STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 20, 2004

U. S. Army Corps of Engineers
Regulatory Branch
Post Office Box 1890
Wilmington, NC 28402-1890

ATTN: Mr. David Timpy
NCDOT Coordinator

Subject: **Application for Nationwide Permit 23** for the proposed replacement of Bridge No. 98 on SR 1240 over Little Coharie Creek in Sampson County, Federal Project No. BRZ-1240(1) State Project No. 8.2281301, WBS Element: 33611.1.1, NCDOT Division 3, TIP No. B-4270

Dear Sir:

Please find the enclosed Categorical Exclusion (CE) document, permit drawings and roadway design plan sheets for the above-mentioned project. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 98 on SR 1240 over Little Coharie Creek at its existing location. The existing 155 foot, 9-span structure will be replaced with 180 foot, 4-span cored slab bridge, built with top down construction. The new bridge will be constructed with three bents. One bent will be located in the surface water along the edge of the creek. NCDOT will observe a work moratorium in-stream from February 15 to June 30 to avoid impacts to anadromous fish spawning and passage. Existing traffic will be detoured offsite an estimated length of 8.6 miles.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1500
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Cape Fear River Basin (CPF19 subbasin). Little Coharie Creek originates approximately 6.0 miles southwest of US 421 and US 13 at the confluence of Caesar Swamp and Opossum Swamp. The creek flows in a southerly direction through the project study area to its confluence with Great Coharie Creek in southwestern Sampson County. Little Coharie Creek has a stream classification of "C-Sw". The "C" designation indicates waters that support aquatic life propagation and survival, fishing, wildlife, secondary recreation and agriculture. The "Sw" designation is used for swamp waters characterized by low velocities, low pH, low dissolved oxygen levels and high organic content.

Wetland Impacts: Permanent impacts to high quality wetlands of 0.03 acre are associated with the new bridge replacement. The impacts are due to mechanized clearing along the approach way on parcel 2 and the permanent drainage easement associated with the cross pipes installed to restore sheet flow in the adjacent wetland (also located on parcel 2).

Bridge Demolition: The superstructure for the existing Bridge No. 93 consists of a reinforced concrete deck on timber joists. End and interior bents are timber caps on timber piles. There is also a steel crutch bent. The bridge has 9 spans and totals approximately 155 feet in length. NCDOT's guidelines for Best Management Practices for Bridge Demolition and Removal will be implemented for the removal of bridge No. 93. The objective of these guidelines shall be to protect the water quality and aquatic life of the affected environment in the vicinity of a project. There will not be any amount of temporary fill due to bridge demolition.

Utility Relocation: There will be no impacts to jurisdictional areas do to utility relocation.

AVOIDANCE, MINIMIZATION AND MITIGATION

This proposed bridge replacement will result in minimal impacts to jurisdictional areas. Best management practices will be used in a effort to minimize impacts, including avoidance of placing staging areas within the wetlands. Compensatory mitigation is not proposed for this project due to the limited nature of project impacts. Less than 0.1 acre of wetland is impacted from the proposed bridge replacement. Land activity impacts associated with construction will be mitigated by replanting disturbed areas with native species and removal of any temporary fill material upon project completion. Cross pipes will be installed in the roadway to improve drainage between wetlands on each side of the roadway.

PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003 the US Fish and Wildlife Service (USFWS) lists three federally protected species for Sampson County: American Alligator (threatened due to similar appearance), red-cockaded woodpecker (endangered) and pondberry (endangered). No species have been added to or deleted from this list since the completion of the CE.

The American Alligator carries the threatened status due to having similar appearance (T(S/A)) to another listed species. Potential habitat exists within the project study area. Construction activities may temporarily displace any American alligators in the vicinity; however, no long-term impact is expected. No Biological Conclusion is required due to the alligator's listing as T(S/A). During the site visit in April, 2001, it was determined that there is no suitable habitat for the red-cockaded woodpecker or the pondberry in the project study area, therefore a biological conclusion of "No Effect" was is given for each of these species.

Construction Moratorium: The CE document states that no moratoriums will apply for this project. This statement was miswritten. A letter dated July 11, 2001 from the National Marine Fisheries service (see appendix in the CE) states that the Little Coharie Creek is a tributary of Black Creek which flows into the Cape Fear River. "The waters and wooded wetlands associated with the Cape Fear River system provide habitat for anadromous fishery resources..." According to the North Carolina Wildlife Resources Commission, a construction moratorium from February 15 until June 30 will be required for anadromous fish passage.

REGULATORY APPROVALS

Section 404 Permit This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification No. 3403 will apply to this project. All general WQC conditions will be adhered to during project construction. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their notification.

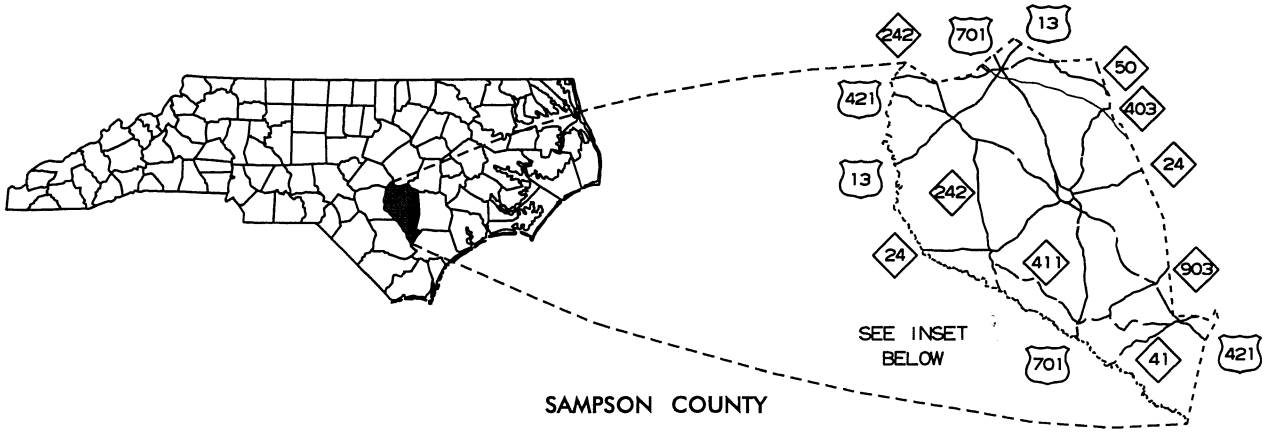
Thank you for your time and assistance with this project. Please contact Carla Dagnino at (919) 715-1456 if you have any questions or need any additional information.

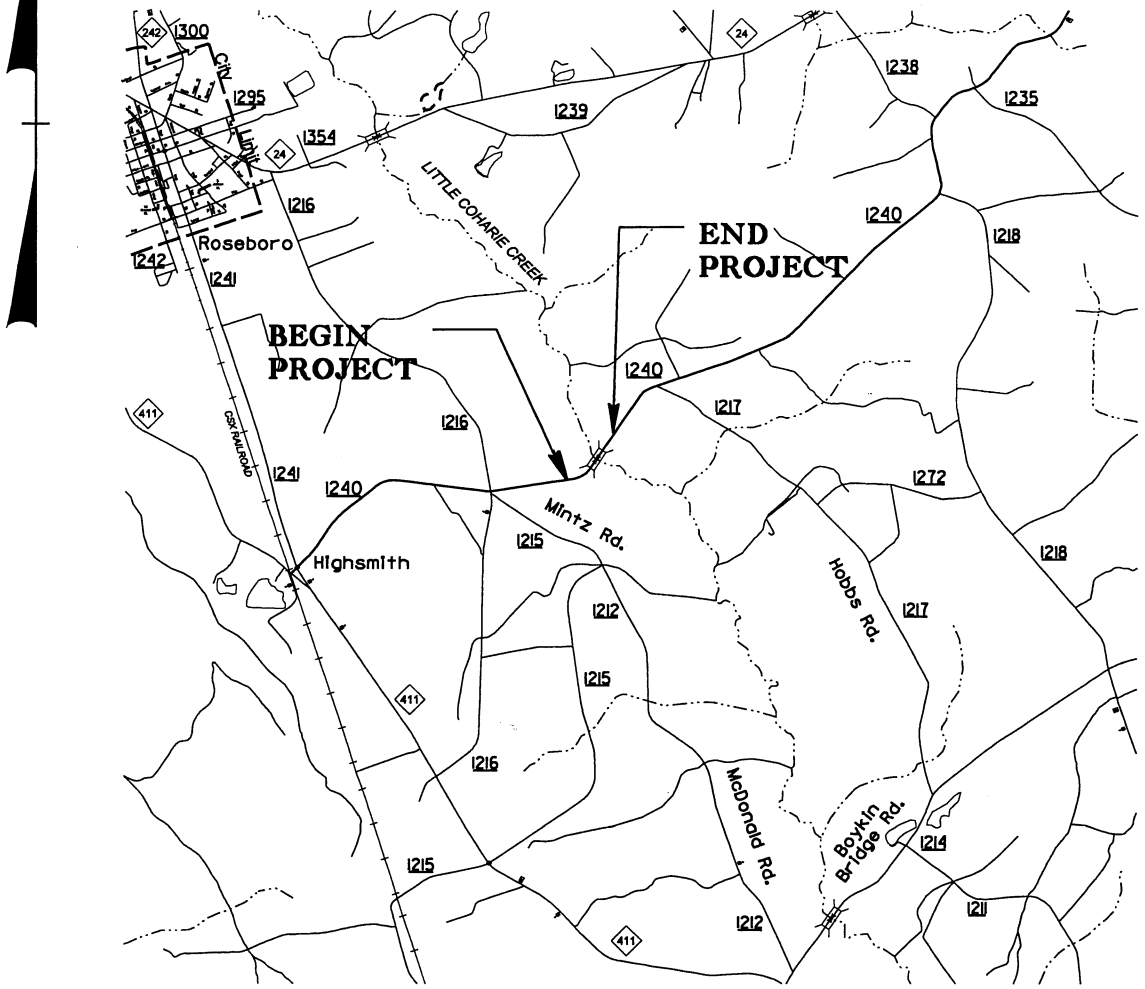
Sincerely,

Gregory J. Thorpe, Ph.D
Environmental Management Director, PDEA

w/attachment
- Mr. John Hennessy, Division of Water Quality (2 copies)
- Mr. Gary Jordan, USFWS
- Mr. Travis Wilson, NCWRC
- Mr. Greg Perfetti, P.E., Structure Design

w/o attachment
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Omar Sultan, Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. David Chang, P.E., Hydraulics
- Mr. Mark Staley, Roadside Environmental
- Mr. John F. Sullivan, III, FHWA
- Mr. Allen Pope, Division 3 Engineer
- Mr. Mason Herndon, Division Environmental Officer
- Ms. Theresa Ellerby (PDEA Project Planning Engineer)
- Mr. David Franklin, USACE, Wilmington (Cover Letter Only)





SCALE

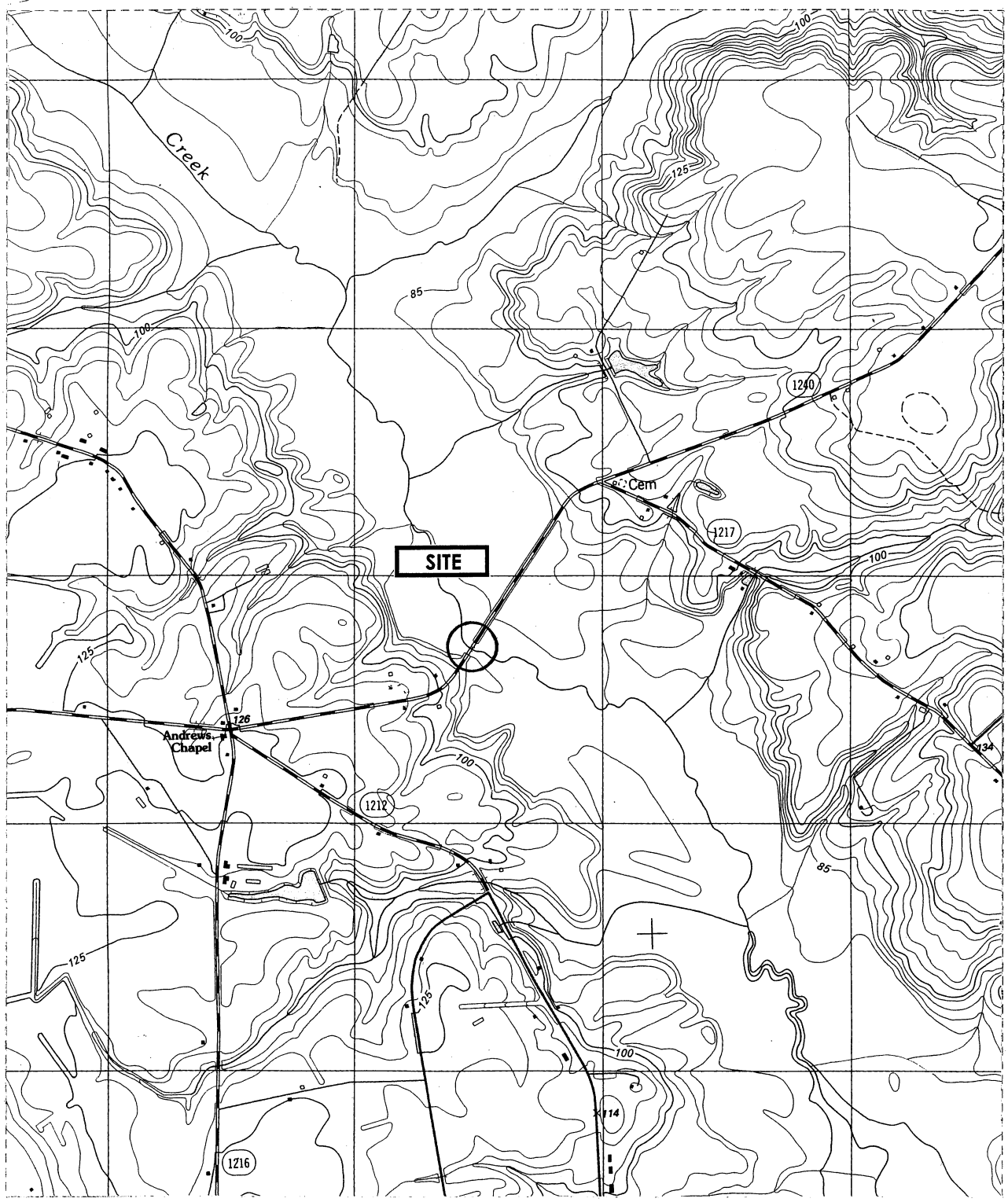
.5 0 1 Mile

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 8.2281301 (B-4270)
BRIDGE NO. 93
ON SR 1240 (FLEET COOPER ROAD)
OVER LITTLE COHARIE CREEK

SHEET 1 OF 9 **9/23/03**



1000 0 2000

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 8.2281301 (B-4270)
BRIDGE NO. 93
ON SR 1240 (FLEET COOPER ROAD)
OVER LITTLE COHARIE CREEK

SHEET 2 OF 9 9/23/03

LEGEND

---WLB---- WETLAND BOUNDARY

WLB WETLAND WLB

WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

P P DENOTES FILL IN SURFACE WATER (POND)

T T DENOTES TEMPORARY FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

— BZ — RIPARIAN BUFFER ZONE

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

RIP RAP ENERGY DISSIPATOR BASIN

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 8.2281301 (B-4270)
BRIDGE NO. 93
ON SR 1240 (FLEET COOPER ROAD)
OVER LITTLE COHARIE CREEK

SHEET 3 OF 9 **9/23/03**

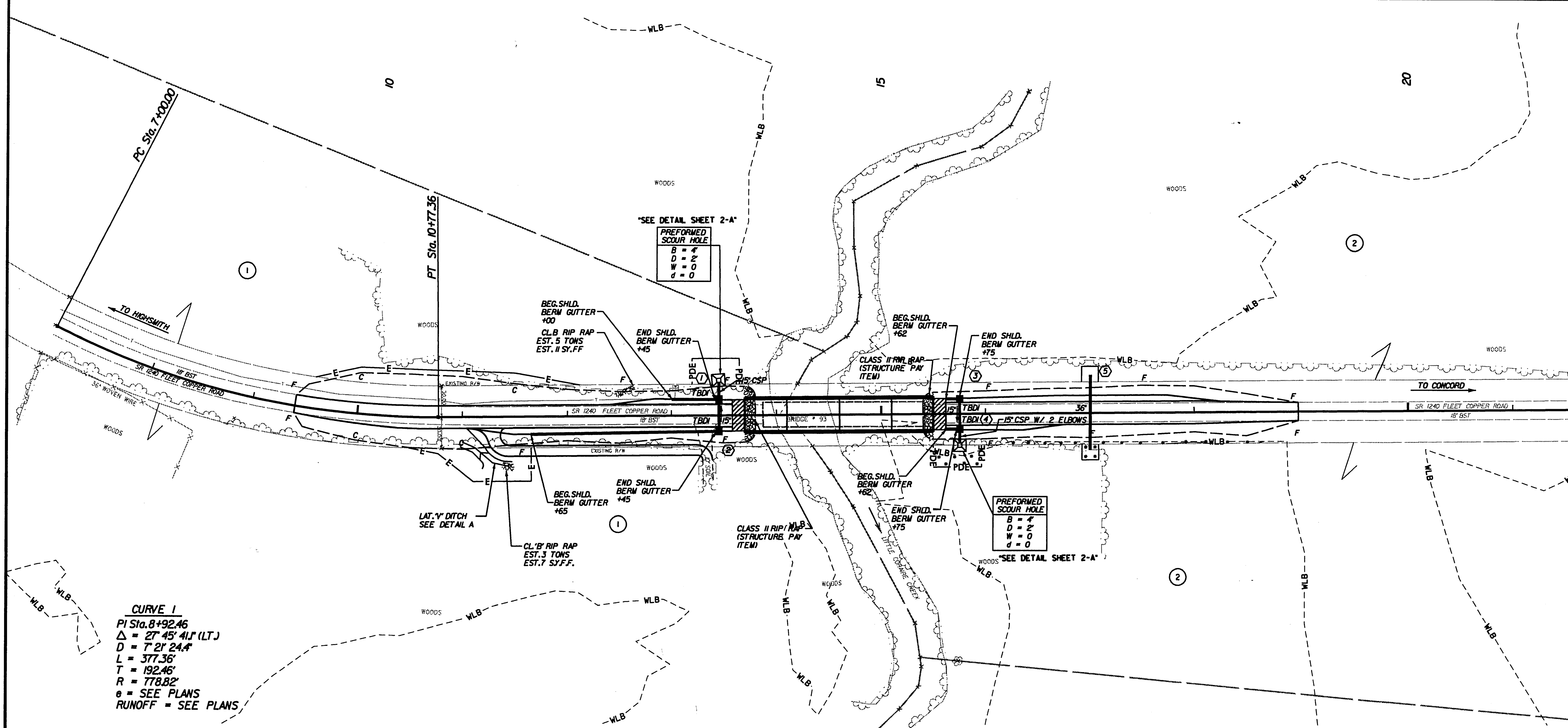
10/26/98

REVISIONS

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
B-4270	4
R/W SHEET NO.	4 of 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

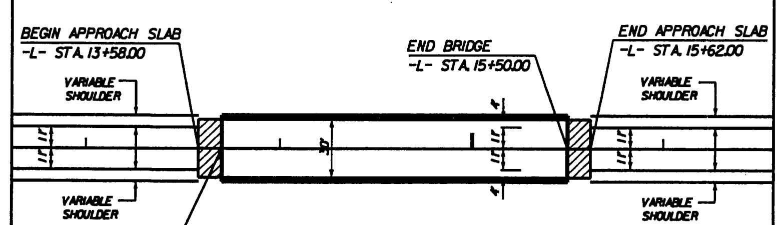


CURVE I
PI Sta. 8+92.46
Δ = 27° 45' 41.1" (LT.)
D = 7° 21' 24.4"
L = 377.36'
T = 192.46'
R = 778.82'
e = SEE PLANS
RUNOFF = SEE PLANS

DENOTES MECHANIZED CLEARING

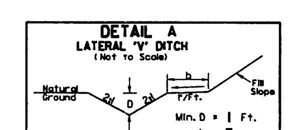
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4270-3" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 429554.8370(ft) EASTING: 2160560.8600(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990100 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4270-3" TO -L- STATION 10+00.00 IS N 34° 05' 53.9" E 734.39' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DENOTES APPROACH SLAB



STA. 11+00 to 11+42 RT.

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

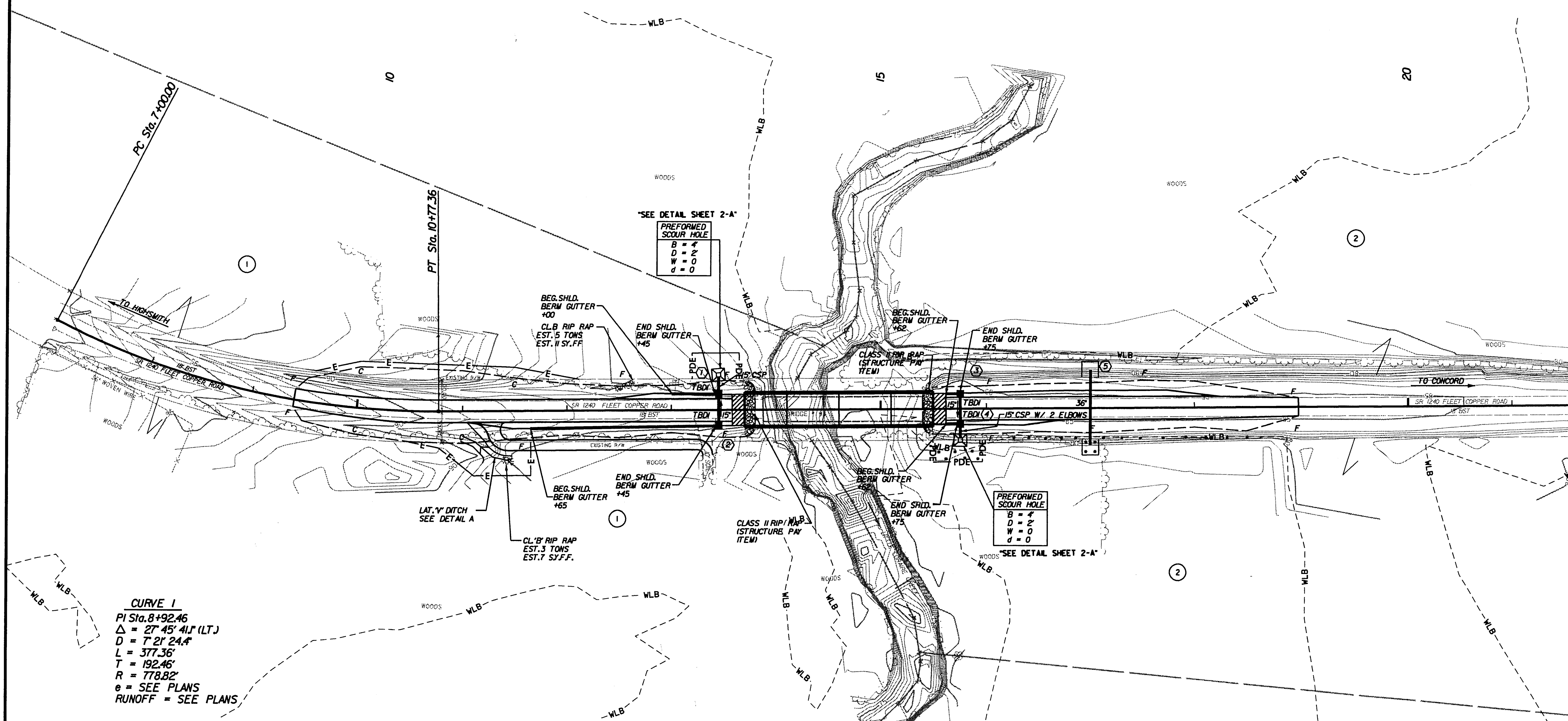
10/26/98

REVISIONS

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
B-4270	4
R/W SHEET NO.	5 of 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

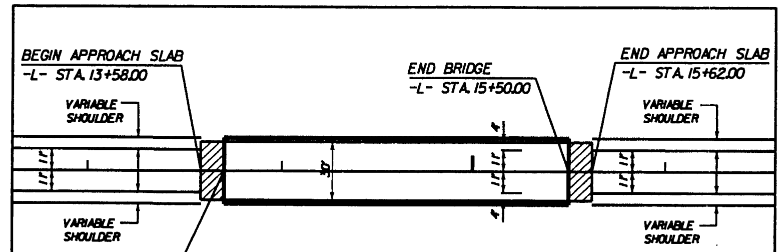


CURVE 1
PI Sta. 8+92.46
Δ = 27° 45' 41.1" (LT.)
D = 7° 21' 24.4"
L = 377.36'
T = 192.46'
R = 778.82'
e = SEE PLANS
RUNOFF = SEE PLANS

DENOTES MECHANIZED CLEARING

DATUM DESCRIPTION

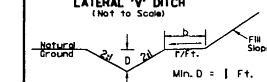
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4270-3" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 429554.837(ft) EASTING: 2160560.8600(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989 0100 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4270-3" TO -L- STATION 10+00.00 IS N 34° 05' 53.9" E 734.39' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DENOTES APPROACH SLAB

DETAIL A
LATERAL "V" DITCH
(Not to Scale)



STA. 11+00 to 11+42 RT.

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

PROJECT REFERENCE NO.	SHEET NO.
B-4270	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

Sheet 6 of 9

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

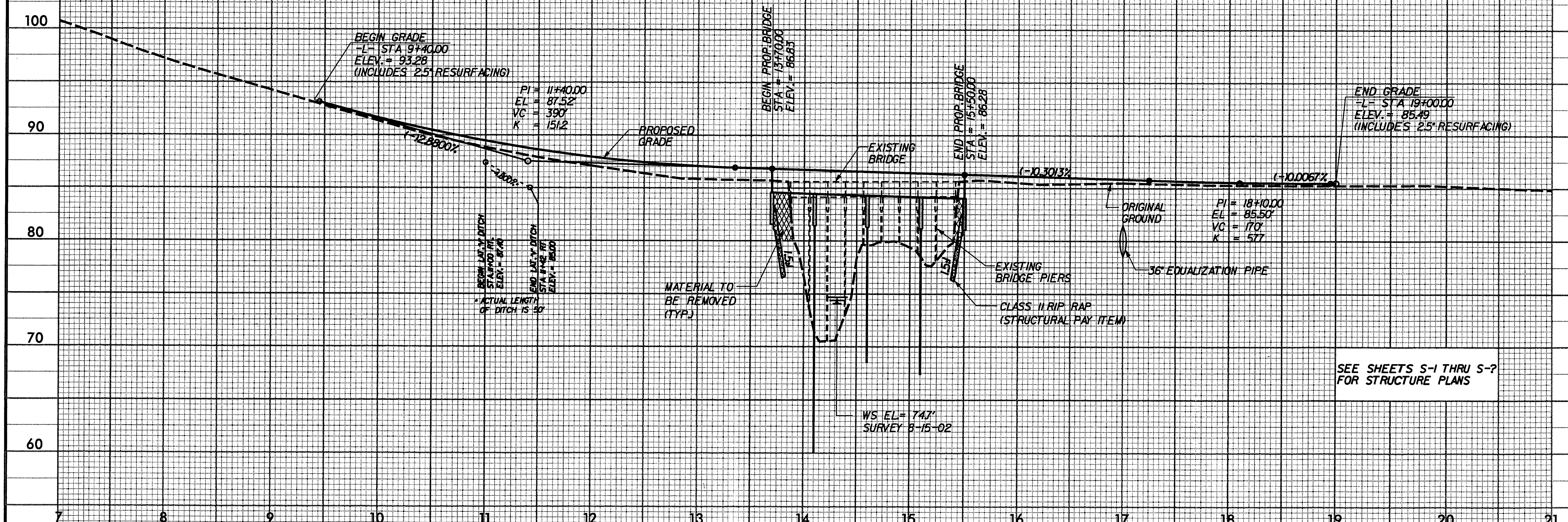
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

B.M.#11 ELEV.= 81.52
RR SPIKE IN 15" MAPLE
112' RT. OF -BL- STA. 13+98

B.M.#12 ELEV.= 96.72
RR SPIKE IN 20" OAK
165' LT. OF -BL- STA. 9+46

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 3300 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 83.6 FT
BASE DISCHARGE	= 4900 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 84.4 FT
OVERTOPPING DISCHARGE	= 4100 CFS
OVERTOPPING FREQUENCY	= 50 YRS
OVERTOPPING ELEVATION	= 83.4 FT



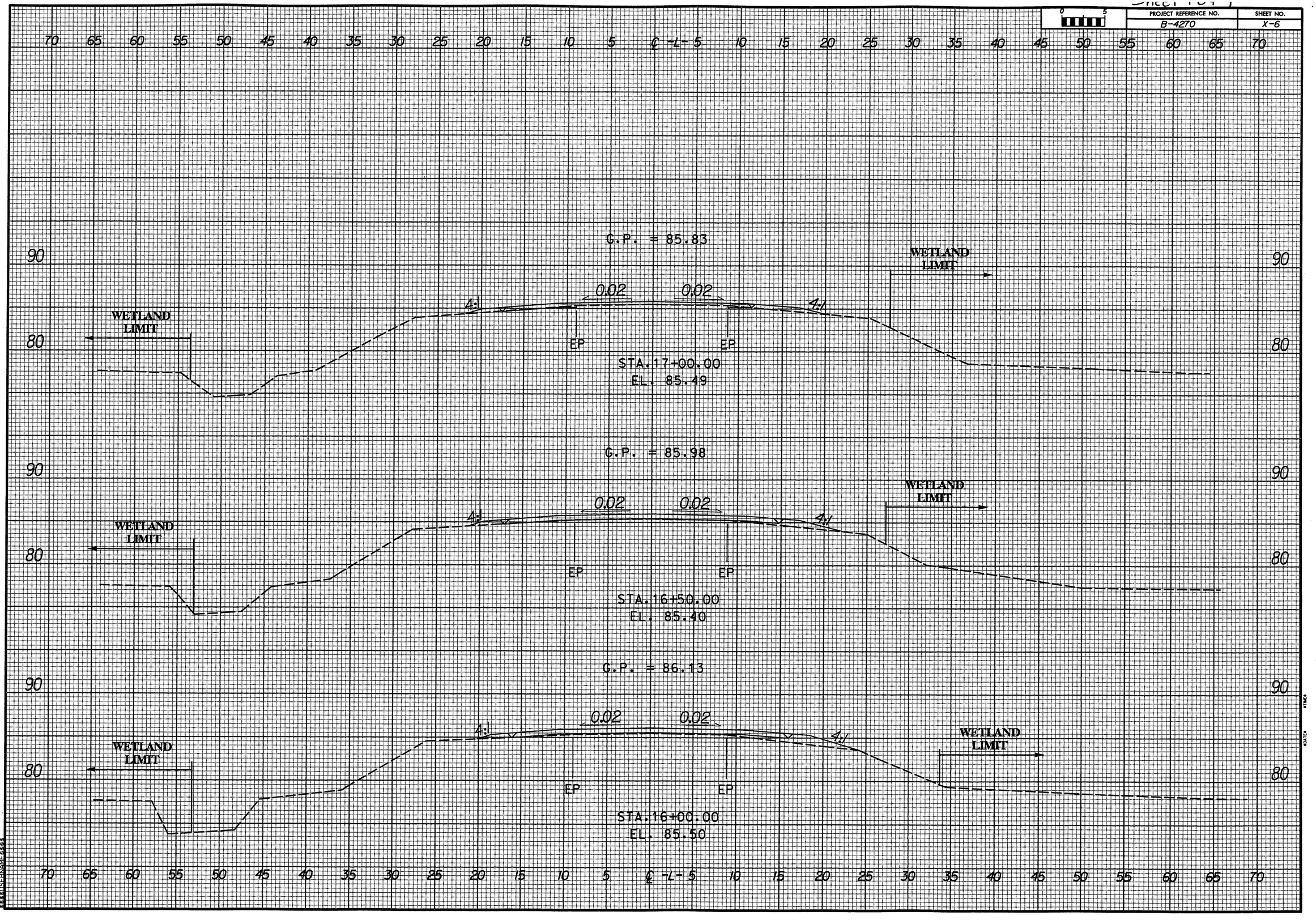
SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

-L-
(FOR -L- PLAN, SEE SHEET NO. 4)

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

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

PROJECT REFERENCE NO.	SHEET NO.
B-4270	X-6



Project No. 8.2281301 (B-4270)

Property Owner List

Parcel Number	Name	Address
1	Albert W. Lamb	5318 Fleet Cooper Rd. Roseboro, NC 28382
2	Duncan M. Faircloth	P.O. Box 496 Clinton, NC 28329

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 8.2281301 (B-4720)
BRIDGE NO. 93
ON SR 1240 (FLEET COOPER ROAD)
OVER LITTLE COHARIE CREEK

 9/23/03

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			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	-L- 15+50 / 18+68	21" Cored Slab Bridge				0.0322					
		1@40', 2@50',1@40'									
		L = 180' - 0"									
TOTALS:			0.0000	0.0000	0.0000	0.0322	0.0000	0.0000	0.0000	0.0	0.0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT 8.2281301 (B-4270)
BRIDGE NO. 93 ON SR 1240 (FLEET COOPER RD.)
OVER LITTLE COHARIE CREEK

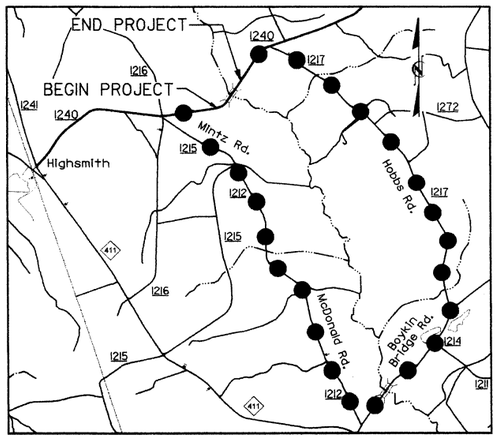
Form Revised 1/21/03

SHEET 9 OF 9

9/23/2003

CONTRACT: TIP PROJECT: B-4270

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



DENOTES OFF-SITE DETOUR

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SAMPSON COUNTY

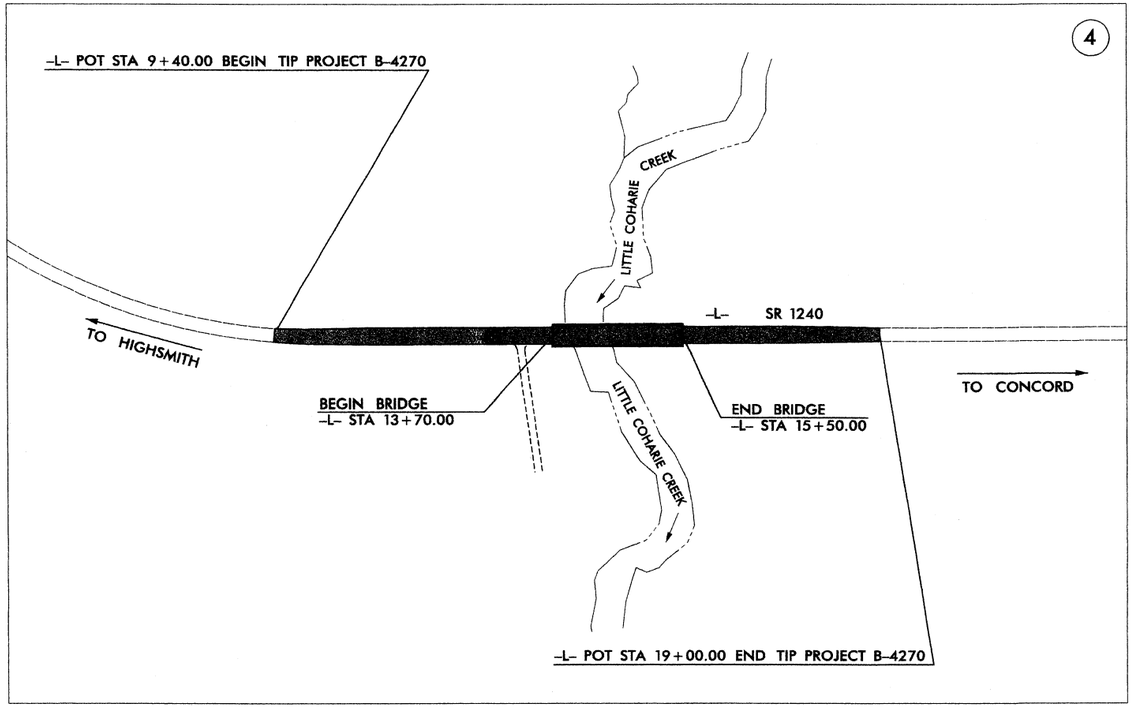
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4270	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33611.1.1	BRZ-1240(1)	P.E.
33611.2.2	BRZ-1240(1)	R /W & UTIL
33611.3.1	BRZ-1240(2)	CONSTR.

LOCATION: REPLACE BRIDGE NO. 93 AND APPROACHES ON SR 1240 OVER LITTLE COHARIE CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

SUBMITTAL: R/W PLANS



NAD 83 NC GRID

NOTE: THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

NOTE: CLEARING OF THIS PROJECT SHALL BE PERFORMED TO LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 = 650
ADT 2025 = 1000
DHV = 12 %
D = 60 %
T = 4 % *
V = 60 MPH

* TTST 1 % DUAL 3 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4270 = 0.148 mi
LENGTH STRUCTURE TIP PROJECT B-4270 = 0.034 mi

TOTAL LENGTH OF TIP PROJECT B-4270 = 0.182 mi

Plans prepared in the office of:
Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
5800-A Riddle Hill Drive, Raleigh, North Carolina 27609
(919) 872-5115 Fax: (919) 878-9416
for the North Carolina Department of Transportation

1995 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 19, 2003

LETTING DATE:
SEPTEMBER 21, 2004

N.C.D.O.T. CONTACT:
VIRGINIA MABRY
PROJECT DESIGN ENGINEER
DESIGN SERVICES

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

Item	Symbol
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

Item	Symbol
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

HYDROLOGY

Item	Symbol
Stream or Body of Water	
River Basin Buffer	RBB
Flow Arrow	
Disappearing Stream	
Spring	
Swamp Marsh	
Shoreline	
Falls, Rapids	
Prop Lateral, Tail, Head Ditches	FLOW

STRUCTURES

MAJOR

Item	Symbol
Bridge, Tunnel, or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW

MINOR

Item	Symbol
Head & End Wall	CONC HW
Pipe Culvert	
Footbridge	
Drainage Boxes	CB
Paved Ditch Gutter	

UTILITIES

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

Item	Symbol
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	WW & ISBW
Existing Wetland Boundaries	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

Item	Symbol
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

Item	Symbol
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

Item	Symbol
Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	VINEYARD

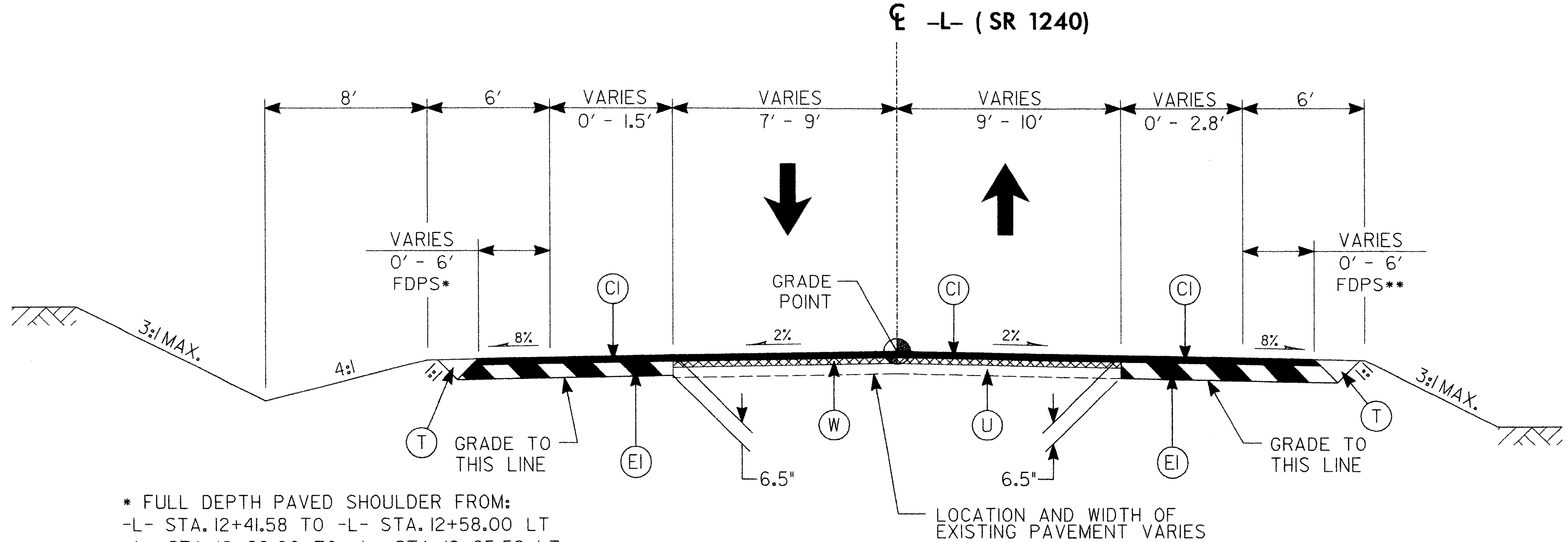
RAILROADS

Item	Symbol
Standard Gauge	CSX TRANSPORTATION
RR Signal Milepost	MILEPOST 35
Switch	SWITCH

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

PROJECT REFERENCE NO.	SHEET NO.
B-4270	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



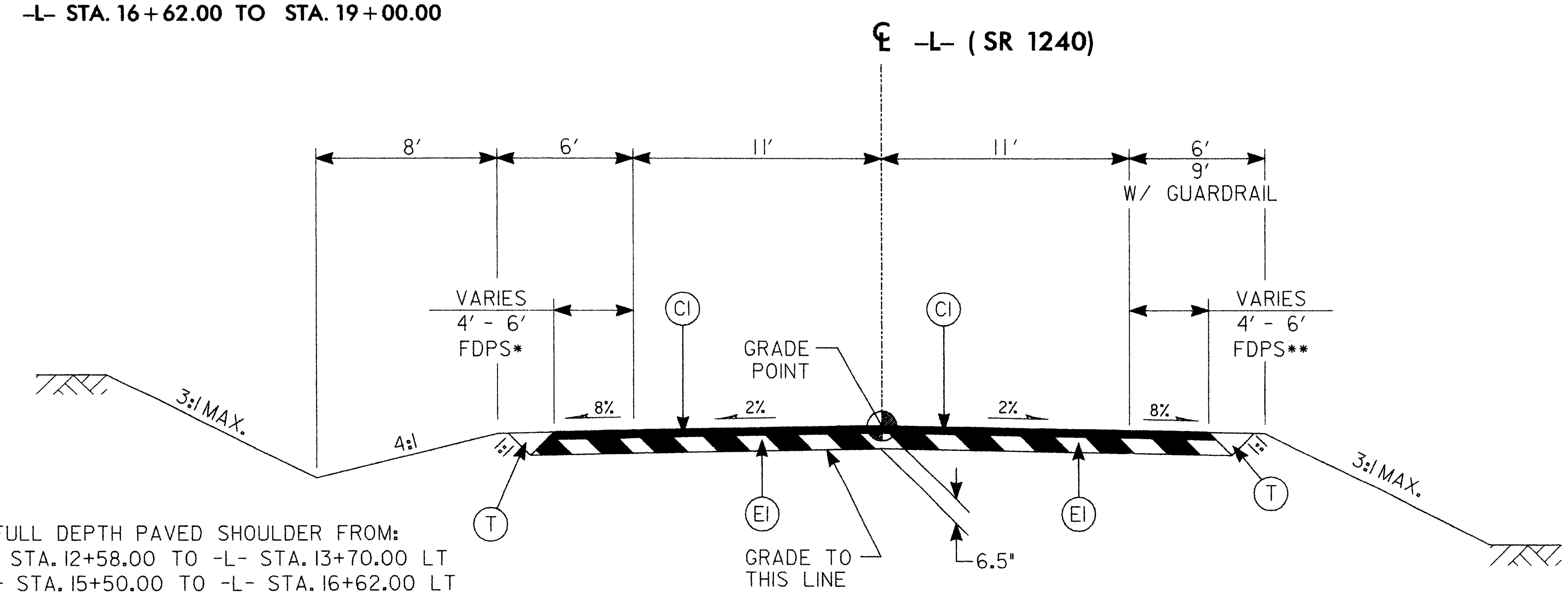
* FULL DEPTH PAVED SHOULDER FROM:
-L- STA. 12+41.58 TO -L- STA. 12+58.00 LT
-L- STA. 16+62.00 TO -L- STA. 18+25.58 LT

USE TYPICAL SECTION NO. 1

-L- STA. 9+40.00 TO STA. 12+58.00
-L- STA. 16+62.00 TO STA. 19+00.00

TYPICAL SECTION NO. 1

** FULL DEPTH PAVED SHOULDER FROM:
-L- STA. 11+04.08 TO -L- STA. 12+58.00 RT
-L- STA. 16+62.00 TO -L- STA. 16+75.25 RT



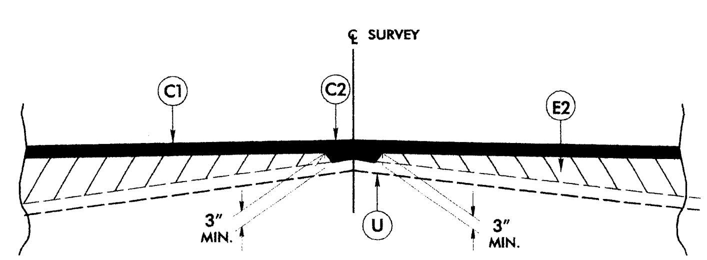
* FULL DEPTH PAVED SHOULDER FROM:
-L- STA. 12+58.00 TO -L- STA. 13+70.00 LT
-L- STA. 15+50.00 TO -L- STA. 16+62.00 LT

USE TYPICAL SECTION NO. 2

-L- STA. 12+58.00 TO STA. 13+70 (BEGIN BRIDGE)
-L- STA. 15+50.00 (END BRIDGE) TO STA. 16+62.00

TYPICAL SECTION NO. 2

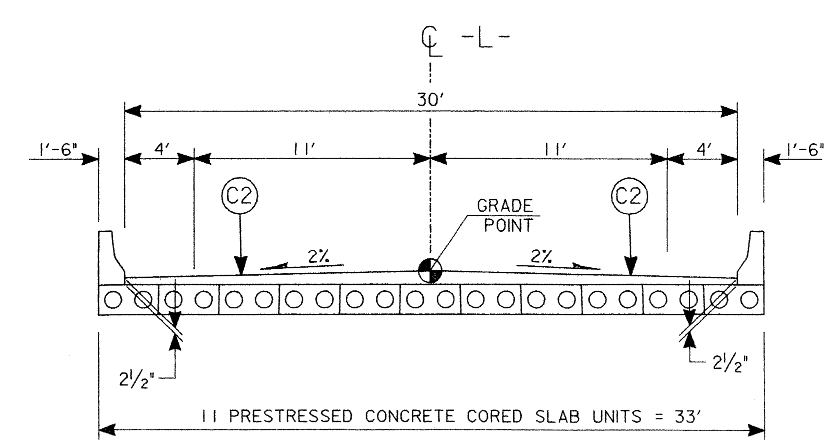
** FULL DEPTH PAVED SHOULDER FROM:
-L- STA. 12+58.00 TO -L- STA. 13+70.00 RT
-L- STA. 15+50.00 TO -L- STA. 16+62.00 RT



Detail Showing Method of Wedging

	PAVEMENT SCHEDULE
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING

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



CORED SLAB DETAIL

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

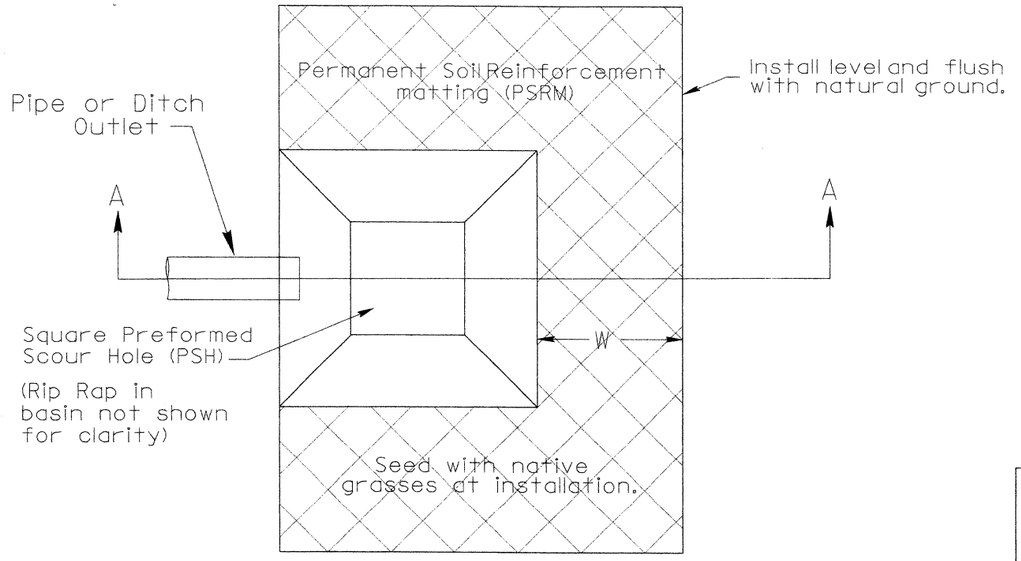
6/2/99
02:23:36 PM
r:\4270\design\B4270.typ

PROJECT REFERENCE NO.	SHEET NO.
B-4270	2-A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PREFORMED SCOUR HOLE DETAIL

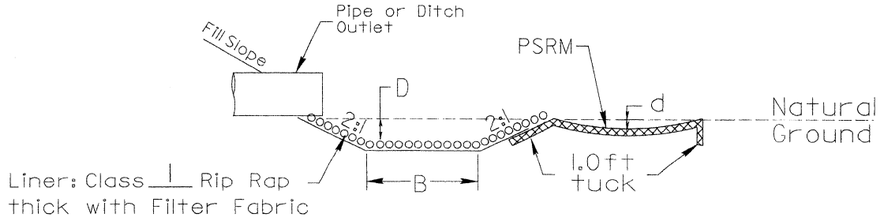
PLAN VIEW



LOCATIONS (AT OUTLET)
Sta 13+45 -L- (LT)
Sta 15+75 -L- (RT)

B	4.0	ft
D	2.0	ft
W	0	ft
d	0	ft

SECTION A-A



Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

COMPUTED BY: D. PETRY	DATE: 3/11/03
CHECKED BY: M. COPPLE	DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4270	3-A

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	PROPOSED RIGHT OF WAY	TEMP. CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	ALBERT W. LAMB	28.70 Ac.	1,121 sf.	25.40 Ac.	3.23 Ac.	0 sf.	5,259 sf.	1,121 sf.	
2	DUNCAN M. FAIRCLOTH	UNKNOWN	1,447 sf.	UNKNOWN	UNKNOWN	0 sf.		1,447 sf.	

ASPHALT PAVEMENT REMOVAL SUMMARY

STATION TO STATION	SQUARE YARDS
-L- STA. 12+58 TO -L- STA. 13+70 (BEGIN BRIDGE)	274
-L- STA. 15+50 (END BRIDGE) TO -L- STA. 16+62	274
PROJECT TOTAL	548
SAY	550

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

SUMMARY OF EARTHWORK

STATION TO STATION	UNCLASIFIED EXCAVATION (cu. yds)	UNDERCUT (cu. yds)	ROADWAY EMBANKMENT +25% (cu. yds)	BORROW (cu. yds)	WASTE (cu. yds)
SUMMARY #1 -L- STA. 9+40.00 -L- STA. 13+70.00 (BEGIN BRIDGE)	202		585	383	
SUMMARY #2 -L- STA. 15+50 (END BRIDGE) -L- STA. 19+00.00	38		140	102	
SUBTOTAL (SUMMARIES 1-2)	240		725	485	
ADDITIONAL UNDERCUT PER GEO. REPORT					
ESTIMATE D.D.E. =					
EST. FOR SHOULDER CONSTRUCTION					
GRAND TOTAL	240		725	485	
SAY	240		730	490	

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING 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.

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 GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-A	VI MOD	BIC	TYPE III					
-L-	11+45.50	13+58.00	RT.	212.50'				13+58.00	4'	9'		100.00'		2.00'			1						1					
-L-	12+83.00	13+58.00	LT.	75.00'			13+58.00		4'	9'	56.25'		1.12'				1						1					
-L-	15+62.00	16+37.00	RT.	75.00'			15+62.00		4'	9'	56.25'		1.12'				1						1					
-L-	15+62.00	17+74.50	LT.	212.50'				15+62.00	4'	9'		100.00'		2.00'			1						1					
SUBTOTAL				575.00'																								
DEDUCTION FOR ANCHOR UNITS:				-275.00'													DEDUCTIONS FOR ANCHOR UNITS:											
											ADDITIONAL GUARDRAIL POSTS ..... 5 EA.						4 GRAU-350 @ 50.00' = 200.00'											
																	4 TYPE III @ 18.75' = 75.00'											
TOTAL				300.00'													TOTAL 275.00'											
			SAY	300.00'																								

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	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') 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	TRAFFIC BEARING DROP INLET STD. 840.35	D.I. FRAME AND GRATE STD. 840.16	CORR. STEEL ELBOWS NO. & SIZE (BITUMINOUS COATED)	REMARKS
-L- 15+77	LT.	OUT	1	86.35	82.70	81.00											12																			1	1	2-15"	
-L- 15+77	RT.	1	2	86.35	83.15	82.85			32																											1	1		
-L- 15+77	LT.	3	4	85.66	82.46	82.16			32																											1	1		
-L- 15+77	RT.	4	OUT	85.66	82.00	78.00											16																			1	1	2-15"	
-L- 17+00	CL.	5			78.50	78.50							72																										EQUALIZATION PIPE
TOTALS									64				72				28																			4	4	4-15"	

ABBREVIATIONS
C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
M.D.I. MEDIAN DROP INLET
M.D.I. (N.S.) MEDIAN 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 JUCTION BOX

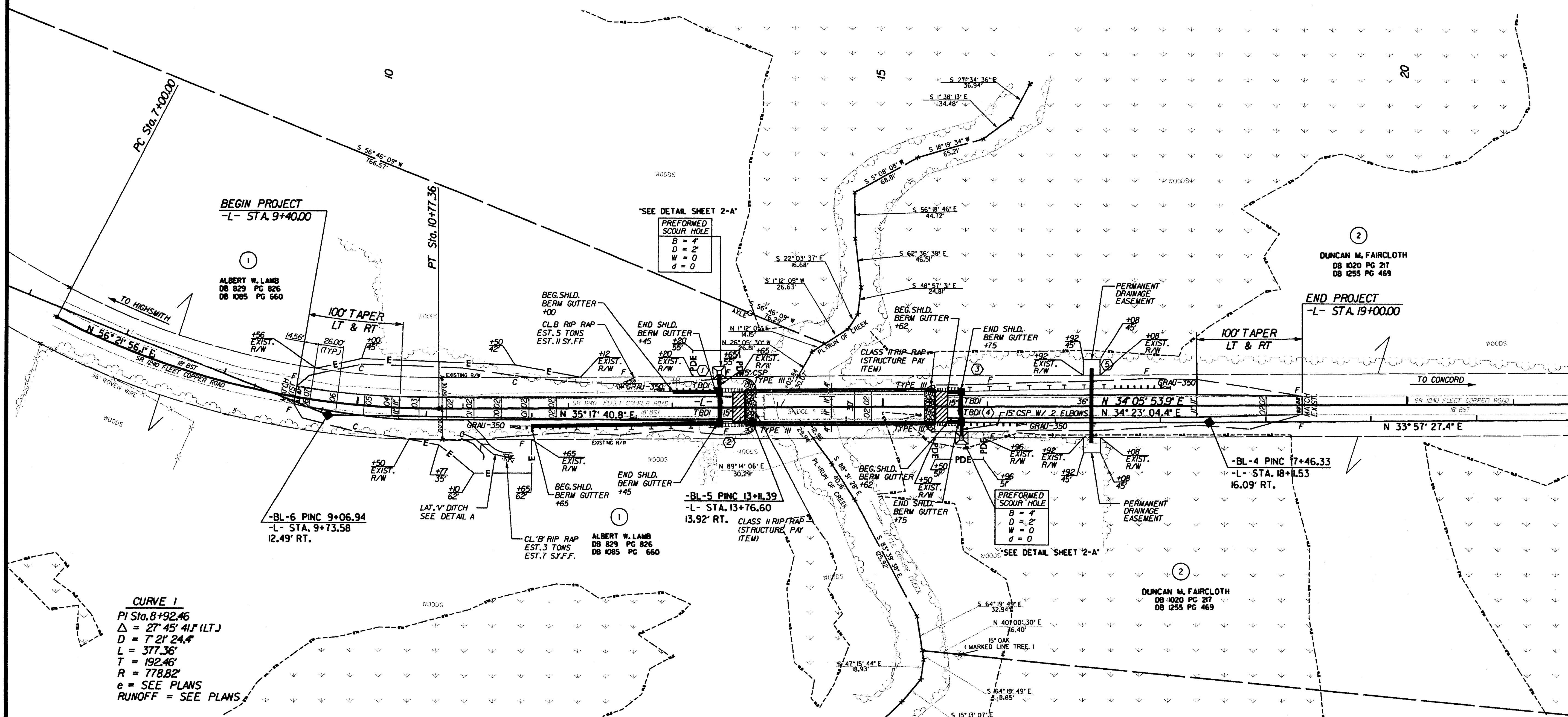
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

1/21/04 - RIGHT OF WAY REVISION, ADDING A DEED REFERENCE TO PARCEL 2.

B-4270	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



CURVE 1
PI Sta. 8+92.46
Δ = 27° 45' 41.1" (LT)
D = 7° 21' 24.4"
L = 377.36'
T = 192.46'
R = 778.82'
e = SEE PLANS
RUNOFF = SEE PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4270-3" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 429554.837(ft) EASTING: 2160560.8600(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989100 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4270-3" TO -L- STATION 10+00.00 IS N 34° 05' 53.9" E 734.39' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

BEGIN APPROACH SLAB -L- STA. 13+58.00; END BRIDGE -L- STA. 15+50.00; END APPROACH SLAB -L- STA. 15+62.00; BEGIN BRIDGE -L- STA. 13+70.00; VARIABLE SHOULDER

DENOTES WETLANDS

DENOTES APPROACH SLAB

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1 Ft.
b = 5 Ft.
STA. 11+00 to 11+42 RT.

FOR -L- PROFILE SEE SHEET NO.5

SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

PROJECT REFERENCE NO.	SHEET NO.
B-4270	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

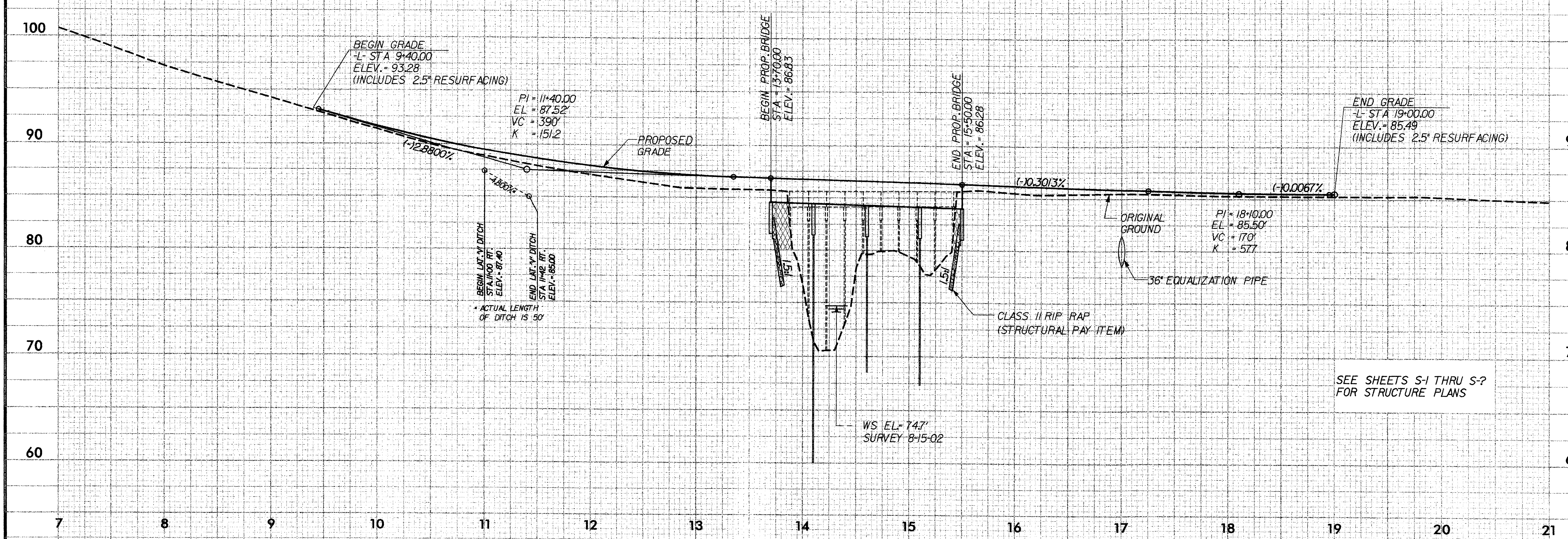
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

B.M.*11 ELEV.= 81.52
RR SPIKE IN 15" MAPLE
112' RT. OF -BL- STA. 13+98

B.M.*12 ELEV.= 96.72
RR SPIKE IN 20" OAK
165' LT. OF -BL- STA. 9+46

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 3300	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 83.6	FT
BASE DISCHARGE	= 4900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 84.4	FT
OVERTOPPING DISCHARGE	= 4100	CFS
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING ELEVATION	= 83.4	FT



-L-
(FOR -L- PLAN, SEE SHEET NO.4)

Romey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

PROJ. REFERENCE NO.	SHEET NO.
B-4270	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

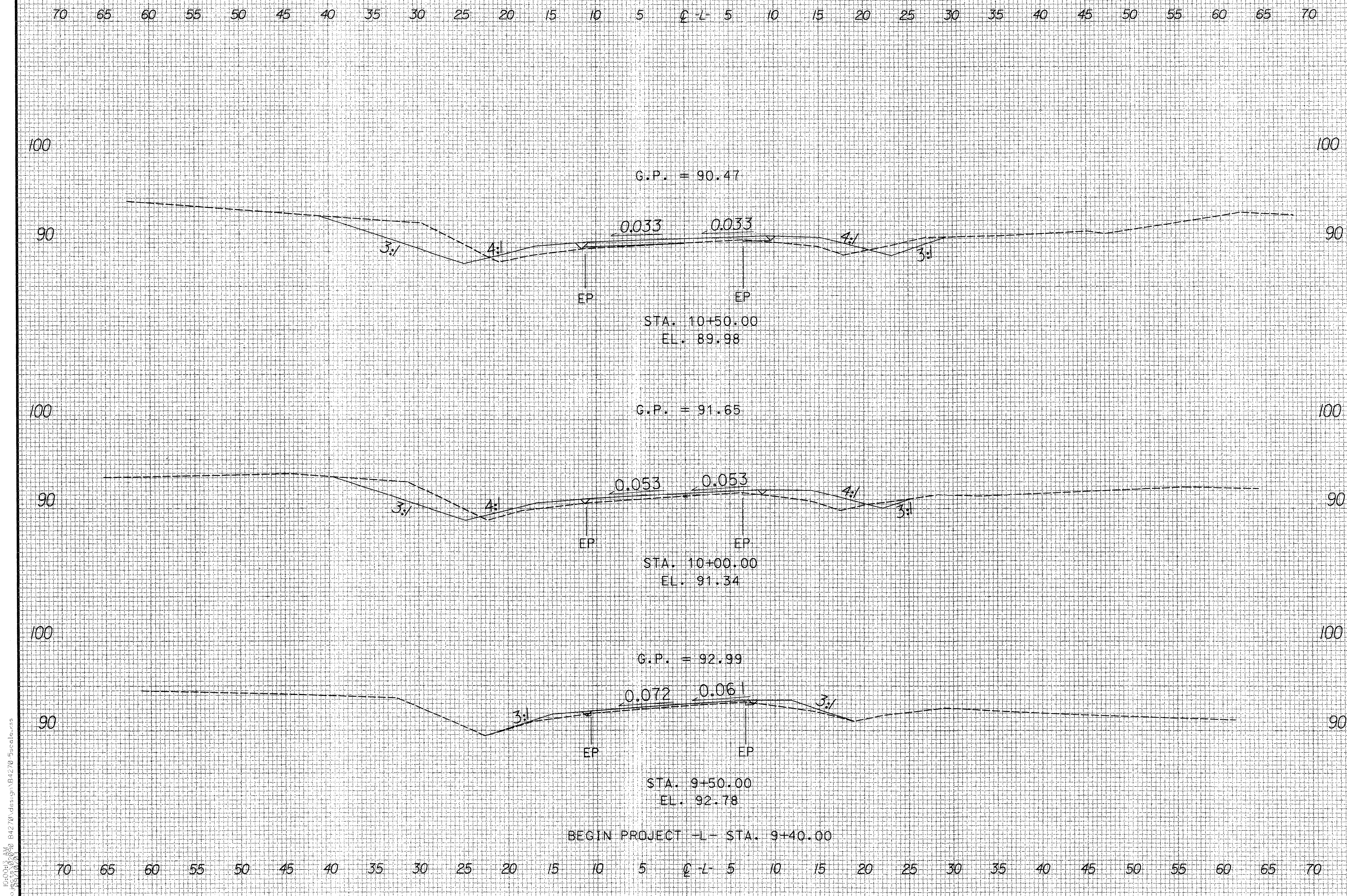
Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
-L-		
9+50.00	2	4
10+00.00	30	31
10+50.00	62	45
11+00.00	67	50
11+50.00	34	56
12+00.00	6	59
12+50.00	1	67
13+00.00	0	81
13+50.00	0	96
13+70.00 (BEG. BRIDGE)	0	96
15+50.00 (END BRIDGE)	0	18
16+00.00	0	18
16+50.00	0	32
17+00.00	5	23
17+50.00	10	20
18+00.00	11	18
18+50.00	12	11
19+00.00	0	0
TOTAL	**240**	**725**

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

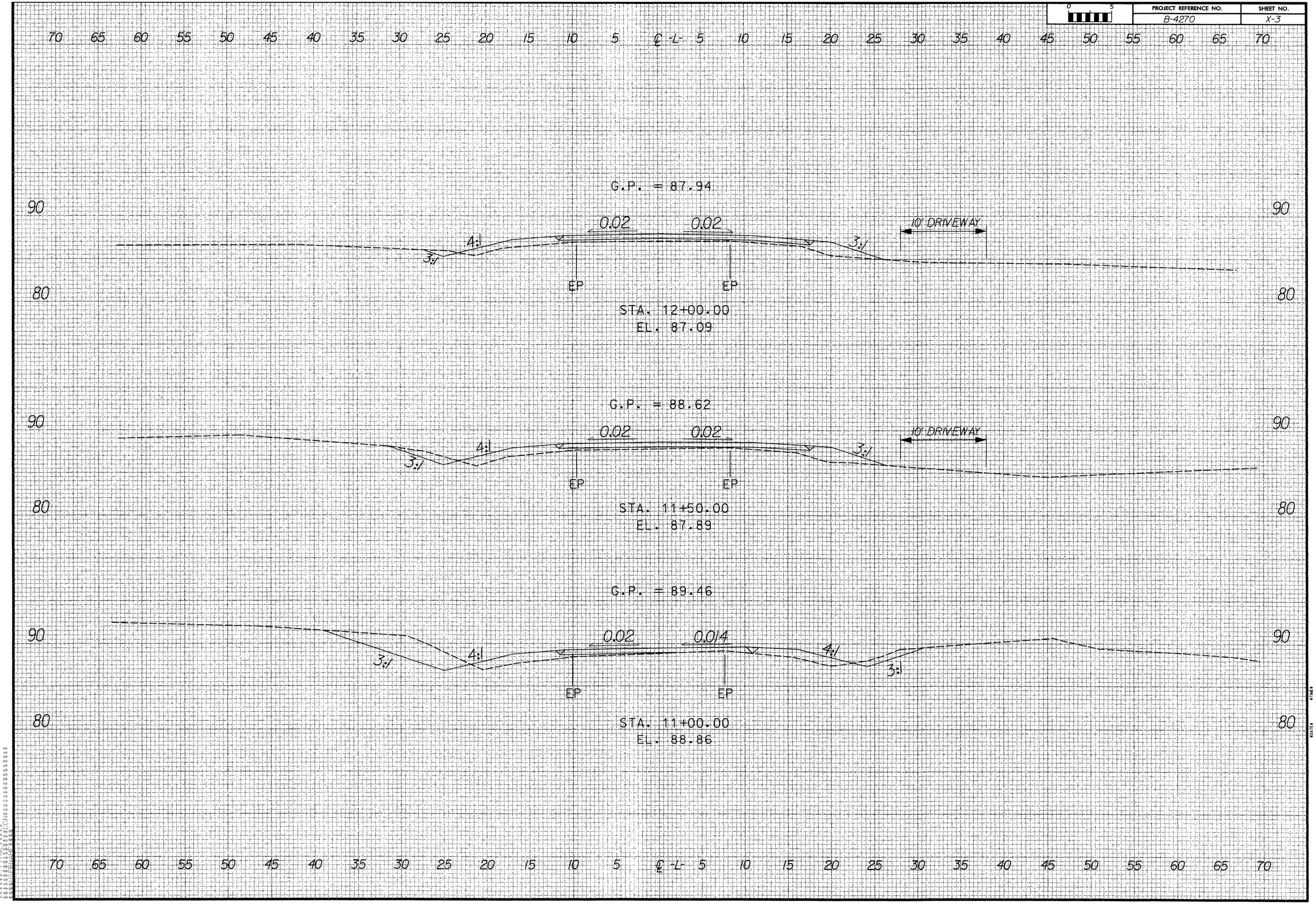
Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4926-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

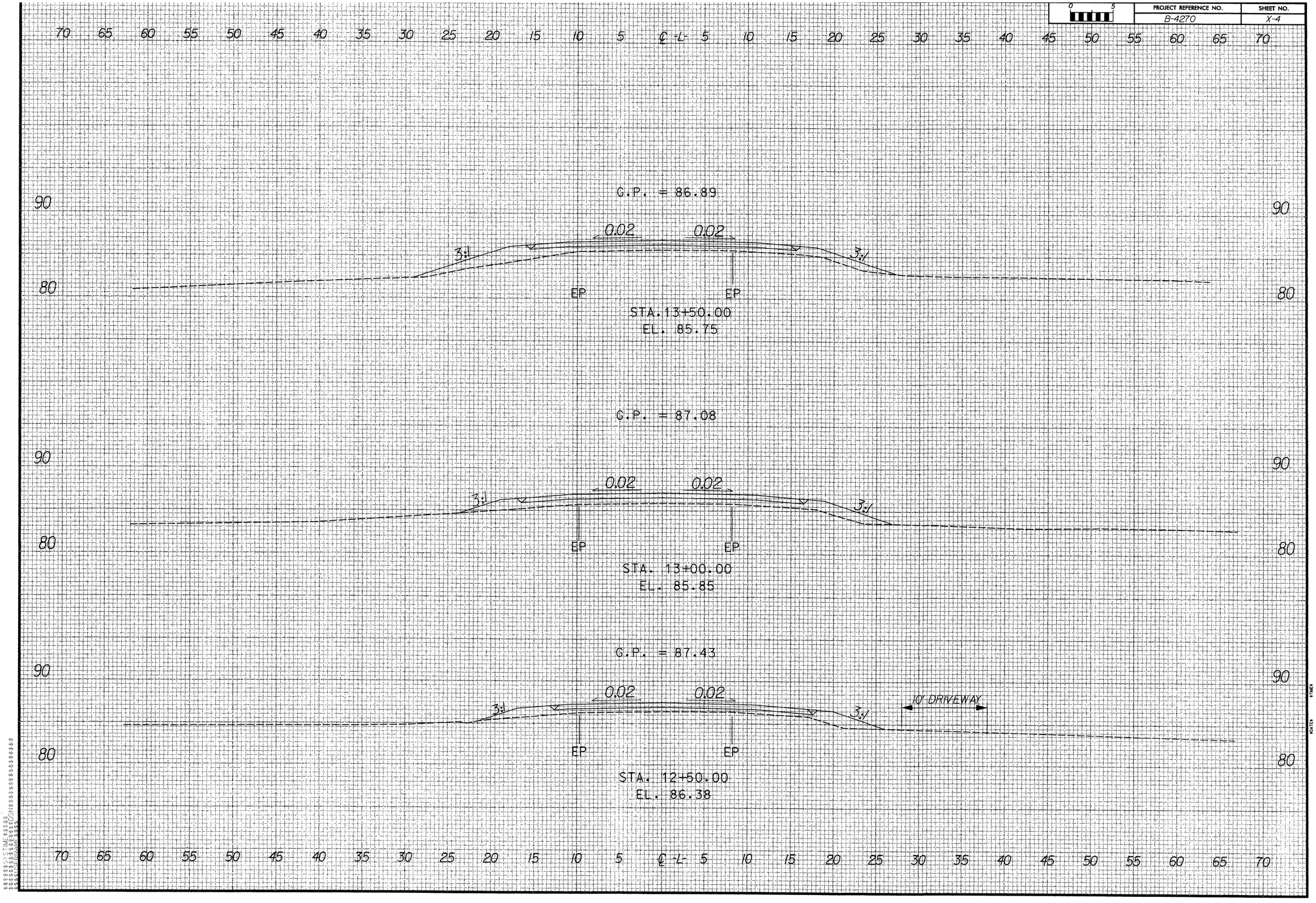
PROJECT REFERENCE NO.	SHEET NO.
B-4270	X-2



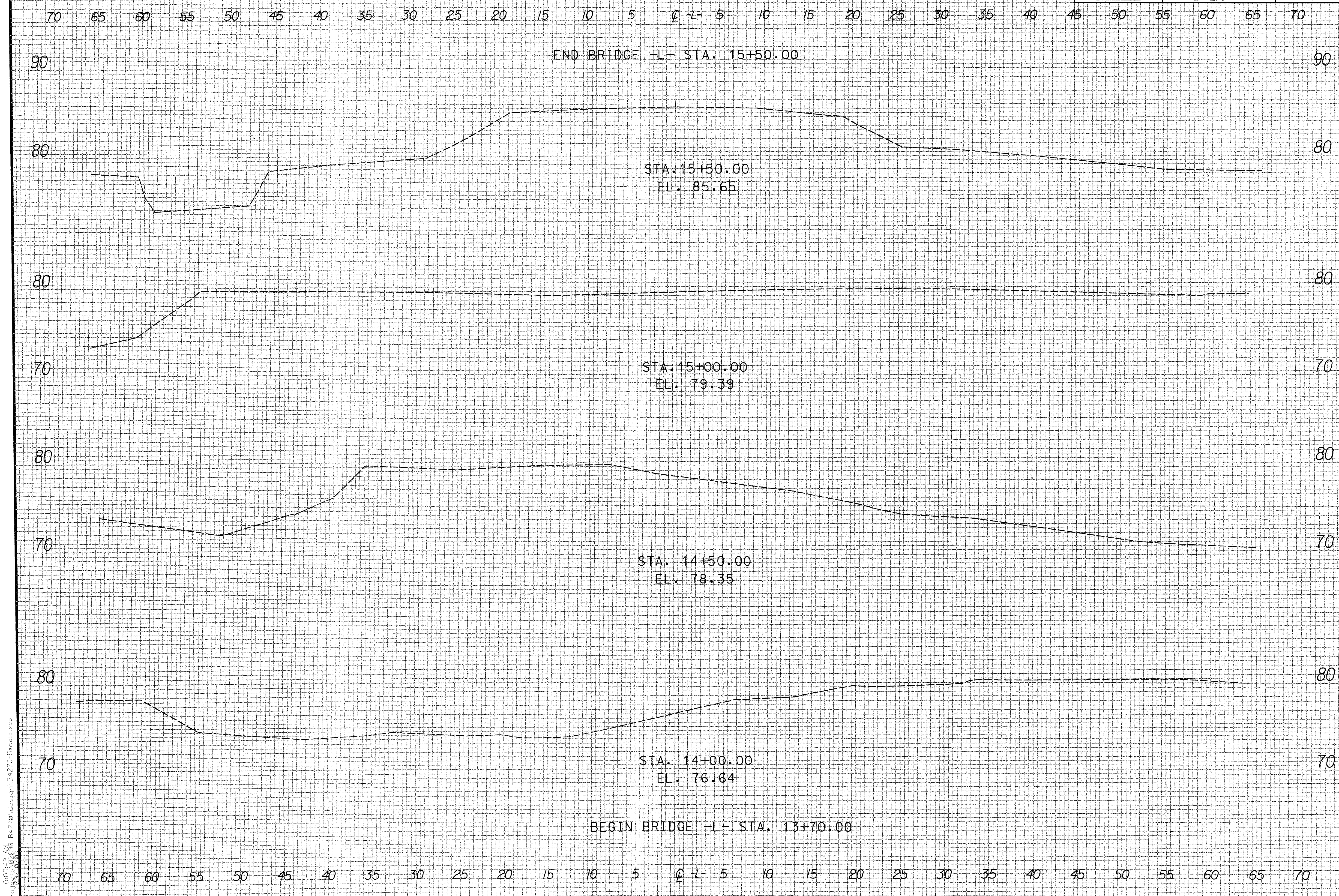
0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4270	X-3



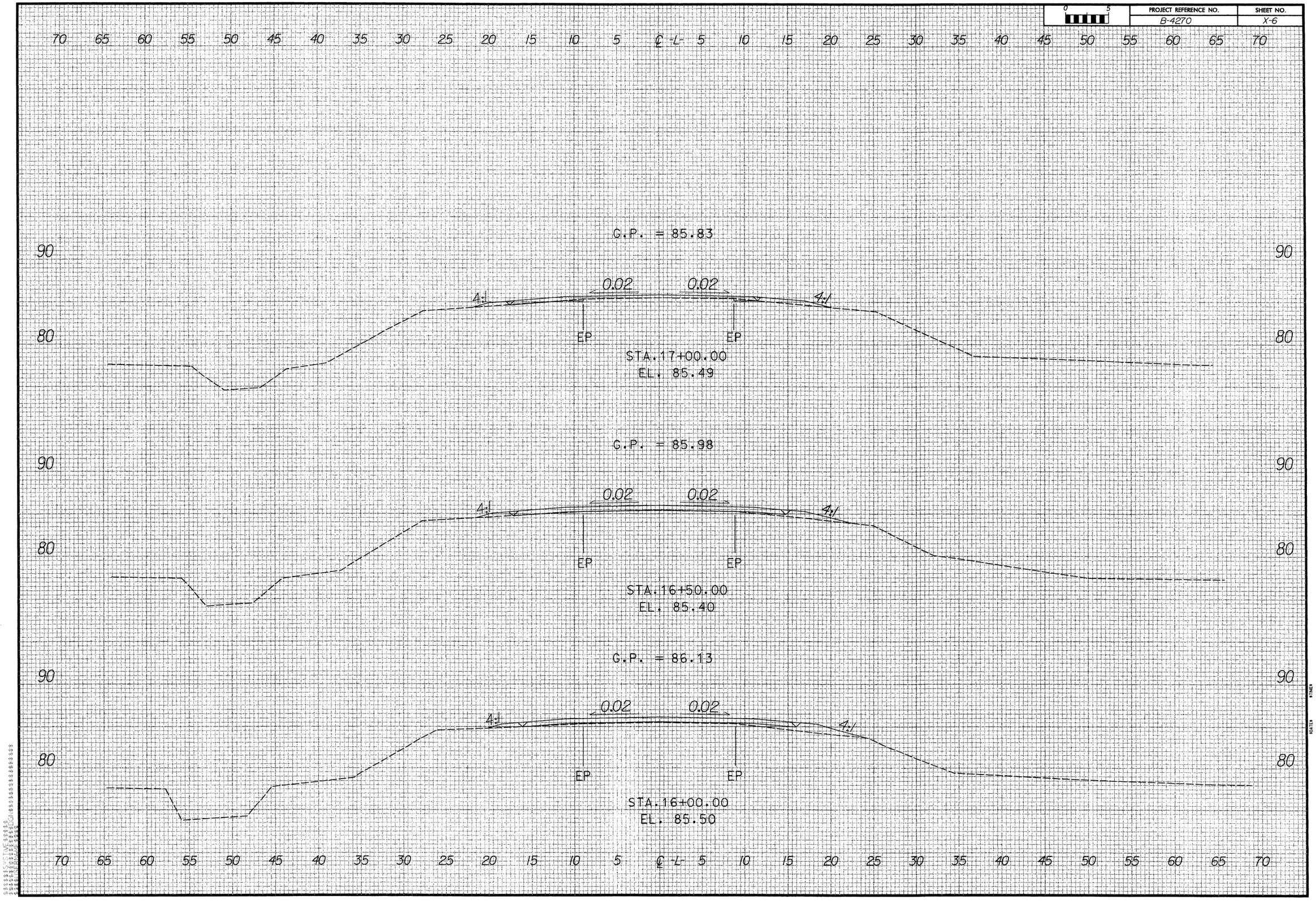
0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4270	X-4



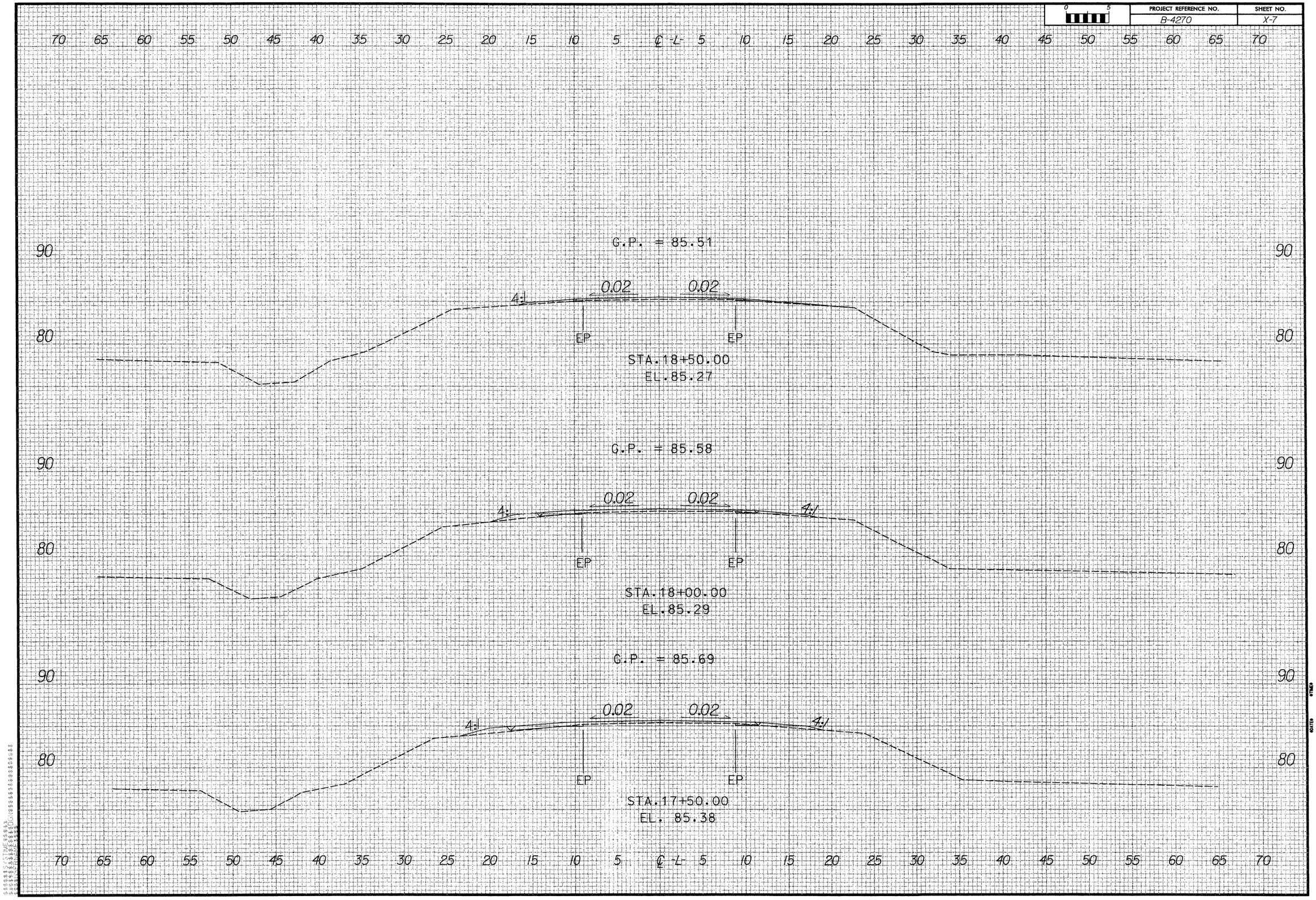
PROJECT REFERENCE NO.	SHEET NO.
B-4270	X-5



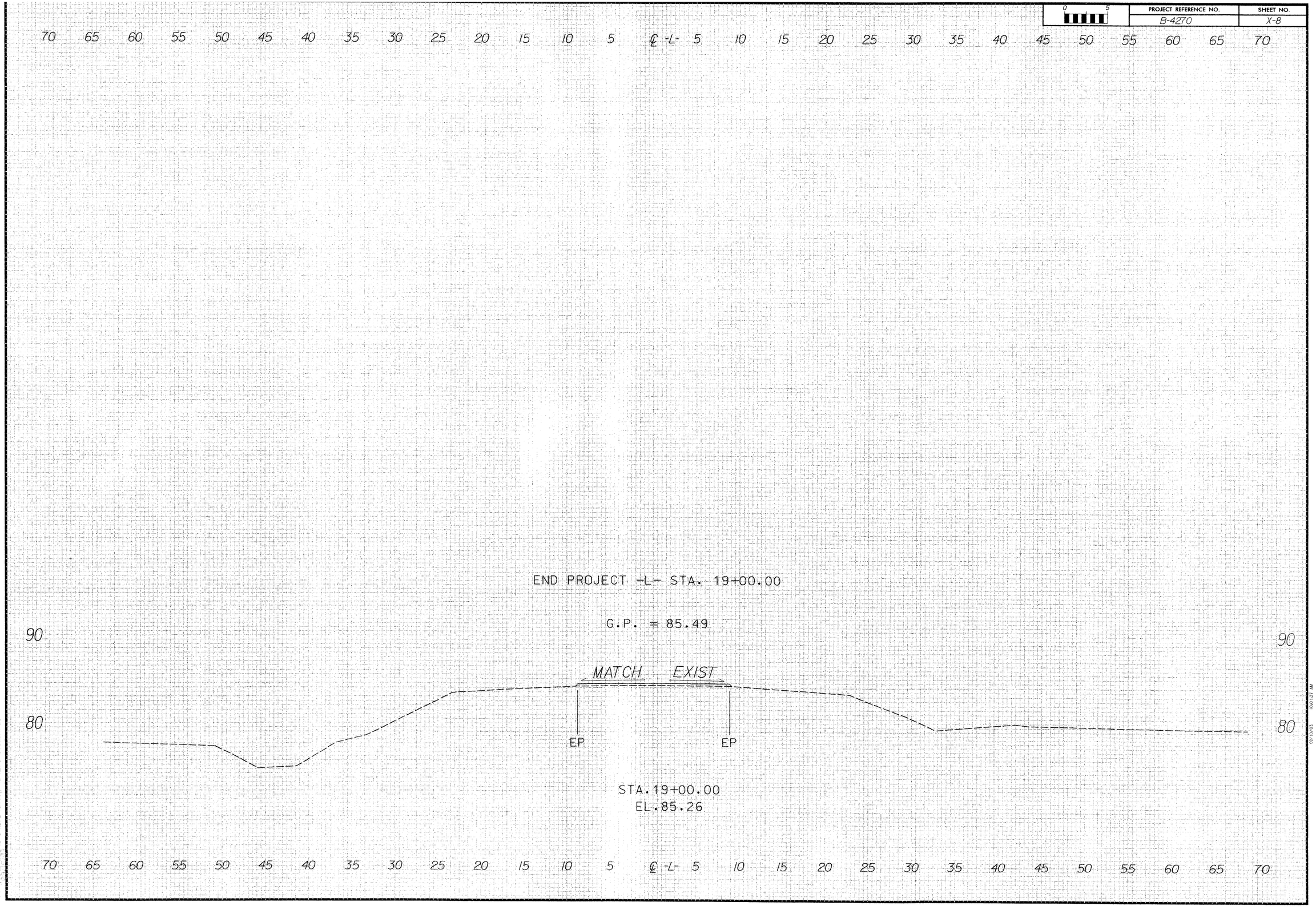
0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4270	X-6



0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4270	X-7



0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4270	X-8



SAMPSON COUNTY
BRIDGE NO. 98 ON SR 1240 (FLEET-COOPER ROAD)
OVER LITTLE COHARIE CREEK

FEDERAL-AID PROJECT NO. BRZ-1240(1)
STATE PROJECT NO. 8.2281301
TIP NO. B-4270

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
N.C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

APPROVED:

01-13-03
DATE

for Stacy Harris
Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development & Environmental Analysis Branch
North Carolina Department of Transportation

1-15-03
DATE

for Ronald C. E.
Nicholas L. Graf, P.E., Division Administrator
Federal Highway Administration

SAMPSON COUNTY
BRIDGE NO. 98 ON SR 1240 (FLEET-COOPER ROAD)
OVER LITTLE COHARIE CREEK

FEDERAL-AID PROJECT NO. BRZ-1240(1)
STATE PROJECT NO. 8.2281301
TIP NO. B-4270

CATEGORICAL EXCLUSION

DECEMBER 2002

Document Prepared by Ramey Kemp & Associates, Inc.
4928-A Windy Hill Dr.
Raleigh, NC 27609

Montell W. Irvin, P.E., PTOE, Project Manager
Ramey Kemp & Associates, Inc.

12/12/02
Date

For the North Carolina Department of Transportation
Project Development and Environmental Analysis Branch

Theresa Ellerby, Project Development Engineer
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

SAMPSON COUNTY
BRIDGE NO. 98 ON SR 1240 (FLEET-COOPER ROAD)
OVER LITTLE COHARIE CREEK

FEDERAL-AID PROJECT NO. BRZ-1240(1)
STATE PROJECT NO. 8.2281301
TIP NO. B-4270

In addition to the standard Nationwide Permit #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

NCDOT Division 3, Hydraulics

1.) To minimize impacts to high quality wetlands, the NCDOT will install cross pipes to restore sheet flow in the adjacent wetlands.

SAMPSON COUNTY
BRIDGE NO. 98 ON SR 1240 (FLEET-COOPER ROAD)
OVER LITTLE COHARIE CREEK

FEDERAL-AID PROJECT NO. BRZ-1240(1)
STATE PROJECT NO. 8.2281301
T.I.P. NO. B-4270

INTRODUCTION

The replacement of Bridge No. 93, located on SR 1240 (Fleet-Cooper Road) over Little Coharie Creek, in Sampson County, is included in the North Carolina Department of Transportation (NCDOT) Draft 2004-2010 Transportation Improvement Program (TIP) as B-4270 and in the Federal-Aid Bridge Replacement Program (BRZ-1240(1)). Refer to Figure 1 and 7 for location of the project.

No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate Bridge No. 93 has a sufficiency rating of 15.1 out of a possible 100 for a new structure. The bridge is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 93 is located approximately 1.9 miles (3.1 km) east of NC 411 on SR 1240 (Fleet-Cooper Road) southeast of Roseboro in Sampson County. Refer to Figure 1 and 7 for the project location and Figures 2 and 3 for photos of the existing project area.

Bridge No. 93 was constructed in 1953. The bridge is currently posted to restrict weight limits to 20 tons (18.1 metric tons) for single vehicles and 29 tons (26.3 metric tons) for truck-tractor semi-trailers.

The overall length of the nine-span structure is 155.0 ft (47.3 m). It has a clear roadway width of 24.0 ft (7.3 m) that includes two travel lanes over the bridge. The superstructure consists of a reinforced concrete deck with timber joists. The end and interior bents are constructed of timber piles and caps. A steel crutch bent has been added to help support the floor beams between bents 1 and 2.

SR 1240 is classified as a Rural Local in the Statewide Functional Classification System. The 2002 average daily traffic volume (ADT) is estimated to be 620 vehicles per day (vpd). The percentages of truck traffic are 1 percent TTST vehicles and 3 percent dual-tired vehicles. The projected 2025 ADT is 1000 vpd.

The two-lane facility measures approximately 18 ft (5.5 m) in width and has variable (approximately 10-12 ft (3.0–3.7 m)) grassed shoulders on each side of the roadway in the vicinity of the bridge. The horizontal alignment of SR 1240 is straight and the vertical alignment is generally flat within the project area. Southbound, the grade

rises slightly and there is a moderate right curve. The speed limit in the immediate vicinity of the bridge is posted at 55 miles per hour (mph) (88 km/h). Existing right-of-way is approximately 60 ft (18.3 m) in width.

There are buried telephone utilities along the west side of SR 1240. There are no other apparent utilities. Utility impacts are expected to be low.

This section of SR 1240 is not part of a designated bicycle route nor is it listed in the Transportation Improvement Program as needing incidental bicycle accommodations. There is no indication that an unusual number of bicyclists use this roadway.

Land use within the project area is a mixture of cultivated and wooded areas. Within 500–800 ft (150–245 m) from the south end of the bridge there are three residences, one abandoned residence and one business. There are no other buildings within close proximity of the bridge.

Two school buses cross Bridge No. 93 two times per day, for a total of four bus trips per day.

Crash records maintained by the NCDOT indicate there has been 1 crash reported in the vicinity of Bridge No. 93 during the period from August 1, 1999 to July 31, 2002. The reported crash involved a single automobile, traveling at a high rate of speed, running off the road and striking a concrete bridge rail.

III. ALTERNATIVES

A. Project Description

Based upon the preliminary hydraulic report, the replacement structure will consist of a 170 ft (51.8 m) spill-through bridge with a 28 ft (8.5 m) clear roadway width. The structure will provide two 11 ft (3.3 m) travel lanes with 3 ft (0.9 m) of lateral clearance on each side of the bridge.

The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows, as determined by a more detailed hydraulic analysis to be performed during the final design phase of the bridge.

The proposed roadway approaches will provide two 11-ft (3.3-m) travel lanes with 6 ft (1.8 m) grassed shoulders. The proposed grade will be approximately the same as the existing grade. The design speed is 60 mph (100 km/h).

B. Build Alternatives

Two (2) build alternatives studied for replacing the existing bridge are described below:

Alternative A (Preferred)

This alternative consists of replacing the bridge in-place using an off-site detour to maintain traffic during construction. The total length of approach work for this alternative is approximately 800 ft (244 m). Refer to Figures 4 and 5 for illustration of the proposed off-site detour and Alternative A, respectively.

Existing traffic would be detoured via SR 1217 (Hobbs Road), SR 1214 (Boykin Bridge Road), SR 1212 (McDaniels Road) and SR 1215 (Mintz Road). There is only one posted structure on this route. It has a posting of 23 tons (20.9 metric tons) for single vehicles and 29 tons (26.3 metric tons) for truck-tractor semi-trailers. The detour length is estimated to be 8.6 miles (13.8 km) long.

Alternative B

This alternative consists of replacing the existing bridge on new alignment along the east side (downstream) of SR 1240. Existing Bridge No. 93 and approaches would be used to maintain traffic during the construction period. The total length for the bridge and approach work of Alternative B is approximately 1,932 ft (589 m). See Figures 6A and 6B for illustration of Alternative B.

Alternative B was not selected as the preferred because of its higher cost and greater wetland impacts.

C. Alternatives Eliminated From Further Consideration

A "Do-Nothing" alternative will eventually necessitate closure of the bridge due to its poor condition. This is not desirable due to the traffic service provided by SR 1240.

Investigation of the existing structure by the NCDOT Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its deteriorated condition. The joists, caps and piles all exhibit various degrees of decay. Steel crutch bents have been added to support the structure which is currently classified as a "shored structure".

Alternatives to the west of the existing bridge were considered, however, locations to the east side of the existing bridge avoid impacts to a large, lateral roadway ditch and a lesser amount of wetlands compared to construction alternatives along the west side of SR 1240. Due to the higher level of impact, alternatives to the west of the existing bridge were eliminated from further consideration.

D. Preferred Alternative (Alternative A)

Alternative A was selected as the preferred because it has the least impact to high quality wetlands and the lowest total cost of the build alternatives. As is detailed above, this alternative consists of replacing the bridge in-place using an off-site detour to maintain traffic during construction. Refer to Figure 5 for illustration of Alternative A.

The Division Engineer concurs with Alternative A as the Preferred Alternative.

IV. ESTIMATED COSTS

The estimated costs for each alternative, based on current dollars, are shown below:

Table 1
Estimated Project Costs

	Alternative A (Preferred)	Alternative B
Structure Removal (Existing)	$29,760	$29,760
Structure Proposed	$309,400	$333,200
Roadway Approaches	$154,267	$772,928
Miscellaneous and Mobilization	$222,573	$511,112
Engineering and Contingencies	$109,000	$253,000
Right-of-Way/Easement and Utilities	$33,000	$40,700
Total Project Cost	**$858,000**	**$1,940,700**

The estimated cost of the project, as shown in the Draft 2004-2010 NCDOT Transportation Improvement Program is $787,000 including $150,000 spent in prior years, $37,000 for right-of-way and $600,000 for construction.

V. NATURAL RESOURCES

Natural resources within the project study area were evaluated to provide: 1) an assessment of existing vegetation, wildlife, protected species, streams, wetlands, and water quality; 2) an evaluation of probable impacts resulting from construction; and 3) a preliminary determination of permit needs.

A. Methodology

Materials and research data in support of this investigation have been derived from a number of sources. The Bonnetsville, NC U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (USGS 1986) was consulted to determine the physiographic relief and to assess landscape characteristics. Additional resources utilized include U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory mapping, and the *Soil Survey of Sampson County, North Carolina* (USDA 1985). Recent aerial photography (scale 1:2400) was reviewed prior to starting the field investigation.

The aerial photograph served as the basis for mapping plant communities and wetlands. Plant community patterns were identified from available mapping sources and then field verified in April 2001. Plant community descriptions are based on a classification system utilized by the NC Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names typically follow nomenclature found in Radford *et al.* (1968).

Jurisdictional wetland areas were identified using the three parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.*

(1979). Jurisdictional stream channels were identified using criteria outlined by the COE and the NC Division of Water Quality (DWQ).

Water resource information for Little Coharie Creek was derived from the most recent versions of the *Cape Fear River Basinwide Water Quality Plan* (DWQ 2000), *Basinwide Assessment Report-Cape Fear River Basin* (DWQ 1999) and several DWQ internet resources. Quantitative sampling was not undertaken to support existing data.

The most current USFWS list of federal protected species with ranges extending into Sampson County was reviewed prior to initiation of the April 2001 field investigation. Currently, the most recent USFWS list is dated May 31, 2002. No additional species have been listed for Sampson County. In addition, NHP records documenting occurrences of federal or state-listed species listed within the project study area were consulted before commencing the field investigation. An updated NHP records search was conducted on December 20, 2001, April 12, 2002 and December 10, 2002.

Direct observations of terrestrial and aquatic wildlife were documented, and expected population distributions were determined through observations of available habitat and review of supportive documentation found in Martof *et al.* (1980), Webster *et al.* (1985), Menhinick (1991), Hamel (1992), Rohde *et al.* (1994), and Palmer and Braswell (1995).

B. Physiography and Soils

The project study area is located in the Coastal Plain physiographic province of North Carolina. The topography in the project study area is characterized as nearly level to gently sloping. Elevations in the project study area range from 75 to 80 feet (23 to 24 m) above mean sea level (USGS 1986). The project study area consists of residential areas, agricultural land, maintained land, successional areas, and forested land.

The project study area crosses three soil mapping units (USDA 1985). Hydric soils mapped as occurring in the project study area include the Johnston (*Cumulic Humaquepts*) series, which is very poorly drained. Nonhydric soils that may contain hydric inclusions mapped in the project study area include the Johns (*Aquic Hapludults*) and Marvyn (*Typic Hapludults*) series.

C. Water Resources

C.1. Waters Impacted

The project study area is located within sub-basin 03-06-19 of the Cape Fear River Basin (DWQ 2000) and is part of USGS hydrologic unit 03030006 (USGS 1974). Little Coharie Creek originates approximately 6.0 miles (9.6 km) southwest of US 421 and US 13 at the confluence of Caesar Swamp and Opossum Swamp. Little Coharie Creek flows in a southerly direction through the project study area to its confluence with Great Coharie Creek in southwestern Sampson County. Little Coharie Creek, from its source to Great Coharie Creek, has been assigned Stream Index Number (SIN) 18-68-1-17 (DENR 2002a).

C.2. Water Resource Characteristics

Little Coharie Creek is a perennial stream with moderate flow over substrate consisting of sand and silt. Water clarity at the time of the field investigation (April 2001) was moderate with a significant amount of tannic acid staining the water. The main channel ranges in width from 45 to 50 feet (14 to 15 m) and has an average depth of approximately 3 to 4 feet (1 to 1.2 m). A geomorphic characterization of the stream section within the project

study area indicates Little Coharie Creek is a "C" type channel (Rosgen 1996). "C" type channels are gently sloped, relatively wide and shallow, slightly entrenched channel with moderate to high sinuosity. The "C" type channels are characterized by riffle-pool sequences, well defined meanders and a well-developed floodplain.

A Best Usage Classification is assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. Little Coharie Creek has been assigned a best usage classification of **C Sw** (DEM 1993, DENR 2002a). The **C** designation indicates waters that support aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation is any activity involving human body contact with water on an infrequent or incidental basis. The **Sw** designation is used for swamp waters characterized by low velocities, low pH, low dissolved oxygen levels, and high organic content.

No Outstanding Resource Waters (**ORW**), High Quality Waters (**HQW**), **WS-I**, or **WS-II** waters occur within 3.0 miles (4.8 km) upstream or downstream of the project study area (DEM 1993, DENR 2002a). Little Coharie Creek is not designated as a North Carolina Natural and Scenic River, nor as a National Wild and Scenic River.

One method used by DWQ to monitor water quality is through long-term monitoring of macroinvertebrates. There are two benthic monitoring stations on Little Coharie Creek that are within 3.0 miles (4.8 km) of the project study area. The first sampling location is approximately 2.1 miles (3.4 km) upstream of the project study area on NC 24. This site was sampled in 1993 and received a bio-classification of Good (DWQ 1999). The second sampling location on SR 1214 is approximately 2.9 miles (4.7 km) downstream of the project study area. This location was sampled in 1998 and received classifications of Good-Fair (DWQ 1999).

Another measure of water quality being used by the DWQ is the North Carolina Index of Biotic Integrity (NCIBI), which assesses biological integrity using the structure and health of the fish community. No NCIBI sampling has been performed on Little Coharie Creek (DWQ 1999).

C.3. Permitted Dischargers

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as "point sources." Wastewater point source discharges include municipal (city and county) and industrial wastewater treatment plants and small domestic wastewater treatment systems serving schools, commercial offices, residential subdivisions, and individual homes (DWQ 1999). Stormwater point source discharges include stormwater collection systems for municipalities and stormwater discharges associated with certain industrial activities. Point source dischargers in North Carolina must apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit. Discharge permits are issued under the NPDES program, delegated to DWQ by the Environmental Protection Agency (EPA).

There is one permitted point source discharger located on Little Coharie Creek 3.0 miles (4.8 km) upstream of the project study area, the Town of Roseboro Wastewater Treatment Plant (permit number NC0026816). No permitted dischargers are located on Little Coharie Creek downstream of the project study area. (DWQ 2000, DENR 2002b).

C.4. Anticipated Impacts to Water Resources

Short-term impacts to water quality, such as sedimentation and turbidity, may result from construction-related activities. Temporary construction impacts due to erosion and sedimentation will be minimized through

implementation of a stringent erosion control schedule and the use of BMP's. The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled Control of Erosion, Siltation, and Pollution pursuant to NCDOT's *Standard Specifications for Roads and Structures.* These measures include: the use of dikes, berms, silt basins, and other containment measures to control runoff and elimination of construction staging areas in floodplains and adjacent waterways. Disturbed sites will be revegetated with herbaceous cover after any temporary construction impacts.

Other impacts to water quality, such as changes in water temperature as a result of increased exposure to sunlight due to the removal of stream-side vegetation or increased shade due to the construction of the bridge, and changes in stormwater flows due to changes in the amount of impervious surface adjacent to the stream channels, can be anticipated as a result of this project. However, due to the limited amount of overall change in the surrounding areas, impacts are expected to be temporary in nature.

No adverse long-term impacts to water resources are expected to result from the alternatives being considered. The proposed bridge replacement project will allow for continuation of present stream flow within the existing channel, thereby protecting stream integrity.

C.5. Impacts Related to Bridge Demolition and Removal

This section outlines restrictions and Best Management Practices for Bridge Demolition and Removal (BMP-BDRs), as well as guidelines for calculating maximum potential fill in the creek resulting from demolition. These standards will be implemented during construction of this project.

The superstructure for Bridge No. 93 consists of a reinforced concrete deck on timber joists. End and interior bents are timber caps on timber piles. The bridge has nine spans and totals approximately 155 feet (47 m) in length. There is potential for the concrete deck to be dropped into Waters of the United States during demolition and removal. The maximum (worst case) resulting temporary fill associated with the removal of the bridge is approximately 38.6 cubic yards (29.5 cubic m).

Because no moratoriums apply, this project falls under Case 3 (no special restrictions) of the Best Management Practices for Bridge Demolition and Removal.

D. Biotic Resources

D.1. Plant Communities

Distribution and composition of plant communities throughout the project study area reflect landscape-level variations in topography, soils, hydrology, and past and present land use practices. When appropriate, the plant community names have been adopted and modified from the NHP classification system (Schafale and Weakley 1990) and the descriptions written to reflect local variations within the project study area. Seven plant communities were identified within the project study area: Coastal Plain small stream swamp, mixed hardwood forest, mixed pine/hardwood forest, pine woodlands, successional/clearcut areas, agricultural land, and maintained/disturbed land. These communities total approximately 29.3 acres (11.9 ha), which does not include the existing road's impervious surface (1.2 acres [0.5 ha]) or the open water (0.4 acre [0.1 ha]) attributed to Little Coharie Creek and two man-made ponds.

Coastal Plain Small Stream Swamp – Coastal Plain small stream swamp covers approximately 3.5 acres (1.4 ha) (12%) of the project study area. This community designation corresponds to the Coastal Plain Small Stream Swamp (Blackwater Subtype) natural community of Schafale and Weakley (1990). The canopy contains bald cypress (*Taxodium distichum*) and a mix of broad-leaved deciduous species including swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), willow oak (*Quercus phellos*), green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), and sweetgum (*Liquidambar styraciflua*). Groundcover is typically sparse in these communities and includes primarily lizard tail (*Saururus cernuus*).

Mixed Hardwood Forest – Mixed hardwood forest covers approximately 5.3 acres (2.1 ha) (18%) of the project study area. Tree species in this community type include water oak (*Quercus nigra*), swamp chestnut oak (*Q. michauxii*), laurel oak (*Q. laurifolia*), flowering dogwood (*Cornus florida*), tulip poplar (*Liriodendron tulipifera*), sweetgum, and red maple. Groundcover includes such species as Virginia chain-fern (*Woodwardia virginica),* Japanese honeysuckle (*Lonicera japonica*), greenbrier (*Smilax* spp.), and poison ivy (*Toxicodendron radicans*).

Mixed Pine/Hardwood Forest – Mixed pine/mixed hardwood forest covers approximately 2.3 acres (0.9 ha) (8%) of the project study area. This community is characterized by the co-dominance of pines and hardwoods in the canopy. Dominant species include loblolly pine (*Pinus taeda*), sweetgum, red maple, water oak, and tulip poplar. The understory varies in density and includes flowering dogwood, wax myrtle (*Myrica heterophylla*), and Chinese privet (*Ligustrum sinense*). Groundcover comprises such species as Japanese honeysuckle, greenbrier, and poison ivy.

Pine Woodlands – Pine woodlands cover approximately 1.0 acre (0.4 ha) (3%) of the project study area. Areas designated as pine woodlands are characterized by a predominance (greater than 80 percent cover) of pines in the canopy. Within the project study area, the pine woodlands represent young, successional pine forest stands consisting primarily of loblolly pine.

Successional/Clear-Cut Areas – Successional/clear-cut areas cover approximately 8.6 acres (3.5 ha) (29%) of the project study area. These areas include recently clear-cut forest and the resulting successional areas that have become colonized with native vegetation. This community type is differentiated from various forest communities by being dominated by the herbaceous or shrub strata rather than dominance by the tree stratum. Most of the successional areas described within the project study area occur as the result of clear-cut timber operations. Species include saplings of red maple, loblolly pine, and sweetgum, along with broomsedge (*Andropogon virginicus*), aster (*Aster pilosus*), goldenrods (*Solidago* spp.), ragweed (*Ambrosia artemisiifolia*), dogfennel (*Eupatorium capillifolium*), Japanese honeysuckle, and blackberry (*Rubus argutus*). Successional areas subject to prolonged surface saturation or periodic inundation are dominated by wool grass (*Scirpus cyperinus*) and soft rush (*Juncus effusus*).

Agricultural Land – Agricultural land covers approximately 1.4 acres (0.6 ha) (5%) of the project study area. This agricultural land is used for the cultivation of row crops and field crops. No planting was observed in the agricultural field at the time of the field investigation.

Maintained/Urban Disturbed Land – Maintained/urban disturbed land covers approximately 7.2 acres (2.9 ha) (25%) of the project study area. This category includes areas with disturbed vegetation and/or soils with man-made structures including buildings, maintained yards, and areas where other human activities dominate.

Vegetation observed within the maintained/disturbed areas includes loblolly pine, red maple, sweetgum, fescue (*Festuca* sp.), broomsedge, and dog-fennel. Ornamental trees and shrubs are also present in residential yards.

D.2. Wildlife

The project study area was visually surveyed for signs of terrestrial and aquatic wildlife; however, little evidence of wildlife was observed during the field effort. Floodplain forests along streams such as Little Coharie Creek provide cover and food and allow animals to travel between different habitats.

One terrestrial reptile was observed within the project study area, eastern box turtle (*Terrapene carolina*). Other species expected to occur within the project study area include southeastern five-lined skink (*Eumeces inexpectatus*), eastern garter snake (*Thamnophis sirtalis*), and black rat snake (*Elaphe obsoleta*).

No terrestrial amphibians were observed within the project study area. Species expected to occur within the project study area include southern toad (*Bufo terrestris*), green tree frog (*Hyla cinerea*), spring pepper (*Pseudacris crucifer*), southern leopard frog (*Rana utricularia*), and marbled salamander (*Ambystoma opacum*).

Bird species observed within or adjacent to the project study area include downy woodpecker (*Picoides pubescens*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), tufted titmouse (*Parus bicolor*), Carolina chickadee (*Parus carolinensis*), Carolina wren (*Thryothorus ludovicianus*), ruby-crowned kinglet (*Regulus calendula*), hermit thrush (*Hylocichla mustelina),* swamp sparrow *(Melospiza georgiana*), and northern cardinal (*Cardinalis cardinalis*).

No mammals or evidence of mammals were observed within the project study area. Species expected to be found in and around the project study area include raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), red fox (*Vulpes vulpes*), gray squirrel (*Sciurus carolinensis*), and eastern cottontail (*Sylvilagus floridanus*). Other species that may use the Little Coharie Creek floodplain as a travel corridor are white-tailed deer (*Odocoileus virginianus*) and bobcat (*Felis rufus*).

D.3. Aquatic Communities

The depth of the Little Coharie Creek channel limited the amount of dip-netting, electro-shocking, and visual observation within the project study area. Electro-shocking was conducted under Scientific Fish Collecting License No. 0616 as issued by the NCWRC. Benthic macro-invertebrates were collected according to current DWQ Aquatic Insect Collection Protocols.

Benthic macroinvertebrate organisms collected within Little Coharie Creek were identified to at least Order and Family if possible. Specimens collected include dragonfly and damselfly larvae (Odonta), caddisfly larvae (Trichoptera), grass shrimp (Crustecea), and water bettles (Coleoptera). Identifications are based on McCafferty (1998).

Fish species documented in the reach of Little Coharie Creek located within the project study area are consistent with species found in Coastal Plain blackwater streams. Species identified include redfin pickerel (*Esox americanus*), pirate perch (*Aphredoderus sayanus*), eastern mosquito fish (*Gambusia holbrooki*), and banded sunfish (*Enneacanthus obesus*). Other species expected to occur within the project study area include bowfin (*Amia calva*), creek chubsucker (*Erimyzon oblongus*), blue-spotted sunfish (*Enneacanthus gloriorus*), warmouth (*Lepomis gulosus*), bluegill (*Lepomis macrochirus*), yellow bullhead (*Ictalurus natalis*), and largemouth bass

(*Micropterus salmoides*). In addition to the above fish species, grass shrimp (*Palaemonetes* sp.) and American eel (*Anguilla rostrata*) were also documented from Little Coharie Creek.

Coastal Plain streams are often utilized by anadromous fish species. Anadromous fish, such as striped bass (*Morone saxatilis*), shad (*Alosa* spp.), and sturgeon (*Acipenser* spp.) spend their adult lives in the ocean but return to freshwater habitats to reproduce. Spawning habitats of anadromous species are typically located upstream of tidal influence and saltwater intrusion. Spawning conditions are specific for each species and variables include water velocity, water depth, substrate composition, temperature, pH, turbidity, and water hardness. Smaller systems such as Little Coharie Creek could potentially be used by striped bass and American shad. However, Menhinick (1991) does not document either American shad or striped bass as occurring in the upper reaches of Little Coharie Creek. These two species have been documented by Menhinick (1991) in the extreme southern portion of Sampson County. In addition, neither Atlantic sturgeon (*Acipenser oxyrhychus*) nor shortnose sturgeon (*A. brevirostrum*) have been documented from project study area streams (Menhinick 1991).

No aquatic reptiles were observed within the project study area. Species expected to occur within the project study area include snapping turtle (*Chelydra serpitina*), yellowbelly slider (*Chrysemys scripta*), banded water snake (*Nerodia fasciats*), redbelly water snake (*Nerodia erythrogaster*), and cottonmouth (*Agkistrodon piscivorus*).

No aquatic amphibians were observed within the project study area. Species expected to occur within the project study area include two-toed amphiuma (*Amphiuma means*), pickerel frog (*Rana palustris*), and bullfrog (*Rana catesbeiana*).

D.4. Anticipated Impacts to Biotic Communities

D.4.a. Terrestrial Communities

Potential impacts to plant communities are estimated based on the approximate area of each plant community present within both the proposed right-of-way and the temporary construction limits of any on-site alternative location. The final permanent right-of-way design width ranges from approximately 100 feet (30 m) for Alternative A to approximately 200 feet (61 m) for Alternative B. A summary of potential plant community impacts is presented in Table 2.

A portion of the permanent plant community impact amount will consist of proposed right-of-way for the road after bridge replacement is complete. Impervious surface and open water areas are not included in this analysis. Permanent community impacts for Alternative A total approximately 0.53 acre (0.21 ha), which represents the least amount of the two alternatives. Alternative B may potentially impact approximately 3.64 acres (1.47 ha) of plant communities. Mixed hardwood forest represents the plant community that may experience the greatest amount of impact from Alternative B with 1.11 acre (1.45 ha) of potential permanent impact.

Table 2
Potential Impacts to Plant Communities

PLANT COMMUNITY	POTENTIAL IMPACTS acres (hectares)		
	ALT A	ALT B	
	Impacts	Impacts	Temp. Impacts*
Coastal Plain Small Stream Swamp	0.19 (0.08)	0.61 (0.25)	0.09 (0.04)
Mixed Hardwood Forest	0.09 (0.03)	1.11 (0.45)	0.0
Mixed Pine/Hardwood Forest	0.0	0.28 (0.11)	(<0.01)
Pine Woodlands	0.0	0.0	0.14 (0.06)
Successional/Clear-cut Areas	0.24 (0.10)	1.02 (0.41)	0.07 (0.03)
Agricultural Land	0.0	0.0	0.0
Maintained/Disturbed Land	0.01(<0.01)	0.11 (0.04)	0.20 (0.08)
Total in acres (ha)	0.53 (0.21)	3.13 (1.26)	0.51 (0.21)
TOTAL FOR ALT (acre[ha])	**0.53 (0.21)**	**3.64 (1.47)**	

* Note: Temporary construction impacts are based on the portion of the impacts that fall outside the estimated right-of-way limits.

D.4.b. Aquatic Communities

The proposed bridge replacement will not result in substantial loss or displacement of known terrestrial animal populations. Wildlife movement corridors are not expected to be substantially impacted by the proposed project. Potential down-stream impacts to aquatic habitat will be avoided by bridging Little Coharie Creek to maintain regular flow and stream integrity. In addition, temporary impacts to downstream habitat from increased sediment during construction will be reduced by limiting in-stream work to an absolute minimum, except for the removal of the portion of the sub-structure below the water. BMP-BDRs will be followed to minimize impacts due to anticipated bridge demolition. BMPs for the protection of surface should be strictly enforced to reduce impacts.

E. Special Topics

E.1. "Waters of the United States": Jurisdictional Issues

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters of the United States are regulated by the United States Army Corps of Engineers (USACE). The surface waters within Little Coharie Creek exhibit characteristics of riverine, lower perennial, unconsolidated bottom, permanently flooded (R2UBH) waters (Cowardin *et al.* 1979). Impacts to Little Coharie Creek will be assessed by linear feet of stream channel impacted and the area of open water impacted.

Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology within 12 inches (30.5 centimeters[cm]) of the soil surface for a portion (12.5 percent) of the growing season (DOA 1987). Based on this three-parameter approach, jurisdictional wetlands do occur within the project study area. Four wetland types occur within the project study area.

Palustrine forested, deciduous, seasonally flooded (PFO6C) wetlands
The Coastal Plain small stream swamp exhibits characteristics of a palustrine forested, deciduous, seasonally flooded (PFO6C) wetland. Wetland hydrology in this community is maintained primarily by inundation from the stream channel.

Palustrine forested, broad-leaved deciduous, saturated (PFO1B) wetlands
The jurisdictional portions of the mixed hardwood forest exhibit characteristics of palustrine forested, broad-leaved deciduous, saturated (PFO1B) wetlands. Wetland hydrology in this community is maintained primarily from groundwater and overland flow and runoff from adjacent uplands.

Palustrine scrub-shrub, broad-leaved deciduous, saturated (PSS1B) wetlands
The jurisdictional portions of the successional/clear-cut areas exhibit characteristics of palustrine scrub-shrub, broad-leaved deciduous, saturated (PSS1B) wetlands. Wetland hydrology in this community is maintained primarily from groundwater and overland flow and runoff from adjacent uplands.

Palustrine unconsolidated bottom, excavated (PUBx) wetlands
The man-made ponds exhibit characteristics of palustrine unconsolidated bottom, excavated (PUBx) wetlands. Wetland hydrology is maintained through impoundment.

E.2. Potential Impacts to Waters of the United States

Temporary and permanent impacts to surface waters and wetlands are estimated based on the amount of each jurisdictional area within the proposed construction easement limits. Temporary impacts include those impacts that will result from temporary construction activities associated with staging areas and/or temporary detours. These temporary impact areas will be restored to their original condition after the project has been completed unless they are to remain as part of the permanent right-of-way. Permanent impacts are those areas that will be in the construction limits and/or the right-of-way of the new structure and approaches. Portions of those areas that are considered temporary impact areas often end up being within the final right-of-way. Potential wetland and surface water impacts are included in Table 3.

The preferred alternative, Alternative A, which replaces the bridge "in-place" while using an off-site detour, incurs the least amount of jurisdictional impacts with regard to wetlands and stream channel. Alternative A may impact 0.12 acre (0.05 ha) of Little Coharie Creek surface waters along 100 linear feet (30 m) of stream channel as well as 0.03 acre (0.01 ha) of jurisdictional wetlands. Alternative B, which replaces the bridge on new alignment to the east side of the existing bridge, incurs the highest amount of jurisdictional wetland impacts. Alternative B may impact up to 0.30 acres (0.12 ha) of Little Coharie Creek surface waters along approximately 215 linear feet (66 m) of stream channel and up to 0.91 acre (0.37 ha) of jurisdictional wetlands. Alternative A will have the least amount of impact to surface waters and jurisdictional wetlands.

Table 3
Potential Impacts to Jurisdictional Wetlands and Surface Waters

JURISDICTIONAL AREAS	ALT A (Preferred)	ALT B	
	Impacts	Impacts	Temp. Impacts*
R2UBH	0.12 (0.05)	0.28 (0.11)	0.02 (0.01)
PFO6C	(<0.01)	0.20 (0.08)	(<0.01)
PSS1B	(0.01)	0.71 (0.29)	0.0
PUBx	0.0	0.0	0.0
Total Areas (acres[ha])	0.15 (0.06)	1.19 (0.48)	0.03 (0.01)
TOTAL FOR ALT (acres[ha]):	**0.15 (0.06)**	**1.22 (0.49)**	
Perennial Stream Channel Impacts feet (meters)	100 (30)	200 (61)	15 (6)
TOTAL FOR ALT feet (meters)	**100 (30)**	**215 (67)**	

R2UBH – riverine, lower perennial, unconsolidated bottom, permanently flooded
PFO6C – palustrine, forested, deciduous, seasonally flooded
PSS1B – palustrine, scrub-shrub, broad-leaved deciduous, saturated
PUBx – palustrine, unconsolidated bottom, excavated
*Note: Temporary construction impacts are based on the portion of the impacts not included in the construction limits for the permanent structure.

E.3. Permits

Section 404 of the Clean Water Act – In accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344), a permit is required from the USACE for projects of this type for the discharge of dredged or fill material into "Waters of the United States". The USACE issues two types of permits for these activities. A general permit may be issued on a nationwide or regional basis for a category or categories of activities when: those activities are substantially similar in nature and cause only a minimal individual or cumulative environmental impacts, or when the general permit would result in avoiding unnecessary duplication or regulatory control exercised by another Federal, state, or local agency provided that the environmental consequences of the action are individually and cumulatively minimal. If a general permit is not appropriate for a particular activity, then an individual permit must be utilized. Individual permits are authorized on a case-by-case evaluation of a specific project involving the proposed discharges.

It is anticipated that this project will fall under Nationwide Permit 23, which is a type of general permit. Nationwide Permit 23 is relevant to approved Categorical Exclusions. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency and that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit. However, final permit decisions are left to the discretionary authority of the USACE.

Section 401 Water Quality Certification – A 401 Water Quality Certification, administered through the DWQ, will also be required. This certification is issued for any activity which may result in a discharge into waters for which a federal permit is required. According to the DWQ, one condition of the permit is that the appropriate sediment and erosion control practices must be utilized to prevent exceedances of the appropriate turbidity water quality standard.

E.4. Mitigation

Avoidance – Each project alternative contains jurisdictional wetlands and surface waters, which may be subject to impact. Complete avoidance of jurisdictional impacts is not possible due to the scope of the project and on-site constraints.

Minimization – Of the two alternatives studied, Alternative A will impact the least amount of jurisdictional areas. Efforts to minimize impacts to jurisdictional areas have been made by reducing the side slope of SR 1240 from a desired 6:1 slope to a maximum of 2:1. Further measures to minimize impacts to these areas would require a reduction in the design standards of SR 1240, which is not recommended considering the existing alignment of the roadway and the speed of vehicles traveling through the project area. Best Management Practices will be used in an effort to minimize impacts, including avoiding placing staging areas within wetlands.

Mitigation - Compensatory mitigation is not proposed for this project due to the limited nature of project impacts. Temporary impacts associated with the construction activities will be mitigated by replanting disturbed areas with native species and removal of any temporary fill material within the floodplain upon project completion. Cross pipes will be installed in the roadway to improve drainage between wetlands on each side of the roadway. Final compensatory wetland and stream mitigation requirements will be determined by the USACE under the statutory provisions of Section 404 of the Clean Water Act and the January 15, 2002 final notice of issuance of nationwide permits.

F. Protected Species

F.1. Federally Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), or officially proposed (P) for such listing, are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The following federal protected species are listed for Sampson County (USFWS list dated May 31, 2002):

Table 4
Federally Protected Species Listed for Sampson County

Common Name	Scientific Name	Status	Biological Conclusion
American alligator	*Alligator mississippiensis*	T(S/A)	N/A
Red-cockaded woodpecker	*Picoides borealis*	E	No effect
Pondberry	*Lindera melissifolia*	E	No effect

Endangered – any native or once-native species in danger of extinction throughout all or a significant portion of its range.
Threatened - any native or once-native species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Threatened (S/A) – a species carrying the threatened status due to having a similar appearance to another listed species.

American alligator – The American alligator is a large reptile with a broad snout, a short neck, a heavy body, and a laterally compressed tail. Adults are blackish or dark gray, but faint yellowish crossbands are sometimes evident. The young are black with conspicuous yellow crossbands. The American alligator inhabits fresh water swamps, marshes, abandoned rice fields, ponds, lakes, and backwaters of large rivers. Females lay eggs in

June and hatchlings emerge in late summer or early fall. (Martof *et al.* 1980). American alligator is listed as threatened based on the similarity in appearance to other federally-listed crocodilians; however, there are no other crocodilians within North Carolina.

BIOLOGICAL CONCLUSION: NOT APPLICABLE

Potential habitat for American alligator exists within the project study area. Construction activities may temporarily displace any American alligators in the vicinity; however, no long-term impact to American alligator is anticipated as a result of this project. No Biological Conclusion is required due to it's listing as T(S/A).

Red-cockaded woodpecker (RCW) – This small woodpecker is 7 to 8.5 inches (17.8 to 21.6 cm) long, has a black head, prominent white cheek patch, and black-and-white barred back. Males often have red markings (cockades) behind the eye, but the cockades may be absent or difficult to see. Primary habitat consists of mature to over-mature southern pine forests dominated by loblolly pine, long-leaf (*Pinus palustris*), slash (*P. elliotii*), and pond (*P. serotina*) pines (Henry 1989). Primary nest sites for RCWs include open pine stands greater than 60 years of age with little or no mid-story development. Nest cavity trees tend to occur in clusters, which are referred to as colonies. Foraging habitat is comprised of open pine or pine/mixed hardwood stands 30 years of age or older (USFWS 1985). Pine flatwoods or pine-dominated savannas, which have been maintained by frequent natural fires serve as ideal nesting and foraging sites for this woodpecker. Development of a thick understory may result in abandonment of cavity trees. The woodpecker drills holes into the bark around the cavity entrance, resulting in a shiny, resinous buildup around the entrance that allows for easy detection of active nest trees (Henry 1989).

BIOLOGICAL CONCLUSION: NO EFFECT

There is no suitable habitat for red-cockaded woodpecker in the project study area. No open pine stands greater than 60 years of age with little or no mid-story development occur within the project study area. The small pine or pine/mixed hardwood forests that occur within the project study area are not considered foraging habitat because they appear to be younger than 30 years old and have relatively dense understory and mid-story coverage. NHP records do not document any occurrences of red-cockaded woodpecker within 3.0 miles (4.8 km) of the project study area as of December 10, 2002.

Pondberry (Southern spicebush) - Pondberry is a deciduous shrub with a limited distribution occurring in two portions of the southeastern United States, the Mississippi Valley and the Coastal Plain of the Carolinas (USFWS 1993). Within the two portions of its range, pondberry is known to occupy different habitats. While pondberry is known from hardwood depressional areas with perched water tables in the Mississippi Valley, in the Carolinas pondberry occurs along margins of sink holes, ponds, and depressions in pinelands (USFWS 1993). Within North Carolina, potential habitat for pondberry is described as: 1) shallow ponds with a sandy substrate, especially sites containing the shrub pondspice (*Litsea aestivalis*); and 2) Carolina bays containing a combination of pond cypress (*Taxodium ascendens*) with loblolly pine and red maple (Leonard 1995).

BIOLOGICAL CONCLUSION: NO EFFECT

A reference pondberry site approximately 7.0 miles (11.0 km) from the project study area was visited prior to the field investigation. This reference site is located in a Carolina bay wetland community. The flowering status and

habitat requirements were reviewed at this reference site. There is no suitable pondberry habitat within the project study area. There are no Carolina bay type habitats containing the appropriate species mixture within the project study area. No impacts to pondberry should result from this project. NHP does not document any occurrences of pondberry within 3.0 miles (4.8 km) of the project study area.

F.2. Federal Species of Concern

The May 31, 2002 USFWS list also includes a category of species designated as "Federal species of concern" (FSC). The FSC designation provides no federal protection under the ESA for the species listed. The presence of potential suitable habitat (Amoroso 1999, LeGrand *et al.* 2001) within the project study area has been evaluated for the following FSC listed for Sampson County and are listed in Table 5.

Table 5
Federal Species of Concern (FSC) listed for Sampson County

Common Name	Scientific Name	Potential Habitat	State Status*
Bachman's sparrow	*Aimophila aestivalis*	N	SC
Rafinesque's big-eared bat	*Corymorphinus rafinesquii*	Y	SC(PT)
Southern hognose snake	*Heterdon simus*	N	SR (PSC)
Mimic glass lizard	*Ophisaurus mimicus*	N	SC (PT)
Carolina gopher frog	*Rana capito capito*	N	SC(PT)
American sand burrowing mayfly	*Dolania americana*	N	SR
Venus flytrap	*Dionea muscipula*	N	C-SC
Butternut	*Juglans cinerea*	Y	W
White wicky	*Kalmia cuneata*	N	E-SC
Pondspice	*Litse aestivalis*	N	C
Carolina bogmit	*Macbridea caroliniana*	Y	T
Spring-flowering goldenrod	*Solidago verna*	N	T
A liverwort	*Cylindrocolea andersonii*	Y	W

Endangered (E) – any native or once-native species in danger of extinction throughout all or a significant portion of its range.
Threatened (T) - any native or once-native species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Special Concern (SC) – any species which requires monitoring but which may be collected and sold under specific regulations.
Candidate(C) – a species for which USUSFWS has enough information on file to support proposals for listing as endangered or threatened.
Watch List(WL) – any species believed to be rare and of conservation concern but not warranting active monitoring.
Proposed(P) – a species which has been formally proposed for listed as endangered, threatened, or special concern, but has not yet completed the legally mandated listing process.
Significantly Rare(SR) – species which are very rare, generally with 1-20 populations in the state, and generally reduced in numbers by habitat destruction.

NHP records document no occurrences of FSC within 3.0 miles (4.8 km) of the project study area as of December 10, 2002.

F.3. State Protected Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), or Special Concern (SC) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202 *et seq.*).

NHP records document no occurrences of any state protected species occurring within 3.0 miles (4.8 km) of the project study area as of December 10, 2002.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO) in accordance with the Advisory Council's regulations and FHWA procedures.

B. Historic Architecture

In their August 6, 2001, letter, the SHPO stated "We have conducted a review of the project area and are aware of no properties of architectural, historic, or archaeological significance, which would be affected by the project. Therefore, we have no comment on the project as currently proposed." Based on the SHPO's comments, a survey was not conducted. A copy of the SHPO memorandum is included in the Appendix.

C. Archaeology

In their August 6, 2001, letter, the SHPO stated "We have conducted a review of the project area and are aware of no properties of architectural, historic, or archaeological significance, which would be affected by the project. Therefore, we have no comment on the project as currently proposed." Based on the SHPO's comments, a survey was not conducted. A copy of the SHPO memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of inadequate bridges will result in safer traffic operations.

The project is considered a Federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.

Replacement of Bridge No. 93 will not have an adverse effect on the quality of the human or natural environment.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

No adverse impact on families or communities is anticipated. Right-of-way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) a review was conducted to determine whether minority or low-income populations were receiving disproportionately high and adverse human health and environmental impacts as a result of this project. The investigation determined the project would not disproportionately impact any minority or low-income populations.

The studied route does not contain any bicycle accommodations, nor is it a designated bicycle route; therefore, no bicycle accommodations have been included as part of this project.

This project has been coordinated with the United States Department of Agriculture, Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland for all land acquisition and construction projects. Alternative A will impact 0.18 acres of Prime and Unique Farmland and Alternative B, 0.34 acres. Alternative A is the preferred alternative and therefore impacts to prime or locally important farmland are minimized.

No publicly owned parks or recreational facilities, wildlife and waterfowl refuges, or historic sites of national, state or local significance in the immediate vicinity of the project will be impacted. The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

No adverse effects to air quality are anticipated from this project. This project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. Since the project is located in an attainment area, 40 CFR Part 51 is not applicable. If vegetation or wood debris is disposed of by open burning, it shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520 and 1990 Clean Air Act Amendments and the National Environmental Policy Act. This evaluation completes the assessment requirements for air quality, and no additional reports are required.

Ambient noise levels may increase during the construction of this project; however this increase will be only temporary and usually confined to daylight hours. There should be no notable change in traffic volumes after this project is complete. Therefore, this project will have no adverse effect on existing noise levels. Noise receptors in the project area will not be impacted by this project. This evaluation completes the assessment requirements for highway noise set forth in 23 CFR Part 772. No additional reports are required.

The NCDOT Geotechnical Unit determined that no underground storage tanks or areas of other contamination were present at or near the project area.

It is unlikely that any archaeological resources listed in or eligible for listing in the National Register of Historic Places will be affected by this project.

Sampson County is a participant in the National Flood Insurance Regular Program. The replacement structure is proposed as an in-kind replacement and in the absence of historical problems, increased flood impacts associated with this bridge replacement are not anticipated. The approximate 100-year floodplain in the project area is shown in Figure 8. All reasonable measures will be taken to minimize any possible harm.

Geotechnical borings for the bridge foundation will be necessary.

Based on the above discussion, it is concluded that no substantial adverse environmental impact will result from the replacement of Bridge No. 93.

IX. PUBLIC INVOLVEMENT

Due to the isolated nature of this bridge replacement project, no formal public involvement program was initiated. Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with a scoping letter.

X. AGENCY COMMENTS

Agency comments are summarized below. Letters from the commenting agencies are included in the appendix.

North Carolina Wildlife Resources Commission (NCWRC): The existing bridge is surrounded by high quality wetlands. NCDOT should explore options such as increased bridging or the addition of cross pipes to restore sheet flow in the adjacent wetlands.

Response: The NCDOT will install cross pipes to restore sheet flow in the adjacent wetlands.

XI. REFERENCES

Amoroso, J.L. 1999. Natural Heritage Program List of the Rare Plant Species of North Carolina. North Carolina Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health and Natural Resources, Raleigh. 85 pp.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. Fish and Wildlife Service, U.S. Department of the Interior, Washington, DC. 103 pp.

Department of the Army (DOA). 1987. Corps of Engineers Wetlands Delineation Manual. Tech. Rpt. Y-87-1. US Army Engineer Waterways Experiment Station, Vicksburg, MS. 100 pp.

Division of Environmental Management (DEM). 1993. Classifications and Water Quality Standards Assigned to the Waters of the Cape Fear River Basin. North Carolina Department of Environment, Health, and Natural Resources, Raleigh.

Department of Environment and Natural Resources (DENR). 2002a. North Carolina Waterbodies Listed by Subbasin. Web Address: http://h2o.enr.state.nc.us/bims/reports/basinsandwaterbodies on 10 January 2002.

DENR. 2002b. Active NPDES Permits. Web Address: http://h2o.enr.state.nc.us/NPDES/documents/permits.xls on 10 January 2002.

Division of Water Quality (DWQ). 1999. Basinwide Assessment Report-Cape Fear River Basin. NC Department of Environment and Natural Resources. Raleigh, NC. 420 pp.

DWQ. 2000. Cape Fear River Basinwide Water Quality Plan. NC Department of Environment and Natural Resources. Raleigh, NC. 274 pp.

Hamel, P.B. 1992. Land Manager's Guide to the Birds of the South. The Nature Conservancy, Southeastern Region, Chapel Hill, NC. 437 pp.

Henry, V. G. 1989. Guidelines for preparation of Biological Assessments and Evaluations for the Red-cockaded Woodpecker. U. S. Fish and Wildlife Service, Southeast Region, Atlanta Georgia, 13 pp.

LeGrand, H.E., Jr., S.P. Hall, and J.T. Finnegan. 2001. Natural Heritage Program List of the Rare Animal Species of North Carolina. North Carolina Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health and Natural Resources, Raleigh. 91 pp.

Leonard, S. 1995. Monitoring, Management, and Restoration of Pondberr (*Lindera melissafolia*) in North Carolina. Final Report. 12 pp.

Martof, B.S., W.M. Palmer, J.R. Bailey, and J.R. Harrison III. 1980. Amphibians and Reptiles of the Carolinas and Virginia. The University of North Carolina Press, Chapel Hill, NC. 264 pp.

McCafferty, W. P. 1998. Aquatic Entomology. Jones and Bartlett Publishers, Sudbury, MA. 448pp.

Menhinick, E.F. 1991. The Freshwater Fishes of North Carolina. North Carolina Wildlife Resources Commission, Raleigh. 227 pp.

Palmer, W.M. and A.L. Braswell. 1995. Reptiles of North Carolina. The University of North Carolina Press, Chapel Hill, NC. 412 pp.

Radford, A. E., H.E. Ahles, and C.R. Bell. 1968. Manual of the Vascular Flora of The Carolinas. The University of North Carolina Press, Chapel Hill, NC. 1183 pp.

Rohde, F.C., R.G Arndt, D.G. Lindquist, and J.F. Parnell. 1994. Freshwater Fishes of the Carolinas, Virginia, Maryland, and Delaware. The University of North Carolina Press, Chapel Hill, NC. 222 pp.

Rosgen, D. 1996. Applied River Morphology. Wildland Hydrology, Inc., Pogosa Springs, CO. 365 pp.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health, and Natural Resources. Raleigh. 325 pp.

U.S. Department of Agriculture (USDA). 1985. Soil Survey of Sampson County, North Carolina. USDA Soil Conservation Service. 117 pp.

U.S. Fish and Wildlife Service (USFWS). 1985. Red-Cockaded Woodpecker Recovery Plan. U.S. Department of the Interior, Southeast Region, Atlanta, Georgia. 88 pp

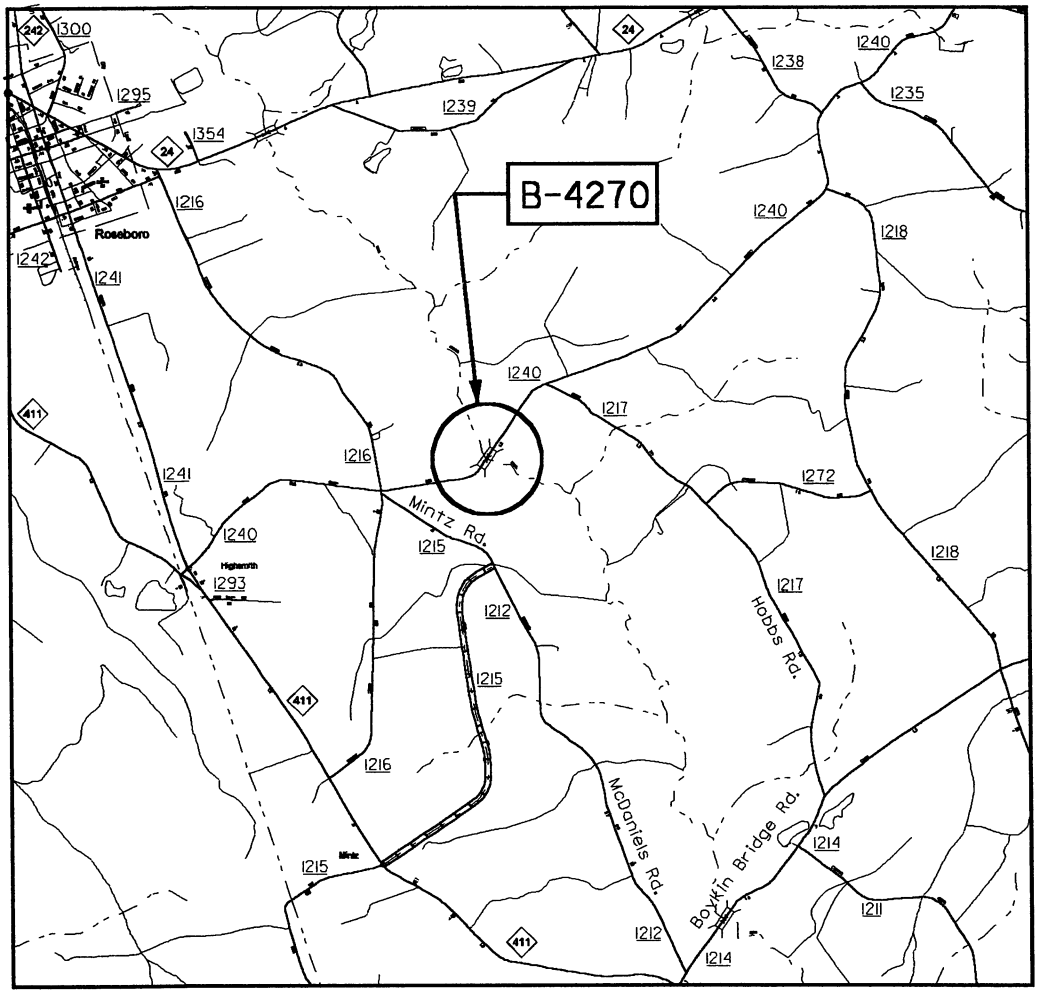
USFWS. 1993. Recovery Plan for Pondberry (*Lindera melissafolia*). U. S. Fish and Wildlife Service, Atlanta, Georgia. 56 pp.

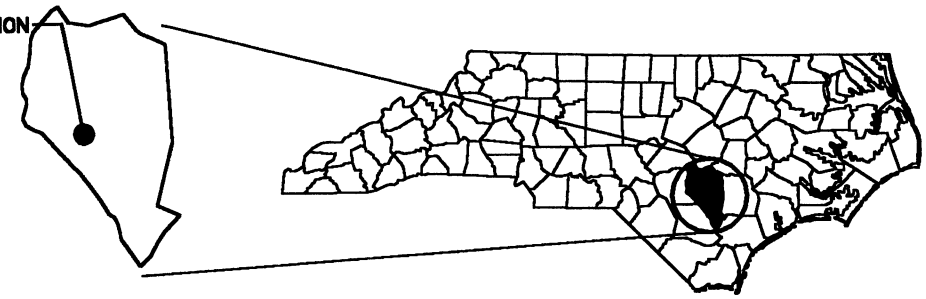
U.S. Geological Survey (USGS). 1974. Hydrologic Units Map, State of North Carolina.

USGS (1986) Bonnetsville, NC 7.5-minute topographic quadrangle map.

Webster, W.D., J.F. Parnell, and W.C. Biggs, Jr. 1985. Mammals of the Carolinas, Virginia, and Maryland. The University of North Carolina Press, Chapel Hill, NC. 255 pp.

FIGURES





SAMPSON COUNTY

SCALE IN MILES

1 0 1

North Carolina Department of Transportation
Division of Highways
Project Development & Environmental Analysis Branch

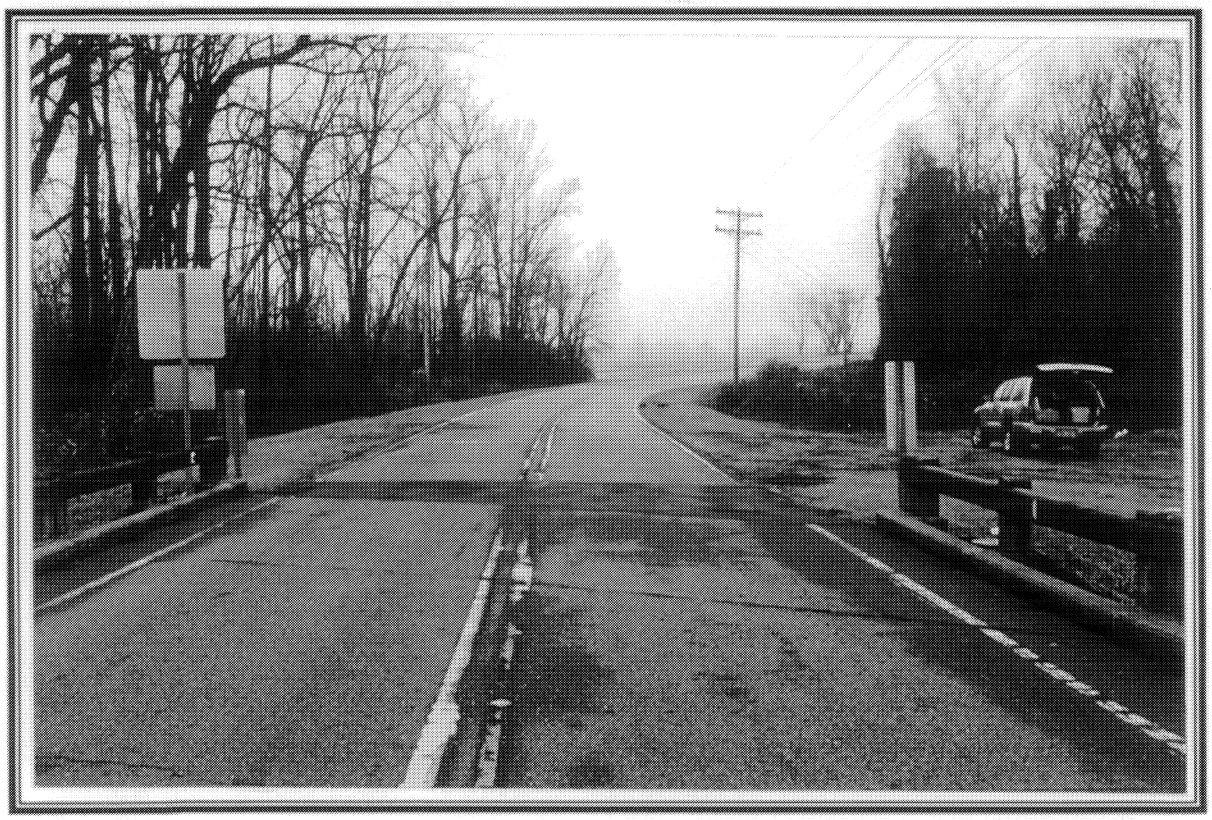
FIGURE 1
AREA LOCATION MAP
BRIDGE NO. 93
ON SR 1240
OVER LITTLE COHARIE CREEK
SAMPSON COUNTY, NORTH CAROLINA
TIP PROJECT B-4270

LOOKING AT WEST SIDE OF BRIDGE NO. 24

LOOKING AT EAST SIDE OF BRIDGE NO. 24

B-4320 WAYNE / DUPLIN COUNTIES
REPLACE BRIDGE NO. 24 ON NC 403 OVER NORTHEAST CAPE FEAR RIVER

FIGURE 2
PROJECT PHOTOGRAPHS

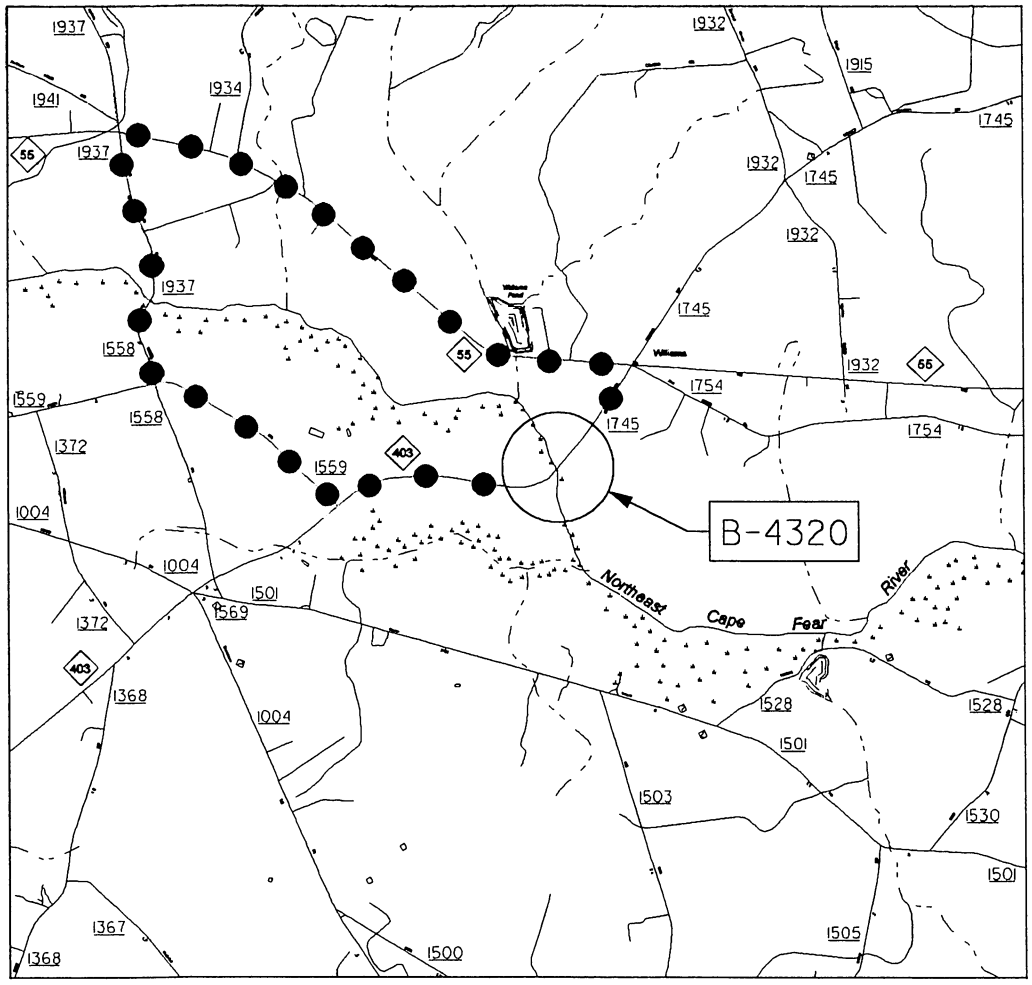


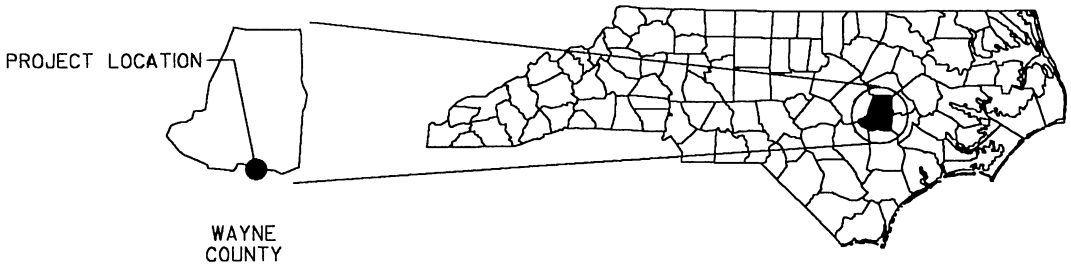
LOOKING SOUTH ACROSS BRIDGE NO. 24

LOOKING NORTH ACROSS BRIDGE NO. 24

B-4320 WAYNE / DUPLIN COUNTIES
REPLACE BRIDGE NO. 24 ON NC 403 OVER NORTHEAST CAPE FEAR RIVER

FIGURE 3
PROJECT PHOTOGRAPHS





SCALE IN MILES

1 0 1

STUDIED DETOUR

North Carolina Department of Transportation
Division of Highways
Project Development & Environmental Analysis Branch

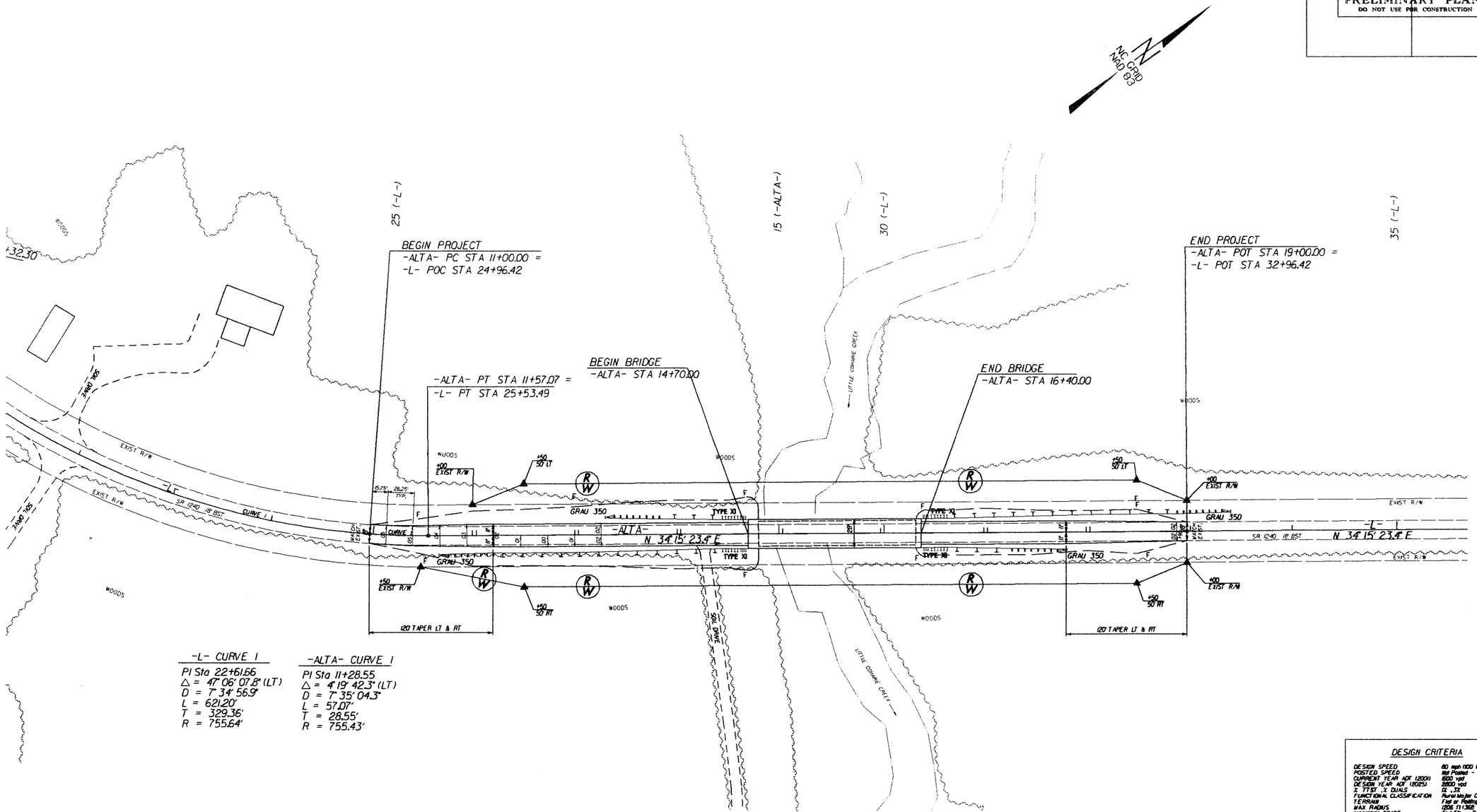
FIGURE 4
STUDIED OFF-SITE DETOUR
BRIDGE NO. 24
ON NC 403
OVER NE CAPE FEAR RIVER
WAYNE COUNTY, NORTH CAROLINA
TIP PROJECT B-4320

PROJECT REFERENCE NO.	SHEET NO.
B-4270	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

(REPLACE IN-PLACE WITH OFF-SITE DETOUR)
ALTERNATE A

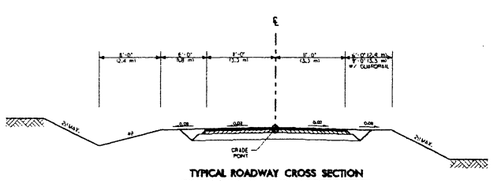


-L- CURVE 1

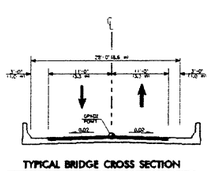
PI Sta 22+61.66
Δ = 41° 06' 07.8" (LT)
D = 7° 34' 56.9"
L = 621.20'
T = 329.36'
R = 755.64'

-ALTA- CURVE 1

PI Sta 11+28.55
Δ = 4° 19' 42.3" (LT)
D = 7° 35' 04.3"
L = 57.07'
T = 28.55'
R = 755.43'



TYPICAL ROADWAY CROSS SECTION



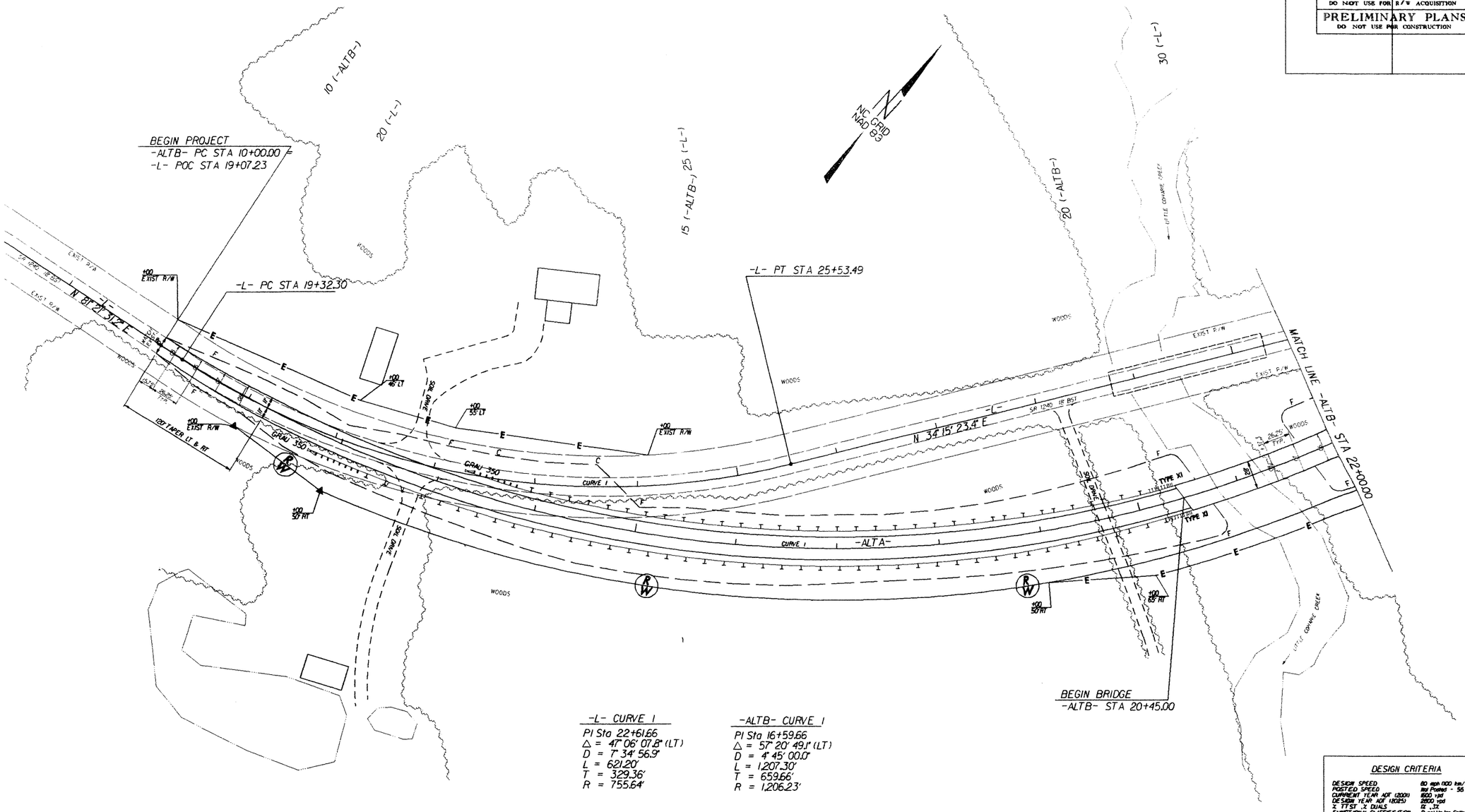
TYPICAL BRIDGE CROSS SECTION

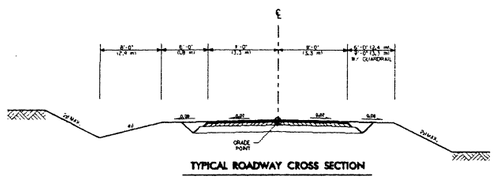
DESIGN CRITERIA

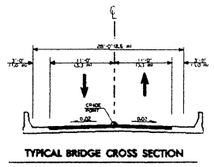
DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2006)	1500 vpd
DESIGN YEAR ADT (2025)	2800 vpd
% TTST & DUALS	01 , 3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat or Rolling
MAX RADIUS	1205.71 (365 m)
MAXIMUM GRADE	Flat 5% - Rolling 6%
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 5







(NEW LOCATION EAST OF EXISTING BRIDGE)
ALTERNATE B

PROJECT REFERENCE NO.	SHEET NO.
B-4270	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L- CURVE 1
PI Sta 22+61.66
△ = 47° 06' 07.8" (LT)
D = 7° 34' 56.9"
L = 621.20'
T = 329.36'
R = 755.64'

-ALTB- CURVE 1
PI Sta 16+59.66
△ = 57° 20' 49.1" (LT)
D = 4° 45' 00.0"
L = 1,207.30'
T = 659.66'
R = 1,206.23'

DESIGN CRITERIA	
DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2001)	1600 vpd
DESIGN YEAR ADT (2025)	2800 vpd
% TTST ,% DUALS	1% ,3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat or Rolling
MAX RADIUS	1206 ft (368 m)
MAXIMUM GRADE	Flat 5% - Rolling 6%
SUPERELEVATION RATE	Se = 0.08

TYPICAL ROADWAY CROSS SECTION

TYPICAL BRIDGE CROSS SECTION

SCALE
50 0 50 100

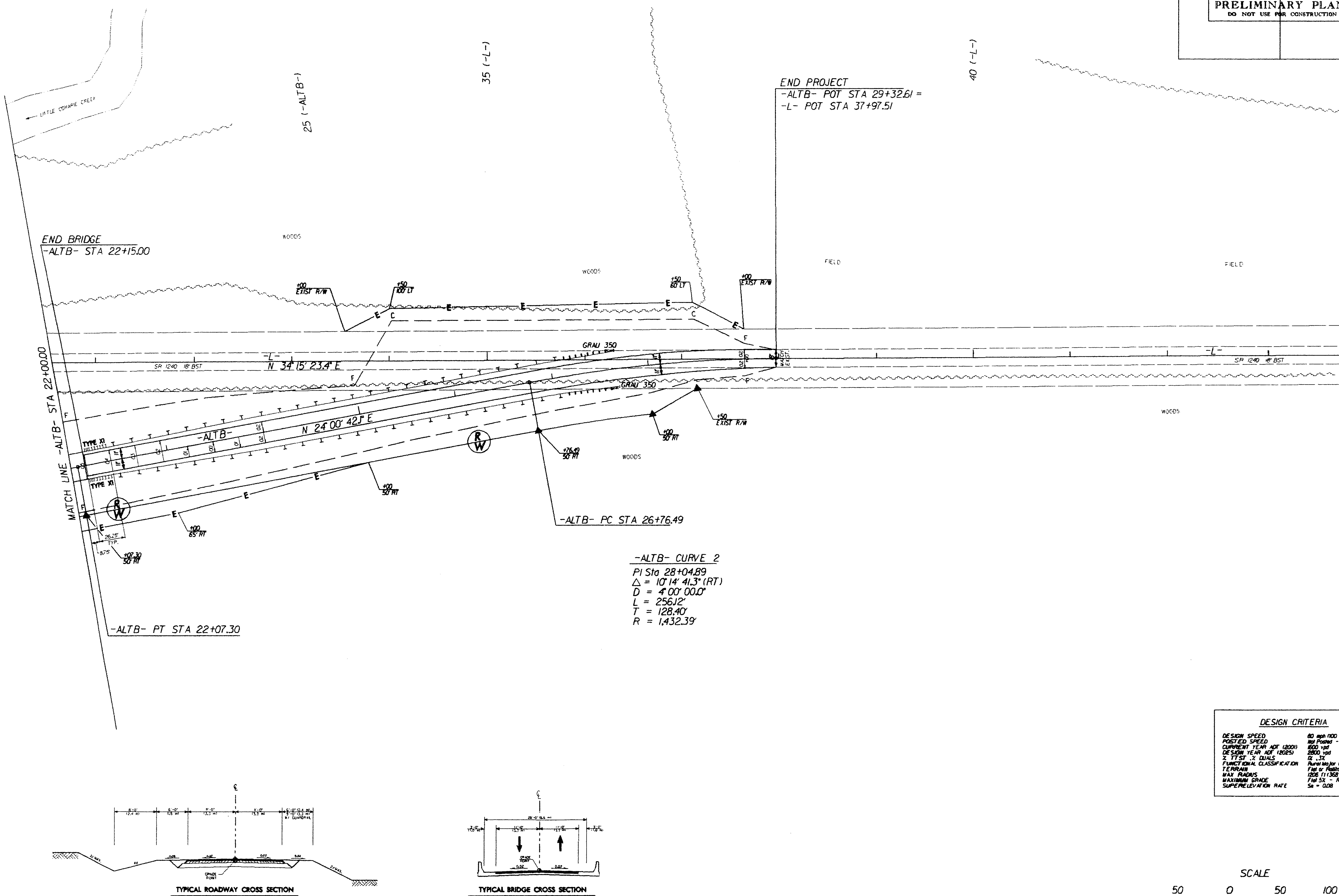
FIGURE 6A

PROJECT REFERENCE NO.	SHEET NO.
B-4270	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

(NEW LOCATION EAST OF THE EXISTING BRIDGE)
ALTERNATE B

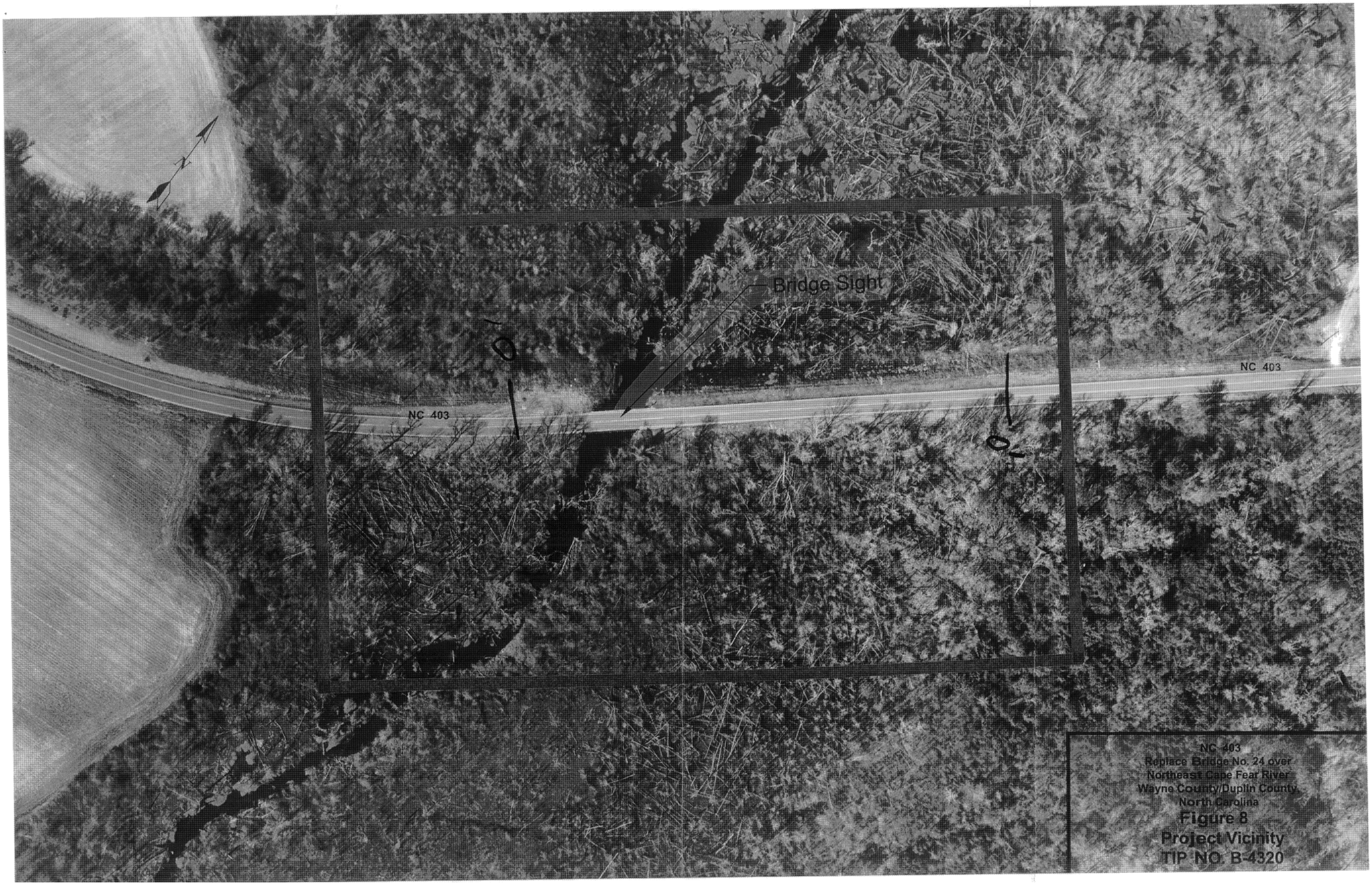


DESIGN CRITERIA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2001)	1600 vpd
DESIGN YEAR ADT (2025)	2800 vpd
% TTST .% DUALS	1% .3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat or Rolling
MAX RADIUS	1206 ft (368 m)
MAXIMUM GRADE	Flat 5% - Rolling 6%
SUPERELEVATION RATE	Se = 0.08

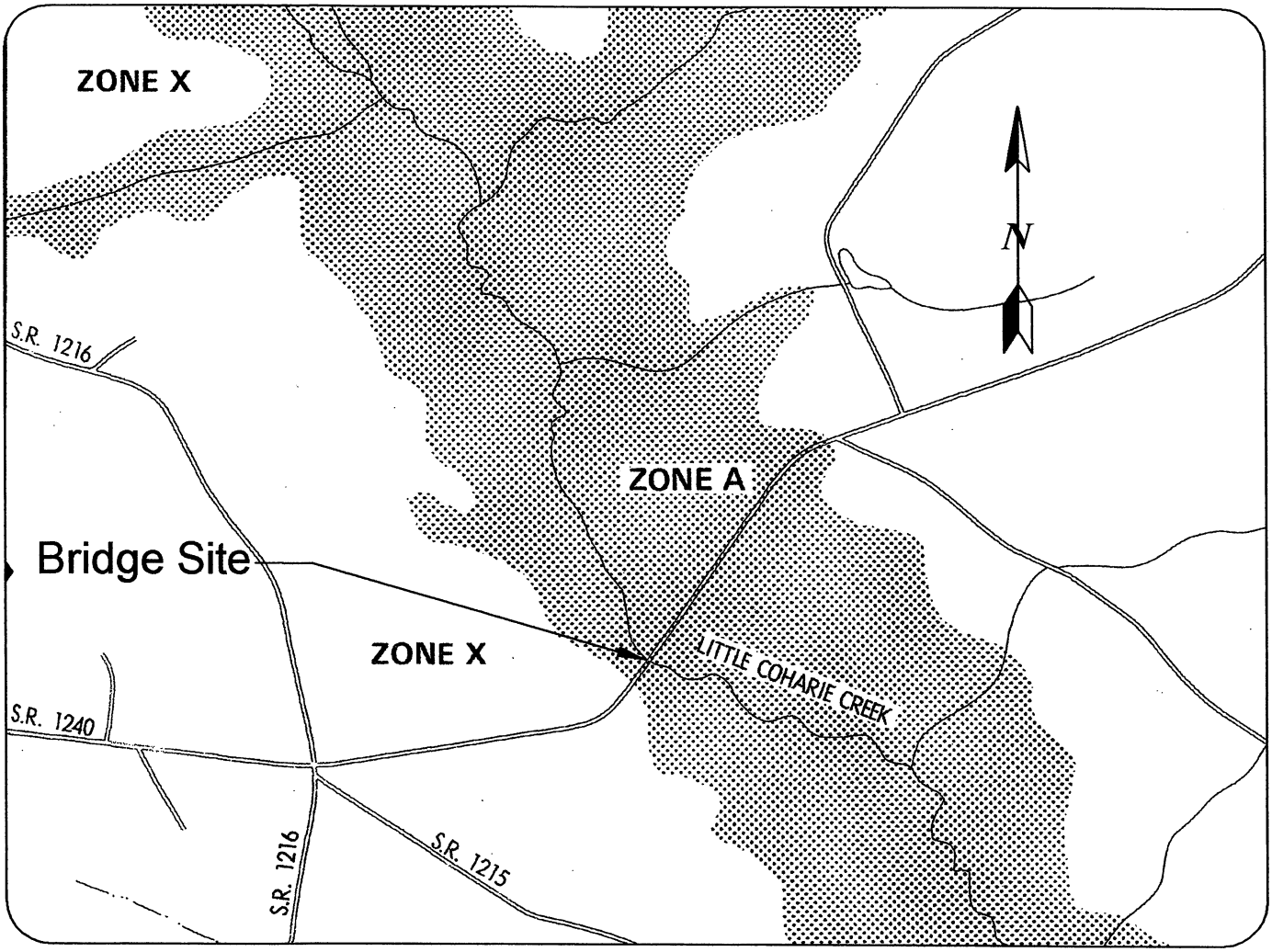
SCALE
50 0 50 100

FIGURE 6B



NC 403
Replace Bridge No. 24 over
Northeast Cape Fear River
Wayne County/Duplin County
North Carolina

Figure 8
Project Vicinity
TIP NO. B-4320



FLOOD INSURANCE RATE MAP

SAMPSON COUNTY,
NORTH CAROLINA
(UNINCORPORATED AREAS)

PANEL 200 OF 350

COMMUNITY–PANEL NUMBER:
370220 0200 B
EFFECTIVE DATE:
JULY 16, 1991

Federal Emergency Management Agency

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SR 1240
Replace Bridge No. 93 over
Little Coharie Creek
Sampson County, North Carolina

TIP NO. B-4270
FEMA 100-YEAR FLOOD PLAIN MAP

Not to Scale

FIGURE 7

APPENDIX

U.S. GOVERNMENT PRINTING OFFICE 1984 451 159/1324

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request: 12/21/01
Name Of Project: NCDOT B-4270 on SR1240	Federal Agency Involved: USDA Natural Resources Cons. Service
Proposed Land Use: Replace existing Bridge No. 93	County And State: Sampson County N.C.
PART II *(To be completed by SCS)*	Date Request Received By SCS: 12/24/01

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated: none	Average Farm Size: 178

Major Crop(s): Corn	Farmable Land In Govt. Jurisdiction: Acres: 534.789 % 86.8	Amount Of Farmland As Defined in FPPA: Acres: 472.09 % 76.6
Name Of Land Evaluation System Used: Sampson LE	Name Of Local Site Assessment System: None	Date Land Evaluation Returned By SCS: 01/29/02

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0.597	3.304		
B. Total Acres To Be Converted Indirectly	0.000	0.000		
C. Total Acres In Site	0.597	3.304		
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	.18	0.34		
B. Total Acres Statewide And Local Important Farmland	0.00	0.62		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	<0.01	<0.01		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	100.00	86.8		
PART V *(To be completed by SCS)* Land Evaluation Criterion				
Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	30.15	17.2		

PART VI *(To be completed by Federal Agency)* Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points			
1. Area In Nonurban Use	15	15	15	
2. Perimeter In Nonurban Use	10	10	10	
3. Percent Of Site Being Farmed	20	5	5	
4. Protection Provided By State And Local Government	20	0	0	Wetland
5. Distance From Urban Builtup Area	15	10	10	
6. Distance To Urban Support Services	15	10	10	
7. Size Of Present Farm Unit Compared To Average	10	9	9	
8. Creation Of Nonfarmable Farmland	10	0	0	
9. Availability Of Farm Support Services	5	5	5	
10. On-Farm Investments	20	15	15	
11. Effects Of Conversion On Farm Support Services	10	0	0	
12. Compatibility With Existing Agricultural Use	10	0	0	
TOTAL SITE ASSESSMENT POINTS	160	79	79	
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland *(From Part V)*	100			
Total Site Assessment *(From Part VI above or a local site assessment)*	160			
TOTAL POINTS *(Total of above two lines)*	260			

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: 200101322 **County:** Sampson

Notification of Jurisdictional Determination

Property Owner:
Mr. William D. Gilmore, P.E., Manager
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, N.C. 27699-1548

Authorized Agent:
Jeff Harbour, PWS
Environmental Services, INC
524 New Hope Road
Raleigh, North Carolina 27610

Size and Location of Property (waterbody, Highway name/number, town, etc.): TIP Project No. B-4270, Bridge No. 93 on SR 1240 over the Little Coharie Creek, Sampson County, North Carolina.

Basis for Determination: Onsite field inspection of selected wetland sites.

Indicate Which of the Following apply:

- There are wetlands on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.
- On **October 9, 2001**, the undersigned inspected the Section 404 jurisdictional line as determined by the NCDOT and/or its representatives for the subject NCDOT project. A select number of wetland sites were inspected for the proposed project and all were found to accurately reflect the limits of Corps jurisdiction. The Corps believes that this jurisdictional delineation can be relied on for planning purposes and impact assessment.
- The wetlands on your lot have been delineated and the limits of the Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no wetlands present on the above described property which are subject to the permit requirements of section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The project is located in one of the 20 Coastal Counties. You should contact the nearest State Office of Coastal Management to determine their requirements.

Placement of dredged or fill material in wetlands on this property without a Department of the Army permit is in most cases a violation of Section 301 of the Clean Water Act (33 USC 1311). A permit is not required for work on the property restricted entirely to existing high ground. If you have any questions regarding the Corps of Engineers regulatory program, please contact Mr. Dave Timpy at 910-251-4634.

Project Manager Signature _____

Date January 2, 2002 **Expiration Date** January 2, 2007

SURVEY PLAT OR FIELD SKETCH OF DESCRIBED PROPERTY AND THE WETLAND DELINEATION FORM MUST BE ATTACHED TO THIS FORM.

Copies

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

September 28, 2001

Regulatory Division

Action ID No. 200101309, 200101321, and 200101322

Mr. William D. Gilmore, P.E., Manager
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, N.C. 27699-1548

OCT - 1

Dear Mr. Gilmore:

Reference your letter June 21, 2001 regarding our scoping comments on the following proposed bridge replacement projects:

1. TIP Project B-3906, Bridge No. 35 on NC 403 over Six Runs Creek, Sampson County, Action ID 200101309.

2. TIP Project B-4247, Bridge No. 44 on NC 403 over Six Runs Creek, Sampson County, Action ID 200101321. This project is in the vicinity of B-3906 listed above.

3. TIP Project B-4270, Bridge No. 93 on SR 1240 over Little Coharie Creek, Sampson County, Action ID 200101322.

Based on the information provided in the referenced letter, it appears that each proposed bridge replacement project may impact jurisdictional wetlands. Department of the Army (DA) permit authorization, pursuant to Section 404 of the Clean Water Act of 1977, as amended, will be required for the discharge of excavated or fill material in waters of the United States or any adjacent wetlands in conjunction with these projects, including disposal of construction debris. Specific permit requirements will depend on design of the projects, extent of fill work within the waters of the United States, including wetlands, construction methods, and other factors.

Although these projects may qualify as a Categorical Exclusion, to qualify for nationwide permit authorization under Nationwide Permit #23, the project planning report should contain sufficient information to document that the proposed activity does not have more than a minimal individual or cumulative impact on the aquatic environment. Our experience has shown that replacing bridges with culverts often results in sufficient adverse impacts to consider the work as having more than minimal impacts on the aquatic environment. Accordingly, the following items need to be addressed in the project planning report:

a. The report should contain the amount of permanent and temporary impacts to waters and wetlands as well as a description of the type of habitat that will be affected.

b. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site detour is the recommended action, justification should be provided. On-site detours, unless constructed on a spanning structure, can cause permanent wetland impacts due to sediment consolidation resulting from the on-site detour itself and associated heavy equipment. Substantial sediment consolidation in wetland systems may in turn cause fragmentation of the wetland and impair the ecological and hydrologic functions of the wetland. Thus, on-site detours constructed in wetlands can result in more than minimal wetland impacts. These types of wetland impacts will be considered as permanent wetland impacts. Please note that an onsite detour constructed on a spanning structure can potentially avoid permanent wetland impacts and should be considered whenever an on-site detour is the recommended action.

For proposed projects and associated on-site detours that cause minimal losses of wetlands, an approved wetland restoration plan will be required prior to issuance of a DA nationwide or general permit. For proposed projects and associated on-site detours that cause significant wetland losses, an individual DA permit and a mitigation proposal for the unavoidable wetland impacts may be required.

In view of our concerns related to onsite detours constructed in wetlands, recent field inspections were conducted at each of the proposed project sites and a cursory determination was made on the potential for sediment consolidation due to an onsite detour. Based on these inspections, potential for sediment consolidation in wetlands exists at several of the proposed projects. Therefore, it is recommended that geotechnical evaluations be conducted at <u>each</u> project site to estimate the magnitude of sediment consolidation that can occur due to an on-site detour and the results be provided in the project planning report. Based on our field inspections, we strongly recommend that geotechnical evaluations be conducted at each of referenced proposed project sites.

c. Project commitments should include the removal of all temporary fills from waters and wetlands and "time-of-year" restrictions on in-stream work if recommended by the NC Wildlife Resources Commission. In addition, if undercutting is necessary for temporary detours, the undercut material should be stockpiled to be used to restore the site.

d. All restored areas should be planted with endemic vegetation including trees, if appropriate.

e. The report should provide an estimate of the linear feet of new impacts to streams resulting from construction of the project.

f. If a bridge is proposed to be replaced with a culvert, NCDOT must demonstrate that the work will not result in more than minimal impacts on the aquatic environment, specifically addressing the passage of aquatic life including anadromous fish. In addition, the report should address the impacts that the culvert would have on recreational navigation.

g. The report should discuss and recommend bridge demolition methods and shall include the impacts of bridge demolition and debris removal in addition to the impacts of constructing the bridge. The report should also incorporate the bridge demolition policy recommendations pursuant to the NCDOT policy entitled "Bridge Demolition and Removal in Waters of the United States" dated September 20, 1999.

h. Based on the recent field investigations of the referenced project sites and the scoping information provided in your letter, the apparent level of wetland impacts and scope of the referenced projects do not warrant coordination pursuant to the integrated NEPA/Section 404-merger agreement.

Should you have any questions please call Mr. David L. Timpy at the Wilmington Field Office at 910-251-4634.

Sincerely,

E. David Franklin
Chief, NCDOT Team

Theresa Ellerby / Bill Goodwin

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

August 9, 2001

Mr. William D. Gilmore, P.E., Manager
NCDOT
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Gilmore:

Thank you for your July 28, 2000, request for information from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of proposed bridge replacements in Sampson County, North Carolina. This report provides scoping information and is provided in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). This report also serves as initial scoping comments to federal and state resource agencies for use in their permitting and/or certification processes for this project.

The North Carolina Department of Transportation (NCDOT) proposes to replace the following bridge structures:

1. B-3906/4267 Bridge Nos. 35 & 44 on NC 403 over Six Runs Creeks; and,

2. B-4270 Bridge No. 93 on SR 1240 over Little Coharie Creek.

The following recommendations are provided to assist you in your planning process and to facilitate a thorough and timely review of the project.

Generally, the Service recommends that wetland impacts be avoided and minimized to the maximum extent practical as outlined in Section 404 (b)(1) of the Clean Water Act Amendments of 1977. In regard to avoidance and minimization of impacts, we recommend that proposed highway projects be aligned along or adjacent to existing roadways, utility corridors, or previously developed areas in order to minimize habitat fragmentation and encroachment. Areas exhibiting high biodiversity or ecological value important to the watershed and region should be avoided. Crossings of streams and associated wetland systems should use existing crossings and/or occur on a structure wherever feasible. Where bridging is not feasible, culvert structures that maintain natural water flows and hydraulic regimes without scouring, or impeding fish and wildlife passage, should be employed. Highway shoulder and

median widths should be reduced through wetland areas. Roadway embankments and fill areas should be stabilized by using appropriate erosion control devices and techniques. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons.

The National Wetlands Inventory (NWI) maps of the Bonnetsville and Clinton North 7.5 Minute Quadrangles show wetland resources in the specific work areas. However, while the NWI maps are useful for providing an overview of a given area, they should not be relied upon in lieu of a detailed wetland delineation by trained personnel using an acceptable wetland classification methodology. Therefore, in addition to the above guidance, we recommend that the environmental documentation for this project include the following in sufficient detail to facilitate a thorough review of the action.

1. The extent and acreage of waters of the U.S., including wetlands, that are to be impacted by filling, dredging, clearing, ditching, or draining. Acres of wetland impact should be differentiated by habitat type based on the wetland classification scheme of the National Wetlands Inventory. Wetland boundaries should be determined by using the 1987 Corps of Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers (Corps).

2. If unavoidable wetland impacts are proposed, we recommend that every effort be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity, preferably via conservation easement, should be explored at the outset.

The document presents a number of scenarios for replacing each bridge, ranging from in-place to relocation, with on-site and off-site detours. The Service recommends that each bridge be replaced on the existing alignment with an off-site detour.

The enclosed list identifies the federally-listed endangered and threatened species, and Federal Species of Concern (FSC) that are known to occur in Sampson County. The Service recommends that habitat requirements for the listed species be compared with the available habitats at the respective project sites. If suitable habitat is present within the action area of the project, biological surveys for the listed species should be performed. Environmental documentation that includes survey methodologies, results, and NCDOT's recommendations based on those results, should be provided to this office for review and comment.

FSC's are those plant and animal species for which the Service remains concerned, but further biological research and field study are needed to resolve the conservation status of these taxa. Although FSC's receive no statutory protection under the ESA, we would encourage the NCDOT to be alert to their potential presence, and to make every reasonable effort to conserve them if found. The North Carolina Natural Heritage Program should be contacted for information on species under state protection.

The Service appreciates the opportunity to comment on this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding these comments, please contact Tom McCartney at 919-856-4520, Ext. 32.

Sincerely,

Garland B. Pardue

Dr. Garland B. Pardue
Ecological Services Supervisor

Enclosure

cc: COE, Wilmington, NC (David Timpy)
NCDWQ, Raleigh, NC (John Hennessey)
NCDNR, Creedmoor, NC (David Cox)

FWS/R4:TMcCartney:TM:08/08/01:919/856-4520 extension 32:\2bdgssam.psn

COMMON NAME	SCIENTIFIC NAME	STATUS
Mountain catchfly	*Silene ovata*	FSC**
White irisette	*Sisyrinchium dichotomum*	Endangered
Nonvascular Plants		
Rock gnome lichen	*Gymnoderma lineare*	Endangered
SAMPSON COUNTY		
Vertebrates		
Bachman's sparrow	*Aimophila aestivalis*	FSC
American alligator	*Alligator mississippiensis*	T(S/A)
Rafinesque's big-eared bat	*Corynorhinus (=Plecotus) rafinesquii*	FSC**
Southern hognose snake	*Heterodon simus*	FSC*
Mimic glass lizard	*Ophisaurus mimicus*	FSC*
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Carolina gopher frog	*Rana capito capito*	FSC
Invertebrates		
American sand burrowing mayfly	*Dolania americana*	FSC
Vascular Plants		
Venus flytrap	*Dionea muscipula*	FSC
Butternut	*Juglans cinerea*	FSC
White wicky	*Kalmia cuneata*	FSC
Pondberry	*Lindera melissifolia*	Endangered
Pondspice	*Litsea aestivalis*	FSC
Carolina bogmint	*Macbridea caroliniana*	FSC
Spring-flowering goldenrod	*Solidago verna*	FSC
Nonvascular Plants		
A liverwort	*Cylindrocolea andersonii*	FSC*
SCOTLAND COUNTY		
Vertebrates		
Bachman's sparrow	*Aimophila aestivalis*	FSC
American alligator	*Alligator mississippiensis*	T(S/A)
Southern hognose snake	*Heterodon simus*	FSC
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Northern pine snake	*Pituophis melanoleucus melanoleucus*	FSC**
Carolina gopher frog	*Rana capito capito*	FSC
Vascular Plants		
Sandhills milkvetch	*Astragalus michauxii*	FSC
Resinous boneset	*Eupatorium resinosum*	FSC
White wicky	*Kalmia cuneata*	FSC
Sandhills bog lily	*Lilium iridollae*	FSC*
Bog spicebush	*Lindera subcoriacea*	FSC

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516

July 11, 2001

William D. Gilmore, P.E., Manager
Project Development and Environmental
Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Attention: Ms. Theresa Ellerby, Project Development Engineer

Dear Mr. Gilmore,

This responds to your June 21, 2001, request for the National Marine Fisheries Service's (NMFS) input on the proposed replacement of Bridges Nos. 35 (B-3906), 93 (B-4270), and 44 (B-4267), by the North Carolina Department of Transportation (NCDOT) in Sampson County, North Carolina. Bridges Nos 35 and 93 cross Six Run Creek and No 44 crosses Little Coharie Creek, tributaries of the Black River a tributary of the Cape Fear River. The waters and wooded wetlands associated with the Cape Fear River system provide habitat for anadromous fishery resources for which the NMFS is responsible. The NMFS recognizes the NCDOT's efforts to minimize losses of wetland and avoid impediments to upstream migration of anadromous fishes by replacing bridges with bridges. We also note the commitment to a seasonal restriction on work in waters that provide anadromous fish spawning and nursery habitat. Generally the spawning and nursery season for anadromous fishes in North Carolina's coastal river is between February 1 and March 31. For specific information on anadromous fish spawning and nursery sites within the project areas and appropriate seasonal restrictions, we recommend coordination with the North Carolina Division of Marine Fisheries and/or the Wildlife Resources Commission.

If detours are required during bridge construction, off-site detours are preferable because they avoids and minimizes impacts to wetlands. If onsite detours are proposed, we recommend the use of a temporary bridge rather than temporary fill in wetlands. Our recent experience with temporary fills for construction access, indicates that subsidence of wetlands is likely, making onsite restoration of impacted wetlands difficult. If unavoidable losses of wetland are identified in the Categorical Exclusion for these projects, appropriate mitigation should be considered as a part of the project plans. In addition, demolition of the existing bridges, should follow the Bridge Demolition Guidelines developed by the NCDOT cooperatively with the Corps of Engineers and the State and Federal resource agencies.

Finally, these comments do not satisfy federal action agency consultation responsibilities under Section 7 of the Endangered Species Act of 1973, as amended. If any activity(ies) "may effect" listed

species and habitats under NMFS purview, consultation should be initiated with the NMFS, Protected Resources Division at 9721 Executive Center Drive North, St. Petersburg, FL 33702-2432.

Please direct related comments or questions to the attention of the Beaufort Facility which can be reached at 101 Pivers Island Rd, Beaufort, North Carolina 28516, or at (252) 728-5090.

Sincerely,

Ron Sechler

Ron Sechler
Fishery Biologist
Beaufort Facility

cc: FWS, Raleigh, NC
EPA, ATLA, GA
NCDMF
NCWRC
F/SER4
F/SER45

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

TO: Theresa Ellerby
Project Development Engineer, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: October 8, 2001

SUBJECT: NCDOT Bridge Replacements in Sampson County of North Carolina. TIP Nos. B-3906/B-4267, and B-4270.

Biologists with the N. C. Wildlife Resources Commission (NCWRC) have reviewed the information provided and have the following preliminary comments on the subject project. Our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

On bridge replacement projects of this scope our standard recommendations are as follows:

1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.

2. Bridge deck drains should not discharge directly into the stream.

3. Live concrete should not be allowed to contact the water in or entering into the stream.

4. If possible, bridge supports (bents) should not be placed in the stream.

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 733-3633 ext. 281 • **Fax:** (919) 715-7643

saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the steam underneath the bridge.

7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.

8. In streams that contain threatened or endangered species, NCDOT biologist Mr. Tim Savidge should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.

9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.

10. In areas with significant fisheries for sunfish, seasonal exclusions may also be recommended.

11. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.

12. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.

13. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

14. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.

15. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

16. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used:

1. The culvert must be designed to allow for fish passage. Generally, this means that the culvert or pipe invert is buried at least 1 foot below the natural stream bed. If multiple cells are required the second and/or third cells should be placed so that their bottoms are at stream bankful stage (similar to Lyonsfield design). This could be

accomplished by constructing a low sill on the upstream end of the other cells that will divert low flows to another cell. This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate fish movements. If culverts are long, notched baffles should be placed in reinforced concrete box culverts at 15 foot intervals to allow for the collection of sediments in the culvert, to reduce flow velocities, and to provide resting places for fish and other aquatic organisms moving through the structure.

2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.

3. Culverts or pipes should be situated so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance.

4. Riprap should not be placed on the stream bed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-3906/4267 – Sampson County – Bridge No. 35 and 44 over Six Runs Creek. The existing bridge is surrounded by high quality wetlands. NCDOT should explore options such as increased bridging or the addition of cross pipes to restore sheet flow in the adjacent wetlands. Standard comments apply. We are not aware of any threatened of endangered species in the project vicinity.

2. B-4270 – Sampson County – Bridge No. 93 over Little Coharie Creek. The existing bridge is surrounded by high quality wetlands. NCDOT should explore options such as increased bridging or the addition of cross pipes to restore sheet flow in the adjacent wetlands. Standard comments apply. We are not aware of any threatened of endangered species in the project vicinity.

We request that NCDOT routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. The NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks, reducing habitat fragmentation and vehicle related mortality at highway crossings.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (919) 528-9886. Thank you for the opportunity to review and comment on these projects.

Theresa Ellerby

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

August 6, 2001

MEMORANDUM

To: William D. Gilmore, P.E., Manager
NCDOT, Project Development & Environmental Analysis Branch

From: David Brook for David Brook
Deputy State Historic Preservation Officer

Re: Replace Bridge No. 24 on NC 403 over northeast Cape Fear River, BRSTP-403(3), 8.1331881, B-4270, Wayne County, ER 01-10076

Thank you for your memorandum of June 21, 2001, concerning the above project.

We have conducted a review of the project and are aware of no properties of architectural, historic, or archaeological significance, which would be affected by the project. Therefore, we have no comment on the project as currently proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, Environmental Review Coordinator, at 919/733-4763.

DB:kgc

cc: Mary Pope Furr, NCDOT
T. Padgett, NCDOT