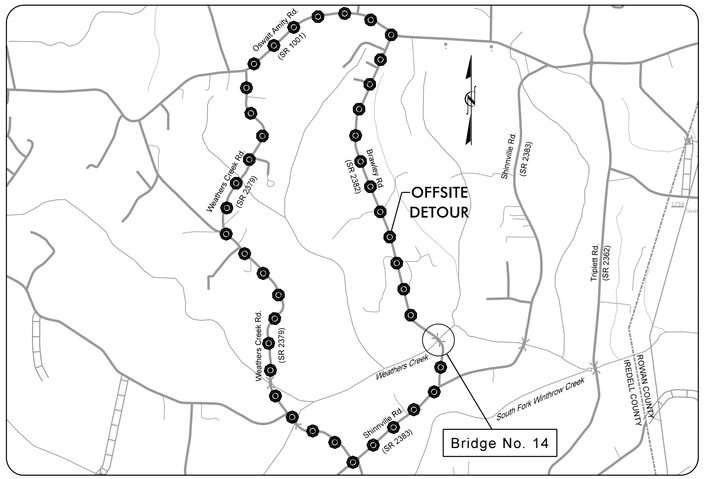
PROJECT: BP12.R015

CONTRACT NO: DL0335

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



VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

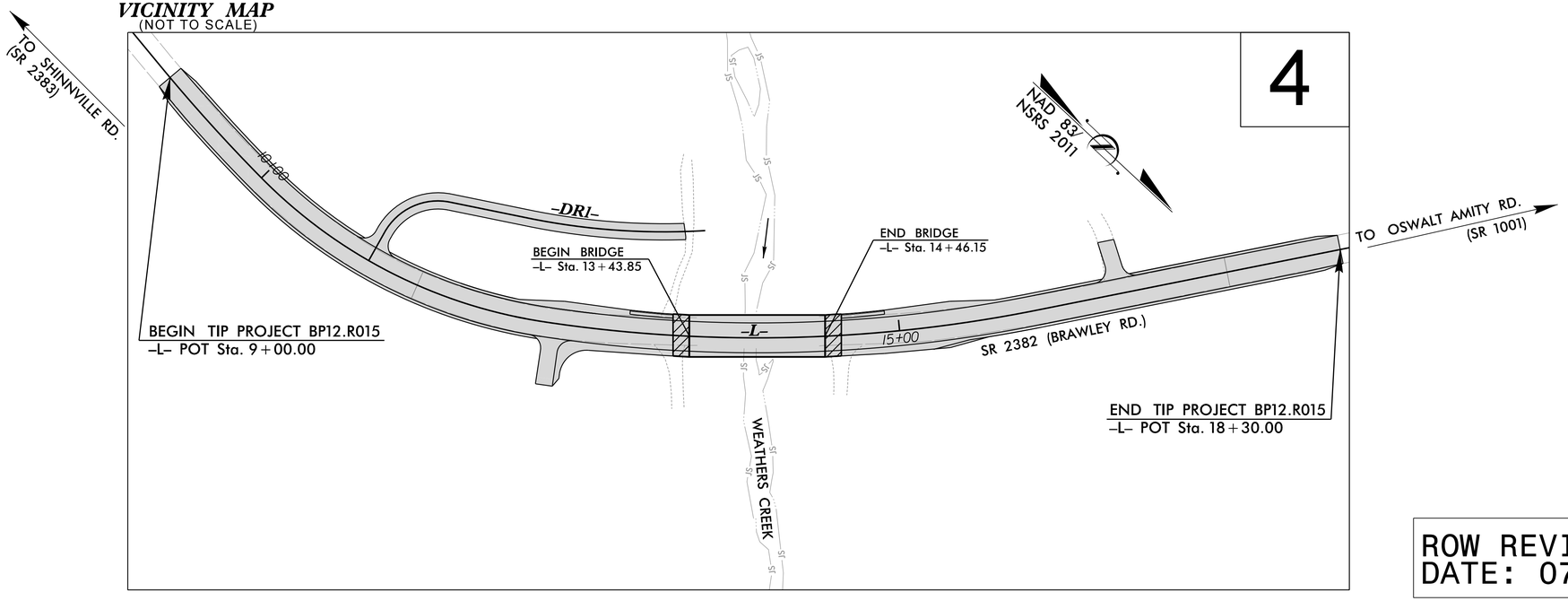
IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R015	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP12.R015.1	N/A	P.E.
BP12.R015.2	N/A	ROW & UTIL.
BP12.R015.3	N/A	CONST.

LOCATION: BRIDGE NO. 14 OVER WEATHERS CREEK ON SR 2382 (BRAWLEY ROAD)

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



ROW REVISION #3
DATE: 07/17/2024

NOTES:

A DESIGN EXCEPTION IS NEEDED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL STOPPING SIGHT DISTANCE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 0 50 100
PROFILE (HORIZONTAL): 50 0 50 100
PROFILE (VERTICAL): 10 0 10 20

DESIGN DATA

ADT 2024 = 1060
ADT 2044 = 1600
T = 5%*
V = 50 MPH
FUNC CLASS = RURAL LOCAL

SUBREGIONAL TIER
*(TTST=1% + DUAL=4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP12.R015	=	0.157 mi
LENGTH STRUCTURE TIP PROJECT BP12.R015	=	0.019 mi
TOTAL LENGTH TIP PROJECT BP12.R015	=	0.176 mi

RK&K

RUMMEL, KLEPPER & KAHL, LLP
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

FOR
DIVISION OF HIGHWAYS

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 31, 2023

LETTING DATE:
AUGUST 13, 2024

Scott D. Blevins, P.E.
PROJECT ENGINEER

Cathy S. Houser, P.E.
PROJECT DESIGN ENGINEER

Joshua B. White, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 035636 ENGINEER CHRISTOPHER L SMITH

DocuSigned by: Christopher L. Smith 7/17/2024 | 12:17 PM EDT
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16410 ENGINEER CATHY S HOUSER

DocuSigned by: Cathy S. Houser 7/17/2024 | 12:17 PM EDT
SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

7/16/2024
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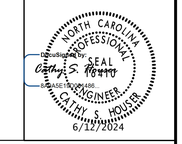
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	1A

ROADWAY DESIGN ENGINEER



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

INDEX OF SHEETS

LIST OF STANDARD DRAWING

EFF. 01–16–2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 – EARTHWORK	
200.03	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
310.10	Driveway Pipe Construction
DIVISION 4 – MAJOR STRUCTURES	
423.01	Bridge Approach Fills – Type 1 Approach Fill for Bridge Abutment
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
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 and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

LIST OF GENERAL NOTES

GENERAL NOTES: 2024 SPECIFICATIONS

EFFECTIVE: 01–16–2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE–IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 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.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104–7.

SUBSURFACE PLANS:

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

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 ENERGY UNITED EMC–POWER, AT&T–TELECOMMUNICATIONS, WINDSTREAM–TELECOMMUNICATIONS AND IREDELL WATER CORPORATION

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 OTHERS.

6/12/2024
R:\Roadway\Proj\48001.4_rdy_psh01A.dgn
dhefner

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel/Sequence Number — 23
- 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:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed 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:

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

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H–Frame Pole
- U/G Power Line Test Hole (SUE – LOS A)*
- U/G Power Line (SUE – LOS B)* — P
- U/G Power Line (SUE – LOS C)* — P
- U/G Power Line (SUE – LOS D)* — 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 Test Hole (SUE – LOS A)*
- U/G Telephone Cable (SUE – LOS B)* — T
- U/G Telephone Cable (SUE – LOS C)* — T
- U/G Telephone Cable (SUE – LOS D)* — T
- U/G Telephone Conduit (SUE – LOS B)* — TC
- U/G Telephone Conduit (SUE – LOS C)* — TC
- U/G Telephone Conduit (SUE – LOS D)* — TC
- U/G Fiber Optics Cable (SUE – LOS B)* — T FO
- U/G Fiber Optics Cable (SUE – LOS C)* — T FO
- U/G Fiber Optics Cable (SUE – LOS D)* — T FO

WATER:

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

TV:

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

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line Test Hole (SUE – LOS A)*
- U/G Gas Line (SUE – LOS B)* — G
- U/G Gas Line (SUE – LOS C)* — G
- U/G Gas Line (SUE – LOS D)* — 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 Force Main Line Test Hole (SUE – LOS A)*
- SS Force Main Line (SUE – LOS B)* — FSS
- SS Force Main Line (SUE – LOS C)* — FSS
- SS Force Main Line (SUE – LOS D)* — FSS

MISCELLANEOUS:

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

6/2/99

PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	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″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R1	SHOULDER BERM GUTTER.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C3	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 TO EXCEED 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″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.	U	EXISTING PAVEMENT.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	J1	PROP. 6″ AGGREGATE BASE COURSE	W	VARIABLE DEPTH ASPHALT PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	2A-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16411 ENGINEER CATHY S. HOUSER

DocuSigned by: Cathy S. Houser 6/27/2024

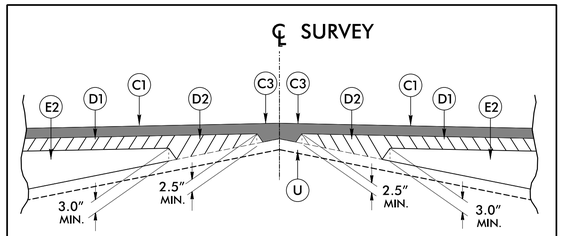
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049961 ENGINEER ANDREW D. WARGO

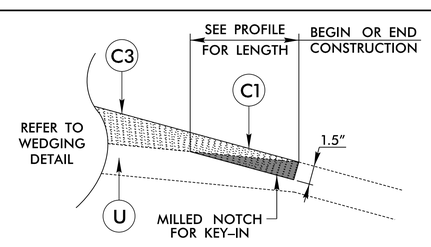
DocuSigned by: Andrew D. Wargo 6/13/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

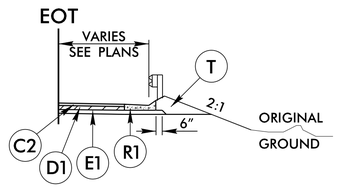
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



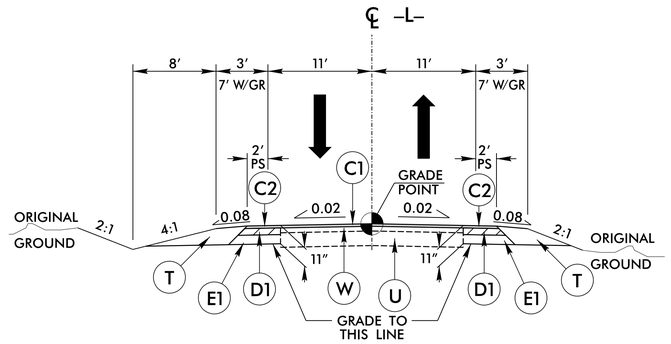
DETAIL SHOWING METHOD OF WEDGING



DETAIL SHOWING TIE–INS (MILLING)

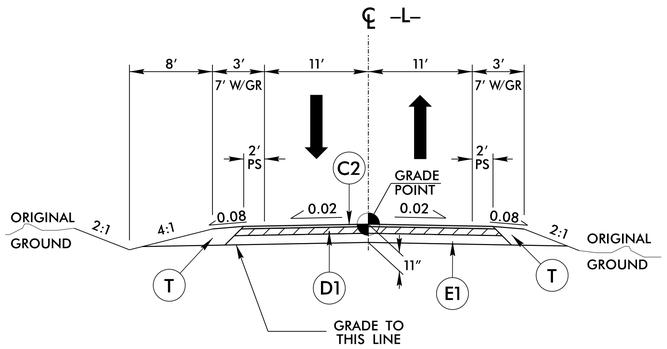


DETAIL SHOWING SHOULDER BERM GUTTER



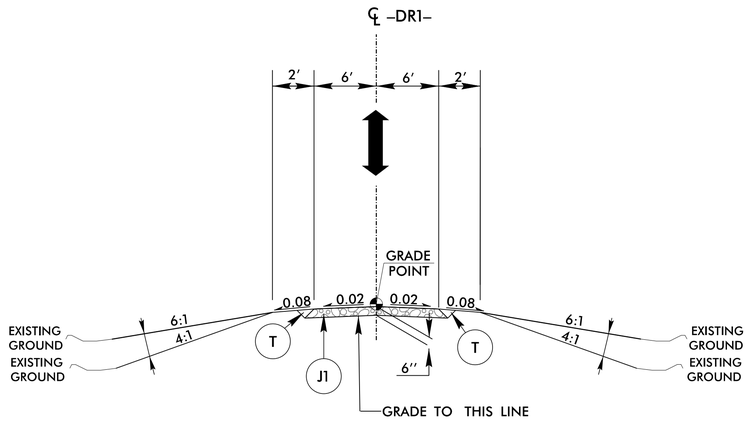
TYPICAL SECTION NO. 1

–L– STA. 9+00.00 TO 10+25.00
–L– STA. 17+25.00 TO 18+30.00



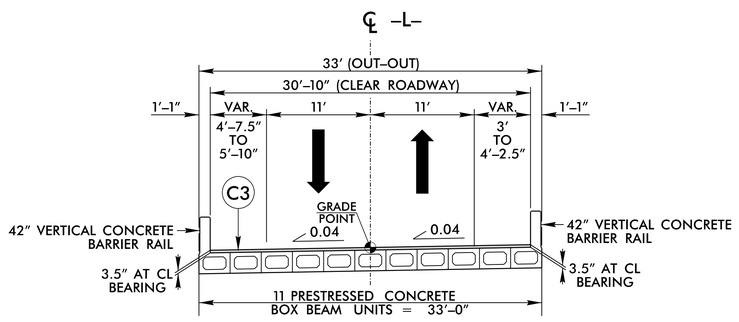
TYPICAL SECTION NO. 2

–L– STA. 10+25.00 TO 13+43.85 (BEGIN BRIDGE)
–L– STA. 14+46.15 (END BRIDGE) TO 17+25.00



TYPICAL SECTION NO. 3

–DR1– STA. 10+11.00 TO 12+55.58



TYPICAL SECTION NO. 4

–L– STA. 13+43.85 (BEGIN BRIDGE) TO 14+46.15 (END BRIDGE)

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No, F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

COMPUTED BY: AG DATE: 04/17/24
CHECKED BY: CSH DATE: 04/18/24

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	3B-1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 1							
-L-	9+00.0000	13+43.7500	160		1,183	1,023	
-L-	14+46.1400	18+25.0000	233		1,459	1,226	
-DR1-	10+25.0000	12+50.0000	2		1,209	1,207	
SUBTOTAL			**395**		**3,851**	**3,456**	
SHEET TOTALS			**395**		**3,851**	**3,456**	
MATERIAL FOR SHOULDER CONSTRUCTION					**132**	**132**	
PROJECT TOTAL			**395**		**3,984**	**3,589**	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT						**179**	
GRAND TOTAL			**395**			**3,768**	
SAY			**400**			**3,770**	

Note: Approximate quantities only. Unclassified excavation, borrow excavation, fine grading, clearing and grubbing and removal of existing pavement will be paid for at the contract lump sum price for Grading.

DRAINAGE DITCH EXCAVATION = 85 C.Y.

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF GUARDRAIL

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	GREU TL-2	TYPE III	CAT-1	AT-1	B-77	TES	G	NG
-L-	12+50.49	13+44.24	LT	93.75			13+44.24		4.62	7.62	50						1		1						
-L-	12+53.91	13+45.71	RT	75	37.5		13+45.71		4.17	7.17	55.8								1		1				
-L-	14+45.76	15+39.51	LT	93.75			14+45.76		4.62	7.62		50					1		1						
-L-	14+44.29	15+38.04	RT	93.75			14+44.29		4.17	7.17		50					1		1						
SHEET 1 TOTALS				356.25	37.5												3		4		1				
LESS ANCHOR DEDUCTIONS																									
		QUANTITY	LF PER EA	TOTAL LF																					
	GREU TL-3	3	50	150.00																					
	AT-1	1	6.25		6.25																				
	TYPE III	4	18.75	75.00																					
TOTAL GUARDRAIL (LF)				131.25	31.25																				
SAY (LF)				137.50	37.50		5 ADDITIONAL POSTS										3		4		1				

SUMMARY OF PAVEMENT REMOVAL

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
L	10+25	12+25	LT/RT	4192.83		465.87
L	16+25	17+25	LT/RT	2098.58		233.18
					TOTAL	699.05
					SAY	**700**

SUMMARY OF BREAKING PAVEMENT

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
L	12+25	13+51	LT/RT	2599.12		288.79
L	14+40	16+25	LT/RT	3924.41		436.05
					TOTAL	724.84
					SAY	**730**

SUMMARY OF SHOULDER BERM GUTTER

LOCATION	SIDE	BEG. STA.	END STA.	LENGTH
-L-	LT	13+00.00	13+32.05	31.71
-L-	LT	14+57.95	14+90.06	31.55
			TOTAL	63.26
			SAY	65

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8/17/99

COMPUTED BY:	MJB	DATE:	4/8/2022
CHECKED BY:	RBH	DATE:	4/18/2024

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

LINE & STATION	OFFSET		STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	% MINIMUM REQUIRED SLOPE	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE								DRAINAGE PIPE THICKNESS OR GAUGE				R.C. PIPE CLASS IV SIZE								PIPE AS NOTED		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	
									12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE, PP, OR PVC	12"	15"	18"	24"	30"	36"	42"	48"	18"	15"	CU. YARDS
																															R.C.P.	C.S.P.
SHEET 4																																
- L- 13+15.0000	-15	LT	401		760.7																											
- L- 13+15.0000		LT	401	402		755.8	755.0	0.5%																					RCP-V	RCP-III		
																														20		
-L- 12+43.00	29	RT	403							56								X	X													
-L- 16+61.00	-28	LT	405									44						X	X													
PROJECT TOTALS										56		44																		20		

LINE & STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	"TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO FLAT GRATES STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FR. WITH TWO FLAT GRATES. STD. 840.29	DRIVEWAY DROP INLET LIN. FT. STD. 840.30	D.I. IN APPROACH SLAB STD. 840.13	J.B. STD. 840.31 OR 840.32	TB.JB STD. 840.34	T.B.D.I. STD. 840.35	STEEL GRATE AND FRAME STD. 840.37	M.H. FRAME AND COVER STD. 840.54	ADJUST MH	ADJUST CB	ADJUST DI	CONV DI TO JBMH	CONV JB TO DI	CONV CB TO JB	BERM DRAINAGE OUTLET	OTCB	FLOWABLE FILL (C'Y)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SHEET 4																																										
- L- 13+15.0000	1																																										
- L- 13+15.0000																																									53	
-L- 12+43.00																																									25	
-L- 16+61.00																																									20	
PROJECT TOTALS	1																																								24	
																																									122	

ABBREVIATIONS

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

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PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042192 ENGINEER CATHY S. HOWARD

Docusigned by: Cathy S. Howard

7/17/2024

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042192 ENGINEER CHRISTOPHER L. SMITH

Docusigned by: Christopher L. Smith

7/17/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2001

BEGIN PROJECT BP12.R015
–L– STA. 9+00.00

END CONSTRUCTION
–DR1– STA. 12+55.59

END PROJECT BP12.R015
–L– STA. 18+30.00

1 RANDY STRICKLER, ELIZABETH STRICKLER, DB 2722 PG 27

2 ERNEST B. TAYLOR, KIMBERLY S. TAYLOR, DB 2584 PG 2079

4 LARRY M. HOWARD, TERRY M. HOWARD, DB 1053 PG 1834, TR. 1

5 DONNA O. CHAMBERLAIN, DB 15E PG 190

6 GLADYS C. COBLE, DB 09E PG 167

EASEMENT FOR SAFETY CLEARING

–DRI– PC Sta. 10+23.89

–DRI– PT Sta. 10+80.76

–DRI– PC Sta. 11+39.53

–DRI– PT Sta. 12+70.44

–L– PC Sta. 8+88.63

–L– PCC Sta. 10+00.00

–L– PCC Sta. 12+37.29

–L– PT Sta. 16+01.86

–L– POT Sta. 18+39.63

–DRI– POT Sta. 10+00.00 = –L– POC Sta. 11+00.00

N 71° 28' 09.5" E

S 76° 08' 35.5" W

N 31° 26' 47.6" W

N 54° 16' 28.0" W

S 46° 42' 32" E

N 46° 52' 28" E 235.53'

30' TAPER

TOE PROTECTION SEE DETAIL C .37 TON CL B RIP RAP W/107 SY GEO FAB

2 TON CL B RIP RAP W/ 5 SY GEO FAB

RIP RAP AT EMBANKMENT SEE DETAIL D

SPECIAL LATERAL BASE DITCH SEE DETAIL B 164 TON CL B RIP RAP W/447 SY GEO FAB DDE=4 CY

SPECIAL LATERAL BASE DITCH SEE DETAIL A DDE=40 CY

SPECIAL LATERAL BASE DITCH SEE DETAIL A DDE=41 CY

90 TON CL B RIP RAP W/95 SY GEO FAB

GRADE TO DRAIN

15" RCP-III

TB 2GI PROP. SBG

REMOVE

TYPE III

GREU TL-3

8:1

* DESIGN EXCEPTION REQUIRED
ALL DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS 12' UNLESS OTHERWISE NOTED.

FOR STRUCTURE PLANS SEE SHEETS S–1 THRU S–16

FOR –DR1– PROFILE SEE SHT. 5

DRIVEWAYS ARE 12' WIDE AND HAVE A RADII 10' UNLESS OTHERWISE NOTED

EXCAVATION DUE TO MINIMUM CLEARANCE, 4' UNDER THE BRIDGE

–L–

PI Sta 9+44.35	PI Sta 11+22.89	PI Sta 14+21.43
Δ = 5° 06' 18.1" (LT)	Δ = 36° 44' 42.5" (LT)	Δ = 19° 53' 36.7" (LT)
D = 4° 35' 01.2"	D = 15° 29' 07.2"	D = 5° 27' 24.3"
L = 111.37'	L = 237.29'	L = 364.57'
T = 55.72'	T = 122.89'	T = 184.14'
R = 1250.00'	R = 370.00' *	R = 1,050.00'
	SE = 0.04	SE = 0.04
	V = 35 mph	V = 50 mph

–DRI–

PI Sta 10+56.83	PI Sta 12+05.36
Δ = 72° 24' 36.9" (RT)	Δ = 15° 00' 01.9" (LT)
D = 127° 19' 26.2"	D = 11° 27' 33.0"
L = 56.87'	L = 130.90'
T = 32.94'	T = 65.83'
R = 45.00'	R = 500.00'

BEGIN APPROACH SLAB –L– STA.13+32.96

BEGIN BRIDGE –L– STA.13+43.85

END BRIDGE –L– STA.14+46.15

END APPROACH SLAB –L– STA.14+57.04

GREU TL-3 · TYPE-111 · PROP. SBG · TYPE III · AT-1 · 33'-0" (30'-10" CLEAR) · VAR. 3' TO 4'-6" · VAR. 4'-3" TO 5'-10" · 15+00

BRIDGE SKETCH NOT TO SCALE

DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.0 Ft.
B= 2 Ft.

FROM –L– STA. 9+85 TO STA. 13+77 RT
FROM –L– STA. 14+17 TO STA. 17+75 RT

DETAIL B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
d= 1 Ft.
B= 4 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

FROM –L– STA. 14+25 TO STA. 17+25 LT

DETAIL C
TOE PROTECTION
(Not to Scale)

d= 1 Ft.
b= 1 Ft.

Type of Liner= CL B Rip-Rap

FROM –L– STA. 11+65 TO STA. 13+24 LT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 50 TONS, CL II Rip-Rap
Geotextile = 60 sy

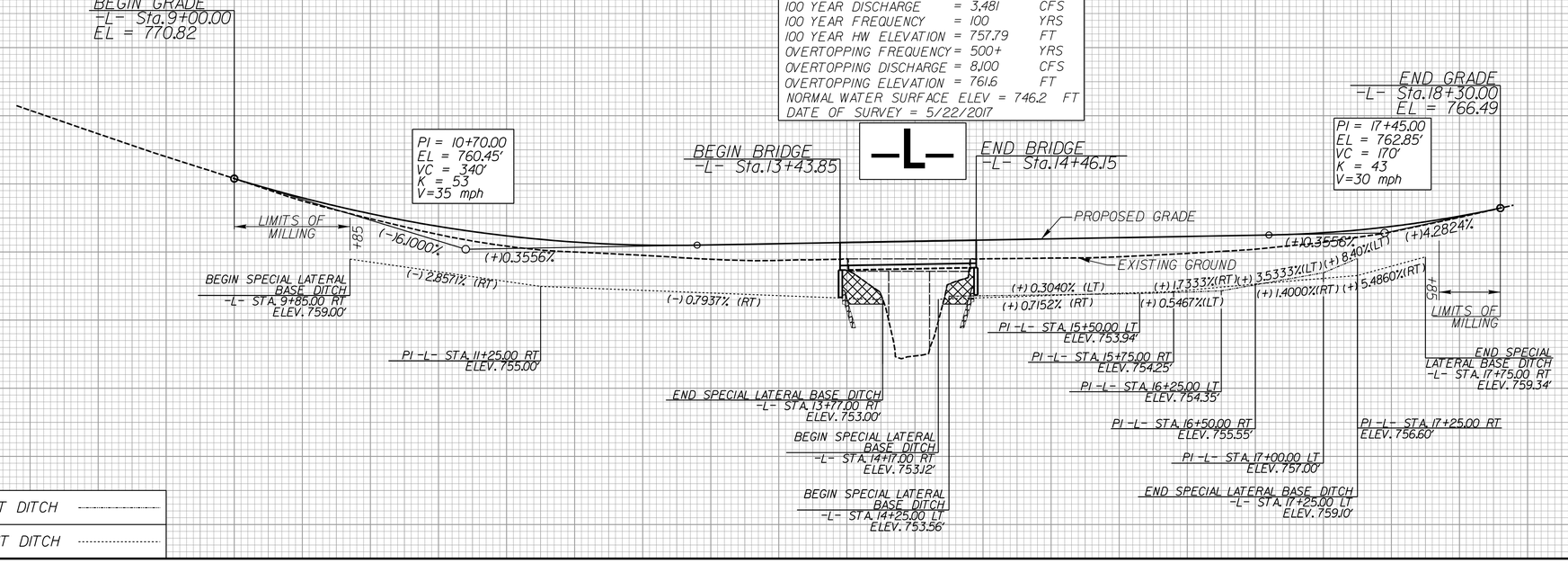
FROM STA. 13+67 TO STA. 13+86 RT
FROM STA. 14+05 TO STA. 14+27 RT
FROM STA. 14+10 TO STA. 14+25 LT

BRIDGE HYDRAULIC DATA
STR #480014 Sta.13+95.0 –L–

DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2,400	CFS
DESIGN HW ELEVATION	= 756.2	FT
100 YEAR DISCHARGE	= 3,481	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 757.79	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 8,100	CFS
OVERTOPPING ELEVATION	= 761.6	FT

NORMAL WATER SURFACE ELEV = 746.2 FT
DATE OF SURVEY = 5/22/2017

BM # 2
ELEV=756.65'
BL Sta.5+37 (40' LT)
–L– Sta.12+96.87 (38.07 LT)
RR SPIKE IN 12" PINE



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5/28/99

–DR1–

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	5

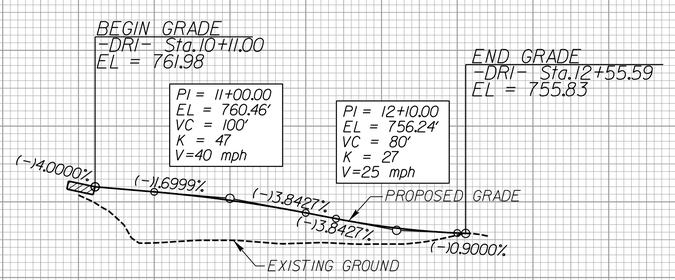
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049410 ENGINEER CATHY S. HOUSER
Docusigned by: Cathy S. Houser
6/12/2024

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 049482 ENGINEER CHRISTOPHER J. SMITH
Docusigned by: Christopher J. Smith
6/12/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR –DR1– PLAN SEE SHT. 4

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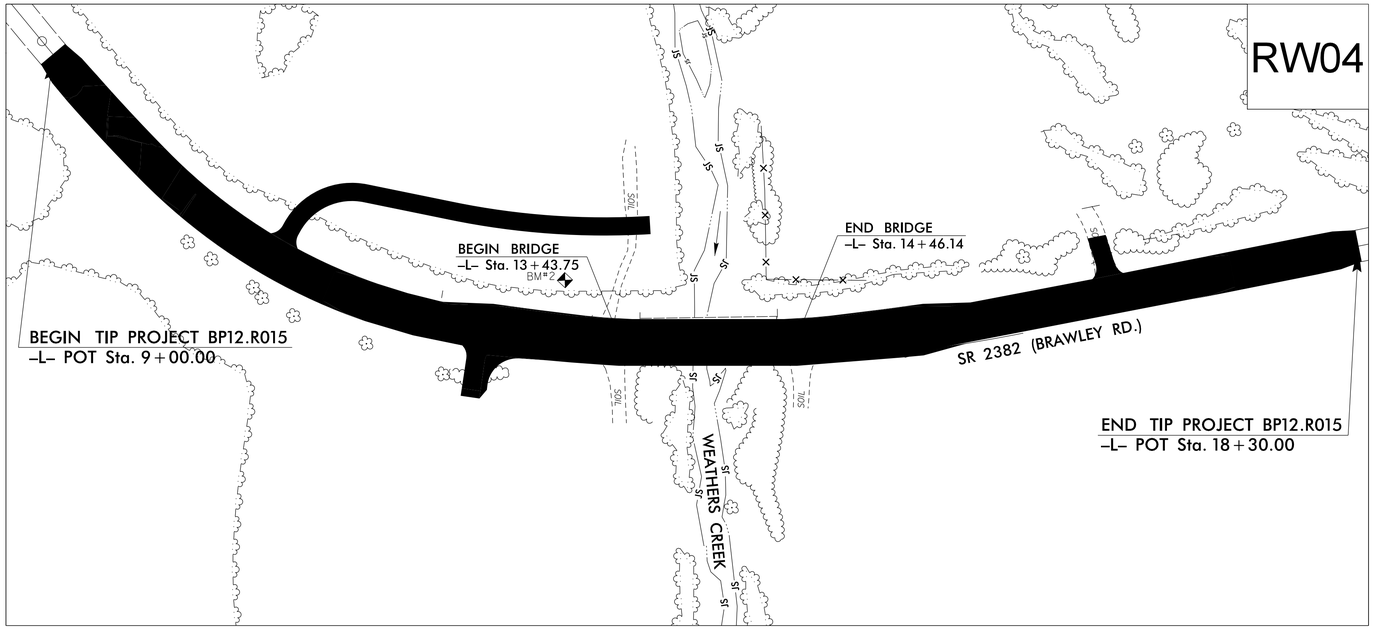
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R015	RW01	06

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

IREDELL 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 NCGS FOR MONUMENT "B4767-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 703,934.981(ft) EASTING: 1,467,205.739(ft) ELEVATION: 758.148(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999866
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4767-2" TO -L- STATION 9+00.00 IS S 21°31'30" E 556.74'(ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	*LETTING DATE:*
06/08/2024	*08/13/2024*

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5298 LAND SURVEYOR GAVIN D PROFFIT

DocuSigned by: Gavin D. Proffit 282D412268164E7...

07/17/2024

SIGNATURE: *Date:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

TIP PROJECT: BP12.R015

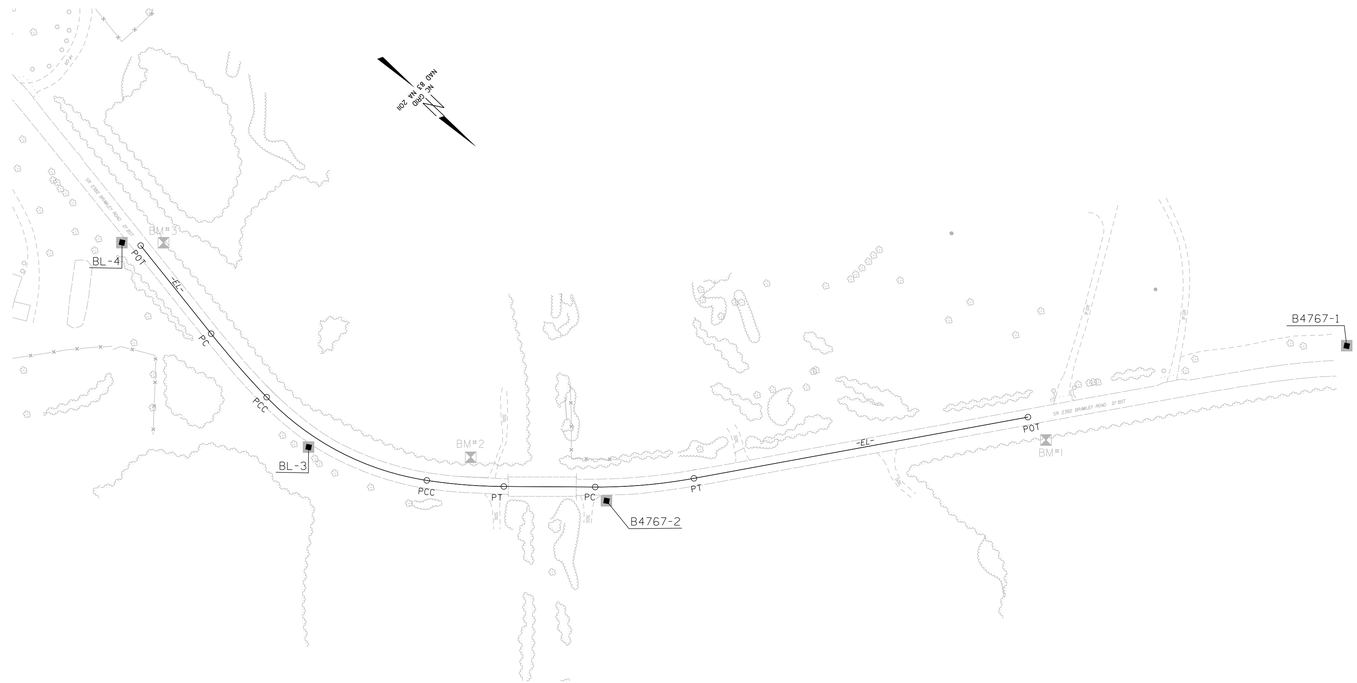
07/12/24

16-JUL-2024 10:16
S:\Units\Div12\Projects\Bridges\Iredell_48_0014_b4767_BP12_R015_BrawleyRd\LS\2-24-xxx not added to gdprofft AT LS-32652L

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

Not To Scale



SEE SHEET RW02C-2 FOR FURTHER ALIGNEMENT DETAILS

PROJECT REFERENCE NO.	SHEET NO.
BP12-R015	RW02C-1

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5298 LAND SURVEYOR GAVIN D PROFFIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, Gavin D. Proffit, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to verify the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: May 27th, 2024
Datum/Epoch:NAD 83/NA 2011
Published/Fixed-control use: Published
Localized around: B4767-2
Northing:703934.981
Easting:1467205.739
Combined grid factor: 0.999866
Geoid model: Geoid 12b
Units: US Survey Feet

I also certify that the Baseline Control for this project was verified under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from May 27th, 2024 to July 15th, 2024 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of June, 2024.

DocuSigned by:
Gavin D. Proffit
282D412268164E7...

Professional Land Surveyor L-5298

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.

06/07/24

REVISIONS

16-JUL-2024 10:16
S:\Units\Div12\Projects\Bridges\lr-edell_48_0014_b4767_BP12_R015_BrawleyRd\LS12-24-xxx not added to database\New RW Sheets\bp12-r015_LS_rw02c-1.dgn
gdproffit AT LS-329652L

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP12-R015	RW02C-2

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5298 LAND SURVEYOR GAVIN D PROFFIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	703258.161	1467389.231							
LINE			N 07°28'09.3" E	148.88					
PC	703405.781	1467408.585							
CURVE			N 04°55'00.2" E	111.34	05°06'18.1"(LT)	04°35'01.2"	111.37	55.72	1250.00
PCC	703516.709	1467418.128							
CURVE			N 16°24'52.3" W	238.22	37°33'26.9"(LT)	15°29'07.2"	242.54	125.81	370.00
PCC	703745.217	1467350.811							
CURVE			N 39°22'18.1" W	102.01	08°21'24.8"(LT)	08°11'06.4"	102.10	51.14	700.00
PT	703824.074	1467286.103							
LINE			N 43°33'00.5" W	120.63					
PC	703911.500	1467202.993							
CURVE			N 48°54'44.3" W	130.83	10°43'27.5"(LT)	08°11'06.4"	131.02	65.70	700.00
PT	703997.484	1467104.385							
LINE			N 54°16'28.0" W	448.28					
POT	704259.236	1466740.460							

BL

POINT	DESC.	NORTH	EAST	ELEVATION
4	BL-4	703237.6363	1467403.3520	781.71
3	BL-3	703602.4154	1467427.2710	760.86
2	B4767-2	703934.9810	1467205.7390	758.15
1	B4767-1	704497.4090	1466380.8800	795.58

****
BM1 ELEVATION = 781.02
N 704297 E 1466746
EL STATION 23+05.00
N 07°56'20.7" E DIST 38.50
RAILROAD SPIKE AT BASE OF 12" PINE
****
****
BM2 ELEVATION = 756.65
N 703766 E 1467289
EL STATION 15+58.00 37 LEFT
RAILROAD SPIKE IN 12" PINE
****
****
BM3 ELEVATION = 779.40
N 703277 E 1467366
EL STATION 10+16.00 26 LEFT
RAILROAD SPIKE AT BASE OF 18" OAK
****

I, Gavin D. Proffit, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to verifiy the survey:

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: May 27th, 2024
Datum/Epoch:NAD 83/NA 2011
Published/Fixed-control use: Published
Localized around: B4767-2
Northing:703934.981
Easting:1467205.739
Combined grid factor: 0.999866
Geoid model: Geoid 12b
Units: US Survey Feet

I also certify that the Baseline Control for this project was verified under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from May 27th, 2024 to July 15th, 2024 , and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2024.

DocuSigned by:
Gavin D. Proffit
282D41226B164E7...

Professional Land Surveyor L-5298

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.

REVISIONS

6/7/24

E:\NLS\Projects\Bridges\Iredell.48.0014_b4767.BP12.R015.BrawleyRd\NLS\12-24-xxx not added to database\New RW Sheets\bp12-r015_LS_rw02c-2.dgn
15-JUL-2024 09:16
User:gdproffit
$$$$ LS 329621

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP12-R015	RW02D-1

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5298 LAND SURVEYOR GAVIN D PROFFIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

This 16th day of July, 2024.

DocuSigned by:
Gavin D. Proffit
282D412268164E7...

Professional Land Surveyor L-5298

L

TYPE	STATION	NORTH	EAST
POT	7+40.00	703258.4168	1467389.2648
PC	8+88.63	703405.7813	1467408.5853
PCC	10+00.00	703516.7091	1467418.1277
PCC	12+37.29	703740.9083	1467353.8043
PT	16+01.86	704000.3959	1467100.3360
POT	18+39.63	704139.2328	1466907.3057

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	703615.9661	1467408.7828
PC	10+23.89	703610.2451	1467385.5905
PT	10+80.76	703630.4589	1467336.4224
PC	11+39.53	703680.6022	1467305.7588
PT	12+70.44	703782.1198	1467223.7074

NOTES:

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

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

REVISIONS

6/7/24

15-JUL-2024 10:16
S:\Projects\Bridges\redell.48.0014_b4767_BP12_R015_BrawleyRd\LS\12-24-xxx not added to database\New RW Sheets\bp12-r015_LS_rw02d-1.dgn
gdproffit AT LS-329652

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
BP12-R015	RW03E-1

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5298 LAND SURVEYOR GAVIN D PROFFIT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Gavin D. Proffit , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed and/or verified from May 24th to July 15 2024, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2024.

DocuSigned by:
Gavin D. Proffit
262D41226B164E7...

Professional Land Surveyor L-5298

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+25.00	30.00	703746.7614	1467385.8824
L	12+25.00	50.00	703757.5009	1467402.7544
L	12+37.29	50.00	703769.1429	1467395.0694
L	16+01.86	50.00	704040.9871	1467129.5312
L	16+01.86	30.00	704024.7506	1467117.8531

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L	9+85.00	45.00	703499.3303	1467462.3552	
L	9+85.00	30.00	703500.1288	1467447.3765	
L	10+50.00	45.00	703570.8718	1467461.6156	
L	11+00.00	45.00	703626.1816	1467452.6080	
L	11+50.00	45.00	703679.7735	1467436.2310	
L	11+60.00	-30.00	703661.6038	1467362.7604	
L	11+60.00	-40.00	703657.7911	1467353.5158	
L	12+10.00	-55.00	703690.2097	1467320.8136	
L	12+10.00	-43.52	703695.9757	1467330.7385	
L	12+35.00	-55.00	703708.2381	1467309.5085	** NOT SET
L	12+75.00	-40.00	703747.8832	1467299.7756	
L	13+25.00	50.00	703842.7233	1467340.0763	
L	13+45.00	-33.51	703804.8750	1467262.9611	
L	13+45.00	-40.00	703800.6796	1467258.0068	
L	13+70.00	60.00	703885.2666	1467317.0030	
L	14+15.00	-35.14	703853.9557	1467216.3036	
L	14+15.00	-55.00	703840.1417	1467202.0378	
L	14+45.00	50.00	703935.4464	1467255.2865	
L	15+00.00	-50.00	703899.4338	1467147.0250	
L	15+38.00	-47.00	703925.1391	1467121.3000	
L	16+25.00	-50.00	703973.3176	1467052.3534	
L	17+25.00	-30.00	704047.9444	1466982.8492	
L	17+25.00	-40.00	704039.8262	1466977.0101	
L	17+90.00	40.00	704142.7257	1466970.9539	
L	18+10.00	30.00	704146.2856	1466948.8784	

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED MAY TO JULY OF 2024.

REVISIONS

6/7/24

$E-VU1-2024_1016
S:\Utilities\Projects\Bridges\redell_48.0014_b4767_BP12_R015_BrawleyRd\LS\12-24-xxx not added to database\New RW Sheets\bp12-r015_LS_rw03e-1.dgn
gdproffit AT LS329652

PROJECT REFERENCE NO.	SHEET NO.
BP12-R015	RW04

Location and Surveys

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION 12 LOCATION AND SURVEYS
2312 KINGS ROAD EXTENSION
SHELBY, NC 28152

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5298 LAND SURVEYOR GAVIN D PROFFIT

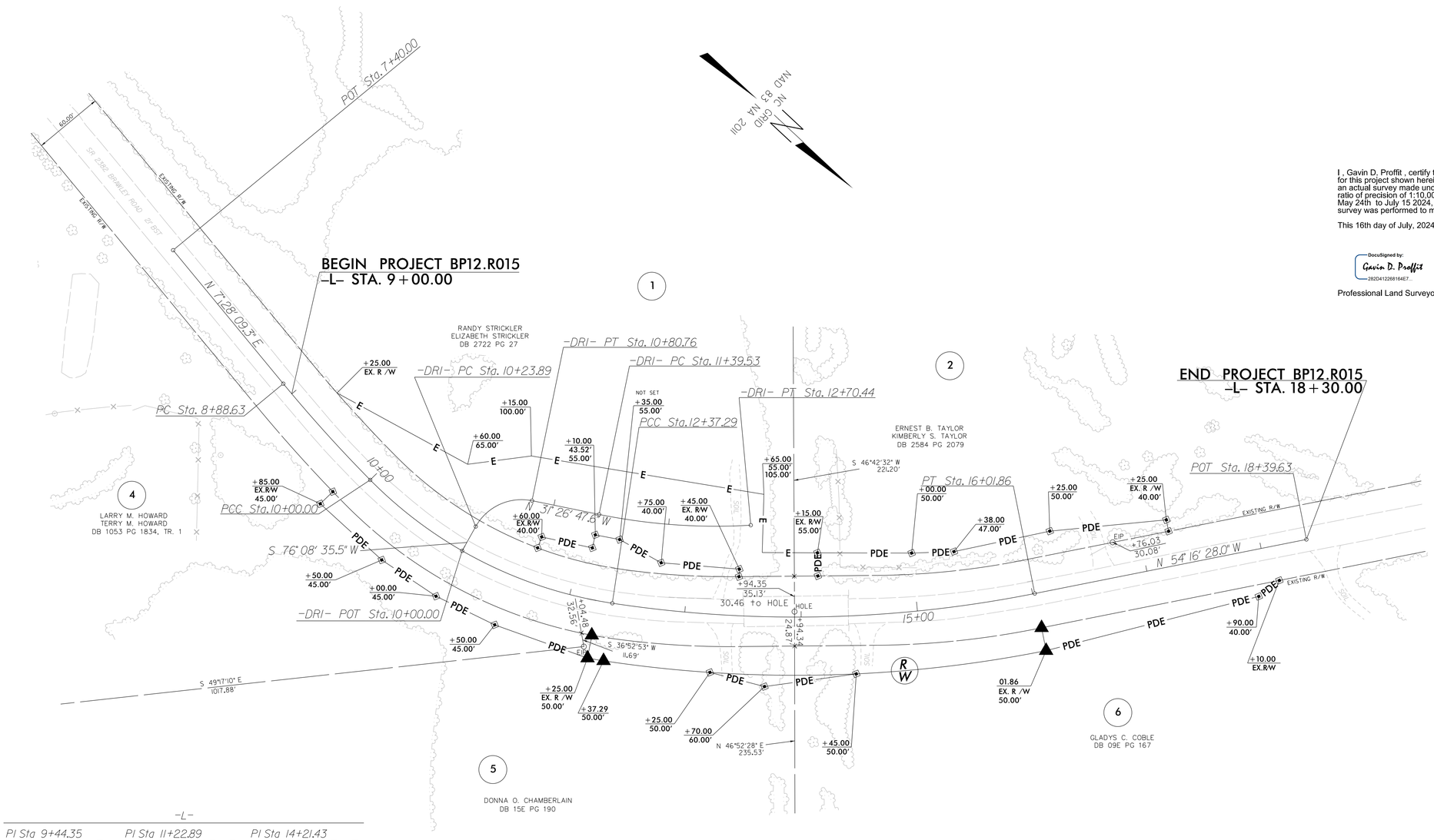
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I , Gavin D. Proffit , certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed and/or verified from May 24th to July 15 2024, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of July, 2024.

DocuSigned by:
Gavin D. Proffit
282D41226B164E7...

Professional Land Surveyor L-5298



-L-

PI Sta 9+44.35	PI Sta 11+22.89	PI Sta 14+21.43
△ = 5° 06' 18.1" (LT)	△ = 36° 44' 42.5" (LT)	△ = 19° 53' 36.7" (LT)
D = 4° 35' 01.2"	D = 15° 29' 07.2"	D = 5° 27' 24.3"
L = 111.37'	L = 237.29'	L = 364.57'
T = 55.72'	T = 122.89'	T = 184.14'
R = 1250.00'	R = 370.00' *	R = 1,050.00'
	SE = 0.04	SE = 0.04
	V = 35 mph	V = 50 mph

-DRI-

PI Sta 11+40.72	PI Sta 10+66.80
△ = 4° 45' 53.4" (LT)	△ = 80° 36' 49.6" (RT)
D = 7° 09' 43.1"	D = 136° 25' 06.7"
L = 66.53'	L = 59.09'
T = 33.28'	T = 35.63'
R = 800.00'	R = 42.00'

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED MAY TO JULY OF 2024.

REVISIONS

R/W REVISION - 10-18-2023 - REVISED DRIVEWAY FOR PARCEL 1,ADDED TCE AND REVISED PDE (csh)
R/W REVISION - 12-4-2023 - REVISED DRIVEWAY FOR PARCEL 1TO TIE TO SURVEYED EXISTING DRIVEWAY,AND UPDATED PROPERTY LINES AND NAMES.(csh)
R/W REVISION - 7-12-2024 - REVISED PDE ON PARCEL 1PER THE DIVISION'S REQUEST. (csh)

17-JUL-2024 08:37
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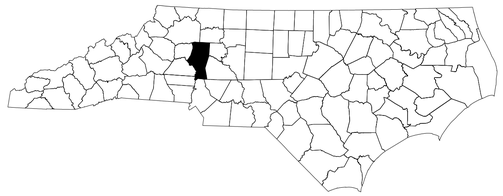
gdproffit AT [3239652]

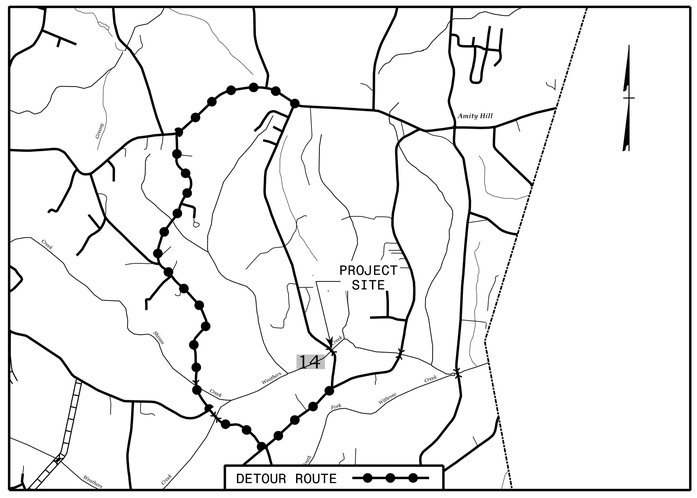
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

IREDELL COUNTY



LOCATION: BRIDGE NO. 14 OVER WEATHERS CREEK ON SR 2382 (BRAWLEY RD.)



INDEX OF SHEETS

SHEET NO.
TMP-1

PROJECT: BP12.R015
BRIDGE: 14 IREDELL COUNTY

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: (980) 552-4160
FAX: (704) 480-5401

JOSH WHITE, PE — DIVISION BRIDGE MANAGER

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

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APPROVED: Docusigned by: Kevin Bisby 6/12/2024
DATE: 6/12/2024

SEAL

6/12/2024
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PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	TMP-1A

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ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1135.01	CONES
1145.01	BARRICADES
1150.01	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

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

SIGNALS

EXISTING PROPOSED TEMPORARY (TEMP)

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

APPROVED: DocuSigned by: Kevin Bisby BDD8D2828912474...

DATE: 6/12/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

6/12/2024
48004_TMP_PSH01A.dgn
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PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	TMP-1B

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GENERAL NOTES

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

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

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) 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.

B) 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.

C) 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.

D) 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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

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

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

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

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

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

TRAFFIC CONTROL DEVICES

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

PAVEMENT MARKINGS AND MARKERS

K) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.

TRAFFIC CONTROL PHASING

PHASE I

STEP 1:
ERECT ADVANCE WARNING SIGNS FOR THE SR 2382 (BRAWLEY RD) OFFSITE DETOUR, KEEPING SIGNS COVERED. REFER TO RDWY STD 1101.03 SHEET 1 AND TMP-2 FOR OFFSITE DETOUR DETAIL.

STEP 2:
USING RDWY STD 1101.02, CONSTRUCT -DR1- AND DRIVEWAY ON THE NORTH SIDE OF BRAWLEY RD. BLEND TO THE EXISTING PAVEMENT ELEVATION USING INCIDENTAL STONE OR OTHER METHOD APPROVED BY THE ENGINEER. (SEE TMP-3)

PHASE II

STEP 1:
CLOSE SR 2382 (BRAWLEY RD) TO TRAFFIC USING RDWY STD 1101.03 SHEET 1. UNCOVER ALL ADVANCE WARNING SIGNS AND IMPLEMENT THE OFFSITE DETOUR. (SEE TMP-3)

STEP 2:
CONSTRUCT THE PROPOSED BRIDGE AND ROADWAY. USE FLAGGERS AS NEEDED TO PROVIDE PROPERTY ACCESS. (SEE TMP-3)

STEP 3:
APPLY FINAL PAVEMENT MARKINGS PER THE PAVEMENT MARKING PLAN.

STEP 4:
REMOVE THE OFFSITE DETOUR SIGNS AND TRAFFIC CONTROL DEVICES AND OPEN SR 2382 (BRAWLEY RD) TO TRAFFIC.

APPROVED: DocuSigned by: Kevin Bixby BDD8D2628912474...
DATE: 6/12/2024
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BIXBY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TRANSPORTATION OPERATIONS PLAN

6/12/2024
48004_TMP_PSH01B.dgn
kbixby

PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	TMP-2

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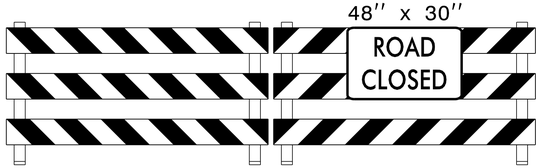
R11-2
48" x 30"



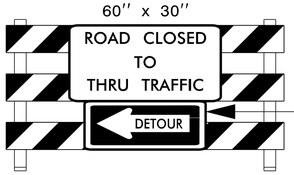
TYPE III BARRICADE(S)
1

R11-3
60" x 30"

M4-10R
48" x 18"

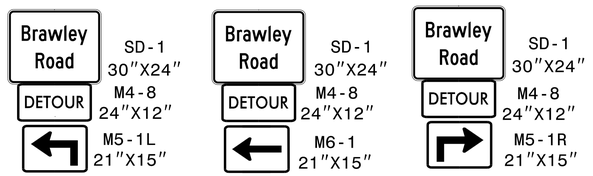
TYPE III BARRICADE
2

R11-4
60" x 30"



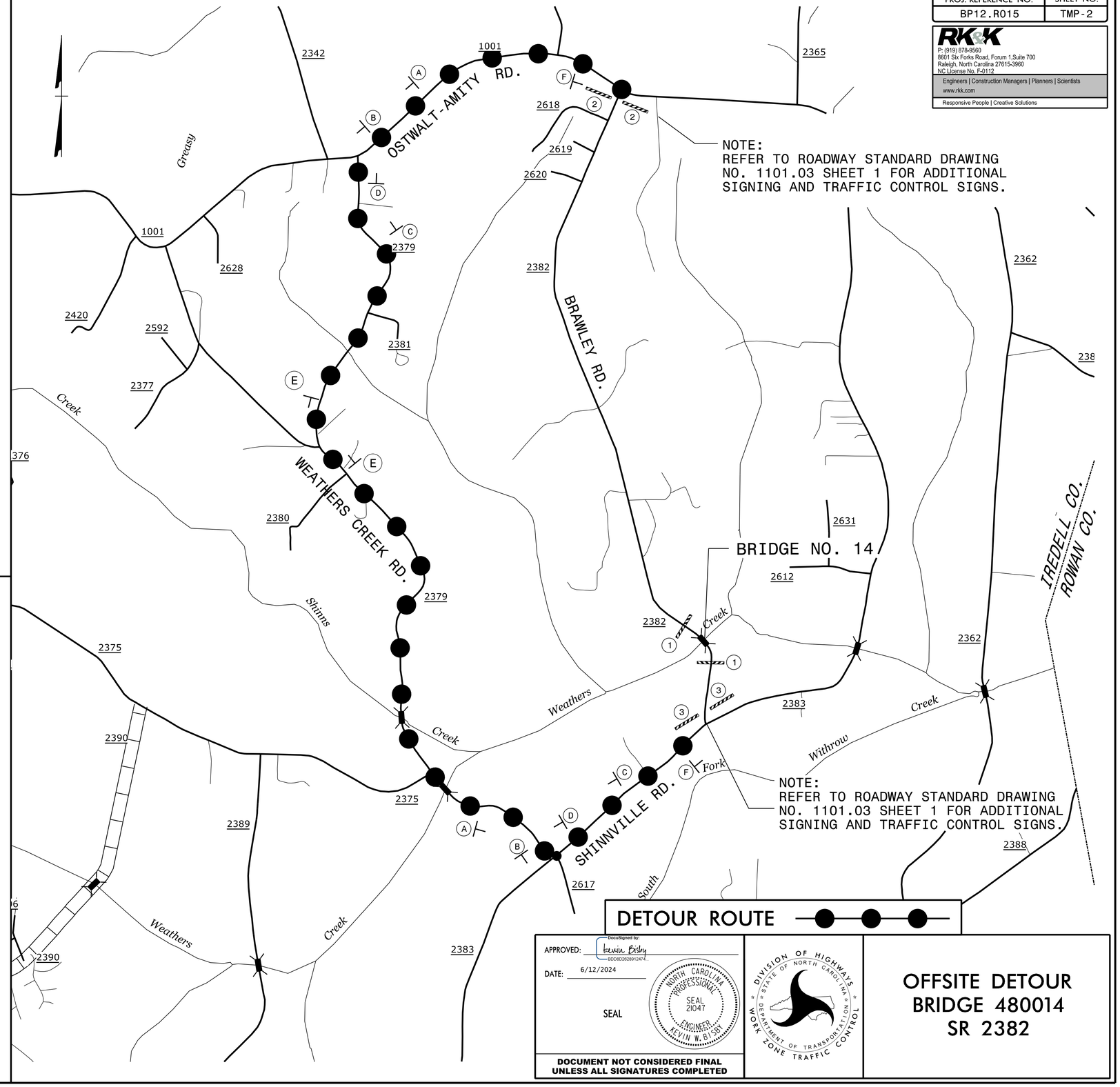
M4-10L
48" x 18"

TYPE III BARRICADE
3



SD-1 30"X24"	SD-1 30"X24"	SD-1 30"X24"
M4-8 24"X12"	M4-8 24"X12"	M4-8 24"X12"
M5-1L 21"X15"	M6-1 21"X15"	M5-1R 21"X15"
A	B	C
SD-1 30"X24"	SD-1 30"X24"	SD-1 30"X24"
M4-8 24"X12"	M4-8 24"X12"	M4-8a 24"X12"
M6-1 21"X15"	M6-3 21"X15"	
D	E	F

NOTE: SEE TMP-2A 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.

DETOUR ROUTE

APPROVED: DocuSigned by: Kevin Bisby BDD8D2628912472...
DATE: 6/12/2024
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

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

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OFFSITE DETOUR
BRIDGE 480014
SR 2382

6/12/2024
480014_TMP_PSH02.dgn
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PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	TMP-2A

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

SIGN WIDTH: 2′-6″
HEIGHT: 2′-0″
TOTAL AREA: 5.0 Sq.Ft.

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

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

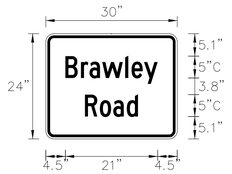
SYMBOL	X	Y	WID	HT

MAT'L: 0.080″ (2.0 mm) ALUMINUM

USE NOTES: 1,2

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

DESIGN BY: K. Bisby
PROJECT ID: BP12.R015
CHECKED BY: B. Holden
LOCATION: SEE PLAN
Apr 08, 2024
DIV: 12



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

		B	r	a	w	l	e	y																		Series/Size Text Length
	4.5	3.5	1.9	2.9	5.2	1.5	2.9	3.1	4.5																	C 2000 21.1
		R	o	a	d																					C 2000
	9	3.4	3	3.1	2.6	9																				12.1

FILENAME: 14_SD1

NORTH CAROLINA D.O.T. SIGN DETAIL

APPROVED: DocuSigned by: Kevin Bisby BDD8D2828912474...
DATE: 6/12/2024
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SIGN DESIGN

6/12/2024
48004_TMP_PSH02A.dgn
KBisby

PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	TMP-3

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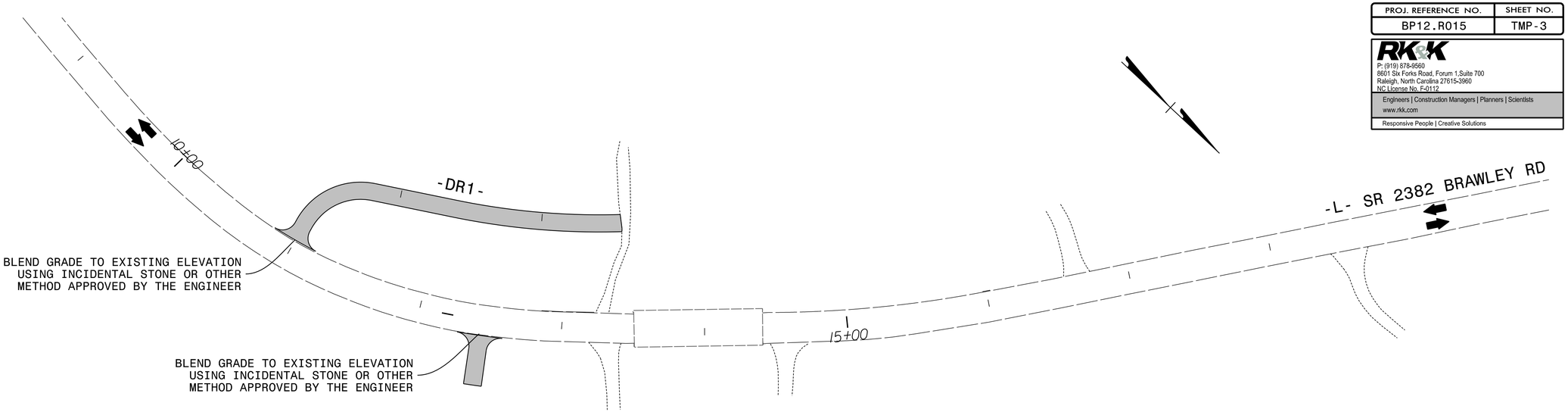
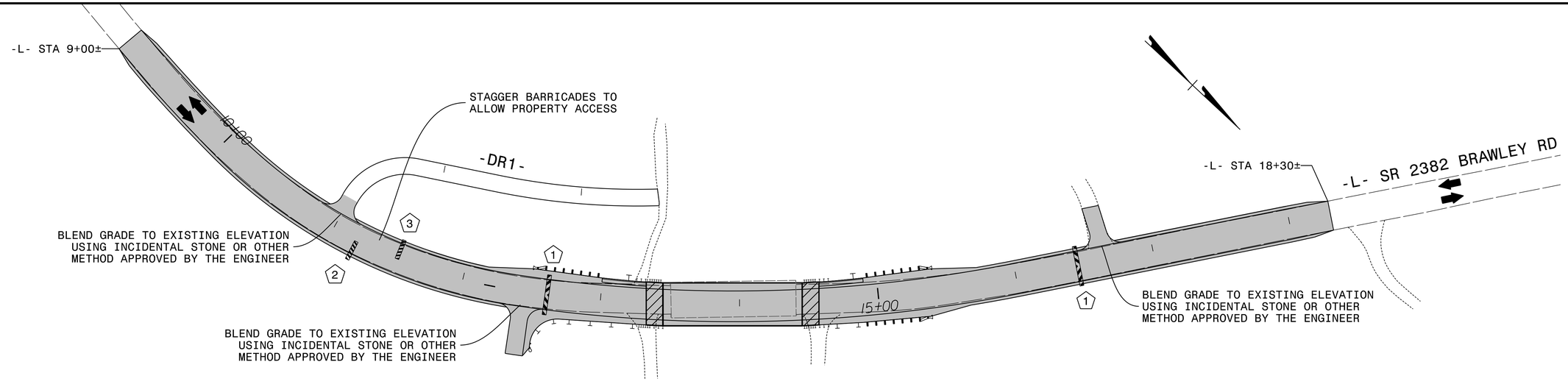
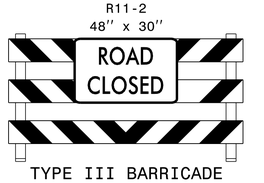
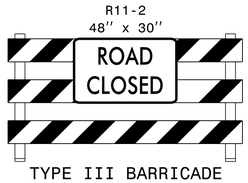


PHASE I DETAIL





TYPE III BARRICADE
1



TYPE III BARRICADE
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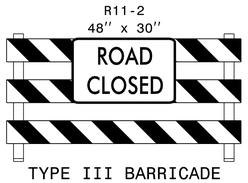

TYPE III BARRICADE
3

PHASE II DETAIL

APPROVED: DocuSigned by: Kevin Bisby BDD8D2628912474...
DATE: 6/12/2024
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASE I AND II DETAILS

6/12/2024
48004_TMP_PSH03.dgn
kbisby

PROJECT	SHEET NO.
BP12.R015	PMP-1

APPROVED: DocuSigned by: Kevin Bisby 6D0B02B289124F4...

DATE: 6/11/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISBY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
IREDELL COUNTY
LOCATION: BRIDGE No. 14 OVER WEATHERS CREEK ON SR 2382 (BRAWLEY RD.)

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION

PAVEMENT MARKING SCHEDULE

PAINT

P1 - 4″ WHITE EDGE LINE

P13 - 4″ YELLOW DOUBLE CENTER LINE

INDEX

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
-L- LINE	PAINT	NONE

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

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

D) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

CONTRACT: 17BP.12.R.83

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

R. B. ROACH, P.E., CPM — STATE SIGNING & DELINEATION ENGINEER

K. L. JORDAN — SIGNING & DELINEATION REGIONAL ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RK&K

P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

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Responsive People | Creative Solutions

6/4/2024
4:40:07 PM
kbisby
17BP_12_R_83_PMP_PSH01.dgn

PROJECT	SHEET NO.
BP12.R015	PMP-2

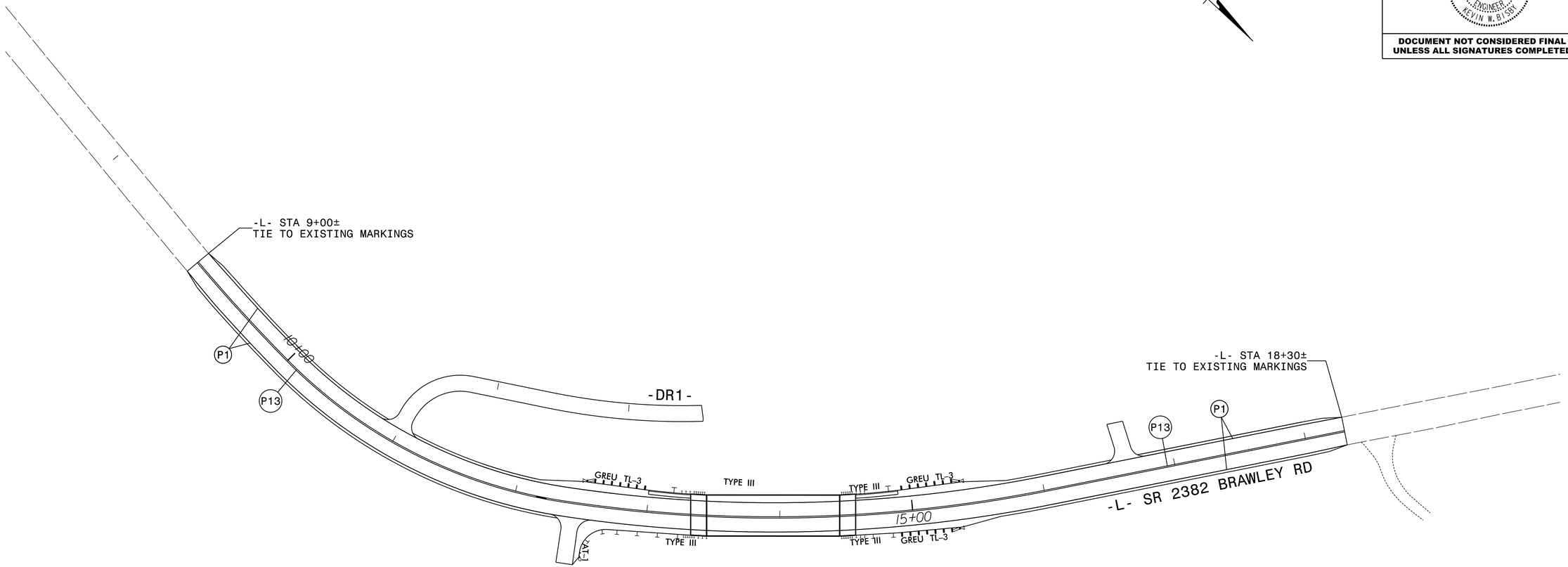
APPROVED: DocuSigned by: Kevin Bishy 8D0B02B2B912474...

DATE: 6/11/2024

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BISHY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



11' LANES

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PAVEMENT MARKING DETAIL

6/10/2024
4:08:01 PM
K:\DEPT\...\PMP_PSH02.dgn
KDIEHL

PROJECT: BP12.R015

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R015	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP12.R015.1		P.E.
BP12.R015.2		ROW & UTIL.
BP12.R015.3		CONST.

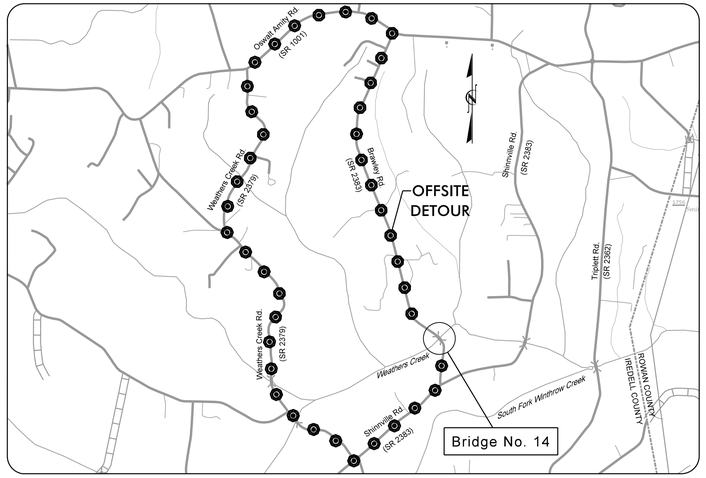
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

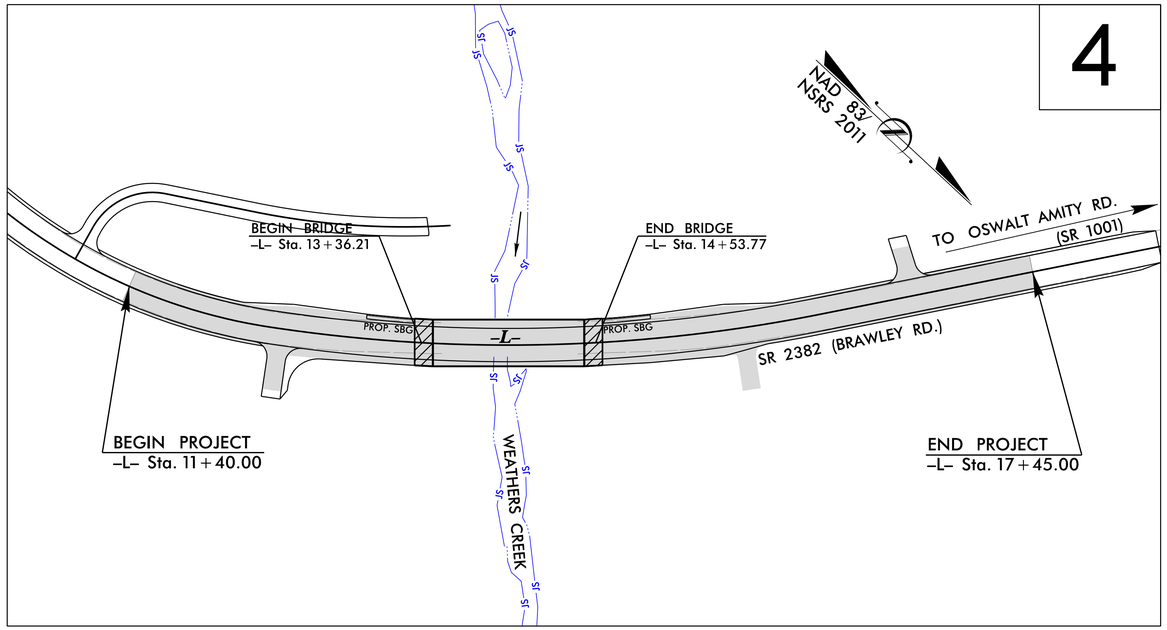
IREDELL COUNTY

LOCATION: BRIDGE NO. 14 OVER WEATHERS CREEK ON SR 2382 (BRAWLEY ROAD)

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



VICINITY MAP
(NOT TO SCALE)



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

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.

NOTES:
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
A DESIGN EXCEPTION IS NEEDED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL STOPPING SIGHT DISTANCE.

GRAPHIC SCALE

50 25 0 50 100
PLANS

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

RK&K

Prepared in the Office of:
RK&K, LLP
8601 SIX FORKS ROAD, SUITE 700
RALEIGH, NORTH CAROLINA 27609
NC LINCENSE NO. F-0112
1-888-521-4455 OR 919-878-9560

Designed by:
MATT BAILEY, EI — *4295*
NAME — *LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	EC-01A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

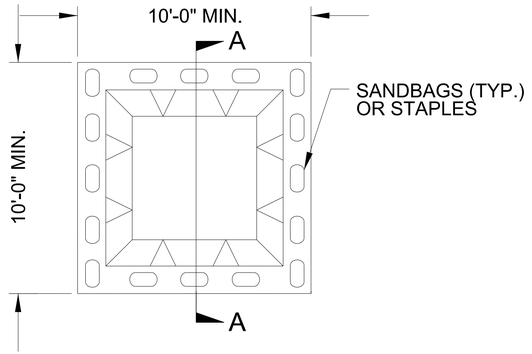
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

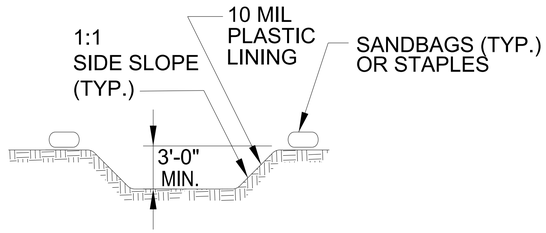
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	EW EW EW
1636.03	Coir Fiber Wattle Barrier	CFW CFW CFW

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	EC-02
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

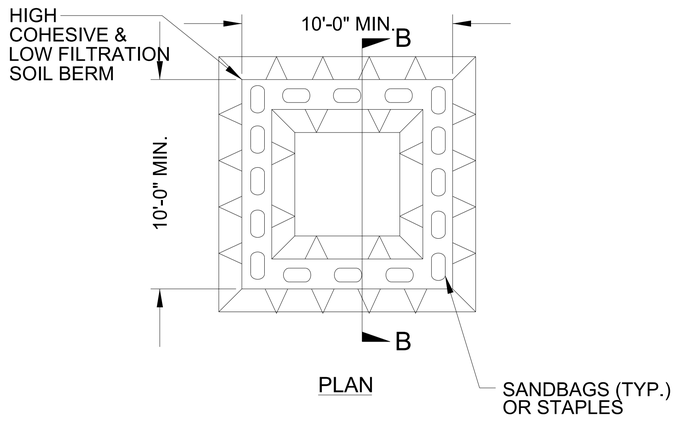
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

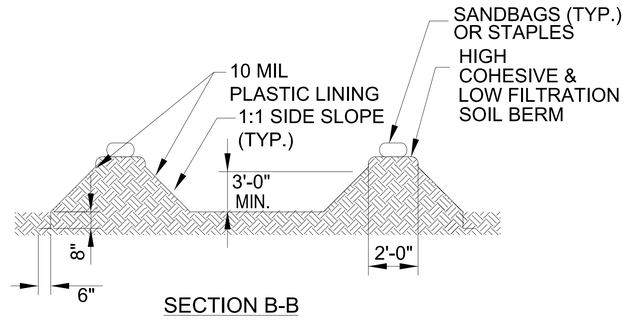
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN



SECTION B-B

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

STRAW MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+75	13+76	RT	55
4	-L-	14+17	15+25	RT	60
4	-L-	15+25	16+49	RT	120
				SUBTOTAL	235
	EROSION CONTROL MATTING IN DITCHES				235
	EROSION CONTROL MATTING ON SLOPES				270
	MISC MATTING FOR EROSION CONTROL				7685
				TOTAL	8190
				SAY	8200

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	EC-3A
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.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/2001

BEGIN PROJECT BP12.R015
-L- STA. 9+00.00

END CONSTRUCTION
-DR1- STA. 12+55.59

END PROJECT BP12.R015
-L- STA. 18+30.00

N 71°28'09.3" E

-L- PC Sta. 8+88.63

-DRI- PC Sta. 10+23.89

-DRI- PT Sta. 10+80.76

-DRI- PC Sta. 11+39.53

-L- PCC Sta.12+37.29

-DRI- PT Sta. 12+70.44

-L- PT Sta. 16+01.86

-L- POT Sta. 18+39.63

-L- PCC Sta.10+00.00

S 76°08'35.5" W

N 31°26'47.6" W

N 54°16'28.0" W

-DRI- POT Sta. 10+00.00 =
-L- POC Sta. 11+00.00

15+00

1 RANDY STRICKLER, ELIZABETH STRICKLER, DB 2722 PG 27

2 ERNEST B. TAYLOR, KIMBERLY S. TAYLOR, DB 2584 PG 2079

4 LARRY M. HOWARD, TERRY M. HOWARD, DB 1053 PG 1834, TR 1

5 DONNA O. CHAMBERLAIN, DB 15E PG 190

6 GLADYS C. COBLE, DB 09E PG 167

SR 2382 BRAWLEY ROAD 2K BST

BM#1

TOE PROTECTION SEE DETAIL C .37 TON CL B RIP RAP W/107 SY GEO FAB

2 TON CL II RIP RAP W/ 75 SY GEO FAB

RIP RAP AT EMBANKMENT SEE DETAIL D

SPECIAL LATERAL BASE DITCH SEE DETAIL B 164 TON CL B RIP RAP W/447 SY GEO FAB DDE=4 CY

GRADE TO DRAIN 15" RCP-III

GRADE TO DRAIN 2 RCP

REMOVE <040> TB 2GI

REMOVE RIP RAP AT EMBANKMENT SEE DETAIL D

<040> SPECIAL LATERAL 80 TON CL II RIP RAP W/85 SY GEO FAB SEE DETAIL A DDE=40 CY

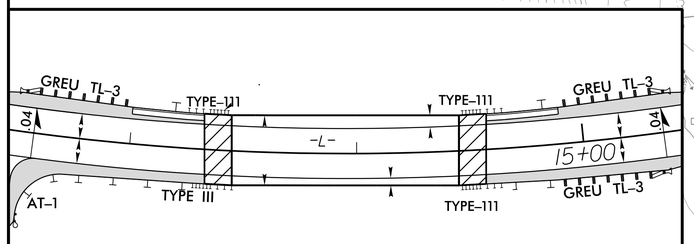
RIP RAP AT EMBANKMENT SEE DETAIL D

90 TON CL II RIP RAP W/95 SY GEO FAB

REMOVE <040> SPECIAL LATERAL BASE DITCH SEE DETAIL A DDE=41 CY

SPECIAL LATERAL BASE DITCH SEE DETAIL A DDE=41 CY

* DESIGN EXCEPTION REQUIRED
ALL DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS 12' UNLESS OTHERWISE NOTED.



BRIDGE SKETCH NOT TO SCALE

UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE.

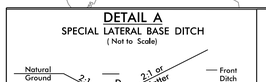
PLACE TEMPORARY ROCK SILT CHECKS TYPE A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

Clearing and Grubbing Phase

Both Phases

DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 2 Ft.

FROM -L- STA. 9+85 TO STA. 13+77 RT
FROM -L- STA. 14+17 TO STA. 17+75 RT

DETAIL B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
d= 1 Ft.
B= 4 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

FROM -L- STA. 14+25 TO STA. 17+25 LT

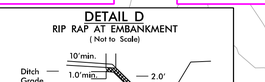
DETAIL C
TOE PROTECTION
(Not to Scale)

d= 1 Ft.
b= 1 Ft.

Type of Liner= CL B Rip-Rap

FROM -L- STA. 11+65 TO STA. 13+24 LT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)

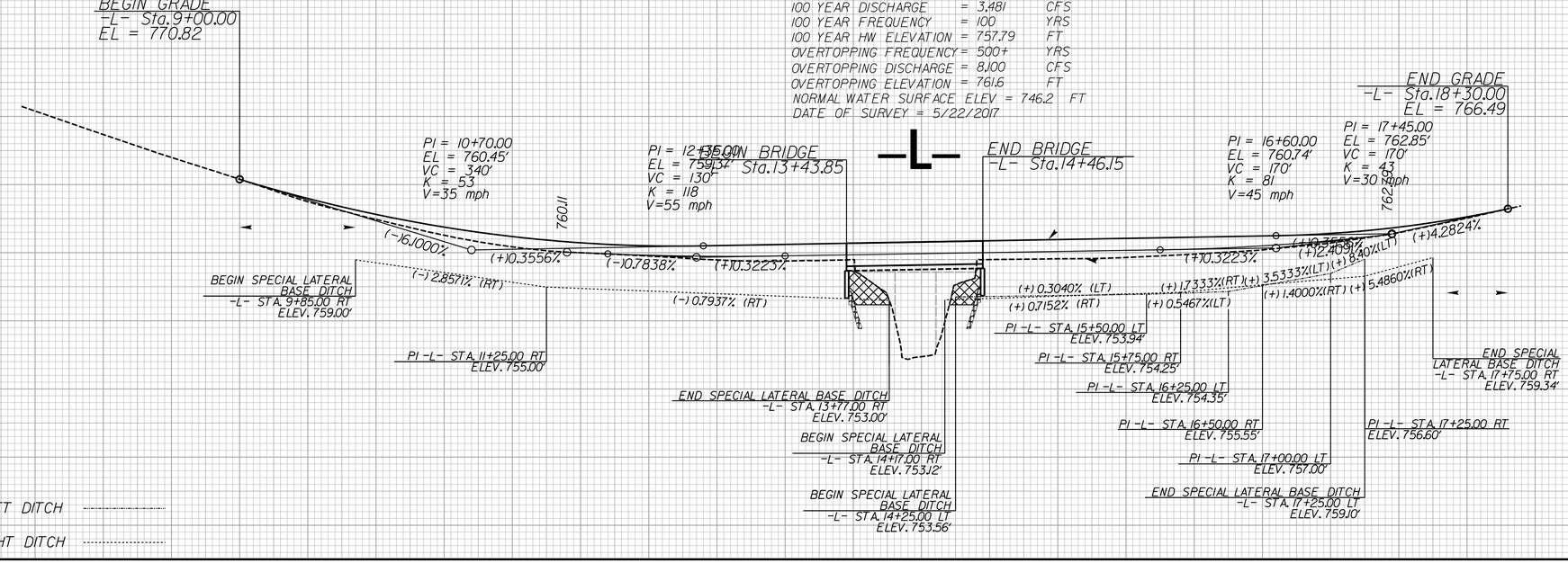


Type of Liner= 50 TONS,CL II Rip-Rap
Geotextile= 60 sy

FROM STA. 13+67 TO STA. 13+86 RT
FROM STA. 14+05 TO STA. 14+27 RT
FROM STA. 14+10 TO STA. 14+25 LT

BRIDGE HYDRAULIC DATA
STR #480014 Sta.13+95.0 -L-

DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2,400	CFS
DESIGN HW ELEVATION	= 756.2	FT
100 YEAR DISCHARGE	= 3,481	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 757.79	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 8,100	CFS
OVERTOPPING ELEVATION	= 761.6	FT
NORMAL WATER SURFACE ELEV	= 746.2	FT
DATE OF SURVEY	= 5/22/2017	



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Chester Bullock

PROJECT REFERENCE NO.	SHEET NO.
BP12.R015	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

8/17/99

BEGIN PROJECT BP12.R015
-L- STA. 9+00.00

END CONSTRUCTION
-DR1- STA. 12+55.59

END PROJECT BP12.R015
-L- STA. 18+30.00

NAD 83/2001

1 RANDY STRICKLER
ELIZABETH STRICKLER

2 ERNEST B. TAYLOR
KIMBERLY S. TAYLOR

4 LARRY M. HOWARD
TERRY M. HOWARD

5 DONNA O. CHAMBERLAIN

6 GLADYS C. COBLE

-DRI- PC Sta. 10+23.89
-DRI- PT Sta. 10+80.76
-DRI- PC Sta. 11+39.53
-DRI- PT Sta. 12+70.44
-L- PC Sta. 8+88.63
-L- PCC Sta. 10+00.00
-L- PCC Sta. 12+37.29
-L- PT Sta. 16+01.86
-L- POT Sta. 18+39.63
-DRI- POT Sta. 10+00.00 =
-L- POC Sta. 11+00.00

N 71° 28' 09.3" E
N 31° 26' 47.6" W
S 76° 08' 35.5" W
N 54° 16' 28.0" W

162.98

* DESIGN EXCEPTION REQUIRED
ALL DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED.
ALL DRIVEWAY WIDTHS 12' UNLESS OTHERWISE NOTED.

FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-16

BM#1

SR 2382 BRAWLEY ROAD 21' BST

BEGIN APPROACH SLAB
-L- STA.13+32.96
BEGIN BRIDGE
-L- STA.13+43.85
END BRIDGE
-L- STA.14+46.15
END APPROACH SLAB
-L- STA.14+57.04
GREU TL-3
TYPE-111
PROP. SBG
TYPE III
AT-1
33'-0" OD
30'-10" CLEAR
VAR. 3:1 TO 4:1
15+00

BRIDGE SKETCH
NOT TO SCALE

Matting For Erosion Control
Final Phase
Both Phases

UTILIZE SPECIAL STILLING BASIN(S) WHERE APPLICABLE

Place Matting for Erosion Control on Slope as Work Allows.

DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1 or Flatter, Front Ditch Slope, B
Min. D= 1.0 Ft.
B= 2 Ft.

FROM -L- STA. 9+85 TO STA. 13+77 RT
FROM -L- STA. 14+17 TO STA. 17+75 RT

DETAIL B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, d, 2:1, D, 2:1 or Flatter, Front Slope Ditch, Geotextile, B
Tuck Geotextile a Minimum of 1ft (TYP)
Min. D= 1 Ft.
d= 1 Ft.
B= 4 Ft.
Type of Liner= CL B Rip-Rap, Keyed-In
FROM -L- STA. 14+25 TO STA. 17+25 LT

DETAIL C
TOE PROTECTION
(Not to Scale)

Natural Ground, b, 2:1 or Flatter Fill Slope, d, Geotextile
d= 1 Ft.
b= 1 Ft.
Type of Liner= CL B Rip-Rap
FROM -L- STA. 11+65 TO STA. 13+24 LT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)

10'min., Ditch Grade, 1.0'min., 2.0', GEOTEXTILE
Type of Liner= 50 TONS,CL II Rip-Rap
Geotextile= 60 sy
FROM STA. 13+67 TO STA. 13+86 RT
FROM STA. 14+05 TO STA. 14+27 RT
FROM STA. 14+10 TO STA. 14+25 LT

BRIDGE HYDRAULIC DATA
STR #480014 Sta.13+95.0 -L-

DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2,400	CFS
DESIGN HW ELEVATION	= 756.2	FT
100 YEAR DISCHARGE	= 3,481	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 757.79	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 8,100	CFS
OVERTOPPING ELEVATION	= 761.6	FT
NORMAL WATER SURFACE ELEV	= 746.2	FT
DATE OF SURVEY	= 5/22/2017	

BM # 2
ELEV=756.65'
BL Sta.5+37 (40' LT)
-L- Sta.12+96.87 (38.07 LT)
RR SPIKE IN 12" PINE

BEGIN GRADE
-L- Sta.9+00.00
EL = 770.82

PI = 10+70.00
EL = 760.45'
VC = 340'
K = 53
V=35 mph

PI = 12+35.00
EL = 759.52'
VC = 130'
K = 118
V=55 mph

BEGIN BRIDGE
-L- Sta.13+43.85

END BRIDGE
-L- Sta.14+46.15

PI = 16+60.00
EL = 760.74'
VC = 170'
K = 81
V=45 mph

PI = 17+45.00
EL = 762.85'
VC = 170'
K = 43
V=30 mph

END GRADE
-L- Sta.18+30.00
EL = 766.49

760.11
762.85

PROPOSED GRADE
EXISTING GROUND

LIMITS OF MILLING
+85
-85

(-)6.1000%
(+)0.3556%
(-)10.7838%
(+)10.3223%
(+)10.3223%
(+)12.4051%
(+)8.4012%(LT)
(+)4.2824%
(-)2.8571% (RT)
(-)0.7937% (RT)
(+)0.3040% (LT)
(+)0.7152% (RT)
(+)1.7333%(RT)
(+)0.5467%(LT)
(+)3.5333%(LT)
(+)1.4000%(RT)
(+)5.4860%(RT)

BEGIN SPECIAL LATERAL BASE DITCH
-L- STA.9+85.00 RT
ELEV.759.00'

PI -L- STA.11+25.00 RT
ELEV.755.00'

END SPECIAL LATERAL BASE DITCH
-L- STA.13+77.00 RT
ELEV.753.00'

BEGIN SPECIAL LATERAL BASE DITCH
-L- STA.14+17.00 RT
ELEV.753.12'

BEGIN SPECIAL LATERAL BASE DITCH
-L- STA.14+25.00 LT
ELEV.753.56'

PI -L- STA.15+50.00 LT
ELEV.753.94'

PI -L- STA.15+75.00 RT
ELEV.754.25'

PI -L- STA.16+25.00 LT
ELEV.754.35'

PI -L- STA.16+50.00 RT
ELEV.755.55'

PI -L- STA.17+00.00 LT
ELEV.757.00'

END SPECIAL LATERAL BASE DITCH
-L- STA.17+25.00 LT
ELEV.759.10'

PI -L- STA.17+25.00 RT
ELEV.756.60'

END SPECIAL LATERAL BASE DITCH
-L- STA.17+75.00 RT
ELEV.759.34'

LEFT DITCH .....
RIGHT DITCH .....

800 790 780 770 760 750 740 730 720

7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00

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7/17/2024
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sheehan

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	X-1

BP12.R015
IREDELL COUNTY

LINE	SHEET NO.
CROSS SECTION SUMMARY SHEET	X–1A
–L–	X–2 THRU X–11
–DR1–	X–12 THRU X–14

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/12/2024
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chefler

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
BP12.R015	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
9+00.0000	0	0
9+25.0000	3	0
9+50.0000	2	1
9+75.0000	1	4
10+00.0000	0	24
10+25.0000	0	47
10+50.0000	0	55
10+75.0000	0	59
11+00.0000	0	58
11+25.0000	0	57
11+50.0000	0	55
11+75.0000	0	49
12+00.0000	0	48
12+25.0000	0	60
12+50.0000	0	93
12+75.0000	0	120
13+00.0000	0	120
13+25.0000	0	108
13+43.7500	0	73

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+46.1400	0	0
14+50.0000	0	16
14+75.0000	0	113
15+00.0000	0	132
15+25.0000	0	150
15+50.0000	0	160
15+75.0000	0	150
16+00.0000	0	134
16+25.0000	0	121
16+50.0000	0	93
16+75.0000	0	71
17+00.0000	0	58
17+25.0000	0	39
17+50.0000	0	20
17+75.0000	0	8
18+00.0000	1	3
18+25.0000	3	0

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
9+00.0000	0	0
9+25.0000	3	0
9+50.0000	2	1
9+75.0000	1	4
10+00.0000	0	24
10+25.0000	0	47
10+50.0000	0	55
10+75.0000	0	59
11+00.0000	0	58

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+25.0000	0	57
11+50.0000	0	55
11+75.0000	0	49
12+00.0000	0	48
12+25.0000	0	60
12+50.0000	0	93
12+75.0000	0	120
13+00.0000	0	120
13+25.0000	0	108
13+43.7500	0	73

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+46.1400	0	0
14+50.0000	0	16
14+75.0000	0	113
15+00.0000	0	132
15+25.0000	0	150
15+50.0000	0	160
15+75.0000	0	150
16+00.0000	0	134
16+25.0000	0	121
16+50.0000	0	93
16+75.0000	0	71
17+00.0000	0	58
17+25.0000	0	39
17+50.0000	0	20
17+75.0000	0	8
18+00.0000	1	3
18+25.0000	3	0

Station Dr1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	0	0
10+50.00	0	176
10+75.00	0	226
11+00.00	0	185
11+25.00	0	154
11+50.00	0	123
11+75.00	0	87
12+00.00	0	56
12+25.00	0	33
12+50.00	2	11

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

6/12/2024
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dherring

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-2

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

780 775 770 765 760 755

2:1 0.042 0.020 2:1

767.53

9+50.0000

780 775 770 765 760 755

2:1 0.054 0.020 2:1

769.16

9+25.0000

780 775 770 765 760 755

2:1 0.067 0.014 3:1

770.82

9+00.0000

750

—℄—

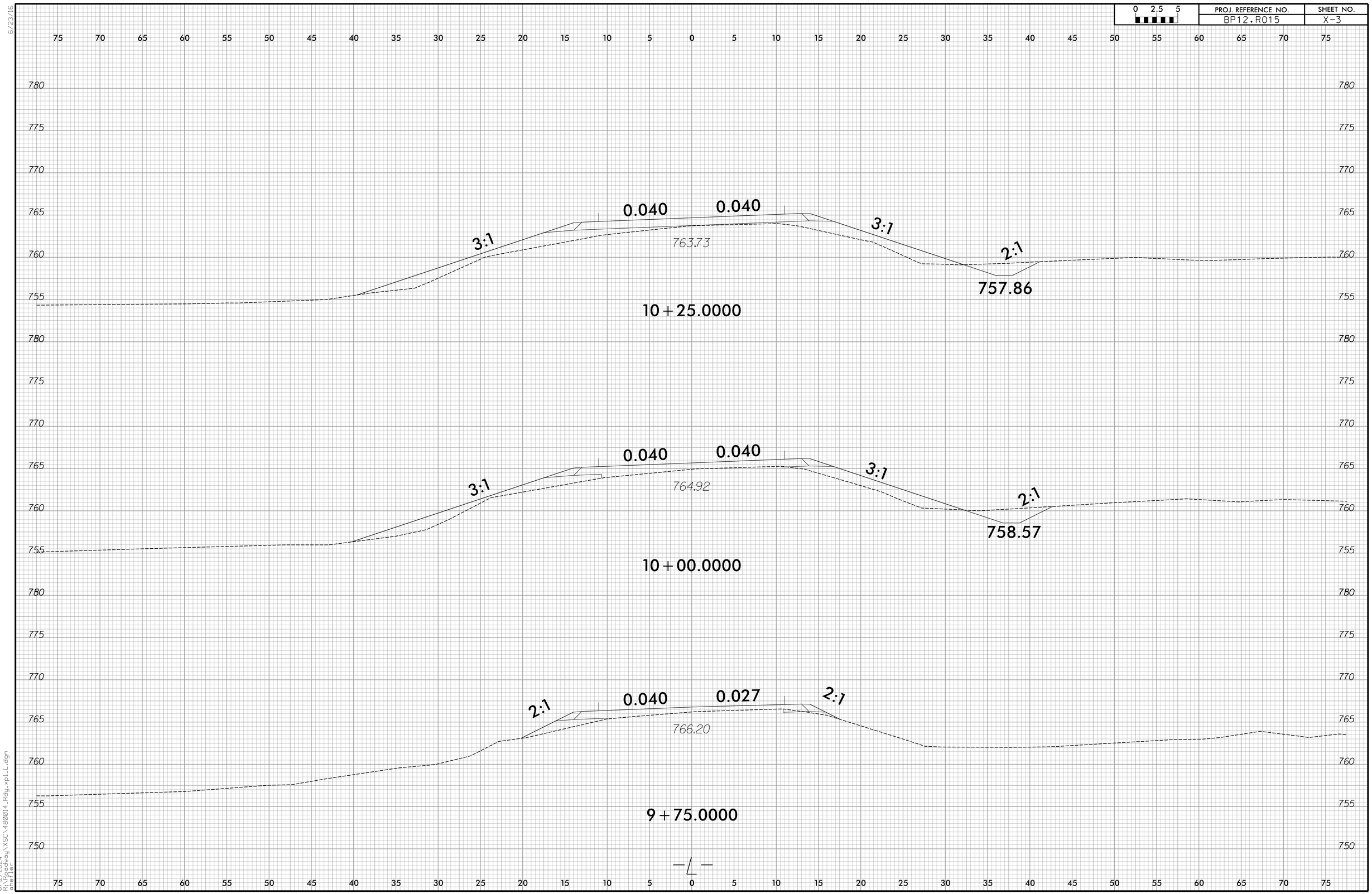
BEGIN CONSTRUCTION
–L– STA 9+00.00

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

6/12/2024
R:\12dwg\XSC\4800014_Rdg_xpl_L.dgn
chelle

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-3



6/12/2024
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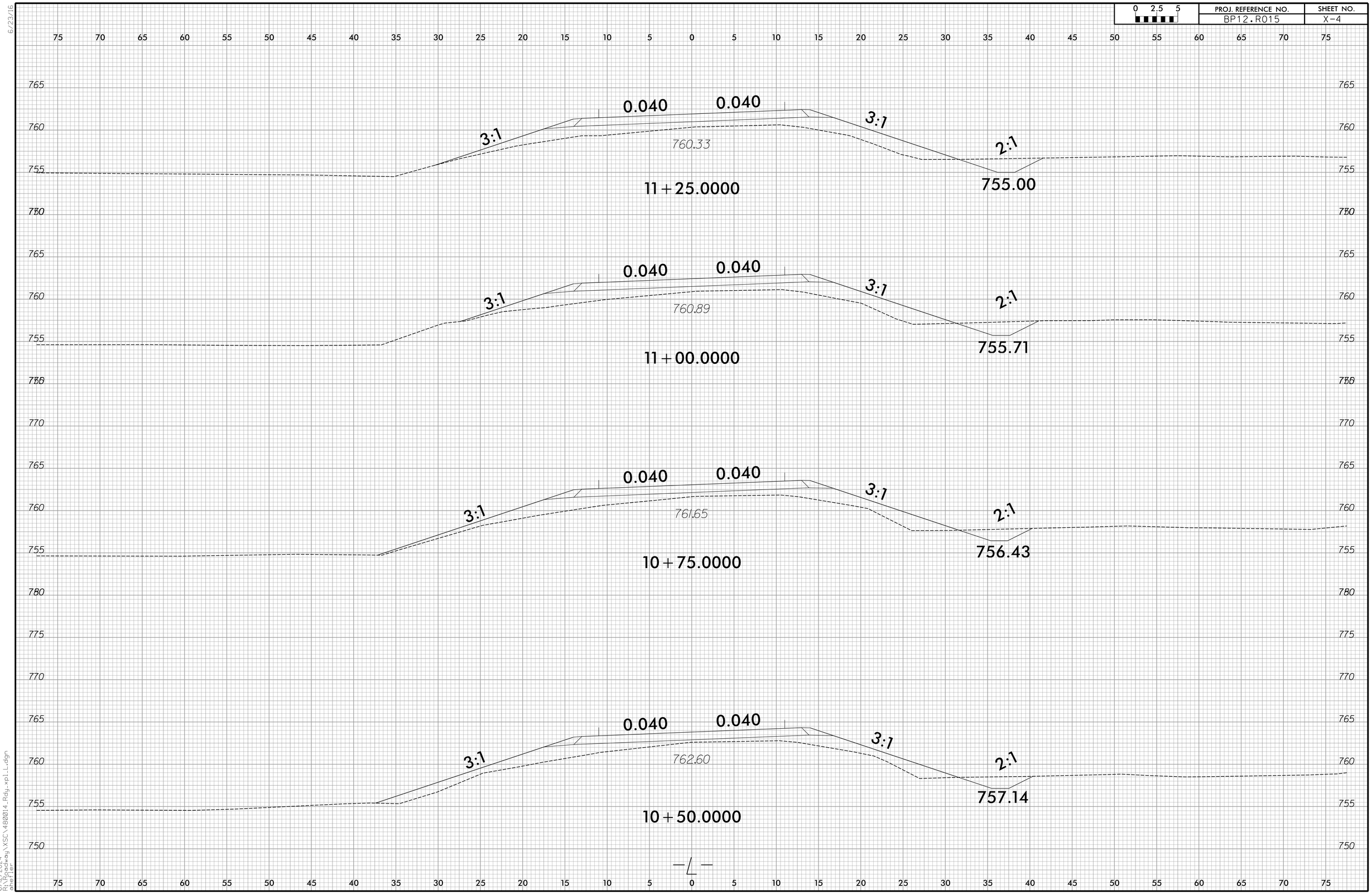
oleary

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-4



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chelez

6/23/16

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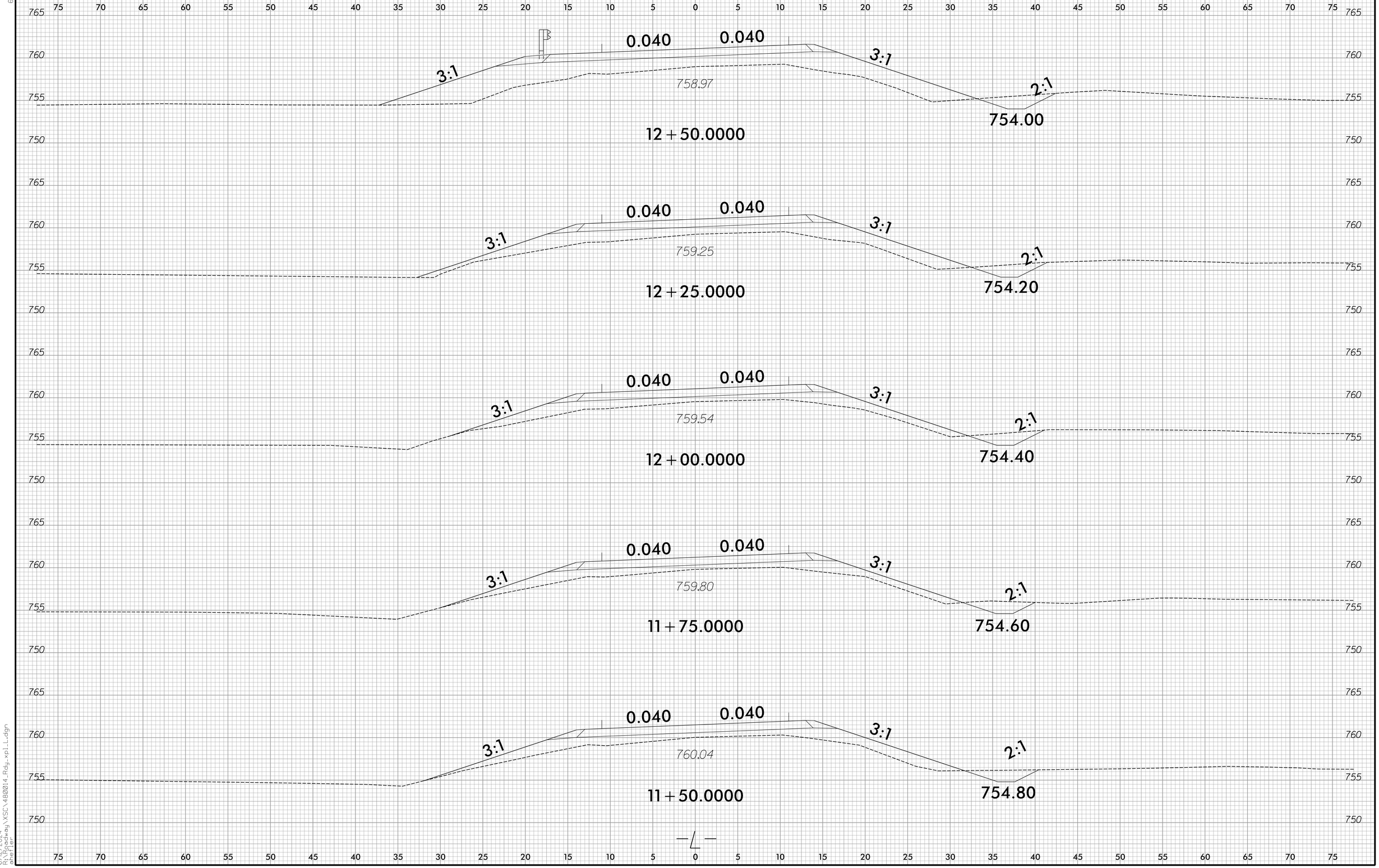
	BP12.R015	X-5



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K:\Pe_Highway\XSC\480014_Rdg_xpl_L.dgn
chefferson

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-6

765 760 755 750

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

0.040 0.040

759.03

2:1 2:1

753.21

EXCAVATION
DUE TO MINIMUM CLERANCE, 4'
UNDER THE BRIDGE
(SEE STRUCTURE PLANS FOR QUANTITY)

13+50.0000

BEGIN BRIDGE
–L– STA 13+43.85

2:1 0.040 0.040 2:1

758.96

2:1

753.26

EXCAVATION
DUE TO MINIMUM CLERANCE, 4'
UNDER THE BRIDGE
(SEE STRUCTURE PLANS FOR QUANTITY)

13+43.8500

2:1 0.040 0.040 2:1

758.89

2:1

753.41

13+25.0000

2:1 0.040 0.040 2:1

758.80

2:1

753.61

13+00.0000

2:1 0.040 0.040 2:1

758.79

2:1

753.81

12+75.0000

–L–

6/12/2024
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sheetseq

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

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	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

770 765 760 755 750 745 740

0.040 0.040

2:1 2:1

753.56

755.32

14+25.0000

753.18

0.040 0.040

744.77

14+00.0000

0.040 0.040

2:1 2:1

753.77

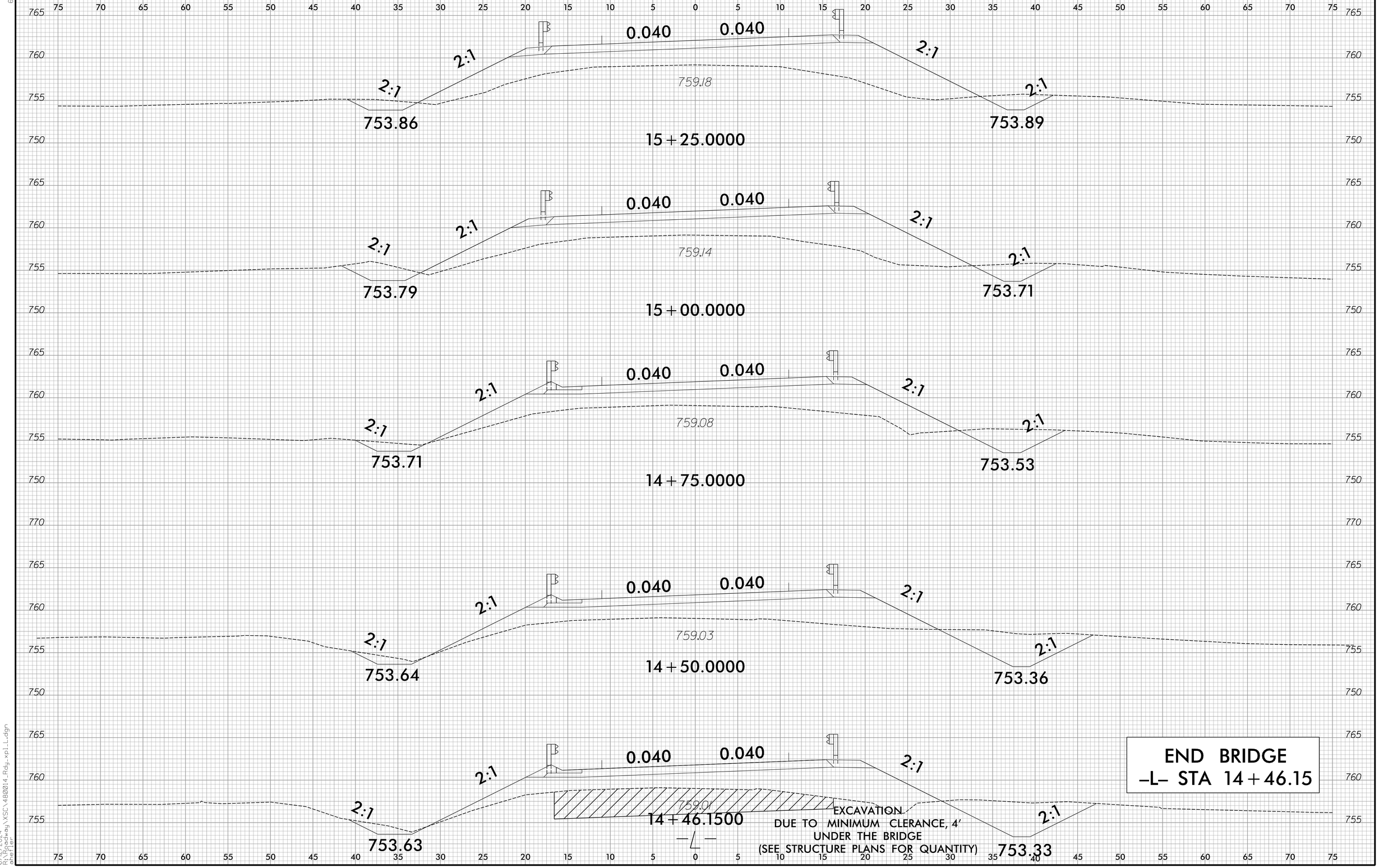
753.02

13+75.0000

—℄—

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-8



6/12/2024
N:\Highway\XSC\480014_Rdy_xpl_L.dgn
chenglish

6/23/16

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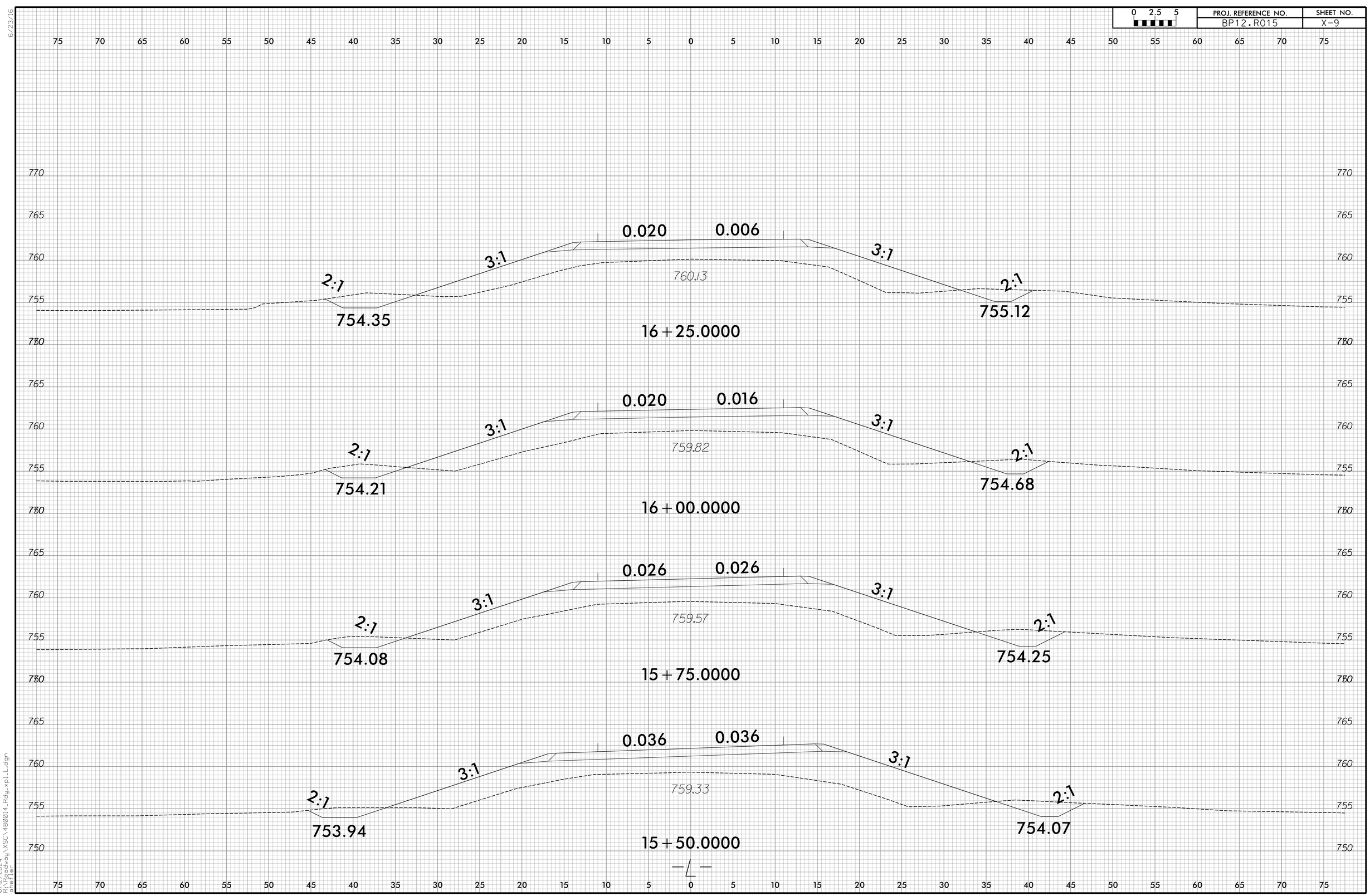
	BP12.R015	X-9



6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-10

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

770 765 760 755 750

0.020 0.020
2:1 2:1 3:1 2:1
762.21
759.10 756.60

17+25.0000

0.020 0.020
2:1 3:1 3:1 2:1
761.48
757.00 756.25

17+00.0000

0.020 0.014
2:1 3:1 3:1 2:1
760.96
756.12 755.90

16+75.0000

0.020 0.004
2:1 3:1 3:1 2:1
760.46
755.23 755.55

16+50.0000

—℄—

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

6/12/2024
R:\12_Roadway\XSC\4800014_Rdg_xpLL.dgn
chelen

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-11

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

775 770 765 760 755 750

END CONSTRUCTION –L– STA 18+30.00

2:1 0.026 0.026 2:1

766.26

18+25.0000

2:1 0.020 0.020 2:1

765.13

18+00.0000

2:1 0.020 0.020 2:1 2:1

764.05

759.34

17+75.0000

2:1 0.020 0.020 2:1 2:1

762.98

757.97

17+50.0000

–L–

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-12

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

765
760
755
750

0.020 0.020
4:1
4:1

10+75.0000

765
760
755
750

0.020 0.003
4:1
4:1

10+50.0000

770
765
760
755
750

0.020 0.014
4:1
4:1

10+25.0000

765
760
755
750

10+00.0000

765
760
755

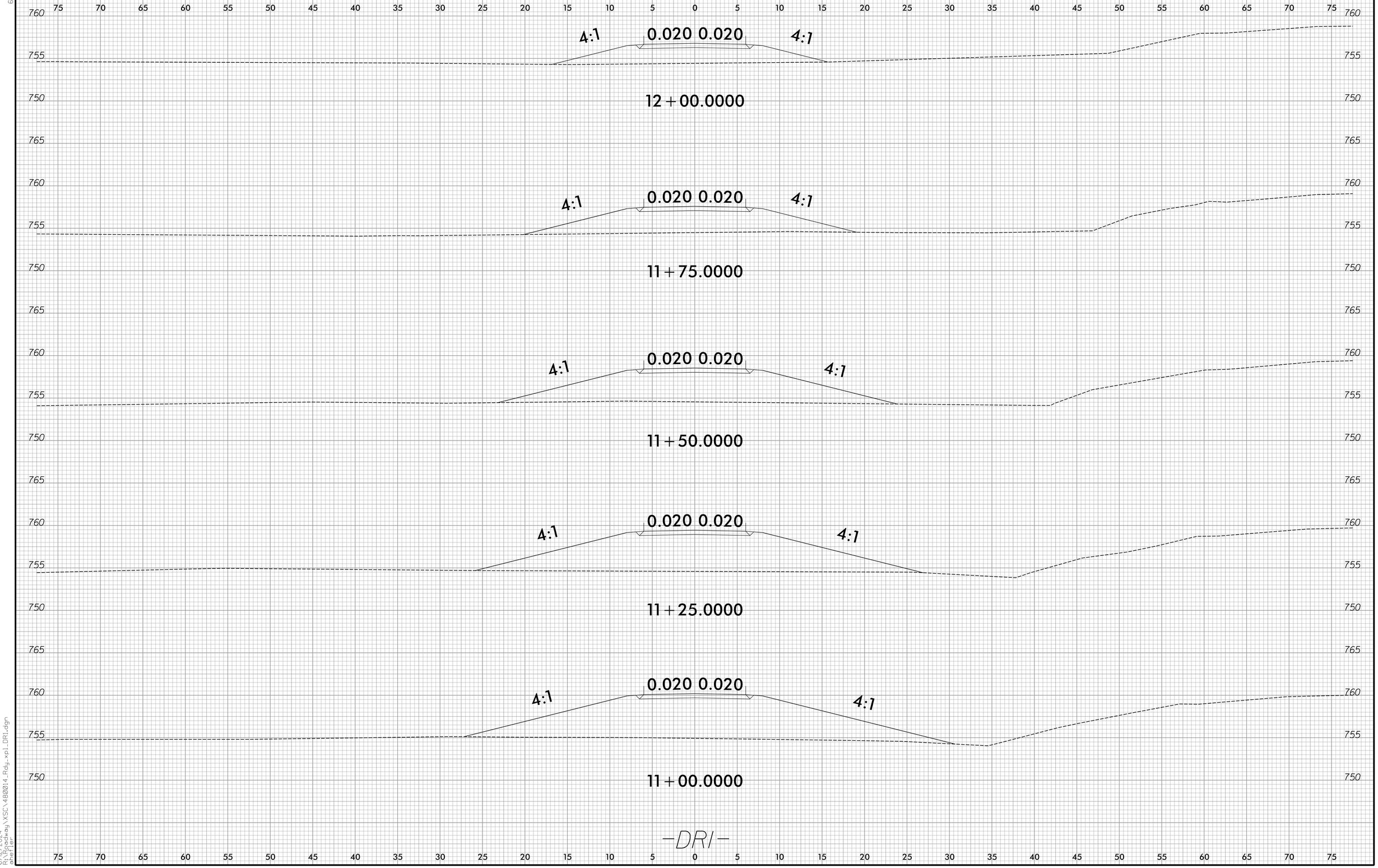
-DRI-

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

6/12/2024
R:\2Dwg\XSC\480014_Rdy_xpl_DR1.dgn
dherrera

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-13



6/12/2024
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chelsea

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BP12.R015	X-14

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

END CONSTRUCTION
–DR1– STA 12+55.59

765
760
755
750

4:1 0.020 0.020

12+50.0000

765
760
755
750

4:1 0.020 0.020 4:1

12+25.0000

–DR1–

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

6/12/2024
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ahefner

PROJECT: BP12.R015

CONTRACT: DL00335

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

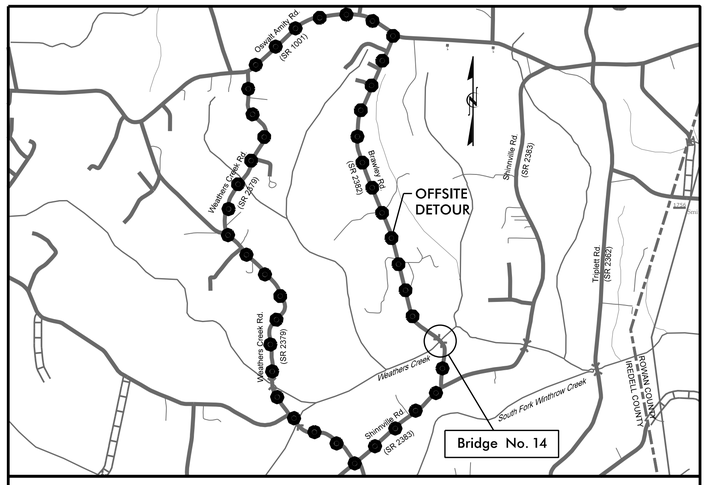
IREDELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP12.R015		

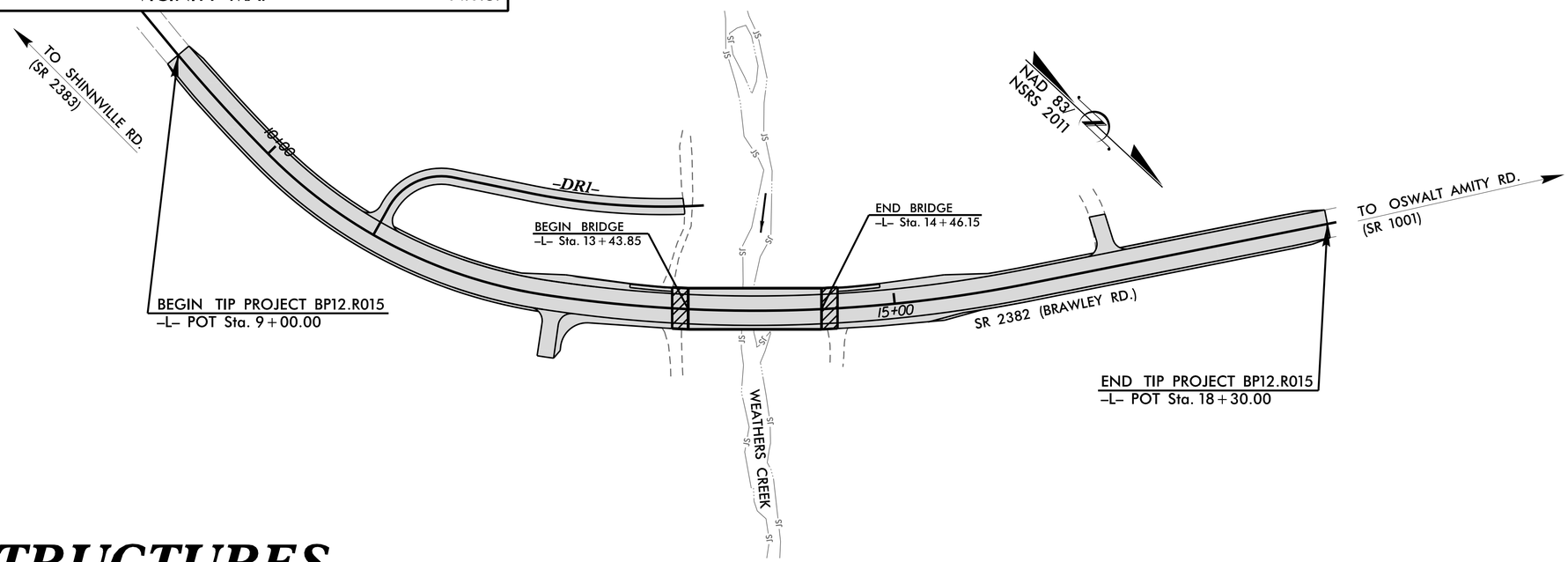
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP12.R015.1		PE
BP12.R015.2		R/W AND UTIL.
BP12.R015.3		CONST.

LOCATION: ***BRIDGE NO. 480014 OVER WEATHERS CREEK ON SR 2382 (BRAWLEY ROAD)***

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



VICINITY MAP N.T.S.



STRUCTURES

DESIGN DATA

ADT 2024 = 1,060
ADT 2044 = 1,600
T = 5%
V = 50 MPH
FUN CLASS = RURAL LOCAL

SUBREGIONAL TIER

* (TTST=1 % + DUAL=5%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP12.R015 = 0.157 MILES
LENGTH STRUCTURE TIP PROJECT BP12.R015 = 0.019 MILES

TOTAL LENGTH TIP PROJECT BP12.R015 = 0.176 MILES

Prepared for the Office of:

DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2024 STANDARD SPECIFICATIONS

LETTING DATE :
August 13, 2024

Scott D. Blevins, P.E.
PROJECT ENGINEER

L. Kevin Austin, P.E.
PROJECT STRUCTURE ENGINEER

NCDOT CONTACT:
Joshua B. White, P.E.

PLANS PREPARED BY:

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1 Suite 700
Raleigh, North Carolina 27615 | NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
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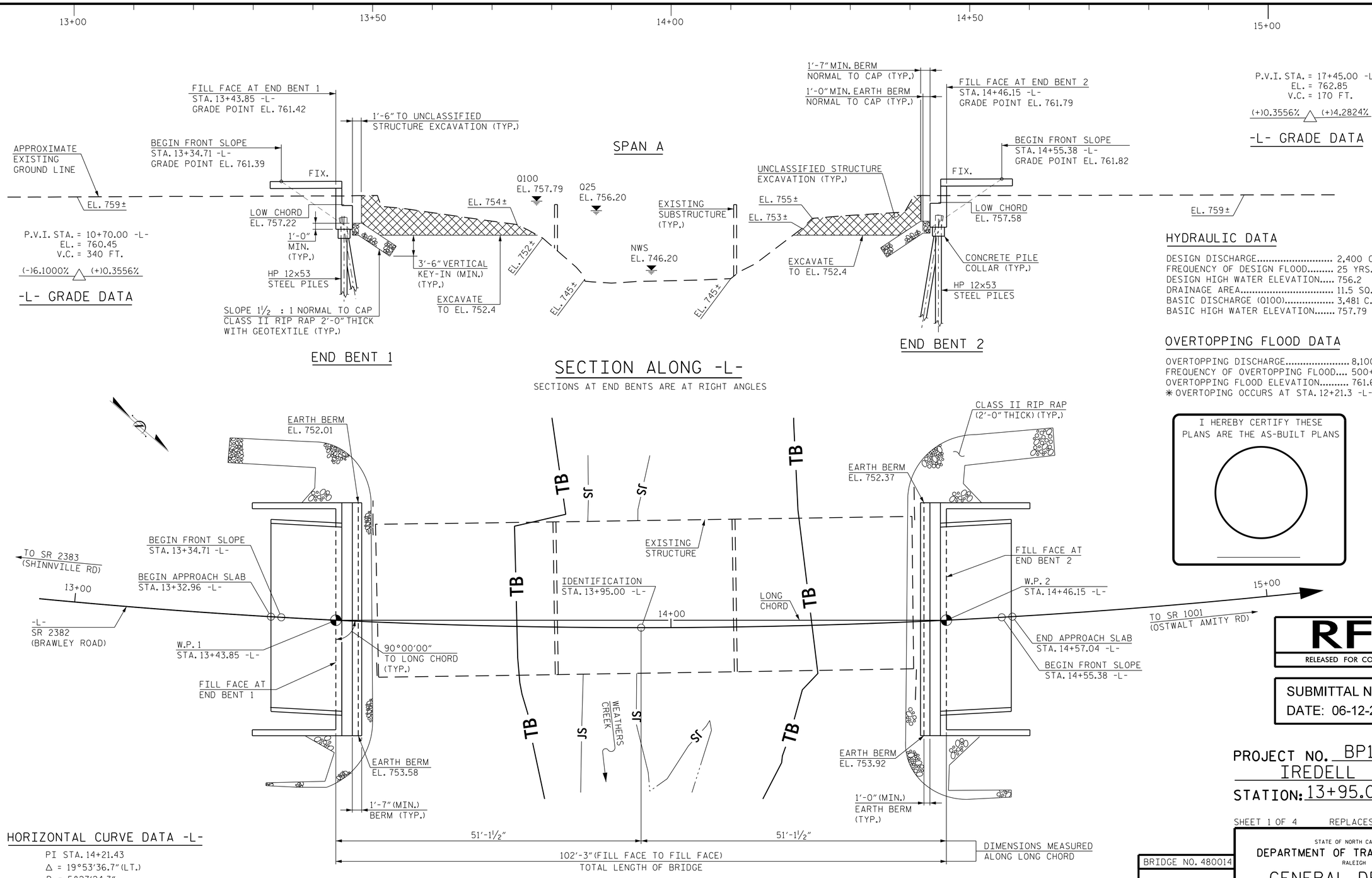
NORTH CAROLINA PROFESSIONAL SEAL 019661 ENGINEER KEVIN AUSTIN

6/11/2024

DocuSigned by: L. Kevin Austin

bgonfa
6/11/2024 R:\Structures\DGN\BR 14\Final\BP12.R015_SMU_TSH_480014.dgn



SECTION ALONG -L-

SECTIONS AT END BENTS ARE AT RIGHT ANGLES

HYDRAULIC DATA

DESIGN DISCHARGE..... 2,400 C.F.S.
FREQUENCY OF DESIGN FLOOD..... 25 YRS.
DESIGN HIGH WATER ELEVATION..... 756.2
DRAINAGE AREA..... 11.5 SQ. MI.
BASIC DISCHARGE (Q100)..... 3,481 C.F.S.
BASIC HIGH WATER ELEVATION..... 757.79

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... 8,100 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD.... 500+ YRS.
OVERTOPPING FLOOD ELEVATION..... 761.6 ✳
✳ OVERTOPING OCCURS AT STA. 12+21.3 -L-, RT.

PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY

HORIZONTAL CURVE DATA -L-

PI STA. 14+21.43
Δ = 19°53'36.7" (LT.)
D = 5°27'24.3"
L = 364.57'
T = 184.14'
R = 1,050.00'

I HEREBY CERTIFY THESE
PLANS ARE THE AS-BUILT PLANS

RFC
RELEASED FOR CONSTRUCTION

SUBMITTAL NO.: S-023
DATE: 06-12-24

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 480014

BRIDGE NO. 480014

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 2382 (BRAWLEY ROAD) OVER WEATHERS CREEK BETWEEN SR 2383 AND SR 1001

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

RK&K
P: (919) 878-9560
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Raleigh, North Carolina 27615 | NC License No. F-0112
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UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 019661 ENGINEER L. KEVIN AUSTIN
Documents Signed By: L. Kevin Austin
C24651150FB2A...
6/11/2024

DRAWN BY : B. H. GONFA DATE : NOV 2023
CHECKED BY : L. K. AUSTIN DATE : NOV 2023
DESIGN ENGINEER OF RECORD : L. K. AUSTIN DATE : NOV 2023

bgonfa
6/11/2024 R:\Structures\DGN\BR 14\Final\BP12.R015_SMU_GD_480014.dgn

SUMMARY OF PILE INFORMATION/INSTALLATION

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	FACTORED RESISTANCE PER PILE	PILE CUT-OFF (TOP OF PILE) ELEVATION	ESTIMATED PILE LENGTH PER PILE	SCOUR CRITICAL ELEVATION	DRIVEN PILES			PREDRILLING FOR PILES ✳			DRILLED-IN PILES		
					MIN. PILE TIP (TIP NO HIGHER THAN) ELEV.	REQUIRED DRIVING RESISTANCE (RDR) ✳✳ PER PILE	TOTAL PILE REDRIVES QUANTITY	PREDRILLING LENGTH PER PILE	PREDRILLING ELEVATION (ELEV. NOT TO PREDRILL BELOW)	MAXIMUM PREDRILLING DIAMETER	PILE EXCAVATION BOTTOM OF HOLE) ELEV.	PILE EXCAVATION NOT IN SOIL PER PILE	PILE EXCAVATION IN SOIL PER PILE
	TONS	FT.	FT.	FT.	FT.	TONS	EA.	LIN.FT.	FT.	INCHES	FT.	LIN.FT.	LIN.FT.
END BENT 1, PILES 1-4	113		50			190	0						
END BENT 1, PILES 5-7	113		45			190							
END BENT 2, PILES 1-7	113		50			190							

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

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	DYNAMIC PILE TESTING (DPT)			PILE ORDER LENGTHS	
	DPT TESTING REQUIRED?	DPT TEST PILE LENGTH	TOTAL DPT TESTING QUANTITY		PILE ORDER LENGTH BASIS ✳
	YES/MAYBE	FT.	EA.		EST/DPT
END BENT 1	MAYBE		1		
END BENT 2	MAYBE				

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

NOTES:

1. THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (MIKEL W. SHIPMAN, PE #054501) ON 03/05/2024.
2. TOTAL PILE DRIVING EQUIPMENT SETUP QUANTITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILES, I.E., THE NUMBER OF PILES WITH A REQUIRED DRIVING RESISTANCE.
3. THE ENGINEER WILL DETERMINE THE NEED FOR DPT TESTING WHEN DPTs MAY BE REQUIRED.

PILE DESIGN INFORMATION

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	FACTORED AXIAL LOAD PER PILE	FACTORED DOWNDRAG LOAD PER PILE	FACTORED DEAD LOAD ✳ PER PILE	DYNAMIC RESISTANCE FACTOR	NOMINAL DOWNDRAG RESISTANCE PER PILE	NOMINAL SCOUR RESISTANCE PER PILE	SCOUR RESISTANCE FACTORE (DEFAULT = 1.00)
	TONS	TONS	TONS		TONS	TONS	
END BENT 1, PILES 1-7	113			0.60			
END BENT 2, PILES 1-7	113			0.60			

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

SUMMARY OF PILE ACCESSORIES

(BLANK ENTTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

	PIPE PILE PLATES REQUIRED?	STEEL PILE POINTS			STEEL PILE TIPS REQUIRED?
		PIPE PILE CUTTING SHOES REQUIRED?	PIPE PILE CONICAL POINTS REQUIRED?	H-PILE POINTS REQUIRED?	
	YES/MAYBE	YES	YES	YES	YES
END BENT 1, PILES 1-7				YES	
END BENT 2, PILES 1-7				YES	
TOTAL QUANTITY:				14	

PROJECT NO. BP12.R015

IREDELL COUNTY

STATION: 13+95.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

BRIDGE NO. 480014

Documents prepared by: L. Kevin Austin 019661 — NORTH CAROLINA PROFESSIONAL ENGINEER L. KEVIN AUSTIN — C24511 — 6/11/2024

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P: (919) 878-9560
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CHECKED BY : L. K. AUSTIN DATE : NOV 2023
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TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 13+95.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	
	LUMP SUM	LUMP SUM	LUM SUM	CU. YARDS	LUMP SUM	LBS.	EACH	NO.	LIN. FT.	NO.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM				LUMP SUM						200.00			LUMP SUM	11	1,100.00
END BENT NO.1	———		LUMP SUM	29.0		4,610	7	7	335	7		50	55			
END BENT NO.2	———		LUMP SUM	29.0		4,610	7	7	350	7		60	70			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	58.0	LUMP SUM	9,220	14	14	685	14	200.00	110	125	LUMP SUM	11	1,100.00

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 SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF ONE 30'-6" SPAN, ONE 30'-0" SPAN AND ONE 30'-6" SPAN WITH A CLEAR ROADWAY WIDTH OF 24.0'; ASPHALT WEARING SURFACE ON PRESTRESSED CONCRETE CHANNELS; END BENTS AND INTERIOR BENTS CONSISTING OF PRECAST CONCRETE CAPS ON TIMBER PILE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

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.

THE MATERIAL SHOWN ON SHEET 1 OF 2 IN TH CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A MAX. DISTANCE OF 28.6 FT. LT. AND 32.0 FT. RT. OF CENTERLINE ROADWAY AT END BENT 1 AND 48.2 FT. LT. AND 31.3 FT. RT. OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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.

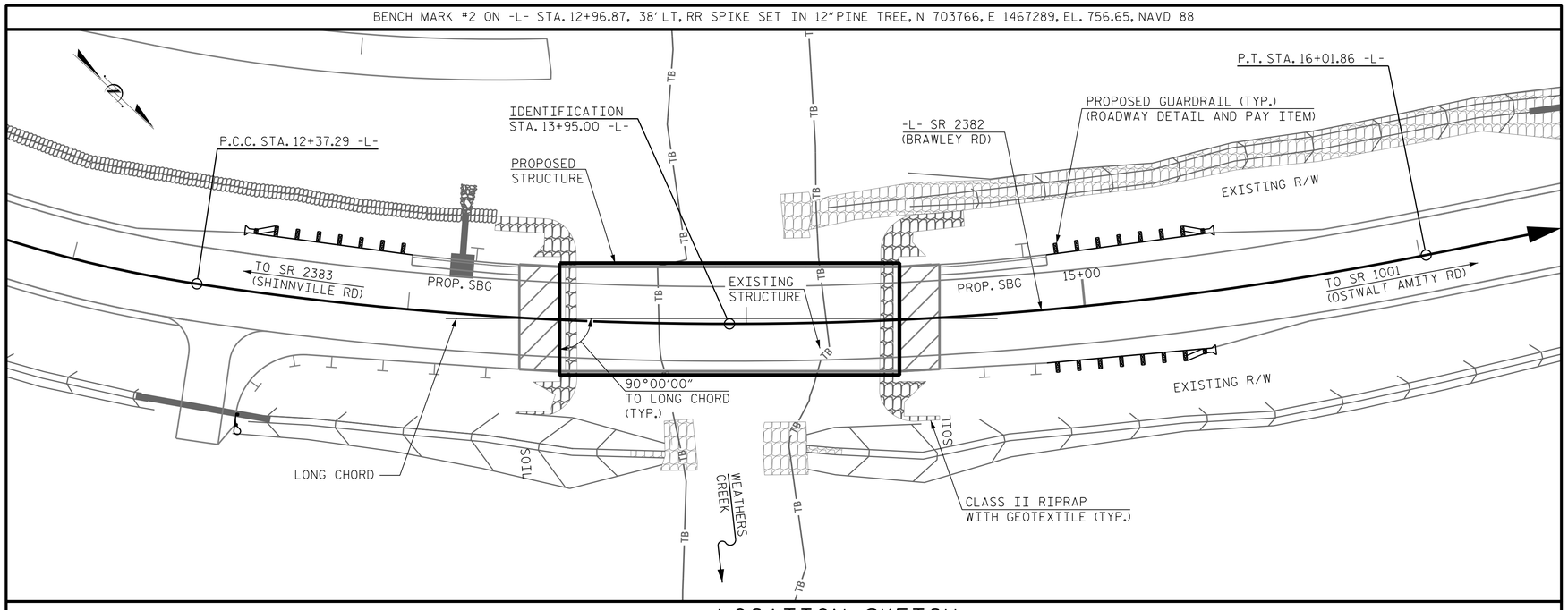
THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18- EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

NO DECK DRAINS REQUIRED.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES, SEE ROADWAY PLANS.



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 2383 (BRAWLEY ROAD) OVER WEATHERS CREEK BETWEEN SR 2383 AND SR 1001

BRIDGE NO. 480014

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 013661 L. KEVIN AUSTIN
Documents Signed by: L. Kevin Austin
6/11/2024

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⟨1⟩	1.035	--	1.75	0.272	1.26	100'	EL	49.25	0.489	1.34	100'	EL	4.925	0.80	0.272	1.04	100'	EL	49.25	
		HL-93 (OPERATING)	N/A		1.633	--	1.35	0.272	1.63	100'	EL	49.25	0.489	1.73	100'	EL	4.925	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.440	51.840	1.75	0.272	1.75	100'	EL	49.25	0.489	1.81	100'	EL	4.925	0.80	0.272	1.44	100'	EL	49.25	
		HS-20 (OPERATING)	36.000		2.271	81.756	1.35	0.272	2.27	100'	EL	49.25	0.489	2.35	100'	EL	4.925	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.413	46.079	1.4	0.272	5.19	100'	EL	49.25	0.489	5.59	100'	EL	4.925	0.80	0.272	3.41	100'	EL	49.25	
		SNGARBS2	20.000		2.473	49.452	1.4	0.272	3.76	100'	EL	49.25	0.489	3.91	100'	EL	4.925	0.80	0.272	2.47	100'	EL	49.25	
		SNAGRIS2	22.000		2.313	50.885	1.4	0.272	3.52	100'	EL	49.25	0.489	3.60	100'	EL	4.925	0.80	0.272	2.31	100'	EL	49.25	
		SNCOTTS3	27.250		1.696	46.228	1.4	0.272	2.58	100'	EL	49.25	0.489	2.78	100'	EL	4.925	0.80	0.272	1.70	100'	EL	49.25	
		SNAGGRS4	34.925		1.390	48.556	1.4	0.272	2.11	100'	EL	49.25	0.489	2.26	100'	EL	4.925	0.80	0.272	1.39	100'	EL	49.25	
		SNS5A	35.550		1.361	48.398	1.4	0.272	2.07	100'	EL	49.25	0.489	2.27	100'	EL	4.925	0.80	0.272	1.36	100'	EL	49.25	
		SNS6A	39.950		1.238	49.456	1.4	0.272	1.88	100'	EL	49.25	0.489	2.05	100'	EL	4.925	0.80	0.272	1.24	100'	EL	49.25	
		SNS7B	42.000		1.178	49.496	1.4	0.272	1.79	100'	EL	49.25	0.489	2.00	100'	EL	4.925	0.80	0.272	1.18	100'	EL	49.25	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.506	49.709	1.4	0.272	2.29	100'	EL	49.25	0.489	2.46	100'	EL	4.925	0.80	0.272	1.51	100'	EL	49.25	
		TNT4A	33.075		1.510	49.942	1.4	0.272	2.30	100'	EL	49.25	0.489	2.41	100'	EL	4.925	0.80	0.272	1.51	100'	EL	49.25	
		TNT6A	41.600		1.224	50.926	1.4	0.272	1.86	100'	EL	49.25	0.489	2.09	100'	EL	4.925	0.80	0.272	1.22	100'	EL	49.25	
		TNT7A	42.000		1.225	51.442	1.4	0.272	1.86	100'	EL	49.25	0.489	2.05	100'	EL	4.925	0.80	0.272	1.22	100'	EL	49.25	
		TNT7B	42.000		1.254	52.657	1.4	0.272	1.91	100'	EL	49.25	0.489	1.96	100'	EL	4.925	0.80	0.272	1.25	100'	EL	49.25	
		TNAGRIT4	43.000		1.203	51.711	1.4	0.272	1.83	100'	EL	49.25	0.489	1.91	100'	EL	4.925	0.80	0.272	1.20	100'	EL	49.25	
		TNAGT5A	45.000		1.139	51.236	1.4	0.272	1.73	100'	EL	49.25	0.489	1.87	100'	EL	4.925	0.80	0.272	1.14	100'	EL	49.25	
		TNAGT5B	45.000	⟨3⟩	1.129	50.805	1.4	0.272	1.72	100'	EL	49.25	0.489	1.82	100'	EL	4.925	0.80	0.272	1.13	100'	EL	49.25	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.129	61.213	1.3	0.272	2.87	100'	EL	49.25	0.489	3.06	100'	EL	4.925	0.80	0.272	2.13	100'	EL	49.25	
		EV3	43.000	⟨4⟩	1.403	60.325	1.3	0.272	1.89	100'	EL	49.25	0.489	2.06	100'	EL	4.925	0.80	0.272	1.40	100'	EL	49.25	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING * *

⟨4⟩ EMERGENCY VEHICLE LOAD RATING **

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER

⟨1⟩
⟨2⟩
⟨3⟩
⟨4⟩

LRFR SUMMARY

FOR SPAN ``A"

PROJECT NO. BP12.R015

IREDELL COUNTY

STATION: 13+95.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR
100' BOX BEAM UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

BRIDGE NO. 480014

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NORTH CAROLINA PROFESSIONAL SEAL 019661 ENGINEER L. KEVIN AUSTIN
Document Signed by: L. Kevin Austin
6/11/2024

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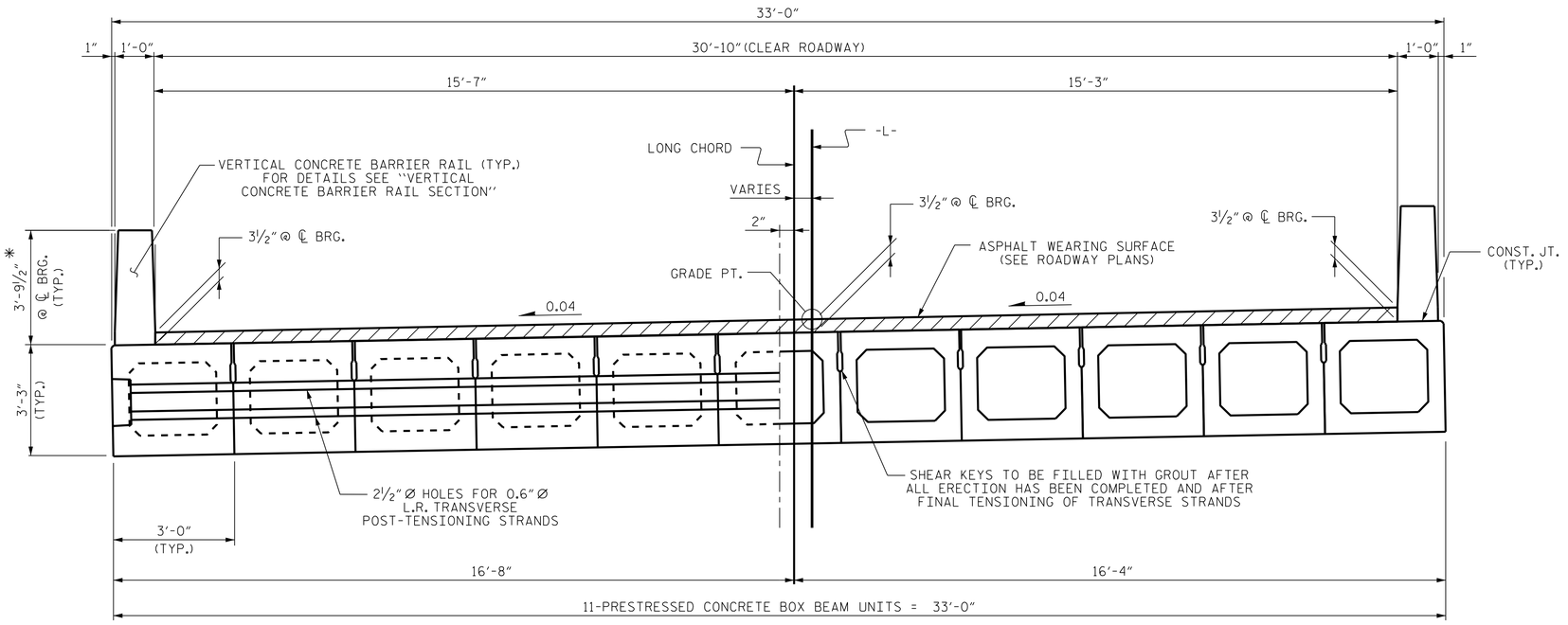


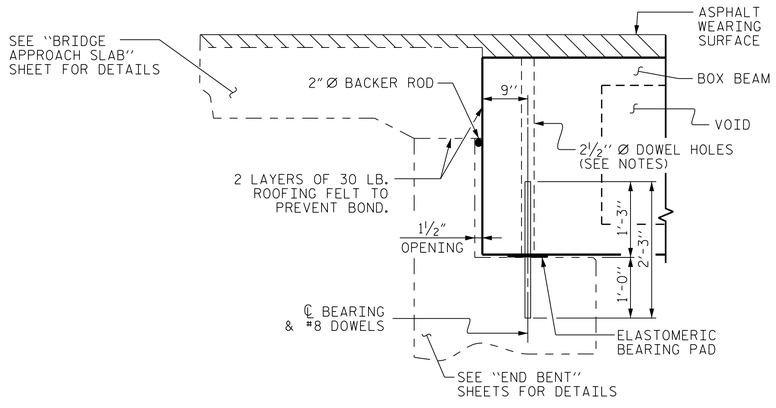
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

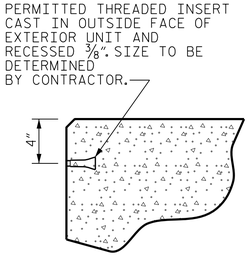
TYPICAL SECTION

* 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.

FIXED END



SECTION AT END BENT



THREADED INSERT DETAIL

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,500 PSI.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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 VERTICAL 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.

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

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.

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

BRIDGE NO. 480014

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 019661 L. KEVIN AUSTIN
Digitally signed by L. Kevin Austin
6/11/2024

RK&K
P: (919) 878-9560
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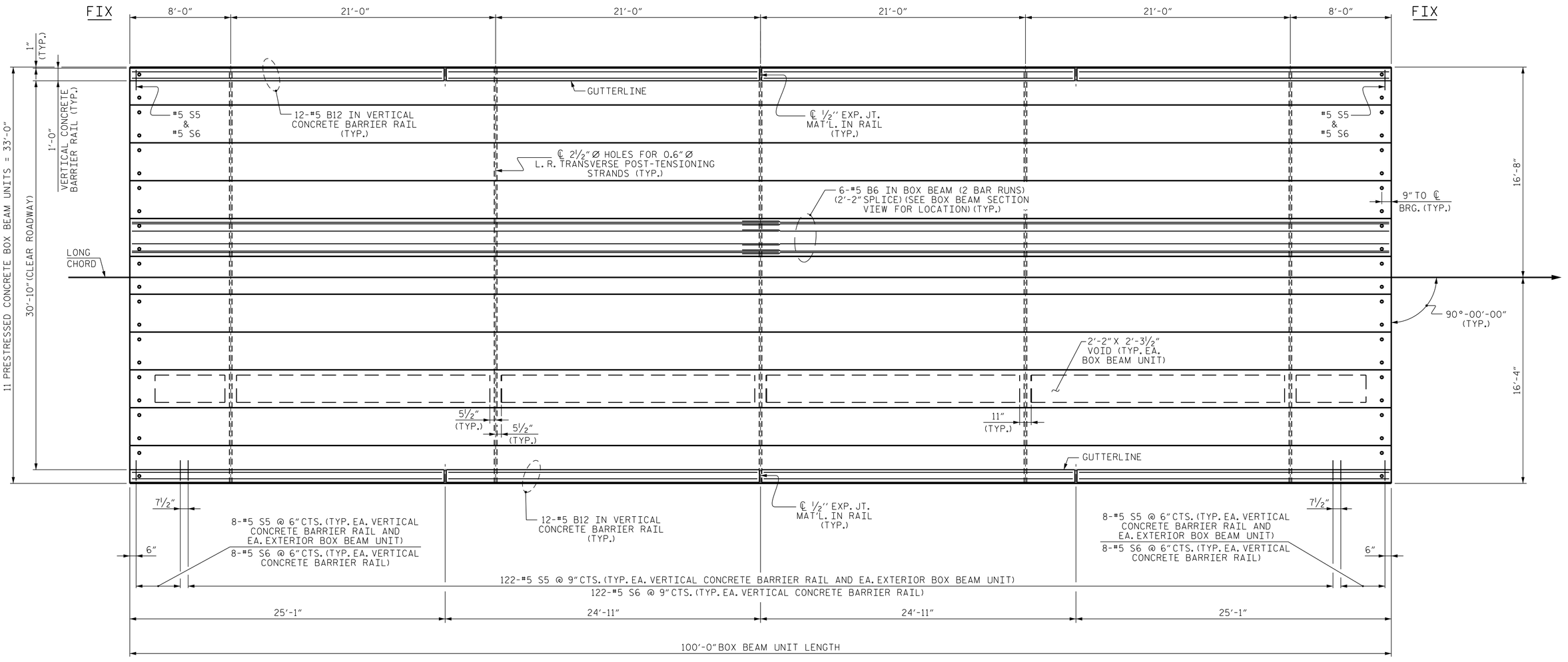
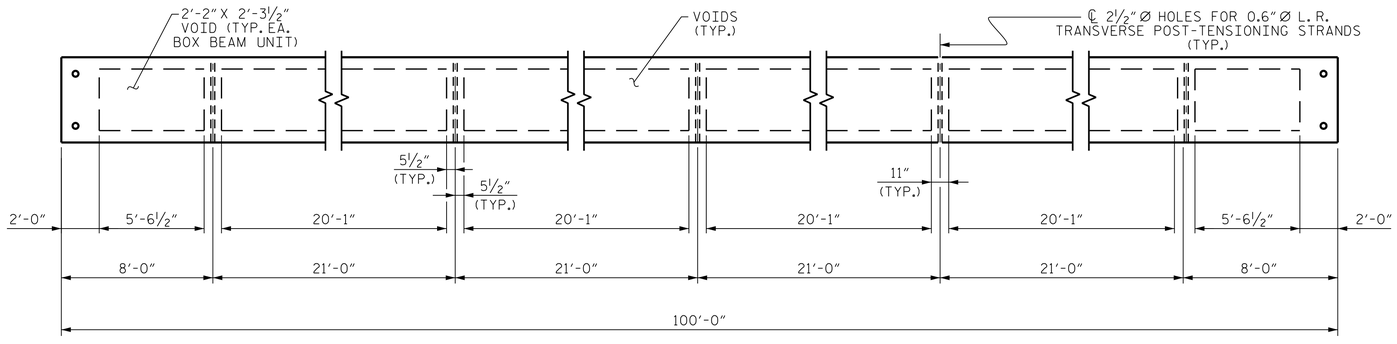


PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 2 OF 5

BRIDGE NO. 480014

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 100' UNIT
30'-10" CLEAR ROADWAY
90° SKEW

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 019661 L. KEVIN AUSTIN
Document Certified by: L. Kevin Austin
6/11/2024

DRAWN BY : B. H. GONFA DATE : NOV 2023
CHECKED BY : L. K. AUSTIN DATE : NOV 2023
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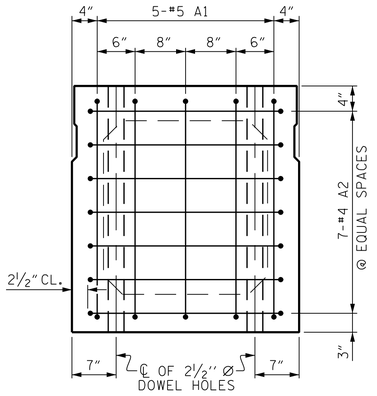
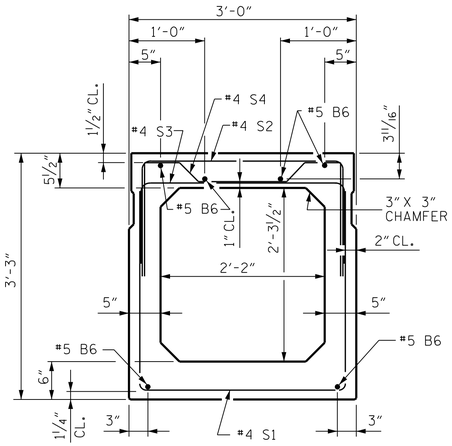


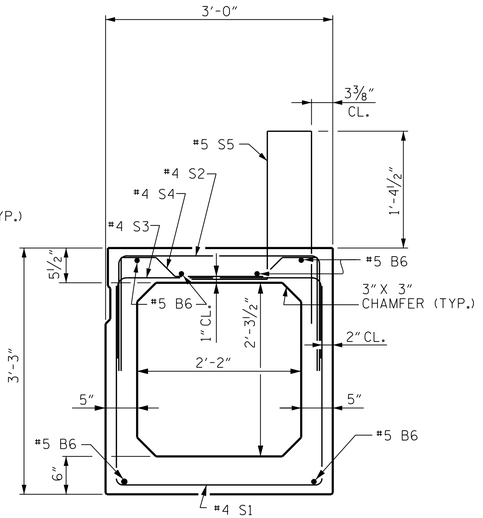
END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES.
(INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



INTERIOR BOX BEAM SECTION

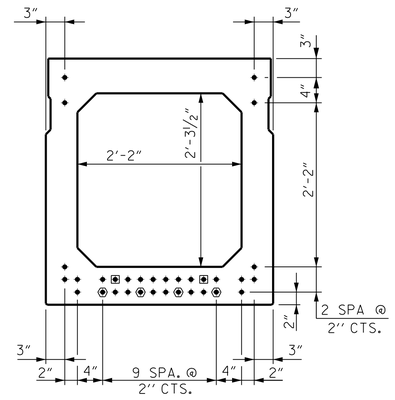
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

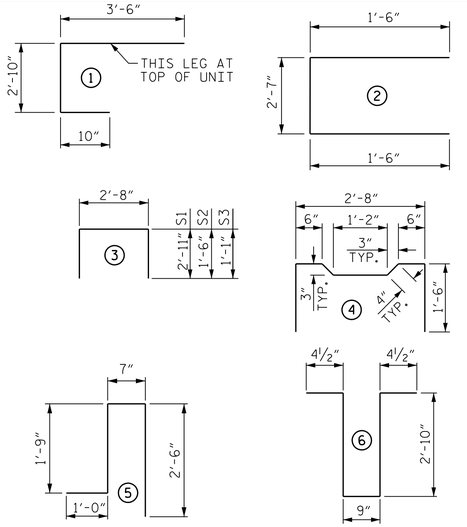
(32 STRANDS REQUIRED)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◉ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⬢ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.

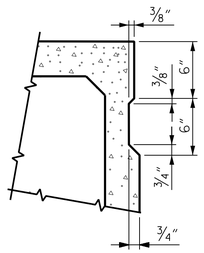
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

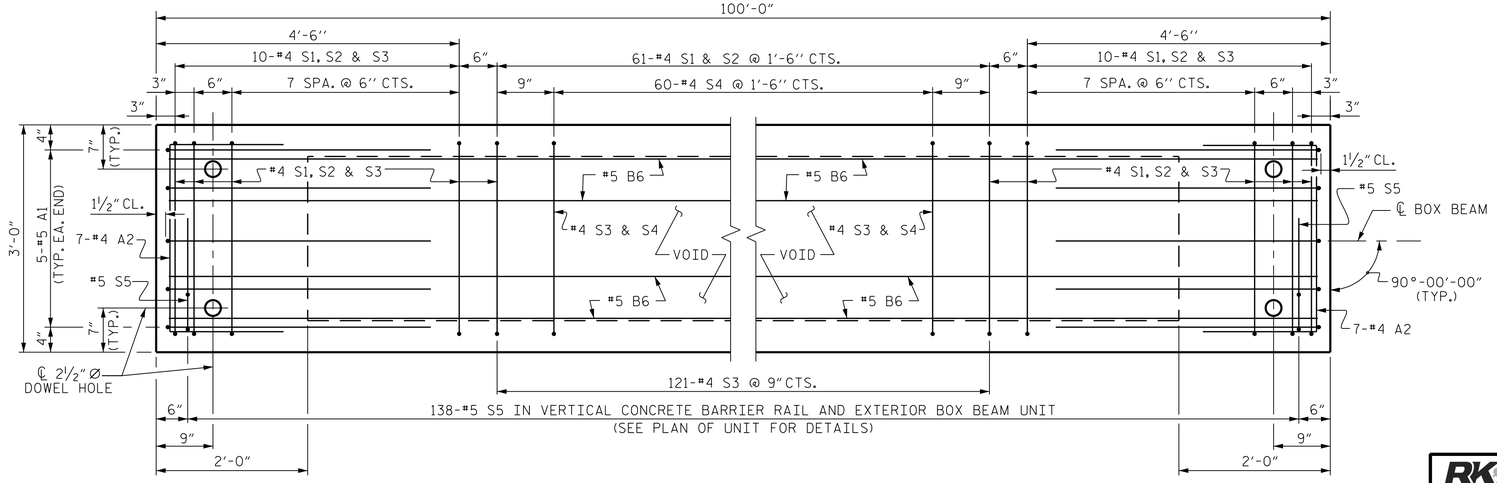
				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B6	12	#5	STR	50'-11"	637	50'-11"	637
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	81	#4	3	8'-6"	460	8'-6"	460
S2	81	#4	3	5'-8"	307	5'-8"	307
S3	141	#4	3	4'-10"	455	4'-10"	455
S4	60	#4	4	5'-10"	234	5'-10"	234
✳ S5	138	#5	5	5'-10"	840	--	--
REINFORCING STEEL					2421 LBS.		2421 LBS.
✳ EPOXY COATED REINF. STEEL					840 LBS.		
7500 P.S.I. CONCRETE					19.6 CU. YDS.		19.4 CU. YDS.
0.6" Ø L.R. STRANDS					No. 32		No. 32



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

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



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

BRIDGE NO. 480014

NORTH CAROLINA PROFESSIONAL SEAL 019661 ENGINEER L. KEVIN AUSTIN
Document signed by: L. Kevin Austin
C2465117D5F3488...
6/11/2024

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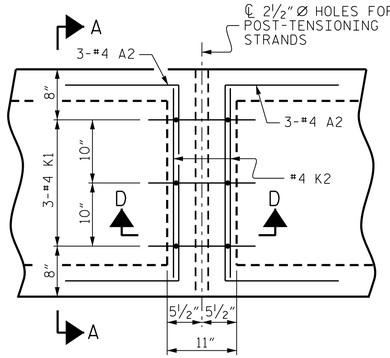
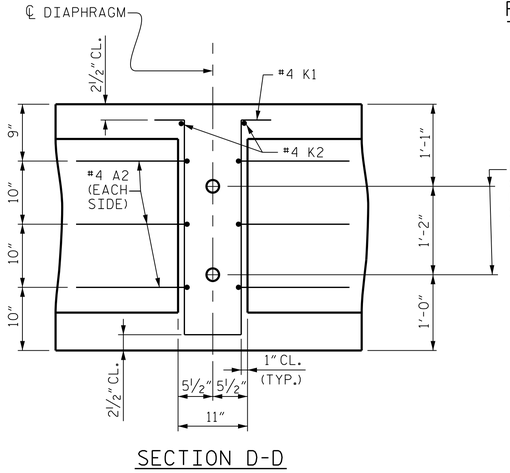
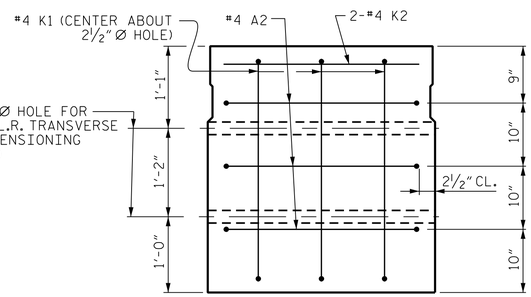


PLAN



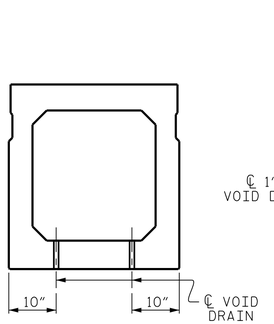
SECTION D-D



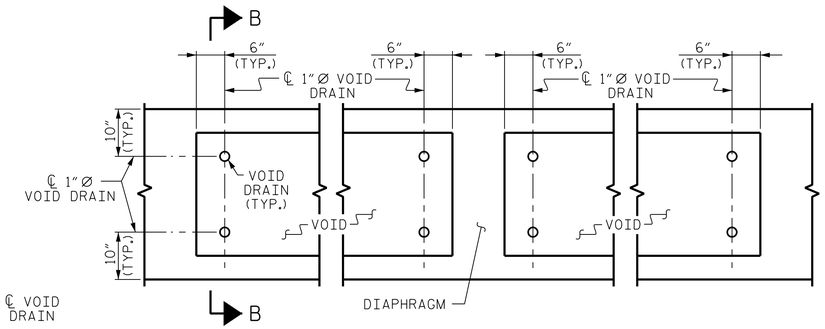
SECTION A-A
VOIDS NOT SHOWN

DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2½" Ø HOLE.



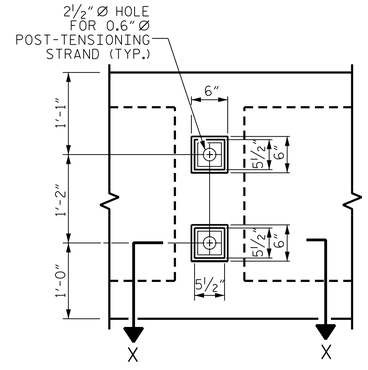
SECTION B-B



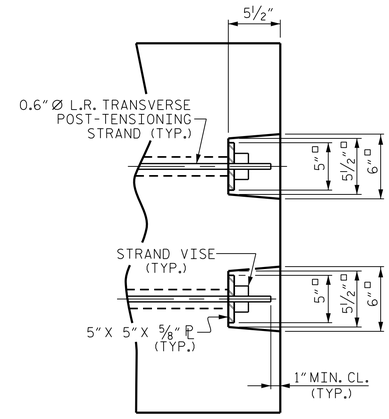
PART PLAN

VOID DRAIN DETAILS

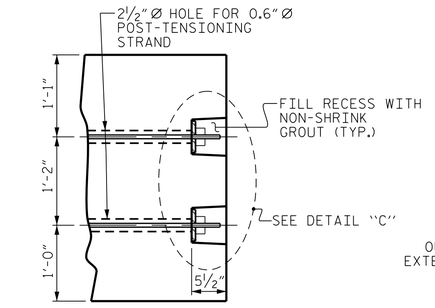
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



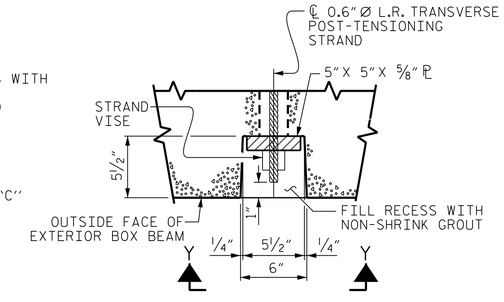
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"



PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
100' BOX BEAM UNIT (NC & SE)	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	⅞" ↓
FINAL CAMBER	1⅛" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

BRIDGE NO. 480014

NORTH CAROLINA PROFESSIONAL Engineer Seal L. Kevin Austin 019661 ENGINEER KEVIN AUSTIN
6/11/2024

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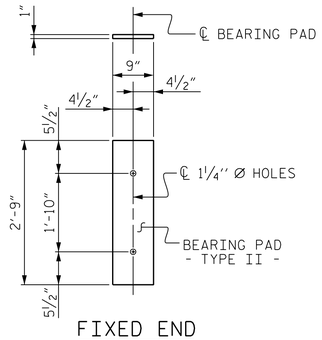
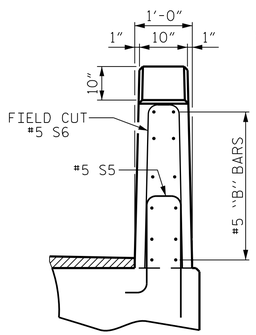


FIXED END

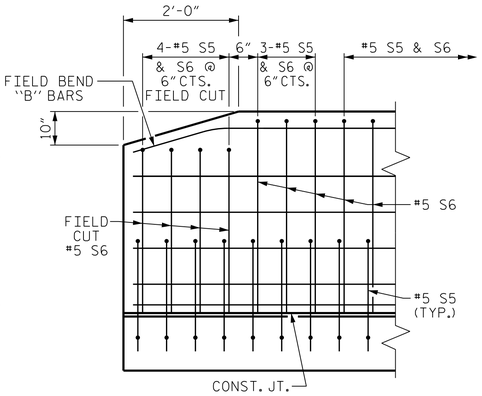
(TYPE II - 22 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARING SHALL BE 60 DUROMETER HARDNESS



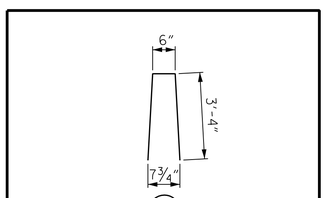
END VIEW



SIDE VIEW

END OF RAIL DETAILS

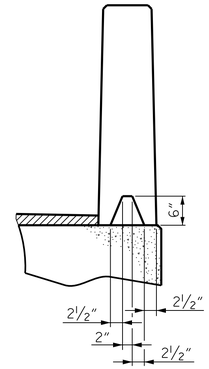
BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	100'-0"	200'-0"
INTERIOR B.B.	9	100'-0"	900'-0"
TOTAL	11	———	1100'-0"



BAR TYPE

BAR DIMENSIONS ARE OUT TO OUT

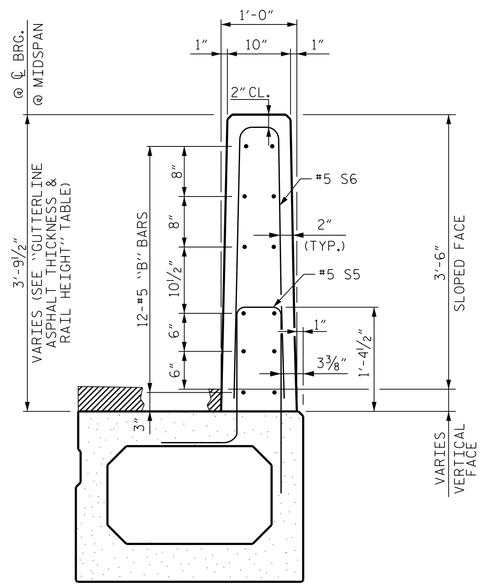
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS 100' UNIT	SIZE	TYPE	LENGTH	WEIGHT
✳B12	96	#5	STR	24'-7"	2461
✳S6	276	#5	1	7'-2"	2063
✳EPOXY COATED REINFORCING STEEL			LBS.		4524
CLASS AA CONCRETE			CU.YDS.		25.9
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN. FT.		200.0



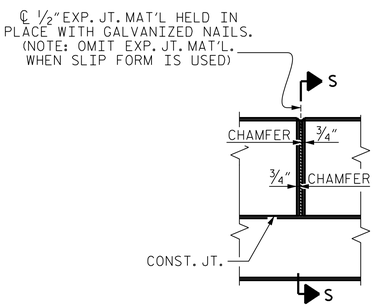
SECTION S-S

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

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
100' UNITS	2⅜"	3'-8⅜"



SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS

PROJECT NO. BP12.R015

IREDELL COUNTY

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SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3"
PRESTRESSED CONCRETE
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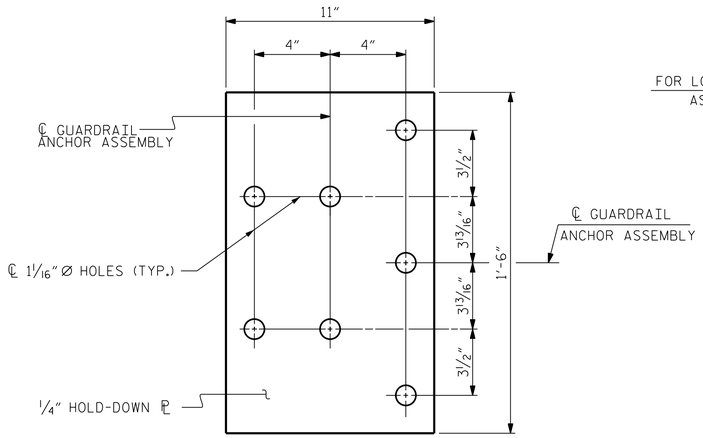
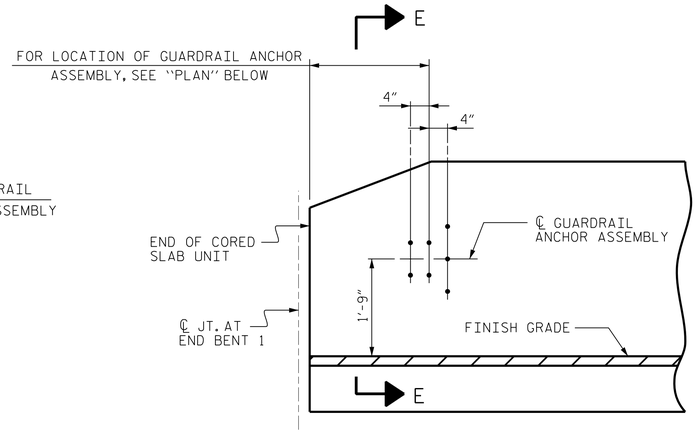


PLAN



ELEVATION

NOTES:

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

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

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

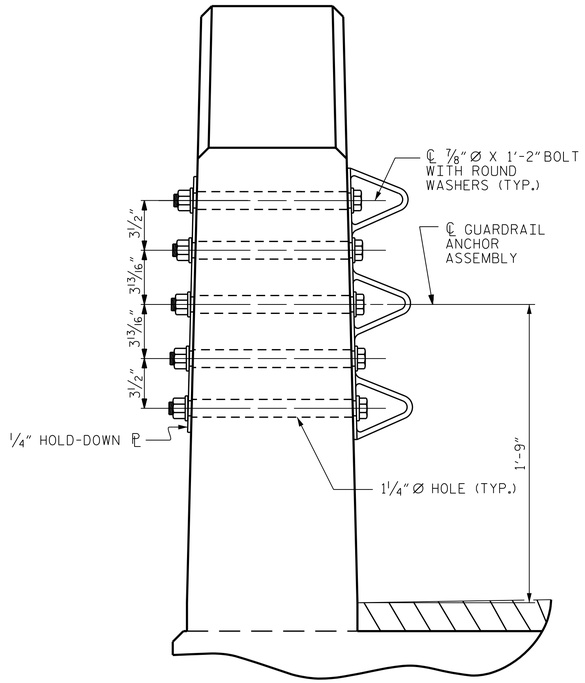
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

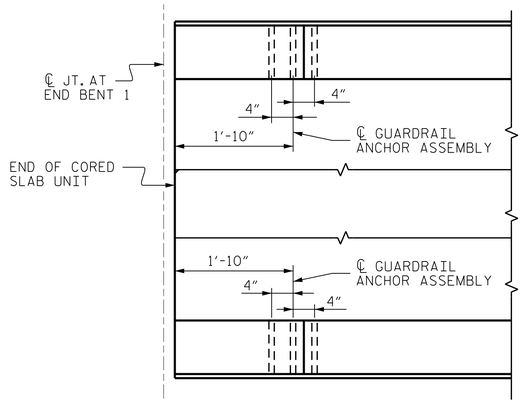
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



SECTION E-E

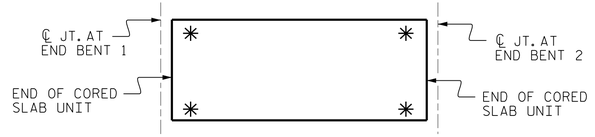
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BP12.R015

IREDELL COUNTY

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Documents Prepared by:
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STATE OF NORTH CAROLINA
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RALEIGH

STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			16

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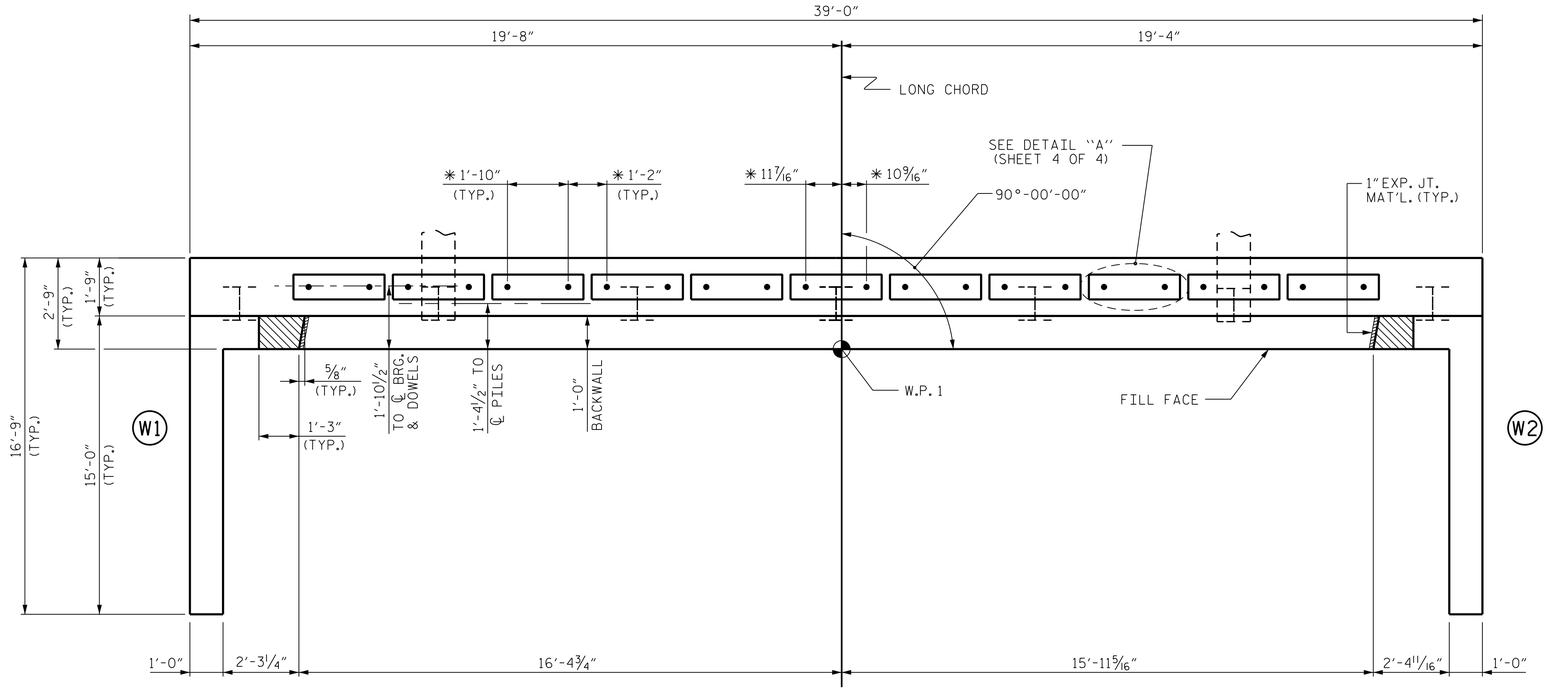

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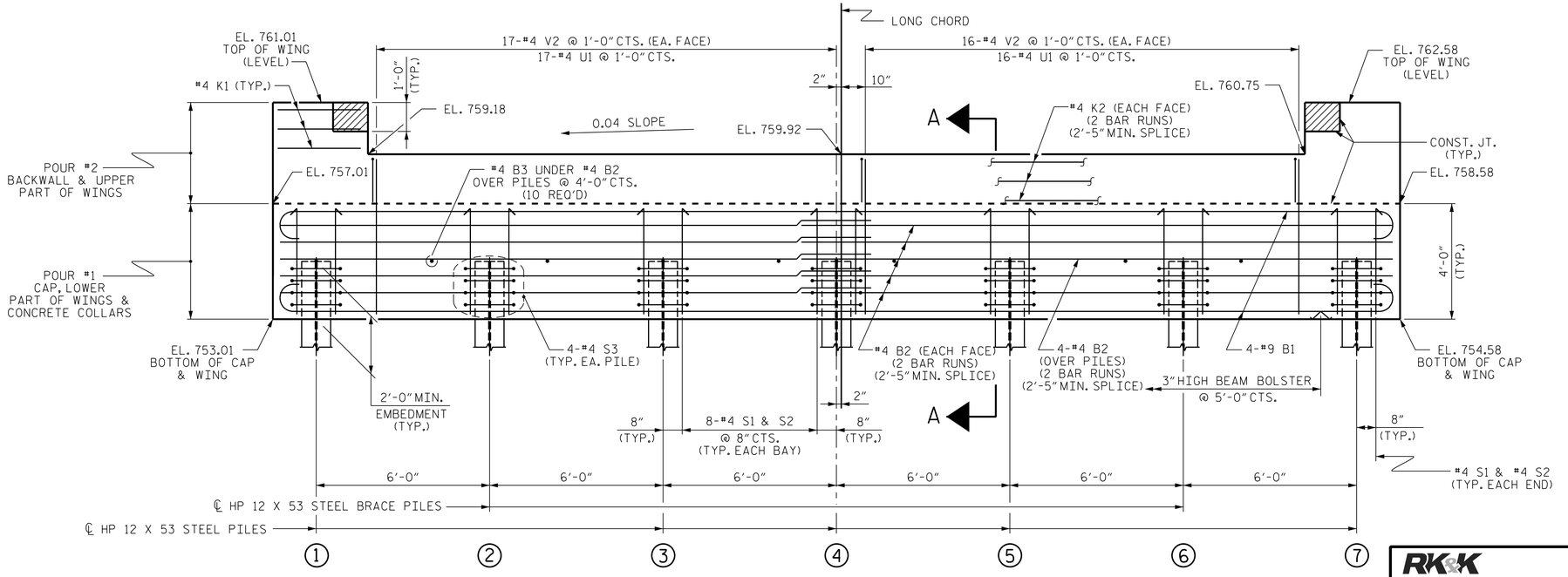

ELEVATION

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.

* MEASURED ALONG FACE OF CAP.

TOP OF PILE ELEVATIONS	
1	755.05
2	755.29
3	755.53
4	755.77
5	756.01
6	756.25
7	756.49

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
END BENT 1

BRIDGE NO. 480014

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STD. NO. EB_33_90S4_39BB

NOTES:

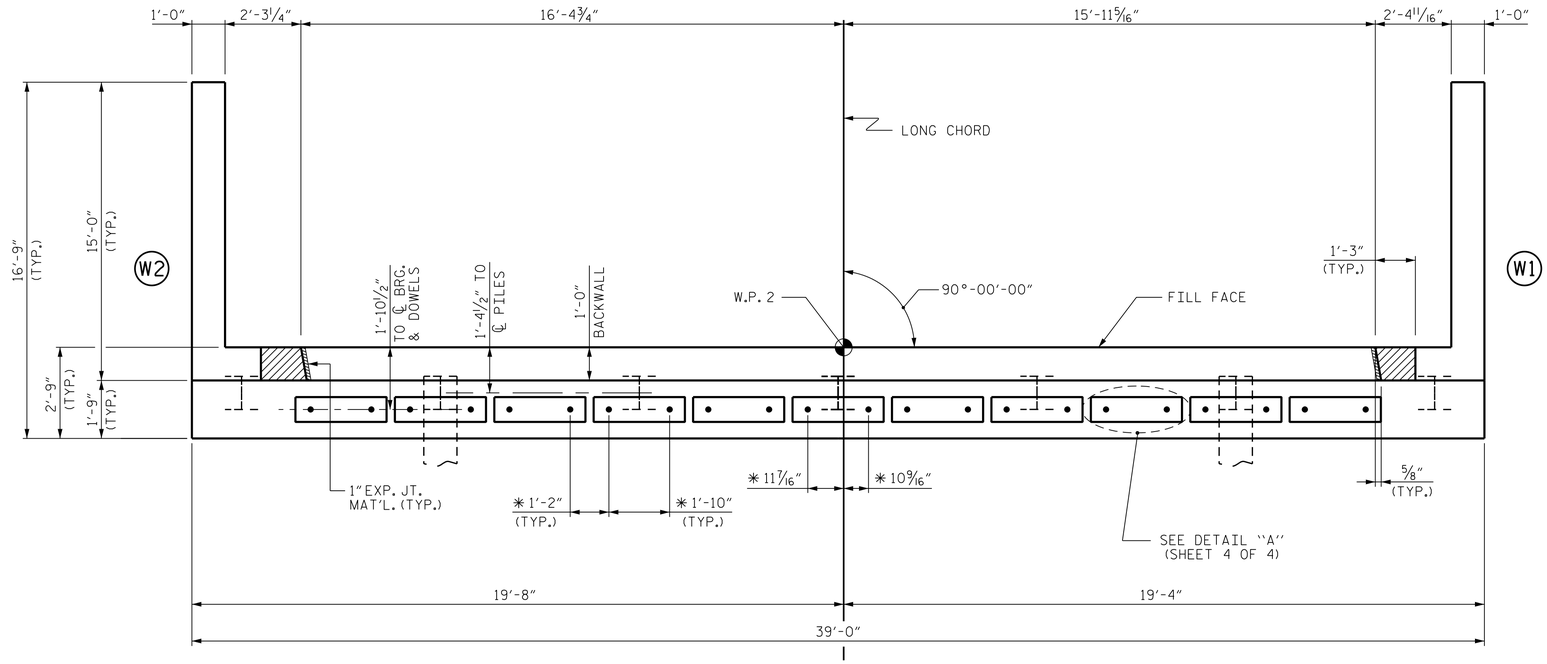
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

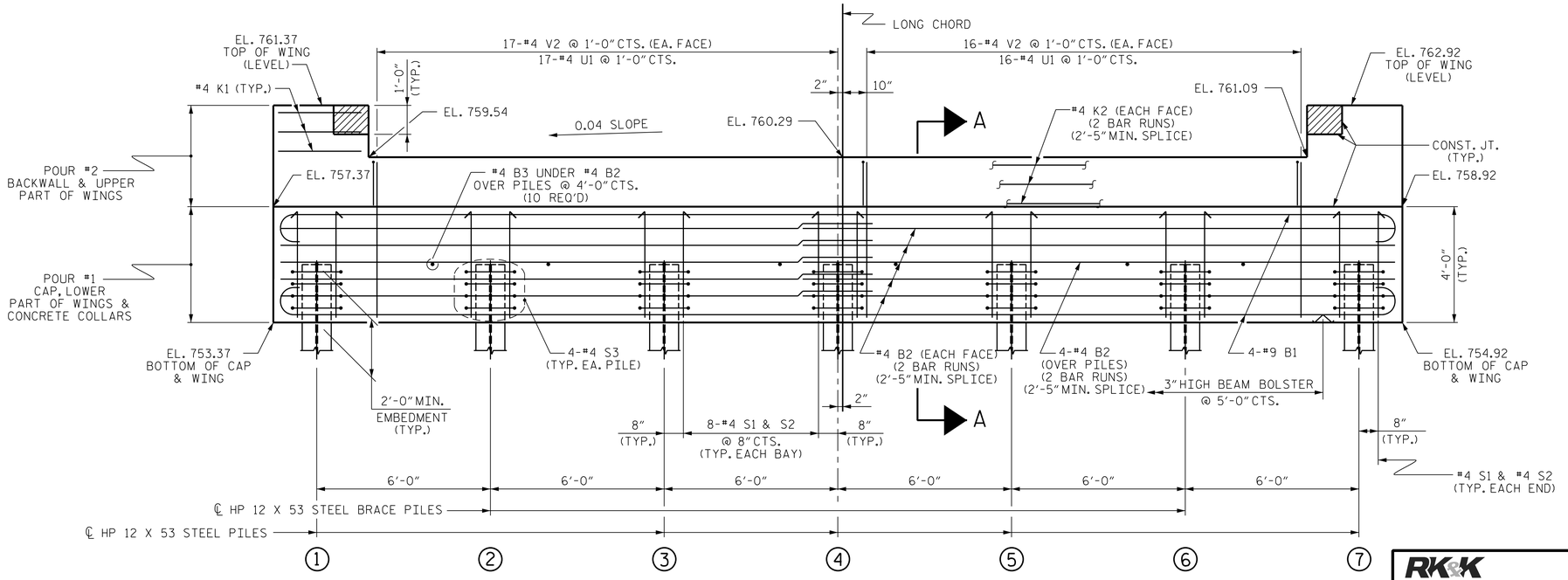
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

* MEASURED ALONG FACE OF CAP.



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.

TOP OF PILE ELEVATIONS	
1	755.40
2	755.64
3	755.88
4	756.12
5	756.36
6	756.60
7	756.84

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SHEET 2 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
END BENT 2

BRIDGE NO. 480014

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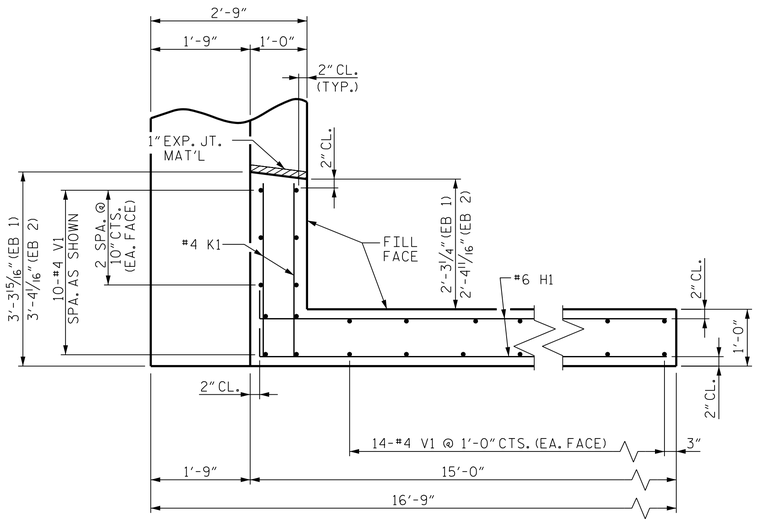
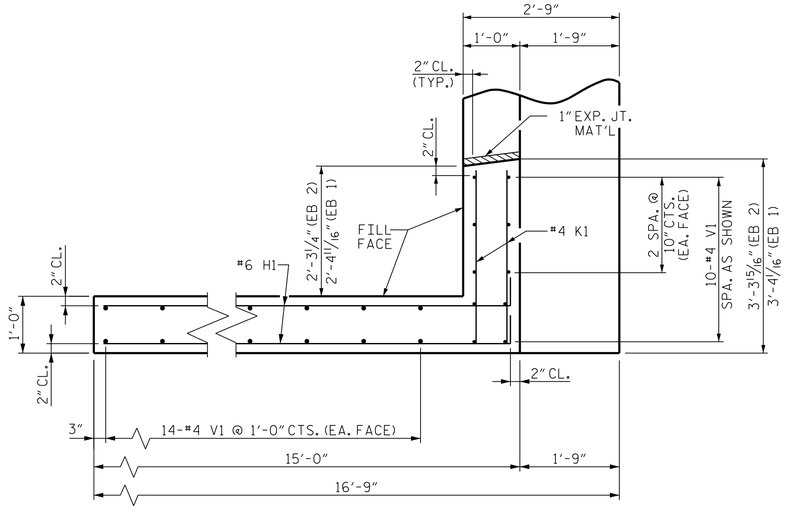
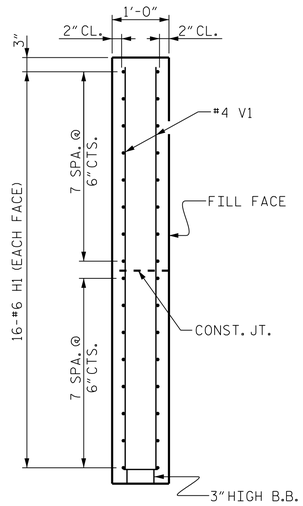


PLAN OF WING (W1)



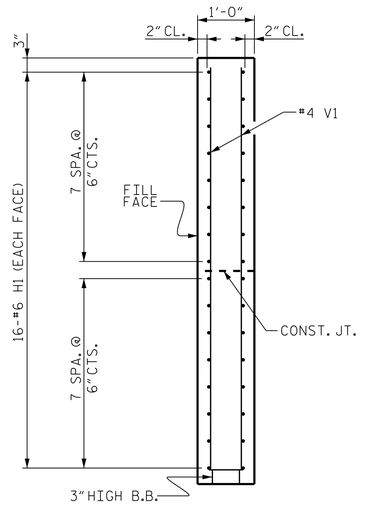
PLAN OF WING (W2)



SECTION X-X

ELEVATION OF WING (W1)

ELEVATION OF WING (W2)



SECTION Y-Y

WING DETAILS

PROJECT NO. BP12.R015

IREDELL COUNTY

STATION: 13+95.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
END BENT
WING DETAILS

BRIDGE NO. 480014

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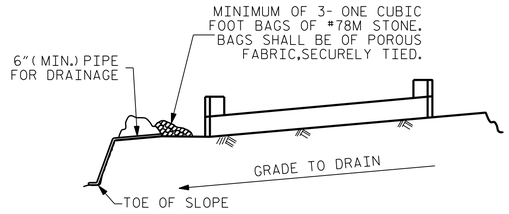
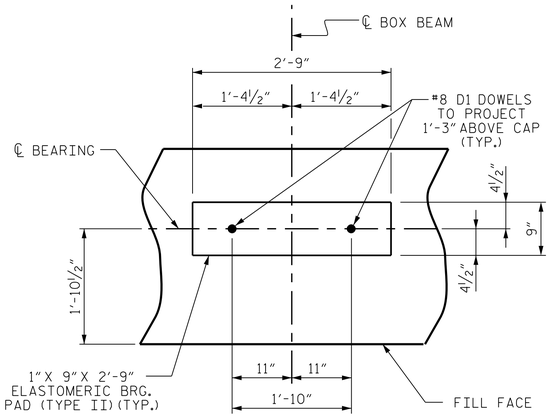


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

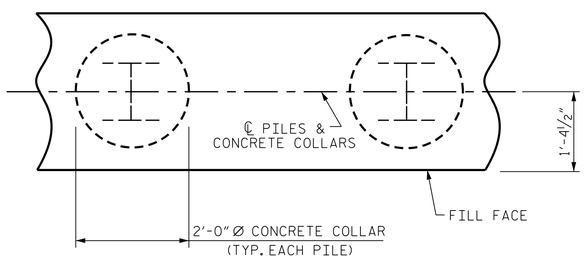
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

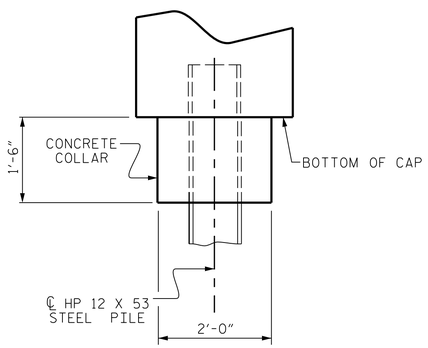


DETAIL "A"

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



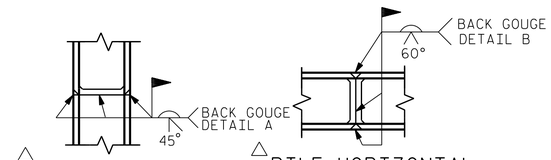
PLAN

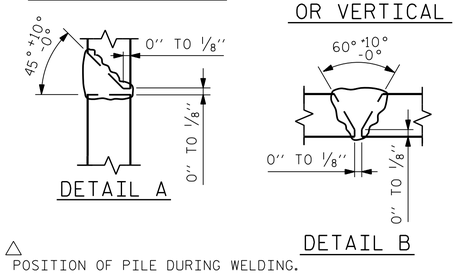


ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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

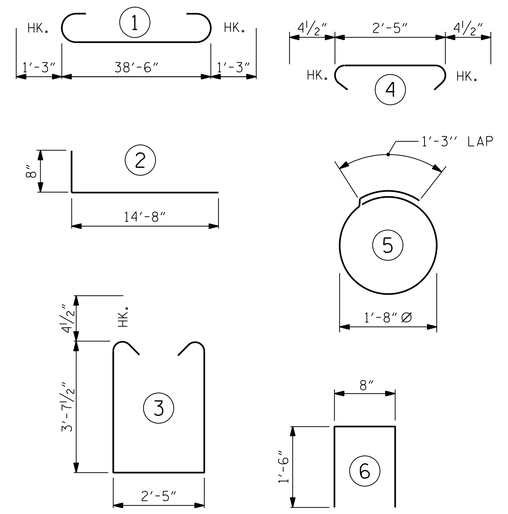




△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7 LIN. FT.= 335	NO: 7 LIN. FT.= 350
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1115
B2	28	#4	STR	20'-7"	385
B3	10	#4	STR	2'-5"	16
D1	22	#8	STR	2'-3"	132
H1	64	#6	2	15'-4"	1474
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	20'-7"	165
S1	50	#4	3	10'-5"	348
S2	50	#4	4	3'-2"	106
S3	28	#4	5	6'-6"	122
U1	33	#4	6	3'-8"	81
V1	76	#4	STR	7'-8"	389
V2	66	#4	STR	5'-9"	254

REINFORCING STEEL (FOR ONE END BENT) 4610 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	21.3 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	7.7 C.Y.
TOTAL CLASS A CONCRETE		29.0 C.Y.

PROJECT NO. BP12.R015

IREDELL COUNTY

STATION: 13+95.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
END BENT 1 AND 2 DETAILS

BRIDGE NO. 480014

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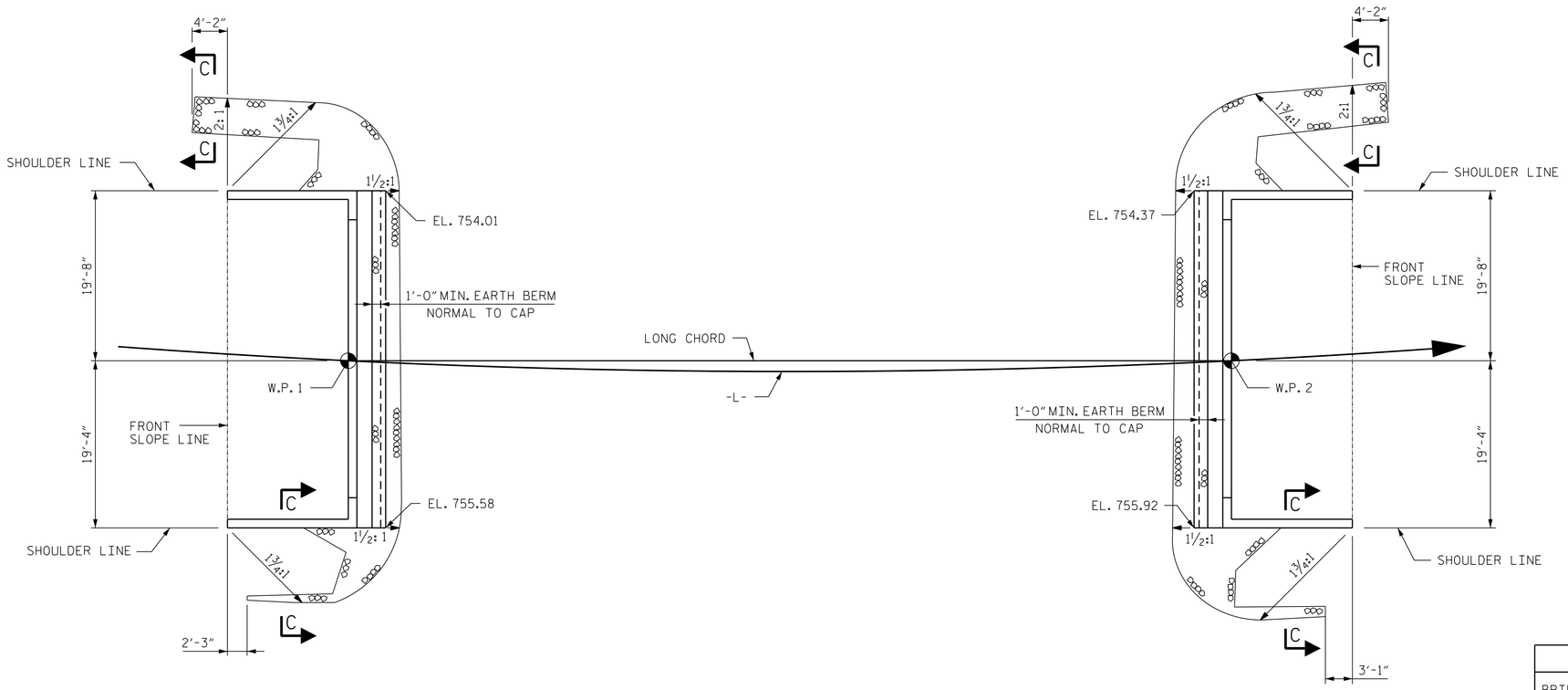
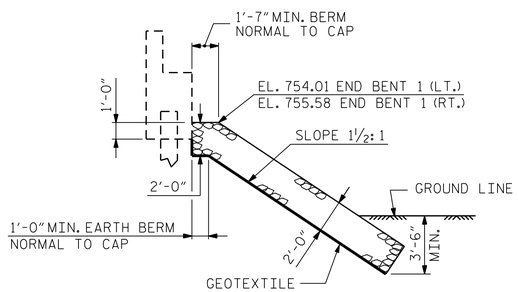
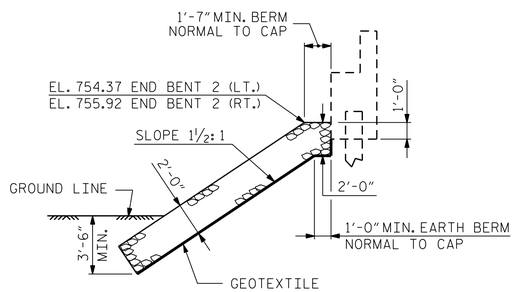


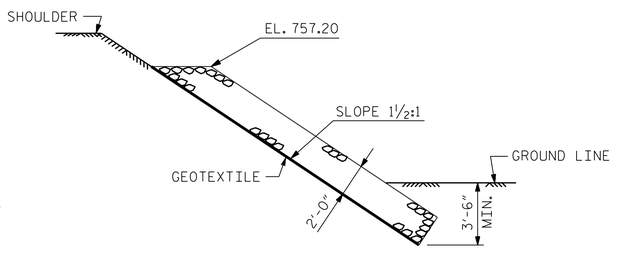
PLAN



℄ SECTION
BERM RIP RAPPED
(END BENT 1)



℄ SECTION
BERM RIP RAPPED
(END BENT 2)



SECTION C-C

ESTIMATED QUANTITIES

BRIDGE @ STA. 13+95.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	50	55
END BENT 2	60	70

PROJECT NO. BP12.R015
IREDELL COUNTY
STATION: 13+95.00 -L-

BRIDGE NO. 480014

STATE OF NORTH CAROLINA
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RIP RAP DETAILS

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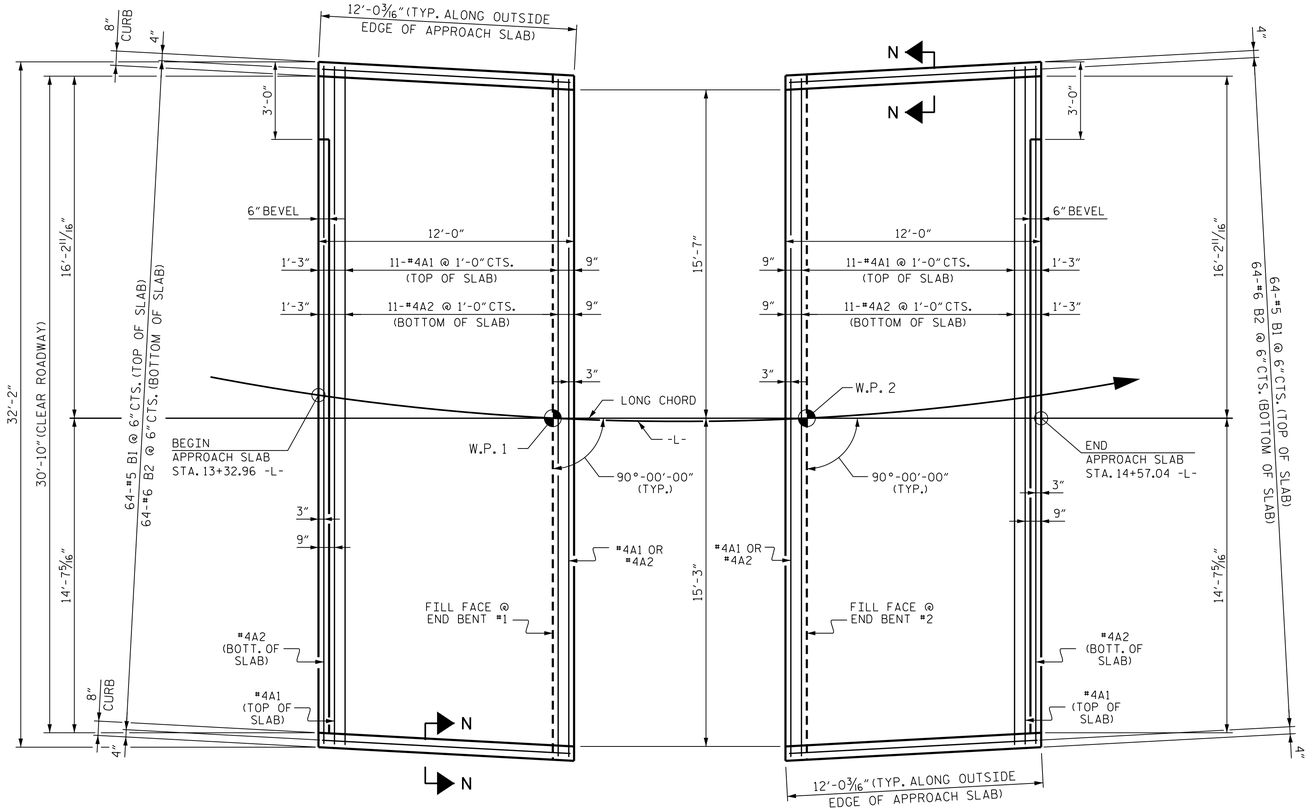
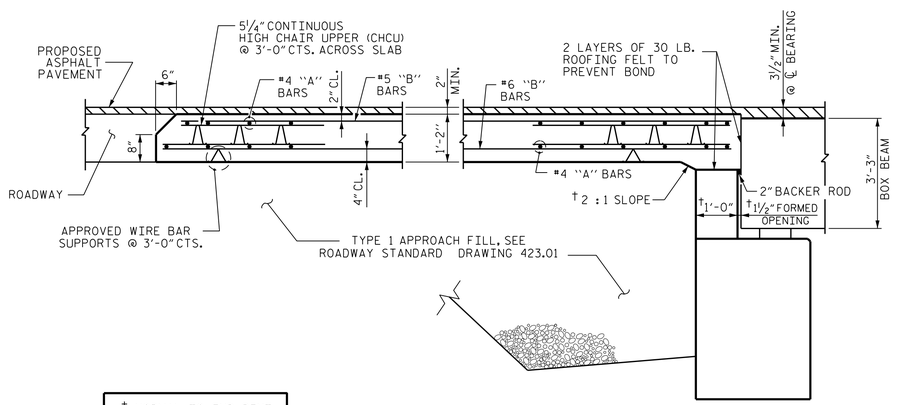


PLAN AT END BENT 1

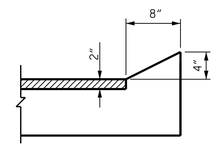
PLAN AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	31'-10"	276
A2	13	#4	STR	31'-10"	276
✱ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1397
✱ EPOXY COATED REINFORCING STEEL				LBS.	1021
CLASS AA CONCRETE				C. Y.	17.0

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ A1	13	#4	STR	31'-10"	276
A2	13	#4	STR	31'-10"	276
✱ B1	64	#5	STR	11'-2"	745
B2	64	#6	STR	11'-8"	1121
REINFORCING STEEL				LBS.	1397
✱ EPOXY COATED REINFORCING STEEL				LBS.	1021
CLASS AA CONCRETE				C. Y.	17.0

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

PROJECT NO. BP12.R015

IREDELL COUNTY

STATION: 13+95.00 -L-

BRIDGE NO. 480014

STATE OF NORTH CAROLINA
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RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE BOX BEAM UNIT (SUB-REGIONAL TIER)

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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
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 AASHTO
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 2024 "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" 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.