DocuSign Envelope ID: 28BE1283-4358-45DE-BCBB-E0A47D982E17

PROJECT: 17BP.3.R.58

CONTRACT: DC-00209

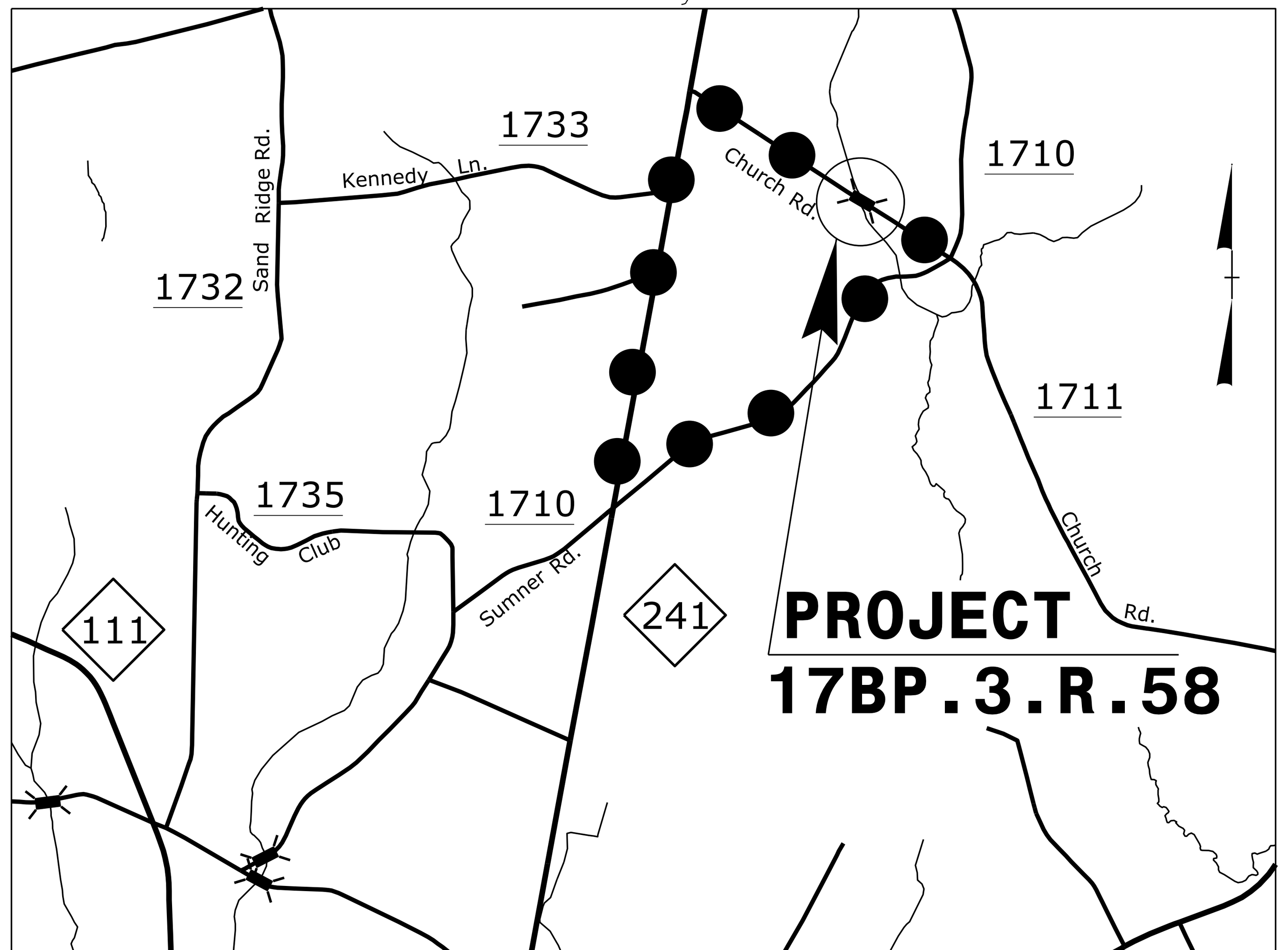
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C For Survey Control Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DUPLIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.3.R.58	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.3.R.58		PE
17BP.3.R.58		ROW
17BP.3.R.58		CONST



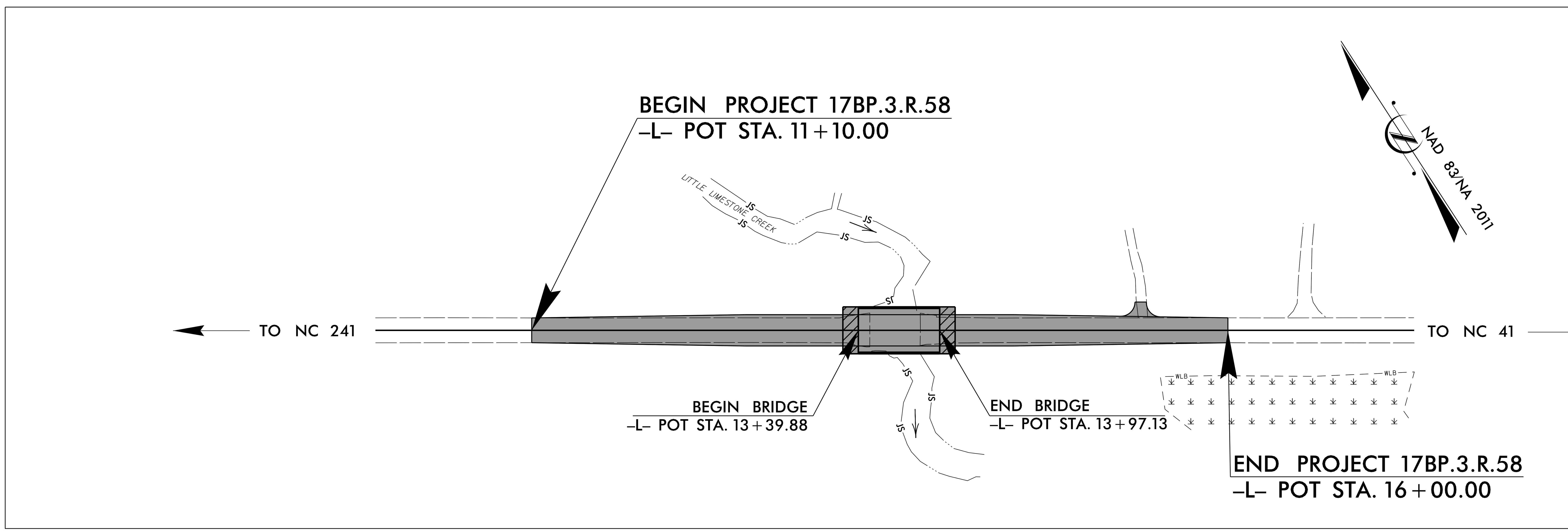
VICINITY MAP

●——● DENOTES OFF–SITE DETOUR

100% SUBMITTAL – FEBRUARY 14, 2018

LOCATION: BRIDGE NO. 161 OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH RD)

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



4

NCDOT CONTACT: AL EDGERTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 310
ADT XXXX = XXX
K = 10 %
D = 60 %
T = 6 % *
V = 60 MPH
* TTST = 3% DUAL = 3%
FUNC CLASS = MINOR COLLECTOR SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT 17BP.3.R.58	=	0.082 MI.
LENGTH OF STRUCTURE TIP PROJECT 17BP.3.R.58	=	0.011 MI.
TOTAL LENGTH OF TIP PROJECT 17BP.3.R.58	=	0.093 MI.

Prepared for the North Carolina Department of Transportation In the office of:

PARSONS — SUNGATE DESIGN GROUP, P.A.

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 17, 2017

LETTING DATE:
APRIL 19, 2018

DAVID L. WILVER, PE
PROJECT ENGINEER

J. MATTHEW PICKENS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026971 ENGINEER JOSHUA G. DALTON
2/16/2018
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER JASON M. PICKENS
2/16/2018
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

16-FEB-2018 11:38
J:\Division 3 Bridge Replacement\17BP.3.R.58 Duplin 161\Roadway\Proj\17BP3R58_rdy_tsh_01.dgn
$$$$USERNAME$$$$
09/08/99

8/17/99

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER
2/14/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C	SURVEY CONTROL SHEET
1D	PROPOSED ALIGNMENT CONTROL SHEET
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	MODIFIED METHOD III DETAIL
3B-1	ROADWAY AND DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN & PROFILE SHEET
TMP-1 THRU TMP-2B	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UC-1 THRU UC-5	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-3	CROSS-SECTIONS
S1-1 THRU S1-15	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

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 PHONE - CENTURYLINK (ALONZA MITCHELL), WATER - DUPLIN COUNTY WATER (DONNA BROWN), POWER - TRI-COUNTY EMC (TONY GRANTHAM), TV - SPECTRUM CATV (STAN RAMSAY)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

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	
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
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 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
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
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	1C
Location and Surveys	

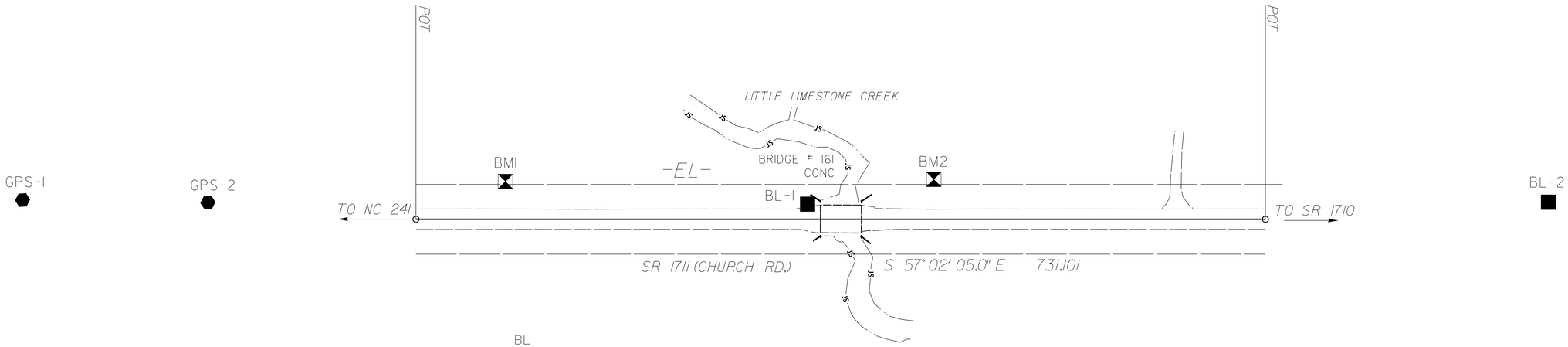
SURVEY CONTROL SHEET 300161

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS-2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 456376.854(ft) EASTING: 2375544.415(ft)
ELEVATION: 101.443(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988321
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-2" TO -L- STATION 10+00 IS
S 55° 32' 18" E 538.2322'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88


```
**********************************************
BM1       ELEVATION = 90.70
N 456058      E 2376070
RR SPIKE SET IN POWER POLE
**********************************************
**********************************************
BM2       ELEVATION = 90.15
N 455862      E 2376376
RR SPIKE SET IN POWER POLE
**********************************************
```



BL

POINT	DESC.	NORTH	EAST	ELEVATION
GPS1	GPS CAP & REBAR	457034.5960	2374532.6890	111.76
GPS2	GPS CAP & REBAR	456376.8540	2375544.4150	101.44
BL1	TRV CAP & REBAR	455899.8342	2376277.9811	89.85
BL2	TRV CAP & REBAR	455554.2785	2376813.8893	89.44

EL

POINT	N	E	BEARING	DIST
POT	456072.293	2375988.191		
LINE			S 57°02'05.0" E	731.10
POT	455674.479	2376601.584		

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

PROPOSED ALIGNMENT CONTROL SHEET 300161

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	456072.2935	2375988.1906
POT	17+31.10	455674.4793	2376601.5845

NOTES:

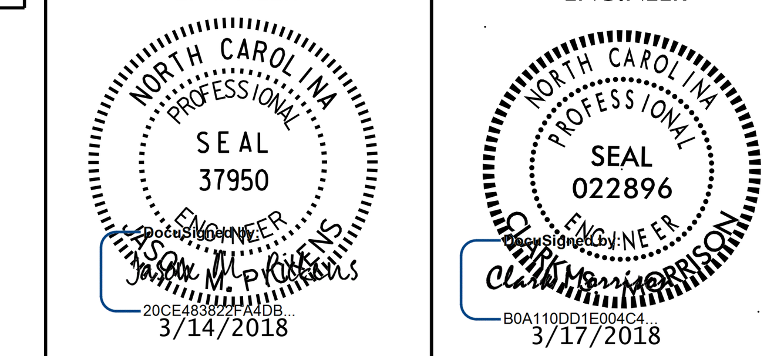
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

8/17/99

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	2A-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

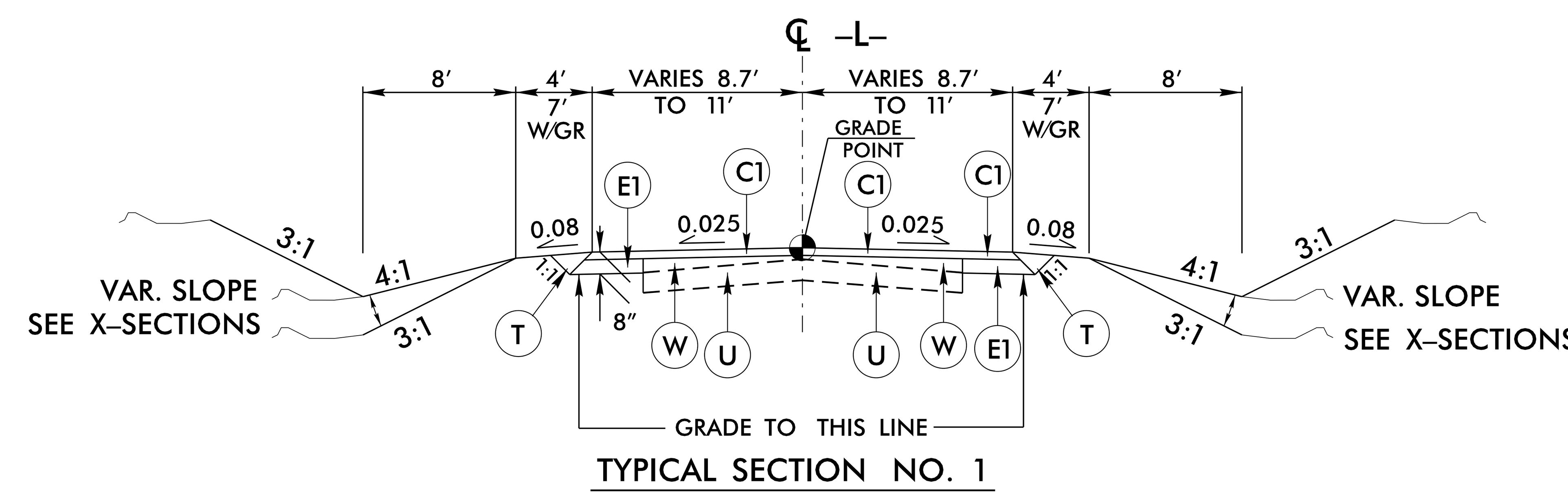


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

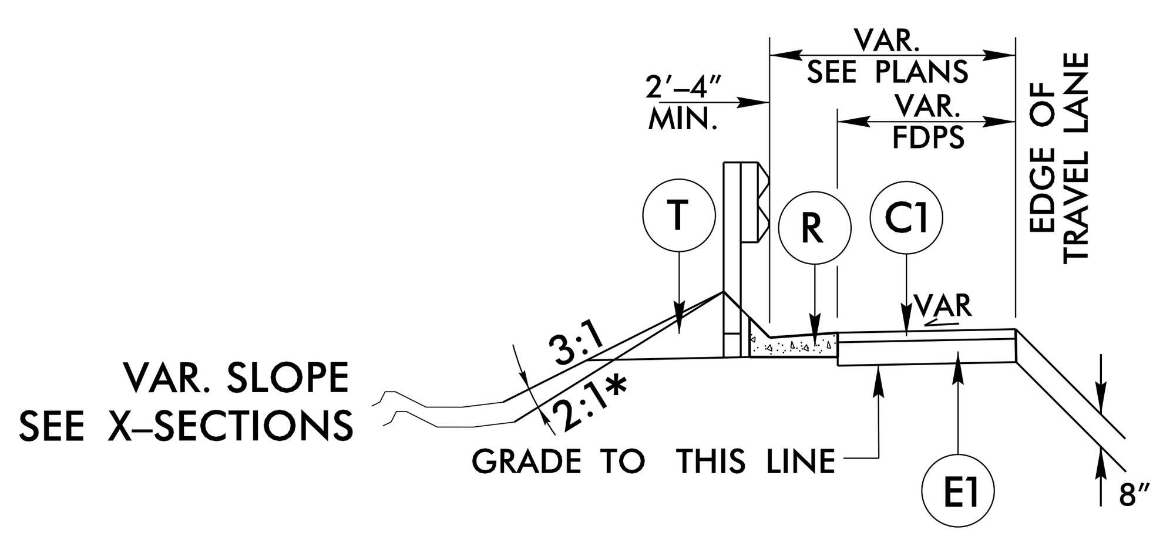
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING)

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

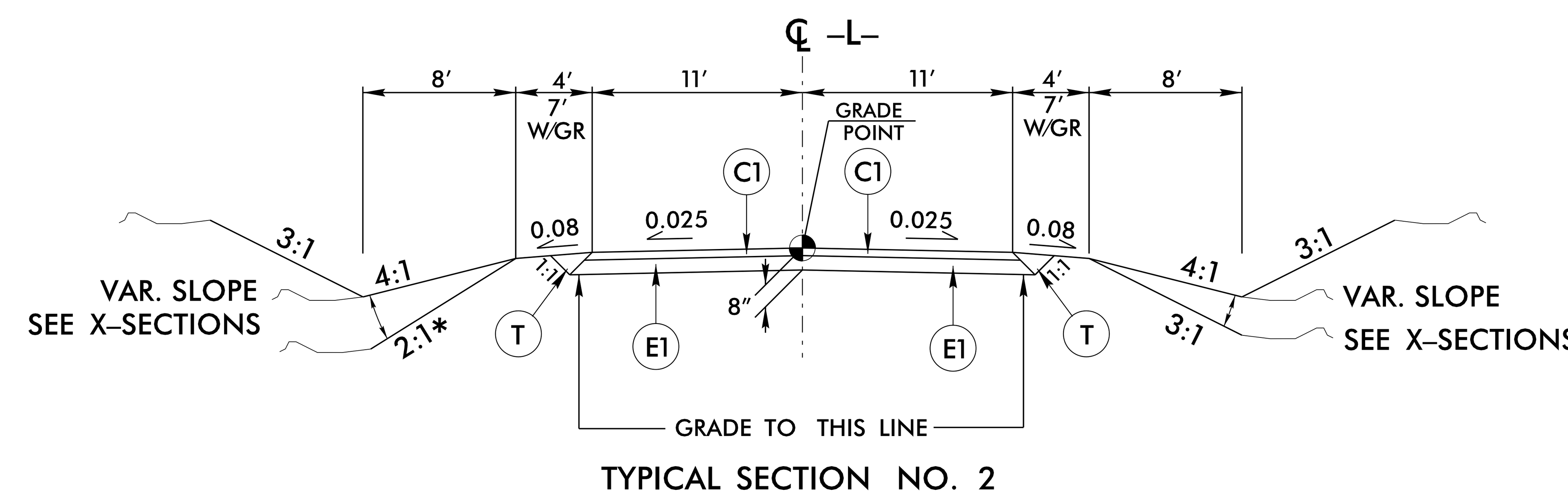


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 11+10.00 TO -L- STA. 12+60.00
-L- STA. 14+70.00 TO -L- STA. 16+00.00

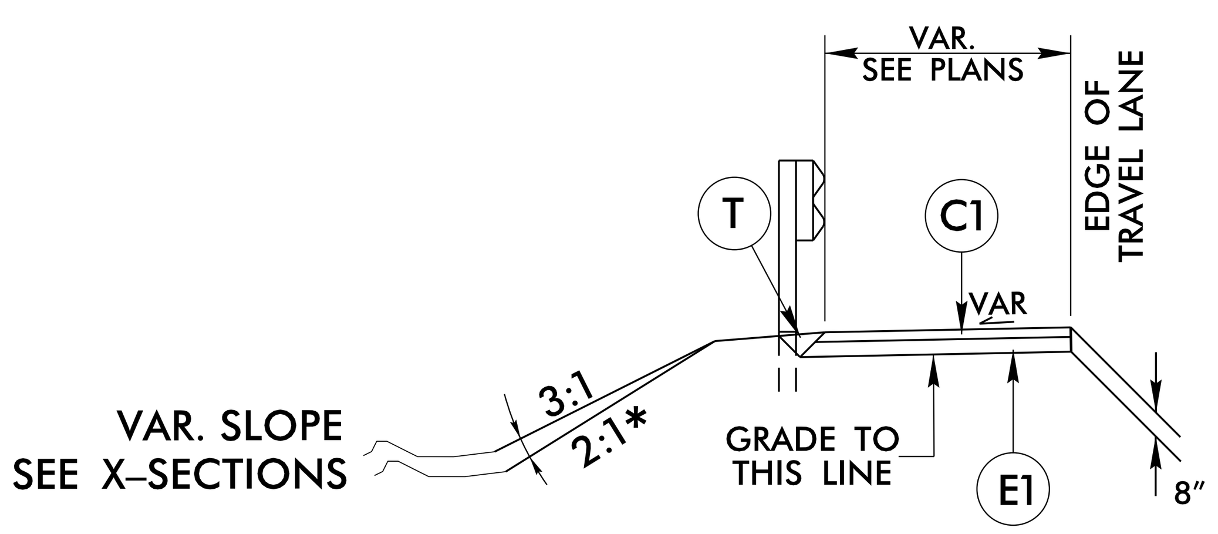


DETAIL SHOWING SHOULDER BERM GUTTER (SBG)
FROM STA. 14+08.00 TO STA. 14+32.00 -L- LT*
FROM STA. 14+08.00 TO STA. 14+32.00 -L- RT

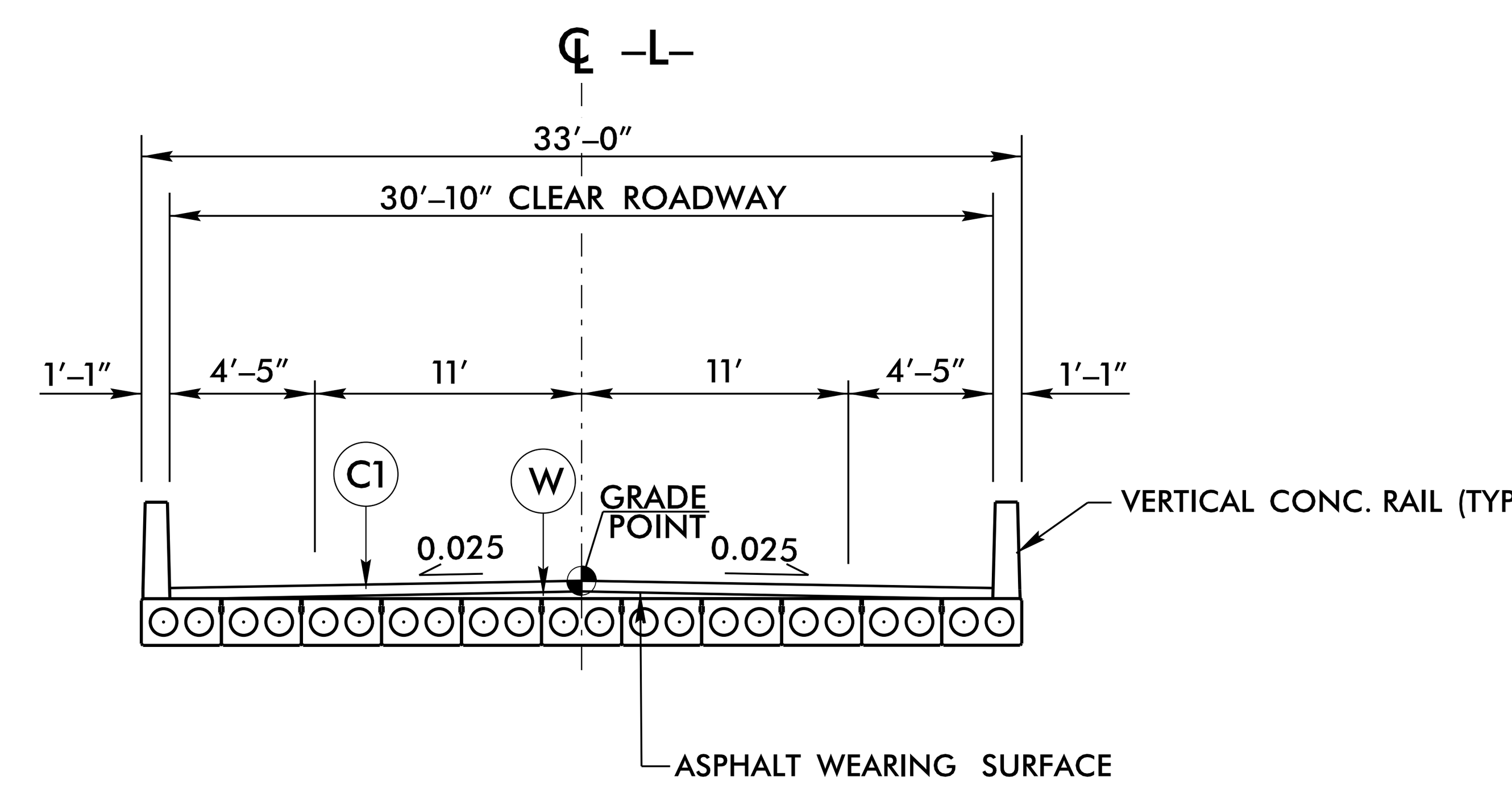


TYPICAL SECTION NO. 2

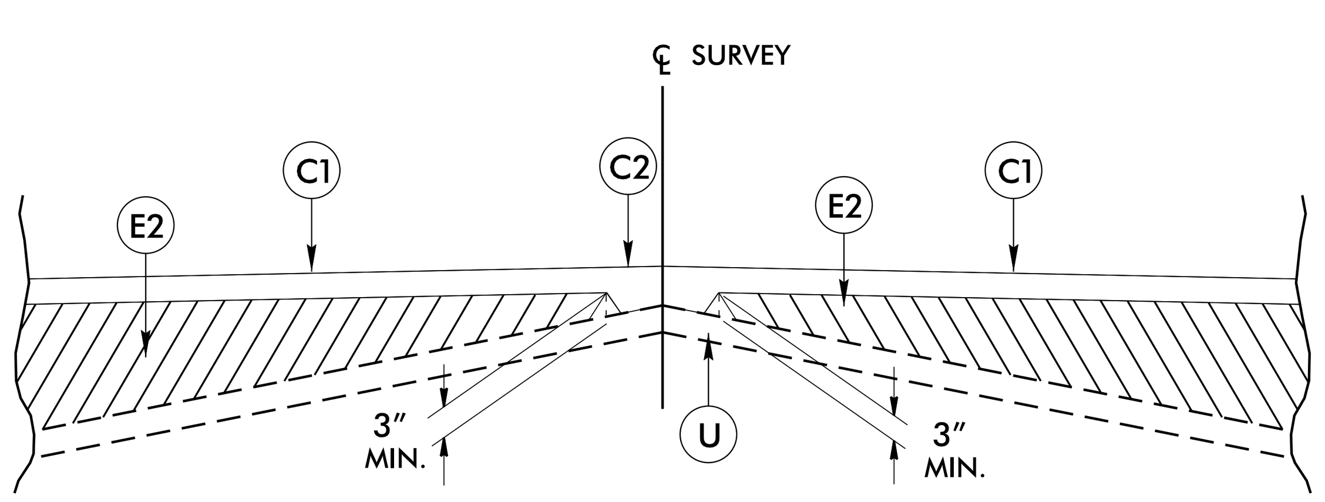
USE TYPICAL SECTION NO. 2
-L- STA. 12+60.00 TO -L- STA. 13+39.88 (BEGIN BRIDGE)
-L- STA. 13+97.13 (END BRIDGE) TO -L- STA. 14+70.00 *



DETAIL SHOWING FULL DEPTH PAVED SHOULDERS TO FACE OF GUARDRAIL
FROM STA. 12+64.89 TO STA. 13+29.00 -L- LT
FROM STA. 12+64.89 TO STA. 13+29.00 -L- RT
FROM STA. 14+32.00 TO STA. 14+72.12 -L- LT*
FROM STA. 14+32.00 TO STA. 14+72.12 -L- RT



TYPICAL SECTION ON STRUCTURE
-L- STA. 13+39.88 TO -L- STA. 13+97.13



Detail Showing Method of Wedging

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	2C-1

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

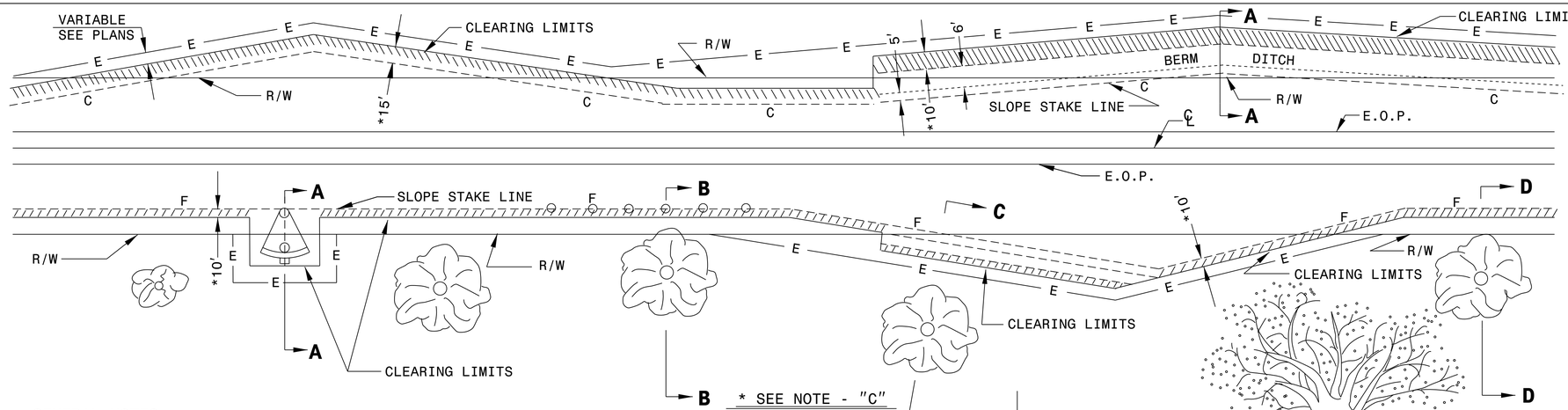
ENGLISH DETAIL DRAWING FOR

METHOD OF CLEARING

MODIFIED METHOD - III

SHEET 1 OF 1

200D03



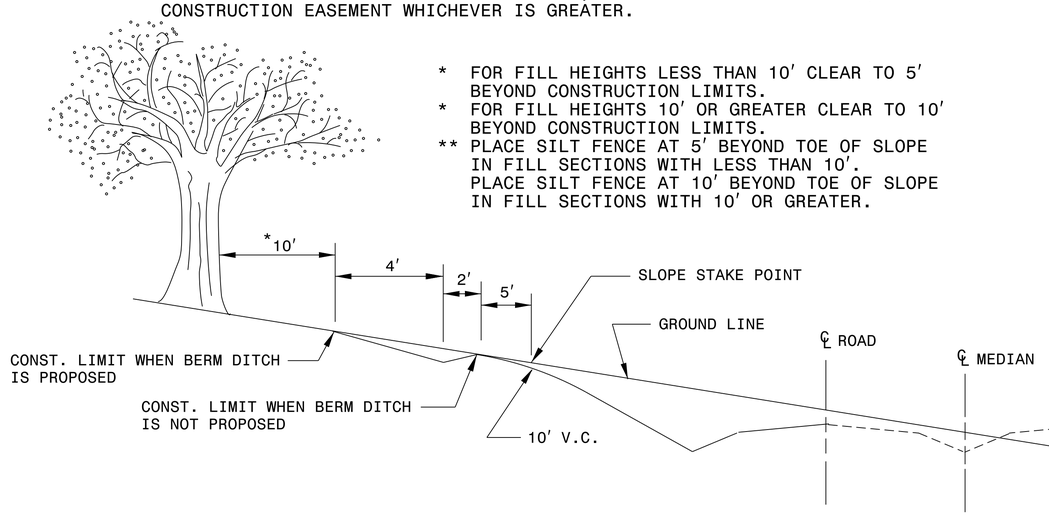
GENERAL NOTES:

1. REMOVE TREES OUTSIDE THE CLEARING LIMIT WHEN, IN THE OPINION OF THE ENGINEER, THE UTILITY OF A TREE WILL BE DESTROYED BY THE CONSTRUCTION OR THE CLEARING OPERATION.
2. CLEAR IN ACCORDANCE WITH THIS STANDARD EXCEPT WHERE ADDITIONAL CLEARING IS REQUIRED FOR SAFETY AS SHOWN ON THE PLANS.

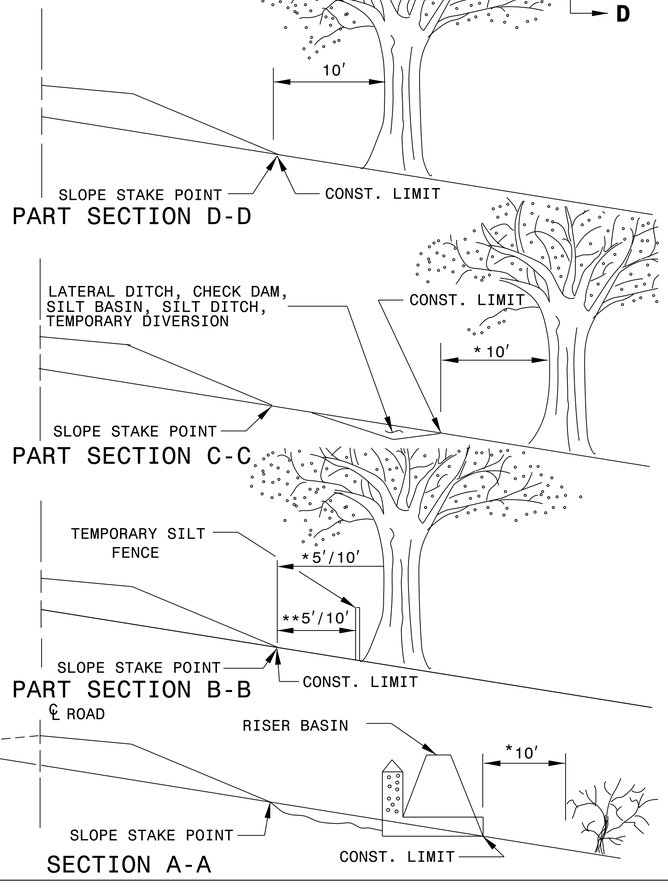
METHOD III CLEARING LIMITS

(A) CUTS -- CLEAR TO CONSTRUCTION LIMITS.
(B) FILLS - CLEAR TO 5′/10′ * BEYOND CONSTRUCTION LIMITS, UNLESS SPECIFIED OTHERWISE BY WETLAND PERMIT.
(C) CUTS AND FILLS - WHEN THE CLEARING LIMITS (A AND B) EXCEED THE PROPOSED R/W OR PROPOSED CONSTRUCTION EASEMENTS, THEN CLEAR ONLY TO THE R/W OR CONSTRUCTION EASEMENT WHICHEVER IS GREATER.

* FOR FILL HEIGHTS LESS THAN 10′ CLEAR TO 5′ BEYOND CONSTRUCTION LIMITS.
* FOR FILL HEIGHTS 10′ OR GREATER CLEAR TO 10′ BEYOND CONSTRUCTION LIMITS.
** PLACE SILT FENCE AT 5′ BEYOND TOE OF SLOPE IN FILL SECTIONS WITH LESS THAN 10′. PLACE SILT FENCE AT 10′ BEYOND TOE OF SLOPE IN FILL SECTIONS WITH 10′ OR GREATER.



SECTION A-A



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

ENGLISH DETAIL DRAWING FOR

METHOD OF CLEARING

MODIFIED METHOD - III

SHEET 1 OF 1

200D03

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
2/23/2018

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

SEE TITLE BLOCK

ORIGINAL BY:	T.S.S.	DATE:	FEB.2000
MODIFIED BY:	K.A.K.	DATE:	AUG.2016
CHECKED BY:		DATE:	
FILE SPEC.:	kkempf/english/0200d301.dgn		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

05-DEC-2017 09:31
S:\Contracts\Special Details\kkempf\english\0200D301_modified method III CandG.dgn
jhoverton
At CSD-292695

COMPUTED BY: JMP	DATE: 12-2017
CHECKED BY: DLW	DATE: 12-2017

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLANS PREPARED BY : PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	3B-1

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK.	BORROW	WASTE
-L- 11+10.00	-L- 13+39.88 (BEGIN BRIDGE)	150		113		37
-L- 13+97.13 (END BRIDGE)	-L- 16+00.00	161		53		108
SUBTOTALS:		311		166		145
SUBTOTALS:						
SUBTOTALS:						
PROJECT TOTALS:		311		166		145
LOSS DUE TO CLEARING & GRUBBING (PER GEOTECH REPORT)		-50				-50
PROJECT TOTAL		261		166		95
GRAND TOTALS:		261		166		95
SAY:		265				

UNDERCUT FOR EMBANKMENT STABILITY CONTINGENCY PER GEOTECH RECS: 200 CY
GRADE POINT UNDERCUT CONTINGENCY PER GEOTECH RECS: 50 CY
SELECT GRANULAR MATERIAL, CLASS III CONTINGENCY PER GEOTECH RECS: 200 CY
GEOTEXTILE FOR SOIL STABILIZATION CONTINGENCY PER GEOTECH RECS: 500 SY
SHALLOW UNDERCUT CONTINGENCY PER GEOTECH RECS: 100 CY
CLASS IV SUBGRADE STABLIZATION CONTINGENCY PER GEOTECH RECS: 200 TONS
EST. SHOULDER BORROW: 30 CY

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	12+60	13+48	CL	178.01
-L-	13+84	14+70	CL	174.24
			TOTAL:	352.25
			SAY:	360

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.

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

See "Standard Specifications For Roads and Structures, Section 300-5".

STATION	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
-L- 14+22	LT	401		89.9															
		401	402		87.2	86.1													
-L- 14+22	RT	403		89.9															
		403	404		86.1	85.2													
-L- 15+38	LT	405																	
-L- 16+54	LT	406			86.8	86.8													
TOTAL																			
SAY																			

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"
-L- 14+22																						
		20																				
-L- 14+22																						
		20																				
-L- 15+38																			24			
-L- 16+54																			20			
TOTAL		40																	44			
SAY		40																	44			

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	24" 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 PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	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	T.B.G.D.I. STD. 840.35	G.D.I. (N.S. FLAT) FRAME W/2 GRATES STD. 840.29	C.S. ELBOW NO. & SIZE	PIPE REMOVAL LIN.FT.	REMARKS
-L- 14+22								1									1	1			
-L- 14+22								1									1	1			
-L- 15+38																				23	
-L- 16+54																				19	
TOTAL								2									2	2		42	
SAY								2									2	2		42	

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

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

"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.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END	ANCHORS XI MOD	XI	GREU TL-3	M-350	III	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 TL-2 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+64.89	13+39.88	LT	75.00				13+39.88	4	7		50		1			1		1											
-L-	12+64.89	13+39.88	RT	75.00			13+39.88		4	7	50		1				1		1											
-L-	13+97.13	14+72.12	LT	75.00			13+97.13		4	7	50		1				1		1											
-L-	13+97.13	14+72.12	RT	75.00				13+97.13	4	7		50		1			1		1											
TOTAL				300.00																										
		DEDUCT FOR ANCHOR UNITS															4		4											
			GREU, TL-3 4 @ 50' =	-200																										
			TYPE III 4 @ 18.75' =	-75																										
SAY				25.00			8 EA ADDITIONAL GUARDRAIL POSTS										4		4											

5/28/99
27-MAR-2018 13:05
J:\Division 3 Bridge Replacement\17BP.3.R.58 Duplin 161\Roadway\Proj\17BP3R58_rdy_sum_3B-1.dgn
$$$$USERNAME$$$$

COMPUTED BY: A. A. Nash DATE: 1/26/2018	(1-16-18)	PROJECT NO.	SHEET NO.
CHECKED BY: M. J. Alexander DATE: 1/26/2018		17BP.3.R.58	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
		TOTAL SY/TONS:	0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	12	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
							TOTAL SY:	0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
					TOTAL SY:	0	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
					TOTAL SY:	0

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
	TOTAL GAUGES (EACH):		

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

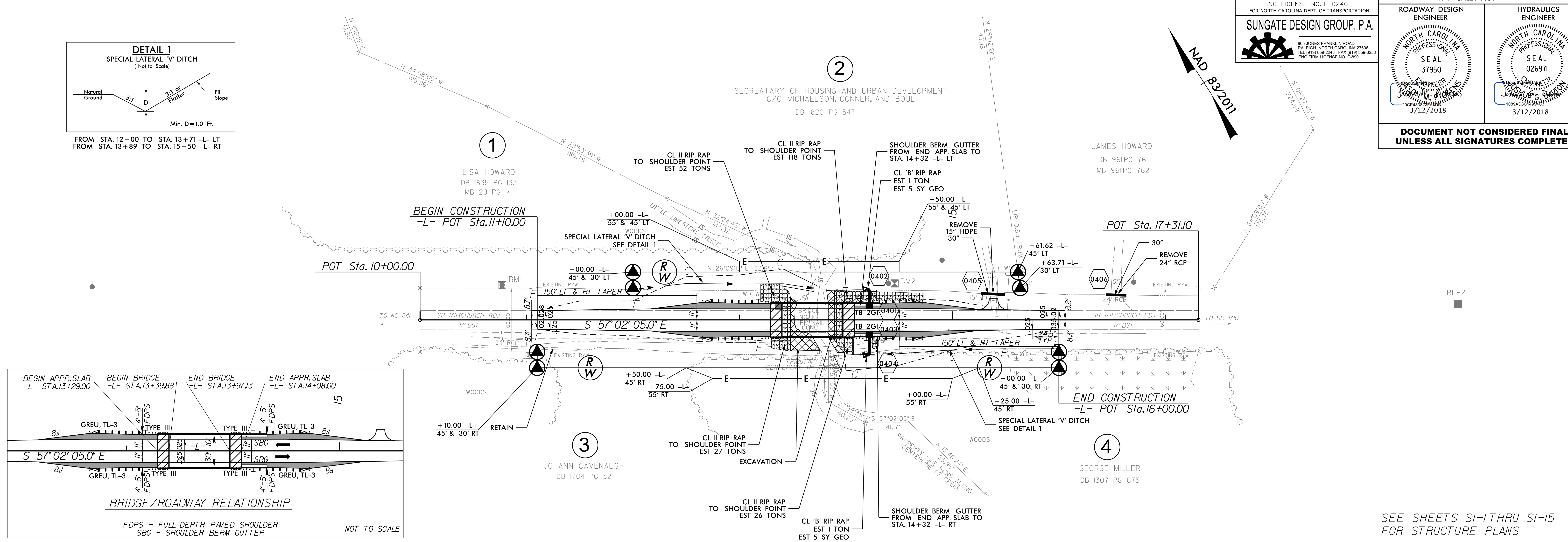
Bridge Description	End Bent/ Bent No.	MONTHS

PLANS PREPARED BY: PARSONS, RALEIGH, NORTH CAROLINA, (919) 854-1345, NC LICENSE NO. F-0246, FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

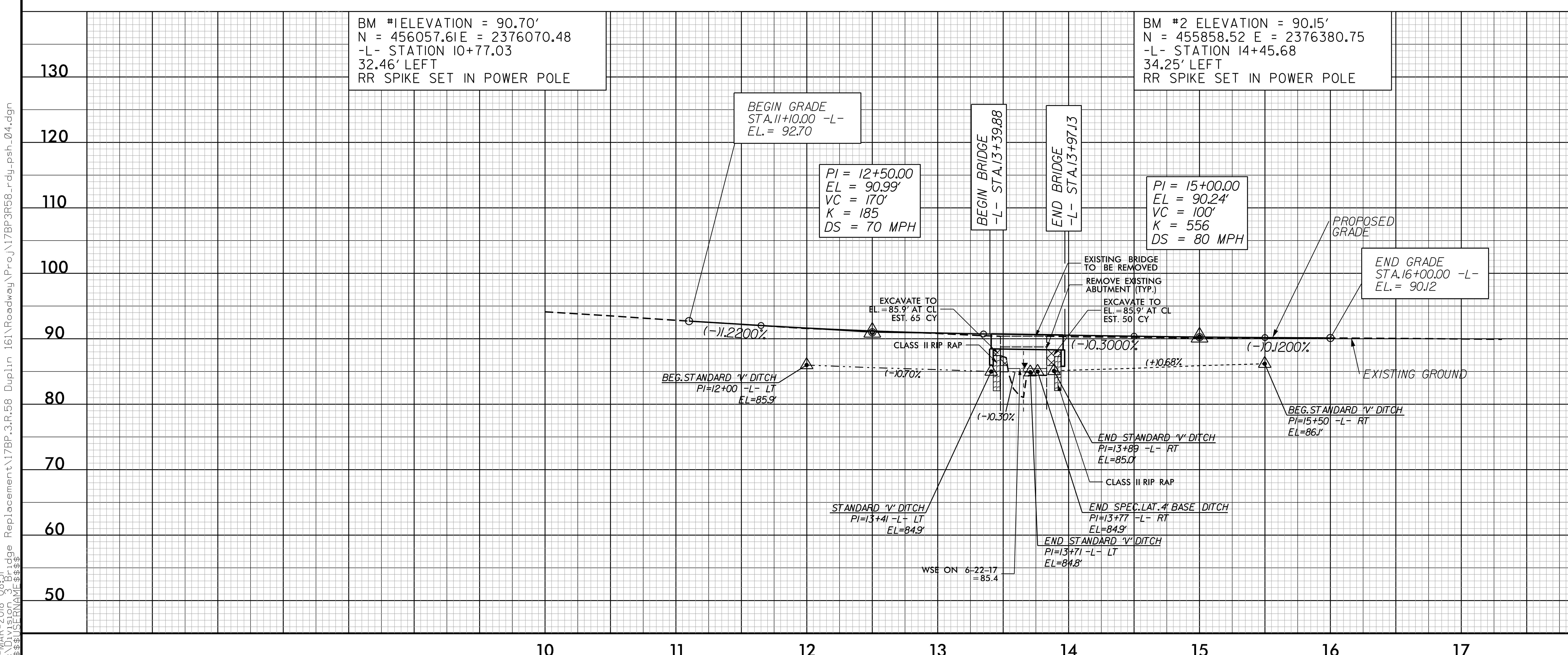
SUNGATE DESIGN GROUP, P.A.

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37950 — 3/12/2018	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026971 — 3/12/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



8/17/99
DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1 or Flatter
Fill Slope
Min. D=1.0 Ft.
FROM STA. 12+00 TO STA. 13+71 -L- LT
FROM STA. 13+89 TO STA. 15+50 -L- RT
NAD 83/2011
SECRETARY OF HOUSING AND URBAN DEVELOPMENT
C/O MICHAELSON, CONNER, AND BOUL
DB 1820 PG 547
LISA HOWARD
DB 1835 PG 133
MB 29 PG 141
JAMES HOWARD
DB 961 PG 761
MB 961 PG 762
JO ANN CAVENAUGH
DB 1704 PG 321
GEORGE MILLER
DB 1307 PG 675
BEGIN CONSTRUCTION
-L- POT Sta.11+10.00
POT Sta. 10+00.00
POT Sta. 17+31.10
END CONSTRUCTION
-L- POT Sta.16+00.00
S 57° 02' 05.0" E
SR 1711 (CHURCH RD)
TO NC 241
TO SR 1710
LITTLE LIMESTONE CREEK
CL II RIP RAP TO SHOULDER POINT EST 52 TONS
CL II RIP RAP TO SHOULDER POINT EST 118 TONS
CL II RIP RAP TO SHOULDER POINT EST 27 TONS
CL II RIP RAP TO SHOULDER POINT EST 26 TONS
SHOULDER BERM GUTTER FROM END APP. SLAB TO STA. 14+32 -L- LT
SHOULDER BERM GUTTER FROM END APP. SLAB TO STA. 14+32 -L- RT
CL 'B' RIP RAP EST 1 TON EST 5 SY GEO
SPECIAL LATERAL 'V' DITCH SEE DETAIL 1
REMOVE 15" HDPE 30"
REMOVE 24" RCP
EXCAVATION
RETAIN
150' LT & RT TAPER
WOODS
BM1
BM2
BL-2
BEGIN APPR. SLAB -L- STA.13+29.00
BEGIN BRIDGE -L- STA.13+39.88
END BRIDGE -L- STA.13+97.13
END APPR. SLAB -L- STA.14+08.00
GREU, TL-3
TYPE III
SBG
FDPS
BRIDGE/ROADWAY RELATIONSHIP
FDPS - FULL DEPTH PAVED SHOULDER
SBG - SHOULDER BERM GUTTER
NOT TO SCALE
SEE SHEETS S1-1 THRU S1-15 FOR STRUCTURE PLANS



BM #1 ELEVATION = 90.70'
N = 456057.61 E = 2376070.48
-L- STATION 10+77.03
32.46' LEFT
RR SPIKE SET IN POWER POLE
BM #2 ELEVATION = 90.15'
N = 455858.52 E = 2376380.75
-L- STATION 14+45.68
34.25' LEFT
RR SPIKE SET IN POWER POLE
BEGIN GRADE STA.11+10.00 -L- EL.= 92.70
PI = 12+50.00
EL = 90.99'
VC = 170'
K = 185
DS = 70 MPH
BEGIN BRIDGE -L- STA.13+39.88
END BRIDGE -L- STA.13+97.13
PI = 15+00.00
EL = 90.24'
VC = 100'
K = 556
DS = 80 MPH
PROPOSED GRADE
END GRADE STA.16+00.00 -L- EL.= 90.12
EXISTING BRIDGE TO BE REMOVED
REMOVE EXISTING ABUTMENT (TYP.)
EXCAVATE TO EL.=85.9' AT CL EST. 65 CY
EXCAVATE TO EL.=85.9' AT CL EST. 50 CY
CLASS II RIP RAP
(-)1.2200%
(-)0.3000%
(-)0.1200%
(-)0.70%
(+)0.68%
(-)0.30%
EXISTING GROUND
BEG. STANDARD 'V' DITCH PI=12+00 -L- LT EL=85.9'
STANDARD 'V' DITCH PI=13+41 -L- LT EL=84.9'
END STANDARD 'V' DITCH PI=13+89 -L- RT EL=85.0'
END SPEC. LAT. 4' BASE DITCH PI=13+77 -L- RT EL=84.9'
END STANDARD 'V' DITCH PI=13+71 -L- LT EL=84.8'
BEG. STANDARD 'V' DITCH PI=15+50 -L- RT EL=86.1'
WSE ON 6-22-17 =85.4
130
120
110
100
90
80
70
60
50
10
11
12
13
14
15
16
17

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	440	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	89.4	FT
BASE DISCHARGE	=	650	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	90.0	FT
OVERTOPPING DISCHARGE	=	646	CFS
OVERTOPPING FREQUENCY	=	100-	YRS
OVERTOPPING ELEVATION	=	89.9	FT

OVERTOPPING AT SAG STA.17+28 -L-

DATE OF SURVEY	=	06/22/2017	
W.S. ELEVATION AT DATE OF SURVEY	=	85.4	FT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

DUPLIN COUNTY

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS 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
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES

PROJECT PHASING

PHASE 1

STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.04, SHEET 1 OF 1, CONTRACTOR TO INSTALL ALL ADVANCE WARNING SIGNS FOR DETOUR, KEEPING SIGNS COVERED (SEE TMP-2A AND ROADWAY STANDARD DRAWING NO. 1101.03, SHEETS 1 OF 9 AND 2 OF 9).

WORKING IN A CONTINOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 2.

STEP 2: CLOSE SR 1711 (CHURCH RD) TO TRAFFIC, UNCOVER ALL ADVANCE WARNING SIGNS FOR ROAD CLOSURE AND SHIFT TRAFFIC TO TEMPORARY DETOUR.

STEP 3: DISMANTLE AND REMOVE EXISTING BRIDGE NO. 161 OVER LITTLE LIMESTONE CREEK.

STEP 4: COMPLETE CONSTRUCTION OF PROPOSED STRUCTURE, APPROACH ROADWAY WIDENING AND PAVING (SEE ROADWAY PLANS).

STEP 5: CONTRACTOR TO PLACE FINAL PAVEMENT MARKINGS (PAINT) ON SR 1711 (CHURCH RD).

WORKING IN A CONTINOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE I, STEP 6.

STEP 6: USING ROADWAY STANDARD DRAWINGS NO. 1101.04, SHEET 1 OF 1, REMOVE ALL ADVANCE WARNING SIGNS FOR ROAD CLOSURE, ALL TRAFFIC CONTROL DEVICES AND OPEN SR 1711 (CHURCH RD) TO TRAFFIC.

PROJECT NOTES

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. MODIFICATIONS 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 CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

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

CONTRACTOR WILL PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS, UNLESS OTHERWISE NOTED.

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

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

TRAFFIC CONTROL DEVICES

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

LOCAL NOTES

1. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS WITHIN THE PROJECT LIMITS AT ALL TIMES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

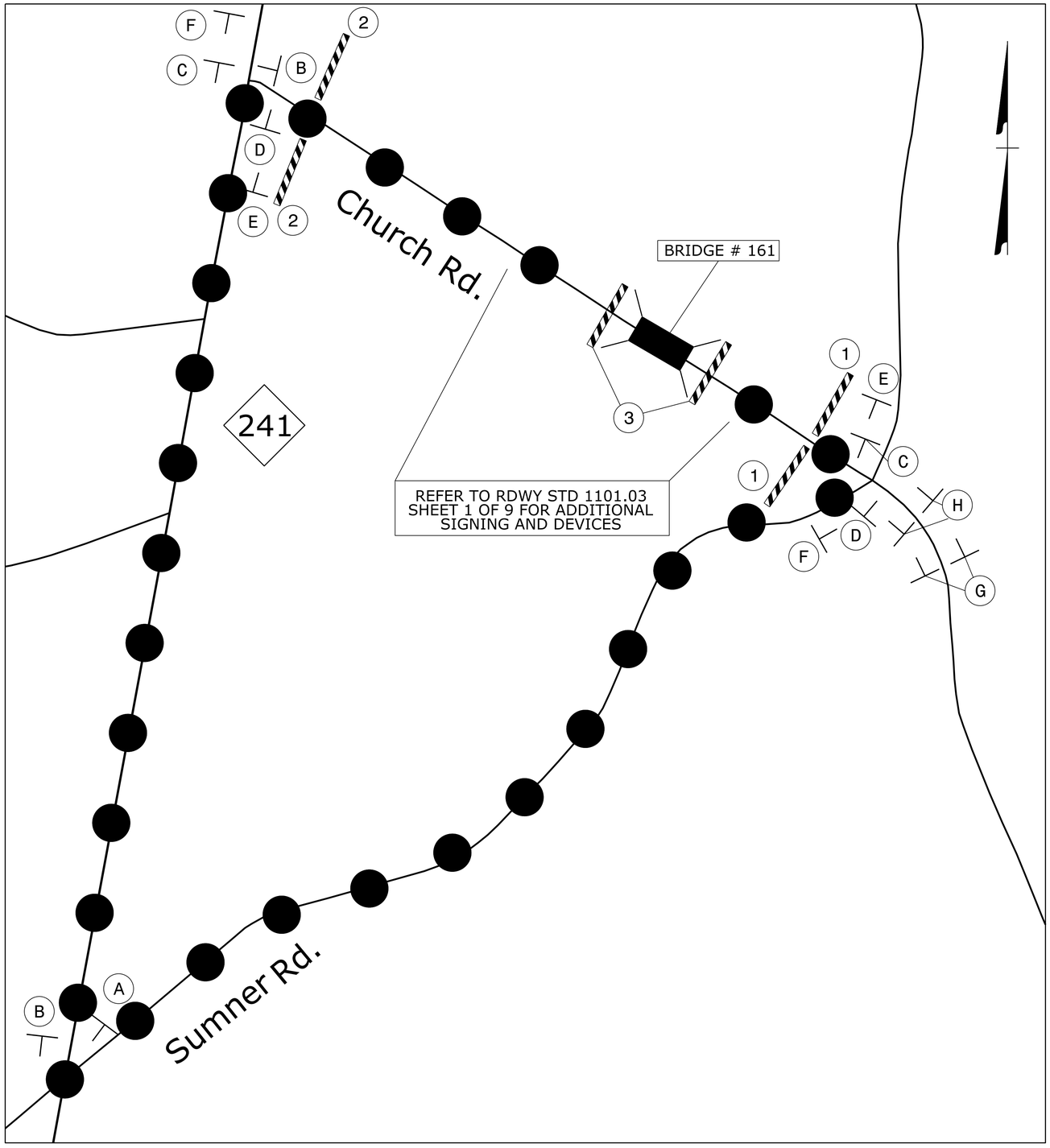
PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER JASON M. PICKENS
2/23/2018

EDWARD S. ROBBINS, PE *TRAFFIC CONTROL PROJECT ENGINEER*

J. MATTHEW PICKENS, PE *TRAFFIC CONTROL ENGINEER*

PROJ. REFERENCE NO.	SHEET NO.
17BP.3.R.58	TMP-2A



A

CHURCH ROAD SP–1

DETOUR M4–8 24″ X 12″

M6–1 21″ X 15″

B

CHURCH ROAD SP–1

DETOUR M4–8 24″ X 12″

M6–1 L 21″ X 15″

C

CHURCH ROAD SP–1

DETOUR M4–8 24″ X 12″

M6-3 21″ x 15″

D

CHURCH ROAD SP–1

END DETOUR M4–8 A 24″ X 18″

E

ROAD CLOSED AHEAD W20-3 48″ x 48″

NEXT RIGHT SP-4R 42″ X 12″

F

ROAD CLOSED AHEAD W20-3 48″ x 48″

NEXT LEFT SP-4L 42″ X 12″

G

ROAD CLOSED AHEAD W20-3 48″ x 48″

H

DETOUR AHEAD W20-2 48″ x 48″

1

R11-4 60″ x 30″

ROAD CLOSED TO THRU TRAFFIC

DETOUR

M4-10L 48″ x 18″

TYPE III BARRICADE

2

R11-4 60″ x 30″

ROAD CLOSED TO THRU TRAFFIC

DETOUR

M4-10R 48″ x 18″

TYPE III BARRICADE

3

R11-2 48″ x 30″

ROAD CLOSED

TYPE III BARRICADE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL 37950 — NORTH CAROLINA PROFESSIONAL ENGINEER — JAMES M. PRICE — 12/13/2018

SR 1711 CHURCH RD. OFF-SITE DETOUR

SCALE:	NONE
DATE:	10/2017
DWG. BY:	JMP
DESIGN BY:	JMP
REVIEWED BY:	ESR

REVISIONS

CADD FILE

PROJ. REFERENCE NO.	SHEET NO.
17BP.3.R.58	TMP-2B

SIGN NUMBER: SP-1
TYPE: D
QUANTITY: SEE PLANS

SIGN WIDTH: 3′-0″
HEIGHT: 2′-0″
TOTAL AREA: 6.0 Sq.Ft.

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

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT′L: 0.125″ (3.2 mm) ALUMINUM

NOTES:

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Grade B, flourescent orange, retroreflective sheeting.
3. To be mounted with Detour signing.

DESIGN BY: JMP
CHECKED BY: ESR
DATE: OCTOBER 2017
PROJECT ID: 17BP.3.R.58
DIV: 3

BORDER
R=1.5"
TH=0.38"
IN=0.38"

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		C	H	U	R	C	H																			C 2000
	5.4	4.3	4.5	4.6	4.3	4.2	3.3	5.4																		25.2
		R	O	A	D																					C 2000
	9.6	4.3	4.5	4.7	3.3	9.6																				16.8

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY :
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

APPROVED Digitally signed by Jason M. Pickens DATE: 2/13/2018

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 37950 ENGINEER JASON M. PICKENS

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

TRANSPORTATION MANAGEMENT PLAN

SPECIAL SIGN DESIGNS

PROJECT: 17BP.3.R.58

TIP NO.	SHEET NO.
17BP.3.R.58	PMP-1

APPROVED: Steve Miller
DATE: 2/27/2018

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037026 STEVEN D. MILLER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
DUPLIN COUNTY

LOCATION: BRIDGE NO. 161 OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH RD.)

INDEX

GENERAL NOTES

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

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

ROAD NAME	MARKING	MARKER
SR 1711 (CHURCH RD.)	PAINT	NONE

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

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

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

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

ROADWAY STANDARD DRAWING

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

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

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
	PAINT(4")
PA	WHITE EDGELINE
PI	YELLOW DOUBLE CENTER

PLAN PREPARED BY: SEPI Engineering

STEVE MILLER, P.E. — PROJECT MANAGER
MAROUN ISHAK — TRAFFIC ENGINEER

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

2/27/2018
X:\2017\SE17.045.02_BRG161\TP\Traffic\PMP\DESIGN\PMP DESIGN PLANS\PMP-1.dgn
rbauman

TIP NO.	SHEET NO.
17BP.3.R.58	PMP-2

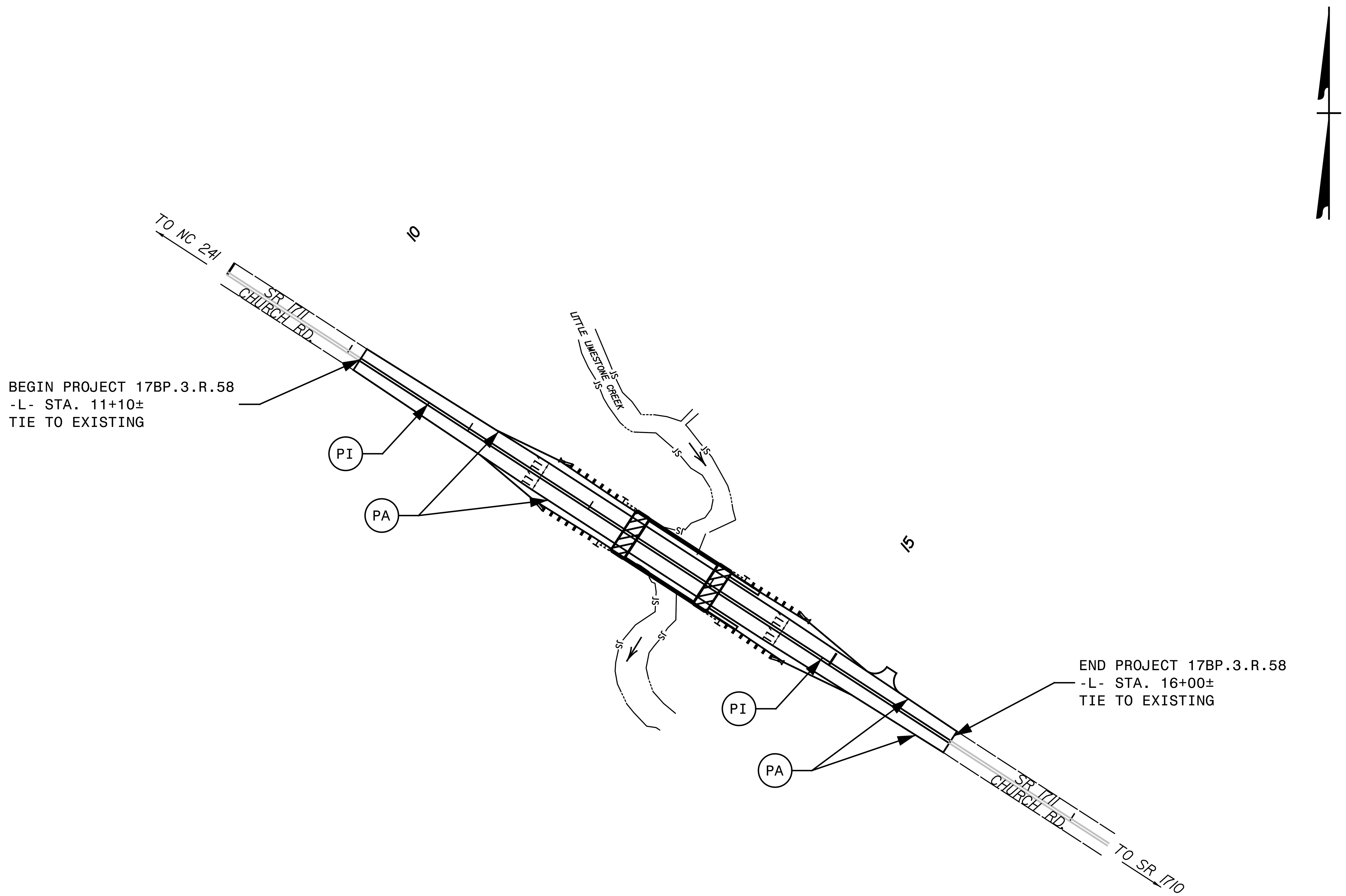
APPROVED: Steve Miller

DATE: 2/27/2018

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037026 ENGINEER STEVEN D. MILLER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEPI ENGINEERING & CONSTRUCTION

1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

PAVEMENT MARKING DETAIL

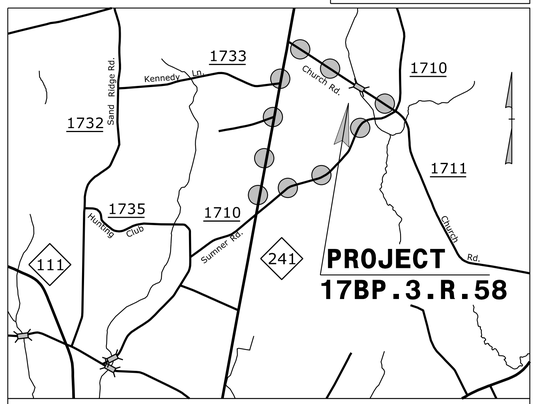
12/20/2017
X:\2017\SE17.045.02_BRG161\TP\Traffic\PMP\DESIGN\PMP DESIGN PLANS\PMP-2.dgn
msbok

TIP PROJECT: 17BP.3.R.58

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 17, 2017

LETTING DATE:
APRIL 19, 2018



VICINITY MAP

DENOTES OFF–SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

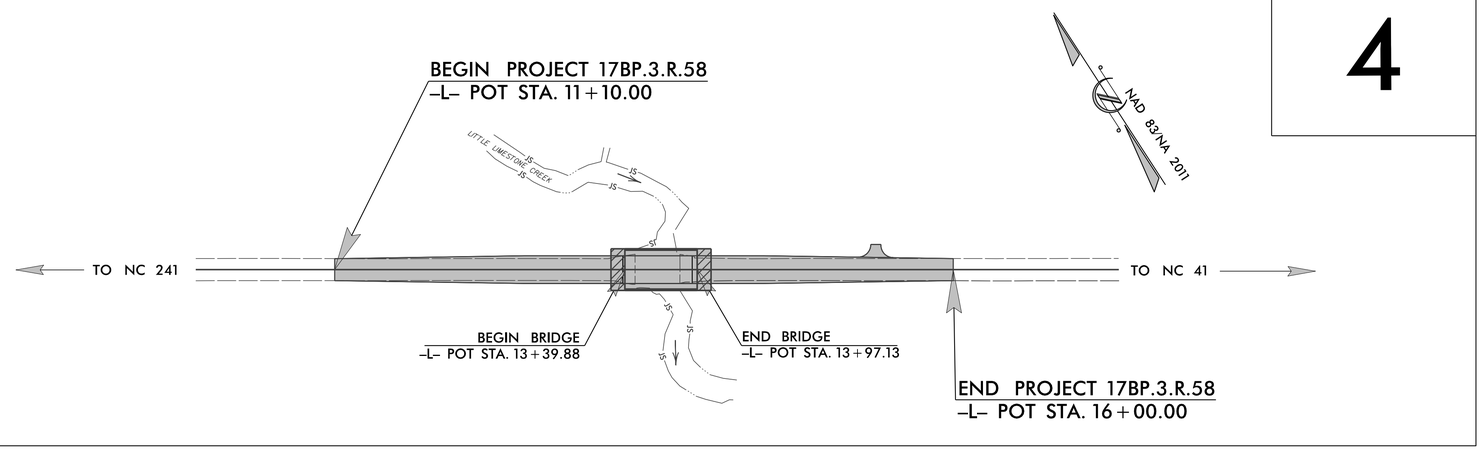
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

DUPLIN COUNTY

LOCATION: BRIDGE NO. 161 OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH RD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.3.R.58	EC-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
XXXXXXXXX	XXXXXXXXX	PE	
XXXXXXXXX			



4

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 CW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY MODIFIED METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDRIES.

GRAPHIC SCALE

50′ 25′ 0 50′ 100′

SCALE: 1″ = 50′

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY 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:

MATTHEW C. EDWARDS, EI ***3992***

NAME *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

NOELLE RING, CPESC

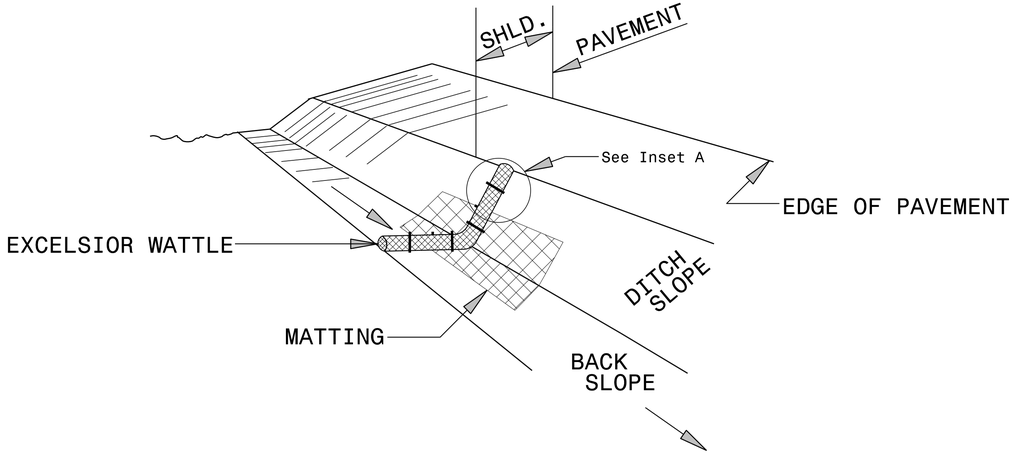
Roadway Standard Drawings

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

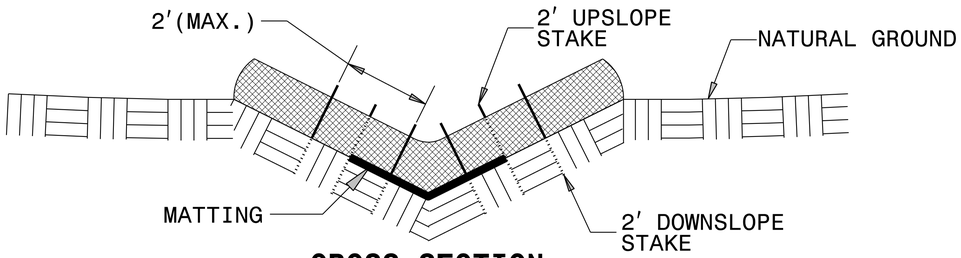
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type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

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

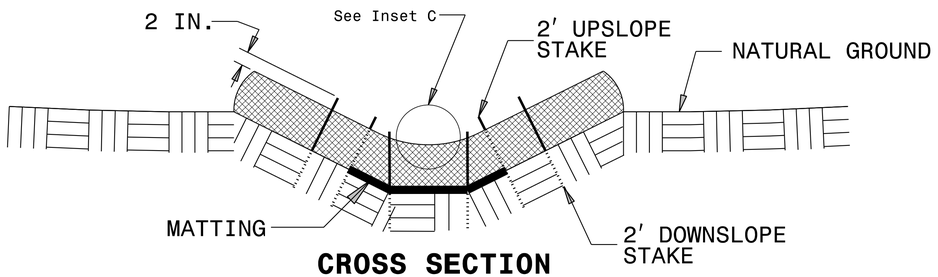
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

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

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

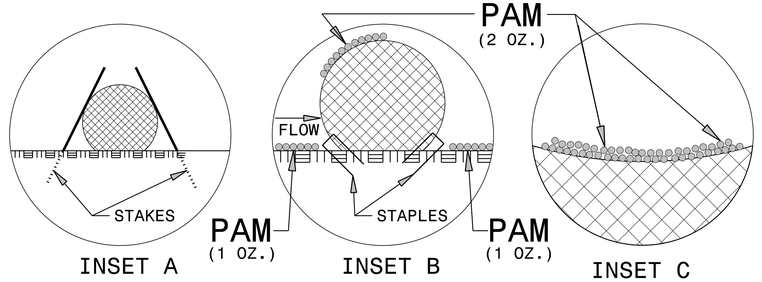
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

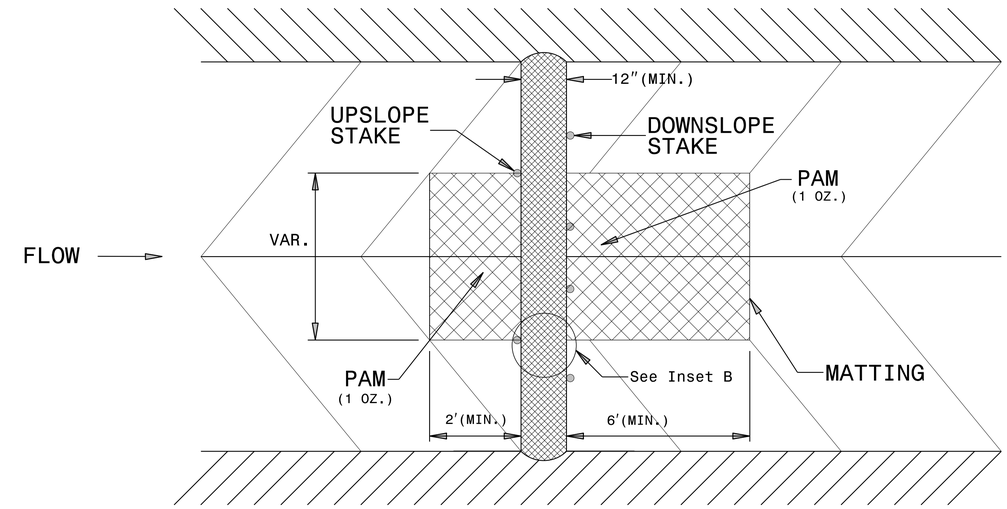
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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

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

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

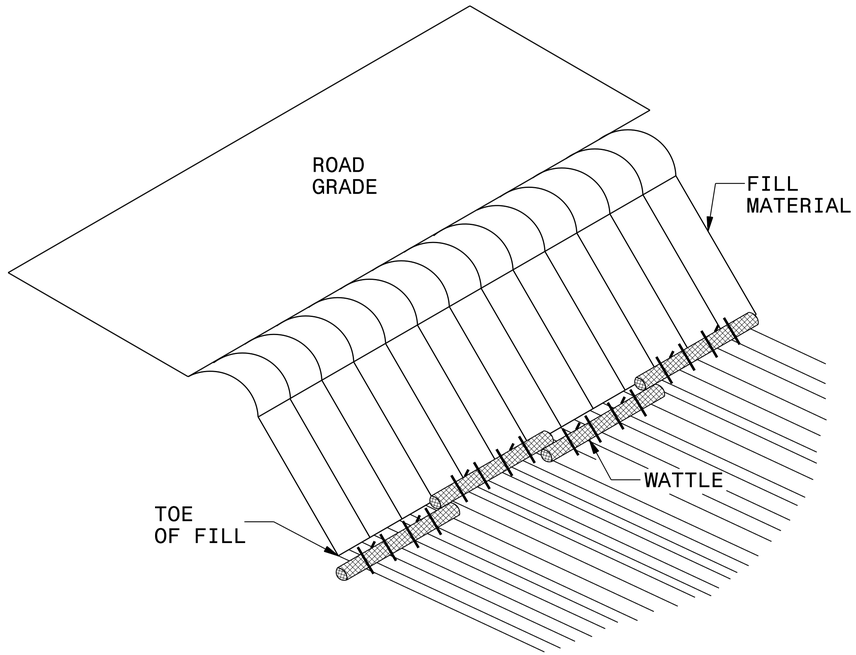




TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

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

DO NOT PLACE WATTLES ON TOE OF SLOPE.

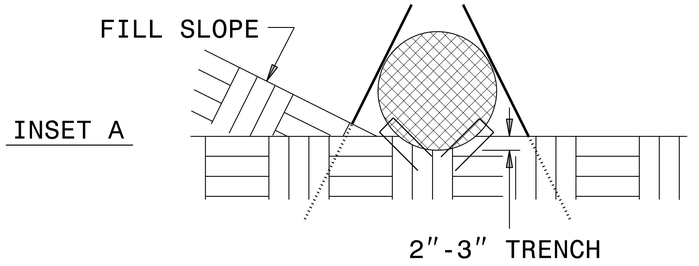
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

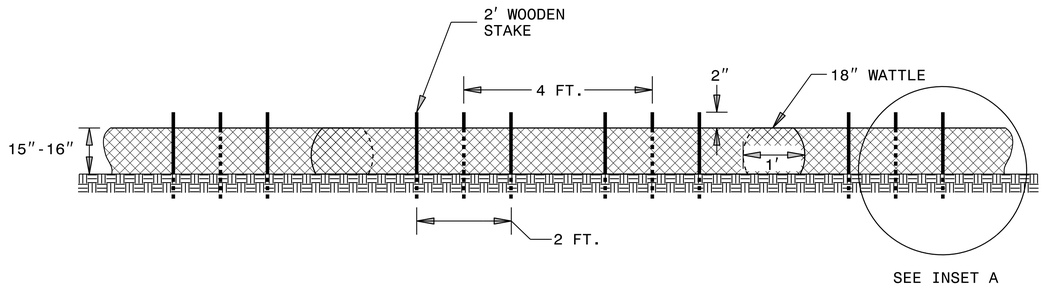
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

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

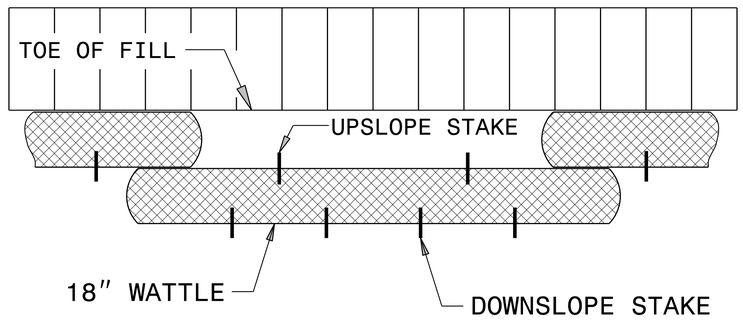
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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





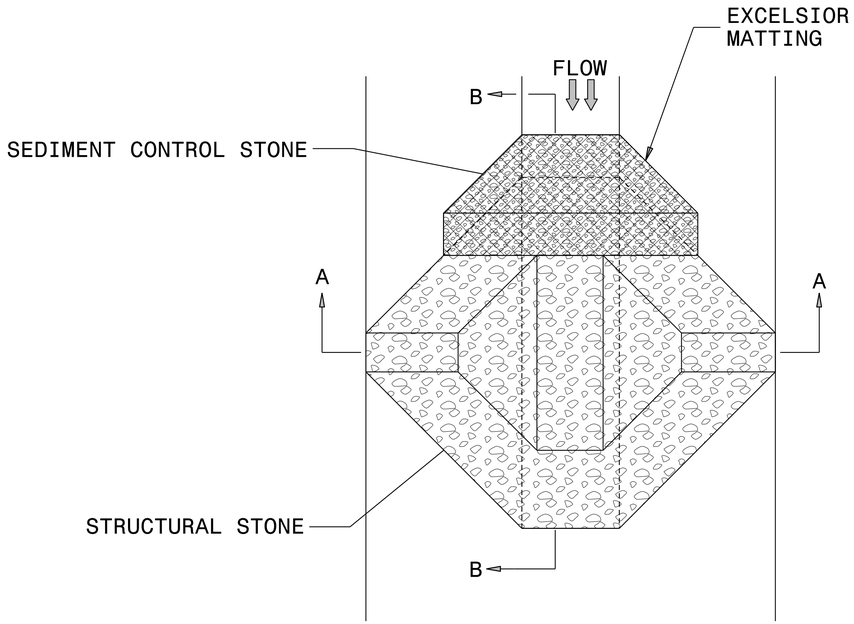
FRONT VIEW



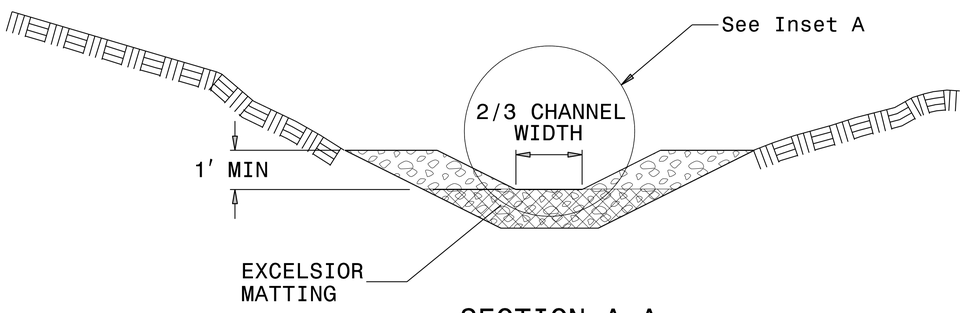
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	EC-2B
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

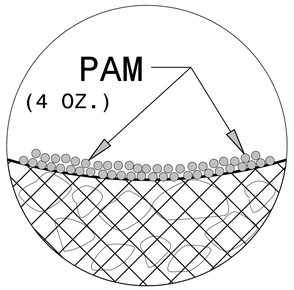
NOTES:

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

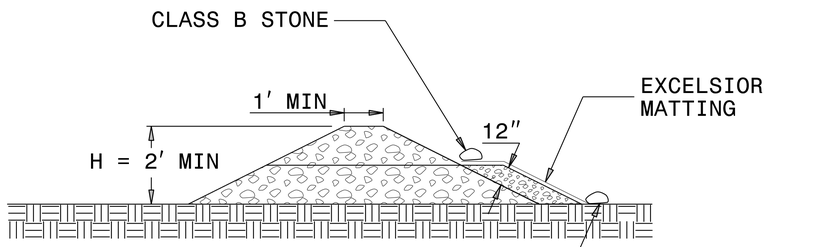
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.3.R.58	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	13+00	13+41	RT	50
				SUBTOTAL	50
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1265
				TOTAL	1315
				SAY	1320

MATTING FOR EROSION CONTROL

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

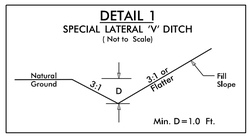
PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

NOTE:
UTILIZE SPECIAL STILLING STILLING BASIN WHERE APPLICABLE.

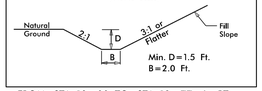
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

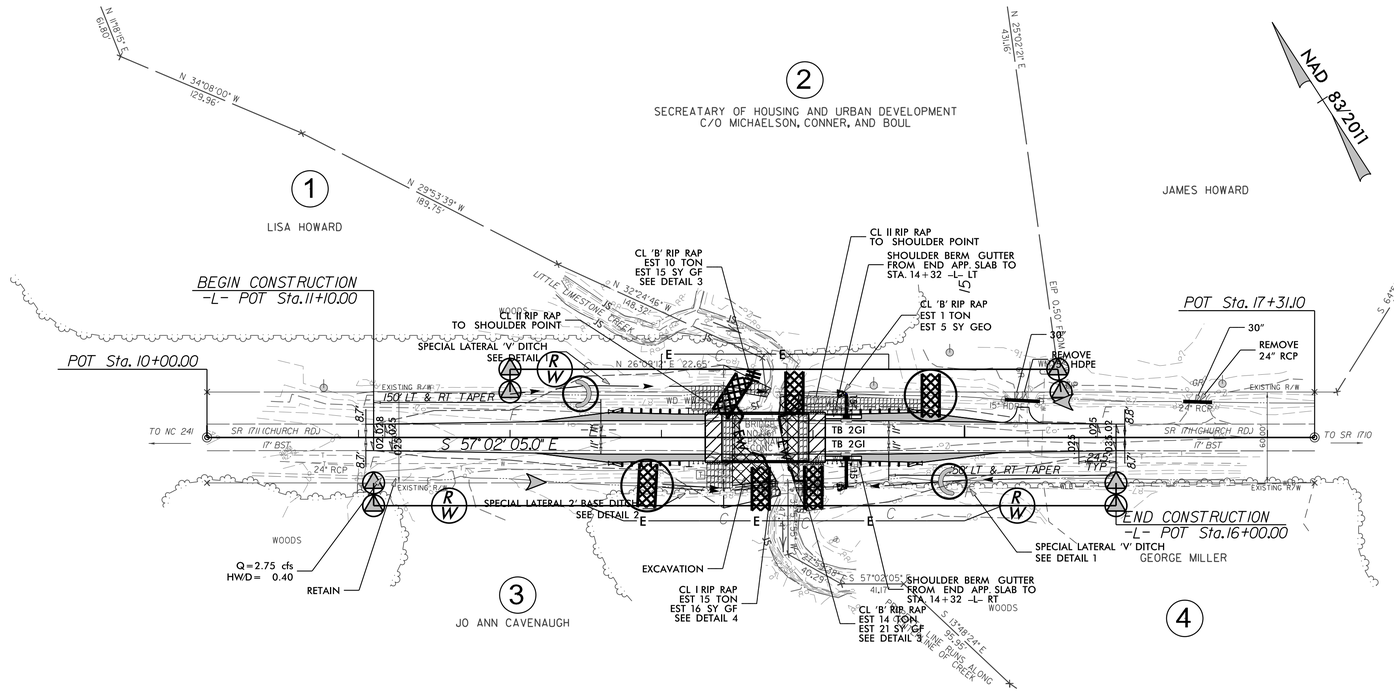


FROM STA. 12+00 TO STA. 13+71 –L– LT
FROM STA. 13+89 TO STA. 15+50 –L– RT

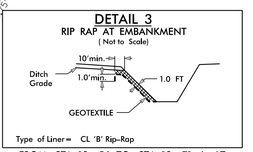
DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 13+00 TO STA. 13+77 –L– RT



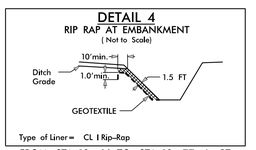
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL 'B' Rip-Rap

FROM STA. 13+56 TO STA. 13+71 –L– LT
FROM STA. 13+89 TO STA. 14+03 –L– RT

DETAIL 4
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL I Rip-Rap

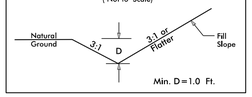
FROM STA. 13+66 TO STA. 13+77 –L– RT

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:
UTILIZE SPECIAL STILLING STILLING BASIN WHERE APPLICABLE.

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

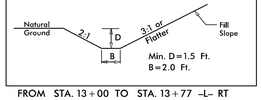
DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

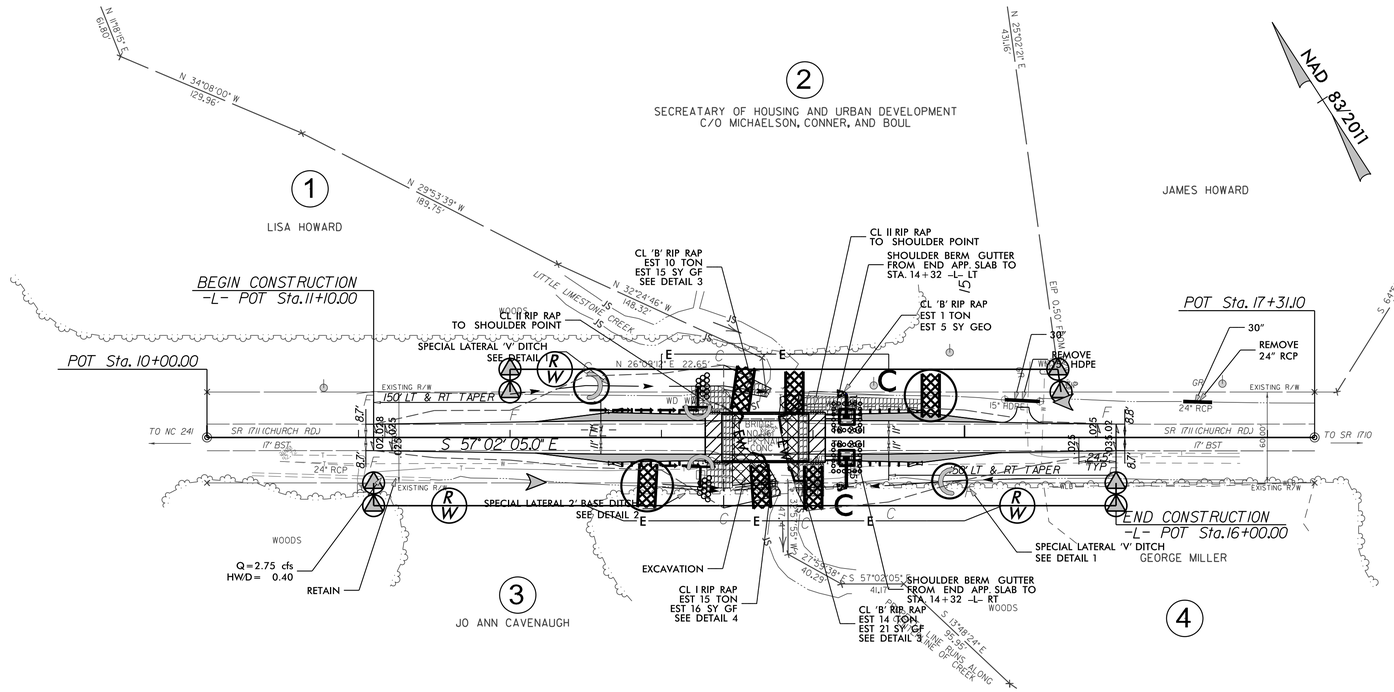
FROM STA. 12+00 TO STA. 13+71 –L– LT
FROM STA. 13+89 TO STA. 15+50 –L– RT

DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)

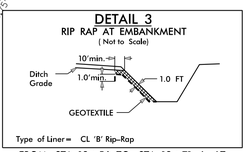


Min. D=1.5 Ft.
B=2.0 Ft.

FROM STA. 13+00 TO STA. 13+77 –L– RT



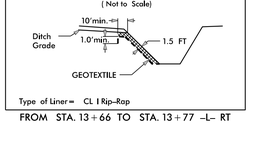
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL 'B' Rip-Rap

FROM STA. 13+56 TO STA. 13+71 –L– LT
FROM STA. 13+89 TO STA. 14+03 –L– RT

DETAIL 4
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL I Rip-Rap

FROM STA. 13+66 TO STA. 13+77 –L– RT

TIP PROJECT: 17BP.3.R.58

T.I.P. NO.	SHEET NO.
17BP.3.R.58	UC-1

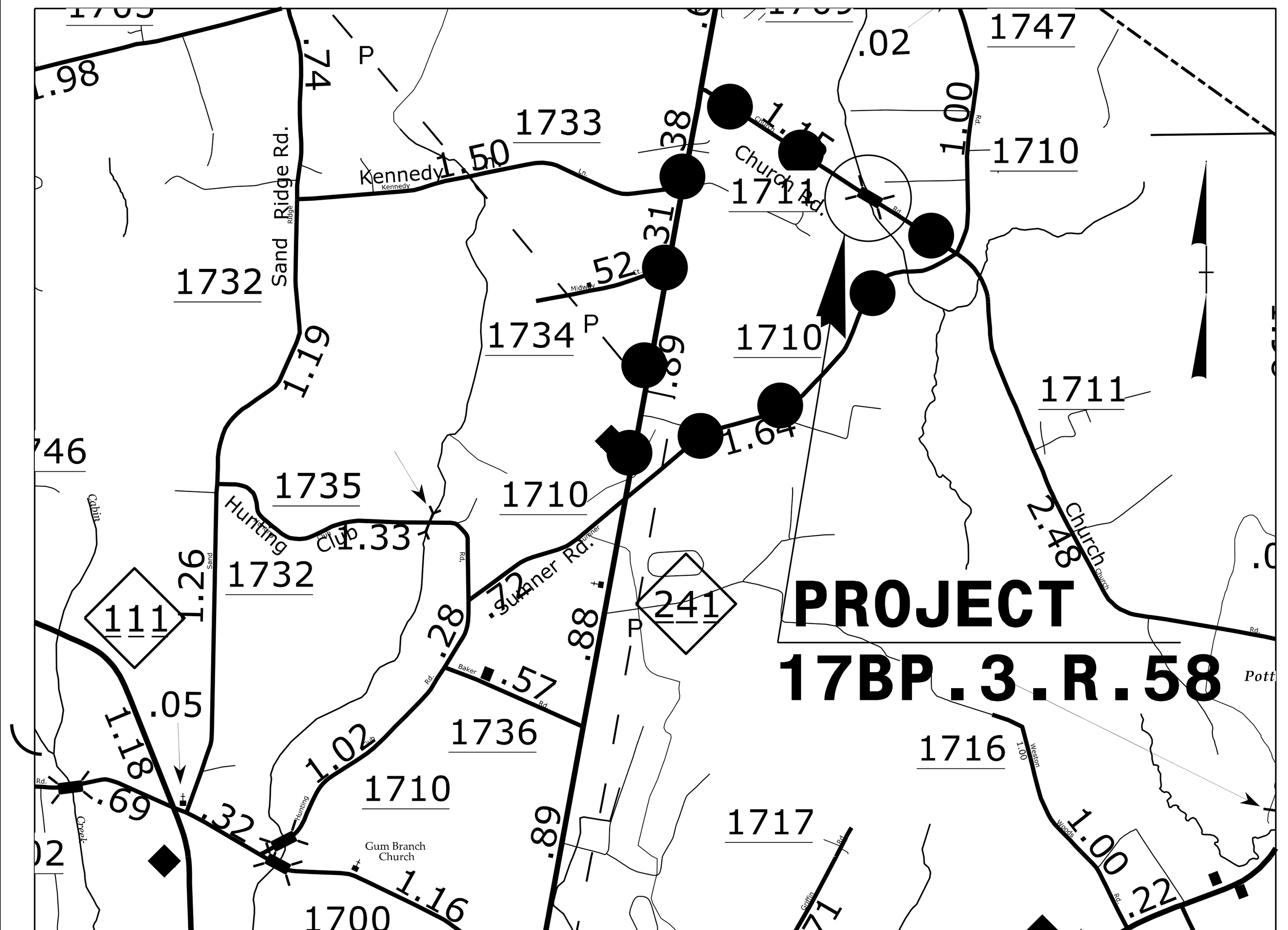
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
DUPLIN COUNTY

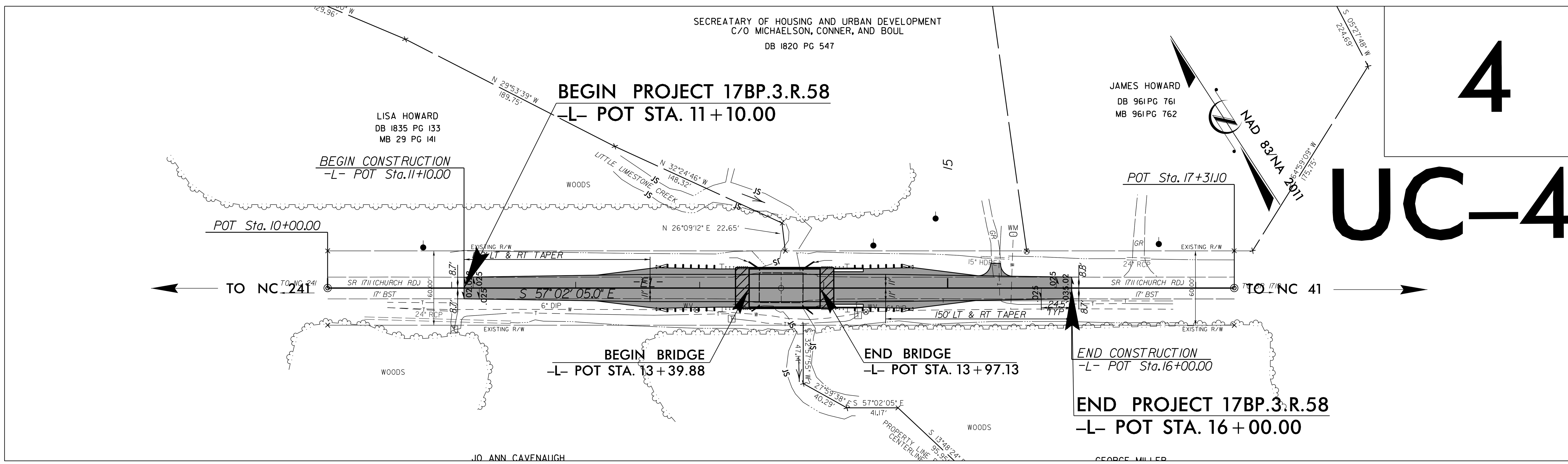
LOCATION: BRIDGE NO. 161 OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH RD.)

TYPE OF WORK: WATER LINE RELOCATION



VICINITY MAP

DENOTES OFF-SITE DETOUR



GRAPHIC SCALES

PLANS (50 25 0 50 100)

PROFILE (HORIZONTAL) (50 25 0 50 100)

PROFILE (VERTICAL) (10 5 0 10 20)

INDEX OF SHEETS

WATER AND SEWER OWNERS ON PROJECT

(A) Duplin County

PREPARED IN THE OFFICE OF:

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513
Ph. (919) 653-0001

Clint L. Stevens, P.E.	UTILITIES PROJECT MANAGER
Corey D. Bousquet, P.E.	UTILITIES PROJECT ENGINEER
Ronald B. Wilkins, P.E.	UTILITIES PROJECT DESIGNER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 023047 ENGINEER COREY D. BOUSQUET

Corey D. Bousquet, P.E.

2/14/2018

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

D. Chad Kimes, P.E.	DIVISION CONTACT #1
Kevin G. Bowen, P.E.	DIVISION CONTACT #2
Lonnie A. Sleeper	DIVISION CONTACT #3
Steve Davis	DIVISION CONTACT #4

14-FEB-2018 14:12
S:\Server Files\PROJECTS\2017\A2017202.00_Parsons_Div. 3 - 5 Bridge Replacements\A2017202.03_Parsons_17BP.3.R.58\Design\Utilities\Engineering\UC\Proj\17BP3R58_ut_tsh_UC01_psh.dgn
$$$$USERNAME$$$$

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Item	Symbol label
Water Line (Sized as Shown)	12" WL
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PFH
Relocate Fire Hydrant	RFH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PS(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

PROPOSED SEWER SYMBOLS

Item	Symbol label
Gravity Sewer Line (Sized as Shown)	12" SS
Force Main Sewer Line (Sized as Shown)	12" FSS
Manhole (Sized per Note)	
Sewer Pump Station	PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

Item	Symbol label
Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	TEL PED
Utility Line by Others (Type as Shown)	PROP O/H POW LINES
Trenchless Installation	12" TL INSTALL
Encasement by Open Cut	24" ENCAS BY OC
Encasement	24" ENCASEMENT
Thrust Block	
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	NOTE
Pay Item Note	PAY ITEM

EXISTING UTILITIES SYMBOLS

Item	Symbol label
Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.
*Underground Power Line	P
*Underground Telephone Cable	T
*Underground Telephone Conduit	TC
*Underground Fiber Optics Telephone Cable	T FO
*Underground TV Cable	TV
*Underground Fiber Optics TV Cable	TV FO
*Underground Gas Pipeline	G
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	W
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line	SS
Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground SS Forced Main Line	FSS
Underground Unknown Utility Line	?UTL
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

*For Existing Utilities
- Utility Line Drawn from Record (Type as Shown) — W
- Designated Utility Line (Type as Shown) — W

REV: 2/1/2012

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING UTILITIES BELONG TO DUPLIN COUNTY. THE CONTACT PERSON FOR DUPLIN COUNTY IS MS. DONNA BROWN WHO CAN BE REACHED AT 910-296-2123.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

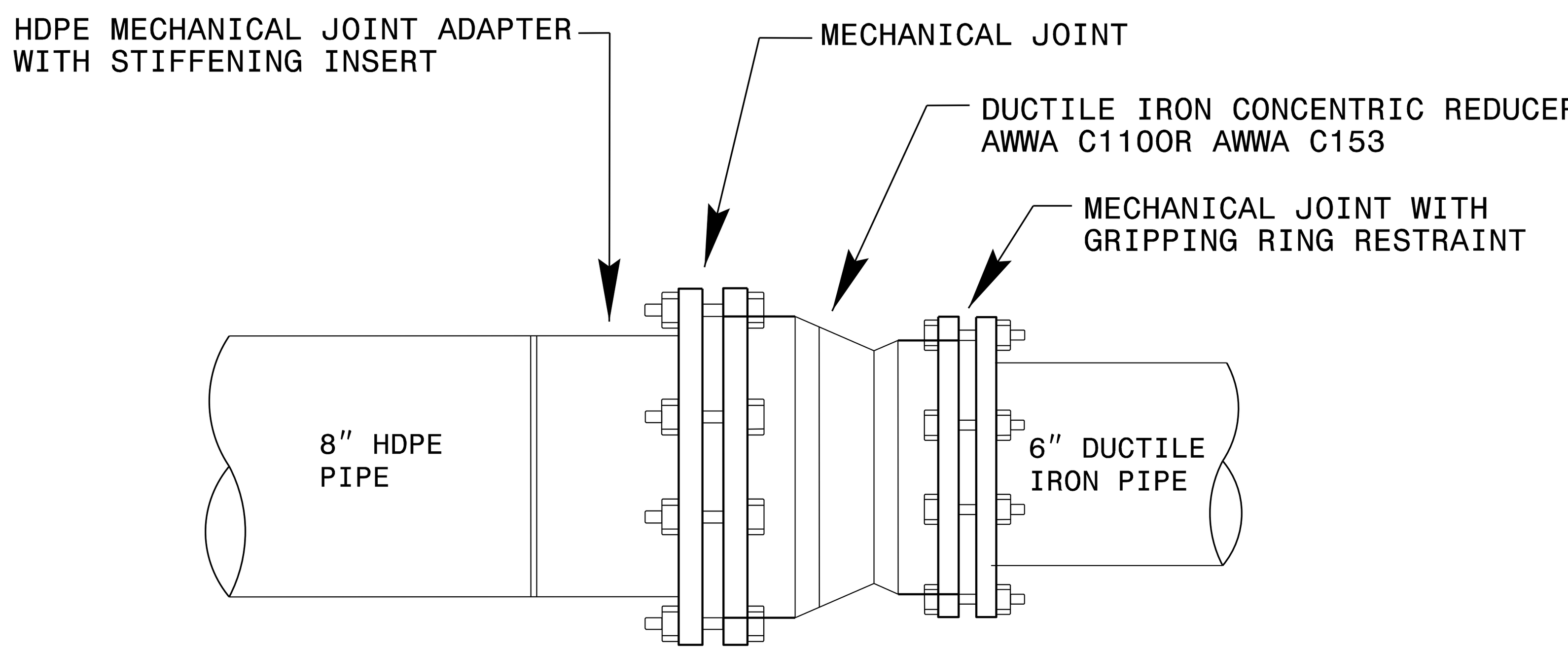
2. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL. IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.

DESIGNED BY: CDB
DRAWN BY: CDB
CHECKED BY: RBW
APPROVED BY: CDB
REVISED:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

NORTH CAROLINA PROFESSIONAL SEAL 230417 ENGINEER COREY D. BOUSQUET 2/13/2018
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

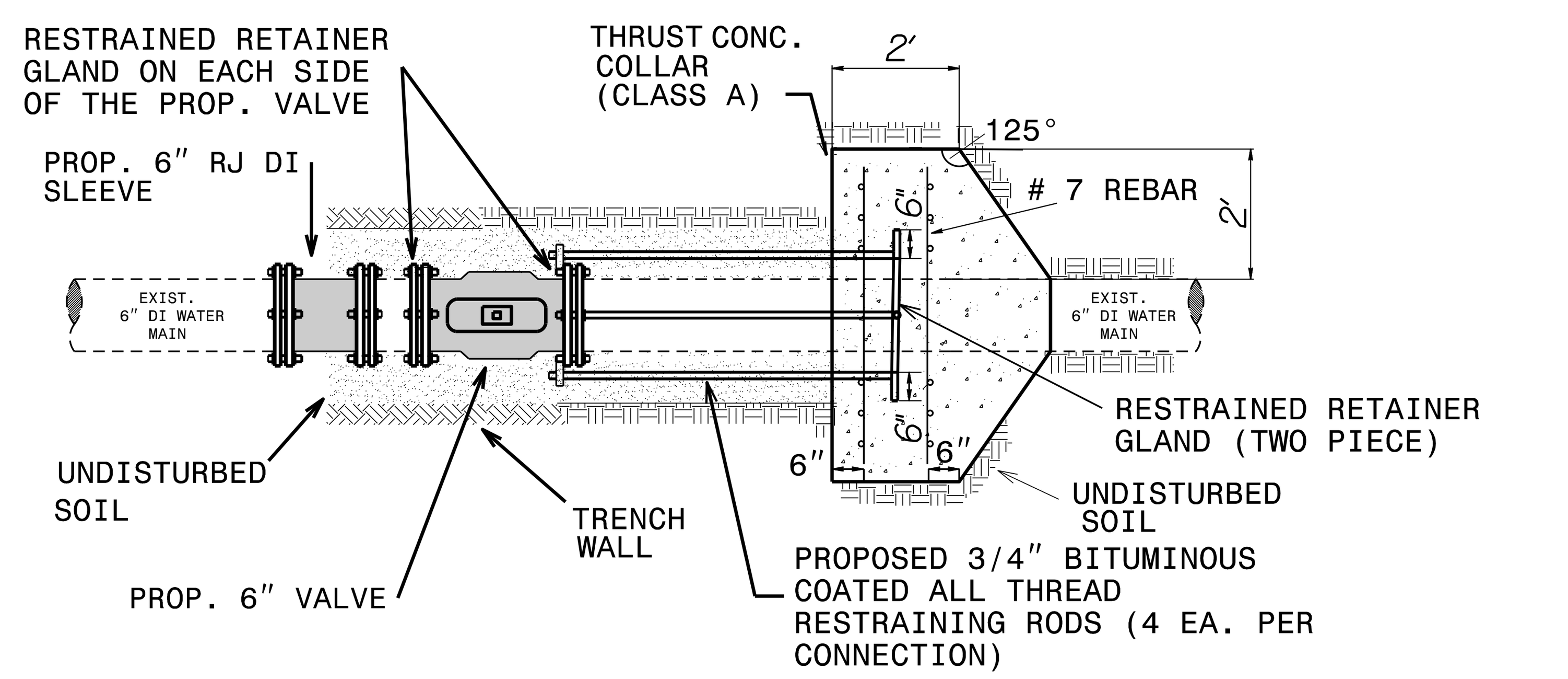
PROJECT TYPICAL DETAILS



TRANSITION DETAIL FROM HDPE TO DI WATER PIPE

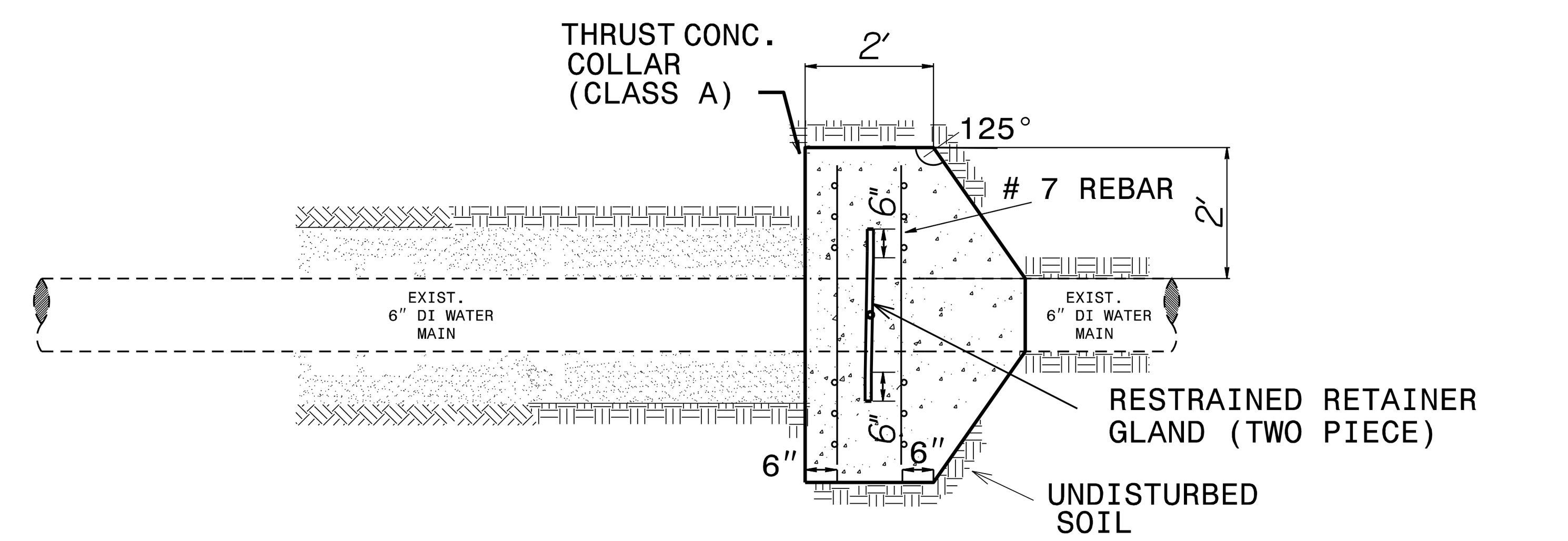
MAXIMUM TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



PLAN

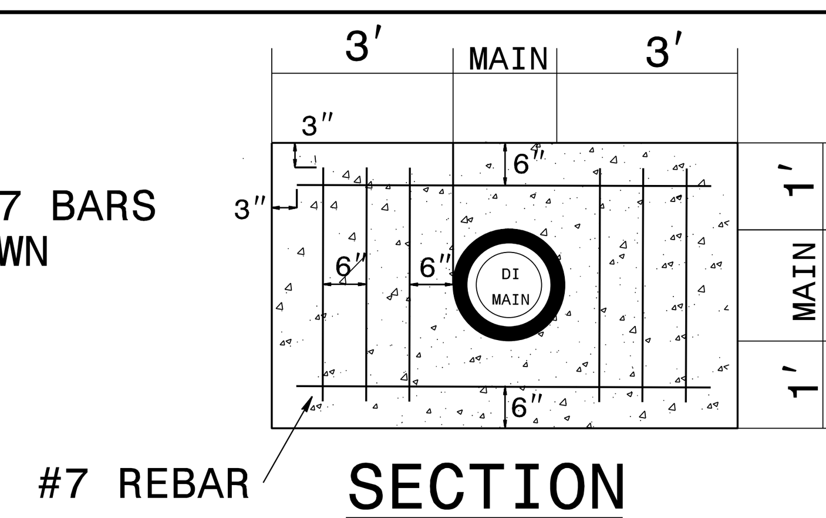
THRUST COLLAR WEST END OF THE 6" WATER LINE



PLAN

THRUST COLLAR EAST END OF THE 6" WATER LINE

NOTE:
6" MAINS = 16-NO. 7 BARS
BARS PLACED AS SHOWN

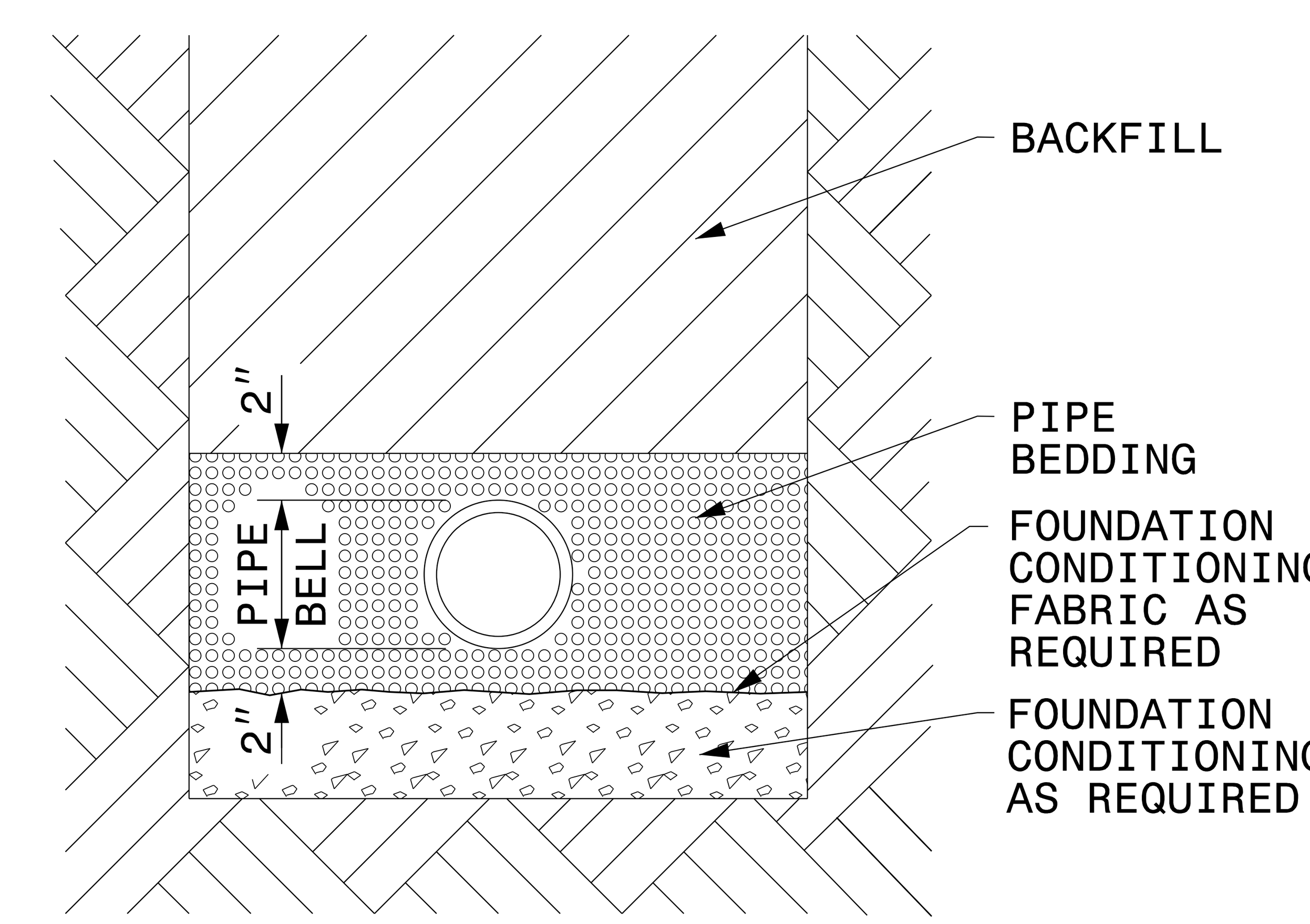


SECTION

THRUST COLLAR FOR EXIST. 6" DI WATER MAIN

NOTE:
THRUST COLLAR TO BE INSTALLED AND ALLOWED TO CURE A MINIMUM OF 3 DAYS PRIOR TO SHUTTING DOWN WATER MAIN.

TRENCH DETAIL



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	UC-4

DESIGNED BY: CDB
DRAWN BY: CDB
CHECKED BY: RBW
APPROVED BY: CDB
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

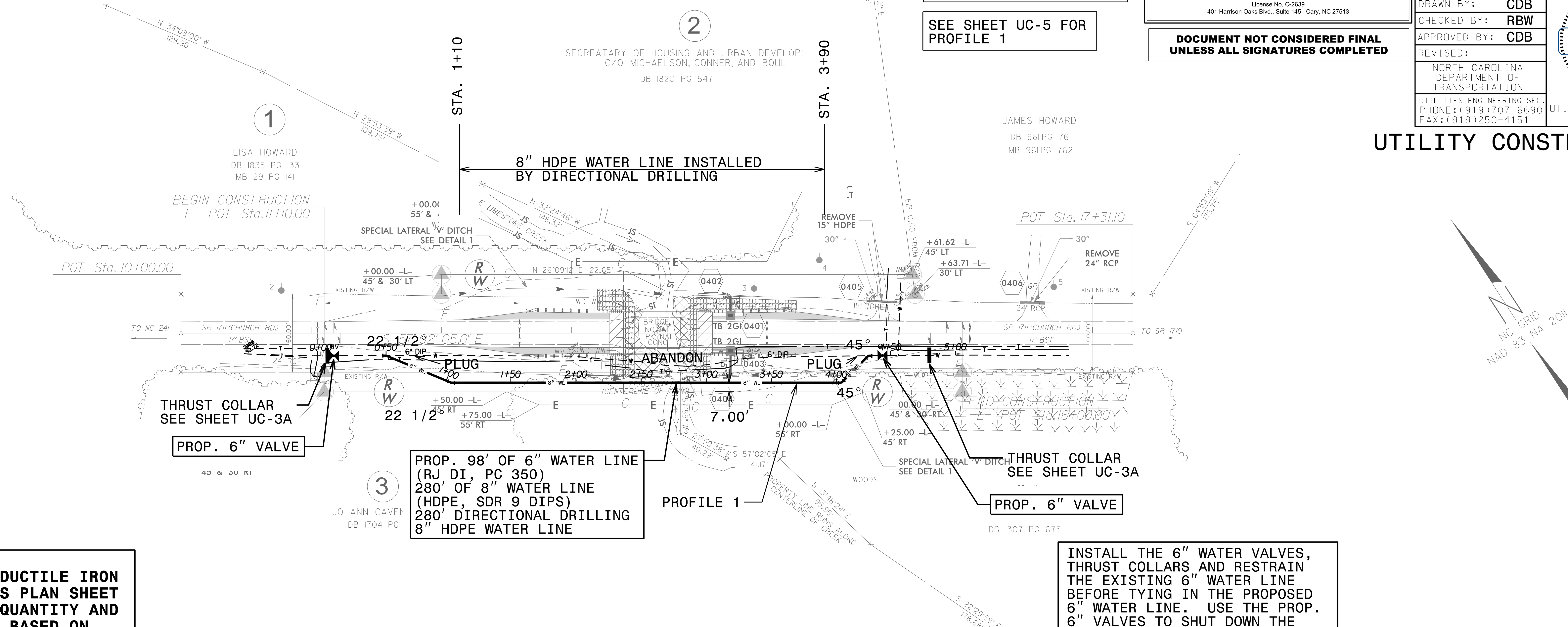
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030417 COREY D. BOUSQUET 2/13/2018

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

6" WATER LINE IS OWNED BY DUPLIN COUNTY

SEE SHEET UC-5 FOR PROFILE 1



INSTALL THE 6" WATER VALVES, THRUST COLLARS AND RESTRAIN THE EXISTING 6" WATER LINE BEFORE TYING IN THE PROPOSED 6" WATER LINE. USE THE PROP. 6" VALVES TO SHUT DOWN THE WATER LINE TO MAKE THE TIE-INS

NOTE:
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 600 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS. (350# MIN WP)

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	UC-5

HINDE ENGINEERING
License No. C-2639
401 Harrison Oaks Blvd., Suite 145 Cary, NC 27513

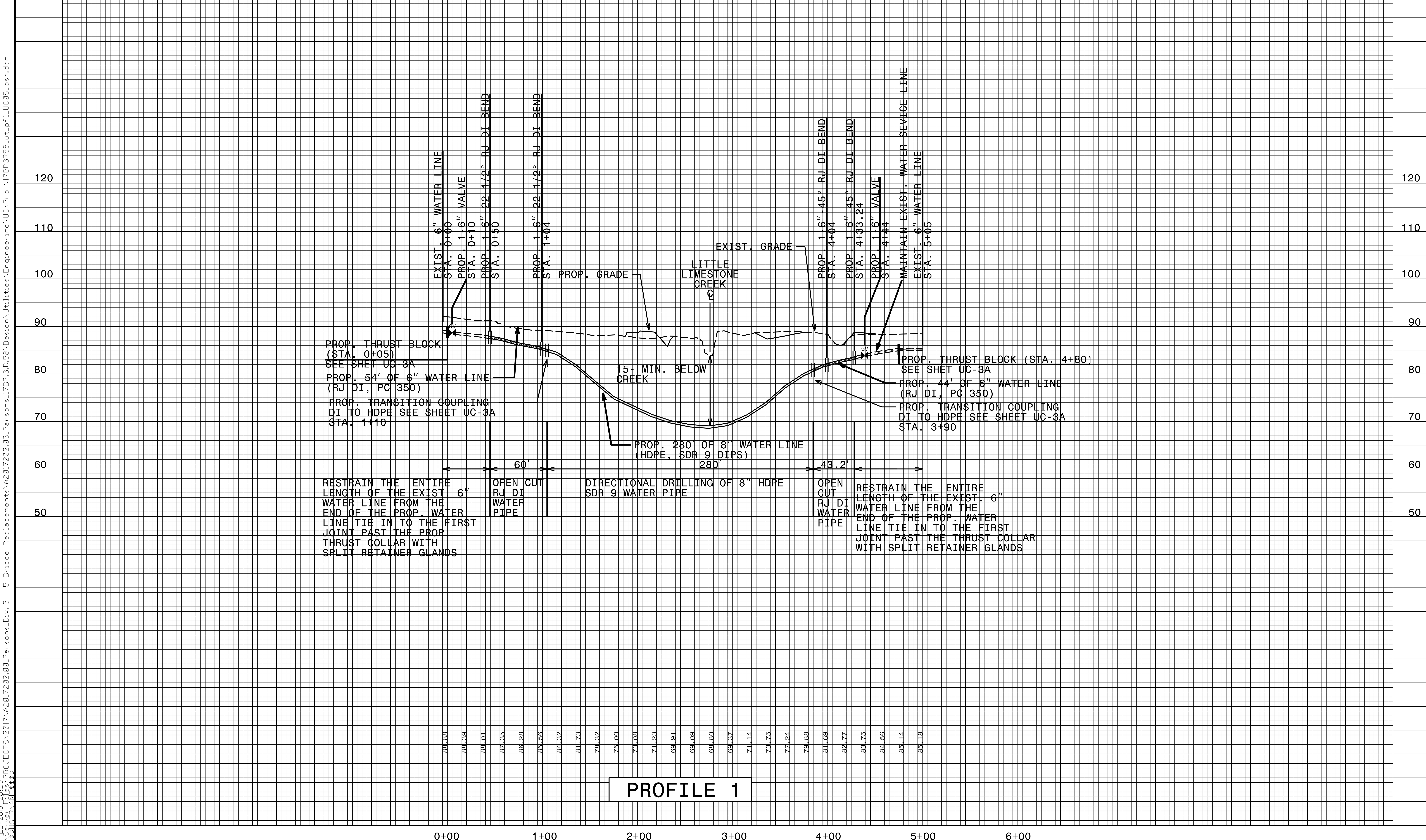
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY: CDB
DRAWN BY: CDB
CHECKED BY: RBW
APPROVED BY: CDB
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — COREY D BOUSQUET
2/13/2018
UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



PROFILE 1

PROJECT: 17BP.3.R.58

CONTRACT: DC-00209

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C For Survey Control Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

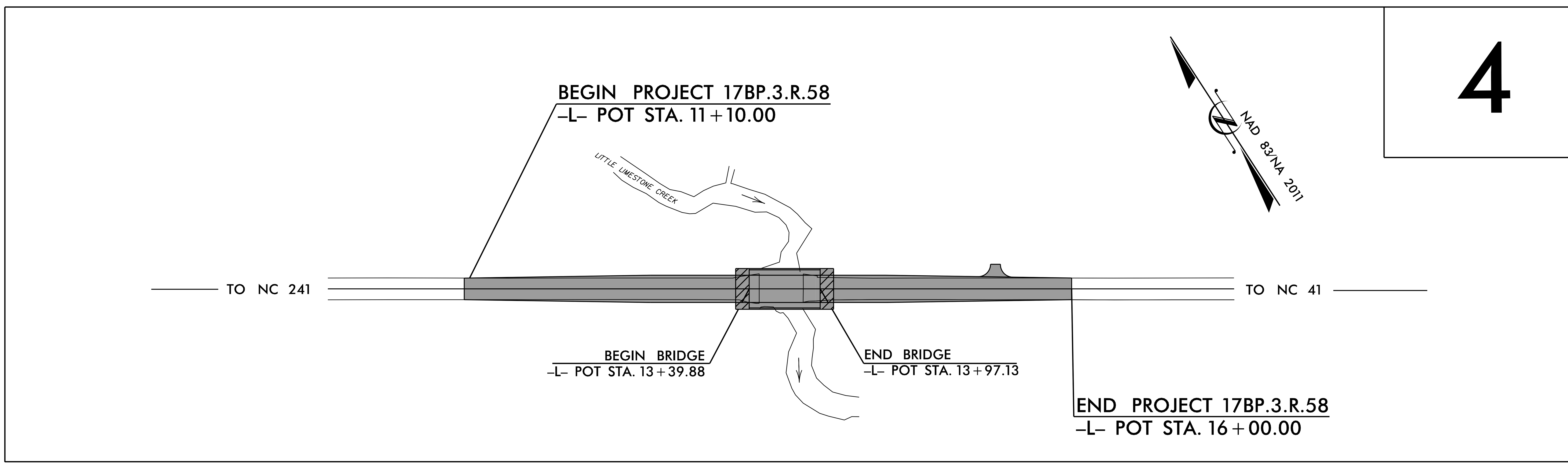
T.I.P. NO.	SHEET NO.
17BP.3.R.58	UO-1

UTILITIES BY OTHERS PLANS
DUPLIN 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.

LOCATION: BRIDGE NO. 161 OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH RD)

TYPE OF WORK: COMMUNICATIONS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

INDEX OF SHEETS

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

UTILITY OWNERS WITH CONFLICTS

(A) CENTURYLINK - COMMUNICATIONS

PREPARED IN THE OFFICE OF:

SO-DEEP | SAM NC

SO-DEEP I SAM NC, Inc.
A SAM COMPANY
2800-154 Sumner Boulevard, Raleigh, NC 27616 Tel 919-878-7466

Keith Garry — UTILITY PROJECT MANAGER
William L. Johnson — UTILITY COORDINATOR

Prepared for the North Carolina Department of Transportation In the office of:
PARSONS
SUNGATE DESIGN GROUP, P.A.

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 17, 2017

LETTING DATE:
APRIL 19, 2018

DAVID L. WILVER, PE
PROJECT ENGINEER

J. MATTHEW PICKENS, PE
PROJECT DESIGN ENGINEER

PLANS PREPARED BY :

PARSONS

RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

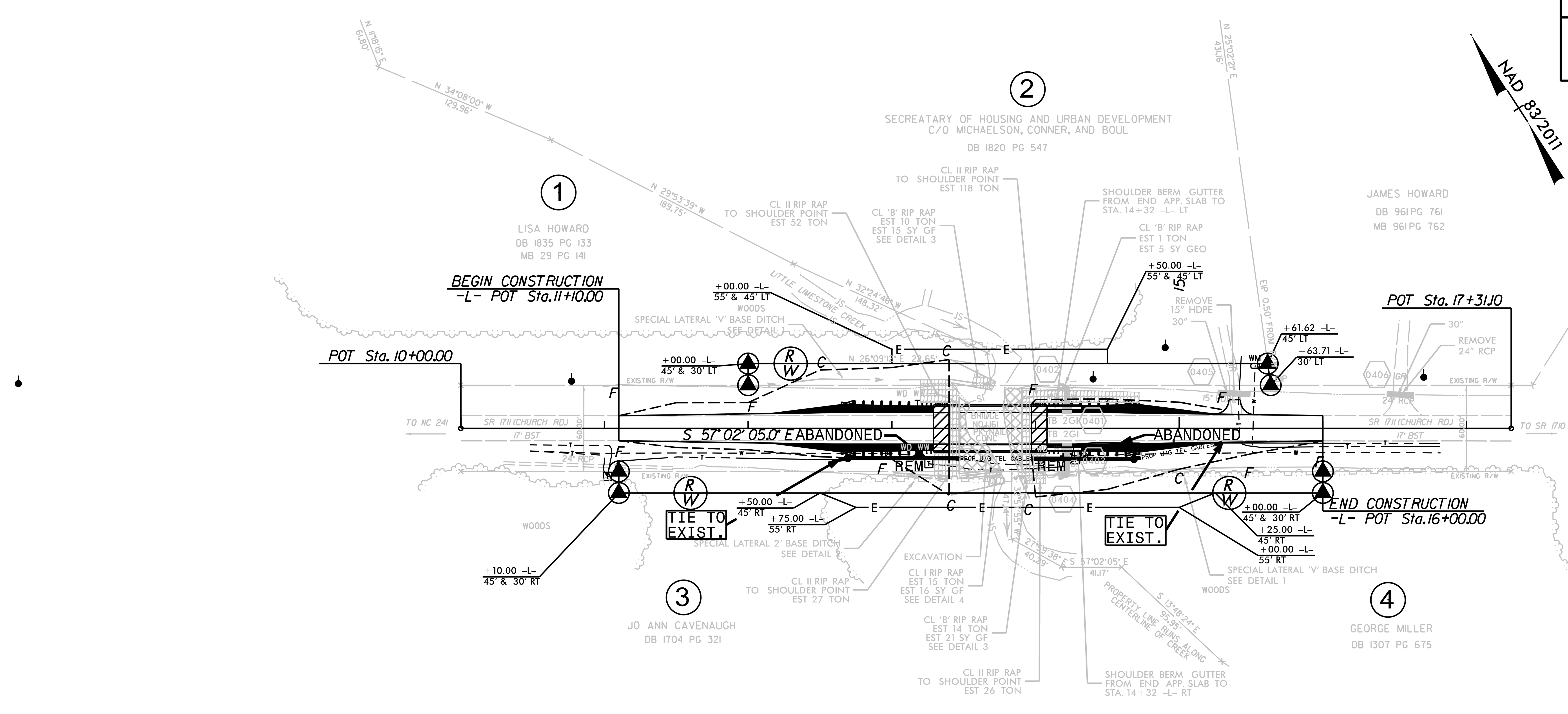
PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	U0-2

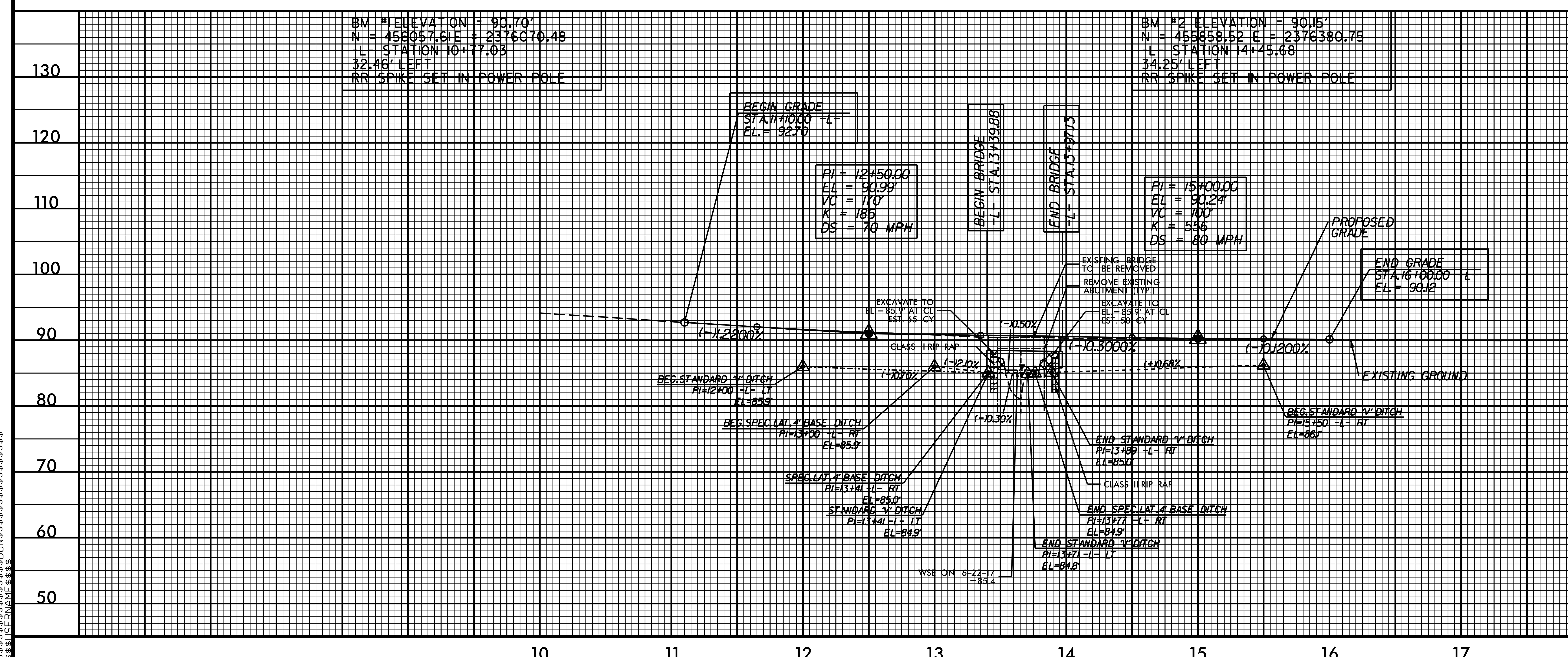
THIS SHEET CORRESPONDS TO RDY-4

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

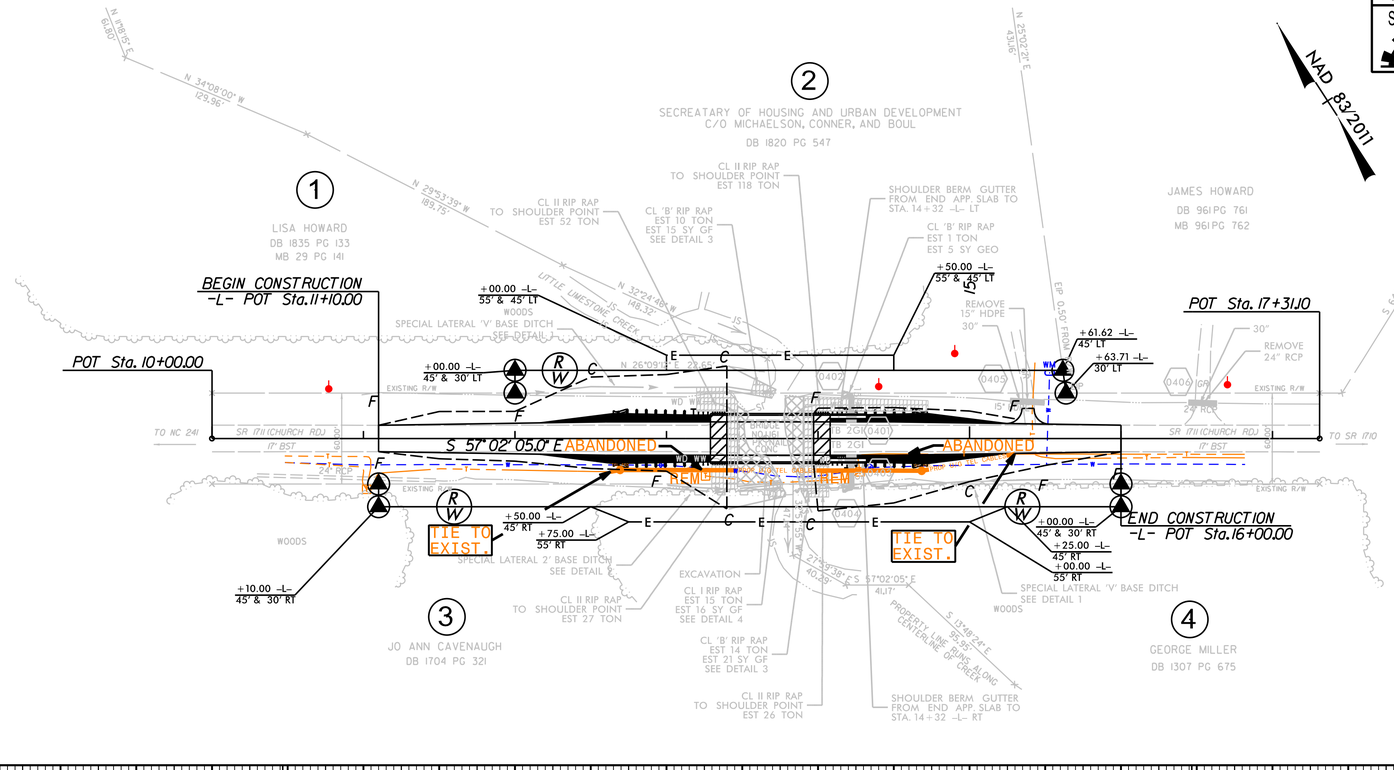




BRIDGE HYDRAULIC DATA			
DESIGN DISCHARGE	=	440	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	89.2	FT
BASE DISCHARGE	=	650	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	90.0	FT
OVERTOPPING DISCHARGE	=	<440	CFS
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING ELEVATION	=	89.9	FT
OVERTOPPING AT SAG STA.17+28 -L-			
DATE OF SURVEY	=	06/22/2017	
W.S.ELEVATION AT DATE OF SURVEY	=	85.4	FT

8/17/99

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



8/17/99

PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA, (919) 854-1345
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	U0-2

THIS SHEET CORRESPONDS TO RDY-4

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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.

BM #1 ELEVATION = 90.70'
N = 456057.61 E = 2376070.48
-L- STATION 10+77.03
32.46' LEFT
RR SPIKE SET IN POWER POLE

BM #2 ELEVATION = 90.15'
N = 455858.52 E = 2376380.75
-L- STATION 14+45.68
34.25' LEFT
RR SPIKE SET IN POWER POLE

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	440	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	89.2	FT
BASE DISCHARGE	=	650	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	90.0	FT
OVERTOPPING DISCHARGE	=	<440	CFS
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING ELEVATION	=	89.9	FT
OVERTOPPING AT SAG STA.17+28 -L-			
DATE OF SURVEY	=	06/22/2017	
W.S.ELEVATION AT DATE OF SURVEY	=	85.4	FT

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.3.R.58	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

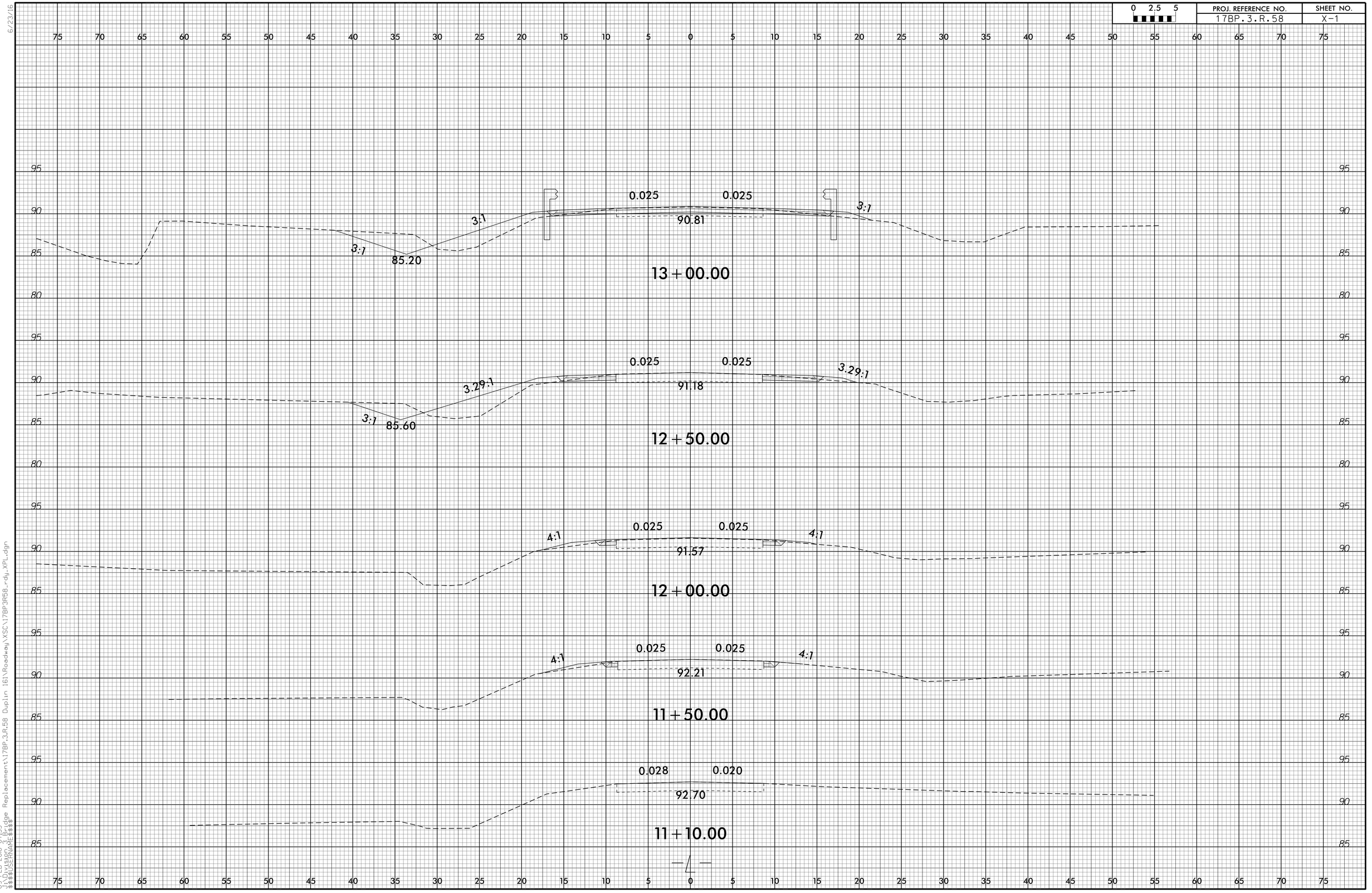
CROSS-SECTION SUMMARY

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+10.00	0	0															
11+50.00	0	0															
12+00.00	4	4															
12+50.00	15	23															
13+00.00	41	39															
13+39.87	90	24															
SKIP STATION RANGE 13+39.88 TO 13+97.13																	
13+97.14	0	0															
14+00.00	10	0															
14+50.00	114	11															
15+00.00	33	19															
15+50.00	4	12															
16+00.00	0	0															

09-FEB-2018 07:33
J:\Division 3 Bridge Replacement\17BP.3.R.58 Duplin 161\Roadway\XSC\17BP3R58_rdy_XPL_1A.dgn
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.3.R.58	X-1



PROJ. REFERENCE NO.	SHEET NO.
17BP.3.R.58	X-2

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.3.R.58	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

95 90 85

0.020 0.035

90.12

16+00.00

95 90 85

0.025 0.025

3:1

90.09

15+50.00

95 90 85

3:1 0.025 0.025

3:1 3:1

90.14

15+00.00

95 90 85

2:1 0.025 0.025

3:1

90.23

85.42

3:1

14+50.00

80

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

09-FEB-2018 07:33
J:\Dublin Bridge Replacement\17BP.3.R.58 Dublin 16\Roadway\XSC\17BP3R58_rdy_XPL.dgn
$$$$USERNAME$$$$

09/08/99

TIP PROJECT: 17BP.3.R.58

CONTRACT: DC00209

STRUCTURE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

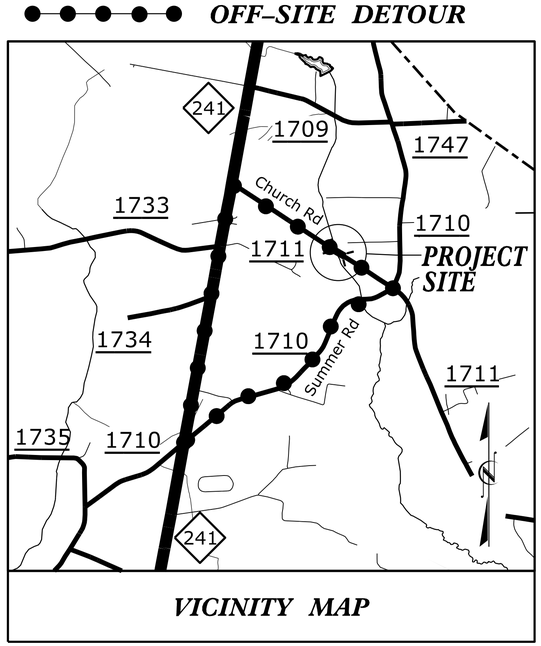
DUPLIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.3.R.58		15

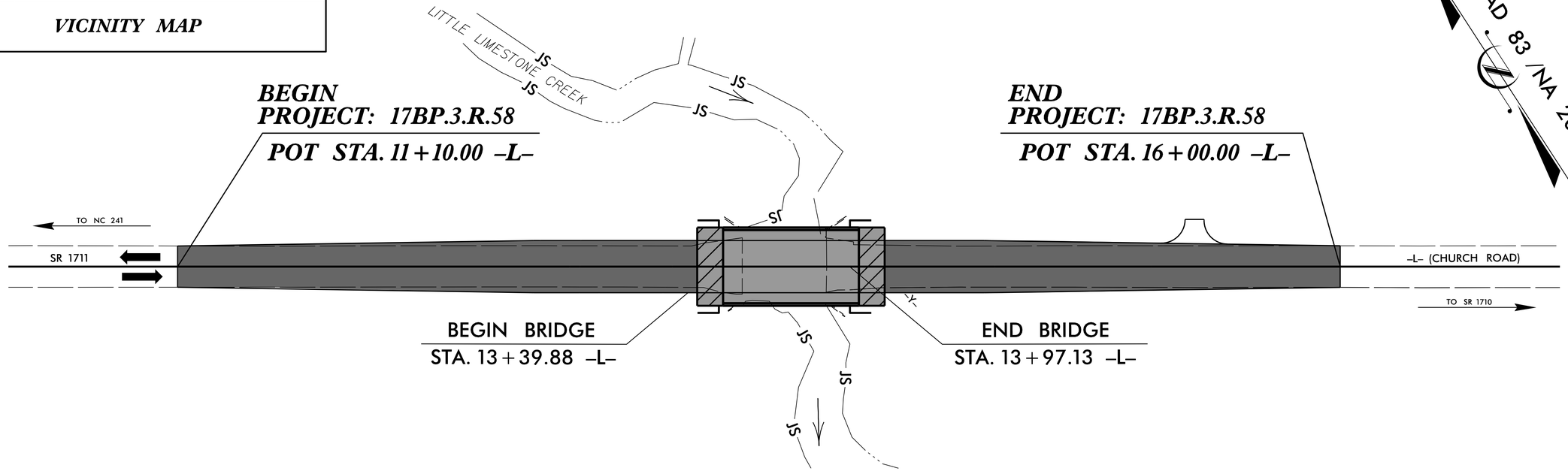
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.3.R.58		CONST

LOCATION: BRIDGE No. 161 OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



VICINITY MAP



DESIGN DATA

ADT 2013 = 310
ADT XXXX = XXX
K = 10 %
D = 60 %
T = 29 % *
V = 60 MPH
* TTST = 23%DUAL = 6%
FUNC CLASS =
MINOR COLLECTOR
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT: 17BP.3.R.58 = 0.082 MILES

LENGTH OF STRUCTURE TIP PROJECT: 17BP.3.R.58 = 0.011 MILES

TOTAL LENGTH OF TIP PROJECT: 17BP.3.R.58 = 0.093 MILES

PLANS PREPARED BY :

PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606–3386
NC LICENSE No. F–0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

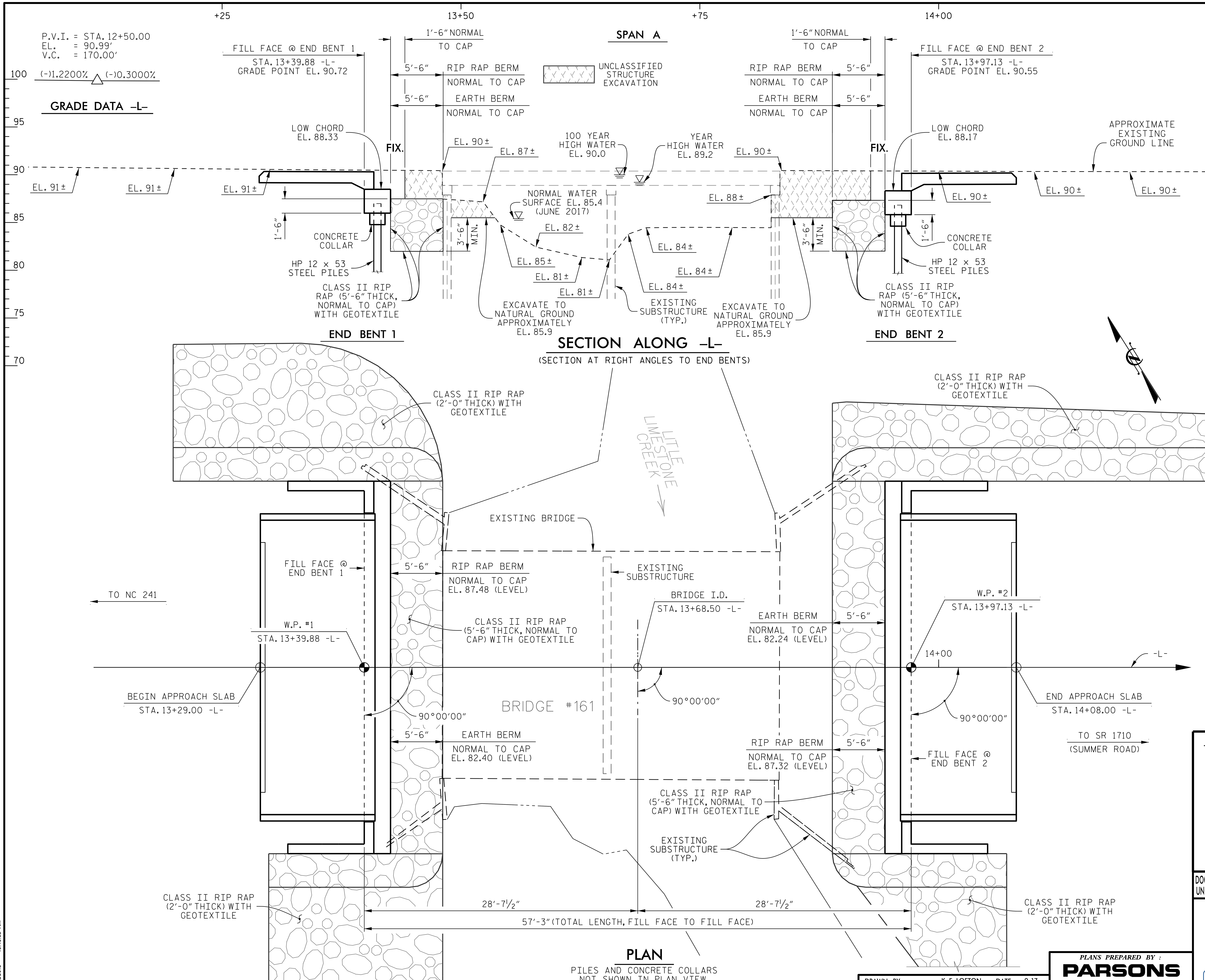
2018 STANDARD SPECIFICATIONS

LETTING DATE:
April 19, 2018

DAVID L. WILVER, P.E.
PROJECT ENGINEER

PATRICK R. GALLAGHER, P.E.
PROJECT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
3/27/2018
7DC4BC8E6A38442...



+25
13+50
+75
14+00
P.V.I. = STA. 12+50.00
EL. = 90.99'
V.C. = 170.00'
(-)1.2200% (-)0.3000%
GRADE DATA -L-
SPAN A
UNCLASSIFIED STRUCTURE EXCAVATION
FILL FACE @ END BENT 1
STA. 13+39.88 -L-
GRADE POINT EL. 90.72
1'-6" NORMAL TO CAP
5'-6" RIP RAP BERM NORMAL TO CAP
5'-6" EARTH BERM NORMAL TO CAP
FILL FACE @ END BENT 2
STA. 13+97.13 -L-
GRADE POINT EL. 90.55
LOW CHORD EL. 88.33
LOW CHORD EL. 88.17
FIX.
100 YEAR HIGH WATER EL. 90.0
YEAR HIGH WATER EL. 89.2
APPROXIMATE EXISTING GROUND LINE
NORMAL WATER SURFACE EL. 85.4 (JUNE 2017)
EL. 91±
EL. 90±
EL. 87±
EL. 88±
EL. 82±
EL. 85±
EL. 84±
EL. 81±
CONCRETE COLLAR
HP 12 x 53 STEEL PILES
CLASS II RIP RAP (5'-6" THICK, NORMAL TO CAP) WITH GEOTEXTILE
EXCAVATE TO NATURAL GROUND APPROXIMATELY EL. 85.9
EXISTING SUBSTRUCTURE (TYP.)
3'-6" MIN.
END BENT 1
END BENT 2
SECTION ALONG -L-
(SECTION AT RIGHT ANGLES TO END BENTS)
CLASS II RIP RAP (2'-0" THICK) WITH GEOTEXTILE
LITTLE LIMESTONE CREEK
EXISTING BRIDGE
EXISTING SUBSTRUCTURE
FILL FACE @ END BENT 1
RIP RAP BERM NORMAL TO CAP EL. 87.48 (LEVEL)
CLASS II RIP RAP (5'-6" THICK, NORMAL TO CAP) WITH GEOTEXTILE
TO NC 241
W.P. #1 STA. 13+39.88 -L-
BRIDGE I.D. STA. 13+68.50 -L-
EARTH BERM NORMAL TO CAP EL. 82.24 (LEVEL)
W.P. #2 STA. 13+97.13 -L-
14+00
-L-
BEGIN APPROACH SLAB STA. 13+29.00 -L-
90°00'00"
BRIDGE #161
END APPROACH SLAB STA. 14+08.00 -L-
EARTH BERM NORMAL TO CAP EL. 82.40 (LEVEL)
RIP RAP BERM NORMAL TO CAP EL. 87.32 (LEVEL)
FILL FACE @ END BENT 2
TO SR 1710 (SUMMER ROAD)
28'-7½"
57'-3" (TOTAL LENGTH, FILL FACE TO FILL FACE)
PLAN
PILES AND CONCRETE COLLARS NOT SHOWN IN PLAN VIEW.

NOTE

FOR NOTES, SEE SHEET 3 OF 3.

HYDRAULIC DATA

DESIGN DISCHARGE	= 440 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 89.40 FT.
DRAINAGE AREA	= 2.6 SQ. MI.
BASE DISCHARGE (Q100)	= 650 CFS
BASE HIGH WATER ELEVATION	= 90.00 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 646 CFS
FREQUENCY OF OVERTOPPING FLOOD	= - 100 YEARS
OVERTOPPING FLOOD ELEVATION AT STA. 17+28.00 -L-	= 89.90 FT.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 161

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH ROAD) BETWEEN NC 241 AND SR 1710

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/26/2018

PLANS PREPARED BY: PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

REVISIONS

No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

SHEET No. S1-1

TOTAL SHEETS 15

STR. #1

FILE: j:\division 3 bridge replacement\17BP.3.R.58 Duplin 161\Structures\Plans\Final\BP_Div_3_300161_smu_gd1.dgn
DATE: 2/6/2018 10:40:05 AM

NOTES

ALL END BENT PILES ARE VERTICAL HP 12 x 53 STEEL PILES.

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINES AT THE BOTTOM OF THE END BENT CAPS.

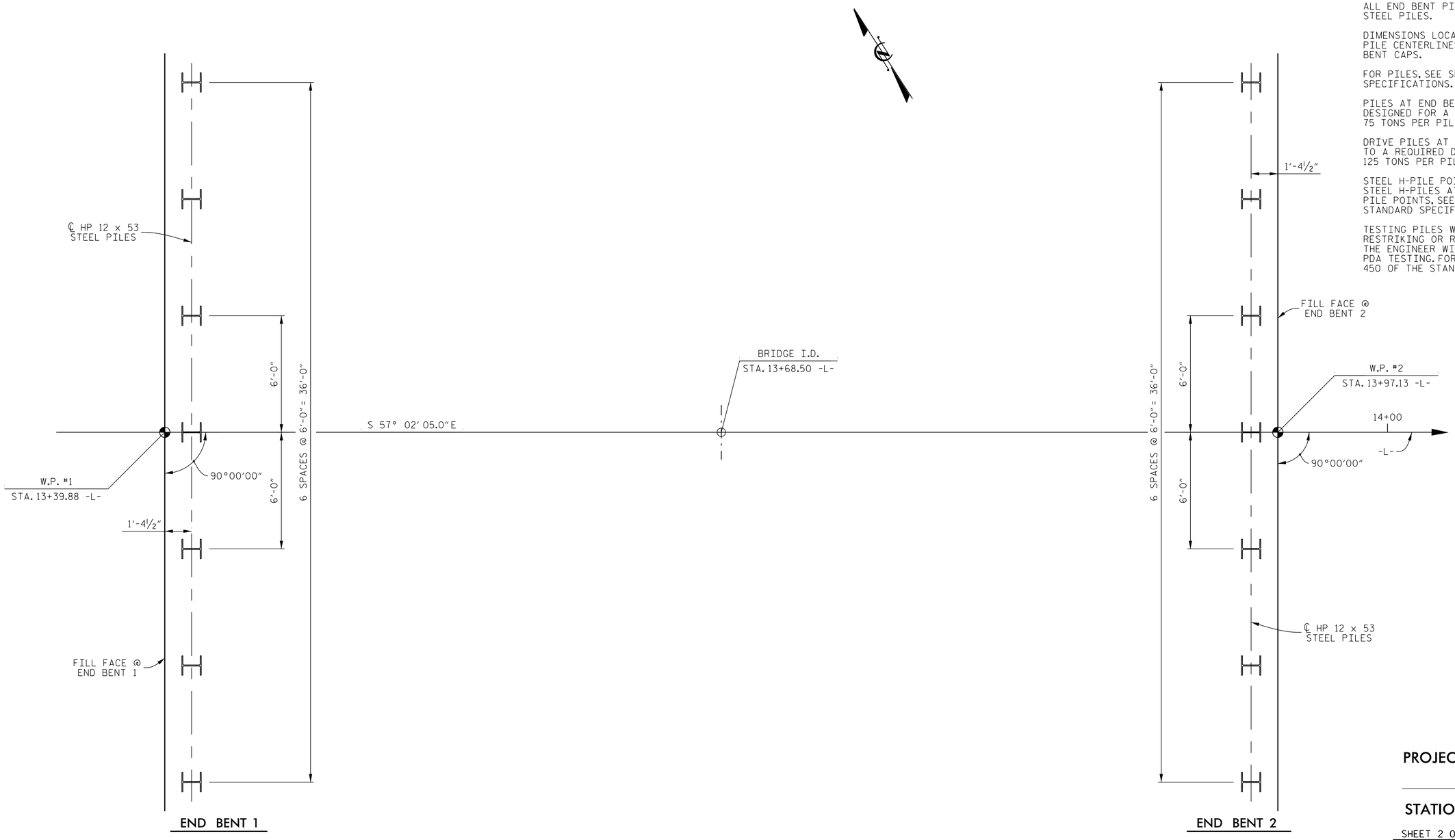
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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



FOUNDATION LAYOUT

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 –L–

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH ROAD) BETWEEN NC 241 AND SR 1710

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/13/2018

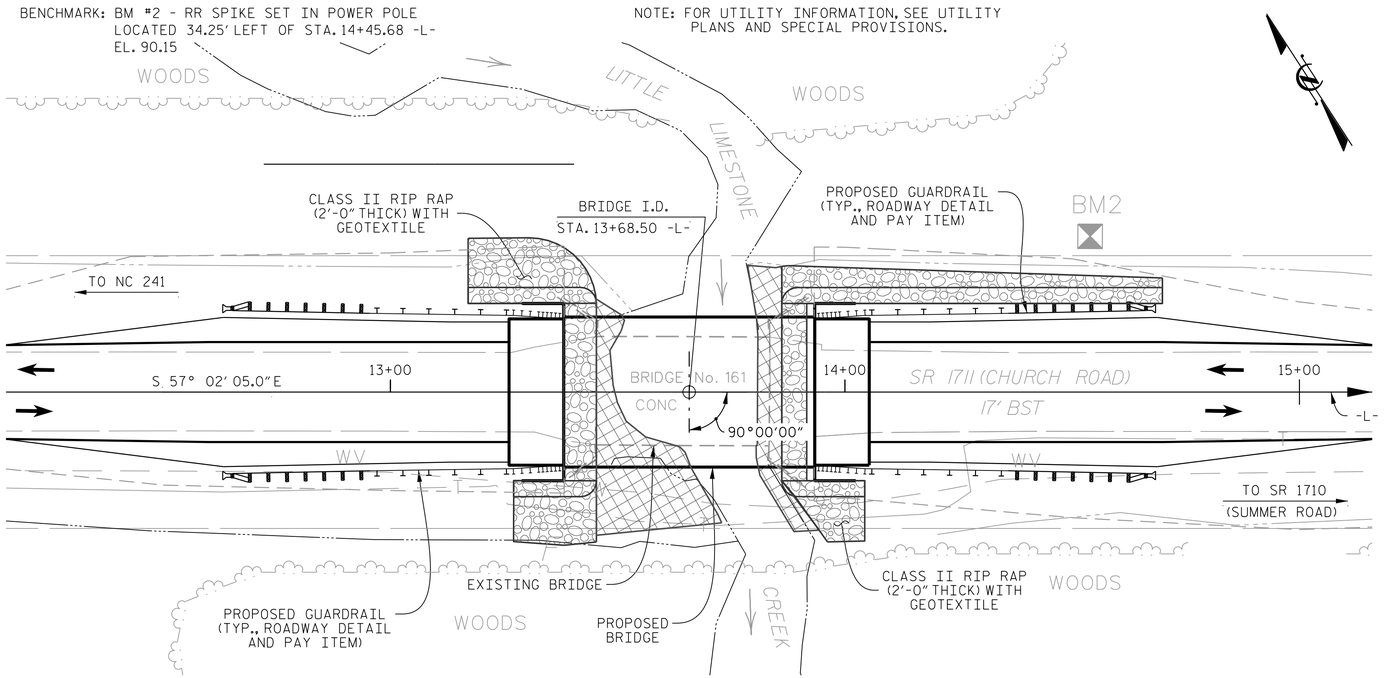
PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : K. E. LOFTON DATE : 9-17
CHECKED BY : A. D. SHAH DATE : 9-17
DESIGN ENGINEER : P. R. GALLAGHER DATE : 12-17

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			15

STR. #1

FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP Div_3_300161_snu_fl1.dgn
DATE: 2/13/2018 11:34:22 AM



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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE "STANDARD NOTES" SHEET.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

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

FOR SURVEY CONTROL SHEET, SEE ROADWAY PLANS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20'-6" LEFT AND 31'-6" RIGHT OF CENTERLINE ROADWAY AT END BENT 1 AND 27'-8" LEFT AND 28'-8" RIGHT OF CENTERLINE ROADWAY AT 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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 13+68.50 -L-	ASBESTOS ASSESMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 13+68.50 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS AT STA. 13+68.50 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	No.	LIN. FT.	EACH	EACH	LIN. FT.	TON	SQ. YD.	LUMP SUM	No.	LIN. FT.
SUPERSTRUCTURE													110.0				11	605.0
END BENT 1					14.2		2,115	7	7	350.0		7		110	125			
END BENT 2					14.2		2,115	7	7	350.0	7	7		140	160			
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	28.4	LUMP SUM	4,230	14	14	700.0	7	14	110.0	250	285	LUMP SUM	11	605.0

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER LITTLE LIMESTONE CREEK ON SR 1711 (CHURCH ROAD) BETWEEN NC 241 AND SR 1710

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/26/2018

DRAWN BY : K. E. LOFTON DATE : 9-17
CHECKED BY : A. D. SHAH DATE : 9-17
DESIGN ENGINEER : P. R. GALLAGHER DATE : 12-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			15

STR. #1

FILE: j:\division 3 bridge replacement\17BP.3.R.58 Duplin 161\Structures\Plans\Final\BP Div_3_3001b1_smu_b1.dgn
DATE: 2/26/2018 10:41:46 AM

LOAD AND RESISTANCE FACTOR RATING (LRFR) 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: LIVE-LOAD FACTORS (γ_{LL})	MOMENT: DISTRIBUTION FACTORS (DF)	MOMENT: RATING FACTOR	MOMENT: SPAN	MOMENT: GIRDER LOCATION	MOMENT: DISTANCE FROM LEFT END OF SPAN (ft)	SHEAR: DISTRIBUTION FACTORS (DF)	SHEAR: RATING FACTOR	SHEAR: SPAN	SHEAR: GIRDER LOCATION	SHEAR: DISTANCE FROM LEFT END OF SPAN (ft)	SERVICE III LIMIT STATE: LIVE-LOAD FACTORS (γ_{LL})	MOMENT: DISTRIBUTION FACTORS (DF)	MOMENT: RATING FACTOR	MOMENT: SPAN	MOMENT: GIRDER LOCATION	MOMENT: DISTANCE FROM LEFT END OF SPAN (ft)	COMMENT NUMBER
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.055	--	1.75	0.275	1.23	55′	EL	27	0.523	1.23	55′	EL	5.4	0.80	0.275	1.05	55′	EL	27	--
		HL-93 (OPERATING)	N/A	--	1.591	--	1.35	0.275	1.59	55′	EL	27	0.523	1.59	55′	--	5.4	N/A	--	--	--	--	--	--
		HS-20 (INVENTORY)	36.000	2	1.322	47.585	1.75	0.275	1.54	55′	EL	27	0.523	1.47	55′	EL	5.4	0.80	0.275	1.32	55′	EL	27	--
		HS-20 (OPERATING)	36.000	--	1.900	68.396	1.35	0.275	1.99	55′	EL	27	0.523	1.90	55′	--	5.4	N/A	--	--	--	--	--	--
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	2.776	37.476	1.40	0.275	4.04	55′	EL	27	0.523	4.17	55′	EL	5.4	0.80	0.275	2.78	55′	EL	27	--
		SNGARBS2	20.000	--	2.155	43.095	1.40	0.275	3.14	55′	EL	27	0.523	3.02	55′	EL	5.4	0.80	0.275	2.15	55′	EL	27	--
		SNAGRIS2	22.000	--	2.079	45.734	1.40	0.275	3.03	55′	EL	27	0.523	2.83	55′	EL	5.4	0.80	0.275	2.08	55′	EL	27	--
		SNCOTTS3	27.250	--	1.384	37.708	1.40	0.275	2.01	55′	EL	27	0.523	2.09	55′	EL	5.4	0.80	0.275	1.38	55′	EL	27	--
		SNAGGRS4	34.925	--	1.189	41.527	1.40	0.275	1.73	55′	EL	27	0.523	1.77	55′	EL	5.4	0.80	0.275	1.19	55′	EL	27	--
		SNS5A	35.550	--	1.160	41.255	1.40	0.275	1.69	55′	EL	27	0.523	1.82	55′	EL	5.4	0.80	0.275	1.16	55′	EL	27	--
		SNS6A	39.950	--	1.079	43.102	1.40	0.275	1.57	55′	EL	27	0.523	1.68	55′	EL	5.4	0.80	0.275	1.08	55′	EL	27	--
		SNS7B	42.000	--	1.028	43.175	1.40	0.275	1.50	55′	EL	27	0.523	1.67	55′	EL	5.4	0.80	0.275	1.03	55′	EL	27	--
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.320	43.556	1.40	0.275	1.92	55′	EL	27	0.523	1.98	55′	EL	5.4	0.80	0.275	1.32	55′	EL	27	--
		TNT4A	33.075	--	1.330	43.979	1.40	0.275	1.94	55′	EL	27	0.523	1.91	55′	EL	5.4	0.80	0.275	1.33	55′	EL	27	--
		TNT6A	41.600	--	1.101	45.811	1.40	0.275	1.60	55′	EL	27	0.523	1.83	55′	EL	5.4	0.80	0.275	1.10	55′	EL	27	--
		TNT7A	42.000	--	1.114	46.804	1.40	0.275	1.62	55′	EL	27	0.523	1.71	55′	EL	5.4	0.80	0.275	1.11	55′	EL	27	--
		TNT7B	42.000	--	1.163	48.848	1.40	0.275	1.69	55′	EL	27	0.523	1.62	55′	EL	5.4	0.80	0.275	1.16	55′	EL	27	--
		TNAGRIT4	43.000	--	1.101	47.33	1.40	0.275	1.60	55′	EL	27	0.523	1.56	55′	EL	5.4	0.80	0.275	1.10	55′	EL	27	--
		TNAGRT5A	45.000	--	1.031	46.405	1.40	0.275	1.50	55′	EL	27	0.523	1.58	55′	EL	5.4	0.80	0.275	1.03	55′	EL	27	--
		TNAGRT5B	45.000	3	1.013	45.582	1.40	0.275	1.47	55′	EL	27	0.523	1.48	55′	EL	5.4	0.80	0.275	1.01	55′	EL	27	--

LOAD FACTORS

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

NOTES

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

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

COMMENTS

1.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

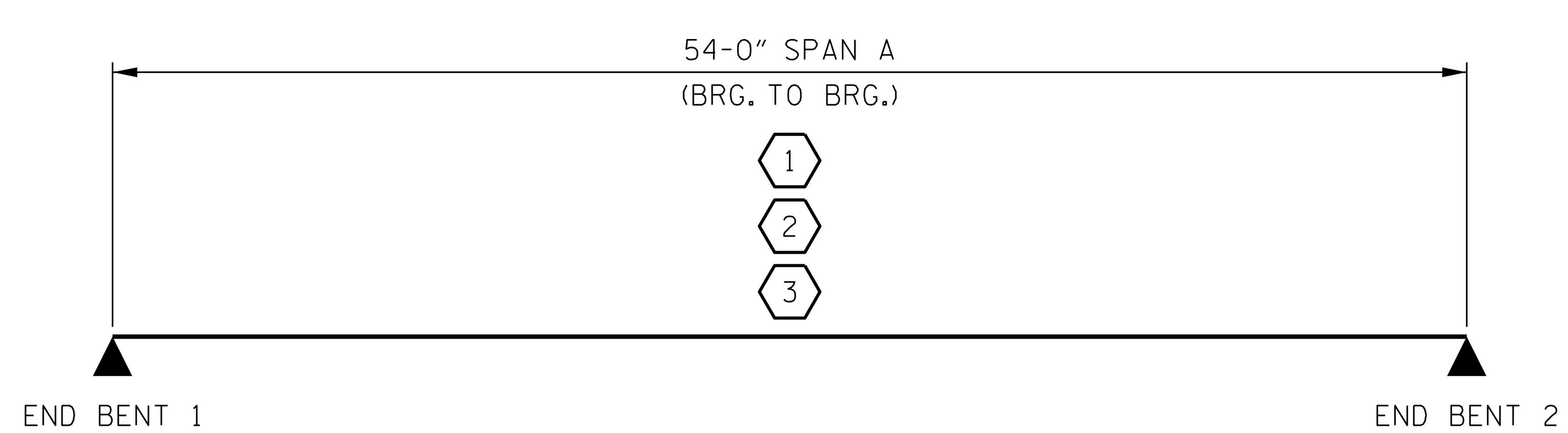
(2) DESIGN LOAD RATING (HS-20)

(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.3.R.58
DUPLIN COUNTY
STATION: 13+68.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR 55′ CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER 2/13/2018

PLANS PREPARED BY: PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY: K. E. LOFTON DATE: 9-17
CHECKED BY: A. D. SHAH DATE: 9-17
DESIGN ENGINEER: P. R. GALLAGHER DATE: 12-17

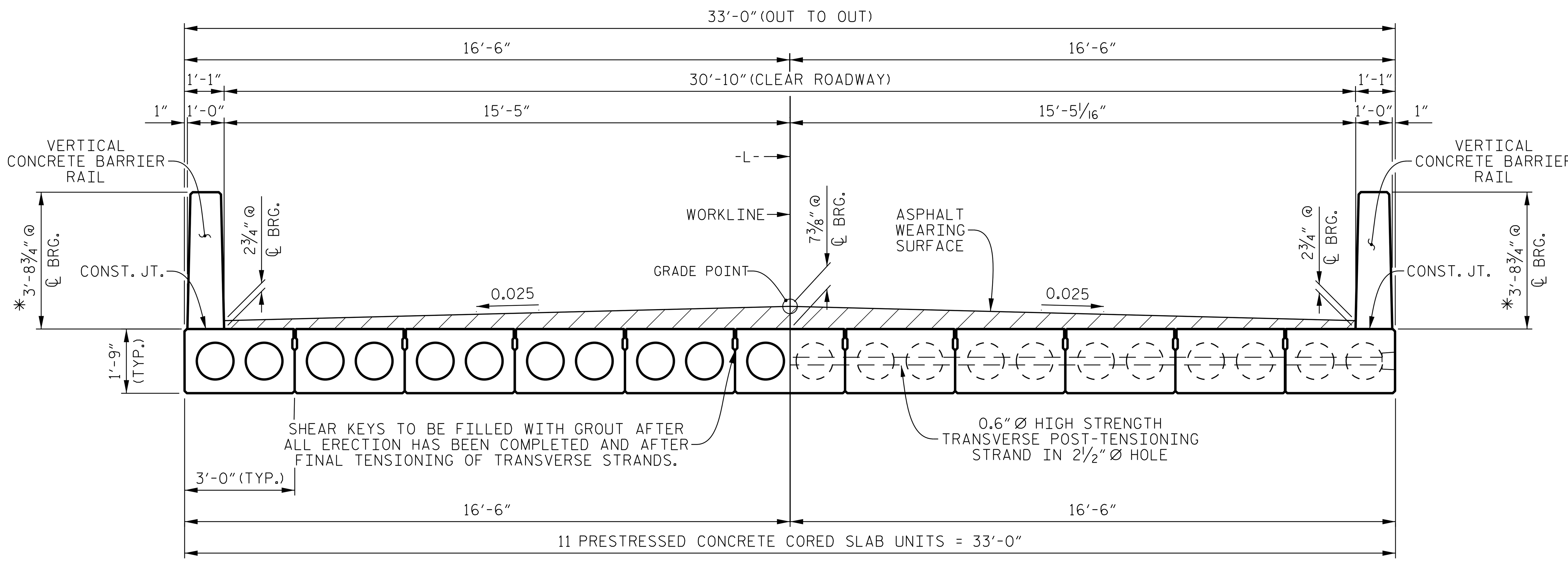
ASSEMBLED BY: K. E. LOFTON DATE: 9-17
CHECKED BY: A. D. SHAH DATE: 9-17
DRAWN BY: CVC 6/10
CHECKED BY: DNS 6/10

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

SHEET No. S1-4
TOTAL SHEETS 15

STD. No. 21LRFR1_90S_55L

FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Div_3_30016_smu_lr1.dgn
DATE: 2/13/2018 11:34:39 AM

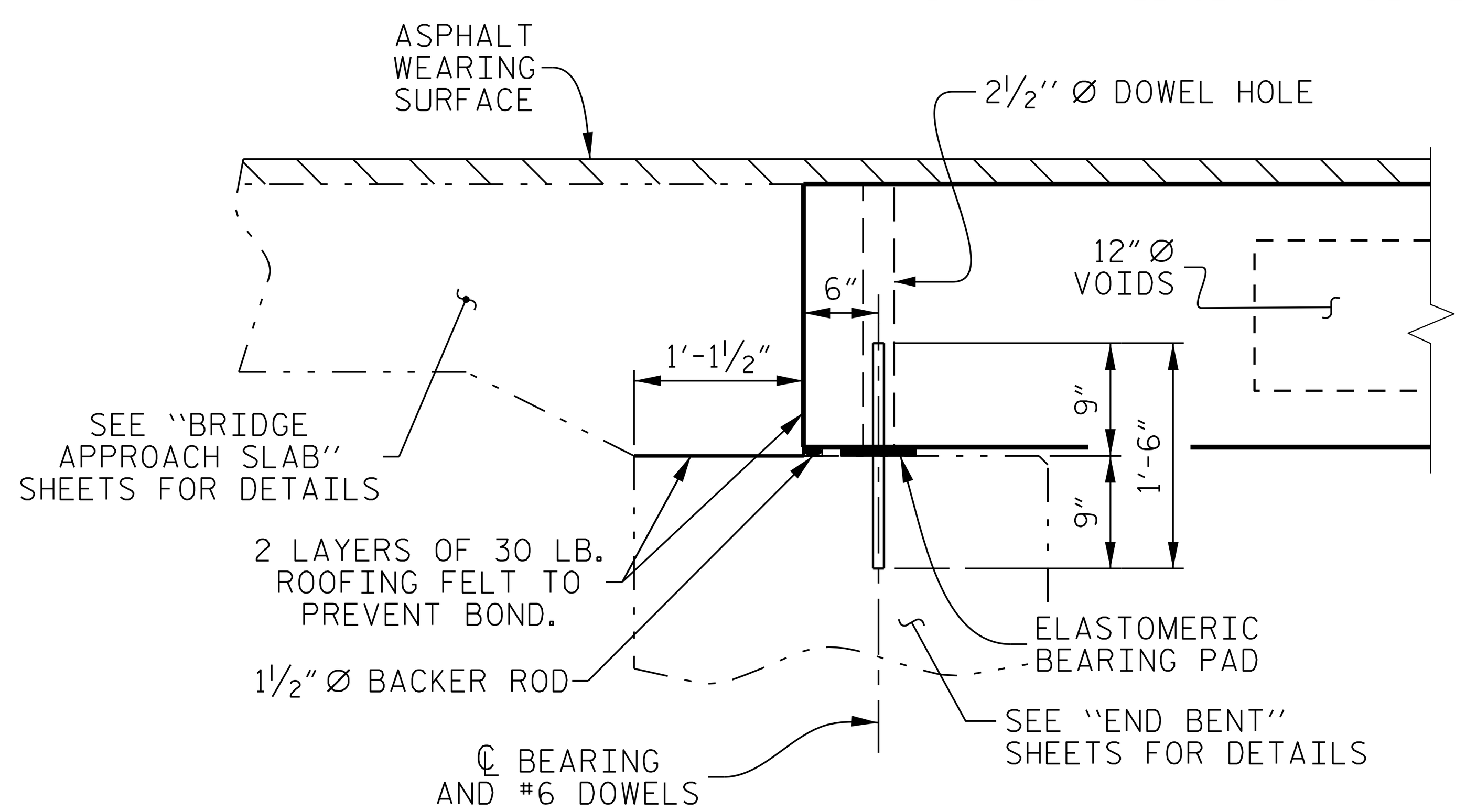


HALF SECTION
THROUGH VOIDS

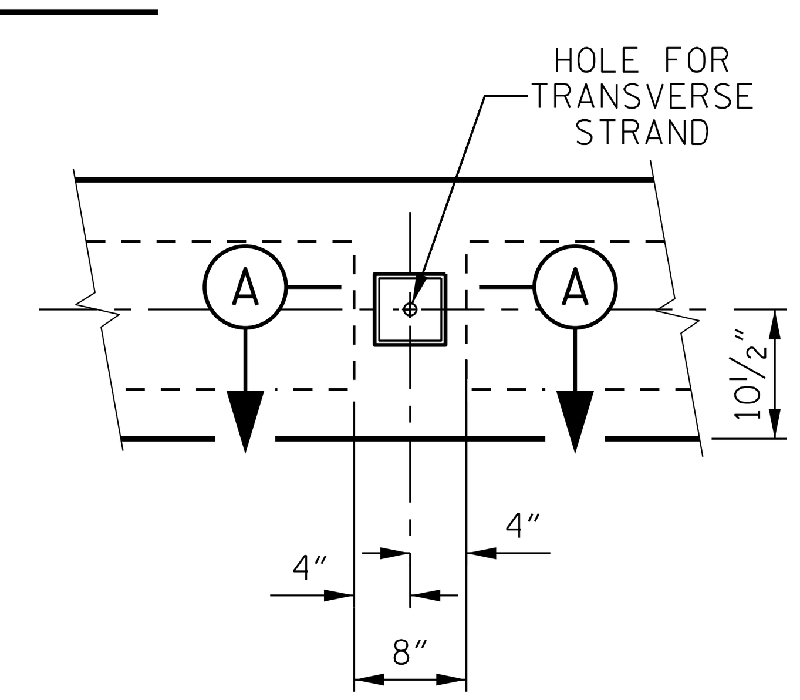
HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

TYPICAL SECTION

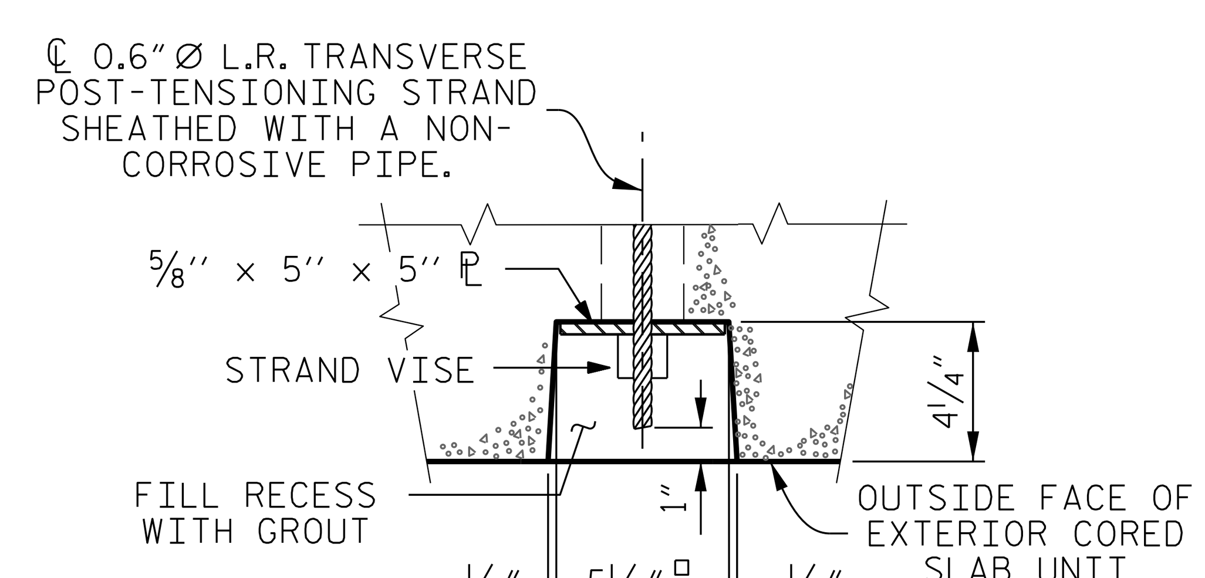
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL, SHEET 4 OF 4.



SECTION AT END BENT

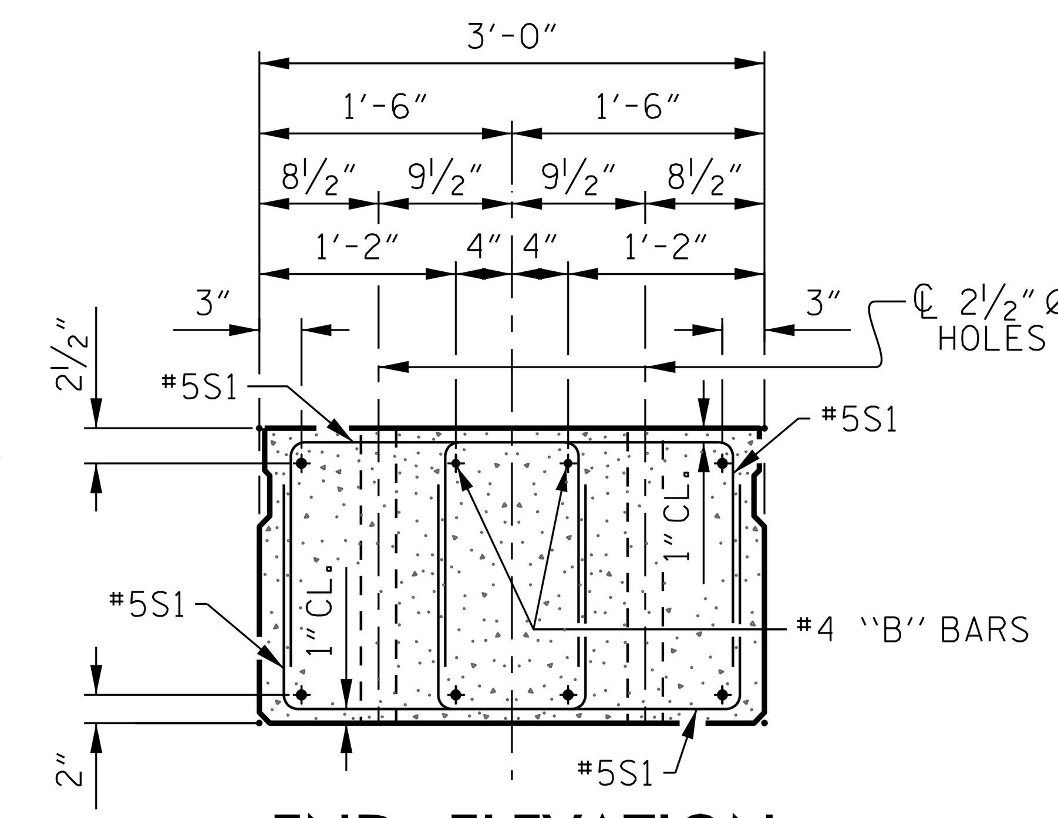


ELEVATION VIEW



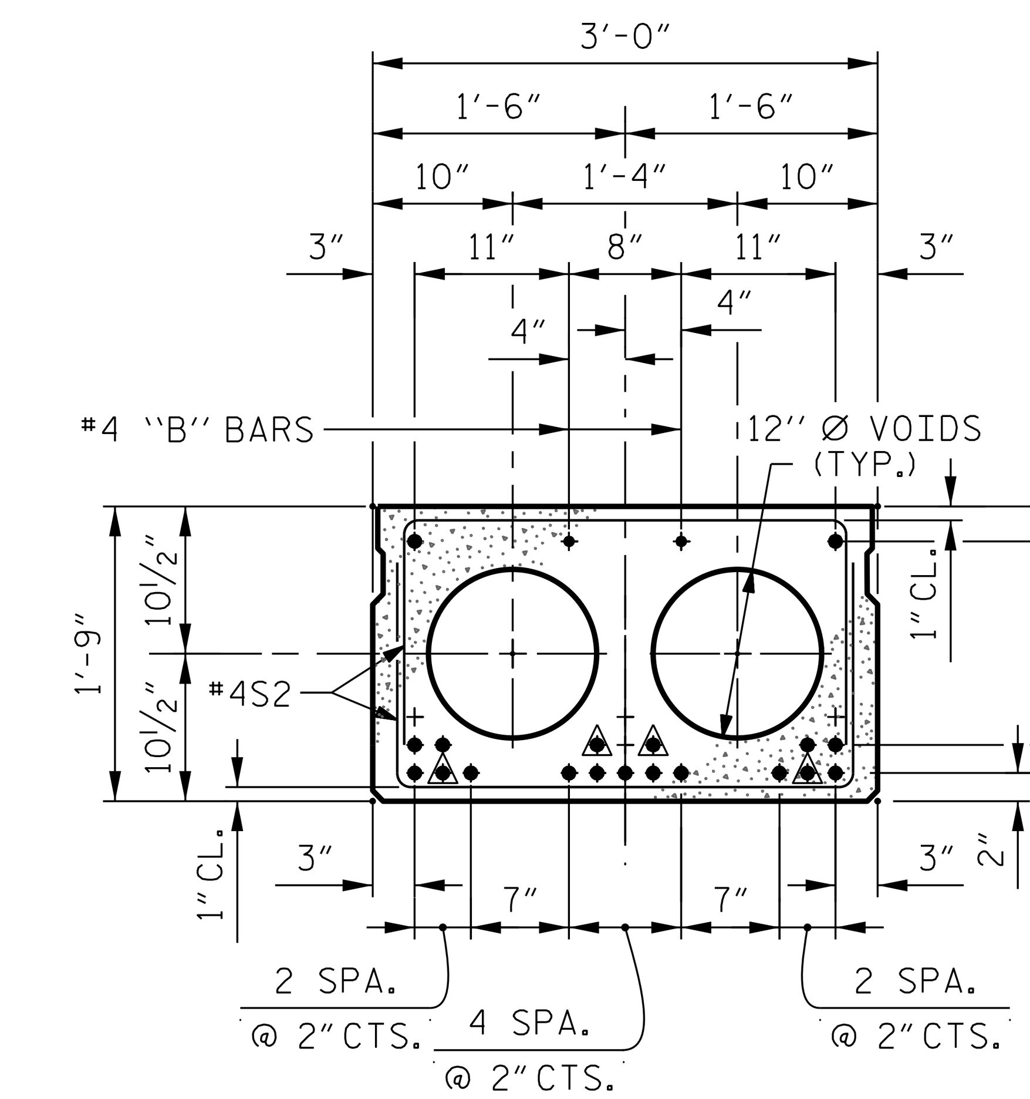
SECTION A–A

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



END ELEVATION

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



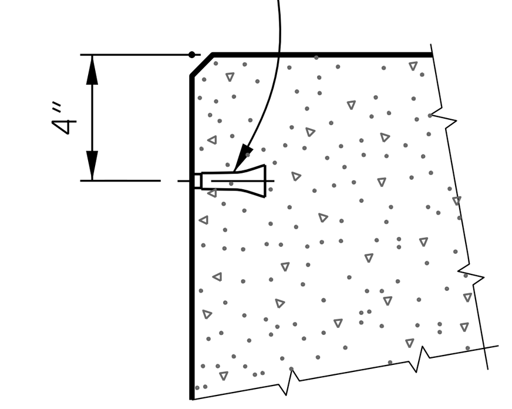
INTERIOR SLAB SECTION

0.6" Ø LOW RELAXATION STRAND LAYOUT
(TYPICAL ALL UNITS, 19 STRANDS REQUIRED)

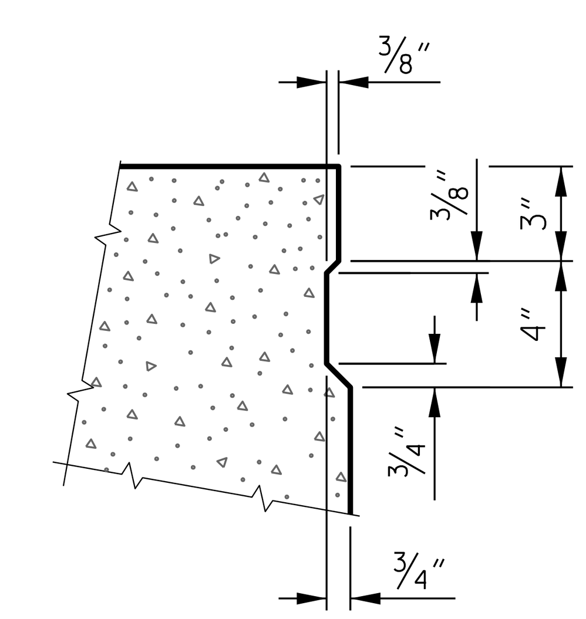
◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR CORED SLAB UNITS, RECESSED 3/8". SIZE TO BE DETERMINED BY CONTRACTOR.

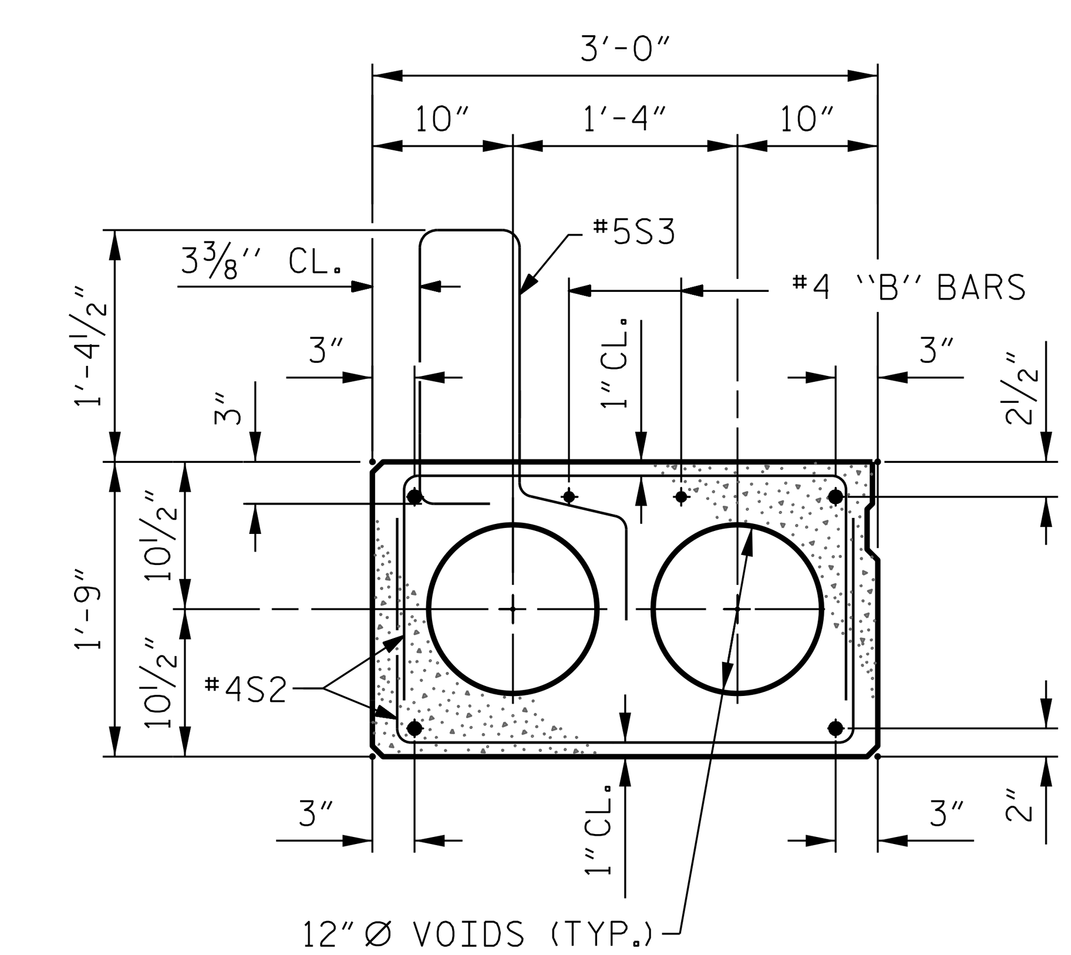


THREADED INSERT DETAIL



SHEAR KEY DETAIL

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



EXTERIOR SLAB SECTION

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION)

PROJECT NO. 17BP.3.R.58
DUPLIN COUNTY
STATION: 13+68.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3'–0" x 1'–9"
PRESTRESSED CONCRETE CORED SLAB UNIT
90° SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
2/13/2018

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

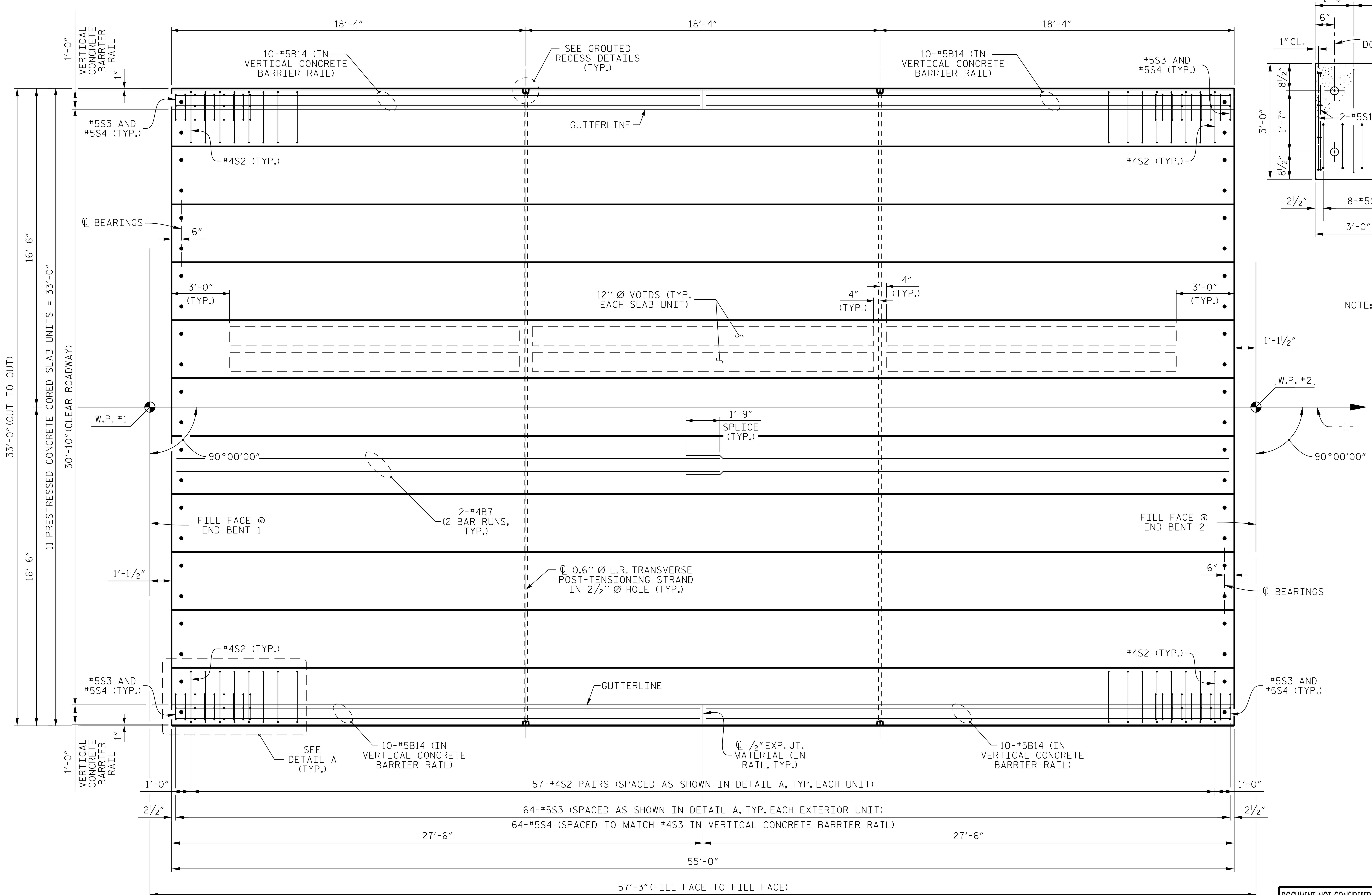
DRAWN BY : K. E. LOFTON	DATE : 9-17	
CHECKED BY : A. D. SHAH	DATE : 9-17	
DESIGN ENGINEER : P. R. GALLAGHER	DATE : 12-17	

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

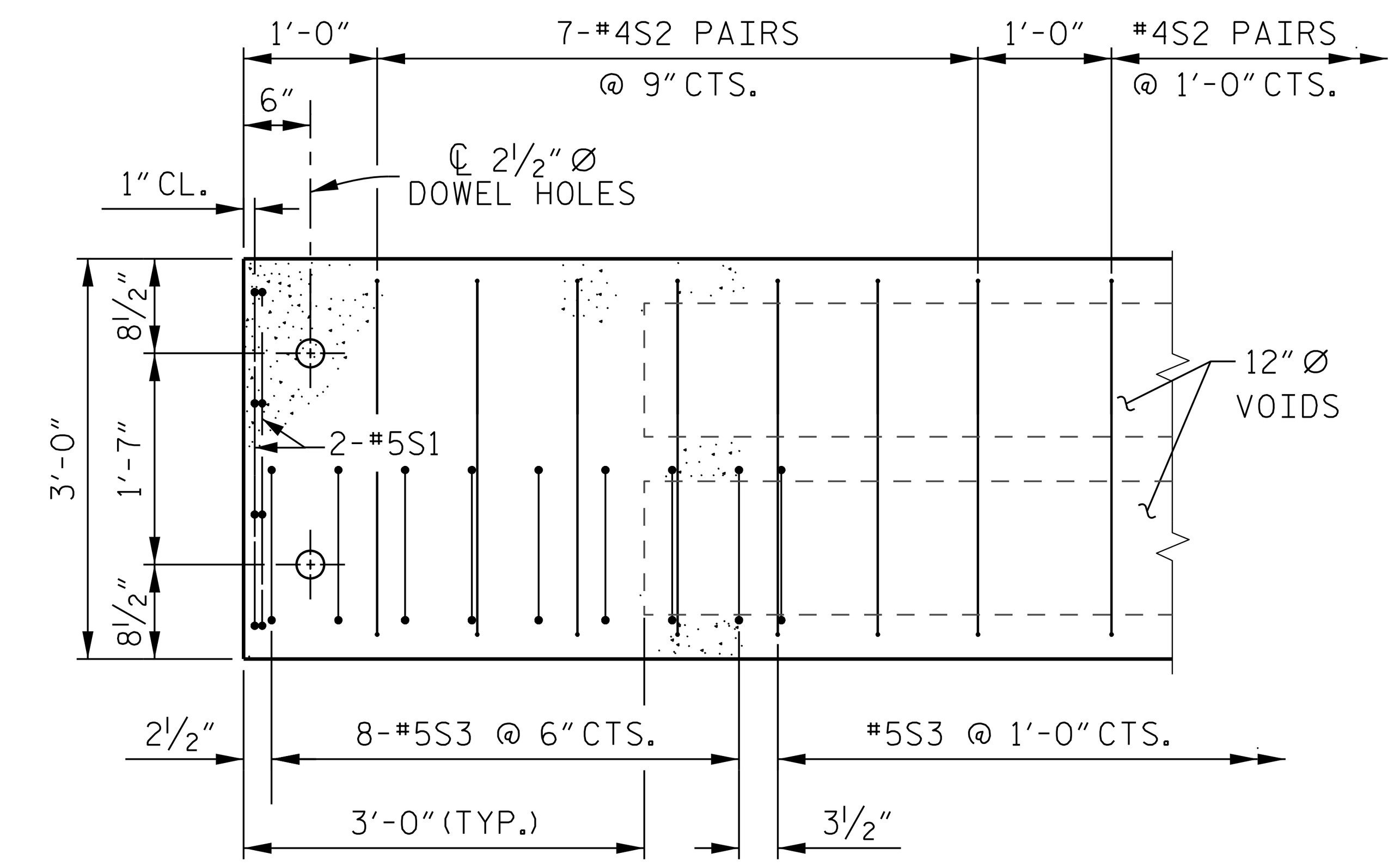
SHEET No. S1–5
TOTAL SHEETS 15

ASSEMBLED BY : K. E. LOFTON	DATE : 9-17	
CHECKED BY : A. D. SHAH	DATE : 9-17	
DRAWN BY : DGE 5-09	REV. 9-14	MAA/TMG
CHECKED BY : BCH 6-09		

STD. No. 21"PCS2_33_90S



PLAN OF UNITS



DETAIL A

(TYPICAL EACH END OF UNIT)

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5S3 BARS.

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3'-0" x 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/13/2018

REVISIONS								SHEET No.
No.	BY:	DATE:		No.	BY:	DATE:		S1-6
1				3				TOTAL SHEETS
2				4				15

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

ASSEMBLED BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17

DRAWN BY : DGE 3/09	REV. 12/5/11	MAA/AAC
CHECKED BY : BCH 3/09	REV. 8/14	MAA/TMG

STD. No. 21"PCS_33_90S_55L

GUTTERLINE ASPHALT THICKNESS AND RAIL HEIGHT AT MID-SPAN

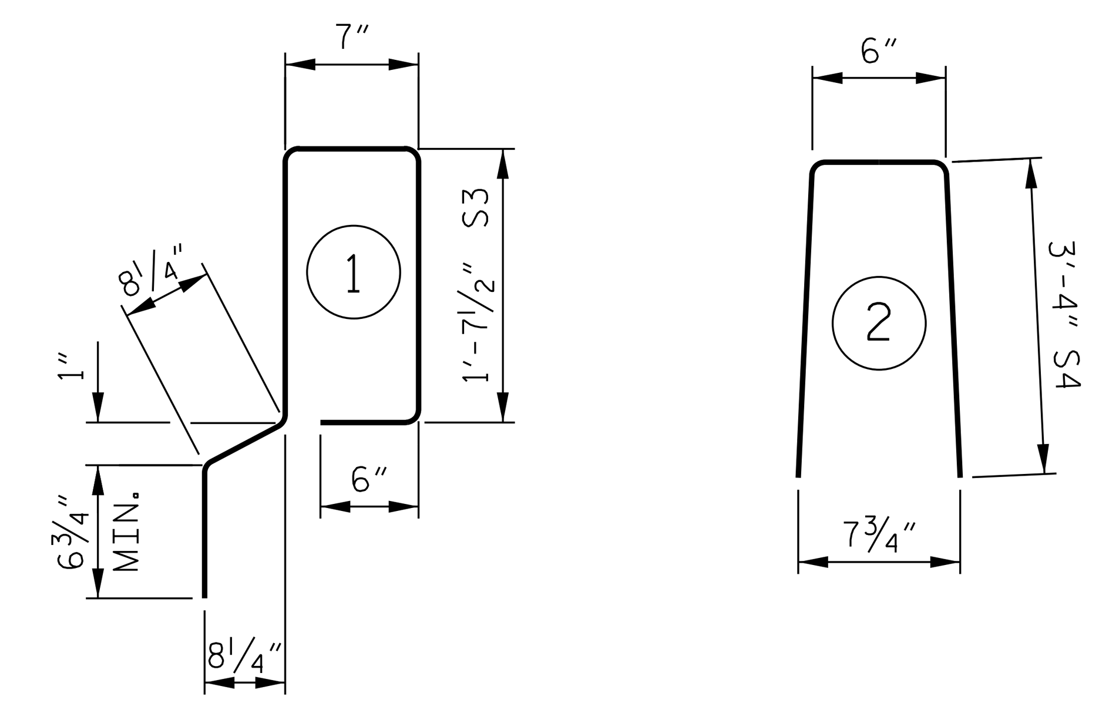
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
LEFT	1⅝″	3′-7⅝″
RIGHT	1⅝″	3′-7⅝″

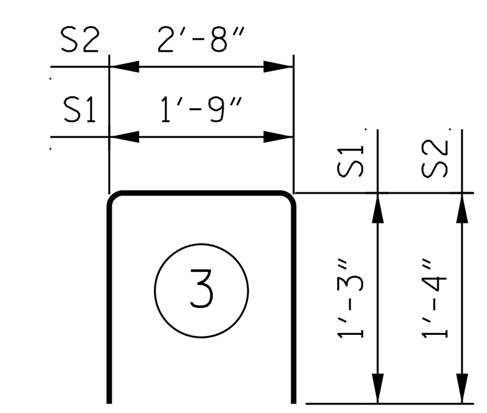
NOTE: FOR ASPHALT OVERLAY THICKNESS AND RAIL HEIGHT AT END BENTS, SEE TYPICAL SECTION, SHEET 1 OF 3

BILL OF MATERIAL FOR 55′ ONE CORED SLAB UNIT

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

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTES

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

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

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

THE 2½″ Ø DOWEL AND ANCHOR BOLT HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT.

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

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4900 PSI.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

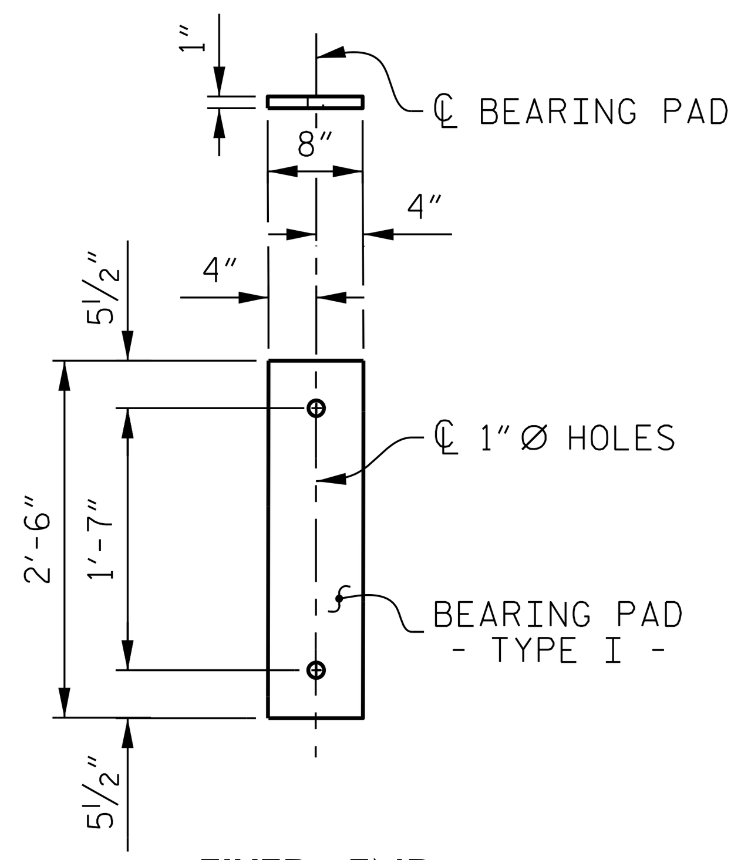
THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

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.

POST-TENSIONING SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



FIXED END

(TYPE I - 22 REQUIRED)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER ONE EXTERIOR UNIT 55′-0″ UNIT	TOTAL No.	SIZE	TYPE	LENGTH	WEIGHT
* B14	20	20	#5	STR	27′- 1″	565
* S4	64	64	#5	2	7′- 2″	478
* EPOXY COATED REINFORCING STEEL (PER EXTERIOR UNIT)					1,043 LBS.	
CLASS AA CONCRETE (PER EXTERIOR UNIT)					7.0 CU. YDS.	
VERTICAL CONCRETE BARRIER RAIL (PER EXTERIOR UNIT)					55.00 LIN. FT.	

DEAD LOAD DEFLECTION AND CAMBER

	3′-0″ × 1′-9″
SPAN A	0.6″ Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1½″ ↑
** DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	⅜″ ↓
FINAL CAMBER	1⅛″ ↑

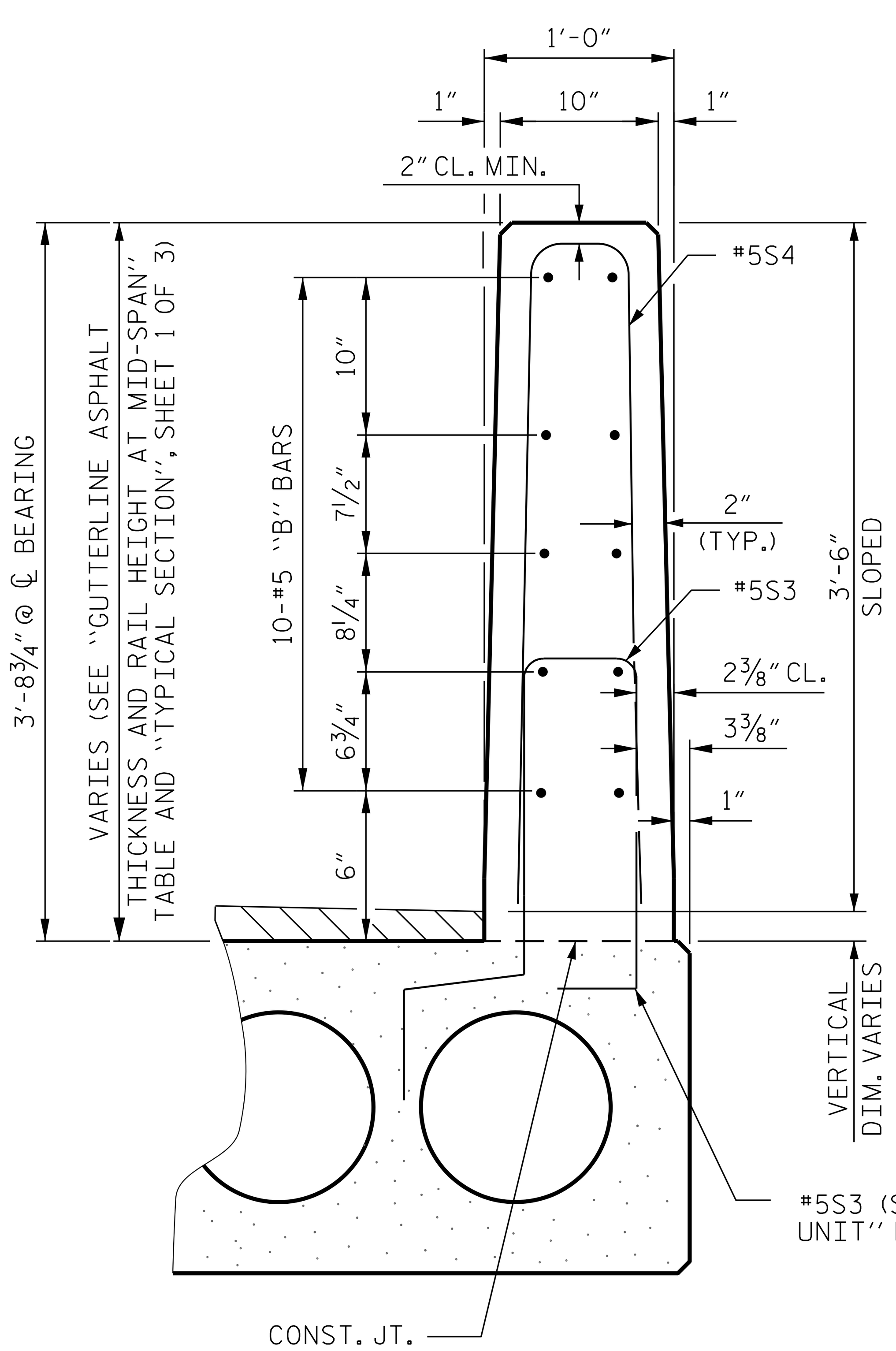
** INCLUDES FUTURE WEARING SURFACE

GRADE 270 STRANDS

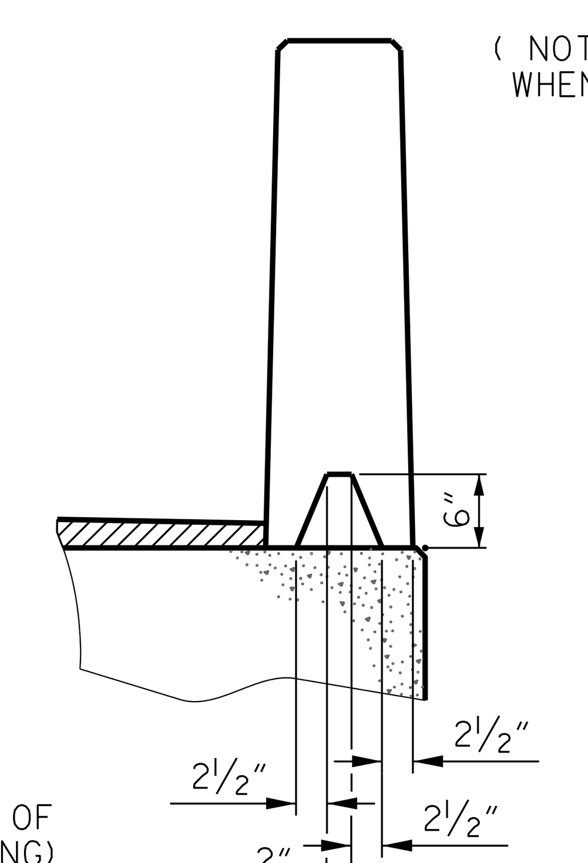
	0.6″ Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

CORED SLABS REQUIRED

SPAN A	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	55′-0″	110′-0″
INTERIOR C.S.	9	55′-0″	495′-0″
TOTAL	11		605′-0″

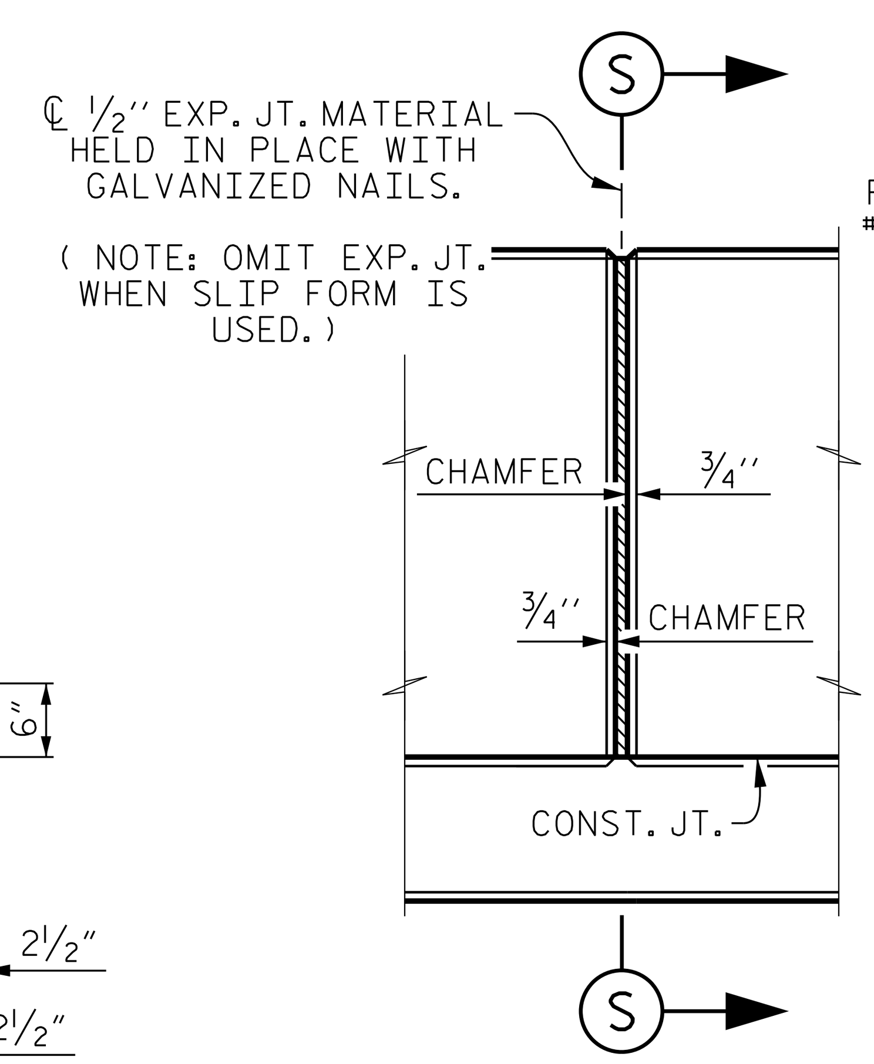


VERTICAL CONCRETE BARRIER RAIL SECTION



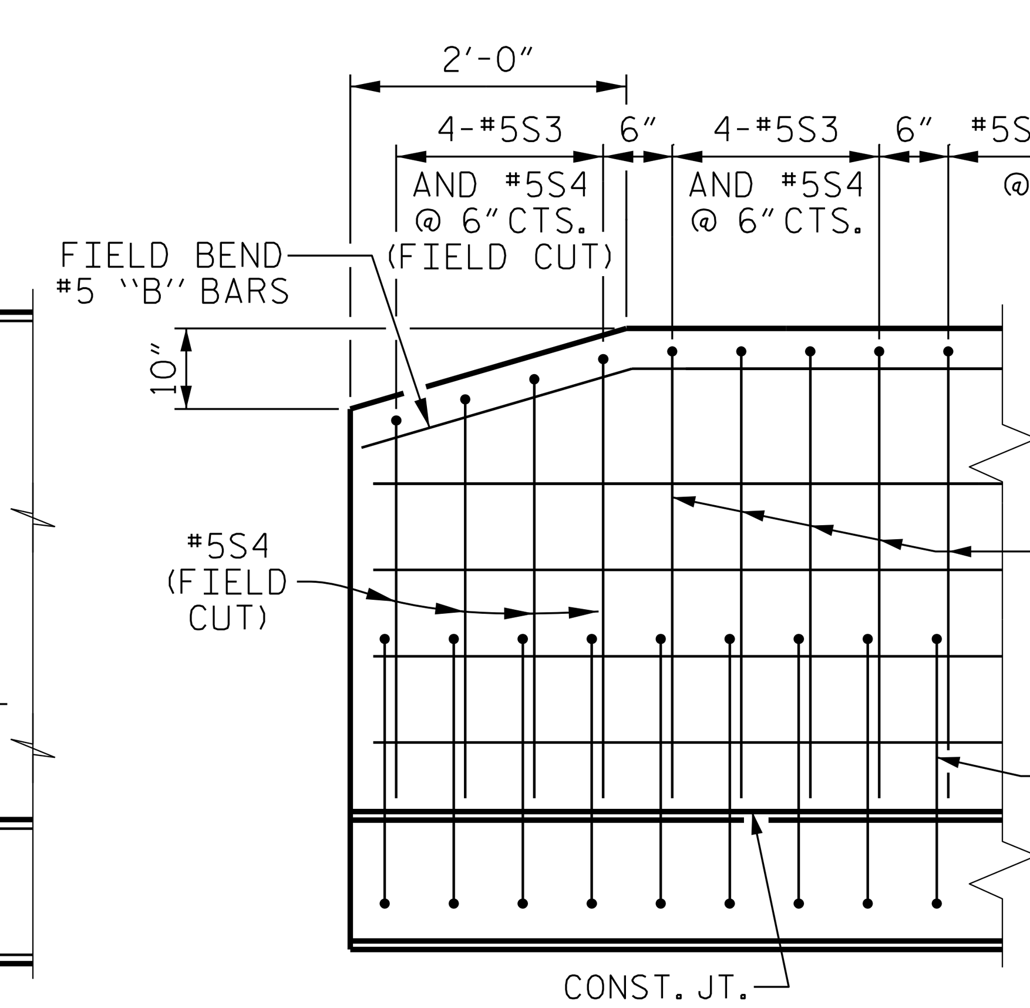
SECTION S-S

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

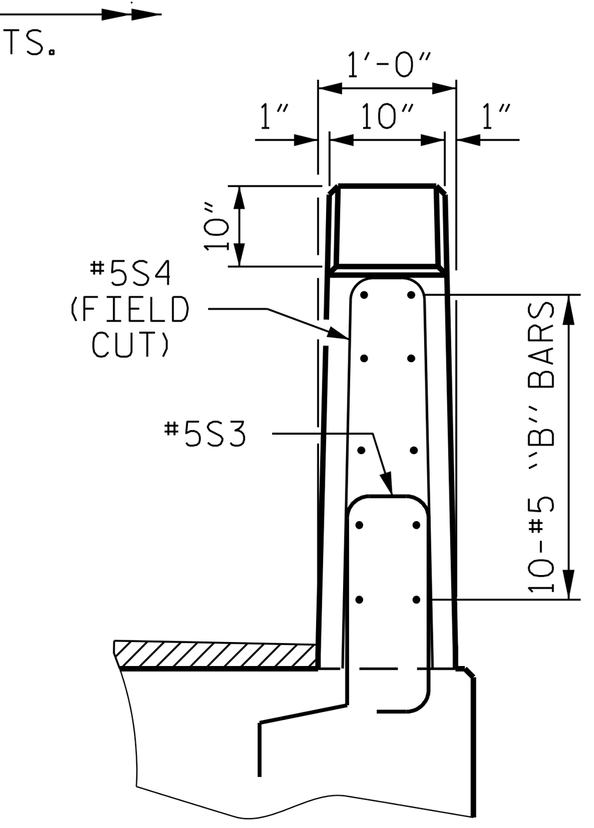


ELEVATION AT EXPANSION JOINTS

VERTICAL CONCRETE BARRIER RAIL DETAILS



ELEVATION VIEW



END VIEW

END OF RAIL DETAILS

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3′-0″ x 1′-9″
PRESTRESSED CONCRETE
CORED SLAB UNIT
90° SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER 2/13/2018

REVISIONS								SHEET No.
No.	BY:	DATE:		No.	BY:	DATE:		S1-7
1				3				TOTAL SHEETS
2				4				15

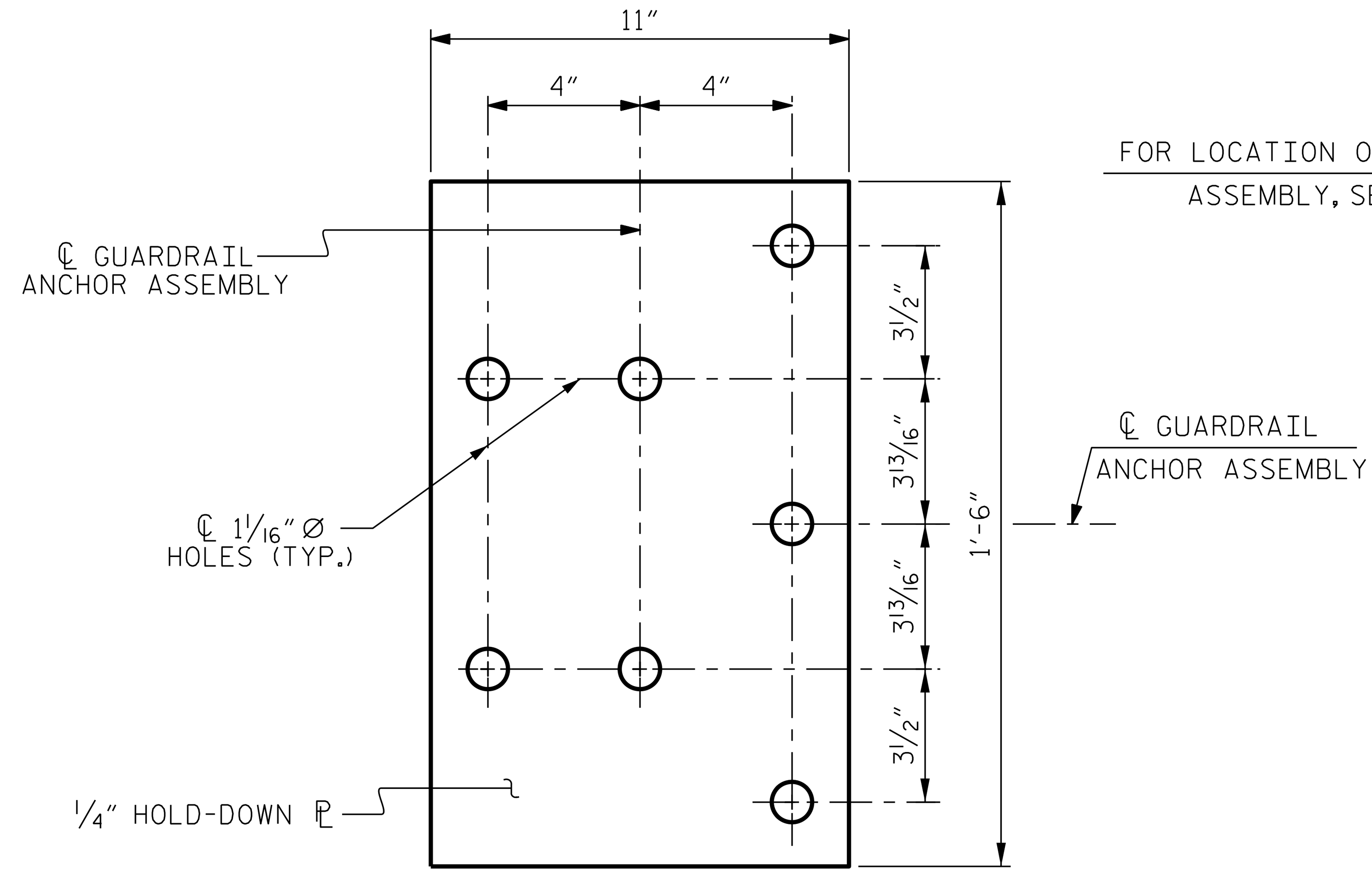
PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : K. E. LOFTON DATE : 9-17
CHECKED BY : A. D. SHAH DATE : 9-17
DESIGN ENGINEER : P. R. GALLAGHER DATE : 12-17

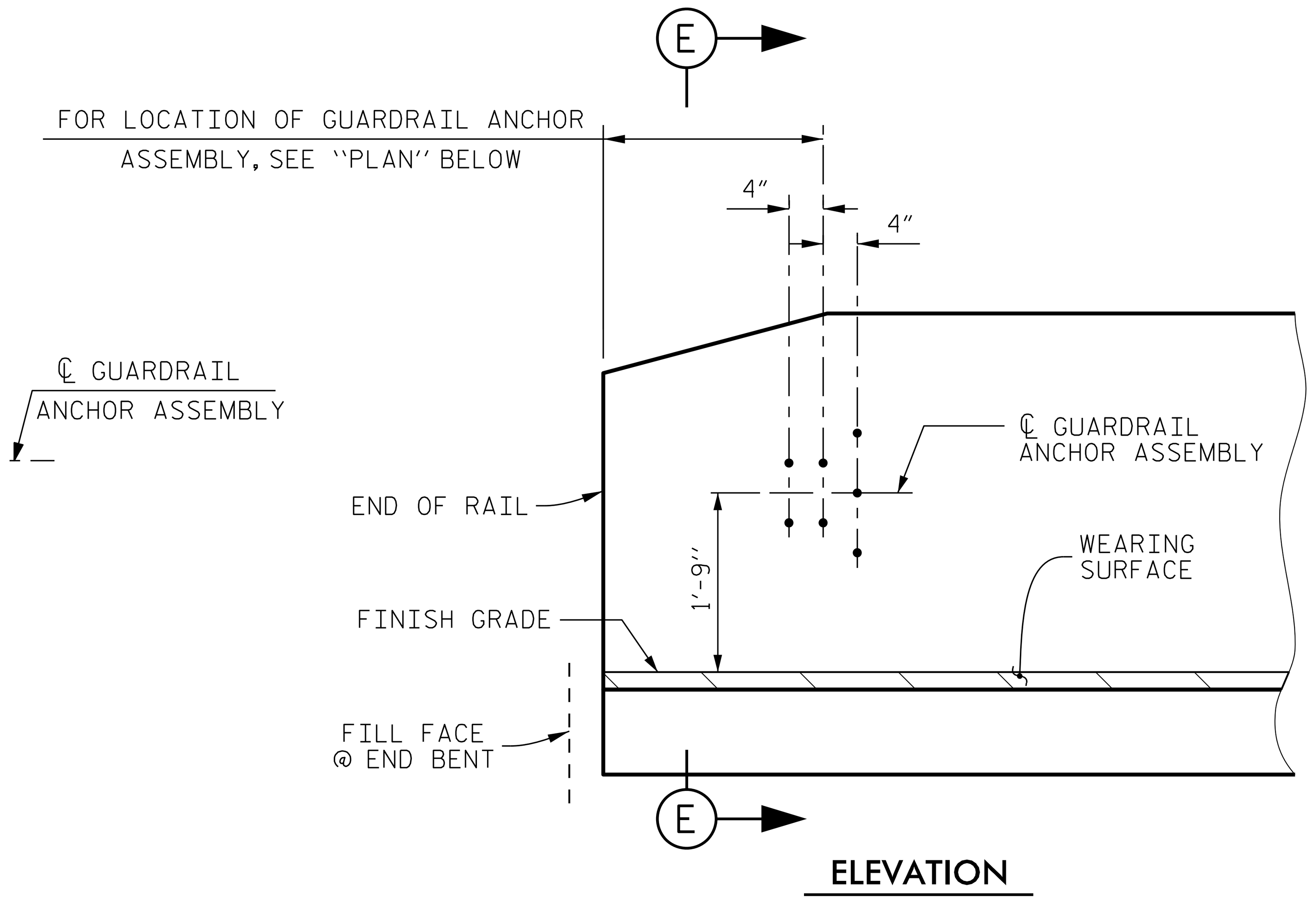
ASSEMBLED BY : K. E. LOFTON DATE : 9-17
CHECKED BY : A. D. SHAH DATE : 9-17
DRAWN BY : DGE 5/09
CHECKED BY : BCH 6/09
REV. 11/14 MAA/TMG

STD. No. 21″PCS3_33_90S

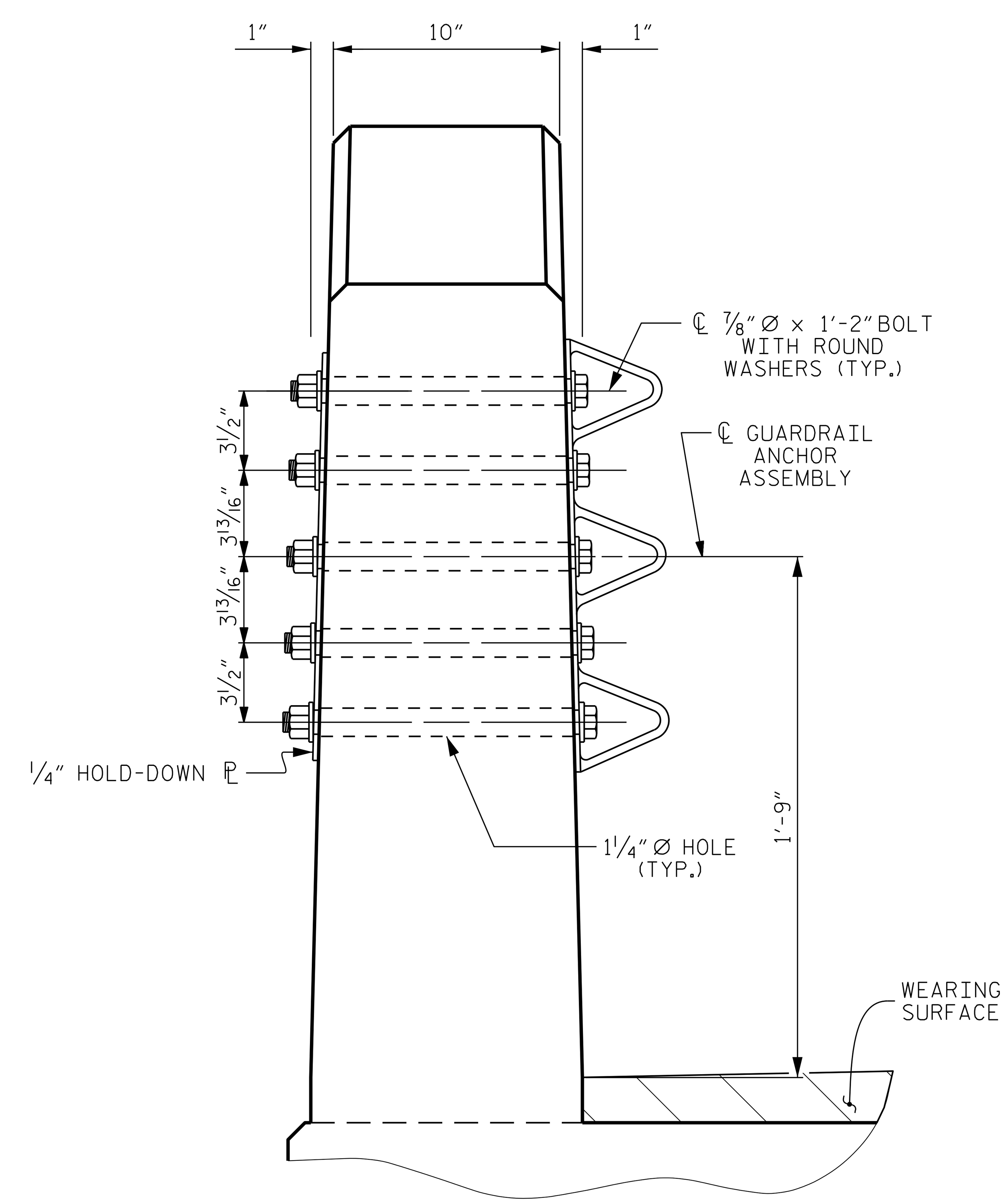
FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Div_3_300161_smu_cs3.dgn DATE: 2/13/2018 11:54:41 AM



PLAN



ELEVATION



SECTION E–E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

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.

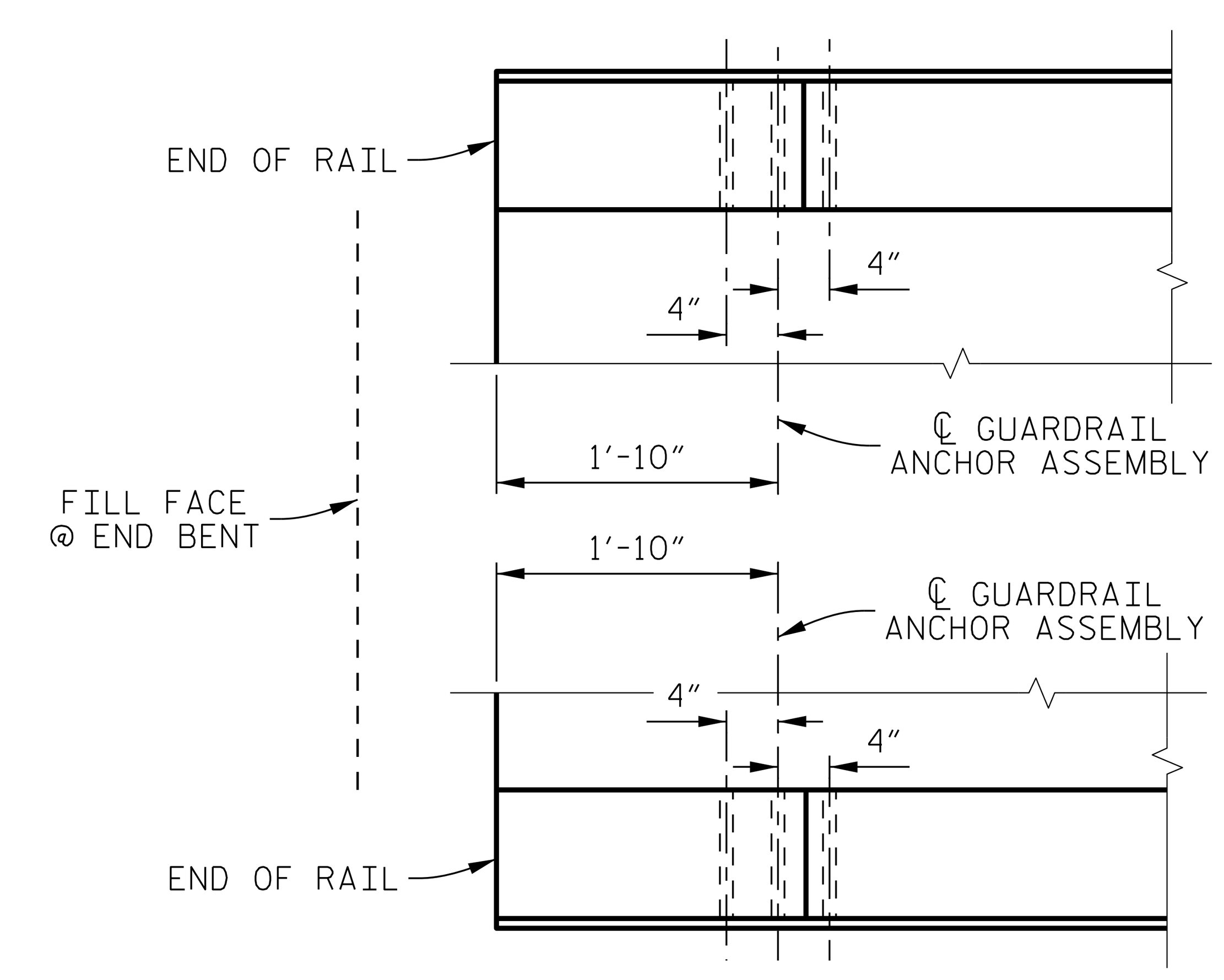
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

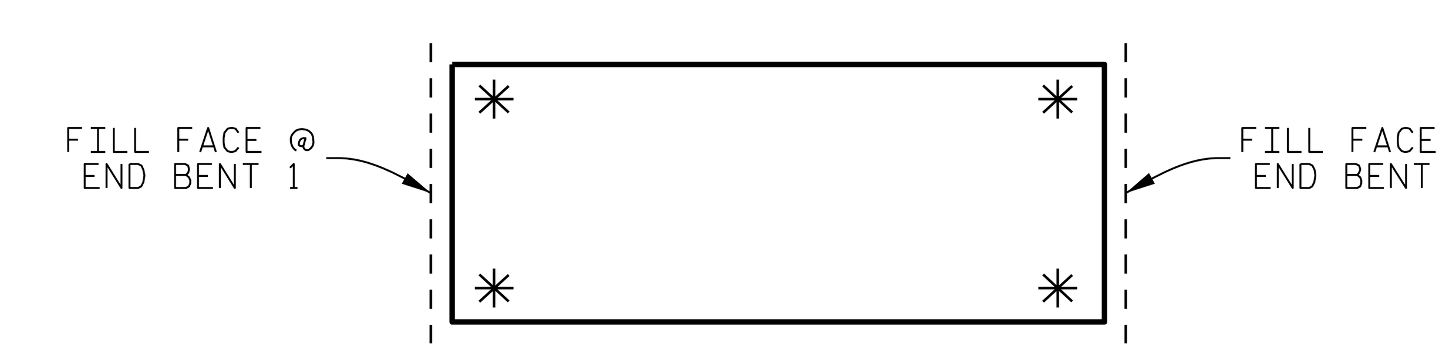
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER 2/13/2018

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

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

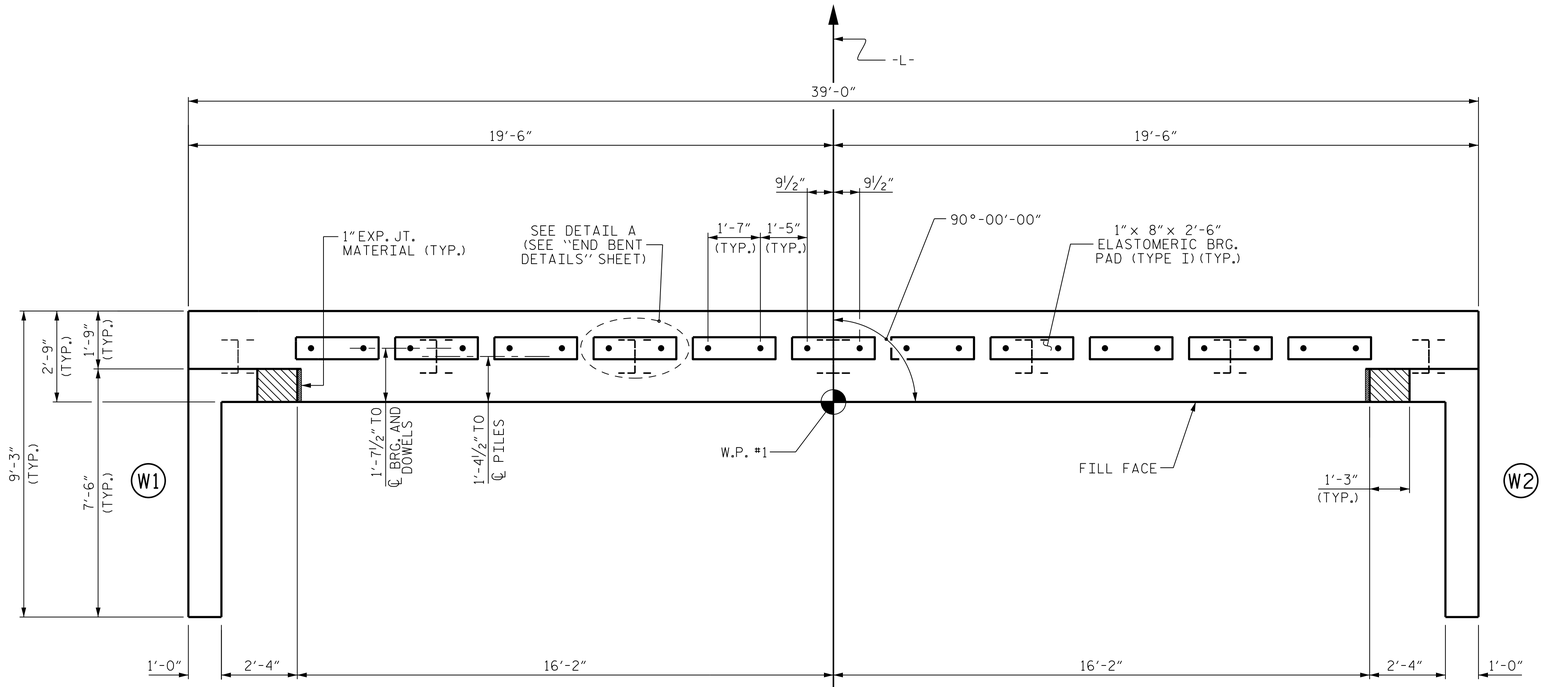
SHEET No. S1-8
TOTAL SHEETS 15

ASSEMBLED BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17

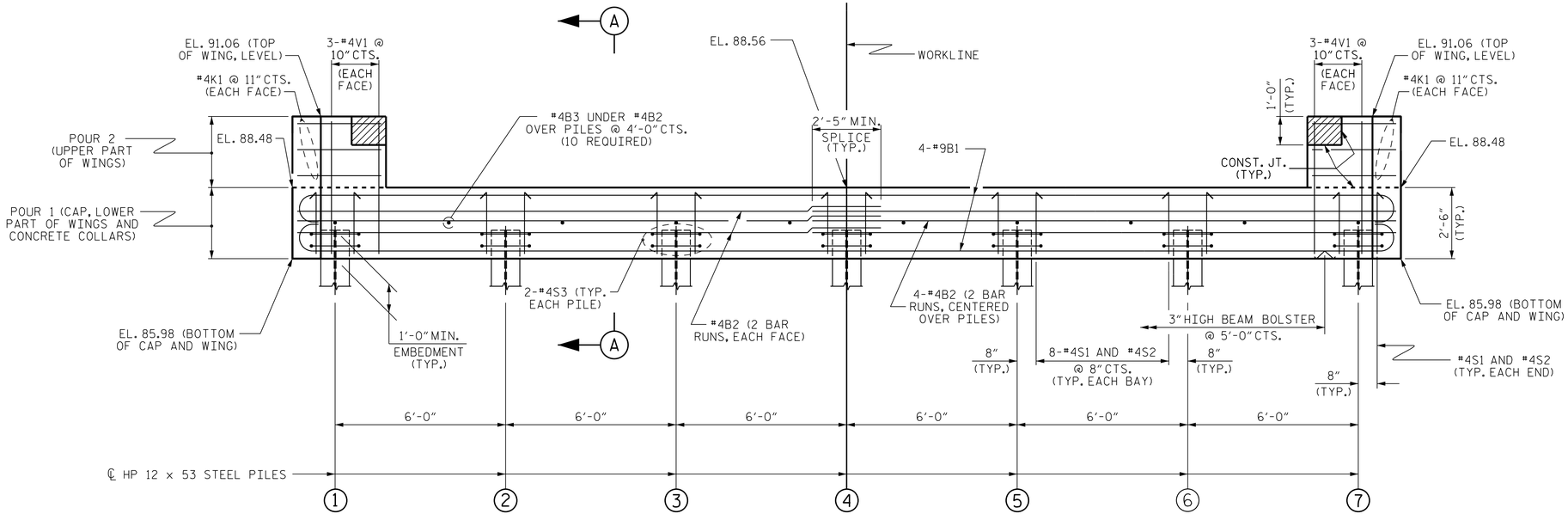
DRAWN BY: MAA 5/10	REV. 6/13	MAA/GM
CHECKED BY: GM 5/10	REV. 1/15	MAA/TMG
	REV. 12/17	MAA/THC

STD. No. GRA3

FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Div_3_30016l_smu_gr1.dgn
DATE: 2/13/2018 11:34:44 AM



PLAN



ELEVATION

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 ''END BENT DETAILS'' SHEET.

FOR WING DETAILS, SEE ''END BENT WING DETAILS'' SHEET.

FOR SECTION A-A, SEE ''END BENT DETAILS'' SHEET.

FOR TEMPORARY DRAINAGE AT END BENT DETAIL, SEE ''END BENT DETAILS'' SHEET.

CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS. SEE ''CORROSION PROTECTION FOR STEEL PILES DETAIL'' ON ''END BENT DETAILS'' SHEET.

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 –L–

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/13/2018

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-9
1			3			TOTAL SHEETS
2			4			15

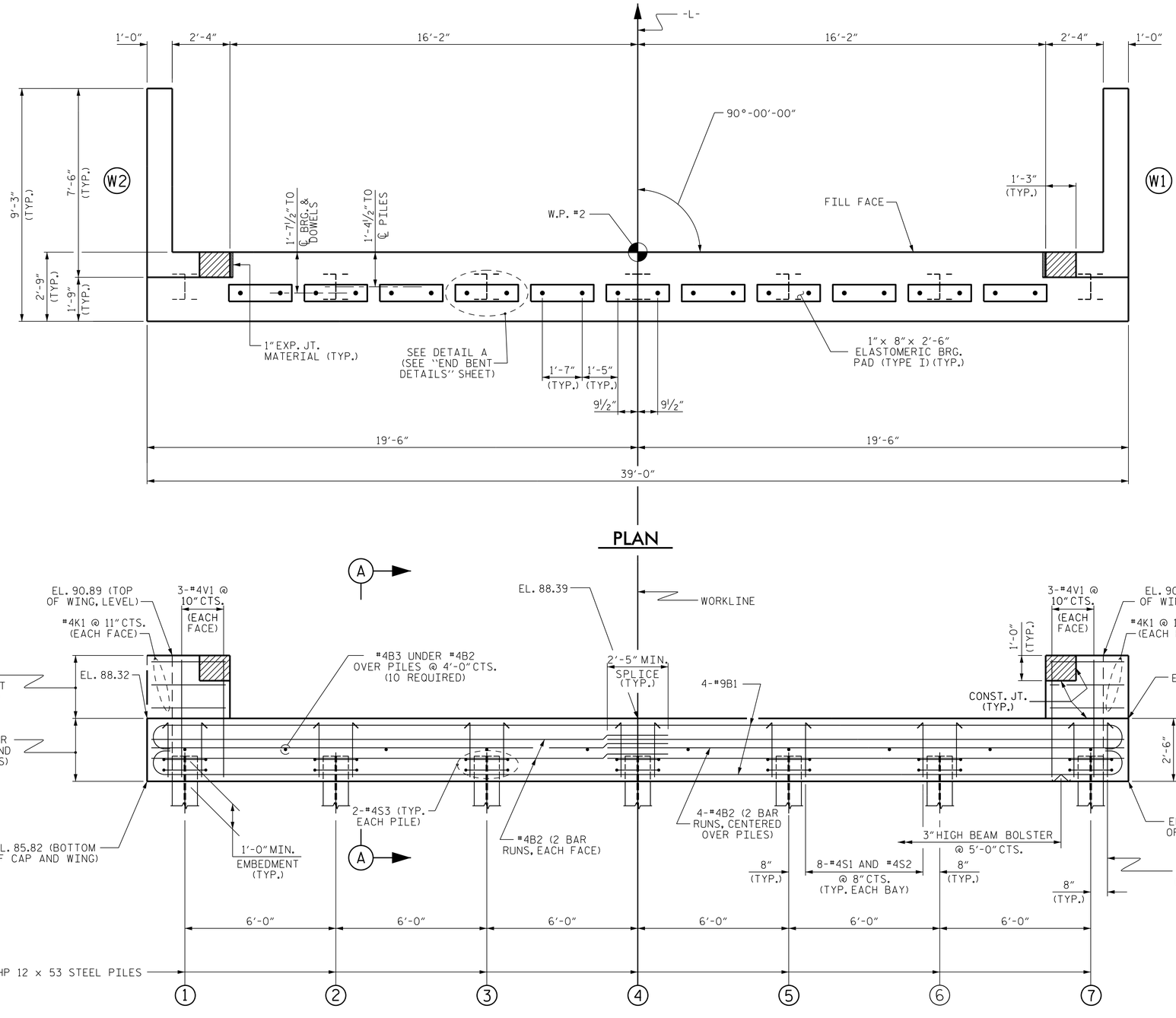
ASSEMBLED BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DRAWN BY :	DGE 01/10	REV. 4/15	MAA/TMG
CHECKED BY :	MKT 01/10		

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STD. No. EB_33_90S

FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Div_3_300161_smu_eb1.dgn
DATE: 2/13/2018 11:34:45 AM



PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 –L–

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
4/13/2018

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1–10
1			3			TOTAL SHEETS
2			4			15

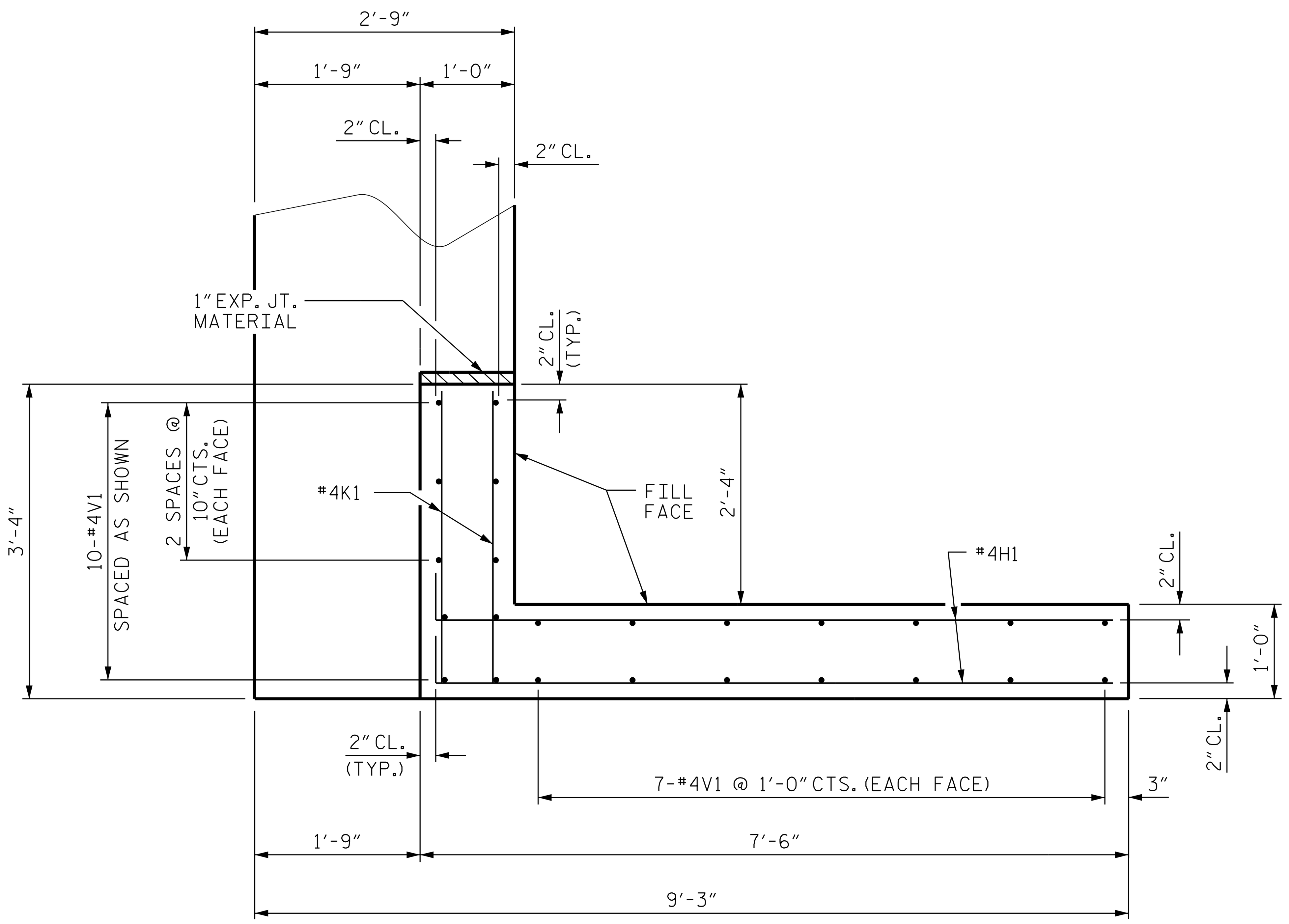
PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	9–17
CHECKED BY :	A. D. SHAH	DATE :	9–17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12–17

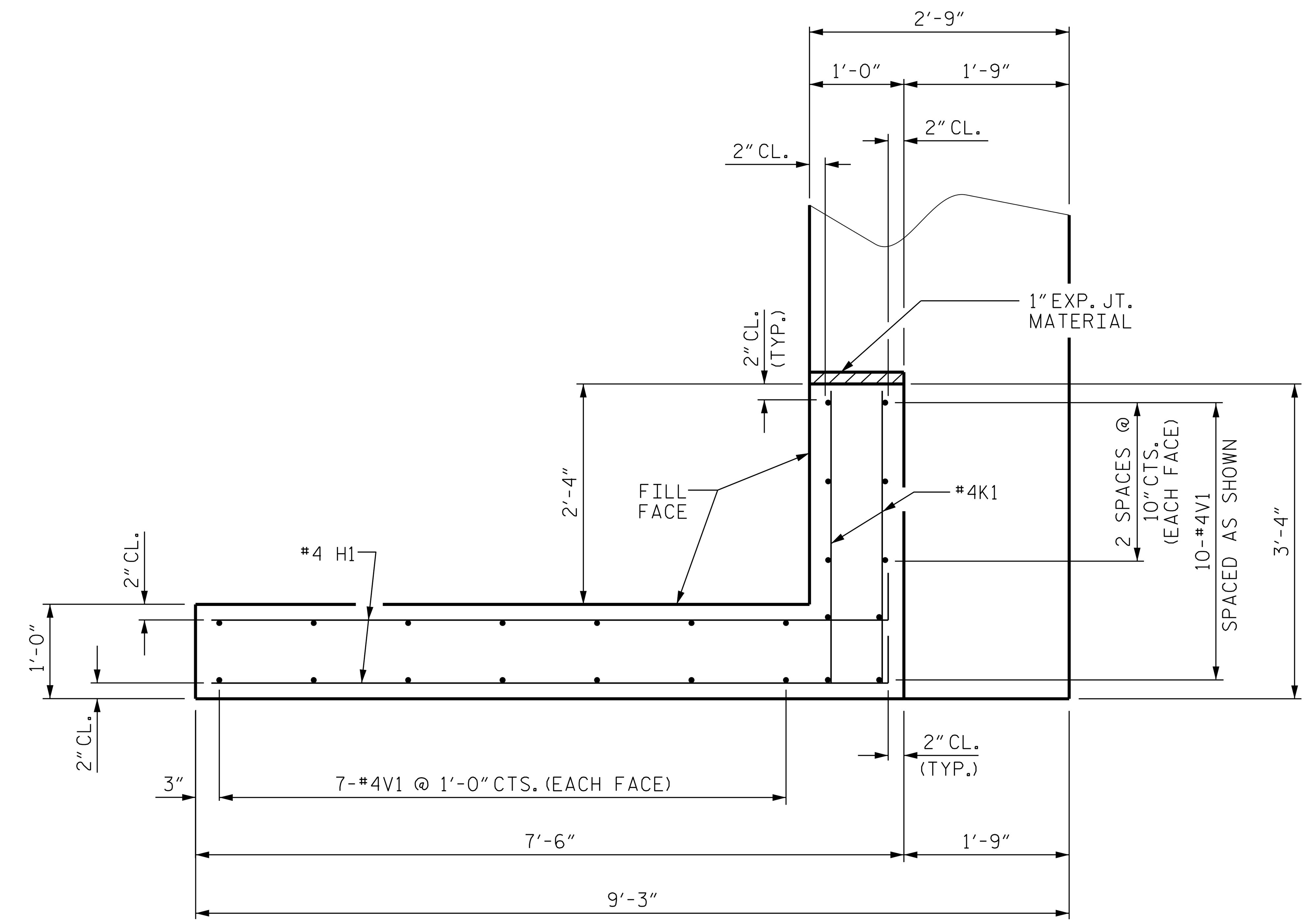
ASSEMBLED BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DRAWN BY :	DGE 01/10	REV. 4/15	MAA/TMG
CHECKED BY :	MKT 01/10		

STD. No. EB_33_90S

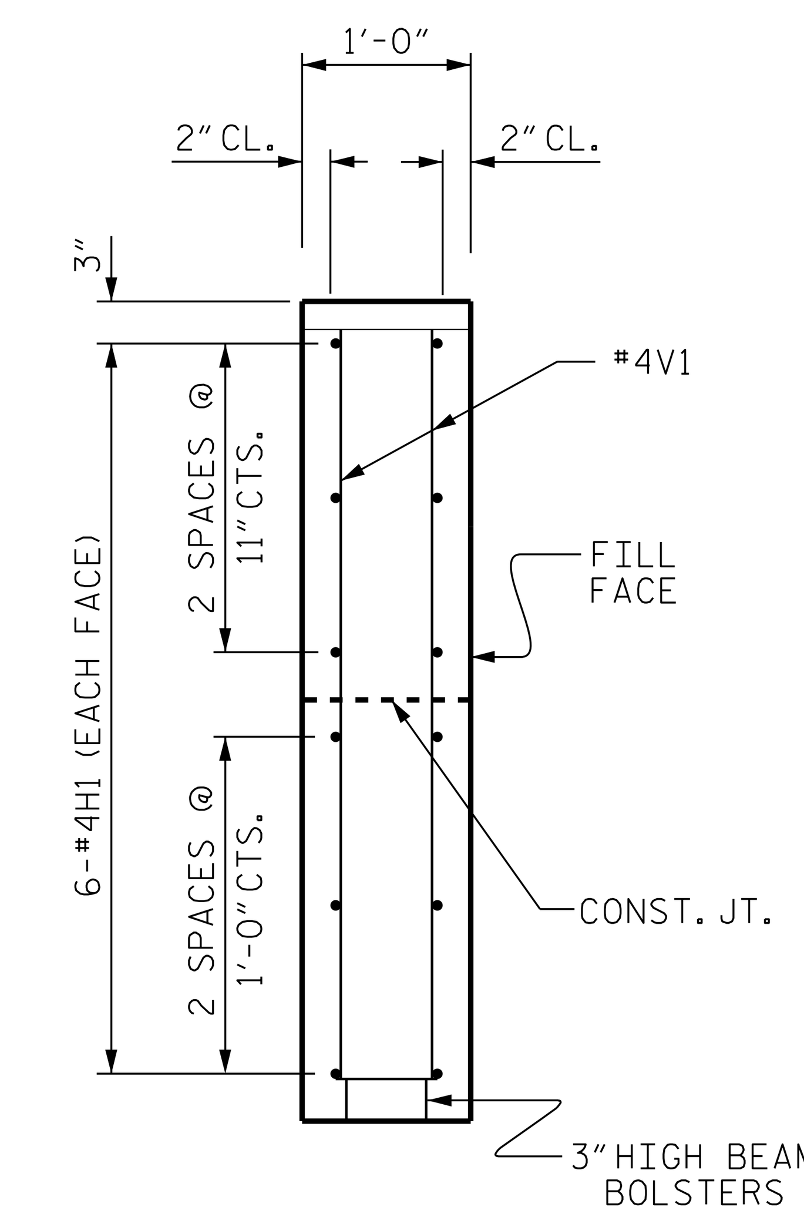
FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Dv_3_300161_smu_eb21.dgn
DATE: 2/3/2018 11:34:47 AM



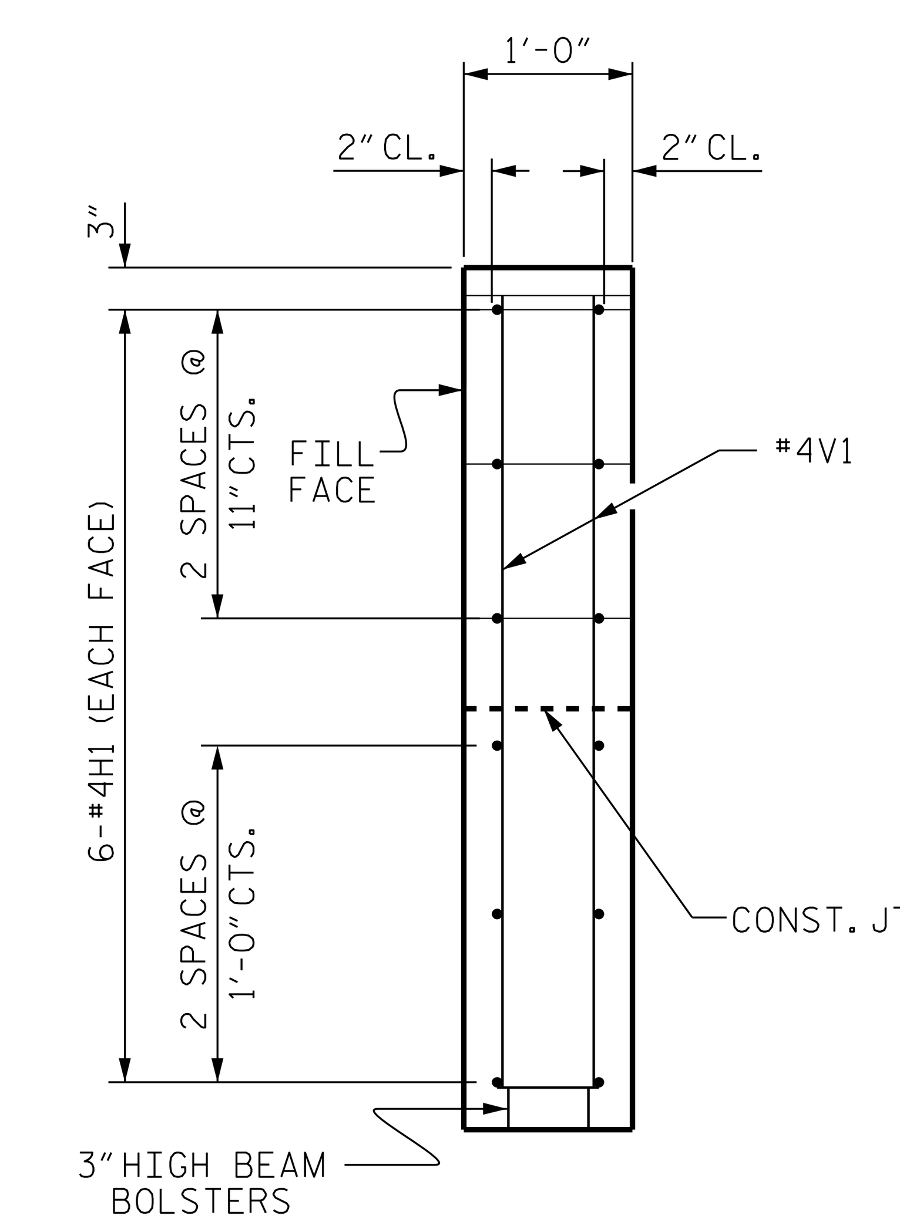
PLAN OF WING (W1)



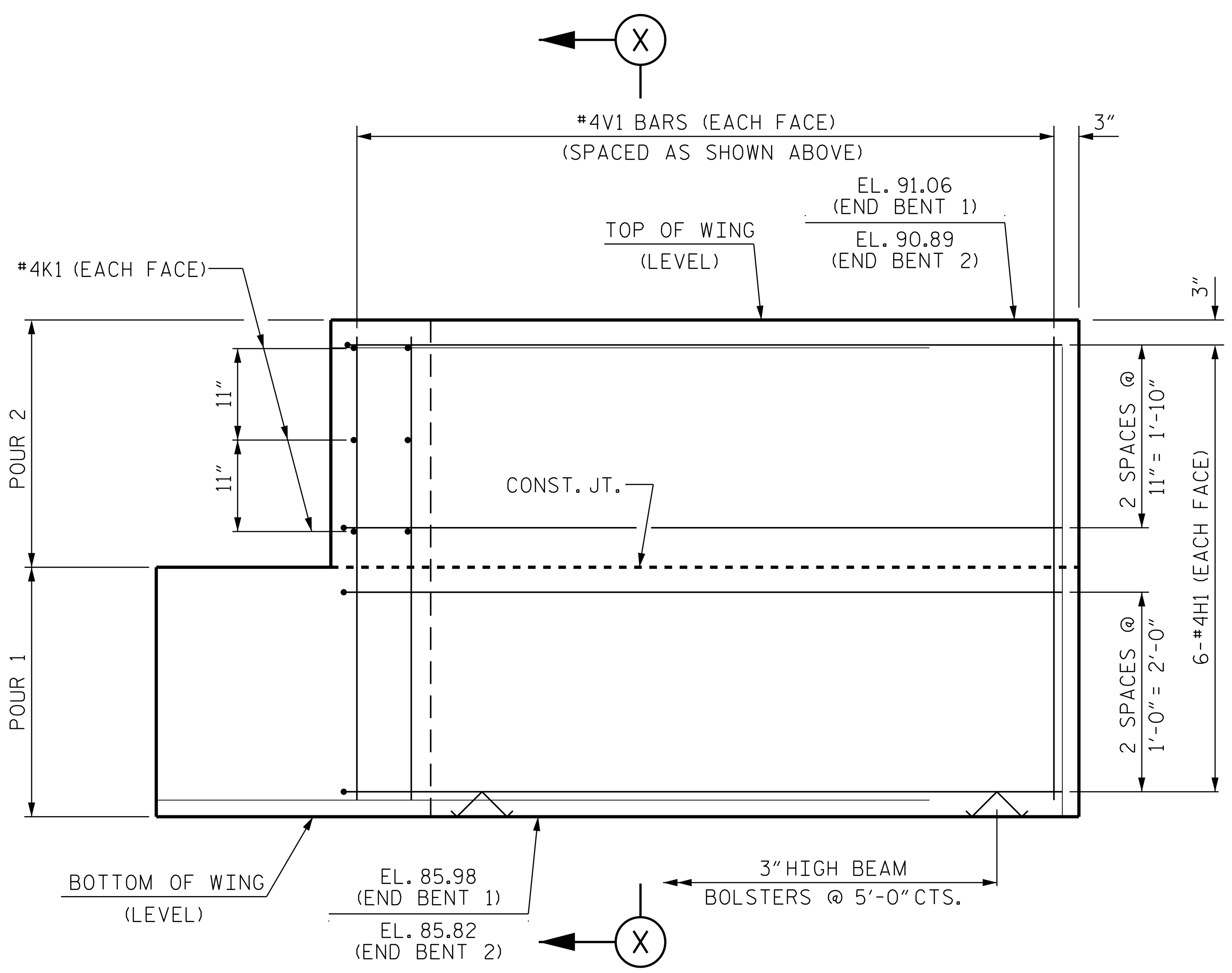
PLAN OF WING (W2)



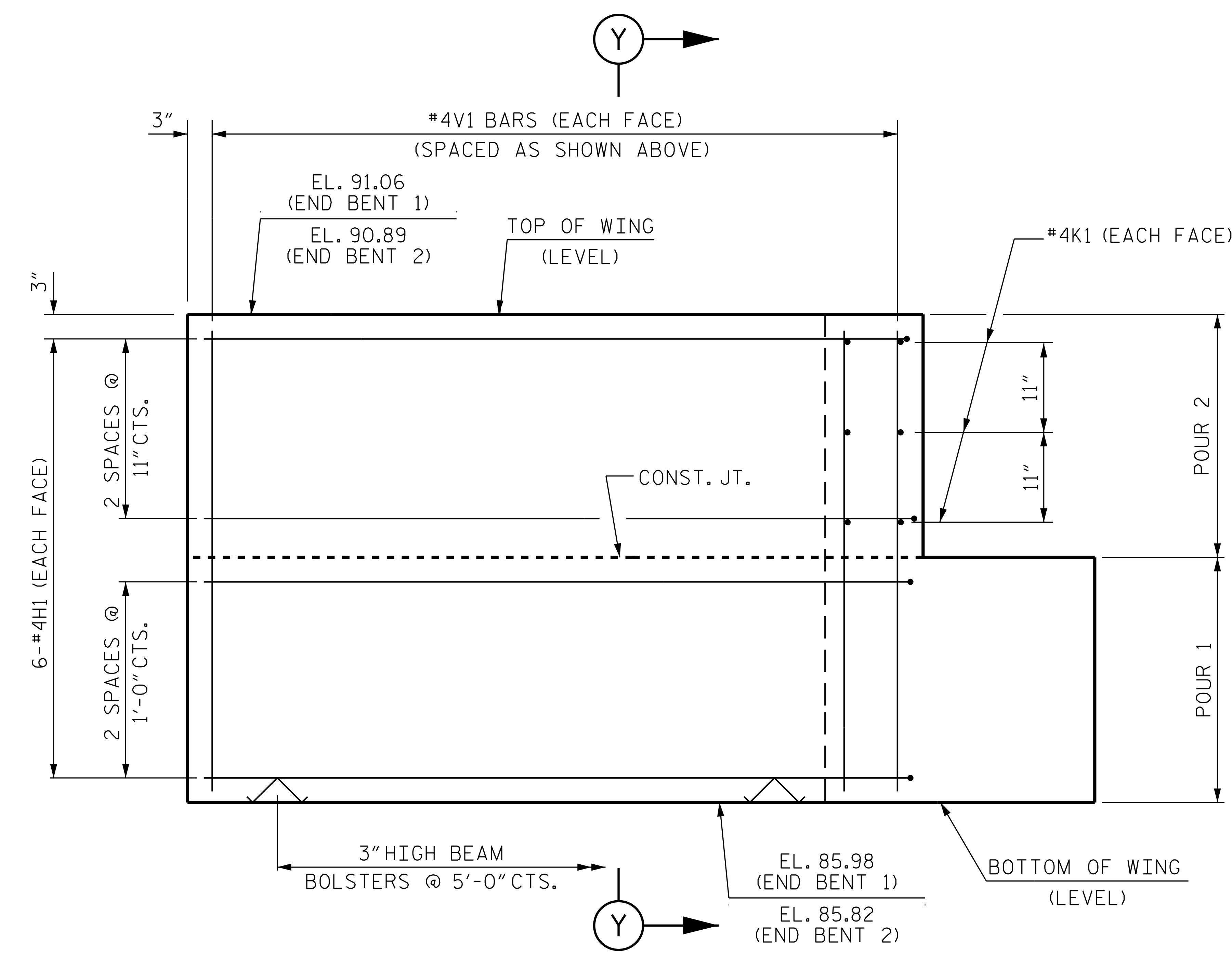
SECTION X–X



SECTION Y–Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.3.R.58
DUPLIN COUNTY
STATION: 13+68.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT WING DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/13/2018

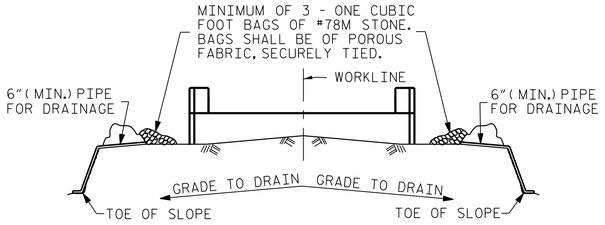
REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			S1-11
1			3					TOTAL SHEETS
2			4					15

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

ASSEMBLED BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DRAWN BY : DGE 02/10	REV. 4/15	MAA/TMG	
CHECKED BY : MKT 02/10			

STD. No. EB_33_90S

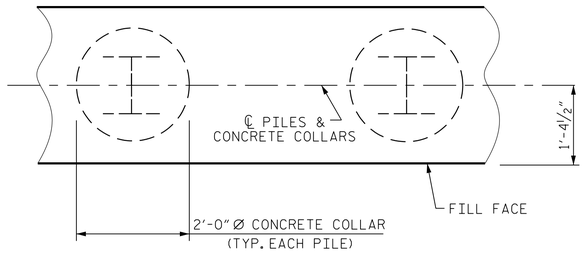


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

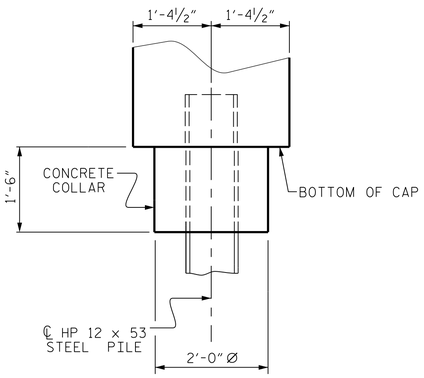
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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



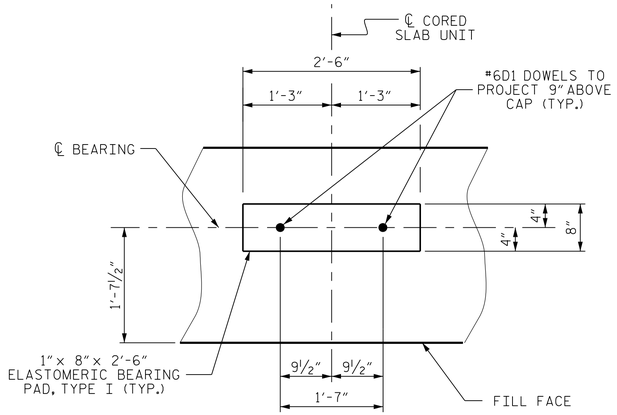
PLAN



ELEVATION

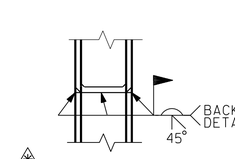
CORROSION PROTECTION FOR STEEL PILES DETAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

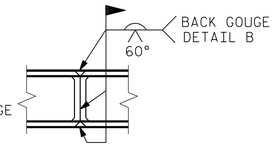


DETAIL A

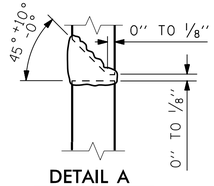
END BENT 1 SHOWN, END BENT 2 SIMILAR.



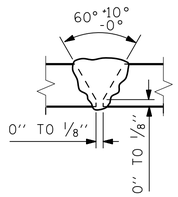
PILE VERTICAL



PILE HORIZONTAL OR VERTICAL



DETAIL A

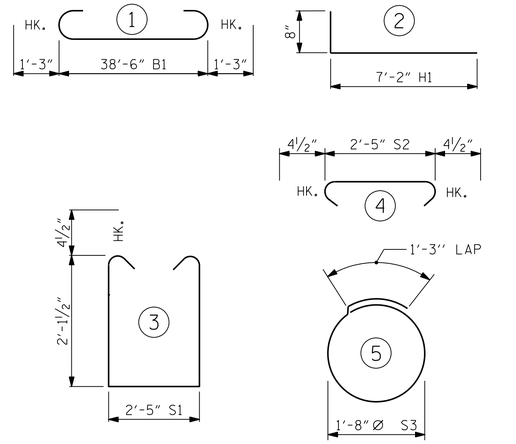


DETAIL B

POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT 1	END BENT 2
PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES 7 EACH	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES 7 EACH
HP 12 x 53 STEEL PILES 7 REQUIRED 350.0 LIN. FT.	HP 12 x 53 STEEL PILES 7 REQUIRED 350.0 LIN. FT.
PILE REDRIVES 7 EACH	STEEL PILE POINTS 7 EACH
	PILE REDRIVES 7 EACH

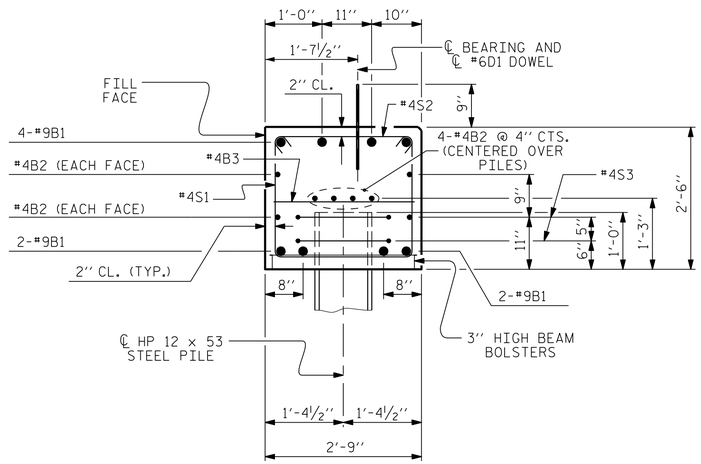
BILL OF MATERIAL FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	41'-0"	1,115
B2	16	#4	STR	20'-7"	220
B3	10	#4	STR	2'-5"	16
D1	22	#6	STR	1'-6"	50
H1	24	#4	2	7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	50	#4	3	7'-5"	248
S2	50	#4	4	3'-2"	106
S3	14	#4	5	6'-6"	61
V1	48	#4	STR	4'-8"	150

REINFORCING STEEL (FOR ONE END BENT) 2,115 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR 1	CAP, LOWER PART OF WINGS AND CONCRETE COLLARS	12.4 C.Y.
POUR 2	UPPER PART OF WINGS	1.8 C.Y.
TOTAL CLASS A CONCRETE		14.2 C.Y.



SECTION A–A

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

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 –L–

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
2/13/2018

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1-12
1			3			TOTAL SHEETS
2			4			15

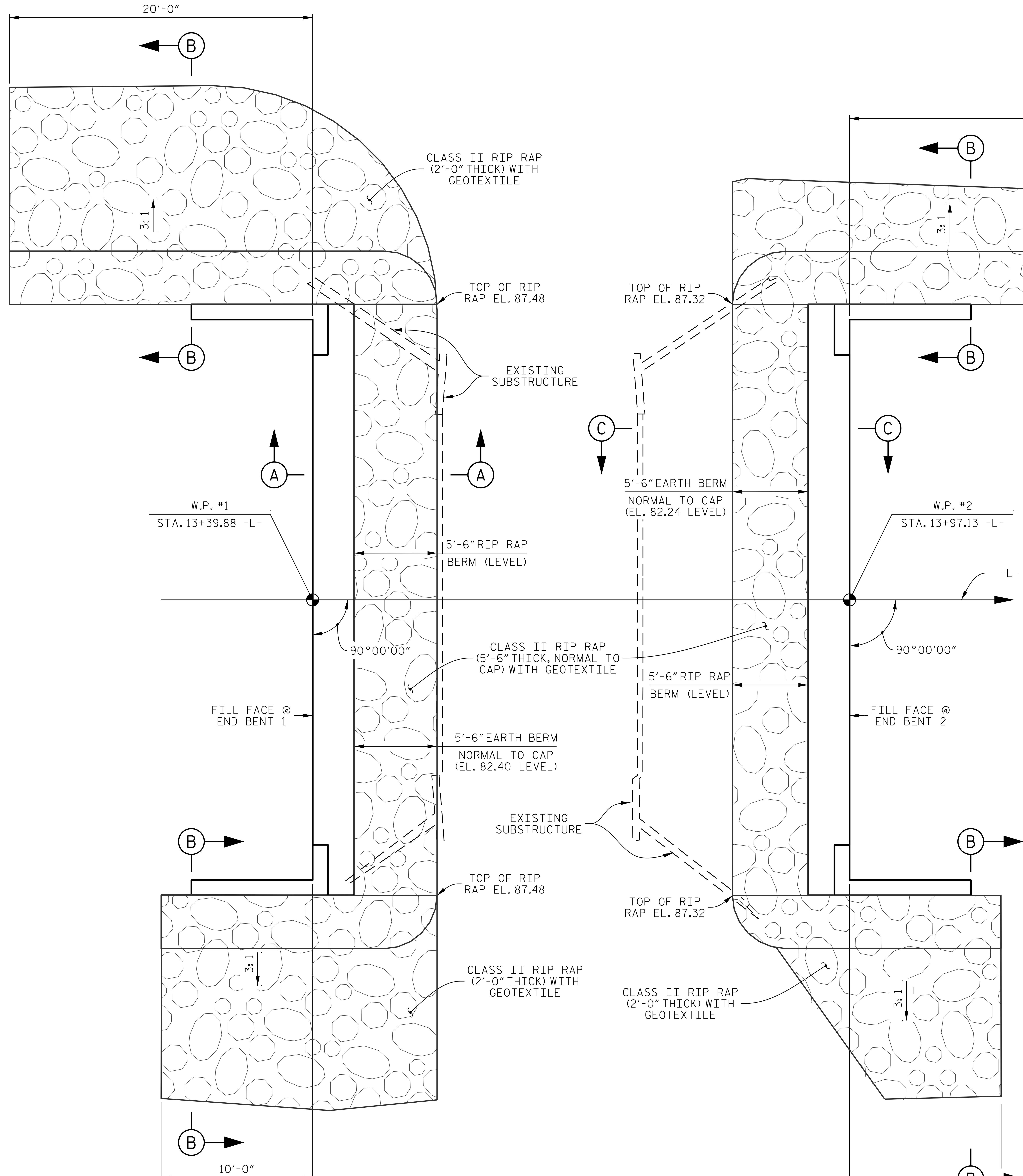
ASSEMBLED BY :	K. E. LOFTON	DATE : 9-17
CHECKED BY :	A. D. SHAH	DATE : 9-17
DRAWN BY : DGE	12/09	REV. 4/17 MAA/THC
CHECKED BY : MKT	01/10	

DRAWN BY :	K. E. LOFTON	DATE : 9-17
CHECKED BY :	A. D. SHAH	DATE : 9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE : 12-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STD. No. EB_33_90S

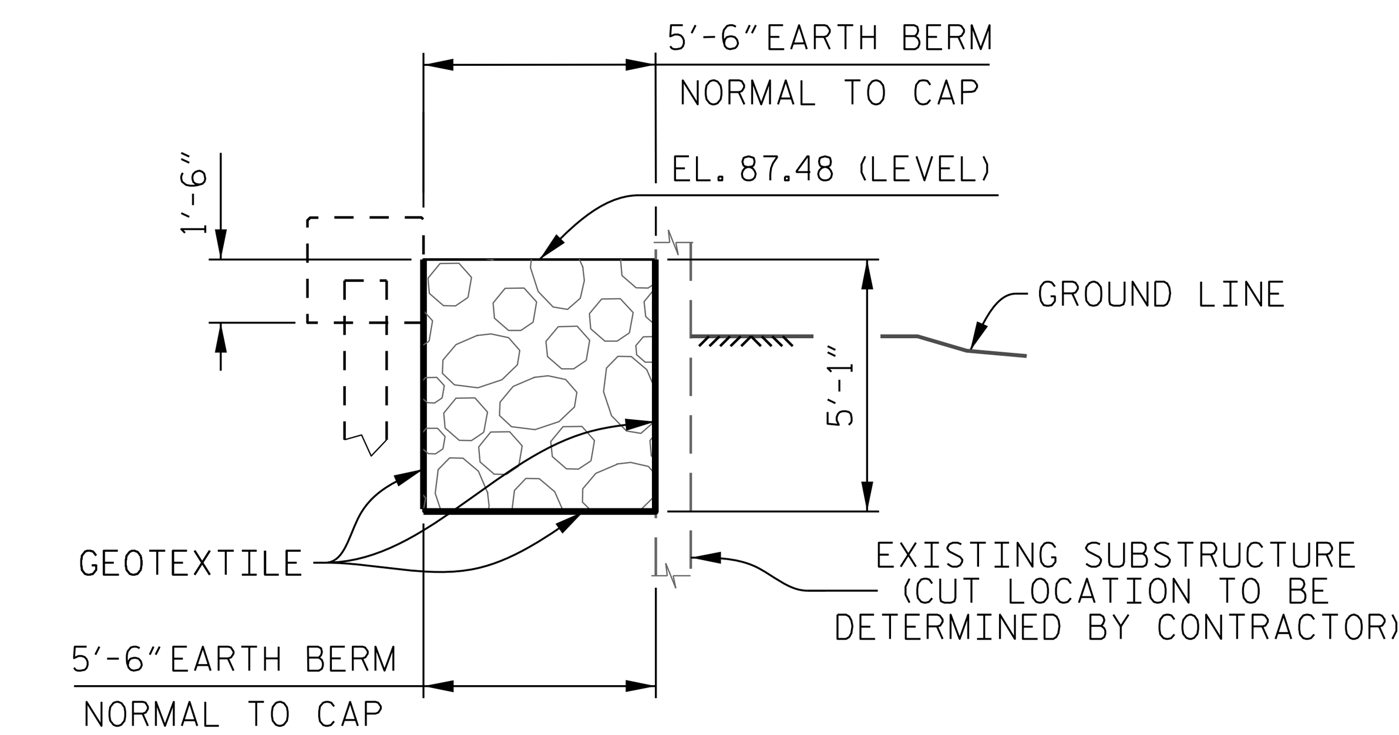
FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP Div_3_300161_smu_eb124.dgn
DATE: 2/13/2018 11:34:51 AM



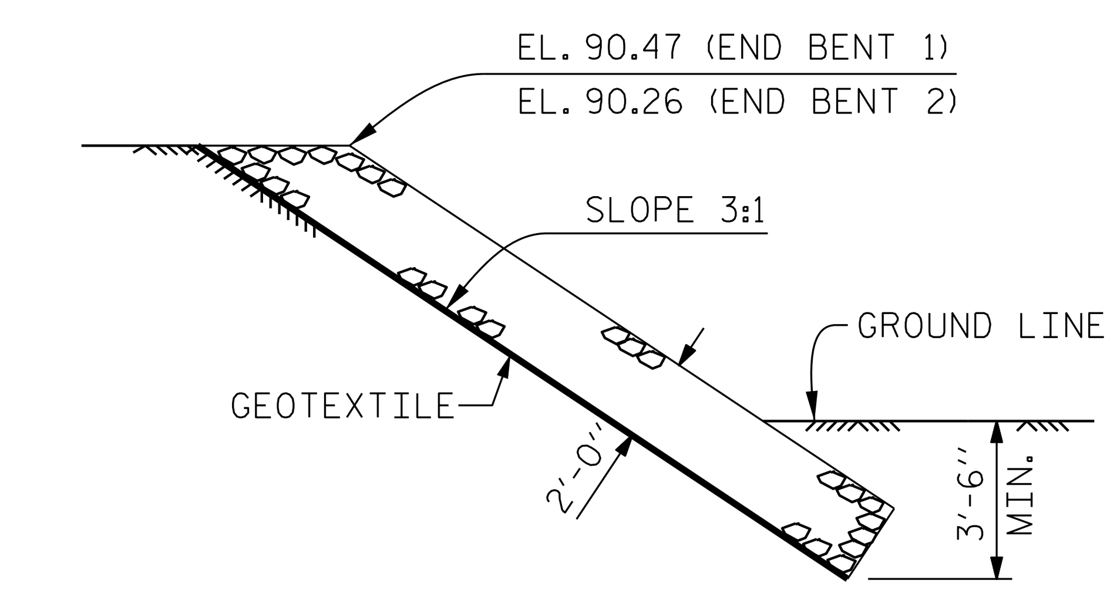
END BENT 1

PLAN

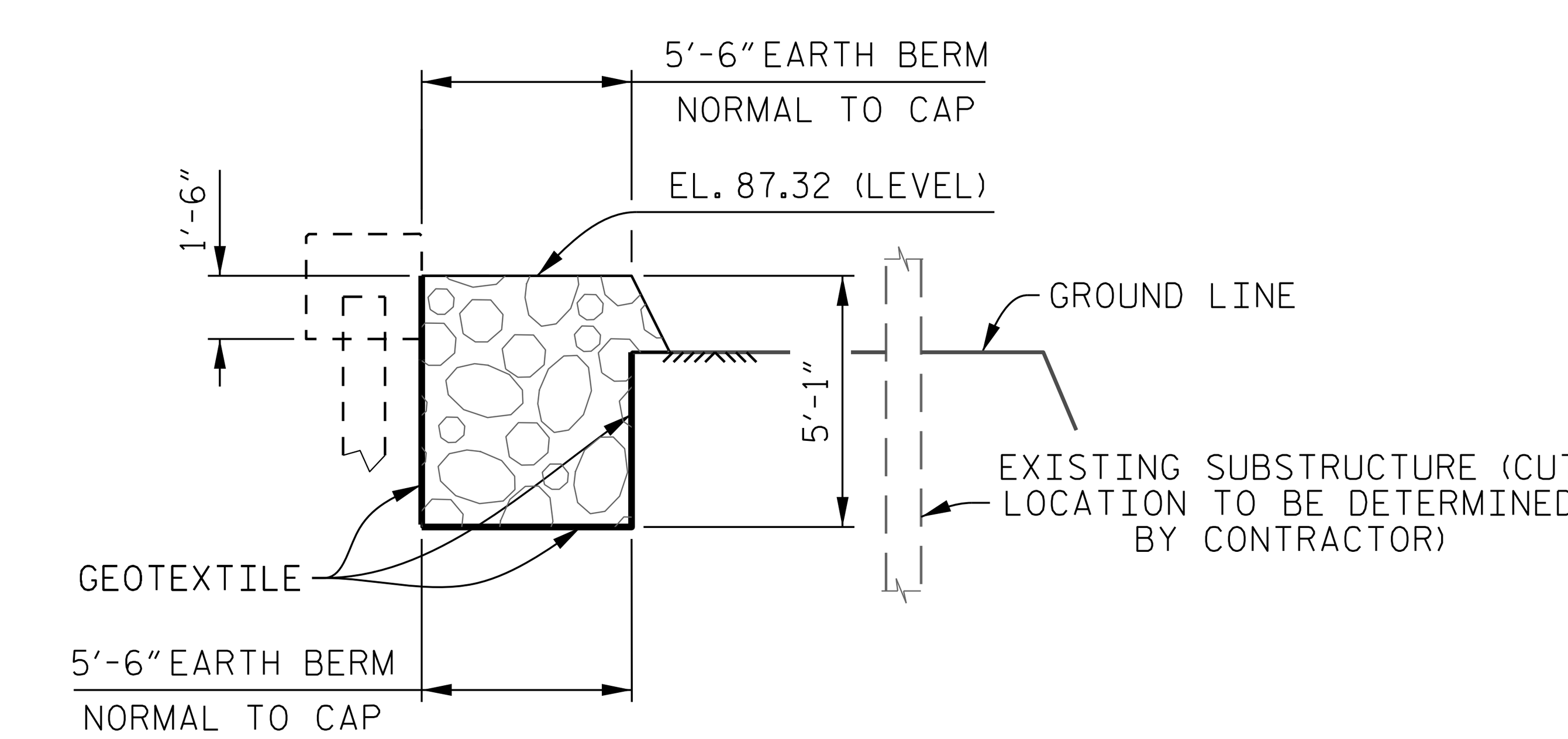
END BENT 2



SECTION A–A



SECTION B–B



SECTION C–C

ESTIMATED QUANTITIES

BRIDGE @ STA. 13+68.50 -L-	RIP RAP CLASS II (2'-0" THICK) (TONS)	GEOTEXTILE FOR DRAINAGE (SQUARE YARDS)
END BENT 1	110	125
END BENT 2	140	160

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
2/26/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

REVISIONS

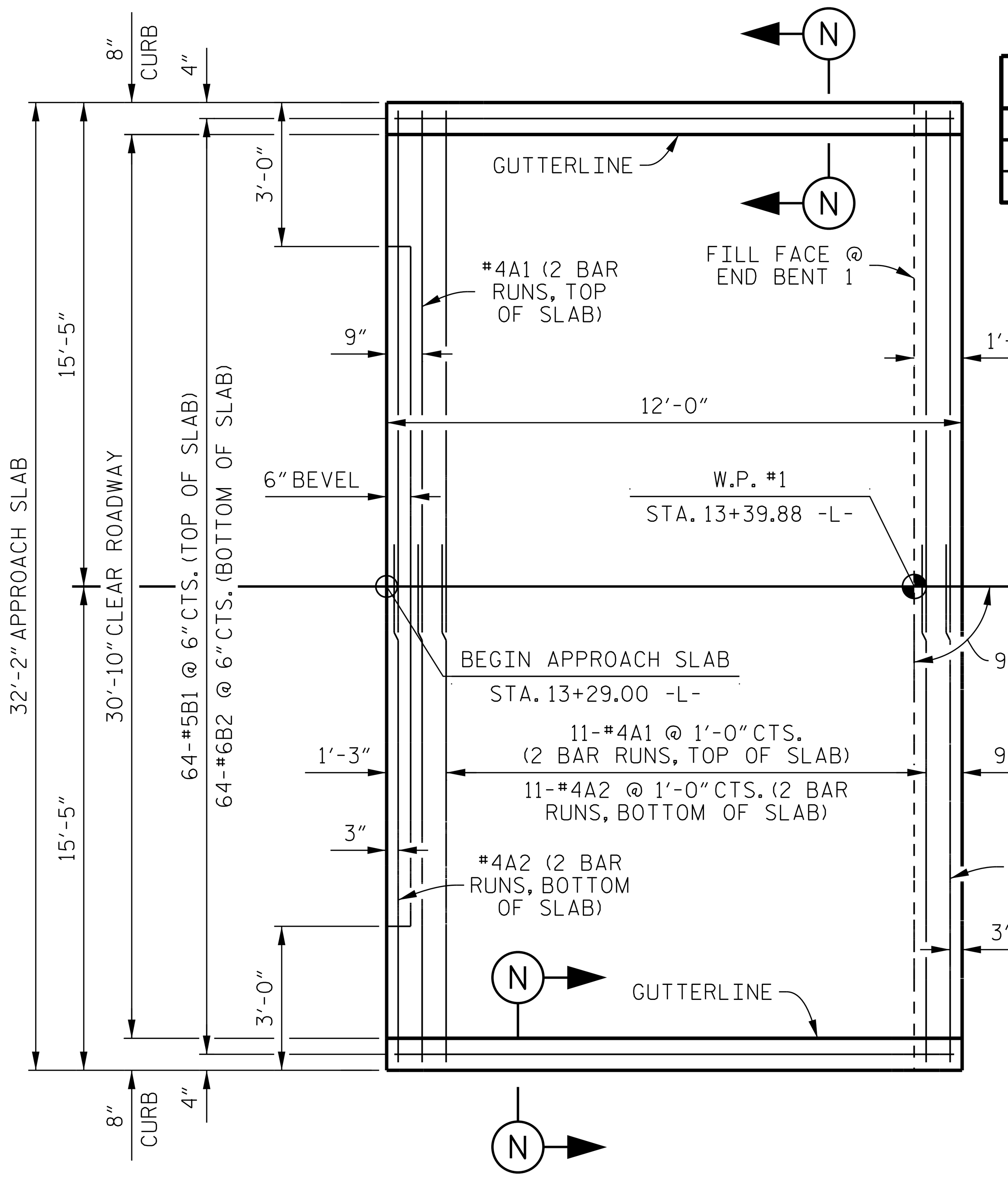
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

SHEET No. S1-13
TOTAL SHEETS 15
STR. #1

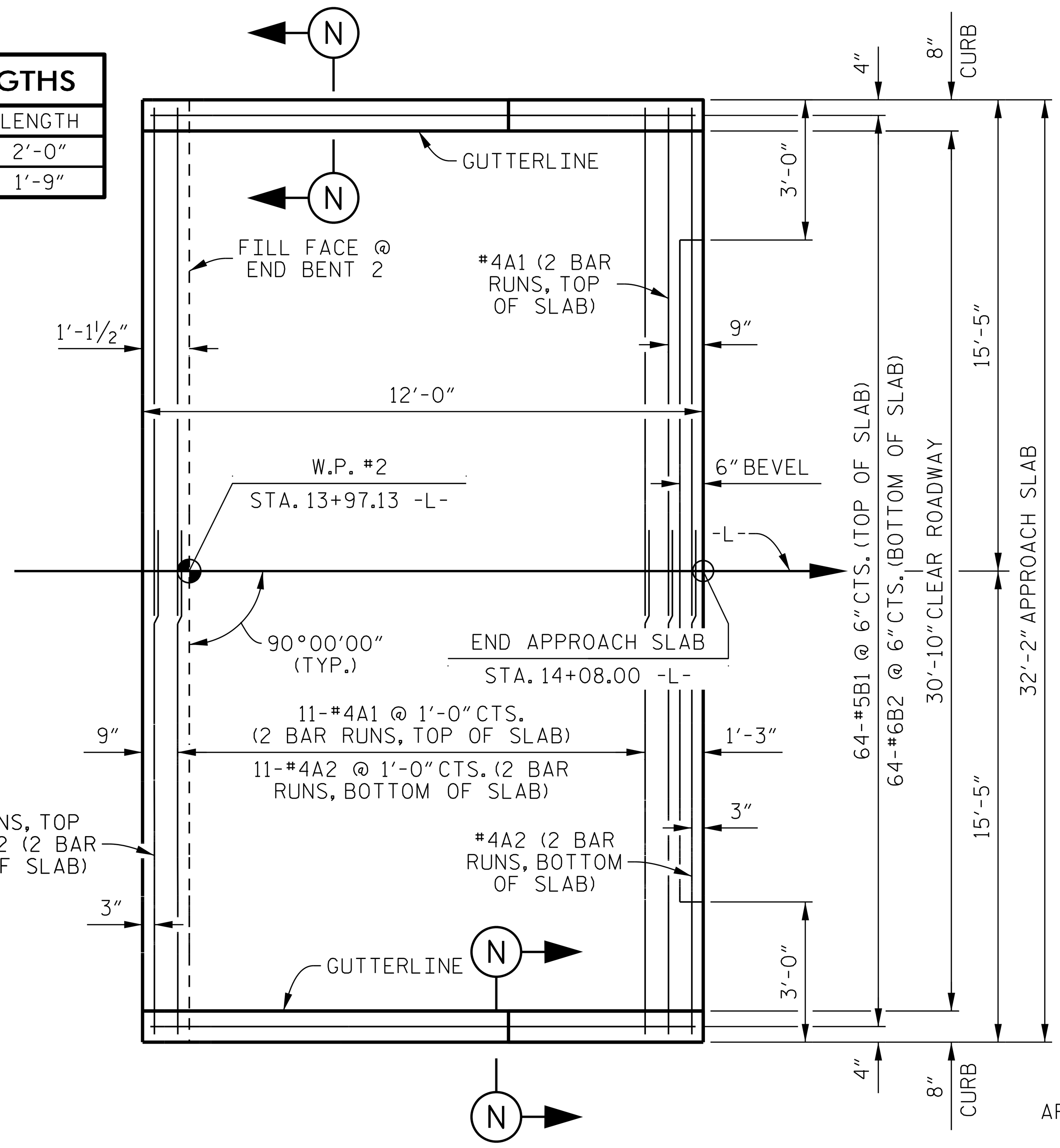
FILE: j:\division 3 bridge replacement\17BP.3.R.58 Duplin 161\Structures\Plans\Final\BP_Div_3_300161_smu_rrl.dgn
DATE: 2/6/2018 10:43:15 AM

SPLICE LENGTHS

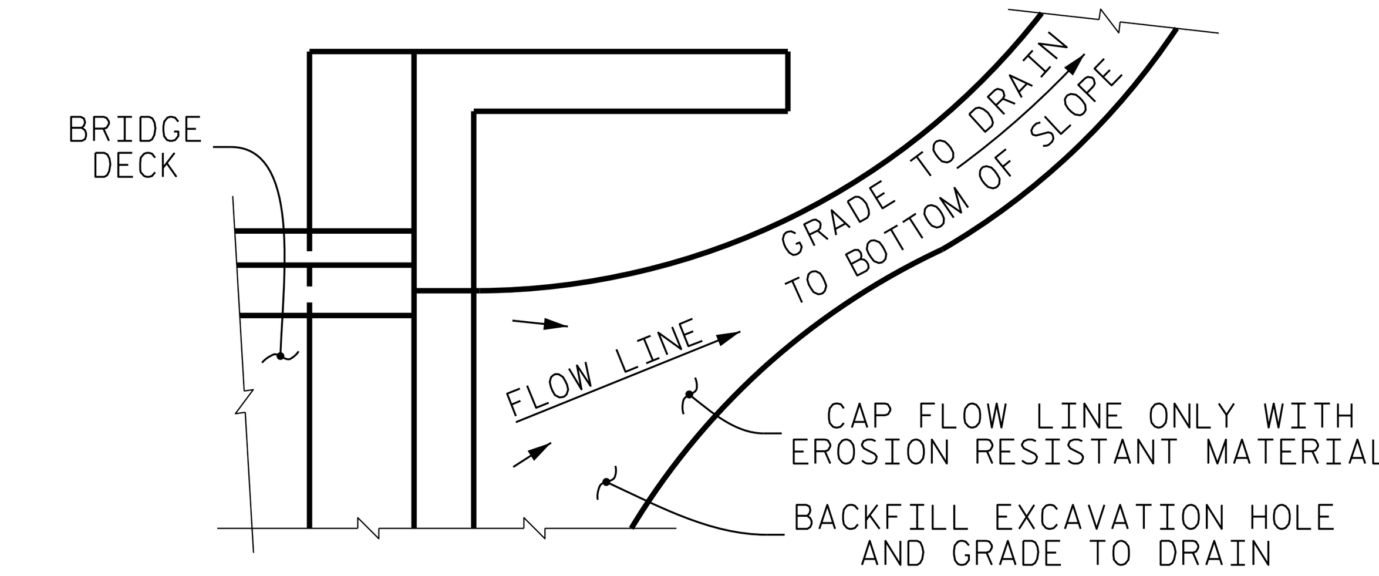
BAR	SIZE	LENGTH
A1	#4	2'-0"
A2	#4	1'-9"



PLAN OF APPROACH SLAB AT END BENT 1



PLAN OF APPROACH SLAB AT END BENT 2



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

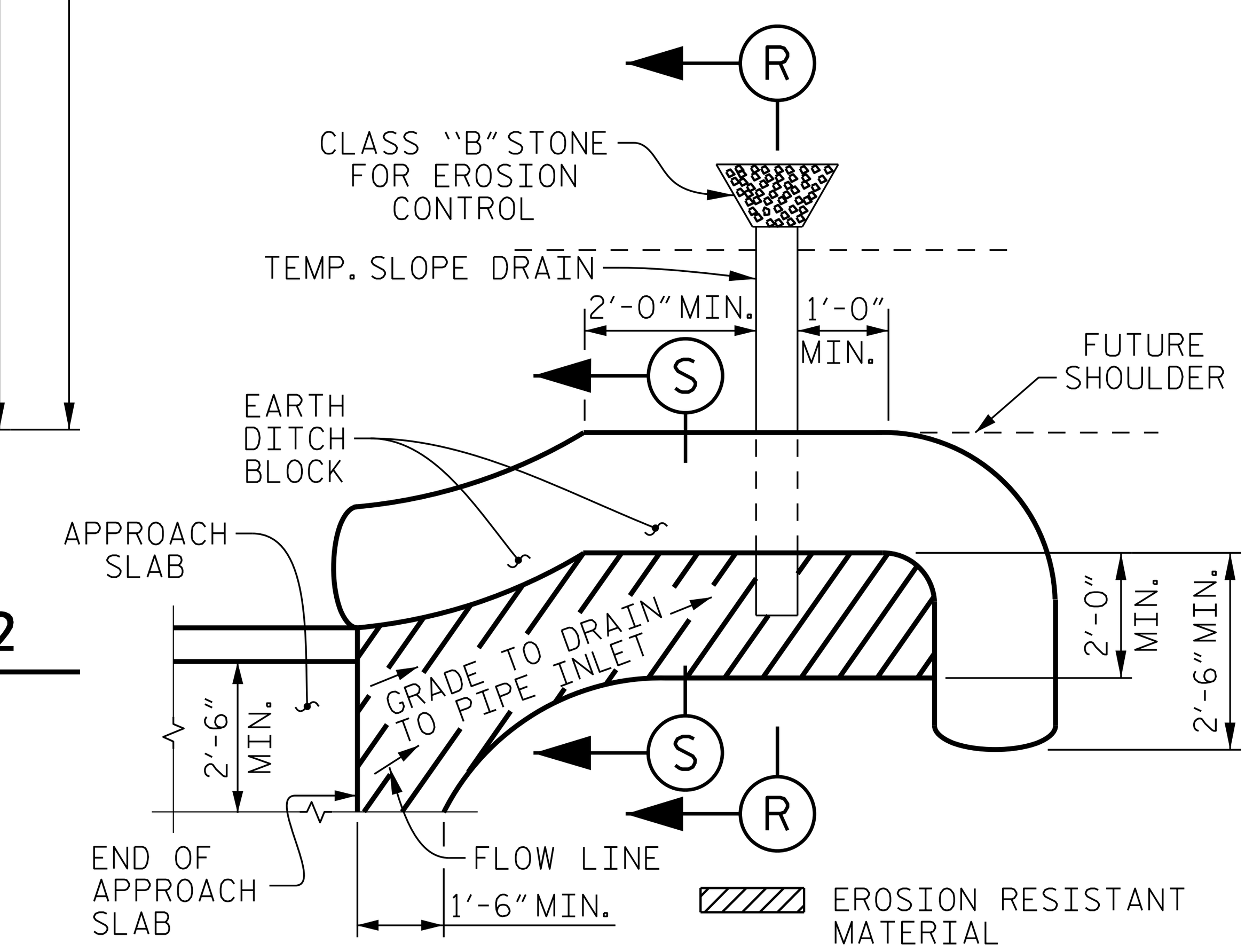
BILL OF MATERIAL

APPROACH SLAB AT END BENT 1

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'- 9"	291
* B1	64	#5	STR	11'- 2"	745
B2	64	#6	STR	11'- 8"	1,121
REINFORCING STEEL					1,412 LBS.
* EPOXY COATED REINFORCING STEEL					1,039 LBS.
CLASS "AA" CONCRETE					
POUR 1	SLAB AND CURB				18.4 CU. YDS.

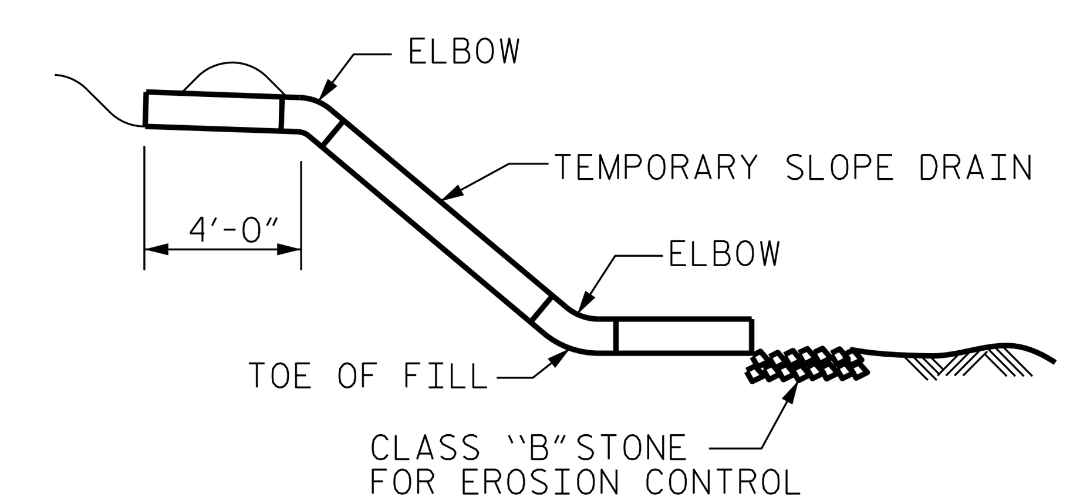
APPROACH SLAB AT END BENT 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	16'-11"	294
A2	26	#4	STR	16'- 9"	291
* B1	64	#5	STR	11'- 2"	745
B2	64	#6	STR	11'- 8"	1,121
REINFORCING STEEL					1,412 LBS.
* EPOXY COATED REINFORCING STEEL					1,039 LBS.
CLASS "AA" CONCRETE					
POUR 1	SLAB AND CURB				18.4 CU. YDS.

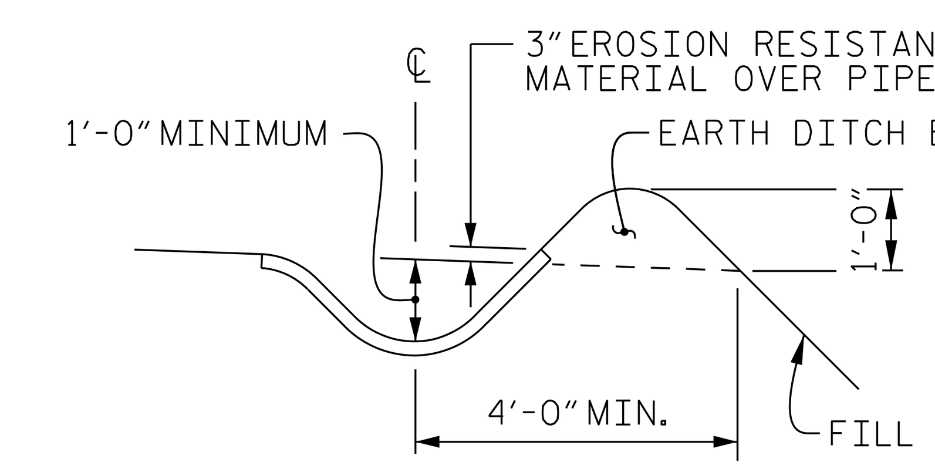


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



SECTION R–R



SECTION S–S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

NOTES

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

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

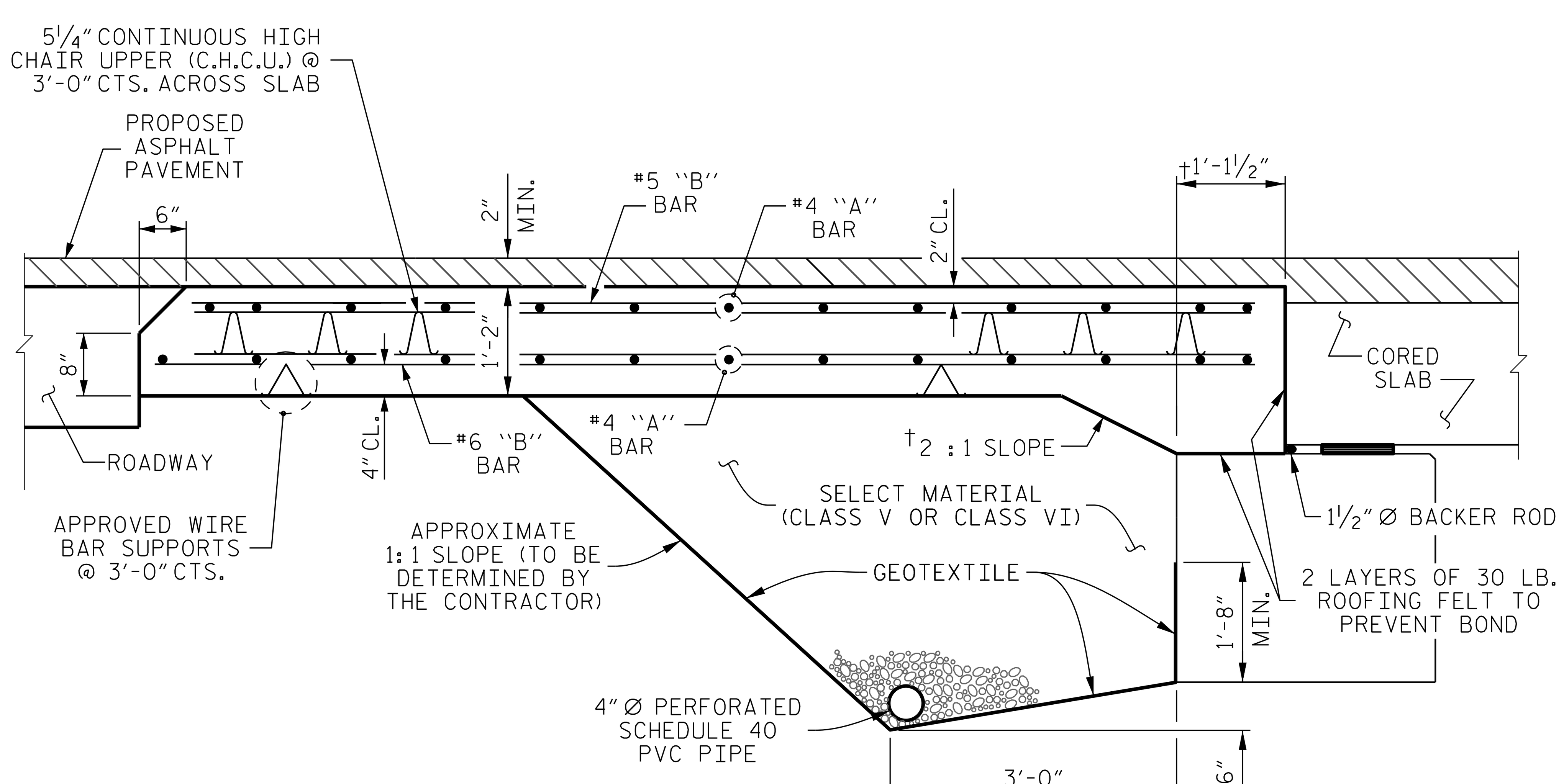
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

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

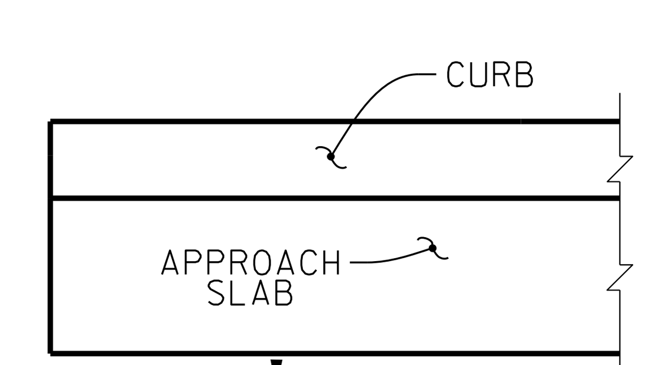
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



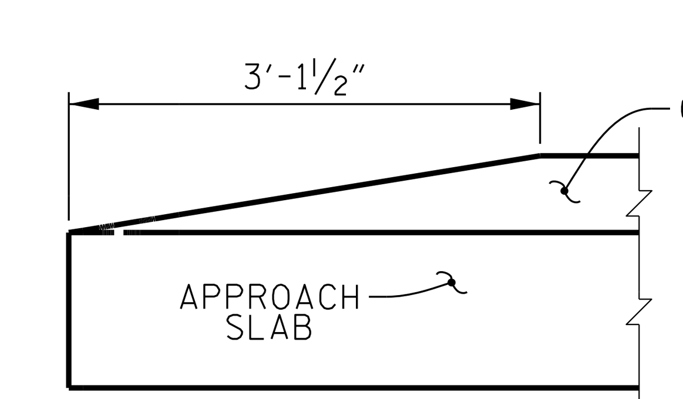
† NORMAL TO END BENT

SECTION THRU SLAB



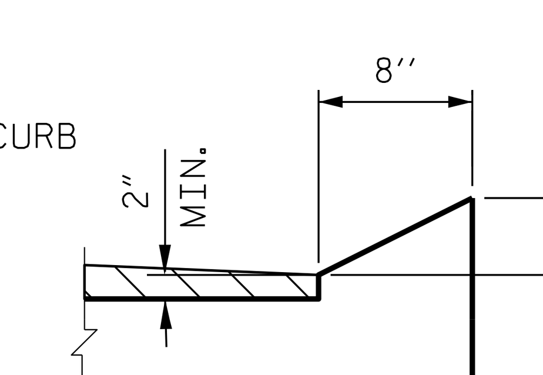
END OF CURB WITH SHOULDER BERM GUTTER

(END BENT 1 APPROACH SLAB)



END OF CURB WITHOUT SHOULDER BERM GUTTER

(END BENT 2 APPROACH SLAB)



SECTION N–N

CURB DETAILS

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 –L–

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

PLANS PREPARED BY : PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : K. E. LOFTON	DATE : 9-17	
CHECKED BY : A. D. SHAH	DATE : 9-17	
DESIGN ENGINEER : P. R. GALLAGHER	DATE : 12-17	

REVISIONS								SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:			S1-14
1			3					TOTAL SHEETS
2			4					15

STD. No. BAS_33_90S STR. #1

ASSEMBLED BY : K. E. LOFTON	DATE : 9-17	
CHECKED BY : A. D. SHAH	DATE : 9-17	
DRAWN BY : SHS/MAA 5-09 CHECKED BY : BCH 5-09	REV. 12-17	MAA/THC

FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Div_3_300161_smu_ast.dgn DATE: 2/3/2018 11:35:09 AM

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - ¾" 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 ¾" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

PROJECT NO. 17BP.3.R.58

DUPLIN COUNTY

STATION: 13+68.50 –L–

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD NOTES

ENGLISH

JANUARY, 1990

DRAWN BY :	K. E. LOFTON	DATE :	9-17
CHECKED BY :	A. D. SHAH	DATE :	9-17
DESIGN ENGINEER :	P. R. GALLAGHER	DATE :	12-17

PLANS PREPARED BY :
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

STD. No. SN STR. #1

FILE: j:\division 3 bridge replacement\17bp.3.r.58 duplin 161\structures\plans\final\BP_Div._3_300161_smu_sn1.dgn
DATE: 2/13/2018 11:35:11 AM

REV. 6-16-95 EEM (J) RGW
REV. 8-16-99 RWW (J) LES
REV. 5-7-03 RWW (J) JTE
REV. 5-1-06 TLA (J) GM
REV. 10-1-11 MAA (J) GM
REV. 12-17 MAA (J) THC