STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 16, 2008

U. S. Army Corps of Engineers
3331 Heritage Trace Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 33 and 13, Section 401 Water Quality Certification, and Tar-Pamlico Buffer Authorization** for the proposed replacement of Bridge No. 193 over Shelton Creek on SR 1309 (Ben Thrope Rd.) in Granville County, Federal Aid Project No. BRZ-1309(5); WBS 33748.1.1; Division 5; TIP No. B-4524.

$240.00 debit from WBS 33748.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 193 on SR 1309 (Ben Thorpe Rd.) over Shelton Creek. A Nationwide 33 and 401 Water Quality Certification (WQC) 3688 will be required for temporary impacts to Shelton Creek due to the construction of a temporary workpad. A Nationwide 13 and WQC 3689 will be required for 31 linear feet of permanent impacts to Shelton Creek necessary for bank stabilization. A Tar-Pamlico Buffer Authorization will also be required for allowable impacts to riparian buffers.

Please see the enclosed copies of the pre-construction notification, U.S. Fish and Wildlife (USFWS) Biological Opinion (BO), permit drawings, and design plans for the subject project. A Categorical Exclusion (CE) was completed for this project in February 2008 and distributed shortly thereafter. Additional copies are available upon request.

The Jurisdictional Determination (JD) for B-4524 will expire on January 14, 2010. This project is currently scheduled for letting on June 16, 2008 (review date of April 28, 2009).

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

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 James Pflaum at (919) 715-7217.

Sincerely,

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

w/attachment

Mr. Brian Wrenn, NCDWQ (5 Copies)
Mr. J. Wally Bowman, PE., Division Engineer
Mr. Chris Murray, DEO

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Bryan Kluchar, PDEA

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: 13, 33

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

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: North Carolina Department of Transportation
   1598 Mail Service Center, Raleigh, NC 27699
   Telephone Number: 919-733-3141 Fax Number: 919-715-5501
   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:
   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.193 over Shelton Creek on SR 1309

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4524

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Granville Nearest Town: Goshen
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers/names, landmarks, etc.): US 158 to to SR 1309

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): 36.3875 °N -78.7534 °W

6. Property size (acres): Project Area is approximately 0.7 acres.

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

8. River Basin: Tar-Pamlico (HUC 03020101)
   (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: rural, residential housing, agriculture

10. Describe the overall project in detail, including the type of equipment to be used:

Construction of a new bridge on its existing location using an offsite detour. The new bridge will be a 100-foot, single span, box beam bridge with end bents on piles. There will be no bents in the water. The approaches to the bridge will have 10-foot lanes and 4-foot grass shoulders, 7-foot where guardrail is required, with a design speed of 60 mph. The approach work will begin roughly 130 feet south of the new bridge and end roughly 140 feet north of the new bridge. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other equipment necessary for roadway construction.

Explain the purpose of the proposed work: To replace a detiorating 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.

Jurisdictional Determination 01/14/05 USACE Action ID # 200421001
Expiration 01/14/10

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:

Permanent Impacts: There will be no impacts to jurisdictional wetlands. There will be 31 linear feet of surface water impacts due to the placement of rip rap along the northern and southern banks for bank stabilization after removal of the existing end bents. The banks at these locations are currently unstable, the rip rap will not result in loss of Waters of the US.

Temporary Impacts: There will be no temporary impacts to jurisdictional wetlands. There will be 0.01 acre of temporary fill placed in Shelton Creek due to the construction of a temporary work pad along the northern bank. The work pad is necessary for the removal of the concrete mud sills at the existing bents. The length of this impact is within the footprint of the northern bank stabilization.

Utility Impacts: There will be no impacts to jurisdictional resource resulting from the removal or relocation of utilities within the project area..

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)
Total Wetland Impact (acres)					0

3. List the total acreage (estimated) of all existing wetlands on the property: 0 acres

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 1	Shelton Creek	Bank stabilization (rip rap on Bank)	Perennial	18	31	<0.01
Site 1	Shelton Creek	Temporary fill (work pad)	Perennial	18	0*	0.01
Total Stream Impact (by length and acreage)					31	<0.02

* Is within the footprint of the bank stabilization impacts, therefore the linear impact is included in the bank stabilization impacts.

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

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Total Open Water Impact (acres)				0

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

Stream Impact (acres):	<0.02
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	<0.02
Total Stream Impact (linear feet):	31

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.

- The new bridge will be 44 feet longer than the existing bridge, increasing the floodplain under the bridge.
- The proposed bridge will be replaced on its existing location.
- The proposed project will completely span Shelton Creek with no bent in the channel, allowing for pre-project stream flows to maintain the current water quality, aquatic habitat, and flow regime.
- An off-site detour will be utilized during construction.
- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control schedule and use of Best Management Practices (BMPs).
- Design Standards in Sensitive Watersheds will be implemented.
- Best Management Practices for Bridge Demolition and Removal will be implemented.
- A preformed scour hole will be located southeast of the new bridge.

Due to the presence of the federally protected dwarf wedgemussel (*Alasmidonta heterodon*) in the project area, a formal consultation was initiated with the U.S Fish and Wildlife Service (USFWS). A Biological Assessment (BA) was submitted to USFWS on June 23, 2008. The USFWS issued the Biological Opinion (BO) on September 4, 2008. To minimize the affect of the proposed project on the federally protected dwarf wedgemussel, the following conservation measures were required.

- In areas identified as Environmentally Sensitive Areas, the contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations.
- Once grading operations begin in identified Environmentally Sensitive Areas, work shall progress in a continuous manner until complete.

- In areas identified as Environmentally Sensitive Areas, erosion control devices shall be installed immediately following the clearing operation.
- In areas identified as Environmentally Sensitive Areas, seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment.
- In areas identified as Environmentally Sensitive Areas, seeding and mulching shall be done in stages on cut and fill slopes that are greater than 20 feet in height measured along the slope, or greater than two acres in area, whichever is less.
- No new bents will be placed in the channel; new bents will be greater than 10 feet from the normal waterline.
- Deck drains will not be allowed to discharge directly into the stream.
- Removal of the existing bents will take place when water flow level is at a minimum point allowable within the project schedule and will be done in such a manner to minimize disturbance to the stream bed.
- Install special sediment control fence along the top of the stream bank. Install silt fence along the toe of slope parallel to the stream. Once the disturbed areas of the project draining to the special sediment control fence have been stabilized, the special sediment control fence and all built up sediment adjacent to the fence will be removed to natural ground and stabilized with a native grass mix.
- All sedimentation and erosion control measures, throughout the project limits, must be cleaned out when half full with sediment, to ensure proper function of the measures.
- Install rip rap slope protection simultaneously with the embankment construction.
- A temporary access road for conveying construction equipment in the floodplain/buffer will be stabilized with rock or timber matting. A rock work pad or timber matting will also be utilized between the stream bank and the interior bent in the stream for removal of the interior bents.
- Embankment construction and grading shall be managed in such a manner to prevent surface runoff/drainage from discharging into the riparian buffer. All interim surfaces will be graded to drain to temporary erosion control devices. Temporary berms ditches, etc. will be incorporated as necessary to prevent temporary runoff from discharging into the riparian buffer (as specified in the NCDOT BMP manual).
- NCDOT will ensure that the contractor understands and follows the conservation measure listed in the BO.
- NCDOT will ensure that the Division Environmental Officer maintains a level of oversight to insure that all appropriate erosion control measures are fully implemented to avoid/minimize sedimentation of the stream.

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 (see DWQ website for most current version.).

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.
   Mitigation is not proposed for this project. The bank stabilization provides remediation for eroding banks and will prevent further bank erosion. The bank stabilization will not be placed across the stream bed, nor will it reduce stream function or result in loss of Waters of the US. The impacts to Tar-Pamlico Riparian Buffers are categorized as allowable, therefore, mitigation is not proposed.

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://www.nceep.net/pages/inlieureplace.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

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

IX. Environmental Documentation (required by DWQ)

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

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

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

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

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

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1	382	3 (2 for Catawba)	0
2	374	1.5	0
Total	756		0

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. Buffer mitigation is not required.

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).

A biological conclusion of "No Effect" was given in the CE for harperella and smooth coneflower. Marginal habitat is located within the project area, however no specimens were observed during surveys conducted on July 14, 2008. A biological conclusion of "No Effect" remains valid for harperella and the smooth coneflower. North Carolina Natural Heritage Program (NCNHP) documents no occurrences of harperella or the smooth coneflower within 1.0 miles of the project area.

A biological conclusion of "May affect-Unresolved" was given in the CE for the dwarf wedgemussel. Surveys for the dwarf wedgemussel were conducted by Alderman Environmental Services on April 28, 2005. A single live specimen was located with the project area. A follow up survey was conducted by NCDOT biologists on February 5, 2008. This survey was conducted after drought conditions

experienced during the last half of 2007 had subsided and the stream had returned to normal flow conditions. Six fresh dwarf wedgemussel shells were observed. Based on the most recent survey results, a biological conclusion of "May affect, likely to adversely affect" was issued and a formal consultation with USFWS was initiated. The USFWS Biological Opinion was issued on September 5, 2008, and is included in this application.

The CE greensheet states that NCDOT will conduct preconstruction surveys and relocated federally protected mussels from the project area. These activities were not proposed as conservation measures in the BA. Pre-construction mussel surveys and relocations were not listed as discretionary or nondiscretionary conservation measures in the BO. While there will be a work pad constructed in the stream, however, it will be constructed in an area that does not provide suitable habitat for the dwarf wedgemussel. Preconstruction surveys and relocation of federally protected mussels is not required by USFWS, therefore, NCDOT has concluded that this commitment is not warranted. Therefore, pre-construction surveys and mussel relocation will not be performed for this project.

E. L. Lusk 10.16.08

Applicant/Agent's Signature **Date**

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

United States Department of the Interior

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

September 4, 2008

John F. Sullivan III, PE
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

Dear Mr. Sullivan:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed replacement of Bridge No. 193 over Shelton Creek on SR 1309, located in Granville County, North Carolina (TIP No. B-4524), and its effects on the federally endangered dwarf wedgemussel (*Alasmidonta heterodon*, DWM) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). Your August 25, 2008 request for formal consultation was received on August 26, 2008.

If you have any questions concerning this biological opinion, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Pete Benjamin
Field Supervisor

cc: Ken Graham, USFWS, Atlanta, GA
Susi von Oettingen, USFWS, Concord, NH
Eric Alsmeyer, USACE, Raleigh, NC
Greg Thorpe, NCDOT, Raleigh, NC
Logan Williams, NCDOT, Raleigh, NC
Chris Murray, NCDOT, Durham, NC
David Harris, NCDOT, Raleigh, NC
Chris Militscher, USEPA, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Rob Ridings, NCDWQ, Raleigh, NC

This Biological Opinion (BO) is based on information provided in the Biological Assessment (BA) prepared by the North Carolina Department of Transportation (NCDOT), telephone conversations, emails, field investigations and other sources of information. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

July 24, 2006 – Service staff assisted in NCDOT mussel survey at project site.

September 15, 2006 – NCDOT requested concurrence with a biological determination of "may affect, not likely to adversely affect" for DWM.

October 3, 2006 – The Service provided a letter to NCDOT stating that the Service does not concur with the biological determination of "may affect, not likely to adversely affect" for DWM.

May-June 2007 – Service staff and NCDOT staff had discussions and email exchanges regarding necessary conservation measures for the project.

June 6, 2007 – Service staff and NCDOT Natural Environment Unit (NEU) staff met at the project site.

June 7, 2007 – The Service recommended that the Federal Highway Administration (FHWA) initiate formal consultation for the project.

January-February 2008 – Service staff and NCDOT staff had discussions and email exchanges regarding the development of a BA.

February 25, 2008 – Service staff assisted in NCDOT mussel survey at project site.

August 26, 2008 – The Service received a letter from the FHWA, dated August 25, 2008, with the attached BA, requesting formal consultation on the proposed Bridge No. 193 replacement over Shelton Creek.

BIOLOGICAL OPINION

I. DESCRIPTION OF THE PROPOSED ACTION

The B-4524 project is located at the SR 1309 crossing of Shelton Creek in Granville County, North Carolina, approximately nine miles northwest of the city of Oxford. The existing four-span, 62 feet long bridge will be replaced with a single-span, 100 feet long box-beam bridge. The new bridge will be placed on the same alignment, but will be raised slightly. The new bridge will completely span the channel of Shelton Creek. A total of 540 cubic yards of existing fill will be removed from the floodplain at the bridge approaches and abutments. The newly shaped bank slopes will be stabilized with riprap above the waterline. For equipment access, a

temporary access path will be constructed on both banks on the downstream side of the existing bridge. Riprap or timber matting will be used to stabilize the temporary paths. The existing bents will be removed from the channel. Removal of the center bent will require a temporary riprap causeway. The existing approach roads will be widened from 18 feet to 20 feet for a distance of approximately 280 feet to the south and 290 feet to the north. Traffic will be detoured onto other roads during construction.

Action Area

The action area is defined as the SR 1309 project right-of-way (ROW) of B-4524, beginning approximately 280 feet south of the bridge to approximately 290 feet north of the bridge, plus Shelton Creek for a distance of 1,312 feet (400 meters) downstream and 98 feet (30 meters) upstream of the bridge. The action area consists mainly of a maintained/disturbed roadside vegetative community, the SR 1309 pavement and bridge structure, and the Shelton Creek channel. The action area occurs in Tar River Sub-basin 03-03-01, as assigned by the North Carolina Department of Environment and Natural Resources, Division of Water Quality Section. At the project site, Shelton Creek is approximately 45 feet wide. Bottomland hardwood forest borders along each bank within the action area.

Conservation Measures

Conservation measures represent actions, pledged in the project description, that the action agency will implement to minimize the effects of the proposed action and further the recovery of the species under review. Such measures should be closely related to the action and should be achievable within the authority of the action agency. Since conservation measures are part of the proposed action, their implementation is required under the terms of the consultation. The FHWA and NCDOT have proposed the following conservation measures.

- In areas identified as Environmentally Sensitive Areas, the contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations.
- Once grading operations begin in identified Environmentally Sensitive Areas, work shall progress in a continuous manner until complete.
- In areas identified as Environmentally Sensitive Areas, erosion control devices shall be installed immediately following the clearing operation.
- In areas identified as Environmentally Sensitive Areas, seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment.
- In areas identified as Environmentally Sensitive Areas, seeding and mulching shall be done in stages on cut and fill slopes that are greater than 20 feet in height measured along the slope, or greater than two acres in area, whichever is less.
- An off-site detour will be utilized for this project.
- NCDOT Best Management Practices for Bridge Demolition and Removal will be implemented during the removal of the existing bridge.

- No new bents will be placed in the channel. New bents will be greater than 10 feet from the normal waterline.
- Deck drains will not be allowed to discharge directly into the stream.
- Removal of the existing bents will take place when water flow level is at a minimum point allowable within the project schedule and will be done in such a manner to minimize disturbance to the stream bed.
- Special sediment control fence will be installed along the top of the steam bank. Standard silt fence will be installed along the toe of slope parallel to the stream. Once the disturbed areas of the project draining to the special sediment control fence have been stabilized, the special sediment control fence and all built up sediment adjacent to the fence will be removed to natural ground and stabilized with a native grass mix.
- All sedimentation and erosion control measures, throughout the project limits, will be cleaned out when ½ full with sediment, to ensure proper function of the measures.
- Rip rap slope protection will be installed simultaneously with the embankment construction.
- A temporary access road for conveying construction equipment in the floodplain/buffer will be stabilized with rock or timber matting. A rock work pad or timber matting will also be utilized between the stream bank and the interior bent in the stream for removal of the interior bents.
- Embankment construction and grading shall be managed in such a manner to prevent surface runoff/drainage from discharging into the riparian buffer. All interim surfaces will be graded to drain to temporary erosion control devices. Temporary berms, ditches, etc. will be incorporated as necessary to prevent temporary runoff from discharging into the riparian buffer (as specified in the NCDOT BMP manual).

II. STATUS OF THE SPECIES

The DWM was federally listed as endangered on March 14, 1990. The DWM is found solely in Atlantic Coast drainage streams and rivers of various sizes and moderate current. It ranges from New Hampshire to North Carolina, in small creeks to deep rivers in stable habitat with substrates ranging from mixed sand, pebble and gravel, to clay and silty sand. In the southern portion of its range, it is often found buried under logs or root mats in shallow water (USFWS 1993); whereas in the northern portion of its range, it may be found in firm substrates of mixed sand, gravel or cobble, or embedded in clay banks in water depths of a few inches to greater than 20 feet (Fichtel and Smith 1995; Gabriel 1995; Gabriel 1996; Nedeau and Werle 2003; Nedeau 2004a, 2004b, 2006a).

The DWM's reproductive cycle is typical of other freshwater mussels, requiring a host fish on which its larvae (glochidia) parasitize and metamorphose into juvenile mussels. The DWM is not a long-lived species as compared to other freshwater mussels; life expectancy is estimated at 10 to 12 years (Michaelson and Neves 1995).

Human activity has significantly degraded DWM habitat causing a general decline in populations and a reduction in distribution of the species. Primary factors responsible for the decline of the

DWM include: 1) impoundment of river systems, 2) pollution, 3) alteration of riverbanks, and 4) siltation (USFWS 1993).

Damming and channelization of rivers throughout the DWM's range have resulted in the elimination or alteration of much of its formerly occupied habitat (Watters 2001). Domestic and industrial pollution was the primary cause for mussel extirpation at many historic sites. Mussels are known to be sensitive to a wide variety of heavy metals and pesticides, and to excessive nutrients and chlorine (Havlik and Marking 1987). Mussel die-offs have been attributed to chemical spills, agricultural waste run-off and low dissolved oxygen levels.

Because freshwater mussels are relatively sedentary and cannot move quickly or for long distances, they cannot easily escape when silt is deposited over their habitat. Siltation has been documented to be extremely detrimental to mussel populations by degrading substrate and water quality, increasing exposure to other pollutants and by direct smothering of mussels (Ellis 1936, Markings and Bills 1979). In Massachusetts, a bridge construction project decimated a population of DWM by accelerated sedimentation and erosion (Smith 1981).

Most DWM populations are small and geographically isolated from each. This isolation restricts exchange of genetic material among populations and reduces genetic variability within populations (USFWS 1993).

At one time, DWM was recorded from 70 localities in 15 major drainages ranging from North Carolina to New Brunswick, Canada. Since the 1993 Recovery Plan, a number of new locations have been discovered and a number of known locations are possibly no longer extant. Based on preliminary information, the dwarf wedgemussel is currently found in 15 major drainages (Table 1), comprising approximately 70 "sites" (one site may have multiple occurrences). At least 45 of these sites are based on less than five individuals or solely on spent shells (USFWS 2007).

Table 1. Dwarf wedgemussel major drainages.

State	Major Drainage	County
NH	Upper Connecticut River	Coos, Grafton, Sullivan, Cheshire
VT	Upper Connecticut River	Essex, Orange, Windsor, Windham
MA	Middle Connecticut River	Hampshire, Hampden
CT	Lower Connecticut River	Hartford
NY	Middle Delaware	Orange, Sullivan, Delaware
NJ	Middle Delaware	Warren, Sussex
PA	Upper Delaware River	Wayne
MD	Choptank River	Queen Anne's, Caroline
MD	Lower Potomac River	St. Mary's, Charles
MD	Upper Chesapeake Bay	Queen Anne's
VA	Middle Potomac River	Stafford
VA	York River	Louisa, Spotsylvania
VA	Chowan River	Sussex, Nottoway, Lunenburg

NC	Upper Tar River	Granville, Vance, Franklin, Nash
NC	Fishing Creek	Warren, Franklin, Halifax
NC	Contentnea	Wilson, Nash
NC	Upper Neuse	Johnson, Wake, Orange

* The 15 major drainages identified in Table 1 do not necessarily correspond to the original drainages identified in the 1993 Recovery Plan although there is considerable overlap.

The main stem of the Connecticut River in New Hampshire and Vermont is considered to have the largest remaining DWM population, consisting of three distinct stretches of sporadically occupied habitat segmented by hydroelectric dams. It is estimated that there are hundreds of thousands of DWM scattered within an approximate 75-mile stretch of the Connecticut River. The Ashuelot River in New Hampshire, the Farmington River in Connecticut, and the Neversink River in New York harbor large populations, but these number in the thousands only. The remaining populations from New Jersey south to North Carolina are estimated at a few individuals to a few hundred individuals (USFWS 2007).

In summary, it appears that the populations in North Carolina, Virginia, and Maryland are declining as evidenced by low densities, lack of reproduction, or inability to relocate any DWM in follow-up surveys. Populations in New Hampshire, Massachusetts, and Connecticut appear to be stable, while the status of populations in the Delaware River watershed affected by the recent floods of 2005 is uncertain at this time (USFWS 2007).

III. ENVIRONMENTAL BASELINE

Under section 7(a)(2) of the Act, when considering the "effects of the action" on federally listed species, the Service is required to take into consideration the environmental baseline. The environmental baseline includes past and ongoing natural factors and the past and present impacts of all federal, state, or private actions and other activities in the action area (50 CFR 402.02), including federal actions in the area that have already undergone section 7 consultation, and the impacts of state or private actions which are contemporaneous with the consultation in process.

Status of the Species Within the Action Area

The action area occurs within the Upper Tar River Basin. Records maintained by the North Carolina Natural Heritage Program (NCNHP) have shown DWM to be present in the Tar River main stem between SR 1150 (Gooches Mill Road) and US 158 and in the following tributaries: Cub Creek, Shelton Creek, Fox Creek and North Fork Tar River. All of the element occurrences in the Upper Tar River Basin are designated as NHP Element Occurrence No. 89, representing them as a single population of DWM.

Observations (G. Jordan, Service, personal observations) of the Upper Tar River Basin suggest that the DWM in the Upper Tar River Basin are genetically isolated and may not be represented as a single population. Shelton Creek and Fox Creek are a contiguous unit, separated from the

Tar River main stem by Gooches Mill Dam. The dam is located at the mouth of Shelton Creek and impounds the Tar River and Shelton Creek. The habitat at their junction is not suitable for DWM or their host species and likely represents a complete barrier to movement between the two areas.

Surveys conducted within the action area on July 24, 2006 and February 25, 2008 did not reveal any live DWM. However, a single dead DWM shell was found during a habitat assessment within the action area in May 2006. NCNHP data also indicate a 2005 observation of DWM approximately 2.8 miles downstream of the action area near the SR 1304 crossing. Though no live DWM have been found within the action area, the habitat is suitable and the presence of DWM cannot be ruled out.

On July 17, 2007, Shelton Creek was observed to have completely stopped flowing and was reduced to a series of stagnant pools due to drought conditions (G. Jordan, Service, personal observation). Little or no rain occurred from July 2007 to at least November 2007. An October 29, 2007 site visit by NCDOT biologists to a location several miles downstream of the action area near the confluence of Shelton Creek and Tar River revealed dry conditions and heavy mussel mortality.

Rainfall returned to the action area during the winter of 2007/2008 and flow resumed in Shelton Creek. A February 25, 2008 mussel survey conducted by Service and NCDOT staff several miles downstream of the action area at the US 158 crossing of Shelton Creek revealed the presence of at least small numbers of live DWM, demonstrating that some DWM survived the drought conditions by burrowing down into moist subterranean substrate.

Factors Affecting the Species Environment Within the Action Area

The existing bridge, with its approach fill material within the floodplain, may have affected DWM habitat within the action area. DWM, like all mussels, are sensitive to changes within their watershed, particularly deforestation, urbanization and major construction activities. Presently the action area and surrounding areas are primarily rural and do not appear to be experiencing deforestation, urbanization or any other major construction activities. The most prevalent recent factor affecting the species in and near the action area was the effect of the severe 2007 drought and the lack of genetic connectivity with nearby, but isolated populations.

IV. EFFECTS OF THE ACTION

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. The federal agency is responsible for analyzing these effects. The effects of the proposed action are added to the environmental baseline to determine the future baseline, which serves as the basis for the determination in this BO. Should the effects of the federal action result in a situation that would jeopardize the continued existence of the species, we may propose reasonable and prudent alternatives that the federal agency can take to avoid a violation of section 7(a)(2). The discussion that follows is our evaluation of the

anticipated direct and indirect effects of the proposed project. Indirect effects are those caused by the proposed action that occur later in time but are still reasonably certain to occur (50 CFR 402.02).

Factors to be Considered

Based on previous survey results, and given the effects of the severe 2007 draught, it is uncertain that any DWM occur within the action area. If the species does occur within the action area, the project is expected to have negative effects for only a short duration. The long term and overall effect of the project may be beneficial if there is significant recovery of the species in the Upper Tar Basin.

Analysis for Effects of the Action

Beneficial Effects: The commitment to completely span the channel and lengthen the bridge from 62 feet to 100 feet will have beneficial effects. Some of the approach fill material in the floodplain at the existing abutments will be removed, allowing the stream to access more of its floodplain. This can be expected to reduce the bridge's effects on stream-flow patterns by potentially reducing downstream bank scouring and sedimentation.

Direct Effects: A temporary causeway (rock work pad or timber matting) will be constructed from one bank to the interior in-channel bent for its removal. Placement of the causeway could crush any DWM within its footprint. If a high water event occurs during the time the causeway is in place, the constricted flow could cause erosion of the opposite bank. A causeway also adds additional area for storm debris to collect on, further increasing the possibility of erosion. Material eroded from the stream bank could be deposited downstream onto DWM and/or their habitat, possibly killing them or hampering respiration, feeding or reproduction. The causeway could be dislodged during a storm event, scattering debris downstream possibly onto DWM and/or their habitat. However, the temporary causeway is expected to only be in place for less than a month, thus reducing the chance of effects. The causeway may cause temporary compaction of the underlying substrate after its removal.

Removal of the in-channel bents may disturb sediment which will redeposit downstream, potentially on DWM or within DWM habitat. However, the small amount of sedimentation is likely sub-lethal. Of greater concern is prolonged erosion of the disturbed area on and along the banks of the creek within the action area during the construction of the bridge and approach road. A major storm event could erode soil from within the disturbed construction area and wash it into the stream, thus smothering mussels; interfering with respiration, feeding, and reproduction; and degrading habitat. To avoid or minimize the potential for this effect, NCDOT has developed stringent erosion control measures and other conservation measures (see "Conservation Measures" section of this BO) which greatly reduce the likelihood of sediment entering the stream.

Indirect Effects: Since the project involves replacing an existing two-lane bridge with a new two-lane bridge, it is unlikely that the project will promote any secondary development or land-use changes. Also, since no bents will be placed in the channel, no measurable negative indirect

effects to stream flow are anticipated. Overall, the project is not likely to have any measurable indirect effect on DWM or its habitat.

Interrelated and Interdependent Actions: None known.

V. CUMMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this BO. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. At this time there are no known future local, state or private actions, not requiring federal actions that are reasonably certain to occur within the action area.

VI. CONCLUSION

After reviewing the current status of the DWM, the environmental baseline for the action area, all effects of the proposed project, and the conservation measures identified in the BA, it is the Service's biological opinion that the proposed replacement of Bridge No. 193 over Shelton Creek on SR 1309 (TIP No. B-4524), as proposed, is not likely to jeopardize the continued existence of this species. No critical habitat has been designated for this species; therefore, none will be affected.

This non-jeopardy opinion is based, in part, on the following facts: It is not known if DWM exist within the action area. The project has some beneficial effects. Several conservation measures will greatly reduce the potential for negative effects. Any adverse effects are expected to be short in duration.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and federal regulations pursuant to Section 4(d) of the ESA prohibit the taking of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the FHWA for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the FHWA (1) fails to assume and implement the terms and conditions or (2) fails to require the NCDOT to adhere to the terms and conditions of the Incidental Take Statement, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the FHWA or the NCDOT must report the progress of the action and its impact on the species to the Service [50 CFR §402.14(I)(3)].

Amount or Extent of Take Anticipated

The Service anticipates that incidental take of the DWM may occur as a result of the bridge replacement. During demolition of the existing bridge and construction of the new bridge, individual mussels may be crushed, harmed by siltation or other water quality degradation, or dislocated because of physical changes in their habitat.

Because there are no reliable data on the number of DWM buried in the substrate compared to those on the surface (and even those on the surface are difficult to detect), it is not possible to base the amount of incidental take on numbers of individual mussels. Additionally, incidental take will likely be difficult to detect and monitor. Although spent shells may be collected, attributing the cause of mortality may be difficult. Glochidia and juvenile mussels are also extremely difficult to sample, therefore it is difficult to document take of either of these life stages.

The level of incidental take of the DWM can be defined as all DWM that may be harmed, harassed, or killed within the action area (400 meters downstream and 30 meters upstream of the existing bridge). If incidental take is exceeded, all work should stop, and the Service should be contacted immediately.

Effect of the Take

In the accompanying BO, the Service has determined that the level of anticipated take is not likely to result in jeopardy to the DWM. Since critical habitat has not been designated for this species, the proposed project will not result in the destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the DWM. These nondiscretionary measures include, but are not limited to, the terms and conditions outlined in this BO.

1. All Conservation Measures previously described in this BO must be implemented.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the NCDOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described previously. These terms and conditions are nondiscretionary.

1. NCDOT will ensure that the contractor understands and follows the measures listed in the "Conservation Measures" section of this BO.

2. NCDOT will ensure that a Division Environmental Officer maintains a level of oversight to insure that all appropriate erosion control measures are fully implemented to avoid/minimize sedimentation of the stream.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. The following conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. Acquire riparian conservation buffers in the Upper Tar River Basin to benefit DWM either unilaterally or in concert with other conservation programs.

2. Conduct periodic DWM status surveys in the Upper Tar River Basin and submit results to the Service.

3. Contribute funding and/or staff to any future DWM reintroduction or population augmentation efforts conducted by others.

4. Contribute funding and/or staff to any future dam removal initiatives in the Upper Tar River Basin.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION/CLOSING STATEMENT

This concludes formal consultation on the action outlined in your August 25, 2008 request for formal consultation. As provided in 50 CFR section 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to the

listed species or critical habitat not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action.

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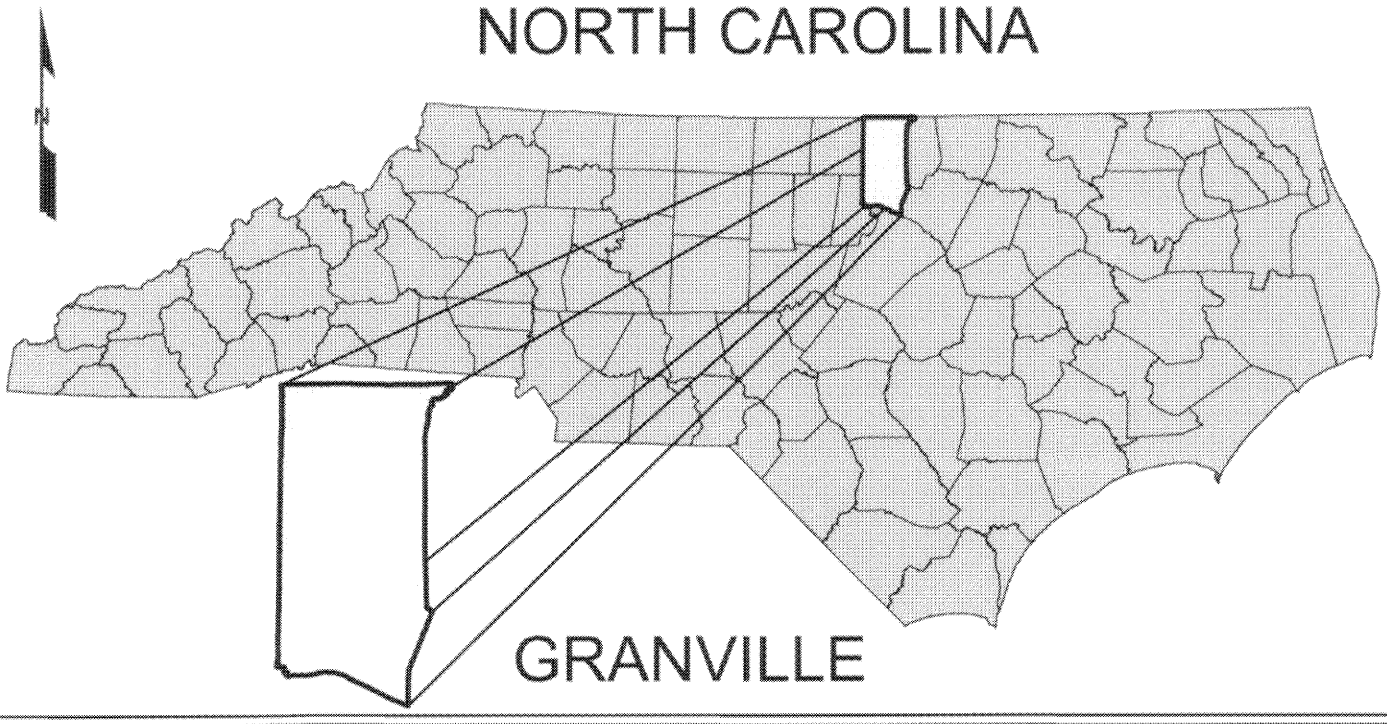
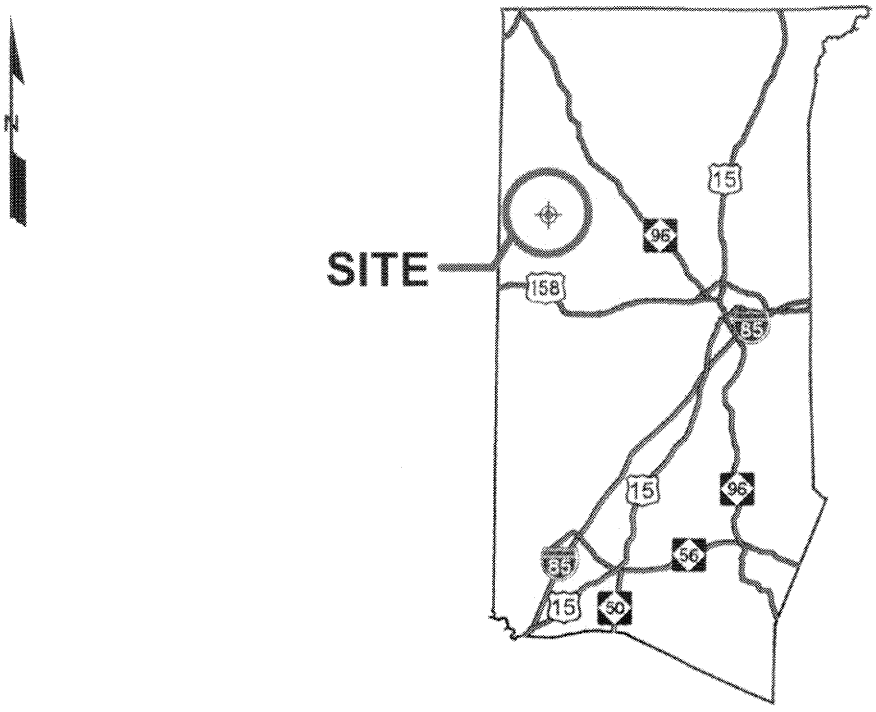


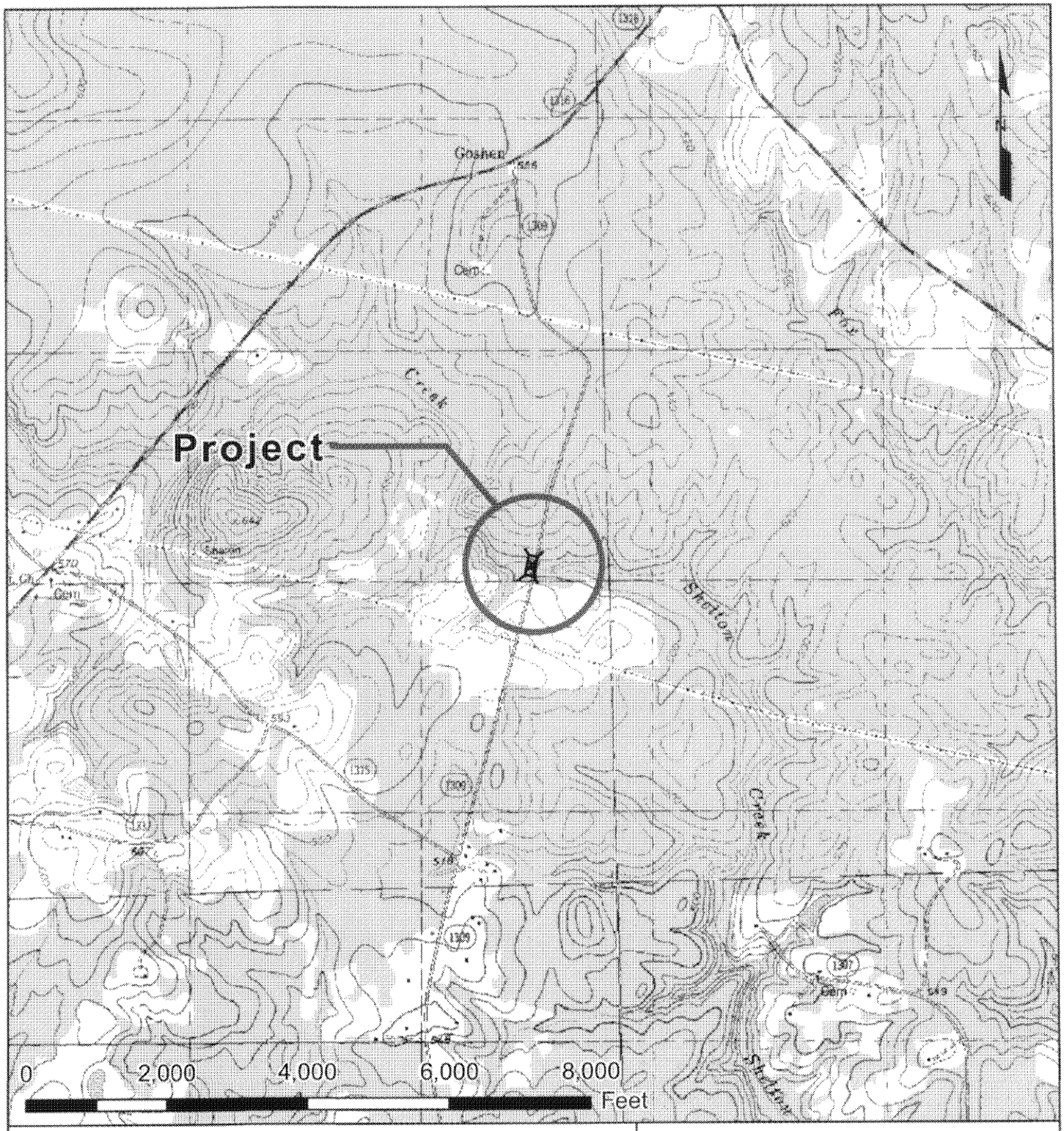


VICINITY MAPS

Buffer Drawing
Sheet 1 of 6

NCDOT

DIVISION OF HIGHWAYS
GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)
REPLACEMENT OF BRIDGE NO. 193
ON SR 1309
OVER SHELTON CREEK
07/28/08



1 inch equals 2,000 feet

LOCATION

Buffer Drawing
Sheet 2 of 10

NCDOT

DIVISION OF HIGHWAYS
GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)
REPLACEMENT OF BRIDGE NO. 193
ON SR 1309
OVER SHELTON CREEK
07/28/08

Source: USGS 7.5 Minute Quadrangle, Triple Springs, NC

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
1	DONALD TINGEN	4521, 9TH STREET, HICKORY NC 28601
2	JASON T. MORTON & JAMES C. MORTON, JR.	P O BOX 473 KITTRELL, NC 27544
3	BLUE SKY TIMBER PROPERTIES, LLC	P O BOX 309 ROANOKE RAPIDS, NC 27870

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)

Buffer Drawing
Sheet 3 of 6 7/31/2008

R:/z-misc/Hydro/Buffprop.xls

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	ROADWAY/BRIDGE	14+81 TO 15+21	X			76.5	338.6	415.1					
		13+87 TO 14+81		X		305.5	35.6	341.1					
TOTAL:						**382.0**	**374.2**	**756.2**					

Buffer Drawing Sheet 4 of 6

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)

7/31/2008

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Granville County

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4524	1	

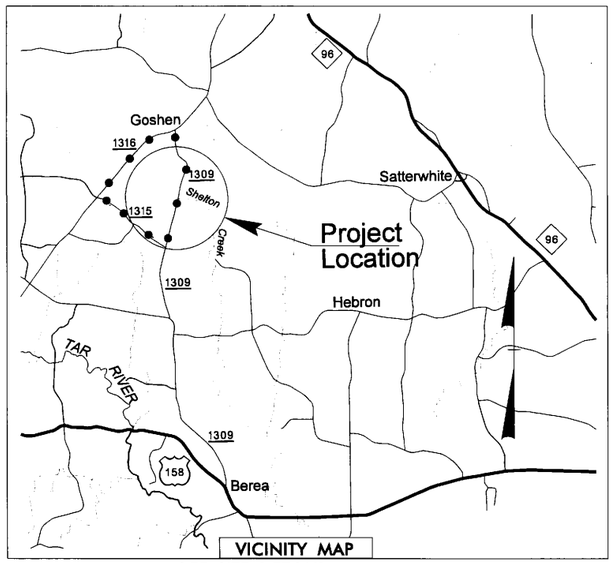
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33748.1.1	BRZ-1309(5)	PE
33748.1.1	BRZ-1309(5)	R/W & UTILITIES

LOCATION: *Bridge #193 on SR 1309 (Ben Thorpe Rd) over Shelton Creek*

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

Buffer Drawing
Sheet 5 of 6

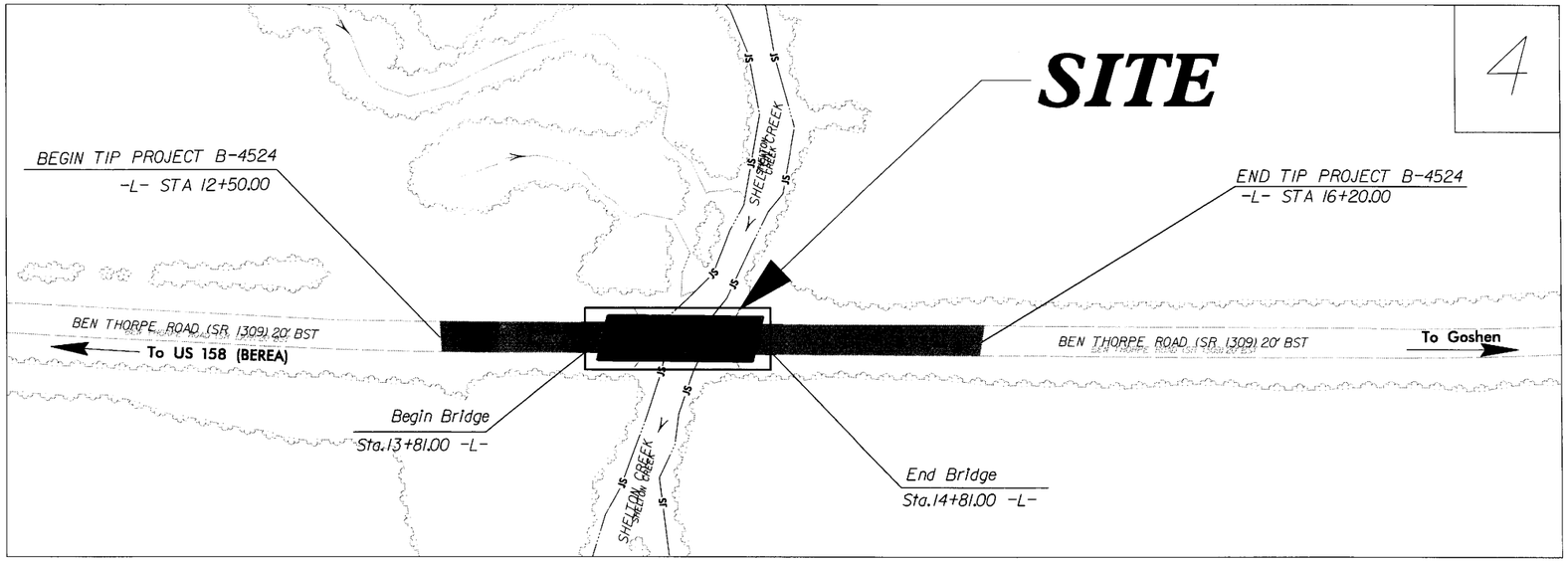
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



VICINITY MAP

OFF SITE DETOUR

NAD 83/95



THIS PROJECT IS NOT WITHIN THE LIMITS OF ANY MUNICIPALITY
CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTORS AND STOPPING SIGHT DISTANCES

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 380 vpd
ADT 2030 = 800 vpd
DHV = 13%
D = 60%
T = 3% *
V = 60mph
* TTST = 1% * DUAL = 2%

PROJECT LENGTH

Length Roadway TIP Project B-4524 = 0.051 Miles
Length Structure TIP Project B-4524 = 0.019 Miles
Total Length TIP Project B-4524 = 0.070 Miles

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
June 17, 2008

LETTING DATE:
June 16, 2009

James Speer, PE
PROJECT ENGINEER

John Lansford, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

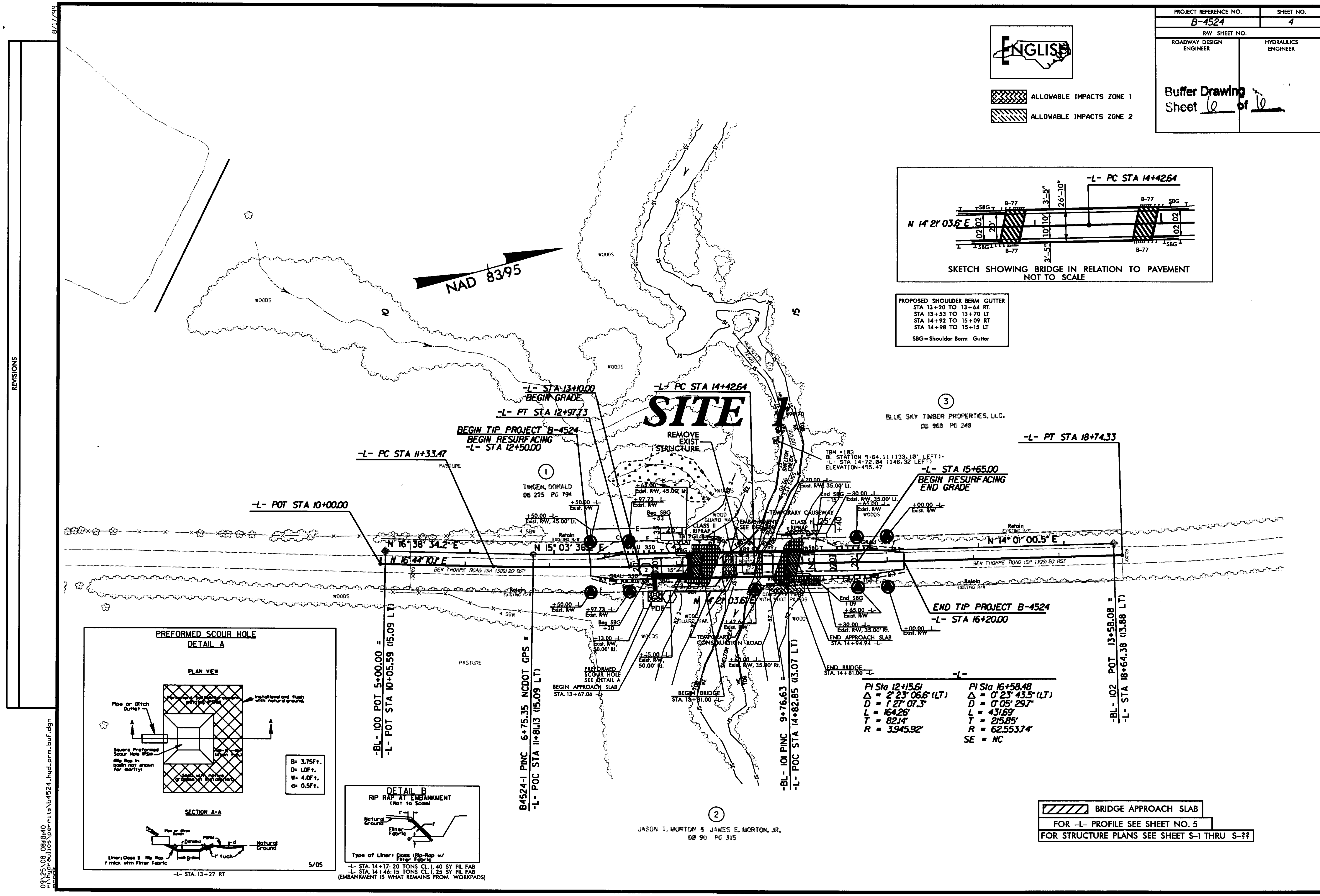
ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

CONTRACT: ***TIP PROJECT: B-4524***


PROJECT REFERENCE NO. B-4524
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Buffer Drawing Sheet 10 of 10
ENGLISH
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
NAD 83/95
SITE 1
-L- PC STA 14+42.64
N 14° 21' 03.6" E
SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT
NOT TO SCALE
PROPOSED SHOULDER BERM GUTTER
STA 13+20 TO 13+64 RT.
STA 13+53 TO 13+70 LT
STA 14+92 TO 15+09 RT
STA 14+98 TO 15+15 LT
SBG=Shoulder Berm Gutter
-L- STA 13+10.00 BEGIN GRADE
-L- PT STA 12+97.73
BEGIN TIP PROJECT B-4524
BEGIN RESURFACING
-L- STA 12+50.00
-L- PC STA 11+33.47
-L- POT STA 10+00.00
REMOVE EXIST. STRUCTURE
BLUE SKY TIMBER PROPERTIES, LLC. DB 968 PG 248
TINGEN, DONALD DB 225 PG 794
JASON T. MORTON & JAMES E. MORTON, JR. DB 90 PG 375
-L- PT STA 18+74.33
-L- STA 15+65.00
BEGIN RESURFACING
END GRADE
END TIP PROJECT B-4524
-L- STA 16+20.00
N 16° 38' 34.2" E
N 16° 44' 10.1" E
N 15° 03' 36.2" E
N 14° 01' 00.5" E
BEN THORPE ROAD (SR 1309) 20' BST
TEMPORARY CAUSEWAY
TEMPORARY CONSTRUCTION ROAD
BEGIN APPROACH SLAB STA. 13+67.06
BEGIN BRIDGE STA. 13+81.00
END BRIDGE STA. 14+81.00
END APPROACH SLAB STA. 14+94.94
-BL- 100 POT 5+00.00 = -L- POT STA 10+05.59 (15.09 LT)
B4524-1 PINC 6+75.35 NCDOT GPS = -L- POC STA 11+81.13 (15.09 LT)
-BL- 101 PINC 9+76.63 = -L- POC STA 14+82.85 (13.07 LT)
-BL- 102 POT 13+58.08 = -L- STA 18+64.38 (13.88 LT)
-L-
PI Sta 12+15.61
Δ = 2° 23' 06.6" (LT)
D = 1° 27' 07.3"
L = 164.26'
T = 82.14'
R = 3,945.92'
PI Sta 16+58.48
Δ = 0° 23' 43.5" (LT)
D = 0° 05' 29.7"
L = 431.69'
T = 215.85'
R = 62,553.74'
SE = NC
PREFORMED SCOUR HOLE
DETAIL A
PLAN VIEW
SECTION A-A
B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.
-L- STA. 13+27 RT
DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner: Class I Rip-Rap w/ Filter Fabric
-L- STA. 14+17: 20 TONS CL. I, 40 SY FIL FAB
-L- STA. 14+46: 15 TONS CL. I, 25 SY FIL FAB
(EMBANKMENT IS WHAT REMAINS FROM WORKPADS)
BRIDGE APPROACH SLAB
FOR -L- PROFILE SEE SHEET NO. 5
FOR STRUCTURE PLANS SEE SHEET S-1 THRU S-??
REVISIONS
8/17/99
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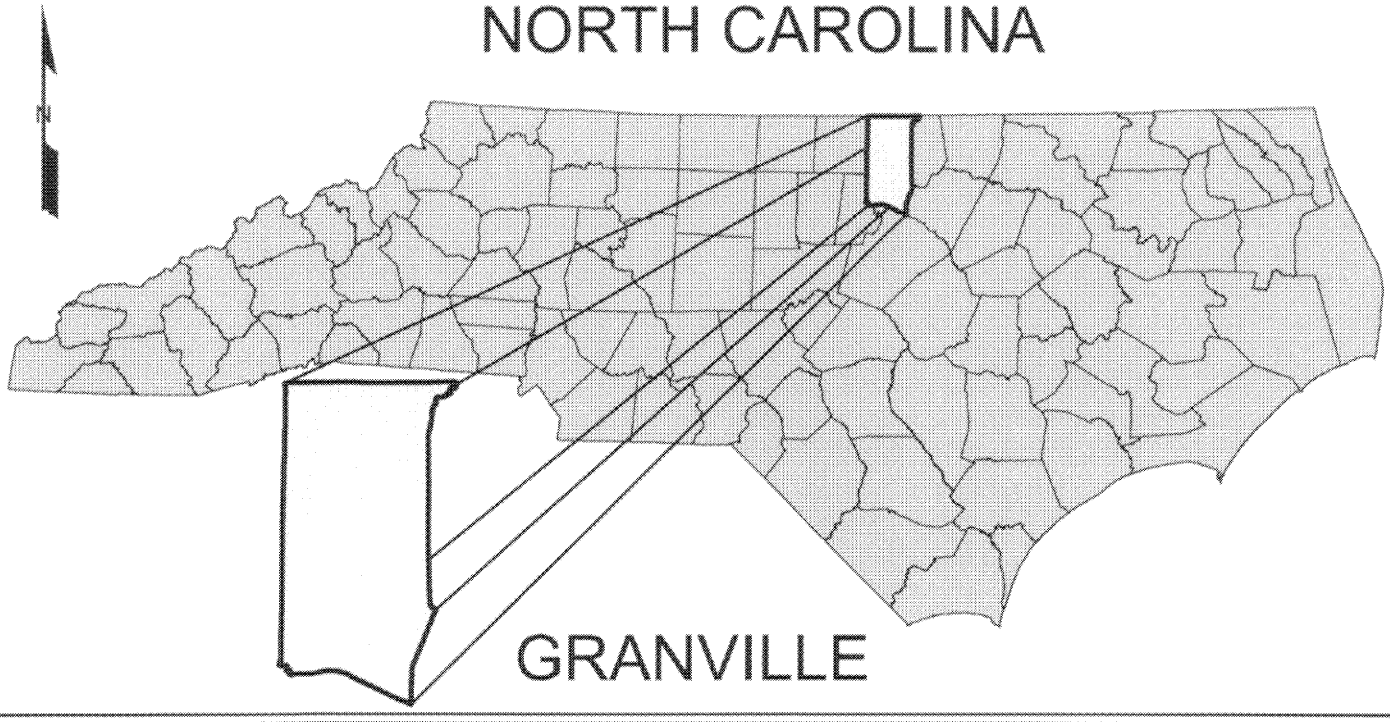
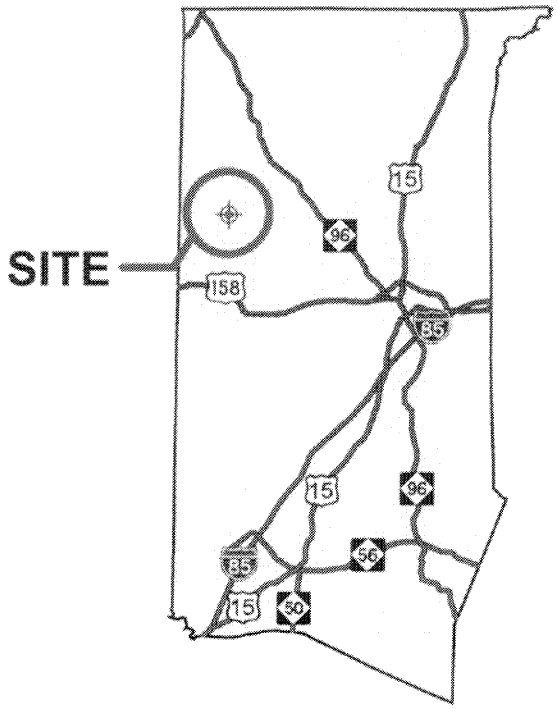




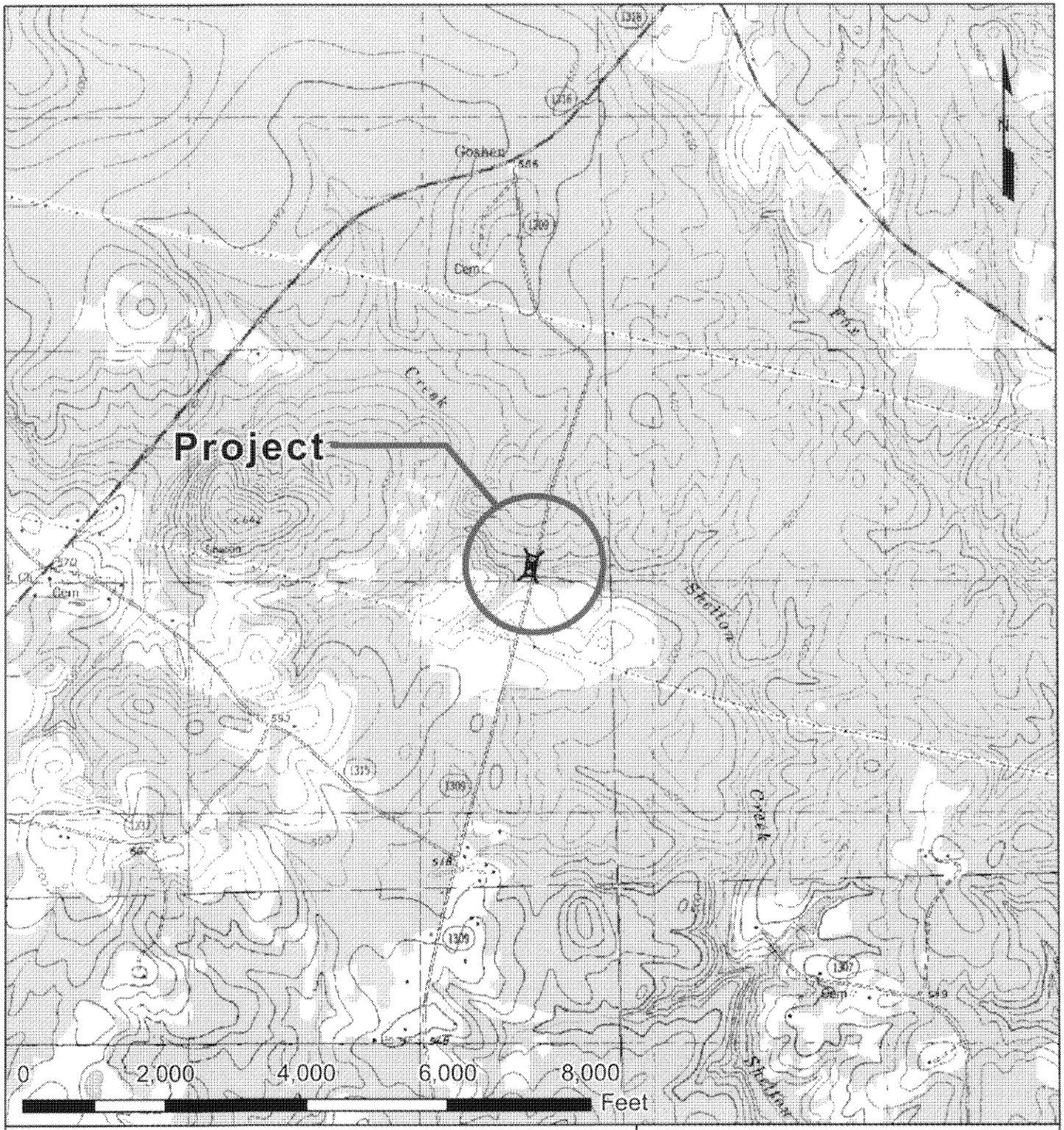
VICINITY MAPS

Permit Drawing
Sheet 1 of 3

NCDOT

DIVISION OF HIGHWAYS
GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)
REPLACEMENT OF BRIDGE NO. 193
ON SR 1309
OVER SHELTON CREEK

07/31/08



1 inch equals 2,000 feet

LOCATION

Permit Drawing
Sheet 2 of 8

NCDOT

DIVISION OF HIGHWAYS
GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)
REPLACEMENT OF BRIDGE NO. 193
ON SR 1309
OVER SHELTON CREEK

07/31/08

Source: USGS 7.5 Minute Quadrangle, Triple Springs, NC

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
1	DONALD TINGEN	4521 9TH STREET, HICKORY NC 28601
2	JASON T. MORTON & JAMES C. MORTON, JR.	P O BOX 473 KITTRELL, NC 27544
3	BLUE SKY TIMBER PROPERTIES, LLC	P O BOX 309 ROANOKE RAPIDS, NC 27870

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)

Permit Drawing
Sheet 3 of 8 7/31/2008

R:/z-misc/Hydro/Wetprop.xls

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 14+13 - 14+51	BRIDGE	N/A	N/A	N/A	N/A	N/A	< 0.01 *	0.01	31	N/A	N/A
TOTALS:								0.01	0.01	31		

*:87.5 sqft (0.002 ac)

Permit Drawing Sheet 4 of 8

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GRANVILLE COUNTY
PROJECT: 33748.1.1 (B-4524)

7/31/2008

ATN Revised 3/12/08
R:\Z-misc\Hydro\New_wetland_Summary.xls

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Granville County

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4524	1	

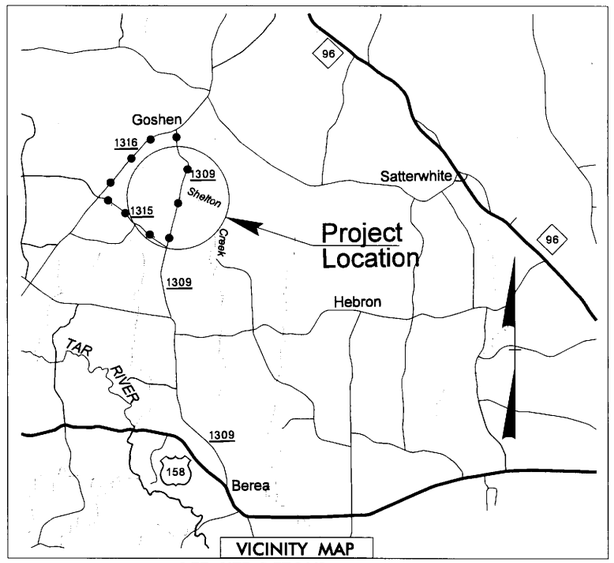
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33748.1.1	BRZ-1309(5)	PE
33748.1.1	BRZ-1309(5)	R/W & UTILITIES

LOCATION: *Bridge #193 on SR 1309 (Ben Thorpe Rd) over Shelton Creek*

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

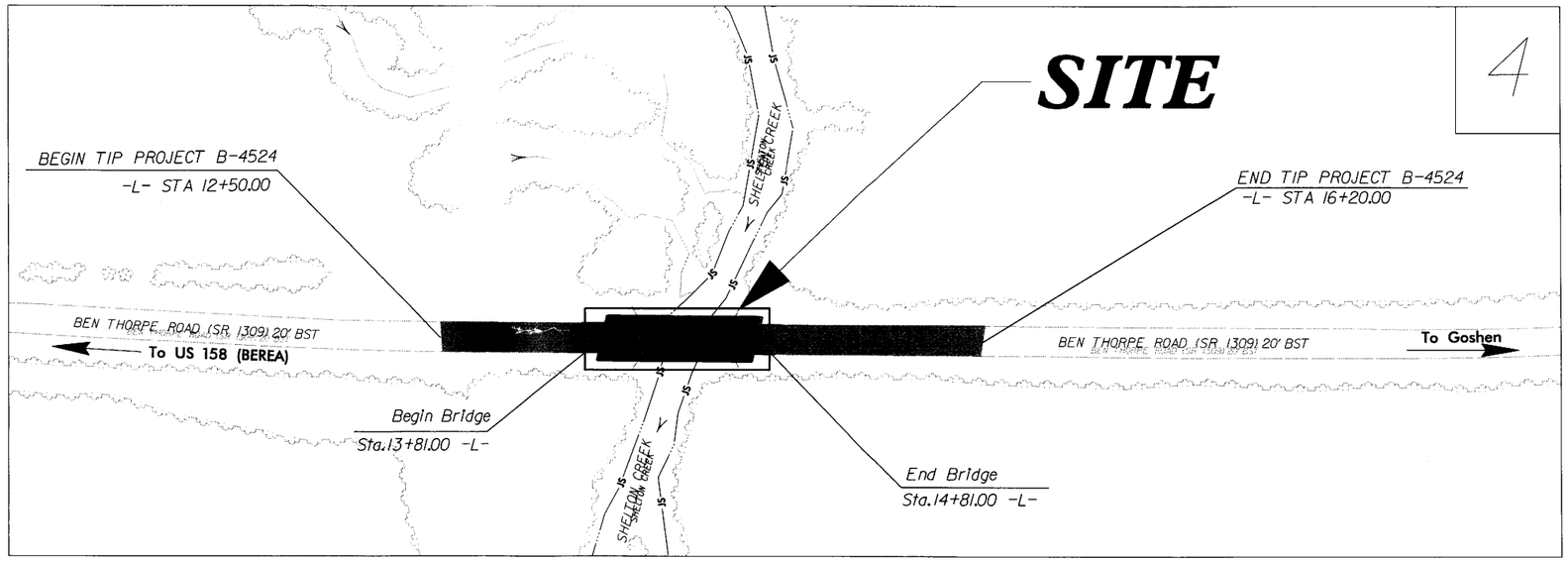
Permit Drawing Sheet 5 of 8

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



OFF SITE DETOUR

NAD 83/95



THIS PROJECT IS NOT WITHIN THE LIMITS OF ANY MUNICIPALITY
CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTORS AND STOPPING SIGHT DISTANCES

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 380 vpd
ADT 2030 = 800 vpd
DHV = 13%
D = 60%
T = 3% *
V = 60mph
* TTST = 1% * DUAL = 2%

PROJECT LENGTH

Length Roadway TIP Project B-4524 = 0.051 Miles
Length Structure TIP Project B-4524 = 0.019 Miles
Total Length TIP Project B-4524 = 0.070 Miles

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: June 17, 2008

LETTING DATE: June 16, 2009

James Speer, PE
PROJECT ENGINEER

John Lansford, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

TIP PROJECT: B-4524

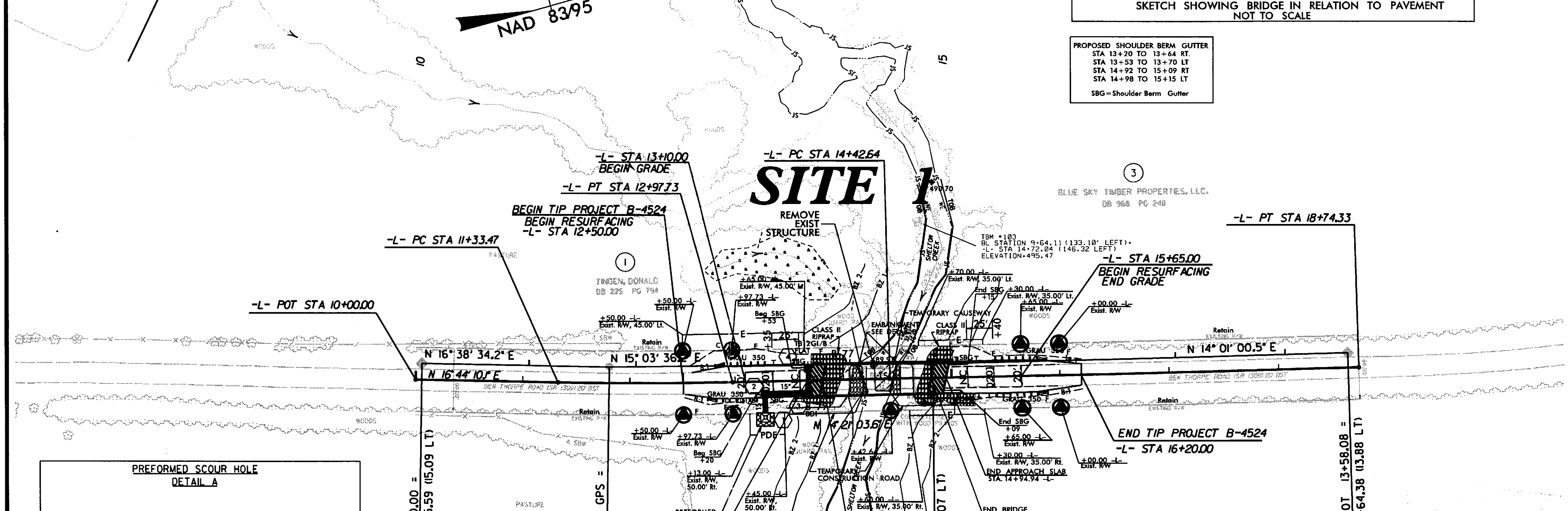
CONTRACT:

PROJECT REFERENCE NO.	SHEET NO.
B-4524	4

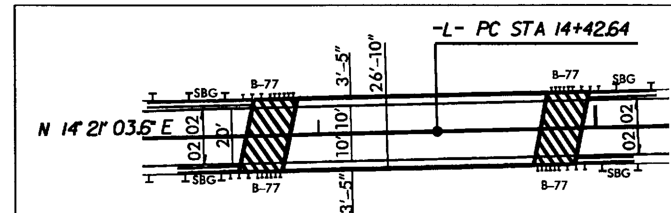
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

Permit Drawing Sheet 6 of 8



ENGLISH
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/95
SITE 1
-L- STA 13+10.00 BEGIN GRADE
-L- PT STA 12+97.73
BEGIN TIP PROJECT B-4524
BEGIN RESURFACING -L- STA 12+50.00
-L- PC STA 11+33.47
-L- POT STA 10+00.00
-L- PC STA 14+42.64
REMOVE EXIST STRUCTURE
TINGEN, DONALD DB 225 PG 798
BLUE SKY TIMBER PROPERTIES, LLC. DB 968 PG 240
JASON E. MORTON & JAMES E. MORTON, JR. DB 80 PG 275
-L- PT STA 18+74.33
-L- STA 15+65.00 BEGIN RESURFACING END GRADE
END TIP PROJECT B-4524 -L- STA 16+20.00
N 16° 38' 34.2" E
N 16° 44' 10.1" E
N 15° 03' 36.2" E
N 14° 01' 00.5" E
N 14° 21' 03.6" E
TEMPORARY CAUSEWAY
TEMPORARY CONSTRUCTION ROAD
PREFORMED SCOUR HOLE SEE DETAIL A
BEGIN APPROACH SLAB STA. 13+67.06 -L-
BEGIN BRIDGE STA. 13+81.00 -L-
END APPROACH SLAB STA. 14+94.94 -L-
END BRIDGE STA. 14+81.00 -L-
-BL- 100 POT 5+00.00 = -L- POT STA 10+05.59 (15.09 LT)
B4524-1 PINC 6+75.35 NCDOT GPS = -L- POC STA 11+81.13 (15.09 LT)
-BL- 101 PINC 9+76.63 = -L- POC STA 14+82.85 (13.07 LT)
-BL- 102 POT 13+58.08 = -L- STA 18+64.38 (13.88 LT)



SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT
NOT TO SCALE

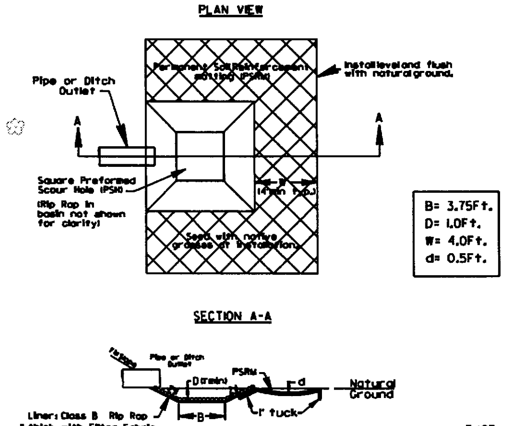
PROPOSED SHOULDER BERM GUTTER
STA 13+20 TO 13+64 RT.
STA 13+53 TO 13+70 LT
STA 14+92 TO 15+09 RT
STA 14+98 TO 15+15 LT
SBG = Shoulder Berm Gutter

-L-

PI Sta 12+15.61	PI Sta 16+58.48
Δ = 2° 23' 06.6" (LT)	Δ = 0° 23' 43.5" (LT)
D = 1° 27' 07.3"	D = 0° 05' 29.7"
L = 164.26'	L = 431.69'
T = 82.14'	T = 215.85'
R = 3,945.92'	R = 62,553.74'
	SE = NC

PREFORMED SCOUR HOLE DETAIL A

PLAN VIEW



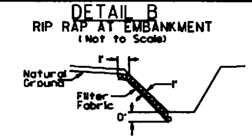
Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation.
SECTION A-A
Natural Ground
Liner: Class B Rip Rap 1' thick with Filter Fabric
1' tuck

B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

5/05

-L- STA. 13+27 RT

DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class I Rip-Rap w/ Filter Fabric

-L- STA. 14+17: 20 TONS CL. I, 40 SY FIL FAB
-L- STA. 14+46: 15 TONS CL. I, 25 SY FIL FAB
(EMBANKMENT IS WHAT REMAINS FROM WORKPADS)

BRIDGE APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO. 5

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

REVISIONS

8/17/99

09/25/08 08:22:17
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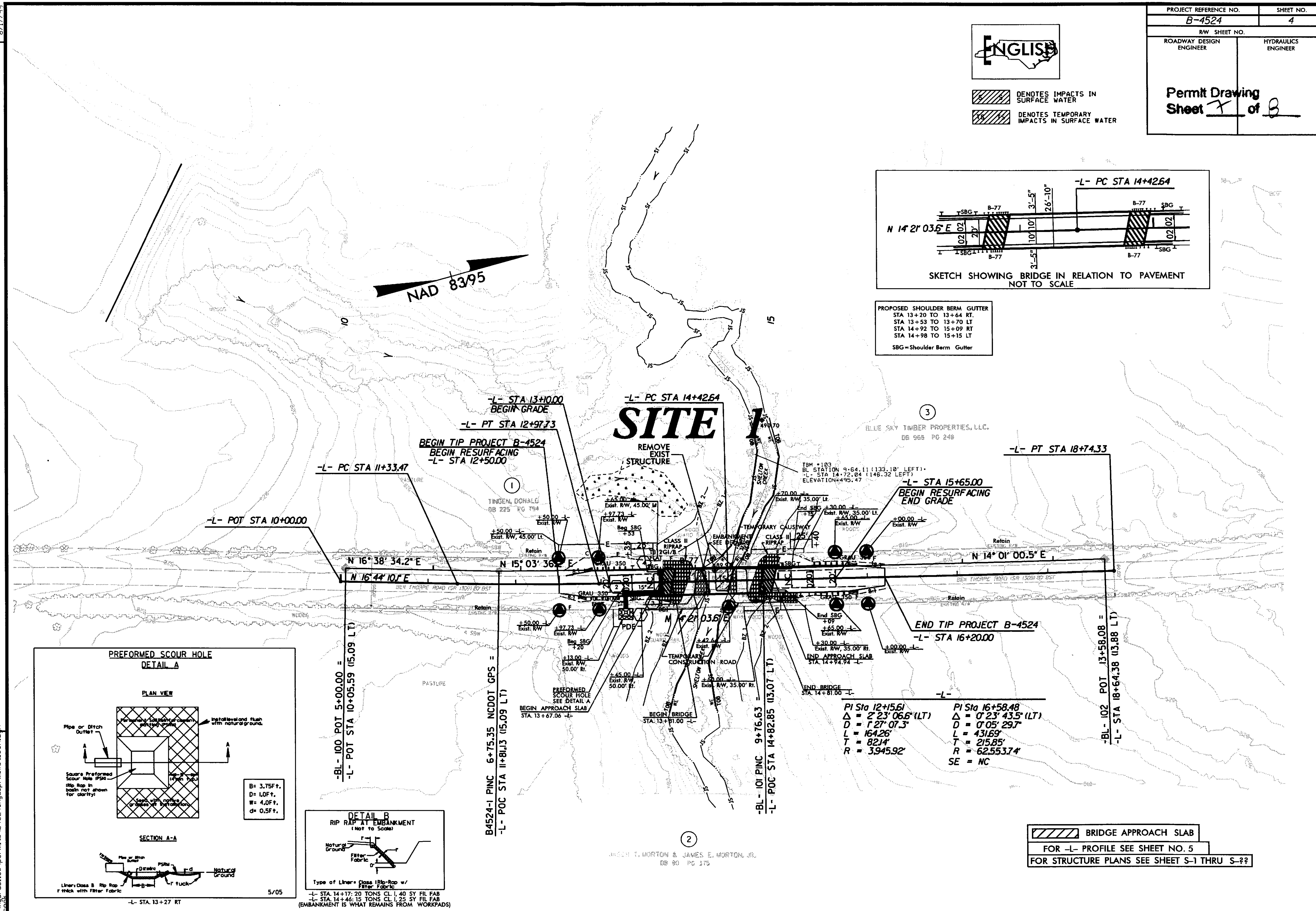
PROJECT REFERENCE NO. B-4524
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Permit Drawing Sheet 7 of 8
ENGLISH
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/95
-L- PC STA 14+42.64
N 14° 21' 03.6" E
SKETCH SHOWING BRIDGE IN RELATION TO PAVEMENT
NOT TO SCALE
PROPOSED SHOULDER BERM GUTTER
STA 13+20 TO 13+64 RT.
STA 13+53 TO 13+70 LT
STA 14+92 TO 15+09 RT
STA 14+98 TO 15+15 LT
SBG = Shoulder Berm Gutter
SITE 1
-L- STA 13+10.00 BEGIN GRADE
-L- PT STA 12+97.73
BEGIN TIP PROJECT B-4524
BEGIN RESURFACING
-L- STA 12+50.00
-L- PC STA 11+33.47
-L- POT STA 10+00.00
REMOVE EXIST STRUCTURE
TINGEN, DONALD
DB 225 PG 794
BLUE SKY TIMBER PROPERTIES, LLC.
DB 965 PG 249
TBM #103
-L- PT STA 18+74.33
-L- STA 15+65.00
BEGIN RESURFACING
END GRADE
N 16° 38' 34.2" E
N 15° 03' 36.2" E
N 16° 44' 10.1" E
N 14° 01' 00.5" E
TEMPORARY CAUSEWAY
CLASS II RIPRAP
TEMPORARY CONSTRUCTION ROAD
END TIP PROJECT B-4524
-L- STA 16+20.00
END APPROACH SLAB STA. 14+94.94 -L-
END BRIDGE STA. 14+81.00 -L-
BEGIN BRIDGE STA. 13+81.00 -L-
BEGIN APPROACH SLAB STA. 13+67.06 -L-
PREFORMED SCOUR HOLE SEE DETAIL A
-BL- 100 POT 5+00.00 = -L- POT STA 10+05.59 (15.09 LT)
B4524-1 PINC 6+75.35 NCDOT GPS = -L- POC STA 11+81.13 (15.09 LT)
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D = 0° 05' 29.7"
L = 431.69'
T = 215.85'
R = 62,553.74'
SE = NC
PREFORMED SCOUR HOLE DETAIL A
PLAN VIEW
SECTION A-A
B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.
-L- STA. 13+27 RT
5/05
DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= Class I Rip-Rap w/ Filter Fabric
-L- STA. 14+17: 20 TONS CL I, 40 SY FIL FAB
-L- STA. 14+46: 15 TONS CL I, 25 SY FIL FAB
(EMBANKMENT IS WHAT REMAINS FROM WORKPADS)
JOSEPH T. MORTON & JAMES E. MORTON, JR.
DB 90 PG 175
BRIDGE APPROACH SLAB
FOR -L- PROFILE SEE SHEET NO. 5
FOR STRUCTURE PLANS SEE SHEET S-1 THRU S-??
REVISIONS
8/17/99
09/25/08 08:20:39

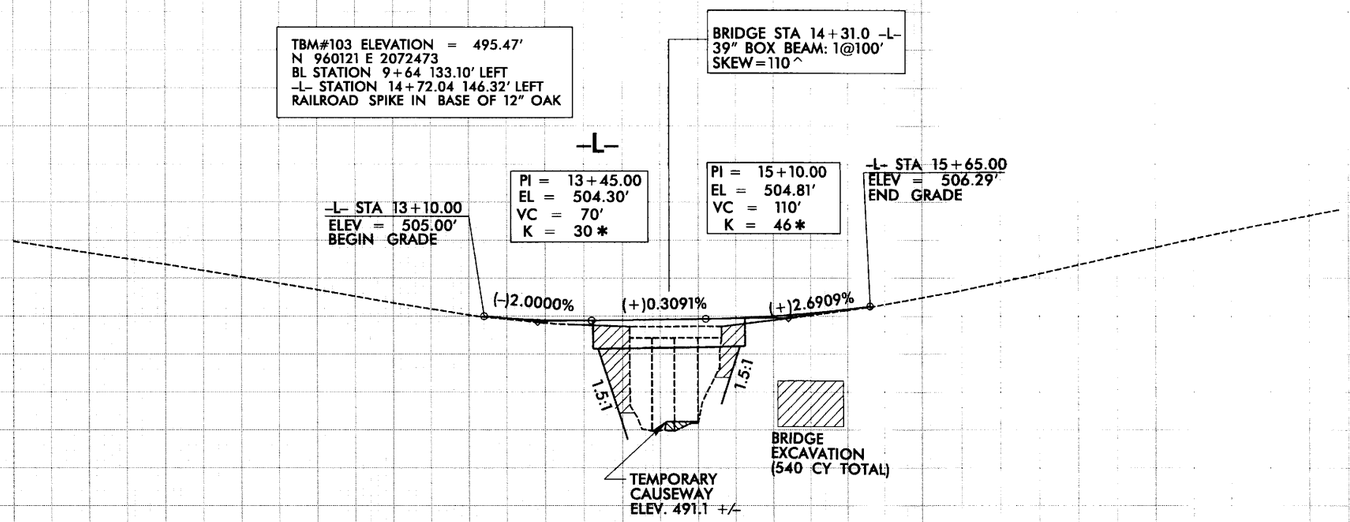
PROJECT REFERENCE NO.	SHEET NO.
B-4524	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 8 of 8

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1880	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 497.9	FT
BASE DISCHARGE	= 2780	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 499.6	FT
OVERTOPPING DISCHARGE	= 10200	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 504.4	FT



*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTOR AND STOPPING SIGHT DISTANCE.

10 11 12 13 14 15 16 17 18

09/08/08

TIP PROJECT: B-4524

See Sheet 1-A for Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Granville County

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4524	1	

STATE PROJ.NO.	F. A. PROJ.NO.	DESCRIPTION
33748.1.1	BRZ-1309(5)	PE
33748.1.1	BRZ-1309(5)	R/W & UTILITIES

LOCATION: *Bridge #193 on SR 1309 (Ben Thorpe Rd) over Shelton Creek*

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

PRELIMINARY PLANS
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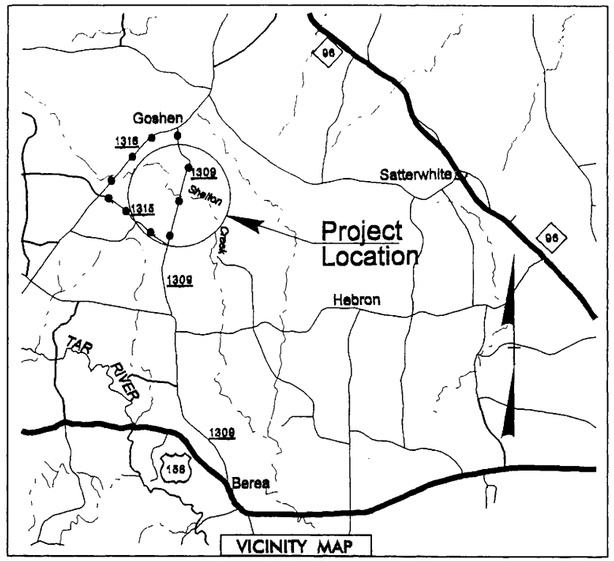
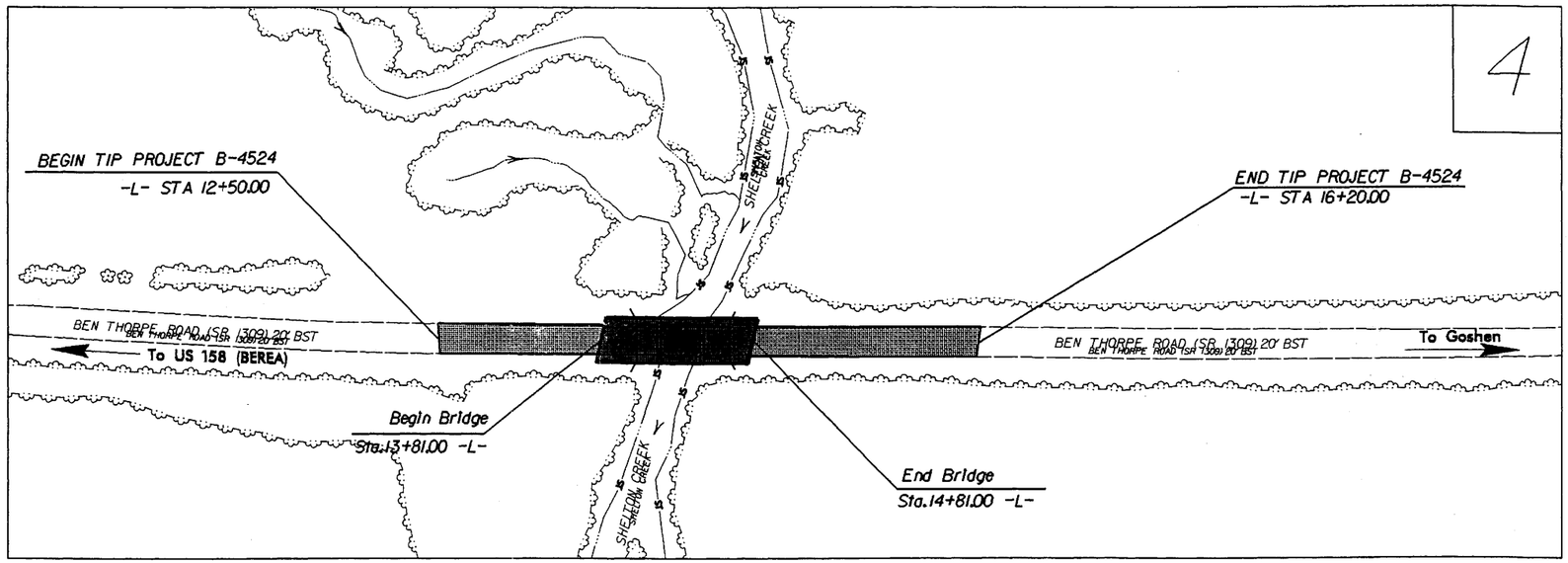


OFF SITE DETOUR

NAD 83'95



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DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTORS AND STOPPING SIGHT DISTANCES

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 380 vpd
ADT 2030 = 800 vpd
DHV = 13%
D = 60%
T = 3% *
V = 60mph
* TTST = 1% * DUAL = 2%

PROJECT LENGTH

Length Roadway TIP Project B-4524 = 0.051 Miles
Length Structure TIP Project B-4524 = 0.019 Miles
Total Length TIP Project B-4524 = 0.070 Miles

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: June 17, 2008

LETTING DATE: June 16, 2009

James Speer, PE
PROJECT ENGINEER

John Lansford, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

CONTRACT:

25-AUG-2008 07:35
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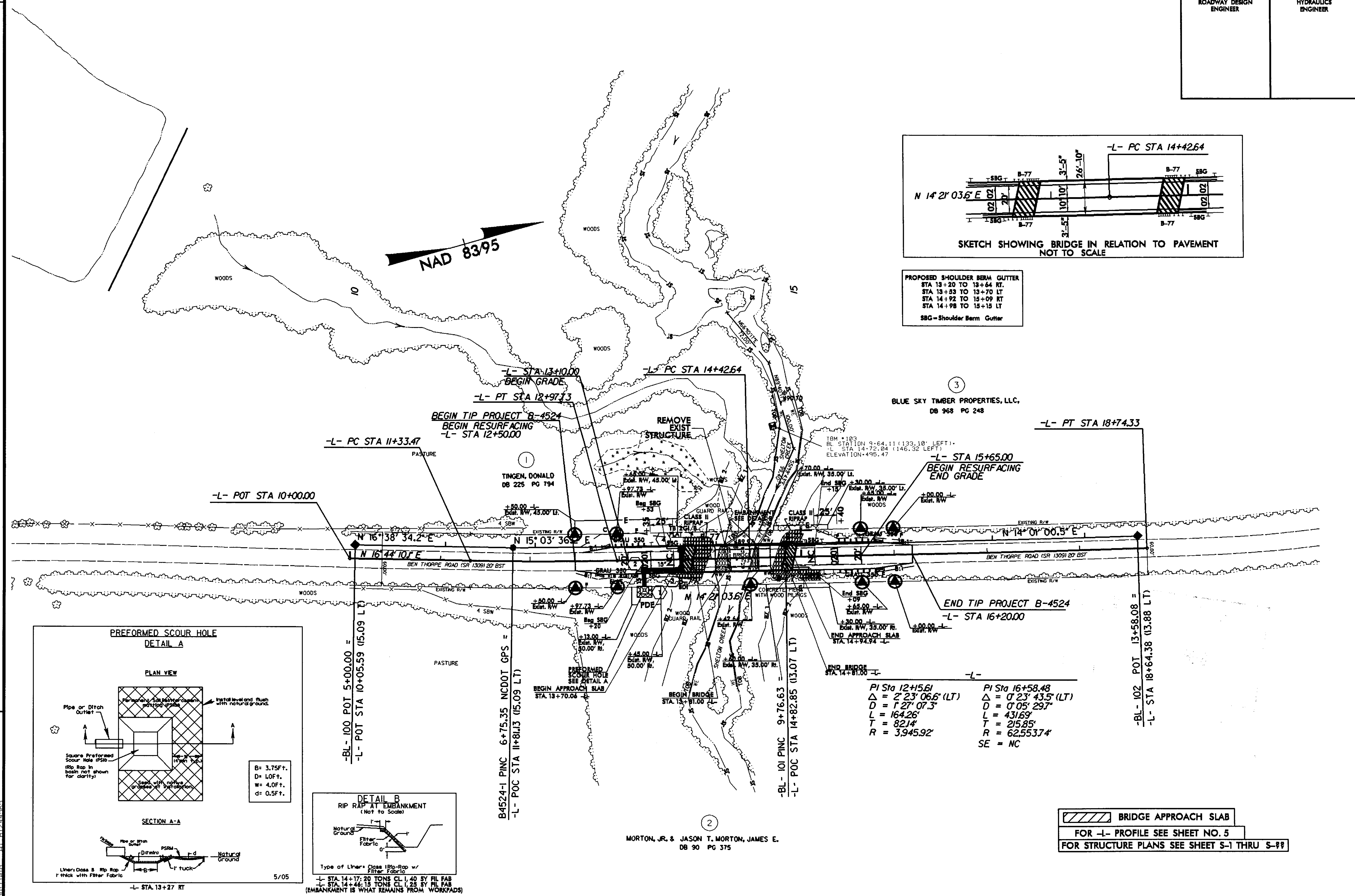
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4524	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NAD 83/95
-L- PC STA 14+42.64
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STA 13+53 TO 13+70 LT
STA 14+92 TO 15+09 RT
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SBG = Shoulder Berm Gutter
-L- STA 13+10.00
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-L- PT STA 12+97.13
BEGIN TIP PROJECT B-4524
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-L- STA 12+50.00
-L- PC STA 11+33.47
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DB 968 PG 248
-L- PT STA 18+74.33
-L- STA 15+65.00
BEGIN RESURFACING
END GRADE
TINGEN, DONALD
DB 225 PG 794
-L- POT STA 10+00.00
N 16° 38' 34.2" E
N 15° 03' 36" E
N 16° 44' 10" E
N 14° 01' 00.5" E
BEN THORPE ROAD (SR 1309) 20' BST
END TIP PROJECT B-4524
-L- STA 16+20.00
-BL- 100 POT 5+00.00 = -L- POT STA 10+05.59 (15.09 LT)
B4524-1 PINC 6+75.35 NCDOT GPS = -L- POC STA 11+81.13 (15.09 LT)
-BL- 101 PINC 9+76.63 = -L- POC STA 14+82.85 (13.07 LT)
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BEGIN APPROACH SLAB STA. 13+70.06 -L-
BEGIN BRIDGE STA. 13+81.00 -L-
END BRIDGE STA. 14+81.00 -L-
END APPROACH SLAB STA. 14+94.94 -L-
MORTON, JR. & JASON T. MORTON, JAMES E.
DB 90 PG 375
-L-
PI Sta 12+15.61
Δ = 2° 23' 06.6" (LT)
D = 1° 27' 07.3"
L = 164.26'
T = 82.14'
R = 3,945.92'
PI Sta 16+58.48
Δ = 0° 23' 43.5" (LT)
D = 0° 05' 29.7"
L = 431.69'
T = 215.85'
R = 62,553.74'
SE = NC
PREFORMED SCOUR HOLE
DETAIL A
PLAN VIEW
SECTION A-A
B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.
-L- STA. 13+27 RT
5/05
DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner: Class I Rip-Rap w/ Filter Fabric
-L- STA. 14+17: 20 TONS CL. I, 40 SY FIL FAB
-L- STA. 14+46: 15 TONS CL. I, 25 SY FIL FAB
(EMBANKMENT IS WHAT REMAINS FROM WORKPADS)
BRIDGE APPROACH SLAB

FOR -L- PROFILE SEE SHEET NO. 5

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

REVISIONS

8/17/99

29-SEP-2008 09:39
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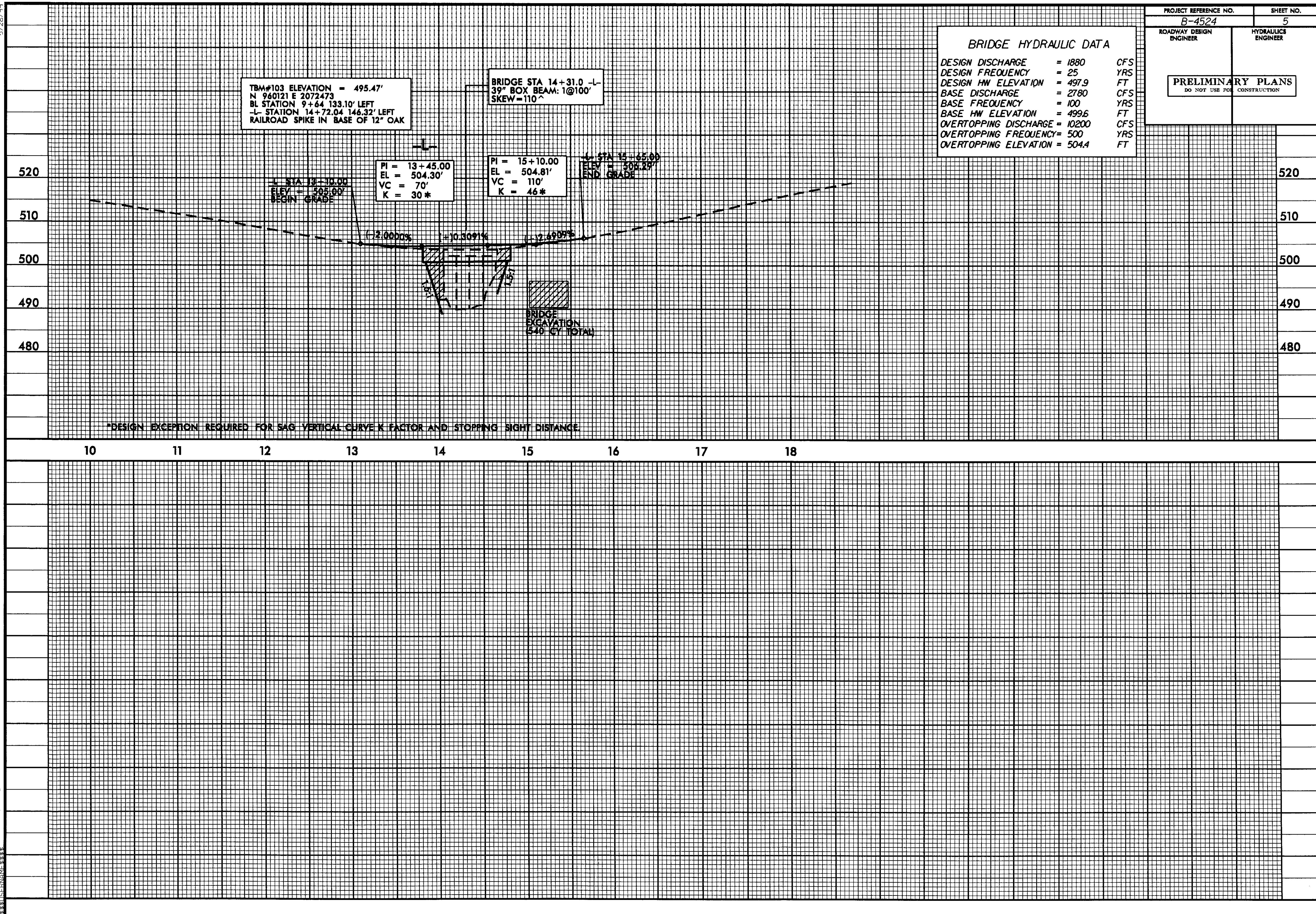

PROJECT REFERENCE NO.
B-4524
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 1880 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 497.9 FT
BASE DISCHARGE = 2780 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 499.6 FT
OVERTOPPING DISCHARGE = 10200 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 504.4 FT
TBM#103 ELEVATION = 495.47'
N 960121 E 2072473
BL STATION 9+64 133.10' LEFT
-L- STATION 14+72.04 146.32' LEFT
RAILROAD SPIKE IN BASE OF 12" OAK
BRIDGE STA 14+31.0 -L-
39" BOX BEAM: 1@100'
SKEW=110^
-L-
PI = 13+45.00
EL = 504.30'
VC = 70'
K = 30*
PI = 15+10.00
EL = 504.81'
VC = 110'
K = 46*
-L- STA 13+10.00
ELEV = 505.00'
BEGIN GRADE
-L- STA 15+65.00
ELEV = 506.29'
END GRADE
(-)2.0000%
(+)0.3091%
(+)2.6909%
1.5:1
1.5:1
BRIDGE EXCAVATION (540 CY TOTAL)
520
510
500
490
480
10
11
12
13
14
15
16
17
18
*DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTOR AND STOPPING SIGHT DISTANCE.

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4524	X-5

Permit Drawing
Sheet NA of NA

BRIDGE

489.74
14+40.00

BRIDGE

491.54
14+20.00

BRIDGE

503.65

14+00.00

0.020 0.020

4:1 3:1

503.79

13+80.00

7/3/2008
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ngnash

8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4524	X-6

Permit Drawing Sheet NA of NA

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

510 505 500 495 490 485

S.S. 503.254

EXTEND SHOULDER SLOPE

0.020 0.020

2:1

504.48

15+00.00

BRIDGE

504.00

14+80.00

BRIDGE

496.25

14+60.00

492.61

14+50.00

—℄—

7/31/2008
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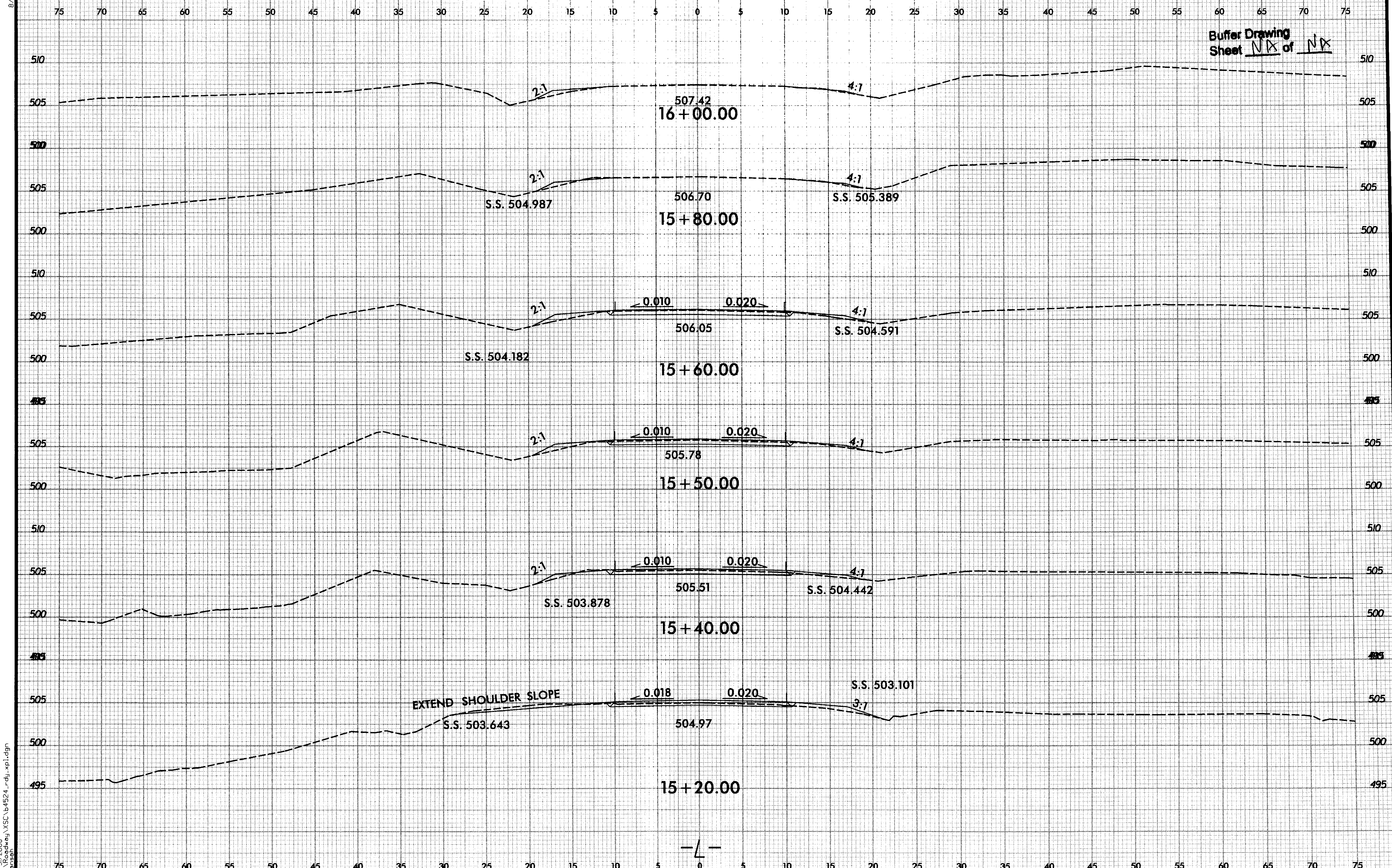
aaston

PROJ. REFERENCE NO.	SHEET NO.
B-4524	X-7



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Granville County
Bridge No. 193 on SR 1309 (Ben Thorpe Rd.)
over Shelton Creek
Federal Aid Project No. BRZ-1309(5)
W.B.S. No. 33748.1.1
State Project No. 8.2371601
T.I.P. No. B-4524

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

2/26/08
DATE

for Gregory J. Thorpe, PhD,
Environmental Management Director, PDEA

2/28/2008
DATE

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

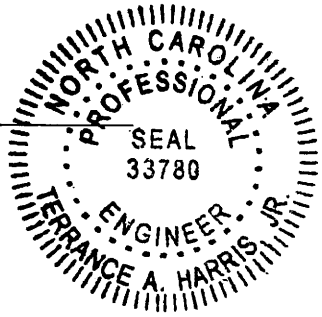
Granville County
Bridge No. 193 on SR 1309 (Ben Thorpe Rd.)
over Shelton Creek
Federal Aid Project No. BRZ-1309(5)
W.B.S. No. 33748.1.1
State Project No. 8.2371601
T.I.P. No. B-4524

CATEGORICAL EXCLUSION

Documentation Prepared in
Project Development and Environmental Analysis Branch By:

2/26/08
DATE

Terrance A. Harris Jr., PE
Project Planning Engineer
Bridge Project Development Unit



2/26/08
DATE

Bryan D. Kluchar, PE
Project Engineer
Bridge Project Development Unit

PROJECT COMMITMENTS:

Granville County
Bridge No. 193 on SR 1309
Over Shelton Creek
Federal Aid Project No. BRZ-1309(5)
State Project No. 8.2371601
W.B.S. No. 33748.1.1
T.I.P. No. B-4524

Division 5 Construction

In order to have time to adequately reroute school busses, Granville County Schools should be contacted at least one month prior to road closure.

Granville County Emergency Services needs to be contacted at least one month prior to road closure to make the necessary temporary reassignments to primary response units.

This project falls within the Tar-Pamlico river basin. Tar-Pamlico riparian buffer rules shall apply.

Install special sediment control fence along the top of the stream bank. Install silt fence along the toe of slope parallel to the stream. Once the disturbed areas of the project draining to the special sediment control fence have been stabilized, the special sediment control fence and all built up sediment adjacent to the fence will be removed to natural ground and stabilized with a native grass mix.

A temporary access road for conveying construction equipment in the floodplain/buffer will be stabilized with rock or timber matting. A rock work pad or timber matting will also be utilized between the streambank and the interior bent in the river for removal of the interior bent.

Embankment construction and grading shall be managed in such a manner to prevent surface runoff/drainage from discharging directly in the riparian buffer. All interim surfaces will be graded to drain to temporary erosion control devices. Temporary berms, ditches, etc. will be incorporated as necessary to prevent temporary runoff from discharging directly into the riparian buffer (As specified in NCDOT BMP Manual).

The NCDOT Resident Engineer is responsible for providing a written invitation to the North Carolina Wildlife Resource Commission: Non-game and Protected Species Branch and the US Fish and Wildlife Service to attend the Pre-Construction meeting.

Roadside Environmental Unit

Design standards in sensitive watersheds will apply.

PD & EA Natural Environment Unit

NCDOT will complete a pre-construction mussel survey approximately 1-2 months prior to LET. Any Federally Protected mussel species will be moved out of the project footprint. The Natural Environment Unit will provide a copy of the survey report to USFWS.

Granville County
Bridge No. 193 on SR 1309 (Ben Thorpe Rd.)
over Shelton Creek
Federal Aid Project No. BRZ-1309(5)
W.B.S. No. 33748.1.1
State Project No. 8.2371601
T.I.P. No. B-4524

INTRODUCTION: Bridge No. 193 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and is eligible for the Federal-Aid Highway Bridge Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Management Unit records indicate Bridge No. 193 has a sufficiency rating of 23.7 out of a possible 100. The bridge has a substructure condition of 4 out of a possible 9; therefore, based on Federal Highway Administration (FHWA) standards, the structure is considered structurally deficient making the bridge eligible for FHWA's Bridge Replacement Program. The bridge is also functionally obsolete because of a deck geometry appraisal of 2 out of a possible 9.

Bridge No. 193 has a fifty-one year old timber substructure with a typical life expectancy between 40 to 50 years due to the natural deterioration rate of wood. Rehabilitation of a timber structure is generally practical only when a few members are damaged or prematurely deteriorated. However, past a certain degree of deterioration, timber structures become impractical to maintain and upon eligibility are programmed for replacement. Bridge No. 193 is passed its useful life.

Components of both the timber superstructure and substructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities. The posted weight limit on the bridge is down to 11 tons for single vehicles and 19 tons for truck-tractor semi-trailers. The bridge is passed the end of its useful life. Replacement of the bridge will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located in the northern area of Granville County between Oak Hill and Oxford. (see Figure 1). Development in the area is agriculture and residential in nature.

SR 1309 is classified as a rural local route in the Statewide Functional Classification System and it is not a National Highway System Route. This route is not a designated bicycle route and there is no indication that an unusual number of bicyclists use this roadway.

In the vicinity of the bridge, SR 1309 has an 18-foot pavement width with grass shoulders. The roadway grade is in a sag vertical curve through the project area. The existing bridge is on a tangent. The roadway is situated approximately 14.0 feet above the creek bed.

Bridge No. 193 is a four span structure that consists of timber decking on timber joists with an asphalt-wearing surface. The substructure is composed of timber caps on timber piles with spread footings on the interior bents. The existing bridge (see Figure 3) was constructed in 1956. The overall length of the structure is 62 feet. The clear roadway width is 19.2 feet. The posted weight limit on this bridge is 11 tons for single vehicles and 21 tons for TTST's.

There are no utilities attached to the existing structure or in the immediate area of the bridge. Utility impacts are anticipated to be low.

The current traffic volume of 380 vehicles per day (VPD) is expected to increase to 800 VPD by the year 2030. The projected volume includes one percent truck-tractor semi-trailer (TTST) and two percent dual-tired vehicles (DT). The posted speed limit is 55 miles per hour in the project area. Three school buses cross the bridge twice daily on their morning and afternoon routes.

There was one accident reported in the vicinity of Bridge No. 193 during a recent three-year period. The accident was not associated with the alignment or geometry of the bridge or its approach roadway.

III. ALTERNATIVES

A. Project Description

The replacement structure will consist of a bridge approximately 100 feet long. The bridge length is based on preliminary design information including hydraulic requirements. The bridge will be of sufficient width to provide for two 10-foot lanes with 5-foot offsets on each side.

The roadway grade of the new structure will be slightly higher than the existing grade at this location.

The existing roadway will be widened to a 20-foot pavement width to provide two 10-foot lanes. Four-foot unpaved shoulders (seven feet with guardrail) will be provided on each side.

B. Reasonable and Feasible Alternatives

One alternative for replacing Bridge No. 193 was studied in detail as described below.

Alternate 1 (Preferred)

Alternate 1 involves replacement of the structure along the existing roadway alignment. Improvements to the approach roadways will be required for a distance of approximately

280 feet to the south and 290 feet to the north of the new structure. A design exemption for the sag vertical curve K factor and vertical stopping sight distance will be required. Traffic will be detoured offsite (see Figure 1) during the construction period.

NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The offsite detour for this project would include SR 1316 and SR 1315. The majority of traffic on the road is through traffic. The detour for the average road user would result in 2 minutes additional travel time (1 mile additional travel). Up to a 6 month duration of construction is expected on this project.

Based on the Guidelines, the criteria above indicate that on the basis of delay alone the detour is acceptable. Granville County Emergency Services along with Granville County Schools Transportation have also indicated that the detour is acceptable. NCDOT Division 5 has indicated the condition of all roads, bridges and intersections on the offsite detour are acceptable without improvement and concurs with the use of the detour.

C. Alternatives Eliminated From Further Consideration

The "do-nothing" alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 1309.

"Rehabilitation" of the old bridge is not practical due to its age and deteriorated condition. These deficiencies are as follows: west end of bent 1 cap has 20 inch deep end decay that extends under joist 1 of span 3, joist 1 of span 3 has lost approximately 50 percent of its bearing area.

D. Preferred Alternative

Bridge No. 193 will be replaced at the existing location as shown by Alternative 1 in Figure 2. NCDOT Division 5 concurs with the preferred alternative.

IV. ESTIMATED COSTS

The estimated costs, based on 2007 prices, are as follows:

	Alternative 1 Preferred
Structure	$ 345,000
Roadway Approaches	$ 147,000
Detour Structure and Approaches	- 0 -
Structure Removal	$ 20,000
Misc. & Mob.	$ 121,000
Eng. & Contingencies	$ 93,000
Total Construction Cost	$ 726,000
Right-of-way Costs	$ 27,000
Utility Relocation	- 0 -
Total Project Cost	$ 753,000

V. NATURAL ENVIRONMENT

Physical Characteristics

Water Resources

The proposed project will impact surface waters of the Tar-Pamlico River Basin, Hydraulic Unit 03020101. The project area is located in Tar-Pamlico subbasin 03-03-01.

Jurisdictional Streams located within the study area are Shelton Creek and a unnamed tributary to Shelton Creek. Shelton Creek has been assigned a best usage classification of WS-IV: NSW [index #28-4]. Neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watersheds of WS-II: predominately undeveloped watersheds), nor Outstanding Resource Waters (ORW) occur within 1.0 mi. of project study area. Shelton Creek is not included on the 2006 Final 303(d) list nor does it drain to any listed waters within 1-mile of the project study area.

Biotic Resources

Three terrestrial communities exist within the project area. These are bottomland hardwood forest, planted pine forest, and maintained/disturbed communities. Two aquatic communities may be impacted by the proposed project. These include Shelton Creek and an unnamed tributary to Shelton Creek. Any construction related activities in or near these resources have the potential to impact biological functions.

Jurisdictional Topics

Surface Waters and Wetlands

Shelton Creek and its unnamed tributary are considered jurisdictional surface waters under Section 404 of the Clean Water Act. Shelton creek and its two unnamed tributaries, UT1 and UT2 are located within the project area. Shelton Creek and UT1 are jurisdictional streams. UT2 is an ephemeral channel and therefore not jurisdictional. One forested wetland occurs within the study area (Figure 2). However, the proposed improvements do not impact the wetland. Jurisdictional were verified by the USACE representative Eric Alsmeyer on January 14, 2005. It is anticipated that there will be no temporary fill resulting from bridge demolition.

Jurisdictional surface waters within the project area may be subject to the Tar-Pamlico River Basin Buffer Rules. These Buffer Rules apply to 50-foot wide riparian buffers directly adjacent to surface waters in the Tar-Pamlico River Basin. This rule does not apply to portions of the riparian buffer where a use is existing and ongoing. Any change in land use within the riparian buffer is characterized as an impact. The Nutrient Sensitive Waters Management Strategy and Protection and Maintenance of Existing Riparian Buffers (15 NCAC 02B.0259) provides a designation for uses that cause impacts to riparian buffers within the Tar-Pamlico River Basin.

Permits

In accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344), a Section 404 Nationwide Permit 23 from the USACE is likely to be applicable for all impacts to Waters of the United States resulting from the proposed project. A NWP No. 33 may be required if temporary construction including cofferdams, access and dewatering are required for this project. A North Carolina Division of Water Quality (DWQ) Section 401 Water Quality General Certification is required prior to the issuance of the Section 401 Nationwide 23 and/or NWP 33. The corresponding Certification number for a NWP 23 is #3701 and NWP 33 is #3688. Since this project is located in the Tar-Pamlico River Basin, a Buffer Certification may be required from DWQ for this project.

Bridge Demolition

Bridge No. 193 is a 62-ft. long by 20-ft. wide structure composed of a timber deck with asphalt wearing surface on timber joists superstructure, and timber substructure with timber caps and bulkheads. Bridge demolition will occur by removing the asphalt surface prior to removal of the bridge structure. The remainder of the timber components will be removed without dropping them into Shelton Creek. Consequently, there will be no temporary fill resulting from bridge demolition. Because of the stream's silt and sand substrate, turbidity curtains will be considered during bridge demolition.

Federally Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 31, 2008, the USFWS lists the following federally-protected species for Granville County. A brief description of each species' characteristics and habitat follows.

Table 1 - Federally Protected species for Granville County

SCIENTIFIC NAME	COMMON NAME	STATUS
Haliaeetus leucocephalus	Bald eagle	Delisted
Alasmidonta heterodon	Dwarf-wedge mussel	E
Ptilimnium nodosum	Harperella	E
Echinacea laevigata	Smooth coneflower	E

"E" denotes Endangered (a species in danger of extinction throughout all or a significant portion of its range.

Bald eagle **Biological Conclusion: Not Required**

The bald eagle was officially delisted on August 8, 2007. However, bald eagle still receives protection under the Bald and Golden Eagle Protection Act. Although the project area has moderately large conifers, suitable for nesting, the stream at this location is not large enough to provide suitable foraging habitat for the bald eagle and there are no large streams or lakes within 1-mile of the project area. The proposed project will not affect the bald eagle.

Dwarf wedgemussel **Biological Conclusion: May Affect – Unresolved**

NCDOT is currently in Section 7 consultation with the USFWS for the Dwarf-wedge mussel. It is expected that this consultation will result in reasonable and prudent measures to minimize or reduce any adverse effects to this species.

Smooth coneflower **Biological Conclusion: No Effect**

On August 9, 2006, NCDOT biologists Erica McLamb, Susan Thebert, Jim Mason, and Sara Easterly surveyed for smooth coneflower within the project area. Prior to the survey, known populations of both species were observed. Surveys for smooth coneflower consisted of foot surveys, with complete visual coverage of potential habitat. Marginal habitat is located within the project area along the roadside of SR 1309 and along pasture edges. The establishment of smooth coneflower within the project area is limited by regular mowing of the roadside and pastures. No specimens of smooth coneflower were observed during the 8 man-hour survey.

Harperella **Biological Conclusion: No Effect**

On August 9, 2006, NCDOT biologists Erica McLamb, Susan Thebert, Jim Mason, and Sara Easterly surveyed for Harperella within the project area. There is marginal habitat within the project area consisting of the edges of rocky shoals for harperella. Surveys were conducted by wading with complete visual coverage of potential habitat. No specimens of harperella were observed during the 4 man-hour survey.

VI. HUMAN ENVIRONMENT

Section 106 Compliance Guidelines

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

Historic Architecture

The Historic Preservation Office (HPO) reviewed the subject project and determined that no surveys are required (see letter dated August 12, 2004)

Archaeology

In a letter dated August 20, 2004, the State Historic Preservation Officer (SHPO) recommended that an evaluation of Bridge No. 193 be conducted based on the very high probability that archaeological sites exist in the project area based the topographic and hydrological situations.

Brockington & Associates, Inc conducted an archaeological survey and evaluation on behalf of NCDOT. No archaeological resources or intact subsurface cultural deposits were identified during the field survey. A finding of "no historic properties affected" with regards to archaeological resources is, therefore, considered appropriate for the bridge replacement project. The SHPO concurred with the findings of the report in a letter dated May 10, 2005. A copy of this letter may be found in the Appendix.

Community Impacts

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

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

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

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. All construction will take place along existing alignment. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project.

Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

The project will not have a disproportionately high and adverse human health and environmental effect on any minority or low-income population.

Noise & Air Quality

This project is an air quality neutral project in accordance with 40 CFR 93.126. It is not required to be included in the regional emissions analysis (if applicable) and project level CO or PM2.5 analyses are not required. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. Therefore, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs. Any burning of vegetation shall be performed in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality compliance with 15 NCAC 2D.0520.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours. The transmission loss characteristics of nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

VII. GENERAL ENVIRONMENTAL EFFECTS

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

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

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

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

Granville County is a participant in the National Flood Insurance Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in an impact area of about the same magnitude. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

VIII. COORDINATION & AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: U.S. Army Corps of Engineers, NC Department of Natural Resources, U.S. Fish & Wildlife Service, N.C Wildlife Resource Commission, N.C. Division of Parks & Recreation, North Carolina State Historic Preservation Office, Granville County Planning Department.

In response from NCDOT's request for comments on the potential environmental impacts of various bridge replacements, USFWS requested a survey be done and other various conservation measures to be implemented. See letter dated May 18, 2004.

IX. PUBLIC INVOLVEMENT

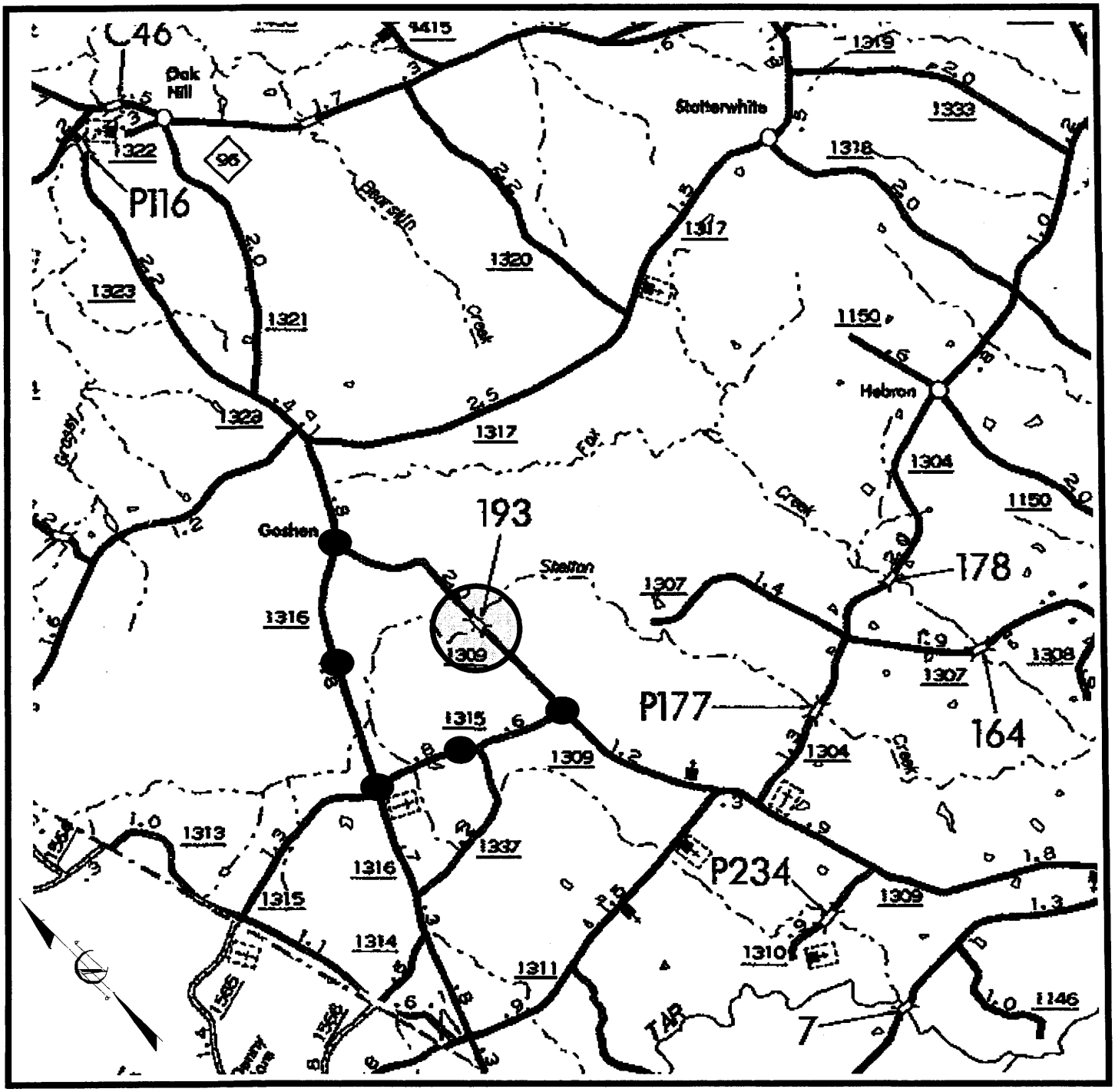
A letter was sent by the Location & Surveys Unit to all property owners affected directly by this project. Property owners were invited to comment. No comments have been received to date.

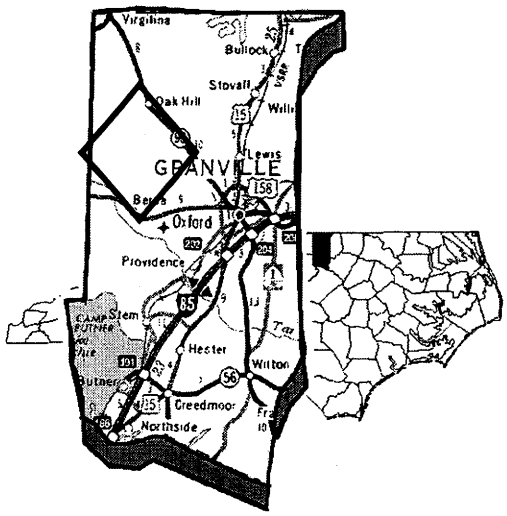
There is not substantial controversy on social, economic, or environmental grounds concerning the project.

X. CONCLUSION

On the basis of the above discussion, it is concluded that no substantial adverse environmental impacts will result from implementation of the project. The project is therefore considered to be a federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.

FIGURES



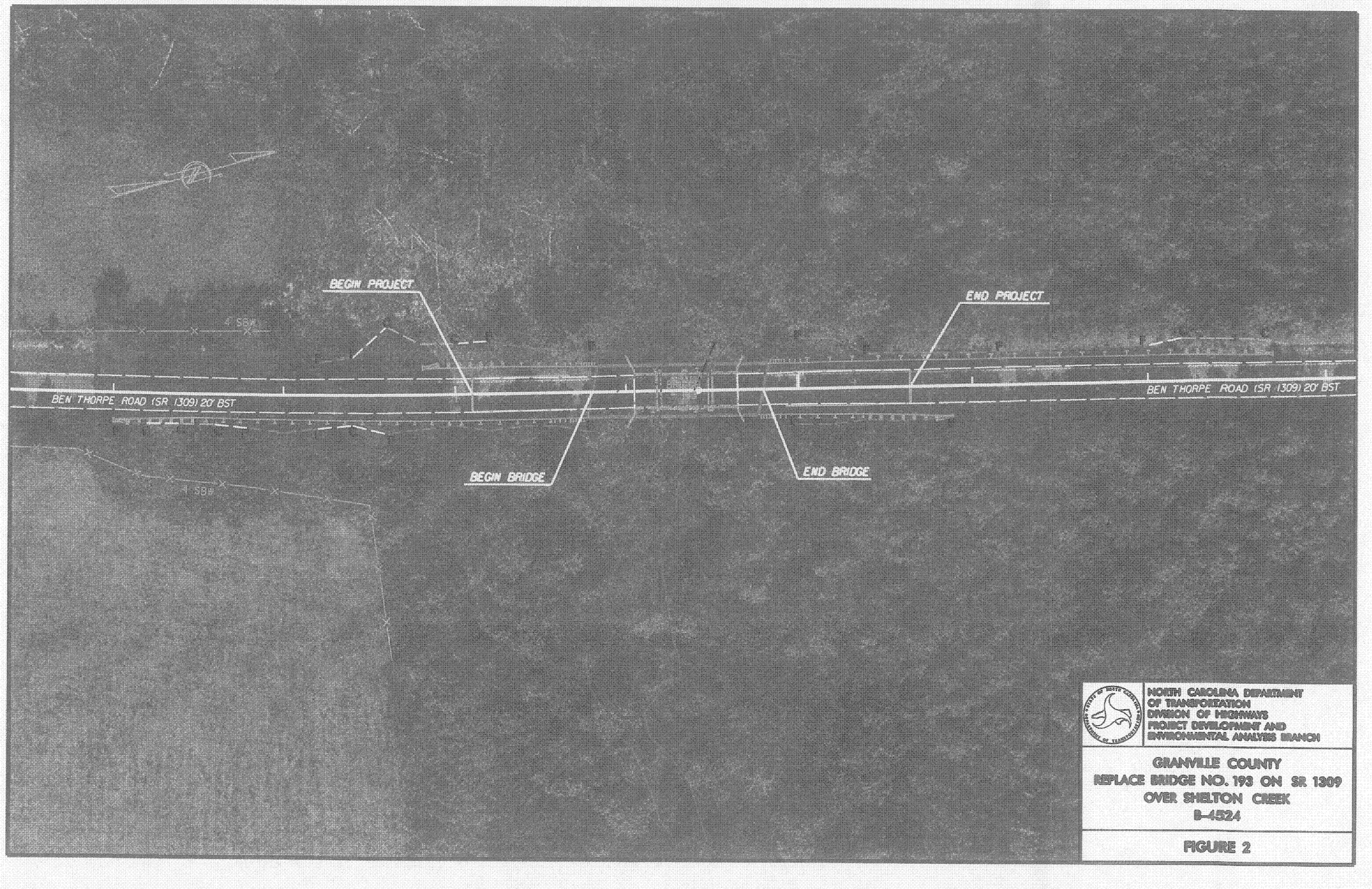


STUDIED DETOUR ROUTE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH

GRANVILLE COUNTY
REPLACE BRIDGE NO. 193 ON SR 1309
OVER SHELTON CREEK
B-4524

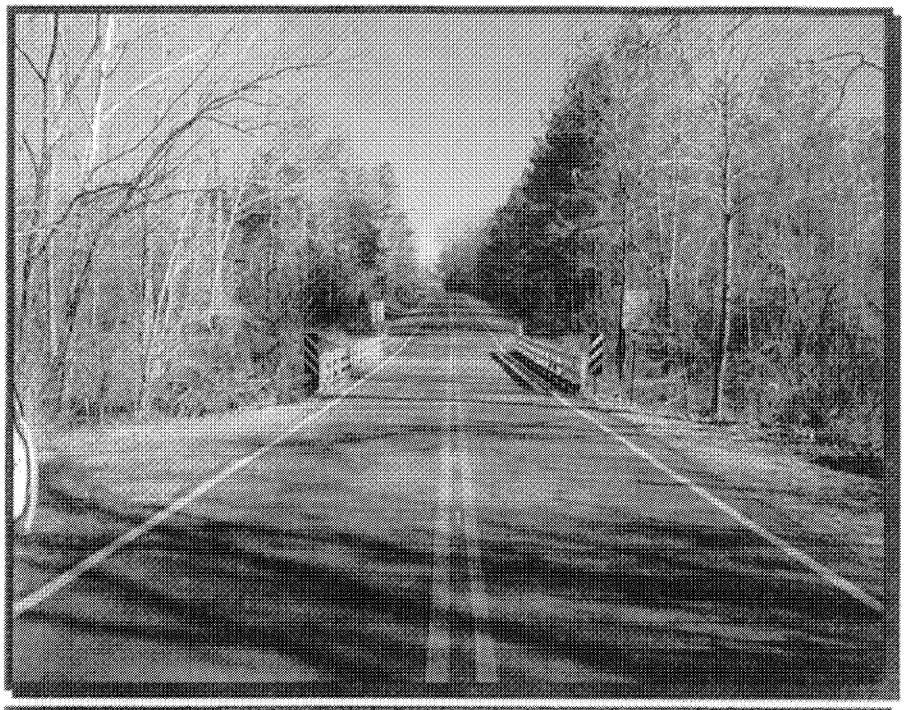
Figure 1



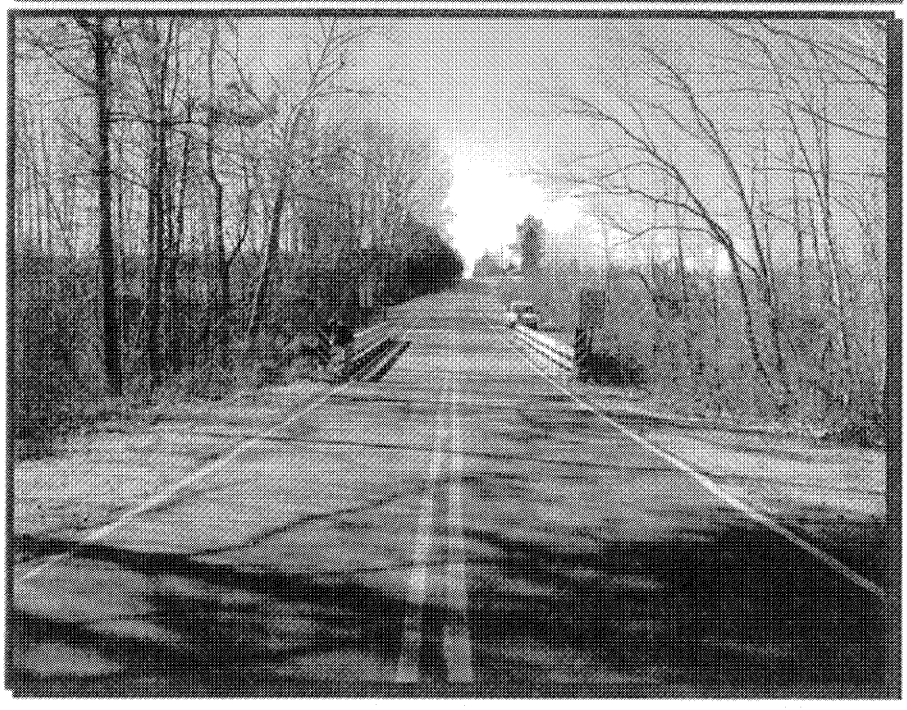
NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

GRANVILLE COUNTY
REPLACE BRIDGE NO. 193 ON SR 1309
OVER SHELTON CREEK
B-4524

FIGURE 2



Looking north across
Bridge No. 193

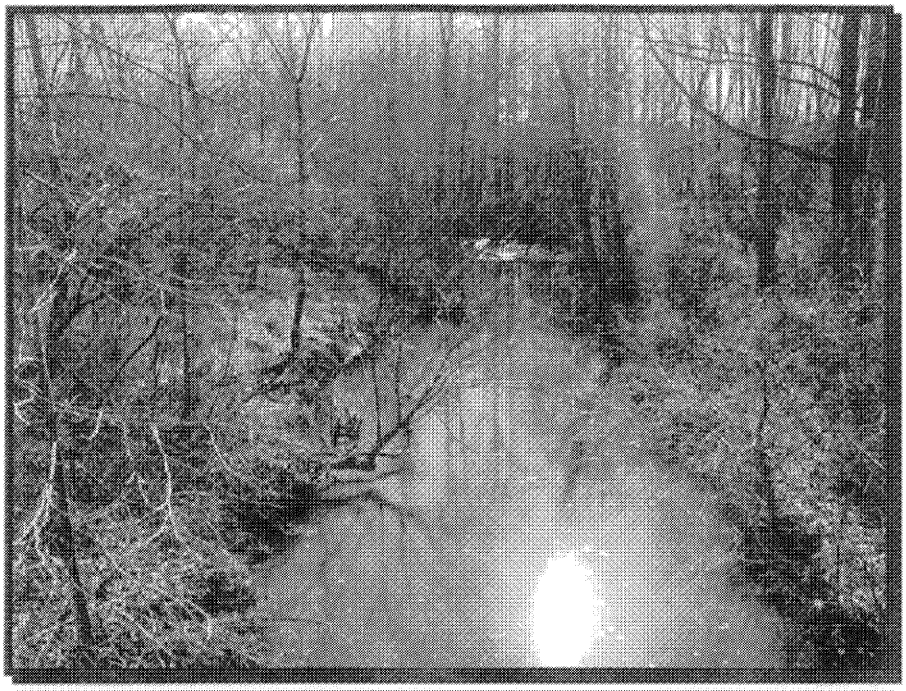


Looking south across
Bridge No. 193

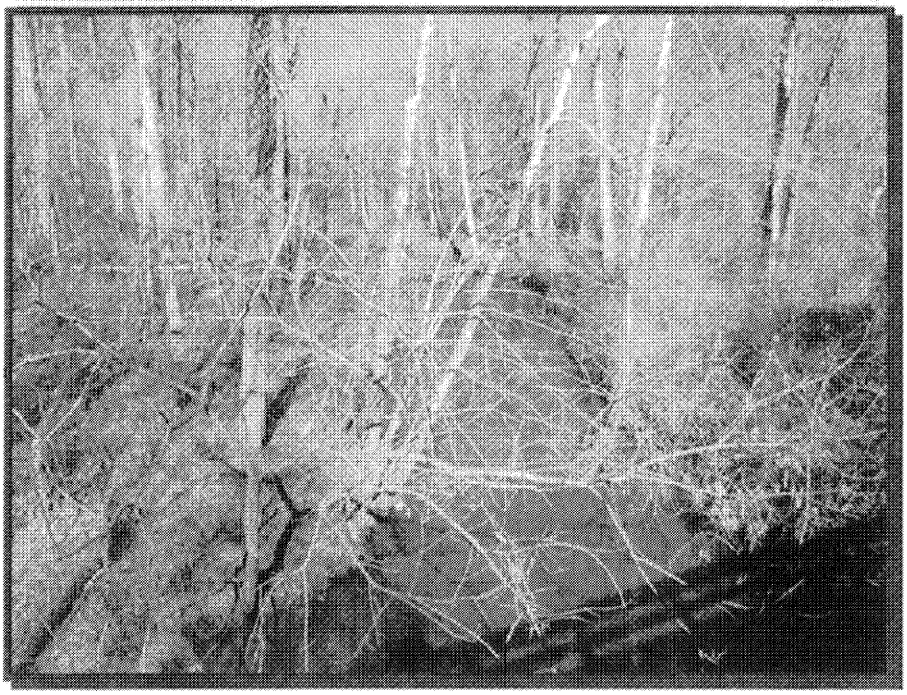
North Carolina Department of Transportation
Division of Highways
Project Development & Environmental Analysis Branch

Granville County
Replace Bridge No. 193 on SR 1309
Over Shelton Creek
B-4524

Figure 3-A



Looking east
(downstream)



Looking west
(upstream)

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

Granville County
Replace Bridge No. 193 on SR 1309
Over Shelton Creek
B-4524

Figure 3-B

APPENDIX A

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

November 17, 2003

MEMORANDUM

TO: David Faucette
School Transportation Director
Granville County Schools
104 Hicks Mill Rd.
Oxford, NC 27565

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

SUBJECT: Replacement of Bridge No. 193 on SR 1309 over Shelton Creek, Granville County, Federal Aid Project No. BRZ-1309(5), State Project No. 8.2371601, TIP No. B-4524

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 2007.

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 on-site.

We ask that you let us know your opinion in writing by using the enclosed addressed envelope. We need your reply by December 31, 2003.

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

Attachment

3 buses Twice A day
No Problem With Road Closure (Can Re-Route)
Gail Matthews
11/20/03
TIM'S

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

TELEPHONE: 919-733-3141
FAX: 919-733-9794
WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

County of Granville
Office of Emergency Management/Fire Marshal
143 Williamsboro Street
Post Office Box 598
Oxford, North Carolina 27565
Voice (919) 603-1310
Facsimile (919) 603-1399
E-Mail - emergencymgmt@granvillecounty.org

March 26, 2004

Mr. William T. Goodwin, Jr. PE
Project Development & Environmental Analysis Branch
NC State Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Goodwin:

Attached to this letter, please find comments and/or observations in regards to the following proposed projects.

- State # 8.2371501 – Replacement of Bridge #164 on SR 1307 over Fox Creek – B-4523
- State # 8.2371601 – Replacement of Bridge #193 on SR 1309 over Shelton Creek – B-4524
- State # 8.2317101 – Replacement of Bridge #133 over SR1412 over Grassy Creek – B-4525
- State #8.2371801–Replacement of Bridge #200 on SR 1435 over Mountain Creek – B-4526

If you have further questions or concerns or would like to discuss our comments, do not hesitate to contact me.

Sincerely,

Douglas P. Logan

Douglas P. Logan
Emergency Management Coordinator

Enclosure

Comments/Observations on Proposed Bridge Replacement Projects

State Project #8.2371501 Replacement of Bridge on SR 1307 over Fox Creek B-4523

In reviewing this project, I see no significant impact on delivery of emergency response as there is adequate access from both sides of the project area.

State Project #8.2371601 Replacement of Bridge on SR 1309 over Shelton Creek B-4524

In reviewing this project, I see no significant impact on delivery of emergency response as there is adequate access from both sides of the project area.

State Project #8.2317101 Replacement of Bridge on SR 1412 over Grassy Creek B-4525

In reviewing this project, I see no significant impact on delivery of emergency response as there is adequate access from both sides of the project area.

State Project #8.2317801 Replacement of Bridge on SR 1435 over Mountain Creek B-4526

In reviewing this project, I see no significant impact on delivery of emergency response as there is adequate access from both sides of the project area.

Granville County EMS

United States Department of the Interior

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

May 18, 2004

William Goodwin, Jr.
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Goodwin:

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 26 proposed bridge replacement projects within the Raleigh Field Office service area. 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).

The 26 projects are as follows:

Project TIP	County	Project TIP	County
B-4538	Halifax	B-4549	Hertford
B-4540	Halifax	B-4560	Johnston
B-4404	Alamance	B-4671	Wayne
B-4520	Gates	B-4658	Wake
B-3169	Durham	B-4664	Warren
B-4613	Randolph	B-4665	Warren
B-4618	Robeson	B-4523	Granville
B-4587	Nash	B-4524	Granville
B-4578	Martin	B-4525	Granville
B-4567	Lenoir	B-4526	Granville
B-4454	Carteret	B-4648	Tyrrell
B-4504	Edgecombe	B-4423	Beaufort
B-4548	Hertford	B-4424	Beaufort

General Conservation Measures

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

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

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

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

4. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;

5. New bridges should be long enough to allow for sufficient wildlife passage along stream corridors;

6. Best Management Practices (BMP) for Protection of Surface Waters should be implemented;

7. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;

8. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. To the extent possible, piers and bents should be placed outside the bank-full width of the stream;

9. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approach to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected area.

Federally Protected Species

Section 7(a)(2) of the Endangered Species Act requires that all federal action agencies (or their designated non-federal representatives), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally-listed threatened or endangered species. A biological assessment/evaluation may be prepared to fulfill the section 7(a)(2) requirement and will expedite the consultation process. To assist you, a complete listing of federally-protected species known to occur in North Carolina and information on their life histories and habitats, as well as information necessary to conduct an effect determination and complete an initiation package, can

be found on our web page at http://nc-es.fws.gov/es . We recommend that you consider this information carefully in preparing a complete initiation package.

If you determine that the proposed action may affect (i.e., likely to adversely affect or not likely to adversely affect) a federally-protected species, you should notify this office with your determination, the results of your surveys, survey methodologies, and an analysis of the effects of the action on listed species, including consideration of direct, indirect, and cumulative effects (i.e., a complete initiation package), before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e., no beneficial or adverse, direct or indirect effect) on federally-listed species, then you are not required to contact our office for concurrence.

Project Specific Comments

B-4540, Halifax County: The Tar spinymussel (*Elliptio steinstansana*) has been observed several miles downstream in Little Fishing Creek. Mussel surveys should be conducted for this project. All aquatic surveys must extend 100 meters upstream and 400 meters downstream of the project limits, where suitable habitat exists.

B-4613, Randolph County: This project site is within critical habitat designated for the Cape Fear shiner (*Notropis mekistocholas*). This species has been observed near the bridge site. Section 7 consultation will be necessary.

B-4587, Nash County: The Tar spinymussel has been observed downstream in the Tar River. The dwarf wedgemussel (*Alasmidonta heterodon*) may also be present. Mussel surveys should be conducted for this project.

B-4504, Edgecombe County: The Tar spinymussel has been observed downstream in the Tar River. Mussel surveys should be conducted for this project.

B-4523, Granville County: The dwarf wedgemussel has been observed downstream in Shelton Creek. Mussel surveys should be conducted for this project.

B-4524, Granville County: The dwarf wedgemussel has been observed 2-3 miles downstream. Mussel surveys should be conducted for this project.

Environmental Documentation

We reserve the right to review any federal permits that may be required for this project, at the public notice stage. Therefore, it is important that resource agency coordination occur early in the planning process in order to resolve any conflicts that may arise and minimize delays in project implementation. In addition to the above guidance, we recommend that the environmental documentation for this project include the following in sufficient detail to facilitate a thorough review of the action:

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

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

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

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

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

6. Design features and construction techniques which would be employed to avoid or minimize 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.

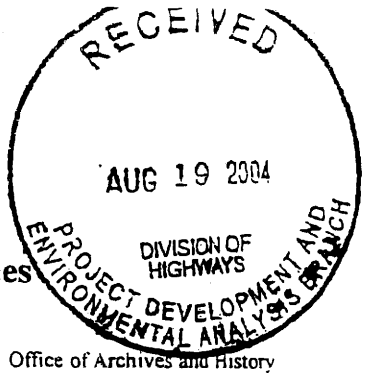
The Service appreciates the opportunity to comment on these projects. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at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

Sincerely,

Garland B. Pardue

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

cc: Mike Bell, USACE, Washington, NC
Bill Biddlecome, USACE, Washington, NC
Richard Spencer, USACE, Wilmington, NC
Eric Alsmeyer, USACE, Raleigh, NC
John Thomas, USACE, Raleigh, NC
John Hennessy, NCDWQ, Raleigh, NC
Beth Barnes, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC



North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

August 12, 2004

MEMORANDUM

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

FROM: Peter B. Sandbeck pbs for Peter Sandbeck

SUBJECT: 2004 Bridge Projects, including B-3492, B-4408, B-4409, B-4410, B-4446, B-4466, B4469, B-4518, B-4545, B-4573, B-4631, B-4423, B-4424, B-4454, B-4520, B-4538, B-4540, B-4548, B-4549, B-4567, B-4578, B-4648, B-4664, B-4665, B-4504, B-4560, B-4587, B-4618, B-4644, B-4649, B-4651, B-4658, B-4671, B-3624, B-3819, B-3911, B-4404, B-4552, B-4613, B-4646, B-4675 B-3169, B-3606, B-3802, B-3803, B-3804, B-4523, B-4524, B-4525, B-4526, Multi-county, ER 04-1280-ER 04-1330

On July 28, 2004, Sarah McBride, our preservation specialist for transportation projects, met with the North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above projects. We reported on our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project descriptions, area photographs, and aerial photographs at the meeting.

Based on our review of the photographs and the information discussed at the meeting, we have included our comments for each bridge project on a spreadsheet attached to this letter. These comments are provided for each project as proposed.

If an archaeological survey is requested on the spreadsheet, a separate memorandum from the Office of State Archaeology, explaining whether a general survey is required or if the survey is predicated upon an off-site detour or new location, is attached.

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

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 considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

PBS:w

Attachments
1 Spreadsheet
16 Memos

cc: Matt Wilkerson, NCDOT
Mary Pope Furr

	TIP	BRIDGE	COUNTY	DIVISION	BUILT	PDE	Architecture	Archaeology
ERO4	1314 B-3492	580056	McDOWELL	13	1962	Hancock	Yes	No
ERO4	1285 B-4408	030265	ANSON	10	1961	Hancock	No	No
ERO4	1286 B-4409	030308	ANSON	10	1922	Hancock	No	No
ERO4	1287 B-4410	030307	ANSON	10	1931	Hancock	Yes	No
ERO4	1301 B-4446	100227	BUNCOMBE	13	1956	Hancock	No	No
ERO4	1290 B-4466	210004	CLAY	14	1952	Hancock	No	No
ERO4	1291 B-4469	220219	CLEVELAND	12	1952	Hancock	No	No
ERO4	1288 B-4518	350110	GASTON	12	1962	Hancock	No	No
ERO4	1307 B-4545	440072	HENDERSON	14	1963	Hancock	No	No
ERO4	1300 B-4573	540183	LINCOLN	12	1965	Hancock	No	No
ERO4	1306 B-4631	800526	RUTHERFORD	13	1970	Hancock	No	No
ERO4	1339 B-4423	060067	BEAUFORT	2	1965	Capps	No	No
ERO4	1335 B-4424	060068	BEAUFORT	2	1966	Capps	No	No
ERO4	1302 B-4454	150043	CARTERET	2	1963	Capps	No	No
ERO4	1292 B-4520	360032	GATES	1	1952	Capps	Yes	No
ERO4	1280 B-4538	410025	HALIFAX	4	1965	Capps	No	No
ERO4	1281 B-4540	410142	HALIFAX	4	1962	Capps	Yes	Yes
ERO4	1358 B-4548	450002	HERTFORD	1	1960	Capps	No	Yes
ERO4	1309 B-4549	450042	HERTFORD	1	1960	Capps	Yes	Yes
ERO4	1299 B-4567	530069	LENOIR	2	1971	Capps	Yes	Yes
ERO4	1298 B-4578	570008	MARTIN	1	1974	Capps	No	No
ERO4	1325 B-4648	880017	TYRRELL	1	1977	Capps	No	No
ERO4	1317 B-4664	920025	WARREN	5	1957	Capps	Yes	Yes
ERO4	1318 B-4665	920036	WARREN	5	1955	Capps	No	Yes
ERO4	1305 B-4504	320052	EDGECOMBE	4	1964	Johnson	No	Yes
ERO4	1312 B-4560	500102	JOHNSTON	4	1956	Johnson	Yes	Yes
ERO4	1297 B-4587	630082	NASH	4	1961	Johnson	No	Yes
ERO4	1326 B-4618	770445	ROBESON	6	1955	Johnson	Yes	No
ERO4	1284 B-4644	830057	STANLY	10	1961	Johnson	No	No
ERO4	1324 B-4649	890377	UNION	10	1962	Johnson	No	No
ERO4	1323 B-4651	890251	UNION	10	1957	Johnson	No	No
ERO4	1315 B-4658	910345	WAKE	5	1960	Johnson	No	No
ERO4	1313 B-4671	950035	WAYNE	4	1961	Johnson	No	Yes
ERO4	1327 B-3624	130190	CALDWELL	11	1981	Pipkin	No	No
ERO4	1328 B-3819	130184	CALDWELL	11	1962	Pipkin	No	No
ERO4	1329 B-3911	850038	SURRY	11	1923	Pipkin	Yes	No
ERO4	1286 B-4404	000102	ALAMANCE	7	1968	Pipkin	Yes	No
ERO4	1310 B-4552	480100	IREDELL	12	1963	Pipkin	Yes	No
ERO4	1295 B-4613	750415	RANDOLPH	8	1959	Pipkin	No	Yes
ERO4	1294 B-4646	850132	SURRY	11	1962	Pipkin	Yes	No
ERO4	1311 B-4675	960034	WILKES	11	1960	Pipkin	No	No
ERO4	1293 B-3169	310158	DURHAM	5	1960	Williams	Yes	No
ERO4	1303 B-3606	040070	ASHE	11	1963	Williams	Yes	No
ERO4	1282 B-3802	040229	ASHE	11	1960	Williams	No	No
ERO4	1304 B-3803	040334	ASHE	11	1966	Williams	Yes	No
ERO4	1283 B-3804	040296	ASHE	11	1964	Williams	Yes	No
ERO4	1319 B-4523	380164	GRANVILLE	5	1955	Williams	No	Yes
ERO4	1320 B-4524	380193	GRANVILLE	5	1956	Williams	No	Yes
ERO4	1321 B-4525	380133	GRANVILLE	5	1960	Williams	No	Yes
ERO4	1322 B-4526	380200	GRANVILLE	5	1957	Williams	No	Yes

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 10, 2005

MEMORANDUM

TO: Matt Wilkerson
Office of Human Environment
NCDOT

FROM: Peter Sandbeck PBS for PBS

SUBJECT: Archaeological Survey and Evaluation of Replacement of Bridge No. 193 on SR 1309 over Shelton Creek, TIP B-4524, State Project No. 8.2371601, Federal Project No. BRZ1309(5), Granville County, ER 04-1320.

Thank you for your letter of April 25, 2005, transmitting the archaeological survey and evaluation report for the above project.

The report author noted that no cultural resources were discovered during the archaeological survey and that no further archaeological investigations are necessary and/or warranted. We concur with this recommendation.

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 considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919.733.4763. In all future communication concerning this project, please cite the above referenced tracking number.