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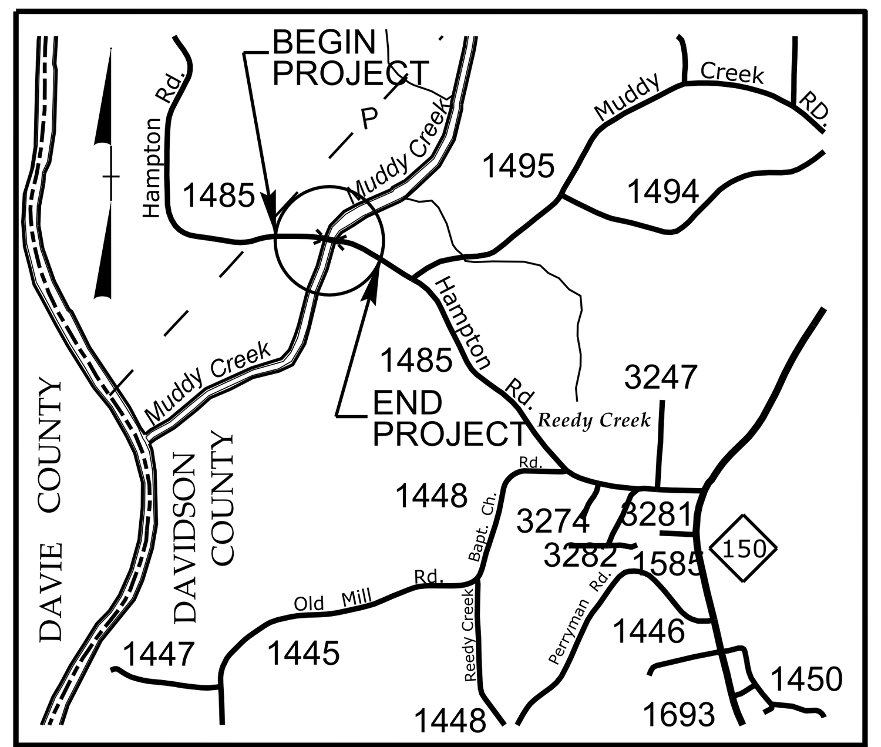
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: B-5165

CONTRACT: C203940

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheets 1C-1 Thru 1C-2 for Survey Control



VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5165	1	

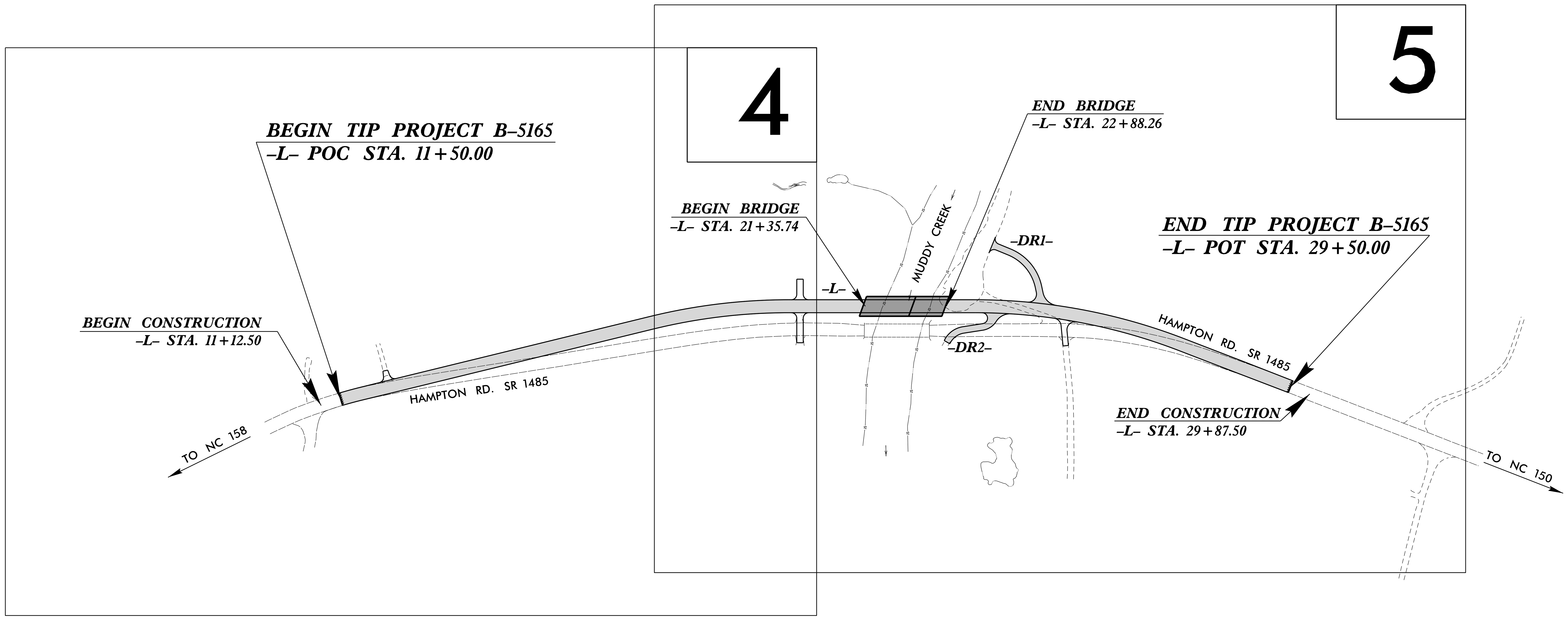
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42341.1.1	BRSTP-1485(2)	P.E.
42341.2.1		R/W
42341.2.2		UTL.
42341.3.1		CONSTR.

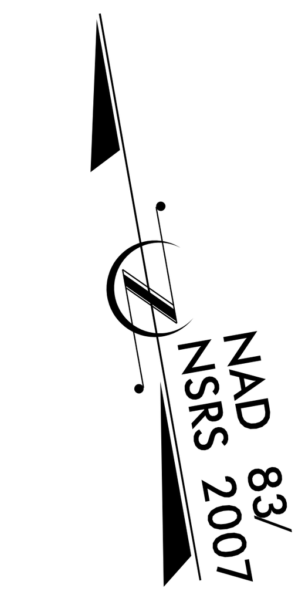
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

LOCATION: BRIDGE NO. 42 OVER MUDDY CREEK ON SR 1485 (HAMPTON RD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE





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 2017 = 2,425 VPD
ADT 2037 = 3,735 VPD
K = 11 %
D = 60 %
* T = 9 %
V = 60 MPH
* (TTST 3% + DUAL 6%)
FUNC. CLASS. = RURAL MAJOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5165	=	0.312 MILE
LENGTH STRUCTURE TIP PROJECT B-5165	=	0.029 MILE
TOTAL LENGTH TIP PROJECT B-5165	=	0.341 MILE

Plans Prepared for NCDOT by:
amec foster wheeler
AMEC Foster Wheeler Environment & Infrastructure, Inc.
4021 Stirrup Creek Drive, Suite 100
Durham, North Carolina 27703
NC Engineering F-1253 NC Geology C-247
(919) 381-9900

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 28, 2016

LETTING DATE:
JUNE 20, 2017

BILL HOOD, PE
PROJECT ENGINEER

CHRISTOPHER H. LEE
PROJECT DESIGN ENGINEER

GARY LOVERING, PE
PROJECT DESIGN ENGINEER
NCDOT ROADWAY DESIGN

HYDRAULICS ENGINEER
DocuSigned by: Wm H Elam, Jr
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 019721 ENGINEER WILLIAM H. ELAM 4/18/2017

ROADWAY DESIGN ENGINEER
DocuSigned by: W. S. Hood
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 014509 ENGINEER W. S. HOOD 4/18/2017

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

11-APR-2017 11:42
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5165	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL 2017 SEAL 014509 ENGINEER W. S. HOOD

DocuSigned by: W. S. Hood

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT: C203940
TIP PROJECT: B-5165
COUNTY: DAVIDSON

INDEX OF SHEETS

GENERAL NOTES:

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE Davidson Water Inc.

Winston-Salem Sewer

Energy United Distribution Power

Surry Telephone Fiber

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-17-2012
REV. 02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills - Sub Regional Tier
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
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
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
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-5165	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:

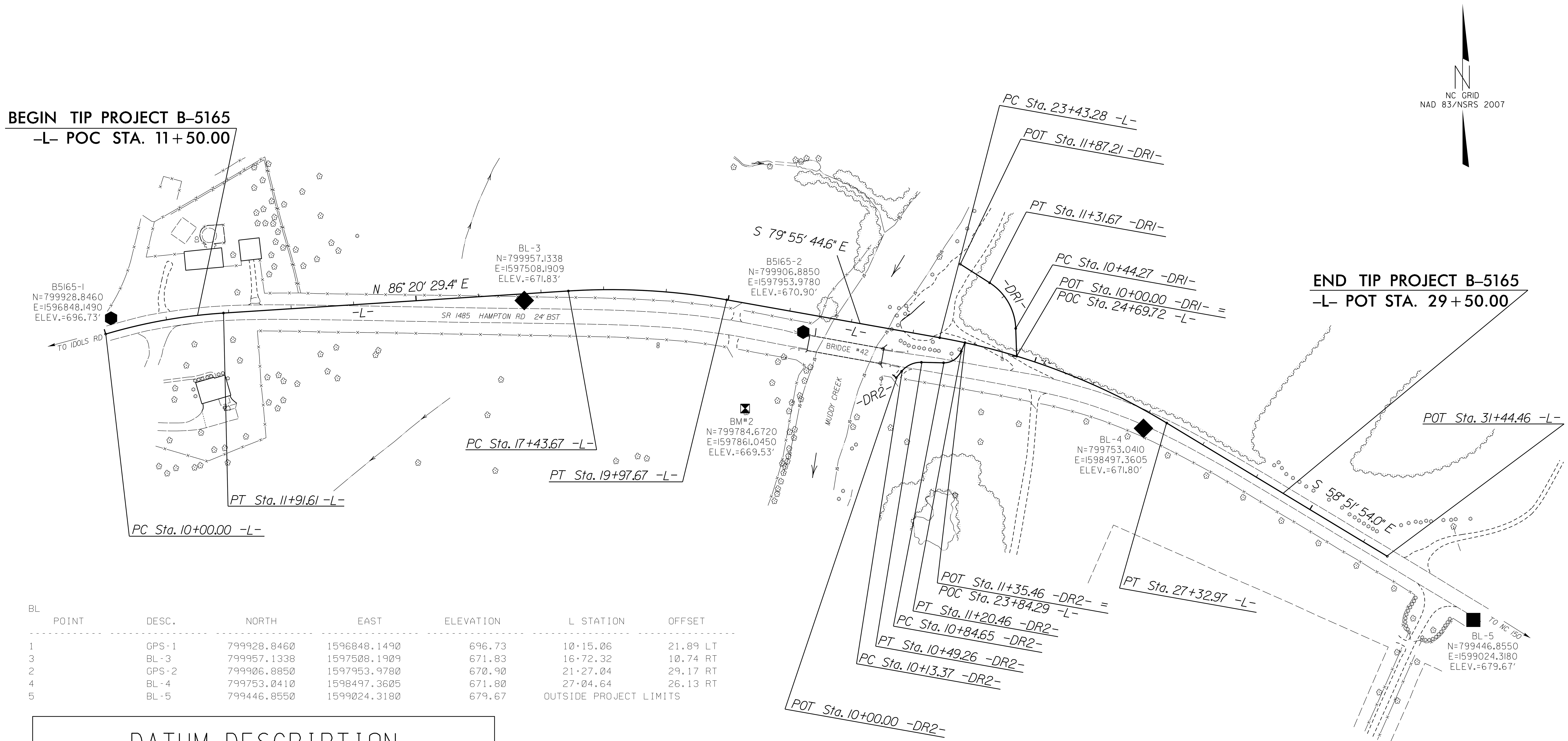
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

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.)

PROJECT REFERENCE NO.	SHEET NO.
B-5165	1C-1
Location and Surveys	

SURVEY CONTROL SHEET B5165



BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	GPS-1	799928.8460	1596848.1490	696.73	10+15.06	21.89 LT
3	BL-3	799957.1338	1597508.1909	671.83	16+72.32	10.74 RT
2	GPS-2	799906.8850	1597953.9780	670.90	21+27.04	29.17 RT
4	BL-4	799753.0410	1598497.3605	671.80	27+04.64	26.13 RT
5	BL-5	799446.8550	1599024.3180	679.67	OUTSIDE PROJECT LIMITS	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5165-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 799928.8460(ft) EASTING: 1596848.149(ft)
ELEVATION: 696.73(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999916474
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5165-1" TO -L- STATION 10+00.00 IS
S 18° 49' 00.28" W 26.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BENCHMARKS

*

BM#1 ELEVATION = 696.73'
N 799929 E 1596848
L STATION 10+15.00 22' LEFT NCDOT
GPS MONUMENT B5165-1

BM#2 ELEVATION = 669.53'
N 799785 E 1597861
L STATION 20+57.00 166' RIGHT
RAIL ROAD SPIKE IN THE NORTHERN
ROOT OF A 30" WILLOW OAK

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5165_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.

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PROJECT REFERENCE NO.	SHEET NO.
B-5165	1C-2
Location and Surveys	

SURVEY CONTROL SHEET B5165
PRELIMINARY

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	799903.5930	1596839.5439
PT	11+91.61	799937.1768	1597027.7721
PC	17+43.67	799972.4037	1597578.7087
PT	19+97.67	799958.2314	1597831.7063
PC	23+43.28	799897.7955	1598171.9911
PT	27+32.97	799761.4365	1598534.7114
POT	31+44.46	799548.6743	1598886.9248

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	799868.3214	1598294.8715
PC	10+44.27	799912.5714	1598293.3892
PT	11+31.67	799985.5094	1598251.7243
POT	11+87.21	800015.3103	1598204.8479

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	799833.8651	1598102.5429
PC	10+13.37	799844.1262	1598111.1109
PT	10+49.26	799858.4789	1598142.6990
PC	10+84.65	799857.6962	1598178.0868
PT	11+20.46	799876.0233	1598206.3891
POT	11+35.46	799889.8445	1598212.2227

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+91.61	-30.00	799967.11562	1597025.85781
L	13+25.00	-30.00	799975.62745	1597158.97984
L	13+50.00	-50.00	799997.18194	1597182.65270
L	17+43.67	-50.00	800022.30177	1597575.51819
L	19+97.67	-50.00	800007.46099	1597840.44966
L	23+43.28	-50.00	799947.02513	1598180.73443
L	27+32.97	-50.00	799804.23406	1598560.56420
L	29+50.00	-30.00	799674.90073	1598735.98621
L	29+50.00	-50.00	799692.01976	1598746.32733

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+37.00	-30.00	799970.01220	1597071.15918
L	12+97.00	-61.00	800004.77760	1597129.05880
L	12+99.00	-49.00	799992.92968	1597131.82044
L	13+17.00	-65.00	800010.04565	1597148.76280
L	13+20.00	-51.00	799996.26561	1597152.65003
L	13+42.00	-43.60	799990.28450	1597175.07738
L	15+22.00	53.33	799905.04258	1597360.89533
L	16+18.00	83.00	799881.55399	1597458.59323
L	23+55.00	74.40	799822.57687	1598169.70041
L	23+55.00	122.00	799775.80519	1598160.85902
L	23+55.00	106.00	799791.52676	1598163.83092
L	24+10.00	122.00	799765.52874	1598208.42596
L	24+10.00	72.30	799813.81938	1598220.17775
L	24+10.00	102.00	799784.96159	1598213.15505
L	25+13.00	-50.00	799902.10008	1598352.49306
L	25+13.00	-61.00	799912.48539	1598356.11872
L	25+31.00	-62.00	799906.99718	1598374.38228
L	25+32.00	-50.00	799895.37419	1598371.21769
L	25+35.00	82.00	799770.5876	1598328.0783
L	28+50.00	-69.00	799759.98846	1598670.55626
L	28+51.10	-50.00	799743.15633	1598661.67422
L	28+70.00	-71.00	799751.35924	1598688.70940
L	28+71.00	-50.00	799732.86721	1598678.70717
L	28+75.00	51.00	799644.34789	1598629.90829
L	28+75.00	30.11	799662.23134	1598640.71118

DATUM DESCRIPTION

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VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/*

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PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

6/2/99

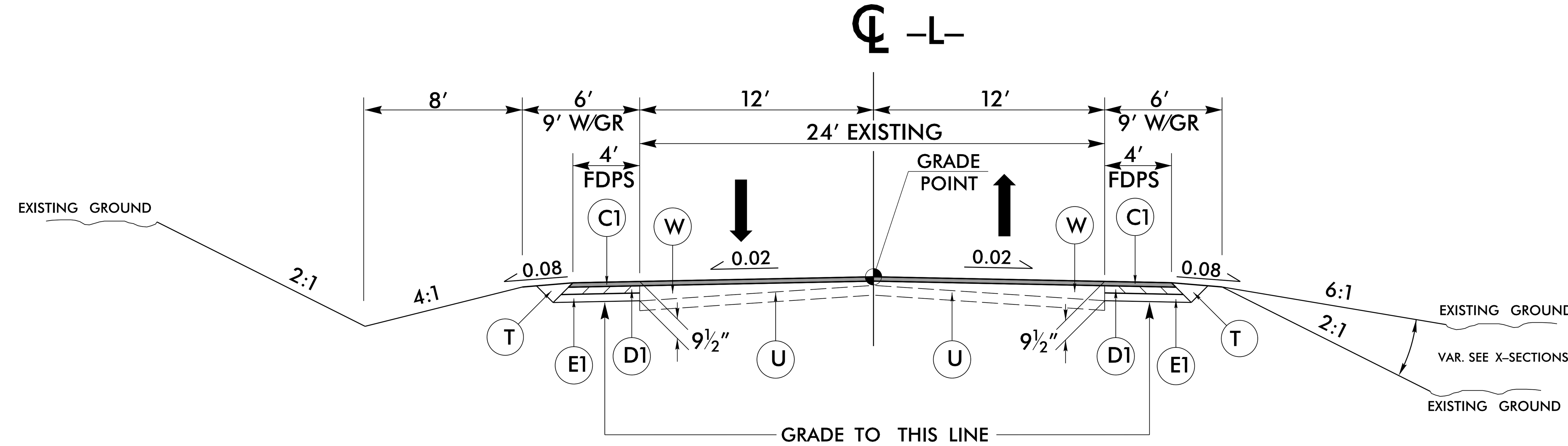
PROJECT REFERENCE NO.	SHEET NO.
B-5165	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 014509 ENGINEER W. S. HOOD 3/17/2017	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON 3/17/2017
DocuSigned by: W. S. Hood	DocuSigned by: Clark Morrison

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 LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAILS SHOWING METHOD OF WEDGING.)

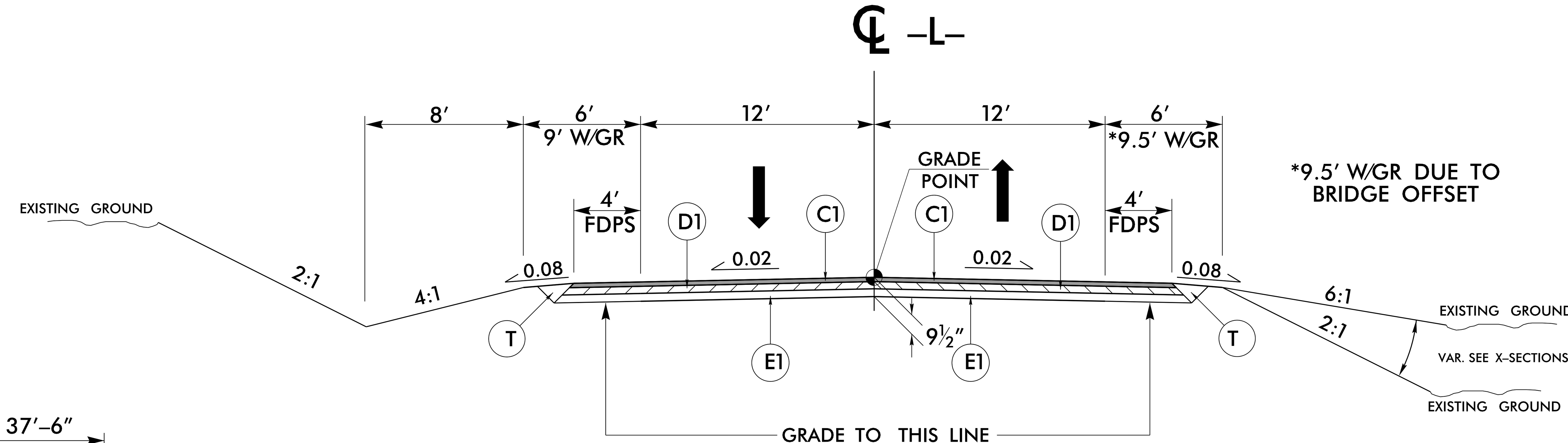
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AT THE FOLLOWING LOCATIONS:

-L- STA. 11+50.00 TO -L- STA. 15+25.00
-L- STA. 25+75.00 TO -L- STA. 29+50.00

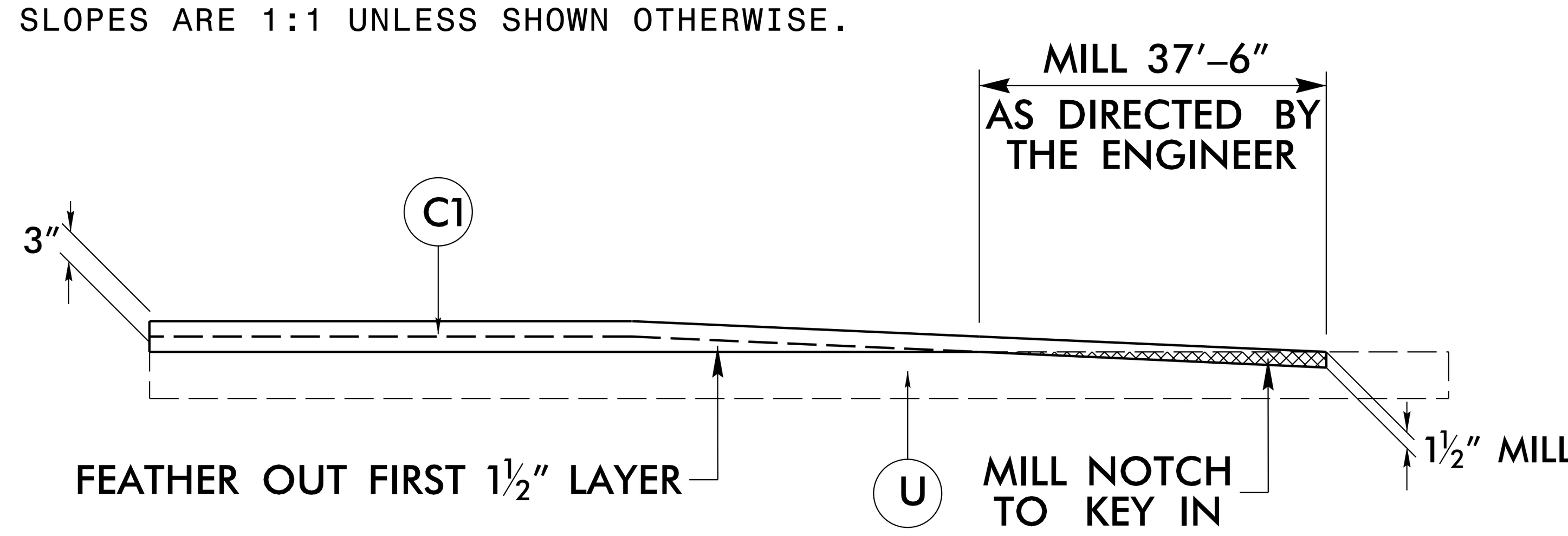


*9.5' W/GR DUE TO BRIDGE OFFSET

TYPICAL SECTION NO. 2

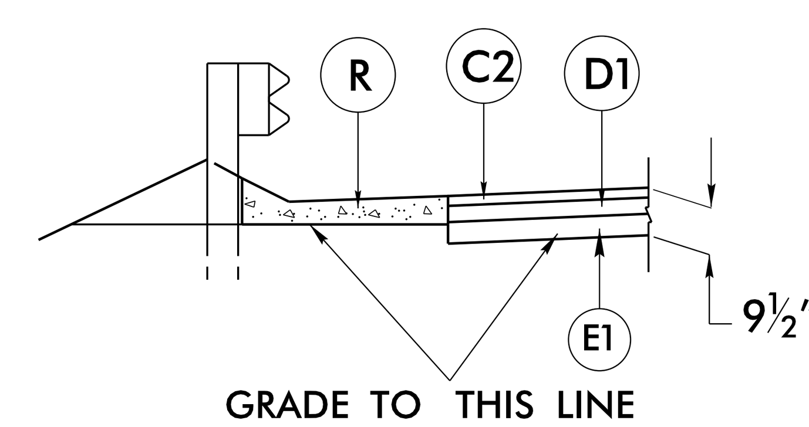
USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATIONS:

-L- STA. 15+25.00 TO -L- STA. 21+35.74 (BEGIN BRIDGE)
-L- STA. 22+88.26 (END BRIDGE) TO -L- STA. 25+75.00



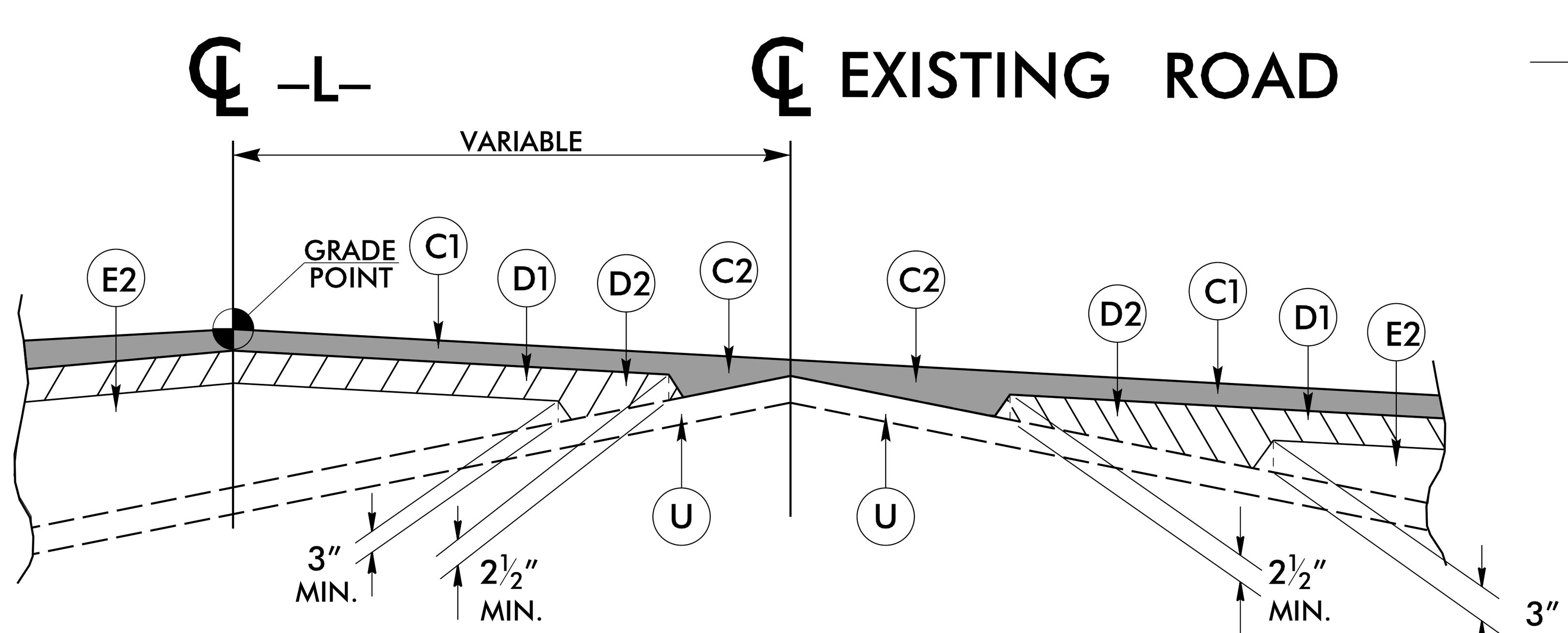
DETAIL OF INCIDENTAL MILLING

-L- STA. 11+12.50 TO 11+50.00
-L- STA. 29+50.00 TO 29+87.50



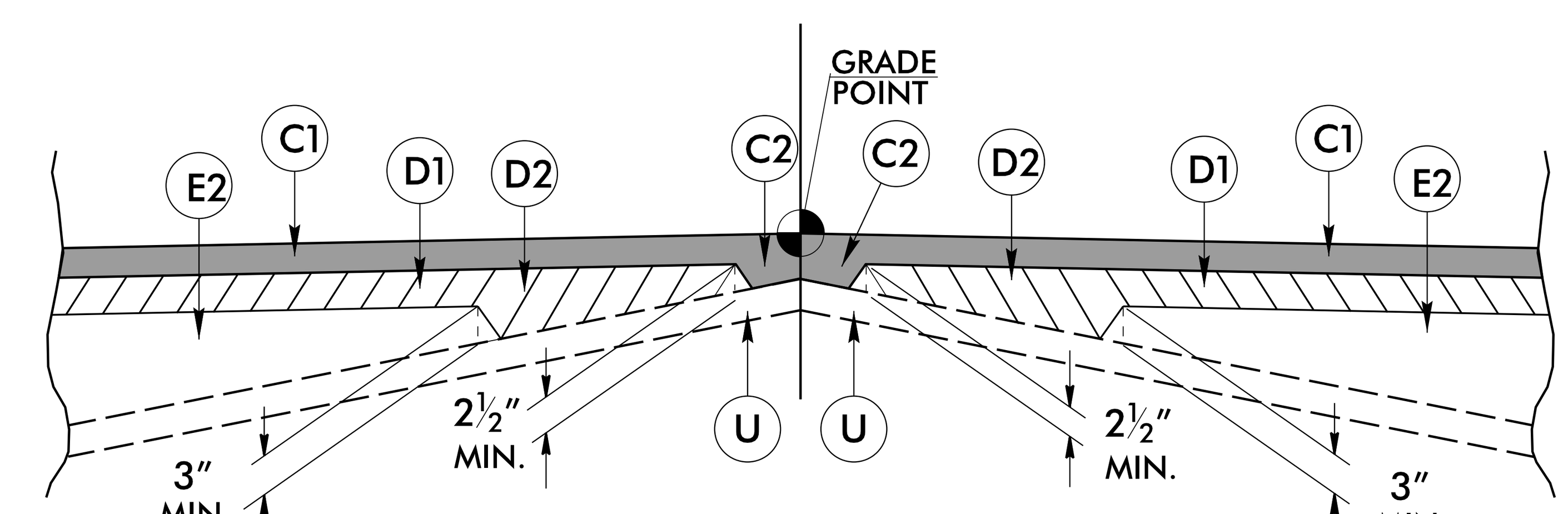
DETAIL SHOWING SHOULDER BERM GUTTER (SBG) ON TOP OF SUBGRADE

-L- STA. 21+00.00 TO STA. 21+29.00(BEGIN APPROACH SLAB) (RT)



DETAIL SHOWING METHOD OF WEDGING

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1



DETAIL SHOWING METHOD OF WEDGING

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1

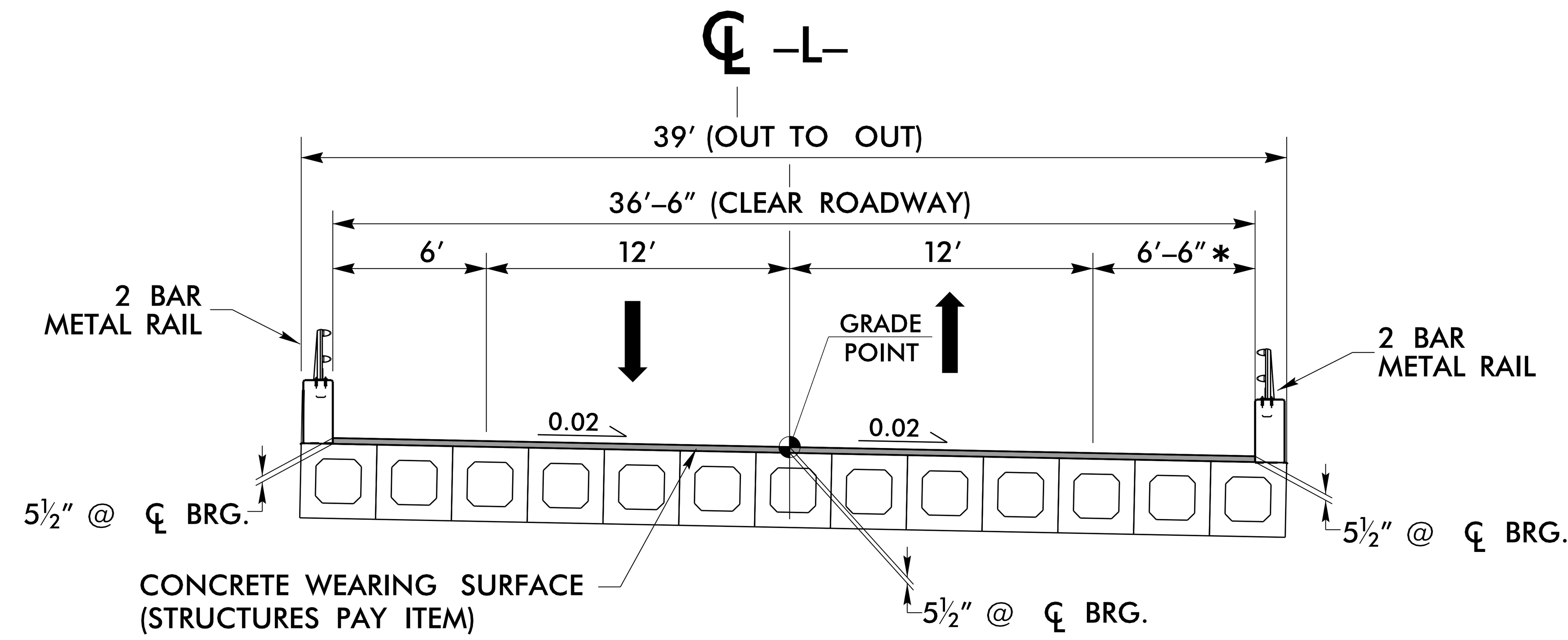
6/2/99

11-APR-2017 12:01
R:\Roadway\Proj\B5165_Rdy_typ_02A1.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5165	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 014509 — W. S. Hood	SEAL 022896 — Clark Morrison

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
C2	VAR. DEPTH S9.5B
J1	6" ABC
T	EARTH MATERIAL



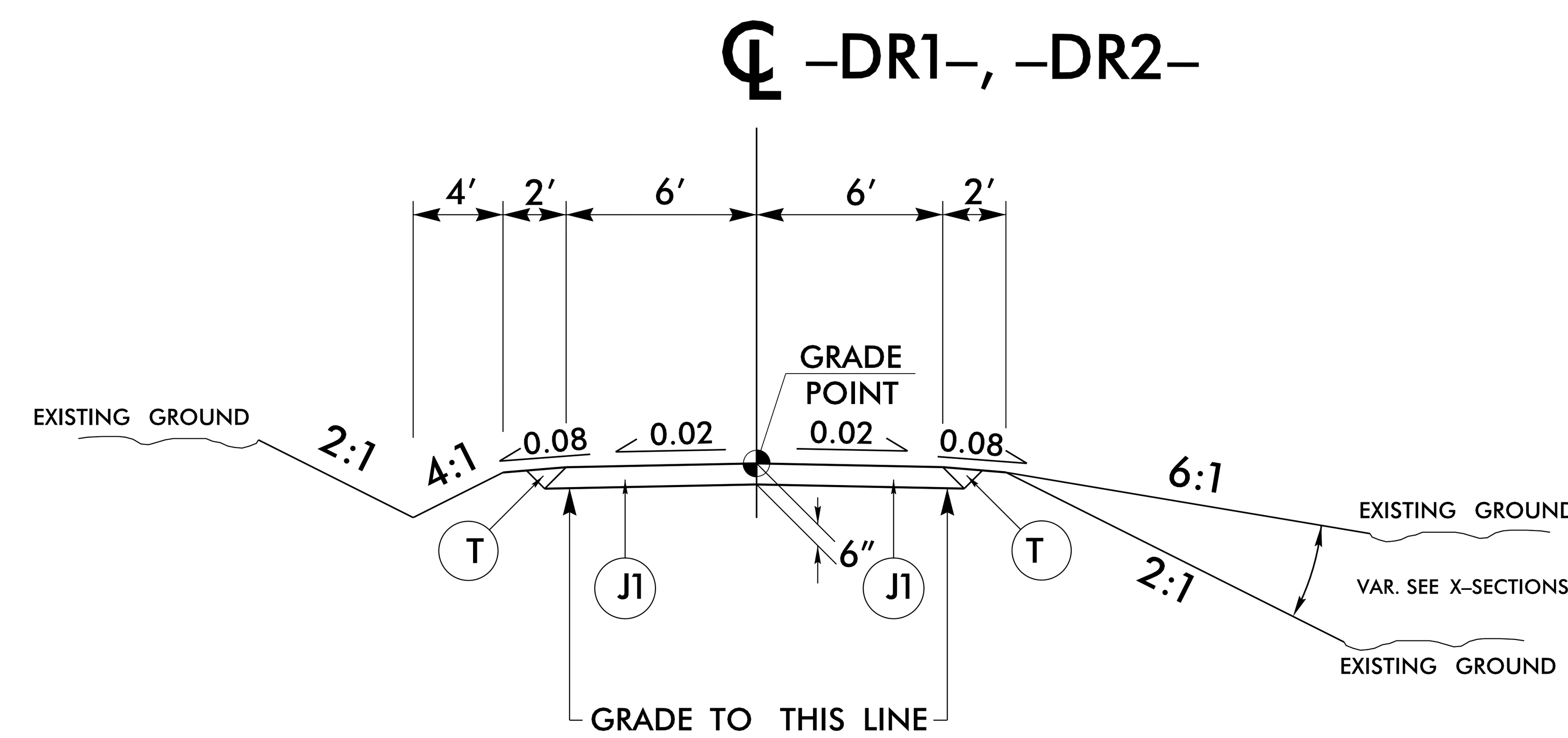
TYPICAL SECTION NO. 3

13 BOX BEAM UNITS
(SEE STRUCTURE PLANS)

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS:

-L- STA. 21+35.74 (BEGIN BRIDGE) TO
-L- STA. 22+88.26 (END BRIDGE)

* ADDITIONAL BRIDGE OFFSET WIDTH REQUIRED FOR HYDRAULIC DESIGN

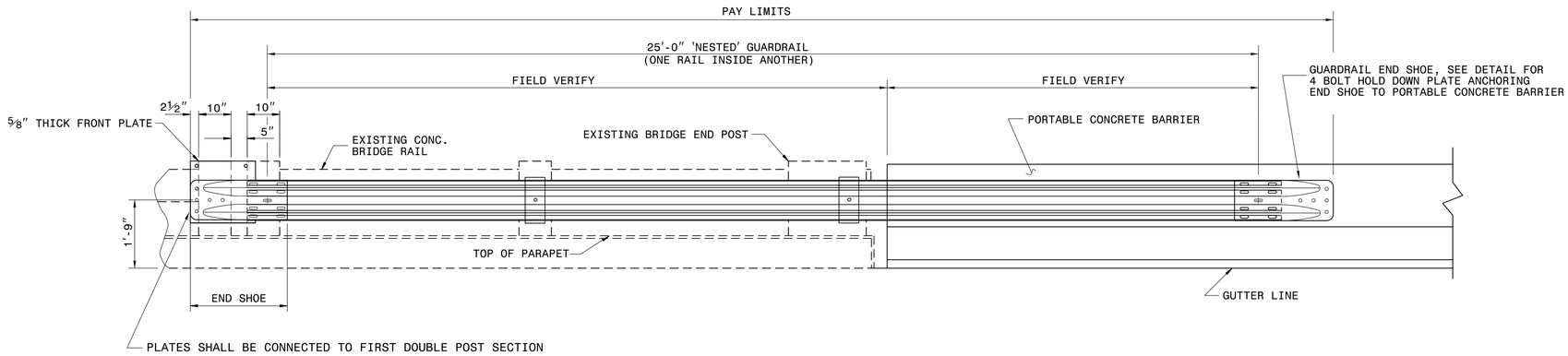


TYPICAL SECTION NO. 4

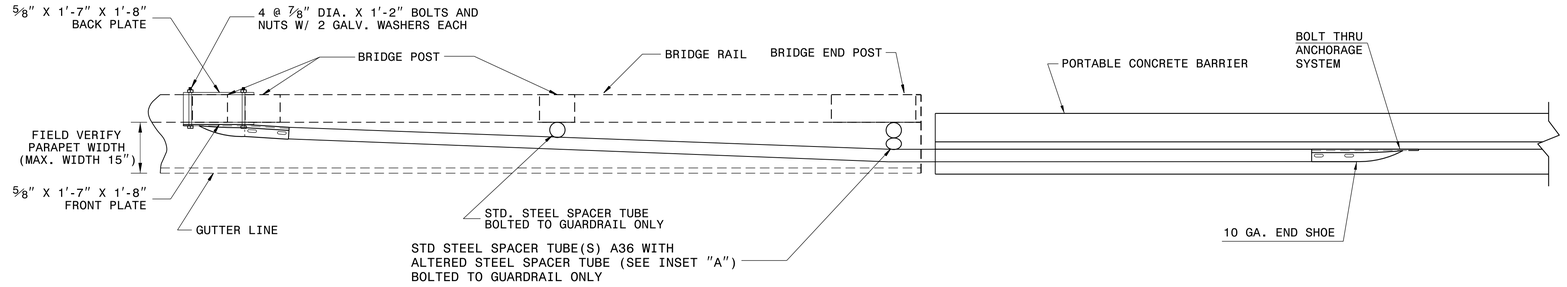
USE TYPICAL SECTION NO. 4
AT THE FOLLOWING LOCATIONS:

-DR1- STA. 10+16.89 TO -DR1- STA. 11+66.00
-DR2- STA. 10+10.00 TO -DR2- STA. 11+19.17

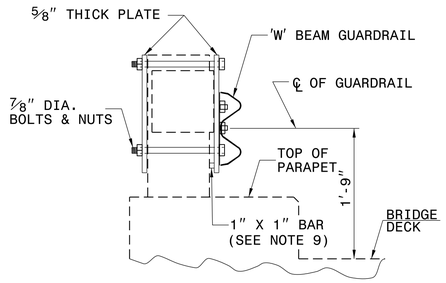
PROJECT REFERENCE NO.	SHEET NO.
B-5165	2C-1



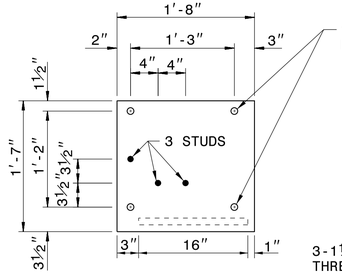
ELEVATION VIEW



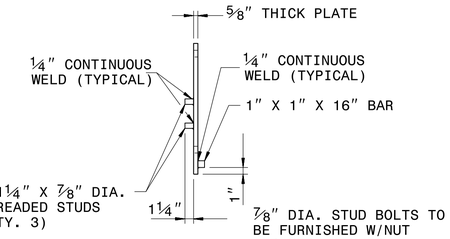
PLAN VIEW



SECTION VIEW



FRONT VIEW

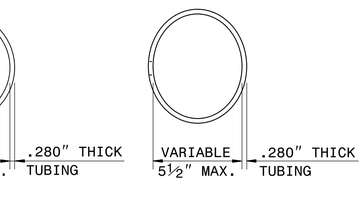


SIDE VIEW

STUDS MAY BE ADJUSTED TO MEET FIELD CONDITIONS

FRONT PLATE

BACK PLATE



FRONT VIEW

PLAN VIEW

PLAN VIEW INSET "A"

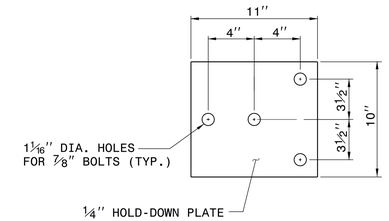
STEEL SPACER TUBE

NOTES FOR 4 BOLT HOLD DOWN PLATE

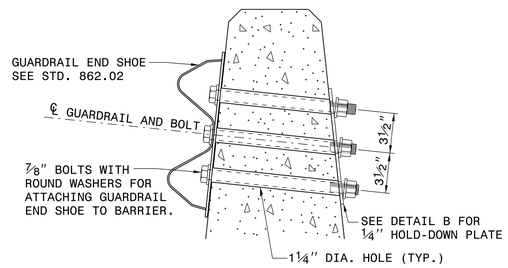
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

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.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1¼" DIA. 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.



4 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER OR RAIL

THRU END SHOE SECTION AND
4 BOLT HOLD DOWN PLATE

GENERAL NOTES:

1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. KEEP TOE OF PORTABLE CONCRETE BARRIER FLUSH WITH FACE OF PARAPET.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH ¼" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

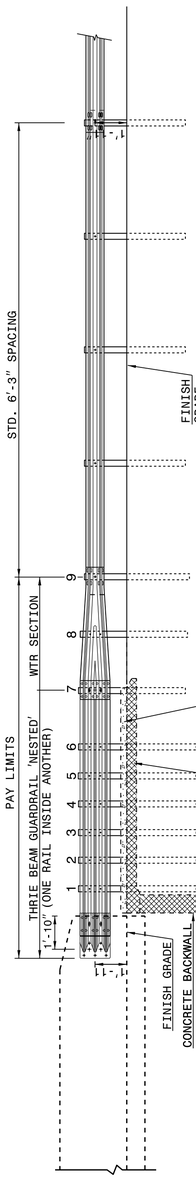
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

TEMPORARY ANCHOR UNIT TYPE W-BEAM

ORIGINAL BY: E.E. WARD DATE: 4-03
MODIFIED BY: E.E. WARD DATE: 6-04
CHECKED BY: DATE:
FILE SPEC.: :\usr\details\stand\862stds\anc.dgn

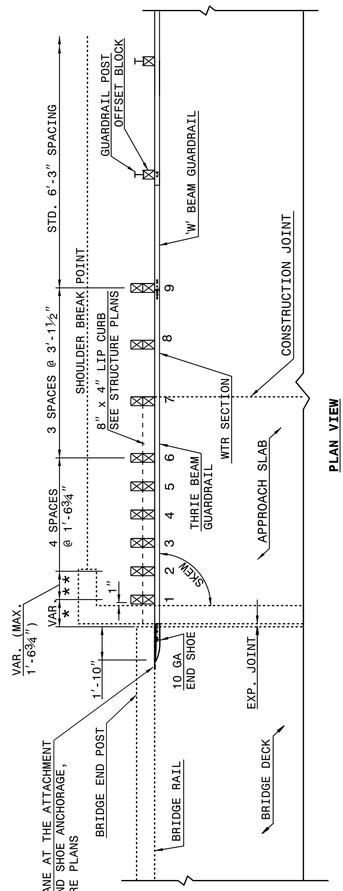
$$$$USERNAME$$$$ $$$$DGNAME$$$$ $$$$SYSTIME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5165	2C-2



ELEVATION

NOTE:
* -POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
** -THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 1½". IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

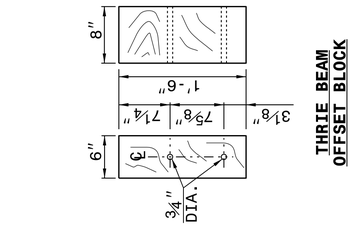
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

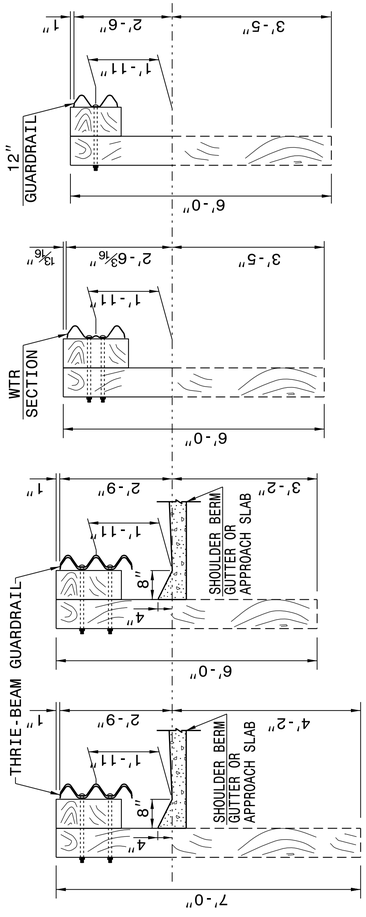
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER	SHEET 2 OF 7 **862d03**

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

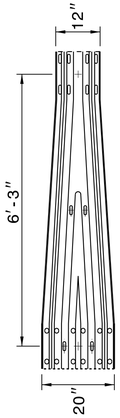
ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

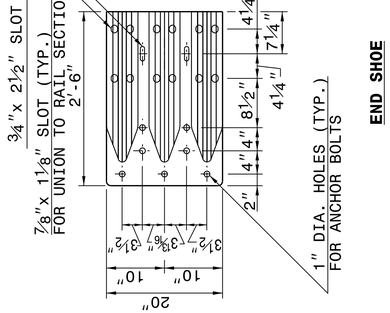
SHEET 2 OF 7 **862d03**

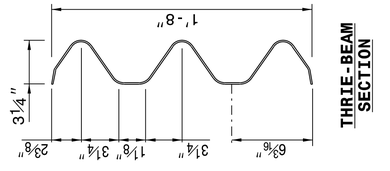




NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.







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

ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7 **862d03**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **STRUCTURE ANCHOR UNITS** GUARDRAIL ANCHOR UNIT, TYPE III	SHEET 3 OF 7 **862d03**

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton 3/2/2021

DocuSigned by: Joel Howerton B73F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

09-MAR-2017 10:11
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2012 Standard Drawings\Details in Lieu of Standards\Division 8\862d03 Type III.dgn
jhowerton AT CSD-242595

PROJECT REFERENCE NO.	SHEET NO.
B-5165	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 3/8/2017
F760CAE9B6EC4D3... SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

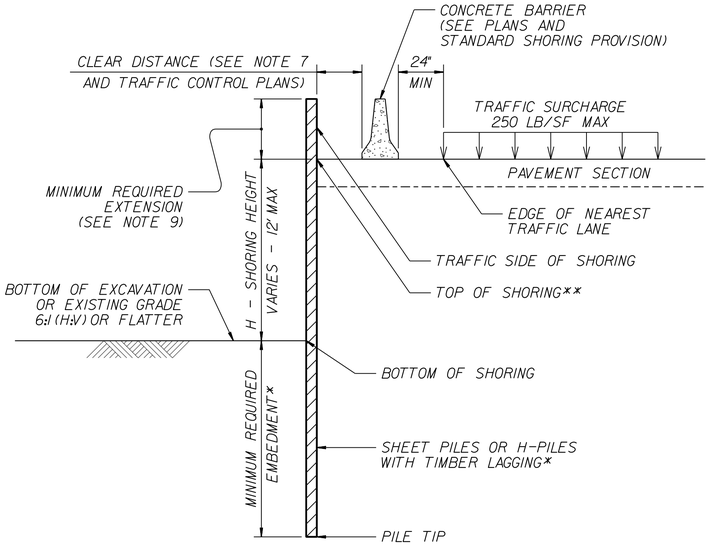
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

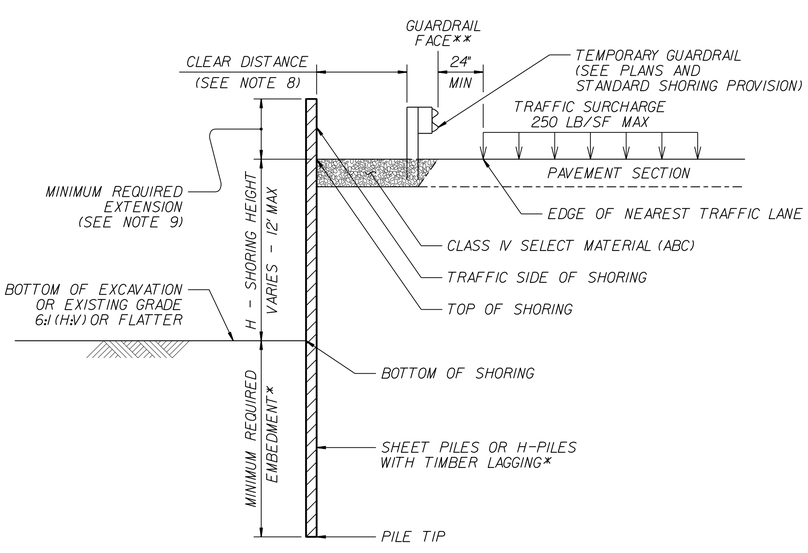
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



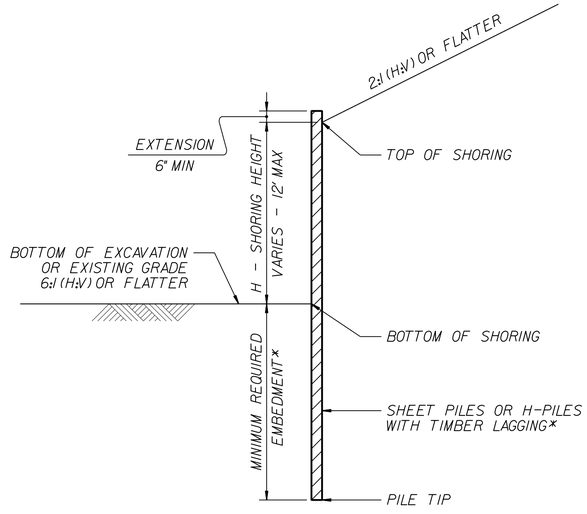
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)

***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

***SEE TABLE ABOVE.**

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

12/06/07

COMPUTED BY: M. Hussey DATE: 3/2016
CHECKED BY: J. TEAGUE DATE: 4/2016

PROJECT REFERENCE NO.	SHEET NO.
B-5165	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	TYPE III		TEMP W-BEAM	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	20+47.76	21+29.01 (BRIDGE)	RT	81.25			21+29.01 (BRIDGE)		6.5	9.5	50		1		1	1											28		
-L-	20+61.04	21+42.29 (BRIDGE)	LT	81.25				21+42.29 (BRIDGE)	6	9		50		1	1	1											28		
-L-	22+81.53 (BRIDGE)	23+62.78	RT	81.25				22+81.53 (BRIDGE)	6.5	9.5		50		1	1	1											28		
-L-	22+94.81 (BRIDGE)	24+38.56	LT	143.75			22+94.81 (BRIDGE)		6	9	50		1		1	1											40		
-L-	24+87.50	29+12.50	LT	425.00			28+50.00	25+00.00	6	9	50	50	1	1	2														
TEMPORARY TRAFFIC CONTROL																													
-L-	20+35.00 +/-	21+40.00 +/-	RT															1											
-L-	22+58.00 +/-	23+67.00 +/-	RT															1											
TOTAL				812.50											6	4		2									124		
DEDUCTIONS FOR ANCHORS:																													
4 TYPE III'S AT 18.75' EA.=				75'																									
6 TYPE GRAU 350'S @ 50' EA.=				300'																									
TOTAL DEDUCTION =				375'																									
TOTAL STEEL BEAM GUARDRAIL =				437.50'																									
SAY =				450.00'											6	4		2									124		
ADDITIONAL GUARDRAIL POSTS =				5 EA																									

★ *ASPHALT PAVEMENT REMOVAL SUMMARY*
IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	14+50.96	20+13.29	RT	991.95
-L-	20+25.29	21+38.37	RT	207.30
-L-	22+58.47	23+16.53	RT	96.24
-L-	23+18.75	23+89.46	RT	55.29
Temp. Pavement				
-L-	20+35.00	21+40.00	LT	70.00
-L-	22+58.00	23+67.00	LT	72.67
Inside Slope Stakes				
-L-	11+50.00	17+81.88	RT	1,183.16
-L-	19+23.00	21+38.37	RT	141.02
-L-	22+79.52	29+50.00	RT	1,630.67
			TOTAL:	4,448.30
			SAY:	4,450

SHOULDER BERM GUTTER SUMMARY
IN LINEAR FEET

SURVEY LINE	STATION	STATION	LENGTH (FT)
-L- (RT)	21+00.00	21+29.00	29.00
		TOTAL:	29.00
		SAY:	29.00

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

★ *SUMMARY OF EARTHWORK*
IN CUBIC YARDS

LINE	STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
PHASE I						
-L-	11+00.00	21+35.74(BRIDGE)	157	4,888	4,731	
-L-	22+88.26(BRIDGE)	30+00.00		6,210	6,210	
-DR1-	10+16.89	11+66.00		1,248	1,248	
		SUBTOTAL 1:	157	12,346	12,189	
PHASE II						
-L-	11+00.00	16+00.00	80	160	80	
-L-	16+50.00	21+35.74	188	7		181
-L-	23+50.00	29+00.00	157	312	155	
-DR2-	10+00.00	11+19.17	16	170	154	
		SUBTOTAL 2:	441	649	389	181
		TOTAL	598	12,995	12,578	181
EARTH WASTE TO REPLACE BORROW					-181	-181
		PROJECT TOTALS:	598	12,995	12,397	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					620	
		GRAND TOTAL:	598		13,018	
		SAY:	600		13,100	

Estimated Undercut Excavation = 300 C.Y. (Per Geotchnical Unit's Letter January 4, 2016)
Estimated Select Granular Material = 300 C.Y. (Per Geotechnical Unit's Letter January 4, 2016)
Estimated DDE = 40 C.Y.
Estimated Shallow Undercut = 100 C.Y. (Per Geotechnical Unit's Letter January 4, 2016)
Estimated Class IV Subgrade Stabilization = 200 Tons (Per Geotechnical Unit's Letter January 4, 2016)

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

LG751494

COMPUTED BY:	CHL	DATE:	2/10/17
CHECKED BY:	WSH	DATE:	2/10/17

PROJECT NO.	SHEET NO.
B-5165	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)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	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	DO NOT USE PVC
-L- 12+43.50	LT	0401																		
-L- 20+10.02	RT	0503																		
-L- 21+10.50	RT	0501		672.9																
-L- 21+10.50	RT	0501	0502		670.1	668.2			20							X				
-DR1- 10+58.88	CL	0504			664.5	664.3														
-L- 23+95.00	CL	0505	0506		664.2	663.5														
SHEET TOTALS									20											
PROJECT TOTALS									20											

LINE & STATION	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02
-L- 12+43.50									20									
-L- 20+10.02									60									
-L- 21+10.50															1			
-L- 21+10.50																		
-DR1- 10+58.88				60														
-L- 23+95.00				136														
SHEET TOTALS				196					80						1			
PROJECT TOTALS				196					80						1			

LINE & STATION	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37
-L- 12+43.50																										
-L- 20+10.02																										
-L- 21+10.50																		1						1		
-L- 21+10.50																										
-DR1- 10+58.88																										
-L- 23+95.00																										
SHEET TOTALS																		1						1		
PROJECT TOTALS																		1						1		

LINE & STATION	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOWS	18" C.S. ELBOW	PIPE CLEANOUT	PREFORMED SCOUR HOLE (PER EACH)	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
-L- 12+43.50																16	REMOVE EXIST 15" RCP
-L- 20+10.02											1					21	REMOVE EXIST 15" IRON PIPE, RETAIN AND CLEANOUT 15" RCP
-L- 21+10.50																	
-L- 21+10.50									2								
-DR1- 10+58.88																24	REMOVE EXIST 18" RCP
-L- 23+95.00												1				72	REMOVE EXIST 24" RCP
SHEET TOTALS									2		1	1				133	
PROJECT TOTALS									2		1	1				133	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: C. Murray DATE: 03-09-2017
CHECKED BY: S. Clark DATE: 03-10-2017

(2-16-16)

PROJECT NO.	SHEET NO.
B-5165	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	100
				TOTAL LF:	100

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

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		100	200	300		
			TOTAL CY/TONS/SY:		100	200	300**		

***ASU = Aggregate Subgrade**
***AST = Aggregate Stabilization**
****Total square yards of "Geotextile for Soil Stabilization" is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.**

PROJ. REFERENCE NO.	SHEET NO.
B-5165	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	HENRY RANDOLPH TURNER
2	4 & 5	RICHARD R. CHILDRESS
3	4 & 5	RICHARD R. CHILDRESS
4	5	JOHN RAY HEGE
5	5	RICHARD R. CHILDRESS

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5165	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

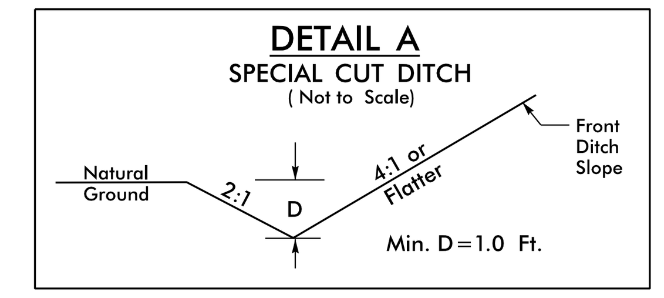
NORTH CAROLINA PROFESSIONAL SEAL 014509 ENGINEER W. S. HOOD — DocuSigned by: W. S. Hood

NORTH CAROLINA PROFESSIONAL SEAL 019721 ENGINEER WILLIAM H. ELAM — DocuSigned by: Wm. H. Elam, Jr

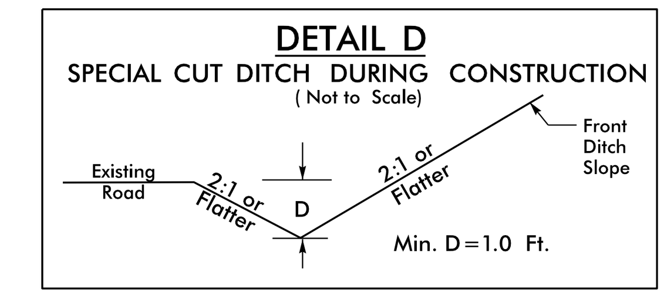
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

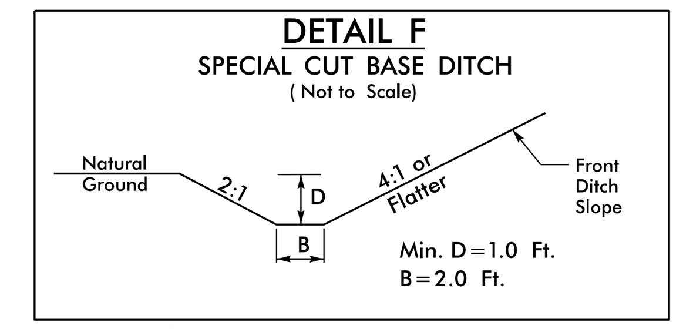
N 73° 25' 33.4" E (BACK)	PI Sta 18+71.28
PI Sta 10+96.21	△ = 13° 43' 46.0" (RT)
△ = 12° 54' 56.0" (RT)	D = 5° 24' 18.9"
D = 6° 44' 26.4"	L = 254.00'
L = 191.61'	T = 127.61'
T = 96.21'	R = 1,060.00'
R = 850.00'	SE = 0.06
	RO = 156'



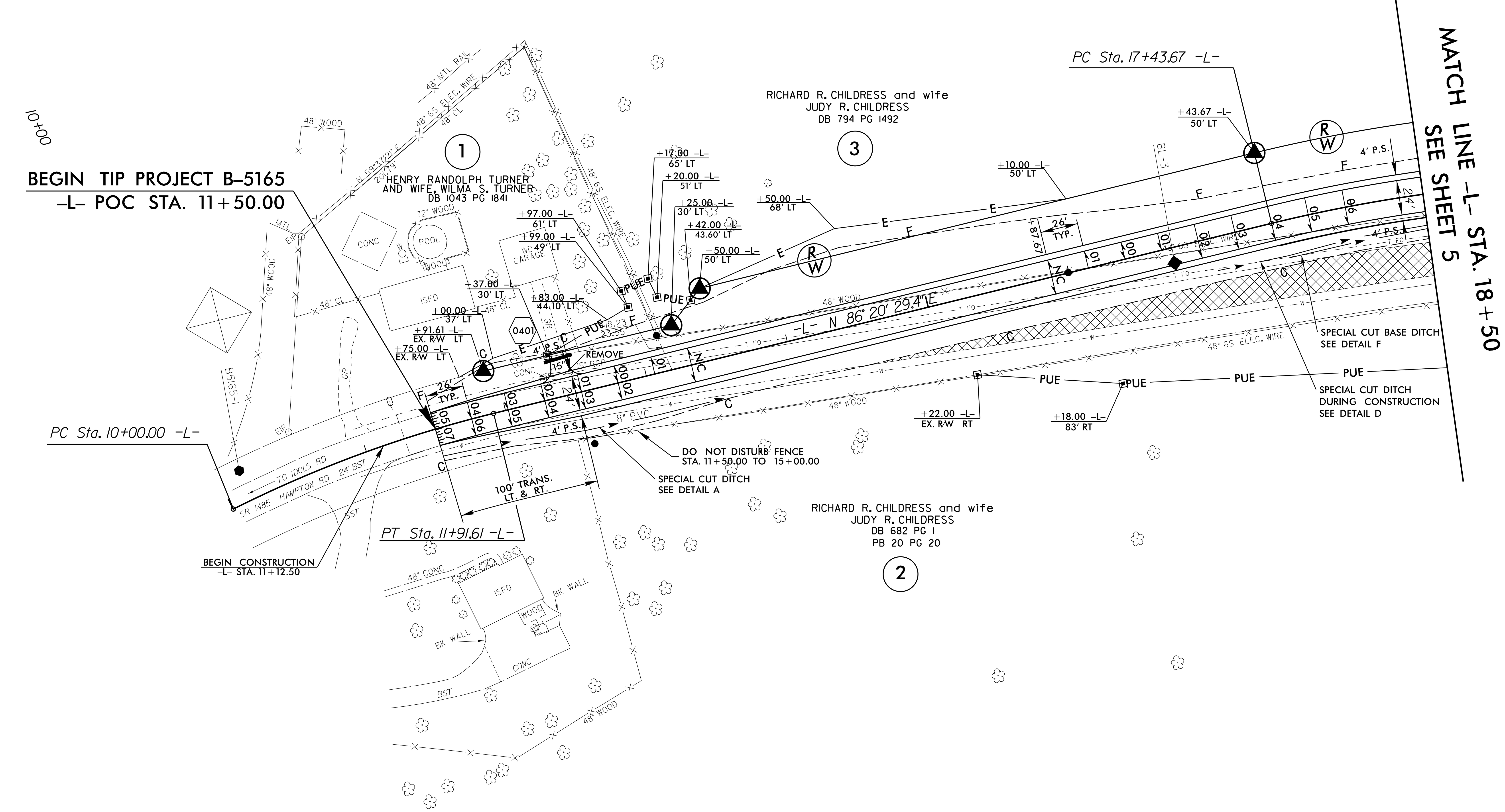
-L- STA. 11+50 TO STA. 13+50 RT



-L- STA. 17+00 TO STA. 21+00 RT
-L- STA. 23+50 TO STA. 24+00 RT



-L- STA. 17+50 TO STA. 21+00 RT



⊠	PAVEMENT REMOVAL

FOR -L- PROFILE, SEE SHEET NO. 6

ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-24

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5165	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 014509 — W. S. Hood

HYDRAULICS ENGINEER — SEAL 019721 — Wm. H. Elam, Jr

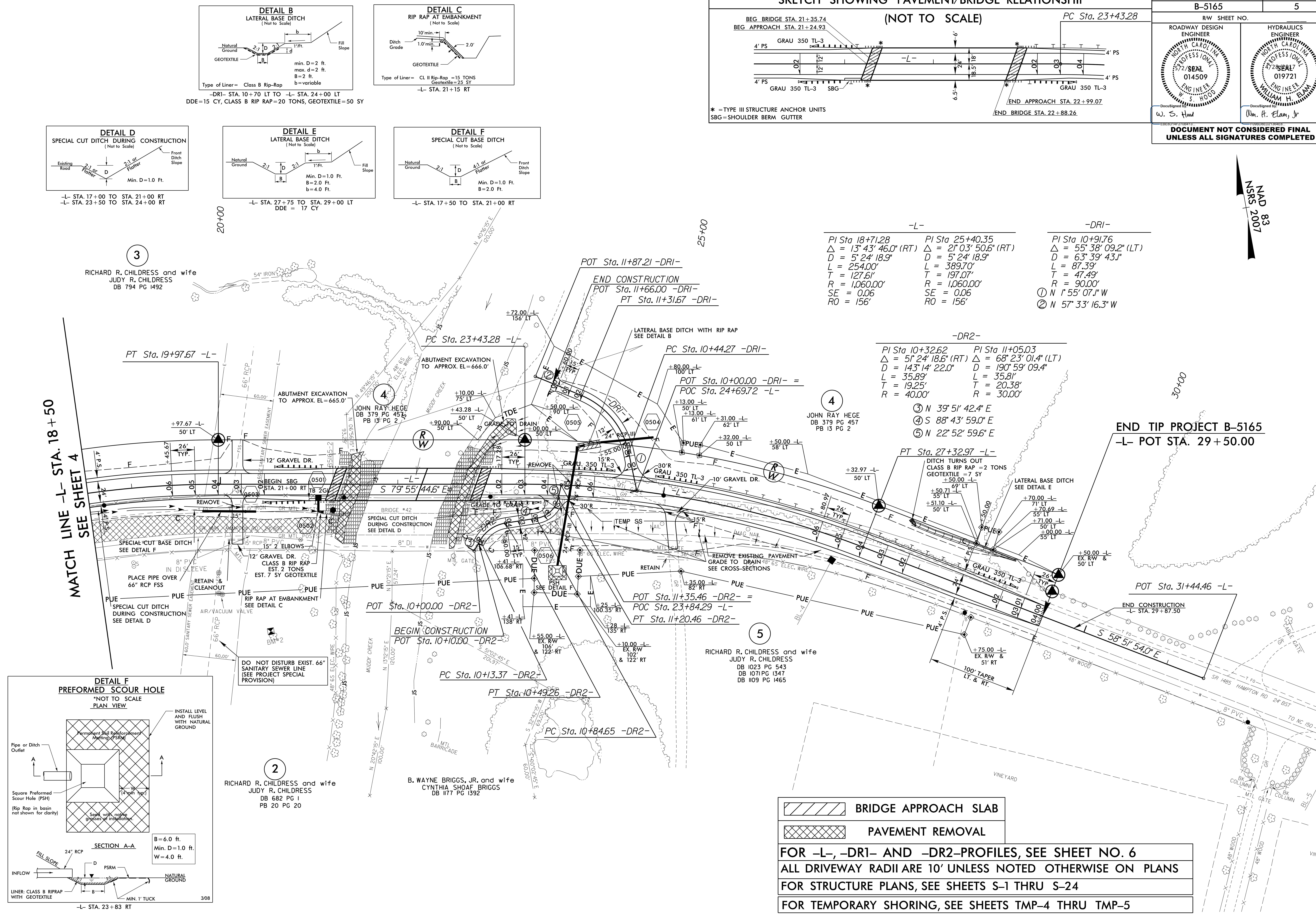
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SKETCH SHOWING PAVEMENT/BRIDGE RELATIONSHIP

(NOT TO SCALE)

BEG BRIDGE STA. 21+35.74
BEG APPROACH STA. 21+24.93
PC Sta. 23+43.28
END APPROACH STA. 22+99.07
END BRIDGE STA. 22+88.26

* = TYPE III STRUCTURE ANCHOR UNITS
SBG = SHOULDER BERM GUTTER



▨	BRIDGE APPROACH SLAB
▩	PAVEMENT REMOVAL

FOR -L-, -DR1- AND -DR2-PROFILES, SEE SHEET NO. 6

ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-24

FOR TEMPORARY SHORING, SEE SHEETS TMP-4 THRU TMP-5

8/17/99
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5165	6

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 014509 ENGINEER W. S. HOOD — 5/28/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 019721 ENGINEER WILLIAM H. BLAM, JR. — 5/28/2017

DocuSigned by: W. S. Hood — EBE8D74F270B413...

DocuSigned by: Wm. H. Blam, Jr — F08BD8ED2136E2E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 9350	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 671.3	FT
BASE DISCHARGE	= 23814	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 677.59	FT
OVERTOPPING DISCHARGE	= 11400	CFS
OVERTOPPING FREQUENCY	= 10	YRS
OVERTOPPING ELEVATION	= 672.9	FT
ESTIMATED NORMAL WATER SURFACE ELEVATION	= 656.00	FT
DATE OF SURVEY	= 1/19/2016	
W.S.ELEVATION AT DATE OF SURVEY	= 656.00	FT

PIPE HYDRAULIC DATA

24" RCP Sta. 23+95

DRAINAGE AREA	= 15.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 18	CFS
DESIGN HW ELEVATION	= 666.7	FT
100 YEAR DISCHARGE	= 20	CFS
100 YEAR HW ELEVATION	= 667.10	FT
OVERTOPPING FREQUENCY	= 10	YRS
OVERTOPPING DISCHARGE	= 16.5	CFS
OVERTOPPING ELEVATION	= 666.5	FT

BEGIN GRADE -L- STA. 11+50.00 EL = 695.76'

PI = 12+35.00 EL = 692.57' VC = 170' K = 96

(-)13.7500% (-)4.4% (-)15.5120% (-)5.4% (-)5.4%

BEGIN DITCH GRADE RT -L- STA. 11+57 EL = 693.60'

PI = 12+00.000 EL = 691.40'

PI = 13+00.000 EL = 686.00'

END DITCH GRADE RT -L- STA. 13+50 EL = 683.28'

PI = 16+30.00 EL = 670.80' VC = 620' K = 103

(-)16.5120% (+)0.5000% (-)3.0% (-)0.72% (-)0.70% (-)0.40%

BEGIN TEMP. DITCH GRADE RT -L- STA. 17+00 EL. = 672.20'

BEGIN DITCH GRADE RT -L- STA. 17+50.00 EL. = 670.31'

PI = 18+00.000 EL. = 669.95'

PI = 17+50.000 EL = 670.70'

PI = 18+50.000 EL = 669.60'

BEGIN BRIDGE -L- STA. 21+35.74

STA. 22+12 -L- 1@90° & 1@60° 33" BOX BEAM 2' CAP, 1.5:1 SPILL THROUGH G.P. ELEV. = 673.1 SKEW = 110°

END BRIDGE -L- STA. 22+88.26

(-)1.012% (-)0.52% (-)0.4000%

END TEMP. DITCH GRADE RT -L- STA. 21+00 EL. = 669.38'

END DITCH GRADE RT -L- STA. 21+00 EL. = 668.60'

ABUTMENT EXCAVATION TO APPROX. EL = 665.0' (STRUCTURE PAY ITEM)

CLASS I RIP RAP 1.5:1 OR FLATTER (STRUCTURE PAY ITEM) SEE STRUCTURE PLANS

NWS = 656'

LOW SIDE, LOW CHORD

ABUTMENT EXCAVATION TO APPROX. EL = 666.0' (STRUCTURE PAY ITEM)

CLASS II RIP RAP 1.5:1 OR FLATTER (STRUCTURE PAY ITEM) SEE STRUCTURE PLANS

(+)0.5000% (+)0.40% 24" RCP

PI = 20+00.000 EL = 669.70'

PI = 20+50.000 EL = 669.64'

BEGIN TEMP. DITCH GRADE RT -L- STA. 23+50 EL = 670.20'

END TEMP. DITCH GRADE RT -L- STA. 24+00 EL = 670.40'

674.47'

BM #2
-L- STA. 20+57
166' RT
EL = 669.53'
R/R SPIKE IN NORTHERN ROOT OF 30" WILLOW OAK

FOR -L- PLAN VIEW, SEE SHEET NO. 4 & 5

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-24

DITCH LEGEND

TEMP DITCH ------

RIGHT DITCH ----------

LEFT DITCH ----------

-L-

PI = 24+50.00 EL = 674.90' VC = 300' K = 281

674.47'

(+)0.5000% (-)0.5667% (-)0.5667% (+)1.1000% (+)0.1000%

BEGIN DITCH GRADE LT -L- STA. 27+75 EL. = 664.88'

PI = 27+50.00 EL = 673.20' VC = 300' K = 180

END DITCH GRADE LT -L- STA. 29+00 EL. = 665.00'

END GRADE -L- STA. 29+50.00 EL = 675.40'

FOR -L- PLAN VIEW, SEE SHEET NO. 5

-DR1-

BEGIN GRADE -DR1- STA. 10+16.89 EL = 675.45'

PI = 10+60.00 EL = 675.88' VC = 70'

END GRADE -DR1- STA. 11+66.00 EL = 666.18'

(+)1.0000% (-)1.0644% (+)0.4000%

24" RCP

PI = 11+30.00 EL = 666.04' VC = 70'

FOR -DR1- PLAN VIEW, SEE SHEET NO. 5

-DR2-

BEGIN GRADE -DR2- STA. 10+10.00 EL = 670.03'

PI = 10+50.00 EL = 672.89' VC = 80'

END GRADE -DR2- STA. 11+19.17 EL = 673.73

(+)1.1624% (+)1.2000%

FOR -DR2- PLAN VIEW, SEE SHEET NO. 5