



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

June 17, 2004

U. S. Army Corps of Engineers  
Regulatory Field Office  
6508 Falls of the Neuse Road, Suite 120  
Raleigh, North Carolina 27615

ATTENTION: Mr. John Thomas  
NCDOT Coordinator

SUBJECT: **Application for Nationwide Permit 23 and 33** for the proposed replacement of Bridge No. 181 on SR 1501 (Garrett Road) over Matrimony Creek, Rockingham County. Federal Aid Project No. BRZ-1501(4), State Project No. 8.2511401, Division 7, TIP No. B-3901.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 181 over Matrimony Creek. The current bridge is 76 feet long, and was constructed in 1950. Due to its age and the timber substructure, it is in need of maintenance, and rehabilitation is not practicable. Furthermore, the existing bridge does not conform to modern highway standards. For your review, please find enclosed three copies of the Categorical Exclusion (CE) Document, Pre-construction Notification (PCN), ½ size plans, permit drawings, Natural Resources Technical Report (NRTR) and a U.S. Fish and Wildlife Service (USFWS) concurrence request letter for the above referenced project.

As proposed, the replacement structure will be a new bridge constructed on the existing location. The new bridge will be 145 feet long (which is longer than the CE document indicates) and 28 feet wide. The cross section of the travel way across the new structure includes two 11-foot lanes and 3-foot offsets. The west approach will be approximately 820 feet long and the east approach will be approximately 720 feet long. The approach cross section includes 11-foot lanes and 6-foot shoulders. Traffic will be detoured offsite during construction.

During a recent storm event in mid June 2004, the bridge was washed out. The NCDOT asks the U.S. Corps of Engineers and N.C. Division of Water Quality issue the necessary permits to construct the new bridge as soon as possible.

## IMPACTS TO WATERS OF THE UNITED STATES

General Description: One surface water, Matrimony Creek, will be directly impacted by the proposed replacement of Bridge No. 181. Matrimony Creek (DWQ Index 22-38) is a Division of Water Quality (DWQ) Class "WS-IV" Waters of the State. The channel of Matrimony Creek at the crossing is approximately 20.0 feet wide with an average bank height from 7 to 12 feet tall. The substrate consists of sand, gravel and wood debris. There are no jurisdictional wetlands in the project area.

Temporary Impacts: According to the proposed plan, the bridge will span the creek and no permanent impact to surface waters is expected. However, during construction temporary fill is required causing temporary stream diversion. As proposed, 0.01 acres of temporary fill within the Matrimony Creek channel will be required. The temporary fill will consist of suitable materials in accordance with applicable Nationwide Permit and 401 Water Quality Certification conditions. After construction, the temporary fill will be removed and disposed of in accordance with applicable regulations.

- Schedule: The project schedule calls for a Let date of November 16, 2004. It is anticipated that the contractor will begin construction around December 21, 2004. NCDOT will request the contractor to complete construction in a timely manner in order to minimize impacts to Matrimony Creek.
- Restoration Plan: The material used for fill to control erosion within the banks of Matrimony Creek will be removed after the purpose has been served. The contractor will be required to submit a reclamation plan for removal of and disposal of all material off-site.

Utility Impacts: There will be no sewer, water, electric or other utility impacts due to this bridge replacement project.

Bridge Demolition: Bridge No. 181, constructed in 1950, consists of a timber deck on steel I-beams supported by timber piles and caps. The interior pile has an exposed concrete footing. The overall length of the structure is 76 feet and is approximately 17 feet above the creek bed. Due to the minimal amount of concrete used for the structure, it is anticipated that the bridge can be removed without resulting fill. In addition, NCDOT and its contractors will adhere to Best Management Practices for "Bridge Demolition and Removal" during the removal of Bridge No. 181.

## FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003 USFWS lists two federally protected species for Rockingham County, James spiny mussel (*Pleurobema collina*) and smooth coneflower (*Echinacea laevigata*).

Suitable habitat for the James spiny mussel consisting of shallow, normally compacted pebble substrate was identified within Matrimony Creek near the bridge site. Unsuitable habitat was also identified consisting of large stretches of unconsolidated, shifting sand. In order to determine if the endangered mussel existed within the project site NCDOT environmental specialists Karen Lynch, Mary Frazer and Sharon Snider conducted a freshwater mussel survey

of the Creek at the bridge crossing on March 27, 2003. Mussel surveys were conducted from approximately 400 meters downstream to 100 meters upstream of the existing bridge. No mussels were found during the survey, therefore a biological conclusion of “may affect, not likely to adversely affect” was issued for the James spiny mussel. NCDOT has requested a concurrence from USFWS, a copy of the request letter is attached.

Suitable habitat for smooth cone snail, consisting of roadsides and utility right-of-way was present within the study area. To determine if smooth cone snail existed within the study area, NCDOT biologists Lynn Smith, Elizabeth Lusk and Michael Turchy surveyed the project area on July 18, 2002. Survey results concurred that suitable habitat existed however no specimens were found within the study area. Therefore it was determined that the proposed bridge replacement will not affect smooth cone snail. However, FWS typically provides concurrence with a two year limit. Therefore, NCDOT agreed to re-survey the project area for smooth cone snail since two years will have passed before construction has commenced. NCDOT has committed to survey the project area prior to initiation of ground disturbing activities. The results of the survey will be forwarded immediately to the NCDOT and the resource agencies should smooth cone snail be found. If no individuals are found, a concurrence request will be submitted to the USFWS.

### **AVOIDANCE AND MINIMIZATION**

As part of the efforts to avoid and minimize jurisdictional impacts, NCDOT is proposing to replace the existing bridge with a new bridge rather than a box culvert, thus minimizing impacts to jurisdictional areas. Likewise, NCDOT has decided to replace the bridge on the existing site and detour traffic offsite, thereby eliminating additional temporary impacts required to install a temporary crossing structure. Additionally, the proposed design spans the stream with no bents in the water and utilizes a longer span further minimizing impacts.

Construction impacts will be minimized or avoided through implementation with applicable Best Management Practices. For instance, during demolition NCDOT will adhere to Best Management Practices for Bridge Demolition and Removal which will reduce or eliminate temporary fill materials from entering Matrimony Creek. Additionally, adherence to NCDOT's Best Management Practices for Protection of Surface Waters will minimize construction impacts since these practices require the use of appropriate sediment and erosion control measures.

Since the proposed project qualifies as a Categorical Exclusion and will have only a temporary impact on jurisdictional waters, no compensatory mitigation has been proposed.

### **REGULATORY APPROVALS**

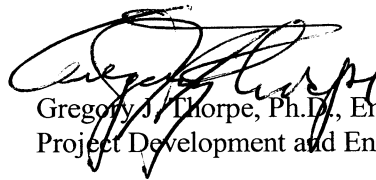
Section 404 Permit: It is anticipated that the temporary stream diversion will be authorized under Section 404 Nationwide Permit 33. We are therefore requesting the issuance of a Nationwide Permit 33 for this diversion. All other aspects of this project are being processed by the Federal Highway Administration as a “Categorical Exclusion” in accordance with 23 CFR § 771.115(b). NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002)

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. All general conditions of the Water Quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are

providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their notification.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Eric Adrignola at (919) 715-1462 or at eadrignola@dot.state.nc.us.

Sincerely,



Gregory J. Thorpe, Ph.D., Environmental Manager  
Project Development and Environmental Analysis Branch

cc: w/ attachment

- Mr. John Dorney, Division of Water Quality (2 copies)
- Mr. Gary Jordan, USFWS
- Ms. Marla Chambers, NCWRC
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Michael Wood, The Catena Group

w/o attachment

- Mr. David Franklin, USACE, Wilmington
- Mr. Jay Bennet, P.E., Roadway Design
- Mr. Omar Sultan, Programming and TIP
- Ms. Debbie Barbour, P.E., Highway Design
- Mr. David Chang, P.E., Hydraulics
- Mr. Mark Staley, Roadside Environmental
- Mr. J. M. Mills, P.E., Division Engineer
- Mr. Jerry Parker, DEO
- Mr. John Williams, P.E., PDEA

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

Riparian or Watershed Buffer Rules

Section 10 Permit

Isolated Wetland Permit from DWQ

401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: NWP 23 & 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 Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here:

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

**II. Applicant Information**

1. Owner/Applicant Information

Name: \_\_\_\_\_

Mailing Address: NCDOT

1548 Mail Service Center

Raleigh, NC 27699-1548

Telephone Number: 919-733-3141 Fax Number: 919-733-9794

E-mail Address: gthorpe@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)

Name: NA

Company Affiliation: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

**III. Project Information**

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

1. Name of project: Bridge No. 181 Replacement
  
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3901
  
3. Property Identification Number (Tax PIN): NA
  
4. Location  
County: Rockingham Nearest Town: Eden  
Subdivision name (include phase/lot number): \_\_\_\_\_  
Directions to site (include road numbers, landmarks, etc.): \_\_\_\_\_  
Bridge No. 181 crossing of Matrimony Creek on SR 1501 (Garrett Road)  
(please refer to attached maps)
  
5. Site coordinates, if available (UTM or Lat/Long): \_\_\_\_\_  
(Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
  
6. Property size (acres): Please refer to attached drawings
  
7. Nearest body of water (stream/river/sound/ocean/lake): Matrimony Creek
  
8. River Basin: Roanoke River  
(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: Existing roadway, utility right-of-way, residential near by  
\_\_\_\_\_  
\_\_\_\_\_

10. Describe the overall project in detail, including the type of equipment to be used: Replace Bridge No. 181 over Matrimony Creek with a new bridge. The new bridge will be 130 feet (39.6 meters) long and 28 feet (8.6 meters) wide. The cross section includes two 11-foot (3.3 meter) lanes and 3-foot (1.0 meter) offsets. The west approach will be approximately 820 feet long and the east approach will be approximately 720 feet long. The approach includes 11-foot lanes and 6-foot shoulders. Traffic will be detoured offsite during construction.
11. Explain the purpose of the proposed work: To replace a structurally deficient and functionally obsolete bridge crossing over Matrimony Creek.

**IV. Prior Project History**

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

N/A

**V. Future Project Plans**

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

N/A

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

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

1. Provide a written description of the proposed impacts: The replacement of the bridge will result in 0.01 acres of temporary fill within the stream channel of Matrimony Creek.  
There will be no impacts to jurisdictional wetlands.

2. Individually list wetland impacts below:

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

- \* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.
- \*\* 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at <http://www.fema.gov>.
- \*\*\* List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: N/A  
 Total area of wetland impact proposed: N/A

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

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
1	Diversion (T)	60	Matrimony Creek	20 feet	Perennial
1	Fill (T)	0.01 acre	Matrimony Creek	20 feet	Perennial

- \* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.
- \*\* Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at [www.usgs.gov](http://www.usgs.gov). Several internet sites also allow direct download and printing of USGS maps (e.g., [www.topozone.com](http://www.topozone.com), [www.mapquest.com](http://www.mapquest.com), etc.).

Cumulative impacts (linear distance in feet) to all streams on site: Approximately 60 feet



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

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

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

5. 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.): N/A

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

Size of watershed draining to pond: N/A Expected pond surface area: N/A

**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 preferred alternative was selected since it proposed an offsite detour and therefore does not require additional impacts of a temporary onsite structure. Additionally, NCDOT is proposing to replace the old bridge with a new bridge rather than a box culvert which would incur additional impacts. During demolition, adherence to NCDOT's Best Management Practices for Bridge Demolition and Removal will reduce temporary fill materials from entering Matrimony Creek. Additionally, adherence to NCDOT Best Management Practices for Protection of Surface Waters will minimize construction impacts since these BMPs require use of erosion and sediment control measures.

**VIII. Mitigation**

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

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

Due to the minor, temporary impacts to surface waters resulting from this project, no compensatory mitigation is proposed.

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

Amount of stream mitigation requested (linear feet): N/A

Amount of buffer mitigation requested (square feet): N/A

Amount of Riparian wetland mitigation requested (acres): N/A

Amount of Non-riparian wetland mitigation requested (acres): N/A  
 Amount of Coastal wetland mitigation requested (acres): N/A

**IX. Environmental Documentation (required by DWQ)**

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

Yes  No

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

Yes  No

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

Yes  No

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

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

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

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

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

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

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

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

N/A

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**XI. Stormwater (required by DWQ)**

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

NA

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**XII. Sewage Disposal (required by DWQ)**

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

NA

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**XIII. Violations (required by DWQ)**

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

Yes  No

Is this an after-the-fact permit application?

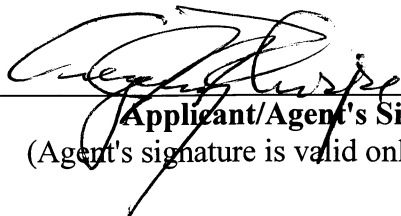
Yes  No

**XIV. Other Circumstances (Optional):**

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

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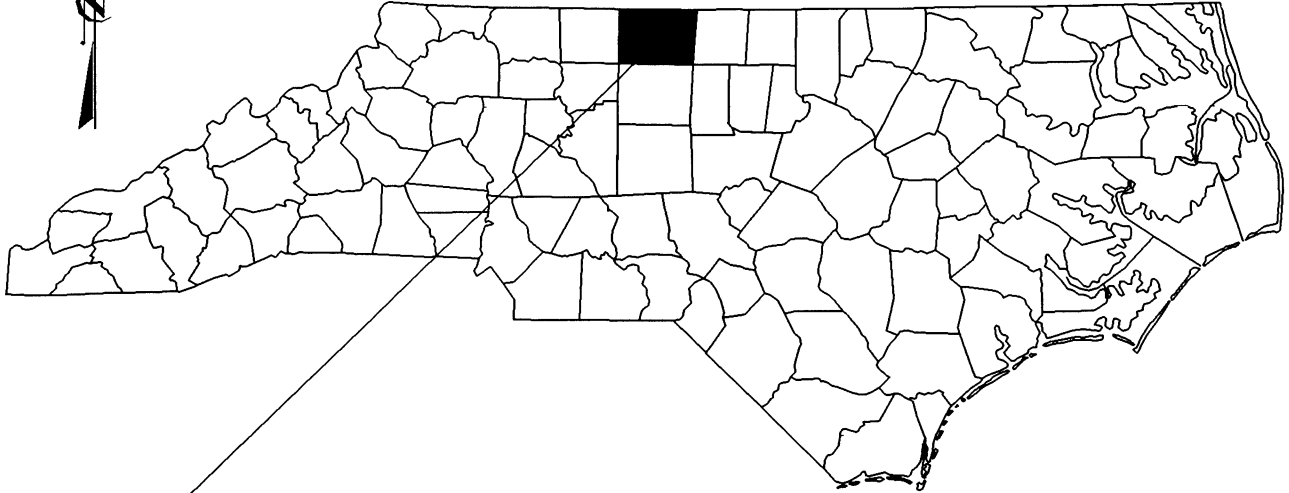


**Applicant/Agent's Signature**

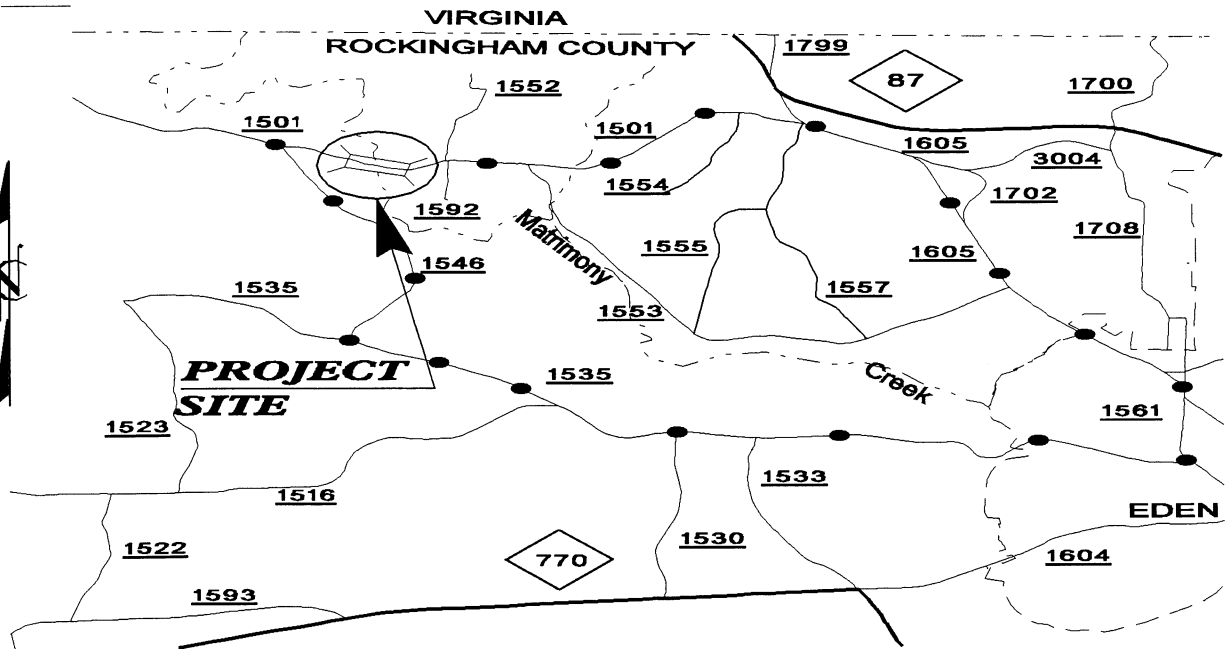
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

17 June 04  
**Date**

# NORTH CAROLINA



PROJECT: 33337.1.1 ( B-3901 )



---●---●---● **DENOTES OFFSITE DETOUR**

## VICINITY MAPS

### NCDOT

DIVISION OF HIGHWAYS  
ROCKINGHAM COUNTY  
PROJECT: 33337.1.1 (B-3901)

REPLACE BRIDGE #181 OVER  
MATRIMONY CREEK ON SR 1501

SHEET


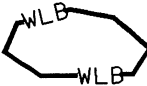



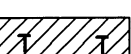
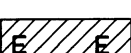
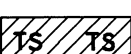
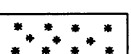

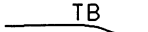
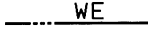
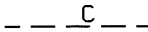


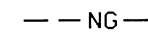









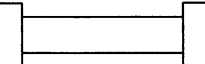
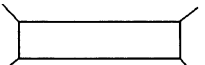




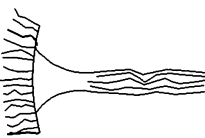



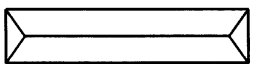
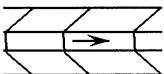
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OF

9

10 / 22 / 03

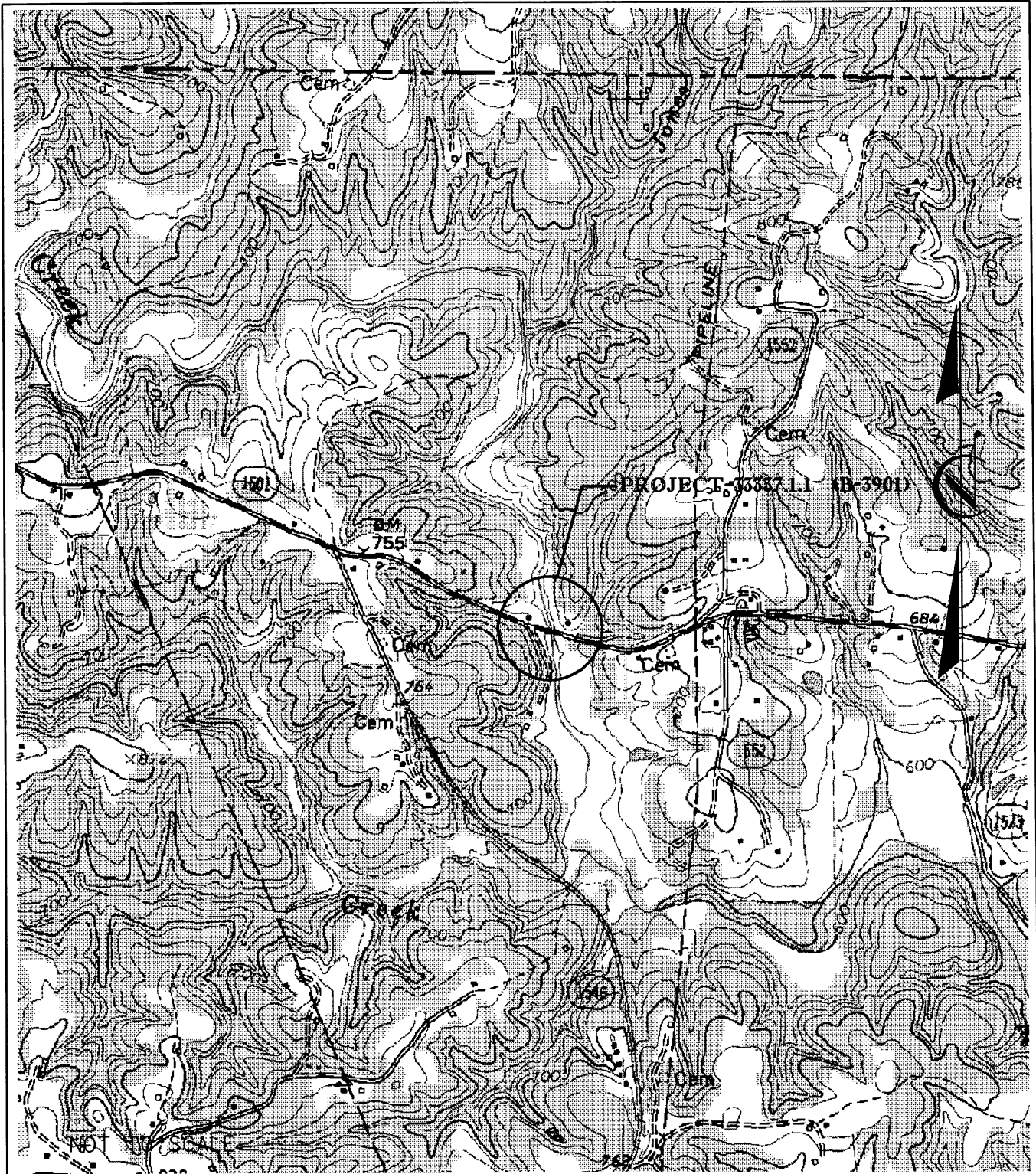
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<p> WETLAND BOUNDARY</p> <p> WETLAND</p> <p> DENOTES FILL IN WETLAND</p> <p> DENOTES FILL IN SURFACE WATER</p> <p> DENOTES FILL IN SURFACE WATER (POND)</p> <p> DENOTES TEMPORARY FILL IN WETLAND</p> <p> DENOTES EXCAVATION IN WETLAND</p> <p> DENOTES TEMPORARY FILL IN SURFACE WATER</p> <p> DENOTES MECHANIZED CLEARING</p> <p> FLOW DIRECTION</p> <p> TOP OF BANK</p> <p> EDGE OF WATER</p> <p> PROP. LIMIT OF CUT</p> <p> PROP. LIMIT OF FILL</p> <p> PROP. RIGHT OF WAY</p> <p> NATURAL GROUND</p> <p> PROPERTY LINE</p> <p> TEMP. DRAINAGE EASEMENT</p> <p> PERMANENT DRAINAGE EASEMENT</p> <p> EXIST. ENDANGERED ANIMAL BOUNDARY</p> <p> EXIST. ENDANGERED PLANT BOUNDARY</p> <p> WATER SURFACE</p> <p> LIVE STAKES</p> <p> BOULDER</p> <p> COIR FIBER ROLLS</p>	<p> PROPOSED BRIDGE</p> <p> PROPOSED BOX CULVERT</p> <p> PROPOSED PIPE CULVERT  <small>12"-48" PIPES 54" PIPES &amp; ABOVE</small></p> <p><small>(DASHED LINES DENOTE EXISTING STRUCTURES)</small></p> <p> SINGLE TREE</p> <p> WOODS LINE</p> <p> DRAINAGE INLET</p> <p> ROOTWAD</p> <p> RIP RAP</p> <p> ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE</p> <p> PREFORMED SCOUR HOLE</p> <p> LEVEL SPREADER (LS)</p> <p> DITCH / GRASS SWALE</p>
---	---

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**ROCKINGHAM COUNTY**  
**PROJECT: 33337.1.1 (B-3901)**

**REPLACE BRIDGE #181 OVER**  
**MATRIMONY CREEK ON SR 1501**

SHEET 2 OF 9 10 / 22 / 03



# VICINITY MAPS

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

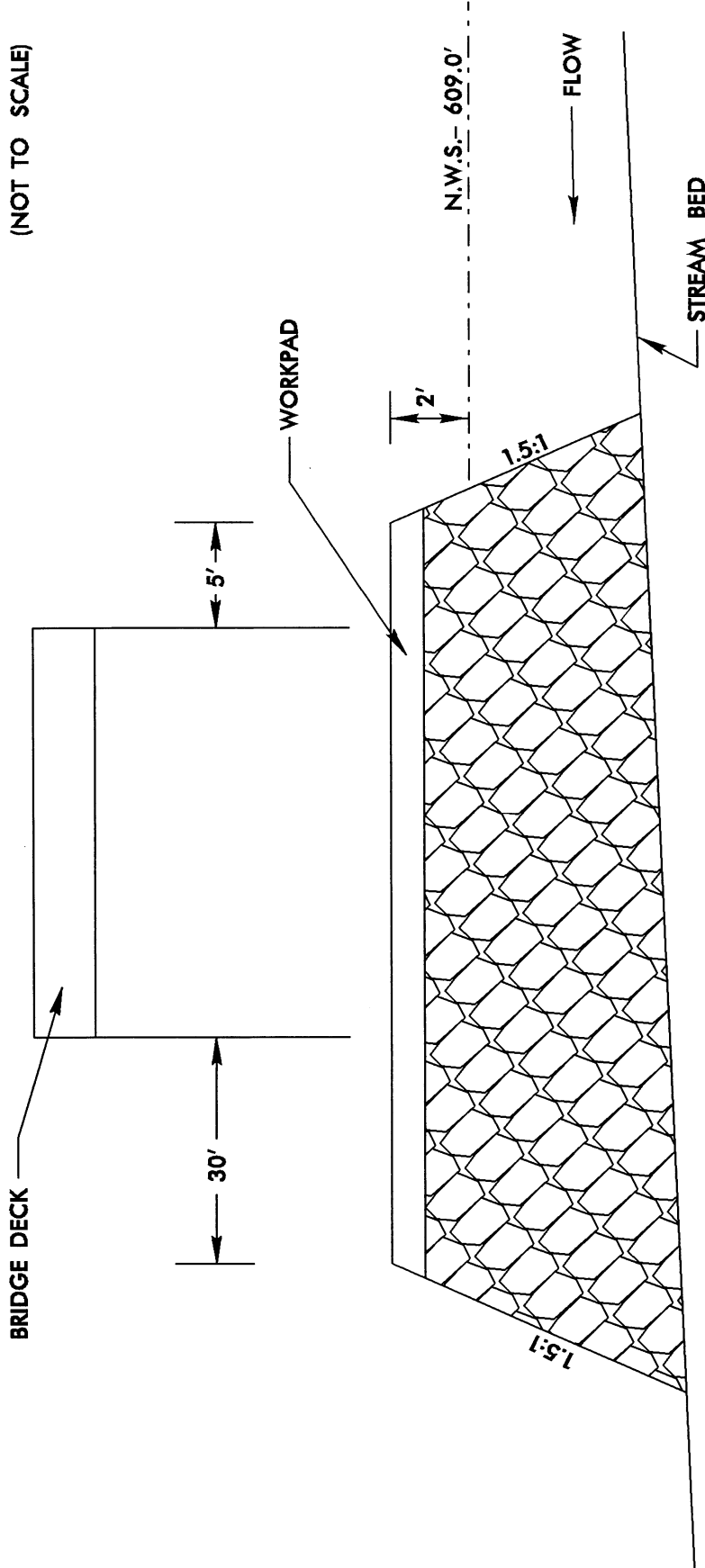
PROJECT: 33337.1.1 (B-3901)

REPLACE BRIDGE #181 OVER  
MATRIMONY CREEK ON SR 1501

SHEET 3 OF 9

10/22/03

**CAUSEWAY DETAIL**  
(NOT TO SCALE)



ROCK CAUSEWAY  
(CLASS II RIP RAP)

**QUANTITIES OF ESTIMATES**

VOLUME OF CLASS II RIP RAP- 40 cu.yds.

AREA OF CLASS II RIP RAP- .03 AC.

**NCDOT**

DIVISION OF HIGHWAYS  
ROCKINGHAM COUNTY  
PROJECT: 33337.1.1 (B-3901)

REPLACE BRIDGE #181 OVER  
MATRIMONY CREEK ON SR 1501





**PROPERTY OWNERS**  
**NAMES AND ADDRESSES**

<b>PARCEL NO.</b>	<b>NAMES</b>	<b>ADDRESSES</b>
1	TROY FRANKLIN WARF, JR.	1220 GARRETT RD. EDEN, N.C. 27288
2	JUDIE I. WEESE	1233 GARRETT RD. EDEN, N.C. 27288
3	H.C. & VIOLA RUTLEDGE	1183 GARRETT RD. EDEN, N.C. 27288
4	H.C. & VIOLA RUTLEDGE	1183 GARRETT RD. EDEN, N.C. 27288

**NCDOT**

**DIVISION OF HIGHWAYS**  
**ROCKINGHAM COUNTY**  
**PROJECT: 33337.1.1 (B-3901)**

**REPLACE BRIDGE #181 OVER**  
**MATRIMONY CREEK ON SR 1501**



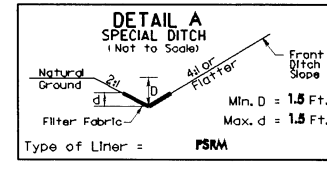
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B-3901	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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 \*\* DESIGN EXCEPTION REQUIRED FOR MAXIMUM GRADE (8.6%)



-L-

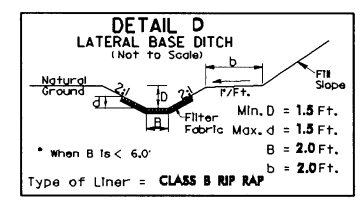
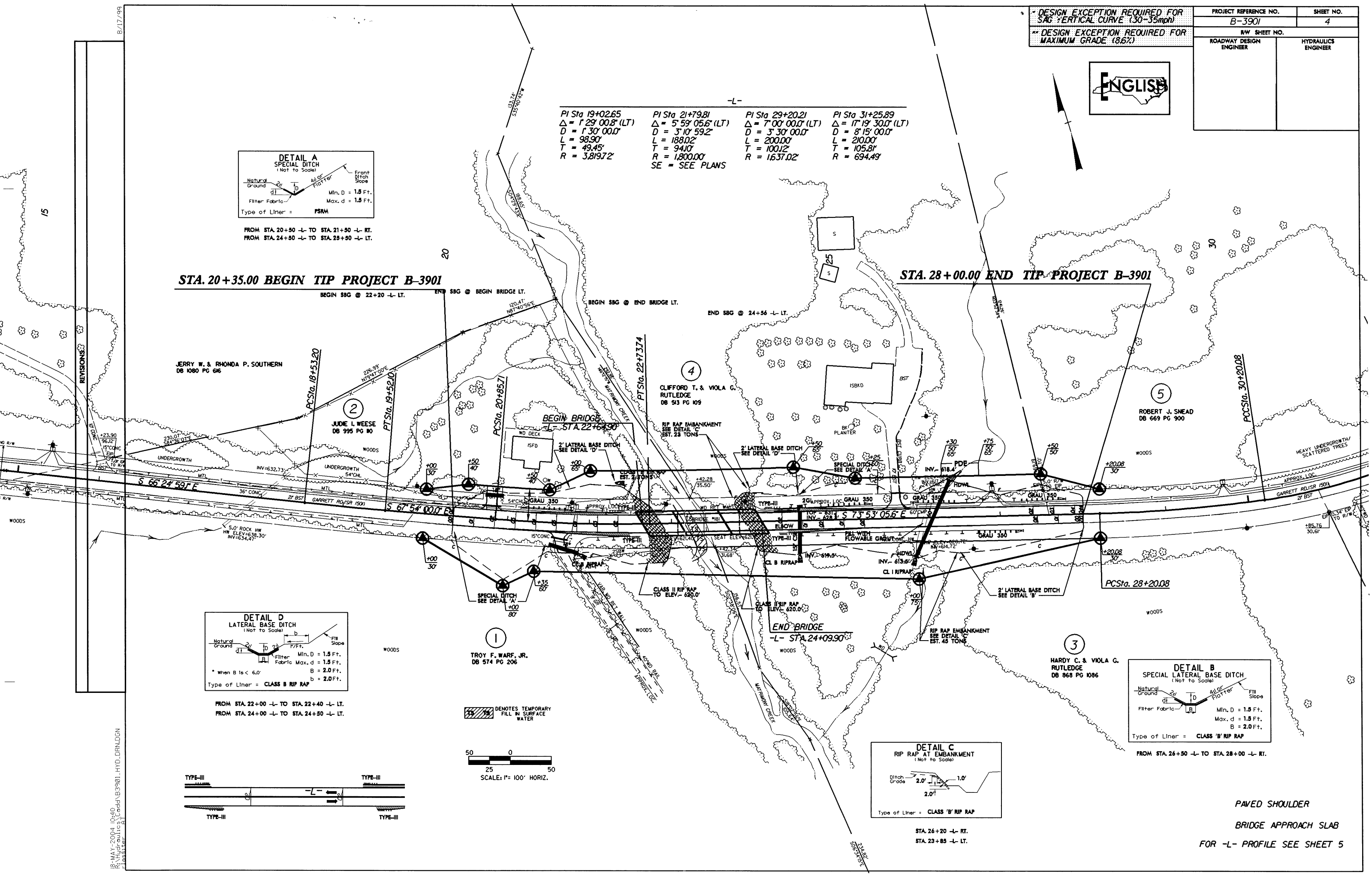
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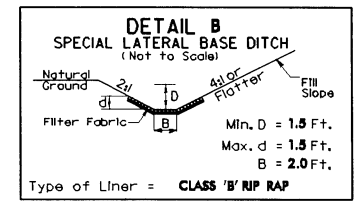
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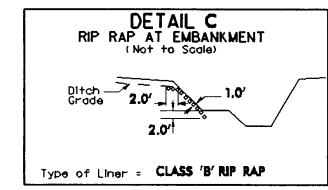
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 FROM STA. 24+00 -L- TO STA. 24+30 -L- LT.



FROM STA. 26+50 -L- TO STA. 28+00 -L- RT.



STA. 26+20 -L- RT.  
 STA. 23+85 -L- LT.

PAVED SHOULDER  
 BRIDGE APPROACH SLAB  
 FOR -L- PROFILE SEE SHEET 5

B/17/99

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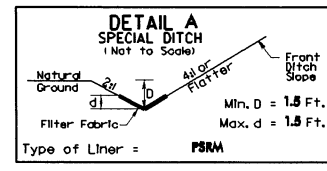
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DESIGN EXCEPTION REQUIRED FOR  
MAXIMUM GRADE (8.6%)

PROJECT REFERENCE NO.	SHEET NO.
B-3901	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L-

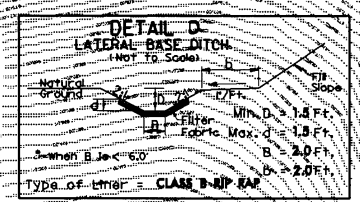
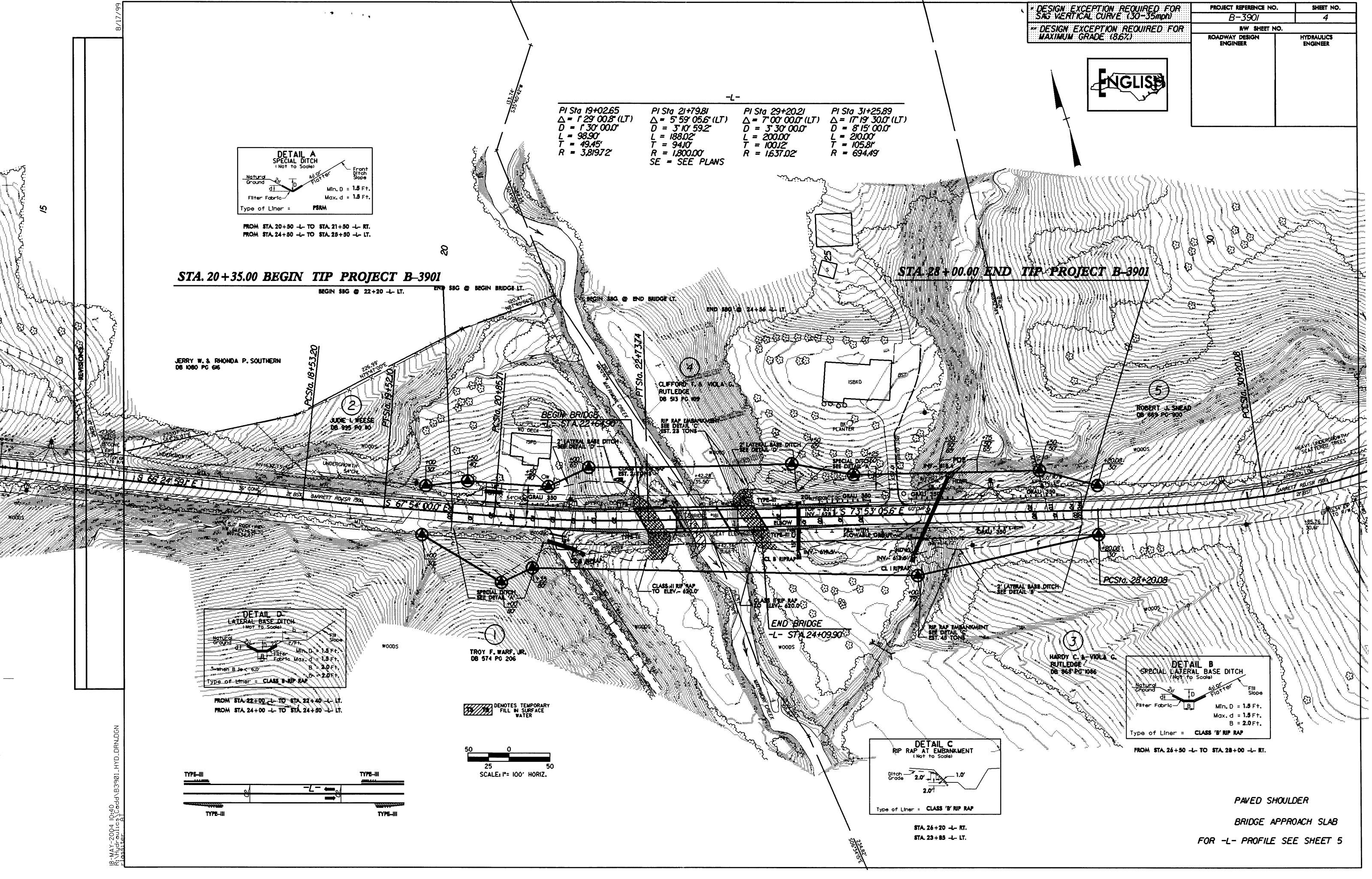
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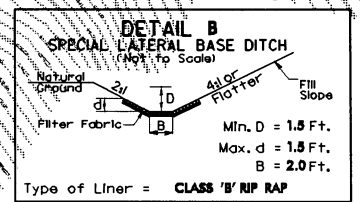
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FROM STA. 24+50 -L- TO STA. 25+50 -L- LT.

STA. 20+35.00 BEGIN TIP PROJECT B-3901

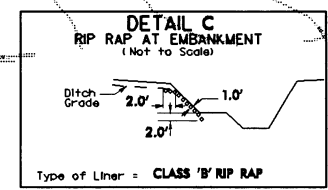
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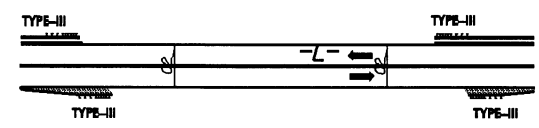
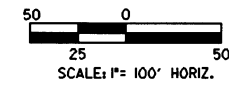


FROM STA. 26+50 -L- TO STA. 28+00 -L- RT.



STA. 26+20 -L- RT.  
STA. 23+85 -L- LT.

DENOTES TEMPORARY  
FILL IN SURFACE  
WATER



PAVED SHOULDER  
BRIDGE APPROACH SLAB  
FOR -L- PROFILE SEE SHEET 5

B/17/99

18-MAY-2004 10:40  
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G. CE Approval

TIP Project No. B-3901  
State Project No. 8.2511401  
Federal-Aid Project No. BRZ-1501(4)

Project Description:

The purpose of this project is to replace Rockingham County Bridge No. 181 on SR 1501 over Matrimony Creek. The replacement structure will be a Bridge 130 feet (39.6 meters) long and 28 feet (8.6 meters) wide. The cross section will include two 11-foot (3.3-meter) lanes and 3-foot (1.0 meter) offsets. The west approach will be approximately 820 feet long and the east approach will be approximately 720 feet long. The approach cross section will include 11-foot lanes and 6-foot shoulders. Traffic will be detoured offsite during construction (see Figure 1). The roadway will be designed with a 60 mph (90 km/h) design speed.

Categorical Exclusion Action Classification:

           TYPE II(A)  
  X   TYPE II(B)

Approved:

9-27-02 William T. Gooding  
Date for Assistant Manager  
Project Development & Environmental Analysis Branch

9-27-02 William T. Gooding  
Date Project Planning Unit Head  
Project Development & Environmental Analysis Branch

9-27-02 John Williams  
Date Project Development Engineer  
Project Development & Environmental Analysis Branch

For Type II(B) projects only:

10-4-02 Felix D. [Signature]  
Date for Division Administrator  
Federal Highway Administration

## **PROJECT COMMITMENTS:**

### **B-3901, Rockingham County**

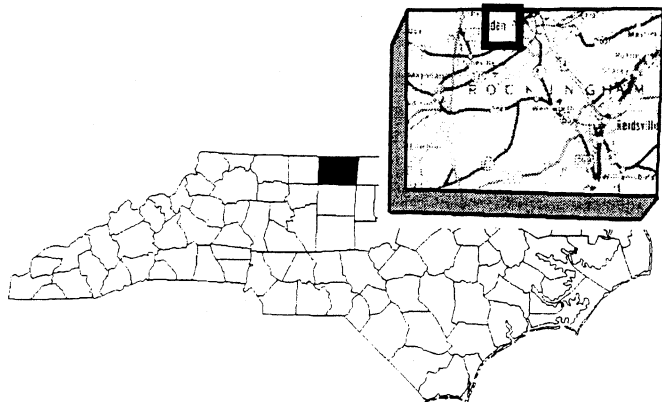
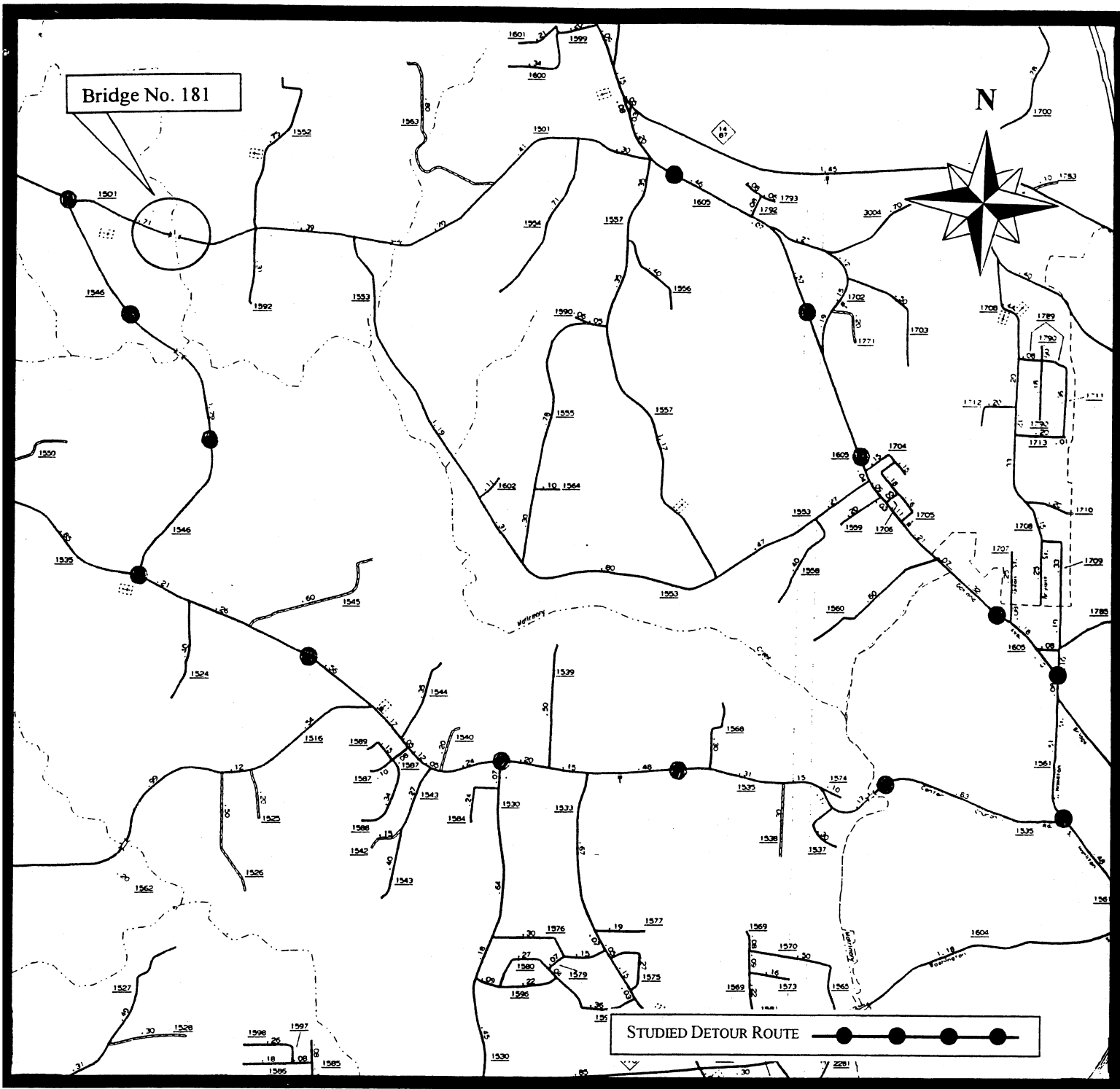
Bridge No. 181 on SR 1501  
Over Matrimony Creek  
Federal Project BRZ-1501(4)  
State Project 8.2511401

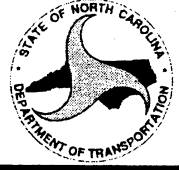
#### **PDEA Office of Natural Environment**

- Additional surveys for smooth coneflower and James spynussel may be required if the project is not let to construction prior to June 2004.

#### **Division Construction Engineer**

- The bridge is to be removed such that there is no resulting fill.
- Please alert both EMS and the County School Bus Coordinator as to the period of anticipated road closure.



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH
	<p align="center"> <b>ROCKINGHAM COUNTY</b>  <b>REPLACE BRIDGE 181 ON SR 1501</b>  <b>OVER MATRIMONY CREEK</b>  <b>B-3901</b> </p>
<p align="center">         Scale 1 in. = 1/2 mi. <span style="float: right;">Figure One</span> </p>	



Williams



North Carolina Department of Cultural Resources

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

Division of Archives and History
William S. Price, Jr., Director

January 8, 2001

MEMORANDUM

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

From: David Brook [Signature] for David Brook
Deputy State Historic Preservation Officer

Re: Replacement of Bridge No. 181 on SR 1501 over Matrimony Creek,
TIP No. B-3901, Rockingham County, ER 01-7938

On November 28, 2000, April Montgomery of our staff met with North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above project. She reported our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project area photographs and aerial photographs at the meeting.

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

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

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places, will be affected by the project construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

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

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

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

DB:kgc



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

1501 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1501

LYNDO TIPPETT  
SECRETARY

March 14, 2002

**MEMORANDUM TO:** John Williams, Project Planning Engineer  
Project Planning Unit

**FROM:** A. Lynn Smith, Natural Systems Specialist *ALS*  
Natural Systems Unit

**SUBJECT:** Natural Resources Technical Report for the Proposed  
Replacement of Bridge No. 181, Rockingham County, TIP  
No. B-3901; State Project No. 8.2511401; Federal Aid No.  
BRZ-1501(4)

The attached Natural Resources Technical Report provides inventories and descriptions of natural resources within the project area, and estimations of impacts likely to occur to these resources as a result of project construction. Pertinent information on Waters of the United States and federally-protected species is also provided.

I would appreciate the opportunity to review the draft Categorical Exclusion for this project. Please contact me if you have any questions, or need this report copied onto disk format (ext. 286).

cc: Randy Turner, Natural Systems Unit Head  
File: B-3901

Replacement of Bridge No. 181 on SR 1501 over Matrimony Creek,  
Rockingham County

TIP No. B-3901  
Federal Aid Project No. BRZ-1501(4)  
State Project No. 8.2511401

Natural Resources Technical Report  
B-3901

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

Harold M. Brady, A. Lynn Smith  
March 14, 2002

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## 1.0 INTRODUCTION

The following Natural Resources Technical Report is submitted to assist in the preparation of a Categorical Exclusion (CE) for the proposed project. The project is located in northern Rockingham County (Figure 1).

### 1.1 Project Description

The proposed project calls for the replacement of Bridge No. 181 on SR 1501 (Garrett Road) over Matrimony Creek (Figure 2). The existing right-of-way (ROW) is 60.0 ft (18.3 m), and the proposed ROW is 100.0 ft (30.5 m). The existing and proposed cross sections are two-lane shoulder sections. Project length is approximately 1617.0 ft (492.9 m) for Alternate 1, and 1994.0 ft (607.8 m) for Alternate 2. The following is a description of the alternates proposed:

Alternate 1: Replace the existing structure with a new bridge on existing location with an on-site temporary detour structure located to the south.

Alternate 2: Replace the existing bridge with a new bridge on new alignment to the south and maintain traffic on the existing bridge during construction.

### 1.2 Bridge Demolition

Bridge No. 181 was constructed in 1950 and is composed entirely out of timber and steel, except for a concrete footing. Due to the minimal use of concrete in the existing construction of the bridge, it is likely that the bridge can be removed without any resulting fill in Matrimony creek. Best Management Practices (BMP's) for Bridge Demolition and Removal will be followed.

### 1.3 Environmental Commitments

There are not any site specific environmental commitments at this time. All standard guidelines and recommendations apply.

### 1.4 Purpose

The purpose of this technical report is to inventory, catalog and describe the various natural resources likely to be impacted by the proposed action. This report also attempts to identify and estimate the probable consequences of the anticipated impacts to these resources. Recommendations are made for measures which will minimize resource impacts. **These descriptions and estimates are relevant only in the context of existing preliminary design concepts. If design parameters and criteria change, additional field investigations will need to be conducted.**

### 1.5 Methodology

Research was conducted prior to field investigations. Information sources used in this pre-field investigation of the study area include: U.S. Geological Survey (USGS) quadrangle map for Rockingham County (Northwest Eden, NC, 1978), Geographical Information Systems (NC Center for Geographical Information & Analysis), U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory Map (Northwest Eden, NC), Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) soil information for Rockingham County, and NCDOT aerial photographs of the project area (1:1200). Water resource

information was obtained from publications of the North Carolina Department of Environment, Health and Natural Resources (NCDEHNR, 1996, 2001), DENR Internet Page 2002, and from the NC Center for Geographic Information and Analysis (Environmental Sensitivity Base Map of Rockingham County, 1995). Information concerning the occurrence of federal and state protected species in the study area was gathered from the USFWS list of protected species and species of concern and the NC Natural Heritage Program (NCNHP) database of rare species and unique habitats.

General field surveys were conducted along the proposed alignment by NCDOT biologist Matthew Haney and NCDOT contract biologist Harold Brady on 15 February 2002. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved using one or more of the following observation techniques: active searching and capture, visual observations (binoculars) and identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Jurisdictional wetland determinations were performed utilizing delineation criteria prescribed in the "US Army Corps of Engineers Wetland Delineation Manual" (Environmental Laboratory, 1987). Jurisdictional surface water determinations were performed using guidance provided by NC Division of Water Quality [(DWQ), formerly known as the Division of Environmental Management (DEM)], "Field Location of Streams, Ditches, and Ponding" (Environmental Sciences Lab, 1997).

### 1.6 Qualifications of Investigators

- 1) Investigator: Harold M. Brady, biologist, ARCADIS  
Education: B.S. Natural Resources, NC State University, 1998  
Experience: ARCADIS G&M, January 2000-present
  
- 2) Investigator: Matthew M. Haney  
Education: B.S. Natural Resources-Ecosystem Assessment, North Carolina State University, Raleigh, North Carolina  
Experience: NC Dept. of Transportation Oct. 1999-present  
NC Forest Service May 1998-August 1998  
US Forest Service, Center for Forested Wetlands Research  
May 1997-August 1997

### 1.7 Definitions

Definitions for areal descriptions used in this report are as follows: **Project Study Area** denotes the area bounded by proposed construction limits; **Project Vicinity** describes an area extending 0.5 mi (0.8 km) on all sides of the project study area; and **Project Region** is equivalent to an area represented by a 7.5 minute USGS quadrangle map with the project occupying the central position.

## 2.0 PHYSICAL RESOURCES

Soil and water resources, which occur in the study area, are discussed below. Soils and availability of water directly influence composition and distribution of flora and fauna in any biotic community.

The project study area lies within the Piedmont physiographic region in the northern part of North Carolina. The topography in this section of Rockingham County is rolling with significant relief in places. Project elevation is approximately 610.0 ft (185.9 m) to 680.0 ft (207.3 m) above mean sea level (msl).

## 2.1 Soils

Three soil mapping units occur within the project vicinity: Madison sandy loam (MaE), Madison sandy clay loam (MbB2) and Chewacla loam (Ck). Table 1 lists the soil mapping units within the study area and gives their general characteristics.

**Table 1. Descriptions of soil mapping units within the project study area.**

Soil mapping unit	Slope	Hazards	Description
Madison sandy loam	15-35%	erosion	Well-drained soil with moderate permeability, found along narrow side slopes.
Madison sandy clay loam	2-8%	erosion	Well-drained eroded soil with moderate permeability, found along narrow ridges.
Chewacla loam	0-2%	hydric inclusions	Somewhat poorly drained soil with moderate permeability, found within floodplains of major streams. The seasonal high water table is 0.5 to 1.5 feet below the surface.

Soil core samples taken throughout the project area revealed soils with a sandy loam and sandy clay loam texture. The soils did not exhibit hydric conditions, such as low chroma colors and oxidized rhizospheres. Therefore, hydric soil indicators, as defined in the 1987 "US Army Corps of Engineers Wetland Delineation Manual", were not observed within the project study area.

## 2.2 Water Resources

This section contains information concerning those water resources likely to be impacted by the project. Water resource information encompasses physical aspects of the resource, its relationship to major water systems, Best Usage Standards and water quality of the resources. Probable impacts to these water bodies are also discussed, as are means to minimize impacts.

### 2.2.1 Waters Impacted and Characteristics

Two surface waters, Matrimony Creek and an unnamed tributary (Ut) to Matrimony Creek, will be directly impacted by the proposed project (Figure 2). Matrimony Creek is located in sub-basin 03-02-03 of the Roanoke River Basin.

At Bridge No. 181, the channel of Matrimony Creek is approximately 20.0 ft (6.1 m) wide, with an average bank height from 7 to 12 ft (2.1 to 3.7 m) tall, and a substrate consisting of sand, gravel, and woody debris. During the site visit on 15 February 2002 the water depth was observed to be 3 to 9 inches (7.6 to 22.9 cm) deep with a fast flow. Matrimony Creek had good sinuosity with well established sandbars; however, scoured banks were observed through the stream near bridge 181. Ut to Matrimony Creek maintains a width of approximately 5 ft (1.5 m),

with a bank height from 2 to 4 ft (0.6 to 1.2 m) tall, and a substrate consisting of sand, gravel, and cobble. During the site visit the stream had a water depth of 2 to 5 inches (5.0 to 12.7 cm) deep, and a moderate flow. It should be noted, that the project region had received heavy rains approximately three to four days prior to the site visit. Therefore, the water levels and flow were somewhat higher than usual.

### 2.2.2 Best Usage Classification

Streams are assigned a best usage classification by the DWQ. The classification of Matrimony Creek [Index no. 22-38] is **WS-IV**. Class **WS-IV** includes waters protected as water supplies which are generally in moderate to highly developed watersheds. Point source discharges of treated waste-water are permitted, and these waters are suitable for all Class C uses.

**Neither High Quality Waters (HQW), Nutrient Sensitive Waters (NSW), Water Supplies (WS) I and 2, nor Outstanding Resource Waters (ORW) occur within 1.0 mi (1.6 km) of project study area.**

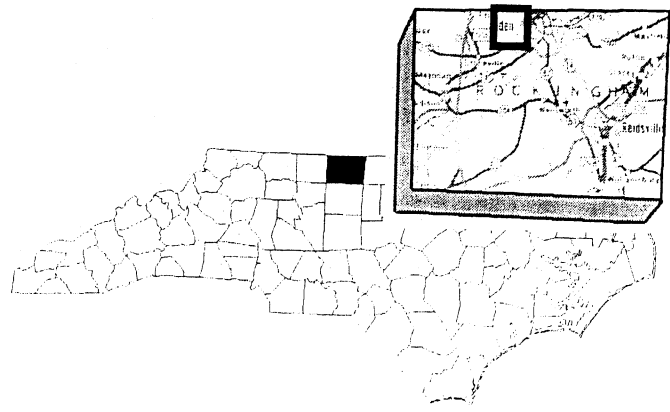
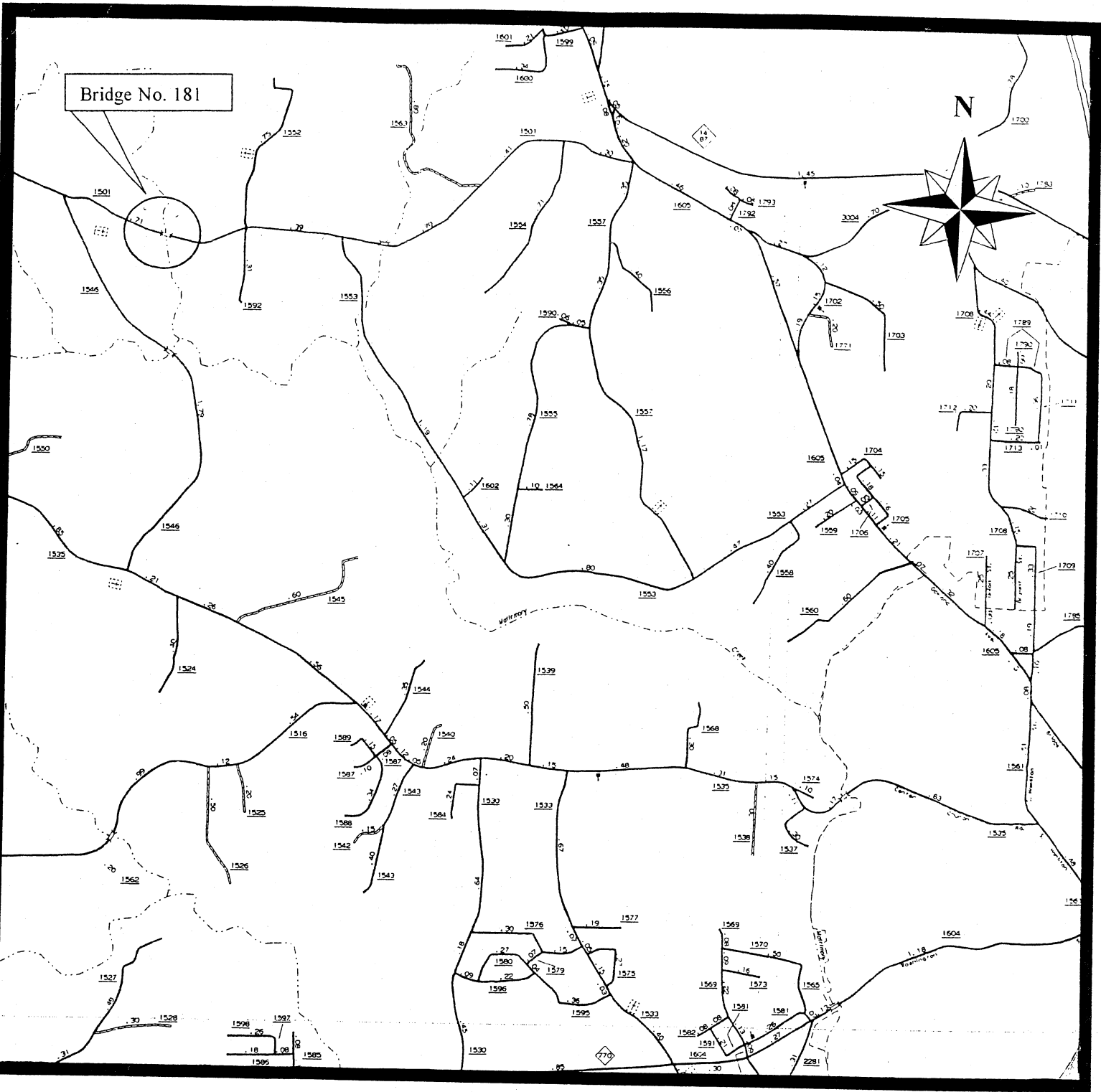
### 2.2.3 Water Quality


Many benthic macroinvertebrates have stages in their life cycle that can last from six months to a year, therefore, the adverse effects of a toxic spill will not be overcome until the next generation. Different taxa of macroinvertebrates have different tolerances to pollution, thereby, long term changes in water quality conditions can be identified by population shifts from pollution sensitive to pollution tolerant organisms (and vice versa). Overall, the species present, the population diversity and the biomass are reflections of long term water quality conditions.

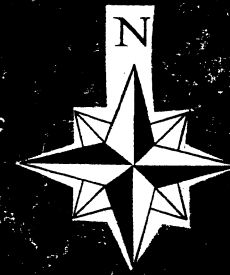
The DWQ has initiated a whole basin approach to water quality management for the 17 river basins within the state. To accomplish this goal the DWQ collects biological, chemical and physical data that can be used in basinwide assessment and planning. All basins are reassessed every five years. Prior to the implementation of the basinwide approach to water quality management, the Benthic Macroinvertebrate Ambient Network (managed by the DEM) assessed water quality by sampling for benthic macroinvertebrate organisms at fixed monitoring sites throughout the state. **There are not any biological sampling sites located along Matrimony Creek, either upstream or downstream of the study area.** The nearest sampling station is approximately 6.0 miles (9.7 km) east of Bridge No. 181 on the Smith River. This station received a **Good-Fair** bioclassification.


The North Carolina Index of Biotic Integrity (NCIBI) was developed for assessing a stream's biological integrity by examining the structure and health of its fish community. The NCIBI scores are used to determine the ecological integrity class of the stream from which the sample was collected. However, the scores may not necessarily directly correlate to water quality (DWQ, 1998). **There are no fish community assessment sites along Matrimony Creek.** The nearest site is located approximately 3.0 miles (4.8 km) southwest of Bridge No. 181 on Buffalo Creek. This site received a NCIBI score of 50, which gives the stream a **Good** bioclassification.





	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH
	<p align="center"> <b>ROCKINGHAM COUNTY</b>  <b>REPLACE BRIDGE 181 ON SR 1501</b>  <b>OVER MATRIMONY CREEK</b>  <b>B-3901</b> </p>
<p>Scale 1 in. = 1/2 mi. <span style="float: right;">Figure One</span></p>	



	<p>North Carolina Department of Transportation Division of Highways Project Development &amp; Environmental Analysis Branch</p>
<p>Rockingham County Replace Bridge No. 181 on SR 1501 Over Matrimony Creek B-3901</p>	
<p>Scale 1"=100'</p>	<p>Figure 2</p>

Point source dischargers located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) Program. **There are not any permitted dischargers located along Matrimony Creek.** The nearest downstream discharger is the Eden/Mebane Bridge Wastewater Treatment Plant, located on the Dan River approximately 7.0 miles (11.3 km) southeast of the study area.

Nonpoint source discharge refers to runoff that enters surface waters through stormwater or snowmelt. Agricultural activities may serve as a source for various forms of nonpoint source pollutants. Land clearing and plowing disturb soils to a degree where they are susceptible to erosion, which can lead to sedimentation in streams. Sediment is the most widespread cause of nonpoint source pollution in North Carolina. Pesticides, chemical fertilizers and land application of animal wastes can be transported via runoff to receiving streams and potentially elevate concentrations of toxic compounds and nutrients. Animal wastes can also be a source of bacterial contamination and elevate biochemical oxygen demand (BOD). Drainage ditches on poorly drained soils enhances the transportation of stormwater into surface waters (DEM, 1993).

#### **2.2.4 Summary of Anticipated Impacts**

Replacing an existing structure in the same location without constructing a detour bridge during construction is almost always preferred. It poses the least risk to aquatic organisms and other natural resources. Alternate 1 includes a detour bridge (ROW=100 ft (30.5 m)) which increases ROW needs and potential impacts. The ROW limits extend 50 feet on each side of the existing and proposed roadways. The widest portion of the study area occurs at the crossing of Matrimony Creek and becomes smaller as the proposed roadway (be it temporary or permanent) merges with the existing SR 1501. Therefore, the combined ROW width at the Matrimony Creek crossing is 180.0 ft (54.9 m) for the replacement bridge and the detour bridge. Alternate 2 (on new location) has a proposed ROW width of 100.0 ft (30.5 m). Potential impacts to Matrimony Creek will be 180.0 ft (54.9 m) for Alternate 1 and 100.0 ft (30.5 m) for Alternate 2. Potential impacts to the unnamed tributary of Matrimony Creek will be 150.0 ft (45.7 m) for Alternate 1 and 100 ft (30.5 m) for Alternate 2. Usually, project construction does not require the entire ROW; therefore, actual impacts may be considerably less.

Project construction may result in the following impacts to surface waters:

1. Increased sedimentation and siltation from construction and/or erosion.
2. Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
3. Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
4. Changes in water temperature due to streamside vegetation removal.
5. Increased nutrient loading during construction via runoff from exposed areas.

6. Increased concentration of toxic compounds from highway runoff, construction and toxic spills.

**Precautions must be taken to minimize impacts to water resources in the study area, NCDOT's Best Management Practices (BMP) for the Protection of Surface Waters must be strictly enforced during the construction stage of the project. Guidelines for these BMPs include, but are not limited to: minimizing built upon area and diversion of stormwater away from surface waters as much as possible. Provisions to preclude contamination by toxic substances during the construction interval must also be strictly enforced.**

### **3.0 BIOTIC RESOURCES**

Biotic resources include aquatic and terrestrial ecosystems. This section describes those ecosystems encountered in the study area, as well as the relationships between fauna and flora within these ecosystems. Composition and distribution of biotic communities throughout the project area are reflective of topography, hydrologic influences and past and present land uses in the study area. Descriptions of the terrestrial systems are presented in the context of plant community classifications and follow descriptions presented by Schafale and Weakley (1990) where possible. Dominant flora and fauna observed, or likely to occur, in each community are described and discussed.

Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Plant taxonomy generally follows Radford, et al. (1968). Animal taxonomy follows Martof, et al. (1980), Menhinick (1991), Potter, et al. (1980), and Webster, et al. (1985). Subsequent references to the same organism will include the common name only. Fauna observed or evidence of their presence observed (i.e. skat, tracks, etc.) during the site visit are denoted with an asterisk (\*). Published range distributions and habitat analysis are used in estimating fauna expected to be present within the project area.

#### **3.1 Terrestrial Communities**

Four distinct terrestrial communities are present in the project study area: maintained/disturbed, Piedmont alluvial forest, mixed pine/hardwood forest, and Virginia pine forest. Community boundaries within the study area are generally well defined without a significant transition zone between them. Many faunal species likely to occur within the study area may exploit all communities for shelter and foraging opportunities, or as movement corridors.

##### **3.1.1 Maintained/Disturbed Community**

The maintained/disturbed community includes highly maintained road shoulders, agricultural land, powerline easements, and maintained residential properties. The road shoulders and associated ditches are present along the entire length of the project, except at the bridge. Road shoulders act as buffers between the roadway and surrounding communities by filtering stormwater runoff and reducing runoff velocities. The width of the road shoulder is approximately 15.0 ft (4.6 m). Two areas of agricultural land are present within the project area, at the far-eastern end on the southern side of SR 1501 and in the central portion of the project

approximately 30 feet (9.1 m) west of Matrimony Creek on the southern side of the existing road. Both fields have been recently left fallow for the winter. A maintained powerline easement is present at the eastern side of the project area on the southern side of the road. The powerline easement is approximately 30 feet (9.1 m) wide off the maintained road shoulder and appeared to have been recently mowed.

Three separate residential properties are present within the project area. The first property is located at the far-eastern end of the project area on the southern side of SR 1501. Another residential property is located near the central portion of the project area approximately 200 feet (61.0 m) east of Matrimony Creek on the northern side of the existing road. The third maintained residential area is approximately 50 feet (15.2 m) west of Matrimony Creek on the northern side of the existing road. Significant soil disturbance and compaction, along with frequent mowing or herbicide application, keep this community in an early successional state.

Vegetation occurring within these maintained/disturbed communities include low growing species such as: fescue grass (*Festuca* sp.), vetch (*Vicia* spp.), chickweed (*Stellaria* spp.), Carolina geranium (*Geranium carolinianum*), blackberry (*Rubus argutus*), beggar ticks (*Bidens* spp.), wild onion (*Allium canadense*), common dandelion (*Taraxacum officinale*), wild lettuce (*Lactuca canadensis*), foxtail grass (*Setaria* spp.), panic grass (*Panicum* spp.), and woolly mullein (*Verbascum thapsus*). Smooth sumac (*Rhus glabra*), Japanese honeysuckle (*Lonicera japonica*), ragweed (*Ambrosia artemisiifolia*), cross vine (*Anisostichus capreolata*), and Chinese privet (*Ligustrum sinense*) occur along the perimeter. Several trees are located within the maintained yards along the project area, including flowering dogwood (*Cornus florida*), black cherry (*Prunus serotina*), yellow poplar (*Liriodendron tulipifera*), eastern red cedar (*Juniperus virginiana*), and red maple (*Acer rubrum*).

### **3.1.2 Piedmont Alluvial Forest**

This community is located along the corridor of Matrimony Creek and the Ut to Matrimony Creek. Due to its location along floodplains, this community maintains a flatter topography and generally a denser understory. The rich soils and readily available water help make for an abundance of species diversity and richness. The Piedmont alluvial forest naturally transitions into the mixed pine/hardwood community as topography increases.

Musclewood (*Carpinus caroliniana*) dominates this community in the area surrounding Bridge No. 181. Other canopy species within the floodplain along the two streams include red maple, flowering dogwood, slippery elm (*Ulmus rubra*), river birch (*Betula nigra*), black cherry, yellow poplar, black walnut (*Juglans nigra*), and sycamore (*Platanus occidentalis*). The understory is primarily composed of Chinese privet, Japanese honeysuckle, Christmas fern (*Polystichum acrostichoides*), greenbriar (*Smilax rotundifolia*), and muscadine grape (*Vitis rotundifolia*).

### **3.1.3 Mixed Pine/Hardwood Forest**

The Mixed Pine/Hardwood Forest community occupies two areas within the project study area. The largest area is on the far-western side of the study area on the southern side of the road. This stand is a mature forest approximately 45 to 60 years old. The other area is on the far-

eastern side of the project area on the northern side of the road. This stand contains an area which has recently (within 5 years) been logged for timber, and is currently dominated by kudzu (*Pueraria lobata*), with blackberry and Japanese honeysuckle also present. The mixed pine/hardwood community includes areas that are steeper and rockier than the other communities, and range in age from 5 to 60 plus years. The forest understory is relatively open which wildlife can use as corridors between streams within the alluvial forest communities and the grasses and herbaceous plants within the maintained/disturbed communities. The mixed pine/hardwood forest communities naturally transition into the Virginia pine forest community as topography flattens near the top of the ridge.

The forest canopy primarily includes yellow poplar, American beech (*Fagus grandifolia*), white pine (*Pinus strobus*), Virginia pine (*P. virginiana*), southern red oak (*Quercus falcata*), northern red oak (*Q. rubra*), black oak (*Q. velutina*), rock chestnut oak (*Q. prinus*), mockernut hickory (*Carya tomentosa*), eastern red cedar, and sourwood (*Oxydendrum arboreum*). The understory is primarily composed of running cedar (*Lycopodium clavatum*), mountain laurel (*Kalmia latifolia*), Chinese privet, poison ivy (*Toxicodendron radicans*), multiflora rose (*Rosa multiflora*), and Japanese honeysuckle.

#### **3.1.4 Virginia Pine Forest**

The Virginia Pine Forest community is found at one location within the study area, approximately 300 feet (91.4 m) east of Matrimony Creek on the southern side of the SR 1501. This community is typically found near or at the top of ridges in the Piedmont. Due to this community's relatively flat topography most Virginia pine stands have had historical agricultural activities. Eventually this community transitions into a mixed pine/hardwood forest as the forest matures and hardwoods become more prevalent. The understory can be dense with small hardwood saplings and epicormic branching commonly observed with Virginia pine. The Virginia pine forest community found within the study area is approximately 15 to 20 years old.

Virginia pine dominates the canopy with small trees and shrubs occupying the understory. The understory typically includes eastern red cedar, post oak (*Quercus stellata*), red maple, musclewood, black cherry, American beech, flowering magnolia (*Magnolia grandiflora*), persimmon (*Diospyros virginiana*), Yucca (*Yucca* spp.), and American holly (*Ilex opaca*).

#### **3.2 Wildlife**

Wildlife includes all living things, especially animals, which are undomesticated. For the purposes of this report wildlife concerns only undomesticated and feral animals including mammals, reptiles and amphibians, and birds.

Mammals associated with the communities present within the project vicinity that were observed or are likely to occur include, red bat (*Lasiurus borealis*), white-tailed deer\* (*Odocoileus virginianus*), eastern mole (*Scalopus aquaticus*), opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), meadow vole (*Microtus pennsylvanicus*), gray squirrel\* (*Sciurus carolinensis*), eastern harvest mouse (*Reithrodontomys humulis*), red fox (*Vulpes vulpes*), and raccoon (*Procyon lotor*).

The wetter areas along Matrimony Creek and the Ut to Matrimony Creek may be inhabited by reptiles and amphibians such as eastern newt (*Notophthalmus viridescens*), bullfrog (*Rana catesbeiana*), eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), eastern box turtle (*Terrapene c. carolina*), rat snake (*Elaphe obsoleta*), eastern garter snake (*Thamnophis sirtalis*), spotted salamander (*Ambystoma maculatum*), and spring peeper (*Hyla crucifer*).

Avian species utilizing the project vicinity include canada goose\* (*Branta canadensis*), turkey vulture\* (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), turkey (*Meleagris gallopavo*), downy woodpecker (*Picoides pubescens*), blue jay (*Cyanocitta cristata*), northern cardinal\* (*Cardinalis cardinalis*), tufted titmouse (*Parus bicolor*), common grackle (*Quiscalus quiscula*), brown-headed cowbird (*Molothrus ater*), Carolina wren (*Thryothorus ludovicianus*), belted kingfisher (*Ceryle alcyon*), and Northern mockingbird\* (*Mimus polyglottos*).

The maintained/disturbed communities within the project area are surrounded by extensive forested areas and represents only a minor constituent of a larger community structure within the project vicinity. Therefore, faunal species frequenting the maintained community will be largely those species inhabiting the adjacent communities.

### **3.3 Aquatic Communities**

Two aquatic communities, Matrimony Creek and an unnamed tributary to Matrimony Creek, will be impacted by the proposed project. Physical characteristics of the water body and condition of the water resource influence faunal composition of aquatic communities. Terrestrial communities adjacent to a water resource also greatly influence aquatic communities.

Fauna associated with these aquatic communities includes various invertebrate and vertebrate species. Fish species likely to occur in Matrimony Creek include rosyside dace (*Clinostomus funduloides*), white shiner (*Luxilus albeolus*), creek chub (*Semotilus atromaculatus*), red breast sunfish (*Lepomis auritus*), largemouth bass (*Micropterus salmoides*), margined madtom (*Noturus insignis*), and fantail darter (*Etheostoma flabellare*). Invertebrates which were observed or are likely to occur include, caddisflies\* (Order: Trichoptera), mayflies\* (Order: Ephemeroptera), stoneflies (Order: Plecoptera), crayfish (Order: Decapoda), water striders (*Aquarius* sp.), whirligig beetles (Family: Gyridae) and dragonflies and damselflies (Order: Odonata). In addition, the snapping turtle (*Chelydra serpentina*), pickerel frog (*Rana palustris*), northern water snake (*Nerodia sipedon*), muskrat (*Ondatra zibethicus*), and beaver (*Castor canadensis*) are common permanent residents in this community. There were no mollusks found in this portion of Matrimony Creek; however, a detailed mollusk survey was not conducted at the time of the site visit.

### **3.4 Summary of Anticipated Impacts**

Construction of the subject project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies impacts to the natural resources in terms of area impacted and ecosystems affected.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present within the study area. Project construction will result in clearing and degradation of portions of these communities. Table 2 summarizes potential quantitative losses to these biotic communities, resulting from project construction. Estimated impacts for Alternate 1 are derived using the combined proposed ROW width of 180.0 ft (33.5 m) which consists of the replacement and detour bridges. Impacts for Alternate 2 are based on a combined ROW width of 180.0 ft (30.5 m), as well. The paved roadway width of 24.0 ft (7.3 m) has been excluded from the impact calculations for the biological communities. Usually, project construction does not require the entire ROW; therefore, actual impacts may be considerably less.

**Table 3. Anticipated Impacts to Biotic Communities**

Community Type	Alternate 1	Alternate 2
Maintained/Disturbed	2.19 (0.89)	2.19 (0.89)
Mixed Pine/Hardwood Forest	1.31 (0.53)	1.31 (0.53)
Alluvial Forest	0.28 (0.11)	0.24 (0.10)
Virginia Pine Forest	0.48 (0.19)	0.47 (0.18)
<b>Total Community Impacts:</b>	<b>4.26 (1.72)</b>	<b>4.21 (1.70)</b>

Note: Values cited are in acres (hectares).

Plant communities found within the proposed project area serve as nesting and sheltering habitat for various wildlife. Replacing Bridge No. 181 and its associated improvements will reduce habitat for faunal species, thereby diminishing faunal numbers. However, due to the size and scope of this project, it is anticipated that impacts to fauna will be minimal, and will quickly recover.

Areas modified by construction (but not paved) will become road shoulders and early successional habitat. Reduced habitat will displace some wildlife further from the roadway while attracting other wildlife by the creation of more early successional habitat. Animals temporarily displaced by construction activities will repopulate areas suitable for the species.

Aquatic communities are sensitive to even small changes in their environment. Stream channelization, scouring, siltation, sedimentation and erosion from construction-related work will affect water quality and biological constituents. Although direct impacts may be temporary, environmental impacts from these construction processes may result in long term or irreversible effects.

Impacts often associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the stream substrate and may remove streamside vegetation at the site. Disturbances to the substrate will produce siltation, which clogs the gills and/or feeding mechanisms of benthic organisms (sessile filter-feeders and deposit-feeders), fish and amphibian species. Benthic organisms can also be covered by excessive amounts of sediment. These organisms are slow to recover or repopulate a stream.



The removal of streamside vegetation and placement of fill material at the construction site alters the terrain. Alterations of the streambank enhances the likelihood of erosion and sedimentation. Revegetation stabilizes and holds the soil thus mitigating these processes. Erosion and sedimentation carry soils, toxic compounds and other materials into aquatic communities at the construction site. These processes magnify turbidity and can cause the formation of sandbars at the site and downstream, thereby altering water flow and the growth of vegetation. Streamside alterations also lead to more direct sunlight penetration and to elevations of water temperatures which may impact many species.

#### **4.0 JURISDICTIONAL TOPICS**

This section provides descriptions, inventories and impact analysis pertinent to two important issues--Waters of the United States and rare and protected species.

##### **4.1 Waters of the United States**

Surface waters and wetlands fall under the broad category of "Waters of the United States," as defined in Section 33 of the Code of Federal Register (CFR) Part 328.3. Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Any action that proposes to place fill into these areas falls under the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (33 U.S.C. 1344).

##### **4.1.1 Characteristics of Wetlands and Surface Waters**

Potential wetland communities were investigated pursuant to the 1987 "US Army Corps of Engineers Wetland Delineation Manual". The three-parameter approach is used where hydric soils, hydrophytic vegetation and prescribed hydrologic characteristics must **all** be present for an area to be considered a wetland. **No wetlands are present within the project study area.**

Matrimony Creek and the Ut to Matrimony Creek are jurisdictional surface waters under Section 404 of the Clean Water Act (33 U.S.C. 1344). Discussion of the biological, physical and water quality aspects of Matrimony Creek and the Ut to Matrimony Creek are presented in Section 2.2.1.

##### **4.1.2 Summary of Anticipated Impacts**

Potential impacts to Matrimony Creek have been determined to be 180.0 ft (54.9 m) for Alternate 1 and 100.0 ft (30.5 m) for Alternate 2. Potential impacts to the Ut to Matrimony Creek have been determined to be 150.0 ft (45.7 m) for Alternate 1 and 100.0 ft (30.5 m) for Alternate 2. Usually, project construction does not require the entire ROW; therefore, actual surface water impacts may be considerably less.

##### **4.1.3 Permits**

Impacts to jurisdictional surface waters are anticipated. In accordance with provisions of section 404 of the Clean Water Act (33 U.S.C. 1344), a permit will be required from the USACE for the discharge of dredged or fill material into "Waters of the United States."

A Section 404 Nationwide Permit 23 CFR 330.5(a) (23) is likely to be applicable for all impacts to Waters of the United States from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined that pursuant to the council on environmental quality regulation for implementing the procedural provisions of the National Environmental Policy Act;

- (1) that the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and;
- (2) that the office of the Chief of Engineers has been furnished notice of the agency' or department's application for the categorical exclusion and concurs with that determination.

A North Carolina Division of Water Quality (DWQ) Section 401 Water Quality General Certification is required prior to the issuance of the Section 404 Nationwide Permit No. 23. Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulations.

#### **4.1.4 Mitigation**

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

##### **4.1.4.1 Avoidance**

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

##### **4.1.4.2 Minimization**

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, ROW widths, fill slopes and/or road shoulder widths. Other practical mechanisms to minimize impacts to Waters of the United States crossed by the proposed project include: strict enforcement of sedimentation control BMP's for the protection of surface waters during the entire life of the

project; reduction of clearing and grubbing activity; reduction/elimination of direct discharge into streams; reduction of runoff velocity; re-establishment of vegetation on exposed areas, judicious pesticide and herbicide usage; minimization of "in-stream" activity; and litter/debris control.

#### **4.1.4.3 Compensatory Mitigation**

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the United States have been avoided **and** minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been reviewed. Compensatory actions often include restoration, creation and enhancement of Waters of the United States. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site. Compensatory mitigation is not usually necessary with a Nationwide Permit No. 23, however the final decision lies with the USACE.

#### **4.2 Rare and Protected Species**

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. Federal law (under the provisions of the Endangered Species Act of 1973, as amended requires that any action, likely to adversely affect a species classified as federally-protected, be subject to review by the USFWS. Other species may receive additional protection under separate state laws.

##### **4.2.1 Federally-Protected Species**

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973. As of February 26, 2001, the USFWS lists two federally endangered species for Rockingham County; James spiny mussel (*Pleurobema collina*) and smooth coneflower (*Echinacea laevigata*).

##### **James spiny mussel (*Pleurobema collina*)**

Animal Family: Unionidae

Federal Status: Endangered

Date Listed: 22 August 1988

The James spiny mussel is one of only a few freshwater mussels where prominent spines can be found on juvenile shells. Adults have a dark brown shell and the spines are typically absent or reduced. It is a short-term brooder that releases glochidia in summer (late May through early August). The fish hosts for this mussel are thought to include, rosyside dace (*Clinostomus funduloides*), bluehead chub (*Nocomis leptcephalus*), mountain redbelly dace (*Phoxinus oreas*), blacknose dace (*rhinichthys atratulus*), central stoneroller (*Campostoma anomalum*), rosefin shiner (*Notropis ardens*), satinfoin shiner (*N. analostanus*), and swallowtail shiner (*N. procne*).

The James spiny mussel are found in waters with slow to moderate current, a moderate gradient, and relatively hard water on sand and mixed sand and gravel substrates. Based on

collection records, the James spiny mussel was endemic to the upper James River drainage north of Richmond, Virginia. It currently is restricted to a few small headwater tributaries in Virginia, West Virginia, and North Carolina. This mussel is suspected to have experienced an approximately 90% reduction in range.

Threats to the current populations of the James spiny mussel are primarily related to industrial and agricultural development within sensitive watersheds. Results of increasing development within these watersheds are the increasing populations of Asian clam (*Corbicula fluminea*), which can out compete most of the native mussel species.

#### **BIOLOGICAL CONCLUSION**

#### **NO EFFECT**

Suitable habitat consisting of waters with slow to moderate current, a moderate gradient, and sand and mixed sand and gravel substrates are present within the study area. A review of the NCNHP database of rare species and unique habitats on 26 February 2002 revealed no record for the presence of the James spiny mussel within the project vicinity. NCDOT environmental specialist, Tim Savidge conducted a survey for freshwater mussels, especially looking for the James spiny mussel within the proposed Bridge No. 181 study area. No populations of the James spiny mussel were observed.

#### **Smooth coneflower (*Echinacea laevigata*)**

Plant Family: Asteraceae

Federal Status: Endangered

Date Listed: 08 September 1992

The smooth coneflower has stems that are simple or branched and averages a height of approximately 3.0 ft (1.0 m). The leaves are glabrous, slender, drooping, ovate-shaped, and white to deep magenta. The smooth coneflower is a perennial plant, requires full or partially full sunlight, and flowers in June.

Originally the plant was known to occur in open prairie-like habitats or in oak-savannas maintained by fire. With the suppression of fire throughout the southern forests, especially during the early 1900's, the populations of smooth coneflower have dwindled significantly. Currently the plant is found in natural openings in forests, on dry limestone bluffs, within clear-cutting logging operations, along roadsides, and in utility line right-of-ways. It has been determined that the locations in which smooth coneflower occur commonly contain soils with higher than normal levels of magnesium and calcium.

A majority of the historically known populations of the plant have been replaced by development or significant disturbance to the forest. Most of the populations that are remaining exist on marginal sites where they are vulnerable to urbanization, the use of herbicides, repeated mowing, and collection for supposed medicinal purposes.

#### **BIOLOGICAL CONCLUSION**

#### **UNRESOLVED**

Suitable habitat consisting of recently logged areas, roadsides, and utility line right-of-ways are present within the project study area. A review of the NCNHP database of rare species

and unique habitats on 26 February 2002 revealed no record for the presence of smooth coneflower within the project vicinity. However, a plant-by-plant survey should be conducted during the flowering season to determine the presence or absence of smooth coneflower within the study area.

**4.2.2 Federal Species of Concern and State Listed Species**

According to USFWS list of federally protected species dated February 26, 2001, there is one Federal Species of Concern (FSC) listed for Rockingham County. Federal Species of Concern are not afforded federal protection under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Federal Species of Concern are defined as those species which may or may not be listed in the future. These species were formally candidate species, or species under consideration for listing for which there was insufficient information to support a listing of Endangered, Threatened, Proposed Endangered and Proposed Threatened. Organisms which are listed as Endangered (E), Threatened (T), Significantly Rare (SR) or Special Concern (SC) by the North Carolina Natural Heritage Program (NCNHP) list of rare plant and animal species are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979.

Table 3 lists Federal Species of Concern, their state status and the existence of suitable habitat for each species in the study area. This species list is provided for information purposes as the status of these species may be upgraded in the future.

**Table 3. Federal Species of Concern for Rockingham County**

Scientific Name	Common Name	State Status	Habitat Availability	Habitat
<i>Lotus helleri</i>	Carolina birdfoot-trefoil	SR-T	Yes	Open woods over clay soils and roadsides.

“E”-----An Endangered species is one whose continued existence as a viable component of the State’s flora is determined to be in jeopardy.

“T”----- A Threatened species is one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

“SR”----- A Significantly Rare species is one which has not been listed by the N.C. Wildlife Resources Commission as an Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring.

Surveys for these species were not conducted during the site visit, nor were any of these species observed. A review of the NCNHP database of rare species and unique habitats on 26 February 2002 revealed no records of North Carolina rare and/or protected species in or near the project study area.

**5.0 REFERENCES**

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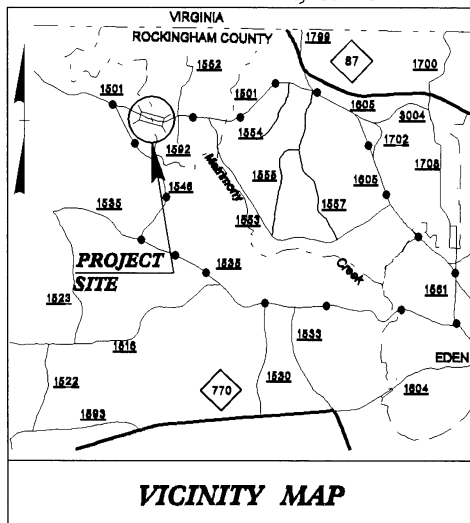
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09/08/99

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



--- DENOTES OFFSITE DETOUR

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**ROCKINGHAM COUNTY**

LOCATION: BRIDGE NO. 181 OVER MATRIMONY CREEK  
ON SR 1501 (GARRETT ROAD)

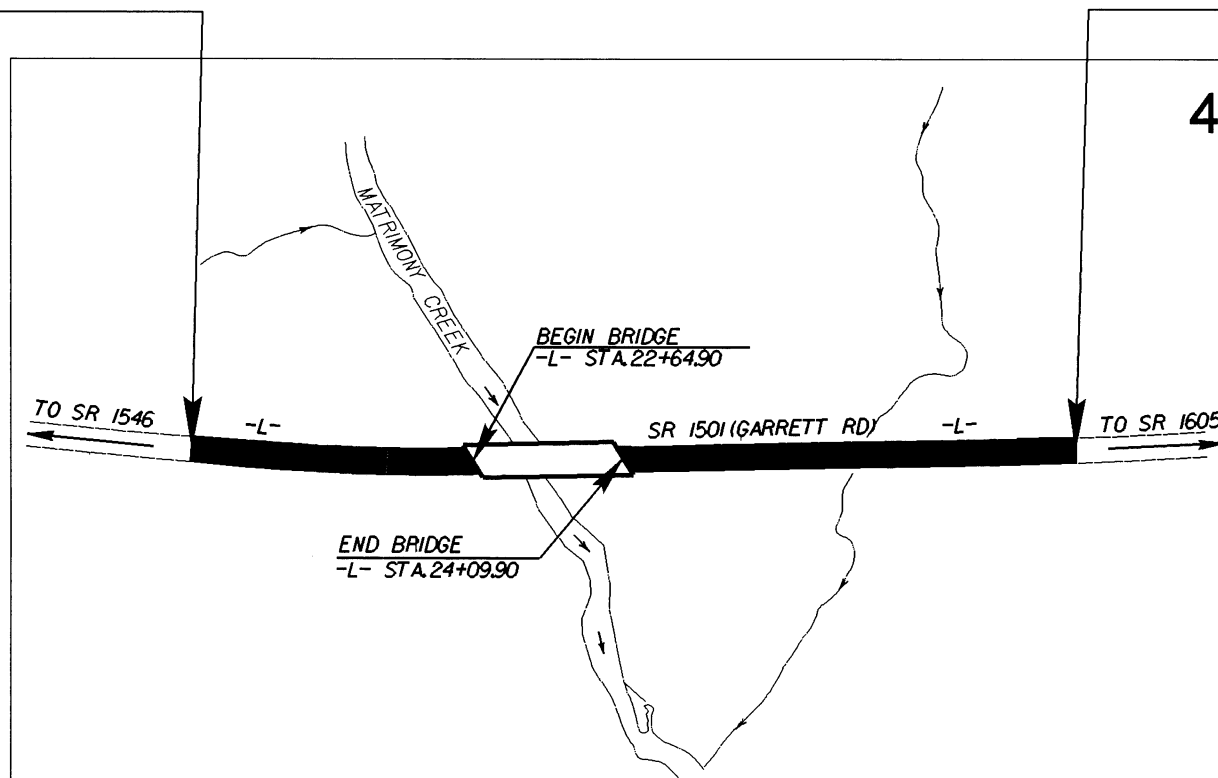
TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL,  
AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3901	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33337.1.1	BRZ-1501(4)	PE	
33337.2.1	BRZ-1501(4)	RW & UTIL.	



STA. 20+35.00 -L- BEGIN TIP PROJECT B-3901

STA. 28+00.00 -L- END TIP PROJECT B-3901



PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2004 = 464  
ADT 2024 = 784  
DHV = 10 %  
D = 60 %  
\* T = 3 %  
\*\* V = 60 mph  
\* TTST 1% + DUAL 2%  
FUNC CLASS = RURAL LOCAL  
\*\*DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVES (30-35mph) AND THE MAXIMUM GRADE (8.6%).

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3901 = 0.118 MILES  
LENGTH STRUCTURE TIP PROJECT B-3901 = 0.027 MILES  
TOTAL LENGTH OF TIP PROJECT B-3901 = 0.145 MILES

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
NOVEMBER 25, 2003

LETTING DATE:  
NOVEMBER 16, 2004

BRENDA MOORE, P.E.  
PROJECT ENGINEER

ROGER KLUCKMAN, P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

\_\_\_\_\_  
SIGNATURE: P.E.  
ROADWAY DESIGN ENGINEER

\_\_\_\_\_  
SIGNATURE: P.E.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

\_\_\_\_\_  
STATE DESIGN ENGINEER  
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED  
DIVISION ADMINISTRATOR DATE

18-MAY-2004 11:07  
C:\Pro\B3901\pdy-tsh.dgn  
RMB:annan AT

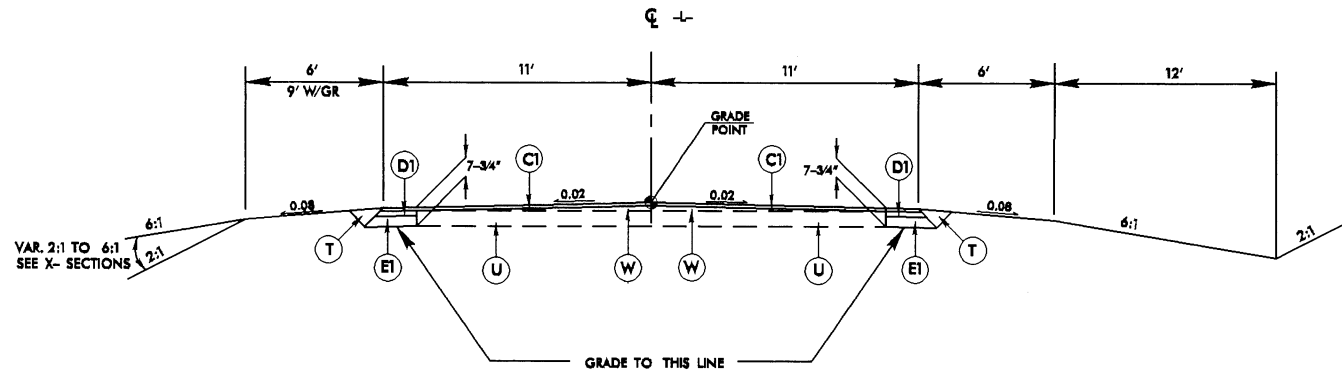
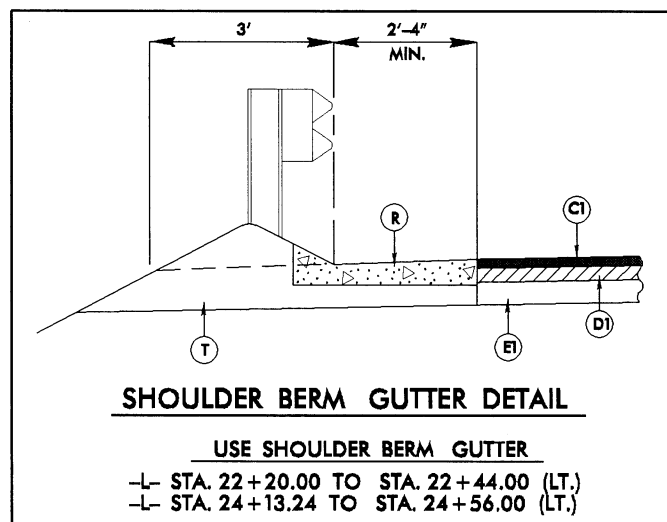
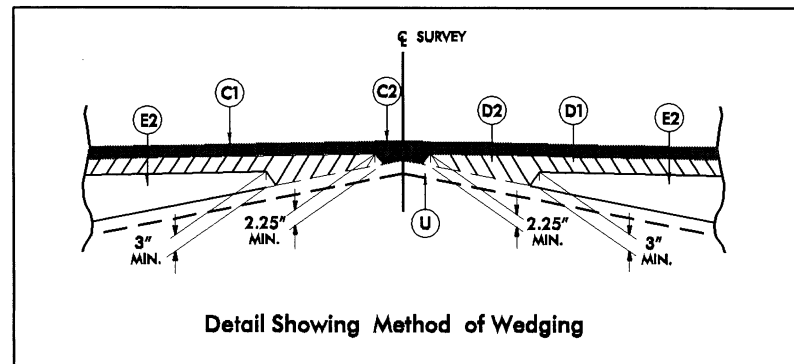
TIP PROJECT: B-3901

CONTRACT: C201072

PROJECT REFERENCE NO. B-3901	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

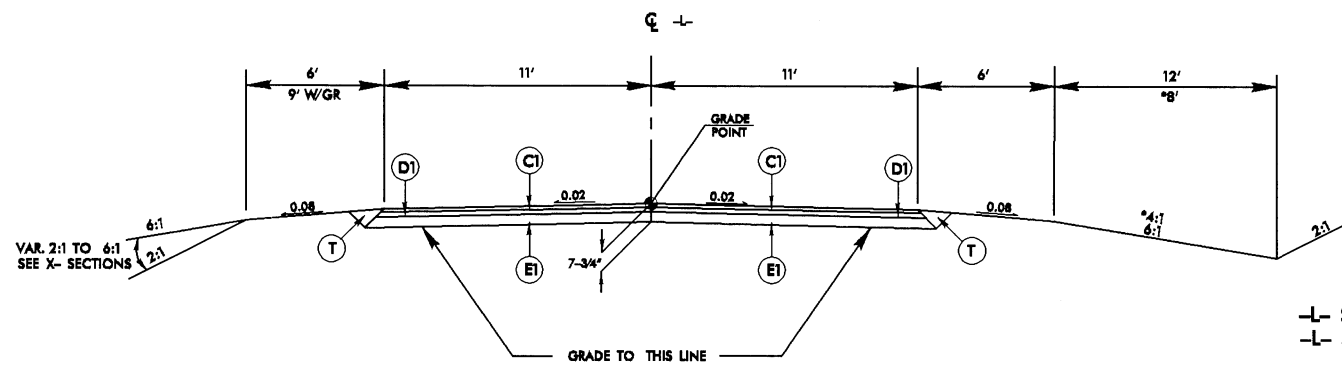
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0, AT AN AVERAGE RATE OF 458 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAIL ON THIS SHEET.)

NOTE: ALL SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



USE TYPICAL SECTION NO. 1

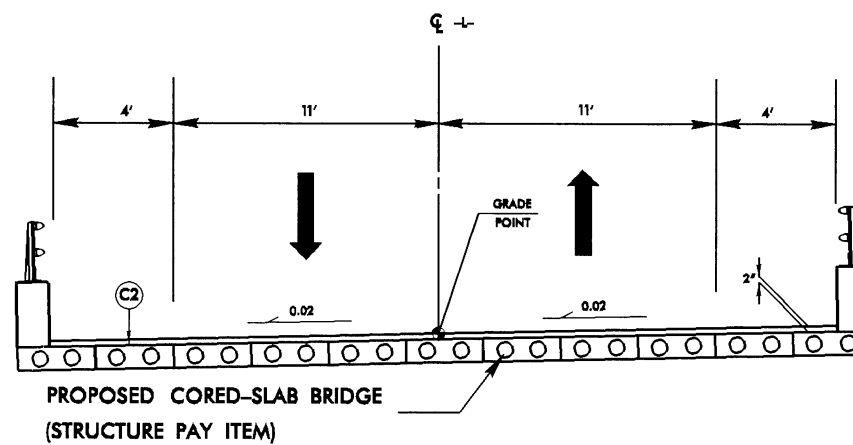
-L- STA. 20+35.00 TO STA. 21+00.00  
-L- STA. 27+00.00 TO STA. 28+00.00



USE TYPICAL SECTION NO. 2

-L- STA. 21+00.00 TO STA. 22+64.90 (BEGIN BRIDGE)  
-L- STA. 24+09.90 (END BRIDGE) TO STA. 27+00.00

\* -L- STA. 24+50 LT. TO STA. 26+00 LT.



USE TYPICAL SECTION NO. 3

-L- STA. 22+64.90 TO STA. 24+09.9





5/14/99

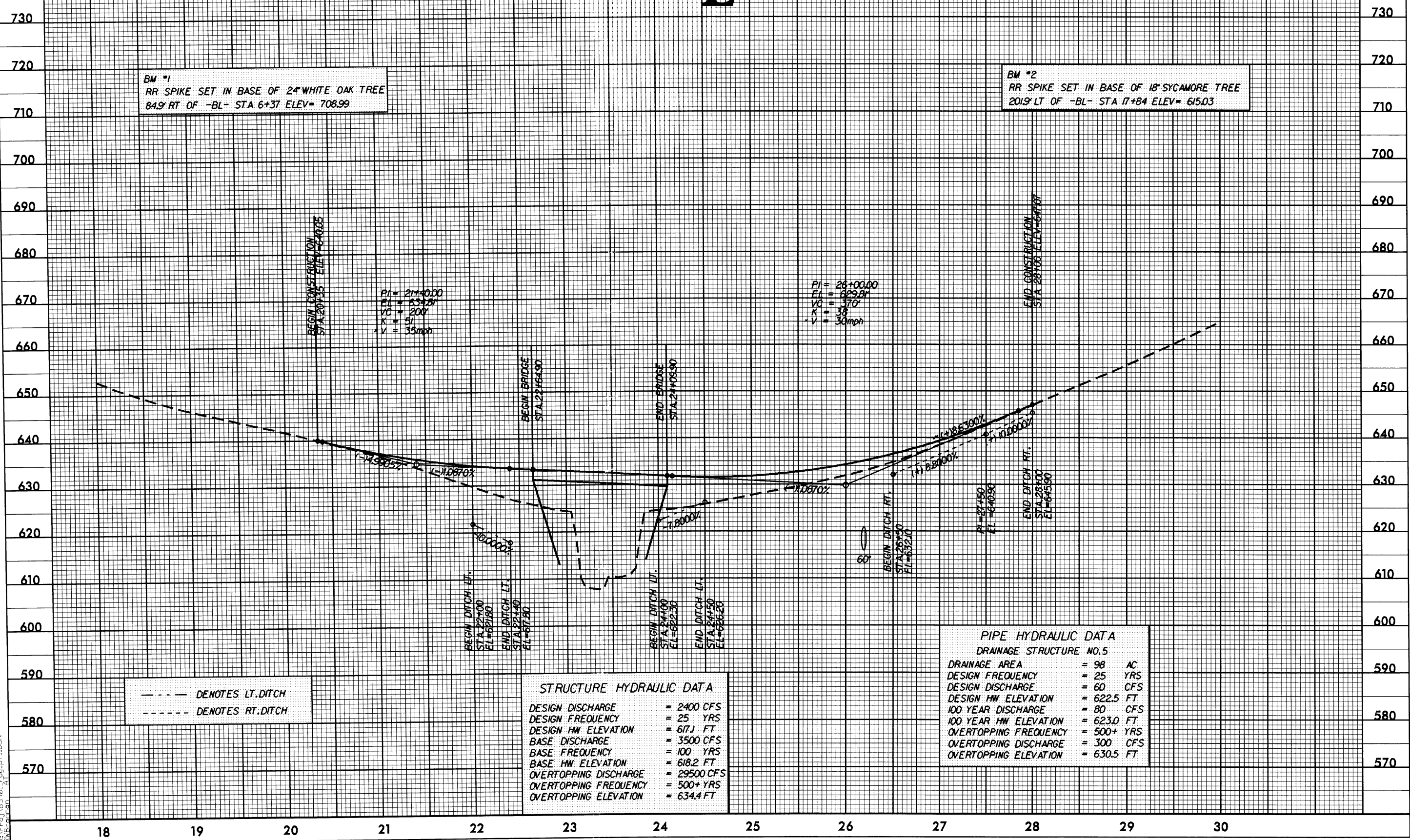
\*NOTE: DESIGN EXCEPTION REQUIRED FOR VERTICAL ALIGNMENT (30-35mph)  
 \*\*NOTE: DESIGN EXCEPTION REQUIRED FOR MAXIMUM GRADE (8.6%)

PROJECT REFERENCE NO. B-3901	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

# L

BM #1  
 RR SPIKE SET IN BASE OF 24" WHITE OAK TREE  
 84.9' RT OF -BL- STA 6+37 ELEV= 708.99

BM #2  
 RR SPIKE SET IN BASE OF 18" SYCAMORE TREE  
 201.9' LT OF -BL- STA 17+84 ELEV= 615.03



--- DENOTES LT. DITCH  
 - - - DENOTES RT. DITCH

**STRUCTURE HYDRAULIC DATA**

DESIGN DISCHARGE	= 2400 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 617.1 FT
BASE DISCHARGE	= 3500 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 618.2 FT
OVERTOPPING DISCHARGE	= 29500 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 634.4 FT

**PIPE HYDRAULIC DATA**  
 DRAINAGE STRUCTURE NO. 5

DRAINAGE AREA	= 98 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 60 CFS
DESIGN HW ELEVATION	= 622.5 FT
100 YEAR DISCHARGE	= 80 CFS
100 YEAR HW ELEVATION	= 623.0 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 300 CFS
OVERTOPPING ELEVATION	= 630.5 FT

18-MAY-2004 11:00 AM  
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 11



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

June 14, 2004

U. S. Fish and Wildlife Service  
Ecological Services  
Raleigh Field Office  
P.O. Box 33726  
Raleigh, North Carolina 27606

ATTENTION: Mr. Gary Jordan  
NCDOT Coordinator

SUBJECT: Request for Section 7 concurrence for the proposed replacement of Bridge No. 181 on SR 1501 (Garrett Road) over Matrimony Creek, Rockingham County. Federal Aid Project No. BRZ-1501(4), State Project No. 8.2511401, Division 7, TIP No. B-3901.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 181 over Matrimony Creek. The current bridge is in need of maintenance and due to its age and the timber substructure, rehabilitation is not practicable. The old bridge will be replaced with a new bridge spanning the creek with no bents located in the stream. Temporary fill will be required to construct the bridge. An application for Nationwide Permit coverage has been submitted to the U.S. Army Corps of Engineers.

According to your species list dated January 29, 2003 two federally protected species are listed for Rockingham County, James spiny mussel (*Pleurobema collina*) and smooth coneflower (*Echinacea laevigata*). During initial site visits suitable habitat for the James spiny mussel consisting of shallow, normally compacted pebble substrate was identified within Matrimony Creek near the bridge site. Unsuitable habitat was also identified consisting of large stretches of unconsolidated, shifting sand.

In order to determine if the endangered mussel existed within the project site NCDOT environmental specialists Karen Lynch, Mary Frazer and Sharon Snider conducted a freshwater mussel survey of the Creek at the bridge crossing on March 27, 2003. Mussel surveys were conducted from approximately 400 meters downstream to 100 meters upstream of the existing bridge. No mussels were found during the survey, therefore a

**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.DOH.DOT.STATE.NC.US](http://WWW.DOH.DOT.STATE.NC.US)

**LOCATION:**  
TRANSPORTATION BUILDING  
1 SOUTH WILMINGTON STREET  
RALEIGH NC

biological conclusion of “may affect, not likely to adversely affect” was issued for the James spiny mussel. Therefore NCDOT is requesting that your agency provide a letter concurring with the “May Affect, Not Likely to Adversely Affect” determination.

Likewise, suitable habitat for smooth coneflower, consisting of roadsides and utility right-of-way was present within the study area. To determine if smooth coneflower existed within the study area, NCDOT biologists Lynn Smith, Elizabeth Lusk and Michael Turchy surveyed the project area on July 18, 2002. Survey results concurred that suitable habitat existed however no specimens were found within the study area. Therefore it was determined that the proposed bridge replacement will not affect smooth coneflower.

However, construction is not slated to start until December of 2004. Therefore, NCDOT agreed to re-survey the project area for smooth coneflower since two years will have passed before construction has commenced. NCDOT has committed to survey the project area prior to initiation of ground disturbing activities. The results of the survey will be forwarded to your agency should smooth coneflower be found. If no individuals are found, an additional concurrence request will be submitted to the USFWS.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Eric Adrignola at (919) 715-1462 or at eadrignola@dot.state.nc.us.

Sincerely,



*for* Gregory J. Thorpe, Ph.D., Environmental Manager  
Project Development and Environmental Analysis Branch

cc: w/ attachment

- Mr. John Dorney, Division of Water Quality
- Mr. John Hennessy, Division of Water Quality
- Mr. John Thomas, U.S. Army Corps of Engineers
- Ms. Marla Chambers, NCWRC
- Mr. Michael Wood, The Catena Group
- Mr. David Franklin, USACE, Wilmington