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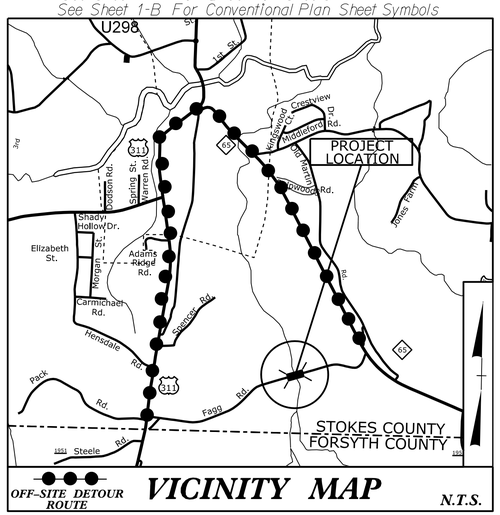
09/08/09

PROJECT: 17BP.9.R.41

CONTRACT: DI00178

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



VICINITY MAP

N.T.S.

RFC PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STOKES COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.9.R.41	1	

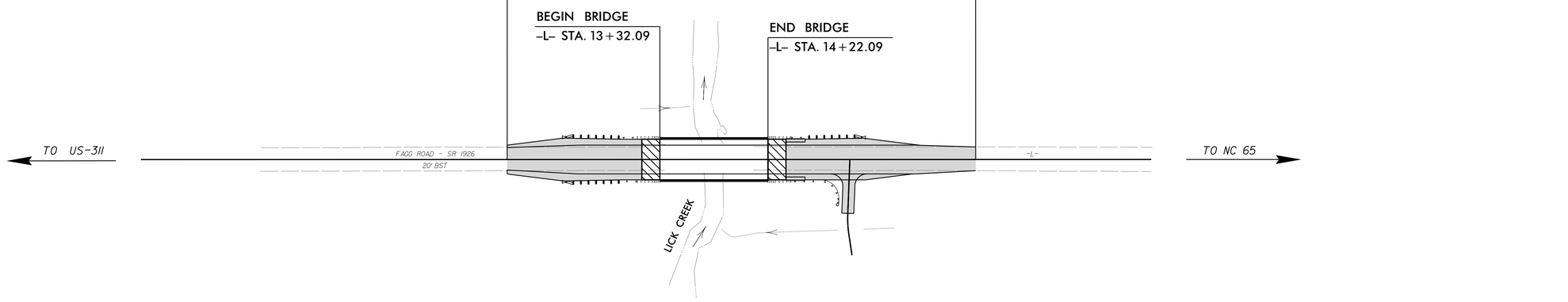
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.9.R.41	N/A	PE
17BP.9.R.41	N/A	R/W/ UTIL
17BP.9.R.41	N/A	CONST.

LOCATION: BRIDGE NO. 176 OVER LICK CREEK ON SR 1926 (FAGG ROAD)

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

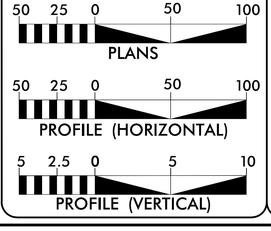
BEGIN PROJECT 17BP.9.R.41
–L– POT STA. 12+05.00

END PROJECT 17BP.9.R.41
–L– POT STA. 15+95.00



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 350
V = 55 MPH

FUNC CLASS = RURAL LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.9.R.41	=	0.057 MI.
LENGTH OF STRUCTURE PROJECT 17BP.9.R.41	=	0.017 MI
TOTAL LENGTH OF PROJECT 17BP.9.R.41	=	0.074 MI

NCDOT CONTACT: MATTHEW JONES, PE
NCDOT DIVISION 9 BRIDGE MANAGER

Stantec

PREPARED IN THE OFFICE OF:
STANTEC CONSULTING
801 Jones Franklin Road |Suite 300| Raleigh, NC 27606
Tel. (919) 851-6866 | Fax. (919) 851-7024 | www.stantec.com
License No. F-0672

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 27 , 2017

LETTING DATE:
DECEMBER 13, 2017

MIKE LINDGREN, PE
PROJECT ENGINEER

MICHAEL LITTLEFIELD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: Joshua G Dalton
11/8/2017 P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON

ROADWAY DESIGN ENGINEER

DocuSigned by: Michael B. Littlefield
11/8/2017 P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 035663 ENGINEER MICHAEL B. LITTLEFIELD

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/8/2017
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mlittlefield

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035663 MICHAEL B. LITTLEFIELD

11/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

EFF. 01-17-2012
REV. 05-24-2017

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modiefied Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
840.00	Concrete Base Pad for Drainage Structures
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 05-24-2017

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.

SUBSURFACE PLANS:

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

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

POWER - ENERGY UNITED

TELEPHONE - CENTURYLINK

CATV - CHARTER

RIGHT-OF-WAY MARKERS:

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

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mlittlefield

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

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:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — 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
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

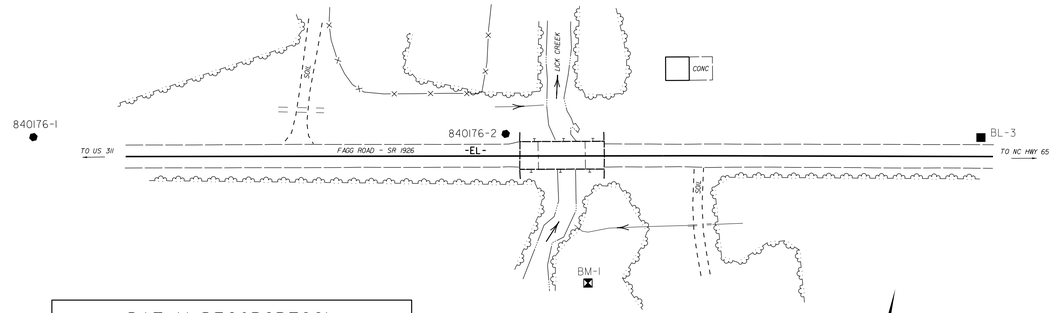
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According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

SURVEY CONTROL SHEET 84-0176

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	1 C – 1
Location and Surveys	

BL

POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
1	840176-1	916736.5860	1666523.3180	680.76	OUTSIDE PROJECT LIMITS	
2	840176-2	916848.4810	1666911.1410	649.33	13+24.85	18.92 LT
3	BL-3	916955.5053	1667302.9102	651.19	17+30.89	16.34 LT



BM-1 (173) ELEVATION = 640.85'
N 916745 E 1667013
BL STATION 9+75.00 127 RIGHT
R/R SPIKE SET IN 23" SYCAMORE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "840176-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 916848.481(ft) EASTING: 1666911.141(ft)
ELEVATION: 649.331(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000002691
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "840176-2" TO -L- STATION IS

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

NC GRID
NAD 83 NA 2011

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	2A-1

ROADWAY DESIGN ENGINEER — SEAL 035663 — MICHAEL B. LITTLEFIELD — 11/8/2017

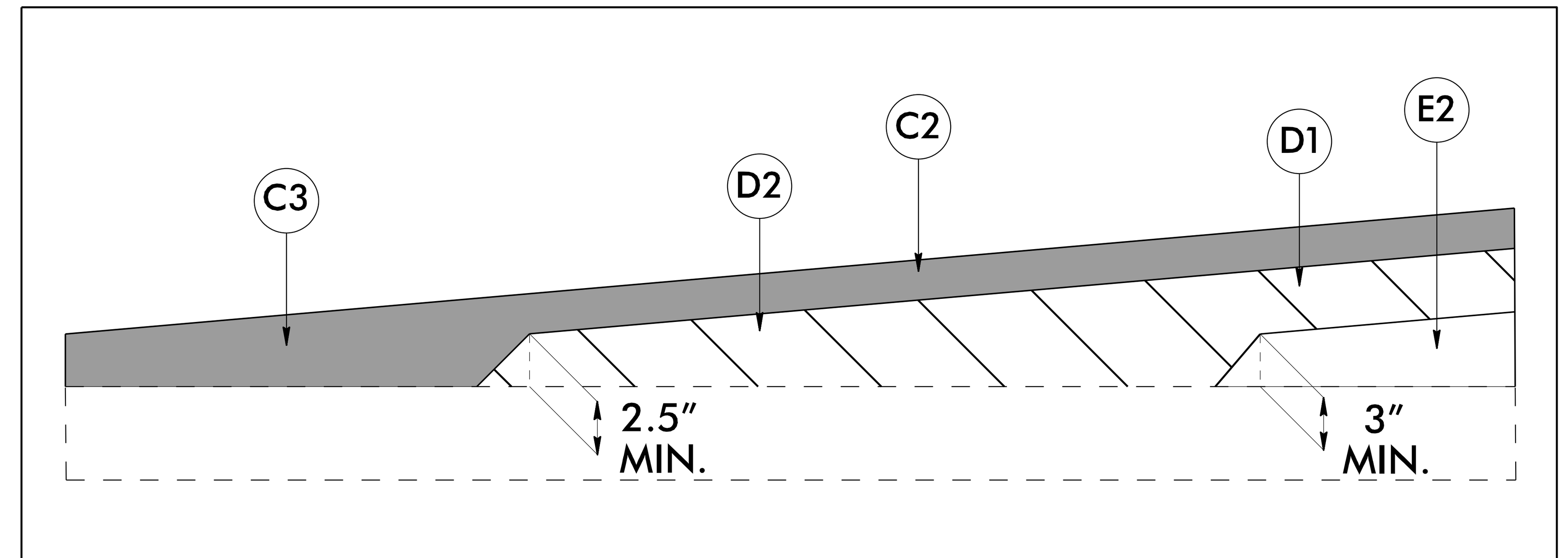
PAVEMENT DESIGN ENGINEER — SEAL 035654 — MATTHEW W. JONES — 11/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

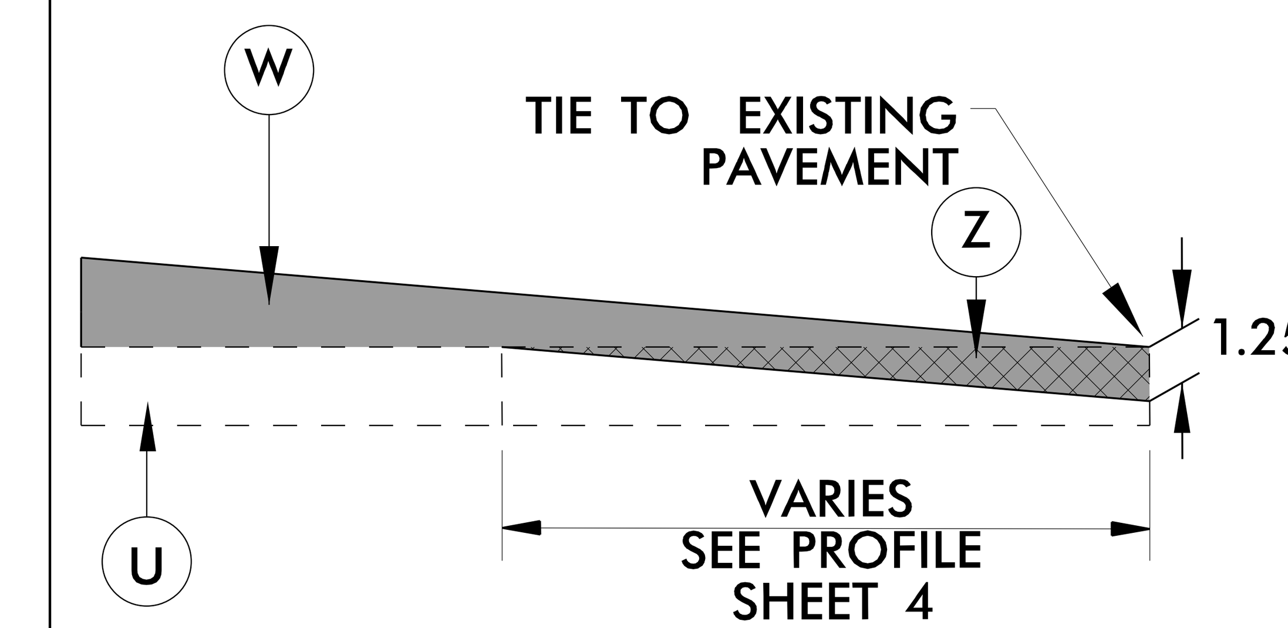
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.0" OR GREATER THAN 1.5".
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4".
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5".
R	PROP. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING. SEE DETAIL THIS SHEET
Z	MILLING 0" TO 1.5"

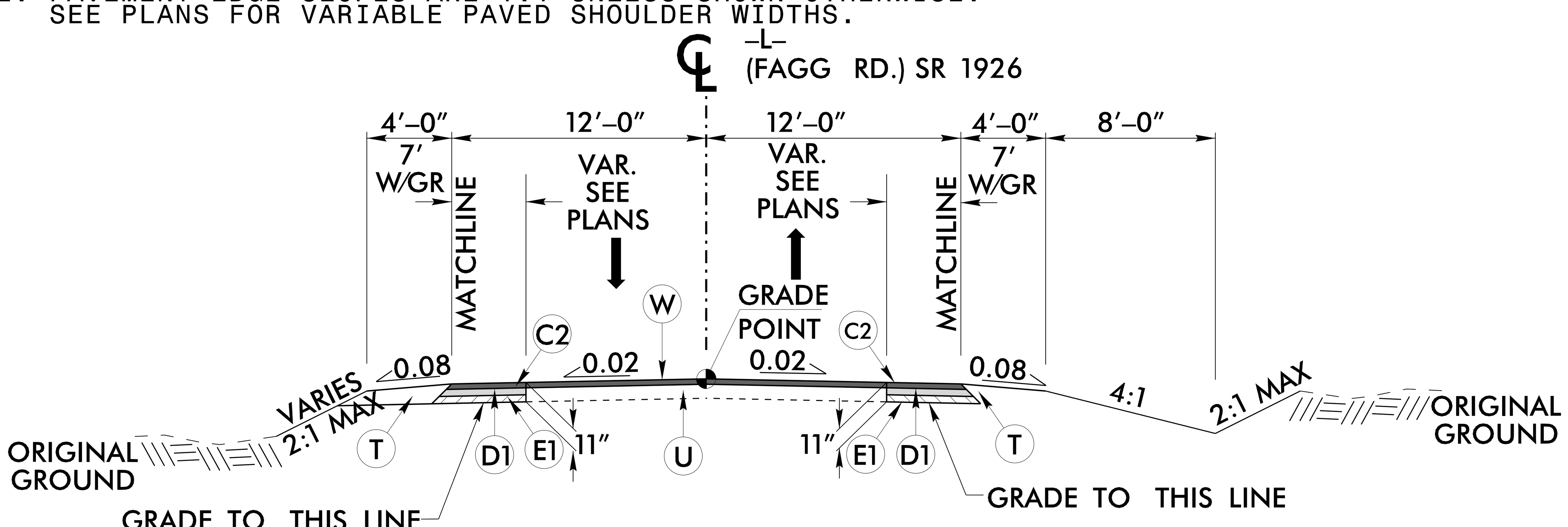
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
SEE PLANS FOR VARIABLE PAVED SHOULDER WIDTHS.



W : WEDGING DETAIL

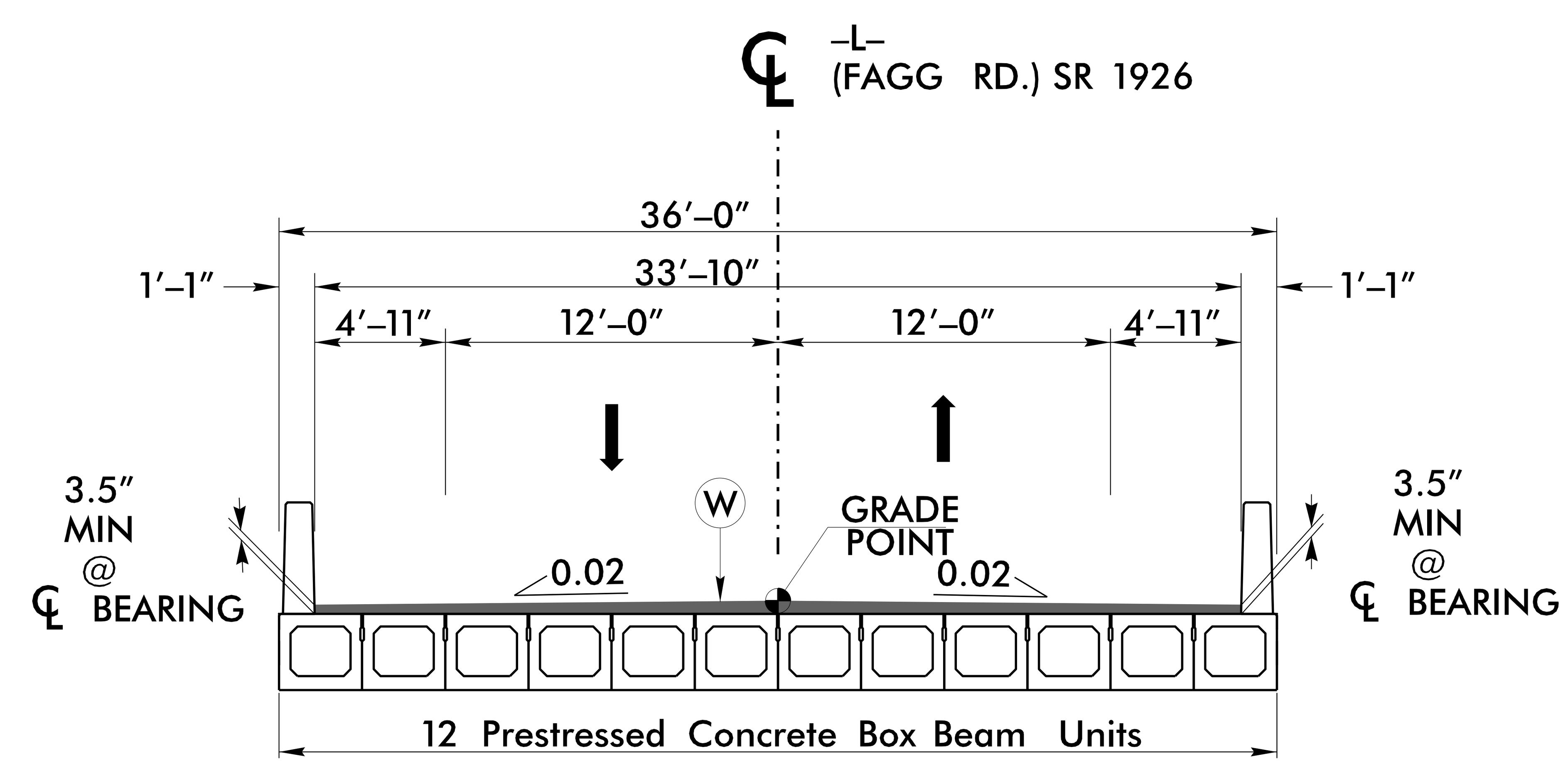


TIE-IN MILLING DETAIL



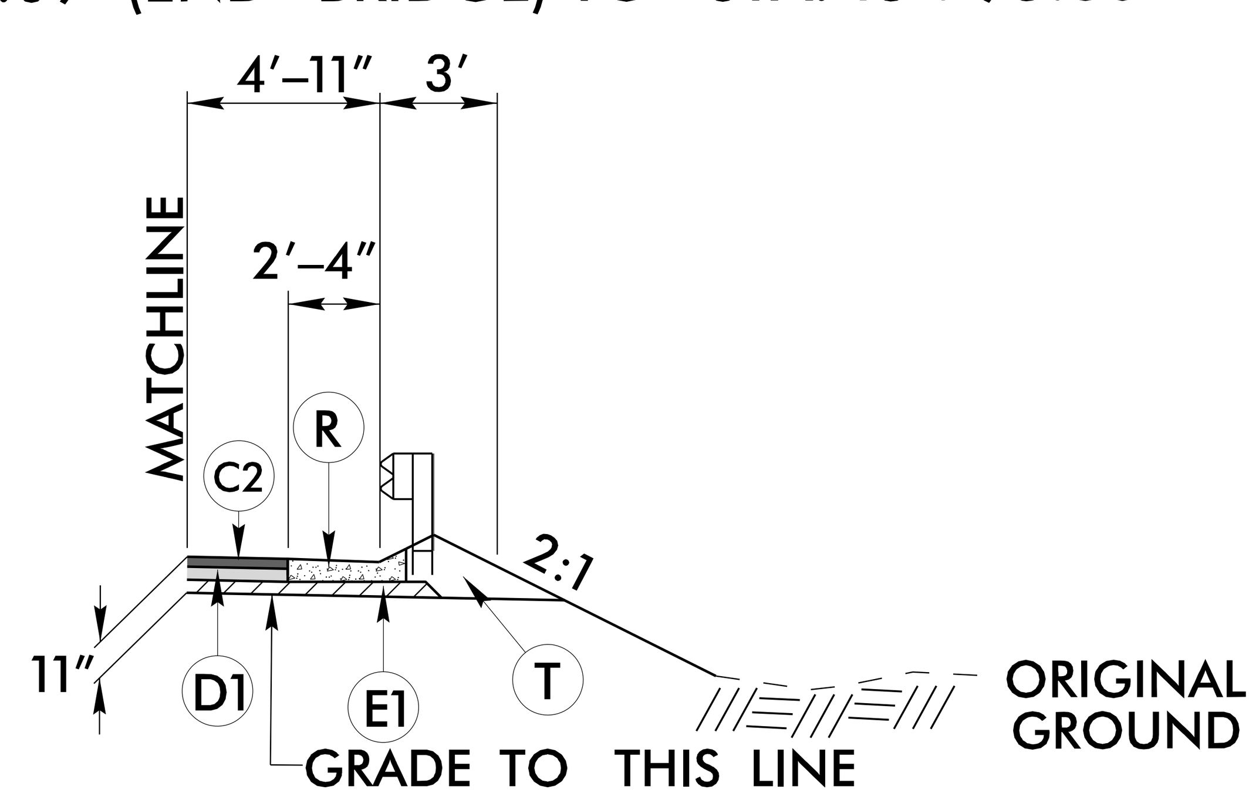
TYPICAL SECTION NO. 1

-L- STA. 12+05.00 TO STA. 13+23.09 (BEGIN BRIDGE)
-L- STA. 14+23.09 (END BRIDGE) TO STA. 15+95.00



TYPICAL SECTION NO. 2

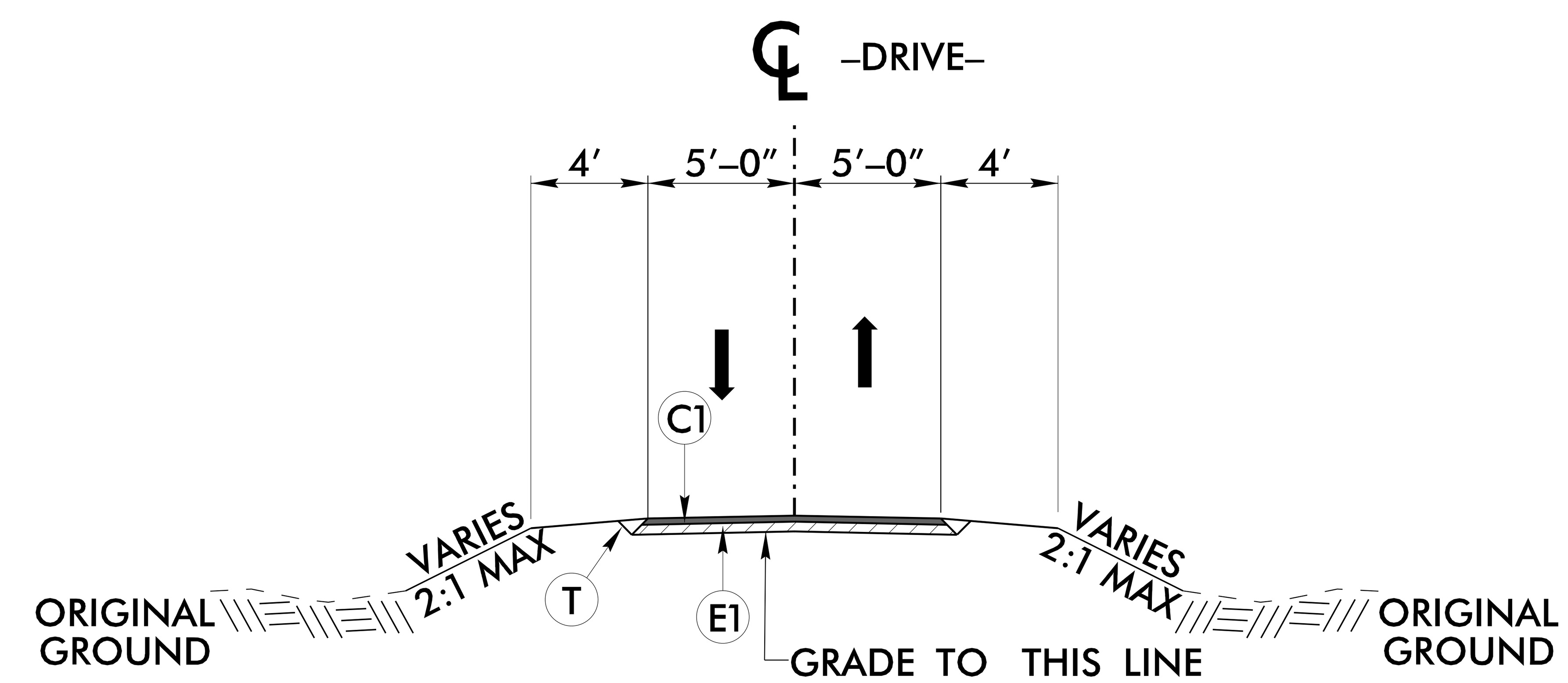
-L- STA. 13+32.09 (BEGIN BRIDGE) TO STA. 14+22.09 (BEGIN BRIDGE)



NOTE: MIRROR FOR LT SIDE

PARTIAL TYPICAL SECTION NO. 1A

USE PARTIAL TYPICAL SECTION IN CONJUNCTION WITH TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA. 14+37.09 TO STA. 14+53.00 (LT AND RT)



TYPICAL SECTION NO. 3

-DRIVE- STA. 10+35.09 TO STA. 10+79.93

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COMPUTED BY: ZAM DATE: 12-22-16
CHECKED BY: MBL DATE: 12-22-16

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

EARTHWORK SUMMARY (CY)

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
SUMMARY NO. 1					
STATION	STATION				
–L– 12+05.00	–L– 13+23.00	16	59	43	
SUB TOTAL SUMMARY NO. 1		16	59	43	
SUMMARY NO. 2					
STATION	STATION				
–L– 14+23.08	–L– 15+95.00	7	118	111	
SUB TOTAL SUMMARY NO. 2		7	118	111	
PROJECT TOTAL		23	177	154	
ESTIMATE 5% FOR BORROW PIT TOP SOIL				8	
GRAND TOTALS:		23	177	162	
SAY:		25	200	175	

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

Note: Approximate quantities only. Clearing and Grubbing, Unclassified Excavation, Borrow Excavation, Fine Grading, and Removal of Existing Asphalt Pavement will be paid for at the contract lump sum price for "Grading".

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
–L–	14+37.09	14+53.00	15.91′
–L–	14+37.09	14+53.00	15.91′
		TOTAL:	31.82′
		SAY:	32′

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350				REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-3	AT-1	Type III	NO.	PERMITTED G	PERMITTED NG		
–L–	12+50.84	13+32.09	LEFT	81.25′				13+32.09	4′–11″	7′–11″	50′		1′		1		1					
–L–	12+50.84	13+32.09	RIGHT	81.25′				13+32.09	4′–11″	7′–11″	50′		1′		1		1					
–L–	14+22.09	15+04.34	LEFT	81.25′			14+22.09		4′–11″	7′–11″		50′		1′	1		1					
–L–	14+22.09	14+80.94	RIGHT	43.75	25.00′		14+22.09		4′–11″	7′–11″						1	1					
			SUBTOTAL	287.50′	25.00′																	
	LESS ANCHOR DEDUCTIONS														3	1	4					
	GREU-350	3 @ 50′		150.00′																		
	TYPE III	4 @ 18.75′		75.00′																		
			TOTAL	62.50′	25.00′																	
			SAY	62.50′	25.00′																	

ADDITIONAL GUARDRAIL POSTS: 5 EACH

4/04/06

COMPUTED BY: JD DATE: 06-21-17
CHECKED BY: BE DATE: 06-21-17

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
14+44 -L-	RT	401		648.4															
		401	402		645.6	645.3													
14+44 -L-	LT	402		648.4															
		402	403		645.3	639.9			20							X			
PROJECT TOTALS									20										

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"
14+44 -L-																						
																28						
14+44 -L-																						
PROJECT TOTALS																28						

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET		G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.G.D.I. STD. 840.35	DRAINAGE PIPEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
14+44 -L-								1														1	1					
14+44 -L-								1														1	1					
																								2-15"				
PROJECT TOTALS																						2	2	2-15"				

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.)	GRATED DROP INLET (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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mlittlefield

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 035663 — MICHAEL B. LITTLEFIELD — 11/8/2017	SEAL 26971 — JOSHUA G. DALTON — 11/8/2017

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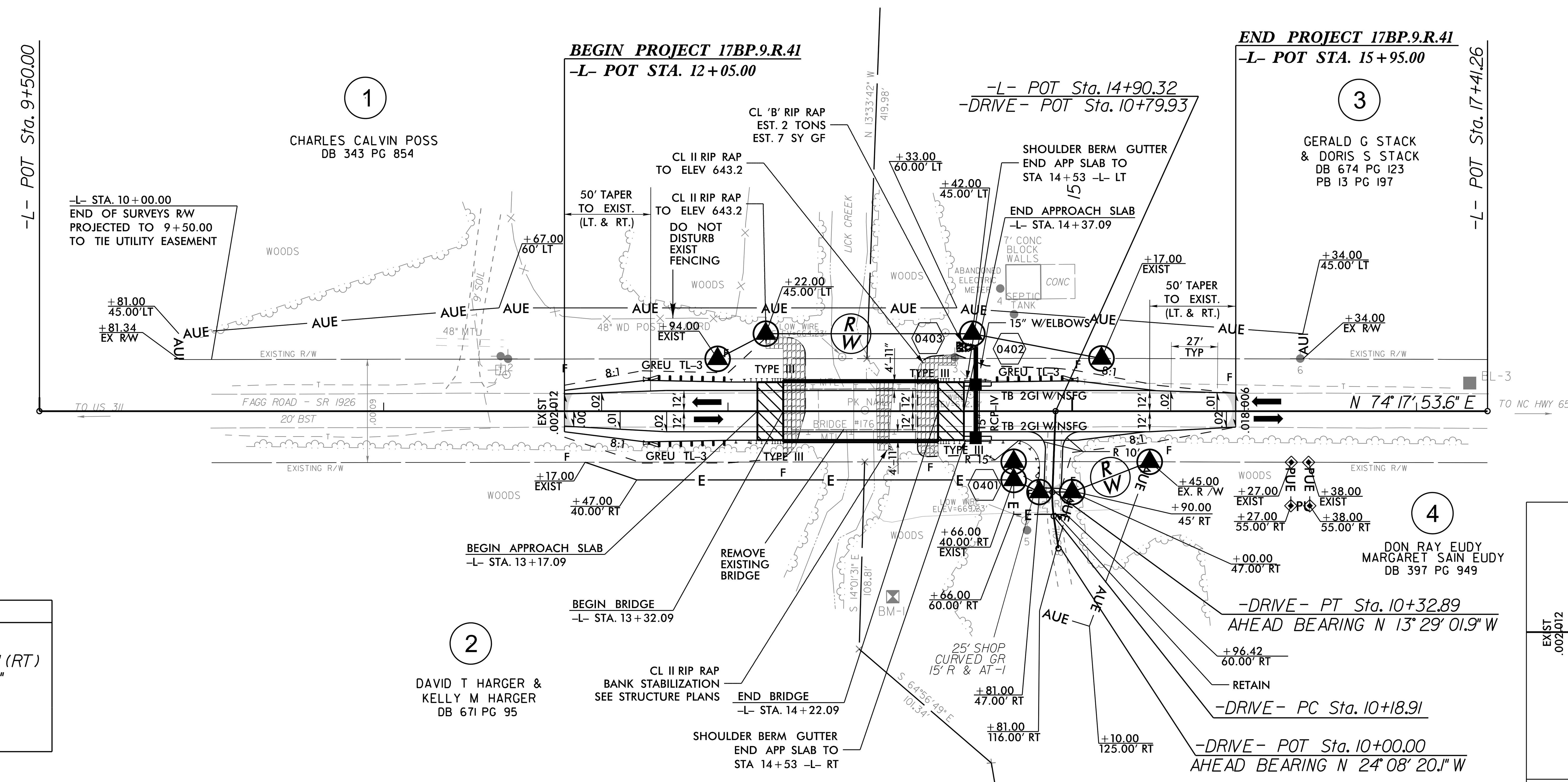
REVISIONS

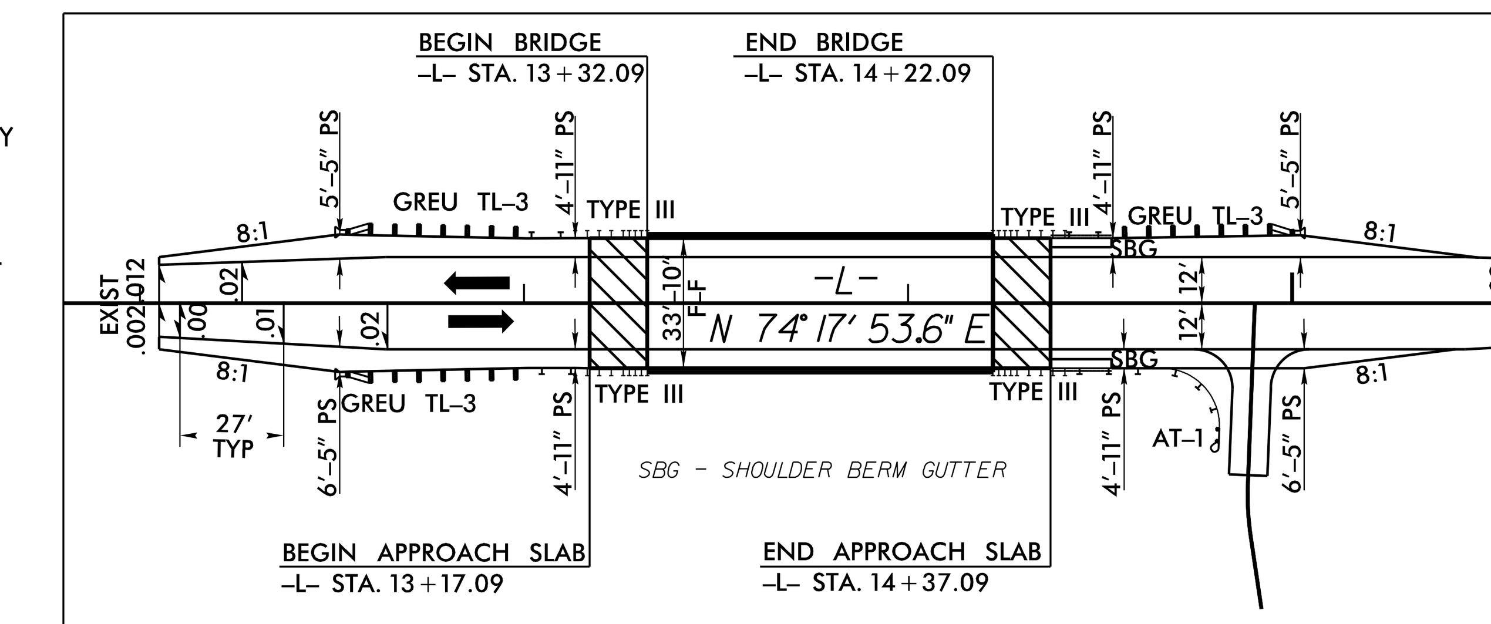
8/17/99


BEGIN PROJECT 17BP.9.R.41
-L- POT STA. 12+05.00
END PROJECT 17BP.9.R.41
-L- POT STA. 15+95.00
-L- POT Sta. 9+50.00
-L- POT Sta. 17+41.26
-L- POT Sta. 14+90.32
-DRIVE- POT Sta. 10+79.93
CHARLES CALVIN POSS
DB 343 PG 854
GERALD G STACK
& DORIS S STACK
DB 674 PG 123
PB 13 PG 197
DAVID T HARGER &
KELLY M HARGER
DB 671 PG 95
DON RAY EUDY
MARGARET SAIN EUDY
DB 397 PG 949
-L- STA. 10+00.00
END OF SURVEYS R/W
PROJECTED TO 9+50.00
TO TIE UTILITY EASEMENT
CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GF
CL II RIP RAP
TO ELEV 643.2
50' TAPER
TO EXIST.
(LT. & RT.)
DO NOT
DISTURB
EXIST
FENCING
SHOULDER BERM GUTTER
END APP SLAB TO
STA 14+53 -L- LT
END APPROACH SLAB
-L- STA. 14+37.09
BEGIN APPROACH SLAB
-L- STA. 13+17.09
BEGIN BRIDGE
-L- STA. 13+32.09
REMOVE
EXISTING
BRIDGE
CL II RIP RAP
BANK STABILIZATION
SEE STRUCTURE PLANS
END BRIDGE
-L- STA. 14+22.09
SHOULDER BERM GUTTER
END APP SLAB TO
STA 14+53 -L- RT
N 74° 17' 53.6" E
-DRIVE- PT Sta. 10+32.89
AHEAD BEARING N 13° 29' 01.9" W
-DRIVE- PC Sta. 10+18.91
-DRIVE- POT Sta. 10+00.00
AHEAD BEARING N 24° 08' 20.1" W
25' SHOP
CURVED GR
15' R & AT-1
RETAIN
FAGG ROAD - SR 1926
NAD 83

-DRIVE-
PI Sta 10+25.92
Δ = 10° 39' 18.3" (RT)
D = 76° 13' 08.4"
L = 13.98'
T = 7.01'
R = 75.17'

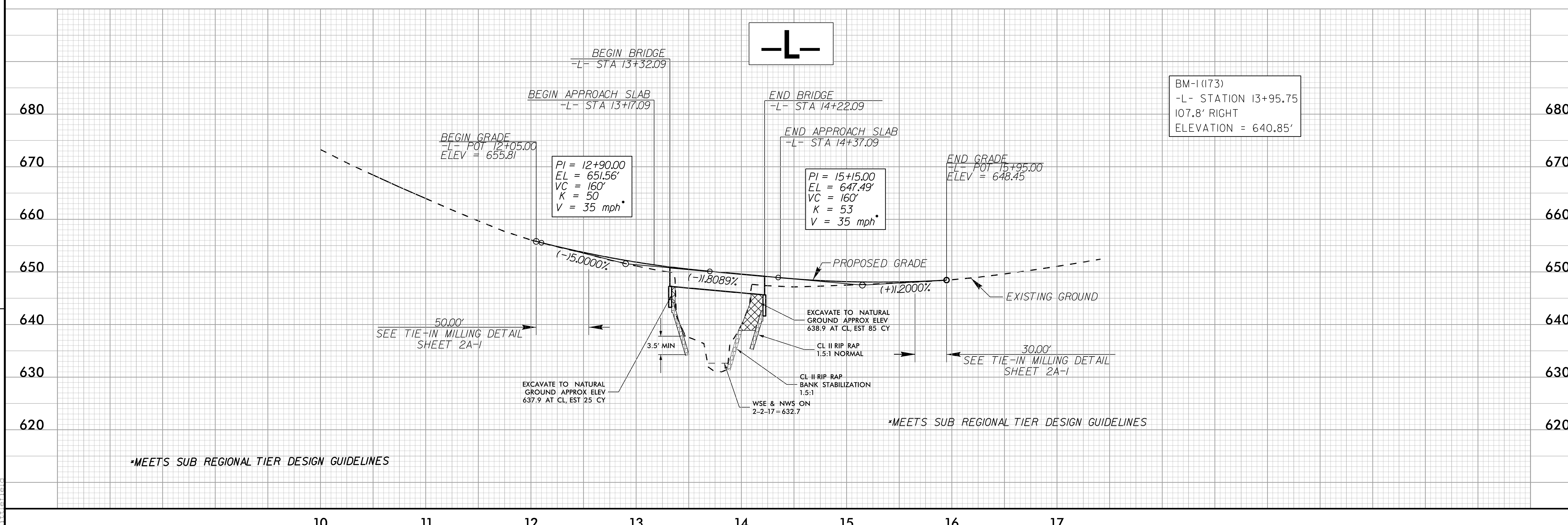
BRIDGE APPROACH SLAB

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-16



DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP

*MEETS SUB REGIONAL TIER DESIGN GUIDELINES


-L-
BEGIN BRIDGE
-L- STA 13+32.09
BEGIN APPROACH SLAB
-L- STA 13+17.09
END BRIDGE
-L- STA 14+22.09
END APPROACH SLAB
-L- STA 14+37.09
BEGIN GRADE
-L- POT 12+05.00
ELEV = 655.81
END GRADE
-L- POT 15+95.00
ELEV = 648.45
PI = 12+90.00
EL = 651.56'
VC = 160'
K = 50
V = 35 mph*
PI = 15+15.00
EL = 647.49'
VC = 160'
K = 53
V = 35 mph*
(-)5.0000%
(-)1.8089%
(+)1.2000%
PROPOSED GRADE
EXISTING GROUND
50.00'
SEE TIE-IN MILLING DETAIL
SHEET 2A-1
30.00'
SEE TIE-IN MILLING DETAIL
SHEET 2A-1
3.5' MIN
EXCAVATE TO NATURAL
GROUND APPROX ELEV
637.9 AT CL, EST 25 CY
EXCAVATE TO NATURAL
GROUND APPROX ELEV
638.9 AT CL, EST 85 CY
CL II RIP RAP
1.5:1 NORMAL
CL II RIP RAP
BANK STABILIZATION
1.5:1
WSE & NWS ON
2-2-17 = 632.7
680
670
660
650
640
630
620
10
11
12
13
14
15
16
17

BM-1 (173)
-L- STATION 13+95.75
107.8' RIGHT
ELEVATION = 640.85'

*MEETS SUB REGIONAL TIER DESIGN GUIDELINES

*MEETS SUB REGIONAL TIER DESIGN GUIDELINES

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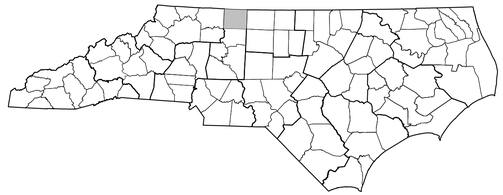
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

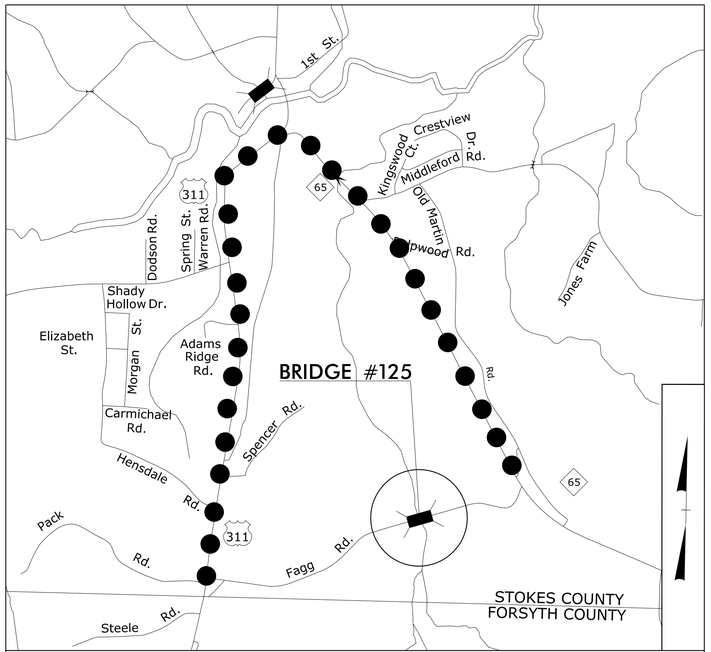
TRANSPORTATION MANAGEMENT PLAN

STOKES COUNTY

DIVISION 9



BRIDGE NO. 176 ON SR 1926 (FAGG ROAD) OVER LICK CREEK



OFF-SITE DETOUR ROUTE

VICINITY MAP

INDEX OF SHEETS

SHEET NO.
TMP-1

TIP PROJECT: 17BP.9.R.41

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

N.C.D.O.T. DIVISION 9

MATTHEW JONES, P.E. — NCDOT DIVISION 9 BRIDGE MANAGER

_____ — TRAFFIC CONTROL PROJECT ENGINEER

_____ — TRAFFIC CONTROL PROJECT DESIGN ENGINEER

_____ — TRAFFIC CONTROL DESIGN ENGINEER

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

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License No. F-0672

JAY W. WOOLARD, PE — SENIOR TRANSPORTATION ENGINEER

ANDREW N. GOOD — TRANSPORTATION DESIGNER

11/8/2017

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER JAY W WOOLARD JR.

DocuSigned by: J.W. Woolard
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PROJ. REFERENCE NO.	SHEET NO.
17BP.9.R.41	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY - DRUM

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- PROPOSED PVMT.
- NORTH ARROW
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- PREVIOUSLY STARTED / CONCURRENT CONSTRUCTION
- PAVEMENT REMOVAL
- TEMPORARY PAVEMENT
- TEMPORARY PAVEMENT ASPHALT PAD
- TEMPORARY PAVEMENT BREAKDOWN LANE

PAVEMENT MARKINGS

- EXISTING LINES

TEMPORARY MARKINGS	PREVIOUSLY PLACED	
		WHITE EDGE LINE
		YELLOW EDGE LINE
		BROKEN LANE LINES
		MINISKIP LANE LINES
		DOUBLE YELLOW LINES
		GORELINE
		STOP BAR

PAVEMENT MARKING SYMBOLS

- EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)

TEMPORARY SYMBOLS	PREVIOUSLY PLACED	
		PAVEMENT MARKING SYMBOLS
ONLY	ONLY	PAVEMENT MARKING ALPHANUMERIC CHARACTERS

TRAFFIC CONTROL DEVICES

TEMPORARY DEVICES	PREVIOUSLY PLACED	
		BARRICADE (TYPE III)
		CONE
		DRUM
		FLASHING ARROW BOARD
		FLAGGER
		LAW ENFORCEMENT
		TRUCK MOUNTED ATTENUATOR (TMA)
		CHANGEABLE MESSAGE SIGN
		TEMPORARY CRASH CUSHION
		TEMPORARY CRASH CUSHION RESET
		PORTABLE CONCRETE BARRIER
		PORTABLE CONCRETE BARRIER (RESET)
		ANCHORED CONCRETE BARRIER
		ANCHORED CONCRETE BARRIER (RESET)

SIGNALS

EXISTING | PROPOSED | TEMPORARY (TEMP)

TEMPORARY SIGNING

TEMPORARY SIGNS	PREVIOUSLY PLACED	
		PORTABLE SIGN
		STATIONARY SIGN
		STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

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ROADWAY STANDARD DRAWINGS AND LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
17BP.9.R.41	TMP-1B

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, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

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

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 TRANSPORTATION MANAGEMENT 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.

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

TRAFFIC PATTERN ALTERATIONS

F) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

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

AND

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.

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

AND

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

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.

MISCELLANEOUS

K) MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING THE LIFE OF THE CONTRACT, UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER. USE INCIDENTAL STONE WHEN NECESSARY.

L) ALL DIMENSIONS AND STATIONS IN THE TRANSPORTATION MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.

M) ENSURE THE OVERSIZE/OVERWEIGHT PERMIT UNIT (919) 814-3700 HAS BEEN ADVISED OF THE ONGOING TRAFFIC OPERATIONS THROUGH THE DIVISION OFFICE.

TRAFFIC MANAGEMENT STRATEGY

PROPOSED BRIDGE AND ROADWAY CONSTRUCTION WILL BE PERFORMED UNDER A ROAD CLOSURE, WITH TRAFFIC OPERATING ON AN OFF-SITE DETOUR (4.2 MILES).

ROADS USED FOR OFFSITE DETOUR INCLUDE US 311 AND NC 65.

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11/8/2017

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER W. WOOLARD, JR.

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GENERAL NOTES AND TRAFFIC MANAGEMENT STRATEGY

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PROJ. REFERENCE NO.	SHEET NO.
17BP.9.R.41	TMP-2

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

SIGN WIDTH: 30″
HEIGHT: 12″
TOTAL AREA: 2.5 Sq.Ft.

BORDER TYPE: RECESSED
RADII: 1.5″
WIDTH: 0.44″
RECESS: 0.38″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.063″ (1.6MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: JWW
PROJECT ID: 17BP.9.R.41 DIV: 9
DATE: Sep 27, 2017

Spacing Factor is 1 unless specified otherwise

USE NOTES

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

LETTER POSITIONS

Letter spacings are to start of next letter																					Series/Size Text Length
	F	A	G	G		R	D														C 2000
3.7	2.8	3.8	3.7	2.8	3	3.7	2.8	3.7													22.6

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SPECIAL SIGN DESIGN
FAGG RD

11/1/2017
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PROJ. REFERENCE NO.	SHEET NO.
17BP.9.R.41	TMP-3

PHASE I
(TMP-4)

STEP 1:

USING RSD 1101.03, SHEET 1 OF 9 AND SHEET TMP-4, PLACE TRAFFIC ON OFF-SITE DETOUR ROUTE, AND CLOSE SR 1926 (FAGG ROAD).

STEP 2:

WITH SR 1926 CLOSED TO TRAFFIC, PERFORM THE FOLLOWING:

- REMOVE EXISTING BRIDGE
- CONSTRUCT PROPOSED BRIDGE
- CONSTRUCT PROPOSED -L- ROADWAY THROUGH FINAL SURFACE COURSE
- PLACE FINAL PAVEMENT MARKINGS/MARKERS AND TIE IN WITH EXISTING MARKINGS.

PHASE II

REMOVE ROAD CLOSURE DEVICES AND DETOUR SIGNS AND OPEN SR 1926 (FAGG ROAD) TO TRAFFIC.

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PHASING

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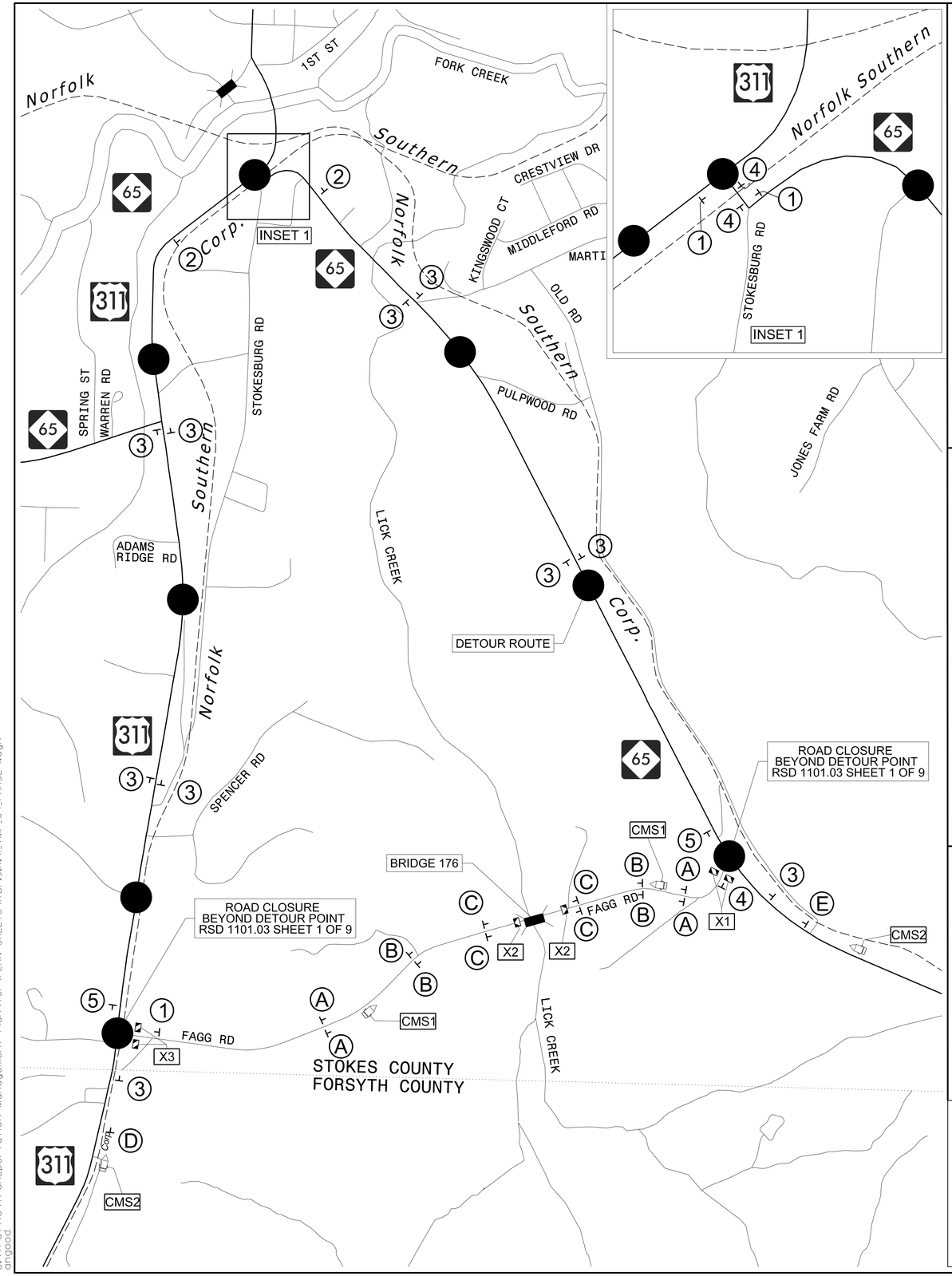

PROJ. REFERENCE NO.	SHEET NO.
17BP.9.R.41	TMP-4

1 DETOUR M4-8 24"X12"
FAGG RD
M6-1R 21"x15"

2 DETOUR M4-8 24"X12"
FAGG RD
M5-1R 21"x15"

3 DETOUR M4-8 24"X12"
FAGG RD
M6-3 21"x15"

4 DETOUR M4-8 24"X12"
FAGG RD
M6-1L 21"x15"

5 END DETOUR M4-8a 24"X18"
FAGG RD

A ROAD CLOSED AHEAD W20-3 48" X 48"

B ROAD CLOSED 1000 FT W20-3 48"X48"

C ROAD CLOSED 500 FT W20-3 48"X48"

D ROAD CLOSED W20-3 48" X 48"
NEXT RIGHT SP-4R 48"X12"

E ROAD CLOSED W20-3 48" X 48"
NEXT LEFT SP-4L 48"X12"

X1 ROAD CLOSED TO THRU TRAFFIC R11-4 60"X30"
DETOUR M4-10R 48"X18"
TYPE III BARRICADE

X2 ROAD CLOSED R11-2 48"X30"
TYPE III BARRICADE

X3 ROAD CLOSED 1 MILE AHEAD R11-3 60"X30"
LOCAL TRAFFIC ONLY
DETOUR M4-10L 48"X18"
TYPE III BARRICADE

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

SR 1926 (FAGG ROAD) ROAD CLOSURE AND DETOUR ROUTE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
STOKES COUNTY

LOCATION: BRIDGE NO. 176 ON SR 1926 (FAGG ROAD)
OVER LICK CREEK

TIP NO.	SHEET NO.
17BP.9.R.41	PMP-1

APPROVED: _____

DATE: _____

SEAL

11/8/2017

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER J. W. WOOLARD JR.

DocuSigned by: J.W. Woolard

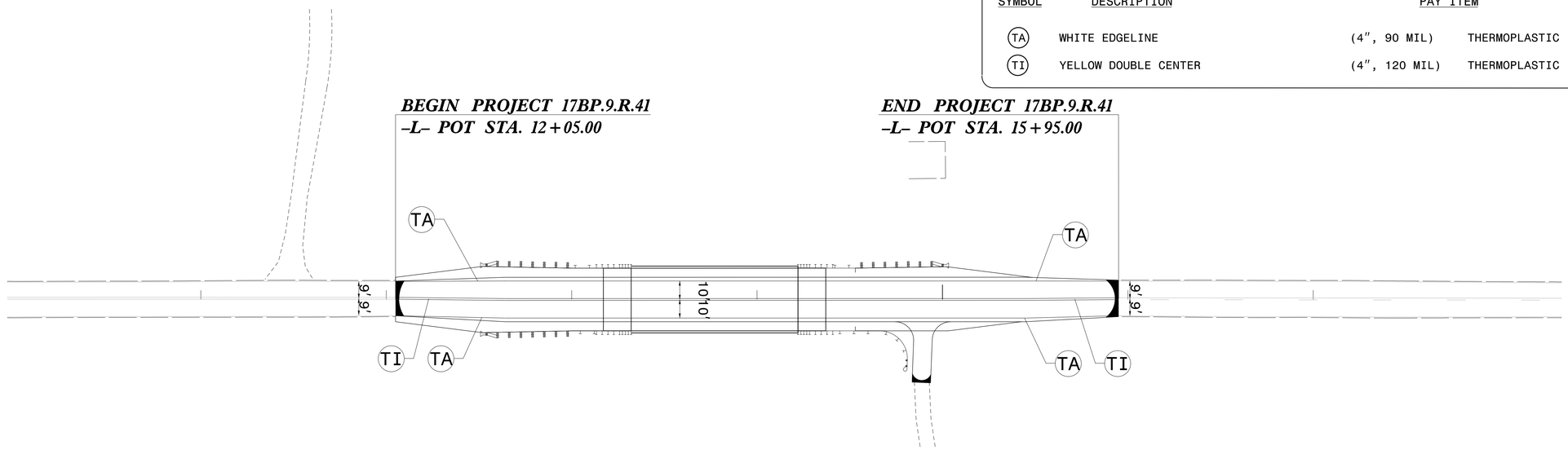
BBC02F49E95C4EC...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Stantec

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM	
TA	WHITE EDGELINE	(4", 90 MIL)	THERMOPLASTIC
TI	YELLOW DOUBLE CENTER	(4", 120 MIL)	THERMOPLASTIC



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
ALL ROADS	THERMOPLASTIC	N/A

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

PLAN REVIEWED BY: N.C.D.O.T. DIVISION 9 CONTACT

MATTHEW JONES, PE DIVISION BRIDGE PROG. MANAGER

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SIGNING AND DELINEATION UNIT

PLAN PREPARED BY:

JAY WOOLARD, P.E. SENIOR TRANSPORTATION ENGINEER

ANDREW N. GOOD TRANSPORTATION DESIGNER

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

INDEX

T.I.P.: 17BP.9.R.41

11/1/2017
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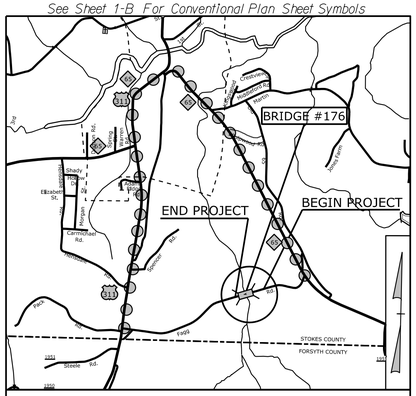
dngood

TIP PROJECT: 17BP.9.R.41

See Sheet 1-B For Conventional Plan Sheet Symbols



VICINITY MAP

N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

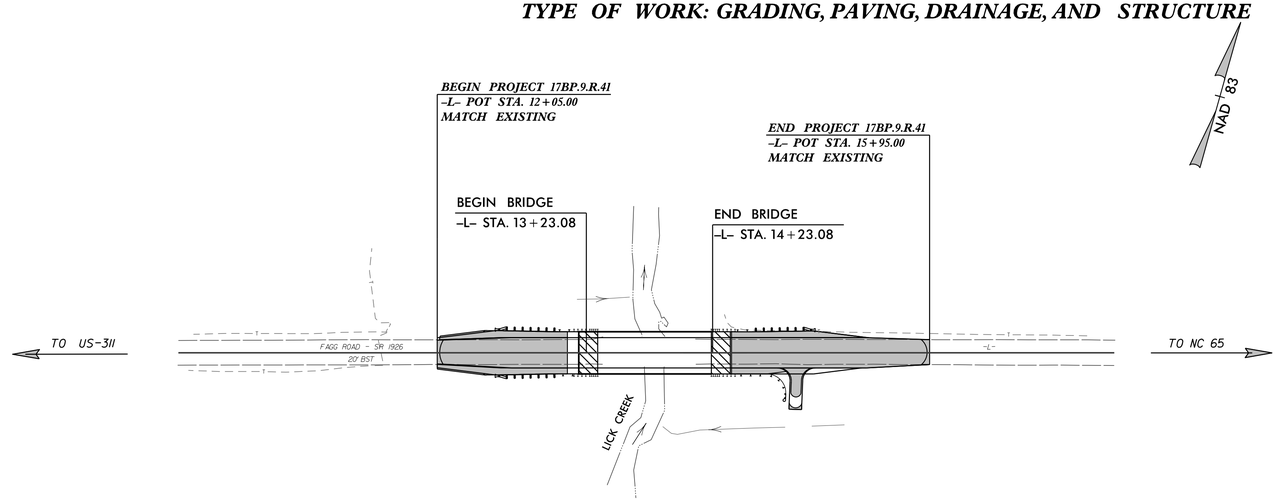
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.9.R.41	EC-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
17BP.9.R.41	N/A	PE	

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

STOKES COUNTY

LOCATION: BRIDGE NO. 176 ON SR 1926 (FAGG ROAD) OVER LICK CREEK

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



EROSION AND SEDIMENT CONTROL MEASURES

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

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

THIS PROJECT IS NOT WITHIN A MUNICIPAL BOUNDARY
THIS IS NOT A CONTROL OF ACCESS PROJECT
CLEARING ON THIS PROJECT SHALL BE IN ACCORDANCE WITH METHOD III
*MEETS SUB REGIONAL TIER DESIGN GUIDELINES

GRAPHIC SCALE

50′ 25′ 0 50′ 100′

SCALE: 1″ = 50′

RIGHT OF WAY DATE:

LETTING DATE:

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared in the Office of:

SUNGATE DESIGN GROUP, P.A.

905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

Designed by:

Brian Elam, PE ***3195***

NAME *LEVEL III CERTIFICATION NO.*

Reviewed in the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2012 STANDARD SPECIFICATIONS

Reviewed by:

Noelle Ring, CPESC

Roadway Standard Drawings

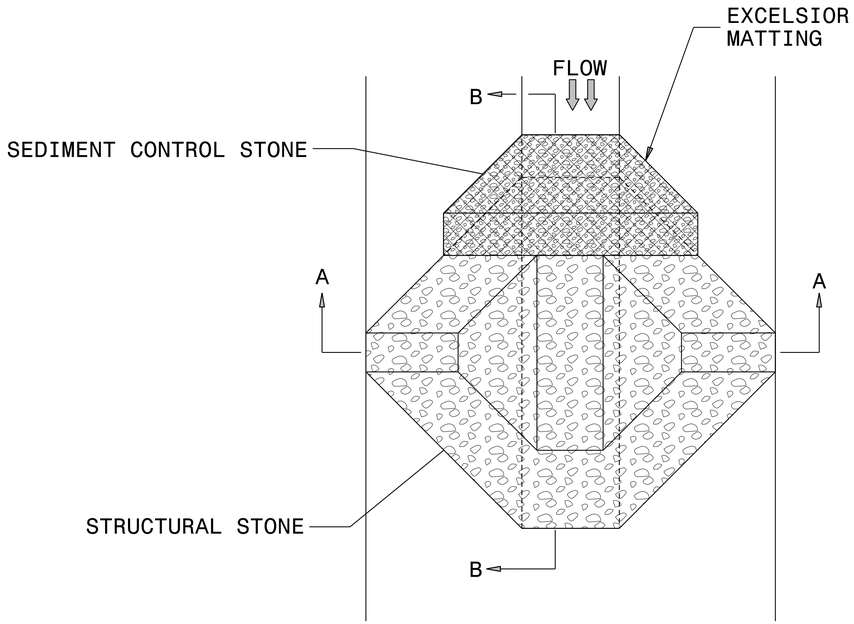
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

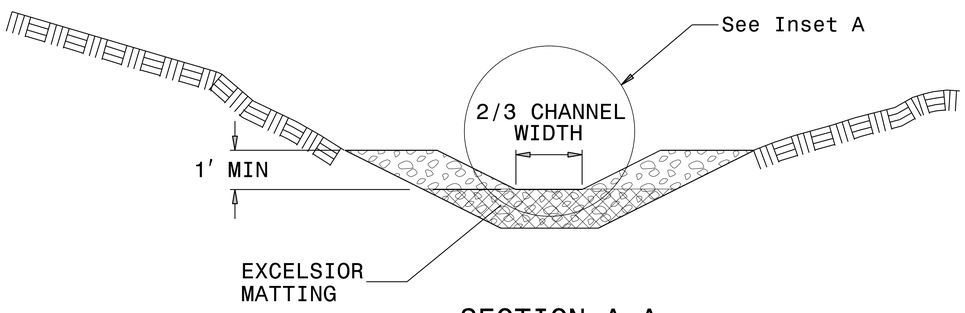
7/6/2017
17BP9R41_EC_dsn_psh_01.dgn
jperkey

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN



SECTION A-A

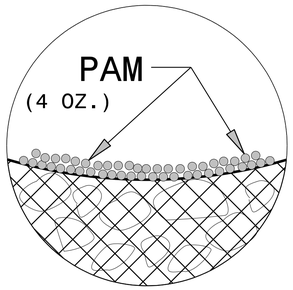
NOTES:

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

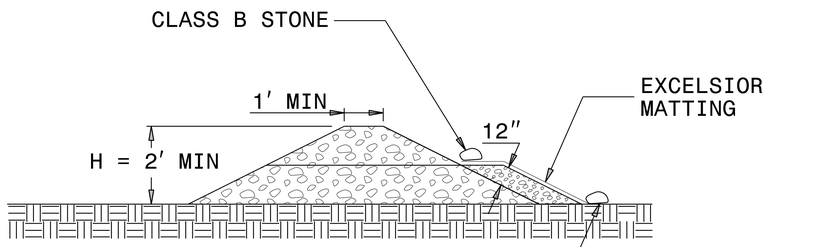
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

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



INSET A



SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

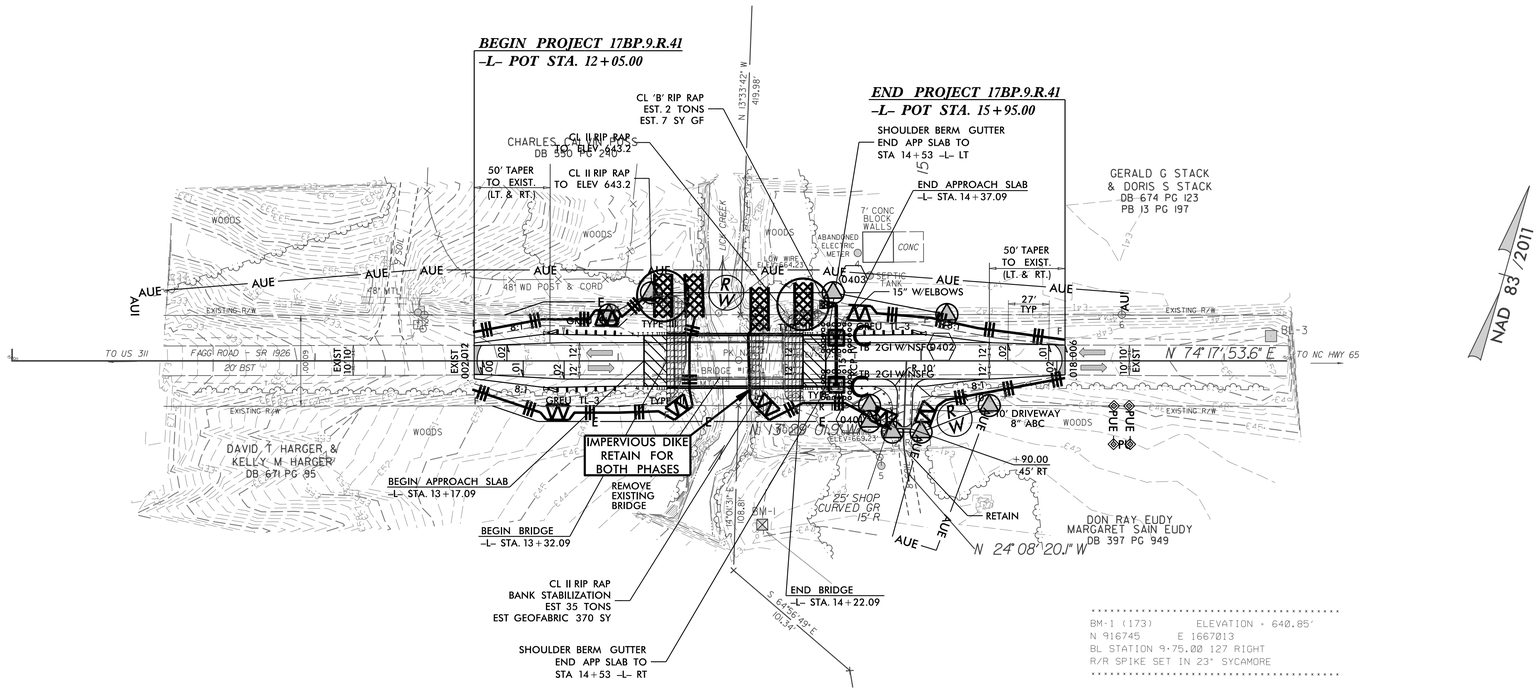
SITE DESCRIPTION	*STABILIZATION TIME*	*TIMEFRAME EXCEPTIONS*
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14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

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

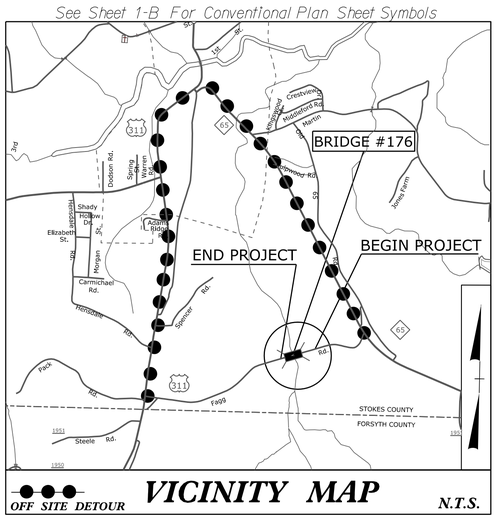
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

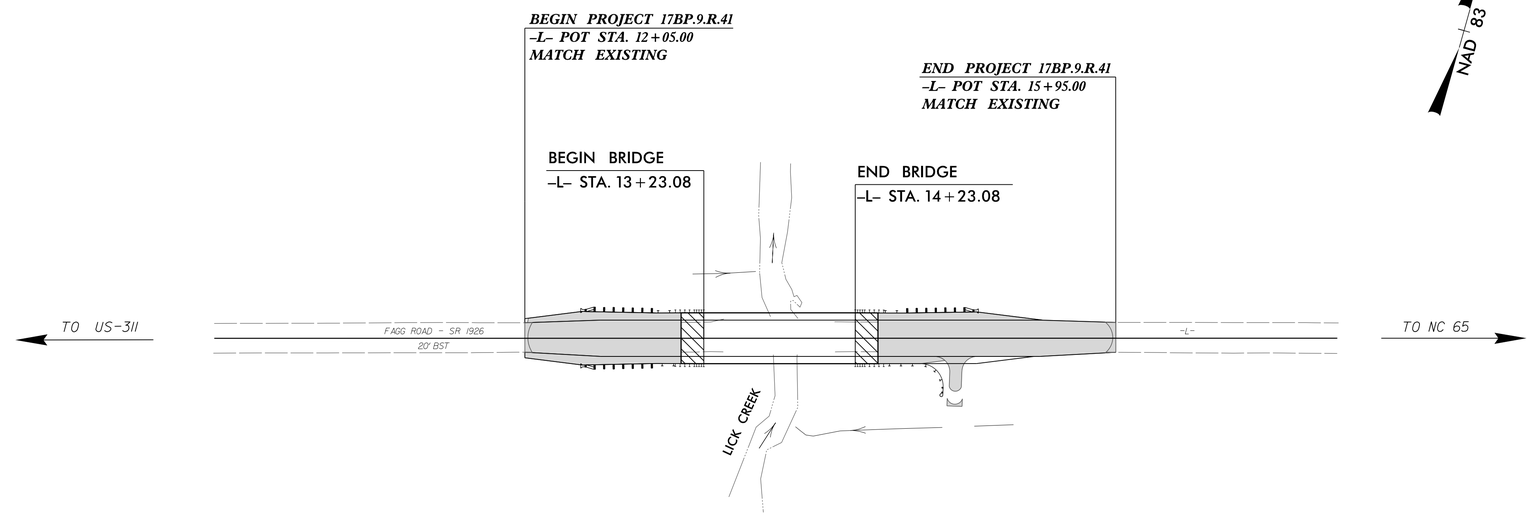
NOTE:
UTILIZE TEMPORARY SEDIMENT BASIN OR SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

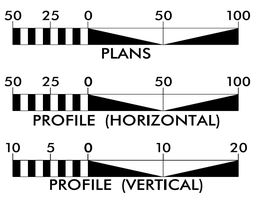
CLEARING AND GRUBBING
AND FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04



BM-1 (173) ELEVATION = 640.85'
N 916745 E 1667013
BL STATION 9+75.00 127 RIGHT
R/R SPIKE SET IN 23" SYCAMORE







09/08/99

$$$$$SYSTIME$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

TIP PROJECT: 17BP.9.R.41

T.I.P. NO.	SHEET NO.
17BP.9.R.41	UO–1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
STOKES COUNTY

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

See Sheet 1-B For Conventional Plan Sheet Symbols

LOCATION: BRIDGE NO. 176 ON SR 1926 (FAGG ROAD) OVER LICK CREEK

TYPE OF WORK: POWER, TELEPHONE, AND CATV RELOCATION

THIS PROJECT IS NOT WITHIN A MUNICIPAL BOUNDARY
THIS IS NOT A CONTROL OF ACCESS PROJECT
CLEARING ON THIS PROJECT SHALL BE IN ACCORDANCE WITH METHOD III
*MEETS SUB REGIONAL TIER DESIGN GUIDELINES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO–1	TITLE SHEET
UO–2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) POWER – ENERGY UNITED
(B) TELEPHONE – CENTURYLINK
(C) CATV – CHARTER

PREPARED IN THE OFFICE OF:

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F–0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

John D. Schriner, PLS	UTILITY PROJECT MANAGER
John D. Schriner, PLS	PROJECT UTILITY COORDINATOR

DIVISION OF HIGHWAYS
DIVISION 9

375 Silas Creek Parkway
Winston Salem, 27127

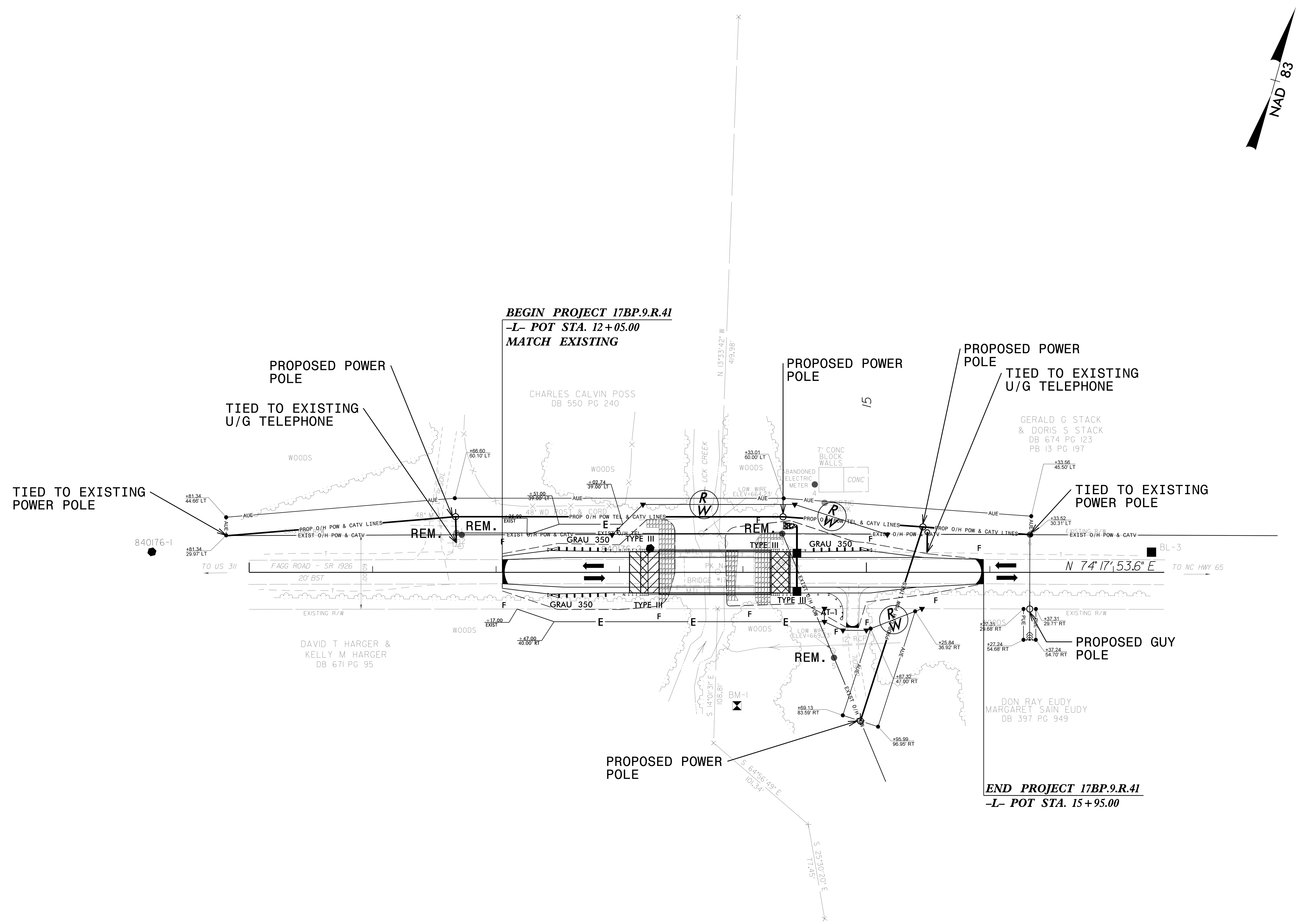
Matthew W. Jones, PE	Division Bridge Prog. Manager
R. David Trantham	Division Utility Coordinator

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	U0-2

UTILITIES BY OTHERS

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/14/99
8:26:36 AM
17-May-17

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	X-A

CROSS SECTION INDEX

ROADWAY	STATION	TO	STATION	SHEET NO.
CROSS SECTION INDEX				X–A
CROSS SECTION SUMMARY				X–1A
–L– FAGG RD	12 + 00.00		16 + 00.00	X–1 – X–3

PROJECT REFERENCE NO.	SHEET NO.
17BP.9.R.41	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

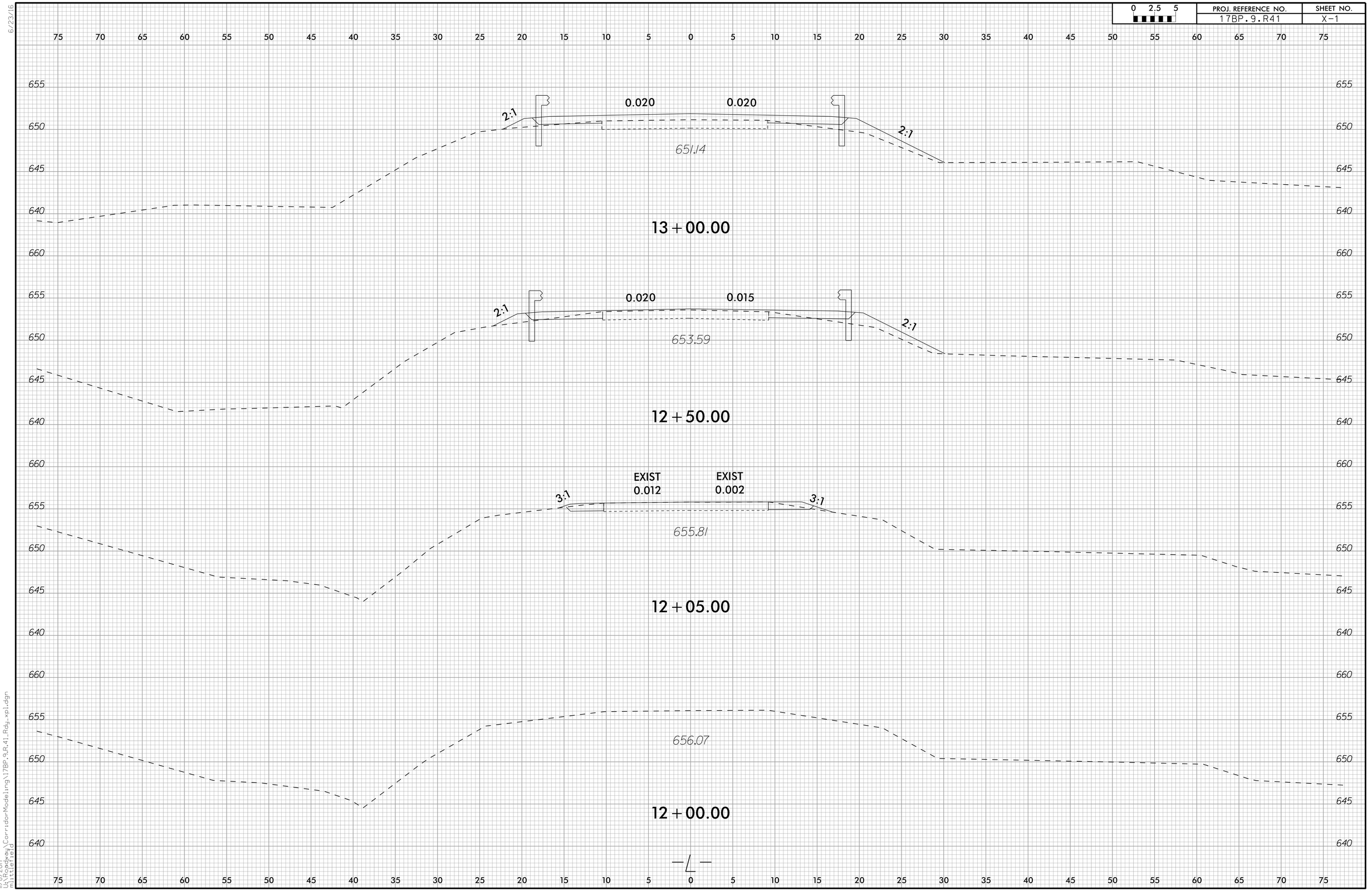
Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+05.00	0	0
12+50.00	9	13
13+00.00	6	28
13+32.09	1	10

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
14+22.09	0	0
14+50.00	0	17
14+90.00	0	56
15+00.00	0	11
15+50.00	4	16
15+95.00	3	3

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

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.9.R41	X-1



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mitchelfield

6/23/16

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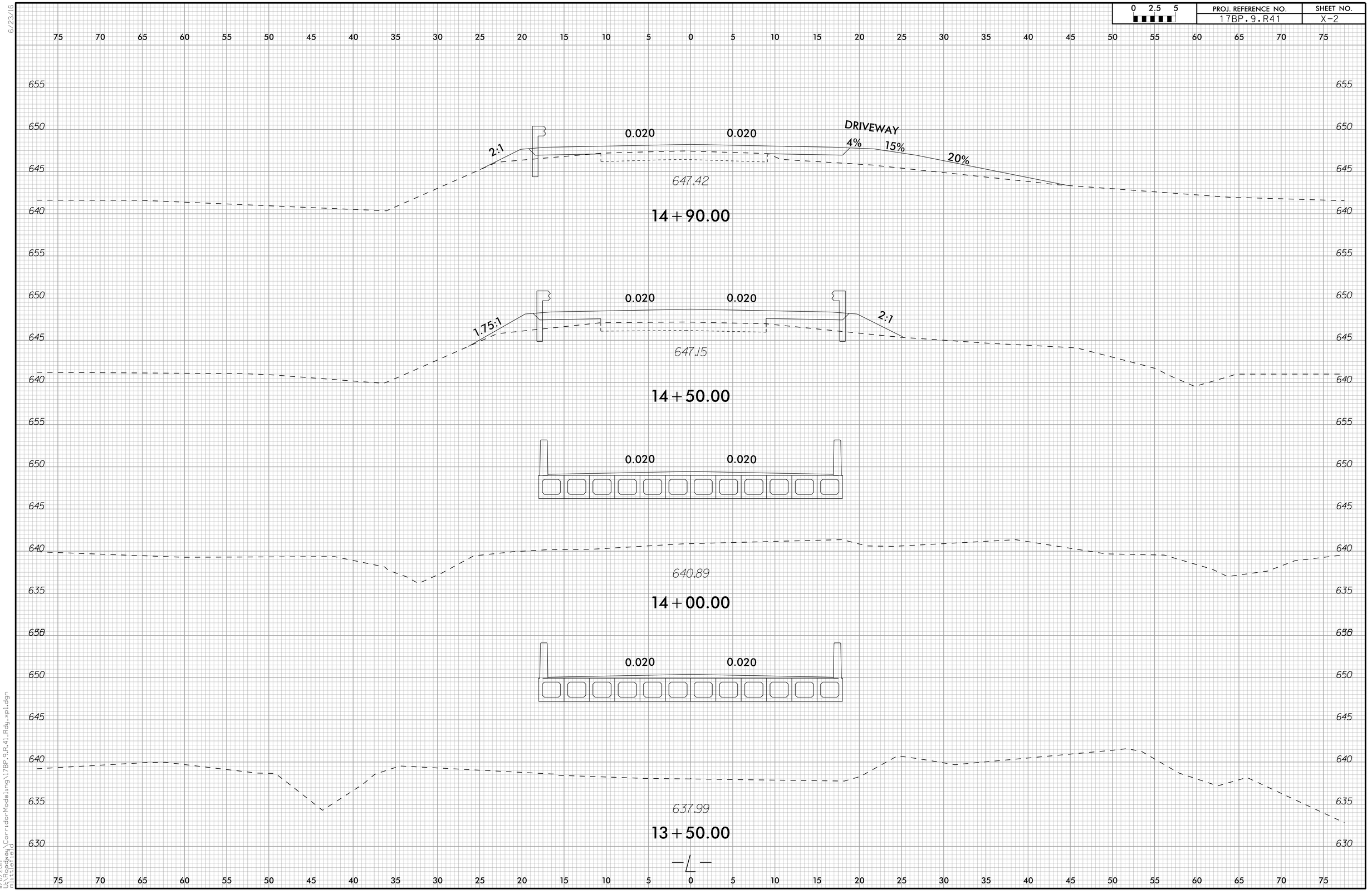
	17BP.9.R41	X-2



11/8/2017
U:\Roadway\CorridorModeling\17BP.9.R41.Rdy.xpl.dgn
mlittlefield

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.9.R41	X-3

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

650
645
640
655

648.52

16+00.00

EXIST 0.006 EXIST 0.018

648.45

15+95.00

3:1 0.020 0.020 3:1

647.90

15+50.00

2:1 0.020 0.020 3:1

647.50

15+00.00

—℄—

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

11/8/2017
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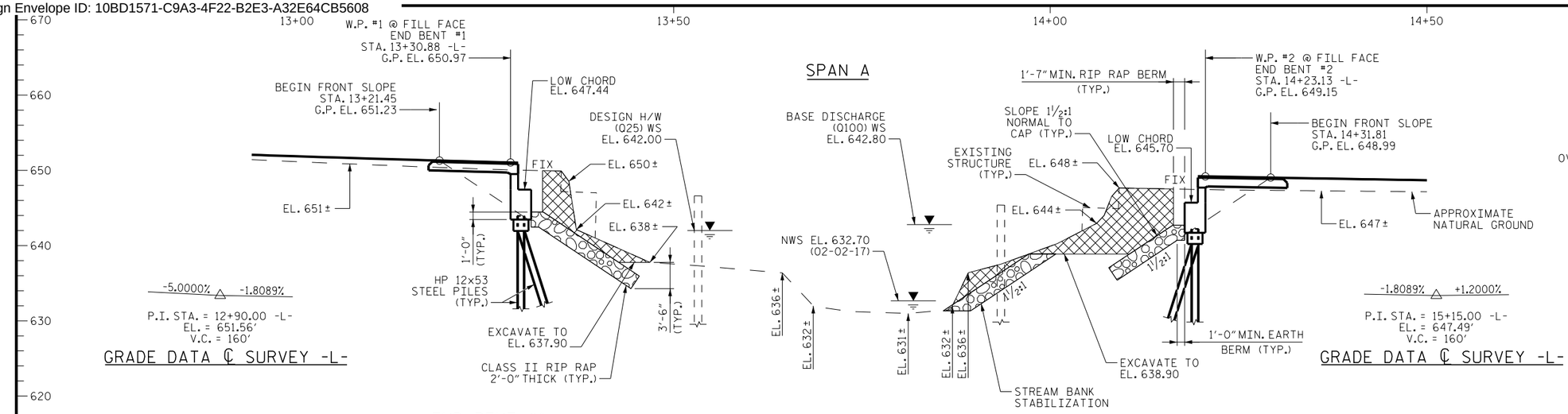
mittlefield



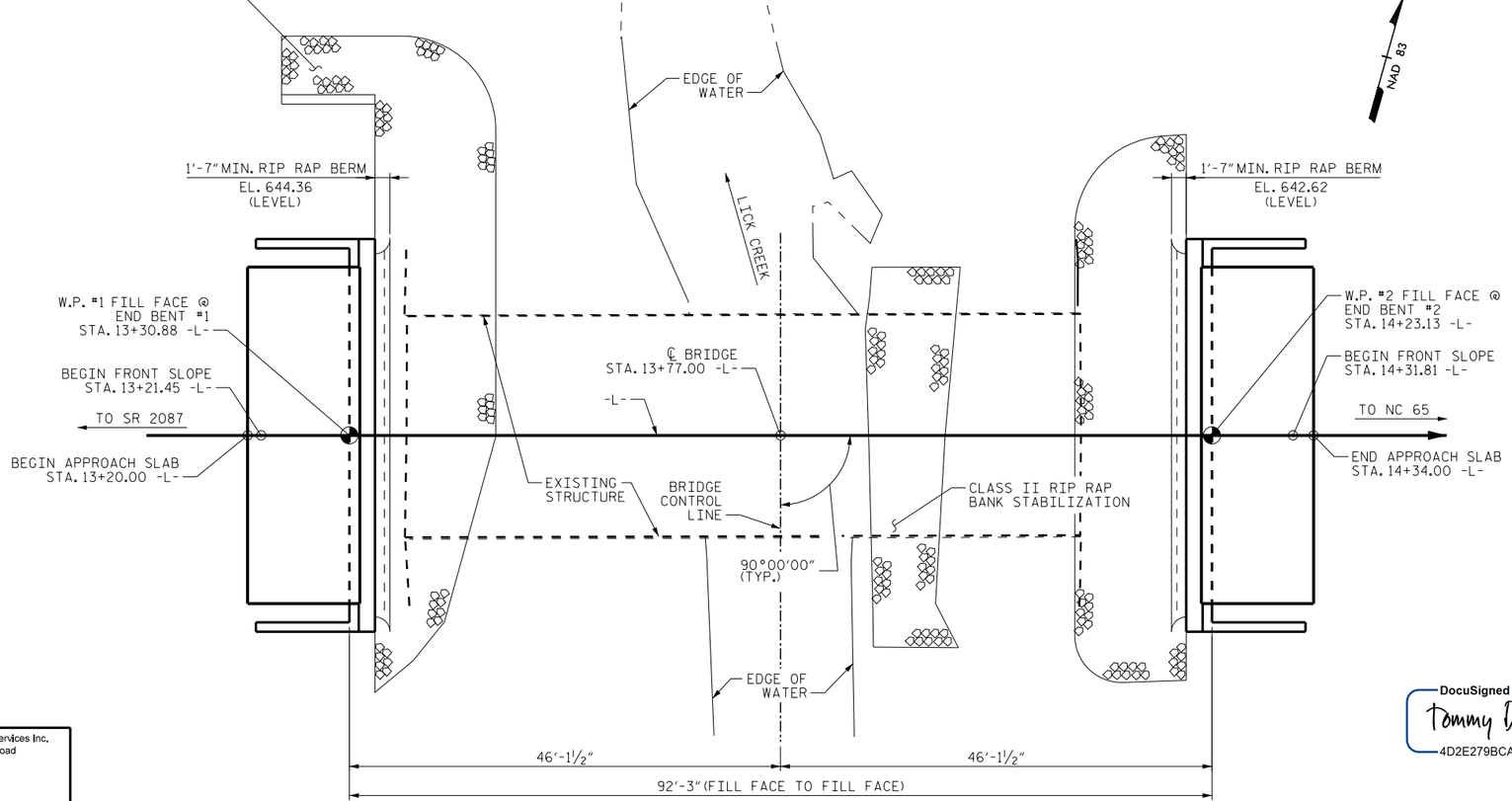
HYDRAULIC DESIGN DATA

DESIGN DISCHARGE	= 2,400 C.F.S.
FREQUENCY OF DESIGN DISCHARGE	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 642.0
DRAINAGE AREA	= 12.1 SQ. MI.
BASE DISCHARGE (Q100)	= 3,400 C.F.S.
BASE HIGH WATER ELEVATION	= 642.80
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= >4,600 C.F.S.
FREQUENCY OF OVERTOPPING	= >500+ YRS.
OVERTOPPING ELEVATION	= 648.10

SECTION ALONG ℄ -L-

SECTIONS @ END BENTS ARE @ RIGHT ANGLES

DENOTES UNCLASSIFIED STRUCTURE EXCAVATION



PLAN ALONG -L-

PILES NOT SHOWN IN PLAN VIEW

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

DocuSigned by:
Tommy Dudeck
4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK

11/6/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 840176

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

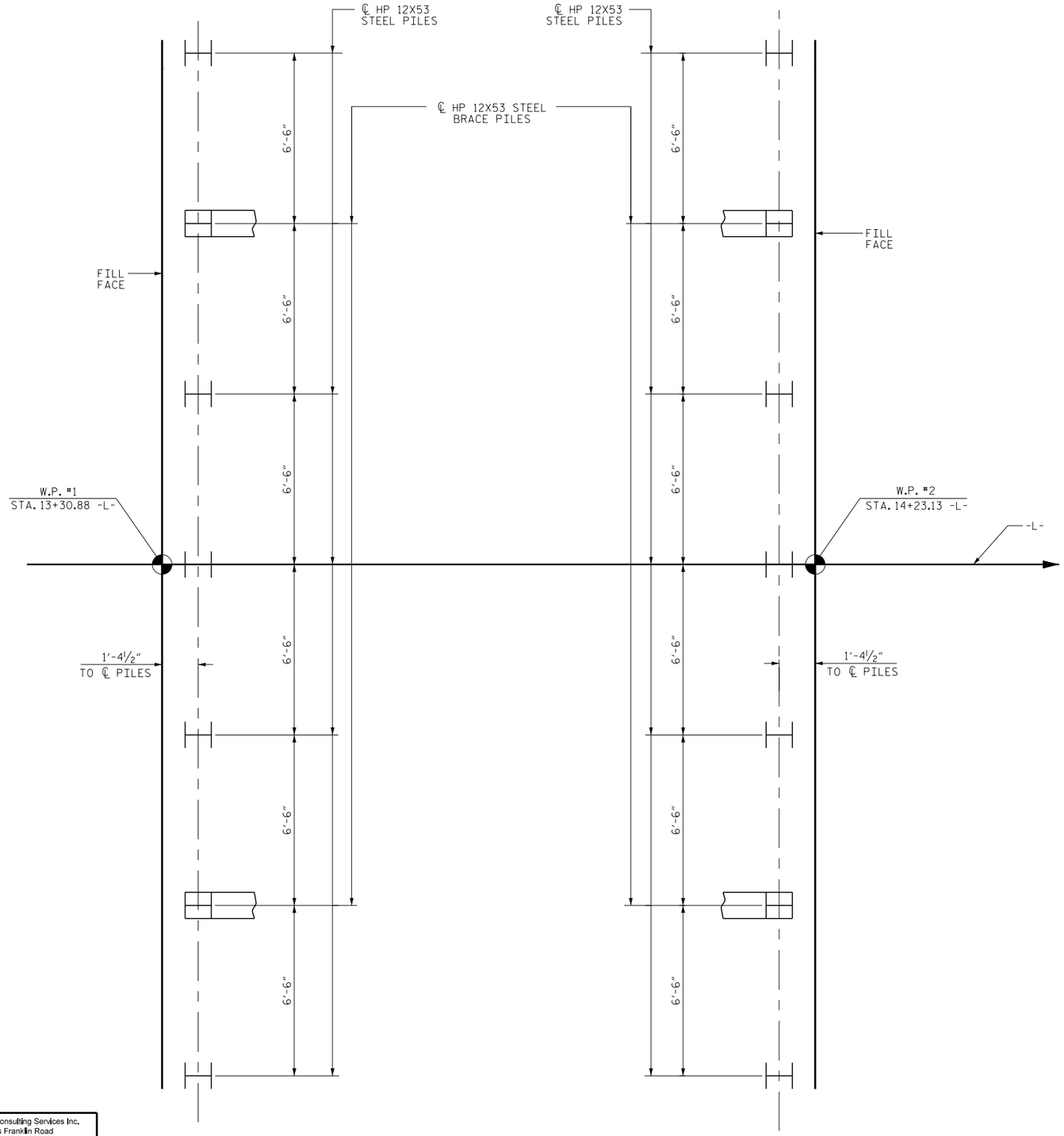
GENERAL DRAWING

FOR BRIDGE ON SR 1926 (FAGG RD.) OVER LICK CREEK BETWEEN SR 2087 (WHIP-O-WILL RD.) AND NC HWY 65

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

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/12/17
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17



END BENT #1

END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE

FOUNDATION NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT #1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO REQUIRED DRIVING RESISTANCE OF 183 TONS PER PILE.

PILES AT END BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 183 TONS PER PILE.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/12/17

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by:
Tommy Dudeck
4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK
11/6/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 17BP.9.R.41
STOKES COUNTY
STATION: 13+77.00 -L-

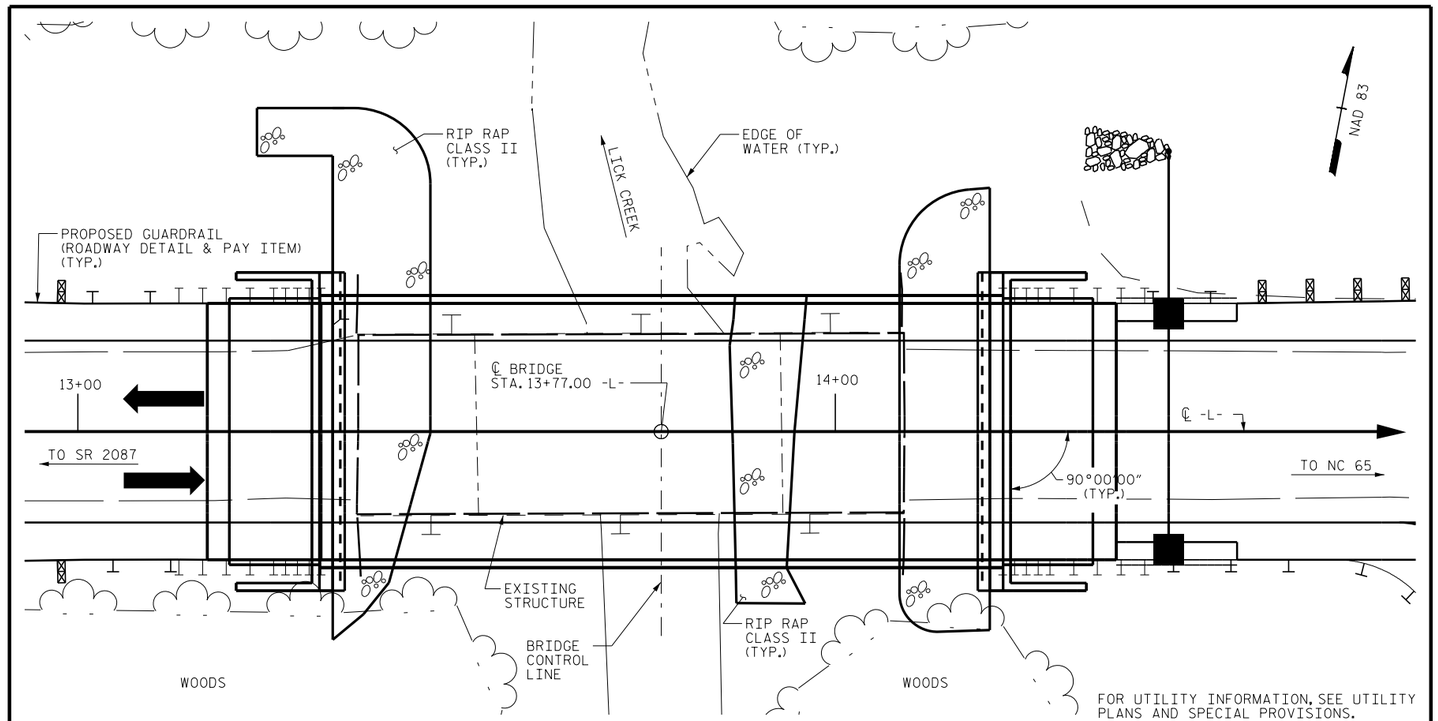
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1926 (FAGG RD.) OVER LICK CREEK
BETWEEN SR 2087 (WHIP-O-WILL RD.) AND NC HWY 65

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

BM #1: RAILROAD SPIKE IN 23" SYCAMORE, 108 FT. RIGHT OF STA 13+95.00 -L-, N 916745, E 1667013, EL. 640.85



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

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.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT LT. & 27 FT RT. OF CENTERLINE ROADWAY FOR END BENT 1 & 32 FT LT. & 26 FT RT. OF CENTERLINE ROADWAY FOR END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 16', 1 @ 40', 1 @ 16') ON STEEL PLANK DECK ON STEEL I-BEAMS; CLEAR ROADWAY WIDTH OF 24'-0" ON TIMBER CAPS ON TIMBER PILES AND LOCATED AT THE PROPOSED STRUCTURE 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. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COST RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 13+77.00 -L-.

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE STA. 13+77.00 -L-	UNCLASSIFIED STRUCTURE EXCAVATION STA. 13+77.00 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS, STA. 13+77.00 -L-	REINFORCING STEEL	HP 12 X 53 STEEL PILES		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAMS		ASBESTOS ASSESSMENT
	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.	LUMP SUM
SUPERSTRUCTURE				LUMP SUM					180.00			LUMP SUM	12	1,080.00	
END BENT #1			26.9		3,795	7	245	7		153	185				
END BENT #2			26.9		3,795	7	210	7		92	115				
TOTAL	LUMP SUM	LUMP SUM	53.8	LUMP SUM	7,590	14	455	14	180.00	245	300	LUMP SUM	12	1,080.00	LUMP SUM

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON SR 1926 (FAGG RD.) OVER LICK CREEK
BETWEEN SR 2087 (WHIP-O-WILL RD.) AND NC HWY 65

DocuSigned by: Tommy Dudeck 4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK

11/6/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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License No. F-0672

DRAWN BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/12/17
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	**1**	1.109	--	1.75	0.272	1.47	A	EL	44.25	0.493	1.26	A	EL	4.425	0.80	0.272	**1.11**	A	EL	**44.25**	
		HL-93(Opr)	N/A	--	1.633	--	1.35	0.272	1.9	A	EL	44.25	0.493	1.63	A	EL	4.425	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	**2**	1.507	54.255	1.75	0.272	1.99	A	EL	44.25	0.493	1.65	A	EL	4.425	0.80	0.272	**1.51**	A	EL	**44.25**	
		HS-20(Opr)	36.000	--	2.14	77.039	1.35	0.272	2.59	A	EL	44.25	0.493	2.14	A	EL	4.425	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.519	47.501	1.4	0.272	5.82	A	EL	44.25	0.493	5.05	A	EL	4.425	0.80	0.272	3.52	A	EL	44.25	
		SNGARBS2	20.000	--	2.572	51.43	1.4	0.272	4.25	A	EL	44.25	0.493	3.55	A	EL	4.425	0.80	0.272	2.57	A	EL	44.25	
		SNAGRIS2	22.000	--	2.415	53.122	1.4	0.272	4	A	EL	44.25	0.493	3.27	A	EL	4.425	0.80	0.272	2.41	A	EL	44.25	
		SNCOTTS3	27.250	--	1.749	47.674	1.4	0.272	2.89	A	EL	44.25	0.493	2.52	A	EL	4.425	0.80	0.272	1.75	A	EL	44.25	
		SNAGGRS4	34.925	--	1.443	50.381	1.4	0.272	2.39	A	EL	44.25	0.493	2.06	A	EL	4.425	0.80	0.272	1.44	A	EL	44.25	
		SNS5A	35.550	--	1.412	50.195	1.4	0.272	2.34	A	EL	44.25	0.493	2.07	A	EL	4.425	0.80	0.272	1.41	A	EL	44.25	
		SNS6A	39.950	--	1.287	51.435	1.4	0.272	2.13	A	EL	44.25	0.493	1.88	A	EL	4.425	0.80	0.272	1.29	A	EL	44.25	
		SNS7B	42.000	--	1.226	51.483	1.4	0.272	2.03	A	EL	44.25	0.493	1.83	A	EL	4.425	0.80	0.272	1.23	A	EL	44.25	
	TTST	TNAGRIT3	33.000	--	1.568	51.733	1.4	0.272	2.59	A	EL	44.25	0.493	2.24	A	EL	4.425	0.80	0.272	1.57	A	EL	44.25	
		TNT4A	33.075	--	1.572	52.007	1.4	0.272	2.6	A	EL	44.25	0.493	2.2	A	EL	4.425	0.80	0.272	1.57	A	EL	44.25	
		TNT6A	41.600	--	1.278	53.17	1.4	0.272	2.11	A	EL	44.25	0.493	1.92	A	EL	4.425	0.80	0.272	1.28	A	EL	44.25	
		TNT7A	42.000	--	1.281	53.782	1.4	0.272	2.12	A	EL	44.25	0.493	1.89	A	EL	4.425	0.80	0.272	1.28	A	EL	44.25	
		TNT7B	42.000	--	1.315	55.229	1.4	0.272	2.18	A	EL	44.25	0.493	1.79	A	EL	4.425	0.80	0.272	1.31	A	EL	44.25	
		TNAGRIT4	43.000	--	1.258	54.101	1.4	0.272	2.08	A	EL	44.25	0.493	1.74	A	EL	4.425	0.80	0.272	1.26	A	EL	44.25	
		TNAGT5A	45.000	--	1.19	53.537	1.4	0.272	1.97	A	EL	44.25	0.493	1.71	A	EL	4.425	0.80	0.272	1.19	A	EL	44.25	
		TNAGT5B	45.000	**3**	1.178	53.027	1.4	0.272	1.95	A	EL	44.25	0.493	1.66	A	EL	4.425	0.80	0.272	**1.18**	A	EL	**44.25**	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

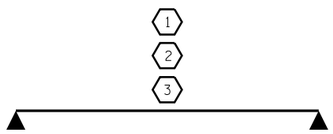
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

Stantec
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ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/22/17

DRAWN BY : TMG 11/11
CHECKED BY : AAC 11/11

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by: Tommy Dudeck
4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R DUDECK

11/6/2017

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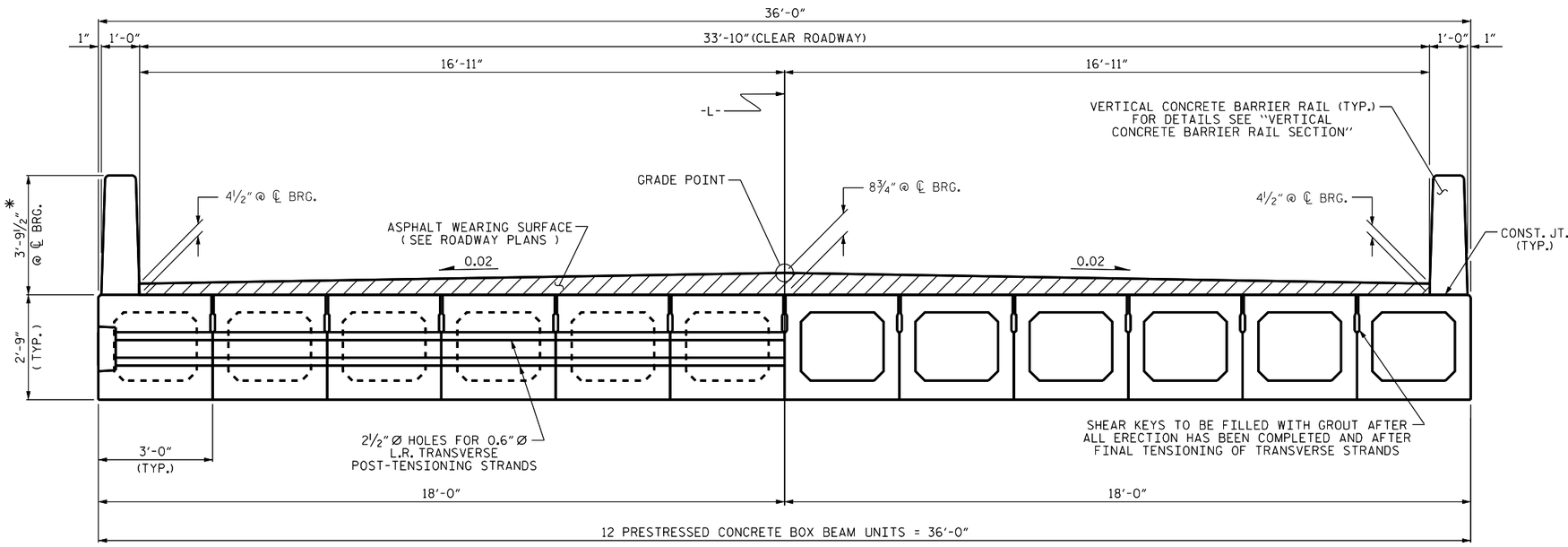
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

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



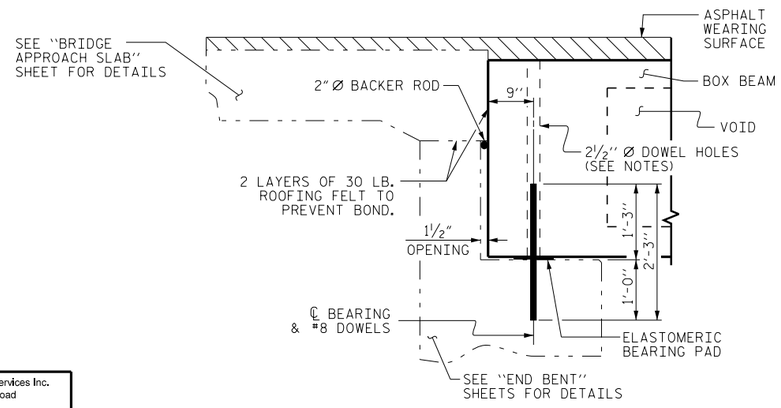
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

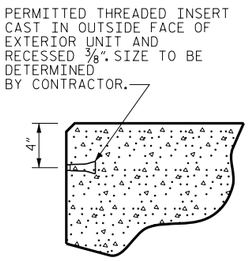
TYPICAL SECTION

*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 6000 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.

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ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/22/17

DRAWN BY : DGE 8/11
CHECKED BY : TMG 11/11

REV. 9/14 MAA/TMG

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by:
Tommy Dudeck
4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK
11/6/2017

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PROJECT NO. 17BP.9.R.41
STOKES COUNTY
STATION: 13+77.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			16

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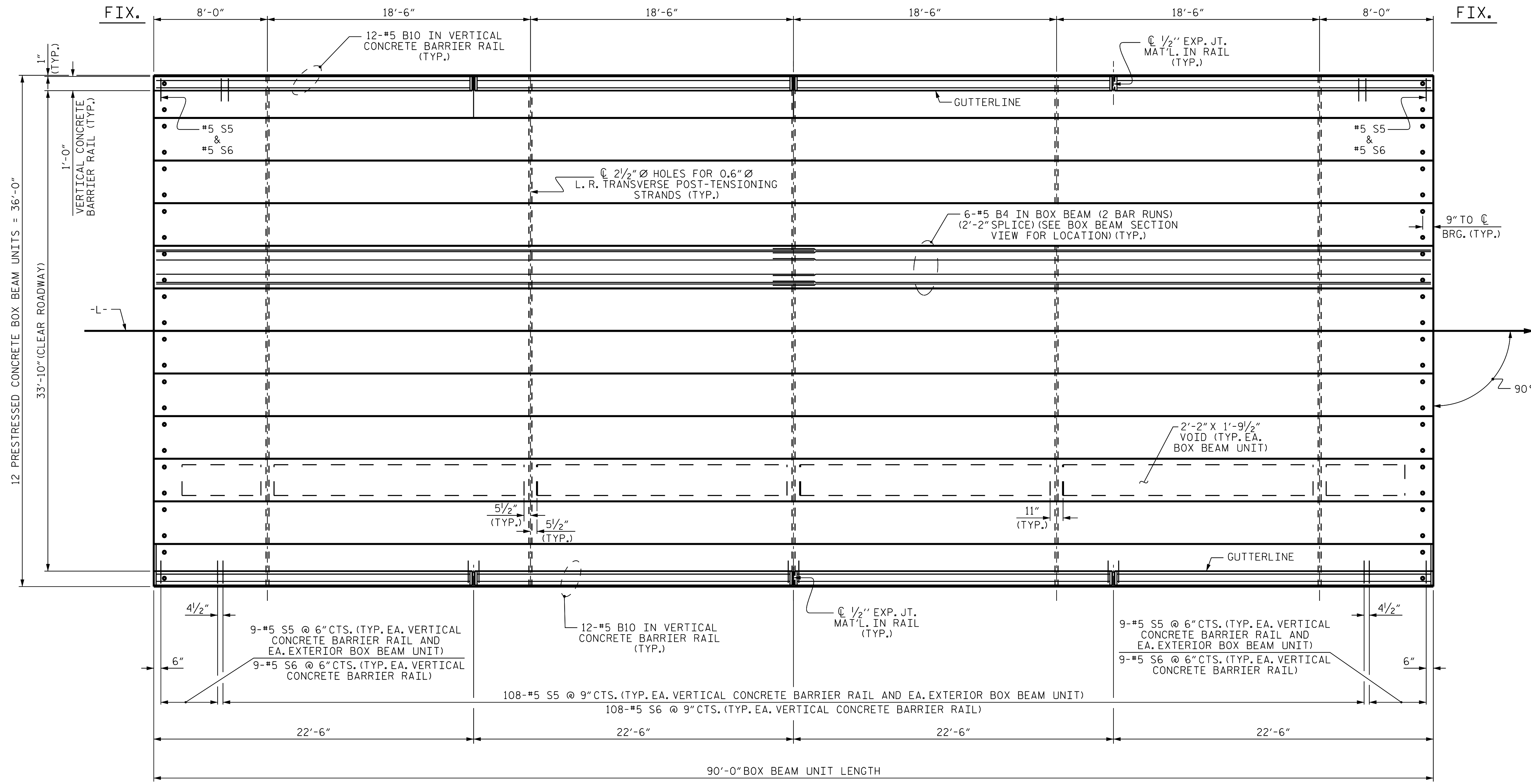
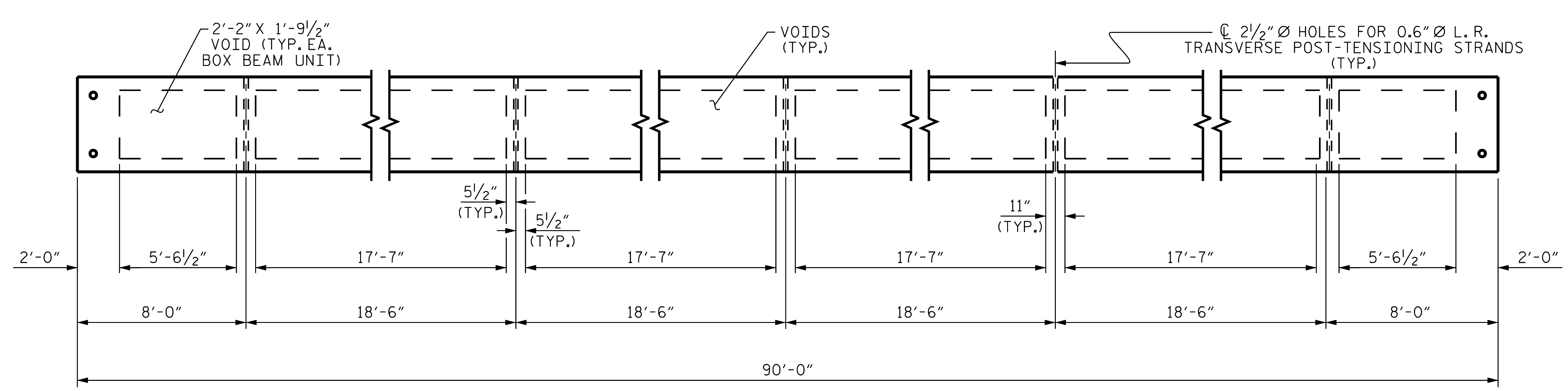


PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 90' UNIT
33'-10" CLEAR ROADWAY
90° SKEW

DocuSigned by: SEAL
11/6/2017

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1			3					TOTAL SHEETS
2			4					16

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ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/22/17

DRAWN BY : DGE 8/10
CHECKED BY : TMG 11/11

REV. 8/14 MAA/TMG

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

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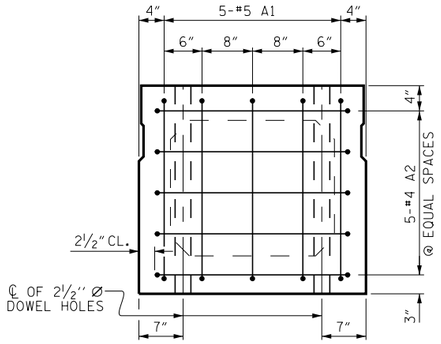
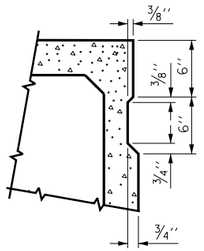


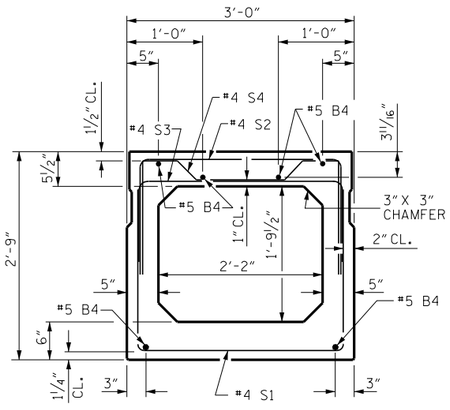
END ELEVATION

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.)



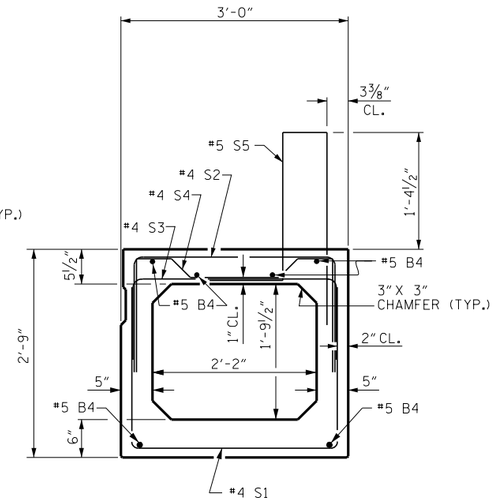
SHEAR KEY DETAIL

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



INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

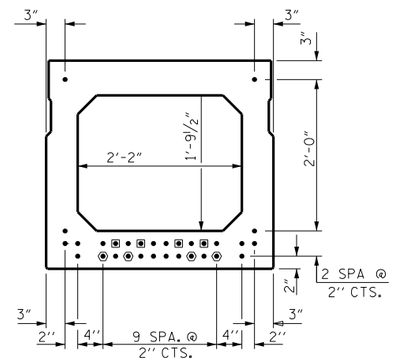


EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

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

0.6" Ø LOW RELAXATION STRAND LAYOUT



TYPICAL STRAND LOCATION

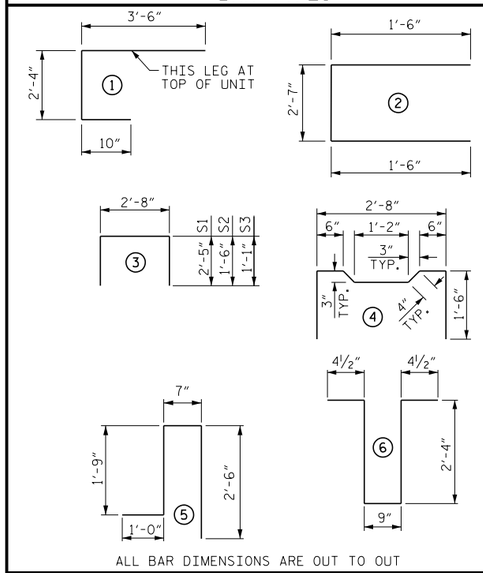
(30 STRANDS REQUIRED)

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.

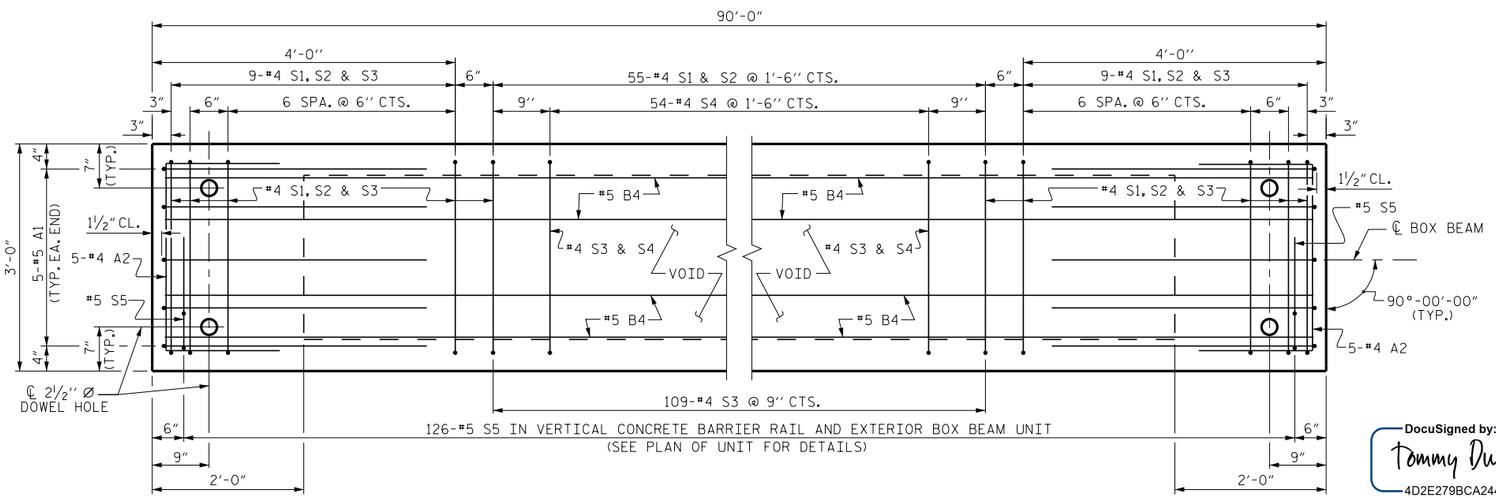
BAR TYPES



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	6'-8"	70	6'-8"	70
A2	40	#4	2	5'-7"	149	5'-7"	149
B4	12	#5	STR	45'-11"	575	45'-11"	575
K1	15	#4	6	6'-2"	62	6'-2"	62
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	73	#4	3	7'-6"	366	7'-6"	366
S2	73	#4	3	5'-8"	276	5'-8"	276
S3	127	#4	3	4'-10"	410	4'-10"	410
S4	54	#4	4	5'-10"	210	5'-10"	210
✳ S5	126	#5	5	5'-10"	767	--	--
REINFORCING STEEL				2135	LBS.	2135	LBS.
✳ EPOXY COATED REINF. STEEL				767	LBS.		
8000 P.S.I. CONCRETE				16.0	CU. YDS.	15.9	CU. YDS.
0.6" Ø L.R. STRANDS				No. 30		No. 30	



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. 17BP.9.R.41

STOKES COUNTY

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SHEET 3 OF 5

STATE OF NORTH CAROLINA
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3'-0" X 2'-9" PRESTRESSED CONCRETE BOX BEAM UNIT

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ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/06/17
CHECKED BY : N. D'AIUTO DATE : 06/22/17

DRAWN BY : DGE 10/11
CHECKED BY : TMG 11/11

REV. 9/14 MAA/TMG

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by: Tommy Dudeck 4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK

11/6/2017

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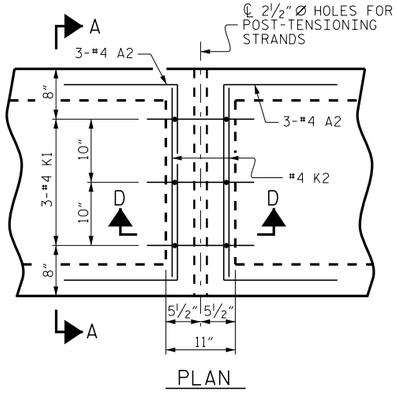
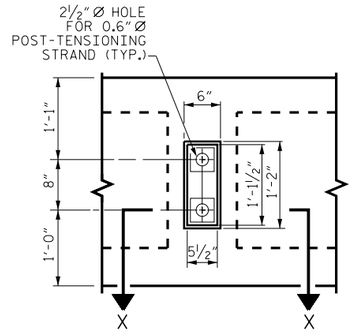
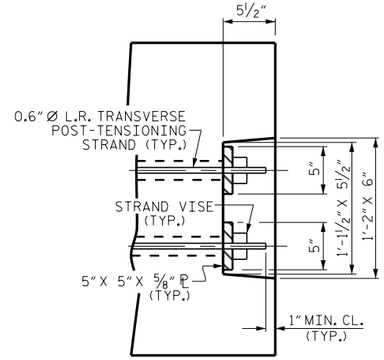


PLAN

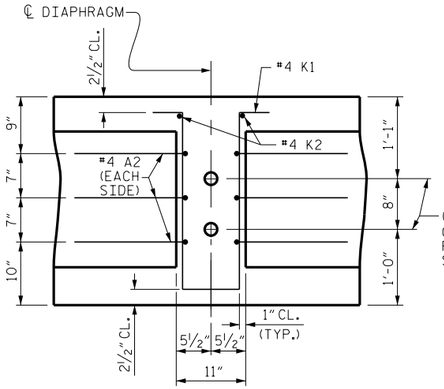


VIEW Y-Y

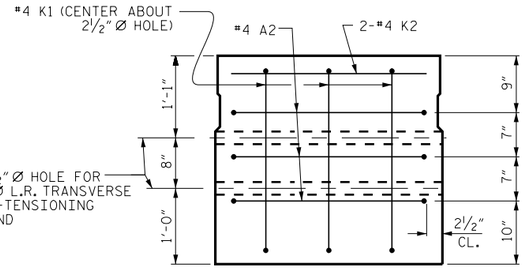
SHOWING ELEVATION VIEW OF GROUTED RECESS



DETAIL "C"

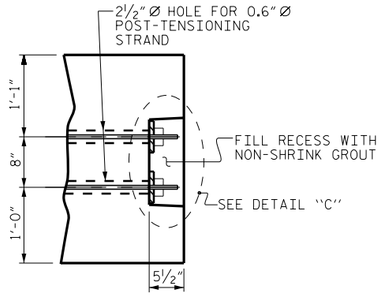


SECTION D-D

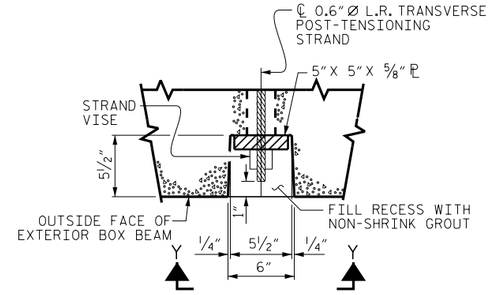


SECTION A-A

VOIDS NOT SHOWN



PART SECTION AT RECESS

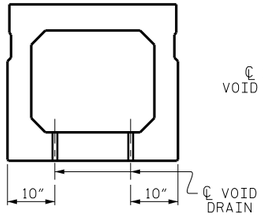


SECTION X-X

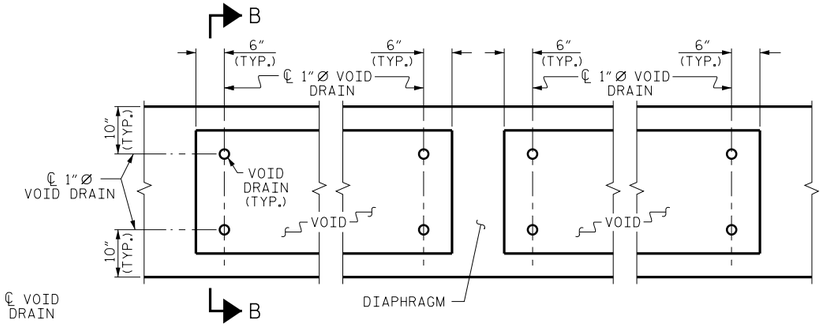
SHOWING PLAN VIEW OF GROUTED RECESS

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)

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

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 2'-9"
90' BOX BEAM UNIT (NC & SE)	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2¾" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	¾" ↓
FINAL CAMBER	2" ↑

** INCLUDES FUTURE WEARING SURFACE

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STOKES COUNTY

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SHEET 4 OF 5

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NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK

11/6/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

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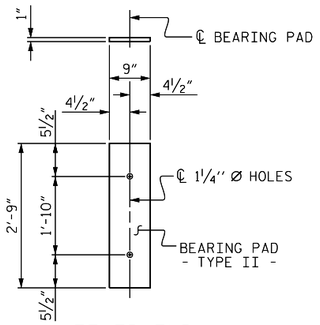
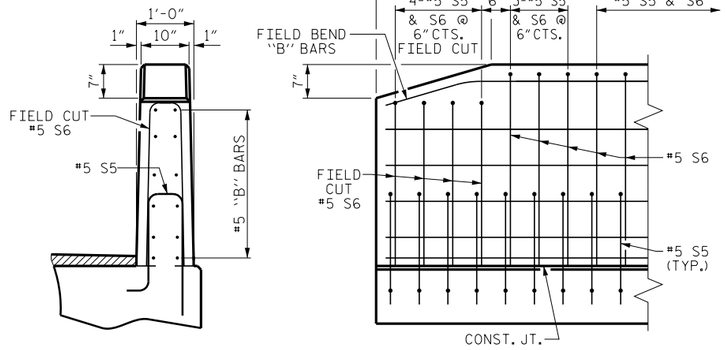


FIXED END
(TYPE II - 24 REQ'D)



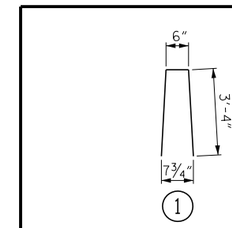
END VIEW SIDE VIEW

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

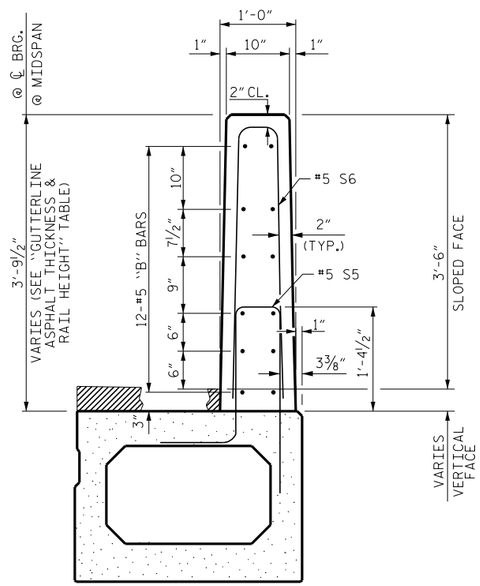
END OF RAIL DETAILS

BOX BEAM UNITS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	90'-0"	180'-0"
INTERIOR B.B.	10	90'-0"	900'-0"
TOTAL	12	———	1080'-0"

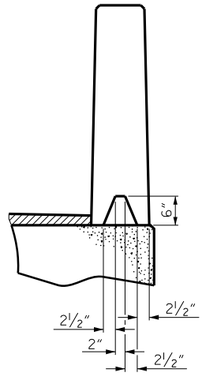


BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT

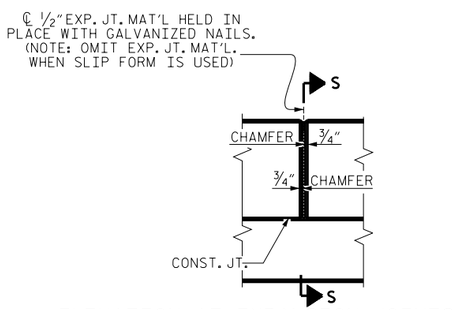
BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL					
BAR	BARS PER PAIR OF EXTERIOR UNITS 90' UNIT	SIZE	TYPE	LENGTH	WEIGHT
✳B10	96	#5	STR	22'-1"	2211
✳S6	252	#5	1	7'-2"	1884
✳EPOXY COATED REINFORCING STEEL			LBS.		4095
CLASS AA CONCRETE			CU.YDS.		23.3
TOTAL VERTICAL CONCRETE BARRIER RAIL			LN.FT.		180.0



SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
90' UNITS	1½"	3'-7½"

VERTICAL CONCRETE BARRIER RAIL DETAILS

PROJECT NO. 17BP.9.R.41
STOKES COUNTY
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SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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3'-0" X 2'-9"
PRESTRESSED CONCRETE
BOX BEAM UNIT

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REV. 4/15 MAA/TMG
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by:
Tommy Dudeck
4D2E279BCA244E9...
11/6/2017

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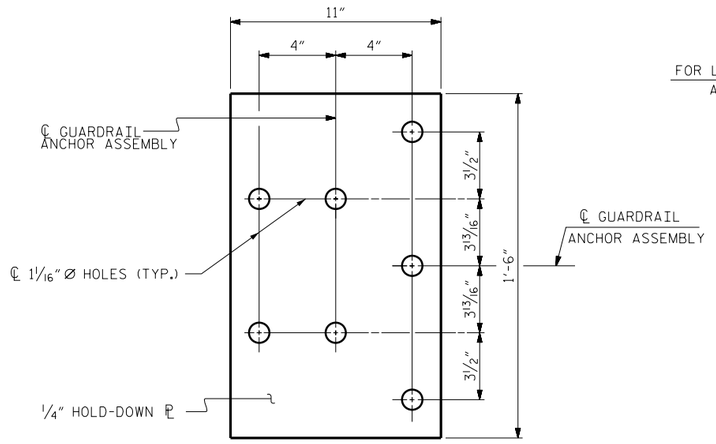
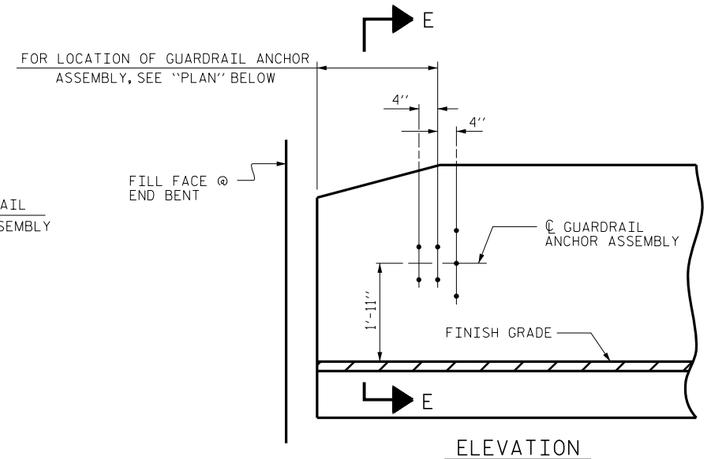


PLAN



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.)

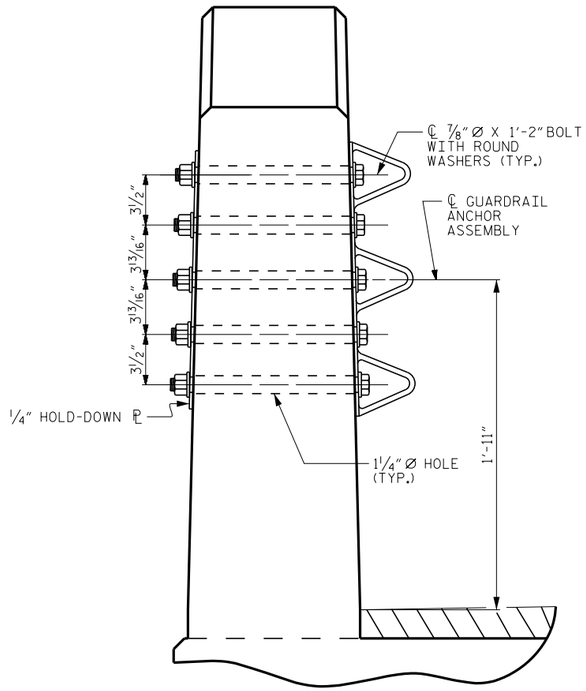
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

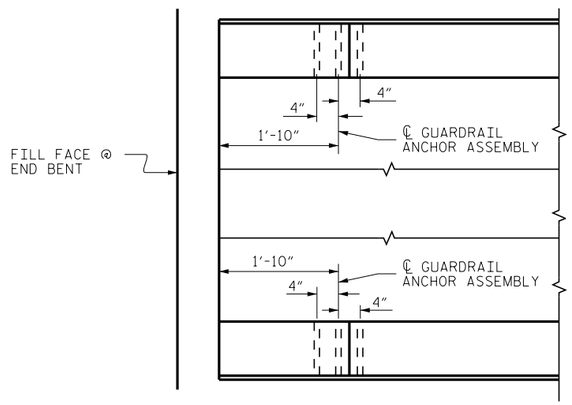
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

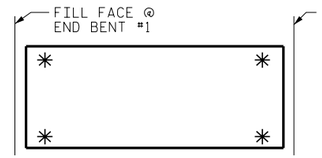
GUARDRAIL ANCHOR ASSEMBLY DETAILS



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. 17BP.9.R.41

STOKES **COUNTY**

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DRAWN BY : MAA 5/10
CHECKED BY : GM 5/10

REV. 12/5/11 MAA/GM
REV. 6/13 MAA/GM
REV. 1/15 MAA/TMG

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GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

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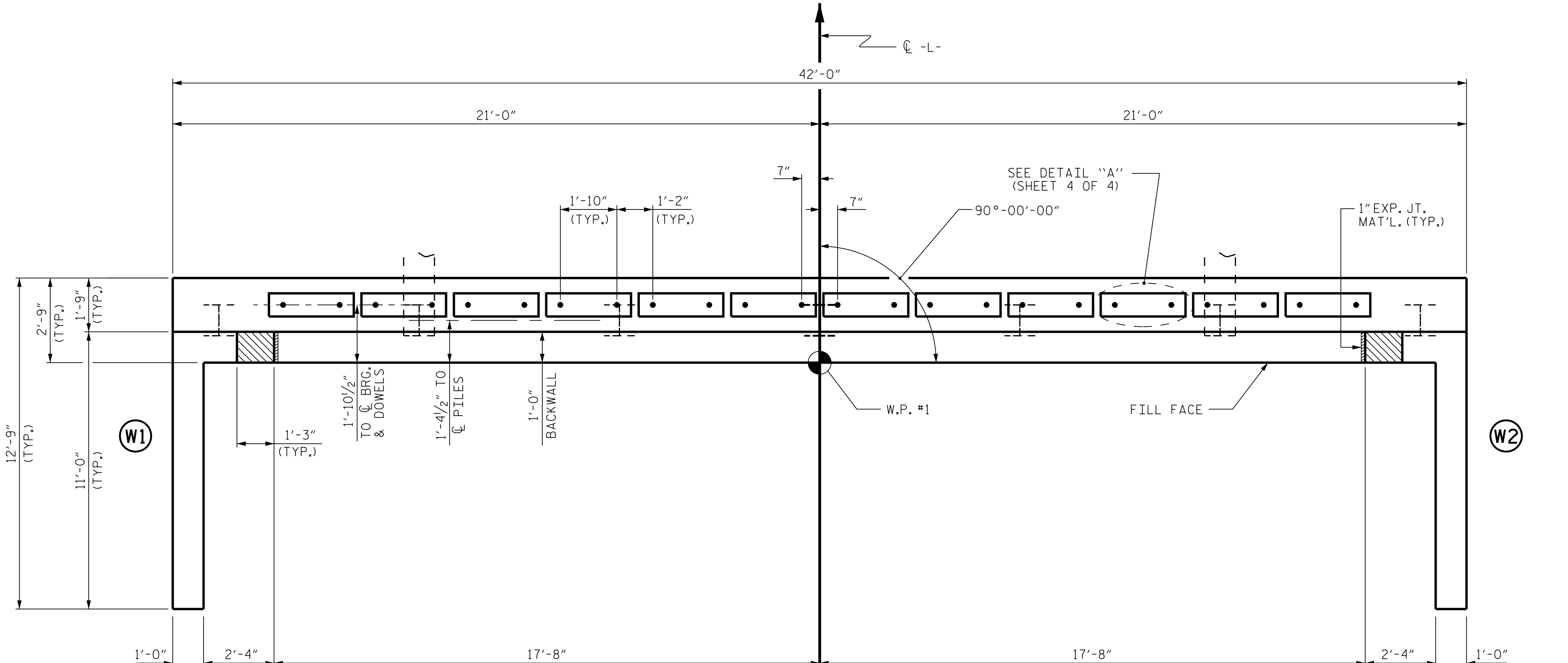
NOTES

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

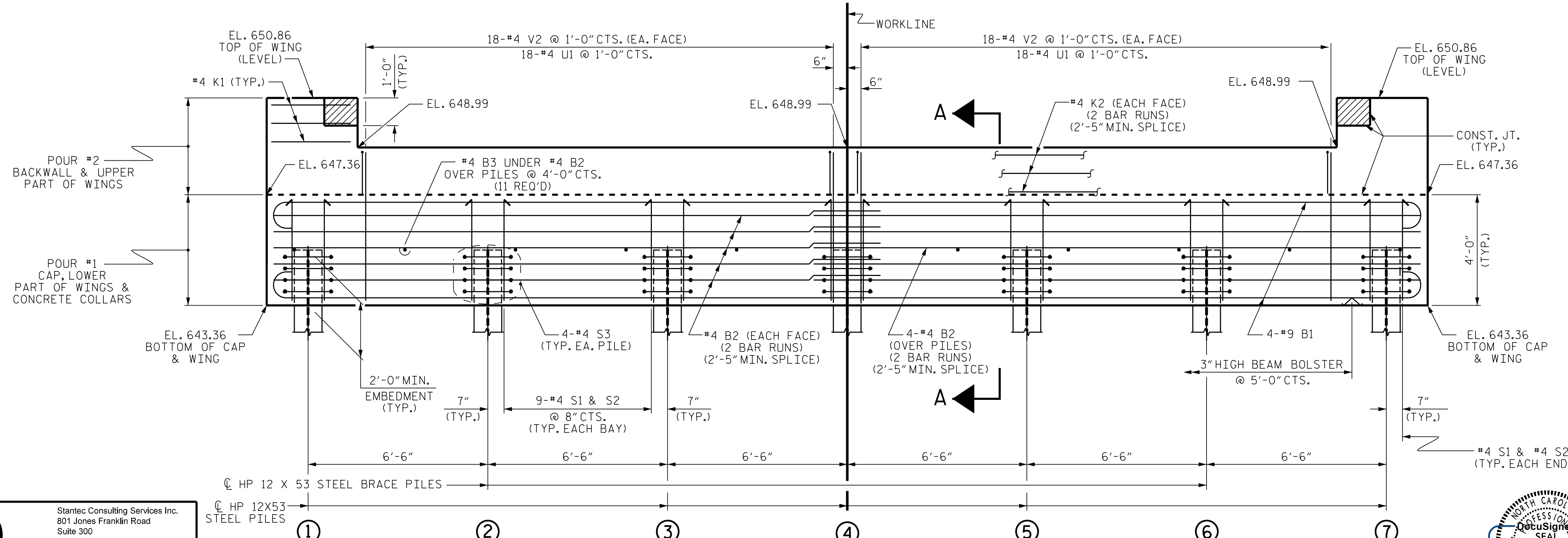
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



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.

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

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SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

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ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/07/17
CHECKED BY : N.D'AIUTO DATE : 06/22/17
DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11
REV. 4/15 MAA/TMG
DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

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NOTES

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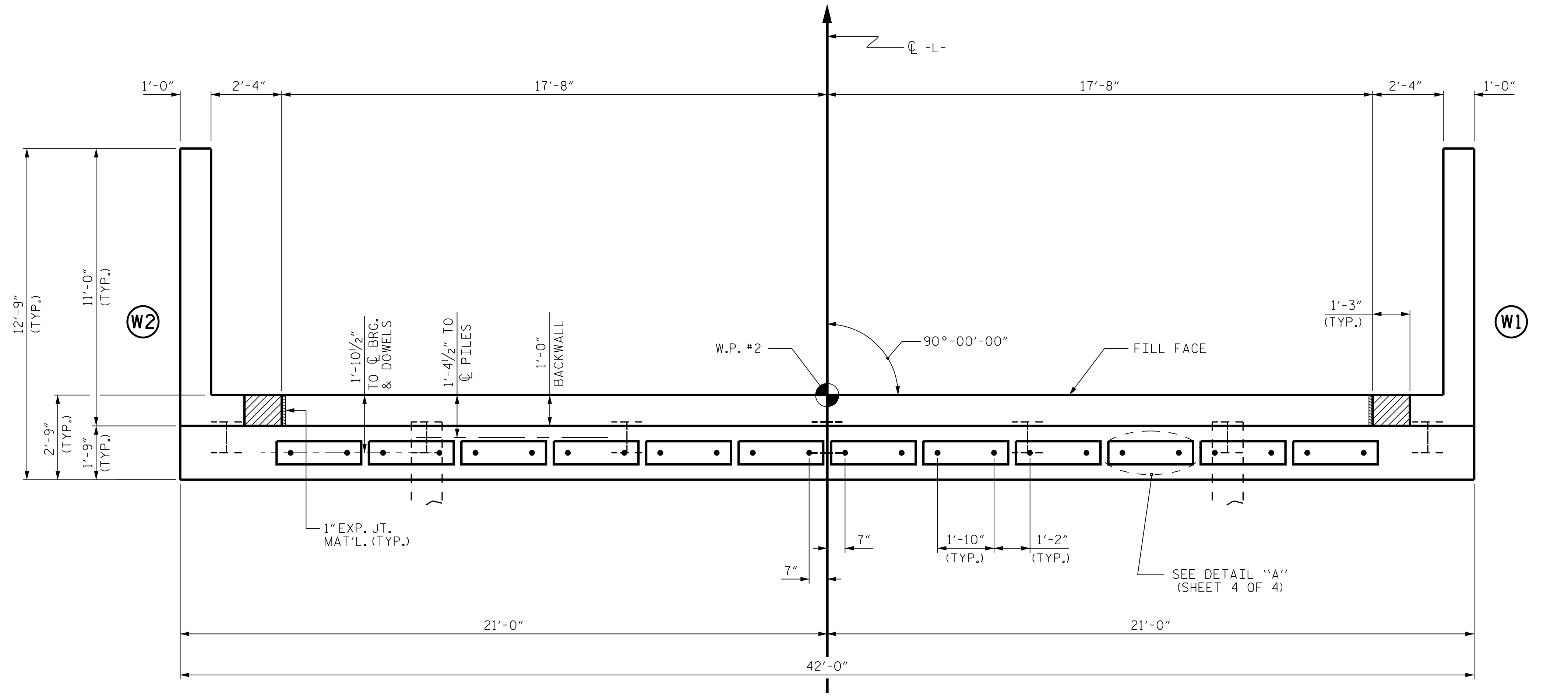
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



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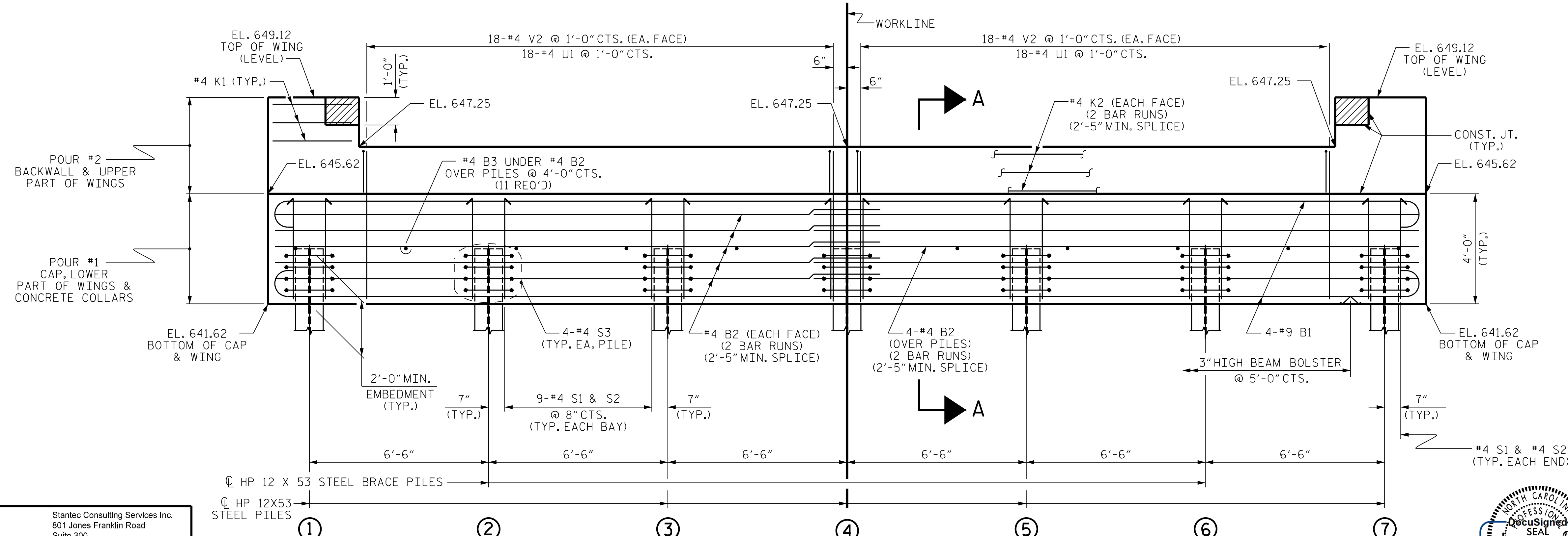

ELEVATION

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.

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SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #2

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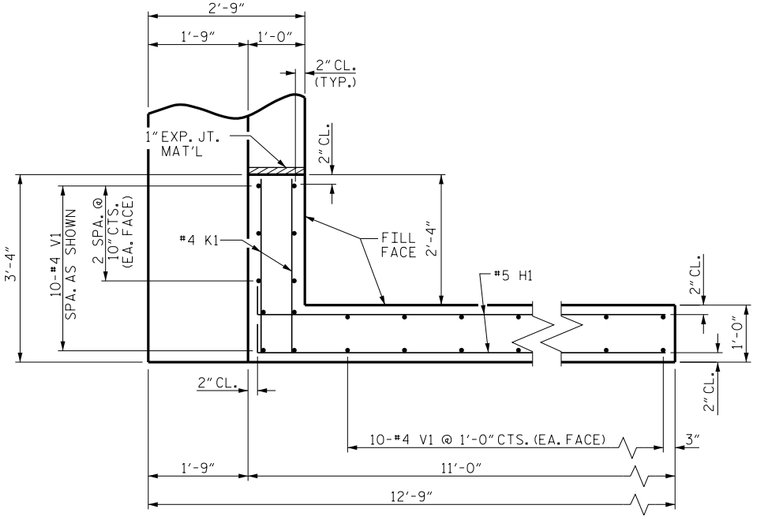
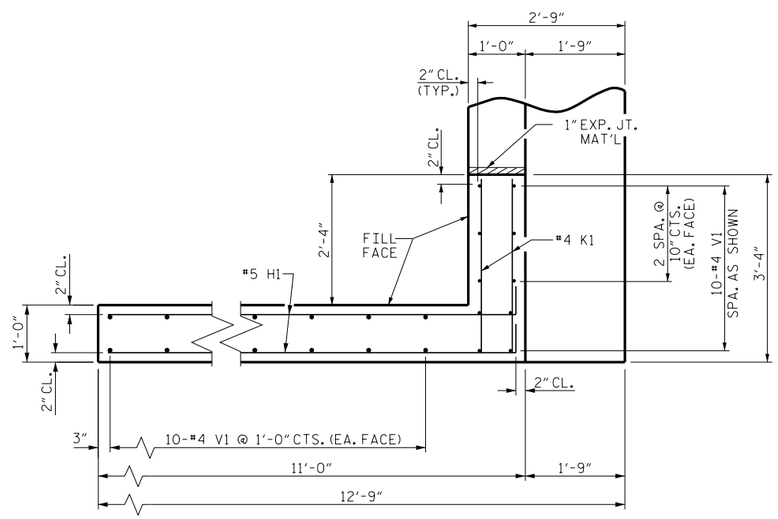
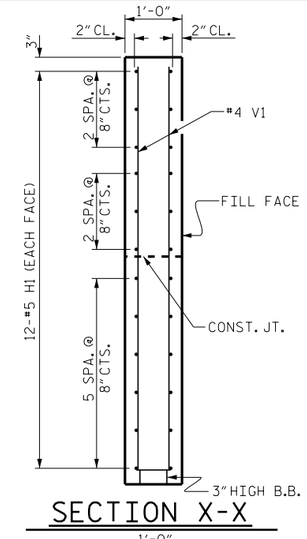


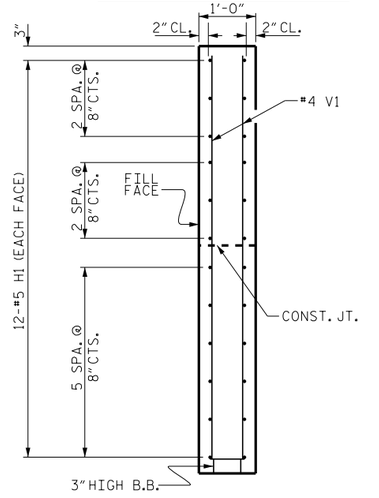
PLAN OF WING (W1)



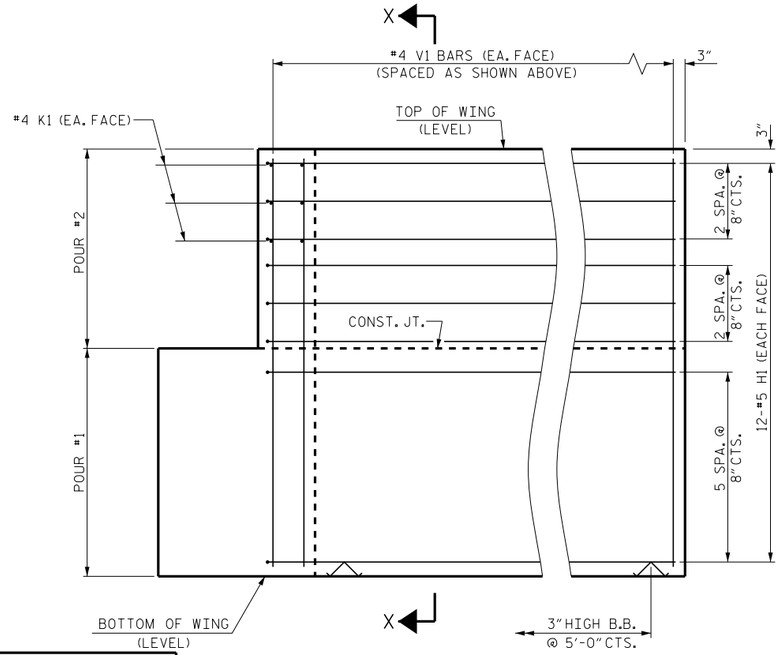
PLAN OF WING (W2)



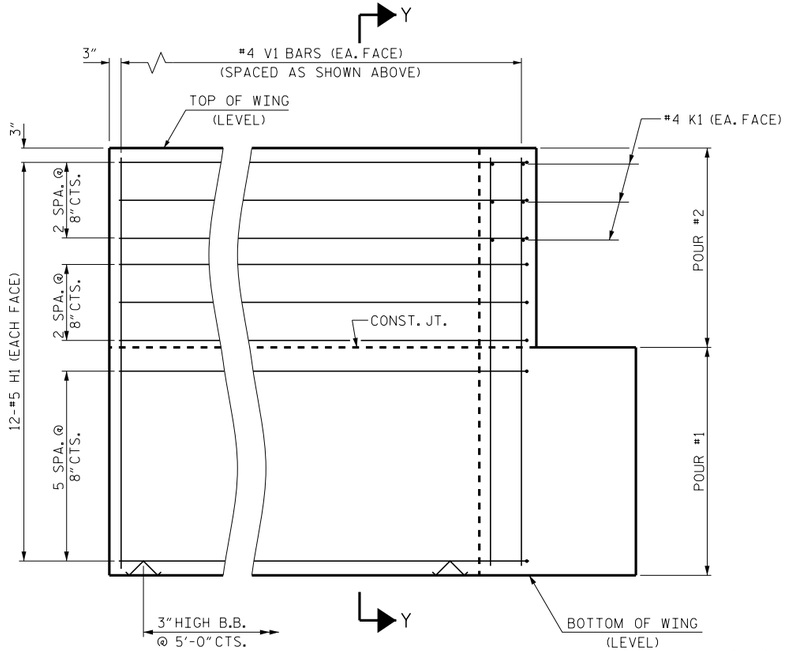
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

Stantec
Stantec Consulting Services Inc.
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www.stantec.com
License No. F-0672

ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/07/17
CHECKED BY : N.D'AIUTO DATE : 06/22/17

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

REV. 4/15 MAA/TMG

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by: Tommy Dudeck 4D2E279BCA244E9...

NORTH CAROLINA PROFESSIONAL SEAL 31462 ENGINEER THOMAS R. DUDECK
11/6/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 17BP.9.R.41
STOKES COUNTY
STATION: 13+77.00 -L-

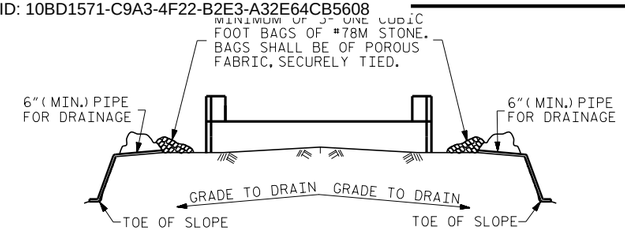
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 & 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			16

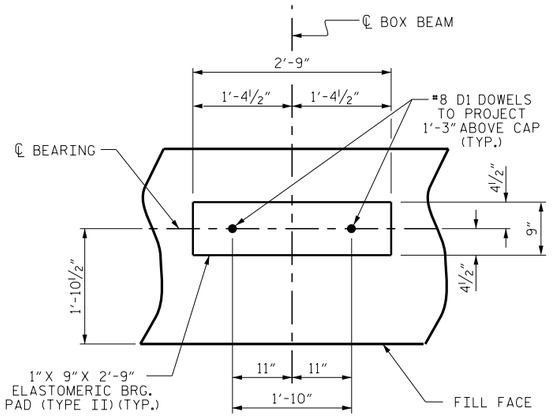


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

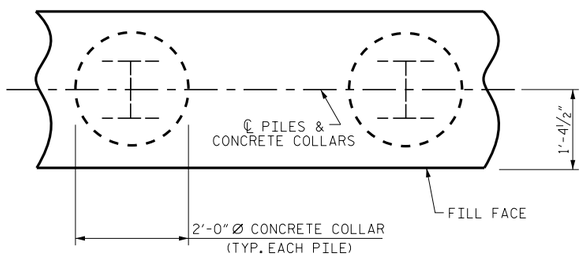
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

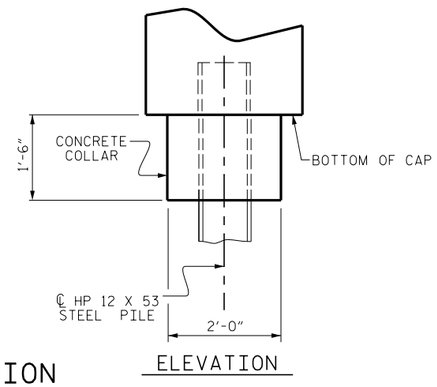


DETAIL "A"

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



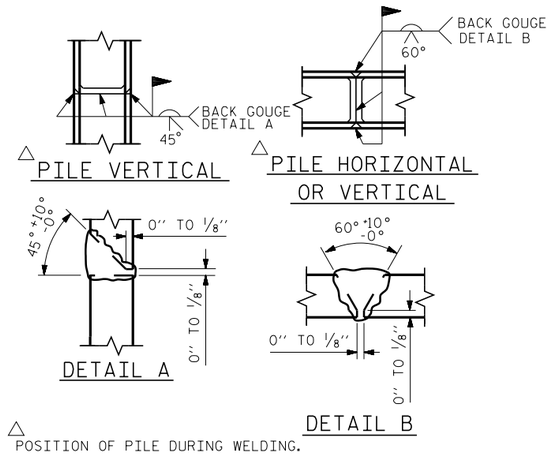
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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



△ PILE VERTICAL

△ PILE HORIZONTAL OR VERTICAL

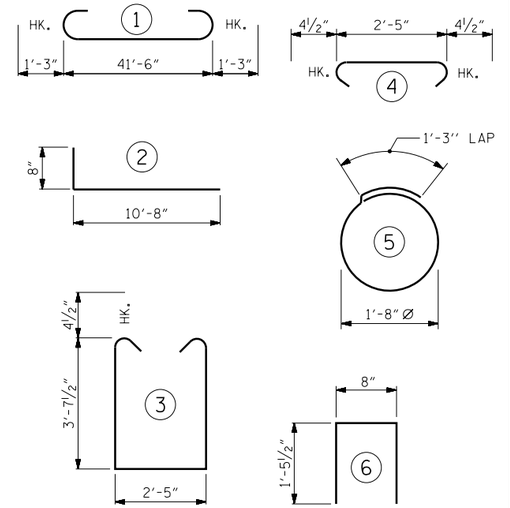
DETAIL A

DETAIL B

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT #1	END BENT #2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
NO: 7 LIN. FT.= 245	NO: 7 LIN. FT.= 210
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
PILE REDRIVES NO: 0	PILE REDRIVES NO: 0

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	44'-0"	1197
B2	28	#4	STR	22'-1"	413
B3	11	#4	STR	2'-5"	18
D1	24	#8	STR	2'-3"	144
H1	48	#5	2	11'-4"	567
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	22'-1"	177
S1	56	#4	3	10'-5"	390
S2	56	#4	4	3'-2"	118
S3	28	#4	5	6'-6"	122
U1	36	#4	6	3'-7"	86
V1	60	#4	STR	7'-2"	287
V2	72	#4	STR	5'-3"	253

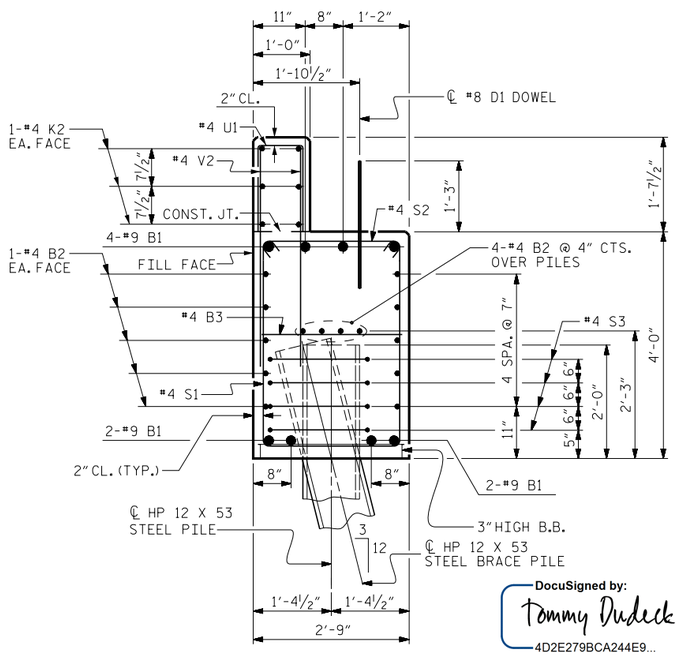
REINFORCING STEEL (FOR ONE END BENT) 3795 LBS.

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 5.5 C.Y.

TOTAL CLASS A CONCRETE 26.9 C.Y.



SECTION A-A

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

DocuSigned by: Tommy Dudeck 4D2E279BCA244E9...

11/6/2017

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1 & #2 DETAILS

Stantec Consulting Services Inc.
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/07/17
CHECKED BY : N.D'AIUTO DATE : 06/22/17

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

REV. 4/17 MAA/THC

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

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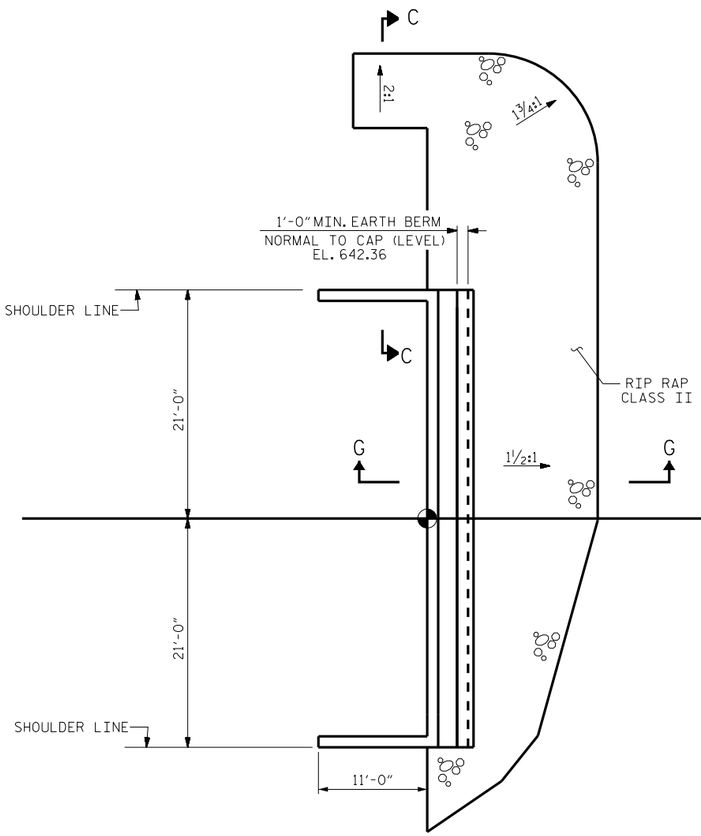
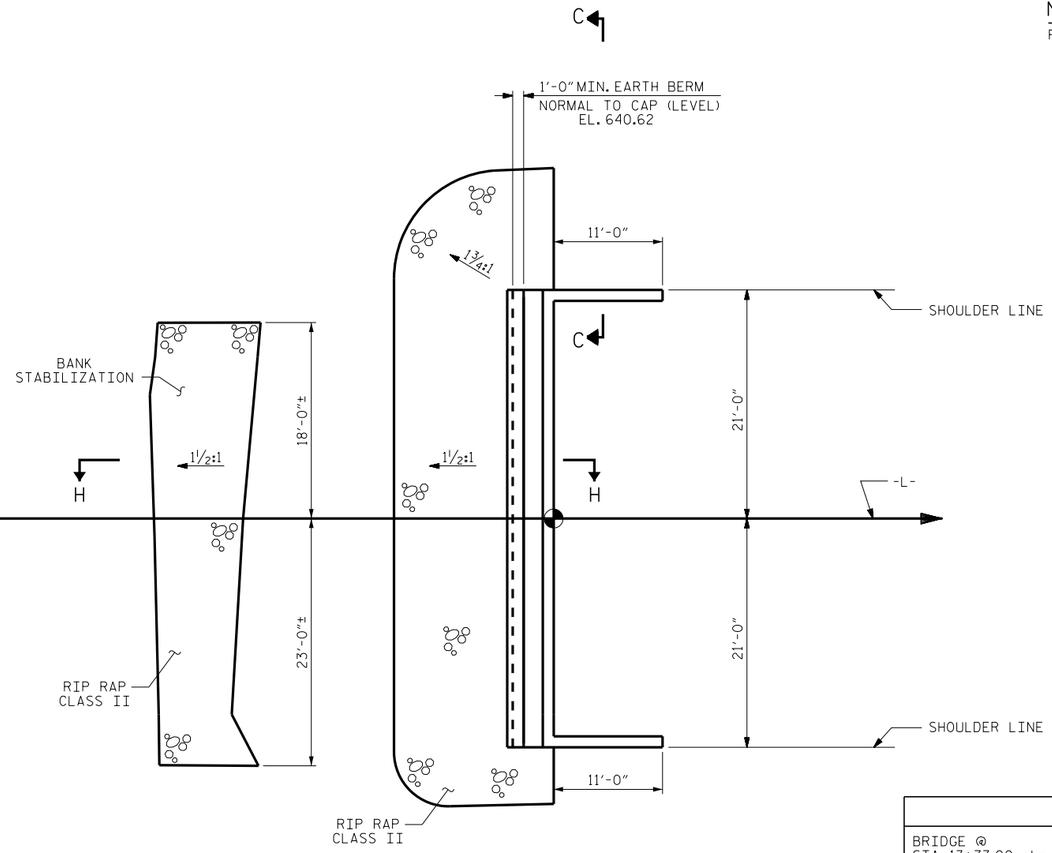
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			16

NOTES

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



END BENT #1

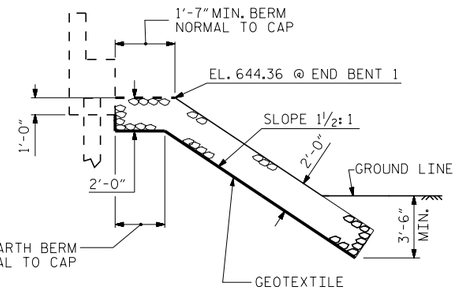


END BENT #2

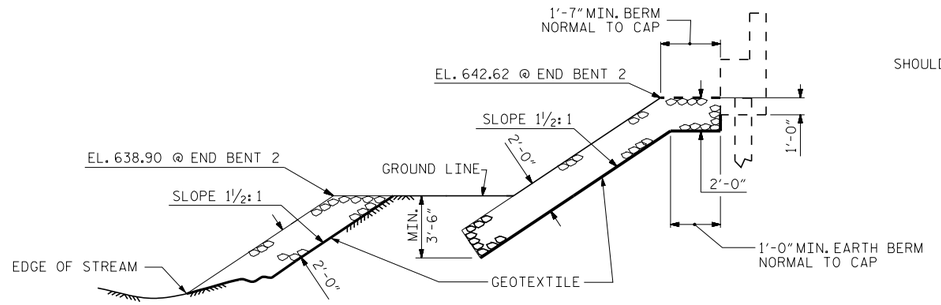
PLAN

ESTIMATED QUANTITIES

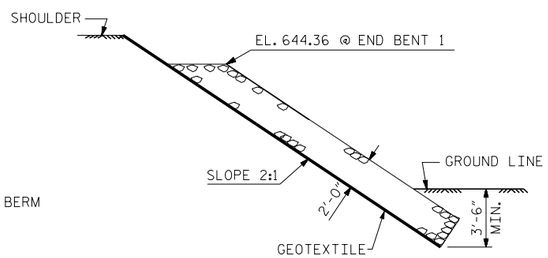
BRIDGE @ STA. 13+77.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	125	140
END BENT #2	65	70
BANK STABILIZATION	55	90
TOTAL	245	300



SECTION G-G



SECTION H-H



SECTION C-C

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

Stantec
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801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/07/17
CHECKED BY : N.D'AIUTO DATE : 06/22/17

DRAWN BY : REK 1/84
CHECKED BY : RDU 1/84

REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM
REV. 12/21/11 MAA/GM

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/06/17

DocuSigned by
SEAL
Tommy Dudeck
[illegible]

11/6/2017

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2			4			16

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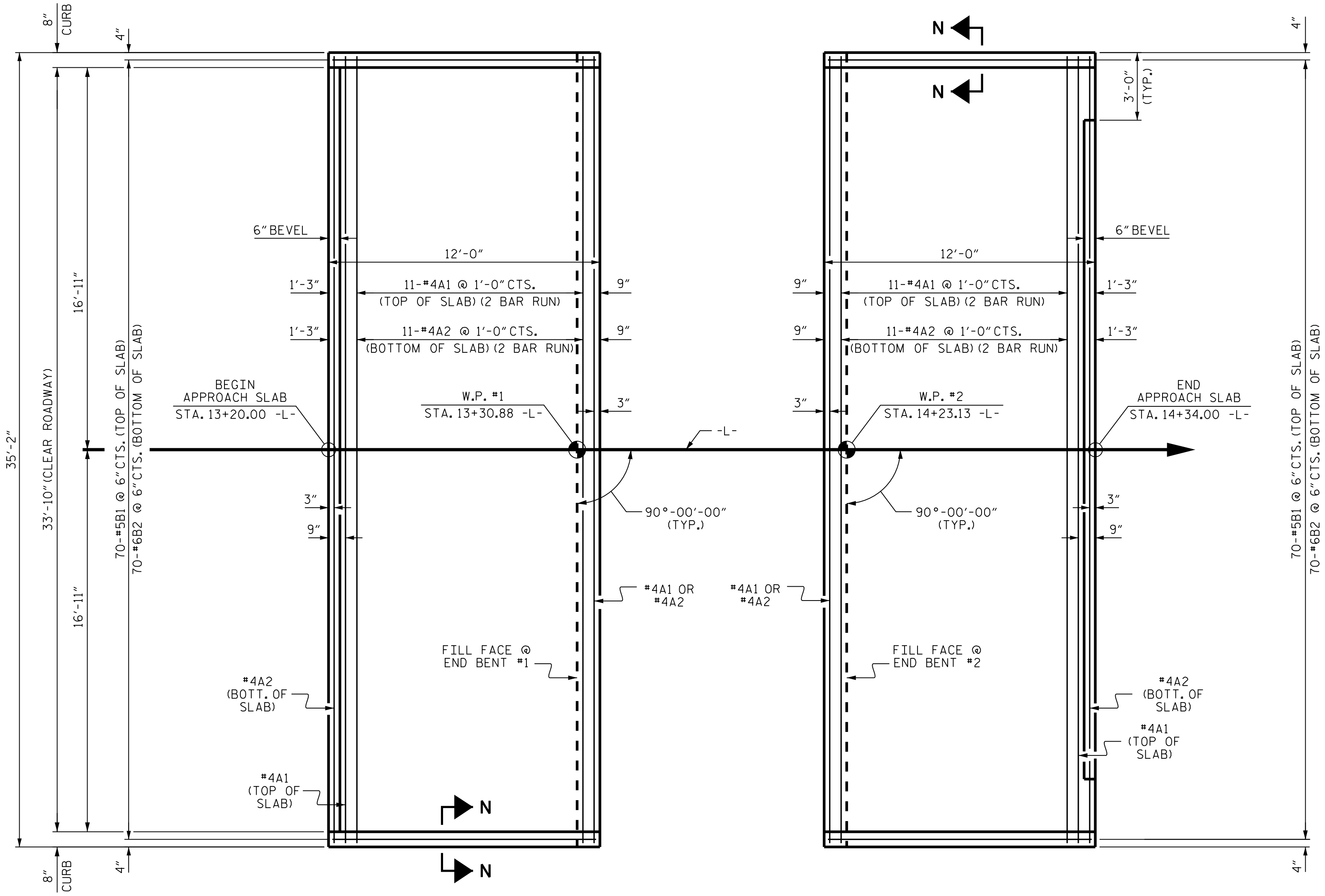
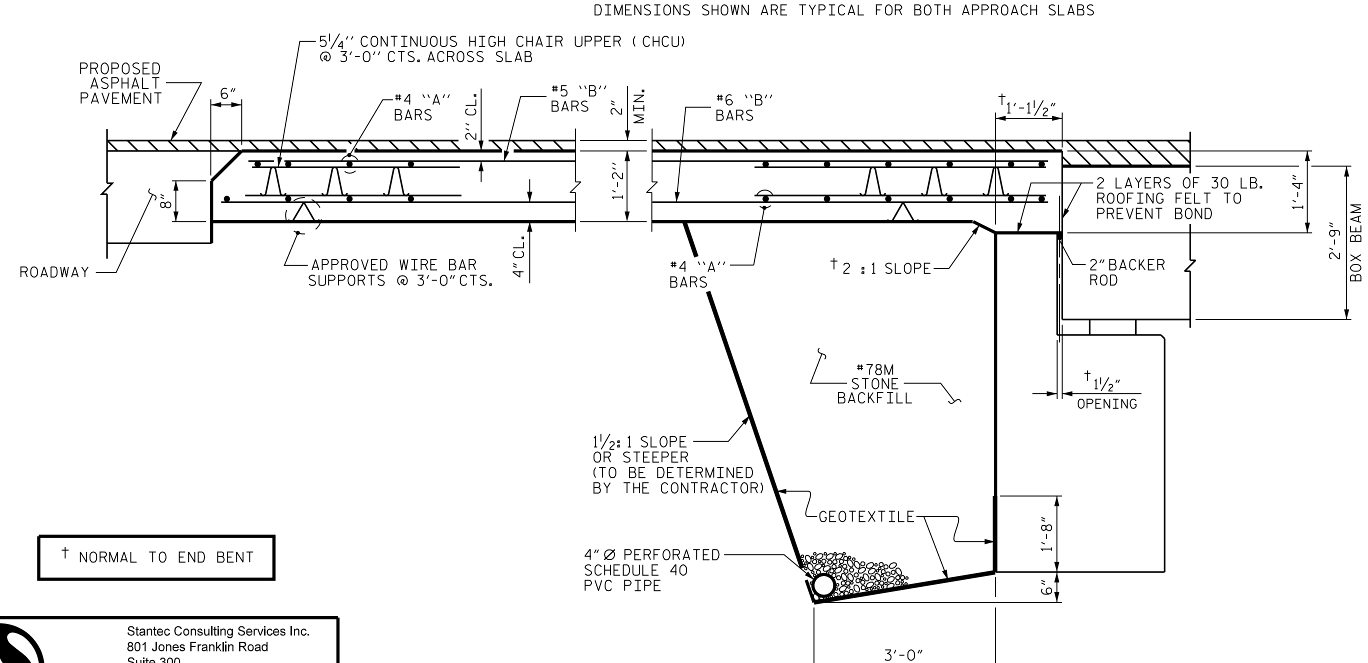


PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

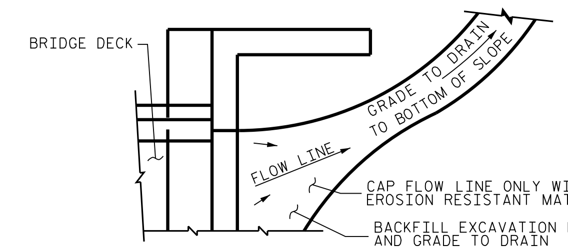
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

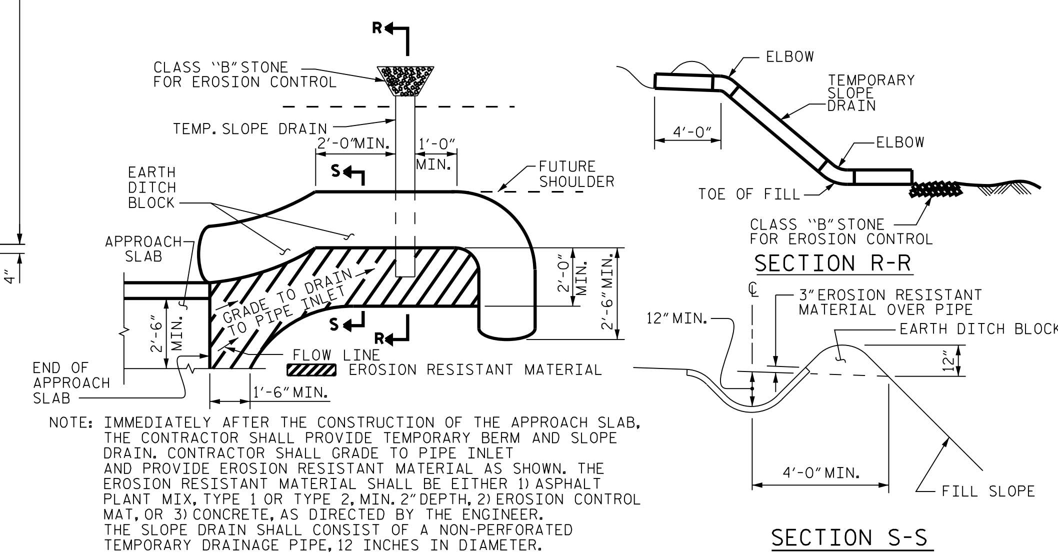
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



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

TEMPORARY DRAINAGE DETAIL

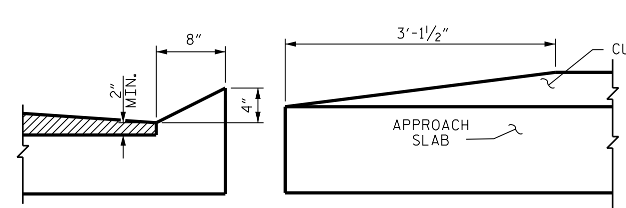


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



CURB DETAILS

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	18'-6"	321
A2	26	#4	STR	18'-4"	318
* B1	70	#5	STR	11'-2"	815
B2	70	#6	STR	11'-8"	1227
REINFORCING STEEL				LBS.	1545
* EPOXY COATED REINFORCING STEEL				LBS.	1136
CLASS AA CONCRETE				C.Y.	18.6

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	18'-6"	321
A2	26	#4	STR	18'-4"	318
* B1	70	#5	STR	11'-2"	815
B2	70	#6	STR	11'-8"	1227
REINFORCING STEEL				LBS.	1545
* EPOXY COATED REINFORCING STEEL				LBS.	1136
CLASS AA CONCRETE				C.Y.	18.6

SPLICE LENGTHS

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

PROJECT NO. 17BP.9.R.41

STOKES COUNTY

STATION: 13+77.00 -L-

DocuSigned by: Tommy Dudeck 4D2E... — SEAL 31482 NORTH CAROLINA PROFESSIONAL ENGINEER THOMAS R. DUDECK

11/15/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

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Stantec

ASSEMBLED BY : J. E. HAGENBUSH DATE : 06/07/17
CHECKED BY : N.D'AIUTO DATE : 06/22/17

DRAWN BY : MAA 11/11
CHECKED BY : AAC 11/11
REV. 9-15 MAA/TMG

DESIGN ENGINEER OF RECORD: T. R. DUDECK DATE : 11/15/17

jgeile

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STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" 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 1/4" 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 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM

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