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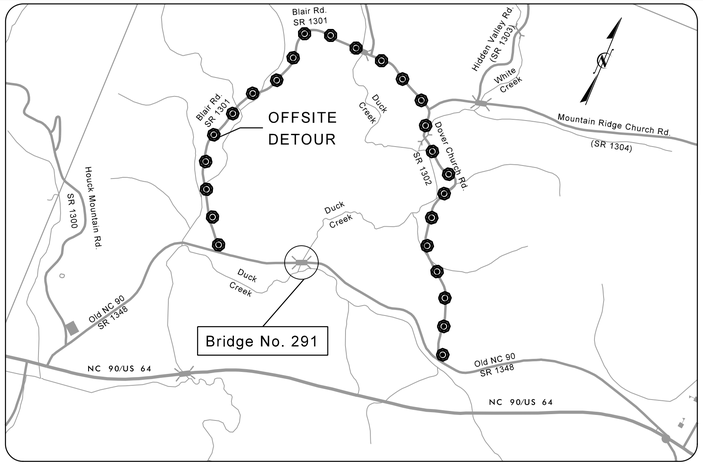
PROJECT: 17BP.12.R.88

CONTRACT: DL00220



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALEXANDER COUNTY

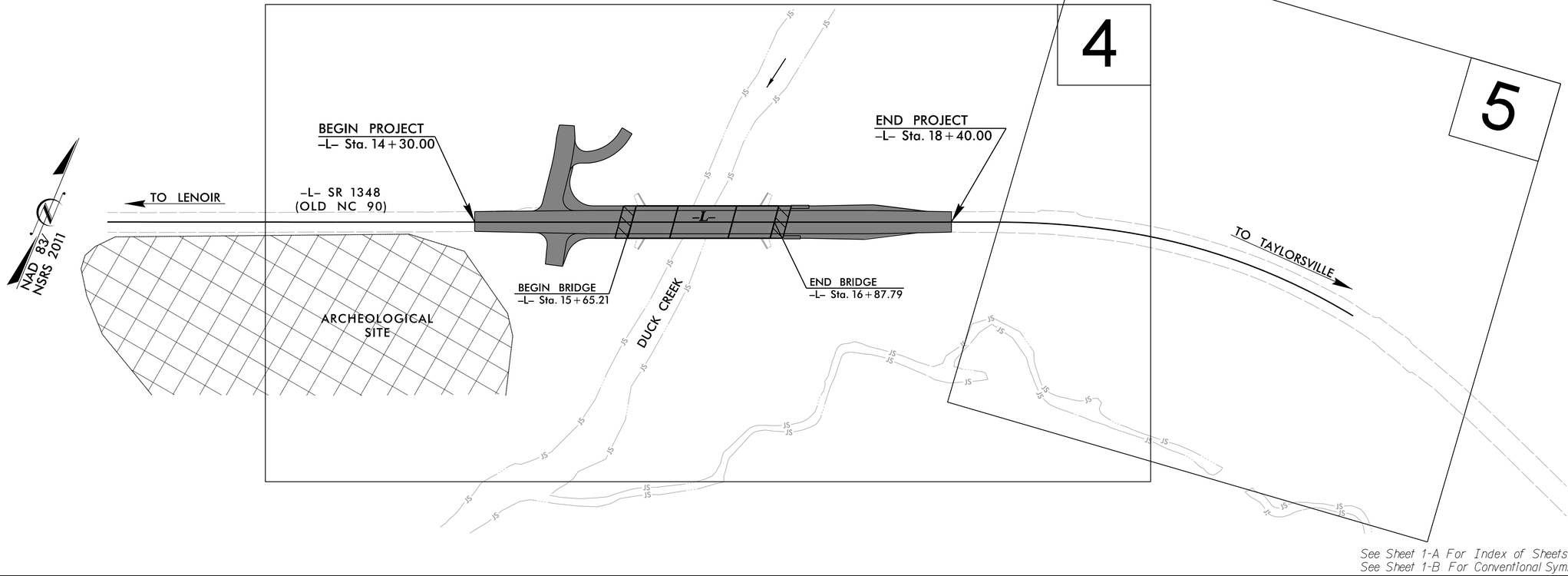
LOCATION: BRIDGE NO. 291 OVER DUCK CREEK ON SR 1348 (OLD NC 90)

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

RFC
RELEASED FOR CONSTRUCTION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.88	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17 BP.12.R.88		P.E.
17 BP.12.R.88		ROW & UTIL.
17 BP.12.R.88		CONST.



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

GRAPHIC SCALES

PLANS: 25 0 25 50

PROFILE (HORIZONTAL): 25 0 25 50

PROFILE (VERTICAL): 5 0 5 10

DESIGN DATA

ADT = 800
T = 6 %*
V = 50 MPH
* TTST = 3% DUAL 3%

FUNC CLASS = RURAL
LOCAL

SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.12.R.88 = 0.055 mi
LENGTH STRUCTURE TIP PROJECT 17BP.12.R.88 = 0.023 mi
TOTAL LENGTH TIP PROJECT 17BP.12.R.88 = 0.078 mi

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P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
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Engineers | Construction Managers | Planners | Scientists
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2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 8, 2019

LETTING DATE:
MARCH 9, 2021

FOR DIVISION OF HIGHWAYS

Scott D. Blevins, P.E.
PROJECT ENGINEER

Matthew A. Lamy, P.E.
PROJECT DESIGN ENGINEER

Steven Rackley, P.E.
Division Bridge Manager

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038190 ENGINEER JONATHAN M. WHITTINGTON
2/1/2021 *P.E.*
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 38649 ENGINEER MATTHEW A. LAMY
2/1/2021 *P.E.*
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

2/1/2021
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Fkeys

8/17/99

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	1-A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038488 ENGINEER MATTHEW A. LAMY

DocuSigned by: Matthew Lamy DocID:50C09275428...

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INDEX OF SHEETS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
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
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES

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 III.

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

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

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

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

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
DUKE ENERGY (POWER) & AT&T (TELECOMMUNICATIONS).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

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dhefler

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.88	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ OR GREATER THAN 2″ IN DEPTH.	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″ OR GREATER THAN 5.5″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C,AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ OR GREATER THAN 4″ IN DEPTH.	U	EXISTING PAVEMENT.
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. ALL DRIVEWAYS WILL BE CONSTRUCTED WITH 8″ OF ABC.		W	VARIABLE DEPTH ASPHALT PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.88	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 38649 ENGINEER MATTHEW A LAMM
DocuSigned by: Matthew A Lamm
1/29/2021

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER CLARK S MORRISON
DocuSigned by: Clark S Morrison
1/29/2021

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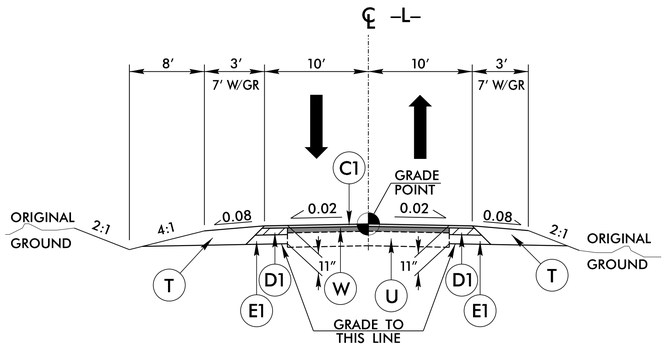
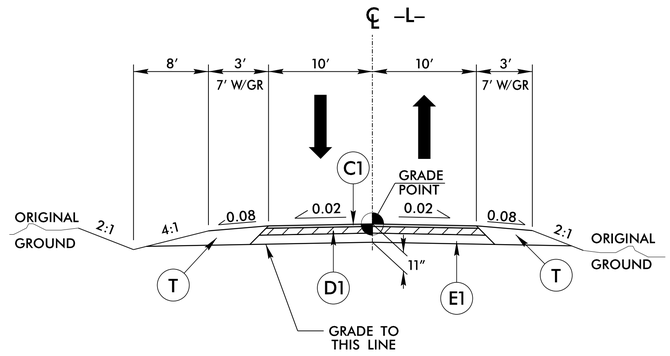


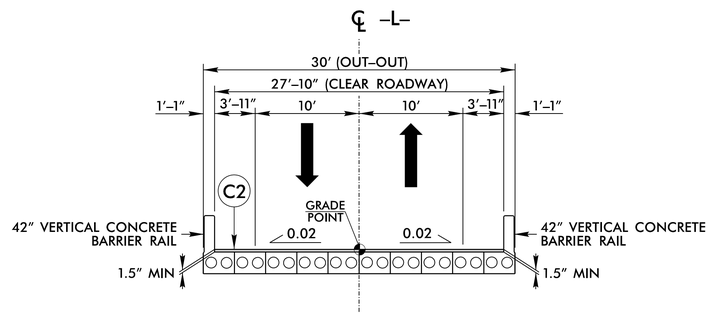
TYPICAL SECTION NO. 1

–L– STA. 14+30.00 TO 15+00.00
–L– STA. 18+00.00 TO 18+40.00



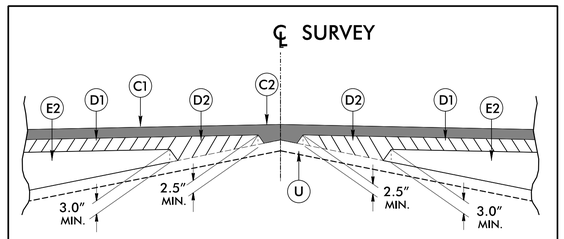
TYPICAL SECTION NO. 2

–L– STA. 15+00.00 TO 15+65.21 (BEGIN BRIDGE)
–L– STA. 16+87.79 (END BRIDGE) TO 18+00.00

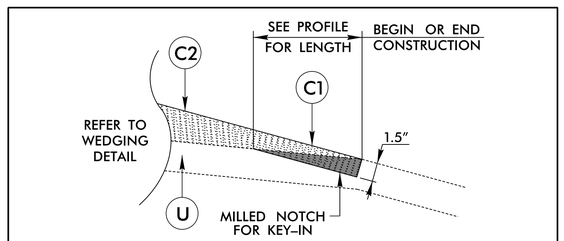


TYPICAL SECTION NO. 3

–L– STA. 15+65.21 (BEGIN BRIDGE) TO 16+87.79 (END BRIDGE)

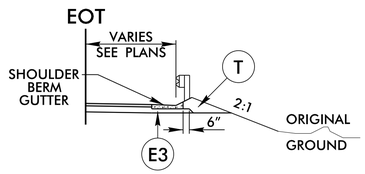


DETAIL SHOWING METHOD OF WEDGING



DETAIL SHOWING TIE–INS (MILLING)

USE –L– STA. 14+70.00 TO 14+89.21 LT



DETAIL SHOWING SHOULDER BERM GUTTER

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Raleigh, North Carolina 27615-3960
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HYDRAULIC DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER JONATHAN M. WHITTINGTON

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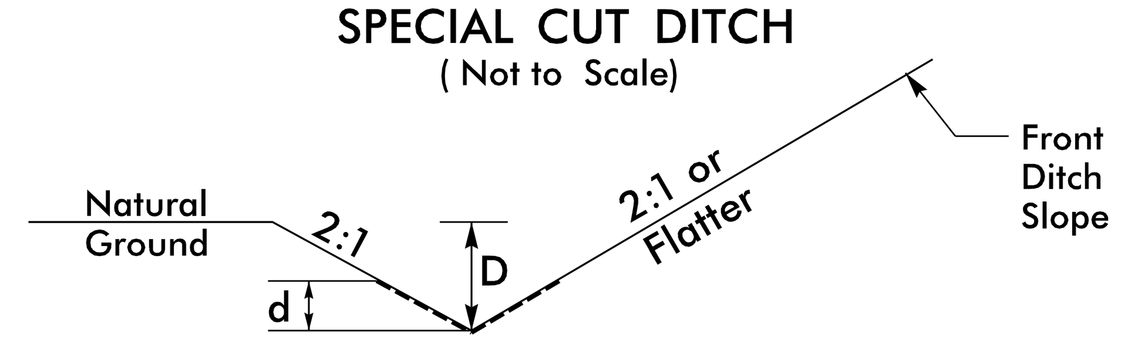
DRAINAGE DETAILS

DETAIL A

SPECIAL CUT DITCH

(Not to Scale)



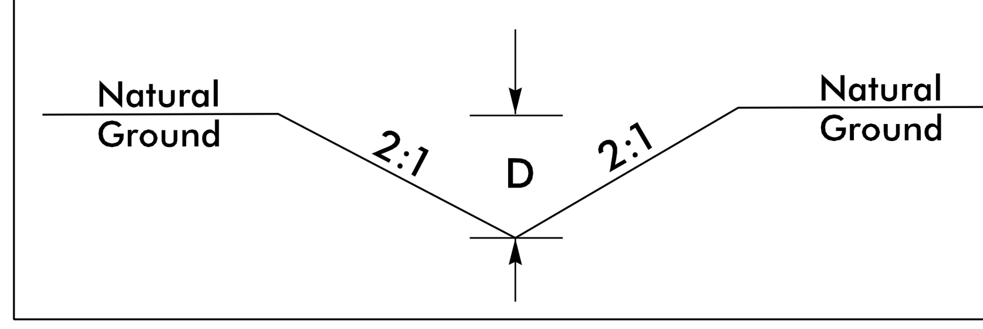
Type of Liner= PSRM

FROM –L STA. 14+30 TO STA. 14+75 LT
33 SY PSRM

DETAIL B

STANDARD 'V' DITCH

(Not to Scale)

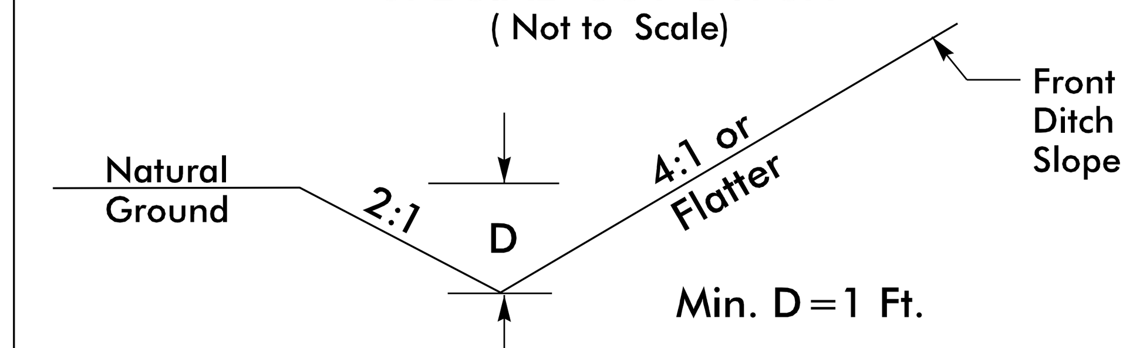


FROM –L– STA. 15+69 TO STA. 16+22 LT
Min. D=1.5 ft; DDE = 35CY
FROM –L– STA. 16+27 TO STA. 16+84 RT
Min. D=1.0 ft; DDE = 13CY
FROM –L– STA. 16+55 TO STA. 16+91 LT
Min. D=1.0 ft; DDE = 5CY

DETAIL C

SPECIAL CUT DITCH

(Not to Scale)

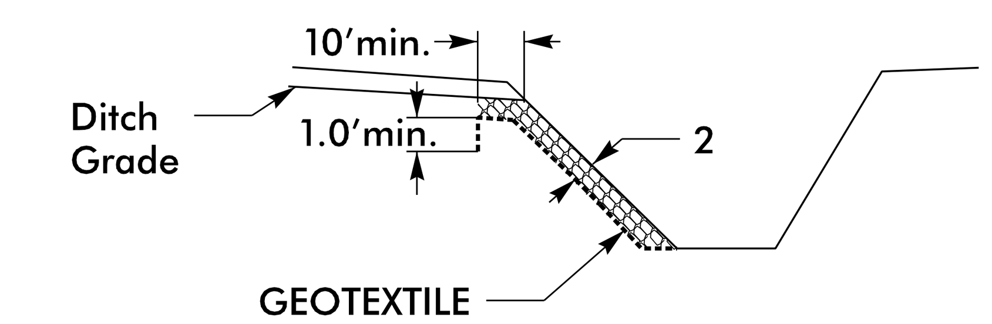


FROM –L– STA. 16+84 TO STA. 18+25 RT
FROM –L– STA. 16+91 TO STA. 18+25 LT

DETAIL D

RIP RAP AT EMBANKMENT

(Not to Scale)

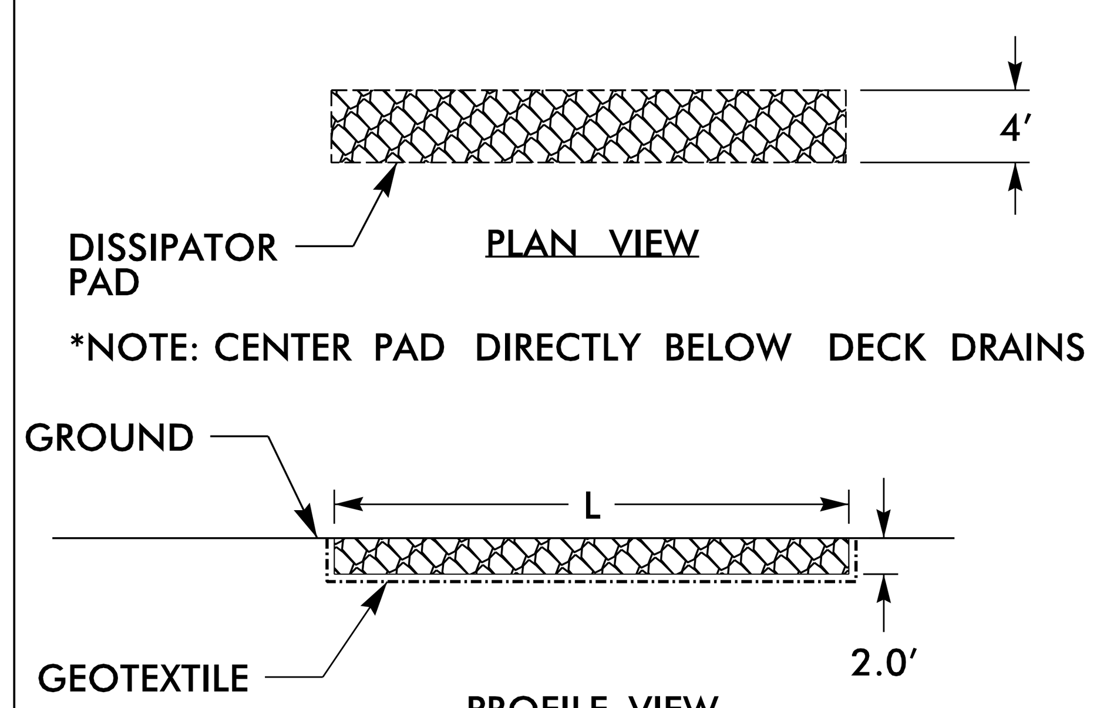


AT –L– STA. 16+25, 35' LT
13 TONS CL II RIP RAP, 17 SY GEOTEXTILE
AT –L– STA. 16+25, 35' RT
12 TONS CL II RIP RAP, 15 SY GEOTEXTILE
AT –L– STA. 16+55, 40' LT
11 TONS CL II RIP RAP, 13 SY GEOTEXTILE

DETAIL E

DECK DRAIN DISSIPATOR PAD

(Not to Scale)



L= 14'
Type of Liner= 6 TONS CL II Rip-Rap
Geotextile= 15 sy

FROM –L– STA. 16+63 TO STA. 16+77 LT
FROM –L– STA. 16+55 TO STA. 16+69 RT

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1/27/2021
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5/9/06

COMPUTED BY: ESP DATE: 02 /14 /2020
CHECKED BY: MAL DATE: 02 /25 /2020

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	3B-1

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	EXCAVATION		EMBANK.	BORROW	WASTE
		TOTAL UNCLASS.	UNDERCUT			
-L- 14+30.00	-L- 15+65.21 (Begin Bridge)	133		184	51	
	SUBTOTAL #1	133		184	51	
-L- 16+87.79 (End Bridge)	-L- 18+40.00	170		486	316	
	SUBTOTAL #2	170		486	316	
TOTAL		303		670	367	
LOSS DUE TO CLEARING & GRUBBING		-15			15	
ESTIMATED SHOULDER MATERIAL				74	74	
PROJECT TOTAL		287		743	455	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					23	
GRAND TOTAL		287		743	477	
SAY		**290**			**480**	

SAFETY FENCE SUMMARY

IN LINEAR FEET

LINE	STATION	STATION	SIDE	LENGTH (LF)
-L-	13+85.000	14+55.000	RT	76.35
			TOTAL	76.35
			SAY	**80**

ASPHALT PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-L-	15+00	15+78	CL	1,272.29		141.37
-L-	16+74	18+00	CL	2,143.23		238.14
					TOTAL	379.50
					SAY	**380**

GUARDRAIL SUMMARY

ALN.	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350		REMOVE EXISTING GR	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPROACH END	TRAILING END	APPR. END	TRAIL. END	TYPE-III	GREU 350 TL-3	AT-1	G	NG		
-L-	15+12.76	15+68.99	LT	43.97	31.03		15+68.99		3.92	6.92					1		1				Rigid Object
-L-	15+07.90	15+61.53	RT	39.53	22.97			15+61.53	3.92	6.92					1		1				Rigid Object
-L-	16+91.49	17+72.74	LT	81.25				16+91.49	3.92	6.92	50		1		1	1					Rigid Object
-L-	16+84.03	17+65.28	RT	81.25			16+84.03		3.92	6.92		50		1	1	1					Rigid Object
			SUBTOTAL:	246.00	54.00										4	2	2				
ANCHOR UNIT DEDUCTIONS:																					
Type-III @ 18.75' Each				-75.00																	
TL-3 @ 50' Each				-100.00																	
AT-1 @ 6.25' Each					-12.50																
LESS GUARDRAIL DEDUCTIONS:				71.00	41.50																
			PROJECT TOTAL:	71.00	41.50																
			SAY:	**75.0**	**50.0**										**4**	**2**	**2**				

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

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5/9/06

COMPUTED BY: SKE	DATE: 6 /17 /2019
CHECKED BY: JMW	DATE: 6 /17 /2019

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	3D-1

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	C.S.P.								R.C. PIPE CLASS III								R.C. PIPE CLASS IV								PIPE AS NOTED			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)		QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03			CONCRETE TRANSITIONAL SECTION		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	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	T.B.D.I. STD. 840.35	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST DI	CONV DI TO JBMH	BERM DRAINAGE OUTLET	CLASS B RIPRAP TONS	GEOTEXTILE FABRIC SY	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.
SIZE		FROM	TO					12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	24"	15"		CU. YARDS		PER EACH (0' THRU 5.0')	LIN. FT. A	LIN. FT. B		TYPE OF GRATE			DROP INLET	CATCH BASIN																							
THICKNESS OR GAUGE								.064	.064	.064	.064	.079	.079	.109	.109																	Side Drain	Alternate		R.C.P.	C.S.P.		5.0' THRU 10.0'	10.0' AND ABOVE		E	F	G																									
SHEET 4																																																																				
-L- 17+13	LT	401		1144.77																																	1																	1			1											
-L- 17+13	LT	401	402		1139.8	1134.3	0.3		28																																																						2	7	2@15"			
-L- 17+05	RT	403		1144.80																																	1																	1			1											
-L- 17+05	RT	403	404		1139.8	1134.9	0.3		24																																																						2	7	2@15"			
-L- 14+75	LT	405			1143.2	1132.7																				96																																							3	10				
-L- 15+00	LT																																																																			41
Project Total									**52**																	**96**											**2**																	**2**			**2**						**7**	**24**				**41**

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COMPUTED BY: ESP	DATE: 5/15/18
CHECKED BY:	DATE:

PROJECT REFERENCE NO.	SHEET NO.
17BPJ2.R.88	3P-1

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

RIGHT OF WAY AREA DATA SHEET

PARCEL NO.	PROPERTY OWNERS NAME	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT
1	DONOCAN & SANDRA FULTON	1.860 AC	0.037 AC			0.067 AC
2	PATRICIA L. BELK	---	0.046 AC			0.002 AC
3	LINDA C. & GARRELL S. PENNELL	---	0.147 AC			0.012 AC

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PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	4

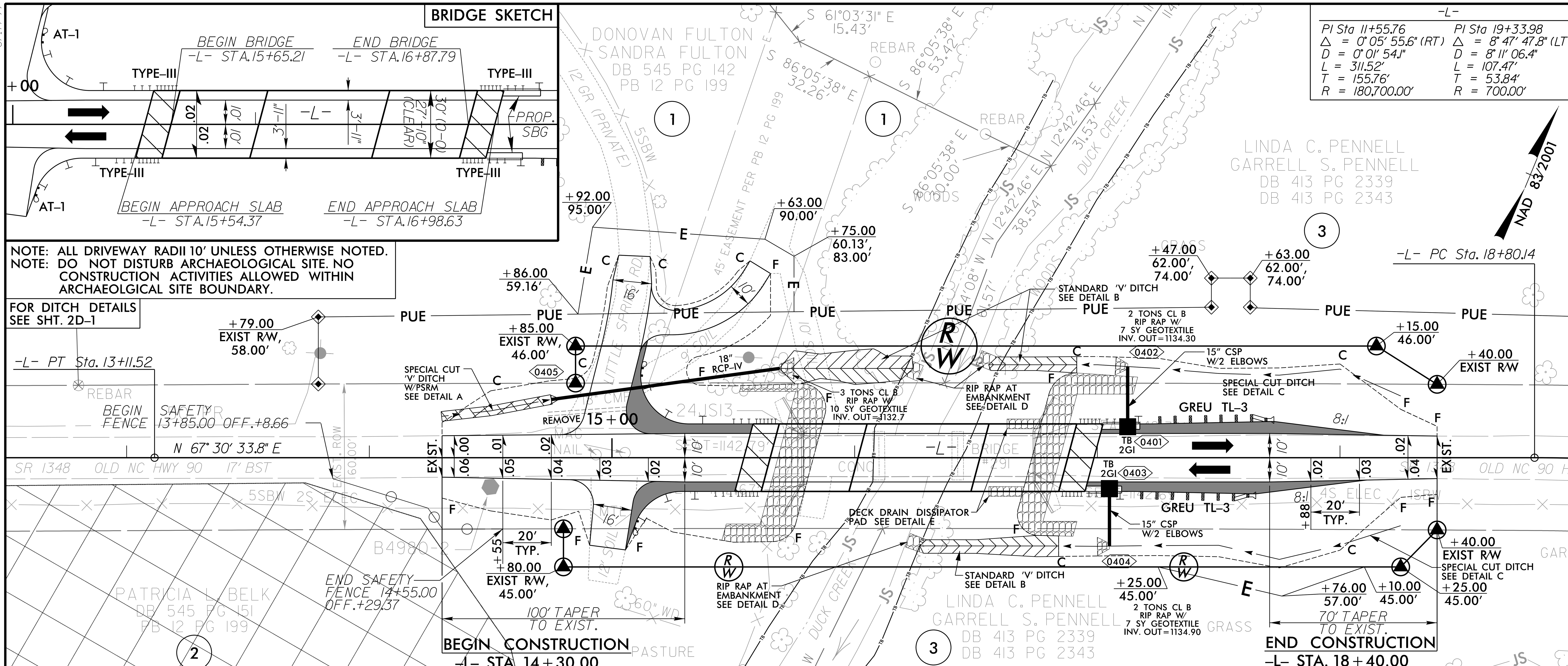
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

PI Sta 11+55.76	PI Sta 19+33.98
Δ = 0° 05′ 55.6″ (RT)	Δ = 8° 47′ 47.8″ (LT)
D = 0° 01′ 54.1″	D = 8° 11′ 06.4″
L = 311.52′	L = 107.47′
T = 155.76′	T = 53.84′
R = 180,700.00′	R = 700.00′



BRIDGE SKETCH
BEGIN BRIDGE -L- STA.15+65.21
END BRIDGE -L- STA.16+87.79
BEGIN APPROACH SLAB -L- STA.15+54.37
END APPROACH SLAB -L- STA.16+98.63
TYPE-III
AT-1
PROP. SBG
27'-10" (CLEAR)
30'-0" (O-O)
NOTE: ALL DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
NOTE: DO NOT DISTURB ARCHAEOLOGICAL SITE. NO CONSTRUCTION ACTIVITIES ALLOWED WITHIN ARCHAEOLGICAL SITE BOUNDARY.
FOR DITCH DETAILS SEE SHT. 2D-1
DONOVAN FULTON
SANDRA FULTON
DB 545 PG 142
PB 12 PG 199
LINDA C. PENNELL
GARRELL S. PENNELL
DB 413 PG 2339
DB 413 PG 2343
PATRICIA L. BELK
DB 545 PG 151
PB 12 PG 199
DUCK CREEK
-L- PT Sta. 13+11.52
-L- PC Sta. 18+80.14
N 67° 30′ 33.8″ E
SR 1348 OLD NC HWY 90
BEGIN SAFETY FENCE 13+85.00 OFF.+8.66
END SAFETY FENCE 14+55.00 OFF.+29.37
SPECIAL CUT 'V' DITCH W/PSRM SEE DETAIL A
18" RCP-IV
3 TONS CL B RIP RAP W/ 10 SY GEOTEXTILE INV. OUT=1132.7
RIP RAP AT EMBANKMENT SEE DETAIL D
STANDARD 'V' DITCH SEE DETAIL B
2 TONS CL B RIP RAP W/ 7 SY GEOTEXTILE INV. OUT=1134.30
15" CSP W/2 ELBOWS
SPECIAL CUT DITCH SEE DETAIL C
GREU TL-3
DECK DRAIN DISSIPATOR PAD SEE DETAIL E
2 TONS CL B RIP RAP W/ 7 SY GEOTEXTILE INV. OUT=1134.90
100' TAPER TO EXIST.
70' TAPER TO EXIST.
BEGIN CONSTRUCTION -L- STA. 14+30.00
END CONSTRUCTION -L- STA. 18+40.00
NAD 83/2001
MATCHLINE SEE SHEET 5 -L- STA. 19+80.00

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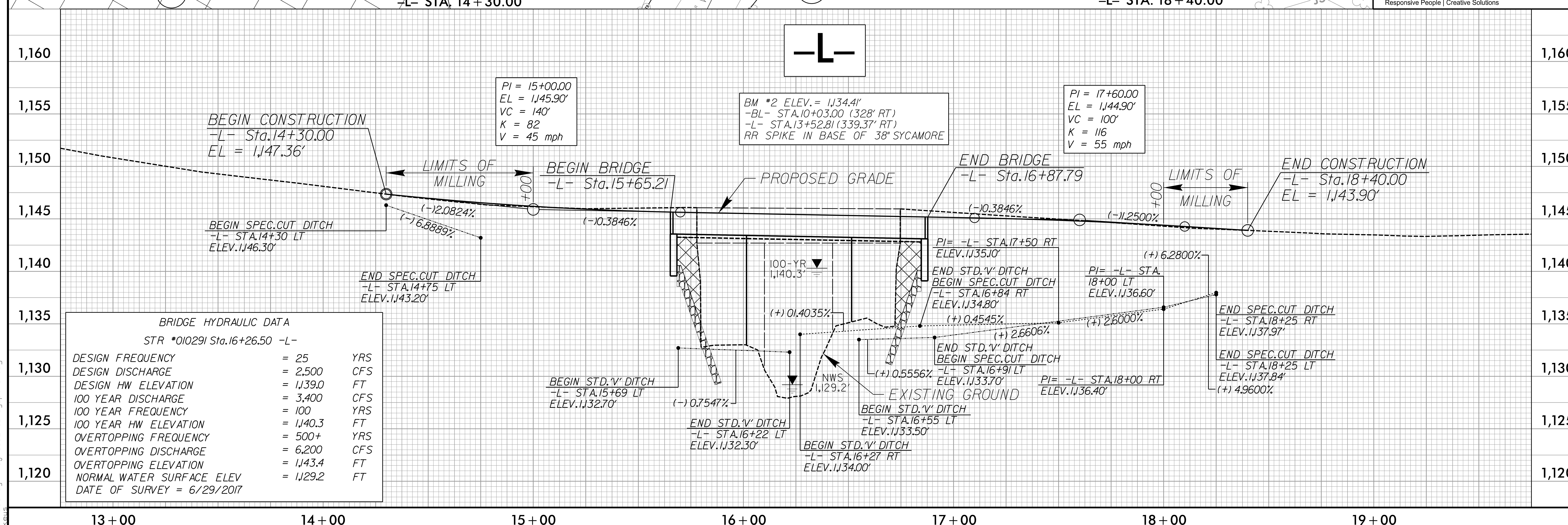
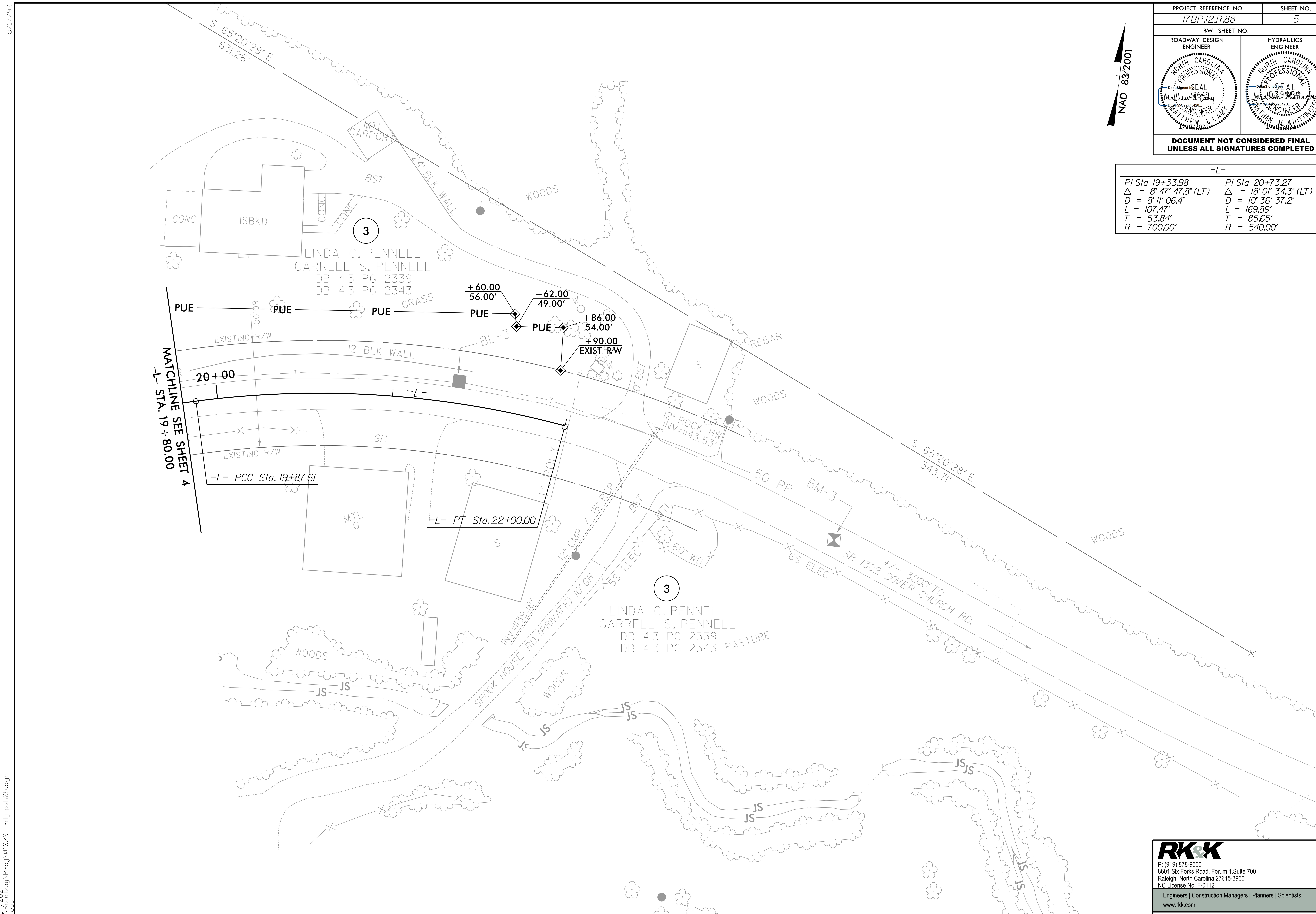


-L-
PI = 15+00.00
EL = 1,145.90′
VC = 140′
K = 82
V = 45 mph
BM #2 ELEV.= 1,134.41′
-BL- STA.10+03.00 (328′ RT)
-L- STA.13+52.81 (339.37′ RT)
RR SPIKE IN BASE OF 38" SYCAMORE
PI = 17+60.00
EL = 1,144.90′
VC = 100′
K = 116
V = 55 mph
BEGIN CONSTRUCTION -L- Sta.14+30.00 EL = 1,147.36′
END CONSTRUCTION -L- Sta.18+40.00 EL = 1,143.90′
BEGIN BRIDGE -L- Sta.15+65.21
END BRIDGE -L- Sta.16+87.79
PROPOSED GRADE
EXISTING GROUND
LIMITS OF MILLING
(-)2.0824%
(-)0.3846%
(-)1.2500%
100-YR 1,140.3′
NWS 1,129.2′
13+00 14+00 15+00 16+00 17+00 18+00 19+00

BRIDGE HYDRAULIC DATA

STR #010291 Sta.16+26.50 -L-

DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2,500	CFS
DESIGN HW ELEVATION	= 1,139.0	FT
100 YEAR DISCHARGE	= 3,400	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 1,140.3	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 6,200	CFS
OVERTOPPING ELEVATION	= 1,143.4	FT
NORMAL WATER SURFACE ELEV	= 1,129.2	FT
DATE OF SURVEY = 6/29/2017		



PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 38649 ENGINEER MATTHEW A. LAMY	NORTH CAROLINA PROFESSIONAL SEAL 039050 ENGINEER JONATHAN M. WHITTINGTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

PI Sta 19+33.98	PI Sta 20+73.27
△ = 8° 47' 47.8" (LT)	△ = 18° 01' 34.3" (LT)
D = 8° 11' 06.4"	D = 10° 36' 37.2"
L = 107.47'	L = 169.89'
T = 53.84'	T = 85.65'
R = 700.00'	R = 540.00'

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01/29/20

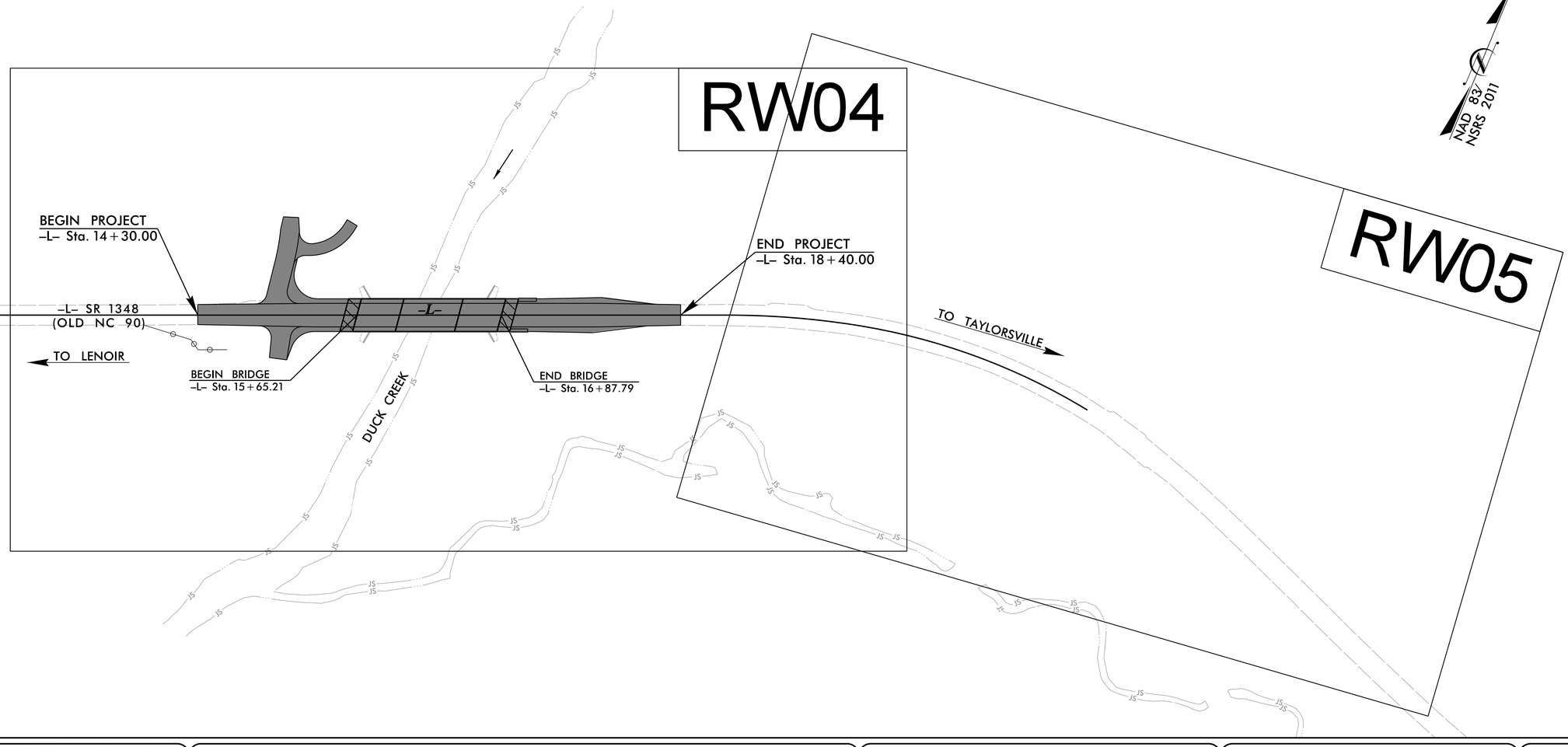
TIP PROJECT: 17BP.12.R.88

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.88	RW01	6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

ALEXANDER COUNTY



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
NCDOT FOR MONUMENT "B4980-2"
WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 800,036.873 (usft) EASTING: 1,316,453.309 (usft)
ELEVATION: 1145.83 (usft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99989100
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"B4980-2" TO -L- STATION 10+00 IS
S 69°04'19.7" W 450.06(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88 (GEOID G12NC)

Prepared in the Office of:

NCDOT
LOCATION AND SURVEY
DIVISION 12

2312 Kings Rd.Ext.
Shelby,NC.28152

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
October 8, 2019	*March 5, 2021*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4870 LAND SURVEYOR Kyle A. Wolfe

DocuSigned by:

2/1/2021

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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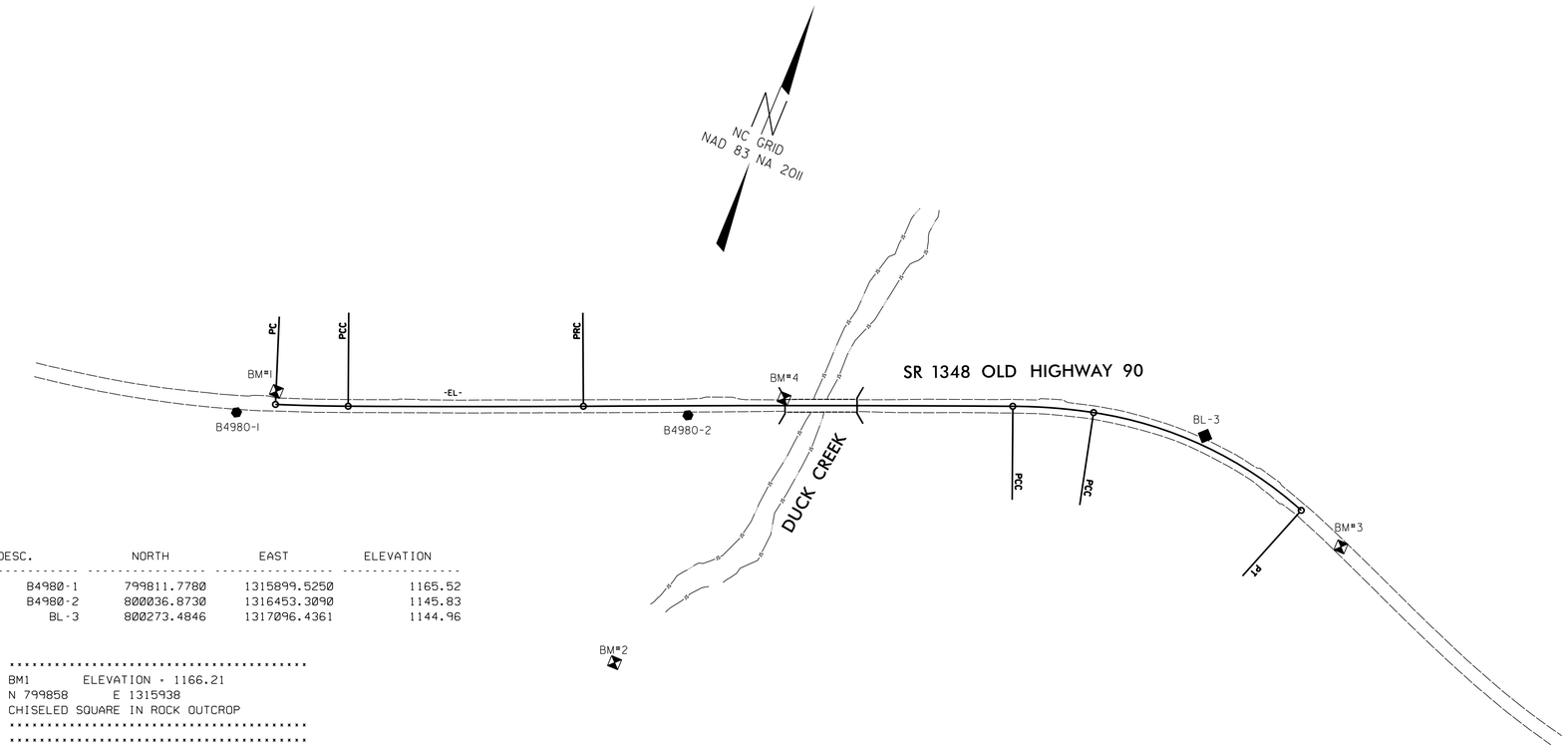
01/29/20

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	RW-02
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



BL

POINT	DESC.	NORTH	EAST	ELEVATION
LS1	B4980-1	799811.7780	1315899.5250	1165.52
LS2	B4980-2	800036.8730	1316453.3090	1145.83
LS3	BL-3	800273.4846	1317096.4361	1144.96

```
****************************************
BM1       ELEVATION = 1166.21
N 799858      E 1315938
CHISELED SQUARE IN ROCK OUTCROP
****************************************
****************************************
BM2       ELEVATION = 1134.31
N 799697      E 1316489
RR SPIKE IN BASE 38/" SYCAMORE
****************************************
****************************************
BM3       ELEVATION = 1150.70
N 800207      E 1317319
RR SPIKE FLUSH IN PAVEMENT SR 1348
****************************************
****************************************
BM4       ELEVATION = 1149.24
N 800106      E 1316563
NCSHC 24JS13
****************************************
```

BL

POINT	N	E	BEARING	DIST
POT	799811.778	1315899.525		
LINE			N 67°52'47.5" E	597.78
POT	800036.873	1316453.309		
LINE			N 69°48'03.7" E	685.27
POT	800273.485	1317096.436		

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	799841.266	1315943.186							
CURVE			N 68°55'26.0" E	96.28	02°07'18.7"(LT)	02°12'13.3"	96.29	48.15	2600.00
PCC	799875.890	1316033.027							
CURVE			N 67°30'51.6" E	311.52	00°41'50.0"(LT)	00°13'25.7"	311.52	155.76	25600.00
PCC	799995.031	1316320.862							
CURVE			N 67°30'33.8" E	568.62	00°41'14.4"(RT)	00°07'15.2"	568.63	284.32	47400.00
PCC	800212.547	1316846.238							
CURVE			N 71°57'25.7" E	107.35	08°12'29.2"(RT)	07°38'22.0"	107.44	53.81	750.00
PCC	800245.797	1316948.311							
CURVE			S 87°16'41.2" E	303.91	33°19'17.1"(RT)	10°48'37.9"	308.23	158.61	530.00
PT	800231.366	1317251.874							

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.

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PROJECT REFERENCE NO.	SHEET NO.
17BP12.88	RW-03
Location and Surveys	

PROPOSED ALIGNMENT CONTROL SHEET

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	799876.1137	1316032.9355
PT	13+11.52	799995.0309	1316320.8623
PC	18+80.14	800212.5475	1316846.2376
PCC	19+87.61	800245.8897	1316948.2947
PT	22+00.00	800254.8237	1317159.1271

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 INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

01/29/20

RIGHT OF WAY AND PERMANENT EASEMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	RW03E-1
Location and Surveys	

PROJECT SURVEYOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, KYLE A. WOLFF, 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) (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 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 29th day of January, 2020.

---------- L-4870

Professional Land Surveyor PLS #

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+80.00	45.00	800017.9034	1316493.7443
L	14+80.00	29.29	800032.4195	1316487.7343
L	14+85.00	-30.72	800089.7799	1316469.3975
L	14+85.00	-46.00	800103.8948	1316463.5536
L	18+15.00	-46.00	800230.1303	1316768.4546
L	18+25.00	45.00	800149.8769	1316812.5044
L	18+40.00	-30.22	800225.1177	1316797.5879
L	18+40.00	29.78	800169.6804	1316820.5401

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+79.00	-58.00	800074.4337	1316361.0253
L	13+79.00	-30.36	800048.8933	1316371.5997
L	17+47.00	-62.00	800218.9012	1316699.5060
L	17+47.00	-74.00	800229.9885	1316694.9156
L	17+63.00	-74.00	800236.1090	1316709.6987
L	17+63.00	-62.00	800225.0217	1316714.2891
L	19+45.00	-60.00	800291.8707	1316889.5021
L	19+45.00	-73.00	800304.2905	1316885.6619
L	19+60.00	-72.00	800308.0523	1316901.8130
L	19+60.00	-59.00	800295.5530	1316905.3863
L	21+60.00	-56.00	800315.3225	1317123.8991
L	21+62.00	-49.00	800308.1661	1317125.5122
L	21+86.00	-54.00	800310.3514	1317152.1806
L	21+90.00	-30.05	800286.0406	1317153.2999

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.

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	RW-04

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4870 SURVEYOR Kyle A. Wolff 2/1/2021

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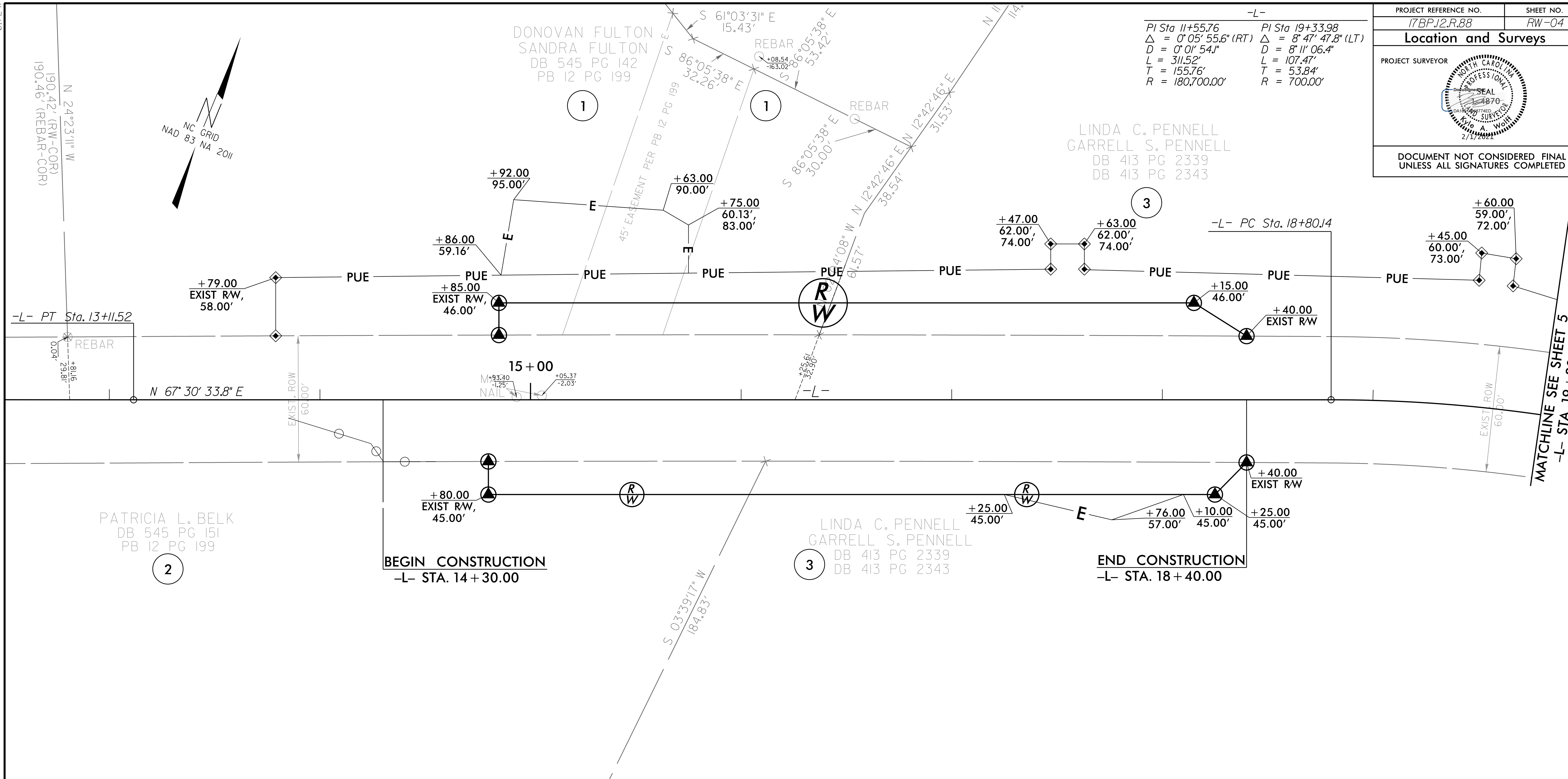


I, KYLE A. WOLFF, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and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

I further certify that the 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 29th day of January, 2020.

---------------------------- Professional Land Surveyor

L-4870 PLS #

NORTH CAROLINA PROFESSIONAL SEAL L-4870 SURVEYOR Kyle A. Wolff 2/1/2021

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.

01/29/20

1/27/2021 R:\RightOfWay\01029l_ls_rw04.dgn

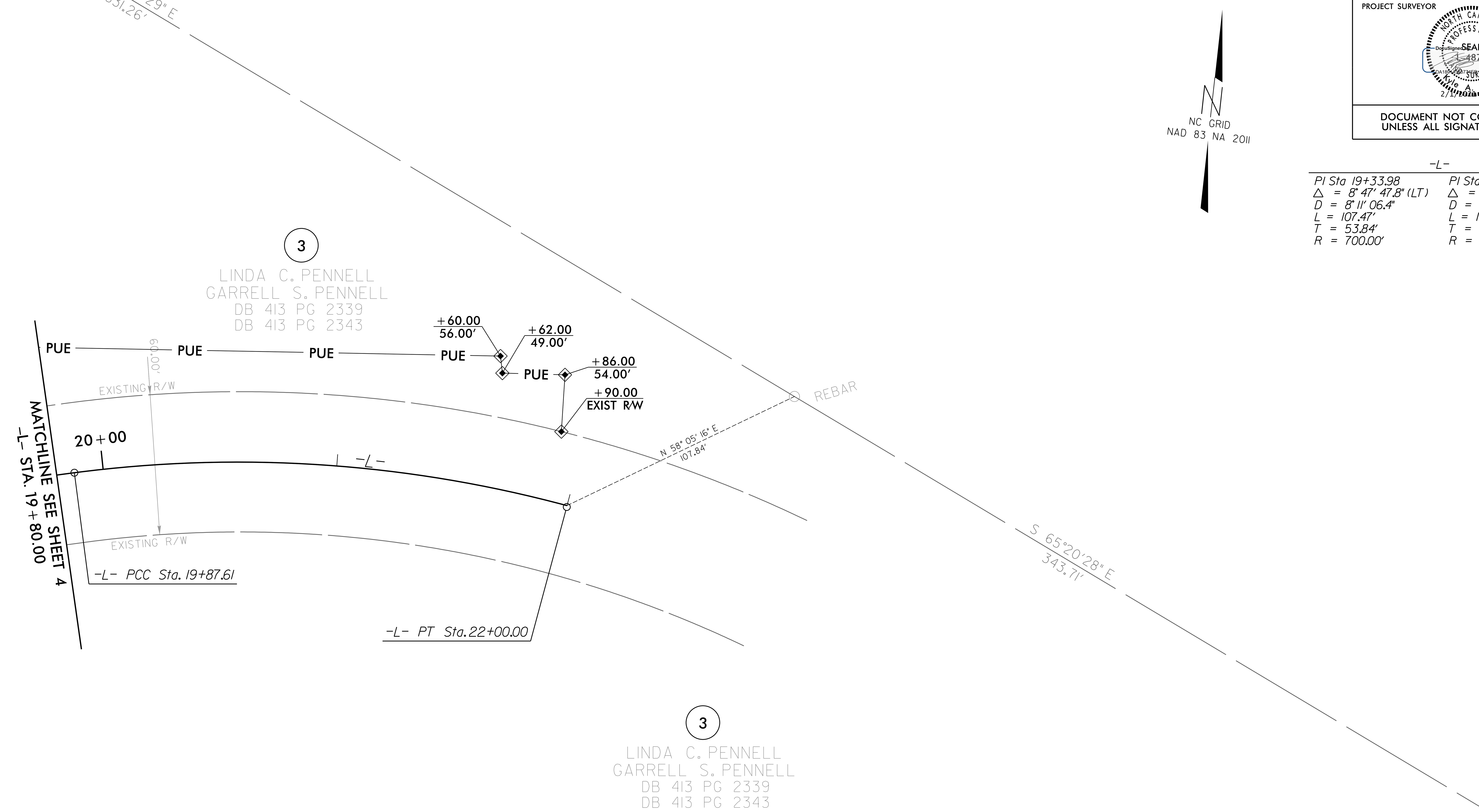
PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	RW-05

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4870 LAND SURVEYOR Kyle A. Wolff 2/1/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-L-

PI Sta 19+33.98	PI Sta 20+73.27
△ = 8° 47' 47.8" (LT)	△ = 18° 01' 34.3" (LT)
D = 8° 11' 06.4"	D = 10° 36' 37.2"
L = 107.47'	L = 169.89'
T = 53.84'	T = 85.65'
R = 700.00'	R = 540.00'

I, Kyle A. Wolff, 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) (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 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 29th day of January, 2020.

Professional Land Surveyor L-4870 PLS =

NORTH CAROLINA PROFESSIONAL SEAL L-4870 LAND SURVEYOR Kyle A. Wolff 2/1/2021

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.

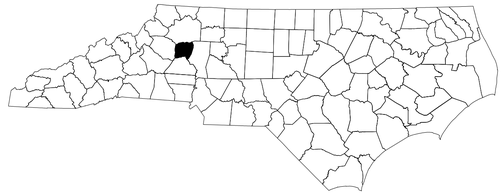
01/29/20

1/27/2021
R:\RightOfWay\010291_ls_rw05.dgn

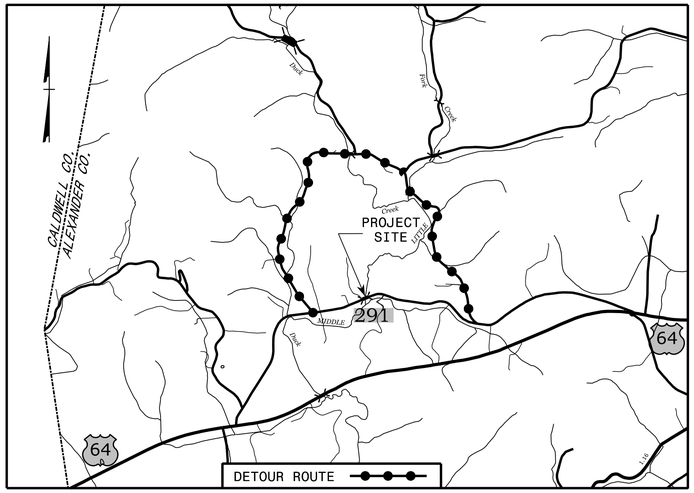
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ALEXANDER COUNTY



LOCATION: BRIDGE NO. 291 OVER DUCK CREEK ON SR 1348 (OLD NC 90)



INDEX OF SHEETS

SHEET NO.
TMP-1

PROJECT: 17BP.12.R.88

CONTRACT: DL00220

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

N.C.D.O.T. HIGHWAY DIVISION 12
1710 E. MARION STREET SHELBY, NC 28151
PHONE: (704) 480-9020

S. RACKLEY, PE — DIVISION BRIDGE MANAGER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY :

RK&K
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Raleigh, North Carolina 27615-3960
NC License No. F-0112
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FOR DIVISION OF HIGHWAYS

APPROVED: DocuSigned by: C. Byron Holden 5C5A055EAF0940...
DATE: 1/30/2021

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

1/30/2021
29_TMP_TSH.dgn
default

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.88	TMP-1A

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ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

NORTH ARROW

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY SIGNING

STATIONARY SIGN

APPROVED: DocuSigned by: C. Byron Holden — 5C5A055EAF0545F...

DATE: 1/30/2021

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

1/30/2021
29_TMP01a.dgn
default

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.88	TMP-1B

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MANAGEMENT STRATEGIES

TRAFFIC MANAGEMENT STRATEGIES:

OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES

GENERAL NOTES / LOCAL 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, SUPPLEMENTING, 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) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

AND

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

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

AND

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

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

E) THE CONTRACTOR SHALL REPLACE ANY EXISTING SIGNS DAMAGED BY CONSTRUCTION OPERATIONS. THE SIGNS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR ACCORDING TO NCDOT'S SPECIFICATIONS. THE CONTRACTOR SHALL REMOVE ANY BRIDGE SIGNS NO LONGER APPLICABLE AFTER THE BRIDGE REPLACEMENT BOTH WITHIN AND OUTSIDE THE CONSTRUCTION LIMITS.

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

G) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN THE PAVEMENT MARKING PLAN.

LANE AND SHOULDER CLOSURE REQUIREMENTS

H) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

I) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

J) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

K) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

L) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

APPROVED: DocuSigned by: C. Byron Holden 5C5A055EAF0545F...

DATE: 1/30/2021

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.88	TMP-2

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TRAFFIC CONTROL PHASING

PHASE I

STEP 1) USING AN APPROVED METHOD PER THE DISCRETION OF THE ENGINEER, INSTALL SIGNING FOR THE SR 1348 (OLD NC 90) OFFSITE DETOUR, KEEPING SIGNS COVERED. REFER TO ROADWAY STANDARD DRAWING NUMBER 1101.03 SHEET 1, TMP-3 AND SD-1 FOR SIGN LOCATIONS AND DESIGN.

STEP 2) UNCOVER OFF-SITE DETOUR SIGNS AND CLOSE SR 1348 (OLD NC 90) TO THRU TRAFFIC USING ROADWAY STANDARD DRAWING NUMBER 1101.03 SHEET 2.

PHASE II

STEP 1) DEMOLISH AND REMOVE EXISTING BRIDGE NO. 291 OVER DUCK CREEK.

STEP 2) CONSTRUCT PROPOSED STRUCTURE AND APPROACH ROADWAY WIDENING AND PAVING (SEE ROADWAY PLANS AND STRUCTURE PLANS). REPLACE ANY EXISTING SIGNS REMOVED DUE TO CONSTRUCTION OPERATIONS.

STEP 3) PLACE THE FINAL PAVEMENT MARKINGS AND MARKERS IN ACCORDANCE WITH THE FINAL PAVEMENT MARKING PLANS AND OPEN SR 1348 (OLD NC 90) TO TRAFFIC. REMOVE ANY REMAINING TRAFFIC CONTROL DEVICES AND DETOUR SIGNS FROM THE PROJECT.

APPROVED: DocuSigned by: C. Byron Holden SC5A055EAF0545F...

DATE: 1/30/2021

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

1/30/2021
21_TMP02.dgn
default

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.88	TMP-3

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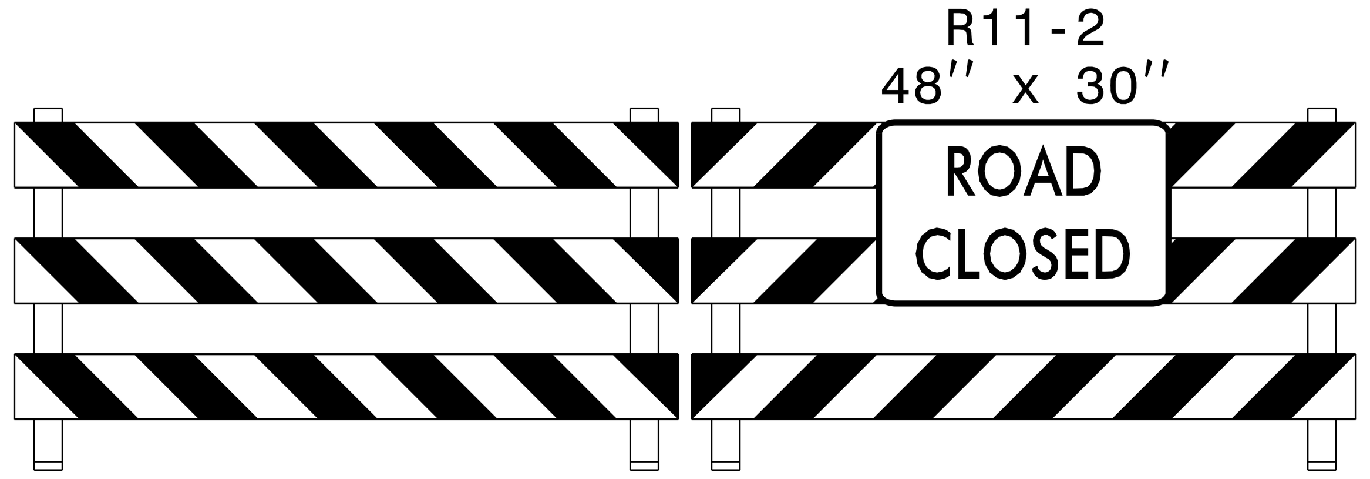
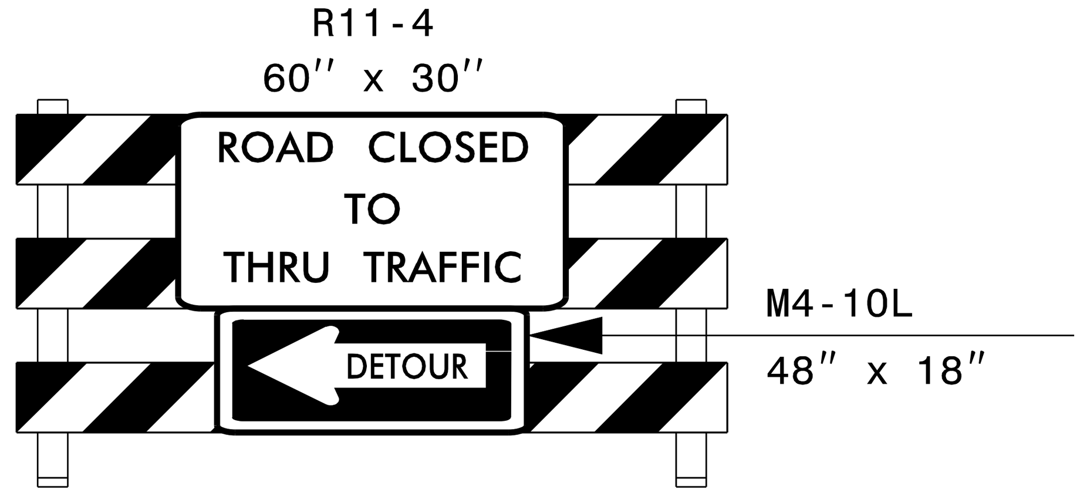


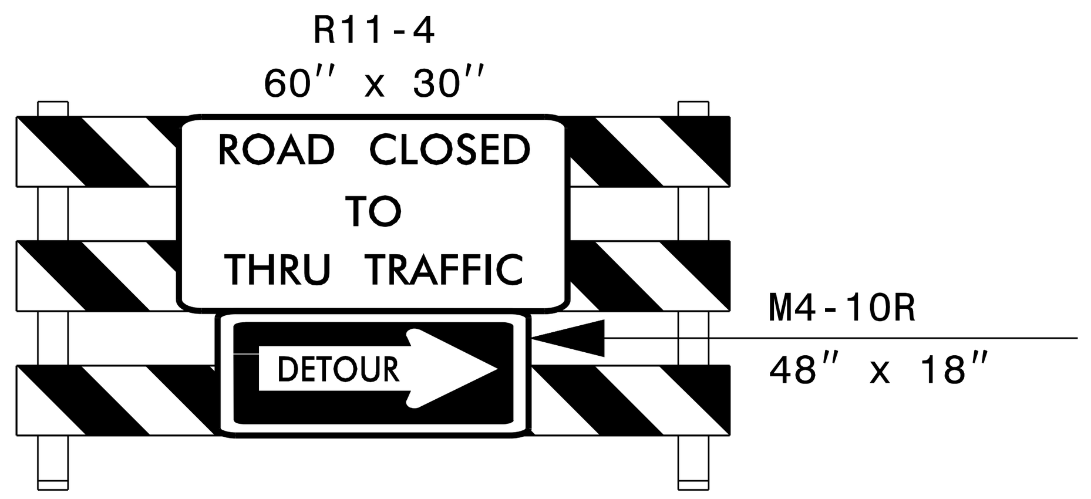
TYPE III BARRICADE(S)

(1)



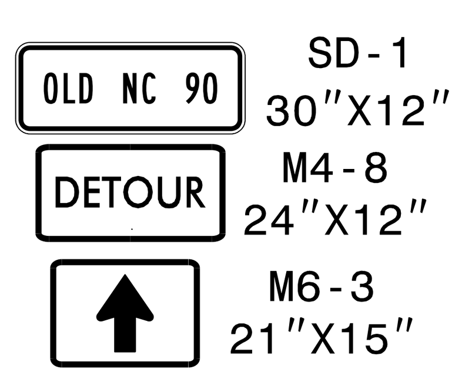
TYPE III BARRICADE

(2)

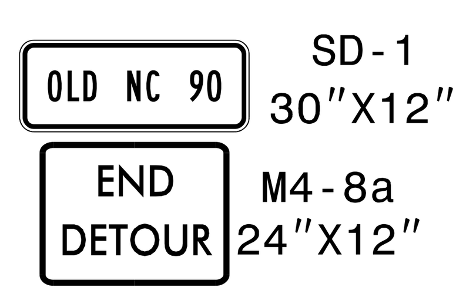


TYPE III BARRICADE

(3)

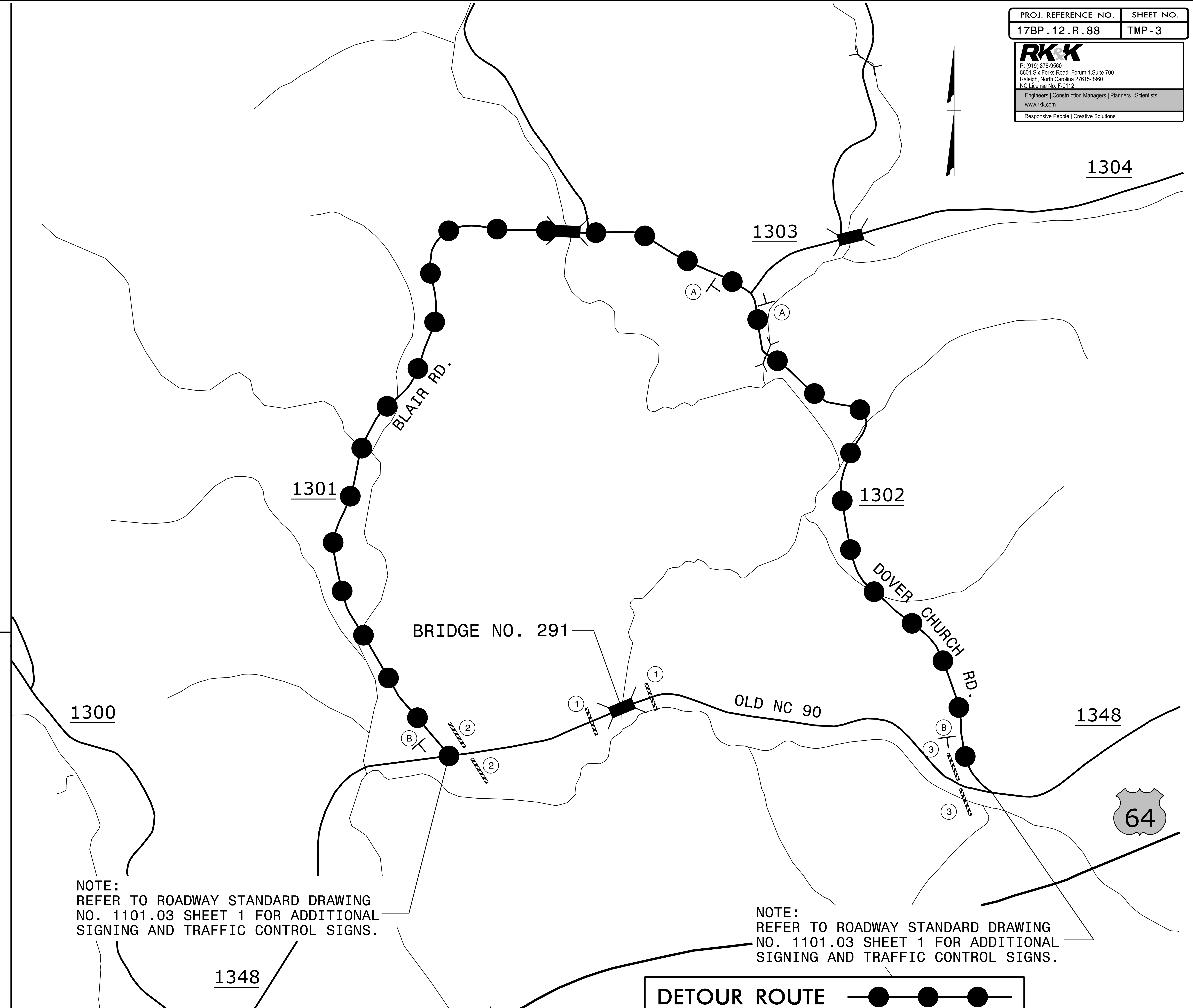


(A)



(B)

NOTE: SEE SD-1 FOR SIGN DESIGN.



NOTE:
REFER TO ROADWAY STANDARD DRAWING NO. 1101.03 SHEET 1 FOR ADDITIONAL SIGNING AND TRAFFIC CONTROL SIGNS.

NOTE:
REFER TO ROADWAY STANDARD DRAWING NO. 1101.03 SHEET 1 FOR ADDITIONAL SIGNING AND TRAFFIC CONTROL SIGNS.

APPROVED: C. Byron Holden
DATE: 1/30/2021

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033753 C. BYRON HOLDEN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

OFFSITE DETOUR
BRIDGE #291
SR 1348

PROJ. REFERENCE NO.	SHEET NO.
17BP.12.R.88	SD-1

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

SIGN WIDTH: 2′-6″
HEIGHT: 1′-0″
TOTAL AREA: 2.5 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

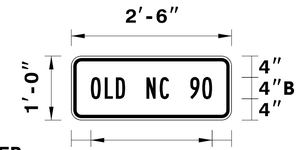
SYMBOL	X	Y	WID	HT

MAT′L: 0.080″ (2.0 mm) ALUMINUM

DESIGN BY: LAT
PROJECT ID: 291
CHECKED BY: CBH
DIV: 12
DATE: Mar 24, 2020

USE NOTES: 1,2

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



BORDER
R=1.5″
TH=0.63″
IN=0.38″

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

Series/Size
Text Length

		O	L	D		N	C		9	0																B 2000
	3.7	2.6	2.1	1.7	4	2.5	1.7	4	2.2	1.8	3.7															22.7

FILENAME: 291_SD1

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED: DocuSigned by: C. Byron Holden
5C5A055EAF0545F...
DATE: 1/30/2021

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

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

SIGN DESIGN

1/30/2021
291_SD1.dgn
tdaul

TIP NO.	SHEET NO.
17BP.12.R.88	PMP-2

APPROVED: DocuSigned by: C. Byron Holden 5C5A055EAF0545F...

DATE: 1/30/2021

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 033753 ENGINEER C. BYRON HOLDEN

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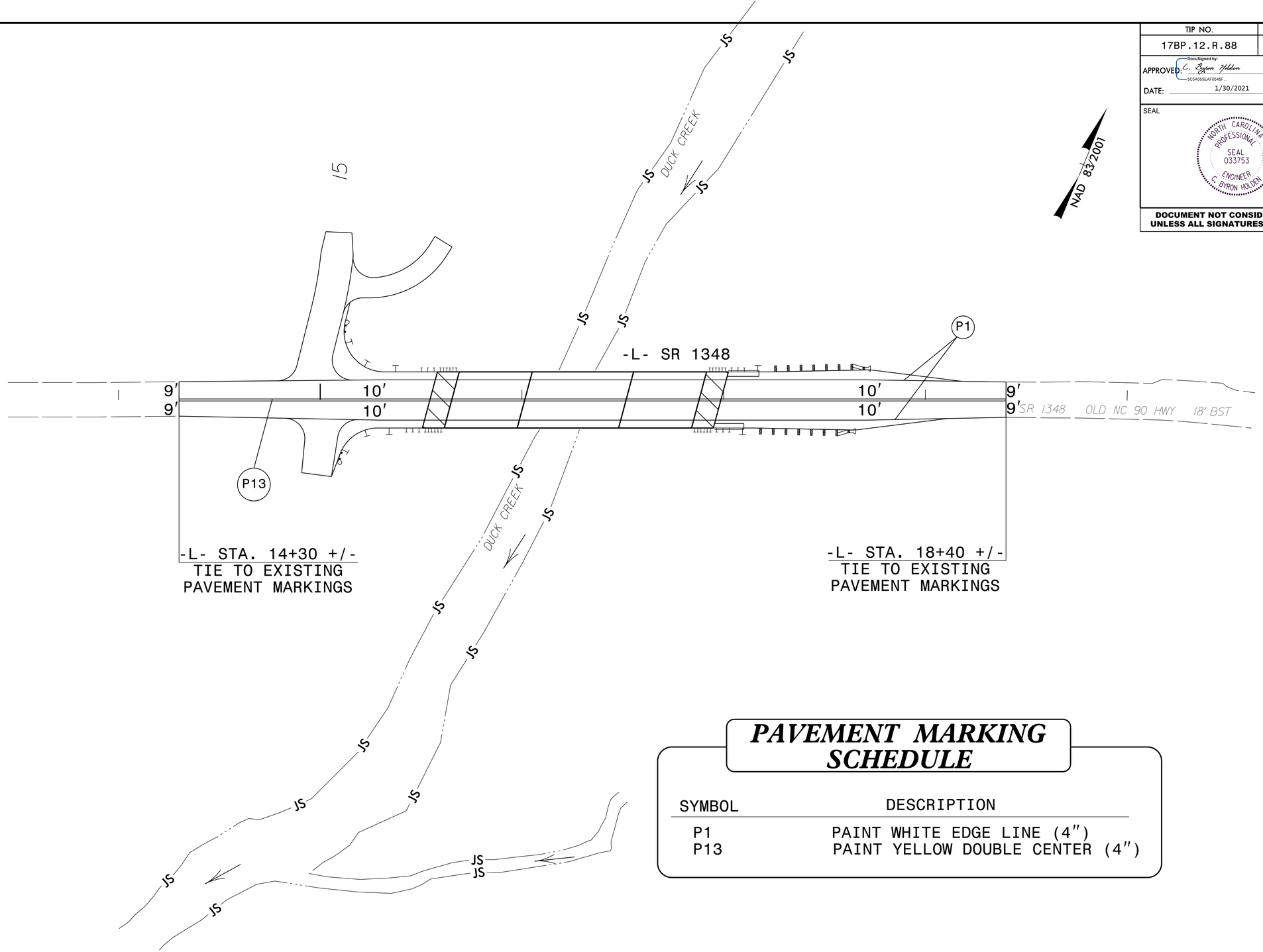

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
P1	PAINT WHITE EDGE LINE (4″)
P13	PAINT YELLOW DOUBLE CENTER (4″)

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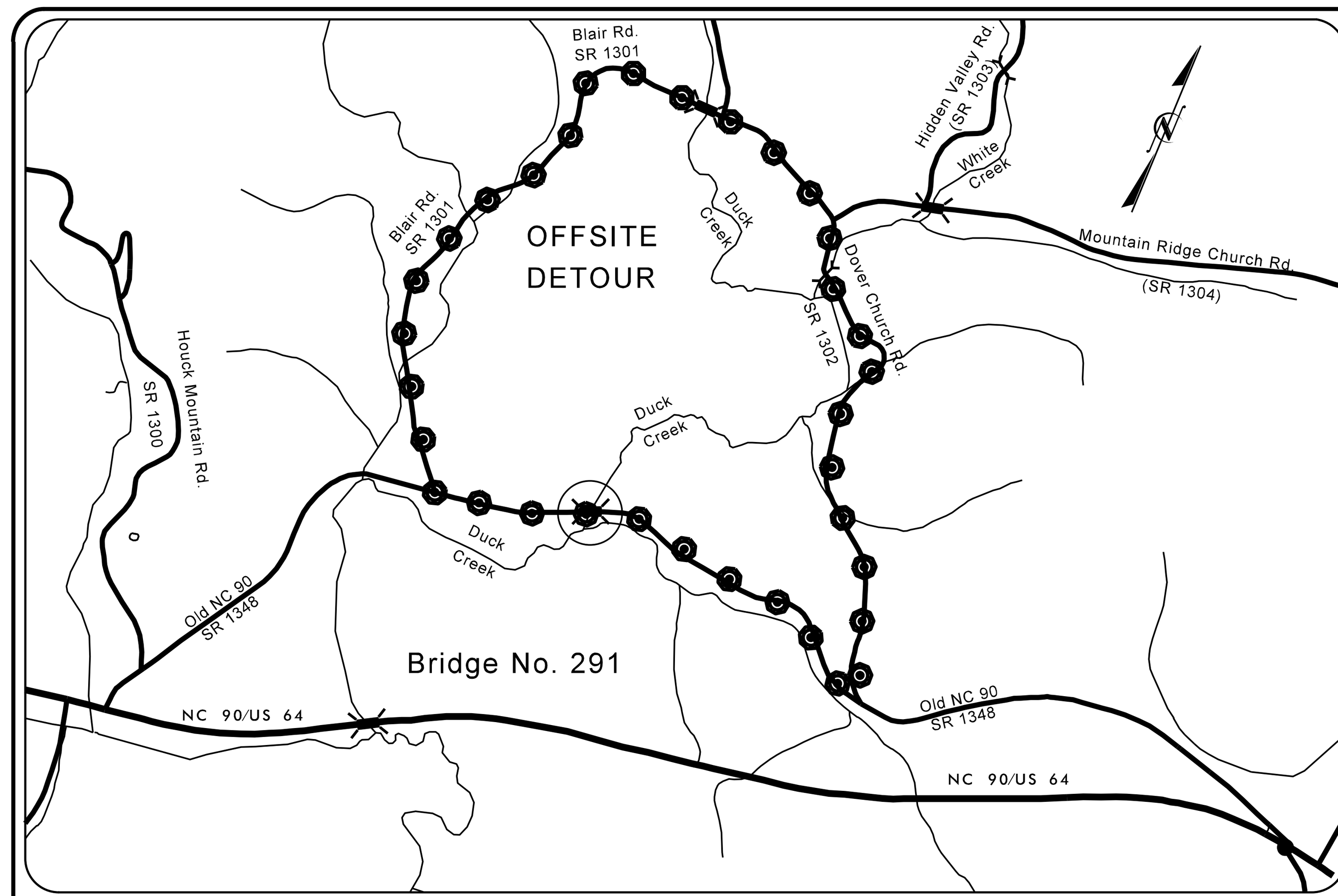
PAVEMENT MARKING DETAIL

1/30/2021
01029_PMP_PSH02.dgn
default

PROJECT: 17BP.12.R.88

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.12.R.88	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

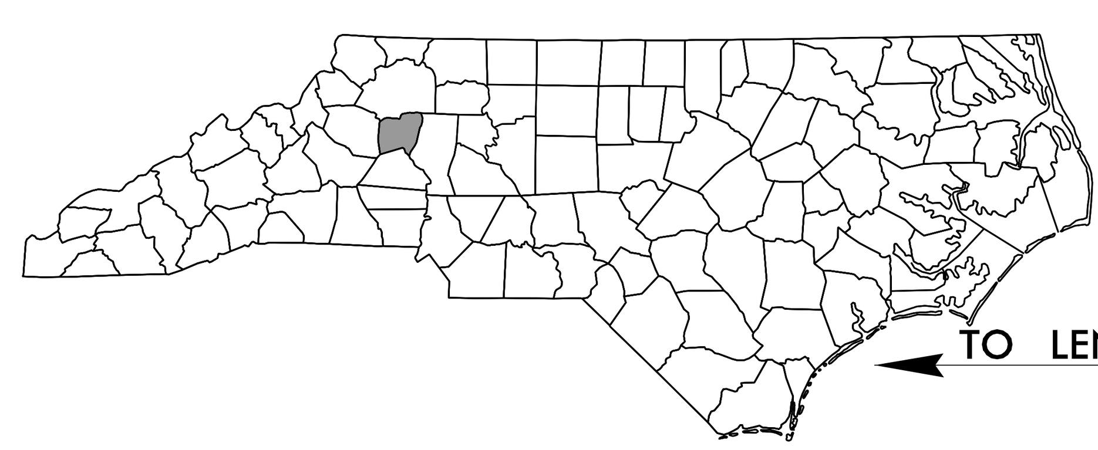
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

ALEXANDER COUNTY

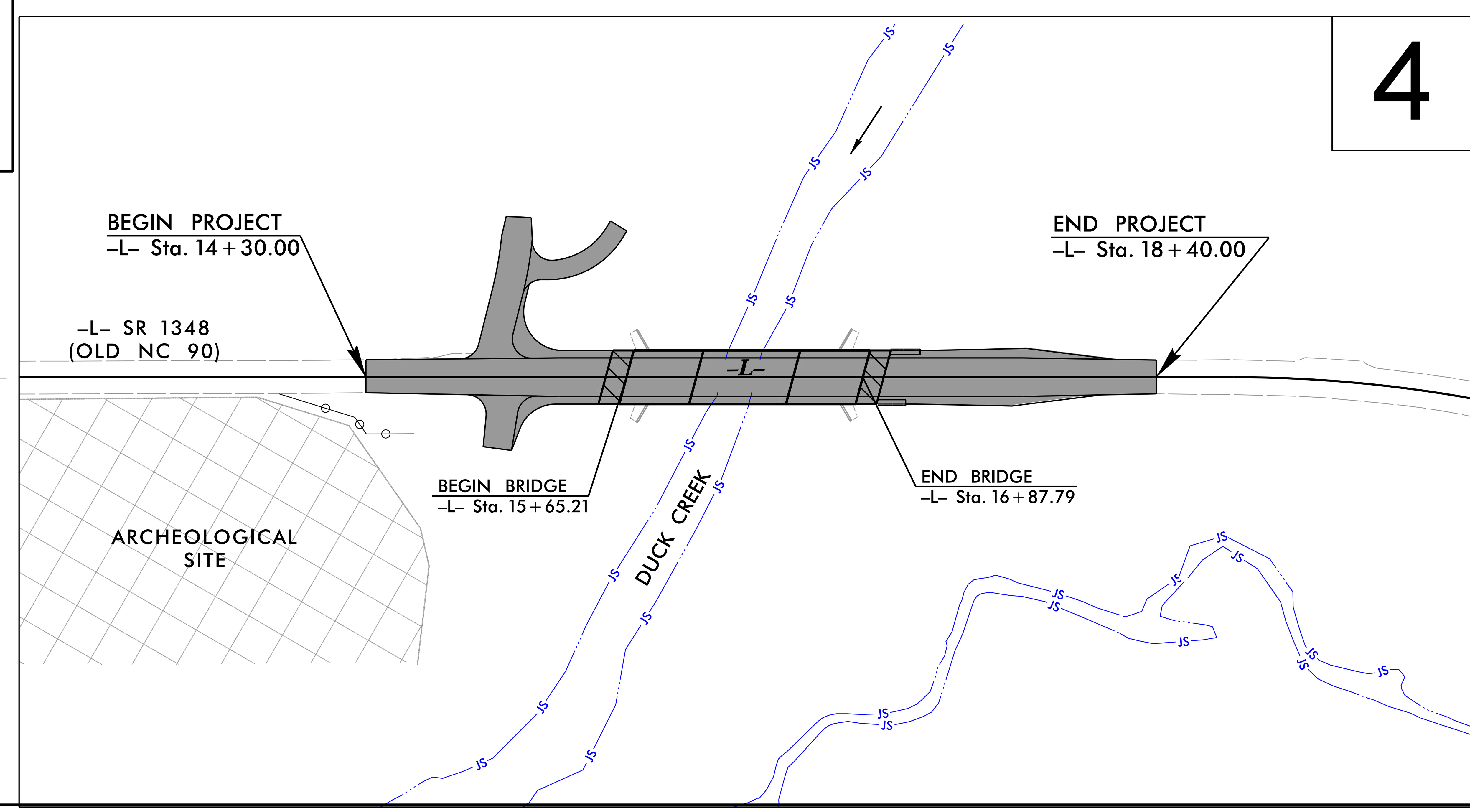
LOCATION: BRIDGE NO. 291 OVER DUCK CREEK ON SR 1348 (OLD NC 90)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND RESURFACING

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.



Clearing and Grubbing Phase
Final Phase
Both Phases



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.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

25 0 25 50
PLANS

25 0 25 50
PROFILE (HORIZONTAL)

5 0 5 10
PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE 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.

Prepared in the Office of:

RK&K

RUMMEL, KLEPPER & KAHL, LLP
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
919-878-9560

Designed by:

Jonathan M. Whittington, P.E. 3245
NAME LEVEL III CERTIFICATION NO.

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

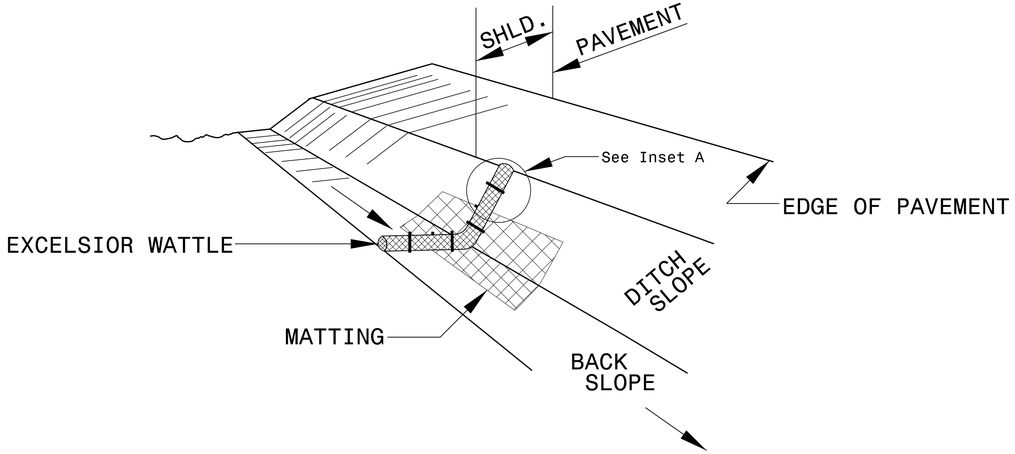
Roadway Standard Drawings

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.

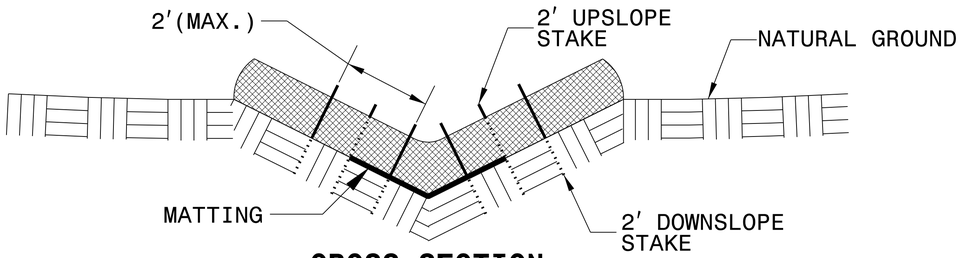
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and 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.
17BP.12.R.88	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

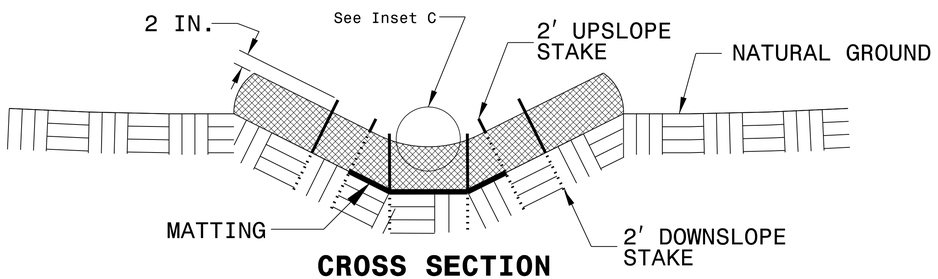
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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.

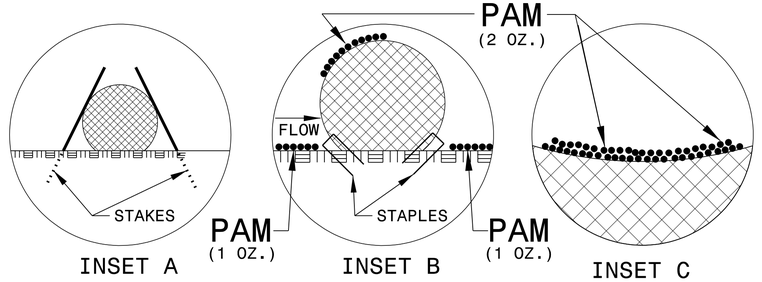
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

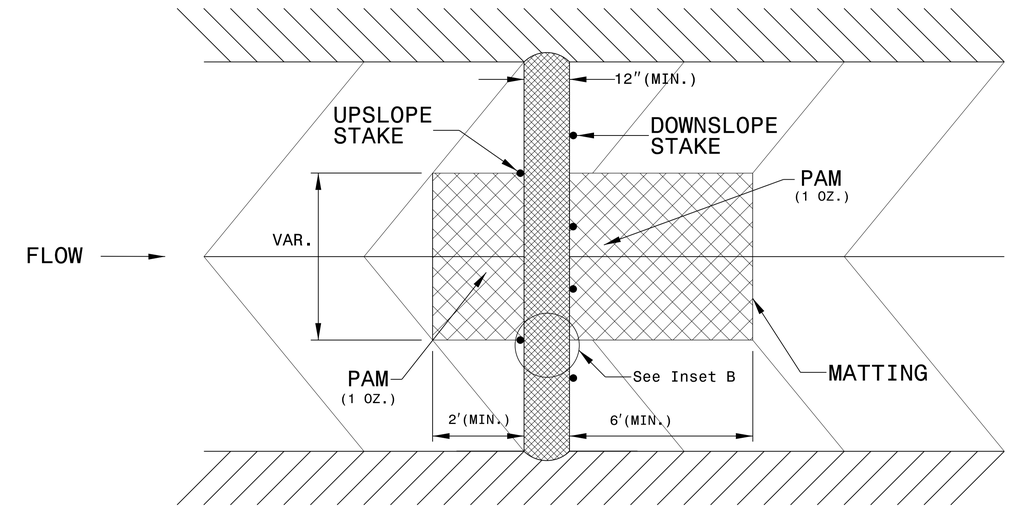
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

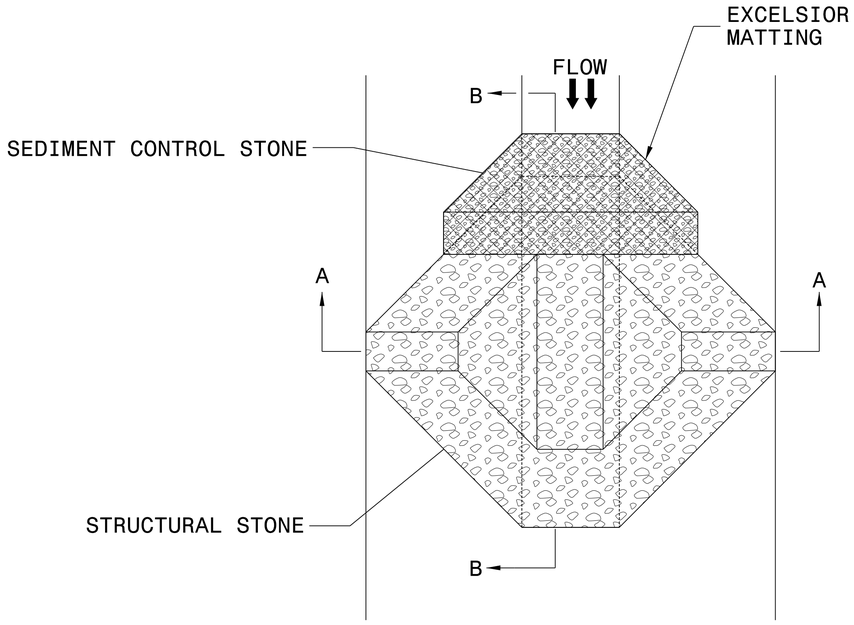




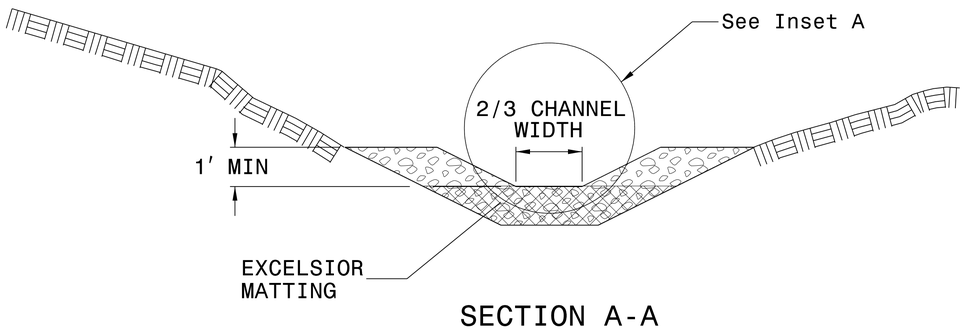
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



SECTION A-A

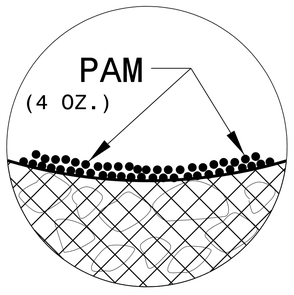
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

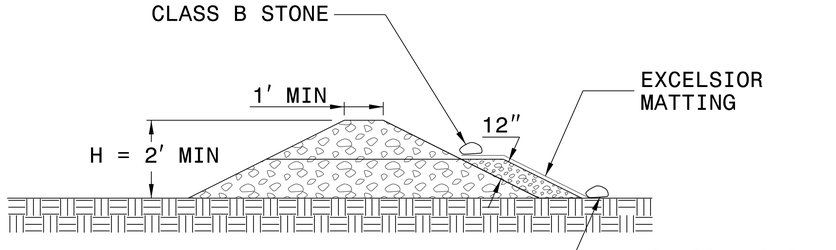
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	EC-3
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.

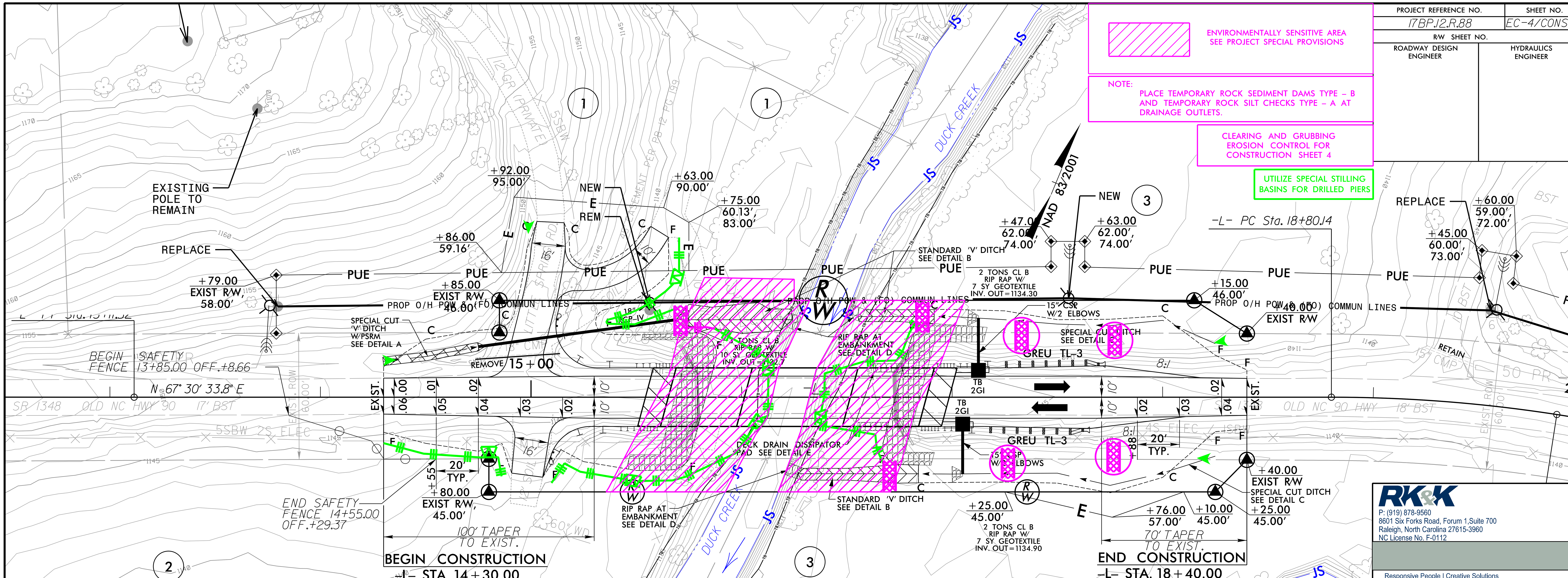
PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	EC-4/CONST4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

UTILIZE SPECIAL STILLING BASINS FOR DRILLED PIERS



EXISTING POLE TO REMAIN
REPLACE
+79.00 EXIST R/W, 58.00'
BEGIN SAFETY FENCE 13+85.00 OFF.+8.66
N 67° 30' 33.8" E
SR 1348 OLD NC HWY 90 17' BST
SPECIAL CUT 'V' DITCH W/PSRM SEE DETAIL A
+86.00 59.16'
+85.00 EXIST R/W 46.60'
+92.00 95.00'
NEW E REM
+63.00 90.00'
+75.00 60.13', 83.00'
PUE
PROP O/H POW & (FO) COMMUN LINES
REMOVE
15+00
DUCK CREEK
NAD 83/2001
STANDARD 'V' DITCH SEE DETAIL B
2 TONS CL B RIP RAP W/ 7 SY GEOTEXTILE INV. OUT=1134.30
RIP RAP AT EMBANKMENT SEE DETAIL D
15" CSP W/2 ELBOWS
SPECIAL CUT DITCH SEE DETAIL C
GREU TL-3
TB 2GI
+47.00 62.00', 74.00'
+63.00 62.00', 74.00'
NEW
-L- PC Sta. 18+80.14
+15.00 46.00'
+40.00 EXIST R/W
REPLACE
+60.00 59.00', 72.00'
+45.00 60.00', 73.00'
OLD NC 90 HWY 18' BST
END SAFETY FENCE 14+55.00 OFF.+29.37
+55 +80.00 EXIST R/W, 45.00'
20' TYP.
100' TAPER TO EXIST.
BEGIN CONSTRUCTION -L- STA. 14+30.00
RIP RAP AT EMBANKMENT SEE DETAIL D
DECK DRAIN DISSIPATOR PAD SEE DETAIL E
STANDARD 'V' DITCH SEE DETAIL B
+25.00 45.00'
2 TONS CL B RIP RAP W/ 7 SY GEOTEXTILE INV. OUT=1134.90
+76.00 57.00'
+10.00 45.00'
+40.00 EXIST R/W
SPECIAL CUT DITCH SEE DETAIL C
+25.00 45.00'
70' TAPER TO EXIST.
END CONSTRUCTION -L- STA. 18+40.00

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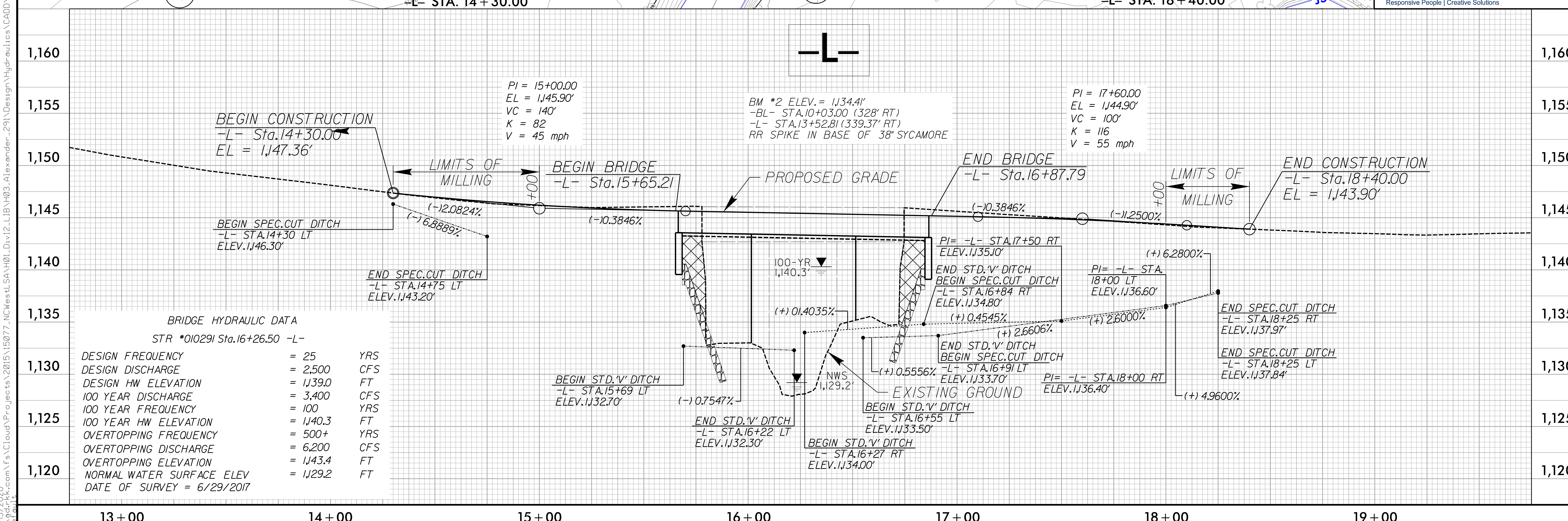


-L-
PI = 15+00.00
EL = 1,145.90'
VC = 140'
K = 82
V = 45 mph
BM *2 ELEV.= 1,134.41'
-BL- STA.10+03.00 (328' RT)
-L- STA.13+52.81 (339.37' RT)
RR SPIKE IN BASE OF 38" SYCAMORE
PI = 17+60.00
EL = 1,144.90'
VC = 100'
K = 116
V = 55 mph
BEGIN CONSTRUCTION -L- Sta.14+30.00 EL = 1,147.36'
LIMITS OF MILLING
BEGIN BRIDGE -L- Sta.15+65.21
PROPOSED GRADE
END BRIDGE -L- Sta.16+87.79
END CONSTRUCTION -L- Sta.18+40.00 EL = 1,143.90'
(-)2.0824%
(-)0.3846%
(-)1.2500%
(-)6.8889%
BEGIN SPEC.CUT DITCH -L- STA.14+30 LT ELEV.1,146.30'
END SPEC.CUT DITCH -L- STA.14+75 LT ELEV.1,143.20'
100-YR 1,140.3'
NWS 1,129.2'
EXISTING GROUND
BEGIN STD.'V' DITCH -L- STA.15+69 LT ELEV.1,132.70'
END STD.'V' DITCH -L- STA.16+22 LT ELEV.1,132.30'
BEGIN STD.'V' DITCH -L- STA.16+27 RT ELEV.1,134.00'
BEGIN STD.'V' DITCH -L- STA.16+55 LT ELEV.1,133.50'
PI= -L- STA.17+50 RT ELEV.1,135.10'
END STD.'V' DITCH BEGIN SPEC.CUT DITCH -L- STA.16+84 RT ELEV.1,134.80'
END STD.'V' DITCH BEGIN SPEC.CUT DITCH -L- STA.16+91 LT ELEV.1,133.70'
PI= -L- STA. 18+00 LT ELEV.1,136.60'
PI= -L- STA.18+00 RT ELEV.1,136.40'
END SPEC.CUT DITCH -L- STA.18+25 RT ELEV.1,137.97'
END SPEC.CUT DITCH -L- STA.18+25 LT ELEV.1,137.84'
(+) 01.4035%
(-) 0.7547%
(+) 0.4545%
(+) 2.6606%
(+) 0.5556%
(+) 2.6000%
(+) 6.2800%
(+) 4.9600%
1,160 1,155 1,150 1,145 1,140 1,135 1,130 1,125 1,120
13+00 14+00 15+00 16+00 17+00 18+00 19+00

BRIDGE HYDRAULIC DATA

STR *010291 Sta.16+26.50 -L-

DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	2,500	CFS
DESIGN HW ELEVATION	=	1,139.0	FT
100 YEAR DISCHARGE	=	3,400	CFS
100 YEAR FREQUENCY	=	100	YRS
100 YEAR HW ELEVATION	=	1,140.3	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	6,200	CFS
OVERTOPPING ELEVATION	=	1,143.4	FT
NORMAL WATER SURFACE ELEV	=	1,129.2	FT
DATE OF SURVEY = 6/29/2017			

PROJECT REFERENCE NO.	SHEET NO.
17BP.12.R.88	EC-5/CONST4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MATTING FOR EROSION CONTROL IN DITCHES

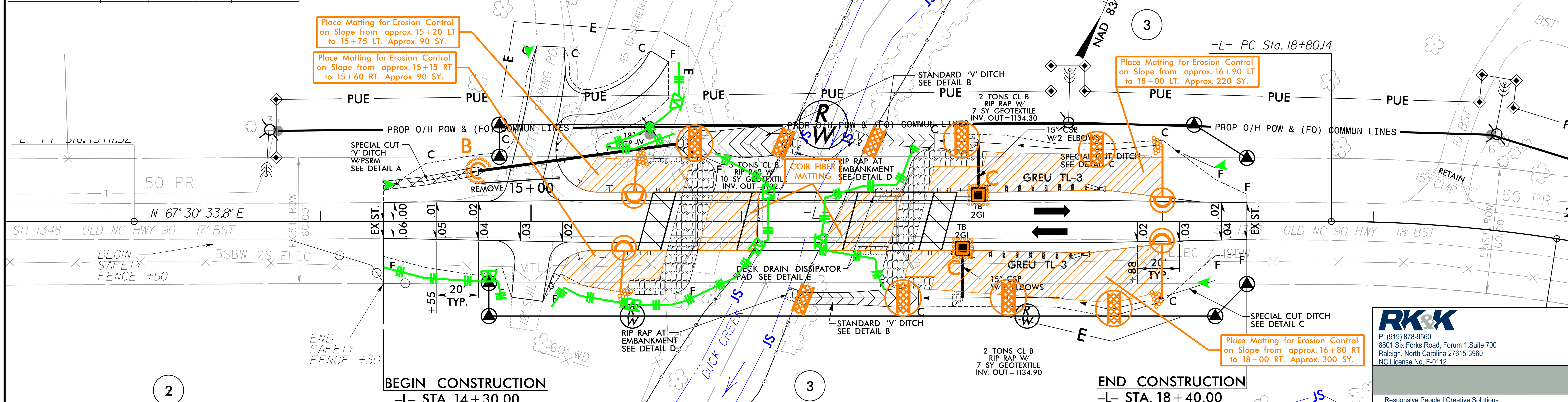
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	15+69	16+22	LT	40
4	-L-	16+55	18+00	LT	75
4	-L-	16+27	18+00	RT	90
				TOTAL	205

PSRM FOR EROSION CONTROL IN DITCHES

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	14+30	14+75	LT	35
4	-L-	18+00	18+25	RT	15

Place Matting for Erosion Control on Slope as Work Allows.

UTILIZE SPECIAL STILLING BASINS FOR DRILLED PIERS



Place Matting for Erosion Control on Slope from approx. 15+20 LT to 15+75 LT. Approx. 90 SY.
Place Matting for Erosion Control on Slope from approx. 15+15 RT to 15+60 RT. Approx. 90 SY.
Place Matting for Erosion Control on Slope from approx. 16+90 LT to 18+00 LT. Approx. 220 SY.
Place Matting for Erosion Control on Slope from approx. 16+80 RT to 18+00 RT. Approx. 300 SY.
COIR FIBER MATTING
-L- PC Sta. 18+80.14
NAD 83/2001
DUCK CREEK
PROP O/H POW & (FO) COMMUN LINES
STANDARD 'V' DITCH SEE DETAIL B
2 TONS CL B RIP RAP W/ 7 SY GEOTEXTILE INV. OUT=1134.30
SPECIAL CUT 'V' DITCH W/PSRM SEE DETAIL A
RIP RAP AT EMBANKMENT SEE DETAIL D
DECK DRAIN DISSIPATOR PAD SEE DETAIL E
GREU TL-3
SPECIAL CUT DITCH SEE DETAIL C
2 TONS CL B RIP RAP W/ 7 SY GEOTEXTILE INV. OUT=1134.90
N 67° 30' 33.8" E
SR 1348 OLD NC HWY 90 17' BST
BEGIN SAFETY FENCE +50
END SAFETY FENCE +30
BEGIN CONSTRUCTION -L- STA. 14+30.00
END CONSTRUCTION -L- STA. 18+40.00

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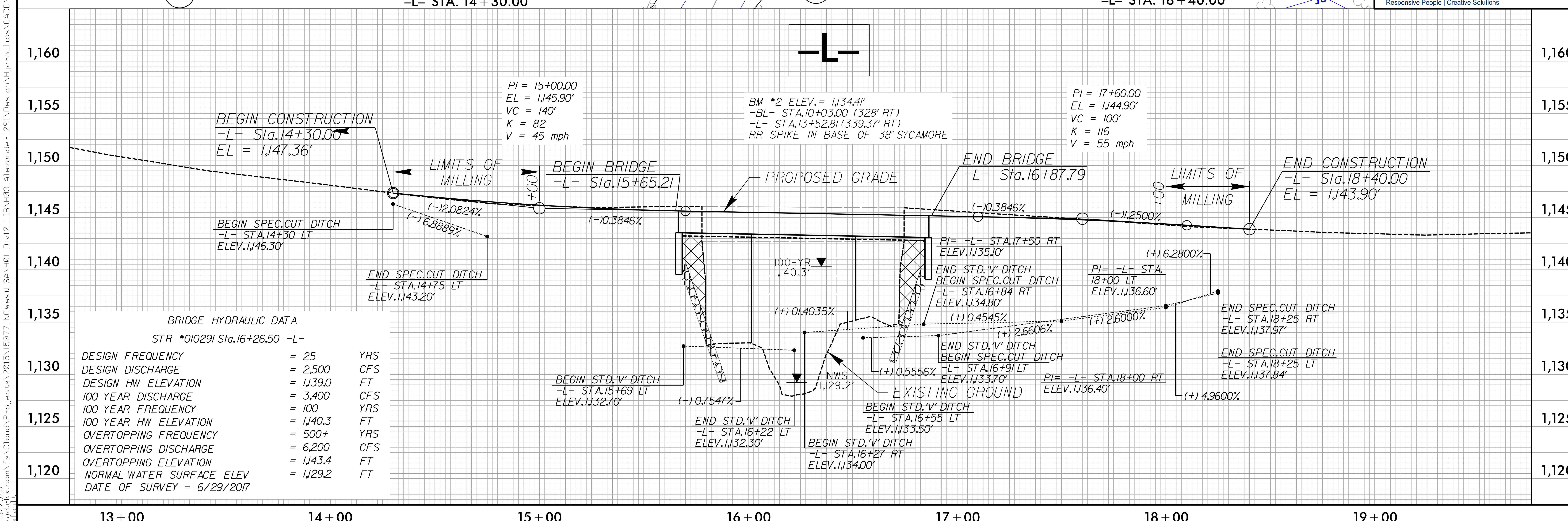

-L-
PI = 15+00.00
EL = 1,145.90'
VC = 140'
K = 82
V = 45 mph
BM #2 ELEV.= 1,134.41'
-BL- STA.10+03.00 (328' RT)
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RR SPIKE IN BASE OF 38" SYCAMORE
PI = 17+60.00
EL = 1,144.90'
VC = 100'
K = 116
V = 55 mph
BEGIN CONSTRUCTION -L- Sta.14+30.00 EL = 1,147.36'
LIMITS OF MILLING
BEGIN BRIDGE -L- Sta.15+65.21
PROPOSED GRADE
END BRIDGE -L- Sta.16+87.79
END CONSTRUCTION -L- Sta.18+40.00 EL = 1,143.90'
100-YR 1,140.3'
NWS 1,129.2'
EXISTING GROUND
(-)2.0824%
(-)6.8889%
(-)0.3846%
(-)1.2500%

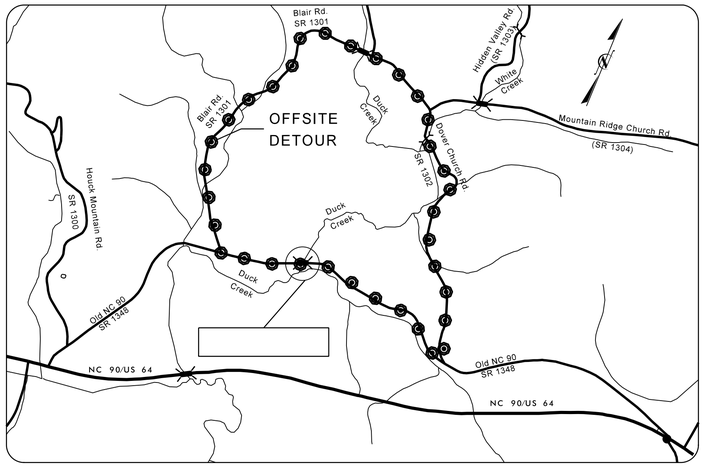
BRIDGE HYDRAULIC DATA

STR #010291 Sta.16+26.50 -L-

DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	2,500	CFS
DESIGN HW ELEVATION	=	1,139.0	FT
100 YEAR DISCHARGE	=	3,400	CFS
100 YEAR FREQUENCY	=	100	YRS
100 YEAR HW ELEVATION	=	1,140.3	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	6,200	CFS
OVERTOPPING ELEVATION	=	1,143.4	FT
NORMAL WATER SURFACE ELEV	=	1,129.2	FT

DATE OF SURVEY = 6/29/2017

TIP PROJECT: 17BP.12.R.88



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

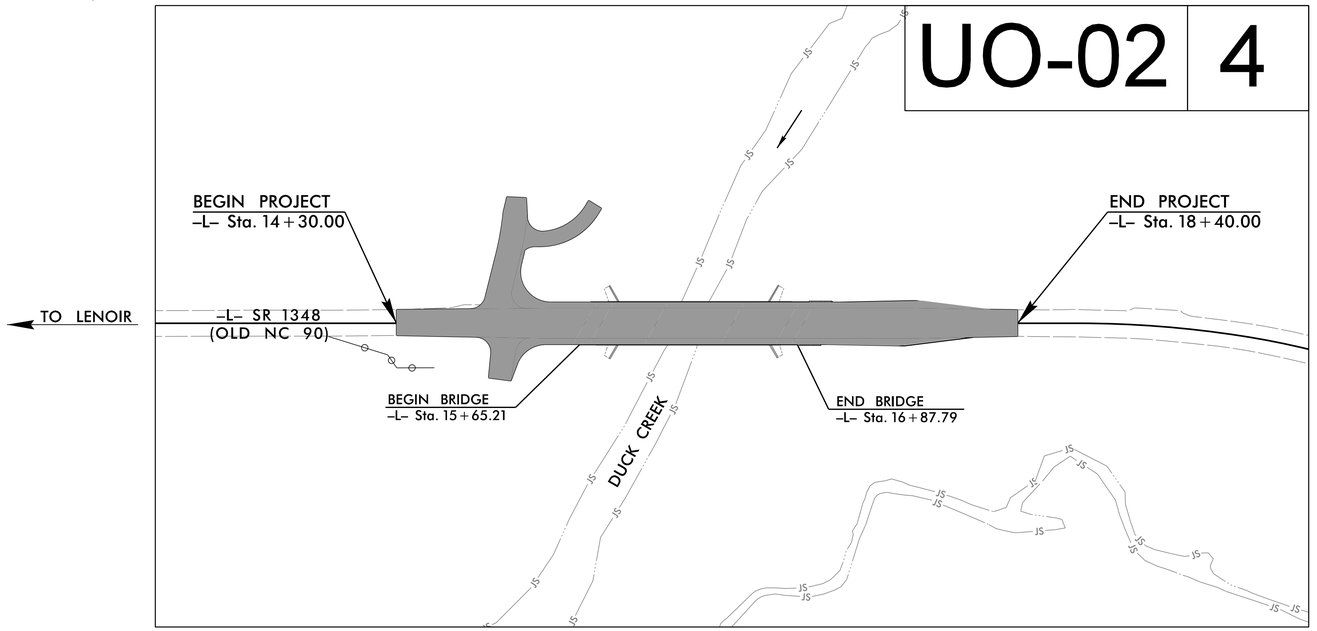
UTILITIES BY OTHERS PLANS
ALEXANDER COUNTY

T.I.P. NO.	SHEET NO.
B–010291	UO–1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: BRIDGE NO. 291 OVER DUCK CREEK ON SR 1348 (OLD NC 90)

TYPE OF WORK: DRY UTILITIES



GRAPHIC SCALES

50 25 0 50 100
PLANS

INDEX OF SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) DUKE ENERGY – POWER (D)
(B) AT&T COMMUNICATIONS – TELECOMMUNICATIONS/FO

PREPARED IN THE OFFICE OF:

RK&K
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Engineers | Construction Managers | Planners | Scientists
www.rkk.com
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Howard Woodall, PE	*UTILITY PROJECT MANAGER*
Mark Lawson	*PROJECT UTILITY COORDINATOR*
Mark Lawson	*PROJECT UTILITY CADD*

DIVISION OF HIGHWAYS
DIVISION 12
1710 E MARION STREET
(US 74 BUSINESS)
SHELBY, NC 28151

Chad Drewery	*DIVISION CONTACT #1*
Warren Anderson	*DIVISION CONTACT #2*
Larry Carpenter, PE	*DIVISION CONTACT #3*
Rodney Gantt	*DIVISION CONTACT #4*

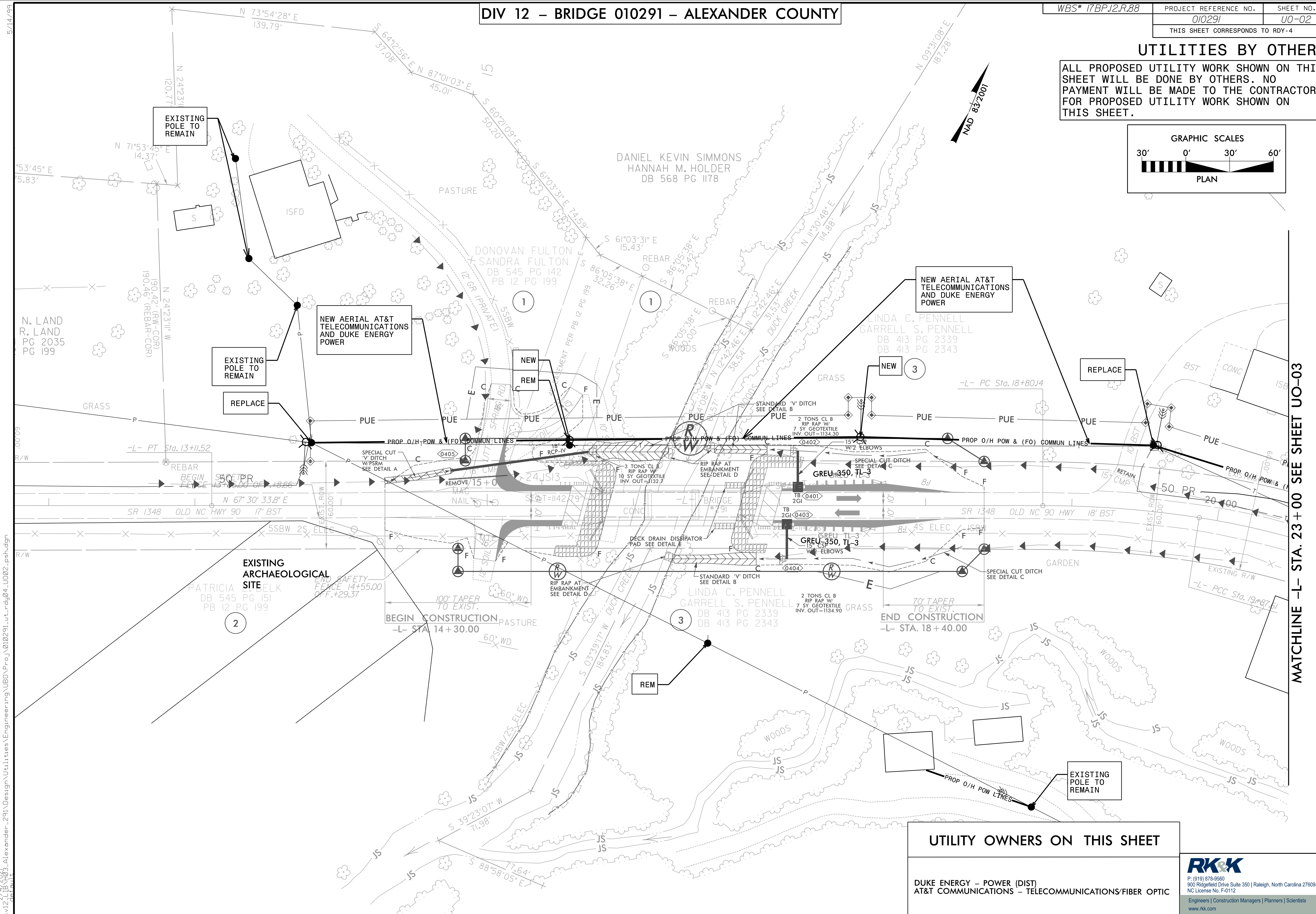
DIV 12 – BRIDGE 010291 – ALEXANDER COUNTY

WBS# 17BP.12.R.88	PROJECT REFERENCE NO.	SHEET NO.
	010291	UO-02
	THIS SHEET CORRESPONDS TO RDY-4	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

GRAPHIC SCALES
30' 0' 30' 60'
PLAN



UTILITY OWNERS ON THIS SHEET

DUKE ENERGY – POWER (DIST)
AT&T COMMUNICATIONS – TELECOMMUNICATIONS/FIBER OPTIC

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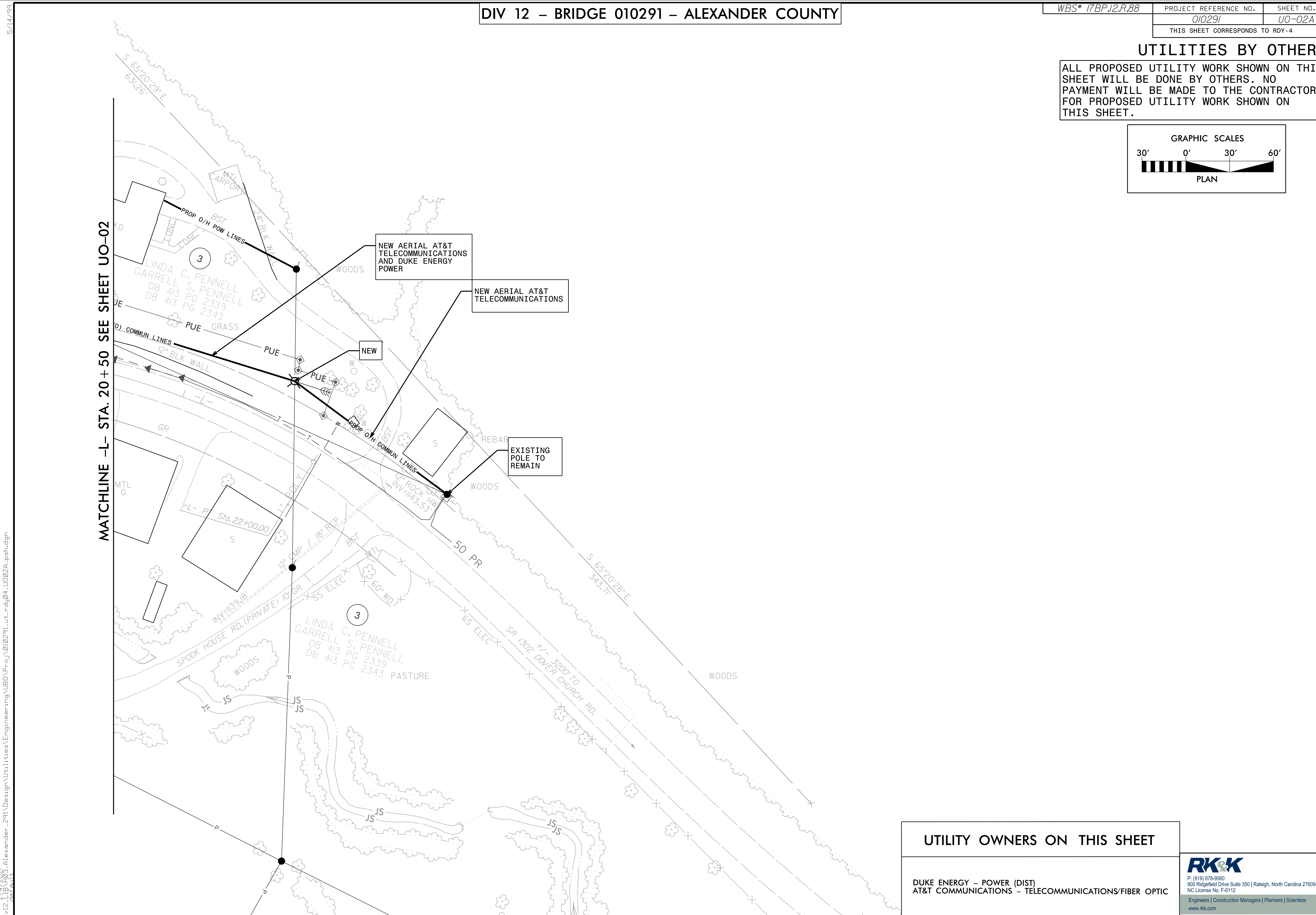
5/14/99
2/4/2021

WBS# 17BP.12.R.88	PROJECT REFERENCE NO.	SHEET NO.
	010291	UO-02A
	THIS SHEET CORRESPONDS TO RDY-4	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



UTILITY OWNERS ON THIS SHEET

DUKE ENERGY – POWER (DIST)
AT&T COMMUNICATIONS – TELECOMMUNICATIONS/FIBER OPTIC

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BPJ2.R.88	X-1

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

1170
1165
1160
1155
1150
1145
1140
1135

4:1 0.001 0.060 4:1

1147.36

14+30.00

1147.48

14+25.00

-L-

BEGIN CONSTRUCTION -L- STA 14+30.00

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1/27/2021
R:\Roadway\XSC\0102911_Rdy_xpLL.dgn
Files

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.12.R.88	X-2

1/27/2021
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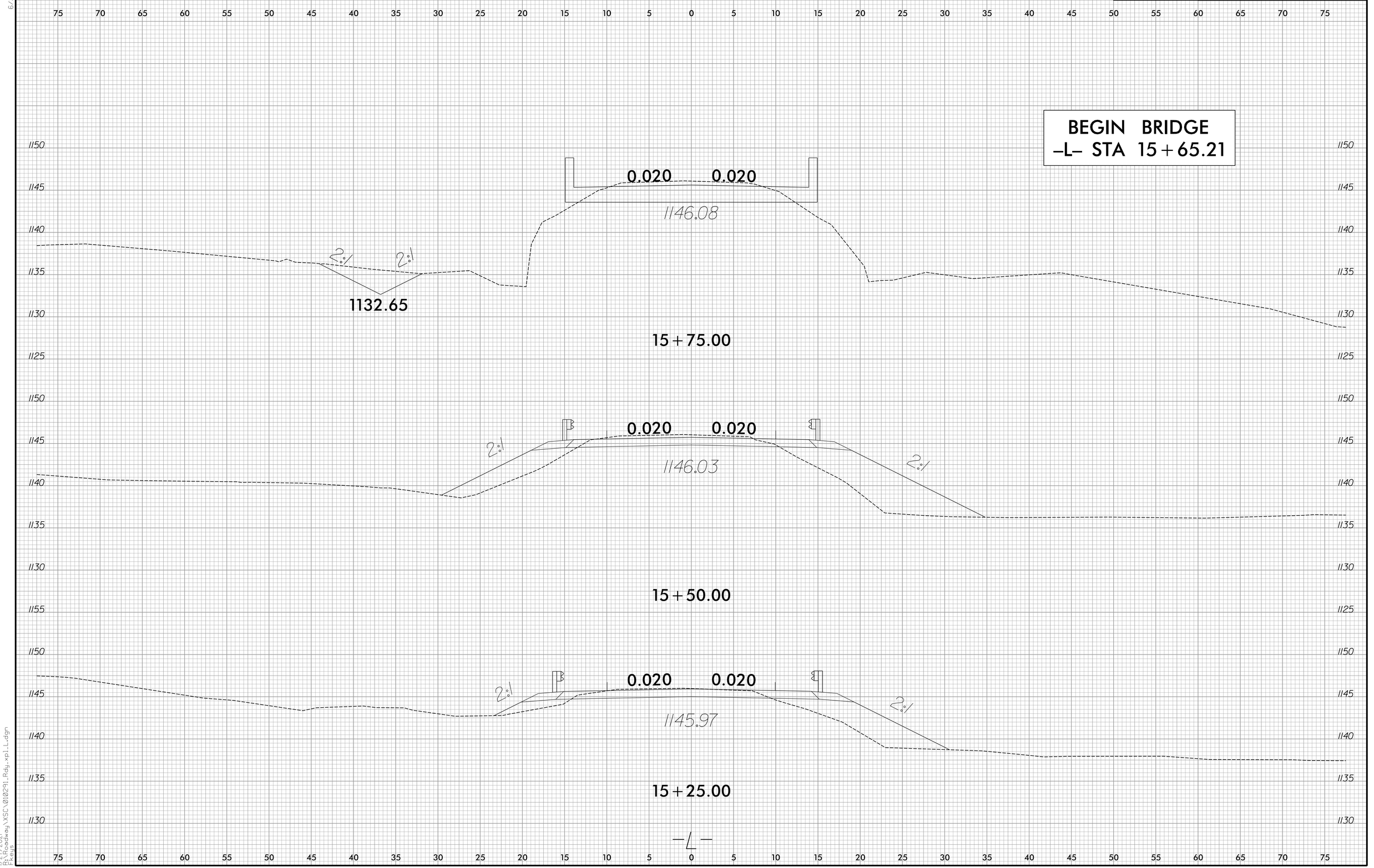
Fkeys

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BPJ2.R.88	X-3

BEGIN BRIDGE
–L– STA 15+65.21



6/23/2021
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6/23/16

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	17BPJ2.R.88	X-4

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1150 1145 1140 1135 1130 1125

0.020 0.020

2% 2:1

1134.32

1135.11

16+50.00

0.020 0.020

1135 1130 1125

1128.09

16+25.00

1120

0.020 0.020

2% 2:1

1132.47

1133.01

16+00.00

—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

PROJ. REFERENCE NO.	SHEET NO.
17BPJ2.R.88	X-5

6/23/16

1/27/2021
R:\Roadway\XSC\010291_Rdy_xpl_L.dgn
Fkeys

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	17BP.12.R.88	X-6

6/23/16

1/27/2021
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Fkeys

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BPJ2.R.88	X-7

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

1145
1140
1135
1155
1150
1145
1140
1135
1130

1143.82

18+50.00

END CONSTRUCTION
–L– STA 18+40.00

2% 0.026 0.045 2%

1143.90

18+40.00
–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

1145
1140
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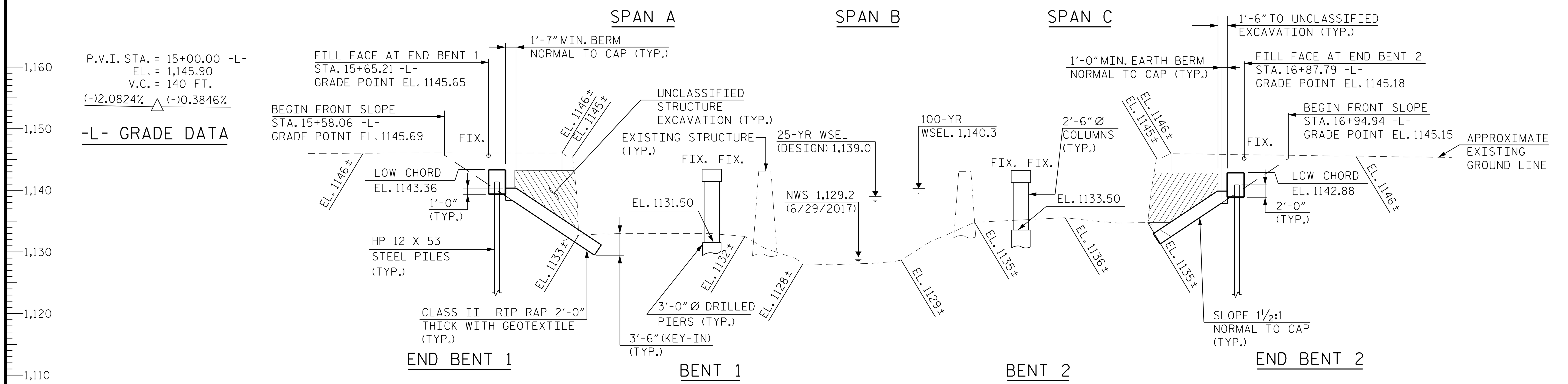
1130



ELEVATION

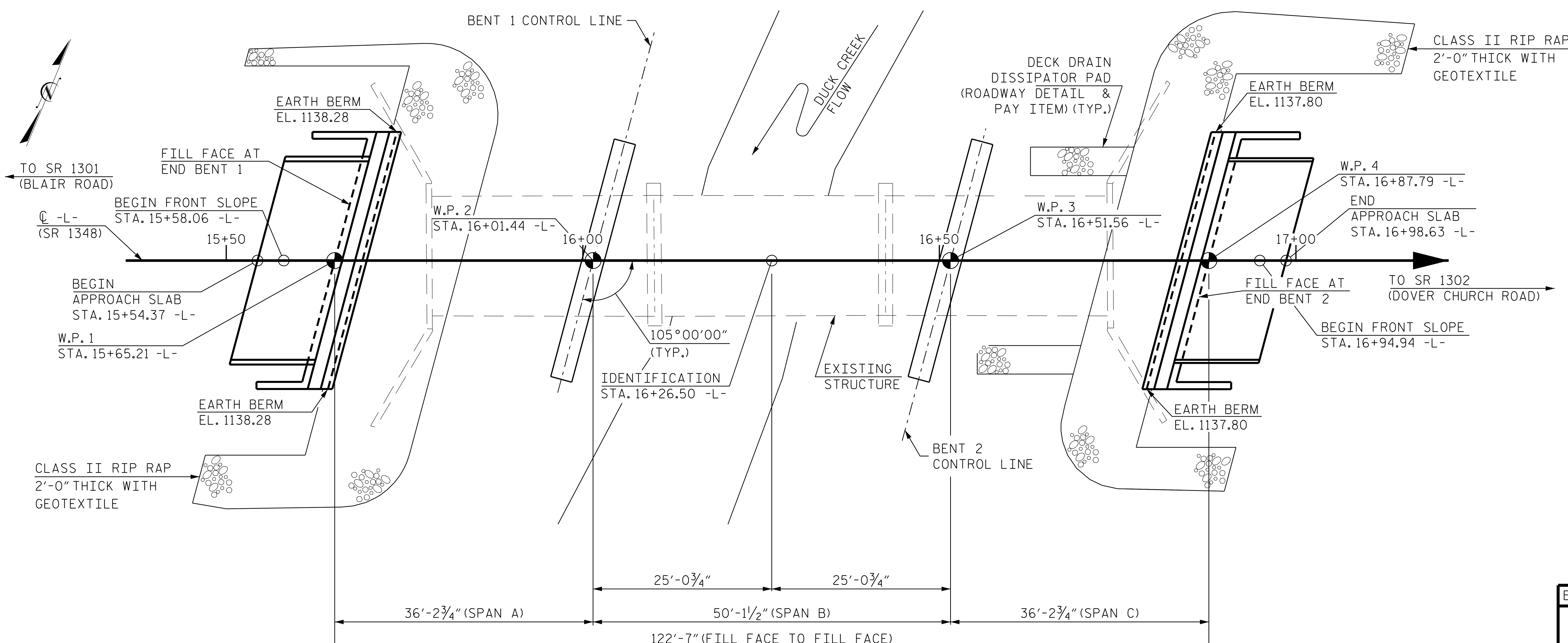
(END BENTS AND BENTS ON SECTION AT RIGHT ANGLES TO END BENTS AND BENTS)

HYDRAULIC DATA

DESIGN DISCHARGE----------------------2,500 C.F.S.
FREQUENCY OF DESIGN FLOOD-----------------25 YR.
DESIGN HIGH WATER ELEVATION-------------1,139.0
DRAINAGE AREA--------------------------12.3 SQ. MI.
BASE DISCHARGE (Q100)-----------------3,400 C.F.S.
BASE HIGH WATER ELEVATION----------------1,140.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE---------------6,200 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD--------500 YR. +
OVERTOPPING FLOOD ELEVATION-------------1,143.4
OVERTOPPING STATION------------------18+94.50-L-



PLAN

(PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 1 OF 3

REPLACES BRIDGE NO. 291

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

1/26/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER DUCK CREEK ON OLD NC HWY 90 (SR 1348) BETWEEN SR 1301 (BLAIR RD) AND SR 1302 (DOVER CHURCH RD)

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1 Suite 700
Raleigh, North Carolina 27615 | NC License No. F-0112
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REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-1
1			3					TOTAL SHEETS
2			4					21

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : T. ROBERSON DATE : SEP 2018
CHECKED BY : T. L. COGGINS DATE : SEP 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : SEP 2018

bgonfa 3/12/2020 R:\Structures\DGN\FINAL\001-010291_SD_GEN.dgn

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-21.

FOR SUBMITTAL OR 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20' EACH SIDE OF CENTERLINE AT END BENT NO. 1 AND 15' EACH SIDE OF CENTERLINE AT END BENT NO. 2 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 EXISTING STRUCTURE CONSISTING OF 1 SPAN AT 32.125', 1 SPAN AT 32.5' AND 1 SPAN AT 32.125' WITH A 8" REINFORCED CONCRETE DECK AND A 7" AWS ON 3 LINES OF RC DECK GIRDERS; CLEAR ROADWAY OF 17'; SUBSTRUCTURE CONSISTING OF RC ABUTMENTS FULL HEIGHT AND RC ROUND NOSE POST AND WEB AND LOCATED AT THE PROPOSED STRUCTURE 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, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISIONS FOR REMOVAL OF EXISTING STRUCTURE AT STA. 16+26.50 -L-.

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 THE DIFFERENCES BETWEEN THE EXISTING SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

EXISTING FOUNDATIONS ARE FROM THE BEST INFORMATION AVAILABLE.

EXISTING INTERIOR BENTS SHALL BE CUT OFF AT GROUND LEVEL AND EXISTING RIP RAP TO REMAIN IN PLACE. ADDITIONAL CLASS II RIP RAP MAY BE ADDED TO EXISTING RIP RAP AS DIRECTED BY THE ENGINEER.

EXISTING CONCRETE END BENTS SHALL BE REMOVED BELOW THE PROPOSED 2' CLASS II RIP RAP AS DIRECTED BY THE ENGINEER.

FOR FIBER OPTIC CONDUIT SYSTEM AT STATION 16+26.50 -L-, SEE SPECIAL PROVISIONS.

FOUNDATION NOTES:

FOR PILES SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 66 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 TO REQUIRED DRIVING RESISTANCE OF 110 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 66 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO REQUIRED DRIVING RESISTANCEOF 110 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1. FOR STEEL PILE POINTS, SEE SECTION 450 OF STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 352 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 5 TSF.

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 1103 FT WITH A PENETRATION OF AT LEAST 12 FT INTO WEATHERED ROCK OR ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 1112.8 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 354 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 5 TSF.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 1094 FT (LT) AND 1097 FT (RT) WITH A PENETRATION OF AT LEAST 12 FT INTO WEATHERED ROCK OR ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 1112.8 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASING BELOW ELEVATION 1115 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. IF REQUIRED, DO NOT EXTEND PERMANENT CASING BELOW ELEVATION 1115 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER DUCK CREEK ON OLD NC HWY 90 (SR 1348) BETWEEN SR 1301 (BLAIR RD) AND SR 1302 (DOVER CHURCH RD)

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS
1/26/2021

RK&K
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8601 Six Forks Road, Forum 1 Suite 700
Raleigh, North Carolina 27615 | NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : T. ROBERSON DATE : SEP 2018
CHECKED BY : T. L. COGGINS DATE : SEP 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : SEP 2018

bgonfa
3/12/2020 R:\Structures\DGN\FINAL\002-010291_SD_GN.dgn

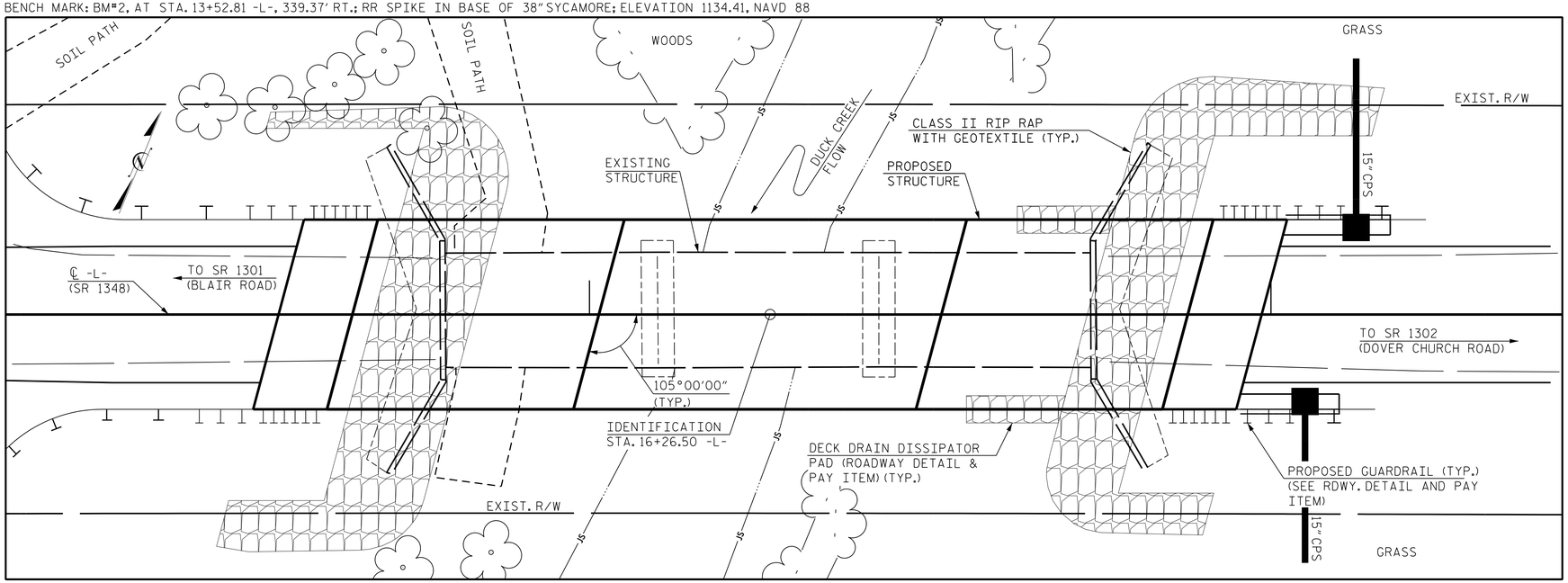
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 16+26.50 -L-	ASBESTOS ASSESSMENT	3'-0" DIA DRILLED PIERS IN SOIL	3'-0" DIA DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA DRILLED PIER	PDA TESTING	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS AT STA. 16+26.50 -L-
	LUMP SUM	LUMP SUM	LIN.FT.	LIN.FT.	LIN.FT.	EA.	EA.	EA.	EA.	LUMP SUM	CU.YDS.	LUMP SUM
SUPERSTRUCTURE												LUMP SUM
END BENT NO.1											⚠ 20.5	
BENT NO.1			49.5	36	54						16.8	
BENT NO.2			78.5	36	60						15.6	
END BENT NO.2											⚠ 20.5	
TOTAL	LUMP SUM	LUMP SUM	128.0	72	114	1	2	2	2	LUMP SUM	73.4	LUMP SUM

TOTAL BILL OF MATERIAL

	REINFORCING STEEL (BRIDGE)	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SET-UP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0") THICK	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FIBER OPTIC CONDUIT SYSTEM AT STA. 16+26.50 -L-	3'-0" X 1'-9" PRESTRESSED CONCRETE CORE SLABS	
	LBS.	LBS.	EACH	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	LIN.FT.	NO.	LIN. FT.
SUPERSTRUCTURE							240.50				236.50	30	1200.00
END BENT NO.1	⚠ 2,522		5	5	75	5		170	189				
BENT NO.1	10,944	1,926											
BENT NO.2	10,970	2,293											
END BENT NO.2	⚠ 2,522		5	5	140			160	178				
TOTAL	26,958	4,219	10	10	215	5	240.50	330	367	LUMP SUM	236.50	30	1200.00

BENCH MARK: BM#2, AT STA. 13+52.81 -L-, 339.37' RT.; RR SPIKE IN BASE OF 38" SYCAMORE; ELEVATION 1134.41, NAVD 88



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISION

⚠ ADJUSTED THE CONCRETE AND REINFORCING STEEL FOR THE END BENTS.
BY: TKB 03/09/2021
CK'D BY: TLC 03/06/2021

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER DUCK CREEK ON OLD NC HWY 90 (SR 1348) BETWEEN SR 1301 (BLAIR RD) AND SR 1302 (DOVER CHURCH RD)

BRIDGE NO. 010291

RK&K
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NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
DocuSigned by: Timothy L. Coggins
3/11/2021

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REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1	TKB	3/9/21	3		
2			4		

SHEET NO. S-3
TOTAL SHEETS 21

DRAWN BY : T. ROBERSON DATE : SEP 2018
CHECKED BY : T. L. COGGINS DATE : SEP 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : SEP 2018

tboyd
3/11/2021 R:\Structures\DGN\FINAL\Revision 1\003-010291_SD_LOC.dgn

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

LEVEL		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						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.06	--	1.75	0.275	1.38	35′	EL	16.982	0.623	1.2	35′	EL	1.698	0.80	0.275	**1.06**	35′	EL	**16.982**	
		HL-93(Opr)	N/A	--	1.549	--	1.35	0.275	1.79	35′	EL	16.982	0.623	1.55	35′	EL	1.698	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.377	49.573	1.75	0.275	1.82	35′	EL	13.586	0.623	**1.38**	35′	EL	**1.698**	0.80	0.275	1.41	35′	EL	16.982	
		HS-20(Opr)	36.000	--	1.785	64.262	1.35	0.275	2.36	35′	EL	13.586	0.623	1.79	35′	EL	1.698	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.424	32.72	1.4	0.275	3.95	35′	EL	16.982	0.623	3.55	35′	EL	1.698	0.80	0.275	2.42	35′	EL	16.982	
		SNGARBS2	20.000	--	2.082	41.635	1.4	0.275	3.34	35′	EL	13.586	0.623	2.68	35′	EL	1.698	0.80	0.275	2.08	35′	EL	13.586	
		SNAGRIS2	22.000	--	2.076	45.668	1.4	0.275	3.31	35′	EL	13.586	0.623	2.56	35′	EL	1.698	0.80	0.275	2.08	35′	EL	13.586	
		SNCOTTS3	27.250	--	1.213	33.066	1.4	0.275	1.98	35′	EL	16.982	0.623	1.79	35′	EL	1.698	0.80	0.275	1.21	35′	EL	16.982	
		SNAGGRS4	34.925	--	1.123	39.207	1.4	0.275	1.83	35′	EL	16.982	0.623	1.6	35′	EL	1.698	0.80	0.275	1.12	35′	EL	16.982	
		SNS5A	35.550	--	1.09	38.739	1.4	0.275	1.77	35′	EL	16.982	0.623	1.69	35′	EL	1.698	0.80	0.275	1.09	35′	EL	16.982	
		SNS6A	39.950	--	1.052	42.014	1.4	0.275	1.71	35′	EL	16.982	0.623	1.58	35′	EL	1.698	0.80	0.275	1.05	35′	EL	16.982	
		SNS7B	42.000	3	1.004	42.153	1.4	0.275	1.63	35′	EL	16.982	0.623	1.62	35′	EL	1.698	0.80	0.275	**1.00**	35′	EL	**16.982**	
	TTST	TNAGRIT3	33.000	--	1.299	42.872	1.4	0.275	2.11	35′	EL	16.982	0.623	1.85	35′	EL	1.698	0.80	0.275	1.30	35′	EL	16.982	
		TNT4A	33.075	--	1.298	42.933	1.4	0.275	2.11	35′	EL	16.982	0.623	1.75	35′	EL	1.698	0.80	0.275	1.30	35′	EL	16.982	
		TNT6A	41.600	--	1.137	47.314	1.4	0.275	1.85	35′	EL	16.982	0.623	1.71	35′	EL	1.698	0.80	0.275	1.14	35′	EL	16.982	
		TNT7A	42.000	--	1.175	49.358	1.4	0.275	1.92	35′	EL	16.982	0.623	1.59	35′	EL	1.698	0.80	0.275	1.18	35′	EL	16.982	
		TNT7B	42.000	--	1.156	48.536	1.4	0.275	1.88	35′	EL	16.982	0.623	1.54	35′	EL	1.698	0.80	0.275	1.16	35′	EL	16.982	
		TNAGRIT4	43.000	--	1.17	50.308	1.4	0.275	1.89	35′	EL	13.586	0.623	1.48	35′	EL	1.698	0.80	0.275	1.17	35′	EL	16.982	
		TNAGT5A	45.000	--	1.079	48.572	1.4	0.275	1.76	35′	EL	16.982	0.623	1.56	35′	EL	1.698	0.80	0.275	1.08	35′	EL	16.982	
		TNAGT5B	45.000	--	1.041	46.853	1.4	0.275	1.69	35′	EL	16.982	0.623	1.4	35′	EL	1.698	0.80	0.275	1.04	35′	EL	16.982	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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)

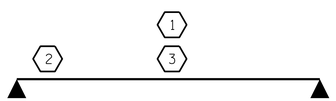
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A' AND 'C'

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
35′ CORED SLAB UNIT
105° SKEW
(SPANS A AND C)
(NON-INTERSTATE TRAFFIC)

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
1/26/2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			21

RK&K
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DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : JUN 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUN 2018

bgonfa
3/12/2020 R:\Structures\DGN\FINAL\004-010291_SD_LRFR_35.dgn

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

LEVEL		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						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.205	--	1.75	0.271	1.59	50′	EL	24.482	0.616	**1.2**	50′	EL	**4.896**	0.80	0.271	1.46	50′	EL	24.482	
		HL-93(Opr)	N/A	--	1.562	--	1.35	0.271	2.06	50′	EL	24.482	0.616	1.56	50′	EL	4.896	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.434	51.614	1.75	0.271	1.97	50′	EL	24.482	0.616	**1.43**	50′	EL	**4.896**	0.80	0.271	1.81	50′	EL	24.482	
		HS-20(Opr)	36.000	--	1.859	66.906	1.35	0.271	2.56	50′	EL	24.482	0.616	1.86	50′	EL	4.896	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.678	49.655	1.4	0.271	5.02	50′	EL	24.482	0.616	4	50′	EL	4.896	0.80	0.271	3.68	50′	EL	24.482	
		SNGARBS2	20.000	--	2.905	58.101	1.4	0.271	3.97	50′	EL	24.482	0.616	2.93	50′	EL	4.896	0.80	0.271	2.91	50′	EL	24.482	
		SNAGRIS2	22.000	--	2.748	60.456	1.4	0.271	3.83	50′	EL	19.586	0.616	2.75	50′	EL	4.896	0.80	0.271	2.81	50′	EL	24.482	
		SNCOTTS3	27.250	--	1.835	49.998	1.4	0.271	2.5	50′	EL	24.482	0.616	2.01	50′	EL	4.896	0.80	0.271	1.83	50′	EL	24.482	
		SNAGGRS4	34.925	--	1.595	55.714	1.4	0.271	2.18	50′	EL	24.482	0.616	1.72	50′	EL	4.896	0.80	0.271	1.60	50′	EL	24.482	
		SNS5A	35.550	--	1.556	55.303	1.4	0.271	2.12	50′	EL	24.482	0.616	1.77	50′	EL	4.896	0.80	0.271	1.56	50′	EL	24.482	
		SNS6A	39.950	--	1.455	58.112	1.4	0.271	1.99	50′	EL	24.482	0.616	1.64	50′	EL	4.896	0.80	0.271	1.45	50′	EL	24.482	
		SNS7B	42.000	--	1.386	58.224	1.4	0.271	1.89	50′	EL	24.482	0.616	1.65	50′	EL	4.896	0.80	0.271	1.39	50′	EL	24.482	
	TTST	TNAGRIT3	33.000	--	1.782	58.809	1.4	0.271	2.43	50′	EL	24.482	0.616	1.94	50′	EL	4.896	0.80	0.271	1.78	50′	EL	24.482	
		TNT4A	33.075	--	1.798	59.458	1.4	0.271	2.45	50′	EL	24.482	0.616	1.86	50′	EL	4.896	0.80	0.271	1.80	50′	EL	24.482	
		TNT6A	41.600	--	1.497	62.293	1.4	0.271	2.04	50′	EL	24.482	0.616	1.8	50′	EL	4.896	0.80	0.271	1.50	50′	EL	24.482	
		TNT7A	42.000	--	1.52	63.842	1.4	0.271	2.08	50′	EL	24.482	0.616	1.67	50′	EL	4.896	0.80	0.271	1.52	50′	EL	24.482	
		TNT7B	42.000	--	1.585	66.559	1.4	0.271	2.16	50′	EL	24.482	0.616	1.59	50′	EL	4.896	0.80	0.271	1.58	50′	EL	24.482	
		TNAGRIT4	43.000	--	1.504	64.667	1.4	0.271	2.05	50′	EL	24.482	0.616	1.53	50′	EL	4.896	0.80	0.271	1.50	50′	EL	24.482	
		TNAGT5A	45.000	--	1.405	63.217	1.4	0.271	1.92	50′	EL	24.482	0.616	1.56	50′	EL	4.896	0.80	0.271	1.40	50′	EL	24.482	
		TNAGT5B	45.000	3	1.376	61.936	1.4	0.271	1.88	50′	EL	24.482	0.616	1.45	50′	EL	4.896	0.80	0.271	**1.38**	50′	EL	**24.482**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	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)

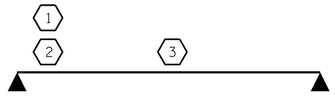
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'B'

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 2 OF 2

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS
1/26/2021

BRIDGE NO. 010291

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
50′ CORED SLAB UNIT
105° SKEW
(SPAN B)
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : JUN 2018
CHECKED BY : T. L. COGGINS DATE : JUN 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUN 2018

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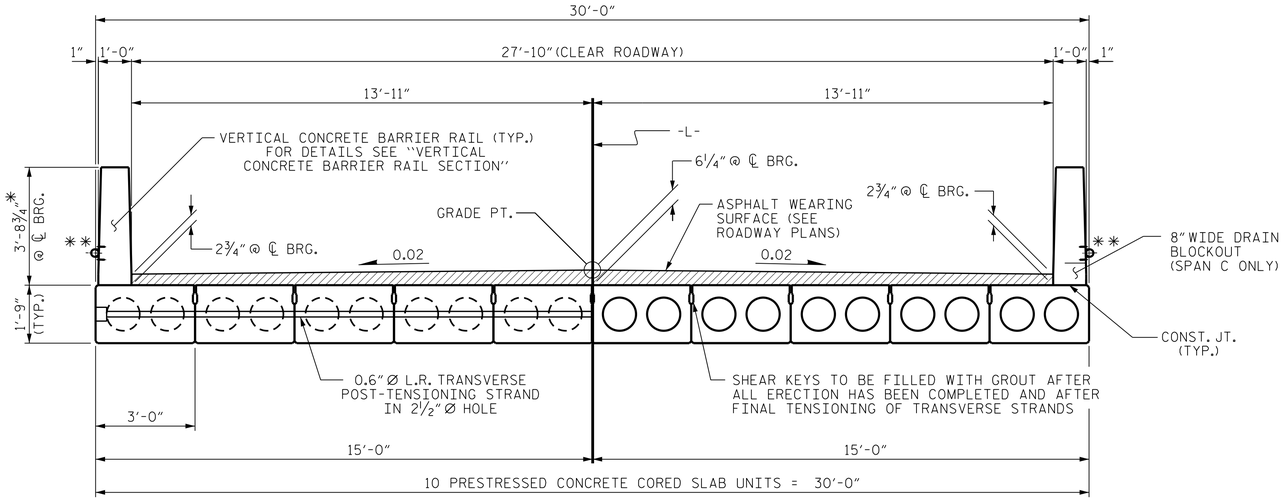
3/12/2020 R:\Structures\DGN\FINAL\005-010291_SD_LRFR_50.dgn



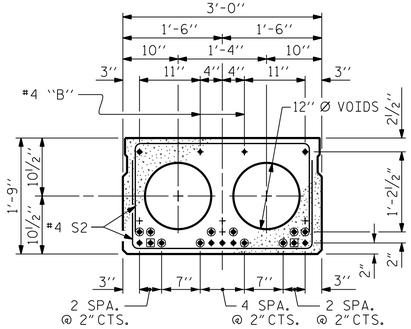
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

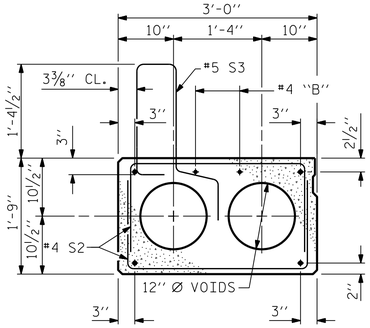
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

** FOR FIBER OPTIC CONDUIT SYSTEM DETAILS, SEE GUARDRAIL ANCHORAGE SHEET, S-10.



INTERIOR SLAB SECTION (35' UNIT)

(9 STRANDS REQUIRED)



EXT. SLAB SECTION

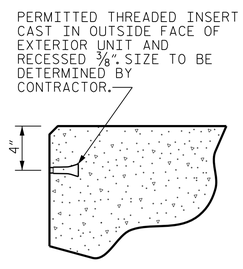
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

▲ 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.

◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

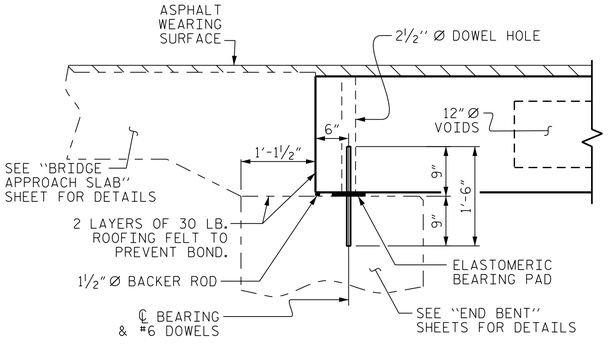
◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



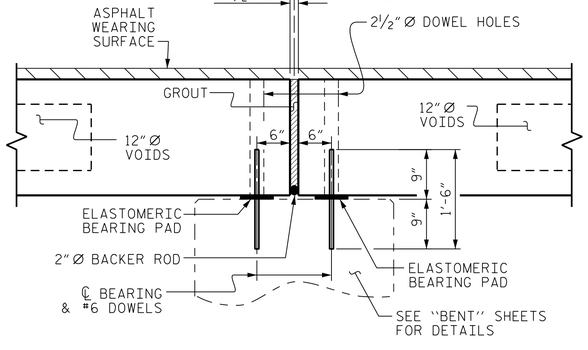
THREADED INSERT DETAIL

FIXED END

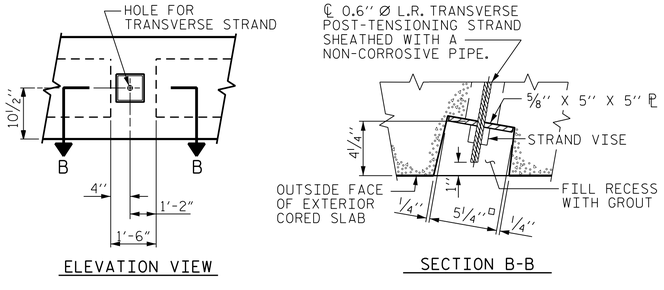


SECTION AT END BENT

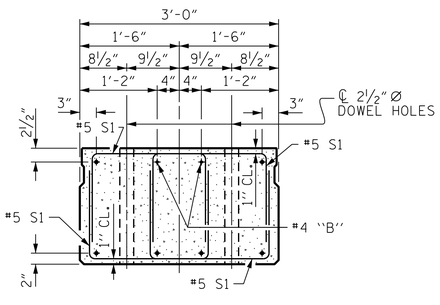
FIXED END FIXED END



SECTION AT BENT

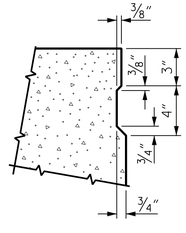


GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



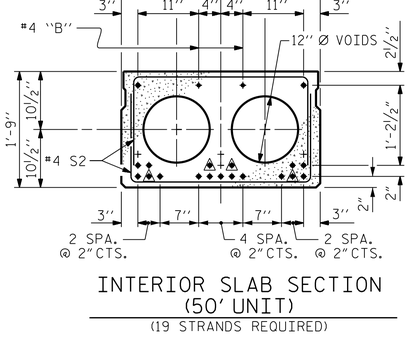
END ELEVATION

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.



SHEAR KEY DETAIL

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



INTERIOR SLAB SECTION (50' UNIT)

(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 105° SKEW

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS
1/26/2021

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1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : JUN 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUN 2018

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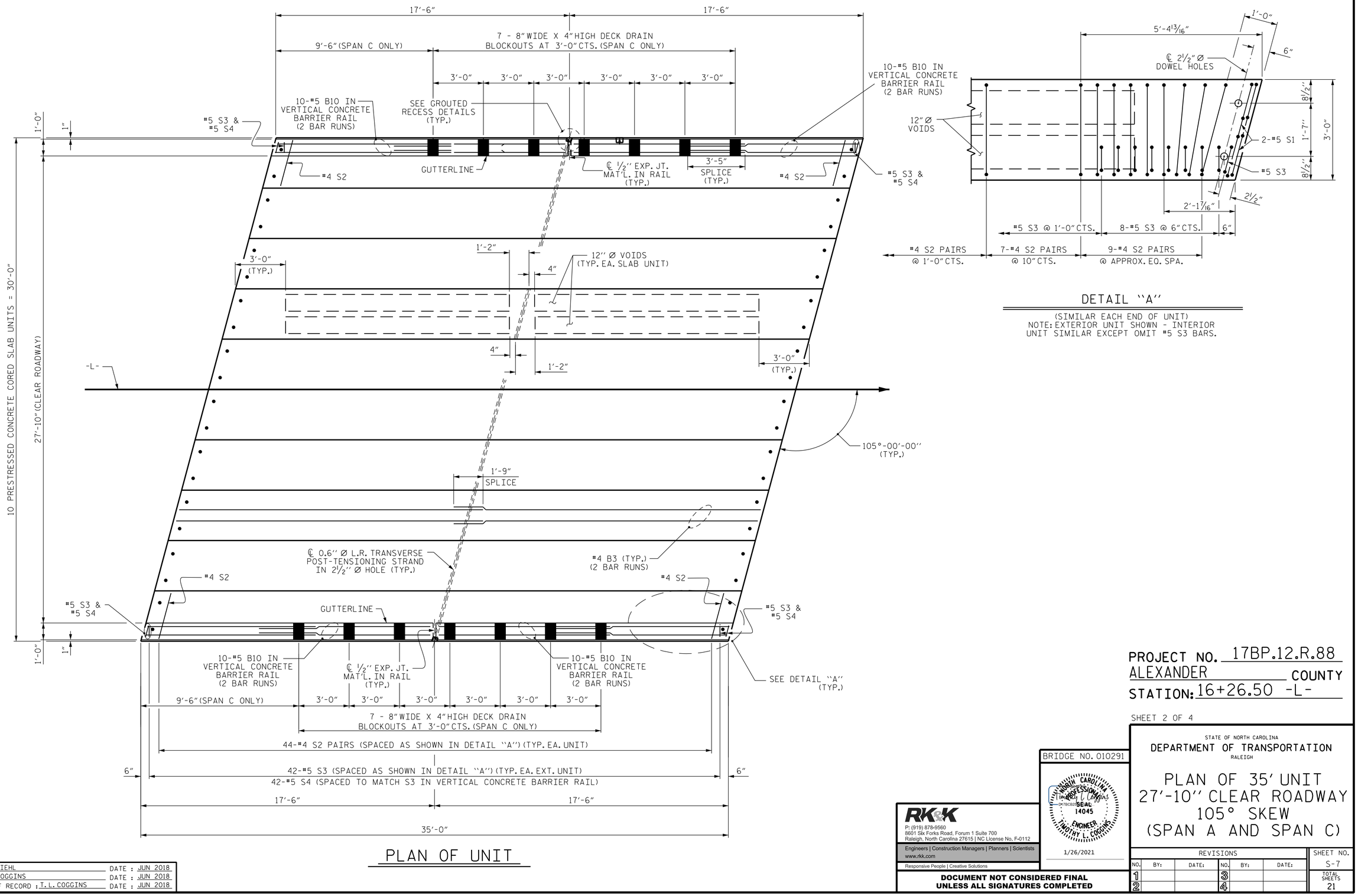

PLAN OF UNIT

DETAIL "A"

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

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 35' UNIT 27'-10" CLEAR ROADWAY 105° SKEW (SPAN A AND SPAN C)

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS
1/26/2021

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2			4			21

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DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUN 2018

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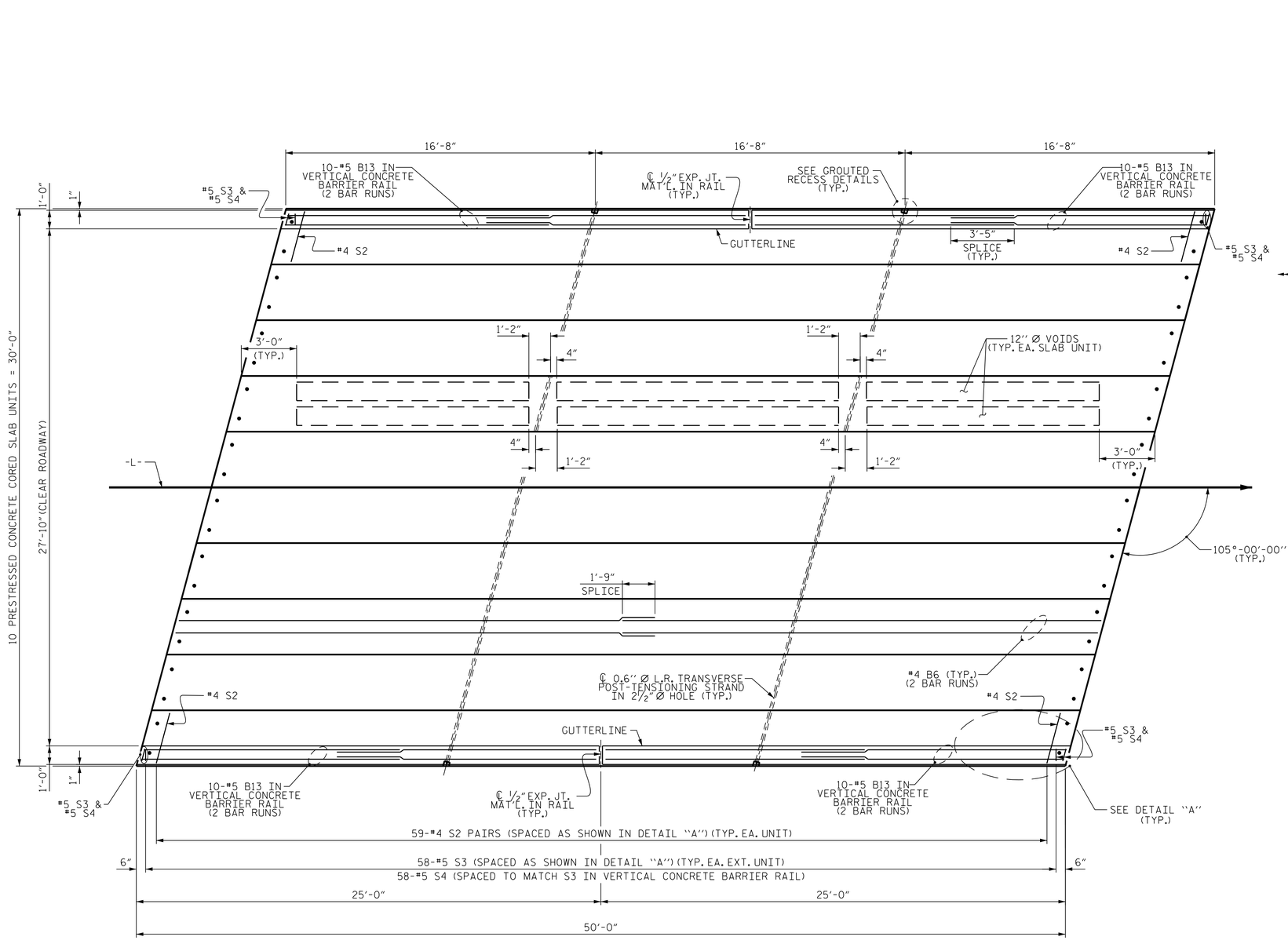
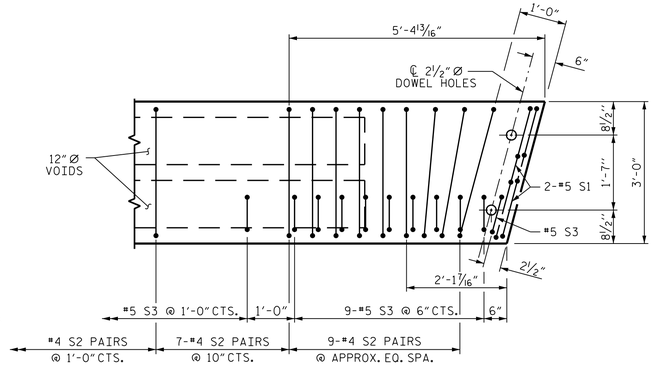


PLAN OF UNIT



DETAIL "A"

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

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 50' UNIT 27'-10" CLEAR ROADWAY 105° SKEW SPAN B

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
1/26/2021

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : JUN 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUN 2018

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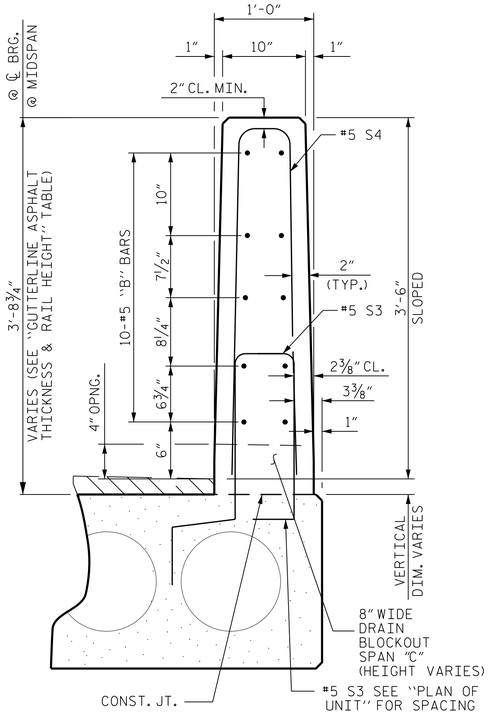
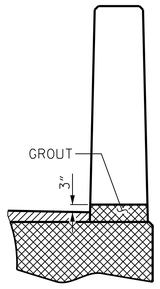
GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
35' UNITS	2⅝"	3'-8⅝"
50' UNITS	1⅝"	3'-7⅝"

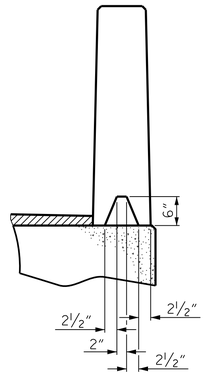
CONCRETE RELEASE STRENGTH	
UNIT	PSI
35' UNITS	4,000
50' UNITS	4,900





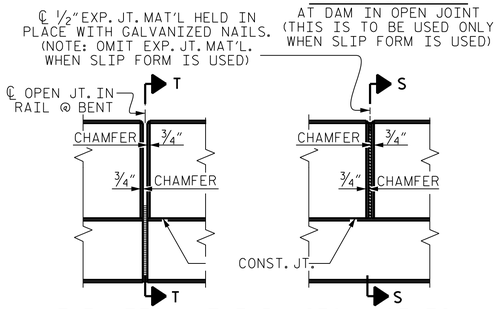
SECTION T-T

AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED)

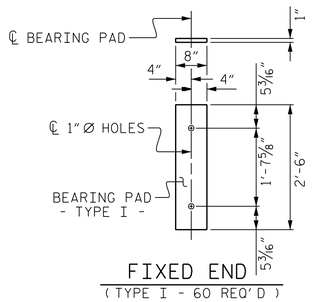


SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

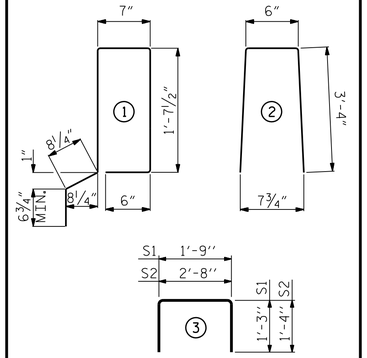


FIXED END
(TYPE I - 60 REQ'D)

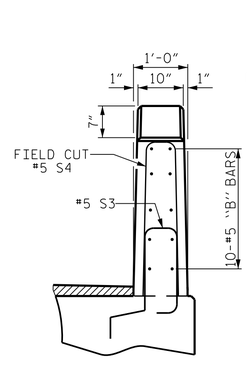
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

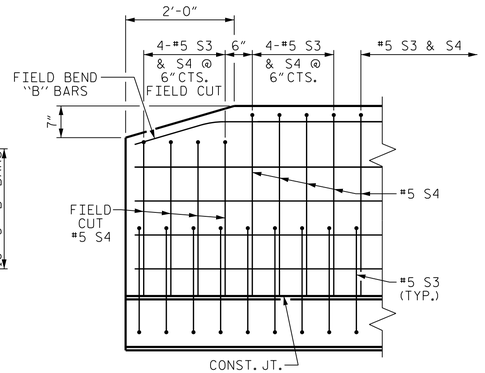
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT



END VIEW



SIDE VIEW

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.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 8". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE CORED SLAB UNIT TO THE TOP OF THE DRAIN OPENING.

APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR CORED SLAB UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.

VERTICAL CONCRETE BARRIER RAIL SECTION

END OF RAIL DETAILS

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
35' UNIT			
EXTERIOR C.S.	4	35'-0"	140'-0"
INTERIOR C.S.	16	35'-0"	560'-0"
TOTAL	20		700'-0"

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
50' UNIT			
EXTERIOR C.S.	2	50'-0"	100'-0"
INTERIOR C.S.	8	50'-0"	400'-0"
TOTAL	10		500'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	50' UNIT					
✱B13	80	80	#5	STR	14'-2"	1,182
✱ S4	120	120	#5	2	7'-2"	897
✱EPOXY COATED REINFORCING STEEL				LBS.		2,079
CLASS AA CONCRETE				CU.YDS.		12.8
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		100.26

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	35' UNIT					
✱B10	80	160	#5	STR	10'-5"	1,738
✱ S4	88	176	#5	2	7'-2"	1,316
✱EPOXY COATED REINFORCING STEEL				LBS.		3,054
CLASS AA CONCRETE				CU.YDS.		18.0
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		140.26

BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	88	#4	3	5'-4"	314	5'-4"	314
✱ S3	44	#5	1	5'-7"	256		
REINFORCING STEEL			LBS.		398		398
✱EPOXY COATED REINFORCING STEEL			LBS.		256		
5000 P.S.I. CONCRETE			CU. YDS.		5.2		5.2
0.6" Ø L.R. STRANDS			No.		9		9

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT							
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	118	#4	3	5'-4"	420	5'-4"	420
✱ S3	60	#5	1	5'-7"	349		
REINFORCING STEEL			LBS.		524		524
✱EPOXY COATED REINFORCING STEEL			LBS.		349		
6500 P.S.I. CONCRETE			CU. YDS.		7.3		7.3
0.6" Ø L.R. STRANDS			No.		19		19

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
35' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	¼" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✱✱	⅛" ↓
FINAL CAMBER	⅛" ↑

✱✱ INCLUDES FUTURE WEARING SURFACE

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 1'-9"
50' 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

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

DRAWN BY : M.J. ZIEHL DATE : MAY 2018
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SHEET 4 OF 4

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS
1/26/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE CORED SLAB UNIT
105° SKEW

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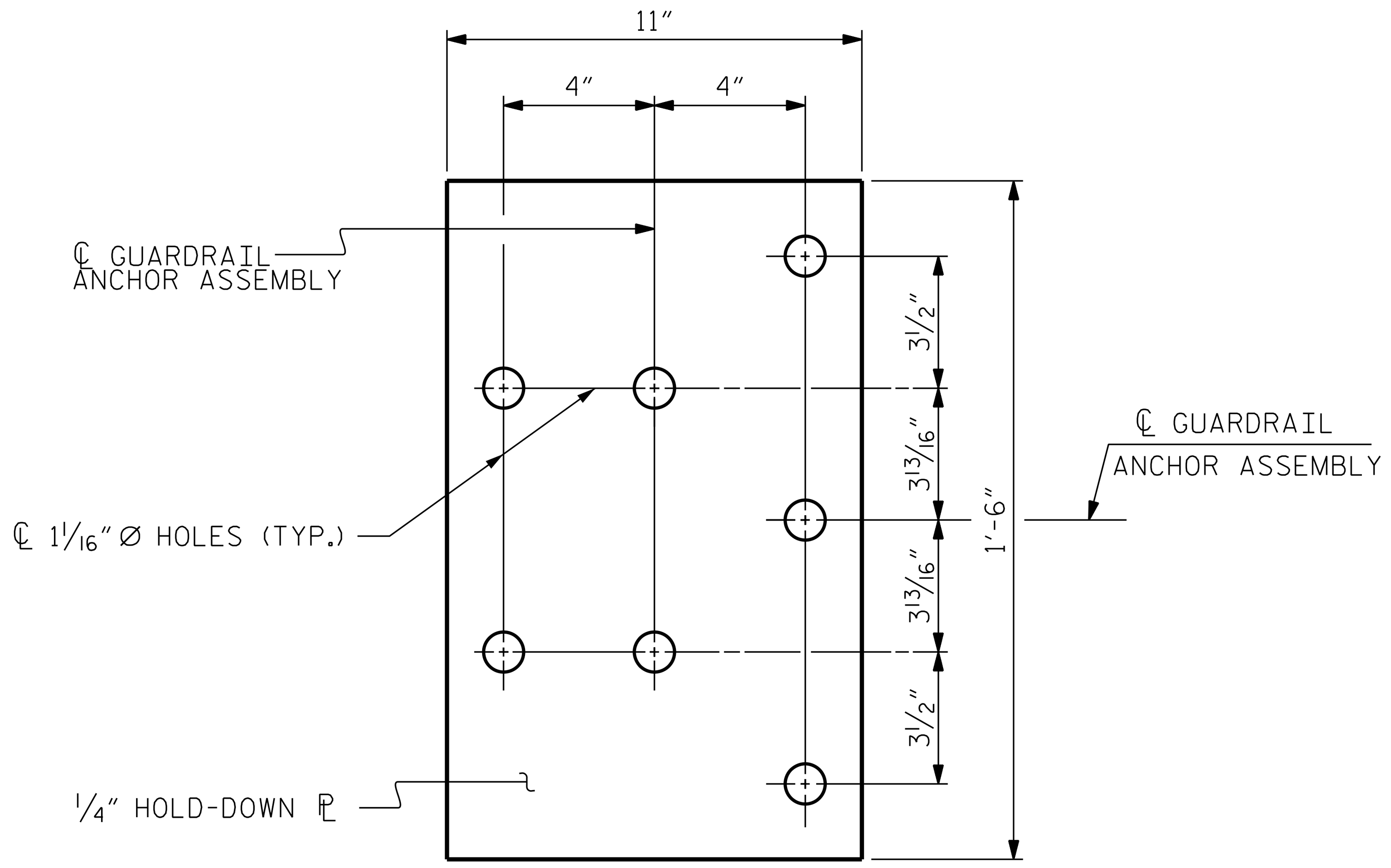
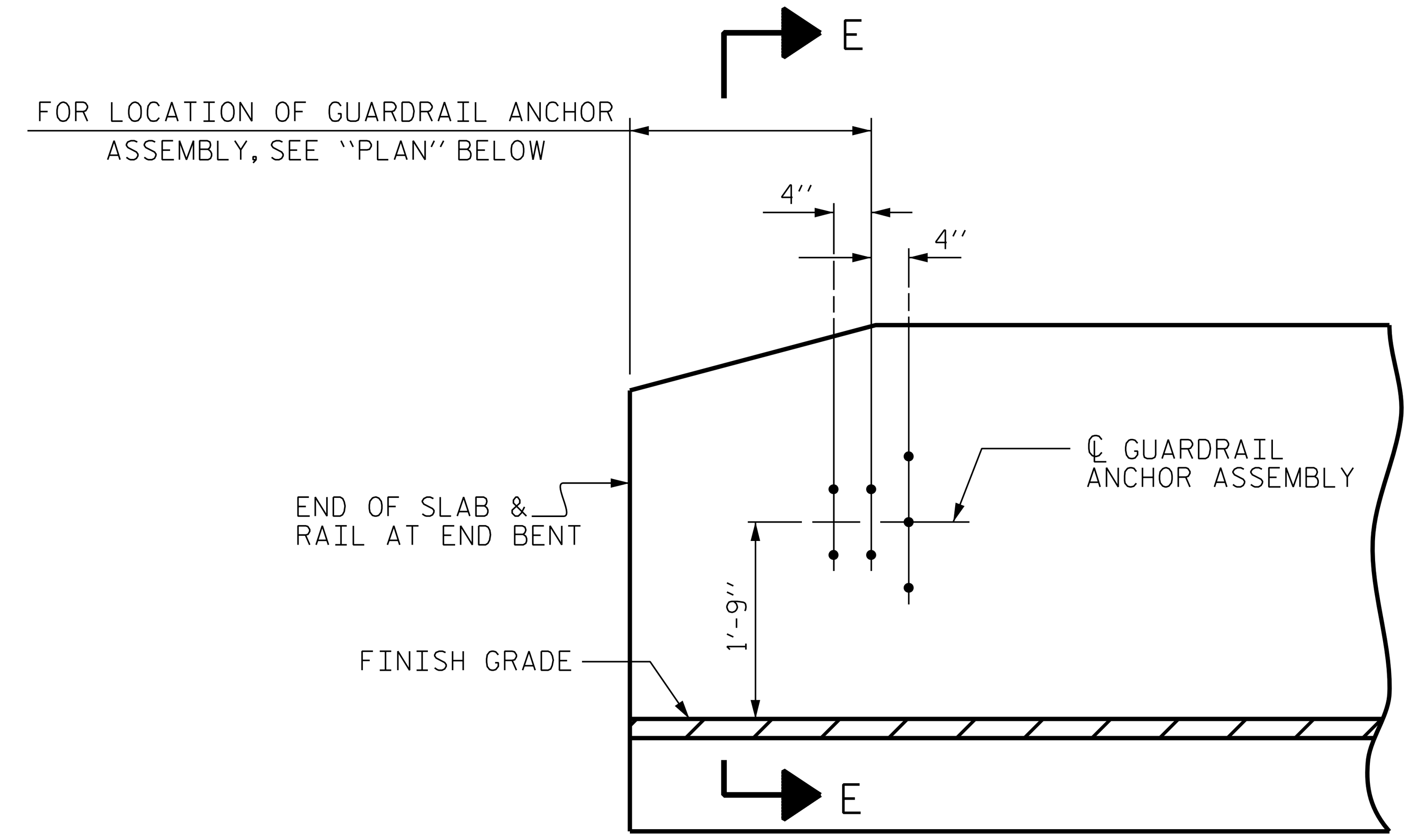


PLAN



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.

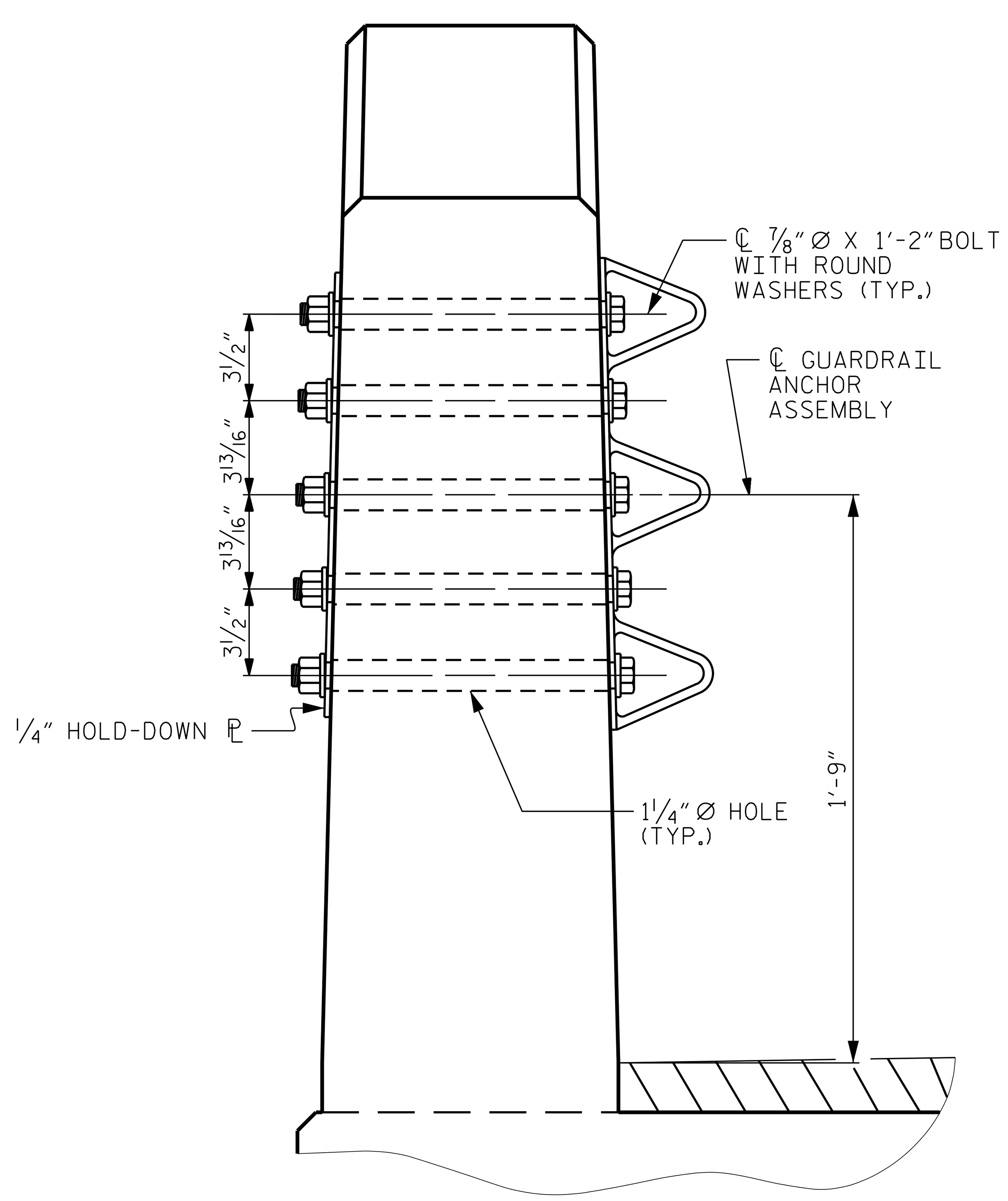
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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.

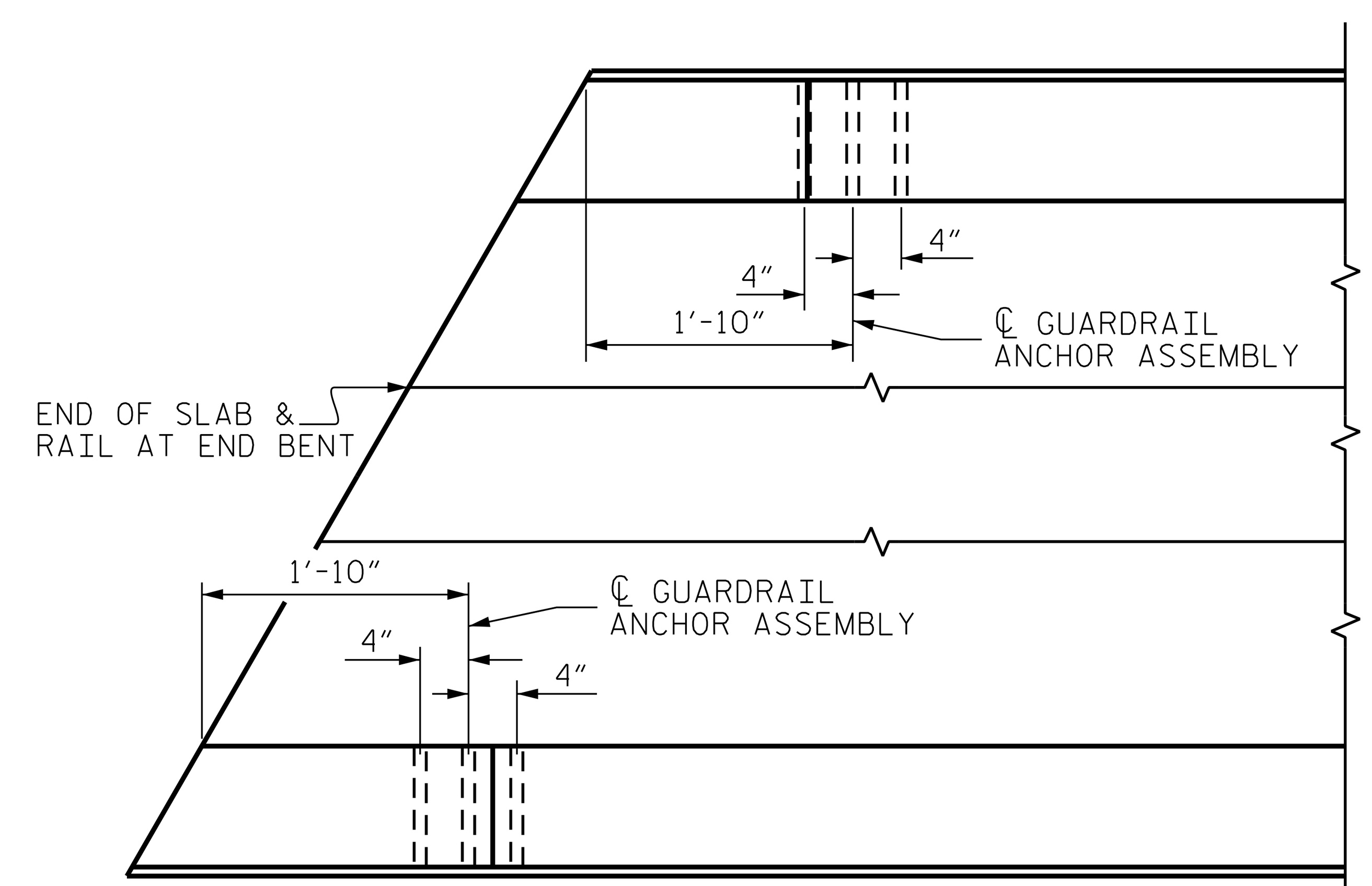
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

2 1/2" PVC PIPE SHALL BE RAISED ABOVE TOP OF DECK DRAIN OPENINGS AS REQUIRED.



SECTION E-E

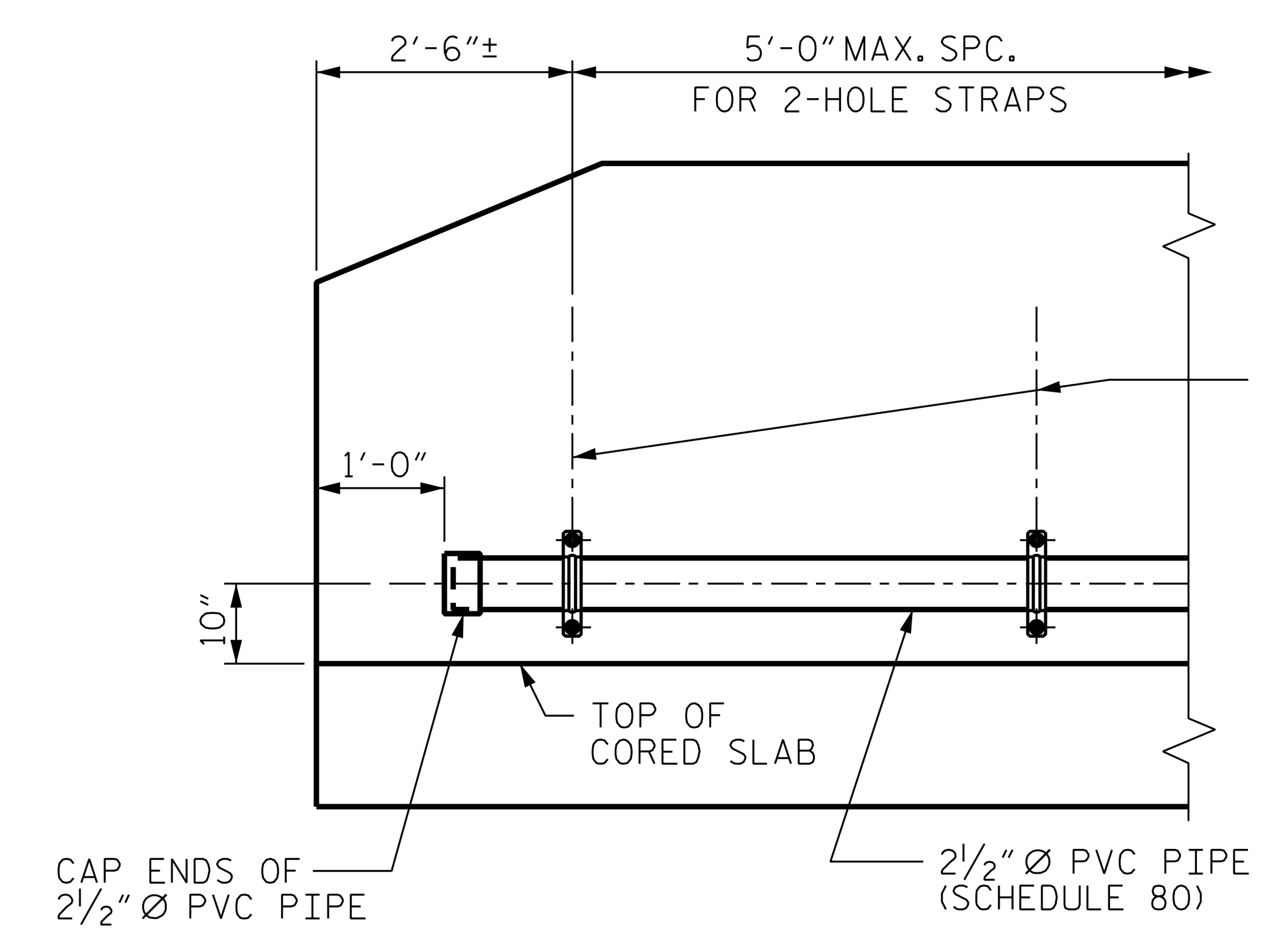
GUARDRAIL ANCHOR ASSEMBLY DETAILS



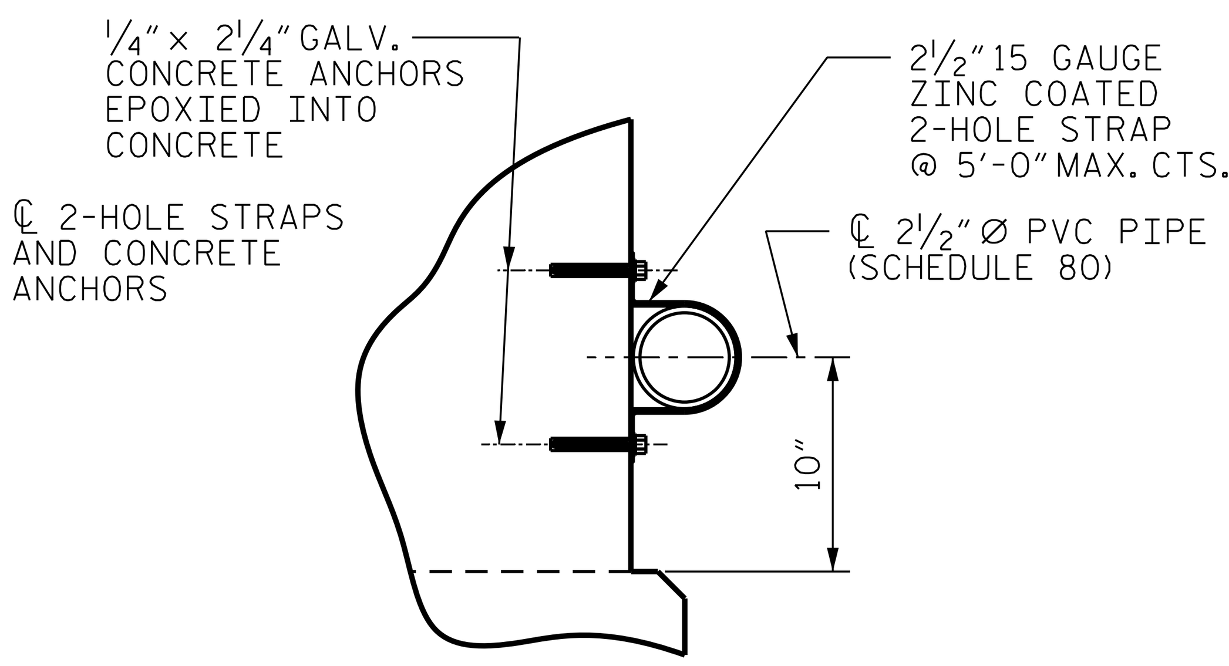
PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.



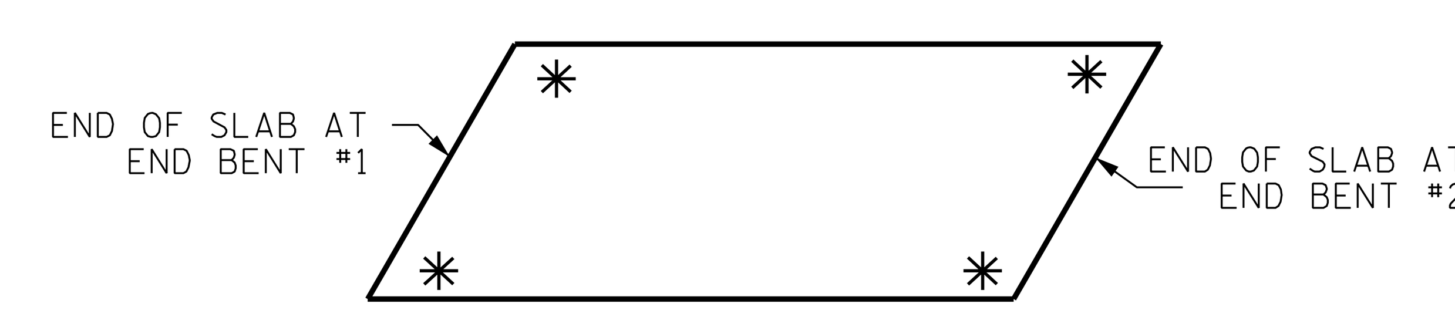
ELEVATION



SECTION

FIBER OPTIC CONDUIT SYSTEM DETAILS

2 1/2" Ø SCHEDULE 80 PVC PIPE ATTACHED TO THE BACK OF BOTH RAILS FOR FUTURE FIBER OPTIC CABLE.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

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STANDARD
GUARDRAIL ANCHORAGE DETAILS
FOR VERTICAL CONCRETE BARRIER RAIL

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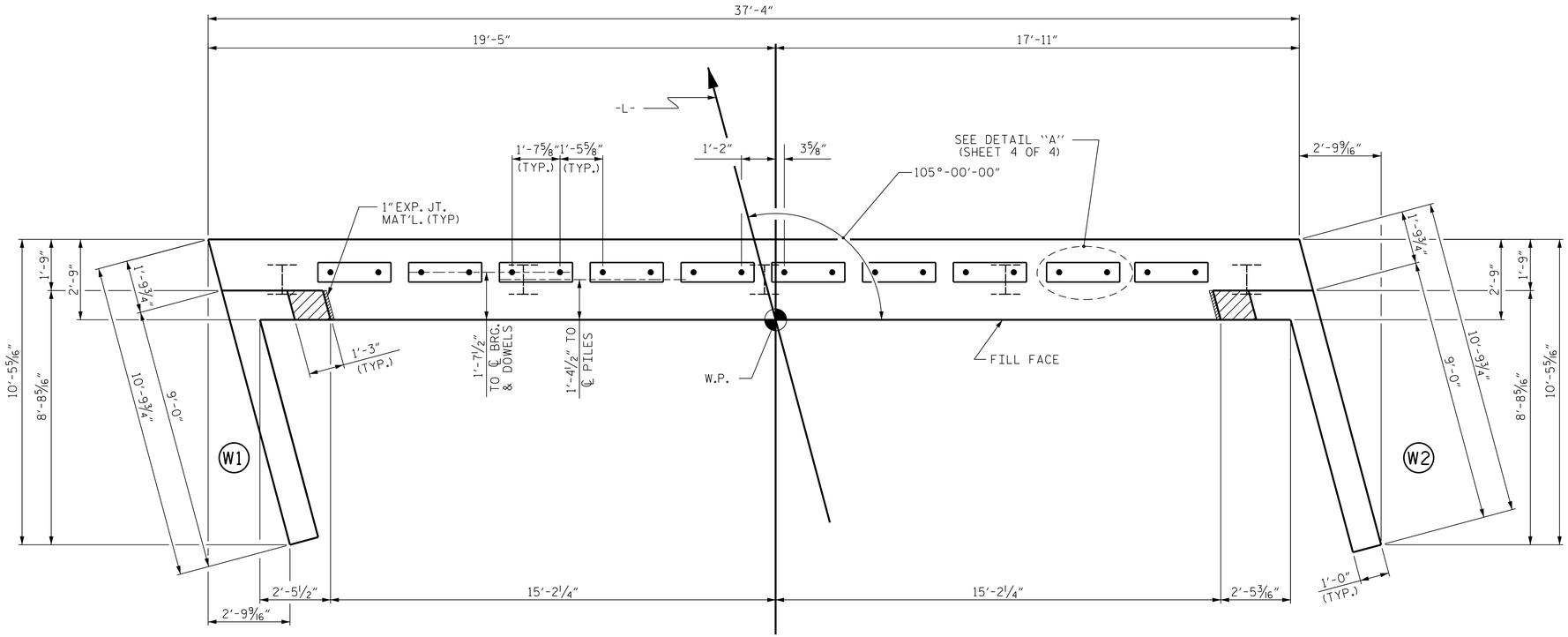
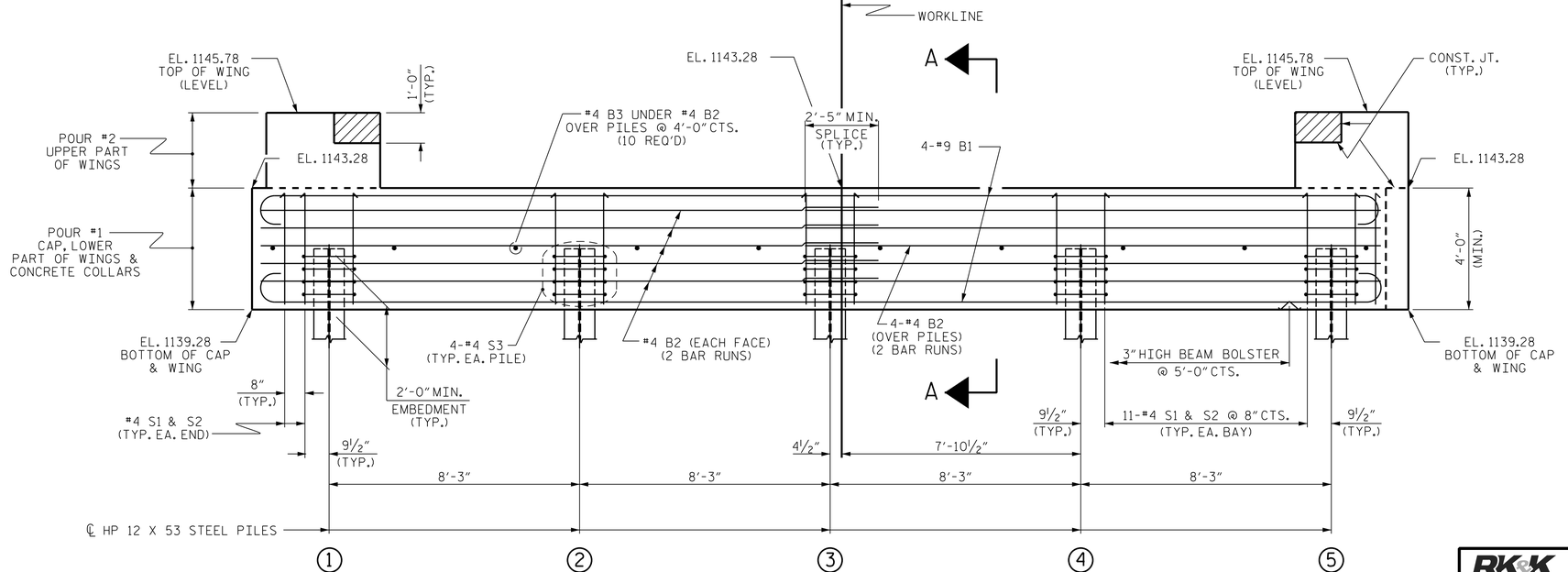


PLAN



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.
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.

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
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SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS
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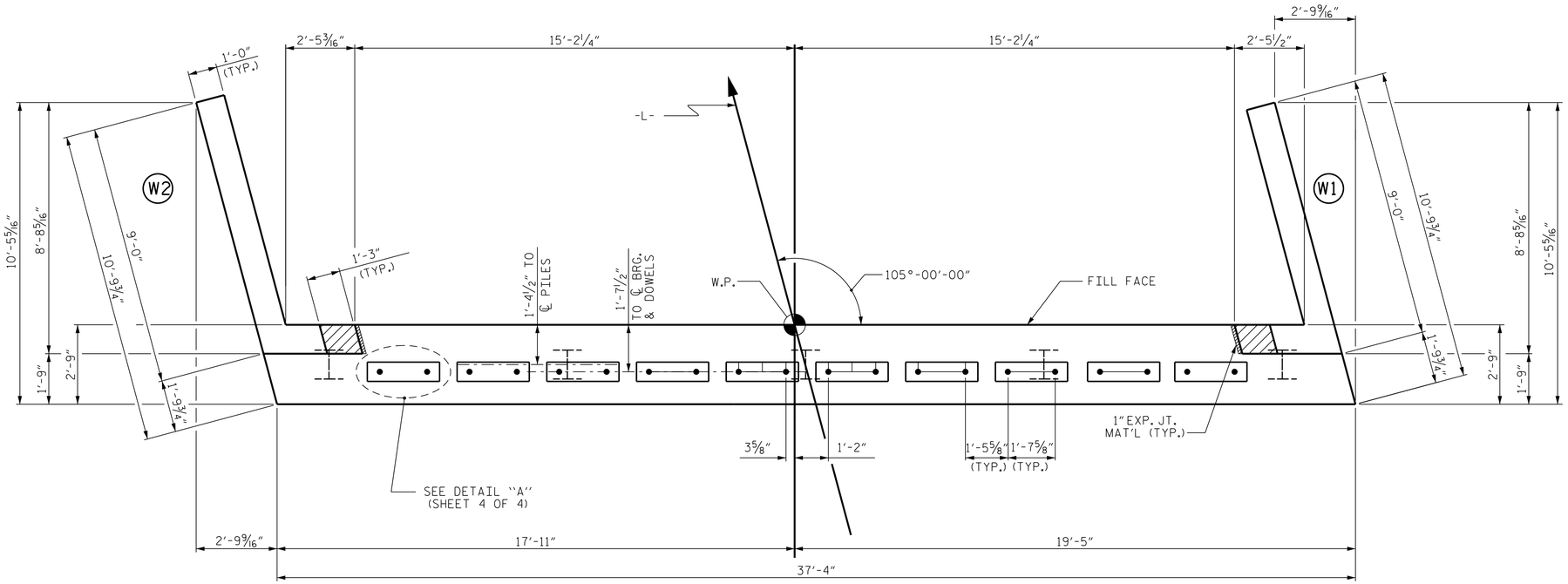

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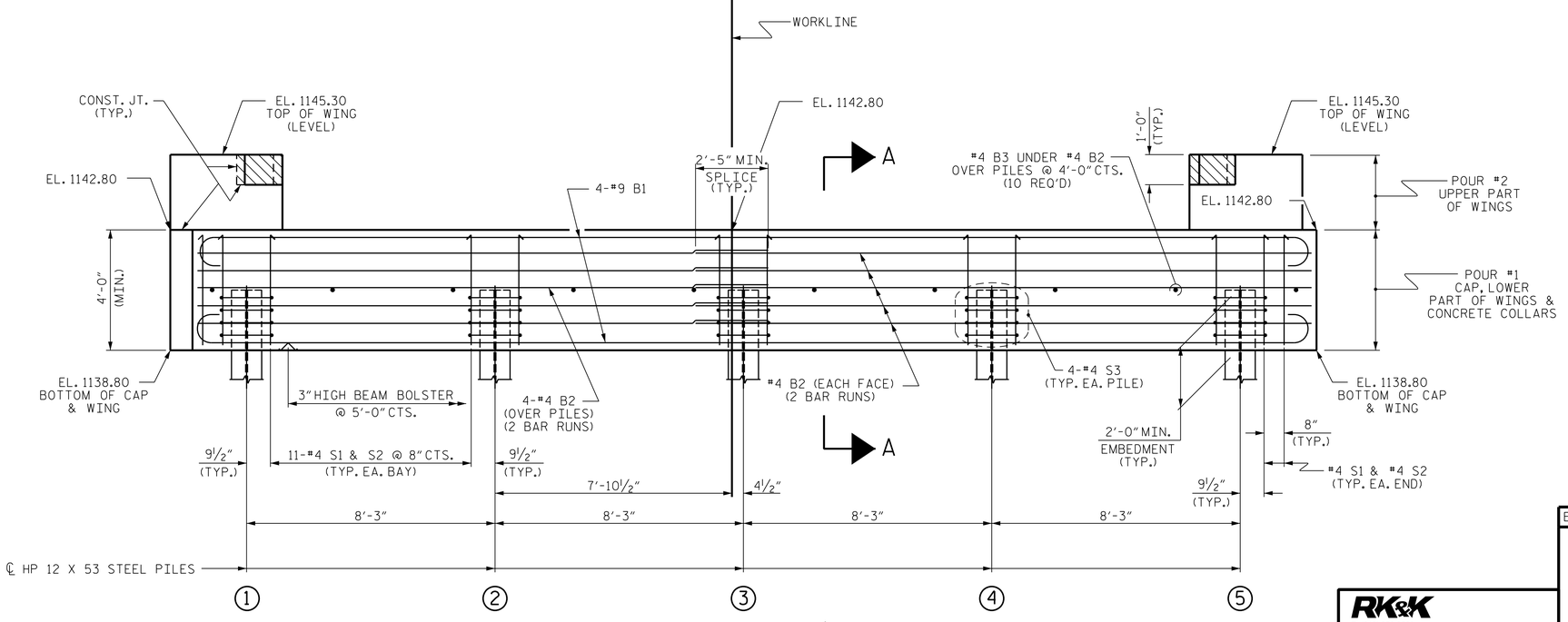

ELEVATION ⚠

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.

⚠ REMOVED EXTRANEOUS VERTICAL LINES IN ELEVATION VIEW.
BY: TKB 03/10/2021
CK'D BY: TLC 03/10/2021

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SHEET 2 OF 4

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SUBSTRUCTURE

END BENT No. 2

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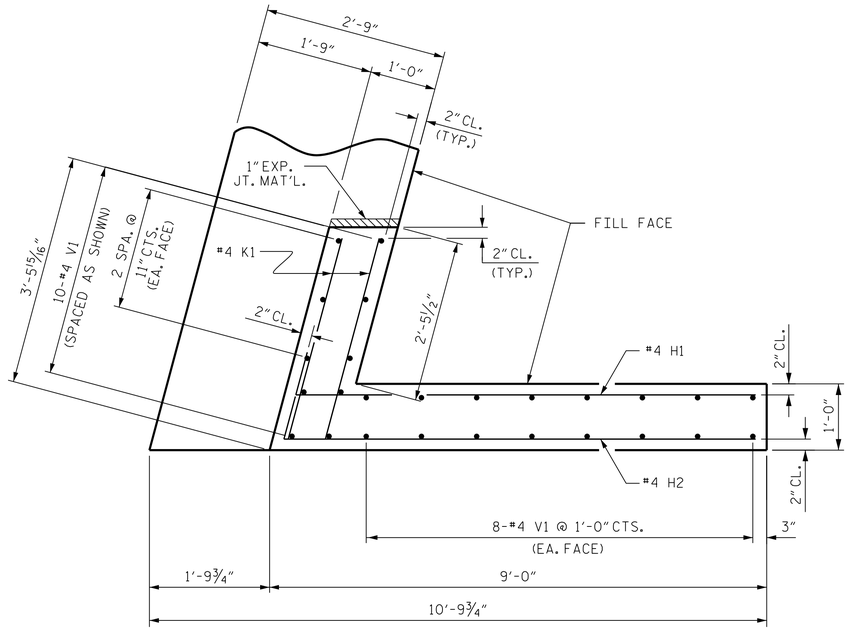
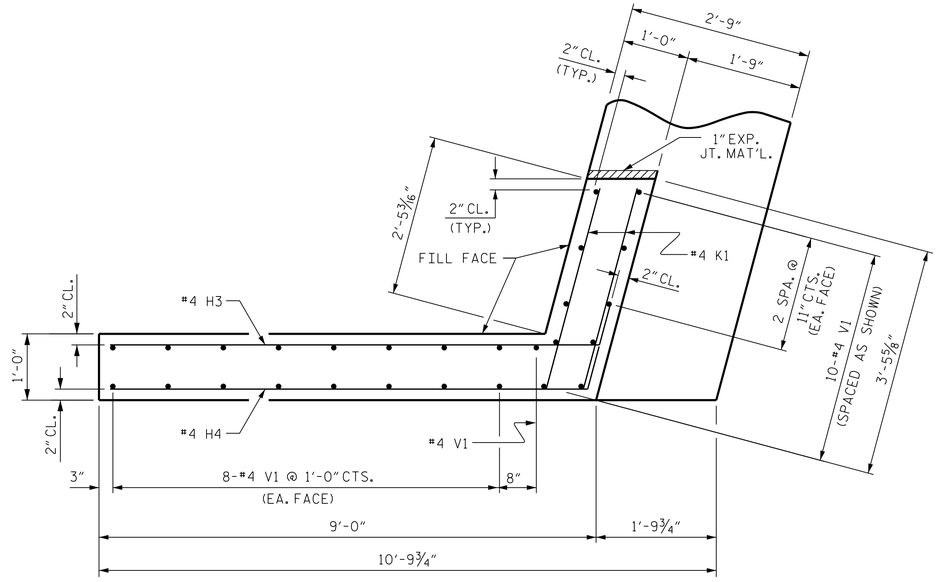
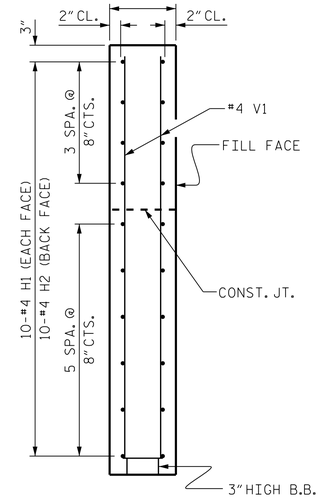


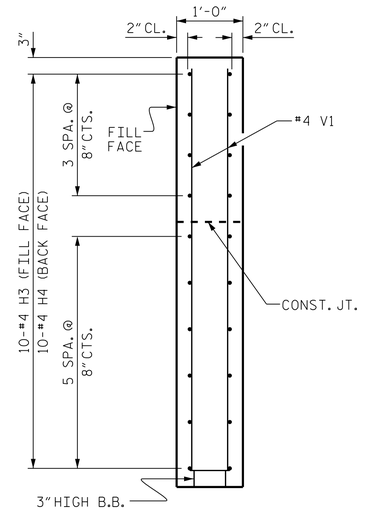
PLAN OF WING (W1)



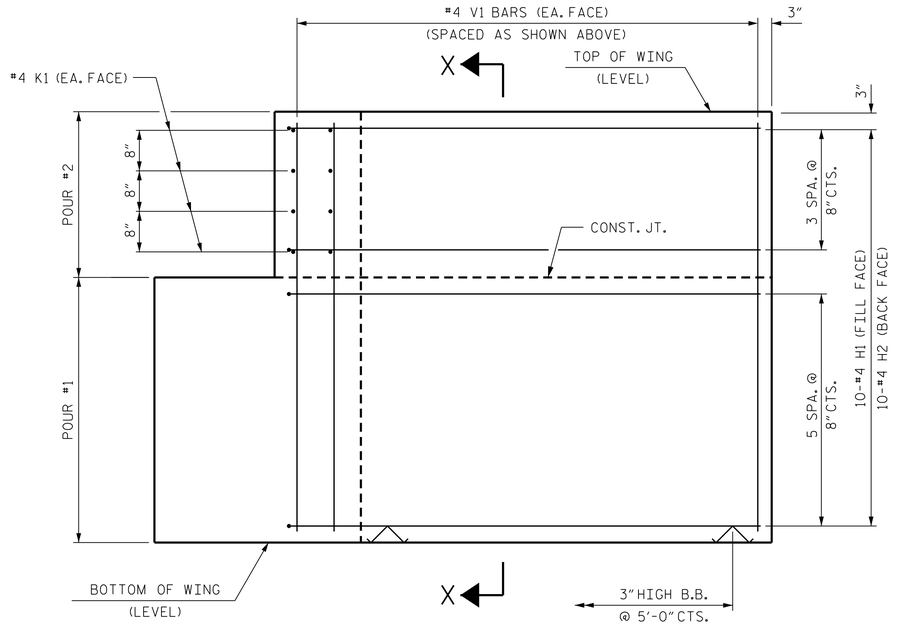
PLAN OF WING (W2)



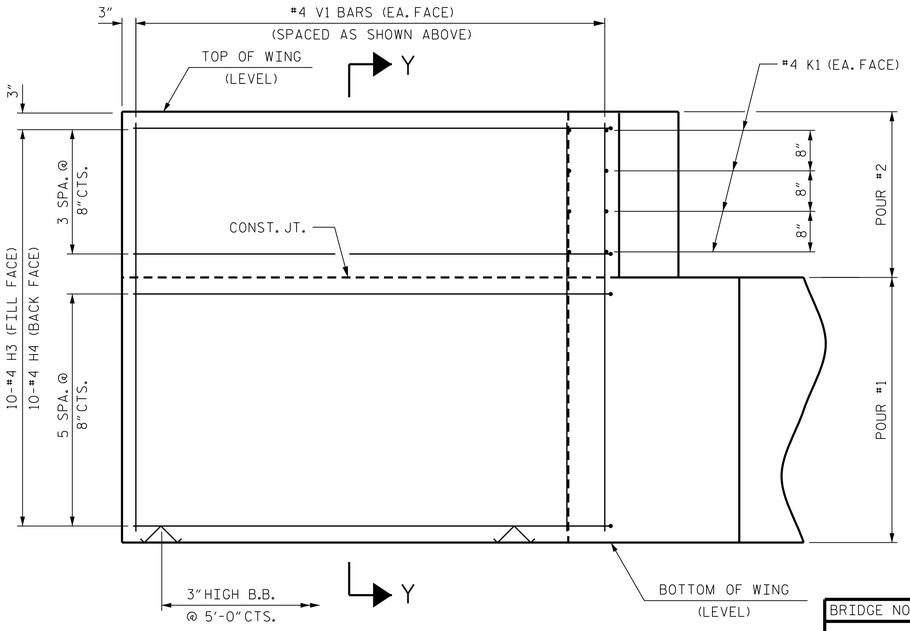
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

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SHEET 3 OF 4

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SUBSTRUCTURE
END BENT
WING DETAILS

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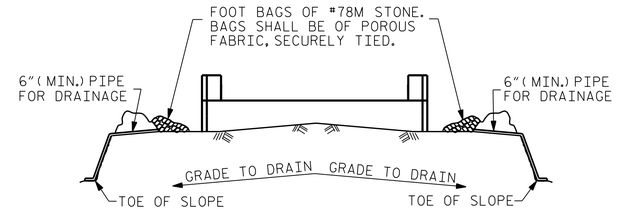
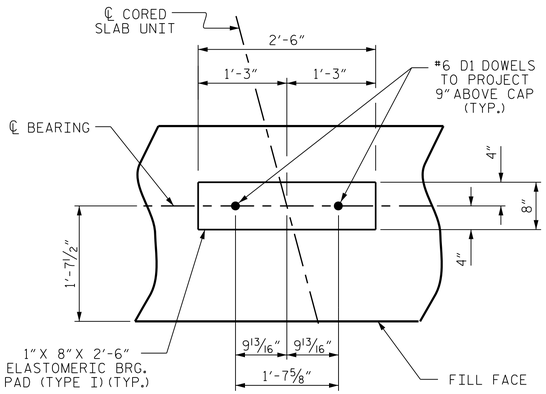


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

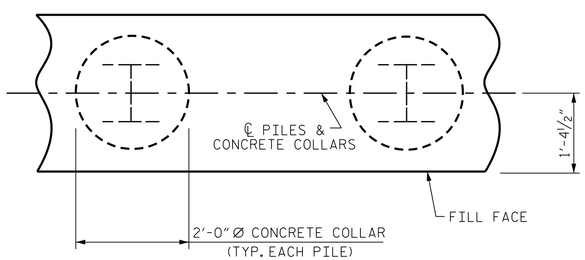
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

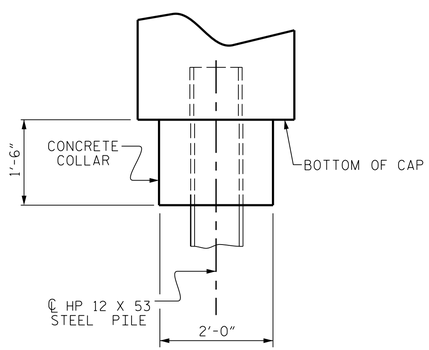


DETAIL ''A''

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



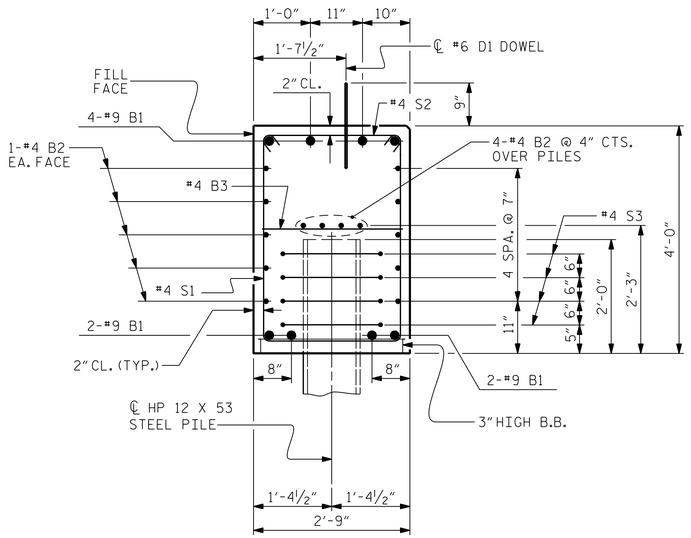
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

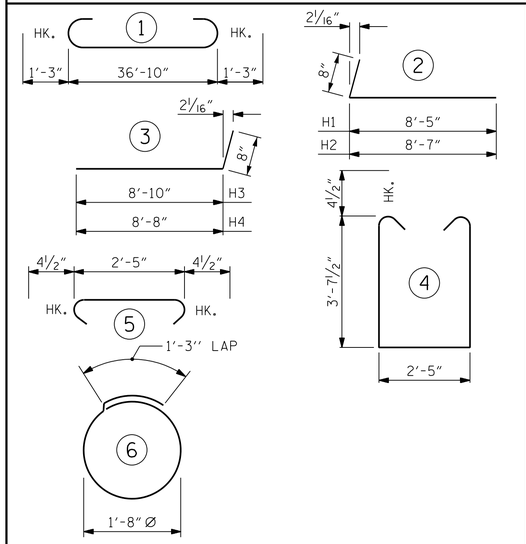
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



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: 5 LIN. FT.= 75	HP 12 X 53 STEEL PILES NO: 5 LIN. FT.= 140
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 5	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 5
STEEL PILE POINTS EA. NO: 5	

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	39'-4"	1070
B2	28	#4	STR	19'-9"	369
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	10	#4	2	9'-1"	61
H2	10	#4	2	9'-3"	62
H3	10	#4	3	9'-6"	63
H4	10	#4	3	9'-4"	62
K1	16	#4	STR	3'-1"	33
S1	48	#4	4	10'-5"	334
S2	48	#4	5	3'-2"	102
S3	20	#4	6	6'-6"	87
V1	53	#4	STR	6'-2"	218

REINFORCING STEEL (FOR ONE END BENT) 2522 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 18.4 C.Y.

POUR #2 UPPER PART OF WINGS 2.1 C.Y.

TOTAL CLASS A CONCRETE 20.5 C.Y.

⚠ REPLACED ENTIRE SHEET 4 OF 4 TO SHOW CORRECT BOM AND SECTION A-A.
BY: TKB 03/09/2021
CK'D BY: TLC 03/09/2021

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 4 OF 4

DRAWN BY : T. ROBERSON DATE : SEP 2018
CHECKED BY : T. L. COGGINS DATE : SEP 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : SEP 2018

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3/11/2021

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BRIDGE NO. 010291

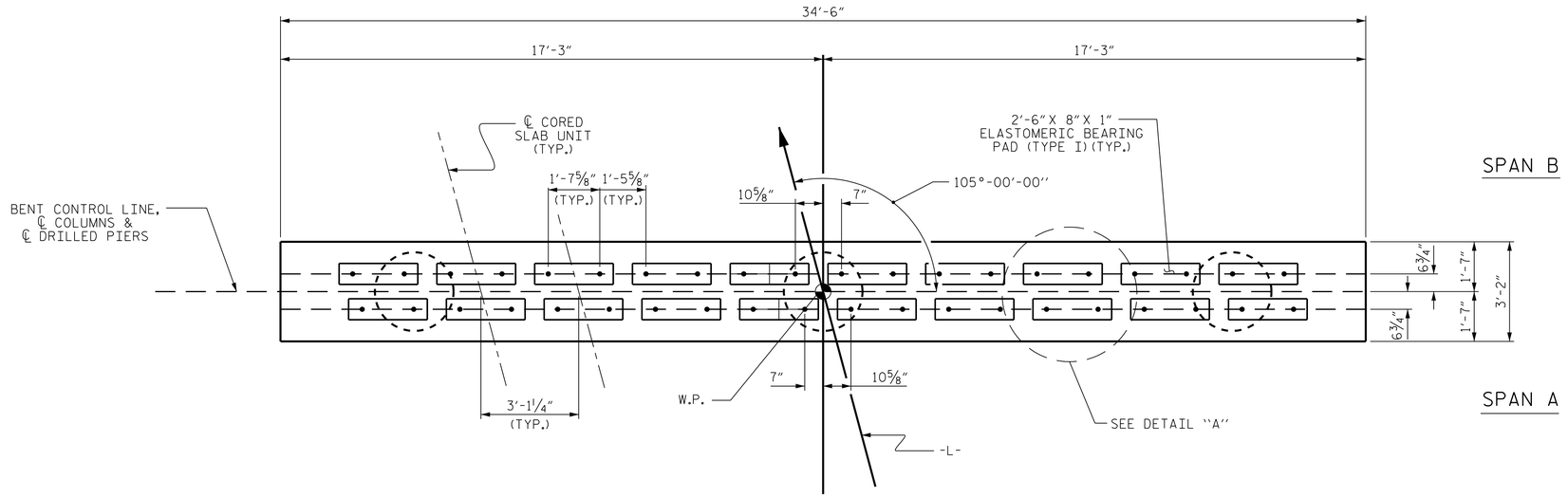
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

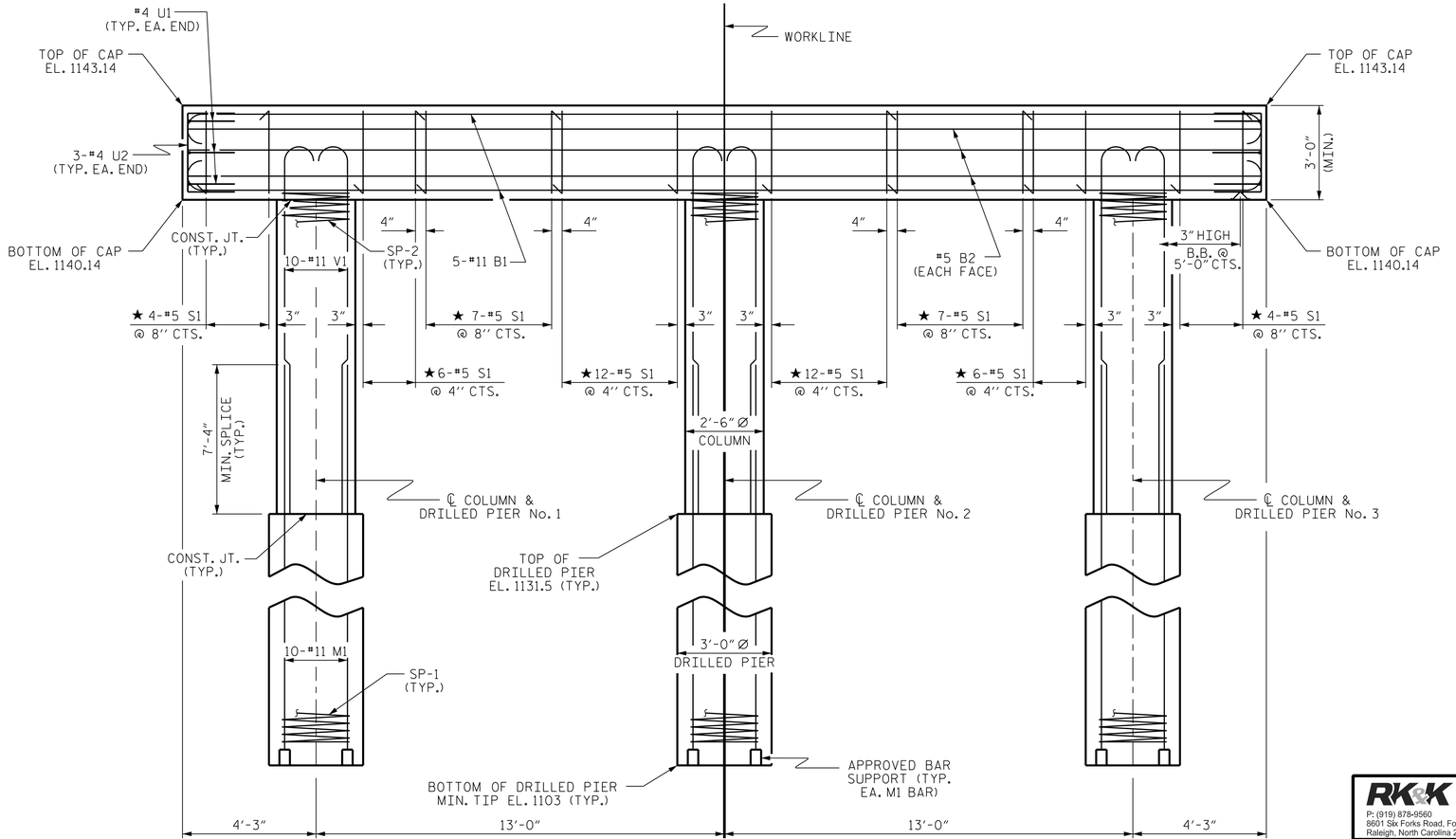
END BENT
DETAILS AND BOM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1	TKB	3/9/21	3			TOTAL SHEETS
2			4			21

R:\Structures\DGN\FINAL\Revision 1\014-010291_SD_BOM_EB4.dgn
tboyd
3/11/2021



PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON ″V″ BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

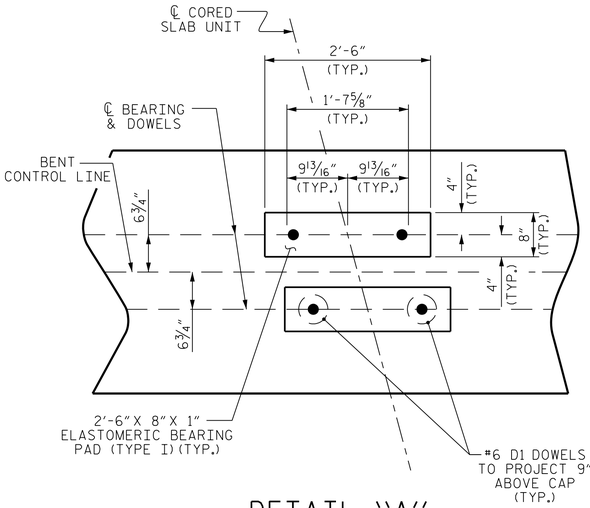
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR ″REINFORCING STEEL″ AND ″SPIRAL COLUMN REINFORCING STEEL.″

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.12.R.88

ALEXANDER COUNTY

STATION: 16+26.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

BRIDGE NO. 010291

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27760 TIMOTHY L. COGGINS
1/26/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : AUG 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : AUG 2018

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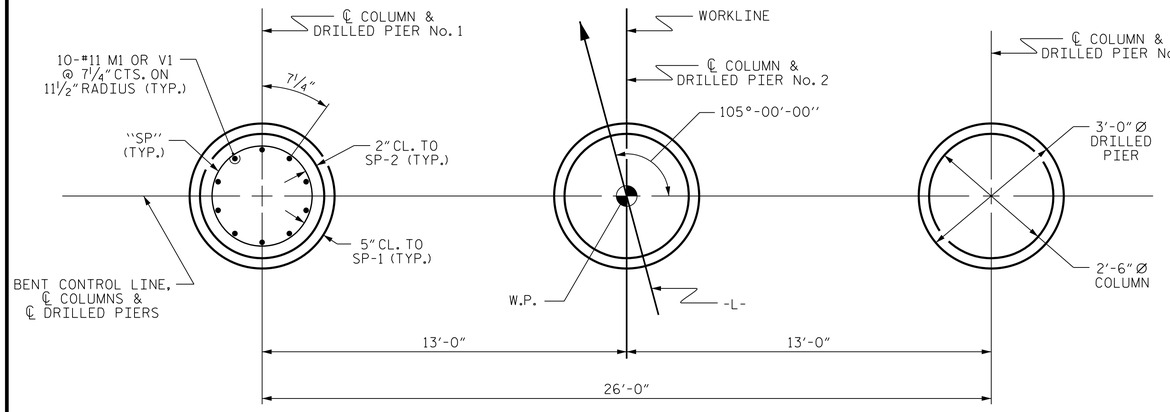
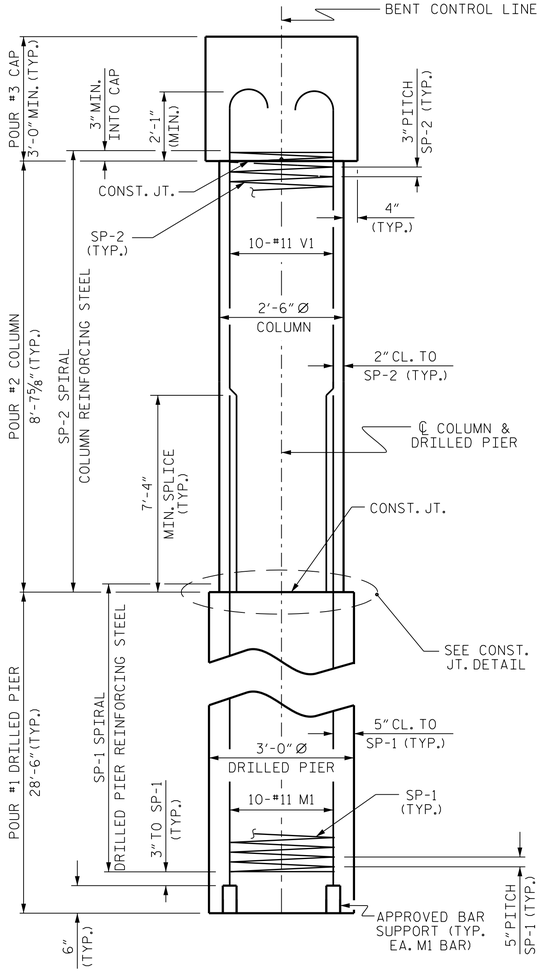
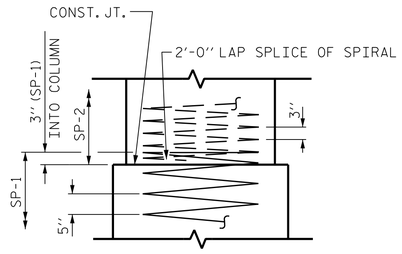
3/12/2020 R:\Structures\DGN\FINAL\015-010291_SD_B1-1.dgn



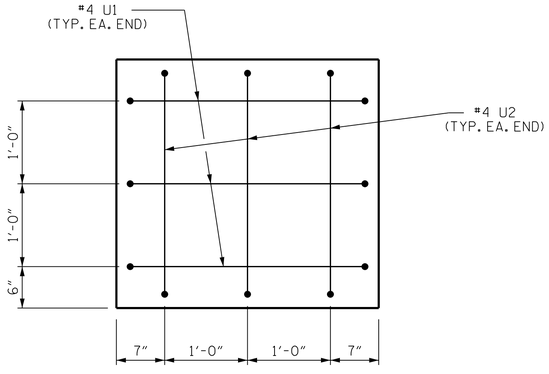
PLAN OF DRILLED PIERS & COLUMNS



END ELEVATION

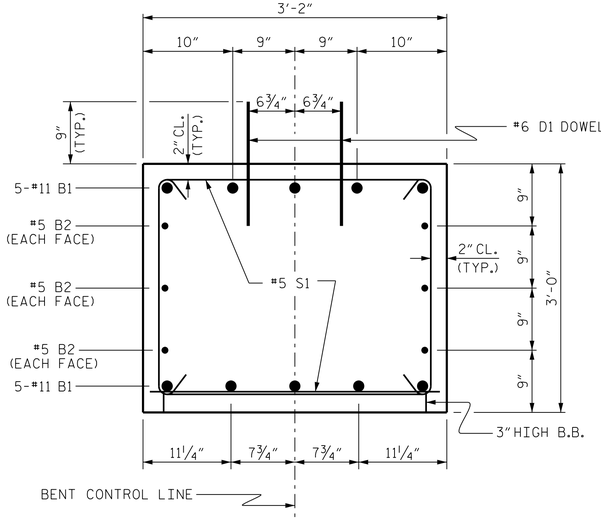


CONSTRUCTION JOINT DETAIL



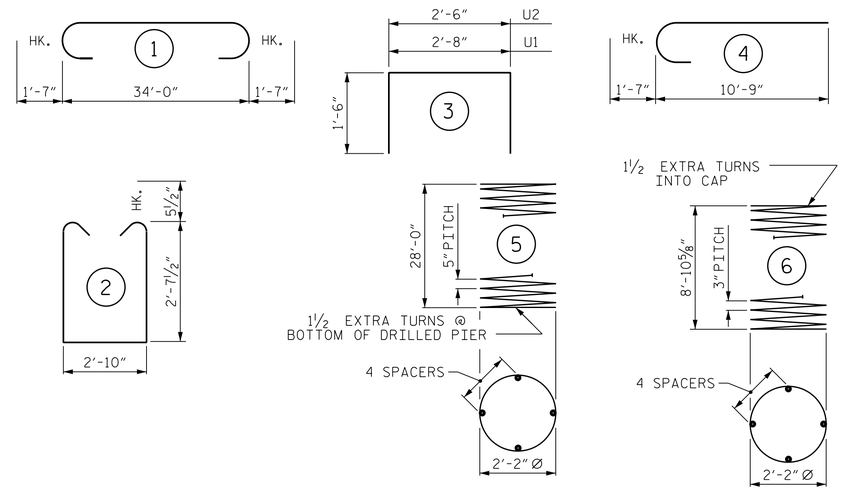
END OF CAP VIEW

(TYPICAL BOTH ENDS)



SECTION THRU CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	37'-2"	1,975
B2	6	#5	STR	34'-2"	214
D1	40	#6	STR	1'-6"	90
M1	30	#11	STR	38'-4"	6,110
S1	58	#5	2	9'-0"	544
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22
V1	30	#11	4	12'-4"	1,966

REINFORCING STEEL (FOR ONE BENT) 10,944 LBS.

SP-1	3	✳	5	457'-4"	1,431
SP-2	3	✳✳	6	247'-3"	495

SPIRAL COLUMN REINFORCING STEEL (FOR ONE BENT) 1,926 LBS.

✳ THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

✳✳ THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	4.7 C.Y.
POUR #3 (CAP)	12.1 C.Y.
TOTAL CLASS A CONCRETE	16.8 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	22.4 C.Y.
3'-0" Ø DRILLED PIER NOT IN SOIL	36 LIN. FT.
3'-0" Ø DRILLED PIER IN SOIL	49.5 LIN. FT.
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER	54 LIN. FT.
CSL TUBES	360 LIN. FT.

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 010291

SUBSTRUCTURE

BENT No. 1

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : AUG 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : AUG 2018

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1/26/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			21

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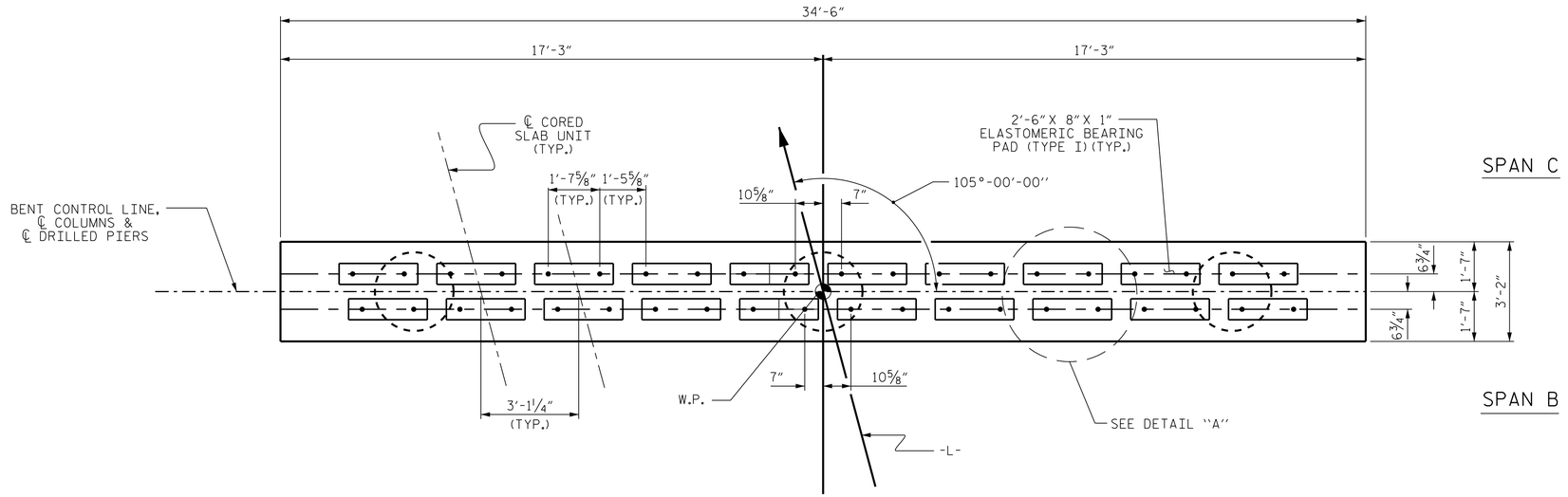
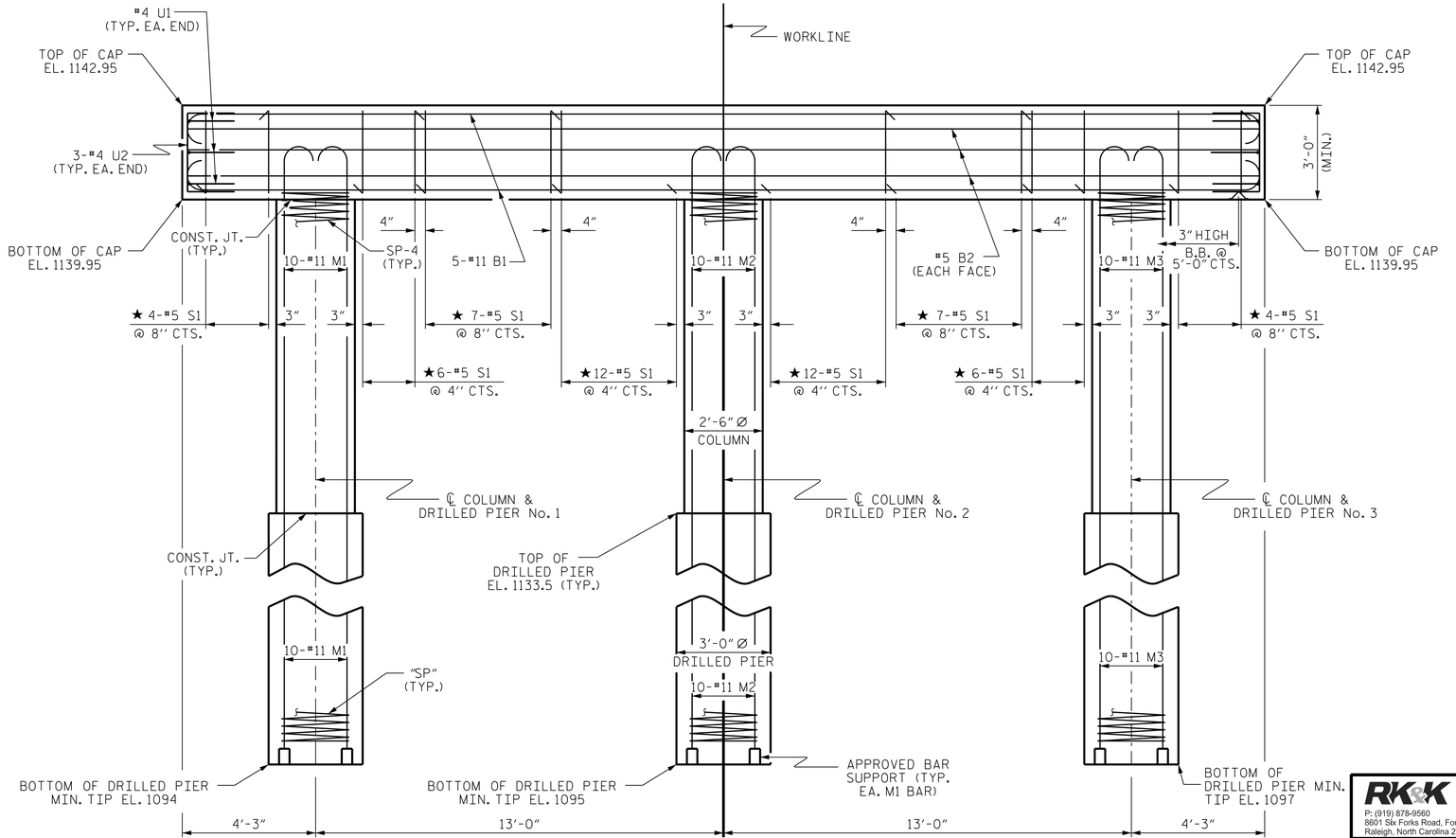


PLAN



ELEVATION

DIMENSIONS & REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER UNLESS OTHERWISE NOTED.

NOTES

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

HOOKS ON ″V″ BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

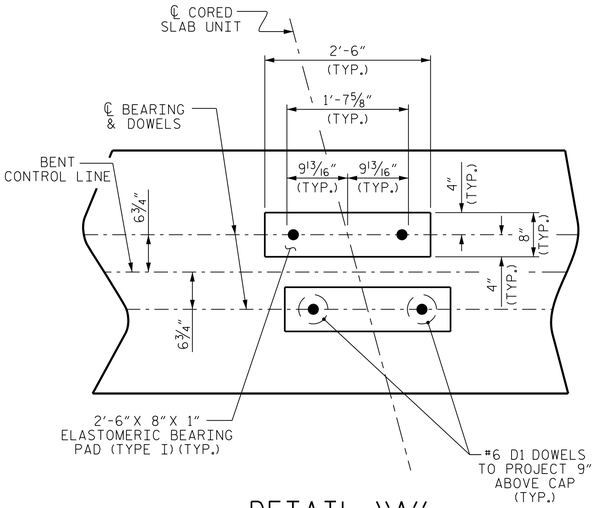
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR ″REINFORCING STEEL″ AND ″SPIRAL COLUMN REINFORCING STEEL.″

★ INVERT ALTERNATE STIRRUPS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT ONE FOOT BELOW THE GROUND LINE.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL ″A″

(DIMENSIONS ARE TYPICAL EACH BEARING)

PROJECT NO. 17BP.12.R.88

ALEXANDER COUNTY

STATION: 16+26.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

BRIDGE NO. 010291

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1/26/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : AUG 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : AUG 2018

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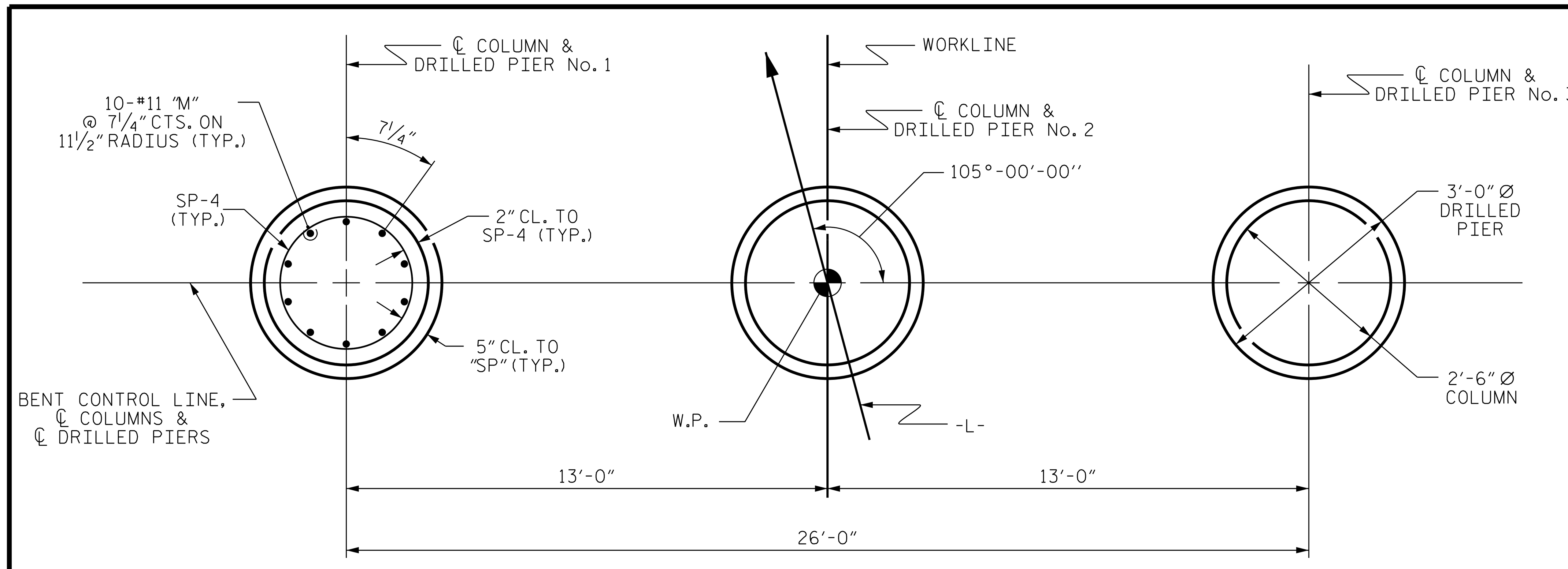
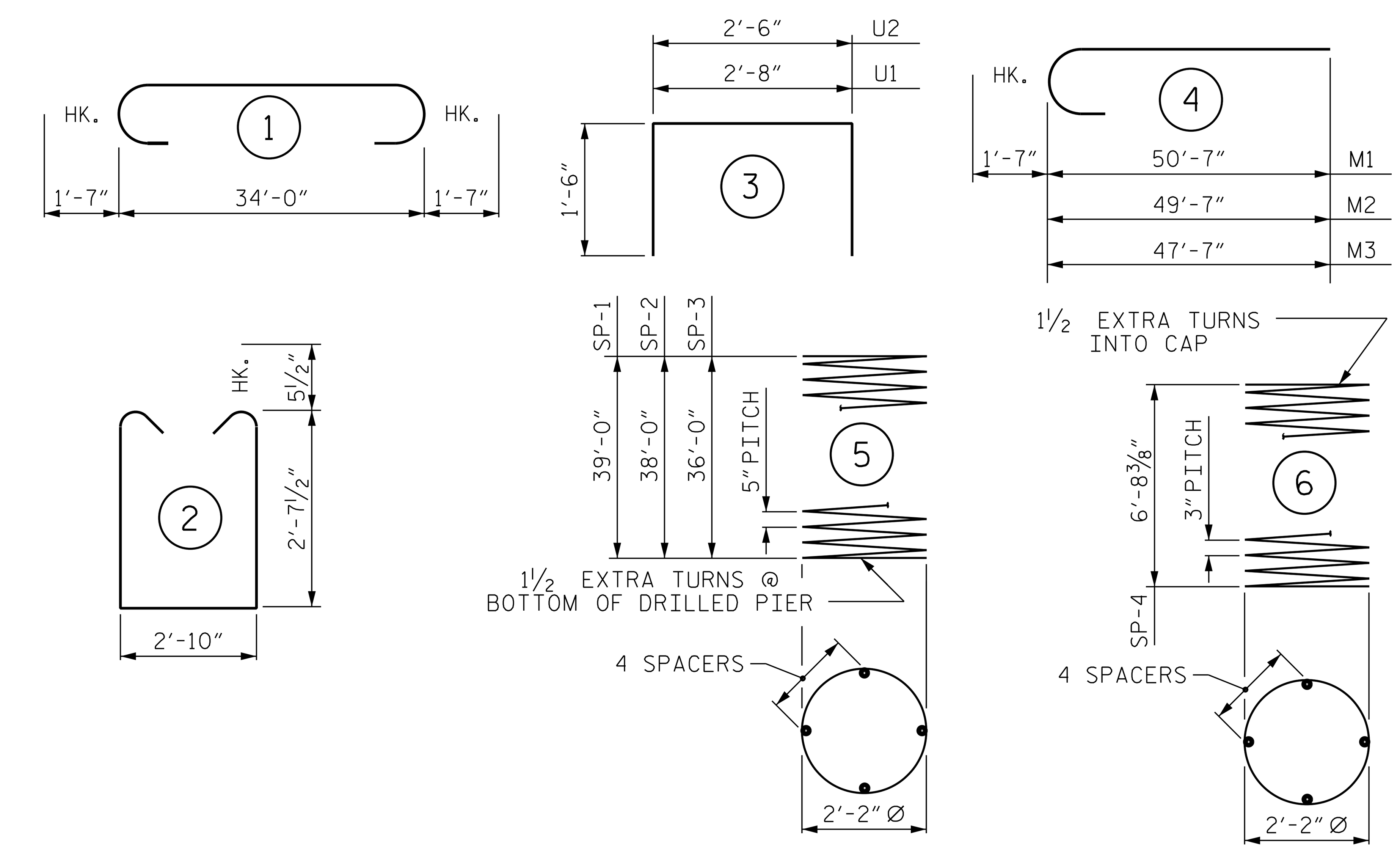
3/12/2020 R:\Structures\DGN\FINAL\017-010291_SD_B2-1.dgn



PLAN OF DRILLED PIERS & COLUMNS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	1	37'-2"	1,975
B2	6	#5	STR	34'-2"	214
D1	40	#6	STR	1'-6"	90
M1	10	#11	STR	52'-2"	2,772
M2	10	#11	STR	51'-2"	2,718
M3	10	#11	STR	49'-2"	2,612
S1	58	#5	2	9'-0"	544
U1	6	#4	3	5'-8"	23
U2	6	#4	3	5'-6"	22

REINFORCING STEEL (FOR BENT) 10,970 LBS.

SP-1	1	*	5	633'-1"	660
SP-2	1	*	5	617'-1"	644
SP-3	1	*	5	585'-1"	610
SP-4	3	**	6	189'-1"	379

SPIRAL COLUMN REINFORCING STEEL (FOR BENT) 2,293 LBS.

* THE SP-1, SP-2, AND SP-3 SPIRAL REINF. STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

** THE SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN (FOR BENT)

POUR #2 (COLUMNS)	3.5 C.Y.
POUR #3 (CAP)	12.1 C.Y.
TOTAL CLASS A CONCRETE	15.6 C.Y.

DRILLED PIERS: (FOR BENT)

DRILLED PIER CONCRETE

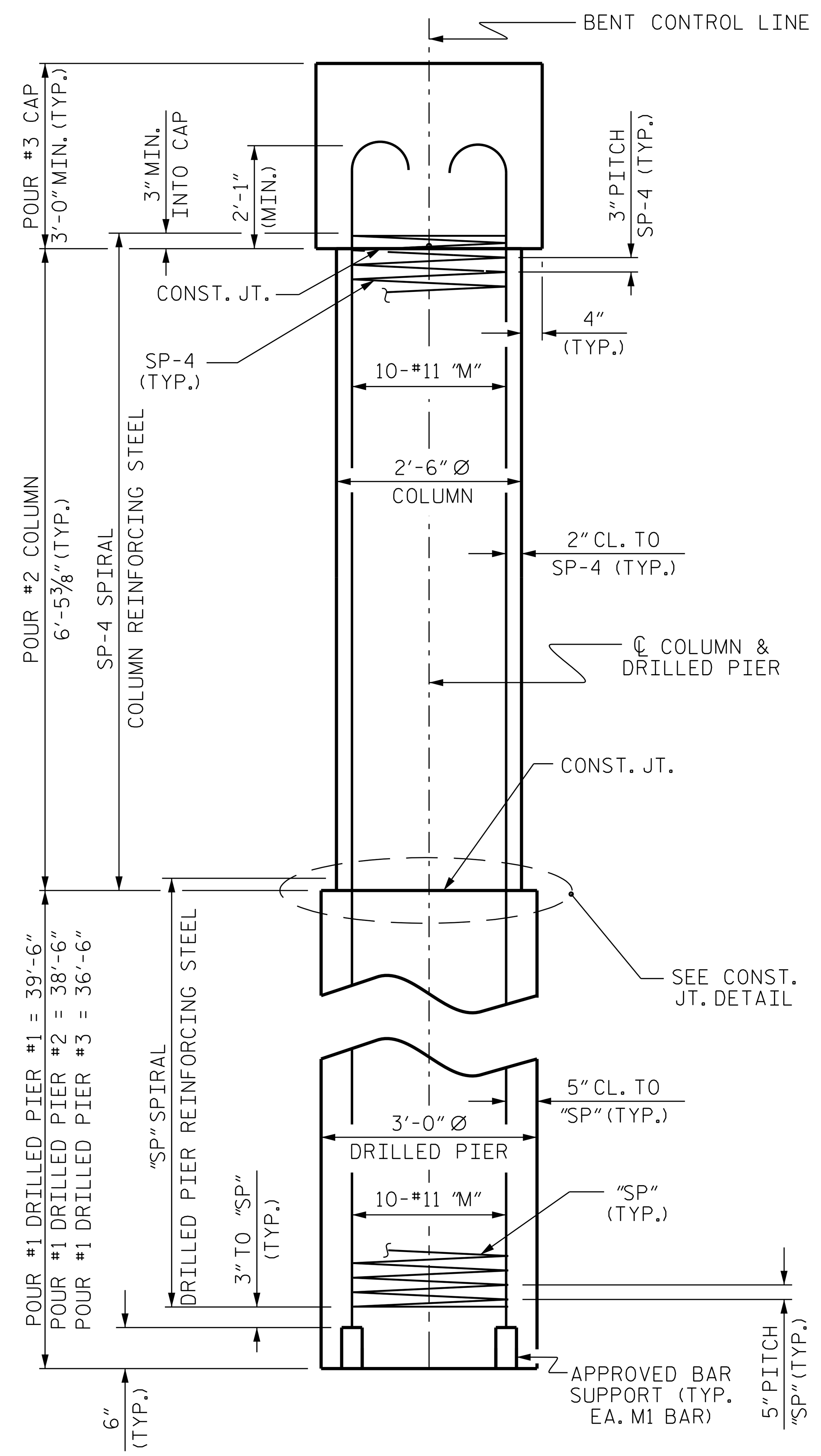
POUR #1 TOTAL 29.8 C.Y.
DRILLED PIER #1 = 10.3 C.Y.
DRILLED PIER #2 = 9.9 C.Y.
DRILLED PIER #3 = 9.6 C.Y.

3'-0" Ø DRILLED PIER NOT IN SOIL 36.0 LIN. FT.

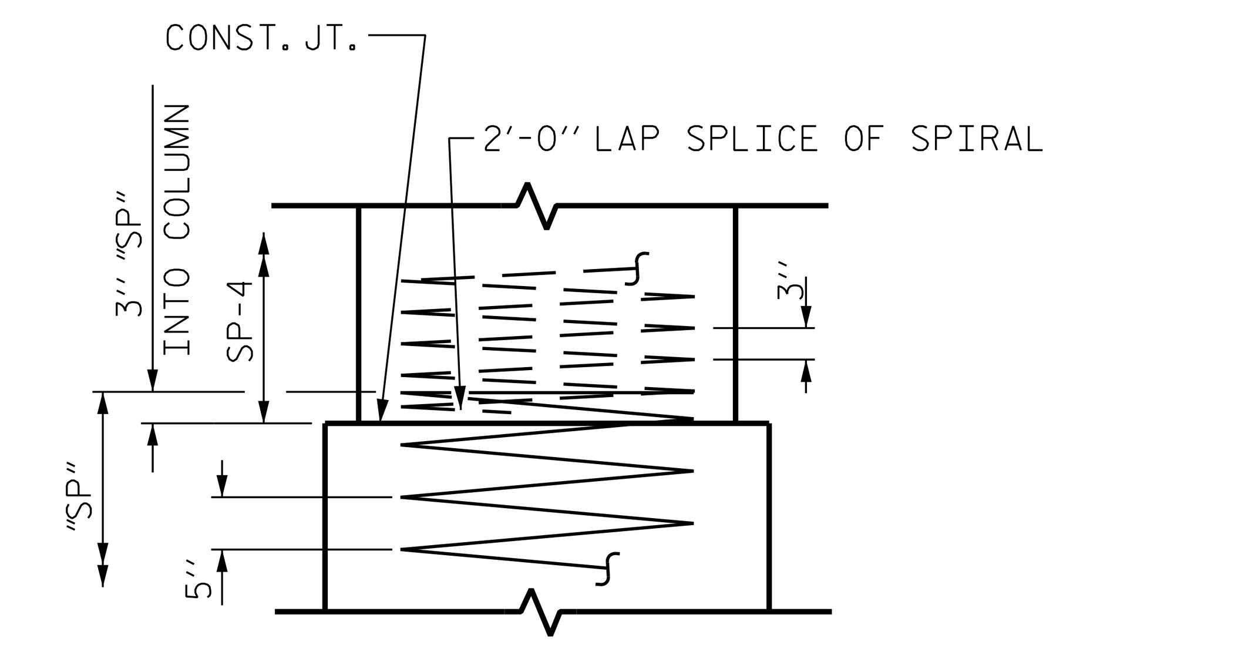
3'-0" Ø DRILLED PIER IN SOIL 78.5 LIN. FT.

PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER 60 LIN. FT.

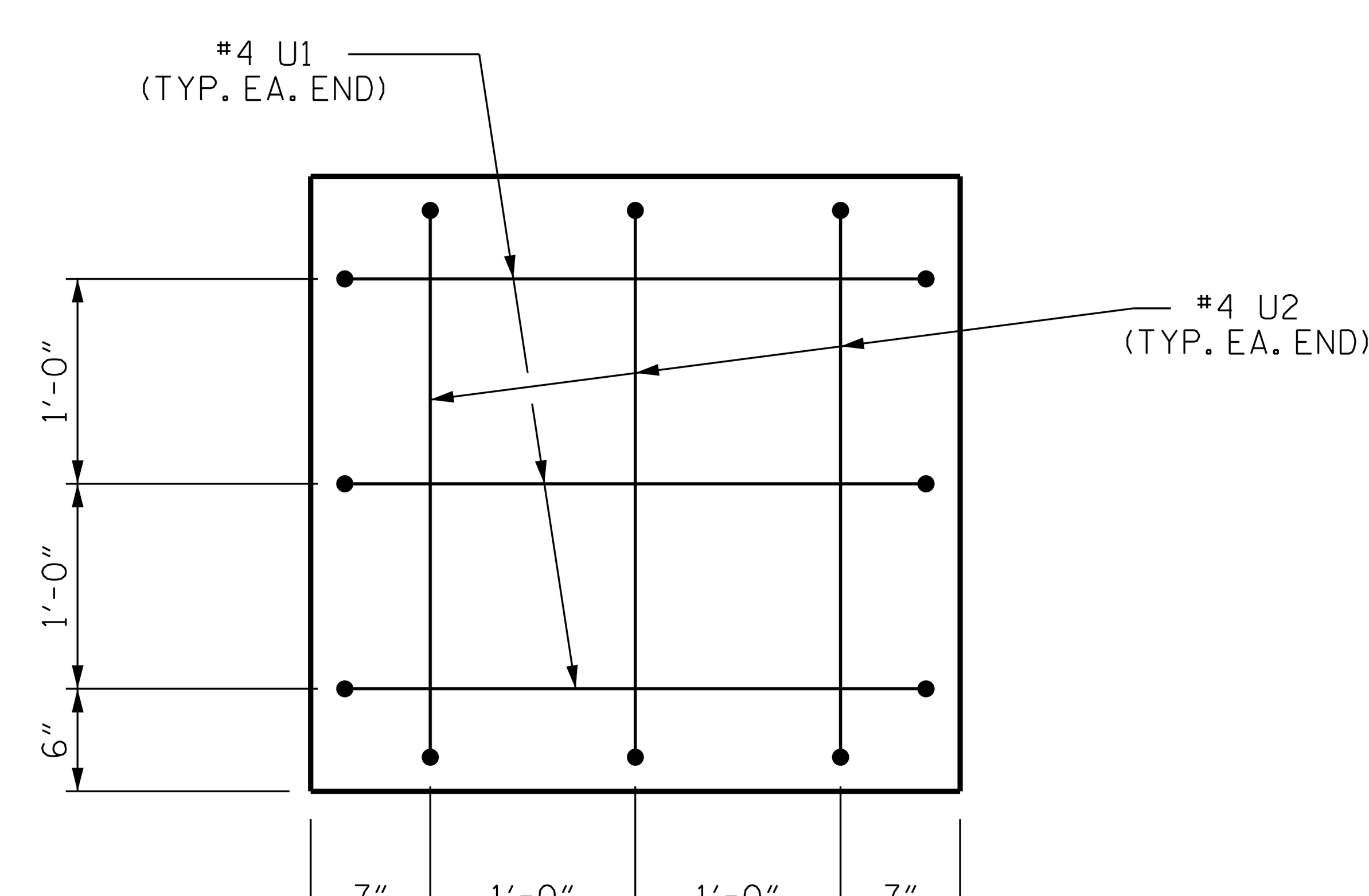
CSL TUBES 476 LIN. FT.



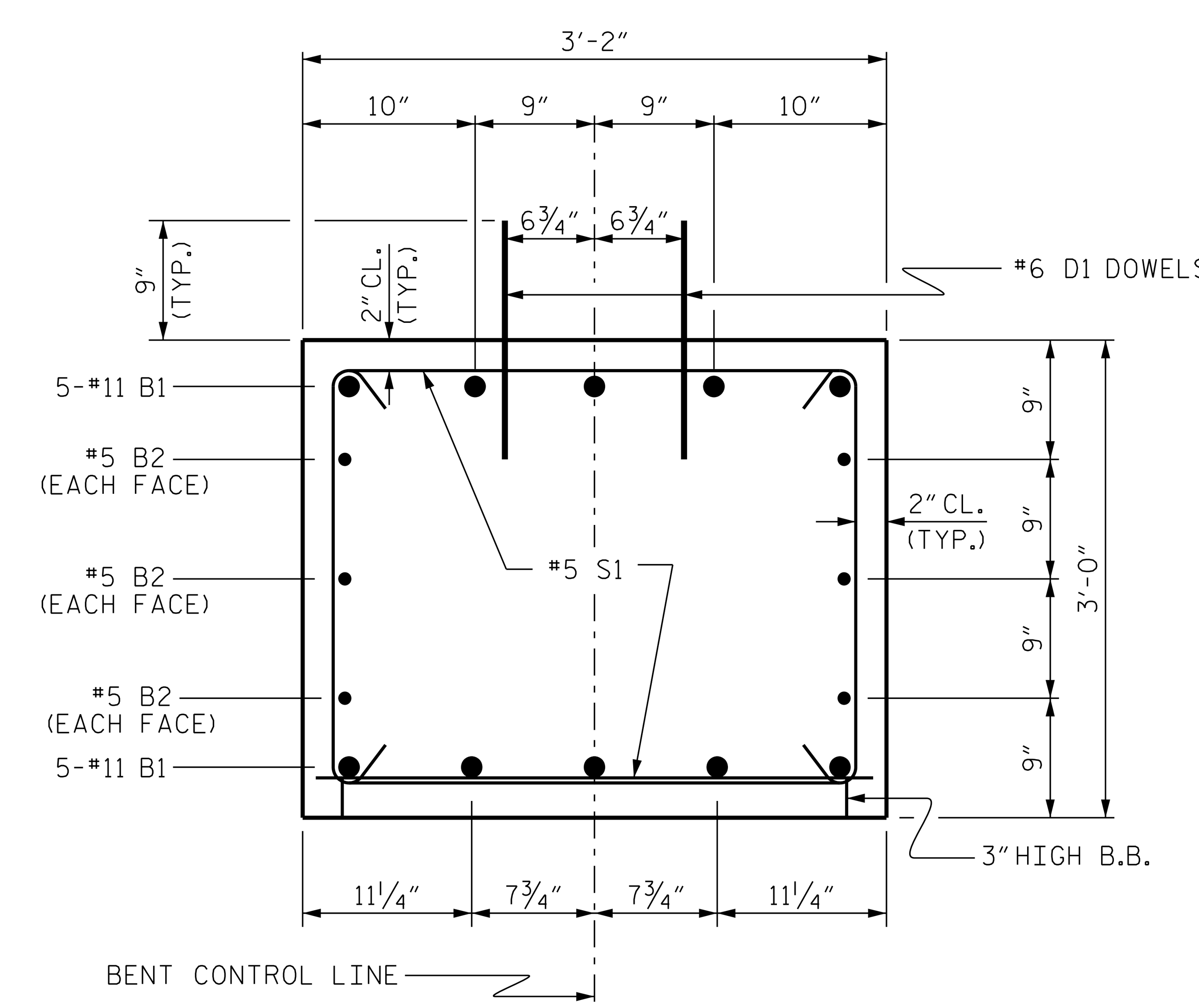
END ELEVATION



CONSTRUCTION JOINT DETAIL



END OF CAP VIEW
(TYPICAL BOTH ENDS)



SECTION THRU CAP

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

SHEET 2 OF 2

BRIDGE NO. 010291

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 2

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS
1/26/2021

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NO.	BY:	DATE:		NO.	BY:	DATE:		S-18
1				3				TOTAL SHEETS
2				4				21

DRAWN BY: M. J. ZIEHL DATE: MAY 2018
CHECKED BY: T. L. COGGINS DATE: AUG 2018
DESIGN ENGINEER OF RECORD: T. L. COGGINS DATE: AUG 2018

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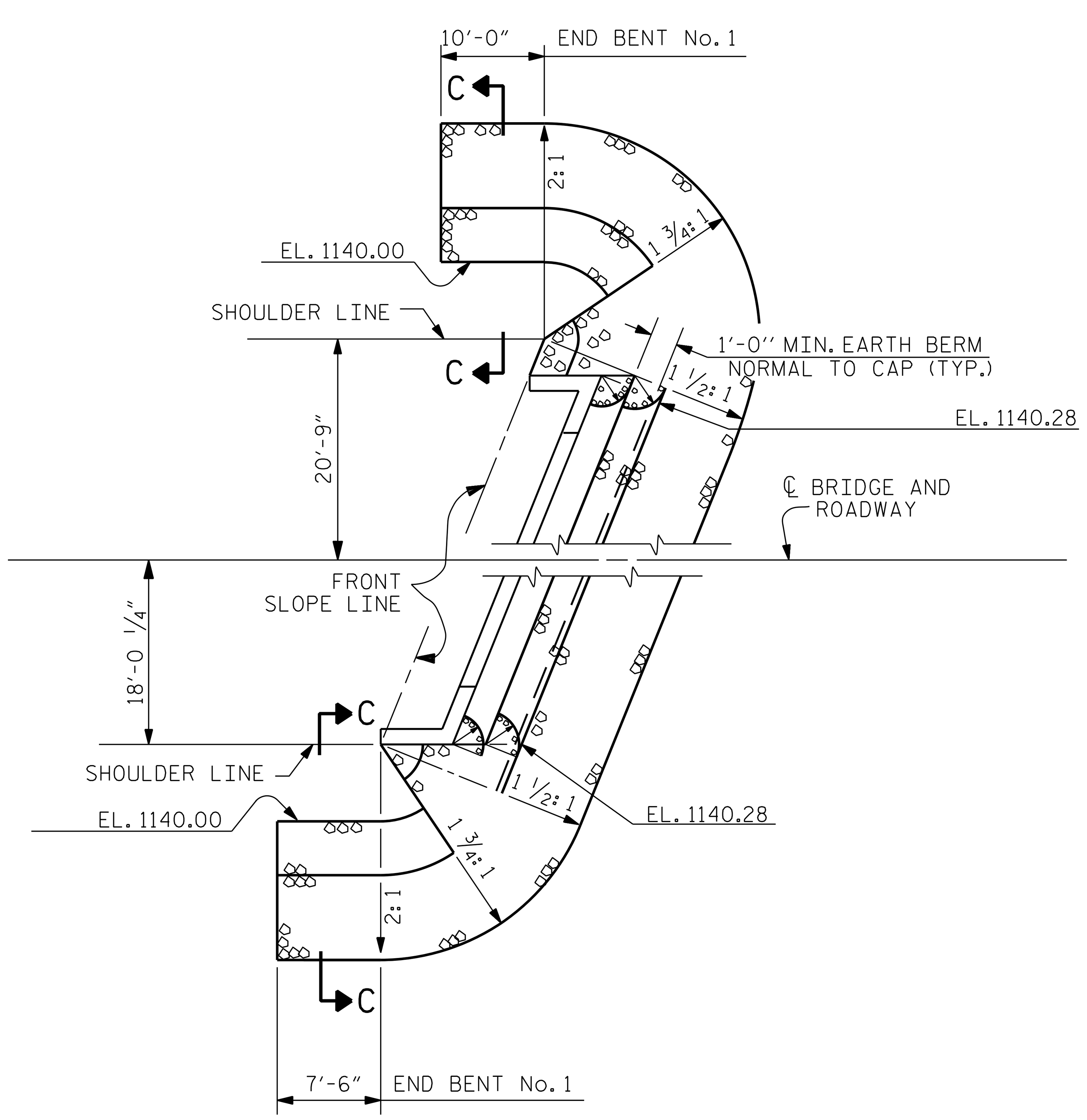
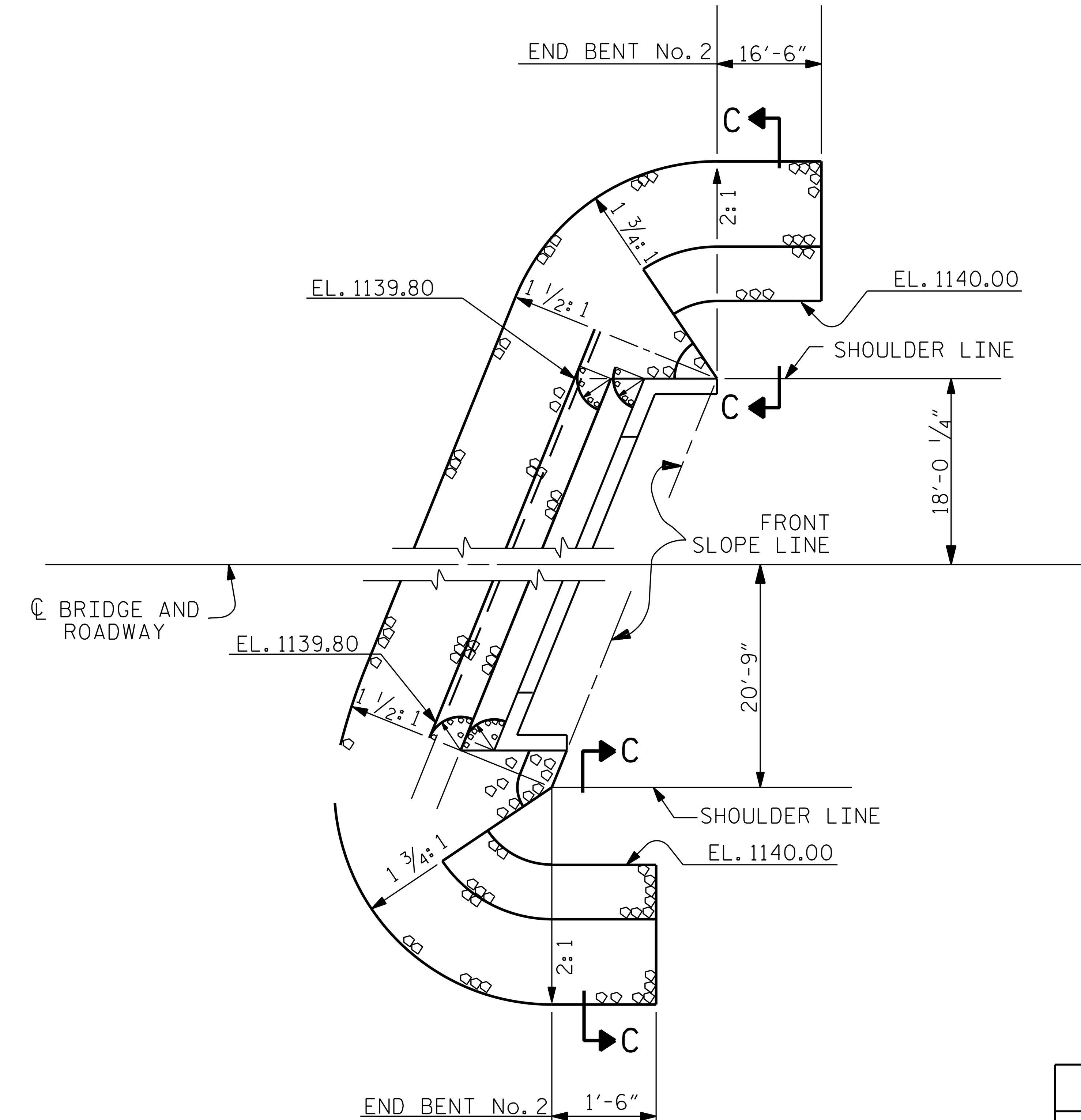
3/12/2020 R:\Structures\DGN\FINAL\018-010291_SD_B2-2.dgn



BERM RIP RAPPED END BENT NO. 1

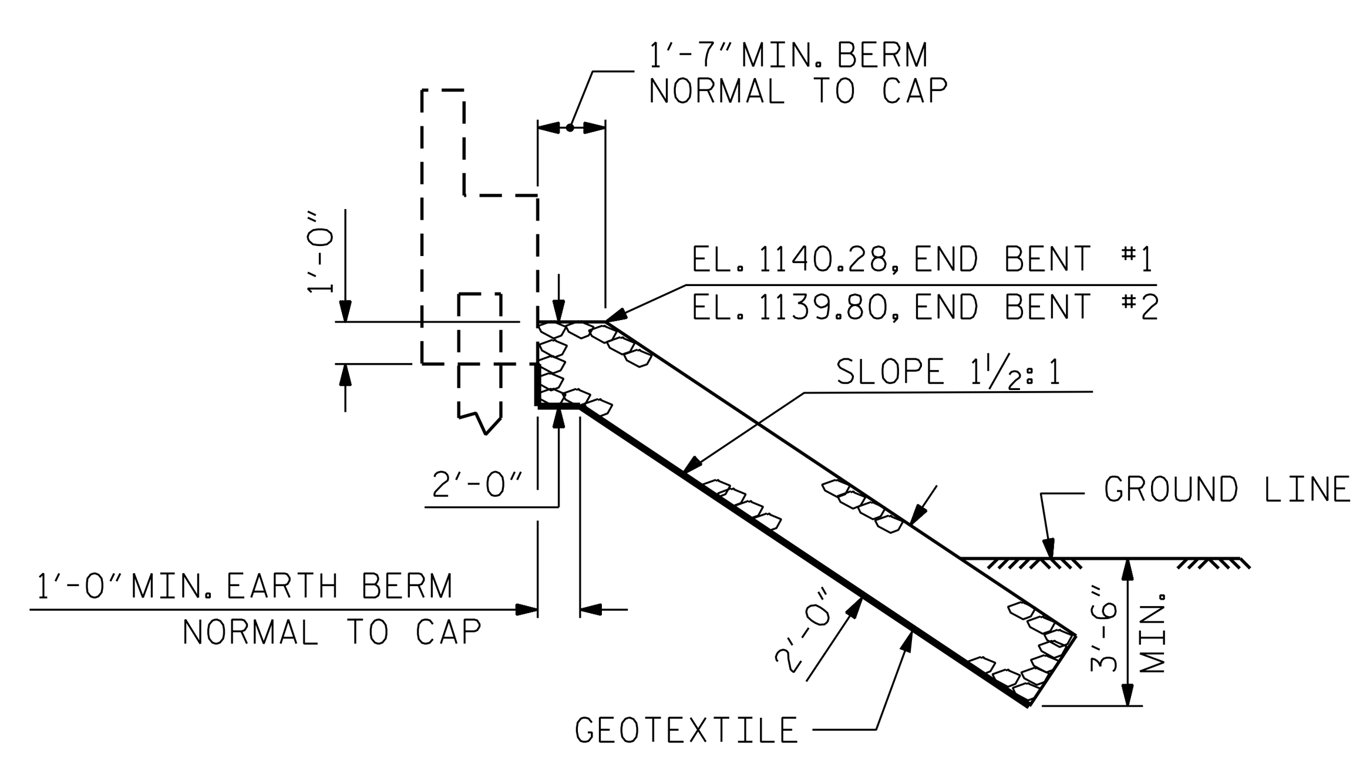


BERM RIP RAPPED END BENT NO. 2

NOTES :

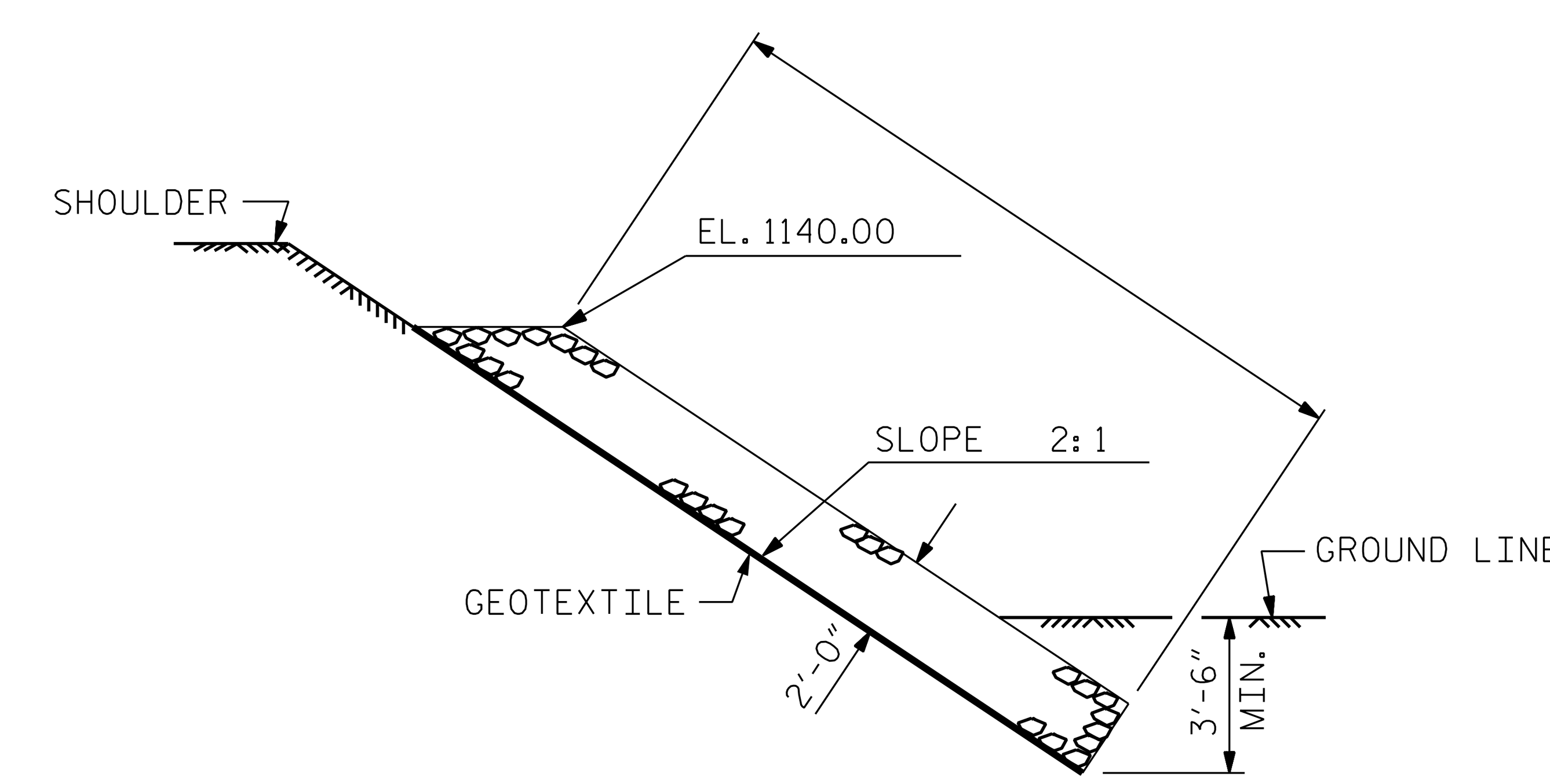
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+26.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	170	189
END BENT 2	160	178



℄ SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL SEAL 14045 ENGINEER TIMOTHY L. COGGINS

1/26/2021

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : JUL 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUL 2018

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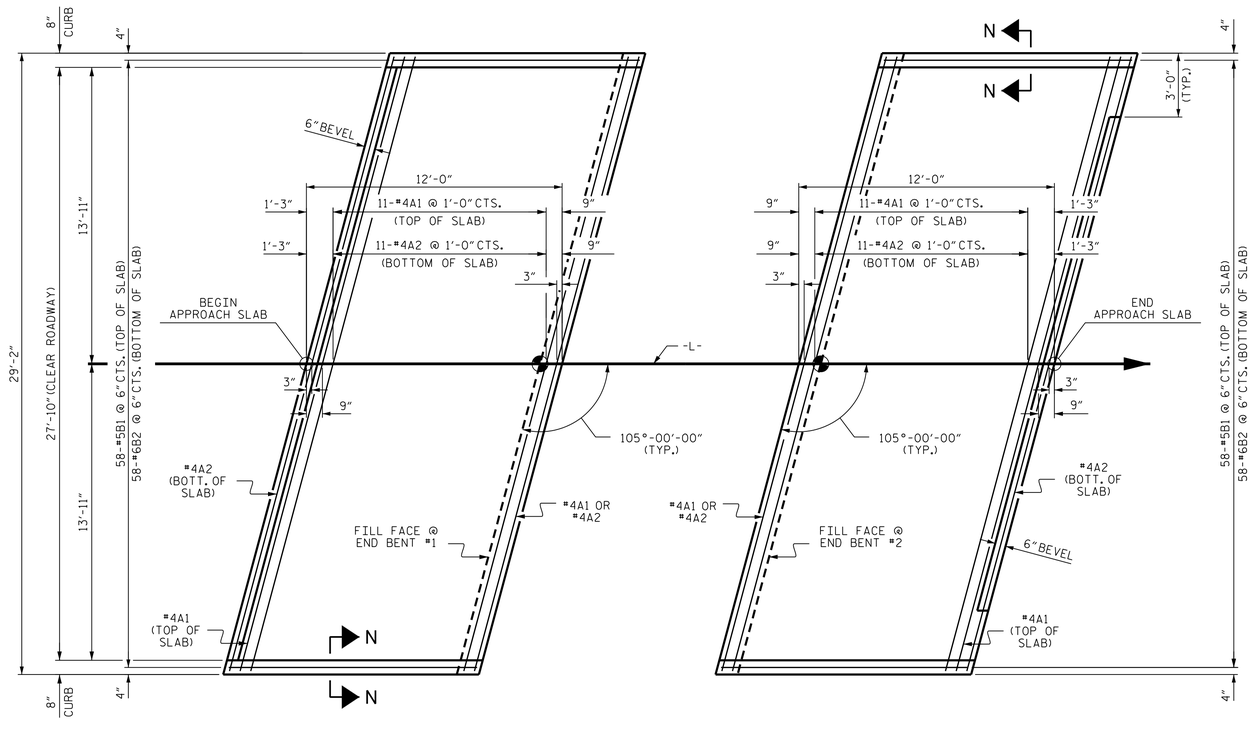
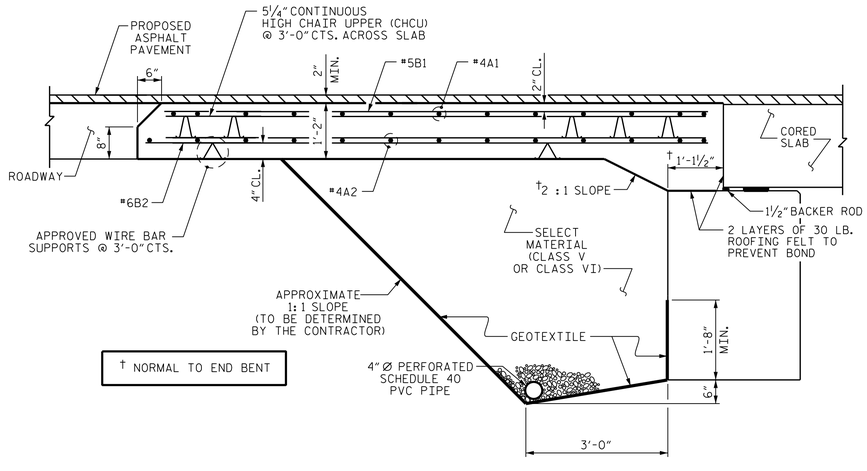


PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE I IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

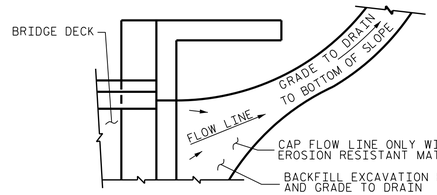
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLETS, SEE ROADWAY STANDARD DRAWINGS.

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.

BILL OF MATERIAL

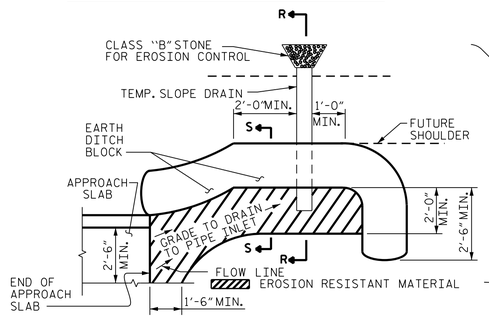
APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	29'-10"	259
A2	13	#4	STR	29'-10"	259
✱ B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL				LBS.	1268
✱ EPOXY COATED REINFORCING STEEL				LBS.	929
CLASS AA CONCRETE				C.Y.	16.7

APPROACH SLAB AT EB #2

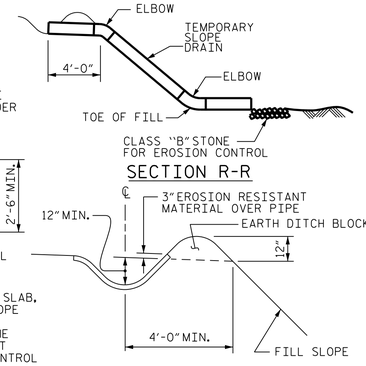
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	29'-10"	259
A2	13	#4	STR	29'-10"	259
✱ B1	58	#5	STR	11'-1"	670
B2	58	#6	STR	11'-7"	1009
REINFORCING STEEL				LBS.	1268
✱ EPOXY COATED REINFORCING STEEL				LBS.	929
CLASS AA CONCRETE				C.Y.	16.7

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.

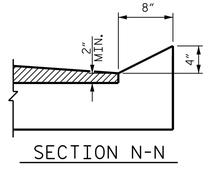
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N

PROJECT NO. 17BP.12.R.88

ALEXANDER COUNTY

STATION: 16+26.50 -L-

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

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BRIDGE NO. 010291

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14045 TIMOTHY L. COGGINS

1/26/2021

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 105° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			21

DRAWN BY : M. J. ZIEHL DATE : MAY 2018
CHECKED BY : T. L. COGGINS DATE : JUN 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : JUN 2018

bgonfa
3/12/2020 R:\Structures\DGN\FINAL\020-010291_SD_AS.dgn

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.

PROJECT NO. 17BP.12.R.88
ALEXANDER COUNTY
STATION: 16+26.50 -L-

DRAWN BY : T. ROBBERSON DATE : SEP 2018
CHECKED BY : T. L. COGGINS DATE : SEP 2018
DESIGN ENGINEER OF RECORD : T. L. COGGINS DATE : SEP 2018

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STANDARD
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