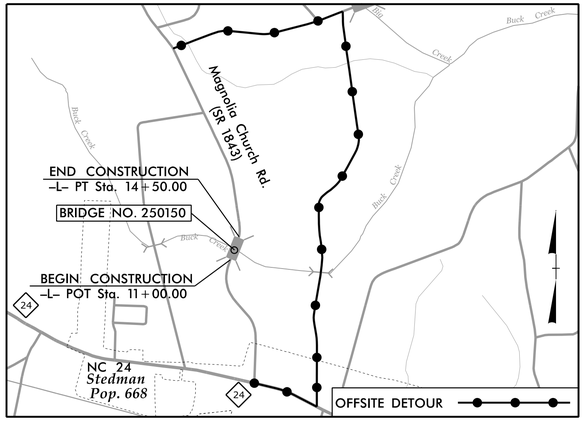
09/08/99

TIP PROJECT: BP6.R018

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

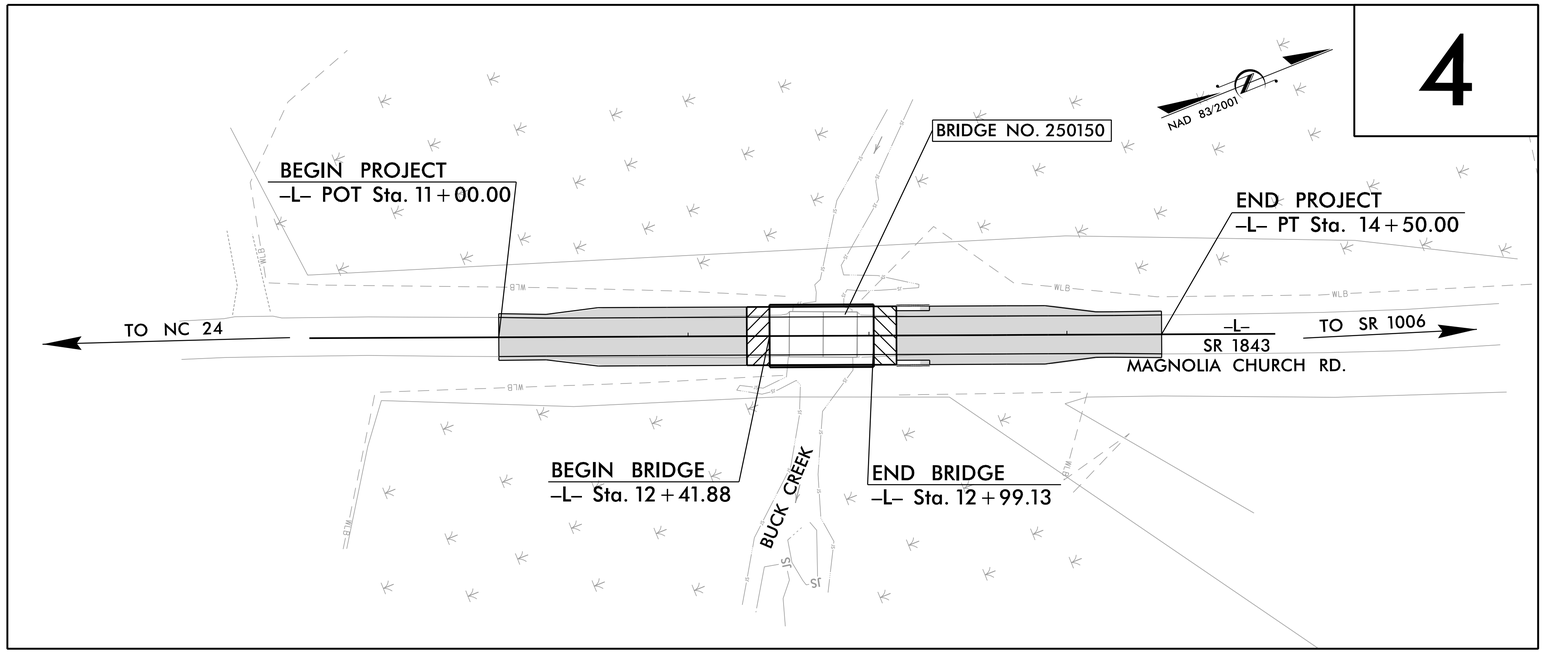
CUMBERLAND COUNTY

LOCATION: BRIDGE NO. 250150 OVER BUCK CREEK ON SR 1843 (MAGNOLIA CHURCH RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND RESURFACING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R018	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP6.R018.1		PE
BP6.R018.2		R/W
BP6.R018.3		CONST.



FINAL ROADWAY PLANS
SUBMITTAL NO.: S-019
DATE: 12/11/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 20 0 20 40
PROFILE (HORIZONTAL): 20 0 20 40
PROFILE (VERTICAL): 5 2.5 0 5 10

DESIGN DATA

ADT 2026 = 470

K = N/A %
D = N/A %
T = 6 %
V = 50 MPH

FUNC CLASS =
RURAL LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT 250150 = 0.055 mi
LENGTH STRUCTURE PROJECT 250150 = 0.011 mi
TOTAL LENGTH PROJECT 250150 = 0.066 mi

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0112
919-878-9560

FOR:
NCDOT DIVISION OF HIGHWAYS

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 2023

LETTING DATE:
JUNE 18, 2025

Mike Merritt, PE
PROJECT ENGINEER

Andrew Hefler
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL 035636 ENGINEER CHRISTOPHER L. SMITH

Signed by: Chris L. Smith
DocuSigned by:
SIGNATURE:
P.E.
5/27/2025

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT

DocuSigned by: Mike Merritt
SIGNATURE:
P.E.
5/27/2025

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

4/8/2025
R:\Roadway\Proj\250150_rdy_tsh.dgn
dhefler

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21122 MICHAEL T. MERRITT
DocuSigned by: Mike Merritt
5/27/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAIL
3B-1	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY, AND GUARDRAIL SUMMARY
3D-1	DRAINANGE SUMMARY SHEET
3G-1	GEOTECH SUMMARY SHEET
4	PLAN/PROFILE SHEET
RW02C-1 THRU RW02C-2	SURVEY CONTROL SHEETS W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
X-1 THRU X-3	CROSS SECTIONS
S-1 THRU S-14	BRIDGE PLANS

LIST OF STANDARD DRAWINGS

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.04	Drainage Ditches with Class 'B' Rip Rap

LIST OF GENERAL NOTES

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
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 II.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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 ARE 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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE South River EMC, Brightspeed, Spectrum

RIGHT-OF-WAY MARKERS:

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

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Responsive People | Creative Solutions

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Computed Property Corner
- Existing Concrete Monument (ECM)
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream
- Buffer Zone 1
- Buffer Zone 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

MINOR:

- Head and End Wall
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	2A-1

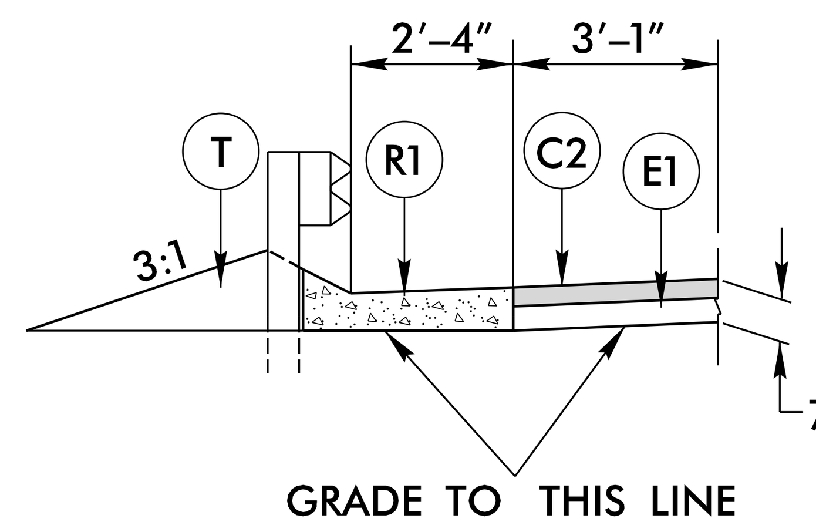
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21122 ENGINEER MICHAEL T. MERRITT 5/27/2025	NORTH CAROLINA PROFESSIONAL SEAL ENGINEER SHIHAI ZHANG 5/27/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL PAVEMENT SCHEDULE

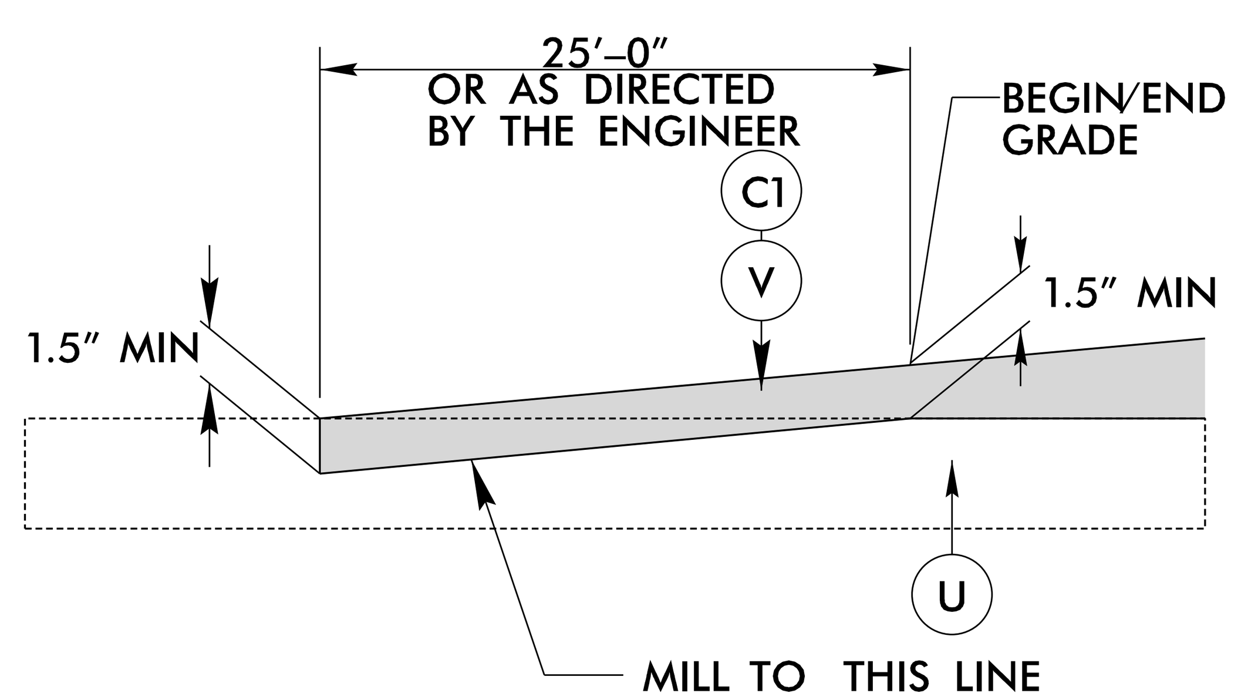
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	R1	SHOULDER BERM GUTTER
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V	MILLING
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 4.0" IN DEPTH.	W	WEDGING

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

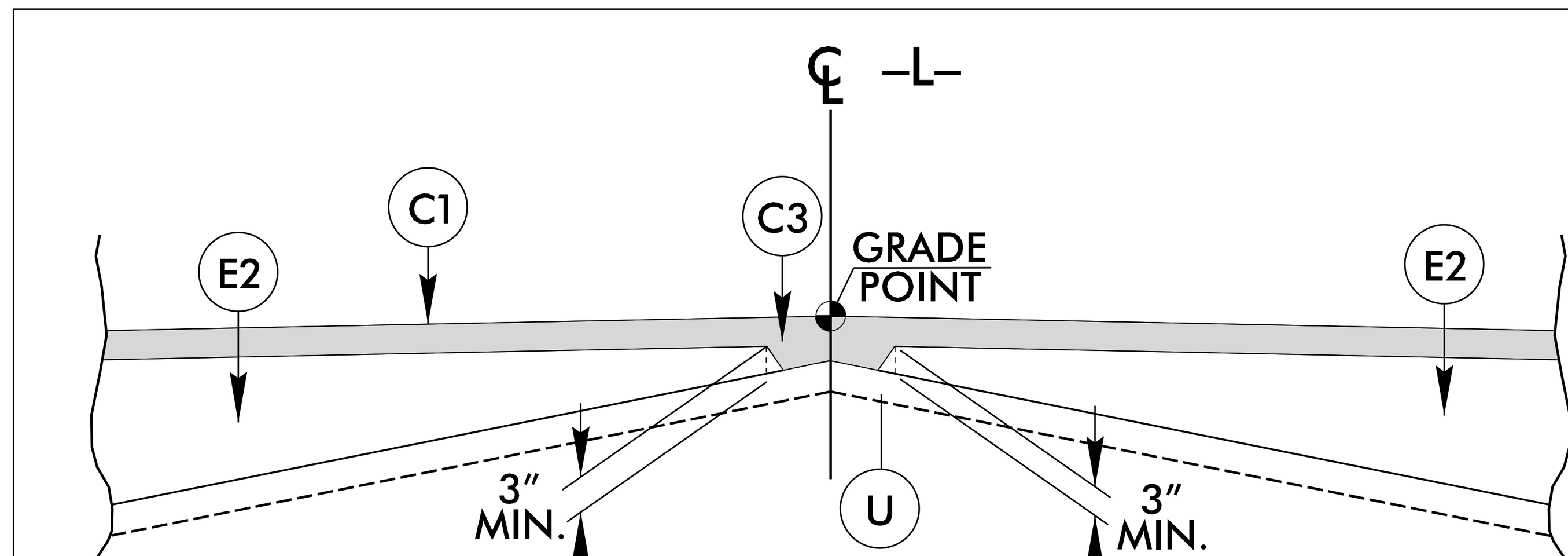


DETAIL SHOWING SHOULDER BERM GUTTER (SBG) ON TOP OF SUBGRADE

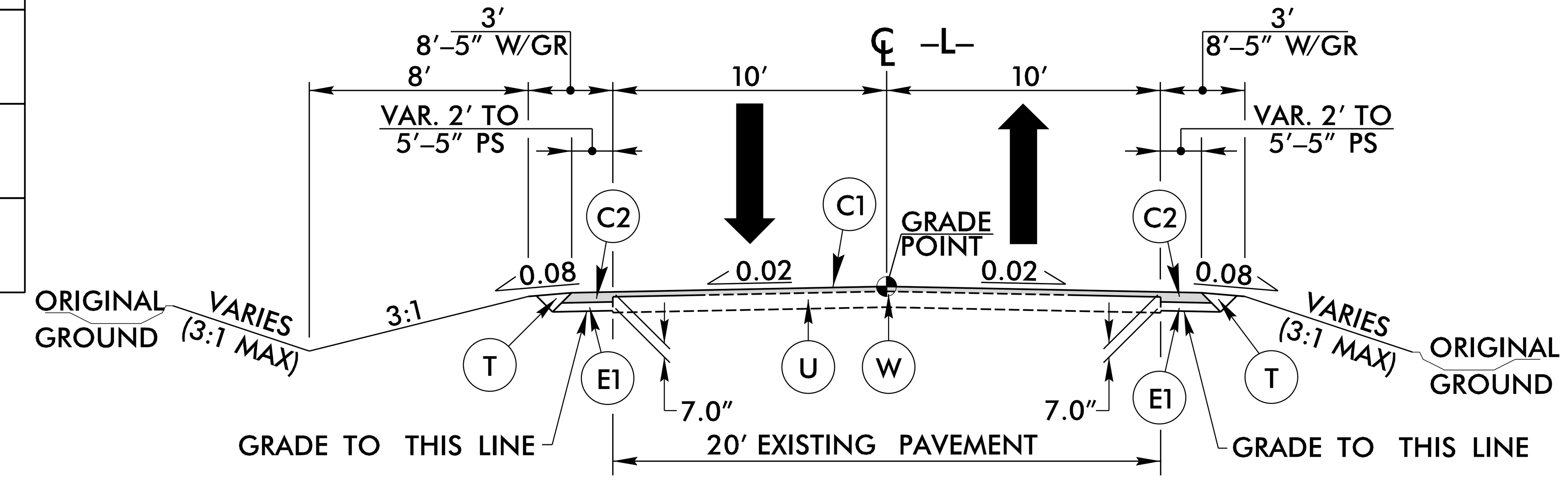
–L– STA. 13+10.00 TO STA. 13+27.50 RT
–L– STA. 13+10.00 TO STA. 13+27.50 LT



DETAIL SHOWING MILLED PAVEMENT TIE-IN

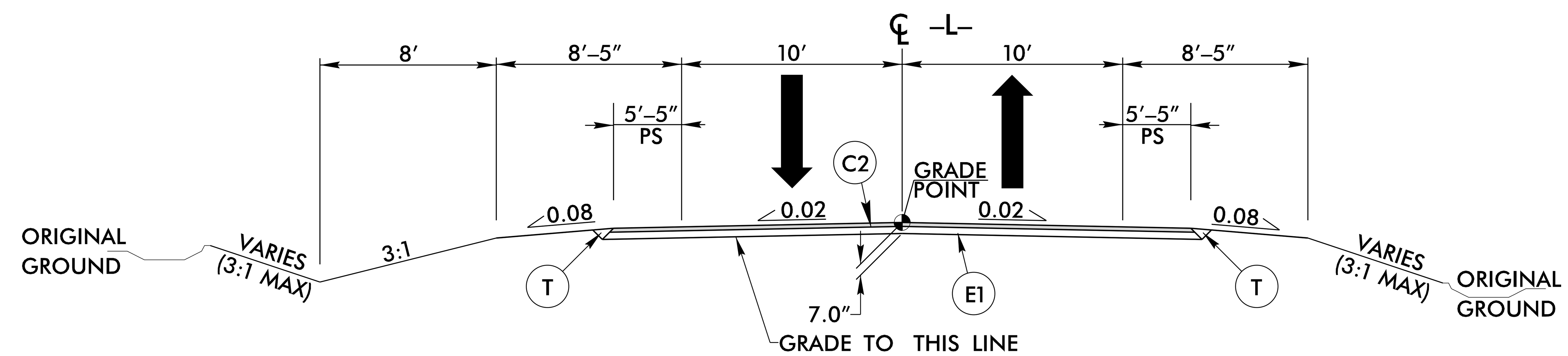


WEDGING DETAIL FOR RESURFACING



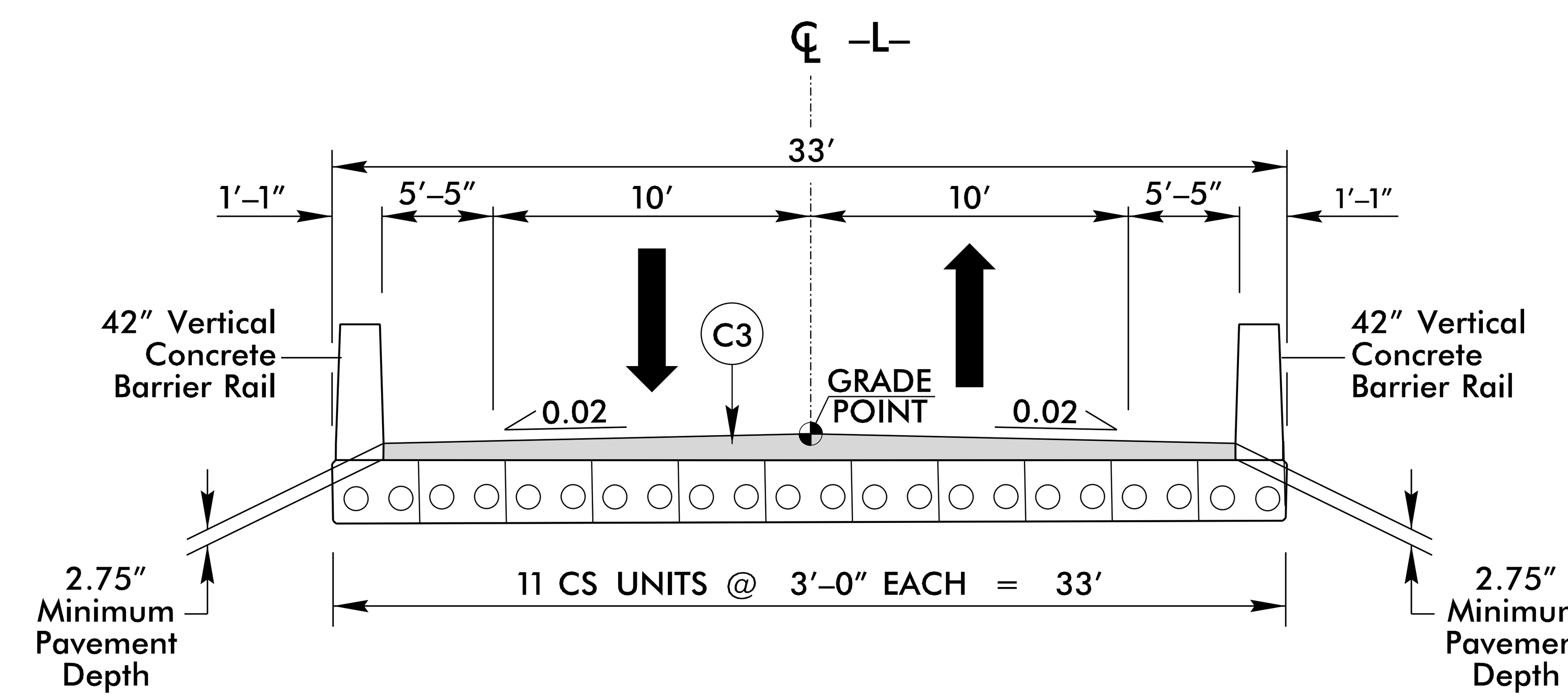
TYPICAL SECTION NO. 1

–L– STA. 11+00.00 TO 12+10.00
–L– STA. 13+40.00 TO 14+50.00



TYPICAL SECTION NO. 2

–L– STA. 12+10.00 TO 12+41.88 (BEGIN BRIDGE)
–L– STA. 12+99.13 (END BRIDGE) TO 13+40.00



TYPICAL SECTION NO. 3

12+41.88 (BEGIN BRIDGE) TO 12+99.13 (END BRIDGE)

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 1							
-L-	11+00.00	12+41.88	17		93	76	
-L-	12+99.13	14+50.00	14		67	53	
SUBTOTAL			**31**		**160**	**129**	
SHEET TOTALS			**31**		**160**	**129**	
PROJECT TOTAL			**31**		**160**	**129**	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT						**6**	
GRAND TOTAL			**31**			**135**	
SAY			**40**			**140**	

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	ANCHORS XI MOD	ANCHORS XI	ANCHORS GREU TL-3	ANCHORS GREU TL-2	ANCHORS TYPE III	ANCHORS CAT-1	ANCHORS TES	IMPACT ATTENUATOR TYPE 350 IA MASH TL-3	IMPACT ATTENUATOR TYPE 350 AT-1	IMPACT ATTENUATOR TYPE 350 NG	SAFETY RAIL	SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMARKS
L	11+48.13	12+41.88	LT	93.75					1		1									
L	11+48.13	12+41.88	RT	93.75					1		1									
L	12+99.13	13+92.88	LT	93.75					1		1									
L	12+99.13	13+92.88	RT	93.75					1		1									
TOTAL				375.00	0.00	0	0	0	4	0	4	0	0	0	0	0	0.00	0.00	0.00	
	LESS ANCHOR DEDUCTIONS																			
	GREU TL-3	4	@50'=	200.00'																
	CAT-1	0	@6.25'=	0.00'																
	TYPE III	4	@18.75' =	75.00'																
	GREU TL-2	0	@25' =	0.00'																
	ATTEN. TYPE 350	0	@21' =	0.00'																
	AT-1	0	@6.25' =	0.00'																
	TES	0	@2.3' =	0.00'																
			TOTAL GUARDRAIL =	100'	0'		10 ADDITIONAL GUARDRAIL POSTS													

ASPHALT PAVEMENT REMOVAL

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-L-	12+10	12+53	LT/RT	951.13		105.68
-L-	12+89	13+40	LT/RT	1055.49		117.28
					TOTAL	222.96
					SAY	**230**

SHOULDER BERM GUTTER SUMMARY

LOCATION	SIDE	BEG. STA.	END STA.	LENGTH
L	RT	13+10.00	13+27.50	17.5
L	LT	13+10.00	13+27.50	17.5
			TOTAL	35.0
			SAY	**35**

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY RKK. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

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5/28/99
4/8/2025
R:\Roadway\Proj\250150_rdy_psh03B-1.dgn
shafler

COMPUTED BY: LJB DATE: 9/1/2022

CHECKED BY: MJB DATE: 9/7/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	3D-1

Note: Invert Elevations Indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications for Roads and Structures, Section 300-5."

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

LINE & STATION	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC	R.C. PIPE CLASS IV SIZE								PIPE AS NOTED SIZE				ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS	
SIZE									12"	15"	18"	24"	30"	36"	42"	48"					12"	15"	18"	24"	30"	36"	42"	48"	18"	15"	24"			
THICKNESS OR GAUGE			FROM	TO																									RCP-V	SIDE DRAIN	SIDE DRAIN		R.C.P.	C.S.P.
SHEET 4																																		
- L- 13+25.00	14	RT	401																															
- L- 13+25.00		RT	401	402		117.3	117.1	0.5%			12							×	×															
- L- 13+25.00	-14	LT	403																															
- L- 13+25.00		LT	403	404		118.2	118.1	0.5%			16							×	×															
SHEET TOTALS									0	28	0	0	0	0	0	0					0	0	0	0	0	0	0	0	0	0	0	0	0	0

QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. PER EACH (0' THRU 5.0')	A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	ADJUST MH	ADJUST CB	ADJUST DI	CONV DI TO JBMH	CONV JB TO DI	CONV CB TO JB	BERM DRAINAGE OUTLET	OTCB	FLOWABLE FILL (CY)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
1																	1																						
1																	1																						
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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P: (919) 878-9560
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Raleigh, North Carolina 27615-3960
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5/28/99

COMPUTED BY: MWS	DATE: 07/13/2023
CHECKED BY: MMS	DATE: 07/13/2023

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	3G-1

(2-3-23)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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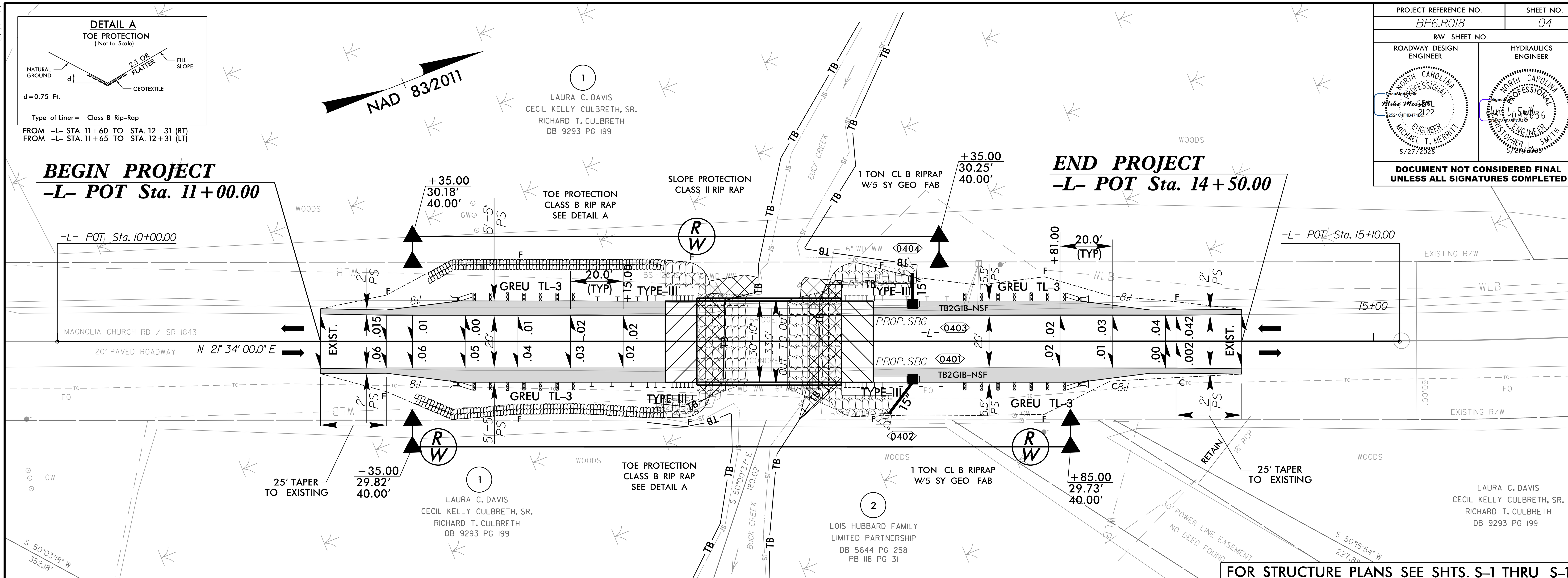
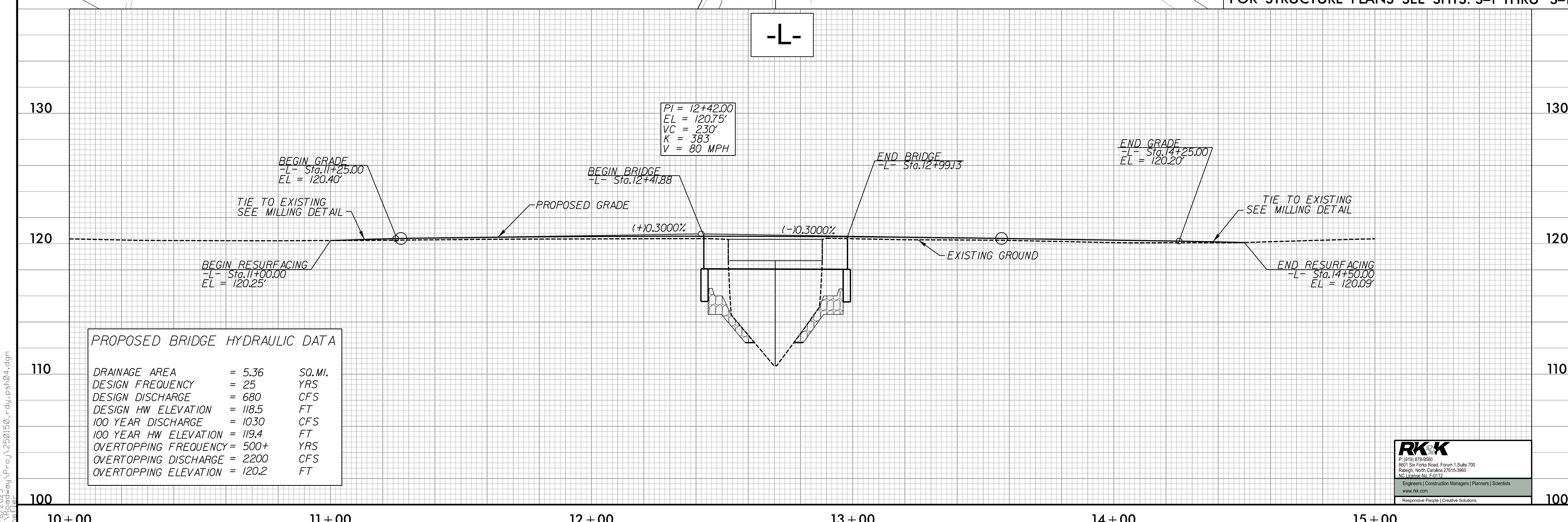
PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DETAIL A
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER
FILL SLOPE
GEOTEXTILE
d=0.75 Ft.
Type of Liner= Class B Rip-Rap
FROM -L- STA. 11+60 TO STA. 12+31 (RT)
FROM -L- STA. 11+65 TO STA. 12+31 (LT)
NAD 83/2011
LAURA C. DAVIS
CECIL KELLY CULBRETH, SR.
RICHARD T. CULBRETH
DB 9293 PG 199
BEGIN PROJECT
-L- POT Sta. 11+00.00
END PROJECT
-L- POT Sta. 14+50.00
TOE PROTECTION
CLASS B RIP RAP
SEE DETAIL A
SLOPE PROTECTION
CLASS II RIP RAP
1 TON CL B RIPRAP
W/5 SY GEO FAB
-L- POT Sta. 10+00.00
-L- POT Sta. 15+10.00
MAGNOLIA CHURCH RD / SR 1843
20' PAVED ROADWAY
N 21° 34' 00.0" E
GREU TL-3
TYPE-III
TB2GIB-NSF
PROP. SBG
25' TAPER TO EXISTING
LOIS HUBBARD FAMILY
LIMITED PARTNERSHIP
DB 5644 PG 258
PB 118 PG 31
BUCK CREEK
30' POWER LINE EASEMENT
NO DEED FOUND
EXISTING R/W
WOODS
FOR STRUCTURE PLANS SEE SHTS. S-1 THRU S-14



-L-
PI = 12+42.00
EL = 120.75'
VC = 230'
K = 383
V = 80 MPH
BEGIN GRADE
-L- Sta. 11+25.00
EL = 120.40'
BEGIN BRIDGE
-L- Sta. 12+41.88
END BRIDGE
-L- Sta. 12+99.13
END GRADE
-L- Sta. 14+25.00
EL = 120.20'
TIE TO EXISTING
SEE MILLING DETAIL
PROPOSED GRADE
(+)0.3000%
(-)0.3000%
EXISTING GROUND
BEGIN RESURFACING
-L- Sta. 11+00.00
EL = 120.25'
END RESURFACING
-L- Sta. 14+50.00
EL = 120.09
130
120
110
100
10+00
11+00
12+00
13+00
14+00
15+00

PROPOSED BRIDGE HYDRAULIC DATA

DRAINAGE AREA	=	5.36	SQ. MI.
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	680	CFS
DESIGN HW ELEVATION	=	118.5	FT
100 YEAR DISCHARGE	=	1030	CFS
100 YEAR HW ELEVATION	=	119.4	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	2200	CFS
OVERTOPPING ELEVATION	=	120.2	FT

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4/8/2025
R:\Roadway\Proj\250150_rdy_psh04.dgn

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6-R018	RW01	6

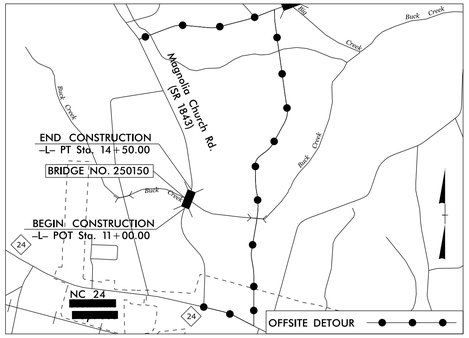
TIP PROJECT: BP6-R018

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

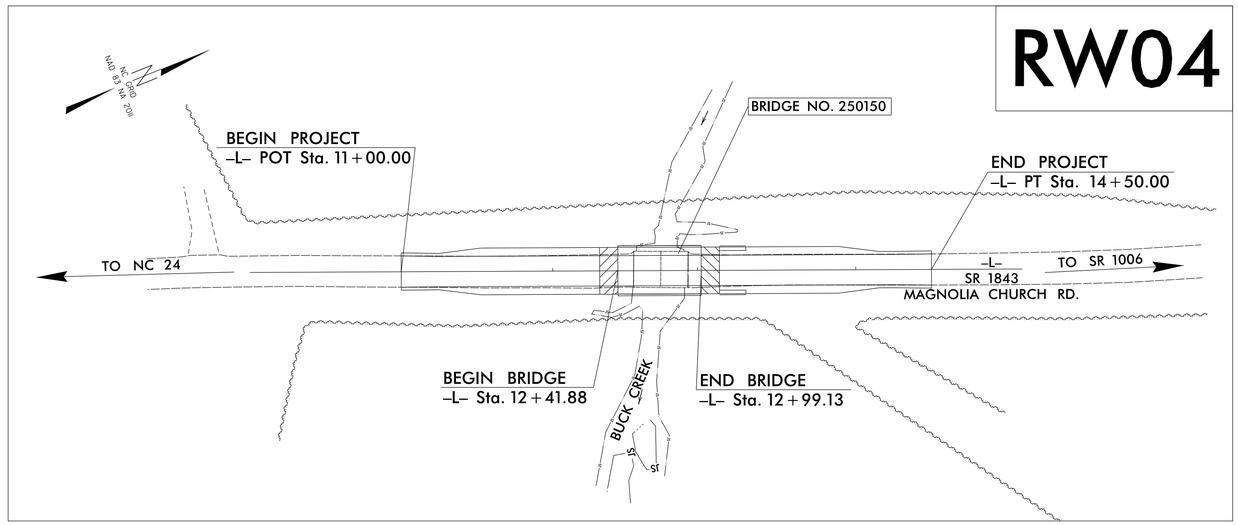
CUMBERLAND COUNTY

LOCATION: BRIDGE NO. 250150 OVER BUCK CREEK ON SR 1843 (MAGNOLIA CHURCH RD)



VICINITY MAP

RW04



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "250150-101" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 464908.425(ft) EASTING: 2089206.689(ft) ELEVATION: 124.945(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GRID TO GROUND) IS: 1.00012041 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "250150-101" TO -L- STATION 15+10.00 IS S 14°28'19" W 414.74(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

McKIM & CREED
4300 EDWARDS MILL RD., SUITE 200
RALEIGH, NC 27612
(P) 919-233-8091 (F) 919-233-8031
F-1222

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
APRIL 2023	*JUNE 18, 2025*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A MITCHELL

Signed by: Richard Mitchell 04/01/2025

SIGNATURE: Date:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	RW02C-1

Location and Surveys

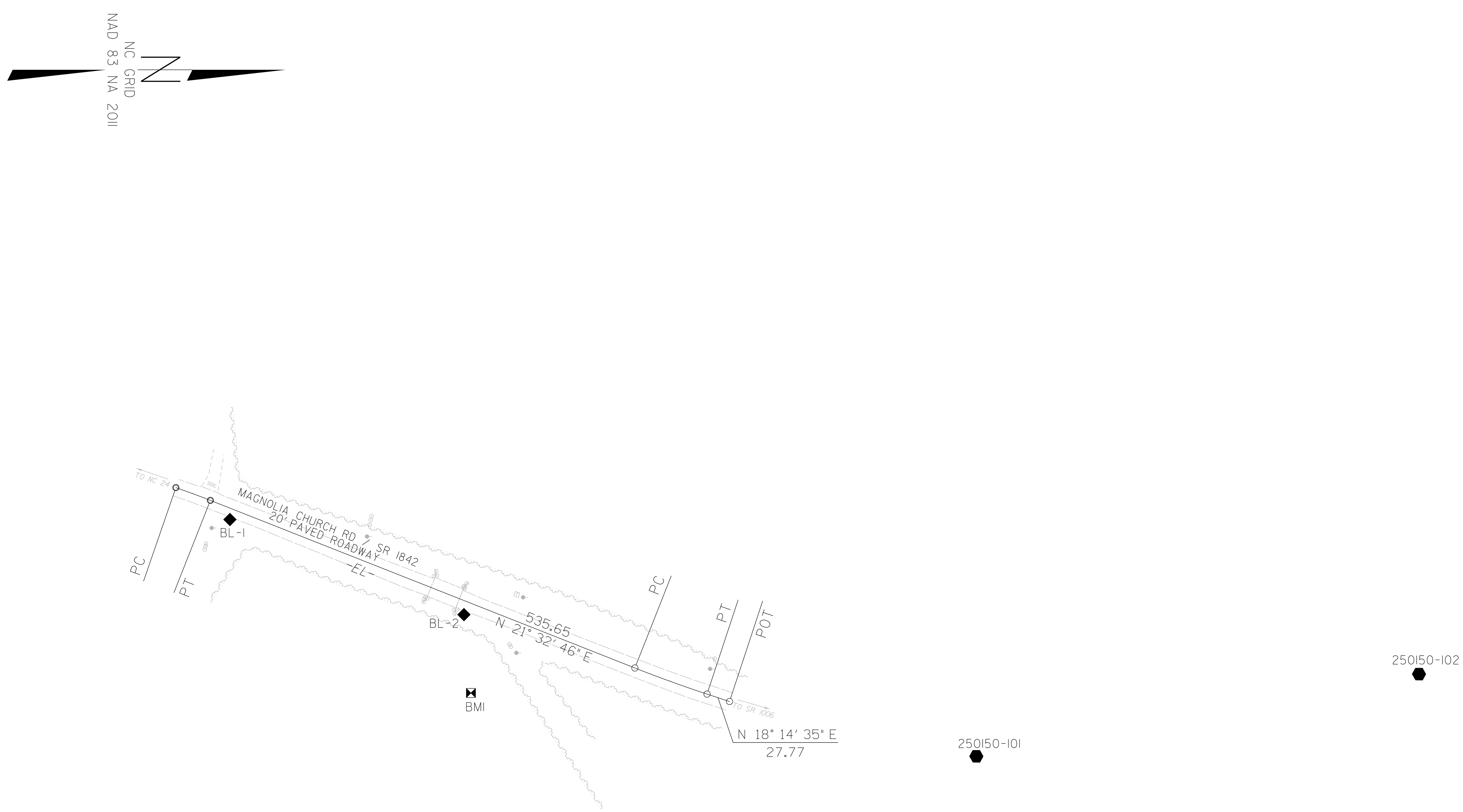
McKIM&CREED

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



I, Richard A. Mitchell, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: 2/14/22-2/21/22
Datum/Epoch:NAD 1983/NA 2011
Published/Fixed-control use: N/A
Localized around: 250150-101
Northing: 464908.425
Easting: 2089206.689
Combined grid factor: 1.00012041
Geoid model: G18US
Units: USFT

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from 2/14/22 to 2/21/22 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5th day of March, 2022.

DocuSigned by: Richard Mitchell 04/05/2022

Richard A. Mitchell
Professional Land Surveyor L-5060

SEE SHEET RW02C–2 FOR FURTHER ALIGNMENT DETAILS

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	RW02C-2

Location and Surveys

McKIM & CREED

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

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This 5th day of April, 2022.

DocuSigned by: Richard Mitchell 5461760058AE49F... 04/05/2022

Richard A. Mitchell
Professional Land Surveyor L-5060

POINT	N	E	EL BEARING	DIST	DELTA	D	L	T	R
POT	463968.911	2088891.312							
LINE			S 19°04'22.6" W	0.00					
PC	463968.910	2088891.311							
CURVE			N 20°18'34.4" E	43.18	02°28'23.6"(RT)	05°43'39.8"	43.18	21.59	1000.32
PT	464009.402	2088906.298							
LINE			N 21°32'46.2" E	535.65					
PC	464507.625	2089103.017							
CURVE			N 19°53'40.8" E	90.09	03°18'10.8"(LT)	03°39'57.7"	90.10	45.06	1562.89
PT	464592.334	2089133.672							
LINE			N 18°14'35.4" E	27.77					
POT	464618.711	2089142.366							

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	464032.3280	2088928.7120	119.04
2	BL-2	464306.9910	2089040.3550	119.36
101	250150-101	464908.4250	2089206.6890	124.94
102	250150-102	465427.9650	2089110.2060	127.92

BM1 ELEVATION = 119.30
N 464315 E 2089132
BL STATION 8+29.00 87 RIGHT
BENCH TIE IN 18" OAK

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

05-APR-2022 16:02
I:\0048\Jobs\Geomatics\250150\80-Drawings\bp6-018.fs_rw01c-2.dgn
ekelvington AT MC06988

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP6-R018	RW02D-1

Location and Surveys

McKIM & CREED

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

Signed by: Richard Mitchell
54617600584E49F...

I, Richard A. Mitchell, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 1st day of April, 2025.

Signed by: Richard Mitchell 04/01/2025
54617600584E49F...

Professional Land Surveyor — L-5060 PLS #

REVISIONS

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	464032.5493	2088915.5745
POT	15+10.00	464506.8445	2089103.0421

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP6-R018	RW03E-1

Location and Surveys

McKIM&CREED

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

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Witness my original signature, registration number and seal this 1st day of April, 2025.

Signed by: Richard Mitchell 04/01/2025
54617600584E49F...

Professional Land Surveyor L-5060 PLS #

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+35.00	40.00	464143.3947	2089002.3979
L	11+35.00	29.82	464147.1353	2088992.9341
L	11+35.00	-30.18	464169.1903	2088937.1347
L	11+35.00	-40.00	464172.8014	2088927.9987
L	13+35.00	-40.00	464358.7995	2089001.5154
L	13+35.00	-30.25	464355.2147	2089010.5849
L	13+85.00	40.00	464375.8923	2089094.2938
L	13+85.00	29.73	464379.6658	2089084.7468

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED 3/14/25.

REVISIONS

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON 3/14/25 .

I, Richard A. Mitchell, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (Base map Compilation, R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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Witness my original signature, registration number and seal this 1st day of April, 2025.

Signed by: Richard Mitchell 04/01/2025
5461760058 4E49F...
Professional Land Surveyor

L-5060
PLS #

PROJECT REFERENCE NO.	SHEET NO.
BP6-R018	RW04

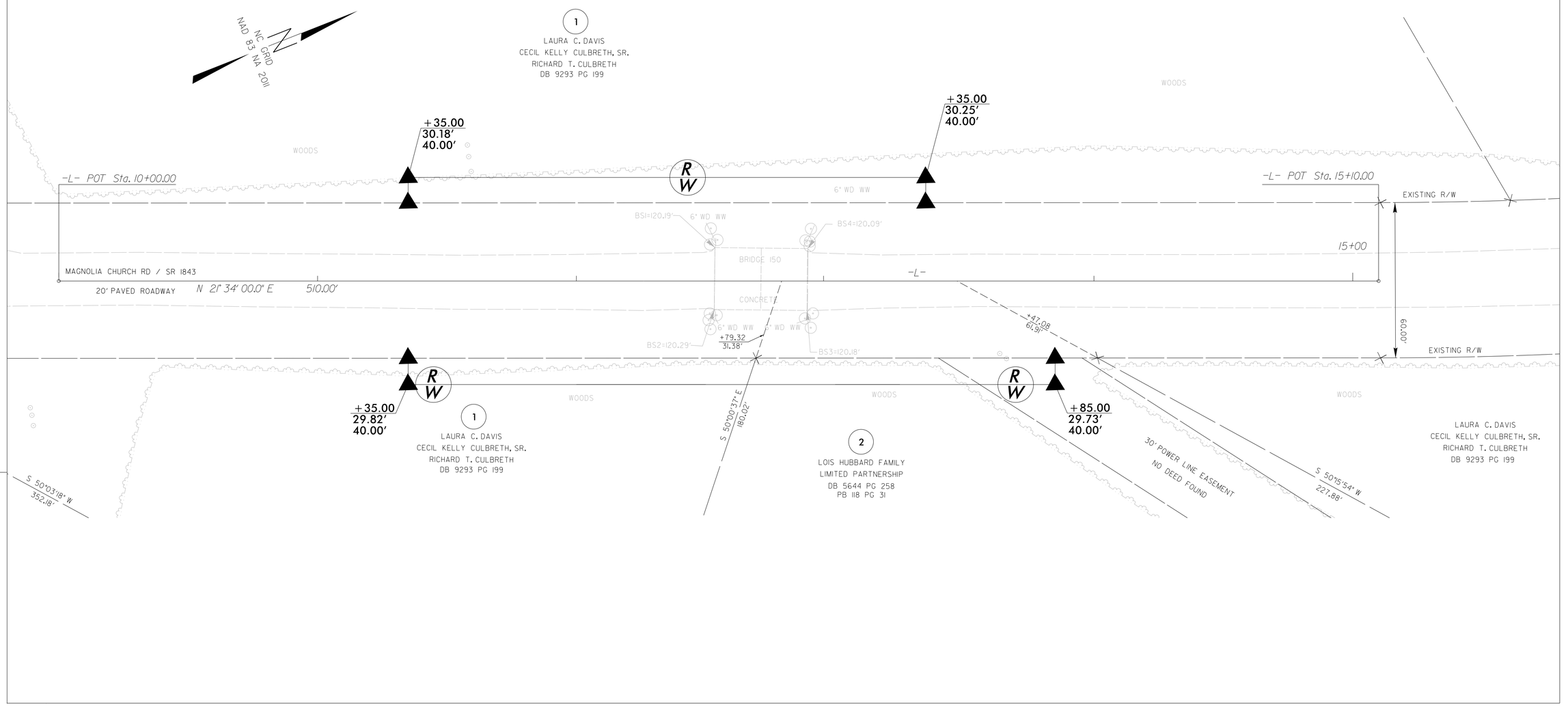
Location and Surveys

McKIM & CREED

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5060 LAND SURVEYOR RICHARD A. MITCHELL

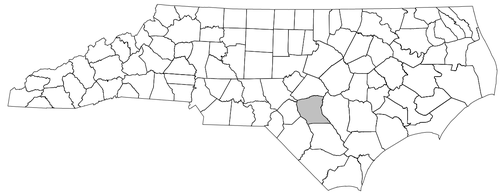
Signed by: Richard Mitchell
5461760058 4E49F...

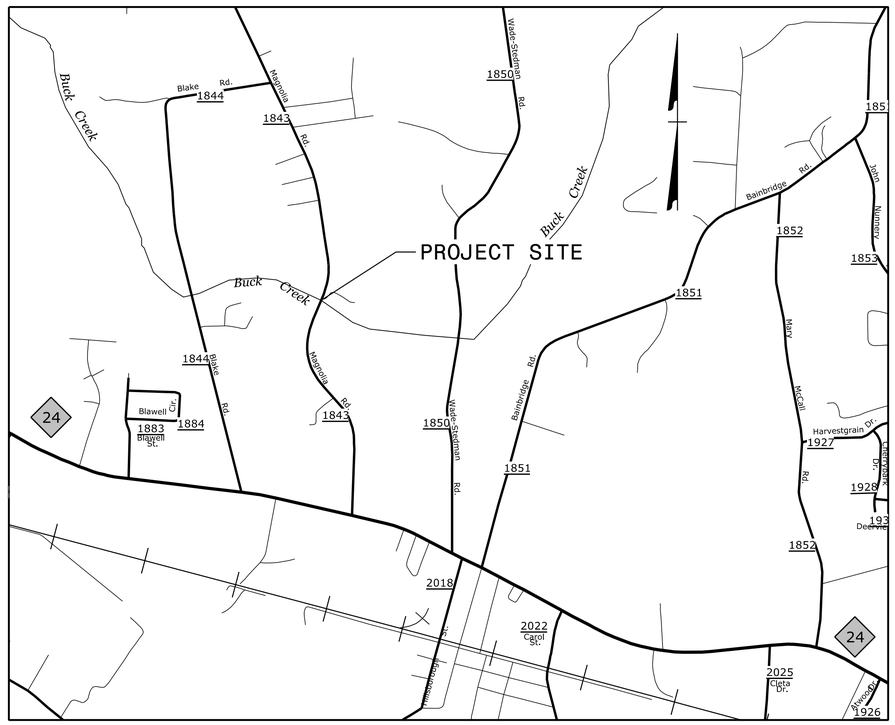


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CUMBERLAND COUNTY





INDEX OF SHEETS

SHEET NO.
TMP-1

TIP PROJECT: BP6.6018

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

PLANS PREPARED BY:

K. BISBY, PE
TECHNICAL MANAGER

A. TUTT
SENIOR DESIGNER

NCDOT CONTACTS:

ADAM T. BRITT
DIV 6 BRIDGE PROGRAM MANAGER

JASON R. HATFIELD
DIV 6 ASSISTANT BRIDGE PROGRAM MANAGER

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

APPROVED: DocuSigned by: Kevin Bisby BDD8D2826912474...

DATE: 5/28/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

5/28/2025
25050_TMP_PSH01.dgn
kbisby

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN
- PORTABLE CONCRETE BARRIER
- PORTABLE CONCRETE BARRIER (EXISTING)
- PORTABLE CONCRETE BARRIER (SECTION VIEW)
- DRUM (SECTION VIEW)
- STATIONARY SIGN

PROJ. REFERENCE NO.	SHEET NO.
250150	TMP-1A

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APPROVED: DocuSigned by: Kevin Bisby BDDB02628912474...

DATE: 5/28/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

5/28/2025
250150_TMP_PSH01A.dgn
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GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

F) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PHASING

PHASE I

USING RDWY STD 1101.03, ERECT DETOUR SIGNS AND DEVICES, AND CLOSE MAGNOLIA CHURCH RD TO TRAFFIC AND CONSTRUCT THROUGH THE FINAL SURFACE COURSE AND PROPOSED BRIDGE.

PHASE II

APPLY PAVEMENT MARKINGS, REMOVE THE OFFSITE DETOUR SIGNING AND DEVICES, AND OPEN ROADS TO TRAFFIC. USE RDWY STD 1101.02 SHEET 1 AS NEEDED TO FINALIZE CONSTRUCTION. (SEE FINAL PAVEMENT MARKING PLAN)

APPROVED: Kevin Bisby
DocuSigned by: BDD8D2628912474...
DATE: 5/28/2025
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

GENERAL NOTES AND PHASING

5/28/2025
250150_TMP_PSH01B.dgn
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PROJ. REFERENCE NO.	SHEET NO.
250150	TMP - 2

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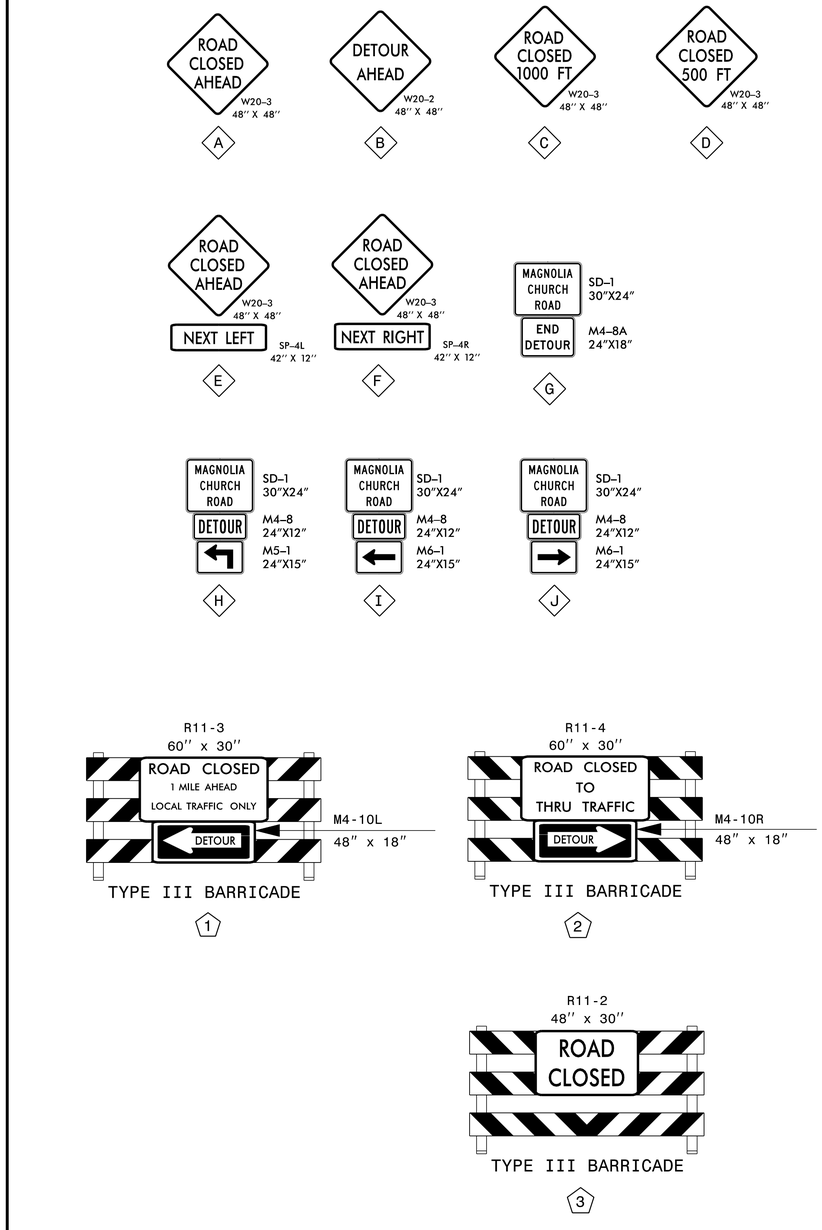
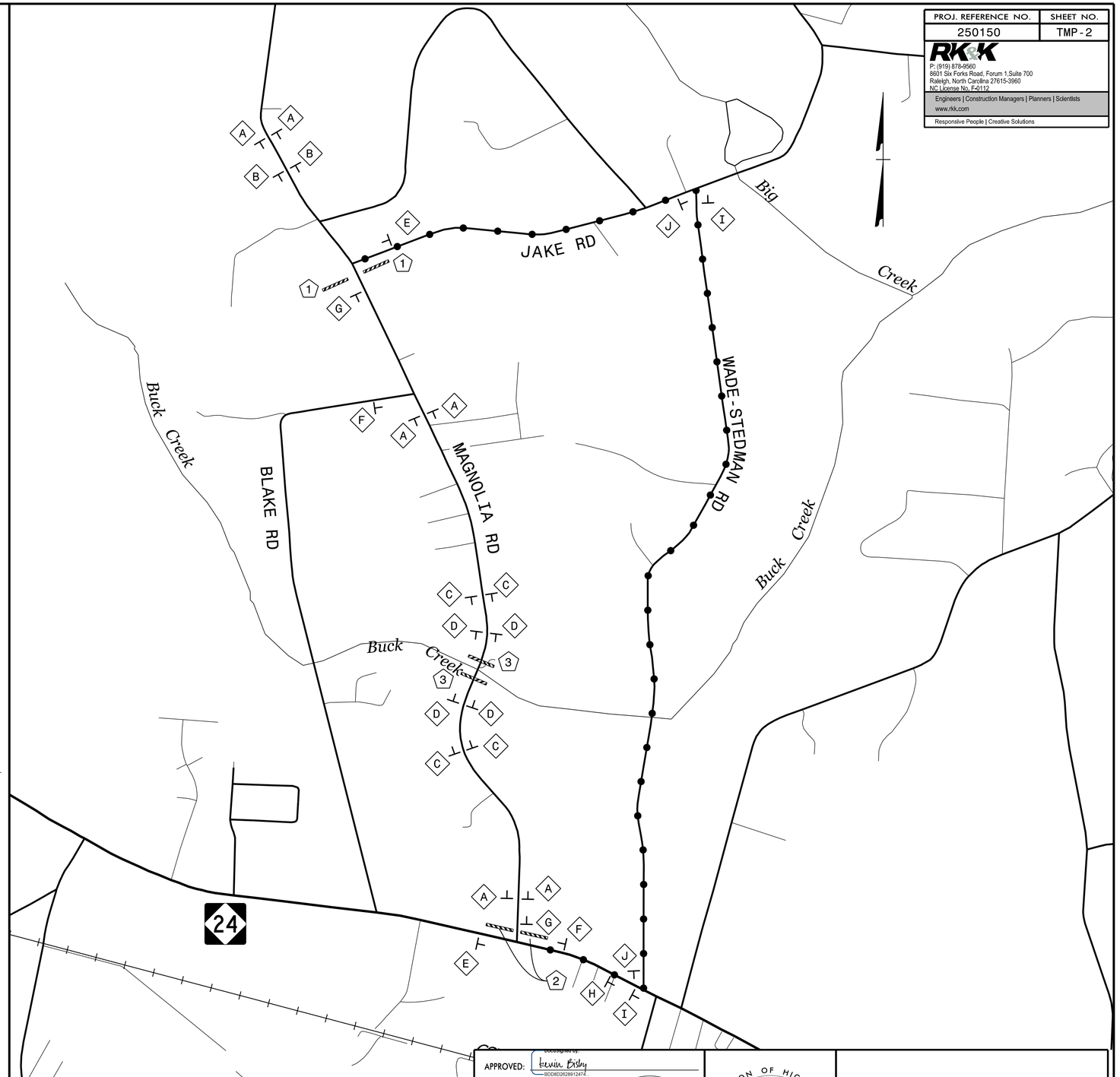


CHANGEABLE MESSAGE SIGNS (NOT SHOWN)
SHALL BE UTILIZED PER RDWY STD 1101.03.



APPROVED: DocuSigned by: Kevin Bisby BDD8D262891247A...

DATE: 5/28/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

OFFSITE DETOUR DETAIL

5/28/2025
250150_TMP_psh02.dgn
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PROJ. REFERENCE NO.	SHEET NO.
250150	TMP-3

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SIGN NUMBER: SD-1
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 2'-6"
HEIGHT: 2'-0"
TOTAL AREA: 5.0 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.38"
WIDTH: 0.63"
RADII: 1.5"

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

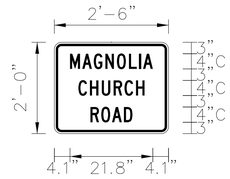
USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

DESIGN BY: A. TUTT
PROJECT ID: 250150

CHECKED BY: K. BISBY
LOCATION: SEE PLAN

Feb 23, 2023
DIV: 6



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																											Series/Size Text Length
		M	A	G	N	O	L	I	A																		C 2000
	4.1	3.2	3	3	3	3.2	2.6	1.1	2.6	4.1																	21.8
		C	H	U	R	C	H																				C 2000
	6.3	3	3.1	3.1	2.8	3	2.2	6.3																			17.4
		R	O	A	D																						C 2000
	9.5	2.8	2.8	3.1	2.2	9.5																					11

FILENAME: 150_TMP_psh03

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED: Docusigned by: kevin Bisby BDD8D262891247...
DATE: 5/28/2025
SEAL

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

SIGN DESIGN

5/28/2025
250150_TMP_psh03.dgn
kbisby

PROJECT	SHEET NO.
BP6.R018	PMP-1

APPROVED: DocuSigned by: Kevin Bisby BDD8D0528912474...

DATE: 11/2/2023

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN

CUMBERLAND COUNTY

LOCATION: BRIDGE NO. 250150 OVER BUCK CREEK ON SR 1843 (MAGNOLIA CHURCH RD)

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
-L-(SR 1843)	THERMOPLASTIC	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

INDEX

PLAN PREPARED FOR: N.C.D.O.T. SIGNING AND DELINEATION UNIT

Ayman I. Alqudwah, PE SIGNING & DELINEATION REGIONAL ENGINEER

Mitch Eaton, PE SIGNING & DELINEATION DESIGN ENGINEER III

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: RK&K ENGINEERS

Kevin Bisby, PE Technical Manager

Allen Tutt Senior Designer

RK&K

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NC License No. F-0112

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CONTRACT: BP6.R018

11/2/2023
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PAVEMENT MARKING SCHEDULE

THERMOPLASTIC MARKINGS

T1	WHITE EDGE LINE (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)

PROJECT	SHEET NO.
BP6.R018	PMP-2

APPROVED: Kevin Bisby

DATE: 11/2/2023

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

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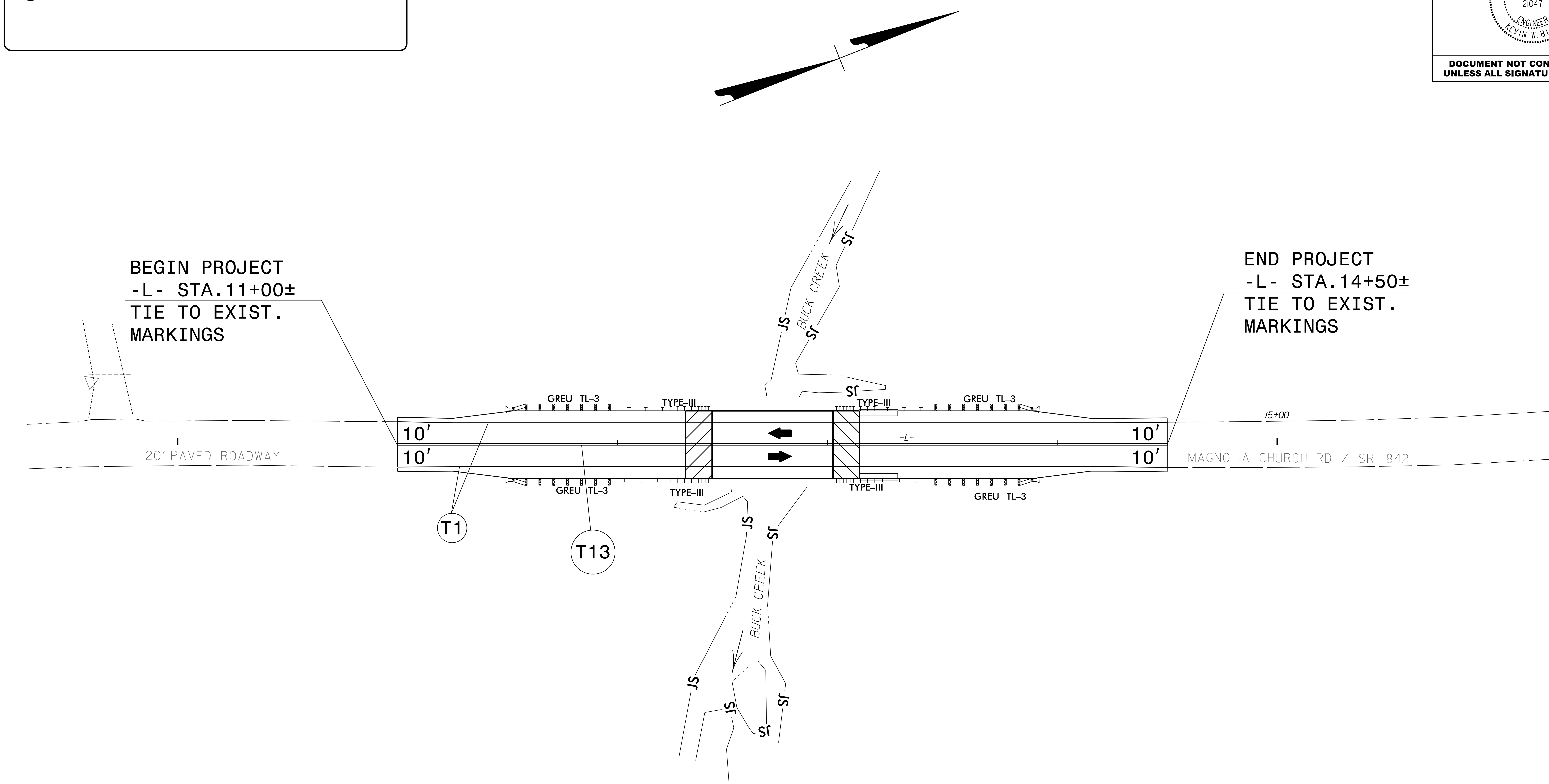

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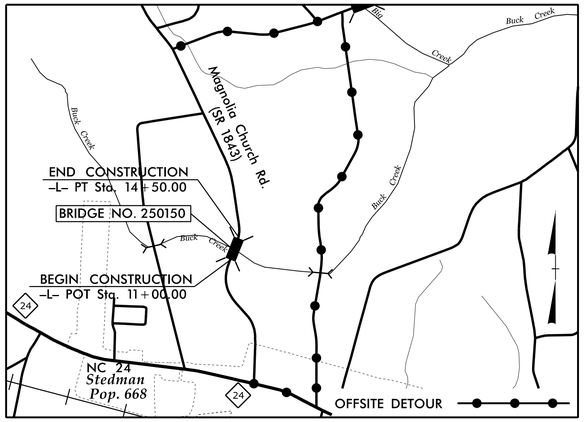
PAVEMENT MARKING DETAIL

TIP PROJECT: BP6.R018



VICINITY MAP

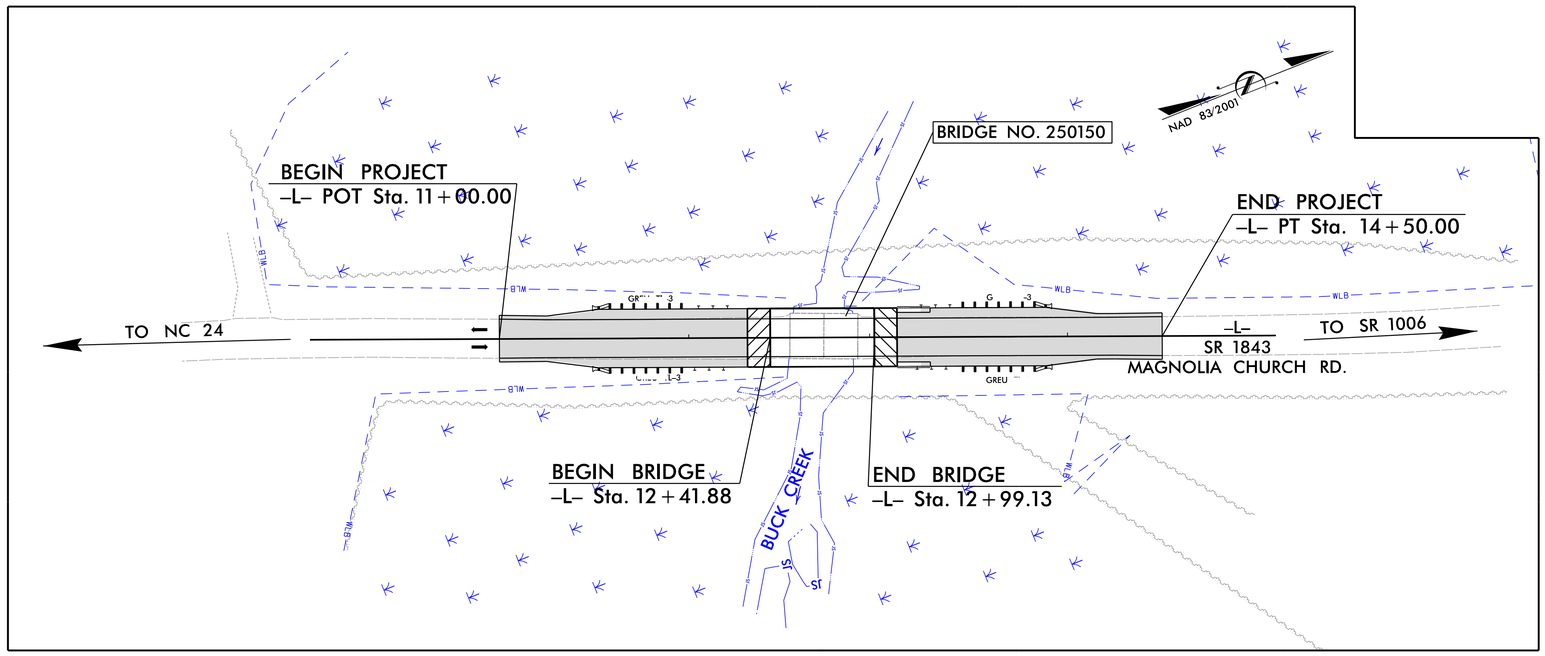
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CUMBERLAND COUNTY

LOCATION: BRIDGE NO. 250150 OVER BUCK CREEK ON SR 1843 (MAGNOLIA CHURCH RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND RESURFACING



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP6.R018	EC-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

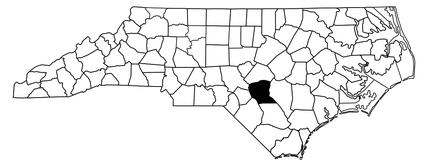
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	EW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

Clearing and Grubbing Phase

Both Phases

Final Phase



GRAPHIC SCALE

20 0 20 40

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

RK&K

Prepared in the Office of:

RUMMEL, KLEPPER & KAHL, LLP

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RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2018 STANDARD SPECIFICATIONS

Designed by:

SETH JONES, EI ***4183***
NAME *LEVEL III CERTIFICATION NO.*

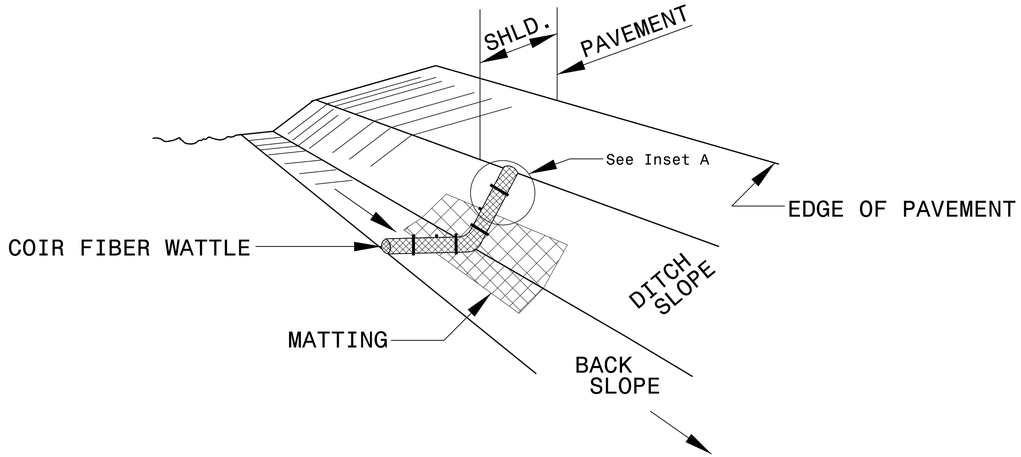
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

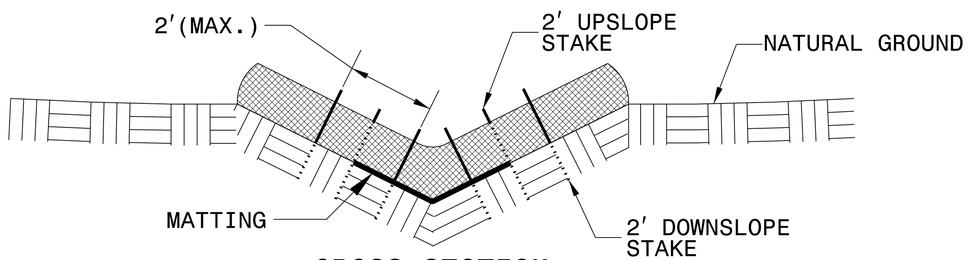
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms & Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

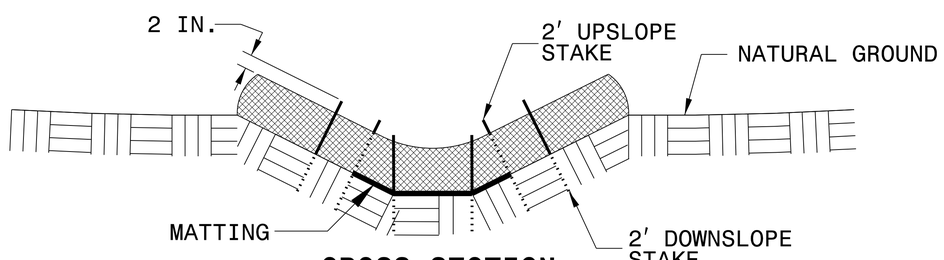
COIR FIBER WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

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

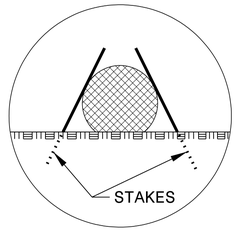
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

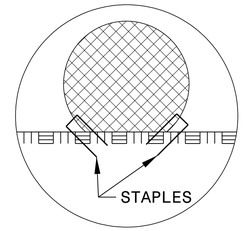
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

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

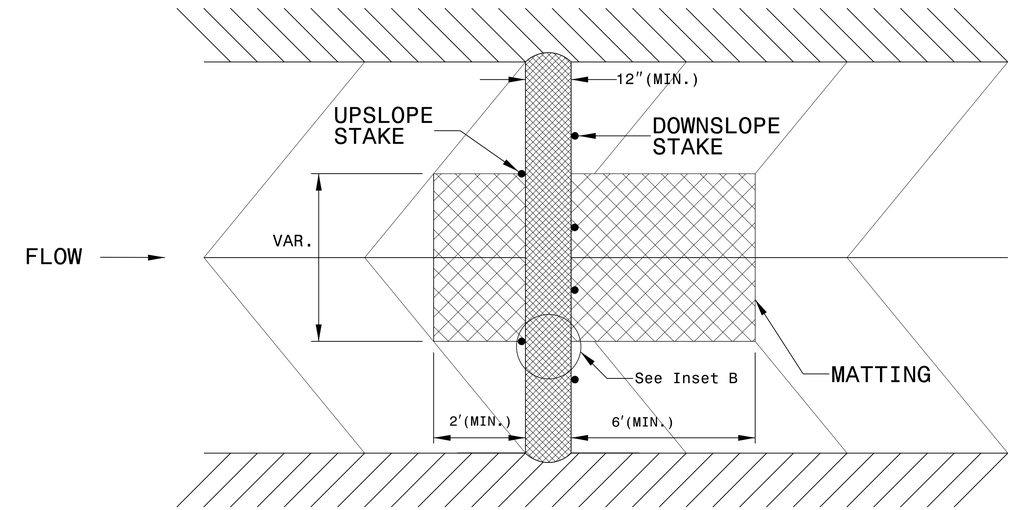
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



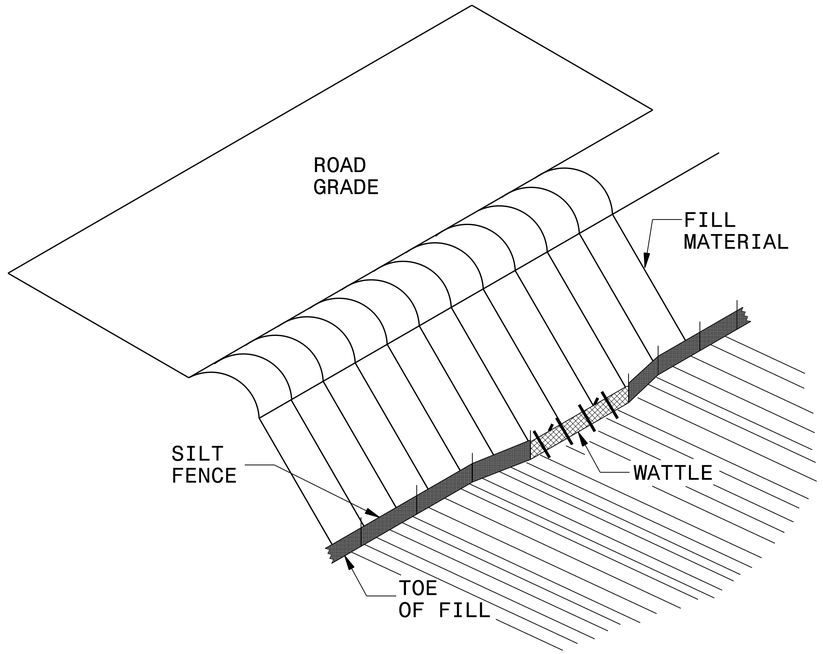
INSET B



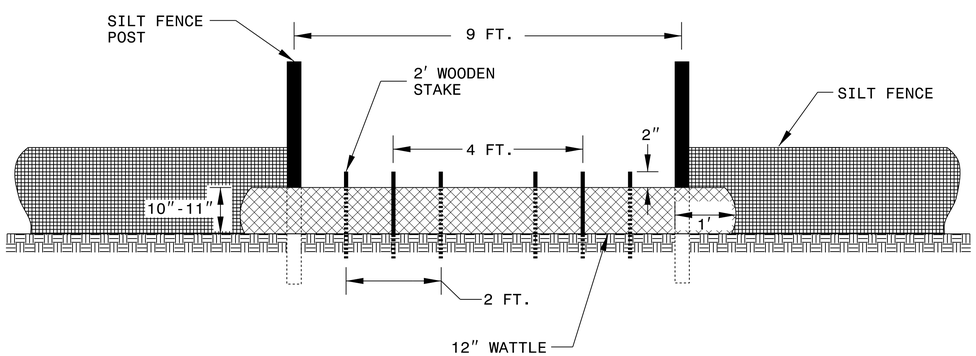
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

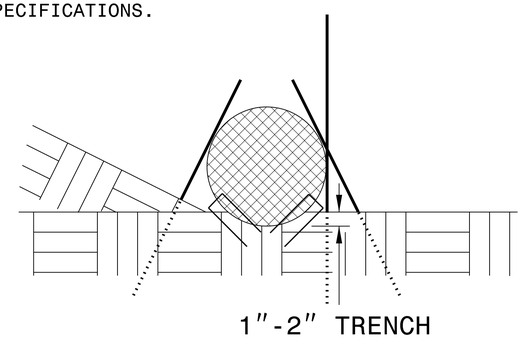
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

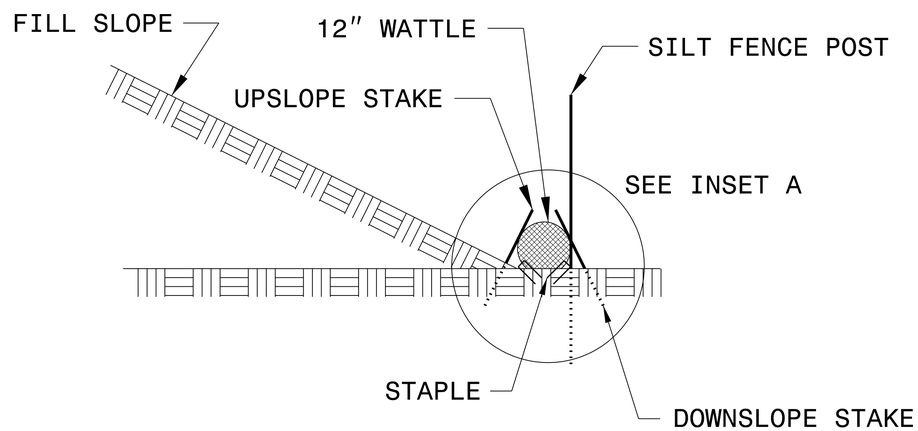
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A

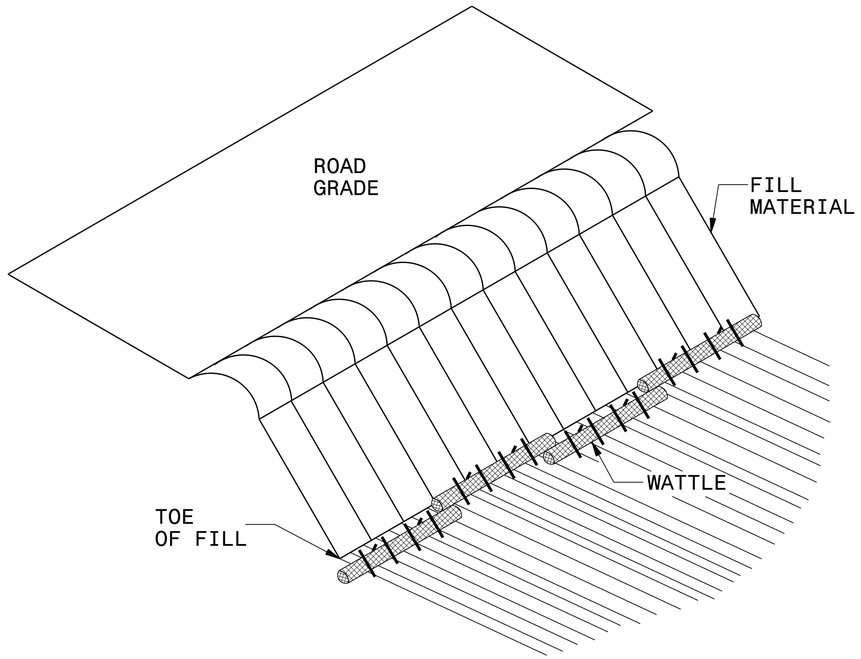




SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
BP6.R018	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

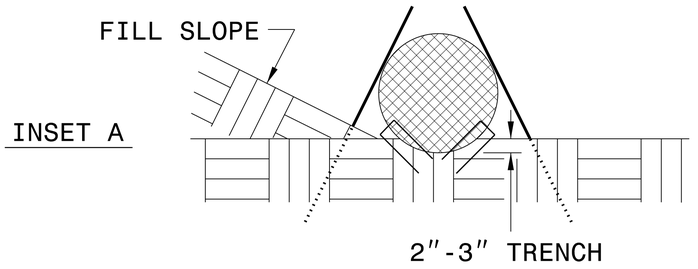
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

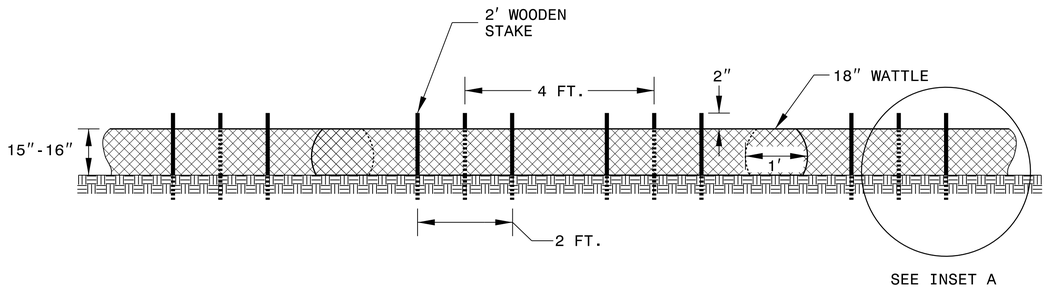
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

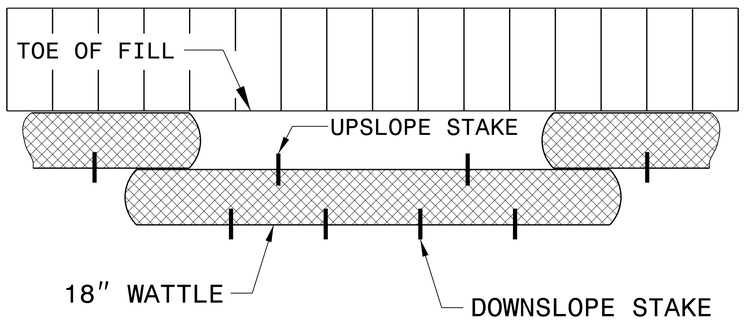
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.





FRONT VIEW



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
BR6.R018	EC-03
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO.	SHEET NO.
BR6.R018	EC-04/CONST.04

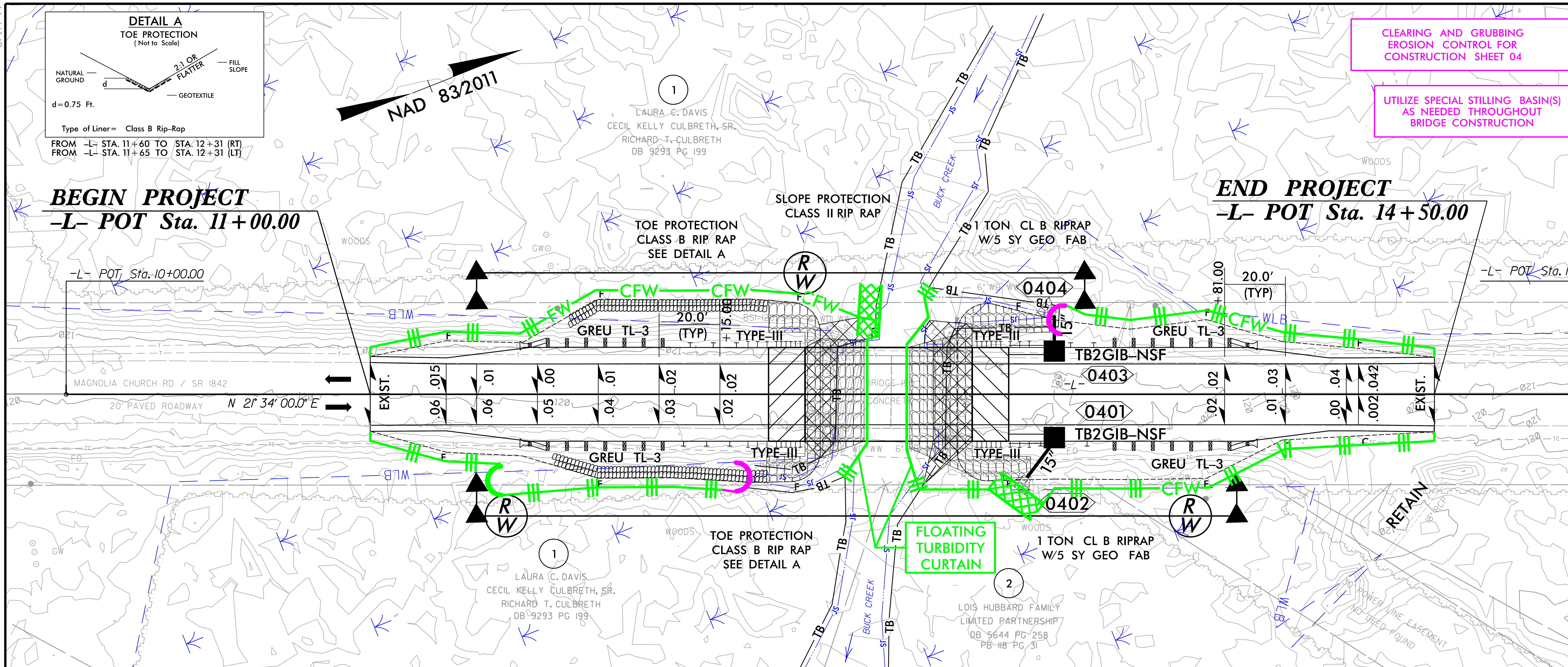
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

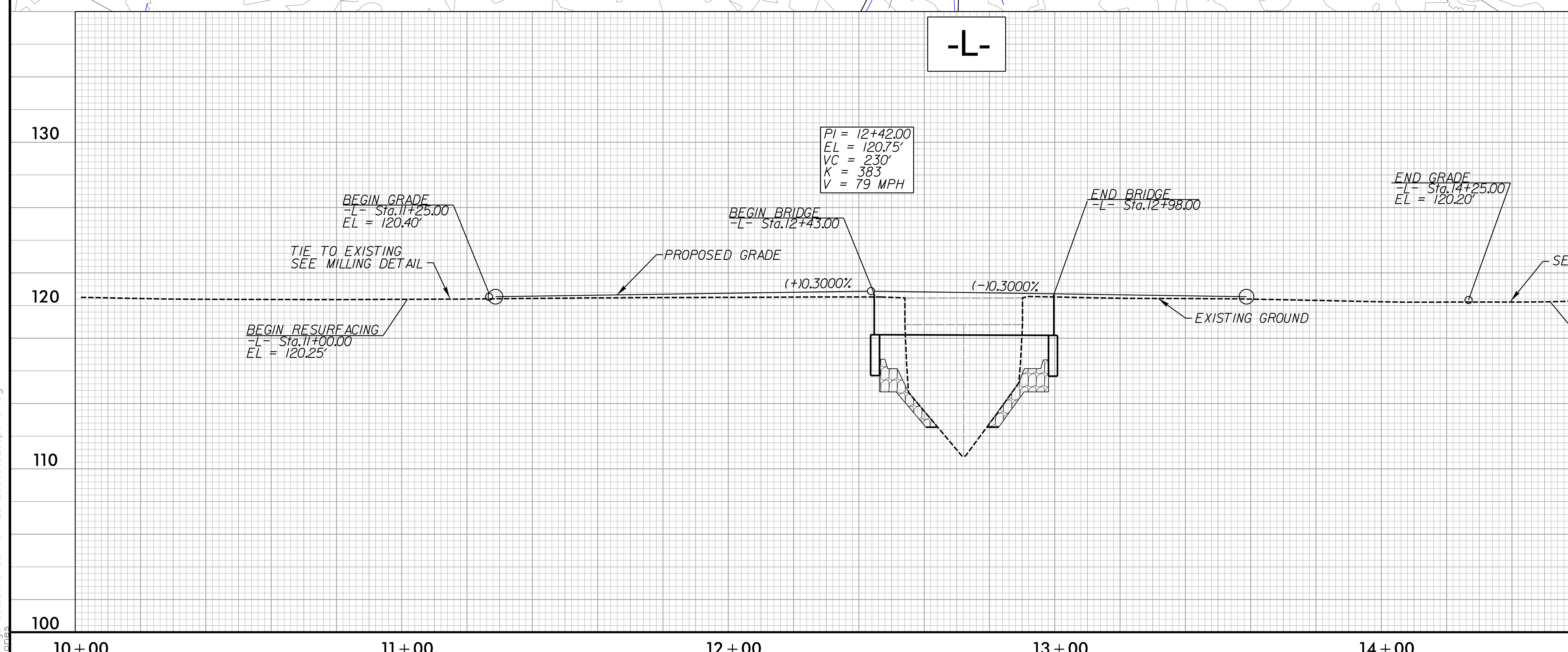
HYDRAULICS ENGINEER

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT BRIDGE CONSTRUCTION



DETAIL A
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER
FILL SLOPE
GEOTEXTILE
d=0.75 Ft.
Type of Liner= Class B Rip-Rap
FROM -L- STA. 11+60 TO STA. 12+31 (RT)
FROM -L- STA. 11+65 TO STA. 12+31 (LT)
NAD 83/2011
BEGIN PROJECT
-L- POT Sta. 11+00.00
END PROJECT
-L- POT Sta. 14+50.00
-L- POT Sta. 10+00.00
-L- POT Sta. 15+10.00
LAURA C. DAVIS
CECIL KELLY CULBRETH, SR.
RICHARD T. CULBRETH
DB 9293 PG 199
LOIS HUBBARD FAMILY
LIMITED PARTNERSHIP
DB 5644 PG 258
PB 118 PG 31
TOE PROTECTION
CLASS B RIP RAP
SEE DETAIL A
SLOPE PROTECTION
CLASS II RIP RAP
1 TON CL B RIPRAP
W/5 SY GEO FAB
FLOATING
TURBIDITY
CURTAIN
MAGNOLIA CHURCH RD / SR 1842
20' PAVED ROADWAY
N 21° 34' 00.0" E
BUCK CREEK
GREU TL-3
TYPE-III
TB2GIB-NSF
CFW
0401
0402
0403
0404
20.0' (TYP)
EXIST.
RETAIN
WOODS
EXISTING R/W
POWER LINE EASEMENT
NO DEED FOUND
20 0 20 40
SCALE



-L-
PI = 12+42.00
EL = 120.75'
VC = 230'
K = 383
V = 79 MPH
BEGIN GRADE
-L- Sta.11+25.00
EL = 120.40'
TIE TO EXISTING
SEE MILLING DETAIL
PROPOSED GRADE
BEGIN BRIDGE
-L- Sta.12+43.00
END BRIDGE
-L- Sta.12+98.00
END GRADE
-L- Sta.14+25.00
EL = 120.20'
(+)0.3000%
(-)0.3000%
EXISTING GROUND
BEGIN RESURFACING
-L- Sta.11+00.00
EL = 120.25'
END RESURFACING
-L- Sta.14+50.00
EL = 120.09'
130
120
110
100
10+00
11+00
12+00
13+00
14+00
15+00

PROPOSED BRIDGE HYDRAULIC DATA

DRAINAGE AREA	= 5.36	SQ.MI.
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 680	CFS
DESIGN HW ELEVATION	= 118.5	FT
100 YEAR DISCHARGE	= 1030	CFS
100 YEAR HW ELEVATION	= 119.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 2200	CFS
OVERTOPPING ELEVATION	= 120.2	FT

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8/17/99

9/20/2023
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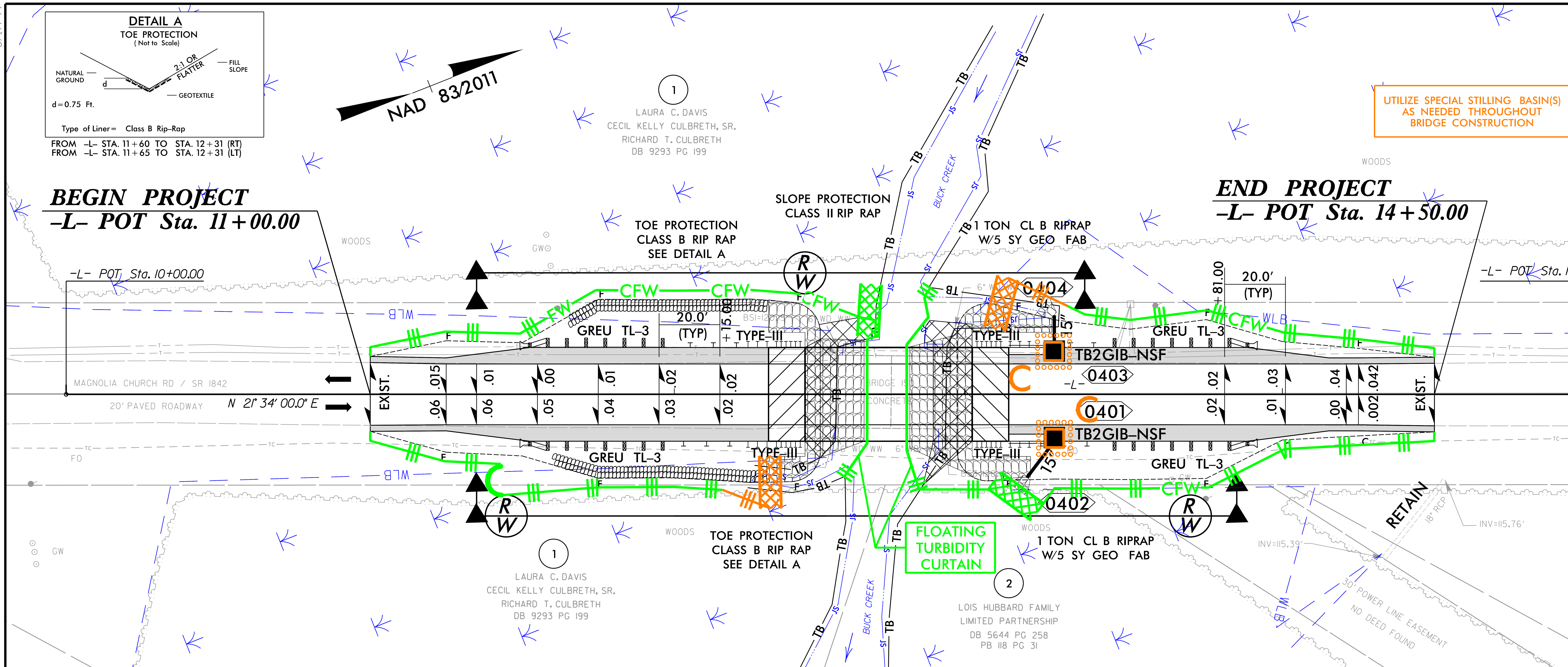
PROJECT REFERENCE NO.	SHEET NO.
BR6.R018	EC-05/CONST.04

R/W SHEET NO.

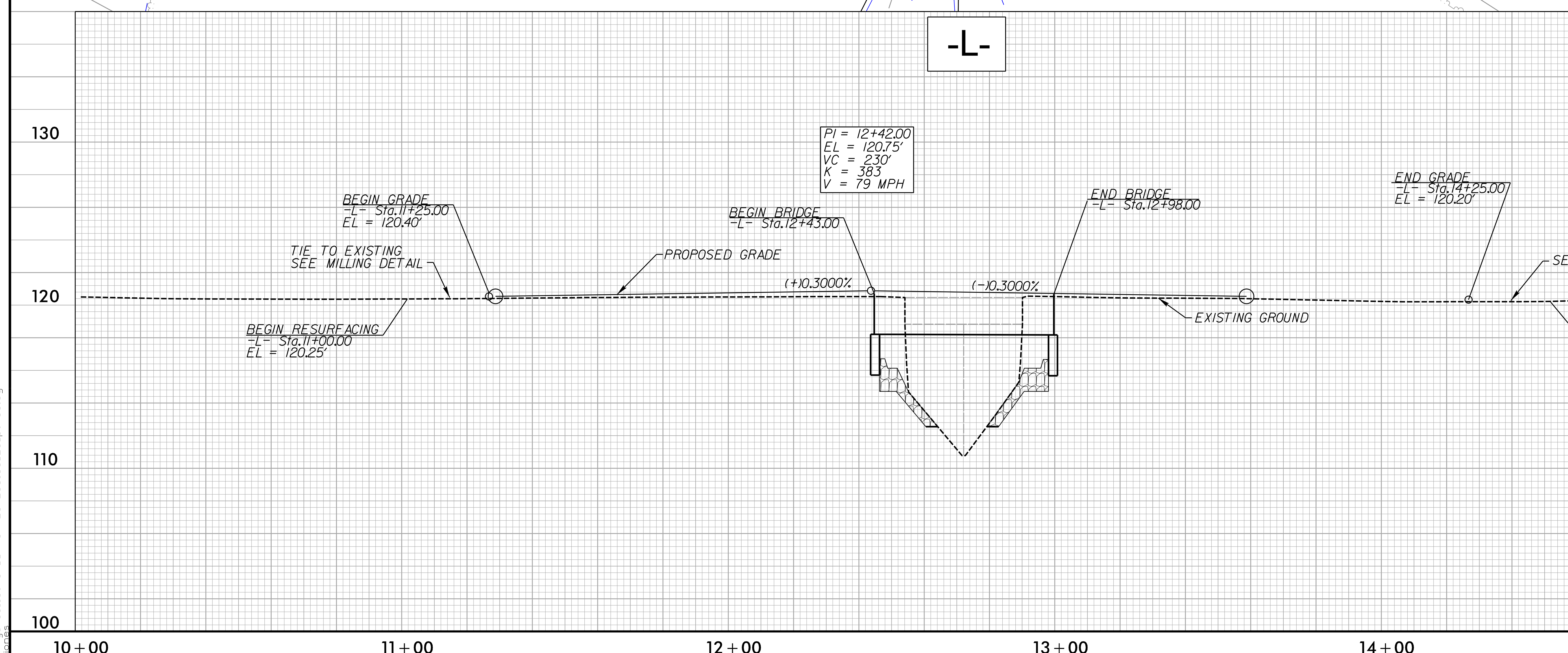
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



DETAIL A
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER
FILL SLOPE
GEOTEXTILE
d=0.75 Ft.
Type of Liner= Class B Rip-Rap
FROM -L- STA. 11+60 TO STA. 12+31 (RT)
FROM -L- STA. 11+65 TO STA. 12+31 (LT)
NAD 83/2011
LAURA C. DAVIS
CECIL KELLY CULBRETH, SR.
RICHARD T. CULBRETH
DB 9293 PG 199
BEGIN PROJECT
-L- POT Sta. 11+00.00
-L- POT Sta. 10+00.00
TOE PROTECTION
CLASS B RIP RAP
SEE DETAIL A
SLOPE PROTECTION
CLASS II RIP RAP
1 TON CL B RIPRAP
W/5 SY GEO FAB
END PROJECT
-L- POT Sta. 14+50.00
-L- POT Sta. 15+10.00
UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT BRIDGE CONSTRUCTION
MAGNOLIA CHURCH RD / SR 1842
20' PAVED ROADWAY
N 21° 34' 00.0" E
GREU TL-3
TYPE-III
TB2GIB-NSF
0403
0404
0401
0402
FLOATING TURBIDITY CURTAIN
LOIS HUBBARD FAMILY LIMITED PARTNERSHIP
DB 5644 PG 258
PB 118 PG 31
BUCK CREEK
RETAIN
30' POWER LINE EASEMENT NO DEED FOUND
EXISTING R/W
WOODS

SCALE 20 0 20 40



-L-
PI = 12+42.00
EL = 120.75'
VC = 230'
K = 383
V = 79 MPH
BEGIN GRADE -L- Sta.11+25.00 EL = 120.40'
TIE TO EXISTING SEE MILLING DETAIL
PROPOSED GRADE
BEGIN BRIDGE -L- Sta.12+43.00
END BRIDGE -L- Sta.12+98.00
(+)0.3000%
(-)0.3000%
EXISTING GROUND
END GRADE -L- Sta.14+25.00 EL = 120.20'
BEGIN RESURFACING -L- Sta.11+00.00 EL = 120.25'
END RESURFACING -L- Sta.14+50.00 EL = 120.09'
130
120
110
100
10+00
11+00
12+00
13+00
14+00
15+00

PROPOSED BRIDGE HYDRAULIC DATA

DRAINAGE AREA	= 5.36	SQ.MI.
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 680	CFS
DESIGN HW ELEVATION	= 118.5	FT
100 YEAR DISCHARGE	= 1030	CFS
100 YEAR HW ELEVATION	= 119.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 2200	CFS
OVERTOPPING ELEVATION	= 120.2	FT

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP6.R018	X-1

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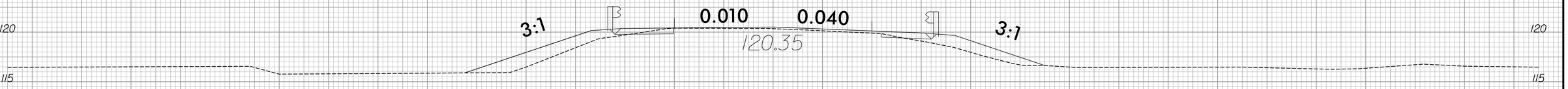
125 120 115 110

12+00.00

125 120 115 110



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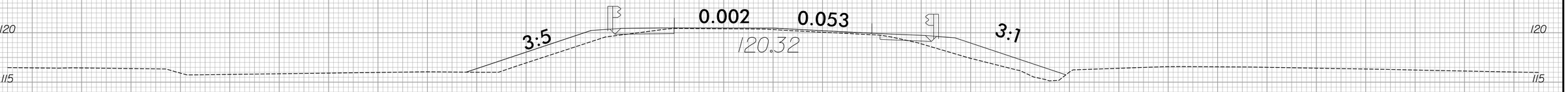

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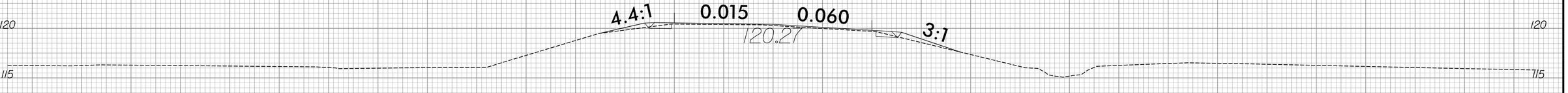
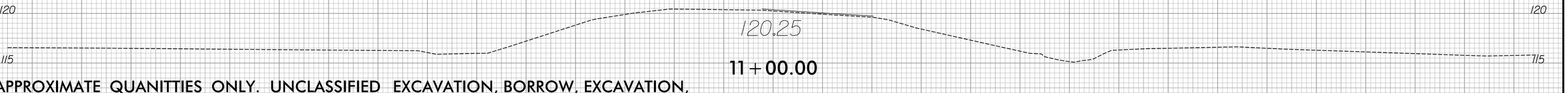


11+25.00

125 120 115



11+00.00

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

—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

4/8/2025
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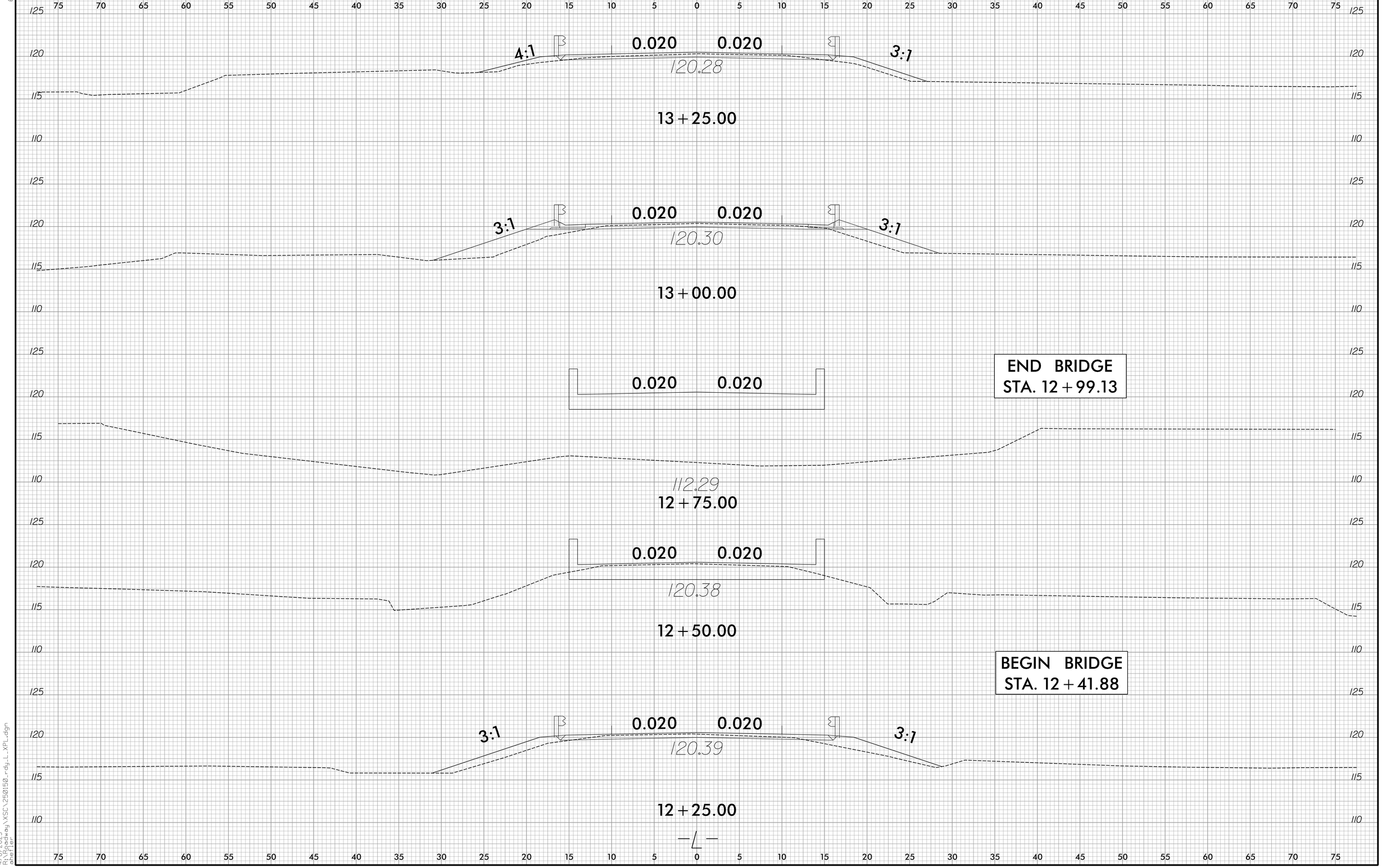
sheet

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP6.R018	X-2



4/8/2025
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PROJ. REFERENCE NO.	SHEET NO.
BP6.R018	X-3

6/23/16
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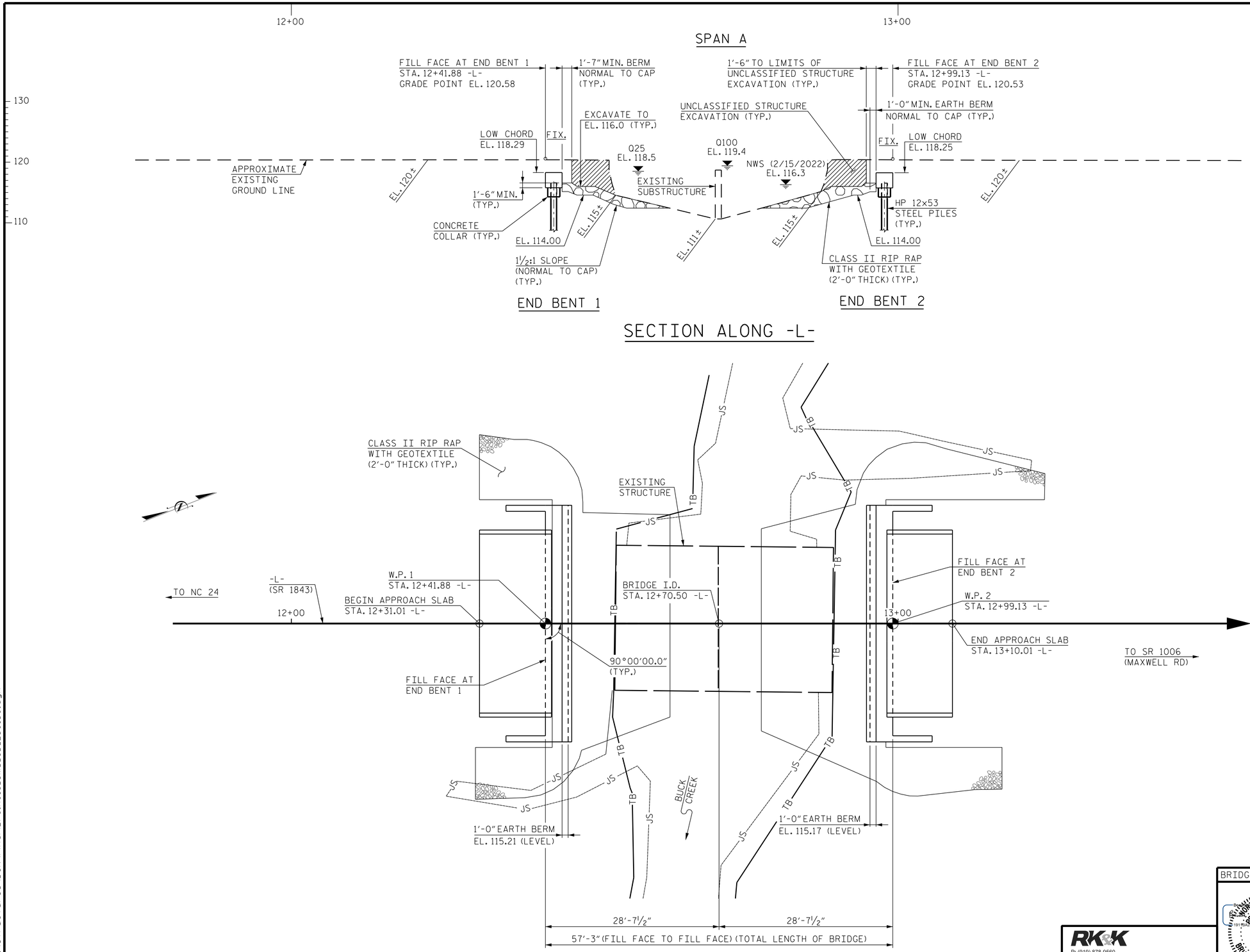

SECTION ALONG -L-

P.V.I. STA. = 12+42.00 -L-
EL. = 120.75
V.C. = 230 FT.
(+)0.3000% (-)0.3000%

-L- GRADE DATA

HYDRAULIC DATA

DESIGN DISCHARGE	680 C.F.S.
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	118.5
DRAINAGE AREA	5.36 SQ. MI.
BASE DISCHARGE (Q100)	1,030 C.F.S.
BASE HIGH WATER ELEVATION	119.4

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	2,200 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	500+ YRS.
OVERTOPPING FLOOD ELEVATION	120.2 *

* STA. 14+23.56 -L-

PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY

PROJECT NO. BP6.R018
CUMBERLAND COUNTY
STATION: 12+70.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 250150

BRIDGE NO. 250150

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER BUCK CREEK ON SR 1843 (MAGNOLIA CHURCH RD.) BETWEEN NC 24 AND SR 1006

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NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
9/13/2023

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			14

DRAWN BY : B. H. GONFA DATE : AUG 2023
CHECKED BY : M. SHARMA DATE : AUG 2023
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : AUG 2023

bgonfa
9/13/2023 R:\Structures\DGN\Final\BP6.R018_SMU_GD_250150.dgn

SUMMARY OF PILE INFORMATION/INSTALLATION

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

					DRIVEN PILES			PREDRILLING FOR PILES ✳			DRILLED-IN PILES		
	FACTORED RESISTANCE PER PILE	PILE CUT-OFF (TOP OF PILE) ELEVATION	ESTIMATED PILE LENGTH PER PILE	SCOUR CRITICAL ELEVATION	MIN. PILE TIP (TIP NO HIGHER THAN) ELEV.	REQUIRED DRIVING RESISTANCE (RDR) ✳✳ PER PILE	TOTAL PILE REDRIVES QUANTITY	PREDRILLING LENGTH PER PILE	PREDRILLING ELEVATION (ELEV. NOT TO PREDRILL BELOW)	MAXIMUM PREDRILLING DIAMETER	PILE EXCAVATION BOTTOM OF HOLE) ELEV.	PILE EXCAVATION NOT IN SOIL PER PILE	PILE EXCAVATION IN SOIL PER PILE
	TONS	FT.	FT.	FT.	FT.	TONS	EA.	LIN. FT.	FT.	INCHES	FT.	LIN. FT.	LIN.FT.
END BENT 1, PILES 1-7	75	116.71	40			125	7						
END BENT 2, PILES 1-7	75	116.67	40			125							

✳ PREDRILLING FOR PILES IS REQUIRED FOR END BENTS/BENTS WITH A PREDRILLING LENGTH AND AT THE CONTRACTOR'S OPTION FOR END BENTS/BENTS WITH PREDRILLING INFORMATION BUT NO PREDRILLING LENGTH

$$✳✳ RDR = \frac{\text{FACTORED RESISTANCE + FACTORED DOWNDRAG LOAD + FACTORED DEAD LOAD}}{\text{DYNAMIC RESISTANCE FACTOR}} + \text{NOMINAL DOWNDRAG RESISTANCE} + \frac{\text{NOMINAL SCOUR RESISTANCE}}{\text{SCOUR RESISTANCE FACTOR}}$$

NOTES:

THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (MIKEL W. SHIPMAN, PE #054501) ON 7-24-2023.

TOTAL PILE DRIVING EQUIPMENT SETUP QUALITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILE, I.E., THE NUMBER OF PILES WITH A REQUIRED DRIVING RESISTANCE.

THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING WHEN PDAs MAY BE REQUIRED.

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

SUMMARY OF PDA/PILE ORDER LENGTHS

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	PILE DRIVING ANALYZER (PDA)			PILE ORDER LENGTHS	
	PDA TESTING REQUIRED	PDA TEST PILE LENGTH	TOTAL PDA TESTING QUANTITY	END BENT/ BENT NO.(S)	PILE ORDER LENGTH BASIS ✳
	YES/MAYBE	FT.	EA.		EST./PDA
END BENT 1	YES	45	1		
END BENT 2	YES/MAYBE	45			

✳ EST = PILE ORDER LENGTHS FROM ESTIMATED PILE LENGTHS; PDA = PILE ORDER LENGTHS BASED ON PDA TESTING. FOR GROUPS OF END BENTS/BENTS WITH PILE ORDER LENGTHS BASED ON PDA TESTING, THE FIRST END BENT/BENT NO. LISTED FOR EACH GROUP IS THE REPRESENTATIVE END BENT/BENT WITH THE PDA.

✳ PDA REQUESTED FOR END BENT 1 DUE TO LACK OF QUALITY SUBSURFACE INFORMATION AVAILABLE AND TO VERIFY ASSUMPTIONS MADE IN DESIGN.

PILE DESIGN INFORMATION

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	FACTORED AXIAL PER PILE	FACTORED DOWNDRAG LOAD PER PILE	FACTORED DEAD LOAD ✳ PER PILE	DYNAMIC RESISTANCE FACTOR	NOMINAL DOWNDRAG RESISTANCE PER PILE	NOMINAL SCOUR RESISTANCE PER PILE	SCOUR RESISTANCE FACTOR
	TONS	TONS	TONS		TONS	TONS	(DEFAULT = 1.00)
END BENT 1, PILES 1-7	75			0.60			
END BENT 2, PILES 1-7	75			0.60			

✳ FACTORED DEAD LOAD IS FACTORED WEIGHT OF PILE ABOVE THE GROUND LINE.

PROJECT NO. BP6.R018

CUMBERLAND COUNTY

STATION: 12+70.50 -L-

SHEET 2 OF 3

BRIDGE NO. 250150

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

PILE FOUNDATION TABLES

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
9/13/2023

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REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-2
TOTAL SHEETS 14

DRAWN BY : B. H. GONFA DATE : AUG 2023
CHECKED BY : M. SHARMA DATE : AUG 2023
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : AUG 2023

bgonfa 9/13/2023 R:\Structures\DGN\Final\BP6.R018_SMU_FD_250150.dgn

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 X 53 STEEL PILES		PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	NO.	LIN.FT.	EA.	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE												110.25			LUMP SUM	11	605
END BENT 1					14.2		2,115	7	7	280			155	170			
END BENT 2					14.2		2,115	7	7	280			190	210			
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	28.4	LUMP SUM	4,230	14	14	560	7	110.25	345	380	LUMP SUM	11	605

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".

THE EXISTING STRUCTURE CONSISTING OF 2 SPANS AT 18'-1" (OAL = 36'-2") WITH A CLEAR ROADWAY WIDTH OF 24'-0" WITH A REINFORCED CONCRETE DECK WITH ASPHALT OVERLAY ON 19 LINES OF 6"X 12" TIMBER JOISTS ON TIMBER CAPS AND TIMBER PILES AT THE END BENTS AND INTERIOR BENTS AND LOCATED AT THE PROPOSED SITE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FEET EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

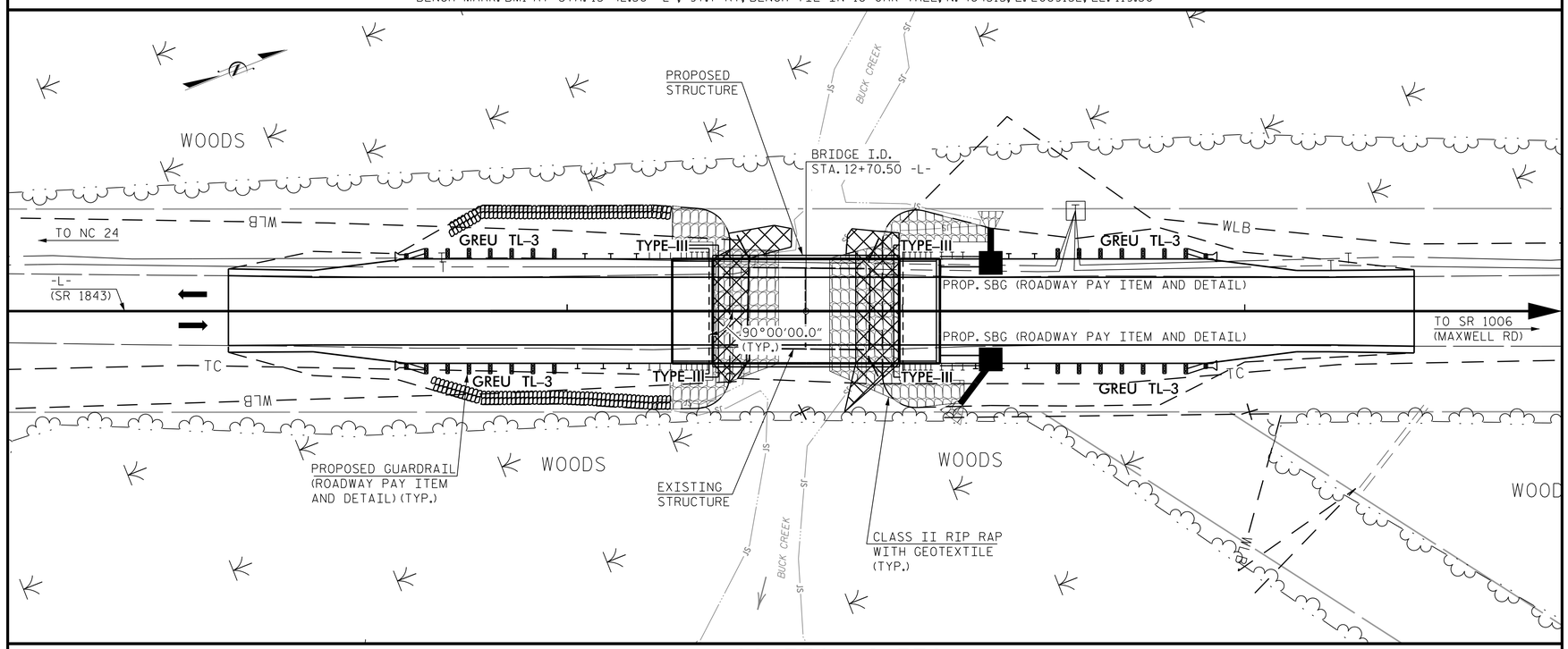
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

BENCH MARK: BM1 AT STA. 13+42.56 -L-, 97.7' RT, BENCH TIE IN 18" OAK TREE, N: 464315, E: 2089132, EL. 119.30



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. BP6.R018
CUMBERLAND COUNTY
STATION: 12+70.50 -L-

SHEET 3 OF 3

BRIDGE NO. 250150

STATE OF NORTH CAROLINA
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RALEIGH

GENERAL DRAWING
LOCATION SKETCH AND TOTAL BILL OF MATERIAL

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15825 BRUCE D. KLAPPENBACH
9/13/2023

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			14

DRAWN BY : B. H. GONFA DATE : AUG 2023
CHECKED BY : M. SHARMA DATE : AUG 2023
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : AUG 2023

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LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT					
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⟨1⟩	1.055	--	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27	
		HL-93 (OPERATING)	N/A		1.591	--	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		HS-20 (OPERATING)	36.000		1.900	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.90	55'	EL	5.4	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27	
		SNGARBS2	20.000		2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000		2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250		1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGGRS4	34.925		1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550		1.160	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		SNS6A	39.950		1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
		SNS7B	42.000		1.028	43.175	1.4	0.275	1.50	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.320	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075		1.330	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600		1.101	45.811	1.4	0.275	1.60	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000		1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000		1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		TNAGRIT4	43.000		1.101	47.330	1.4	0.275	1.60	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNAGT5A	45.000		1.031	46.405	1.4	0.275	1.50	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27	
		TNAGT5B	45.000	⟨3⟩	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.617	46.483	1.3	0.275	2.37	55'	EL	27	0.523	2.27	55'	EL	5.4	0.80	0.275	1.62	55'	EL	27	
		EV3	43.000	⟨4⟩	1.049	45.107	1.3	0.275	1.54	55'	EL	27	0.523	1.53	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.

2.

3.

4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING * *

⟨4⟩ EMERGENCY VEHICLE LOAD RATING **

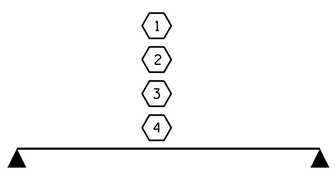
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER- EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN ``A"

PROJECT NO. BP6.R018

CUMBERLAND COUNTY

STATION: 12+70.50 -L-

BRIDGE NO. 250150

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9/13/2023

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 55' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			14

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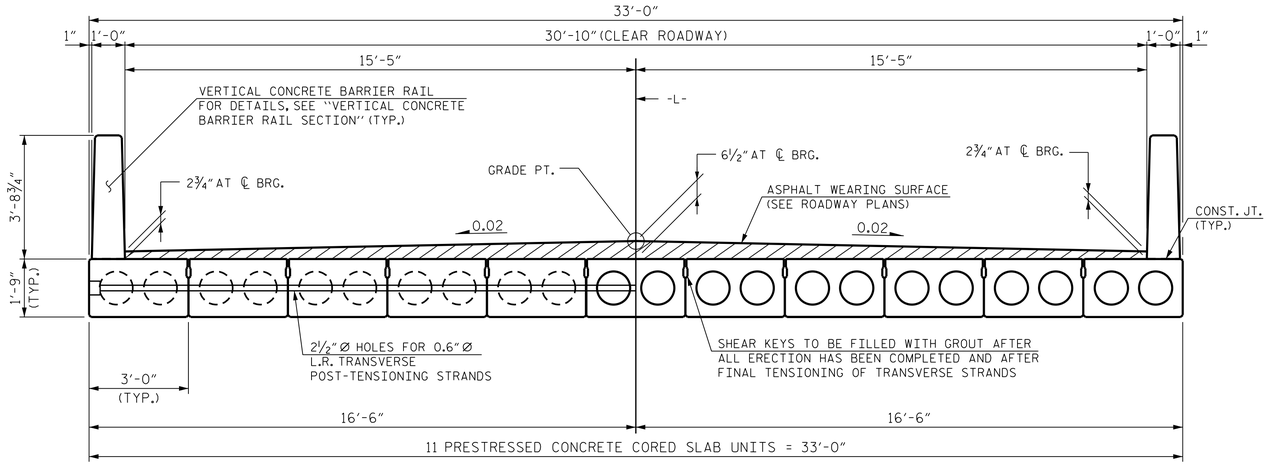


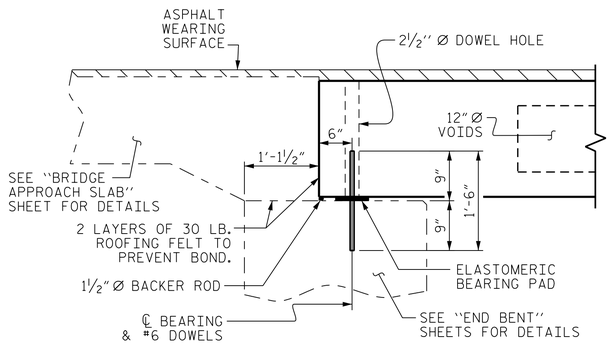
HALF SECTION AT INTERMEDIATE DIAPHGRAMS

HALF SECTION THROUGH VOIDS

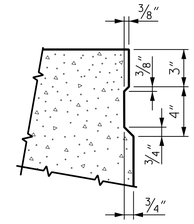
TYPICAL SECTION

✱ THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL

FIXED END

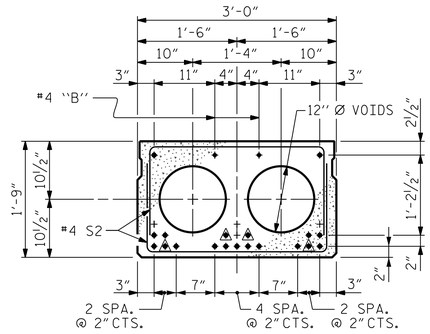


SECTION AT END BENT



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



INTERIOR SLAB SECTION (55′ UNIT)
(19 STRANDS REQUIRED)

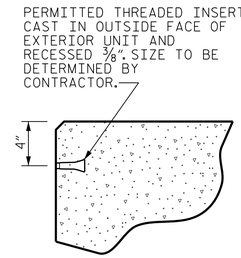
0.6 Ø LOW RELAXATION STRAND LAYOUT

△ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

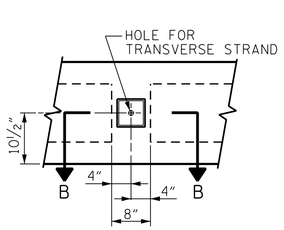
DEBONDING LEGEND

EXT. SLAB SECTION

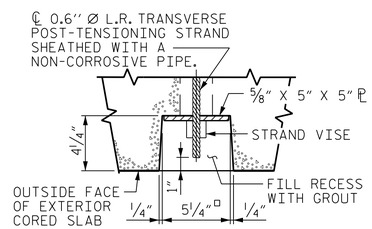
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



THREADED INSERT DETAIL

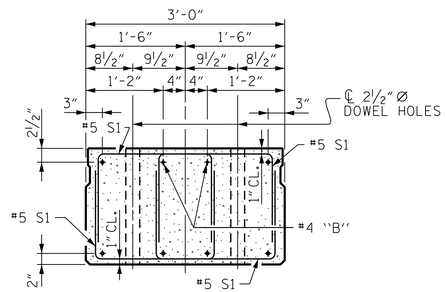


ELEVATION VIEW



SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

PROJECT NO. BP6.R018
CUMBERLAND COUNTY
STATION: 12+70.50 -L-

SHEET 1 OF 3

BRIDGE NO. 250150

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

REVISIONS					
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2			4		

SHEET NO. S-5
TOTAL SHEETS 14

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9/13/2023

DRAWN BY : B. H. GONFA DATE : AUG 2023
CHECKED BY : M. SHARMA DATE : AUG 2023
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : AUG 2023

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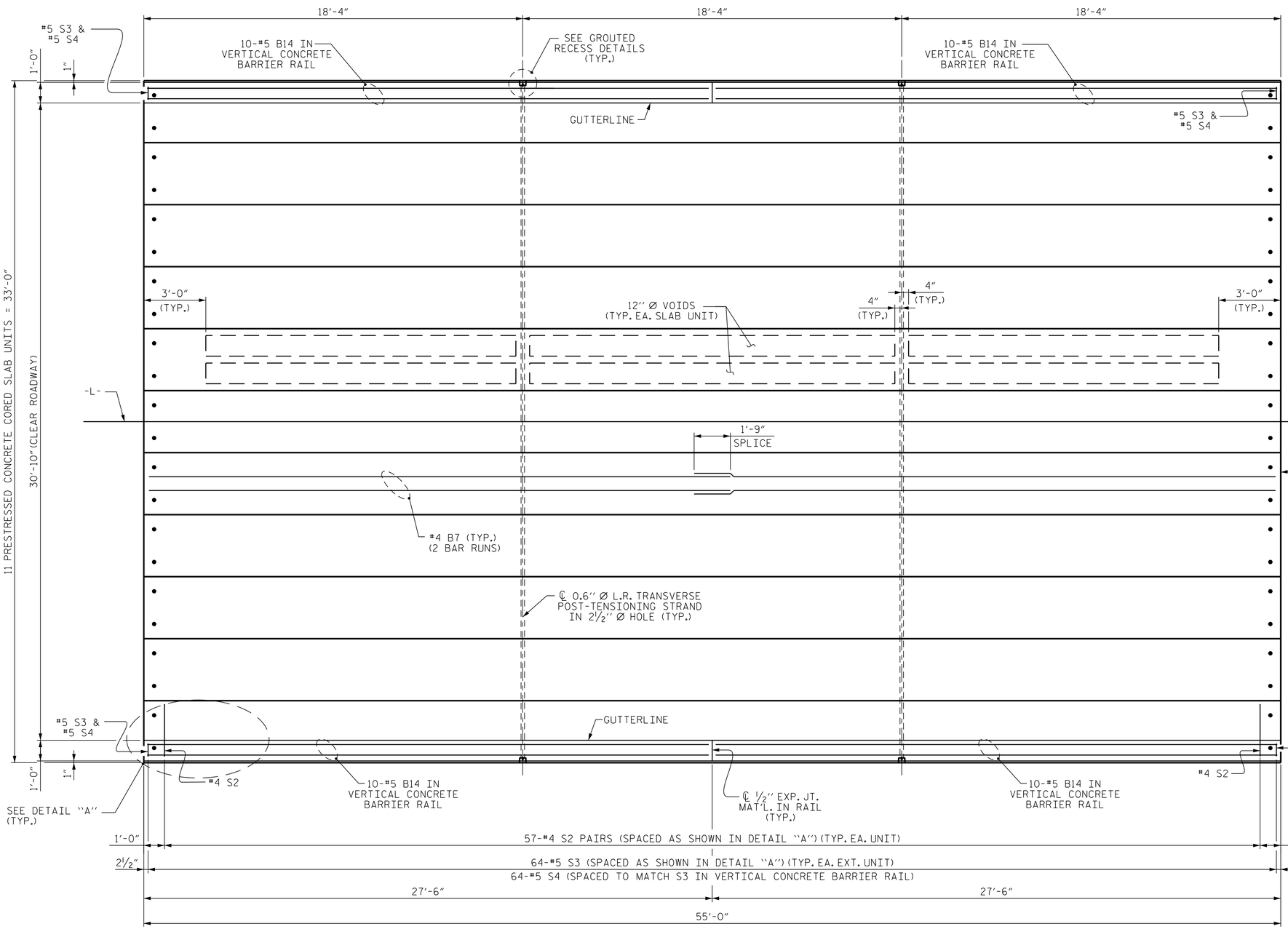
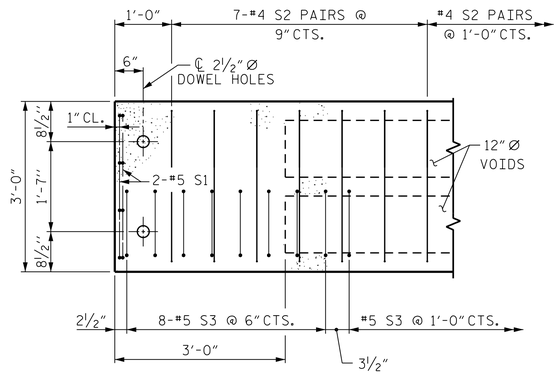


PLAN OF UNIT



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. BP6.R018
CUMBERLAND COUNTY
STATION: 12+70.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 55' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

BRIDGE NO. 250150

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15825 BRUCE D. KLAPPENBACH
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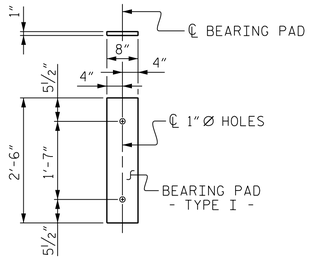


FIXED END

(TYPE I - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	55' UNIT					
✳B14	40	40	#5	STR	27'-1"	1130
✳S4	128	128	#5	2	7'-2"	957
✳EPOXY COATED REINFORCING STEEL				LBS.		2087
CLASS AA CONCRETE				CU.YDS.		14.1
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
55' UNITS	1⅝"	3'-7⅝"

DEAD LOAD DEFLECTION AND CAMBER

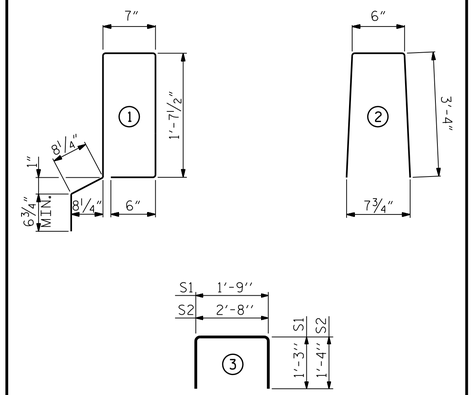
	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✳✳	⅜" ↓
FINAL CAMBER	1⅛" ↑

✳✳ INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	9	55'-0"	495'-0"
TOTAL	11		605'-0"

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406
✳S3	64	#5	1	5'-7"	373		
REINFORCING STEEL			LBS.		516		516
✳EPOXY COATED REINFORCING STEEL			LBS.		373		
6500 P.S.I. CONCRETE			CU. YDS.		7.8		7.8
0.6"Ø L.R. STRANDS			No.		19		19

CONCRETE RELEASE STRENGTH

UNIT	PSI
55' UNITS	4900

GRADE 270 STRANDS

	0.6"Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

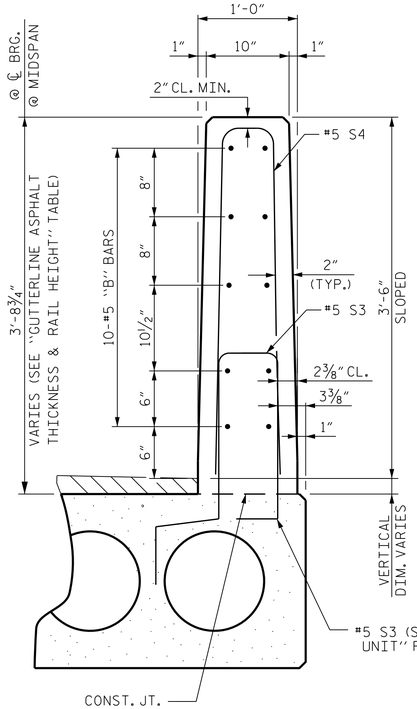
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

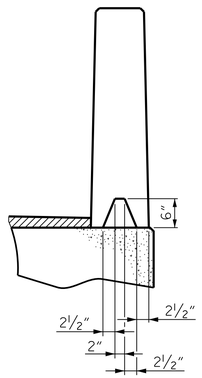
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

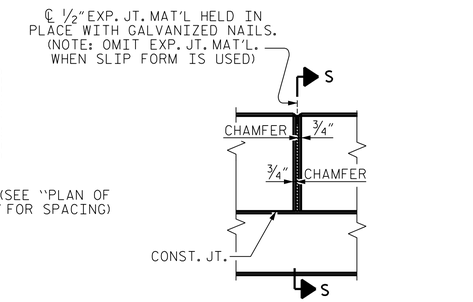


SCTION THRU RAIL



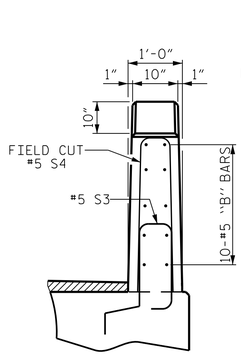
SECTION S-S

AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

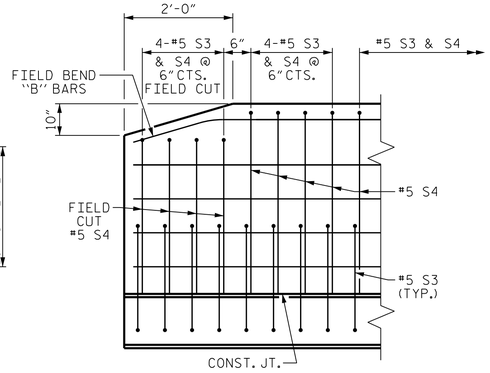


ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL SECTION



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. BP6.R018

CUMBERLAND COUNTY

STATION: 12+70.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
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RALEIGH

STANDARD
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

BRIDGE NO. 250150

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15825 BRUCE D. KLAPPENBACH
9/13/2023

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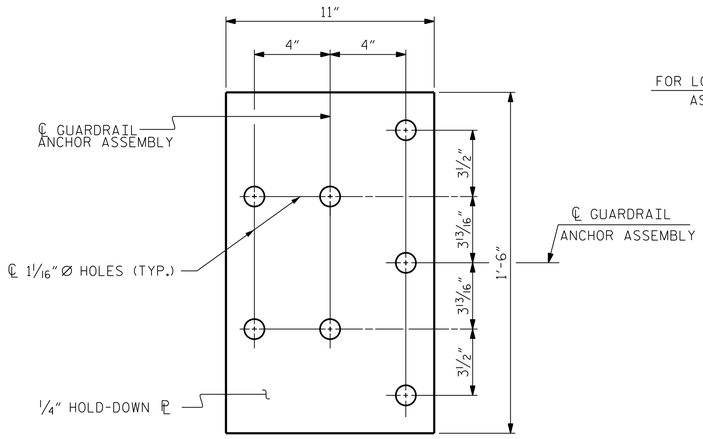
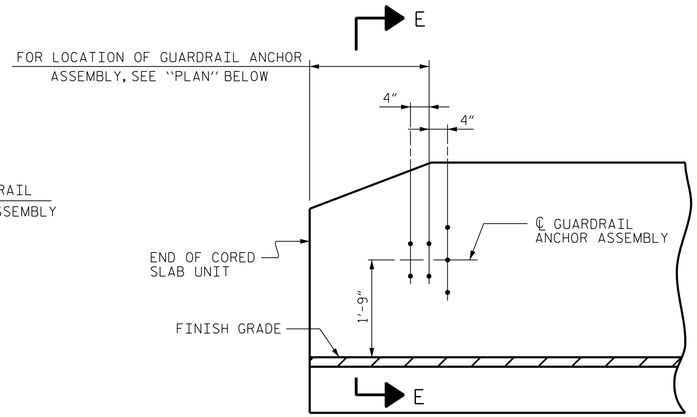


PLAN



ELEVATION

NOTES:

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

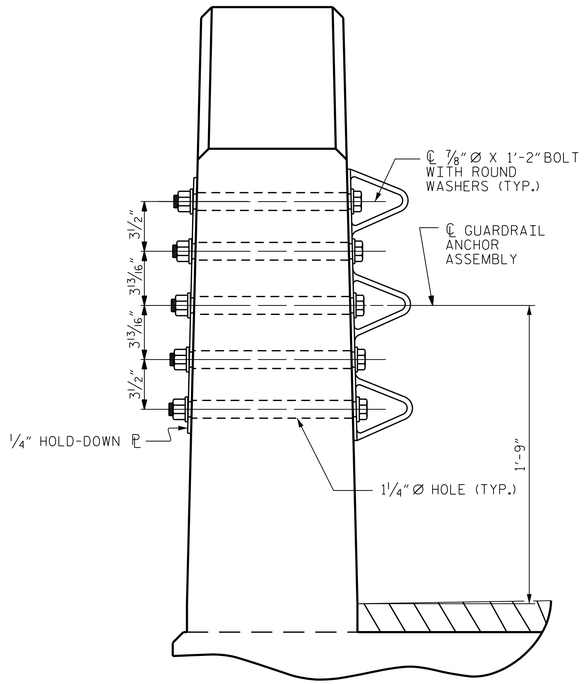
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

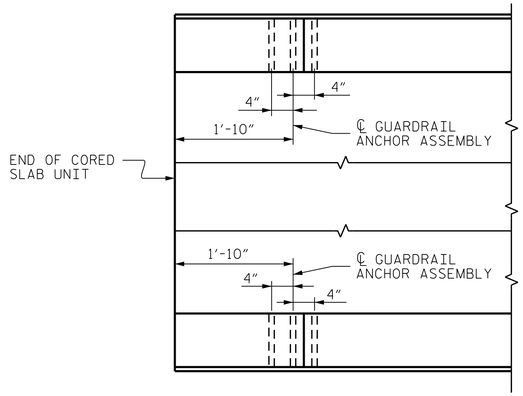
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR

SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. BP6.R018

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STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

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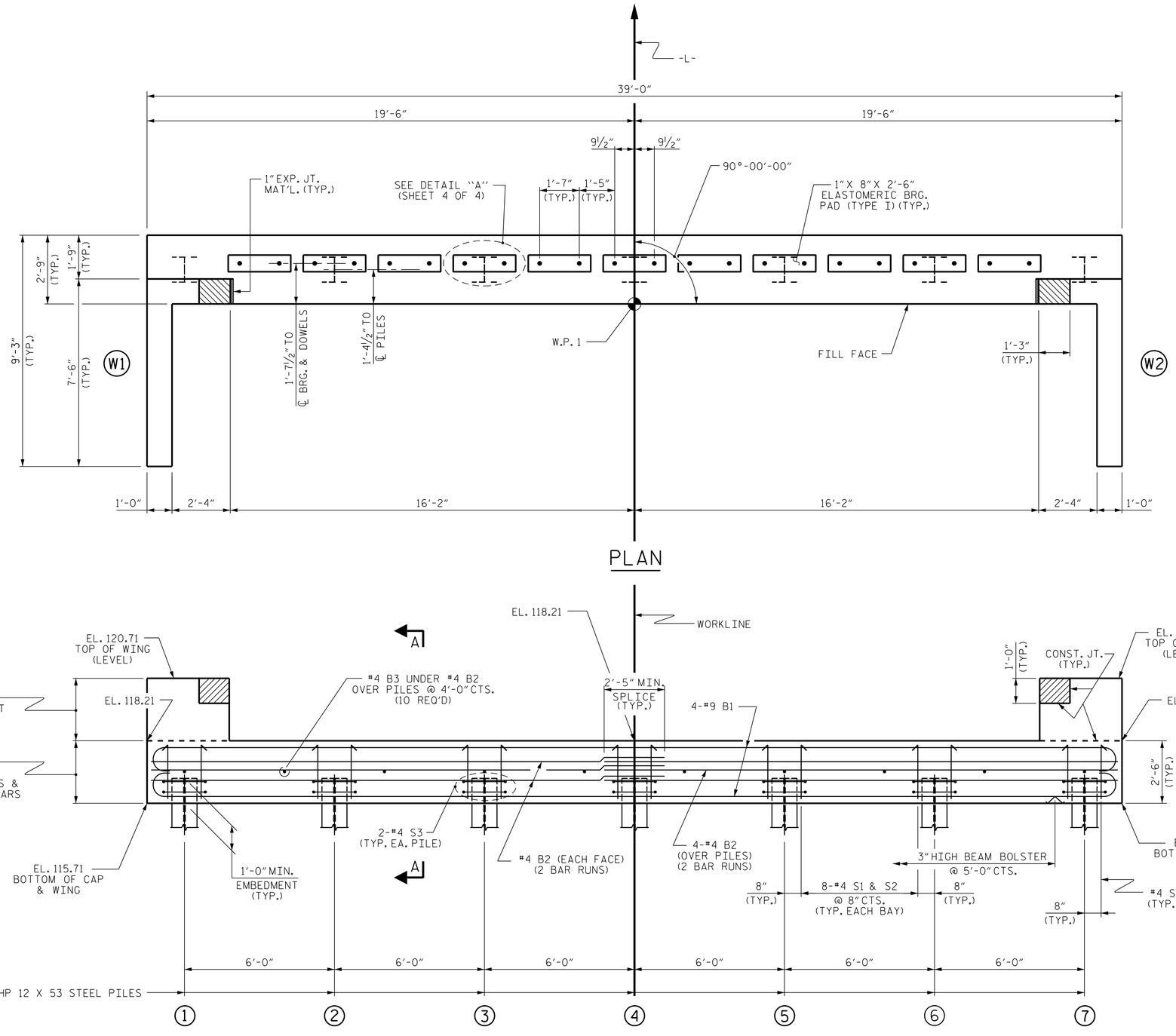

ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

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CUMBERLAND COUNTY
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SHEET 1 OF 4

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SUBSTRUCTURE
END BENT 1

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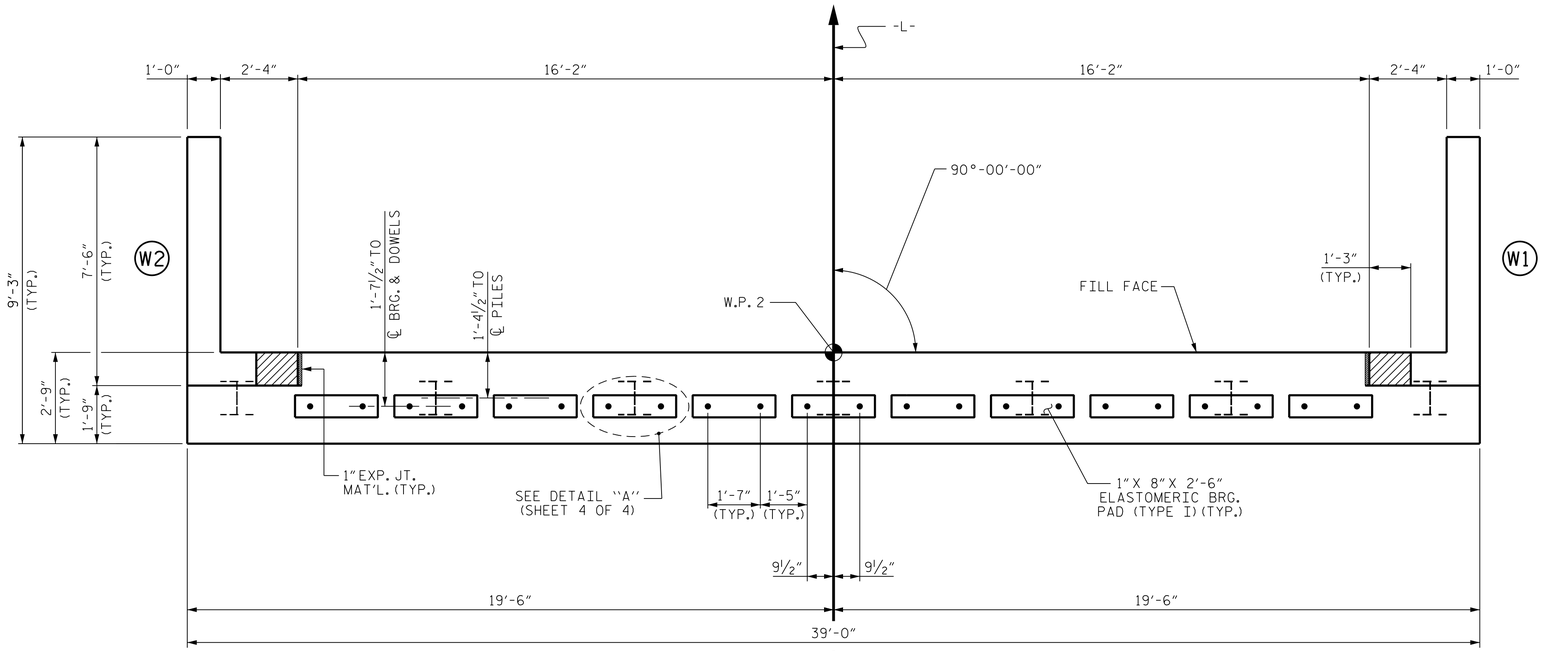
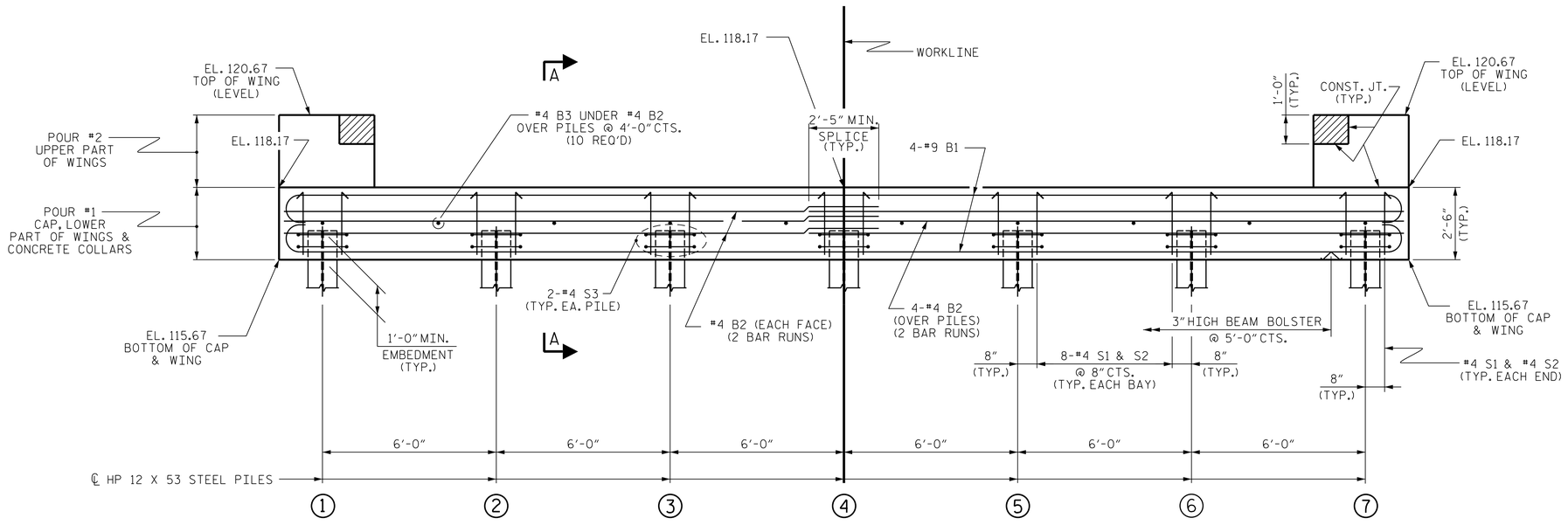


PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
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FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

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CUMBERLAND COUNTY
STATION: 12+70.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
END BENT 2

BRIDGE NO. 250150

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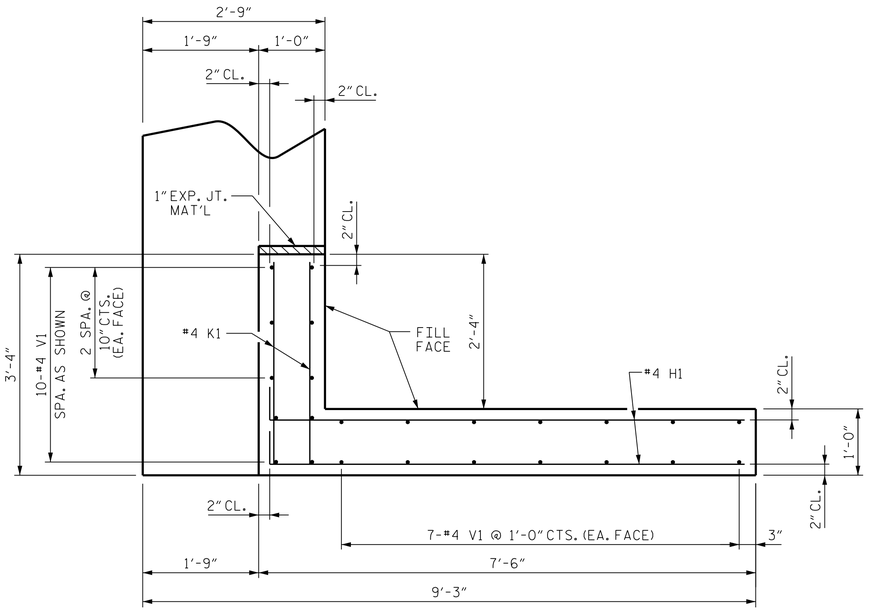
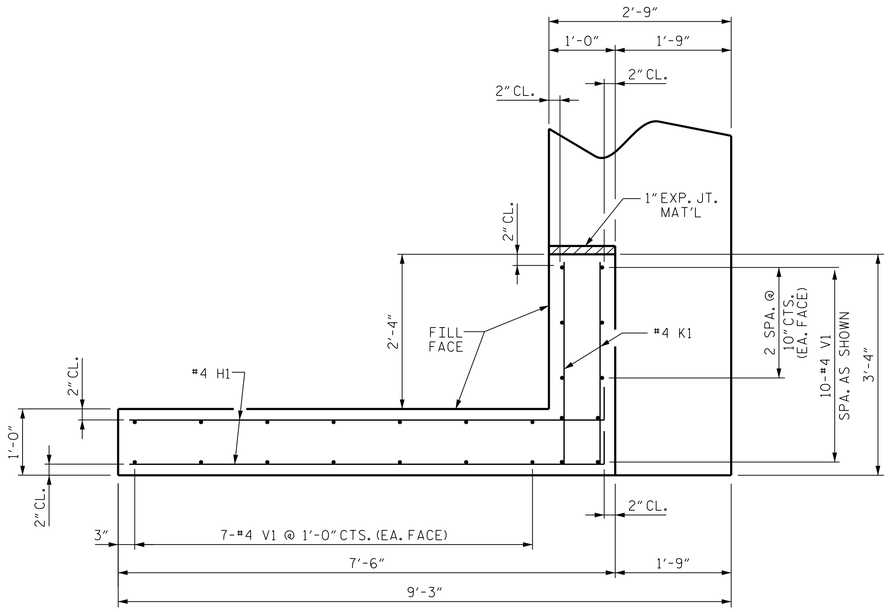
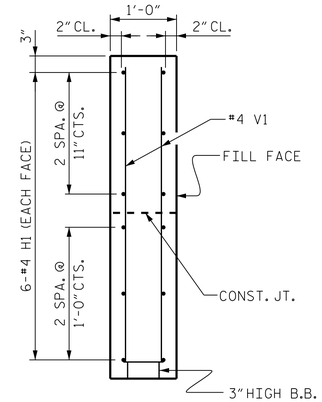


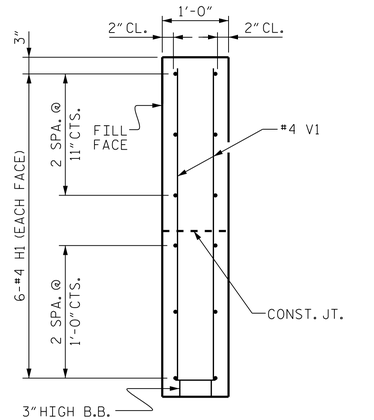
PLAN OF WING (W1)



PLAN OF WING (W2)



SECTION X-X



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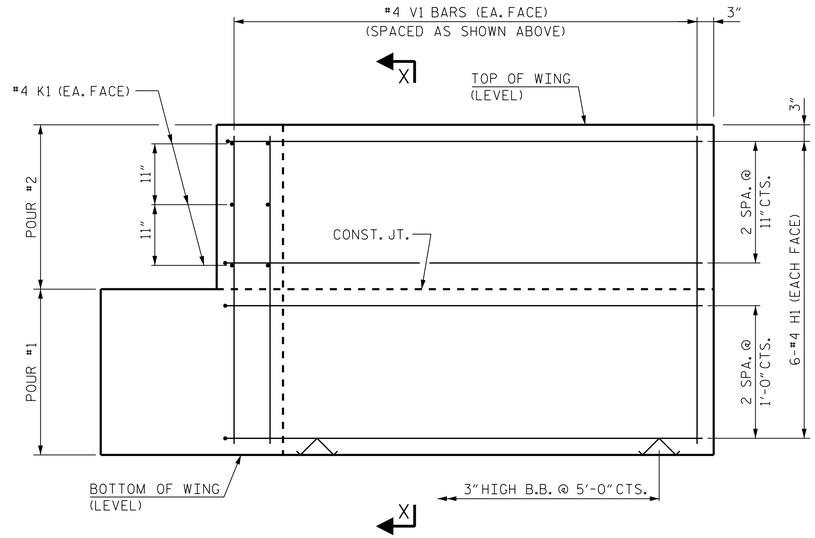
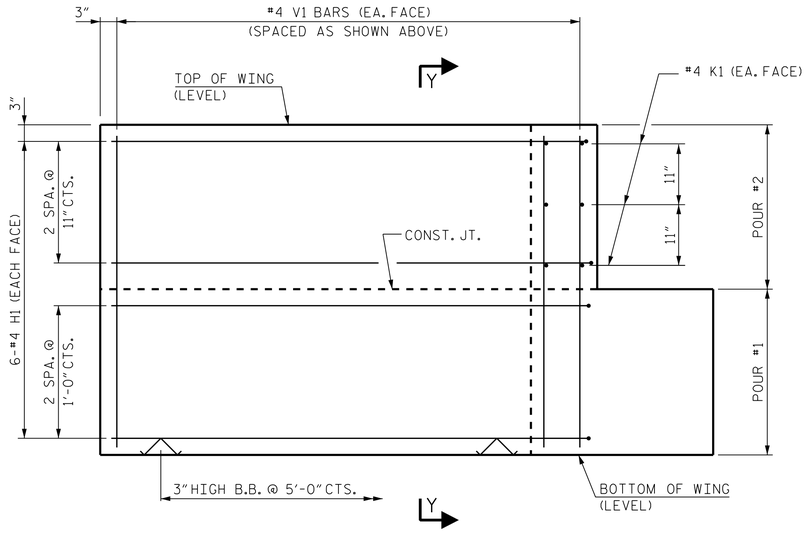


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. BP6.R018
CUMBERLAND COUNTY
STATION: 12+70.50 -L-

SHEET 3 OF 4

BRIDGE NO. 250150

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SUBSTRUCTURE
END BENT
WING DETAILS

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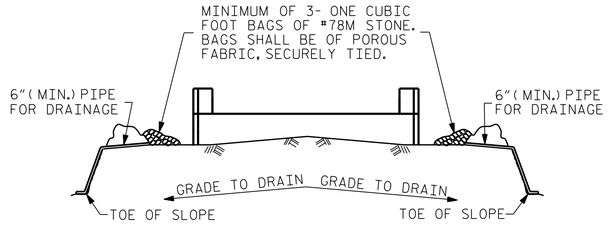
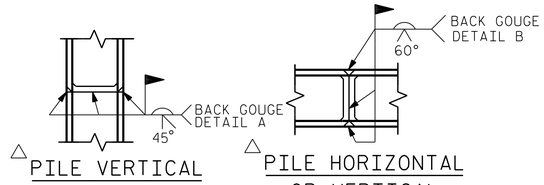


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

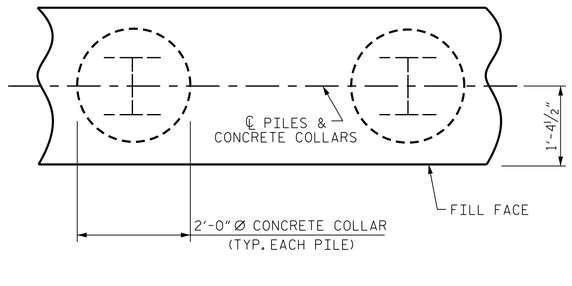
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

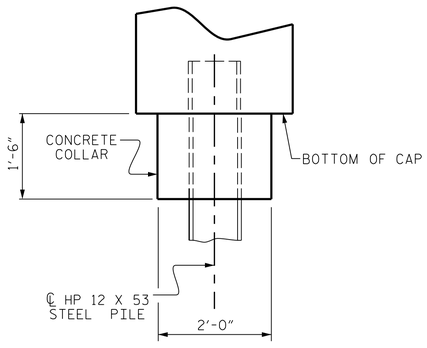


△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



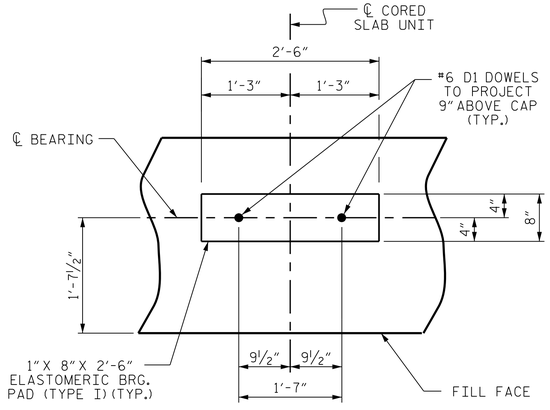
PLAN



ELEVATION

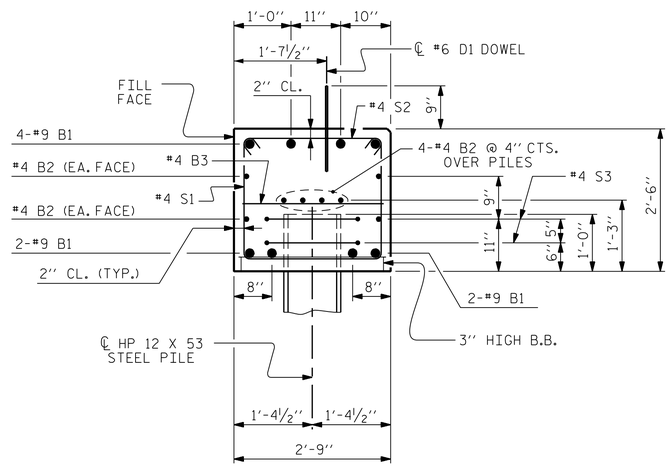
CORROSION PROTECTION FOR STEEL PILE DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION



DETAIL "A"

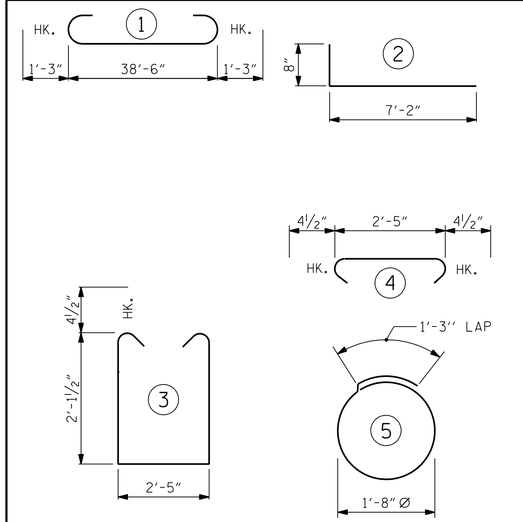
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 280	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 280
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	16	#4	STR	20'-7"	220
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	2	7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	50	#4	3	7'-5"	248
S2	50	#4	4	3'-2"	106
S3	14	#4	5	6'-6"	61
V1	48	#4	STR	4'-8"	150

REINFORCING STEEL (FOR ONE END BENT) 2115 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 12.4 C.Y.

POUR #2 UPPER PART OF WINGS 1.8 C.Y.

TOTAL CLASS A CONCRETE 14.2 C.Y.

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SHEET 4 OF 4

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SUBSTRUCTURE
END BENT 1 & 2 DETAILS

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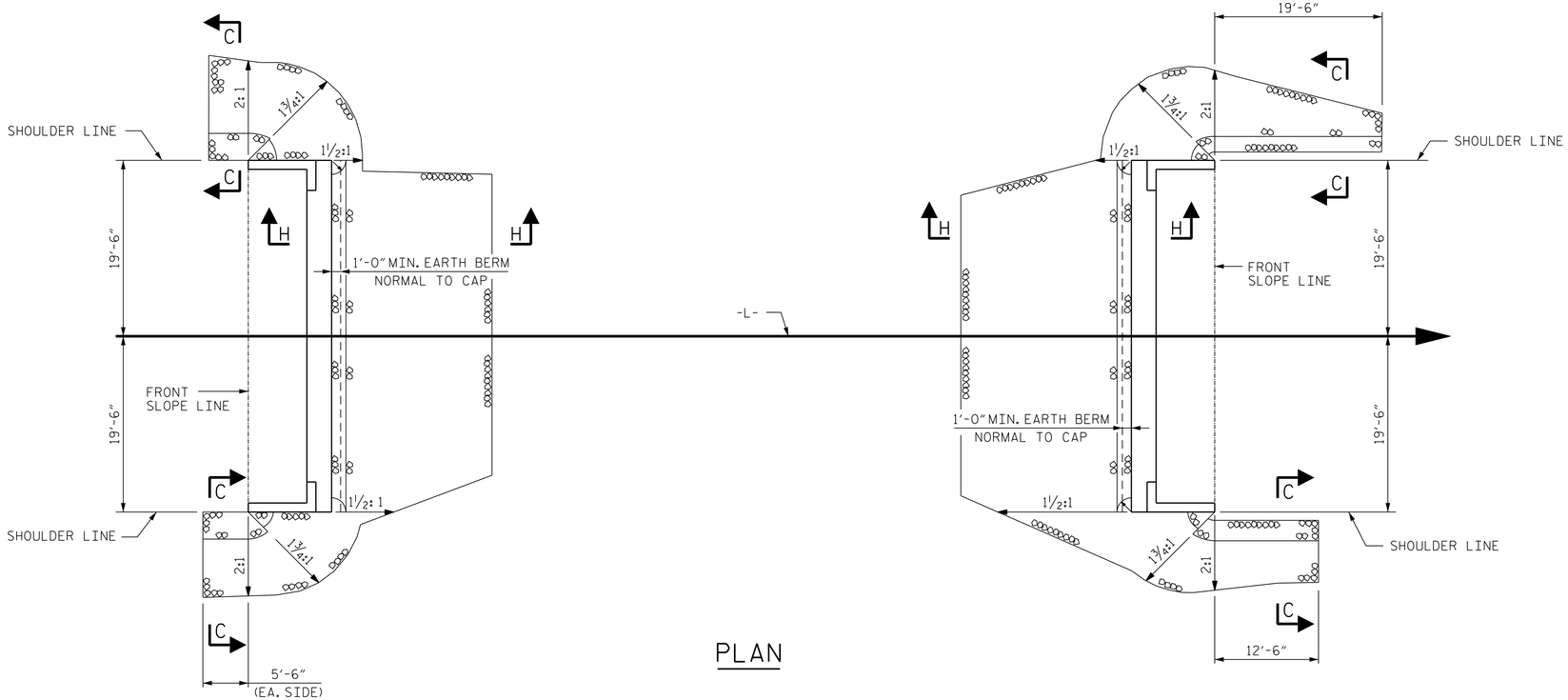
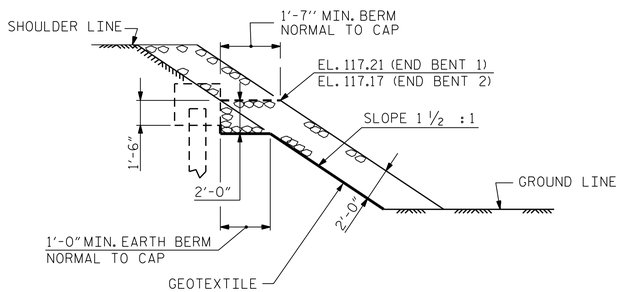
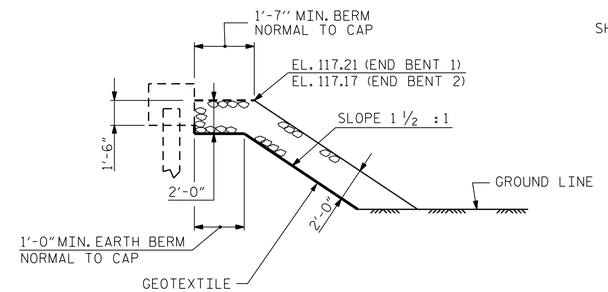


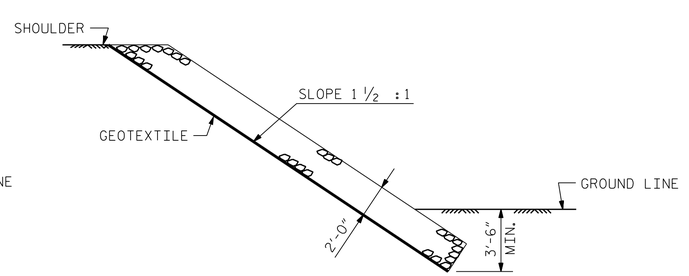
PLAN



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+70.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	155	170
END BENT 2	190	210

PROJECT NO. BP6.R018
CUMBERLAND COUNTY
STATION: 12+70.50 -L-

BRIDGE NO. 250150

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			14

STD. NO. RR1

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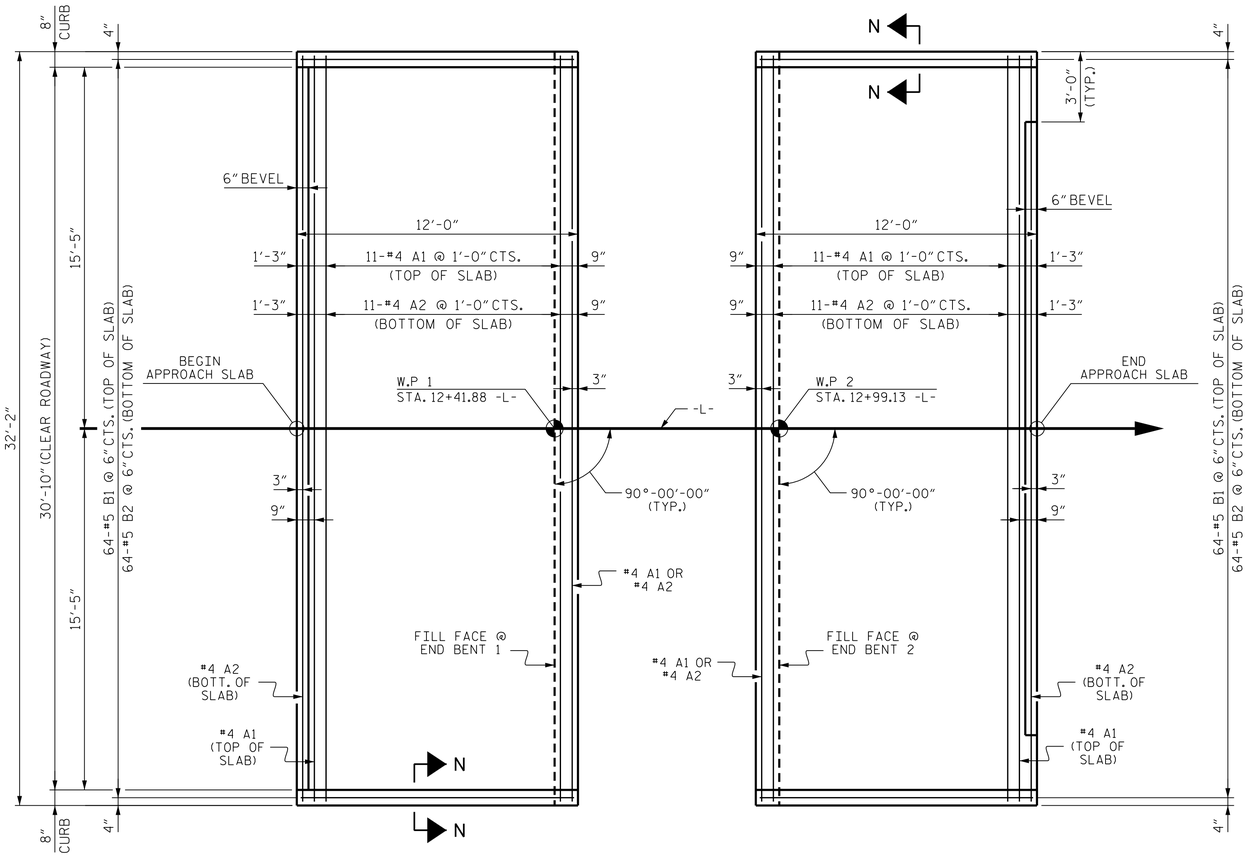
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15825 BRUCE D. KLAPPENBACH
9/13/2023

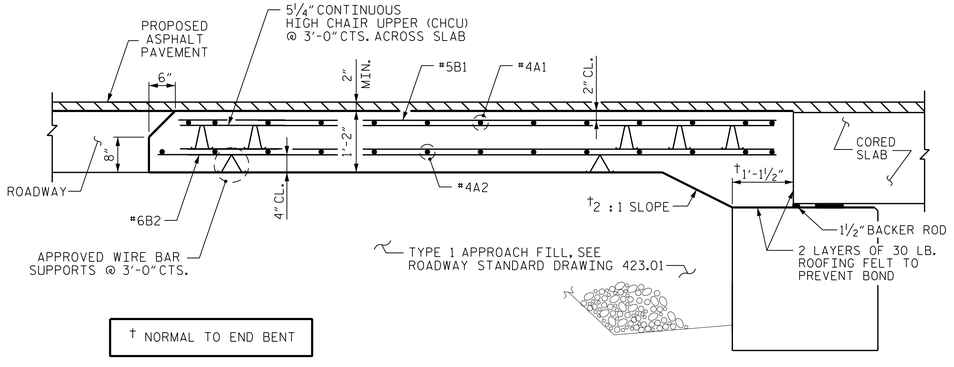
DRAWN BY : B. H. GONFA DATE : AUG 2023
CHECKED BY : M. SHARMA DATE : AUG 2023
DESIGN ENGINEER OF RECORD : B. D. KLAPPENBACH DATE : AUG 2023

bgonfa
9/13/2023 R:\Structures\DGN\Final\BP6.R018_SMU_RR_250150.dgn



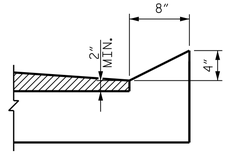
PLAN @ END BENT 1 PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N

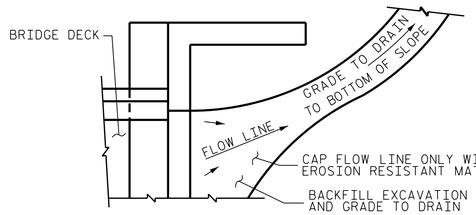
CURB DETAILS

NOTES:

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

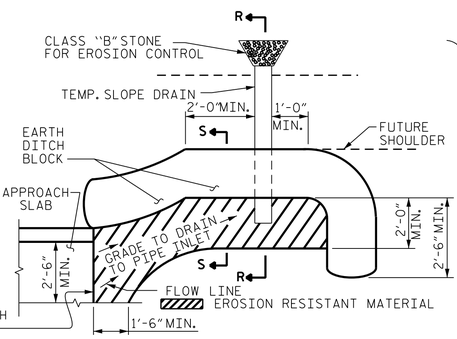
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



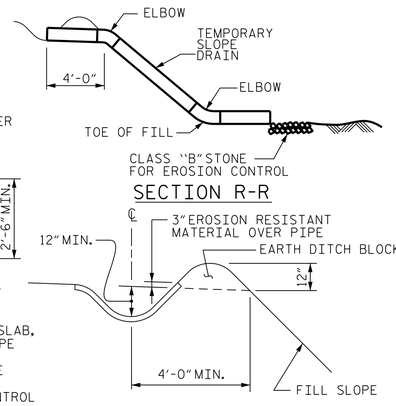
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



SECTION R-R

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. BP6.R018

CUMBERLAND COUNTY

STATION: 12+70.50 -L-

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	31'-10"	276
A2	13	#4	STR	31'-10"	276
✱ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1397
✱ EPOXY COATED REINFORCING STEEL				LBS.	1021
CLASS AA CONCRETE				C. Y.	18.4

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	31'-10"	276
A2	13	#4	STR	31'-10"	276
✱ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1397
✱ EPOXY COATED REINFORCING STEEL				LBS.	1021
CLASS AA CONCRETE				C. Y.	18.4

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15825 BRUCE D. KLAPPENBACH
6/16/2025

BRIDGE NO. 250150

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			14

bklappenbach
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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN