STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 11, 2004

US Army Corps of Engineers
Regulatory Branch
6508 Falls of the Neuse Road/ Suite 120
Raleigh, NC 27615

ATTENTION: Mr. David Timpy
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 Permit Application** for the replacement of Bridge Nos. 35 & 44 over Six Runs Creek on NC 403 (Faison Highway), Sampson County. Federal Aid Project No. BRSTP-403(2), State Project No. 8.1281401, Division 3, TIP No. B-3906, WBS #33341.1.1.

Please find enclosed three copies of the project planning report, permit drawings, ½ size plans and EEP confirmation letter for the above referenced project. The document specifies that Alternative A has been selected. The document states that Bridge Nos. 35 and 44, built in 1939 over Six Runs Creek, will be replaced in-place with new bridges using top-down construction. The new structures will be approximately 90 ft for Bridge No. 35 and 105 ft for Bridge No. 44 as shown in the permit drawings. The bridge length for Bridge No. 35 was originally estimated to be 105 ft in the Categorical Exclusion document. The Hydraulics Department, after conducting a field survey, determined that the structure would adequately minimize impacts with a length of 90 ft.

The structures will include two 12 ft travel lanes with 4 ft of lateral clearance on each side of the bridge. The roadway approaches will provide two 12 ft travel lanes with 8 ft shoulders, 4 ft of the shoulders being paved. The roadway approach and bridge grades will approximately match existing bridge and roadway elevations. During construction, traffic will be maintained by an off-site detour.

IMPACTS TO WATERS OF THE UNITED STATES

GENERAL DESCRIPTION: This project is located in the Cape Fear River Basin within USGS hydrologic unit 03030006 (sub-basin 030619). The proposed bridge

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

replacements are located over Six Runs Creek, which has been assigned a Division of Water Quality best usage classification of "C Sw".

PERMANENT IMPACTS: The U.S. Army Corps of Engineers verified the wetlands for both bridges on January 2, 2002. Riverine wetlands will be permanently impacted and consist of 0.11 acres of fill and 0.29 acres of mechanized clearing for a total of 0.40 acres. There will be no permanent impacts to streams.

TEMPORARY IMPACTS: There will be no temporary impacts to streams or wetlands due to the top-down construction methods being implemented.

BRIDGE DEMOLITION: Bridge No. 35 consists of a continuous reinforced concrete deck on steel I-beams. The bridge has two spans, totaling 53 feet in length. All bents are timber caps and piles. Bridge No. 44 consists of a continuous reinforced concrete deck on steel I-beams. The bridge has two spans, totaling 52 feet in length. The end bents are timber caps and piles and the interior bents are steel caps on H-piles. There is also a crutch at bent 1. It is anticipated that the bridge railings and substructure will be removed without dropping components into Waters of the United States. All guidelines for bridge demolition and removal will be followed in addition to Best Management Practices for the Protection of Surface Waters and BMP's for Bridge Demolition and Removal.

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

UTILITIES: No impacts to waters of the U.S. from utilities are anticipated as a result of demolition or construction.

MITIGATION

The Corps of Engineers has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy that embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the Waters of the United States. Mitigation of wetland and surface water impacts has been defined by the CEQ to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Executive Order 11990 (Protection of Wetlands) and Department of Transportation Order 5660.1A (Preservation of the Nations Wetlands), emphasize protection of the functions and values provided by wetlands. These directives require that new construction in wetlands be avoided as much as possible and that all practicable measures are taken to minimize or mitigate impacts to wetlands.

AVOIDANCE AND MINIMIZATION: The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Specific measures taken to minimize impacts are as follows:

- Replacing Bridge Nos. 35 & 44 using top-down construction methods will minimize the impacts to Six Runs Creek and surrounding wetlands.
- No bents will be placed in the stream.
- Bridge lengths have been increased from 53 ft to 90 ft for Bridge No. 35 and from 52 ft to 105 ft for Bridge No. 44.
- Increasing the side slopes to 2:1 and 3:1 will further minimize wetland impacts and are required to stay within the existing right-of-way.

COMPENSATORY MITIGATION: Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District" (MOA), it is understood that the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP), will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the EEP transition period which ends on June 30, 2005.

Since the subject project is listed in Exhibit 1, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP. The offsetting mitigation will derive from an inventory of assets already in existence within the same 8-digit cataloguing unit. The Department has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The remaining, unavoidable impacts to 0.4 acres of jurisdictional riverine wetlands will be offset by compensatory mitigation provided by the EEP program. A letter confirming EEP's agreement to provide compensatory mitigation for this project is attached to this application.

FEDERALLY-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 2003 the Fish and Wildlife Service (FWS) lists three federally protected species for Sampson County: American alligator, Red-cockaded woodpecker, and Pondberry (Table 1).

Field surveys for these species were conducted in 2001. The American alligator is listed as Threatened due to Similarity of Appearance [T(S/A)]. T(S/A) species are not subject to Section 7 consultation and a biological conclusion is not required.

Biological conclusions of "No effect" were found for both the Red-cockaded woodpecker and Pondberry due to lack of suitable habitat within the project study area.

Table 1- Federally Protected Species of Sampson County

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

REGULATORY APPROVALS

This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit but propose to proceed under a Nationwide 23 in accordance with 67 FR 2020, 2082, Jan 15, 2002. We anticipate a 401 General Certification number 3361 will apply to this project and will adhere to the general conditions of WQC 3361. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

If you have any questions or need additional information, please contact Jon Scott at (919) 715-1340.

Sincerely,

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

w/attachment

Mr. John Hennessy, Division of Water Quality (2 Copies)
Mr. Travis Wilson, NCWRC
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. H. Allen Pope, P.E., Division Engineer
Mr. Mason Herndon, Division Environmental Officer
Mr. Ron Hancock, State Bridge Construction Engineer

w/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington PDEA Project Planning Engineer
Ms. Theresa Ellerby, PDEA Engineer
Ms. Beth Harmon, EEP

NCDENR
North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

October 1, 2004

Mr. Gregory J. Thorpe, Ph.D., Manager,
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Dr. Thorpe:

Subject: Project: Bridges 35 and 44 over Six Runs Creek, NC 403
TIP Number: B-3906, Sampson County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide compensation for the subject project. Based on the information supplied by you in a letter dated September 15, 2004, the impacts are located in CU 3030006 of the Cape Fear River Basin in the Southern Inner Coastal Plain Eco-Region, and are as follows:

Riverine Wetland Impacts: 0.40 acre

As stated in your letter, the subject project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The ecosystem enhancement for the subject project will be provided in accordance with Section IX, EEP Transition Period, of this agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
Transition Manager

cc: Dave Timpy, USACE-Wilmington
John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-3906

NC DENR Ecosystem Enhancement Program
1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219 \ Internet: h2o.enr.state.nc.us/wrp/

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Ecosystem Enhancement
Michael F. Easley, Governor
William G. Ross Jr., Secretary

October 1, 2004

Mr. Dave Timpy
U. S. Army Corps of Engineers
Wilmington Regulatory Field Office
Post Office Box 1890
Wilmington, North Carolina 28403

Dear Mr. Timpy:

Project:	Bridge Replacement over Six Runs Creek, NC 403
TIP#:	B-3906
County:	Sampson County
	Southern Inner Coastal Plain Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide 4.0 acres of riverine wetland preservation as compensatory mitigation at a 10:1 ratio for the 0.4-acre of unavoidable riverine wetland impacts of the subject project. The preservation site that will be debited for this mitigation is:

Great Cohaire Site (Sampson County) 4.0 acres

The subject TIP project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The compensatory mitigation for the project will be provided in accordance with Section IX, EEP Transition Period, of the Agreement.

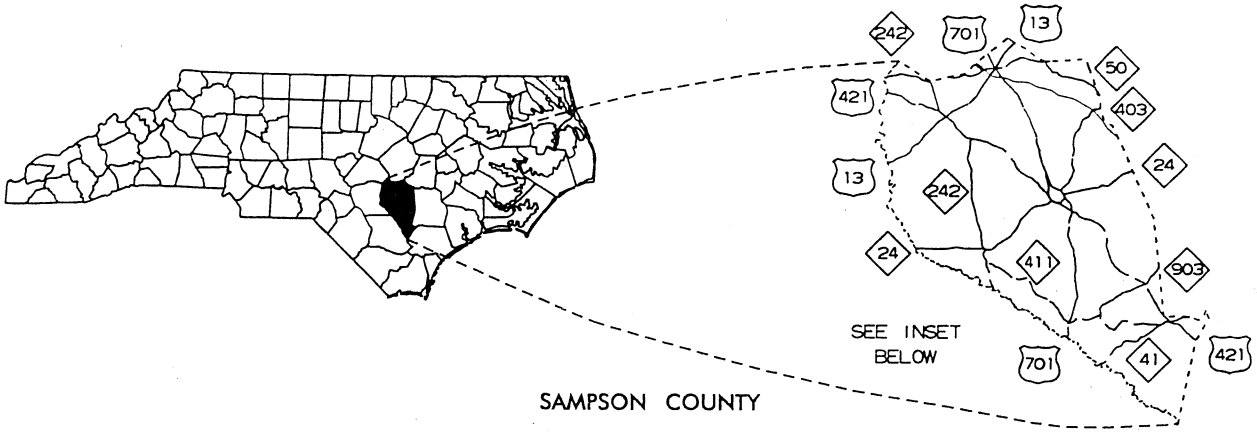
If you have any questions or need additional information, please contact Ms. Beth Harmon at (919) 715-1929.

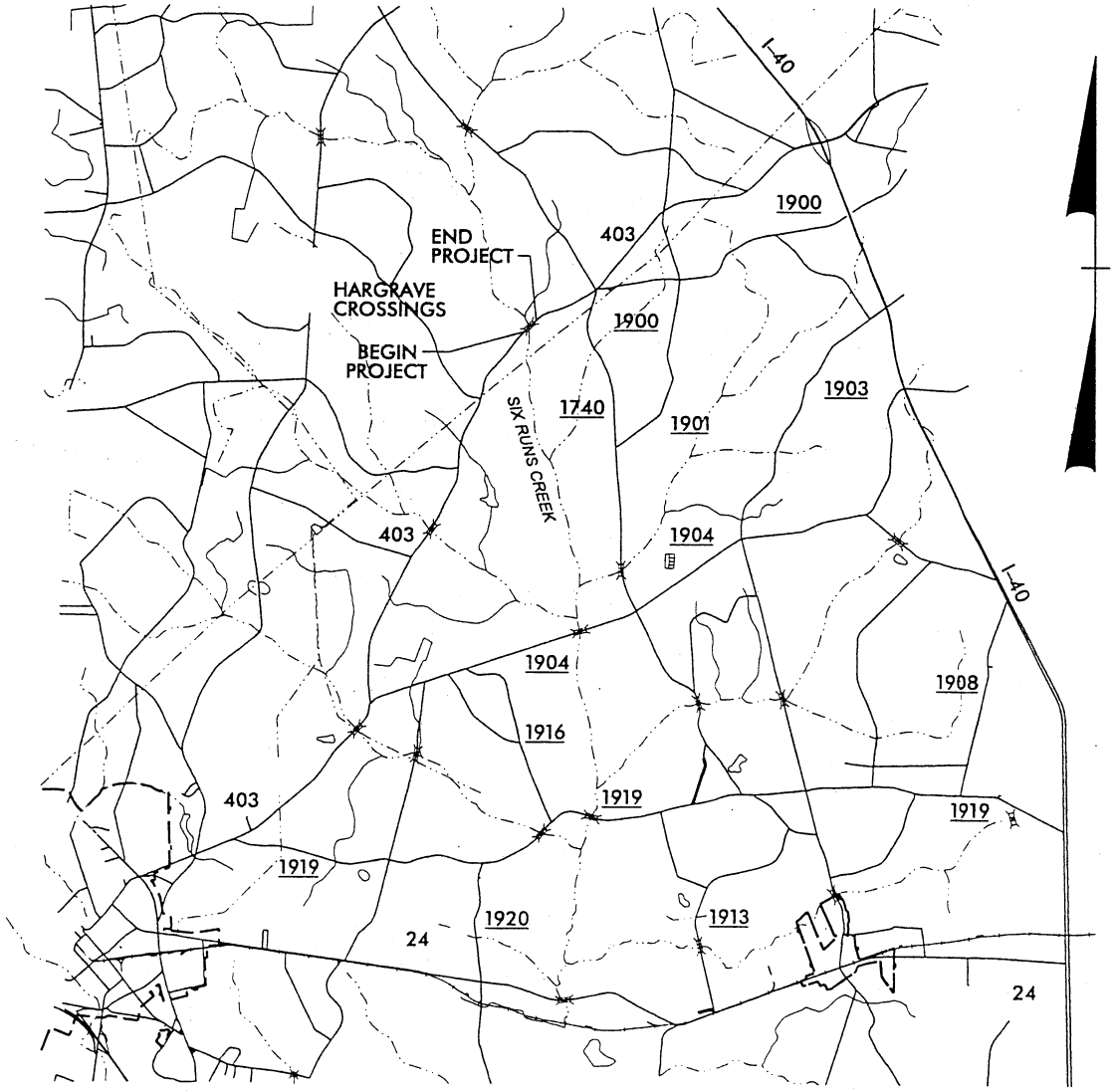
Sincerely,

William D. Gilmore, P.E.
Transition Manager

cc: Phil Harris, Office of Natural Environment, NCDOT
John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-3906

1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219
An Equal Opportunity \ Affirmative Action Employer





SCALE

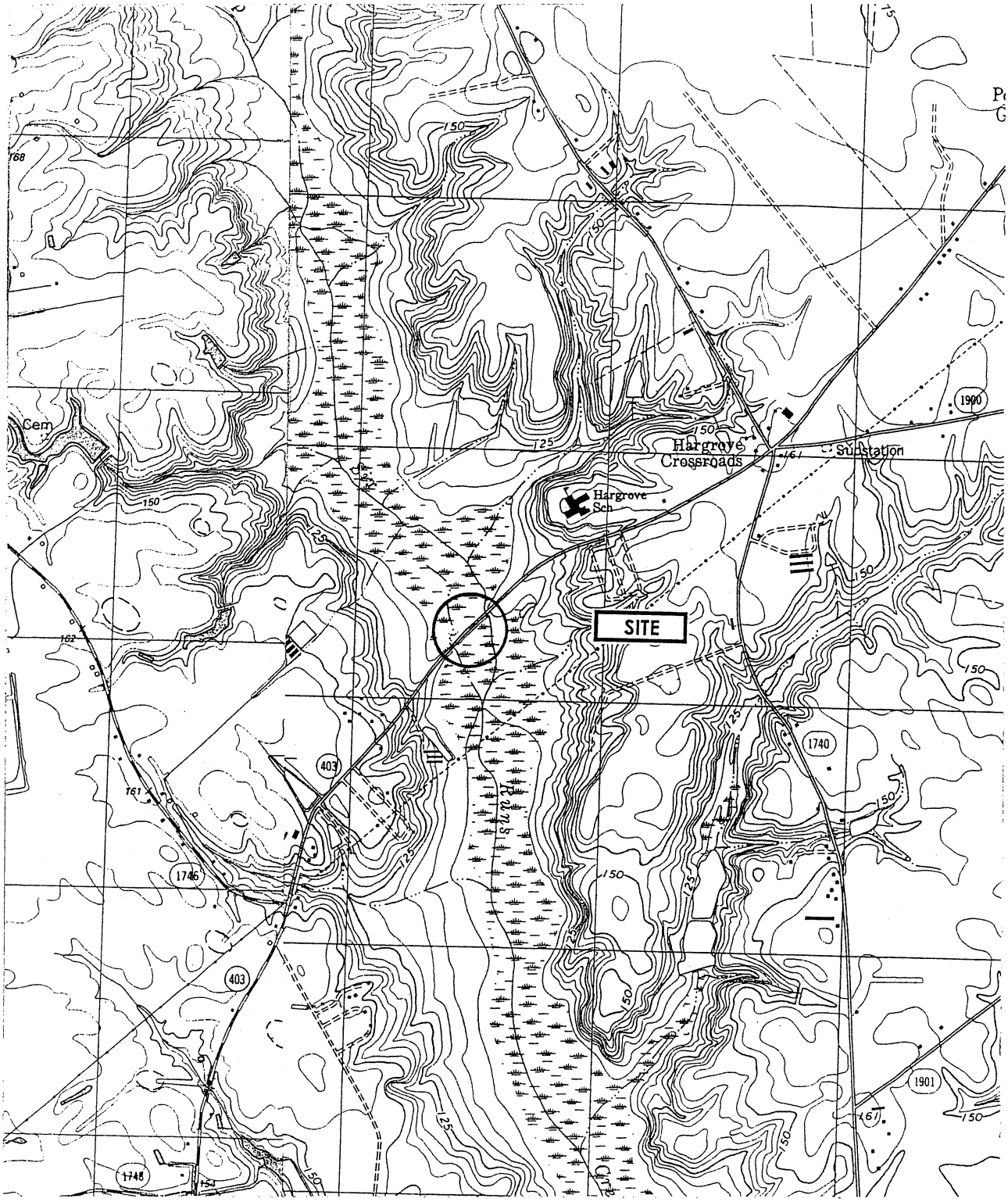
1.0 0 2 Miles

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 33341.1.1 (B-3906)
BRIDGES NO. 35 & NO. 44
ON NC 403 (FAISON HIGHWAY)
OVER SIX RUNS CREEK

SHEET 1 OF 12 5/26/04



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N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 33341.1.1 (B-3906)
BRIDGES NO. 35 & NO. 44
ON NC 403 (FAISON HIGHWAY)
OVER SIX RUNS CREEK

SHEET 2 OF 12 5/26/04

LEGEND

---WLB---- WETLAND BOUNDARY

WLB / 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: 33341.1.1 (B-3906)
BRIDGES NO. 35 & NO. 44
ON NC 403 (FAISON HIGHWAY)
OVER SIX RUNS CREEK

SHEET 3 OF 12

5/26/04

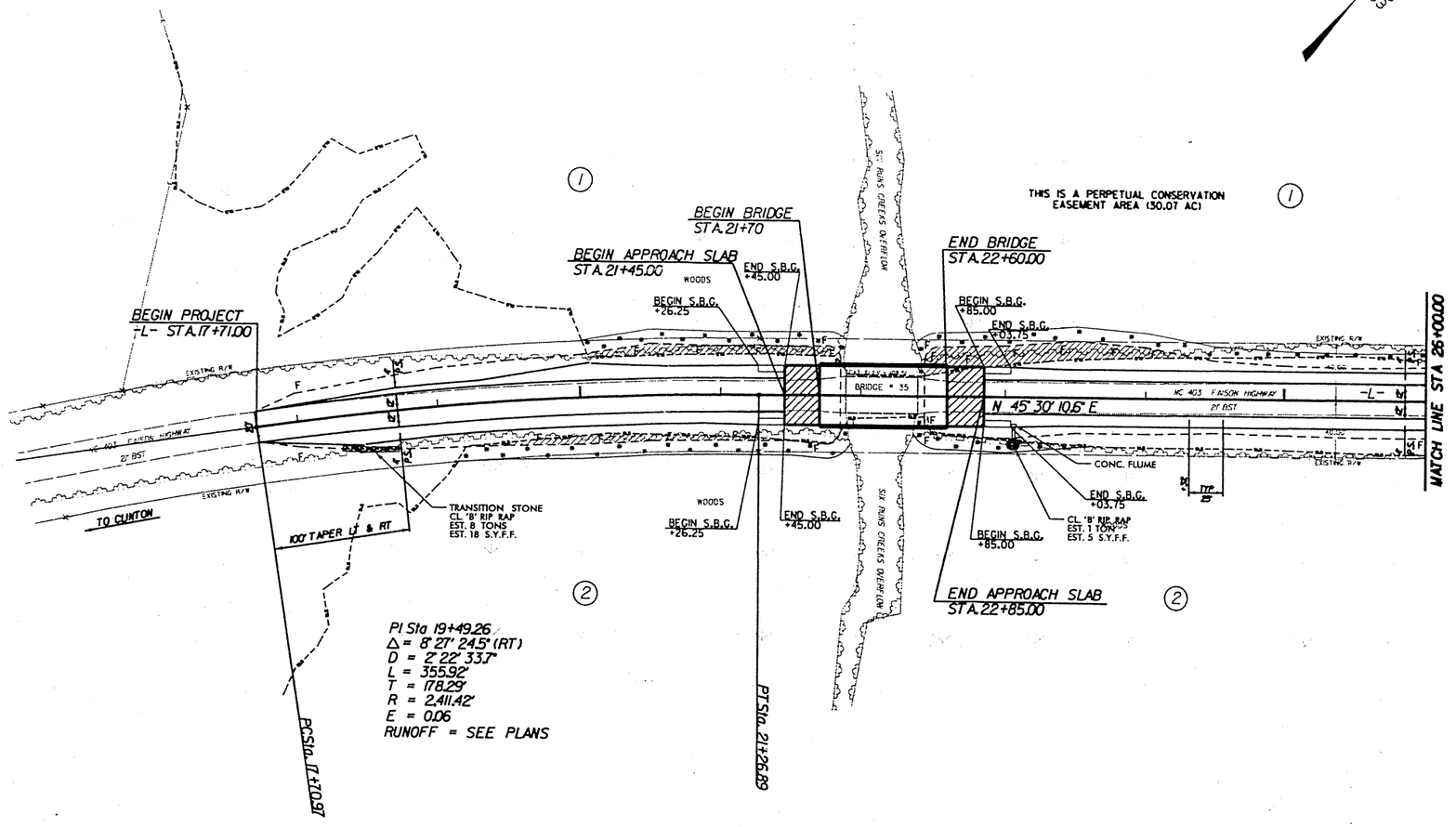
12/26/98

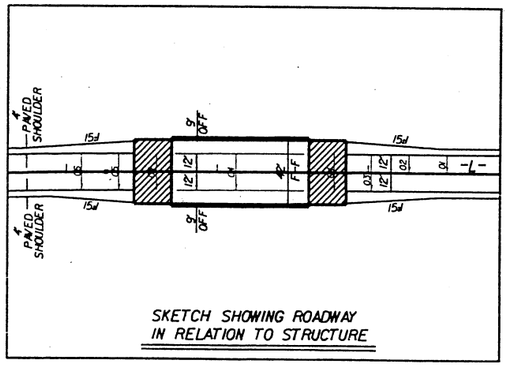
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Sheet 4 of 12





SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "B3906-3"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 486,359.231(ft) EASTING: 2,225,620.707(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.99987687O
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"B3906-3" TO -L- STATION 17+70.97 IS
N 37° 10' 03" E 1173.99'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

▨ DENOTES APPROACH SLAB

▨ F DENOTES FILL IN WETLANDS

⁘ DENOTES MECHANIZED CLEARING

FOR -L- PROFILE SEE SHEET NO.6

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

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

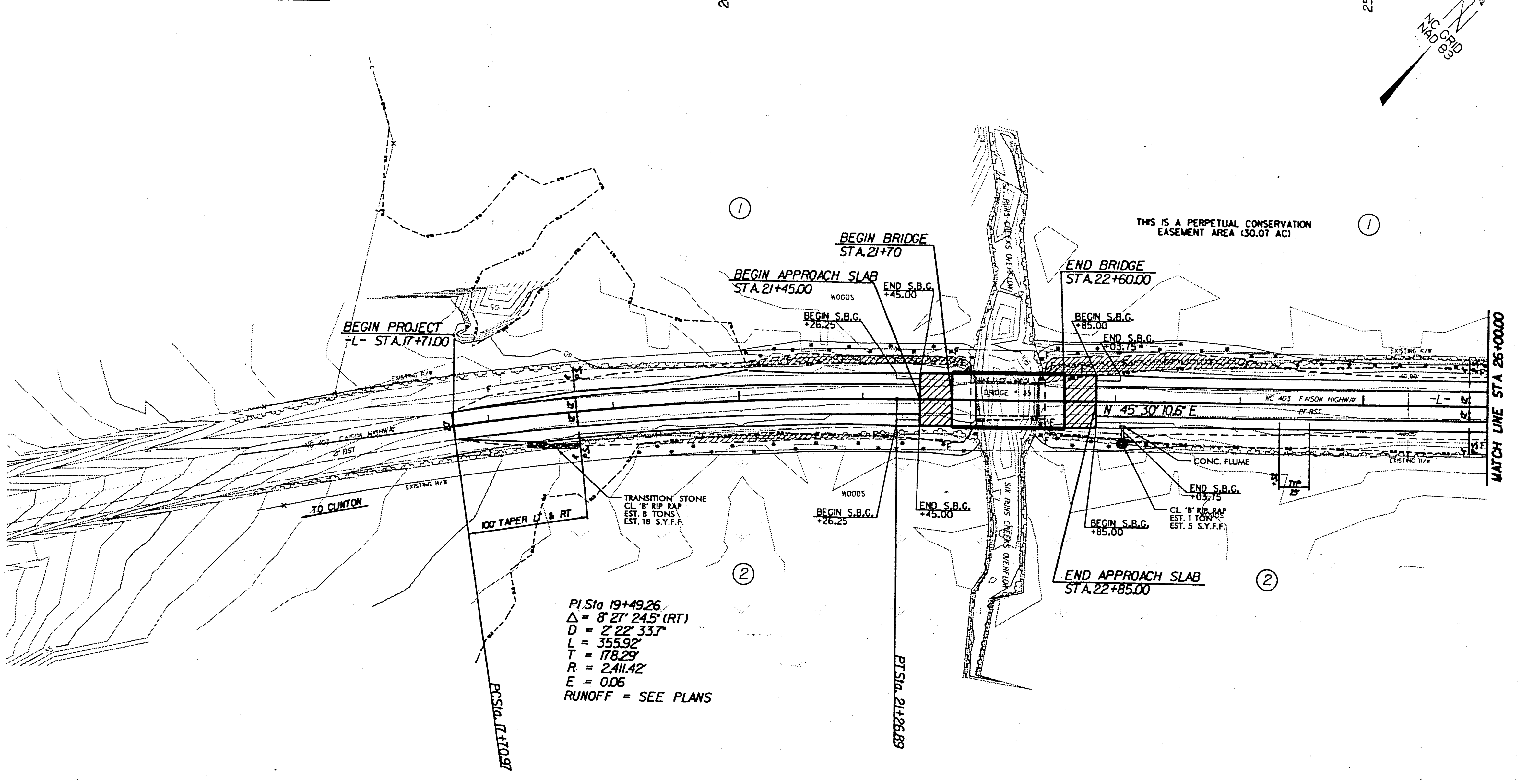
10/26/98

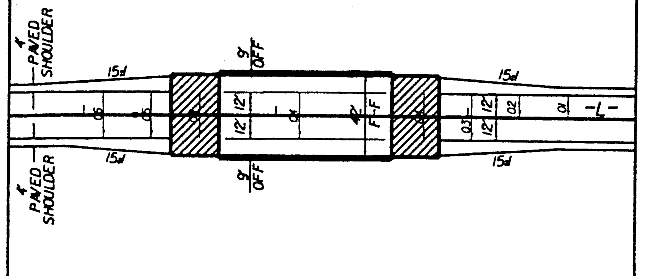
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Sheet 5 of 12





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10/26/98

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Sheet 6 of 12

NC GRID
NAD 83

30

(1) THIS IS A PERPETUAL CONSERVATION EASEMENT AREA (30.07 AC)

(3)

BEGIN BRIDGE
STA. 28+00.00

END BRIDGE
STA. 29+05.00

END PROJECT
-L- PT STA. 33+01.86

SIX RUNS CREEK

WOODS

CL 'B' RIP RAP
EST. 1 TON
EST. 5 S.Y.F.F.

END S.B.G.
+75.00

BEGIN S.B.G.
+56.25

CONC. FLUME

BEGIN S.B.G.
+30.00

END S.B.G.
+48.75

MATCH LINE STA 26+00.00

N 45°30'10.6" E

BRIDGE # 44
SEAT ELEV.= 109.00

-L-

NC 403 FAISON HIGHWAY 21 EST

TO GOLDSBORO

36" SSBW

100' TAPER LT & RT

(2)

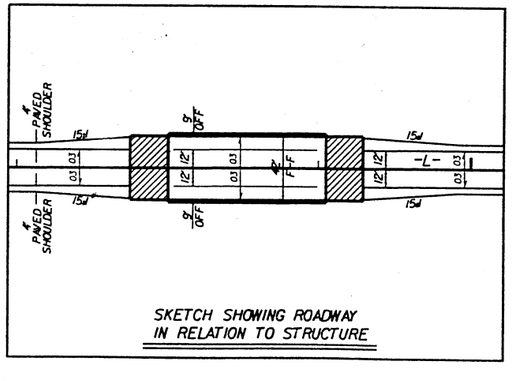
BEGIN APPROACH SLAB
STA. 27+75.00

END APPROACH SLAB
STA. 29+30.00

PC Sta. 29+63.56

(4)

PI Sta 31+32.52
Δ = 01° 35' 03.6" (RT)
D = 00° 28' 03.9"
L = 338.70'
T = 169.36'
R = 12,248.94'
E = 0.06



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DENOTES APPROACH SLAB

DENOTES FILL IN WETLANDS

DENOTES MECHANIZED CLEARING

FOR -L- PROFILE SEE SHEET NO.6

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

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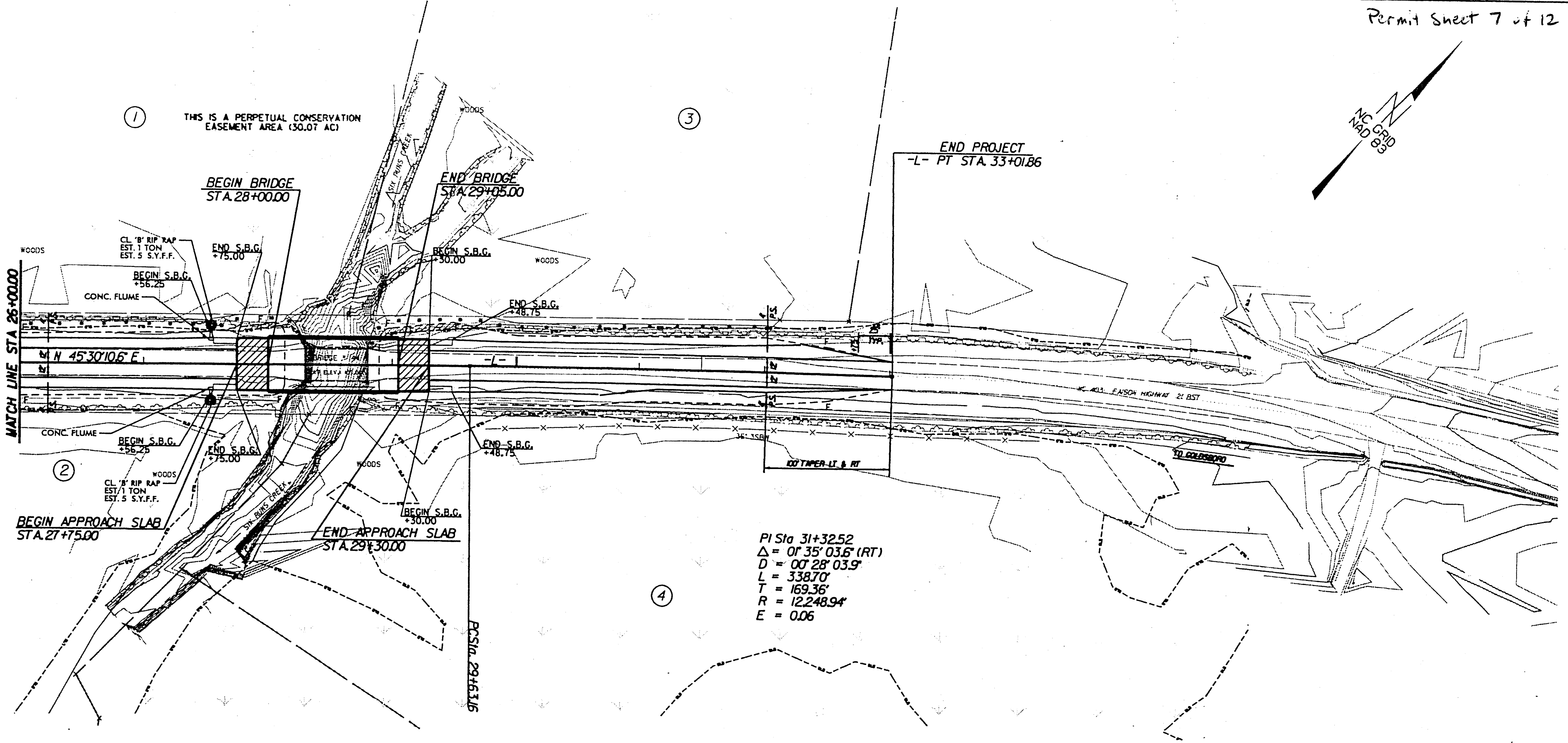
12/26/98

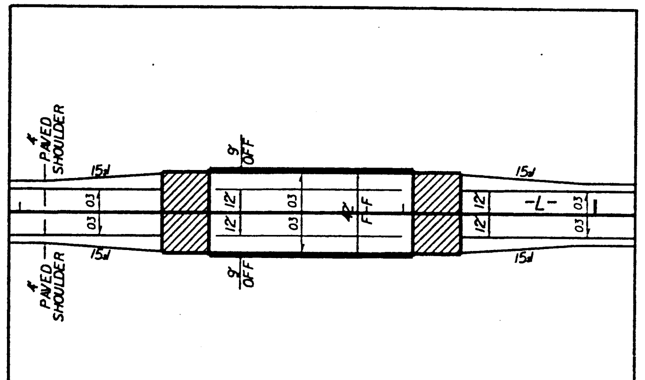
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Sheet 7 of 12





SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

▨ DENOTES APPROACH SLAB

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FOR -L- PROFILE SEE SHEET NO.6

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(919) 872-5115 fax (919) 878-5416

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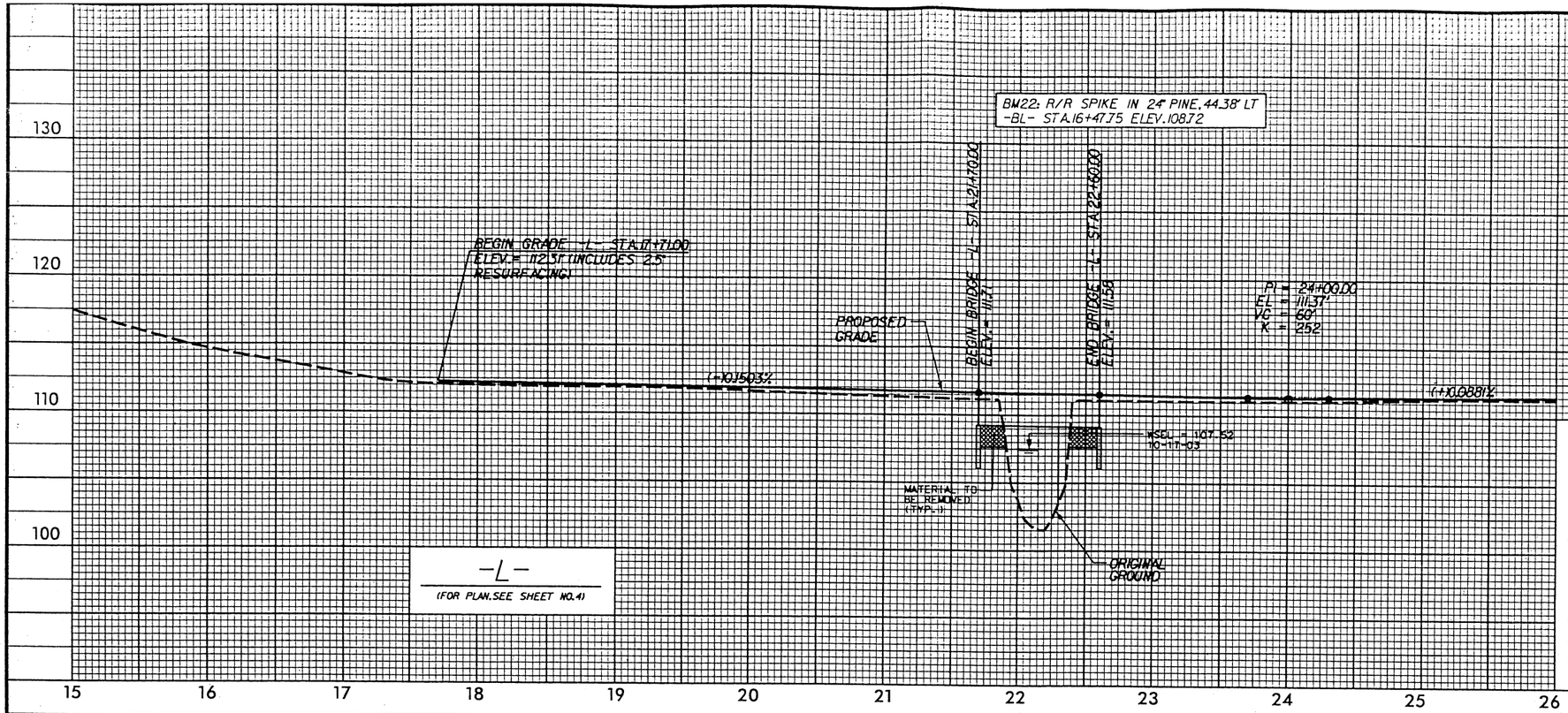
PROJECT REFERENCE NO. B-3906
SHEET NO. 6

ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

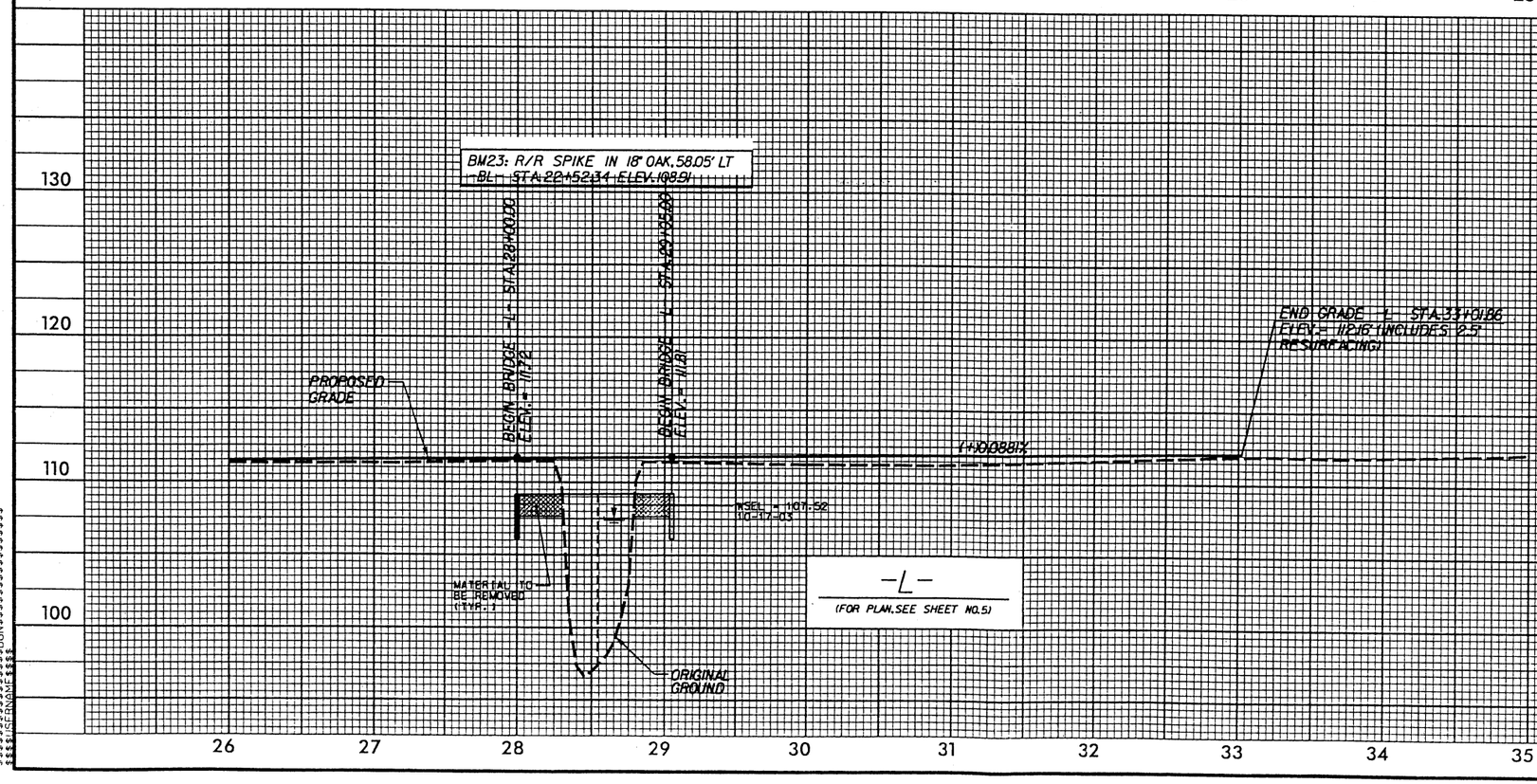
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Sheet 8 of 12



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE = 2600 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 111.8 FT
BASE DISCHARGE = 3100 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 112.1 FT
OVERTOPPING DISCHARGE = 2350 CFS
OVERTOPPING FREQUENCY = 50 - YRS
OVERTOPPING ELEVATION = 111.38 FT



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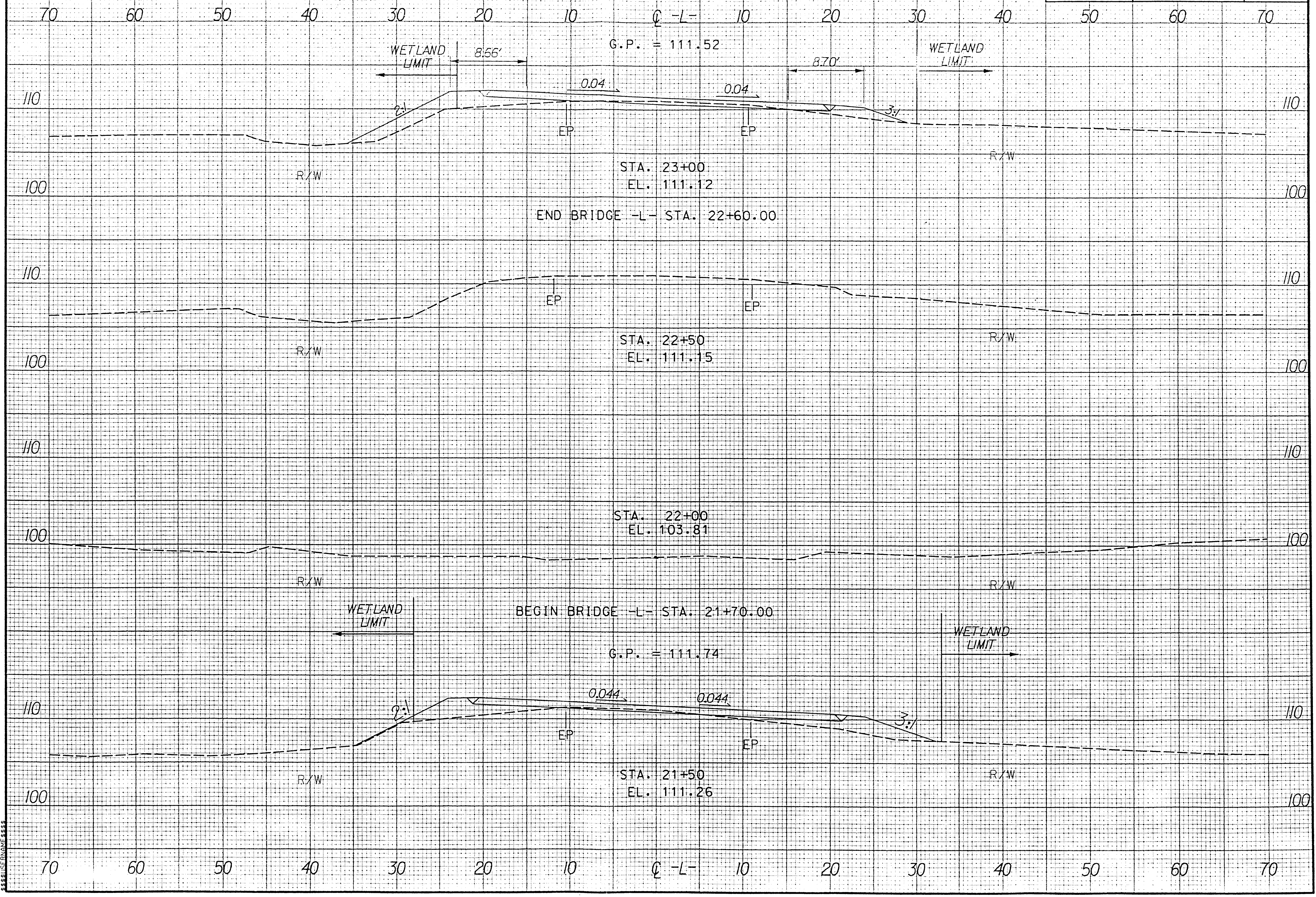
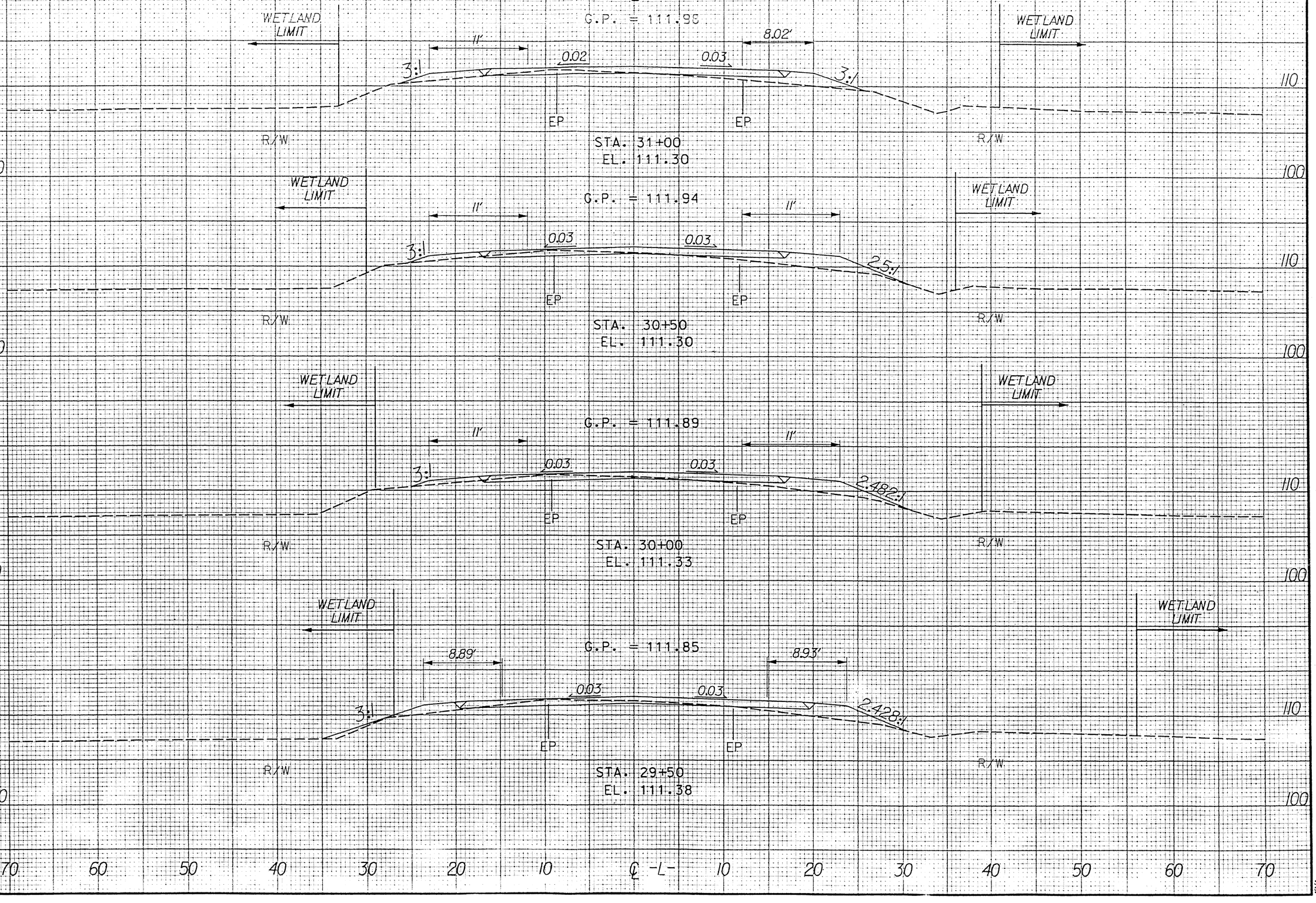
DESIGN HW ELEVATION = 111.8 FT
BASE DISCHARGE = 3100 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 112.1 FT
OVERTOPPING DISCHARGE = 2350 CFS
OVERTOPPING FREQUENCY = 50 - YRS
OVERTOPPING ELEVATION = 111.38 FT

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-3906	X-4




0 5
70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70
WETLAND LIMIT
WETLAND LIMIT
G.P. = 111.98
11'
8.02'
0.02
0.03
3:1
3:1
110
EP
EP
R/W
R/W
STA. 31+00
EL. 111.30
100
WETLAND LIMIT
WETLAND LIMIT
G.P. = 111.94
11'
11'
0.03
0.03
3:1
2.5:1
110
EP
EP
R/W
R/W
STA. 30+50
EL. 111.30
100
WETLAND LIMIT
WETLAND LIMIT
G.P. = 111.89
11'
11'
0.03
0.03
3:1
2.482:1
110
EP
EP
R/W
R/W
STA. 30+00
EL. 111.33
110
100
WETLAND LIMIT
WETLAND LIMIT
G.P. = 111.85
8.89'
8.93'
0.03
0.03
3:1
2.428:1
110
EP
EP
R/W
R/W
STA. 29+50
EL. 111.38
100
70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

Project No. 33341.1.1 (B-3906)

Property Owner List

Property Number	Name	Address
1	Pelmon Jart Hudson, Jr.	4901 Old Warsaw Rd. Turkey, NC 28393
2	W. A. Autry	502 Raleigh Rd. Clinton, NC 28328
3	Huston B. Wilson	3289 Governor Moore Rd. Clinton, NC 28328
4	J. D. Corbett	4425 Lake Artesia Rd. Faison, NC 28341

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT: 33341.1.1 (B-3906)
BRIDGES NO. 35 & NO. 44
ON NC 403 (FAISON HIGHWAY)
OVER SIX RUNS CREEK

 5/26/04

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- 19+00 to 32+00	Cored Slab Bridge	0.1097			0.2895					
		#35 3@30', L=90'									
		#44 3@35', L=105'									
TOTALS:			0.1097	0.0000	0.0000	0.2895	0.0000	0.0000	0.0000	0.0	0.0

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

SAMPSON COUNTY

PROJECT 33341.1.1 (B-3906)
BRIDGES NO. 35 & NO. 44 ON NC 403 (FAISON HIGHWAY)
OVER SIX RUNS CREEK

Form Revised 1/21/03

SHEET 12 OF 12

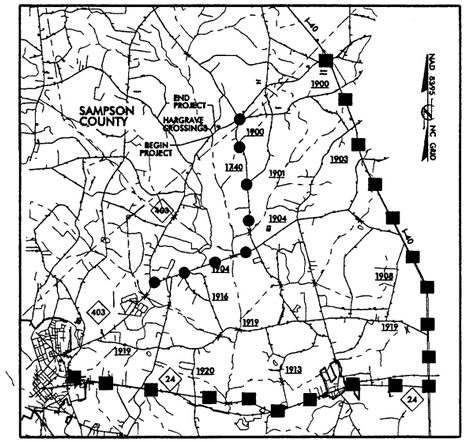
5/26/04

09/08/99

TIP PROJECT B-3906

CONTRACT:

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



DENOTES OFFSITE DETOUR FOR CARS

DENOTES OFFSITE DETOUR FOR TRUCKS

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SAMPSON COUNTY

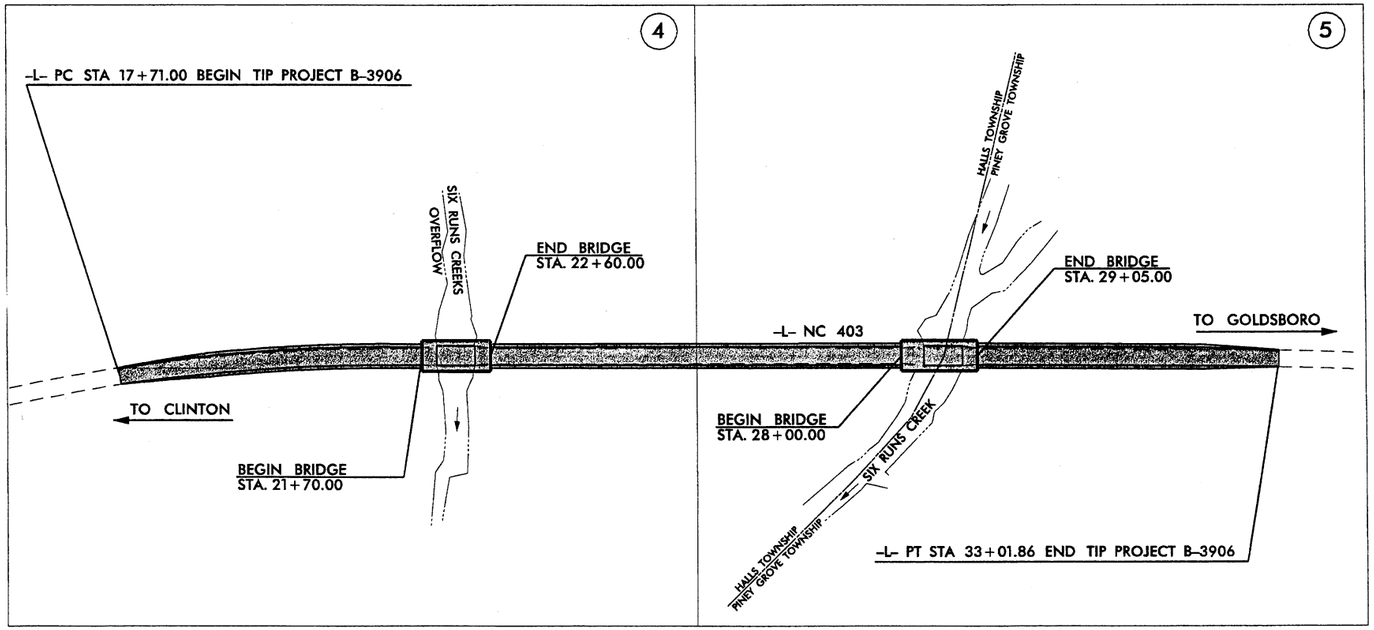
LOCATION: BRIDGES NO. 35, NO. 44 OVER SIX RUNS CREEK ON NC 403

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3906	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33341.1.1	BRSTP-403(2)	P.E.
33341.2.1	BRSTP-403(2)	R /W & UTIL

SUBMITTAL: R/W PLANS
3/31/04



NOTE: THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 4,800
ADT 2025 = 8,600
DHV = 12 %
D = 60 %
T = 5 % *
V = 60 MPH

* TTST 2 % DUAL 3 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3906 = 0.253 mi
LENGTH STRUCTURE TIP PROJECT B-3906 = 0.037 mi
TOTAL LENGTH OF TIP PROJECT B-3906 = 0.290 mi

Plans prepared in the office of:
Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
5808-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 Fax (919) 878-9416
for the North Carolina Department of Transportation

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 19, 2004

LETTING DATE: MARCH 15, 2005

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

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

$$$$SYSTIMES$$$$
$$$$USERNAME$$$$
$$$$DGNS$$$$
$$$$REFDGNS$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-3906	1-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

Edge of Pavement	— — —
Curb	— — —
Prop. Slope Stakes Cut	– – – C – – –
Prop. Slope Stakes Fill	– – – F – – –
Prop. Woven Wire Fence	—○——○—
Prop. Chain Link Fence	—□——□—
Prop. Barbed Wire Fence	—◇——◇—
Prop. Wheelchair Ramp	WCR
Curb Cut for Future Wheelchair Ramp	CCFR
Exist. Guardrail	—⊤— —⊤— —⊤—
Prop. Guardrail	——⊤——⊤——⊤——
Equality Symbol	◕
Pavement Removal	⊠⊠⊠⊠⊠

RIGHT OF WAY

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

HYDROLOGY

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

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

MINOR

Head & End Wall	CONC HW
Pipe Culvert	═ ═ ═
Footbridge	>– – – – – –<
Drainage Boxes	□ CB
Paved Ditch Gutter	— — —

UTILITIES

Exist. Pole	●
Exist. Power Pole	●
Prop. Power Pole	○
Exist. Telephone Pole	-●-
Prop. Telephone Pole	-○-
Exist. Joint Use Pole	-●-
Prop. Joint Use Pole	-○-
Telephone Pedestal	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	Ⓟ
Telephone Booth	☎
Cellular Telephone Tower	▲
Water Manhole	Ⓦ
Light Pole	¤
H-Frame Pole	●——●
Power Line Tower	⊠
Pole with Base	⊡
Gas Valve	◇
Gas Meter	◈
Telephone Manhole	Ⓣ
Power Transformer	☒
Sanitary Sewer Manhole	⊕
Storm Sewer Manhole	Ⓢ
Tank; Water, Gas, Oil	○
Water Tank With Legs	⊗
Traffic Signal Junction Box	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	0
U/G Test Hole (S.U.E.*)	⊗
Abandoned According to U/G Record	ATTUR
End of Information	E.O.I.

BOUNDARIES & PROPERTIES

State Line	——— – – – ———
County Line	——— – – ———
Township Line	——— – – ———
City Line	——— – ———
Reservation Line	– ——— – ——— –
Property Line	——— ———
Property Line Symbol	PL
Exist. Iron Pin	⊙ EIP
Property Corner	——— ———+
Property Monument	□ ECM
Property Number	123
Parcel Number	6
Fence Line	—×——×——×— 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

Buildings	⊓
Foundations	⌐
Area Outline	⩗
Gate	⟋
Gas Pump Vent or U/G Tank Cap	∘
Church	✝
School	▶
Park	═ ═
Cemetery	═ † ═
Dam	———
Sign	⊙ S
Well	○ W
Small Mine	⚒
Swimming Pool	▨

TOPOGRAPHY

Loose Surface	– – – – – –
Hard Surface	———
Change in Road Surface	· · · · · ·
Curb	———
Right of Way Symbol	R/W
Guard Post	○ GP
Paved Walk	– – – – – –
Bridge	)═══(
Box Culvert or Tunnel	)– – – – –(
Ferry	– – – – – –
Culvert	> · · · · · · <
Footbridge	· · · · · ·
Trail, Footpath	— ⌄ —
Light House	✡

VEGETATION

Single Tree	✿
Single Shrub	✿
Hedge	⁀⁀⁀⁀⁀
Woods Line	⁀⁀·⁀⁀
Orchard	✿✿✿✿✿✿
Vineyard	VINEYARD

RAILROADS

Standard Gauge	┼┼┼┼┼┼┼ CSX TRANSPORTATION
RR Signal Milepost	⊙ MILEPOST 35
Switch	□ SWITCH

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

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
WBS# 33341.1.1 PROJECT# 8.1281401	1C
Location and Surveys	

SURVEY CONTROL SHEET B-3906

LOCALIZED CONTROL COORDINATES

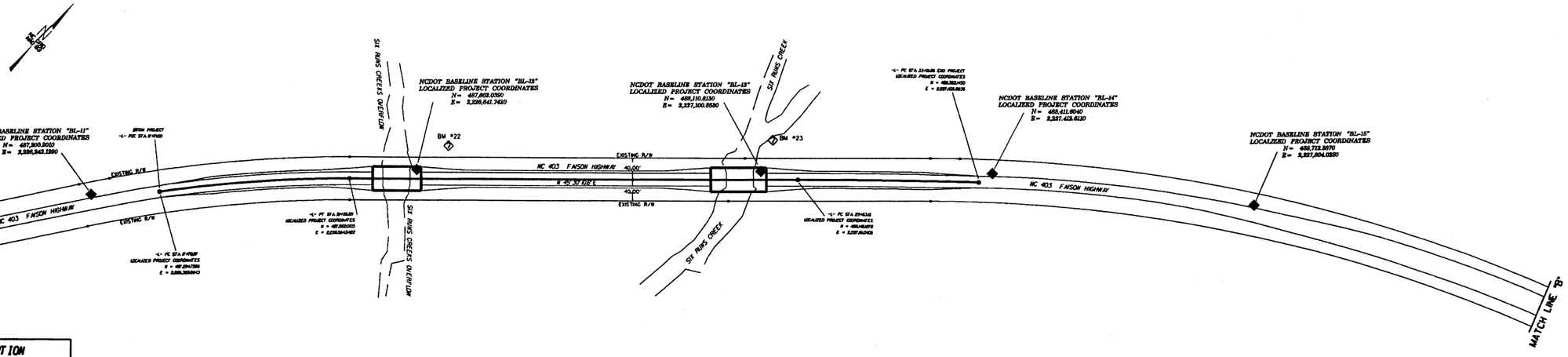
-BL-

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
10		486882.6210	2225977.8180	129.84	OUTSIDE PROJECT LIMITS	
11		487200.9010	2226242.1290	113.80	OUTSIDE PROJECT LIMITS	
12		487662.8390	2226641.7420	110.82	22+52.07	17.24 LT
13		488110.8130	2227100.8630	110.91	28+54.88	15.56 LT
14		488411.6040	2227412.6110	111.73	OUTSIDE PROJECT LIMITS	
15		488712.3870	2227884.0280	115.87	OUTSIDE PROJECT LIMITS	
16		488988.1720	2228345.9110	133.12	OUTSIDE PROJECT LIMITS	

LOCALIZED BENCH MARKS

BM# 22 ELEVATION = 108.72
N 487735 E 2226653
L STATION 23+12 61 LEFT
RR SPIKE SET IN 24" PINE

BM#23 ELEVATION = 108.91
N 488168 E 2227876
L STATION 29+17 73 LEFT
RR SPIKE SET IN 18" OAK



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3906-3"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING 486,359.21 WITH EASTING 2,225,620.70 FEET
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS 0.99991670
THE NC LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3906-3" TO +/- STATION 17+00 IS N 37°40'03"E 1,121.39'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT
FILE NAME: B3906_LS_CONTROL_040227.TXT
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.
IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

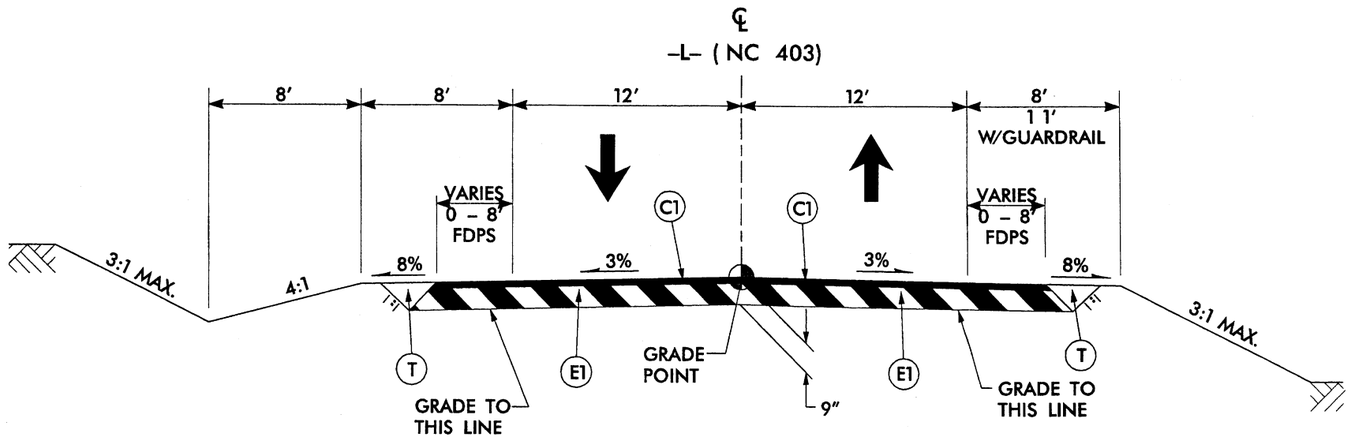
● INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING HARN-NAD83/95 DATUM.

NOTE: DRAWING NOT TO SCALE

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-3906	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 1

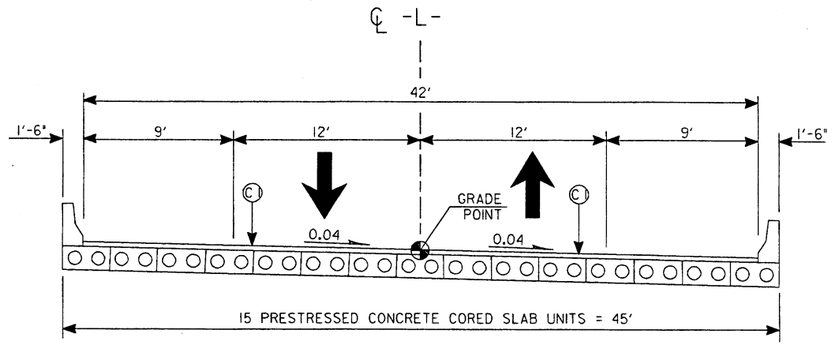
NOTE:
TRANSITION FROM EXISTING TO TYPICAL SECTION 1 STA. 17+71 TO 18+71
TRANSITION FROM TYPICAL SECTION 1 TO EXISTING STA. 32+01.86 TO 33+01.86

USE TYPICAL SECTION NO. 1

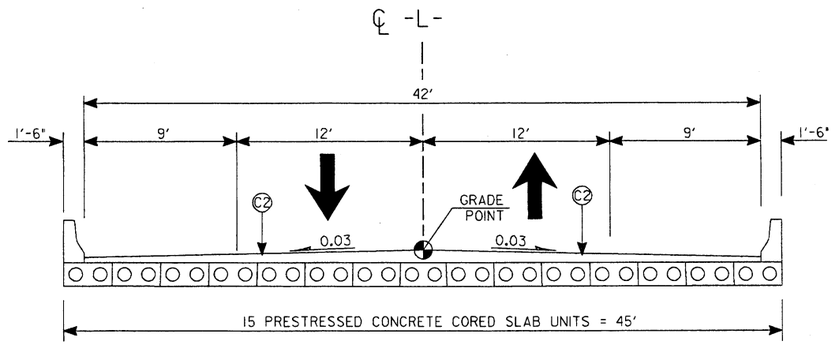
-L- STA. 18+71.00 TO STA. 21+70.00 (BEGIN BRIDGE)
-L- STA. 22+60.00 (END BRIDGE) TO STA. 28+00.00 (BEGIN BRIDGE)
-L- STA. 29+05.00 (END BRIDGE) TO STA. 32+01.86

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
E1	PROP. APPROX. 6.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
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	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

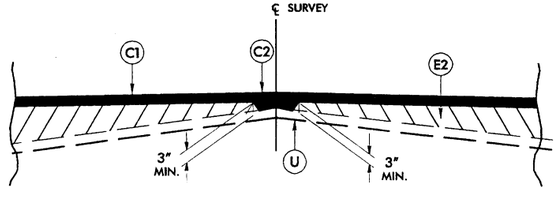
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



CORED SLAB DETAIL
BRIDGE NO. 35



CORED SLAB DETAIL
BRIDGE NO. 44



Detail Showing Method of Wedging

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

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

6/21/00

COMPUTED BY:	D. PETRY	DATE:	2-4-04
CHECKED BY:	M. YOUNG	DATE:	2-11-04

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	3-A

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ASPHALT PAVEMENT REMOVAL SUMMARY

STATION TO STATION	SQUARE YARDS
-L- STA. 20+60 TO -L- STA. 21+70 (BEGIN BRIDGE)	234 SY.
-L- STA. 22+60 (END BRIDGE) TO -L- STA. 23+50	182 SY.
-L- STA. 27+05 TO -L- STA. 28+00 (BEGIN BRIDGE)	217 SY.
-L- STA. 29+05 (END BRIDGE) TO -L- STA. 31+00	450 SY.
PROJECT TOTAL	1,083 SY.
SAY	1,090 SY.

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)	ROADWAY EMBANKMENT (cu. yds)	BORROW (cu. yds)	WASTE (cu. yds)
SUMMARY #1				
-L- STA. 17+70.97 -L- STA. 21+70.00 (BEGIN BRIDGE)	146	461	315	
SUMMARY #2				
-L- STA. 22+60.00 (END BRIDGE) -L- STA. 28+00.00 (BEGIN BRIDGE)	286	353	67	
SUMMARY #3				
-L- STA. 29+05.00 (END BRIDGE) -L- STA. 33+01.86	86	311	225	
SUBTOTAL (SUMMARIES 1-3)	518	1,125	607	
GRAND TOTAL	518	1,125	607	
SAY	520	1,130	610	

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-	18+45.00	21+45.00	RT.	300.00'				21+45.00	3'	11'		281.25'		4.62'			1						1					
-L-	20+07.50	21+45.00	LT.	137.50'			21+45.00		3'	11'	118.75'		2.37'				1						1					
-L-	22+85.00 (BB)	27+75.00 (EB)	RT.	490.00'			22+85.00	27+75.00	3'	11'													2					
-L-	22+85.00 (BB)	27+75.00 (EB)	LT.	490.00'			27+75.00	22+85.00	3'	11'													2					
-L-	29+30.00	30+67.50	RT.	137.50'			29+30.00		3'	11'		118.75'		2.37'			1						1					
-L-	29+30.00	32+30.00	LT.	300.00'				29+30.00	3'	11'	281.25'		4.62'				1						1					
																	4						8					
							DEDUCTION FOR ANCHOR UNITS:																					
SUBTOTAL				1855.00'			4 GRAU-350 @ 50.00' = 200.00'						... 5 ADDITIONAL GUARDRAIL POSTS															
DEDUCTIONS FOR ANCHOR UNITS:				-350.00'			8 TYPE III @ 18.75' = 150.00'																					
								350.00'																				
TOTAL				1505.00'																								
			SAY	1512.50'																								

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

STATION / SIZE / THICKNESS OR GAUGE	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	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	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 * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL 'A' + (1.3 X COL'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		MODIFIED CONCRETE FLUME SEE DETAIL _																				CORR. STEEL ELBOWS NO. & SIZE (BITUMINOUS COATED)	PIPE REMOVAL (LF)	REMARKS
23+04	RT.	1																																								1																						
27+56	LT.	2																																								1																						
27+56	RT.	3																																								1																						
TOTAL																																										3																						

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

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

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$

10/26/98

REVISIONS

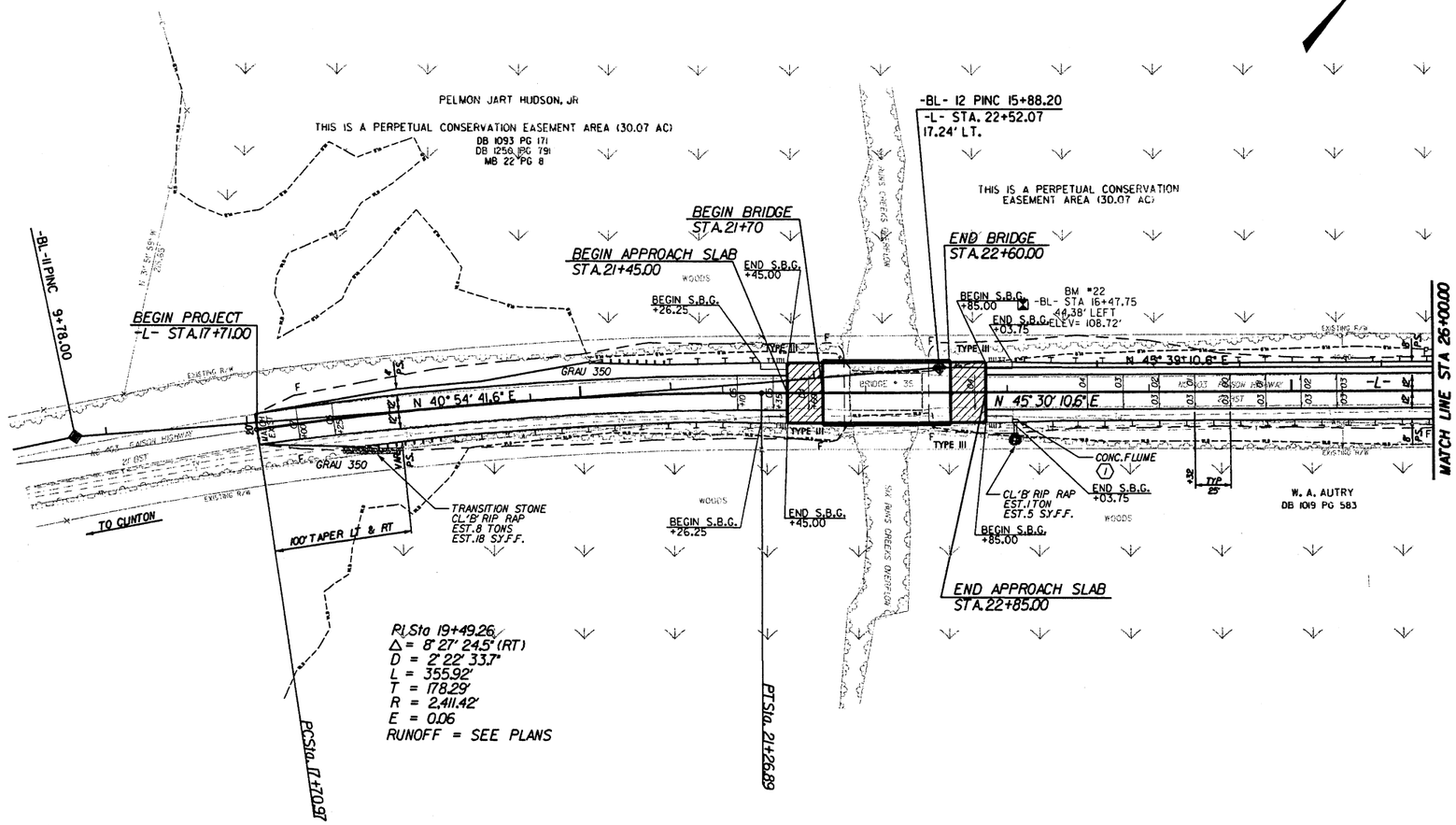
PROJECT REFERENCE NO.	SHEET NO.
B-3906	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

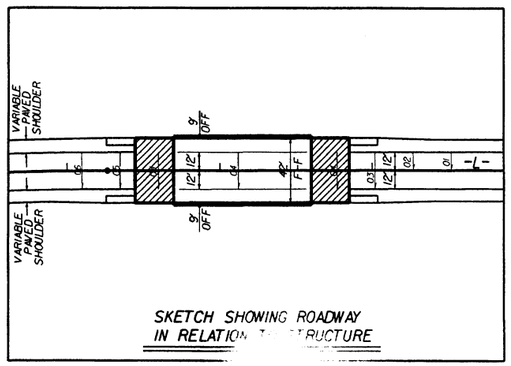
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

20

25

NC GRID
NAD 83





SKETCH SHOWING ROADWAY
IN RELATION TO STRUCTURE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3906-3" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 486,359.2311(ft) EASTING: 2,225,620.707(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999876870
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3906-3" TO -L- STATION 17+71.00 IS
N 37° 10' 03" E 1174.02'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DENOTES APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO.6

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

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Transportation Consulting Engineers
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(919) 872-5115 fax (919) 878-5416

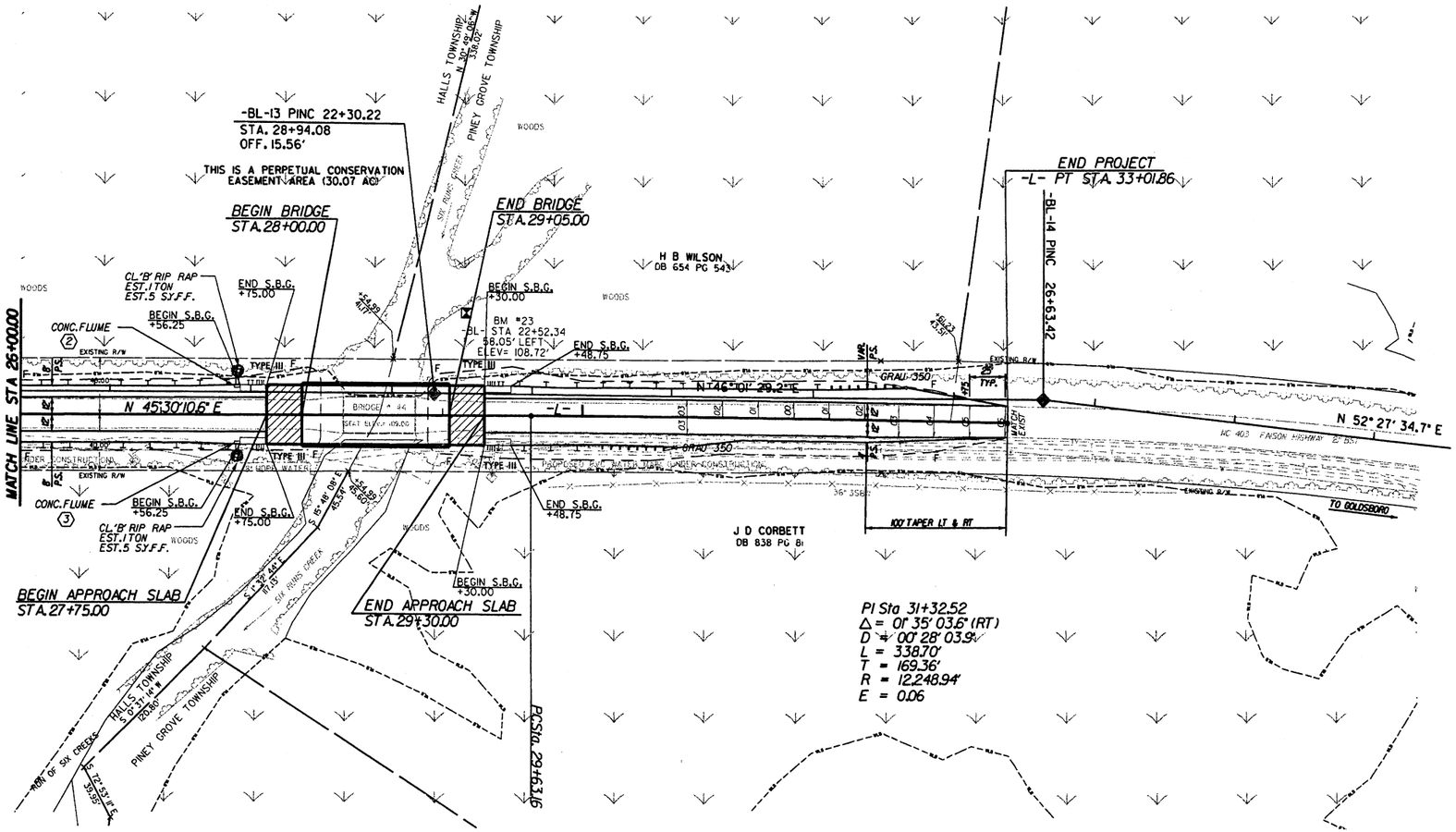
$$$$USERNAME$$$$ $$$$DATE$$$$ $$$$SYSTIME$$$$ $$$$DGN$$$$

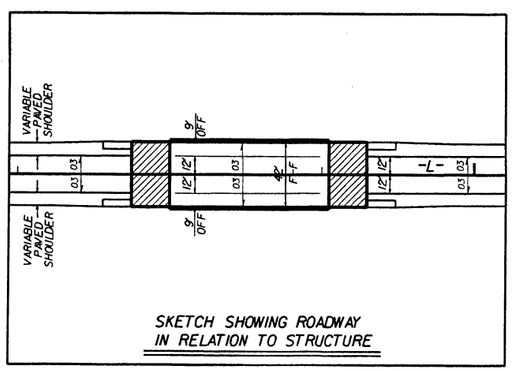
10/26/98

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DENOTES APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO.6

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

Ramey Kemp & Associates, Inc.
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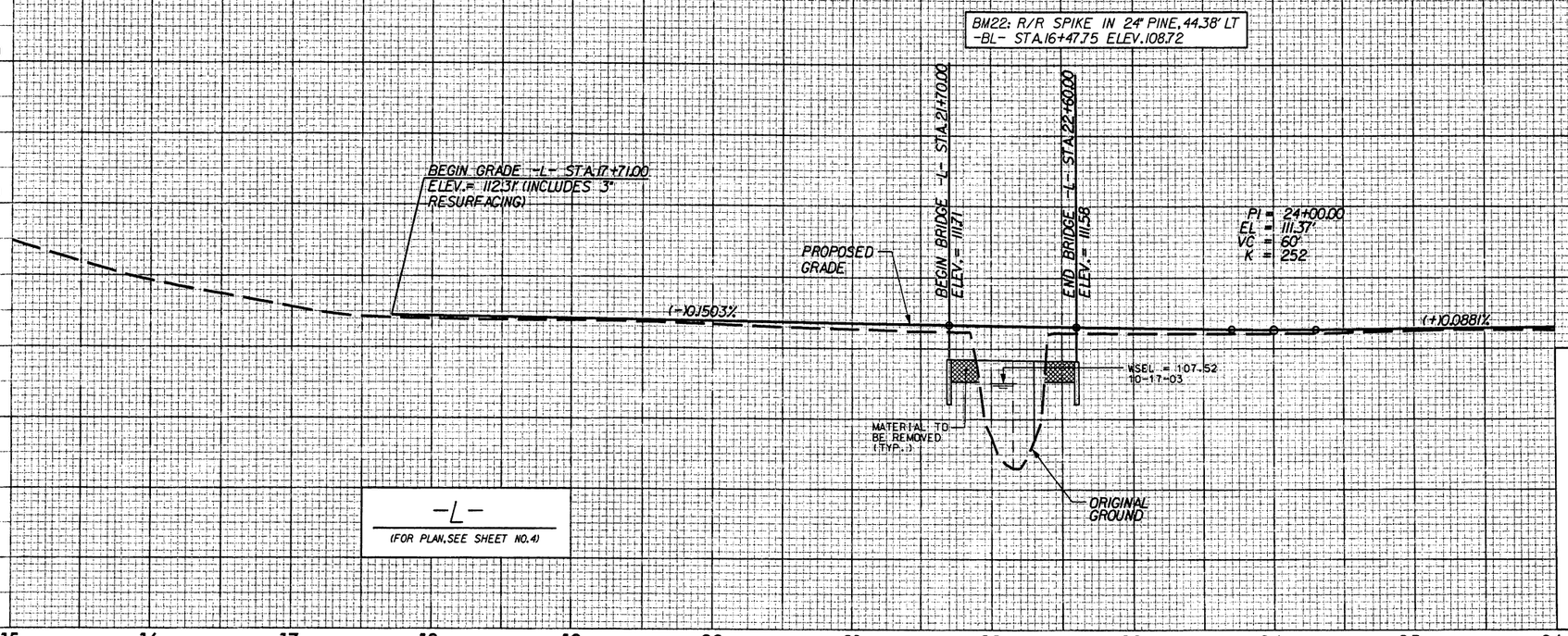
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-515 fax (919) 878-5416

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$

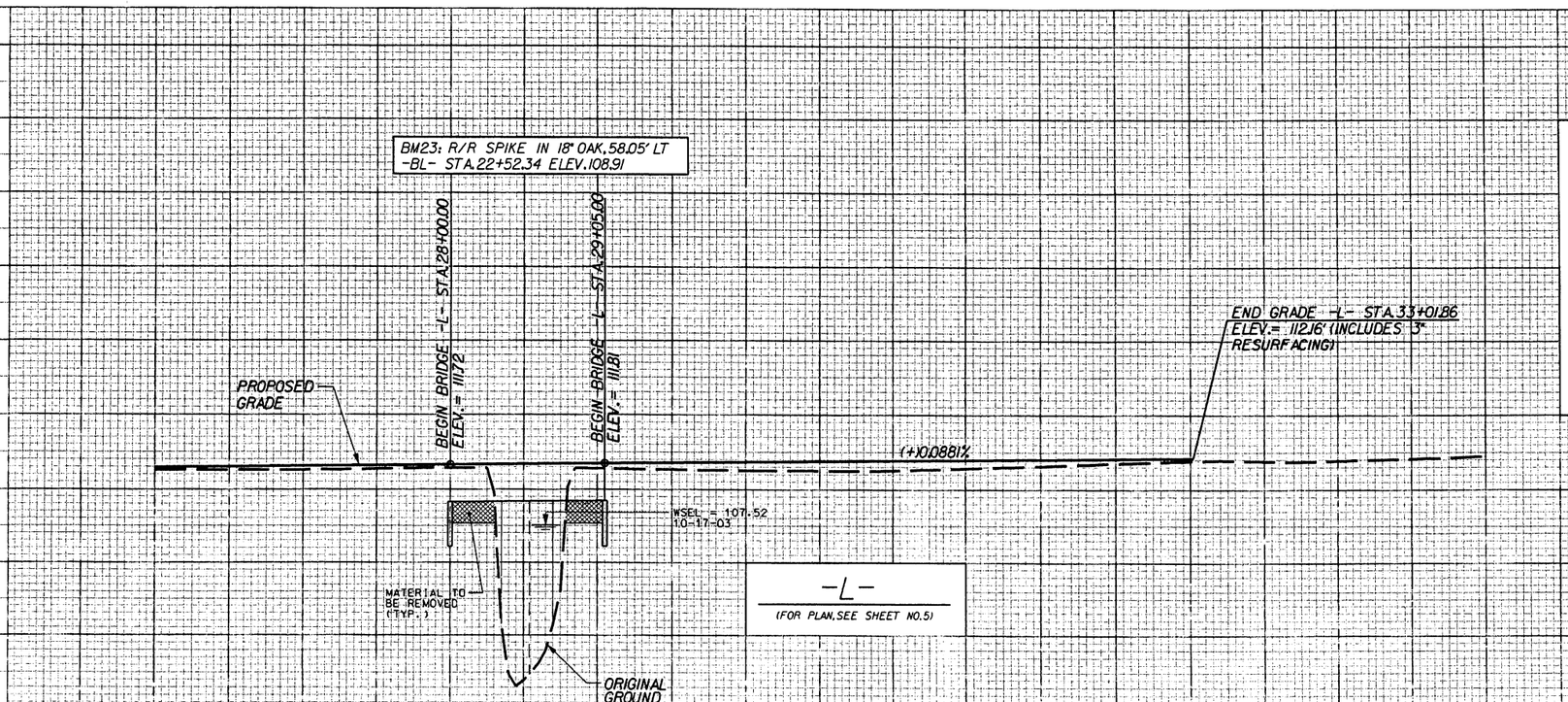
PROJECT REFERENCE NO.	SHEET NO.
B-3906	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 2600 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 111.8 FT
BASE DISCHARGE	= 3100 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 112.1 FT
OVERTOPPING DISCHARGE	= 2350 CFS
OVERTOPPING FREQUENCY	= 50 - YRS
OVERTOPPING ELEVATION	= 111.38 FT



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 2600 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 111.8 FT
BASE DISCHARGE	= 3100 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 112.1 FT
OVERTOPPING DISCHARGE	= 2350 CFS
OVERTOPPING FREQUENCY	= 50 - YRS
OVERTOPPING ELEVATION	= 111.38 FT

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PROJ. REFERENCE NO.	SHEET NO.
B-3906	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
-L-		
17+71.00	7	3
18+00.00	7	3
18+50.00	24	17
19+00.00	24	33
19+50.00	25	44
20+00.00	22	51
20+50.00	17	65
21+00.00	12	69
21+50.00	7	69
21+70.00 (BEG. BRIDGE)	1	15
22+60.00 (END BRIDGE)	4	28
23+00.00	4	28
23+50.00	12	65
24+00.00	16	49
24+50.00	21	27
25+00.00	30	14
25+50.00	37	11
26+00.00	36	12
26+50.00	31	13
27+00.00	29	13
27+50.00	31	11
28+00.00 (BEG. BRIDGE)	35	11
29+05.00 (END BRIDGE)	8	18
29+50.00	8	18
30+00.00	17	37
30+50.00	14	37
31+00.00	11	37
31+50.00	9	36
32+00.00	9	37
32+50.00	10	29
33+01.86	0	0
TOTAL	**518**	**900**

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."

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Transportation Consulting Engineers
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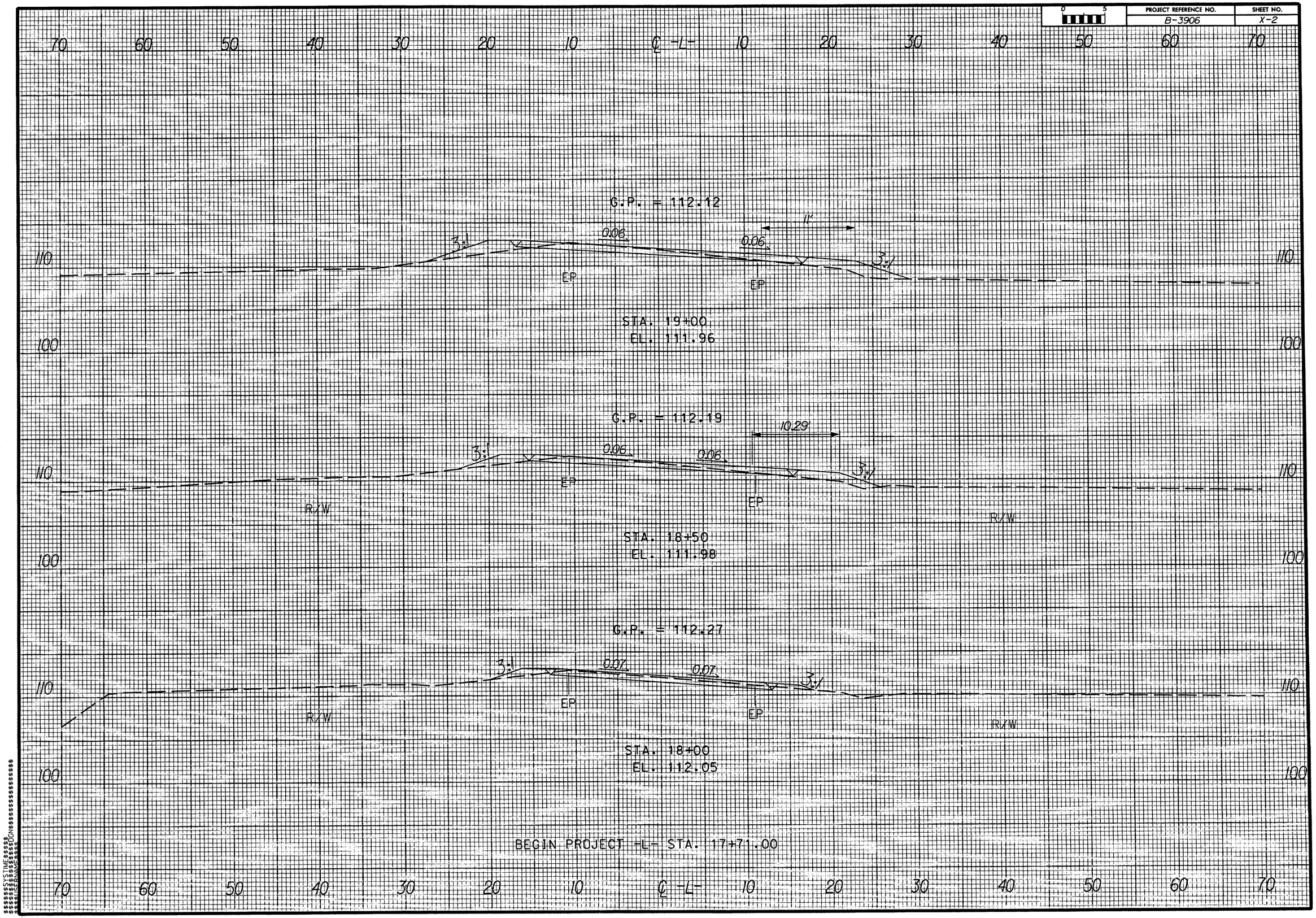
(919) 872-5115 fax (919) 878-5416

0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-3906	X-2



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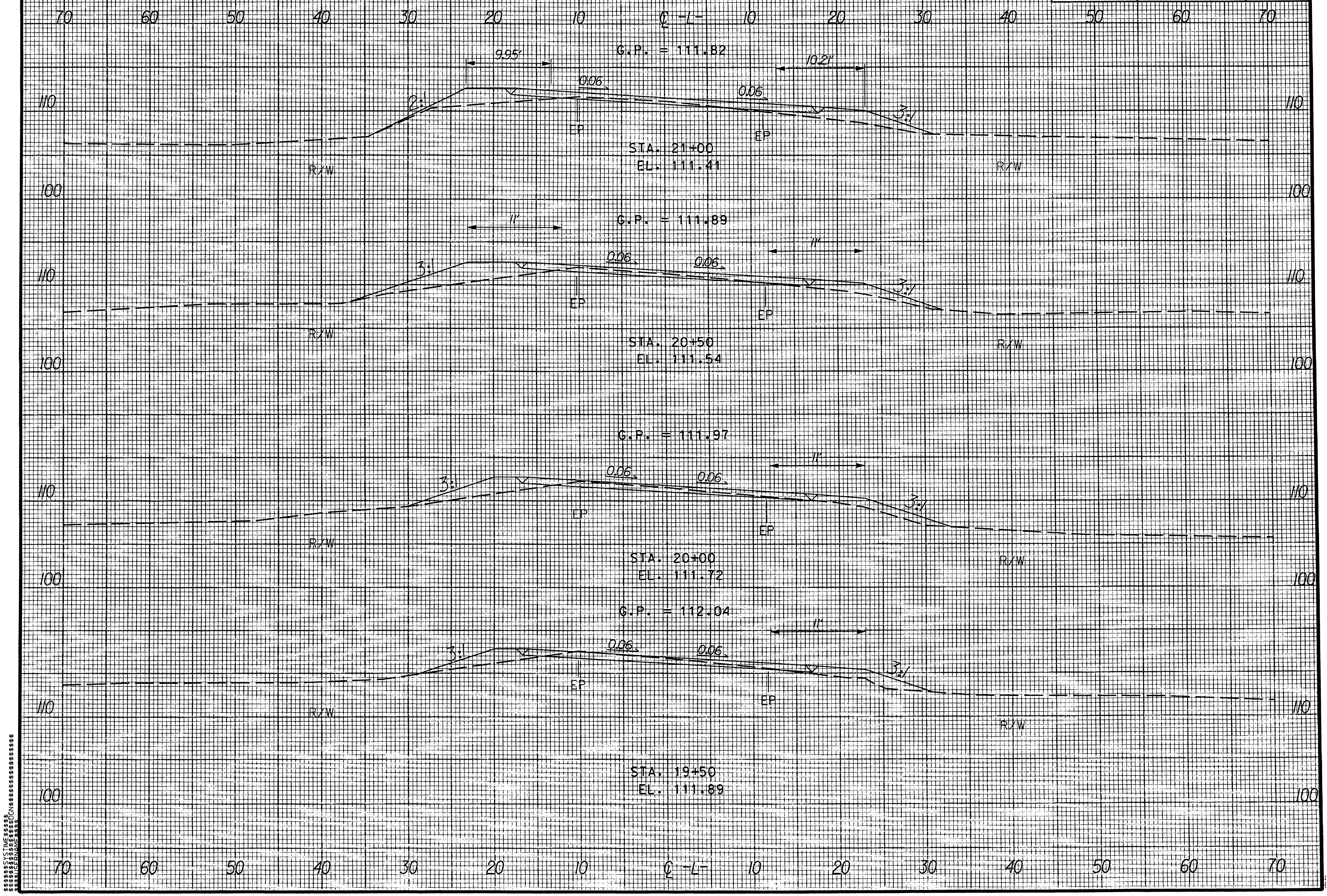

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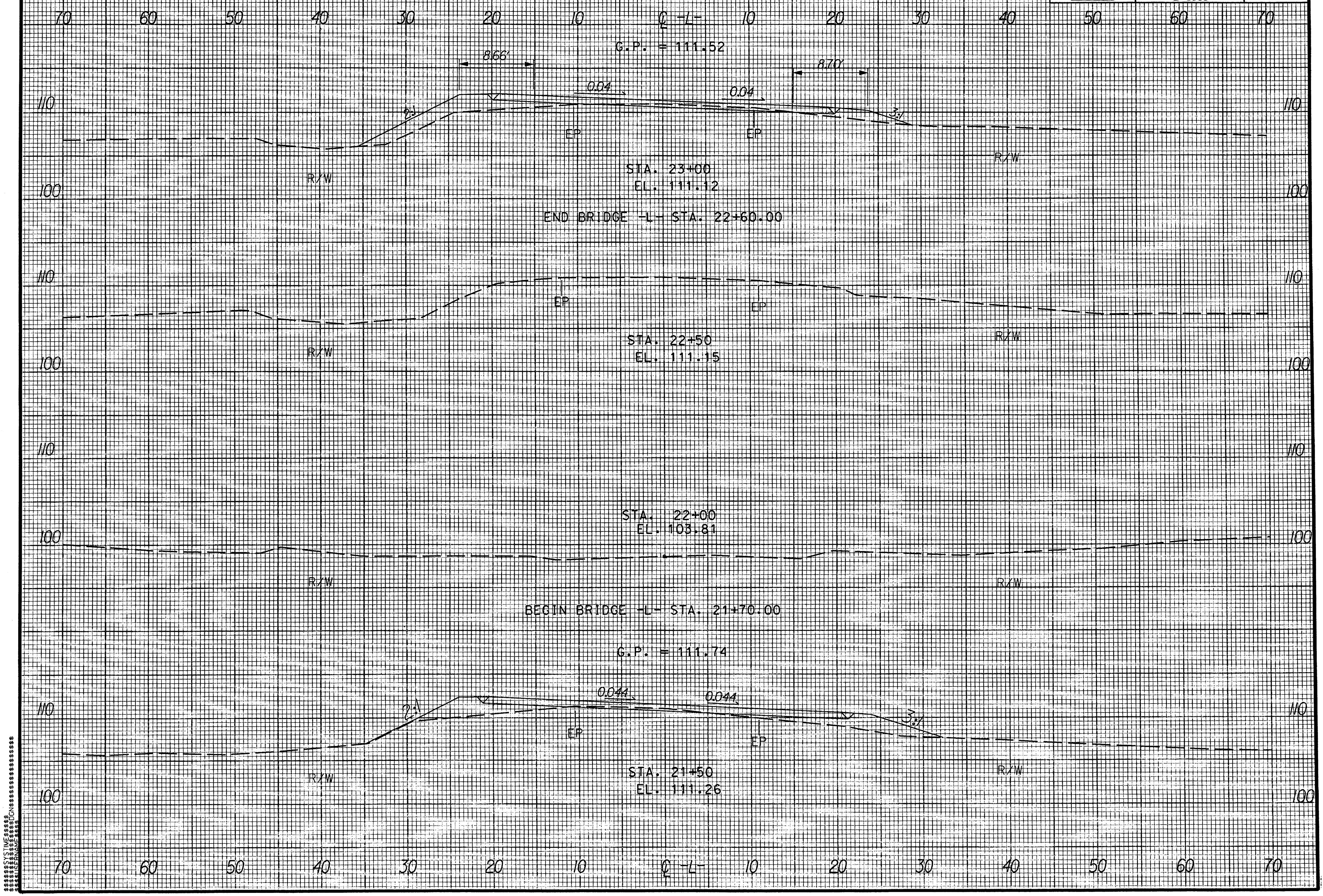
B-3906	X-4



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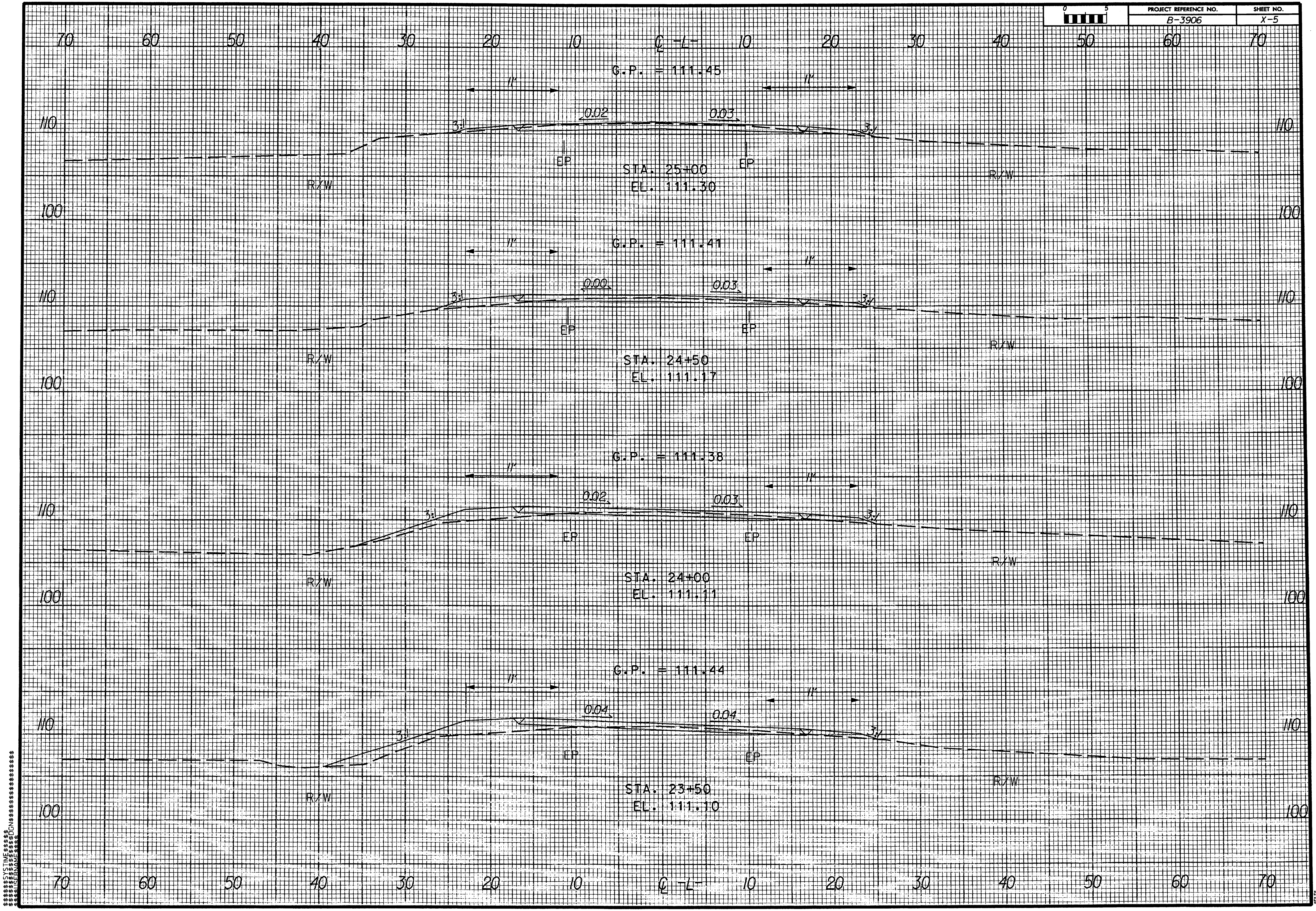
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-3906	X-5



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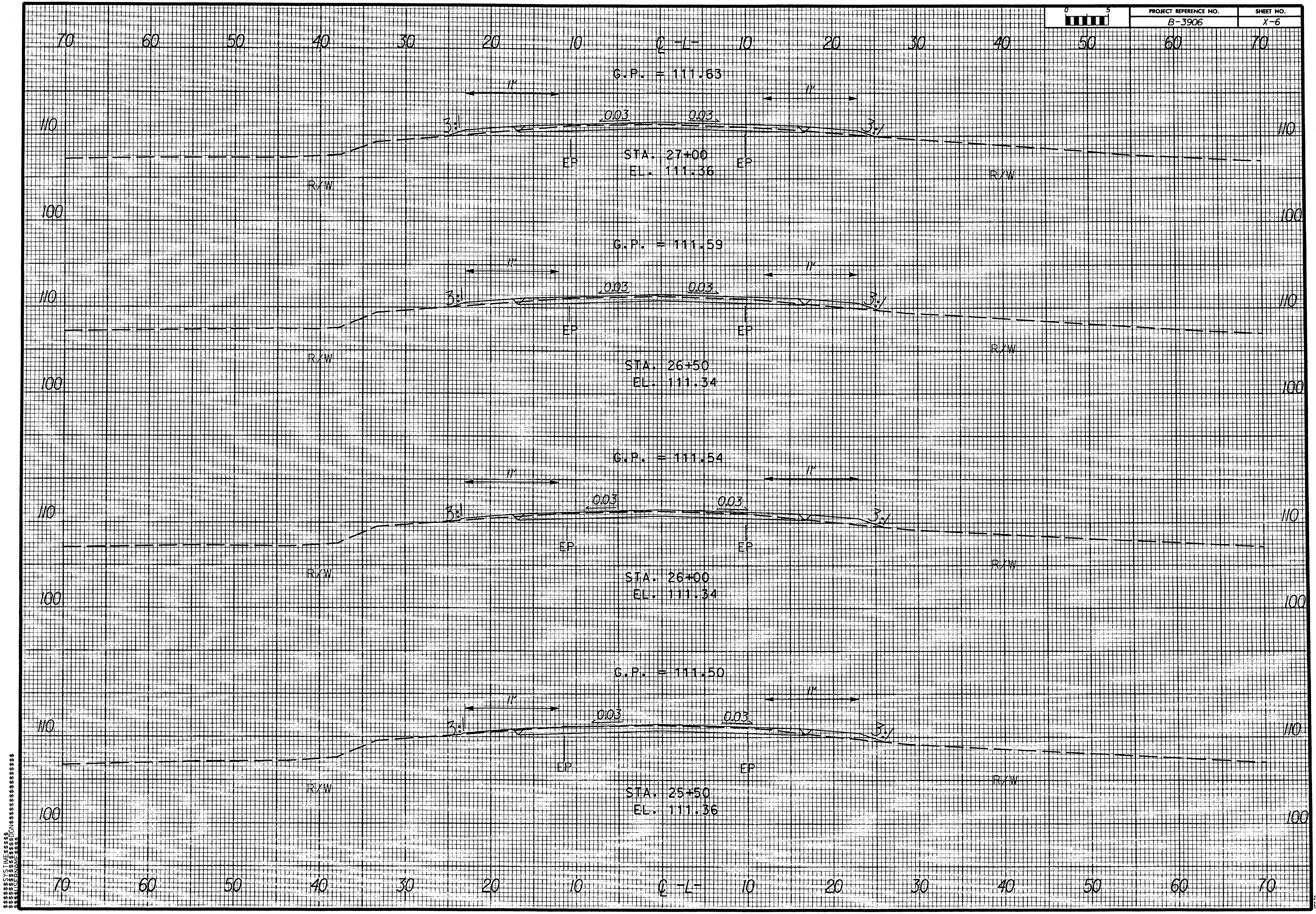
B-3906	X-6



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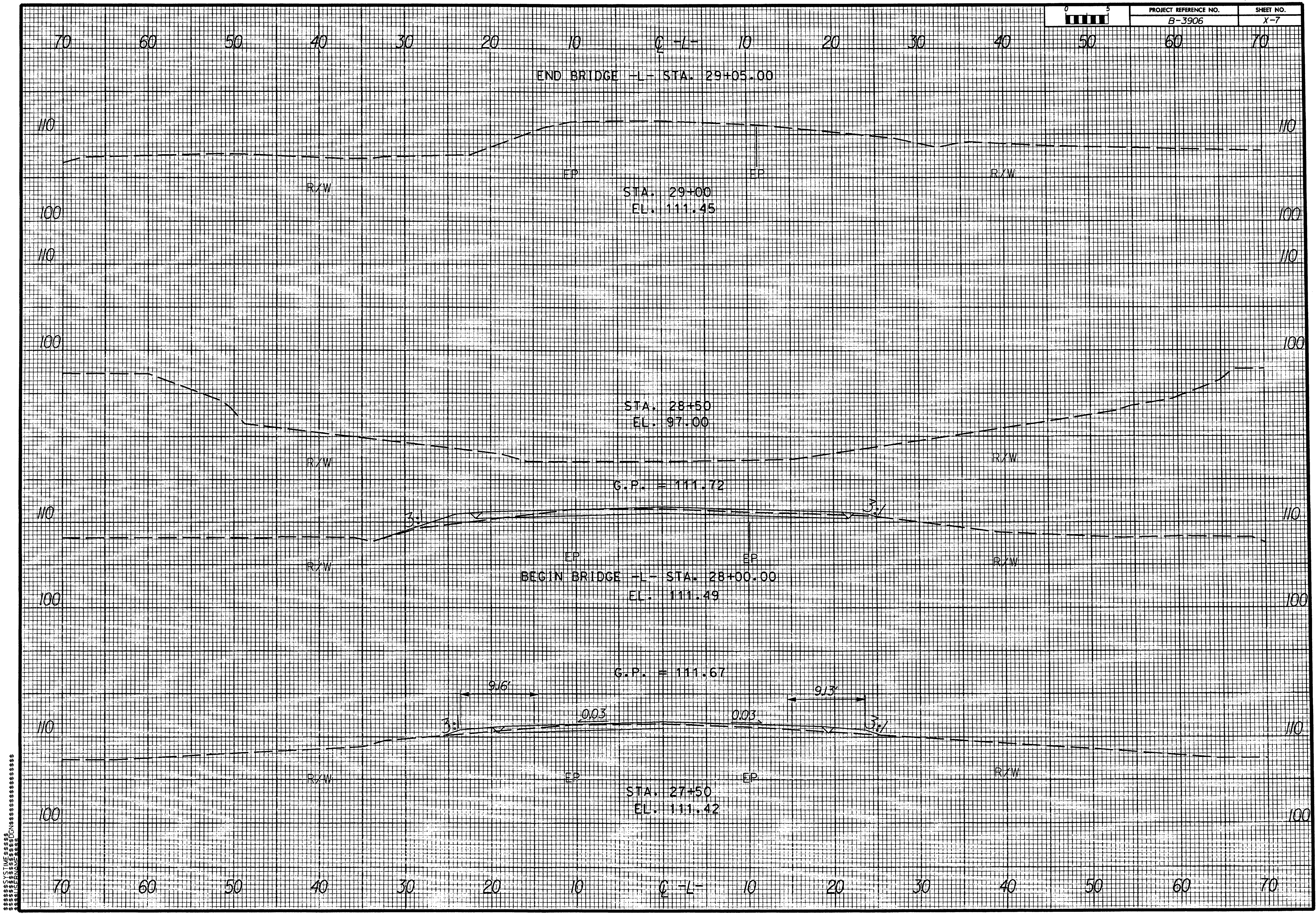
B-3906	X-7



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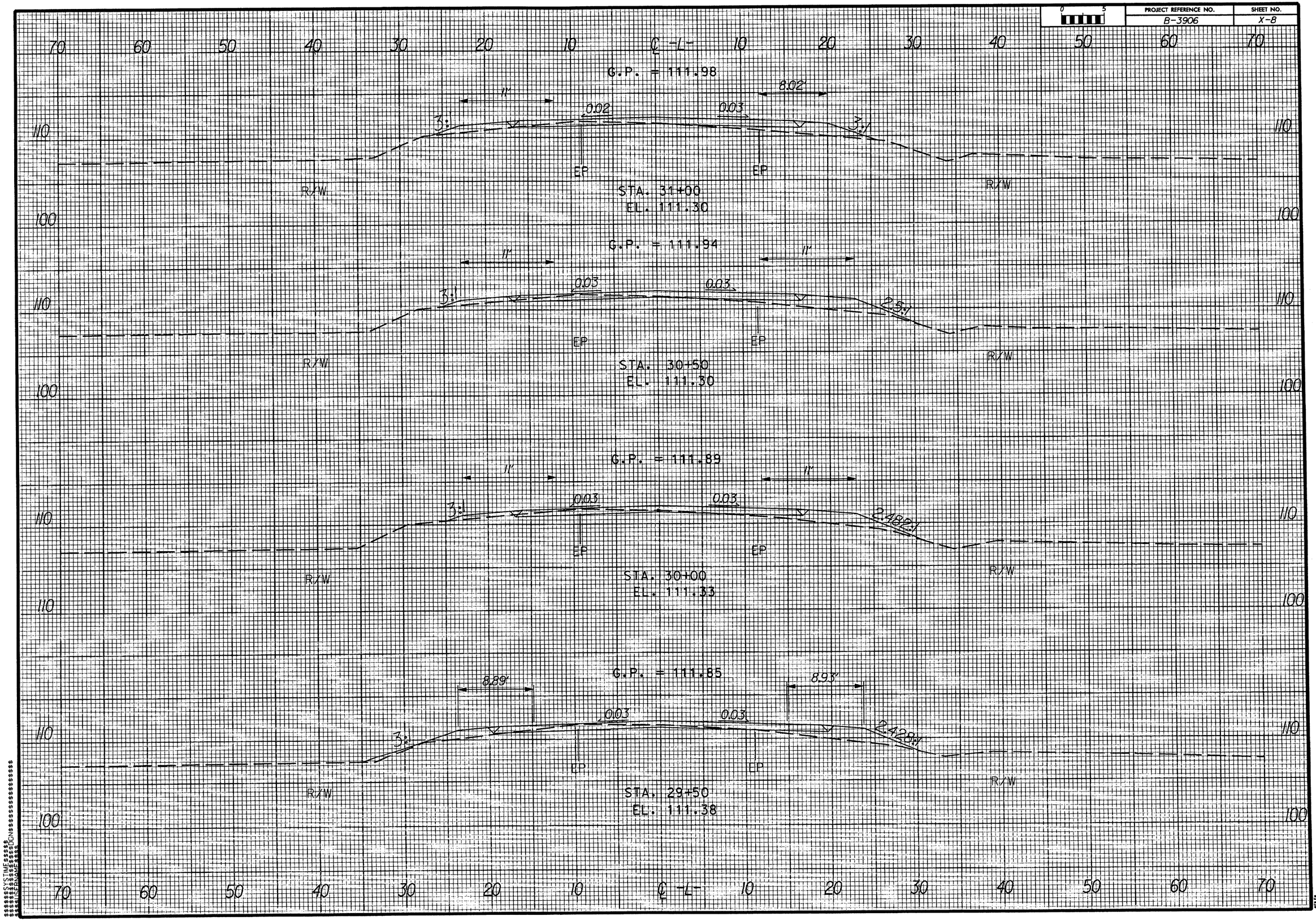
B-3906	X-8



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

0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-3906	X-9

END PROJECT -L- STA. 33+01.86

G.P. = 112.16

MATCH EXIST.

STA. 33+00
EL. 111.76

G.P. = 112.11

8.02'

3:1 0.04 0.04 3:1

STA. 32+50
EL. 111.64

G.P. = 112.07

11.00'

3:1 0.02 0.03 3:1

STA. 32+00
EL. 111.54

G.P. = 112.03

11' 7.93'

3:1 0.00 0.05 3:1

STA. 31+50
EL. 111.47

EP R/W 110 100 70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$DRAWER$$$$$$

NC 403 (FAISON HIGHWAY)
BRIDGE NOS. 35 & 44 OVER SIX RUNS CREEK
SAMPSON COUNTY

FEDERAL-AID PROJECT NO. BRSTP-403(2)
STATE PROJECT NO. 8.1281401
T.I.P. NO. B-3906

CATEGORICAL EXCLUSION

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

APPROVED:

6/5/03
DATE

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

6/9/03
DATE

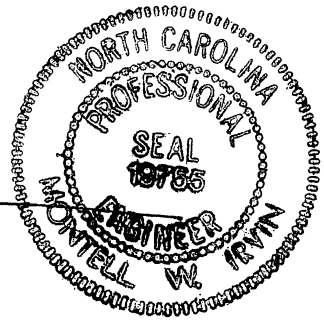
Ronald G Tucker
for **John F. Sullivan, III**
Division Administrator
Federal Highway Administration

NC 403 (FAISON HIGHWAY)
BRIDGE NOS. 35 & 44 OVER SIX RUNS CREEK
SAMPSON COUNTY

FEDERAL-AID PROJECT NO. BRSTP-403(2)
STATE PROJECT NO. 8.1281401
T.I.P. NO. B-3906

CATEGORICAL EXCLUSION

Document Prepared by Ramey Kemp & Associates, Inc.
4928-A Windy Hill Drive
Raleigh, North Carolina 27609



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

05/19/03
Date

For the North Carolina Department of Transportation

Theresa J. Ellerby

Theresa Ellerby, Project Manager
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

NC 403 (FAISON HIGHWAY)
BRIDGE NOS. 35 & 44 OVER SIX RUNS CREEK
SAMPSON COUNTY

FEDERAL-AID PROJECT NO. BRSTP-403(2)
STATE PROJECT NO. 8.1281401
T.I.P. NO. B-3906

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, Design Standards for Sensitive Watersheds, 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 and Highway Design

1.) Side slopes will be increased as necessary to stay within the existing right-of-way.

NC 403 (FAISON HIGHWAY)
BRIDGE NOS. 35 & 44 OVER SIX RUNS CREEK
SAMPSON COUNTY

FEDERAL-AID PROJECT NO. BRSTP-403(2)
STATE PROJECT NO. 8.1281401
T.I.P. NO. B-3906

INTRODUCTION

The replacement of Bridge Nos. 35 & 44, located on NC 403 (Faison Highway) over Six Runs Creek in Sampson County, are included in the North Carolina Department of Transportation (NCDOT) 2002-2008 Transportation Improvement Program (TIP) as B-3906 and in the Federal-Aid Bridge Replacement Program as (BRSTP-403(2)). The location is shown in Figures 1 and 12.

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 that both Bridge No. 35 and 44 have a sufficiency rating of 7.0 out of a possible 100 for a new structure. The bridges are considered structurally deficient and functionally obsolete. The replacement of these inadequate structures will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge Nos. 35 and 44 are located approximately 4 miles (6.4 km) west of I-40 on NC 403 (Faison Highway) in Sampson County. Bridge No. 35, the southernmost bridge, is located approximately 1.0 mile (0.62 km) south of SR 1740 and Bridge No. 44 is located 0.9 miles (0.56 km) south of SR 1740. Refer to Figures 1 and 12 for the project location and Figures 2 - 5 for photos of the existing project area.

Bridge No. 35 was constructed in 1939. The bridge is currently posted to restrict weight limits at 27 tons (24.5 metric tons) for both single vehicles and truck-tractor semi-trailers.

The overall length of the two-span bridge is 53.0 ft (16.2 m). It has a clear roadway width of 26.0 ft (7.9 m) that includes two 10 ft (3.0 m) travel lanes over the bridge. The deck width out-to-out is 28.0 ft (8.5 m). The superstructure consists of a reinforced concrete deck on steel I-beams. The substructure consists of timber caps on timber piles. Cross caps have been added to piles 3 and 6 of bent 1. The height from crown to stream bed is approximately 9 ft (2.7 m).

Bridge No. 44 was constructed in 1939. The bridge is currently posted to restrict weight limits at 27 tons (24.5 metric tons) for single vehicles and legal limit for truck-tractor semi-trailers.

The overall length of the two-span bridge is 52.0 ft (15.9 m). It has a clear roadway width of 26.0 ft (7.9 m) that includes two 10 ft (3.0 m) travel lanes over the bridge. The deck width out-to-out is 28.0 ft (8.5 m). The superstructure consists of a reinforced concrete deck on steel I-beams. The end bents are timber caps on timber piles and the interior bents are steel caps on H-piles. There is also a crutch at bent 1. The height from crown to stream bed is 14.0 ft (4.3 m).

NC 403 is classified as a rural major collector in the Statewide Functional Classification System. The 2002 average daily traffic (ADT) volume on NC 403 is estimated to be 4,100 vehicles per day (vpd). The percentages of truck traffic are 2 percent TTST vehicles and 3 percent dual-tired vehicles. The projected 2025 ADT is 8,600 vpd.

The two-lane facility measures approximately 20 ft (6.1 m) in width and has variable (approximately 10-14 ft (3.0–4.3 m)) grassed shoulders on each side of the roadway. On NC 403 southbound, the grade rises approximately 2 percent and there are mild reverse curves within 1500 ft of the south end of Bridge No. 35. Northbound, the grade rises approximately 0.5 percent and there is a right curve between the north end of Bridge No. 44 and Hargrave Elementary School. 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 CATV and telephone utilities along the east side of NC 403. There are no other apparent utilities. Utility impacts are expected to be low.

There is a US Fish and Wildlife Service (USFWS) Conservation Easement along the west side of NC 403 from the southeast end of Bridge No. 44 to approximately 300 feet (91 m) south of Bridge No. 35.

This section of NC 403 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 primarily swampy wooded areas and rural residential properties. Approximately 1700 ft north of Bridge No. 44, there is a driveway entrance to Hargrave Elementary School. Across from the school there is a mobile home park containing approximately 40 units. Approximately 1200 ft south of Bridge No. 35, there are several residences and outbuildings associated with farming operations.

Thirteen school buses cross Bridge Nos. 35 and 44 twice daily, for a total of twenty-six trips per day.

There were three crashes reported on NC 403 within the project area between August 1, 1999 and July 31, 2002. These included two crashes where vehicles hit a fixed object and one sideswipe of another vehicle.

III. ALTERNATIVES

A. Project Description

Based upon a preliminary hydraulics analysis, the proposed replacement structures will be approximately 105 ft (31.8 m) for both Bridge No. 35 and Bridge No. 44. The structures will include two 12 ft (3.6 m) travel lanes with 4 ft (1.2 m) of lateral clearance on each side of the bridge.

The length and opening size of the proposed structures 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 project.

The roadway approaches will provide two 12 ft (3.6 m) travel lanes with 8 ft (2.4 m) shoulders, 4 ft (1.2 m) of the shoulders being paved. The roadway approach and bridge grades will approximately match existing bridge and roadway elevations. The design speed will be 60 mph (100 Km/h).

B. Build Alternatives

Four (4) build alternatives for replacing Bridge Nos. 35 and 44 are described below:

Alternative A (Preferred)

Alternative A consists of replacing the bridges in-place with new bridges. During construction, traffic will be maintained by an off-site detour. The total length of roadway approach work for this alternative is approximately 1457 ft (444 m). Refer to Figures 7A and 7B for illustration of Alternative A.

Existing traffic would be detoured two ways. Local traffic will be detoured via SR 1904 (Pine Ridge Road) and SR 1740 (Lake Artesia Road). The length of this detour is estimated to be 11.8 miles (18.9 km). Truck traffic will be detoured via NC 24 and I-40. The length of this detour is estimated to be 20 miles (32.1 km) Refer to Figure 6 for illustration of the studied detour routes.

Alternative B

Alternative B consists of replacing the bridges in-place with new bridges. During construction, traffic will be maintained by a temporary on-site detour along the east side of NC 403. The total length of roadway approach work for this alternative is approximately 1457 ft (444 m), and the length of the temporary detour is approximately 1909 ft (582 m). Refer to Figures 8A and 8B for illustration of Alternative B.

Alternative B was not selected as the preferred because of the potential impacts to the Conservation Easement, the wetland impacts associated with the temporary detour and the higher construction costs.

Alternative C

Alternative C consists of replacing the bridges on new alignment with new bridges along the east side (downstream) of NC 403. The existing bridges and roadway will be used to maintain traffic during the construction period. The total length of roadway approach work for this alternative is approximately 2797 ft (853 m). Refer to Figures 9A and 9B for illustration of Alternative C.

Alternative C was not selected as the preferred because of impacts to high quality wetlands and the higher construction costs.

Alternative D

Alternative D consists of replacing the bridges in-place with one bridge. The causeway between the two existing bridges will be removed. During construction, traffic will be maintained by an off-site detour. The total length of roadway approach work for this alternative is approximately 1457 ft (444 m). Refer to Figures 10A and 10B for illustration of Alternative D.

Existing traffic would be detoured two ways. Local traffic will be detoured via SR 1904 (Pine Ridge Road) and SR 1740 (Lake Artesia Road). The length of this detour is estimated to be 11.8 miles (18.9 km). Truck traffic will be detoured via NC 24 and I-40. The length of this detour is estimated to be 20 miles (32.1 km) Refer to Figure 6 for illustration of the studied detour routes.

Alternative D was not selected as the preferred because of the higher construction costs.

C. Alternatives Eliminated From Further Consideration

The "Do-Nothing" alternative will eventually necessitate closure of the bridges due to their poor conditions. This is not desirable due to the traffic service provided by NC 403.

Investigation of the existing structures by the NCDOT Bridge Maintenance Unit indicates that rehabilitation of the existing bridges is not feasible due to their age and deteriorated condition.

Alternatives along the west side of NC 403 were eliminated to avoid substantial impacts to the US Fish and Wildlife Conservation Easement.

D. Preferred Alternative (Alternative A)

Alternative A consists of replacing the bridges in-place with new bridges. During construction, traffic will be maintained by an off-site detour. This alternative was selected as the preferred alternative because it does not impact the US Fish and Wildlife Conservation Easement, has fewer wetland impacts than Alternative's B and C, and has the lowest construction costs.

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

IV. ESTIMATED COSTS

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

Table 1
Estimated Project Costs

	Alternative A (Preferred)	Alternative B	Alternative C	Alternative D
Structure Removal (Existing)	$ 27,000	$ 27,000	$ 27,000	$ 27,000
Structure Proposed	$ 608,000	$ 608,000	$ 608,000	$1,443,000
Roadway Approaches	$ 367,000	$ 367,000	$ 966,000	$ 310,000
Detour Structure and Approaches	$ 0	$ 756,000	$ 0	$ 0
Miscellaneous and Mobilization	$ 260,000	$ 544,000	$ 530,000	$ 360,000
Engineering and Contingencies	$ 238,000	$ 398,000	$ 369,000	$ 360,000
Right-of-Way/Easement and Utilities	$ 31,500	$ 46,800	$ 38,700	$ 25,000
Total Project Cost	**$ 1,531,500**	**$ 2,746,800**	**$ 2,538,700**	**$2,525,000**

The estimated cost of the project, as shown in the 2002-2008 NCDOT Transportation Improvement Program is $1,030,000, including $150,000 spent in prior years, $80,000 for right-of-way and $800,000 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 U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map of Faison, NC (USGS 1975) 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).

Aerial photography 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, and wetland hydrology) following U.S. Army Corps of Engineers (USACE) 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 USACE and the NC Division of Water Quality (DWQ).

Water resource information for Six Runs 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.

At the time of the field investigation, the most current USFWS list of federal protected species listed for Sampson County was dated February 26, 2001, and this list was reviewed prior to the field investigation. Currently, the most recent USFWS list is dated February 25, 2003. No additional species have been listed for Sampson County. In addition, NHP records documenting the presence of federal or state listed species within the project study area were consulted before commencing the field investigation and an updated records search was performed on December 20, 2001, April 12, 2002, December 10, 2002 and May 15, 2003.

Direct observations of terrestrial and aquatic wildlife were documented. 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).

The study limits used to evaluate the existing natural resources were approximately 3,000 ft (914 m) in length and 600 ft (183 m) in width, which equates to an area of approximately 41 acres (17 ha). Impact calculations are based upon the proposed right-of-way of each alternative.

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 generally characterized as nearly level to gently sloping. Elevations in the project study area range from 105 to 110 feet (32 to 34 m) above mean sea level (MSL) (USGS 1975).

The project study area consists of bottomland hardwood forest, mixed hardwood forest, pine/hardwood forest, successional pasture, and maintained/disturbed areas.

The project study area crosses four soil mapping units (USDA 1985). The hydric soils located within the project study area consist of the Bibb (*Typic Fluvaquents*) series, Johnston (*Cumulic Humaquepts*) series and Lumbee (*Typic Ochraquults)* series. The Bibb and Johnston series are grouped together and represent one soil mapping unit (USDA 1985). Non-hydric soils within the project study area that may contain hydric soil inclusions include Johns fine sandy loam (*Aquic Hapludults*) and Marvyn loamy sand (*Typic Hapludults*), which are typically found along stream terraces or in well-defined drainageways.

C. Water Resources

C.1. Waters Impacted

The project study area is located within sub-basin 030619 of the Cape Fear River Basin (DWQ 1999, DWQ 2000) and is part of USGS hydrologic unit 03030006 (USGS 1974). Six Runs Creek originates approximately 1.3 miles (2.1 km) north of NC 403 at the confluence of Hoe Swamp and an unnamed tributary and flows generally in a southerly direction through the project study area to its confluence with the Black River in southeastern Sampson County. The drainage area at the bridge crossings is 29 square miles (74.7 square kilometers). Six Runs Creek has been assigned Stream Index Number (SIN) 18-68-2-(0.3) by the DWQ from its source to its confluence with Quewhiffle Swamp (DENR 2001a).

Six Runs Creek is a perennial stream with moderate flow over substrate consisting of sand and silt. Water clarity was moderate with the majority of the color coming from tannic acid. The portion of Six Runs Creek that was accessible for delineation has a bankfull channel width of approximately 50 feet (15 m) and the depth likely exceeds 5 feet (1.5 m). A geomorphic characterization of the stream section within the project study area indicates that the delineated portion of Six Runs Creek within the project study area is a "C" type channel (Rosgen 1996).

A small, intermittent stream also occurs within the eastern end of the project study area approximately 3,000 feet (914 m) from the intersection of NC 403 and SR 1740. This intermittent stream flows along the side of NC 403 into the bottomland hardwood forest adjacent to Six Runs Creek. No geomorphic characterization was performed on this intermittent stream channel due to its small size and disturbed nature. This intermittent stream does not run under either of the two bridges.

There is an excavated canal within the bottomland hardwood forest associated with Six Runs Creek. This canal is located on the east side of NC 403 and connects Six Runs Creek with a man-made irrigation pond

located outside the project study area. The canal is approximately 20 to 25 feet in width (6 to 8 m) and extends for approximately 270 feet (82 m) between the pond and the channel of Six Runs Creek. The canal represents a "G" type channel, which is indicative of highly entrenched "gully-type" channels (Rosgen 1996). This man-made canal does not run under either of the two bridges.

Six Runs Creek has been assigned a best usage classification of **C Sw** (DEM 1993, DENR 2001a). 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. The unnamed intermittent tributary of Six Runs Creek also has the best usage classification of **C Sw**.

No Outstanding Resource Waters (**ORW**), High Quality Waters (**HQW**), **WS-I**, or **WS-II** Waters occur within 1.0 miles (1.6 km) upstream or downstream of the project study area (DEM 1993, DENR 2001a). Six Runs Creek is designated as an **ORW** approximately 15 miles (24 km) downstream of the project study area. Six Runs Creek has been listed in the Nationwide Rivers Inventory, which means that it has been recognized as a significant free-flowing area that could be designated as a Wild and Scenic River (Hackney *et al.* 1992).

One method used by DWQ to monitor water quality is through long-term monitoring of macroinvertebrates. The two closest benthic monitoring stations on Six Runs Creek are located approximately 12 miles (19.3 km) and 17 miles (27.3 km) downstream of the project study area, and were sampled in 1996 and 1998 respectively. The monitoring station 12 miles (19.3 km) downstream on SR 1004 received a bio-classification of Fair in 1996 (DWQ 1999). The monitoring station 17 miles (27.3 km) downstream on SR 1960 received a bio-classification of Good in 1998 (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. Six Runs Creek has not been sampled to determine a NCIBI score as of the most recent Basinwide Assessment Report (DWQ 1999).

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as "point sources". There is one permitted point source discharger located on Six Runs Creek 16 miles (26 km) downstream.

C.2. 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 bridges, 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.3. Impacts Related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled: "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", and "Best Management Practices for Bridge Demolition and Removal".

Bridge No. 35 is the southernmost bridge to be replaced. The superstructure of Bridge No. 35 consists of a continuous reinforced concrete deck on steel I-beams. The bridge has two spans and totals 53 feet (16.2 m) in length. All bents are timber caps and piles. There is the potential for the concrete deck to be dropped into waters of the United States during demolition and removal. The maximum resulting temporary fill associated with the removal of Bridge No. 35 is approximately 34.5 cubic yards (26.4 cubic m).

Bridge No. 44 is the northernmost bridge to be replaced. The superstructure of Bridge No. 44 consists of a continuous reinforced concrete deck on steel I-beams. The bridge has two spans and totals 52 feet (15.9 m) in length. The end bents are timber caps and piles and the interior bents are steel caps on H-piles. There is also a crutch at bent 1. There is the potential for the concrete deck to be dropped into waters of the United States during demolition and removal. The maximum resulting temporary fill associated with the removal of Bridge No. 44 is approximately 33.7 cubic yards (25.8 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

Terrestrial 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. Five plant communities were identified within the project study area: Coastal Plain bottomland hardwood forest, mixed hardwood forest, mixed pine/hardwood forest, successional land, and maintained/disturbed land. These communities total approximately 40.2 acres (16.2 ha), which does not include the existing impervious surface (1.4 acres [0.6 ha]) or the open water (0.9 acre [0.4 ha]) attributed to Six Runs Creek, the canal, and the unnamed intermittent tributary.

Coastal Plain Bottomland Hardwood Forest – Coastal Plain bottomland hardwood forest covers approximately 21.1 acres (8.5 ha)[50 percent] of the project study area. These plant communities are typically located landward of abandoned or relict natural levee deposits, point bar ridges, and other relatively high parts of the floodplain associated with rivers or streams (Schafale and Weakley 1990). The Coastal Plain bottomland hardwood forest within the project study area is part of the active floodplain of Six Runs Creek. Dominant tree and shrub species include red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), laurel oak (*Quercus laurifolia*), American elm (*Ulmus americana*), river birch (*Betula nigra*), tag alder (*Alnus serrulata*) and scattered swamp tupelo (*Nyssa biflora*). Groundcover species consist of lizard tail (*Saururus cernuus*), smartweed (*Polygonum amphibium*), arrow arum (*Peltandra virginica*), softrush (*Juncus effusus*), cattail (*Typha latifolia*), netted chain fern (*Woodwardia areolata*), cinnamon fern (*Osmunda cinnamomea*) and greenbriar (*Smilax rotundifolia*).

Mixed Hardwood Forest – The mixed hardwood forest covers approximately 7.7 acres (3.1 ha)[18 percent] of the project study area. This natural plant community is located upslope of the Coastal Plain bottomland hardwood forest. Dominant tree and shrub species consist of red maple, sweetgum, tulip poplar (*Liriodendron tulipifera*), flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), and water oak. Groundcover species consist primarily of greenbriar, giant cane (*Arundinaria gigantea*), and Japanese honeysuckle (*Lonicera japonica*).

Mixed Pine/Hardwood Forest – The mixed pine/hardwood forest covers approximately 1.2 acres (0.5 ha)[3 percent] of the project study area. This natural plant community is located upslope of the Coastal Plain bottomland hardwood forest. Dominant tree and shrub species consist of young loblolly pine (*Pinus taeda*), water oak, sweetgum, red maple, and wax myrtle (*Myrica cerifera*). Groundcover species consist of greenbriar, Japanese honeysuckle, and blackberry (*Rubus* sp.). This area is located east of NC 403 near the southern boundary of the project study area, and it appears to have been logged several years back.

Successional Land – Successional land covers approximately 3.6 acres (1.4 ha)[8 percent] of the project study area. This community is located east of SR 403 near the northern end of the project study area and consists of pasture. This pasture area is currently vegetated with various grasses (*Panicum* spp. and *Paspalum* spp.) along with a few scattered oaks (*Quercus* spp.) and loblolly pine.

Maintained/Disturbed Land – The maintained/disturbed land covers approximately 6.6 acres (2.7 ha)[16 percent] of the project study area. Maintained/disturbed land located within the project study area includes such areas as roadsides and ROW's, residential areas, dirt roads / driveways, and an athletic field associated with an adjacent school. Vegetation associated with the maintained/disturbed land includes grasses such as fescue, rye grass, and unidentified species of *Panicum* sp. and *Paspalum* sp.

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 Six Runs Creek provide cover and food and allow animals to travel between different habitats.

No terrestrial reptiles were observed within the project study area. Species expected to occur within the project study area include eastern box turtle (*Terrapene carolina*), eastern garter snake (*Thamnophis sirtalis*), ringneck snake (*Diadophis punctatus*), 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 white-spotted slimy salamander (*Plethodon cylindraceus*), Fowler's toad (*Bufo woodhouseii),* marbled salamander *(Ambystoma opacum*), spring peeper (*Pseudacris crucifer*), and northern cricket frog (*Acris crepitans*).

Bird species observed in the project study area include American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), song sparrow (*Melospiza melodia*), pileated woodpecker (*Dryocopus pileatus)* and blue jay (*Cyanocitta cristata*). Avian species expected to occur in the habitat types located within the study area include such species as great blue heron (*Ardea herodias*), Carolina chickadee (*Parus carolinensis*), downy woodpecker (*Picoides pubescens*), white-breasted nuthatch (*Sitta carolinensis*), ruby-crowned kinglet (*Regulus calendula*), eastern bluebird (*Sialia sialis*), white-throated sparrow (*Zonotrichia albicollis*), and common grackle (*Quiscalus quiscula*).

No mammals or signs there of 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*), white-tailed deer (*Odocoilus virginiana*) and eastern cottontail (*Sylvilagus floridanus*).

D.3. Aquatic Communities

Limited kick-netting, seining, dip-netting, and visual observation of stream banks and channel within the project study area were conducted in Six Runs Creek to document the resident aquatic wildlife populations. The water depth greatly limited the amount of benthic samples collected. Samples were collected from the edge of the deep channel along mud banks and sandbars. Benthic macroinvertebrate samples were collected pursuant to current DWQ Aquatic Insect Collection Protocols.

Benthic macroinvertebrate organisms collected within Six Runs Creek were identified to at least Order and Family if possible and include fingernail clams (Mollusca:Corbicula), mosquito larvae (Diptera), midges (Diptera:Chironimidae), crayfish (Decapoda:Crustacea), dragonflies (Odonta), and water boatmen (Hemiptera). Identifications are based on McCafferty (1998).

The water depth did not allow for electro-shocking to sample the resident fish populations. Based upon the habitat type in this part of the Coastal Plain, the following fish species are known to occur in Six Runs Creek: eastern mosquitofish (*Gambusia holbrooki*), blue-spotted sunfish (*Enneacanthus gloriosus*), yellow bullhead (*Ameiurus natalis*), eastern mud minnow (*Umbra pygmaea*), pirate pearch (*Aphredoderus sayanus*), bluegill (*Lepomis macrochirus*), warmouth (*Lepomis gularis*), and sawcheek darter (*Etheostoma serrifer*).

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 Six Runs Creek could be used by striped bass and American shad (NCWRC 2001). However, Menhinick (1991) does not document either American shad or striped bass as occurring in the upper reaches of Six Runs 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).

The only two aquatic reptiles observed within the project study area included a southern water snake (*Nerodia fasciata*) and an eastern cottonmouth (*Agkistrodon piscivorus*). Other species expected to occur within the project study area include the brown water snake (*Nerodia taxispilota*), slider (*Pseudemys scripta*), mud turtle (*Kinosternon subrubrum*), painted turtle (*Chrysemys picta*), and snapping turtle (*Chelydra serpentina*).

No aquatic amphibians were observed within the project study area. Other species expected to occur within the project study area include such species as bullfrog (*Rana catesbeiana*), green tree frog (*Hyla cinera*), Southern leopard frog (*Rana utricularia*), and pickerel frog (*Rana palustris*).

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 detour or easement that falls outside of the estimated permanent right-of-way limit. 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.

Table 2
Potential Impacts to Plant Communities

PLANT COMMUNITY	POTENTIAL IMPACTS Acres (hectares)				
	ALT A	ALT B		ALT C	ALT D (Preferred)
	Impacts	Impacts	Temp. Impacts*	Impacts	Impacts
Coastal Plain Bottomland Hardwood	1.49 (0.60)	2.80 (1.13)	0.89 (0.36)	2.38 (0.96)	1.30 (0.52)
Mixed Hardwood Forest	0.29 (0.12)	0.39 (0.16)	0.09 (0.03)	0.98 (0.40)	0.29 (0.12)
Mixed Pine/Hardwood Forest	0.00	0.00	0.00	0.00	0.00
Successional Land	0.00	0.00	0.00	0.31 (0.13)	0.00
Maintained/Disturbed Land	0.36 (0.15)	0.40 (0.16)	0.39 (0.16)	0.58 (0.23)	0.32 (0.13)
Total (Acre[ha])	**2.14 (0.87)**	**3.59 (1.45)**	**1.37 (0.55)**	**4.25 (1.72)**	**1.91 (0.77)**
TOTAL FOR ALT (Acre[ha])	**2.14 (0.87)**	**4.96 (2.00)**		**4.25 (1.72)**	**1.91 (0.77)**

* Note: Temporary construction impacts are based on the portion of the impacts not included in the construction limits for the permanent structure.

Permanent community impacts for Alternative D represent the least amount of the four alternatives. The highest amount of permanent plant community impacts result from Alternative C, which calls for bridge replacement on new alignment east of the existing structures. The plant community with the largest amount of potential permanent and temporary impacts for all proposed alternatives is the Coastal Plain bottomland hardwood forest community.

D.4.b. Aquatic Communities

The proposed bridge replacements will not result in substantial loss or displacement of known aquatic wildlife populations. Potential down-stream impacts to aquatic habitat will be avoided by bridging Six Runs Creek to maintain regular flow and stream integrity. In addition, temporary impacts to downstream habitat from increased sediment during construction are expected to 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.

E. Special Topics

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

Surface waters within the embankments of Six Runs Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "Waters of the United States" (33 CFR 328.3). 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). Pursuant to Cowardin et al. (1979) jurisdictional wetlands occur within the project study area in the form of Coastal Plain bottomland hardwood forest. The Coastal Plain bottomland hardwood forest exhibits characteristics of a palustrine, forested, broad-leaved deciduous, seasonally flooded (PFO1C) wetland (Cowardin *et al.* 1979).

The surface waters within Six Runs Creek exhibit characteristics of riverine, lower perennial, unconsolidated bottom, permanently flooded (R2UBH) waters. (Cowardin *et al.* 1979). A small, intermittent stream runs along the west side of NC 403 on the northern end of the project study area and exhibits characteristics of riverine, intermittent, unconsolidated bottom, intermittently flooded (R4UBJ) waters. This stream flows into the bottomland hardwood forest adjacent to Six Runs Creek. Six Runs Creek is a jurisdictional surface water.

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 jurisdictional area within the project limits. Temporary impacts include those impacts that will result from temporary construction activities outside of permanent right-of-way and/or those associated with temporary on-site detours. Temporary impacts will be restored to their original condition after the project has been completed. Permanent impacts are those areas that will be in the construction limits and/or the proposed right-of-way of the new structure and approaches. Potential wetland and surface water impacts are included in Table 3.

Table 3
Anticipated Impacts to Jurisdictional Wetlands and Surface Waters

JURISDICTIONAL AREAS	POTENTIAL IMPACTS acres (hectares)				
	ALT A	ALT B		ALT C	ALT D (Preferred)
	Impacts	Impacts	Temp. Impacts*	Impacts	Impacts
R2UBH	0.25 (0.10)	0.31 (0.13)	0.05 (0.02)	0.24 (0.10)	0.25 (0.10)
R4UBJ	0.0	0.0	0.0	0.02 (0.01)	0.0
PFO1C	1.49 (0.60)	2.80 (1.13)	0.89 (0.36)	2.38 (0.96)	1.30 (0.52)
Total Areas (acres[ha])	1.74 (0.70)	3.11 (1.26)	0.94 (0.38)	2.64 (1.07)	1.55 (0.62)
TOTAL FOR ALT (acres[ha]):	1.74 (0.70)	4.05 (1.64)		2.64 (1.07)	1.55 (0.62)
Perennial Stream Channel Impacts feet (meters)	245 (75)	360 (110)	60 (18)	290 (88)	245 (75)
Intermittent Stream Channel Impacts feet (meters)	0.0	0.0	0.0	435 (133)	0.0
TOTAL FOR ALT feet(meters)	245 (75)	420 (128)		725 (221)	245 (75)

R2UBH – riverine, lower perennial, unconsolidated bottom, permanently flooded
R4UBJ – riverine, intermittent, unconsolidated bottom, intermittently flooded
PFO1C – palustrine, forested, broad-leaved deciduous, seasonally flooded
*Note: Temporary construction impacts are based on the portion of the impacts not included in the construction limits for the permanent structure.

Alternative D, replaces the bridges in-place using an off-site detour, incurs the least amount of jurisdictional impacts with regard to wetlands and stream channel. Alternative B, replaces the bridges in-place with an on-site detour on the east side, incurs the highest amount of jurisdictional wetland impacts with 4.05 acres (1.64 ha). Alternative C, replaces the bridges on new alignment east of the existing bridges, incurs the second highest amount of jurisdictional wetland impacts and the highest amount of stream channel impacts with 725 linear feet (221 m). The intermittent stream channel is potentially impacted only by Alternative C. All four alternatives potentially impact Six Runs Creek and the adjacent wetlands. Alternative D will have the least amount of impact to surface waters and jurisdictional wetlands.

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 Evaluation

Avoidance – The project's purpose necessitates traversing the creek; therefore, totally avoiding surface water impacts is impossible. The proposed alternative involves replacing the bridge "in-place" and utilizing an off-site detour. This will prevent any temporary impacts associated with on-site detours.

Minimization – Impacts will be minimized by replacing the structures in their existing locations and maintaining traffic with an off-site detour. This replacement method will require the smallest relative construction footprint. However, utilization of BMPs is recommended in an effort to minimize impacts, including avoiding placing staging areas within wetlands.

Mitigation - Compensatory mitigation is not expected for this project due to the limited nature of project impacts. Temporary impacts associated with the construction activities could be mitigated by replanting disturbed areas with native species and removal of any temporary fill material within the floodplain upon project completion. Final compensatory wetland and stream mitigation requirements will be determined by the USACE.

F. Rare and Endangered Species

F.1. Federally Protected Species

Species with the federal classification of Endangered (E), Threatened (T), or Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of 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 February 25, 2003) in Table 4.

Table 4
Federally Protected Species Listed for Sampson County, North Carolina

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 (S/A) – a species carrying the threatened status due to having a similar appearance to another listed species.

American alligator - American alligator is listed as Threatened based on the similarity in appearance to other protected crocodilians; however, there are no other crocodilians within North Carolina. American alligators can be found in a variety of freshwater to estuarine aquatic habitats including swamp forests, marshes, large streams and canals, and ponds and lakes (Martof *et al.* 1980).

Potential habitat for American alligator does exist within the project study area; however, no individuals were observed. Construction activities may temporarily displace American alligators in the vicinity; however, no long-term impact to the American alligator is anticipated as a result of this project.

BIOLOGICAL CONCLUSION: NONE REQUIRED

The American alligator is listed as Threatened due to Similarity of Appearance [T(S/A)]. T(S/A) species are not subject to Section 7 consultation and a biological conclusion is not required. Potential habitat does exist for the American alligator within the project study area. Any impacts to this species will be only temporary in nature.

Red-cockaded woodpecker (RCW) - This small woodpecker measuring 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 (Potter *et al.* 1980). Primary nest sites for RCWs include open pine stands greater than 60 years of age with little or no mid-story development. Foraging habitat is comprised of open pine or pine/mixed hardwood stands 30 years of age or older (Henry 1989). Primary habitat consists of mature to over-mature southern pine forests dominated by loblolly, long-leaf (*Pinus palustris*), slash (*P. elliotii*), and pond (*P. serotina*) pines. Nest cavities are constructed in the heartwood of living pines, generally older than 60 years, that have been infected with red-heart disease. Nest cavity trees tend to occur in clusters, which are referred to as colonies. 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. 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.

BIOLOGICAL CONCLUSION: NO EFFECT

No suitable nesting or foraging habitat for the red-cockaded woodpecker exists within the project study area. The mixed pine/hardwood forest located within the project study area is too young and too thick to provide

either nesting or foraging habitat. An updated NHP records search was performed on May 15, 2003. NHP records do not document any known RCW populations within 3.0 miles (4.8 km) of the project study area. This project will not have any impact on the red-cockaded woodpecker.

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

No suitable pondberry habitat exists within the project study area. Reference populations of pondberry within Sampson County were visited to determine the appropriate habitat and to review vegetative flowering characteristics. The reference populations that were visited consisted of shrubby pocosin with scattered pond pine, loblolly pine, and pond cypress. This habitat type is not present within the project study area. An updated NHP records search was performed on May 15, 2003. NHP records do not document the occurrence of pondberry within 3.0 miles (4.8 km) of the project study area. Due to lack of habitat, this project will not impact pondberry.

F.2. Federal species of concern

The January 29, 2003 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 and Hall 1999) within the project study area has been evaluated for the FSC listed for Sampson County and this data is summarized in Table 5.

An updated search of the NHP records on May 15, 2003 documented no FSC occurrences within 3.0 miles (4.8 km) of the project study area.

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.*). An updated NHP records search was performed on May 15, 2003. NHP records document the occurrence of one state-listed species occurring within the project study area. Grassleaf heartleaf (*Sagittaria graminea* var. *weatherbiana*) is listed as Significantly Rare (SR); however, it was last observed in the project study area in 1957. The SR designation provides no protection for this species.

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

Common Name	Scientific Name	Potential Habitat	State Status*
Bachman's sparrow	*Aimophila aestivalis*	N	SC
"Broadtail" madtom	*Noturus sp. 1*	Y	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
Long beach seedbox	*Ludwigia brevipes*	Y	SR-T
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 USFWS 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.

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, and 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 memorandum the SHPO stated "We are aware of no historic properties in the area of potential effect, except the bridge itself. Built in 1939, the bridge's (both) eligibility for listing in the National Register of Historic Places should be evaluated". In a meeting held on October 4, 2001, members of the NCDOT and SHPO concurred that neither Bridge No. 35 nor Bridge No. 44 are eligible for listing in the National Register of Historic Places. Therefore, no historic structures will be affected and compliance with Section 106 is complete. A copy of the SHPO memorandum and concurrence form is included in the Appendix.

C. Archaeology

In their August 6, 2001 memorandum the SHPO stated "There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources, which may be eligible for inclusion in the National Register of Historic Places, will be affected by the project construction. We, therefore recommend that no archaeological investigation be conducted in connection with this project." Based on the SHPO's comments, a survey was not conducted and compliance with Section 106 is complete. 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 Nos. 35 and 44 will not have an adverse effect on the quality of the human or natural environment with the use of the current North Carolina Department of Transportation roadway design standards and specifications.

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. The proposed project involves replacing the bridge in its existing location; therefore, no impacts to prime or locally important farmland are anticipated.

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 expected to result from this project. This project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis (if applicable), 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 and no additional reports are required.

The NCDOT Geotechnical Unit observed no evidence of underground storage tanks or other areas of contamination at or near the proposed project.

Sampson County is a participant in the National Flood Insurance Regular Program. The project is not located in a Detailed Study Area, but is located within a Zone A floodplain. There are no practical alternatives to crossing the floodplain area. The replacement structure is proposed as an in-kind replacement, and in the absence of historical problems, will not increase the upstream limits of the 100-year floodplain. The approximate 100-year floodplain in the project area is shown in Figure 11. 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 impacts will result from the replacement of Bridge Nos. 35 and 44.

VIII. 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.

IX. AGENCY COMMENTS

Agency comments were received during the scoping process and can be found in the Appendix.

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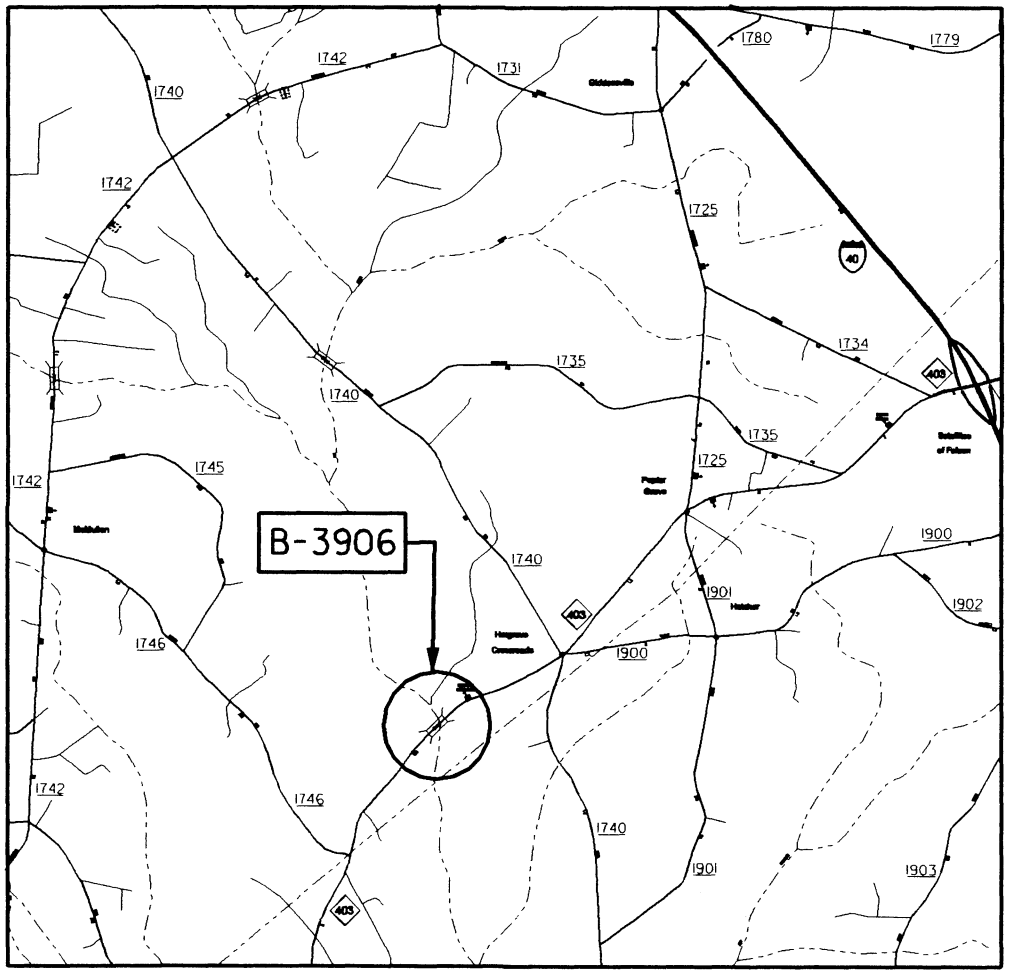
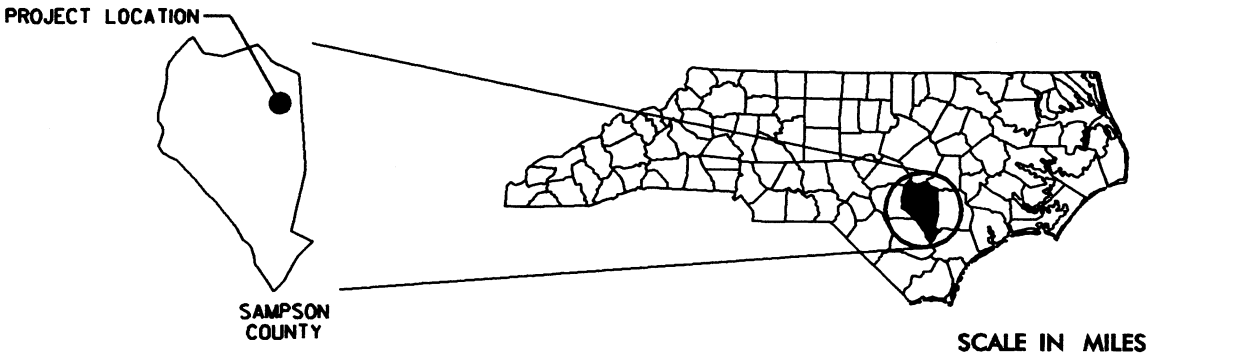
FIGURES





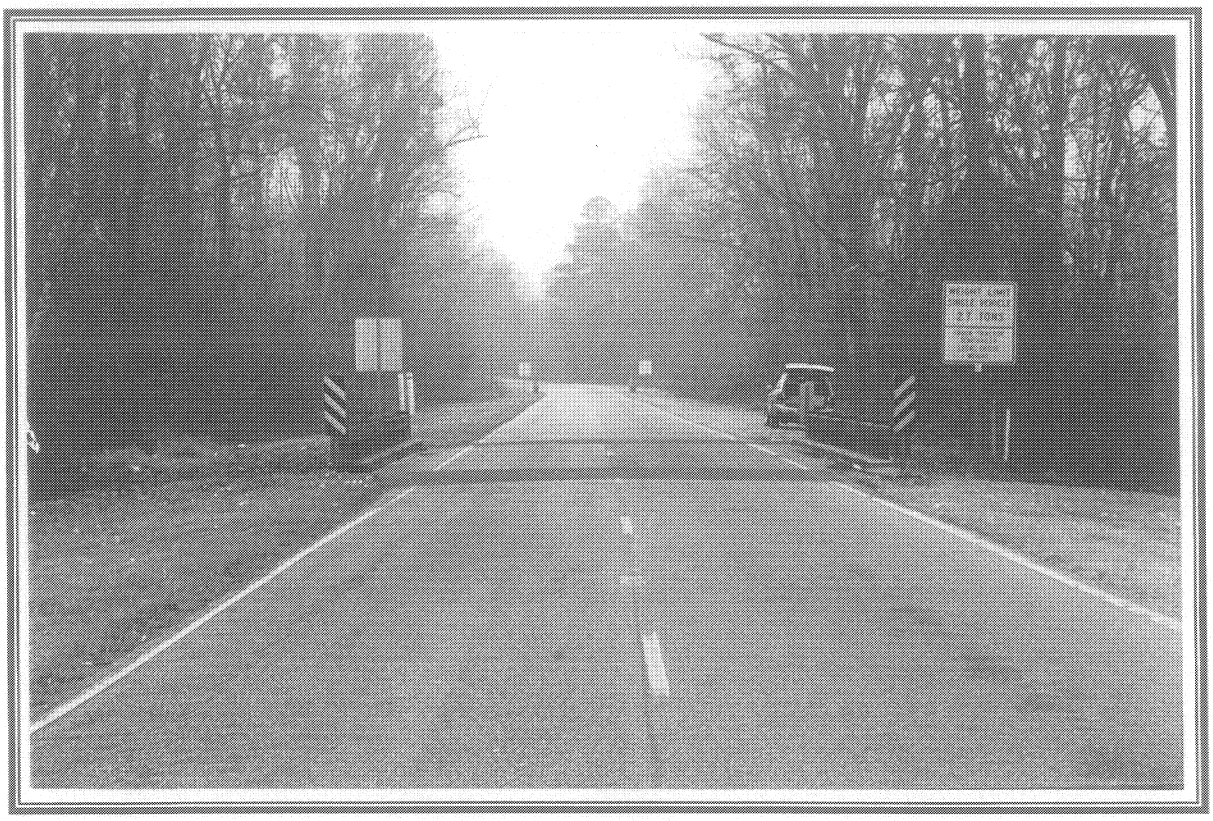
SCALE IN MILES

1 0 1

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

FIGURE 1
AREA LOCATION MAP
NC 403 (FAISON HIGHWAY)
BRIDGE NOS. 35 & 44
OVER SIX RUNS CREEK
SAMPSON COUNTY, NORTH CAROLINA
TIP PROJECT B-3906

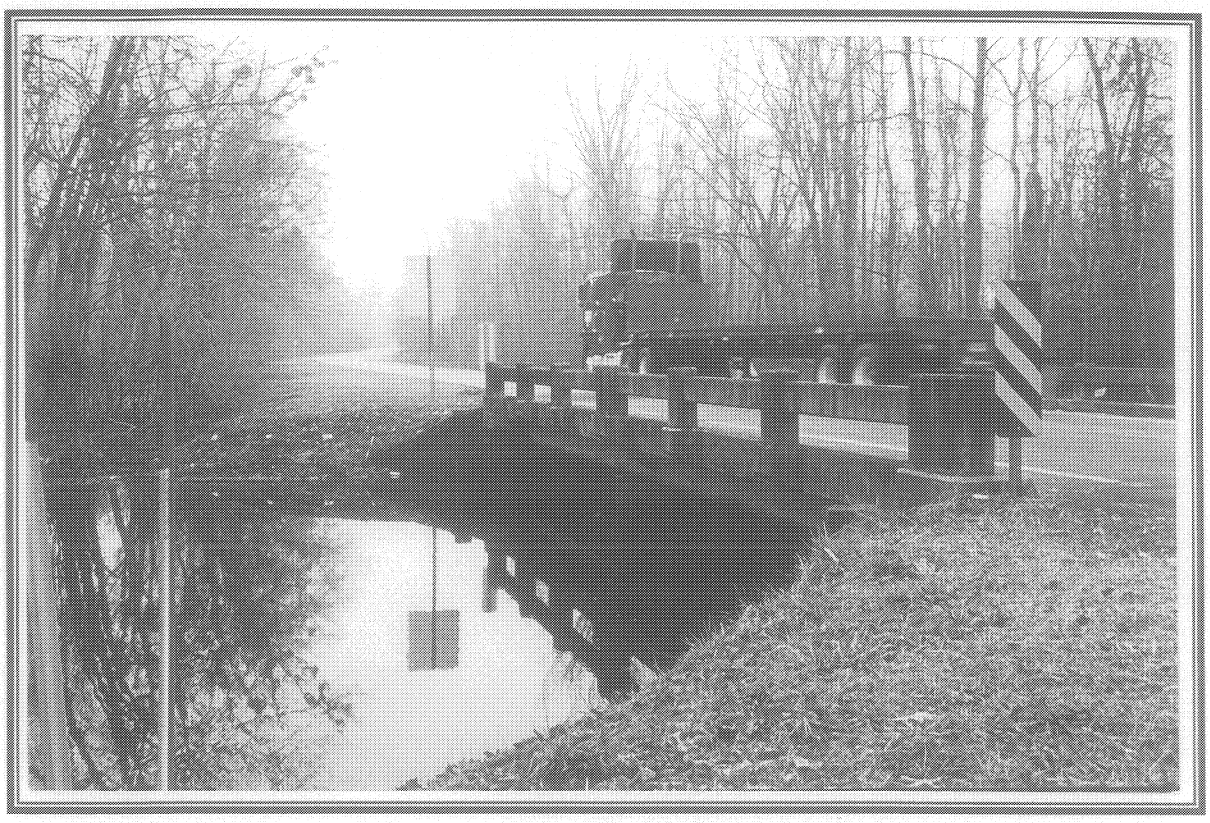
LOOKING NORTH ACROSS BRIDGE NO. 44



LOOKING SOUTH ACROSS BRIDGE NO. 44 TO BRIDGE NO. 35

B-3906 SAMPSON COUNTY
REPLACE BRIDGE NOS. 35 AND 44 OVER SIX RUNS CREEK

FIGURE 2
PROJECT PHOTOGRAPHS

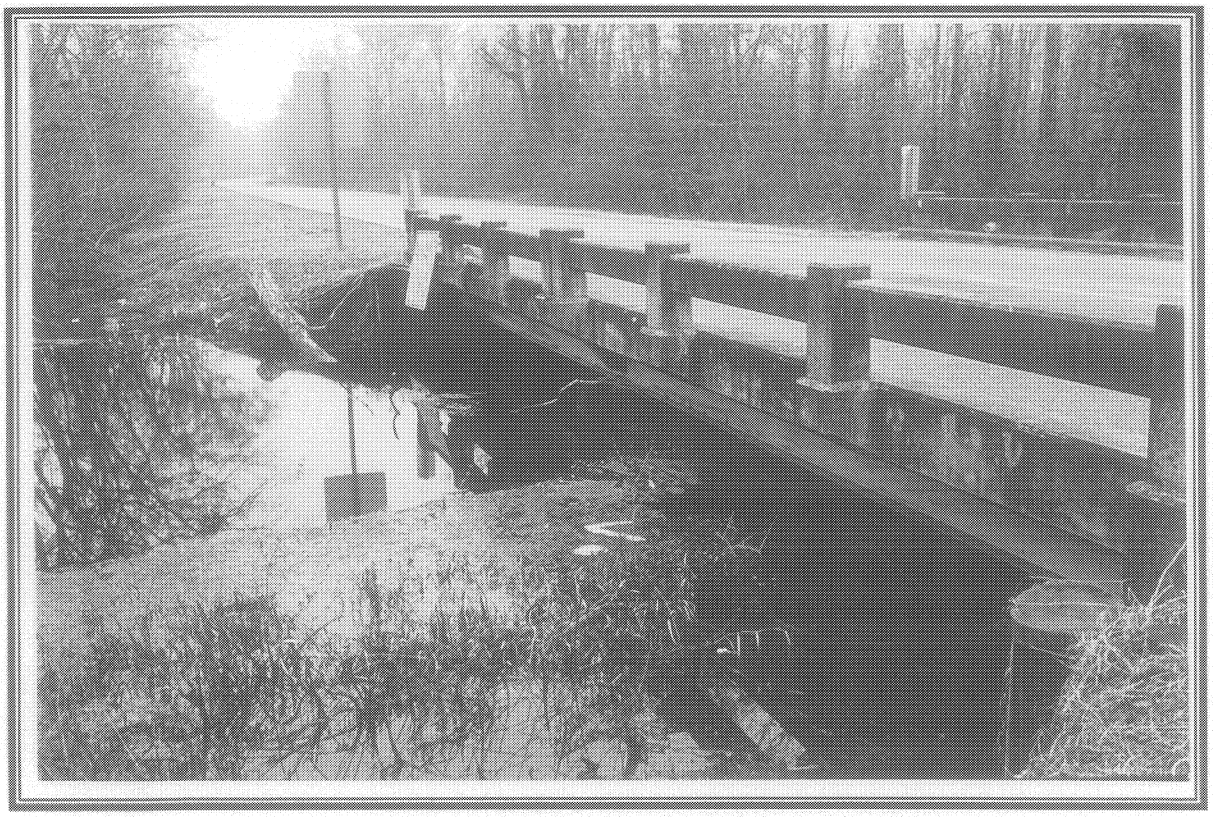


LOOKING AT WEST SIDE OF BRIDGE NO. 44

LOOKING AT EAST SIDE OF BRIDGE NO. 44

B-3906 SAMPSON COUNTY
REPLACE BRIDGE NOS. 35 AND 44 OVER SIX RUNS CREEK

FIGURE 3
PROJECT PHOTOGRAPHS



LOOKING AT WEST SIDE OF BRIDGE NO. 35

LOOKING AT EAST SIDE OF BRIDGE NO. 35

B-3906 SAMPSON COUNTY
REPLACE BRIDGE NOS. 35 AND 44 OVER SIX RUNS CREEK

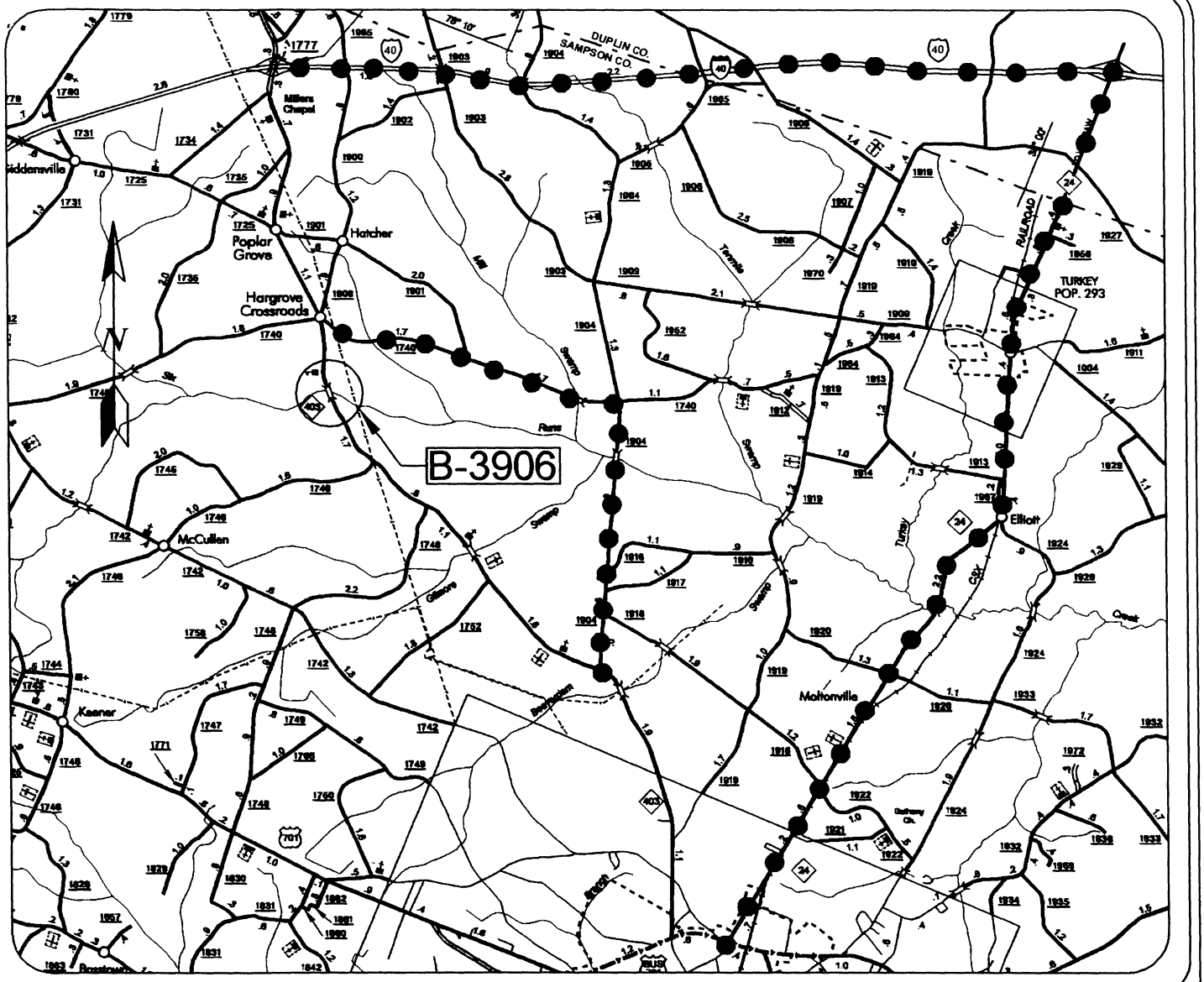
FIGURE 4
PROJECT PHOTOGRAPHS

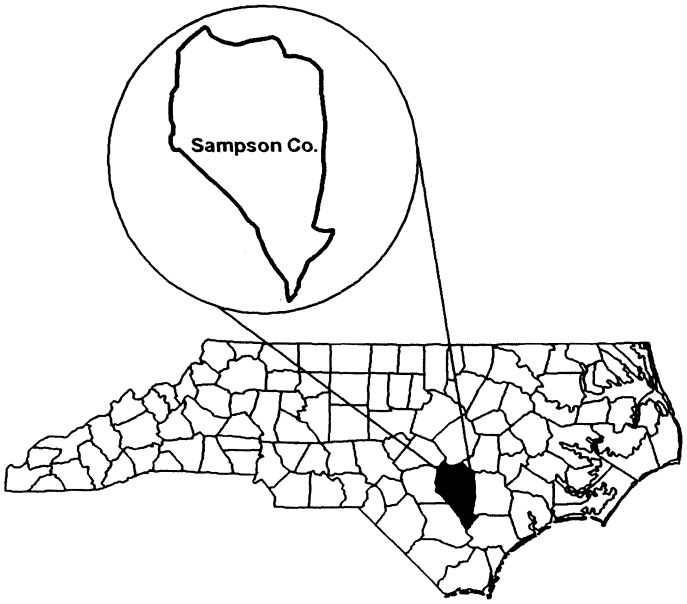
LOOKING SOUTH ACROSS BRIDGE NO. 35

LOOKING NORTH ACROSS BRIDGE NO. 35 TO BRIDGE NO. 44

B-3906 SAMPSON COUNTY
REPLACE BRIDGE NOS. 35 AND 44 OVER SIX RUNS CREEK

FIGURE 5
PROJECT PHOTOGRAPHS





Off-Site Detour Routes

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROPOSED OFF-SITE DETOURS
NC 403 (FAISON HIGHWAY)
BRIDGE NOS. 35 & 44
OVER SIX RUNS CREEK
SAMPSON COUNTY, NORTH CAROLINA
TIP PROJECT B-3609

Not to Scale

FIGURE 6

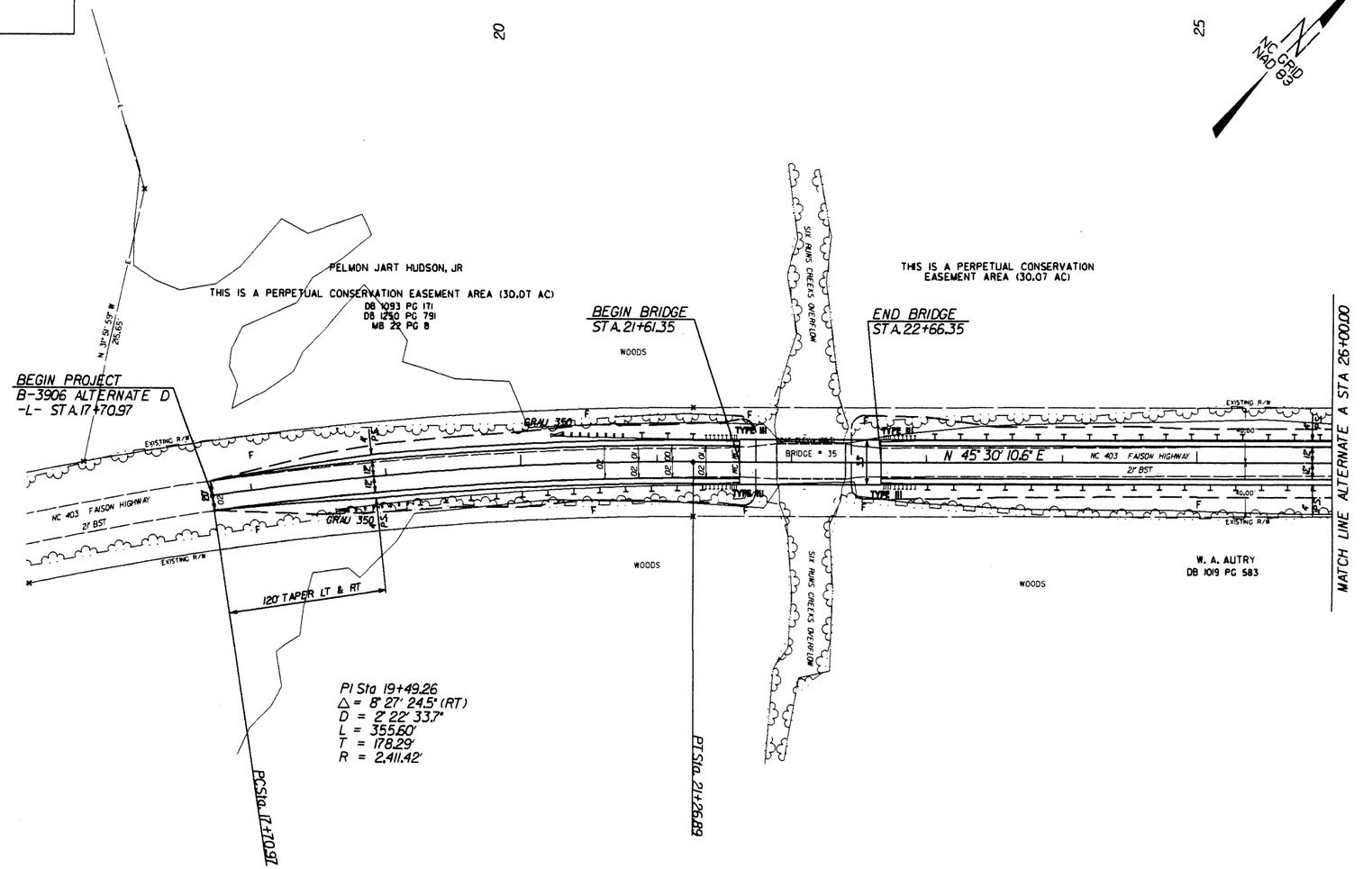
REVISIONS

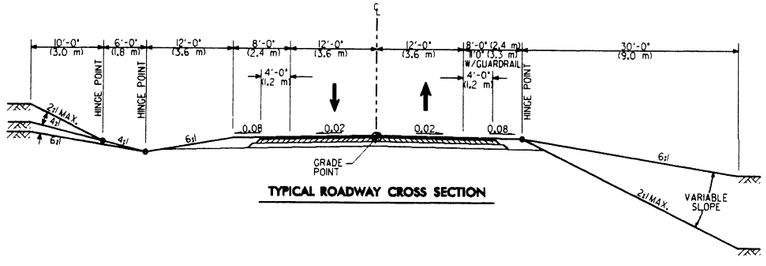
PROJECT REFERENCE NO.	SHEET NO.
B-3906	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

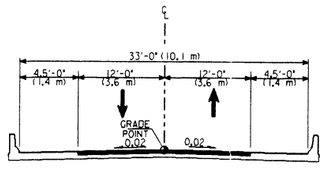
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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





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 (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST ,% DUALS	2% ,3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5%
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 7A

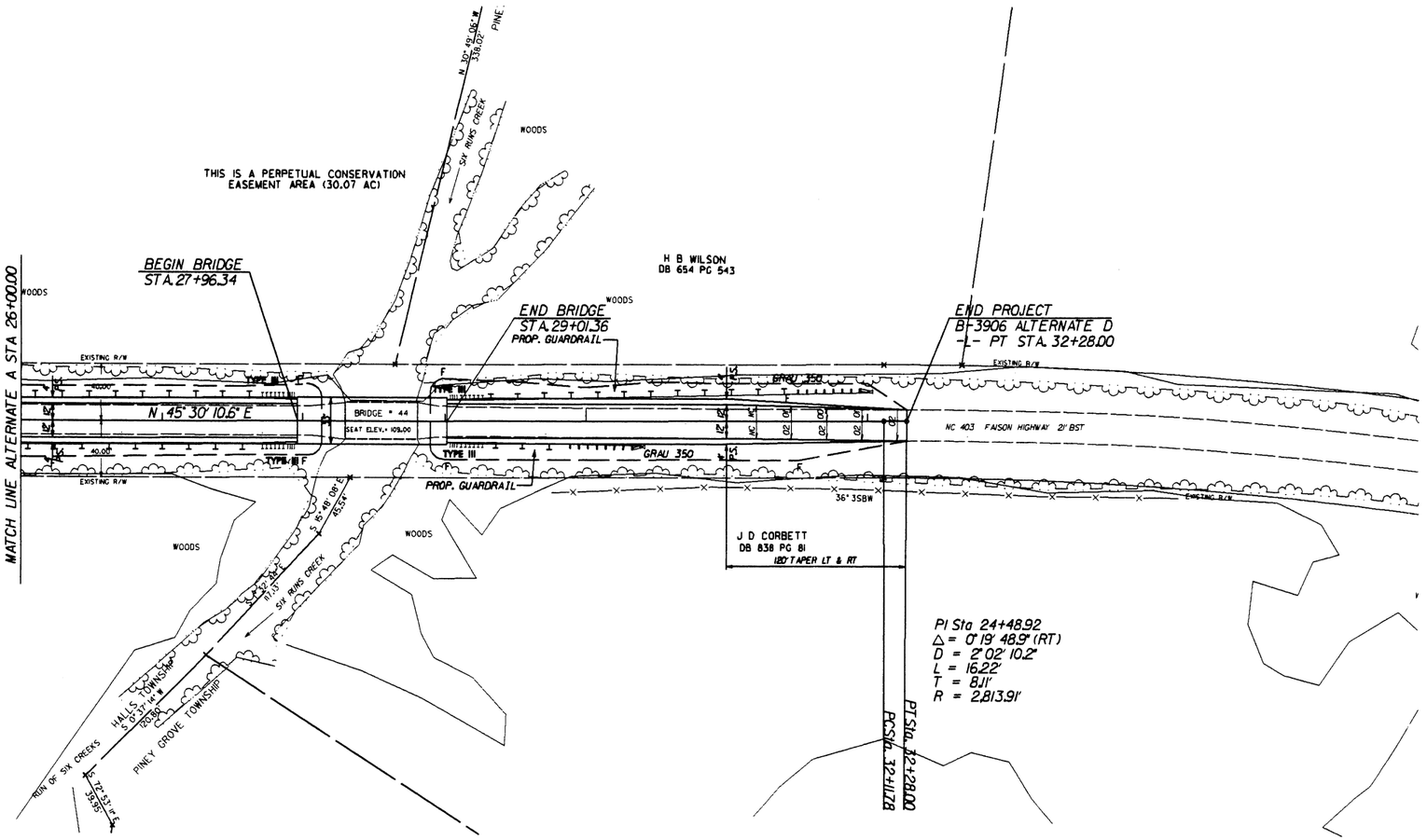
REVISIONS

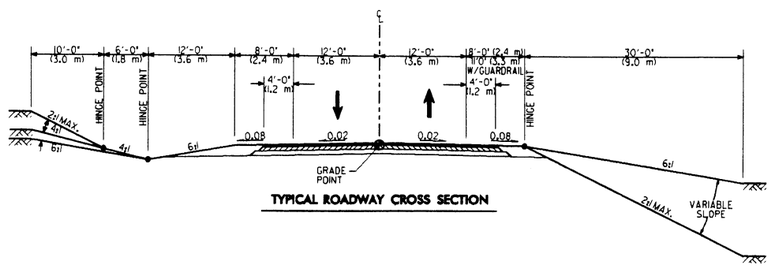
PROJECT REFERENCE NO.	SHEET NO.
B-3906	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

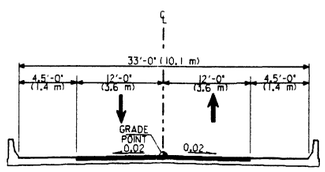
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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





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 (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST .% DUALS	2% 3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5%
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 7B

REVISIONS

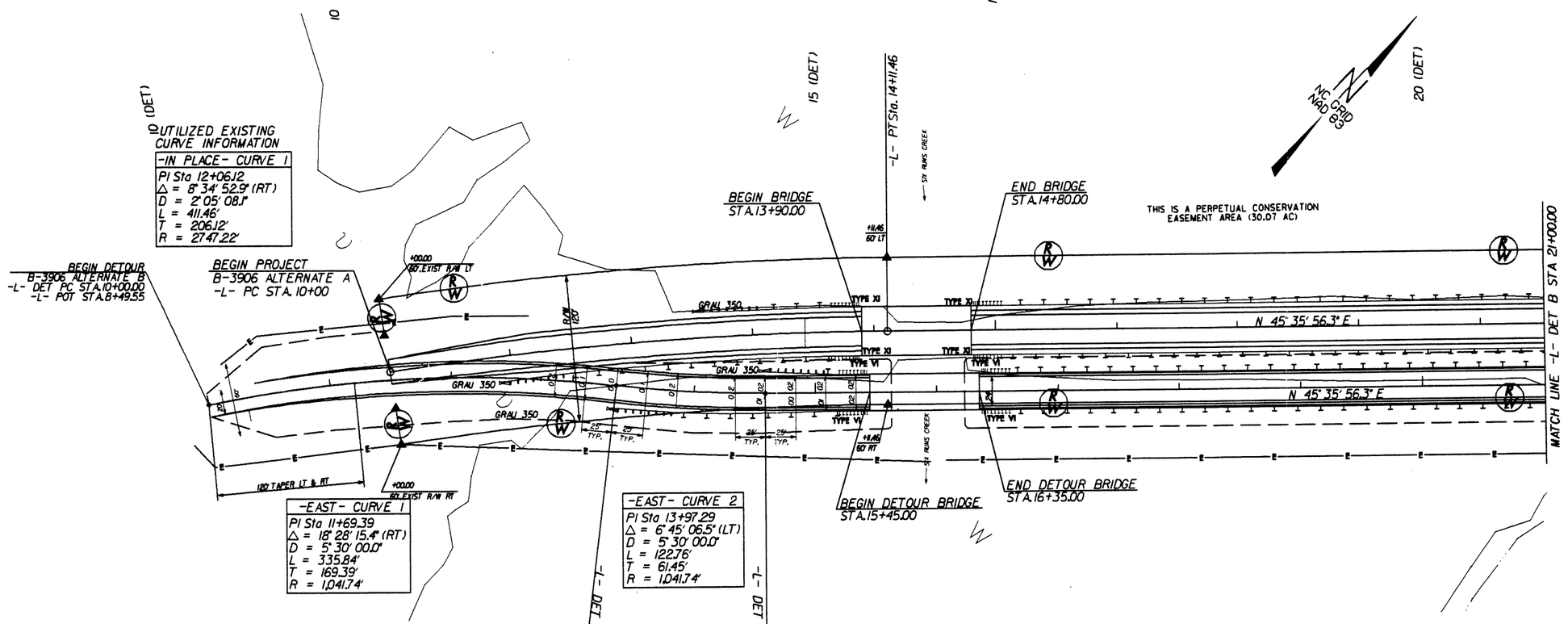
PROJECT REFERENCE NO.	SHEET NO.
B-3906	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

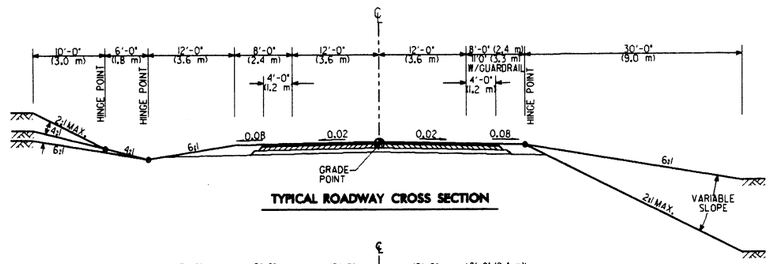
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

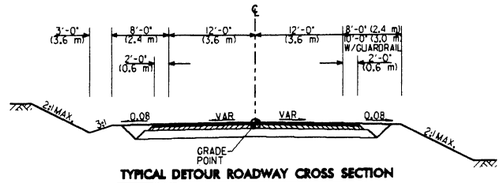
ALTERNATE B
(REPLACE IN PLACE WITH ON-SITE DETOUR EAST SIDE)

NOTE: SEE ALTERNATE A FOR IN-PLACE REPLACEMENT DESIGN

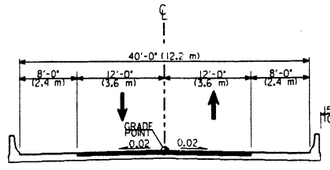




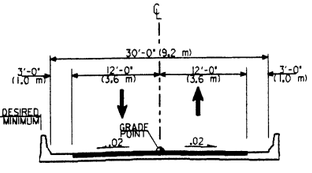
TYPICAL ROADWAY CROSS SECTION



TYPICAL DETOUR ROADWAY CROSS SECTION



TYPICAL BRIDGE CROSS SECTION



TYPICAL DETOUR BRIDGE CROSS SECTION

DESIGN CRITERIA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST ,% DUALS	2% ,3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1205 ft (368 m)
MAXIMUM GRADE	5% Flat
SUPERELEVATION RATE	Se = 0.08

DETOUR DESIGN CRITERIA

DESIGN SPEED	50 mph (80 km/h)
MIN. RADIUS	849 ft (259 m)
MAX GRADE	8%
SUPERELEVATION RATE	Se = 0.06

SCALE

50 0 50 100

FIGURE 8A

REVISIONS

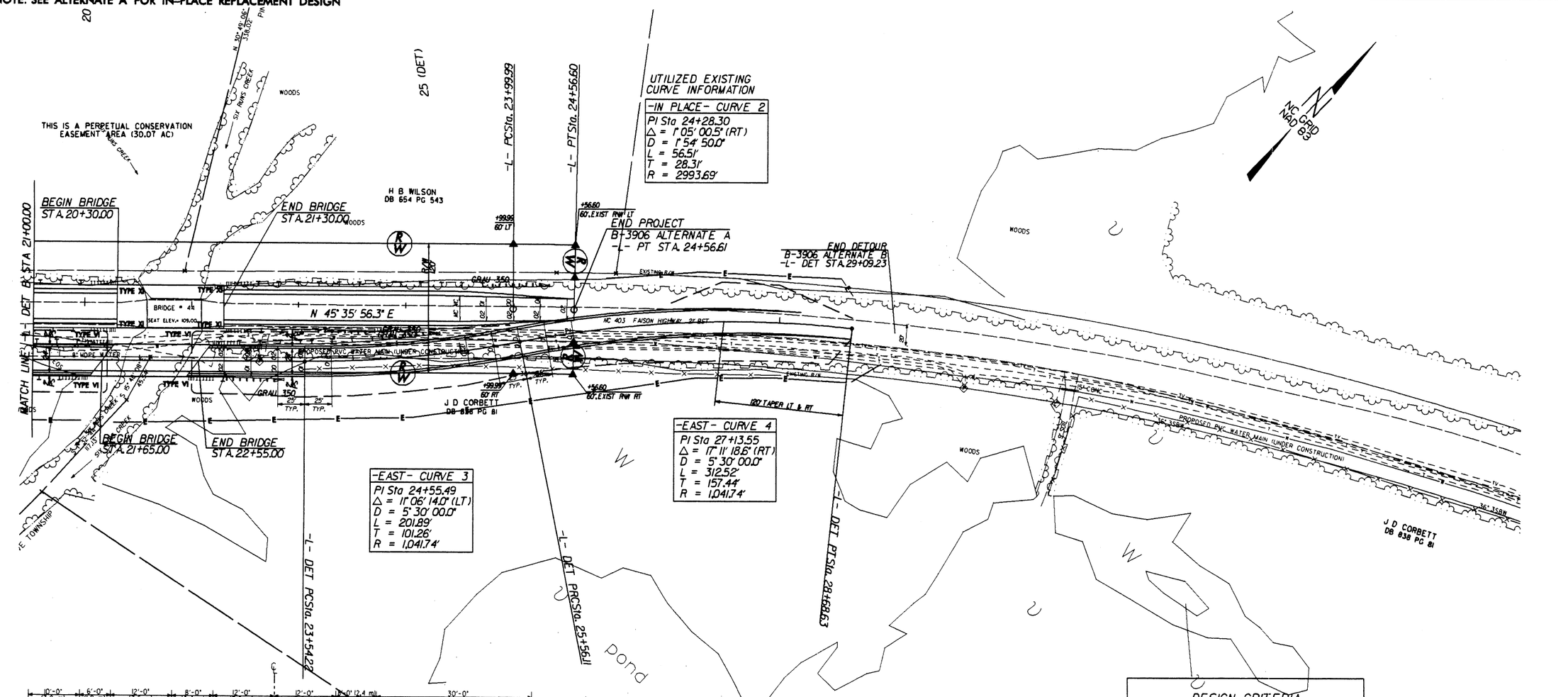
PROJECT REFERENCE NO.	SHEET NO.
B-3906	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ALTERNATE B
(REPLACE IN PLACE WITH ON-SITE DETOUR EAST SIDE)

NOTE: SEE ALTERNATE A FOR IN-PLACE REPLACEMENT DESIGN



DESIGN CRITERIA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST ,% DUALS	2%, 3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5% Flat
SUPERELEVATION RATE	Se = 0.08

DETOUR DESIGN CRITERIA

DESIGN SPEED	50 mph (80 km/h)
MIN. RADIUS	849 ft (259 m)
MAX GRADE	8%
SUPERELEVATION RATE	Se = 0.06

SCALE
50 0 50 100

FIGURE 8B

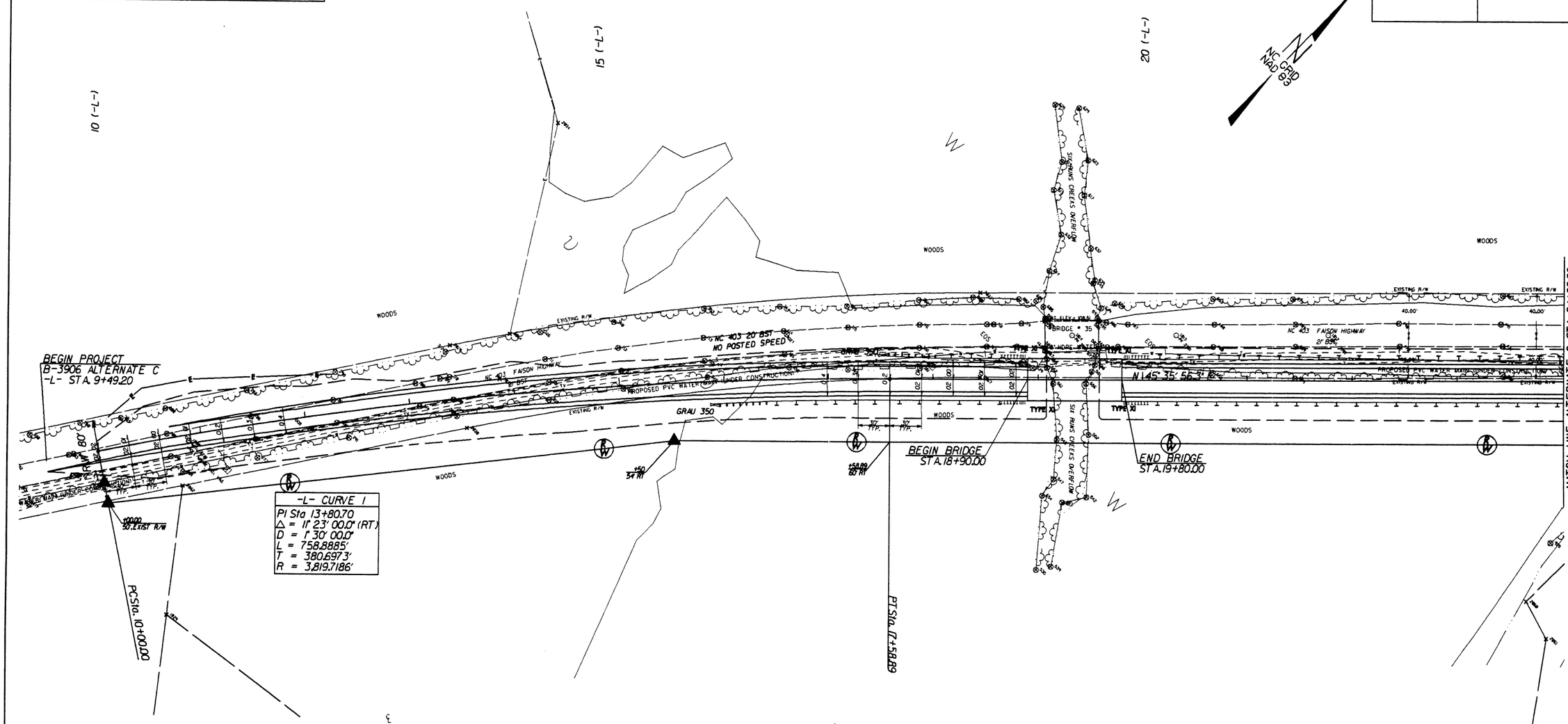
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	
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

ALTERNATE C
(REPLACE ON NEW LOCATION, EAST SIDE)



DESIGN CRITERIA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST ,% DUALS	2% ,3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5% Flat
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 9A

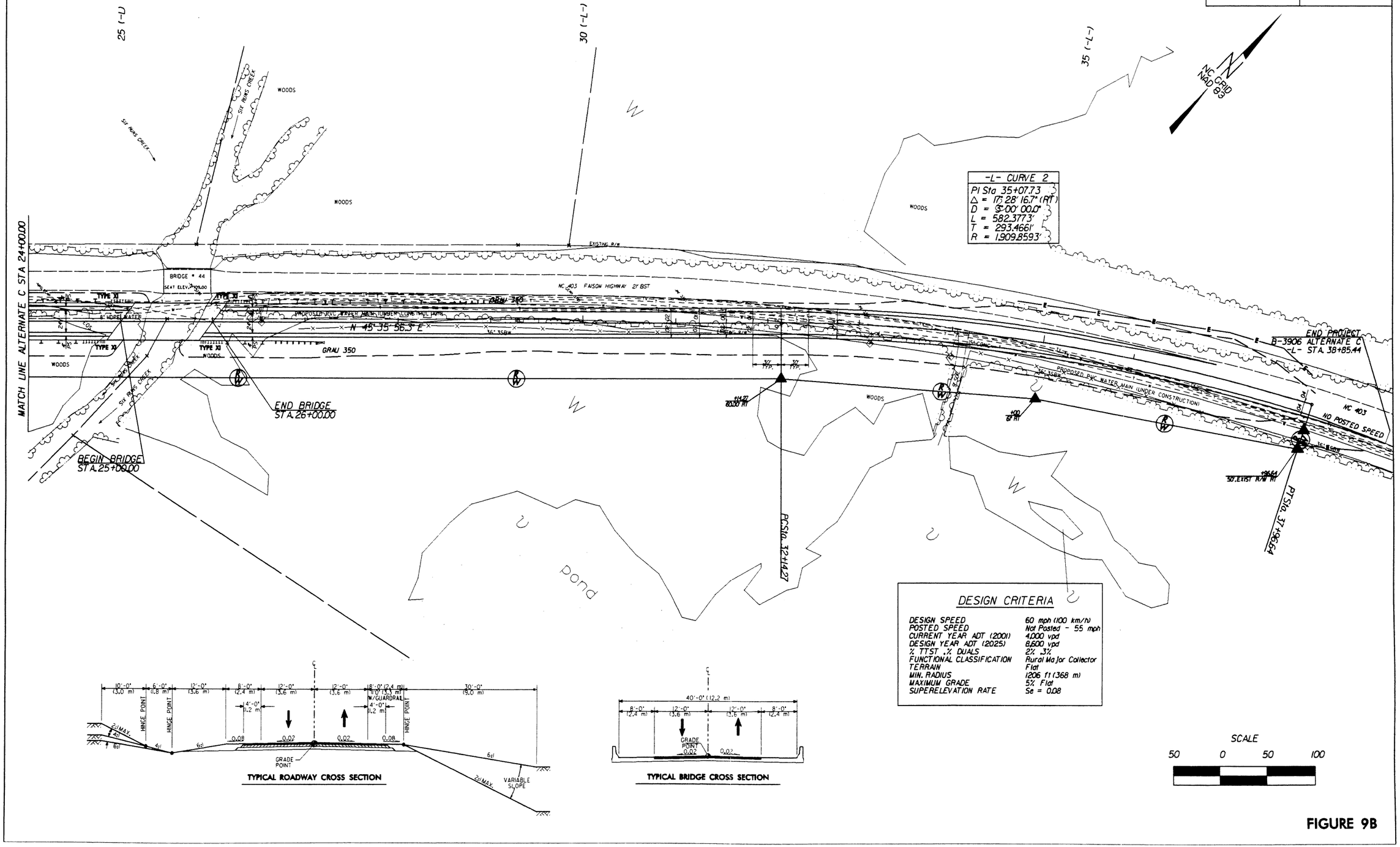
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3906	
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

ALTERNATE C
(REPLACE WITH NEW LOCATION, EAST SIDE)



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 (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST ,% DUALS	2% ,3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5% Flat
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 9B

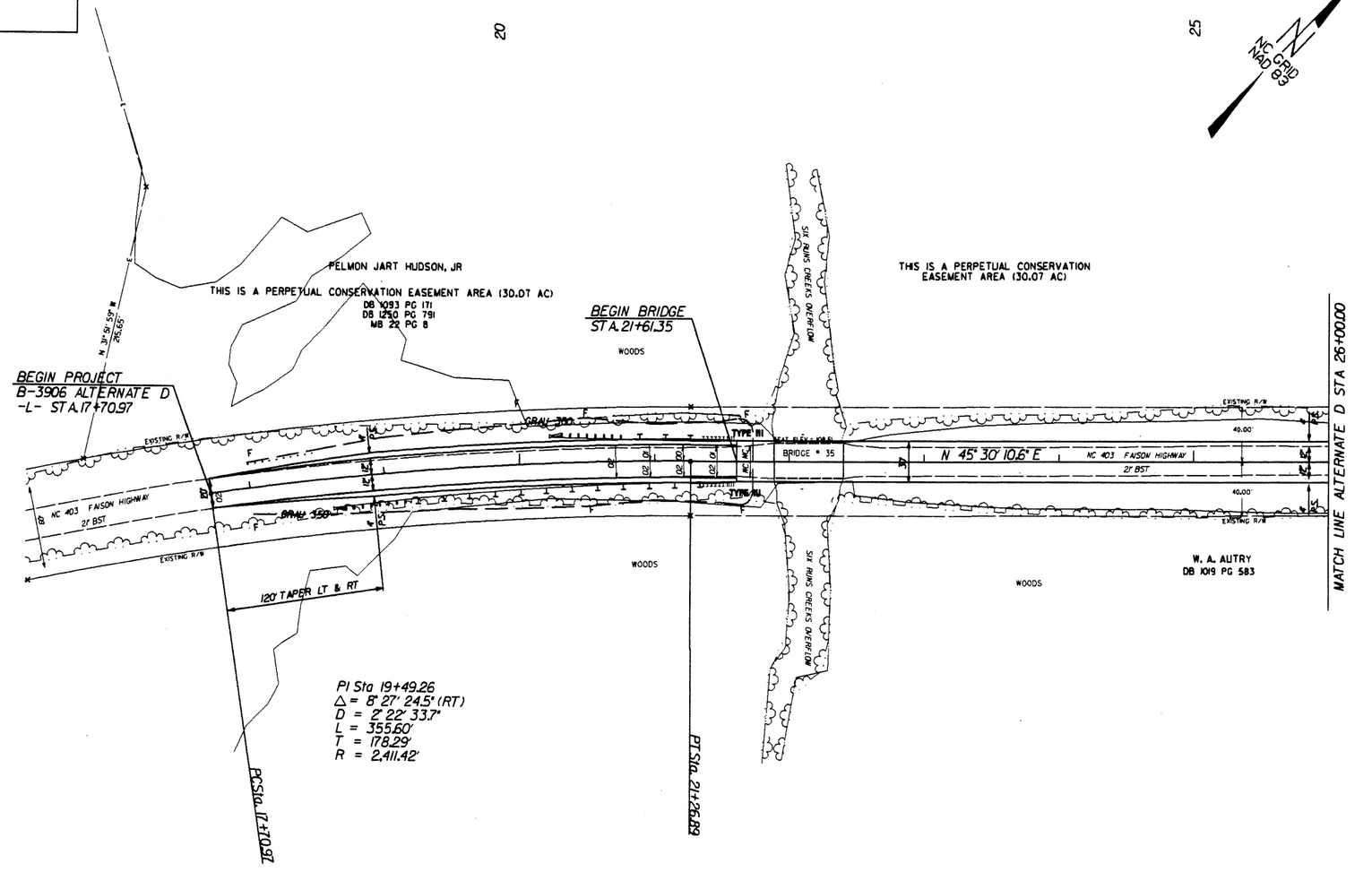
REVISIONS

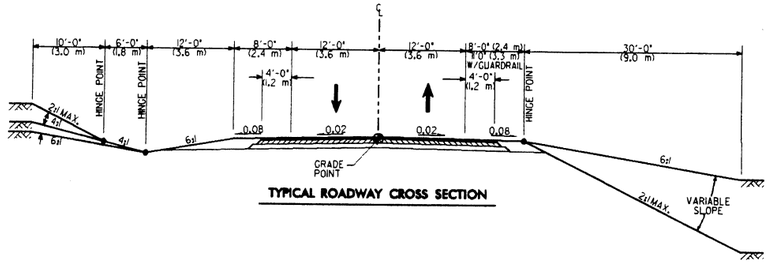
PROJECT REFERENCE NO.	SHEET NO.
B-3906	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

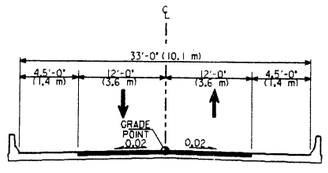
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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





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 (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST , % DUALS	2% , 3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5%
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 10A

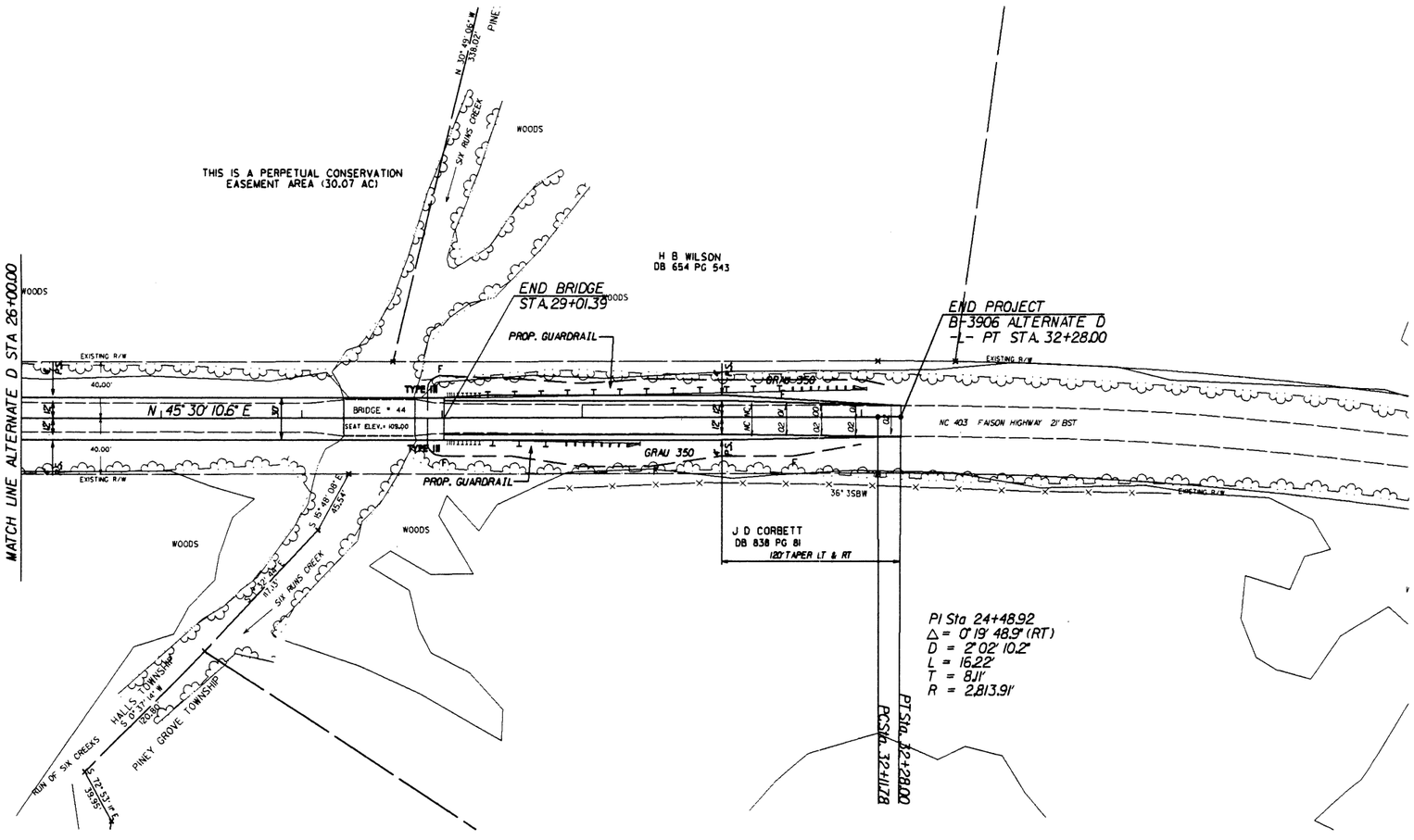
REVISIONS

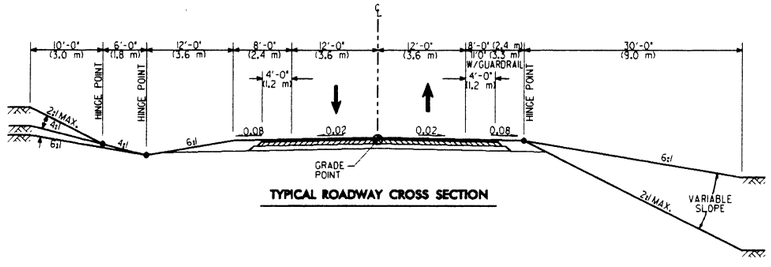
PROJECT REFERENCE NO.	SHEET NO.
B-3906	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

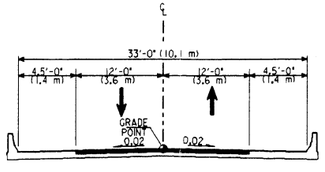
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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





TYPICAL ROADWAY CROSS SECTION



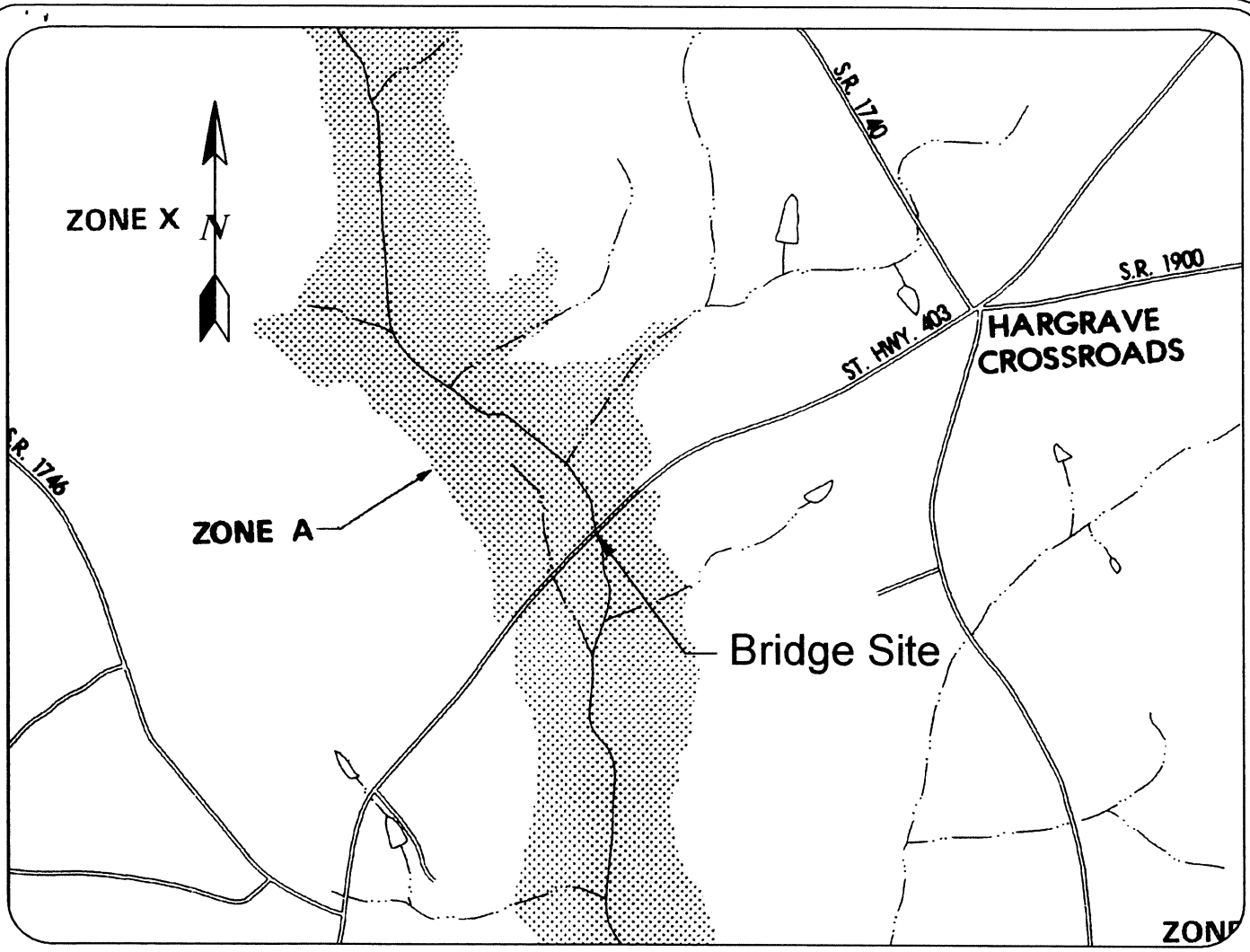
TYPICAL BRIDGE CROSS SECTION

DESIGN CRITERIA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	Not Posted - 55 mph
CURRENT YEAR ADT (2001)	4,000 vpd
DESIGN YEAR ADT (2025)	8,600 vpd
% TTST ,% DUALS	2% ,3%
FUNCTIONAL CLASSIFICATION	Rural Major Collector
TERRAIN	Flat
MIN. RADIUS	1206 ft (368 m)
MAXIMUM GRADE	5%
SUPERELEVATION RATE	Se = 0.08

SCALE
50 0 50 100

FIGURE 10B



FIRM
FLOOD INSURANCE RATE MAP

SAMPSON COUNTY,
NORTH CAROLINA
(UNINCORPORATED AREAS)

PANEL 150 OF 350

COMMUNITY–PANEL NUMBER:
370220 0150 B
EFFECTIVE DATE:
JULY 16, 1991

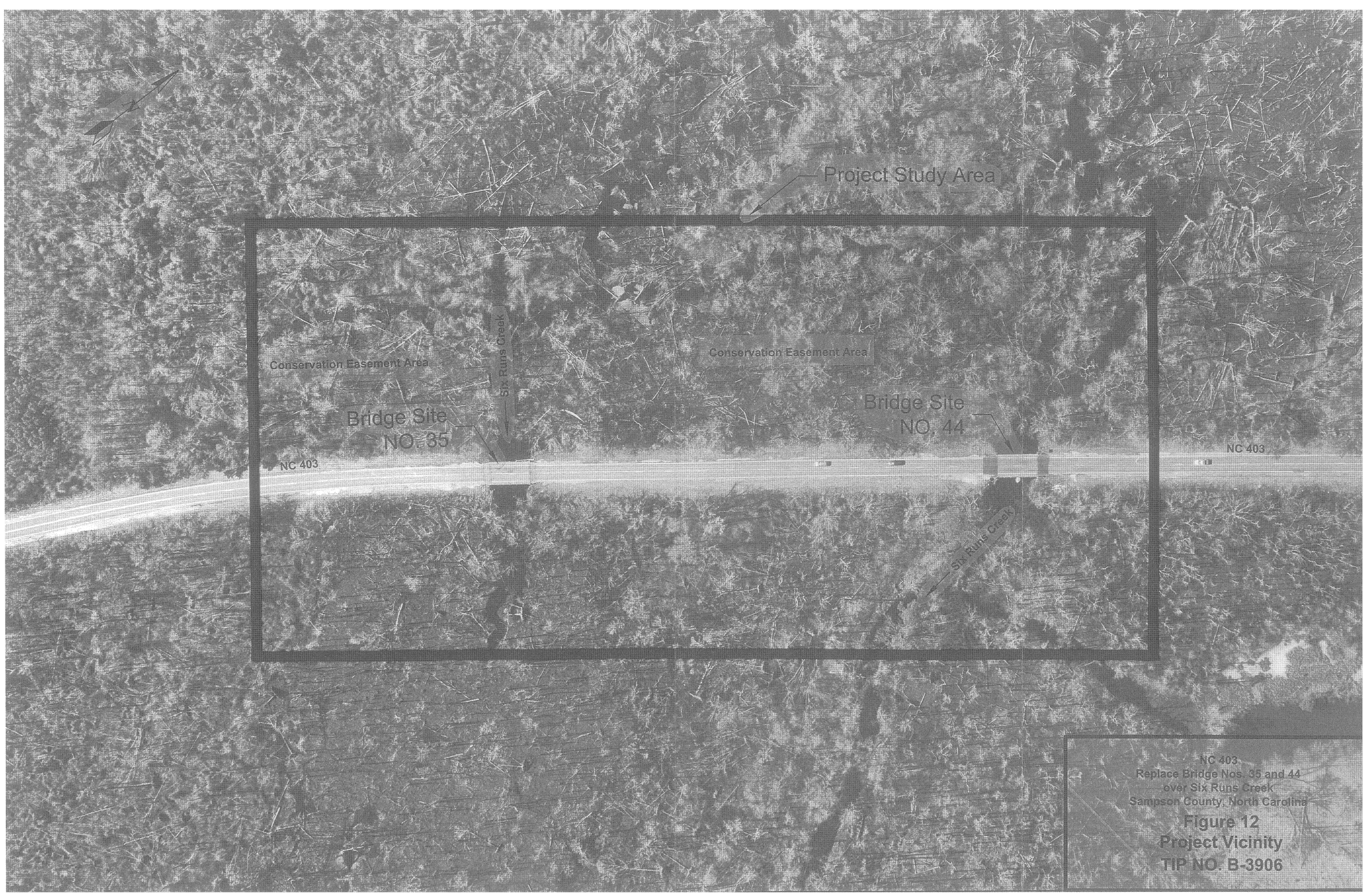
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

NC 403
Replace Bridge Nos. 35 and 44
over Six Runs Creek
Sampson County, North Carolina

TIP NO. B-3906
FEMA 100-YEAR FLOOD PLAIN MAP

Not to Scale

FIGURE 11



NC 403
Replace Bridge Nos. 35 and 44
over Six Runs Creek
Sampson County, North Carolina

Figure 12
Project Vicinity
TIP NO. B-3906

APPENDIX

Theresa Ellerby / Bill Gilmore

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

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

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

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

JUL 18

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

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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.

Cherry + Goodman

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 (KH for David Brook
Deputy State Historic Preservation Officer

Re: Replace Bridge Nos. 35 and 44 on NC 403 over Six Runs Creek, BRZ-403(2), 8.1281401, B-3906 and B-4267, Division 3, Sampson County, ER 01-10075

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

We are aware of no historic properties in the area of potential effect, except the bridge itself. Built in 1939, the bridge's eligibility for listing in the National Register of Historic Places should be evaluated.

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources, which may be eligible for inclusion in the National Register of Historic Places, will be affected by the project construction. We, therefore recommend that no archaeological investigation be conducted in connection with this project.

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

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St., Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 •733-8653
Restoration	515 N. Blount St., Raleigh , NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 •715-4801
Survey & Planning	515 N. Blount St., Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 •715-4801

Federal Aid # **BRSTP-403(2)** *TIP #* **B-3906** *County*: **Sampson**

CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

Project Description: Replace Bridges No. 35 and No. 44 on NC 403 over Six Runs Creek
On 10/4/01, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project at

- [ ] Scoping meeting
- [x] Historic architectural resources photograph review session/consultation
- [ ] Other

All parties present agreed

- [ ] There are no properties over fifty years old within the project's area of potential effects.
- [x] There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- [x] There are properties over fifty years old within the project's Area of Potential Effects (APE), but based on the historical information available and the photographs of each property, the properties identified as **Bridge No. 35 and Bridge No. 44** are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- [x] All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- [ ] There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Representative, NCDOT — Date: 10/4/01

Richard C. Dawson — 10/4/01
FHWA, for the Division Administrator, or other Federal Agency — Date

Representative, HPO — Date: 10/4/01

David Brook for — 10/4/01
State Historic Preservation Officer — Date

If a survey report is prepared, a final copy of this form will be included