STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 7, 2007

Mr. Bill Biddlecome
U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1000
Washington, NC 27889-1000

Dear Sir:

Subject: **Nationwide 23 Permit Application** for the Replacement of Bridge No. 77 over Kirby's Creek on NC 35; Northampton County; TIP Project B-4212; Federal Aid Project No. BRSTP-35(1). WBS Element 33558.1.1

Please find enclosed the permit drawings, half-size plans, and the Categorical Exclusion (CE) for the above-mentioned project. The North Carolina Department of Transportation proposes to replace existing Bridge No. 77 over Kirby's Creek on NC 35 in Northampton County. The project involves replacement of the existing functionally obsolete and structurally deficient bridge and approaches with a new 230-foot bridge and approaches. The new bridge will feature two 12-foot lanes with 6-foot offsets. The west approach will be approximately 385 feet long and the east approach will be approximately 325 feet long. Proposed permanent impacts include 0.03 acre of riverine wetland impacts. Additionally, there will be 0.02 acre of proposed permanent impacts to surface waters (pond).

Impacts to Water of the United States

General Description: Kirby's Creek is located in the 03010204 CU of the Chowan River Basin. The Division of Water Quality (DWQ) has assigned Kirby's Creek a Stream Index Number of 25-4-4. DWQ has assigned a best usage classification of **C NSW**.

Kirby's Creek is not designated as a North Carolina Natural or Scenic River, or as a national Wild and Scenic River. It is not it listed as a 303(d) stream within 1 mile. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1 mile of the project study area.

Permanent Impacts: As stated above, proposed permanent impacts consist of 0.01 acre of fill and 0.02 acre of mechanized clearing in riverine wetlands. The total amount of proposed impacts to jurisdictional wetlands is 0.03 acre. Additionally, there is 0.02 acre of proposed impacts to surface waters due to roadway fill.

Temporary Impacts: There are no temporary impacts proposed for this project

Utility Impacts: There will be no impacts to jurisdictional resources due to utilities.

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

Bridge Demolition

The superstructure for Bridge No. 77 is a reinforced concrete floor on timber joists and the substructure consists of timber caps on timber piles. All components will allow removal without dropping them into the water. Best Management Practices for Bridge Demolition and Removal will be implemented.

Avoidance and Minimization

Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States". Due to the presence of surface waters and wetlands within the project study area, avoidance of all impacts is not possible. The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Minimization measures were incorporated as part of the project design. These included:

- To minimize impacts, NCDOT is replacing Bridge No. 77 in place and utilizing an off-site detour.
- The bridge will be lengthened by 126 feet.
- The bridge will be constructed without any temporary access.
- NCDOT is also minimizing impacts to surface waters by utilizing longer spans with fewer bents than the existing bridge.
- NCDOT will observe an in-stream construction moratorium from February 15 to June 30 and utilize Stream Crossing Guidelines for Anadromous Fish Passage.
- 3:1 slopes were used in jurisdictional areas. 1.5:1 slopes and riprap were used as armoring along banks.
- Two preformed scour holes were utilized for this project.

Mitigation

The proposed project will have permanent impacts to wetlands totaling 0.03 acre. Due to the minimal amount of permanent impacts to jurisdictional wetlands, NCDOT is not proposing mitigation.

Federally Protected Species

As of May 10, 2007, the US Fish and Wildlife Service (USFWS) lists the red-cockaded woodpecker (*Picoides borealis*) as the only federally protected species for Northampton County. There is no habitat for the red-cockaded woodpecker within the project study area and the biological conclusion is "No Effect".

Cultural Resources

Bridge No. 77 is eligible for the National Register under Criterion C as one of the earliest examples of a timber stringer bridge in North Carolina. The bridge will be removed as a part of this project, therefore, a Memorandum of Agreement (MOA) was prepared and is included in Appendix A of the attached CE. The stipulations outlined in the MOA have been met and documentation of their completion was submitted to the Historic Preservation Office (HPO) on January 26, 2007.

Project Schedule

The project has a scheduled let of March 18, 2008 with a review date of January 29, 2008.

Regulatory Approvals

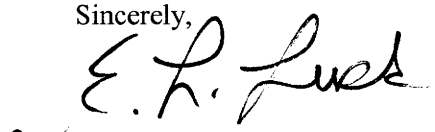
Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit but propose to proceed under a Nationwide 23 as authorized by a Nationwide Permit 23 (72 FR 11092; March 12, 2007).

Section 401 Permit: We anticipate 401 General Certification number 3632 will apply to this project. The NCDOT will adhere to all standard conditions. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their record.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html.

If you have any questions or need additional information, please contact Chris Underwood at (919) 715-1451.

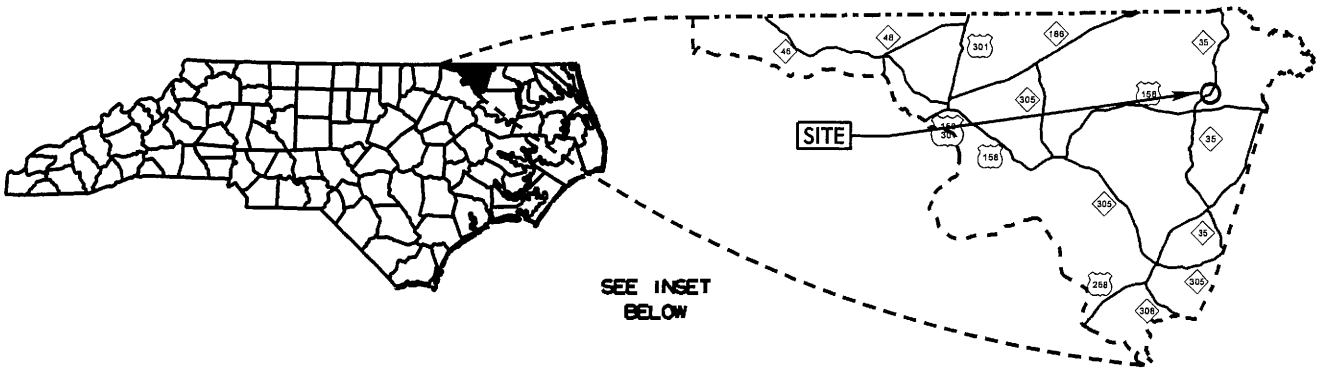
Sincerely,



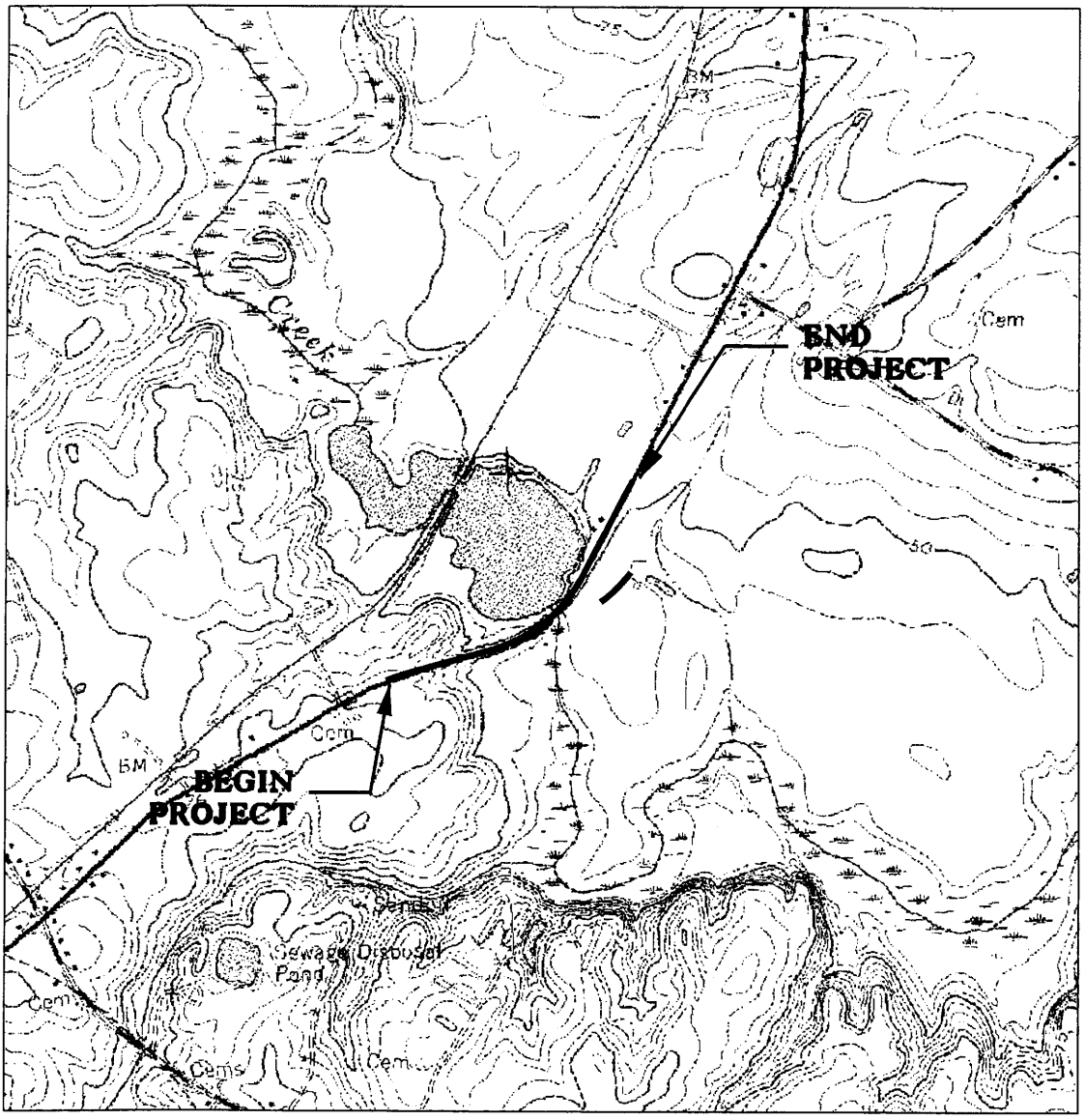
for Gregory J. Thorpe, Ph.D., Environmental Management Director
Project Development and Environmental Analysis

W/attachment:
- Mr. John Hennessy, NCDWQ (2 copies)
- Mr. Travis Wilson, NCWRC
- Mr. Gary Jordan, USFWS
- Mr. Ron Sechler, NMFS
- Mr. Michael Street, NCDMF
- Dr. David Chang, P.E., Hydraulics
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Victor Barbour, P.E., Project Services Unit
- Mr. Mark Staley, Roadside Environmental
- Mr. Anthony Roper, P.E., Division 1 Engineer
- Mr. Clay Willis, Division 1 Environmental Officer

W/o attachment
- Mr. Scott McLendon, USACE, Wilmington
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Majed Alghandour, P. E., Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. Wade Kirby, P.E., PDEA



NORTHAMPTON COUNTY



WETLAND IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NORTHAMPTON COUNTY

PROJECT: 33558.1.1 (B-4212)
BRIDGE NO.77 OVER
KIRBY'S CREEK ON NC 35

SHEET ___ OF ___ **4/27/07**

Permit Drawing

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	23+00-L- Rt	ROADWAY FILL	0.01			0.02						
2	27+65 to 29+40 Lt	RIP RAP FILL SLOPE						0.02				
TOTALS:			0.01		0.00	0.02		0.02				

NOTE: THE EXISTING STRUCTURE CAN BE REMOVED WITHOUT DROPPING ANY COMPONENTS INTO THE STREAM.

NOTE: 3 INTERIOR BENTS ON STEEL PILES. 2 BENTS IN STREAM.
AREA IMPACTED = 30 SQ. FT. (0.001 ACRES)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

NORTHAMPTON COUNTY
PROJECT: 33558.1.1 (B-4212)

SHEET 5/29/2007

ATN Revised 3/31/05

Permit Drawing
Sheet 2 of 10

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	Stephenson McLean Farms, Inc. c/ o Margaret McLean	P.O. Box 98 Murfreesboro, NC 27855

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NORTHAMPTON COUNTY

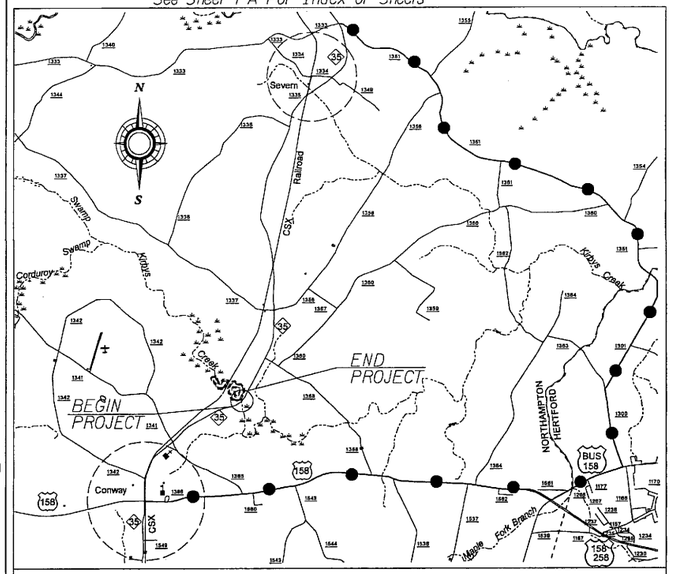
PROJECT: 33558.1.1 (B-4212)
BRIDGE NO.77 OVER
KIRBY'S CREEK ON NC 35

SHEET ____ OF ____ **4/27/07**

Permit Drawing

CONTRACT: TIP PROJECT: B-4212

See Sheet 1-A For Index of Sheets



VICINITY MAP

LEGEND ●—●—● *Studied Detour Route*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NORTHAMPTON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4212	1	

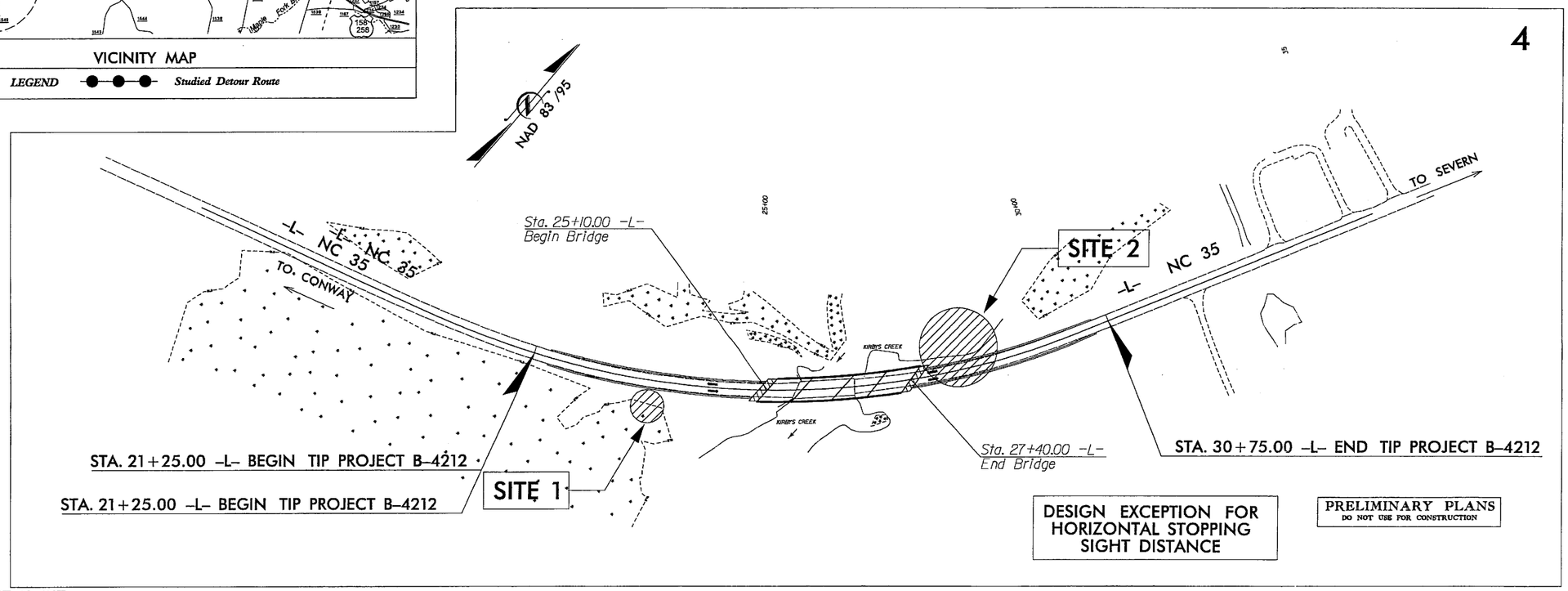
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33558.1.1	BRSTP-35(1)	P.E.
33558.2.1	BRSTP-35(1)	R/W, UTIL.

Permit Drawing
Sheet 4 of 10

LOCATION: BRIDGE NO. 77 OVER KIRBY'S CREEK ON NC 35

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

4



DESIGN EXCEPTION FOR HORIZONTAL STOPPING SIGHT DISTANCE

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES.

NCDOT CONTACT: CATHY HOUSER, P.E., PROJECT ENGINEER - ROADWAY DESIGN

"CLEARING ON THIS PROJECT SHALL BE ESTABLISHED BY METHOD III "

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 2700
ADT 2030 = 4500
DHV = 10 %
D = 60 %
T = 6 % *
V = 60 MPH
FUNC. CLASS = RURAL MAJOR COLLECTOR
* TTST 2 % DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4212 = 0.136 mi.

LENGTH STRUCTURE TIP PROJECT B-4212 = 0.044 mi.

TOTAL LENGTH TIP PROJECT B-4212 = 0.180 mi.

Prepared in the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 16, 2007

LETTING DATE: MARCH 18, 2008

GREG S. PURVIS, P. E.
PROJECT ENGINEER

SCOTT L. KENNEDY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

8/17/95

PROJECT REFERENCE NO.	SHEET NO.
B-4212	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 5 of 10

NAD 83 /95

-L- PC Sta. 19+56.11

-L- POC Sta. 25+10.00
Begin Bridge

-L- POC Sta. 24+96.00
Begin Approach Slab

BM#10
15+70 -BL- 82.0' LT.
R/R SPIKE LOCATED
IN BASE OF 16" GUM
ELEV = 44.94'=
STA. 21+61.45 -L-
93.60' LT.

-L-
PI Sta 25+28.43
Δ = 46° 48' 38.7" (LT)
D = 4° 20' 00.0"
L = 1,080.25'
T = 572.32'
R = 1,322.21'
DS = 55mph

SITE 2

SHOULDER BERM GUTTER STA 24+89.00 TO STA 25+08.89 -L- LT

SHOULDER BERM GUTTER STA 27+69.24 TO STA 29+53.00 -L- LT

PREFORMED SCOUR HOLE SEE DETAIL SHEET 2

PLACE ROCK PLATING AT STA. 27+65 TO STA. 29+40 -L- LT. (SEE ROCK PLATING DETAIL SHEET 2-A)

PREFORMED SCOUR HOLE SEE DETAIL SHEET 2

BM#11
23+69 -BL- 27.1' LT.
R/R SPIKE LOCATED
IN BASE OF 30" GUM
ELEV = 43.93'=
STA. 29+73.65 -L-
33.71' LT.

-L- PT Sta. 30+36.36

BEGIN 1.5:1 ROCK PLATED SLOPE STA. 27+65 LT.

CL 'II' RIP RAP (STR PAY ITEM)

15" CSP W/ELBOWS

KIRBYS CREEK

2GI-B W/FLAT GRATE

SEAT ELEV = 45'

END TIP PROJECT B-4212
POT Sta. 30+75.00 -L-

ENGLISH

S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

BEGIN TIP PROJECT B-4212
POC Sta. 21+25.00 -L-

SITE 1

CL 'II' RIP RAP (STR PAY ITEM)

-L- POC Sta. 27+54.00
End Approach Slab

-L- POC Sta. 27+40.00
End Bridge

* NO DECK DRAINS REQUIRED

TYPE B-77

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	4,320 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	47.3'
BASE DISCHARGE	=	5,160 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	48.1'
OVERTOPPING DISCHARGE	=	6,420+ CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	50.0'
DATE OF SURVEY	=	3/5/05
W.S. ELEVATION AT DATE OF SURVEY	=	40.75'

STA. 21+25.00
EL = 49.53

25' TAPER TO EXIST.

BEGIN GRADE
STA. 21+50.00
EL = 49.65

PROPOSED GRADE

EXISTING GROUND

BEGIN BRIDGE STA. 25+10.00

PI = 26+00.00
EL = 51.30'
K = 404
VC = 300'
DS = 60mph

26+25-L-
GP=51.03
1@55', 1@45', 2@55' 45° PCG
SKEW=135

END BRIDGE STA. 27+40.00

(+)0.367%

(-)0.374%

(-)0.374%

EXCAVATE TO ELEV. 41.0 ±1,200 CY (STR PAY ITEM)

3.5'

1.5:1

WS & WSE ON 3-5-05 = 40.75

CLASS II RIP RAP TO TOP OF BERM

1.5:1 NORMAL
2.1:1 SKEW

EXCAVATE TO ELEV. 41.0 ±2,250 CY (STR PAY ITEM)

BM#10
-BL- STA. 15+70.00
82.0' LEFT =
-L- STA. 21+61.45
93.60' LT
ELEV. = 44.94'

BM#11
-BL- STA. 23+69.00
27.1' LEFT =
-L- STA. 29+73.65
33.71' LT
ELEV. = 48.48'

END GRADE
STA. 30+50.00
EL = 49.61

25' TAPER TO EXIST.

STA. 30+75.00
EL = 49.41

19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

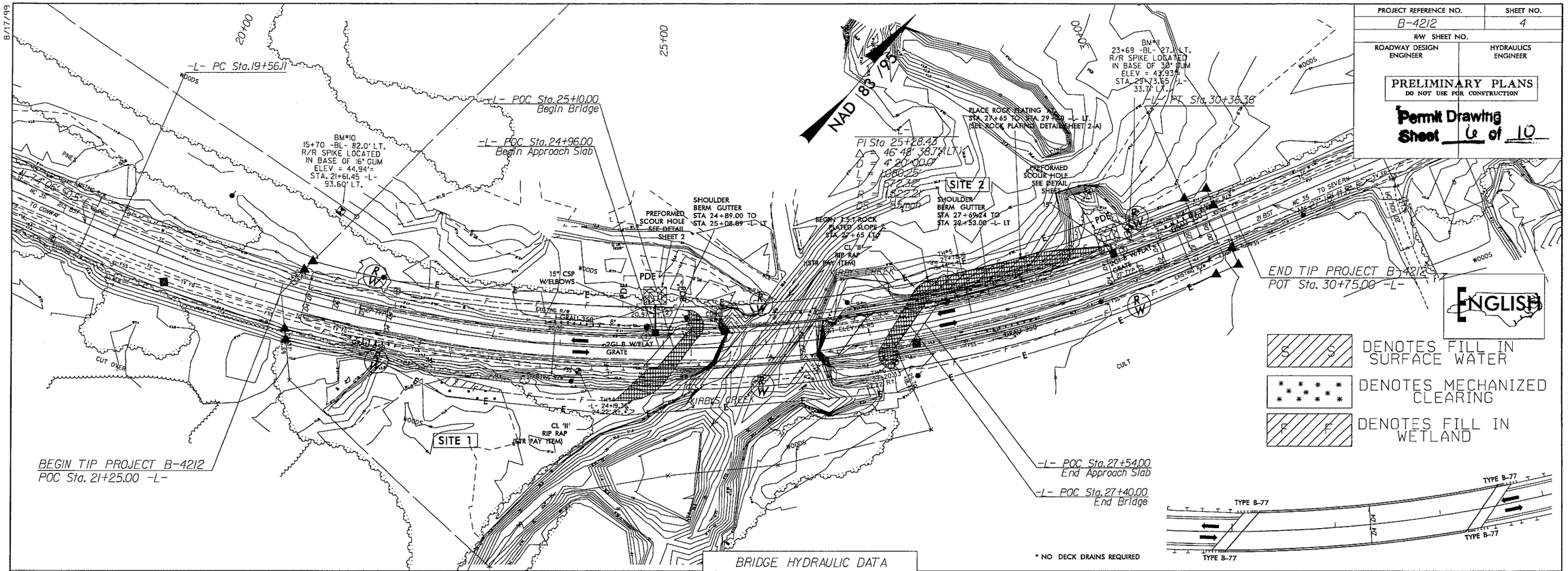
0 10 20 30 40 50 60 70 80

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4212	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

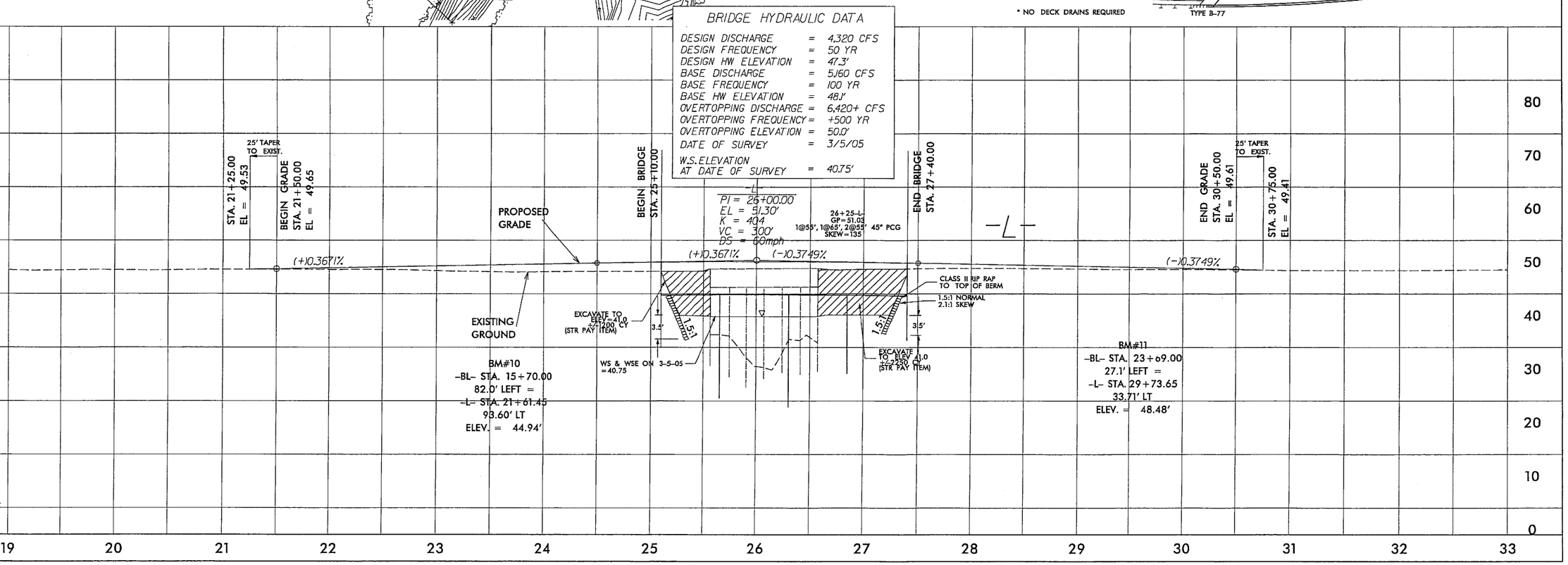
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 6 of 10



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	4,320 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	47.3'
BASE DISCHARGE	=	5,160 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	48.1'
OVERTOPPING DISCHARGE	=	6,420+ CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	50.0'
DATE OF SURVEY	=	3/5/05
W.S. ELEVATION AT DATE OF SURVEY	=	40.75'



6/2/99

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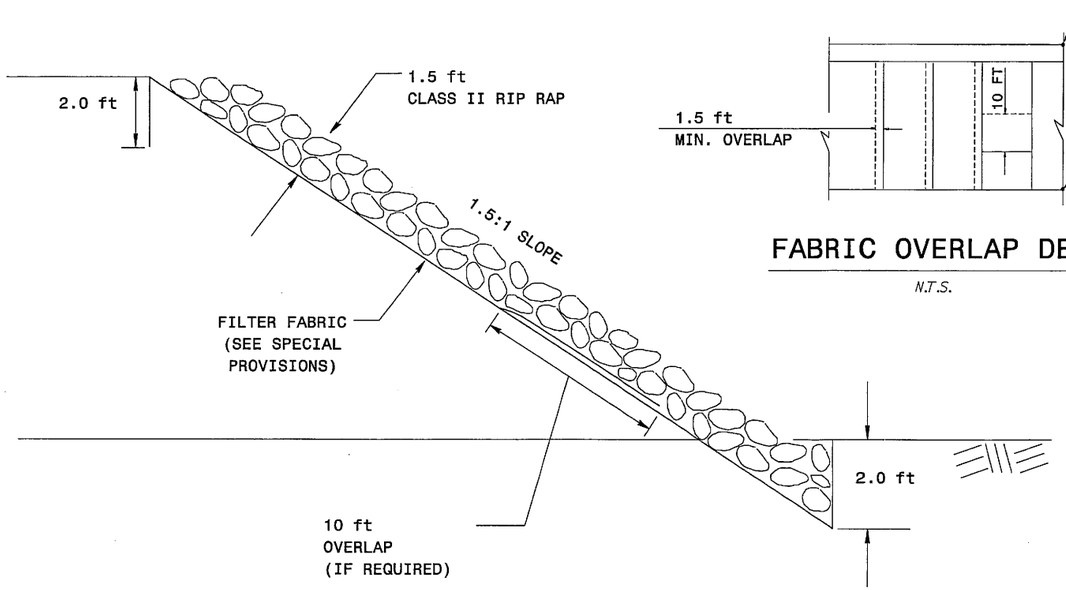
PROJECT REFERENCE NO.	SHEET NO.
B-4212	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

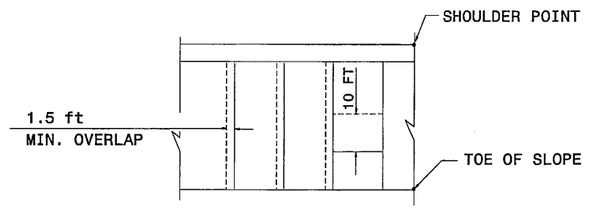
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 7 of 10

WANG ENGINEERING

ROCK PLATING DETAIL





FABRIC OVERLAP DETAIL

N.T.S.

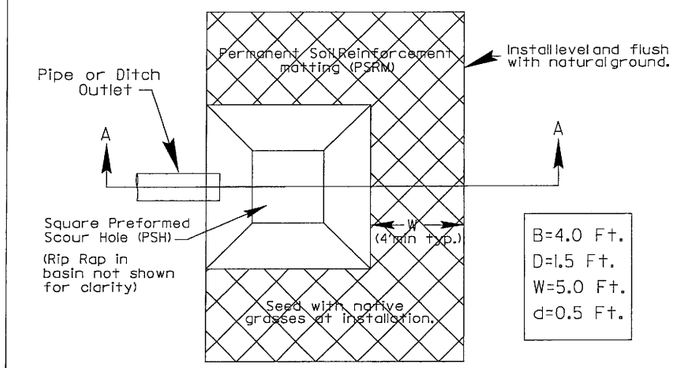
ROCK PLATING DETAIL

-L- Sta. 27+65.00 to -L- Sta. 29+40.00 LT.

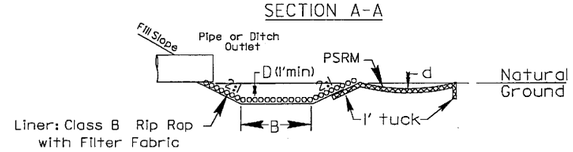
N.T.S.

PREFORMED SCOUR HOLE

PLAN VIEW



SECTION A-A



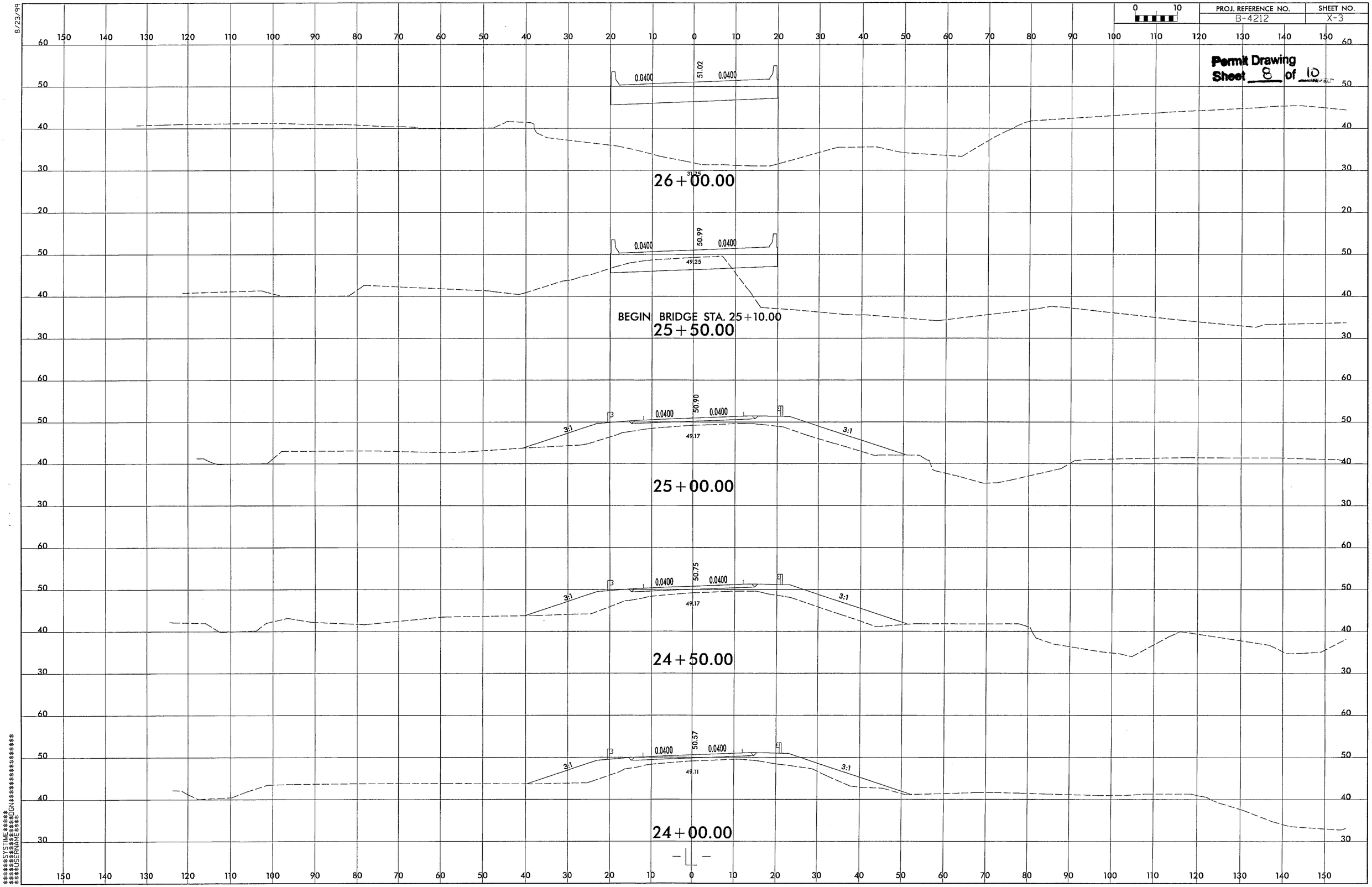
STA 24+92 –L– LT
STA 29+50 –L– LT
CL 'B' RIP RAP=90 TONS EACH
DDE EST 15 CY EACH
FF EST 13 SY EACH
PSRM EST 25 SY EACH

$$$$USERNAME$$$$ $$$$TIME$$$$ $$$$DGN$$$$

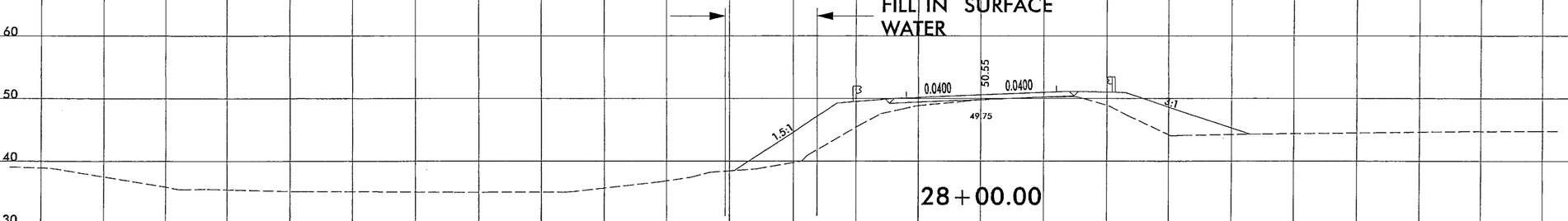
8/23/99

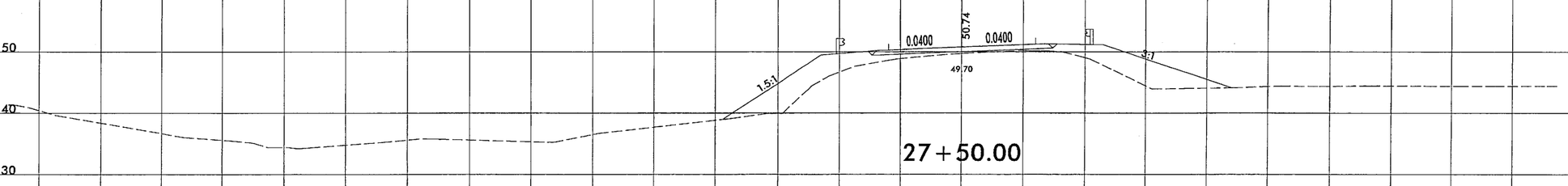
PROJ. REFERENCE NO.	SHEET NO.
B-4212	X-3

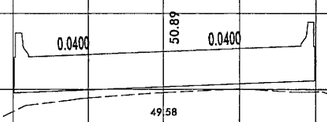
Permit Drawing
Sheet 8 of 10

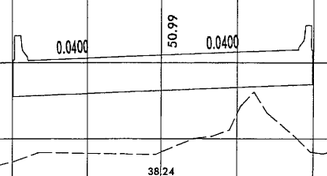


$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$$$$$
$$$$$$CELL$$$$$$$$$$
$$$$$$LEVEL$$$$$$$$$









8/23/99

PROJ. REFERENCE NO.	SHEET NO.
B-4212	X-4

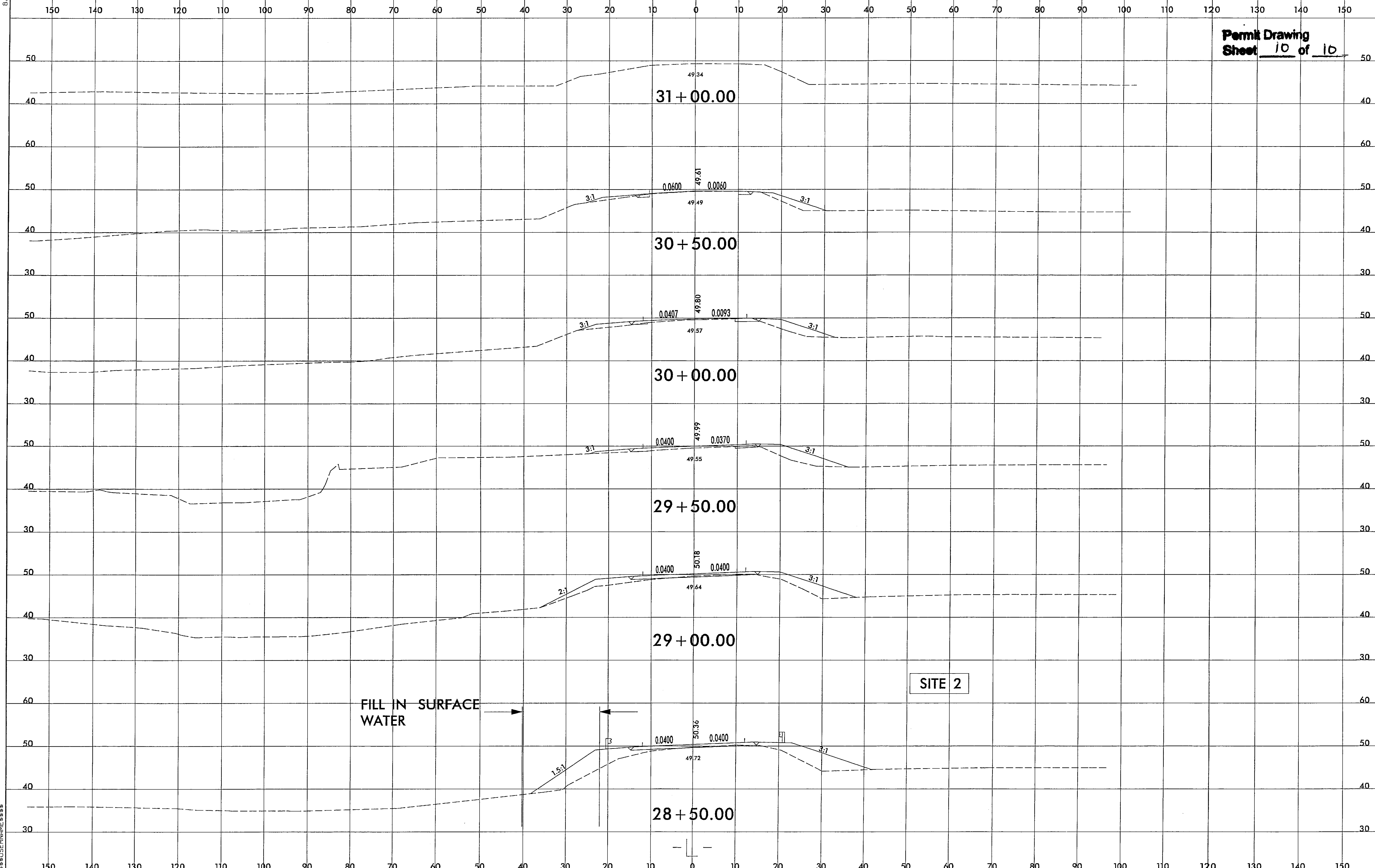
SITE 2

Permit Drawing
Sheet 9 **of** 10

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

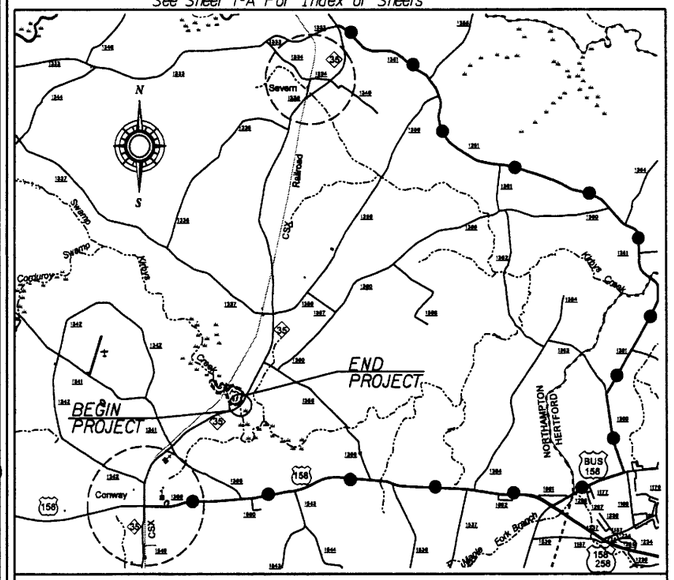
PROJ. REFERENCE NO.	SHEET NO.
B-4212	X-5

Permit Drawing
Sheet 10 of 10



CONTRACT: TIP PROJECT: B-4212

See Sheet 1-A For Index of Sheets



VICINITY MAP

LEGEND — Studied Detour Route

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NORTHAMPTON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4212	1	

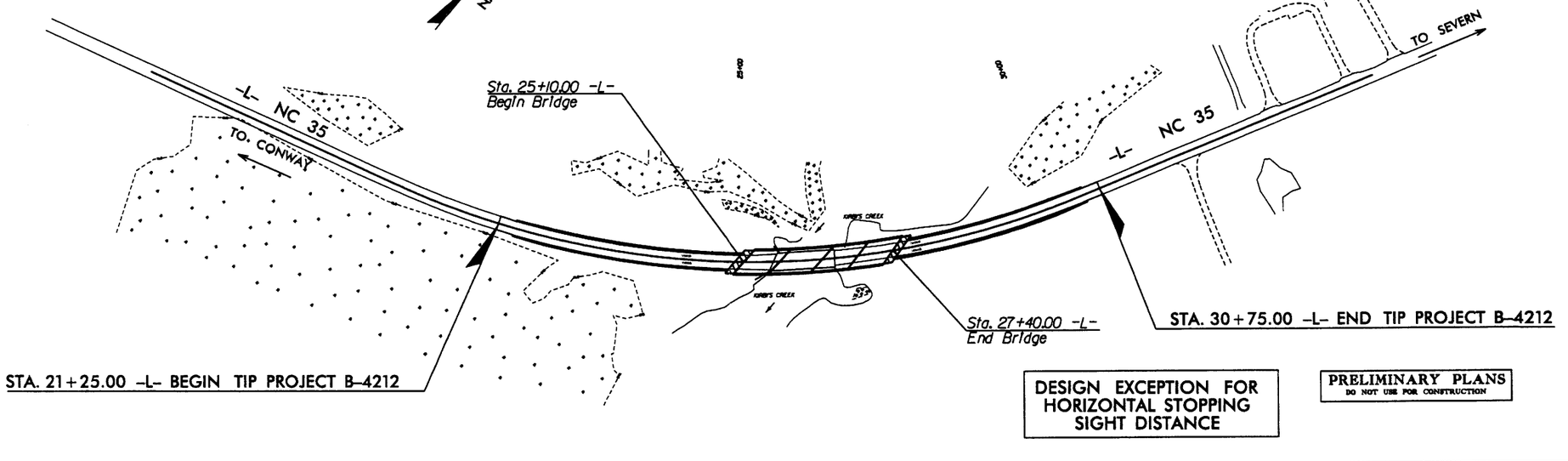
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33558.1.1	BRSTP-35(1)	P.E.
33558.2.1	BRSTP-35(1)	R/W, UTIL.

LOCATION: BRIDGE NO. 77 OVER KIRBY'S CREEK ON NC 35

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

4

NAD 83/95



DESIGN EXCEPTION FOR HORIZONTAL STOPPING SIGHT DISTANCE

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES.

NCDOT CONTACT: CATHY HOUSER, P.E., PROJECT ENGINEER - ROADWAY DESIGN

*CLEARING ON THIS PROJECT SHALL BE ESTABLISHED BY METHOD III *

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2007 = 2700
ADT 2030 = 4500
DHV = 10 %
D = 60 %
T = 6 % *
V = 60 MPH
FUNC. CLASS = RURAL MAJOR COLLECTOR
* TTST 2 % DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4212	=	0.136 mi.
LENGTH STRUCTURE TIP PROJECT B-4212	=	0.044 mi.
TOTAL LENGTH TIP PROJECT B-4212	=	0.180 mi.

Prepared in the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 16, 2007

LETTING DATE: MARCH 18, 2008

GREG S. PURVIS, P. E.
PROJECT ENGINEER

SCOTT L. KENNEDY
PROJECT DESIGN ENGINEER

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*

PROJECT REFERENCE NO.	SHEET NO.
B-4212	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

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

RIGHT OF WAY

Baseline Control Point
Existing Right of Way Marker
Exist. Right of Way Line w/Marker
Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
Exist. Control of Access Line — CA
Prop. Control of Access Line — CA
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 — W
Light Pole
H-Frame Pole
Power Line Tower
Pole with Base
Gas Valve
Gas Meter
Telephone Manhole — T
Power Transformer
Sanitary Sewer Manhole — S
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

Recorded Water Line — W
Designated Water Line (S.U.E.*) — W
Sanitary Sewer — SS
Recorded Sanitary Sewer Force Main — FSS
Designated Sanitary Sewer Force Main(S.U.E.*) — FSS
Recorded Gas Line — G
Designated Gas Line (S.U.E.*) — G
Storm Sewer — S
Recorded Power Line — P
Designated Power Line (S.U.E.*) — P
Recorded Telephone Cable — T
Designated Telephone Cable (S.U.E.*) — T
Recorded U/G Telephone Conduit — TC
Designated U/G Telephone Conduit (S.U.E.*) — TC
Unknown Utility (S.U.E.*) — ?UTL
Recorded Television Cable — TV
Designated Television Cable (S.U.E.*) — TV
Recorded Fiber Optics Cable — FO
Designated Fiber Optics Cable (S.U.E.*) — FO
Exist. Water Meter — 0
U/G Test Hole (S.U.E.*) — ATTUR
Abandoned According to U/G Record
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
Cemetery
Dam
Sign
Well
Small Mine
Swimming Pool

TOPOGRAPHY

Loose Surface
Hard Surface
Change in Road Surface
Curb
Right of Way Symbol — R/W
Guard Post
Paved Walk
Bridge
Box Culvert or Tunnel
Ferry
Culvert
Footbridge
Light House

VEGETATION

Single Tree
Single Shrub
Hedge
Woods Line
Orchard
Vineyard — VINEYARD

RAILROADS

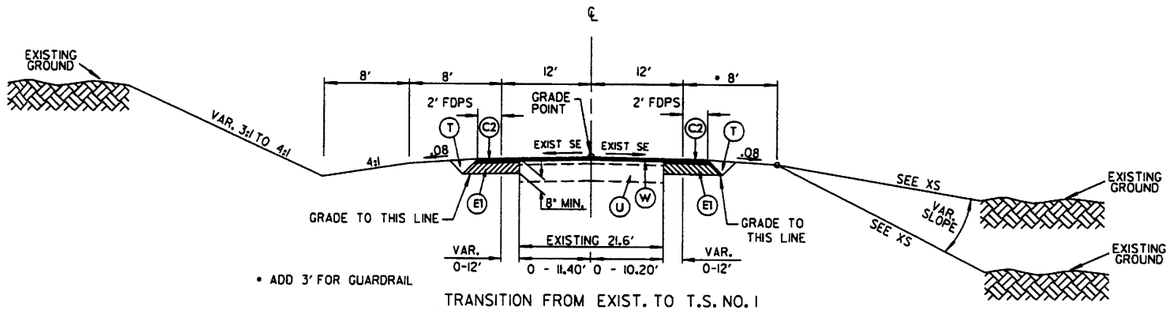
Standard Gauge — CSX TRANSPORTATION
RR Signal Milepost — MILEPOST 35
Switch — SWITCH

revised 02/02/00

PROJECT REFERENCE NO.	SHEET NO.
B-4212	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WANG ENGINEERING

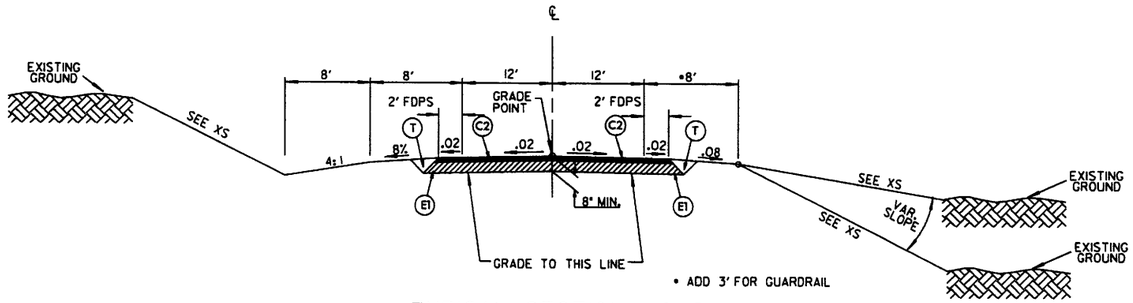


TRANSITION FROM EXIST. TO T.S. NO. 1
-L- Sta. 21+25.00 to Sta. 21+50.00

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS
-L- Sta. 21+50.00 to Sta. 23+10.00
-L- Sta. 29+40.00 to Sta. 30+50.00

TRANSITION FROM T.S. NO. 1 TO EXIST.
-L- Sta. 30+50.00 to Sta. 30+75.00



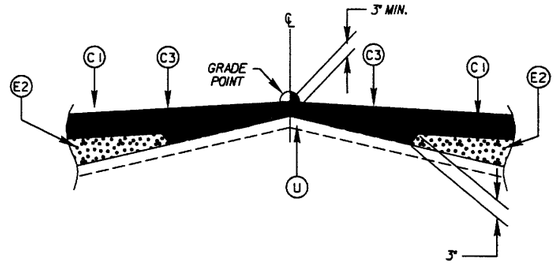
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS
-L- Sta. 23+10.00 to Begin Bridge Sta. 25+10.00
-L- End Bridge Sta. 27+40.00 to Sta. 29+40.00

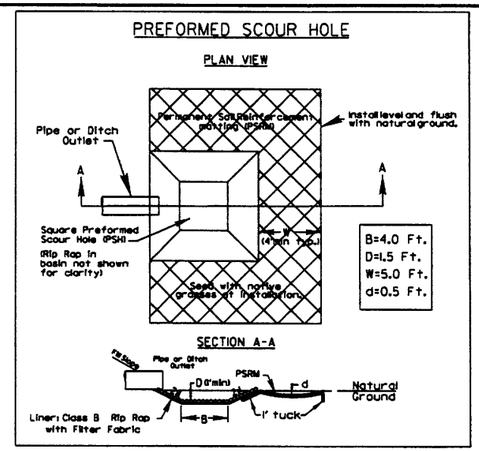
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH PAVEMENT (SEE WEDGING DETAILS)

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED



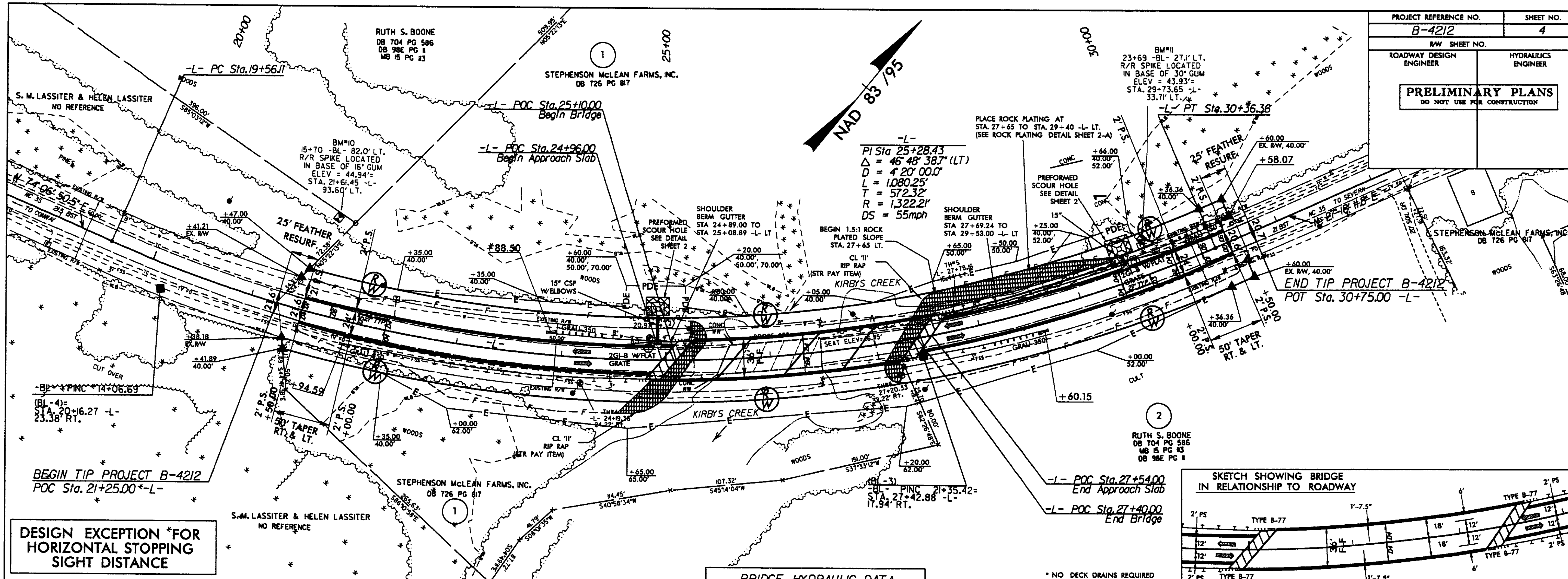
DETAIL SHOWING METHOD OF WEDGING



STA 24+92 -L- LT
STA 29+50 -L- LT
CL 'B' RIP RAP = 90 TONS EACH
DDE EST 15 CY EACH
FF EST 13 SY EACH
PSRM EST 25 SY EACH

PROJECT REFERENCE NO.	SHEET NO.
B-4212	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

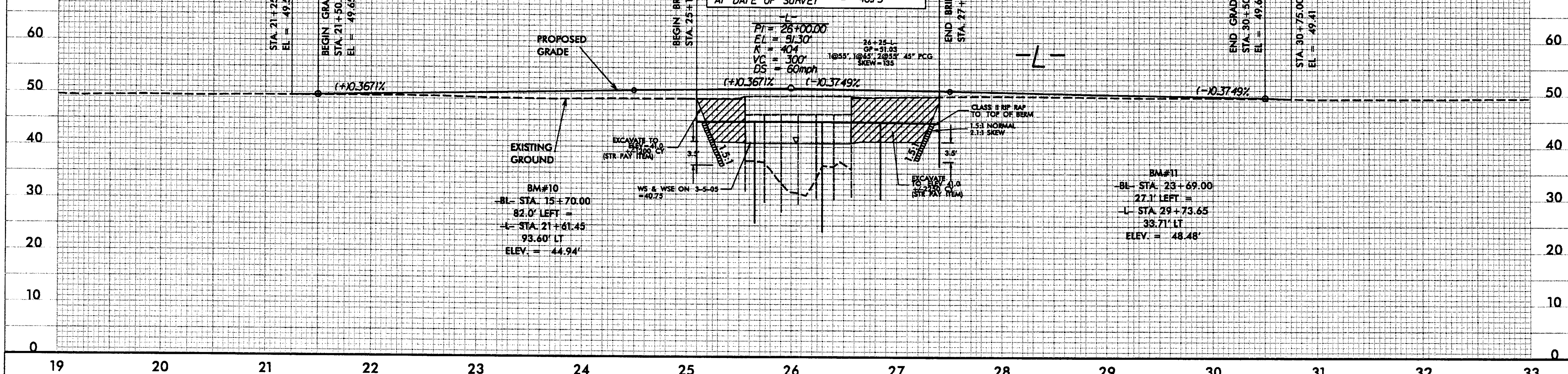
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



RUTH S. BOONE
DB 704 PG 586
DB 98E PG 8
MB 15 PG #3
STEPHENSON McLEAN FARMS, INC.
DB 726 PG 817
-L- PC Sta.19+56.11
S. M. LASSITER & HELEN LASSITER
NO REFERENCE
-L- POC Sta.25+10.00
Begin Bridge
-L- POC Sta.24+96.00
Begin Approach Slab
BM#10
15+70 -BL- 82.0' LT.
R/R SPIKE LOCATED
IN BASE OF 16" GUM
ELEV = 44.94'
STA. 21+61.45 -L-
93.60' LT.
NAD 83 /95
-L-
PI Sta 25+28.43
Δ = 46°48' 38.7" (LT)
D = 4°20' 00.0"
L = 1,080.25'
T = 572.32'
R = 1,322.21'
DS = 55mph
PLACE ROCK PLATING AT
STA. 27+65 TO STA. 29+40 -L- LT.
(SEE ROCK PLATING DETAIL SHEET 2-A)
BM#11
23+69 -BL- 27.1' LT.
R/R SPIKE LOCATED
IN BASE OF 30" GUM
ELEV = 43.93'
STA. 29+73.65 -L-
33.71' LT.
-L- PT Sta.30+36.36
25' FEATHER RESURF.
25' FEATHER RESURF.
PREFORMED SCOUR HOLE SEE DETAIL SHEET 2
SHOULDER BERM GUTTER STA 24+89.00 TO STA 25+08.89 -L- LT
BEGIN 1.5:1 ROCK PLATED SLOPE STA. 27+65 LT.
SHOULDER BERM GUTTER STA 27+69.24 TO STA 29+53.00 -L- LT
CL 'II' RIP RAP (STR PAY ITEM)
KIRBYS CREEK
15" CSP W/ELBOWS
2GI-B W/FLAT GRATE
END TIP PROJECT B-4212
POT Sta. 30+75.00 -L-
STEPHENSON McLEAN FARMS, INC.
DB 726 PG 817
50' TAPER RT. & LT.
-BL- PINC 14+06.69
(BL-4)=
STA. 20+16.27 -L-
23.38' RT.
30' TAPER RT. & LT.
BEGIN TIP PROJECT B-4212
POC Sta. 21+25.00 -L-
STEPHENSON McLEAN FARMS, INC.
DB 726 PG 817
CL 'II' RIP RAP (STR PAY ITEM)
KIRBYS CREEK
RUTH S. BOONE
DB 704 PG 586
MB 15 PG #3
DB 98E PG 8
-L- POC Sta.27+54.00
End Approach Slab
-L- POC Sta.27+40.00
End Bridge
(BL-3)
-BL- PINC 21+35.42=
STA. 27+42.88 -L-
17.94' RT.
S.M. LASSITER & HELEN LASSITER
NO REFERENCE
WOODS
DESIGN EXCEPTION *FOR HORIZONTAL STOPPING SIGHT DISTANCE
* NO DECK DRAINS REQUIRED
SKETCH SHOWING BRIDGE IN RELATIONSHIP TO ROADWAY
TYPE B-77

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	4,320 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	47.3'
BASE DISCHARGE	=	5,160 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	48.1'
OVERTOPPING DISCHARGE	=	6,420+ CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	50.0'
DATE OF SURVEY	=	3/5/05
W.S. ELEVATION AT DATE OF SURVEY	=	40.75'



25' TAPER TO EXIST.
STA. 21+25.00 EL = 49.53
BEGIN GRADE STA. 21+50.00 EL = 49.65
PROPOSED GRADE
(+)0.3671%
BEGIN BRIDGE STA. 25+10.00
-L-
PI = 26+00.00
EL = 51.30'
K = 404
VC = 300'
DS = 60mph
(+)0.3671%
(-)0.3749%
END BRIDGE STA. 27+40.00
CLASS II RIP RAP TO TOP OF BERM
-L-
(-)0.3749%
END GRADE STA. 30+50.00 EL = 49.61
25' TAPER TO EXIST.
STA. 30+75.00 EL = 49.41
EXISTING GROUND
WS & WSE ON 3-5-05 =40.75
BM#10
-BL- STA. 15+70.00
82.0' LEFT =
-L- STA. 21+61.45
93.60' LT
ELEV. = 44.94'
BM#11
-BL- STA. 23+69.00
27.1' LEFT =
-L- STA. 29+73.65
33.71' LT
ELEV. = 48.48'
80
70
60
50
40
30
20
10
0
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

Northampton County

Bridge No. 77 on NC 35 Over Kirby's Creek

Federal-Aid Project No. BRSTP-35(1)

State Project No. 33558.1.1

T.I.P. Project No. B-4212

CATEGORICAL EXCLUSION

AND PROGRAMMATIC SECTION 4(f) EVALUATION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

APPROVED:

11-16-06
DATE

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

11-29-06
DATE

for John F. Sullivan, III, P. E.
Division Administrator, FHWA

Northampton County

Bridge No. 77 on NC 35 Over Kirby's Creek

Federal-Aid Project No. BRSTP-35(1)

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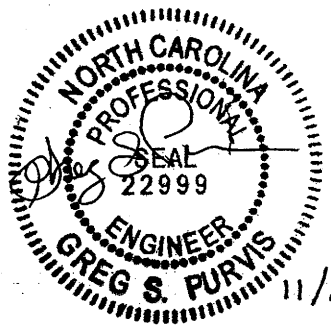
CATEGORICAL EXCLUSION

AND PROGRAMMATIC SECTION 4(f) EVALUATION

November 2006

Document Prepared by:
Wang Engineering Company, Inc.

Greg S. Purvis, P. E.
Project Manager



11/16/06

James Wang, Ph.D., P. E.
Principal

For the North Carolina Department of Transportation

Wade Kirby, P. E., P. G.
Project Development Engineer
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

Northampton County
Bridge No. 77 on NC 35 Over Kirby's Creek
Federal-Aid Project No. BRSTP-35(1)
State Project No. 33558.1.1
T.I.P. Project No. B-4212

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Division One

The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented.

An in-water work moratorium will be in effect from February 15 to June 30 due to Anadromous Fish in the project area.

Road closure will be coordinated with the Northampton County Schools and Northampton County Emergency Management Services prior to construction.

Project Development and Environmental Analysis Branch/Division One

The following measures will be carried out for Bridge No. 77 per the approved Memorandum of Agreement for adverse effects to replacing existing bridge:

1. Recordation: Prior to the demolition of Bridge No. 77, the NCDOT shall record the existing condition of the bridge and its surroundings in accordance with the attached Historic Structures and Landscape Recordation Plan (See Appendix C).

   New Bridge Design: The NCDOT shall employ railings of Jersey barrier design for the new bridge.

2. Dispute Resolution: Disagreement and misunderstanding about the implementation of this memorandum of agreement shall be resolved in the following manner.

   A. If the SHPO or any invited signatory to this memorandum of agreement should object in writing within thirty (30) days to any plans or documentation provided for review pursuant to this memorandum of agreement, then the FHWA shall consult with the objecting party to resolve this objection. If after such consultation the FHWA determines that the objection cannot be resolved through consultation, then the FHWA shall forward all documentation relevant to the objection to the Council, including the FHWA's proposed response to the objection. Within forty-five (45) days after receipt of all pertinent documentation, the Council shall exercise one of the following options:

i. Provide the FHWA with a staff-level recommendation, which the FHWA shall take into account in reaching a final decision regarding its response to the objection; or

ii. Notify the FHWA that the objection will be referred for formal comment pursuant to 36 CFR Section 800.7(c) and proceed to refer the objection and comment. The FHWA shall take into account the Council's comments in reaching a final decision regarding its response to the objection.

The FHWA shall take into account any Council comment or recommendations provided in accordance with this stipulation with reference only to the subject of the objection. The FHWA's responsibility to carry out all actions under the memorandum of agreement that are not the subjects of the objection shall remain unchanged.

3. Unanticipated Discovery: In accordance with 36 CFR 800.11(a) and prior to intitiation of construction activities, NCDOT shall ensure preparation of a plan of action should archaeological or architectural resources be inadvertently or accidentally discovered during the construction of the project. The plan shall provide for an assessment of the significance of the discovery in consultation amongst FHWA, NCDOT, and SHPO. Inadvertent or accidental discovery of human remains will be handled in accordance with North Carolina General Statutes 65 and 70.

4. Amendment: Any signatory to this memorandum of agreement may request that it be amended, whereupon the parties shall consult to consider the proposed amendment. Any such amendment shall be governed by 36 CFR Section 800.6(c)(7).

5. Termination: Any signatory to the memorandum of agreement may terminate it by providing thirty (30) days notice to the other parties, provided that the parties shall consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FHWA shall comply with 36 CFR Section 800.3 through 800.7 with regard to the review of the undertaking. In the event that the FHWA does not carry out the terms of this memorandum of agreement, the FHWA shall comply with 36 CFR Sections 800.3 through 800.7 with regard to the review of the undertaking.

Northampton County
Bridge No. 77 on NC 35 Over Kirby's Creek
Federal-Aid Project No. BRSTP-35(1)
State Project No. 33558.1.1
T.I.P. Project No. B-4212

INTRODUCTION: The replacement of Bridge No. 77 is included in the 2006-2012 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 4.2 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The existing bridge does not meet NCDOT Bridge Policy standards for clear deck width. The replacement of an inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

NC 35 is classified as a rural major collector. Land use in the project area is predominantly woodlands and farmland. Undeveloped woodlands are adjacent on the north and south sides of the study area. There is farmland to the east of the existing bridge.

Bridge No. 77 was constructed in 1932. The existing structure is 104 feet in length, consisting of six spans. The maximum span length is approximately 17 feet. The clear roadway width is 24.1 feet, providing two ten-foot travel lanes with two-foot gutters. The superstructure consists of a reinforced concrete floor on timber joists. The substructure consists of timber caps on timber piles. The bed to crown height is 16 feet and the normal depth of flow is 6 feet. Bridge No. 77 is eligible for the National Register under Criterion C as one of the earliest examples of a timber stringer bridge in North Carolina. The posted weight limit is 18 tons for single vehicles (SV) and 23 tons for truck-tractors semi-trailers (TTST).

The existing bridge and approaches on NC 35 are located in an approximate 1,315-foot radius curve. NC 35 consists of two 10.5-foot lanes with approximately six-foot grass shoulders.

The estimated 2004 average daily traffic volume is 2,500 vehicles per day (vpd). The projected traffic volume is expected to increase to 4,500 vpd by the design year 2030. The volumes include two percent TTST and four percent dual tired vehicles.

The speed limit in the vicinity of the bridge is not posted and therefore a statutory 55 miles per hour (mph) is assumed. There is a 45 mph advisory sign for the existing horizontal curve at the existing bridge.

There are aerial power and telephone lines crossing on the north and south sides of the existing bridge. County water line located on the north/northwest side of the existing bridge. Utility impacts are anticipated to be low.

There were two crashes reported for the three-year period of October 1, 2002 to September 30, 2005.

Twenty school buses cross this bridge twice daily.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide a 31-foot clear deck width to allow for two 12-foot travel lanes with three-foot from edge of travel lane to face of bridge rail on the right and four-foot from edge of travel lane to face of bridge rail on the left to accommodate spread. The existing bridge navigational clearance will be maintained.

The proposed approach roadway will consist of a 24-foot travel way providing for two 12-foot travel lanes with eight-foot shoulders including two foot paved shoulders. The design speed will be 60 mph.

Based on a preliminary hydraulic analysis, Bridge No. 77 will be replaced with an approximate 230-foot long bridge. The grade of the roadway will match the elevation of the existing roadway since lowering the grade would cause the road to be flooded by Kirby's Creek. The minimum deck grade will be 0.3%. The length of the proposed bridge and the recommended roadway elevation may be adjusted (increased or decreased) to accommodate design floods as determined in the final hydrologic study and hydraulic design.

B. Build Alternatives

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

Alternate A (Preferred) replaces the bridge at the existing location. During construction, traffic will be maintained by an off-site detour route along US 158, US 158 Business, SR 1300 (Hertford County), SR 1301 (Hertford County), and SR 1351 (Northampton County) approximately 14.85 miles in length. The detour route would require improvements to SR 1300, SR 1301, and SR 1351 in order to handle the additional traffic. These improvements include: 1). Resurfacing SR 1300 2). Resurfacing SR 1301 with select curve widening 3). Widening SR 1351 1.5 feet each side and resurfacing. These costs are shown in Table 1. The proposed structure length is 230 feet. The length of approach work will be approximately 385 feet on the southwest side of the bridge and approximately 335 feet on the northeast side of the bridge. The proposed right-of-way width varies from 90 feet to 115 feet. The existing bridge will be removed.

Alternate B replaces the bridge on new location to the southeast. During construction, traffic will be maintained on the existing bridge. The proposed structure length is 345 feet. The length of approach work will be approximately 967 feet on the southwest side of the bridge and approximately 785 feet on the northeast side of the bridge. The proposed right-of-way width varies from 100 feet to 145 feet. The existing bridge will be removed. Alternate B was not selected because it has higher human and natural environment impacts.

C. Alternatives Eliminated From Further Study

The "Do-Nothing" Alternative will eventually necessitate removal of the bridge and closing of the road. This is not desirable due to the traffic service provided by NC 35.

Investigation of the existing structure by the Bridge Maintenance Unit indicates the rehabilitation of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternative

Alternate A, replacing the existing bridge at the existing location. During construction, traffic will be maintained by an off-site detour route along US 158, US 158 Business, SR 1300 (Hertford County), SR 1301 (Hertford County), and SR 1351 (Northampton County) approximately 14.85 miles in length. Alternate A was selected because it has lower human and natural environment impacts.

The Division Engineer concurs with Alternate A as the preferred alternative.

Alternate A is estimated to cost $3,454,500. A breakdown of the estimated cost is shown in Item V (Table 1).

IV. DESIGN EXCEPTIONS ANTICIPATED

A design exception will be required for the horizontal stopping sight distance for Alternate A. The horizontal stopping sight distance meets a design speed of 40 mph.

V. ESTIMATED COSTS

The estimated costs, based on current 2006 prices, are as follows:

Table 1. – Estimated Costs

	Alternate A (Preferred)	Alternate B
Structure Removal (existing)	$ 37,600	$ 37,600
Structure (proposed)	827,200	1,286,000
Roadway Approaches	244,000	665,700
Temporary Work Bridge	30,000	95,000
Miscellaneous and Mobilization	244,200	512,700
Engineering and Contingencies	217,000	403,000
ROW/Const. Easements/Utilities:	34,500	91,000
Widen/Resurface Detour Route	1,800,000	
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TOTAL	**$ 3,454,500**	**$ 3,091,000**

The estimated cost of the project, as shown in the 2006-2012 Transportation Improvement Program, is $2,240,000 including $40,000 for right-of-way, $2,000,000 for construction, and $200,000 for prior year costs.

VI. NATURAL RESOURCES

A. Methodology

Materials and literature supporting this investigation have been derived from a number of sources including U.S. Geological Survey (USGS) topographic mapping (Conway, NC [1973] 7.5-minute quadrangle), U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (USFWS 2002), Natural Resources Conservation Service (NRCS; formerly the Soils Conservation Service) soils mapping (NRCS 1994), and N.C. Wildlife Resources Commission (WRC) proposed Significant Aquatic Endangered Species Habitats (WRC 1998).

Plant community descriptions are based on a classification system utilized by the N.C. Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968) with adjustments for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (USACE) delineation guidelines (Environmental Laboratory 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979) and/or the N.C. Division of Environmental Management (DEM) *Field Guide to North Carolina Wetlands* (1996). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof *et al.* 1980, Potter *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Palmer and Braswell 1995, and Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (DWQ 2002a, 2002b, 2004a, 2004b). Quantitative sampling was not undertaken to support existing data.

The most current USFWS listing of federally protected species with ranges extending into Northampton County (USFWS 2003) is considered in this report. NHP records documenting the presence of federally or state listed species were reviewed on April 2, 2004. Furthermore, Significant Aquatic Endangered Species Habitats proposed by the WRC (December 11, 1998 listing) were consulted to determine the presence of Proposed Critical Habitats for aquatic species.

The project area was walked and visually surveyed for significant features. For purposes of this evaluation, the project area has been delineated by Wang Engineering. Potential impacts of construction will be limited to cut-fill boundaries of each alternate. Special concerns evaluated in the field include 1) potential protected species habitat and 2) wetlands and water quality protection of Kirbys Creek.

B. Physiography and Soils

The project area is located in the Coastal Plain physiographic province, and more specifically, in the Rolling Coastal Plain ecoregion of North Carolina (NRCS 1994, Griffith *et al.* 2002). This ecoregion is dissected by rolling hills and irregular valleys. The project area is situated within a gently sloping floodplain valley. Elevations within the project area range from a high of approximately 50 feet National Geodetic Vertical Datum (NGVD) along NC 35 to a low of approximately 45 feet NGVD within the Kirbys Creek floodplain (USGS 1973). Land uses within and adjacent to the project area consist of woodlands, agricultural fields, residential lots, roadside shoulders, and a powerline corridor.

Based on soil mapping for Northampton County (NRCS 2001), the project area is underlain by six soil series including Altavista fine sandy loam (*Aquic Hapludults*), Bonneau loamy sand (*Arenic Paleudults*), Conetoe loamy sand (*Arenic Hapludults*), Seabrook loamy sand (*Aquic Udipsamments*),

Tomotley fine sandy loam (*Typic Ochraquults*), and Wehadkee loam (*Typic Fluvaquents*). The Tomotley fine sandy loam and Wehadkee loam are considered hydric by the NRCS (1996). Furthermore, depressions within the Altavista fine sandy loam series may contain hydric inclusions of Tomotley fine sandy loam.

Altavista fine sandy loam, 0 to 3 percent slopes, is a moderately well drained soil found on nearly level and gently sloping stream terraces. Permeability is moderate and flooding is rare. The seasonal high water table occurs at a depth of 1.5 to 2.5 feet. Altavista fine sandy loam underlies approximately 1.8-acres (9 percent) in the Kirbys Creek floodplain north of the existing bridge.

Bonneau loamy sand, 0 to 6 percent slopes, is a nearly level, well-drained soil found in uplands. Permeability is moderate. The seasonal high water table occurs at a depth of 3.5 to 5 feet. Bonneau loamy sand underlies approximately 1.3 acres in the uplands near the southern boundary of the project area.

Conetoe loamy sand, 0 to 5 percent slopes, is a well-drained soil found on nearly level and gently sloping stream terraces. Permeability is moderately rapid. The seasonal high water table occurs at a depth of more than 6 feet. Conetoe loamy sand underlies approximately 5.3 acres (28 percent) in the Kirbys Creek floodplain near the southwestern corner of the project area.

Seabrook loamy sand is a nearly level, moderately well drained soil found on stream terraces. Slopes containing this soil range from 0 to 2 percent. Permeability is rapid and flooding is rare. The seasonal high water table occurs at a depth of 2 to 4 feet. Seabrook loamy sand underlies approximately 0.6 acre (3 percent) in the Kirbys Creek floodplain east of the existing bridge.

Tomotley fine sandy loam, rarely flooded, is a nearly level, poorly drained soil found on river terraces. Slopes containing this soil range from 0 to 2 percent. Permeability is moderate. Although rare, this soil is subject to brief periods of flooding. The seasonal high water table occurs at a depth of 1 foot. Tomotley fine sandy loam underlies approximately 4.8 acres (25 percent) in the Kirbys Creek floodplain near the northern extent of the project area.

Wehadkee loam is a nearly level, poorly drained soil found in the floodplains of major rivers and smaller creeks. Slopes containing this soil range from 0 to 2 percent. Permeability is moderate. This soil frequently experiences long periods of flooding. The seasonal high water table is at or near the surface. Within the project area, Wehadkee loam underlies approximately 5.1 acres (26 percent), occurring adjacent to Kirbys Creek and in the Kirbys Creek floodplain.

C. Water Resources

1. Waters Impacted

The project area is located within sub-basin 03-01-02 of the Chowan River Basin (DWQ 2002a). This area is part of USGS Hydrologic Unit 03010204 of the South Atlantic/Gulf Region (USGS 1994). The structure targeted for replacement spans Kirbys Creek and its adjacent floodplains. In all, the project area contains two streams: Kirbys Creek and an unnamed tributary (UT1) to Kirbys Creek (Figure 6). Kirbys Creek flows southward through the center of the project area. The portion of Kirbys Creek traversing the project area has been assigned Stream Index Number 25-4-4 by the N.C. Division of Water Quality (DWQ) (2004b). UT1 is located in the southeastern quadrant formed by the intersection of NC 35 and Kirbys Creek. UT1 flows from west to east reaching a confluence with Kirbys Creek approximately 290 feet southwest of the existing bridge. UT1 has not been assigned a Stream Index Number.

2. Water Resource Characteristics

Kirbys Creek enters through the northern edge of the project area as a pond. The pond formed as the result of a now breached, mill dam located immediately upstream (north) of the project area. Although the reach of Kirbys Creek within the project area is downstream of the dam, outflow from the impoundment has scoured the channel to the extent that a pond has formed downstream of the dam as well. Pond conditions remain both upstream and downstream of the dam, despite the breaching of the dam. Kirbys Creek reforms as a channelized stream about 110 feet north of the existing bridge, at which point Kirbys Creek is 40 feet wide. The stream widens to approximately 90 feet immediately upstream of the existing bridge and further widens to 110 feet immediately downstream of the bridge, thereby suggesting streamflow is restricted by the upstream side of the bridge and propelled downstream with increased velocity. The increased velocity of the streamflow has led to scouring downstream of the existing bridge, as evidenced by the formation of an island in the center of the stream channel. Within the project area, the stream has a sand and silt substrate. Bank heights vary from 2 feet upstream of the existing bridge to 4 feet downstream of the bridge. During field investigations, the water depth was at 2 feet, flow was slow to stagnant, and water clarity was poor. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within Kirbys Creek include overhanging trees, undercut banks, fallen logs, and leaf packs.

UT1 is a first-order, intermittent stream with a sand and silt substrate. UT1 originates from a backwater slough at a point 280 feet southwest of the existing bridge. UT1 flows southeastward for approximately 35 feet before discharging into Kirbys Creek. The stream is 3 feet wide with 3-foot high banks. During the field investigation, there was no observed flow in UT1, but pools of water were present. In the past, the UT1 possibly only conveyed floodwater from the floodplain back to the stream channel; however, over time it appears that the streambed has eroded down to the water table elevation of Kirbys Creek. This likely explains the presence of pools in UT1. No persistent emergent aquatic vegetation was observed within the stream. Due to bed erosion, opportunities for habitat within UT1 are limited for much of the reach.

The DWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7, hereafter referred to as the N.C. 2002 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired water body is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment. The impairment could be from point sources, nonpoint sources, and/or atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the N.C. 2002 Section 303(d) list. Streams are further categorized into one of six parts within the N.C. 2002 Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, North Carolina has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State. Kirbys Creek and UT1 are not listed on any section of the N.C. 2002 Section 303(d) list (DWQ 2002b).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A Best Usage Classification of **C NSW** has been assigned to the entire length of Kirbys Creek and UT1. Class

C waters are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation includes wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis. Nutrient Sensitive Waters (**NSW**) are areas with water quality problems associated with excessive plant growth resulting from nutrient enrichment. No designated High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), Water Supply II (**WS-II**) waters, or watershed Critical Areas (**CA**) occur within 1.0 mile of the project area (DWQ 2004b).

The DWQ has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project area is summarized in the Chowan River Basinwide Water Quality Plan (DWQ 2002a). Neither Kirbys Creek nor UT1 have been assigned a Use Support Rating. No benthic macroinvertebrate monitoring stations occur within 1.0 mile of the project area (DWQ 2002a).

Sub-basin 03-01-02 of the Chowan River Basin supports no permitted, point source discharges (DWQ 2004a). Major non-point sources of pollution within the Chowan River Basin include agricultural lands, timber harvesting, urban areas, marinas and recreational boating, and hydrologic modification. Sedimentation and nutrient inputs are major problems associated with non-point source discharges (DWQ 2002a). Sources of non-point source pollution that may specifically affect the reach of Kirbys Creek within the project area include runoff from agricultural land both within and surrounding the project area, from NC 35, and from recently timbered land in the northwest corner of the project area.

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion-control schedule and the use of Best Management Practices (BMPs). 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 (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into streams by catch basins and roadside vegetation.

The replacement of Bridge No. 77 warrants special concern due to Kirbys Creek's function as an anadromous fish passage; the N.C. Division of Marine Fisheries (NCDMF) has documented blueback herring and alewife spawning in Kirbys Creek (Memorandum from Sara E. Winslow, N.C. Department of Environment and Natural Resources, January 26, 2004). Consequently, the replacement of Bridge No. 77 can be classified as Case 2, where no work at all is permissible during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas occurs. In this case, NCDMF has requested an in-water construction moratorium from February 15 – June 30. In addition, the *Stream Crossing Guidelines for Anadromous Fish Passage* will be implemented as applicable.

3. Anticipated Impacts

a) Impacts Related to Water Resources

Impacts to water resources in the project area may result from activities associated with project construction. Activities that would result in impacts are clearing and grubbing on streambanks, riparian canopy removal, in-stream construction, fertilizers and pesticides used

in revegetation, and pavement/culvert installation. The following impacts to surface water resources could result from the construction activities mentioned above.

- Increased sedimentation and siltation downstream of the crossing and increased erosion in the project area.
- Alteration of stream discharge due to silt loading and changes in surface and groundwater drainage patterns.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Changes in and destabilization of water temperature due to vegetation removal.
- Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentrations of toxic compounds in roadway runoff.
- Increased potential for release of toxic compounds such as fuel and oil from construction equipment and other vehicles.

The proposed bridge replacement will allow for continuation of pre-project stream flows in Kirbys Creek, thereby protecting the integrity of this waterway. Long-term impacts resulting from construction are expected to be negligible. In order to minimize impacts to water resources, NCDOT Best Management Practices for the Protection of Surface Waters will be strictly enforced during the life of the project.

b) 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 potential 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" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for Best Management Practices for the Protection of Surface Waters.

Dropping any portion of the structure into waters of the United States will be avoided unless there is no other practical method of removal. In the event that no other practical method is feasible, a worst-case scenario is assumed for calculations of fill entering waters of the United States. There is potential for components of the bridge to be dropped into waters of the United States. The resulting temporary fill associated with the concrete deck is expected to be approximately 44 cubic yards. NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR) will be applied for the removal of this bridge.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project will fall under Case 2, which states that no work will be performed in the water during moratorium periods (February 15 to June 30) associated with fish migration, spawning, and larval recruitment into nursery areas. This conclusion is based upon the classification of the waters within the project area and vicinity, the Stream Crossing Guidelines for Anadromous Fish Passage, and comments received from the North Carolina Wildlife Resources Commission (NCWRC).

D. Biotic Resources

1. Plant Communities

Four distinct plant communities were identified within the project area: swamp forest, agricultural land, shrub assemblage, and disturbed/maintained land. Plant communities were delineated to determine the approximate area and location of each (Figure 6). Collectively, the plant communities constitute 16.7 acres (87 percent) of the project area. The remaining 2.6 acres (13 percent) consists of impermeable surfaces (1.1 acres, 6 percent) and water bodies (1.5 acres, 8 percent) (note: the rounding of individual areas leads to a discrepancy in total percentage of land covers). The plant communities are described below in order of their dominance within the project area.

a) Swamp Forest

The most prominent plant community, the swamp forest community constitutes approximately 7.1 acres (37 percent) of the project area. This community primarily occurs in the floodplain immediately adjacent to Kirbys Creek. An additional small pocket, dissected from the rest of the community by an agricultural field and NC 35, occurs in the northeast corner of the project area. The community consists of a mature, secondary growth forest that most closely resembles the Cypress-Gum Swamp (Blackwater Subtype) community described by Schafale and Weakley (1990). Six wetland areas were found within this community; however, the widespread distribution of hydrophytic woody vegetation throughout the community suggests the area may have been wetter in the past. Furthermore, numerous downed trees were observed throughout the swamp forest community – likely the result of recent hurricanes.

Canopy species within the swamp forest community include bald cypress (*Taxodium distichum*), loblolly pine (*Pinus taeda*), laurel oak *(Quercus laurifolia)*, cherrybark oak (*Q. pagoda*), swamp chestnut oak (*Q. michauxii*), and water oak (*Q. nigra*). The subcanopy consists of American holly (*Ilex opaca*), ironwood (*Carpinus caroliniana*), river birch (*Betula nigra*), sweetbay magnolia (*Magnolia virginiana*), and sweetgum (*Liquidambar styraciflua*). The shrub and sapling layer includes canopy species as well as Chinese privet (*Ligustrum sinense*), elderberry (*Sambucus canadensis*), giant cane (*Arundinaria gigantea*), southern arrowwood (*Viburnum dentatum*), sweet pepperbush (*Clethra alnifolia*), swamp cyrilla (*Cyrilla racemiflora*), and Virginia willow (*Itea virginica*). An herbaceous and vine layer extends throughout the swamp forest community. The herb layer consists of false nettle (*Boehmeria cylindrica*), netted chain fern (*Woodwardia areolata*), pokeberry (*Phytolacca americana*), and southern lady fern (*Athyrium asplenioides*). Vines present include greenbrier (*Smilax laurifolia*), muscadine grape (*Vitis rotundifolia*), and Virginia creeper (*Parthenocissus quinqefolia*).

Situated within a surrounding matrix of agricultural fields, the swamp forest provides a corridor for wildlife passage and refuge. In addition, the diverse structure of the swamp forest, as exemplified by the well developed forest strata, and interior water course offer a range of habitat niches. An account of observed wildlife follows.

A high diversity of bird species were observed within the swamp forest. Observed species include red-shouldered hawk (*Buteo lineatus*), ruby-throated hummingbird (*Archilochus colubris*), red-bellied woodpecker (*Melanerpes carolinus*), yellow-bellied sapsucker (*Sphyrapicus varius*), red-eyed vireo (*Vireo olivaceus*), Carolina wren (*Thryothorus*

ludovicianus), blue-gray gnatcatcher (*Polioptila caerulia*), prothonotary warbler (*Protonotaria citrea*), hooded warbler (*Wilsonia citrina*), summer tanager (*Piranga rubra*), and indigo bunting (*Passerina cyanea*). Additional birds which are likely to inhabit wooded interiors, especially in bottomlands along water courses, are sharp-shinned hawk (*Accipiter striatus*), American woodcock (*Scolopax minor*), barred owl (*Strix varia*), northern parula (*Parula americana*), yellow-throated warbler (*Dendroica dominica*), and Louisiana waterthrush (*Seiurus motacilla*).

Two mammal species were observed during the field investigation: gray squirrel (*Sciurus carolinensis*) and a mouse, likely a white-footed mouse (*Peromyscus leucopus*). Additional evidence of mammal activity observed during the field investigation includes raccoon (*Procyon lotor*) scat and a beaver (*Castor canadensis*) lodge. Mammal species expected to occur within the swamp forest portion of the project area are red bat (*Lasiurus borealis*), southern flying squirrel (*Glaucomys volans*), southern short-tailed shrew (*Blarina carolinensis*), and Virginia opossum (*Didelphis virginiana*).

Amphibian species observed during the field investigation include bullfrog (*Rana catesbeiana*), gray treefrog (*Hyla versicolor*), and southern leopard frog (*Rana utricularia*). In addition, four species of reptiles were observed: eastern mud turtle (*Kinosternon subrubrum*), five-lined skink (*Eumeces fasciatus*), cottonmouth (*Agkistrodon piscivorus*), and yellowbelly slider (*Trachemys scripta*). Some terrestrial reptiles and amphibians which may occur within the forest include American toad (*Bufo americanus*), copperhead (*Agkistrodon contortrix*), northern fence lizard (*Sceloporus undulatus*), slimy salamander (*Plethodon glutinosus*), and southern ringneck snake (*Diadophis punctatus*).

b) Shrub Assemblage

The shrub assemblage community, composing approximately 4.4 acres (23 percent) of the project area, occurs in the southeast quadrant formed by the intersection of NC 35 and Kirbys Creek. Currently, the shrub assemblage community consists of a dense, 5 to 15 foot high shrub layer. The area occupied by the shrub assemblage community had recently been timbered, probably within the last five years. Prior to timbering, this area likely supported a swamp forest community similar to that previously described. It is expected the shrub assemblage community will return to a swamp forest through succession. A marshy wetland occurs here in the lowest portion of the Kirbys Creek floodplain. Vegetation within the community varies along a moisture gradient, with hydrophytic species occurring in the wetland and more mesic species occurring along the drier, outer floodplain slopes.

Vegetation within the wetland area is dominated by a dense shrub layer, which includes both shrub species and tree saplings. In general, the wetland contains hydrophytic species adapted to the wet moisture regime. Representative species of the shrub layer are bald cypress, black willow (*Salix nigra*), buttonbush (*Cephalanthus occidentalis*), Carolina ash (*Fraxinus caroliniana*), Chinese privet, giant cane, green ash (*Fraxinus pennsylvanica*), groundsel bush (*Baccharis halimifolia*), red maple (*Acer rubrum*), river birch, sweet pepperbush, swamp cottonwood (*Populus heterophylla*), swamp tupelo (*Nyssa biflora*), and winged sumac (*Rhus copallina*). Tree species, while sparse, are interspersed throughout the community. Members include red maple, swamp cottonwood, sweetgum, and tulip tree (*Liriodendron tulipifera*). Herbaceous species form a carpet layer that spreads through the understory of the shrub assemblage community. In addition, open areas, absent of shrubs and trees, occur throughout this community. In these open areas, herbs and vines form dense vegetative mats. Herbaceous and vine species observed include false nettle, lizard's tail (*Saururus cernuus*),

muscadine grape, polygonum (*Polygonum* sp.), sedges (*Carex* spp.), soft rush (*Juncus effusus*), and wool grass (*Scirpus cyperinus*).

In contrast to the wetland area, the outer floodplain slopes along the southern edge of the southeast quadrant have a drier moisture regime. Consequently, the slopes support more mesic species. The vegetative structure here is similar to that of the wetland area, with a dominant shrub layer of both shrub and tree saplings, sparsely dispersed trees, and a carpet layer of herbs. Members of the shrub layer include loblolly pine, mimosa (*Albizia julibrissin*), sweetgum, winged sumac, and tulip tree. The tree layer contains mature tree species from the shrub layer. The herb and vine layers include blackberry (*Rubus* sp.), dog fennel (*Eupatorium capillifolium*), greenbrier, muscadine grape, and poison ivy (*Toxicodendron radicans*).

The shrub assemblage represents an early successional community in the process of transitioning from a timbered area to a swamp forest. In its current state, the shrub assemblage community provides an intermediate habitat accessible to both forest and open area species. An account of observed wildlife follows.

Bird species observed during the field investigation include eastern wood-pewee (*Contopus virens*), white-eyed vireo (*Vireo griseus*), blue-gray gnatcatcher, common yellowthroat (*Geothlypis trichas*), yellow-breasted chat (*Icteria virens*), and indigo bunting. Additional bird species expected to utilize shrub assemblage community include American crow (*Corvus brachyrhynchos*), Carolina wren, eastern bluebird (*Sialia sialis*), northern cardinal (*Cardinalis cardinalis*), field sparrow (*Spizella pusilla*), and common grackle (*Quiscalus quiscula*).

No terrestrial mammals were observed during the field investigation, although evidence of beaver activity (cut saplings) was found. Mammal species expected to occur within the shrub assemblage include eastern cottontail (*Sylvilagus floridanus*), eastern mole (*Scalopus aquaticus*), hispid cotton rat, least shrew (*Cryptotis parva*), meadow vole (*Microtus pennsylvanicus*), and white-tailed deer (*Odocoileus virginianus*). A single amphibian species was observed during the field investigation, southern toad (*Bufo terrestris*). Additional terrestrial reptiles and amphibians which may occur within this community include eastern box turtle (*Terrapene carolina*), six-lined racerunner (*Cnemidomorphorus sexlineatus*), eastern garter snake (*Thamnophis sirtalis*), black racer (*Coluber constrictor*), and northern cricket frog (*Acris crepitans).*

c) Agricultural Land

The agricultural land community constitutes approximately 3.2 acres (16 percent) of the project area. This community is comprised of a row-cropped corn monoculture. Vegetation in the community is managed to promote agricultural production.

The agricultural land community potentially provides a rich food source, but offers little cover from predators and the environment. In addition, frequent disturbances associated with crop maintenance may also exclude wildlife. Wildlife likely utilize this community for foraging, but then retreat back to the forest for cover. An account of observed wildlife follows.

A single bird species was observed in the agricultural land community, red-tailed hawk (*Buteo jamaicensis*). Birds that frequent agricultural land include American crow, field

sparrow, eastern meadowlark (*Sturnella magna*), and common grackle. Mammals which are more specialized to utilize open field habitat are eastern mole, hispid cotton rat (*Sigmodon hispidus*), raccoon, Virginia opossum, and white-tailed deer. Reptile and amphibian species that might find suitable habitat in agricultural areas include American toad, black racer, and eastern kingsnake (*Lampropeltis getulus*).

d) Disturbed/Maintained Land

The disturbed/maintained land community composes approximately 2.0 acres (11 percent) of the project area. This community includes residential lots, roadside shoulders, and a powerline corridor, all of which are maintained by mowing or some other form of vegetative control. The residential lots occur in the northwest and northeast quadrants formed by the intersection of NC 35 and Kirbys Creek, the powerline corridor occurs in the southwest quadrant, and roadside shoulders occur in all four quadrants.

Herbs and vines dominate the vegetation in this community. Observed species include blackberry, goldenrod (*Solidago* sp.), greenbrier, Johnson grass (*Sorghum halepense*), plantain (*Plantago* sp.), poison ivy, ragweed (*Ambrosia artemisiifolia*), trumpet creeper (*Campsis radicans*), violet (*Viola* sp.), white clover (*Trifolium repens*), and wild carrot (*Daucus carota*). Shrubs and trees are present to a lesser extent in the disturbed/maintained community. In general, shrubs and trees have a scattered distribution, occurring in small groups or as individuals. Shrubs primarily occur in the powerline corridor, although some individuals are present along roadside shoulders. The shrub layer consists of red mulberry (*Morus rubra*), sweet pepperbush, and winged sumac. Trees are present in the residential lots. Observed tree species include red maple, sweetgum, and tulip tree.

The disturbed/maintained community provides a relatively narrow range of habitat structures for roosting, nesting, and feeding. The community is linear and highly fragmented. Species utilizing this community must be adapted to such fragmentation and edge effects. An account of observed wildlife follows.

Bird species observed during the field investigation include black vulture (*Coragyps atratus*), white-eyed vireo, common yellowthroat, and northern cardinal. Birds species expected to be found in the disturbed/maintained community include turkey vulture (*Cathartes aura*), red-tailed hawk, American crow, Carolina wren, eastern bluebird, field sparrow, eastern meadowlark, common grackle, and American goldfinch (*Carduelis tristis*).

No terrestrial mammals were observed during the field investigation. Mammal species expected to occur within the disturbed/maintained land include eastern cottontail, eastern mole, hispid cotton rat, least shrew, meadow vole, and white-tailed deer. A single reptile species was observed during the field investigation, five-lined skink. Additional terrestrial reptiles and amphibians which may occur within disturbed/maintained land include American toad, black racer, eastern box turtle, eastern garter snake, and six-lined racerunner.

2. Aquatic Communities

This section details the physical characteristics of Kirbys Creek and UT1, the only aquatic habitats present in the project area. Aquatic-oriented wildlife observed within the project study area includes beaver, bullfrog, eastern mud turtle, gray treefrog, southern leopard frog, cottonmouth, and yellowbelly slider. All were observed in the swamp forest community.

No sampling was undertaken in Kirbys Creek to determine fishery potential, although minnows and catfish were observed during the field investigation. Furthermore, Kirbys Creek is designated as an anadromous fish passage; NCDMF has documented blueback herring and alewife spawning in Kirbys Creek. Fish species that may be present in this reach of Kirbys Creek include American eel (*Anguilla rostrata*), margined madtom (*Noturus insignis*), rosyside dace (*Clinostomus funduloides*), spottail shiner (*Notropis hudsonius*), and yellow bullhead (*Ameriurus natalis*).

The WRC has developed a Significant Aquatic Endangered Species Habitat database to enhance planning and impact analysis in areas proposed by WRC as being critical due to the presence of Endangered or Threatened aquatic species. The portion of Kirbys Creek within the project is designated as Significant Aquatic Endangered Species Habitat (WRC 1998). One species of state concern, a freshwater mussel called tidewater mucket (Leptodea ochracea) (listed as state Threatened), has been documented approximately 14 miles downstream of the project study area in the Meherrin River (Personal communication, Angie Rogers, NCWRC, April 6, 2005).

3. Anticipated Impacts to Biotic Communities

Project alternatives include permanent impacts, which are considered to be those impacts that occur within proposed cut-fill limits. Plant communities within the project area were delineated to determine the approximate area and location of each (Figure 6). A summary of plant community areas and the potential impacts to each is presented in Table 2.

Projected permanent impacts to natural plant communities resulting from bridge replacements are generally restricted to narrow strips adjacent to the existing bridge and roadway approach segments. In terms of area, little of the natural plant community is expected to be permanently impacted by the proposed project.

No significant habitat fragmentation is expected as a result of project activities since potential improvements will be restricted to adjoining roadside margins. Construction noise and associated disturbances are anticipated to have short-term impacts on avifauna and migratory wildlife movement patterns.

Table 2. Plant Communities Within Cut/Fill Areas of Respective Alternatives[1]

	Alternate A (Preferred)	Alternate B
Plant Community	Permanent	Permanent
Swamp Forest	0.35	0.79
Shrub Assemblage	<0.01	0.49
Agricultural Land	0.05	0.25
Disturbed/Maintained	0.57	0.90
Total	**0.97**	**2.43**

[1] Areas expressed in acres.

Impacts associated with turbidity and suspended sediments resulting from bridge replacement will be minimized through stringent erosion control measures. NCDMF has documented the occurrence of anadromous fish within Kirbys Creek. Furthermore, the entire length of Kirbys Creek is designated as Significant Aquatic Endangered Species Habitat (WRC 1998).

Potential downstream impacts to aquatic habitat are anticipated to be avoided by bridging the stream system to maintain regular flow and stream integrity. Short-term impacts associated with turbidity and suspended sediments may affect benthic populations. Temporary impacts to downstream habitat from increased sediment during construction will be minimized by the implementation of stringent erosion control measures.

E. Special Topics

1. Waters of the United States

Surface waters within the project area are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR Section 328.3). The NWI system for classification of wetlands and deepwater habitats was used to determine the type of each wetland present (Cowardin *et al.* 1979). Section 404 jurisdictional areas are depicted by Figure 6.

Kirbys Creek exhibits the characteristics of a well-defined, third-order, perennial stream with moderate flow over a sand and silt substrate. The stream can be classified as a lower perennial, riverine system with an unconsolidated bottom composed of cobble and gravel (R2UB2). Additionally, UT1 can be classified as a well-defined, first-order, lower intermittent stream with low flow over an unconsolidated bottom of sand (R4UB2).

Vegetated wetlands are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (Environmental Laboratory 1987). The project area contains six vegetated wetland areas, all of which occur in the floodplains of Kirbys Creek (Figure 6).

A 3.8-acre forested wetland occurs in the southwest quadrant of the project area, approximately 270 feet southwest of the existing bridge (Figure 6, Wetland 1). Wetland 1 is a broad, flat wetland located adjacent to Kirbys Creek. It extends through both the swamp forest and shrub assemblage communities, with the majority occurring in the shrub assemblage community. Within the shrub assemblage community, Wetland 1 supports a thin, noncontiguous canopy of red maple, swamp cottonwood, sweetgum, and tulip tree. A dense shrub and sapling layer extends throughout the wetland. Shrubs and saplings present include bald cypress, black willow, buttonbush, green ash, groundsel bush, loblolly pine, red maple, river birch, swamp cottonwood, and winged sumac. Herbaceous species are interspersed amongst the shrub species and are particularly abundant in open areas. Members of the herbaceous layer include false nettle, giant cane, lizard's tail, polygonum, soft rush, and wool grass. Within the swamp forest community, Wetland 1 supports a canopy of ironwood, laurel oak, and river birch. The shrub layer includes American holly, ironwood, and southern arrowwood. The herbaceous layer contains muscadine grape, netted chain fern, and trumpet creeper. Areas of Wetland 1 adjacent to Kirbys Creek likely receive over bank stream flow. In addition, the wetland receives groundwater seepage from slopes that parallel the southern side of NC 35 as well as from slopes along the western extent of the wetland. The wetland can be classified as a palustrine, seasonally flooded, forested wetland supporting broad-leaved deciduous vegetation (PFO1C). Soils exhibit hydric chromas and mottles. Hydrology indicators include oxidized rhizospheres, ponding, and scour. In terms of mitigation, DWQ would consider this system "riverine," based upon its location within the Kirbys Creek floodplain.

A 0.16-acre forested wetland occurs in the northwest quadrant of the project area, approximately 650 feet west of the existing bridge (Figure 6, Wetland 2). The canopy of Wetland 2 consists of

laurel oak, red maple, sweetgum, and tulip tree. The wetland supports a dense shrub layer of Chinese privet, giant cane, and river birch. The herbaceous layer, also dense, includes blackberry, Japanese honeysuckle (*Lonicera japonica*), netted chain fern, and southern lady fern. Wetland 2 can be classified as a palustrine, seasonally flooded, forested wetland supporting broad-leaved deciduous vegetation (PFO1C). Soils exhibit hydric chromas. Hydrology indicators include oxidized rhizospheres, ponding, saturated soils and scour. In terms of mitigation, DWQ would consider this system "riverine," based upon its location within the Kirbys Creek floodplain.

A 0.01-acre wetland, Wetland 3, is located in the northeast quadrant of the project area, approximately 90 feet east of the existing bridge (Figure 6, Wetland 3). Wetland 3 is bowl-shaped wetland located adjacent to Kirbys Creek. The wetland contains herbaceous vegetation such as netted chain fern, polygonum, and wool grass. Trees and shrubs are not supported within the interior of Wetland 3; however, tree and shrub species similar to those found in Wetland 1 are support along the periphery of the wetland. Wetland 3 likely receives water during high flow events. Wetland 3 can be classified as a palustrine, seasonally, flooded, forested wetland supporting broad-leaved deciduous vegetation (PFO1C). Soils exhibit hydric chromas and mottles. Hydrology indicators include oxidized rhizospheres, ponding, and scour. In terms of mitigation, DWQ would consider this system "riverine," based upon its location within the Kirbys Creek floodplain.

Two forested wetlands, Wetlands 4 and 5, occur in the northwest quadrant of the project area approximately 45 and 70 feet northwest of the existing bridge, respectively (Figure 6, Wetlands 4 and 5). Wetland 4 is a 0.32-acre, 3-foot deep linear depressions oriented perpendicular to the Kirbys Creek. Similarly, Wetland 5 is a 0.02-acre, 3-foot deep depression oriented perpendicular to Kirbys Creek. Both are sparsely vegetated. Instead, the wetland interiors are covered with leaf litter and have cypress knees protruding above the soil surface. The periphery of the wetlands supports vegetation similar to that described above for the swamp forest. Wetlands 4 and 5 likely function as swales, conveying over bank stream flow from the floodplain back to Kirbys Creek. Both wetlands can be classified as palustrine, seasonally flooded, forested wetlands supporting broad-leaved deciduous vegetation (PFO1C). Soils exhibit hydric chromas and mottles. Hydrology indicators include saturated soils and water stains. In terms of mitigation, DWQ would consider this system "riverine," based upon its location within the Kirbys Creek floodplain.

A 0.26-acre forested wetland is located in the northeast quadrant of the project area approximately 350 feet northeast of the existing bridge (Figure 6, Wetland 6). Wetland 6 is a broad, flat wetland abutting Kirbys Creek. The canopy layer contains bald cypress and red maple. The shrub and herbaceous layers are sparse within the interior of the wetland. In contrast, the perimeter of the wetland supports dense mass of herbs and vines. The single shrub present in Wetland 6 is sweet pepperbush. Herbs and vines present include blackberry, greenbrier (*Smilax rotundifolia*), muscadine grape, and poison ivy. The wetland likely receives and retains over bank stream flow from Kirbys Creek. Wetland 6 can be classified as palustrine, seasonally flooded, forested wetlands supporting broad-leaved deciduous vegetation (PFO1C). Soils exhibit hydric chromas. Hydrology indicators are oxidized rhizospheres and water stains. In terms of mitigation, DWQ would consider this system "riverine," based upon its location within the Kirbys Creek floodplain.

Alternate A calls for the replacement of Bridge No. 77 at its current location while maintaining traffic with an off-site detour. In contrast, Alternate B calls for the replacement of Bridge No. 77 at a location approximately 35 feet southeast of the existing bridge. Permanent impacts associated

with Alternate A will occur to Kirbys Creek in the northeast and southeast quadrants as well as to Wetland 1 in the southeast quadrant. Impacts to Kirbys Creek are restricted to narrow areas of the stream channel, 4 feet wide or less, along the left stream bank in the northeast quadrant and along the right stream bank in the southeast quadrant. Permanent impacts associated with Alternate B will occur to Wetland 1 in the southeast quadrant, Wetland 2 in the southwest quadrant, and Wetland 3 in the northeast quadrant. Information pertaining to jurisdictional area impacts within the project area is summarized in Table 3.

Table 3. Projected Impacts to Jurisdictional Areas[1] (Areas are depicted in Figure 2.)

Jurisdictional Area	Alternate A (Preferred) Permanent	Alternate B Permanent	DEM Wetland Rating
Kirbys Creek	221		-
Total	221		-
Wetland 1	0.02	0.46	87
Wetland 2	-	0.04	-
Wetland 3	-	<0.01	32
Wetland 4	-	-	85
Wetland 5	-	-	85
Wetland 6	-	-	84
Total	0.02	0.50	-

[1] Stream impacts are expressed in linear feet. Wetland impacts are expressed in acres. Note: rounding of individual impacts leads to discrepancies in total impacts.

There is potential for components of the deck to be dropped into waters of the United States. The resulting temporary fill associated with the deck and caps may be as much as 44 cubic yards. NCDMF has documented the occurrence of anadromous fish within Kirbys Creek. In addition, the entire length of Kirbys Creek is designated as Significant Aquatic Endangered Species Habitat (NCWRC 1998). One species of state concern, a freshwater mussel called tidewater mucket (Leptodea ochracea) (listed as state Threatened), has been documented approximately 14 miles downstream of the project study area in the Meherrin River (Personal communication, Angie Rogers, NCWRC, April 6, 2005). The replacement of Bridge No. 77 can be classified as Case 2, where no work at all is permissible during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas occurs. In this case, NCDMF has requested an in-water construction moratorium from February 15 – June 30. Furthermore, the *Stream Crossing Guidelines for Anadromous Fish Passage* will be implemented as applicable.

2. Permits

a). Section 404 of the Clean Water Act

This project may be processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The USACE has made available Nationwide Permit (NWP) 23 (67 FR 2020, 2082; January 15, 2002) for CEs due to minimal impacts to waters of the U.S. expected with bridge construction. Activities under this permit are categorically excluded from environmental documentation because they are included within a category of activities that neither individually nor cumulatively have a significant effect on the human and natural environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit.

b). Section 401 Water Quality Certification

DWQ has made available a General 401 Water Quality Certification for NWP 23 (GC 3403). If temporary structures are necessary for construction activities, access fills, or dewatering of the site, then a NWP 33 (67 FR 2020, 2087; January 15, 2002) permit and the associated General 401 Water Quality Certification (GC 3366) will be required. Impacts to vegetated wetlands may be authorized under NWP 3 (67 FR 2020, 2078) and the associated General 401 Water Quality Certification (GC 3376). In the event that NWPs 23, 33, and 3 will not suffice, impacts attributed to bridge replacement and associated approach improvements may qualify under General Bridge Permit (GP) 031 issued by the Wilmington USACE District. DWQ has made available a General 401 Water Quality Certification for GP 031 (GC 3404). Notification to the Wilmington USACE District office is required if this general permit is utilized.

c). Bridge Demolition and Removal

If no practical alternative exists to remove the current bridge other than to drop it into the water, prior to removal of debris off-site, fill related to demolition procedures will need to be considered during the permitting process. A worst-case scenario should be assumed with the understanding that if there is any other practical method available, the bridge will not be dropped into the water. The worst-case scenario associated with the bridge removal is expected to be 44 cubic yards of temporary fill. Permitting will be coordinated such that any permit needed for bridge construction will also address issues related to bridge demolition.

3. Mitigation

The USACE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which 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 waters of the United States, and specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the USACE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction to median widths, right-of-way widths, fill slopes, and/or road shoulder widths. All efforts will be made to decrease impacts to surface waters. The proposed bridge was lengthened to minimize impacts to the existing stream.

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized

that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. In accordance with 15A NCAC 2H .0506(h), DWQ may require compensatory mitigation for projects with greater to or equal than 0.1 acre of impacts to jurisdictional wetlands or greater than or equal to 150 linear feet of total perennial stream impacts. Furthermore, in accordance with 67 FR 2020, 2092; January 15, 2002, the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of the proposed project impact and the function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, preservation and enhancement, and creation of waters of the United States. Such actions should be undertaken first in areas adjacent to or contiguous to the discharge site.

Mitigation for Section 404 jurisdictional areas may not need to be proposed for this project due to the potentially limited nature of the project impacts. However, utilization of BMPs is recommended in an effort to minimize impacts. Temporary impacts to floodplains associated with construction activities could be mitigated by replanting disturbed areas with native riparian species and removal of temporary fill material upon project completion. A final determination regarding mitigation rests with the USACE and DWQ.

F. Protected Species

1. Federally Protected Species

Species with the federal classification of Endangered (E), Threatened (T), or officially Proposed (P) for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term "Endangered Species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range," and the term "Threatened Species" is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532).

Two federally protected species are listed for Northampton County as of June 22, 2006: bald eagle (*Haliaeetus leucocephalus*) and red-cockaded woodpecker (*Picoides borealis*) (USFWS 2006). The red-cockaded woodpecker is listed as Endangered, while the bald eagle is listed as Threatened. A summary of Biological Conclusions for the replacement of Bridge No. 77 is represented in Table 4.

Table 4. Federally Protected Species

Common Name	Scientific Name	Biological Conclusion	Federal Status
Bald Eagle	*Haliaeetus leucocephalus*	No Effect	T
Red-cockaded woodpecker	*Picoides borealis*	No Effect	E

T- Threatened, E - Endangered, Exp - Experimental

Haliaeetus leucocephalus **(Bald Eagle)**
Threatened
Family: Accipitridae
Date Listed: March 11, 1967

The bald eagle is a large raptor with a wingspan greater than 6 feet. Adult bald eagles are dark brown with a white head and tail. Immature eagles are brown with whitish mottling on the tail, belly, and wing linings. Bald eagles typically feed on fish but may also take birds and small mammals. In the Carolinas, nesting season extends from December through May (Potter *et al.* 1980). Bald eagles typically nest in tall, living trees in a conspicuous location near open water. Eagles forage over large bodies of water and utilize adjacent trees for perching (Hamel 1992). Disturbance activities within a primary zone extending 750 to 1500 feet from a nest tree are considered to result in unacceptable conditions for eagles (USFWS 1987). The USFWS recommends avoiding disturbance activities, including construction and tree-cutting, within this primary zone. Within a secondary zone, extending from the primary zone boundary out to a distance of 1.0 mile from a nest tree, construction and land-clearing activities should be restricted to the non-nesting period. The USFWS also recommends avoiding alteration of natural shorelines where bald eagles forage, and avoiding significant land-clearing activities within 1500 feet of known roosting sites.

BIOLOGICAL CONCLUSION: NO EFFECT

The NCNHP has no documentation (as of June 22, 2006) for bald eagle within 2.0 miles of the project study area, and no bald eagles were observed during the field investigation. Bald eagles require open bodies of water lined with large trees for foraging and perching. Habitat of this nature was not found within the project area.

Picoides borealis **(Red-cockaded Woodpecker)**
Endangered
Family: Picidae
Date Listed: October 13, 1970

This small woodpecker (7 to 8.5 inches long) has a black head, prominent white cheek patches, and a 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 habitat consists of mature to over-mature southern pine forests dominated by loblolly, long-leaf (*Pinus palustris*), pond (*P. serotina*), and slash (*P. elliottii*) pines (Thompson and Baker 1971). Nest cavities are constructed in the heartwood of living pines, generally older than 70 years, which have been infected with red-heart disease. Nest cavity trees tend to occur in clusters, which are referred to as colonies (USFWS 1985). 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 maintained by frequent natural or prescribed 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

The NCNHP has no documentation (as of June 22, 2006) for red-cockaded woodpecker within 2.0 miles of the project area, and no red-cockaded woodpeckers were observed during the field investigation. Primary nest sites for red-cockaded woodpeckers 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). Although the project area forests contain mature pines, the individuals are scattered throughout a canopy dominated by hardwoods and cypress. As a result, the forest stands provide inadequate red-cockaded woodpecker habitat.

2. Federal Species of Concern

The June 22, 2006 USFWS list (USFWS 2006) also includes a category of species designated as "Federal Species of Concern" (FSC). A species with this designation is one that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing). The FSC designation provides no federal protection under the ESA for the species listed. FSC species listed for Northampton County are presented in Table 5.

NCNHP has no documentation (as of June 22, 2006) of FSC species within 2.0 miles of the project area. No FSC species were observed during field investigations.

Table 5. Federal Species of Concern

Common Name	Scientific Name	*Potential* Habitat	*State* Status*
Bog St. John's-wort	*Hypercum adpressum*	Yes	SR-T
American eel	*Anguilla rostrata*	Yes	None
Cerulean warbler	Dendroica cerulea	No	SR
Reclining bulrush	Scirpus flaccidifolius	Yes	SR-L
Rafinesque's big-	*Corynorhinus rafinesquii*	Yes	T
Atlantic pigtoe	*Fusconaia masoni*	Yes	E
Chowanoke crayfish	*Orconectes virginiensis*	Yes	SC
Green floater	*Lasmigona subviridis*	Yes	E
Sandhills bog lily	*Lilium iridollae*	Yes	T

*State Status: E = Endangered; SR = Significantly Rare; SR-L = Significantly Rare-Limited; SR-T = Significantly Rare-Proposed Threatened; T = Threatened (Franklin and Finnegan 2004; LeGrand et al. 2004).

VII. 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 as 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted projects) on properties listed 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.

B. Historic Architecture

NCDOT architectural historians conducted an intensive field survey of the Area of Potential Effects (APE) on December 15, 2004. They identified, photographed, mapped, and evaluated all structures over fifty years of age in the APE. On February 3 2004, they met with representatives from the North Carolina State Historic Preservation Office (HPO) and FHWA to discuss their findings. It was agreed that Property #2 (tenant house and outbuilding) is not eligible for the National Register of Historic Places (NR), but Property #1 (Bridge No. 77) required further investigation. NCDOT had already sent a letter evaluating the eligibility of the bridge to HPO on January 5, 2004. The letter stated that Bridge No. 77 is eligible for the NR under Criterion C as one of the earliest, intact examples of a "Standard 600-C" timber stringer bridge surviving in the state. HPO concurred with this finding in a memorandum dated March 8, 2004. In a meeting between NCDOT, HPO, and FHWA on September 27, 2005 it was determined that both Alternatives A and B will adversely affect Bridge No. 77, as they require removal of the structure. HPO also agreed that closure and retention of Bridge No. 77 and the construction of a nearby replacement, as well as its poor condition, raise a series of complex and costly design and maintenance problems. NCDOT, HPO, and FHWA consequently agreed that Bridge No. 77 may be removed after photographic documentation is complete. NCDOT architectural historians also studied the off-site detour for the project (specifically that portion to receive improvements) to determine the presence of properties listed on or eligible for the NR. At a June 27, 2006 meeting, NCDOT, HPO, and FHWA agreed that there are no historic architectural properties of concern located along the off-site detour. Copies of the concurrence forms documenting these various agreements are included in Appendix A. A Memorandum of Agreement was prepared to mitigate the adverse effects and is included in Appendix C.

C. Archaeology

The State Historic Preservation Office (SHPO) reviewed the subject project. There are no known archaeological sites within the proposed project area, and no archaeological investigation needed to be conducted (see letter dated May 6, 2005 in Appendix A).

VIII. ENVIRONMENTAL EFFECTS

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

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

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulation. No substantial change in land use is expected to result from 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 anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

There are no publicly owned recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

No North Carolina Geodetic Survey control monuments will be impacted during construction of this project.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

This project is located in Northampton County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. Therefore, the project's impact on noise and air quality will not be substantial.

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and for air quality (1990 CAAA and NEPA) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area. No facility with Underground Storage Tanks (UST) was identified in the project vicinity.

Northampton County is a participant in the Federal Flood Insurance Program. The bridge is located within an Approximate Study Area. Since the proposed replacement for Bridge No. 77 would be a structure similar in waterway opening size, it is not anticipated that it will have any significant adverse impact on the existing floodplain and floodway. The proposed alternative will not modify flow characteristics and will have a minimal impact on floodplains due to roadway encroachment. The existing drainage patterns and groundwater will not be affected.

On the basis of the above discussion, it is concluded that no significant adverse environmental effects will result from implementation of the project.

IX. PROGRAMMATIC SECTION 4(F) EVALUATION

Part 23 CFR 771.135 Section 4(f) (49 U.S.C. 303) states that "The Administrator may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

(i) There is no feasible and prudent alternative to the use of land from the property; and

(ii) The action includes all possible planning to minimize harm to the property resulting from such use."

In addition, in accordance with the criteria set forth in the Federal Register December 23, 1986, the following Programmatic Section 4(f) for Minor Involvements with Historic Sites evaluation was prepared:

Bridge No. 77 is eligible for the National Register under Criterion C as one of the earliest examples of a timber stringer bridge in North Carolina.

Since this project necessitates the use of a minor amount of land from a historic site, which is adjacent to the existing roadway, and since the project meets the criteria set forth in the Federal Register (December 23, 1986), a programmatic Section 4(f) evaluation satisfies the requirements of Section 4(f).

The following alternatives, which avoid use of the historic bridge, have been fully evaluated: (1) do nothing; (2) improve the highway without using the adjacent historic site; (3) build the replacement structure on new location without using the historic site.

No Build Alternative: **The No Build or "Do-Nothing" alternative is not considered feasible and prudent because the bridge will eventually deteriorate beyond repair and necessitate closure of the** bridge. This is not prudent due to the traffic service provided by NC 35.

Rehabilitation of the Existing Bridge: This alternative is not considered to be feasible and prudent due to the age and deteriorated condition of the existing bridge.

Replacement of Bridge No. 77 on New Location: This alternative was studied however, due to the higher human and natural environment impacts was not selected.

These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the historic site has been performed as an integral part of this project. The following mitigation measures will be carried out for the replacement of Bridge No. 77:

The approved Memorandum of Agreement (MOA):

1. Recordation: **Prior to the demolition of Bridge No. 77, the NCDOT shall record the existing** condition of the bridge and its surroundings in accordance with the attached Historic Structures and Landscape Recordation Plan (See Appendix C).

   New Bridge Design: The NCDOT shall employ railings of Jersey barrier design for the new bridge.

2. Dispute Resolution: Disagreement and misunderstanding about the implementation of this memorandum of agreement shall be resolved in the following manner.

   A. If the SHPO or any invited signatory to this memorandum of agreement should object in writing within thirty (30) days to any plans or documentation provided for review pursuant to this memorandum of agreement, then the FHWA shall consult with the objecting party to resolve this objection. If after such consultation the FHWA determines that the objection

cannot be resolved through consultation, then the FHWA shall forward all documentation relevant to the objection to the Council, including the FHWA's proposed response to the objection. Within forty-five (45) days after receipt of all pertinent documentation, the Council shall exercise one of the following options:

i. Provide the FHWA with a staff-level recommendation, which the FHWA shall take into account in reaching a final decision regarding its response to the objection; or

ii. Notify the FHWA that the objection will be referred for formal comment pursuant to 36 CFR Section 800.7(c) and proceed to refer the objection and comment. The FHWA shall take into account the Council's comments in reaching a final decision regarding its response to the objection.

The FHWA shall take into account any Council comment or recommendations provided in accordance with this stipulation with reference only to the subject of the objection. The FHWA's responsibility to carry out all actions under the memorandum of agreement that are not the subjects of the objection shall remain unchanged.

3. Unanticipated Discovery: **In accordance with 36 CFR 800.11(a) and prior to intitiation of construction activities, NCDOT shall ensure preparation of a plan of action should archaeological or architectural resources be inadvertently or accidentally discovered during the construction of** the project. The plan shall provide for an assessment of the significance of the discovery in consultation amongst FHWA, NCDOT, and SHPO. Inadvertent or accidental discovery of human remains will be handled in accordance with North Carolina General Statutes 65 and 70.

4. Amendment: Any signatory to this memorandum of agreement may request that it be amended, whereupon the parties shall consult to consider the proposed amendment. Any such amendment shall be governed by 36 CFR Section 800.6(c)(7).

Termination: Any signatory to the memorandum of agreement may terminate it by providing thirty (30) days notice to the other parties, provided that the parties shall consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FHWA shall comply with 36 CFR Section 800.3 through 800.7 with regard to the review of the undertaking. In the event that the FHWA does not carry out the terms of this memorandum of agreement, the FHWA shall comply with 36 CFR Sections 800.3 through 800.7 with regard to the review of the undertaking.

This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO), whose correspondence is included in Appendix A. The SHPO has concurred that this project, as proposed, has an adverse effect, because the bridge will be replaced with regard to the existing historic bridge. Approval of the Programmatic Section 4(f) evaluation by the FHWA Division Administrator is included in this document. The approved Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvement with Historic Sites is included in Appendix B.

X. UNRESOLVED ISSUES AND AREAS OF CONTROVERSY

No unresolved issues or areas of controversy have been identified during the planning process and none are anticipated.

XI. AGENCY COMMENTS

Scoping letters were sent to the following agencies listed below. Agencies that responded are marked with an asterisk (*). Comment letters are included in Appendix A.

Federal Agencies
US Fish and Wildlife Service – Raleigh*
US Army Corps of Engineers – Washington*
US Army Corps of Engineers – Wilmington
Environmental Protection Agency – Raleigh
National Marine Fisheries – Beaufort
US Geological Survey – Raleigh

State Agencies
NC Wildlife Resources Commission*
NC Department of Environment and Natural Resources
NC Division of Water Quality
NC Department of Cultural Resources*
NC Division of Marine Fisheries*

Regional and Local Agencies
Northampton County Schools*
Northampton County Schools –Transportation Department*
Northampton County
Northampton County EMS*
Peanut Belt RPO

The following are comments received during the scoping process:

1. United States Department of the Interior - Fish and Wildlife Service

   Comment: "Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical."

   Response: The preferred alternate, Alternative B replaces the existing bridge on new location and minimizes human environment impacts and construction costs. The proposed bridge was lengthened to minimize impacts to Kirby's Creek.

   Comment: "Off-site detours should be used rather than construction of temporary, on-site bridges."

   Response: Traffic will be maintained on an off-site detour during construction.

   Comment: "Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. ....The general moratorium period for anadromous fish is February 15- June 30."

   Response: An in-water work moratorium will be in effect from February 15 to June 30 due to Anadromous Fish in the project area.

Comment: "The bridge design should not alter the natural stream and stream-bank morphology or impede fish passage."

Response: The bridge will be replaced in the existing location and impacts to the existing stream will be minimized.

Comment: "Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain."

Response: The bridge will be replaced in the existing location and the final bridge length will be determined during final design.

2. North Carolina Wildlife Resources Commission

Comment: "We recommend replacing this bridge with a bridge. Anadromous species are found in this portion of Kirby's Creek, including alewife and blueback herring. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 15."

Response: The preferred alternate, Alternative A, replaces the existing bridge in the existing location and minimizes human environment impacts. An in-water work moratorium will be in effect from February 15 to June 30 due to Anadromous Fish in the project area.

3. North Carolina Department of Environment and Natural Resources – Division of Marine Fisheries

Comment: "NCDMF has documented blueback herring and alewife spawning in Kirby's Creek. The area is also utilized as a nursery for these species, as well as resident species. The Division would request an inwater construction moratorium from February 15 – June 30. This will ensure the environmental integrity is protected during critical times of usage by the previously mentioned species. This agency would be concerned with any loss and/or impacts to adjacent wetlands…"

Response: The preferred alternate, Alternative A, replaces the existing bridge in the existing location and minimizes human environment impacts. An in-water work moratorium will be in effect from February 15 to June 30 due to Anadromous Fish in the project area.

4. United States Army Corps of Engineers (USACE)

Comment: "Off-site detours are always preferable to on-site (temporary) detours in wetlands…"

Response: The preferred alternate, Alternative A, replaces the existing bridge in the existing location and traffic will be maintained by an offsite detour during construction.

Comment: "Project commitments should include the removal of temporary fills from waters and wetlands…"

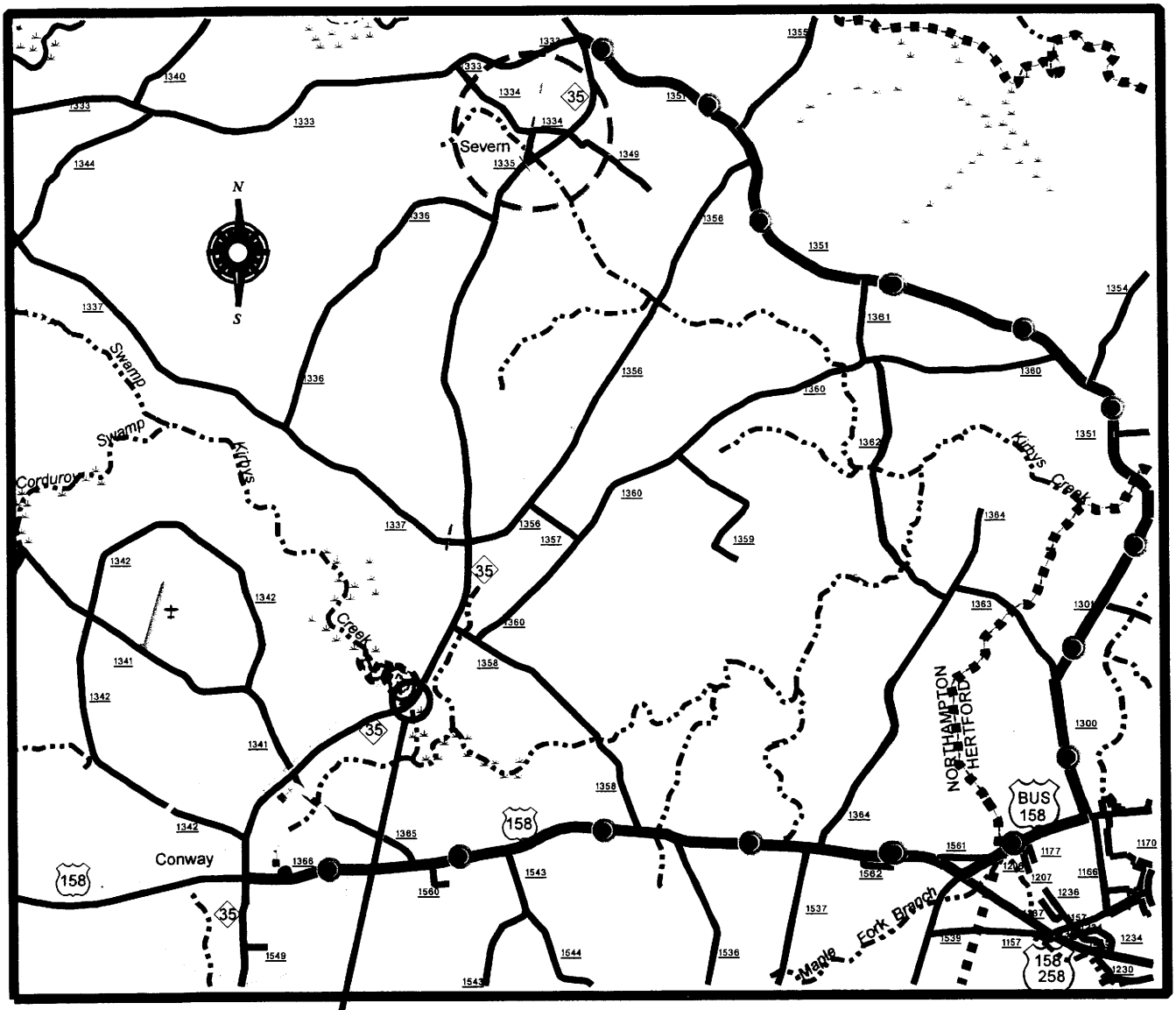
Response: There will no temporary fills on this project.

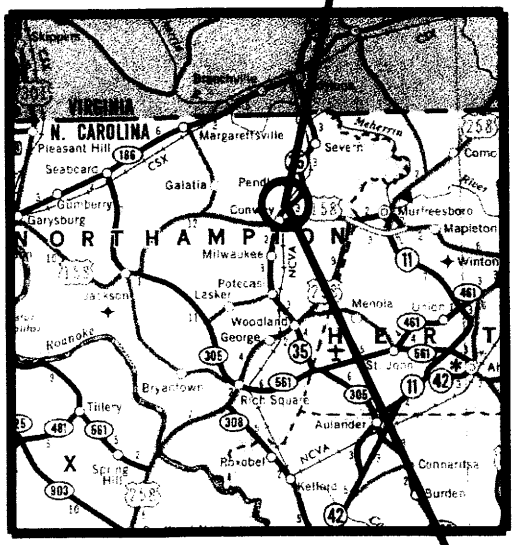
5. Northampton County Schools

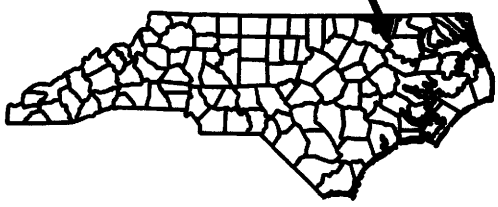
Comment: "We would simply request advance notice of any road closing or detour so we may fully educate our drivers on their route changes."

Response: Traffic will be maintained on an off-site detour during construction.

FIGURES







LEGEND

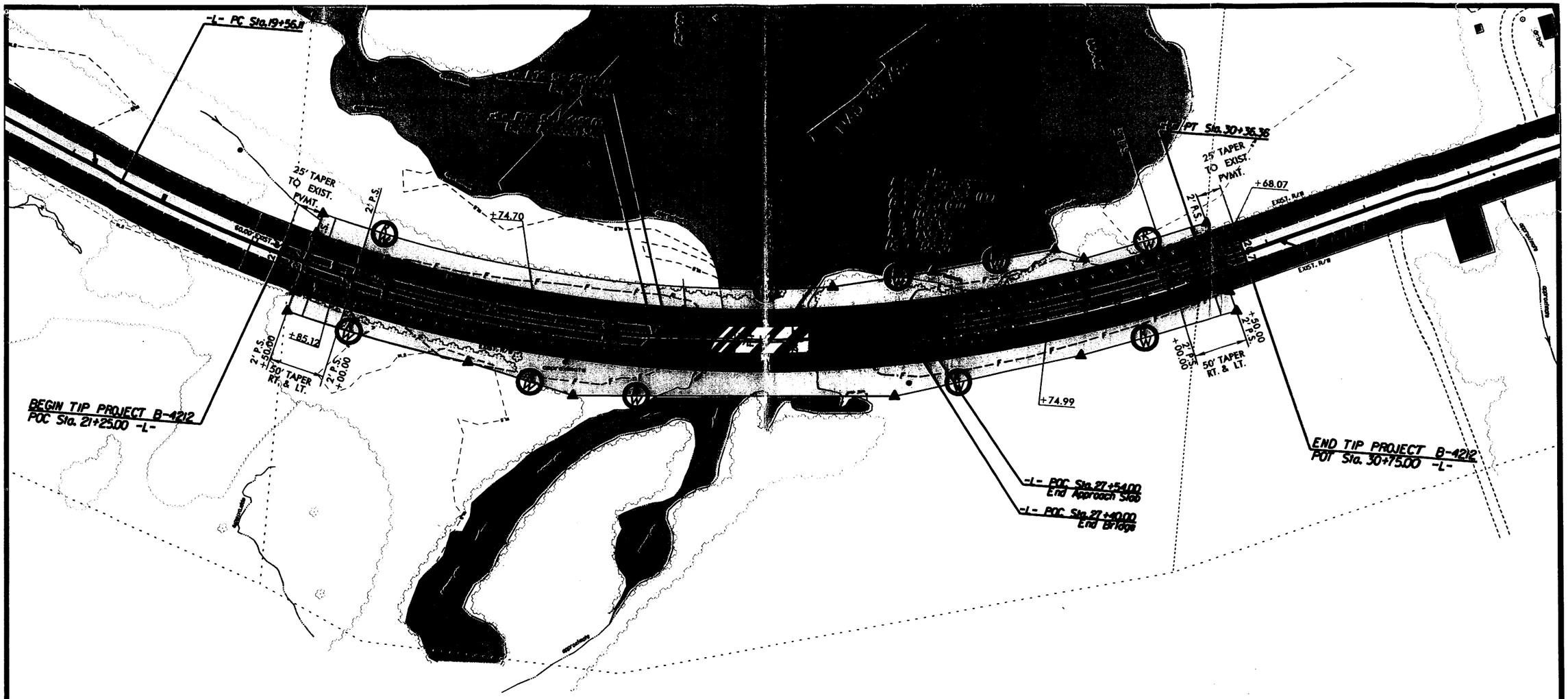
Studied Detour Route

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS

NORTHHAMPTON COUNTY
BRIDGE NO. 77 ON NC 35
OVER KIRBY'S CREEK

TIP NO. B-4212

VICINITY MAP
FIGURE 1



LEGEND

- BUILDINGS
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- ALL EASEMENTS
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- EXISTING STRUCTURES, ISLAND, CURB AND GUTTER TO BE REMOVED
- LAKES, RIVER, STREAMS, AND PONDS
- TEMPORARY DETOUR
- TEMPORARY DETOUR STRUCTURE
- 100/200 PRESENT ADT (2001) / FUTURE ADT (2025)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

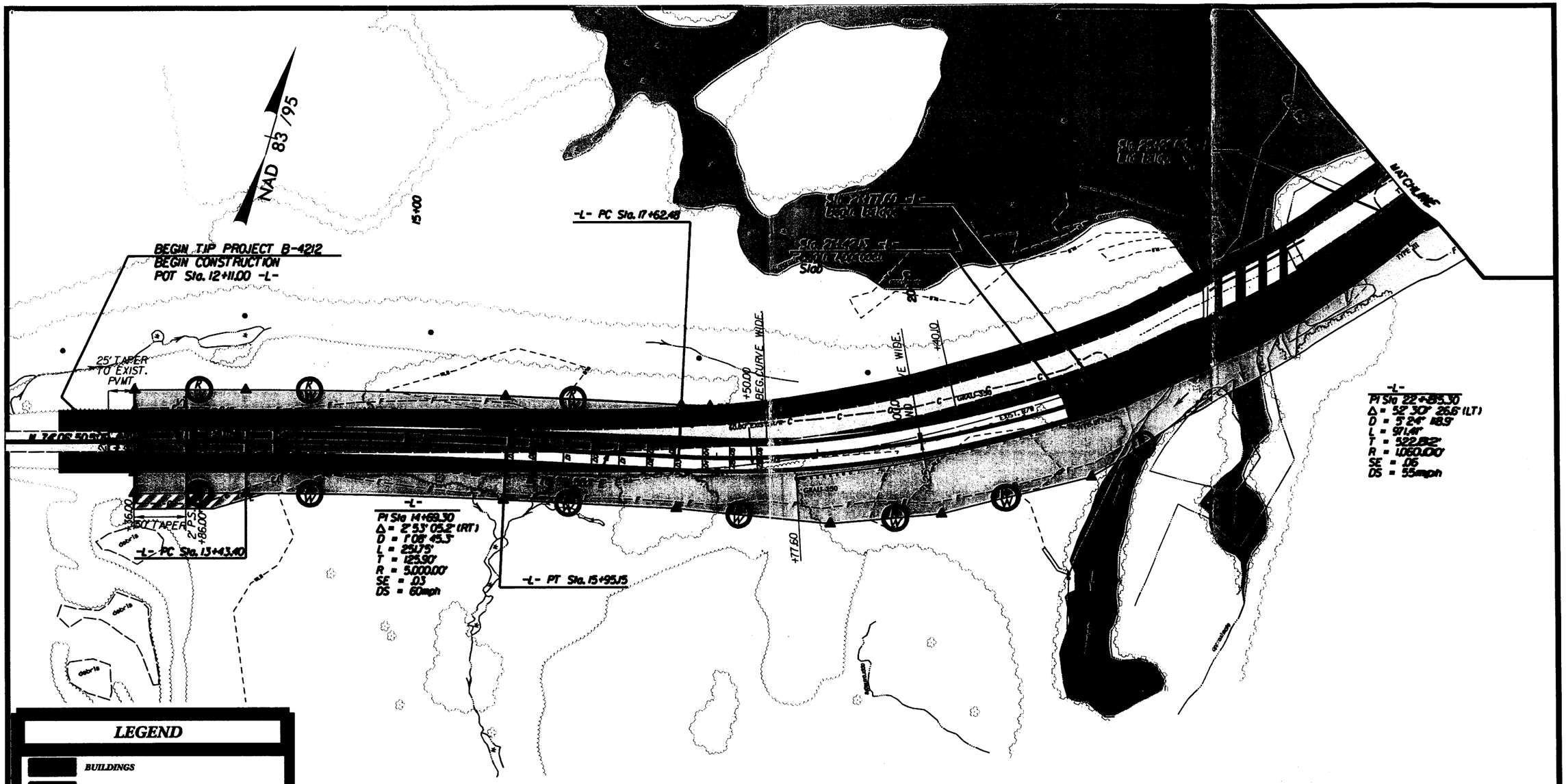
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

NORTHAMPTON COUNTY
BRIDGE NO. 77 ON NC 35 OVER KIRBYS CREEK
TIP NO. B-4212

1 " = 100'

ALTERNATE A
(PREFERRED)
FIGURE 2A



LEGEND

■	BUILDINGS
■	EXISTING RIGHT OF WAY
▨	PROPOSED RIGHT OF WAY
▨	ALL EASEMENTS
▨	EXISTING ROADWAY
▨	EXISTING ROADWAY TO BE RESURFACED
☐	PROPOSED ROADWAY
■	PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
▨	EXISTING STRUCTURES, ISLAND, CURB AND GUTTER TO BE REMOVED
■	LAKES, RIVER, STREAMS, AND PONDS
■	TEMPORARY DETOUR
▨	TEMPORARY DETOUR STRUCTURE
100/200	PRESENT ADT (2001) FUTURE ADT (2025)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

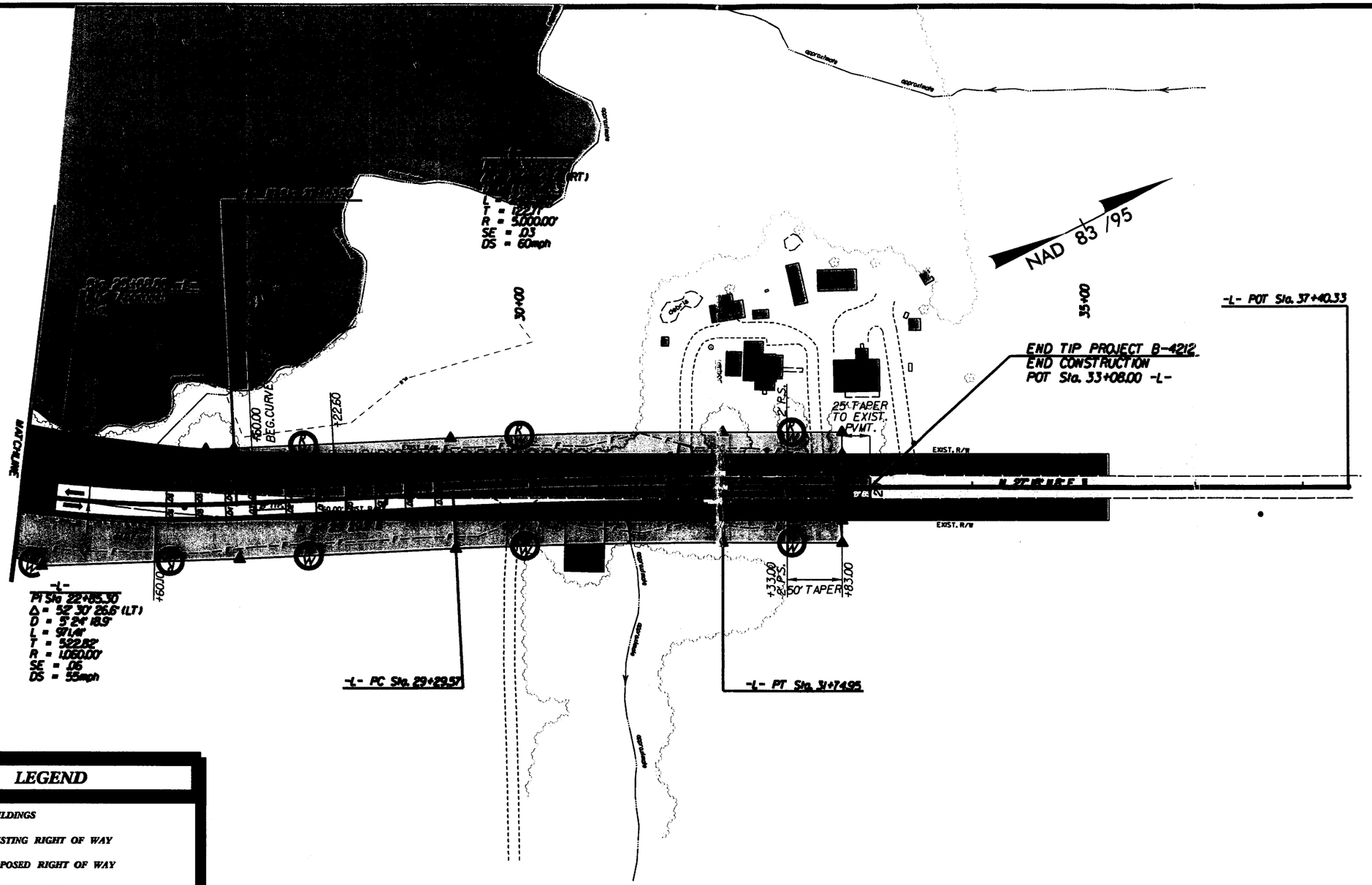
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

NORTHAMPTON COUNTY
BRIDGE NO. 77 ON NC 35
OVER KIRBYS CREEK
TIP NO. B-4212

1" = 50'

ALTERNATE B

FIGURE 2B



LEGEND

- BUILDINGS
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- ALL EASEMENTS
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- EXISTING STRUCTURES, ISLAND, CURB AND GUTTER TO BE REMOVED
- LAKES, RIVER, STREAMS, AND PONDS
- TEMPORARY DETOUR
- TEMPORARY DETOUR STRUCTURE
- 100/200 PRESENT ADT (2001) / FUTURE ADT (2025)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

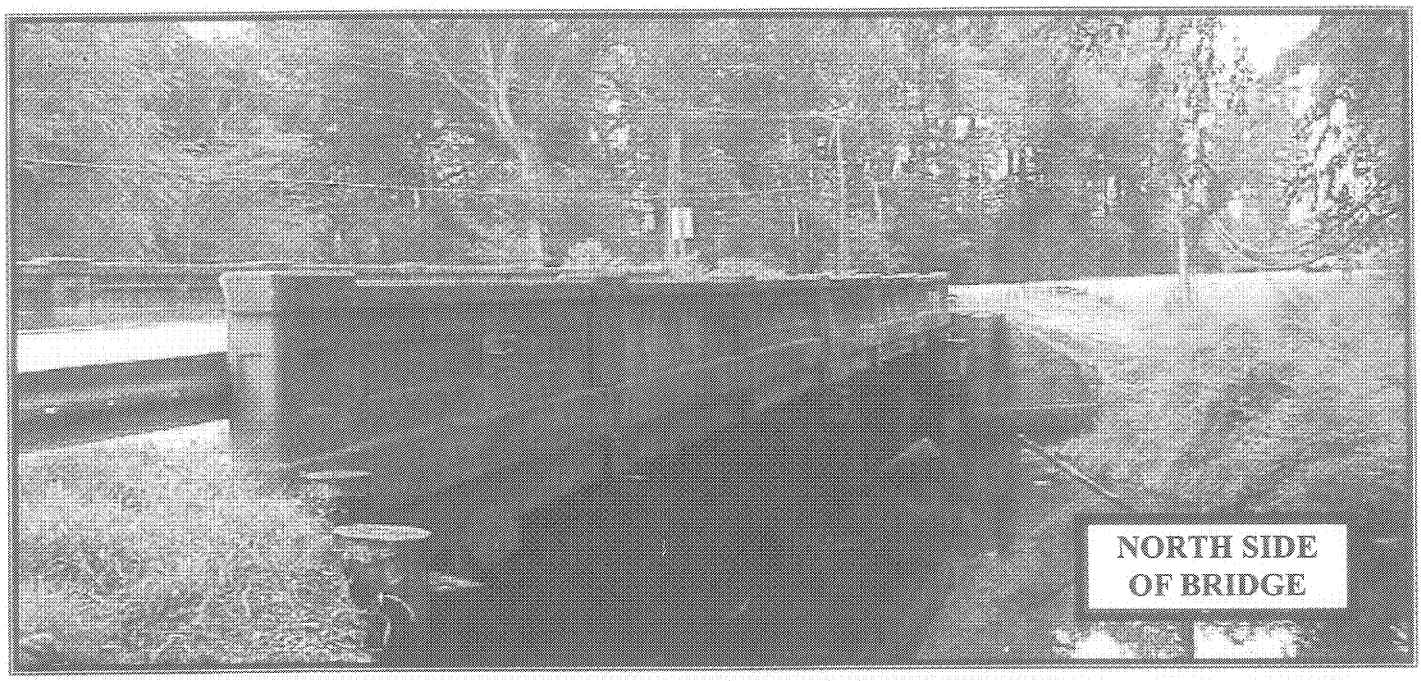
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

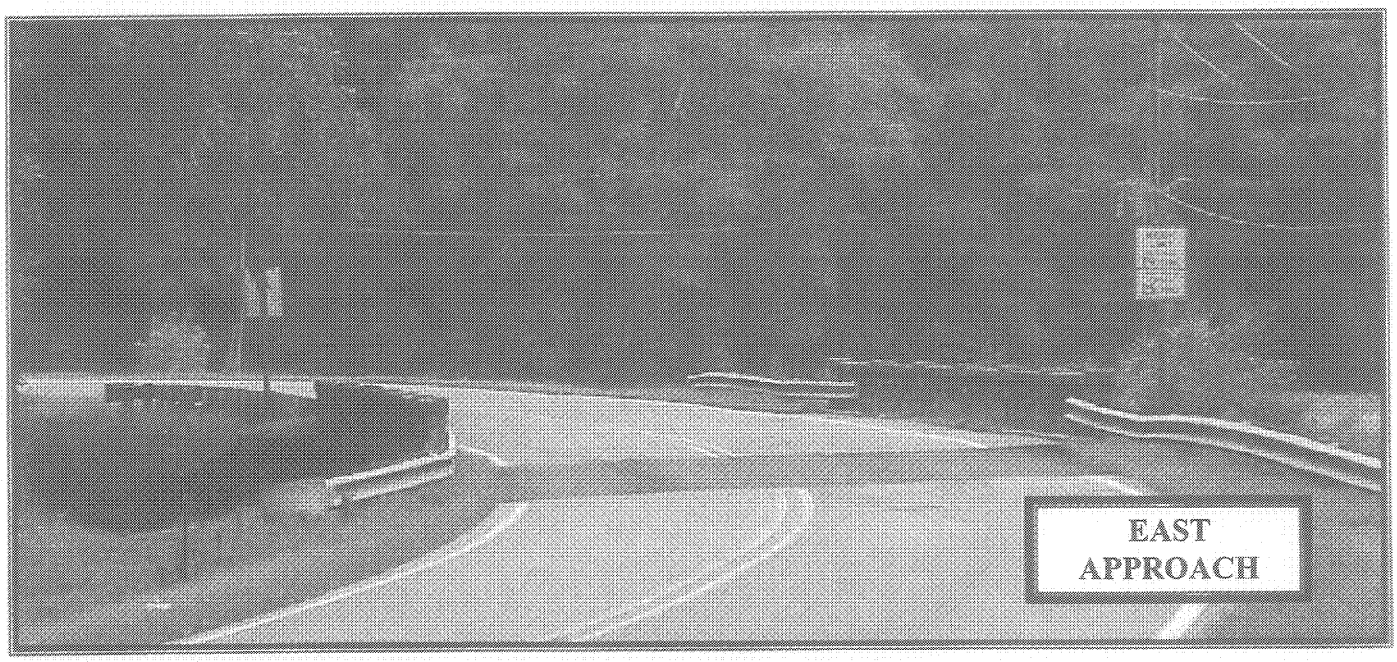
NORTHAMPTON COUNTY
BRIDGE NO. 77 ON NC 35
OVER KIRBYS CREEK
TIP NO. B-4212

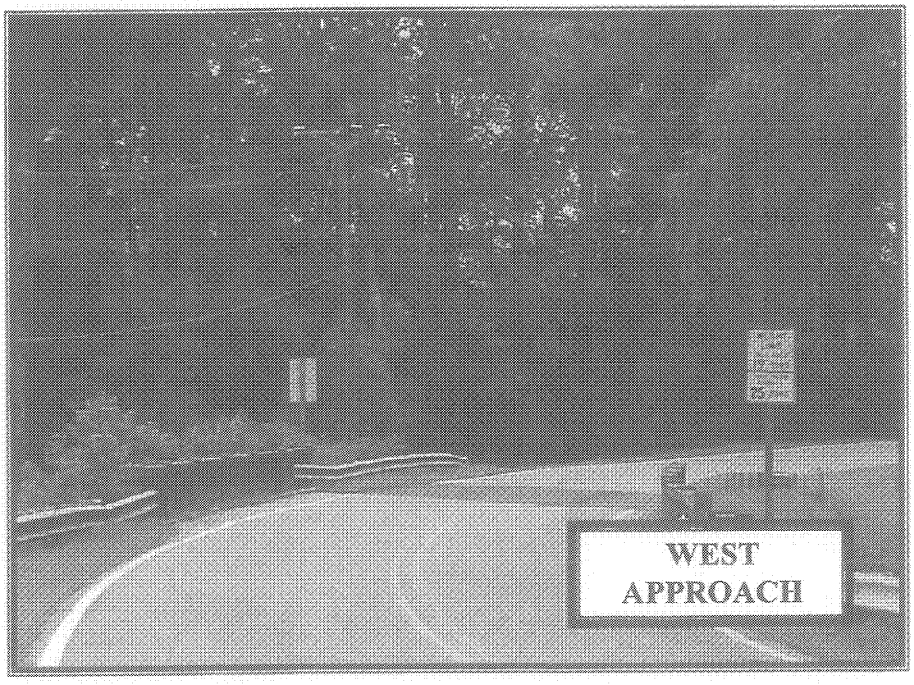
1 " = 50'

ALTERNATE B

FIGURE 2C



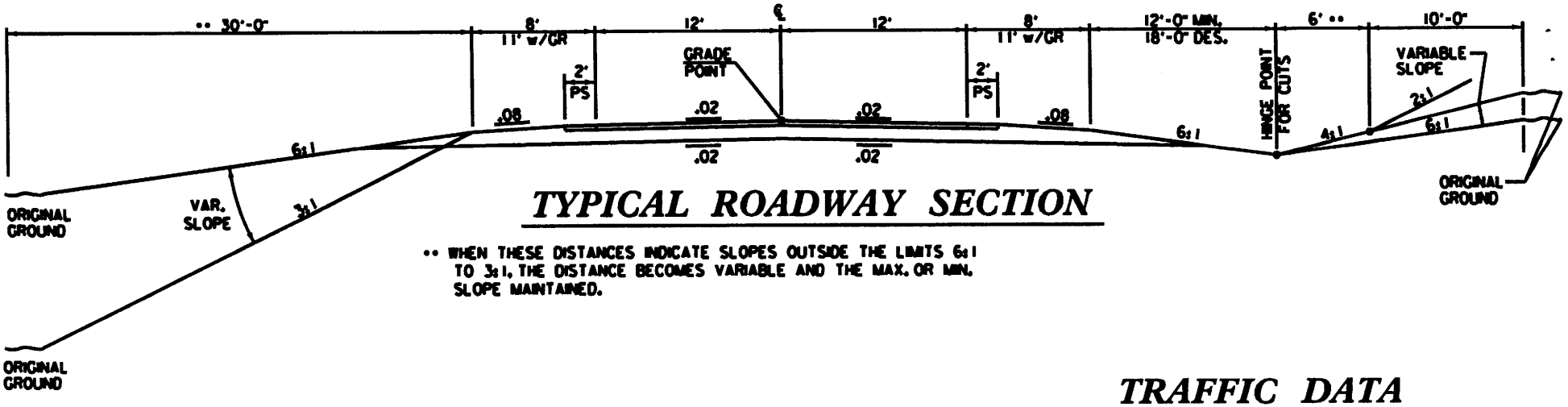




B-4212
Replacement of Bridge
No. 77 on NC 35
Over Kirby's Creek
Northampton County

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FIGURE 3



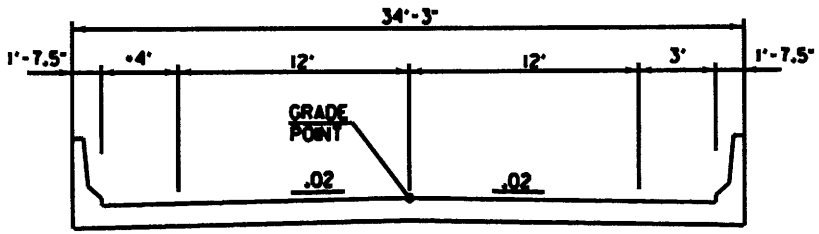
TYPICAL ROADWAY SECTION

•• WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS 6:1 TO 3:1, THE DISTANCE BECOMES VARIABLE AND THE MAX. OR MIN. SLOPE MAINTAINED.

TRAFFIC DATA

ADT 2002	*2,300*	*LOS B*
ADT 2004	*2,500*	*LOS B*
ADT 2030	*4,500*	*LOS B*
DUAL	*4%*	
TTST	*2%*	

FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR



TYPICAL BRIDGE SECTION

EXISTING BRIDGE LENGTH IS 104 FT.

• THE BRIDGE WILL BE WIDER ON THE INSIDE DUE TO SPREAD

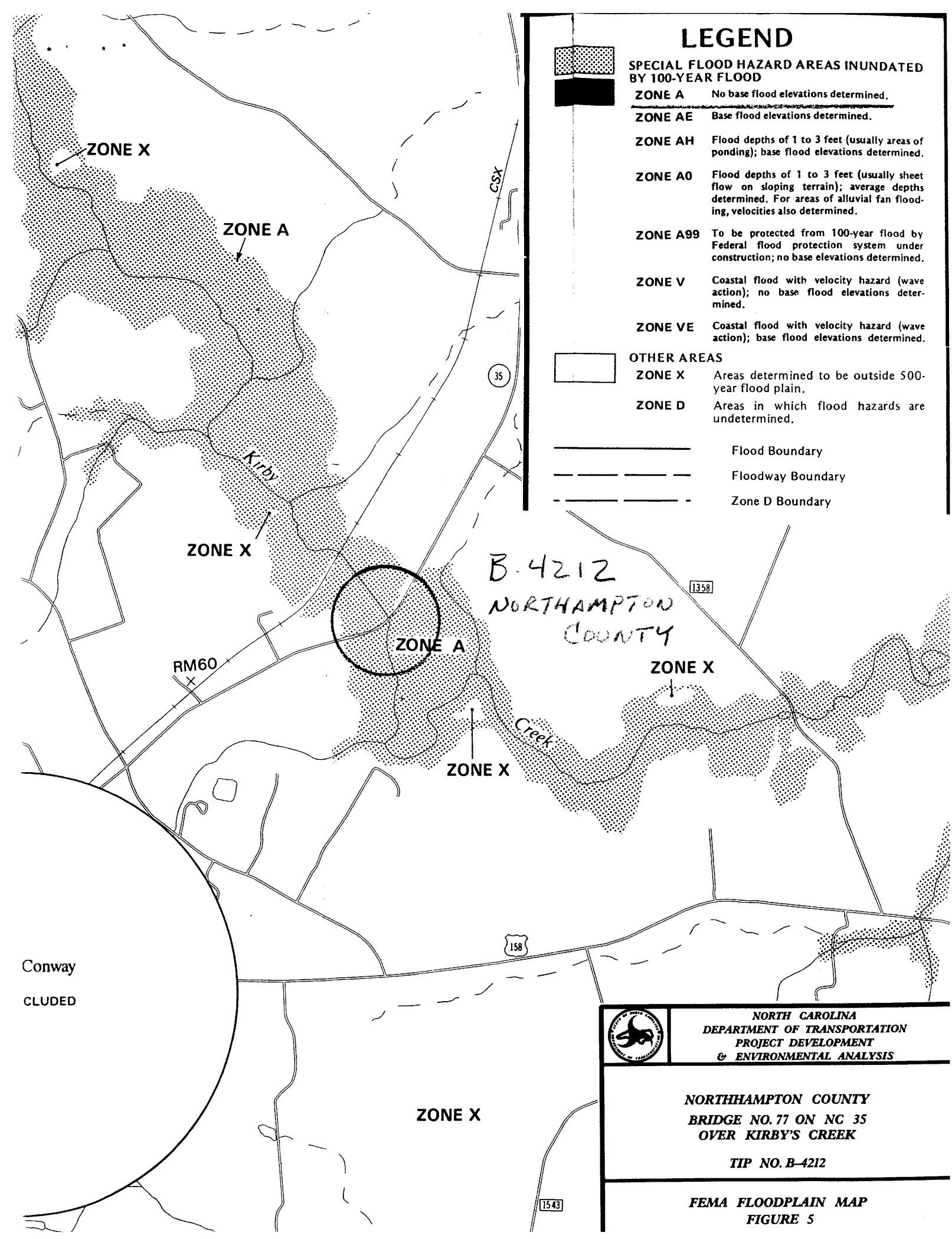
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPEMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

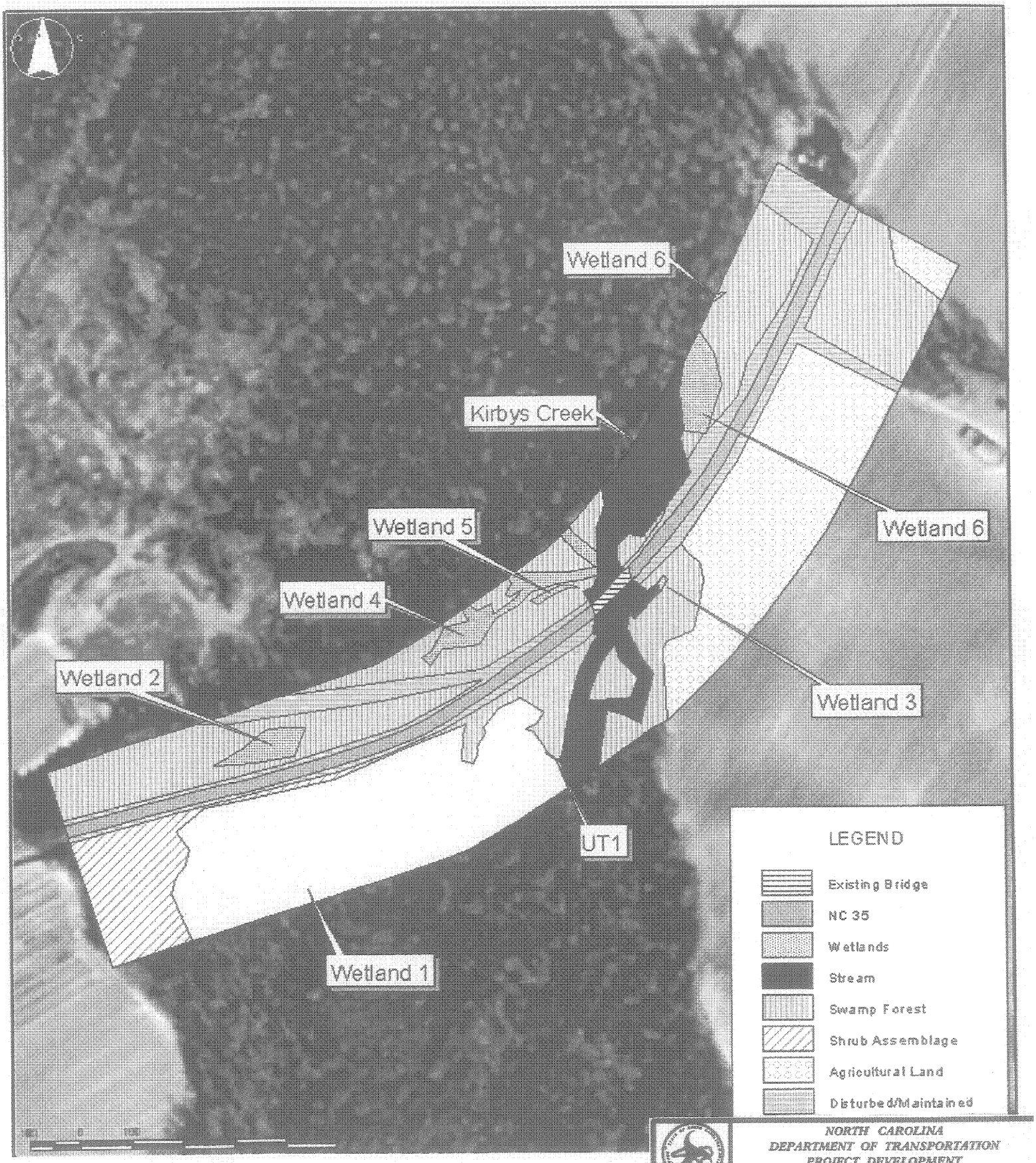
NORTHAMPTON COUNTY

BRIDGE NO. 77 ON NC 35
OVER KIRBY'S CREEK

B-4212

FIGURE 4


LEGEND
SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD
ZONE A No base flood elevations determined.
ZONE AE Base flood elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.
ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.
OTHER AREAS
ZONE X Areas determined to be outside 500-year flood plain.
ZONE D Areas in which flood hazards are undetermined.
Flood Boundary
Floodway Boundary
Zone D Boundary
ZONE X
ZONE A
CSX
35
Kirby
ZONE X
B-4212
NORTHAMPTON
COUNTY
1358
ZONE A
RM60
ZONE X
Creek
ZONE X
158
Conway
CLUDED
ZONE X
1543
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS
NORTHHAMPTON COUNTY
BRIDGE NO. 77 ON NC 35
OVER KIRBY'S CREEK
TIP NO. B-4212
FEMA FLOODPLAIN MAP
FIGURE 5



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS

NORTHHAMPTON COUNTY
BRIDGE NO. 77 ON NC 35
OVER KIRBY'S CREEK

TIP NO. B-4212

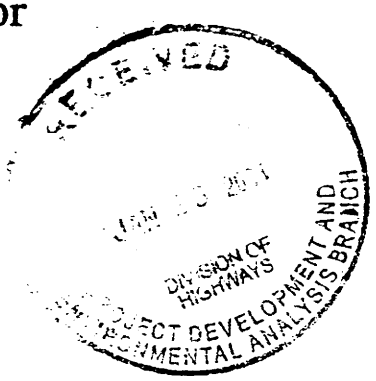
NATURAL COMMUNITIES MAP
FIGURE 6

APPENDIX A

Comments received from Federal, State, and Local Agencies

United States Department of the Interior

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



January 13, 2004

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

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed replacement of the following nine bridges:

- B-4018, Beaufort County, Bridge No. 104 on NC 32 over Broad Creek
- B-4019, Beaufort County, Bridge No. 103 on NC 32 over Runyon Creek
- B-4020, Beaufort/Pitt County, Bridge No. 8 on SR 1403 over Tranters Creek
- B-4055, Carteret County, Bridge No. 22 on SR 1124 over Branch of Newport River
- B-4132, Halifax County, Bridge No. 97 on NC 561 over Looking Glass Swamp
- B-4172, Lenoir County, Bridge No. 9 on NC 55 over Jericho Run
- B-4212, Northampton County, Bridge No. 77 on NC 35 over Kirby's Creek
- B-4321, Wayne County, Bridge No. 17 on SR 1918 over Carraway Creek
- B-4326, Wilson County, Bridge No. 79 on SR 1001 over Bloomery Swamp

These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (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).

For bridge replacement projects, the Service recommends the following general conservation measures to avoid or minimize environmental impacts to fish and wildlife resources:

1. Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical;

2. If unavoidable wetland impacts are proposed, every effort should 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 via conservation easements, land trusts or by

other means should be explored at the outset;

3. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be entirely removed and the impacted areas be planted with appropriate vegetation, including trees if necessary;

4. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;

5. New bridges should be long enough to allow for sufficient wildlife passage along stream corridors;

6. Best Management Practices (BMP) for Protection of Surface Waters should be implemented;

7. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;

8. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. To the extent possible, piers and bents should be placed outside the bank-full width of the stream;

9. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approach to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected area.

A list of federally protected species for each county in North Carolina can be found at http://nc-es.fws.gov/es/countyfr.html . Additional information about the habitats in which each species is often found can also be found at http://endangered.fws.gov . Please note, the use of the North Carolina Natural Heritage Program data should not be substituted for actual field surveys if suitable habitat occurs near the project site. If suitable habitat exists in the project area, we recommend that biological surveys for the listed species be conducted and submitted to us for review. All survey documentation must include survey methodologies and results.

We do not have any specific comments for the individual projects, with the exception of the following two:

B-4020, Beaufort/Pitt County - There is a past occurrence of the West Indian manatee (*Trichechus manatus*) less than one mile south of the project area. The Service's **Guidelines For Avoiding Impacts To The West Indian Manatee: Precautionary Measures for Construction Activities in North Carolina Waters** should be implemented to minimize impacts to this species. These guidelines can be found at http://nc-es.fws.gov/es/publications.html .

B-4055, Carteret County - There are known occurrences of red-cockaded woodpeckers (*Picoides borealis*) and rough-leaved loosestrife (*Lysimachia asperulaefolia*) within two and three miles, respectively, of the project area. If habitat for these or any other listed species occurs at the site, appropriate surveys should be conducted. In addition, this site occurs within the Croatan Game Lands area. Impacts to this protected area should be minimized to the maximum extent practical.

We reserve the right to review any federal permits that may be required for this project, at the public notice stage. Therefore, it is important that resource agency coordination occur early in the planning process in order to resolve any conflicts that may arise and minimize delays in project implementation. 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. A clearly defined and detailed purpose and need for the proposed project;

2. A description of the proposed action with an analysis of all alternatives being considered, including the "no action" alternative;

3. A description of the fish and wildlife resources, and their habitats, within the project impact area that may be directly or indirectly affected;

4. 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 (NWI). Wetland boundaries should be determined by using the 1987 Corps of Engineers Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers;

5. The anticipated environmental impacts, both temporary and permanent, that would be likely to occur as a direct result of the proposed project. The assessment should also include the extent to which the proposed project would result in secondary impacts to natural resources, and how this and similar projects contribute to cumulative adverse effects;

6. Design features and construction techniques which would be employed to avoid or minimize the fragmentation or direct loss of wildlife habitat and waters of the US;

7. If unavoidable wetland impacts are proposed, project planning should include a detailed compensatory mitigation plan for offsetting the unavoidable impacts.

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 our response, please contact Mr. Gary Jordan at (919) 856-4520, ext. 32.

Sincerely,

Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: Mike Bell, USACE, Washington, NC
Bill Biddlecome, USACE, Washington, NC
John Hennessy, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

Greg Purvis

From: Biddlecome, William J SAW [William.J.Biddlecome@saw02.usace.army.mil]
Sent: Friday, February 06, 2004 1:44 PM
To: 'eevance@dot.state.nc.us'
Subject: Group 50 Bridge Replacement Project - B-4212, Northampton County, Replace Bridge No. 77 on NC 35 over Kirby's Creek

Mr. Vance:

The following are my comments concerning the above project:

1. Based on the information provided for the project, it appears that the proposed bridge replacement project might impact jurisdictional wetlands and waters. 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 this project, 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.

2. Although this project 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. All activities, including temporary construction, access, and dewatering activities, should be included in the project planning report.

3. The project planning 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 by the proposed project. In addition, the report should provide an estimate of the linear feet of adverse impacts to streams resulting from construction of the project. The project planning report should provide accurate estimates of wetland and stream impacts based on preliminary project design and verified wetland delineations.

4. 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 that demonstrates that alternatives with lower wetland impacts are not practicable. On-site detours, unless constructed on a spanning structure or on a previous detour that was used in a past construction activity, 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 on-site 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 projects where a spanning structure is not feasible, the NCDOT should investigate the existence of previous on-site detours at the site that were used in previous construction activities. These areas should be utilized for on-site detours whenever possible to minimize wetland impacts.

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

6. 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, NC Division of Marine Fisheries, or the NOAA Marine Fisheries Service. In addition, if undercutting is necessary for temporary detours, the undercut material should be stockpiled on an upland site and later used to restore the site.

7. All restored areas should be planted with endemic vegetation including trees, if appropriate. For projects proposing a temporary on-site detour in wetlands, the entire detour area, including any previous detour from past construction activities, should be removed in its entirety.

8. The project planning 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. Bridge demolition shall follow NCDOT best management practices for construction and maintenance activities dated August 2003. Bridge demolition into the creek should be avoided unless no feasible alternative is available.

9. Lengthening existing bridges can often benefit the ecological and hydrological functions of the associated wetlands and streams. In addition, longer bridges would also enhance the existing crossing for wildlife passage thereby creating a safer roadway. Most bridge approaches are connected to earthen causeways that were built over wetlands and streams. Replacing these causeways with longer bridges would allow previously impacted wetlands to be restored. In an effort to encourage this type of work, mitigation credit for wetland restoration activities can be provided to offset the added costs of lengthening an existing bridge.

10. All work related to Federal Endangered Species as required by Section 7 of the Endangered Species Act including copies of all correspondence and meeting minutes with the NOAA Marine Fisheries Service and the US Fish and Wildlife Service associated with the subject projects should be coordinated with this office.

If you have questions or comments you can reach me by e-mail at william.j.biddlecome@usace.army.mil or by telephone at (252) 975-1616 ext.31.

Sincerely,
William J. Biddlecome
U. S. Army Corps of Engineers
Project Manager
Regulatory Division
Washington Field Office

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Elmo Vance
Project Development and Environmental Analysis Branch, NCDOT

FROM: Travis Wilson, Highway Project Coordinator
Habitat Conservation Program

DATE: February 5, 2004

SUBJECT: NCDOT Bridge Replacements in Beaufort, Carteret, Halifax, Lenoir, Northampton, Wayne, and Wilson counties. TIP Nos. B-4018, B-4019, B-4020, B-4055, B-4132, B-4172, B-4212, B-4321, and B-4326.

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).

Our standard recommendations for bridge replacement projects of this scope 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.

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

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 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. Hal Bain~~ 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. NO LONGER WITH DOT

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 aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

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 along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

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 reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be utilized as mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-4018, Beaufort County, Bridge No. 104 over Broad Creek on NC 32. We recommend replacing this bridge with a bridge. Adult and juvenile anadromous species are found in this portion of Broad Creek, including striped bass, American shad, river herring, and hickory shad. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to September 30. Standard recommendations apply.

2. B-4019, Beaufort County, Bridge No. 103 over Runyon Creek on NC 32. We recommend replacing this bridge with a bridge. Adult and juvenile anadromous species are found in this portion of Runyon Creek, including striped bass, American shad, river herring, and hickory shad. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to September 30. Standard recommendations apply.

3. B-4020, Beaufort County, Bridge No. 8 over Tranter's Creek on SR 1403. We recommend replacing this bridge with a bridge. Adult and juvenile anadromous species are found in this portion of Tranter's Creek, including striped bass, American shad, river herring, and hickory shad. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to September 30. Standard recommendations apply.

4. B-4055, Carteret County, Bridge No. 22 over Branch of Newport River on SR 1124. We recommend replacing this bridge with a bridge. Adult and juvenile anadromous species are found in this area, including striped bass, American shad, blueback herring, and hickory shad. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to September 30. Standard recommendations apply.

5. B-4132, Halifax County, Bridge No. 97 over Looking Glass Swamp on NC 561. We recommend replacing this bridge with a bridge. Anadromous species are found in this portion of Looking Glass Swamp, including alewife and blueback herring. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 15. Standard recommendations apply.

6. B-4172, Lenoir County, Bridge No. 9 over Jericho Run on NC 55. We recommend replacing this bridge with a bridge. Standard recommendations apply.

7. B-4212, Northampton County, Bridge No. 77 over Kirby's Creek on NC 35. We recommend replacing this bridge with a bridge. Anadromous species are found in this portion of Kirby's Creek, including alewife and blueback herring. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 15. Standard recommendations apply.

8. B-4321, Wayne County, Bridge No. 17 over Caraway Creek on SR 1918. We recommend replacing this bridge with a bridge. Anadromous species are found in this portion of Caraway Creek, including alewife and blueback herring. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 15. Standard recommendations apply.

9. B-4326, Wilson County, Bridge No. 79 over Bloomery Swamp on SR 1001. We recommend replacing this bridge with a bridge. Standard recommendations apply.

NCDOT should routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. Restoring previously disturbed floodplain benches should narrow and deepen streams previously widened and shallowed during initial bridge installation. 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 and reduce habitat fragmentation.

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.

Cc: Gary Jordan, U.S. Fish and Wildlife Service, Raleigh

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries
Michael F. Easley, Governor
William G. Ross Jr., Secretary
Preston P. Pate Jr., Director

MEMORANDUM:

TO: Gregory Thorpe, NC DOT Environmental Management Director

THROUGH: Mike Street, Chief Habitat Section

FROM: Sara E. Winslow, Northern District Manager

SUBJECT: NC DOT – Group 50 Bridge Replacement Projects

DATE: January 26, 2004

The NC Division of Marine Fisheries has reviewed the information relative to bridge replacements and submits the following comments pursuant to General Statute 113-131.

B-4132 – Halifax County – Bridge No. 97 – Looking Glass Creek

NCDMF has conducted an anadromous spawning area survey in this creek but did not encounter any anadromous species. Thus, the Division would not request an inwater construction moratorium. This agency would be concerned with the loss and/or impacts to adjacent wetlands. The importance of wetlands to fisheries production and water quality is well documented.

B-4212 – Northhampton County – Bridge No. 77 – Kirby's Creek

NCDMF has documented blueback herring and alewife spawning in Kirby's Creek. The area is also utilized as a nursery for these species, as well as resident species. The Division would request an inwater construction moratorium from February 15 – June 30. This will ensure the environmental integrity is protected during critical times of usage b the previously mentioned species. This agency would be concerned with any loss or impacts to adjacent wetlands. The importance of wetlands to fisheries production and water quality is well documented.

1367 U.S. 17 South, Elizabeth City, North Carolina 27909
Phone: 252 [illegible] FAX: 252 264-3723 Internet: www.ncdmf.net

Federal Aid # **BRSTP-35(1)** *TIP #* **B-4212** *County*: **Northampton**

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

Project Description: **Replace Bridge No. 77 on NC 35 over Kirby's Creek, including off-site detour with improvements. This document concerns the off-site detour; see effects concurrence form dated September 27, 2005 for immediate project area.**

On June 27, 2006 representatives of the

- [X] North Carolina Department of Transportation (NCDOT)
- [X] 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 property identified as **(List Attached)** is considered not eligible for the National Register and no further evaluation of it is necessary. No. 1-9
- [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 (off-site detour only) 56 detour to be improved
- [ ] There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Vanessa E. Patrick — 6-27-06
Representative, NCDOT — Date

Donald R Brew — 7-11-06
FHWA, for the Division Administrator, or other Federal Agency — Date

[signature] — 7/11/06
Representative, HPO — Date

Renee Gledhill-Earley — 6.27.06
State Historic Preservation Officer — Date

If a survey report is prepared, a final copy of this form and the attached list will be included

SUPERSEDES AGREEMENT OF JULY 19, 2004

Federal Aid # **BRSTP-35(1)** *TIP#* **B-4212** *County*: **Northampton**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No. 77 on NC 35 over Kirby's Creek.

On May 31, 2005 representatives of the

X North Carolina Department of Transportation (NCDOT)
X Federal Highway Administration (FHWA)
X North Carolina State Historic Preservation Office (HPO)
☐ Other

Reviewed the subject project and agreed

☐ There are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.

☐ There are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.

☐ There is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.

X There is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Vanessa J. Patrick 9-27-05
Representative, NCDOT Date

9.27.05
FHWA, for the Division Administrator, or other Federal Agency Date

for Renee Gledhill-Earley 9.29.05
Representative, HPO Date

9.27.05
State Historic Preservation Officer Date

Federal Aid # **BRSTP-35(1)** *TIP*# **B-4212** *County*: **Northampton**

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Both Alternatives A and B (the latter is the preferred) adversely affect Bridge No. 77, determined eligible for the National Register in 2004, as they require the removal of the structure. The age and condition of the bridge argue against its practicable rehabilitation. Closure and retention of Bridge No. 77 and the construction of a nearby replacement raise a series of complex and costly design and maintenance problems. NCDOT and NCHPO consequently have agreed that Bridge No. 77 may be removed after photographic documentation is complete (drawings exist for the structure).

N.B. This agreement supersedes that documented by a concurrence form dated July 19, 2004.

Reason(s) why the effect is not adverse (if applicable).

Initialed: NCDOT VEP FHWA RHH HPO PMS

North Carolina Department of Cultural Resources
State Historic Preservation Office

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

Division of Historical Resources
David L. S. Brook, Director

March 8, 2004

MEMORANDUM

TO: Greg Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: David Brook DB for David Brook

SUBJECT: Replace Bridge No. 77 on NC 35 over Kirby's Cre[redacted]
Northampton County, ER04-0078

Thank you for your letter of January 5, 2004, concerning the above project.

We have reviewed the additional research you provided in your letter concerning the eligibility of Bridge 77 over Kirby's Creek.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following structure is eligible for the National Register of Historic Places:

> Bridge No. 77 on NC 35 over Kirby's Creek, is eligible for the National Register under Criterion C as one of the earliest examples of a timber stringer bridge in North Carolina.

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. In all future communication concerning this project, please cite the above referenced tracking number.

cc: √ Mary Pope Furr, NCDOT

Federal Aid # **BRSTP-35(1)** *TIP #* **B-4212** *County:* **Northampton**

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

Project Description: **Replace Bridge No. 77 over Kirby's Creek on NC 35**

On **February 3, 2004**, representatives of the

X North Carolina Department of Transportation (NCDOT)
X 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 property identified as **#2 – Tenant House and Outbuilding** is considered not eligible for the National Register and no further evaluation of it is necessary.

X There are no National Register-listed or Study Listed properties within the project's area of potential effects.

☐ 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:

Vanessa E. Patrick — 2-3-04
Representative, NCDOT — Date

RPHA — 2/4/04
FHWA, for the Division Administrator, or other Federal Agency — Date

[signature] — 2/3/04
Representative, HPO — Date

Renee Gledhill-Earley — 2/3/04
State Historic Preservation Officer — Date

If a survey report is prepared, a final copy of this form and the attached list will be included.

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 6, 2005

MEMORANDUM

TO: Greg Thorpe, Manager
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter Sandbeck pbs/g Peter Sandbeck

SUBJECT: Federal Categorical Exclusion, Bridge 77 on NC 35 over Kirby's Creek, TIP B-4212, Northampton County, ER 04-0078

Thank you for your letter of March 22, 2005, transmitting the Categorical Exclusion (CE) for the above project. We believe the CE adequately addresses our concerns for historic resources.

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. In all future communication concerning this project, please cite the above referenced tracking number.

cc: John F. Sullivan
NCDOT, Federal Highway Administration

Northampton County Schools
Post Office Box 158 • 320 Bagley Drive
Jackson, North Carolina 27845
Telephone: (252) 534-1371 • Fax: (252) 534-4631

Mr. James W. Pickens, Sr.
Superintendent

Mr. Phil Matthews
Assistant Superintendent

B-4212

February 5, 2004

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

Dear Mr. Thorpe,

The Transportation Department of Northampton County is in receipt of your letter dated January 8, 2004 regarding the request for comments on Group 50 Bridge Replacement Project. While this will greatly affect our bus routes, we do understand the necessity for such a project. Twenty of our buses on the eastern end of Northampton County travel this particular site but can be rerouted if necessary to accommodate our students We would simply request advance notice of any road closing or detour so we may fully educate our drivers on their route changes.

We do appreciate all the Department of Transportation does in helping maintain safe roads for the students of Northampton County.

Sincerely,

Pamela C. Woodard
Transportation Coordinator

Pw

June 6, 2005

I spoke with Ronald Storey, Northampton County Emergency Management Director and the County does not have any issues with an offsite detour for this project.

Greg Purvis, P.E.
Project Manager
Wang Engineering

APPENDIX B

Programmatic Section 4(f) Evaluation

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4(f) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS WITH MINOR INVOLVEMENTS WITH HISTORIC SITES

F. A. Project: **BRSTP-35(1)**

State Project **33558.1.1**

T. I. P. No. **B-4212**

DESCRIPTION:
Replace Bridge No. 77 on NC 35 over Kirby's Creek in Northampton County, North Carolina. Bridge No. 77 is eligible for the National Register under Criterion C as one of the earliest examples of a timber stringer bridge in North Carolina.

		YES	NO
1.	Is the proposed project designed to improve the operational characteristics, safety, and/or physical condition of the existing highway facility on essentially the same alignment?	X	☐
2.	Is the project on new location?	☐	X
3.	Is the historic site adjacent to the existing highway?	X	☐
4.	Does the project require the removal or alteration of historic buildings, structures, or objects?	☒	___
5.	Does the project disturb or remove archaeological resources which are important to preserve in place rather than to recover for archaeological research?	☐	X
6.	a. Is the impact on the Section 4(f) site considered minor (i.e. no effect, no adverse effect)?	___	☒
	b. If the project is determined to have "no adverse effect" on the historic site, does the Advisory Council on Historic Preservation object to the determination of "no adverse effect"?	☐	X
7.	Has the SHPO agreed, in writing, with the assessment of impacts and the proposed mitigation?	X	☐
8.	Does the project require the preparation of an EIS?	☐	X

		Yes	No
3.	Build an improved facility on new location without using the historic site.	X	☐

(a) An alternate on new location would result in: (circle, as appropriate)

(i) a project which does not solve the existing problems

or (ii) substantial social, environmental, or economic impacts

or (iii) a substantial increase in project cost or engineering difficulties

and (iv) such impacts, costs, or difficulties of truly unusual or unique or extraordinary magnitude

MINIMIZATION OF HARM

		Yes	No
1.	The project includes all possible planning to minimize harm necessary to preserve the historic integrity of the site.	X	☐
2.	Measures to minimize harm have been agreed to, in accordance with 36 CFR Part 800, by the FHWA, the SHPO, and as appropriate, the ACHP.	X	☐

3. Specific measures to minimize harm are described as follows:

- A Memorandum of Agreement was approved and is attached to the Categorical Exclusion.

Note: Any response in a box requires additional information prior to approval. Consult Nationwide 4(f) evaluation.

4. Project will require the removal of the existing bridge No. 77. Bridge No. 77 is eligible for the National Register under Criterion C as one of the earliest examples of a timber stringer bridge in North Carolina.

6a. The removal of the existing bridge was determined to be an adverse effect by the SHPO. Due to design and maintenance problems SHPO has agreed to removal of the existing bridge.

COORDINATION

The proposed project has been coordinated with the following (attach correspondence):

a. State Historic Preservation Officer	X
b. Advisory Council on Historic Preservation	X
c. Property owner	
d. Local/State/Federal Agencies	X
e. US Coast Guard (for bridges requiring bridge permits)	X

SUMMARY AND APPROVAL

The project meets all criteria included in the programmatic 4(f) evaluation approved on December 23, 1986.

All required alternatives have been evaluated and the findings made are clearly applicable to this project. There are no feasible and prudent alternatives to the use of the historic site.

The project includes all possible planning to minimize harm, and the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed with local and state agencies.

Approved:

11-16-06
Date

for Manager, Project Development and Environmental Analysis Branch, NCDOT

11-29-06
Date

for Division Administrator, FHWA

APPENDIX C

Memorandum of Agreement

MEMORANDUM OF AGREEMENT

BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
REGARDING
TIP NO. B-4212
REPLACEMENT OF BRIDGE NO. 77
ON NC 35 OVER KIRBY'S CREEK
NORTHAMPTON COUNTY, NORTH CAROLINA

WHEREAS the Federal Highway Administration (FHWA) proposes to fund the replacement of Bridge No. 77 in Northampton County, North Carolina (hereafter, the undertaking) through the Federal Highway Bridge Replacement and Rehabilitation Program; and

WHEREAS the FHWA, in consultation with the North Carolina Department of Transportation (NCDOT) and the North Carolina State Historic Preservation Officer (SHPO), has defined the Area of Potential Effects (APE) for the undertaking and found that Bridge No. 77 is within the APE; and

WHEREAS the FHWA, in consultation with the NCDOT and SHPO, has determined, pursuant to 36 CFR Section 800.4(c), that Bridge No. 77 is eligible for inclusion in the National Register of Historic Places; and

WHEREAS the FHWA, in consultation with the NCDOT and SHPO, has determined, pursuant to 36 CFR Section 800.5(a), that the undertaking will have an adverse effect on Bridge No. 77; and

WHEREAS the FHWA has consulted with the NCDOT and SHPO in accordance with Section 106 of the National Historic Preservation Act (16 USC Section 470f) and its implementing regulations (36 CFR Part 800) to resolve the adverse effect on Bridge No. 77;

NOW, THEREFORE, the FHWA and the SHPO agree that, upon the submission of a copy of this executed memorandum of agreement, as well as the documentation specified in 36 CRF Sections 800.11(e) and (f) to the Advisory Council on Historic Preservation (hereafter, the Council) pursuant to 36 CFR

Section 800.6(b)(1)(iv), and upon the FHWA's approval of the undertaking, the FHWA shall ensure that the following stipulations are implemented in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

FHWA shall ensure the following stipulations are implemented:

I. Bridge No. 77.

A. Recordation. Prior to the demolition of Bridge No. 77, the NCDOT shall record the existing condition of the bridge and its surroundings in accordance with the attached Historic Structures and Landscape Recordation Plan (Appendix A).

B. New Bridge Design. The NCDOT shall employ railings of Jersey barrier design for the new bridge.

II. Dispute Resolution.

Disagreement and misunderstanding about the implementation of this memorandum of agreement shall be resolved in the following manner.

A. If the SHPO or any invited signatory to this memorandum of agreement should object in writing within thirty (30) days to any plans or documentation provided for review pursuant to this memorandum of agreement, then the FHWA shall consult with the objecting party to resolve this objection. If after such consultation the FHWA determines that the objection cannot be resolved through consultation, then the FHWA shall forward all documentation relevant to the objection to the Council, including the FHWA's proposed response to the objection. Within forty-five (45) days after receipt of all pertinent documentation, the Council shall exercise one of the following options:

i. Provide the FHWA with a staff-level recommendation, which the FHWA shall take into account in reaching a final decision regarding its response to the objection; or

ii. Notify the FHWA that the objection will be referred for formal comment pursuant to 36 CFR Section 800.7(c) and proceed to refer the objection and comment. The FHWA shall take into account the Council's comments in reaching a final decision regarding its response to the objection.

B. The FHWA shall take into account any Council comment or recommendations provided in accordance with this stipulation with

reference only to the subject of the objection. The FHWA's responsibility to carry out all actions under the memorandum of agreement that are not the subjects of the objection shall remain unchanged.

III. Unanticipated Discovery.

In accordance with 36 CFR 800.11(a) and prior to initiation of construction activities, NCDOT shall ensure preparation of a plan of action should archaeological or architectural resources be inadvertently or accidentally discovered during the construction of the project. The plan shall provide for an assessment of the significance of the discovery in consultation amongst FHWA, NCDOT, and SHPO. Inadvertent or accidental discovery of human remains will be handled in accordance with North Carolina General Statutes 65 and 70.

IV. Amendment.

Any signatory to this memorandum of agreement may request that it be amended, whereupon the parties shall consult to consider the proposed amendment. Any such amendment shall be governed by 36 CFR Section 800.6(c)(7).

V. Termination.

Any signatory to the memorandum of agreement may terminate it by providing thirty (30) days notice to the other parties, provided that the parties shall consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FHWA shall comply with 36 CFR Section 800.3 through 800.7 with regard to the review of the undertaking. In the event that the FHWA does not carry out the terms of this memorandum of agreement, the FHWA shall comply with 36 CFR Sections 800.3 through 800.7 with regard to the review of the undertaking.

APPENDIX A

Historic Structures and Landscape Recordation Plan
Kirby's Creek Bridge (Bridge No. 77) Replacement
NC 35
Northampton County, North Carolina
TIP No. B-4212
Federal Aid No. BRSTP-35(1), State Project No. 8.1101401
WBS No. 33558.1.1

Subject Specifications

Photographic recordation of the Kirby's Creek Bridge (Bridge No. 77) to include:

- Elevations and oblique views of the bridge and representative structural and ornamental details;
- Overall views of the project area illustrating the relationship of the bridge to its setting.

Photographic Formats

- Color slides (all views)
- 35 mm or larger black and white negatives (all views)
- Two (2) sets of black and white contact sheets (all views)
- All processing to meet archival standards
- All photographs and negatives to be labeled according to North Carolina Department of Archives and History standards

Copies and Curation

One (1) complete set of photographs (slides, negatives, and contact sheet) will be deposited with the North Carolina Department of Archives and History, State Historic Preservation Office as a permanent part of the statewide architectural survey and iconographic collection.

One (1) contact sheet will be deposited in the project files of the Historic Architecture Group, North Carolina Department of Transportation.

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
REGARDING
TIP NO. B-4212
REPLACEMENT OF BRIDGE NO. 77
ON NC 35 OVER KIRBY'S CREEK
NORTHAMPTON COUNTY, NORTH CAROLINA

The execution of this memorandum of agreement between the FHWA and the North Carolina SHPO and the submission of it to the Council with the appropriate documentation specified in 36 CFR Section 800.11(e) and (f), and the implementation of its terms evidence that the FHWA has afforded the Council an opportunity to comment on the undertaking and its effect on historic properties and that the FHWA has taken into account the effects of the undertaking on historic properties.

AGREE:

11-27-06

FEDERAL HIGHWAY ADMINISTRATION DATE

9/19/06

NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER DATE

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION DATE

MEMORANDUM OF AGREEMENT
BETWEEN
THE FEDERAL HIGHWAY ADMINISTRATION
AND
THE NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
REGARDING
TIP NO. B-4212
REPLACEMENT OF BRIDGE NO. 77
ON NC 35 OVER KIRBY'S CREEK
NORTHAMPTON COUNTY, NORTH CAROLINA

The execution of this memorandum of agreement between the FHWA and the North Carolina SHPO and the submission of it to the Council with the appropriate documentation specified in 36 CFR Section 800.11(e) and (f), and the implementation of its terms evidence that the FHWA has afforded the Council an opportunity to comment on the undertaking and its effect on historic properties and that the FHWA has taken into account the effects of the undertaking on historic properties.

CONCUR:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION — DATE 9/11/06

Preserving America's Heritage

November 29, 2006

Mr. John F. Sullivan, III, P.E.
Division Administrator
North Carolina Division
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

Re: ***Replacement of Bridge No. 77 on NC 35 over Kirby's Creek***
Northampton County, North Carolina
Federal Project No. *BRSTP-35(1)*

Dear Mr. Sullivan:

On November 9, 2006, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on properties eligible for inclusion in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is warranted. However, should circumstances change and you or other consulting parties determine that our participation is required, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the North Carolina State Historic Preservation Office (SHPO) and other consulting parties, and related documentation at the conclusion of the consultation process. The filing of **this MOA with the ACHP is required to complete your compliance responsibilities under Section 106 of** the National Historic Preservation Act.

Thank you for providing us with your notification of adverse effect. If you have any questions or require further assistance, please contact me at (202) 606-8520 or kharris@achp.gov.

Sincerely,

Katry Harris

Katry Harris
Historic Preservation Specialist
Office of Federal Agency Programs

APPENDIX D

Routine Wetland Determination Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? Yes No	Community ID: Swamp forest
Is the site significantly disturbed (Atypical Situation)? Yes No	Transect ID: ST#6
Is the area a potential Problem Area? Yes No	Plot ID: upland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Betula nigra	Tree	FACW	9.		
2. Quercus laurifolia	Tree	FACW	10.		
3. Carpinus caroliniana	Tree	FAC	11.		
4. Ilex opaca	shrub	FAC-	12.		
5. Arundinaria gigantea	shrub	FACW	13.		
6. Viburnum dentatum	shrub	FAC	14.		
7. Vitis rotundifolia	herb	FAC	15.		
8. Campsis radicans	herb	FAC	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 88%

Remarks:

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- __Other
- ✓No Recorded Data Available

Field Observations:
- Depth of Surface Water: — (in.)
- Depth to Free Water in Pit: — (in.)
- Depth to Saturated Soil: — (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- __Inundated
- __Saturated in Upper 12 Inches
- __Water Marks
- __Drift Lines
- __Sediment Deposits
- __Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- __Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Wehadkee loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquents

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-14		10YR 6/3			fine sand
14+		10 YR 4/3			sandy loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ✓ Listed on Local Hydric Soils List
- ✓ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes (No)

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse	Community ID: swamp forest Transect ID: SJR6 Plot ID: wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Betula nigra	Tree	FACW	9. Woodwardia areolata	herb	OBL
2. Quercus laurifolia	Tree	FACW	10.		
3. Carpinus caroliniana	Tree	FAC	11.		
4. Ilex opaca	shrub	FAC-	12.		
5. Arundinaria gigantea	shrub	FACW	13.		
6. Viburnum dentatum	shrub	FAC	14.		
7. Vitis rotundifolia	herb	FAC	15.		
8. Campsis radicans	herb	FAC	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 89%

Remarks:

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- __Other
- √No Recorded Data Available

Field Observations:
- Depth of Surface Water: 1 (in.)
- Depth to Free Water in Pit: _____ (in.)
- Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- √Inundated
- __Saturated in Upper 12 Inches
- √Water Marks
- __Drift Lines
- __Sediment Deposits
- √Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- √Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Wehadkee loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquents

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1					organics
1-4		10 YR 4/2			Sandy loam
4-12		10 YR 5/2	10 YR 5/4		Sandy loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ✓ Listed on Local Hydric Soils List
- ✓ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

(Circle)
Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? (Yes) No	Community ID: Swamp Forest
Is the site significantly disturbed (Atypical Situation)? Yes (No)	Transect ID: SA 07
Is the area a potential Problem Area? Yes (No)	Plot ID: Upland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Ilex opaca	tree	FAC-	9.		
2. Ligustrum sinese	shrub	FAC	10.		
3. Vitis rotundifolia	herb	FAC	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 66%

Remarks:

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- ✓ Other
- __No Recorded Data Available

Field Observations:
- Depth of Surface Water: — (in.)
- Depth to Free Water in Pit: — (in.)
- Depth to Saturated Soil: — (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- __Inundated
- __Saturated in Upper 12 Inches
- __Water Marks
- __Drift Lines
- __Sediment Deposits
- __Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- __Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Conetoe loamy sand

Drainage Class: well drained

Taxonomy (Subgroup): Arenic Hapludults

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1					Organics
1-5		10YR 3/2			Sandy loam
5-12		10YR 5/6			Sandy loam

Hydric Soil Indicators: none

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes (No)

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? (Yes) No	Community ID: Swamp Forest
Is the site significantly disturbed (Atypical Situation)? Yes (No)	Transect ID: SA07
Is the area a potential Problem Area? Yes (No)	Plot ID: wetland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Liriodendron tulipifera	Tree	FAC	9. Athyrium asplenioides	herb	FAC
2. Acer rubrum	Tree	FAC	10. Lonicera japonica	herb	FAC-
3. Quercus laurifolia	Tree	FACW	11.		
4. Liquidambar styraciflua	Tree	FAC+	12.		
5. Betula nigra	shrub	FACW	13.		
6. Ligustrum sinense	shrub	FAC	14.		
7. Arundinaria gigantea	shrub	FACW	15.		
8. Woodwardia areolata	herb	OBL	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 90%

Remarks:

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- __Other
- ✓No Recorded Data Available

Field Observations:
- Depth of Surface Water: 1 (in.)
- Depth to Free Water in Pit: _____ (in.)
- Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ✓Inundated
- ✓Saturated in Upper 12 Inches
- __Water Marks
- __Drift Lines
- __Sediment Deposits
- __Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- __Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Conetoe loamy sand

Drainage Class: well drained

Taxonomy (Subgroup): Arenic Hapludults

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1					Organics
1-5		10YR 3/2			sandy loam
5-12		10YR 4/2	10YR 4/2 + 10YR 6/6		sandy loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

(Circle)
Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? (Yes) No	Community ID: swamp forest
Is the site significantly disturbed (Atypical Situation)? Yes (No)	Transect ID: SE 04
Is the area a potential Problem Area? Yes (No)	Plot ID: upland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Taxodium distichum	Tree	OBL	9.		
2. Pinus taeda	Tree	FAC	10.		
3. Fagus grandifolia	Tree	FACU	11.		
4. Ilex opaca	Tree	FAC-	12.		
5. Clethra alnifolia	shrub	FACW	13.		
6. Woodwardia areolata	herb	OBL	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 66%

Remarks:

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- __Other
- ✓No Recorded Data Available

Field Observations:
- Depth of Surface Water: ___ (in.)
- Depth to Free Water in Pit: ___ (in.)
- Depth to Saturated Soil: ___ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- __Inundated
- __Saturated in Upper 12 Inches
- __Water Marks
- __Drift Lines
- __Sediment Deposits
- __Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- __Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Wehadkee loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquents

Field Observations Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1					organics
1-6		10YR 3/3			fine sandy loam
6-12		10YR 5/3			fine sandy loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ✓ Listed on Local Hydric Soils List
- ✓ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)

Wetland Hydrology Present? Yes (No)

Hydric Soils Present? Yes (No)

(Circle)

Is this Sampling Point Within a Wetland? Yes (No)

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse	Community ID: swamp forest Transect ID: SEC 4 Plot ID: wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1.			9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) none

Remarks: The interior of the wetland is unvegetated. Surface is covered in leaf litter

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- __Other
- ✓No Recorded Data Available

Field Observations:
- Depth of Surface Water: — (in.)
- Depth to Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- __Inundated
- ✓Saturated in Upper 12 Inches
- ✓Water Marks
- ✓Drift Lines
- __Sediment Deposits
- ✓Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- __Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Wehadkee loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquents

Field Observations Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1					organics
1-6		10 YR 3/3			organics
6-12		10 YR 5/2	10 YR 6/4		fine sand loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ✓ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ✓ Listed on Local Hydric Soils List
- ✓ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes (No) (Circle)

Wetland Hydrology Present? (Yes) No

Hydric Soils Present? (Yes) No

(Circle)

Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? Yes No	Community ID: swamp forest
Is the site significantly disturbed (Atypical Situation)? Yes No	Transect ID: SO#4
Is the area a potential Problem Area? Yes No	Plot ID: wetland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Taxodium distichum	Tree	OBL	9.		
2. Acer rubrum	Tree	FAC	10.		
3. Clethra alnifolia	Shrub	FACW	11.		
4. Smilax rotundifolia	herb	FAC	12.		
5. Toxicodendron radicans	herb	FAC	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100%

Remarks:

HYDROLOGY

__Recorded Data (Describe in Remarks):
- __Stream, Lake or Tide Gauge
- __Aerial Photographs
- __Other
- √No Recorded Data Available

Field Observations:
- Depth of Surface Water: ~ (in.)
- Depth to Free Water in Pit: 0 (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- __Inundated
- √Saturated in Upper 12 Inches
- √Water Marks
- __Drift Lines
- __Sediment Deposits
- √Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- √Oxidized Root Channels in Upper 12 Inches
- __Water-Stained Leaves
- __Local Soil Survey Data
- __FAC-Neutral Test
- __Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Altavista fine sandy loam

Drainage Class: moderately well drained

Taxonomy (Subgroup): Aquic Hapludults

Field Observations
Confirm Mapped Type: Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2					organics
2-6		10 YR 4/1			Sandy loam
6-12		10 YR 7/1			Sandy clay loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

(Circle)
Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4212	Date: 06-24-2004
Applicant/Owner: NCDOT	County: Northampton
Investigator: ESC	State: NC
Do Normal Circumstances exist on the site? Yes No	Community ID: swamp forest
Is the site significantly disturbed (Atypical Situation)? Yes No	Transect ID: SOP4
Is the area a potential Problem Area? Yes No	Plot ID: upland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Fagus grandifolia	Tree	FACU	9.		
2. Liquidambar styraciflua	Tree	FAC+	10.		
3. Acer rubrum	Tree	FAC	11.		
4. Clethra alnifolia	shrub	FACW	12.		
5. Smilax rotundifolia	herb	FAC	13.		
6. Vitus rotundifolia	herb	FAC	14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 83%

Remarks:

HYDROLOGY

___Recorded Data (Describe in Remarks):
- ___Stream, Lake or Tide Gauge
- ___Aerial Photographs
- ___Other

✓No Recorded Data Available

Field Observations:
- Depth of Surface Water: ___(in.)
- Depth to Free Water in Pit: ___(in.)
- Depth to Saturated Soil: ___(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ___Inundated
- ___Saturated in Upper 12 Inches
- ___Water Marks
- ___Drift Lines
- ___Sediment Deposits
- ___Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓Oxidized Root Channels in Upper 12 Inches
- ___Water-Stained Leaves
- ___Local Soil Survey Data
- ___FAC-Neutral Test
- ___Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Altavista fine sandy loam

Drainage Class: moderately well drained

Taxonomy (Subgroup): Aquic Hapludults

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2					organics
2-4		10 YR 3/2			Sandy loam
4-12		10 YR 5/2			Sandy clay loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes (No)

Remarks:

Approved by HQUSACE 2/92

HJL
8/93