STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 28, 2007

US Army Corps of Engineers
Wilmington Regulatory Office
P.O. Box 1890
Wilmington, NC 28402-1890

ATTENTION: Richard Spencer
NCDOT Coordinator

Dear Sir:

Subject: **Application for Section 404 Nationwide Permits 23 and 33** for the replacement of Bridge No. 228 over Richland Creek on SR 2834 (Old Cox Road), Randolph County. Federal Aid Project Number BRZ-2834(1), WBS No. 33589.1.1, State Project No. 8.2574301, Division 8, T.I.P No. B-4246

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 228 over Richland Creek. The existing bridge is currently in poor condition (bridge sufficiency rating of 28.1 out of 100) and in need of replacement. The new bridge is intended to provide a safer bridge structure consistent with federal and state bridge standards.

The proposed structure will be approximately 125 feet in length with three spans at 45 feet, 50 feet, and 30 feet, and will completely span Richland Creek. The superstructure will be composed of pre-stressed 3-foot (width) by 21-inch (depth) cored slab units. The proposed bridge has 33.5 feet of clear roadway and will provide two travel lanes. The travel lanes will be 12 feet wide each with approximately 4.5-foot shoulders. Traffic will be maintained through off-site detour during construction. Enclosed are the Categorical Exclusion (CE) document, Pre-Construction Notification, permit drawings, and design plans for the subject project.

IMPACTS TO WATERS OF THE UNITED STATES

The project is located in the Cape Fear River Basin (subbasin 03-06-09). This area is part of the United States Geological Survey (USGS) Hydrologic Cataloging Unit 03030003 of the South Atlantic-Gulf Coast Region. Richland Creek [Division of Water Quality (DWQ) index # 17-22] and Tantraugh Branch (DWQ index # 17-22-3) are the only jurisdictional streams within the project area. Both Richland Creek and Tantraugh Branch have a best usage classification of Class C. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply (WS-II), waters occur within 1.0 mile of the study corridor. Richland Creek and Tantraugh Branch are not listed on the

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

TELEPHONE: 919-715-1334 or
919-715-1335

FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD. SUITE 240
RALEIGH NC 27604

Final 2004 Clean Water Act Section 303(d) list of impaired waterbodies. No Section 303(d) listed waterbodies are located within 1.0 mile of the project area.

One wetland (Site 1) is located within the project area, approximately 190 feet northeast of the bridge. It is a forested wetland occurring in a depressional area of the Richland Creek floodplain. It is considered riverine based upon its location within the Richland Creek floodplain and is classified as a palustrine, seasonally flooded, forested wetland supporting broad-leaved deciduous vegetation (PFO1C, Cowardin classification).

Permanent Impacts

Construction for the new bridge will require additional fill along each side of the existing bridge, resulting in less than 0.01 acre of fill placed in the wetland (Site 1). Overall it was determined that this alternative resulting in minimal additional fill to jurisdictional areas is more cost effective than replacing bridge at a new location.

Temporary Impacts

There will be 0.01 acre of temporary surface water impacts resulting from the construction of a causeway for the proposed bridge. The causeway will be placed along 48 feet of the east bank and channel. The causeway will be removed upon completion of construction.

Utility Impacts

No utility impacts are anticipated from project construction.

Bridge Demolition

The existing bridge was constructed in 1951 and is 92 feet in length. It consists of three spans approximately 31 feet each. The superstructure consists of a reinforced concrete deck on I-Beams. The substructure consists of reinforced concrete caps on timber piles for both end and interior bents. NCDOT will make every effort to extract the pile bents in their entirety. If complete extraction is not possible, then the piles will be cut at streambed levels as directed by the engineer. Best Management Practices for Bridge Demolition and Removal will be implemented during the demolition of this bridge.

RESTORATION PLAN

Following construction of the bridge, all material used in the construction of the structure will be removed. The impact area associated with the bridge is expected to recover naturally, since the natural streambed and plant material will not be removed. NCDOT does not propose any additional planting in this area. Class II riprap and filter fabric will be used for bank stabilization. Pre-project elevations will be restored.

REMOVAL AND DISPOSAL PLAN

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 use excavation equipment for removal of any earthen material. Heavy–duty trucks, dozers, cranes and various other pieces of mechanical equipment necessary for construction of roadways and bridges will be used on site. All material placed in the stream will be removed from the stream at that time. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project. After the erosion control devices are no longer needed, all temporary materials will become the property of the contractor.

MITIGATION OPTIONS

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 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 US. The following is a list of the project's jurisdictional stream and wetland avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/Minimization

- The new bridge is longer than the original bridge and will completely span Richland Creek.
- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control methods and use of Best Management Practices (BMPs).
- Best Management Practices for Protection of Surface Waters will be implemented.
- A preformed scour hole will be constructed on the northeast side of the bridge.

Compensatory Mitigation:

The proposed action includes all practicable methods to avoid and/or minimize jurisdictional impacts that may result from such use. It was determined that there are no practicable alternatives to the proposed construction in jurisdictional waters of the US. Replacing the bridge 70 feet west of existing location was considered, however it is not practical due to cost and right-of-way impacts.

The project will impact surface waters (temporary impacts only) and wetlands (less than 0.01 acres). Compensatory mitigation is not proposed for the minimal impacts to these resources.

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. The United States Fish and Wildlife Service (USFWS) lists 2 species for Randolph County. Table 1 lists the species and their federal status.

Table 1. Federally Protected Species in Randolph County, NC

Scientific Name	Common Name	Status	Habitat Present	Biological Conclusion
Helianthus schweinitzii	Schweinitz's sunflower	E	Yes	No Effect
Notropis mekistocholas	Cape Fear shiner	E	Yes	May Affect, Not Likely to Adversely Affect

A Biological Conclusion of "No Effect" was issued for Schweinitz's sunflower in the CE. Marginal habitat exists within the project area along roadside shoulders, utility corridors, and forest edges. The most recent survey, conducted by NCDOT biologists on September 6, 2006, revealed no specimens. NCDOT received concurrence on the "No Effect" determination for Schweinitz's sunflower from USFWS on February 5, 2007.

A Biological Conclusion of "May Affect, Not Likely to Adversely Affect" was issued for the Cape Fear shiner. Fisheries surveys conducted on October 17, 2005 and October 14, 2004 by NCDOT biologists revealed no specimens. NCDOT received concurrence on the "May Affect, Not Likely to Adversely Affect" determination for the Cape Fear shiner from USFWS on February 5, 2007.

SCHEDULE

The project calls for a letting of February 19, 2008 (review date of January 1, 2008) with a date of availability of April 1, 2008. It is expected that the contractor will choose to start construction in April 2008.

REGULATORY APPROVALS

Section 404 Permit: The project has been processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (67 FR 2020; January 15, 2002). We are also requesting the issuance of a Nationwide Permit 33 for the temporary causeway associated with bridge construction within Richland Creek.

Section 401 Permit: We anticipate 401 General Certification numbers 3632 and 3634 will apply to this project. All general conditions of the Water quality Certifications will be met. No written concurrence is required. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their notification.

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 call Greg Price at 715-5533.

Sincerely,

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

w/attachment
Mr. John Hennessy, NCDWQ (2 Copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
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 Unit
Mr. Tim Johnson, P.E., Division 8 Engineer
Mr. Art King, Division 8 Environmental Officer

w/o attachment
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. Scott McLendon, USACE, Wilmington
Mr. Wade Kirby, PDEA Project Planning Engineer

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: NWP 23 and 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: 1598 Mail Service Center
   Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: _____

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: N/A
   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.228 over Richland Creek on SR 2834

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4246

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Randolph Nearest Town: Asheboro
   Subdivision name (include phase/lot number):
   Directions to site (include road numbers/names, landmarks, etc.): see map in permit drawings

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): 35.6504 °N 79.7778 °W

6. Property size (acres): N/A

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

8. River Basin: Cape Fear
   (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: The land use in the surrounding area consists primarily of undeveloped forested land and fields.

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 228 will be replaced at its current location. Traffic will be maintained through offsite detour during construction. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other various equipment necessary for roadway construction.

11. Explain the purpose of the proposed work: To replace a deteriorating bridge

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 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	Fill	Forested	Yes	10	<0.01
Site 1	Mechanized clearing	Forested	Yes	10	<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)
Site 2	Richland Creek	Causeway (Temp)	Perennial	30 feet	48	0.01
Total Stream Impact (by length and acreage)					48	0.01

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)				

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

Stream Impact (acres): Temporary	0.01
Wetland Impact (acres):	<0.01
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0
Total Stream Impact (linear feet): Temporary	48

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. Please refer to the 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.
   No mitigation is proposed for the minimal impacts.

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

IX. Environmental Documentation (required by DWQ)

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 Neuse)? 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		3 (2 for Catawba)	
2		1.5	
Total			

* 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. _____

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 ☒

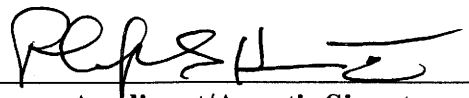
Is this an after-the-fact permit application? Yes ☐ No ☒

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:

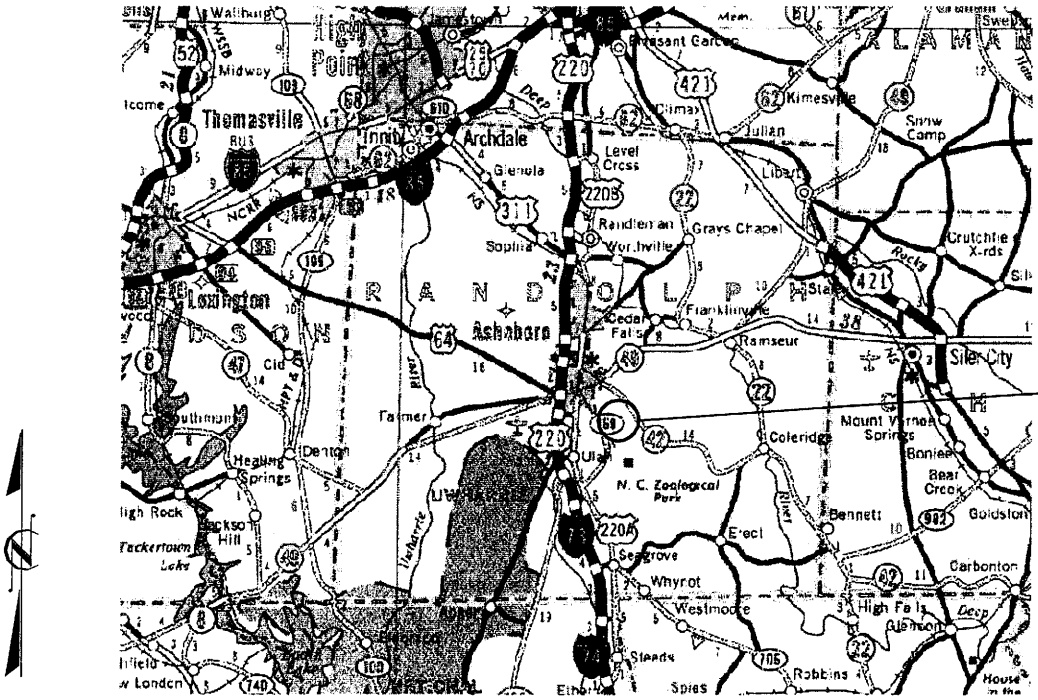
XV. Other Circumstances (Optional):

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).
None



6/28/07

Applicant/Agent's Signature **Date**
(Agent's signature is valid only if an authorization letter from the applicant is provided.)



VICINITY MAP

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 OVER
RICHLAND CREEK
ON SR 2834

SHEET 1 OF 8 **3 / 27 / 07**

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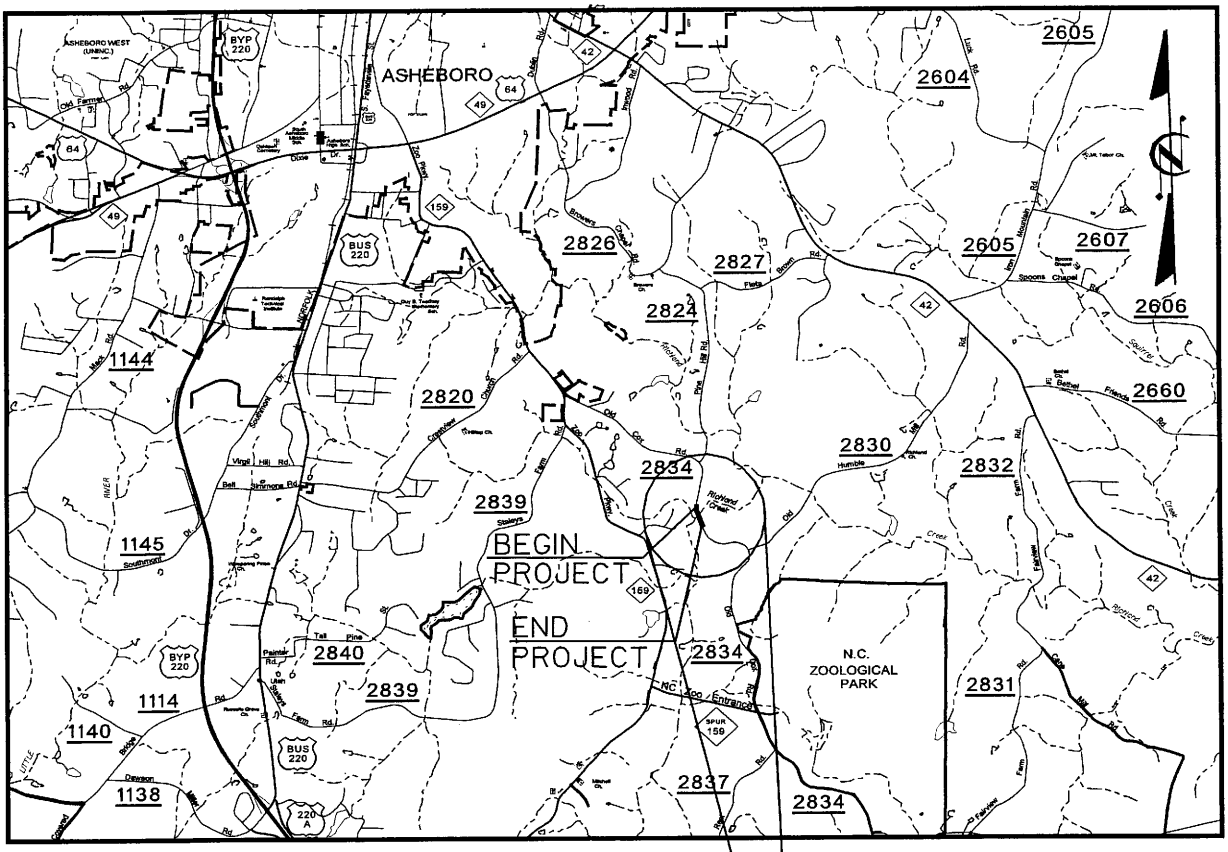
SITE MAP



SITE

ENGLISH

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 OVER
RICHLAND CREEK
ON SR 2834

SHEET 2 OF 8 **3 / 27 / 07**

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WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB / WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES PERMANENT SURFACE WATER IMPACT

P P — DENOTES PERMANENT SURFACE WATER IMPACT (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY SURFACE WATER IMPACT

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

12"-48" PIPES

54" PIPES & ABOVE

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 33589.1.1 (B-4246)

BRIDGE 228 OVER RICHLAND CREEK ON SR 2834

SHEET 3 OF 8 **3/27/07**

3/27/2007
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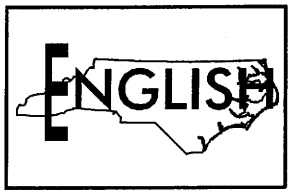
SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(1)	DENNIS GARNER	1839 OLD COX RD. ASHEBORO, NC 27205	1
	IMPACTS CONTAINED WITHIN THE EXISTING R/W		2



NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 OVER
RICHLAND CREEK
ON SR 2834

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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	-L- 14+63 - 14+75 LT	Roadway Fill	<0.01			<0.01						
2	-L- 16+45 - 16+70	3-Span PCCS: 45'-50'-30'							0.01		48	
TOTALS:			<0.01	0.00	0.00	<0.01	0.00	0.00	0.01	0	48	0

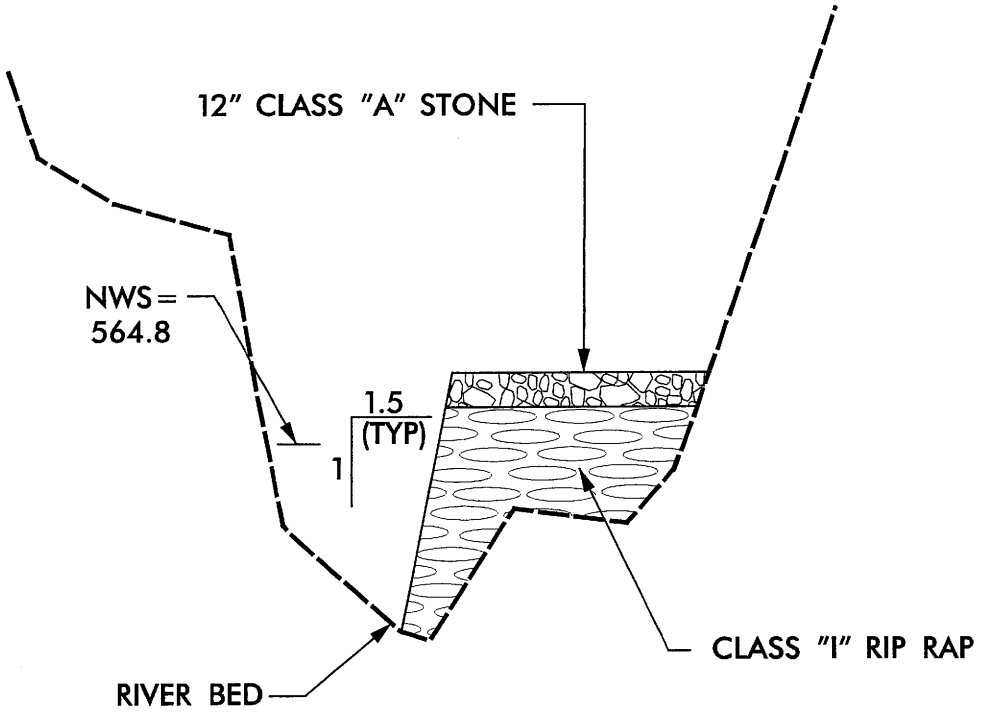
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RANDOLPH COUNTY
WBS - 33589.1.1 (B-4246)

SHEET 5 OF 8 3/27/2007

ATN Revised 3/31/05

DETAIL OF CAUSEWAY FOR PROPOSED BRIDGE



VOLUME AND AREA OF TEMPORARY FILL (CLASS "I" RIP RAP) BELOW NWS
AREA = .009 Ac VOLUME = 29 CY

ENGLISH

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 ON
SR 2834 OVER
RICHLAND CREEK

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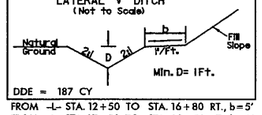
8/17/99

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6866

PROJECT REFERENCE NO.	SHEET NO.
B-4246	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

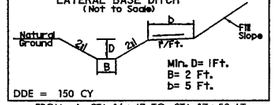
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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



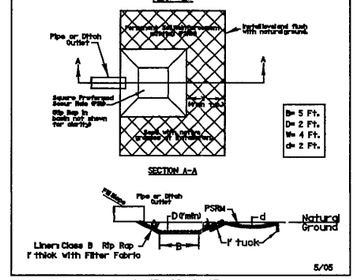
DDE = 187 CY
FROM -L- STA. 12+50 TO STA. 16+80 RT., b=5'
FROM -L- STA. 17+50 TO STA. 20+50 LT., b=2'

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



DDE = 150 CY
FROM -L- STA. 16+47 TO STA. 17+50 LT.

DETAIL C
PREFORMED SCOUR HOLE
PLAN VIEW



-L- STA. 15+37 LT.

NC GRID
NAD 83/95

-L- POT 10+00.00

1 DENNIS GARNER

-L- PC 11+33.43

S 8°35'325"W

-L- PT 14+72.36

BEGIN SHOULDER BERM GUTTER, STA. 15+32 LT.

PREFORMED SCOUR HOLE SEE DETAIL C

15" CSP W/ELBS, ROD & LUG CONNECTORS

2' LATERAL BASE DITCH, SEE DETAIL D

END SHOULDER BERM GUTTER, STA. 17+25.50 LT.

SITE 1

SITE 2

END PROJECT B-4246
-L- POC STA. 21+00.00
S 19°16'10" E

4 RUTH & MARY PUGH

-L- PCC 22+64.10

-L- PC 20+78.78

5 RUTH & MARY PUGH

BEGIN PROJECT B-4246
-L- POC STA. 12+00.00
S 3°13'40" E

2 EVERETTE & MABEL COOPER

3 MICHAEL & SHERRY HARRELL

Tantrough Branch

RICHLAND CREEK

100' R/W PROGRESS ENERGY

50' TAPER LT & RT

LATERAL 'V' DITCH SEE DETAIL A

CLASS II RIP RAP

RETAIN 15" CSP

REMOVE & RESET FENCE

S 18°43'142"E

OLD COX ROAD SR 2834 18.4 BST

TO OLD HWY 13 SR 2845

WOODS

FALLOW

BRUSH

PASTURE

EXISTING R/W

4" PS

4" WW 15 ELEC

MTL GF

PLAN VIEW
SITE 1 & 2

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

LEGEND

WLB	WETLAND
F F	DENOTES FILL IN WETLAND
TS TS	DENOTES TEMPORARY SURFACE WATER IMPACT
	DENOTES MECHANIZED CLEARING

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 ON
SR 2834 OVER
RICHLAND CREEK

SHEET 7 OF 8 3/27/07

3/27/2007
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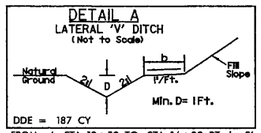
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4246	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

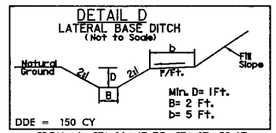
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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



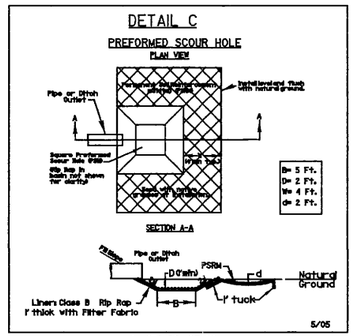
DDE = 187 CY
FROM -L- STA. 12+50 TO STA. 16+80 RT., b=5'
FROM -L- STA. 17+50 TO STA. 20+50 LT., b=2'

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

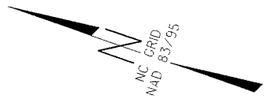


DDE = 150 CY
FROM -L- STA. 16+47 TO STA. 17+50 LT.

DETAIL C
PREFORMED SCOUR HOLE



-L- STA. 15+37 LT.



-L- POT 10+00.00

-L- PC 11+33.43

S 8° 35' 32.5" W

BEGIN PROJECT B-4246
-L- POC STA. 12+00.00
S 3°13'40" E

SITE 1

1 DENNIS GARNER

2 EVERETTE & MABEL COOPER

3 MICHAEL & SHERRY HARRELL

-L- PT 14+72.36

BEGIN SHOULDER BERM GUTTER, STA. 15+32 LT.

PREFORMED SCOUR HOLE SEE DETAIL C

15" CSP W/ELBS, ROD & LUG CONNECTORS

2' LATERAL BASE DITCH, SEE DETAIL D

END SHOULDER BERM GUTTER, STA. 17+25.50 LT.

LATERAL 'V' DITCH SEE DETAIL A

50' TAPER LT & RT

REMOVE & RESET FENCE

CLASS II RIP RAP

SITE 2

END PROJECT B-4246
-L- POC STA. 21+00.00
S 19°16'10" E

4 RUTH & MARY PUGH

5 RUTH & MARY PUGH

-L- PC 20+78.78

-L- PCC 22+64.10

S 18°43'42" E

OLD COX ROAD SR 2834 (R.A. BST.)

PASTURE

WOODS

FALLOW

BRUSH

RICHLAND CREEK

100' R/W PROGRESS ENERGY

EXISTING R/W

ENGLISH

PLAN VIEW
SITE 1 & 2

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

LEGEND

WLB	WETLAND
F F	DENOTES FILL IN WETLAND
TS TS	DENOTES TEMPORARY SURFACE WATER IMPACT
	DENOTES MECHANIZED CLEARING

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 ON
SR 2834 OVER
RICHLAND CREEK

SHEET 7 OF 8 3/27/07

3/21/2007
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kkessinger

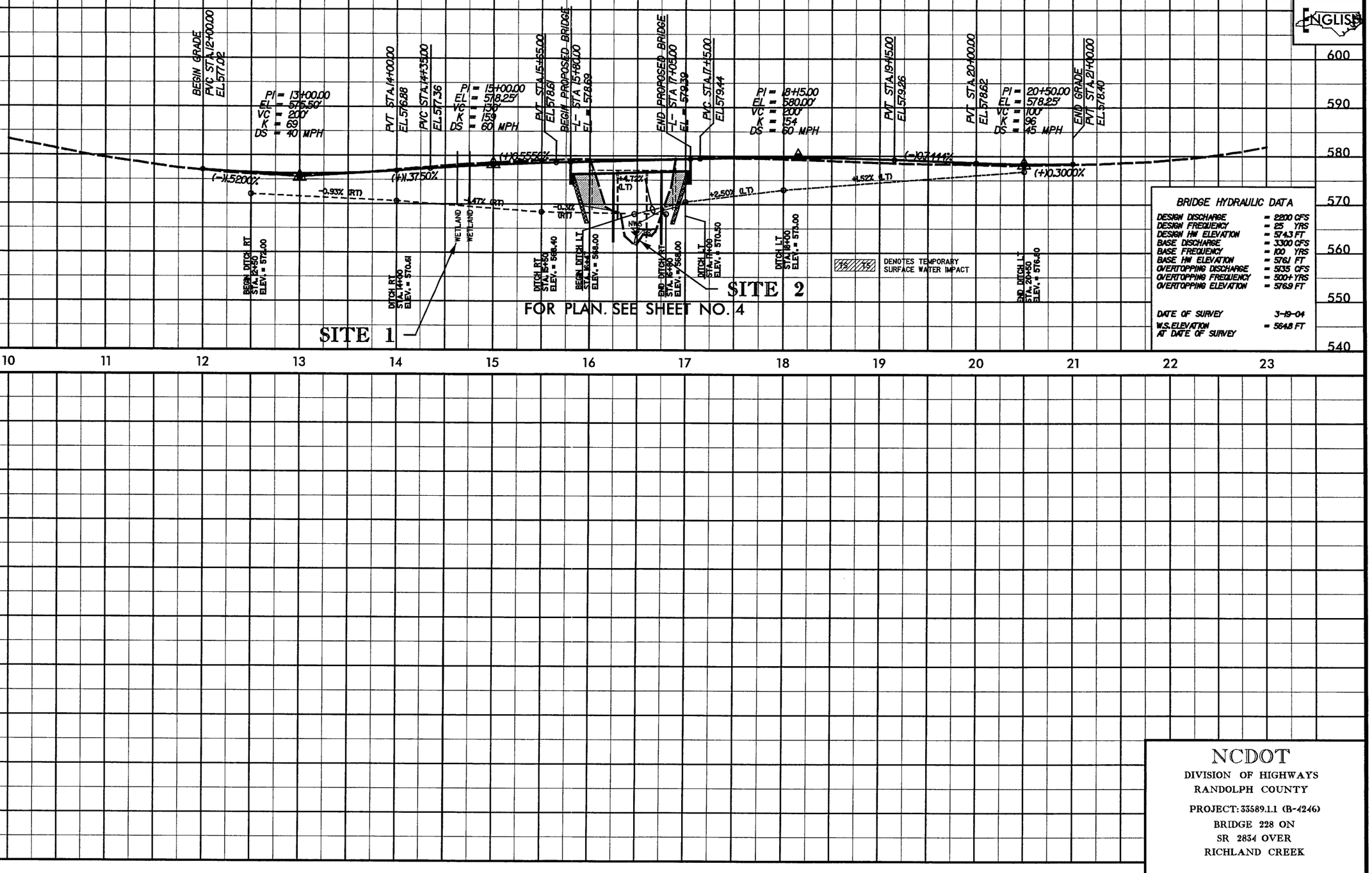
PROJECT REFERENCE NO.	SHEET NO.
B-4246	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

B.M.#1 EL = 573.09
RR SPIKE IN BASE OF
POWER POLE
99.85' LT OF -BL- STA 5+00
291.3' LT OF -L- STA 12+04.32

B.M.#2 EL = 576.59
RR SPIKE IN BASE OF
HIGH TENSION POWER POLE
7' LT OF -BL- STA 10+28
92.70' LT OF -L- STA 18+18.33



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2200 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 574.3 FT
BASE DISCHARGE	= 3300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 576.1 FT
OVERTOPPING DISCHARGE	= 1535 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 576.9 FT
DATE OF SURVEY	3-19-04
W.S. ELEVATION AT DATE OF SURVEY	= 564.8 FT

NCDOT
DIVISION OF HIGHWAYS
RANDOLPH COUNTY

PROJECT: 33589.1.1 (B-4246)
BRIDGE 228 ON
SR 2834 OVER
RICHLAND CREEK

SHEET 8 OF 8 3/27/07

5/28/99

3/27/2007
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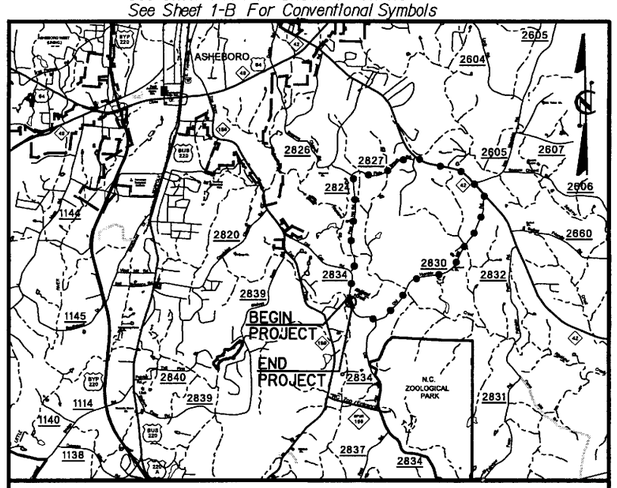
jwallace

09/08/99

TIP PROJECT: B-4246

CONTRACT:

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



VICINITY MAP

DENOTES OFF-SITE DETOUR

90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

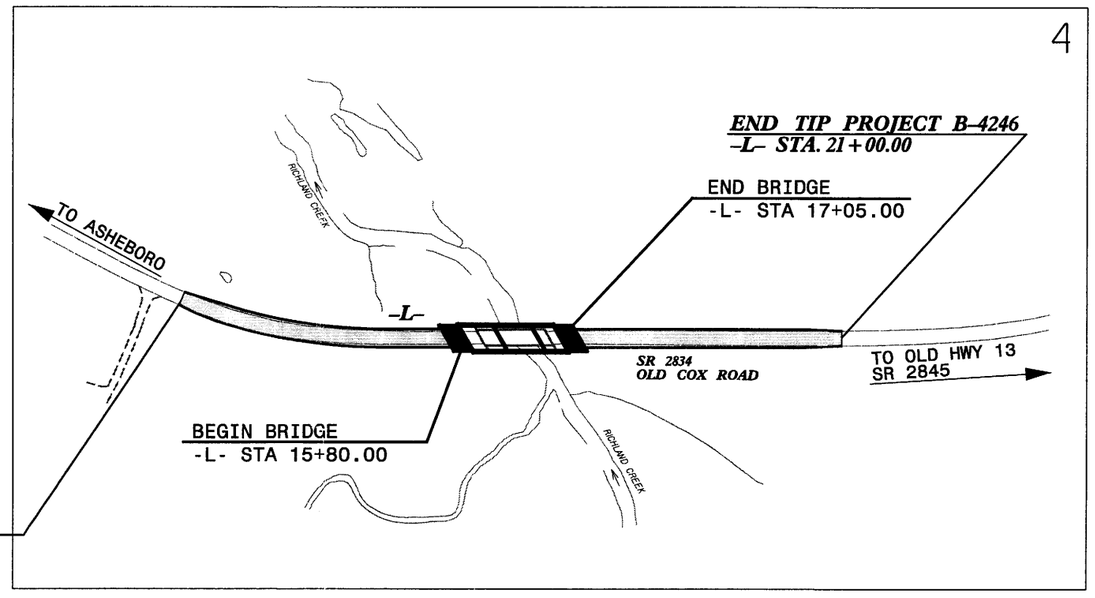
RANDOLPH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4246	1	

WBS NO.	F.A. PROJ. NO.	DESCRIPTION
33589.1.1	BRZ-2834(1)	P.E.
		R/W & UTIL.
		CONSTR.

LOCATION: BRIDGE NO. 228 OVER RICHLAND CREEK ON SR 2834

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



NC GRID NAD 83/95

NCDOT CONTACT: CATHY HOUSER, P.E.
ROADWAY DESIGN - ENGINEERING COORDINATION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT (2007) = 3,390
ADT (2027) = 6,290
DHV = 13 %
D = 60 %
T = 3 %
V = 60 MPH

(TTST=1% + DUALS=2%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4246	=	*0.147 MI.*
LENGTH STRUCTURES TIP PROJECT B-4246	=	*0.024 MI.*
TOTAL LENGTH OF TIP PROJECT B-4246	=	*0.171 MI.*

Prepared in the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 Schaub Dr, Suite 202 Raleigh NC 27606
(919) 851-6066

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 15, 2006

LETTING DATE:
FEBRUARY 19, 2008

MICHAEL A. YOUNG, PE
PROJECT ENGINEER

STEPHEN R. WHITLEY, PE
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.*

3/27/2007
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Ko & Associates, P.C.

10/25/05

PROJECT REFERENCE NO.	SHEET NO.
B-4246	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

PAVEMENT SCHEDULE

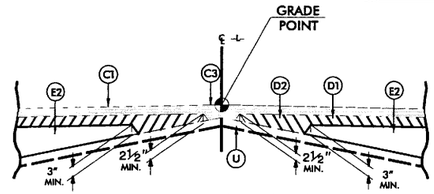
A1	PROP. PORTLAND CEMENT CONCRETE PAVEMENT	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	U	EXISTING PAVEMENT.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.		

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

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4246	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

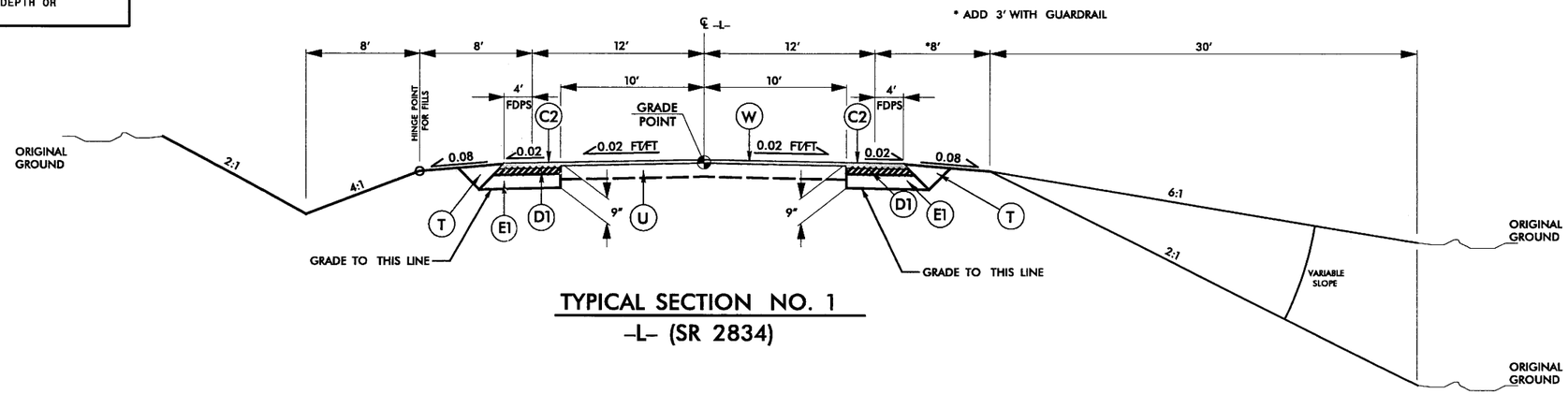


Detail Showing Method of Wedging

TRANSITION FROM EXISTING TO T.S. NO. 1
-L- STA. 12+00.00 TO 12+50.00

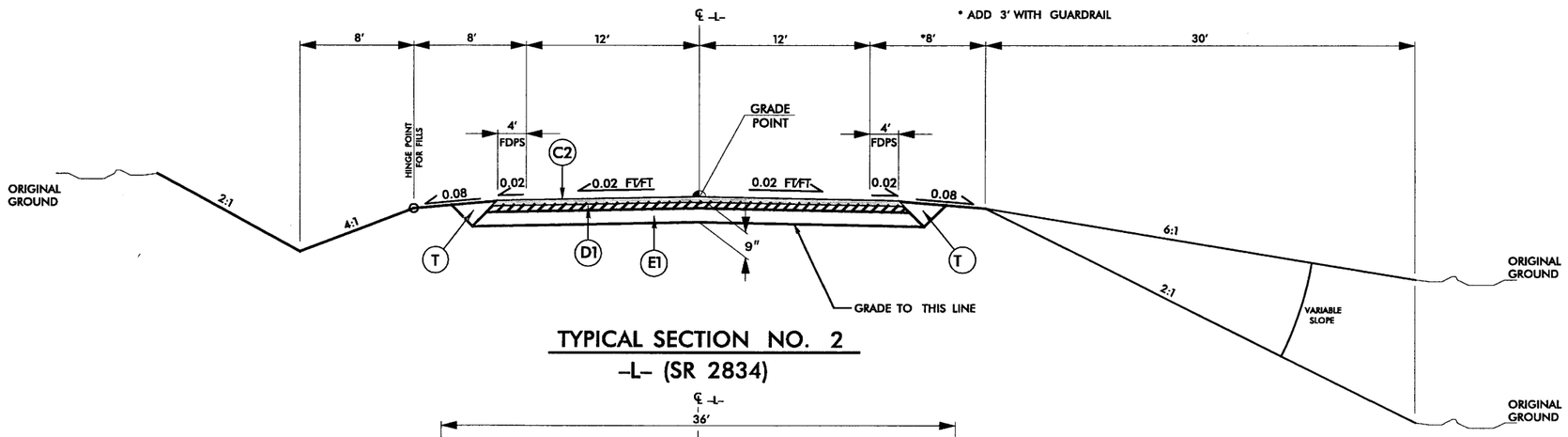
USE TYPICAL SECTION NO. 1
-L- STA. 12+50.00 TO 13+70.00
-L- STA. 18+50.00 TO 20+50.00

TRANSITION FROM T.S. NO. 1 TO EXISTING
-L- STA. 20+50.00 TO 21+00.00



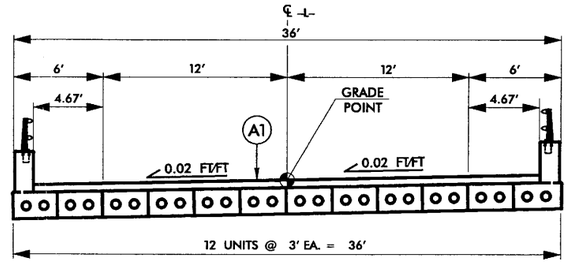
TYPICAL SECTION NO. 1
-L- (SR 2834)

USE TYPICAL SECTION NO. 2
-L- STA. 13+70.00 TO 15+56.00 (APPROACH SLAB)
-L- STA. 17+29.00 (APPROACH SLAB) TO 18+50.00



TYPICAL SECTION NO. 2
-L- (SR 2834)

USE TYPICAL SECTION NO. 3
-L- STA. 15+80.00 TO 17+05.00



TYPICAL SECTION NO. 3
-L- (SR 2834)

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KO & Associates, P.C.

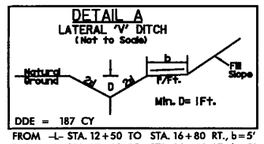
8/17/99

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4246	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

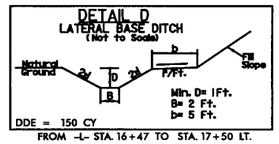
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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



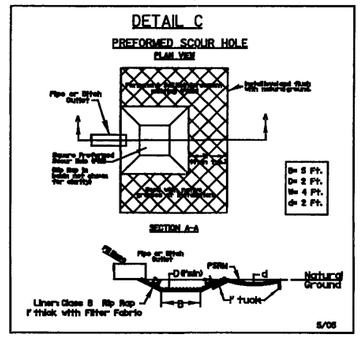
DDE = 187 CY
FROM -L- STA. 12+50 TO STA. 16+80 RT., b=5'
FROM -L- STA. 17+50 TO STA. 20+50 LT., b=2'

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



DDE = 150 CY
FROM -L- STA. 16+47 TO STA. 17+50 LT.

DETAIL C
PREFORMED SCOUR HOLE



-L- STA. 15+37 LT.

-L-
PI Sta 13+06.18
Δ = 27° 18' 46.7" (LT)
D = 8° 03' 30.5"
L = 338.93'
T = 172.75'
R = 711.00'
SE = 0.040
RO = 89'

NC GRID
NAD 83 '95

-L-
PI Sta 21+71.50
Δ = 4° 41' 37.8" (LT)
D = 2° 35' 12.2"
L = 185.32'
T = 92.72'
R = 2,215.00'
SE = EXIST.

-L-
PI Sta 23+79.44
Δ = 20° 33' 20.1" (LT)
D = 9° 00' 28.0"
L = 228.20'
T = 115.34'
R = 636.07'
SE = EXIST.

-L- POT 10+00.00

-BL- 101 PINC 9+05.15 =
-T- PINC 6+77.29
ELEV=578.66
REBAR & CAP SET
-L- 16+94.13 17.57'LT

END PROJECT B-4246
-L- POC STA. 21+00.00
S 19°16'10" E

-L- PC 11+33.43

-L- PT 14+72.36

-L- PCC 22+64.10

1
DENNIS GARNER
WB 96E PG 356

2
EVERETTE & MABEL COOPER
DB 1071 PG 355

3
MICHAEL & SHERRY HARRELL
DB 1365 PG 635
DB 1697 PG 826
PB 29 PG 72

4
RUTH & MARY PUGH
WB 88E PG 180
PB 71 PG 46

5
RUTH & MARY PUGH
WB 89E PG 180
PB 71 PG 46

BM #1
BL STA 5+00
N 28°27'59" E 99.85'
ELEV = 573.09'

BM #2
BL STA 10+28
77' LEFT
ELEV = 576.59'

S 8°35'32.5" W

S 18°43'14.2" E

PREFORMED SCOUR HOLE SEE DETAIL C

15" CSP W/ELBS, ROD & LUG CONNECTORS

2' LATERAL BASE DITCH, SEE DETAIL D

END SHOULDER BERM GUTTER, STA. 17+25.50 LT.

BEGIN SHOULDER BERM GUTTER STA. 15+32 LT.

LATERAL 'V' DITCH SEE DETAIL A

50' TAPER LT & RT

REMOVE & RESET FENCE

BEGIN APPROACH SLAB
-L- POT STA 15+56.00

BEGIN PROPOSED BRIDGE
-L- POT STA 15+80.00

B4246-1
-BL- POT 5+00.00
-L- 12+92.20 19.56'RT

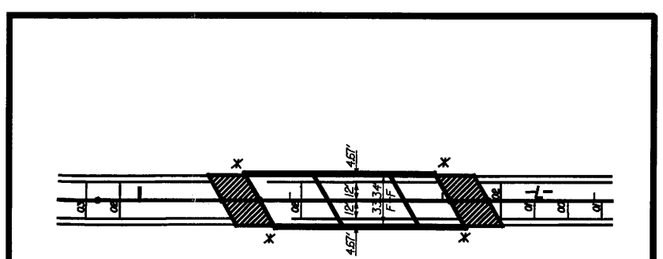
END APPROACH SLAB
-L- POT STA 17+29.00
-L- PC 20+78.78

B4246-2
-BL- POT 15+72.14
-L- 23+59.27 14.22'RT

END PROPOSED BRIDGE
-L- POT STA 17+05.00

BEGIN PROJECT B-4246
-L- POC STA. 12+00.00
S 3°13'40" E

TO ASHEBORO
OLD COX ROAD
TO OLD HWY 13 SR 2845
OLD COX ROAD SR 2834 1.8± EST
EXISTING R/W
100' R/W PROGRESS ENERGY
WOODS
BRUSH
FALLOW
PASTURE
GRAVEL
MTL GA



PAVEMENT - BRIDGE RELATIONSHIP SKETCH

PAVED SHOULDER
BRIDGE APPROACH SLAB
FOR -L- PROFILE, SEE SHEET NO. 5
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-??

3/27/2007
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kmcgee

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4246	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

B.M. #1 EL = 573.09
RR SPIKE IN BASE OF POWER POLE
98.89 LT OF -PL- STA 5+00
29.13 LT OF -L- STA 12+04.32

B.M. #2 EL = 576.59
RR SPIKE IN BASE OF HIGH TENSION POWER POLE
(+)1.1 OF -PL- STA 10+28
92.70 LT OF -L- STA 18+18.33

BEGIN GRADE
PVC STA.12+00.00
EL.577.02

PI = 13+00.00
EL = 576.50'
VC = 200'
K = 62.00
DS = 40 MPH

PVT STA.14+00.00
EL.576.88

PVC STA.14+35.00
EL.577.36

PI = 15+00.00
EL = 578.25'
VC = 150'
K = 60.00
DS = 60 MPH

PVT STA.15+55.00
EL.578.68

BEGIN PROPOSED BRIDGE
-L- STA 15+80.00
EL = 578.69

END PROPOSED BRIDGE
-L- STA 17+05.00
EL = 578.39

PVC STA.17+45.00
EL.579.44

PI = 18+15.00
EL = 580.00'
VC = 200'
K = 154
DS = 60 MPH

PVT STA.19+15.00
EL.579.26

PVT STA.20+00.00
EL.578.82

PI = 20+50.00
EL = 578.25'
VC = 100'
K = 36.00
DS = 45 MPH

END GRADE
PVT STA.21+00.00
EL.578.40

(-)4.5200%

(+)4.3750%

(+)4.5555%

(-)0.932% (RT)

(-)4.47% (RT)

(+)4.732% (LT)

(-)0.502% (LT)

(+)0.502% (LT)

(-)4.882% (LT)

(-)0.3444%

(+)0.3000%

BEGIN DITCH RT
STA. 12+00
ELEV. = 577.00

DITCH RT
STA. 14+00
ELEV. = 576.88

DITCH RT
STA. 15+55
ELEV. = 576.40

BEGIN DITCH LT
STA. 15+55
ELEV. = 576.40

DITCH LT
STA. 16+55
ELEV. = 576.00

DITCH LT
STA. 18+00
ELEV. = 575.00

END DITCH LT
STA. 21+00
ELEV. = 576.40

FOR PLAN, SEE SHEET NO. 4

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2200 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 574.3 FT
BASE DISCHARGE	= 3300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 576.1 FT
OVERTOPPING DISCHARGE	= 5135 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 576.9 FT
DATE OF SURVEY	3-18-04
W.S. ELEVATION AT DATE OF SURVEY	= 564.8 FT

600 590 580 570 560 550 540

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

3/27/2007
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Ken R. Associates, P.A.

Randolph County
SR 2834
Bridge No. 228 over Richland Creek
Federal-Aid Project No. BRZ-2834(1)
State Project No. 33589.1.1
T.I.P. No. B-4246

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION

APPROVED:

7-11-05
DATE

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

7/11/05
DATE

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

Randolph County
SR 2834
Bridge No. 228 over Richland Creek
Federal-Aid Project No. BRZ-2834(1)
State Project No. 33589.1.1
T.I.P. No. B-4246

CATEGORICAL EXCLUSION

May 2005

Documentation Prepared By Ko & Associates, P.C.

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

For North Carolina Department of Transportation

for

Karen B. Taylor, P.E.
Project Development Engineer

PROJECT COMMITMENTS

Randolph County
SR 2834
Bridge No. 228 over Richland Creek
Federal-Aid Project No. BRZ-2834(1)
State Project No. 33589.1.1
T.I.P. No. B-4246

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

Division 8:

Randolph County Emergency Services has requested NCDOT give 2–3 weeks notice prior to beginning construction of Bridge No. 228.

Project Development and Environmental Analysis Branch (PD&EA):

Richland Creek is designated as a Significant Aquatic Endangered Species Habitat; Richland Creek contains potential Cape Fear shiner habit (WRC 1998). Consequently, "in water" work is restricted to an absolute minimum due to the presence of Endangered Species, and all work potentially affecting the resource is required to be coordinated with the appropriate resource agency.

Highway Design Branch, Project Services, and Traffic Engineering and Safety Systems:

Bridge replacement project B-4246, located on SR 2834, is in the general vicinity of B-4245. The construction of these two projects should be grouped (i.e. same contractor), and the construction schedules should be accelerated to minimize travel inconveniences for local residents. Since the posted weight limits for B-4245 are less than those for B-4246, construction of B-4245 should be completed prior to road closure for the construction of B-4246.

The B-4246 project section of SR 2834 is designated as a Randolph County bike route. Final design of the bridge replacement should include ASSHTO standard bicycle-safe bridge railing height of 54 inches and 4-foot paved shoulders on the approaches as well as across the bridge.

Spanning the stream should be investigated during final design of the bridge to protect the endangered species habitat.

Randolph County
SR 2834
Bridge No. 228 over Richland Creek
Federal-Aid Project No. BRZ-2834(1)
State Project No. 33589.1.1
T.I.P. No. B-4246

INTRODUCTION: The replacement of Bridge No. 228 is included in the North Carolina Department of Transportation 2004-2010 Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1A. 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 28.1 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

SR 2834 (Old Cox Road) crosses over Richland Creek in Randolph County approximately 0.4 mile south of its junction with NC 159. Bridge No. 228 is located southeast of the City of Asheboro. Land in the proximity of the bridge consists of mainly undeveloped woodlands and fields and is generally flat. SR 2834 is classified as a Rural Local Road in the Statewide Functional Classification System.

SR 2834 has a current pavement width of 18 feet with 5-foot grass shoulders in the area of the bridge. The roadway approaches are on tangents; however, the sight distance is poor approaching the bridge from the north due to a curve in the horizontal alignment. From the north end of the bridge, SR 2834 curves to the east approximately 150 feet from the end of the bridge. From the south end of the bridge, the roadway again curves to the east approximately 500 feet from the end of the bridge.

The estimated annual daily traffic (ADT) for 2005 on SR 2834 at Richland Creek is 3,100 vehicles per day (vpd), and for the design year 2025, the estimated ADT is 6,000 vpd. The volumes include an estimated 1 percent truck-tractor semi-trailer (TTST) and 2 percent dual-tired (DT) vehicles. The posted speed limit could not be determined during the field visit and is assumed to be 55 mph in the vicinity of the bridge.

Bridge No. 228, as shown in Figures 2A and 2B, has an overall length of 92 feet, a clear deck width of 19.5 feet, and a bed-to-crown distance of approximately 16 feet. The existing two-lane bridge was constructed in 1951 and has a reinforced concrete deck on I-beams supported by a substructure of reinforced concrete caps on timber piles. The current posted weight limit is 21 tons for single unit vehicles (SV) and 27 tons for truck-tractor semi-trailer vehicles (TTST). A sufficiency rating of 28.1 (out of a possible 100 for a new structure and approaches) is given in the bridge inspection report (dated March, 2002) for Bridge No. 228.

One accident was reported in the vicinity of the bridge during the period from May 1, 1999 to April 30, 2002. The accident rate for the period is 168.96 accidents per 100 million vehicle miles (MVM) of travel as compared to the statewide average of 347.58 accidents per 100 MVM for rural secondary routes (two lanes undivided) for the three-year period 2000–2002.

Randolph County Bicycle Route No. 1 utilizes SR 2834 and Bridge No. 228. It is a 31-mile north-south route over lightly traveled roads and connects the municipalities of Level Cross, Randleman, Asheboro, and Seagrove.

Utility conflicts should be considered light. Progress Energy aerial power transmission lines cross the south roadway approach diagonally at approximately 350 feet from the bridge. On the north roadway approach, Randolph Electric Membership Corporation aerial power lines also cross the road diagonally at approximately 400 feet from the bridge. The two utilities intersect in the southeast quadrant of the bridge, approximately 150 feet from the roadway. A US Sprint underground telephone cable is located along the east side of SR 2834. It emerges from underground for an aerial crossing over Richland Creek and returns underground continuing along the roadway. A 16-inch waterline is located approximately 30 feet from the centerline of the roadway on the west side. No utilities are attached to the bridge.

There are eight school bus crossings daily over the bridge.

III. ALTERNATIVES

A. Project Description

NCDOT proposes to replace Bridge No. 228 with a new bridge approximately 115 feet long with a clear bridge deck width of 32 feet. The final bridge length and width will be determined during final bridge design. New approaches to the bridge will provide 12-foot travel lanes in each direction with 8-foot shoulders (4-foot paved). The proposed cross sections are shown in Figures 3A and 3B. The design speed will be 60 mph.

B. Detailed Study Alternatives

The studied alternatives were: (1) replace Bridge No. 228 at its existing location while maintaining traffic with a temporary structure and detour on the west side; (2) replace Bridge No. 228 on new alignment to the west of the existing location while maintaining traffic on the existing structure as an on-site detour; and, (3) replace Bridge No. 228 at its existing location with an off-site detour (preferred alternative). These alternatives are shown in Figures 4, 5 and 6.

Alternate 1 and Alternate 2 were not selected as the preferred alternative for similar reasons. The estimated costs are 81% and 91% (respectively) higher than that for the preferred alternative due to the temporary detour and structure for Alternate 1 and the length/realignment of the approaches for Alternate 2. In addition, both involve impacts to wetlands, a tributary of Richland Creek, and the existing water utility.

C. Alternatives Eliminated from Further Study

The No-Build or "do-nothing" alternative was also considered but, this alternative would eventually necessitate closure of Bridge No. 228. The No-Build alternative was therefore eliminated due to the traffic service provided by SR 2834.

Investigation of the existing structure by the NCDOT Bridge Maintenance Unit indicates that rehabilitation of Bridge No. 228 is not feasible due to its age and deteriorated condition. The existing bridge is classified as structurally deficient.

D. Preferred Alternative

Alternate 3, replacing the existing bridge at its existing location with an off-site detour is the preferred alternative. Alternate 3 was selected because it is the most economical and will impact wetlands and existing utilities less than the other two alternatives. By replacing the structure in the existing location, the length of improvements to the roadway approaches will be shorter, there will be no interference to the tributary, and the existing water utility line to the west will not be impacted. Spanning the stream should be investigated during final design of the bridge to protect the endangered species habitat.

The design speed for the replacement bridge will be 60 mph; however, design exceptions for both the horizontal and vertical alignments will be necessary. A design exception for the horizontal alignment with 46 and 47 mph design speeds will be necessary because the proposed

alignment will be tying into an existing horizontal curve. The design exception for the vertical curve with a design speed of 55 mph is required because maintaining a 60 mph design speed will necessitate a longer vertical curve and lower grade.

In accordance with the NCDOT Guidelines for Evaluation of Off-site Detours for Bridge Replacement Projects (April 2004), the average delay per motorist using the proposed detour for Alternate 3 is estimated to range from 5-10 minutes for a construction period of 12 months, which falls under the Evaluation (E) range of the Guidelines (see Figure 7 for the proposed detour route). The Evaluation (E) 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.

Coordination with the local NCDOT Resident Engineer and emergency services officials indicates an off-site detour would not cause undue hardship to the local community. School officials indicated a closure would not create an unworkable situation.

The recommended detour utilizes SR 2824, SR 2827, NC 42, SR 2830, and SR 2834. TIP B-4245, the replacement of Bridge No. 257 over Richland Creek, is located on SR 2824 of the detour route and is scheduled for construction during the same year as TIP B-4246. The posted weight limit of Bridge No. 257 (SV 10, TTST 17) is lower than that posted for Bridge No. 228 (SV 21, TTST 27); therefore, these two projects should be coordinated such that TIP B-4245 is constructed prior to closing SR 2834 for construction of TIP B-4246. Other structures along the detour route have posted weight limits equal to or greater than the posted limits for Bridge No. 228.

The estimated cost of Alternate 3 is $732,975. The current estimated cost of the project, as shown in the NCDOT 2004-2010 Transportation Improvement Program, is $50,000 for right-of-way and $525,000 for construction.

The Division Office concurs with the recommended improvements.

IV. ESTIMATED COST

The estimated costs of the alternatives studied, based on 2004 prices, are shown in the following table:

	Alternate 1 On-site Detour	Alternate 2 New Location	Alternate 3 Off-site Detour
Structure Removal	$ 15,840	$ 15,840	$ 15,840
Structure	$ 370,875	$ 387,000	$370,875
Roadway Approaches	$ 113,100	$ 480,160	$102,800
Mobilization and Miscellaneous	$ 110,185	$ 277,000	$104,485
Engineering and Contingencies	$ 90,000	$ 190,000	$106,000
Temporary Detour	$ 575,000	N/A	N/A
SUBTOTAL	$1,275,000	$1,350,000	$700,000
Right-of-Way/Const. Ease./Util.	$ 56,500	$ 49,500	$ 32,975
TOTAL	$1,331,500	$1,399,500	$732,975

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

V. NATURAL RESOURCES

A. Methodology

Materials and literature supporting this investigation have been derived from a number of sources including U.S. Geological Survey (USGS) topographic mapping (Climax, NC (1982) 7.5-minute quadrangle), U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (Climax, NC (1982) 7.5-minute quadrangle), Natural Resources Conservation Service (NRCS; formerly the Soils Conservation Service) soils mapping (NRCS 2002), N.C. Wildlife Resources Commission (WRC) proposed Significant Aquatic Endangered Species Habitats, and recent aerial photography.

Plant community descriptions are based on a classification system utilized by the N.C. Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968) with adjustments for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (USACE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979) and/or the N.C. Division of Environmental Management (DEM) *Field Guide to North Carolina*

Wetlands (1996). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof *et al.* 1980, Potter *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Palmer and Braswell 1995, and Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (DWQ 2000, 2002, 2004a-b). Quantitative sampling was not undertaken to support existing data.

The most current USFWS listing of federally protected species with ranges extending into Randolph County (February 25, 2003 USFWS list) is considered in this report. In addition, NHP records documenting the presence of federally or state listed species were consulted before commencing field investigations. Furthermore, Significant Aquatic Endangered Species Habitats proposed by the WRC (December 11, 1998 listing) were consulted to determine the presence of Proposed Critical Habitats for aquatic species.

The project area was walked and visually surveyed for significant features. The project area was determined to be approximately 300 feet in width (centered on the existing roadway) and approximately 2,300 feet in length, encompassing approximately 15.8 acres. Potential impacts of construction will be limited to cut-fill boundaries for each alternative. Special concerns evaluated in the field include: 1) potential protected species habitat and 2) wetlands and water quality protection of Richland Creek, North Prong, and Tantraugh Branch.

B. Physiography and Soils

The project study area is located in the Carolina Slate Belt ecoregion of the Piedmont physiographic province of North Carolina. This ecoregion is characterized by lower elevations and wider valleys relative to other Piedmont ecoregions: although, in some areas of North Carolina the Carolina Slate Belt is rugged and hilly (Griffith *et al.* 2002). The project study area is situated within a gently sloping floodplain valley. Elevations within the project study area range from a high of approximately 620 feet National Geodetic Vertical Datum (NGVD), in the southeastern corner of the project study area, to a low of approximately 570 feet NGVD within the channel of Richland Creek (Climax, NC (1982) 7.5-minute quadrangle). Land uses within and adjacent to the project study area consist of pastures, woodlands, residential lots, and roadside shoulders.

Based on soil mapping for Randolph County (NRCS 2002), the project study area is underlain by three soil series including Chewacla loam (*Fluvaquentic Dystrudepts*), Georgeville silt loam (*Typic Kanhapludults*), and Georgeville silty clay loam (*Typic Kanhapludults*). Within the project study area, Chewacla loam occurs adjacent to the stream, while Georgeville silt loam and Georgeville silty clay loam loam are found on slopes. None of the above soil series are considered hydric by the NRCS (1996); although depressions within the Chewacla series may contain inclusions of Wehadkee silt loam (*Typic Fluvaquents*), a hydric soil.

The Chewacla series, with 0 to 2 percent slopes, consists of somewhat poorly drained, moderately permeable, nearly level soils found on floodplains. Within the project study area, the Chewalca series occurs in floodplains adjacent to Richland Creek, North Prong, and Tantraugh Branch. The Chewalca series underlies approximately 5.4 acres (34 percent) of the project study area. Depth to bedrock is greater than 60 inches and the seasonal high water table occurs at a depth of 0.5 to 1.5 feet. This soil is subject to frequent flooding.

Georgeville silt loam, with 4 to 15 percent slopes, is a well drained, moderately permeable soil found on convex summits of narrow ridges. This series underlies an approximately 4.8-acre (31 percent) area in the southeast corner of the project study area. Depth to bedrock is greater than 60 inches and the seasonal high water table occurs at a depth greater than 6 feet.

Georgeville silty clay loam, with 2 to 8 percent slopes, is a well drained, moderately permeable soil found on convex summits of broad ridges. This series underlies an approximately 1.9-acre (12 percent) area in the northwest corner of the project study area. Depth to bedrock is greater than 60 inches and the seasonal high water table occurs at a depth of greater than 6 feet.

Georgeville silty clay loam, with 8 to 15 percent slopes, is a well drained, moderately permeable soil found on convex side slopes. This series underlies an approximately 3.7-acre (23 percent) area extending on a northeast-southwest axis from the northeast corner to the western boundary of the project study area. Depth to bedrock is greater than 60 inches and the seasonal high water table occurs at a depth of greater than 6 feet.

C. Water Resources

1. Waters Impacted

The project study area is located within sub-basin 03-06-09 of the Cape Fear River Basin (DWQ 2000). This area is part of USGS Hydrologic Unit 03030003 of the South Atlantic/Gulf Region (Seaber *et al.* 1987). The structure targeted for replacement spans Richland Creek and the adjacent floodplain. The portion of Richland Creek traversing the project study area has been assigned Stream Index Number 17-22 by the N.C. Division of Water Quality (NCDWQ) (2004b).

2. Water Resource Characteristics

The project study area contains three streams: Richland Creek, North Prong, and Tantraugh Branch. Richland Creek flows from southwest to northeast, bisecting the project study area (Figure 8). North Prong flows from southwest to northeast through the southwestern quadrant

formed by the intersection of Old Cox Road and Richland Creek (Figure 8). Tantraugh Branch flows from northwest to southeast through the northwestern quadrant (Figure 8). Both North Prong and Tantraugh Branch terminate at the formation of Richland Creek.

Richland Creek originates within the project study area at the confluence of North Prong and Tantraugh Branch, approximately 70 feet southwest of the existing bridge. At its formation, Richland Creek is a well-defined, 35-foot wide, third-order, perennial stream. Richland Creek flows northeastward, narrowing to 20 feet wide near the bridge and expanding again to 35 feet wide downstream of the bridge. Throughout the project study area, Richland Creek has a sand, gravel, and cobble substrate. The banks are 4 feet high and heavily vegetated. Trees form a canopy over the stream channel. During field investigations, the water level appeared low, ranging from 2 inches deep over ripples to 1-foot deep in pools. Flow was moderate and water clarity was poor. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within Richland Creek include overhanging trees, undercut banks, fallen logs, and leaf packs.

North Prong enters the project study area as a well-defined, third-order, perennial stream with a sand, gravel, and cobble substrate. North Prong flows northeastward through the project study area for approximately 90 feet before converging with Tantraugh Branch to form Richland Creek. In general, North Prong resembles Richland Creek. North Prong is 35 feet wide with 4-foot high, heavily vegetated banks. The tree canopy extends over the stream channel. During field investigations, the water level appeared low, about 1-foot deep. Flow was moderate and water clarity was poor. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within North Prong include overhanging trees, undercut banks, fallen logs, and leaf packs.

Tantraugh Branch is a well-defined, second-order, perennial stream with 4-foot banks and a sand, gravel, and cobble substrate. Tantraugh Branch flows southwestward through the project study area for approximately 90 feet, at which point it converges with North Prong to form Richland Creek. Similar to Richland Creek and North Prong, the banks of Tantraugh Branch are heavily vegetated and a canopy extends over the stream channel. During field investigations, the water level appeared low, about 6 inches deep. Flow was moderate, as was water clarity. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within Tantraugh Branch include overhanging trees, undercut banks, fallen logs, and leaf packs.

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 N.C. 2002 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative

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

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 has been assigned to the entire lengths of Richland Creek, North Prong, and Tantraugh Branch. Class C waters are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation includes wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis. No designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), Water Supply I (WS-I), Water Supply II (WS-II) waters, or watershed Critical Areas (CA) occur within 1.0 mile of the project study area (NCDWQ 2000).

The NCDWQ 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 Cape Fear River Basinwide Water Quality Plan (DWQ 2000). Richland Creek is currently listed by NCDWQ as Supporting its designated uses. North Prong and Tantraugh Branch have not been assigned a Use Support Rating. No benthic macroinvertebrate monitoring stations occur within 1.0 mile of the project study area (NCDWQ 2000). The nearest benthic macroinvertebrate monitoring station is approximately 9.4 miles east of the project study area (13 miles downstream in Richland Creek). In 1998, sampling at this station returned a bioclassification of Good (NCDWQ 2000).

Sub-basin 03-06-09 of the Cape Fear River Basin supports 14 permitted, point source discharges with a total discharge of 9.9 million gallons per day. One of the permitted dischargers is classified as a major discharger, discharging 9 million gallons per day. The 13 remaining permitted dischargers are minor (NCDWQ 2004a). Major non-point sources of pollution within the Cape Fear River Basin include runoff from construction activities, agriculture, timber

harvesting, mining, hydrologic modification, failing septic systems, roads, parking lots, and roof tops. Sedimentation and nutrient inputs are major problems associated with non-point source discharges (NCDWQ 2000).

3. Anticipated 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 Richland Creek, thereby protecting the integrity of this waterway. Long-term impacts resulting from construction are expected to be negligible. In order to minimize impacts to water resources, NCDOT *Best Management Practices for the Protection of Surface Waters* will be strictly enforced during the life of the project.

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion-control schedule and the use of Best Management Practices (BMPs). The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled Control of Erosion, Siltation, and Pollution (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-

seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into streams by catch basins and roadside vegetation.

The replacement of Bridge No. 228 warrants special concern due to Richland Creek's designation as Significant Aquatic Endangered Species Habitat; Richland Creek contains potential Cape Fear shiner habit (WRC 1998). Consequently, "in water" work is restricted to an absolute minimum due to the presence of Endangered Species, all work potentially affecting the resource is required to be coordinated with the appropriate resource agency.

D. BIOTIC RESOURCES

1. Plant Communities

Four distinct plant communities were identified within the project study area: agricultural land, disturbed/maintained land, upland mixed hardwood forest, and bottomland hardwood forest. Plant communities were delineated to determine the approximate area and location of each (Figure 8). These communities are described below in order of their dominance within the project study area.

a) Agricultural Land

The most prominent community, the agricultural land community composes approximately 7.7 acres (49 percent) of the project study area. This community is comprised of four open pastures located in the northwest, northeast, southwest, and southeast quadrants of the project study area. The four fields serve as grazing areas for cattle. One wetland area was found in the agricultural land community.

Vegetation in the agricultural land community primarily consists of pasture and hayfield grasses such as fescue (*Festuca* sp.). The otherwise grass monoculture is, however, invaded by opportunistic herbs such as white clover (*Trifolium repens*), buttercup (*Ranunculus* sp.), blackberry (*Rubus* sp.), microstegium (*Microstegium vimineum*), and thistle (*Carduus* sp.). Vegetation in the pastures is impacted by cattle grazing.

A single wetland occurs in the pasture in the northeast quadrant of the project study area, approximately 530 feet north of the existing bridge (Figure 8). The wetland supports hydrophytic vegetation, distinct from the rest of the pasture community, such as soft rush (*Juncus effusus*), spikerush (*Eleocharis* sp.), sedge (*Carex* sp.), and ludwigia (*Ludwigia* sp.). Cattle have access to the wetland and have likely influenced the composition of the plant species here.

b) Disturbed/Maintained Land

The disturbed/maintained land community constitutes approximately 3.8 acres (24 percent) of the project study area. This community includes residential lots, roadside shoulders, and a powerline corridor, all of which are maintained by mowing. Residential lots occur in the northwest, southwest, and southeast quadrants of the project study area, while roadside shoulders occur in all four quadrants, and the powerline corridor occurs in the northwest quadrant.

Grasses and herbs dominate the vegetation in this community. Representative species include fescue, white clover, poison ivy (*Toxicodendron radicans*) Japanese honeysuckle (*Lonicera japonica*), buttercup, broomsedge (*Andropogon virginicus*), greenbrier (*Smilax* sp.), blackberry, and trumpet creeper (*Campsis radicans*).

Trees and shrubs are present to a lesser extent in the disturbed/maintained community. Both have a scattered distribution, occurring in small groups or as individuals. In general, trees are confined to the residential lots and powerline corridor. Observed tree species include red maple (*Acer rubrum*), eastern red cedar (*Juniperus virginiana*), and sycamore (*Platanus occidentalis*). Shrubs and saplings occur throughout the disturbed/maintained community, but are most abundant along roadside shoulders and in the powerline corridor. Observed shrub species include red maple, tulip poplar (*Liriodendron tulipfera*), willow oak (*Quercus phellos*), redbud (*Cercis canadensis*), and sycamore.

c) Upland Mixed Hardwood Forest

The upland mixed hardwood forest community occupies a total of 1.9 acres (12 percent) in the northwest and northeast quadrants of the project study area. This community consists of two stands of mid-successional, mature forest with well developed forest strata. The two stands of upland forest are adjacent to pasture areas and accessible to cattle.

Canopy species observed in the upland mixed hardwood forest community include Virginia pine (*Pinus virginiana*), shortleaf pine (*Pinus echinata*), tulip poplar, sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), and white oak (*Quercus alba*). The shrub and sapling layer consists of flowering dogwood (*Cornus florida*), post oak (*Quercus stellata*), wild cherry (*Prunus serotina*), eastern red cedar, and tag alder (*Alnus serrulata*).

The herbaceous layer is sparse through much of this community. Observed herbs include microstegium, poison ivy, trumpet creeper, greenbrier, and pokeweed (*Phytolacca americana*). Cattle grazing likely contributes to the limited presence of herbs here.

d) Bottomland Forest

The bottomland forest community constitutes approximately 1.3 acres (8 percent) of the project study area. This community occurs in the floodplain and floodplain slopes adjacent to Richland Creek, North Prong, and Tantraugh Branch. It consists of a mature, secondary growth forest with well developed forest strata. A powerline corridor crosses through the bottomland forest in the northeast quandrant of the project study area. Vegetation within the powerline corridor is maintained at a relatively lower height than the rest of the community. One wetland area was found within this community.

Canopy species observed in this community include sweetgum, red maple, green ash *(Fraxinus pennsylvanica),* sycamore, and pignut hickory (*Carya glabra*). Sapling and shrub layers include canopy species as well as spicebush (*Lindera benzoin*), Chinese privet (*Ligustrum sinense*), wild cherry, mockernut hickory (*Carya alba*), ironwood (*Carpinus caroliniana*), sassafras (*Sassafras albidum*), and American holly (*Ilex opaca*).

The herbaceous layer is dense, creating a carpet layer that extends throughout the bottomland forest community; although, it is most pronounced in the maintained powerline corridor. The herbaceous layer consists of Japanese honeysuckle, blackberry, jewelweed (*Impatiens capensis*), Virginia creeper (*Parthenocissus quinqefolia*), microstegium, poison ivy, chickweed (*Stellaria* sp.), grape (*Vitis* sp.), greenbrier, pokeweed, and wingstem (*Verbesina alternifolia*).

A single wetland, located approximately 190 feet northeast of the existing bridge, occurs in the bottomland forest community (Figure 8). The interior of the wetland is not vegetated and consists of exposed, mucky soil. Vegetation is, however, present along the periphery of the wetland. The only tree and shrub species present in the wetland are red maple and spicebush. Observed herbs include jewelweed and ludwigia.

2. Wildlife

Agricultural Land

Birds that frequent agricultural land include eastern meadowlark (*Sturnella magna*), common grackle (*Quiscalus quiscula*), and field sparrow (*Spizella pusilla*). Mammals which are more specialized to inhabit open fields in the project study area are eastern mole (*Scalopus aquaticus*), least shrew (*Cryptotis parva*), and meadow vole (*Microtus pennsylvanicus*). Reptile and amphibian species that might find suitable habitat in agricultural areas include eastern kingsnake (*Lampropeltis getulus*), black racer (*Coluber constritor*), and American toad (*Bufo americanus*).

Disturbed/Maintained Land

Birds observed within disturbed/maintained land include turkey vulture (*Cathartes aura*), northern cardinal (*Cardinalis cardinalis*), common grackle, Carolina wren (*Thryothorus ludovicianus*), eastern bluebird (*Sialia sialis*), and American goldfinch (*Carduelis tristis*). Other bird species expected to be found within the disturbed/maintained portion of the project study area include American crow (*Corvus brachyrhynchos*), field sparrow, eastern meadowlark, and red-tailed hawk (*Buteo jamaicensis*).

No terrestrial mammals, reptiles, or amphibians were observed during the site visit. Mammal species expected to occur within the disturbed/maintained land include eastern cottontail (*Sylvilagus floridanus*), eastern mole, hispid cotton rat (*Sigmodon hispidus*), least shrew, meadow vole, and whitetail deer (*Odocoileus virginianus*). Terrestrial reptiles and amphibians which may occur within maintained/disturbed land include eastern box turtle (*Terrapene carolina*), six-lined racerunner (*Cnemidomorphorus sexlineatus*), eastern garter snake (*Thamnophis sirtalis*), black racer, southeastern five-lined skink (*Eumeces inexpectatus*), and northern cricket frog (*Acris crepitans*).

Upland Mixed Hardwood Forest

Birds observed during the site visit include Carolina wren and Carolina chickadee (*Poecile carolinensis*). Many bird species frequent the edges between wooded areas and open fields or lawns. Other bird species that may utilize this habitat include ruby-throated hummingbird (*Archilochus colubris*), downy woodpecker (*Picoides pubescens*), great crested flycatcher (*Myiarchus crinitus*), eastern wood-pewee (*Contopus virens*), blue jay (*Cyanocitta cristata*), tufted titmouse (*Baeolophus bicolor*), white-breasted nuthatch (*Sitta carolinensis*), house wren (*Troglodytes aedon*), blue-gray gnatcatcher (*Polioptila caerulea*), northern cardinal, eastern towhee (*Pipilo erythrophthalmus*), and chipping sparrow (*Spizella passerina*).

No dense, unfragmented forests occur in or near the project study area; however, the open woods present may support little brown myotis (*Myotis lucifugus*), silver-haired bat (*Lasionycteris noctivagans*), red bat (*Lasiurus borealis*), and evening bat (*Nycticeius humeralis*), which forage along streams in fields, and sometimes among trees, and roost in wooded areas. Other mammals which are more specialized to inhabit wooded areas are southern flying squirrel (*Glaucomys volans*), gray fox (*Urocyon cinereoargenteus*), and long-tailed weasel (*Mustela frenata*).

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles and amphibians which may occur within the forest include eastern box turtle, northern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), southern ringneck snake (*Diadophis punctatus*), copperhead (*Agkistrodon contortrix*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), American toad (*Bufo americanus*), and slimy salamander (*Plethodon glutinosus*).

Bottomland Forest

A barn swallow (*Hirundo rustica*) was observed flying along the stream channel. Additional birds which are likely to inhabit wooded interiors, especially in bottomlands along water courses, are sharp-shinned hawk (*Accipiter striatus*), red-shouldered hawk (*Buteo lineatus*), American woodcock (*Scolopax minor*), barred owl (*Strix varia*), belted kingfisher (*Megaceryle alcyon*), northern parula (*Parula americana*), yellow-throated warbler (*Dendroica dominica*), Louisiana waterthrush (*Seiurus motacilla*), and hooded warbler (*Wilsonia citrina*).

No mammals were observed during the site visit, but observed evidence of mammal activity includes raccoon (*Procyon lotor*) and whitetail deer tracks. Mammal species expected to occur within the forested portion of the project study area are gray squirrel (*Sciurus carolinensis*), white-footed mouse (*Peromyscus leucopus*), and red bat.

Two species of amphibian, southern cricket frog (*Acris gryllus*) and bullfrog (*Rana catesbeiana*) were observed during the site visit. Some terrestrial reptiles and amphibians which may occur within the forest include eastern box turtle, northern fence lizard, five-lined skink, southern ringneck snake, copperhead, gray treefrog, spring peeper, American toad, and slimy salamander.

3. Aquatic Communities

The "Water Resources Characteristics" section details the physical characteristics of Richland Creek, North Prong, Tantraugh Branch, the only aquatic habitats present in the project study area. No support bents are expected to be placed within stream channels; therefore, no impacts to these aquatic resources are anticipated as a result of project construction.

Limited investigations resulted in no observations of aquatic reptiles. Aquatic or semi-aquatic reptiles and amphibians expected to occur within the project study area vicinity include green frog (*Rana clamitans*), eastern musk turtle (*Sternotherus odoratus*), and two-lined salamander (*Eurycea bislineata*).

No sampling was undertaken in Richland Creek to determine fishery potential and no fish species were observed during the field survey. Fish species that may be present in this reach of Richland Creek include smaller fish species such as margined madtom (*Noturus insignis*), rosyside dace (*Clinostomus funduloides*), and spottail shiner (*Notropis hudsonius*).

The North Carolina Wildlife Resources Commission (NCWRC) has developed a Significant Aquatic Endangered Species Habitat database to enhance planning and impact analysis in areas proposed by WRC as being critical due to the presence of Endangered or Threatened aquatic species. All three streams in the project study area (Richland Creek, North Prong, and Tantraugh Branch) are designated Significant Aquatic Endangered Species Habitat (NCWRC 1998).

4. Summary of Anticipated Impacts

Project 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 occurring within the cut-fill footprint of the temporary detour of Alternate 1. Plant communities within the project study area were delineated to determine the approximate area and location of each (Figure 8). A summary of plant community areas and the potential impacts to each is presented in the table below.

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

	Alternate 1			Alternate 2	Alternate 3
Plant Community	**Permanent**	**Temporary**	**Total**	**Permanent**	**Permanent**
Agricultural Land	0.12	0.90	1.02	1.53	0.12
Disturbed/Maintained Land	0.32	0.77	1.09	1.58	0.32
Upland Mixed Hardwood Forest	-	<0.01	<0.01	0.02	-
Bottomland Forest	0.08	0.18	0.26	0.17	0.08
Total	0.52	1.85	2.37	3.30	0.52

[1] Areas expressed in acres.

Projected permanent impacts to natural plant communities resulting from bridge replacements are generally restricted to narrow strips adjacent to the existing bridge and roadway approach segments. In terms of area, little of the natural plant community is expected to be permanently impacted by the proposed project. Temporary impacts result in additional impact to natural communities, and although these impacts are considered to be short-term, re-growth of this community to pre-project stand age and ecological function may require several decades.

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

Richland Creek, North Prong, and Tantraugh Branch are designated as Significant Aquatic Endangered Species Habitat. Consequently, "in water" work is restricted to an absolute minimum due to the presence of Endangered Species, and all work potentially affecting the resource is required to be coordinated with the appropriate resource agency.

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

E. Special Topics

1. Waters of the United States

Surface waters within the project study area are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR Section 328.3). The NWI system for classification of wetlands and deepwater habitats was used to determine the type of each wetland present (Cowardin *et al.* 1979). Section 404 jurisdictional areas are depicted by Figure 8.

Richland Creek and North Prong exhibit the characteristics of a well-defined, third-order, perennial stream with moderate flow over a sand, gravel, and cobble substrate. Alternatively, Tantraugh Branch is a well-defined, second-order, perennial stream with a sand, gravel, and cobble substrate. All three streams can be classified as upper perennial, riverine systems with an unconsolidated bottom composed of cobble and gravel (R3UB1).

Vegetated wetlands are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (Environmental Laboratory 1987). The project study area contains two vegetated wetland areas (Figure 8).

A grass and herb dominated wet depression occurs in the northeast quadrant of the project study area, approximately 530 feet north of the existing bridge (Figure 8, Wetland 1). The project study area contains 0.15 acre of the wetland. The remainder of the wetland extends eastward out of the project study area towards Richland Creek. The depression appears to accumulate groundwater seepage from an adjacent hill. Located in a pasture, the soil and vegetation within the wetland are frequently disturbed by cattle grazing. As a result, the vegetation is suspended in an early successional stage. The wetland can be classified as a palustrine, seasonally flooded wetland supporting scrub-shrub vegetation (PSS1C). Soils exhibit hydric chromas and mottles. Hydrology indicators include water-stained leaves, algal mats, and oxidized rhizospheres. This system would be considered a "riverine" wetland by NCDWQ, based upon its location within the Richland Creek floodplain.

A 0.02-acre forested wetland occurs within a depressional area of the Richland Creek floodplain. The wetland is in the northeast quadrant of the project study area, approximately 190 feet northeast of the existing bridge (Figure 8, Wetland 2). The depression containing the wetland is shaped like a linear bowl with steep, 3-foot walls. The shape of the depression and the surrounding topography suggest it may have been excavated, possibly to create the topographic gradient necessary to drain a nearby ditch. The wetland can be classified as a palustrine, seasonally flooded, forested wetland supporting broad-leaved deciduous vegetation (PFO1C). Soils exhibit hydric chromas and mottles. Hydrology indicators consist of saturated soils and water stains. This system would be considered a "riverine" wetland by NCDWQ, based upon its location within the Richland Creek floodplain.

Alternates 1 and 3 call for the replacement of Bridge No. 228 at its current location. Alternate 1 additionally calls for the construction of a temporary structure 70 feet west of the existing bridge. In contrast, Alternate 2 calls for the replacement of Bridge No. 228 at a location approximately 70 feet west of the existing bridge. Permanent impacts associated with Alternates 1 and 3 will occur to the agricultural land wetland in the northeast quadrant (Figure 8, Wetland 1). There are no anticipated permanent impacts associated with Alternate 2. Information pertaining to jurisdictional area impacts within the project study area is summarized in the following table.

Projected Impacts to Jurisdictional Areas[1] (Areas are depicted in Figure 8)

	Alternate 1			Alternate 2	Alternate 3
Jurisdictional Area	**Permanent**	**Temporary**	**Total**	**Permanent**	**Permanent**
Tantraugh Branch	-	-	-	-	-
North Prong	-	-	-	-	-
Richland Creek	-	-	-	-	-
Total	-	-	-	-	-
Wetland 1	<0.01	-	<0.01	-	<0.01
Wetland 2	-	-	-	-	-
Total	<0.01	-	<0.01	-	<0.01

[1] Stream impacts are expressed in linear feet. Wetland impacts are expressed in acres.

Richland Creek, North Prong, and Tantraugh Branch are designated as Significant Aquatic Endangered Species Habitat. Consequently, "in water" work is restricted to an absolute minimum due to the presence of Endangered Species, and all work potentially affecting the resource is required to be coordinated with the appropriate resource agency.

2. Permits

Impacts to jurisdictional areas are anticipated from the proposed project. As a result, construction activities may require permits and certifications from various regulatory agencies in charge of protecting the water quality of public water resources.

This project may be processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The USACE has made available Nationwide Permit (NWP) 23 (67 FR 2020, 2082; January 15, 2002) for CEs due to minimal impacts to waters of the U.S. expected with bridge construction. NCDWQ has made available a General 401 Water Quality Certification for NWP 23 (GC 3403). If temporary structures are necessary for construction activities, access fills, or dewatering of the site, then a NWP 33 (67 FR 2020, 2087; January 15, 2002) permit and the associated General 401 Water Quality Certification (GC 3366) will be required. Impacts to vegetated wetlands may be authorized under NWP 3 (67 FR 2020, 2078) and the associated General 401 Water Quality Certification (GC 3376). In the event that NWPs 23, 33, and 3 will not suffice, impacts attributed to bridge replacement and associated approach improvements may qualify under General Bridge Permit (GP) 031 issued by the Wilmington USACE District. NCDWQ has made available a General 401 Water Quality Certification for GP 031 (GC 3404). Notification to the Wilmington USACE District office is required if this general permit is utilized.

3. Mitigation

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

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

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

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

F. Rare and Protected Species

1. Federally Protected Species

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

Two federally protected species are listed for Randolph County: Cape Fear shiner (*Notropis mekistocholas*) and Schweinitz's sunflower (*Helianthus schweinitzii*) (February 25, 2003 USFWS list). Both species are listed as Endangered.

Notropis mekistocholas **(Cape Fear shiner)**
Endangered
Family: Cyprinidae
Date Listed: September 25, 1987

The Cape Fear shiner is a small (to 2 inches), moderately stocky minnow. It is pale silvery yellow with a black band along the sides and the moderate-sized eyes are located on the sides of the head (USFWS 1988). This species is distinguished from all other *Notropis* by having a coiled alimentary tract that is visible through the wall of the belly (Rohde *et al.* 1994). Plant material constitutes the primary part of the shiner's diet. Habitat elements include clean streams with gravel, cobble, and boulder substrates with pools, riffles, shallow runs and slackwater areas with large rock outcrops and side channels and pools with water of good quality with relatively low silt loads (USFWS 2003). Little is known about the Cape Fear shiner's life history. The N.C. Wildlife Resources Commission has designated Critical Habitat for this species in Bear Creek in Chatham County, the Rocky River in Chatham County, the Deep River in Chatham and Lee Counties, Fork Creek in Randolph County, and the Deep River in Randolph and Moore Counties. Total numbers are unknown, but all populations appear to be small (USFWS 2003).

BIOLOGICAL CONCLUSION: MAY AFFECT; NOT LIKELY TO ADVERSELY AFFECT

A survey for the Cape Fear shiner was conducted by NCDOT personnel on October 14, 2004 for TIP B-4246. The results of this survey found the Cape Fear shiner is not present in the area of the stream potentially affected by the replacement of Bridge No. 228. Given the results of the survey and the distance to the nearest documented Cape Fear shiner population, completion of this project is not likely to affect the Cape Fear shiner.

Helianthus scheinitzii **(Schweinitz's sunflower)**
Endangered
Family:
Date Listed: June 7, 1991

Schweinitz's sunflower is an erect, unbranched, rhizomatous, perennial herb that grows to approximately 6 feet in height. The stem may be purple, usually pubescent, but sometimes nearly smooth. Leaves are sessile, opposite on the lower stem but alternate above; in shape they are lanceolate and average 5 to 10 times as long as wide. The leaves are rather thick and stiff, with a few small serrations. The upper leaf surface is rough and the lower surface is usually pubescent with soft white hairs. Schweinitz's sunflower blooms from September to frost; the yellow flower heads are about 0.6 inch in diameter. The current range of this species is within

60 miles of Charlotte, North Carolina, occurring on upland interstream flats or gentle slopes, in soils that are thin or clay in texture. The species needs open areas protected from shade or excessive competition, reminiscent of Piedmont prairies. Disturbances such as fire maintenance or regular mowing help sustain preferred habitat (USFWS 1994).

BIOLOGICAL CONCLUSION: NO EFFECT

The project study area provides habitat preferred by Schweintz's sunflower along roadsides, powerline corridors, and upland forest edges. Additionally, NHP lists an occurrence of Schweinitz's sunflower approximately 1.5 miles from the project study area. A systematic survey for Schweinitz's sunflower conducted on August 18, 2004, however, revealed no individuals within the project study area.

2. Federal Species of Concern

The February 25, 2003 USFWS list 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 Randolph County are presented in the table below.

NHP files list an occurrence of Carolina creekshell approximately 0.5 mile ~~east~~ north of the project study area (0.6 mile upstream in the Richland Creek). No FSC species were observed during field investigations.

Federal Species of Concern

Common Name	Scientific Name	*Potential* Habitat	*State* Status*
Carolina darter	*Etheostoma collis lepidinion*	Yes	SC
"Carolina" redhorse	Moxostoma sp.	Yes	SR-PE
Atlantic pigtoe	Fusconaia masoni	Yes	E
Brook floater	Alasmidonta varicosa	Yes	E
Carolina creekshell	Villosa vaughaniana	Yes	E
Pee Dee crayfish ostracod	Dactyloctythere peedeensis	Yes	-

*State Status: E = Endangered; SR-PE = Significantly Rare-Proposed Endangered; (Amoroso 2002; LeGrand and Hall 2001).

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires that for federally funded, licensed, or permitted projects having an effect on properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

B. Historic Architecture

In a memorandum dated: March 10, 2004, the North Carolina State Historic Preservation Office (HPO) determined the project would not affect any historic structures. Accordingly, NCDOT architectural historians did not initiate a survey of the project area. A copy of this memorandum is included in the Appendix.

C. Archaeology

A memorandum from the HPO dated March 10, 2004 states they are not aware of any historic resources that would be affected by the project. Accordingly, NCDOT archaeologists did not initiate a survey of the project area. A copy of the memorandum is included in the Appendix.

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.

No residential or business relocatees are anticipated as a result of the proposed project.

No adverse impacts on families or communities are 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 proposed project is excluded from the Farmland Protection Policy Act (FPPA) since the project is located within the Asheboro Extra Territory Jurisdiction (7 CFR Part 658).

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.

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 burning, it shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520 and 1990 Clean Air Act Amendments and the National Environmental Policy Act. The replacement of the existing bridge will not increase or decrease traffic volumes. 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.

The results from a pre-scoping geotechnical and geoenvironmental investigation performed by the NCDOT Geotechnical Engineering Unit showed no underground storage tank sites or hazardous waste sites or apparent landfills were identified within the project limits. The geotechnical pre-scoping report is included in the Appendix.

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

A "start of study" letter was distributed to local officials and agencies requesting information and concerns relative to the proposed study alternates. Their responses are included in the Appendix. Due to the isolated nature of this bridge replacement project, no formal public involvement program was initiated.

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*
State Clearinghouse
NC Department of Cultural Resources*
NC Wildlife Resources Commission, NC Division of Water Quality*
NC Division of Water Quality*
Director, Randolph County Planning & Zoning Department
Manager, Randolph County
Chairman, Randolph County Board of Commissioners
Superintendent, Randolph County Public School System*
Director, Randolph County Emergency Services*
Sheriff, Randolph County
Mayor, City of Asheboro
Manager, City of Asheboro
Planning Director, City of Asheboro
Fire Chief, Asheboro Fire Department

Asterisks (*) indicate agencies from which written/oral comments were received. Scoping comments and corresponding responses are given below. Copies of the comments received are in the Appendix.

1. United States Department of Interior – Fish and Wildlife Service

Comment: "If suitable habitat occurs within the project vicinity for [the Cape Fear shiner], surveys should be conducted to determine presence or absence of the species".

Response: Richland Creek is designated as a Significant Aquatic Endangered Species Habitat; Richland Creek contains potential Cape Fear shiner habitat. Consequently, "in water" work is restricted to an absolute minimum due to the presence of Endangered Species, and all work potentially affecting the resource is required to be coordinated with the appropriate resource agency. NCDOT conducted a survey for the Cape Fear shiner and determined the biological conclusion to be: "May Affect; Not Likely to Adversely Affect."

Comment: "The Service recommends surveys for Schweinitz's sunflower at [the bridge site]".

Response: A survey of the project area concluded this project will not affect the Schweinitz's sunflower.

2. **North Carolina Wildlife Resources Commission**

Comment: "We recommend replacing this bridge with a bridge".

Response: A new bridge will replace the existing bridge at its current location utilizing an off-site detour during construction.

3. **North Carolina Division of Water Quality**

Comment: "Richland Creek is listed as C and is in the Cape Fear River Basin. It is a 303(d) listed water. NCDOT shall maximize the use of Best Management Practices for all work crossing or draining to the Critical Area of the Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere to 'Design Standards in Sensitive Watersheds' (15A NCAC 04B .0124)".

Response: According to the natural resources technical report and the NCDWQ 2004 Draft 303(d) list, Richland Creek is not a 303(d)-listed water.

4. **Randolph County Emergency Services**

Comment: "We do request that we be given 2-3 weeks notice prior to the closing of [the] bridge so that a more strategic and detailed survey can be taken of the immediate residences and/or businesses in those areas. At that time we will also notify each Fire Department, Rescue Service, EMS, and Law Enforcement".

Response: A recommendation to contact Randolph County Emergency Services prior to closure of SR 2834 has been included in this document.

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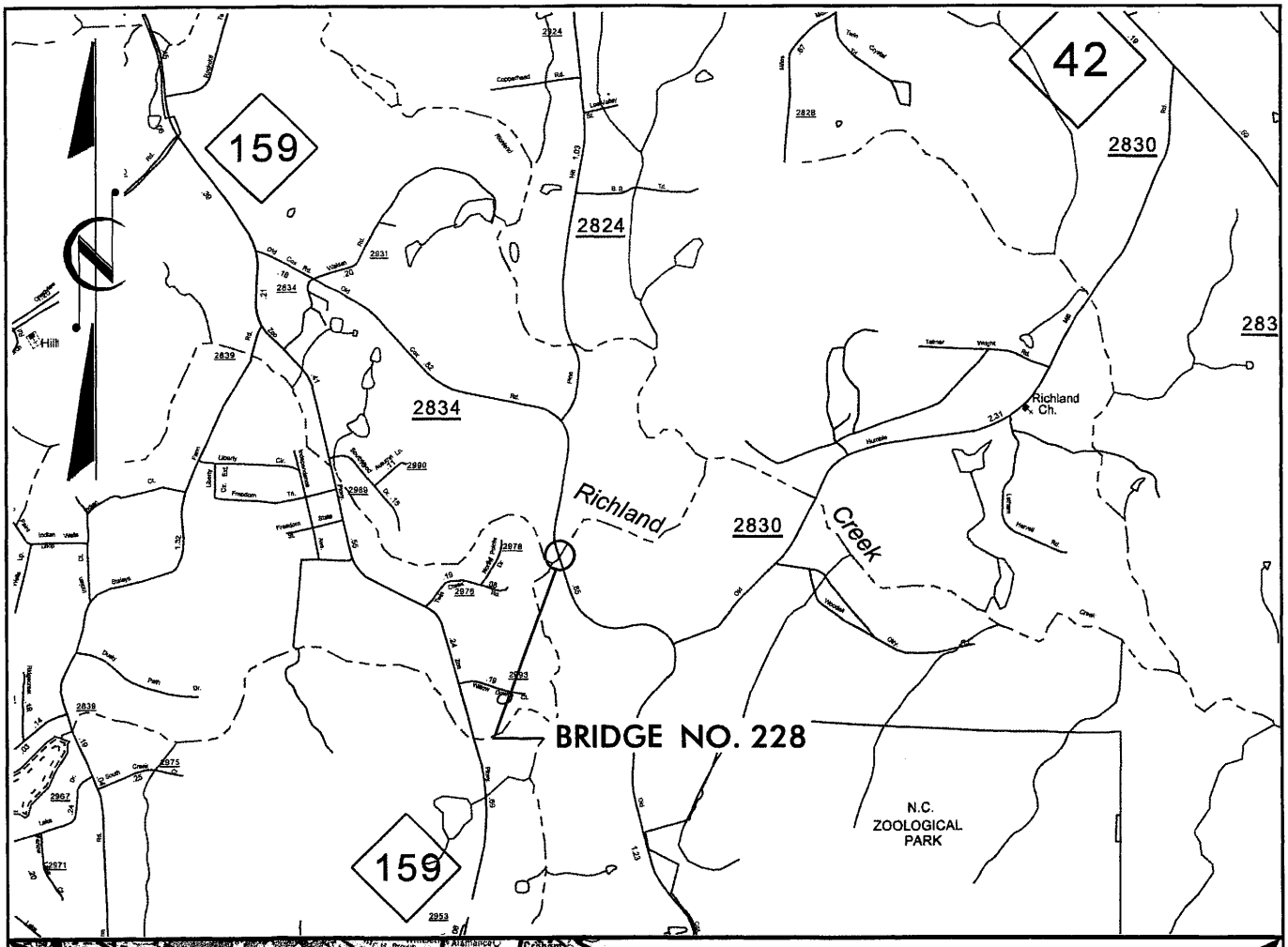
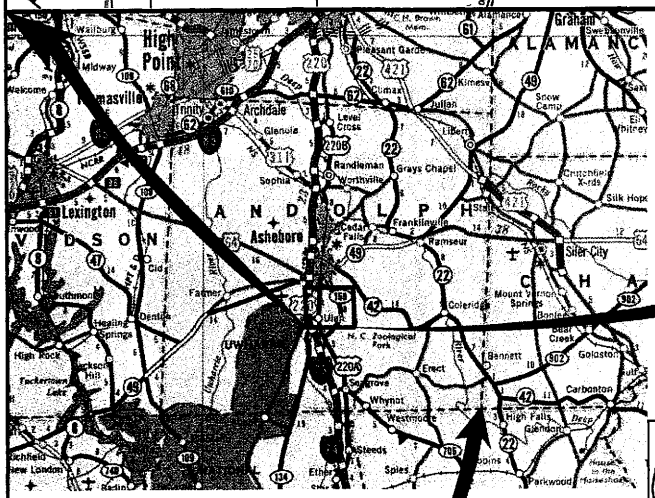
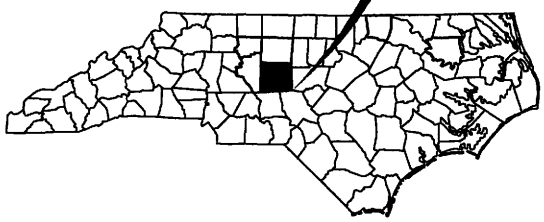
Figures







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

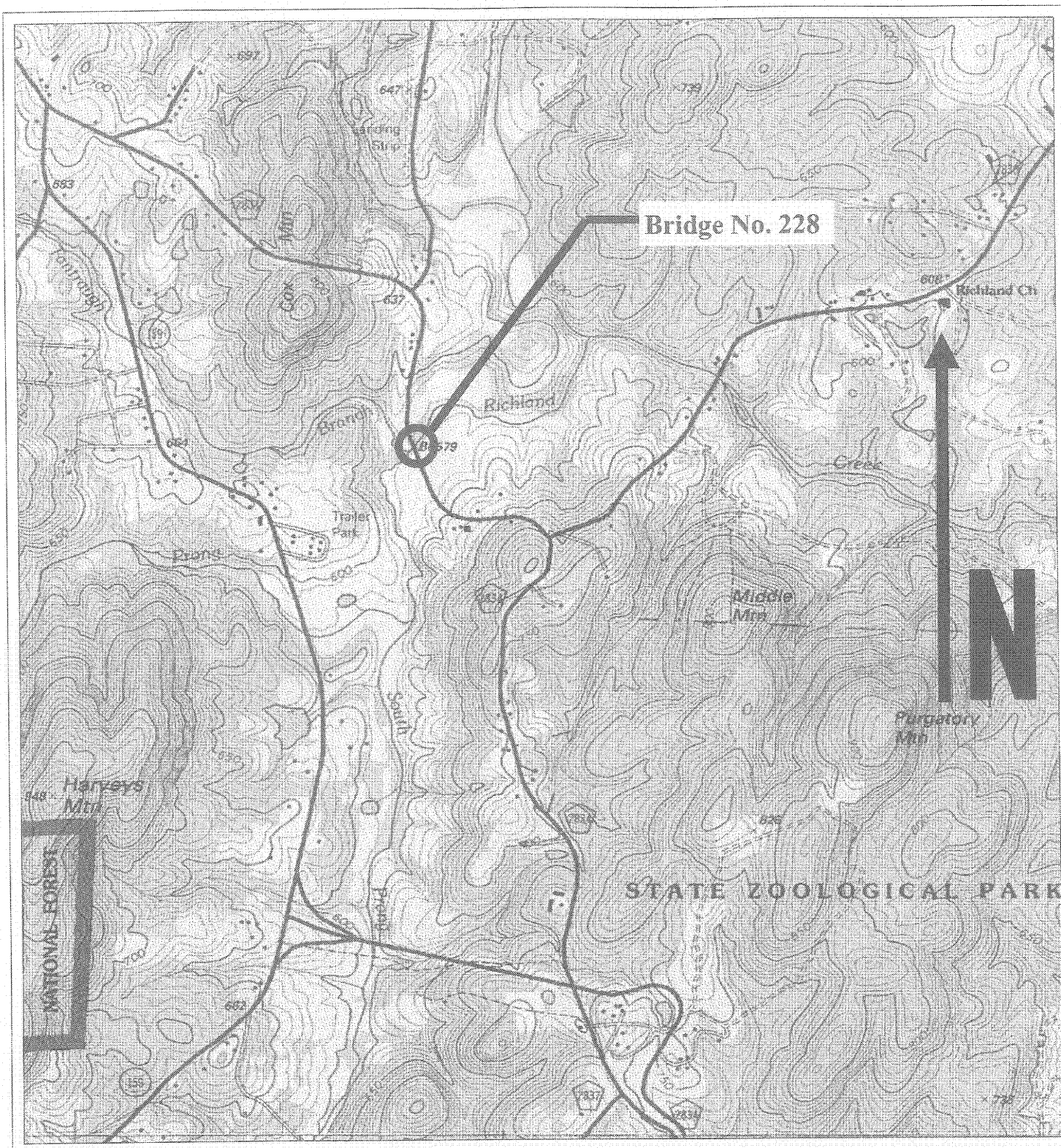
Project Development and Environmental Analysis Branch

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

VICINITY MAP

0 0.5
GRAPHIC SCALE (MILES)

FIGURE 1A

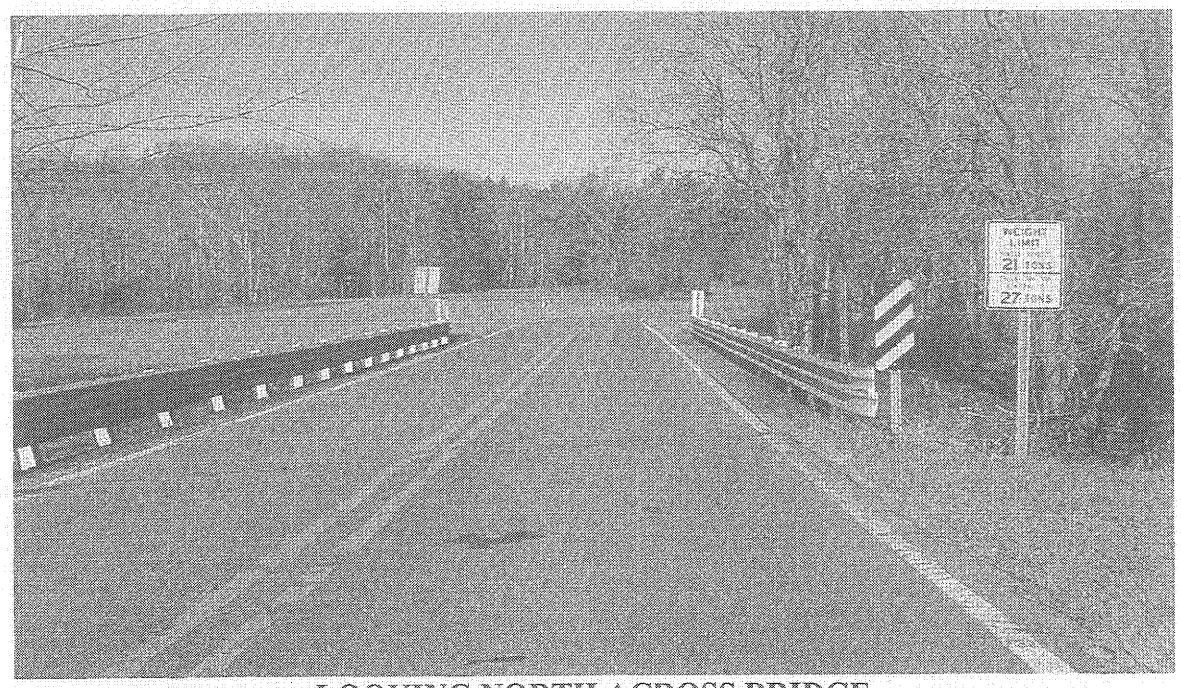


North Carolina Department of Transportation
Project Development and Environmental Analysis Branch

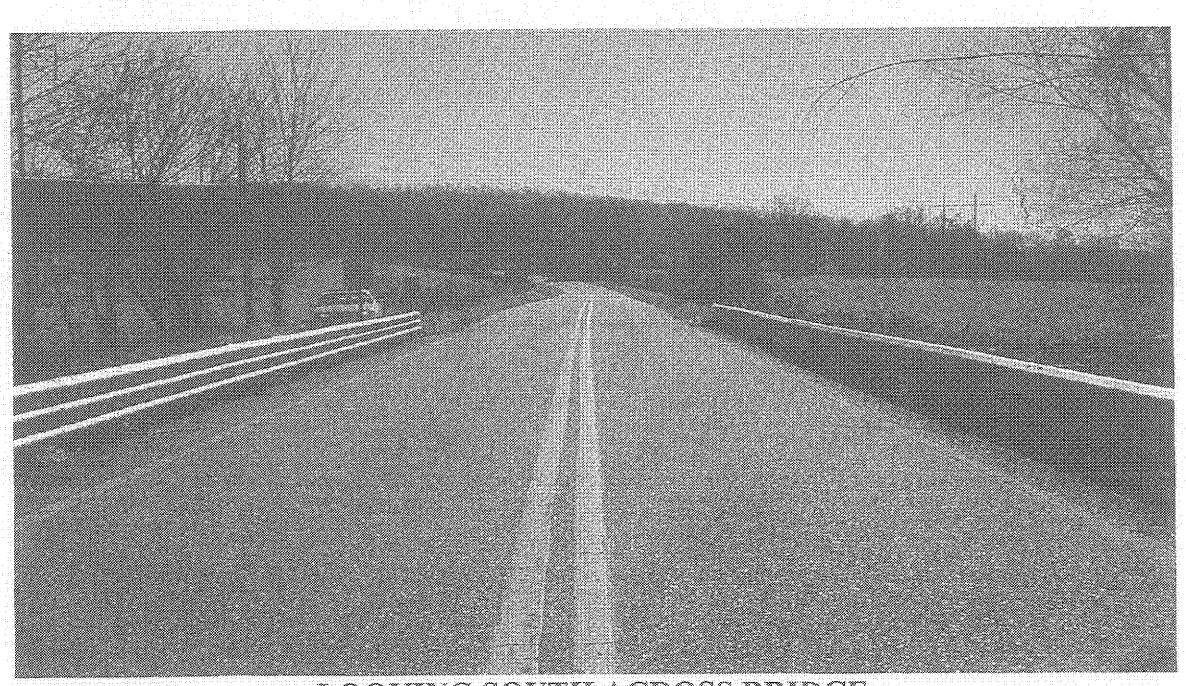
T.I.P. B-4246
Bridge No. 228 Over Richland Creek
On SR 2834 - Randolph County, N.C.

Quad. Map: Asheboro

Figure 1B



LOOKING NORTH ACROSS BRIDGE



LOOKING SOUTH ACROSS BRIDGE

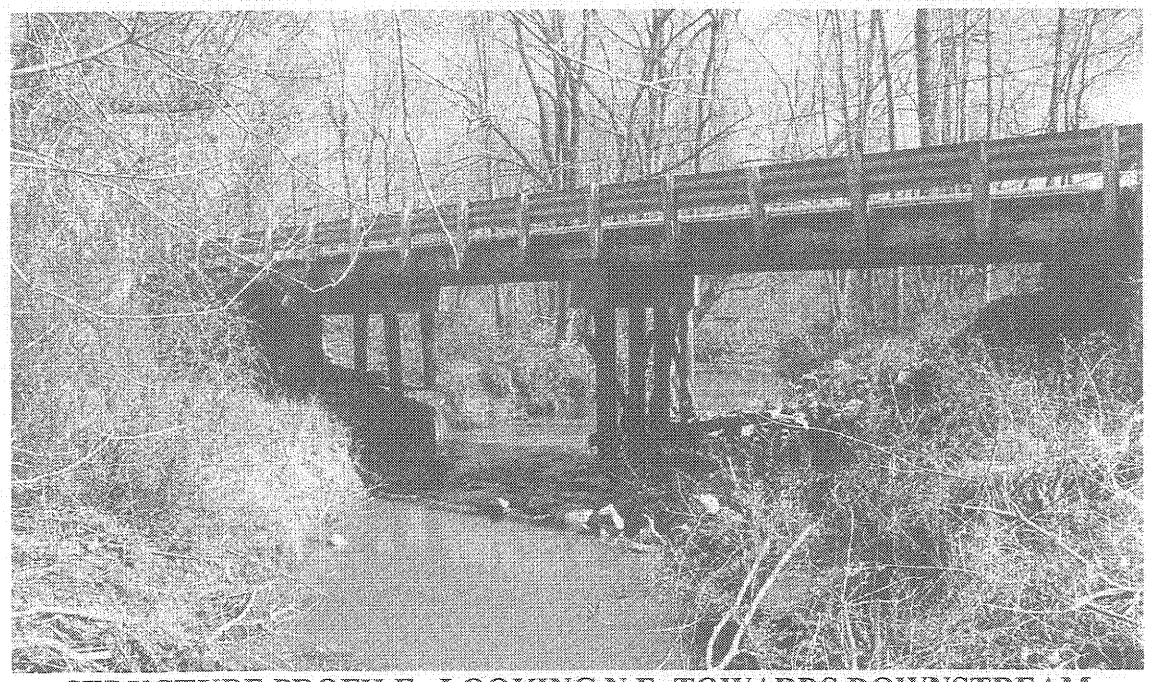
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

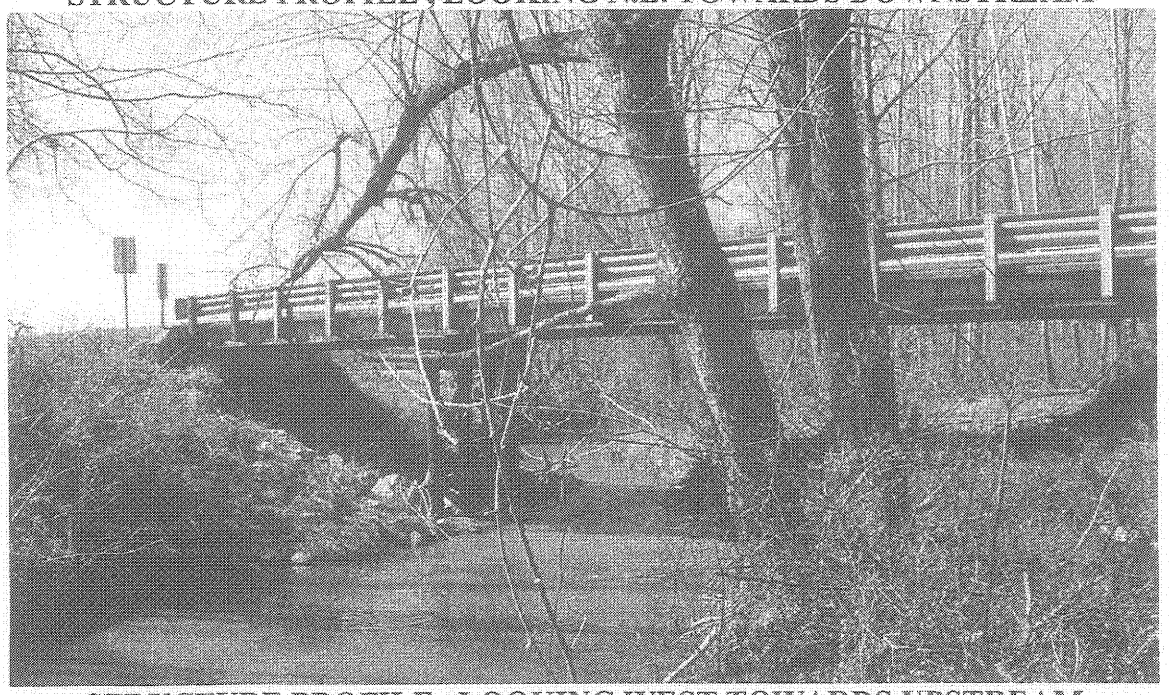
BRIDGE NO. 228

ON SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 2A



STRUCTURE PROFILE , LOOKING N.E. TOWARDS DOWNSTREAM



STRUCTURE PROFILE , LOOKING WEST TOWARDS UPSTREAM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 228

ON SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 2B

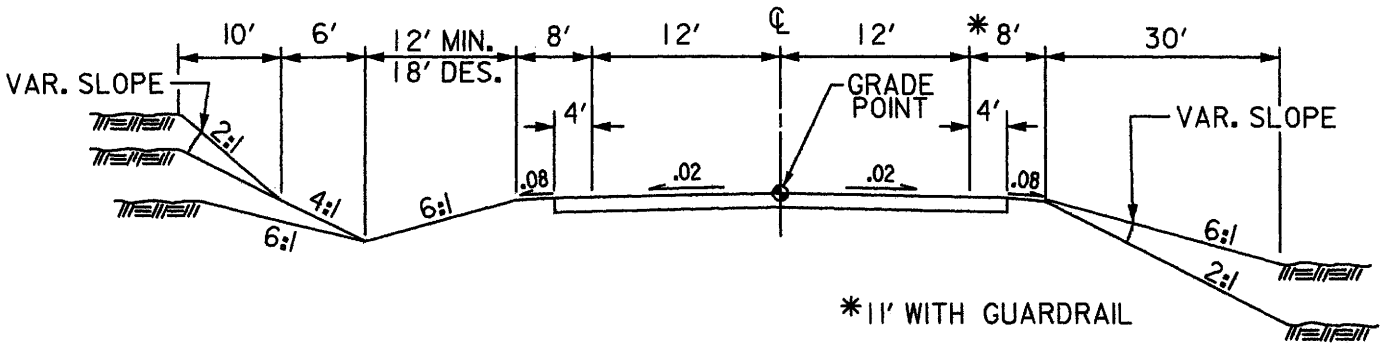
PROPOSED DESIGN CRITERIA

FIGURE 3A

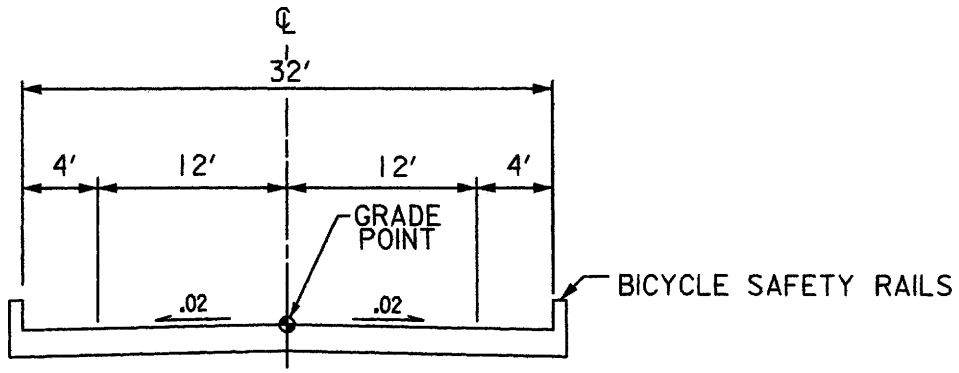
REPLACE BRIDGE NO. 228 ON SR 2834
OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FUNCTIONAL CLASSIFICATION: RURAL LOCAL, DESIGNATED BIKE ROUTE
POSTED SPEED: 55 MPH (ASSUMED)
ESTIMATED ADT:
2005 ADT = 3,100
2025 ADT = 6,000
TTST = 1%
DUAL = 2%
DHV = 13%
DIR = 60%

DESIGN SPEED: 60 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.06 ft/ft
MAXIMUM DEGREE OF CURVE: 4°15'
MAXIMUM GRADE: 6%
MINIMUM DESIRABLE K FACTORS: Ksag = 136 Kcrest = 151
SHOULDER WIDTH & TYPE : 2.0 ft FDPS 8.0 ft TOTAL (11.0ft WITH GUARDRAIL)
LANE WIDTHS: 12.0 ft
BRIDGE DECK WIDTH: 32.0ft CLEAR
BRIDGE LENGTH: 115.0 ft



APPROACH ROADWAY TYPICAL SECTION



BRIDGE TYPICAL SECTION

NOTE:
HORIZONTAL & VERTICAL DESIGN EXCEPTIONS MAY BE REQUIRED.

PREPARED BY: KO & ASSOC. DATE: 02-04-04
REVISED BY: KO & ASSOC. DATE: 02-24-04
APPROVED BY: _____ DATE: _____

FIGURE 3B

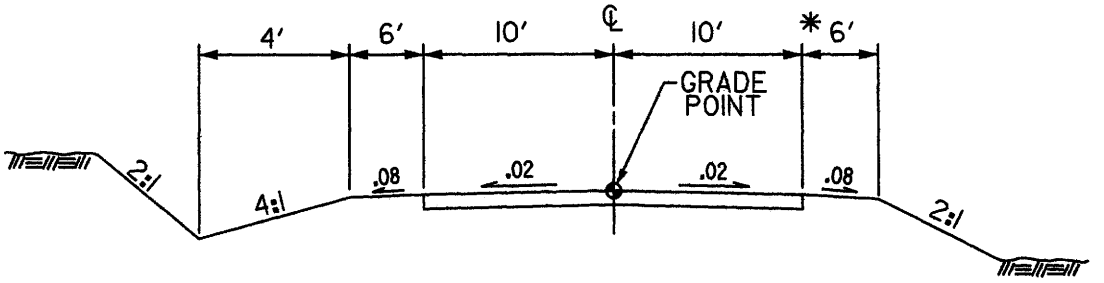
PROPOSED DETOUR CRITERIA

REPLACE BRIDGE NO. 228 ON SR 2834
OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FUNCTIONAL CLASSIFICATION: RURAL LOCAL
POSTED SPEED: 55 MPH (ASSUMED)
ESTIMATED ADT:

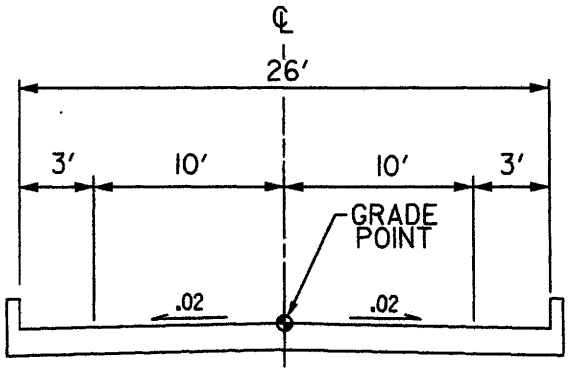
2005 ADT	=	3,100
2025 ADT	=	6,000
TTST	=	1%
DUAL	=	2%
DHV	=	13%
DIR	=	60%

DESIGN SPEED: 45 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.06 ft/ft
MAXIMUM DEGREE OF CURVE: 8°50'
MAXIMUM GRADE: 9%
MINIMUM DESIRABLE K FACTORS: Ksag = 79 Kcrest = 61
SHOULDER WIDTH & TYPE : 6.0 ft TOTAL (9.0ft WITH GUARDRAIL)
LANE WIDTHS: 10.0 ft
BRIDGE DECK WIDTH: 26.0ft CLEAR
BRIDGE LENGTH: 115.0 ft



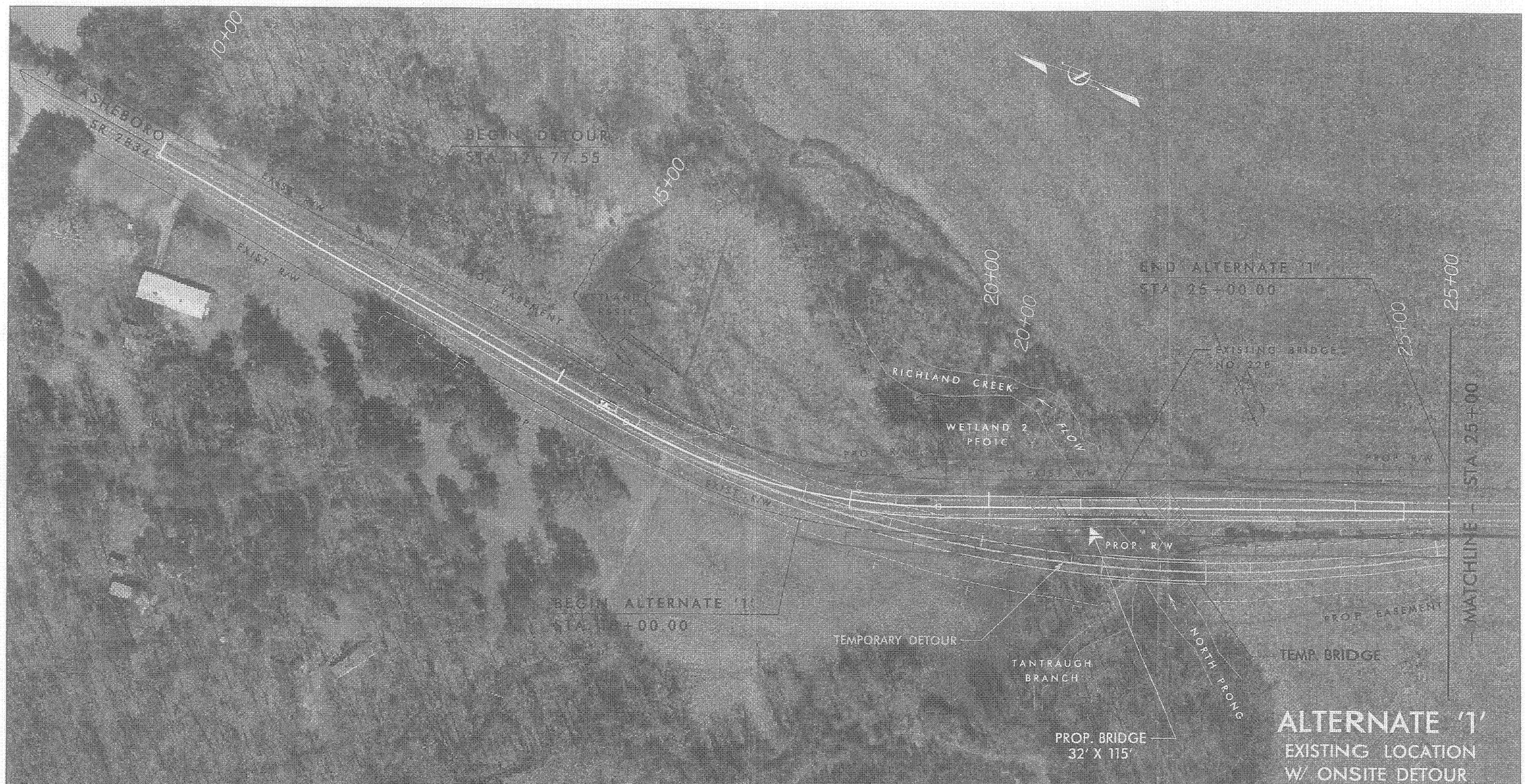
*9' WITH GUARDRAIL

DETOUR APPROACH ROADWAY TYPICAL SECTION



DETOUR BRIDGE TYPICAL SECTION

PREPARED BY: KO & ASSOC. DATE: 02-04-04
APPROVED BY: _____ DATE: _____



ALTERNATE '1'
EXISTING LOCATION
W/ ONSITE DETOUR

-L-	DETOUR
PI Sta. 17+71.17	PI Sta. 20+61.87
Δ = 28° 48' 31.8" (LT)	Δ = 39° 50' 44.1" (LT)
D = 8° 00' 48.2"	D = 4° 05' 33.2"
T = 183.64'	T = 507.42'
L = 359.51'	L = 973.61'
R = 715.00'	R = 1,400.00'
S.E. = 0.06	S.E. = 0.05
DS. = 47 mph	DS. = 45 mph

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 2004

0 50 100 150
(FEET)

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 4

ALTERNATE '1'

EXISTING LOCATION W/ ONSITE DETOUR

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

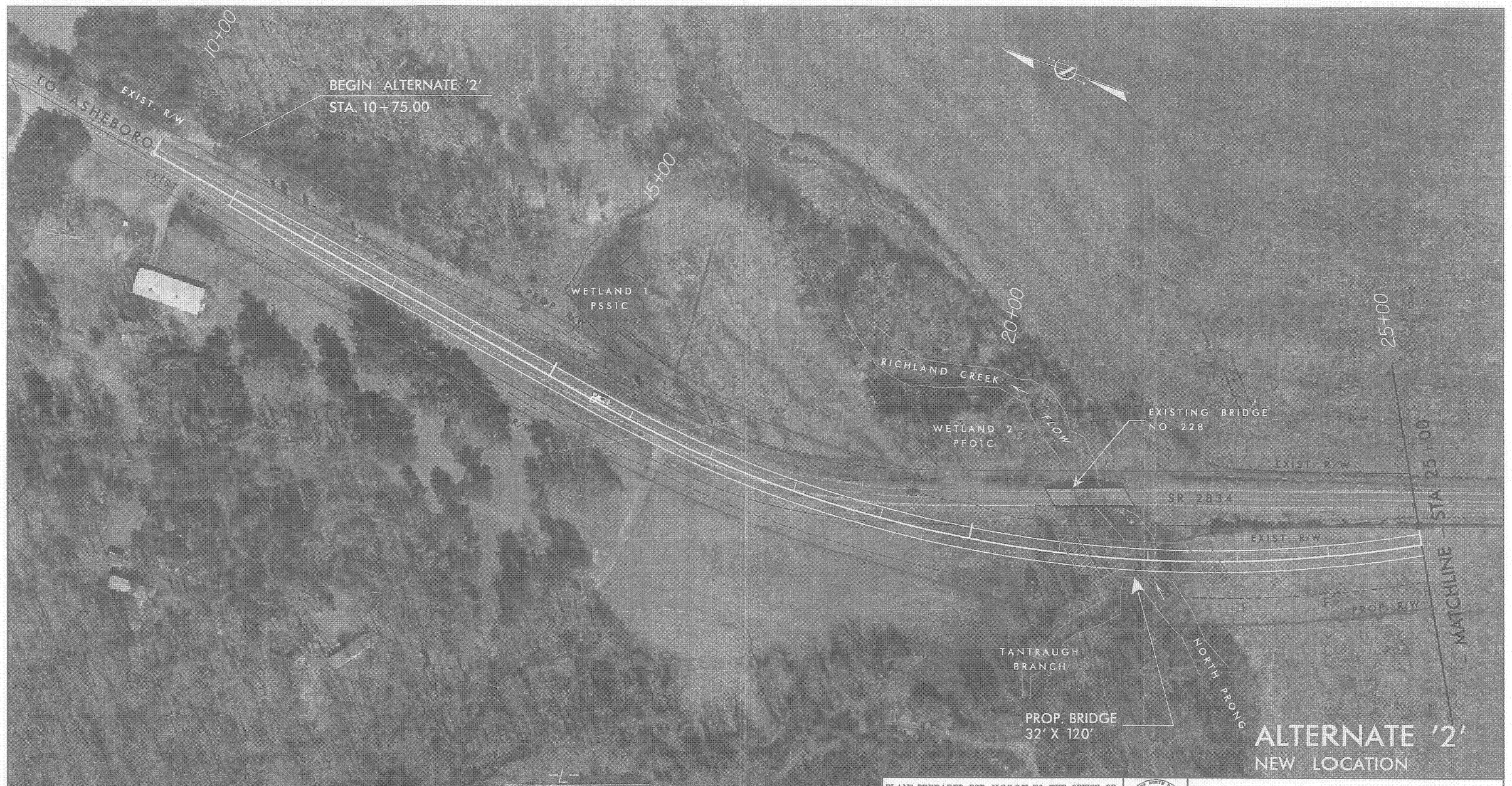
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2004

0 50 100 150
(FEET)

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 4

$JOBPATH\Engineering\B-4246\ORNA4246_ALT_A_sh2.dgn
2/20/2005



-L-
PI Sta. 20+61.87
△ = 39° 50' 44.1" (LT)
D = 4° 05' 33.2"
T = 507.42'
L = 973.61'
R = 1,400.00'
S.E. = 0.06
DS = 60 mph

ALTERNATE '2'
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 2004

0 50 100 150
(FEET)

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 5 SHEET 1 OF 2

ALTERNATE '2'
NEW LOCATION

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

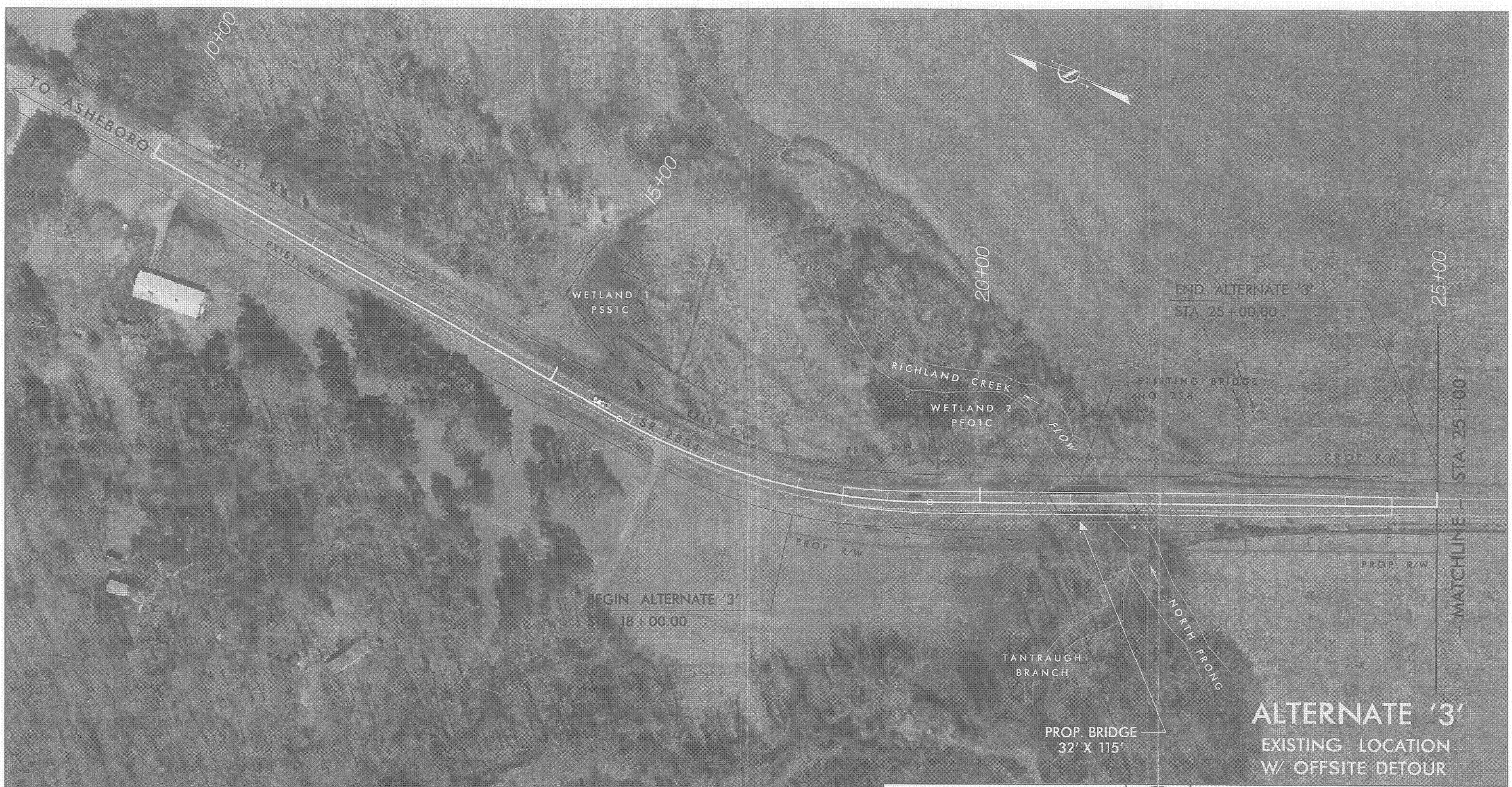
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2004

0 50 100 150
(FEET)

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 5



ALTERNATE '3'

EXISTING LOCATION
W/ OFFSITE DETOUR

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

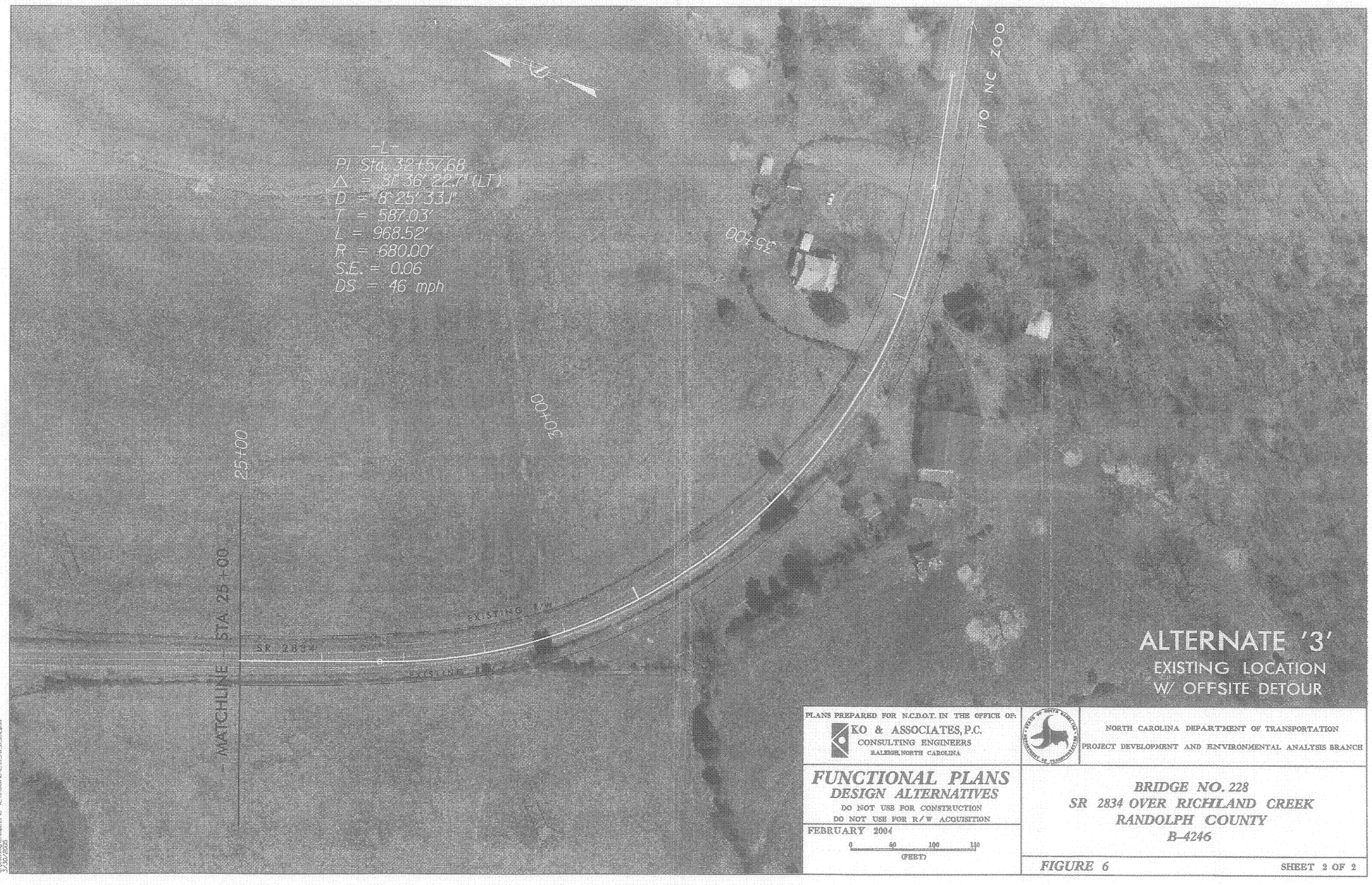
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

FEBRUARY 2004

0 50 100 150
(FEET)

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 6



ALTERNATE '3'
EXISTING LOCATION W/ OFFSITE DETOUR

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

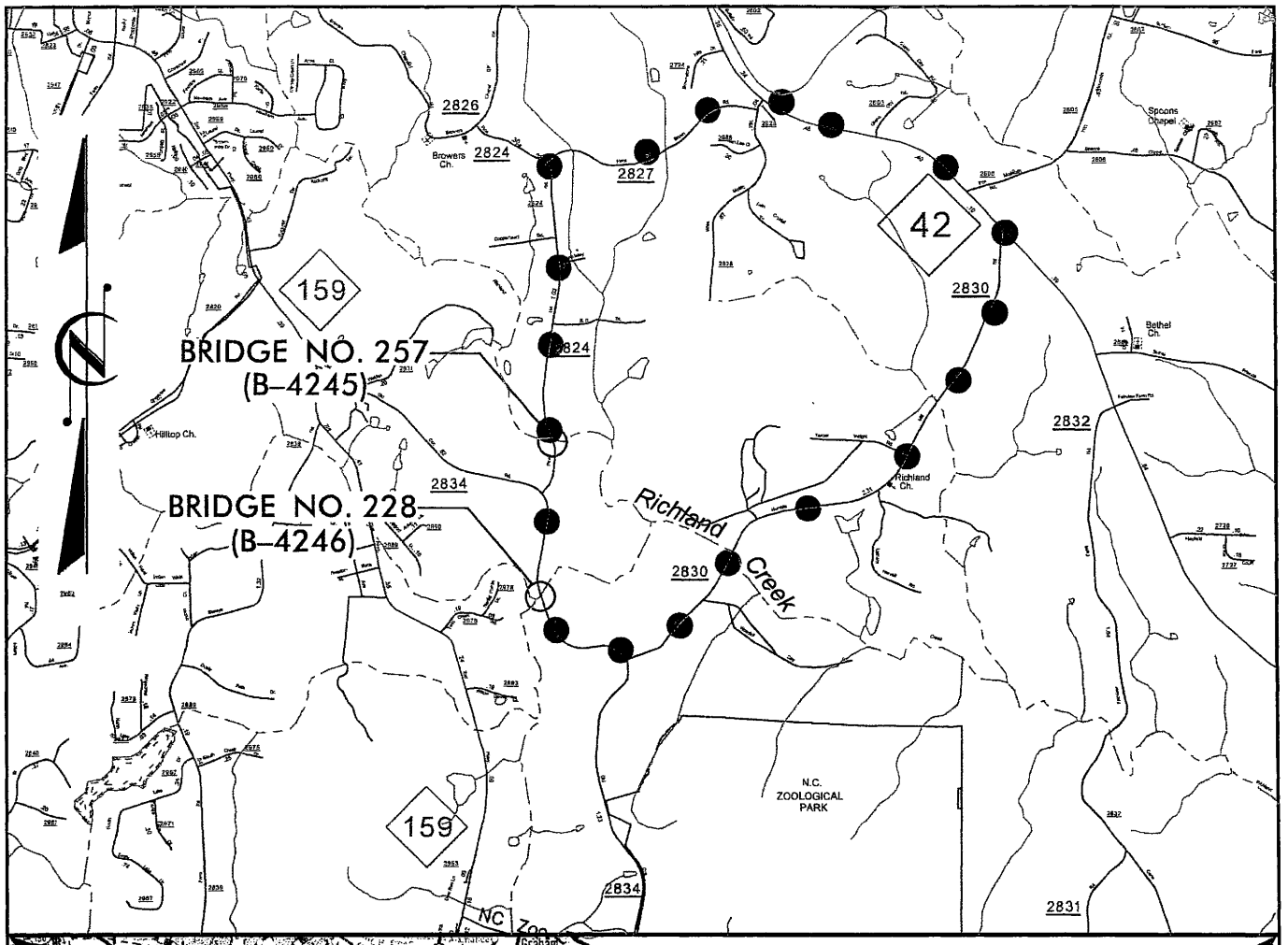
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2004

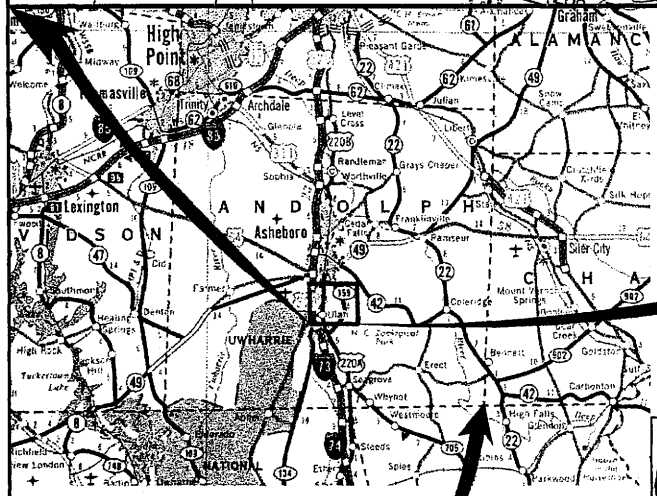
0 50 100 150
(FEET)

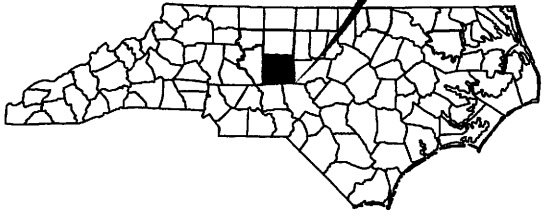
BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

FIGURE 6 SHEET 2 OF 2

q:\planning\Projects\UA\B-4246\DGN\B4246_alt_3_sht2.pdh
5/30/2025







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

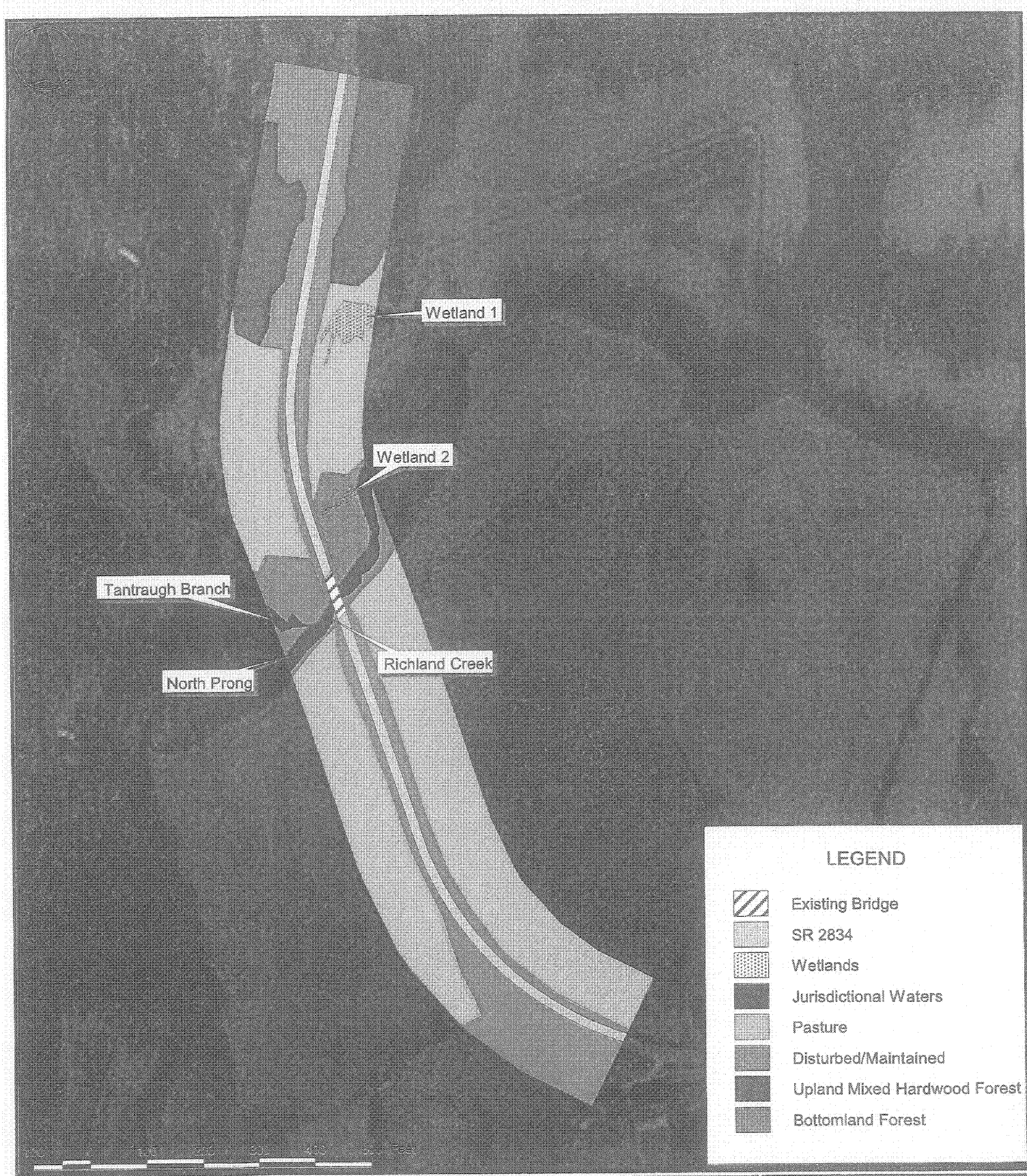
Project Development and Environmental Analysis Branch

BRIDGE NO. 228
SR 2834 OVER RICHLAND CREEK
RANDOLPH COUNTY
B-4246

DETOUR MAP

0 0.5
GRAPHIC SCALE (MILES)

FIGURE 7



EcoScience Corporation
EcoScience Raleigh, North Carolina

Plant Communities (B-4246)

Dwn By:	TBA
Chk By:	TBA
Date:	MAY 2004
ESC Project No.:	04-185

FIGURE 8

Appendix

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON. NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF:

April 2, 2004

Regulatory Division

Subject: Action ID No. 200400429 (B-4243)
200400431 (B-4244)
200400432 (B-4246)

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

Dear Dr. Thorpe:

I am responding to your letter dated February 10, 2004 requesting scoping comments on TIP Projects B-4243, Bridge number 71 on SR 1504 over Reek Creek; TIP Projects B-4244, Bridge number 140 on SR 2215 over Gabriels Creek; and TIP Projects B-4246, Bridge number 228 on SR 2834 over Richland Creek, Randolph County, NCDOT Division 8. Based on the information provided and GIS, it appears that jurisdictional areas as defined at 33 CFR 328.3(a) are located within the proposed project scoping area. In accordance with Section 404 of the Clean Water Act of 1977, as amended, Department of the Army (DA) authorization will be required for the discharge of dredged, excavated or fill material into waters of the United States, including wetlands that are identified in association with this project.

Your letter specifies that Categorical Exclusion would be prepared for this project. However, to qualify for nationwide permit authorization under Nationwide Permit #23 or any other form of general permit, the application and/or project planning report should contain sufficient information to document that all proposed activities associated with the project do not have more than a minimal individual or cumulative impact on the aquatic environment. All activities, including temporary construction, demolition, access, and dewatering activities, should be included in the application and/or project planning report. A copy of the project planning report should be included with the application submittal. The report should contain an adequate description of all proposed activities, both permanent and temporary. The amount of permanent and temporary impacts to waters and wetlands as well as a description of the type of habitat that will be affected by the proposed project should also be included in the report. In addition, the report should provide a reasonable estimate of the linear feet of adverse impacts to streams and acreage impacts to verified wetlands. The type of DA authorization and any specific permit requirements will depend on the crossing design, extent of the fill work within jurisdictional areas, construction methods and other public interest and environmental factors.

Our experience has shown that replacing bridges with culverts often results in more than minimal impacts on the aquatic environment and the proposed project would therefore not be

completion of the project. If restoration involves revegatation of the disturbed area, the plan should include a planting scheme using only endemic vegetation. Bridge piers and footers should be located outside of the waterway whenever possible and where not practicable should be keep to a minimum.

Based on the information provided for the referenced project site, the apparent level of wetland impacts, and scope of the project, the referenced project does not appear to warrant coordination pursuant to the integrated Section 404/NEPA-merger agreement.

We appreciate this opportunity to provide you with our scoping comments. Should you have any questions or wish to discuss our comments further, please call me at the Wilmington Field Office at 910-251-4172.

Sincerely,

Richard K. Spencer
NCDOT Project Manager

CF:

Ms. Karen Taylor, P.E.
Project Development Engineer
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Mr. John Dorney
NCDENR-DWQ
Wetlands Section
1621 Mail Service Center
Raleigh, NC 27699-1621

Mr. Travis Wilson
Highway Coordinator
North Carolina Wildlife Resources Commission
1141 I-85 Service Road
Creedmoor, North Carolina 27522

Mr. Gary Jordan
United States Fish & Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

United States Department of the Interior

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

March 4, 2004

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

Dear Dr. Thorpe:

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

B-4243, Bridge No. 71 on SR 1504 over Reek Creek
B-4244, Bridge No. 140 on SR 2215 over Gabriels Creek (W. Branch)
B-4246, Bridge No. 228 on SR 2834 over Richland Creek

These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

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

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

2. If unavoidable wetland impacts are proposed, every effort should be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity via conservation easements, land trusts or by other means should be explored at the outset;

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

project implementation. In addition to the above guidance, we recommend that the environmental documentation for this project include the following in sufficient detail to facilitate a thorough review of the action:

1. A clearly defined and detailed purpose and need for the proposed project;

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

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

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

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

6. Design features and construction techniques which would be employed to avoid or minimize impacts to fish and wildlife resources, both direct and indirect, and including fragmentation and direct loss of habitat;

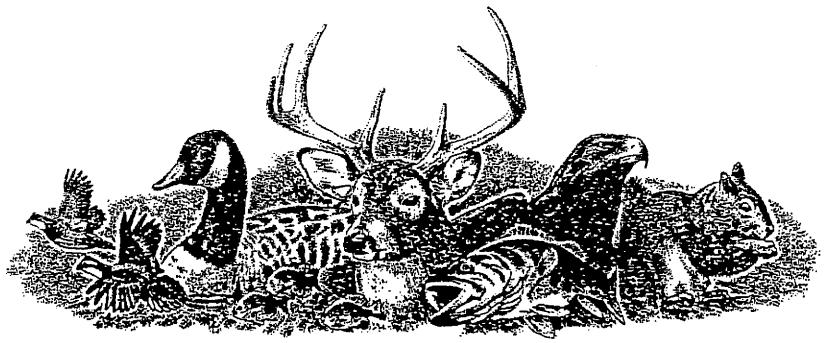
7. If unavoidable wetland or stream impacts are proposed, project planning should include a detailed compensatory mitigation plan for offsetting the unavoidable impacts.

The Service appreciates the opportunity to comment on this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520, ext. 32.

Sincerely,

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

cc: Richard Spencer, USACE, Wilmington, NC
Beth Barnes, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC



North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Karen Taylor
Project Development and Environmental Analysis Branch, NCDOT

FROM: Travis Wilson, Highway Project Coordinator
Habitat Conservation Program

DATE: March 19, 2004

SUBJECT: NCDOT Bridge Replacements in Rockingham, Randolph, and Guilford counties. TIP Nos. B-4252, B-4254, B-4243, B-4244, B-4246, B-4129, B-4130, and B-4131.

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

Our standard recommendations for bridge replacement projects of this scope are as follows:

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

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

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

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

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

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

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

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

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

Project specific comments:

1. B-4252, Rockingham County, Bridge No. 67 over Little Beaver Creek and Bridge No. 95 over Big Beaver Creek on US 311. We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at the Big Beaver Creek site, therefore we request an in-water work moratorium for sunfish from April 1 to June 30. Standard recommendations apply.

2. B-4254, Rockingham County, Bridge No. 89 over Little Troublesome Creek on SR 2627. We recommend replacing this bridge with a bridge. A significant fishery for sunfish

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E., Director
Division of Water Quality
Coleen H. Sullins, Deputy Director
Division of Water Quality

March 24, 2004

MEMORANDUM

TO: Gregory J. Thorpe, PhD, Director
NCDOT Project Development and Environmental Analysis Branch

FROM: Robert Ridings, Env. Tech., DWQ 401 Unit

THROUGH: John Hennessy, Supervisor, DWQ 401 Transportation Unit

SUBJECT: Scoping Review of NCDOT's proposed bridge replacement projects: B-4281, B-4112, B-4252, B-4254, B-4100, B-4101, B-4243, B-4244, B-4246, B-4104, B-4129, B-4130, B-4131.

In reply to your correspondence dated February 10, 2004 (received February 18, 2004) to Cynthia Van der Wiele, in which you requested comments for the referenced projects, the NC Division of Water Quality has the following comments:

I. General Comments Regarding Bridge Replacement Projects

1. If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used to replace the bridge, then DWQ recommends the use of Nationwide Permit No. 14 rather than Nationwide Permit 23.

2. Bridge demolition should be performed using Best Management Practices developed by NCDOT.

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

4. Bridge deck drains should not discharge directly into the stream; stormwater should be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to NCDOT Best Management Practices for the Protection of Surface Waters

5. Live concrete should not be allowed to contact the water in or entering into the stream. Concrete is mostly made up of lime (calcium carbonate) and when in a dry or wet state (not hardened) calcium carbonate is very soluble in water and has a pH of approximately 12. In an unhardened state concrete or cement will change the pH of fresh water to very basic and will cause fish and other macroinvertebrate kills.

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

7. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to re-vegetate naturally and minimizes disturbed soil.

N. C. Division of Water Quality, 401 Wetlands Certification Unit,
1650 Mail Service Center, Raleigh, NC 27699-1650 (Mailing Address)
2321 Crabtree Blvd., Raleigh, NC 27604-2260 (Location)
(919) 733-1786 (phone), 919-733-6893 (fax), (http://h2o.enr.state.nc.us/ncwetlands)
Customer Service #: 1-877-623-6748

III. Project-Specific Comments

B-4281, Bridge 60, Dan River, Stokes County
Dan River is classified as C Trout and is in the Roanoke River Basin. A moratorium prohibiting in-strean and land disturbance within the 25-foot trout buffer is recommended from October 15 to April 15 to protec egg and fry stages of trout. DWQ would prefer this bridge to be replaced with a bridge and the use of BMI (particularly for sediment and erosion control) to be maximized.

B-4112, Bridge 30, Muddy Creek, Forsyth County
Muddy Creek is classified as C and is in the Yadkin River Basin. DWQ has no special concerns with this Please refer to general recommendations listed above.

B-4252, Bridges 67 and 95, Little Beaver and Big Beaver Creeks, Rockingham County
Little Beaver and Big Beaver Creeks are both classified as C and are in the Roanoke River Basin. DWQ h special concerns with this project.

B-4254, Bridge 89, Little Troublesome Creek, Rockingham County
Little Troublesome Creek is listed as C NSW and is in the Cape Fear River Basin. It is a 303(d) listed wa NCDOT shall maximize the use of Best Management Practices for all work crossing or draining to the Cr Area of the Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere t "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0124).

B-4100 and B-4101, Bridges 142 and 141, Abbotts Creek, Davidson County
Abbotts Creek is listed as WS-III water supply stream and is in the Yadkin River Basin. There are 30-foo vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runo maximize use of BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G).

B-4243, Bridge 71, Hasketts Creek, Randolph County
Hasketts Creek is listed as C and is in the Cape Fear River Basin. It is a 303(d) listed water. NCDOT sh maximize the use of Best Management Practices for all work crossing or draining to the Critical Area of t Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere to "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0124).

B-4244, Bridge 140, Gabriels Creek, Randolph County
Gabriels Creek is listed as C and is in the Cape Fear River Basin. DWQ has no special concerns for this

B-4246, Bridge 228, Richland Creek, Randolph County
Richland Creek is listed as C and is in the Cape Fear River Basin. It is a 303(d) listed water. NCDOT sh maximize the use of Best Management Practices for all work crossing or draining to the Critical Area of Water Supply Watershed and 303(d)-listed waters. In addition, NCDOT shall strictly adhere to "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0124).

B-4104, Bridge 21, Carter Creek, Davie County
Carter Creek is listed as WS-IV and is in the Yadkin River Basin. There are 30-foot vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runoff and maximiz BMPs. Refer to 15A NCAC 2B .0216(3)(b)(i)(F) and (G).

North Carolina Department of Cultural Resources
State Historic Preservation Office

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

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

March 10, 2004

MEMORANDUM

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

FROM: David Brook DB for David Brook

SUBJECT: Bridge No. 71 on SR 1504 over Reek Creek, B-4243; Bridge No. 140 on SR 2215 over Gabriels Creek, B-4244; Bridge No. 228 on SR 2834 over Richland Creek, B-4246; Randolph County, ER04-0471, ER04-0472 and ER04-0473

Thank you for your letter of February 10, 2004, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as 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. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Mary Pope Furr
Matt Wilkerson

4/2/03
Not An Unworkable Situation Leslie Cox DTM

Old Cox Rd.
2 Buses Tuesday 4
2 EC Buses 4
Total 8

STATE OF NORTH CARO
DEPARTMENT OF TRANSI

MICHAEL F. EASLEY
GOVERNOR

August 21, 2002

MEMORANDUM

TO: Leslie Cox
School Transportation Director
Randolph County Schools
2234-A Enterprise St.
Asheboro, NC 27203

FROM: William T. Goodwin, Jr. PE
Project Development & Environmental Analysis Branch

SUBJECT: Replacement of Bridge No. 228 on SR 2834 over Richland Creek, Randolph County, Federal Aid Project No. BRZ-2834(1), State Project No. 8.2574301, TIP No. B-4246

The N. C. Department of Transportation has begun the planning process to replace the above bridge, which is nearing the end of its useful life. Construction is planned for year 2006.

Alternative methods of replacing the bridge will be studied. Some alternatives may require road closure at the bridge site. In that case, all traffic would be detoured onto other local roads.

The type of bridge or structure that we select will determine how long the road would have to remain closed. However, the time of closure would not be longer than 8-12 months.

We would like to know the specific number of bus crossings per day and if road closure could be handled by re-routing or other changes, or if it would create an unworkable situation for your school bus operations. Of course, closure is not a realistic option for dead end roads. In such cases traffic will be maintained.

We ask that you let us know your opinion in writing by using the enclosed addressed envelope. We need your reply by December 2, 2002.

If you have any questions concerning the project, please contact Davis Moore at (919) 733-7844, ext. 258.

Attachment

see next 1 9

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS

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

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET

Jack Ward

From: Davis, Donovan L. [dldavis@co.randolph.nc.us]
Sent: Wednesday, August 18, 2004 3:27 PM
To: jward@koassociates.com
Subject: Randolph County, NC Bridge replacement projects

Mr. Ward,

In reference to the bridge closing projects; B-4243, B-4244, and B-4246. I do not see any immediate concerns regarding the detours. We do request that we be given 2-3 weeks notice prior to the closing of each bridge so that a more strategic and detailed survey can be taken of the immediate residences and/or businesses in those areas. At that time we will also notify each Fire Department, Rescue Service, EMS, and Law Enforcement.

It is difficult to make exact determinations with the provided maps. I did look on our GIS but could not determine the specific area when comparing the two maps.

The most problematic area will be the project on Old Cox Rd (SR 2834) because of NC Zoo traffic in the area. Again, with 2-3 weeks notice prior to the closing, this should not be a major problem.

Please give me a call if you have any other questions or need further assistance.

Sincerely,
Donovan Davis,
Deputy Director - EM
Randolph County Emergency Services
336-318-6943 Office
336-318-6951 Fax
www.co.randolph.nc.us/

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael F. Easley
GOVERNOR

Lyndo Tippett
SECRETARY

September 9, 2004

MEMORANDUM TO: Mr. Gregory J. Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch

ATTENTION: Karen B. Taylor, PE
Project Development Engineer

FROM: Njoroge W. Wainaina, PE
State Geotechnical Engineer

TIP NO. B-4246
WBS 33589.1.1
FEDERAL PROJECT: BRZ-2834 (1)
COUNTY: Randolph
DESCRIPTION: Bridge # 228 over Richland Creek on SR 2834

SUBJECT: Geotechnical Pre-Scoping Report

The Geotechnical Engineering Unit performed a limited pre-scoping investigation of the above reference project to provide an early identification of any Geotechnical and GeoEnvironmental issues that might impact the project's planning, design or construction. The following information summarizes our findings.

GEOENVIRONMENTAL ISSUES

Purpose

This report presents the results of a GeoEnvironmental impact evaluation conducted along the above referenced project. The main purpose of this investigation is to identify properties within the project study area that are or may be contaminated and therefore result in increased project

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CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

GEOTECHNICAL ISSUES

Techniques and Methodologies

A site reconnaissance was conducted on May 11, 2004. A single Standard Penetration Test boring was conducted on June 2, 2004. The boring was located on the shoulder of the existing roadway, in the southeast quadrant.

Findings

The proposed corridor lies within the Carolina Slate Belt province in an area mapped as felsic meta-volcanic rock. There are some soft and wet surface soils within the floodplain in the northeast quadrant. There is a considerable amount of large rip-rap material in the stream, particularly around the existing piers. It appears to be fairly recent and is likely a scour protection measure. The single test boring found hard residual soil at the streambed elevation and weathered rock within five feet.

Anticipated Impacts

A drilled shaft foundation appears most likely based on geologic conditions and apparent scour potential. No geotechnical impacts are foreseen for a west side relocation or temporary structure.

If there are any questions regarding these Geotechnical comments, please contact Clinton B. Little, L.G or John L. Pilipchuk, L.G., P.E. at (704)-455-8902

NWW/ET/CBL/JLP/dbm