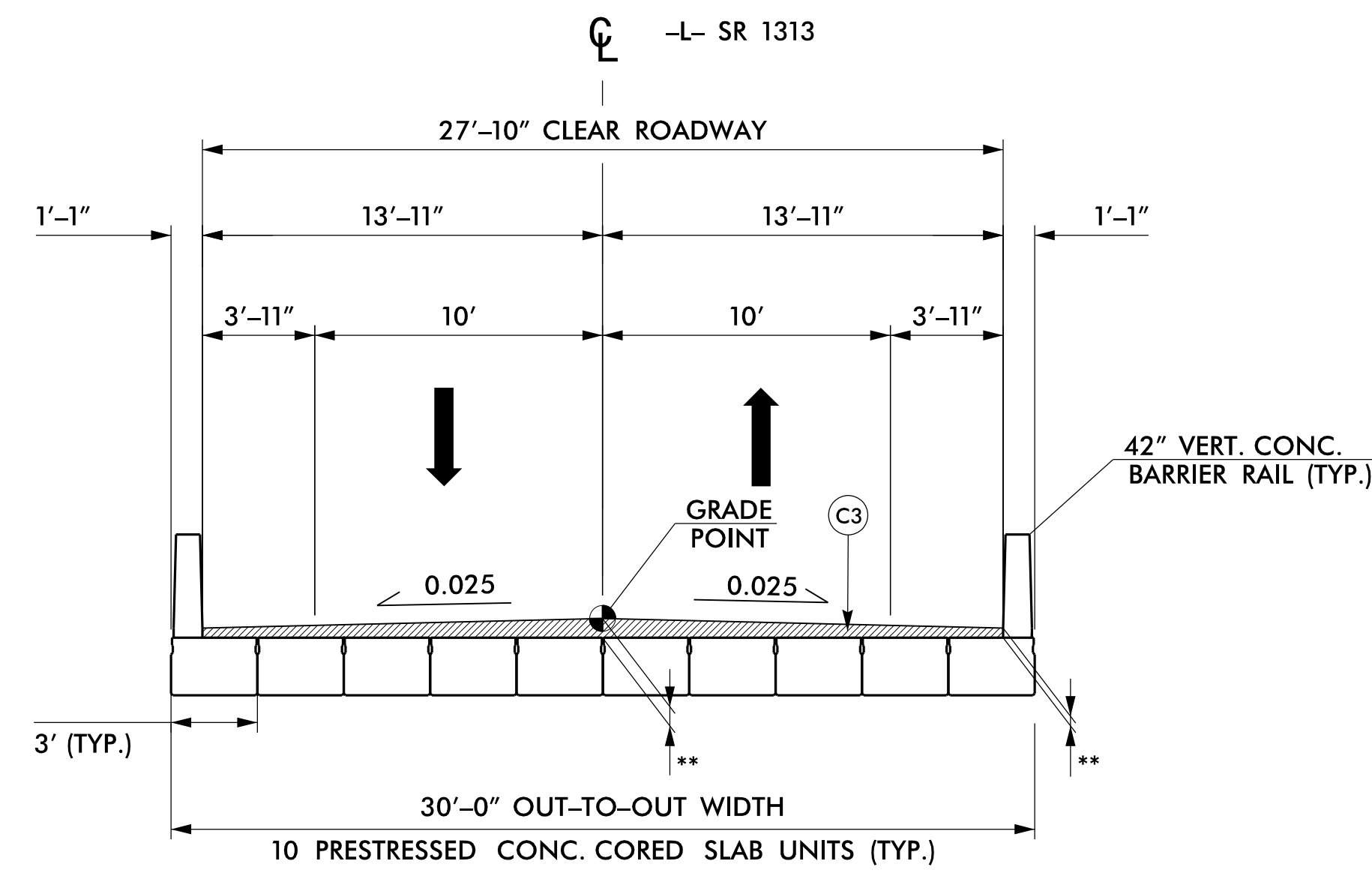
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 BR-0117-rdjt-tpkrdgn  
 idebbone

6/2/2019

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
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R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE  
 NOTE: FINAL PAVEMENT DESIGN PER PAVEMENT DESIGN MEMO DATED 07/29/2019 FROM CLARK S. MORRISON, PHD, P.E.

PROJECT REFERENCE NO. <i>BR-0117</i>	SHEET NO. <i>2A-2</i>
ROADWAY DESIGN ENGINEER	
2/24/2020 DocuSigned by: <i>John P. Magers</i>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PREPARED IN THE OFFICE OF:	 NC FIRM LICENSE No: C-1506 501 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919)882-7839



**TYPICAL SECTION NO. 2 ON STRUCTURE**  
 FOR BRIDGE OVER GUMBERRY SWAMP  
 -L- STA. 13+77.66 TO STA. 14+75.03  
 \*\* SEE STRUCTURE PLANS FOR PAVEMENT THICKNESS

24-FEB-2020 10:23  
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 idebbone

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

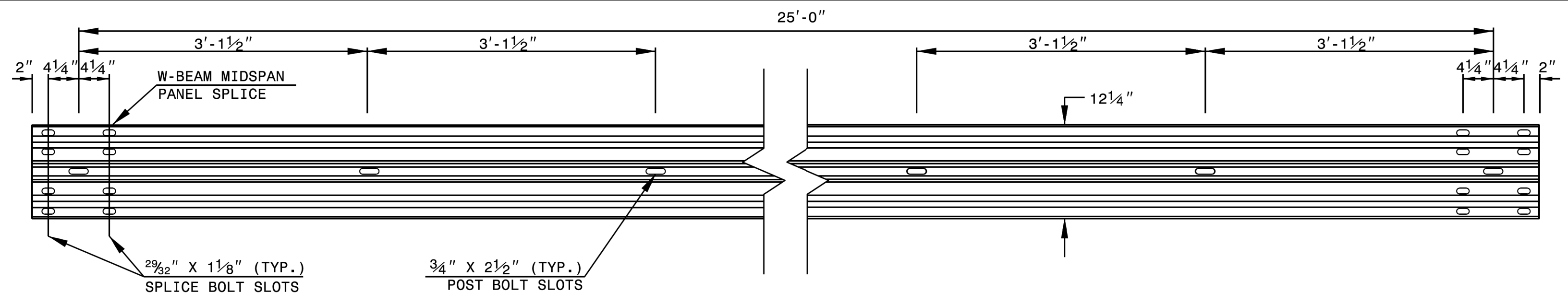
ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

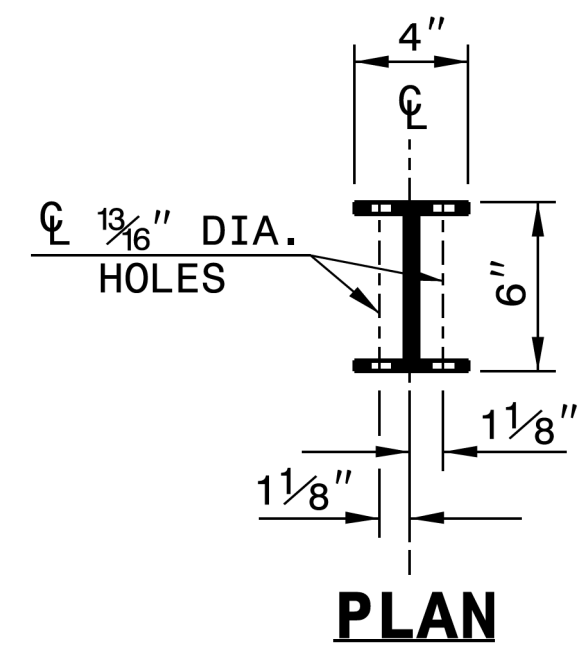
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

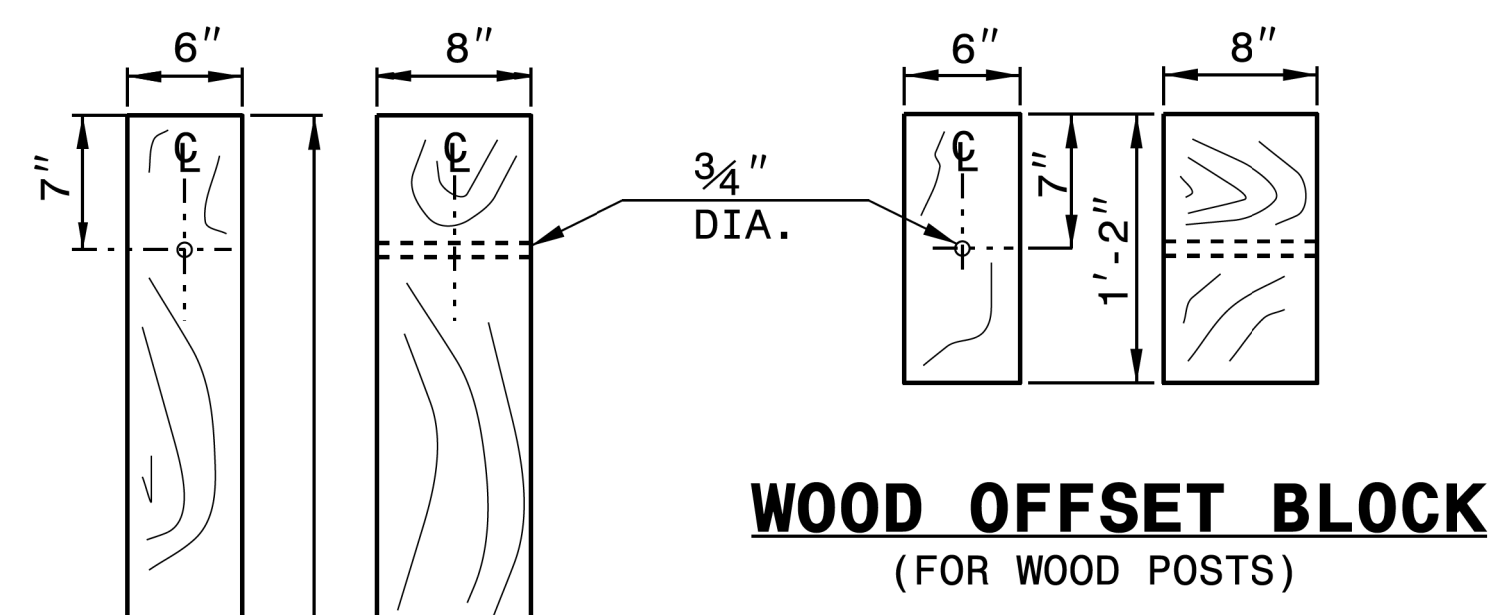
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**

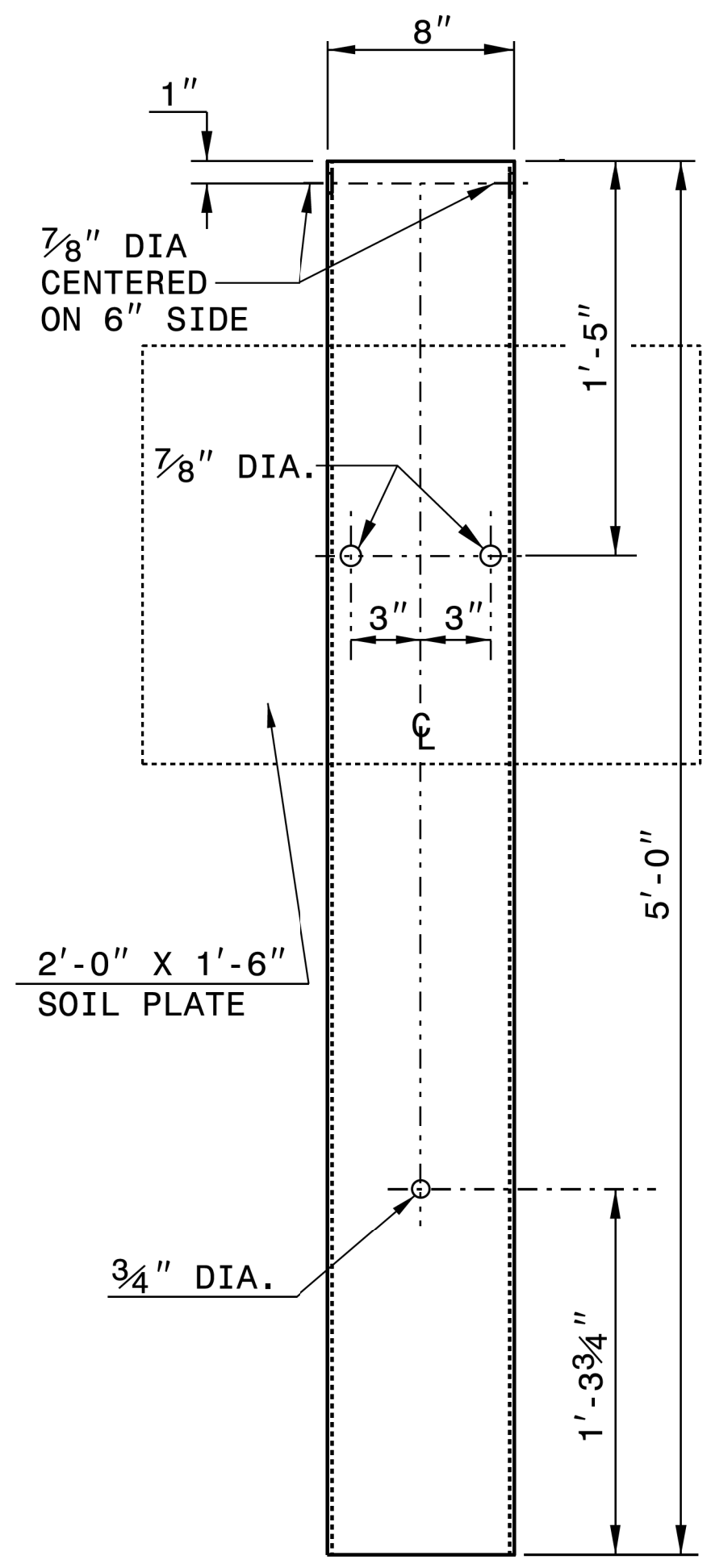


**PLAN**

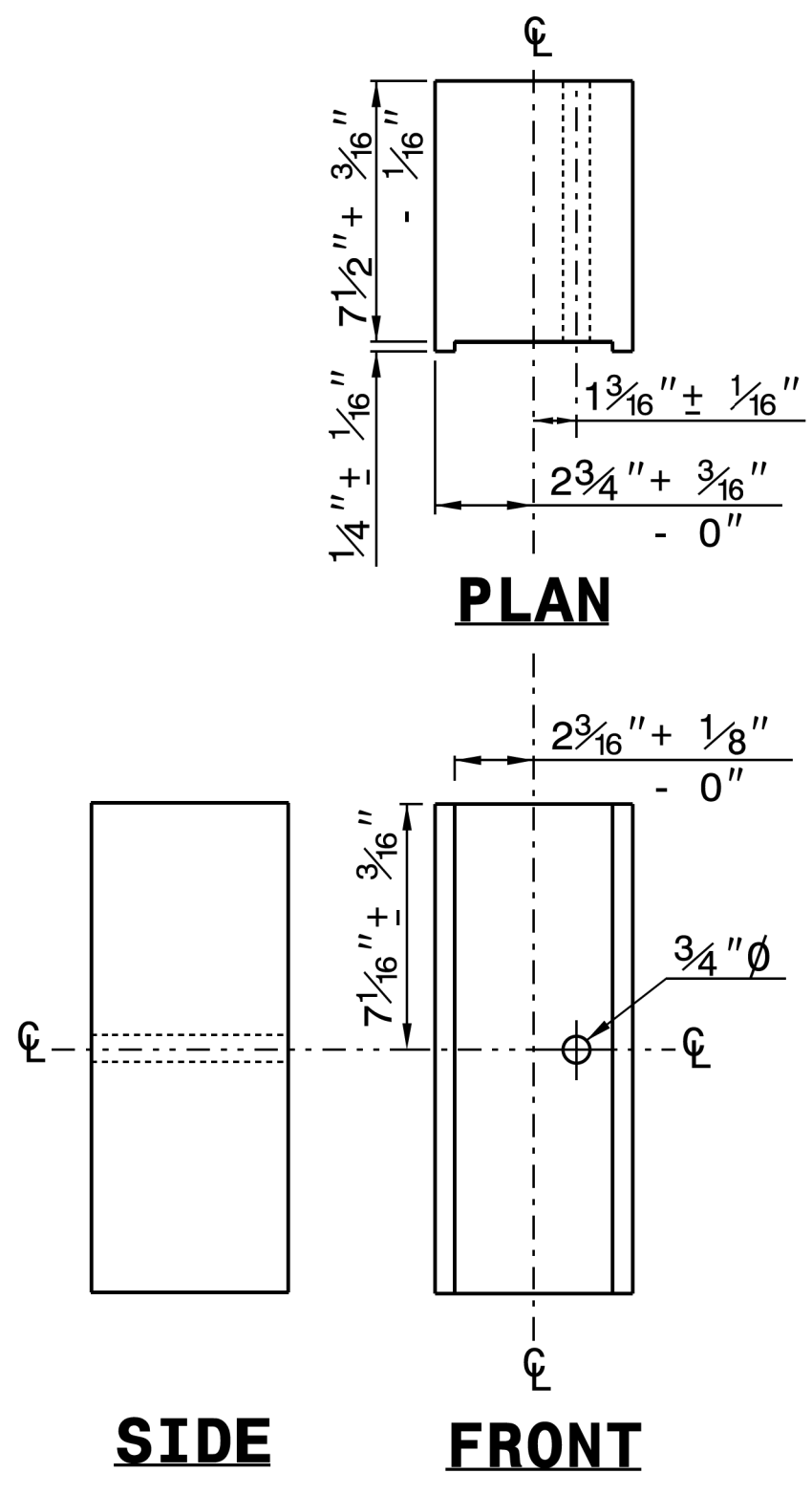


**STANDARD LINE POST**

**SHORT WOOD BREAKAWAY POST**



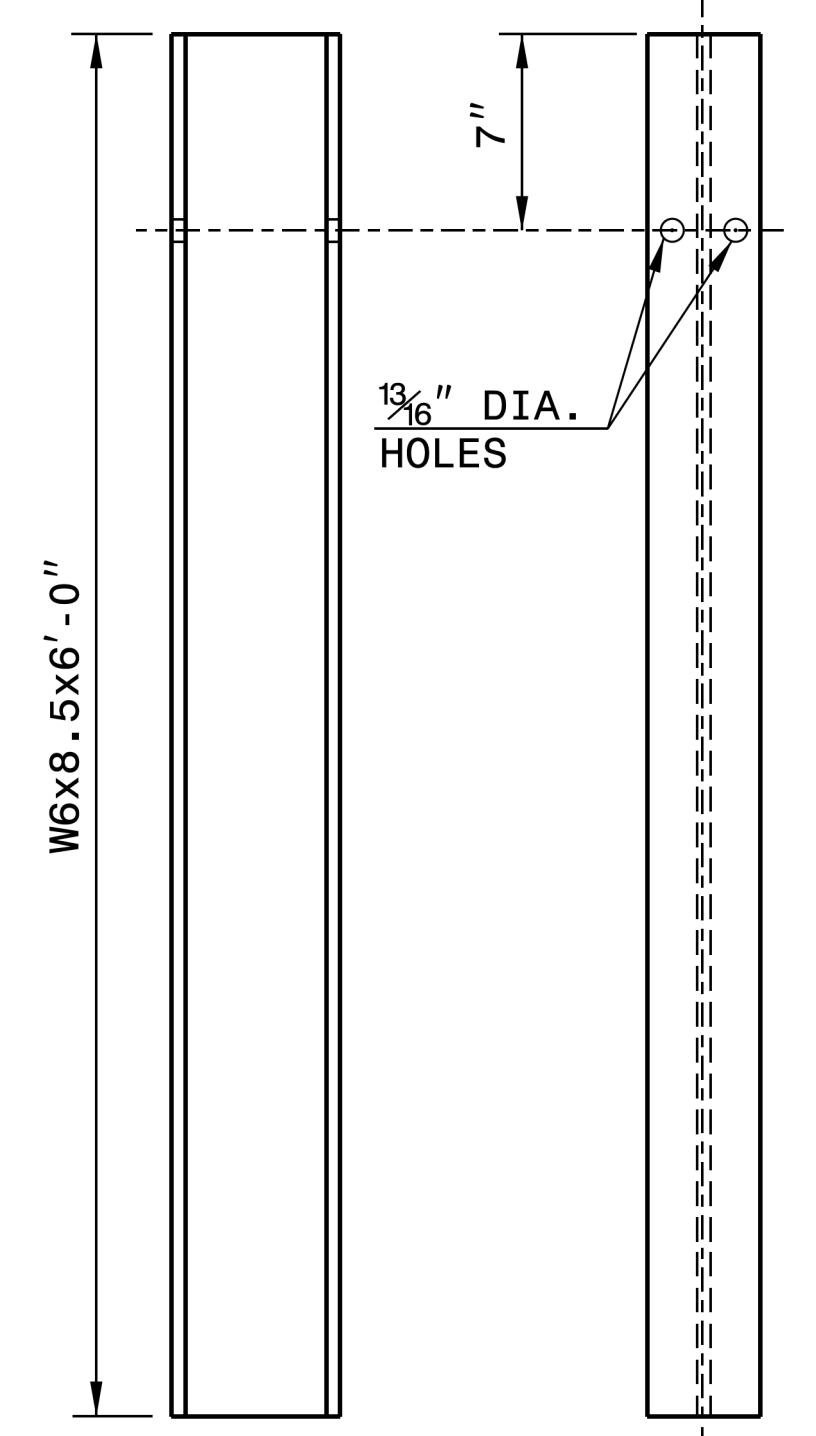
**STEEL TUBE**  
TS 6"x8"x0.1875"



**SIDE**

**FRONT**

**ROUTED OFFSET BLOCK**



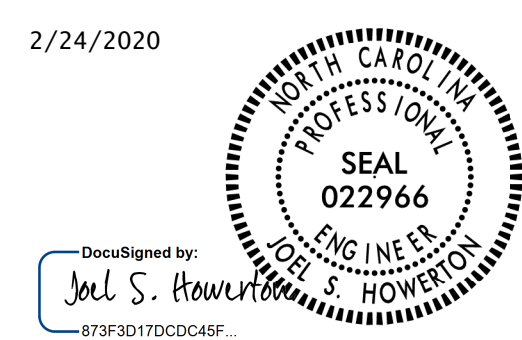
**SIDE**

**FRONT**

**"W6" STEEL POST**

**SYSTEM PARTS**

2/24/2020



DocuSigned by:  
Joel S. Howerton  
673F3D17DCC046F

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

**SEE TITLE BLOCK**

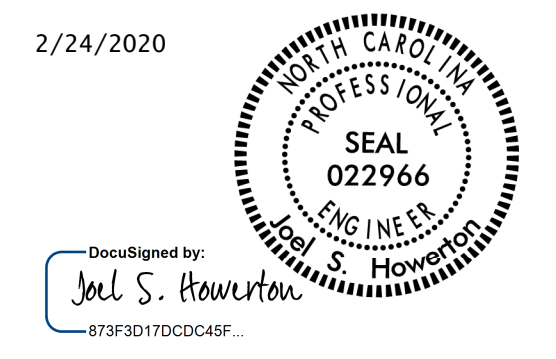
ORIGINAL BY: J. HOWERTON DATE: 3-7-2018  
MODIFIED BY: DATE: \_\_\_\_\_  
CHECKED BY: DATE: \_\_\_\_\_  
FILE SPEC.: \_\_\_\_\_

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 Jhowerton AT CSU-292895

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR <b>STRUCTURE ANCHOR UNITS</b> GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE	SHEET 1 OF 7 <b>862D03</b>
<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.</li> <li>*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.</li> <li>-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.</li> <li>-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).</li> <li>-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.</li> <li>-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.</li> </ul>		
<b>GUARDRAIL ANCHOR UNIT, TYPE III                  FOR ATTACHMENT TO RAIL ON BRIDGE</b>		

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR <b>STRUCTURE ANCHOR UNITS</b> GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 <b>862D03</b>
<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.</li> <li>*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.</li> <li>-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.</li> <li>-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).</li> <li>-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.</li> <li>-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.</li> </ul>		
<b>GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO                  RAIL ON BRIDGE - SUB REGIONAL TIER</b>		

2/24/2020



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS                  AND DEVELOPMENT UNIT</b> Office 919-707-6950 FAX 919-250-4119	
<b>SEE TITLE BLOCK</b>	
ORIGINAL BY: J HOWERTON MODIFIED BY: CHECKED BY: FILE SPEC.:	DATE: 06-22-12 DATE: DATE: DATE:

12/06/07

COMPUTED BY: AJM DATE: 01/06/2020  
 CHECKED BY: JPM DATE: 01/09/2020

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. <i>BR-0117</i>	SHEET NO. <i>3B-1</i>
PREPARED IN THE OFFICE OF: <b>KCA</b> KISINGER CAMPO & ASSOCIATES	NC FIRM LICENSE No: C-1506 301 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919)862-7839
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

**SUMMARY OF EARTHWORK**

Station	Station	Uncl. Excav. (CY)	Embank. +% (CY)	Borrow (CY)	Waste
-L- STA. 10+55.00	-L- STA.13+77.66 (Begin Bridge)	0	705	705	0
-L- STA. 14+75.03 (End Bridge)	-L- STA.17+55.00	30	493	463	0
<b>PROJECT TOTALS:</b>		30	1197	1168	0
<b>REPLACE TOP SOIL ON BORROW PIT (5%):</b>				58	
<b>GRAND TOTALS:</b>		30	1197	1226	0
<b>SAY:</b>		40		1350	0

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."

These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit

**PAVEMENT REMOVAL SUMMARY**  
 IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	10+55	11+92	RT/LT	274.45			
-L-	11+92	13+67	RT/LT	332.22			
<b>TOTAL:</b>				606.67			
<b>SAY:</b>				610			

**SHOULDER BERM GUTTER SUMMARY**

LINE	Station	Station	LENGTH (LF)
-L-	14+85.91	14+99.13	13.22
-L-	14+85.91	14+99.03	13.12
<b>TOTAL:</b>			26.34
<b>SAY:</b>			27.00

COMPUTED BY: AJM DATE: 01/06/2020  
 CHECKED BY: JPM DATE: 01/09/2020

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.  
*BR-0117*

SHEET NO.  
*3B-1*

**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 SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								ADDITIONAL GUARDRAIL POST	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-3	M-350	III	CAT-1	VI MOD	BIC		G	NG														
-L-	13+02.66	13+77.66	RT	75.00'			13+02.66	Bridge	3.95	7.95	50		1																										
-L-	13+02.66	13+77.66	LT	75.00'			Bridge	13+02.66	3.95	7.95		50		1																									
-L-	14+73.90	15+48.90	RT	75.00'			Bridge	15+48.90	3.95	7.95	50		1																										
-L-	14+73.90	15+48.90	LT	75.00'			15+48.90	Bridge	3.95	7.95			1																										
<b>SUBTOTAL:</b>				300.00'																																			
				Less 4 GREU TL-3 @ 50' Each	200.00'																																		
				Less 4 Type III @ 18.75' Each	75.00'																																		
<b>PROJECT TOTALS:</b>				25.00'																																			

18-FEB-2020 15:11  
 18-FEB-2020 15:11  
 18-FEB-2020 15:11





12/06/07

COMPUTED BY:     AJM     DATE:     01/06/2020      
CHECKED BY:     JPM     DATE:     01/06/2020    

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.

BR-0117 36-1

PREPARED IN THE OFFICE OF: **KCA** NC FIRM LICENSE No: C-1506  
KISINGER CAMPO & ASSOCIATES 301 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919) 882-7839

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

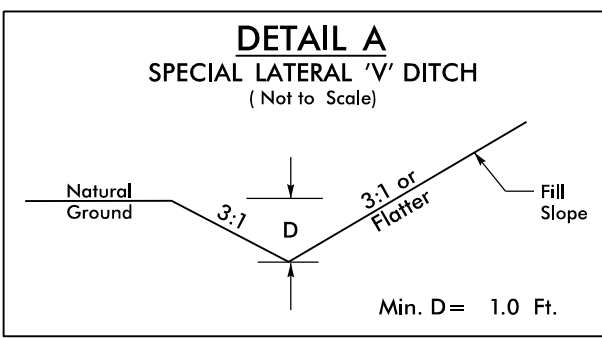
**SUMMARY OF SUBSURFACE DRAINAGE**

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

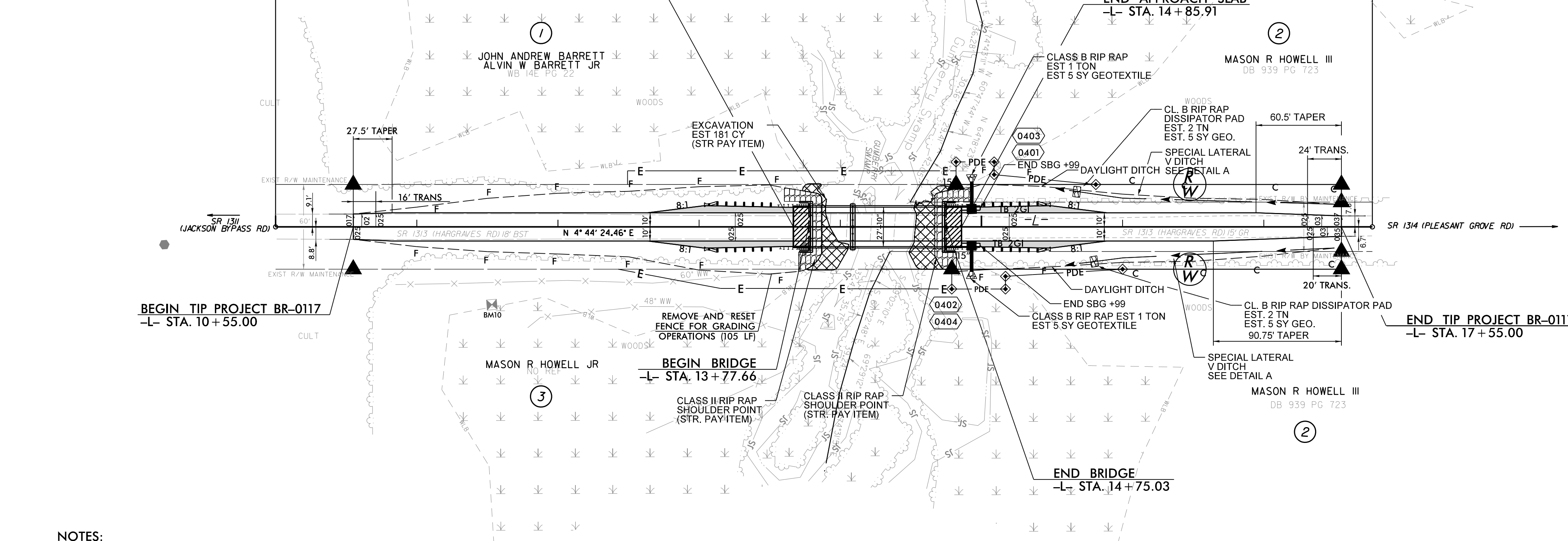
\*UD = Underdrain  
\*BD = Blind Drain  
\*SD = Subsurface Drain

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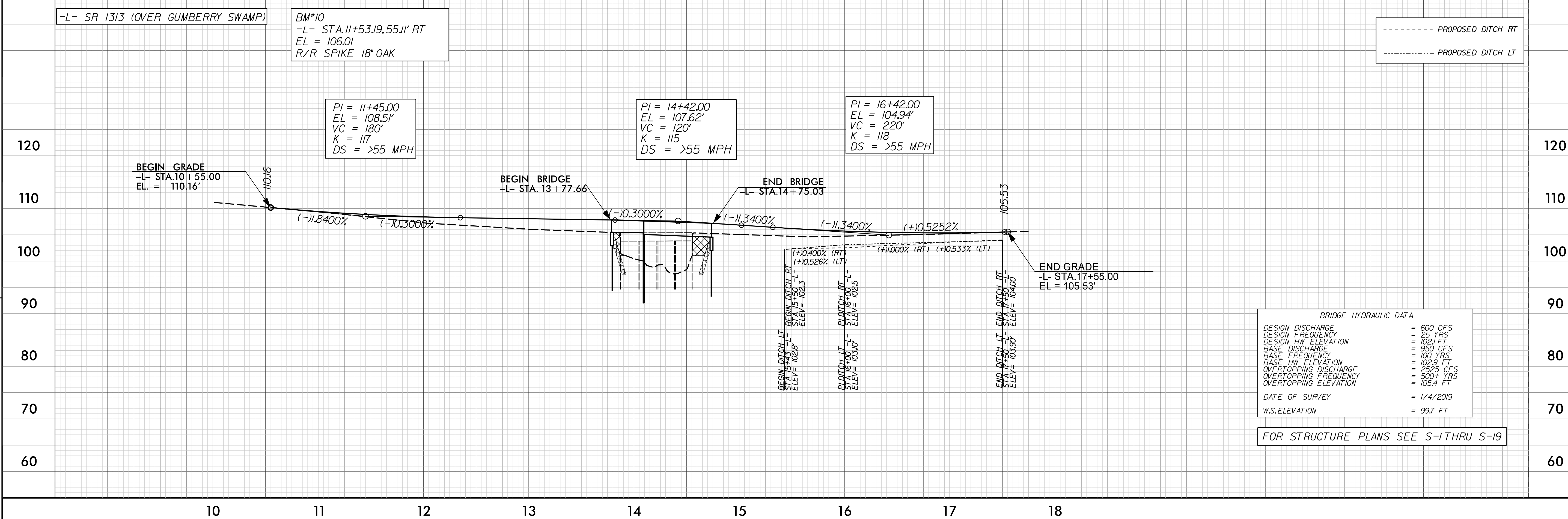


FROM STA. 15+43 TO STA. 17+50 -LT-  
STA. 15+50 TO STA. 17+50 -RT-



**NOTES:**

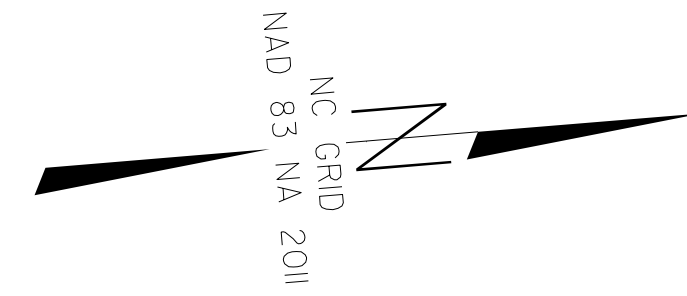
1. ALL BRIDGE ANCHOR UNITS ARE TYPE III.
2. ALL GUARDRAIL END UNITS ARE GREU TL-3.
3. FOR RW STATION AND OFFSETS SEE SHEET 4A.



BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 600 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 102.1 FT
BASE DISCHARGE	= 950 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 102.9 FT
OVERTOPPING DISCHARGE	= 2525 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 105.4 FT
DATE OF SURVEY	= 1/4/2019
W.S. ELEVATION	= 99.7 FT

FOR STRUCTURE PLANS SEE S-1 THRU S-19

PROJECT REFERENCE NO. <b>BR-0117</b>	SHEET NO. <b>4</b>
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/24/2020 DocuSign by John P. Mayers DocuSign by Ali Taylanjeh <b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PREPARED IN THE OFFICE OF:  NC FIRM LICENSE No. C-1508 301 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919) 862-7839	

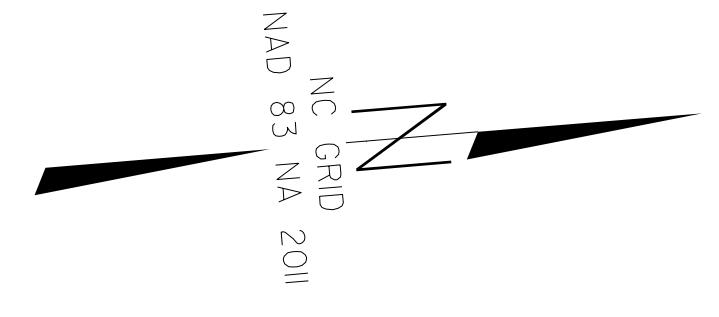
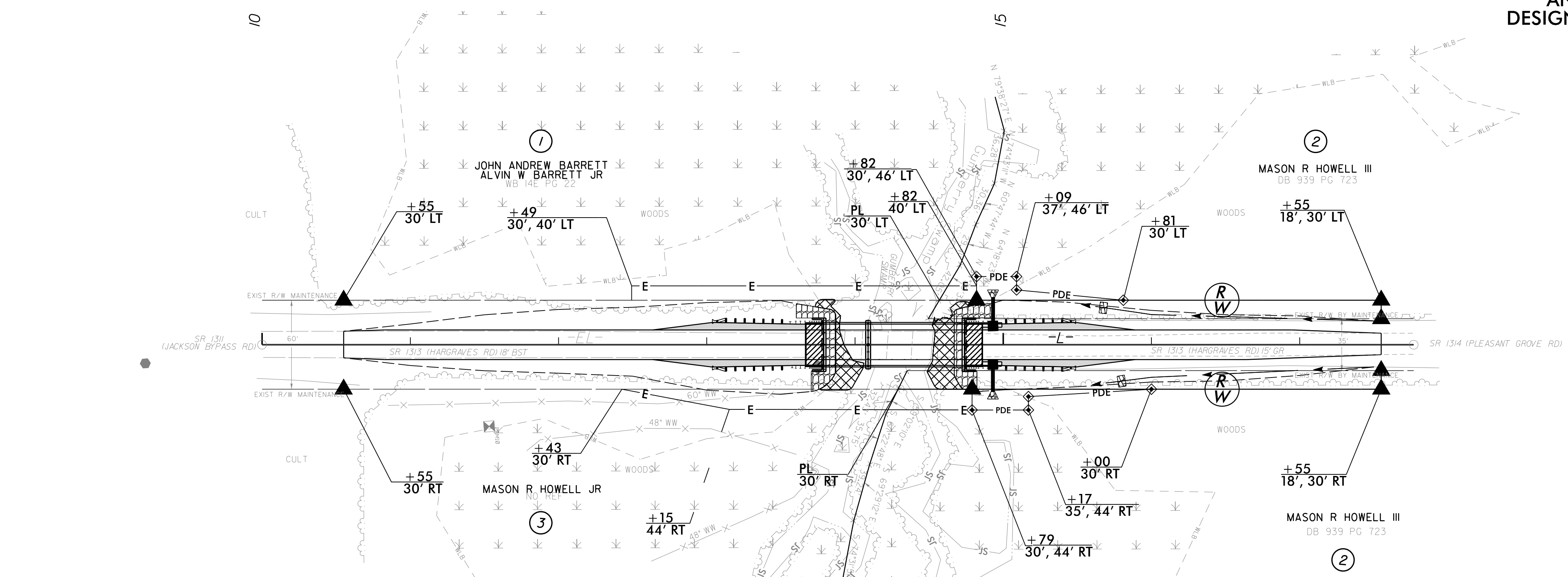


REVISIONS

8/17/19

**RIGHT OF WAY DETAIL SHEET**  
**\*\* DETAIL FOR RIGHT OF WAY MONUMENTS AND EASEMENT FLAGS DESIGN FOR REFERENCE ONLY**

PROJECT REFERENCE NO. BR-0117	SHEET NO. 4A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/24/2020	
Prepared by: John P. Mares, Ali Taylor	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
PREPARED IN THE OFFICE OF: <b>KCA</b> KISINGER CAMPO & ASSOCIATES 301 Fayetteville St., Suite 1500 Raleigh, NC 27601 (919)862-7839	



REVISIONS

PARCEL No.	SHEET No.	PROPERTY OWNER NAME	ROW AREA (SF)	ROW AREA (AC)	TCE AREA (SF)	TCE AREA (AC)	PDE AREA (SF)	PDE AREA (AC)
1	4	JOHN ANDREW BARRETT ALVIN W BARRETT JR			2038.57	0.05		
2	4	MASON R HOWELL III	7808.76	0.18	945.63	0.02	1438.50	0.03
3	4	MASON R HOWELL JR			1996.07	0.05		

