



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 17, 2007

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

ATTENTION: Mr. William Wescott
NCDOT Coordinator

Dear Sir:

SUBJECT: **Nationwide Permit 23 Permit Application** for the proposed replacement of Bridge No. 20 over East Prong Broad Creek on SR 1124 (Nine Mile Road) in Carteret County. TIP B-3625, WBS Element 33173.1.1.

Please find enclosed a copy of the permit drawings, half-size plans, and EEP mitigation acceptance letter. A Programmatic Categorical Exclusion (PCE) was completed for this project on December 12, 2003, and distributed shortly thereafter. Additional copies are available upon request. NCDOT proposes to replace Bridge No. 20, approximately 60 feet in length, with a 96-foot long single-span bridge on the same alignment, using an offsite detour. Impacts for this project have been minimized to 0.13 acre of permanent impacts to wetlands due to widening of the approaches leading up to the new structure.

IMPACTS TO WATERS OF THE UNITED STATES

General Descriptions: East Prong Broad Creek will be completely spanned with the new structure. The North Carolina Department of Environment and Natural Resources classifies East Prong Broad Creek "SA HQW". This system contains the HWQ (High Quality Water) secondary classification as East Prong Broad Creek is designated as a Primary Nursery Area. East Prong Broad Creek is located in Hydrological Cataloguing Unit 03020106 of the White Oak River Basin.

Permanent Impacts: There will be at total of 0.13 acre of permanent riverine wetland impacts for this project. Construction associated with the widening of the approach shoulders leading up to the wider bridge will account for 0.06 acre of permanent fill in wetlands and 0.07 acre of mechanized clearing.

Temporary Impacts:

No temporary impacts are associated with this project.

Utility Impacts:

There will be no jurisdictional impacts to utilities for this project. Power lines will be temporarily removed in the project area, and telephone lines will be directionally bored to avoid impacts to jurisdictional resources.

Bridge Demolition:

No impacts are associated with the demolition of the current structure. NCDOT Best Management Practices will be used and no temporary fill will enter East Prong Broad Creek.

FEDERALLY PROTECTED SPECIES

As of May 10, 2007, the Fish and Wildlife Service (FWS) lists 14 federally protected species for Carteret County (Table 1).

Table 1. Federally-Protected Species for Carteret County.

Common Name	Scientific Name	Status	Habitat/ Last Survey Date	Biological Conclusion
American alligator	<i>Amaranthus pumilus</i>	T (S/A)	N/A	N/A
Eastern puma	<i>concolor cougar</i>	E	No	No Effect
Green sea turtle	<i>Chelonia mydas</i>	T	No	No Effect
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	No	No Effect
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E	No	No Effect
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	No	No Effect
Loggerhead sea turtle	<i>Caretta caretta</i>	T	No	No Effect
Piping plover	<i>Charadrius melodus</i>	T	No	No Effect
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	No	No Effect
Roseate tern	<i>Sterna dougallii dougallii</i>	E	No	No Effect
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	No	No Effect
West Indian manatee	<i>Trichechus manatus</i>	E	No	No Effect
Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	E	Yes 7/5/2007	No Effect
Seabeach amaranth	<i>Amaranthus pumilus</i>	T	No	No Effect

MITIGATION

Avoidance and Minimization: The construction of this project has minimized the extent of the built-upon area by using the existing alignment for the replacement. Traffic will be maintained using an offsite detour. The existing structure will be removed without dropping any components into East Prong Broad Creek. NCDOT's Best Management Practices (BMP's) for the Protection of Surface Waters be used to minimize water quality impacts, and in compliance with 15A NCAC 02B.0104(m) we have incorporated the use of BMP's in the design of the project. Additional minimization measures include:

- NCDOT will adhere to Design Standards in Sensitive Waters.
- The hydraulic opening of the new structure replacing Bridge No. 20 will be approximately 8' wider than the previous structure, thus increasing hydraulic capacity and connectivity of East Prong Broad Creek.
- The abutments of a relic bridge (the bridge prior to the current structure) will be removed, with the exception of the structure on the southern bank which should assist with erosion control, as suggested by Michael Bell of the US Army Corps of Engineers at a field meeting on July 14, 2005.
- Drainage will be directed to lateral ditching and thus will not directly discharge into East Prong Broad Creek.
- 3:1 Slopes have been used to minimize impacts to jurisdictional resources.

Compensatory Mitigation: A letter dated August 21, 2007 from the North Carolina Ecosystem Enhancement Program (EEP) confirming they will provide mitigation for the 0.13 acre of impacts to riverine wetlands for this project is included with this application.

IN-WATER WORK MORATORIUM

As East Prong of Broad Creek is classified as a Primary Nursery Area, an in-stream work moratorium is required from March 1, through July 31. However, no impacts to surface waters are proposed for this project.

PROJECT SCHEDULE

The project schedule calls for a March 18, 2008 let date and a review date of January 29, 2008.

REGULATORY APPROVALS

Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR § 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (72 FR 11092; March 12, 2007.)

Section 401 Permit: We anticipate that 401 General Certification number 3632 will apply to this project. The NCDOT will adhere to all general conditions of the aforementioned certification, and therefore are not requesting writing concurrence from the North Carolina Department of Environmental and Natural Resources, Division of Water Quality. In accordance with 15A NCAC 2H, Section .0500(a) we are providing two copies of this application to the NC DWQ, for their review.

US Forest Service: As the east side of this project impacts US Forest Service property, permission was required to encroach on USFS property. The USFS easement and Biological Evaluation are attached to this application. NCDOT will adhere to the conservation measures found on page 3 of the Biological Evaluation for this project.

CAMA: Due to the absence of any Areas of Environmental Concern, this project will not require a CAMA permit as confirmed by North Carolina Division of Coastal Management staff. As previously stated, the project will require a Nationwide permit, which has been determined to be consistent with the State's coastal program.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Michael Turchy at maturchy@dot.state.nc.us or (919) 715-1468.

Sincerely,



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

Cc:

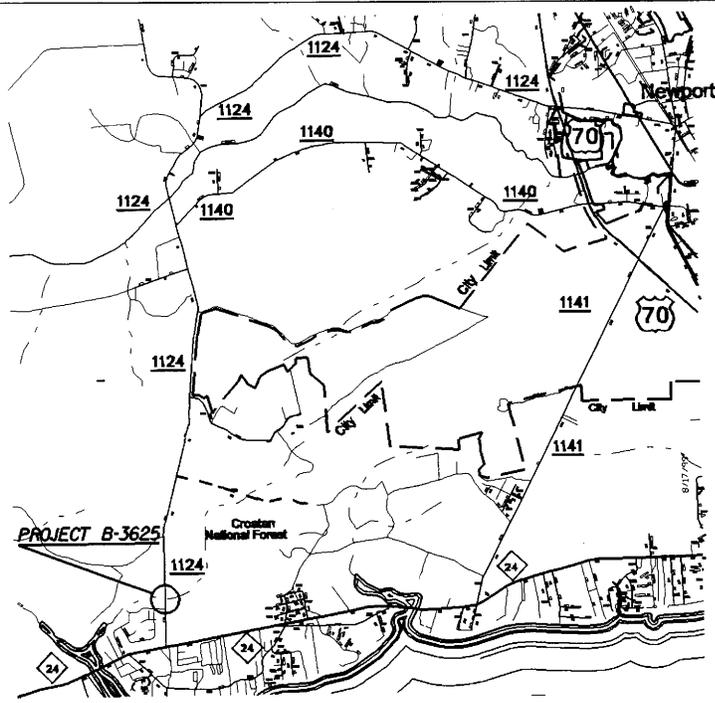
W/attachment

Mr. John Hennessy, NCDWQ (2 Copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Mr. Michael Street, NCDMF
Mr. Steve Sollod, NCDCM
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 Engineer
Mr. Jay Johnson, Division Environmental Officer

W/o attachment

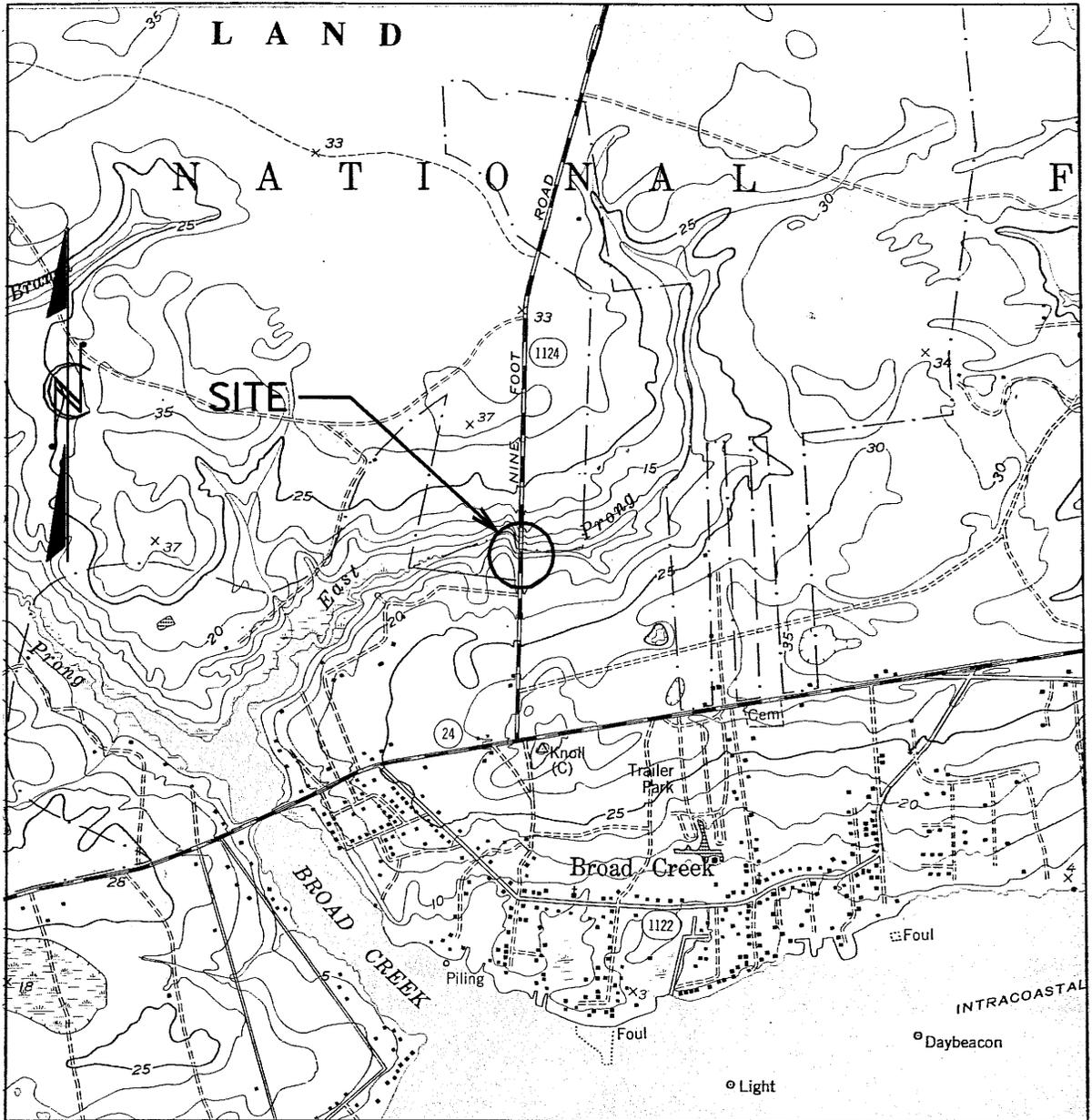
Mr. Scott McLendon, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch
Ms. Pam Williams, PDEA

NORTH CAROLINA



VICINITY MAP

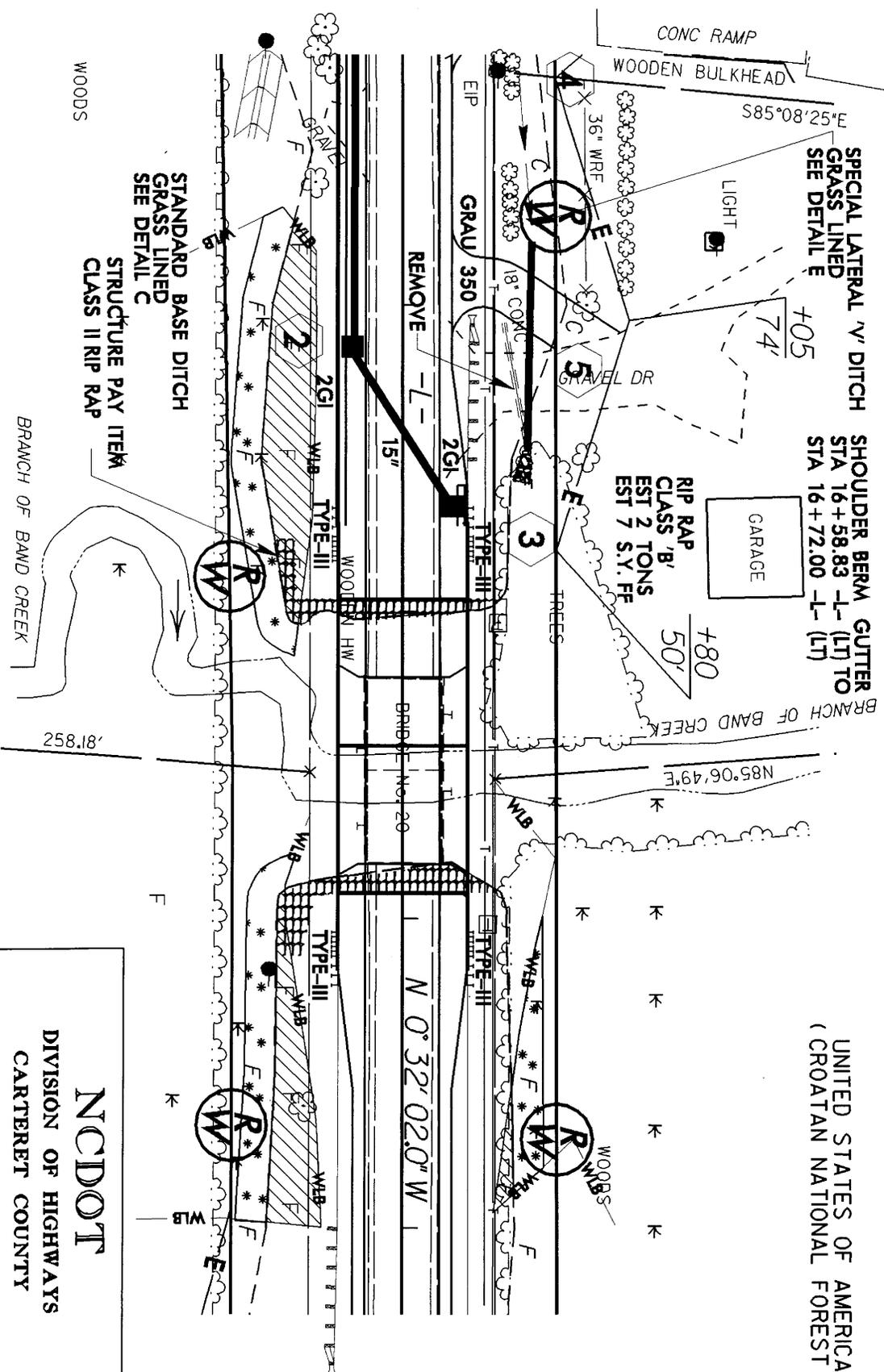
NCDOT
DIVISION OF HIGHWAYS
CARTERET COUNTY
WBS NO.: 33173.11 (B-3625)
BRIDGE NO. 20 OVER EAST PRONG
OF BROAD CREEK ON SR 1124



SITE MAP

NCDOT
 DIVISION OF HIGHWAYS
 CARTERET COUNTY
 PROJECT: 8.2160901 (B-3625)
 WBS NO: 33173.1.1
 BRIDGE NO.20 ON SR 1124 OVER
 EAST PRONG OF BRAOD CREEK

UNITED STATES OF AMERICA
(CROATIAN NATIONAL FOREST)



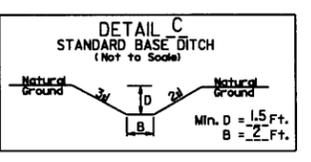
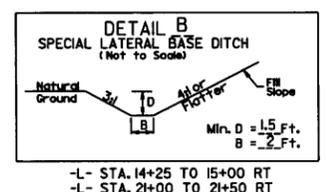
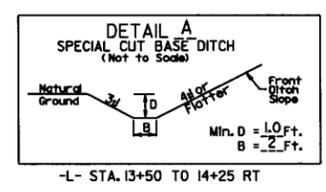
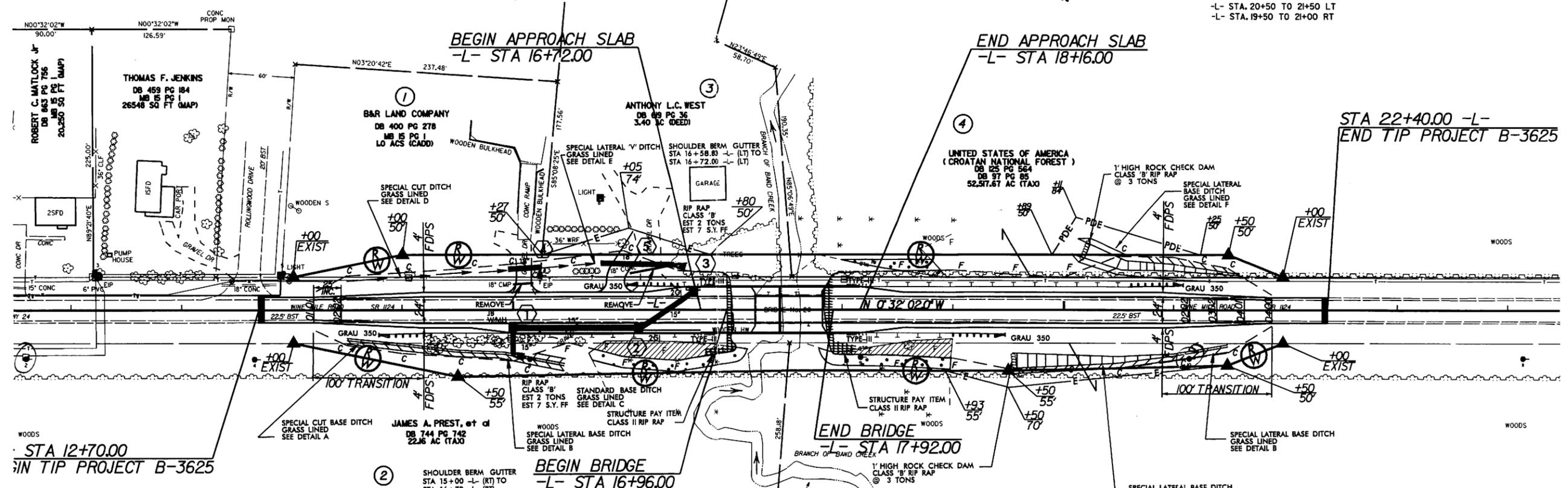
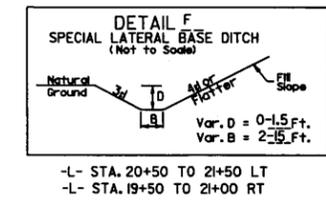
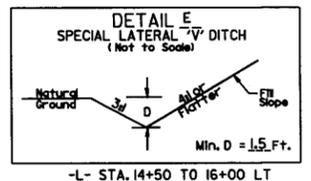
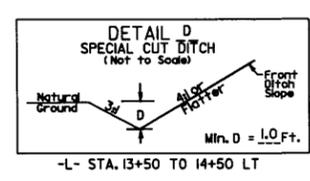
PLAN VIEW

DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND

NC DOT
DIVISION OF HIGHWAYS
CARTERET COUNTY
WBS.NO: 33173.11 (B-3635)
BRIDGE NO. 20 ON SR 1124 OVER
EAST PRONG OF BROAD CREEK



DENOTES FILL IN WETLAND

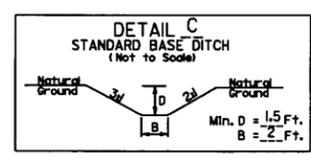
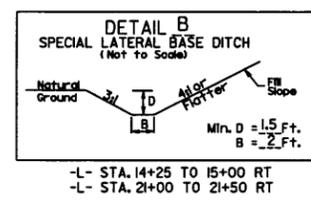
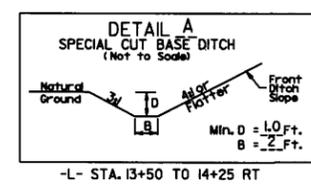
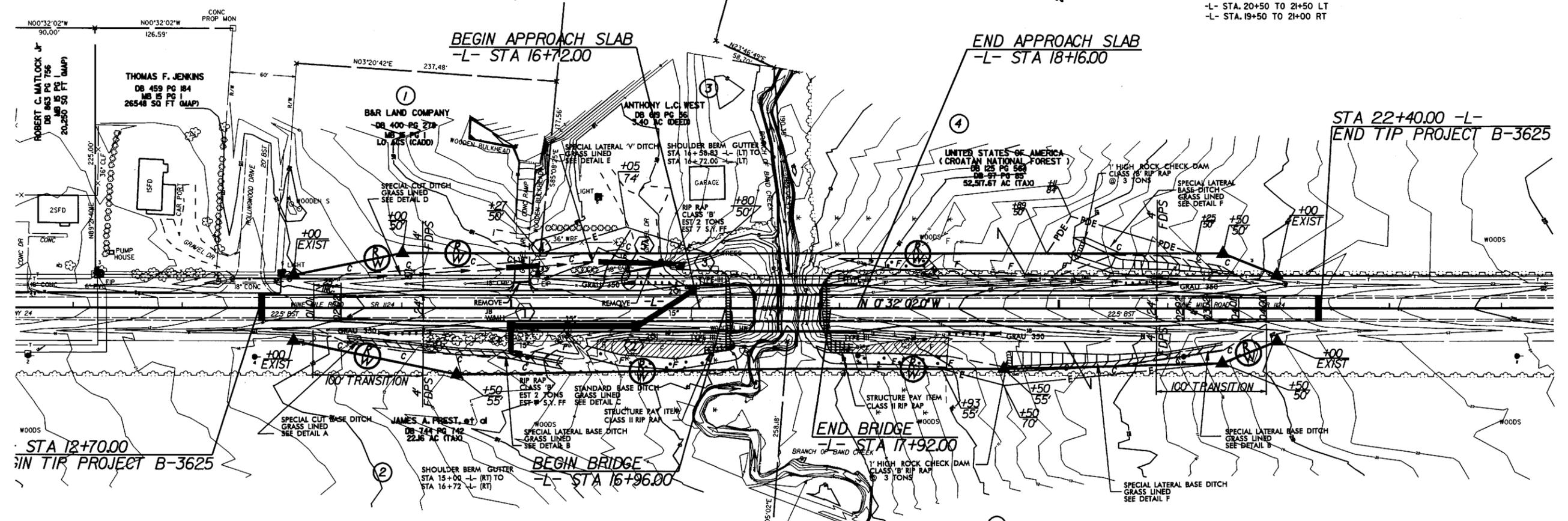
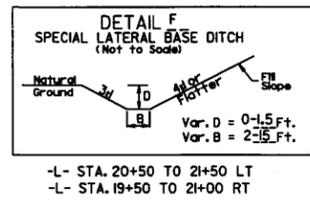
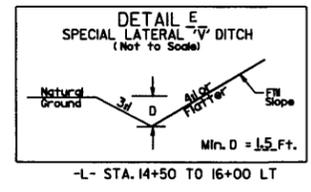
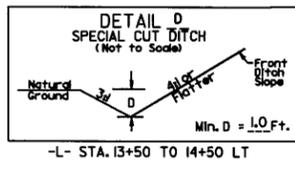
DENOTES MECHANIZED CLEARING

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ENGLISH

PROJECT REFERENCE NO. B-3625	SHEET NO.
PERMIT SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing Sheet 5 of 8



- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

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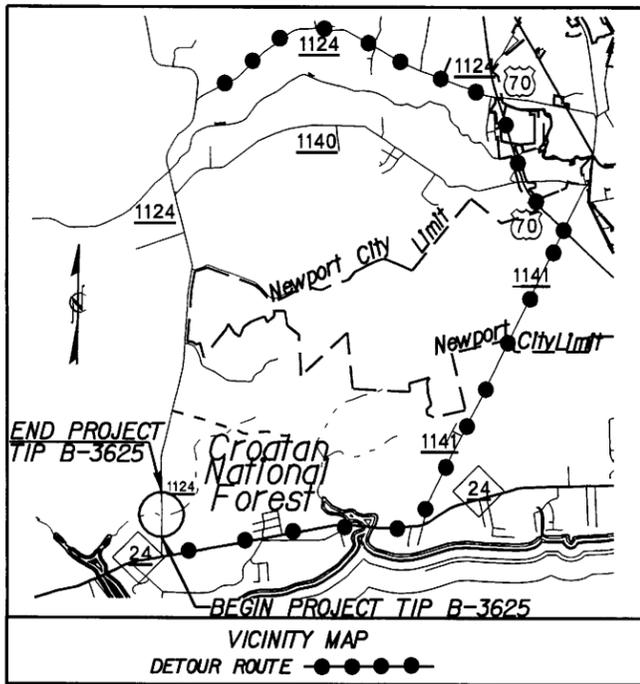
PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
2	JAMES A. PREST, et al	135 CRAVEN STREET BEAUFORT, NC 28516
3	ANTHONY L. C. WEST	245 NINE MILE ROAD NEWPORT, NC 28570
4	UNITED STATES OF AMERICA	141 EAST FISHER AVENUE NEW BERN, NC 28560

NCDOT
DIVISION OF HIGHWAYS
CARTERET COUNTY
WBS NO.: 33173.1.1 (B-3625)
BRIDGE NO. 20 OVER EAST PRONG
OF BROAD CREEK ON SR 1124

09/08/99

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET COUNTY

LOCATION: BRIDGE No. 20 OVER EAST PRONG OF BROAD CREEK ON SR 1124

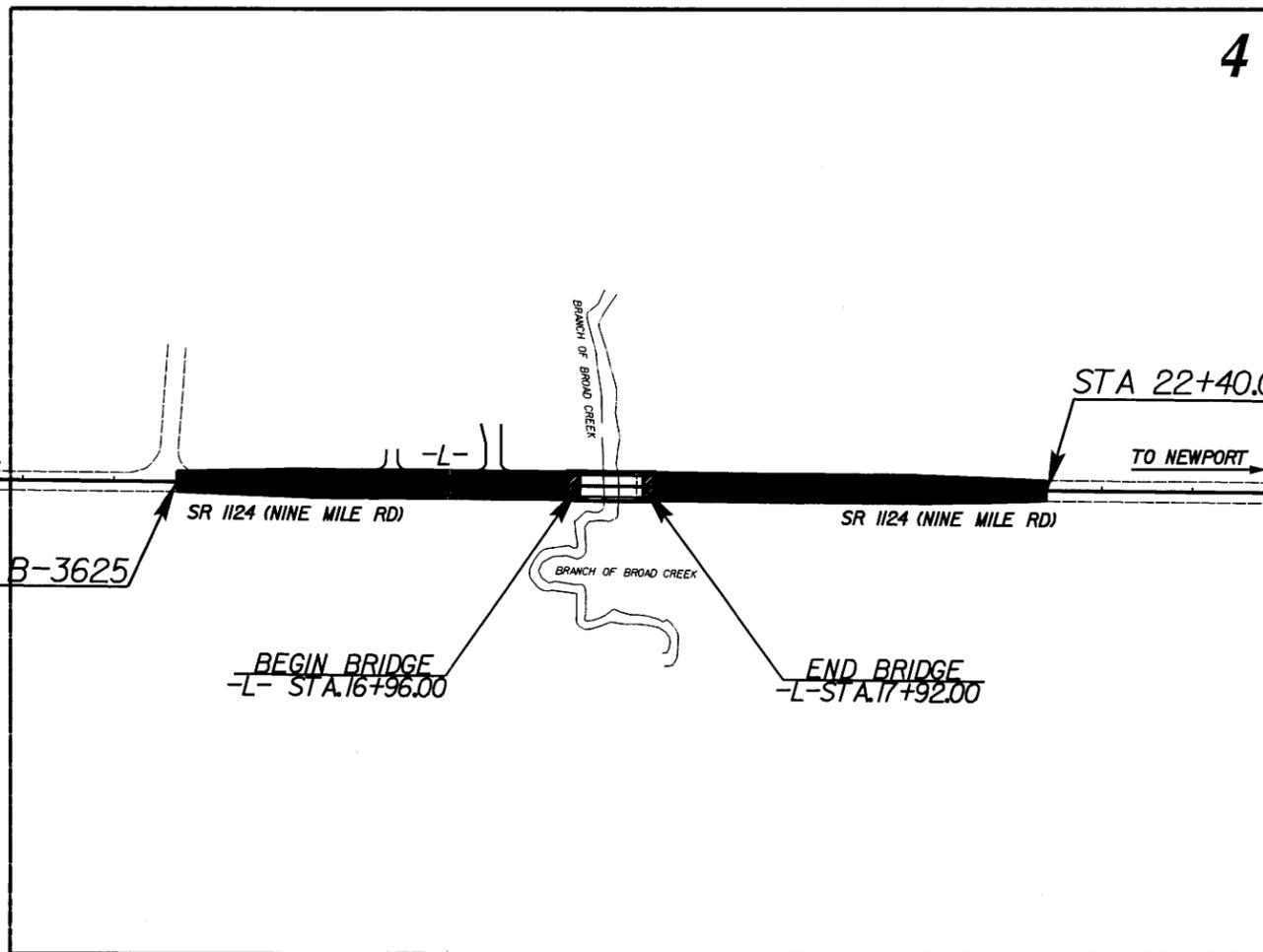
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3625	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33173.1.1	BRSTP-1124(3)	P.E.	
33173.2.2	BRSTP-1124(3)	RW, UTL	



TIP PROJECT: B-3625

CONTRACT: C201603



STA 12+70.00 -L- BEGIN TIP PROJECT B-3625

STA 22+40.00 -L- END TIP PROJECT B-3625

SR 1124 (NINE MILE RD)

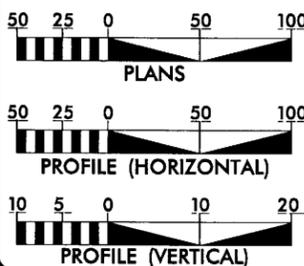
SR 1124 (NINE MILE RD)

BEGIN BRIDGE
-L- STA. 16+96.00

END BRIDGE
-L- STA. 17+92.00

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 5800
ADT 2025 = 8500
DHV = 10 %
D = 55 %
T = 4 % *
V = 60 MPH
* TTST 1 % DUAL 3 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3625 = 0.166 MILE
LENGTH STRUCTURE TIP PROJECT B-3625 = 0.018 MILE
TOTAL LENGTH TIP PROJECT B-3625 = 0.184 MILE

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 16, 2005

LETTING DATE:
MARCH 20, 2007

TONY A. HOUSER, PE
PROJECT ENGINEER

BRUCE B. PAYNE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER

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Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing High Quality Wetland Boundary	--- HQ WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	□
Dam	-----

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
River Basin Buffer	--- RBB ---
Flow Arrow	←
Disappearing Stream	-----
Spring	○
Swamp Marsh	⋈
Proposed Lateral, Tail, Head Ditch	-----
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Utility Easement	-----

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Wheel Chair Ramp	WCR
Curb Cut for Future Wheel Chair Ramp	CCFR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	⊗

VEGETATION:

Single Tree	⊕
Single Shrub	⊙
Hedge	-----
Woods Line	-----
Orchard	⊕
Vineyard	⊕

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
UG Power Cable Hand Hole	⊕
H-Frame Pole	●
Recorded UG Power Line	-----
Designated UG Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
UG Telephone Cable Hand Hole	⊕
Recorded UG Telephone Cable	-----
Designated UG Telephone Cable (S.U.E.*)	-----
Recorded UG Telephone Conduit	-----
Designated UG Telephone Conduit (S.U.E.*)	-----
Recorded UG Fiber Optics Cable	-----
Designated UG Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	⊕
Water Valve	⊕
Water Hydrant	⊕
Recorded UG Water Line	-----
Designated UG Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊕
UG TV Cable Hand Hole	⊕
Recorded UG TV Cable	-----
Designated UG TV Cable (S.U.E.*)	-----
Recorded UG Fiber Optic Cable	-----
Designated UG Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded UG Gas Line	-----
Designated UG Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

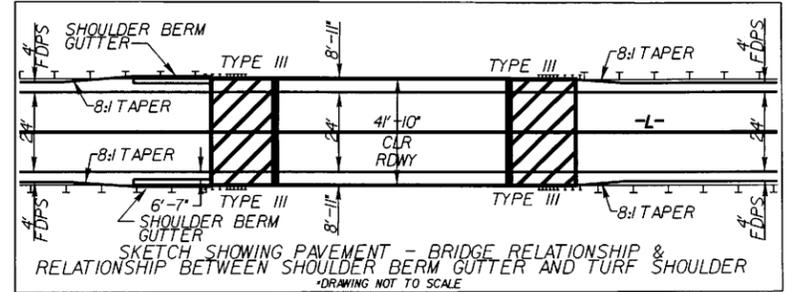
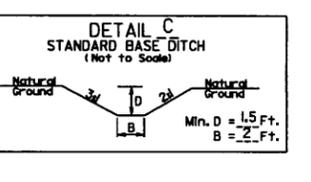
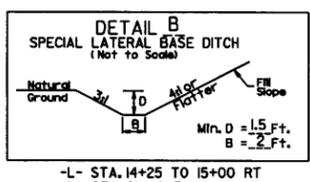
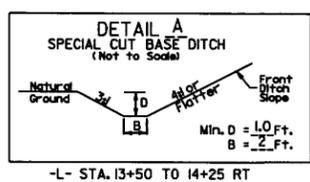
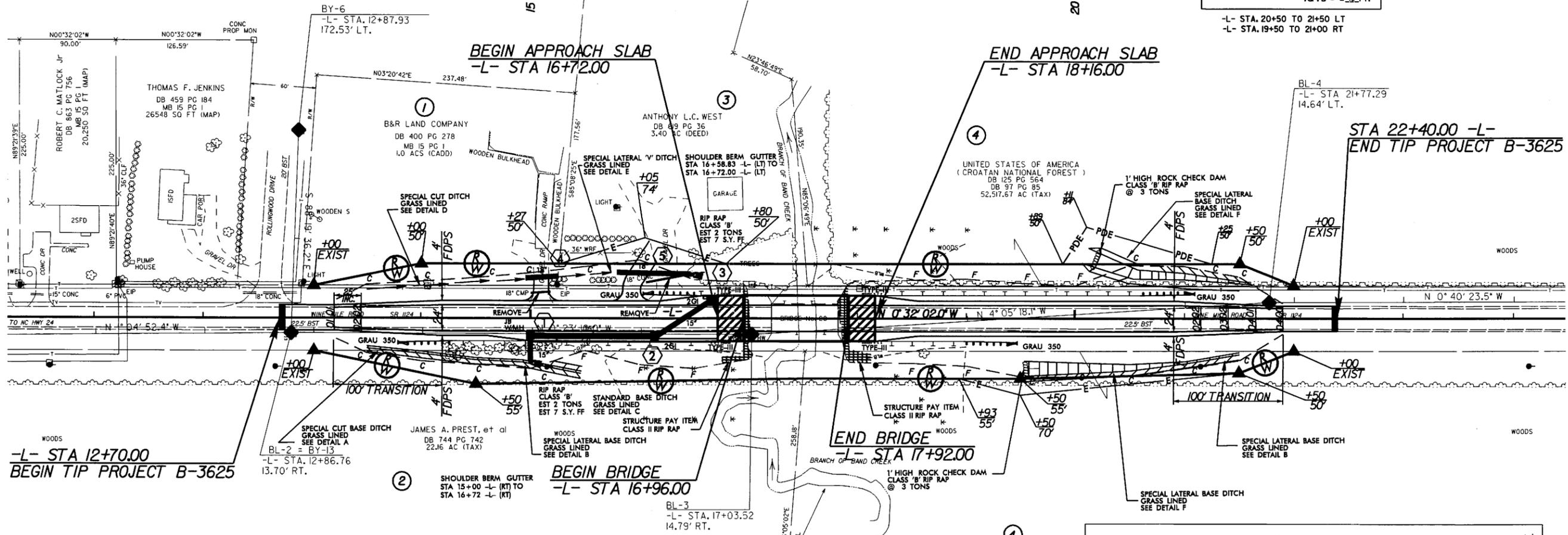
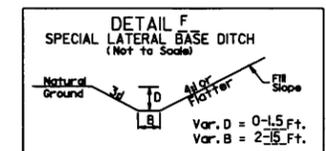
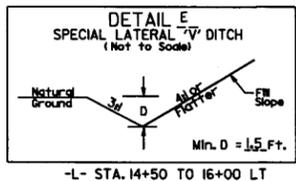
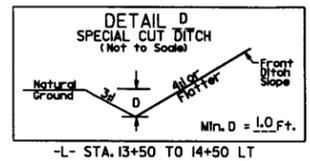
SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
UG Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown UG Line	-----
UG Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
UG Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

PROJECT REFERENCE NO. B-3625	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

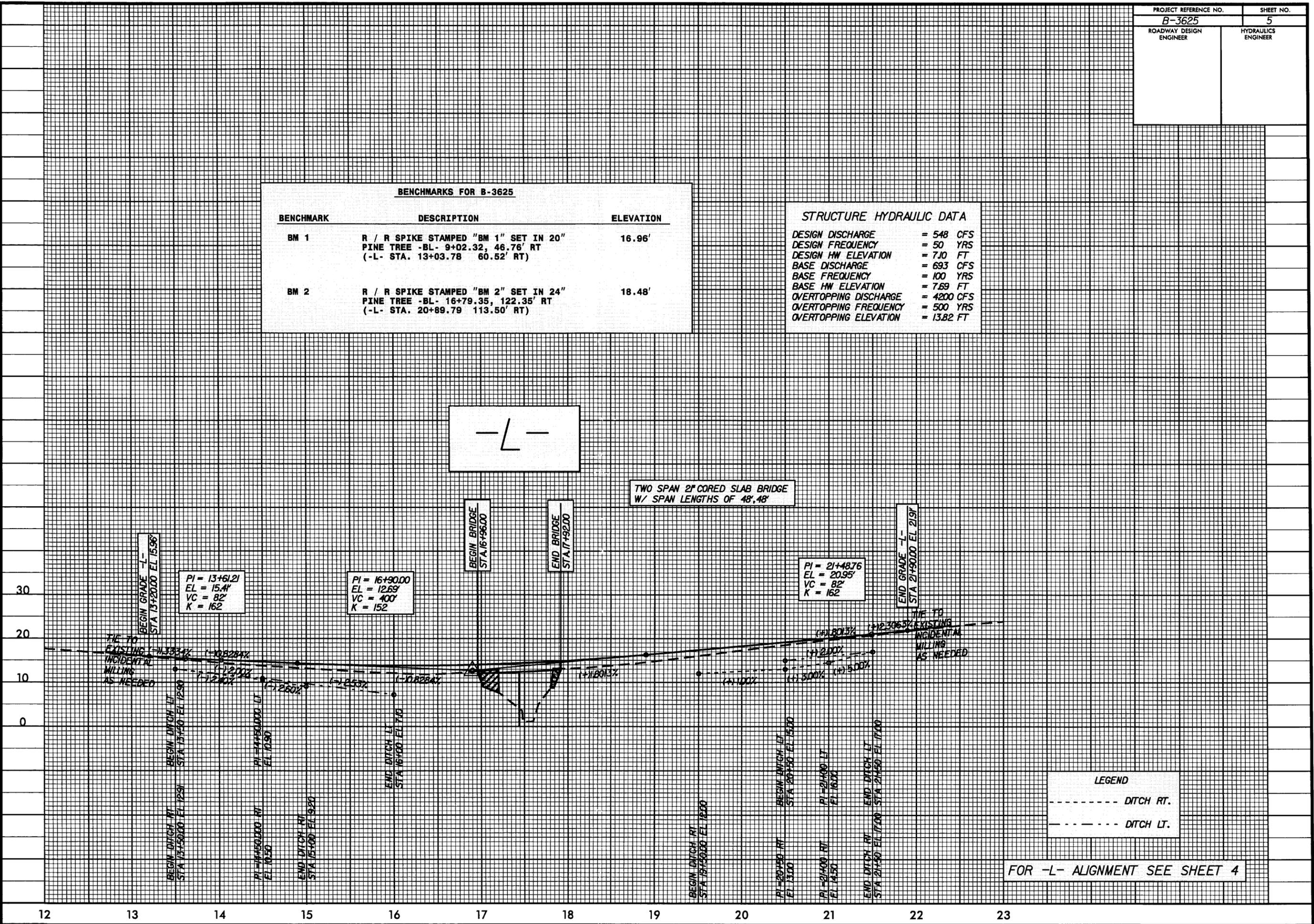


SEE SHEET 5 FOR -L- PROFILE
SEE SHEET S-1 THRU S-4 FOR STRUCTURE PLANS.

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BENCHMARKS FOR B-3625		
BENCHMARK	DESCRIPTION	ELEVATION
BM 1	R / R SPIKE STAMPED "BM 1" SET IN 20" PINE TREE -BL- 9+02.32, 46.76' RT (-L- STA. 13+03.78 60.52' RT)	16.96'
BM 2	R / R SPIKE STAMPED "BM 2" SET IN 24" PINE TREE -BL- 16+79.35, 122.35' RT (-L- STA. 20+89.79 113.50' RT)	18.48'

STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 548 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 7.10 FT
BASE DISCHARGE	= 693 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 7.69 FT
OVERTOPPING DISCHARGE	= 4200 CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 13.82 FT



-L-

TWO SPAN 21' CORED SLAB BRIDGE
W/ SPAN LENGTHS OF 48', 48'

PI = 13+61.21
EL = 15.4'
VC = 82'
K = 162

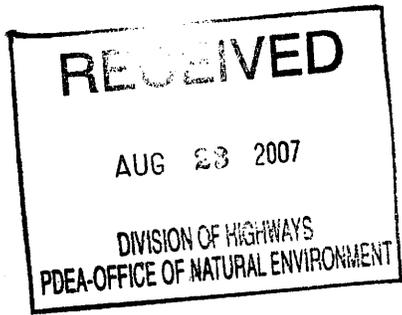
PI = 16+90.00
EL = 12.63'
VC = 400'
K = 152

PI = 21+48.76
EL = 20.95'
VC = 82'
K = 162

LEGEND
- - - - - DITCH RT.
- - - - - DITCH LT.

FOR -L- ALIGNMENT SEE SHEET 4

5/14/99
 02-APR-2007 08:31
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August 21, 2007

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-3625, Replace Bridge Number 20 on SR 1124 over East Prong
of Broad Creek, Carteret County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the subject project. Based on the information supplied by you on July 27, 2007, the impacts are located in CU 03020106 of the White Oak River Basin in the Southern Outer Coastal Plain (SOCP) Eco-Region, and are as follows:

Riparian Wetlands: 0.13 acre

During the review of this request, it was noted that this project did not include any wetland or stream impacts in the 2007 Impact Projection Database; however, EEP will provide the requested riparian wetland mitigation. Depending on the availability and projected need of stream mitigation in this cataloging unit, additional stream mitigation may be required that was not included in the biennial budget submitted to NCDOT on April 2, 2007 (revised April 16, 2007).

EEP commits to implementing sufficient compensatory riparian wetland mitigation to offset the impacts associated with this project by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, fully executed on March 8, 2007. If the above

Restoring... Enhancing... Protecting Our State

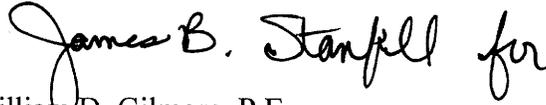


North Carolina Ecosystem Enhancement Program, 1652 Mail Service Center, Raleigh, NC 27699-1652 / 919-715-0476 / www.nceep.net

referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

A handwritten signature in black ink that reads "James B. Stanfell for". The signature is written in a cursive style.

William D. Gilmore, P.E.
EEP Director

cc: Mr. William Wescott, USACE – Washington
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-3625

lurchy



United States
Department of
Agriculture

Forest
Service

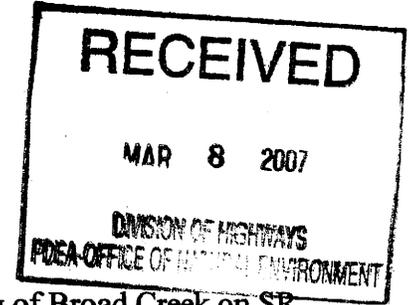
National Forests in North Carolina
Supervisor's Office

160 ZILICOA ST STE A
ASHEVILLE NC 28801-1082
828-257-4200

File Code: 2730-2

Date: February 27, 2007

Ms. Betty Yancey
Right of Way Agent
North Carolina Department of Transportation
1546 Mail Service Center
Raleigh, NC 27699-1546



Dear Ms. Yancey:

We received a request for a Right-of-Way for Bridge #20 over East Prong of Broad Creek on SR 1124 in Carteret County dated April 19, 2006. Attached to that request was a revised set of plans dated September 29, 2005. We have reviewed those plans and conducted additional field work based on those plans.

The Forest Service issued a Public Road Easement to the North Carolina Department of Transportation (NCDOT) for this project on August 19th, 2003 based on plans dated July 2, 1999. After reviewing the new plans and writing a supplement to the Biological Evaluation (BE) dated December 20, 2006, we have determined that the easement as issued covers the work as described in the plans dated September 29, 2005. That easement covers 50 foot from the centerline excluding any cuts and fills. Therefore, it is not necessary to issue any additional easement for this project as currently proposed.

For your convenience, I have enclosed copies of the previously issued easement and contract stipulations for this project and a copy of the supplement to the BE. Please ensure that your engineer has incorporated the contract stipulations and previously prescribed mitigation measures found on page three of the July 3, 2003 BE into the design of the project and that they contact Croatan District Ranger Lauren Hillman at 252-638-5628 prior to beginning construction.

If you have any questions regarding the project for Bridge #20 in Carteret County please contact me at 828-257-4230.

Sincerely,

KAREN L. COMPTON
Environmental Coordinator

Enclosure

cc: Pam Williams, NCDOT Bridge Unit ✓
Lauren Hillman, Croatan District Ranger



Authorization ID: CRO101229
Contact ID: CRO1012
Expiration Date: None
Use Code: 741

FS-2700-9f (9/96)
OMB No. 0596-0082

**U. S. DEPARTMENT OF AGRICULTURE
Forest Service
PUBLIC ROAD EASEMENT
National Forest Roads and Trails Act,
October 13, 1964, (P. L. 88-657)
36 CFR 251.50, et seq**

COPY

THIS EASEMENT, dated this 19th day of August, 2003, from the UNITED STATES OF AMERICA, acting by and through the Forest Service, Department of Agriculture, hereinafter called Grantor, to the North Carolina Department of Transportation, hereinafter called Grantee.

WITNESSETH:

WHEREAS, the Grantee has applied for a grant of an easement under the Act of October 13, 1964 (78 Stat. 1089, 16 U.S.C. 532-538), for a road over certain lands or assignable easements owned by the United States in the County of Carteret, State of North Carolina, and administered by the Forest Service, Department of Agriculture.

NOW THEREFORE, Grantor does hereby grant to Grantee an easement for a public road and highway along and across a strip of land, hereinafter defined as the right-of-way for Bridge #20 on SR 1124 on the north side of the East Prong of Broad Creek over and across the lands in the County of Carteret, State of North Carolina, as described in exhibit A attached hereto.

The word "right-of-way" when used herein means said strip of land whether or not there is an existing road or highway located thereon. Except where it is defined more specifically, the word "highway" shall mean roads or highways now existing or hereafter constructed on the right-of-way or any segment of such roads or highways.

This grant is made subject to the following terms, provisions, and conditions:

1. Outstanding valid claims, if any, existing on the date of this grant.
2. The easement herein granted is limited to use of the described right-of-way for the purpose of construction, operation, and maintenance of a highway in accordance with approved plans, specifications, and stipulations described in the following conditions numbered 3 and 4 and does not include the grant of any rights for nonhighway purposes or facilities; Provided, That the Forest Service shall not exercise its right to use or authorize the use of any portion of the right-of-way for nonhighway purposes when such use would interfere with the free flow of traffic or impair the full use and safety of the highway; and Provided further, That nothing herein shall preclude the Forest Service from locating National Forest and other Department of Agriculture information signs on the portions of the right-of-way outside of construction limits.

3. The design and construction of the highway project situated on this right-of-way shall conform with plans, specifications, and written stipulations approved by the Forest Supervisor.
4. Any reconstruction of the highway situated on this right-of-way shall conform with plans, specifications, and written stipulations approved by the Forest Supervisor or authorized representative prior to beginning such reconstruction.
5. Consistent with highway safety standards, the Grantee shall:
 - (a) Protect and preserve soil and vegetative cover and scenic and esthetic values on the right-of-way outside of construction limits.
 - (b) Provide for the prevention and control of soil erosion within the right-of-way and adjacent lands that might be affected by the construction operation, or maintenance of the highway, and shall vegetate and keep vegetated with suitable species all earth cut or fill slopes feasible for revegetation or other areas on which ground cover is destroyed. The Grantee shall perform these activities where it is deemed necessary during a joint review between the authorized Forest Officer and Grantee prior to completion of the highway. The Grantee also shall maintain all terracing, water bars, leadoff ditches, or other preventive works that may be necessary to accomplish this objective. This provision also shall apply to waste disposal areas and slopes that are reshaped following slides that occur during or after construction.
6. The Grantee shall: Establish no borrow, sand, or gravel pits; stone quarry; permanent storage areas; sites for highway-operation and maintenance facilities; camps; supply depots; or disposal areas within the right-of-way, unless shown on approved construction plans, without first obtaining approval of the authorized Forest Officer.
7. The Grantee shall maintain the right-of-way clearing by means of chemicals only after the Forest Supervisor has given specific written approval. Application for such approval must be in writing and must specify the time, method, chemicals, and the exact portion of the right-of-way to be chemically treated.
8. The Grantee does by the acceptance of this document covenant and agrees for itself, its assigns, and its successors in interest to the property here granted or any part thereof, that the covenant set forth below shall attach to and run with the land:
 - (a) That the Grantee shall operate the described property and its appurtenant areas and its buildings and facilities whether or not on the land therein granted as a public road, in full compliance with Title VI of the Civil Rights Act of 1964 and all requirements imposed by or pursuant to the regulations issued there under by the Department of Agriculture and in effect on the date of this document to the end that no person in the United States shall, on the grounds of race, sex, color, religion, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any programs or activities provided thereon; and
 - (b) That the United States shall have the right to judicial enforcement of these covenants not only as to the Grantee, its successors and assigns, but also as to lessees and licensees doing business or extending services under contractual or other arrangements on the land therein conveyed.

The Chief, Forest Service, may terminate this easement, or any segment thereof, (1) by consent of the Grantee, (2) by condemnation, or (3) after a five (5) year period of nonuse, by a determination to cancel after notification and opportunity for hearing as prescribed by law.

IN WITNESS WHEREOF, the Grantor, by its Forest Supervisor, Forest Service, has executed this easement pursuant to the delegation of authority to the Chief, Forest Service, 7 CFR 2.60, and the delegation of authority by the Chief, Forest Service, dated August 22, 1984 (49 FR 34283), on the day and year first above written.

UNITED STATES OF AMERICA

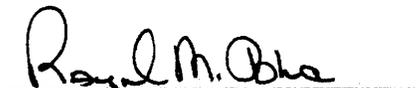


JOHN F. RAMEY
Forest Supervisor
Forest Service
Department of Agriculture

STATE OF NORTH CAROLINA
COUNTY OF BUNCOMBE

I, Raymond M. Johns II, a Notary Public for said County and State, do hereby certify that John F. Ramey, Forest Supervisor, National Forests in North Carolina, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witnessed my hand and official seal, this the 19th day of August, 2003.


Notary Public

My commission expires October 22, 2006

STATE OF NORTH CAROLINA
COUNTY OF CARTERET

I, _____, Register of Deeds of Carteret County, North Carolina, do hereby certify that the foregoing certificate of Raymond M. Johns II, a Notary Public of Buncombe County, North Carolina, duly authenticated by his notarial seal thereto affixed, is adjudged by me this day to be correct, in due form, and according to law, and said instrument is adjudged duly acknowledged.

Register of Deeds

Filed for registration of the ____ day of _____, 2003 at ____ o'clock ____ M, and registered and verified in the Office of the Register of Deeds for Carteret County, North Carolina, in Deed Book _____, page _____, this the ____ day of _____, 2003.

Register of Deeds

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0598-0082.

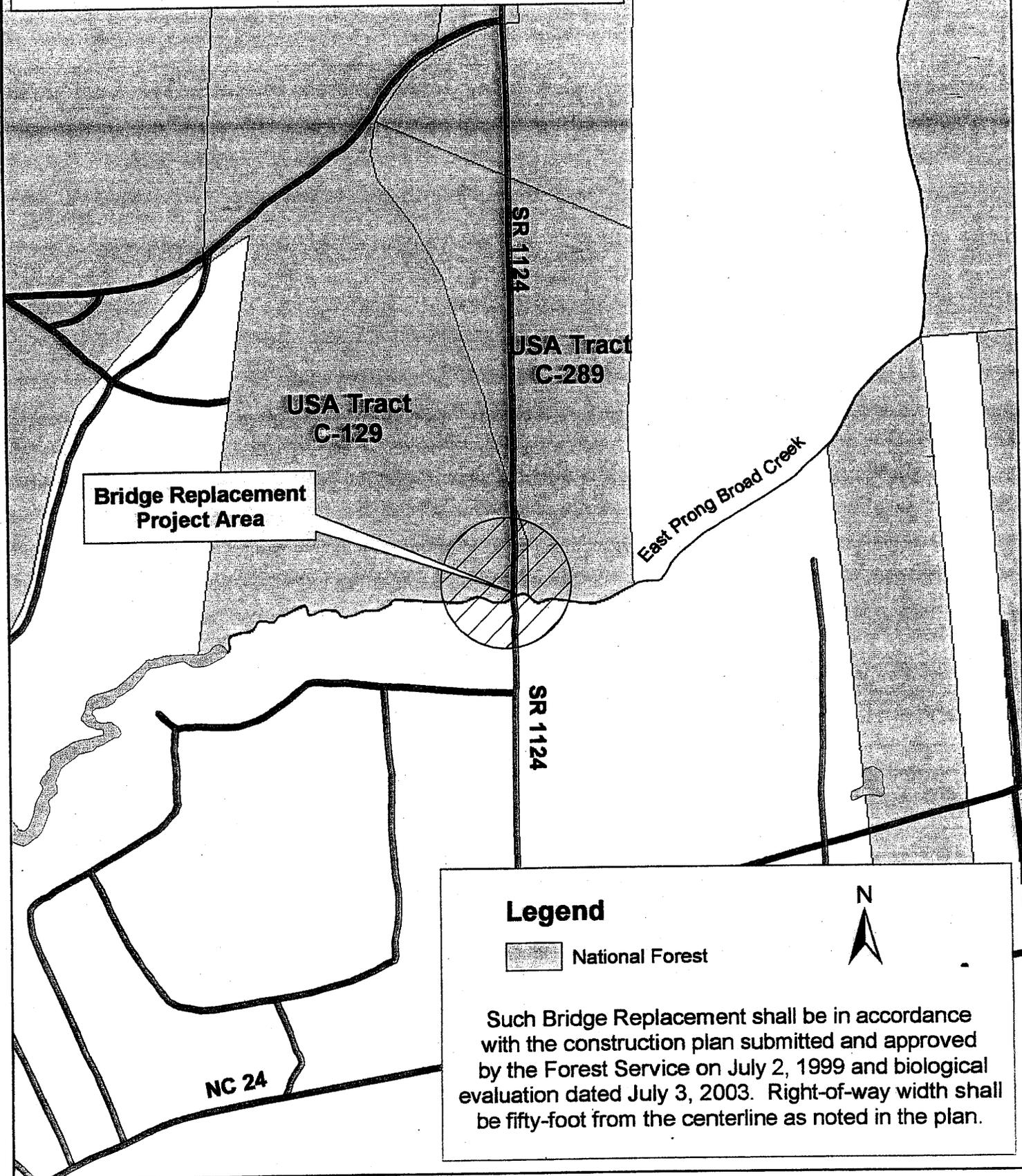
This information is needed by the Forest Service to evaluate requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the Secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Sid Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act, Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations for the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information, if requested, is estimated to average 1 hour per response for annual financial information; average 1 hour per response to prepare or update operation and/or maintenance plan; average 1 hour per response for inspection reports; and an average of 1 hour for each request that may include such things as reports, logs, facility and user information, sublease information, and other similar miscellaneous information requests. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

**Public Road Easement - SR 1124
Replacement of Bridge No. 20 - B-3625
East Prong Broad Creek
North Carolina Department of Transportation**

ID: CRO101229



**Bridge Replacement
Project Area**

Legend

 National Forest



Such Bridge Replacement shall be in accordance with the construction plan submitted and approved by the Forest Service on July 2, 1999 and biological evaluation dated July 3, 2003. Right-of-way width shall be fifty-foot from the centerline as noted in the plan.

Construction Stipulations
North Carolina Department of Transportation
Replacement of Bridge #20 on SR 1124 over East Prong of Broad Creek
Carteret County, North Carolina

This Stipulation, made this 18th day of August 2003, by and between the North Carolina Department of Transportation, hereinafter referred to as the State, and the Forest Service, United States Department of Agriculture, acting herein by and through the Forest Supervisor, hereinafter referred to as the Forest Supervisor.

WHEREAS, the State is engaged in the replacement of Bridge #20 on SR 1124 over East Prong of Broad Creek, located on the Croatan Ranger District, which traverses lands of the United States in the State of North Carolina, County of Carteret administered by the Forest Service, and

WHEREAS, the State and the Forest Supervisor desire to cooperate in the development and construction of a highway that will protect adequately and afford adequate utilization of the lands of the United States traversed by the highway for the purposes for which the lands are being administered.

NOW, THEREFORE, supplementary to the terms and conditions of the highway easement deed between the United States, and the State, the parties hereto agree to carry out the following provisions during the construction stage: (Construction stage is to begin when construction activities commence on lands administered by the Forest Service and end when the Forest Supervisor and the State mutually agree that any work done thereafter will be considered as maintenance, EXCEPT, that the Forest Supervisor reserves the right to reinstate the provisions of this stipulation if the State subsequently submits plans for reconstruction or alteration of the highway).
The State shall:

1. Before any clearing of the right-of-way or construction of the bridge begins:

- a. All plans and specifications must comply with the mitigation measures contained in the Biological Evaluation dated July 3, 2003, which are attached to and made part of these stipulations. Construction plans that address these measures shall be prepared and submitted for approval by the Forest Supervisor prior to beginning construction.
- b. Prepare, in cooperation with the Forest Supervisor, a fire protection plan that sets forth in detail the fire prevention, pre-suppression, and suppression measures that will be taken by the Grantee, its employees, contractors, and subcontractors, and their employees in all operations during the construction stage. The fire plan shall be made available to all bidders prior to letting contract and the Grantee shall cause its contractors to comply with all provisions of the fire plan and of all burning permits issued for disposal of flammable materials.
- c. Prepare, in cooperation with the Forest Supervisor, a clearing plan that sets forth in detail the procedures and standards that will apply to all clearing and disposal of merchantable timber and young growth in the right-of-way and debris disposals, including debris removal from all streams. Such plan shall include provision for payment by the Grantee or its contractors for the merchantable timber on lands of the United States to be cut, used, or destroyed in the construction of the highway or in clearing of said right-of-way. Payment for merchantable timber shall be at appraised value as determined by the Forest Supervisor. Provided, That the Forest Supervisor may dispose of the merchantable timber to other than the Grantee or its contractors at no stumpage cost to the Grantee or its contractors.

d. Prepare, in cooperation with the Forest Supervisor, a landscape and erosion control plan with the objective of protecting, restoring, or enhancing the roadside landscape, protecting soil, and protecting or reestablishing vegetative cover. Such plan shall, when appropriate, provide for vegetating cuts, fills, and other areas damaged as a result of highway construction; maintenance or operation; and for terraces, drainage, waste disposal areas, soil replacement, and other related requirements necessary to achieve the objective. Contract specifications pertaining to erosion control shall be made available to the Forest Service prior to contract advertisement.

2. Dispose of waste material resulting from slides during and after construction and surplus material at locations approved by the Forest Supervisor. A plan showing the proposed method of disposal shall be submitted by the Grantee at the time approval is requested.

3. Permanently monument the right-of-way in accordance with State requirements for such right-of-way before completing construction, but in any event, the minimum requirements shall be to place permanent monuments at the intersection of right-of-way with all property lines, section lines, and at intervals of not more than 1,000 feet along the right-of-way limits.

4. Land monuments and property corners or witness markers shall not be damaged, destroyed, or obliterated without the prior permission of the Forest Supervisor and shall be relocated or reestablished in accordance with standards satisfactory to the Forest Supervisor.

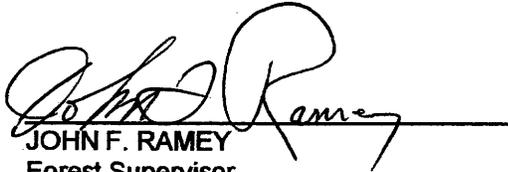
IN WITNESS WHEREOF, the parties hereto have caused this Stipulation to be executed on the day and year first above written.

**North Carolina Department
of Transportation:**



JOHN B. WILLIAMSON, JR.
Manager of Right-of-Way
North Carolina Department of Transportation

United States Forest Service:



JOHN F. RAMEY
Forest Supervisor
National Forests in North Carolina

Date: 7-30-03

Date: 8/15/03

FIRE PROTECTION PLAN

During the period of construction, the Grantee shall both independently and in cooperation with the Forest Service, do everything that is reasonable and practical to prevent and suppress forest fires on the easement area and in its immediate vicinity. All contracts and subcontracts for the construction of the road shall include provisions requiring contractors, subcontractors, and their respective employees to do likewise. The Grantee, the contractors, and subcontractors will conform to, but not be limited to, the following Fire Plan:

1. Take immediate independent or cooperative action to control and extinguish any fire, regardless of cause, within the easement area and its vicinity.
2. Be responsible for all damage and fire suppression costs incurred by any Government agency resulting from this use of National Forest lands. The contractor will require his personnel and equipment to be available for fire suppression, under the direction of the Forest Service, for all fires resulting from his operation.
3. The contractor will be required to contact the N.C. Forest Service and the U.S. Forest Service to obtain a permit for burning on the granted area. The N.C. State Forest Service will coordinate their burning permit with the U.S. Forest Service. The Forest Service will be contacted by the contractor if burning on private land is near Forest Service land.
4. At all times, when burning, the contractor shall have on the project a sufficient number of personnel and equipment to keep fire(s) under control.
5. Conduct burning operations on National Forest land in a manner prescribed by, and satisfactory to, the National Forest Officer in charge.
6. Provide adequate spark arrestors acceptable to the Forest Officer on all steam and internal combustion engines, including tractors, trucks power rollers, power shovels, and chain saws. The use of welding equipment, cutting torches, and similar flammable equipment must be done in an area cleared of all vegetation, leaves and debris. Power saws shall not be refueled while hot and shall be refueled in a roadway or other cleared area.
7. When the Forest Service advises the State that local fire weather conditions are becoming critical, the Grantee shall keep with gasoline chain saws at all times, a shovel, and take precautionary measures requested by the Forest Service.

CLEARING PLAN

The Grantee, or his contractors and subcontractors will conform to the following Clearing Plan:

1. The Grantee, or his contractors, will pay for all merchantable timber on National Forest land to be cut, used, or destroyed in the construction of the highway or in clearing of said right-of-way. Lump sum payment for merchantable timber will be appraised value as determined by the District Ranger using the R-8 timber appraisal schedule; provided, that the District Ranger may dispose of the merchantable timber to other than the Grantee or its contractors at no stumpage cost to the Grantee or its contractors.
2. Unmerchantable materials, including tops and branches, shall be disposed of by being used as brush barriers as directed by the Forest Service. Alternative methods of disposal, including any of the following methods or combinations of methods (lop and scatter, chip, remove, pile only), must be approved in advance by the Forest Service.
3. The maximum clearing and grubbing limits are to be set at 5 feet outside actual construction lines except that cutting of hazard trees outside these limits may be done with approval. Construction machinery is to be contained within the clearing limits. However, no clearing shall be done outside the south right-of-way limits.
4. The Grantee does hereby agree that prior to clearing operations within the easement limits, that in consultation with the Forest Supervisor, the mitigation measures contained in the Biological Evaluation (B.E.) will be incorporated into the construction plan. If during the clearing phase of construction endangered, threatened, and sensitive species are encountered, the Forest Supervisor will be notified before clearing proceeds and a specific B.E. will be performed. If the B.E. concludes that adverse effects to endangered, threatened, and sensitive species is likely to occur, then it will be necessary to consult with the Forest Supervisor regarding the findings and diverse mitigation measures to ensure protection of the species.

CULTURAL RESOURCE PLAN

1. Assure that the project area has been surveyed by a professional Archaeologist. (A professional Archaeologist is one whose qualifications meets or exceeds those of the Society of Professional Archaeologists.)
2. In consultation with the Forest Supervisor, conduct an archaeological survey of sufficient quality and scope to determine if significant cultural resources exist (those that meet or may meet National Register criteria). Archaeological reports will be submitted to the Forest Supervisor for review. Reports will address the following:
 - (a) Introduction (setting, location, sites plotted by UTM with statement of significance, historical background research description of project.)
 - (b) Survey methodology employed.
 - (c) Survey results, including discussion of sites found; person-hours in field and report preparation; mitigation alternatives and costs, if any; evaluation of adequacy of survey work.
 - (d) Bibliography, photographs, and completed State site forms.
3. If, during the survey of construction, archaeological sites are discovered, each will be evaluated by a professional archaeologist using the National Register of Historic Places, criteria of significance, using known data.
 - (a) In the event that archaeological site testing is required to evaluate significance, and the construction project cannot be moved so that no adverse effect will occur to the cultural resource, the public road agency will notify the Forest Supervisor for consultation before construction begins or resumes.
 - (b) All activities requiring modifications to National Register listed or eligible sites will be coordinated by the Forest Service and the Advisory Council on Historic Places and the State Historic Preservation Officer, whether under easement or not.
 - (c) Testing or mitigating National Register sites will require a 1906 Antiquities Act permit, authorized by the Regional Forester and the Smithsonian Institution. The permit shall be sought prior to any investigations of this order.
 - (d) A report describing the sites found, their significance, and the judgments used to arrive at significant determinations, will be prepared by the public road agency's professional archaeologist and submitted to the Forest Supervisor for review.
 - (e) A "site" is defined as more than two artifacts in close proximity and older than 50 years.

LANDSCAPE AND EROSION CONTROL PLAN

The Grantee or Contractor shall take necessary measures to prevent and control soil erosion within the right-of-way and on adjacent lands that might be affected by construction, operation, or maintenance of the highway; and shall revegetate, and keep revegetated, all areas of soil made bare by these activities, and shall constrain eroded material within the construction limits. To meet this objective the Grantee or Contractor will accomplish the following provisions during construction:

1. Slope cut banks in earth or mixed earth and rock to a 1:1 or flatter slope, so that the banks will remain stable and support vegetation. Round top of bank.
2. Leave cut banks in a rough condition to provide good seed bed. Use serrated banks where needed to provide adequate seed bed.
3. Construction intercepting ditches above cut banks 30 feet or more in height. Ditches will have a 2 percent gradient to carry runoff into an adjacent stable channel.
4. Maintain uniform cut and fill slopes. Do not permit steep pitches, particularly at the toe of the slope.
5. Leave raised berm along fill sections until fill is stabilized. Provide stable drainage channels through berm and down fills at adequate intervals to prevent water concentration and gulying.
6. Protect fills with a suitable riprap where rills or gullies develop.
7. Slope earth fills to 1-1/2:1 or flatter to reduce sloughing.
8. Do not remove and replace culverts outside the normal seeding season, April 1 to September 30, or when precipitation is expected.
9. Install culverts on natural slope or so that they will drain on stable material. Use water spreading devices where needed to prevent gulying below culvert.
10. Construct toe walls or retaining walls at the toe of fills on steep slopes where sediment from the fill would reach the high water level or a live stream.
11. Establish and maintain a vegetative cover on all earth cut and fill banks on all mixed earth and rock banks which have enough soil due to construction. General guidelines for stabilization include:
 - (a) Seeding as construction progresses. A temporary cover crop will be established if there is a conflict in planting season. A permanent cover crop will be established at the first approved time of planting.
 - (b) Completing all seeding, fertilizing, and mulching within 30 days of construction during the seeding season, unless drought conditions prevail.
 - (c) Using a seed mixture adapted to soil, climate, and season. Mulching with straw tied down with asphalt emulsion.
12. Seed bare soils within 100 feet of riparian area the same day as completion of soil disturbance.
13. Use stream spanning structures in place of culverts at stream crossings where possible.
14. Comply with the Mitigation Measures contained within the Biological Evaluation (BE) prepared for the project. If any of the above stipulations conflict with the mitigation contained in the BE, those contained in the BE shall take precedence.

**BIOLOGICAL EVALUATION
(2006 supplement)**

**Croatan National Forest, Croatan Ranger District
Carteret County, North Carolina**

DOT Bridge #20 Replacement Project

Discussion

In August, 2003 The North Carolina Department of Transportation (NCDOT) was granted an easement along SR 1124 for the replacement of Bridge #20 over the East Prong of Broad Creek, located on the Croatan Ranger District. This project has not been initiated due to a recent request for additional easement rights. This Biological Evaluation is meant to supplement the results and determination of effects from the original Biological Evaluation, Aquatic Resource Analysis, and Botanical Survey that were conducted between 2001 and 2003.

Proposed Actions

The original right-of-way request was 30 feet on either side of the centerline. NCDOT has now requested 50 feet on either side of the centerline plus easement to tie the slope to the existing natural ground. No other changes were requested from the original Decision Memo and Easement request.

Results and Determination of Effect

Bart Kicklighter, Wildlife Biologist and Will Dienst, Silviculturist for the Croatan National Forest surveyed the proposed easement area in November, 2006. No Proposed, Endangered, Threatened, or Sensitive (PETS) terrestrial wildlife or plants were observed within the previous and recently requested easement area. Several pulp and sawtimber sized trees lie within the proposed easement. The removal of these trees will require further consultation with the Croatan National Forest timber managers. There is no change in the Determination of Effect from the original Biological Evaluation.

Original Determination of Effect:

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not affect threatened, endangered, or proposed aquatic species, nor will suitable habitat be affected. Consultation with the U.S. Fish and Wildlife Service is not required.

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not have long-term impacts on aquatic sensitive

(Croatan crayfish) or Forest concern (elfin skimmer) species, nor will project implementation result in a trend toward listing for either of these species assuming that the above mitigation measures are implemented successfully. Habitat for these species could be temporarily affected, with conditions quickly returning to normal upon project completion.

It was determined that this project may directly affect individuals of the mimic glass lizard. The Buchholz' dart moth, Arogos skipper, Venus flytrap cutworm moth, and Byssus skipper may be directly affected if eggs are laid within the area where ground disturbance and vegetation removal are proposed. The Bachman's sparrow may be directly affected if nests with eggs are crushed during project implementation. However, due to the very small area impacted, it is not likely to cause a trend toward federal listing of any sensitive terrestrial wildlife species or a loss of viability to any PETS terrestrial wildlife species. No indirect or cumulative effects will occur. Consultation with the USDI Fish and Wildlife Service is not required.

Implementation of this project will have no effect on botanical resources. Consultation with the USDI Fish and Wildlife Service is not required.

prepared by:

/s/ Bart C. Kicklighter

Bart C. Kicklighter
Wildlife Biologist
Croatan National Forest
December 20, 2006

BIOLOGICAL EVALUATION

Croatan National Forest, Croatan Ranger District Carteret County, North Carolina

DOT Bridge #20 Replacement Project

Existing Conditions and Proposed Actions

This document discloses the effects to Proposed, Endangered, Threatened, and Sensitive (PETS) terrestrial wildlife, plants, and aquatic species as a result of the replacement of Bridge #20. This bridge is located across the east prong of Broad Creek in Carteret County, North Carolina. The road, SR 1124 (Nine Mile Road), is located at the southern end of the Croatan National Forest. National Forest land occurs directly adjacent to the road and north of the creek, while private land can be found directly adjacent to the road and south of the creek. There were three alternatives and three "sub" alternatives considered in this proposal (reference project file). John O. Fussell, III, Contract Botanist, also visited the site on August 27, September 18, and October 7, 2001. Sheryl Bryan, Fishery Biologist, visited the site on August 23, 2001. Megan York (formerly Megan Martoglio), Wildlife Biologist, visited the area several times during this time period. Additional information for this project was received from Dennis Foster, Assistant Ranger, on the Croatan National Forest.

Of the seven proposed alternatives (reference the original proposal or supporting environmental documentation), the decision has been made to implement Alternative 3B.

Results and Discussion

Species considered for this project include those listed for the Croatan National Forest in the National Forests in North Carolina PETS Species List (reference attached species lists). As part of the determination of effects to PETS species, occurrence records of rare species and communities for the project area were reviewed. Information collected from Mr. Alvin Braswell, Curator of Reptiles at the NC Museum of Natural Science, was used to make determinations of habitat suitability for this project. Information received from Mr. Bo Sullivan, a private individual specializing in moths and butterflies, was also used to make determinations of effects.

Aquatic Resources

Forty-five rare aquatic species have been listed by the NCWRC, USFWS or NCNHP as occurring or potentially occurring on the Croatan National Forest (reference attached list). Of the 45 aquatic species included on the original list for analysis, 43 were dropped as a result of a likelihood of occurrence evaluation based on preferred habitat elements and field survey results. Species that do not occur (based on survey results) or are not likely to occur (based on a lack of suitable habitat) are removed from the list of species considered. Species that may occur due to the presence of suitable habitat, but that have not been documented as occurring in the vicinity of the analysis area are not considered in this analysis. This analysis will address habitat suitability for two rare aquatic species that may occur within the aquatic analysis area, although the species were not found during recent

surveys. These species are the Croatan crayfish (*Procambarus plumimanis*) and the Elfin skimmer (*Nannothemis bella*).

No rare aquatic insects were found during these surveys. Of the aquatic insects sampled from East Prong Broad Creek in August 2001, approximately 17% are members of the orders Ephemeroptera (mayflies), Plecoptera (stoneflies), or Trichoptera (caddisflies) (EPT organisms). These orders are typically indicators of good water quality and stream health. This collective relative abundance has been indexed as a metric for use in determining overall stream health (EPT index) by the North Carolina Department of the Environment and Natural Resources (NCDENR). NCDENR records from the Croatan National Forest indicate that approximately 150 species of aquatic insects and invertebrates (other than species considered above) occur across the Forest, with approximately 47 (31%) of these species representing EPT taxa. In this light, overall stream health within East Prong Broad Creek appears to be somewhat affected by surrounding land uses. The dominance of flies and midges (and not EPT organisms) generally indicates lower water quality. Within the aquatic analysis area, land use is primarily road right-of-way. Beyond this area, rural development (including housing and businesses) dominates local land use.

Implementation of this project will result in some disturbance to East Prong Broad Creek within the project area. Included are disturbances to the riverbanks and bottom during construction of bridge abutments (either temporary or permanent) and at equipment access points. Also, turbidity is likely to be increased during the implementation of any alternative.

Disturbance of the riverbanks and bottom will result in the sedimentation of local and downstream habitats. Sedimentation of aquatic resources reduces the amount of habitat available to fish and other aquatic organisms. This includes the loss of interstitial space within the substrate, which is particularly important for aquatic invertebrates (including mussels and crayfish), as well as for fish and salamander spawning and rearing areas. In addition, fine sediment particles, such as silt, decrease oxygen transport to and from aquatic populations and increase the risk of disease introduction. Long-term loss of suitable habitat can result in a decline in fish, invertebrate, and other aquatic organism productivity. However, the method of project implementation can affect how much sediment is transported and how much habitat is affected. Therefore, the mitigation measures listed below are required to minimize these negative effects during project implementation.

Aquatic habitat within area streams may be lost locally to increased sedimentation and turbidity during and after bridge replacement; however, such losses are expected to be of short duration. As bare soil is revegetated and sediments are flushed downstream, local aquatic invertebrate communities will recolonize quickly. Long-term changes in local hydrology and aquatic microhabitat distribution will not affect aquatic insect community composition since no habitats will be lost-- only "reorganized".

Sediments that are flushed downstream may also temporarily affect habitats downstream in East Prong Broad Creek. However, these potential effects are not likely to be measurable based on flow volume and potential sediment transport rates within system.

Mobile species, such as juvenile and adult fish and crayfish will likely respond to disturbance by leaving the area during adverse conditions, and return when conditions improve. In addition, aquatic

insect communities generally adapt quickly to local conditions, and have demonstrated the ability to recolonize affected areas quickly after disturbance (Rosenberg and Resh 1983). Aquatic communities within East Prong Broad Creek have, over time, adapted to the conditions associated with coastal river systems. And in general, species persisting in these systems are the ones that are tolerant of these temporary conditions.

Mitigation Measures- Aquatic Resources

Mitigation measures are management actions that are required to maintain compliance with environmental laws and regulations and are required in either action alternative to achieve the determination of effect below.

1. Erosion control such as (but not limited to) silt fence should be placed along the length of river bank that will be disturbed, between the disturbance and the water's edge, prior to project implementation to minimize soil entering East Prong Broad Creek. Erosion control efficiency should be maintained until vegetative cover is established upon project completion.
2. All coffer dams should be constructed using pre-formed concrete and other non-toxic materials unless the work area can be completely dry during installation and curing. If uncured concrete is used to form abutments or center supports behind a coffer dam, one or more aquatic biologist from the NCDOT, NCWRC, USFWS, or USFS should be present to insure that no uncured concrete comes in contact with East Prong Broad Creek. Uncured concrete is toxic to most aquatic life.

Terrestrial Wildlife Resources

Fifteen terrestrial wildlife PETS species are listed for the Croatan National Forest. All were considered in this document. According to the NCNHP records, none are known to occur within the project vicinity. Suitable habitat occurs within the project area for seven sensitive species. These are the mimic glass lizard, Bachman's sparrow, Byssus skipper, Buchholz' dart moth, Carolina gopher frog, Arogos skipper, and Venus flytrap cutworm moth.

Carteret County is the northernmost part of the range of the mimic glass lizard. This species is known to occur west of the project area within a Natural Heritage Area along Millis Road. Mr. Fussell also found *Pixidanthera*, host plant for the Buchholz' dart moth, and Venus flytrap slightly west of the project area. Therefore, the Buchholz' dart moth and Venus flytrap cutworm moth are likely to occur because their host plants occur within the vicinity and because there is high quality habitat within the project area. The Byssus skipper may occur within the project area because high quality grasses occur here, and the Arogos skipper could use the ecotonal area. No fish-free ponds used for breeding are known to occur within the vicinity of the project area, and none were found during the survey. Therefore it was determined that the Carolina gopher frog does not occur within the project area.

It was determined that this project may directly affect individuals of the mimic glass lizard. The Buchholz' dart moth, Arogos skipper, Venus flytrap cutworm moth, and Byssus skipper may be

directly affected if eggs are laid within the area where ground disturbance and vegetation removal are proposed. The Bachman's sparrow may be directly affected if nests with eggs are crushed during project implementation. However, due to the very small area impacted, it is not likely to cause a trend toward federal listing of any sensitive terrestrial wildlife species or a loss of viability to any PETS terrestrial wildlife species. No indirect or cumulative effects will occur.

Botanical Resources

Mr. Fussell observed several sensitive plant species within the proposed project area. These include Venus flytrap, savanna cowbane, Carolina asphodel, and Carolina goldenrod. In addition, savanna yellow-eyed-grass has been previously documented within this same area (Jeannie Kraus, N.C. Maritime Museum, pers. com., August 2001), and it is likely that it still occurs here, although it was not observed during recent survey.

Implementation of this project will avoid all sites having Sensitive plant species. However, one site lies within 50' of the proposed detour route. Thus, any poorly supervised work that leads to disturbance only a short distance beyond the proposed detour route could result in the destruction of individuals of Venus flytrap, savanna cowbane, and Carolina goldenrod, as well as southern white beaksedge if it also occurs here.

Determination of Effect

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not affect threatened, endangered, or proposed aquatic species, nor will suitable habitat be affected. Consultation with the U.S. Fish and Wildlife Service is not required.

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not have long-term impacts on aquatic sensitive (Croatan crayfish) or Forest concern (elfin skimmer) species, nor will project implementation result in a trend toward listing for either of these species assuming that the above mitigation measures are implemented successfully. Habitat for these species could be temporarily affected, with conditions quickly returning to normal upon project completion.

It was determined that this project may directly affect individuals of the mimic glass lizard. The Buchholz' dart moth, Arogos skipper, Venus flytrap cutworm moth, and Byssus skipper may be directly affected if eggs are laid within the area where ground disturbance and vegetation removal are proposed. The Bachman's sparrow may be directly affected if nests with eggs are crushed during project implementation. However, due to the very small area impacted, it is not likely to cause a trend toward federal listing of any sensitive terrestrial wildlife species or a loss of viability to any PETS terrestrial wildlife species. No indirect or cumulative effects will occur. Consultation with the USDI Fish and Wildlife Service is not required.

Implementation of this project will have no effect on botanical resources. Consultation with the USDI Fish and Wildlife Service is not required.

Prepared by:

/s/ Sheryl A. Bryan

SHERYL A. BRYAN
Fisheries Biologist
National Forests in North Carolina
July 3, 2003

**Proposed, Endangered, Threatened, and Sensitive Terrestrial Wildlife Species on
the Croatan National Forest**

<u>Species</u>	<u>Habitat Association</u>	<u>US Fish and Wildlife Service Status</u>	<u>State Status</u>	<u>Forest Service Status</u>	<u>Suitable Habitat Occurs in the Project Area</u>
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<u>Mammals</u>					
eastern cougar <i>Felis concolor cougar</i>	extensive forests, remote areas	Endangered	Endangered	Endangered	No

<u>Birds</u>					
Bachman's sparrow <i>Aimophila aestivalis</i>	pine savannas; old fields	Federal Species of Concern	Special Concern	Sensitive	No
bald eagle <i>Haliaeetus leucocephalus</i>	large bodies of water with mature trees nearby for perching	Threatened	Endangered	Threatened	No
red-cockaded woodpecker <i>Picoides borealis</i>	pine savannas; nesting habitat is pines 80+ years of age; foraging habitat is 50%+ pines at least 30 years in age	Endangered	Endangered	Endangered	No

<u>Reptiles/Amphibians</u>					
American alligator <i>Alligator mississippiensis</i>	fresh to brackish lakes, ponds, rivers, and marshes	Threatened	Threatened	Threatened	Yes
mimic glass lizard <i>Ophisaurus mimicus</i>	pine flatwoods, savannas, pine/oak sandhills	Federal Species of Concern	Special Concern	Sensitive	No
Carolina gopher frog <i>Rana capito capito</i>	temporary fish-free pools for breeding; forages in dry, sandy woods	Federal Species of Concern	Special Concern	Sensitive	No

Moths/Butterflies					
Buchholz' dart moth <i>Agrotis buchholzi</i>	flatwoods with pixie moss (<i>Pyxidantha</i>)	Federal Species of Concern	Significantly rare	Sensitive	No
Carter's noctuid moth <i>Spartiniphaga carterae</i>	savannas and sandhills with pinebarrens sandreed	Federal Species of Concern	Significantly rare	Sensitive	No
Arogos skipper <i>Atrytone arogos</i> <i>arogos</i>	savannas, open pinewoods, and other relatively undisturbed grasslands; host plant <u>Calamovilfa</u>	Federal Species of Concern	Significantly rare	Sensitive	No
Duke's skipper <i>Euphyes dukesi</i>	ecotones of brackish or fresh marshes with swamps; host plants are sedges	-	Significantly rare	Sensitive	No
Venus flytrap cutworm moth <i>Hemipachnobia</i> <i>subporphyria</i>	savannas with Venus flytraps	Federal Species of Concern	Significantly rare	Sensitive	No
an owlet moth <i>Meropleon</i> <i>diversicolor sullivanii</i>	coastal marshes	-	Significantly rare	Sensitive	No
rare skipper <i>Problema bulenta</i>	fresh to brackish marshes with tall grasses	Federal Species of Concern	Significantly rare	Sensitive	No
Byssus skipper <i>Problema byssus</i>	savannas, marshes, and other high quality grassy areas; host plants are grasses	-	Significantly rare	Sensitive	No

AQUATIC RESOURCE ANALYSIS (AQUA)

**UNITED STATES FOREST SERVICE
NATIONAL FORESTS IN NORTH CAROLINA
CROATAN NATIONAL FOREST**

SR 1124 Bridge # 20 Replacement
North Carolina Department of Transportation

Carteret County, North Carolina

Analysis Prepared By:

SHERYL A. BRYAN
Fisheries Biologist
October 31, 2001

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LEGAL REQUIREMENTS FOR AQUAS

This section should be considered a summary of environmental laws and regulations most applicable to this analysis. References for these and other environmental laws and regulations can be found at the end of this document.

The Endangered Species Act (ESA) requires that effects of a project proposal on Federally-listed (threatened or endangered) species and species proposed for Federal listing be analyzed, and that a determination of potential effects be made for each of these species. Consultation with the United States Fish and Wildlife Service (USFWS) is required to assess these potential effects to a listed or proposed species, which results in concurrence by the USFWS or the issuance of a jeopardy opinion.

The National Forest Management Act (NFMA) requires that potential effects of a proposed project on identified (and appropriate) management indicator species (MIS) be analyzed and disclosed. Furthermore, the NFMA requires potential effects on MIS viability at local and regional scales be analyzed and disclosed.

The National Environmental Policy Act (NEPA) requires that potential effects of a proposed project on natural resources be analyzed for a reasonable range of alternatives, and that such effects be disclosed and made available to the public.

Forest Service Manual 2670 (FSM 2670) is directly related to the ESA, and also allows the Forest Service to identify species as *sensitive* based on regional data and species information. FSM 2670 applies to Federally-listed and proposed species and Forest Service sensitive species, and requires that the Forest Service:

- “1. Manage habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species;
2. Conduct activities and programs to assist in the identification and recovery of Threatened and endangered plant and animal species; and
3. Avoid actions which may cause a species to become threatened or endangered.”

The Land and Resource Management Plan (LRMP) for the Uwharrie National Forest (hereafter, the Forest) identifies species that are considered to be generally rare based on local data and information as *Forest concern* and requires that effects on these species be considered in project analyses.

In addition, the LRMP includes practice standards and desired future conditions for the Forests that are related to several environmental laws or regulations. Particular attention is given to riparian areas and associated aquatic resources. Incorporation of LRMP standards during project planning and successful adherence to them during implementation virtually ensures compliance with environmental laws and regulations involving aquatic resources. The LRMP allows for mitigation measures to be implemented that minimize or eliminate potential effects.

PROJECT PROPOSAL DESCRIPTION

A more complete description of the project proposal can be found in the environmental assessment (EA) or other environmental documentation for this project. In summary, three action alternatives are being considered by the NCDOT for this project. For this analysis, the alternatives are identified as:

1. (a) Replace bridge #20 with two 8' x 6' concrete box culverts at approximately the same location and at approximately the same elevation. Maintain traffic along a temporary replacement structure (72" corrugated metal pipe) to the East (upstream) during construction.

(b) Replace bridge #20 with a 70' bridge at approximately the same location and at approximately the same elevation. Maintain traffic along a temporary replacement structure (72" corrugated metal pipe) to the East (upstream) during construction.
2. (a) Replace bridge #20 with two 8' x 6' concrete box culverts at approximately the same location and at approximately the same elevation. Maintain traffic along a temporary replacement structure (72" corrugated metal pipe) to the West (downstream) during construction.

(b) Replace bridge #20 with a 70' bridge at approximately the same location and at approximately the same elevation. Maintain traffic along a temporary replacement structure (72" corrugated metal pipe) to the West (downstream) during construction.
3. (a) Replace bridge #20 with a single-barrel culvert at approximately the same location and at approximately the same elevation. Maintain traffic using an off-site detour during construction.

(b) Replace bridge #20 with a 70' bridge at approximately the same location and at approximately the same elevation. Maintain traffic using an off-site detour during construction.
4. No action.

ISSUES CONSIDERED IN THIS AQUA

Table 1 lists issues related to aquatic resources identified by the Forest Service interdisciplinary team (IDT), other resource agencies, and the public for the SR 1124 Bridge #20 Replacement Project.

Table 1. Issues related to aquatic resources identified during the NEPA process for the SR 1124 Bridge #20 Replacement Project.

Issue	Identified By*
Effects on water quality within Broad Creek	agency, public
Sedimentation of Broad Creek	agency, public
Effects on local aquatic habitat and populations	agency, public
Effects on freshwater mussels	agency,
Effects on other rare aquatic species	agency

*Members of the general public and environmental organizations who provided comments during the NEPA process are not identified by name in this AQUA. They are referred to as the "public". Other State and Federal resource agencies providing comments during the NEPA process are identified as "agency".

AFFECTED ENVIRONMENT

The proposed project lies within the Broad Creek (hereafter, the Creek) drainage basin. Specifically, the project proposes to cross the East Prong Broad Creek at or in the vicinity of the existing Bridge #20. There are no tributaries involved.

For this analysis, the **aquatic project area** is defined from 100 meters downstream of the existing bridge upstream to 100 meters above the existing bridge, for a total of approximately 200 meters of the East Prong Broad Creek.

The **aquatic analysis area** is defined as the above area and extends downstream approximately 300 meters (to consider potential sediment transport), for a total of approximately 500 meters of the East Prong Broad Creek.

The aquatic project area is defined as the area immediately adjacent to ground-disturbing activities, where aquatic habitat and populations may be directly, indirectly, or cumulatively affected. The aquatic analysis area, or area of this effects analysis, includes the aquatic project area and downstream reaches potentially affected (indirectly and cumulatively) by the project proposal. Downstream boundaries of the aquatic analysis area are based on local conditions and recommendations made by the Forest Hydrologist. In the absence of a project-specific recommendation by the Forest Hydrologist, a logical downstream point will be identified based on field observations (by a Forest Service Fisheries Biologist) of local stream and landscape conditions.

EXISTING CONDITION

Data Sources and Surveys Conducted

Existing data for aquatic resources within an aquatic analysis area is used to the extent it is relevant to the project proposal. This data exists in two forms: general inventory and monitoring of Forest aquatic resources, and data provided by cooperating resource agencies from aquatic resources on or flowing through the Forest. Both of these sources are accurate back to approximately 1980 and are

used regularly in project analyses. Data collected prior to 1980 is used sparingly (mostly as a historical reference). Project-specific surveys are conducted to obtain reliable data where none exists.

Table 2 lists survey methods used for aquatic resource parameters and references to descriptions of the methods. All data used in this AQUA (existing or project-specific) was collected using an appropriate survey method. Full citations of listed references can be found at the end of this document.

Table 2. Data collection methods for aquatic resource parameters used in AQUAs.

Parameter	Method	Reference(s)
Fish populations (streams)	backpack electrofishing	Murphy and Willis 1996 Schreck and Moyle 1990 SD-AFS 1992
	visual (snorkel)	Dolloff et al. 1993 Hankin and Reeves 1988
Fish populations (rivers)	IBI	Karr et al. 1986 Lyons 1992
	boat electrofishing	Murphy and Willis 1996 Schreck and Moyle 1990
	visual (snorkel, SCUBA)	Murphy and Willis 1996 Schreck and Moyle 1990
Fish populations (ponds, reservoirs, rivers)	nets/traps	Murphy and Willis 1996 Schreck and Moyle 1990
Aquatic insects and crayfish	net samplers (Surber, kick, drift)	Brigham et al. 1982
		Hauer and Resh 1996
		Hawkins et al. 1998
		Hobbs 1972
		Merritt et al. 1996
		Rosenburg and Resh 1993
		USEPA 1989
Freshwater mussels	visual (snorkel, SCUBA)	Athearn 1969
		Cummings et al. 1993
Aquatic salamanders	backpack electrofishing	Williams and Hocutt 1981
	visual (snorkel, SCUBA)	Williams and Hocutt 1981
Habitat	BVET	Dolloff et al. 1993
		Hankin and Reeves 1988
		Harrelson et al. 1994
Substrate composition	pebble count	Bevenger and King 1995

Aquatic Habitat

Aquatic habitat within the aquatic analysis area was surveyed on August 23, 2001 by Sheryl Bryan,, Forest Service Fisheries Biologist.

Within the aquatic analysis area, the East Prong Broad Creek is a narrow, shallow, sandy-bottomed stream with little to no flow. Substrate consists primarily of uniformly-sized sand mixed with small gravel and organic debris. Flow obstructions such as the existing bridge supports accumulate larger substrate and woody debris, which provides some instream cover. Riparian vegetation also provides habitat diversity in terms of overhead cover, large wood accumulations, and thermal refuge (i.e. shade). East Prong Broad Creek flows through wetlands, which likely adds to aquatic diversity.

Aquatic Populations

Qualitative mussel and aquatic insect surveys were conducted in East Prong Broad Creek on August 23, 2001 by Sheryl Bryan. These surveys were conducted to familiarize the biologist with the stream and local aquatic fauna, and to look for the sensitive species identified in Table 4.

Historical fish species data from this site is also available for use in this analysis. East Fork Broad Creek at the SR 1124 bridge is a small blackwater stream. It is too small to support a diverse fish community. Therefore, the historical data is presumed to represent the local fish community. No additional fish surveys were conducted for this project.

Fish

Table 3 lists fish species occurring in East Fork Broad Creek. This stream is a small, but apparently stable system with little (if any) tidal influence. Because of aquatic habitat limitations (i.e. lack of heterogeneity), the local fish community is not diverse. However, it is suspected that the fish community and species populations, while naturally dynamic, are relatively stable based on habitat suitability and stability.

Table 3. Fish species occurring in East Fork Broad Creek at the SR 1124 bridge (Davis and McCoy 1965).

Common Name	Scientific Name	USFWS Status	NC Status	USFS Status
redfin pickerel	<i>Esox americanus</i>	None	None	MIS
mud sunfish	<i>Acantharchus pomotis</i>	None	None	None
pirate perch	<i>Aphredoderus sayanus</i>	None	None	None
yellow bullhead	<i>Ameiurus natalis</i>	None	None	None
American eel	<i>Anguilla rostrata</i>	None	None	None

Freshwater mussels, crayfish, and aquatic snails

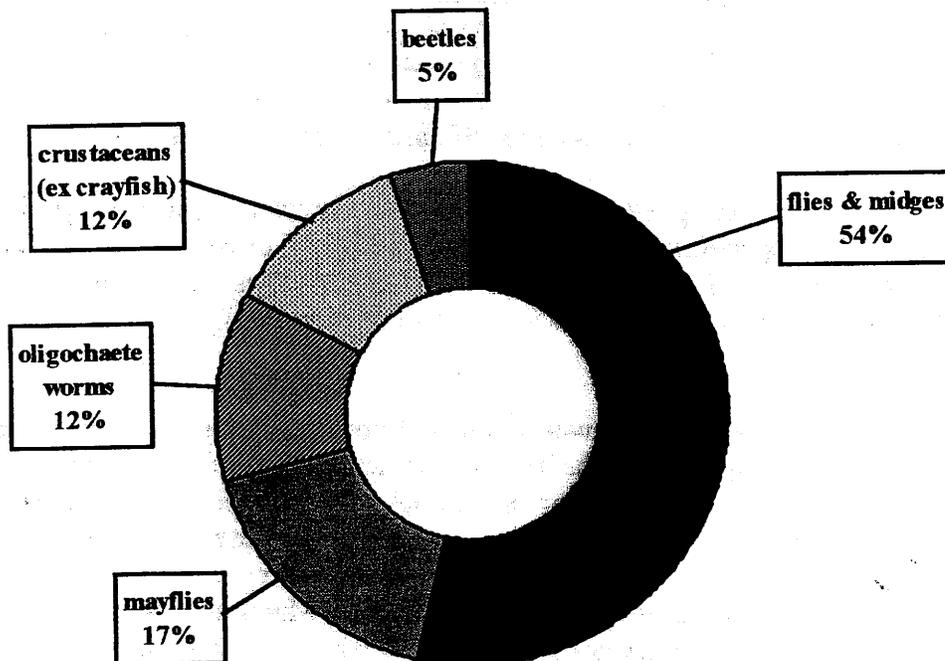
Alderman et al. (1994) found no freshwater mussels in the vicinity of East Prong Broad Creek. This was confirmed by the August 2001 surveys conducted by Sheryl Bryan. In addition, one unidentified aquatic snail species was found in East Prong Broad Creek and surrounding wetlands (in the vicinity of the SR 1124 bridge) during August 2001 survey by Sheryl Bryan.

One species of crayfish, *Procambarus acutus*, was found during both of these collections (Alderman et al. 1994 and August 2001 surveys by Sheryl Bryan). The Croatan crayfish (*Procambarus plumimanus*) was not found in the East Prong Broad Creek or surrounding wetlands during these two sampling efforts. This species is listed as Sensitive by the Regional Forester, although it receives no other State or Federal protection.

Aquatic insects and other invertebrates

Recent qualitative aquatic invertebrate community surveys are summarized in Figure 1. No rare aquatic insects were found during these surveys.

Figure 1. Aquatic insect and other invertebrate community structure within the East Prong Broad Creek at Bridge #20, SR 1124, Carteret County, North Carolina.



Of the aquatic insects sampled from East Prong Broad Creek in August 2001, approximately 17% are members of the orders Ephemeroptera (mayflies), Plecoptera (stoneflies), or Trichoptera (caddisflies) (EPT organisms), as indicated in Figure 1. These orders are typically indicators of good water quality and stream health. This collective relative abundance has been indexed as a metric for use in determining overall stream health (EPT index) by the NCDENR.

NCDENR records from the Croatan National Forest indicate that approximately 150 species of aquatic insects and invertebrates (other than species considered above) occur across the Forest, with approximately 47 (31%) of these species representing EPT taxa. This data is summarized in Alderman and McGrath 1994, and more detailed information is available from the NCDENR (www.esb.enr.state.nc.us/BAU.html).

In this light, overall stream health within East Prong Broad Creek appears to be somewhat affected by surrounding land uses. The dominance of flies and midges (and not EPT organisms) generally

indicates lower water quality. Within the aquatic analysis area, land use is primarily road right-of-way. Beyond this area, rural development (including housing and businesses) dominates local land use.

AQUATIC SPECIES CONSIDERED IN THE AQUA

Rare Aquatic Species

National Forests in North Carolina recognizes three types of rare species during a NEPA analysis, which are described below.

A proposed, threatened, or endangered species (T, E, PT, and PE) is a species that has been formally listed or is proposed for listing by the United States Fish and Wildlife Service. These species are included in every AQUA conducted for projects within a watershed where the species is known to, likely to, or may occur. These species are also included in AQUAs for watersheds where the species occurred historically but hasn't been found during recent surveys.

A sensitive species (S) is a species appearing on the Regional Forester's Sensitive Species list for the Southern Region. These species may or may not have a Federal or State status, but generally have a global rank of G1, G2, or G3 and a State rank of S1 or S2. These species are included in every AQUA conducted for projects within a watershed where the species is known to, likely to, or may occur.

A Forest concern species (FC) is a species, which National Forests in North Carolina considers to be generally rare, and an important part of the biodiversity across the Forests that do not fall within one of the above categories. These species may or may not have a Federal or State status, and generally have a global rank of G3 or lower and a State rank of S1 or lower. These species are included in every AQUA conducted for projects within a watershed where the species is known to or is likely to occur. The large group of Forest concern species, which may occur within the aquatic analysis area, but are not known to or are not likely to occur within this area are addressed collectively as the aquatic insect community.

Forty-five rare aquatic species have been listed by the NCWRC, USFWS or NCNHP as occurring or potentially occurring on the Croatan National Forest. These species are listed in Appendix Table 1. Of the 45 aquatic species included on the original list for analysis, 43 were dropped as a result of a likelihood of occurrence evaluation based on preferred habitat elements and field survey results. Species that do not occur (based on survey results) or are not likely to occur (based on a lack of suitable habitat) are removed from the list of species considered. Species that may occur due to the presence of suitable habitat, but that have not been documented as occurring in the vicinity of the analysis area are not considered in this analysis. This analysis will address habitat suitability for two rare aquatic species that may occur within the aquatic analysis area, although the species were not found during recent surveys (Table 4).

Management Indicator Species (MIS)

Redfin pickerel are known to occur within the aquatic analysis area. Therefore, the species was chosen as project-level management indicator species since it is sensitive to changes in habitat

condition and are the best representative of the type of aquatic habitat within the aquatic analysis area.

A management indicator species is a species identified in the Forest Plan that represents a community, assemblage, or special habitat in the Forests. MIS are intended to aid in the description of biodiversity and to serve as a mechanism for monitoring population viability across the Forests.

Therefore, potential effects of the propose project on one aquatic MIS and two rare aquatic species will be analyzed in this report. These species are listed in Table 4.

Table 4. Aquatic species considered in the AQUA for the Bridge #20 (SR 1124) Replacement project.

Species	Type	Rationale for Inclusion
redfin pickerel (<i>Esox americanus</i>)	fish	management indicator species
Croatan crayfish (<i>Procambarus plumimanis</i>)	crayfish	Forest concern species
Elfin skimmer (<i>Nannothemis bella</i>)	dragonfly	Forest concern species

DISCUSSION

Please refer to the Environmental Assessment for a complete list of project issues and a detailed description of each alternative. Direct, indirect, and cumulative effects of implementing each alternative on aquatic resources will be discussed using a tiered approach. First, effects on aquatic community structure will be examined. Second, if necessary, effects on specific parts of the community (e.g. insects, fish, etc.) will be evaluated. And third, species-specific effects will be discussed when a species will be affected differently than other species in the community. Mitigation measures will be stated where such actions are necessary to comply with local, State, and Federal environmental regulations. Management recommendations to protect or enhance aquatic resources are made where practical.

Potential Effects of the No Action Alternative (Alternative 4)

Implementation of the no action alternative will avoid disturbance of the river bottom and banks, which avoids any potential effects on aquatic species and habitats. Natural aquatic community dynamics will continue. However, continued deterioration of the existing structure could ultimately result in bridge collapse, which would cause a major disturbance to East Prong Broad Creek.

Potential Effects Common to Alternatives 1, 2, and 3

Implementation of any action alternative will result in some disturbance to East Prong Broad Creek within the aquatic project area. Included are disturbances to the riverbanks and bottom during construction of bridge abutments (either temporary or permanent) and at equipment access points. Also, turbidity is likely to be increased during the implementation of any alternative.

Disturbance of the riverbanks and bottom will result in the sedimentation of local and downstream habitats. Sedimentation of aquatic resources reduces the amount of habitat available to fish and other aquatic organisms. This includes the loss of interstitial space within the substrate, which is particularly important for aquatic invertebrates (including mussels and crayfish), as well as for fish and salamander spawning and rearing areas. In addition, fine sediment particles, such as silt, decrease oxygen transport to and from aquatic populations and increase the risk of disease introduction. Long-term loss of suitable habitat can result in a decline in fish, invertebrate, and other aquatic organism productivity. However, the method of project implementation can affect how much sediment is transported and how much habitat is affected. Therefore, the mitigation measures listed below are required to minimize these negative effects during project implementation.

Aquatic habitat within area streams may be lost locally to increased sedimentation and turbidity during and after bridge replacement; however, such losses are expected to be of short duration. As bare soil is revegetated and sediments are flushed downstream, local aquatic invertebrate communities will recolonize quickly. Long-term changes in local hydrology and aquatic microhabitat distribution will not affect aquatic insect community composition since no habitats will be lost-- only "reorganized".

Sediments that are flushed downstream may also temporarily affect interstitial habitats downstream in East Prong Broad Creek. However, these potential effects are not likely to be measurable based on flow volume and potential sediment transport rates within system.

Mobile species, such as juvenile and adult fish and crayfish will likely respond to disturbance by leaving the area during adverse conditions, and return when conditions improve. In addition, aquatic insect communities generally adapt quickly to local conditions, and have demonstrated the ability to recolonize affected areas quickly after disturbance (Rosenberg and Resh 1983). Aquatic communities within East Prong Broad Creek have, over time, adapted to the conditions associated with coastal river systems. And in general, species persisting in these systems are the ones that are tolerant of these temporary conditions.

However, for management indicators, such as redbfin pickerel, as well as other fish species, the timing of project implementation can be important to avoid key spawning and rearing times (which for most species is early to mid spring), as the egg and larval life stages of fish are less mobile and therefore more vulnerable to the effects of turbidity and sedimentation.

Mitigation Measures

Mitigation measures are management actions that are required to maintain compliance with environmental laws and regulations and are required in either action alternative to achieve the determination of effect below.

1. Erosion control such as (but not limited to) silt fence should be placed along the length of river bank that will be disturbed, between the disturbance and the water's edge, prior to project implementation to minimize soil entering East Prong Broad Creek. Erosion control efficiency should be maintained until vegetative cover is established upon project completion.

2. All coffer dams should be constructed using pre-formed concrete and other non-toxic materials unless the work area can be completely dry during installation and curing. If uncured concrete is used to form abutments or center supports behind a coffer dam, one or more aquatic biologist from the NCDOT, NCWRC, USFWS, or USFS should be present to insure that no uncured concrete comes in contact with East Prong Broad Creek. Uncured concrete is toxic to most aquatic life.

Potential Effects of Alternative 3

Additionally, implementation of Alternative 3 has the potential to reduce or eliminate fish passage along East Prong Broad Creek with the installation of a corrugated metal pipe instead of a spanning structure (bridge or concrete box). The installation of an impassable barrier (likely due to insufficient water depth) to the instream movement of redbfin pickerel could isolate populations up- or downstream. This isolation can ultimately lead to reduced genetic diversity and viability within the isolated populations.

Therefore, in addition to the mitigation measures listed above, any culverts should be installed to maintain pre-project water depths to facilitate instream movement of fish populations.

DETERMINATION OF EFFECT

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not affect threatened, endangered, or proposed aquatic species, nor will suitable habitat be affected. Consultation with the U.S. Fish and Wildlife Service is not required.

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not have long-term impacts on aquatic sensitive (Croatan crayfish) or Forest concern (elfin skimmer) species, nor will project implementation result in a trend toward listing for either of these species assuming that the above mitigation measures are implemented successfully. Habitat for these species could be temporarily affected, with conditions quickly returning to normal upon project completion.

PERSONS CONTACTED

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Christian Waters, NCWRC District Fisheries Biologist
Mason Herndon, NCDOT Environmental Officer

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Survey/Evaluation of Habitat Suitability for
Sensitive Plant Species at
Site of Proposed Bridge Replacement,
Bridge No. 20, East Prong of Broad Creek, SR 1124,
Carteret County, N.C.

7 October 2001

prepared by John O. Fussell III,
for the U.S. Forest Service

INTRODUCTION/PROPOSED ACTION

The proposed action is the replacement of the NC 1124 bridge over the East Prong of Broad Creek, in Carteret County (see Figure 1 for location of project). Part of the project area is on Federal land (Croatan National Forest).

Three alternates have been proposed: In **Alternate 1**, a temporary bridge/road will be located east of the existing highway (up to 75' from it). Approximately a 500'-length of this temporary road will lie on Croatan National Forest land. In **Alternate 2**, a temporary bridge/road will be located west of the existing highway (up to 75' from it). Approximately a 500'-length of this temporary road will lie on Croatan National Forest land. In **Alternate 3**, there will be no temporary bridge/road on-site during bridge construction--a detour will be along other state roads.

In August 2001, I was asked by Dennis Foster of the U.S. Forest Service to survey the Forest Service lands that would be affected by Alternates 1 and 2, and 1) look for Sensitive plant species, and 2) evaluate the areas as habitat for Sensitive plant species.

METHODS

Plants considered "Sensitive" are ones that have a Global rarity status of G1 or G2 or a State rarity status of S1, S2, or S3, as rated by the Nature Conservancy and the North Carolina Natural Heritage Program.

Based on the types of habitat I observed in the area on my initial visit in August 2001, I developed a list of Sensitive plant species that I considered to be of potential occurrence in the project area (see Table 1). This list is also based in part on a prior evaluation of Sensitive plant habitat within this general area that I conducted for the Forest Service in 2001 (Fussell 2001).

I surveyed the project area on three dates: 27 August, 18 September, and 7 October. Coverage on these dates combined is adequate to find all of the Sensitive plant species that might occur in this area.

Common names are based primarily on Schafale and Weakley (1990). In a few cases, scientific names are added for clarity.

RESULTS AND CONCLUSIONS

General description of habitats present

(Note: the following description applies only to the portion of the project that is part of the Croatan National Forest, i.e. from the bridge northward).

West side of highway

Within approximately 20' of the highway, there is a maintained road shoulder. The most common plant species here are Bahia grass and other common exotic grasses, common horseweed, and other weedy, ubiquitous species.

Beyond the maintained road shoulder, the land is wooded. Within about 200' of the bridge and creek, the canopy consists primarily of loblolly pine, and is open in structure. There is a dense shrub growth. Common species in this stratum are fetterbush, wax-myrtle, cane, red bay, ti-ti, red maple, water oak, and inkberry. Common herb species in this area are cinnamon fern, bracken, and Virginia chainfern.

From about 200' to 500' N of the bridge and creek, there is a noticeable uphill slope (see contour lines in Figure 1). In this area, there is a very open canopy of mature loblolly and pond pines southward which shifts to dominance by sapling pines (loblolly, longleaf, and pond) northward. Near 500' from the bridge, a plantation structure with pines in rows and old bedding is evident. In this area (200'-500' N), shrub stratum vegetation is generally dense. Common species are fetterbush, inkberry, gallberry, coastal sweet pepperbush, wax-myrtle (dwarf form), southern blueberry, and creeping blueberry. Common and widespread herbs are bracken and cinnamon fern. At a few sites, water seepage to the surface is evident. Sphagnum moss is common in these areas. Many of the seepage areas are shaded by tree and shrub vegetation, but a few are open to the sunlight. A few such open seepage areas occur near the proposed detour road, perhaps within about 50' of it. Common species in these seepage areas, in addition to Sphagnum mosses, are insectivorous species like Venus flytrap, pink sundew, slender bladderwort, blue butterwort, and sweet pitcherplant, as well as numerous other herb species,

such as pineland rayless-goldenrod, orange milkwort, savanna cowbane, white colicroot, and savanna coreopsis.

East side of highway

Within approximately 20' of the highway, there is a maintained road shoulder. The most common plant species here are Bahia grass and other common exotic grasses, common horseweed, and other weedy, ubiquitous species.

A powerline parallels the highway. The center of the powerline is about 40' from the highway edge. Associated with the powerline is a band of herbaceous and shrub vegetation that extends from the edge of the maintained highway shoulder (about 20' from highway) out to 60' from the highway (and up to 100' in places). Also within this band is an ATV trail. Within 200' of the bridge and creek, common species within the powerline corridor are coinwort, flat-topped goldenrod, bushy broomsedge, pineywoods goldenrod, dogfennel, several species of *Juncus*, several species of *Rhynchospora*, slender spikegrass, beautyberry, and ragweed.

From about 200' to 500' N of the bridge and creek, there is a noticeable slope (see above) and the powerline corridor here has a rich diversity of pine savanna species. Species common at the time of my visits were Carolina asphodel, Carolina goldenrod, savanna cowbane, pineland rayless-goldenrod, savanna coreopsis, white colicroot, coinwort, orange milkwort, several species of *Rhynchospora*, bog blazing-star, roundleaf eupatorium, as well as insectivorous species like pink sundew and blue butterwort.

East of the powerline corridor, the land is wooded. Within approximately 200' of the bridge, there is a swamp forest associated with the creek. The dominant tree here is swamp black gum. Farther north, within the slope area, there is an open pinewoods dominated by longleaf and pond pines. Ground cover within this area is mostly shrubs, but a prescribed burn two-three years ago has increased herbaceous cover somewhat. Many of the herb species that occur within the powerline corridor likely also occur here, but in much lower densities.

Observations of Sensitive plants species within proposed project area

Observations of Sensitive plant species are summarized in Table 2.

West side of highway

No Sensitive plant species were observed within the projected footprint of the detour road (Alternate 2) or within the area lying between the detour road and SR 1124. However, in an opening about 50' from the projected detour road, I observed numerous Venus flytraps, several savanna cowbanes, and a few Carolina goldenrods. The location of these Sensitive plants is shown in Figure 2 (Area A).

East side of highway

Three Sensitive plant species were observed within the area that would be impacted by the detour road (Alternate 1). In the area indicated by Area B (Figure 2), there are numerous savanna cowbane, numerous Carolina goldenrod, and numerous Carolina asphodel. In addition, savanna yellow-eyed-grass has been previously documented within this same area (Jeannie Kraus, N.C. Maritime Museum, pers. com., August 2001), and it is likely that it still occurs here, although it was not observed during the current survey. Additionally, although no Venus flytraps were observed within Area B, it is likely that at least a few plants do occur, in that the habitat is very good. The species has previously been found here, although it was subjected to collecting pressures (Jeannie Kraus, pers.com., August 2001).

Expected impacts to Sensitive plant species for each of the three alternates

Alternate 1

Expected impacts to Sensitive plant species from this alternate are summarized in Table 3-1.

The Federally listed rough-leaf loosestrife was not observed in the immediate project area, and it has not been observed here previously (Jeannie Kraus, pers. com.). However, the ecotonal habitat present here is excellent habitat for the species, and it has been recorded within one-quarter mile of the site (Natural Heritage Program database). Thus, it is probably best to assume that this alternate may destroy some individuals of the species; it will certainly impact habitat for the species.

This alternate will result in the loss of numerous individuals of three other Sensitive species: savanna cowbane, Carolina goldenrod, and Carolina asphodel, and it will probably result in the loss of some individuals of savanna yellow-eyed-grass. As noted above, it will likely lead to the loss of at

least a few Venus flytrap.

Just recently (September 2001), the presence of southern white beaksedge (an S1 species) in the Croatan was documented (report by John Fussell to the Natural Heritage Program). The single known location is about five miles to the NE, and the plants were found on seepage slopes. Thus, the habitat to be impacted by Alternate 1 is probably excellent for the species. (By the time the species was discovered, it was already too late in the season to confirm its presence/absence at the project site.) It is probably best to assume that Alternate 1 may destroy some individuals of this species.

In addition, habitat (at least marginal habitat) for 12 other Sensitive species is likely to be impacted by this alternate (see Table 3-1).
Alternate 2

Many decades ago, when the natural fire regime was in effect, the west side of the project area north of the East Prong, with its numerous seepage sites, was certainly excellent habitat for savanna species. However, the area has been subject to a very long period of fire suppression, and now there are only a few sites (openings) with a rich diversity of savanna species.

It appears that the footprint for the detour route for Alternate 2 will avoid all sites having Sensitive plant species. However, one site lies within 50' of the proposed detour route. Thus, any poorly supervised work that leads to disturbance only a short distance beyond the proposed detour route could result in the destruction of individuals of Venus flytrap, savanna cowbane, and Carolina goldenrod, as well as southern white beaksedge if it also occurs here.

In addition, this proposed alternate will lead to the loss of marginal (i.e. long fire-suppressed) habitat for 10 other Sensitive species, including the Federally listed rough-leaf loosestrife.

Alternate 3

This alternate will not lead to the loss of any Sensitive plant species or any loss of habitat for such species. This statement assumes that disturbance will be limited strictly to the current roadway and no more than 20' from it on the east and no more than 30' from it on the west side.

Other issues

The project area and vicinity is an important field trip location for the N.C. Maritime Museum and other local institutions. They regularly visit the powerline corridor (east side of highway) as well as the seepage openings west of the highway.

Both sides of the highway are part of the Nine Mile Road/Broad Creek Pinewoods Natural Area, recognized by the N.C. Natural Heritage Program.

CONCLUSIONS AND RECOMMENDATIONS

1. Alternate 1 would be the most damaging alternate. It would result in the loss of habitat for the Federally listed rough-leaf loosestrife and might destroy individuals of this species as well. Additionally, it would destroy numerous individuals of three Sensitive species: savanna cowbane, Carolina goldenrod, and Carolina asphodel. It would destroy some number of individuals of the savanna yellow-eyed-grass (Sensitive) and would probably destroy some individuals of Venus flytrap (Sensitive). It will result in the loss of habitat for several other Sensitive species as well.
2. Alternate 2, if very carefully supervised, will be much less damaging to Sensitive plant species. If it strictly follows the plans, it will result in loss of marginal (i.e. fire suppressed) habitat for several Sensitive species, but will not destroy any individuals of these species or impact any prime habitat. However, if incidental work intrudes more than 50' westward from the planned route, then individuals of at least three Sensitive species may be destroyed: Venus flytrap, savanna cowbane, and Carolina goldenrod. Additionally, individuals of the recently discovered (in the Croatan) southern white beaksedge may be destroyed as well.
3. Alternate 3 is the most desirable alternate for protecting Sensitive plant species and their habitat. However, it is imperative that disturbance be strictly limited to the present roadway and no more than 20' to the east and 30' to the west in order that Sensitive plant species and their habitat not be impacted.
4. Considering that Alternate 3 will probably be very unattractive to DOT because detours would require such long distances, perhaps a modified version of Alternate 2

might be considered. If Alternate 2 does not extend more than 40' west of the current highway, and, perhaps more important, does not extend more than 250' N of the bridge, it almost certainly will not impact any individuals of Sensitive species.

5. No matter what alternate is selected, there will be a very real risk of significant damage to Sensitive plant species if the project is not very strictly supervised. For instance, it is almost inevitable that trucks associated with this project will be parked within the powerline corridor north of the bridge (where parking is relatively easy), resulting in maximum damage to Sensitive plant species, unless a major effort is made beforehand to prevent this from happening.

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Table 1. Sensitive species evaluated as being potentially affected by the replacement of Bridge No. 20. [Preferred habitats are from Amoroso (1999)].

	Rank Global	State	Primary Habitat(s)
VASCULAR PLANTS			
<i>Agalinis aphylla</i> Scale-leaf gerardia	G3G4	S3	wet savannas, sandhill/pocosin ecotones
<i>Agalinis virgata</i> Branched gerardia	G3G4Q	S2	savannas
<i>Asclepias pedicellata</i> Savanna milkweed	G3?	S2	savannas
<i>Dionaea muscipula</i> Venus flytrap	G3	S3	savannas, seepage bogs, pocosin edges
<i>Lachnocaulon beyrichianum</i> Southern bogbutton	G2G3	S2S3	sandhills, sandhill/ pocosin ecotones
<i>Lysimachia asperulifolia</i> Rough-leaf loosestrife	G3	S3	pocosin/savanna ecotones
<i>Oxypolis ternata</i> Savanna cowbane	G3?	S3	pine savannas, sandhill seeps
<i>Peltandra sagittifolia</i> Spoonflower	G3	S2S3	pocosins, other wet, peaty sites
<i>Pinguicula pumila</i> Small butterwort	G4	S2	savannas
<i>Platanthera integra</i> Yellow fringeless orchid	G3G4	S1	savannas
<i>Polygala hookeri</i> Hooker's milkwort	G3	S2	savannas
<i>Rhynchospora alba</i> Northern white beaksedge	G5	S2	bogs, pocosin openings, limesink ponds

Table 1 (continued).

	Rank		Primary Habitat(s)
	Global	State	
<i>Rhynchospora macra</i> Southern white beaksedge	G3	S1	seepage bogs
<i>Rhynchospora breviseta</i> Short-bristled beaksedge	G3G4	S2	savannas
<i>Rhynchospora globularis</i> var <i>pinetorum</i> Small's beaksedge	G5T3?	S1	wet savannas
<i>Rhynchospora oligantha</i> Feather-bristled beaksedge	G4	S2S3	savannas, seepage bogs
<i>Rhynchospora scirpoides</i> Long-beak baldsedge	G4	S2	limesink ponds, wet savannas
<i>Scleria baldwinii</i> Baldwin's nutrush	G4	S1	wet savannas
<i>Scleria georgiana</i> Georgia nutrush	G4	S2	savannas
<i>Scleria verticillata</i> Savanna nutrush	G5	S1	intermediate swales
<i>Solidago leavenworthii</i> Leavenworth's goldenrod	G3G4	S1	savannas, pocosin borders, peaty seeps
<i>Solidago pulchra</i> Carolina goldenrod	G3	S3	savanna ecotones
<i>Spiranthes longilabris</i> Giant spiral orchid	G3	S1	savannas
<i>Tofieldia glabra</i> Carolina asphodel	G3	S3	savannas, sandhill seeps, sandhill/ pocosin ecotones
<i>Xyris brevifolia</i> Shortleaf yellow- eyed-grass	G4G5	S2	savannas

Table 1 (continued).

	Rank Global	State	Primary Habitat(s)
<i>Xyris elliotii</i> Elliott's yellow- eyed grass	G4	S1	low wet areas
<i>Xyris flabelliformis</i> Savanna yellow-eyed- grass	G4	S1	savannas
<i>Xyris stricta</i> a yellow-eyed-grass	G3G4	S1	savannas
MOSSES			
<i>Campylopus carolinae</i> Savanna campylopus	G1	S1	savannas, sandhills
<i>Sphagnum fitzgeraldii</i> Fitzgerald's peatmoss	G2G3	S2S3	pocosins and savannas

Table 2. Observations of Sensitive species within or adjacent to project area.

Species/Location(s)

Dionaea muscipula (Venus flytrap)

West side of highway: Numerous plants in a clearing within pine plantation about 50' W of northern terminus of project (see Area A in Figure 2).

East side of highway: None observed, but high probability of at least a few plants in powerline clearing, about 200-400' N of bridge (Area B in Figure 2).

Oxypolis ternata (Savanna cowbane)

West side of highway: Several plants in a clearing within pine plantation about 50' W of northern terminus of project (see Area A in Figure 2).

East side of highway: Numerous plants in powerline clearing, about 200-400' N of bridge (Area B in Figure 2).

Solidago pulchra (Carolina goldenrod)

West side of highway: A few plants in a clearing within pine plantation about 50' W of northern terminus of project (see Area A in Figure 2).

East side of highway: Numerous plants in powerline clearing, about 200-400' N of bridge (Area B in Figure 2).

Tofieldia glabra (Carolina asphodel)

West side of highway: None observed.

East side of highway: Numerous (hundreds) plants in powerline clearing, about 200-400' N of bridge (Area B in Figure 2).

Xyris flabelliformis (Savanna yellow-eyed-grass)

West side of highway: None observed.

East side of highway: None observed during this survey, but previously documented in powerline clearing, about 200-400' N of bridge (Area B in Figure 2) (Jeannie Kraus, pers. com., August 2001).

Table 3-1. Expected impacts to Sensitive plant species from Alternate 1 (detour bridge to east).

Species	Expected impacts
<i>Agalinis aphylla</i> Scale-leaf gerardia	loss of marginal habitat
<i>Agalinis virgata</i> Branched gerardia	loss of habitat
<i>Dionaea muscipula</i> Venus flytrap	possible loss of individuals, loss of habitat
<i>Lysimachia asperulifolia</i> Rough-leaf loosestrife	possible loss of individuals, loss of habitat
<i>Oxypolis ternata</i> Savanna cowbane	loss of numerous individuals, loss of habitat
<i>Peltandra sagittifolia</i> Spoonflower	loss of marginal habitat
<i>Platanthera integra</i> Yellow fringeless orchid	loss of habitat
<i>Rhynchospora macra</i> Southern white beaksedge	possible loss of individuals, loss of habitat
<i>Rhynchospora breviseta</i> Short-bristled beaksedge	loss of habitat
<i>Rhynchospora oligantha</i> Feather-bristled beaksedge	loss of habitat
<i>Scleria baldwinii</i> Baldwin's nutrush	loss of habitat
<i>Scleria georgiana</i> Georgia nutrush	loss of habitat
<i>Solidago leavenworthii</i> Leavenworth's goldenrod	loss of marginal habitat

Table 3-1 (continued).

Species	Expected impacts
<i>Solidago pulchra</i> Carolina goldenrod	loss of numerous individuals, loss of habitat
<i>Tofieldia glabra</i> Carolina asphodel	loss of numerous individuals, loss of habitat
<i>Xyris brevifolia</i> Shortleaf yellow- eyed-grass	loss of habitat
<i>Xyris flabelliformis</i> Savanna yellow-eyed- grass	loss of individuals, loss of habitat
<i>Campylopus carolinae</i> Savanna campylopus	loss of habitat
<i>Sphagnum fitzgeraldii</i> Fitzgerald's peatmoss	loss of habitat

Table 3-2. Expected impacts to Sensitive plant species from Alternate 2 (detour bridge to west).

Note: "Possible loss of individuals" for four species below assumes some incidental disturbance up to 50' west of actual alternate roadway.

Species	Expected impacts
<i>Agalinis virgata</i> Branched gerardia	loss of marginal (fire-suppressed) habitat
<i>Dionaea muscipula</i> Venus flytrap	possible loss of individuals, loss of habitat
<i>Lysimachia asperulifolia</i> Rough-leaf loosestrife	loss of marginal (fire-suppressed) habitat
<i>Oxypòlis ternata</i> Savanna cowbane	possible loss of individuals, loss of habitat
<i>Platanthera integra</i> Yellow fringeless orchid	loss of marginal (fire-suppressed) habitat
<i>Rhynchospora macra</i> Southern white beaksedge	possible loss of individuals, loss of habitat
<i>Rhynchospora breviseta</i> Short-bristled beaksedge	loss of marginal (fire-suppressed) habitat
<i>Rhynchospora oligantha</i> Feather-bristled beaksedge	loss of marginal (fire-suppressed) habitat
<i>Scleria baldwinii</i> Baldwin's nutrush	loss of marginal (fire-suppressed) habitat
<i>Scleria georgiana</i> Georgia nutrush	loss of marginal (fire-suppressed) habitat
<i>Solidago pulchra</i> Carolina goldenrod	possible loss of individuals, loss of habitat
<i>Tofieldia glabra</i> Carolina asphodel	loss of marginal (fire-suppressed) habitat

Xyris brevifolia
Shortleaf yellow-
eyed-grass

loss of marginal (fire-
suppressed) habitat

Xyris flabelliformis
Savanna yellow-eyed-
grass

loss of marginal (fire-
suppressed) habitat

**Table 3-3. Expected impacts to Sensitive plant species from
Alternate 3 (detour on-site).**

No impacts to Sensitive plants species are expected from this
alternative.

(NOTE: The above conclusion assumes that disturbance associated
with bridge construction does not occur more than 20' from the
current paved roadway.)

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	<u>B-3625</u>
WBS No.	<u>33173.1.1</u>
State Project No.	<u>8.2160901</u>
Federal Project No.	<u>BRSTP-1124(3)</u>

A. Project Description:

NCDOT will replace Bridge No. 20 on SR 1124 (Nine Mile Road) over East Prong of Broad Creek in Carteret County. The bridge will be replaced with a new bridge approximately 70 feet in length and 32 feet in width. This width will provide for a 24-foot travelway and 4 foot offsets on each side. The new approach roadway will also have a 24-foot travelway with 4-foot paved shoulders and a total shoulder width of at least 8 feet. Shoulder width will be increased at least 3 feet where guardrail is warranted. Total project length is 500 feet. Traffic will be detoured along surrounding roads during construction.

B. Purpose and Need:

Bridge No. 20 has a sufficiency rating of 7.0 out of 100. The deck is only 25.8 feet wide and the substructure is composed of timber piles. For these reasons, the bridge needs to be replaced.

C. Proposed Improvements:

The following Type II improvements which apply to the project are circled:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).
 - a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
 - b. Widening roadway and shoulders without adding through lanes
 - c. Modernizing gore treatments
 - d. Constructing lane improvements (merges, auxiliary, and turn lanes)
 - e. Adding shoulder drains
 - f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
 - g. Providing driveway pipes
 - h. Performing minor bridge widening (less than one through lane)
 - i. Slide Stabilization
 - j. Structural BMP's for water quality improvement

2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
 - a. Installing ramp metering devices
 - b. Installing lights
 - c. Adding or upgrading guardrail

- d. Installing safety barriers including Jersey type barriers and pier protection
 - e. Installing or replacing impact attenuators
 - f. Upgrading medians including adding or upgrading median barriers
 - g. Improving intersections including relocation and/or realignment
 - h. Making minor roadway realignment
 - i. Channelizing traffic
 - j. Performing clear zone safety improvements including removing hazards and flattening slopes
 - k. Implementing traffic aid systems, signals, and motorist aid
 - l. Installing bridge safety hardware including bridge rail retrofit
3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.
- a. Rehabilitating, reconstructing, or replacing bridge approach slabs
 - b. Rehabilitating or replacing bridge decks
 - c. Rehabilitating bridges including painting (no red lead paint) scour repair, fender systems, and minor structural improvements
 - d. Replacing a bridge (structure and/or fill)
4. Transportation corridor fringe parking facilities.
 5. Construction of new truck weigh stations or rest areas.
 6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
 7. Approvals for changes in access control.
 8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
 9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
 10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks, and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
 11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.
 12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction

projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.

13. Acquisition and construction of wetland, stream and endangered species mitigation sites.
14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

Estimated Costs:

Total Construction	\$ 400,000
Right of Way	\$ 12,000
Total	\$ 412,000

Estimated Traffic:

Current	-	4600 vpd
Year 2025	-	8500 vpd
TTST	-	1%
Dual	-	3%

Proposed Typical Cross Section:

The new approach roadway will have a 24-foot travelway with 4-foot paved shoulders and a total shoulder width of at least 8 feet. Shoulder width will be increased at least 3 feet where guardrail is warranted.

Design Speed:

60 mph

Design Exceptions:

None

Functional Classification:

SR 1124 is classified as a Rural Major Collector Route in the Statewide Functional Classification system.

Division Office Comments:

The Division 2 Construction Engineer supports the chosen alternate. The detour route to be utilized during construction consists of NC 24, SR 1141, US 70, and SR 1124.

Bridge Demolition:

The superstructure of the bridge is composed of pre-stressed concrete channels that can be lifted off with a large crane after the transverse post tensing strands have been removed. The substructure is composed of timber piles with concrete caps, which can be removed without any falling debris. Therefore, the bridge will be removed without dropping any component into Waters of the United States during construction.

Alternatives Discussion: (including Studied Offsite Detour Evaluation)

According to the Transportation Director for Carteret County Schools, this road is in the middle of three school districts, used by all the schools and the special needs bus. If they could have adequate warning of road closure, they can re-route the buses.

Emergency Management Services states they can handle a temporary offsite detour.

The detour route will utilize NC 24, SR 1141, US 70, and SR 1124.

Other alternatives studied included an onsite detour to the east and an onsite detour to the west. Structural replacement was also considered for a bridge and a culvert. The onsite detours were eliminated from further study due to their impacts on the Croatan National Forest and surrounding environment. The culvert structure was eliminated due to the construction impacts it would cause to the living organisms and their environment.

"Do-nothing" is not practical; requiring the eventual closing of the road as the existing bridge completely deteriorates. Rehabilitation of the existing deteriorating bridge is neither practical nor economical.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

<u>ECOLOGICAL</u>	<u>YES</u>	<u>NO</u>
(1) Will the project have a substantial impact on any unique or important natural resource?	<input type="checkbox"/>	<u> X </u>
(2) Does the project involve habitat where federally listed endangered or threatened species may occur?	<input checked="" type="checkbox"/>	<u> </u>
(3) Will the project affect anadromous fish?	<input type="checkbox"/>	<u> X </u>
(4) If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	<u> X </u>	<input type="checkbox"/>
(5) Will the project require the use of U. S. Forest Service lands?	<input checked="" type="checkbox"/>	<u> </u>
(6) Will the quality of adjacent water resources be adversely impacted by proposed construction activities?	<input type="checkbox"/>	<u> X </u>
(7) Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?	<input checked="" type="checkbox"/>	<u> </u>
(8) Will the project require fill in waters of the United States in any of the designated mountain trout counties?	<input type="checkbox"/>	<u> X </u>
(9) Does the project involve any known underground storage tanks (UST's) or hazardous material sites?	<input type="checkbox"/>	<u> X </u>
 <u>PERMITS AND COORDINATION</u>		
(10) If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?	<input type="checkbox"/>	<u> X </u>
(11) Does the project involve Coastal Barrier Resources Act resources?	<input type="checkbox"/>	<u> X </u>
(12) Will a U. S. Coast Guard permit be required?	<input type="checkbox"/>	<u> X </u>

- | | | | |
|------|--|--------------------------|--------------|
| (13) | Will the project result in the modification of any existing regulatory floodway? | <input type="checkbox"/> | <u> X </u> |
| (14) | Will the project require any stream relocations or channel changes? | <input type="checkbox"/> | <u> X </u> |

SOCIAL, ECONOMIC, AND CULTURAL RESOURCES

YES

NO

- | | | | |
|------|---|--------------------------|--------------------------|
| (15) | Will the project induce substantial impacts to planned growth or land use for the area? | <input type="checkbox"/> | <u> X </u> |
| (16) | Will the project require the relocation of any family or business? | <input type="checkbox"/> | <u> X </u> |
| (17) | Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population? | <input type="checkbox"/> | <u> X </u> |
| (18) | If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor? | <u> X </u> | <input type="checkbox"/> |
| (19) | Will the project involve any changes in access control? | <input type="checkbox"/> | <u> X </u> |
| (20) | Will the project substantially alter the usefulness and/or land use of adjacent property? | <input type="checkbox"/> | <u> X </u> |
| (21) | Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness? | <input type="checkbox"/> | <u> X </u> |
| (22) | Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)? | <u> X </u> | <input type="checkbox"/> |
| (23) | Is the project anticipated to cause an increase in traffic volumes? | <input type="checkbox"/> | <u> X </u> |
| (24) | Will traffic be maintained during construction using existing roads, staged construction, or on-site detours? | <u> X </u> | <input type="checkbox"/> |
| (25) | If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility? | <u> X </u> | <input type="checkbox"/> |
| (26) | Is there substantial controversy on social, economic, or environmental grounds concerning the project? | <input type="checkbox"/> | <u> X </u> |

- | | | | |
|------|---|--------------------------|--------------------------|
| (27) | Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project? | <u> X </u> | <input type="checkbox"/> |
| (28) | Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places? | <input type="checkbox"/> | <u> X </u> |
| (29) | Will the project affect any archaeological remains, which are important to history or pre-history? | <input type="checkbox"/> | <u> X </u> |
| (30) | Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)? | <input type="checkbox"/> | <u> X </u> |
| (31) | Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended? | <input type="checkbox"/> | <u> X </u> |
| (32) | Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the Natural System of Wild and Scenic Rivers? | <input type="checkbox"/> | <u> X </u> |

F. Additional Documentation Required for Unfavorable Responses in Part E
 (Discussion regarding all unfavorable responses in Part E should be provided below. Additional supporting documentation may be attached, as necessary.)

Item (2)

Suitable habitat exists for both the red-cockaded woodpecker and the rough-leaf loosestrife. On May 10, 2001, NCDOT biologists conducted a survey for each of the species. No populations were identified in the project area. In addition, the Natural Heritage Program (NHP) had no records of either of these species being sited in the project area. The Biological Conclusion is 'No Effect.'

Item (5) and (30)

This project is located on National Forest System lands with the center of Broad Creek being the property boundary. The specific US Forest System is the Croatan National Forest. This area of the forest is not designated as public parks, recreation lands, nor wildlife and waterfowl refuges. Therefore, a Section 4 (f) is not warranted. The US Forest Service has completed a Biological Evaluation (see letter dated July 3, 2003) and no direct or cumulative effects are expected if Green Sheet commitments are met.

Item (7)

There are waters within the project region classified as Outstanding Resource Waters (ORW) and/or High Quality Waters (HQW). The DENR stream classifications show the East Prong of Broad Creek classified as SA HQW. The ORW is Bogue Sound, which Broad Creek flows in to approximately 2 miles downstream from the project site

G. CE Approval

TIP Project No.	<u>B-3625</u>
WBS No.	<u>33173.1.1</u>
State Project No.	<u>8.2160901</u>
Federal Project No.	<u>BRSTP-1124(3)</u>

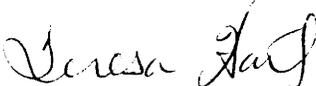
Project Description:

NCDOT will replace Bridge No. 20 on SR 1124 (Nine Mile Road) over East Prong of Broad Creek in Carteret County. The bridge will be replaced with a new bridge approximately 70 feet in length and 32 feet in width. This width will provide for a 24-foot travelway and 4 foot offsets on each side. The new approach roadway will also have a 24-foot travelway with 4-foot paved shoulders and a total shoulder width of at least 8 feet. Shoulder width will be increased at least 3 feet where guardrail is warranted. Total project length is 500 feet. Traffic will be detoured along surrounding roads during construction.

Categorical Exclusion Action Classification:

 TYPE II(A)
 X TYPE II(B)

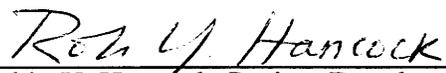
Approved:

12-1-03
Date


Teresa Hart, PE, CPM, Assistant Manager
Project Development & Environmental Analysis Branch

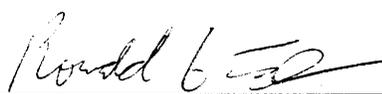
12-1-03
Date


William T. Goodwin, Jr., PE, Project Planning Unit Head,
Project Development & Environmental Analysis Branch

12-1-03
Date


Robin Y. Hancock, Project Development Engineer,
Project Development & Environmental Analysis Branch

For Type II(B) projects only:

12-5-03
Date


John F. Sullivan, III, Division Administrator
Federal Highway Administration

BIOLOGICAL EVALUATION

**Croatan National Forest, Croatan Ranger District
Carteret County, North Carolina**

DOT Bridge #20 Replacement Project

Existing Conditions and Proposed Actions

This document discloses the effects to Proposed, Endangered, Threatened, and Sensitive (PETS) terrestrial wildlife, plants, and aquatic species as a result of the replacement of Bridge #20. This bridge is located across the east prong of Broad Creek in Carteret County, North Carolina. The road, SR 1124 (Nine Mile Road), is located at the southern end of the Croatan National Forest. National Forest land occurs directly adjacent to the road and north of the creek, while private land can be found directly adjacent to the road and south of the creek. There were three alternatives and three "sub" alternatives considered in this proposal (reference project file). John O. Fussell, III, Contract Botanist, also visited the site on August 27, September 18, and October 7, 2001. Sheryl Bryan, Fishery Biologist, visited the site on August 23, 2001. Megan York (formerly Megan Martoglio), Wildlife Biologist, visited the area several times during this time period. Additional information for this project was received from Dennis Foster, Assistant Ranger, on the Croatan National Forest.

Of the seven proposed alternatives (reference the original proposal or supporting environmental documentation), the decision has been made to implement Alternative 3B.

Results and Discussion

Species considered for this project include those listed for the Croatan National Forest in the National Forests in North Carolina PETS Species List (reference attached species lists). As part of the determination of effects to PETS species, occurrence records of rare species and communities for the project area were reviewed. Information collected from Mr. Alvin Braswell, Curator of Reptiles at the NC Museum of Natural Science, was used to make determinations of habitat suitability for this project. Information received from Mr. Bo Sullivan, a private individual specializing in moths and butterflies, was also used to make determinations of effects.

Aquatic Resources

Forty-five rare aquatic species have been listed by the NCWRC, USFWS or NCNHP as occurring or potentially occurring on the Croatan National Forest (reference attached list). Of the 45 aquatic species included on the original list for analysis, 43 were dropped as a result of a likelihood of occurrence evaluation based on preferred habitat elements and field survey results. Species that do not occur (based on survey results) or are not likely to occur (based on a lack of suitable habitat) are removed from the list of species considered. Species that may occur due to the presence of suitable habitat, but that have not been documented as occurring in the vicinity of the analysis area are not considered in this analysis. This analysis will address habitat suitability for two rare aquatic species that may occur within the aquatic analysis area, although the species were not found during recent

surveys. These species are the Croatan crayfish (*Procambarus plumimanis*) and the Elfin skimmer (*Nannothemis bella*).

No rare aquatic insects were found during these surveys. Of the aquatic insects sampled from East Prong Broad Creek in August 2001, approximately 17% are members of the orders Ephemeroptera (mayflies), Plecoptera (stoneflies), or Trichoptera (caddisflies) (EPT organisms). These orders are typically indicators of good water quality and stream health. This collective relative abundance has been indexed as a metric for use in determining overall stream health (EPT index) by the North Carolina Department of the Environment and Natural Resources (NCDENR). NCDENR records from the Croatan National Forest indicate that approximately 150 species of aquatic insects and invertebrates (other than species considered above) occur across the Forest, with approximately 47 (31%) of these species representing EPT taxa. In this light, overall stream health within East Prong Broad Creek appears to be somewhat affected by surrounding land uses. The dominance of flies and midges (and not EPT organisms) generally indicates lower water quality. Within the aquatic analysis area, land use is primarily road right-of-way. Beyond this area, rural development (including housing and businesses) dominates local land use.

Implementation of this project will result in some disturbance to East Prong Broad Creek within the project area. Included are disturbances to the riverbanks and bottom during construction of bridge abutments (either temporary or permanent) and at equipment access points. Also, turbidity is likely to be increased during the implementation of any alternative.

Disturbance of the riverbanks and bottom will result in the sedimentation of local and downstream habitats. Sedimentation of aquatic resources reduces the amount of habitat available to fish and other aquatic organisms. This includes the loss of interstitial space within the substrate, which is particularly important for aquatic invertebrates (including mussels and crayfish), as well as for fish and salamander spawning and rearing areas. In addition, fine sediment particles, such as silt, decrease oxygen transport to and from aquatic populations and increase the risk of disease introduction. Long-term loss of suitable habitat can result in a decline in fish, invertebrate, and other aquatic organism productivity. However, the method of project implementation can affect how much sediment is transported and how much habitat is affected. Therefore, the mitigation measures listed below are required to minimize these negative effects during project implementation.

Aquatic habitat within area streams may be lost locally to increased sedimentation and turbidity during and after bridge replacement; however, such losses are expected to be of short duration. As bare soil is revegetated and sediments are flushed downstream, local aquatic invertebrate communities will recolonize quickly. Long-term changes in local hydrology and aquatic microhabitat distribution will not affect aquatic insect community composition since no habitats will be lost-- only "reorganized".

Sediments that are flushed downstream may also temporarily affect habitats downstream in East Prong Broad Creek. However, these potential effects are not likely to be measurable based on flow volume and potential sediment transport rates within system.

Mobile species, such as juvenile and adult fish and crayfish will likely respond to disturbance by leaving the area during adverse conditions, and return when conditions improve. In addition, aquatic

insect communities generally adapt quickly to local conditions, and have demonstrated the ability to recolonize affected areas quickly after disturbance (Rosenberg and Resh 1983). Aquatic communities within East Prong Broad Creek have, over time, adapted to the conditions associated with coastal river systems. And in general, species persisting in these systems are the ones that are tolerant of these temporary conditions.

Mitigation Measures- Aquatic Resources

Mitigation measures are management actions that are required to maintain compliance with environmental laws and regulations and are required in either action alternative to achieve the determination of effect below.

1. Erosion control such as (but not limited to) silt fence should be placed along the length of river bank that will be disturbed, between the disturbance and the water's edge, prior to project implementation to minimize soil entering East Prong Broad Creek. Erosion control efficiency should be maintained until vegetative cover is established upon project completion.
2. All coffer dams should be constructed using pre-formed concrete and other non-toxic materials unless the work area can be completely dry during installation and curing. If uncured concrete is used to form abutments or center supports behind a coffer dam, one or more aquatic biologist from the NCDOT, NCWRC, USFWS, or USFS should be present to insure that no uncured concrete comes in contact with East Prong Broad Creek. Uncured concrete is toxic to most aquatic life.

Terrestrial Wildlife Resources

Fifteen terrestrial wildlife PETS species are listed for the Croatan National Forest. All were considered in this document. According to the NCNHP records, none are known to occur within the project vicinity. Suitable habitat occurs within the project area for seven sensitive species. These are the mimic glass lizard, Bachman's sparrow, Byssus skipper, Buchholz' dart moth, Carolina gopher frog, Arogos skipper, and Venus flytrap cutworm moth.

Carteret County is the northernmost part of the range of the mimic glass lizard. This species is known to occur west of the project area within a Natural Heritage Area along Millis Road. Mr. Fussell also found *Pixidanthera*, host plant for the Buchholz' dart moth, and Venus flytrap slightly west of the project area. Therefore, the Buchholz' dart moth and Venus flytrap cutworm moth are likely to occur because their host plants occur within the vicinity and because there is high quality habitat within the project area. The Byssus skipper may occur within the project area because high quality grasses occur here, and the Arogos skipper could use the ecotonal area. No fish-free ponds used for breeding are known to occur within the vicinity of the project area, and none were found during the survey. Therefore it was determined that the Carolina gopher frog does not occur within the project area.

It was determined that this project may directly affect individuals of the mimic glass lizard. The Buchholz' dart moth, Arogos skipper, Venus flytrap cutworm moth, and Byssus skipper may be

directly affected if eggs are laid within the area where ground disturbance and vegetation removal are proposed. The Bachman's sparrow may be directly affected if nests with eggs are crushed during project implementation. However, due to the very small area impacted, it is not likely to cause a trend toward federal listing of any sensitive terrestrial wildlife species or a loss of viability to any PETS terrestrial wildlife species. No indirect or cumulative effects will occur.

Botanical Resources

Mr. Fussell observed several sensitive plant species within the proposed project area. These include Venus flytrap, savanna cowbane, Carolina asphodel, and Carolina goldenrod. In addition, savanna yellow-eyed-grass has been previously documented within this same area (Jeannie Kraus, N.C. Maritime Museum, pers. com., August 2001), and it is likely that it still occurs here, although it was not observed during recent survey.

Implementation of this project will avoid all sites having Sensitive plant species. However, one site lies within 50' of the proposed detour route. Thus, any poorly supervised work that leads to disturbance only a short distance beyond the proposed detour route could result in the destruction of individuals of Venus flytrap, savanna cowbane, and Carolina goldenrod, as well as southern white beaksedge if it also occurs here.

Determination of Effect

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not affect threatened, endangered, or proposed aquatic species, nor will suitable habitat be affected. Consultation with the U.S. Fish and Wildlife Service is not required.

Implementation of any action alternative proposed for the replacement of Bridge #20 over East Prong Broad Creek will not have long-term impacts on aquatic sensitive (Croatan crayfish) or Forest concern (elfin skimmer) species, nor will project implementation result in a trend toward listing for either of these species assuming that the above mitigation measures are implemented successfully. Habitat for these species could be temporarily affected, with conditions quickly returning to normal upon project completion.

It was determined that this project may directly affect individuals of the mimic glass lizard. The Buchholz' dart moth, Arogos skipper, Venus flytrap cutworm moth, and Byssus skipper may be directly affected if eggs are laid within the area where ground disturbance and vegetation removal are proposed. The Bachman's sparrow may be directly affected if nests with eggs are crushed during project implementation. However, due to the very small area impacted, it is not likely to cause a trend toward federal listing of any sensitive terrestrial wildlife species or a loss of viability to any PETS terrestrial wildlife species. No indirect or cumulative effects will occur. Consultation with the USDI Fish and Wildlife Service is not required.

Implementation of this project will have no effect on botanical resources. Consultation with the USDI Fish and Wildlife Service is not required.

Prepared by:

/s/ Sheryl A. Bryan

SHERYL A. BRYAN

Fisheries Biologist

National Forests in North Carolina

July 3, 2003



North Carolina Department of Cultural Resources
State Historic Preservation Office

David L. S. Brook, Administrator

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

September 14, 2000

MEMORANDUM

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

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

Re: Replacement of Bridge No. 20 on SR 1124 over Over Branch of
Band Creek, TIP No. B-3625, Carteret County.

In November 1999, April Montgomery of our staff met with North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above project. We reported our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project area photographs and aerial photographs at the meeting.

Based upon our review of the photographs and the information discussed at the meeting, we offer our preliminary comments regarding this project.

In terms of historic architectural resources we are aware of no historic structures located within the area of potential effect. We recommend that no historic architectural survey be conducted for this project.

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.

Having provided this information, we look forward to the receipt of either a Categorical Exclusion or Environmental Assessment, which indicates how NCDOT addressed our comments.

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh, NC	4617 Mail Service Center, Raleigh, NC 27699-2617	919/733-2763 • 733-2763
ARCHAEOLOGY	421 N. Blount St., Raleigh, NC	4619 Mail Service Center, Raleigh, NC 27699-2619	919/733-7342 • 733-2763
RESTORATION	518 N. Blount St., Raleigh, NC	4621 Mail Service Center, Raleigh, NC 27699-2621	919/733-6847 • 733-2763
SURVEY & PLANNING	511 N. Blount St., Raleigh, NC	4623 Mail Service Center, Raleigh, NC 27699-2623	919/733-6847 • 733-2763

Page 2 of 2
William D. Gilmore
September 14, 2000

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 any questions concerning the above comment, contact Renee Gledhill-Earley, Environmental Review Coordinator, at 919 733-4763.

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

Project Description: Replace Bridge No. 20 on SR 1124 over East prong of Broad Creek

On April 20, 2000, representatives of the

- North Carolina Department of Transportation (NCDOT)
- Federal Highway Administration (FHWA)
- North Carolina State Historic Preservation Office (SHPO)

Reviewed the subject project at

- a scoping meeting
- photograph review session/consultation
- other

All parties present agreed

- there are no properties over fifty years old within the project's area of potential effect.
- there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Bridge No. 20 are considered not eligible for the National Register and no further evaluation of them is necessary.
- there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope 4-20-00
 Representative, NCDOT Date

Michael C. Dawson 4/20/00
 FHWA, for the Division Administrator, or other Federal Agency Date

J. F. Math 4/20/00
 Representative, SHPO Date

David Brook 4/21/00
 State Historic Preservation Officer Date



☒ North Carolina Wildlife Resources Commission ☒

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Robin Young, Project Planning Engineer
Project Development & Environmental Analysis Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program 

DATE: March 10, 2000

SUBJECT: NCDOT Bridge Replacements in Carteret, Caswell, and Chatham
counties. TIP Nos. B-3625, B-3628, and B-3634.

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

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

1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.
2. Bridge deck drains should not discharge directly into the stream.
3. Live concrete should not be allowed to contact the water in or entering into the stream.
4. If possible, bridge supports (bents) should not be placed in the stream.

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain 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 stream underneath the bridge.
7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.
8. In streams that contain threatened or endangered species, NCDOT biologist Mr. Tim Savidge should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.
9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.
10. In areas with significant fisheries for sunfish, seasonal exclusions may also be recommended.

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

1. The culvert must be designed to allow for fish passage. Generally, this means that the culvert or pipe invert is buried at least 1 foot below the natural stream bed. If multiple cells are required the second and/or third cells should be placed so that their bottoms are at stream bankfull stage (similar to Lyonsfield design). This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate fish movements. If culverts are long, baffle systems are required to trap gravel and provide resting areas for fish and other aquatic organisms.
2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.
3. Culverts or pipes should be situated so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance.
4. Riprap should not be placed on the stream bed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to

avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-3625 – Carteret County – Bridge No. 20 over East Prong of Broad Creek. We would prefer this bridge be replaced with a bridge. There appears to be wetlands on both sides of the bridge. Standard recommendations apply.
2. B-3628 – Caswell County – Bridge No. 45 over Moon Creek. We recommend replacing this bridge with a bridge. Standard recommendations apply.
3. B-3634 – Chatham County – Bridge No. 117 over Dry Creek. Dry Creek is a tributary to the Haw River that drains directly into known Cape Fear Shiner (*Notropis mekistocholas*) habitat. We recommend that NCDOT hold an on-site field meeting to discuss this project. We recommend replacing this bridge with a bridge. Other standard recommendations apply.

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

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

PROJECT COMMITMENTS

Carteret County
Bridge No. 20 on SR 1124
Over the East Prong of Broad Creek
Federal Project BRSTP-1124 (3)
WBS 33173.1.1
State Project 8.2160901
TIP No. B-3625

Commitments Developed Through Project Development and Design

Division 2 Construction, Roadside Environmental Unit, Structure Design Unit, Project Development & Environmental Analysis (Natural Resource Specialist)

Bridge Demolition: Best Management Practices for Bridge Demolition & Removal will be implemented during the construction of Bridge No. 20. The superstructure is composed of pre-stressed concrete channels that can be lifted off with a large crane after the transverse post tensing strands have been removed. The substructure is composed of timber piles with concrete caps, which can be removed without any falling debris. Therefore, the bridge will be removed without dropping components into Waters of the United States during construction.

Roadside Environmental Unit, Division 2 Construction, Roadway Design Unit

Due to the potential sedimentation concerns resulting from demolition of the bridge, where it is possible to do so, a turbidity curtain shall be included to contain and minimize sedimentation in the stream. Strict erosion and sedimentation controls must be maintained during the entire life of the project.

Per the Biological Evaluation, the US Forest Service requires the following mitigation measures:

1. Erosion control such as (but not limited to) silt fence should be placed along the length of river bank that will be disturbed, between the disturbance and the water's edge, prior to project implementation to minimize soil entering East Prong Broad Creek. Erosion control efficiency should be maintained until vegetative cover is established upon project completion.
2. All coffer dams should be constructed using pre-formed concrete and other non-toxic materials unless the work area can be completely dry during installation and curing. If uncured concrete is used to form abutments or center supports behind a coffer dam, one or more aquatic biologist from the NCDOT, NCWRC, USFWS, or USFS should be present to insure that no uncured concrete comes in contact with East Prong Broad Creek. Uncured concrete is toxic to most aquatic life.
3. From the US Forest Service, it is imperative that disturbance be strictly limited to the present roadway and no more than 20 feet to the east and 30 feet to the west in order that Sensitive plant species and their habitat not be impacted. In addition, there is a very real risk of significant damage to the plant species if trucks and other equipment involved in construction are parked within the powerline corridor north of the bridge (resulting in maximum damage to the plant species). An effort should be made to prevent this from happening.

PROJECT COMMITMENTS

**Carteret County
Bridge No. 20 on SR 1124
Over the East Prong of Broad Creek
Federal Project BRSTP-1124 (3)
WBS 33173.1.1
State Project 8.2160901
TIP No. B-3625**

Commitments Developed Through Project Development and Design

Division 2 Construction, Roadway Design Unit, Hydraulics Unit

A Primary Nursery Area located within the project requires an in-stream moratorium from March 1 to July 31.

Division 2 Construction

In order to allow Emergency Management Services (EMS) time to prepare for road closure, the NCDOT Resident Engineer will notify Michael G. Addertion with Carteret County EMS at (252) 728-8470 of the bridge removal 30 days prior to road closure.

Division 2 Construction

In order to allow Carteret County Schools time to prepare for road closure, the NCDOT Resident Engineer will notify John Barbour with Carteret County Schools at (252) 728-4726 of the bridge removal 30 days prior to road closure.

Project Development & Environmental Analysis (Natural Resource Specialist)

Updated surveys for the Red-cockaded woodpecker and the rough-leaved loosestrife are scheduled for the summer of 2004. These surveys must be completed before this project is let for construction.