STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 29, 2004

Division of Water Quality
1621 Mail Service Center
Raleigh, NC 27699

Attention: Mr. John Hennessey
NCDOT Coordinator

Subject: **Buffer Certification Application** for the replacement of Bridge No. 40 over Bear Swamp Creek on SR 1235 (Dyking Road), Franklin County, Federal Aid Project No. BRZ-1235(1), State Project No. 8.2360601, Division 5, TIP Project No. B-4515

Dear Sir:

Please find enclosed a copy of the Pre-construction Notification, Fish and Wildlife concurrence letter, permit drawings, roadway design plans and Categorical Exclusion (CE), for the above-mentioned project. The NCDOT proposes to replace Bridge No. 40 over Bear Swamp Creek with a 3 span, cored slab bridge using top down construction. The new bridge will be 130 feet long with no bents in the water. Bear Swamp Creek [DWQ Index #28-23] is a jurisdictional stream in the Tar River Basin and therefore is subject to the Tar-Pamlico River Basin Buffer Rules.

Tar-Pamlico River Basin Buffer Rules

As previously noted, this project is located in the Tar-Pamlico River Basin (subbasin 030301, HUC 03020101). Bear Swamp Creek originates north of SR 1002 in Franklin County and flows southwest to its confluence with the Tar River south of the study area. Buffer impacts associated with this project are 1339 sq. ft. for Zone 1 and 3105 sq. ft. for Zone 2. There will be a total of 4444 sq. ft. of impacts to the riparian buffers as a result of the bridge replacement. According to Administrative Code Section 15A NCAC 02B.0259 (6), bridges are ALLOWABLE. Uses designated as allowable may proceed within the riparian buffer provided that there are no practical alternatives to the requested use pursuant to Item (8) of this Rule.

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
2728 CAPITOL BOULEVARD
PARKER LINCOLN BUILDING, SUITE 168
RALEIGH NC 27699

All practicable measures to minimize impacts within buffer zones were followed. There will be 3 preformed scour holes outside the buffer zone to slow velocities and to ensure diffusion of flow before entering the buffer. The creek will be bridged from high ground to high ground such that no fill will be placed in the surface waters; the side slope of SR 1235 will be primarily at 2:1 with a small area at a maximum of 4:1.

Bridge Demolition: The NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal as presented in NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal. Components of the superstructure will be removed without any structure falling into Waters of the United States. The substructure consists of timber; this will be removed without dropping any portion into Waters of the United States. It is anticipated that there will be no temporary fill associated with demolition and removal of the superstructure and substructure.

Utility Impacts: There are two Sprint telephone utility poles with aerial lines crossing Bear Swamp Creek perpendicularly inside the buffer zone on this project. These poles will be removed with equipment that will be placed on the road (SR 1235). Once the aerial lines are removed, Sprint plans to reinstall the telephone lines using directional bore method. All equipment and machinery will be located outside the buffer zones. According to 15A NCAC 02B.0259 (6) Rule, non electric utility lines that are perpendicular crossings and disturb equal to or less than 40 linear feet of riparian buffer with a maintenance corridor equal to or less than 10 feet in width are EXEMPT. Impacts from the proposed reinstallation of the Sprint utility poles will not be more that 40 linear feet with a maintenance corridor less than 10 feet.

Rare and Protected Species

Plants and animals with federal classification of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA). As of January 29, 2003 the U.S. Fish and Wildlife Service (USFWS) lists seven federally-protected species for Franklin County (see Table 1).

Table 1. Federally-protected species for Franklin County.

Common Name	Scientific Name	Status	Habitat	Biological Conclusion
Dwarf wedgemussel	*Alasmidonta heterodon*	Endangered	Yes	May Affect, Not Likely To Adversely Affect
Tar spinymussel	*Elliptio steinstansana*	Endangered	Yes	May Affect, Not Likely To Adversely Affect
Michaux's sumac	*Rhus michauxii*	Endangered	No	No Effect

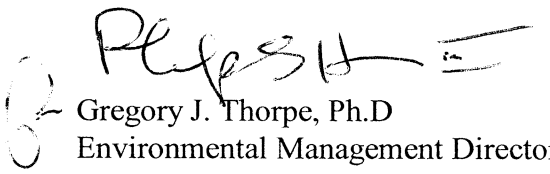
The Natural Heritage Program (NHP) files document one occurrence of the dwarf wedgemussel *(Alasmidonta heterodon)* 3.0 miles southeast of the project corridor along the Tar River at NC 56. The NHP files have no documentation of the Tar spineymussel

within 3 miles of the project corridor. Concurrence from the US Fish and Wildlife Service (USFWS) for the above biological conclusion for the dwarf wedgemussel and Tar spineymussel has been received in this office (see attached letter, dated March 1, 2004).

This project has been reviewed for jurisdiction under the Federal Clean Water Act (CWA). There are no impacts to Waters of the US, therefore none of the actions of this project fall under jurisdiction of the SWA. Therefore, no permits pursuant to the CWA are required. NCDOT requests written authorization for a Buffer Certification from the Division of Water Quality.

If you have any questions or need additional information, please contact Carla Dagnino at (919) 715-1456.

Sincerely,



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

Cc:

w/attachment

Mr. Eric Alsmeyer, USACE
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Greg Perfetti, P.E., Structure Design
Mr. David Chang, P.E., Hydraulics
Mr. Jon Nance, P.E., Division Engineer
Mr. Chris Murray, DEO

w/o attachment

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

Office Use Only: Form Version May 2002

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☐ Section 404 Permit
   - ☐ Section 10 Permit
   - ☐ 401 Water Quality Certification
   - ☒ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ

2. Nationwide, Regional or General Permit Number(s) Requested: NA

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☐

4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here: ☐

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: NC Department of Transportation
   Mailing Address: 1548 Mail Service Center
   Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 715-1501
   E-mail Address:

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: NA
   Company Affiliation:
   Mailing Address:
   Telephone Number: Fax Number:
   E-mail Address:

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Bridge No. 40 over Bear Swamp Creek on SR 1235

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4515

3. Property Identification Number (Tax PIN): NA

4. Location
   County: Franklin Nearest Town: Louisburg
   Subdivision name (include phase/lot number): NA
   Directions to site (include road numbers, landmarks, etc.): From Take 401 North of Louisburg to SR 1235, go left onto SR 1235 and follow the road approximately 1.5 miles until you reach the bridge over Bear Swamp Creek

5. Site coordinates, if available (UTM or Lat/Long): 36°8.01'N / 78°19.10'W

6. (Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)

7. Property size (acres): approximately 2.4 acres

8. Nearest body of water (stream/river/sound/ocean/lake): Tar River

9. River Basin: Tar Pamlico River Basin
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

10. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Land use is a mixture of residential properties, cultivated and wooded areas.

11. Describe the overall project in detail, including the type of equipment to be used: Please see permit application attached for description of project.
Construction equipment will consist of heavy duty trucks, earth moving equipment, cranes, etc.

12. Explain the purpose of the proposed work: Bridge No. 40 is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in a safer and more efficient traffic operations.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules.

NA

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.

NA

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

Provide a written description of the proposed impacts: . There will be 0.1 acre of impacts to the riparian buffers due to bridge construction .

1. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***
NA					

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at http://www.fema.gov.

*** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: NA
Total area of wetland impact proposed: _____

2. Individually list all intermittent and perennial stream impacts below:

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
NA					

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.

** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site: NA

3. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.) below:

Open Water Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Name of Waterbody (if applicable)	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)
NA				

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: fill, excavation, dredging, flooding, drainage, bulkheads, etc.

4. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): NA

   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): NA

   Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts.
Please see permit application.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors

including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCWRP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   NA

2. Mitigation may also be made by payment into the North Carolina Wetlands Restoration Program (NCWRP). Please note it is the applicant's responsibility to contact the NCWRP at (919) 733-5208 to determine availability and to request written approval of mitigation prior to submittal of a PCN. For additional information regarding the application process for the NCWRP, check the NCWRP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCWRP is proposed, please check the appropriate box on page three and provide the following information:

   Amount of stream mitigation requested (linear feet): NA
   Amount of buffer mitigation requested (square feet): NA
   Amount of Riparian wetland mitigation requested (acres):
   Amount of Non-riparian wetland mitigation requested (acres):
   Amount of Coastal wetland mitigation requested (acres):

IX. Environmental Documentation (required by DWQ)

Does the project involve an expenditure of public (federal/state) funds or the use of public (federal/state) land?

Yes ☒ No ☐

If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.

Yes ☒ No ☐

If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter.

Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)?

Yes ☐ No ☒ If you answered "yes", provide the following information:

Identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1	1339	3	
2	3105	1.5	
Total	4444		

* Zone 1 extends out 30 feet perpendicular from near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Conservation Easement, Riparian Buffer Restoration / Enhancement, Preservation or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0260.

XI. Stormwater (required by DWQ)

Describe impervious acreage (both existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property.

NA

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.

NA

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?

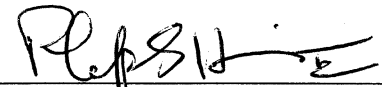
Yes ☐ No ☒

Is this an after-the-fact permit application?

Yes ☐ No ☒

XIV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).



10/20/04

Applicant/Agent's Signature **Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

United States Department of the Interior

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

RECEIVED
MAR 5 2004
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

March 1, 2004

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

Dear Dr. Thorpe:

This letter is in response to your letter of February 12, 2004 which provided the U.S. Fish and Wildlife Service (Service) with the biological conclusion of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge No. 40 on SR 1235 over Bear Swamp Creek in Franklin County (TIP No. B-4515) may affect, but is not likely to adversely affect the federally-endangered dwarf wedgemussel (*Alasmidonta heterodon*) and the Tar spinymussel (*Elliptio steinstansana*). These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to the information you submitted, mussel surveys were conducted at the project site on June 1 and 5, 2003. The survey extended 100 meters upstream and 400+ meters downstream of SR 1235. Neither of the federally listed species was found. Based on the information provided and other information available, the Service concurs with your conclusion that the proposed bridge replacement may affect, but is not likely to adversely affect the dwarf wedgemussel and Tar spinymussel. We believe that the requirements of section 7 (a)(2) of the ESA have been satisfied. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

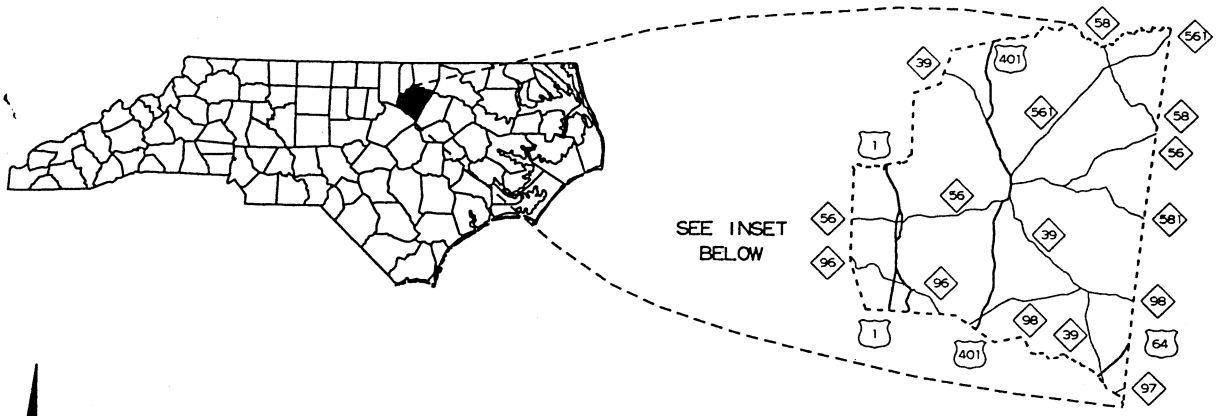
The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

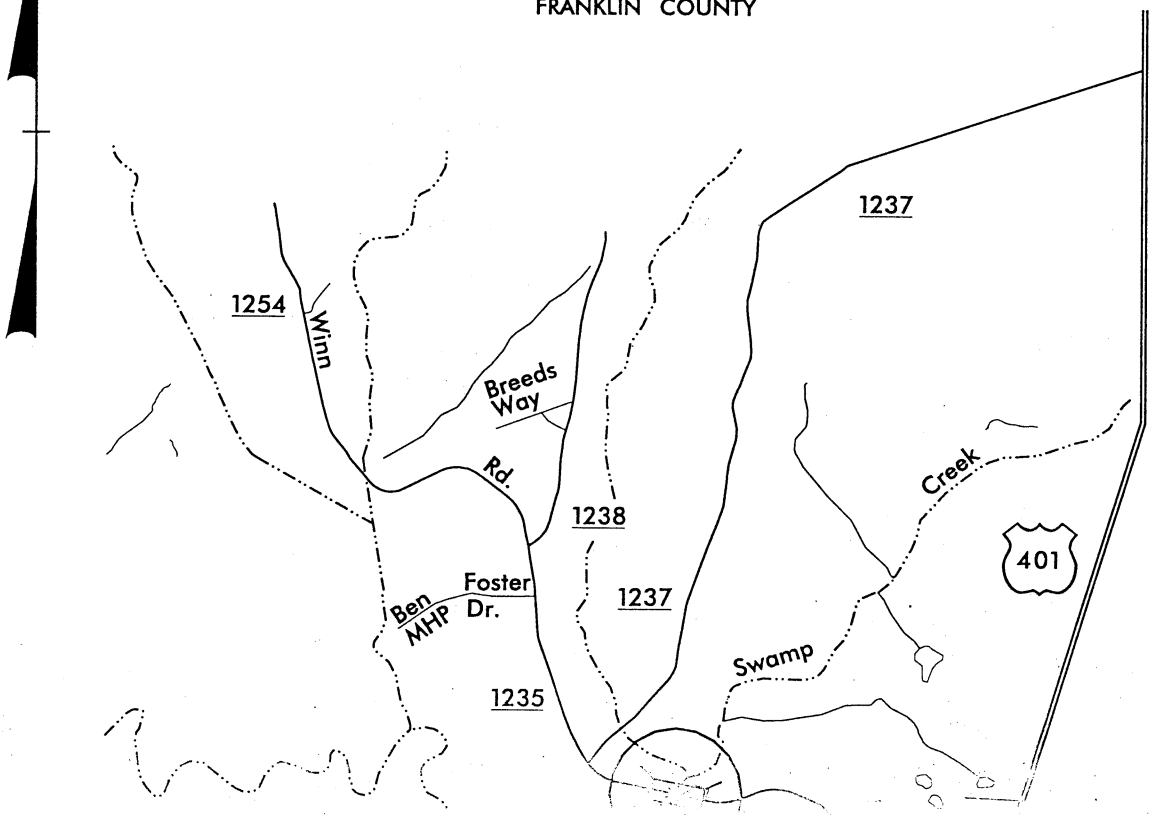
John E. Ellis

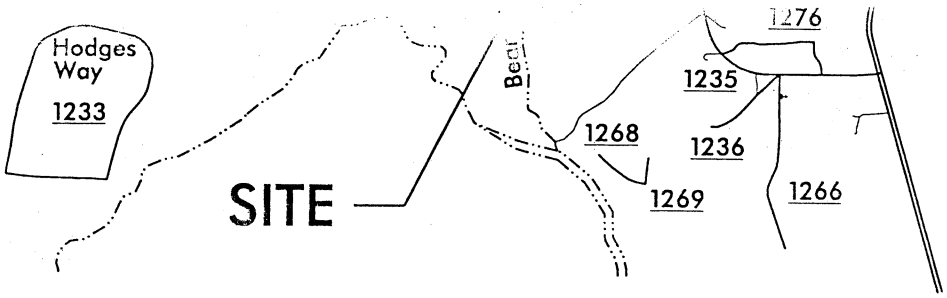
for Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: Eric Alsmeyer, USACE, Raleigh, NC
John Hennessy, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC



FRANKLIN COUNTY





SCALE

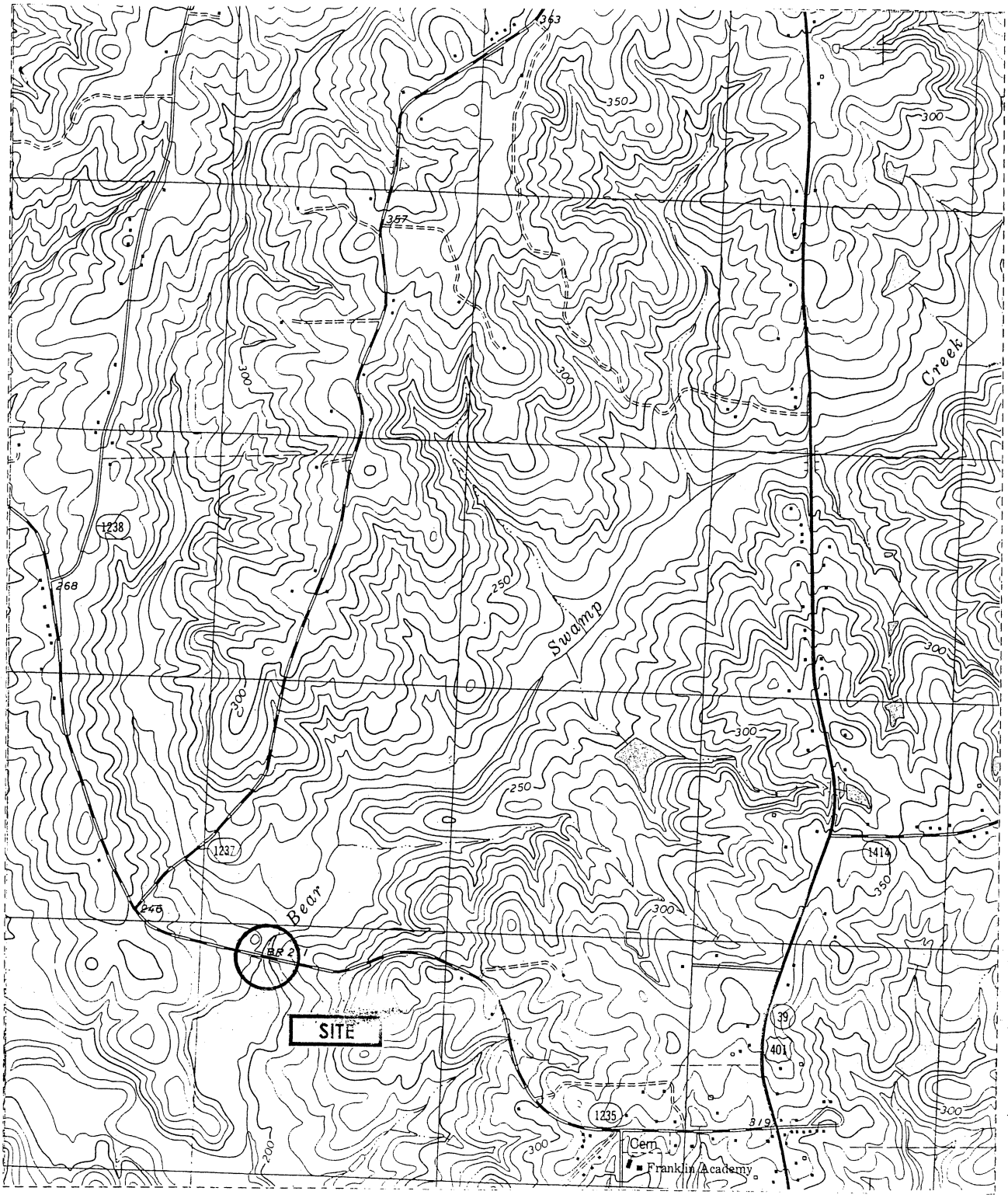
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N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

PROJECT: 8.2360601 (B-4515)
BRIDGE NO. 40
ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

SHEET 1 OF 8 12/8/03



1000 0 2000

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

PROJECT: 8.2360601 (B-4515)
BRIDGE NO. 40
ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

SHEET 2 OF 8 12/8/03

LEGEND

WLB ---- WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

BZ — RIPARIAN BUFFER ZONE

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

RIP RAP ENERGY DISSIPATOR BASIN

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

PROJECT: 8.2360601 (B-4515)
BRIDGE NO. 40
ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

SHEET 3 OF 8

12/8/03

10/25/9

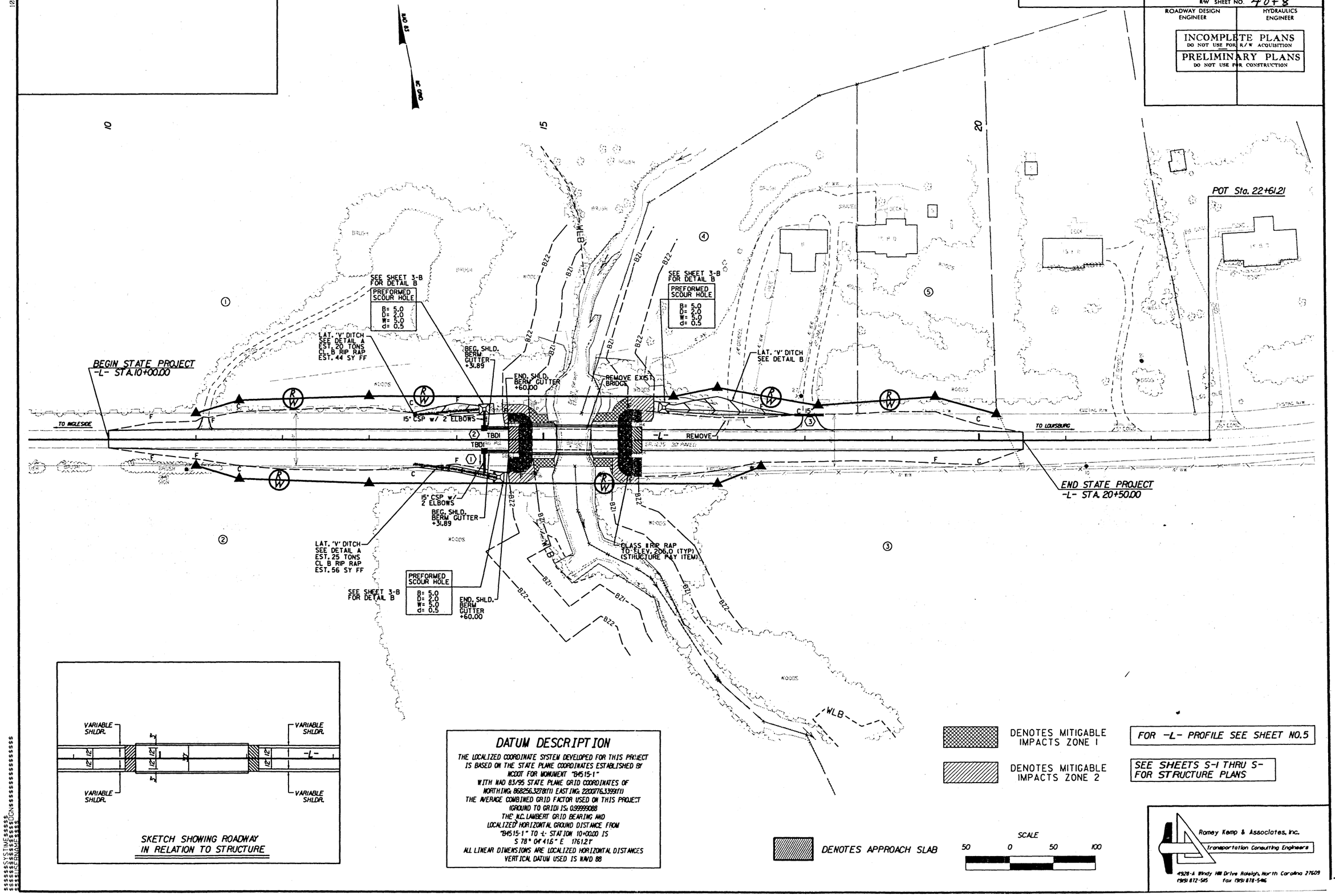
REVISIONS

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
B-4515	4
R/W SHEET NO. 4078	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4515-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 868256.3278(ft) EASTING: 2200776.3399(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99999088
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4515-1" TO -L- STATION 10+00.00 IS S 78° 04' 41.6" E 176.12'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DENOTES MITIGABLE IMPACTS ZONE 1

DENOTES MITIGABLE IMPACTS ZONE 2

DENOTES APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO.5

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

SCALE
50 0 50 100

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

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

10/26/2

REVISIONS

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
B-4515	
R/W SHEET NO. 5 of 8	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83
NC GRID

10 15 20

BEGIN STATE PROJECT
-L- STA. 10+00.00

POT Sta. 22+61.21

SEE SHEET 3-B FOR DETAIL B
PREFORMED SCOUR HOLE
B= 5.0
D= 2.0
W= 5.0
d= 0.5

LAT. 'V' DITCH SEE DETAIL A
EST. 20 TONS CL B RIP RAP
EST. 44 SY FF

BEG. SHLD. BERM GUTTER +31.89

END SHLD. BERM GUTTER +60.00

REMOVE EXIST. BRIDGE

LAT. 'V' DITCH SEE DETAIL B

TO INGLESIDE

TO LOUISBURG

15" CSP w/ 2 ELBOWS

TBDI

-L- REMOVE

END STATE PROJECT
-L- STA. 20+50.00

LAT. 'V' DITCH SEE DETAIL A
EST. 25 TONS CL B RIP RAP
EST. 56 SY FF

GLASS B RIP RAP TO ELEV. 205.0 (TYP) (STRUCTURE PAY ITEM)

WLB

VARIABLE SHLDR.

-L-

SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4515-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 868256.3278(1) EASTING: 2200776.3399(1)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999993088
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4515-1" TO -L- STATION 10+00.00 IS S 78° 04' 41.6" E 1761.21'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DENOTES MITIGABLE IMPACTS ZONE 1

DENOTES MITIGABLE IMPACTS ZONE 2

DENOTES APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO.5

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

SCALE
50 0 50 100

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5146

$$$$$$$SYSTN$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$USERNAME$$$$$$$$$$$$$$$$$$

WLB

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
B-4515	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Sheet 4 of 8

BW2 : R/R SPIKE IN 24" PINE, 201.69' LT
STA. 7+64.46 ELEV. 238.48

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

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

BEGIN GRADE -L- STA. 10+00.00
ELEV. = 217.77 (INCLUDES 2.5" RESURFACING)

(-)1.37 3%

VPI STA. 14+00 LT ELEV. = 207.00

END LAT. 'Y' DITCH STA. 14+25 LT ELEV. = 206.00

BEGIN BRIDGE -L- STA. 14+72.00 ELEV. = 213.18

END BRIDGE -L- STA. 16+02.00 ELEV. = 213.69

BOTTOM OF EXTERIOR SLAB

(+)10.39 03%

PI = 17+70.00
EL = 214.34'
VC = 360'
K = 138

(+)2.99 00%

END GRADE -L- STA. 20+50.00
ELEV. = 222.71 (INCLUDES 2.5" RESURFACING)

MATERIAL TO BE REMOVED = 950 CY.
EXISTING BRIDGE OPENING = 358 sf.
PROPOSED BRIDGE OPENING = 680 sf.

BEGIN LAT. 'Y' DITCH STA. 13+50 (LT & RT) ELEV. = 210.98

VPI STA. 14+00 RT ELEV. = 206.40

END LAT. 'Y' DITCH STA. 14+45 RT ELEV. = 203.00

BEGIN LAT. 'Y' DITCH STA. 16+40 LT ELEV. = 208.00

END LAT. 'Y' DITCH STA. 17+50 LT ELEV. = 206.64

WS EL. = 197.5'
SURVEY 7-30-02

CLASS II RIP RAP TO ELEV. 205.00 (STRUCTURAL PAY ITEM)

MATERIAL TO BE REMOVED (TYP.)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2000 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 207.0 FT
BASE DISCHARGE	= 2900 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 209.7 FT
OVERTOPPING DISCHARGE	= 4400 CFS
OVERTOPPING FREQUENCY	= >500 YRS
OVERTOPPING ELEVATION	= 212.0 FT

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 Fax (919) 878-5146

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$

Project No. 8.2360601 (B-4515)

Property Owner List

Parcel Number	Name	Address
1	William E. Stephens & Sylvia B. Stephens	148 Beasley Rd. Louisburg, NC 27549
2	Church of Latter-Day Saints	50 E. North Temple Salt Lake City, UT 84150
3	George D. Davis III & Wife Teresa W. Davis	665 W. Dyking Rd. Louisburg, NC 27549
4	Robert L. Stallings & Wife Rebecca W. Stallings	736 Dyking Rd. Louisburg, NC 27549
5	Robert L. Stallings & Wife Rebecca W. Stallings	736 Dyking Rd. Louisburg, NC 27549

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

PROJECT: 8.2360601 (B-4515)
BRIDGE NO. 40
ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

 12/8/03

BUFFER IMPACTS SUMMARY

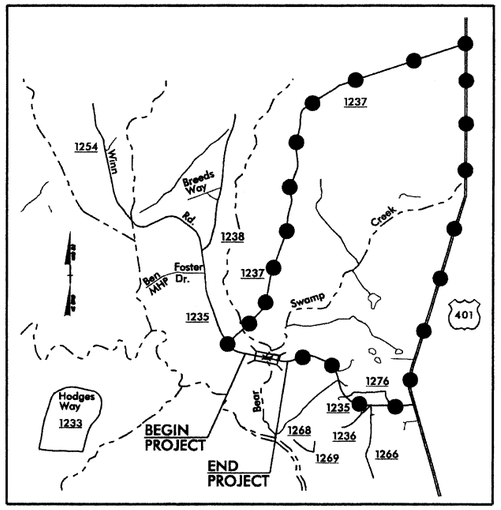
SITE NO.	STRUCTURE SIZE / TYPE	STATION	IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	Bridge	14+50 to 16+30	X		1339.1	3105.2	4444.3					
TOTALS:					1339.1	3105.2	4444.3					

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
FRANKLIN COUNTY
PROJECT: 8.2360601 (B-4515)
BRIDGE #40 ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK
SHEET 8 OF 8 12/8/2003

09/08/9

PROJECT WBS# 33740.2.1 TIP PROJECT: B-4515

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



DENOTES OFF-SITE DETOUR

VICINITY MAP

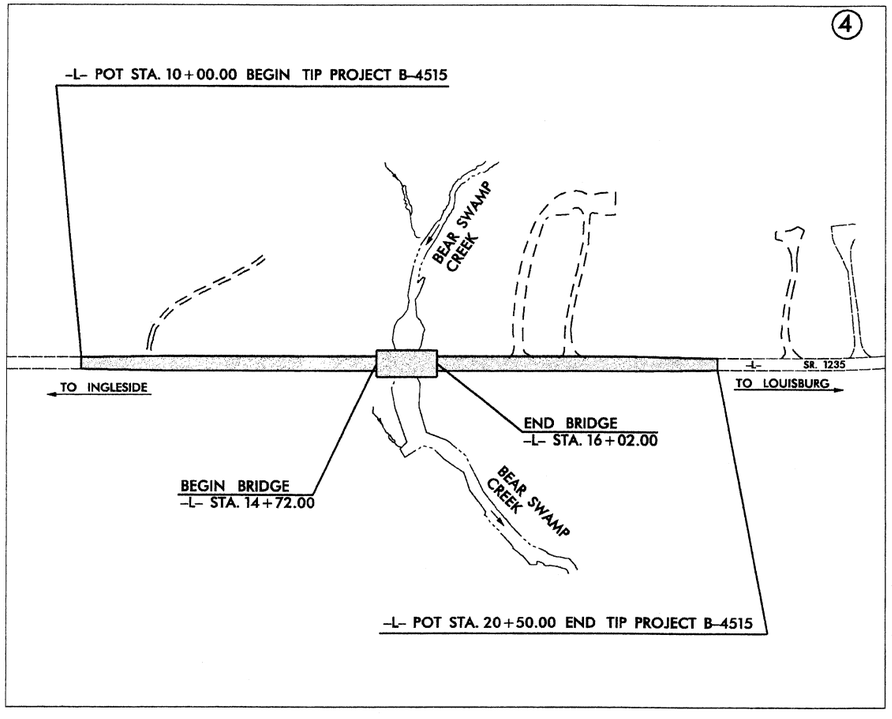


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

LOCATION: REPLACE BRIDGE NO. 40 AND APPROACHES ON SR 1235 OVER BEAR SWAMP CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE



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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4515	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33740.1.1	BRZ-1235(1)	P.E.
33740.2.1	BRZ-1235(1)	R/W, UTIL
33740.3.1	BRZ-1235(1)	CONST.

SUBMITTAL: 90% PLANS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2004 = 1,357
ADT 2025 = 2,100
DHV = 13 %
D = 60 %
T = 3 % *
V = 60 MPH

* TTST 1 % DUAL 2 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4515 = 0.174 mi
LENGTH STRUCTURE TIP PROJECT B-4515 = 0.025 mi
TOTAL LENGTH OF TIP PROJECT B-4515 = 0.199 mi

Plans prepared in the office of:

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers

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

for the North Carolina Department of Transportation

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 16, 2004

LETTING DATE:
MARCH 15, 2005

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

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

SYSTIME=09/08/9 09:38:00 ENGINEER=DONS

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4515	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

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

RIGHT OF WAY

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

HYDROLOGY

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

STRUCTURES

MAJOR

- Bridge, Tunnel, or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR

- Head & End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Boxes — CB
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal — T
- U/G Telephone Cable Hand Hold — HH
- Cable TV Pedestal — C
- U/G TV Cable Hand Hold — HH
- U/G Power Cable Hand Hold — HH
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole
- Telephone Booth
- Cellular Telephone Tower
- Water Manhole — W
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole — T
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole — S
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box — S
- Fiber Optic Splice Box — F
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS — TS

- Recorded Water Line — W — W
- Designated Water Line (S.U.E.*) — W — W
- Sanitary Sewer — SS — SS
- Recorded Sanitary Sewer Force Main — FSS — FSS
- Designated Sanitary Sewer Force Main(S.U.E.*) — FSS — FSS
- Recorded Gas Line — G — G
- Designated Gas Line (S.U.E.*) — G — G
- Storm Sewer — S — S
- Recorded Power Line — P — P
- Designated Power Line (S.U.E.*) — P — P
- Recorded Telephone Cable — T — T
- Designated Telephone Cable (S.U.E.*) — T — T
- Recorded U/G Telephone Conduit — TC — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC — TC
- Unknown Utility (S.U.E.*) — ?UTL — ?UTL
- Recorded Television Cable — TV — TV
- Designated Television Cable (S.U.E.*) — TV — TV
- Recorded Fiber Optics Cable — FO — FO
- Designated Fiber Optics Cable (S.U.E.*) — FO — FO
- Exist. Water Meter — 0
- U/G Test Hole (S.U.E.*) — ATTUR
- Abandoned According to U/G Record — E.O.I.
- End of Information

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol — PL
- Exist. Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Property Number — 123
- Parcel Number — 6
- Fence Line — WW & ISBW
- Existing Wetland Boundaries — WLB
- High Quality Wetland Boundary — HQ WLB
- Medium Quality Wetland Boundaries — MQ WLB
- Low Quality Wetland Boundaries — LQ WLB
- Proposed Wetland Boundaries — WLB
- Existing Endangered Animal Boundaries — EAB
- Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign — S
- Well — W
- Small Mine
- Swimming Pool

TOPOGRAPHY

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

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — VINEYARD

RAILROADS

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

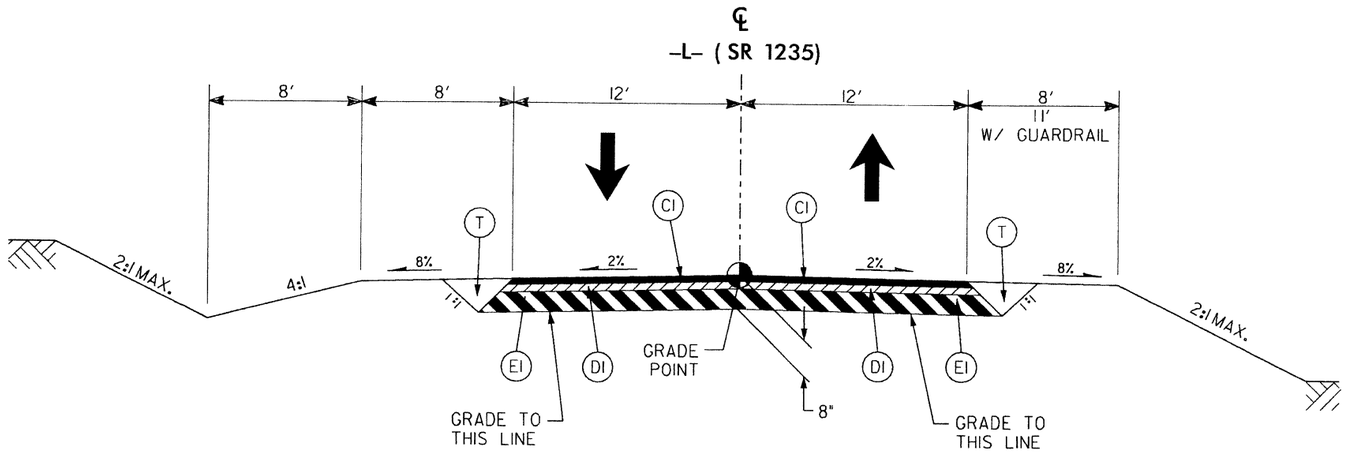
Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

SYSTIMES$$$

6/2/9

PROJECT REFERENCE NO.	SHEET NO.
B-4515	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



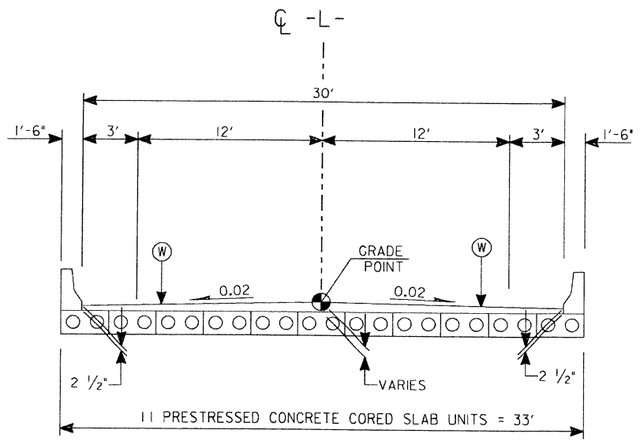
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 2

-L- STA. 10+00.00 TO STA. 14+72.00 (BEGIN BRIDGE)
-L- STA. 16+02.00 (END BRIDGE) TO STA. 20+50.00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

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



CORED SLAB DETAIL

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-585 fax (919) 878-5416

$$$$SYSTIVE$$$$
$$$$ENGELSDUNS$$$$$$$$$$$$$$$$$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4515	3

SUMMARY OF QUANTITIES

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-585 Fax (919) 878-546

6/21/00

COMPUTED BY: D. PETRY DATE: 1/7/03
CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4515	3-A

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ASPHALT PAVEMENT REMOVAL SUMMARY

STATION TO STATION	SQUARE YARDS
-L- STA. 13+10 TO STA. 14+72 (BEGIN BRIDGE)	360
-L- STA. 16+02 (END BRIDGE) TO STA. 18+15	473
PROJECT TOTAL	833
SAY	850

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

SUMMARY OF EARTHWORK

STATION TO STATION	UNCLASIFIED EXCAVATION (cu. yds)	UNDERCUT (cu. yds)	ROADWAY EMBANKMENT (cu. yds)	BORROW (cu. yds)	UNSUIT WASTE (cu. yds)
SUMMARY #1					
-L- STA. 10+00 -L- STA. 14+72.00 (BEGIN BRIDGE)	301		744	383	
SUMMARY #2					
-L- STA. 16+02.00 (END BRIDGE) -L- STA. 20+50.00	77		1327	1235	
SUBTOTAL (SUMMARIES 1-2)	378		2071	1618	
ESTIMATED 5% FOR REPLACING TOPSOIL					
ON BORROW PITS				81	
GRAND TOTAL	378		2071	1699	
SAY	380		2080	1700	

ESTIMATED DRAINAGE DITCH EXCAVATION = 13 C.Y.
ESTIMATED UNDERCUT = 100 CY.

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPROACH END	WARRANT POINT: TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH: APPROACH END	FLARE LENGTH: TRAILING END	W: APPROACH END	W: TRAILING END	ANCHORS: XI MOD	XI	GRAU 350	M-350	XIII	CAT-A	VI MOD	BIC	TYPE III	IMPACT ATTENUATOR TYPE 350	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	11+72.00	14+72.00	RT.	300.00'				14+72.00	3'	11'		281.25'		5.62'			1						1					
-L-	13+34.50	14+72.00	LT.	137.50'			14+72.00		3'	11'	118.75'		2.38'				1						1					
-L-	16+02.00	17+27.00	RT.	125.00'			16+02.00		3'	11'	106.25'		2.12'				1						1					
-L-	16+02.00	17+89.50	LT.	187.50'				16+02.00	3'	11'		168.25'		3.82'			1						1					
																	4						4					
							DEDUCTION FOR ANCHOR UNITS:																						
SUBTOTAL				750.00'			4 GRAU-350 @ 50.00' = 200.00'						5 ADDITIONAL GUARDRAIL POSTS																
DEDUCTIONS FOR ANCHOR UNITS:				-275.00'			4 TYPE III @ 18.75' = 75.00'																					
								275.00'																					
TOTAL				475.00'																								
			SAY	475.00'																								

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

STATION	SIZE / THICKNESS OR GAUGE	LOCATION (LT.,RT., OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE): 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE): 12"	15"	18"	24"	30"	36"	42"	48"
																	.064	.064	.064	.064	.079	.079	.109	.109
-L- 14+31.89		LT.	1	OUT	212.79	209.62	204.00											28'						
-L- 14+31.89		RT.	2	OUT	212.79	209.62	205.50											24'						
-L- 18+05.00		LT.	3																					
TOTAL																		52						

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS: STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS: STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS. C.S.P.	QUANTITIES FOR JUNCTION BOX STRUCTURES: PER EACH (0' THRU 5.0')	LIN. FT. A: 5.0' THRU 10.0'	LIN. FT. B: 10.0' AND ABOVE	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.5 X COL. 'B')	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE: E	F	G	TRAFFIC BEARING DROP INLET STD. 840.35	D.I. FRAME AND GRATE STD. 840.16	CORR. STEEL ELBOWS NO. & SIZE (BITUMINOUS COATED)	PIPE REMOVAL (LF)	REMARKS
-L- 14+31.89																1	1	2-15"		
-L- 14+31.89																1	1	2-15"		
-L- 18+05.00	32																		29	
TOTAL	32															2	2	4-15"	29	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I. (N.S.)	MEDIAN DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUCTION BOX

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-585 fax (919) 878-5486

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

10/26/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4515	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Type of Liner = CLASS 'B'
STA 13+50 to 14+25 LT
STA 13+50 to 14+45 RT

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)

STA 16+40 to 17+50 LT

(1) WILLIAM E. STEPHENS AND SYLVIA B. STEPHENS DB 920 PG 690-692

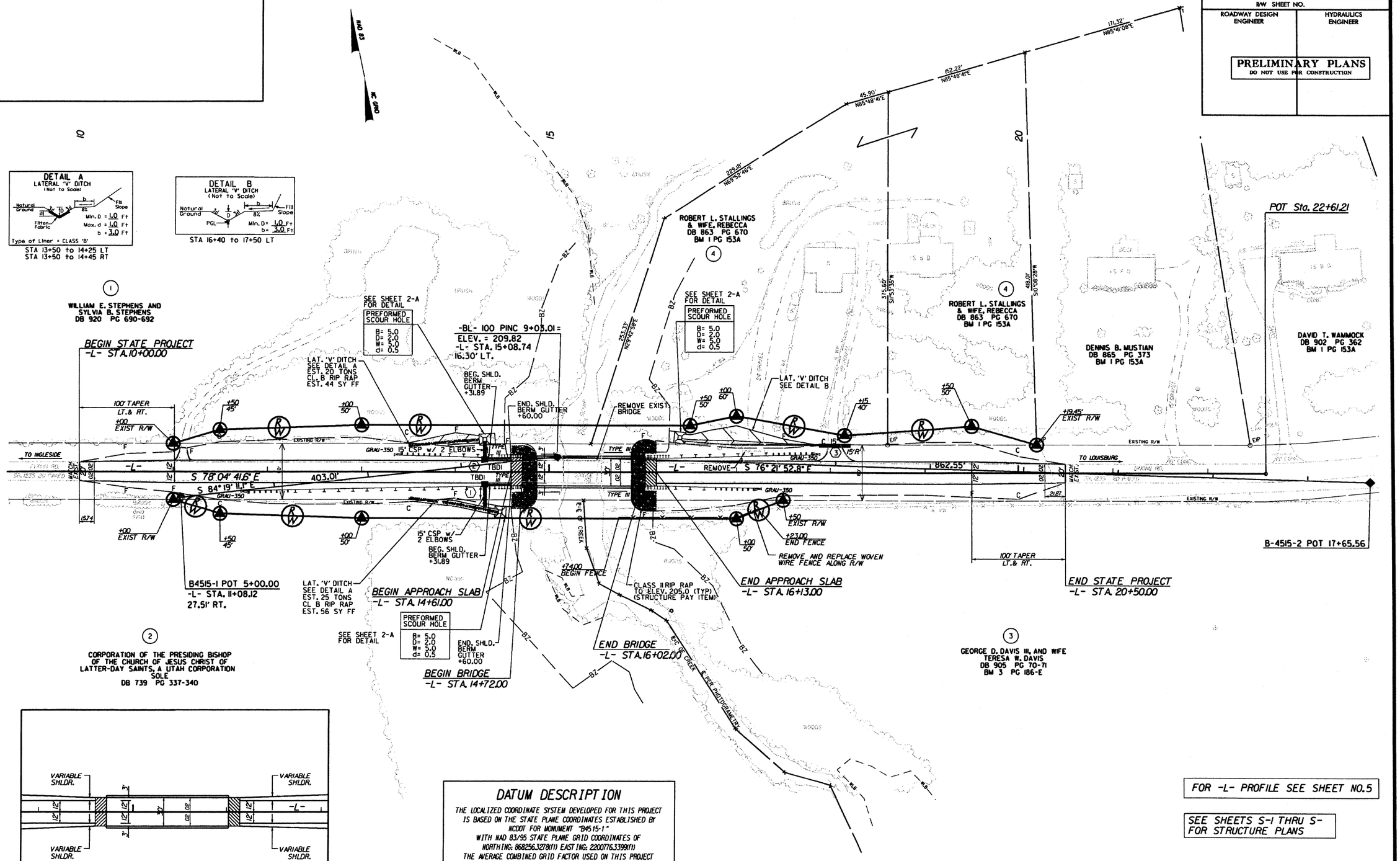
(2) CORPORATION OF THE PRESIDING BISHOP OF THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS, A UTAH CORPORATION SOLE DB 739 PG 337-340

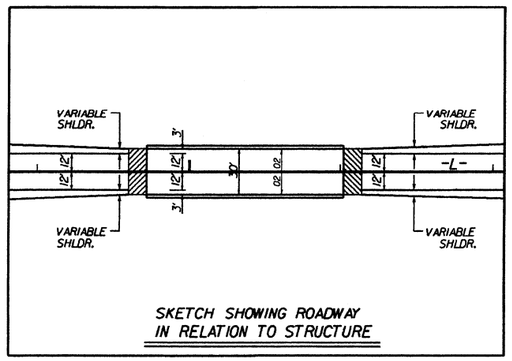
(3) GEORGE D. DAVIS III, AND WIFE TERESA W. DAVIS DB 905 PG 70-71 BM 3 PG 186-E

(4) ROBERT L. STALLINGS & WIFE, REBECCA DB 863 PG 670 BM 1 PG 153A

DENNIS B. MUSTIAN DB 865 PG 373 BM 1 PG 153A

DAVID T. WAMMOCK DB 902 PG 362 BM 1 PG 153A





SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4515-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 868256.3278(ft) EASTING: 2200776.3399(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99999088 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4515-1" TO -L- STATION 10+00.00 IS S 68°48'05.6" E 111.57' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

DENOTES APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO.5

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

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

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

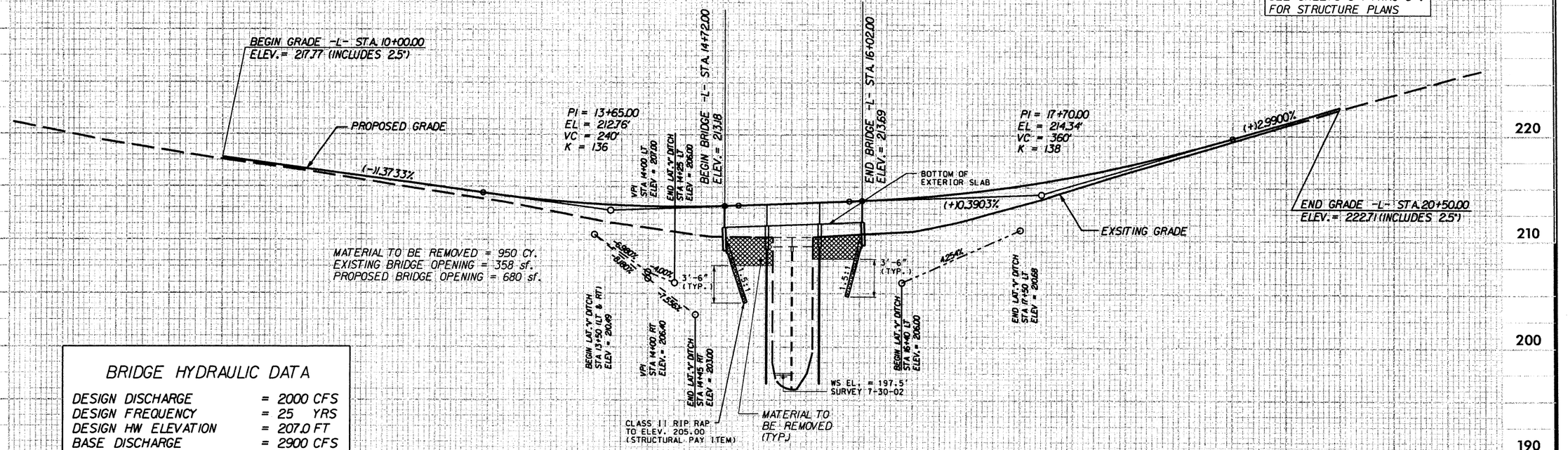
PROJECT REFERENCE NO.	SHEET NO.
B-4515	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BMI: R/R SPIKE IN 12" PINE, 204.00' SOUTH OF ℄ SR.1235 ELEV. 228.00

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

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



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2000 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 207.0 FT
BASE DISCHARGE	= 2900 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 209.7 FT
OVERTOPPING DISCHARGE	= 4400 CFS
OVERTOPPING FREQUENCY	= >500 YRS
OVERTOPPING ELEVATION	= 212.0 FT

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4928-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-585 fax (919) 878-546

$$$$$$$SYSTIME$$$$$
$$$$$$$

PROJ. REFERENCE NO.	SHEET NO.
B-4515	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
-L-		
10+00.00	8	0
10+50.00	16	4
11+00.00	14	13
11+50.00	20	25
12+00.00	38	30
12+50.00	63	29
13+00.00	78	49
13+50.00	52	96
14+00.00	12	156
14+50.00	0	109
14+72.00 (BEG. BRIDGE)	0	109
16+02.00 (END BRIDGE)	0	178
16+50.00	0	178
17+00.00	0	293
17+50.00	0	185
18+00.00	1	116
18+50.00	4	67
19+00.00	16	38
19+50.00	31	30
20+00.00	25	21
20+50.00	0	0
TOTAL	378	1726

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Ramey Kemp & Associates, Inc.
Transportation Consulting Engineers
4038-A Windy Hill Drive Raleigh, North Carolina 27609
(919) 872-5115 fax (919) 878-5416

0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4515	X-2

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

220

210

G.P. = 216.40

0.020 0.020

2:1 2:1

EP EP

STA. 11+00.00
EL. 216.13

G.P. = 217.08

0.020 0.020

2:1 2:1

EP EP

STA. 10+50.00
EL. 216.88

G.P. = 217.77

MATCH EXIST.

EP EP

STA. 10+00.00
EL. 217.56

BEGIN PROJECT -L- STA. 10+00.00

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$$$$SYSTIME$$$$$
$$$$$$$SCALE$$$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$

0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4515	X-3

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

220

G.P. = 213.76

0.020 0.020

2:1 4:1 4:1 2:1

210

EP EP

STA. 13+00.00
EL. 212.85

220

G.P. = 214.34

0.020 0.020

2:1 4:1 4:1 2:1

210

EP EP

STA. 12+50.00
EL. 213.76

220

G.P. = 215.02

0.020 0.020

2:1 4:1 4:1 2:1

210

EP EP

STA. 12+00.00
EL. 214.51

220

G.P. = 215.71

0.020 0.020

2:1 4:1 4:1 2:1

210

EP EP

STA. 11+50.00
EL. 215.30

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$LICENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4515	X-4

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

210 200 220 210 220

STA. 15+00.00
EL. 210.26

BEGIN BRIDGE -L- STA.14+72.00

G.P. = 213.13

0.020 0.020 2:1 2:1

EP EP

STA. 14+50.00
EL. 210.41

G.P. = 213.16

0.020 0.020 2:1 2:1 3:1 3:1 3:1 3:1

207.00 206.40

EP EP

STA. 14+00.00
EL. 211.12

G.P. = 213.37

0.020 0.020 4:1 2:1 4:1 2:1

EP EP

STA. 13+50.00
EL. 211.88

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$$$SYSTIME$$$$$$
$$$$$$SESSION$$$$$$
$$$$$$USERNAME$$$$$$

0 5	PROJECT REFERENCE NO.	SHEET NO.
	B-4515	X-5

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

220

G.P. = 214.50

0.020 0.020

210

3:1 3:1 2:1 2:1

208.55

STA. 17+00.00
EL. 211.96

EP EP

220

G.P. = 214.00

0.020 0.020

210

3:1 3:1 2:1 2:1

206.43

EP EP

STA. 16+50.00
EL. 210.83

END BRIDGE -L- STA. 16+02.00

210

200

STA. 16+00.00
EL. 210.53

200

190

STA. 15+50.00
EL. 196.94

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$$$$SYSTIME$$$$$
$$$$$$$SYSDATE$$$$$
$$$$$$$PROGRAMNAME$$$$$
$$$$$$$DGN$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4515	X-6

70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

220 210

G.P. = 218.32

0.020 0.020

2:1 4:1 2:1

STA. 19+00.00
EL. 217.90

EP EP

G.P. = 217.09

0.020 0.020

2:1 4:1 2:1

STA. 18+50.00
EL. 216.43

EP EP

G.P. = 216.05

0.020 0.020

4:1 2:1 3:1

STA. 18+00.00
EL. 214.85

EP EP

G.P. = 215.18

0.020 0.020

2:1 2:1 3:1 3:1

210.68

STA. 17+50.00
EL. 213.34

EP EP

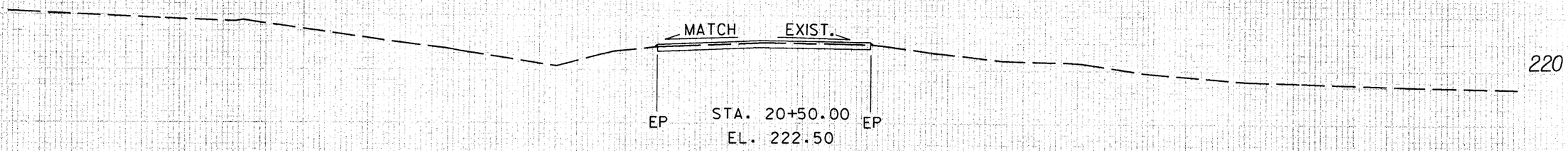
70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$SYSTIMES$$$$
$$$$USERNAME$$$$ ON $$$$$$$$$$$$$$$$$$$$

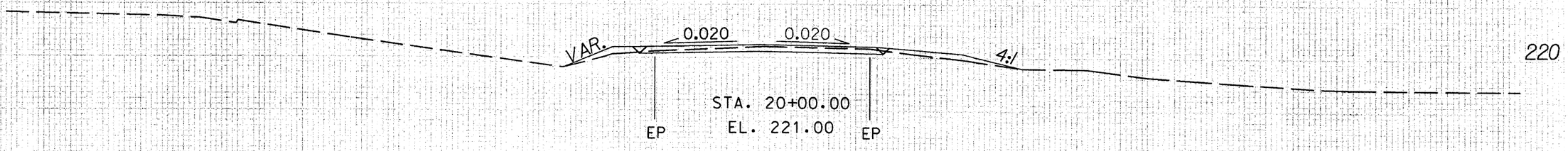
70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

END PROJECT -L- STA. 20+50.00

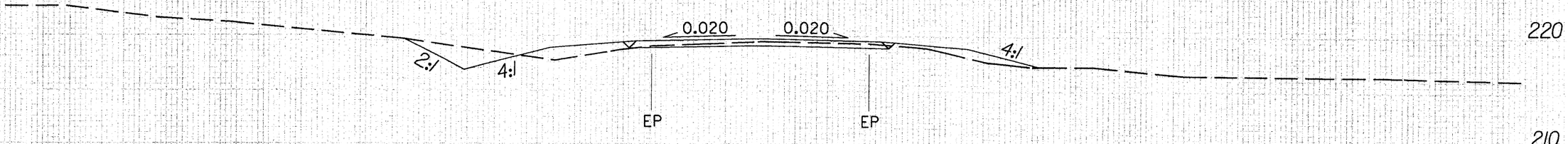
G.P. = 222.71



G.P. = 221.22



G.P. = 219.72



70 60 50 40 30 20 10 ℄ -L- 10 20 30 40 50 60 70

$$$$$$$SYSTIME$$$$$$
$$$$$$$

FRANKLIN COUNTY
BRIDGE NO. 40 ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

FEDERAL-AID PROJECT NO. BRZ-1235(1)
STATE PROJECT NO. 8.2360601
T.I.P. NO. B-4515

CATEGORICAL EXCLUSION

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

APPROVED:

10/24/03
DATE

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

10/27/03
DATE

Thomas D. Rayfield, PE
John F. Sullivan, III
for Division Administrator
Federal Highway Administration

FRANKLIN COUNTY
BRIDGE NO. 40 ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

FEDERAL-AID PROJECT NO. BRZ-1235(1)
STATE PROJECT NO. 8.2360601
T.I.P. NO. B-4515

CATEGORICAL EXCLUSION

OCTOBER 2003

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

Philip D. Edwards, Project Manager
Ramey Kemp & Associates, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 22032 ENGINEER PHILIP D. EDWARDS

10/23/03
Date

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

Theresa Ellerby, Project Manager
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

FRANKLIN COUNTY
BRIDGE NO. 40 ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

FEDERAL-AID PROJECT NO. BRZ-1235(1)
STATE PROJECT NO. 8.2360601
T.I.P. NO. B-4515

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

NCDOT Division 5 and Structure Design
The Tar-Pamlico River Buffer Rules will be implemented during the design, construction and maintenance of the project.

NCDOT Division 5
The Division will provide adequate notice to Franklin County Schools so they may plan their bus routing.

Green Sheet
Categorical Exclusion
October 2003

FRANKLIN COUNTY
BRIDGE NO. 40 ON SR 1235 (DYKING ROAD)
OVER BEAR SWAMP CREEK

FEDERAL-AID PROJECT NO. BRZ-1235(1)
STATE PROJECT NO. 8.2360601
T.I.P. NO. B-4515

INTRODUCTION

The replacement of Bridge No. 40, located on SR 1235 (Dyking Road) over Bear Swamp Creek, in Franklin County, is included in the North Carolina Department of Transportation (NCDOT) 2004-2010 Transportation Improvement Program (TIP) as B-4515 and the Federal-Aid Bridge Replacement Program (BRZ-1235(1)). The location is shown in Figure 1.

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

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate Bridge No. 40 has a sufficiency rating of 13.4 out of a possible 100 for a new structure. The bridge is considered to be structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 40 is located approximately 1.0 mile west of US 401 / NC 39 on SR 1235 (Dyking Road) north of Louisburg in Franklin County. Refer to Figures 2 and 3 for photos of the existing project area.

Bridge No. 40, was constructed in 1961, and has a sufficiency rating of 13.4 out of a possible 100. The bridge is currently posted to restrict weight limits, 19 tons (17.2 metric tons) for single vehicles and 22 tons (20.0 metric tons) for truck-tractor semi-trailers.

The overall length of the two-span structure is 41.0 ft (12.5 m). It has a clear roadway width of 24.2 ft (7.4 m) that includes two travel lanes over the bridge. The superstructure consists of a timber deck on steel I-beams with an asphalt wearing surface. The end and interior bents are constructed of timber piles and caps. A steel crutch bent has been added to help support the floor beams near the west abutment.

SR 1235 is classified as a rural minor collector in the Statewide Functional Classification System. The estimated 2003 average daily traffic (ADT) volume is 1,350 vehicles per day (vpd). The percentages of truck traffic are 1 percent TTST vehicles and 2 percent dual-tired vehicles. The projected 2030 ADT is 2,350 vpd.

The two-lane facility measures approximately 20 ft (6.0 m) in width and has variable (approximately 3 - 6 ft (0.9 – 1.8 m)) grassed shoulders on each side of the roadway. The horizontal alignment of SR 1235 is

straight and the vertical alignment is generally flat within the project area with slight upward grades both east and west from the bridge. The speed limit in the immediate vicinity of the bridge is posted at 45 miles per hour (mph) (73 km/h) east of the existing bridge and at 55 mph (88 km/h) west of the existing bridge. Existing right-of-way is approximately 60 ft (18.3 m) in width. The roadway is situated approximately 17 ft (5.2 m) above the creek bed.

There are utilities along the south side of SR 1235. Sprint has an underground telephone line located approximately 28 ft (8.5 m) south of the existing bridge structure. The line is aerial over Bear Swamp Creek. Overhead power lines are also located along the south side of SR 1235 approximately 23 ft (7 m) from the existing bridge structure. There are no utilities attached to the existing structure. Utility impacts are expected to be low.

This section of SR 1235 is not part of a designated bicycle route nor is it listed in the Transportation Improvement Program as needing incidental bicycle accommodations. There is no indication that an unusual number of bicyclists use this roadway.

Land use within the project area is a mixture of residential properties, cultivated and wooded areas. Please refer to Figure 8. An animal clinic is located approximately 850 ft (260 m) from the east end of the bridge in the southeast quadrant. There are old bridge abutments located approximately 55 ft (17 m) north (upstream) of the existing bridge. These abutments are unstable.

According to Franklin County school officials, school buses cross Bridge No. 40 eight times per day.

There has been one crash reported in the vicinity of Bridge No. 40 during the period from August 1, 1999 to July 31, 2002.

III. ALTERNATIVES

A. Project Description

Based upon the preliminary hydraulics report the proposed replacement structure will consist of a multi-span 100 ft (30.5 m) spill through bridge with a 40 ft (12.2 m) clear roadway width. The structure will provide two 12 ft (3.6 m) travel lanes with 8 ft (2.4 m) of lateral clearance on each side of the bridge.

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

The roadway approaches will provide two 12 ft (3.6 m) travel lanes with 8 ft (2.4 m) grassed shoulders. The roadway approach and bridge grades will be raised approximately 3 ft (0.9 m) to meet design speed. The design speed is 60 mph (100 km/h).

B. Build Alternatives

Three (3) build alternatives studied for replacing the existing bridge are described below:

Alternative A (Preferred)
Alternative A consists of replacing the bridge in-place with a new bridge. During construction, traffic will be maintained by an off-site detour. Existing traffic would be detoured via SR 1237 (Beasley Road) and US 401. The detour is estimated to be 8.4 miles (13.5 km) long. Refer to Figures 4 and 5 for illustration of this alternative.

The total length of roadway approach work for this alternative is approximately 900 ft (274 m).

Alternative B (In-place with On-Site Detour – South)
Alternative B consists of replacing the bridge in-place with a new bridge. During construction, traffic will be maintained by a temporary on-site detour along the south side of SR 1235. The temporary detour structure will consist of a 28 ft (8.4 m) clear roadway width with two 11 ft (3.3 m) travel lanes and 3 ft (0.9 m) of lateral clearance on each side of the bridge. The temporary detour structure is an approximate 90 foot (27 m) bridge with spill-through slopes. The roadway approaches will provide two 11 ft (3.3 m) travel lanes with 6 ft (1.8 m) grassed shoulders. The temporary detour design speed is 40 mph (65 km/h). Refer to Figure 6 for illustration of this alternative.

The total length of roadway approach work for this alternative is approximately 900 ft (274 m) and the length of the temporary detour is approximately 1,100 ft (335 m).

This alternative was not selected because it has greater impacts to wetlands, floodplains and utilities than Alternative A. It also involves more borrow material and has a greater cost.

Alternative C (In-Place with On-Site Detour – North)
Alternative C consists of replacing the bridge in-place with a new bridge. During construction, traffic will be maintained by a temporary on-site detour along the north side of SR 1235. The temporary detour structure will consist of a 28 ft (8.4 m) clear roadway with two 11 ft (3.3 m) travel lanes and 3 ft (m) of lateral clearance on each side of the bridge. The temporary detour structure is an approximate 90 foot (27 m) bridge with spill-through slopes. The roadway approaches would provide two 11 ft (3.3 m) travel lanes with 6 ft (1.8 m) grassed shoulders. The temporary detour design speed is 40 mph (65 km/h). Refer to Figure 7 for illustration of this alternative.

The total length of roadway approach work for this alternate is approximately 900 ft (274 m) and the length of the temporary detour is approximately 1,100 ft (335 m).

This alternative was not selected because it has greater impacts to wetlands, floodplains and utilities than Alternative A. It also involves more borrow material and has a greater cost.

C. Alternatives Eliminated From Further Discussion
A "Do-Nothing" alternative will eventually necessitate closure of the bridge due to its poor condition. This is not desirable due to the traffic service provided by SR 1235.

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

D. Preferred Alternative

Alternative A consists of replacing the bridge in-place with a new bridge. During construction, traffic will be maintained by an off-site detour. This alternative was selected as the Preferred Alternative because it has less impact to wetlands, floodplains and utilities. Alternative A also has a lower cost than Alternatives B or C.

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

IV. ESTIMATED COSTS

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

Table 1
Estimated Project Costs

	Alternative A (Preferred)	Alternative B	Alternative C
Structure Removal (existing)	$ 7,936	$ 7,936	$ 7,936
Structure (proposed)	260,000	260,000	260,000
Detour Structure and Approaches	---	331,744	317,991
Roadway Approaches	279,382	279,382	279,382
Miscellaneous and Mobilization	246,682	395,938	389,691
Engineering and Contingencies	131,000	225,000	220,000
Right-of-Way/Easement and Utilities	33,000	49,325	55,725
Total Project Cost	**$ 958,000**	**$ 1,549,325**	**$ 1,530,725**

The estimated cost of the project, as shown in the 2004-2010 NCDOT Transportation Improvement Program is $747,000, including $301,000 spent in prior years, $46,000 for right-of-way and $400,000 for construction.

V. NATURAL RESOURCES

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

A. Methodology

Materials and research data in support of this investigation have been derived from a number of sources. The U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic maps of Louisburg, NC (USGS 1978) and Ingleside, NC (USGS 1979) were consulted to determine physiographic relief and to assess landscape characteristics. U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping was also consulted to determine what potential wetland types may be encountered in the field. Detailed soils information was obtained from the Franklin County Soil and Water Conservation District. A county soil

survey is currently being prepared by Franklin County. Recent aerial photography (scale 1 inch = 200 feet) was furnished by NCDOT prior to starting the field investigation.

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

Jurisdictional areas were identified using the three parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979).

Water resource information for Bear Swamp Creek was derived from the most recent versions of the *Tar-Pamlico River Basinwide Water Quality Plan* (DWQ 1999), *Basinwide Assessment Report-Tar-Pamlico River Basin* (DWQ 1998), and several NC Division of Water Quality (DWQ) internet resources. Quantitative sampling was not undertaken to support existing data.

At the time of the field investigation, the most current USFWS list of federal protected species listed for Franklin County was dated February 26, 2001, and this list was reviewed prior to the field investigation. Currently, the most recent USFWS list is dated February 18, 2003. No additional species have been listed for Franklin County. In addition, NHP records, documenting the presence of federal or state listed species within the project study area were consulted before commencing the field investigation and an updated records search was performed on December 20, 2001, April 12, 2002 December 10, 2002 and May 15, 2003.

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

Quantative calculations were based on the worst-case scenario using the 100-foot (30-meter) right of way limits (minus the existing right of way), the width and length of the replacement structure, the width of the stream for aquatic impacts, and the length of the project approaches. The actual construction impacts should be less, but without specific replacement structure design information, the worst case was assumed for the impact calculations.

B. Physiography and Soils

The project study area is located in the Piedmont Physiographic Province of North Carolina. The topography in the project study area is generally characterized as nearly level. Elevations in the project study area range from 195 to 250 feet (59 to 76 m) above sea level (USGS 1978, 1979). The project study area consists of existing maintained right-of-way, pine/hardwood forest, successional land, agricultural

land, piedmont alluvial forest, and maintained/disturbed land. Current land use in the project vicinity is a mixture of rural residential, agriculture and forested.

The project study area crosses four soil mapping units based on information provided by the Franklin County Soil and Water Conservation District. These soils include Wedowee sandy loam, Helena sandy loam, Wake-Wateree-Wedowee complex, and Chewacla and Wehadkee soils and are described below.

Wedowee sandy loam is a gently sloping, well-drained soil with a loamy surface layer and clayey subsoil; on Piedmont uplands. It is derived from felsic crystalline rock.

Helena sandy loam is a strongly sloping, moderately well drained with a loamy surface layer and clayey subsoil; on Piedmont uplands. It is derived from a mixture of felsic, intermediate, or mafic igneous or high-grade metamorphic rock.

Wake-Wateree-Wedowee is a gently sloping to moderately steep, excessively drained to well-drained soils that have a sandy or loamy surface layer and sandy, clayey, or loamy subsoil; on Piedmont uplands. It is derived from felsic crystalline rock.

Chewacla-Wehadkee is a nearly level, moderately well-drained to poorly drained soils that have a loamy surface layer and a loamy subsoil; on floodplains and terraces. It is derived from metamorphic or igneous rock.

Hydric soil units mapped as occurring within the project study area include the Chewacla and Wehadkee series *(Fluvaquentic Dystrochrepts and Typic Fluvaquents)* which are frequently flooded. Non-hydric soil units that may contain hydric inclusions mapped as occurring in the project study area include the Helena series (*Aquic Hapludults*), which are moderately well drained to somewhat poorly drained and may contain inclusions of Wehadkee in depressions and drainageways. Non-hydric soils mapped as occurring within the project study area include the Wake-Wateree-Wedowee series *(Lithic Udipsamments-Typic Dystrochrepts-Typic Kanhapludults)*.

C. Water Resources

C.1. Waters Impacted

The project study area is located within sub-basin 030301 of the Tar-Pamlico River Basin (DEM 1998) and is part of USGS hydrologic unit 03020101 (USGS 1974). Bear Swamp Creek originates north of SR 1002 in Franklin County and flows southwest to its confluence with the Tar River south of the study area. This stream has been assigned Stream Index Number (SIN) 28-23 by the DWQ from its source to the Tar River.

C.2. Waters Resource Characteristics

Bear Swamp Creek is a perennial stream with moderate flow over substrate consisting of sand and silt. The channel ranges in width from 12 to 30 feet (3.7 to 9.1 m). The water depth ranges from 3 feet (0.9 m) to 5 feet (1.5 m). A geomorphic characterization of the stream section within the project study area indicates Bear Swamp Creek is an "F" type channel (Rosgen 1996). The stream occurs on a terrace-bounded alluvial valley and has moderate sinuosity. The "F" designation indicates that the stream has an entrenched meandering riffle/pool channel on a low gradient with high width/depth ratio (Rosgen 1996).

Bear Swamp Creek has been assigned a best usage classification of **WSIV NSW** (DEM 1993, DENR 2001). The **WSIV** designation indicates waters protected as water supplies which are generally in moderately to highly developed watersheds; point source discharges of treated wastewater are permitted in these waters, pursuant to Rules .0104 and .0211 of 15A NCAC 2B; however, local programs to control nonpoint source and stormwater discharge of pollution are required. The **NSW** supplemental classification indicates Nutrient Sensitive Waters which require limitations on nutrient inputs.

No Outstanding Resource Waters (**ORW**), High Quality Waters (**HQW**), **WS I**, or **WS-II** Waters occur within 1.0 miles (1.6 km) upstream or downstream of the project study area (DEM 1993, DENR 2001). Bear Swamp Creek is not designated as a North Carolina Natural and Scenic River, nor as a National Wild and Scenic River.

One method used by DWQ to monitor water quality is through long-term monitoring of macroinvertebrates. In 1997, benthic macroinvertebrate samples were taken downstream of the study area at SR 1229 on the Tar River. The sampling location received a bioclassification of Good (DWQ 1998).

Another measure of water quality being used by the DWQ is the North Carolina Index of Biotic Integrity (NCIBI), which assesses biological integrity using the structure and health of the fish community. No NCIBI sampling has been completed on this stream or its receiving waters within subbasin 030301 in Franklin County (DWQ 1998).

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as "point sources". A total of 20 permitted dischargers are located in this subbasin. There are no permitted point source dischargers located on Bear Swamp Creek or any of its upstream tributaries. One permitted point source discharger is located on the Tar River downstream from the study area.

C.3. Anticipated Impacts to Water Resources

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

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

No adverse long-term impacts to water resources are expected to result from the alternatives being considered. The proposed project calls for replacement of the bridge in-place across Bear Swamp Creek, which will allow for continuation of present stream flow within the existing channel, thereby protecting stream integrity. Alternatives with on-site detours (Alt. B and Alt. C) will utilize a temporary bridge which will also allow for continuation of stream flow.

C.4. Impacts Related to Bridge Demolition and Removal

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

Components of the superstructure will be removed without dropping them into Waters of the United States. The substructure consists of timber; this will be removed without dropping any portion into Waters of the United States. It is anticipated that there will be no temporary fill associated with demolition and removal of the superstructure and substructure.

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

D. BIOTIC RESOURCES

D.1. Plant Communities

Distribution and composition of plant communities throughout the project study area reflect landscape-level variations in topography, soils, hydrology, and past and present land use practices. When appropriate, the plant community names have been adopted and modified from the NHP classification system (Schafale and Weakley 1990) and the descriptions written to reflect local variations within the project study area. Five plant communities were identified within the project study area: piedmont/low mountain alluvial forest, pine woodlands, mixed pine/hardwood forest, agricultural land, maintained/disturbed areas, and successional areas.

Piedmont Alluvial Forest - This specific community is found within the Bear Swamp Creek floodplain. The piedmont alluvial forest community is located in river and stream floodplains in which separate fluvial landforms and associated vegetation zones are too small to distinguish (Schafale and Weakley 1990). This community is characterized by location in a floodplain and the presence of alluvial species such as green ash (*Fraxinus pennsylvanica*), sweet gum (*Liquidambar styraciflua*), river birch (*Betula nigra*), ironwood (*Carpinus caroliniana*), and box elder (*Acer negundo*).

Pine Woodlands – The pine woodlands located within the project study area are non-jurisdictional and located on the north and south sides of SR 1235 west of Bear Swamp Creek. These areas appear to have been planted and managed for timber production. Dominant tree species consist of loblolly pines (*Pinus taeda*). Shrub species consists of sweetgum, red maple (*Acer rubrum*), and tulip poplar *(Liriodendron tulipifera)* saplings. Groundcover species consist of greenbriar *(Smilax rotundifolia)*, trumpet creeper *(Campsis radicans),* poison ivy *(Toxicodendron radicans)*, and blackberry *(Rubus argutus)*.

Mixed Pine/Hardwood Forest – Dominant species include loblolly pine, red maple, sweetgum, and tulip poplar. Groundcover consists of blackberry, poison ivy, and Japanese honeysuckle (*Lonicera japonica*).

Agricultural Land – The agricultural land consists of active pastures and a fallow field. Pastures located on the north and south sides of SR 1235 east of Bear Swamp Creek are vegetated with various grasses and are used for horse grazing. The fallow agricultural field is located on the south side of SR 1235 west of Bear Swamp Creek. This field is currently vegetated with various grasses.

Maintained/Disturbed Areas – The maintained/disturbed areas located within the project study area include: roads, road right-of-ways, maintained residential yards, and areas where human related activities dominate. Roadsides are typically maintained by mowing and/or herbicides. Residential yards are dominated by various grasses, shrubs, ornamentals, and loblolly pines.

Successional Area – This community type represents land that has been disturbed in the past and has begun to revert back to a natural state. The successional area located within the project study area has been logged within the past ten years. Dominant species consist of sweetgum, tulip poplar, Chinese privet (*Ligustrum sinense*), winged elm *(Ulmus alata)*, and winged sumac *(Rhus copallinum)*. Groundcover species consist of blackberry and Japanese honeysuckle.

D.2. Wildlife

The project study area was visually surveyed for signs of terrestrial and aquatic wildlife; however, little evidence of wildlife was observed during the field effort. The project study area is surrounded by a state maintained road, agricultural fields and pastures, pine forests and residential yards. Alluvial forests along streams such as Bear Swamp Creek provide cover and food and allow animals to travel between more optimal habitats. Other expected wildlife species are those adapted to ecotones between the maintained roadsides and adjacent natural forest.

Few bird species were observed within or adjacent to the project study area. Bird species observed include American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), song sparrow (*Melospiza melodia*), and blue jay (*Cyanocitta cristata*). Species that commonly occur in regional alluvial forests include pileated woodpecker (*Dryocopus pileatus*), barred owl (*Strix varia*), and belted kingfisher (*Megaceryle alcyon*).

White-tailed deer (*Odocoileus virginianus*) tracks and evidence of beaver *(Castor canadensis)* activity were found within the project study area. No other mammals were observed within the project study area. Other species expected to be found in and around roadside and urban settings include raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), woodchuck (*Marmota monax*), red fox (*Vulpes vulpes*), gray squirrel (*Sciurus carolinensis*), and eastern cottontail (*Sylvilagus floridanus*). Other species that may use the Bear Swamp Creek floodplain as a travel corridor include possibly bobcat (*Felis rufus*).

No terrestrial reptiles were observed within the project study area. Species expected to occur within the project study area include eastern box turtle (*Terrapene carolina*), eastern garter snake (*Thamnophis sirtalis*), ringneck snake (*Diadophis punctatus*), and black rat snake (*Elaphe obsoleta*).

No terrestrial amphibians were observed within the project study area. Species expected to occur within the project study area include American toad (*Bufo americanus*), spring peeper (*Pseudacris crucifer*), and northern cricket frog (*Acris crepitans*).

D.3. Aquatic Communities

Fish species documented in the segment of Bear Swamp Creek within the project study area are chain pickerel (*Esox niger*), largemouth bass (*Micropterus salmoides*), redbreast sunfish (*Lepomis auritus*), warmouth (*Lepomis gulosus*), creek chubsucker (*Erimyzon oblongus*), and eastern mosquitofish (*Gambusia holbrooki*).

No aquatic reptiles were observed within the project study area. Species expected to occur within the project study area include the northern water snake (*Nerodia sipedon*), painted turtle (*Chrysemys picta*), and common snapping turtle (*Chelydra serpentina*).

No aquatic amphibians were observed within the project study area. Species expected to occur within the project study area include red-spotted newt (*Notophthalmus viridescens*), bullfrog (*Rana catesbeiana*), and pickerel frog (*Rana palustris*).

Aquatic invertebrate surveys included kick-net surveys, limited bottom sampling, and walking all streambanks in the project study area to locate freshwater mussel middens. Visual observation of the streambanks along Bear Swamp Creek revealed evidence of the eastern elliptio *(Elliptio complanata)* (a freshwater mussel) and Asiatic clam *(Corbicula fluminea)*.

Benthic macroinvertebrates were sampled pursuant to current DWQ protocol. Benthic organisms collected within Bear Swamp Creek were identified to at least Order and Family if possible and include dragonflies (Odonota: Gomphidae and Calapterygidae), mayflies (Ephemeroptera: Heptageniidae and Siphlonuridae), caddisflies (Trichoptera: Neophylax, Hydropsychidae and Polycentropodidae), crane flies (Diptera: Tipulidae), beetles (Coleoptera), stoneflies (Plecoptera:Perlodidae) midges (Diptera:Chironomidae), aquatic earthworms (Oligochaeta), leeches (Hirudinea), and snails (Gastropoda: Physidae). Identifications are based on McCafferty (1998).

D.4. Anticipated Impacts to Biotic Communities

D.4.a. Terrestrial Community Impacts

Anticipated impacts to plant communities are estimated based on the approximate acreage of each plant community present within both the proposed right-of-way and the temporary construction limits of the on-site alternative location. The proposed right-of-way width is 100 feet (30.5 m). A summary of potential plant community impacts is presented in Table 2. All plant community impacts are based on aerial photograph base mapping. A portion of the permanent plant community impact amount will consist of future right-of-way for the road after bridge replacement is complete.

Permanent impacts due to bridge replacement will result from expansion of the existing right-of-way and are generally limited to narrow strips adjacent to the existing bridge structure and roadway approach segments. The right-of-way will be expanded from 60 feet (18.3 m) to 100 feet (30.5 m) resulting in clearing and maintenance within the new right-of-way.

Permanent community impacts for Alternatives A, B, and C are 1.13 acres (0.46 ha), which includes 0.51 acre (0.21 ha) of impacts to forested natural plant communities. Temporary impacts typically consist of on-site detour routes and/or staging areas. Alternative B has 0.22 acre (0.09 ha) of temporary impact, of which 0.15 acre (0.06 ha) of impact is to natural forested communities. Alternative C has 0.25 acre (0.10 ha) of temporary impact, of which 0.22 acre (0.09 ha) of impact is to natural forested communities.

Table 2
Potential Impacts to Plant Communities

PLANT COMMUNITY	POTENTIAL IMPACTS acres (hectares)				
	ALT A	ALT B		ALT C	
	Impacts	Impacts	Temp. Detour Impacts	Impacts	Temp. Detour Impacts
Piedmont Alluvial Forest	0.19 (0.08)	0.19 (0.08)	0.13(0.05)	0.19 (0.08)	0.12(0.05)
Pine Woodlands	0.26 (0.11)	0.26 (0.11)	0.0	0.26 (0.11)	0.10 (0.04)
Mixed Pine/Hardwoods	0.06 (0.02)	0.06 (0.02)	0.02 (0.01	0.06 (0.02)	0.0
Agricultural Land	0.41 (0.17)	0.41 (0.17)	0.0	0.41 (0.17)	0.0
Maintained/Disturbed	0.21 (0.08)	0.21 (0.08)	0.07 (0.03)	0.21 (0.08)	0.03 (0.01)
Total	1.13 (0.46)	1.13 (0.46)	0.22 (0.09)	1.13 (0.46)	0.25 (0.10)
TOTAL FOR ALT	**1.13 (0.46)**	**1.35 (0.55)**		**1.38 (0.56)**	

Note: Temporary detour impacts are based on the portion of the on-site detour not included in the final construction limits for the permanent structure.

D.4.b. Aquatic Communities Impacts

The proposed bridge replacement will not result in substantial loss or displacement of known aquatic wildlife population. Potential down-stream impacts to aquatic habitat will be avoided by bridging Bear Swamp Creek to maintain regular flow and stream integrity. In addition, temporary impacts to downstream habitat from increased sediment during construction are expected to be reduced by limiting in-stream work to an absolute minimum, except for the removal of the portion of the sub-structure below the water. BMP-BDRs will be followed to minimize impacts due to anticipated bridge demolition.

E. SPECIAL TOPICS

E.1. Waters of the United States

Surface waters within the embankments of Bear Swamp Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "Waters of the United States" (33 CFR 328.3). The surface waters within Bear Swamp Creek exhibit characteristics of riverine, lower perennial, unconsolidated bottom, permanently flooded (R2UBH) waters (Cowardin *et al.* 1979).

Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology within 12 inches (31 cm) of the soil surface for a portion (12.5 percent) of the growing season (DOA 1987). Based on this three-parameter approach, jurisdictional wetlands to occur within the project study area in the form of palustrine, broad-leaf deciduous forested wetlands (PFO1C). Only small portions of the Bear Swamp Creek floodplain are jurisdictional, and none of these jurisdictional areas are within the construction limits of the proposed bridge replacement project.

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

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

Table 3
Potential Impacts to Jurisdictional Surface Waters

JURISDICTIONAL AREAS	ALT A	ALT B		ALT C	
	Impacts	Impacts	Temp. Detour Impacts	Impacts	Temp. Detour Impacts
Surface Water Acres (hectares)	0.11 (0.04)	0.11 (0.04)	0.05 (0.02)	0.11 (0.04)	0.04 (0.02)
Wetland	0	0	0	0	0
Total:	0.11 (0.04)	0.11 (0.04)	0.05 (0.02)	0.11 (0.04)	0.04 (0.02)
TOTAL FOR ALT: Acres (hectares)	**0.11 (0.04)**	**0.16 (0.06)**		**0.15 (0.06)**	
Stream Channel Impacts in Linear Feet (meters)	100 (30.5)	100 (30.5)	50 (15.2)	100 (30.5)	50 (15.2)
TOTAL FOR ALT: Feet (meters)	**100 (30.5)**	**150 (45.7)**		**150 (45.7)**	

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

None of the three alternatives impacts jurisdictional wetlands; however, each alternative does impact jurisdictional surface waters. Within the right-of-way for Alternative A, potential impacts total approximately 0.11 acre (0.04 ha) of R2UBH surface waters along 100 linear feet (30.5 m) of stream channel. Within the right-of-way for Alternative B, potential impacts total approximately 0.16 acre (0.06 ha) of R2UBH surface

waters along 150 linear feet (45.7 m) of stream channel, of which 0.05 acre (0.02 ha) is considered temporary impact. Within the right-of-way for Alternative C, potential impacts total approximately 0.15 acre (0.06 ha) of R2UBH surface waters along 150 linear feet (45.7 m) of stream channel, of which 0.04 acre (0.02 ha) is considered temporary impact. Potential permanent impacts to R2UBH surface waters consist of 0.11 acre (0.04 ha) for all three alternatives; however, Alternative A does not have the additional temporary impacts the two other alternatives have as a result of the on-site detours. These potential impacts are calculated based on the proposed right-of-way limits. These impacts include areas that may be cleared for the new right-of-way, open water areas that may be spanned by the new bridge and the bridges associated with the temporary on-site detours. The totals depicted in Table 3 are considered worst-case scenarios. Most impacts can be avoided by using BMP's and not working directly in streams.

E.3. Permits

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

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

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

E.4. Tar-Pamlico River Buffer Rule

Since the study area is within the Tar-Pamlico River Drainage Basin, jurisdictional surface waters are subject to the Tar-Pamlico River Riparian Buffer Rules. The Buffer Rules apply to a 50 ft (15.2 m) wide riparian buffer directly adjacent to surface waters in the Tar-Pamlico River Drainage Basin. This includes intermittent streams, perennial streams, lakes, ponds, and estuaries that are depicted on USGS maps and county soil survey maps, but does not include jurisdictional wetlands (non-surface waters) regulated under Section 404 of the Clean Water Act. Bear Swamp Creek is mapped on the USGS map and the Franklin

County soils map and will be subject to the Buffer Rules. The riparian buffer consists of two distinct zones. Zone 1 comprises a 30 ft (9.1 m) wide area adjacent to the surface water that cannot be disturbed except for those specific activities that are allowed by the Buffer Rules. Zone 2 comprises a 20 ft (6.1 m) wide area adjacent to Zone 1 that is to be left undisturbed except for those activities specifically allowed by the Buffer Rules.

Activities in the buffer area beyond the footprint of the existing use are classified as either "exempt", "allowable"," allowable with mitigation", or " prohibited". Table 4 provides a list of activities that may be subject to buffer rules within the project study area along with their classifications. Depending upon project alternatives, not all of the uses listed may apply, and other uses not listed here, such as utility crossings and roadside drainage ditches, among others, may be regulated under the buffer rules. Guidelines will be consulted in entirety to review all project related uses subject to the buffer rules.

Table 4
Activities That May Be Subject To the Buffer Rules in the Project Study Area

Use	Exempt	Allowable	Allowable With Mitigation	Prohibited
Bridges		X		
Road crossings that impact less than or equal to 40 linear feet (12 m)	X			
Road crossings that impact greater than 40 linear feet (12 m) but less than or equal to 150 linear feet (46 m) or 0.33 acres (0.13 ha) of riparian area.		X		
Road crossings that impact greater than 150 linear feet (46 m) or greater than 0.33 acres (0.13 ha) of riparian buffer			X	
Temporary roads used for bridge construction or replacement provided that restoration activities such as soil stabilization and revegetation occur immediately after construction.		X		

Activities deemed "exempt" will be designed, constructed, and maintained to minimize soil disturbance and to provide the maximum water quality protection practicable. "Allowable" activities may proceed within the riparian buffer provided that there are no practicable alternatives to the requested use. Written authorization from the DWQ or delegated local authority is required. Activities deemed "allowable with mitigation" may proceed within the riparian buffer if there are no practicable alternatives to the requested use and an appropriate mitigation strategy has been approved. Written authorization from the DWQ or

delegated local authority is required. "Prohibited" activities, none of which are listed above, may not proceed within the riparian buffer unless a variance is granted from the DWQ or delegated local authority.

Alternative A expands the existing right-of-way from 60 feet (18.3 m) to 100 feet (30.5 m), resulting in 40 feet (12.2 m) of impact to riparian buffer through clearing of forested vegetation in Zones 1 and 2. Buffer impacts resulting from Alternative A should be "Exempt". Alternative B results in an additional 50 feet (15.2 m) of clearing of existing buffer resulting from the temporary on-site detour. Alternative C also results in an additional 50 feet (15.2 m) of clearing of existing buffer resulting from the temporary on-site detour. Buffer impacts resulting from Alternative B or C will total 90 linear feet (27.4 m) and should be "Allowable".

Since portions of the project study area are within the 50 ft (15.2 m) riparian buffer zone, measurements should be taken prior to initiating any activities on the site in order to keep any stockpiled material a minimum of 50 ft (15.2) from this stream channel. Silt fences should also be erected around any stockpiled material in order to minimize the chance of erosion or run-off from affecting the stream channel.

E.5. Mitigation Evaluation

Avoidance – Each alternative contains jurisdictional open water areas, which will be subject to impact. However, open water will be bridged from high ground to high ground such that no fill will be placed in the Waters of the United States for any of the alternatives. Each alternative also contains riparian buffers, which will be subject to unavoidable impact resulting from clearing activities for the expanded right-of-way.

Minimization – Of the three alternatives studied, Alternative A will impact the least amount of open water area and riparian buffer. Efforts to minimize impacts to open water areas and riparian buffer have been made by reducing the side slope of SR 1235 from a desired 6:1 slope to a maximum of 2:1.

Mitigation - Compensatory mitigation is not proposed for this project due to the limited nature of project impacts. However, BMPs will be used in an effort to minimize impacts, including avoiding placing staging areas within wetlands. Temporary impacts associated with the construction activities will be mitigated by replanting disturbed areas with native species and removal of any temporary fill material within the floodplain upon project completion.

Mitigation should not be required for the potential buffer impacts based on Table 4.

F. RARE AND PROTECTED SPECIES

F.1. Federally Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The following federal protected species are listed for Franklin County (USFWS list dated February 18, 2003):

Table 5
Federally Protected Species for Franklin County, NC

Common Name	Scientific Name	Status	Biological Conclusion
Dwarf wedgemussel	*Alasmidonta heterodon*	E	May Effect/Not Likely to Adversely Effect
Tar spinymussel	Elliptio steinstansana	E	No Effect
Michaux's sumac	*Rhus michauxii*	E	No Effect

Endangered – any native or once-native species in danger of extinction throughout all or a significant portion of its range

NHP files document one occurrence of an endangered species within 3.0 miles (4.8 km) of the project study area. The dwarf wedgemussel (*Alasmidonta heterodon*) has been documented 3.0 miles (4.8 km) southeast of the project study corridor along the Tar River at NC 56.

Dwarf wedgemussel – The dwarf wedgemussel rarely exceeds 1.5 inches (3.8 cm) in length. The outer shell is brown or yellowish brown with faint green rays, and the nacre is bluish or silvery white. The shells of the females are somewhat wider than those of males.

This mussel species typically inhabits streams with moderate flow velocities and substrates varying in texture from gravel and coarse sand to mud with little silt deposition (FWS 1993). It is generally found in association with other mussels but is never very numerous. As with other mussel species, the dwarf wedgemussel has suffered from excess siltation in streams and rivers and from the toxic effects of various pollutants entering waterways.

BIOLOGICAL CONCLUSION: May Effect/Not Likely to Adversely Affect

A survey was performed by Mr. John M. Alderman of Alderman Environmental Services, Inc. on June 1 and 5, 2003. The survey limits were 1300 ft (400 m) downstream and 330 ft (100 m) upstream of the bridge crossing. No specimens of Dwarf wedgemussel were found.

Tar spinymussel -The Tar spinymussel is a small, subrhomboidal mussel that grows to approximately 2.5 inches (6.4 cm) in length. The external shell of the adult is smooth, orange-brown to dark brown, and ornamented by one or two rows of short spines up to 0.2 inch (0.5 cm) long. The shell is thicker on the anterior end and thinner on the posterior end. Preferred habitat of the spiny mussel includes relatively fast-flowing, well-oxygenated, circumneutral water over a silt-free, noncompacted, gravel/coarse sand substrate (FWS 1992).

BIOLOGICAL CONCLUSION: No Effect

A survey was performed by Mr. John M. Alderman of Alderman Environmental Services, Inc. on June 1 and 5, 2003. The survey limits were 1300 ft (400 m) downstream and 330 ft (100 m) upstream of the bridge crossing. No specimens of Tar spinymussel were found.

Michaux's sumac – Michaux's sumac is a dioecious, densely pubescent rhizomatous shrub, generally 2 to 3 feet (0.6 to 0.9 m) in height that produces fruits and seeds in late summer. In the Piedmont, Michaux's sumac appears to prefer clay soil derived from mafic rocks or sandy soil derived from granite. Michaux's

sumac typically grows in disturbed areas where competition is reduced by periodic fire or other disturbances, and may grow along roadside margins or utility right-of-ways (Weakley 1993). Due to the absence of suitable soil types and habitat within the project study area, no impacts to this species are expected as a result of this project.

BIOLOGICAL CONCLUSION: No effect

The project study area does contain vegetative communities that could potentially support Michaux's sumac although the mapped soil units do not appear to be clay or granite derived as is typically encountered. A species specific survey performed during the field investigation revealed no specimens of Michaux's sumac.

F.2. Federal Species of Concern

The February 18, 2003 FWS list also includes a category of species designated as "Federal species of concern" (FSC). The FSC designation provides no federal protection under the ESA for the species listed. The presence of potential suitable habitat (Amoroso 1999, LeGrand and Hall 1999) within the project study area has been evaluated for the FSC species listed for Franklin County and are presented in Table 6.

Table 6
Federal Species of Concern (FSC) for Franklin County, NC

Common Name	Scientific Name	Potential Habitat	State Status*
Pinewoods shiner	*Lythrurus matutinus*	N	SR
Yellow lance	*Elliptio lanceolata*	Y	T
Atlantic pigtoe	*Fusconaia masoni*	Y	T
Yellow lampmussel	*Lampsilis cariosa*	Y	T
Flatrock panic grass	*Panicum lithophilum*	N	SR-T
Carolina madtom	*Noturus furiosus*	Y	SR

Threatened (T) - any native or once-native species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Significantly Rare (SR) – species which are very rare, generally with 1-20 populations in the state, and generally reduced in numbers by habitat destruction.

NHP files document three occurrences of FSC within 3.0 miles (4.8 km) of the project study area. The yellow lance (*Elliptio lanceolata*) has been documented 3.0 miles (4.8 km) southeast of the project study corridor along the Tar River at NC 56. Atlantic pigtoe (*Fusconaia masoni*) and yellow lampmussel *(Lampsilis cariosa)* have been documented 3.0 miles (4.8 km) west of the project study area along the Tar River at SR 1003. No FSC were identified during the site visit.

F.3. State Protected Species

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

NHP records indicate that in addition to the aforementioned federal species of concern, three other state-listed species have been documented within 3.0 miles (4.8 km) of the project study area. Triangle floater *(Alasmidonta undulata),* which is listed by the State as **T** has been documented 3.0 miles (4.8 km) southeast of the project study corridor along the Tar River at NC 56. Neuse River waterdog *(Necturus lewisi),* which is listed by the State as **SC** has been documented 3.0 miles (4.8 km) west of the project study corridor along the Tar River at SR 1003. Squawfoot *(Strophitus undulatus),* which is listed by the State as **T** has been documented 3.0 miles (4.8 km) southeast of the project study corridor along the Tar River at NC 56.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

In their August 6, 2001, memorandum the SHPO stated "We have conducted a review of the project area and are aware of no properties of architectural, historic, or archaeological significance, which would be affected by the project. Therefore, we have no comment on the project as currently proposed." A copy of the SHPO memorandum is included in the Appendix.

C. Archaeology

In their August 6, 2001, memorandum the SHPO stated "We have conducted a review of the project area and are aware of no properties of architectural, historic, or archaeological significance, which would be affected by the project. Therefore, we have no comment on the project as currently proposed." A copy of the SHPO memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

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

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

Replacement of Bridge No. 40 will not have an adverse effect on the quality of the human or natural environment. The project should have an overall positive impact due to the improvement of existing, poor bridge conditions.

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

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

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

There is the possibility that the overhead power line and the Sprint telephone line may be impacted. This determination will be made during final design.

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

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

This project has been coordinated with the United States Department of Agriculture, Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland for all land acquisition and construction projects. The proposed project involves replacing the bridge in its existing location; therefore, no impacts to prime or locally important farmland are anticipated.

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

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

Ambient noise levels may increase during the construction of this project; however this increase will be only temporary and usually confined to daylight hours. There should be no notable change in traffic volumes after this project is complete. Therefore, this project will have no adverse effect on existing noise levels. Noise receptors in the project area will not be impacted by this project. This evaluation completes

the assessment requirements for highway noise set forth in 23 CFR Part 772. No additional reports are required.

During the site visit, observation revealed no existence of underground storage tanks or hazardous waste sites in the project area.

Franklin County is a participant in the National Flood Insurance Regular Program. The bridge is not located in a Detailed Study Area, but is located in a Zone A floodplain. The replacement structure is proposed as an in-kind replacement and in the absence of historical problems, increased flood impacts associated with this bridge replacement are not anticipated. The approximate 100-year floodplain in the project area is shown in Figure 9.

Geotechnical borings for the bridge foundation will be necessary.

Based on the above discussion, it is concluded that no substantial adverse environmental impacts will result from the replacement of Bridge No. 40.

VIII. PUBLIC INVOLVEMENT

No formal public involvement program was initiated. Efforts were undertaken early in the planning process (June 2001) to contact local officials to involve them in the project development with a scoping letter.

IX. AGENCY COMMENTS

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

North Carolina Wildlife Resources Commission (NCWRC) – NCWRC indicated that "there are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request the NCDOT perform a mussel survey prior to the construction of this bridge."

Response: NCDOT Environmental Specialist have conducted a mussel survey on June 1 and 5, 2003, and found no species.

Franklin County Schools – The Franklin County school system commented that "this crossing provides significant access to other county roads traveled by our buses." They requested to be notified as soon as possible in advance of bridge closure so they may plan their bus routing.

Response: NCDOT will provide adequate notice to Franklin County Schools so they may plan their bus routing.

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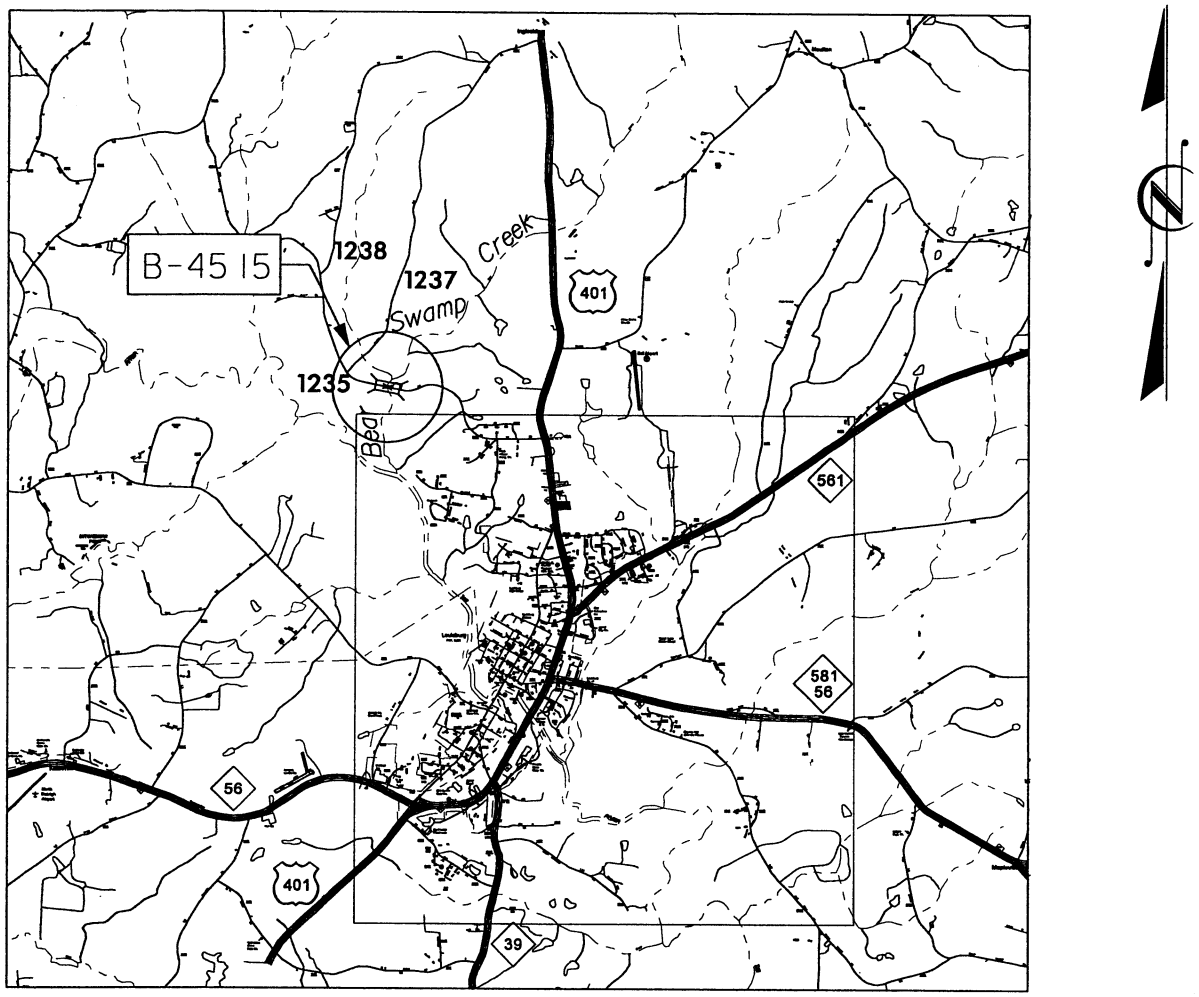
USGS. 1978. Louisburg, NC 7.5-minute topographic quad

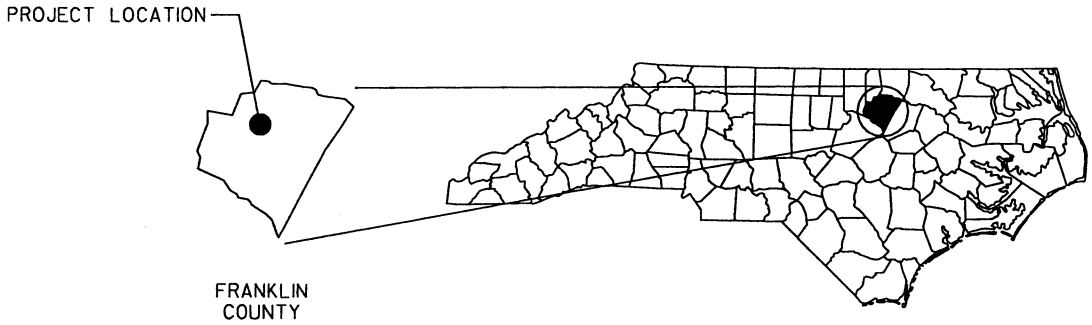
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FIGURES





SCALE IN MILES

1 0 1

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

FIGURE 1
AREA LOCATION MAP
BRIDGE NO. 40
ON SR 1235
OVER BEAR SWAMP CREEK
FRANKLIN COUNTY, NORTH CAROLINA
TIP PROJECT B-45 15



LOOKING WEST FROM BRIDGE NO. 40



LOOKING EAST FROM BRIDGE NO. 40

B-4515 FRANKLIN COUNTY
REPLACE BRIDGE NO. 40 OVER BEAR SWAMP CREEK

FIGURE 2
PROJECT PHOTOGRAPHS



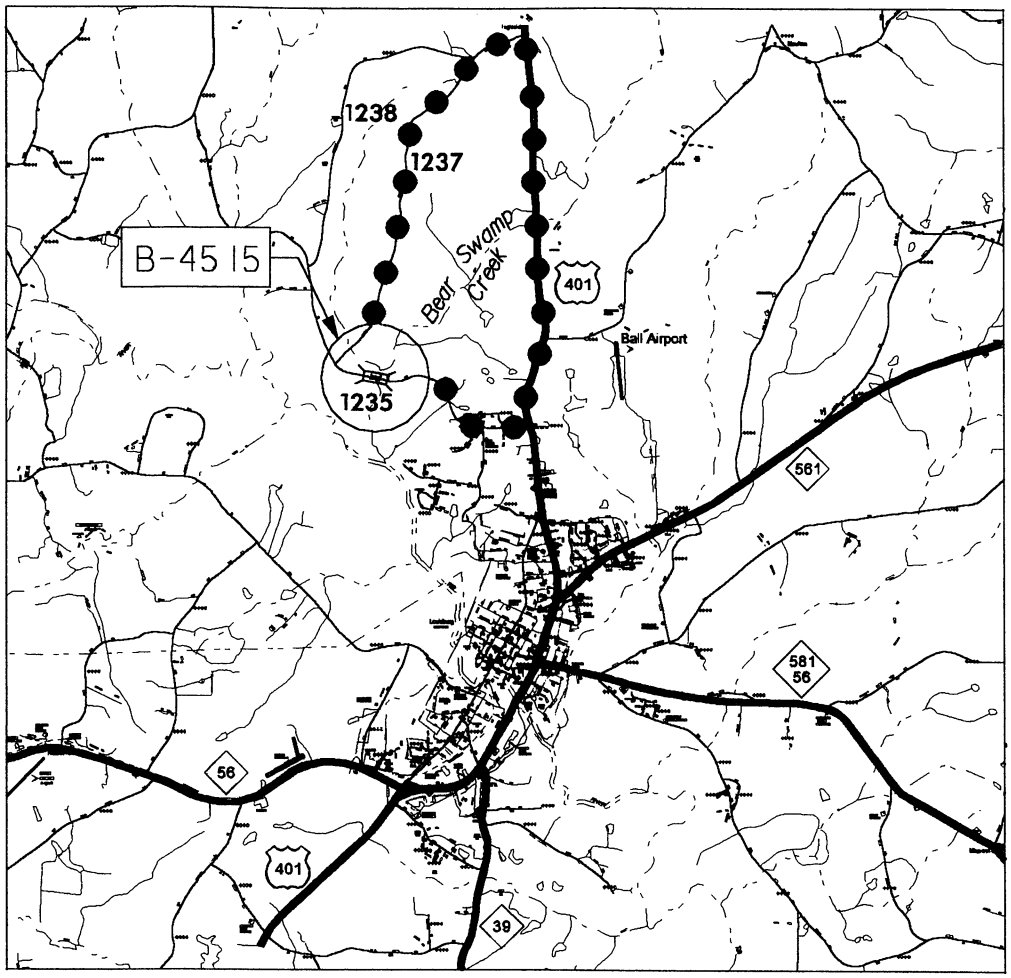
LOOKING AT SOUTH SIDE OF BRIDGE NO. 40

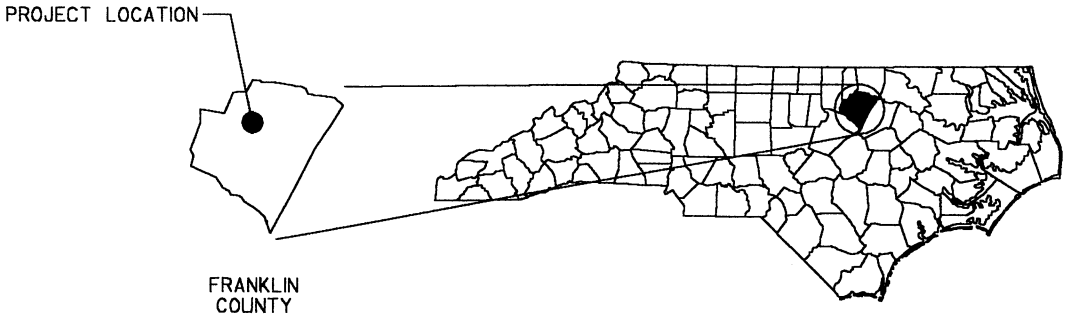


LOOKING AT NORTH SIDE OF BRIDGE NO. 40

B-4515 FRANKLIN COUNTY
REPLACE BRIDGE NO. 40 OVER BEAR SWAMP CREEK

FIGURE 3
PROJECT PHOTOGRAPHS





SCALE IN MILES

1 0 1

STUDIED DETOUR

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

FIGURE 4
PROPOSED OFF-SITE DETOUR
BRIDGE NO. 40
ON SR 1235
OVER BEAR SWAMP CREEK
FRANKLIN COUNTY, NORTH CAROLINA
TIP PROJECT B-4515

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

PROJECT REFERENCE NO.	SHEET NO.
B-4515	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN DATA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	55 mph (90 km/h)
CURRENT YEAR ADT (2000)	1200 vpd
DESIGN YEAR ADT (2025)	2100 vpd
% TTST ,% DUALS	1% ,2%
FUNCTIONAL CLASSIFICATION	Rural Minor Collector
TERRAIN	Rolling
MAX RADIUS	1206 FT (368 m)
MAXIMUM GRADE	7% Rolling
SUPERELEVATION RATE	Se = 0.08

25 (-L-)

30 (-L-)

15 (-ALTA-)

35 (-L-)

20 (-ALTA-)

BEGIN PROJECT
-ALTA- POT STA 11+00.00 =
-L- POT STA 26+85.64

180' TAPER LT & RT

BEGIN BRIDGE
-ALTA- STA 14+95.00

END BRIDGE
-ALTA- STA 15+95.00

END PROJECT
-ALTA- POT STA 20+00.00 =
-L- POT STA 35+85.64

180' TAPER LT & RT

-L- PC STA 38+11.08

BARN

I S F D

I S F D

I S F D

SOIL DRIVE

BEAR SWAMP CREEK

WOODS

FIELD

EXISTING R/W

EXIST R/W

SR 1325 18' BST S 78° 15' 56.2" E

CURVE 1

-L- CURVE 1
PI Sta 41+53.08
Δ = 34° 21' 59.7" (LT)
D = 5° 10' 50.7"
L = 663.35'
T = 341.99'
R = 1,105.94'

50 0 50 100
SCALE

TYPICAL ROADWAY CROSS SECTION

TYPICAL BRIDGE CROSS SECTION

FIGURE 5

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

PROJECT REFERENCE NO.	SHEET NO.
B-4515	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN DATA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	55 mph (90 km/h)
CURRENT YEAR ADT (2000)	1200 vpd
DESIGN YEAR ADT (2025)	2400 vpd
% TTST ,% DUALS	1%, 2%
FUNCTIONAL CLASSIFICATION	Rural Minor Collector
TERRAIN	Rolling
MAX RADIUS	1205 ft (368 m)
MAXIMUM GRADE	7% Rolling
SUPERELEVATION RATE	Se = 0.08

DETOUR DESIGN DATA

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

25 (-L-) | 10 (-ALTB-) | 30 (-L-) | 15 (-ALTB-) | 15 (-ALTA-) | 35 (-L-) | 20 (-ALTB-) | 20 (-ALTA-)

BEGIN PROJECT
-ALTA- POT STA 11+00.00 =
-L- POT STA 26+85.64

BEGIN BRIDGE
-ALTA- STA 14+95.00

END BRIDGE
-ALTA- STA 15+95.00

END PROJECT
-ALTA- POT STA 20+00.00 =
-L- POT STA 35+85.64

-L- PC STA 38+11.08

BARN

ISFD

SOIL DRIVE

BEAR SWAMP CREEK

WOODS

EXISTING R/W

FIELD

SR 1325 18' BST

S 78° 15' 56.2" E

CURVE 1

CURVE 2

CURVE 3

CURVE 4

BEGIN DETOUR
-ALTB- PC STA 10+00.00 =
-L- POT STA 25+85.64

-ALTB- PRC STA 12+21.18

-ALTB- PT STA 14+42.36

BEGIN TEMP. BRIDGE
-ALTB- STA 15+05.00

-ALTB- PC STA 16+65.53

END TEMP. BRIDGE
-ALTB- STA 15+95.00

-ALTB- PRC STA 18+86.71

END DETOUR
-ALTB- PT STA 21+07.89 =
-L- POT STA 36+85.64

-ALTB- CURVE 1
PI Sta 11+11.09
Δ = 13° 16' 14.5" (RT)
D = 6° 00' 00.0"
L = 221.1780'
T = 111.0861'
R = 954.9297'

-ALTB- CURVE 2
PI Sta 13+32.26
Δ = 13° 16' 14.5" (LT)
D = 6° 00' 00.0"
L = 221.1780'
T = 111.0861'
R = 954.9297'

-ALTB- CURVE 3
PI Sta 17+76.62
Δ = 13° 16' 14.5" (LT)
D = 6° 00' 00.0"
L = 221.1780'
T = 111.0861'
R = 954.9297'

-ALTB- CURVE 4
PI Sta 19+97.80
Δ = 13° 16' 14.5" (RT)
D = 6° 00' 00.0"
L = 221.1780'
T = 111.0861'
R = 954.9297'

-L- CURVE 1
PI Sta 41+53.08
Δ = 34° 21' 59.7" (LT)
D = 5° 10' 50.7"
L = 663.3507'
T = 341.9906'
R = 1,105.9350'

TYPICAL ROADWAY CROSS SECTION

TYPICAL DETOUR ROADWAY CROSS SECTION

TYPICAL BRIDGE CROSS SECTION

TYPICAL DETOUR BRIDGE CROSS SECTION

50 0 50 100
SCALE

FIGURE 6

ALTERNATE C
(REPLACE IN-PLACE WITH ON-SITE DETOUR NORTH SIDE)

PROJECT REFERENCE NO.	SHEET NO.
B-4515	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

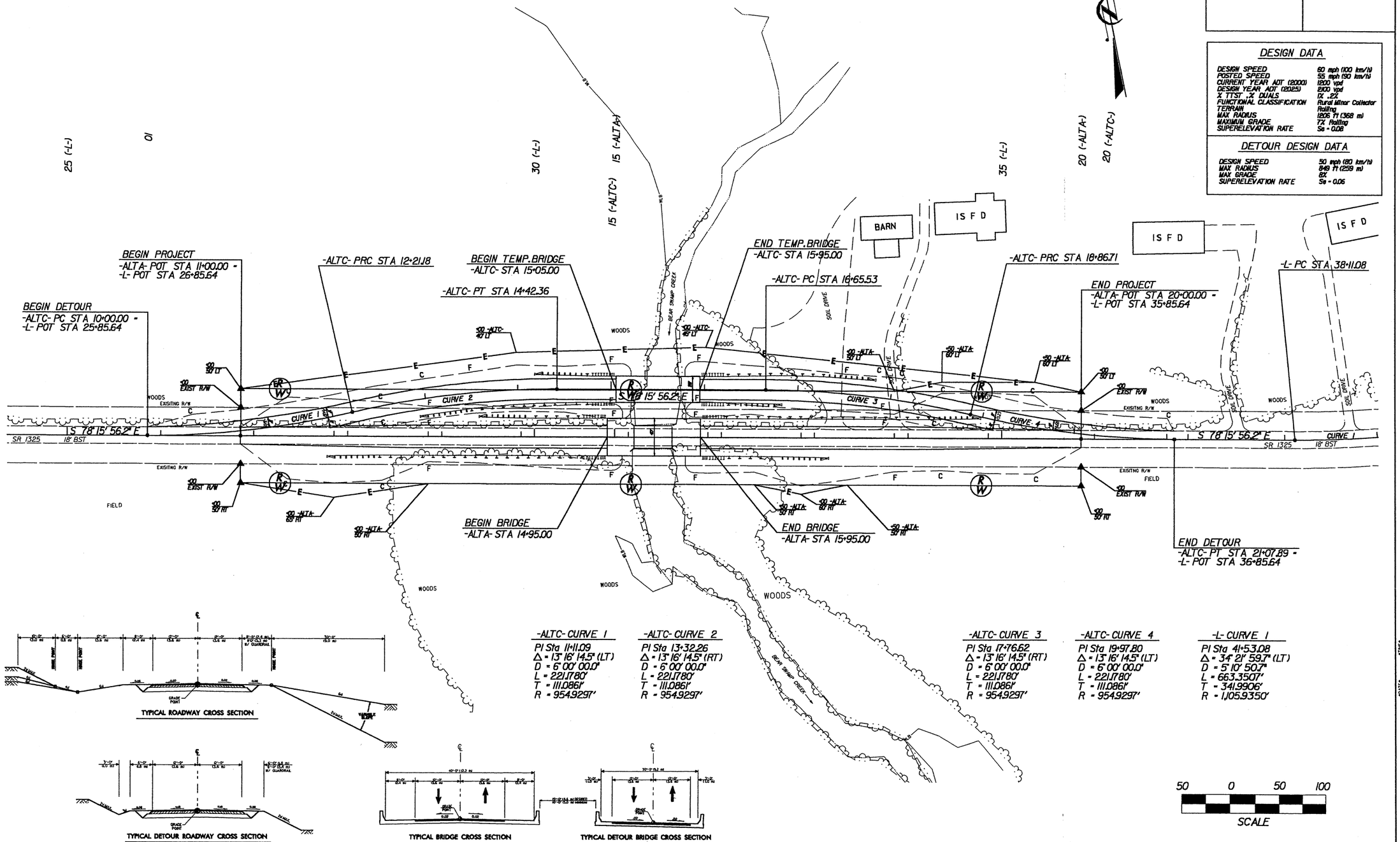
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN DATA

DESIGN SPEED	60 mph (100 km/h)
POSTED SPEED	55 mph (90 km/h)
CURRENT YEAR ADT (2000)	1800 vpd
DESIGN YEAR ADT (2025)	2100 vpd
% TTST ,% DUALS	1% ,2%
FUNCTIONAL CLASSIFICATION	Rural Minor Collector
TERRAIN	Rolling
MAX RADIUS	1206 Ft (368 m)
MAXIMUM GRADE	7% Rolling
SUPERELEVATION RATE	Se = 0.08

DETOUR DESIGN DATA

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



-ALTC- CURVE 1
PI Sta 11+11.09
Δ = 13° 16' 14.5" (LT)
D = 6° 00' 00.0"
L = 221.17.80'
T = 111.0861'
R = 954.9297'

-ALTC- CURVE 2
PI Sta 13+32.26
Δ = 13° 16' 14.5" (RT)
D = 6° 00' 00.0"
L = 221.17.80'
T = 111.0861'
R = 954.9297'

-ALTC- CURVE 3
PI Sta 17+76.62
Δ = 13° 16' 14.5" (RT)
D = 6° 00' 00.0"
L = 221.17.80'
T = 111.0861'
R = 954.9297'

-ALTC- CURVE 4
PI Sta 19+97.80
Δ = 13° 16' 14.5" (LT)
D = 6° 00' 00.0"
L = 221.17.80'
T = 111.0861'
R = 954.9297'

-L- CURVE 1
PI Sta 41+53.08
Δ = 34° 21' 59.7" (LT)
D = 5° 10' 50.7"
L = 663.3507'
T = 341.9906'
R = 1,105.9350'

50 0 50 100
SCALE

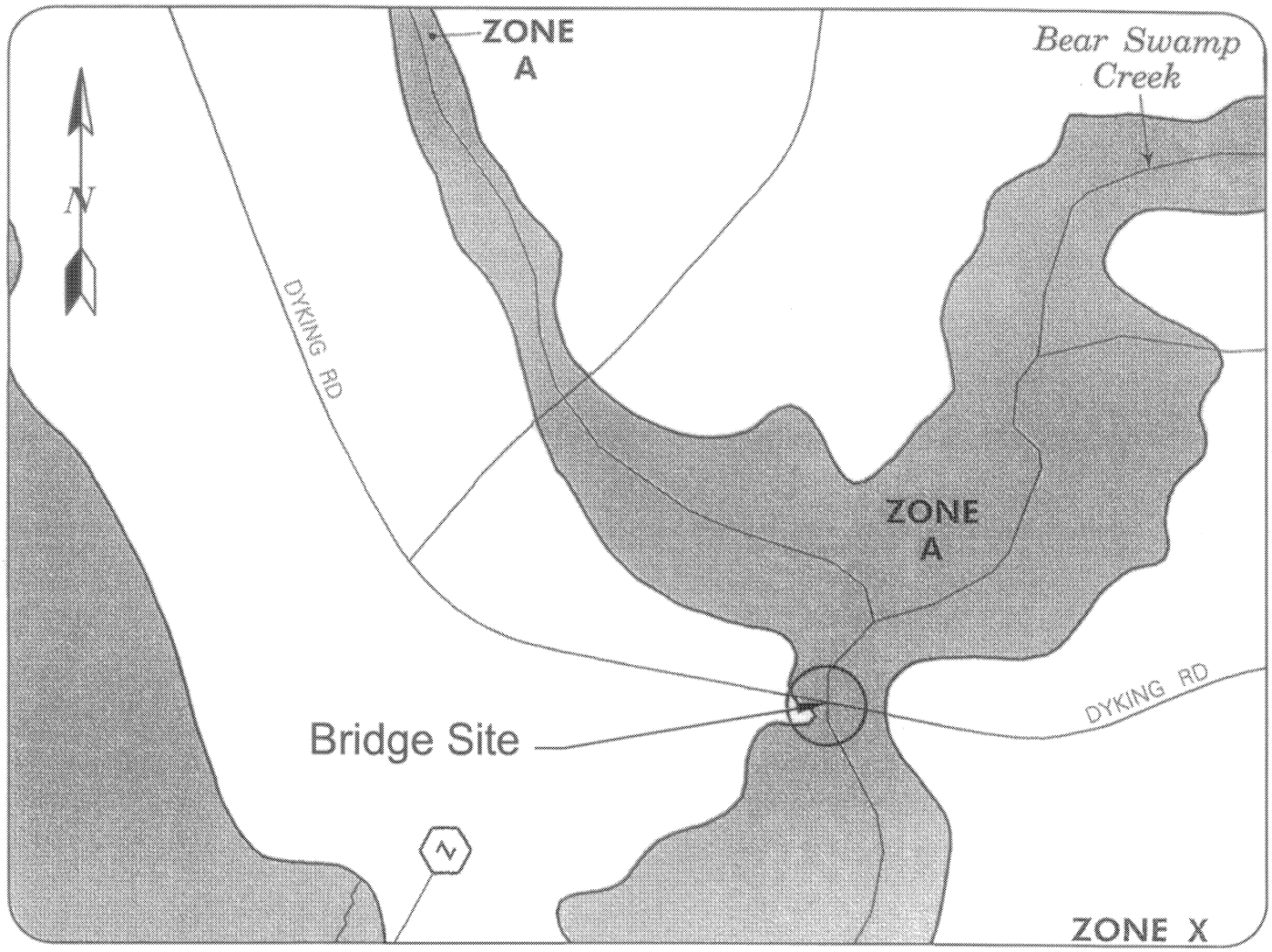
FIGURE 7

$$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$



SR 1235 (Dyking Road)
Replace Bridge No. 40 over
Bear Swamp Creek
Franklin County, North Carolina

Figure 8
Project Vicinity
TIP NO. B-4515



FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY,
NORTH CAROLINA
AND INCORPORATED AREAS

PANEL 115 OF 425

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	370377	0115	D

Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
37069C0115 D

EFFECTIVE DATE:
JANUARY 19, 2001

Federal Emergency Management Agency

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

SR 1235 (Dyking Road)
Replace Bridge No. 40 over
Bear Swamp Creek
Franklin County, North Carolina

TIP NO. B-4515
FEMA 100-YEAR FLOOD PLAIN MAP

Not to Scale

FIGURE 9

APPENDIX

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: 200220003 **TIP:** B-4515 County: Franklin

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Project Proponent:	NCDOT	**Agent:**	Environmental Services Inc.
Address:	Division of Highways William D. Gilmore, P.E., Manager PDEA Branch 1548 Mail Service Center Raleigh, NC 27699-1548		ATTN: Mr. Jeff Harbour, PWS 524 New Hope Road Raleigh, North Carolina 27610
Telephone No.:	(919) 733-7844		(919) 212-1760

Location of Property (waterbody, Highway name/number, town, etc.): Existing Bridge No. 40 on SR 1235 over Bear Swamp Creek.

Basis for Determination: The site contains wetlands, as indicated on the data forms submitted on August 22, 2001, and stream channels with indicators of ordinary high water marks. The wetlands are located adjacent to Bear Swamp Creek, a tributary to the Tar River.

Indicate Which of the Following Apply:

____ There are waters of the U.S., to include wetlands, on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.

____ Because of the size of your property and our present workload, our identification and delineation of your wetlands cannot be accomplished in a timely manner. You may wish to obtain a consultant to obtain a more timely delineation of the wetlands. Once the consultant has flagged a wetland line on the property, Corps staff will review it, and, if it is accurate, we strongly recommend that you have the line surveyed for final approval by the Corps. The Corps will not make a final jurisdictional determination on your property without an approved survey.

__X__ The waters of the U.S., to include wetlands, within the project limits, have been delineated, as shown in the August 22, 2001 submittal, and a desktop verification of Corps jurisdiction has been completed on this date. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

____ There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Placement of dredged or fill material in wetlands on this property without a Department of the Army Permit is in most cases a violation of Section 301 of the Clean Water Act (33 USC 1311). A permit is not required for work on the property restricted entirely to existing high ground. If you have any questions regarding the Corps of Engineers regulatory program, please contact Eric Alsmeyer **at telephone number** (919) 876 - 8441 extension 23.

Project Manager Signature Eric Alsmeyer

Date October 4, 2001 **Expiration Date** October 4, 2006

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

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NCDOT/TIP B-4515	File Number: 200220003	Date: October 4, 2001
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Eric C. Alsmeyer, Regulatory Project Manager U.S. Army Corps of Engineers, Wilmington District Raleigh Regulatory Field Office 6508 Falls of Neuse Road, Suite 120 Raleigh, North Carolina 27615-6814	If you only have questions regarding the appeal process you may also contact: Mr. Arthur Middleton, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

DIVISION ENGINEER:
Commander
U.S. Army Engineer Division, South Atlantic
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-3490

WA1-9

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

Project/Site: Bridge No. 45I5 - Bear Swamp Creek
Applicant/Owner: NCDOT
Investigator: ESI

Date: 5/9/01
County: Franklin
State: NC

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse

Community ID: Floodplain
Transect ID: WA L-7
Plot ID: WetHand

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Liquidambar styraciflua	T	FAC+
2. Carpinus caroliniana	T	FAC
3.		
4. Betula nigra	S	FACW
5. Liquidambar styraciflua	S	FAC+
6. Carpinus caroliniana	S	FAC
7.		
8. Boehmeria cylindrica	H	FACW+
9. Onoclea sensibilis	H	FACW
10. Saururus cernuus	H	OBL
11. Carex spp.	H	—
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 8/8 100%

Remarks:
Depression within floodplain

HYDROLOGY

___Recorded Data (Describe in Remarks):
___Stream, Lake or Tide Gauge
___Aerial Photographs
___Other
X No Recorded Data Available

Field Observations:
Depth of Surface Water: 0 (in.)
Depth to Free Water in Pit: 9 (in.)
Depth to Saturated Soil: 18 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
___Inundated
X Saturated in Upper 12 Inches
___Water Marks
X Drift Lines
___Sediment Deposits
___Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___Oxidized Root Channels in Upper 12 Inches
X Water-Stained Leaves
___Local Soil Survey Data
___FAC-Neutral Test
___Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Chewacla & Wehadkee

Drainage Class: Frequently Flooded

Taxonomy (Subgroup): Fluvaquentic Dystrochrepts

Field Observations Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-15		2.5Y 4/2	7.5YR 4/6	many, distinct	Clay loam
15-18+		2.5Y 5/1	7.5YR 5/6	common, distinct	Clay

Hydric Soil Indicators:

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

Remarks:

Hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No (Circle)	(Circle)
Wetland Hydrology Present?	(Yes) No	Is this Sampling Point Within a Wetland? (Yes) No
Hydric Soils Present?	(Yes) No	

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

WA1-9

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

Project/Site: Bridge No. 45IS - Bear Swamp Creek
Applicant/Owner: NCDOT
Investigator: ESI

Date: 5/9/01
County: Franklin
State: NC

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse

Community ID: Hardwood
Transect ID: WA-7
Plot ID: Upland

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Acer rubrum	S	FAC
2. Carpinus caroliniana	S	FAC
3. Betula nigra	S	FACW
4. Liquidambar styraciflua	S	FAC+
5.		
6. Rubus argutus	H	FACU+
7.		
8. Lonicera japonica	V	FAC-
9. Toxicodendron radicans	V	FAC
10. Smilax rotundifolia	V	FAC
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 7/8 88%

Remarks:
Shrub area between floodplain and pasture

HYDROLOGY

___Recorded Data (Describe in Remarks):
___Stream, Lake or Tide Gauge
___Aerial Photographs
___Other
X No Recorded Data Available

Field Observations:
Depth of Surface Water: 0 (in.)
Depth to Free Water in Pit: 7/8 (in.)
Depth to Saturated Soil: 7/8 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
___Inundated
___Saturated in Upper 12 Inches
___Water Marks
___Drift Lines
___Sediment Deposits
___Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___Oxidized Root Channels in Upper 12 Inches
___Water-Stained Leaves
___Local Soil Survey Data
___FAC-Neutral Test
___Other (Explain in Remarks)

Remarks:
No hydrology Indicators

SOILS

Map Unit Name (Series and Phase): Helena sandy loam

Drainage Class: _____

Field Observations

Taxonomy (Subgroup): Aquic Hapludults

Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2		10YR 4/3	—	—	Sandy loam
2-10		10YR 4/6	—	—	Sandy loam
10-18+		10YR 5/4	—	—	Sandy clay loam

Hydric Soil Indicators:

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

Remarks:

Non-hydric soils present

WETLAND DETERMINATION

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

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

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

WC1-8

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

Project/Site: Bridge No. 45I5 - Bear Swamp Creek	Date: 5/9/01
Applicant/Owner: NCDOT	County: Franklin
Investigator: ESI	State: NC
Do Normal Circumstances exist on the site? (Yes) No	Community ID: Bottomland
Is the site significantly disturbed (Atypical Situation)? Yes (No)	Transect ID: WC-4
Is the area a potential Problem Area? Yes (No)	Plot ID: Wetland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Acer rubrum	T	FAC	9. Peltandra virginica	H	OBL
2.			10.		
3. Acer negundo	S	FACW	11.		
4. Betula nigra	S	FACW	12.		
5. Carpinus caroliniana	S	FAC	13.		
6.			14.		
7. Juncus effusus	H	FACW+	15.		
8. Boehmeria cylindrica	H	FACW+	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 7/7 100%

Remarks:
Bottomland hardwood forest

HYDROLOGY

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

X No Recorded Data Available

Field Observations:
- Depth of Surface Water: 0 (in.)
- Depth to Free Water in Pit: >18 (in.)
- Depth to Saturated Soil: 10 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ___Inundated
- X Saturated in Upper 12 Inches
- ___Water Marks
- X Drift Lines
- ___Sediment Deposits
- ___Drainage Patterns in Wetlands

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

Remarks:

SOILS

Map Unit Name (Series and Phase): Chewacla - Wehadkee

Drainage Class: Freq. Flooded

Taxonomy (Subgroup): Fluvaquentic Dystrochrepts

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		2.5Y 5/3	5YR 4/6	many, distinct	Clay loam
8-18+		2.5Y 4/2	5YR 4/6	many, distinct	Clay loam

Hydric Soil Indicators:

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

Remarks:

Hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes) No (Circle)	(Circle)
Wetland Hydrology Present?	(Yes) No	Is this Sampling Point Within a Wetland? (Yes) No
Hydric Soils Present?	(Yes) No	

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

WC 1-8

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

Project/Site: Bridge No. 45 15 - Bear Swamp Creek	Date: 5/9/01
Applicant/Owner: NCDOT	County: Franklin
Investigator: ESI	State: NC
Do Normal Circumstances exist on the site? (Yes) No	Community ID: Hardwood
Is the site significantly disturbed (Atypical Situation)? Yes (No)	Transect ID: WC-4
Is the area a potential Problem Area? Yes (No)	Plot ID: Upland
(If needed, explain on reverse	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Liquidambar styraciflua	T	FAC+	9. Toxicodendron radicans	V	FAC
2. Liriodendron tulipifera	T	FAC	10.		
3.			11.		
4. Cornus florida	S	FACU	12.		
5. Ulmus alata	S	FACU+	13.		
6.			14.		
7. Lonicera japonica	V	FAC-	15.		
8. Smilax rotundifolia	V	FAC	16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 4/7 57%

Remarks:
Hardwood forest

HYDROLOGY

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

X No Recorded Data Available

Field Observations:
- Depth of Surface Water: 0 (in.)
- Depth to Free Water in Pit: >18 (in.)
- Depth to Saturated Soil: >18 (in.)

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

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

Remarks:
No indicators met

SOILS

Map Unit Name (Series and Phase): Wake - Watoga - Wedowee complex

Drainage Class: _____

Taxonomy (Subgroup): _____

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4		10YR 3/3	—	—	Sandy loam
4-14		10YR 5/4	—	—	Sandy loam
14-18+		10YR 5/3	—	—	Sandy loam

Hydric Soil Indicators:

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

Remarks:

Non-hydric soils present

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes)	No (Circle)	(Circle)
Wetland Hydrology Present?	Yes	(No)	Is this Sampling Point Within a Wetland? Yes (No)
Hydric Soils Present?	Yes	(No)	

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

Theresa Ellerby

United States Department of the Interior

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

RECEIVED
AUG 13 2001
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

August 10, 2001

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

Dear Mr. Gilmore:

Thank you for your June 21, 2001, request for information from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of proposed bridge replacements in Franklin and Wake Counties, North Carolina. This report provides scoping information and is provided in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). This report also serves as initial scoping comments to federal and state resource agencies for use in their permitting and/or certification processes for this project.

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

1. B-4515 Bridge No. 40 on SR 1235 over Bear Swamp Creek;

2. B-3916 Bridge No. 63 on US 401 over Middle Creek; and,

3. B-4299 Bridge No. 255 on SR 1006 over unnamed creek.

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

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

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

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

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

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

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

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

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

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

Sincerely,

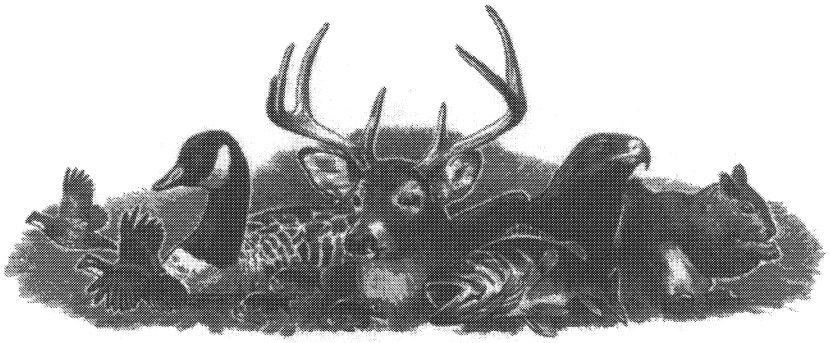
for Dr. Garland B. Pardue
Ecological Services Supervisor

Enclosures

cc: COE, Raleigh, NC (Eric Alsmeyer)
NCDWQ, Raleigh, NC (John Hennessey)
NCDNR, Creedmoor, NC (David Cox)

FWS/R4:TMcCartney:TM:08/10/01:919/856-4520 extension 32:\bdgfran.wak

COMMON NAME	SCIENTIFIC NAME	STATUS
EDGECOMBE COUNTY		
Vertebrates		
Henslow's sparrow	*Ammodramus henslowii*	FSC
Southern hognose snake	*Heterodon simus*	FSC*
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Invertebrates		
Yellow lance	*Elliptio lanceolata*	FSC
Tar spinymussel	*Elliptio steinstansana*	Endangered
Atlantic pigtoe	*Fusconaia masoni*	FSC
Yellow lampmussel	*Lampsilis cariosa*	FSC
FORSYTH COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Red-cockaded woodpecker	*Picoides borealis*	Endangered****
Vascular Plants		
Small-anthered bittercress	*Cardamine micranthera*	Endangered
FRANKLIN COUNTY		
Invertebrates		
Dwarf wedge mussel	*Alasmidonta heterodon*	Endangered
Yellow lance	*Elliptio lanceolata*	FSC
Tar spinymussel	*Elliptio steinstansana*	Endangered
Atlantic pigtoe	*Fusconaia masoni*	FSC
Yellow lampmussel	*Lampsilis cariosa*	FSC
Vascular Plants		
Wavyleaf wild quinine	*Parthenium radfordii*	FSC
Michaux's sumac	*Rhus michauxii*	Endangered
GASTON COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Vascular Plants		
Georgia aster	*Aster georgianus*	FSC
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered



North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

TO: Theresa Ellerby
Project Development Engineer, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: October 8, 2001

SUBJECT: NCDOT Bridge Replacements in Franklin and Wake counties of North Carolina. TIP Nos. B-4515, B-3916, and B-4299.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Project specific comments:

1. B-4515 – Franklin County – Bridge No. 40 over Bear Swamp Creek. There are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. Standard comments apply.

2. B-3916 – Wake County – Bridge No. 63 over Middle Creek. There are also records of state listed mussels upstream of the project. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. Standard comments apply.

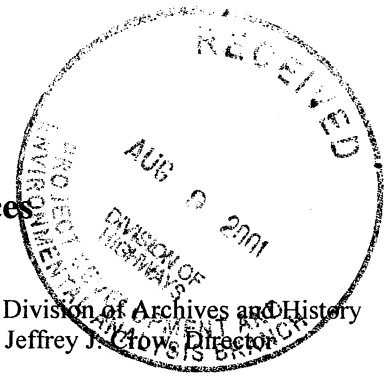
3. B-4299 – Wake County – Bridge No. 255 over unnamed Creek. Standard comments apply. We are not aware of any threatened of endangered species in the project vicinity.

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

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

Theresa Ellerby





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

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

Division of Archives and History
Jeffrey J. Crow, Director

August 6, 2001

MEMORANDUM

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

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

Re: Replace Bridge No. 40 on SR 1235 over Bear Swamp Creek,
BRSTP-1235(1), 8.2360601, B-4515, Franklin County, ER 01-10080

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

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

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

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

DB:kgc

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

B-4515
J. Ellerby

Franklin County Schools

Transportation Department

942 S. Main Street
Louisburg, NC 27549



July 9, 2001

NC Department of Transportation
Attn: Mr. William D. Gilmore
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Gilmore,

This letter is in response to your correspondence dated June 21, 2001 regarding Bridge No. 40 on Highway SR 1235 over Bear Creek Swamp in Franklin County. I am providing information relative to the # of times daily that a school bus crosses the bridge and the impact of bridge closure on school bus operations.

School buses in Franklin County cross the bridge 8 times per day. This crossing provides significant access to other county roads traveled by our buses. A solution that repairs/replaces the bridge with as little bridge closure and detour as possible will certainly help Franklin County Schools. Scheduling closure during June and July, based on our current school calendar is also highly desirable.

We appreciate you allowing us to provide input on this project. Once you have decided on an action plan and schedule, please notify us as soon as possible in advance of bridge closure (if necessary) so that we may adequately plan alternate school bus routing.

Regards,

G. Scott Denton
Transportation Director

Cc: Tommy Piper, Asst. Supt. Auxiliary Svcs.
Gerald H. Knott, AIA – School Planning, DPI