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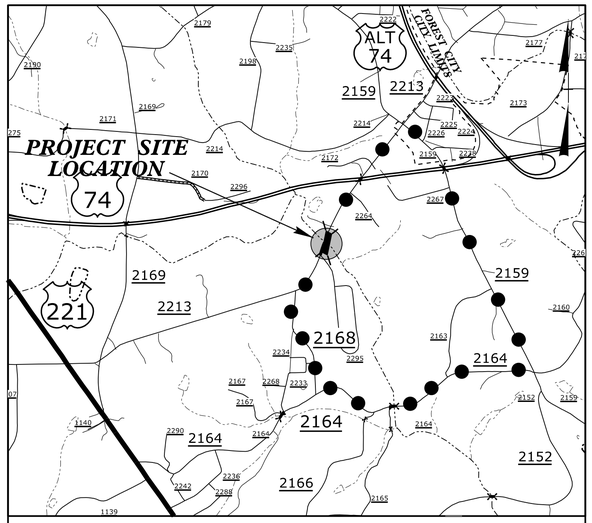
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: B–5397

CONTRACT: C203847

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



VICINITY MAP

OFF-SITE DETOUR ROUTE

N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5397	1	

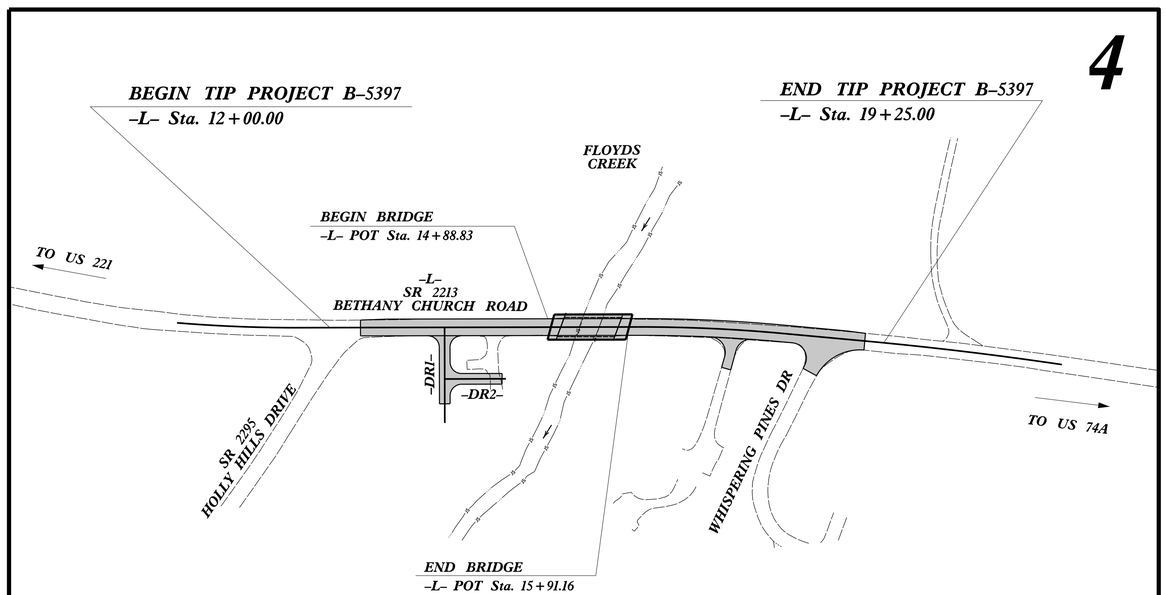
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46112.1.1	BRZ–2213(2)	P.E.
46112.2.1	BRZ–2213(2)	R/W
46112.2.1	BRZ–2213(2)	UTILITY
46112.3.1	BRZ–2213(2)	CONST.

LOCATION: BRIDGE NO. 51 OVER FLOYDS CREEK ON SR 2213 (BETHANY CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

NC GRID
NAD 83

4



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

DESIGN DATA

ADT 2017 = 5,000
ADT 2040 = 5,400
K = 10 %
D = 55 %
T = 6 % *
V = 40 MPH
* TTST = 1% DUAL 5%
FUNC CLASS = LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5397 = 0.118 mi.
LENGTH STRUCTURE TIP PROJECT B–5397 = 0.019 mi.
TOTAL LENGTH TIP PROJECT B–5397 = 0.137 mi.

PLANS PREPARED BY:
CH ENGINEERING
3220 GLEN ROYAL RD, RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr. Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 19, 2016

LETTING DATE:
MARCH 21, 2017

BRIAN A. WILES, PE
PROJECT ENGINEER

BRENDA MOORE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER
2/21/2017
DocuSigned by: Joshua G. Dalton
1088AD8C14994C3...
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON P.E.

ROADWAY DESIGN ENGINEER
2/21/2017
DocuSigned by: Brian A Wiles
8890D0FEA2E34DE...
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/2/2017
R:\Roadway\Proj\B5397_Rdy_tsh.dgn
USERNAME

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5397	1A

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

ROADWAY DESIGN ENGINEER
12/21/2016
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIANT ALLEN WILES
Document: Brian A Wiles
88900DFEA2E34DE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

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 II.

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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE 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 Duke Energy - Power Distribution, Town of Forest City - Water and Sewer, AT&T - Communications and Northland Cable - Communications.

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	
200.02	Method of Clearing - Method II
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
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 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

12/8/2016
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04/06/15

PROJECT REFERENCE NO.	SHEET NO.
B-5397	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
- 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:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- 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.
B-5397	1C-1
Location and Surveys	

SURVEY CONTROL SHEET B-5397

(FINAL)

BL

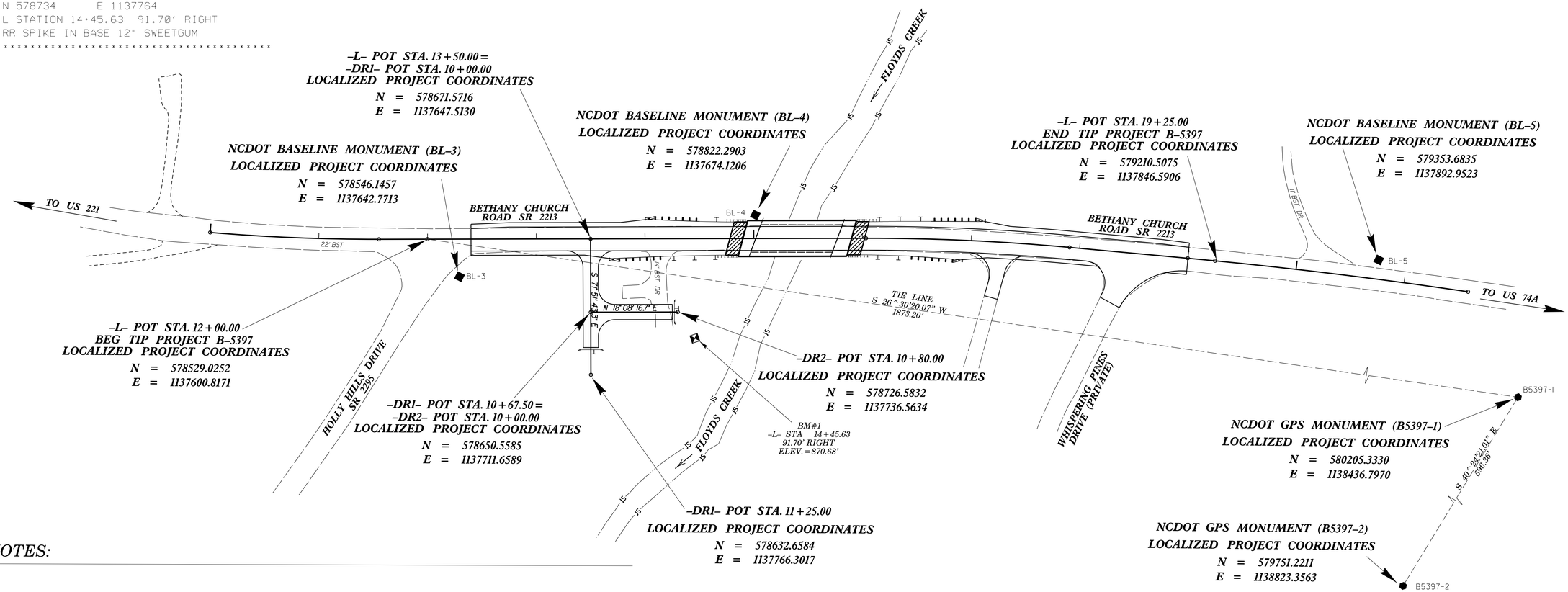
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS-1	B-5397-1	580205.3330	1138436.7970	955.96	OUTSIDE PROJECT LIMITS	
GPS-2	B-5397-2	579751.2211	1138823.3563	933.35	OUTSIDE PROJECT LIMITS	
3	BL-3	578546.1457	1137642.7713	885.36	12+29.33	34.54 RT
4	BL-4	578822.2903	1137674.1206	875.18	15+01.51	21.63 LT
5	BL-5	579353.6835	1137892.9523	898.02	20+74.17	17.76 LT

****

BM1 ELEVATION = 870.68
N 578734 E 1137764
L STATION 14+45.63 91.70' RIGHT
RR SPIKE IN BASE 12" SWEETGUM

****

NC GRID NAD 83



NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5397_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.
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5397-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 580205.333(ft) EASTING: 1138436.797(ft) ELEVATION: 955.96(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999753505
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5397-1" TO -L- STATION 12+00.00 IS S 26°30'20.07" W 1,873.20'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 88

1/12/2017
R:\Roadway\Proj\B5397_ls_1C-1.dgn
TGEFENGR

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5397	1C-2
Location and Surveys	

SURVEY CONTROL SHEET B-5397
(FINAL)

(DESIGN ALIGNMENTS)

-L-

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	578341.1952	1137532.3436
PT	11+55.21	578486.4650	1137586.8750
PC	16+03.25	578912.2417	1137726.3526
PT	17+90.68	579087.3627	1137792.9540
PC	18+99.87	579187.4942	1137836.5077
PT	21+59.49	579422.6011	1137946.5527

-DRIVES-

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	578671.5716	1137647.5130
POT	11+25.00	578632.6584	1137766.3017

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	578650.5585	1137711.6589
POT	10+80.00	578726.5832	1137736.5634

(ROW MARKERS)

-L-

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-19.00	578534.9400	1137582.7612
L	12+00.00	-50.00	578544.5905	1137553.3016
L	12+23.26	50.00	578535.5596	1137655.5721
L	16+03.25	-50.00	578927.8070	1137678.8371
L	16+03.25	50.00	578896.6764	1137773.8681
L	17+90.68	-50.00	579107.3060	1137747.1036
L	17+90.68	50.00	579067.4193	1137838.8045
L	17+90.68	19.95	579079.4059	1137811.2469
L	18+99.87	-50.00	579207.4375	1137790.6573
L	19+25.00	-19.00	579218.1785	1137829.2080

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:
   B5397_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.
  NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
  SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5397-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 580205.333(ft) EASTING: 1138436.797(ft)
ELEVATION: 955.96(ft)
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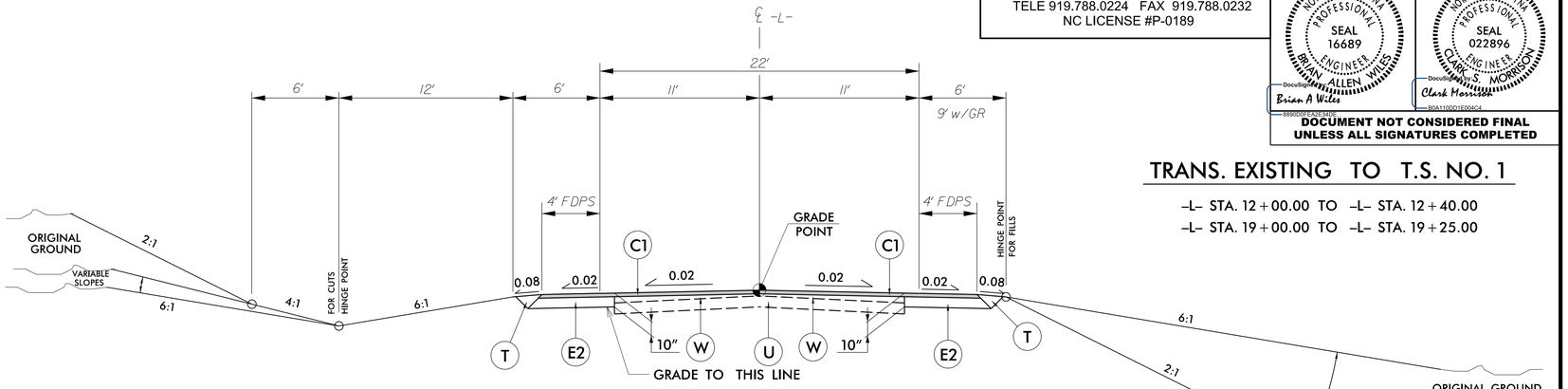
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"B5397-1" TO -L- STATION 12+00.00 IS
S 26°30'20.07" W 1,873.20'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 88

6/2/99

PAVEMENT SCHEDULE

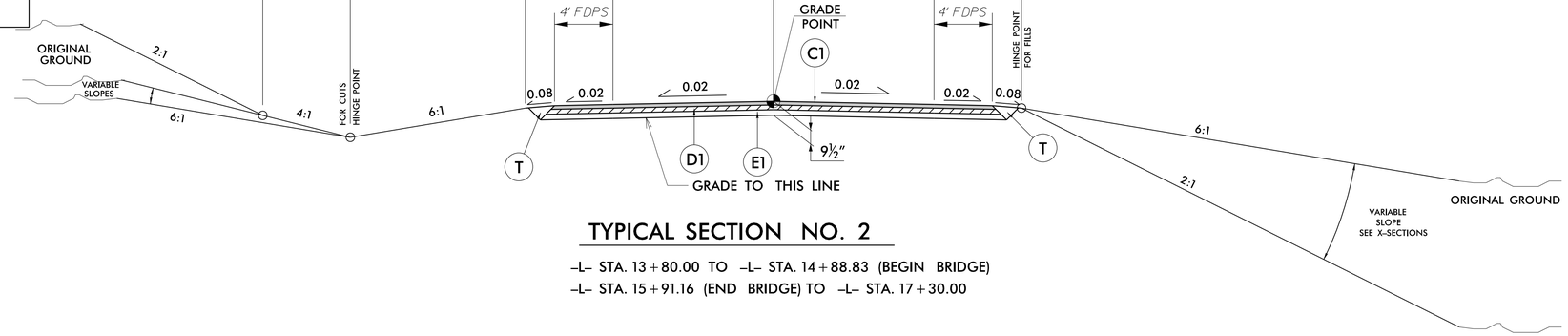
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.
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. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E3	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. 8″ AGGREGATE BASE COURSE.
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

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



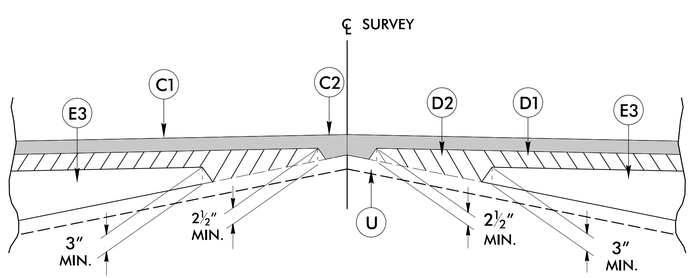
TYPICAL SECTION NO. 1

–L– STA. 12+40.00 TO –L– STA. 13+80.00
–L– STA. 17+30.00 TO –L– STA. 19+00.00

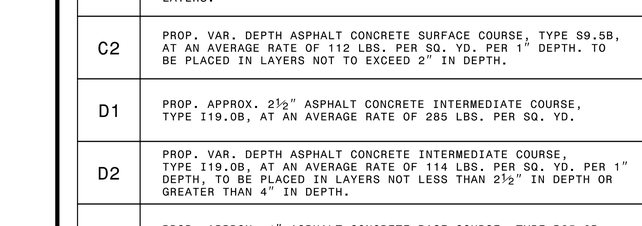


TYPICAL SECTION NO. 2

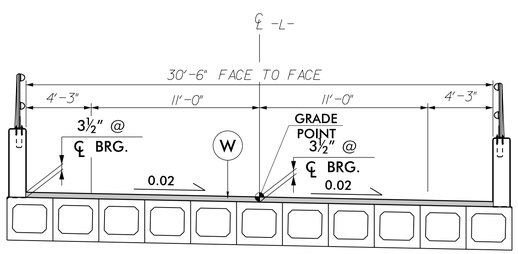
–L– STA. 13+80.00 TO –L– STA. 14+88.83 (BEGIN BRIDGE)
–L– STA. 15+91.16 (END BRIDGE) TO –L– STA. 17+30.00



Detail Showing Method of Wedging

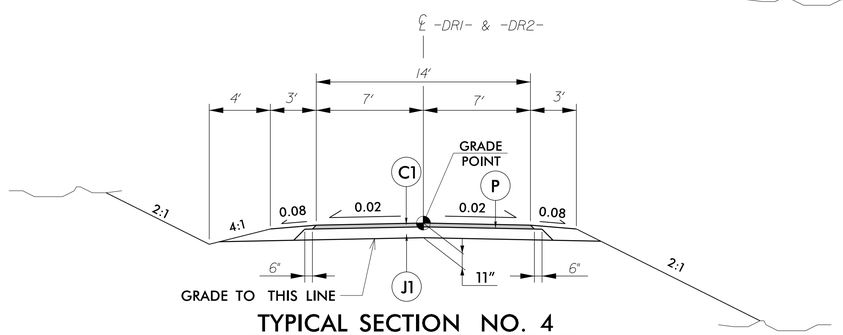


Incidental Milling Existing Pavement



TYPICAL SECTION NO. 3

–L– STA. 14+88.83 (BEGIN BRIDGE) TO –L– STA. 15+91.16 (END BRIDGE)



TYPICAL SECTION NO. 4

–DR1– STA. 10+15.00 TO –DR1– STA. 11+00.00
–DR2– STA. 10+07.00 TO –DR2– STA. 10+75.00

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	2A-1

ROADWAY DESIGN ENGINEER
12/22/2016
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILKES
DocuSigned by: Brian A Wilkes 889D0DFEA2E340E...

PAVEMENT DESIGN ENGINEER
12/22/2016
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S MORRISON
DocuSigned by: Clark Morrison 8DA110DD1ED04C4...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRANS. EXISTING TO T.S. NO. 1

–L– STA. 12+00.00 TO –L– STA. 12+40.00
–L– STA. 19+00.00 TO –L– STA. 19+25.00

12/8/2016
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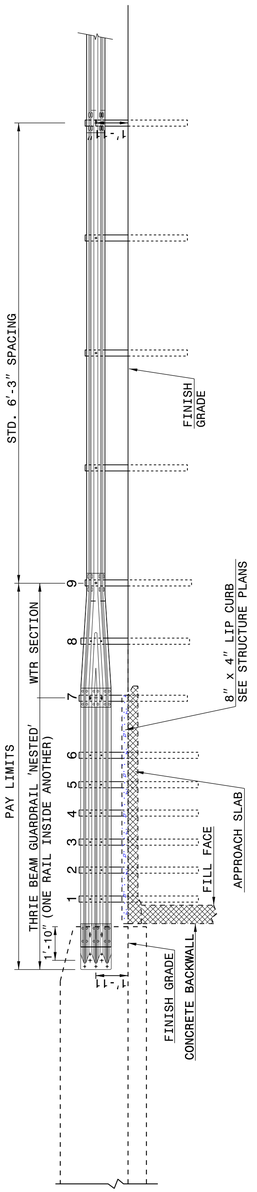
jlefler

PROJECT REFERENCE NO.	SHEET NO.
B–5397	2C–1

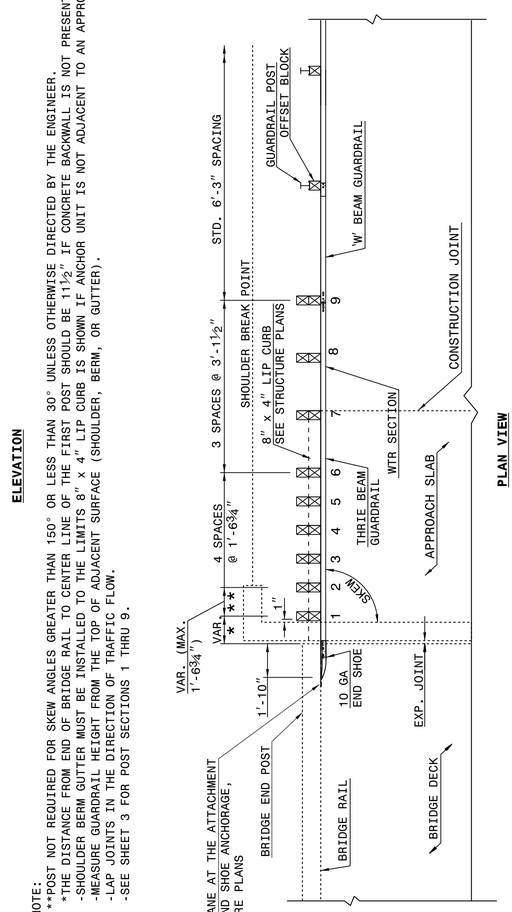
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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



ELEVATION



PLAN VIEW

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.

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.

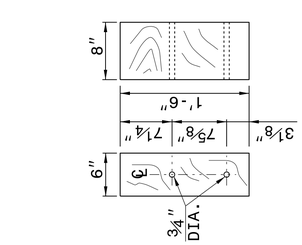
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03

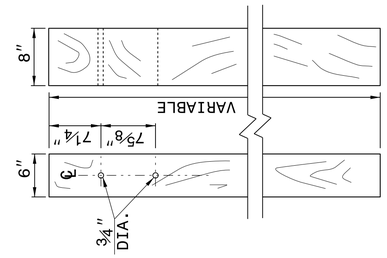
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

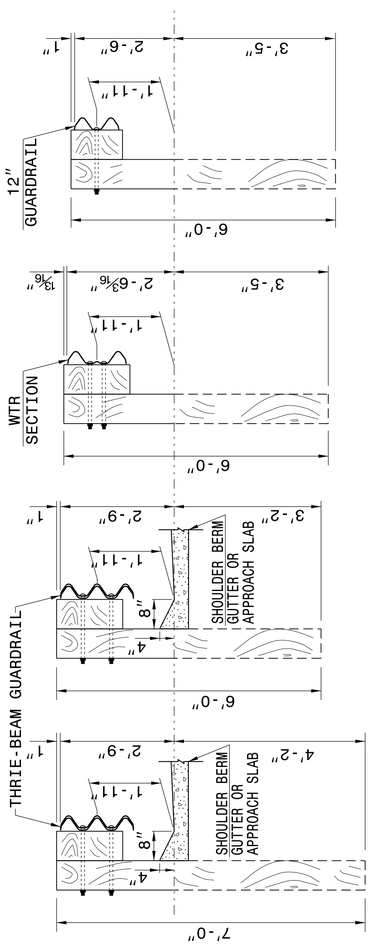
SHEET 3 OF 7
862d03



THRIE BEAM OFFSET BLOCK



THRIE BEAM LINE POST



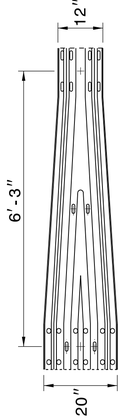
SECTION OF 'W' BEAM POST 9

SECTION OF WTR BEAM POST 8

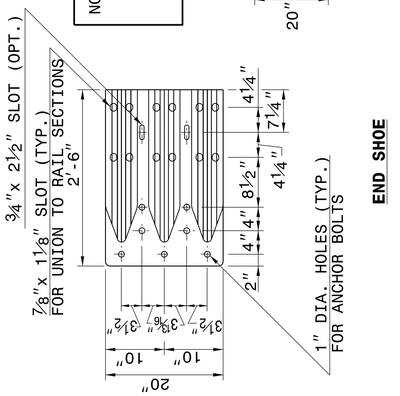
SECTION OF THRIE BEAM POST 7

SECTION OF THRIE BEAM POSTS 1 THRU 6

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.



WTR SECTION
ELEVATION VIEW



END SHOE

THRIE-BEAM SECTION

SEAL
022966
ENGINEER
Joel S. Howerton
Joel Howerton
873F3D1TDCDC45F...
12/21/2016

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.:

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

12/06/07

COMPUTED BY: BAW DATE: 8/7/17
CHECKED BY: EMT DATE: 8/24/16

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5397	3B-1

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–L– 12+40	14+88.83	1,168	965		203
–DR1– 10+15	11+22	0	559	559	
–DR2– 10+07	10+80	19	123	104	
	SUBTOTAL	1,187	1,647	663	203
–L– 15+91.16	19+25	507	1,248	741	
	SUBTOTAL	507	1,248	741	
	SUBTOTAL	1,694	2,895	1,404	203
TOTAL		1,694	2,895	1,404	203
LOSS DUE TO CLEARING & GRUBBING		–0		0	
MATERIAL FOR SHOULDER CONSTRUCTION				30	
WASTE IN LIEU OF BORROW				–203	–203
PROJECT TOTAL		1,694	2,895	1,231	0
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				62	
GRAND TOTALS:		1,694		1,292	
SAY:		1,750		1,300	

SHALLOW UNDERCUT EXCAVATION CONTINGENCY PER GEOTECH REPORT = 50 CUBIC YARDS
UNDERCUT EXCAVATION CONTINGENCY PER GEOTECH REPORT = 50 CUBIC YARDS
SELECT GRANULAR MATERIAL CONTINGENCY PER GEOTECH REPORT = 50 CUBIC YARDS
CLASS IV SUBGRADE STABILIZATION CONTINGENCY PER GEOTECH REPORT = 100 TONS
ESTIMATE DDE = 15 CUBIC YARDS

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

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

"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

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
L	13+80	15+02	CL	298
L	15+76	17+30	CL	376
			TOTAL:	674
			SAY:	680

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH (LF)
L	14+30	14+74	44
		TOTAL:	44
		SAY:	45

GUARDRAIL SUMMARY

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 CONCRETE BARRIER	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	XI MOD	XI	GRAU 350	M–350	TYPE III	CAT–1	VI MOD	BIC	TERM SECT	EA	G	NG				
L	14+17.97	14+92.97	LT	75.00				14+90	6	9		50		1			1		1										
L	13+66.04	14+84.79	RT	118.75			14+70		6	9	50		1				1		1										
L	15+95.22	17+13.97	LT	118.75			15+95		6	9	50		1				1		1										
L	15+87.04	16+93.29	RT	106.25				16+00	6	9		50		1			1		1										
DR1	11+02.00		CL	18.75																			2						
DR2	10+77.00		CL	18.75																			2						
		SUBTOTAL		456.25													4		4				4						
		LESS ANCHOR DEDUCTIONS																											
		GRAU–350 4 @ 50'		–200.00																									
		TYPE III 4 @ 18.75'		–75.00																									
		TOTAL		181.25													4		4				4						
		SAY		187.50			ADDITIONAL GUARDRAIL POSTS 5 EACH										4		4				4						

11/22/2016
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jtedford

4/04/06

COMPUTED BY: BAW DATE: 8/17/16
CHECKED BY: EMT DATE: 8/24/16

PROJECT REFERENCE NO.	SHEET NO.
B-5397	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DRAINAGE PIPE THICKNESS OR GAUGE DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	C.S. PIPE THICKNESS .064	.064	.064	.064	.079	.079	.109	.109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
14+68	RT	0401		880.1	877.1																																											
		0401	0402		877.1	870.0				28						X																																	
14+14.41	LT																																															
14+37.34	RT																																															
TOTALS										28																																						

STATION	LOCATION (LT,RT, OR CL)	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. C.S.P.	*** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	T.B.D.I. STD. 840.35	G.D.I. FRAME WITH TWO N.S. FLAT GRATES STD. 840.29	ADJUSTMENT OF MANHOLES	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN.FT.	REMARKS
14+68	RT							1																													
																																	2@15"			
14+14.41	LT								2																											MANHOLE ADJUSTMENT (16.2' LT)
14+37.34	RT								2																											MANHOLE ADJUSTMENT (21.8' RT)
TOTALS								1	4																								2@15"			

ABBREVIATIONS

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

11/22/2016
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COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
B-5397	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location	Drain Type*	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		50	100	50		
			TOTAL CY/TONS/SY:		50	100	50*	0	0

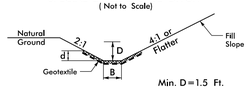
ASU = Aggregate Subgrade, AST = Aggregate Stabilization

***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.**

5/14/99

REVISIONS

DETAIL #1
SPECIAL LATERAL BASE DITCH
(Not to Scale)

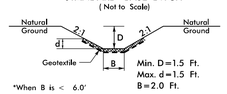


Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= Class B Rip-Rap 39 Tons
Geotextile = 107 SY

FROM STA. 14+25 TO STA. 14+95 –L– LT

DETAIL #2
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
*When B is < 6.0'

Type of Liner= Class B Rip-Rap 14 Tons
Geotextile = 38 SY
DDE = 15 CY

FROM STA. 14+95 TO STA. 15+20 –L– LT

–L–
PI Sta 10+77.65
△ = 4° 52' 27.9" (LT)
D = 3° 08' 25.6"
L = 155.21'
T = 77.65'
R = 1,824.45'

–L–
PI Sta 16+97.04
△ = 5° 22' 09.8" (RT)
D = 2° 51' 53.2"
L = 187.43'
T = 93.78'
R = 2,000.00'
SE = 0.04

–L–
PI Sta 20+29.72
△ = 3° 09' 01.6" (RT)
D = 1° 12' 48.6"
L = 259.62'
T = 129.84'
R = 4,721.57'

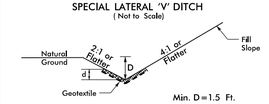
NC GRID
NAD 83

DETAIL #3
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= CL 'I' Rip-Rap 32 Tons
Geotextile= 35 SY

FROM STA. 15+20 TO STA. 15+40 –L– LT

DETAIL #4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.

Type of Liner= Class B Rip-Rap 16 Tons
Geotextile = 46 SY

FROM STA. 17+15 TO STA. 17+50 –L– LT

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
12/21/2016
NORTH CAROLINA PROFESSIONAL SEAL 16689 ENGINEER BRIAN ALLEN WILES
DocuSigned by: Brian A Wiles 889000F0406D4E0...
12/21/2016

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
12/21/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BEGIN TIP PROJECT B–5397
–L– POT Sta. 12+00.00

END TIP PROJECT B–5397
–L– POC Sta. 19+25.00

–L– PC Sta. 10+00.00
–L– PT Sta. 11+55.21
–L– POT Sta. 13+50.00 = –DRI– POT Sta. 10+00.00
–L– PC Sta. 16+03.25
–L– PT Sta. 17+90.68
–L– PC Sta. 18+99.87
–L– PT Sta. 21+59.49
–DRI– POT Sta. 10+67.50 = –DR2– POT Sta. 10+00.00
–DRI– POT Sta. 11+25.00
–DR2– POT Sta. 10+86.00

N 07°36'29" E 631.07'
N 02°28'49" E 39.58'
REBAR
N 45°01'26" E 311.47'
S 64°17'17" E 126.27'
N 18° 08' 16.7" E
N 23° 30' 26.4" E
N 07°19'52" W 493.46' EIP-EIP
N 24°17' EIP-RW
S 36°07'17" E 89.37'
S 87°25'44" E 25.95' RW REBAR
0.42' RW REBAR
REBAR-CORNER
S 24°57'02" E 64.65'
N 48°39'14" E 260.02'
S 36°07'16" E 334.35'
N 48°39'14" E 52.82'
S 48°23'16" E 123.46'
S 48°54'34" E 25.00'
N 64°36'03" E 225.13'
N 43°20'48" E 112.00'
N 41°45'29" E 48.48'
N 36°50'42" E 100.06'
S 55°32'15" E 25.00'
S 55°32'15" E 274.34'

DUKE POWER COMPANY EXISTING R/W
60.00'
45.00'
34.00'
SR 2225 HOLLY HILLS DR.
22' BST
EXISTING R/W
TO US 221
GRAVEL
SIZE UNKNOWN
400PR 400PR 22' BST
48 ST EXISTING R/W
TO US 74A
BETHANY CHURCH ROAD SR 2213
400PR 48 ST F
8" DIP
12" DIP EXISTING R/W
8" PVC
4" DIP
6" CONC HW
18" DRY STACK BLOCK WALL
WOODS
FLOYDS CREEK
SECONDARY GROWTH
BRIDGE #5 TIMBER DECK ON STEEL BEAMS
GRAU 350 (TL-3)
TB 2G N5EG
GRADE TO DRAIN
401
402
BL-3
BL-4
BL-5
RIP RAP AT EMBANKMENT SEE DETAIL #3
CLASS II RIP RAP TO TOP OF BERM (STR PAY ITEM)
STD 2' BASE DITCH W/CL B RIP RAP SEE DETAIL #2
SPEC. LAT 2' BASE DITCH W/CL B RIP RAP SEE DETAIL #1
EXCAVATE (STR PAY ITEM)
DAYLIGHT DITCH CLASS B RIP RAP EST 3 TONS EST 10 SY GEOTEXTILE
EXISTING BRIDGE TO BE REMOVED (STR PAY ITEM)
SPEC. LAT. V DITCH W/CL B RIP RAP SEE DETAIL #4
DECK DRAIN DISSIPATOR PADS SEE DETAIL #5
SHOULDER BERM GUTTER STA. 14+30 -L- RT TO BEGIN APP SLAB
15" W/ELBOWS
CL B RIP RAP EST 1 TON EST 5 SY GEOTEXTILE
BM#1 -L- STA 14+45.63 91.70' RIGHT ELEV.=870.68'
DO NOT DISTURB
POOL
2SFD
1-1/2 SBKD
CONC
EIP
REBAR

(1) JACK HICKSON DAVIS FAMILY TRUST
DB 808 PG 534
PB 11 PG 112

(2) HAZEL T. KISER
DB 717 PG 264
DB 717 PG 266

(3) GAYLORD H. COWAN
DB 484 PG 07

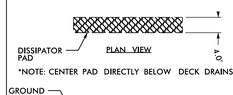
(4) TOWN OF FOREST CITY
DB 697 PG 152

(5) CLAUDE LUTHER STREET, JR.
DB 937 PG 82

(6) CANDACE DORSEY BUTLER AND HUSBAND, MARK CHRISTOPHER BUTLER
DB 1048 PG 823
DB 1048 PG 826
PB 14 PG 108

DENA L. JENKINS
DB 991 PG 310

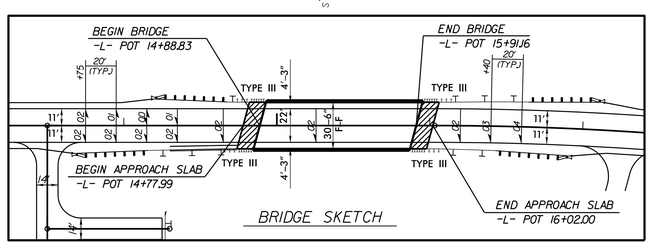
DETAIL #5
DECK DRAIN DISSIPATOR PAD
(Not to Scale)



FROM STA. 14+93 TO STA. 15+14 –L– RT
L= 21'
Type of Liner= 5 TONS CL B Rip-Rap
Geotextile= 22 sy

FROM STA. 15+50 TO STA. 15+81 –L– RT
L= 31'
Type of Liner= 6 TONS CL B Rip-Rap
Geotextile= 32 sy

FOR PROFILES, SEE SHEET 5



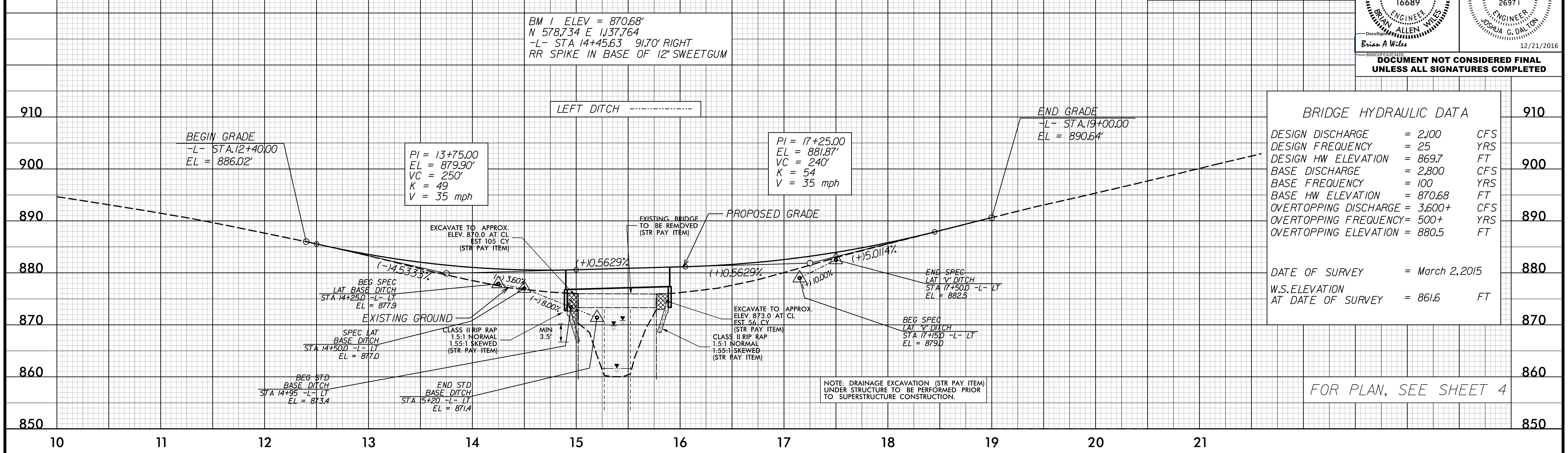
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	5

ROADWAY DESIGN ENGINEER — 12/21/2016 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16689 BRIAN ALLEN WILES — Brian A Wiles

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA C. DALTON — 12/21/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 869.7	FT
BASE DISCHARGE	= 2,800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 870.68	FT
OVERTOPPING DISCHARGE	= 3,600+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 880.5	FT
DATE OF SURVEY	= March 2, 2015	
W.S. ELEVATION AT DATE OF SURVEY	= 861.6	FT