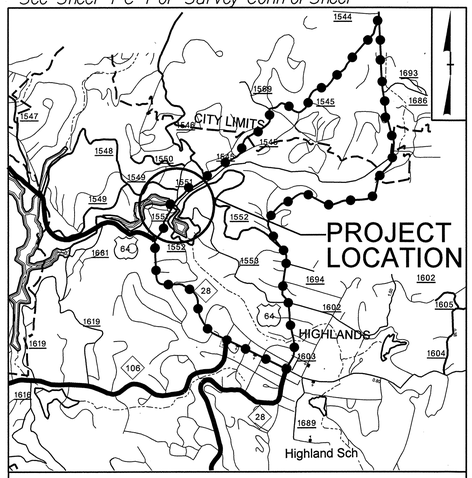
09/08/99

TIP PROJECT: B-4574

CONTRACT: C202432

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

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



VICINITY MAP

OFF-SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4574	1	

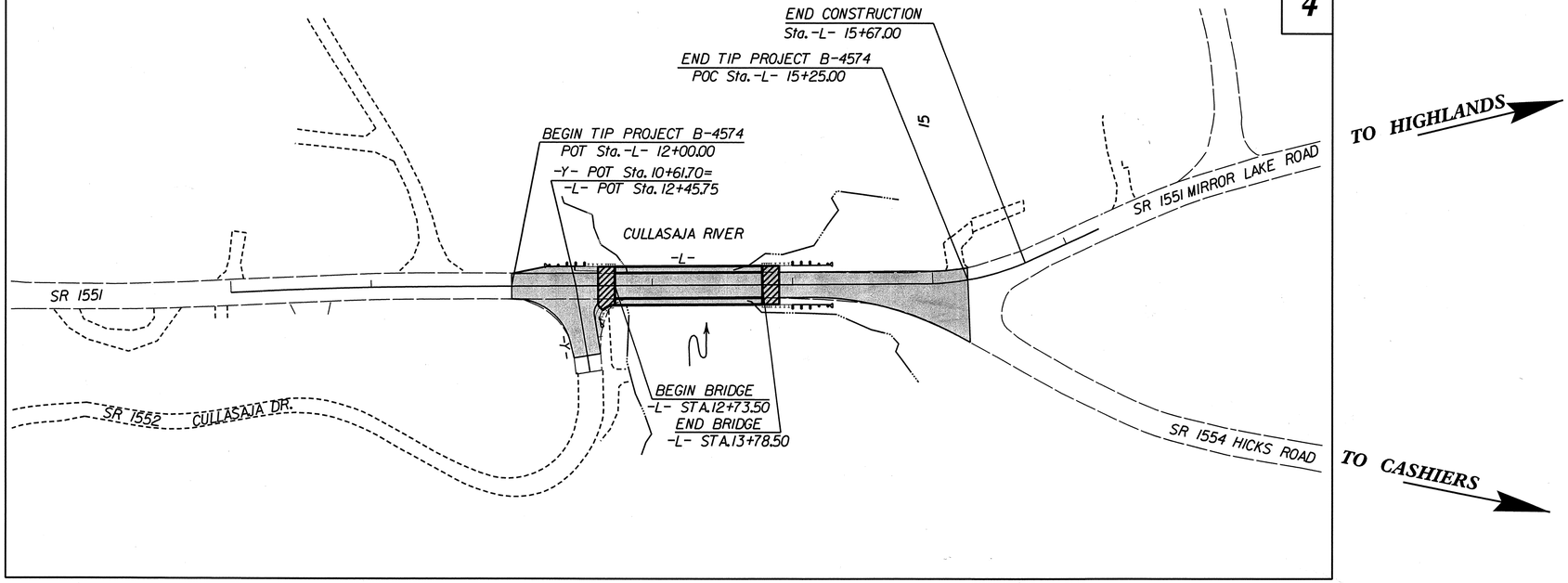
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33778.1.1	BRZ-1551(1)	PE
33778.2.1	BRZ-1551(1)	R/W & UTIL
33778.3.1	BRZ-1551(1)	CONST.

LOCATION: BRIDGE # 58 OVER THE CULLASAJA RIVER ON SR 1551 (MIRROR LAKE ROAD)

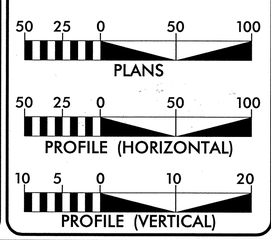
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE

NC GRID
NAD 83/95

4



GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 2523
ADT 2031 = 3446
DHV = 9 %
D = 65 %
T = 7 % *
V = 30 MPH
FUNC CLASS = RURAL LOCAL
* TTST 1% DUAL 6%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4574 = 0.042 MI
LENGTH OF STRUCTURE TIP PROJECT B-4574 = 0.020 MI
TOTAL LENGTH OF TIP PROJECT B-4574 = 0.062 MI

DESIGN EXCEPTION REQUIRED:
LANE WIDTH
SHOULDER WIDTH
BRIDGE WIDTH

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

FOR THE NORTH CAROLINA DEPT. OF TRANSPORATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 19, 2009

LETTING DATE:
MARCH 15, 2011

STEVE SCOTT, PE
PROJECT ENGINEER

AGNIESZKA NAU, PE
ROADWAY PROJECT DESIGN ENGINEER

RON E. McCOLLUM, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 10746 ENGINEER DENISE K. HILL

SIGNATURE: _____ 9/2/10 P.E.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22558 ENGINEER STEVEN L. SCOTT

SIGNATURE: _____ 9/2/10 P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

art mcmillan P.E.
STATE HIGHWAY DESIGN ENGINEER

8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

PROJECT REFERENCE NO.	SHEET NO.
B-4574	1-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22566 ENGINEER STEVEN L. SCOTT
12-2-10

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	SURVEY CONTROL
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2A	TYPE III - SHOP CURVED STRUCTURE ANCHOR UNIT
2B	ROCK EMBANKMENT DETAIL
2C	DELETED
2D	DELETED
2E	MODIFIED CONCRETE FLUME
2F	BRIDGE APPROACH FILL- SUBREGIONAL TIER
3	SUMMARY OF QUANTITIES
3A	DRAINAGE SUMMARY
3B	SUMMARY OF GUARDRAIL AND EARTHWORK SUMMARY
4	PLAN SHEET
5	PROFILE SHEET
TPM-1 THRU TPM-2	TRANSPORTATION MANAGEMENT PLANS
SD-1	SIGNDESIGN SHEETS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS SECTION SUMMARY
X-2 THRU X-4	CROSS-SECTIONS
S-1 THRU S-23	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 07-30-08

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.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 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.

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
WATER - TOWN OF HIGHLANDS
SEWER - TOWN OF HIGHLANDS
TELEPHONE - VERIZON / TOWN OF HIGHLANDS
POWER - DUKE ENERGY / TOWN OF HIGHLANDS
CATV - NORTHLAND

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. 07-18-06
REV. 01-02-07

2006 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 July 18, 2006 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	
310.10	Driveway Pipe Construction
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
815.03	Pipe Underdrain and Blind Drain
846.01	Concrete Curb, Gutter and Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.04	Drainage Ditches with Class 'B' Rip Rap

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4574	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- 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

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 Marker — RW
- 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 Utility Easement — PUE
- 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 Wheel Chair Ramp — WCR
- 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 — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4574	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4574

BL

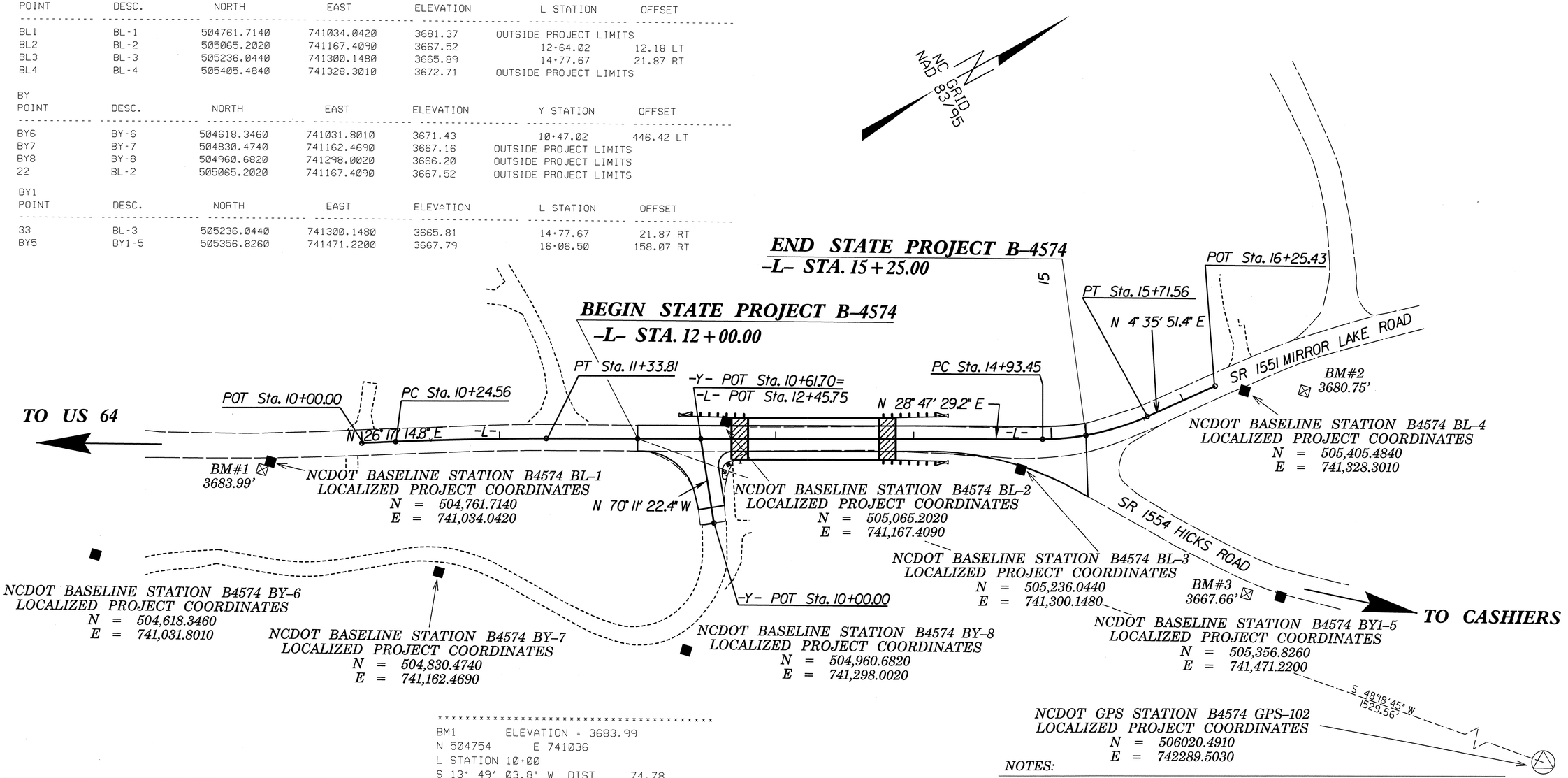
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL1	BL-1	504761.7140	741034.0420	3681.37	OUTSIDE PROJECT LIMITS	
BL2	BL-2	505065.2020	741167.4090	3667.52	12+64.02	12.18 LT
BL3	BL-3	505236.0440	741300.1480	3665.89	14+77.67	21.87 RT
BL4	BL-4	505405.4840	741328.3010	3672.71	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
BY6	BY-6	504618.3460	741031.8010	3671.43	10+47.02	446.42 LT
BY7	BY-7	504830.4740	741162.4690	3667.16	OUTSIDE PROJECT LIMITS	
BY8	BY-8	504960.6820	741298.0020	3666.20	OUTSIDE PROJECT LIMITS	
22	BL-2	505065.2020	741167.4090	3667.52	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
33	BL-3	505236.0440	741300.1480	3665.81	14+77.67	21.87 RT
BY5	BY1-5	505356.8260	741471.2200	3667.79	16+06.50	158.07 RT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4574 GPS-102" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 506020.491(ft) EASTING: 742289.503(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99970224 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4574 GPS-102" TO -L- STATION 12+00.00 IS S 48°18'45" W 1529.56' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

```
**********************************************
BM1       ELEVATION = 3683.99
N 504754      E 741036
L STATION 10+00
S 13° 49' 03.8" W  DIST     74.78
8" SPIKE SET ON TOP OF 10" HEMLOCK STUMP
**********************************************
**********************************************
BM2       ELEVATION = 3680.75
N 505443      E 741349
L STATION 16+25
N 31° 48' 58.2" E  DIST     64.86
8" SPIKE SET IN ROOT OF 24" HEMLOCK TREE
**********************************************
**********************************************
BM3       ELEVATION = 3667.66
N 505336      E 741458
L STATION 15+85 146 RIGHT
8" SPIKE SET ON TOP OF 8" MAPLE STUMP
**********************************************
```

NOTE: DRAWING NOT TO SCALE

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B-4574_LS_CONTROL_070102.TXT
   B-4574_LS_1C_070102.DGN

   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 USING ONLINE POSITIONING SERVICE (OPUS)

$$$$$$$SYSTIME$$$$$$$
$$$$$$$LEVNAME$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4574	1D
Location and Surveys	

SURVEY CONTROL SHEET B-4574

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+99.36	40.11	505247.4409	741327.0972
L	14+89.00	-27.20	505269.6014	741262.6023
L	14+80.00	-35.00	505265.4707	741251.4320
L	14+25.00	-65.00	505231.7185	741198.6514
L	14+25.00	-40.00	505219.6780	741220.5608
L	12+10.00	-40.00	505031.2566	741117.0119
L	12+10.00	-30.37	505026.6185	741125.4514
L	12+25.00	29.68	505010.8428	741185.3023
L	12+85.00	40.00	505058.4551	741223.2439

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+00.00	-20.00	505003.5995	741220.5560
Y	10+00.00	-10.01	505012.9983	741223.9417
Y	10+10.00	9.46	505034.7052	741221.1321
Y	10+10.00	30.00	505054.0296	741228.0933

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	504826.3368	741053.9865
PC	10+24.56	504848.3530	741064.8615
PT	11+33.81	504945.2233	741115.3738
PC	14+93.45	505260.3969	741288.5807
PT	15+71.56	505334.6680	741310.8554
POT	16+25.43	505388.3639	741315.1734

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	505022.4159	741227.3342
POT	10+61.70	505043.3261	741169.2872

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "B-4574 GPS-102"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 506020.491(ft) EASTING: 742289.503(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99970224
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"B-4574 GPS-102" TO -L- STATION 12+00.00 IS
S 48°18′45″ W 1529.56′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B-4574_LS_CONTROL_070102.TXT

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

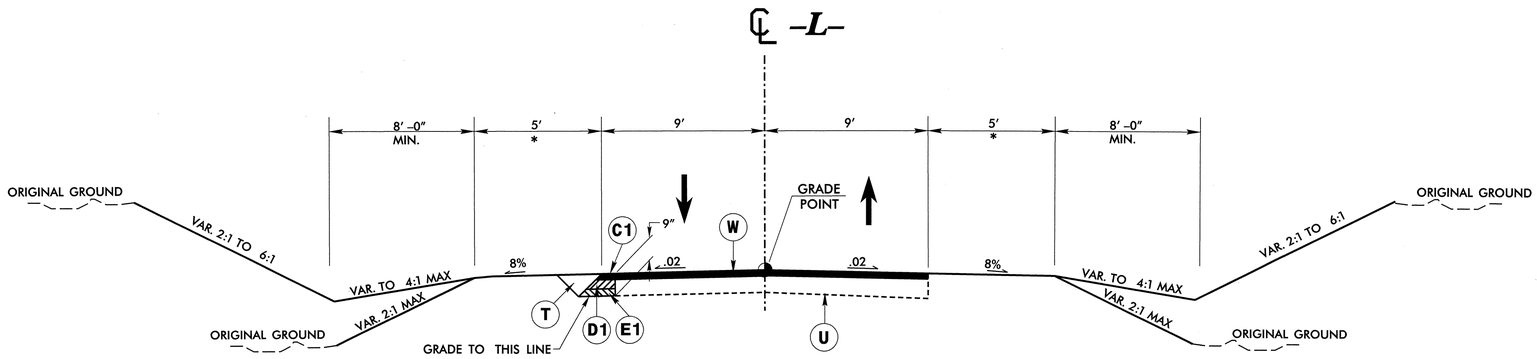
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED USING ONLINE POSITIONING SERVICE (OPUS)

5/14/99 5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4574	2
R/W SHEET NO.	

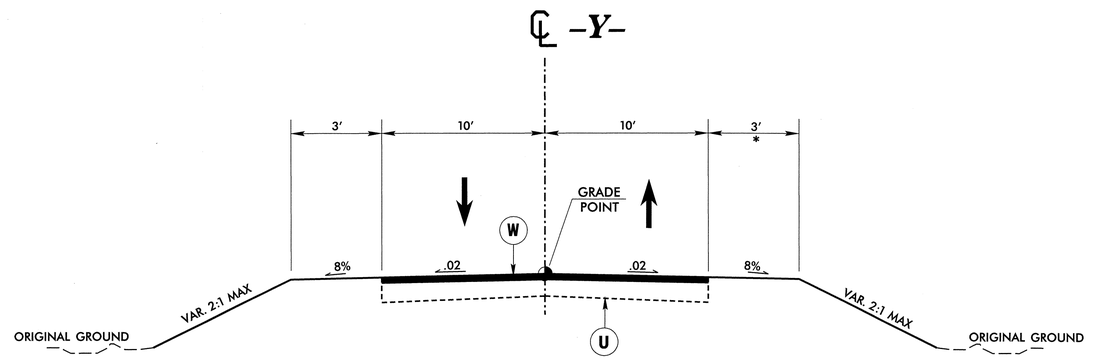
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22868 ENGINEER STEVEN L SCOTT
12-22-10

NORTH CAROLINA PROFESSIONAL SEAL 22868 ENGINEER CLARK S. MORRISON
12/22/10



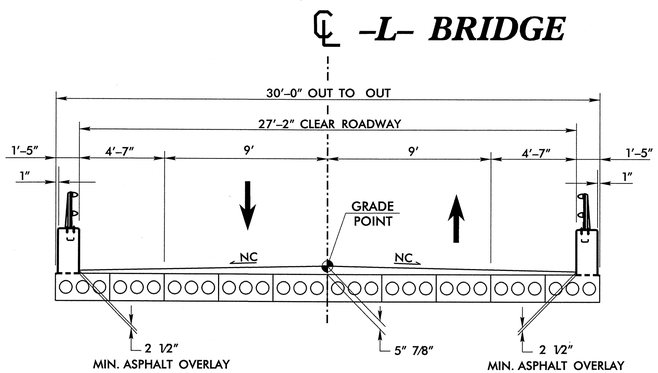
* ADD 3′ TO SHOULDERS FOR GUARDRAIL

TYPICAL SECTION NO. 1
–L– STA. 12+00.00 TO 12+73.50 (BEGIN BRIDGE)
–L STA. 13+78.50 (END BRIDGE) TO STA. 15+25.00



* ADD 4′ TO SHOULDERS FOR GUARDRAIL

TYPICAL SECTION NO. 2
–Y– STA. 10+11.42 TO 10+39.37.00

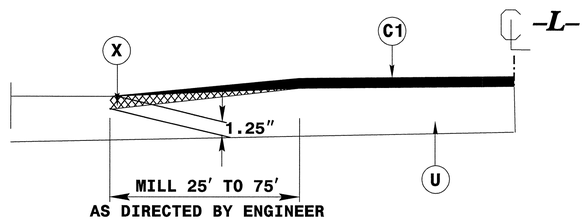


TYPICAL SECTION NO. 3
CORED SLAB BRIDGE
–L– STA. 12+73.50 (BEGIN BRIDGE) TO 13+78.50 (END BRIDGE)

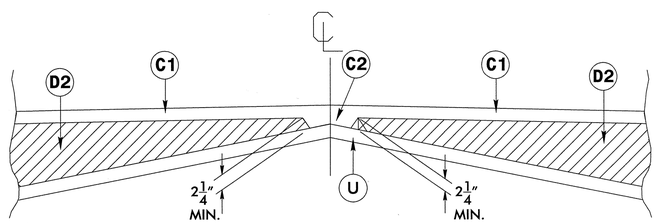
PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ 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 2¼″ 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.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL)
X	MILL

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



MILLING DETAIL
–L– 12+00.00, –L– 15+25.00



Detail Showing Method of Wedging

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4574	2A

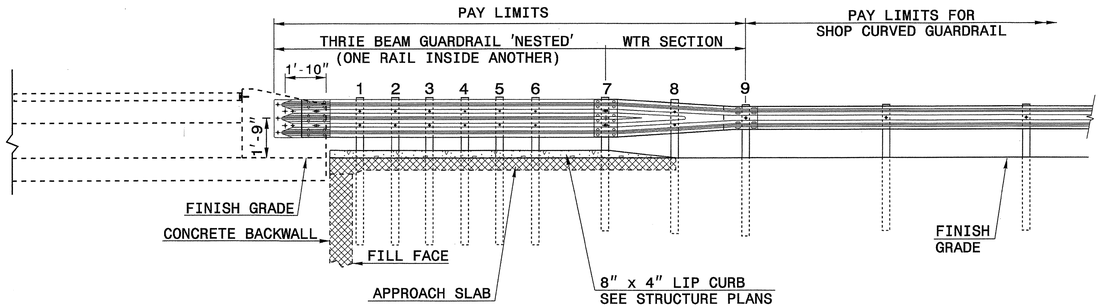
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

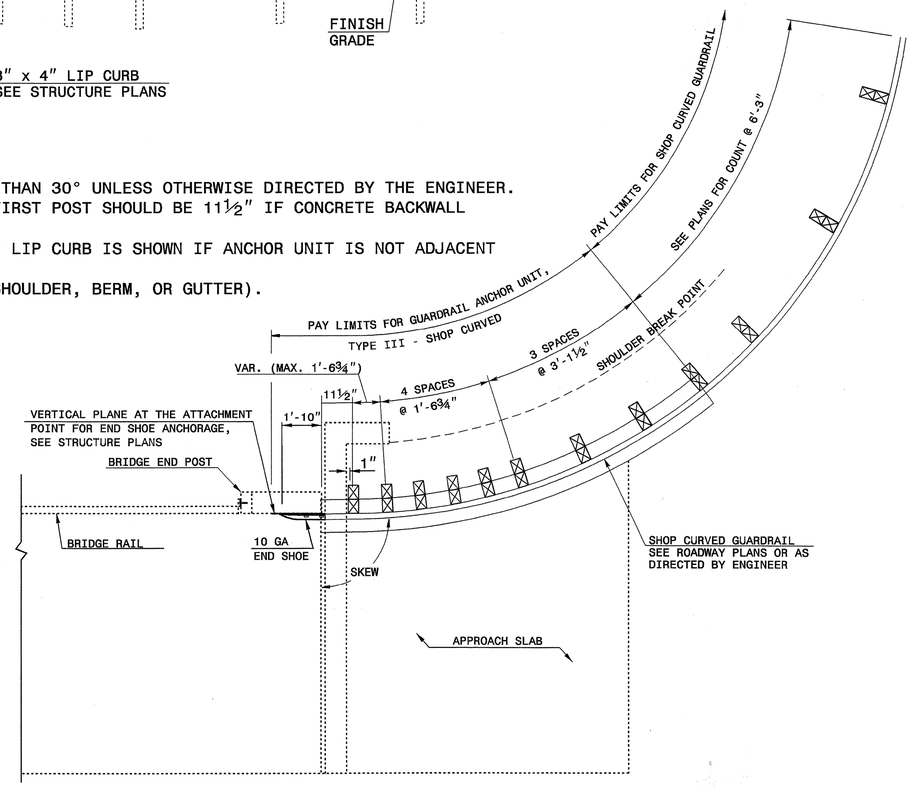
TYPE III SC



ELEVATION

SEE ROADWAY PLANS FOR END TREATMENT

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 11½" 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).
-USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

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

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC

NORTH CAROLINA PROFESSIONAL SEAL 022566 ENGINEER JOEL E. LEWIS
12/22/10

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. WARD DATE: 4-4-02
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: ward:\usr\details\stand\862stds\typeiiisc.dgn

PROJECT REFERENCE NO.	SHEET
b-4574 (WBS 33778)	28

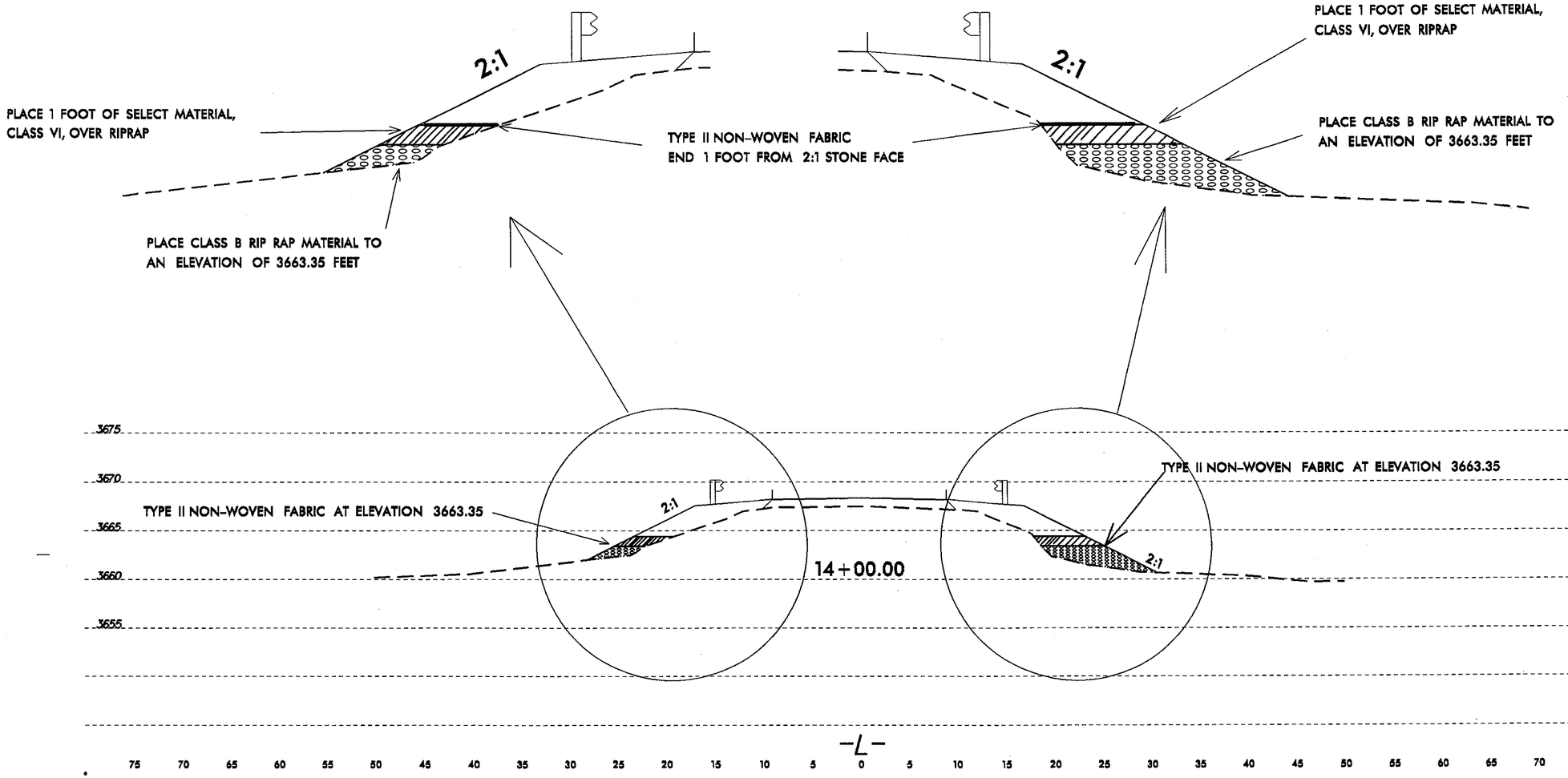
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 29869 ENGINEER SHANE C. CLARK

SIGNATURE 1/13/11 DATE

ENGINEER

SIGNATURE DATE



PREPARED BY: P. Lockamy	DATE: 12/10
REVIEWED BY: S. Clark	DATE: 1/11

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☒ WESTERN REGIONAL OFFICE
☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROCK EMBANKMENT DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

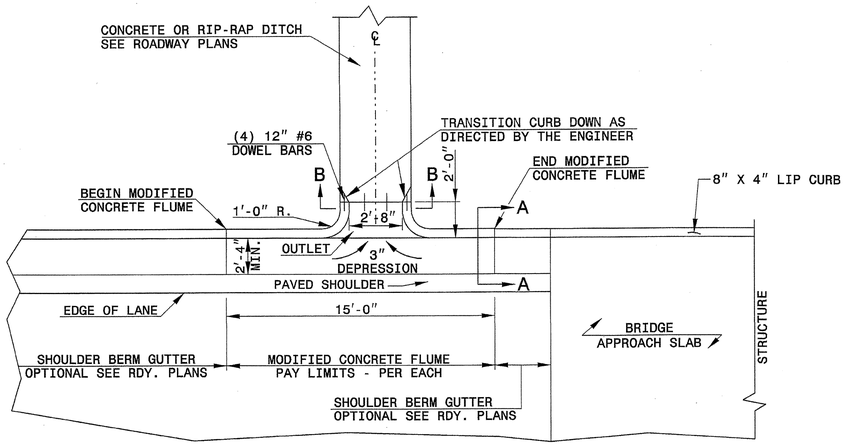
PROJECT REFERENCE NO.	SHEET NO.
B-4574	2E

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

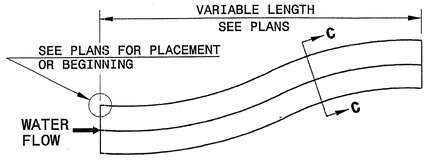
ENGLISH DETAIL DRAWING FOR

MODIFIED CONCRETE FLUME

WITH CONCRETE OR RIP-RAP DITCH

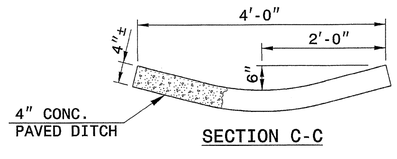


PLAN VIEW

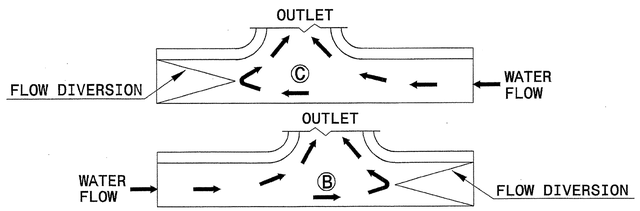


DOWNGRADE OR SAG

SAG

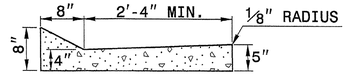


SECTION C-C

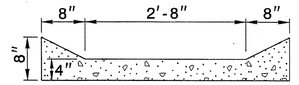


DOWN GRADE

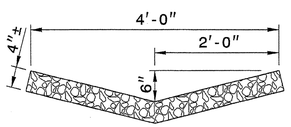
FLOW DIVERSION EXAMPLES



SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER K. KOWSMANN
12/22/10

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY:	E.E. Ward	DATE:	Apr. 2002
MODIFIED BY:	E.E. Ward	DATE:	July 2004
CHECKED BY:	K.K. Lee	DATE:	12/22/10
FILE SPEC.:	w:\details\stand\modifiedflume.dgn		

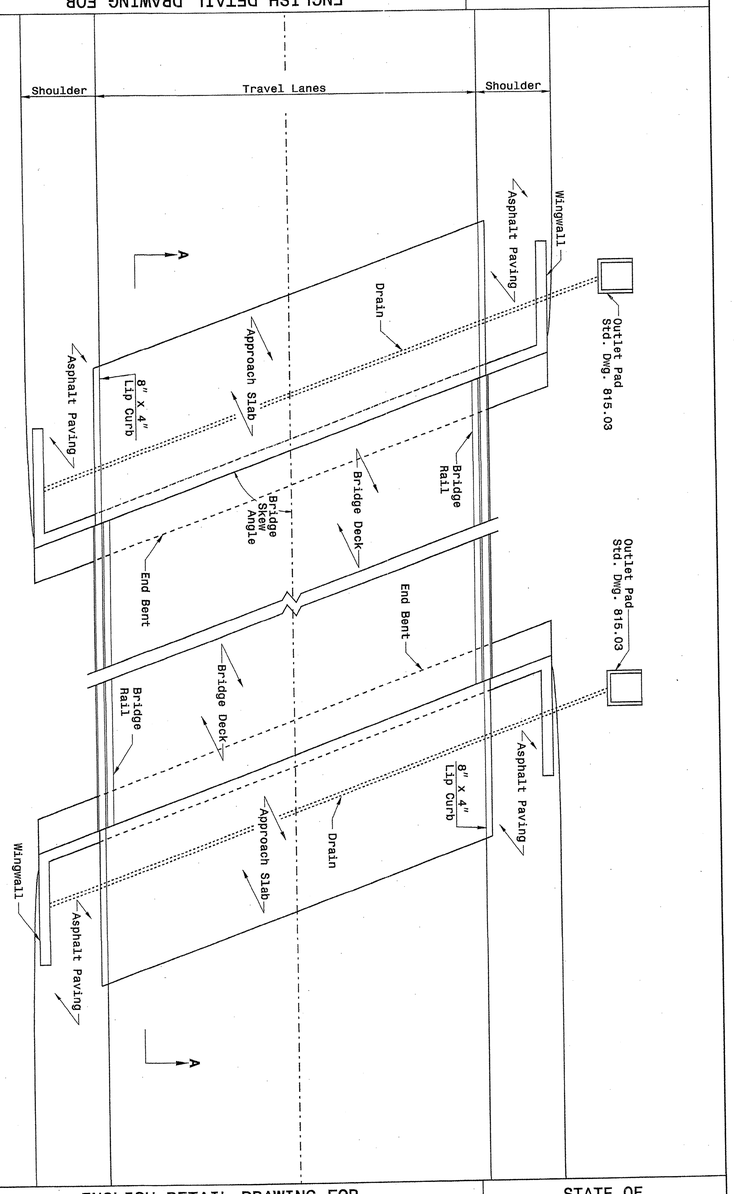
21-DEC-2009 09:01
s:\contracts\contracts\special details\ericward\usr\details\stand\modifiedflume.dgn
jhowerton AT PS237501

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

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 1 OF 2
422D11

PLAN VIEW
12' APPROACH SLAB

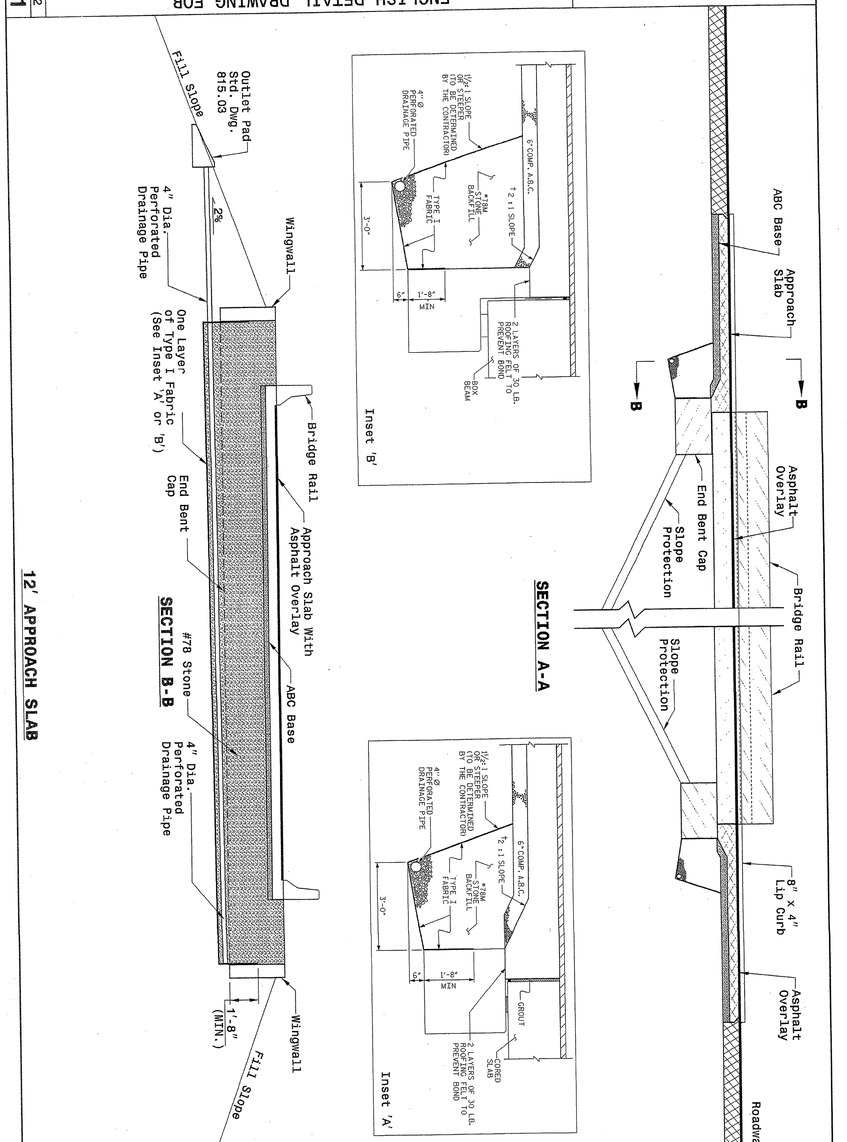


STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 2 OF 2
422D11

12' APPROACH SLAB



PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: 2/16/09
FILE SPEC.: K:\kempf\english\bridge approach fills.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 2/22/10

PROJECT REFERENCE NO.	SHEET NO.
B-4574	2F

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4574	3
R/W SHEET NO.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202432

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0030000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ******* (13+26.00)
0038000000-E	SP	100	CY	SHALLOW UNDERCUT
0043000000-N	226	Lump Sum		GRADING
0057000000-E	226	120	CY	UNDERCUT EXCAVATION
0080000000-E	SP	100	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	6	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	SP	100	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	260	SY	FABRIC FOR SOIL STABILIZATION
0220000000-E	SP	75	TON	ROCK EMBANKMENTS
0314000000-E	SP	40	TON	SELECT MATERIAL, CLASS ***** (VI)
0345000000-E	SP	20	LF	24" SIDE DRAIN PIPE
0995000000-E	340	48	LF	PIPE REMOVAL
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1330000000-E	607	10	SY	INCIDENTAL MILLING
1489000000-E	610	2	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	83	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1525000000-E	610	150	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1560000000-E	620	15	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2000000000-N	806	13	EA	RIGHT OF WAY MARKERS
2022000000-E	SP	22.4	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	16.8	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	100	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2556000000-E	846	38	LF	SHOULDER BERM GUTTER
2570000000-N	SP	2	EA	MODIFIED CONCRETE FLUME
2619000000-E	850	5	SY	4" CONCRETE PAVED DITCH
3420000000-E	SP	25	LF	GENERIC GUARDRAIL ITEM PAINTED GALVANIZED STEEL BM GUARDRAIL
3435000000-N	SP	5	EA	GENERIC GUARDRAIL ITEM PAINTED GALVANIZED ADDITIONAL GUARDRAIL POST
3435000000-N	SP	3	EA	GENERIC GUARDRAIL ITEM PAINTED GALVANIZED GUARDRAIL ANCHOR UNITS, TYPE 350, TL-2
3435000000-N	SP	1	EA	GENERIC GUARDRAIL ITEM PAINTED GALVANIZED GUARDRAIL ANCHOR UNITS, TYPE AT-1
3435000000-N	SP	4	EA	GENERIC GUARDRAIL ITEM PAINTED GALVANIZED GUARDRAIL ANCHOR UNITS, TYPE III
3649000000-E	876	21	TON	RIP RAP, CLASS B
3656000000-E	876	785	SY	FILTER FABRIC FOR DRAINAGE
3677000000-E	SP	160	SY	GENERIC EROSION CONTROL ITEM FILTER FABRIC FOR ROCK EMBANKMENT
4072000000-E	903	52	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	4	EA	SIGN ERECTION, TYPE E
4155000000-N	907	6	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4238000000-N	907	4	EA	DISPOSAL OF SIGN, D, E OR F
4400000000-E	1110	270	SF	WORK ZONE SIGNS (STATIONARY)
4410000000-E	1110	67	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4445000000-E	1145	80	LF	BARRICADES (TYPE III)
4810000000-E	1205	2,780	LF	PAINT PAVEMENT MARKING LINES (4")
6000000000-E	1605	225	LF	TEMPORARY SILT FENCE
6006000000-E	1610	250	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	75	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	125	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	0.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	350	LF	SAFETY FENCE
6030000000-E	1630	100	CY	SILT EXCAVATION
6036000000-E	1631	2,000	SY	MATTING FOR EROSION CONTROL
6038000000-E	SP	510	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	50	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	225	SY	FLOATING TURBIDITY CURTAIN
6070000000-N	SP	4	EA	SPECIAL STILLING BASINS
6071020000-E	SP	10	LB	POLYACRYLAMIDE (PAM)
6084000000-E	1660	0.5	ACR	SEEDING & MULCHING
6087000000-E	1660	0.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	0.25	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.1	ACR	REFORESTATION

COMPUTED BY: AJN DATE: 11/23/09
CHECKED BY: SLS DATE: 11/25/09

PROJECT REFERENCE NO.	SHEET NO.
B-4574	3A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
SEAL 22563
STEVEN L. SCOTT
12-21-10

HYDRAULICS ENGINEER
SEAL 10746
DENNIS K. HOYLE
12/21/10

SEPI
ENGINEERING GROUP
1025 WADE AVENUE
RALEIGH, NC 27605
TEL: 919-789-9977 FAX: 789-9591

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB-REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

REVISIONS

STATION SIZE THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	*** R. C. PIPE (CLASS V)	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	MODIFIED CONCRETE FLUME	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 14+95	LT																																																																		28'	
-L- 15+18	LT	1																																											20																						20'	
-L- 12+50	LT																																																									1										
-Y- 10+30	RT																																																									1										
SHEET TOTALS																																													20													2									48'	

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

COMPUTED BY: AJN DATE: 11/23/09
CHECKED BY: SLS DATE: 11/25/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4574	3B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22688 ENGINEER STEVEN L. SCOTT 12-31-10

HYDRAULICS ENGINEER

SEPI ENGINEERING GROUP
1025 WADE AVENUE
RALEIGH, NC 27605
TEL: 919-789-9977 FAX: 789-9591

REVISIONS

SUMMARY OF EARTHWORK — IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– STA. 12+00.00 TO BRIDGE	5		6	1	
SUBTOTAL	5		6	1	
BRIDGE TO –L– STA. 15+25.00	23		144	121	
SUBTOTAL	23		144	121	
–Y– 10+11.42 TO STA. 10+39.37	1		3	2	
SUBTOTAL	1		3	2	
TOTAL	29		153	124	
LOSS DUE TO CLEARING & GRUBBING	–10			10	
ADDITIONAL GRADE POINT UNDERCUT (GEOTECHNICAL UNIT)		20	23	23	20
PROJECT TOTAL	19		176	157	
EST. FOR REPLACE TOPSOIL ON BORROW PITS				8	
GRAND TOTALS	19		176	165	20
SAY	20			170	

EST. FABRIC FOR SOIL STABILIZATION = 260 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. CLASS IV SUBGRADE STABILIZATION = 100 TON (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. SELECT GRANULAR FILL = 100 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. GENERIC GRADING ITEM SELECT MATERIAL, CLASS VI = 40 TON (CONTINGENCY FROM GEOTECHNICAL REPORT)

EST. FILTER FABRIC FOR ROCK EMBANKMENT = 160 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. UNDERCUT = 120 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
EST. SHALLOW UNDERCUT = 100 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)

NOTE: Approximate quantities only. Unclassified Excavation, Fine Grading, Borrow Excavation and Clearing and Grubbing will be paid for at the contract lump sum price for "Grading."

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

GUARDRAIL SUMMARY

SURVEY LINE	BEGINNING STATION	END STATION	LOCATION	LENGTH			WARRENT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			REMARKS
				STAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU–350 TL–2	AT–1	TYPE III	
–L–	12+23.50	12+73.50	LT	50.0′				12+73.50	5′	8′					1		1	
–Y– /–L–	–Y–10+32.20	–L–12+73.50	RT		25.0′		12+73.50		3′	3′						1	1	
–L–	13+78.50	14+28.50	LT	50.0′			13+78.50		5′	8′					1		1	
–L–	13+78.50	14+28.50	RT	50.0′				13+78.50	5′	8′					1		1	
SUB–TOTAL				150.0′	25.0′													
LESS ANCHOR DEDUCTIONS																		
GRAU–350, TL–2 3 @ 25′ =				–75′														
AT–1 1 @ 6.25′ =					–6.25′													
TYPE III 4 @ 18.75′′ =				–56.25′	–18.75′													
TOTAL				18.75′	ADDITIONAL GUARDRAIL POSTS – 5 EA													
SAY				25.0′											3	1	4	

5/14/99

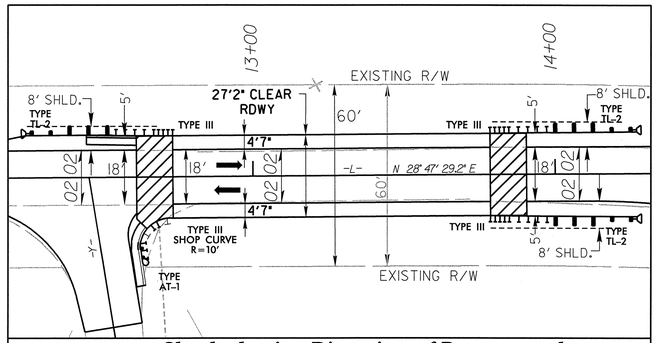
PROJECT REFERENCE NO.	SHEET NO.
B-4574	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12565 ENGINEER STEVEN L. SCOTT 12-21-10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 10746 ENGINEER DENNIS K. HOYLE 12/21/10



Sketch showing Dimensions of Pavement and Shoulder in Relation to Proposed Bridge Width

-L-

PI Sta 10+79.19	PI Sta 15+33.10
Δ = 2° 30' 14.4" (RT)	Δ = 24° 11' 37.8" (LT)
D = 2° 17' 30.6"	D = 30° 58' 14.5"
L = 109.26'	L = 78.12'
T = 54.64'	T = 39.65'
R = 2,500.00'	R = 185.00'
Se = NC	Se = NC

NAD 83/95

CULLASAJA HEIGHTS MIRROR LAKE IMPROVEMENTS COMPANY
DEED FOR LAKE BOTTOM AND SHORE LINE NOT AVALIBLE

-Y- POT Sta. 10+61.70=
-L- POT Sta. 12+45.75

BEGIN TIP PROJECT B-4574
POT Sta. -L- 12+00.00

PT Sta. 11+33.81

POT Sta. 10+00.00

PC Sta. 10+24.56

BENSON L. BAGWELL, TRUSTEE
D.B. Z-26 PG. 218

1

BEGIN SBG -L- STA.12+45 LT.
END SBG -L- STA.12+61.50 LT.

2

END TIP PROJECT B-4574
POC Sta. -L- 15+25.00
PC Sta. 14+93.45

N 4° 35' 51.4" E
PT Sta. 15+71.56
END CONTRUCTION
STA. -L- 15+67.00

JOHN GREER
D.B. B-21 PG. 1179
POT Sta. 16+25.43

ELIZABETH BARR, TRUSTEE
D.B. T-25 PG. 309

-BL-4

-BL-2

-BL-1

-BL-3

-BY-6

-BY-7

-BY-8

-BYI-5

-BY-

-I5-

JUDITH L. THOMAS
D.B. L-26 PG. 2175

THE TOWN OF HIGHLANDS
DB B-33 PG 1931
PUMP STATION

RAYFIELD E. LINES
D.B. Y-30 PG. 1728

MARY W. BREITENBACH
D.B. I-26 PG. 1764

3

WOODROW W. WILSON AND WIFE, MELINDA R. WILSON
D.B. R-9 PG. 300

CULLASAJA HEIGHTS MIRROR LAKE IMPROVEMENTS COMPANY
DEED FOR LAKE BOTTOM AND SHORE LINE NOT AVALIBLE

2

DO NOT DISTURB RETAINING WALL

GRADE TO DRAIN 85 LF. EXIST. DITCH

MOD. CONC. FLUME W/ 3' OF 4" CONC. PAVED DITCH SEE DETAIL SHEET 2E

LATERAL 2' BASE DITCH SEE DETAIL I 10 TONS CLASS B RIP RAP 15 SY FILTER FABRIC 2.5 CY DDE 14+89.00 27.20'

CL. II RIP RAP W/ FF - STRUCTURE PAY ITEM

6' X 32' PSRM

6' X 20' PSRM

RETAIN

ROCK EMBANKMENT

CULLASAJA RIVER

SR 1551 MIRROR LAKE RD.

SR 1552 CULLASAJA DR.

SR 1545 HICKS RD.

HICKORY HILL RD.

PRIVATE R/W

EXISTING R/W

MAINTAINED R/W

BEGIN BRIDGE -L- STA.12+73.50

BEGIN APPR. SLAB -L- STA.12+62.50

BEGIN CONST. -Y-Sta. 10+11.42

END BRIDGE -L- STA.13+78.50

END APPR. SLAB -L- STA.13+89.50

BEGIN SBG -L- STA.12+62.67 RT.
END SBG -Y- STA.10+31 RT.

-Y- POT Sta. 10+00.00

REMOVE 28' EXIST. 24" CMP CLEANOUT PORTION RETAINED (SEE NOTES)

REMOVE 6' DIP

REMOVE -L-

TRANSITION FROM EXIST. V DITCH TO 2' BASE DITCH -L- STA.15+50 LT. TO STA.15+67 LT.

LATERAL 2' BASE DITCH SEE DETAIL I 11 TONS CLASS B RIP RAP 16 SY FILTER FABRIC 3 CY DDE

NOTES:
REMOVE EXIST. PAVED FLUMES ON NW AND SW BRIDGE APPROACHES.

INV. 24" CMP AT INLET COULD NOT BE LOCATED IN FIELD. PIPE OUTLET IS IN FAIR CONDITION AND IS PARTIALLY RUSTED.

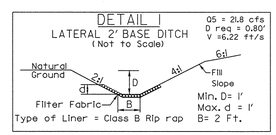
18" CMP INLET END IS COVERED AND OUTLET END IS CRUSHED. WATER IS TRAPPED NEAR INLET.

ESTIMATED EXCAVATION QUANTITIES: ABUTMENT 1 - 50 CY
ABUTMENT 2 - 32 CY.

PROVIDE MINIMUM 6' OF COVER FOR THE PROPOSED 24" CMP (DRIVEWAY PIPE).

DETAIL I
LATERAL 2' BASE DITCH
(Not to Scale)

Q5 = 21.8 cfs
D req = 0.80'
V =6.22 ft/s



-L- STA. 14+85 TO STA. 15+08 (LT.)
-L- STA. 15+28 TO STA. 15+50 (LT.)

NOTE: SEE PLAN SHEET 5 FOR PROFILE
SEE S-1 THRU S-23 STRUCTURE PLANS

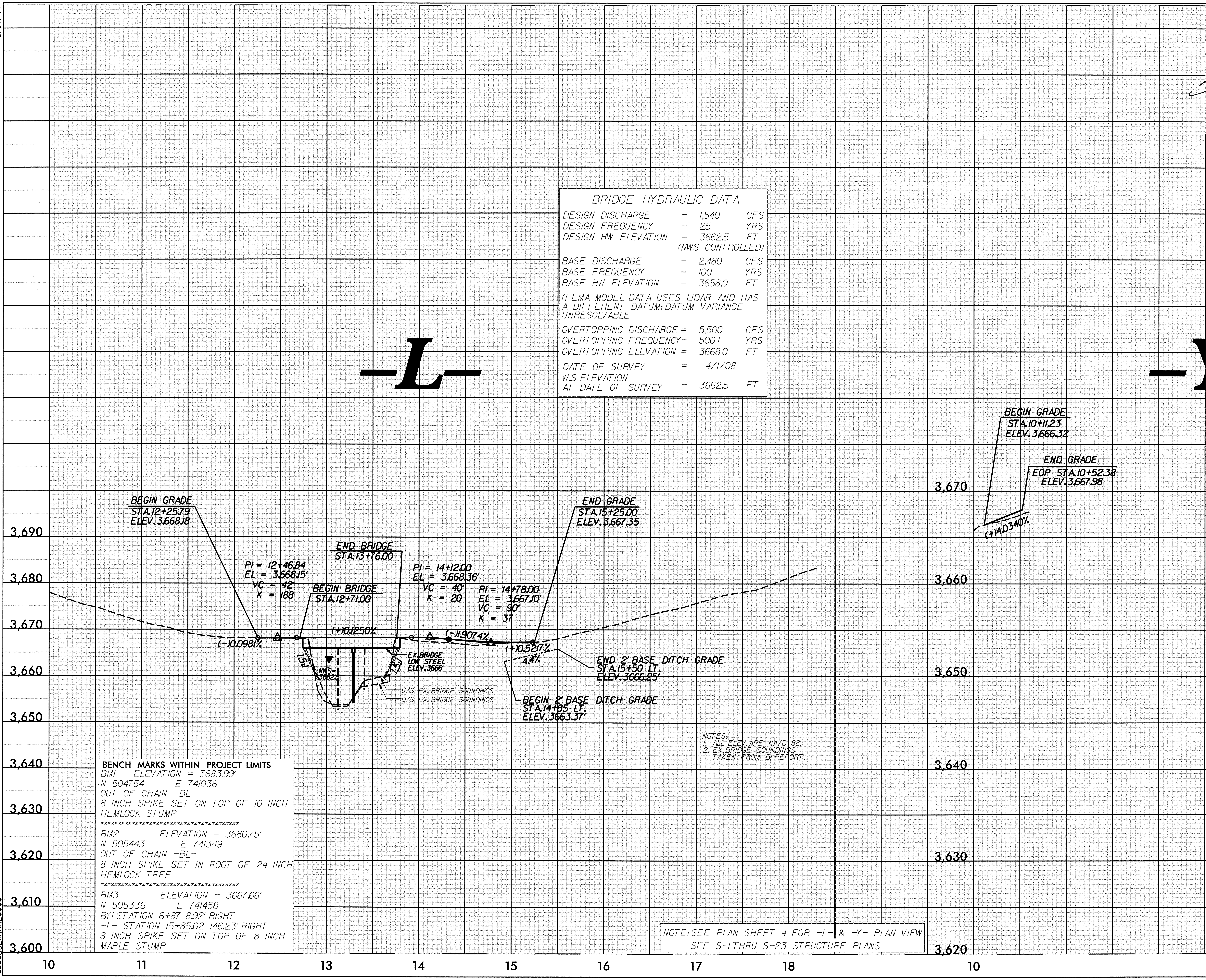
$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$
$$$$RFS$$$$
$$$$USERNAME2$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4574	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 22568 STEVEN L. SCOTT 3.21.10	SEAL 10746 DENNIS K. HOYLE 12/21/10

DITCH LEGEND

LEFT DITCH -··-··-··-··-



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1,540 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 3662.5 FT
(NWS CONTROLLED)

BASE DISCHARGE = 2,480 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 3658.0 FT

(FEMA MODEL DATA USES LIDAR AND HAS A DIFFERENT DATUM; DATUM VARIANCE UNRESOLVABLE

OVERTOPPING DISCHARGE = 5,500 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 3668.0 FT

DATE OF SURVEY = 4/1/08
W.S.ELEVATION
AT DATE OF SURVEY = 3662.5 FT

NOTES:
1. ALL ELEV. ARE NAVD 88.
2. EX.BRIDGE SOUNDINGS TAKEN FROM BI REPORT.

BENCH MARKS WITHIN PROJECT LIMITS

BM1 ELEVATION = 3683.99'
N 504754 E 741036
OUT OF CHAIN -BL-
8 INCH SPIKE SET ON TOP OF 10 INCH HEMLOCK STUMP

****

BM2 ELEVATION = 3680.75'
N 505443 E 741349
OUT OF CHAIN -BL-
8 INCH SPIKE SET IN ROOT OF 24 INCH HEMLOCK TREE

****

BM3 ELEVATION = 3667.66'
N 505336 E 741458
BY1 STATION 6+87 8.92' RIGHT
-L- STATION 15+85.02 146.23' RIGHT
8 INCH SPIKE SET ON TOP OF 8 INCH MAPLE STUMP

NOTE: SEE PLAN SHEET 4 FOR -L- & -Y- PLAN VIEW
SEE S-1 THRU S-23 STRUCTURE PLANS