STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 9, 2004

U.S. Army Corps of Engineers
Regulatory Field Office
6508 Falls of the Neuse Road
Suite 120
Raleigh, NC 27615

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Subject: **Request for Modification to the existing Nationwide 23 and 33 Permit and Neuse River Buffer Certification.** Wake County, Replacement of Bridge No. 273 Over Middle Creek on SR 1006, Federal Aid Project No. BRZ-1006(13), State Project No. 8.2407501, TIP Project No. B-3521. WBS Element 33130.1.1. NCDOT Division 5.

The U.S. Army Corps of Engineers (USACE) issued Nationwide Permits 23 and 33 for the above referenced project on April 30, 2004 (Action ID 200120071). These permits authorized 0.29 ac of wetland impacts including fill, temporary fill, and mechanized clearing and 0.01 ac of temporary fill in surface waters for construction of temporary causeways. The N.C. Division of Water Quality (NCDWQ) issued a Neuse River Buffer Certification for this project on January 5, 2004 (DWQ No. 031456). This certification authorized 10,323 square feet of riparian buffer impacts in Zone 1 and 6,403 square feet of riparian buffer impacts in Zone 2.

USACE Nationwide Permit General Conditions and Neuse River Buffer Certification conditions directs the permittee to ensure that the construction design plans for this project do not deviate from the permit plans. It further directs the permittee to forward any deviation in the construction design plans to the USACE and NCDWQ prior to any active construction in waters and wetlands.

NCDOT Division 5 has recently completed a pre-let environmental review associated with this project. The pre-let review is based on the final roadway construction plan sheets, permit drawings and other information that may be present in the permit application. The review identified all permit drawing and plan sheet discrepancies as well as other associated constructability concerns that can be identified during the pre-construction phase of this project. The following information presents the findings of this comprehensive review.

Permit Drawing 4/Plan Sheet 4

- The permit drawing indicates an 18 inch driveway pipe at Station 18+56 Lt. This driveway pipe represents a break in the grassed swale and is not depicted on the plan sheet drawing.
- There is a discrepancy between the permit drawing and plan sheet in the exact footprint of the grassed swale from Station 17+30 to 20+10 Lt.
- The plan sheet indicates an 18 inch driveway pipe at Station 20+50 Lt. This driveway pipe is not depicted on the permit drawing.
- Rip rap lined ditches are located at 16+50 Lt and Rt. The terminal ends of these ditches are located outside of the permitted buffer impacts.
- The buffer impacts associated with the temporary detour are not included on any permit drawing. However, the impacts have been clearly identified on the buffer impact summary sheet.

The permit drawings associated with these issues have been revised and are attached. Impacts at some of the sites have changed based on these revisions:

Wetlands
Site 1 (Station 18+82 TO 22+25 Rt): increase of 0.073 ac of mechanized clearing in wetlands impact.
Site 2 (Station 21+49 to 22+60 Lt): decrease of 0.015 ac of fill in wetlands impact. Decrease of 0.004 ac of mechanized clearing in wetlands impact.
Site 3 (16+27 to 16+61 Rt): increase of 0.007 ac of mechanized clearing in wetlands impact.
Site 4 (21+40 to 22+84 Lt Det): increase of 0.015 ac of temporary fill in wetlands impact. Increase of 0.008 ac of mechanized clearing in wetlands impact.

These revisions account for an increase of 0.084 ac of wetland impacts. We propose to mitigate for the additional wetland impacts through the Ecosystem Enhancement Program (EEP). A copy of the request letter is attached.

Buffers
Site 1 (Station 17+06): increase of 1,293 square feet of riparian buffer impacts in Zone 1 and 250 square feet of riparian buffers in Zone 2.
Site 2 (Station 17+12.5 Det): increase of 382 square feet of riparian buffer impacts in Zone 1. Decrease of 150 square feet of riparian buffer impacts in Zone 2.

These revisions account for an increase of 1,675 square feet of riparian buffer impacts in Zone 1 and 100 square feet of riparian buffer impacts in Zone 2. Since the riparian buffer impact at Site 1 totals 0.33 ac, we propose to mitigate for these impacts through the EEP. In the original permit application, NCDOT did not propose to mitigate for buffer impacts since impacts at each site were below the 0.33 ac threshold.

Regulatory Approvals

Application is hereby made for a modification of USACE Nationwide Permits 23 and 33. We are also requesting modification of the Neuse River Buffer Certification. Please find attached permit drawings and impact summary sheet.

If you have any questions or need additional information, please contact Matt Haney at (919) 715-1428.

Sincerely,

for

Gregory J. Thorpe, Ph.D., Environmental Management Director,
Project Development and Environmental Analysis Branch

Cc: w/attachment
Mr. John Hennessy, Division of Water Quality
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Jon Nance, P.E., Division 5 Engineer
Mr. Chris Murray, Division 5 Environmental Officer
W/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington
Mr. John Conforti, Consultant Engineer
Ms. Beth Harmon, EEP

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 7, 2004

Mr. William D. Gilmore, P.E.
EEP Transition Manager
Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

Dear Sir:

Subject: **Additional Request for Mitigation.** Wake County. Replacement of Bridge No. 273 over Middle Creek on SR 1006. State Project No 8.2407501. TIP No. B-3521. NCDOT Division 5. Federal Aid Project No. BRZ-1006(13).

Reference: EEP request letter dated November 7, 2003.
EEP confirmation letter dated April 19, 2004.

The North Carolina Department of Transportation (NCDOT) sent a letter to the North Carolina Ecosystem Enhancement Program (EEP) dated November 7, 2003 requesting that the EEP provide confirmation that you are willing to provide compensatory mitigation for the subject project. In this letter, we estimated that 0.233 acres of wetlands will be impacted. We have since realized that there is an additional 0.08 acre of wetland impact, 9,264 square feet of riparian buffer impacts in Zone 1, and 5,259 square feet of riparian buffer impacts in Zone 2. Therefore, the wetland impacts total 0.313 acre and the riparian buffer impacts total 14,523 square feet. This wetland impact will be to non-riverine, scrub-shrub wetlands. The riparian buffer impacts will occur adjacent to Middle Creek [DWQ# 27-43-15-(4)], a fourth order perennial stream.

We request that these impacts be included in the original request sent on November 7, 2003. Please send the letter of confirmation to Eric Alsmeyer (USACE Coordinator) at U.S. Army Corps of Engineers Raleigh Regulatory Field Office (6508 Falls of the Neuse Road, Suite 120 Raleigh, NC 27615). Mr. Alsmeyer's FAX number is (919) 876-5823.

In order to satisfy regulatory assurances that mitigation will be performed, the NCDWQ requires a formal letter from EEP indicating their willingness and ability to provide the mitigation work requested by NCDOT. The NCDOT requests such a letter of confirmation be addressed to Mr. John Hennessy of NCDWQ, with copies submitted to NCDOT.

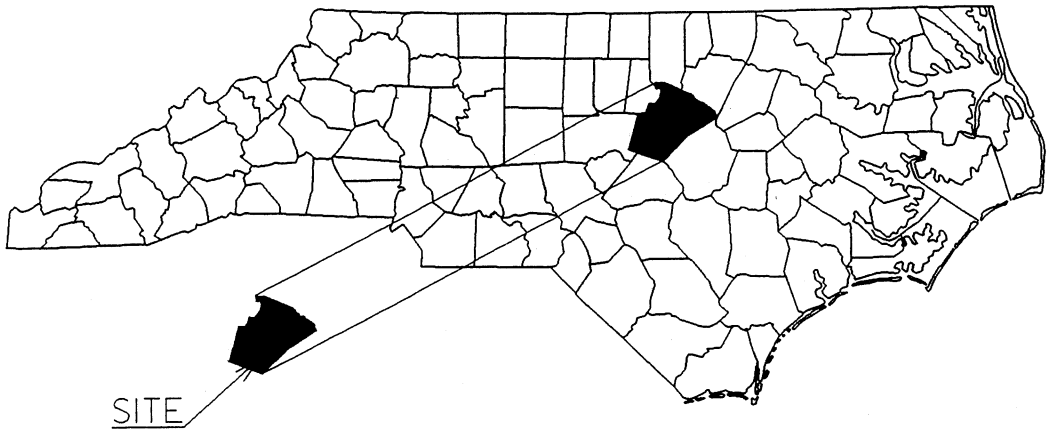
If you have any questions or need additional information please call Matt Haney at (919) 715-1428.

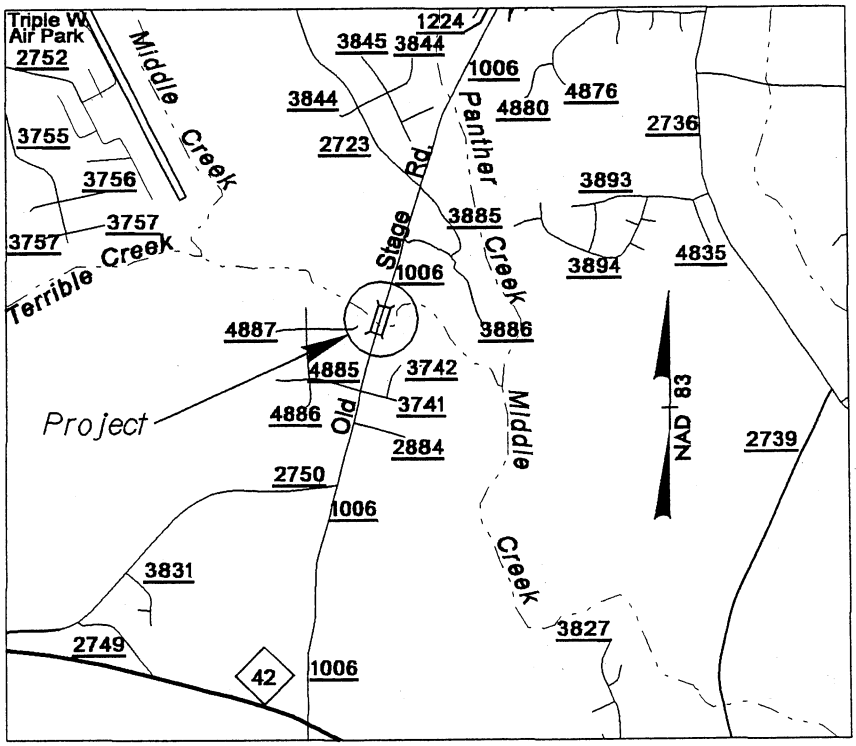
Sincerely,

for Gregory J. Thorpe, Ph.D.,
Environmental Management Director
Project Development & Environmental Analysis Branch

cc: Mr. John Hennessy, Division of Water Quality
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. David Franklin, USACE, Wilmington
Mr. Eric Alsmeyer, USACE
Ms. Beth Harmon, EEP, Raleigh

NORTH CAROLINA





WETLAND IMPACT VICINITY MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 8.2407501 (B-3521)

SR 1006 (OLD STAGE ROAD)

SHEET 1 OF 6

GRASS SWALE DATA-14+00 TO 16+00LT-L-

DA= 1.24ac MINIMUM LENGTH OF SWALE= 124 ft	
SWALE LENGTH PROVIDED=200ft	
LONGITUDINAL SLOPE= 4% SIDE SLOPES =3:1	
Q2=2.3cfs	Q10= 3.0cfs
V2= 1.7ft/s	V10= 1.9ft/s
D2= 0.7ft	D10= 0.7ft

GRASS SWALE DATA-13+00 TO 13+59RT-L-

DA= 0.17ac MINIMUM LENGTH OF SWALE= 17 ft	
SWALE LENGTH PROVIDED=59 ft	
LONGITUDINAL SLOPE= 4% SIDE SLOPES >/=3:1	
Q2=0.4 cfs	Q10= 0.5 cfs
V2=0.5 ft/s	V10=0.6 ft/s
D2=0.3 ft	D10= 0.3 ft

GRASS SWALE DATA-17+44 TO 20+40LT-L-

DA= .52ac MINIMUM LENGTH OF SWALE= 52ft	
SWALE LENGTH PROVIDED=296FT	
LONGITUDINAL SLOPE= .2% SIDE SLOPES =3:1	
Q2= 1.0cfs	Q10= 1.3cfs
V2= .26ft/s	V10= .30ft/s
D2= .9ft	D10= .9ft

GRASS SWALE DATA-14+65 TO 15+00RT-L-

DA=0.34 ac MINIMUM LENGTH OF SWALE= 35 ft	
SWALE LENGTH PROVIDED=35 ft	
LONGITUDINAL SLOPE= 4% SIDE SLOPES >/=3:1	
Q2=0.7 cfs	Q10= 0.9 cfs
V2=0.8 ft/s	V10=0.9 ft/s
D2=0.3 ft	D10= 0.3 ft

GRASS SWALE DATA-13+50 TO 14+00LT-L-

DA=0.42 ac MINIMUM LENGTH OF SWALE= 42 ft	
SWALE LENGTH PROVIDED=50 ft	
LONGITUDINAL SLOPE= 4% SIDE SLOPES >/=3:1	
Q2=0.9 cfs	Q10= 1.1cfs
V2=0.8 ft/s	V10= 1.0 ft/s
D2=0.3 ft	D10= 0.3 ft

SWALE DATA

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 8.2407501 (B-3521)

SR 1006 (OLD STAGE ROAD)

SHEET 5 OF 6 REV. 6/22/04

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	18+82 TO 22+25RT-L-	BRIDGE APPROACH FILL	0.009			0.133					
2	21+49 TO 22+60LT-L-	BRIDGE APPROACH FILL	0.023			0.022					
3	16+27 TO 16+61RT-L-	BRIDGE APPROACH				0.007					
4	*21+40 TO 22+84LT-Det-	DETOUR APPROACH FILL		0.068		0.038					
	17+23 TO 17+31-L-	WORK PAD-L-							0.004		
TOTALS:			0.03	0.07	0	0.20	0	0	0.004	0	0

*Note: The Mechanized Area For Site 2 Above Is Also Included In The Detour Temporary Fill In Wetlands. An Overlap Exists.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT 8.2407501 B-3521

SHEET 6 OF 6

Revised:
6/24/2004

Form Revised 3/22/01

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	Bridge	17+06-L-	X		9264	5259	14523					
2	*Detour Bridge	17+12.5-Det-	X		2734	1244	3978					
TOTAL:					11998	6503	18501					

*Note: BZ1 Imact for PDE (SW Side Beyond R/W) Is Included In Site 1.

N.C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS

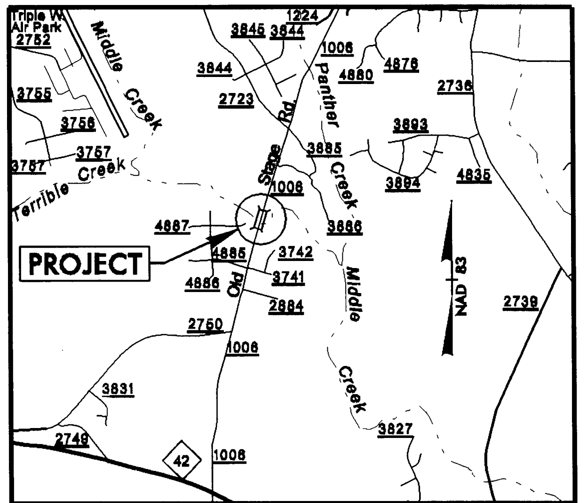
WAKE COUNTY
PROJECT: 8.2407501 (B-3521)

Revised:
6/24/2004
SHEET 6A OF 6

TIP PROJECT: B-3521

CONTRACT: C200806

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3521	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33130.1.1	BRZ-1006(13)	PE
33130.2.2	BRZ-1006(13)	R/W, UTIL.
33130.3.1	BRZ-1006(21)	CONSTR.

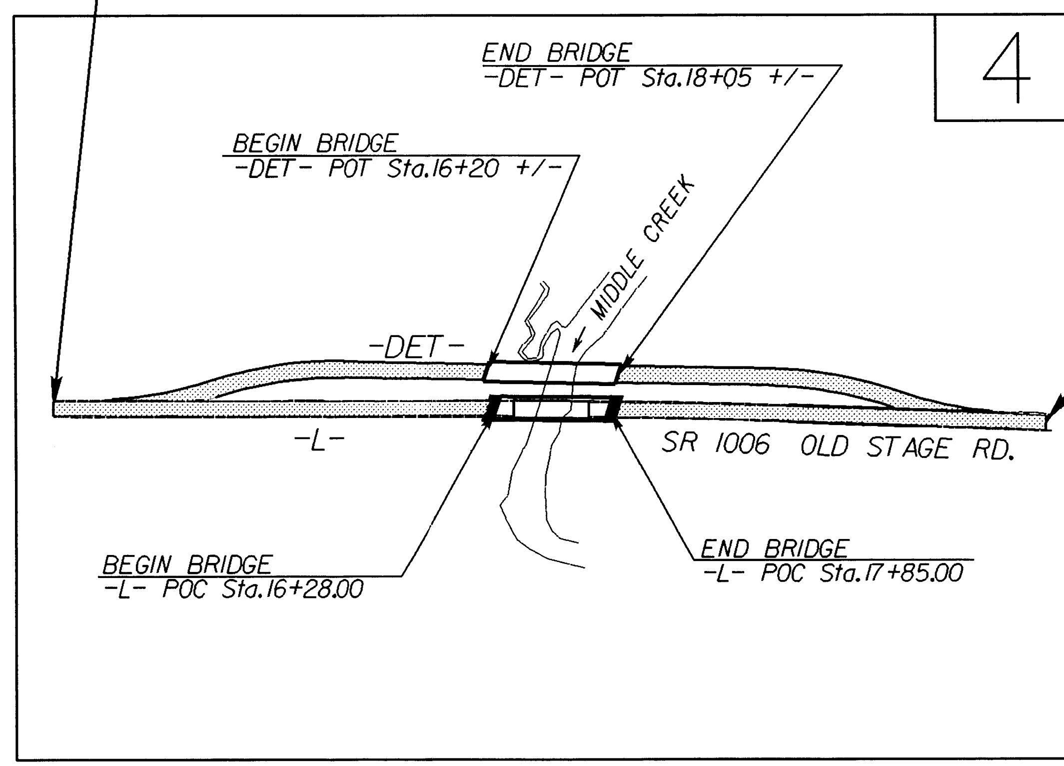
LOCATION: BRIDGE NO. 273 OVER MIDDLE CREEK ON SR 1006

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

NAD 83

STA. 10 + 00.00 -L- BEGIN TIP PROJECT B-3521

STA. 24 + 00.00 -L- END TIP PROJECT B-3521



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 2004 = 4020
ADT 2025 = 8300
DHV = 10 %
D = 60 %
T = 3 % *
V = 50 MPH
V (DETOUR) = 40 MPH
* TTST 1 % DUAL 2 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3521 = 0.235 mi
LENGTH STRUCTURE TIP PROJECT B-3521 = 0.030 mi
TOTAL LENGTH TIP PROJECT B-3521 = 0.265 mi

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2002

LETTING DATE:
JUNE 15, 2004

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

PROJECT REFERENCE NO.	SHEET NO.
B-3521	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut (C)
- Prop. Slope Stakes Fill (F)
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp (WCR)
- Curb Cut for Future Wheelchair Ramp (CCFR)
- Exist. Guardrail
- Prop. Guardrail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
- Exist. Control of Access Line (C/A)
- Prop. Control of Access Line (C/A)
- Exist. Easement Line (E)
- Prop. Temp. Construction Easement Line (E)
- Prop. Temp. Drainage Easement Line (TDE)
- Prop. Perm. Drainage Easement Line (PDE)
- Prop. Perm. Access Easement Line (PAE)

HYDROLOGY

- Stream or Body of Water
- River Basin Buffer (BZ)
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches (FLOW)

STRUCTURES

MAJOR

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

MINOR

- Head & End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Boxes (CB)
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal
- U/G Telephone Cable Hand Hold
- Cable TV Pedestal
- U/G TV Cable Hand Hold
- U/G Power Cable Hand Hold
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole
- Telephone Booth
- Cellular Telephone Tower
- Water Manhole
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box
- Fiber Optic Splice Box
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement (TS)
- Recorded Water Line (W)
- Designated Water Line (S.U.E.*) (W)
- Sanitary Sewer (SS)
- Recorded Sanitary Sewer Force Main (FSS)
- Designated Sanitary Sewer Force Main(S.U.E.*) (FSS)
- Recorded Gas Line (G)
- Designated Gas Line (S.U.E.*) (G)
- Storm Sewer (S)
- Recorded Power Line (P)
- Designated Power Line (S.U.E.*) (P)
- Recorded Telephone Cable (T)
- Designated Telephone Cable (S.U.E.*) (T)
- Recorded U/G Telephone Conduit (TC)
- Designated U/G Telephone Conduit (S.U.E.*) (TC)
- Unknown Utility (S.U.E.*) (?UTL)
- Recorded Television Cable (TV)
- Designated Television Cable (S.U.E.*) (TV)
- Recorded Fiber Optics Cable (FO)
- Designated Fiber Optics Cable (S.U.E.*) (FO)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record (ATTUR)
- End of Information (E.O.I.)

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol (PL)
- Exist. Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Property Number (123)
- Parcel Number (6)
- Fence Line
- Existing Wetland Boundaries (WW & ISBW / WLB)
- High Quality Wetland Boundary (HQ WLB)
- Medium Quality Wetland Boundaries (MQ WLB)
- Low Quality Wetland Boundaries (LQ WLB)
- Proposed Wetland Boundaries (WLB)
- Existing Endangered Animal Boundaries (EAB)
- Existing Endangered Plant Boundaries (EPB)

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign (S)
- Well (W)
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol (R/W)
- Guard Post (GP)
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (VINEYARD)

RAILROADS

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)

revised 02/02/00

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R:\Proj\B3521\Sheets
AT BD023673

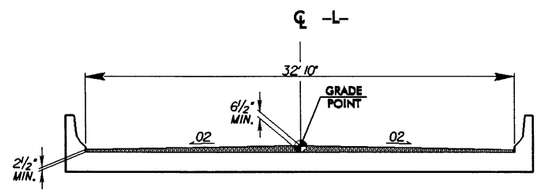
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3521	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

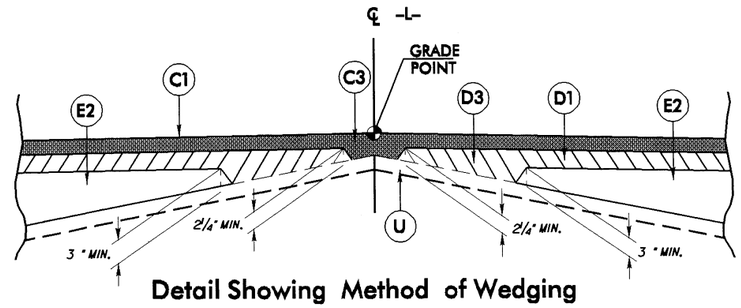
NORTH CAROLINA PROFESSIONAL SEAL 22057 ENGINEER

PAVEMENT SCHEDULE

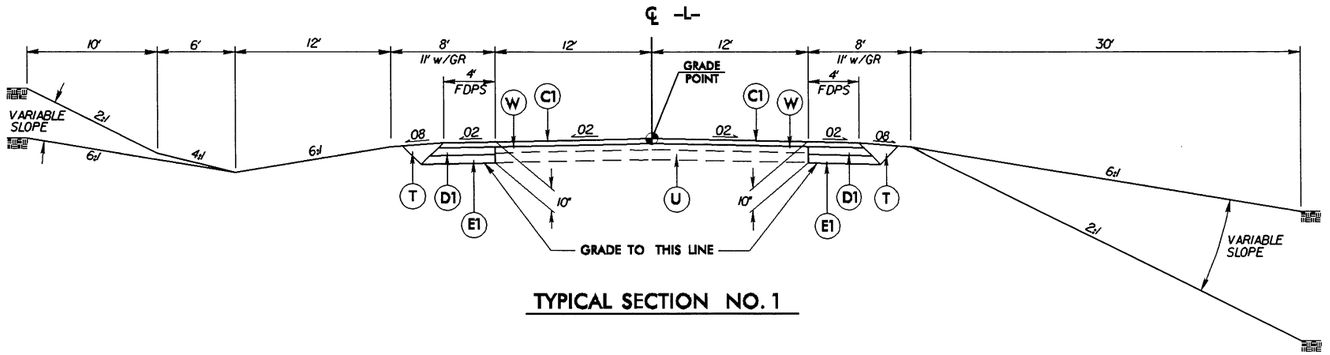
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	D2	PROP. APPROX. 2¼" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 256.5 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.
C2	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD.	D3	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" IN DEPTH OR GREATER THAN 4" IN DEPTH.	J2	PROP. 8" AGGREGATE BASE COURSE.
C3	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 1½" IN DEPTH.	E1	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 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.	U	EXISTING PAVEMENT.
				W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)



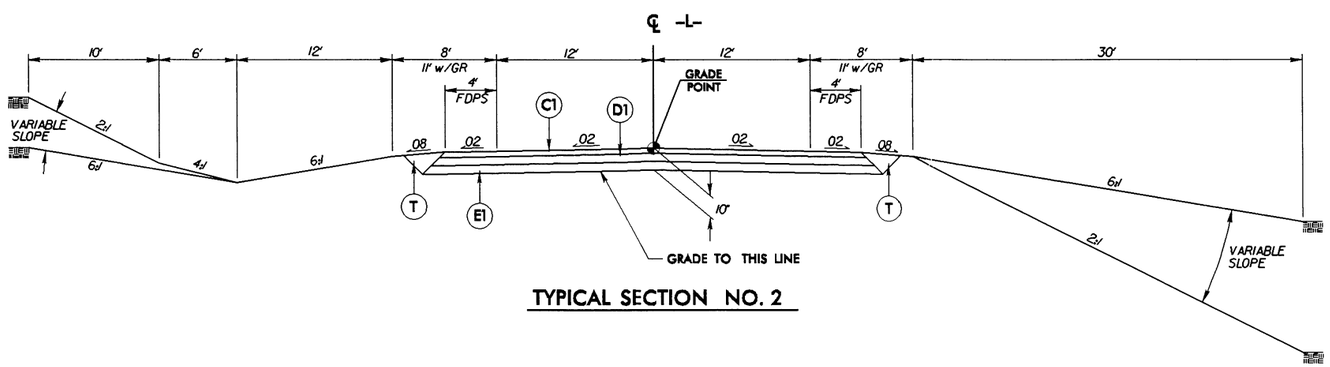
Detail Showing Asphalt Wearing Surface On Cored Slab Bridge



Detail Showing Method of Wedging



TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2

NOTES: TRANSITION FROM EXISTING TO TYPICAL SECTION NO.1
-L- STA.10+00.00 TO -L- STA.12+00.00
-L- STA.22+00.00 TO -L- STA.24+00.00

USE TYPICAL SECTION NO. 1

-L- STA. 12+00.00 TO -L- STA. 13+00.00
-L- STA. 19+50.00 TO -L- STA. 22+00.00

USE TYPICAL SECTION NO. 2

-L- STA. 13+00.00 TO -L- STA. 16+28.00 (BEGIN BRIDGE)
-L- STA. 17+85.00 (END BRIDGE) TO -L- STA. 19+50.00

25-JUN-2004 13:54
R:\PROJ\B3521.typ
title AT RD2B3673

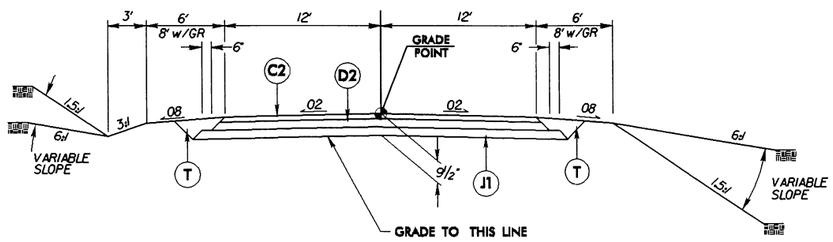
PROJECT REFERENCE NO.	SHEET NO.
B-3521	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22357 ENGINEER

PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE
C2	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE
D2	PROP. APPROX. 2¼" ASPHALT CONCRETE INTERMEDIATE COURSE
J1	PROP. 6" AGGREGATE BASE COURSE.
J2	PROP. 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.

℄ -DET-



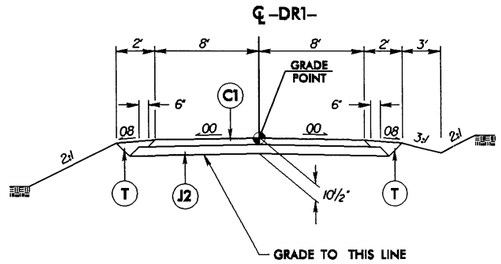
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-DET- STA. 12+14.69 TO -DET- STA. 16+20 +/- (BEGIN BRIDGE)
-DET- STA. 18+05 +/- (END BRIDGE) TO -DET- STA. 22+06.40

NOTES: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 3
-DET- STA. 10+50.00 - 12+14.69
-DET- STA. 22+06.40 - 23+71.09

℄ -DR1-

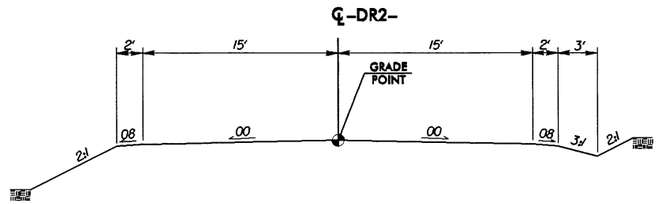


TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-DR1- STA. 10+17.00 TO -DR1- STA. 11+10.00

℄ -DR2-

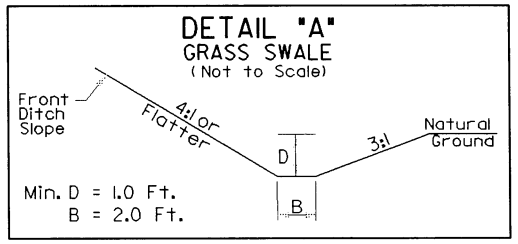


TYPICAL SECTION NO. 5

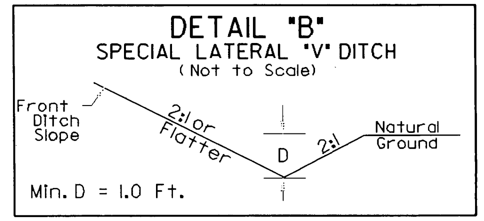
USE TYPICAL SECTION NO. 5

-DR2- STA. 10+00.00 TO -DR2- STA. 11+34.00

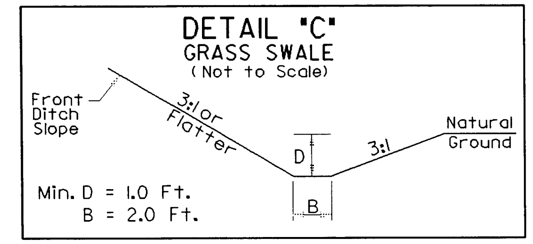
PROJECT REFERENCE NO.	SHEET NO.
B-3521	2-B
	HYDRAULICS ENGINEER



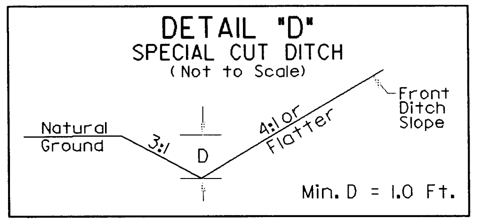
-L- STA. 12+50 TO 13+59 RT.



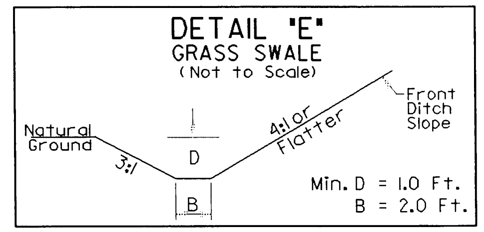
-L- STA. 14+00 TO 14+65 RT.



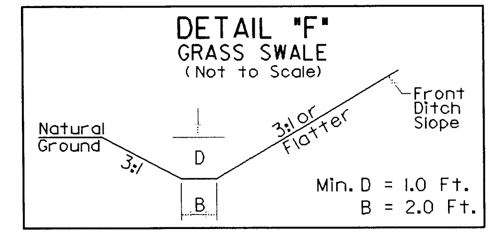
-L- STA. 14+65 TO 15+00 RT.



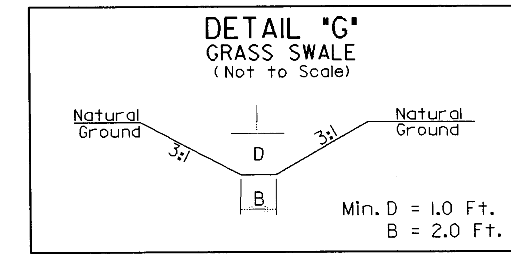
-L- STA. 12+50 TO 13+50 LT.



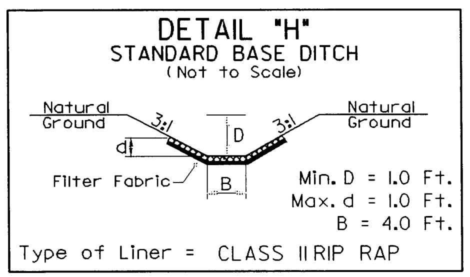
-L- STA. 14+00 TO 15+00 LT.



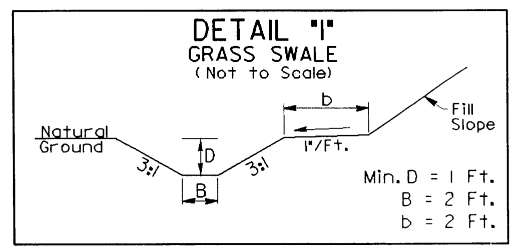
-L- STA. 13+50 TO 14+00 LT.
-L- STA. 15+00 TO 15+75 LT.



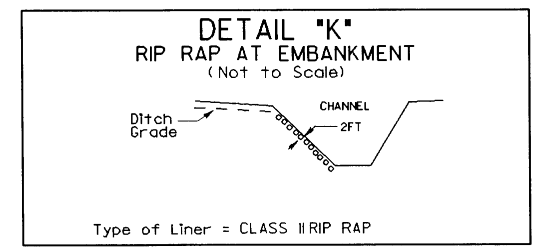
-L- STA. 15+75 TO 16+00 LT.



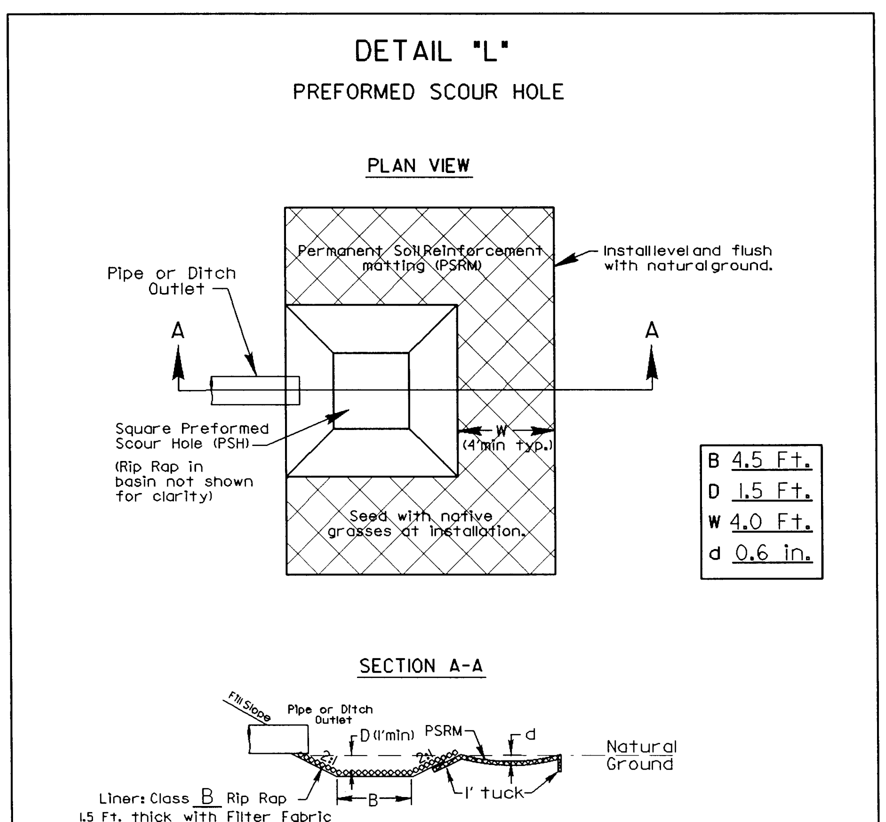
-L- STA. 16+24 TO 16+52 RT.
-L- STA. 16+22 TO 16+58 LT.



-L- STA. 17+44 TO 20+40 LT.



-L- STA. 16+51 RT. TO WATERS EDGE
-L- STA. 17+44 LT. TO WATERS EDGE



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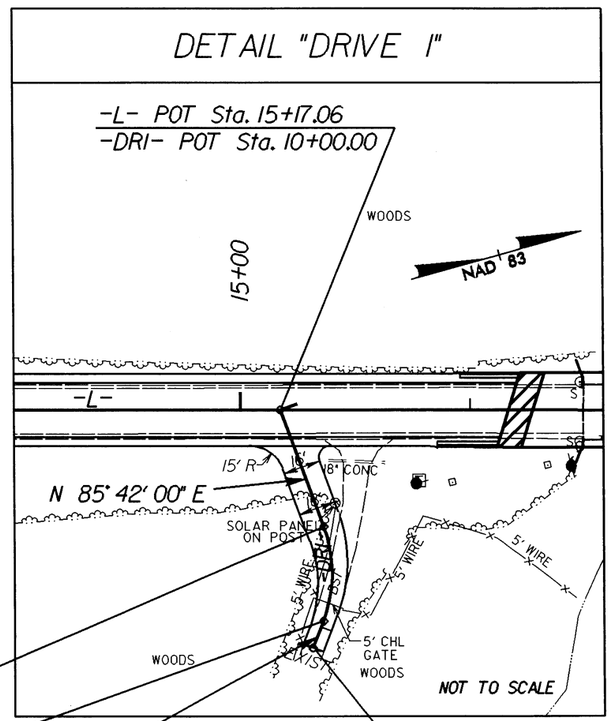
PROJECT REFERENCE NO.	SHEET NO.
B-3521	2-C

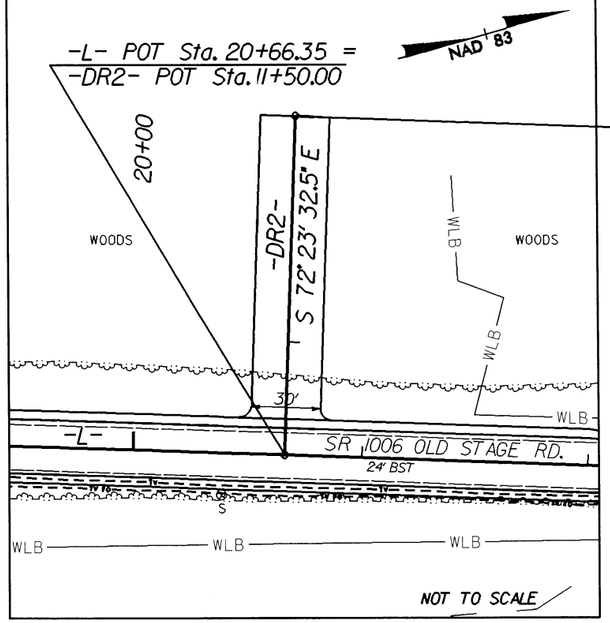
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER

DETAIL "DRIVE 1"



DETAIL "DRIVE 2"



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PROJECT REFERENCE NO.	SHEET NO.
B-3521	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22557 ENGINEER

8/17/99

REVISIONS

-DET-

PI Sta 11+39.95
Δ = 17° 50' 41.1" (LT)
D = 10° 00' 00.0"
L = 178.45'
T = 89.95'
R = 572.96'

PI Sta 13+23.85
Δ = 18° 54' 26.5" (RT)
D = 10° 00' 00.0"
L = 189.07'
T = 95.40'
R = 572.96'

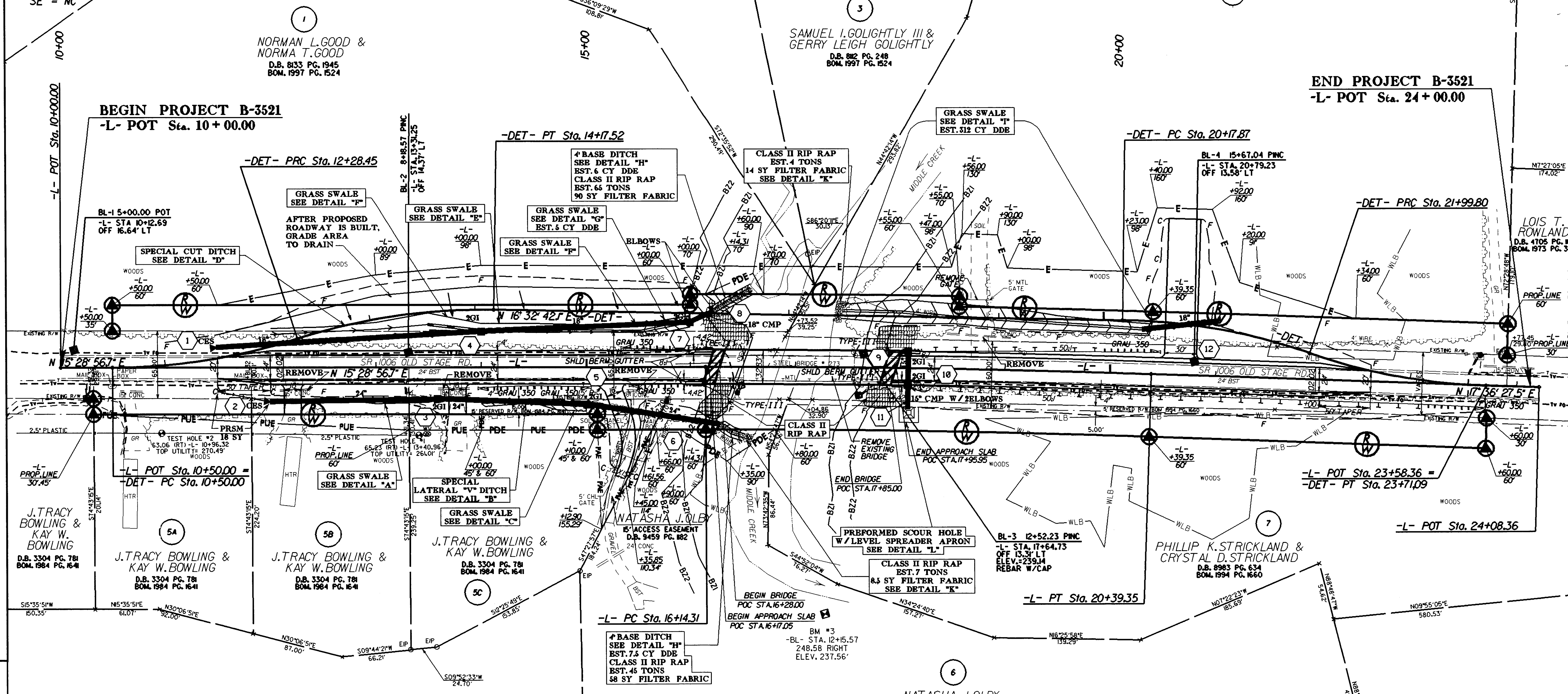
-DET-

PI Sta 21+09.61
Δ = 18° 11' 32.5" (RT)
D = 10° 00' 00.0"
L = 181.92'
T = 91.73'
R = 572.96'

PI Sta 22+86.09
Δ = 17° 07' 47.2" (LT)
D = 10° 00' 00.0"
L = 171.30'
T = 86.29'
R = 572.96'

-L-

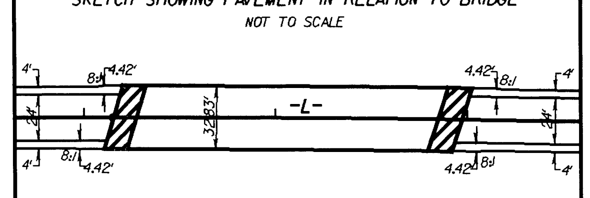
PI Sta 18+26.86
Δ = 2° 07' 30.7" (RT)
D = 0° 30' 00.0"
L = 425.04'
T = 212.54'
R = 11,459.16'
SE = NC



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-3521-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 678331.359(ft) EASTING: 2093728.909(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988390
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-3521-1" TO -L- STATION 10+00.00 IS
S 17° 35' 13.91" W 2243.05 ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SKETCH SHOWING PAVEMENT IN RELATION TO BRIDGE
NOT TO SCALE



NOTES:
(1) ALL DRIVEWAYS HAVE 5' RADII UNLESS SHOWN OTHERWISE
(2) SEE SHEET 4-A FOR -DET- PLAN VIEW
(3) SEE SHEET 5 FOR -L- PROFILE
(4) SEE SHEET 6 FOR -DR1- & -DR2- PROFILES
(5) SEE SHEET 2-B FOR DRAINAGE DETAILS
(6) SEE SHEETS 2-C FOR -DR1- & -DR2- DRIVEWAY DETAILS
(7) SEE SHEETS S-1 TO S-23 FOR STRUCTURE DETAILS

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PROJECT REFERENCE NO.	SHEET NO.
B-3521	4-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DETOUR

-DET-

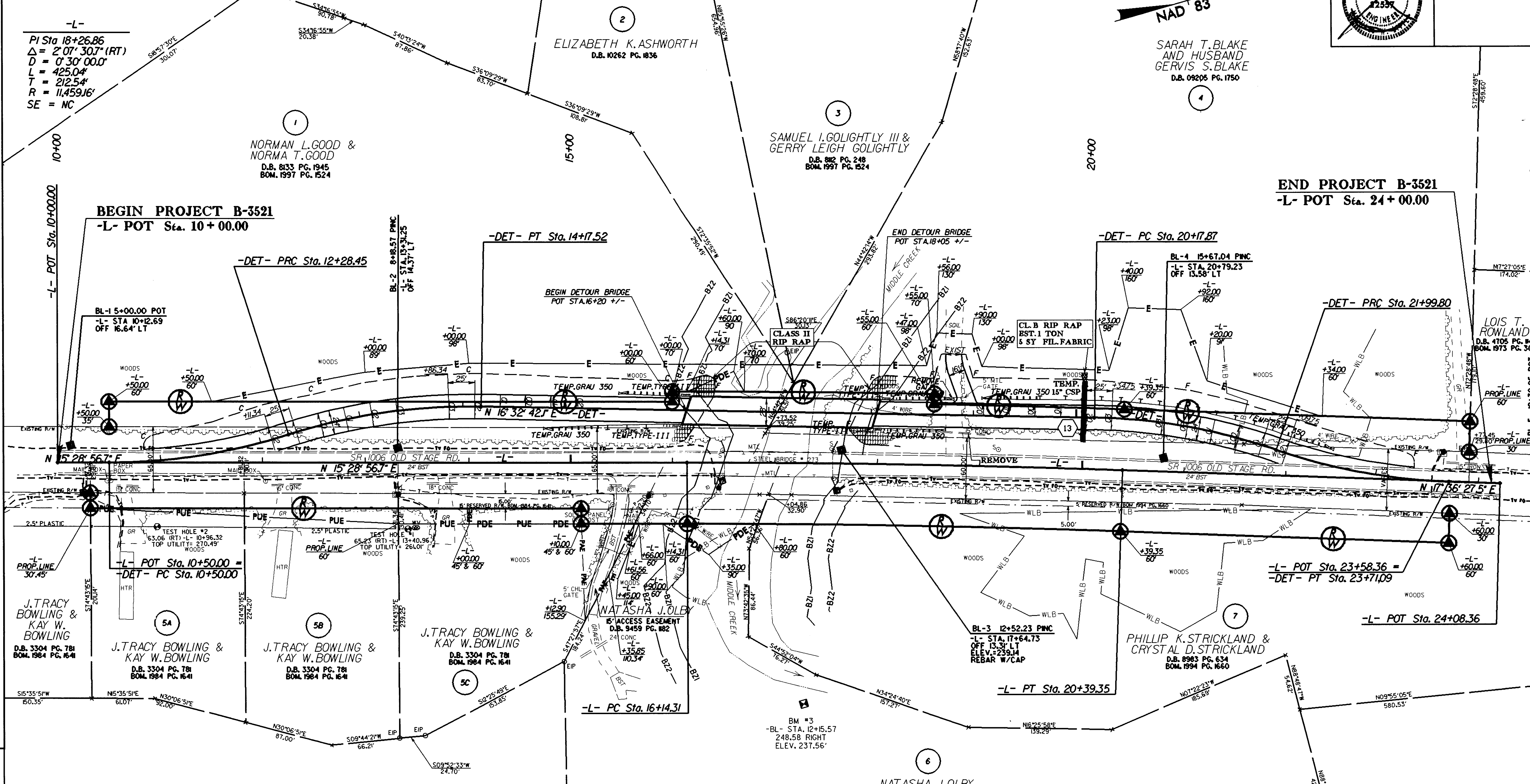
PI Sta 11+39.95	PI Sta 13+23.85
Δ = 17° 50' 41.1" (LT)	Δ = 18° 54' 26.5" (RT)
D = 10° 00' 00.0"	D = 10° 00' 00.0"
L = 178.45'	L = 189.07'
T = 89.95'	T = 95.40'
R = 572.96'	R = 572.96'
SE = SEE PLAN	SE = SEE PLAN

-DET-

PI Sta 21+09.61	PI Sta 22+86.09
Δ = 18° 11' 32.5" (RT)	Δ = 17° 07' 47.2" (LT)
D = 10° 00' 00.0"	D = 10° 00' 00.0"
L = 181.92'	L = 171.30'
T = 91.73'	T = 86.29'
R = 572.96'	R = 572.96'
SE = SEE PLAN	SE = SEE PLAN

-L-

PI Sta 18+26.86
Δ = 2° 07' 30.7" (RT)
D = 0° 30' 00.0"
L = 425.04'
T = 212.54'
R = 11,459.16'
SE = NC

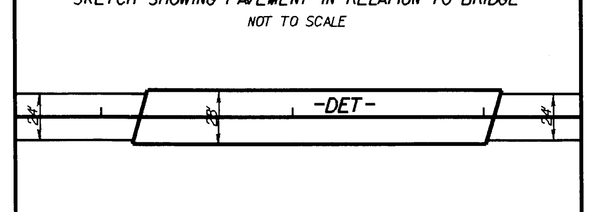


NAD 83
BEGIN PROJECT B-3521
-L- POT Sta. 10+00.00
END PROJECT B-3521
-L- POT Sta. 24+00.00
-DET- PRC Sta. 12+28.45
-DET- PT Sta. 14+17.52
-DET- PC Sta. 20+17.87
-DET- PRC Sta. 21+99.80
-L- POT Sta. 10+50.00 = -DET- PC Sta. 10+50.00
-L- POT Sta. 23+58.36 = -DET- PT Sta. 23+71.09
-L- POT Sta. 24+08.36
-L- PC Sta. 16+14.31
-L- PT Sta. 20+39.35
BEGIN DETOUR BRIDGE POT STA.16+20 +/-
END DETOUR BRIDGE POT STA.18+05 +/-
CLASS II RIP RAP
CL.B RIP RAP EST.1 TON & SY FIL.FABRIC
SR 1006 OLD STAGE RD.
MIDDLE CREEK
NORMAN L.GOOD & NORMA T.GOOD D.B. 8133 PG. 1945 BOM. 1997 PG. 1524
ELIZABETH K.ASHWORTH D.B. 10262 PG. 1836
SAMUEL I.GOLIGHTLY III & GERRY LEIGH GOLIGHTLY D.B. 8112 PG. 248 BOM. 1997 PG. 1524
SARAH T.BLAKE AND HUSBAND GERVIS S.BLAKE D.B. 09205 PG. 1750
LOIS T. ROWLAND D.B. 4705 PG. 84 BOM. 1973 PG. 301
J.TRACY BOWLING & KAY W. BOWLING D.B. 3304 PG. 781 BOM. 1984 PG. 1641
NATASHA J.OLBY 15' ACCESS EASEMENT D.B. 9459 PG. 1182
NATASHA J.OLBY D.B. 10424 PG. 1824
PHILLIP K.STRICKLAND & CRYSTAL D.STRICKLAND D.B. 8983 PG. 634 BOM. 1994 PG. 1660
BM #3 -BL- STA. 12+15.57 248.58 RIGHT ELEV. 237.56'
BL-1 5+00.00 POT -L- STA 10+12.69 OFF 16.64' LT
BL-2 8+18.57 PINC -L- STA. 13+31.25 OFF 14.37' LT
BL-3 12+52.23 PINC -L- STA. 17+64.73 OFF 13.31' LT ELEV.=239.14 REBAR W/CAP
BL-4 15+67.04 PINC -L- STA. 20+79.23 OFF 13.58' LT
TEST HOLE #2 63.06 (RT) -L- 10+96.32 TOP UTILITY= 270.49'
TEST HOLE #1 65.23 (RT) -L- 13+40.96 TOP UTILITY= 261.01'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-3521-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 678331.359(ft) EASTING: 2093728.909(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988390
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-3521-1" TO -L- STATION 10+00.00 IS
S 17° 35' 13.91" W 2243.05 ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SKETCH SHOWING PAVEMENT IN RELATION TO BRIDGE
NOT TO SCALE



NOTES: (1) ALL DRIVEWAYS HAVE 5' RADII UNLESS SHOWN OTHERWISE
(2) SEE SHEET 4 FOR -L- PLAN VIEW
(3) SEE SHEET 5 FOR -DET- PROFILE
(4) SEE SHEET 2-B FOR DRAINAGE DETAILS

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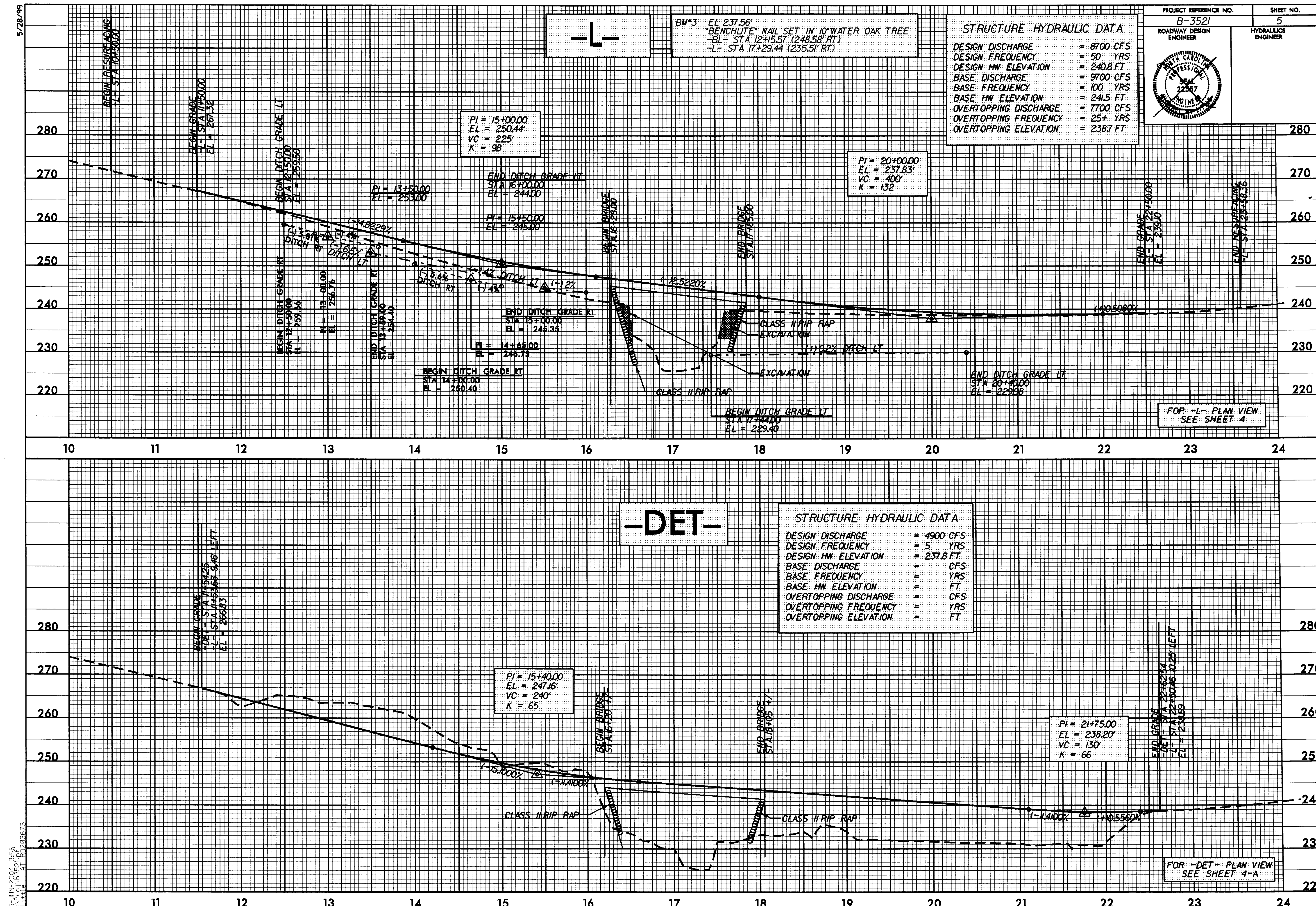

PROJECT REFERENCE NO.
B-3521
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
-L-
BM#3 EL 237.56' "BENCHLITE" NAIL SET IN 10" WATER OAK TREE -BL- STA 12+15.57 (248.58' RT) -L- STA 17+29.44 (235.51' RT)
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 8700 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 240.8 FT
BASE DISCHARGE = 9700 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 241.5 FT
OVERTOPPING DISCHARGE = 7700 CFS
OVERTOPPING FREQUENCY = 25+ YRS
OVERTOPPING ELEVATION = 238.7 FT
BEGIN RESURFACING -L- STA 10+50.00
BEGIN GRADE -L- STA 11+50.00 EL = 267.32
BEGIN DITCH GRADE LT STA 12+50.00 EL = 259.50
PI = 15+00.00 EL = 250.44' VC = 225' K = 98
PI = 13+50.00 EL = 253.00
END DITCH GRADE LT STA 16+00.00 EL = 244.00
PI = 15+50.00 EL = 245.00
(-)4.8229%
DITCH RT
DITCH LT
DITCH LT
DITCH RT
(-)2%
BEGIN DITCH GRADE RT STA 12+50.00 EL = 259.56
PI = 13+00.00 EL = 256.76
END DITCH GRADE RT STA 13+59.00 EL = 254.40
END DITCH GRADE RT STA 15+00.00 EL = 246.35
PI = 14+65.00 EL = 246.75
BEGIN DITCH GRADE RT STA 14+00.00 EL = 250.40
BEGIN BRIDGE STA 16+28.00
END BRIDGE STA 17+85.00
(-)2.5220%
PI = 20+00.00 EL = 237.83' VC = 400' K = 132
CLASS II RIP RAP
EXCAVATION
(+)0.2% DITCH LT
EXCAVATION
CLASS II RIP RAP
BEGIN DITCH GRADE LT STA 17+44.00 EL = 229.40
END DITCH GRADE LT STA 20+40.00 EL = 229.98
(+)0.5080%
END GRADE -L- STA 22+50.00 EL = 239.0
END RESURFACING -L- STA 23+58.36
FOR -L- PLAN VIEW SEE SHEET 4
280
270
260
250
240
230
220
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
-DET-
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 4900 CFS
DESIGN FREQUENCY = 5 YRS
DESIGN HW ELEVATION = 237.8 FT
BASE DISCHARGE = CFS
BASE FREQUENCY = YRS
BASE HW ELEVATION = FT
OVERTOPPING DISCHARGE = CFS
OVERTOPPING FREQUENCY = YRS
OVERTOPPING ELEVATION = FT
BEGIN GRADE -DET- STA 11+54.25 -L- STA 11+53.68 9.46' LEFT EL = 266.83
PI = 15+40.00 EL = 247.16' VC = 240' K = 65
(-)5.7000%
(-)1.4100%
BEGIN BRIDGE STA 16+19.47
END BRIDGE STA 18+05.47
CLASS II RIP RAP
CLASS II RIP RAP
PI = 21+75.00 EL = 238.20' VC = 130' K = 66
(-)1.4100%
(+)0.5560%
END GRADE -DET- STA 22+62.54 -L- STA 22+50.46 10.25' LEFT EL = 238.69
FOR -DET- PLAN VIEW SEE SHEET 4-A
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PROJECT REFERENCE NO.	SHEET NO.
B-3521	6

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21257 ENGINEER

-DR1-

BEGIN GRADE -DR1- STA. 10+17.00 -L- STA. 10+22.81 16' RIGHT EL = 246.96

END GRADE -DR1- STA. 11+40.00 EL = 246.61

(-)4.00000%

(-)0.91667%

PI = 10+98.00
EL = 246.72'
VC = 20'

FOR -DR1- PLAN VIEW SEE SHEET 4

-DR2-

BEGIN GRADE -DR2- STA. 10+00.00 -L- STA. 10+06.35 16' LEFT EL = 232.00

END GRADE -DR2- STA. 11+34.00 -L- STA. 20+66.35 16' LEFT EL = 239.52

(-)0.50000%

1.5316%

PI = 10+20.00
EL = 232.10'
VC = 40'

FOR -DR2- PLAN VIEW SEE SHEET 4

250 240 230 220 240 230 220 210 200

10 11 11

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