STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 12, 2008

U.S. Army Corps of Engineers
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

ATTENTION: Mr. Eric Alsmeyer
NCDOT Coordinator, Division 5

Dear Sir:

SUBJECT: **Application for Section 404 Nationwide Permit 33, Section 401 Water Quality Certification, and Tar-Pamlico Riparian Buffer Authorization** for the replacement of Bridge No. 20 over Fishing Creek on SR 1100 (Manson-Axtell Road), Warren County, Division 5. Federal Aid Project No. BRZ-1100(8), State Project No. 8.2410701, WBS No. 33246.1.1, T.I.P. Project No. B-3706.

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 20 over Fishing Creek on SR 1100 (Manson-Axtell Road) in Warren County. The existing 94-foot long structure will be replaced on the existing alignment with a 120-foot long, single span bridge with a 72-inch modified bulb tee pre-stressed girder superstructure. The proposed structure will have a clear roadway width of 29 feet, with two 11-foot lanes, a 4-foot offset on the west side, and a 3-foot offset on the east side. This structure will span Fishing Creek. The bridge approaches will have two 11-foot lanes and 6-foot grass shoulders. The shoulders along the eastern side of the approaches will be widened to 9 feet where guardrail is present. During construction, Manson-Axtell Road will be closed on either side of the bridge just prior to the project site and traffic will be maintained via an off-site detour.

Please see the enclosed copies of the Pre-Construction Notification (PCN), permit drawings, design plans, email from the U.S. Fish and Wildlife Service (USFWS) dated October 15, 2007, and mussel survey report for the above-referenced project. The Categorical Exclusion (CE) for this project was signed in March 2006 and distributed shortly thereafter. Additional copies of this document are available upon request.

IMPACTS TO WATERS OF THE UNITED STATES

General Description

The project is located in the Tar-Pamlico River Basin (sub-basin 03-03-04) and is part of Hydrologic Cataloging Unit (HUC) 03020102. Water resources within the project limits include Fishing Creek and one wetland. A Notification of Jurisdictional Determination was issued by U.S. Army Corps of

MAILING ADDRESS:
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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
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RALEIGH, NC 27699-1598

TELEPHONE: 919-715-1334
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
2728 CAPITAL BLVD., SUITE 240
RALEIGH, NC 27604

Engineers (USACE) Regulatory Specialist Eric Alsmeyer for this project on October 26, 2007 (Action ID No. 200320287).

Fishing Creek is a well-defined, perennial, Piedmont/upper Coastal Plain stream. The portion of Fishing Creek that flows through the study area is assigned Stream Index Number 28-79-(1) (08/03/1992) by the N.C. Division of Water Quality (NCDWQ) and has a best usage classification of **C NSW**. Fishing Creek is approximately 30 to 35 feet wide where it flows under Bridge No. 20 and has an average depth of 2 to 3 feet. During Natural Resource Technical Report (NRTR)-related field visits (June 2005), water clarity was described as being fair with some sedimentation, flow was moderate to fast, and the substrate was primarily composed of cobble and gravel underlain by bedrock.

Neither High Quality Waters (HQW), Water Supplies (WS I or WS II), nor Outstanding Resource Waters (ORW) occur within 1.0 mile of the project study area. Additionally, no portion of Fishing Creek, its tributaries, or other surface waters within 1.0 mile of the project are listed on the NCDWQ 2006 Final 303(d) List of Impaired Waters.

The only wetland within the project limits is located just east of the existing bridge, on the south side of Fishing Creek. It is a riverine wetland that occurs as a linear drainage system. The wetland is classified as a palustrine, forested, broad-leaved deciduous, seasonally flooded wetland (PFO1C).

Moratoria

The North Carolina Wildlife Resources Commission (NCWRC) previously recommended that a moratorium for clearing and grubbing work to protect mussels that may inhabit Fishing Creek be applied to this project between November 15th and April 1st. This moratorium was one of several environmental conditions recommended by the NCWRC via email correspondence with NCDOT on January 29, 2003. This email was a response to a request by NCDOT for comments regarding a July 2002 freshwater mussel survey, which rendered a biological conclusion of "May Affect, Not Likely to Adversely Affect" for both the Tar River spinymussel (*Elliptio steinstansana*) and dwarf wedgemussel (*Alasmidonta heteredon*). Since these recommendations were made, another mussel survey for these two species was performed on April 25, 2007. Due to the reduced quality of the habitat and the absence of these two species during the 2nd survey, an updated biological conclusion of "No Effect" was rendered. Based on these updated results, NCDOT believes that the clearing and grubbing moratorium should no longer apply. Gary Jordan of the USFWS, via email correspondence with NCDOT biologist Karen Lynch on October 15, 2007, concurred with NCDOT. Therefore, this moratorium has been removed as a condition for this project.

Permanent Impacts

There are no permanent impacts to jurisdictional streams or wetlands associated with this project.

Temporary Impacts

No temporary stream impacts to Fishing Creek will result from this project.

A total of less than 0.01 acre of temporary fill will be placed into the wetland. This temporary wetland impact is associated with the construction of a 30-foot by 50-foot temporary work bridge, which will be used to remove the existing bridge.

Bridge Demolition

The superstructure of Bridge No. 20 consists of an asphalt wearing surface on a creosote timber floor atop steel I-beams and timber joists. The substructure consists of creosote timber caps and posts, with no piers in Fishing Creek. The existing bridge will be removed without dropping any of its components into Waters of the U.S. NCDOT shall adhere to NCDOT's Best Management Practices (BMPs) for Bridge Demolition and Removal.

Utility Impacts

There are no utility impacts to jurisdictional areas associated with this project.

IMPACTS TO THE TAR-PAMLICO RIVER RIPARIAN BUFFER

Riparian Buffer Impacts

This project is located within the Tar-Pamlico River Basin and is therefore subject to the Tar-Pamlico River riparian buffer rules (15A NCAC 2B .0259). There will be a total of 7,875 square feet of permanent impacts to the buffers of Fishing Creek from the construction of the bridge (Site 1). A total of 4,900 square feet will occur in Zone 1 and 2,975 square feet will occur in Zone 2 (Table 1). These impacts will occur along Fishing Creek within an area bounded by the right-of-way (ROW) boundaries of the project to the east and west and the end bents to the north and south. According to the buffer rules, impacts associated with the construction of bridges are **Allowable**.

The temporary work bridge spanning Fishing Creek will be constructed east of the existing bridge and will result in Zone 1 buffer impacts. However, these buffer impacts occur within the area already being impacted by the above-mentioned permanent bridge buffer impacts; therefore, duplicative impacts were not calculated.

In addition to the *bridge* buffer impacts, a total of 630 square feet of permanent *road crossing* buffer impacts will result from this project (Site 1). These buffers impacts occur in Zone 2 only. A total of 279 square feet of impact will occur between Stations -L- 16+43 and -L- 16+61. The remaining 351 square feet of road crossing impacts will occur between Stations -L- 17+81 and -L- 18+13. According to the buffer rules, since these impacts are greater than 40 linear feet, but equal to or less than 150 linear feet (or one-third of an acre), they are considered **Allowable**.

Table 1. Tar-Pamlico River Riparian Buffer Impacts

Type of Impact	Bridge	Road Crossing
Mitigation requirements (Exempt, Allowable, or Allowable with Mitigation)	Allowable	Allowable
Zone 1 Impact (sq. ft)	4,900	0
Zone 2 Impact (sq. ft)	2,975	630
Total [Zones 1 and 2 (sq. ft)]	7,875	630

Practical Alternatives Analysis

This bridge has been determined to be structurally deficient and functionally obsolete. Replacement of this inadequate structure will result in safer and more efficient traffic operations. Because this bridge

needs to be replaced, impacts to the riparian buffers of Fishing Creek are unavoidable. In this case, replacing the existing bridge on the same alignment and maintaining traffic off-site during construction provides the least amount of impacts to riparian buffers.

RESTORATION PLAN

Any temporary fill placed into the wetland will be removed upon completion of construction. The temporary fill areas will be restored back to their pre-project elevations. NCDOT will also restore the affected portion of the wetland to its pre-project contours and re-vegetate, if necessary.

REMOVAL AND DISPOSAL PLAN

The temporary fill placed into the wetland will be removed once its purpose has been served. The material will likely be removed by the contractor using excavation equipment. The contractor will be required to submit a reclamation plan for the removal of and disposal of all material off-site at an upland location. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project. The temporary work bridge will be dismantled and removed from the site once the existing bridge demolition is completed.

AVOIDANCE, MINIMIZATION, AND COMPENSATORY MITIGATION

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and National Environmental Policy Act (NEPA) compliance stages; minimization measures were incorporated as part of the project design.

According to the Clean Water Act (CWA) §404(b) (1) guidelines, NCDOT must avoid, minimize, and mitigate, in sequential order, impacts to waters of the U.S. The following is a list of the project's jurisdictional stream and wetland avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/Minimization

- There are no permanent impacts to any jurisdictional streams or wetlands.
- A filter fabric and Class B rip rap-lined lateral "V" ditch will be constructed along the toe-of-slope northeast of bridge. This will act as an energy dissipater for storm water run-off prior to it entering the riparian buffer.
- The new bridge will span Fishing Creek; therefore, no impacts will result from bents in the water.
- During construction, traffic will be maintained on an off-site detour.
- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control methods and use of NCDOT's BMPs for Protection of Surface Waters.
- Due to the project's location in the Tar-Pamlico River Basin, Design Standards in Sensitive Watersheds will be employed.
- NCDOT will implement its BMP's for Bridge Demolition and Removal during this project.

Compensatory Mitigation

No permanent stream or wetland impacts will result from the replacement of Bridge No. 20. Additionally, all riparian buffer impacts are considered **Allowable**. Therefore, no mitigation is proposed for this project.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of its most recent update on January 31, 2008, the USFWS website lists two federally-protected species for Warren County. These species and their associated biological conclusions are listed below in Table 2.

Table 2. Federally protected species in Warren County

Common Name	Scientific Name	Federal Status	Biological Conclusion	Habitat Present
dwarf wedgemussel	*Alasmidonta heteredon*	E*	No Effect	Yes, but degraded
Tar River spinymussel	*Elliptio steinstansana*	E	No Effect	Yes, but degraded

* "E" – Endangered

The bald eagle was previously listed by the USFWS as a federally protected species for Warren County; however, its inclusion on the county species list came after the CE was written. Due to this post-CE listing, a survey for suitable nesting and foraging habitat was conducted on March 22, 2007 by NCDOT biologists Jim Mason, Ashley Cox, and James Pflaum. The survey was conducted within a one-mile radius of the proposed project site and took a total of 15 man-hours to complete. No bald eagle nests or individuals were observed during the survey. Additionally, there is neither suitable nesting habitat nor open water suitable for foraging present within the survey area. Furthermore, a review of the North Carolina Natural Heritage Program (NCNHP) database (GIS shapefiles last updated May 1, 2008) revealed no known bald eagle occurrences within 1.0 mile of the project study area. These factors make it apparent that the proposed bridge replacement will not affect this species.

According to a 2007 Federal Register release, the bald eagle was officially de-listed in the Lower 48 States and removed from the List of Endangered and Threatened Wildlife effective August 8, 2007 (72 FR 37346-37372; July 9, 2007). This species still receives protection under the Bald and Golden Eagle Protection Act.

A survey for dwarf wedgemussel and Tar River spinymussel was originally performed for this project on July 9, 2002 by NCDOT biologists Jeff Burleson, Jared Gray, April Helms, and Tim Howell. No mussels were found, but the reach of Fishing Creek within the project study area was considered suitable habitat for both species. Therefore, a biological conclusion of **May Affect, Not Likely to Adversely Affect** was assigned to both species. The USFWS concurred with these conclusions in a letter, dated March 1, 2004, which is included in the CE.

Another, more recent mussel survey was conducted for these two species on April 25, 2007 by NCDOT biologists Karen M. Lynch (Permit No. NC-2007-ES-165), Jay Mays (Permit No. NC-2007-ES-133), Logan Williams (Permit No. NC-2007-ES-166), and Mary Frazer. At the time of this survey, Fishing Creek at the Manson-Axtell Road crossing contained a natural grade control with an abundance of bedrock and cobble, with sand, muck, and gravel on top. Immediately above and below the grade control was unconsolidated sediment consisting of sand, silt, and a few boulders. Historic channelization has adversely impacted this reach of Fishing Creek above and below the bridge crossing. During the 1.0 person-hour tactile/visual mussel survey from 100 meters (m) upstream to 400m downstream of the bridge, no mussels were found. However, one species of snail (*Campeloma decisum*) was common. Given the survey results, it is apparent that neither dwarf wedgemussel nor Tar River spinymussel occur in the project footprint. Additionally, a review of the NCNHP database (most recently on July 18, 2008)

revealed no known populations of either species within 1.0 mile of the project. Therefore, the biological conclusion of both species has been updated to **No Effect**. This mussel survey satisfies the CE greensheet commitment requiring a full mussel survey prior to letting and no further surveys will be performed.

SCHEDULE

The project calls for a review date of January 27, 2009, a letting of March 17, 2009, and a date of availability of April 28, 2009. It is expected that the contractor will choose to start construction in April/May 2009.

REGULATORY APPROVALS

Section 404 Permit: A request is hereby submitted for a Nationwide Permit 33, issued under Section 404 of the CWA, authorizing activities associated with this project that will result in temporary impacts to jurisdictional waters.

Section 401 Permit: We anticipate that Section 401 General Water Quality Certification (WQC) 3688 will apply to this project. The NCDOT will adhere to all general conditions of this WQC. This project will impact Tar-Pamlico Riparian Buffers; therefore, written concurrence will be required. In accordance with 15A NCAC 2H, Section .0500 (a) and 15A NCAC 2B, Section .0200, we are providing five copies of this application to the North Carolina Department of Environment and Natural Resources (NCDENR), NCDWQ, for their review.

Tar-Pamlico Riparian Buffer Authorization: The proposed project has been designed to comply with the Tar-Pamlico River Basin Riparian Buffer Protection Rule (15A NCAC 2B .0259). Therefore, we respectfully request a Tar-Pamlico Riparian Buffer Authorization Certificate from NCDWQ.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/. If you have any questions or need additional information please contact Mr. Jim Mason at either (919) 715-5531 or jsmason@ncdot.gov.

Sincerely,

E. R. Luske

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

w/ attachment
Mr. Brian Wrenn, NCDWQ (**5 Copies**)
Mr. J. Wally Bowman, P.E., Division Engineer, Division 5
Mr. Chris Murray, DEO, Division 5

w/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Derrick Weaver, PDEA Consultant Engineering Unit Head

Office Use Only: Form Version March 05

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
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: Nationwide 33

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 Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, 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: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: North Carolina Department of Transportation
   1598 Mail Service Center
   Raleigh, North Carolina 27699-1598
   Telephone Number: 919-733-3141 Fax Number: 919-733-9794
   E-mail Address: gthorpe@dot.state.nc.us

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: _____
   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: Replacement of Bridge No. 20 over Fishing Creek on SR 1100 (Manson-Axtell Road)

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3706

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Warren Nearest Town: Middleburg (Vance County)
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers/names, landmarks, etc.): from Middleburg, take U.S. 1 North/ U.S. 158 East into Warren County (from Vance County). Approximately 1.5 miles east of county line, take right onto SR 1102 (Collins Road). Turn right onto Manson-Axtell Road; bridge is approximately 1.8 miles south of intersection.

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): _____ °N _____ °W

6. Property size (acres): Please see attached drawings

7. Name of nearest receiving body of water: Fishing Creek

8. River Basin: Tar-Pamlico
   (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/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Manson-Axtell Road is classified as a Rural Local roadway. Land use within the project vicinity includes residential, agriculture, and forested.

10. Describe the overall project in detail, including the type of equipment to be used: See attached cover letter for project description. Heavy duty excavation equipment will be used such as trucks, dozers, and other various equipment necessary for bridge and roadway construction.

11. Explain the purpose of the proposed work: Bridge No. 20 is considered functionally obsolete and structurally deficient. Replacement of this inadequate structure will result in 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.
N/A

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.
N/A

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. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should 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.

1. Provide a written description of the proposed impacts: See attached cover letter.

2. Individually list wetland impacts. Types of 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.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
Site 1	Temporary Fill	Forested	Yes	0 ft	<0.01
Total Wetland Impact (acres)					<0.01

3. List the total acreage (estimated) of all existing wetlands on the property: 0.02

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, 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. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Total Stream Impact (by length and acreage)						0.00

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Total Open Water Impact (acres)				0.0

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.00
Wetland Impact (acres):	<0.01
Open Water Impact (acres):	0.00
Total Impact to Waters of the U.S. (acres)	<0.01
Total Stream Impact (linear feet):	-----

7. Isolated Waters
Do any isolated waters exist on the property? ☐ Yes ☒ No
Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

8. 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.):_____
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
   Current land use in the vicinity of the pond:_____
   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. See attached cover letter.

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 January 15, 2002, 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 NCEEP 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.

N/A

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

   Amount of stream mitigation requested (linear feet): 0
   Amount of buffer mitigation requested (square feet): 0
   Amount of Riparian wetland mitigation requested (acres): 0.00
   Amount of Non-riparian wetland mitigation requested (acres): 0.00
   Amount of Coastal wetland mitigation requested (acres): 0.00

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. 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 ☐

3. 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.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)?
   Yes☒ No ☐

2. If "yes", 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	4,900	3 (2 for Catawba)	0
2	3,605	1.5	0
Total	8,505		0

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. No buffer mitigation is required. All impacts are considered **Allowable**.

XI. Stormwater (required by DWQ)

Describe impervious acreage (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. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. N/A

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.
N/A

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. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description: N/A

XV. 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).

N/A

E. L. Funk 8-12-08

Applicant/Agent's Signature **Date**

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael Easley
GOVERNOR

Lyndo Tippett
SECRETARY

October 16, 2007

MEMORANDUM TO: Jennifer Evans, P.E., Consultant Engineer
Consultant Engineering Unit

FROM: Cheryl Gregory, Environmental Specialist
Natural Environment Unit

SUBJECT: **Protected species survey report for the Tar River spinymussel *(Elliptio steinstansana)* and dwarf wedgemussel *(Alasmidonta heterodon)*** for replacement of Bridge No. 20 on Satterwite Rd. (SR 1100) over Fishing Creek; Warren County: Federal Aid Project No. BRZ-1100(8); State Project No. 82410701; **TIP Project No. B-3706.**

ATTENTION: Derrick Weaver, P.E. Consulting Engineering Unit Head
Project Development- Central Engineering Unit

The following memorandum addresses the Tar River spinymussel (*Elliptio steinstansana*) and dwarf wedgemussel *(Alasmidonta heterodon*), federally protected species listed by the US Fish and Wildlife Service for Warren County. The most recent mussel survey was conducted on April 25, 2007 by NCDOT biologists Karen M. Lynch (Permit No. NC-2007-ES-165), Jay Mays (Permit No. NC-2007-ES-133), Logan Williams (Permit No. NC-2007-ES-166) and Mary Frazer. Fishing Creek at the SR 1100 crossing contains a natural grade control with an abundance of bedrock and cobble with sand, muck and gravel on top. Immediately above and below the grade control is unconsolidated sediment consisting of sand, silt, and a few boulders. Historic channelization has adversely impacted this reach of Fishing Creek above and below the bridge crossing. During the 1.0 person-hour tactile/visual mussel survey from 100 meters upstream and 400 meters downstream of the bridge, no mussels were found. However, one species of snail (*Campeloma decisum*) was common. The original survey for this project was completed on July 9, 2002 by NCDOT biologists Jeff Burleson, Jared Gray, April Helms and Tim Howell. Similar results were found during the 2002 survey, no mussels were found.

BIOLOGICAL CONCLUSION: **NO EFFECT**

Given the survey results, it is apparent that neither dwarf wedgemussel nor Tar River spinymussel occur in the project footprint. However, the North Carolina Natural Heritage Program lists a known location of Tar spinymussel approximately twelve "river miles" downstream in Fishing Creek at the SR 1609 crossing (August 1999 record). There is an impounded reach of Fishing Creek between the subject project and the SR 1609 crossing approximately nine "river miles" downstream of the project crossing. Several known populations of yellow lance (*Elliptio lanceolata*) and Atlantic pigtoe (*Fusconaia masoni)* which are Federal Species of Concern and are state endangered, are located along Fishing Creek near or at state route crossings SR 1117, SR 1118, SR 1600, and at SR 1609 (August 1999 and October 2003

records). The two records within 5 miles include the Atlantic pigtoe (2003 record) which is located in Fishing Creek near SR 1117 approximately 3.6 river miles downstream of the project and above the impounded reach of Fishing Creek. The SR 1118 yellow lance record is also above the impounded reach of Fishing Creek approximately 5.2 river miles downstream (Figure 1). Precautions must be taken to prevent harm to downstream populations.

The following green sheet conditions should be followed in order to protect downstream populations of freshwater mussels in Fishing Creek and its tributaries. NCDOT concludes that as long as the remaining conditions are followed, project construction will have "No Effect" upon these species.

Environmental Conditions:

1. ~~There will be a moratorium on clearing and grubbing-no work between November 15 and April 1.~~
   Following e-mail correspondence (10/15/07) with USFWS biologist Gary Jordan, this moratorium has been removed from the environmental commitments of this project.

2. Weep holes shall be configured so that the run-off does not fall into the stream.

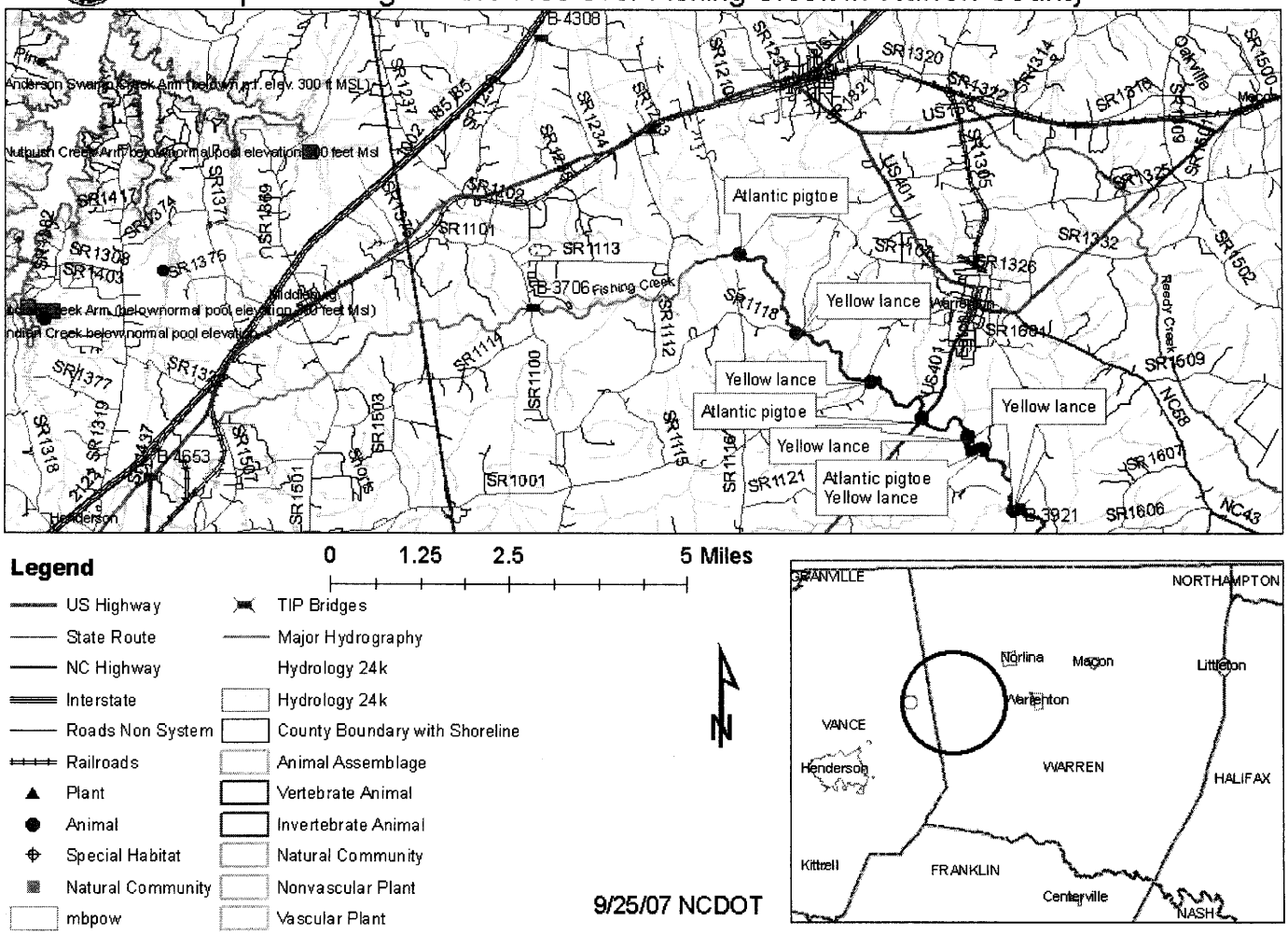
3. NCDOT resident engineer is responsible or providing a written invitation to the North Carolina Wildlife Resources Commission, Nongame and Protected Species Branch, and the US Fish and Wildlife Service prior to construction.

4. The erosion control plans for Design Standards in Sensitive Watersheds (15A NCAC 04B.0024) must be used because this project occurs within the Tar Pamlico Riverbasin. These plans include the following requirements:
   - Sediment and Erosion controls must be in place prior to land clearing activities. No sediment from either, bridge demolition or construction activities, shall be allowed to enter the flowing stream.
   - "Environmentally Sensitive Areas" will be defined on the plans, which consist of a 50-foot buffer zone on both sides of the stream.
   - The Contractor may perform clearing operations, but not grubbing operations in the "Environmentally Sensitive Areas", until immediately prior to beginning grading operations.
   - Once grading operations begin in "Environmentally Sensitive Areas", as specified on the plans, work will progress in a continuous manner until complete.
   - Seeding and mulching will be performed immediately following final grade establishment.
   - Stage seeding will be performed on cut and fill slopes as grading progresses

5. ~~A full mussel survey extending 100 meters upstream and 400 meters downstream shall be conducted prior to letting unless it is determined that no suitable habitat exists within the full range.~~
   The survey addressed in this memo will serve as the pre-letting survey. Due to the lack of suitable habitat at the site, no further survey is needed. Commitment No. 5 has therefore been removed from the Environmental Commitments.

6. NCDOT will make every reasonable effort to minimize the time of road closure.

Figure 1. Federally Listed Species Survey for B-3706
Replace Bridge at SR 1100 over Fishing Creek in Warren County



CC: Jim Mason, Environmental Specialist
Natural Environment Unit-Project Manager Group
File: B-3706

Subject: Re: upper Fishing Creek, B-3706
Date: Mon, 15 Oct 2007 10:00:14 -0400
From: Gary_Jordan@fws.gov
To: "Karen M. Lynch" <kmlynch@dot.state.nc.us>
CC: "Cheryl L. Gregory" <clgregory@dot.state.nc.us>

Karen,

I am fine with you removing the moratorium language since it is a "No effect" determination. If I remember correctly, this site appeared to have channelization effects from the past??? Is that correct?

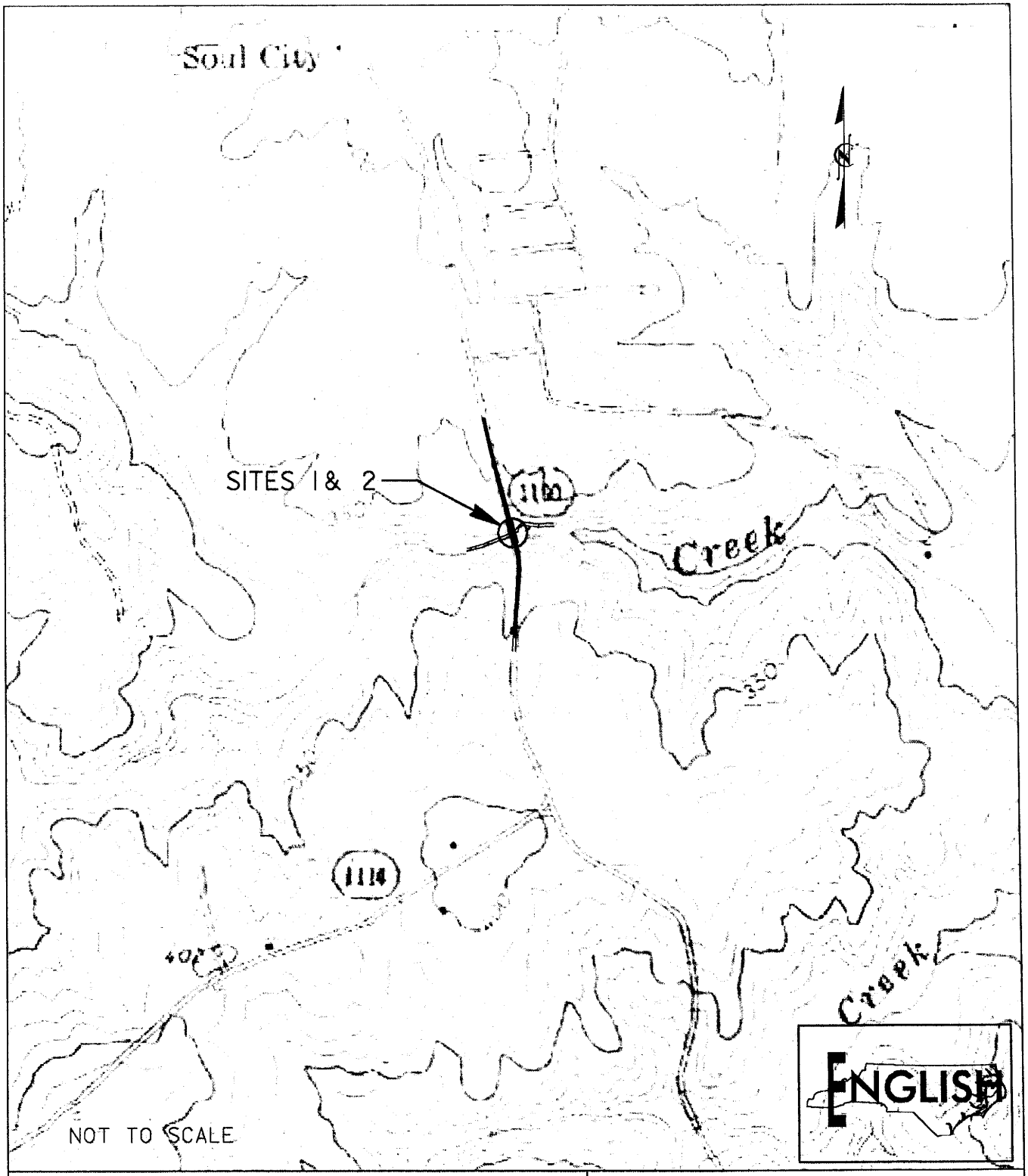
Gary Jordan
US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636-3726

Phone (919) 856-4520 ext. 32
Fax (919) 856-4556
gary_jordan@fws.gov

"Karen M. Lynch" <kmlynch@dot.state.nc.us>
10/12/2007 01:42 PM

To: Gary Jordan <Gary_Jordan@fws.gov>
cc: "Cheryl L. Gregory" <clgregory@dot.state.nc.us>
Subject: upper Fishing Creek, B-3706

Hi Gary,
We have a bridge replacement on upper Fishing Creek in Warren County (Satterwhite Rd. SR 1100) . At least 2 mussel surveys have been done by NCDOT (conducted in 2003 and 2006) and no mussels have ever been found. Relevant mussel info: Natural Heritage Program lists a known location of Tar spinymussel approximately twelve â€œriver milesâ€ downstream in Fishing Creek at the SR 1609 crossing (August 1999 record). There is an impounded reach of Fishing Creek between the subject project and the SR 1609 crossing approximately nine â€œriver milesâ€ downstream of the project crossing. Several known populations of yellow lance (Elliptio lanceolata) and Atlantic pigtoe (Fusconaia masoni) which are Federal Species of Concern and are state endangered, are located along Fishing Creek near or at state route crossings SR 1117, SR 1118, SR 1600, and at SR 1609 (August 1999 and October 2003 records). The two records within 5 miles include the Atlantic pigtoe (2003 record) which is located in Fishing Creek near SR 1117 approximately 3.6 river miles downstream of the project and above the impounded reach of Fishing Creek. The SR 1118 yellow lance record is also above the impounded reach of Fishing Creek approximately 5.2 river miles downstream
Our BC is No Effect. An offsite detour will be used.



WETLAND / SURFACE WATER

LOCATION MAP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

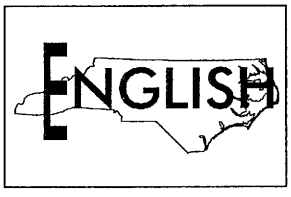
BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 1 OF 7 6/23/08

6/23/2008
R:\Hydraulics\dgn\permits\surface water\B3706_Hyd_prm_wet01_Quad.dgn
KCI & Associates, PLC

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(4)	JOHN EDWIN ROYSTER & SHIRLEY A. ROYSTER	54 ROSE LANE HENDERSON, NC 27536	1 & 2



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 2 OF 7 6/23/08

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 16+87 to 17+00 RT	SINGLE-SPAN, 72" MBT, OAL = 120'	---	< 0.01	---	---	---	---	---	---	---	---
2	-L- 17+02 to 17+52 RT	30' x 50' Temporary Work Bridge	---		---	---	---	---		---		---
TOTALS:				< 0.01								

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WARREN COUNTY
WBS - 33246.1.1 (B-3706)

SHEET 3 OF 7 6/23/2008

SHT 3 OF 6

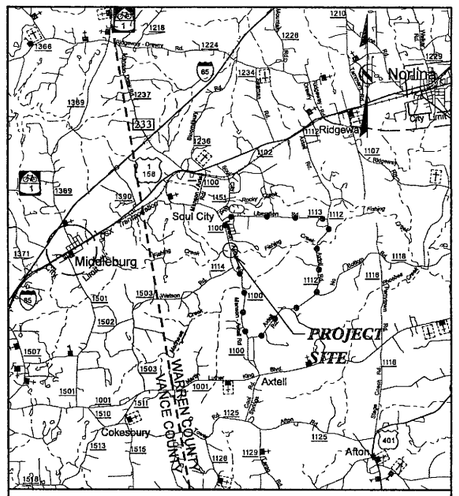
ATN Revised 3/31/05

09/08/99

TIP PROJECT: B-3706

CONTRACT:

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



VICINITY MAP

OFFSITE DETOUR ROUTE

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WARREN COUNTY

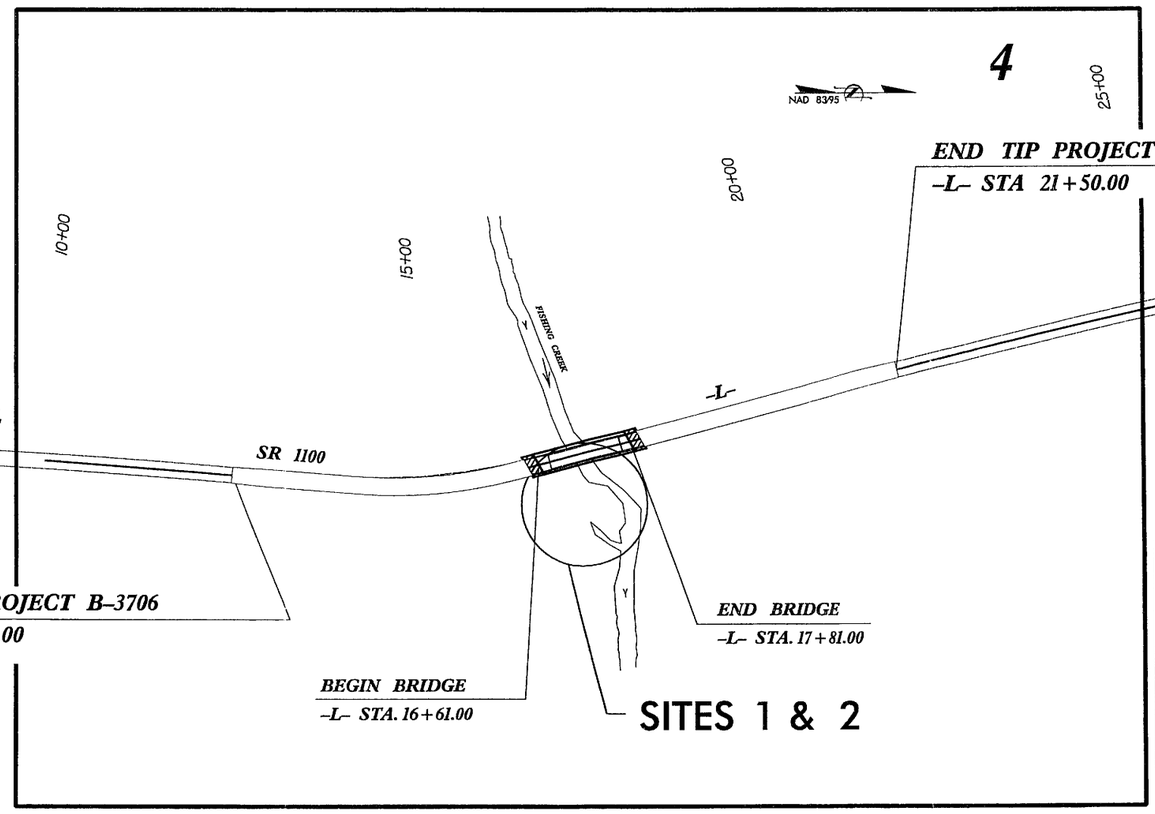
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3706	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33246.1.1	BRZ-1100(8)	P.E.
33246.2.1	BRZ-1100(8)	R/W & UTIL.

***LOCATION:** Bridge No. 20 on SR 1100 (Manson-Axtell Road) over Fishing Creek*

***TYPE OF WORK:** Grading, Drainage, Paving and Structure*

B-3706: WETLAND/SURFACE WATER SITE MAP



** DESIGN EXCEPTION FOR LANE WIDTH, STRUCTURE WIDTH, HORIZONTAL ALIGNMENT, VERTICAL ALIGNMENT, AND STOPPING SIGHT DISTANCE REQUIRED.

***NCDOT CONTACT:** B. DOUG TAYLOR, P.E., ROADWAY DESIGN - ENGINEERING COORDINATION*

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY
PROJECT: 33246.1.1 (B-3706)
BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100
SHEET 4 OF 7 6/23/08

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009 = 900
ADT 2029 = 1525
DHV = 10 %
D = 60 %
T = 5 % *
V = 60 MPH
(* TTST 2% + DUAL 3%)
FUNC. CLASS. = RURAL LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-3706 = 0.147 mi.
LENGTH OF STRUCTURE TIP PROJECT B-3706 = 0.023 mi.
TOTAL LENGTH OF TIP PROJECT B-3706 = 0.170 mi.

Prepared In the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
5121 Kingdom Way, Suite 100, Raleigh, NC 27607 (919) 851-6066
For the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: March 12, 2008

LETTING DATE: March 17, 2009

Brian A. Wiles, P.E.
PROJECT ENGINEER

Michael A. Young, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER *P.E.*

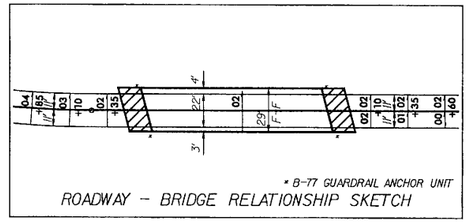
6/23/2008
R:\Hydraulics\dgn\permits\surface water\B3706_Hyd_prm_wet04_tsh.dgn
KO & Associates, P.C.

PROJECT REFERENCE NO.	SHEET NO.
B-3706	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

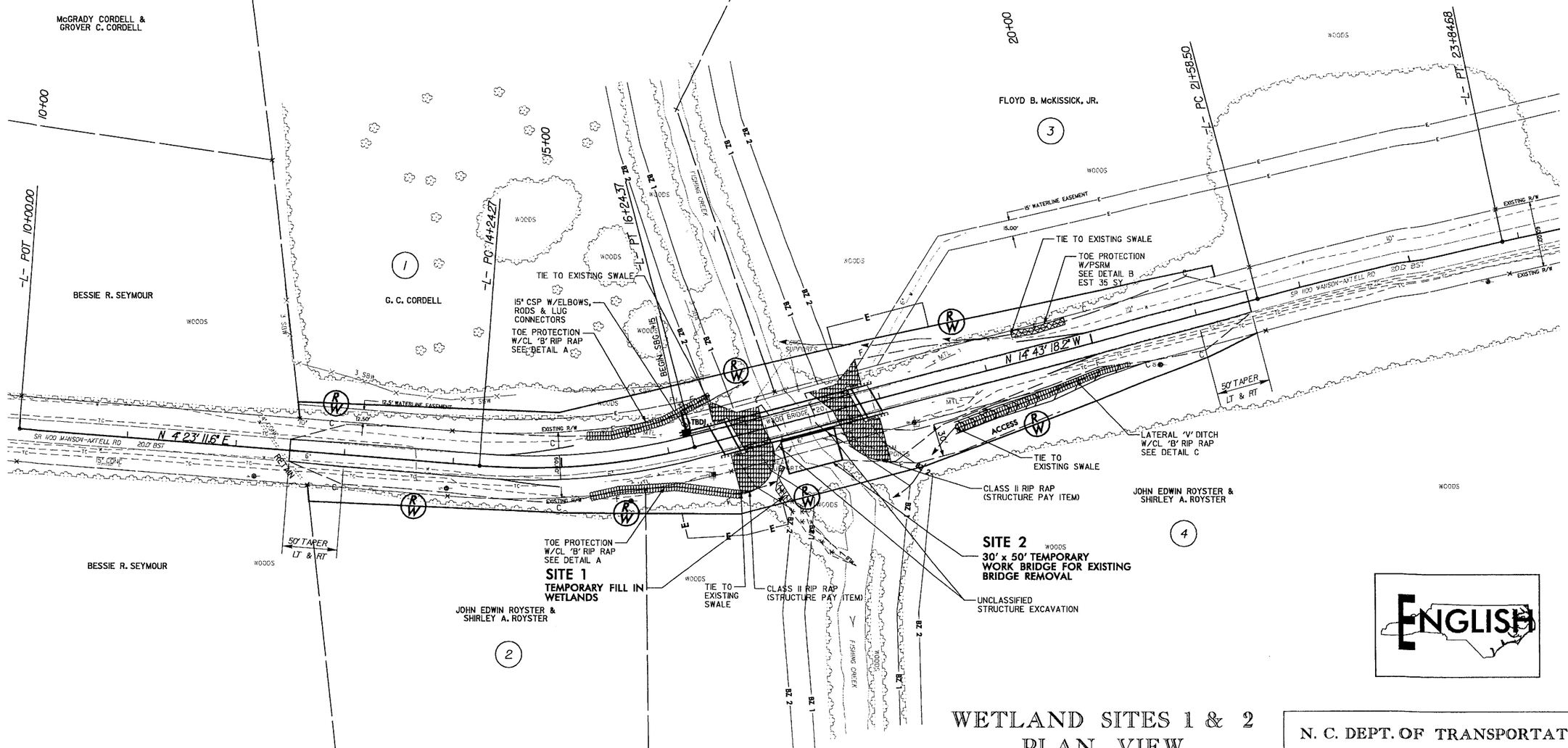
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100, RALEIGH, N.C. 27607
(919) 853-6066

NAD 83/95



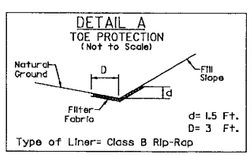
ROADWAY – BRIDGE RELATIONSHIP SKETCH



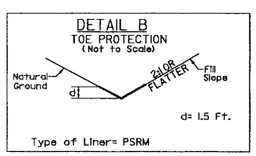
100 0 50 100
SCALE: 1"= 100' HORIZ.

LEGEND
DENOTES TEMPORARY FILL IN WETLAND

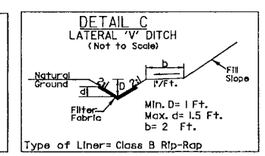
WETLAND SITES 1 & 2
PLAN VIEW



RDWY	STATION – STATION	SIDE
-L-	15+25 – 16+55	RT.
-L-	15+25 – 16+45	LT.



RDWY	STATION – STATION	SIDE
-L-	19+30 – 19+80	LT.



RDWY	STATION – STATION	SIDE
-L-	18+60 – 20+50	RT.

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 5 OF 7 6/23/08

REVISIONS
R/W Revision 4/18/2008 Changed owner names Parcels 1 and 3, revised Deed Book and Page for Parcel 2.
8/17/99

6/23/2008
P:\Hydraulics\dgn\permits\surface water\B3706_Hyd_prm_wet05_psh04.dgn

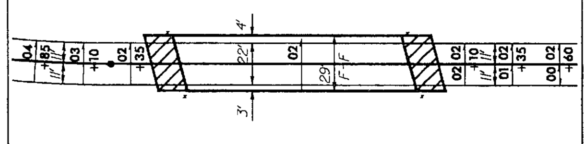
PROJECT REFERENCE NO.	SHEET NO.
B-3706	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

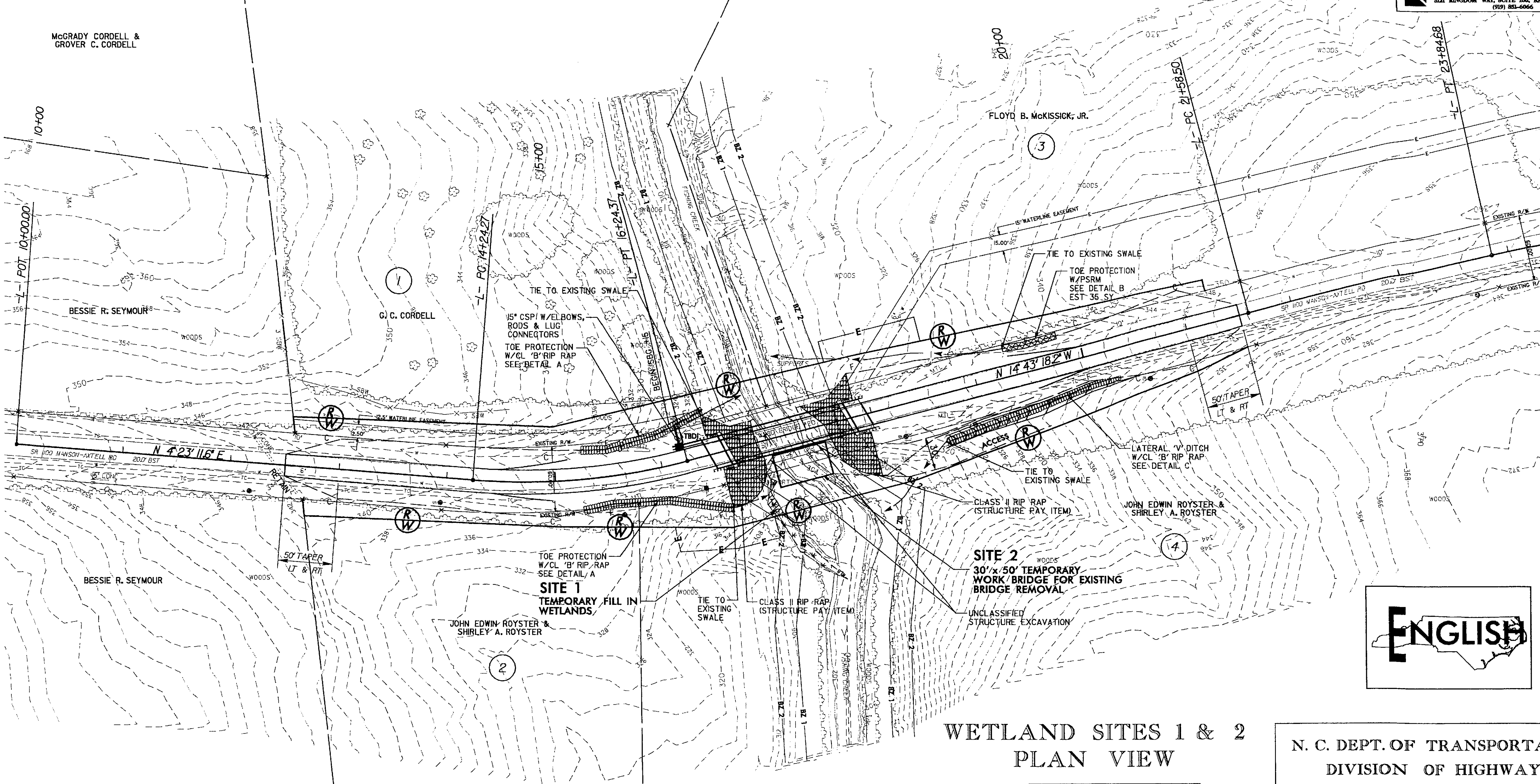
KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100, RALEIGH, N.C. 27607
(919) 851-6066

REVISIONS

R/W Revision 4/18/2008 Changed owner names Parcels 1 and 3, revised Deed Book and Page for Parcel 2.



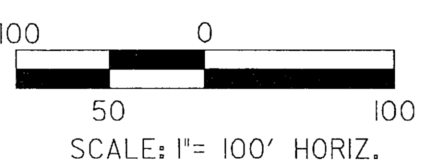
ROADWAY - BRIDGE RELATIONSHIP SKETCH



NAD 83/95
McGRADY CORDELL &
GROVER C. CORDELL
BESSIE R. SEYMOUR
G. C. CORDELL
FLOYD B. McKISSICK, JR.
JOHN EDWIN ROYSTER &
SHIRLEY A. ROYSTER
N 4°23'11.6" E
N 14°43'18.2" W
-L- POT 10+00.00
-L- PC 14+24.27
-L- PT 16+24.37
-L- PC 21+58.50
-L- PT 23+84.68
TIE TO EXISTING SWALE
15" CSP W/ELBOWS, RODS & LUG CONNECTORS
TOE PROTECTION W/CL 'B' RIP RAP SEE DETAIL A
TOE PROTECTION W/PSRM SEE DETAIL B EST 35 SY
LATERAL 'V' DITCH W/CL 'B' RIP RAP SEE DETAIL C
CLASS II RIP RAP (STRUCTURE PAY ITEM)
SITE 1
TEMPORARY FILL IN WETLANDS
SITE 2
30'x50' TEMPORARY WORK BRIDGE FOR EXISTING BRIDGE REMOVAL
UNCLASSIFIED STRUCTURE EXCAVATION
50' TAPER LT & RT
FISHING CREEK

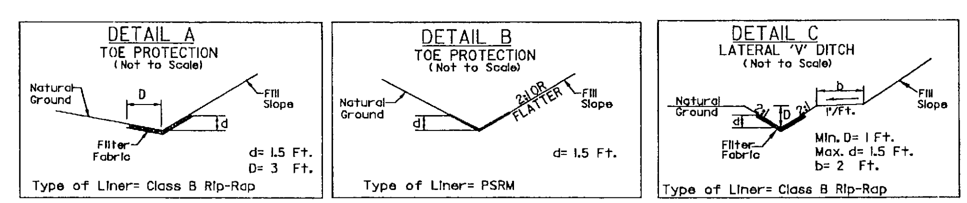
ENGLISH

WETLAND SITES 1 & 2
PLAN VIEW



LEGEND

DENOTES TEMPORARY FILL IN WETLAND



DETAIL A
TOE PROTECTION
(Not to Scale)
Natural Ground
Fill Slope
Filter Fabric
d= 1.5 Ft.
D= 3 Ft.
Type of Liner= Class B Rip-Rap
DETAIL B
TOE PROTECTION
(Not to Scale)
2:1 OR FLATTER
d= 1.5 Ft.
Type of Liner= PSRM
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1.5 Ft.
b= 2 Ft.
Type of Liner= Class B Rip-Rap

RDWY	STATION - STATION	SIDE
-L-	15+25 - 16+55	RT.
-L-	15+25 - 16+45	LT.

RDWY	STATION - STATION	SIDE
-L-	19+30 - 19+80	LT.

RDWY	STATION - STATION	SIDE
-L-	18+60 - 20+50	RT.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)
BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 6 OF 7 6/23/08

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3706	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100, RALEIGH, N.C. 27607
(919) 851-6066

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 7 OF 7 6/23/08

-L-

FOR PLAN, SEE SHEET NO. 4

B.M.#2 EL = 315.49'
"BENCHLITE" NAIL SET IN 14" BIRCH TREE
137' RT OF -BL- STA 15+87
150' RT OF -L- STA 17+88

PI = 13+40.00
EL = 342.50'
VC = 150'
*K = 70
DS = 47 mph
* DESIGN EXCEPTION REQUIRED

PI = 15+55.00
EL = 332.05'
VC = 200'
*K = 37
DS = 30 mph
* DESIGN EXCEPTION REQUIRED

PI = 19+35.00
EL = 334.00'
VC = 280'
*K = 40
DS = 30 mph
* DESIGN EXCEPTION REQUIRED

BEGIN GRADE
STA. 12+50.00
EL = 344.95'

PVC STA. 12+65.00
EL = 344.54'

(-)2.7227%

(-)1.8605%

PVC STA. 14+15.00
EL = 338.85'

(-)4.8605%

PVC STA. 14+55.00
EL = 336.91'

LOW POINT
STA. 16+35.90
EL = 332.21'

PVT STA. 16+55.00
EL = 332.56'

(+)0.5132%

PVC STA. 17+95.00
EL = 333.28'

(+)1.4309%

LAT @ 10.0%

PVT STA. 20+75.00
EL = 344.49'
END GRADE
STA. 21+00.00
EL = 346.36'

50' TIE TO EXISTING

20+50 RT.
EL. = 340.0

18+60 RT.
EL. = 321.0

1.55

REMOVE EXISTING BRIDGE

CONSTRUCTION ACCESS (15% MAX. GRADE)

3' KEY

3' KEY

UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)
EST. CY

TEMPORARY WORK BRIDGE FOR EXISTING BRIDGE REMOVAL (MIN LOW CHORD EL. = 307.2

NWS = 305.2

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1,950	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	314.3	FT
BASE DISCHARGE	=	2,890	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	316.3	FT
OVERTOPPING DISCHARGE	=	4,400	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	332.8	FT

390 380 370 360 350 340 330 320 310 300

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

6/23/2008
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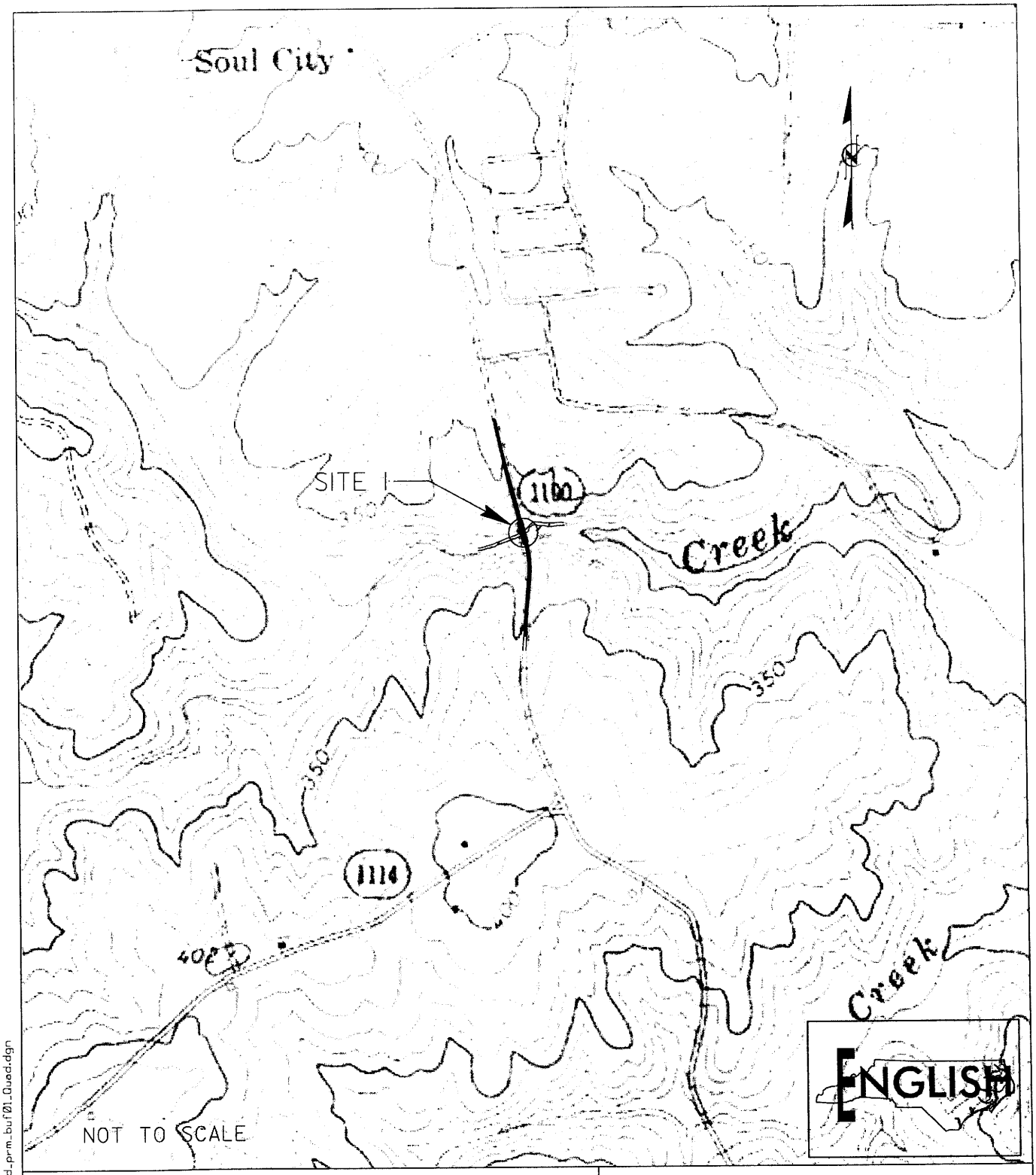
KO & Associates, P.C.



TAR-PAMLICO RIVER BUFFER

LOCATION MAP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 1 OF 6 4/30/08

4/29/2008
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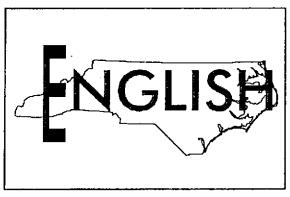
Ko & Associates, P.C.

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(1)	C. G. CORDELL		1
(2)	JOHN EDWIN ROYSTER & SHIRLEY A. ROYSTER	54 ROSE LANE HENDERSON, NC 27536	1
(3)	FLOYD B. McKISSICK, JR.		1
(4)	JOHN EDWIN ROYSTER & SHIRLEY A. ROYSTER	54 ROSE LANE HENDERSON, NC 27536	1



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 2 OF 6 4/30/08

4/29/2008
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BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT TYPE			IMPACT ALLOWABLE			IMPACT MITIGABLE			BUFFER REPLACEMENT	
			ROAD CROSSING	BRIDGE	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 - 72" MBT , OAL = 120'	-L- 16+61 to 17+81		X		4900	2975	7875					
	ROADWAY EMBANKMENT	-L- 16+43 to 16+61	X			0	279	279					
	ROADWAY EMBANKMENT	-L- 17+81 to 18+13	X			0	351	351					
TOTAL:						4900	3605	8505	0	0	0		

* The temporary bridge impacts are included with the Site1 bridge impacts.

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WARREN COUNTY
PROJECT: 33246.1.1 (**B-3706**)
REPLACEMENT OF BRIDGE NO. 20
OVER FISHING CREEK ON SR 1100
5/20/2008
SHEET 3 OF 6

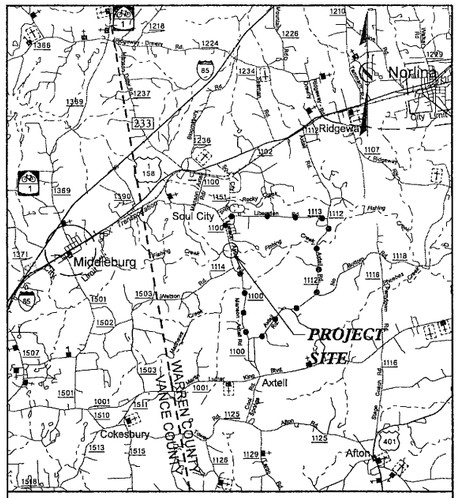
Rev. May 2006

09/08/99

TIP PROJECT: B-3706

CONTRACT:

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



VICINITY MAP

RW PLANS

OFFSITE DETOUR ROUTE

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WARREN COUNTY

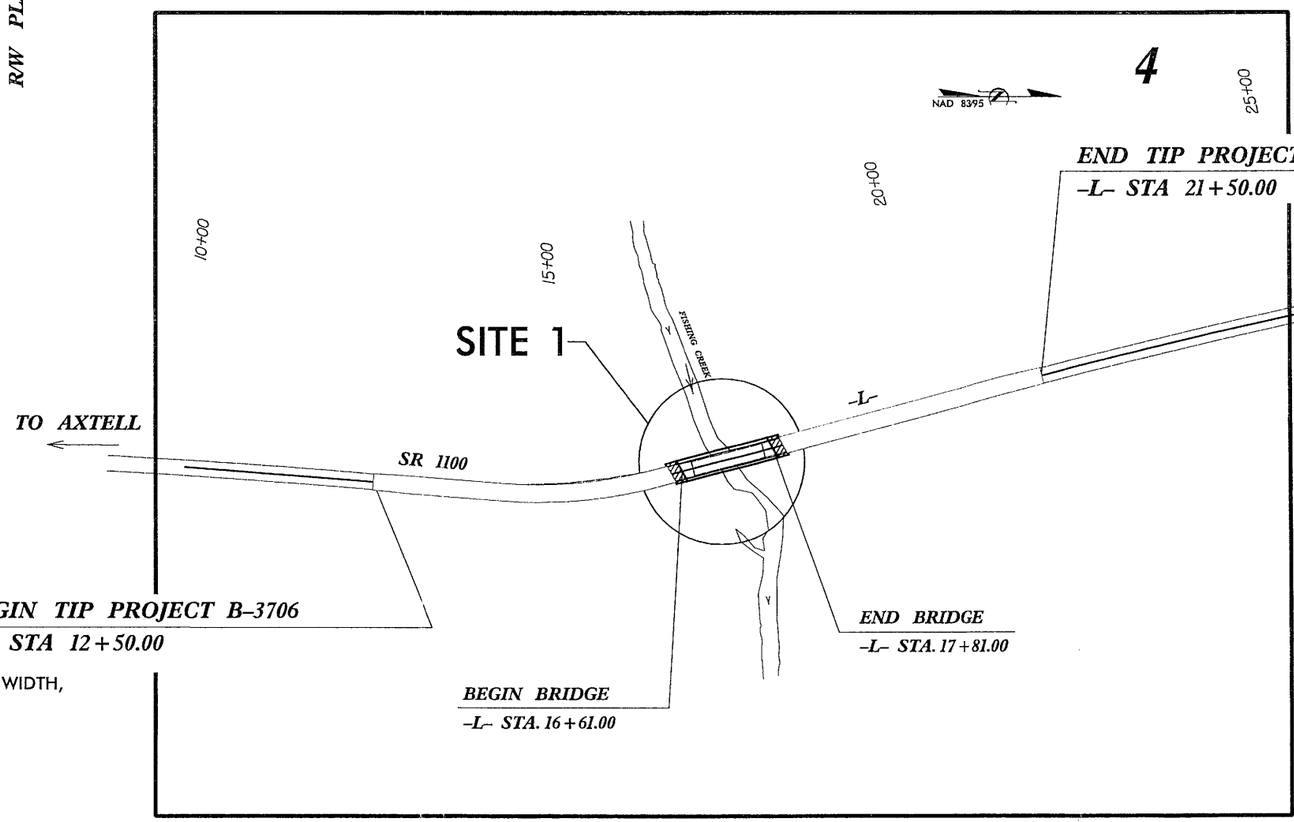
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3706	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33246.1.1	BRZ-1100(8)	P.E.
33246.2.1	BRZ-1100(8)	R/W & UTIL.

LOCATION: *Bridge No. 20 on SR 1100 (Manson–Axtell Road) over Fishing Creek*

TYPE OF WORK: *Grading, Drainage, Paving and Structure*

B–3706: BUFFER SITE MAP



** DESIGN EXCEPTION FOR LANE WIDTH, STRUCTURE WIDTH, HORIZONTAL ALIGNMENT, VERTICAL ALIGNMENT, AND STOPPING SIGHT DISTANCE REQUIRED.

NCDOT CONTACT: *B. DOUG TAYLOR, P.E., ROADWAY DESIGN – ENGINEERING COORDINATION*

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY
PROJECT: 33246.1.1 (B-3706)
BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100
SHEET 4 OF 6 4/30/08

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009 = 900
ADT 2029 = 1525
DHV = 10 %
D = 60 %
T = 5 % *
V = 60 MPH
(* TTST 2% + DUAL 3%)
FUNC. CLASS. = RURAL LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–3706 = 0.147 mi.
LENGTH OF STRUCTURE TIP PROJECT B–3706 = 0.023 mi.
TOTAL LENGTH OF TIP PROJECT B–3706 = 0.170 mi.

Prepared In the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
5121 Kingdom Way, Suite 100, Raleigh, NC 27607 (919) 851-6066
For the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: March 12, 2008

LETTING DATE: March 17, 2009

Brian A. Wiles, P.E.
PROJECT ENGINEER

Michael A. Young, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER *P.E.*

4/29/2008
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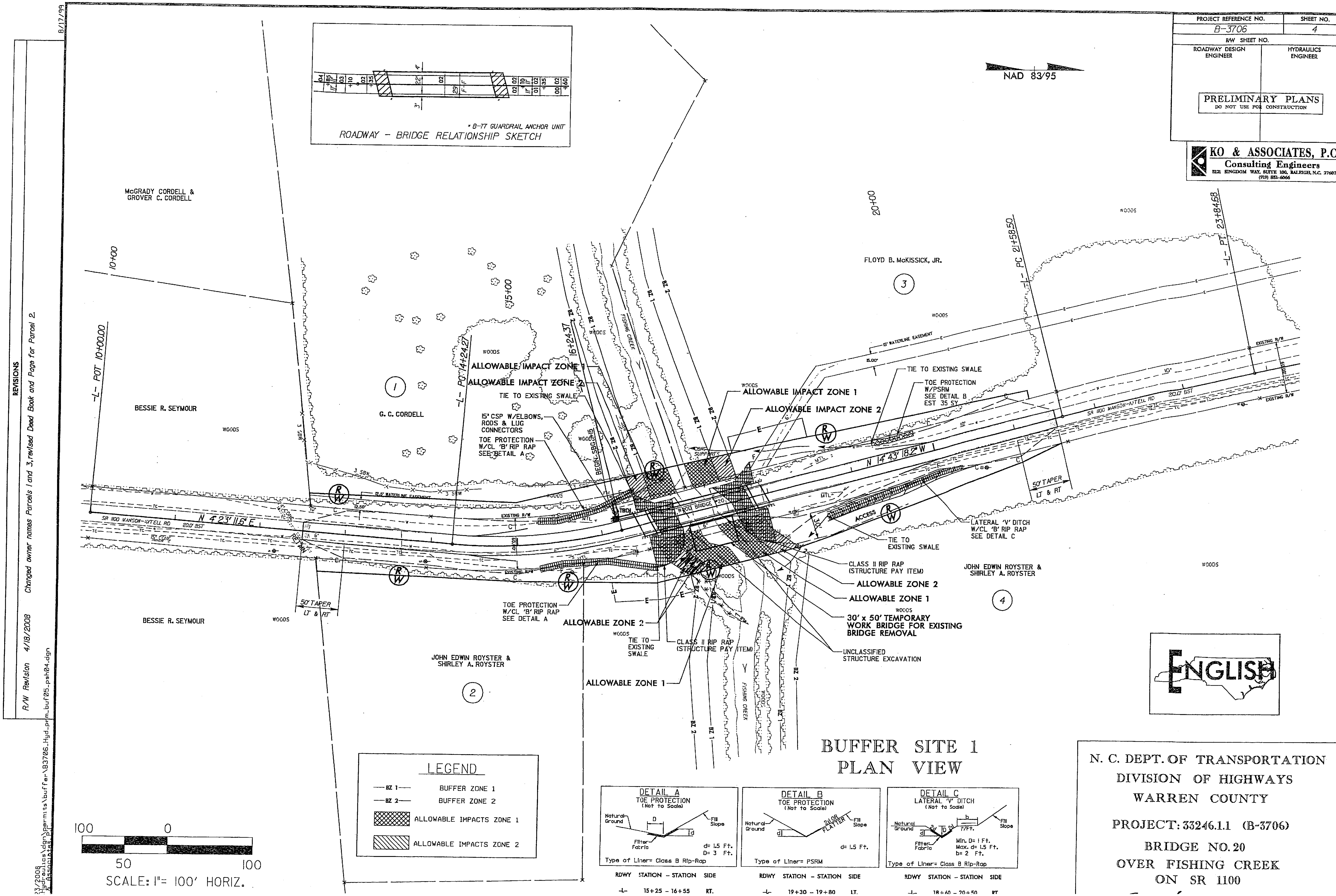
Ko & Associates, P.C.


8/17/99
PROJECT REFERENCE NO.
SHEET NO.
B-3706
4
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
KO & ASSOCIATES, P.C.
Consulting Engineers
NAD 83/95
* B-77 GUARDRAIL ANCHOR UNIT
ROADWAY - BRIDGE RELATIONSHIP SKETCH
REVISIONS
R/W Revision 4/18/2008 Changed owner names Parcels 1 and 3, revised Deed Book and Page for Parcel 2
McGRADY CORDELL & GROVER C. CORDELL
BESSIE R. SEYMOUR
G. C. CORDELL
FLOYD B. McKISSICK, JR.
JOHN EDWIN ROYSTER & SHIRLEY A. ROYSTER
WOODS
FISHING CREEK
-L- POT 10+00.00
-L- PC 14+24.27
-L- PC 21+58.50
-L- PT 23+84.68
16+24.37
15+00
20+00
N 4°23'11.6" E
N 14°43'18.2" W
SR 1100 MANSON-AXTELL RD 20.0' BST
ALLOWABLE IMPACT ZONE 1
ALLOWABLE IMPACT ZONE 2
TIE TO EXISTING SWALE
15' CSP W/ELBOWS, RODS & LUG CONNECTORS
TOE PROTECTION W/CL 'B' RIP RAP SEE DETAIL A
TOE PROTECTION W/PSRM SEE DETAIL B EST 35 SY
LATERAL 'V' DITCH W/CL 'B' RIP RAP SEE DETAIL C
CLASS II RIP RAP (STRUCTURE PAY ITEM)
ALLOWABLE ZONE 2
ALLOWABLE ZONE 1
30' x 50' TEMPORARY WORK BRIDGE FOR EXISTING BRIDGE REMOVAL
UNCLASSIFIED STRUCTURE EXCAVATION
50' TAPER LT & RT
15' WATERLINE EASEMENT
ENGLISH
BUFFER SITE 1
PLAN VIEW
LEGEND
BZ 1 BUFFER ZONE 1
BZ 2 BUFFER ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
100 0 50 100
SCALE: 1" = 100' HORIZ.
DETAIL A
TOE PROTECTION
(Not to Scale)
Natural Ground
Filter Fabric
Fill Slope
d= 1.5 Ft.
D= 3 Ft.
Type of Liner= Class B Rip-Rap
RDWY STATION - STATION SIDE
-L- 15+25 - 16+55 RT.
DETAIL B
TOE PROTECTION
(Not to Scale)
2:1 OR FLATTER
d= 1.5 Ft.
Type of Liner= PSRM
RDWY STATION - STATION SIDE
-L- 19+30 - 19+80 LT.
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1.5 Ft.
b= 2 Ft.
Type of Liner= Class B Rip-Rap
RDWY STATION - STATION SIDE
-L- 18+60 - 20+50 RT
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY
PROJECT: 33246.1.1 (B-3706)
BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3706	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100, RALEIGH, N.C. 27607
(919) 853-6066

ENGLISH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WARREN COUNTY

PROJECT: 33246.1.1 (B-3706)

BRIDGE NO. 20
OVER FISHING CREEK
ON SR 1100

SHEET 6 OF 6 6/23/08

-L-

FOR PLAN, SEE SHEET NO. 4

B.M.#2 EL = 315.49'
"BENCHLITE" NAIL SET IN 14" BIRCH TREE
137' RT OF -BL- STA 15+87
150' RT OF -L- STA 17+88

PI = 13+40.00
EL = 342.50'
VC = 150'
*K = 70
DS = 47 mph
* DESIGN EXCEPTION REQUIRED

PI = 15+55.00
EL = 332.05'
VC = 200'
*K = 37
DS = 30 mph
* DESIGN EXCEPTION REQUIRED

PI = 19+35.00
EL = 334.00'
VC = 280'
*K = 40
DS = 30 mph
* DESIGN EXCEPTION REQUIRED

BEGIN GRADE
STA. 12+50.00
EL = 344.95'

PVC STA. 12+65.00
EL = 344.54'

(-)2.7222%

(-)4.9605%

PVC STA. 14+55.00
EL = 336.91'

PVT STA. 14+15.00
EL = 338.85'

(-)4.8605%

LOW POINT
STA. 16+35.90
EL = 332.51'

PVT STA. 16+55.00
EL = 332.56'

(+)0.5132%

PVC STA. 17+95.00
EL = 333.28'

(+)0.5132%

(+)4.4909%

LAI = 10.0%

PVT STA. 20+75.00
EL = 344.49'
END GRADE
STA. 21+00.00
EL = 346.36'

50' TIE TO EXISTING

20+50 RT.
EL. = 340.0

18+60 RT.
EL. = 321.0

1.55

REMOVE EXISTING BRIDGE

CONSTRUCTION ACCESS (15% MAX. GRADE)

3' KEY

3' KEY

UNCLASSIFIED STRUCTURE EXCAVATION (TYP.)
EST CY

NWS = 305.2

TEMPORARY WORK BRIDGE FOR EXISTING BRIDGE REMOVAL (MIN LOW CHORD EL. = 307.2

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1,950	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	314.3	FT
BASE DISCHARGE	=	2,890	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	316.3	FT
OVERTOPPING DISCHARGE	=	4,400	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	332.8	FT

390 380 370 360 350 340 330 320 310 300

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

6/23/2008
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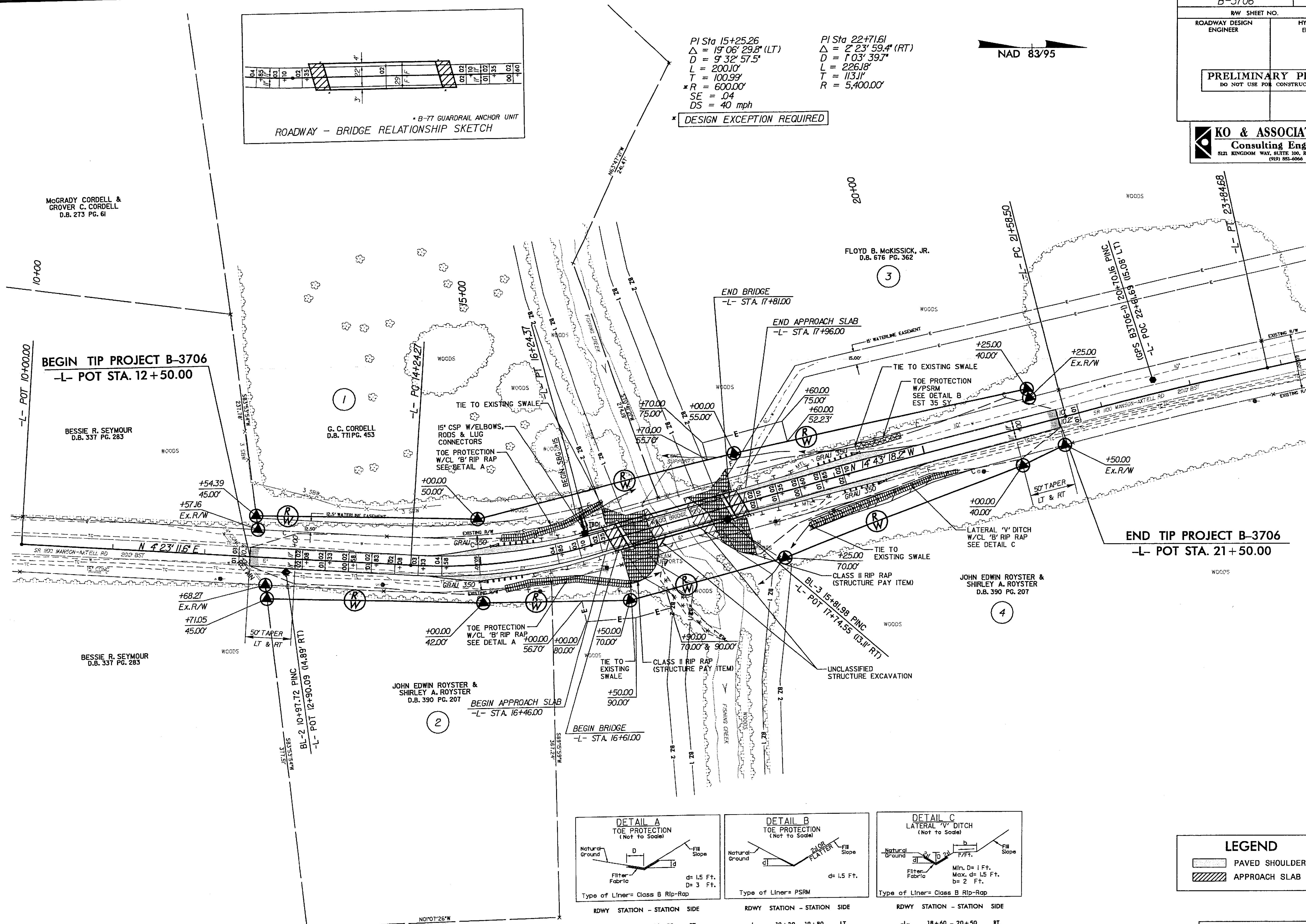
PROJECT REFERENCE NO.	SHEET NO.
B-3706	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100, RALEIGH, N.C. 27607
(919) 851-6066

REVISIONS
R/W Revision 4/18/2008 Changed owner names Parcels 1 and 3, revised Deed Book and Page for Parcel 2.



ROADWAY - BRIDGE RELATIONSHIP SKETCH
* B-77 GUARDRAIL ANCHOR UNIT
PI Sta 15+25.26
Δ = 19° 06' 29.8" (LT)
D = 9° 32' 57.5"
L = 200.10'
T = 100.99'
*R = 600.00'
SE = .04
DS = 40 mph
* DESIGN EXCEPTION REQUIRED
PI Sta 22+71.61
Δ = 2° 23' 59.4" (RT)
D = 1° 03' 39.7"
L = 226.18'
T = 113.11'
R = 5,400.00'
NAD 83/95
McGRADY CORDELL &
GROVER C. CORDELL
D.B. 273 PG. 61
BEGIN TIP PROJECT B-3706
-L- POT STA. 12+50.00
-L- POT 10+00.00
BESSIE R. SEYMOUR
D.B. 337 PG. 283
G. C. CORDELL
D.B. 771 PG. 453
-L- PC 14+24.27
-L- PT 16+24.37
TIE TO EXISTING SWALE
15' CSP W/ELBOWS, RODS & LUG CONNECTORS
TOE PROTECTION W/CL 'B' RIP RAP SEE DETAIL A
FLOYD B. McKISSICK, JR.
D.B. 676 PG. 362
END BRIDGE
-L- STA. 17+81.00
END APPROACH SLAB
-L- STA. 17+96.00
TOE PROTECTION W/PSRM SEE DETAIL B EST 35 SY
-L- PC 21+58.50
(GPS B3706-1) 20+70.16 PINC
-L- POC 22+61.69 (15.08' LT)
-L- PT 23+84.68
N 14° 43' 18.2" W
N 4° 23' 11.6" E
END TIP PROJECT B-3706
-L- POT STA. 21+50.00
LATERAL 'V' DITCH W/CL 'B' RIP RAP SEE DETAIL C
TIE TO EXISTING SWALE
CLASS II RIP RAP (STRUCTURE PAY ITEM)
BL-3 15+81.98 PINC
-L- POT 17+74.55 (13.11' RT)
UNCLASSIFIED STRUCTURE EXCAVATION
JOHN EDWIN ROYSTER &
SHIRLEY A. ROYSTER
D.B. 390 PG. 207
BEGIN APPROACH SLAB
-L- STA. 16+46.00
BEGIN BRIDGE
-L- STA. 16+61.00
BL-2 10+97.72 PINC
-L- POT 12+90.09 (14.89' RT)
SR 1100 MANSON-AXTELL RD
FISHING CREEK
50' TAPER LT & RT
WOODS
N01°07'26"W
275.29'

DETAIL A TOE PROTECTION (Not to Scale)	DETAIL B TOE PROTECTION (Not to Scale)	DETAIL C LATERAL 'V' DITCH (Not to Scale)
d= 1.5 Ft. D= 3 Ft. Type of Liner= Class B Rip-Rap	d= 1.5 Ft. Type of Liner= PSRM	Min. D= 1 Ft. Max. d= 1.5 Ft. b= 2 Ft. Type of Liner= Class B Rip-Rap

RDWY	STATION - STATION	SIDE
-L-	15+25 - 16+55	RT.
-L-	15+25 - 16+45	LT.

RDWY	STATION - STATION	SIDE
-L-	19+30 - 19+80	LT.

RDWY	STATION - STATION	SIDE
-L-	18+60 - 20+50	RT.

LEGEND
- PAVED SHOULDER
- APPROACH SLAB

FOR -L- PROFILE, SEE SHEET NO. 5

PROJECT REFERENCE NO.	SHEET NO.
B-3706	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

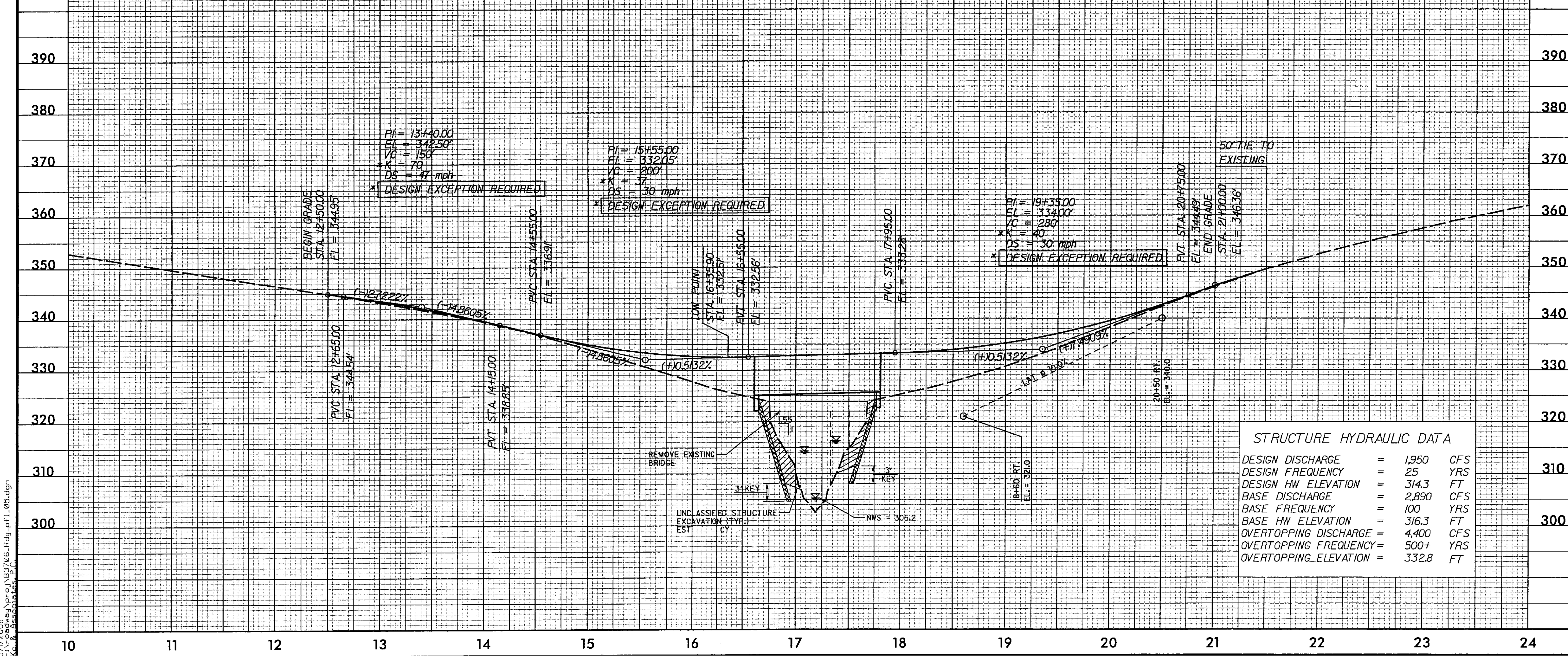
KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOOM WAY, SUITE 100, RALEIGH, N.C. 27607
(919) 851-6066

5/14/99

-L-

FOR PLAN, SEE SHEET NO. 4

B.M. #2 EL = 315.49'
"BENCHUTE" NAIL SET IN 14" BIRCH TREE
137' RT OF -BL- STA 15+87
150' RT OF -L- STA 17+88



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1,950	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	314.3	FT
BASE DISCHARGE	=	2,890	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	316.3	FT
OVERTOPPING DISCHARGE	=	4,400	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	332.8	FT

5/1/2008
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Ko & Associates, P.C.

Warren County
SR 1100
Bridge No. 20 over Fishing Creek
Federal-Aid Project No. BRZ-1100(8)
WBS No. 33246.1.1
T.I.P. No. B-3706

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION

APPROVED:

3/28/06
Date

for **Gregory J. Thorpe, Ph.D., Director**
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation

3/27/06
Date

John F. Sullivan III, P.E.
for **Division Administrator**
Federal Highway Administration

Warren County
SR 1100
Bridge No. 20 over Fishing Creek
Federal-Aid Project No. BRZ-1100(8)
WBS No. 33246.1.1
T.I.P. No. B-3706

CATEGORICAL EXCLUSION

March 2006

Documentation Prepared By Ko and Associates, P.C.

L. J. Ward

L. J. Ward, P.E.
Project Manager

For the North Carolina Department of Transportation

Shannon L. Lasater

Shannon L. Lasater, P.E.
Project Development Engineer

PROJECT COMMITMENTS

Warren County
SR 1100
Bridge No. 20 over Fishing Creek
Federal-Aid Project No. BRZ-1100(8)
WBS No. 33246.1.1
T.I.P. No. B-3706

In addition to the standard Nationwide Permit #33 and #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Construction and Maintenance Activities, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

PDEA/Hydraulics/Roadway Design

The Tar-Pamlico River Basin Rule applies to this project.

Highway Design Branch

The 10-inch water main on the west side of the existing structure is the only line serving the Axtell community. Any impacts to or costs associated with the water line resulting from the bridge replacement will be coordinated with the Warren County Public Works Director, Mr. Macon Robertson (252-257-3645).

Highway Design Branch/ Division 5

1. There will be a moratorium on clearing and grubbing work between November 15 and April 1.

2. Weep holes shall be configured so that the run-off does not fall into the stream. ***This is a standard NCDOT commitment.***

3. NCDOT resident engineer is responsible for providing a written invitation to visit the site to the North Carolina Wildlife Resources Commission, Non-game and Protected Species Branch, and the US Fish and Wildlife Service prior to construction. ***This is a standard NCDOT commitment.***

PROJECT COMMITMENTS CONTINUED

Warren County
SR 1100
Bridge No. 20 over Fishing Creek
Federal-Aid Project No. BRZ-1100(8)
WBS No.
T.I.P. No. B-3706

4. The erosion control plans for Protected Aquatic Species must be used. These plans include the requirements listed below. ***These are standard NCDOT commitments.***

   - Sediment and Erosion controls must be in place prior to land clearing activities. No sediment from either, bridge demolition or construction activities, shall be allowed to enter the flowing stream.

   - "Environmentally Sensitive Areas" will be defined on the plans, which consist of a 50-foot buffer zone on both sides of the stream.

   - The Contractor may perform clearing operations, but not grubbing operations in the "Environmentally Sensitive Areas", until immediately prior to beginning grading operations.

   - Once grading operations begin in "Environmentally Sensitive Areas", as specified on the plans, work will progress in a continuous manner until complete.

   - Seeding and mulching will be performed immediately following final grading establishment.

   - Stage seeding will be performed on cut and fill slopes as grading progresses.

5. A full Mussel survey extending 100 meters upstream and 400 meters downstream shall be conducted prior to letting unless it is determined that no suitable habitat exists within the full range.

6. NCDOT will make every reasonable effort to minimize the time of road closure.

Warren County
SR 1100 (Manson-Axtell Road)
Bridge No. 20 over Fishing Creek
Federal-Aid Project No. BRZ-1100(8)
WBS No. 33246.1.1
T.I.P. No. B-3706

INTRODUCTION: The replacement of Bridge No. 20 is included in the North Carolina Department of Transportation 2006-2012 Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 31.9 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

This project replaces Bridge No. 20 on SR 1100 (Manson-Axtell Road) over Fishing Creek in western Warren County, immediately southwest of Soul City. SR 1100 is classified as a Rural Local roadway in the Statewide Functional Classification System. The existing bridge, shown in Figures 2A and 2B, has an overall length of 94.0 feet and a clear roadway width of 19.2 feet. The existing two lane bridge has five spans with creosote timber floor on steel beams and timber joists supported by creosote timber caps and posts. SR 1100 has a current pavement width of 19 feet with two grass shoulders approximately 10 to 12 feet wide each in the area of the bridge. The roadway approaches are short tangents and on downgrades toward the bridge. The vertical sag occurs at the bridge; however, the bridge structure itself is flat. Sight distance is good both to the north and south.

Utilities in the project area include water, telephone, and power lines. Approximately 26 feet west of the centerline, there is a 10-inch water line on concrete pillars. This line is the only line that feeds the water tank for the Axtell community. Approximately 23 feet east of the centerline, there is a 6-inch water line on elevated steel bents. This water line is not currently in use. Seven feet farther east, there is a buried telephone cable that transitions to an overhead line as it crosses

Fishing Creek. Still farther east is an overhead power line. Utility conflicts should be considered high.

The structure was constructed in 1953. The current posted weight limit is 9 tons for single unit vehicles and 15 tons for truck-tractor semi-trailer vehicles. Bridge No. 20 has a bed-to-crown distance of approximately 21 feet. The estimated traffic volumes on SR 1100 are currently 800 vehicles per day (vpd) and are projected to be 1400 vpd for the design year 2025. The volumes include an estimated two percent truck-tractor semi-trailer (TTST) and three percent dual-tired (DT) vehicles. The posted speed limit is 55 mph in the vicinity of the bridge.

There is no development at the project site; however, residential development and community facilities are located in the vicinity of Soul City, north of the project. Residential development also exists near the intersection with SR 1114 (Watson Road), south of the project.

One accident was reported in the vicinity of this bridge during a recent three year period.

Four public school buses cross the present bridge two times per day.

III. ALTERNATIVES

A. Project Description

NCDOT proposes to replace Bridge No. 20 with a new bridge structure 105 feet long with 28 feet of clear roadway width. The grade of the roadway over the new structure will be approximately 6 feet above the grade of the existing bridge. The approaches to the new bridge will have a pavement width of 22 feet with 6-foot grassed shoulders.

B. Detailed Study Alternatives

The studied alternatives were: (1) to replace the structure on the existing location with an on-site temporary detour on the east side; (2) to replace the structure on the existing location with an on-site temporary detour on the west side; (3) to replace the structure on new alignment west of the existing location; and (4) to replace the structure on the existing location, closing SR 1100 and utilizing an off-site detour (see Figures 3, 4, 5, and 6).

Alternate 1 replaces the bridge on the existing location with an on-site temporary detour on the east side. The estimated cost is $1,465,000. Alternate 1 will require a design exception for the horizontal and vertical alignments.

Alternate 2 replaces the bridge on the existing location with an on-site temporary detour on the west side. The estimated cost is $1,288,750. Alternate 2 will require a design exception for the horizontal and vertical alignments.

Alternate 3 replaces the bridge on new alignment west of and parallel to the existing bridge at a cost of $1,355,000. Traffic would be maintained on the existing structure during construction. Alternate 3 will require a design exception for the vertical alignment.

Alternate 4 replaces the bridge with a new bridge in the existing location, closing SR 1100 to through traffic during construction, and utilizing an off-site detour at a cost of $780,325. Alternative 4 will require a design exception for the horizontal and vertical alignments. The proposed off-site detour route uses SR 1113 (Liberation Road), SR 1112 (Axtell-Ridgeway Road), and SR 1100 and is approximately 7.1 miles long (see Figure 1).

In accordance with the NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects (April 2004), the average delay per motorist using the proposed detour for Alternate 4 is estimated to range from seven to nine minutes for a construction period of six months, which falls under the Evaluation (E) range of the Guidelines. The Evaluation range suggests an on-site detour is justifiable from a traffic operations standpoint but must be weighed with other project factors to determine if it is appropriate. The condition of the detour route, including bridges, is comparable to the route being closed.

The Warren County Emergency Management Services Coordinator indicates police and ambulance services can adequately respond to residents in the vicinity of the project with an off-site detour in place. Emergency fire response, however, may be delayed to residents living south of Fishing Creek. These residences are approximately 1 mile from the Soul City Fire Department and approximately 5 miles from the Cokesbury and Afton Fire Departments. With road closure, any of these departments could reach homes south of Fishing Creek in approximately 15 minutes. By maintaining traffic on-site, the response time could be shortened by three to four minutes from the Soul City Fire Department, and the Fire Department Chief prefers an on-site detour.

Other ideas have been considered to minimize delays to fire responders. Consideration was given for locating a temporary fire station south of Fishing Creek, but this option was determined not to be feasible. The most feasible option is to incorporate bridge design and construction methods that reduce the duration of road closure during construction. NCDOT will make every reasonable effort to shorten the construction schedule for this bridge replacement project.

The Emergency Management Services agency and school system will be notified prior to construction so alternative emergency response and school bus routes can be developed. In consideration of these factors, an off-site detour is considered to be acceptable under the requirements of the NCDOT guidelines.

C. Alternatives Eliminated from Further Study

The No-Build or "do-nothing" alternative was also considered but this choice would eventually necessitate closure of the bridge. This is not a desirable alternative due to the traffic service provided by SR 1100.

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. The existing bridge is classified as structurally deficient and functionally obsolete.

D. Preferred Alternative (Alternate 4)

The recommended replacement structure is a new bridge structure 105 feet long with 28 feet of clear roadway width on the existing alignment. The grade of the roadway over the new structure will be approximately 6 feet above the grade of the existing bridge. The approaches to the new bridge will have a pavement width of 22 feet (see Figure 7) with 6 feet of grassed shoulders, on each side. The design speed will be improved, yet limited to 30 mph for the vertical alignment and 50 mph for the horizontal alignment. A design exception will be required for both the horizontal and vertical alignments. This is preferred because it minimizes construction costs, right of way costs, and stream impacts. An off-site detour will be used to maintain traffic during the construction period.

The Division Office concurs with the recommended improvements.

IV. ESTIMATED COST

The total estimated cost of this project as listed in the 2006-2012 TIP is $1,376,000. The estimated costs of the alternatives studied, based on 2005 prices, are shown in Table 1:

Table 1: Estimated Costs

	Alternate 1 With On-site Detour East	**Alternate2** With On-site Detour West	**Alternate 3** New Location	**Alternate 4** With Off-site Detour
Structure Removal	$ 18,800.00	$ 18,800.00	$ 18,800.00	$ 18,800.00
Structure	$ 249,900.00	$ 249,900.00	$ 249,900.00	$249,900.00
Roadway Approaches	$ 234,975.00	$ 234,975.00	$ 552,475.00	$234,375.00
Mobilization and Miscellaneous	$ 146,325.00	$ 146,325.00	$ 288,825.00	$145,925.00
Engineering and Contingencies	$ 100,000.00	$ 100,000.00	$ 190,000.00	$101,000.00
Temporary Detour	$ 675,000.00	$ 500,000.00	$ 0.00	$ 0.00
SUBTOTAL	$1,425,000.00	$1,250,000.00	$1,300,000.00	$750,000.00
Right-of-Way / Const. Ease. /	$ 40,000.00	$ 38,750.00	$ 55,000.00	$ 30,325.00
TOTAL	$1,465,000.00	$1,288,750.00	$1,355,000.00	$780,325.00

The above estimates are based on functional design plans; therefore, 45 % has been included for miscellaneous items and contractor mobilization, and 15 % for engineering and contingencies.

V. NATURAL RESOURCES

A. Methodology

The purpose of the natural systems report is to provide an evaluation of biological resources in the immediate area of potential project impact (project corridor). Specifically, the tasks performed for this project include an assessment of biological features within the project corridor including descriptions of vegetation, wildlife, protected species, wetlands, and water quality; a delineation of Section 404 jurisdictional areas; an evaluation of probable impacts resulting from construction and a preliminary determination of permit needs.

Materials and research data in support of this investigation have been derived from a number of sources including applicable US Geological Survey (USGS) topographic mapping (Middleburg,

NC 7.5 minute quadrangle), US Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping, and recent aerial photography (scale 1:1200). Natural Resources Conservation Service (NRCS), formerly the Soils Conservation Service, soils mapping was not available for Warren County. A discussion of typical soils found in Warren County is included based on Daniels *et al.* (1999).

The project study area was visited on October 6, 2000 and revisited on December 6, 2004. The study area was walked and visually surveyed for significant features. Special concerns evaluated in the field include: 1) potential protected species habitat, and 2) wetlands and water quality protection in Fishing Creek.

Plant community descriptions are based on a classification system utilized by NC Natural Heritage Program (NCNHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968) with adjustments for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following US Army Corps of Engineers (USACE) delineation guidelines (Environmental Laboratory 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof *et al.* 1980, Potter *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Hamel 1992, Palmer and Braswell 1995, and Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (NCDWQ 2004a, NCDWQ 2004b, and NCDWQ 2004c). Quantitative sampling was not undertaken to support existing data.

At the time of the initial field investigation, the most current USFWS listing of federally protected species with ranges extending into Warren County (dated June 16, 2000) was consulted prior to the 2000 field investigations. The February 25, 2003 USFWS listing of federally protected species (USFWS 2003) was reviewed prior the December 2004 field visit to ensure that all federally protected species are accounted for within the project study area. In addition, NCNHP records documenting presence of federally or state listed species were consulted in 2000 and again in December 2004.

B. Physiography and Soils

The project study area is underlain by the Felsic Crystalline geologic formation within the Piedmont physiographic province of North Carolina. Soil systems have been formed over bedrock of granite, granite gneiss, mica gneiss and mica schist. Inclusions of more mafic rock, with darker and more plastic soils, are common. Topography includes broad gently sloping

uplands and moderately dissected landscapes, with narrow convex ridges and steep valley slopes (Daniels *et al.* 1999). Topography within the project study area is characterized as gently rolling with steep areas along major streams. Within the project study area, the floodplain is characterized by a gradual, shallow slope on the northern bank, and a steep bluff on the southern bank. Elevations in the project study area are approximately 300 to 350 feet National Geodetic Vertical Datum (NGVD) (Middleburg, NC 7.5-minute quadrangle [1982]).

The majority of soils in Warren County have not been mapped by the NRCS. Dominant soil series in the eastern portion of the Felsic Crystalline geologic formation include Pacolet, Cecil, Appling, Vance, and Helena, which occur in uplands, and Congaree, Chewacla, and Wehadkee, which occur in river terraces and floodplains (Daniels *et al.* 1999).

The Pacolet series (*Typic Kanhapludults*) consists of very well-drained, moderately permeable soils formed from weathered acid crystalline rock. Slopes are commonly 15 to 25 percent.

The Cecil series (*Typic Kanhapludults*) consists of very deep, well-drained moderately permeable soils on ridges and side slopes of the Piedmont uplands. Cecil soils formed from felsic, igneous and high-grade metamorphic rocks of the Piedmont uplands. Slopes range from 0 to 25 percent.

The Appling series (*Typic Kanhapludults*) consists of very deep, well-drained, and moderately permeable soils that typically occur on ridges and slopes of Piedmont uplands. Appling soils formed in residuum weathered from felsic igneous and metamorphic rocks of the Piedmont uplands. Slopes range from 0 to 25 percent.

The Vance series (*Typic Hapludults*) consists of well-drained, slowly permeable soils that formed in residuum weathered from acid crystalline rock in the Piedmont. Vance soils are on ridges and side slopes, with slopes from 2 to 25 percent.

The Helena series (*Aquic Hapludults*) consists of gently to strongly sloping, deep, moderately well-drained soils that occupy small areas on side slopes. Helena soils are formed in forested areas from mixed acidic and basic rocks.

The Congaree series *(Typic Udifluvents*) consists of nearly level, well-drained soils on floodplains, originating from fine loamy material washed from soils on uplands. Chewacla soils (*Fluventic Dystrochrepts*) are nearly level, somewhat poorly-drained soils on floodplains, formed of fine alluvial deposits. The seasonally high water table is at a depth of approximately 1.5 feet.

The Wehadkee series (*Fluventic Haplaquepts*) consists of nearly level, poorly-drained soils on floodplains. Wehadkee soils are formed of fine loamy material, and the seasonal high water table is approximately at the surface. (Daniels *et al.* 1999, USDA 1970).

The NRCS considers the following soil series to be hydric in Warren County: Chewacla and Wehadkee silt loams, where frequently flooded; Worsham (*Typic Ochraquults*); and Helena soils with Worsham inclusions (USDA 1997). These series are saturated for a significant period during the growing season, and support woody vegetation under natural conditions. The Worsham series (*Typic Ochraquults*) consists of nearly level or gently sloping, poorly-drained soils that occupy small areas at the heads of drainages, at foot slopes, and in slight depressions. Worsham soils are formed from alluvial and residual material, and the seasonal high water table is approximately at the surface (USDA 1970).

C. WATER RESOURCES

1. Waters Impacted

The project study area is located within sub-basin 03-03-04 of the Tar-Pamlico River Basin and is part of USGS Hydrologic Unit 03020102 (NCDWQ 2004a). The bridge targeted for replacement spans Fishing Creek with no direct involvement of additional streams or tributaries. This section of Fishing Creek has been assigned Stream Index Number 28-79-(1) by the NC Division of Water Quality (NCDWQ) (NCDWQ 2004b).

2. Water Resources Characteristics

Fishing Creek is a well-defined, meandering Piedmont/upper Coastal Plain stream with moderate to fast flow. During field investigations, water clarity was fair with some sedimentation making the stream bottom difficult to see in pools. The stream averages 30 to 35 feet in width and water depth ranged from 2 to 3 feet at the time of the field visit. The substrate is comprised primarily of cobble and gravel underlain by bedrock. Segments of the stream west of the bridge are well-defined, entrenched, and channelized with no floodplain in the northwest or southwest project quadrants. Upland hardwood forest cover occurs adjacent to the stream on both sides. While the northwestern quadrant is composed entirely of upland hardwoods, forest cover in the southwestern quadrant borders an old pasture approximately 120 feet south of the stream. Segments of the stream to the east of the bridge are less entrenched and enter a fast-moving riffle area before meandering out of the project study area. The northeastern quadrant is mainly composed of maintained right-of-way with no floodplain. At approximately 70 feet from the centerline of the existing bridge, upland hardwood forest cover resumes for the remainder of the quadrant. The southeastern quadrant consists of a small disturbed upland hardwood system functioning as a poorly developed floodplain. While hydrophytic vegetation was observed

throughout the floodplain, wetland conditions were observed only in a linear drainage system along the toe of the southeastern slope. This system exhibited evidence of wetland conditions including hydrophytic vegetation, presence of hydric soils, and evidence of regular and prolonged inundation. Riparian vegetation is present on stream embankments throughout the project study area.

The NCDWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7, hereafter referred to as the draft NC 2004 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, or an unknown cause of impairment. The impairment could be from point sources, non-point sources, and/or atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the draft NC 2004 Section 303(d) list. Streams are further categorized into one of six parts within the draft NC 2004 Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, North Carolina has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State. This section of Fishing Creek is not listed on the draft NC 2004 Section 303(d) list (NCDWQ 2004c).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A best usage classification of **C NSW** has been assigned to Fishing Creek from its source to Shocco Creek (NCDWQ 2004b). The designation **C** denotes that appropriate uses include aquatic life propagation and survival, fishing, wildlife, and agriculture. The supplemental classification **NSW** refers to waters needing additional nutrient management because they are subject to excessive growth of microscopic and macroscopic vegetation (NCDWQ 2004b). No designated High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), or Water Supply II (**WS-II**) waters occur within 1 mile of the project study area.

The NCDWQ (previously known as the Division of Environmental Management, Water Quality Section [DEM]) has initiated a whole basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project study area is summarized in the *Tar-Pamlico River Basinwide Water Quality Management Plan* (NCDWQ 2004a). Fishing Creek has a Biological Rating of **Good-Fair.** The Biological Rating is based on macro-

invertebrate sampling in Fishing Creek in 2002. Fishing Creek is rated as **Supporting** for designated uses because the water is of high enough quality to facilitate aquatic life propagation and survival, fishing, wildlife, and agriculture. In terms of stream mitigation, Fishing Creek is classified as a **Warmwater** stream (USACE et al. 2003).

Eight National Pollutant Discharge Elimination Systems (NPDES) permitted wastewater discharge sites are located within the sub-basin, with a total permitted flow of 3.9 million gallons per day (MGD). The largest discharger within this sub-basin is the Warrenton Wastewater Treatment Plant (WWTP), with a permitted flow of 2 MGD. There are also two general NPDES wastewater permits, an individual NPDES stormwater permit, and ten general NPDES stormwater permits in this sub-basin (NCDWQ 2004a).

3. Potential Impacts to Water Resources

Impacts to water resources in the project study area may result from activities associated with project construction. Activities that would result in impacts are clearing and grubbing on streambanks, riparian canopy removal, in-stream construction, fertilizers and pesticides used in revegetation, and pavement/culvert installation. The following impacts to surface water resources could result from the construction activities mentioned above.

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

The proposed bridge replacement will allow for continuation of pre-project stream flows in Fishing Creek, thereby protecting the integrity of these waterways. Long-term impacts resulting from construction are expected to be negligible.

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion control schedule and the use of Best Management Practices (BMPs). The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into steams by catch basins and roadside vegetation.

4. Impacts Related to Bridge Demolition and Removal

The deck for Bridge No. 20 is composed of timber, and the substructure is not located in the creek; therefore, the bridge is expected to be removed without dropping any components into waters of the US during construction. If a temporary on-site detour is utilized, it will be constructed such that upon removal it will not result in any fill into waters of the United States. NCDOT will coordinate with the various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved. NCDOT's Best Management Practices for Construction and Maintenance Activities must be applied for the removal of this bridge.

D. BIOTIC RESOURCES

1. Plant Communities

Three distinct plant communities were identified within the project corridor: (1) Mixed Mesic Forest (Piedmont subtype); (2) disturbed/maintained land; and (3) early successional/ maintained grass lands. These plant communities are described below.

a) Mixed Mesic Forest (Piedmont subtype)

This community approximates that of the same name described by Schafale and Weakley (1990). The Mixed Mesic Forest community occurs in the majority of the project corridor, especially the northwest and southeast quadrants. The northeast quadrant contains a stand of Mixed Mesic Forest extending from the edge of the powerline right-of-way out of the project corridor. Canopy cover found on site consists of disturbance, adapted species including American sycamore (*Platanus occidentalis)*, loblolly pine (*Pinus taeda),* black cherry (*Prunus serotina),* tulip poplar (*Liriodendron tulipifera),* sweetgum (*Liquidambar styraciflua),* red cedar (*Juniperus*

virginiana), and red maple (*Acer rubrum).* Herbaceous species consist of Christmas fern (*Polystichum acrostichoides),* mockernut hickory (*Carya tomentosa),* water oak (*Quercus nigra),* and seedlings of canopy species. Tag alder (*Alnus serrulata*), river birch (*Betula nigra),* rushes (*Juncus spp.*), red maple (*Acer rubrum),* and giant cane (*Arundinaria gigantea*) occur along creek banks and in the floodplain area in the southeastern quadrant.

b) Disturbed/maintained land

Maintained plant communities occur along the present roadside margins and within the power line right-of-way which crosses the eastern portions of the project corridor in a north-south direction. Invasive weeds and some shrubs are present in both areas. In higher portions of the power line right-of-way corridor, growth of vasey-grass *(Paspalum urvillei*), crabgrass (*Digitaria spp.),* blackberries (*Rubus spp.)*, dog fennel (*Eupatorium capillifolium),* goldenrod (*Solidago spp.),* ragweed (*Ambrosia artemisiifolia*), trumpet creeper (*Campsis radicans*), and winged sumac (*Rhus copallina*) proliferate. In lower, wet areas within this right-of-way corridor, tag alder, river birch, rushes, and giant cane occur along creek banks and in the floodplain area in the southeastern quadrant.

c) Early successional/maintained grass lands

This maintained plant community occurs as an abandoned grass land pasture located in the southwest project quadrant bordering the forest adjacent to the creek. This community is dominated by herbaceous ground cover and small canopy species. Characteristic species include loblolly pine, red maple, sweetgum, dog fennel, poison ivy (*Toxicodendron radicans),* crabgrass, fescue (*Festuca sp.*), and blackberry.

2. Wildlife

No mammal species were observed in the project study area during the site visits. Mammal species expected to occur are white-tailed deer *(Odocoileus virginianus*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), meadow vole (*Microtus pennsylvanicus*), white-footed mouse (*Peromyscus leucopus*), short-tailed shrew (*Blarina brevicauda*), and little brown bat (*Myotis lucifugus*).

Birds observed within or adjacent to the corridor include American crow (*Corvus brachyrhynchos*) and bluejay (*Cyanocitta cristata*). Additional avian species expected to occur within the project study area are Carolina chickadee (*Poecile carolinensis)*, Carolina wren (*Thryothorus ludovicianus)*, tufted titmouse (*Baeolophus bicolor)*, downy woodpecker (*Picoides pubescens)*, red belly woodpecker (*Melanerpes carolinus)*, belted kingfisher (*Ceryle alcyon)*,

northern bobwhite (*Colinus virginianus*), mourning dove (*Zenaida macroura*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), eastern meadowlark (*Sturnella magna*), eastern bluebird (*Sialia sialis*), brown-headed cowbird (*Molothrus ater*), indigo bunting (*Passerina cyanea*), common yellowthroat (*Geothlypis trichas*), American goldfinch (*Carduelis tristis*), and northern cardinal (*Cardinalis cardinalis*).

No observations of terrestrial reptiles or amphibians were made within the project study area; however, herptile species expected to occur within the project study area are eastern box turtle (*Terrapene carolina*), eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), worm snake (*Carphophis amoenus*), rat snake (*Elaphe obsoleta*), brown snake (*Storeria dekayi*), eastern garter snake (*Thamnophis sirtalis*), and American toad (*Bufo americanus*).

3. Aquatic Communities

No aquatic reptile species were observed within the project study area. Fishing Creek does, however, provide suitable habitat for snapping turtle (*Chelydra serpentina*), river cooter (*Pseudemys concinna*), northern water snake (*Nerodia sipedon*), queen snake (*Regina septemvittata*), copperhead (*Agkistrodon contortrix),* eastern newt (*Notophthalmus viridescens*), northern dusky salamander (*Desmognathus fuscus*), two-lined salamander (*Eurycea cirrigera*), green frog (*Rana clamitans*), and pickerel frog (*Rana palustris*).

No sampling was undertaken in Fishing Creek to determine fishery potential. A limited visual assessment of Fishing Creek was conducted at the time of this survey during which no fish species were seen. However, this reach has reported fishing potential for redbreast sunfish (*Lepomis auritus*) (Fish 1968). Other species which may be present within Fishing Creek include rosyside dace (*Clinostomus funduloides*), bluehead chub (*Nocomis leptocephalus*), and margined madtom (*Noturus insignis*) (Menhinick 1991, Rohde *et al.* 1994).

The NC Wildlife Resources Commission (NCWRC) has developed a Significant Aquatic Endangered Species Habitat database to enhance planning and impact analysis in areas proposed by NCWRC as being critical due to the presence of Endangered or Threatened aquatic species. Fishing Creek may be considered to provide Significant Aquatic Endangered Species Habitat (NCWRC 1998), and coordination with NCWRC will be required to establish appropriate criteria for the protection of rare aquatic species.

4. Anticipated Impacts to Biotic Communities

a) Plant Communities

Proposed alternatives include both permanent and temporary impacts. Permanent impacts are considered to be those impacts that occur within proposed cut-fill limits. Temporary impacts are considered to be those impacts that occur within the cut-fill footprint associated with the temporary detours of Alternates 1 and 2. Temporary impact areas will be restored to pre-project conditions once construction is complete. Plant communities within the project study area were delineated to determine the approximate area and location of each. A summary of potential impacts to plant communities is presented in Table 2.

Alternate 4 will result in the least total impacts to plant communities. For Alternate 4, it is estimated that of the 0.50 acre impacted; only 0.20 acre will consist of relatively undisturbed areas (Mixed Mesic Hardwood Forest). Alternate 3 avoids temporary impacts but will result in the most permanent impacts to plant communities, approximately 2.81 acres. Alternate 1 will result in 1.25 acres of temporary impacts and 0.50 acre of permanent impacts. Alternate 2 will result in 0.97 acre of temporary impacts and 0.50 acre of permanent impacts.

From an ecological perspective, impacts of upgrading existing road facilities are minimal. No new fragmentation of plant communities will be created, as the project will result only in alteration of communities bordering an existing highway. Much of the alignment is currently bounded by a maintained right-of-way, a utility line corridor, and an abandoned pasture or grass lands. Therefore, the proposed project may only claim narrow strips of adjacent natural communities for Alternates 1, 2, and 4. Alternate 3 will fragment two small strips of land to the east of the proposed bridge location.

Fishing Creek may be considered to provide Significant Aquatic Endangered Species Habitat (NCWRC 1998) and coordination will be required to establish appropriate criteria for the protection of rare aquatic species. Impacts associated with turbidity and suspended sediments resulting from bridge replacement will be minimized through stringent erosion control measures.

Table 2. Potential Impacts to Plant Communities – Alternatives 1, 2, 3, and 4

Plant Community	POTENTIAL IMPACTS (acres)					
	Alternate 1 Temporary Detour-East			**Alternate 2** Temporary Detour-West		
	Temporary	Permanent	Total	Temporary	Permanent	Total
Disturbed/Maintained Land	0.37	0.30	0.67	0.10	0.30	0.40
Early Successional/Maintained Grass Lands	0.00	0.00	0.00	0.14	0.00	0.14
Mixed Mesic Forest (Piedmont subtype)	0.88	0.20	1.08	0.73	0.20	0.93
TOTAL:	1.25	0.50	1.75	0.97	0.50	1.47

Plant Community	**Alternate 3** Relocate Bridge to West			**Alternate 4** Off-site Detour		
	Temporary	Permanent	Total	Temporary	Permanent	Total
Disturbed/Maintained Land	0.00	0.83	0.83	0.00	0.30	0.30
Early Successional/Maintained Grass Lands	0.00	0.46	0.46	0.00	0.00	0.00
Mixed Mesic Forest (Piedmont subtype)	0.00	1.52	1.52	0.00	0.20	0.20
TOTAL:	0.00	2.81	2.81	0.00	0.50	0.50

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

b) Wildlife

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

c) Aquatic Communities

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

E. SPECIAL TOPICS

1. Waters of the United States

Surface waters within the embankments of Fishing Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR section 328.3). NWI mapping indicates and field investigations confirm that Fishing Creek is a riverine, upper-perennial stream, characterized by an unconsolidated bottom predominately consisting of unconsolidated cobble and gravel (R3UB1) (Cowardin *et al.* 1979).

Vegetated wetlands are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (Environmental Laboratory 1987). Vegetated wetlands subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United

States (33 CFR section 328.3) occur within the project study area. NWI mapping indicates that areas adjacent to Fishing Creek exhibit characteristics of palustrine, broad-leaved, deciduous forest systems that are seasonally flooded (PFO1C) (Cowardin *et al.* 1979). Field investigations indicate that there is one wetland within the project study area which occurs as a linear drainage system along the toe of the southeastern slope (see Figure 3, Alternative 1). This wetland is classified as PFO1C (Cowardin *et al.* 1979).

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

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

All four alternatives avoid impacts to stream and wetland areas; however, three of the alternatives (Alternates 1, 2, and 3) are expected to result in impacts to riparian buffer. Proposed impacts to jurisdictional areas are shown in Table 3.

There is little potential that components of the existing bridge may be dropped into "waters of the United States" during construction. Therefore, no temporary fill is expected to result from bridge removal. NCDOT will coordinate with the various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved. In addition, NCDOT's "Guidelines for Best Management Practices for Construction and Maintenance Activities" will be applied for the removal of this bridge.

Table 3. Potential Impacts to Jurisdictional Areas

	Potential Impacts					
	Alternate 1 Temporary Detour-East			**Alternate 2** Temporary Detour-West		
Jurisdictional Type	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**
Riparian Buffer Length (feet)	45	0	45	45	0	45
Stream Linear Distance (feet)	0	0	0	0	0	0
Stream Area (acres)	0	0	0	0	0	0
Wetland Area (acres)	0	0	0	0	0	0

	Alternate 3 Replace Bridge to West			**Alternate 4** Off-site Detour		
Jurisdictional Type	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**
Riparian Buffer Length (feet)	0	75	75	0	0	0
Stream Linear Distance (feet)	0	0	0	0	0	0
Stream Area (acres)	0	0	0	0	0	0
Wetland Area (acres)	0	0	0	0	0	0

2. Permits

Replacement of this bridge is anticipated to result in no impacts to waters of the United States, and will therefore not require a USACE permit or NCDWQ water quality certification.

The Tar-Pamlico River Basin Rule applies to 50-foot wide riparian buffers directly adjacent to surface waters of the Tar-Pamlico River Basin. Alternate 4 is not anticipated to result in impacts to the riparian buffer. Impacts resulting from Alternates 1, 2, and 3 are considered to be Allowable. These impacts may proceed provided there are no practical alternatives. Implementation of Alternates 1, 2, or 3 will require written authorization from NCDWQ.

3. Mitigation

The USACE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of waters of the United States, and specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

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

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

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and

every permit action. In accordance with 15A NCAC 2H .0506(h), NCDWQ may require compensatory mitigation for projects with greater than or equal to 1 acre of impacts to jurisdictional wetlands or greater than or equal to 150 linear feet of total perennial stream impacts. Furthermore, in accordance with 67 FR 2020, 2092; January 15, 2002, the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of the proposed project impact and the function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, preservation and enhancement, and creation of waters of the United States. Such actions should be undertaken first in areas adjacent to or contiguous to the discharge site.

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

No need for mitigation is anticipated due to riparian buffer impacts associated with Alternates 1, 2, and 3. Riparian buffers associated with Alternates 1 and 2 will be temporary. Following removal of the temporary structures, the riparian buffer will be restored to pre-project contours and replanted with native vegetation. Alternate 3 involves replacement of the bridge on new location. Implementation of this alternative will allow for removal of the pre-project bridge and approaches, restoration of the riparian buffer to natural contours, and replanting with native vegetation.

F. Rare and Protected Species

1. Federal-Protected Species

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

throughout all or a significant portion of its range" (16 U.S.C. 1532). The term "Threatened due to Similarity of Appearance" is defined as a species which is not "Endangered" or "Threatened", but "closely resembles and Endangered or Threatened species" (16 U.S.C. 1532). Federal-protected species listed for Warren County (February 25, 2003 USFWS list) are listed in Table 4.

Table 4: Federal-Protected Species

Common Name	Scientific Name	Federal Status	Biological Conclusion
Dwarf wedgemussel	*Alasmidonta heterodon*	Endangered	**MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT**
Tar spinymussel	*Elliptio steinstansana*	Endangered	**MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT**

Alasmidonta heterodon (Dwarf wedgemussel)
Endangered
Family: Unionidae
Date Listed: March 14, 1990

The dwarf wedgemussel is relatively small, averaging 1 to 1.5 inches long. The shells are olive-green to dark brown in color and are subrhomboidally shaped. The shells of females are swollen posteriorly, while the shells of males are generally flattened (TSCFTM 1990). The preferred habitats are streams with moderate flow velocities and bottoms varying in texture from gravel and coarse sand to mud, especially just downstream of debris and on banks of accreting sediment. This species was previously known only from a few, disjunct populations in the Neuse River basin (Johnston County) and Tar River basin (Nash County). Statewide surveys conducted since 1992 have expanded this species' range in North Carolina. This species is now known from Neuse Basin in Orange, Wake, Johnston, and Nash Counties; and from Tar River Basin in Nash, Vance, Warren, Franklin, Halifax, and Nash Counties.

BIOLOGICAL CONCLUSION: MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT

NCNHP files have no documentation of this species within 1 mile of the project study area. Stream habitat within the western half of the project study area is characterized by moderate flow over a cobble/gravel/mud substrate. Fishing Creek is a perennial meandering stream with the potential for riffle-pool structure and occasional sand-mud bars throughout its reach. These conditions provide suitable habitat for this species. A mussel survey was conducted on July 9,

2002 by NCDOT biologists. The survey found that dwarf wedgemussel does not occur in the vicinity of Bridge No. 20. Based on an NHP record search and habitat surveys conducted during field investigations, the project is not likely to adversely affect, the dwarf wedgemussel.

Elliptio steinstansana (Tar spinymussel)
Endangered
Family: Unionidae
Date Listed: June 27, 1985

The Tar spinymussel is a small, subrhomboidal mussel that grows to approximately 2.5 inches 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 0.2 inches long. The shell is thicker on the anterior end and thinner on the posterior end. Preferred habitat of the spinymussel includes relatively fast-flowing, well-oxygenated, circumneutral water over a silt-free, noncompacted, gravel/coarse sand substrate (TSCFTM 1990).

BIOLOGICAL CONCLUSION: MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT

NCNHP files have no documentation of this species within 1 mile of the project study area. Stream habitat within the eastern half of the project study area is characterized by relatively fast-flowing, well-oxygenated flow over a cobble/gravel/sand substrate. Fishing Creek is a perennial meandering stream with the potential for riffle-pool structure and occasional sand-mud bars throughout its reach. These conditions provide suitable habitat for this species. A mussel survey was conducted on July 9, 2002 by NCDOT biologists. The survey found that Tar spinymussel does not occur in the vicinity of Bridge No. 20. Based on an NHP record search and habitat surveys conducted during field investigations, the project is not likely to adversely affect the Tar spinymussel.

In coordination between the USFWS, NCWRC and NCDOT, all agencies concurred with the "not likely to adversely affect" conclusion as long as the following conditions are adhered to by the contractor. These conditions should be followed in order to protect downstream populations of freshwater mussels on Fishing Creek and its tributaries:

- There will be a moratorium on clearing and grubbing work between November 15 and April 1.
- Weep holes shall be configured so that the run-off does not fall into the stream.
- NCDOT resident engineer is responsible for providing a written invitation to visit the site to the North Carolina Wildlife Resources Commission, Non-game and Protected Species

Branch, and the US Fish and Wildlife Service prior to construction.

- The erosion control plans for Protected Aquatic Species must be used. These plans include the following requirements:
  - Sediment and Erosion controls must be in place prior to land clearing activities. No sediment from either, bridge demolition or construction activities, shall be allowed to enter the flowing stream.
  - "Environmentally Sensitive Areas" will be defined on the plans, which consist of a 50-foot buffer zone on both sides of the stream.
  - The Contractor may perform clearing operations, but not grubbing operations in the "Environmentally Sensitive Areas", until immediately prior to beginning grading operations.
  - Once grading operations begin in "Environmentally Sensitive Areas", as specified on the plans, work will progress in a continuous manner until complete.
  - Seeding and mulching will be performed immediately following final grade establishment.
  - Stage seeding will be performed on cut and fill slopes as grading progresses.

Since the 2002 survey was completed, new protocols have been implemented. In addition, other mussel species have been documented downstream. For these reasons, NCDOT will complete a full mussel survey extending 100 meters upstream and 400 meters downstream prior to letting unless it is determined that no suitable habitat exists within the full range.

2. Federal Species of Concern

The February 25, 2003 USFWS list (USFWS 2003) also includes a category of species designated as "Federal species of concern" (FSC). A species with this designation is one that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing). The FSC designation provides no federal protection under the ESA for the species listed. FSC species listed for Warren County (USFWS 2003) are presented in Table 5. NCNHP files have no documentation of FSC species within the project study area or within 1 mile of the project study area.

Several known populations of yellow lance (*Elliptio lanceolata*), which is a federal species of concern and is state endangered, are located at SR 1118, SR 1600, and at SR 1609 (August 1999 records). The SR 1118 yellow lance record is above the impounded reach of Fishing Creek. Project activities could potentially alter downstream habitat and promote "take" of freshwater mussels; thus, precautions must be taken to prevent harm to downstream populations.

Table 5. Federal Species of Concern Listed for Warren County

Common Name	Scientific Name	Potential Habitat	State Status*
Bachman's sparrow	*Aimophila aestivalis*	Yes	SC
Heller's trefoil	*Lotus helleri*	Yes	SR-T
Pinewoods shiner	*Lythrurus matutinus*	Yes	SR
Atlantic pigtoe	*Fusconaia masoni*	Yes	E
Yellow lance	*Elliptio lanceolata*	No	E

E = Endangered; T = Threatened; SC = Special concern; SR = Significantly rare; -T = Throughout (Amoroso 2002; LeGrand and Hall 2001).

3. State-Protected Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), Special Concern (SC), Candidate (C), Significantly Rare (SR), or Proposed (P) (Amoroso 1999, LeGrand and Hall 1999) 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 no terrestrial or aquatic State-listed species have been documented within one (1) mile of the project corridor.

The project corridor contains no rare or unique natural communities; however, the project corridor is upstream of a Significant Natural Heritage Area (**SNHA**) known as the Fishing Creek Aquatic Habitat (NHP 1999). The nearest portion of this **SNHA** is located approximately 12 miles downstream and carries a significance rating of B indicating ecological resources that are among the highest quality occurrences in North Carolina (NHP 1999).

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires Federal Agencies to take into account the effect of their undertakings (federally-funded, licensed, or permitted projects) on properties included in or eligible for the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

B. Historic Architecture

Ko and Associates conducted a field survey of the APE on February 22, 2000. All structures within the APE were photographed and submitted for review. The findings of the survey were presented to an NCDOT architectural historian and the State Historic Preservation Office (HPO) on June 1, 2000. At that meeting it was determined that no properties, including Bridge No. 20, are considered eligible for the NRHP. A copy of the concurrence form is included in the Appendix.

C. Archaeology

In their October 18, 2000 letter, the HPO stated "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." Given the limited scope of the project, no effects on archaeological sites are anticipated.

VII. ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact by replacing a potentially unsafe bridge.

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

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

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

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.

No adverse impact on families or communities is anticipated.

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

The project will not impact any prime or important state farmland based on a review by the U.S. Department of Agriculture. Additionally, no soils survey exists for the area.

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of National, state, or local significance in the vicinity of the project. Therefore, the proposed project will not require right-of-way acquisition or easement from land protected under Section 4(f) of the Department of Transportation Act of 1966.

The project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. 40 CFR Part 51 is not applicable because the proposed project is located in an attainment area. If vegetation or wood debris is disposed of by open burning, it shall be done in accordance with applicable local laws and regulations, the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520 and the 1990 Clean Air Act Amendments, and the National Environmental Policy Act. Traffic volumes will not increase or decrease due to the replacement of this bridge. The noise levels will increase during the construction period, but will only be temporary. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulations (CFR), Part 772 and for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Waste Management revealed no leaking underground storage tanks or hazardous waste sites in the project area.

Warren County is a participant in the National Flood Insurance Regular Program. This crossing of Fishing Creek is located in a designated flood hazard zone, but is not included in a detailed flood study. The existing upstream floodplain is rural, wooded or agricultural, and there are no buildings in the project vicinity with floor elevation below the 100-year level. The proposed bridge replacement will provide equivalent or improved conveyance compared to that of the existing bridge; therefore, the project will not have any significant adverse impact on the existing floodplain or on the associated flood hazard to the adjacent properties and buildings.

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

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

VIII. PUBLIC INVOLVEMENT

Ko and Associates developed a "start of study" letter describing the study alternates which was mailed to local officials and agencies. Also, a newsletter was developed that was mailed to local property owners as determined from property tax records.

Citizen Informational Workshops were held on January 10, 2001 and March 7, 2005 at the Duke Green House in Soul City. Four residents attended the 2001 meeting. One person supported realigning the roadway approaches to the bridge as a better route for logging trucks. A resident preferred Alternate 1, and another supported replacement of the bridge without road closure during the construction period. Fifteen people attended the 2005 meeting. It was noted that Warren County's Economic Development Commission is planning a multi-county industrial development near Soul City and supports an improved bridge and roadway. A representative from the County Emergency Management Services agency commented that the Soul City Volunteer Fire Department would be delayed by an off-site detour. A neighboring landowner supports an off-site detour (Alternate 4) to minimize damages to his property. Several residents asked for logging trucks to be prohibited from this highway and routed on nearby roads. Another resident suggested adding a sidewalk to one side of the bridge. Others did not want the road to be closed during construction due to longer trips, higher gas prices, and potential delays for emergency vehicles.

IX. AGENCY COORDINATION

Letters requesting comments and environmental input were sent to the following agencies:

US Army Corps of Engineers- Wilmington District
US Fish and Wildlife Service*
US Department of Agriculture, Natural Resources Conservation Service*
US Geological Survey
State Clearinghouse
NC Department of Cultural Resources*
NC Department of Environment and Natural Resources*
NC Wildlife Resources Commission
NC Division of Water Quality
NC Natural Heritage Program
County Manager, Warren County

Chairman, Warren County Commissioners
Superintendent, Warren County Schools*
Coordinator, Warren County EMS
Sheriff, Warren County
President, Warren County Fireman's Association*

Asterisks (*) indicates agencies from which written comments were received. The comments are included in the appendix of this report.

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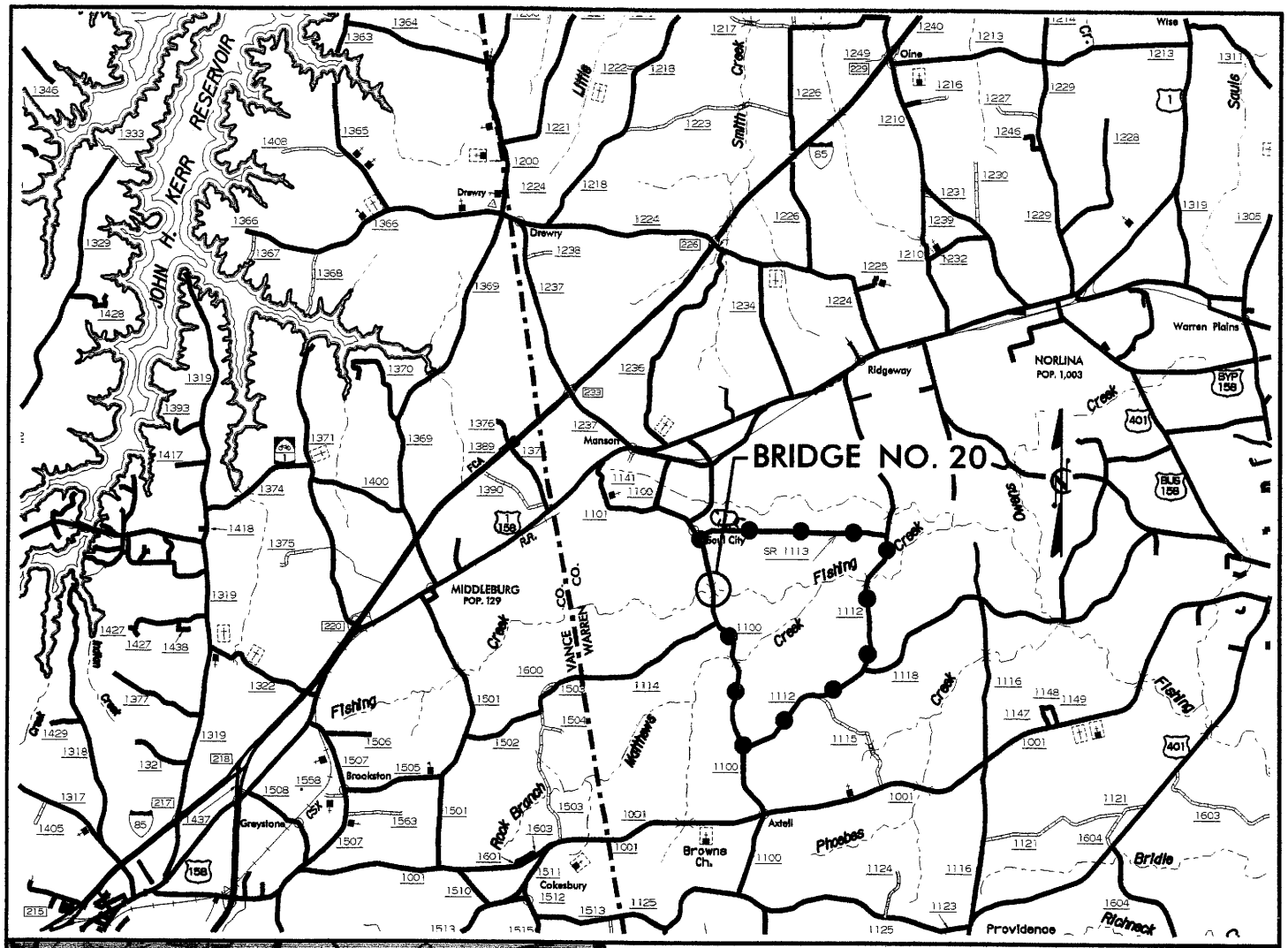
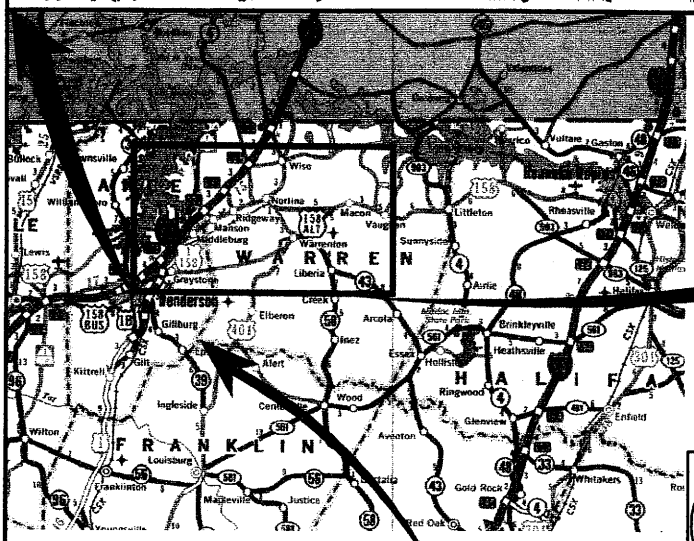
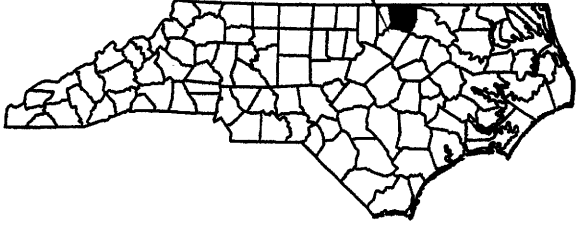
FIGURES







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

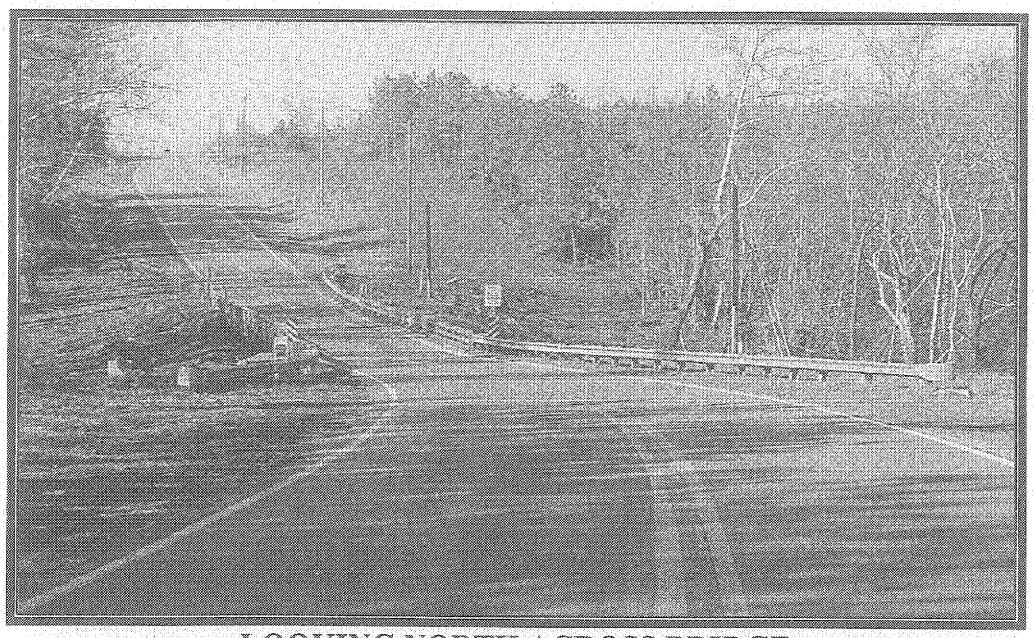
PROJECT DEVELOPMENT AND ENVIROMENTAL ANALYSIS BRANCH

BRIDGE NO. 20
SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

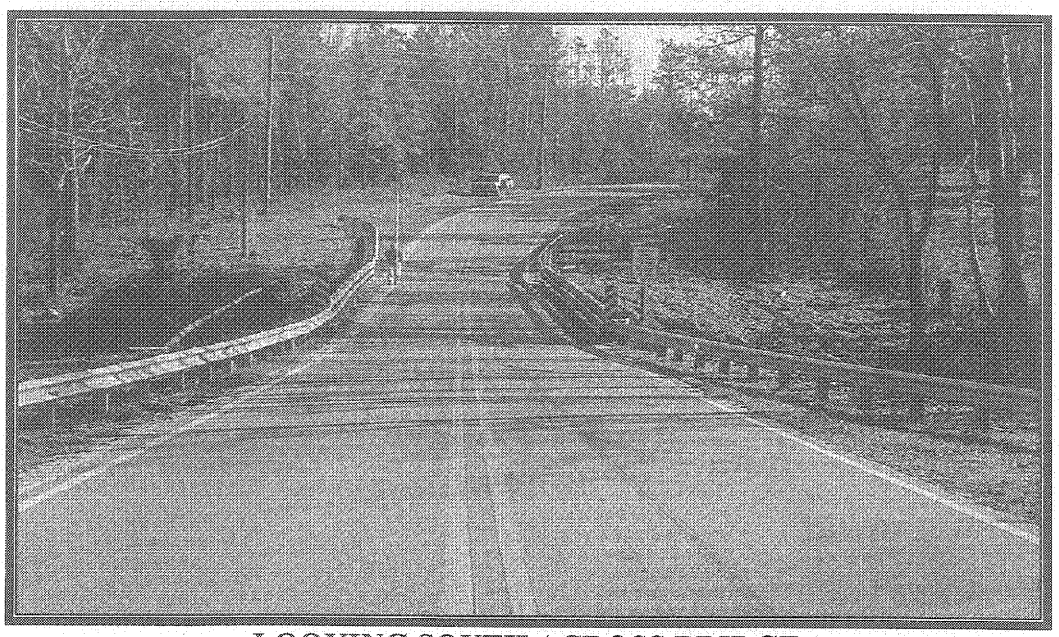
VICINITY MAP

0 1 2 3
GRAPHIC SCALE (MILES)

FIGURE 1



LOOKING NORTH ACROSS BRIDGE



LOOKING SOUTH ACROSS BRIDGE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

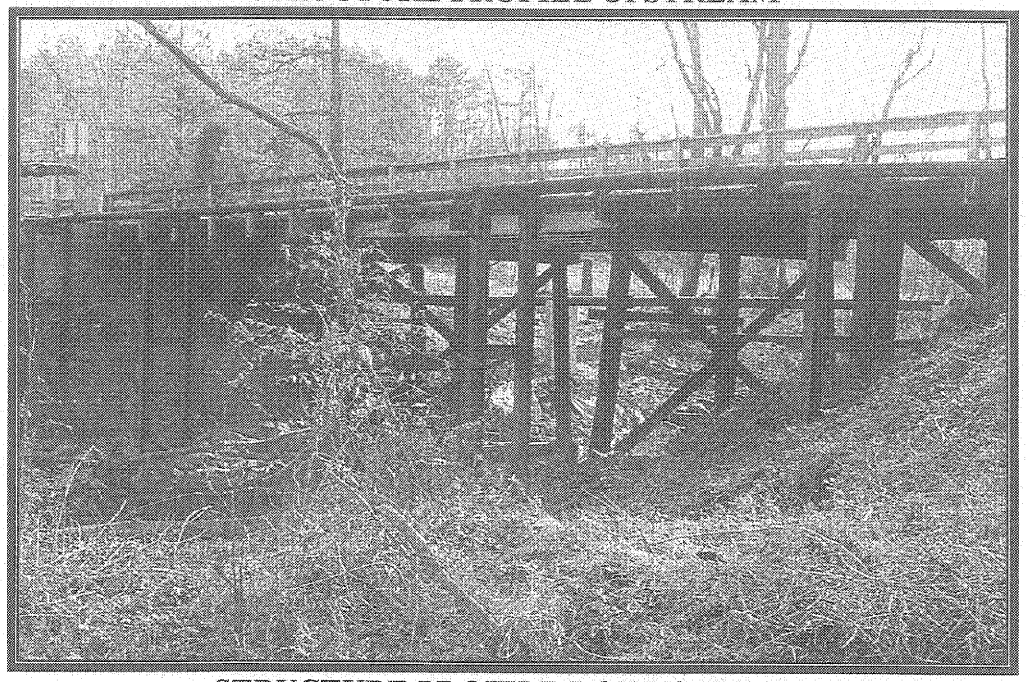
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 20

ON SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

FIGURE 2A

STRUCTURE PROFILE UPSTREAM



STRUCTURE PROFILE DOWNSTREAM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 20

ON SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

FIGURE 2B

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2006
0 50 100 150
(FEET)

BRIDGE NO. 20
SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

FIGURE 3 SHEET 1 OF 1

$FILES
$DATE$

ALTERNATE '2'

(TEMPORARY DETOUR - WEST SIDE)

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

FEBRUARY 2006

0 50 100 150
(FEET)

BRIDGE NO. 20
SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

FIGURE 4

SHEET 1 OF 1

PI Sta. 7+68.14
△ = 4° 39' 16.4" (RT)
D = 2° 30' 00.0"
L = 186.18'
T = 93.14'
R = 2,291.83'
DS = 60 MPH

5+00

00+01

FLOW

15+00

WLR

EXISTING BRIDGE NO. 20

TO SR 1114

SR 1100 (Monson Axtell Rd)

TO SOUL CITY

FISHING CREEK

–MATCHLINE– SEE SHEET 2 OF 2

BEGIN ALTERNATE '3'
STA. 5+00.00

DESIGN EXCEPTION REQ'D
FOR VERT. ALIGNMENT

EXISTING RIGHT–OF–WAY
PROPOSED RIGHT–OF–WAY
E E TEMPORARY EASEMENT
WETLAND AREA

ALTERNATE '3'
(NEW LOCATION)

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

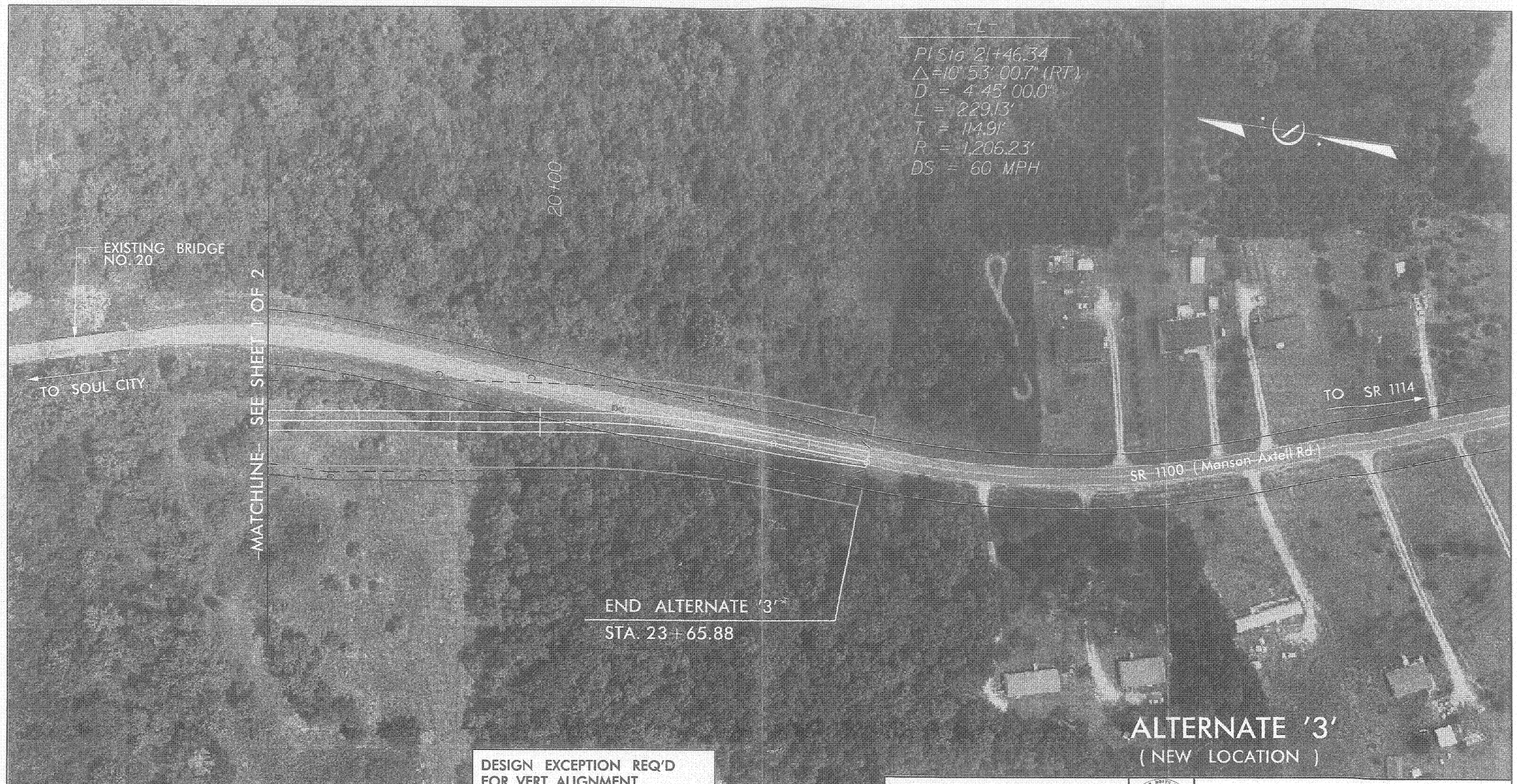
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2006

0 50 100 150
(FEET)

BRIDGE NO. 20
SR 1100 OVER FISHING CREEK
WARREN COUNTY
B–3706

FIGURE 5

SHEET 1 OF 2



ALTERNATE '3'
(NEW LOCATION)

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2006

0 50 100 150
(FEET)

BRIDGE NO. 20
SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

FIGURE 5 SHEET 2 OF 2

-L-

PI Sta 10+60.16
Δ=2° 46' 39.7" (LT)
D = 0° 30' 00.0"
L = 555.54'
T = 277.82'
R = 11,459.16'
DS = 60 MPH

PI Sta 16+90.06
Δ=19° 39' 32.6" (RT)
D = 7° 30' 00.0"
L = 262.12'
T = 132.36'
R = 763.94'
DS = 50 MPH

PI Sta 25+92.76
Δ=23° 26' 09.1" (LT)
D = 5° 00' 00.0"
L = 468.72'
T = 237.68'
R = 1,145.92'
DS = 60 MPH

JOHN EDWIN ROYSTER & SHIRLEY A. ROYSTER D.B. 398 PG. 207

JOHN EDWIN ROYSTER & SHIRLEY A. ROYSTER

10+00

15+00

20+00

BEGIN ALTERNATE '4'
STA. 12 + 00.00

END ALTERNATE '4'
STA. 18 + 40.00

FLOW

WL

EXISTING BRIDGE NO. 20

TO SOUL CITY

SR 1100 (Monson-Axtell Rd.)

RAYMOND J. SEAMAN & RUBY K. SEAMAN D.B. 382 PG. 282

FISHING CREEK

BESSIE R. SEYMOUR

TO SR 1114

OWNER UNKNOWN NO REF. FOUND

BESSIE R. SEYMOUR

DESIGN EXCEPTION REQ'D FOR HORIZ. & VERT. ALIGNMENT

EXISTING RIGHT-OF-WAY

PROPOSED RIGHT-OF-WAY

—E———E— TEMPORARY EASEMENT

WETLAND AREA

ALTERNATE '4'
(OFF-SITE DETOUR REQ'D)

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

FEBRUARY 2006

0 50 100 150
(FEET)

BRIDGE NO. 20
SR 1100 OVER FISHING CREEK
WARREN COUNTY
B-3706

FIGURE 6

SHEET 1 OF 1

FIGURE 7A

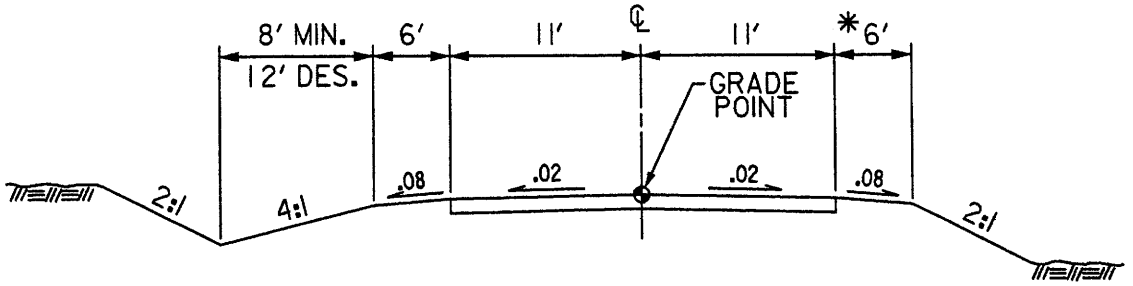
PROPOSED DESIGN CRITERIA

REPLACE BRIDGE NO. 20 ON SR 1100
OVER FISHING CREEK
WARREN COUNTY
B-3706

FUNCTIONAL CLASSIFICATION: RURAL LOCAL
POSTED SPEED: 55 MPH
ESTIMATED ADT:

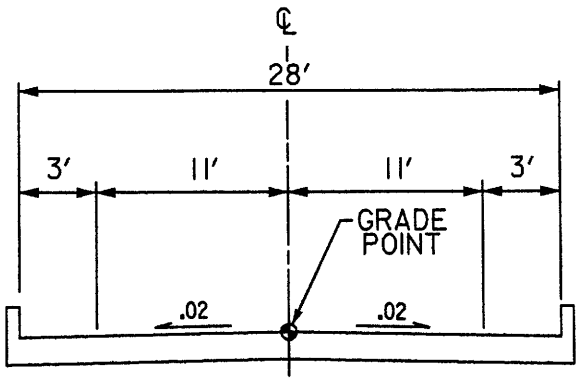
2005 ADT	=	800
2025 ADT	=	1,400
TTST	=	2%
DUAL	=	3%
DHV	=	10%
DIR	=	60%

DESIGN SPEED: 60 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.06 ft/ft
MAXIMUM DEGREE OF CURVE: 4°15'
NO SPIRALS
MAXIMUM GRADE: 6%
MINIMUM DESIRABLE K FACTORS: Ksag = 136 Kcrest = 151
SHOULDER WIDTH & TYPE : 6.0 ft GRASSED (9.0ft WITH GUARDRAIL)
LANE WIDTHS: 11.0 ft
BRIDGE DECK WIDTH: 28.0ft CLEAR



*9' WITH GUARDRAIL

APPROACH ROADWAY TYPICAL SECTION



BRIDGE TYPICAL SECTION

NOTE:
HORIZONTAL & VERTICAL DESIGN

PREPARED BY: KO & ASSOC. DATE: 2-06

FIGURE 7B

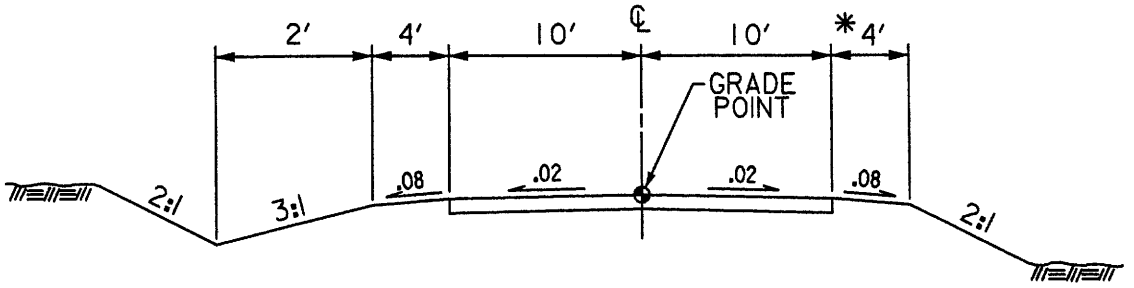
PROPOSED DETOUR CRITERIA

REPLACE BRIDGE NO. 20 ON SR 1100
OVER FISHING CREEK
WARREN COUNTY
B-3706

FUNCTIONAL CLASSIFICATION: RURAL LOCAL
POSTED SPEED: 55 MPH
ESTIMATED ADT:

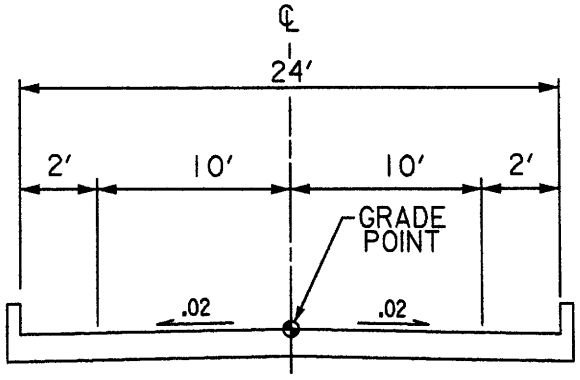
2005 ADT	=	800
2025 ADT	=	1,400
TTST	=	2%
DUAL	=	3%
DHV	=	10%
DIR	=	60%

DESIGN SPEED: 45 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.06 ft/ft
MAXIMUM DEGREE OF CURVE: 8°45'
NO SPIRALS
MAXIMUM GRADE: 9%
MINIMUM DESIRABLE K FACTORS: Ksag = 79 Kcrest = 61
SHOULDER WIDTH & TYPE : 4.0 ft GRASSED (6.0ft WITH GUARDRAIL)
LANE WIDTHS: 10.0 ft
BRIDGE DECK WIDTH: 24.0ft CLEAR



*6' WITH GUARDRAIL

DETOUR APPROACH ROADWAY TYPICAL SECTION



DETOUR BRIDGE TYPICAL SECTION

NOTE:
HORIZONTAL & VERTICAL DESIGN

PREPARED BY: KO & ASSOC. DATE: 2-06

APPENDIX

Agency Comments on Survey Results for Tar Spinymussel and Dwarf Wedgemussel

Source: January 30, 2003 Memorandum from Jared Gray to Teresa Hart of NCDOT

Judith Johnson, with the NC Wildlife Resources Commission, concurred with the "not likely to adversely affect" conclusion on January 29, 2003 as long as the following conditions are adhered to by the contractor (per e-mail, January 29, 2003). These conditions should be followed in order to protect downstream populations of freshwater mussels on Fishing Creek and its tributaries. As long as the conditions are followed, it can be concluded that project construction is "not likely to adversely affect" these species.

Environmental Conditions:

1. There will be a moratorium on clearing and grubbing-no work between November 15 and April 1

2. Weep holes shall be configured so that the run-off does not fall into the stream.

3. NCDOT resident engineer is responsible or providing a written invitation to the North Carolina Wildlife Resources Commission, Non-game and Protected Species Branch, and the US Fish and Wildlife Service prior to construction.

4. The erosion control plans for Protected Aquatic Species must be used. These plans include the following requirements:
   - Sediment and Erosion controls must be in place prior to land clearing activities. No sediment from either, bridge demolition or construction activities, shall be allowed to enter the flowing stream.
   - "Environmentally Sensitive Areas" will be defined on the plans, which consist of a 50-foot buffer zone on both sides of the stream.
   - The Contractor may perform clearing operations, but not grubbing operations in the "Environmentally Sensitive Areas", until immediately prior to beginning grading operations.
   - Once grading operations begin in "Environmentally Sensitive Areas", as specified on the plans, work will progress in a continuous manner until complete.
   - Seeding and mulching will be performed immediately following final grade establishment.
   - Stage seeding will be performed on cut and fill slopes as grading progresses

United States Department of the Interior

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

March 1, 2004

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

Dear Mr. Feulner:

This letter is in response to your letter of February 5, 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. 20 on SR 1100 over Fishing Creek in Warren County (TIP No. B-3706) 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, a mussel survey was conducted at the project site on July 9, 2002. The survey extended 350 feet upstream and 350 feet downstream of SR 1100. No mussels were observed. Your letter indicates that historic channelization has impacted this reach of Fishing Creek. NCDOT has agreed to several environmental commitments recommended by the North Carolina Wildlife Resources Commission (NCWRC) which would minimize impacts to downstream mussel resources.

Please note that the Service generally requires that aquatic surveys extend 100 meters upstream and 400 meters downstream of the project limits. However, given the fact that no mussels of any species were observed in the area that was surveyed, the Service will not request an additional survey at this time.

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.

In future requests for concurrence, the Service requests that additional information be provided to support your conclusions. The actual survey reports, not just a summary of a report, should be included with your request. A copy of any referenced document or correspondence (e.g. the January 29, 2003 email correspondence with the NCWRC) should be included. A map of the project site would help facilitate our review. Also, for bridge projects, information on whether a stream will be completely spanned or will require in-channel bents would be most helpful.

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,

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

Joyner

United States Department of the Interior

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

November 1, 2000

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 August 15, 2000 request for information from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of proposed bridge replacements in Warren County, North Carolina. This report provides scoping information and is provided in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). This report also serves as initial scoping comments to federal and state resource agencies for use in their permitting and/or certification processes for this project.

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

1. B-3706 Bridge No. 20 on SR 1100 over Fishing Creek, and

2. B-3707 Bridge No. 67 on SR 1507 over Reedy Pond 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 Middleburg and Inez 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 Engineers 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 Warren County. The Service recommends that habitat requirements for the listed species be compared with the available habitats at the respective project sites. If suitable habitat is present within the action area of the project, biological surveys for the listed species should be performed. Environmental documentation that includes survey methodologies, results, and NCDOT's recommendations based on those results, should be provided to this office for review and comment.

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

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

Sincerely,

Dr. Garland B. Pardue
Ecological Services Supervisor

Enclosures

cc:
COE, Raleigh, NC (Eric Alsmeyer)
NCDWQ, Raleigh, NC (John Hennessy)
NCDNR, Northside, NC (David Cox)

FWS/R4:TMcCartney:TM:10/31/00:919/856-4520 extension 32:\2brdgwar.ren

COMMON NAME	SCIENTIFIC NAME	STATUS
WAKE COUNTY		
Vertebrates		
Bachman's sparrow	*Aimophila aestivalis*	FSC
Bald eagle	*Haliaeetus leucocephalus*	Threatened
Southern hognose snake	*Heterodon simus*	FSC*
Southeastern myotis	*Myotis austroriparius*	FSC
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Invertebrates		
Dwarf wedge mussel	*Alasmidonta heterodon*	Endangered
Yellow lance	*Elliptio lanceolata*	FSC
Atlantic pigtoe	*Fusconaia masoni*	FSC
Green floater	*Lasmigona subviridus*	FSC
Diana fritillary butterfly	*Speyeria diana*	FSC*
Vascular Plants		
Sweet pinesap	*Monotropsis odorata*	FSC
Michaux's sumac	*Rhus michauxii*	Endangered
Carolina least trillium	*Trillium pusillum* var. *pusillum*	FSC
WARREN COUNTY		
Vertebrates		
Bachman's sparrow	*Aimophila aestivalis*	FSC
Invertebrates		
Dwarf wedge mussel	*Alasmidonta heterodon*	Endangered
Yellow lance	*Elliptio lanceolata*	FSC
Tar spinymussel	*Elliptio steinstansana*	Endangered
Atlantic pigtoe	*Fusconaia masoni*	FSC
Vascular Plants		
Heller's trefoil	*Lotus helleri*	FSC
WASHINGTON COUNTY		
Vertebrates		
Red wolf	*Canis rufus*	EXP
Rafinesque's big-eared bat	*Corynorhinus (=Plecotus) rafinesquii*	FSC
Waccamaw killifish	*Fundulus waccamawensis*	FSC
Bald eagle	*Haliaeetus leucocephalus*	Threatened

* U.S. GOVERNMENT PRINTING OFFICE: 1984-451-159/1324

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 10-26-00
Name Of Project B-3706	Federal Agency Involved Federal Highway Adm.
Proposed Land Use Bridge Replacement	County And State Warren Co., N. C.
PART II *(To be completed by SCS)*	Date Request Received By SCS 10/30/00 WCW

Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply — do not complete additional parts of this form). Yes ? No ☐		Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS 10/1/00 WCW	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A 1	Site B 2	Site C 3	Site D 4.
A. Total Acres To Be Converted Directly	1.47	1.47	4.28	1.47
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	1.47	1.47	4.28	1.47
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*				
PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points			
1. Area In Nonurban Use	15	15	15	15	15
2. Perimeter In Nonurban Use	10	10	10	10	10
3. Percent Of Site Being Farmed	20	2	2	2	2
4. Protection Provided By State And Local Government	20	0	0	0	0
5. Distance From Urban Builtup Area	15	5	5	5	5
6. Distance To Urban Support Services	15	0	0	0	0
7. Size Of Present Farm Unit Compared To Average	10	5	5	5	5
8. Creation Of Nonfarmable Farmland	10	0	0	0	0
9. Availability Of Farm Support Services	5	5	5	5	5
10. On-Farm Investments	20	0	0	0	0
11. Effects Of Conversion On Farm Support Services	10	0	0	0	0
12. Compatibility With Existing Agricultural Use	10	0	0	0	0
TOTAL SITE ASSESSMENT POINTS	160	42	42	42	42
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160	42	42	42	42
TOTAL POINTS *(Total of above 2 lines)*	260				

ite Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:
No Soil Survey exist for area. Chances are the area is Chewacla or Wehadkee soils. The Relative Value would be low. These soils are not Prime/State unless protected from floodi

Kendy

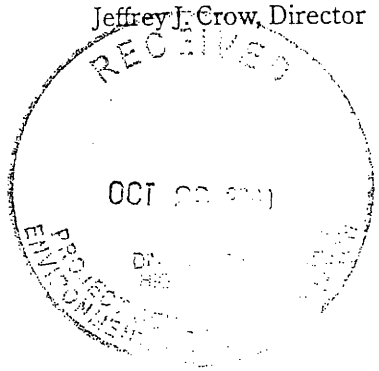
North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

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

Division of Archives and History
Jeffrey J. Crow, Director



October 18, 2000

MEMORANDUM

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

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

Re: B-3706, Bridge No. 20 on SR 1100 over Fishing Creek, Warren County, ER 01-7361

Thank you for your memorandum of August 15, 2000, 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, NC DOT
T. Padgett, NC DOT

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-2671

Federal Aid #BRZ-1100(8) *TIP* #B-3706 *County*: Warren

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

Project Description: Replace Bridge No. 20 on SR 1100 over Fishing Creek

On June 1, 2000, representatives of the

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

Reviewed the subject project at

- [ ] a scoping meeting
- [x] photograph review session/consultation
- [ ] other

All parties present agreed

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

Signed:

Mary Pope Furr — 6-1-00
Representative, NCDOT — Date

Michael C. Gibson — 6/1/00
FHWA, for the Division Administrator, or other Federal Agency — Date

Jill Montgomery — 6/1/00
Representative, SHPO — Date

David Brook, Deputy — 6/9/00
State Historic Preservation Officer — Date

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

Joyner

NCDENR

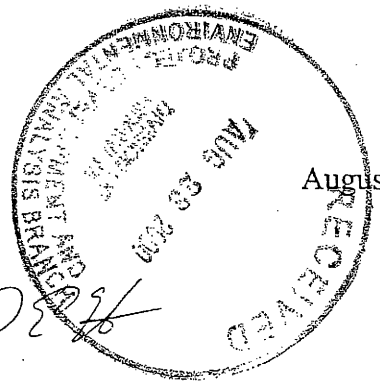
JAMES B. HUNT JR.
GOVERNOR

BILL HOLMAN
SECRETARY

DAVID S. VOGEL
DIRECTOR

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF SOIL AND WATER CONSERVATION



MEMORANDUM: August 21, 2000

TO: Melba McGee

FROM: David Harrison

SUBJECT: NCDOT Bridge Replacement Projects B-3500 (Person County); B-3654 and B-3655 (Harnett County); and B-3706 and B-3707 (Warren County).

If additional land is needed beyond the existing right-of-way, the environmental assessment should include information on adverse impacts to Prime or Statewide Important Farmland.

The definition of Prime or Statewide Important Farmland is based on the soil series and not on its current land use. Areas that are developed or are within municipal boundaries are exempt from consideration as Prime or Important Farmland.

For additional information, contact the soils specialists with the Natural Resources Conservation Service, USDA, Raleigh, NC at (919) 873-2141.

Cc: William D. Gilmore

1614 MAIL SERVICE CENTER, RALEIGH, NORTH CAROLINA 27699-1614

Transportation Services

Joseph Mustian, Director
Wendy Young, Supervisor

Warren County Schools
109 Cousin Lucy's Lane
Post Office Box 110
Warrenton, North Carolina 27589
Phone (252) 257-3184 Fax (252) 257-5357

September 27, 2000

William D. Gilmore, P. E., Manager
NC Dept. of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Gilmore:

This is in regard to your letter dated August 15, 2000 concerning B-3706, Bridge No. 20 on SR 1100 over Fishing Creek and B-3707, Bridge No. 67 on SR 1507 over Reedy Pond Creek.

We have three buses that cross B-3706, Bridge No. 20, a total of seven times per day with an average of 24 students per trip. On B-3707, Bridge No. 67, we have four buses that cross the bridge with an avearge of 5 students per trip.

If I can be of any assistance, please give me a call at (252) 257-3860.

Sincerely,

Joseph Mustian

Warren County School Bus Garage
1311 Warren Plains Road
Warrenton, NC 27589

Wendy Young
Transportation Supervisor

(252) 257-3860
Fax (252) 257-4452

July 7, 2004

Gregory J. Thorpe, Ph.D.
Environmental Management Director
NC Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Thorpe:

This letter is in regard to Warren County B-3706, Replacement of Bridge No. 20 on SR 1100 over Fishing Creek. We had three buses that used that route last year. The bus routes for this year have not been confirmed yet. If the bridge is closed we will need to re-route our buses. It would be helpful if we could know well in advance of the closing. This would give us time to contact parents before re-routing the school buses. If we knew far enough in advance we could start the year by not routing any buses over that bridge.

As with all bridge closings, we would need places for our buses to turn around. We could best determine if we would need a turn around on one side or on both sides of the bridge closer to the closing date. The turn around places would be based on where we are picking up students at that time.

Thank you for your interest in the safety of our students.

Sincerely,

Wendy Young

Wendy Young

Joyner

WARREN COUNTY FIREMEN'S ASSOCIATION, INC.

P. O. BOX 563 WARRENTON, N. C. 27589

August 17, 2000

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

Subject: Warren County
B-3706, Bridge No. 20 on SR 1100 over Fishing Creek
B-3707, Bridge No. 67 on SR 1507 over Reedy Pond Creek

Dear Mr. Gilmore:

Thank you for requesting my comments regarding these projects. I feel only capable of speaking to the potential impacts to Emergency Response Units. There are no permits and/or approvals required by this Association.

B-3706
This area is served by the Soul City Volunteer Fire Department, Warren County EMS and the Warren County Sheriff Department. Your description indicates that you do not plan to give much consideration to road closure to through traffic during the construction of the replacement structure. If that is the case, there will be no impact to the emergency service organizations. If you desire to change that line of thought, notification to these agencies prior to beginning construction would prove very necessary. The most effected agency due to road closure would be the Soul City Fire Department. If could delay their response in that area in two ways.

- Delay volunteer firefighters', which would normally travel that route, arrival time at the fire station.
- Delay responding fire apparatus which would have to travel an alternate route of approximately five additional miles to serve areas of their response district.

With these considerations in mind, I recommend that you follow the alternatives you outlined for study. Also, please note that there are regional water system transmission lines on the east and west sides of the current bridge.

B-3707
This area is served by the Warrenton Rural Vol. Fire Department, Arcola Vol. Fire Department and Macon Rural Vol. Fire Department, Warren County EMS and the Warren County Sheriff Department. I feel that with prior construction notice to Warren County's Telecommunication Center in the Warren County Sheriff Department, all these agencies can work with any of your alternatives, including an off-site detour route and the closure of the road to through traffic.

If you have any further questions which you would like for me to address or you wish to discuss any of the above comments, please feel free to contact me, 252-257-3104 or wia@gloryroad.net.

Sincerely,

Walter M. Gardner, Jr.
President

REPLACEMENT OF BRIDGE NO. 20 ON SR 1100 OVER FISHING CREEK IN WARREN COUNTY TIP NO. B-3706

September 2000 **NEWSLETTER** **Number 1**

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 20 on SR 1100 over Fishing Creek in Warren County (see attached map). The bridge replacement is necessary to maintain the safety of those traveling this route as the existing structure is nearing the end of its useful life.

For approximately the next six months, the NCDOT will be conducting engineering and environmental studies to determine the most economical and environmentally sound alternative for replacing the existing bridge. Two alternates are under consideration. These include (1) replacing the bridge at its existing location while utilizing a temporary, on-site detour and (2) replacing the bridge at its existing location while closing the roadway utilizing an off-site detour (i.e., detouring traffic on other roadways) during construction of the new structure. If an off-site detour is utilized as the preferred alternate, the roadway will be closed to traffic for approximately one year.

The current schedule in the NCDOT's Draft 2002-2008 Transportation Improvement Program is for right of way acquisition to begin in fiscal year 2002 and for construction to begin in fiscal year 2003. Please note that this schedule is subject to change.

The NCDOT does not plan to conduct a Citizens Informational Workshop for this project. Please consider how the proposed alternates may affect you and use this opportunity to express any comments and concerns you might have relative to the general alternates expressed above.

The NCDOT has engaged the private engineering firm of Ko and Associates, P. C., to conduct the study. The results of the study will be used by NCDOT to select a preferred alternate to replace Bridge No. 20 that minimizes impacts to both man-made and natural resources, while meeting the public's transportation needs at a reasonable cost.

****

If you have questions concerning other transportation projects, please call our Customer Service Office toll free at 1-877-DOT-4YOU or check our website for more information at www.dot.state.nc.us

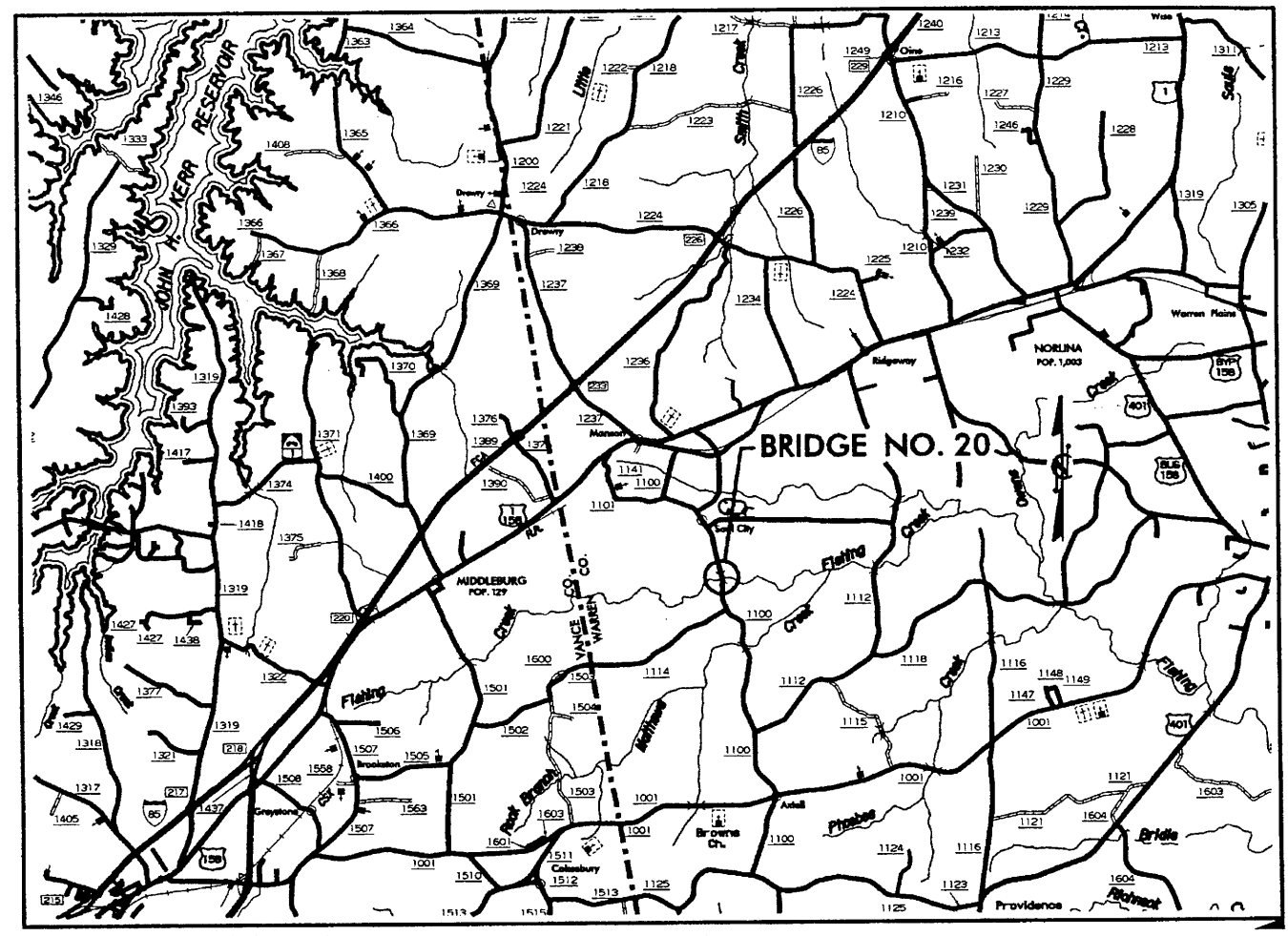
ON SR 1100 LOOKING NORTH

PROFILE OF BRIDGE NO. 20

PLEASE ADDRESS COMMENTS OR CONCERNS TO EITHER OF THE FOLLOWING:

Mr. L. Jack Ward, P. E.
Project Manager
Ko & Associates, P. C.
1011 Schaub Drive, Suite 202
Raleigh, NC 27606
Telephone 919-851-6066 extension 107
E-mail jward@koassociates.com

Mr. Drew Joyner, P. E.
Project Engineer
NCDOT – PDEA
1548 Mail Service Center
Raleigh, NC 27699-1548
Telephone 919-733-7844 extension 269
E-mail djoyner@dot.state.nc.us



Mr. Jack Ward, P.E.
Project Manager
Ko & Associates, P.C.
1011 Schaub Drive, Suite 202
Raleigh, NC 27606

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 21, 2005

NOTICE OF A CITIZENS INFORMATIONAL WORKSHOP FOR THE PROPOSED REPLACEMENT OF BRIDGE NO. 20 OVER FISHING CREEK ON SATTERWHITE ROAD (SR 1100) NEAR SOUL CITY

WBS No. 33246.1.1 B-3706 Warren County

The North Carolina Department of Transportation (NCDOT) will hold the above Citizens Informational Workshop on Monday, March 7, 2005 between the hours of 4:30 p.m. and 6:30 p.m. in the Green Duke House, 119 Green Duke Drive, Soul City.

The purpose of this workshop is for NCDOT representatives to provide information, answer questions, and accept written comments regarding this project. NCDOT proposes to replace the bridge on Satterwhite Road (SR 1100) over Fishing Creek with a new structure. Four alternatives for replacing the bridge will be presented at the workshop. During construction, traffic would be maintained by either using the existing bridge, or a temporary structure as a detour on either the east or west side of the existing bridge, or by closing and routing traffic to other local roads. It is anticipated that right of way will be required for this project. Representatives from NCDOT will be available to provide information, answer questions and accept written comments from the public about the proposed project.

Anyone desiring additional information may contact Michael Penney, 1548 Mail Service Center, Raleigh, NC 27699-1548, or by phone at (919) 733-7844 ext. 260, fax at (919) 733-9794, or E-mail at mpenney@dot.state.nc.us.

NCDOT will provide auxiliary aids and services for disabled persons who wish to participate in this workshop, to comply with the Americans with Disabilities Act. To request special assistance; please contact Mr. Penney as early as possible so that arrangements can be made.

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

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

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON ST.
RALEIGH NC

Subject: Re: TIP Comments Form: B-3706
Date: Fri, 11 Mar 2005 08:40:46 -0500
From: Ray McIntyre <rmcintyre@dot.state.nc.us>
Organization: North Carolina Department of Transportation
To: Mike Penney <mpenney@dot.state.nc.us>

Good Morning,
Thank you for your comments and concerns. I am forwarding this email to Mr. Mike Penney, Project Planning Engineer for this project to make him aware of your concerns and questions. Thanks.

"Dr.S.C. McKissick-Melton\" \"" wrote:

TIP Number: B-3706

County(ies): Warren

Comment:* **Please be sure to fill in the comment box.**

<b>I recently attended
the informational workshop for replacemnt of Bridge 20 on
SR1100 over Fishing
Creek. I have been a resident of Warren County for more than
thirty years
and own a home less than a mile from the bridge in

Email Address:* scmckissick@aol.com

Name:* Dr.S.C. McKissick-Melton

Street Address:* 489 Liberation Rd.

City:* Manson

State:* NC

Zip:* 27553

Ray McIntyre <rmcintyre@dot.state.nc.us>
TIP Coordinator - Eastern Region
TIP Development,Program Development Branch,Planning and Environment

I recently attended
the informational workshop for replacemnt of Bridge 20 on SR1100 over Fishing Creek. I have been a resident of Warren County for more than thirty years and own a home less than a mile from the bridge in questions. I have several concerns in relationship to closing the bridge,alternate 4. I will assume this may be the option chosen because all other options cost almost twice the amount. My concerns fall in three areas; 1) public safety 2) gasoline prices 3) postal service. I have grave concerns that those most affected by the closing of this bridge are poor and minority persons and the closing of this bridge even for 6-9 months will cause undue hardship to those who can least afford this major inconvience. Will EMS and fire be able to adequately respond when the detour provided by NCDOT will be up to TEN miles each way? Would this not cause the loss of life due to an untimely response by EMS or fire? To my knowledge most of the persons on that side of the bridge receive there mail at a PO box in Manson not Ridgeway or Norlina. To travel over 20 miles daily to receive mail would be a serious problem especially in a county that is near the top of the list of Unemployement in our state. Lasty, the cost of gasoline is already starting to rise again and there are predictions it will increase by up to 25 cents per gallon within the next 60days. With this project slated by approximatley 2007 there is now telling how much gasoline will cost at that time. With your planned detour almost 10 miles in each direction to reach your home. This will cause a serious UNDUE HARDSHIP or financial ruin. As I stated earlier these problems a putting the hardshiiip on those who are last able to absorb this tramatic disruption in their lives just to reach their home. Thank you in advance for your interest. Dr. S.Charmaine McKissick-Melton