STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 14, 2007

NC Department of Environment and Natural Resources
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

ATTN: Mr. Stephen Lane
NCDOT Coordinator

Dear Sir,

Subject: **CAMA Major Development Permit Application** for the proposed replacement of Bridge No. 104 on NC 32 over Broad Creek in Beaufort County. Federal Project No. BRSTP-32(2), State Project No 8.1151401, T.I.P. No. B-4018. Debit $400.00 from WBS Element 33385.1.1.

Please find enclosed copies of the Categorical Exclusion (CE) Document, MP Forms, landowner notification cards, permit drawings, and roadway plans for the above referenced project proposed by the North Carolina Department of Transportation (NCDOT). The NCDOT plans to replace Bridge No. 104 over Broad Creek on NC 32 in Beaufort County. The existing 172-foot long bridge will be replaced with a 200-foot long structure using top-down construction in the existing location. During construction, traffic will be maintained by an off-site detour. No permanent impacts and 0.02 acre of hand clearing and 0.01 acre of temporary impacts to jurisdictional wetlands are anticipated. Impacts to riparian buffers total 4,962 ft^2. Impacts to jurisdictional surface waters are anticipated to be <0.001 acre.

Impacts to Waters of the United States

General Description: The project study area is located within sub-basin 03-03-07 of the Tar-Pamlico River Basin. This area is part of USGS Hydrologic Unit 03020104 of the Mid-Atlantic/Coastal Plain Ecoregion. The project study area contains two streams: Broad Creek and an unnamed tributary to Broad Creek (UT1).

Broad Creek and UT1 are within a riverine system that is subject to wind tides. Both have an unconsolidated benthos consisting of muddy sediments. A best usage classification of SB NSW has been assigned to this section of Broad Creek. Broad Creek

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.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River. Broad Creek is not listed on any section of the NCDWQ Section 303(d) list. Broad Creek is not located within 1 mile nor does it flow into a stream with 303(d) classification. In addition, no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 miles of the project study area.

Broad Creek, UT1, and their adjacent wetlands are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "Waters of the United States" (33 CFR section 328.3). Wetlands within the study site exhibit characteristics of a palustrine-forested system with broad-leaved deciduous and needle-leaved evergreen vegetation. In addition, these wetlands are seasonally inundated, tidally influenced, and therefore under jurisdiction of the North Carolina Division of Coastal Management according to the Coastal Area Management Act (CAMA).

Permanent Impacts: Proposed permanent impacts to surface waters due to in-stream piers will be <0.001 acre. This project will result in no permanent impacts to jurisdictional wetlands.

Hand Clearing: Hand clearing (0.02 acre) will be necessary for project construction.

Utility Impacts: The relocation of a water supply pipe will result in 0.01 acre of temporary excavation in jurisdictional wetlands.

Avoidance and Minimization

NCDOT has avoided and minimized impacts to the fullest extent possible:

- Traffic will be maintained using an off-site detour during construction.
- The bridge will be built in-place using top-down construction and can therefore be built without the need of a causeway or work pad.
- The bridge is being lengthened by 28 feet.
- There will be no deck drains over surface waters.
- Design Standards in Sensitive Watersheds will be strictly adhered to.
- The number of interior bents in the water is being reduced from eight for the existing bridge to three for the new bridge.

Mitigation

The proposed project will have no permanent impacts to wetlands. Temporary impacts totaling 0.01 acre are a result of excavation of a water pipe. Following construction, this area will be graded to preconstruction elevation and revegetated. Hand clearing in the vicinity of the north abutment (0.02 ac) is not a jurisdictional impact and therefore does not require mitigation. Because there are no permanent impacts to jurisdictional wetlands, and impacts to riparian buffers have not exceeded the threshold requiring compensatory mitigation, NCDOT is not proposing mitigation.

Bridge Demolition

The existing bridge is 172 feet in length, consisting of ten spans with the maximum span approximately 18 feet. 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 19.7 feet and the normal depth of flow is 11 feet. The bridge will be removed using Best Management Practices (BMP's) for Bridge Demolition to avoid any temporary fill in "Waters of the United States".

Bridge Construction

Bridge No. 104 will be replaced with a 200-foot long, 4-span structure in the existing location. A single-row driven-pile substructure will support a cored slab superstructure. Construction of this bridge will not require a temporary causeway.

Federally-Protected Species

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under Endangered Species Act §§7 and 9. As of January 29, 2007, the US Fish and Wildlife Service (USFWS) lists 7 federally protected species for Beaufort County (Table 1).

Biological conclusions of "No Effect" were reached for Kemp's ridley sea turtle, Red-cockaded woodpecker (*Picoides borealis*), rough-leaved loosestrife (*Lysimachia asperulaefolia*), and sensitive jointvetch (*Aeschynomene virginica*). A biological conclusion of "May Affect, Not Likely to Adversely Affect" was reached for Bald Eagle (*Haliaeetus leucocephalus*) and West Indian manatee (*Trichechus manatus*). Concurrence from the USFWS was received for all species on May 5, 2006. A copy of this letter is included with this application.

Due to the presence of potential West Indian Manatee habitat, NCDOT has committed to implementing Guidelines for Avoiding Impacts to the West Indian Manatee: Precautionary Measures for Construction Activities in North Carolina Waters.

Table 1. Federally protected species of Beaufort County.

Scientific Name	Common Name	Federal Status	Habitat	Biological Conclusion
Haliaeetus leucocephalus	Bald eagle	T(PFD)	Yes	MANLTAA
Lepidochelys kempii	Kemp's ridley sea turtle	E	No	No Effect
Trichechus manatus	West Indian manatee	E	Yes	MANLTAA
Picoides borealis	Red-cockaded woodpecker	E	No	No Effect
Canis rufus	Red wolf	EXP	Not Required	N/A
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Yes	No Effect
Aeschynomene virginica	Sensitive jointvetch	T	Yes	No Effect

In-Stream Work Moratorium

As required by the NC Wildlife Resources Commission (NCWRC), a moratorium on in-stream construction activities will be strictly adhered for the dates between and including February 15th and September 30th in order to protect striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), river herring (*Alosa pseudoharengus*), and hickory shad (*Alosa mediocris*); all anadromous fish species. In addition, the Stream Crossing Guidelines for Anadromous Fish Passage will be implemented.

Project Schedule

This project is scheduled to let December 18, 2007, with a review date of October 30, 2007.

Regulatory Approvals

CAMA Permit: The NCDOT hereby requests that this project be authorized by the issuance of a Coastal Area Management Act Major Development Permit. Please find attached the completed MP forms along with the appropriate permit drawings. The certified mail "green cards" from the adjacent riparian landowner notifications are also included.

Section 404 Permit: In a separate application, NCDOT is applying for a Clean Water Act Section 404 General Permit. All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion". The NCDOT is requesting that these activities be authorized by a General Permit No. 198200031.

Section 401 Permit: In a separate application, NCDOT is applying for a 401 Water Quality Certification from DWQ. We anticipate 401 General Certification number 3404 will apply to this project. All general conditions of the Water Quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a), we are providing five copies of this application to the NCDWQ for their review and written concurrence.

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

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Worth Calfee at wcalfee@dot.state.nc.us or (919) 715-7225.

Sincerely,

E. R. Lusk

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

W/attachments
Mr. Steve Sollod, NCDCM

W/o attachment
Mr. John Hennessy, NCDWQ
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. C. E. Lassiter, P.E., Division 2 Engineer
Mr. Jay Johnson, Division 2 Environmental Officer
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, PDEA

DCM MP-1

APPLICATION for Major Development Permit

(last revised 12/27/06)

North Carolina DIVISION OF COASTAL MANAGEMENT

1. Primary Applicant/ Landowner Information

Business Name Nc Dot (C/O Greg Thorpe, Ph.D. - Pdea)		Project Name (if applicable) B-4018		
Applicant 1: First Name	MI	Last Name		
Applicant 2: First Name	MI	Last Name		
If additional applicants, please attach an additional page(s) with names listed.				
Mailing Address 1548 Mail Service Center		PO Box	City Raleigh	State NC
ZIP 27699 - 1548	Country	Phone No. 919 - 733 - 3141 ext.	FAX No. 919 - 733 - 9794	
Street Address *(if different from above)*		City	State	ZIP -
Email wcalfee@dot.state.nc.us				

2. Agent/Contractor Information

Business Name				
Agent/ Contractor 1: First Name	MI	Last Name		
Agent/ Contractor 2: First Name	MI	Last Name		
Mailing Address		PO Box	City	State
ZIP		Phone No. 1 - - ext.	Phone No. 2 - - ext.	
FAX No.		Contractor #		
Street Address *(if different from above)*		City	State	ZIP -
Email				

<Form continues on back>

3. Project Location

County (can be multiple)	Street Address		State Rd. #
Beaufort			NC 32
Subdivision Name	City	State	Zip
	Washington	NC	27889 -

Phone No.	Lot No.(s) *(if many, attach additional page with list)*
- - ext.	, , , ,
a. In which NC river basin is the project located? Tar-Pamlico	b. Name of body of water nearest to proposed project Broad Creek
c. Is the water body identified in (b) above, natural or manmade? ☒Natural ☐Manmade ☐Unknown	d. Name the closest major water body to the proposed project site. Pamlico River
e. Is proposed work within city limits or planning jurisdiction? ☐Yes ☒No	f. If applicable, list the planning jurisdiction or city limit the proposed work falls within. n/a

4. Site Description

a. Total length of shoreline on the tract (ft.) approx 3,500	b. Size of entire tract (sq.ft.) n/a
c. Size of individual lot(s) , , , *(If many lot sizes, please attach additional page with a list)*	d. Approximate elevation of tract above NHW *(normal high water)* or NWL *(normal water level)* 8.0 ft ☐NHW or ☒NWL

e. Vegetation on tract
Three plant communities were present on the tract, Mixed Hardwood/Pine Forest, Bottomland Hardwood Forest, and a Disturbed/Maintained Land.

f. Man-made features and uses now on tract
Existing Bridge and NC 32

g. Identify and describe the existing land uses adjacent to the proposed project site.
residential / agricultural

h. How does local government zone the tract? n/a	i. Is the proposed project consistent with the applicable zoning? (Attach zoning compliance certificate, if applicable) ☐Yes ☐No ☒NA

j. Is the proposed activity part of an urban waterfront redevelopment proposal?	☐Yes ☒No
k. Has a professional archaeological assessment been done for the tract? If yes, attach a copy.	☒Yes ☐No ☐NA
If yes, by whom?	NCDOT
l. Is the proposed project located in a National Registered Historic District or does it involve a National Register listed or eligible property?	☐Yes ☒No ☐NA

<Form continues on next page>

m. (i) Are there wetlands on the site?	☒Yes ☐No
(ii) Are there coastal wetlands on the site?	☐Yes ☒No
(iii) If yes to either (i) or (ii) above, has a delineation been conducted? *(Attach documentation, if available)*	☒Yes ☐No

n. Describe existing wastewater treatment facilities.
n/a

o. Describe existing drinking water supply source.
n/a

p. Describe existing storm water management or treatment systems.
see attached stormwater management plan

5. Activities and Impacts

a. Will the project be for commercial, public, or private use? ☐Commercial ☒Public/Government ☐Private/Community

b. Give a brief description of purpose, use, and daily operations of the project when complete.
The purpose of this project is to replace the aged Bridge No. 104 on NC 32 over Broad Creek with an improved structure. The new bridge will be constructed in-place, and will be approximately 200 feet in length and 39 feet in width.

c. Describe the proposed construction methodology, types of construction equipment to be used during construction, the number of each type of equipment and where it is to be stored.
Top-down construction and an off-site detour will be utilized to reduce environmental impacts.

Standard road and bridge construction equipment will be used.

d. List all development activities you propose.
demolition of existing bridge and construction of a new bridge

e. Are the proposed activities maintenance of an existing project, new work, or both? replacement of existing structure with a new structure

f. What is the approximate total disturbed land area resulting from the proposed project? 0.123 ☐Sq.Ft or ☒Acres

g. Will the proposed project encroach on any public easement, public accessway or other area that the public has established use of? ☐Yes ☒No ☐NA

h. Describe location and type of existing and proposed discharges to waters of the state.
The existing bridge has surface drains that are directly over the stream channel. The new bridge will have no deck drains located over surface waters. Stormwater will be collected and discharged in wetlands.

i. Will wastewater or stormwater be discharged into a wetland? ☒Yes ☐No ☐NA

If yes, will this discharged water be of the same salinity as the receiving water? ☒Yes ☐No ☐NA

j. Is there any mitigation proposed? ☐Yes ☒No ☐NA
If yes, attach a mitigation proposal.

<Form continues on back>

6. Additional Information

In addition to this completed application form, (MP-1) the following items below, if applicable, must be submitted in order for the application package to be complete. Items (a) – (f) are always applicable to any major development application. Please consult the application instruction booklet on how to properly prepare the required items below.

a. A project narrative.

b. An accurate, dated work plat (including plan view and cross-sectional drawings) drawn to scale. Please give the present status of the proposed project. Is any portion already complete? If previously authorized work, clearly indicate on maps, plats, drawings to distinguish between work completed and proposed.

c. A site or location map that is sufficiently detailed to guide agency personnel unfamiliar with the area to the site.

d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.

e. The appropriate application fee. Check or money order made payable to DENR.

f. A list of the names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail. Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management.

Name Anna A. Gray
Phone No.

Address 5104 Lyons View Drive, Knoxville, TN 37919

Name
Phone No.

Address

Name
Phone No.

Address

g. A list of previous state or federal permits issued for work on the project tract. Include permit numbers, permittee, and issuing dates.

h. Signed consultant or agent authorization form, if applicable.

i. Wetland delineation, if necessary.

j. A signed AEC hazard notice for projects in oceanfront and inlet areas. *(Must be signed by property owner)*

k. A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A 1-10), if necessary. If the project involves expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

7. Certification and Permission to Enter on Land

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit.

I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project.

I further certify that the information provided in this application is truthful to the best of my knowledge.

Date May 14, 2007 Print Name E. L. Lusk

Signature E. L. Lusk

Please indicate application attachments pertaining to your proposed project.

☐DCM MP-2 Excavation and Fill Information ☒DCM MP-5 Bridges and Culverts

☐DCM MP-3 Upland Development

☐DCM MP-4 Structures Information

Form DCM MP-5

BRIDGES and CULVERTS

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

1. BRIDGES

☐ *This section not applicable*

a. Is the proposed bridge:
☐Commercial ☒Public/Government ☐Private/Community

b. Water body to be crossed by bridge:
Borad Creek

c. Type of bridge (construction material):
Concrete

d. Water depth at the proposed crossing at NLW or NWL:
11.3

e. (i) Will proposed bridge replace an existing bridge? ☒Yes ☐No
If yes,
(ii) Length of existing bridge: 171 ft
(iii) Width of existing bridge: 27.3 ft
(iv) Navigation clearance underneath existing bridge: 6.9 ft
(v) Will all, or a part of, the existing bridge be removed?
(Explain) Entire Bridge, Piers and abutments will be removed

f. (i) Will proposed bridge replace an existing culvert? ☐Yes ☒No
If yes,
(ii) Length of existing culvert: n/a
(iii) Width of existing culvert: n/a
(iv) Height of the top of the existing culvert above the NHW or NWL: n/a
(v) Will all, or a part of, the existing culvert be removed?
(Explain) n/a

g. Length of proposed bridge: 200 ft

h. Width of proposed bridge: 36 ft

i. Will the proposed bridge affect existing water flow? ☐Yes ☒No
If yes, explain:

j. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? ☒Yes ☐No
If yes, explain: Bridge opening will increase slightly

k. Navigation clearance underneath proposed bridge: 7.4 ft

l. Have you contacted the U.S. Coast Guard concerning their approval? ☒Yes ☐No
If yes, explain: Advanced approval given on June 22, 2004

m. Will the proposed bridge cross wetlands containing no navigable waters? ☐Yes ☒No
If yes, explain:

n. Height of proposed bridge above wetlands: n/a

2. CULVERTS

☒ *This section not applicable*

a. Number of culverts proposed:

b. Water body in which the culvert is to be placed:

< Form continues on back>

c. Type of culvert (construction material):

d. (i) Will proposed culvert replace an existing bridge? ☐Yes ☐No

If yes,

(ii) Length of existing bridge:

(iii) Width of existing bridge:

(iv) Navigation clearance underneath existing bridge:

(v) Will all, or a part of, the existing bridge be removed? (Explain)

e. (i) Will proposed culvert replace an existing culvert? ☐Yes ☐No

If yes,

(ii) Length of existing culvert(s):

(iii) Width of existing culvert(s):

(iv) Height of the top of the existing culvert above the NHW or NWL:

(v) Will all, or a part of, the existing culvert be removed? (Explain)

f. Length of proposed culvert:

g. Width of proposed culvert:

h. Height of the top of the proposed culvert above the NHW or NWL.

i. Depth of culvert to be buried below existing bottom contour.

j. Will the proposed culvert affect navigation by reducing or increasing the existing navigable opening? ☐Yes ☐No

If yes, explain:

k. Will the proposed culvert affect existing water flow? ☐Yes ☐No

If yes, explain:

3. EXCAVATION and FILL

☐*This section not applicable*

a. (i) Will the placement of the proposed bridge or culvert require any excavation below the NHW or NWL? ☒Yes ☐No

If yes,

(ii) Avg. length of area to be excavated: 20'

(iii) Avg. width of area to be excavated: 10'

(iv) Avg. depth of area to be excavated: 8'

(v) Amount of material to be excavated in cubic yards: 59.27

b. (i) Will the placement of the proposed bridge or culvert require any excavation within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB

☐WL _____ ☒None

(ii) Describe the purpose of the excavation in these areas:

c. (i) Will the placement of the proposed bridge or culvert require any high-ground excavation? ☒Yes ☐No

If yes,

(ii) Avg. length of area to be excavated: 40'

(iii) Avg. width of area to be excavated: 70'

(iv) Avg. depth of area to be excavated: 4'

(v) Amount of material to be excavated in cubic yards: 420

d. If the placement of the bridge or culvert involves any excavation, please complete the following:

(i) Location of the spoil disposal area: to be determined by contractor

(ii) Dimensions of the spoil disposal area: to be determined by contractor

(iii) Do you claim title to the disposal area? ☐Yes ☒No *(If no, attach a letter granting permission from the owner.)*

(iv) Will the disposal area be available for future maintenance? ☐Yes ☒No

(v) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAVs), other wetlands (WL), or shell bottom (SB)?

☐CW ☐SAV ☐WL ☐SB ☒None

If any boxes are checked, give dimensions if different from (ii) above.

(vi) Does the disposal area include any area below the NHW or NWL? ? ☐Yes ☒No

If yes, give dimensions if different from (ii) above.

e. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed below NHW or NWL? ☐Yes ☒No

If yes,

(ii) Avg. length of area to be filled:

(iii) Avg. width of area to be filled:

(iv) Purpose of fill:

f. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB

☐WL _____ ☒None

(ii) Describe the purpose of the excavation in these areas:

g. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed on high-ground? ☐Yes ☒No

If yes,

(ii) Avg. length of area to be filled:

(iii) Avg. width of area to be filled:

(iv) Purpose of fill:

4. GENERAL

a. Will the proposed project require the relocation of any existing utility lines? ☒Yes ☐No

If yes, explain: Aerial utilty lines will remain in place, a small amount of burial of new utility lines will occur. A water pipe will be relocated and result in 0.01 acre of wetland impacts. All impacts will occur within the existing right-of-way.

If this portion of the proposed project has already received approval from local authorities, please attach a copy of the approval or certification.

b. Will the proposed project require the construction of any temporary detour structures? ☐Yes ☒No

If yes, explain:

< Form continues on back>

c. Will the proposed project require any work channels? ☐Yes ☒No

If yes, complete Form DCM-MP-2.

d. How will excavated or fill material be kept on site and erosion controlled?

NCDOT Design Standards in Sensitive Watersheds will be used

e. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?

Heavy highway construction equipment

f. Will wetlands be crossed in transporting equipment to project site? ☐Yes ☒No

If yes, explain steps that will be taken to avoid or minimize environmental impacts.

g. Will the placement of the proposed bridge or culvert require any

shoreline stabilization? ☐Yes ☒No

If yes, complete form MP-2, Section 3 for Shoreline Stabilization only.

May 14, 2007

Date

B-4018

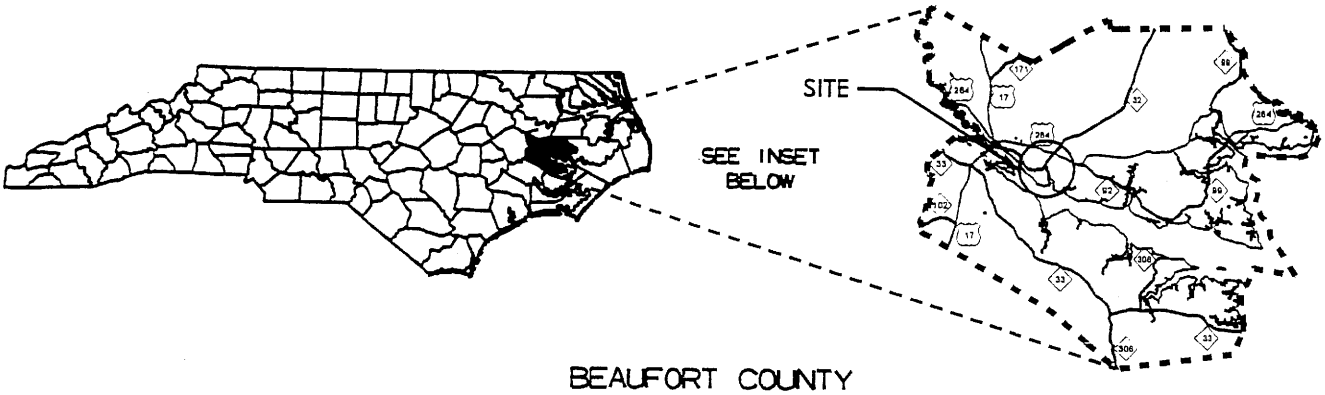
Project Name

D.H. NCDOT

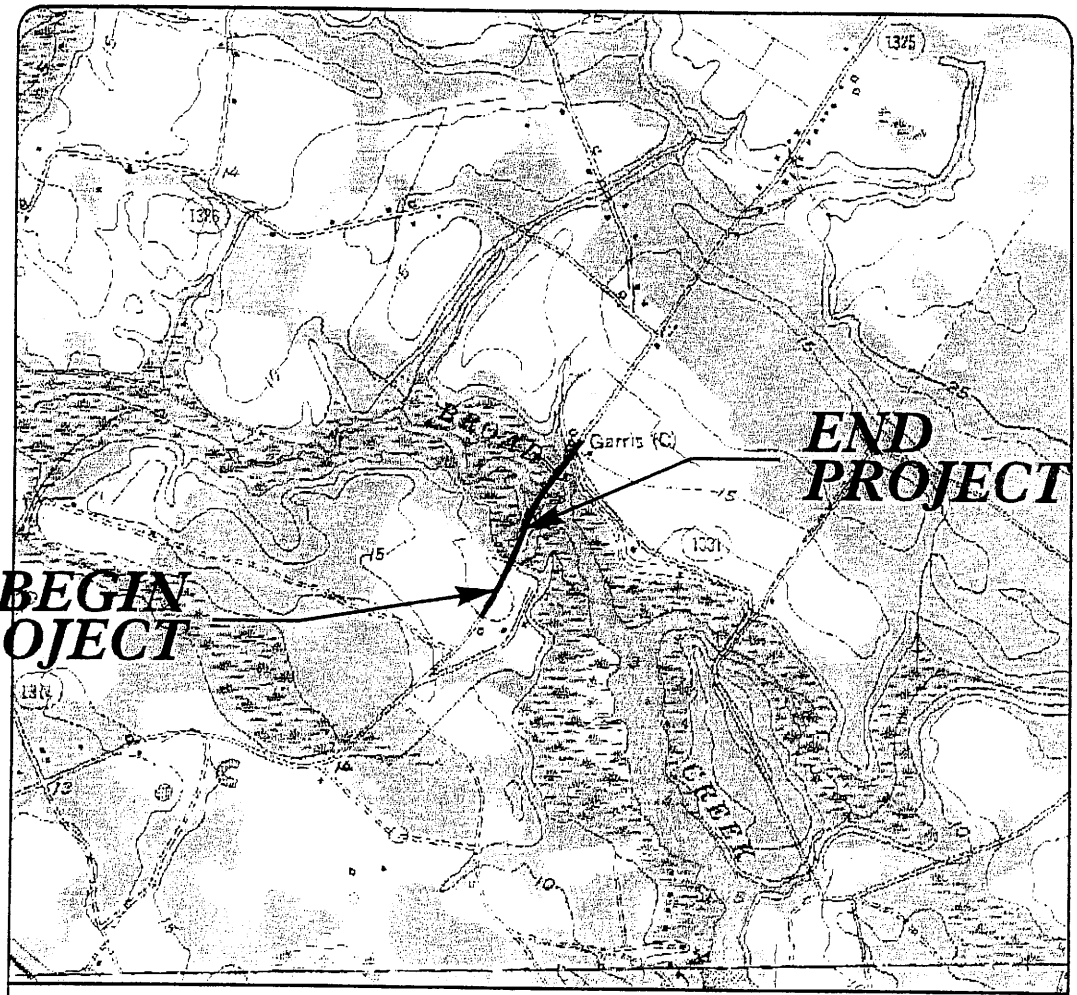
Applicant Name

E. L. Lusk

Applicant Signature



BEAUFORT COUNTY



VICINITY MAP NTS

WETLAND IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

BEAUFORT COUNTY
PROJECT: (B-4018)
BRIDGE NO. 104 OVER
BROAD CREEK ON NC 32

SHEET 1 **OF** 4

Permit Drawing Sheet 2 of 4

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	15+60/18+85 -L-	BRIDGE			0.01		0.02					
TOTALS:					0.01		0.02					

Area of impact due to proposed piers is 30 ft^2

Excavation in Wetlands due relocation of water line and is temporary.

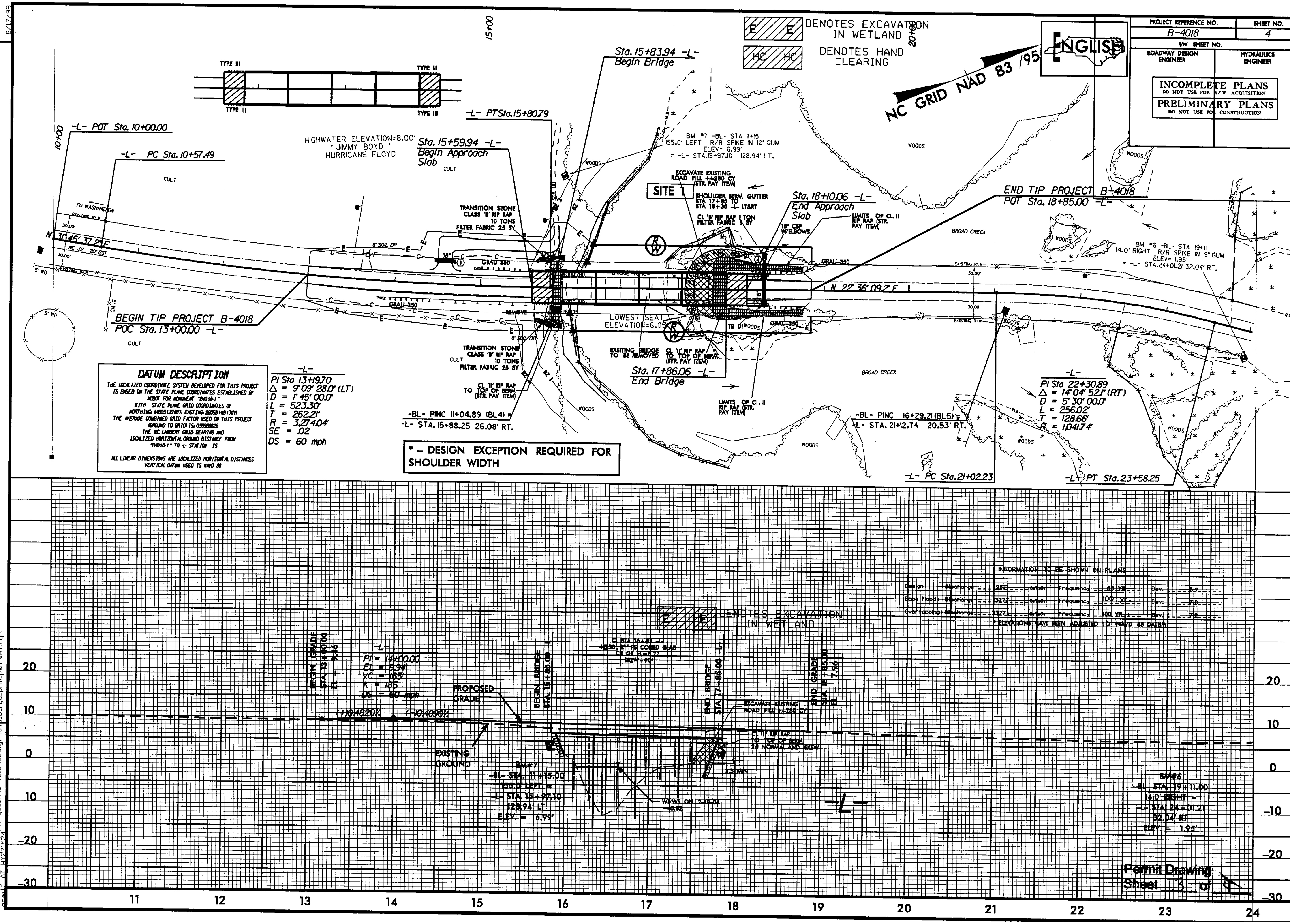
Area of existing road causeway/fill to be removed is 0.03 acres

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BEAUFORT COUNTY
PROJECT: 33385.1.1 (B-4018)

SHEET Feb-07

ATN Revised 3/31/05


PROJECT REFERENCE NO. B-4018
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
ENGLISH
NC GRID NAD 83 /95
DENOTES EXCAVATION IN WETLAND
DENOTES HAND CLEARING
Sta. 15+83.94 -L- Begin Bridge
-L- PT Sta. 15+80.79
Sta. 15+59.94 -L- Begin Approach Slab
HIGHWATER ELEVATION=8.00' "JIMMY BOYD" HURRICANE FLOYD
-L- POT Sta. 10+00.00
-L- PC Sta. 10+57.49
BM #7 -BL- STA 11+15 155.0' LEFT R/R SPIKE IN 12" GUM ELEV= 6.99' = -L- STA. 15+97.10 128.94' LT.
EXCAVATE EXISTING ROAD FILL +/-280 CY (STR. PAY ITEM)
SITE 1
SHOULDER BERM GUTTER STA 17+85 TO STA 18+35 -L- LT&RT
CL 'B' RIP RAP 1 TON FILTER FABRIC 5 SY
Sta. 18+10.06 -L- End Approach Slab
END TIP PROJECT B-4018 POT Sta. 18+85.00 -L-
BM #6 -BL- STA 19+11 14.0' RIGHT R/R SPIKE IN 9" GUM ELEV= 1.95' = -L- STA. 24+01.21 32.04' RT.
TRANSITION STONE CLASS 'B' RIP RAP 10 TONS FILTER FABRIC 25 SY
N 30°45' 37.2" E
N 22°36' 09.2" E
BEGIN TIP PROJECT B-4018 POC Sta. 13+00.00 -L-
LOWEST SEAT ELEVATION=6.05
EXISTING BRIDGE TO BE REMOVED
CL 'II' RIP RAP TO TOP OF BERM (STR. PAY ITEM)
Sta. 17+86.06 -L- End Bridge
LIMITS OF CL. II RIP RAP (STR. PAY ITEM)
BROAD CREEK
WOODS
CULT
DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4018-1"
WITH STATE PLANE GRID COORDINATES OF NORTHING: 649031.2718(ft) EASTING: 2605814.9131(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988826
THE NC LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4018-1" TO -L- STATION 15
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88
-L- PI Sta 13+19.70 Δ = 9°09' 28.0" (LT) D = 1°45' 00.0" L = 523.30' T = 262.21' R = 3,274.04' SE = .02 DS = 60 mph
* - DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH
-BL- PINC 11+04.89 (BL4) = -L- STA. 15+88.25 26.08' RT.
-BL- PINC 16+29.21 (BL5) = -L- STA. 21+12.74 20.53' RT.
-L- PI Sta 22+30.89 Δ = 14°04' 52.1" (RT) D = 5°30' 00.0" L = 256.02' T = 128.66' R = 1,041.74'
-L- PC Sta. 21+02.23
-L- PT Sta. 23+58.25
INFORMATION TO BE SHOWN ON PLANS
ELEVATIONS HAVE BEEN ADJUSTED TO NAVD 88 DATUM
DENOTES EXCAVATION IN WETLAND
BEGIN GRADE STA 13+00.00 EL = 9.86
-L- PI = 14+00.00 EL = 9.94 VC = 165' K = 185 DS = 60 mph
(+)0.4820% (-)0.4090%
PROPOSED GRADE
EXISTING GROUND
BEGIN BRIDGE STA. 15+85.00 -L-
END BRIDGE STA. 17+85.00 -L-
END GRADE STA 18+85.00 EL = 7.96
EXCAVATE EXISTING ROAD FILL +/-280 CY
CL 'II' RIP RAP TO TOP OF BERM 2:1 NORMAL AND SKEW
WKWS ON 2-10-04
BM#7 -BL- STA. 11+15.00 155.0' LEFT = -L- STA. 15+97.10 128.94' LT ELEV = 6.99'
BM#6 -BL- STA. 19+11.00 14.0' RIGHT = -L- STA. 24+01.21 32.04' RT ELEV = 1.95'
-L-
20
10
0
-10
-20
-30
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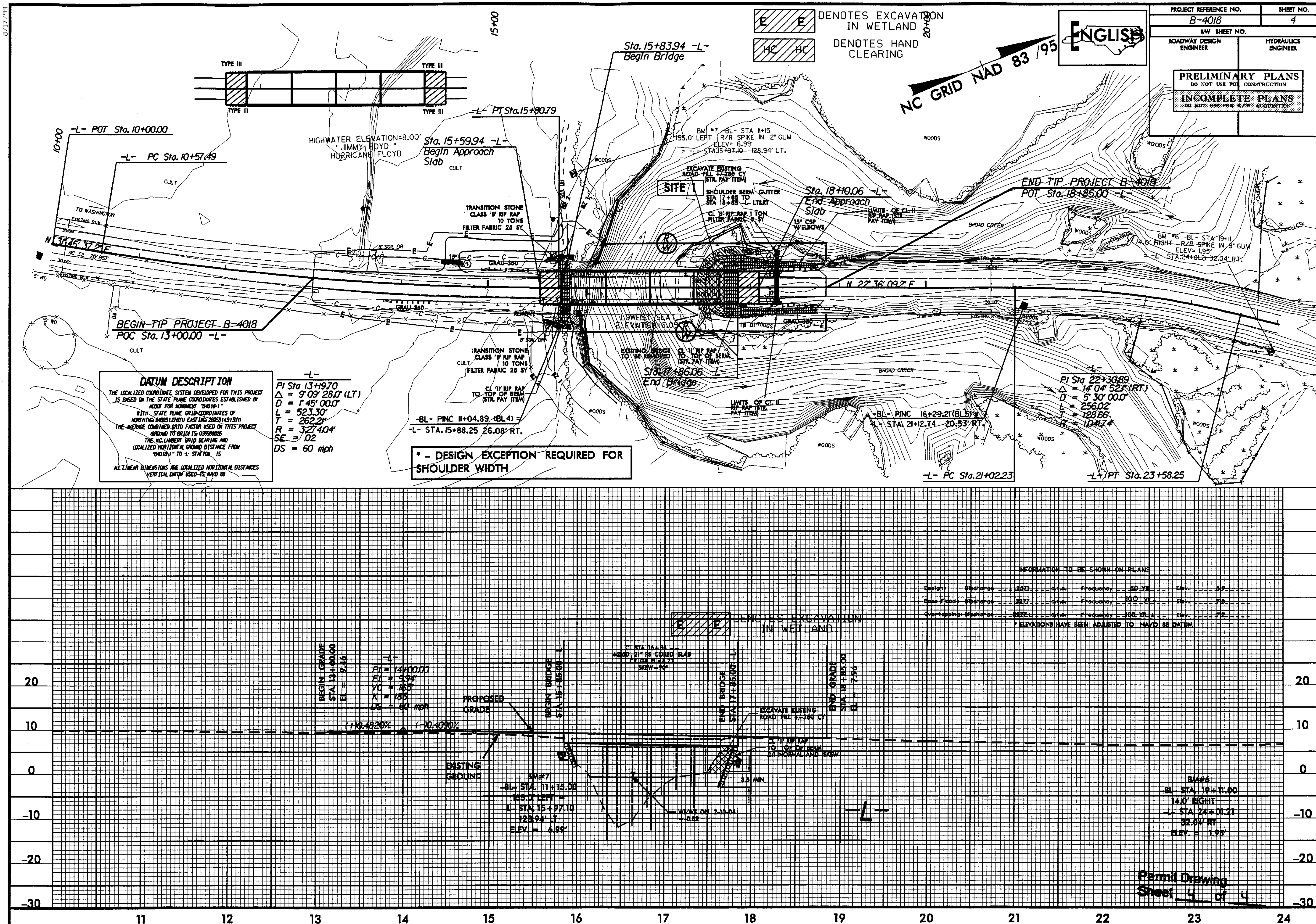
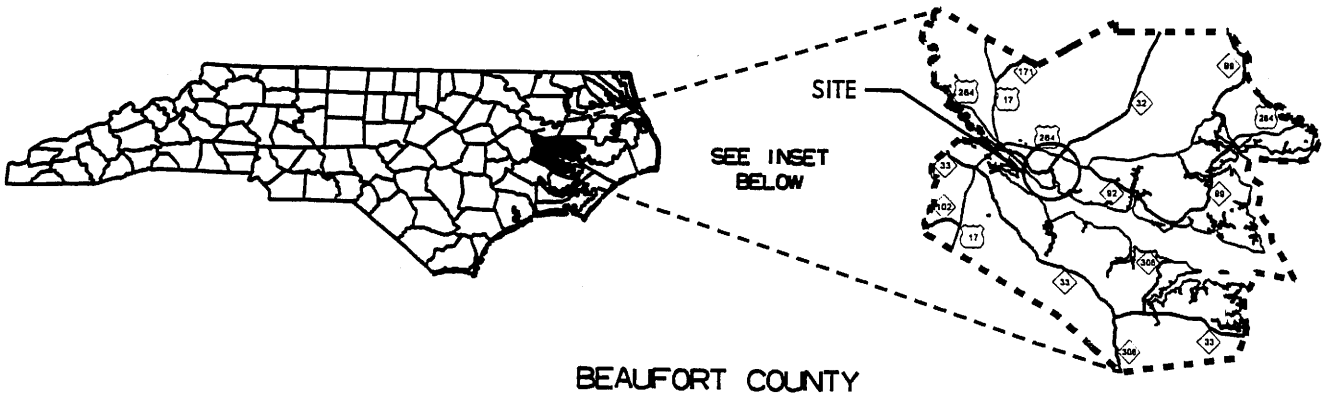
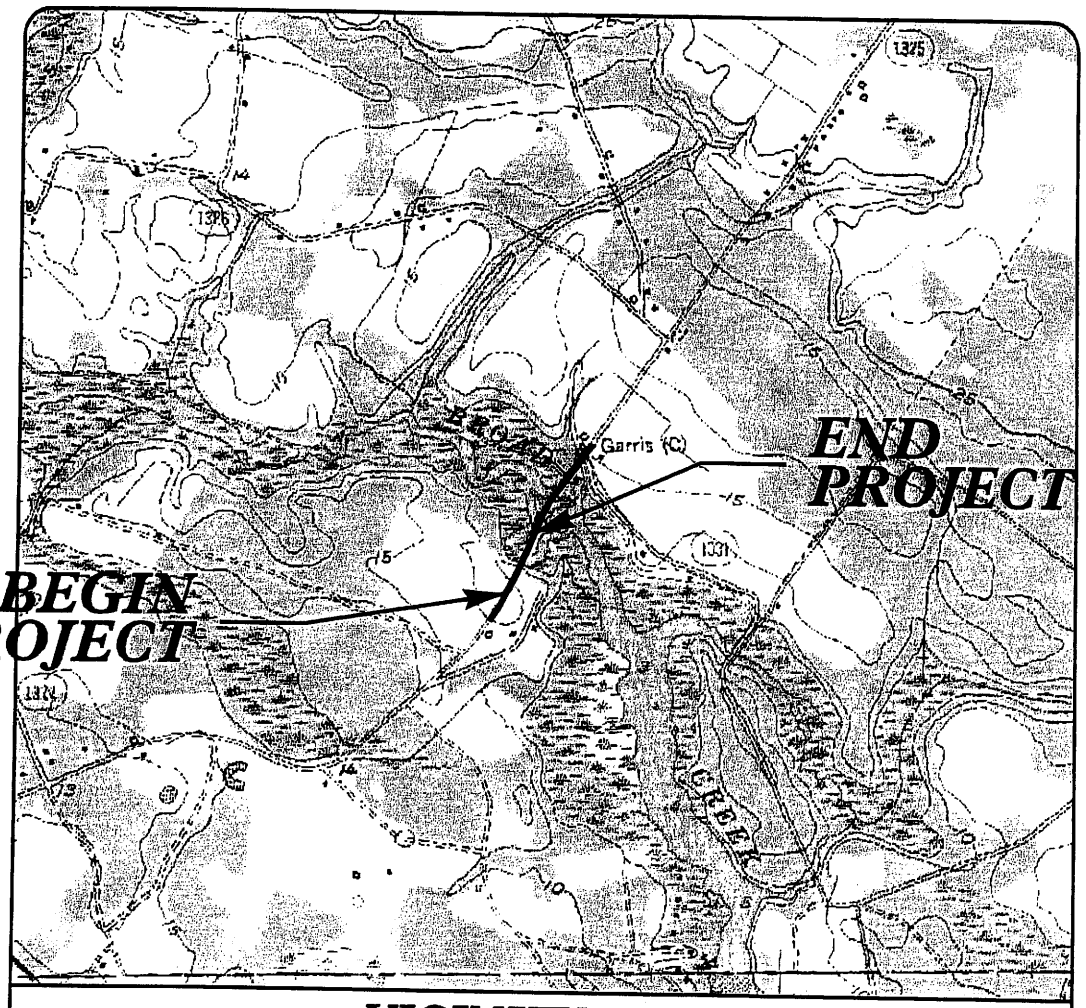
REVISIONS
Permit Drawing Sheet 3 of 9



PROJECT REFERENCE NO. B-4018
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
ENGLISH
NC GRID NAD 83 /95
DENOTES EXCAVATION IN WETLAND
DENOTES HAND CLEARING
Sta. 15+83.94 -L- Begin Bridge
-L- PT Sta.15+80.79
-L- POT Sta. 10+00.00
-L- PC Sta. 10+57.49
HIGHWATER ELEVATION=8.00' "JIMMY BOYD" HURRICANE FLOYD
Sta. 15+59.94 -L- Begin Approach Slab
BM #7 -BL- STA 11+15 155.0' LEFT R/R SPIKE IN 12' GUM ELEV= 6.99'
-L- STA.15+97.10 128.94' LT.
SITE 1
Sta. 18+10.06 -L- End Approach Slab
END TIP PROJECT B-4018 POT Sta. 18+85.00 -L-
BM #6 -BL- STA 19+11 14.0' RIGHT R/R SPIKE IN 9' GUM ELEV= 1.95'
-L- STA.24+01.21 32.04' RT.
N 30°45' 37.2" E
N 22°36' 09.2" E
BEGIN TIP PROJECT B-4018 POC Sta. 13+00.00 -L-
LOWEST SEAT ELEVATION=6.05
Sta. 17+86.06 -L- End Bridge
DATUM DESCRIPTION
-L- PI Sta 13+19.70 Δ = 9°09' 28.0" (LT) D = 1°45' 00.0" L = 523.30' T = 262.21' R = 3,274.04' SE = .02 DS = 60 mph
-BL- PINC 11+04.89 (BL4) = -L- STA. 15+88.25 26.08' RT.
* - DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH
-BL- PINC 16+29.21 (BL5) = -L- STA. 21+12.74 20.53' RT.
-L- PI Sta 22+30.89 Δ = 14°04' 52.1" (RT) D = 5°30' 00.0" L = 256.02' T = 128.66' R = 1,041.74'
-L- PC Sta.21+02.23
-L- PT Sta.23+58.25
INFORMATION TO BE SHOWN ON PLANS
Design: Discharge 2570 c.f.s. Frequency 50 YR Elev. 5.9
Base Flood: Discharge 3277 c.f.s. Frequency 100 YR Elev. 7.0
Overtopping: Discharge 3277± c.f.s. Frequency 100 YR ± Elev. 7.2
* ELEVATIONS HAVE BEEN ADJUSTED TO NAVD 88 DATUM
BEGIN GRADE STA 13+00.00 EL = 9.46
-L- PI = 14+00.00 EL = 9.94 VC = 165 K = 185 DS = 60 mph
(+)0.4820% (-)0.4090%
PROPOSED GRADE
EXISTING GROUND
BEGIN BRIDGE STA 15+85.00 -L-
END BRIDGE STA 17+85.00 -L-
END GRADE STA 18+85.00 EL = 7.96
EXCAVATE EXISTING ROAD FILL +/-280 CY
BM#7 -BL- STA. 11+15.00 155.0' LEFT = -L- STA. 15+97.10 128.94' LT ELEV = 6.99'
BM#6 -BL- STA. 19+11.00 14.0' RIGHT = -L- STA. 24+01.21 32.04' RT ELEV = 1.95'
-L-
20 10 0 -10 -20 -30
11 12 13 14 15 16 17 18 19 20 21 22 23 24
Permit Drawing Sheet 4 of 4



BEAUFORT COUNTY



VICINITY MAP NTS

BUFFER IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

BEAUFORT COUNTY
PROJECT: (B-4018)
BRIDGE NO. 104 OVER
BROAD CREEK ON NC 32

SHEET 1 OF 6

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT TYPE: ROAD CROSSING	IMPACT TYPE: BRIDGE	IMPACT TYPE: PARALLEL IMPACT	ALLOWABLE: ZONE 1 (ft^2)	ALLOWABLE: ZONE 2 (ft^2)	ALLOWABLE: TOTAL (ft^2)	MITIGABLE: ZONE 1 (ft^2)	MITIGABLE: ZONE 2 (ft^2)	MITIGABLE: TOTAL (ft^2)	BUFFER REPLACEMENT: ZONE 1 (ft^2)	BUFFER REPLACEMENT: ZONE 2 (ft^2)
1	4 Span Bridge	-L- 15+85-17+85 LT & RT		X		2344	0	2344					
1	Roadway Fill	-L- 15+50-15+85 LT & RT -L- 17+85-18+85 LT & RT	X						1392	1226	2618		
TOTAL:						2344	0	2344	1392	1226	2618		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

BEAUFORT COUNTY
PROJECT: 33385.1.1 (B-4018)

February-07
SHEET OF

Rev. May 2006

Buffer Drawing
Sheet 2 of 6

Buffer Drawing Sheet 3 of 6

BUFFER IMPACTS SUMMARY

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	15+60/18+85 -L-	918	0
	TOTAL	918	0

NC DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

BEAUFORT COUNTY

PROJECT:33385.1.1 (B-4018)

February-07

6/13/99

PROJECT REFERENCE NO.	SHEET NO.
B-4018	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

ENGLISH

NC GRID NAD 83 /95

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

15+00

20+00

10+00

TYPE III

TYPE III

TYPE III

TYPE III

-L- POT Sta. 10+00.00

-L- PC Sta. 10+57.49

HIGHWATER ELEVATION=8.00'
* JIMMY BOYD *
HURRICANE FLOYD

Sta. 15+59.94 -L-
Begin Approach Slab

-L- PT Sta. 15+80.79

Sta. 15+89.94 -L-
Begin Bridge

BM #7 -BL- STA 11+15
155.0' LEFT R/R SPIKE IN 12" GUM
ELEV= 6.99'
= -L- STA. 15+97.10 128.94' LT.

SITE 1

EXCAVATE EXISTING ROAD FILL +/-280 CY (STR. PAY ITEM)

SHOULDER BERM GUTTER STA 17+85 TO STA 18+35 -L- LT&RT

CL 'B' RIP RAP 1 TON FILTER FABRIC 5 SY

Sta. 18+10.06 -L-
End Approach Slab

LIMITS OF CL II RIP RAP (STR. PAY ITEM)

18" CSP W/ELBOWS

END TIP PROJECT B-4018
POT Sta. 18+85.00 -L-

BM #6 -BL- STA 19+11
14.0' RIGHT R/R SPIKE IN 9" GUM
ELEV= 1.95'
= -L- STA.24+01.21 32.04' RT.

TO WASHINGTON

EXISTING R/W

30.00'

N 30° 45' 37.2" E

NC 32 201 BST

CULT

+00.00 EX. R/W

+75.00 38.00'

+28.00 38.00'

+35.00 60.00'

+85.00 75.00'

+75.00 58.00'

+00.00 52.00'

+00.00 52.00'

+50.00 42.00'

+00.00 EX. R/W

TRANSITION STONE CLASS 'B' RIP RAP 10 TONS FILTER FABRIC 25 SY

8' SOIL DR

18" CMP

GRAU-350

REMOVE

LOWEST SEAT ELEVATION=6.05

EXISTING BRIDGE TO BE REMOVED

CL 'II' RIP RAP TO TOP OF BERM (STR. PAY ITEM)

Sta. 17+86.06 -L-
End Bridge

LIMITS OF CL. II RIP RAP (STR. PAY ITEM)

BEGIN TIP PROJECT B-4018
POC Sta. 13+00.00 -L-

-BL- PINC 11+04.89 (BL4)
-L- STA. 15+88.25 26.08' RT.

-BL- PINC 16+29.21 (BL5)
-L- STA. 21+12.74 20.53' RT.

N 22° 36' 09.2" E

BROAD CREEK

WOODS

EXISTING R/W

30.00'

-L-
PI Sta 13+19.70
Δ = 9° 09' 28.0" (LT)
D = 1° 45' 00.0"
L = 523.30'
T = 262.21'
R = 3,274.04'
SE = .02
DS = 60 mph

-L-
PI Sta 22+30.89
Δ = 14° 04' 52.1" (RT)
D = 5° 30' 00.0"
L = 256.02'
T = 128.66'
R = 1,041.74'

-L- PC Sta. 21+02.23

-L- PT Sta. 23+58.25

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4018-1" WITH STATE PLANE GRID COORDINATES OF NORTHING 648031.276811 EASTING 2605814.913110
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988826
THE NC LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4018-1" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

* – DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH

INFORMATION TO BE SHOWN ON PLANS

Design	Discharge	2923 c.f.s.	Frequency	50 Yrs	Elev. 9.9'
Base Flood	Discharge	3872 c.f.s.	Frequency	100 Yr	Elev. 7.8'
Overtopping	Discharge	4277 c.f.s.	Frequency	300 Yrs	Elev. 7.2'

* ELEVATIONS HAVE BEEN ADJUSTED TO NAVD 88 DATUM

BEGIN GRADE STA. 13+00.00 EL = 9.46

-L-
PI = 14+00.00
EL = 5.94'
VC = 1650'
K = 185
DS = 60 mph

BEGIN BRIDGE STA. 15+85.00 -L-

PROPOSED GRADE

EXISTING GROUND

(+)0.4820%

(-)0.4090%

Sta. 16+84.72 -L-
42.50' 21" RS COPED SLAB
CL OF EL = 4.72
SKEW = 90°

END BRIDGE STA. 17+85.00 -L-

EXCAVATE EXISTING ROAD FILL +/-280 CY

CL 'II' RIP RAP TO TOP OF BERM 2:1 NORMAL AND SKEW

END GRADE STA. 18+85.00 -L- EL = 7.96

3.5' MIN

WIDTH OF 2:1 = +/-0.62

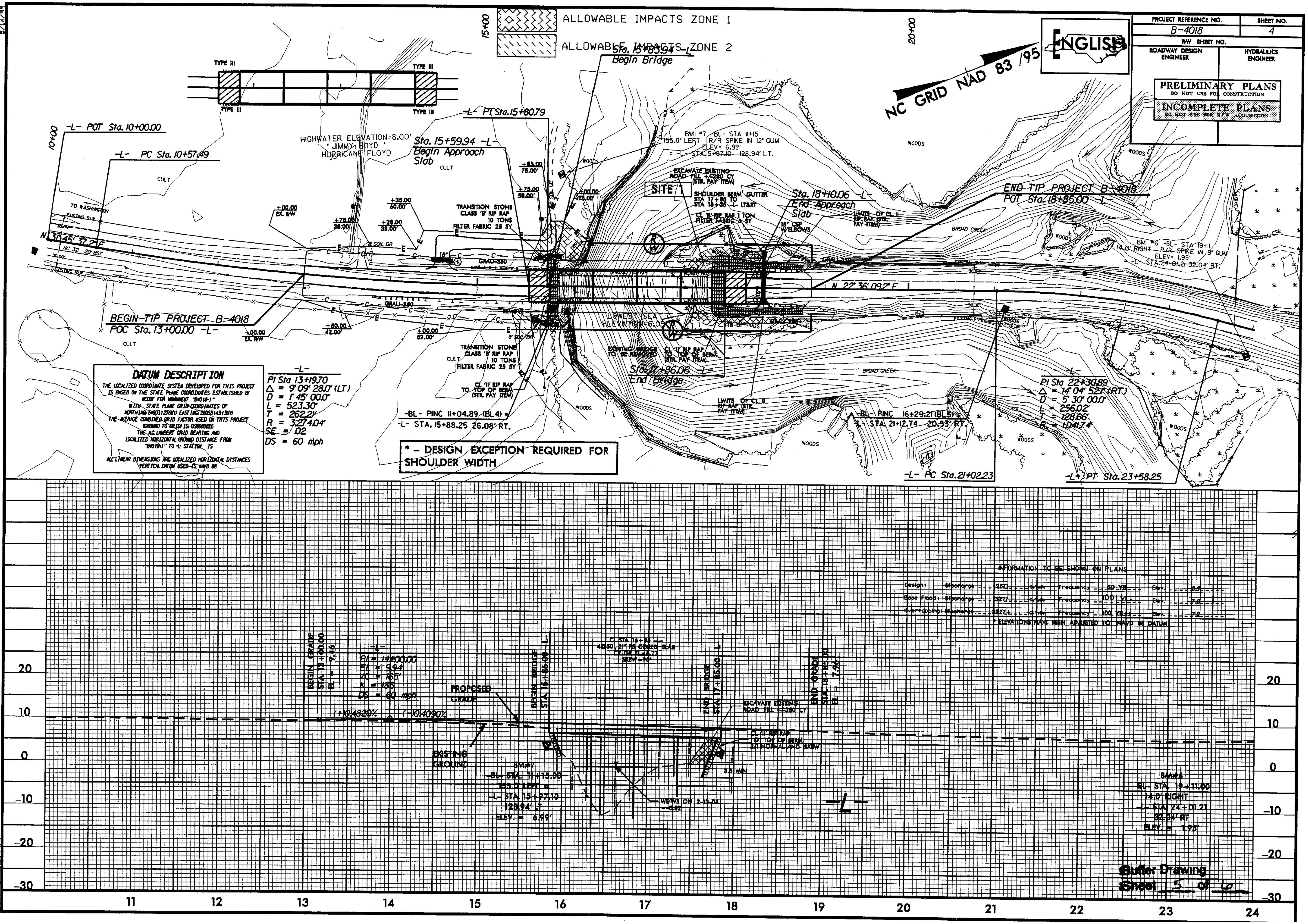
BM#7
-BL- STA. 11+15.00
155.0' LEFT
-L- STA. 15+97.10
128.94' LT
ELEV. = 6.99'

BM#6
-BL- STA. 19+11.00
14.0' RIGHT
-L- STA. 24+01.21
32.04' RT
ELEV. = 1.95'

-L-

Buffer Drawing
Sheet 4 of 6

12-APR-2007 06:49
projects\pgl\b4018\design\b4018_hyd_prm_psh_buf.dgn


ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
PROJECT REFERENCE NO. B-4018
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
ENGLISH
NC GRID NAD 83 /95
-L- POT Sta. 10+00.00
-L- PC Sta. 10+57.49
-L- PT Sta. 15+80.79
Sta. 15+83.94 -L- Begin Bridge
Sta. 15+59.94 -L- Begin Approach Slab
HIGHWATER ELEVATION=8.00' "JIMMY BOYD" HURRICANE FLOYD
BM #7 -BL- STA 11+15 155.0' LEFT R/R SPIKE IN 12" GUM ELEV= 6.99' = -L- STA. 15+97.10 128.94' LT.
SITE 1
Sta. 18+10.06 -L- End Approach Slab
END TIP PROJECT B-4018
POT Sta. 18+85.00 -L-
BM #6 -BL- STA 19+11 14.0' RIGHT R/R SPIKE IN 9" GUM ELEV= 1.95' -L- STA. 24+01.21 32.04' RT.
N 30°45'37.2" E
N 27°36'09.2" E
BEGIN TIP PROJECT B-4018
POC Sta. 13+00.00 -L-
LOWEST SEAT ELEVATION=6.05'
Sta. 17+86.06 -L- End Bridge
TRANSITION STONE CLASS 'B' RIP RAP 10 TONS FILTER FABRIC 25 SY
BROAD CREEK
WOODS
CULT
TO WASHINGTON
DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4018-1"
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88
-L-
PI Sta 13+19.70
Δ = 9°09'28.0" (LT)
D = 1°45'00.0"
L = 523.30'
T = 262.21'
R = 3,274.04'
SE = .02
DS = 60 mph
-BL- PINC 11+04.89 (BL4) = -L- STA. 15+88.25 26.08' RT.
* - DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH
-L-
PI Sta 22+30.89
Δ = 14°04'52.7" (RT)
D = 5°30'00.0"
L = 256.02'
T = 128.66'
R = 1,041.74'
-BL- PINC 16+29.21 (BL5) = -L- STA. 21+12.74 20.53' RT.
-L- PC Sta. 21+02.23
-L- PT Sta. 23+58.25
INFORMATION TO BE SHOWN ON PLANS
*ELEVATIONS HAVE BEEN ADJUSTED TO NAVD 88 DATUM
BEGIN GRADE STA. 13+00.00 EL = 9.46
-L-
PI = 14+00.00
EL = 9.94'
VC = 165'
K = 185
DS = 60 mph
PROPOSED GRADE
(+)0.4820%
(-)0.4090%
EXISTING GROUND
BEGIN BRIDGE STA. 15+85.00 -L-
END BRIDGE STA. 17+85.00 -L-
END GRADE STA. 18+85.00 EL = 7.96
EXCAVATE EXISTING ROAD FILL +/-280 CY
BM#7 -BL- STA. 11+15.00 155.0' LEFT = -L- STA. 15+97.10 128.94' LT ELEV. = 6.99'
BM#6 -BL- STA. 19+11.00 14.0' RIGHT = -L- STA. 24+01.21 32.04' RT ELEV. = 1.95'
-L-
20
10
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Buffer Drawing
Sheet 5 of 6

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4018	UC-2
DESIGNED BY: BH	
DRAWN BY: BH	
CHECKED BY: CDB	
APPROVED BY: CDB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
PROJECT SERVICES UNIT PHONE: (919) 250-4128 FAX: (919) 250-4119	UTILITY CONSTRUCTION PLANS ONLY

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

UTILITY CONSTRUCTION

NC GRID NAD 83 /95

ABANDON

CATV CABLE BY OPEN CUT

FO TELEPHONE LINE BY DIRECTIONAL DRILL

615' 10" WATER PIPE BY DIRECTIONAL DRILL

ABANDON

238' 12" WATER PIPE BY OPEN CUT

ABANDON

TELEPHONE CABLE BY DIRECTIONAL DRILL

AREA OF TEMPORARY EXCAVATION SHOWN ON HYDRAULICS PLANS

146' 12" WATER PIPE BY OPEN CUT

-L- POT Sta. 10+00.00

-L- PC Sta. 10+57.49

BEGIN TIP PROJECT B-4018
POC Sta. 13+00.00 -L-

-L-
PI Sta 13+19.70
Δ = 9°09'28.0" (LT)
D = 1°45'00.0"
L = 523.30'
T = 262.21'
R = 3,274.04'
SE = .02
DS = 60 mph

ANNA A. GRAY
9I-E-348
NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE PROPERTY

Sta. 15+59.94 -L-
Begin Approach Slab

Sta. 15+83.94 -L-
Begin Bridge

Sta. 17+86.06 -L-
End Bridge

Sta. 18+10.06 -L-
End Approach Slab

END TIP PROJECT B-4018
POT Sta. 18+85.00 -L-

-L- PC Sta. 21+02.23

-L- PT Sta. 23+58.25

-L-
PI Sta 22+30.89
Δ = 14°04'52" (RT)
D = 5°30'00.0"
L = 256.02'
T = 128.66'
R = 1,041.74'

TRANSITION STONE CLASS 'B' RIP RAP 10 TONS FILTER FABRIC 25 SY

CL 'II' RIP RAP TO TOP OF BERM (STR. PAY ITEM)

EXCAVATE EXISTING ROAD FILL +/-280 CY (STR. PAY ITEM)

SHOULDER BERM GUTTER

LIMITS OF CL II RIP RAP (STR. PAY ITEM)

18" CSP W/ELBOWS

DO NOT DISTURB FENCE

75' TAPER LT. & RT.

50' TAPER LT. & RT.

LOWEST SEAT ELEVATION=6.05'

EXISTING BRIDGE TO BE REMOVED

TO WASHINGTON

BROAD CREEK

WOODS

CULT

ANNA A. GRAY
9I-E-348
NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE PROPERTY

Buffer Drawing
Sheet 6 of 6

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4018	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33385.1.1	BRSTP-32(2)	P.E.
33385.2.1	BRSTP-32(2)	R/W, UTIL.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

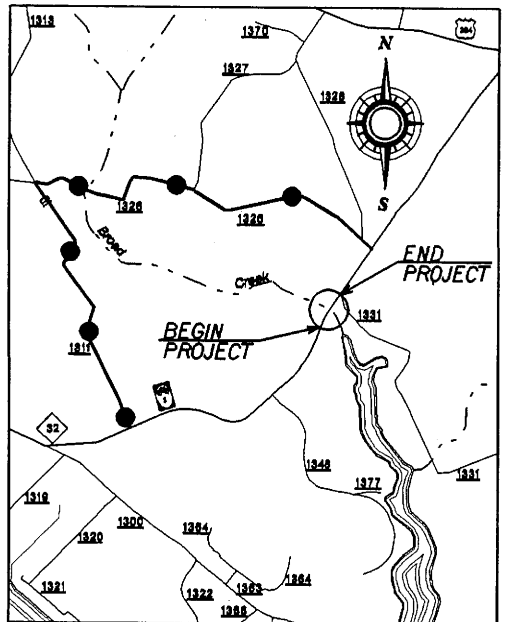
LOCATION: BRIDGE NO. 104 OVER BROAD CREEK ON NC 32

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

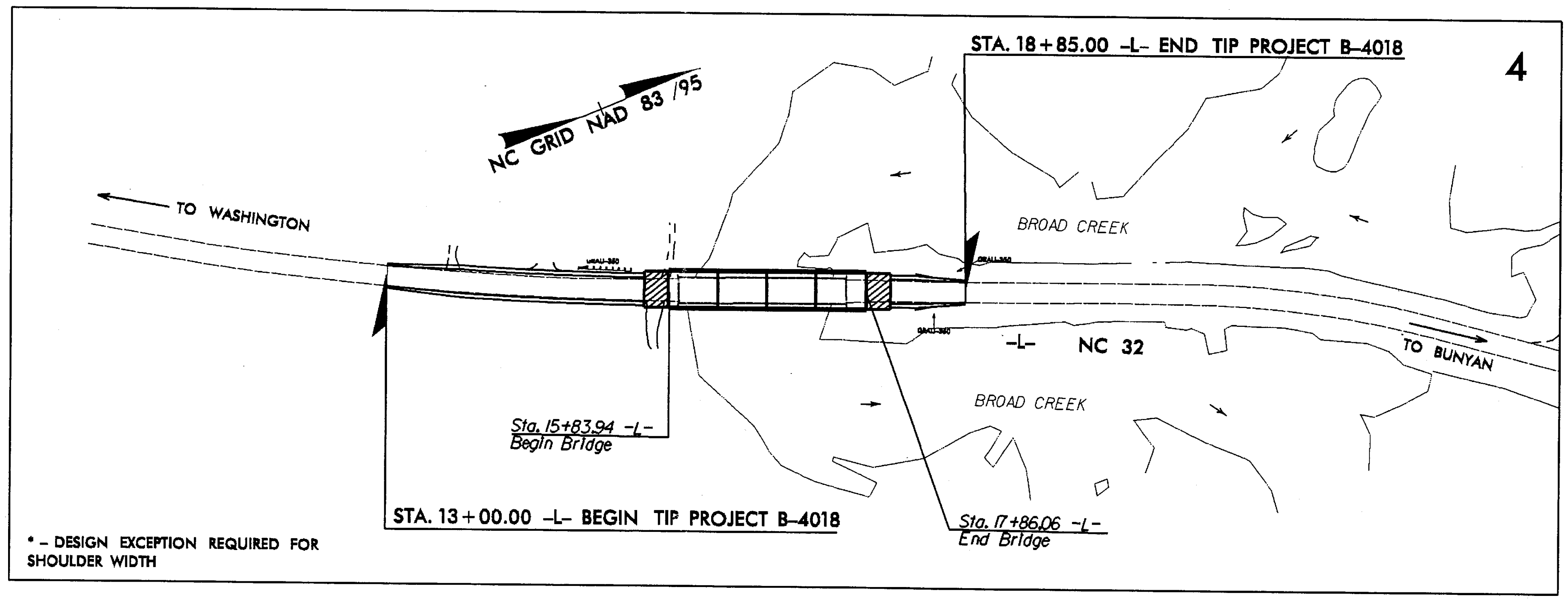
TIP PROJECT: B-4018

CONTRACT:



VICINITY MAP

LEGEND ●—●—● Studied Detour Route



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 = 3600
ADT 2030 = 5600
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-4018	= 0.073 mi.
LENGTH STRUCTURE TIP PROJECT B-4018	= 0.038 mi.
TOTAL LENGTH TIP PROJECT B-4018	= 0.111 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:

GREG S. PURVIS, P. E.
PROJECT ENGINEER

LETTING DATE:
December 18, 2007

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

09/08/99

09-MAR-2007 10:07
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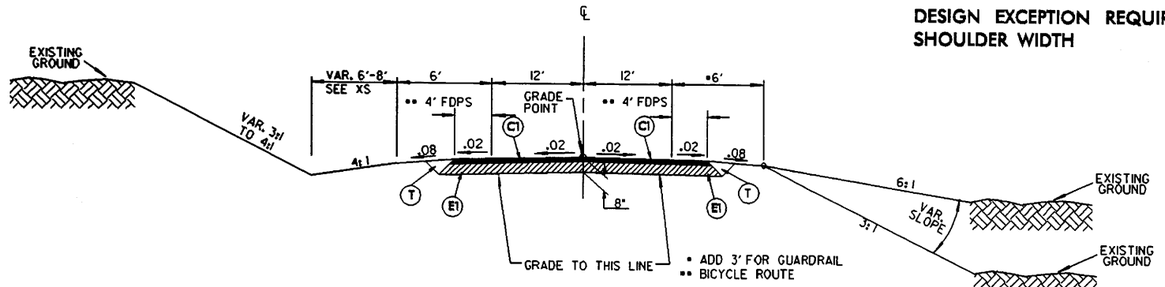
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4018	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
WANG ENGINEERING	



DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH

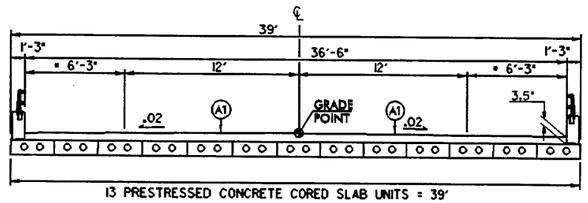
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS

-L- Sta. 12+50.00 to Sta. 15+83.94 (BEGIN BRIDGE)
-L- Sta. 17+86.06 (END BRIDGE) to Sta. 18+85.00

PAVEMENT SCHEDULE	
A1	PROP. PORTLAND CEMENT CONCRETE PAVEMENT
C1	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.
E1	PROP. APPROX. 5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS PER SQ. YD.
T	EARTH MATERIAL

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED



TYPICAL BRIDGE SECTION

-L- Sta. 15+83.94 to Sta. 17+86.06

• EXTRA WIDTH NEEDED DUE TO BICYCLE LANES AND SPREAD

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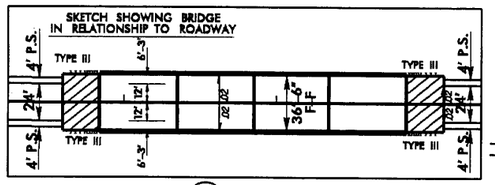
PROJECT REFERENCE NO.	SHEET NO.
B-4018	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC GRID NAD 83 /95

SKETCH SHOWING BRIDGE IN RELATIONSHIP TO ROADWAY



-L- POT Sta. 10+00.00

-L- PC Sta. 10+57.49

-L- PT Sta. 15+80.79

Sta. 15+83.94 -L-
Begin Bridge

Sta. 15+59.94 -L-
Begin Approach Slab

Sta. 18+10.06 -L-
End Approach Slab

END TIP PROJECT B-4018
POT Sta. 18+85.00 -L-

BEGIN TIP PROJECT B-4018
POC Sta. 13+00.00 -L-

ANNA A. GRAY
SN-E-348
NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE PROPERTY

BM #7 -BL- STA 11+15
155.0' LEFT R/R SPIKE IN 12" GUM
ELEV= 6.99'
= -L- STA.15+97.10 128.94' LT.

BM #6 -BL- STA 19+11
14.0' RIGHT R/R SPIKE IN 9" GUM
ELEV= 1.95'
= -L- STA.24+01.21 32.04' RT.

-L-
PI Sta 13+19.70
Δ = 9° 09' 28.0" (LT)
D = 1° 45' 00.0"
L = 523.30'
T = 262.21'
R = 3,274.04'
SE = .02
DS = 60 mph

-L-
PI Sta 22+30.89
Δ = 14° 04' 52.1" (RT)
D = 5° 30' 00.0"
L = 256.02'
T = 128.66'
R = 1,041.74'

-BL- PINC 14+04.89 (BL4) =
-L- STA. 15+88.25 26.08' RT.

-BL- PINC 16+29.21(BL5) =
-L- STA. 21+12.74 20.53' RT.

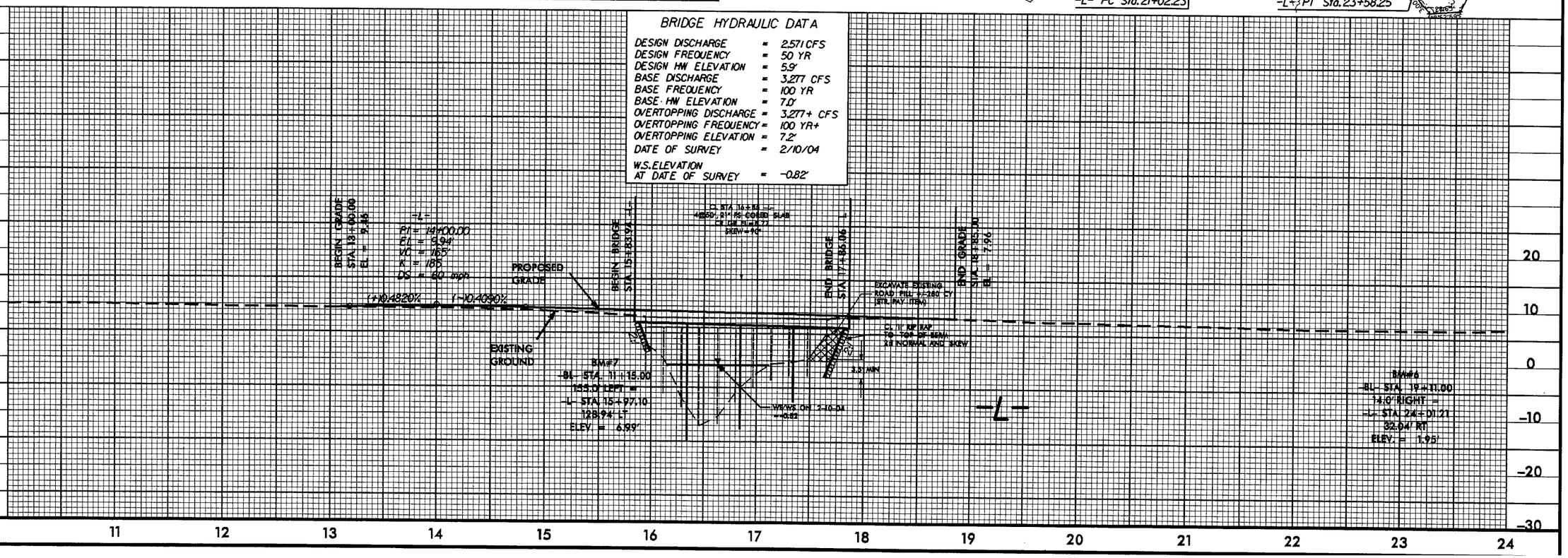
-L- PC Sta. 21+02.23

-L- PT Sta. 23+58.25

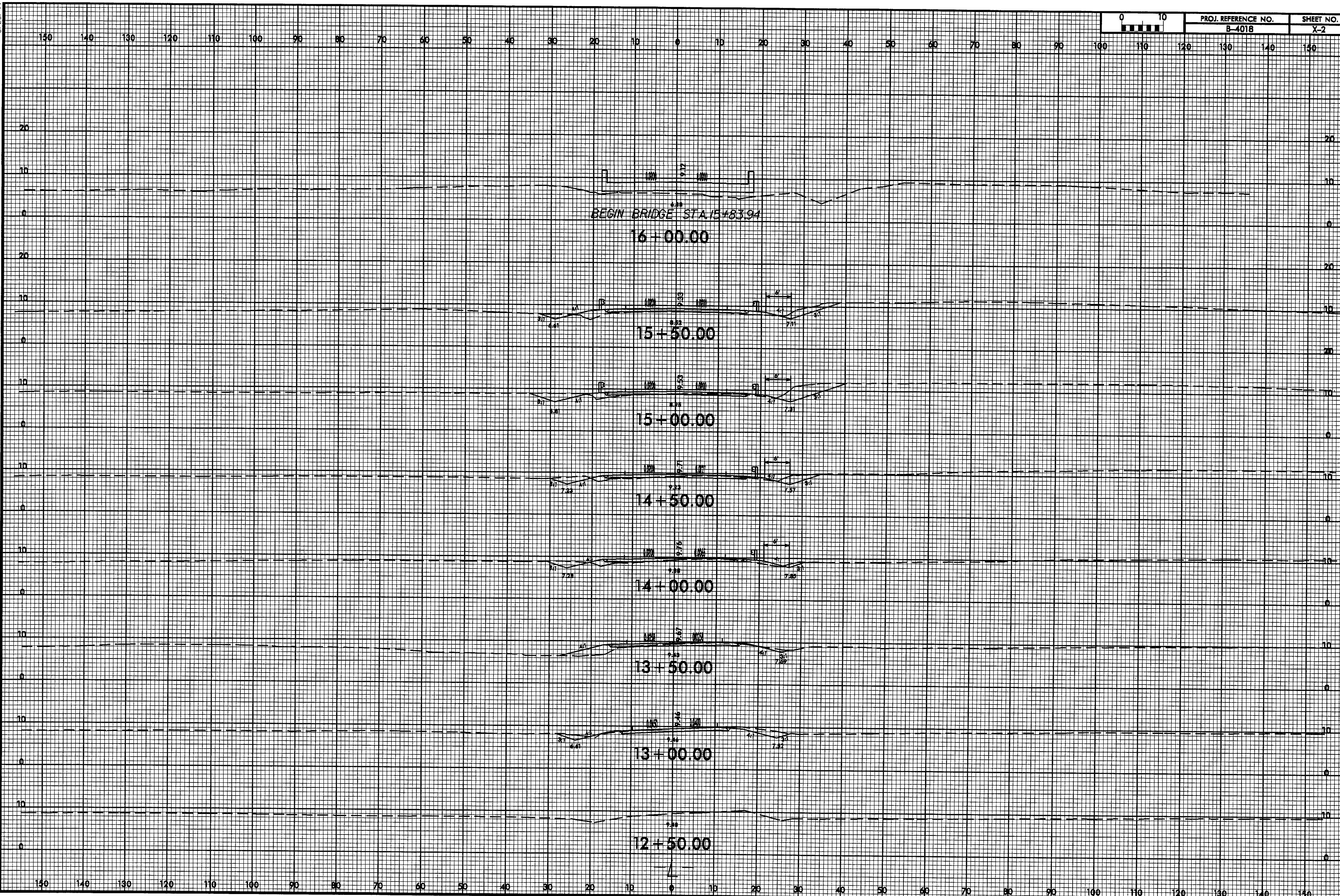
* - DESIGN EXCEPTION REQUIRED FOR SHOULDER WIDTH

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2,571 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	5.9'
BASE DISCHARGE	=	3,277 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	7.0'
OVERTOPPING DISCHARGE	=	3,277+ CFS
OVERTOPPING FREQUENCY	=	100 YR+
OVERTOPPING ELEVATION	=	7.2'
DATE OF SURVEY	=	2/10/04
W.S. ELEVATION AT DATE OF SURVEY	=	-0.82'



PROJ. REFERENCE NO.	SHEET NO.
B-4018	X-2



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PROJ. REFERENCE NO.	SHEET NO.
B-4018	X-3

18+00.00

7.98

END BRIDGE STA.17+86.06

17+50.00

0.72

17+00.00

16+50.00

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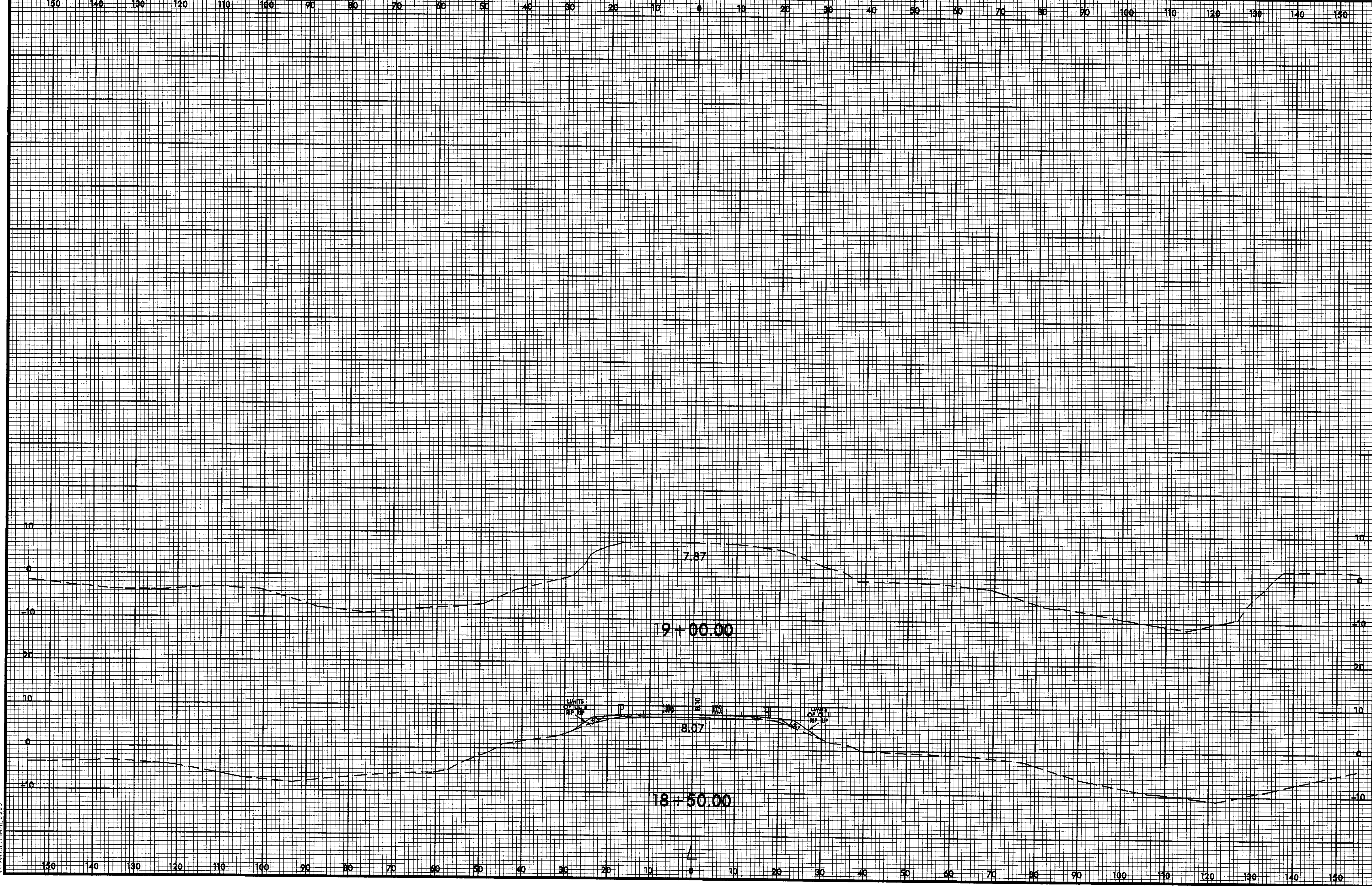
PROJ. REFERENCE NO.	SHEET NO.
B-4018	X-4



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Beaufort County

Bridge No. 104 on NC 32 Over Broad Creek

Federal-Aid Project No. BRSTP-32(2)

State Project No. 33385.1.1

T.I.P. Project No. B-4018

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

APPROVED:

6-13-06
DATE

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

6-16-06
DATE

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

Beaufort County

Bridge No. 104 on NC 32 Over Broad Creek

Federal-Aid Project No. BRSTP-32(2)

State Project No. 33385.1.1

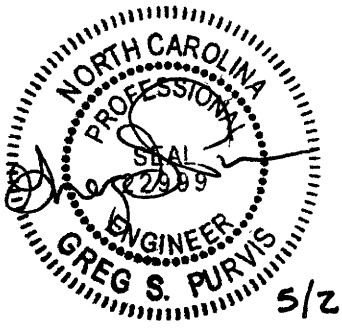
T.I.P. Project No. B-4018

CATEGORICAL EXCLUSION

May 2006

Document Prepared by:
Wang Engineering Company, Inc.

Greg S. Purvis, P. E.
Project Manager



5/25/06

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

Beaufort County
Bridge No. 104 on NC 32 Over Broad Creek
Federal-Aid Project No. BRSTP-32(2)
State Project No. 33385.1.1
T.I.P. Project No. B-4018

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 Two

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

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

Guidelines for Avoiding Impacts to the West Indian Manatee: Precautionary Measures for Construction Activities in North Carolina will need to be adhered to during construction.

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

Roadway Design/Hydraulic Design/Structure Design

The width of the proposed bridge will be studied further during final design to determine if additional width is needed.

Division Two/Roadway Design/Hydraulic Design

The State Historic Preservation Office concurred that there is a No Adverse Effect to the Candy-Alligood farm property located on both sides of the road from the beginning of the project to the beginning of the bridge. Currently, there is a temporary construction easement shown in this area if this changes it will need to be coordinated with the State Historic Preservation Office.

Hydraulics & Project Development and Environmental Analysis Branch

A CAMA major stormwater permit will be required.

Beaufort County
Bridge No. 104 on NC 32 Over Broad Creek
Federal-Aid Project No. BRSTP-32(2)
State Project No. 33385.1.1
T.I.P. Project No. B-4018

INTRODUCTION: The replacement of Bridge No. 104 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 7.0 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of an inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

NC 32 is classified as a rural major collector. Land use in the project area is predominantly cleared farmland with a mix of light residential development. The Candy-Alligood farm is adjacent to the project both south and southeast of the existing bridge. The State Historic Preservation Office considers the Candy-Alligood farm eligible for the National Register.

Bridge No. 104 was constructed in 1953. The existing structure is 172 feet in length, consisting of ten spans with the maximum span at approximately 18 feet. The clear roadway width is 24.2 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 19.7 feet and the normal depth of flow is 11 feet. The posted weight limit is 31 tons for single vehicles (SV) and 39 tons for truck-tractors semi-trailers (TTST).

The existing bridge on NC 32 is on a tangent. The southwest approach has an approximate 3,230-foot radius curve that becomes tangent at the bridge. The northeast approach has an approximate 1,115-foot radius curve that is approximately 322 feet from the bridge. NC 32 consists of two ten-foot lanes with approximately five-foot grass shoulders.

The estimated 2004 average daily traffic volume is 3,200 vehicles per day (vpd). The projected traffic volume is expected to increase to 5,600 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 are aerial power lines and telephone lines on the west side of NC 32. There is a fiber optic telephone on the west side of NC 32. Utility impacts are anticipated to be low.

There were no crashes reported for the three-year period of October 1, 2002 to September 30, 2005.

Two school buses cross this bridge twice daily.

This section of NC 32 is part of a designated NC Bicycling Highway, NC-2 Mountains to Sea.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide a 33-feet six inches clear roadway width to allow for two 12-foot travel lanes with four-feet nine-inches from edge of travel lane to face of bridge rail. The bridge railing will be bicycle safe rails. The existing bridge navigational clearance will be maintained with a bed to crown height of 19.7 feet.

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

Based on a preliminary hydraulic analysis, Bridge No. 104 will be replaced with a 200-foot long bridge. The grade of the roadway will match the elevation of the existing roadway since lowering the grade could cause the road to be flooded by Broad Creek. The minimum deck grade will be 0.3%. The opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined from a more detailed hydraulic analysis to be performed during the final design phase of the project.

B. Build Alternatives

One (1) build alternative studied for replacing the existing bridge is 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 SR 1328 (Black Road), SR 1326 (Turkey Trot Road No. 2), and SR 1311 (Magnolia School Road) approximately 2.9 miles in length. The existing bridge will be replaced with a 200-foot long bridge. The length of approach work will be approximately 285 feet on the south side of the bridge and approximately 100 feet on the east side of the bridge. Alternate A was selected because it minimizes 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 32.

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 while maintaining traffic by an off-site detour route is the preferred alternate. Alternate A was selected because it minimizes natural environmental impacts and construction time. The Division Engineer concurs with Alternate A as the preferred alternative.

Alternate A is estimated to cost $1,330,500. 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 six-foot shoulder width.

V. ESTIMATED COSTS

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

Table 1. – Estimated Costs

	Alternate A (Preferred)
Structure Removal (existing)	**$ 53,100**
Structure (proposed)	**648,000**
Roadway Approaches	**234,400**
Miscellaneous and Mobilization	**194,500**
Engineering and Contingencies	**170,000**
ROW/Const. Easements/Utilities:	**30,500**

TOTAL	**$ 1,330,500**

The estimated cost of the project, as shown in the 2006-2012 Transportation Improvement Program, is $1,431,000 including $31,000 for right-of-way, $1,150,000 for construction, and $250,000 for prior years cost

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 (Bunyan, NC 7.5 minute quadrangle), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping (NWI) (Bunyan, NC 7.5 minute quadrangle), Natural Resources Conservation Service (NRCS; formerly the Soils Conservation Service [SCS]) soils mapping (SCS 1980), and recent aerial photography.

Plant community descriptions are based on a classification system utilized by the North Carolina 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 exceptions for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (USACE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). 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, Hamel 1992, Palmer and Braswell 1995, and Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (DWQ 2002, DWQ 2004a, DWQ 2004b). Quantitative sampling was not undertaken to support existing data.

The most current FWS listing of federally protected species with ranges extending into Beaufort County (February 5, 2003) was reviewed prior to initiation of the field investigation. In addition, NHP records documenting the presence of federally or state listed species were consulted before commencing field investigations.

The project study area was walked and visually surveyed for significant features. For purposes of this evaluation, the project study area has been delineated by Wang Engineering Co. to be approximately 300 feet in width (centered on the existing roadway) and approximately 1475 feet in length, encompassing approximately 10 acres. Potential impacts of construction will be limited to the cut-fill boundary for the proposed alternative. Special concerns evaluated in the field include 1) potential protected species habitat and 2) wetlands and water quality protection of Broad Creek.

B. Physiography and Soils

The project study area is located within the Mid-Atlantic Flatwoods ecoregion of North Carolina. This ecoregion is characterized by low-elevation plains that exhibit little topographic relief, and have poorly-drained soils (Griffith *et al.* 2002). The project study area is located within a low-elevation floodplain valley. Elevations within the project study area range from a high of approximately 15 feet National Geodetic Vertical Datum (NGVD) at the eastern and western ends of the project study area, to a low of approximately 5 feet NGVD within the stream channel. Land uses within and adjacent to the project study area consist of woodlands, agriculture, roadside shoulders, and residential lots.

Based on soil mapping for Beaufort County (SCS 1980), the project study area is underlain by six soil series: Altavista fine sandy loam, Arapahoe fine sandy loam, Dorovan mucky peat, Muckalee loam, Seabrook loamy sand, and Tarboro sand. The Doravan and Muckalee series are considered hydric in Beaufort County by the NRCS (1996).

The Altavista series with slopes ranging between 0 to 2 percent consists of nearly level, moderately well-drained fine sandy loams that occur on smooth ridges on stream and marine terraces. Permeability is moderate, available water capacity is moderate, and the shrink-swell potential is low. The seasonal high water table is at a depth of 1.5 to 2.5 feet during winter and early spring.

The Arapahoe series with 0 to 2 percent slopes consists of nearly level, very poorly-drained fine sandy loams that occur on broad flats and in shallow depressions on uplands. Permeability is moderately rapid, available water capacity is moderate, and the shrink-swell potential is low. The seasonal high water table is within a depth of 1 foot during winter and early spring.

The Dorovan series with slopes ranging between 0 to 1 percent consists of nearly level, very poorly-drained organic soil that occurs in wooded areas on the floodplains along the Pamlico River and its tributaries. Permeability is moderate, available water capacity is very high, and the shrink-swell potential is low. The seasonal high water table ranges from 1 foot above the surface to 0.5 foot below, but usually is at or above the surface. The soil is frequently flooded for very long periods.

The Muckalee series with slopes ranging between 0 and 1 percent consists of nearly level, poorly-drained loam that occurs on floodplains along small streams that flow into the Pamlico River. Permeability and available water capacity are moderate, and shrink-swell potential is low. The seasonal high water table is at a depth of 0.5 foot to 1.5 feet during the winter and early spring, and is frequently flooded for brief periods.

The Seabrook series with slopes ranging between 0 and 2 percent consists of nearly level, moderately well-drained loamy sand that occurs on smooth ridges on river and stream terraces. Permeability is rapid, available water capacity is low, and the shrink-swell potential is low. The seasonal high water table is at a depth of 2 to 4 feet during winter and early spring.

The Tarboro series with slopes ranging between 0 and 5 percent consists of nearly level and gently sloping, somewhat excessively drained sand that occurs on smooth or slightly rounded ridges on river and stream terraces. Permeability is rapid, available water capacity is low, and shrink-swell potential is low. The seasonal high water table is at a depth of 4 to 6 feet during winter and early spring. This soil is subject to rare flooding.

C. Water Resources

1. Waters Impacted

The project study area is located within sub-basin 03-03-07 of the Tar-Pamlico River Basin (DWQ 2004a). This area is part of USGS Hydrologic Unit 03020104 of the Mid-Atlantic/Gulf Region. The structure targeted for replacement spans Broad Creek. The portion of Broad Creek that lies within the project study area has been assigned Stream Index Number 29-10-(3) by the N.C. Division of Water Quality (DWQ) (DWQ 2004b).

2. Stream Characteristics

The project study area contains two streams: Broad Creek and an unnamed tributary to Broad Creek (UT 1). Broad Creek enters the project study area in the northwest quadrant, flows southwest, parallel to NC 32, and makes a broad 180 degree turn at Bridge No. 104. Broad Creek then flows northeast along NC 32 and exits the project study area in the northeast quadrant (Figure 6). UT 1 is located in the northwestern quadrant and flows south for approximately 30 feet to a culvert. UT 1 exits the culvert and flows for another 125 feet to a confluence with Broad Creek (Figure 6).

Broad Creek enters the project study area as a well-defined, third-order, perennial stream with slow flow over an unconsolidated bottom. At Bridge No. 104, Broad Creek is approximately 100 feet wide. The banks of Broad Creek range from 1 to 6 feet high and are moderately sloping. During field investigations, the water level appeared normal and ranged up to approximately 4 feet deep. Water clarity was moderate, with little visibility to the substrate, and flow-velocity was slow. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within Broad Creek include overhanging trees, undercut banks, fallen logs, and leaf packs.

UT 1 enters the project study area as a moderately-defined, first-order, perennial stream with slow flow over a mud substrate. UT 1 is approximately 5 feet wide and its banks range from 0.5 to 2.0 feet high and are gently sloping. During field investigations, the water level appeared normal and ranged up to approximately 0.5 foot in depth. Water clarity was moderate, with some visibility to the substrate, and flow-velocity was slow. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within UT 1 include overhanging trees, undercut banks, fallen logs, and leaf packs.

The North Carolina Division of Water Quality 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 waterbody 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. Broad Creek is not listed on any section of the N.C. 2002 Section 303(d) list (DWQ 2002).

Classifications are assigned to salt-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 **SB NSW** has been assigned to this section of Broad Creek. The designation **S** refers to saltwater. Class **B** waters are suitable for aquatic life propagation and survival, fishing, wildlife, primary recreation, and agriculture. Primary recreation refers to human body contact with waters on an organized and frequent basis. The designation **NSW** (Nutrient Sensitive Waters) refers to waters needing additional management due to their excessive growth of vegetation resulting from nutrient enrichment. No 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 (DWQ 2004a, DWQ 2004b).

The DWQ (previously known as the Division of Environmental Management, Water Quality Section [DEM]) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project study area is summarized in the Tar-Pamlico River basinwide water quality plan (DWQ 2004a). Broad Creek is rated as **Supporting** of designated uses (DWQ 2004b).

This sub-basin (03-03-07) supports three major point-source dischargers and 17 minor point-source dischargers with a total permitted flow of 7.5 million gallons per day (MGD). There are no point-source discharges directly associated with this section of Broad Creek. Major non-point sources of pollution for the entire Tar-Pamlico River Basin are agriculture, construction, forestry, mining, onsite wastewater disposal, solid waste disposal, and atmospheric deposition. Sedimentation and nutrient inputs are major problems associated with non-point source discharges and often result in fecal coliform, heavy metals, oil from roads and parking lots, and increased nutrient levels in surface waters (DWQ 2004b).

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 steams by catch basins and roadside vegetation.

There is potential for concrete deck and bent components of the bridge to be dropped into waters of the United States during removal of the existing bridge. The resulting, temporary fill associated with the deck and bents is approximately 68 cubic yards. NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR) must be applied for the removal of this bridge.

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

3. Anticipated Impacts

a) Impacts Related to Water Resources

Impacts to water resources in the project study 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 study 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.

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 68 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 September 30) associated with fish migration, spawning, and larval recruitment into nursery areas.

D. Biotic Resources

1. Plant Communities

Three distinct plant communities were identified within the project study area: mixed hardwood/pine forest, bottomland hardwood forest, and disturbed/maintained land. These communities are described below; and their approximate locations are depicted in Figure 6.

a) Mixed Hardwood/Pine Forest

Approximately 0.8 acre (8 percent) of the project study area is encompassed by mixed hardwood/pine forest. Communities of mixed hardwood/pine forest occur on uplands, floodplains and floodplain slopes in the project study area. This community consists of a mature, secondary growth forest characterized by a closed canopy with a relatively open understory. Small areas of this community exist as immature, secondary growth scrub/shrub communities.

The mixed hardwood/pine community supports a canopy of tulip poplar (*Liriodendron tulipifera*), loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*). The sub-canopy includes canopy species as well as eastern red cedar (*Juniperus virginiana*), black cherry (*Prunus serotina*), and water oak (*Quercus nigra*). Sapling and shrub layers include canopy and sub-canopy species as well as devil's walking stick (Aralia spinosa). Herbaceous plants and vines within this community are poison ivy (*Toxicodendron radicans*), greenbrier (*Smilax* sp.), and muscadine grape (*Vitis rotundifolia*).

Birds observed within or adjacent to the corridor are blue-gray gnatcatcher (*Polioptila caerulea*), northern mockingbird (*Mimus polyglottos*), summer tanager (*Piranga rubra*), and northern cardinal (*Cardinalis cardinalis*). Other avian species expected to occur in this community are red-bellied woodpecker (*Melanerpes carolinus*), tufted titmouse (*Baeolophus bicolor*), Carolina chickadee (*Poecile carolinensis*), yellow-rumped warbler (*Dendroica coronata*), pine warbler (*Dendroica pinus*), Carolina wren (*Thryothorus ludovicianus*), American crow (*Corvus brachyrhynchos*), common grackle (*Quiscalus quiscula*), eastern bluebird (*Sialia sialis*), barn swallow (*Hirundo rustica*), yellow-throated warbler (*Dendroica dominica*), pileated woodpecker (*Dryocopus pileatus*), and red-shouldered hawk (*Buteo lineatus).*

No terrestrial mammals were observed during the site visit. Evidence of mammal activity includes raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and white-tailed deer (*Odocoileus virginianus*) tracks. Other mammal species expected to occur within the forested portion of the project study area include gray squirrel (*Sciurus carolinensis*) and red bat (*Lasiurus borealis*).

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles and amphibians, which may occur within the forest, include eastern box turtle (*Terrapene Carolina*), five-lined skink (*Eumeces fasciatus*), southern ringneck snake (*Diadophis punctatus*), cottonmouth (*Agkistrodon piscivorus*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), and slimy salamander (*Plethodon glutinosus*).

b) Bottomland Hardwood Forest

Approximately 1.1 acres (11 percent) of the project study area is encompassed by bottomland hardwood forest (Figure 6). This community consists of a mature, secondary growth forest characterized by a closed canopy with a relatively open understory. Bottomland hardwood forest within the project study area occurs within the floodplain of Broad Creek. Bottomland hardwood forest also occurs as isolated islands within the embankments of Broad Creek.

Bottomland hardwood forest within the project study area is dominated by a canopy of bald cypress (*Taxodium distichum*), green ash (*Fraxinus pennsylvanica*), swamp cottonwood (*Populus heterophylla*), water oak, and red maple. Sapling, shrub, and sub-canopy layers include canopy species as well as elderberry (*Sambucus canadensis*) and wax myrtle (*Morella cerifera*). Herbaceous plants and vines within wet areas of this community, and especially along the streamside/riparian fringe, are poison ivy, muscadine grape, soft rush (*Juncus effuses*), arrow arum (*Peltandra virginica*), royal fern (*Osmunda regalis*), and jewelweed (*Impatiens capensis*).

Birds observed within or adjacent to the corridor are northern mockingbird and green heron (*Butorides virescens*). Other avian species expected to occur in this community are red-bellied woodpecker, tufted titmouse, blue-gray gnatcatcher, Carolina chickadee, yellow-rumped warbler, Carolina wren, fish crow (*Corvus ossifragus*), American crow, eastern bluebird, barn swallow, yellow-throated warbler, pileated woodpecker, and red-shouldered hawk.

No terrestrial mammals were observed during the site visit. Evidence of mammal activity includes raccoon, Virginia opossum, and white-tailed deer tracks. Other mammal species expected to occur within the forested portion of the project study area include gray squirrel and red bat.

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles and amphibians which may occur within the forest include eastern box turtle, five-lined skink, southern ringneck snake, cottonmouth, gray treefrog, spring peeper, and slimy salamander.

c) Disturbed/Maintained Land

Approximately 4 acres (40 percent) of the project study area is encompassed by disturbed/maintained land (Figure 6). This community includes roadside shoulders, agricultural fields, and residential lots. Within the disturbed/maintained areas, grasses and herbs dominate the vegetation. Representative herbaceous and grass species include clover (*Trifolium* sp.), wild onion (*Allium canadense*), goldenrod (*Solidago* sp.), multi-flora rose (*Rosa multiflora*), common plantain (*Plantago major*), buttercup (*Ranunculus* sp.), wild strawberry (*Fragaria* sp.), and dandelion (*Taraxicum officionale*).

Birds observed within disturbed/maintained land include the northern cardinal, American crow, common yellowthroat (*Geothlypis trichas*), field sparrow (*Spizella pusilla*), and turkey vulture (*Cathartes aura*). Other bird species expected to be found within the disturbed/maintained portion of the project study area include northern mockingbird, red-tailed hawk (*Buteo jamaicensis*), brown thrasher (*Toxostoma rufum*), and American goldfinch (*Carduelis tristis*).

No terrestrial mammals were observed during the site visit. Mammal species expected to occur within the open portion of the project study area include least shrew (*Cryptotis parva*), eastern mole (*Scalopus aquaticus*), meadow vole (*Microtus pennsylvanicus*), hispid cotton rat (*Sigmodon hispidus*), and eastern cottontail (*Sylvilagus floridanus*).

No terrestrial reptile or amphibian species were observed during the site visit. Terrestrial reptiles and amphibians which may occur within maintained/disturbed land include eastern box turtle, six-lined racerunner (*Cnemidomorphorus sexlineatus*), eastern garter snake (*Thamnophis sirtalis*), northern black racer (*Coluber constrictor*), and five-lined skink.

Many of these wildlife species are adaptable and can eat a wide variety of plant and animal material when the preferred food is absent. Many of these species can be found within disturbed areas, brushy edges of the forest, within heavy underbrush, or amongst shrubby plants. Migration between communities of the project study area may be frequent based on the needs of each species for food, cover, protection from predators, and nesting.

2. Aquatic Communities

Aquatic or semi-aquatic reptiles and amphibians expected to occur within the project study area include cottonmouth, green frog (*Rana clamitans*), yellowbelly slider (*Trachemys scripta scripta*), snapping turtle (*Chelydra serpentina*), redbelly watersnake (*Nerodia erythrogaster erythrogaster*), eastern musk turtle (*Sternotherus odoratus*), and two-lined salamander (*Eurycea bislineata*).

No sampling was undertaken in Broad Creek to determine fishery potential. Visual surveys of Broad Creek revealed the presence of fish. Fish species expected to occur in Broad Creek include American shad (*Alosa sappidissima*), white perch (*Morone americana*), striped bass (*Morone saxatilis*), American eel (*Anguilla rostrata*), alewife (*Alosa pseudoharengus*), and inland silverside (*Menidia beryllina*). Potential game fish that may be present within the project study area include redbreast sunfish (*Lepomis auritus*) and yellow perch (*Perca flavescens*).

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles which may occur within the study corridor include eastern box turtle (*Terrapene carolina*), Carolina anole (*Anolis carolinensis*), eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), broadhead skink (*Eumeces laticeps*), worm snake (*Carphophis amoenus*), rat snake (*Elaphe obsoleta*), eastern kingsnake (*Lampropeltis getula*), eastern garter snake (*Thamnophis sirtalis*), copperhead (*Agkistrodon contortrix*), little grass frog (*Limnaoedus ocularis*), southern toad (*Bufo terrestris*), and slimy salamander (*Plethodon cylindraceus*).

3. Summary of Anticipated Impacts

The proposed bridge replacement is expected to result in permanent impacts to plant communities. Permanent impacts are considered to be those impacts that occur within the proposed cut-fill limits. Plant communities within the project study area were delineated to

determine the approximate area and location of each community (Figure 6). A summary of potential impacts to each plant community is presented in Table 2.

Table 2. Plant Communities Within Cut/Fill lines of Alternative A

Plant Community	Permanent Impacts*
Mixed Hardwood/ Pine Forest	<0.1
Bottomland Hardwood Forest	<0.1
Maintained/Disturbed	0.4
Total	**0.4**

*Areas are given in acres

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. A small area of natural plant community is expected to be permanently impacted by the proposed project.

Due to the limited extent of infringement on natural communities, the proposed bridge replacement will not result in significant loss or displacement of known terrestrial animal populations. No significant habitat fragmentation is expected since most improvements will be restricted to existing roadside margins. Construction noise and associated disturbances will have short-term impacts on avifauna and migratory wildlife movement patterns. However, long-term impacts are expected to be negligible.

The North Carolina Wildlife Resources Commission (WRC) has developed a Significant Aquatic Endangered Species Habitat database (1998) to enhance planning and impact analysis in areas proposed by WRC as being critical due to the presence of Endangered or Threatened aquatic species. No Significant Aquatic Endangered Species Habitat occurs within or near the project study area.

Broad Creek is a Coastal Plain, estuarine water system, and anadromous fish passage should be considered in the timing of any proposed in-stream activities associated with the bridge replacement. Six anadromous fish species have been documented to occur in Beaufort County (Menhinick 1991), and eight anadromous fish species have distributions which include the Tar-Pamlico River Basin (Rohde *et al.* 1994, Menhinick 1991). Design and scheduling of bridge replacement should avoid the necessity of in-stream activities during the spring migration period for anadromous fish species (February 15 to September 30) within the Pamlico River and its tributaries, including Broad Creek.

Special consideration needs to be given concerning spawning migration of shortnose sturgeon (*Acipencer brevicauda*). This anadromous fish species is federally protected and listed as Endangered. Although shortnose sturgeon is not listed by the USFWS as occurring in Beaufort County, there is potential that this section of Broad Creek provides suitable migratory passage and spawning habitat for this species during late summer to early winter.

To minimize fishing and non-fishing activities that adversely affect marine fisheries, areas of Essential Fish Habitat (EFH) afford limited protection under the Magnuson-Stevens Act of 1996 (16 U.S.C. 1801 *et. seq.*). EFH has been broadly defined by congress as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Fishing and

non-fishing related activities that can adversely affect fisheries include fishing gear, dredging, filling, agricultural and urban runoff, and point-source pollution discharge. According to the National Marine Fisheries Service (NMFS) guidance manual (2001), the water column and the soft bottom substrate of Broad Creek at Bridge No. 104 provide EFH for managed species of fish and shrimp. Therefore, the temporary fill (68 cubic yards) associated with replacement of Bridge No. 104 will adversely affect existing EFH. There is also potential for EFH to be impacted from bridge pile insertion, bridge runoff, and construction related sediment erosion. Utilization of BMPs is recommended in an effort to minimize impacts.

There is potential for concrete deck and bent components of the bridge to be dropped into waters of the United States during removal of the existing bridge. The resulting, temporary fill associated with the deck and bents is approximately 68 cubic yards. Upon completion of construction, temporary impacts associated with construction activities will be restored to pre-project conditions. This project can be classified as Case 2, where no in-stream work may occur during moratorium periods due to anadromous fish migration.

Potential down-stream impacts to aquatic habitat will be avoided by bridging Broad Creek to maintain regular flow and stream integrity. Short-term impacts associated with turbidity and suspended sediments will 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 embankments of Broad Creek and UT 1 are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR section 328.3). NWI mapping indicates that Broad Creek exhibits characteristics of a tidal, open water, riverine system with an unknown bottom, that is Permanent Tidal (R1OWV; Cowardin *et al.* 1979). Field investigations indicate that, within the project study area, Broad Creek is a tidal, riverine system subject to wind tides, with an unconsolidated bottom of mud that is Permanent Tidal (R1UB3V). Field investigations indicate that, within the project study area, UT 1 is a tidal, riverine system subject to wind tides, with an unconsolidated bottom of mud that is Permanent Tidal (R1UB3V).

Wetlands adjacent to Broad Creek and UT 1 are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR section 328.3). These areas 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 (DOA 1987) (Appendix C). NWI mapping and field investigations indicate that, within the project study area, wetlands adjacent to Broad Creek exhibit characteristics of palustrine forested systems with broad-leaved deciduous and needle-leaved evergreen vegetation that is seasonly flooded (PF01/4C; Cowardin *et al.* 1979). These wetlands satisfy the three-parameter approach outlined by the ACE (DOA 1987). Wetland vegetation species are bald cypress, green ash, swamp cottonwood, water oak, red maple, elderberry, wax myrtle, poison ivy, muscadine grape, soft rush, arrow arum, royal fern, and jewelweed. Evidence of wetland hydrology includes saturated soils, standing water, and oxidized rhizospheres.

All project study area wetlands occur within bottomland hardwood forest. Wetland 1 (Figure 6) supports an immature shrub/scrub community on the west side of the bridge and transitions to a

more mature, secondary growth forest on the east side of the bridge. Wetlands 2, 3, and 4 (Figure 6) occur as islands within the banks of Broad Creek and support a mature, secondary growth forest. Wetlands 5, 6, and 7 (Figure 6) support a mature, secondary growth forest, as well as significant amounts of streamside/riparian fringe. Wetland 8 (Figure 6) is a small, open, wetland area that supports mostly herbaceous plants, predominantly jewelweed.

No impacts to project study area streams or wetlands are expected to occur as a result of the proposed project. An impact to 341 linear feet of riparian buffer within maintained/disturbed land is expected to occur as a result of the proposed bridge replacement. Impacts to riparian buffer that occur as a result of the proposed project are expected to be **Exempt** from the buffer rule given land use remains the same within these areas (impacts to riparian buffer are "Exempt" in areas where land uses are present and on-going).

2. Permits

a). Section 404 of the Clean Water Act

This project will be processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The United States Army Corps of Engineers (USACE) has made available Nationwide Permit (NWP) No. 23 (67 FR 2082; January 15, 2002) for CE's due to expected minimal impact. 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 No. 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 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 NWP No. 23, 33, and 3 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit 031 and its associated General 401 Water Quality Certification (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 will 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 68 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.

d). Coast Guard

According to a letter received from the U.S. Coast Guard (USCG) dated June 22, 2004, this reach of Broad Creek is considered legally navigable for Bridge Administration purposes. This reach of Broad Creek also meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but are not actually navigated by other than small boats. The Commandment of the Coast Guard has given advance approval to the construction or repair of bridges across such waterways; therefore, Section 10 permit for structures and/or work in or affecting navigable waters of the United States will not be required for this project.

e). Coastal Area Management Act (CAMA)

The proposed project will occur in one (Beaufort) of the 20 counties covered by the Coastal Area Management Act (CAMA). Because the project area contains open water within a CAMA county, a N.C. Division of Coastal Management (DCM) representative will need to verify the presence or absence of a Public Trust Waters Area of Environmental Concern (AEC). If the project area contains Public Trust Waters AECs and replacement of the bridge avoids impacts to AECs, the DCM will review the permit application for CAMA consistency prior to construction. If an AEC is proposed to be impacted, a CAMA Major Permit for bridge replacement may be applicable.

f). National Marine Fisheries Service

NCDOT, because it is a state agency, is not required to consult with National Marine Fisheries Service (NMFS) concerning projects that adversely affect EFH; however, NMFS is required to make conservation recommendations to NCDOT concerning these actions. Pursuant to section 305 (b) (2) of the Magnuson-Stevens Act, federal agencies providing funding to projects that adversely affect EFH should consult with NMFS to develop EFH conservation recommendations on a programmatic level. NMFS should supply the state agency with the conservation recommendations developed by the associated federal agency consultation (NMFS 2001).

3. Riparian Buffer Protection Rules for the Tar-Pamlico River Basin

The Nutrient Sensitive Waters Management Strategy for the Protection and Maintenance of Riparian Buffers for the Tar-Pamlico River Basin (15A NCAC 02B .0259) provides a designation for uses that cause impacts to riparian buffers within the Tar-Pamlico Basin. The Tar-Pamlico Basin Rule applies to 50-foot wide riparian buffers (measured parallel to the stream) directly adjacent to surface waters in the Tar-Pamlico River Basin.

Changes in land use within the buffer area are considered to be buffer impacts. Land use changes within the riparian are defined as being **Exempt, Allowable, Allowable with Mitigation,** or **Prohibited**. The **Exempt** designation refers to uses allowed within the buffer. The **Allowable** designation refers to uses that may proceed within the riparian buffer provided there are no practical alternatives, and that written authorization from the DWQ is obtained prior to project development. The **Allowable with Mitigation** designation refers to uses that are allowed, given there are no practical alternatives and appropriate mitigation plans have been approved. The **Prohibited** designation refers to uses that are prohibited without a variance. Exemptions to the riparian buffer rule include the footprint of existing uses that are present and ongoing.

Impacts to areas and linear distances of riparian buffer occurring within the proposed cut/fill limits are shown in Table 3. Riparian buffer areas within the existing alignment footprint will be **Exempt** from the buffer rule given land use remains the same within these areas.

The chosen alternative proposes to undertake uses designated as **Exempt** and **Allowable with Mitigation** under the Tar-Pamlico River Basin Rule for the protection of riparian buffers. Approximately 507 linear feet will fall under the **Exempt** category because the footprint of existing uses that are present and ongoing will remain the same (roadside shoulder). The remaining 163 linear feet of permanent impacts to riparian buffer (mixed hardwood/pine forest) will fall under the **Allowable with Mitigation** category. A request for a "no practical alternatives" determination will have to be made to DWQ in order to obtain a Certificate of Authorization.

As this reach of Broad Creek has potential as a travel corridor for migratory fish, this project can be classified as Case 2, where no work at all will be allowed during moratorium periods associated with anadromous fish migration.

4. 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 of median widths, right-of-way widths, fill slopes, and/or road shoulder widths. All efforts will be made to decrease impacts to surface waters.

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 1.0 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.

NCDOT will propose compensatory mitigation for cumulative impacts exceeding 0.1 acre. However, utilization of BMPs is recommended in an effort to minimize impacts. A final determination regarding wetlands or stream mitigation for impacts to waters of the U.S. rests with DCM, USACE and DWQ.

Riparian buffer mitigation will be considered due to extent of potential impacts resulting from bridge replacement. A final determination regarding riparian buffer mitigation rests with DWQ.

F. Protected Species

1. Federally Protected Species

Species with the federal classification of Endangered (E), Threatened (T), Experimental (Exp.), Threatened due to Similarity of Appearance (T [S/A]), 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). The term "Threatened due to Similarity of Appearance" is defined as a species which is not "Endangered" or "Threatened", but "closely resembles an Endangered or Threatened species" (16 U.S.C. 1532). Federally protected species known to occur in Beaufort County are listed in Table 3 and described below.

Table 3. Federally Protected Species

Common Name	Scientific Name	Biological Conclusion	Federal Status
Red wolf	*Canis rufus*	No Survey Required	Exp
West Indian manatee	*Trichechus manatus*	May Affect, Not Likely to Adversely Affect	E
Bald Eagle	*Haliaeetus leucocephalus*	May Affect, Not Likely to Adversely Affect	T
Red-cockaded woodpecker	*Picoides borealis*	No Effect	E
Kemp's ridley sea turtle	*Lepidochelys kempii*	No Effect	E
Sensitive jointvetch	*Aeschynomene virginica*	No Effect	T
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	No Effect	E

T- Threatened, E- Endangered, Exp- Experimental

Canis rufus **(Red Wolf)**
Experimental
Family: Canidae
Date Listed: November 19, 1986

The red wolf is a medium-sized canine that resembles the coyote but is larger and more robust. Adults measure 4.5 to 5.5 feet in length, and weigh from 35 to 90 pounds. This species is slightly smaller than the gray wolf (*C. lupus*) with a more slender and elongated head (FWS 1990), and longer legs (Webster *et al.* 1985). Its pelage is shorter and coarser than in any race of *C. lupus* (FWS 1990) and individuals vary in color from reddish to gray to black (Webster *et al.* 1985). The red wolf prefers habitat that provides large amounts of cover, including upland and swamp forests, coastal marshes, and prairies (Webster *et al.* 1985). Small- to medium-sized mammals are normal prey items, but the red wolf is also heavily dependent on white-tailed deer (FWS 1990). The red wolf was once found throughout the southeastern United States, but was extirpated from most of its range by 1920. Captive-bred animals were released at Alligator River National Wildlife Refuge in the fall of 1987, and successful reproduction resulted in 26-30 adults by August 1993 (USFWS 1990).

The red wolf is considered by USFWS to be an experimental, nonessential endangered species because the local population has been recently introduced into its historic range and habitat. This species is considered "nonessential" because loss of the experimental population is not expected to "appreciably reduce the likelihood of the survival of the species in the wild" (CFR 50, Part 17.80). The red wolf is considered by USFWS to be Threatened on public land, for consultation purposes, and as a species Proposed for listing on private land. Therefore, with respect to the proposed project, the red wolf is considered as Proposed for listing.

BIOLOGICAL CONCLUSION: **NO SURVEY REQUIRED**

The project study area does contain very small areas of suitable habitat for red wolf; however, based on the limited nature of this project concerning impacts to forested areas, and the proximity to a concentration of human development and activity, this project is not likely to adversely affect the red wolf. NHP records have no documentation of this species within 1 mile of the project study area.

Trichechus manatus **(West Indian Manatee)**
Endangered
Family: Trichechidae
Date Listed: March 11, 1967

The West Indian Manatee is a large, gray or brown aquatic mammal that averages 10 to 13 feet in length and weighs up to 1,000 pounds. During summer months manatees migrate from their Florida wintering areas to as far north as coastal Virginia. These mammals inhabit warm waters, both fresh and salt, where their diet consists mostly of aquatic vegetation (Webster *et al.* 1985). The manatee rarely occurs in North Carolina inland waters, although there have been sightings in the Cape Fear and Neuse Rivers.

The USFWS has developed recommendations for general construction activities in aquatic areas that may be used by the manatee. The USFWS directs that construction that can be completed within a seven-month period should take place between November and May. The USFWS also makes a series of recommendations pertaining to construction and the manatee (see Appendix B), some of which are summarized as follows: 1) construction managers should advise all

construction personnel to be aware of the possibility of manatee appearance and the legal obligation to avoid harassment of the species; 2) construction personnel will watch for manatee sightings and be prepared to shut down equipment if one is made; 3) any sightings or contact with manatees will be reported to the appropriate natural resource agencies (USFWS, North Carolina Wildlife Resources Commission); 4) a sign will be posted providing instructions to equipment operators in case a manatee is sighted; 5) special steps will be taken on site concerning operations during the no-blast moratorium period, such as guidelines for operating water craft and placement of siltation barriers.

BIOLOGICAL CONCLUSION: MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT

Based on available information, the manatee is not expected to occur within the project study area during the period from November to May, and is unlikely to occur from June to October. To avoid impacts to manatee, all construction associated with the project should be conducted under the above-mentioned guidelines prepared by the USFWS (See Appendix D). Assuming these guidelines are adhered to during construction activities, this project may affect, but is not likely to adversely affect West Indian manatee. In a letter dated May 5, 2006 the USFWS concurred with the biological conclusion that this project may affect, but is not likely to adversely affect the West Indian Manatee.

***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 patch, and black-and-white barred back. Males often have red markings (cockades) behind the eye, but the cockades may be absent or difficult to see (Potter *et al.* 1980). Primary habitat consists of mature to over-mature southern pine forests dominated by loblolly, long-leaf (*Pinus palustris*), slash (*P. elliotii*), and pond (*P. serotina*) pines (Thompson and Baker 1971). Nest cavities are constructed in the heartwood of living pines, generally older than 60 years, which have been infected with red-heart disease. Nest cavity trees tend to occur in clusters, which are referred to as colonies (FWS 1985). The woodpecker excavates 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 that have been maintained by frequent natural fires serve as ideal nesting and foraging.

BIOLOGICAL CONCLUSION: NO EFFECT

Plant communities within the project study area include 1) roadside/disturbed land and 2) mixed hardwood/cypress/pine forest. Forested, upland areas within the project study area support hardwoods in the canopy and have a moderately dense shrub layer. Plant communities within the project study area lack the open shrub layer of pine savanna habitat required by this species for foraging. In addition, the project study area does not include pines that are older than 60 years that are required for nesting. NHP records indicate that red-cockaded woodpecker has not been documented to occur within 1 mile of the project study area, and the project study area contains no suitable habitat for this species. Based on a NHP record search and habitat types within the project study area, this project will have no effect on red-cockaded woodpecker.

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

The bald eagle is a large raptor with a wingspan greater than 6.0 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. Bald eagles forage over large bodies of water and utilize adjacent trees for perching (Hamel 1992). Disturbance activities within a primary zone extending 750 to 1,500 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 mile from a nest tree, construction and land-clearing activities should be restricted to the non-nesting period. The FWS also recommends avoiding alteration of natural shorelines where bald eagles forage, and avoiding significant land-clearing activities within 1,500 feet of known roosting sites.

BIOLOGICAL CONCLUSION: MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT

The bald eagle typically nests in large trees near open water. The project study area includes open water and has some large trees that may be suitable for nesting or roosting by bald eagle. NHP records have no documentation of this species within 1 mile of the project study area. Based on the availability of open water and large trees within the project study area, a survey was conducted by canoe along all shorelines within 1,500 feet of Bridge No. 104. The survey identified no bald eagle nests within this area, and no bald eagles were observed during field investigations; therefore, this project may affect, but is not likely to adversely affect bald eagles. In a letter dated May 5, 2006 the USFWS concurred with the biological conclusion that this project may affect, but is not likely to adversely affect the bald eagle.

Lepidochelys kempi **(Kemp's ridley sea turtle)**
Endangered
Family: Cheloniidae
Date Listed: December 2, 1970

The Kemp's ridley sea turtle is the smallest of the sea turtles. The carapace length ranges from 23 to 30 inches and the weight ranges from 79 to 110 pounds. This species is generally considered to be the most endangered of sea turtles in the world (Palmer and Braswell 1995). Distribution ranges from the Gulf of Mexico and the east coast, to Nova Scotia and Europe. In addition to its small size, this species is discernible by the heart shaped carapace and gray coloration. Kemp's ridley prefers shallow coastal waters, including sounds and the lower portions of large rivers, where it feeds on crabs, shrimp, snails, clams, and some saltwater plants. Nearly all members of this species are believed to nest on a short strand of ocean beach in the state of Tamaulipas, Mexico. The nearest suitable nesting habitat for this species is the Outer Banks ocean beaches (approximately 60 miles from the project study area).

BIOLOGICAL CONCLUSION: NO EFFECT

A review of the NCNHP database of rare species and unique habitats revealed no existing records of Kemp's ridley sea turtle within 30 miles of the project study area. There is no suitable nesting habitat for Kemp's ridley sea turtle in the project study area; the nearest suitable habitat for this species is the Outer Banks ocean beaches (approximately 60 miles from the project study area). Based upon the lack of habitat for Kemp's ridley sea turtle and NHP records for Beaufort County, this project will have no impact on this species.

***Aeschynomene virginica* (Sensitive jointvetch)**
Threatened
Animal Family: Fabaceae
Date Listed: May 20, 1992

Sensitive jointvetch is a robust, bushy-branched, annual legume often exceeding 3 feet in height. Young stems have bristly hairs with large, swollen bases (Leonard 1985). The alternate, compound leaves are even-pinnate, approximately 1 to 2 inches wide, with 30 to 56 toothless leaflets (Radford *et al.* 1968). Flowers are bright greenish-yellow with red veins, about 0.5 inch long, and are subtended by bracts with toothed margins (Leonard 1985). Flowers are produced on few-flowered racemes from July to October. The jointed legume (loment) is about 2 inches long, has 6 to 10 segments, and a 0.5 to 1.0 inch long stalk.

Sensitive jointvetch occurs in the intertidal zone near the upper limit of tidal fluctuation. It seems to prefer sparsely-vegetated areas where annuals predominate (FWS 1995a). Habitat for this species in North Carolina consists of moist to wet coastal roadside ditches and moist fields that are nearly tidal (FWS 1995a); especially in full sun (Leonard 1985). Associated plants listed for this jointvetch in North Carolina are all fresh water species. Sensitive jointvetch is not expected to be found in association with salt-tolerant species such as saltmarsh cordgrass or giant cordgrass (Rouse 1994). This species seems to favor microhabitats where there is a reduction in competition from other plant species, and usually some form of soil disturbance (FWS 1995a).

BIOLOGICAL CONCLUSION: **NO EFFECT**

Wetland areas within the project study area are within the upper reach of intertidal, estuarine systems. Within the project study area, this area supports salt intolerant plant species including soft rush, arrow arum, royal fern, and jewelweed. Wetland fringes also receive full sun exposure. NHP records indicate that sensitive jointvetch has not been documented to occur within 1 mile of the project study area. A systematic plant-by-plant survey for sensitive jointvetch was conducted on August 19, 2004. No specimens of sensitive jointvetch were observed. Based on NHP records and a systematic plant-by-plant survey, this project will have no effect on sensitive jointvetch.

***Lysimachia asperulaefolia* (Rough-leaved loosestrife)**
Endangered
Family: Primulaceae
Date Listed: June 12, 1987

The rough-leaved loosestrife is a rhizomatous perennial herb that grows to 2 feet in height. Plants are dormant in the winter, with the first leaves appearing in late March or early April. The triangular leaves typically occur in whorls of 3 or 4. Leaves are typically sessile, entire, 0.3 to 0.4 inch wide, broadest at the base, and have three prominent principal veins. Five-lobed yellow flowers, approximately 0.6 inch across, are produced on a loose terminal raceme 1 to 4 inches long (Godfrey and Wooten 1981). Rough-leaved loosestrife is reported to flower from late May

to June (USFWS 1995b). Seeds are formed by August, but the small, rounded capsules do not dehisce until October. Habitat typical of rough-leaved loosestrife consists of the wet ecotone between longleaf pine savannas and wet, shrubby areas, where lack of canopy vegetation allows abundant sunlight into the herb layer. Kral (1983) indicates that rough-leaved loosestrife is typically found growing in black sandy peats or sands with a high organic content. This species is fire maintained and suppression of naturally occurring fires has contributed to the loss of habitat in our state. In the absence of fire, rough-leaved loosestrife may persist for several years in an area with dense shrub encroachment; however, reproduction is reported to be suppressed under these conditions, leading to eventual local extirpation (USFWS 1995b). Because rough-leaved loosestrife is an obligate wetland species (Reed 1988), drainage of habitat also has an adverse effect on the plant.

BIOLOGICAL CONCLUSION: **NO EFFECT**

Wetland areas within the project study area which provide suitable habitat for rough-leaved loosestrife are disturbed/maintained areas and wetland edges which receive abundant sunlight and lack a shrub or canopy layer. NHP records indicate that rough-leaved loosestrife has not been documented to occur within 1 mile of the project study area. A systematic plant-by-plant survey for rough-leaved loosestrife was conducted on June 3, 2004. No specimens of rough-leaved loosestrife were observed. Based on NHP records and a systematic plant-by-plant survey, this project will have no effect on rough-leaved loosestrife.

2. Federal Species of Concern

The February 5, 2003 USFWS list includes a category of species designated as "Federal species of concern" (FSC) (Table 5). 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. NCNHP files have no documentation of FSC listed species within the project study area or within 1 mile of the project study area.

Table 4. Federal Species of Concern

Common Name	Scientific Name	Potential Habitat	State Status**
Eastern Henslow's sparrow	*Ammodramus henslowii susurrans*	No	SR
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	Yes	T
Carolina gopher frog *	*Rana captio capito* *	No	T
"Neuse" madtom	*Noturus furiosus*	Yes	SC
Pinewoods Shiner	*Lythrurus matutinus*	No	SR
Southern hognose snake	*Heterodon simus*	No	SR
Atlantic pigtoe	*Fusconaia masoni*	No	T
Green floater	*Lasmigona subviridis*	No	E
Tar River crayfish	*Procambrus medialis*	Yes	W-2
Yellow lampmussel	*Lampsilis cariosa*	No	E
Venus flytrap	*Dionaea muscipula*	No	SR-L, SC
Carolina asphodel *	*Tofieldia glabra* *	Yes	W-1

* Historic record – this species was last observed in Beaufort or Pitt County more than 50 years ago
**State Status Codes - SC: Special Concern; T: Threatened; SR-L: Significantly rare and the range of the species is limited to North Carolina and adjacent states; W-1: rare and declining; W-2: rare, but relatively secure (Amoroso 2002, LeGrand and Hall 2001)

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

A field survey of the Area of Potential Effects (APE) was conducted by NCDOT architectural historians on July 30, 2003. All structures within the APE were photographed, and later reviewed with the North Carolina State Historic Preservation Office (HPO). In a report dated December 2004 the farm adjacent to the project in the southeast corner was determined eligible for the National Register. HPO concurred with the eligibility of the Candy-Alligood Farm in their memorandum of February 3, 2005. In a concurrence meeting on June 14, 2005 NCDOT, HPO, and FHWA agreed that the project would have No Adverse Effect to the property since only temporary construction easements were required and a form was signed to this effect. Copies of the relevant correspondence are included in Appendix A.

C. Archaeology

The HPO, in a memorandum dated July 14, 2005 recommended no archaeological survey on the project as currently proposed. There is little likelihood of any National Register archaeological sites occurring in the project area because of the disturbed landforms, therefore the SHPO recommends no further action. A copy of the HPO memorandum is included 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). There are no prime or important farmlands in the immediate vicinity of the proposed bridge; therefore the Farmland Protection Policy does not apply.

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

This project is located in Beaufort 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, no regulated or unregulated landfills or dumpsites with in the project area. No facility with underground storage tanks (UST) was identified in the project vicinity.

Beaufort County is a participant in the Federal Flood Insurance Program. The bridge is located within a Detailed Study Area, but there is no floodway delineated in this area. The new structure should be designed to match or lower the existing 100-year storm elevation upstream of the roadway. Since the proposed replacement for Bridge No. 104 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. Since the proposed replacement for Bridge No. 104 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 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. PUBLIC INVOLVEMENT

A mailing list was developed based upon property owners located near the bridge. Approximately twenty names are included on the list. Newsletters were mailed early in the planning process to the nearby property owners and local officials. A copy of the newsletter is attached in Appendix B. No responses for or against replacing the bridge were received.

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 Coastal Management*
NC Division of Marine Fisheries

Regional and Local Agencies

City of Washington
Beaufort County Schools
Beaufort County Schools –Transportation Department
Beaufort County*
Beaufort County EMS
Mid East Commission 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 A replaces the existing bridge in the existing location and minimizes natural environment impacts.

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

Response: An off-site detour will be utilized for this project.

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 September 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 the final bridge length will be determined during final design.

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. 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."

Response: The bridge will be replaced in the existing location and an in-water work moratorium will be in effect from February 15 to September 30 due to Anadromous Fish in the project area.

3. Mid-East Rural Planning Organization

Comment: "Doing the project during the winter months might minimize the traffic load having to use the by-pass."

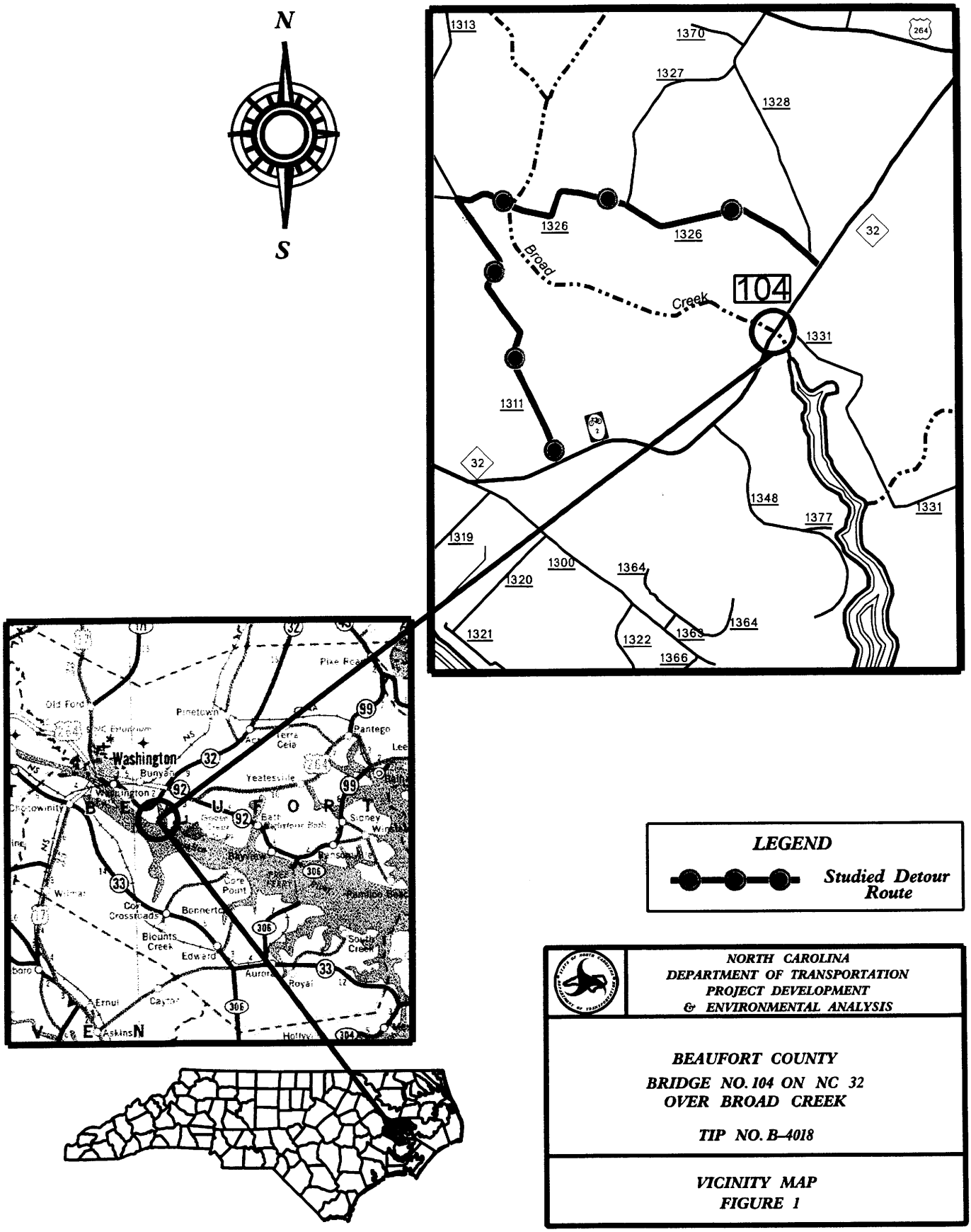
Response: This will be coordinated during final design.

4. North Carolina Division of Coastal Management

Comment: "...the following projects will impact CAMA Area of Environmental Concern (AEC) and will require CAMA permits."

Response: NCDOT will coordinate with the DCM during final design to obtain the permits necessary.

FIGURES



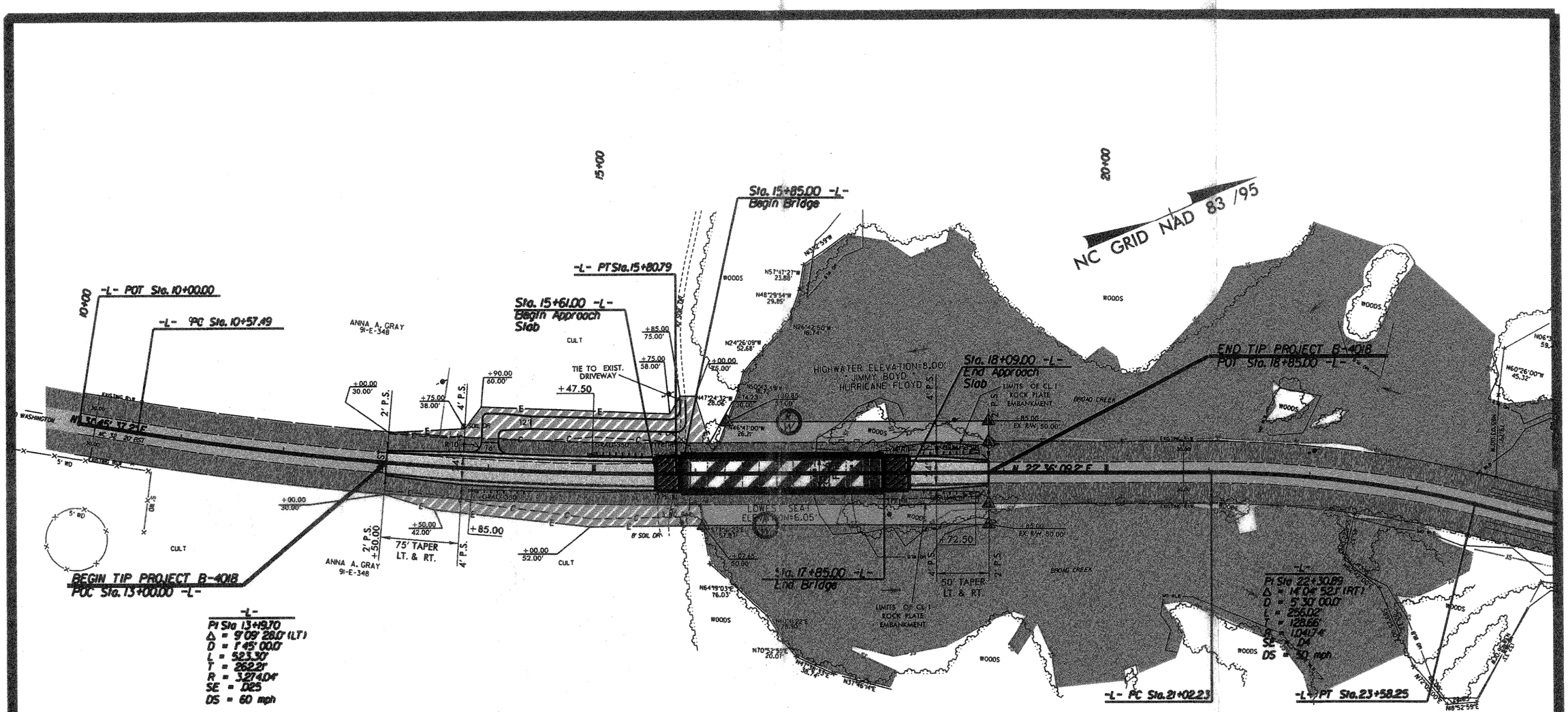
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS

BEAUFORT COUNTY

BRIDGE NO. 104 ON NC 32
OVER BROAD CREEK

TIP NO. B-4018

VICINITY MAP
FIGURE 1



LEGEND

- 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
- BUILDINGS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

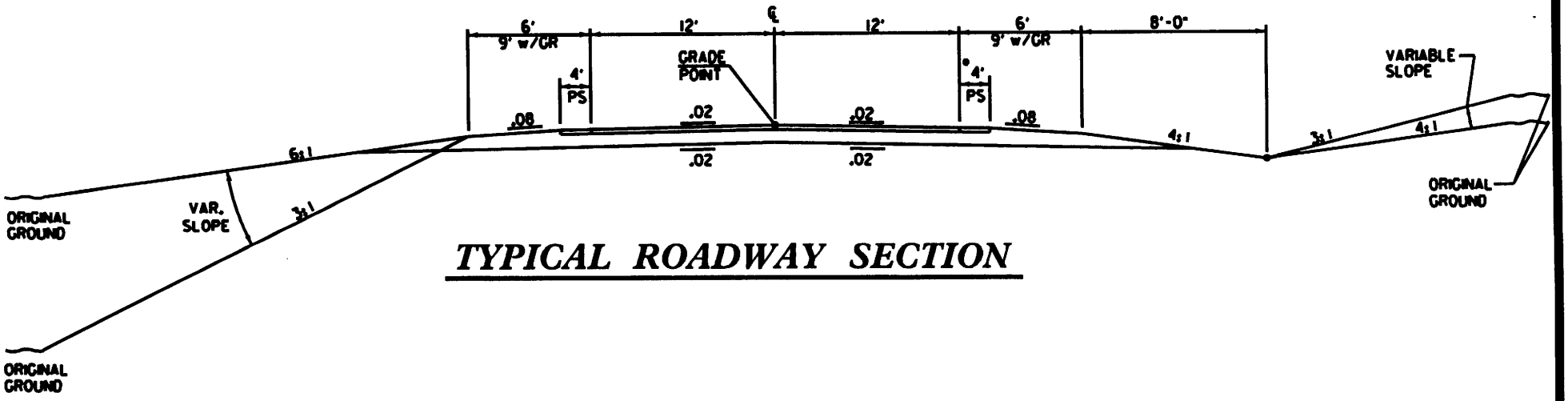
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

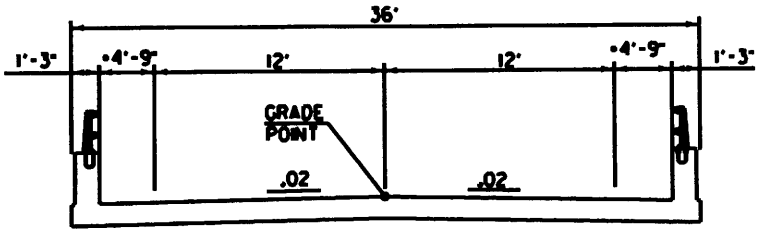
BEAUFORT COUNTY
BRIDGE NO. 104 ON NC 32 OVER BROAD CREEK
TIP NO. B-4018

1 " = 100'

ALTERNATE A
(PREFERRED)
FIGURE 2



TYPICAL ROADWAY SECTION



TYPICAL BRIDGE SECTION

EXISTING BRIDGE LENGTH IS 172 FT.

• - BICYCLE ROUTE

TRAFFIC DATA

ADT 2002	*3,000*	*LOS A*
ADT 2004	*3,200*	*LOS A*
ADT 2030	*5,600*	*LOS B*
DUAL	*4%*	
TTST	*2%*	

FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR

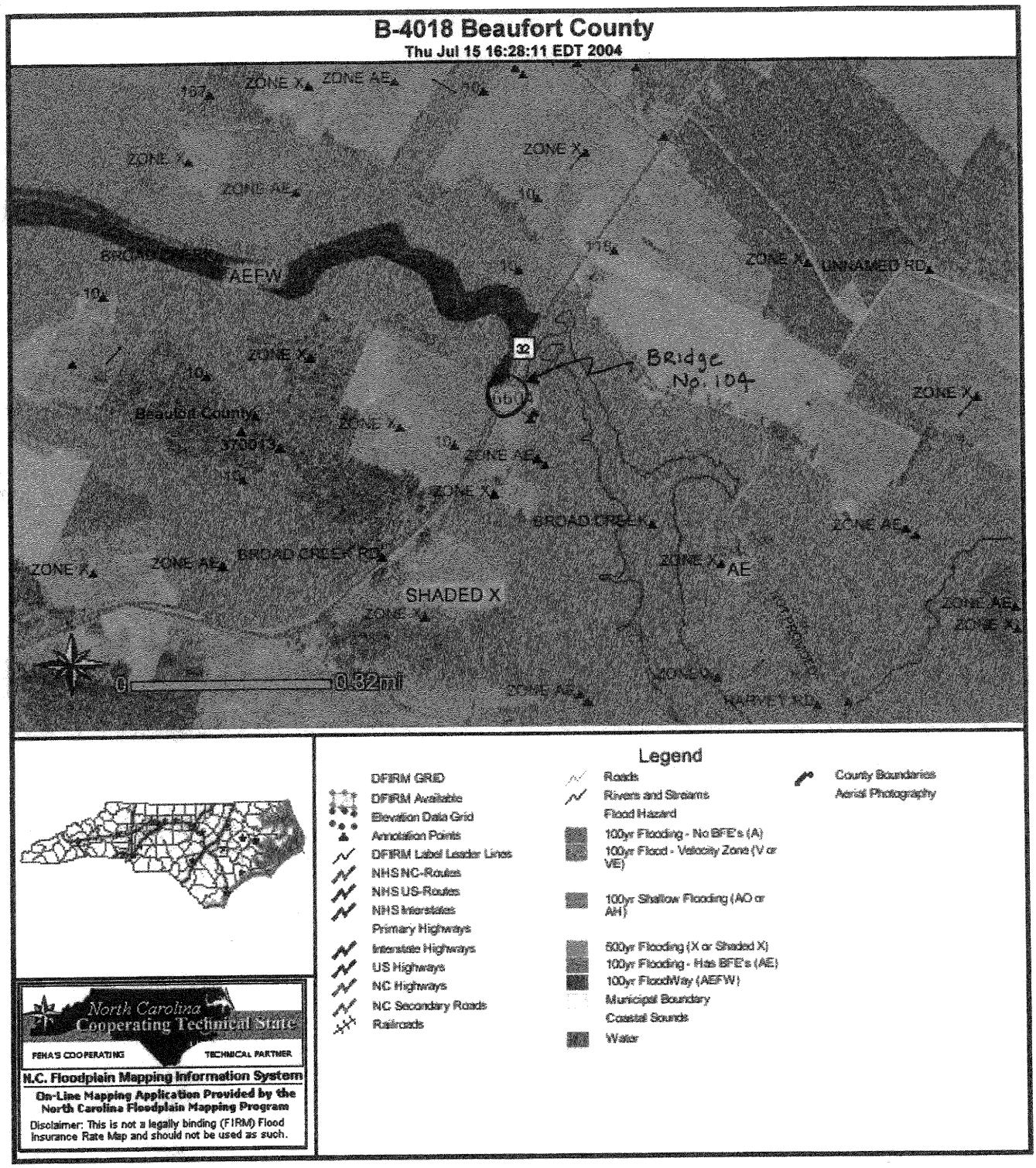
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPEMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

BEAUFORT COUNTY

BRIDGE NO. 104 ON NC 32
OVER BROAD CREEK

B-4018

FIGURE 4

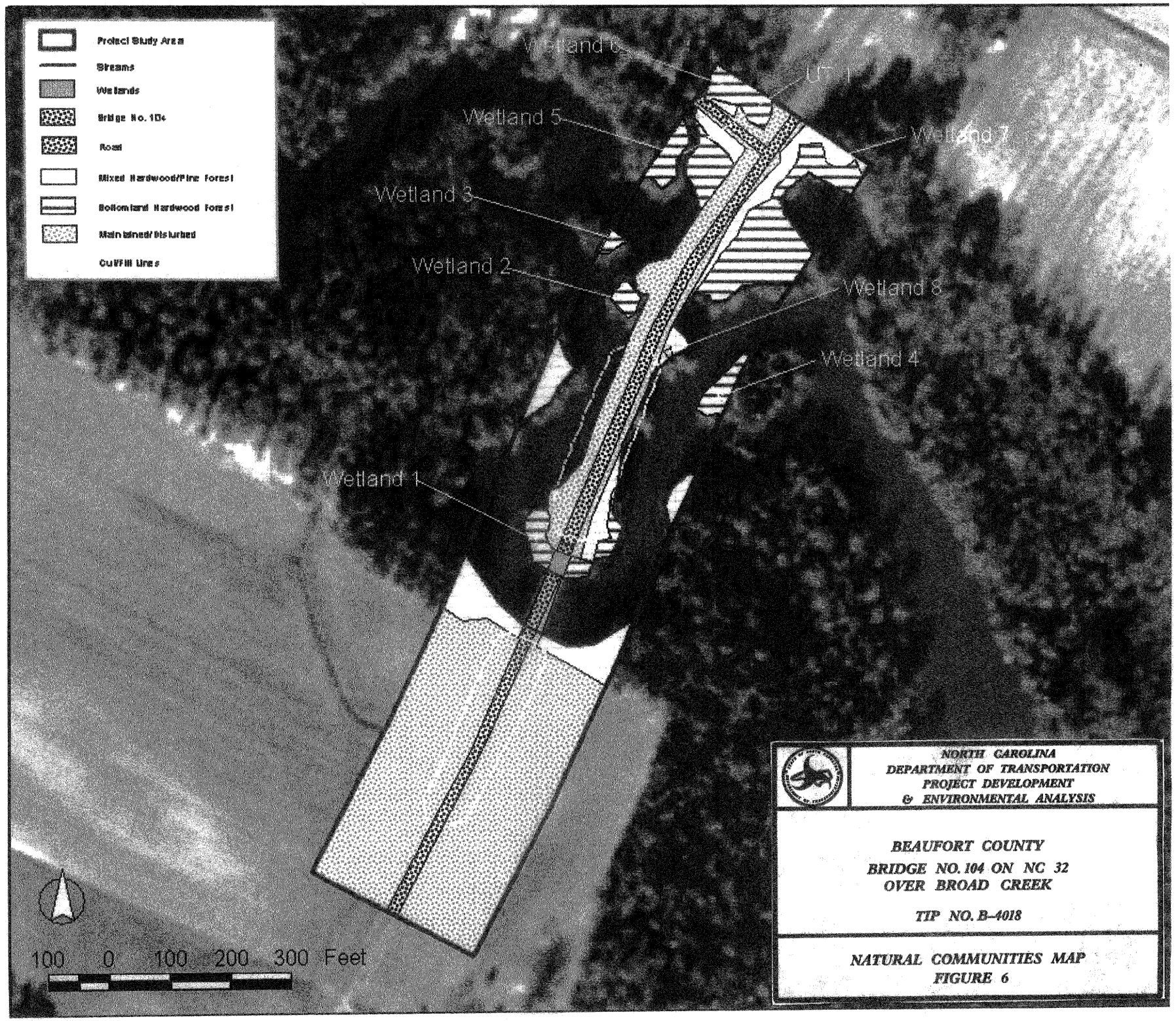


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS

BEAUFORT COUNTY
BRIDGE NO. 104 ON NC 32
OVER BROAD CREEK

TIP NO. B-4018

FEMA FLOODPLAIN MAP
FIGURE 5


Project Study Area
Streams
Wetlands
Bridge No. 104
Road
Mixed Hardwood/Pine Forest
Bottomland Hardwood Forest
Maintained/Disturbed
Cut/Fill Lines
Wetland 6
UT 1
Wetland 5
Wetland 7
Wetland 3
Wetland 2
Wetland 8
Wetland 4
Wetland 1
100 0 100 200 300 Feet
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS
BEAUFORT COUNTY
BRIDGE NO. 104 ON NC 32
OVER BROAD CREEK
TIP NO. B-4018
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

United States Department of the Interior

Stanton

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

May 5, 2006

Phil S. Harris, III, P.E.
North Carolina Department of Transportation
Project Development and Environmental Analysis
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

This letter is in response to your letter of April 26, 2006 which provided the U.S. Fish and Wildlife Service (Service) with the biological determination of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge No. 104 on NC 32 over Broad Creek in Beaufort County (TIP No. B-4018) may affect, but is not likely to adversely affect the federally protected bald eagle (*Haliaeetus leucocephalus*) and West Indian manatee (*Trichechus manatus*). In addition, NCDOT has determined that the project will have no effect on the federally protected Kemp's ridley sea turtle (*Lepidochelys manatus*), red-cockaded woodpecker (*Picoides borealis*), rough-leaved loosestrife (*Lysimachia asperulaefolia*) and sensitive jointvetch (*Aeschynomene virginica*). These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to information provided, an eagle survey was conducted within a one mile radius of the project site on March 30, 2006. No eagles or eagle nests were observed. Based on the survey results, the Service concurs with your determination that the project may affect, but is not likely to adversely affect the bald eagle.

NCDOT has committed to implementing the Service's **GUIDELINES FOR AVOIDING IMPACTS TO THE WEST INDIAN MANATEE: Precautionary Measures for Construction Activities in North Carolina Waters.** Based on this commitment and on all available information, the Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect the West Indian manatee. Please note that the above guidelines were revised in 2003 and can be found at the following website: http://nc-es.fws.gov/mammal/manatee_guidelines.pdf .

Based on the lack of habitat, the Service concurs with your determination that the project will have no effect on the Kemp's ridley sea turtle and red-cockaded woodpecker.

Based on 2004 survey results provided to the Service via facsimile on May 4, 2006 by Tyler Stanton of NCDOT, the Service concurs with your determination that the project will have no effect on rough-leaved loosestrife and sensitive jointvetch. We believe that the requirements of

section 7(a)(2) of the ESA have been satisfied. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Pete Benjamin
Ecological Services Supervisor

cc: William Wescott, USACE, Washington, NC
Brian Wrenn, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC
John Sullivan, FHwA, Raleigh, NC

U.S. Department of Homeland Security

United States Coast Guard

Commander
United States Coast Guard
Fifth Coast Guard District

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: obr
Phone: 757-398-6629
Fax: 757-398-6334
Email: GHeyer@lantd5.uscg.mil

16593
22 Jun 04

Ms. Heather Saunders
Ecoscience Corporation
1101 Haynes Street, Suite 101
Raleigh, North Carolina 27604

Dear Ms. Saunders:

This is in response to your fax letter of June 22, 2004, proposing to replace the bridge on NC 32 crossing Broad Creek, a tributary of the Pamlico River in Beaufort County, North Carolina.

Since Broad Creek is subject to tidal influence, it is considered legally navigable for Bridge Administration purposes. This waterway also meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70 advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given advance approval to the construction or repair of bridges across such waterways. Therefore, an individual permit will not be required for this project.

If you have any questions regarding this matter, please contract Mr. Gary Heyer, at the phone number or address shown above.

Sincerely,

Waverly W. Gregory, Jr.

WAVERLY W. GREGORY, JR.
Chief, Bridge Administration Branch
By direction of the Commander
Fifth Coast Guard District

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEMORANDUM

TO: Gail Grimes, P.E.
PDEA

FROM: Jennifer Cathey
Historic Architecture Section

SUBJECT: B-4018 Beaufort County
Section 106 Compliance for Historic Architecture

DATE: June 14, 2005

CC: ✓ Greg Purvis, P.E., Wang Engineering
Project File

At this morning's concurrence meeting, NCDOT Historic Architecture staff and representatives of the North Carolina Historic Preservation Office (HPO) assessed effects for the above referenced project. HPO and NCDOT agree that there is No Adverse Effect to the Candy-Alligood Farm property, which has been Determined Eligible for the National Register of Historic Places. No further compliance for Section 106 for historic architecture is required. Should the plans be modified or the scope of the project otherwise change, please notify the Historic Architecture section in writing so that the APE and effects may be reassessed.

I have attached a copy of the signed effects form for use in the Environmental Document. You may reach me at 715-1516 if you have any questions or concerns.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
OFFICE OF HUMAN ENVIRONMENT
1583 MAIL SERVICE CENTER
RALEIGH NC 27699-1583

TELEPHONE: 919-715-1500
FAX: 919-715-1522

WEBSITE: WWW.NCDOT.ORG

LOCATION:
PARKER LINCOLN BUILDING
2728 CAPITAL BOULEVARD, SUITE 168
RALEIGH, NC 27604

Federal Aid # **BRSTP-32(2)** *TIP #* **B-4018** *County*: **Beaufort**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: **Replace Bridge No. 104 on NC 32 over Broad Creek, Beaufort County**

On **June 14, 2005** representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☒ Federal Highway Administration (FHWA)
- ☒ 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.
- ☒ 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:

Jennifer Cathey — 6/14/05
Representative, NCDOT — Date

Ronald G Eason — 6/14/05
FHWA, for the Division Administrator, or other Federal Agency — Date

Representative, HPO — 6/14/05
Date

Renee Gledhill-Earley — 6-14-05
State Historic Preservation Officer — Date

Federal Aid # **BRSTP-32(2)** *TIP* # **B-4018** *County*: **Beaufort**

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).

n/a

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

Effect to Candy - Alligood Farm (DE) located at south end of Bridge.

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

No adverse effect since only temporary construction easements are necessary for south end of bridge. No new ROW is needed.

Initialed: NCDOT JAC FHWA _____ HPO SDM

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

July 14, 2005

MEMORANDUM

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

FROM: Peter Sandbeck PBS for Peter Sandbeck

SUBJECT: Bridge Group 50, Bridge 104, NC 32 over Broad Creek,
B-4018, Beaufort County, ER 04-0102

Our memorandum of February 18, 2004 concerning this project contained conflicting recommendations with regard to archaeological resources. We apologize for the confusion and would like to clarify our comments.

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

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please 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: Paul Mohler
NC DOT

ADMINISTRATION
RESTORATION
SURVEY & PLANNING

Location
507 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh, NC

Mailing Address
4617 Mail Service Center, Raleigh NC 27699-4617
4617 Mail Service Center, Raleigh NC 27699-4617
4617 Mail Service Center, Raleigh NC 27699-4617

Telephone/Fax
(919)733-4763/733-8653
(919)733-6547/715-4801
(919)733-6545/715-4801

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

February 3, 2005

MEMORANDUM

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

FROM: Peter B. Sandbeck RLR for Peter Sandbeck

SUBJECT: Historic Architectural Resources Survey Report, Replace Bridge No. 104 on NC 32 over Broad Creek, B-4018, Beaufort County, ER 04-0102

Thank you for your letter of December 15, 2004, transmitting the survey report by Jennifer Cathey for the above project.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is not eligible for the National Register of Historic Places:

- Bridge No. 104, on NC 32 over Broad Creek is not eligible for the National Register because it has no innovative or distinctive details and is one of hundreds of simple secondary road bridges throughout the state.

We do not concur with your evaluation of the Candy-Alligood Farm located on NC 32 in eastern Beaufort County.

We believe the Candy-Alligood Farm to be eligible for the National Register of Historic Places under Criterion A and C. This is an intact farmstead of the late 19th and early 20th centuries with a representative example of a late Greek-Revival farmhouse and a fine collection of outbuildings. The complex has undergone few major alterations through the years except for the interior of the farmhouse and a moved smokehouse. The farm is one of only a few remaining small farms associated with maritime activity on the creeks that feed into the Pamlico River.

The farm's boundary should include all the buildings, structures, field patterns, and land that were historically associated with the Candy-Alligood Farm. From the information provided in the report, it appears that the current Beaufort County legal tax parcel may suffice as the historic boundary as it encompasses the eligible resources and part of the original farm acreage.

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-4763/733-8653
RESTORATION	515 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6547/715-4801
SURVEY & PLANNING	515 N. Blount Street, Raleigh, NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6545/715-4801

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

Greg Purvis

From: Steve Sollod [Steve.Sollod@ncmail.net]
Sent: Friday, June 18, 2004 2:32 PM
To: gthorpe@dot.state.nc.us
Cc: bgoodwin@dot.state.nc.us; kcapps@dot.state.nc.us; bill arrington; Doug Huggett
Subject: [Fwd: Scoping Request]

Scoping Request
(2.33 KB)

Based on a preliminary evaluation by Bill Arrington, DCM's Field Representative and Transportation Project Coordinator for NCDOT's Divisions 2 & 3, the following projects will impact CAMA Areas of Environmental Concern (AEC) and will require CAMA permits.

B-4018, Bridge No. 104 on NC 32 over Broad Creek, Beaufort County
B-4019, Bridge No. 103 on NC 32 over Runyon Creek, Beaufort County
B-4020, Bridge No. 8 on SR 1403 over Tranters Creek, Beaufort/Pitt County
B-4055, Bridge No. 22 on SR 1124 over Branch of Newport River, Carteret County

The specific type of permit and specific permit conditions will depend on design of the project, methods of construction, and impacts to AECs. It is recommended that NCDOT allow sufficient time to coordinate with DCM.

Be advised, DCM did not receive the NCDOT January 8, 2004 letter requesting comments on the potential impacts of the proposed projects. We apologize for the delayed response. Please ensure future requests for comments on potential environmental impacts are also directed to DCM.

Please contact me at 733-2293 X 240 for questions or comments.

Steve Sollod

--
Steve Sollod
Transportation Project Coordinator
NC Division of Coastal Management
1638 Mail Service Center
Raleigh, NC 27699-1638
(919) 733-2293 X240 Phone
(919) 733-1495 FAX

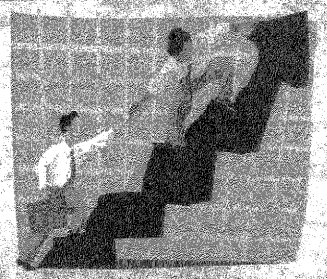
APPENDIX B

Newsletter

NEWSLETTER

Beaufort County
For Replacement of Bridge No. 104
Over Broad Creek On NC 32
TIP Project No. B-4018

This newsletter is published by the North Carolina Department of Transportation *(NCDOT)* to inform citizens of the alternates for the proposed replacement and road closure of Bridge No. 104 on NC 32 over Broad Creek (TIP Project No. B-4018). This newsletter gives an overview of the steps in the project development process and presents the bridge replacement alternatives evaluated.



STEPS TO SUCCESS

Step 6 Environmental Document
Step 5 Public Involvement
Step 4 Selection of Preferred Alternative
Step 3 Environmental Studies
Step 2 Alternatives Development
Step 1 Project Initiation/Scoping

THE PROJECT DEVELOPMENT PROCESS

During **Step 1** of the project development process, information was collected on the existing human and natural environments. This information was used to identify preliminary alternatives for replacing Bridge No. 104. In **Step 2**, the preliminary alternatives were evaluated and one "build" alternative was selected for detailed environmental studies. **Steps 3 and 4** involved conducting the detailed environmental studies for the "build" alternative and selecting a preferred alternative. The build alternative studied was:

Alternate A (Preferred) replaces Bridge No. 104 at the existing location with a new structure. During the construction of the new bridge and approaches, traffic will be maintained by an off-site detour. The off-site detour is along SR 1328 (Black Road), SR 1326 (Turkey Trot Road No.2), and SR 1311 (Magnolia school Road). It is about 2.9 miles in length.

Alternate A was selected as the preferred alternative because it minimizes natural environmental impacts and construction time.

The NCDOT is aware that citizens living in the proposed project area want to know the potential effects of the project on their homes and businesses. However, exact information is not available at this stage in the planning process. Additional design work will be performed before the actual right-of-way limits can be established. This newsletter is to inform the public of the replacement of Bridge No. 104 and solicit your input on the project.

Planning and environmental studies for this project are in progress. The Federal Categorical Exclusion (CE) is scheduled for approval in February 2005. The CE will address the potential impacts of the proposed bridge replacement on the human and natural environments and will include recommended design criteria for the project. Input received from the public will be included in the decision making process.

The right of way date for this project is 2/17/06 and the construction date is 2/20/07.

Project Costs:	**Alt. A**
Right of way costs -	$30,500
Construction costs -	$1,150,000
Total costs	**- $1,180,500**

NEWSLETTER

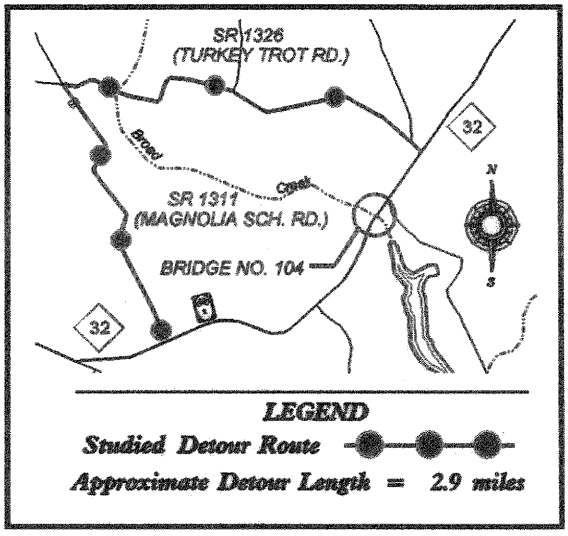
Public involvement is an important part of the project planning process. The North Carolina Department of Transportation is committed to ensuring that all issues of public concern are considered. Please send your comments to one of the addresses listed below. **Your comments are important to us!**

Ms. Karen B. Taylor, P.E.
NCDOT - PD&EA Branch
1548 Mail Service Center
Raleigh, North Carolina 27699-1548
(919) 733-7844, ext. 223
email:kbtaylor@dot.state.nc.us

or Mr. Greg Purvis, P.E.
Wang Engineering
15200 Weston Parkway, Suite 101
Cary, North Carolina 27513
(919) 677-9544
email:gpurvis@wang-engineering.com

If you have transportation questions on other projects, call the NCDOT Customer Service Office toll-free at 1-877-DOT-4YOU.

BEAUFORT COUNTY
Replacement of Bridge No. 104
Over Broad Creek
On NC 32
TIP Project NO. B-4018



North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh NC 27699-1548

APPENDIX C

Routine Wetland Determination Data Forms

Wetland Boundary (no upland boundary)

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

Project/Site:	04-188 (B-4018)	Date:	5.27.04
Applicant/Owner:	NCDOT/Wang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	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: Wetland

Transect ID: HB/HD/HK

Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Morella cerifera	Sh	FAC+	9.		
2. Impatiens capensis	H	FACW	10.		
3. Juncus effusus	H	FACW+	11.		
4. Smilax bona-nox	V	FAC	12.		
5. Toxicodendron radicans	H	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: N/A (in.)

Depth to Free Water in Pit: N/A (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): Doroan

Drainage Class: Very poorly-drain

Taxonomy (Subgroup): Typic Haplosaprists

Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-12+		10YR 3/2	10YR 5/2		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 (Check)

Wetland Hydrology Present? ☑ Yes ☐ No

Hydric Soils Present? ☑ Yes ☐ No

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

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	5.27.04
Applicant/Owner:	NCDOT / Nang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	State:	NC
Do Normal Circumstances exist on the site?	☑ Yes ☐ No	Community ID:	Upland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☑ No	Transect ID:	GB
Is the area a potential Problem Area? (If needed, explain on reverse.)	☐ Yes ☐ No	Plot ID:	GB03

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Quercus nigra	T	FAC	9.		
2. Liquidambar styraciflua	T	FAC+	10.		
3. Liriodendron tulipifera	T	FAC	11.		
4. Vitis sp.	V	N/F	12.		
5. Smilax rotundifolia	V	FAC	13.		
6. Persea palustris	Sh	FAC	14.		
7. Vaccinium sp.	Sh	N/F	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: _____ (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:

NO HYDROLOGIC INDICATORS !!

SOILS

Map Unit Name (Series and Phase): Tarboro

Drainage Class: excessively drained

Taxonomy (Subgroup): Typic Udipsamments

Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-2		10YR 4/1			Sand
2-12+		10YR 6/1			Sand

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 (Check)	(Check)
Wetland Hydrology Present?	☐ Yes ☑ No	
Hydric Soils Present?	☑ Yes ☐ No	Is this Sampling Point Within a Wetland? ☐ Yes ☑ No

Remarks

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

Project/Site: 04-188 (B-4018) | Date: 5.27.04
Applicant/Owner: NCDOT/Wang Engineering | County: Beaufort
Investigator: EcoScience Corporation | State: NC

Do Normal Circumstances exist on the site? ☑ Yes ☐ No | Community ID: Wetland
Is the site significantly disturbed (Atypical Situation)? ☐ Yes ☑ No | Transect ID: GB
Is the area a potential Problem Area? ☐ Yes ☑ No | Plot ID: GB03
(If needed, explain on reverse.)

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Nyssa sylvatica	T	FAC
2. Acer rubrum	T	FAC
3. Persea palustris	S	FAC
4. Morella cerifera	Sh	FAC+
5. Osmunda regalis	H	OBL
6. Impatiens capensis	H	FACW
7. Polygonum sp.	H	N/F
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
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: N/A (in.)
- Depth to Free Water in Pit: N/A (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): Arapahoe

Drainage Class: Very poorly drained

Taxonomy (Subgroup): Typic Humaquepts

Field Observations Confirm Mapped Type? ☐Yes ☐No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-12+	1	10YR 2/1			mucky 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 (Check)	(Check)
Wetland Hydrology Present?	☐Yes ☐No	
Hydric Soils Present?	☐Yes ☐No	Is this Sampling Point Within a Wetland? ☐Yes ☐No

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	5.27.04
Applicant/Owner:	NCDOT/Wang Engineering	County:	Beaufort
Investigator:	Eco Science Corporation	State:	NC
Do Normal Circumstances exist on the site?	☑ Yes ☐ No	Community ID:	Upland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☑ No	Transect ID:	GF/GH
Is the area a potential Problem Area? (If needed, explain on reverse.)	☐ Yes ☐ No	Plot ID:	GH02

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Liquidambar styraciflua	T	FAC+	9.		
2. Lonicera japonica	V	FAC-	10.		
3. Rhus copallinum	Sh	NI	11.		
4. Quercus alba	T	FACU	12.		
5. Vitis sp.	V	NI	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33%

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:

NO HYDROLOGIC INDICATORS!!

SOILS

Map Unit Name (Series and Phase): Arapahoe Series

Drainage Class: Very poorly drained

Taxonomy (Subgroup): Typic Humaquepts

Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-8		10YR 5/2	10YR 4/6		Fine Stnd
8-12+		10YR 4/6	10YR 5/2		Fine Stnd

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	(Check)
Wetland Hydrology Present?	☐ Yes ☑ No	
Hydric Soils Present?	☑ Yes ☐ No	

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

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	5.27.04
Applicant/Owner:	NCDOT / Wang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	State:	NC
Do Normal Circumstances exist on the site?	☑ Yes ☐ No	Community ID:	Wetland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☑ No	Transect ID:	GF/GH
Is the area a potential Problem Area? (If needed, explain on reverse.)	☐ Yes ☐ No	Plot ID:	GH02

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Liquidambar styraciflua	T	FAC+	9.		
2. Sambucus Canadensis	Sh	FACW-	10.		
3. Acer rubrum	T	FAC	11.		
4. Taxodium distichum	Stp	OBL	12.		
5. Peltandra virginica	H	OBL	13.		
6. Ligustrum sinense	Sh	FAC	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: N/A (in.)

Depth to Free Water in Pit: 10 (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): Dorovan

Drainage Class: Very-poorly drained

Taxonomy (Subgroup): Typic Haplosaprists

Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-12+		10YR 3/1			Silty 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 (Check)

Wetland Hydrology Present? ☑ Yes ☐ No

Hydric Soils Present? ☑ Yes ☐ No

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

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	5.27.04
Applicant/Owner:	NCDOT / Wang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	State:	NC
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	upland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☒ No	Transect ID:	HI
Is the area a potential Problem Area?	☐ Yes ☐ No	Plot ID:	HI 17
(If needed, explain on reverse.)			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Parthenocissus	H	FAC	9.		
2. quinquefolia			10.		
3. Toxicodendron radicans	H	FAC	11.		
4. Lonicera japonica	V	FAC-	12.		
5. Liquidambar styraciflua	T	FAC+	13.		
6. Acer rubrum	T	FACW	14.		
7. Ligustrum sinense	Sh	FAC	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:

NO HYDROLOGIC INDICATORS!

SOILS

Map Unit Name (Series and Phase): Dorovan

Drainage Class: Very poorly drain.

Taxonomy (Subgroup): Typic Haplosaprists

Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-12+		10YR 3/2	10YR 4/2 10YR 5/8		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 (Check)	(Check)
Wetland Hydrology Present?	☐ Yes ☑ No	
Hydric Soils Present?	☑ Yes ☐ No	Is this Sampling Point Within a Wetland? ☐ Yes ☑ No

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	5.27.04
Applicant/Owner:	NCDOT/Wang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	State:	NC
Do Normal Circumstances exist on the site?	☑ Yes ☐ No	Community ID:	Wetland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☑ No	Transect ID:	HI
Is the area a potential Problem Area? (If needed, explain on reverse.)	☐ Yes ☑ No	Plot ID:	HI 17

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Impatiens capensis	H	FACW	9.		
2. Peltandra virginica	H	OBL	10.		
3. Taxodium distichum	T	OBL	11.		
4. Liriodendron tulipifera	T	FAC	12.		
5. Acer rubrum	T	FAC	13.		
6. Baccharis halimifolia	Sh	FAC	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: 0-5 (in.)

Depth to Free Water in Pit: 8 (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): Dorovan

Drainage Class: Very poorly-drain

Taxonomy (Subgroup): Typic Haplosaprists

Field Observations Confirm Mapped Type? ☐Yes ☐No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-4		10YR 3/2			Sandy loam
4-8		10YR 3/2 (50%)	10YR 5/1 (50%)		Sandy loam
8-12+		10YR 5/1	10YR 3/2		Loamy sand

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 (Check)	(Check)
Wetland Hydrology Present?	☑Yes ☐No	
Hydric Soils Present?	☑Yes ☐No	Is this Sampling Point Within a Wetland? ☑Yes ☐No

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	6.03.04
Applicant/Owner:	NCDOT / Wang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	State:	NC
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	upland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☒ No	Transect ID:	HE/HF/HG 1
Is the area a potential Problem Area? (If needed, explain on reverse.)	☐ Yes ☒ No	Plot ID:	HF02

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Parthenocissus	SH	FAC	9.		
2. quinquefolia			10.		
3. Liquidambar styraciflua	T	FAC+	11.		
4. Toxicodendron radicans	V	FAC	12.		
5.			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: _____ (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:

NO HYDROLOGIC INDICATORS!!

SOILS

Map Unit Name (Series and Phase): Dorovan

Drainage Class: Very poorly-drain

Taxonomy (Subgroup): Typic Haplosaprists

Field Observations Confirm Mapped Type? ☐Yes ☐No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3		10YR 5/3			fine loam
3-8		10YR 5/3			Sandy loam
8-12+		10YR 5/3	10YR 7/6 10YR 5/8		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 (Check)	(Check)
Wetland Hydrology Present?	☐Yes ☑No	
Hydric Soils Present?	☑Yes ☐No	Is this Sampling Point Within a Wetland? ☐Yes ☑No

Remarks

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

Project/Site:	04-188 (B-4018)	Date:	6.03.04
Applicant/Owner:	NCDOT / Wang Engineering	County:	Beaufort
Investigator:	EcoScience Corporation	State:	NC
Do Normal Circumstances exist on the site?	☒ Yes ☐ No	Community ID:	Wetland
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☒ No	Transect ID:	HE/HF/HG
Is the area a potential Problem Area? (If needed, explain on reverse.)	☐ Yes ☐ No	Plot ID:	HF02

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Morella cerifera	Sh	FAC+	9.		
2. Peltandra virginica	H	OBL	10.		
3. Liquidambar styraciflua	T	FAC+	11.		
4. Taxodium distichum	T	OBL	12.		
5. Salix nigra	Sh	OBL	13.		
6. Toxicodendron radicans	V	FAC	14.		
7. Impatiens capensis	H	FACW	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: 0-5 (in.)

Depth to Free Water in Pit: 8 (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): Dorovan

Drainage Class: Very poorly-drained

Taxonomy (Subgroup): Typic Haplosaprists

Field Observations
Confirm Mapped Type? ☐ Yes ☐ No

Profile Descriptions:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc,
0-2		10YR 3/2			fine sandy clay loam
2-6		10YR 3/2			sandy clay loam
6-12+		10YR 3/2			sandy loam
		(fill w/	10YR 5/8)		

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 (Check)	(Check)
Wetland Hydrology Present?	☑ Yes ☐ No	
Hydric Soils Present?	☑ Yes ☐ No	Is this Sampling Point Within a Wetland? ☑ Yes ☐ No

Remarks

Wetland Rating Worksheet

Project name 04-188 Bridge Group 50 Nearest road NC 32
County Beaufort Name of Evaluator EcoScience Corporation Date 5/27/04

Wetland location
- _ on pond or lake
- ✓ on perennial stream
- _ on intermittent stream
- _ within interstream divide
- _ other

Adjacent land use (within 1/2 mile upstream)
- forested/natural vegetation 40 %
- agriculture, urban/suburban 50 %
- impervious surface 10% %

Soil Series Dorovan
- ✓ predominantly organic-humus, muck, or peat
- _ predominantly mineral- non-sandy
- _ predominantly sandy

Dominant Vegetation
(1) Taxodium distichum
(2) Fraxinus pennsylvanica
(3) Populus heterophylla

Flooding and Wetness
- _ semipermanently to permanently flooded or inundated
- ✓ seasonally flooded or inundated
- _ intermittently flooded or temporary surface water
- _ no evidence of flooding or surface water

Hydraulic Factors
- _ steep topography
- _ ditched or channelized
- _ wetland width >/= 50 feet

Wetland Type (select one)
- ✓ Bottomland hardwood forest
- _ Headwater forest
- _ Swamp forest
- _ Wet flat
- _ Pocosin
- _ Pine savanna
- _ Freshwater marsh
- _ Bog/fen
- _ Ephemeral wetland
- _ Other

*The rating system cannot be applied to salt or brackish marshes

Water storage	3	*	4	=	12
Bank/Shoreline stabilization	3	*	4	=	12
Pollutant removal	4	*	5	=	20
Wildlife habitat	4	*	2	=	8
Aquatic life value	4	*	4	=	16
Recreation/Education	4	*	1	=	4

Total score 72

Add 1 point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile upstream

APPENDIX D

Guidelines for Avoiding Impacts to the West Indian Manatee

United States Department of the Interior

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

GUIDELINES FOR AVOIDING IMPACTS TO THE WEST INDIAN MANATEE
Precautionary Measures for Construction Activities in North Carolina Waters

The West Indian manatee (*Trichechus manatus*), also known as the Florida manatee, is a Federally-listed endangered aquatic mammal protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) and the Marine Mammal Protection Act of 1972, as amended (16 U.S.C 1461 *et seq.*). The manatee is also listed as endangered under the North Carolina Endangered Species Act of 1987 (Article 25 of Chapter 113 of the General Statutes). The U.S. Fish and Wildlife Service (Service) is the lead Federal agency responsible for the protection and recovery of the West Indian manatee under the provisions of the Endangered Species Act.

Adult manatees average 10 feet long and weigh about 2,200 pounds, although some individuals have been recorded at lengths greater than 13 feet and weighing as much as 3,500 pounds. Manatees are commonly found in fresh, brackish, or marine water habitats, including shallow coastal bays, lagoons, estuaries, and inland rivers of varying salinity extremes. Manatees spend much of their time underwater or partly submerged, making them difficult to detect even in shallow water. While the manatee's principal stronghold in the United States is Florida, the species is considered a seasonal inhabitant of North Carolina with most occurrences reported from June through October.

To protect manatees in North Carolina, the Service's Raleigh Field Office has prepared precautionary measures for general construction activities in waters used by the species. Implementation of these measure will allow in-water projects which do not require blasting to proceed without adverse impacts to manatees. In addition, inclusion of these guidelines as conservation measures in a Biological Assessment or Biological Evaluation, or as part of the determination of impacts on the manatee in an environmental document prepared pursuant to the National Environmental Policy Act, will expedite the Service's review of the document for the fulfillment of requirements under Section 7 of the Endangered Species Act. These measures include:

1. The project manager and/or contractor will inform all personnel associated with the project that manatees may be present in the project area, and the need to avoid any harm to these endangered mammals. The project manager will ensure that all construction personnel know the general appearance of the species and their habit of moving about completely or partially submerged in shallow water. All construction personnel will be informed that they are responsible for observing water-related activities for the presence of manatees.

2. The project manager and/or the contractor will advise all construction personnel that

there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act and the Endangered Species Act.

3. If a manatee is seen within 100 yards of the active construction and/or dredging operation or vessel movement, all appropriate precautions will be implemented to ensure protection of the manatee. These precautions will include the immediate shutdown of moving equipment if a manatee comes within 50 feet of the operational area of the equipment. Activities will not resume until the manatee has departed the project area on its own volition (i.e., it may not be herded or harassed from the area).

4. Any collision with and/or injury to a manatee will be reported immediately. The report must be made to the U.S. Fish and Wildlife Service (ph. 919.856.4520 ext. 16), the National Marine Fisheries Service (ph. 252.728.8762), and the North Carolina Wildlife Resources Commission (ph. 252.448.1546).

5. A sign will be posted in all vessels associated with the project where it is clearly visible to the vessel operator. The sign should state:

> CAUTION: The endangered manatee may occur in these waters during the warmer months, primarily from June through October. Idle speed is required if operating this vessel in shallow water during these months. All equipment must be shut down if a manatee comes within 50 feet of the vessel or operating equipment. A collision with and/or injury to the manatee must be reported immediately to the U.S. Fish and Wildlife Service (919-856-4520 ext. 16), the National Marine Fisheries Service (252.728.8762), and the North Carolina Wildlife Resources Commission (252.448.1546).

6. The contractor will maintain a log detailing sightings, collisions, and/or injuries to manatees during project activities. Upon completion of the action, the project manager will prepare a report which summarizes all information on manatees encountered and submit the report to the Service's Raleigh Field Office.

7. All vessels associated with the construction project will operate at "no wake/idle" speeds at all times while in water where the draft of the vessel provides less than a four foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

8. If siltation barriers must be placed in shallow water, these barriers will be: (a) made of material in which manatees cannot become entangled; (b) secured in a manner that they cannot break free and entangle manatees; and, (c) regularly monitored to ensure that manatees have not become entangled. Barriers will be placed in a manner to allow manatees entry to or exit from essential habitat.

Prepared by (rev. 06/2003):
U.S. Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726
919/856-4520

Figure 1. The whole body of the West Indian manatee may be visible in clear water; but in the dark and muddy waters of coastal North Carolina, one normally sees only a small part of the head when the manatee raises its nose to breathe.

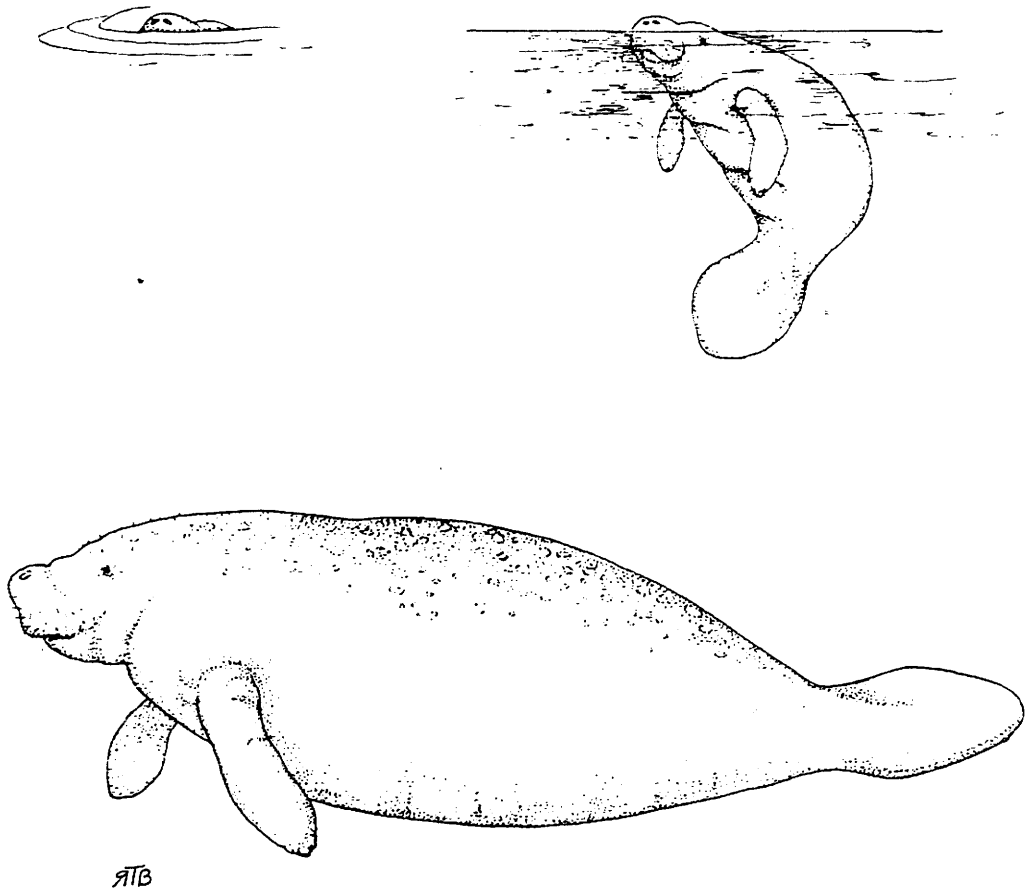


Illustration used with the permission of the North Carolina State Museum of Natural Sciences. Source: Clark, M. K. 1987. Endangered, Threatened, and Rare Fauna of North Carolina: Part I. A re-evaluation of the mammals. Occasional Papers of the North Carolina Biological Survey 1987-3. North Carolina State Museum of Natural Sciences. Raleigh, NC. pp. 52.