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with their signature on that page.**

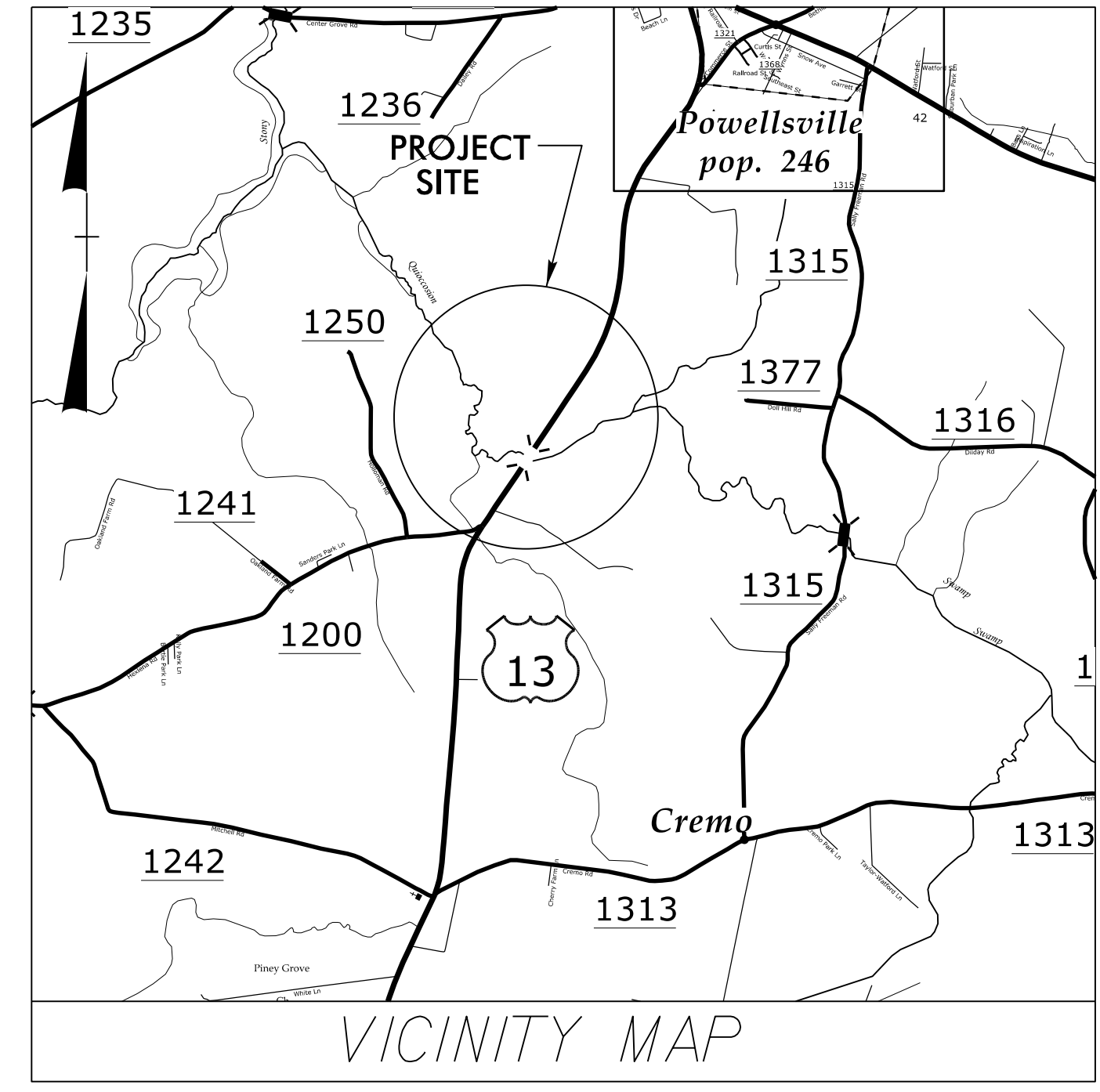
**This file or an individual page
shall not be considered a certified document.**

09/08/2019

TIP PROJECT: B-4916

CONTRACT: C204206

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

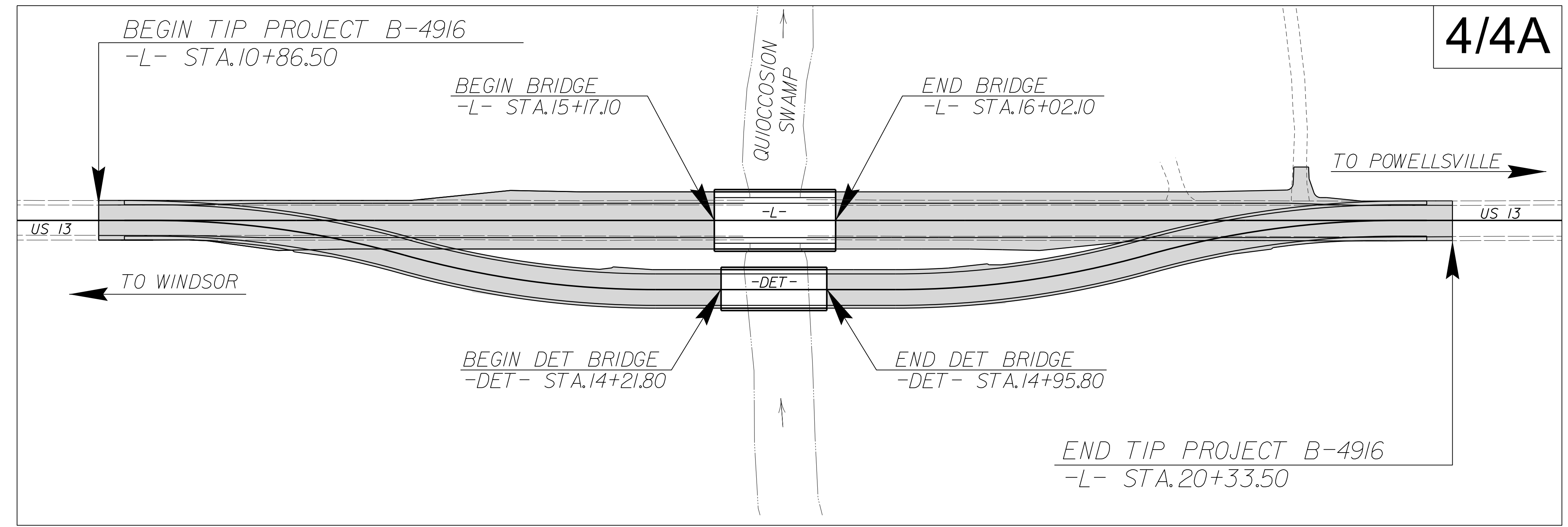


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BERTIE COUNTY

LOCATION: REPLACE BRIDGE NO. 57 OVER QUIOCCOSION SWAMP ON US 13

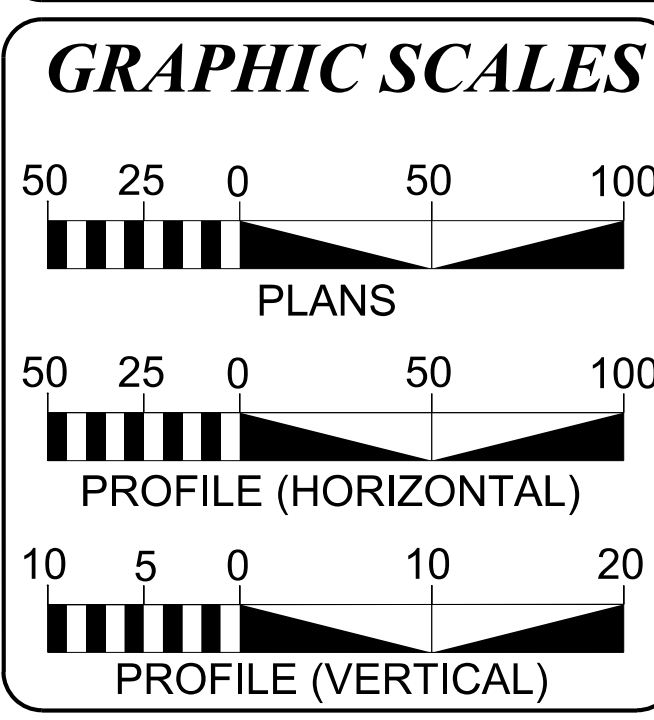
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4916	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40089.1.2	BRNHS-0013(27)	P.E.	
40089.2.1		R/W & UTIL.	
40089.3.1		CONSTR.	



4/4A

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UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2020 =	4040
ADT 2040 =	5400
K =	9 %
D =	55 %
T =	17 % *
V =	60 MPH
* TTST =6% DUAL 11%	
FUNC CLASS = MAJOR COLLECTOR	
REGIONAL TIER	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4916	= .163 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4916	= .016 MILES
TOTAL LENGTH OF TIP PROJECT B-4916	= .179 MILES

Prepared in the Office of:
KCI Associates of N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCT. 31, 2018

LETTING DATE:
APRIL 16, 2019

NCDOT CONTACT:
DAVID STUTTS, PE
STRUCTURES MANAGEMENT UNIT

DEWAYNE L. SYKES, P.E.
PROJECT ENGINEER

BRYAN E. HOUGH, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

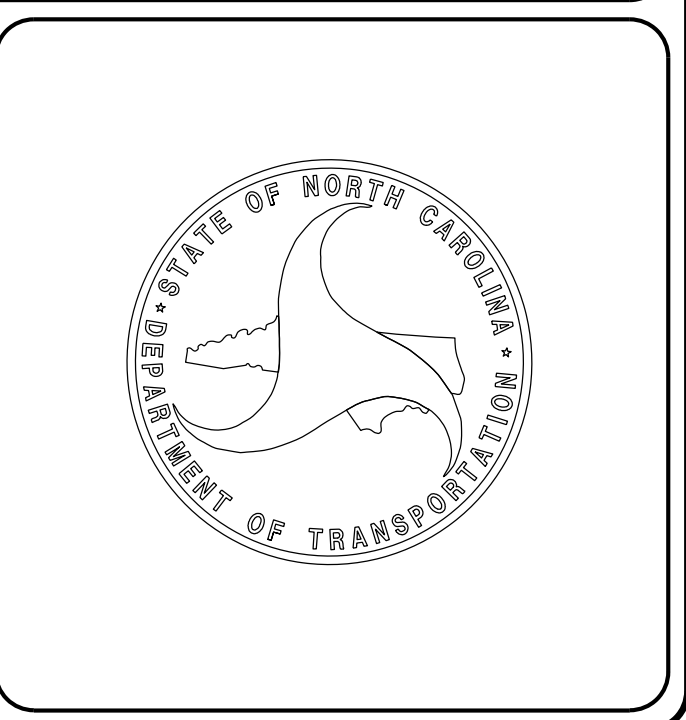
DocuSigned by:
CADC901HEK437
3/12/2019

SEAL 033860
LEAH M. YOUNG
P.E.

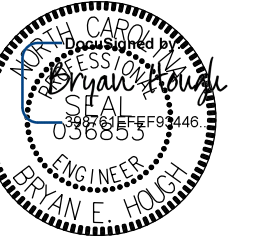
ROADWAY DESIGN ENGINEER

DocuSigned by:
Bryan Hough
3/12/2019

SEAL 036853
BRYAN E. HOUGH
P.E.



12-MAR-2019 15:43
M:\2018\201809145\06 B-4916\Roadway\Proj\B-4916_Rdy_tsh.dgn
\$\$\$\$\$SERVNAME\$\$\$\$\$



EFF. 01-16-2018

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1	TYPICAL SECTIONS, PAVEMENT SCHEDULE, WEDGING DETAIL, AND PROFILE KEY-IN DETAIL
2C	GUARDRAIL INSTALLATION
3B-1	SUMMARY OF EARTHWORK, SUMMARY OF SHOULDER BERM GUTTER, SUMMARY OF PAVEMENT REMOVAL, SUMMARY OF BREAKING OF EXISTING PAVEMENT AND SUMMARY OF GUARDRAIL
3D-1	SUMMARY OF DRAINAGE QUANTITIES
3G-1	SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION
4	PLAN SHEET
4A	DETOUR PLAN SHEET
5	PROFILE SHEET
5A	DETOUR PROFILE SHEET
TMP-1 TO TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 TO PMP-2	PAVEMENT MARKING PLANS
EC-1 TO EC-9	EROSION CONTROL PLANS
UC-1 TO UC-5	UTILITY CONSTRUCTION PLANS
UO-1 TO UO-3	UTILITIES BY OTHERS PLANS
X-0	INDEX OF CROSS SECTIONS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 TO X-5	-L- CROSS-SECTIONS
X-6 TO X-14	-DET- CROSS-SECTIONS
S-1 TO S-25	STRUCTURE PLANS

GENERAL NOTES: 2018 SPECIFICATIONS EFFECTIVE: 01-16-2018

GRADING AND SURFACING:

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

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 11.

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

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO.815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

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 DOMINION ENERGY(POWER), CENTURYLINK (BURIED TELEPHONE), AND BERTIE COUNTY WATER DEPARTMENT.

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method 11
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superlevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill For Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Riprap in Channels

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

04/06/15

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
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	☠ ☠
Potential Contamination Area: Soil	☒ ☒
Known Contamination Area: Water	☠ ☠
Potential Contamination Area: Water	☒ ☒
Contaminated Site: Known or Potential	☠ ☒

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ 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	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	----- RW
Proposed Right of Way Line with Iron Pin and Cap Marker	----- RW ▲
Proposed Right of Way Line with Concrete or Granite RW Marker	----- RW ▲
Proposed Control of Access Line with Concrete C/A Marker	----- C/A
Existing Control of Access	----- C/A
Proposed Control of Access	----- C/A
Existing Easement Line	----- E
Proposed Temporary Construction Easement	----- E
Proposed Temporary Drainage Easement	----- TDE
Proposed Permanent Drainage Easement	----- PDE
Proposed Permanent Drainage / Utility Easement	----- DUE
Proposed Permanent Utility Easement	----- PUE
Proposed Temporary Utility Easement	----- TUE
Proposed Aerial Utility Easement	----- AUE
Proposed Permanent Easement with Iron Pin and Cap Marker	----- ◆

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	☀
Single Shrub	☀
Hedge	-----
Woods Line	-----

Orchard	☀ ☀ ☀ ☀
Vineyard	----- Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	----- CONC WW
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	----- CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	----- S
Storm Sewer	----- S

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
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	⊕
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	-----
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	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

TV:

TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	-----
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

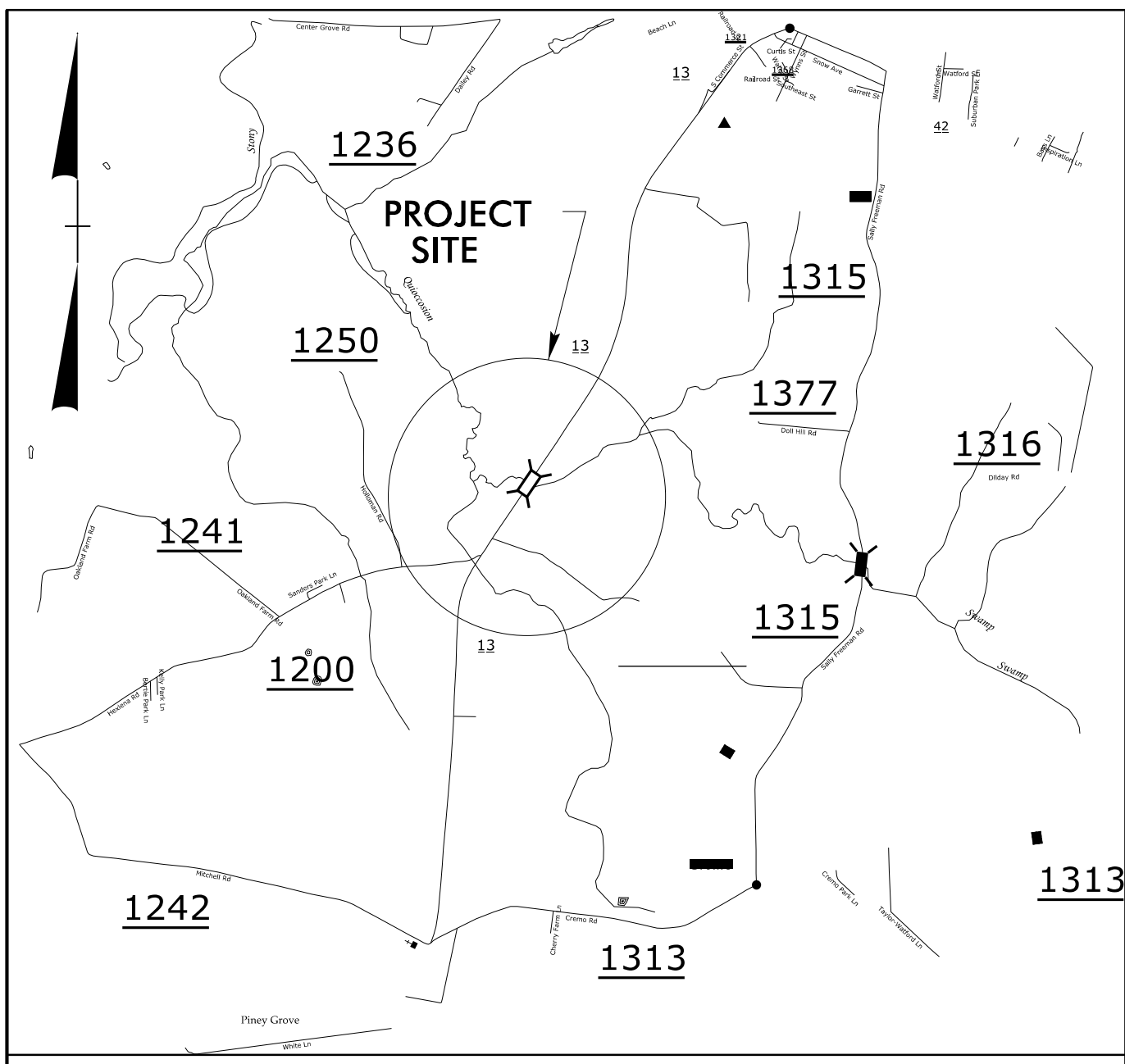
SANITARY SEWER:

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:

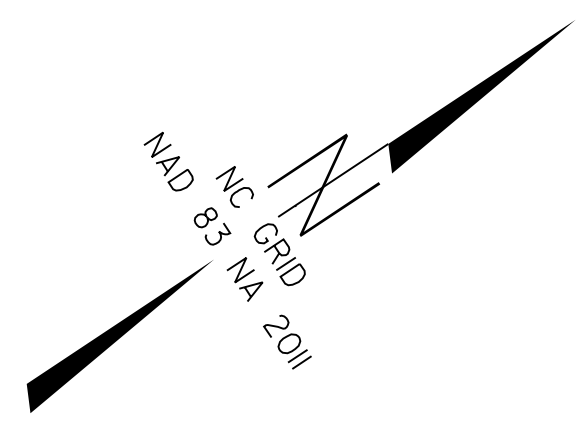
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- 7UTL
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	⊠ UST
A/G Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

SURVEY CONTROL SHEET B-4916



CONTROL DATA

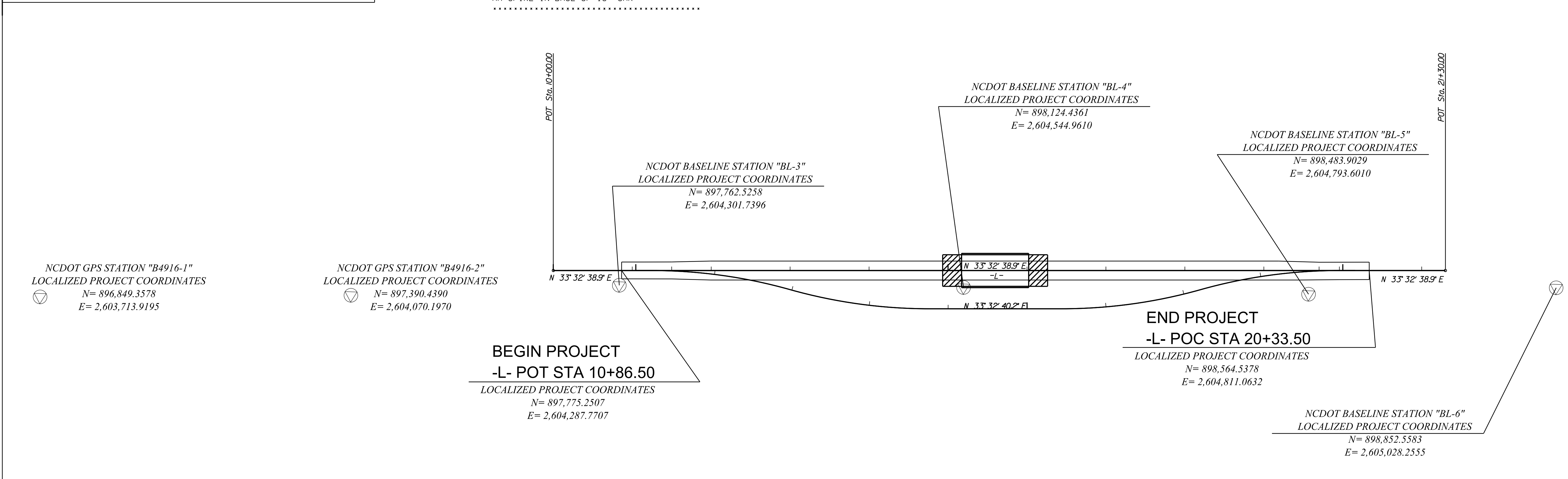
BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	GPS B4916-1		896849.3578	2603713.9195	38.26	OUTSIDE PROJECT LIMITS	
2	GPS B4916-2		897390.4390	2604070.1970	41.94	OUTSIDE PROJECT LIMITS	
3	BL-3		897762.5258	2604301.7396	35.09	10+83.61	18.67 RT
4	BL-4		898124.4361	2604544.9610	35.04	15+19.65	21.41 RT
5	BL-5		898483.9029	2604793.6010	34.86	19+56.64	30.00 RT
6	BL-6		898852.5583	2605028.2555	35.92	OUTSIDE PROJECT LIMITS	



BENCHMARK DATA

.....
 100 ELEVATION = 32.14
 N 898098 E 2604593
 L STATION 15+24.00 76 RIGHT
 RR SPIKE IN BASE OF 18" OAK

VICINITY MAP



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4916-2"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 897,390.4390(ft) EASTING: 2,604,070.1970(ft)
 ELEVATION: 41.94(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000012624

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4916-2" TO -L- STATION 10+86.50 IS
 N 29°29'02.22" W 442.06 (ft)

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

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.GOV/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.gov/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
 TIP B4916_LS_CONTROL.TXT

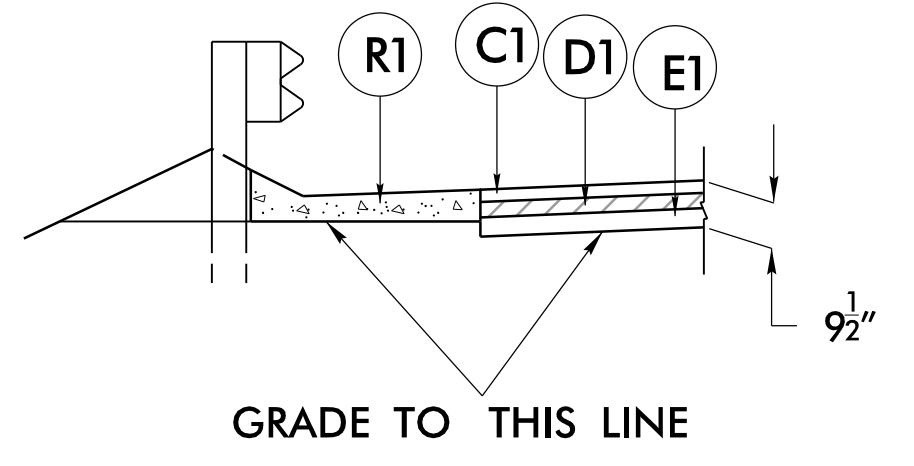
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

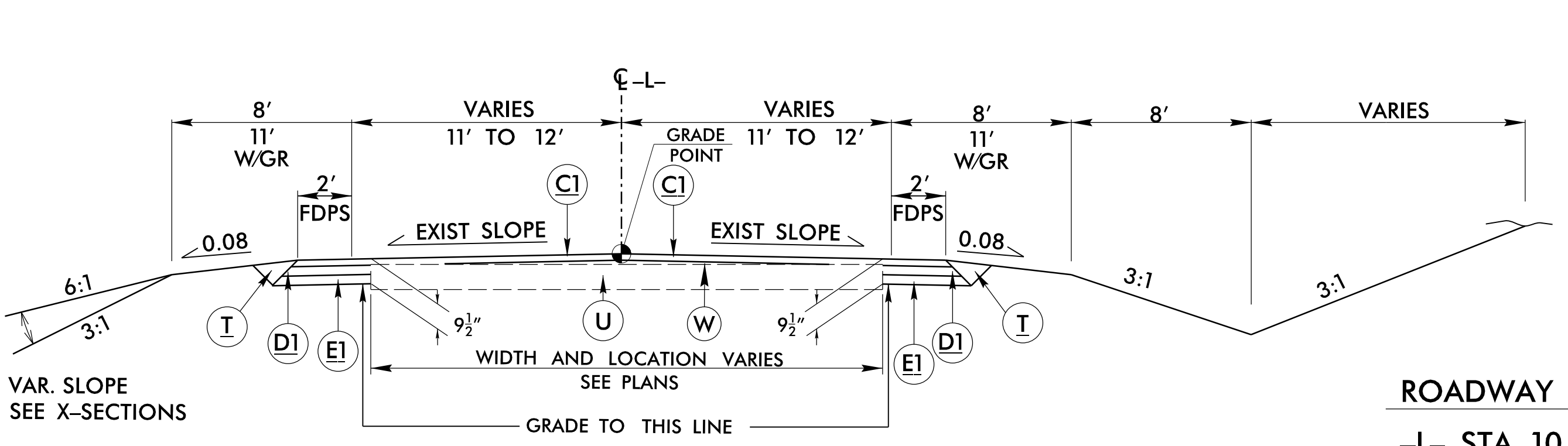
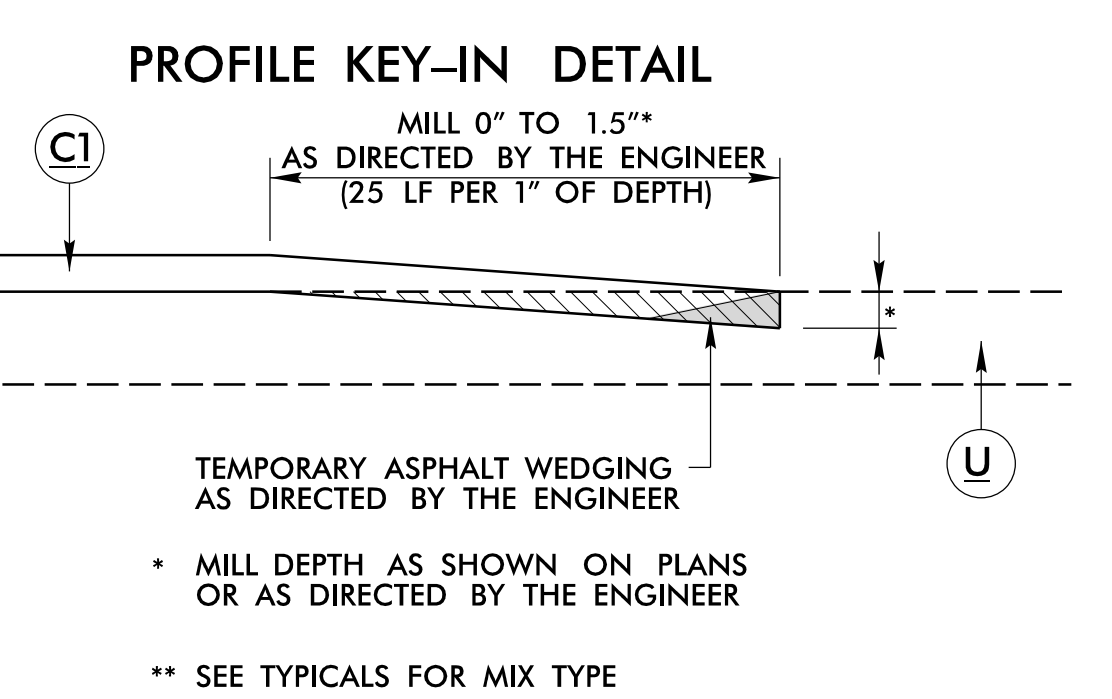
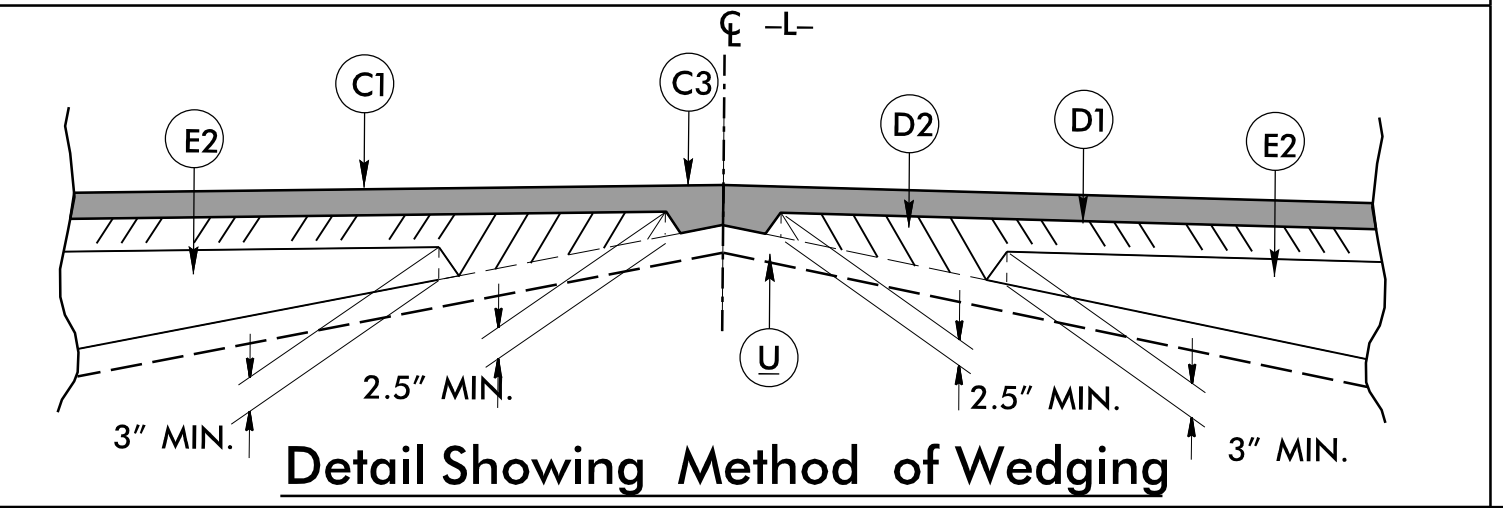
NOTE: DRAWING NOT TO SCALE

6/2/2019

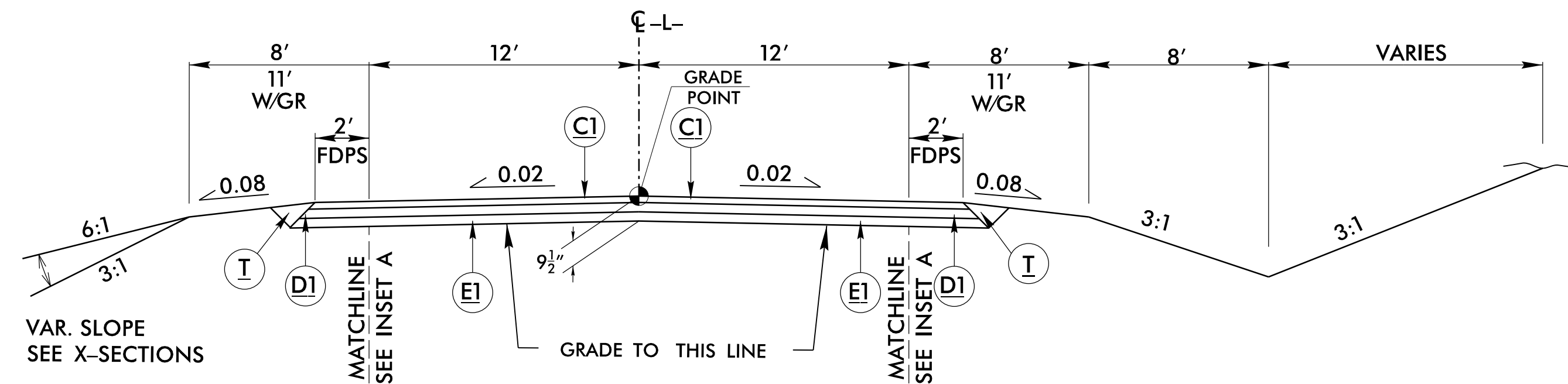
FINAL PAVEMENT SCHEDULE	
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110.0 LBS. PER SQ. YD., TO BE PLACED IN TWO LAYERS NOT TO EXCEED 1" PER LAYER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 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 5 1/2" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE.
P	PRIME COAT. (APPLY THE PRIME COAT AT A RATE .35 GAL/SY.)
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).



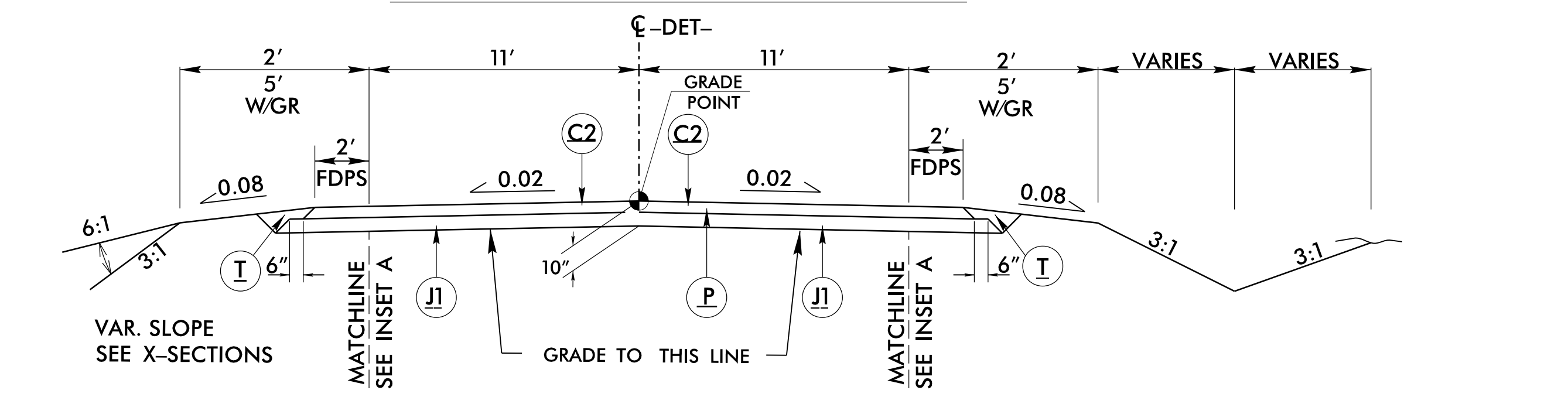
DETAIL SHOWING SHOULDER BERM GUTTER (SBG) ON TOP OF SUBGRADE



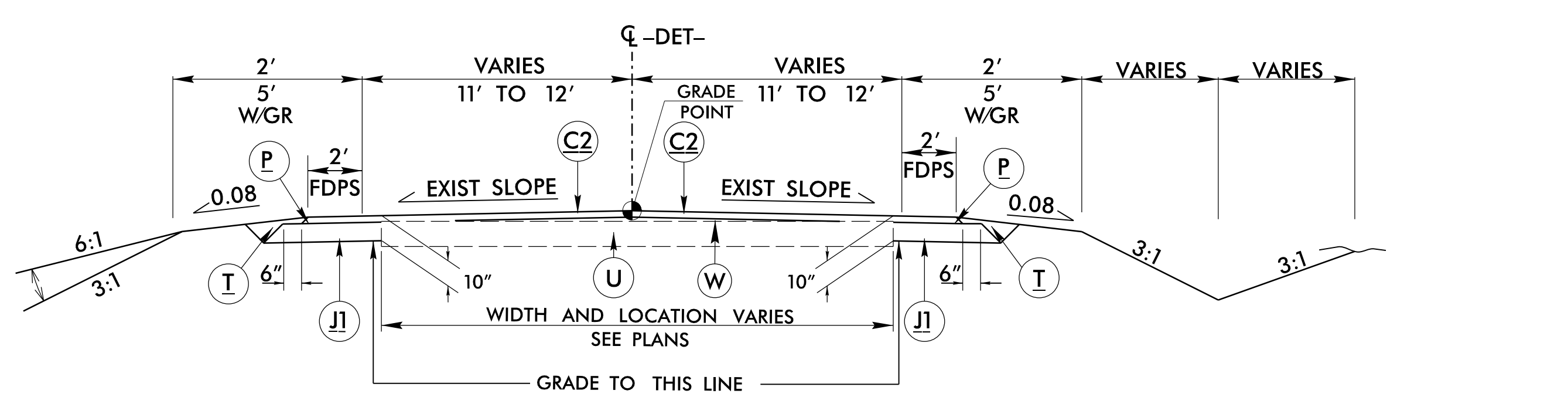
ROADWAY TYPICAL SECTION NO. 1



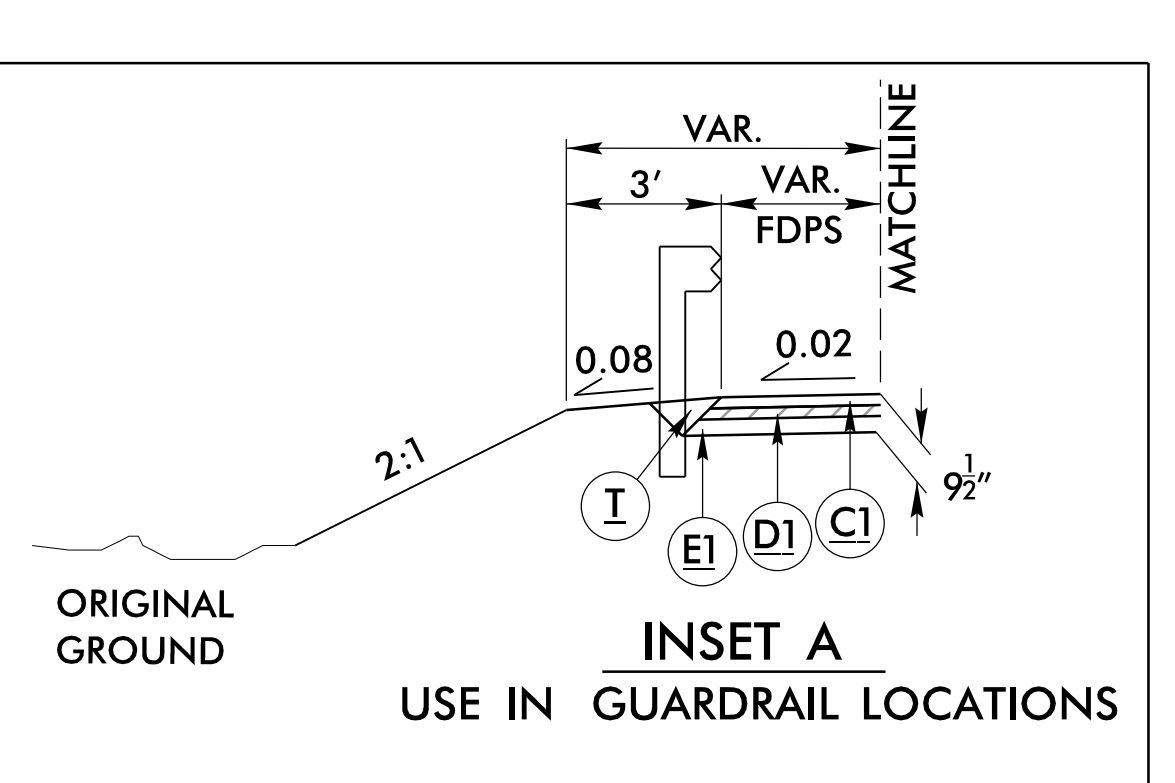
ROADWAY TYPICAL SECTION NO. 2



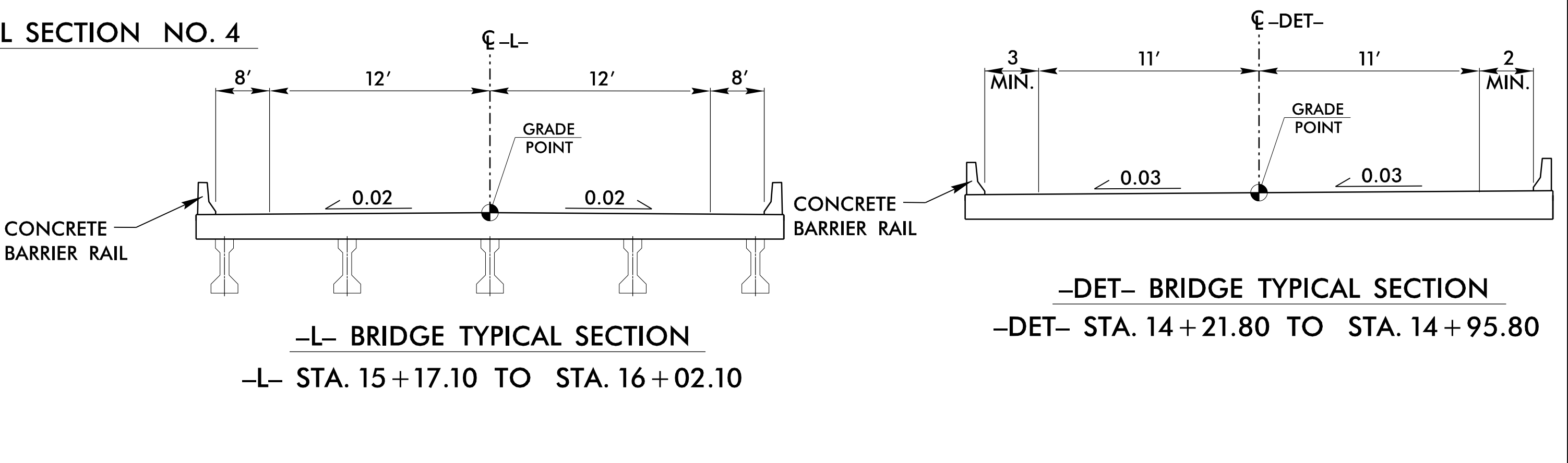
ROADWAY TYPICAL SECTION NO. 3



ROADWAY TYPICAL SECTION NO. 4



INSET A USE IN GUARDRAIL LOCATIONS



BRIDGE TYPICAL SECTION -L- STA. 15+17.10 TO STA. 16+02.10

BRIDGE TYPICAL SECTION -DET- STA. 14+21.80 TO STA. 14+95.80

PROJECT REFERENCE NO. B-4916	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
3/15/2019	3/17/2019
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-0214 • Fax (919) 783-9266	

ROADWAY TYPICAL SECTION NO. 1
-L- STA. 10+86.50 TO STA. 11+50.00
-L- STA. 19+70.00 TO STA. 20+33.50

ROADWAY TYPICAL SECTION NO. 2
-L- STA. 11+50.00 TO STA. 15+17.10
-L- STA. 16+02.10 TO STA. 19+70.00

ROADWAY TYPICAL SECTION NO. 3
-DET- STA. 12+05.54 TO STA. 14+21.80
-DET- STA. 14+95.80 TO STA. 17+12.58

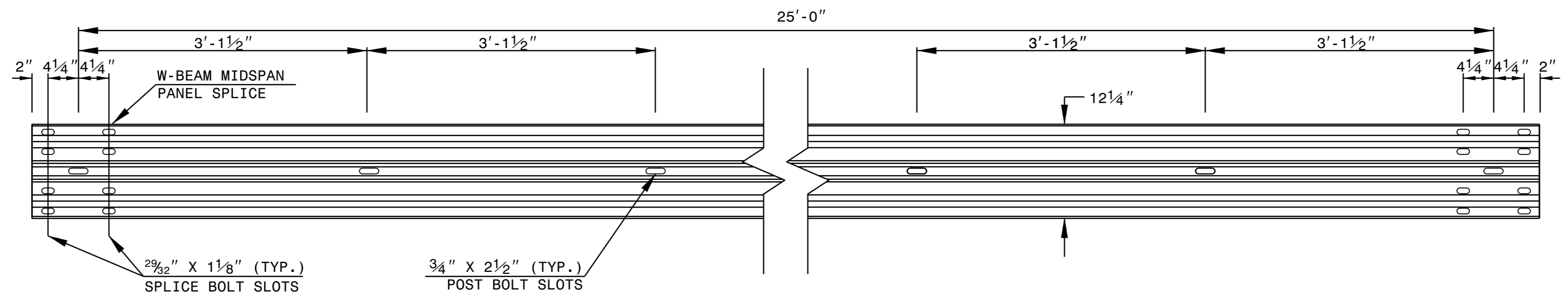
ROADWAY TYPICAL SECTION NO. 4
-DET- STA. 10+90.00 TO STA. 12+05.54
-DET- STA. 17+12.58 TO STA. 18+30.00

15-MAR-2019 10:07 AM
 M:\2018\16000\16000\F06_B-4916\Roadway\Proj\B-4916_Rdy_tup.dgn
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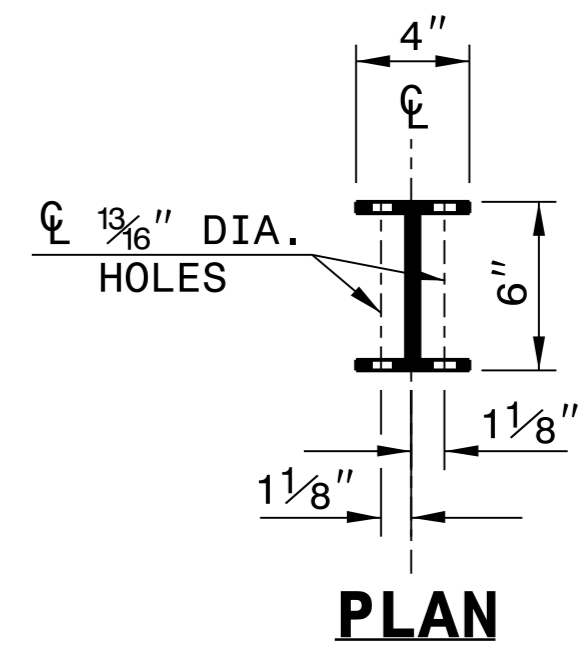
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

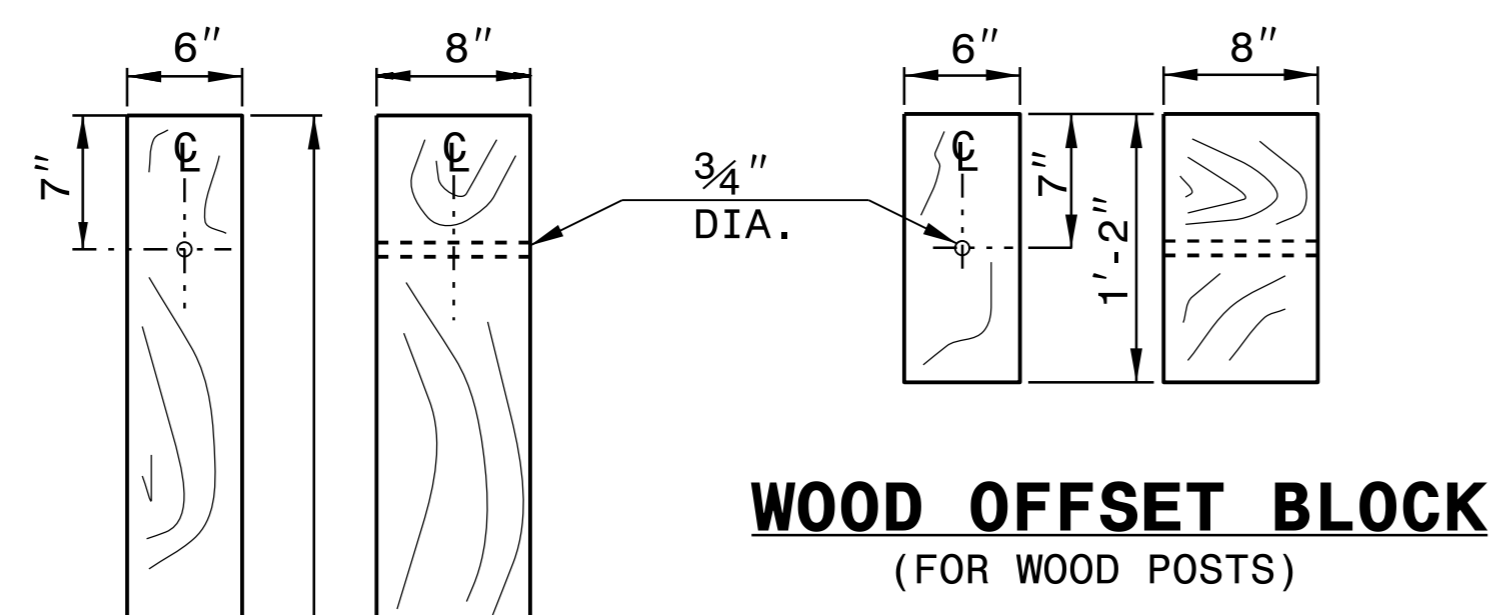
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



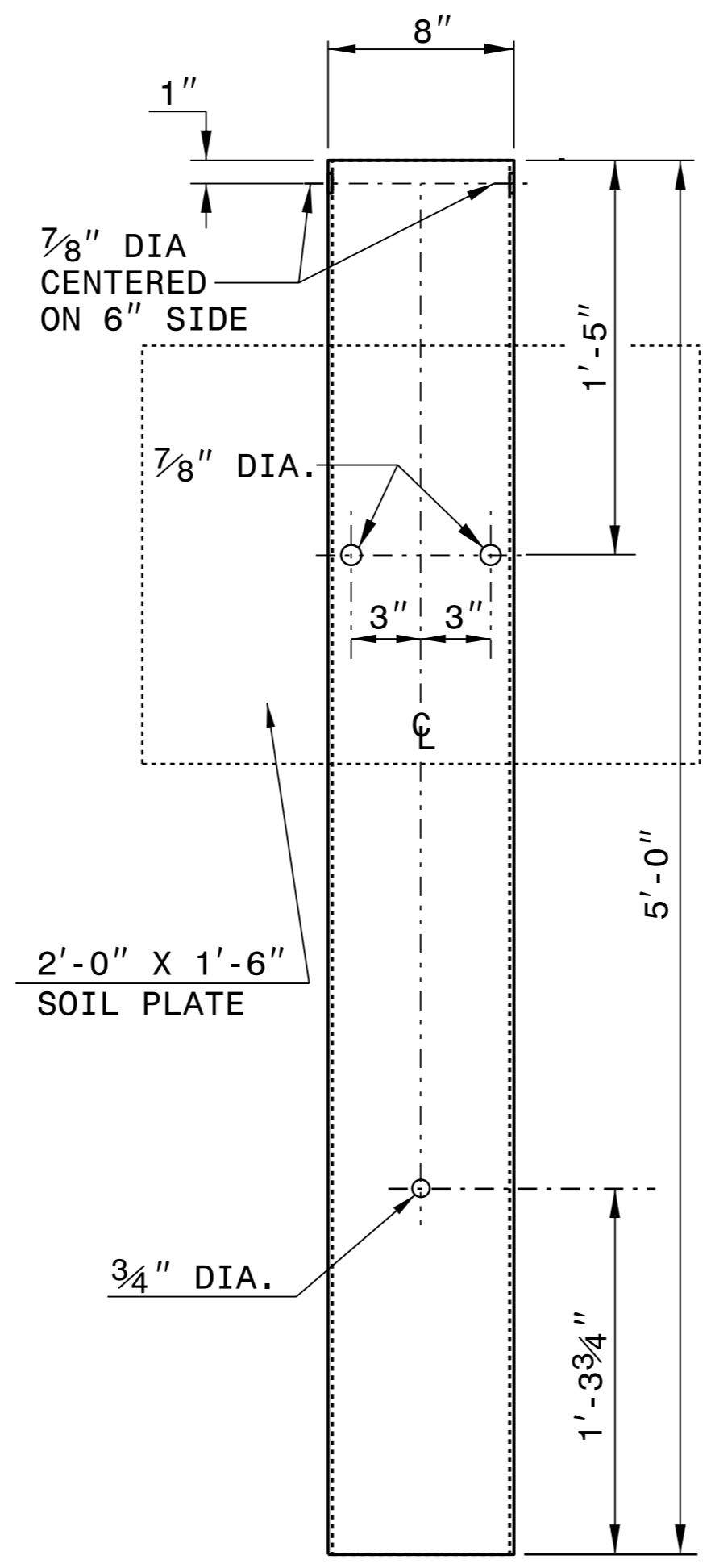
PLAN



WOOD OFFSET BLOCK
(FOR WOOD POSTS)

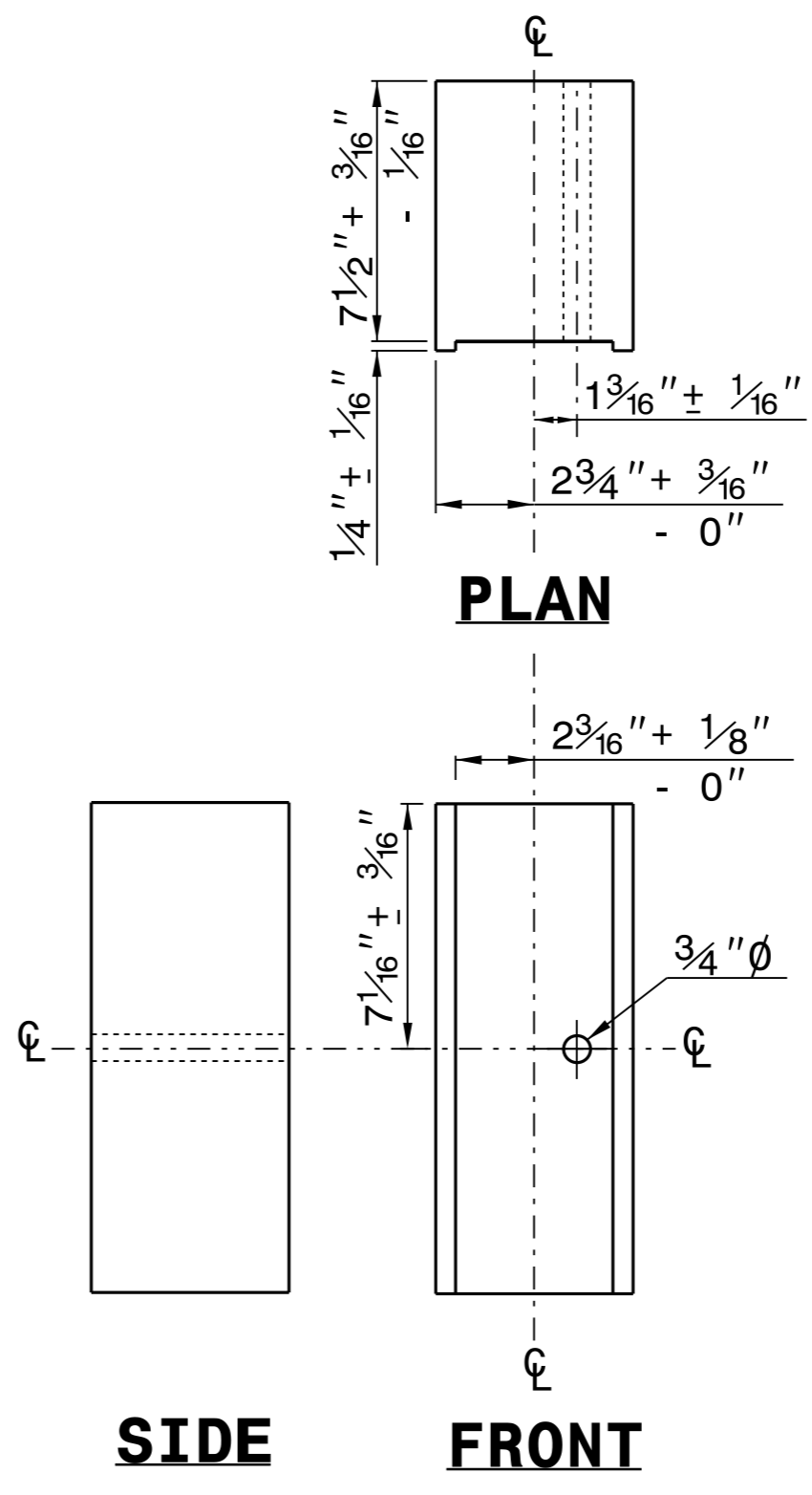
STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"

SYSTEM PARTS

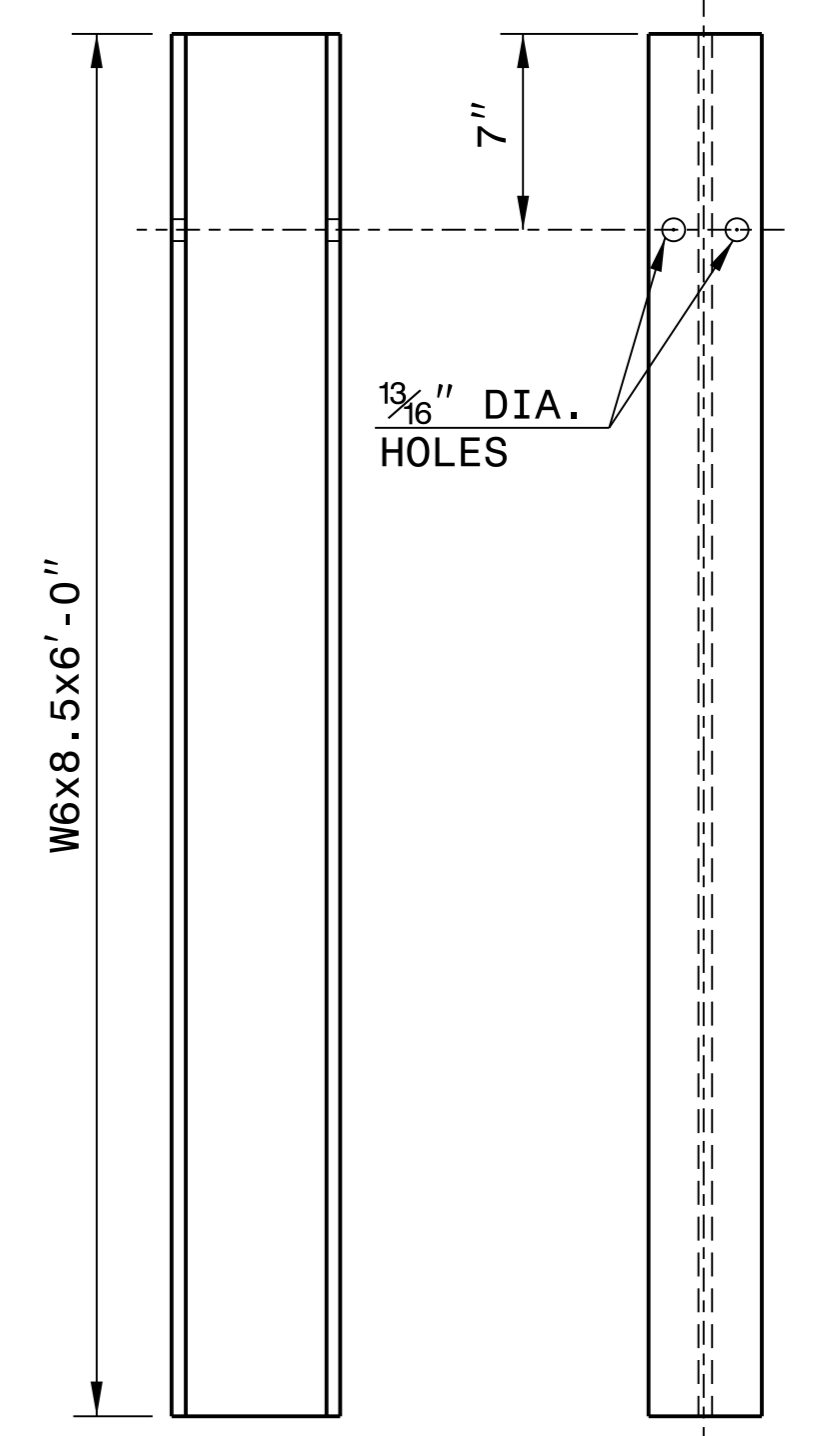


PLAN

SIDE

FRONT

ROUTED OFFSET BLOCK



SIDE

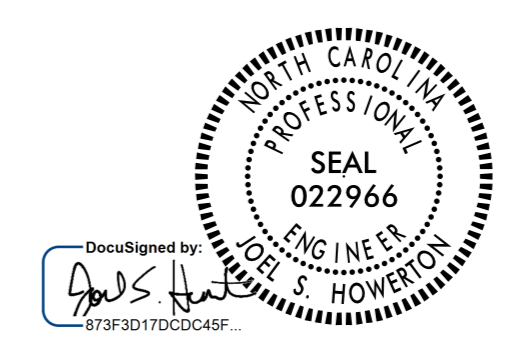
FRONT

"W6" STEEL POST

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



3/13/2019

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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

12-3700BHZ

COMPUTED BY: SAW DATE: 01/23/2019
CHECKED BY: LMY DATE: 01/23/2019

PROJECT NO. SHEET NO.
B-4916 3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns: LINE & STATION, OFFSET, STRUCTURE NUMBER, TOP ELEVATION, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, Drainage Pipe (RCP, CAAP, HDPE), C. A. A. PIPE, R. C. PIPE CLASS III, R. C. PIPE CLASS IV, ENDWALLS, REINFORCED ENDWALLS, MASONRY, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, GRATE TYPE, 15" C.A.A. ELBOW, 18" C.A.A. ELBOW, 24" C.A.A. ELBOW, 30" C.A.A. ELBOW, 36" C.A.A. ELBOW, BERM DITCH OUTLET, # SLUICE GATE, MODIFIED CONC. FLUME, PREFORMED SCOUR HOLE, ENERGY DISSIPATION BASIN, FLOWABLE FILL, CONCRETE COLLARS, CONCRETE AND BRICK PIPE PLUG, PIPE REMOVAL, REMARKS.

SHEET TOTALS
PROJECT TOTALS

COMPUTED BY: Tyler C. Bottoms DATE: 6/26/18
 CHECKED BY: Dean Argenbright DATE: 6/26/18

(5-15-18)

PROJECT NO.
B-4916

SHEET NO.
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(1/2)/AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY									
					TOTAL CY/TONS/SY:	0	0**	0**	0 0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *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(1/2)/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 EMBANKMENT
 WAITING PERIODS**

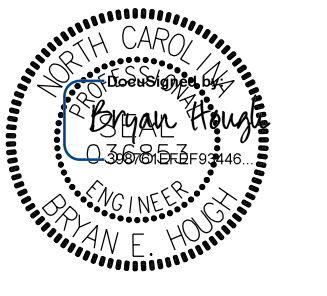
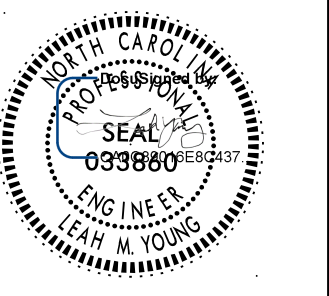

LINE	Station	Station	MONTHS

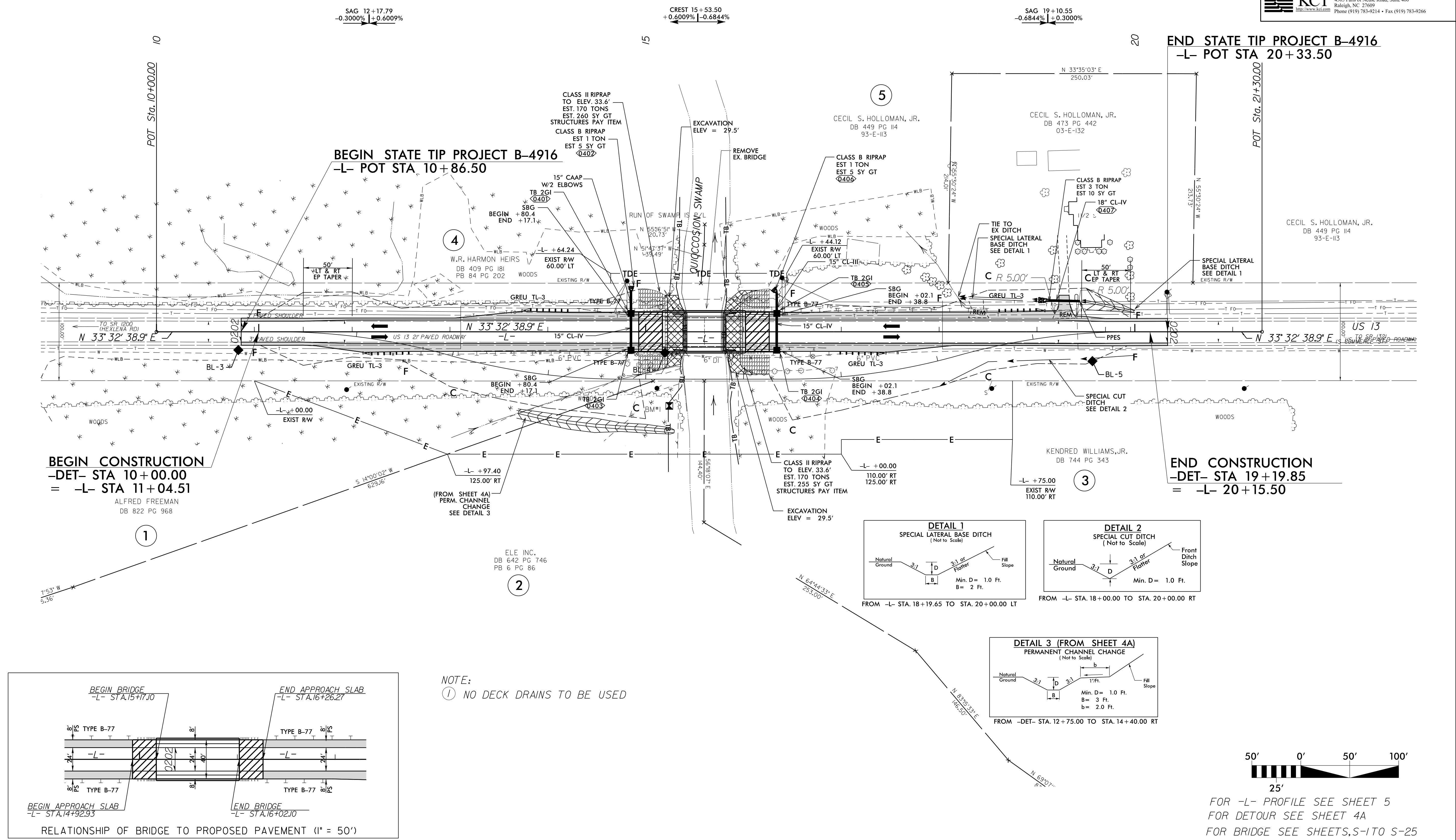
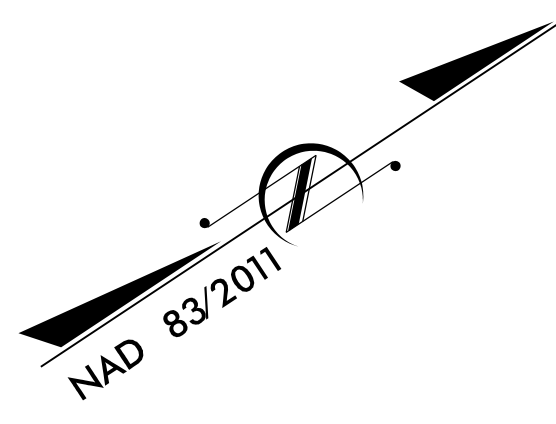
**SUMMARY OF
 SETTLEMENT GAUGES**

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

SUMMARY OF BRIDGE WAITING PERIODS

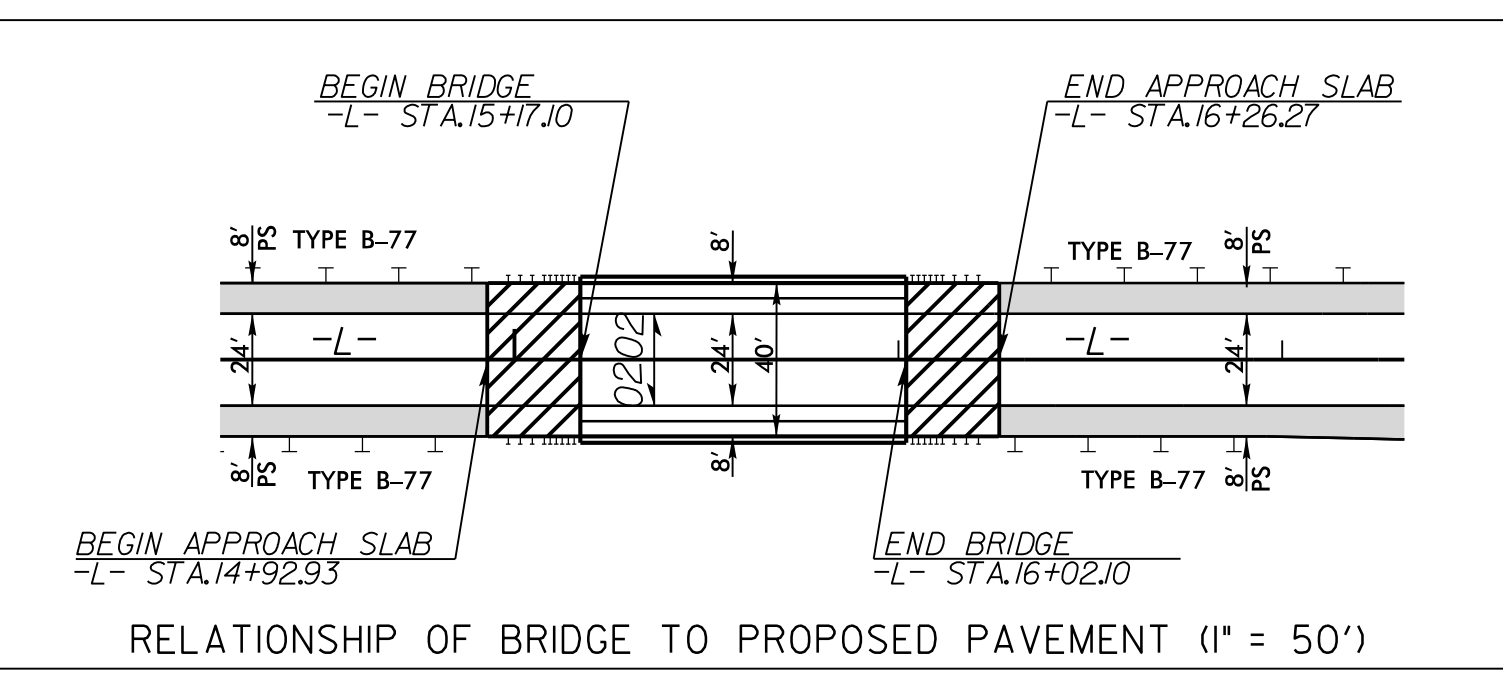
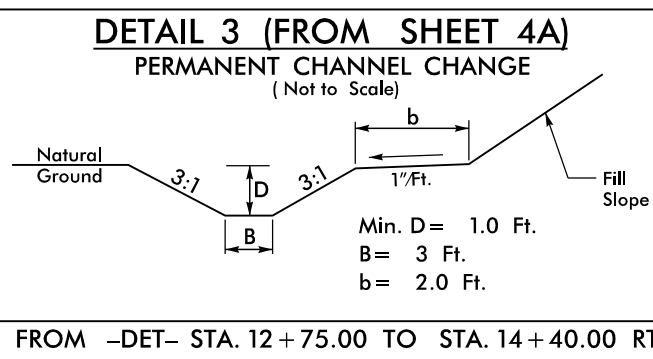
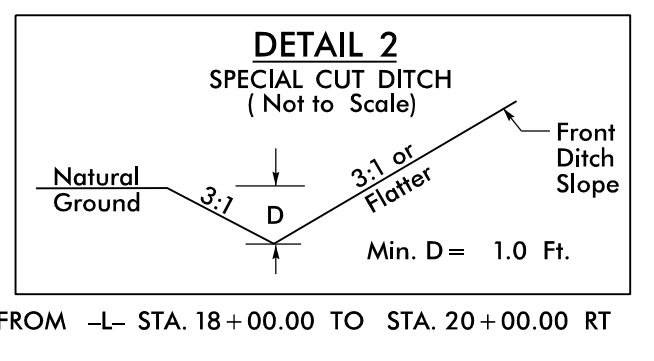
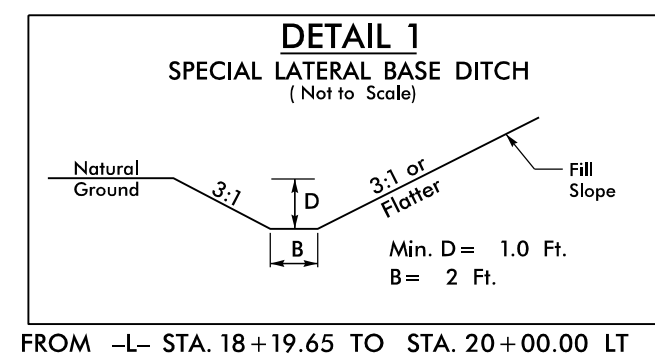
Bridge Description	End Bent/ Bent No.	MONTHS

PROJECT REFERENCE NO. B-4916	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER  3/12/2019	HYDRAULICS ENGINEER  3/12/2019
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266	

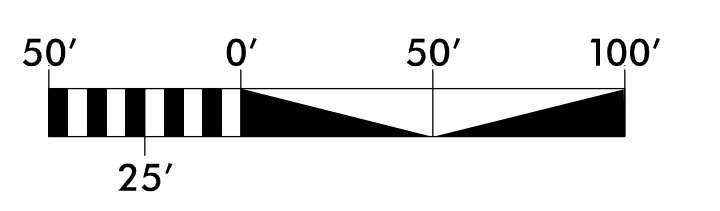


BEGIN CONSTRUCTION
-DET- STA 10+00.00
= -L- STA 11+04.51
ALFRED FREEMAN
DB 822 PG 968

END CONSTRUCTION
-DET- STA 19+19.85
= -L- 20+15.50



NOTE:
① NO DECK DRAINS TO BE USED



FOR -L- PROFILE SEE SHEET 5
FOR DETOUR SEE SHEET 4A
FOR BRIDGE SEE SHEETS S-1 TO S-25

12.MAR.2016 15:48 Roadway\Proj\B-4916_Rdy_psh.dgn
18\251820\01\02\03\04\05\06\07\08\09\10\11\12\13\14\15\16\17\18\19\20\21\22\23\24\25\26\27\28\29\30\31\32\33\34\35\36\37\38\39\40\41\42\43\44\45\46\47\48\49\50\51\52\53\54\55\56\57\58\59\60\61\62\63\64\65\66\67\68\69\70\71\72\73\74\75\76\77\78\79\80\81\82\83\84\85\86\87\88\89\90\91\92\93\94\95\96\97\98\99\100

8/17/99

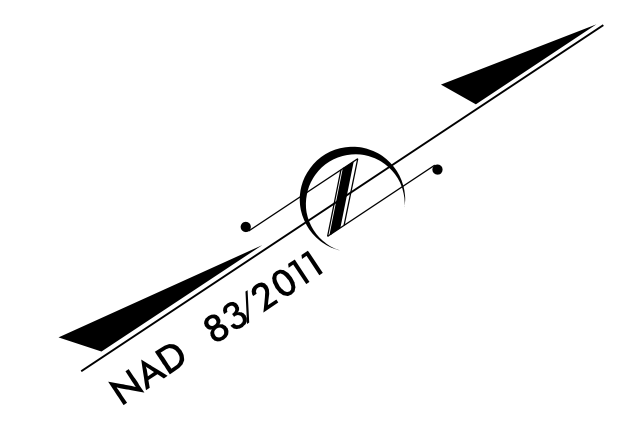
-DET-			
PI Sta 11+09.54 Δ = 15° 41' 12.7" (RT) D = 8° 48' 53.0" L = 177.96' T = 89.54' R = 650.00' DS = 45 MPH	PI Sta 12+87.50 Δ = 15° 41' 11.3" (LT) D = 8° 48' 53.0" L = 177.96' T = 89.54' R = 650.00' DS = 45 MPH	PI Sta 16+33.46 Δ = 15° 41' 14.7" (LT) D = 8° 48' 53.0" L = 177.97' T = 89.54' R = 650.00' DS = 45 MPH	PI Sta 18+11.43 Δ = 15° 41' 13.3" (RT) D = 8° 48' 53.0" L = 177.96' T = 89.54' R = 650.00' DS = 45 MPH

PER GEOTECHNICAL REPORT: GEOTEXTILE FOR SOIL STABILIZATION SHOULD BE PLACED BENEATH THE DETOUR FOOTPRINT FOR SEPARATION BETWEEN THE DETOUR EMBANKMENT AND THE EXISTING SOIL IN ACCORDANCE WITH SECTION 270 OF THE 2018 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES AT THE FOLLOWING LOCATIONS:

FROM -DET- STA 11+00 +/- TO STA 14+26-
FROM -DET- STA 14+92 +/- TO STA 18+50 +/-

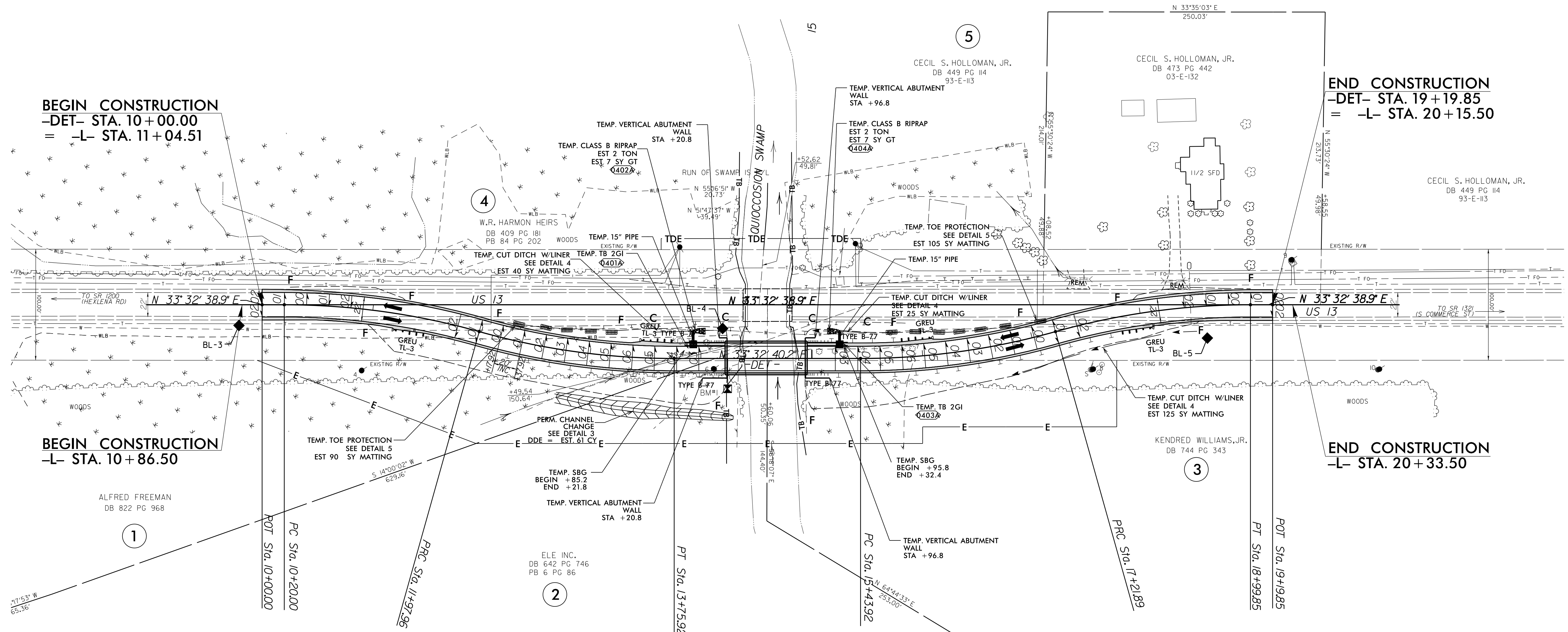
USE TEMPORARY PROTECTIVE MATTING AT SLOPES STEEPER THAN 3:1 ON CUT SLOPE.

FROM -DET- STA 13+25.00 TO STA 14+38.00 LT
FROM -DET- STA 14+84.04 TO STA 15+75.00 LT



PROJECT REFERENCE NO. B-4916	SHEET NO. 4A
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
3/14/2019	3/15/2019
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266	

REVISIONS

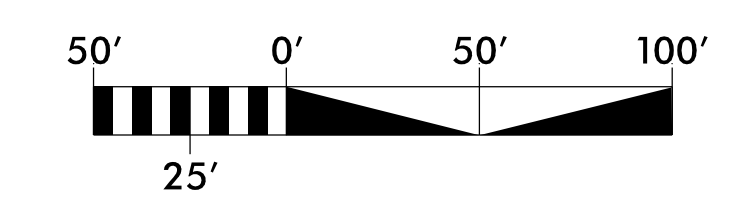
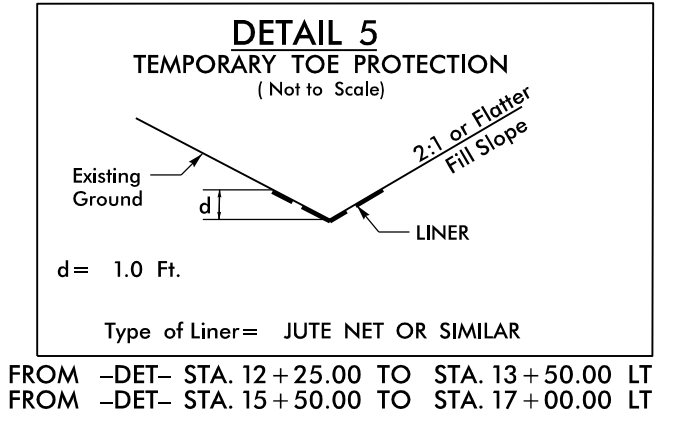
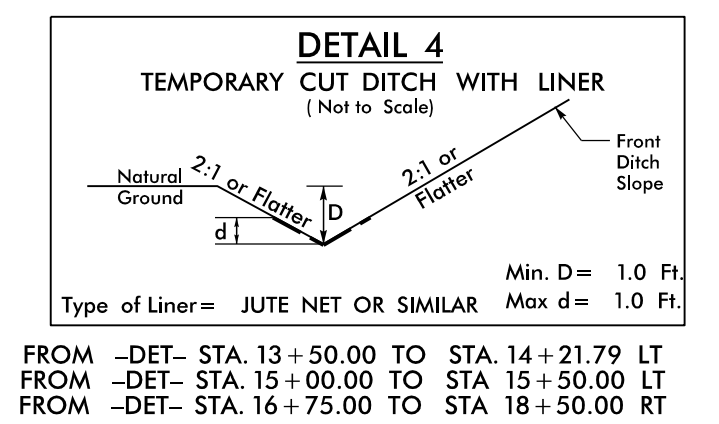
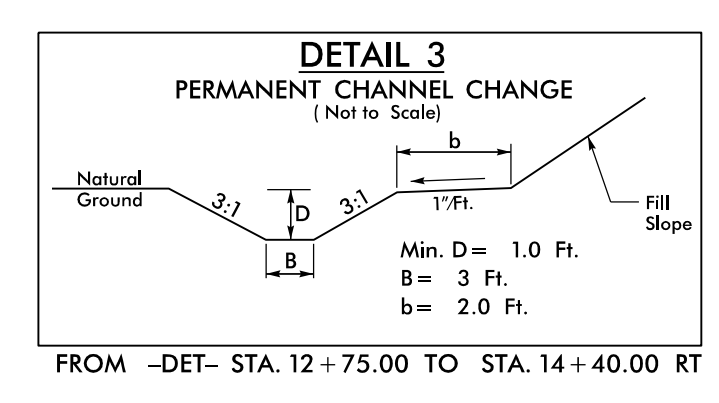
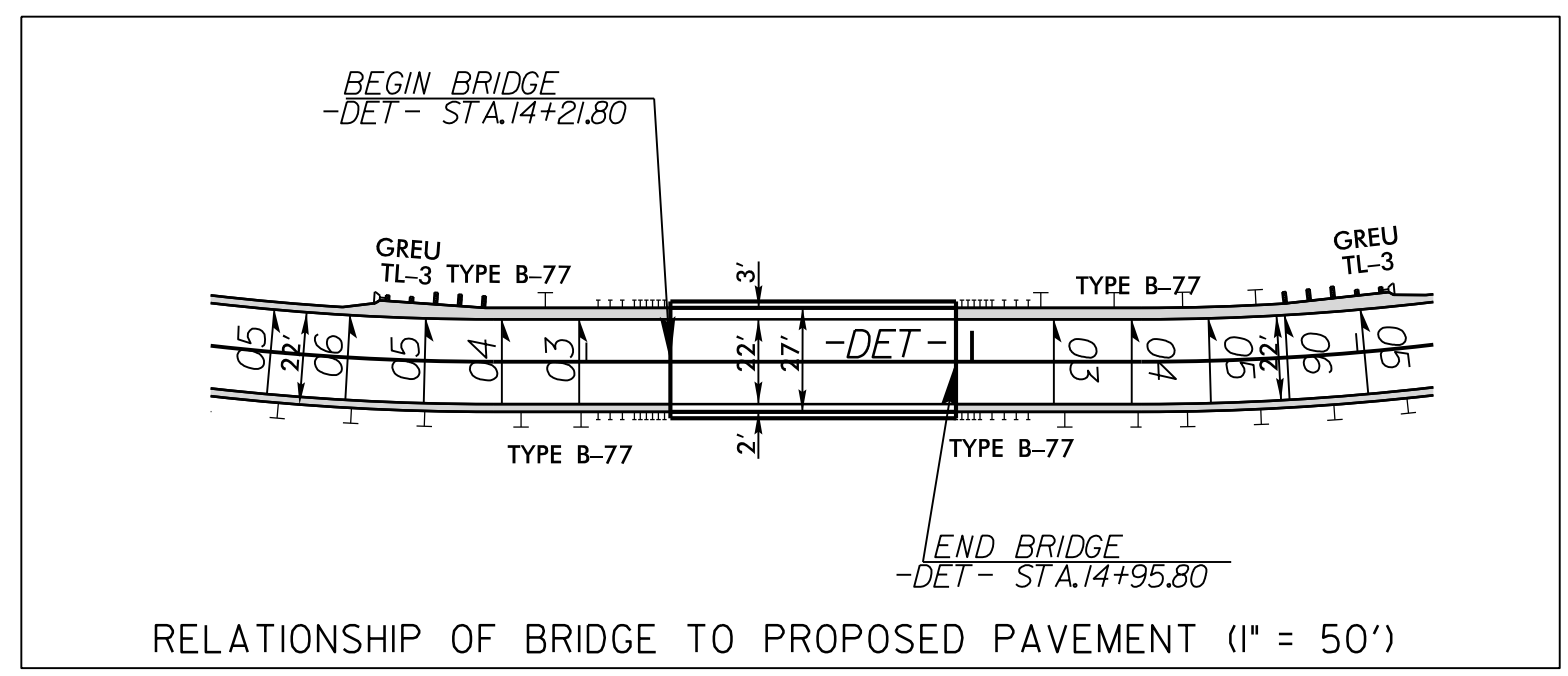


BEGIN CONSTRUCTION
-DET- STA. 10+00.00
= -L- STA. 11+04.51

BEGIN CONSTRUCTION
-L- STA. 10+86.50

END CONSTRUCTION
-DET- STA. 19+19.85
= -L- STA. 20+15.50

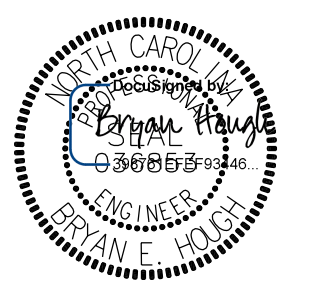
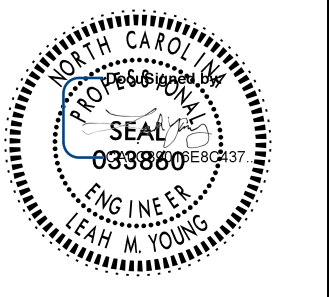
END CONSTRUCTION
-L- STA. 20+33.50



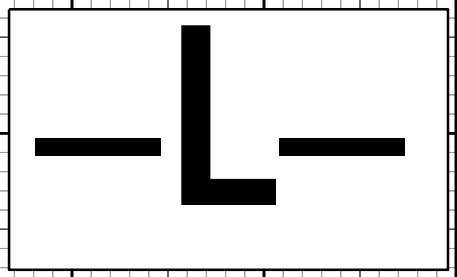
FOR -DET- PROFILE SEE SHEET 6
FOR -L- DESIGN SEE SHEET 4
FOR BRIDGE SEE SHEETS S-1 TO S-25

14-MAR-2019 16:13 M:\2018\B-4916\Roadway\Proj\B-4916_Rdwy_det_pah_4a.dgn

5/14/99

PROJECT REFERENCE NO. B-4916	SHEET NO. 5
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
3/12/2019	3/12/2019

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



BM #1 - 8" SPIKE SET IN BASE OF 18" OAK TREE
-L- STA. 15+24.21, 75.69' RT
EL = 32.14'

BEGIN GRADE -L- STA 11+24.00
ELEV. 36.96'

PI = 12+38.50
EL = 36.62'
VC = 124'
K = 138'
DS = 60 mph

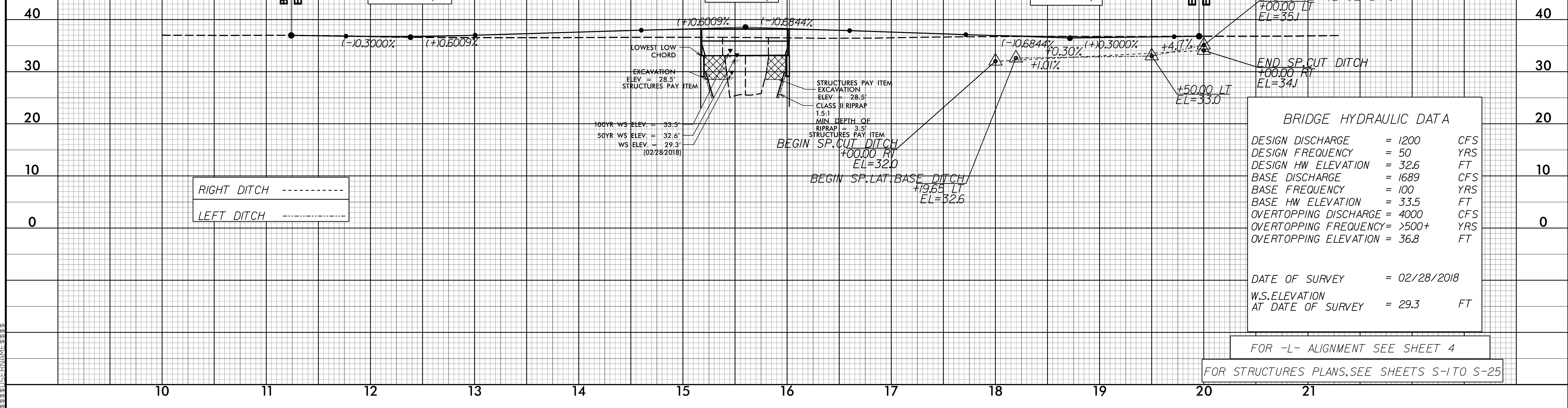
BEGIN BRIDGE -L- STA 15+17.10

PI = 15+60.00
EL = 38.55'
VC = 200'
K = 156'
DS = 60 mph

END BRIDGE -L- STA 16+02.10

PI = 18+71.50
EL = 36.42'
VC = 200'
K = 203'
DS = 60 mph

END GRADE -DET- STA 19+95.50
ELEV. 36.79'

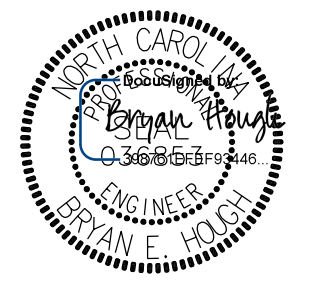
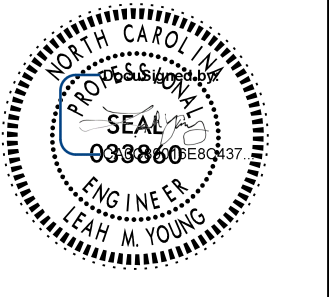


BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 32.6	FT
BASE DISCHARGE	= 1689	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 33.5	FT
OVERTOPPING DISCHARGE	= 4000	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= 36.8	FT
DATE OF SURVEY	= 02/28/2018	
W.S. ELEVATION	= 29.3	FT

FOR -L- ALIGNMENT SEE SHEET 4
FOR STRUCTURES PLANS, SEE SHEETS S-1 TO S-25

12-MAR-2019 15:51
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3/12/2019 10:55:33 AM

5/14/99

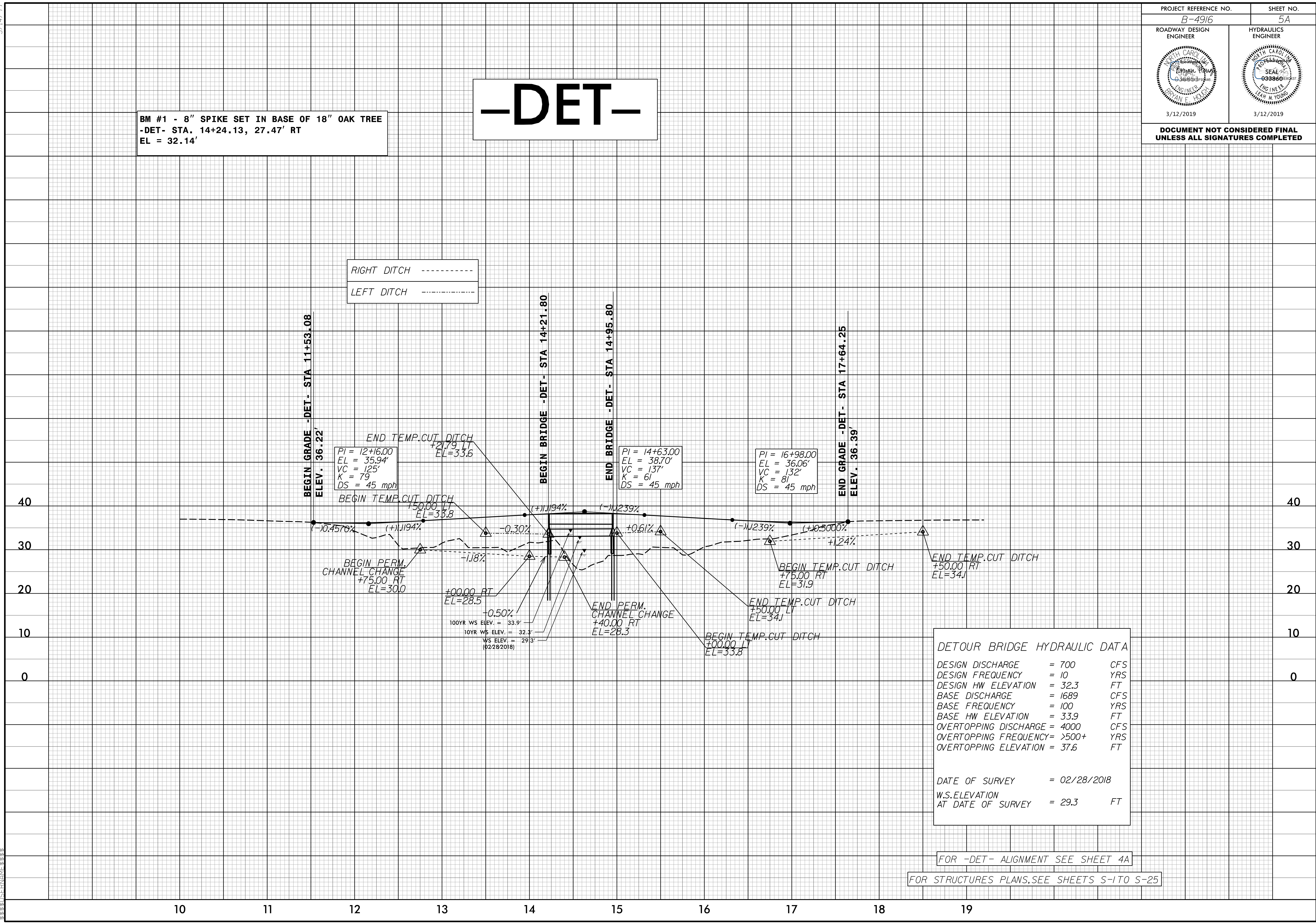
PROJECT REFERENCE NO. B-4916	SHEET NO. 5A
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
3/12/2019	3/12/2019

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BM #1 - 8" SPIKE SET IN BASE OF 18" OAK TREE
-DET- STA. 14+24.13, 27.47' RT
EL = 32.14'

-DET-

RIGHT DITCH -----
LEFT DITCH -----



DETOUR BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 700	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 32.3	FT
BASE DISCHARGE	= 1689	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 33.9	FT
OVERTOPPING DISCHARGE	= 4000	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= 37.6	FT
DATE OF SURVEY	= 02/28/2018	
W.S. ELEVATION AT DATE OF SURVEY	= 29.3	FT

FOR -DET- ALIGNMENT SEE SHEET 4A

FOR STRUCTURES PLANS, SEE SHEETS S-1 TO S-25

12-MAR-2019 15:52
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10 11 12 13 14 15 16 17 18 19