STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 6, 2006

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

ATTENTION: Mr. John Thomas
NCDOT Coordinator

SUBJECT: **Nationwide Permit 13 Application** for the proposed replacement of Bridge No. 28 on SR 1321 over Curtis Creek. Avery County in Division 11. Federal Project No. BRZ-1321, State Project No. 8.2721201, T.I.P. No. B-3406.

Dear Mr. Thomas:

Please find enclosed the Categorical Exclusion (CE) for the above referenced project, along with permit drawings, ½ size design plans and a Preconstruction notification (PCN). North Carolina Department of Transportation (NCDOT) plans to replace bridge No. 28 with a new 40-feet long and 30-foot wide cored slab bridge on existing location that will completely span Curtis Creek. Traffic will use an onsite detour located to the south of the existing structure during construction. The onsite detour will completely span Curtis Creek. There are no wetlands located in the project area. Project impacts consist of the placement of 121 feet of riprap on the banks of Curtis Creek. No temporary impacts will occur.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Watauga River basin (HUC 06010108) and will cross Curtis Creek. Curtis Creek is has been assigned a best usage classification of **C Tr**, by the N.C. Division of Water Quality. Curtis Creek is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River, nor is it listed as a 303(d) stream. No designated Outstanding Resource Waters (ORW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 miles of the project study area. Since Curtis Creek is classified as a trout water, NCDOT will implement design standards for sensitive watersheds.

Temporary Impacts: No temporary impacts will occur.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-715-1334
FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
SUITE 240
RALEIGH NC

Permanent Impacts: This project will place 121 feet of riprap on the banks of Curtis Creek. There will be no impacts to surface waters.

Utility Impacts: No impacts will occur due to utility relocations

Bridge Demolition
Bridge No. 28's superstructure consists of a timber floor on I-beams. The substructure consists of timber caps on timber posts and sills. The existing bridge can be removed in sections without dropping bridge components into the water. NCDOT will follow NCDOT's Best Management Practices for Bridge Demolition and Removal.

Bank Stabilization
Measures necessary for erosion prevention will be required, in order to protect the integrity of Curtis Creek. Riprap will be placed from the top of the bank to the waters edge, to eliminate potential erosion in the project area.

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 April 27, 2006 the Fish and Wildlife Service (FWS) lists eight federally protected species for Avery County (Table 1). A Biological Conclusion of "No Effect" was reached for all applicable species.

Table 1. Federally Protected Species for Avery County

Scientific Name	Common Name	Status	Biological Conclusion	Habitat available
Clemmys muhlenbergii	Bog turtle	T (S/A)	NA	NA
Corynorhinus towsendii virginianus	Virginia big-eared bat	E	No Effect	No
Geum radiatum	Spreading avens	E	No Effect	No
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	E	No Effect	No
Gymnoderma lineare	Rock gnome lichen	E	No Effect	No
Liatris helleri	Heller's blazing star	T	No Effect	No
Microhexura montivaga	Spruce-fir moss spider	E	No Effect	No
Solidago spithamaea	Blue Ridge goldenrod	T	No Effect	No

AVOIDANCE AND MINIMIZATION:
The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design and include:

- Best Management Practices for the Protection of Surface Waters and Bridge Demolition and Removal will be followed.
- No bents will be placed in the water.
- Replace at existing location.

MITIGATION
Mitigation is not proposed because riprap will be placed on the stream bank.

Regulatory Approvals
Section 404 Permit: This project is being processed by the Federal Highway Administration as a Categorical Exclusion in accordance with 23 CFR 771.115(b). Therefore we do not anticipate requesting an individual permit, but propose to proceed under a Nationwide 13 (67 FR 2020; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification number 3495 will apply to this project. In accordance with 15A NCAC 2H .0501(a), we are providing two copies of this notification to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

Thank you for your assistance in this project. If you have any questions or need additional information please contact Brett Feulner at (919) 715-1488.

Sincerely,

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

cc: w/attachment
Mr. John Hennessy, NCDWQ (2 Copies)
Ms. Marla Chambers, NCWRC
Ms. Marella Buncick, USFWS
Mr. Harold Draper, TVA
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Michael A. Pettyjohn, P.E. Division 11 Engineer
Mr. Heath Slaughter, Division 11 Environmental Officer
w/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Stacy Baldwin, P.E., PDEA
Mr. Scott McLendon, USACE, Wilmington

Office Use Only: Form Version March 05

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

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

I. Processing

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

2. Nationwide, Regional or General Permit Number(s) Requested: NW 13

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

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

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: gthorpe@dot.state.nc.us

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

III. Project Information

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

1. Name of project: Replacement of Bridge No. 28 over Curtis Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3406

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

4. Location
   County: Avery Nearest Town: Heaton
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): The site is located at the crossing SR 1321 over Curtis Creek

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 34.4432 °N 77.8339 °W

6. Property size (acres): N/A

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

8. River Basin: Watauga
   (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: Residential, small buisnesses, and forestland

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

11. Explain the purpose of the proposed work: The purpose is to replace the old bridge that is functionally obsolete and structurally deficient.

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.
No

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: The project impacts are as follows, 121 feet of bank stabilization

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

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

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

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Site 1	Curtis Creek	Stablization	Perennial	20	121	0.01
Total Stream Impact (by length and acreage)					121	0.01

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

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

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

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

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

   _____

   _____

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):_____
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
   Current land use in the vicinity of the pond:_____
   Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. Best management Practices for the protection of Surface Waters and BMP's for Bridge demolition and removal, proposed bridge will span the creek

_____

_____

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include,

but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   No mitigation is proposed because the proposed impacts are from bank stabilization activities.

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

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

IX. Environmental Documentation (required by DWQ)

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

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

Yes ☒ No ☐

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

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

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

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

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

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

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. _____

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Approximately the same as current conditions

XII. Sewage Disposal (required by DWQ)

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

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

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

XIV. Cumulative Impacts (required by DWQ)

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

XV. Other Circumstances (Optional):

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

E.F. Luck 8.25.06

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

Avery County

Bridge No. 28 on SR 1321 over Curtis Creek

Federal Aid Project No. BRZ-1321(1)

State Project 8.2721201

WBS # 33037.1.1

TIP Project No. B-3406

CATEGORICAL EXCLUSION

US DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NC DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

10-13-04
DATE

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

10-19-04
DATE

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

Avery County

Bridge No. 28 on SR 1321 over Curtis Creek

Federal Aid Project No. BRZ-1321(1)

State Project 8.2721201

WBS # 33037.1.1

TIP Project No. B-3406

CATEGORICAL EXCLUSION

October 2004

Document Prepared by

EARTH TECH

John Schrohenloher, P.E., Project Engineer
Earth Tech

For the North Carolina Department of Transportation

John Wadsworth, P.E., Project Manager
Consultant Engineering Unit
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

Avery County
Bridge No. 28 on SR 1321 over Curtis Creek
Federal Aid Project No. BRZ-1321(1)
State Project 8.2721201
WBS # 33037.1.1
TIP Project No. B-3406

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Best Management Practices for Protection of Surface Waters, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Division 11
All in-stream work and land disturbance within a 25-foot buffer will be conducted between April 16 and October 14 to avoid impacts to trout reproduction. Guidelines for Construction Adjacent to or Crossing Trout Waters as incorporated into Erosion and Sediment Control Guidelines will be implemented and adhered to throughout the project.

Design Branch
To address community concerns with pedestrian safety, right-of-way impacts, and relocations, the following measures will be considered to minimize or mitigate impacts:

- Use *3R Guide* to design the project.
- Minimize the use of guardrail to minimize property access impacts.
- Include pedestrian safety components (e.g., crosswalks and signing) in the project that enhance the safety of pedestrian movements between the Heaton Christian Church buildings and its parking lot on the other side of SR 1321.

Project Development & Environmental Analysis Branch
Approved under Section 26a of the Tennessee Valley Authority Act is required. A copy of the environmental document will be provided to the Tennessee Valley Authority.

Avery County
Bridge No. 28 on SR 1321 over Curtis Creek
Federal Aid Project No. BRZ-1321(1)
State Project 8.2721201
WBS # 33037.1.1
TIP Project No. B-3406

INTRODUCTION: The replacement of Bridge No. 28 is included in the 2004–2010 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and in the Federal Aid Bridge Replacement Program. The location is shown in **Figure 1.** No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 18.3, out of a possible of 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1321 (Curtis Creek Road) in Avery County is classified as "Local Route" in the Statewide Functional Classification System, and is not a Federal-aid Highway.

Through the project area, SR 1321 has a 20-foot wide clear roadway width and a 50-foot wide right-of-way. There is no speed limit posted on SR 1321 near the bridge, so the statutory speed limit of 55 miles per hour applies. The existing bridge and roadway can be seen in **Figures 2a-b.**

The existing bridge was constructed in 1959. The superstructure consists of a timber floor on I-beams. The substructure consists of timber caps on timber posts and sills. The abutments are vertical. The existing bridge consists of one 30.5-foot span and the clear roadway width is 19.1 feet. The crown of the roadway is approximately 7 feet over the bed of Curtis Creek. The posted weight limit is 14 tons for single vehicles and 18 tons for trucks with trailers. The bridge is located in a tangent section of SR 1321 and crosses Curtis Creek at approximately 90 degrees. Photographs of the approaches to the existing bridge are shown in **Figures 4a-c.**

The average daily traffic volume on SR 1321 at Bridge No. 28 is estimated to be 900 vehicles per day in 2003. By the design year 2030, the average daily traffic volume is expected to increase to 1,500 vehicles per day. The projected traffic volume includes 2 percent dual-tired vehicles and 1 percent truck-tractor semi-trailers. Two school buses each cross the bridge four times daily (a total of eight crossings). SR 1321 is not a designated bicycle route.

In the period between September 1, 2000 and August 31, 2003, there was one accident on the west approach to Bridge No. 28 (within 100 feet of the bridge).

III. ALTERNATIVES

A. Project Description

The project replaces the existing bridge with a new bridge on the existing horizontal alignment and existing grade. The bridge will carry two lanes of traffic over Curtis Creek. The proposed bridge will be approximately 40 feet long and 26 feet wide, accommodating two 10-foot travel lanes. The typical sections for the approaches and bridge are shown in **Figure 3**.

B. Build Alternatives

Two build alternatives were considered for the project:

Alternative 1 replaces Bridge No. 28 on the existing roadway alignment (see **Figure 2a**). During construction, traffic is maintained on a temporary detour structure located south (upstream) of the existing bridge and re-joins SR 1321 near SR 1320 (Barlow Road). This alternative relocates one residence. Alternative 1 was not selected as the preferred alternative because its construction cost and temporary detour impacts are the higher of Alternatives 1 and 4. The temporary impact to Heaton Christian Church parking and terrestrial impacts are higher than Alternative 4.

Alternative 4 (Preferred) replaces Bridge No. 28 on the existing roadway alignment (see **Figure 2b**). During construction, traffic is maintained on a temporary detour structure located south (upstream) of the existing bridge and re-joins SR 1321 approximately 150 feet east of the existing bridge. This alternative relocates one residence.

C. Alternatives Eliminated from Further Study

Alternative 2 replaces Bridge No. 28 south (upstream) of its existing location and realigns the roadway to the south. The new road rejoins existing SR 1321 at the intersection of SR 1320. Traffic is maintained on the existing bridge during construction. Bridge No. 28 will be removed when the new bridge is open to traffic. This alternative relocates one residence. Alternative 2 was eliminated from further consideration due to the new alignment lying in a floodplain, which would have created a flood hazard.

Alternative 3 replaces Bridge No. 28 just south (upstream) of the existing location and realigns the roadway to the south. The road is closer to existing SR 1321 than in Alternative 2. The new road rejoins existing SR 1321 south of the SR 1320 intersection. Traffic is maintained on the existing bridge during construction. Bridge No. 28 will be removed when the new bridge is open to traffic. This alternative relocates one residence. Alternative 3 was eliminated from further consideration due to impacts to Heaton Christian Church's parking.

Alternative 5 replaces Bridge No. 28 approximately 460 feet upstream of the existing bridge and realigns the intersection of SR 1320 and SR 1321. Bridge No. 28 will be removed when the new bridge is open to traffic. Alternative 5 relocates two residences and places the new road directly adjacent to the Heaton Cemetery (located southeast of the intersection of SR 1321 and SR 1320). In addition, a large amount of excavation is required due to an outcropping of bedrock adjacent to SR 1320. This alternative was eliminated due to the combination of relocation and cemetery impacts.

Alternative 6 (Do Nothing) This alternative consists of short-term minor reconstruction and maintenance activities that are part of an ongoing plan for continuing operation of the existing structure and roadway system in the project area. Many of the structural elements are decaying or corroding. Decay and corrosion have already reduced the bridge's safe load-bearing capacity. Although further maintenance activities will slow the decay, closing the bridge will eventually be necessary. Alternative 6 was eliminated due to there not being any other existing route that provides practical access to properties that Bridge No. 28 serves.

Alternative 7 creates a new alignment and bridge across the Elk River, connecting SR 1321 with NC 194. The new alignment begins on SR 1321 approximately 400 feet east of Bridge No. 28, heads north on the east side of Heaton Christian Church, crosses the Elk River, then connects to NC 194. Bridge No. 28 will be removed when the new bridge is open to traffic. Alternative 7 has a left turn lane for NC 194 westbound traffic, which requires the construction of retaining walls on both sides of NC 194. The new bridge will be approximately 130 feet long, and the approach work extends approximately 250 feet to the south of the bridge, 350 feet to the west and 450 feet to the east of the bridge on NC 194. Alternative 7 was eliminated from consideration because of inadequate sight distance on NC 194 and strong community opposition.

Alternative 8 creates a new alignment and bridge across the Elk River, connecting SR 1321 with NC 194. The new alignment begins on SR 1321 approximately 400 feet east of Bridge

No. 28, heads north on the east side of Heaton Christian Church, crosses the Elk River, then connects to NC 194. Bridge No. 28 will be removed when the new bridge is open to traffic. Alternative 8 does not have a left turn lane on NC 194, which does not make any major modifications to NC 194 nor requires any retaining walls except in the vicinity of the bridge abutment at NC 194. The new bridge will be approximately 130 feet long, and the approach work will extend approximately 250 feet to the south of the bridge, 350 feet to the west and 450 feet to the east of the bridge on NC 194. Alternative 8 was eliminated from consideration because of inadequate sight distance on NC 194 and strong community opposition.

D. Preferred Alternative

Alternative 4, replacing Bridge No. 28 on the existing roadway alignment while maintaining traffic on a temporary detour structure south (upstream) of the existing bridge, is the preferred alternative. Alternative 4 is the preferred alternative because its construction costs and temporary detour impacts are the lesser of Alternatives 1 and 4. The temporary impact to Heaton Christian Church parking and terrestrial impacts are less than Alternative 1.

Measures to enhance pedestrian safety, such as crosswalks and signing, at Heaton Christian Church will be evaluated. The structure will probably have to use 1 or 2 bar metal rail so that the structure anchor unit (for guardrail) will attach to the end of the bridge; not to the barrier on the approach slab. Using one or two bar metal rail will reduce impacts to the driveway adjacent to the church property by limiting the use of guardrail. Using barrier rail will make the driveway adjacent to the church unusable.

NCDOT Division 11 supports this alternative.

E. Anticipated Design Exceptions

Design exceptions include a design speed of 30 miles per hour, which is below the current statutory speed limit of 55 miles per hour.

Design exceptions will be required for lane and shoulder widths so the Heaton Christian Church building and parking is not impacted, and to avoid encroachment into the floodplain. Proposed lane and shoulder widths are not less than what currently exists.

Design exceptions will be required for horizontal and vertical alignment elements. Changing the existing horizontal or vertical alignments will impact properties adjacent to the bridge.

IV. ESTIMATED COSTS

Estimated costs are summarized in Table 1.

Table 1: Estimated Costs

Item	Alt. 1	Alt. 4 (Preferred)
Structure Removal	$4,720	$4,720
Structure	$90,000	$90,000
Roadway Approaches	$201,420	$201,420
Detour Structure & Approaches	$99,800	$99,800
Miscellaneous and Mobilization	$134,060	$134,060
Engineering and Contingencies	$95,000	$95,000
Right-of-Way/Utilities/Relocations	$313,800	$296,000
Total Cost of Alternative	**$938,800**	**$921,200**

The estimated cost of the project, as shown in the 2004-2010 TIP is $820,000, including $150,000 for right-of-way and $550,000 for construction. Right-of-way acquisition is scheduled for Federal Fiscal Year 2005, with construction to follow in Federal Fiscal Year 2006.

V. NATURAL RESOURCES

An evaluation of natural resources in the immediate area of potential project impact was performed. The evaluation describes the various natural resources likely to be impacted by the proposed action. This section identifies and estimates the likely consequences of the anticipated impacts to these resources. The information in this section is based on the Natural Resources Technical Report dated March 1999 and later updates.

A. Methodology

Published information and resources were collected before the field investigation. Information sources used to prepare this report include the following:

- United States Geological Survey (USGS) quadrangle map (Elk Park, 1978)
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map (Elk Park, 1989)
- NCDOT aerial photograph of project area (1:1200)

- Draft soil survey maps of Avery County (Natural Resources Conservation Service [NRCS] 1994)
- North Carolina Department of Environment and Natural Resources (NCDENR) basin-wide assessment information (NCDENR, 1998)
- USFWS list of protected and candidate species
- North Carolina Natural Heritage Program (NHP) files of rare species and unique habitats

Water resource information was obtained from publications posted on the World Wide Web by NCDENR, Division of Water Quality (NCDWQ). Information concerning the occurrence of federally protected species in the study area was obtained from the USFWS list of protected and candidate species (January 2004). NHP files were reviewed for documented sightings of species on state or federal lists and locations of significant natural areas.

A general field survey was conducted along the proposed project route on February 4, 1999. Water resources were identified and their physical characteristics were recorded. A habitat assessment was performed within the project area of Curtis Creek. Plant communities and their associated wildlife were identified using a variety of observation techniques, including active searching, visual observations, and identifying characteristic signs of wildlife (sounds, tracks, scats, and burrows). Terrestrial community classifications generally follow Schafale and Weakley (1990) where appropriate, and plant taxonomy follows Radford et al (1968). Vertebrate taxonomy follows Potter et al (1980), Martof et al (1980), and Webster et al (1985). Vegetative communities were mapped using aerial photography of the project site. Predictions regarding wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities.

Jurisdictional wetlands, if present, were delineated and evaluated based on criteria established in the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987). Wetlands were classified based on Cowardin et al (1979).

The following terms are used for describing the limits of natural resources investigations. "Study corridor" and "project area" refer to both the permanent and temporary right-of ways". The "project region" is an area equivalent in size to the area represented by a 7.5-minute USGS quadrangle map (about 61.8 square miles), with the project area occupying the center of the project region. When referring to stream banks, "left bank" and "right bank" are relative to an observer facing downstream.

B. Physiography and Soils

1. Regional Characteristics

The proposed project is in a rural area in Avery County approximately 3.8 miles west of Banner Elk. Avery County's major economic resources are tourism and horticulture (Christmas trees and ornamental shrubs).

The project area lies in the western portion of North Carolina within the Blue Ridge physiographic province. Elevations in the project area are approximately 3,040 feet (National Geodetic Vertical Datum, 1929). The topography of the project vicinity is mountainous, with steep slopes rising from a narrow floodplain.

2. Soils

The following information about soils in the project area was taken from draft maps provided by the Avery County NRCS (NRCS, 1994). The draft map unit in the project area is Reddies loam (0-3 percent slopes). The seasonal high water table for this type is 2.0-3.5 feet. Reddies loam (16-A) is mapped along the banks and floodplain of Curtis Creek within the project area. This soil is frequently flooded and occurs on 0-3 percent slopes. It is a very deep, moderately well-drained soil found on floodplains in the southern Appalachian mountains. Reddies soils are not on the NRCS list of hydric soils for North Carolina. Site index information was not available for this soil type.

C. Water Resources

1. Waters Impacted

The project is located in the Watauga River Basin, NCDWQ sub-basin 04-02-01 (NCDWQ Environmental Sciences Branch Watauga River WAT01 sub-basin). The Watauga River Basin is 205 square miles in size. One surface water resource, Curtis Creek, will be directly impacted by the proposed project. Curtis Creek originates about 2.8 miles southeast of the project area, near Blood Camp Ridge. From the project area, the creek flows northeast approximately 50 feet to its confluence with the Elk River.

2. Water Resource Characteristics

Curtis Creek is approximately 5 feet wide in the project area. The stream flows northeast in a straight run, with numerous small cascades and runs. The substrate of the river at this point consists of about 50 percent boulders, 20 percent cobbles, 15 percent gravel, and 15 percent sand. Stream flow on the day of the site visit was rapid. The water was clear and shallow, with a maximum depth of about 2 feet.

The banks are nearly vertical and lined with rocks and boulders or planted shrubs and vines to a height of 3-6 feet. The banks increase in height towards the mouth of the creek. No signs of recent flooding were observed.

The creek has an open canopy and riparian vegetation consists of landscaped plantings of shrubs, small trees, and vines.

Surface waters in North Carolina are assigned a classification by the NCDWQ that is designed to maintain, protect, and enhance water quality within the state. Curtis Creek (Index # 8-22-15, 05/15/1963) is classified as a *Class C Tr* water body (NCDENR, 1999). *Class C* water resources are used for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. There are no restrictions on watershed development activities. The supplemental *Tr* classification refers to trout waters, which are fresh waters protected for natural trout propagation and survival of stocked trout.

No waters classified as High Quality Water (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occur with 1.0 mile of the project study area.

Non-point source runoff from adjacent landscaping, paved parking areas, and pastures is likely to be the primary source of water quality degradation to the water resources located within the project vicinity. There are maintained lawns on the left bank of the stream and gravel and paved parking lots on the right bank. Nutrient loading from fertilizers and contaminants from the parking lot runoff could affect water quality.

The NCDWQ has initiated a basin-wide approach to water quality management for the seventeen river basins within the state. River basins are reassessed every five years. The Basin-Wide Assessment Program assesses water quality by sampling for benthic macroinvertebrate (benthos) organisms throughout the state. The monitoring sites may vary according to needs assessed for a particular basin.

Curtis Creek has not been sampled as part of this monitoring program.

Point source discharges in North Carolina are permitted through the NPDES program administered by the NCDWQ. All dischargers are required to obtain a permit to discharge. No point source discharges were observed in the study area. There are no permits issued to discharge in Curtis Creek as of September 13, 2004.

3. Anticipated Impacts to Water Resources

a) General Impacts

Any action that affects water quality can adversely affect aquatic organisms. Temporary impacts during the construction phases may result in long-term impacts to the aquatic community. Project construction may result in the following impacts to surface water resources:

- Increased sediment loading and siltation as a consequence of watershed vegetation removal, erosion, and/or construction.
- Decreased light penetration/water clarity from increased sedimentation.

- Changes in water temperature with vegetation removal.
- Changes in the amount of available organic matter with vegetation removal.
- Increased concentration of toxic compounds from highway runoff, construction activities and construction equipment, and spills from construction equipment.
- Alteration of water levels and flows as a result of interruptions and/or additions to surface and groundwater flow from construction.

Based on the right-of-way widths, the project may impact up to 100 linear feet of Curtis Creek. Most of the impacts would be temporary for the construction of the temporary detour (50 feet for the proposed permanent structure and 50 feet for the temporary detour structure). NCDOT's *Best Management Practices for the Protection of Surface Waters* will be followed during the construction of the project. In addition, *Guidelines for Construction Adjacent to or Crossing Trout Waters* as incorporated into *Erosion and Sediment Control Guidelines* will be implemented and adhered to throughout the project.

4. Impacts Related to Bridge Demolition and Removal

Section 402-2 "Removal of Existing Structures" of NCDOT's *Standard Specifications for Roads and Structures* stipulates that "...excavated materials shall not be deposited...in rivers, streams, or impoundments," and "...the dropping of parts or components of structures into any body of water will not be permitted unless there is no other practical method of removal. The removal from the water of any part or component of a structure shall be done so as to keep any resulting siltation to a minimum." To meet these specifications, NCDOT will adhere to *Best Management Practices for the Protection of Surface Waters*, as supplemented with *Best Management Practices for Bridge Demolition and Removal.*

In addition, all in-stream work is classified into one of three categories as follows:

Case 1. In-water work is limited to an absolute minimum, due to the presence of special resource waters or threatened and/or endangered species, except for the removal of the portion of the sub-structure below the water. The work is carefully coordinated with the responsible agency to protect the Special Resource Water or Threatened and Endangered Species.

Case 2. No work at all in the water during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas.

Case 3. No special restrictions other than those outlined in *Best Management Practices for Protection of Surface Waters.*

Curtis Creek in the vicinity of the proposed project is not a special resource water and is not known to provide habitat for species on the federal list of threatened and endangered species. It is not classified as a DPMTW, but it does carry the NCDWQ supplemental "Tr"

classification. Therefore, Case 2 applies to the proposed replacement of Bridge No. 28 over Curtis Creek.

Bridge No. 28's superstructure consists of a timber floor on I-beams. The substructure consists of timber caps on timber posts and sills. The abutments are vertical. Because of its design, the existing bridge can be removed in sections without dropping bridge components into the water. There is no substructure in the water. No fill will result from demolition.

D. Biotic Resources

1. Terrestrial Communities

One terrestrial community occurs within the project area—a maintained landscape. Dominant faunal components associated with this terrestrial area are discussed in the community description.

This community covers the area on both banks of Curtis Creek. It consists of maintained residential lawns or parking lots covering the project area up to the stream banks, which are lined with planted trees, shrubs, and ground cover. Tree species include yellow buckeye (*Aesculus flava*), eastern hemlock (*Tsuga canadensis*), black locust (*Robinia pseudoacacia*), red spruce (*Picea rubens*), sycamore (*Platanus occidentalis*), and red maple (*Acer rubrum*). The shrub and herbaceous species are largely horticultural varieties, along with some common weedy species. These include ornamental rhododendron (*Rhododendron sp.*), violet (*Viola sp.*), periwinkle (*Vinca minor*), a horticultural variety of ivy, mock strawberry (*Duchesnea indica*), buttercup (*Ranunculus hispidus*), and poison ivy (*Toxicodendron radicans*).

2. Wildlife

The animal species present in the maintained landscape are opportunistic and capable of surviving on a variety of resources, ranging from vegetation to both living and dead faunal components. Northern mockingbird (*Mimus polyglottos*), starling (*Sturnus vulgaris*), and American robin (*Turdus migratorius*) are common birds that use these habitats. A red-bellied woodpecker (*Melanerpes carolinus*) was observed the day of the site visit. The area may also be used by gray squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), Eastern garter snake (*Thamnophis sirtalis*), and American toad (*Bufo americanus*).

3. Aquatic Communities

Within the project area, Curtis Creek is a mid-gradient, third order stream. The bed material consists of boulders and cobbles, with a small percentage of sand and gravel. On the day of the site visit, the water was clear with no suspended sediment. The riparian community is composed of mostly small trees and shrubs.

Avery County is designated a "trout" county by the North Carolina Wildlife Resources Commission (WRC). Curtis Creek was sampled in 1997 and found to support brown trout (*Salmo trutta*) and wild rainbow trout (*Onchorhynchus mykiss*). Streams of this type also typically support rosyside dace (*Clinostomus fungiloides*) and yellowfin shiner (*Notropis lutipinnis*). Curtis Creek is a tributary of the Elk River, which is designated as "Public Mountain Trout Water" (DPMTW).

4. Anticipated Impacts to Biotic Communities

a) Terrestrial Communities

Terrestrial communities in the project area will be permanently impacted by project construction from clearing and paving and loss of the terrestrial community area along SR 1321. Temporary impacts will be incurred by the construction of a temporary detour. Estimated impacts include the area within the proposed permanent right-of-way of 50 feet and with the proposed temporary detour right-of-way of 50 feet. Table 2 describes the potential impacts to terrestrial communities by habitat type.

Table 2: Estimated Areas of Impact to Terrestrial Communities

	Impacted Area in Acres			
	Alternative 1		Alternative 4	
	Temporary	Permanent	Temporary	Permanent
Maintained Landscape	0.75	0.98	0.52	0.69

b) Wetland Communities

Curtis Creek is labeled on the NWI map as a PSS1A (Palustrine/scrub-shrub/broad-leaved deciduous/temporarily flooded) wetland. No jurisdictional wetlands were observed within the project area.

c) Aquatic Communities

No wetlands will be impacted by the project. Project construction cannot be accomplished without infringing on the surface waters. Anticipated surface water impacts fall under the jurisdiction of the USACE and the NCDWQ.

Assuming a study corridor of 50 feet wide at the proposed permanent bridge location and 50 feet wide at the proposed temporary detour location, Alternatives 1 and 4 will impact 100 linear feet of Curtis Creek, or 500 square feet of surface waters. Impacts will be less than those calculated if project construction does not require the entire permanent and temporary right-of-way.

Wet concrete should not come into contact with surface water during bridge construction in order to minimize effects of runoff on the stream water quality. Potential adverse effects will

be minimized through the implementation of NCDOT *Best Management Practices for Protection of Surface Waters*. In addition, *Guidelines for Construction Adjacent to and Crossing Trout Waters* (as incorporated into *Erosion and Sediment Control Guidelines*) will be implemented and followed throughout the project.

E. Special Topics

1. "Waters of the United States": Jurisdictional Issues

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR § 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). These waters are regulated by the USACE. Any action that proposes to dredge or place fill material into surface waters or wetlands falls under these provisions.

Curtis Creek is labeled on the NWI map as a PSS1A (Palustrine/scrub-shrub/broad-leaved deciduous/temporarily flooded) wetland. No jurisdictional wetlands were observed within the project area. Curtis Creek meets the definition of surface waters; therefore, is classified as "Waters of the United States".

2. Permits

a) Section 404 of the Clean Water Act

Construction is likely to be authorized by Nationwide Permits (NWP) No. 23 (Categorical Exclusion) and 33 (Temporary Construction, Access and Dewatering), as promulgated under 67 FR 2020, 2092; January 15, 2002. Activities under this permit are categorically excluded from environmental documentation because it is included within a category of actions that neither individually nor cumulatively have a significant effect on the human environment. Activities authorized under NWP must satisfy all terms and conditions of the particular permit.

b) Section 401 Water Quality Certification

A Section 401 Water Quality Certification No. 3403 for projects requiring Section 404 permits, from the NCDENR prior to issuance of the NWP No. 23. The project is located in a designated "trout" county. Although Curtis Creek is not a DPMTW, it empties directly into a DPMTW, the Elk River. The Elk River, approximately 50 feet from Bridge No. 28, supports a healthy trout population. The WRC has expressed a preference that the bridge be replaced with another spanning structure. Final permit decisions rest with the USACE.

c) Bridge Demolition and Removal

Demolition and removal of a highway bridge over Waters of the United States requires a permit from the USACE. Effective September 20, 1999, this permit is included with the permit for the construction of the new bridge. The permit application requires disclosure of

demolition methods and potential impacts to the body of water in the planning document for the bridge reconstruction.

Curtis Creek in the vicinity of the proposed project is not a special resource water and is not known to provide habitat for species on the federal list of threatened and endangered species. It is not classified as a DPMTW, but it does carry the NCDWQ supplemental "Tr" classification. Therefore, all in-stream work and land disturbance within a 25-foot buffer will be conducted between April 16 and October 14 to avoid impacts to trout reproduction.

Bridge No. 28's superstructure consists of a timber floor on I-beams. The substructure consists of timber caps on timber posts and sills. The abutments are vertical. Because of its design, the existing bridge can be removed in sections without dropping bridge components into the water. There is no substructure in the water. No fill will result from demolition.

d) Tennessee Valley Authority (TVA)

The project lies in TVA's jurisdiction. TVA approval must be obtained before any construction activities (Section 26a of the TVA Act). A copy of this document will be sent to TVA.

3. Mitigation

Because this project will likely be authorized under a NWP No. 23, mitigation for impacts to surface waters may or may not be required by the USACE and NCDWQ. In accordance with 15A NCAC 2H .0506 (h), compensatory mitigation may be required for impacts to 150 linear feet or more of streams and/or one acre or more of wetlands (NCDWQ, Section 401 Water Quality Certification No. 3403). Since there are no wetlands within the study corridor, wetland mitigation will not be required. The actual stream impacts (estimated at approximately 100 linear feet along Curtis Creek) will likely be lower than the 150 linear feet threshold, depending on final design plans. However, if the final right-of-way for the replacement structure is greater than 150 linear feet, compensatory mitigation will be required.

F. Rare and Protected Species

1. Federally Protected Species

Plants and animals with a federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended.

The USFWS lists nine species under federal protection for Avery County as of January 2004. These species are listed in Table 3.

Table 3: Species Under Federal Protection in Avery County

Scientific Name	Common Name	Federal Status
Clemmys muhlenbergii	Bog turtle	T S/A
Corynorhinus townsendii virginianus	Virginia big-eared bat	E
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	E
Microhexura montivaga	Spruce-fir moss spider	E
Geum radiatum	Spreading avens	E
Houstonia montana	Roan Mountain bluet	E
Liatris helleri	Heller's blazing star	T
Solidago spithamaea	Blue Ridge goldenrod	T
Gymnoderma lineare	Rock gnome lichen	E

Notes:
- E — Endangered-A species that is threatened with extinction throughout all or a significant portion of its range.
- T — Threatened-A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- T S/A — Similarity of Appearance-A species that is listed as threatened due to similarity of appearance with other rare species.

Clemmys muhlenbergii **(Bog turtle)** **Threatened due to Similarity of Appearance**

Vertebrate Family: Emydidae

Federally Listed: 1997

The bog turtle is a small freshwater turtle reaching a maximum carapace length of 4.5 inches. These turtles have a domed carapace that is weakly keeled and is light brown to ebony in color. The scutes have a lighter-colored starburst pattern. The plastron is brownish-black with contrasting yellow or cream areas along the midline. This species is distinguished by a conspicuous orange, yellow, or red blotch on each side of the head.

The bog turtle is semi-aquatic and is typically found in freshwater wetlands characterized by open fields, meadows, or marshes with slow moving streams, ditches, and boggy areas. The bog turtle is also found in wetlands in agricultural areas subject to light to moderate livestock grazing, which helps to maintain an intermediate stage of succession. During the winter, this species hibernates just below the upper surface of mud. Mating occurs in May and June, and the female deposits two to six eggs in sphagnum moss or sedge tussocks in May, June or July. The diet of the bog turtle is varied, consisting of beetles, lepidopteran and caddisfly larvae, snails, millipedes, pondweed and sedge seeds, and carrion.

The southern population of the bog turtle is listed as Threatened due to Similarity of Appearance to the northern population, therefore, the southern population is not afforded protection under Section 7 of the Endangered Species Act. No habitat exists in the project area for the bog turtle. There are no freshwater wetlands characterized by open fields, meadows, or marshes with slow moving streams, ditches, or boggy areas near the bridge.

Corynorhinus townsendii virginianus **(Virginia big-eared bat)** **Endangered**

Vertebrate Family: Vespertilionidae

Federally Listed: 1979

The big-eared bat (Corynorhinus townsendii) includes two subspecies that are federally protected: the Virginia big-eared bat (*C. t. virginianus*), and the Ozark big-eared bat (*C. t. ingen*). The Virginia big-eared bat is known from West Virginia, Virginia, Kentucky, and North Carolina, with a current population estimated at 13,566 individuals. The Ozark big-eared bat is currently known from Oklahoma and Arkansas, with an estimated population of 1,800.

Big-eared bats have light to dark brown fur and are medium in size, weighing 0.2-0.4 ounces. The total body length is about 3.9 inches. Distinguishing characteristics include facial glands on either side of the snout and long ears (1 inch).

Virginia big-eared bats roost in caves year-round. From December through February, the bats hibernate in caves that range in temperature from 36.5° to 49.1° Fahrenheit. In the summer, the females gather in warmer caves that range in temperature from 59° to 64° Fahrenheit. While females are raising young in these "maternity caves", males disperse into smaller groups separate from the females. The diet of the big-eared bat consists primarily of moths captured in the air along forest edges after dark.

Biological Conclusion: **No Effect**

No habitat exists in the project area for the Virginia big-eared bat. There are no caves located near the bridge. A search of the NHP database found no occurrence of the Virginia big-eared bat in the project vicinity. It can be concluded that the project will not impact this endangered species.

Glaucomys sabrinus coloratus **(Carolina northern flying squirrel)** **Endangered**

Vertebrate Family: Sciurdiae

Federally Listed: 1985

The Carolina northern flying squirrel is a small mammal weighing about 3 to 5 ounces. The adult squirrel is gray with a reddish or brownish wash on the back, and a grayish-white to white underside. It has a large flap of skin along either side of its body from

wrist to ankle. The skin flaps and its broad flattened tail allow the northern flying squirrel to glide from tree to tree. It is a strictly nocturnal animal with large dark eyes.

There are several isolated populations of the northern flying squirrel in the western part of North Carolina along the Tennessee border. This squirrel is found above 5,000 feet in the vegetation transition zone between hardwood and coniferous forests. Both forest types are used to search for food, and the hardwood forest is used for nesting sites. The squirrel can subsist on lichens and fungi throughout much of its range; however, the diet can also include seeds, buds, fruits, cones, and insects.

Biological Conclusion: **No Effect**

No habitat exists in the project area for the Carolina northern flying squirrel. The project area is at an elevation of 926.6 m (3040 ft) with no transition zone between hardwood and coniferous forests. A search of the NHP database found no occurrence of the Carolina northern flying squirrel in the project vicinity. It can be concluded that the project will not impact this endangered species.

Microhexura montivaga **(Spruce-fir moss spider)** **Endangered**

Invertebrate family: Dipluridae

Federally Listed: 1995

The spruce-fir moss spider is a small spider, approximately 0.10 to 0.15 inches in length. It ranges from light brown to yellow-brown to a darker reddish brown, with no markings on its abdomen. This species is one of only two species belonging to the genus Microhexura in the family Dipluridae. Diplurids belong in the primitive suborder Mygalomorphae, which are often popularly referred to as "tarantulas". The spruce-fir moss spider is distinguished by chelicerae that project forward beyond the anterior edge of the carapace. Other characteristics include long posterior spinnerets, and a second pair of book lungs that appear as light patches behind the genital furrow.

The spruce-fir moss spider constructs tube-shaped webs in the interface between damp, well-drained moss mats and rock surfaces. It prefers well-shaded areas of mature Fraser fir and red spruce forest communities in the highest elevations of the Southern Appalachian Mountains. The spider has not been observed feeding and prey has not been found in the webs. It is likely that the abundant springtails (collembolans) which occur in the moss mats are the food source for the spider.

Biological Conclusion: **No Effect**

No habitat exists in the project area for the spruce-fir moss spider. There are no well-shaded areas of mature Fraser fir and red spruce forest near the bridge. A search of the NHP database found no occurrence of this species in the project vicinity. It can be concluded that the project will not impact this endangered species.

Geum radiatum **(Spreading avens)** **Endangered**

Plant Family: Rosaceae

Federally Listed: 1990

Spreading avens is a perennial herb having stems with an indefinite cyme of bright yellow, radially symmetrical flowers. Flowers of spreading avens are present from June to early July. Spreading avens has basal leaves which are odd-pinnately compound; terminal leaflets are kidney shaped and much larger than the lateral leaflets, which are reduced or absent.

Spreading avens is found only in the North Carolina and Tennessee section of the Southern Appalachian Mountains. Spreading avens occurs on scarps, bluffs, cliffs and escarpments on mountains, hills and ridges. Known populations of this plant have been found to occur at elevations from 5,060 to 5,800 feet. Other habitat requirements for this species include full sunlight and shallow acidic soils. These soils are composed of sand, pebbles, humus, sandy loam and clay loam. Most populations are pioneers on rocky outcrops.

Biological Conclusion: **No Effect**

No habitat exists in the project area for spreading avens. The elevation of the project area is approximately 3,040 feet and known populations occur above 5,000 feet. A search of the NHP database found no occurrence of spreading avens in the project vicinity. It can be concluded that the project will not impact this endangered species.

Houstonia montana **(Roan Mountain bluet)** **Endangered**

(= Hedyotis purpurea var. montana)

Plant Family: Rubiaceae

Federally Listed: 1990

Roan Mountain bluet is a cespitose perennial herb with erect or ascending, unbranched or weakly terminally branched stems. It grows to 8 inches tall from a basal winter rosette. Cauline leaves are opposite, sessile, and ovate, 0.3 to 1.2 inches long and 0.2 to 0.5 inches wide. Flowers are reddish-purple and funnel-shaped. The inflorescence is few-flowered, with flowers occurring from late May through August, with peak flowering in June and July. There is considerable disagreement among the experts concerning whether the Roan Mountain bluet belongs to the Hedyotis or Houstonia genus, and whether it is a variety or deserves a full species ranking.

Roan Mountain bluet grows on rocky exposures at high elevations of 4,600 to 6,270 feet. Bedrock geology is critical for the growth of this species. All sites are on mafic (i.e., basic) rock, which contrasts with most other high elevation rocky-summit

sites, which are typically on felsic or acidic rock. The plants typically grow in gravel-filled pockets found on north- or northwest-facing cliff ledges, or on talus slopes associated with outcrop exposures on the south or southwest slopes of mountain balds. Most sites are kept moist by frequent fog, mid-elevation clouds, or summer thunderstorms.

Biological Conclusion: **No Effect**

No habitat exists in the project area for Roan Mountain bluet. The elevation of the project area is approximately 3,040 feet and this species occurs above 4,600 feet. A search of the NHP database found no occurrence of Roan Mountain bluet in the project vicinity. It can be concluded that the project will not impact this endangered species.

Liatris helleri **(Heller's blazing star)** **Threatened**

Plant Family: Asteraceae

Federally Listed: 1987

Heller's blazing star is a perennial herb with an erect stem from a corm-like rootstock. The stiff stems are purple near the base, turning to green upwards, and are strongly ribbed and angulate. Both basal and cauline leaves are numerous, decreasing in size upward. The leaves are long and narrow, with those at the base 8 to 12 inches in length. The stems reach up to 16 inches in height and are topped by a showy spike of lavender flowers 0.3 to 8 inches long. Flowering occurs from July through September.

Heller's blazing star typically occurs on sandy soil on rocky summits, cliffs, ledges, and rocky woods at elevations of 3,500 to 6,000 feet. The plants grow in humus or clay loams on igneous and metasedimentary rock. Soils are generally acidic (pH 4) and shallow. Sites occupied by the Heller's blazing star are generally exposed to full sun.

Biological Conclusion: **No Effect**

No habitat exists in the project area for Heller's blazing star. The elevation of the project area is approximately 3,040 feet, whereas this species occurs above 3,500 feet. There are no areas of sandy soil on rocky summits, cliffs, ledges, or rocky woods that are exposed to full sun. A search of the NHP database found no occurrence of Heller's blazing star in the project vicinity. It can be concluded that the project will not impact this threatened species.

Solidago spithamaea **(Blue Ridge goldenrod)** **Threatened**

Plant Family: Asteraceae

Federally Listed: 1995

The Blue Ridge goldenrod is a perennial herb with an erect, angled stem 4 to 16 inches tall. This sparsely to densely pubescent herb arises from a stout, short rhizome. The elliptic leaves are serrate and 3.9 to 9.8 inches in length. The flowers are yellow and are borne in heads of 20 to 30 flowers in a compact corymb. Flowering occurs during July and August.

The Blue Ridge goldenrod occurs at elevations above 4,600 feet. It is an early successional species that occurs in the crevices of granite outcrops in full sun. The development of the open mountain summits, including construction of observation platforms, trails, parking lots, and roads, as well as trampling by hikers and sightseers, has likely contributed to the decline of this species.

Biological Conclusion: **No Effect**

No habitat exists in the project area for Blue Ridge goldenrod. The elevation of the project area is approximately 3,040 feet, while this species occurs above 4,600 feet. A search of the NHP database found no occurrence of Blue Ridge goldenrod in the project vicinity. It can be concluded that the project will not impact this threatened species.

Gymnoderma lineare **(Rock gnome lichen)** **Endangered**

Family: Cladoniaceae

Federally Listed: 1994

The rock gnome lichen is a squamose lichen in the reindeer moss family. The lichen can be identified by its fruiting bodies, which are born singly or in clusters, black in color, and are found at the tips of the squamules. The fruiting season of the rock gnome lichen occurs from July through September.

The rock gnome lichen is a narrow endemic, restricted to areas of high humidity. These high humidity environments occur on high elevation (4,000 feet) mountaintops and cliff faces which are frequently bathed in fog or lower elevation (2,500 feet) deep gorges in the Southern Appalachians. The rock gnome lichen primarily occurs on vertical rock faces where seepage water from forest soils above flows only at very wet times. The rock gnome lichen is almost always found growing with the moss Adreaea in these vertical intermittent seeps. The major threat of extinction to the rock gnome lichen relates directly to habitat alteration and loss of high-elevation coniferous forests. These coniferous forests usually lie adjacent to the habitat occupied by the rock gnome lichen. The high elevation habitat occurs in the counties of Ashe, Avery, Buncombe, Graham,

Haywood, Mitchell, Swain, and Yancey. The lower elevation habitat of the rock gnome lichen can be found in the counties of Jackson, Rutherford and Transylvania.

Biological Conclusion: **No Effect**

No habitat exists in the project area for the rock gnome lichen. The elevation of the project area is approximately 3,040 feet. In Avery County, this species occurs on mountaintops and cliff faces at elevations above 4,000 feet. A search of the NHP database found no occurrence of rock gnome lichen in the project vicinity. It can be concluded that the project will not impact this threatened species.

2. Federal Species of Concern

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Organisms which are listed as Endangered, Threatened, or Special Concern on the North Carolina Natural Heritage Program 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. However, the level of protection given to state-listed species does not apply to NCDOT activities. Table 4 lists the Federal Species of Concern for Avery County.

Table 4. Federal Species of Concern in Avery County

Scientific Name	Common Name	NC Status	Habitat present
Neotoma magister	Alleghany woodrat	SC	Yes
Thryomanes bewickii altus	Appalachian Bewick's wren	E	No
Sylvilagus obscurus	Appalachian cottontail	-	No
Erimystax insignis	Blotched chub	SR	Yes
Myotis leibii	Eastern small-footed bat	SC	No
Cryptobranchus alleganiensis	Hellbender	SC	Yes
Poecile atricapillus practicus	Southern Appalachian black-capped chickadee	SC	No
Loxia curvirostra	Southern Appalachian red crossbill	SR-PSC	No
Aegolius acadicus	Southern Appalachian saw-whet owl	SC	No
Sphyrapicus varius appalaciencis	Southern Appalachian yellow-bellied sapsucker	SR-PSC	No
Microtus chrotorrhinus carolinensis	Southern rock vole	SC	No
Sorex palustris punctulatus	Southern water shrew	SC	No
Speyeria diana	Diana fritillary butterfly	SR	No
Ascetocythere cosmeta	Grayson crayfish ostracod	SR	Yes

Scientific Name	Common Name	NC Status	Habitat present
Speyeria idalia	Regal fritillary butterfly	SR	No
Geum geniculatum	Bent avens	T	No
Poa paludigena	Bog bluegrass	E	No
Juglans cinerea	Butternut	W5A	No
Saxifraga caroliniana	Carolina saxifrage	SR-T	No
Abies fraseri	Fraser fir	SR-L	No
Lilium grayi	Gray's lily	T-SC	No
Cardamine clematitis	Mountain bittercress	SR-T	No
Delphinium exaltatum	Tall larkspur	E-SC	No
Plagiochila sullivantii var. sullivanti	A liverwort	SR-T	No
Plagiochila virginica var. caroliniana	A liverwort	SR-T	No
Sphenolobopsis pearsonii	A liverwort	PE	No

Notes: Source: Amoroso, ed., 2002 LeGrand and Hall, eds., 2001
E = Endangered, T = Threatened, SC = Special Concern, C = Candidate, W2 = Watch Category 2, W5 = Watch Category 5, SR = Significantly Rare, PE = Proposed Endangered, PSC = Proposed for Special Concern

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architectural Resources

A field survey of the Area of Potential Effects (APE) was conducted on September 21, 1999. A survey was performed by architectural historians and a report was submitted to the State Historic Preservation Office (HPO) on January 3, 2000. None of the properties were considered eligible and in a concurrence memorandum dated March 2, 2000, the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed in or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence memorandum is included in the Appendix.

C. Archaeological Resources

The SHPO, in memorandum dated January 13, 1999 recommended that no archaeological investigation be conducted in connection with this project. A copy of the memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

The project is considered to be a Federal "Categorical Exclusion" because of its limited scope and lack of substantial environmental consequences. The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

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

No adverse effect on public facilities or services is anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area. Impacts to Heaton Christian Church's parking will be minimized to the greatest extent practical.

No adverse impact on families or communities is anticipated. Right-of-way acquisition will be limited. One residence will be acquired as part of the proposed project. No businesses will be relocated. Relocation will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) and the North Carolina Relocation Assistance Act (GS 133-5 through 133-18). The program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do business.

Executive Order 12898, Environmental Justice: This project will not have disproportionately high and adverse human health effects on any minority or low-income populations due to environmental impacts since there will not be any anticipated displacements of residences, places of employment, or changes in access. The proposed project will have the same general horizontal alignment as the existing. In addition, most of the proposed project is anticipated to be constructed within the existing right-of-way. Therefore, no neighborhoods will be split or adversely affected by the proposed project.

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland by all land acquisition and construction projects. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. No prime or important farmlands will be impacted by the proposed project.

This project is an air quality "neutral" project; therefore, it is not required to be included in the regional emissions analysis, and a project level CO analysis is not required. The project is located in Avery County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

Traffic volumes will not increase or decrease because of this project. The project's impact on noise and air quality will not be substantial.

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and for air quality (1990 CAAA and NEPA), and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, NCDWQ, Groundwater Section and the Division of Waste Management revealed neither underground storage tanks, hazardous waste sites, regulated or unregulated landfills, nor dump sites in the project area.

Avery County is a participant in the National Flood Insurance Program (NFIP). Flood Insurance Study maps for Avery County show that Bridge No. 28 is located in a FEMA 100-year floodplain (see **Figure 5**). Replacement of this bridge is not expected to affect the 100-year floodplain. The hydraulic opening of the bridge approximates that of the existing bridge. The grade of the proposed roadway will remain the same as existing in the vicinity of the bridge. The project will not to increase the level or extent of upstream flood hazard.

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

VIII. PUBLIC INVOLVEMENT

A newsletter was circulated in March 2000 to inform area residents of the proposed project and announce a Citizens Informational Workshop. A Local Officials Meeting and a Citizens Informational Workshop were held on April 6, 2000 in the Avery County Administrative Annex Building in Newland. A handout with complete details of the project was given to meeting attendees. On May 16, 2000, a small group meeting was held with the Heaton Christian Church Board and members to address the potential impacts on the church's parking facilities.

At the Local Officials Meeting, the project was discussed with the Avery County Manager. The county manager favored alternatives that moved the roadway farther from the church.

Approximately 17 people attended the Citizens Informational Workshop, with the majority of the attendees from Heaton Christian Church. The attendees' primary concern was the impact of the project on church parking and in lowering the speed limit on SR 1321 (Curtis Creek Road) in the vicinity of the church.

At the meeting with Heaton Christian Church Board, the board members reiterated the concerns expressed at the Citizens Informational Workshop. The members stated that they do not wish to have guardrails placed on either side of the road in the area of the church, as this will limit available church parking.

A second newsletter, circulated in April 2004, informed the local community of the latest alternatives considered (Alternatives 1 through 8), NCDOT's preferred alternative (Alternative 8), and announced a second Citizens Informational Workshop. The Citizens Informational Workshop was held on June 1, 2004, at the firehouse located on Main Street in Elk Park. Approximately 43 citizens attended. NCDOT representatives gave a presentation, answered questions, and responded to comments during the workshop. The majority of the citizens attending the workshop were vocal about their concerns with Alternative 8 being the preferred alternative. Among their concerns were the safety of the project's intersection with NC 194, effects from Elk River flooding, and effects of bridge grade during icy conditions. NCDOT received a substantial amount of written correspondence following the second Citizens Informational Workshop. Most of this correspondence opposed crossing the Elk River.

IX. AREAS OF CONTROVERSY

The members of Heaton Christian Church are concerned with pedestrian safety for movements between their buildings and parking lot on the other side of SR 1321. The local residents not associated with Heaton Christian Church are concerned about Elk River flooding potential, NC 194 intersection safety, safety during icy conditions, and right-of-way and relocation impacts.

Alternative 4 addresses the community (local residents and Heaton Christian Church) concerns. This alternative:

- Includes a commitment to consider pedestrian safety components (e.g., cross walks and signing) in the project that enhance safety for pedestrian movements between the Heaton Christian Church buildings and its parking lot on the other side of SR 1321.

- Minimizes permanent right-of-way impacts by replacing Bridge No. 28 with a new bridge on the existing roadway alignment and limit all temporary and permanent construction to one side. Guardrail use will be limited to minimize impacts to Heaton Christian Church parking.

- Limits relocation impacts to one structure, which is currently unoccupied and is listed for sale by a real estate brokerage firm.

- Addresses the community's concern with highway safety (icy conditions and NC 194 intersection) and Elk River flooding with Alternatives 7 and 8. The grade does not increase and the sight distance does not decrease with Alternative 4.

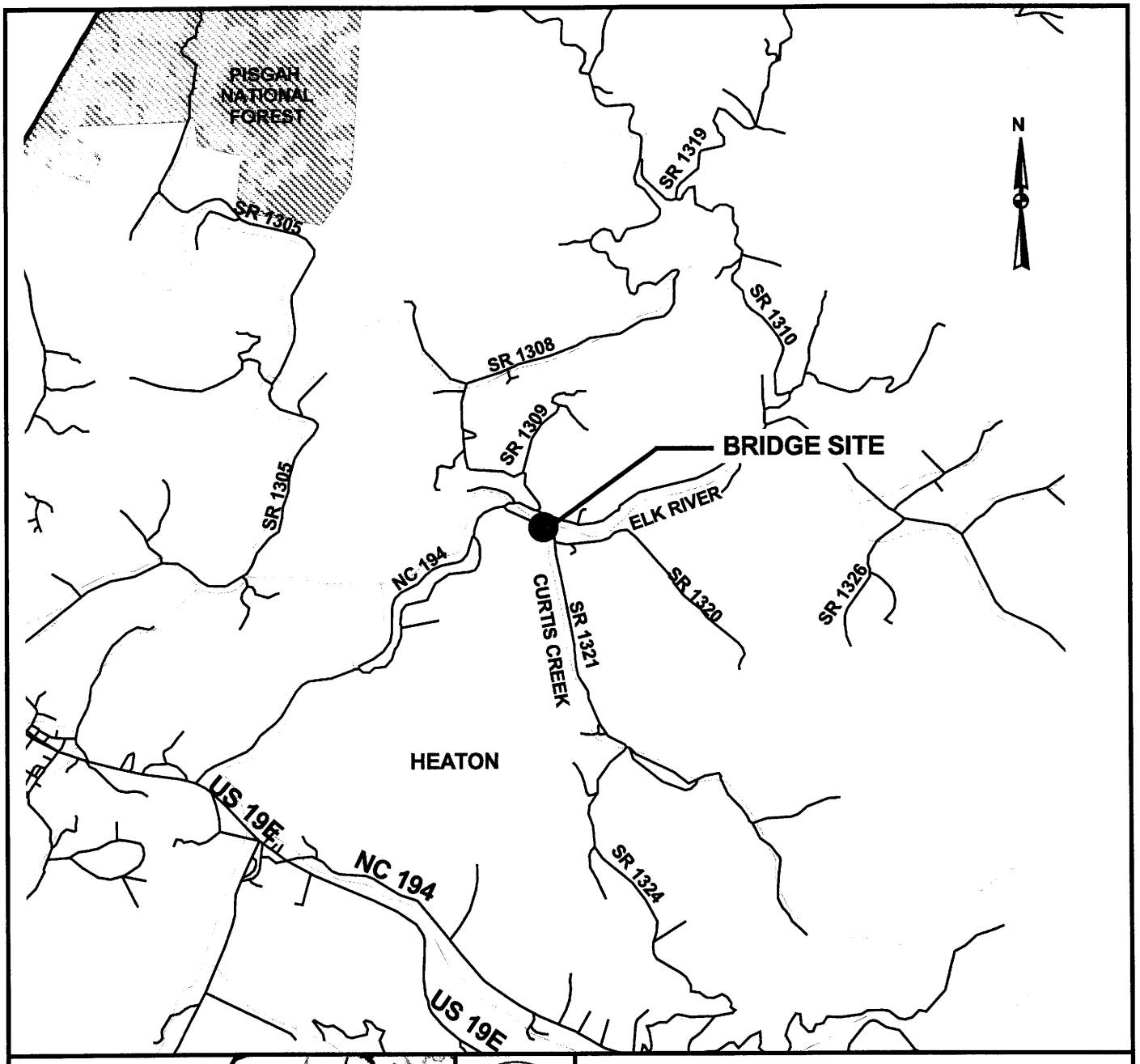
X. AGENCY COMMENTS

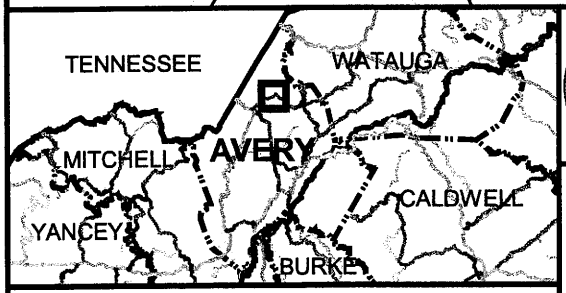
North Carolina Wildlife Resources Commission, September 15, 1999, and February 6, 2003.

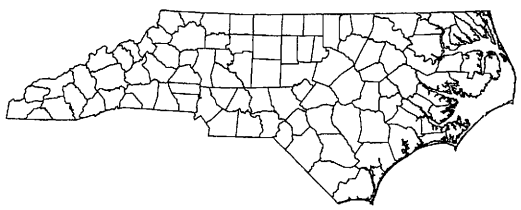
Comment. They prefer the replacement of the existing structure at the same location. Curtis Creek is not Designated Public Mountain Trout Waters, however, the stream supports a good wild trout population. They recommend replacing the bridge with another spanning structure. They recommend that in-stream work and land disturbance within a 25-foot buffer be prohibited during the brown and brook trout spawning season of October 15 through April 15.

Response. The existing bridge will be replaced with a spanning structure in the same location. All in-stream work and land disturbance within a 25-foot buffer will be conducted between April 16 and October 14 to avoid impacts to trout reproduction.

FIGURES





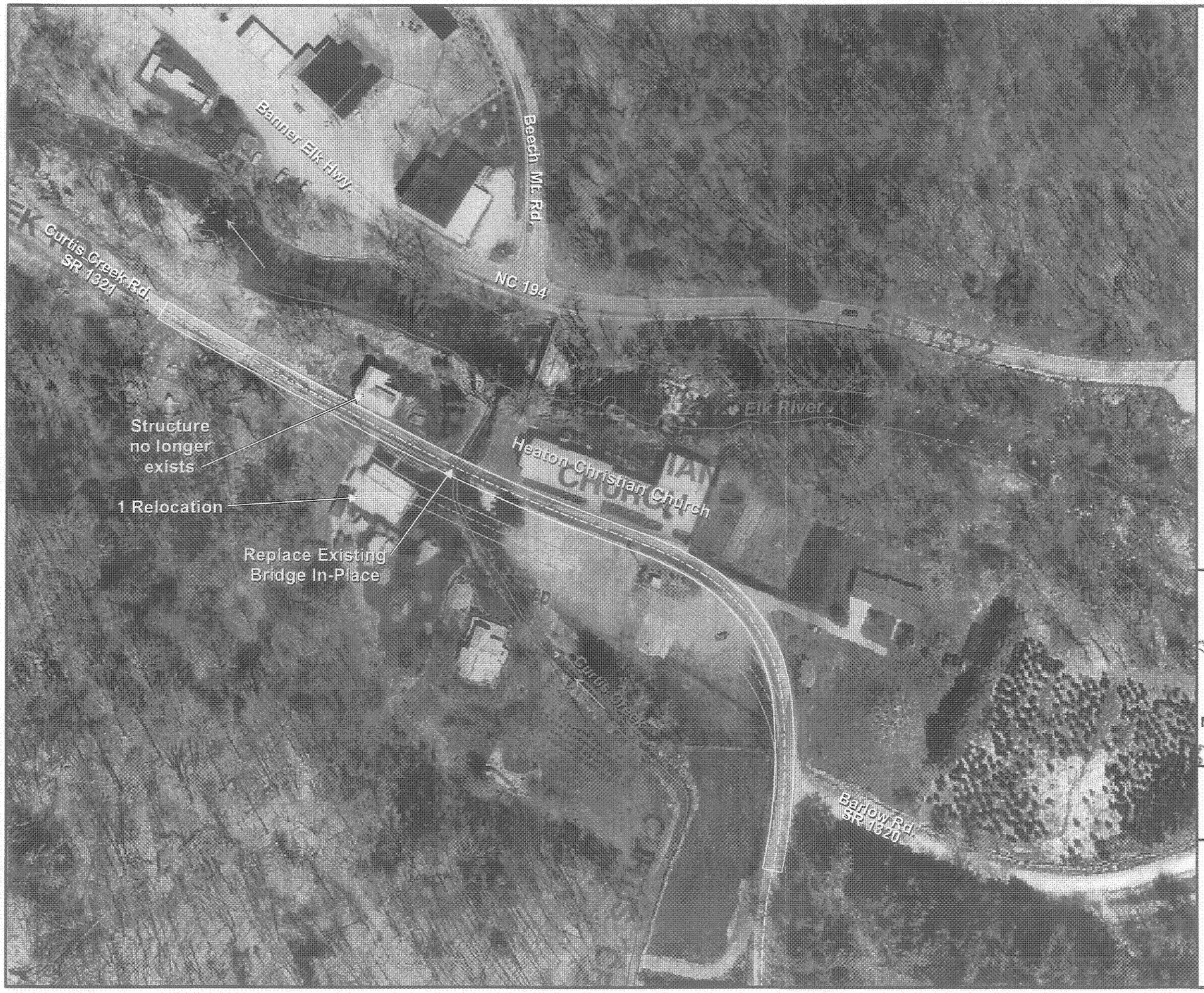


North Carolina - Department of Transportation
Division of Highways
Project Development and Environmental Analysis Branch

FIGURE 1
VICINITY MAP

REPLACEMENT OF BRIDGE NUMBER 28
ON SR 1321 OVER CURTIS CREEK
AVERY COUNTY
TIP NO. B-3406

0.5 0 0.5 1 Miles



N

Legend

Final Alignment

Centerline

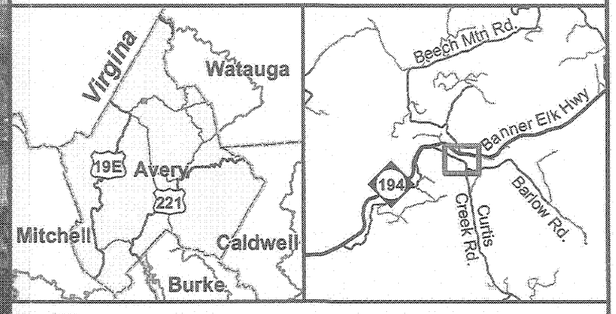
Edge of Pavement

Temporary Detour

Centerline

Edge of Pavement

0 50 100 200 300 Feet



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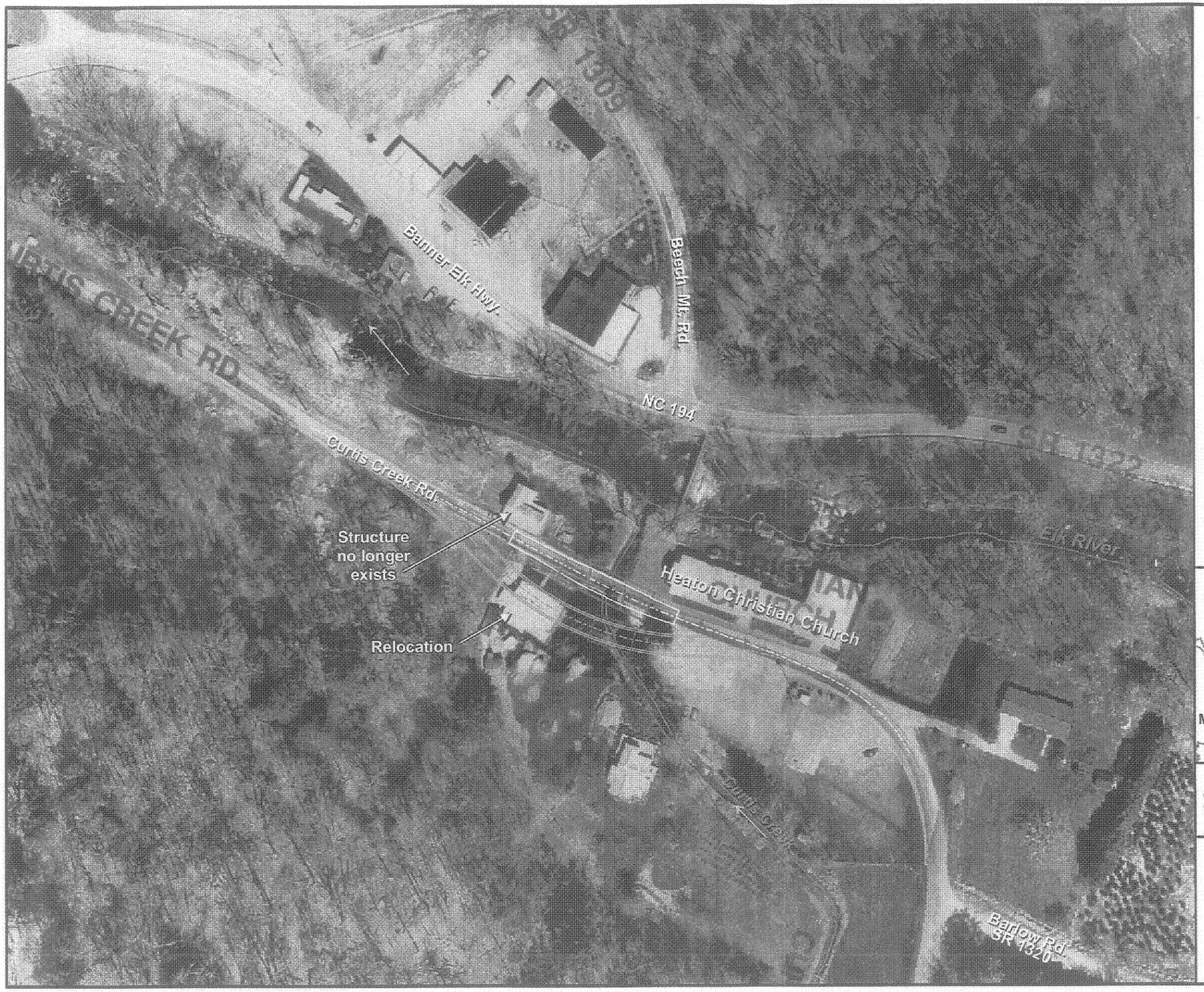
Project Development and Environmental Analysis Branch

FIGURE 2a
ALTERNATIVE 1
Replacement of Bridge No. 28
On SR 1321 Over Curtis Creek

AVERY COUNTY
TIP NO. B-3406



Legend

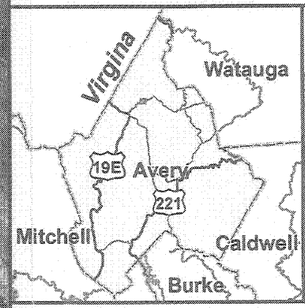
Final Alignment

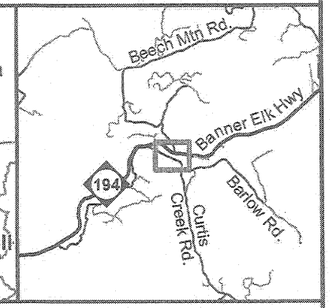
Centerline
Edge of Pavement
Structure

Temporary Detour

Centerline
Edge of Pavement
Structure

0 50 100 200 300 Feet





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Division of Highways
Project Development and Environmental Analysis Branch

FIGURE 2b
ALTERNATIVE 4 (PREFERRED)
Replacement of Bridge No. 28
On SR 1321 Over Curtis Creek

AVERY COUNTY
TIP NO. B-3406

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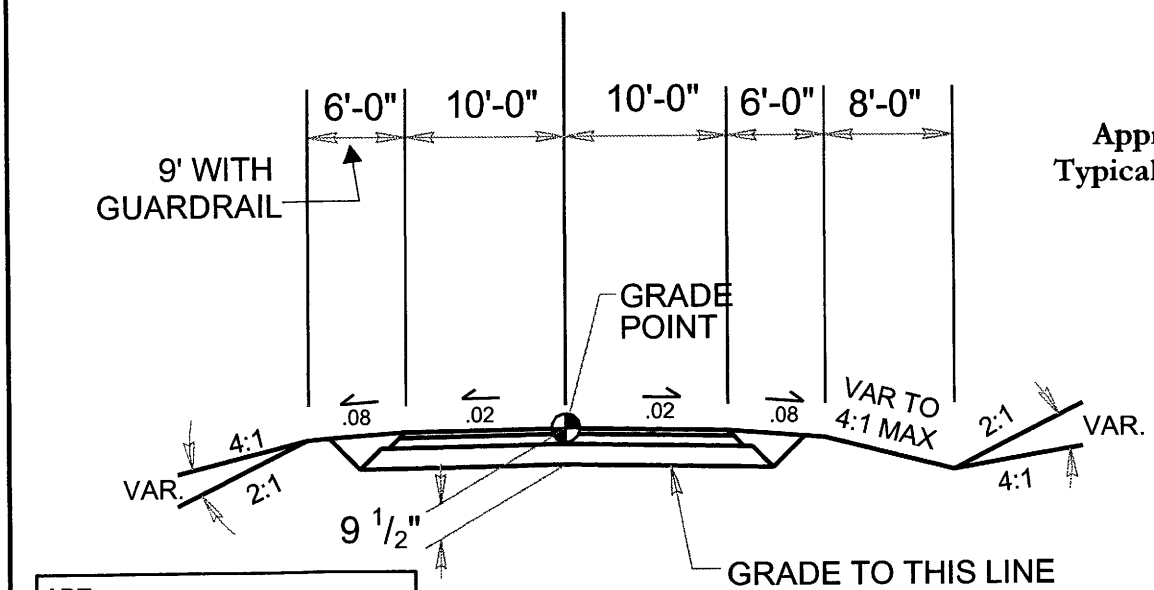
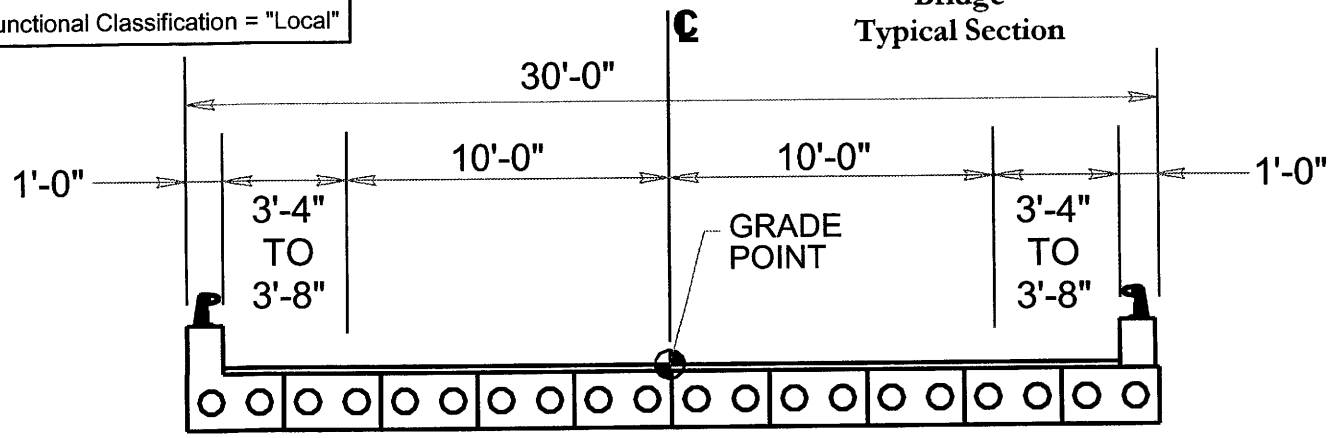


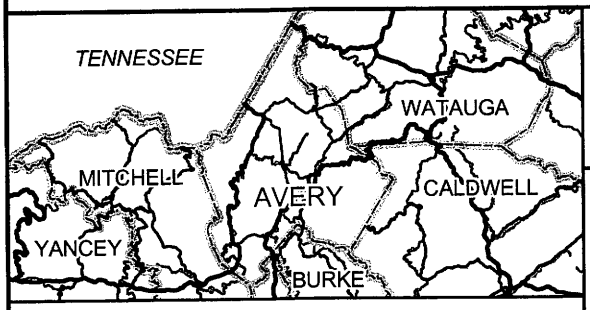
Approach Typical Section

ADT	
2003 (Existing)	900
2006 (Construction)	1000
2030 (Design)	1500
Duals	2 %
TT-STs	1 %

Functional Classification = "Local"



Bridge Typical Section



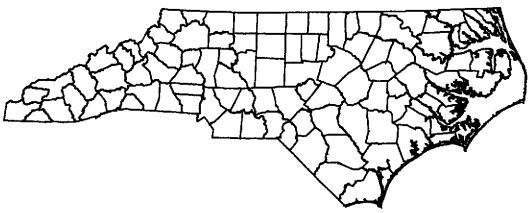


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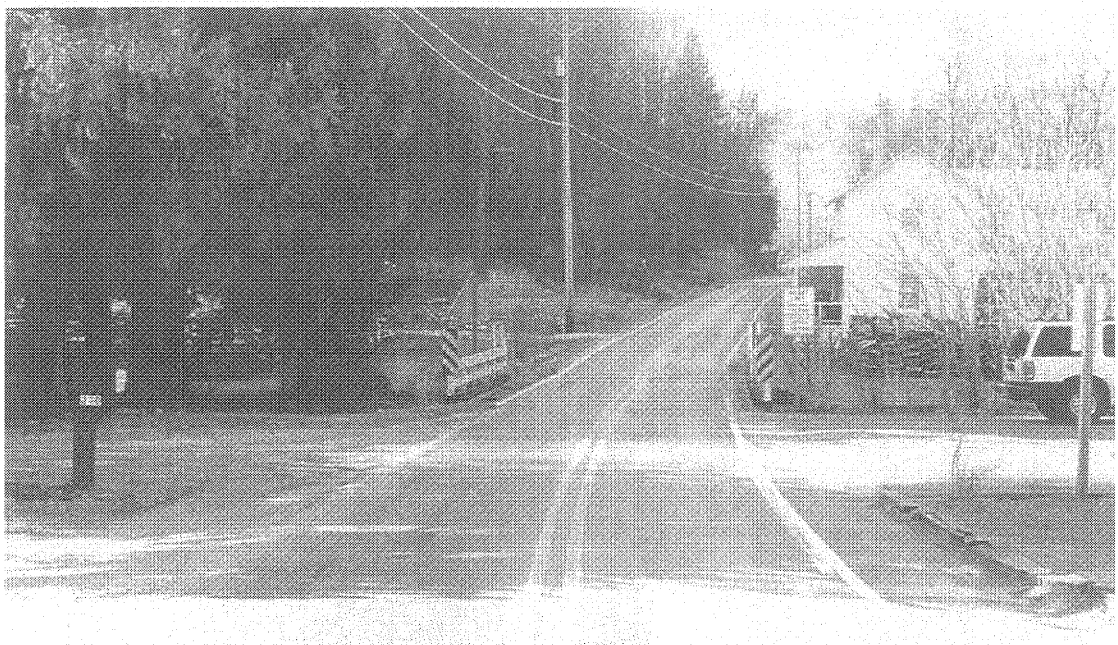
FIGURE 3
TYPICAL SECTION
Replacement of Bridge Number 28
on SR 1321 over Curtis Creek

AVERY COUNTY
TIP NO. B-3406

NOT TO SCALE



Looking West at the Bridge from SR 1321

Looking East at the Bridge from SR 1321

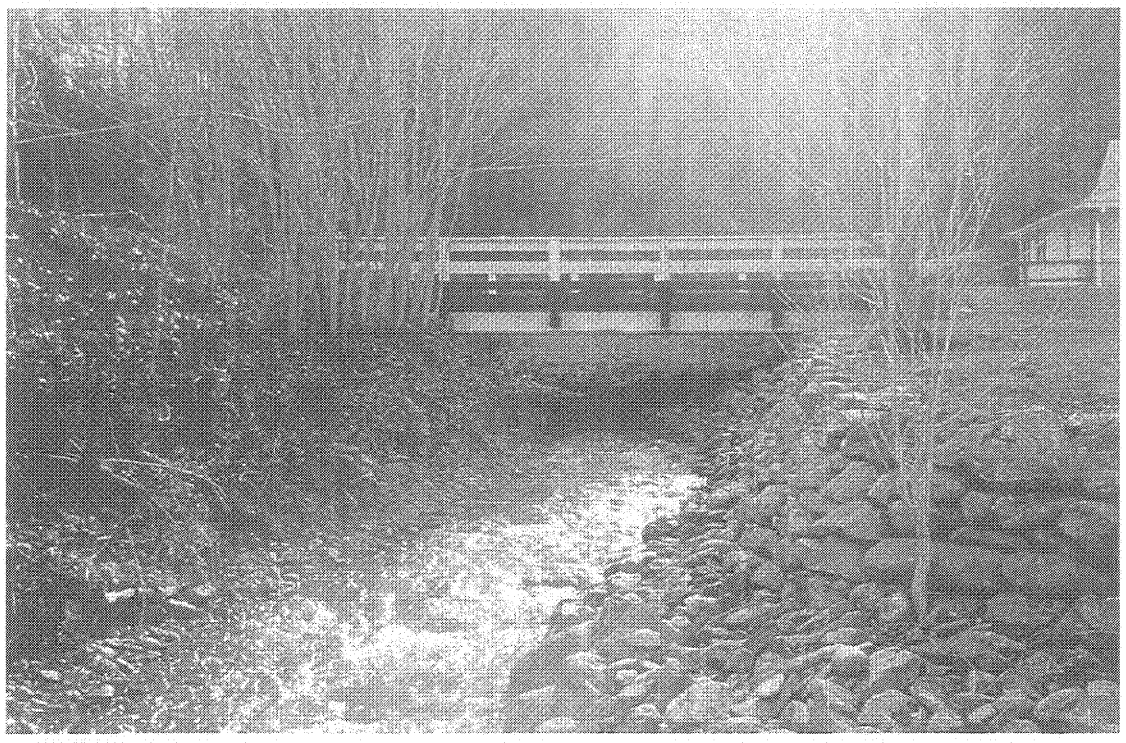
North Carolina – Department of Transportation

Division of Highways

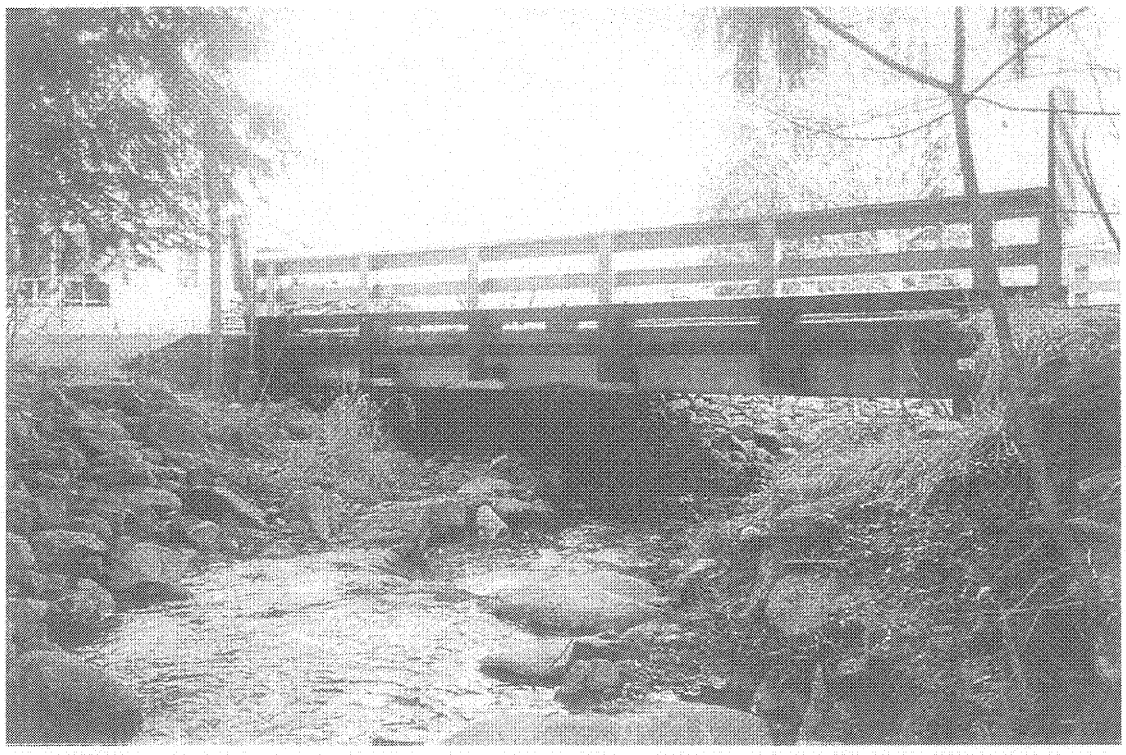
Project Development and
Environmental Analysis Branch

Figure 4a
East and West Views of Bridge

Replacement of Bridge Number 28
On SR 1321 over Curtis Creek
Avery County
TIP No. B-3406



Looking Upstream at the Bridge



Looking Downstream at the Bridge

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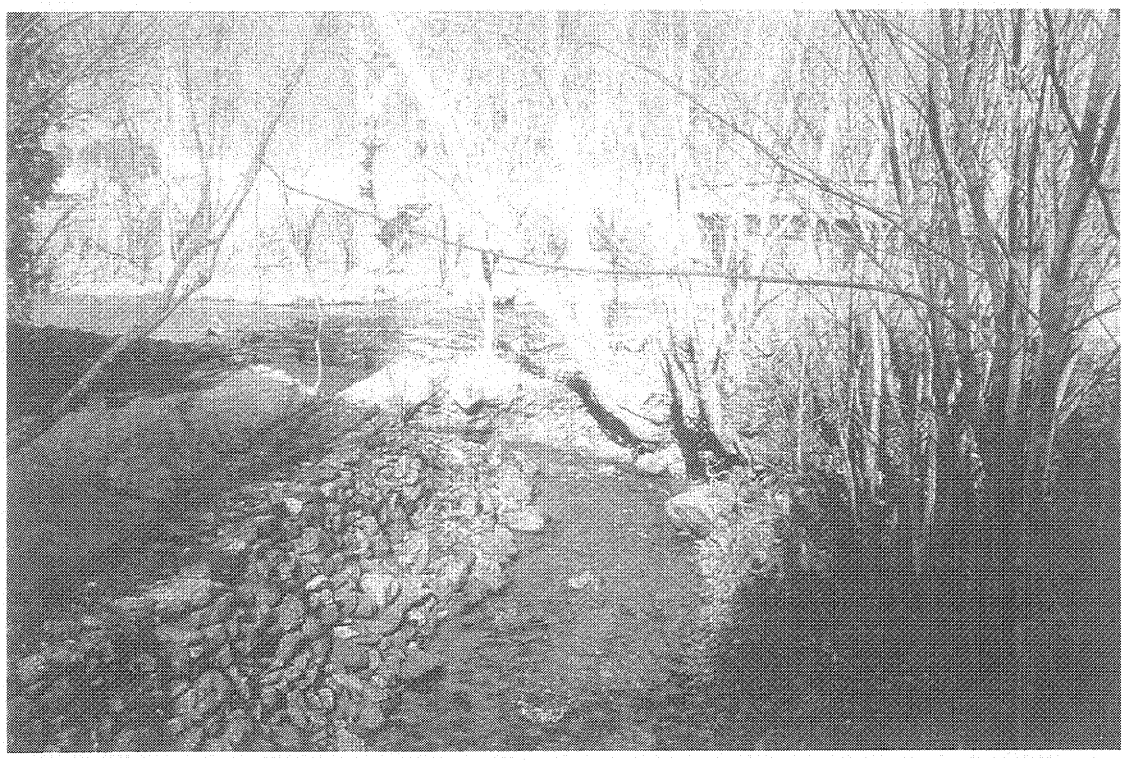
Division of Highways

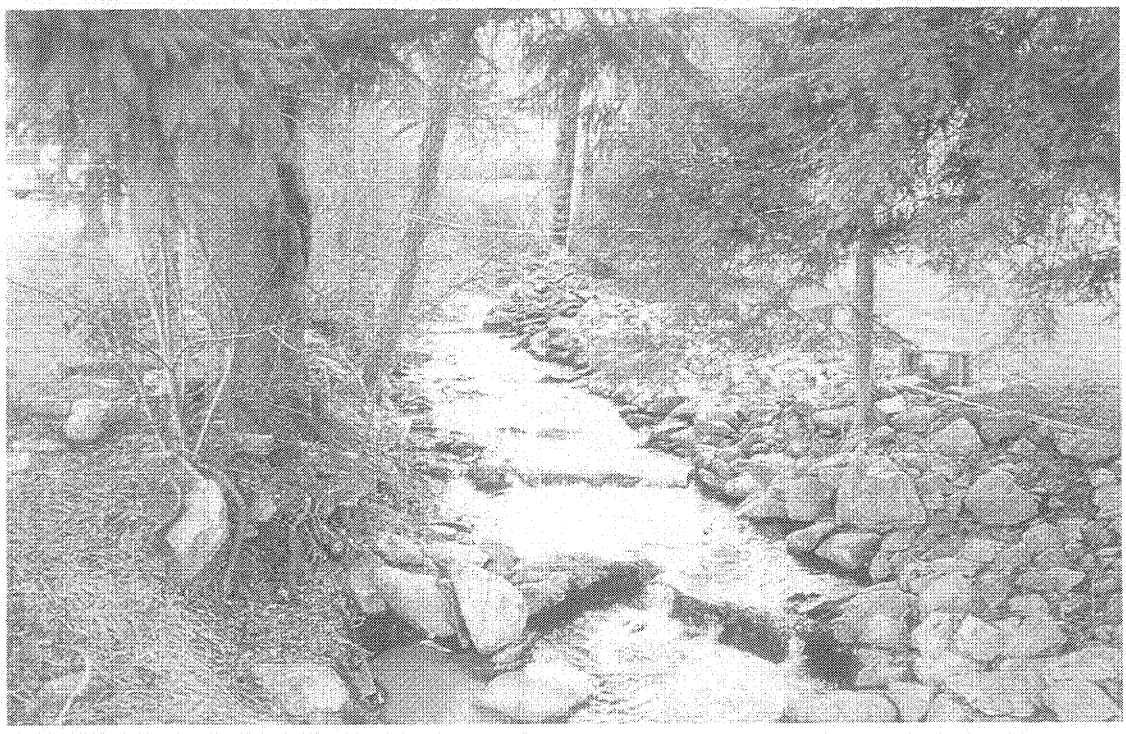
Project Development and
Environmental Analysis Branch

Figure 4b
Views of Bridge from Creek

Replacement of Bridge Number 28
On SR 1321 over Curtis Creek
Avery County
TIP No. B-3406



View of Curtis Creek Downstream of the Bridge



View of Curtis Creek Upstream from the Bridge

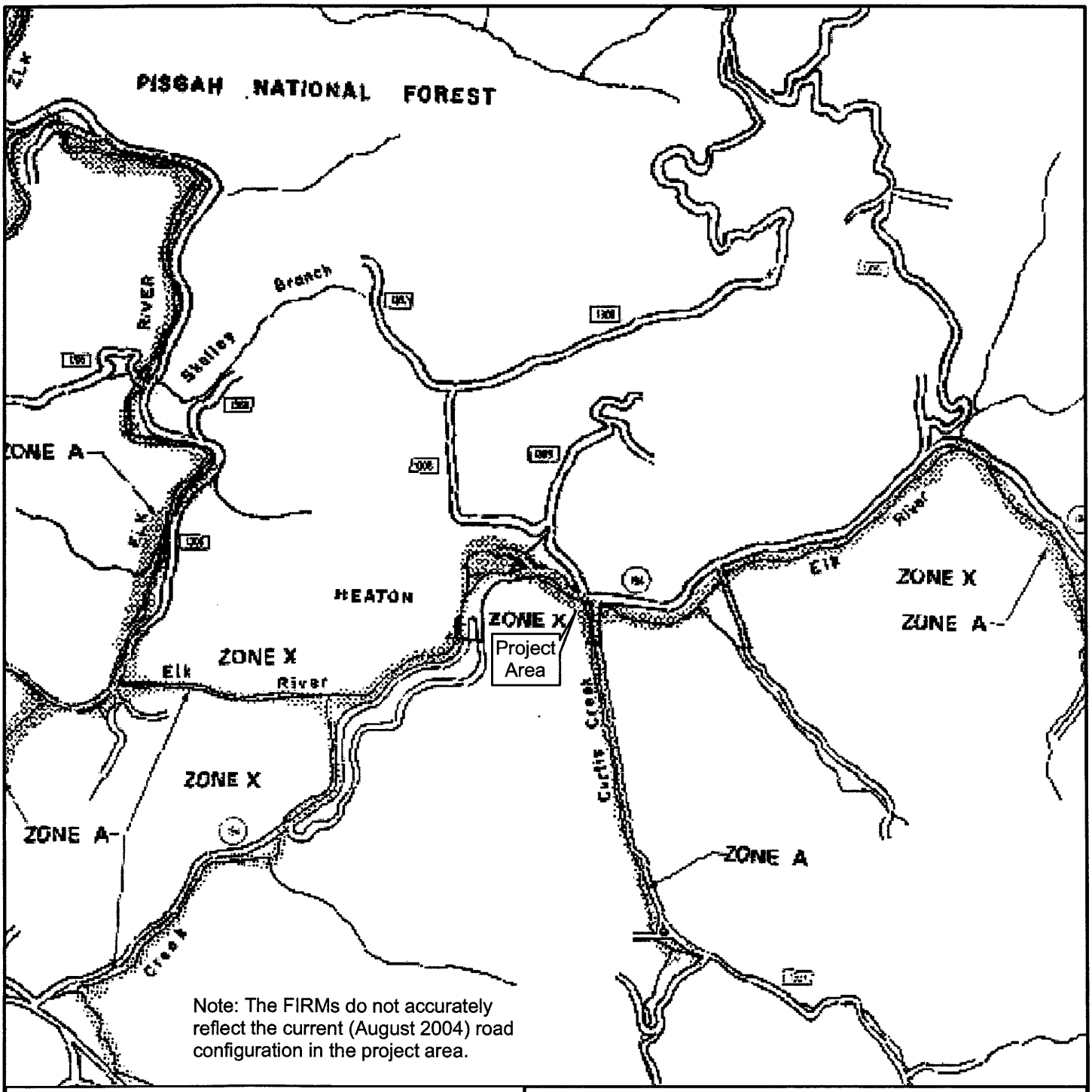
North Carolina – Department of Transportation

Division of Highways

Project Development and
Environmental Analysis Branch

Figure 4c
Views of Creek and Bank from Bridge

Replacement of Bridge Number 28
On SR 1321 over Curtis Creek
Avery County
TIP No. B-3406



Source: FIRM, Avery County, North Carolina (Unincorporated Areas), Community-Panel Numbers: 370010 0025 B & 370010 0050 B

Legend

Zone A Special flood hazard areas inundated by 100-year flood: No base flood elevations determined.

Zone X Other areas: Areas determined to be outside 500-year flood plain.

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

FIGURE 5
FLOOD INSURANCE RATE MAP
Replacement of Bridge No. 28
On SR 1321 Over Curtis Creek

AVERY COUNTY
TIP NO. B-3406

APPENDIX

APPALACHIAN REGIONAL COMMISSION
A Proud Past. A New Vision

January 7, 2003

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

Wadsworth
B-3406

Dear Mr. Thorpe:

Thank you for your December 16, 2002 letter offering the Appalachian Regional Commission (ARC) an opportunity to comment on the environmental document for the replacement of bridge No. 28 on SR 1321 over Curtis Creek west of Banner Elk in Avery County.

The proposed project will not have any adverse effect on the Appalachian Development Highway System.

Should you have any questions please do not hesitate to contact me at (202) 884 7706.

Sincerely:

Edward A. Terry, Jr., P.E.
Senior Transportation Advisor

Cc: Mr. Nicholas L. Graff – FHWA Division Administrator

1666 CONNECTICUT AVENUE, NW, SUITE 700 WASHINGTON, DC 20009-1068 (202) 884-7799 FAX (202) 884-7691

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

February 3, 1999

Mr. William D. Gilmore, P.E., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Gilmore:

Subject: Proposed bridge replacements, Bridge Group XX, North Carolina

In your letter of December 14, 1998, you requested our comments and concurrence on the subject project with regard to potential impacts to federally listed species. The following comments are provided in accordance with the provisions of Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

The proposed projects will involve the replacement of seven bridges in the western part of North Carolina, as follows:

1. B-3335, Bridge Number 70 on SR 1134 over the Cheoah River, Graham County.
2. B-3340, Bridge Number 94 on US 19 over Richland Creek, Haywood County.
3. B-3406, Bridge Number 28 on SR 1321 over Curtis Creek, Avery County.
4. B-3471, Bridge Number 180 on SR 1123 over the West Fork Pigeon River, Haywood County.
5. B-3473, Bridge Number 364 on SR 1889 over Pisgah Creek, Haywood County.
6. B-3490, Bridge Number 259 on SR 1345 over Big Laurel Creek, Madison County.
7. B-3491, Bridge Number 56 on SR 1369 over East Fork Bull Creek, Madison County.

Enclosed is a list of the federally endangered and threatened species known from Avery, Graham, Haywood, and Madison Counties. This list also includes species of Federal concern that are currently under status review by the U.S. Fish and Wildlife Service which may occur in the project impact area. Species of Federal concern are not legally protected under the Act and are not subject to any of its provisions, including Section 7, unless they are formally proposed or listed as endangered or threatened. We are including these species in our response to give you advance notification.

The project areas have not been surveyed for listed aquatic species; therefore, we recommend aquatic surveys relative to the area of impact of this project. We have records of the Junaluska salamander (*Eurycea junaluska*) in the Cheoah River at the B-3335 site in Graham County. We are concerned about the potential effects that could occur to the Junaluska salamander as a result of the proposed construction and related activities at the B-3335 site. We have records of the hellbender (*Cryptobranchus alleganiensis*), a species of Federal concern, from near the B-3490 project site in Madison County. Big Laurel Creek should be surveyed; it has habitat that is apparently suitable for a number of rare mussel species.

We recommend that each bridge design include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the affected stream. We prefer a bridge design that does not alter the natural stream morphology or impede fish passage. Any new piers or bents should be placed outside of the bankfull width of the river. We recommend that erosion and sedimentation measures be in place prior to any ground-disturbing activities. Wet concrete should never be allowed to come into contact with the stream. If any in-stream work is planned, it should be scheduled during periods of low flow. Please address the demolition plans for the existing bridges in any environmental document prepared for this project, as well as any temporary access roads or coffer dams. What bridge design is planned for each replacement site?

If you have any questions or concerns, please contact Mr. Mark Cantrell of our staff at 828/258-3939, Ext. 227. In any future correspondence concerning this project, please reference our Log Number 4-2-99-065.

Sincerely,

Brian P. Cole

Brian P. Cole
State Supervisor

Enclosure

cc:
Mr. Mark Davis, Mountain Region Coordinator, North Carolina Wildlife Resources Commission, 20830 Great Smoky Mtn. Expressway, Waynesville, NC 28786
Mr. Bob Johnson, U.S. Army Corps of Engineers, Asheville Regulatory Field Office, 151 Patton Avenue, Room 143, Asheville, NC 28801-5006

ENDANGERED, THREATENED, AND CANDIDATE SPECIES AND FEDERAL SPECIES OF CONCERN, BY COUNTY, IN NORTH CAROLINA

This list was adapted from the North Carolina Natural Heritage Program's County Species List. It is a listing of North Carolina's federally listed and proposed endangered, threatened, and candidate species and Federal species of concern (for a complete list of rare species in the state, please contact the North Carolina Natural Heritage Program). The information in this list is compiled from a variety of sources, including field surveys, museums and herbariums, literature, and personal communications. The North Carolina Natural Heritage Program's database is dynamic, with new records being added and old records being revised as new information is received. Please note that this list cannot be considered a definitive record of listed species and Federal species of concern, and it should not be considered a substitute for field surveys.

Critical habitat: Critical habitat is noted, with a description, for the counties where it is designated.

Aquatic species: Fishes and aquatic invertebrates are noted for counties where they are known to occur. However, projects may have effects on downstream aquatic systems in adjacent counties.

Sea turtles: Sea turtles occur in coastal waters and nest along beaches. This list includes sea turtles in the counties where they are known to nest. The U.S. Fish and Wildlife Service has jurisdiction over sea turtle issues on terrestrial systems; the National Marine Fisheries Service has authority over sea turtles in coastal waters.

Manatees: Manatees occur throughout North Carolina's coastal waters; this list includes manatees in counties where there are known concentrations. The U.S. Fish and Wildlife Service has consultation and recovery responsibility for manatees.

COMMON NAME	SCIENTIFIC NAME	STATUS
AVERY COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Virginia big-eared bat	*Corynorhinus (=Plecotus) townsendii virginianus*	Endangered
Hellbender	*Cryptobranchus alleganiensis*	FSC
Peregrine falcon	*Falco peregrinus anatum*	Endangered
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	Endangered
Southern rock vole	*Microtus chrotorrhinus carolinensis*	FSC
Eastern small-footed bat	*Myotis leibii*	FSC
Alleghany woodrat	*Neotoma magister*	FSC
Southern water shrew	*Sorex palustris punctulatus*	FSC
Appalachian cottontail	*Sylvilagus obscurus*	FSC
Appalachian Bewick's wren	*Thryomanes bewickii altus*	FSC
Invertebrates		
Grayson crayfish ostracod	*Asceiocythere cosmeta*	FSC
Spruce-fir moss spider	*Microhexura montivaga*	Endangered
Diana fritillary butterfly	*Speyeria diana*	FSC
Regal fritillary butterfly	*Speyeria idalia*	FSC

Vascular Plants		
Fraser fir	*Abies fraseri*	FSC
Roan false goat's beard	*Astilbe crenatiloba*	FSC*
Mountain bittercress	*Cardamine clematitis*	FSC
Manhart's sedge	*Carex manhartii*	FSC
Bent avens	*Geum geniculatum*	FSC
Spreading avens	*Geum radiatum*	Endangered
Roan Mountain bluet	*Houstonia montana* (=*Hedyotis purpurea* var. *montana*)	Endangered
Buttemut	*Juglans cinerea*	FSC
Heller's blazing star	*Liatris helleri*	Threatened
Gray's lily	*Lilium grayi*	FSC
Bog bluegrass	*Poa paludigena*	FSC
Carolina saxifrage	*Saxifraga caroliniana*	FSC
Blue Ridge goldenrod	*Solidago spithamaea*	Threatened
Nonvascular Plants		
Rock gnome lichen	*Gymnoderma lineare*	Endangered
A liverwort	*Plagiochila sullivantii* var. *sullivantii*	FSC
A liverwort	*Plagiochila virginica* var. *caroliniana*	FSC
A liverwort	*Sphenolobopsis pearsonii*	FSC

GRAHAM COUNTY

Vertebrates		
Hellbender	*Cryptobranchus alleganiensis*	FSC
Cerulean warbler	*Dendroica cerulea*	FSC
Junaluska salamander	*Eurycea junaluska*	FSC
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	Endangered
Northern pine snake	*Pituophis melanoleucus melanoleucus*	FSC*
Appalachian cottontail	*Sylvilagus obscurus*	FSC**
Invertebrates		
Appalachian elktoe	*Alasmidonta raveneliana*	Endangered
Diana fritillary butterfly	*Speyeria diana*	FSC
Vascular Plants		
Mountain bittercress	*Cardamine clematitis*	FSC
Glade spurge	*Euphorbia purpurea*	FSC
Smoky Mountain manna grass	*Glyceria nubigena*	FSC
Buttemut	*Juglans cinerea*	FSC
Carolina saxifrage	*Saxifraga caroliniana*	FSC
Virginia spiraea	*Spiraea virginiana*	Threatened
Hairy blueberry	*Vaccinium hirsutum*	FSC
Nonvascular Plants		
Rock gnome lichen	*Gymnoderma lineare*	Endangered

COMMON NAME	SCIENTIFIC NAME	STATUS
HAYWOOD COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Olive-sided flycatcher	*Contopus borealis*	FSC
Hellbender	*Cryptobranchus alleganiensis*	FSC
Cerulean warbler	*Dendroica cerulea*	FSC
Eastern cougar	*Felis concolor couguar*	Endangered
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	Endangered
Bald eagle	*Haliaeetus leucocephalus*	Threatened
Southern rock vole	*Microtus chrotorrhinus carolinensis*	FSC
Southern Appalachian woodrat	*Neotoma floridana haematoreia*	FSC
Alleghany woodrat	*Neotoma magister*	FSC
Southern water shrew	*Sorex palustris punctulatus*	FSC
Appalachian cottontail	*Sylvilagus obscurus*	FSC
Appalachian Bewick's wren	*Thryomanes bewickii altus*	FSC
Invertebrates		
Appalachian elktoe	*Alasmidonta raveneliana*	Endangered
Tawny crescent butterfly	*Phyciodes batesii maconensis*	FSC*
Diana fritillary butterfly	*Speyeria diana*	FSC
Vascular Plants		
Fraser fir	*Abies fraseri*	FSC
Piratebush	*Buckleya disticophylla*	FSC
Mountain bittercress	*Cardamine clematitis*	FSC
Manhart's sedge	*Carex manhartii*	FSC
Tall larkspur	*Delphinium exaltatum*	FSC*
Glade spurge	*Euphorbia purpurea*	FSC
Smoky Mountain manna grass	*Glyceria nubigena*	FSC
Small-whorled pogonia	*Isotria medeoloides*	Threatened
Butternut	*Juglans cinerea*	FSC
Fraser's loosestrife	*Lysimachia fraseri*	FSC
Rugel's ragwort	*Rugelia nudicaulis*	FSC
Carolina saxifrage	*Saxifraga caroliniana*	FSC
Mountain catchfly	*Silene ovata*	FSC
Alabama least trillium	*Trillium pusillum* var. *1*	FSC
Nonvascular Plants		
Rock gnome lichen	*Gymnoderma lineare*	Endangered
A liverwort	*Plagiochila sharpii*	FSC
A liverwort	*Plagiochila sullivantii* var. *sullivantii*	FSC
A liverwort	*Sphenolobopsis pearsonii*	FSC
MADISON COUNTY		
Vertebrates		
Lake sturgeon	*Acipenser fulvescens*	FSC*
Rafinesque's big-eared bat	*Corynorhinus (=Plecotus) rafinesquii*	FSC*

COMMON NAME	SCIENTIFIC NAME	STATUS
Hellbender	*Cryptobranchus alleganiensis*	FSC
Spotfin chub	*Hybopsis monacha*	Threatened*
Peregrine falcon	*Falco peregrinus anatum*	Endangered
Olive darter	*Percina squamata*	FSC
Paddlefish	*Polyodon spathula*	FSC*
Invertebrates		
Sculpted supercoil	*Paravitrea ternaria*	FSC
Vascular Plants		
Piratebush	*Buckleya distichophylla*	FSC
Glade spurge	*Euphorbia purpurea*	FSC
Butternut	*Juglans cinerea*	FSC
Carolina saxifrage	*Saxifraga caroliniana*	FSC
Mountain catchfly	*Silene ovata*	FSC

KEY:

Status	Definition
Endangered	A taxon "in danger of extinction throughout all or a significant portion of its range."
Threatened	A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."
FSC	A Federal species of concern--a species that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing).
T(S/A)	Threatened due to similarity of appearance (e.g., American alligator)--a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section 7 consultation.

Species with 1, 2, 3, or 4 asterisks behind them indicate historic, obscure, or incidental records.

*Historic record - the species was last observed in the county more than 50 years ago.
**Obscure record - the date and/or location of observation is uncertain.
***Incidental/migrant record - the species was observed outside of its normal range or habitat.
****Historic record - obscure and incidental record.

[1]In the November 4, 1997, *Federal Register* (55822-55825), the northern population of the bog turtle (from New York south to Maryland) was listed as T (threatened), and the southern population (from Virginia south to Georgia) was listed as T(S/A) (threatened due to similarity of appearance). The T(S/A) designation bans the collection and interstate and international commercial trade of bog turtles from the southern population. The T(S/A) designation has no effect on land-management activities by private landowners in North Carolina, part of the southern population of the species. In addition to its official status as T(S/A), the U.S. Fish and Wildlife Service considers the southern population of the bog turtle as a Federal species of concern due to habitat loss.

United States Department of Agriculture

NRCS
Natural Resources Conservation Service
4405 Bland Road, Suite 205
Raleigh, NC 27609

Telephone No.: (919) 873-2134
Fax No.: (919) 873-2154

January 8, 2003

Mr. John Wadsworth, P. E.
Project Development & Environmental Analysis Branch
NCDOT
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Wadsworth:

Thank you for the opportunity to provide comments on scoping comments on Replacement of Bridge No. 28 on SR 1321 over Curtis Creek, Avery County, North Carolina, TIP No. B-3406.

The Natural Resources Conservation Service does not have any comments at this time.

Sincerely,

Mary K Combs

Mary K. Combs
State Conservationist

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

s B. Hunt Jr., Governor
r Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

arch 2, 2000

EMORANDUM

O: William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

ROM: David Brook
Deputy State Historic Preservation Officer

UBJECT: Replace Bridge No. 28 on SR 1321 over Curtis Creek, TIP No. B-3406, Avery County, ER 99-7910

Thank you for your recent letter transmitting the survey report by Mattson, Alexander & Associates, Inc. concerning the above project.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following properties are not eligible for listing in the National Register of Historic Places:

House No. 1
Spring House No. 2
House No. 3
House No. 4

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

cc: B. Church

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-2671
	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801

North Carolina Department of Cultural Resources

es B. Hunt Jr., Governor
y Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

January 13, 1999

MEMORANDUM

TO: William D. Gilmore, P.E., Manager
Planning and Environmental Branch
Division of Highways
Department of Transportation

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: Bridge Group XX, Bridge 28 on SR 1321 over Curtis Creek, Avery County, B-3406, ER 99-7910

Thank you for your memorandum of December 14, 1998, concerning the above project.

We have conducted a search of our maps and files and have located the following structures of historical or architectural importance within the general area of the project:

Old Heaton School, south side of SR 1321, 0.1 mile from junction with NC 194.

J. M. Heaton Store, north side of NC 194 at SR 1308.

We look forward to meeting with an architectural historian from the North Carolina Department of Transportation to review the aerial and photographs of the project area so we can make our survey recommendation.

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.

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

cc: N. Graf
B. Church
L. Novick

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources
Alan W. Klimek, P.E. Director
Division of Water Quality

January 2, 2003

MEMORANDUM

TO: Gregory J. Thorpe, Ph.D., Environmental Management Director
NCDOT, Project Development & Environmental Analysis

FROM: Cynthia F. Van Der Wiele, NCDOT Coordinator cvdw

SUBJECT: Scoping Comments for Avery County, Replacement of Bridge No. 28 on SR 1321 over Curtis Creek, TIP Project B-3406.

This letter is in response to your request for comments on the above-referenced project. Curtis Creek (stream index 8-22-15; HU 040201) is classified as C trout. Elk River (stream index 8-22; HU 040201) is classified as B trout).

According to the *Watauga River Basinwide Water Quality Plan* (February 2002), the primary water quality problem is storm water runoff with substantial amounts of sediment. Substantial amounts of erosion can be prevented by planning to minimize the amount and time the land is exposed. Care should be taken to prevent loss of material into Elk River or Curtis Creek during construction.

The NC Division of Water Quality staff has the following comments:

- NCDOT proposes to replace the existing bridge over Curtis Creek just upstream of the current location or to eliminate the Curtis Creek crossing and connect SR 1321 directly by crossing the Elk River. However, without more specific information as to the design, the temporary and permanent construction impacts, as well as more details about each resource, DWQ cannot select a preferred alternative.
- Regardless of which alternative is selected, the bridge should be designed to span the entire stream and its floodplain with *no piers* in the stream.
- NCDOT should use *Best Management Practices for the Protection of Surface Waters* (March 1997). BMPs should be carefully installed and maintained during construction due to the steep slopes and high erosion potential of soils in this area.
- Temporary or permanent herbaceous vegetation shall be planted on all bare soil *within 15 days* of ground-disturbing activities to provide long term erosion control.
- Use a turbidity curtain or other methods (BMPs) proven to prevent violation of the turbidity standard for trout waters is also recommended.
- Use BMPs for bridge demolition and removal, Case 1 (9-20-99 NCDOT policy).

Thank you for requesting our input at this time. The DOT is reminded that issuance of a §401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact Cynthia Van Der Wiele at (919) 733.5715.

pc: John Thomas, USACE Raleigh Field Office
Chris Militscher, USEPA
Marella Buncick, USFWS
Marla Chambers, NCWRC
File Copy

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

James B. Hunt, Jr., Governor
Bill Holman, Secretary
Kerr T. Stevens, Director

NCDENR

October 18, 1999

MEMORANDUM

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

From: John E. Hennessy, NC Division of Water Quality

Subject: Scoping comments on the proposed replacement of Bridge No. 28 (05028) over Curtis Creek in Avery County, TIP B-3406.

Reference your correspondence dated August 10, 1999, in which you requested scoping comments for the referenced project. Preliminary analysis of the project reveals that the proposed bridge will span Curtis Creek in the Watagua River Basin. The stream is classified as Class C Trout waters. The Division of Water Quality requests that NCDOT consider the following environmental issues for the proposed project:

A. Review of the proposed project reveals the potential for impacts to a class C Trout Waters. Prior to selecting a preferred alternative, the DOT needs to assess and document all other reasonable and feasible alternatives. The NCDWQ cannot permit impacts to valuable water supplies that are otherwise avoidable. Prior to issuance of the 401 Water Quality Certification, the NCDOT will need to demonstrate the rationale for the selected alternative and all efforts undertaken to ameliorate impacts.

B. We would like to see a discussion in the document that presents a clear purpose and need to justify the project's existence. Based on the information presented in your report, we assume that the Level-of- Service (LOS) is one of the primary reasons for the project. Therefore, the document should delineate a detailed discussion on the existing Level-of-Service as well as the proposed future Level-of-Service. The discussion for the future Level-of-Service should consider the Level-of-Service with and without the project.

C. The document should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping.

D. There should be a discussion on mitigation plans for unavoidable impacts. If mitigation is required, it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact John Hennessy at (919) 733-5694.

cc: Steve Lund, Corps of Engineers
Mark Cantrell, USFWS
Ron Linville, NCWRC
Personal Files
Central Files

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State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality

James B. Hunt, Jr., Governor
Wayne McDevitt, Secretary
A. Preston Howard, Jr., P.E., Director

NCDENR

January 27, 1999

MEMORANDUM

TO: William D. Gilmore Manager
Planning and Environmental Branch

FROM: Gloria Putnam, DWQ SEPA Coordinator

RE: Comments on DOT Scoping Sheets, DWQ# 12317
Group XX Bridge Replacement Projects

The Division of Water Quality (DWQ) requests that the following topics be discussed in the environmental review document (s):

A. Identify the streams potentially impacted by the project. The current stream classifications and use support ratings for these streams should be included. This information is available from DWQ through the following contacts:

Liz Kovasckitz - Classifications - 919-733-5083, ext. 572
Andrea Leslie - Use Support Ratings - 919-733-5083, ext. 577

B. Identify the linear feet of stream channelization/relocations. If the original stream banks were vegetated, it is requested that the channelized/relocated stream banks be revegetated.

C. Identify the number and locations of all proposed stream crossings.

D. Will permanent spill catch basins be utilized? DWQ requests that these catch basins be placed at all water supply stream crossings. Identify the responsible party for maintenance.

E. Identify the stormwater controls (permanent and temporary) that will be used.

F. Please ensure that sediment and erosion control measures are not placed in wetlands.

G-3436

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

TO: John Wadsworth, Project Planning Engineer
Project Development and Environmental Analysis Branch, NCDOT

FROM: Marla Chambers, Highway Projects Coordinator
Habitat Conservation Program, NCWRC

DATE: February 6, 2003

SUBJECT: Scoping review of NCDOT's proposed replacement of Bridge No. 28 on SR 1321 over Curtis Creek, Avery County. TIP No. B-3406.

North Carolina Department of Transportation (NCDOT) has requested comments from the North Carolina Wildlife Resources Commission (NCWRC) regarding impacts to fish and wildlife resources resulting from the subject project. Staff biologists have reviewed the information provided and have the following preliminary comments. These comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The NCDOT proposes to replace Bridge No. 28 on SR 1321 over Curtis Creek in Avery County. The project is being revised to include alternatives eliminating the Curtis Creek crossing and connecting SR 1321 directly to SR 1322 by crossing the Elk River. Elk River has good populations of wild brown and rainbow trout and Curtis Creek serves as an important nursery stream for young fishes. We recommend a spanning structure to cross either body of water and an in-stream and 25-foot buffer work moratorium from October 15 to April 15 to protect the egg and fry stages of trout.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (704) 485-2384. Thank you for the opportunity to review and comment on these projects.

cc: Cynthia Van Der Wiele, DWQ
Marella Buncick, USFWS

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

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

FROM: Mark S. Davis, Mountain Region Coordinator
Habitat Conservation Program

DATE: September 15, 1999

SUBJECT: Comments on Group XX Bridge Replacement Projects in Avery, Haywood, Graham and Madison Counties, North Carolina.

This memorandum responds to your request for our concerns regarding impacts on fish and wildlife resources resulting from the subject projects. The North Carolina Wildlife Resources Commission (NCWRC) has reviewed the proposed projects, and our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The proposed work involves 6 bridge replacement/demolition projects in western North Carolina (listed below). Construction impacts on wildlife and fisheries resources will depend on the extent of disturbance in the streambed and surrounding floodplain areas. We prefer bridge designs that do not alter the natural stream morphology or impede fish passage. Bridge designs should also include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the subject surface waters. Demolition plans for the existing bridge structures should be addressed in the environmental documents prepared for these projects, as well as any proposed causeways, temporary access roads or detours. We are also concerned about impacts to Designated Public Mountain Trout Waters (DPMTW) and environmental documentation for these projects should include a description of any streams or wetlands on the project site and surveys for any threatened or endangered species that may be affected by construction.

B-3406 - Avery County, Bridge No. 28 on SR 1321 over Curtis Creek

Curtis Creek is not DPMTW at the project site; however, the stream supports a good wild trout population in the project area. We recommend that the existing bridge be replaced with another spanning structure. We recommend that instream work and land disturbance within the 25-foot trout buffer zone be prohibited during the brown and brook trout spawning season of October 15 through April 15 to protect the egg and fry stages from off-site sedimentation.

B-3335 - Graham County, Bridge No. 70 on SR 1134 over Cheoah River

The Cheoah River is not DPMTW; however, the river supports good populations of smallmouth bass, rock bass, as well as various non-game species in the project area. The Junaluska salamander (*Eurycea junaluska*), a species of concern, is also known to occur in the project area. We recommend that the existing bridge be replaced with another spanning structure.

B-3340 - Haywood County, Bridge No. 94 on US 19 over Richland Creek

We have not identified any special concerns associated with this project.

B-3471 - Haywood County, Bridge No. 180 on SR 1123 over West Fork Pigeon River

The West Fork Pigeon River is managed by the NCWRC as Hatchery Supported trout water. The river also supports wild trout populations in the project area. The federally endangered Appalachian elktoe (*Alasmidonta raveneliana*) was recently discovered in the West Fork Pigeon River. NCDOT should contact the U.S. Fish & Wildlife Service concerning potential impacts to this endangered species. Contact is Mr. Mark Cantrell at (828) 258-3939 Ext. 227. We recommend that the existing bridge be replaced with another spanning structure.

B-3490 - Madison County, Bridge No. 259 on SR 1345 over Big Laurel Creek

Big Laurel Creek is managed by the NCWRC as Hatchery Supported trout water. The stream also supports wild trout populations in the project area. We recommend that the existing bridge be replaced with another spanning structure.

B-3491 – Madison County, Bridge No. 56 on SR 1369 over East Fork Bull Creek

We have not identified any special concerns associated with this project.

Because the Corps of Engineers (COE) recognizes all of the above counties as "trout water counties", the NCWRC will review any nationwide or general 404 permits for the proposed projects. The following conditions are likely to be placed on the subject 404 permits:

1. Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. Structures should be inspected and maintained regularly, especially following rainfall events.

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

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

4. If concrete is used during construction, a dry work area must be maintained to prevent direct contact between curing concrete and stream water. Uncured concrete affects water quality and is highly toxic to fish and other aquatic organisms.

5. Grading and backfilling should be minimized, and tree and shrub growth should be retained if possible to ensure long term availability of shoreline cover for gamefish and wildlife.

6. In trout waters, instream construction is prohibited during the trout spawning period of November 1 to April 15 to avoid impacts on trout reproduction.

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

8. If multi-celled reinforced concrete box culverts are utilized, they should be designed so that all water flows through a single cell (or two if necessary) during low flow conditions. This could be accomplished by constructing a low sill on the upstream end of the other cells that will divert low flows to another cell. This will facilitate fish passage at low flows.

9. Notched baffles should be placed in reinforced concrete box culverts at 15 foot intervals to allow for the collection of sediments in the culvert, reduce flow velocities, and to provide resting places for fish moving through the structure.

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

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

Thank you for the opportunity to review and comment during the early stages of these projects. If you have any questions regarding these comments, please contact me at (828) 452-2546.

cc: Mr. Steven Lund, NCDOT Coordinator, COE, Asheville
Ms. Stacy Harris, P.E., PD & EA Branch, NCDOT, Raleigh
Mr. Joe Mickey, Western Piedmont Region Coordinator, NCWRC, State Road

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

January 26, 1999

Mr. William D. Gilmore, P.E., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
Post Office Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Gilmore:

GROUP XX BRIDGE REPLACEMENT PROJECTS, FRENCH BROAD, LITTLE TENNESSEE, AND HOLSTON RIVER WATERSHEDS, AVERY, GRAHAM, HAYWOOD, AND MADISON COUNTIES, NORTH CAROLINA

TVA has reviewed the December 14, 1998 request for comments on the following proposed bridge replacements in western North Carolina:

- B-3335, SR 1134 over the Cheoah River, Graham County
- B-3340, US 19 over Richland Creek, Haywood County
- B-3406, SR 1321 over Curtis Creek, Avery County
- B-3471, SR 1123 over West Fork Pigeon River, Haywood County
- B-3473, SR 1889 over Pisgah Creek, Haywood County
- B-3490, SR 1345 over Big Laurel Creek, Madison County
- B-3491, SR 1369 over East Fork Bull Creek, Madison County

The environmental document prepared for these projects should note that approvals under Section 26a of the TVA Act would be required for the bridge replacements. TVA may wish to use the Federal Highway Administration Categorical Exclusion documents as support for its environmental review of the same actions. Therefore, the inclusion of information related to wetlands and potential mitigation, Floodplain Management Executive Order, National Historic Preservation Act compliance, and Endangered Species Act compliance would lower TVA's review costs and greatly facilitate TVA's eventual approval of the projects. Other issues to be discussed would vary according to project location and impacts but may include, as appropriate, state-listed species (biodiversity impacts) and visual impacts.

Please invite TVA to any interagency meetings, if any are found to be necessary. Please send a copy of the completed environmental documents to TVA.

Should you have any questions, please contact Harold M. Draper at (423) 632-6889 or hmdraper@tva.gov.

Sincerely,

Jon M. Loney, Manager
Environmental Management

LOCATION REPORT

North Carolina Department of Transportation
DIVISION RIGHT OF WAY OFFICE

E.I.S. ☐ CORRIDOR ☐ DESIGN

ECT:	8.2721201	COUNTY	AVERY	Alternate 2 of 2 Alternate	
).:	B-3406	F.A. PROJECT	BRZ-1321(1)	NOTE: APPLIES TO ALL ALTERNATES.	
RIPTION OF PROJECT:	Replace bridge #28 on SR 1321 over Curtis Creek				

ESTIMATED DISPLACEES

of acee	Owner	Tenant	Total	Minority
dential	1	0	1	0
nesses	0	0	0	0
ns	0	0	0	0
-Profit	0	0	0	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	1	0	0

VALUE OF DWELLING / DSS DWELLING AVAILABLE

Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	2	150-250	3
40-70M	0	250-400	0	40-70M	3	250-400	13
70-100M	0	400-600	0	70-100M	1	400-600	11
100 UP	0	600 UP	0	100 UP	37	600 UP	0
TOTAL							

ANSWER ALL QUESTIONS

No	Explain all "YES" answers.
X	1. Will special relocation services be necessary?
X	2. Will schools or churches be affect by displacement?
	3. Will business services still be available after project?
X	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
X	5. Will relocation cause a housing shortage?
	6. Source for available housing (list).
X	7. Will additional housing programs be needed?
	8. Should Last Resort Housing be considered?
	9. Are there large, disabled, elderly, etc. families?
X	10. Will public housing be needed for project?
	11. Is public housing available?
	12. Is it felt there will be adequate DSS housing housing available during relocation period?
X	13. Will there be a problem of housing within financial means?
	14. Are suitable business sites available (list source).
	15. Number months estimated to complete RELOCATION? N/A

REMARKS (Respond by Number)

3) Business services in area of the project are not being Affected.

6) Newspaper, Visual Survey, MLS, and Internet.

8) Will be implemented as necessary.

9) It is possible there may be some elderly, large, or disabled People affected on the project

11) Avery County Housing Authority.

12) Yes, as indicated by the available housing list.

14) See items 4 and 6.

Comments: (A) Available housing list was compiled from a Partial list and does not indicate the total available housing in Avery County. (B) There is a probability that there are some Minority residents. However, a fair estimate from the limited contact And present information cannot be determined until initial contacts with those affected are made.

A. A. Adams A. A. Adams — Relocation Agent — 12-16-99 — Date

D. R. Vick — Approved by — 12/20/99 — Date

Form 15.4 Revised 02/95 d

12/16/99 Approved Reg/Acting Mgr

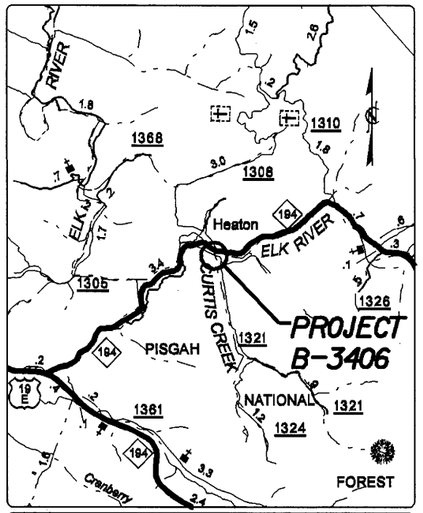
Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

05/08/99

TIP PROJECT: B-3406

PROJECT: 33037.2.1

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



VICINITY MAP FOR PROJECT B-3406

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

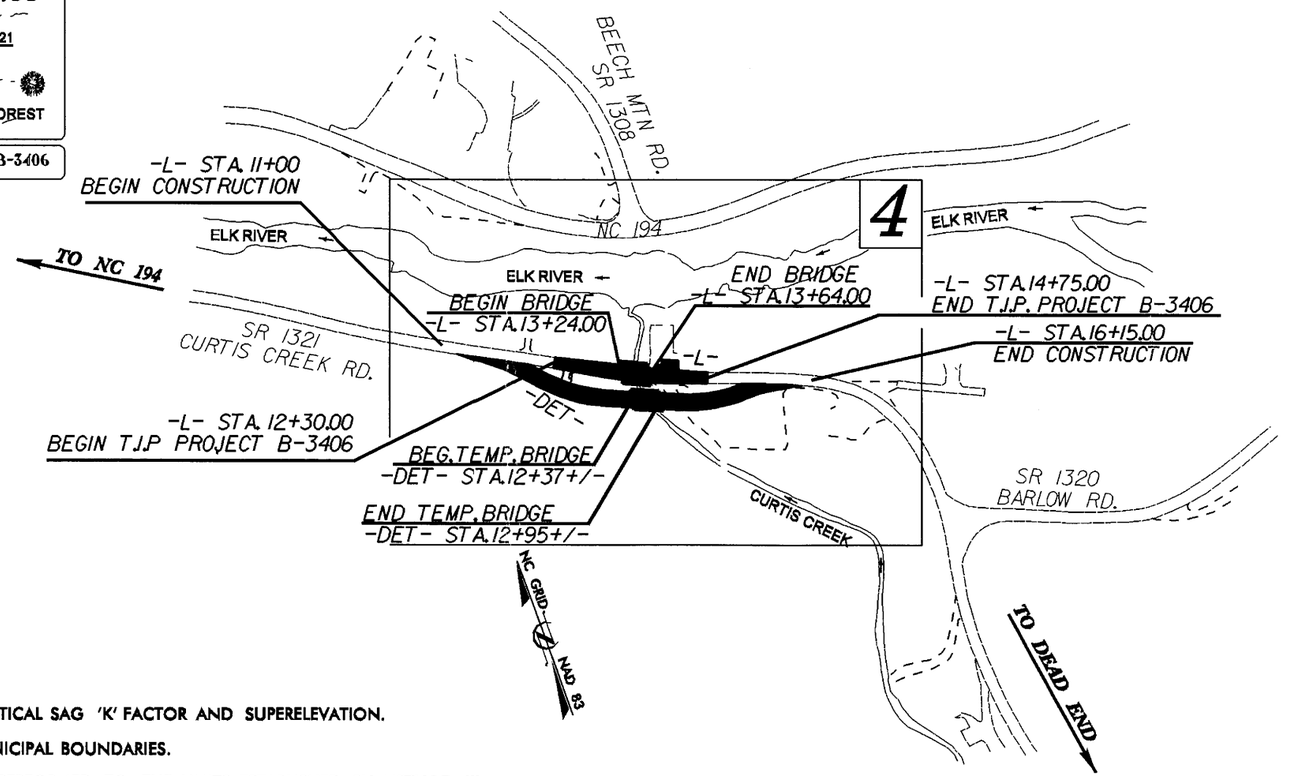
AVERY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3406	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33037.1.1	BRZ-1321(1)	PE
33037.2.1	BRZ-1321(1)	RW/UTL

LOCATION: BRIDGE NO. 28 OVER CURTIS CREEK ON SR 1321

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



DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = 967
ADT 2026 = 1,411
DHV = 10 %
D = 60 %
T = 3 % *
V = 60 MPH

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B-3406 = 0.038 MILES
LENGTH STRUCTURES T.I.P. PROJECT B-3406 = 0.008 MILES
TOTAL LENGTH OF T.I.P. PROJECT B-3406 = 0.046 MILES

EarthTech
A Tyco International Ltd. Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 21, 2005

LETTING DATE:
FEBRUARY 20, 2007

NEIL J. DEAN, P.E.
EARTH TECH PROJECT MANAGER

CATHY S. HOUSER, P.E.
NCDOT PROJECT ENGINEER

ROBERT J. STROUP, P.E.
NCDOT PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

JOHN D.R. NICHOLS, P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

NEIL J. DEAN, P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLAN, P.E.
STATE HIGHWAY DESIGN ENGINEER

26-APR-2006 11:36
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$$$$USERNAME$$$$

5/28/99

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CONVENTIONAL SYMBOLS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
B-3406	1-B

ROADS & RELATED ITEMS

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

RIGHT OF WAY

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

HYDROLOGY

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

STRUCTURES

MAJOR

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

MINOR

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

UTILITIES

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

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

BOUNDARIES & PROPERTIES

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

BUILDINGS & OTHER CULTURE

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

TOPOGRAPHY

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

VEGETATION

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

RAILROADS

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

revised 02/25/97

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USER: #USER#
DGN: #DGN#
REF: #REF#
DATE: #DATE#
TIME: #TIME#

PROJECT REFERENCE NO.	SHEET NO.
B-3406	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

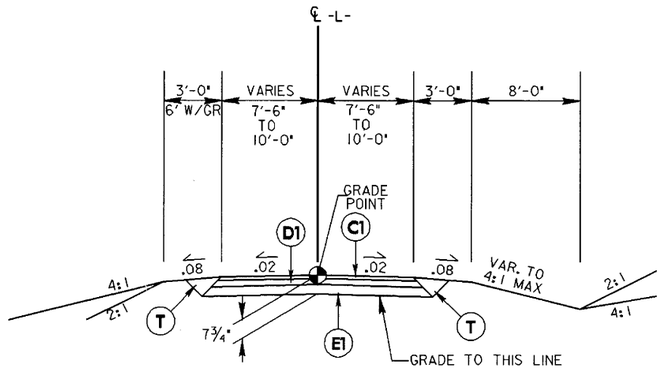
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Prepared in the Offices of:
EarthTech
A Tyco International Ltd. Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

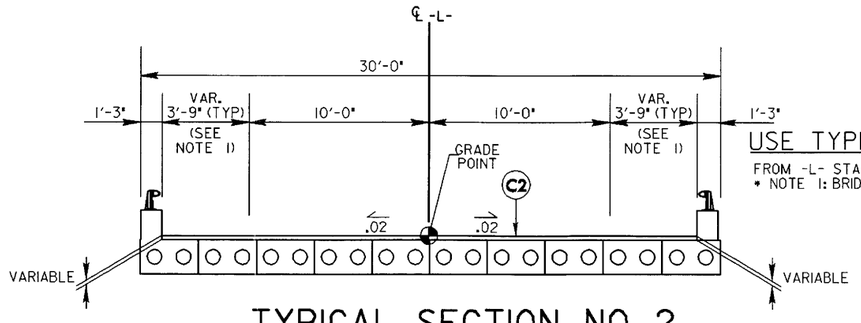
NOTE: ALL PAVEMENT EDGE SLOPE ARE 1:1 UNLESS OTHERWISE SHOWN



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:

FROM -L- STA. 12+30.00 TO -L- STA. 13+24.00 (BEGIN BRIDGE)
FROM -L- STA. 13+64.00 (END BRIDGE) TO -L- STA. 14+75.00



TYPICAL SECTION NO. 2

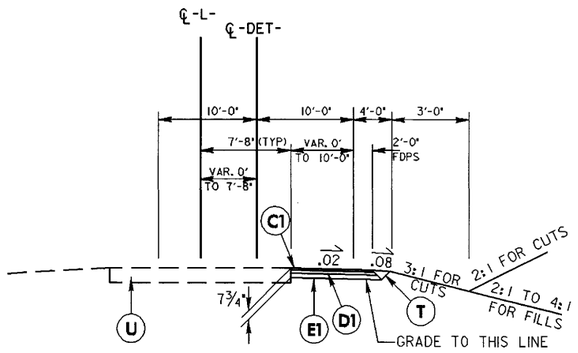
USE TYPICAL SECTION NO. 2:

FROM -L- STA. 13+24.00 (BEGIN BRIDGE) TO -L- STA. 13+64.00 (END BRIDGE)
* NOTE 1: BRIDGE IS TANGENT, TRAVEL LANES ARE IN HORIZONTAL CURVE (SEE PLANS)

PROJECT REFERENCE NO.	SHEET NO.
B-3406	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

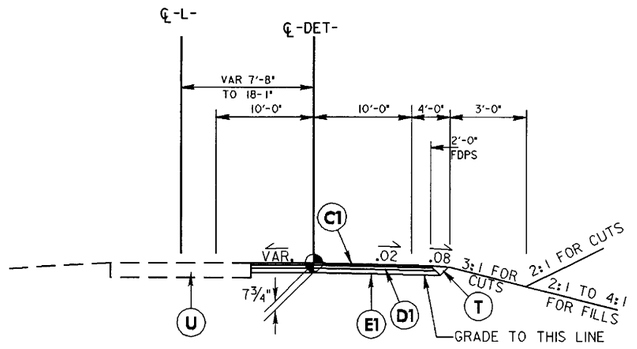
Prepared in the Office of:
EarthTech
A Tetra Tech Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 (FAX)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3:

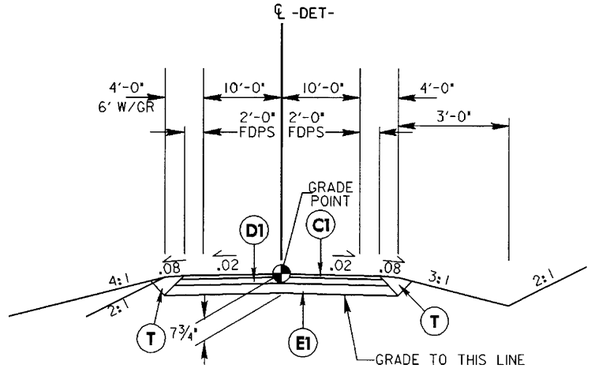
FROM -DET- STA. 10+00.00 TO -DET- STA. 10+54.67
FROM -DET- STA. 14+29.43 TO -DET- STA. 15+12.57



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4:

FROM -DET- STA. 10+54.67 TO -DET- STA. 10+86.41
FROM -DET- STA. 13+93.72 TO -DET- STA. 14+29.43



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5:

FROM -DET- STA. 10+86.41 TO -DET- STA. 12+40 +/- (BEGIN TEMP. BRIDGE)
FROM -DET- STA. 12+85+/- (END TEMP. BRIDGE) TO -DET- STA. 13+93.72

PAVEMENT SCHEDULE	
C1	1.25" SF9.5A
C2	VAR. S9.5A
D1	2.5" I19.0B
E1	4" B25.0B
T	EARTH
U	EXISTING PAVEMENT

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

NOTE: SEE SHEET 2 FOR DETAILED DESCRIPTION OF PAVEMENT SCHEDULE

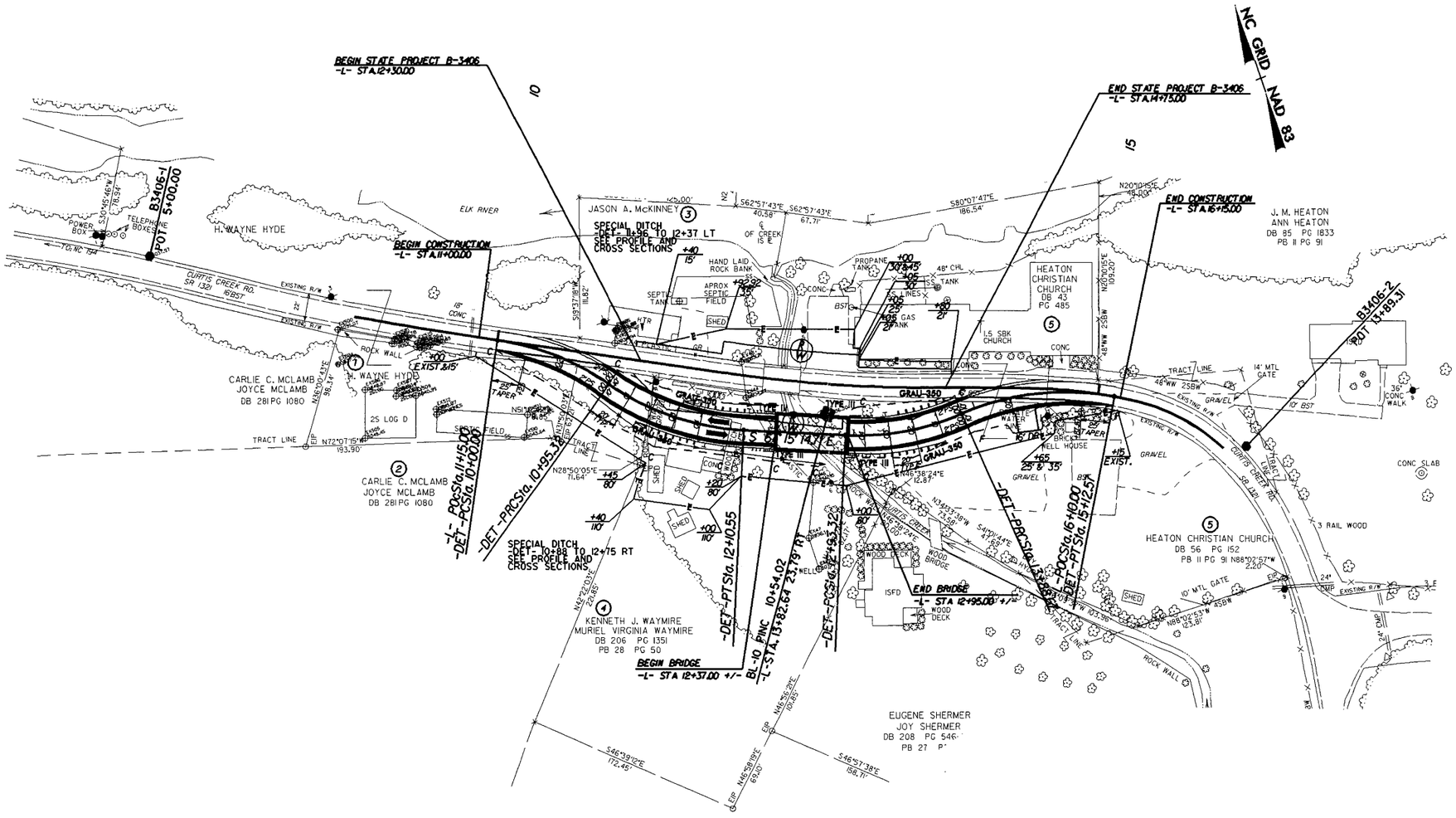
PROJECT REFERENCE NO.	SHEET NO.
B-3406	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Prepared in the Office of: EarthTech
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259 (FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

DETOUR PLAN



-DETOUR- CURVE DATA

PI Sta 10+48.54	PI Sta 11+54.50	PI Sta 13+41.88	PI Sta 14+52.58
Δ = 26° 38' 28.2" (RT)	Δ = 32° 12' 23.0" (LT)	Δ = 26° 38' 57.4" (LT)	Δ = 34° 37' 39.3" (RT)
D = 27° 56' 57.0"	D = 27° 56' 57.0"	D = 27° 56' 57.0"	D = 27° 56' 57.0"
L = 95.32'	L = 115.23'	L = 95.35'	L = 123.89'
T = 48.54'	T = 59.18'	T = 48.55'	T = 63.90'
R = 205.00'	R = 205.00'	R = 205.00'	R = 205.00'
e = SEE PLANS	e = 0.04 FT/FT	e = 0.04 FT/FT	e = SEE PLANS
R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS

FOR -DET- PROFILE, SEE SHEET 5

REVISIONS

DATE: ##DATE##
TIME: ##TIME##

USER: ##USER##
FILE: ##FILE##
PSN: ##PSN##

PROJECT REFERENCE NO.	SHEET NO.
B-3406	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Prepared in the Office of:
EarthTech
A Member of the Amec Group
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

REVISIONS

DATE: #DATE#
TIME: #TIME#

USER: #USER#
DGN: #DGN#
DSN: #DSN#

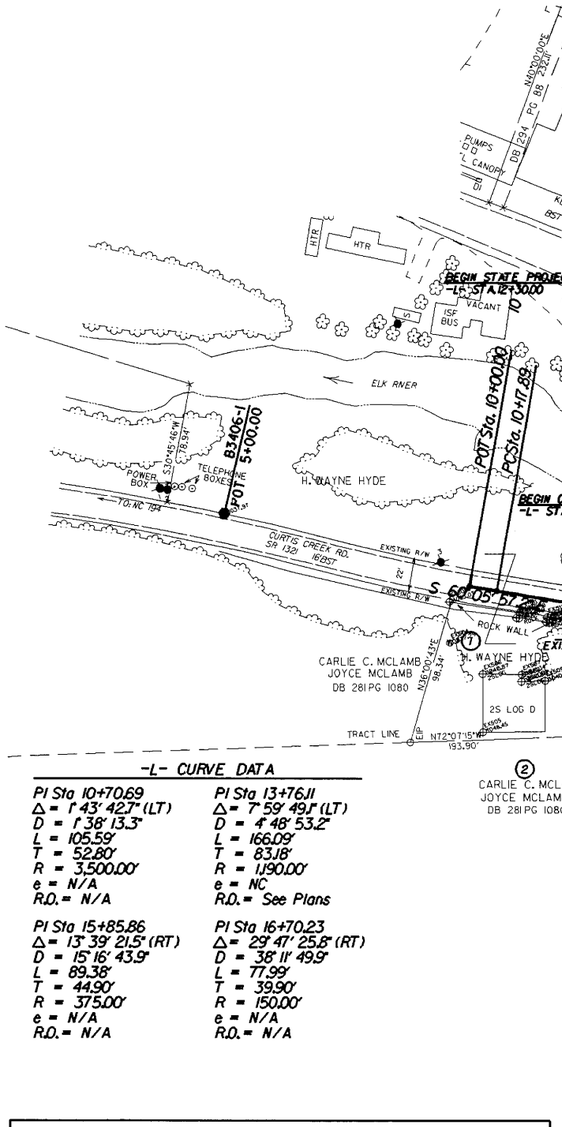
-L- CURVE DATA

PI Sta 10+70.69
Δ = 1° 43' 42.7" (LT)
D = 1° 38' 13.3"
L = 105.59'
T = 52.80'
R = 3,500.00'
e = N/A
R.O. = N/A

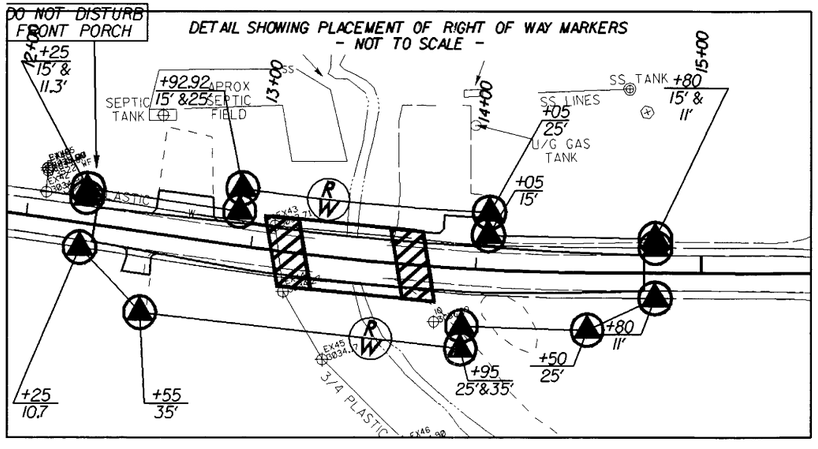
PI Sta 13+76.11
Δ = 7° 59' 49.1" (LT)
D = 4° 48' 53.2"
L = 166.09'
T = 83.18'
R = 1,190.00'
e = NC
R.O. = See Plans

PI Sta 15+85.86
Δ = 13° 39' 21.5" (RT)
D = 15° 16' 43.9"
L = 89.38'
T = 44.90'
R = 375.00'
e = N/A
R.O. = N/A

PI Sta 16+70.23
Δ = 29° 47' 25.8" (RT)
D = 38° 11' 49.9"
L = 77.99'
T = 39.90'
R = 150.00'
e = N/A
R.O. = N/A



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP
NOT TO SCALE



DETAIL SHOWING PLACEMENT OF RIGHT OF WAY MARKERS
- NOT TO SCALE -

FOR -L- PROFILE, SEE SHEET 5
FOR -DETOUR- PLAN VIEW, SEE SHEET 2-B

DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION

PROJECT REFERENCE NO.	SHEET NO.
B-3406	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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EarthTech
A Tyco International Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
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-L-

BENCH MARK #1
GPS CAP STAMPED B-3406-1
-BL- STA.5+00, ELEV.=3037.97

BENCH MARK #3
GPS CAP STAMPED B-3406-2
-BL- STA.13+89.31 ELEV.=3047.08

BEGIN STATE PROJECT B-3406
BEGIN GRADE -L- STA.12+30.00
ELEV.3035.53
BEGIN CONSTRUCTION

BENCH MARK #2
P.K. NAIL IN CONC. WALK LEADING
TO FOOTBRIDGE OVER ELK RIVER
-L- STA.13+85.41, ELEV.=3038.09

END STATE PROJECT B-3406
END GRADE -L- STA.14+75.00
ELEV.3040.19
END CONSTRUCTION

BEGIN BRIDGE
-L- STA 13+24.00

END BRIDGE
-L- STA 13+64.00

PI = 13+50.00
EL = 3034.99
VC = 120'
K = 26

EXISTING GROUND

PROPOSED GRADE

(-)0.4500%

(+)1.4600%

(-)0.5000%

STA.13+92.00 RT
3033.00

STA.13+46.00 RT
3031.80

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 550 CFS
DESIGN FREQUENCY	= EXT. 01 YRS
DESIGN HW ELEVATION	= 3034.6 FT
BASE DISCHARGE	= 1230 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 3036.4 FT
OVERTOPPING DISCHARGE	= 620 CFS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3034.9 FT
OVERTOPPING POINT IS ON ROADWAY APPROACH NOT BRIDGE	
DATE OF SURVEY	= 07/23/2001
W.S. ELEVATION AT DATE OF SURVEY	= 3029.0 FT

DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION

FOR -L- PLAN VIEW, SEE SHEET 4

-DETOUR-

BEGIN GRADE -DET- STA.10+54.57
-L- 11+89.01 7.32' RT (EOP)
ELEV.3035.85
BEGIN CONSTRUCTION

END GRADE -DET- STA.14+29.43
-L- 15+27.06 7.88' RT (EOP)
ELEV.3041.96
END CONSTRUCTION

PI = 12+60.00
EL = 3035.23'
VC = 150'
K = 35

EXISTING GROUND

PROPOSED GRADE

(-)3.0000%

(-)0.5000%

(+)3.9698%

STA.10+68.00 RT
3034.57

STA.11+96.00 LT
3033.76

STA.12+57.00 LT
3035.80

STA.12+75.00 RT
3033.53

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 240 CFS
DESIGN FREQUENCY	= 2 YRS
DESIGN HW ELEVATION	= 3036.0 FT
BASE DISCHARGE	= 570 CFS
BASE FREQUENCY	= 10 YRS
BASE HW ELEVATION	= 3038.0 FT
OVERTOPPING DISCHARGE	= 230 CFS
OVERTOPPING FREQUENCY	= 2 YRS
OVERTOPPING ELEVATION	= 3035.8 FT
OVERTOPPING POINT IS ON ROADWAY APPROACH NOT BRIDGE	
DATE OF SURVEY	= 07/23/2001
W.S. ELEVATION AT DATE OF SURVEY	= 3031.5 FT

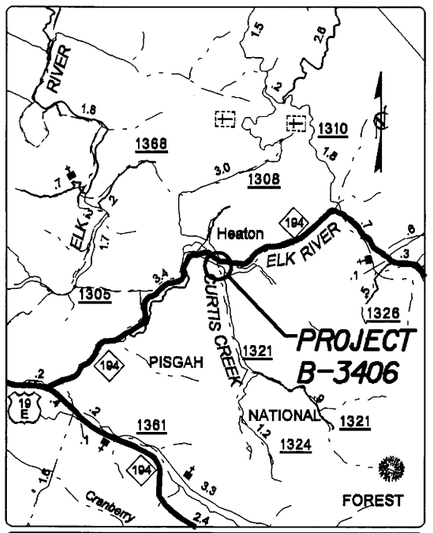
FOR -DETOUR- PLAN VIEW, SEE SHEET 2-B

09/08/99

TIP PROJECT: B-3406

PROJECT: 33037.2.1

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



VICINITY MAP FOR PROJECT B-3406

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

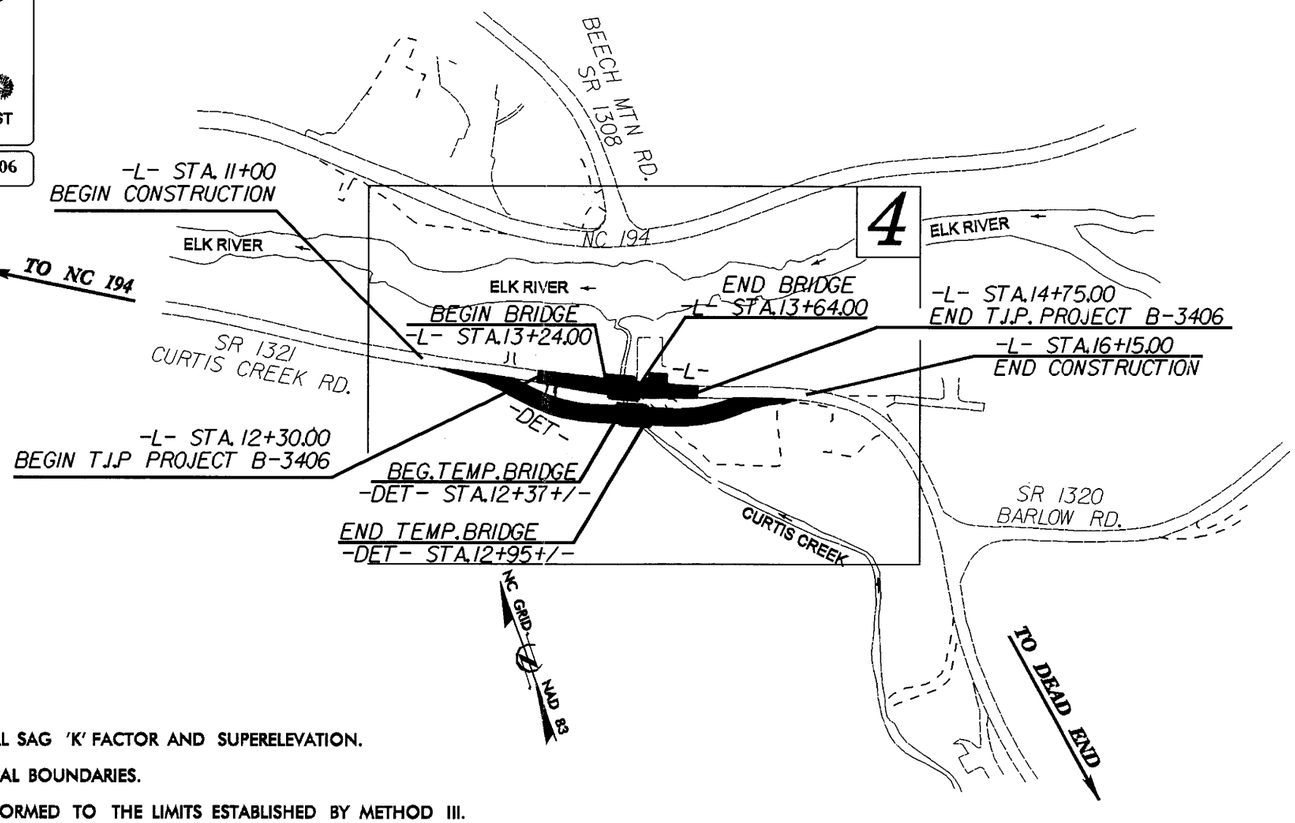
AVERY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3406	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33037.1.1	BRZ-1321(1)	PE
33037.2.1	BRZ-1321(1)	RW/UTL

LOCATION: BRIDGE NO. 28 OVER CURTIS CREEK ON SR 1321

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



DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

159

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = 967
ADT 2026 = 1,411
DHV = 10 %
D = 60 %
T = 3 % *
V = 60 MPH

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B-3406 = 0.038 MILES
LENGTH STRUCTURES T.I.P. PROJECT B-3406 = 0.008 MILES
TOTAL LENGTH OF T.I.P. PROJECT B-3406 = 0.046 MILES

EarthTech
A Tyco International Ltd. Company
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 21, 2005

LETTING DATE:
FEBRUARY 20, 2007

NEIL J. DEAN, P.E.
EARTH TECH PROJECT MANAGER

CATHY S. HOUSER, P.E.
NCDOT PROJECT ENGINEER

ROBERT J. STROUP, P.E.
NCDOT PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

JOHN D.R. NICHOLS, P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

NEIL J. DEAN, P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLAN, P.E.
STATE HIGHWAY DESIGN ENGINEER

11-APR-2006 15:50
s:\eng_coord\projects\gaden\b-3406\design\b3406_rdy_tsh.dgn
gadil AT HY22524

PROJECT REFERENCE NO.	SHEET NO.
B-3406	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE
50 25 0 50 100
PLANS

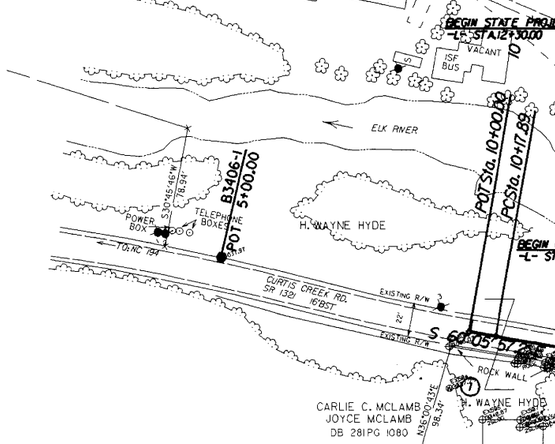
REVISIONS

DATE: #DATE#
TIME: ##TIME#

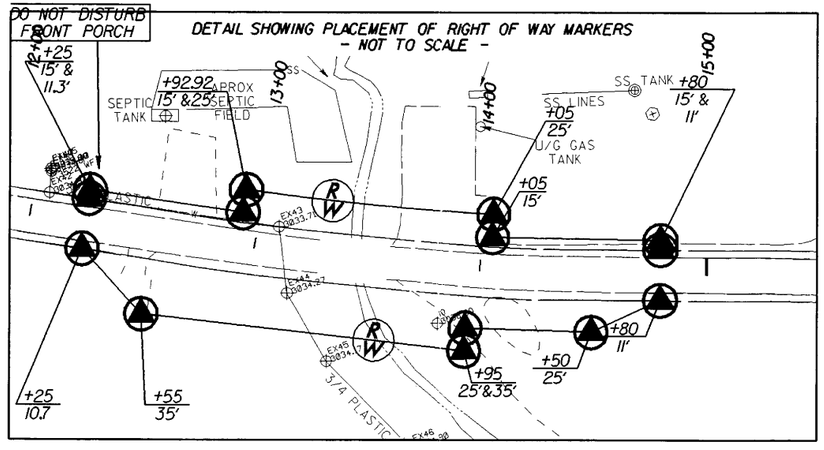
USER: #USER#
ADD: #ADDR#
APP: ##PRO##

-L- CURVE DATA

PI Sta 10+70.69	PI Sta 13+76.11
Δ = 1° 43' 42.7" (LT)	Δ = 7° 59' 49.1" (LT)
D = 1° 38' 13.3"	D = 4° 48' 53.2"
L = 105.59'	L = 166.09'
T = 52.80'	T = 83.18'
R = 3,500.00'	R = 1,190.00'
e = N/A	e = NC
R.O. = N/A	R.O. = See Plans
PI Sta 15+85.86	PI Sta 16+70.23
Δ = 13° 39' 21.5" (RT)	Δ = 29° 47' 25.8" (RT)
D = 15° 16' 43.9"	D = 38° 11' 49.9"
L = 89.38'	L = 77.99'
T = 44.90'	T = 39.90'
R = 375.00'	R = 150.00'
e = N/A	e = N/A
R.O. = N/A	R.O. = N/A



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP
NOT TO SCALE



SPECIAL DITCH
-L- 13+02 - 13+42 RT
SEE PROFILE

160 TONS CLASS II RIP RAP
235 S.Y. FF
MAY BE ADJUSTED OR DELETED BY THE ENGINEER BASED ON FIELD CONDITIONS. BANKS MUST BE STABLE AT PROJECT COMPLETION.

DO NOT DISTURB ROCK BANK ON NORTH SIDE OF EXISTING BRIDGE
GRADE TO DRAIN CREATE SUMP

DO NOT DISTURB EXISTING ROCK WALL OUTSIDE EASEMENT
MINIMIZE DISTURBANCE INSIDE EASEMENT

FOR -L- PROFILE, SEE SHEET 5
FOR -DETOUR- PLAN VIEW, SEE SHEET 2-B

DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION

PROJECT REFERENCE NO.	SHEET NO.
B-3406	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:
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GRAPHIC SCALE
50 25 0 50 100
PLANS

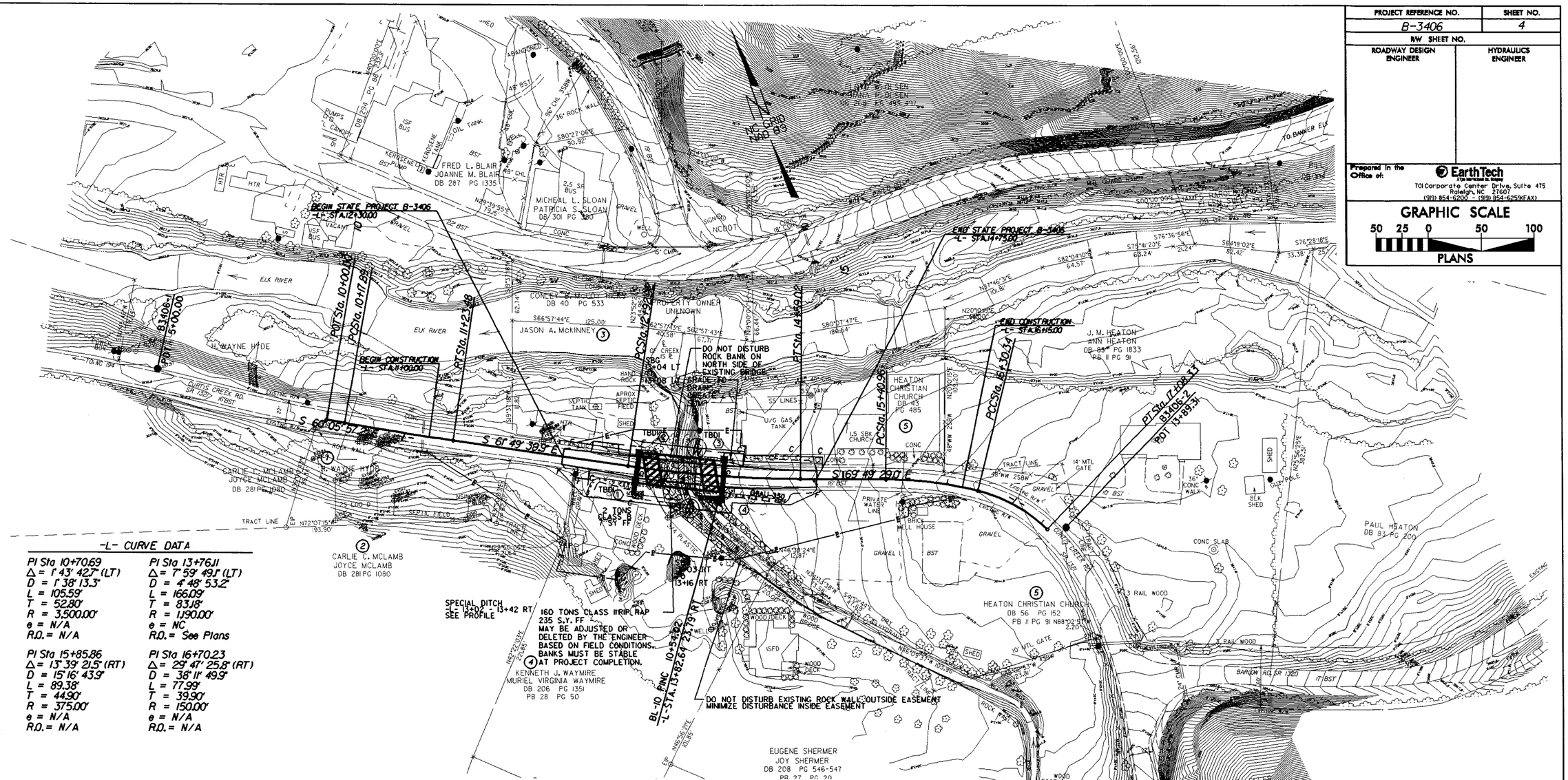
REVISIONS

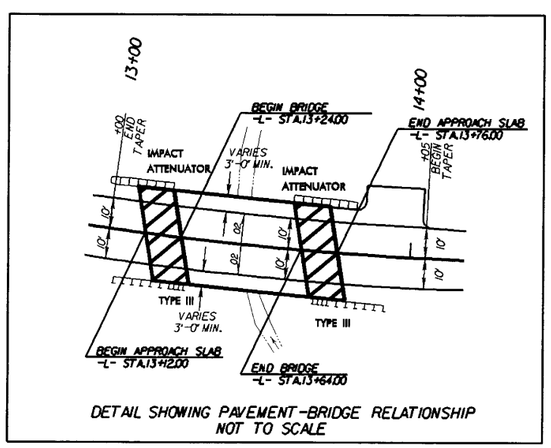
DATE: ##/##/##
TIME: ##:##:## ##

USER: ##USER##
DGN: ##DGN##
PWP: ##PWP##

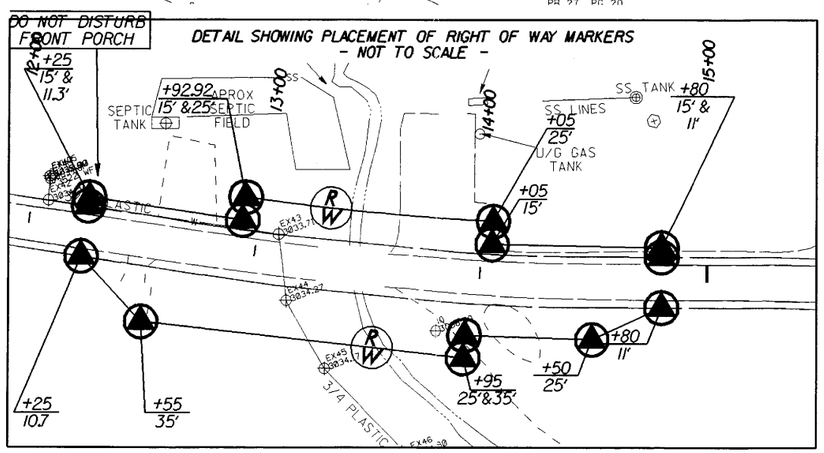
-L- CURVE DATA

PI Sta 10+70.69	PI Sta 13+76.11
Δ = 1° 43' 42.7" (LT)	Δ = 7° 59' 49.1" (LT)
D = 1° 38' 13.3"	D = 4° 48' 53.2"
L = 105.59'	L = 166.09'
T = 52.80'	T = 83.18'
R = 3,500.00'	R = 1,190.00'
e = N/A	e = NC
R.O. = N/A	R.O. = See Plans
PI Sta 15+85.86	PI Sta 16+70.23
Δ = 13° 39' 21.5" (RT)	Δ = 29° 47' 25.8" (RT)
D = 15° 16' 43.9"	D = 36° 11' 49.9"
L = 89.38'	L = 77.99'
T = 44.90'	T = 39.90'
R = 375.00'	R = 150.00'
e = N/A	e = N/A
R.O. = N/A	R.O. = N/A





DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP
NOT TO SCALE



30 OF 9

FOR -L- PROFILE, SEE SHEET 5
FOR -DETOUR- PLAN VIEW, SEE SHEET 2-B

DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION

PROJECT REFERENCE NO.	SHEET NO.
B-3406	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:
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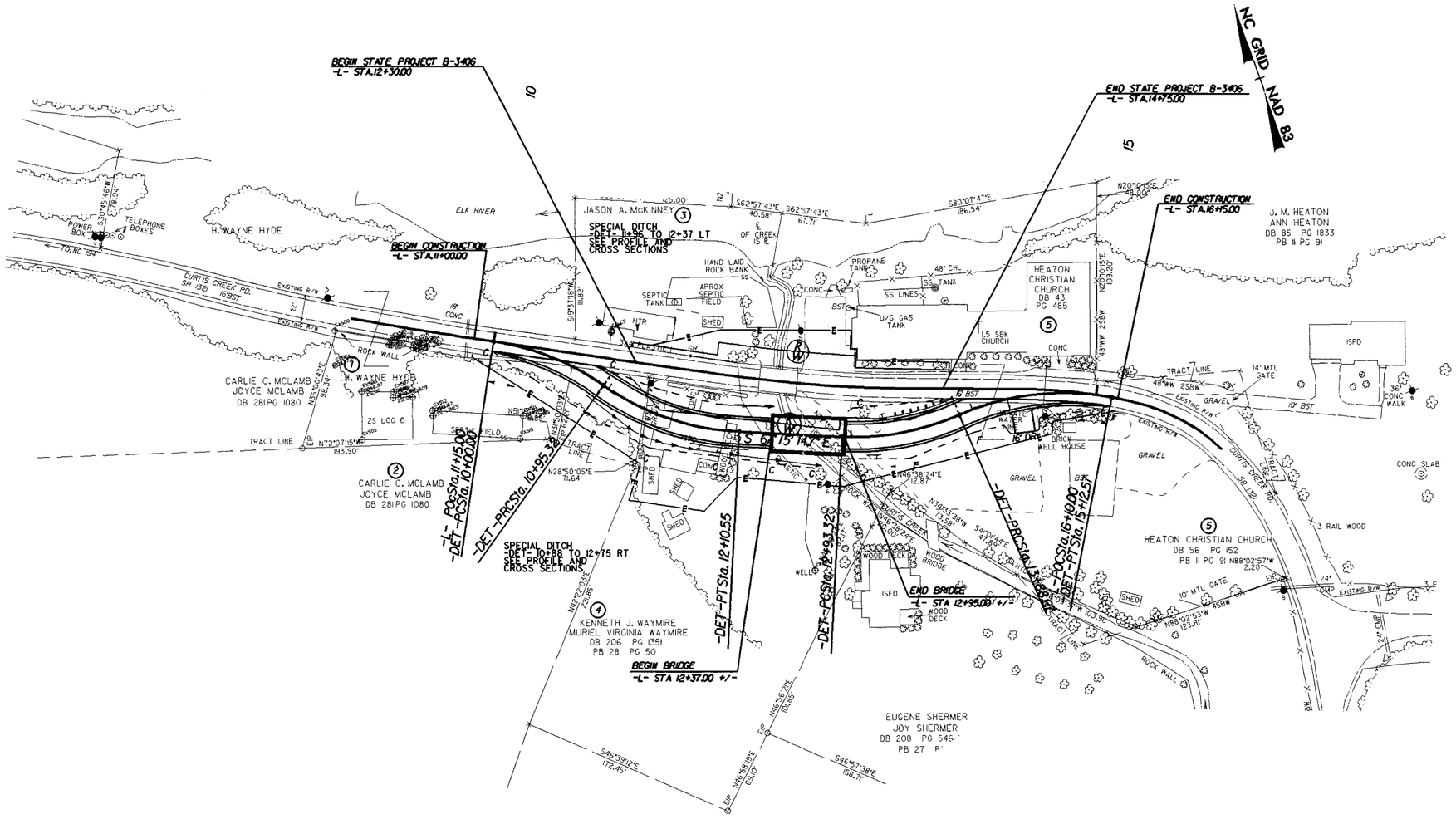
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

DETOUR PLAN



-DETOUR- CURVE DATA

PI Sta 10+48.54	PI Sta 11+54.50	PI Sta 13+41.88	PI Sta 14+52.58
Δ = 26° 38' 28.2" (RT)	Δ = 32° 12' 23.0" (LT)	Δ = 26° 38' 57.4" (LT)	Δ = 34° 37' 39.3" (RT)
D = 27° 56' 57.0"	D = 27° 56' 57.0"	D = 27° 56' 57.0"	D = 27° 56' 57.0"
L = 95.32'	L = 115.23'	L = 95.35'	L = 123.89'
T = 48.54'	T = 59.18'	T = 48.55'	T = 63.90'
R = 205.00'	R = 205.00'	R = 205.00'	R = 205.00'
e = SEE PLANS	e = 0.04 FT/FT	e = 0.04 FT/FT	e = SEE PLANS
R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS

FOR -DET- PROFILE, SEE SHEET 5

REVISIONS

DATE: ##DATE##
TIME: ##TIME##

USER: ##USER##
DGN: ##DGN##
PRF: ##PRF##

PROJECT REFERENCE NO.	SHEET NO.
B-3406	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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(919) 854-6200 - (919) 854-6259(FAX)

GRAPHIC SCALE
50 25 0 50 100
PLANS

REVISIONS

DATE: ##DATE##
SHEET ##SHEET##

USER: ##USER##
DGN: ##DGN##
PRJ: ##PRJ##

DETOUR PLAN

BEGIN STATE PROJECT B-3406
-L- STA 12+30.00

END STATE PROJECT B-3406
-L- STA 14+75.00

NC GRID NAD 83

BEGIN CONSTRUCTION
-L- STA 11+00.00

END CONSTRUCTION
-L- STA 16+95.00

BEGIN BRIDGE
-L- STA 12+37.00 +/-

END BRIDGE
-L- STA 12+95.00 +/-

SPECIAL DITCH
-DET- 10+88 TO 12+75 RT
SEE PROFILE AND CROSS SECTIONS

SPECIAL DITCH
-DET- 10+85 TO 12+37 LT
SEE PROFILE AND CROSS SECTIONS

-DET-PCSta.11+15.00
-DET-PCSta.10+00.00
-DET-PTSta.12+00.55
-DET-PCSta.13+41.88
-DET-PCSta.16+19.00
-DET-PTSta.15+12.58

ELK RIVER

1 H. WAYNE HYDE

2 CARLIE C. MCLAMB
JOYCE MCLAMB
DB 281PG 1080

3 JASON A. McKINNEY

4 KENNETH J. WAYMIRE
MURIEL VIRGINIA WAYMIRE
DB 206 PG 1351
PB 28 PG 50

5 HEATON CHRISTIAN CHURCH
DB 43 PG 485

J. M. HEATON
ANN HEATON
DB 88 PG 1833
PB 11 PG 91

HEATON CHRISTIAN CHURCH
DB 56 PG 152
PB 11 PG 91

EUGENE SHERMER
JOY SHERMER
DB 208 PG 546
PB 27 P

CURTIS CREEK RD. SR 1370

TO NC 194

-DETOUR- CURVE DATA

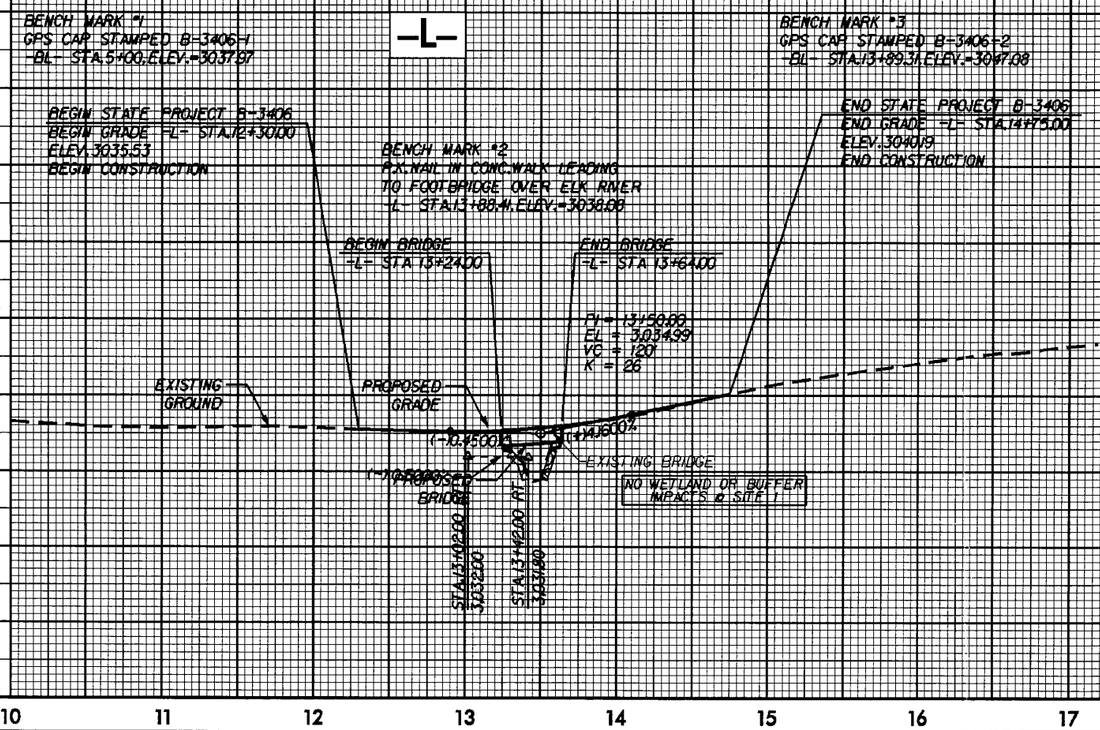
PI Sta 10+48.54	PI Sta 11+54.50	PI Sta 13+41.88	PI Sta 14+52.58
Δ = 26° 38' 28.2" (RT)	Δ = 32° 12' 23.0" (LT)	Δ = 26° 38' 57.4" (LT)	Δ = 34° 37' 39.3" (RT)
D = 27° 56' 57.0"	D = 27° 56' 57.0"	D = 27° 56' 57.0"	D = 27° 56' 57.0"
L = 95.32'	L = 115.23'	L = 95.35'	L = 123.89'
T = 48.54'	T = 59.18'	T = 48.55'	T = 63.90'
R = 205.00'	R = 205.00'	R = 205.00'	R = 205.00'
e = SEE PLANS	e = 0.04 FT/FT	e = 0.04 FT/FT	e = SEE PLANS
R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS

FOR -DET- PROFILE, SEE SHEET 5

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L- PROFILE – SITE 1

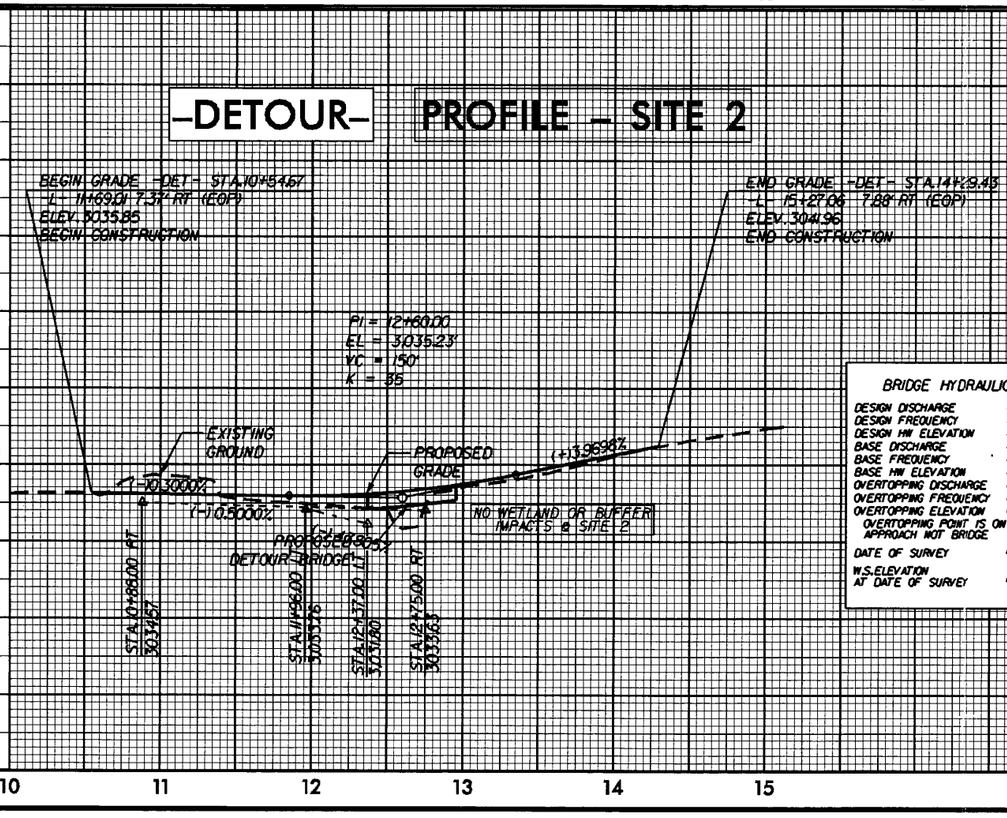


BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 550 CFS
DESIGN FREQUENCY	= EX.OT YRS
DESIGN HW ELEVATION	= 3034.6 FT
BASE DISCHARGE	= 1230 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 3036.4 FT
OVERTOPPING DISCHARGE	= 620 CFS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3034.9 FT
OVERTOPPING POINT IS ON ROADWAY APPROACH NOT BRIDGE	
DATE OF SURVEY	= 07/23/2001
W.S.ELEVATION AT DATE OF SURVEY	= 3029.0 FT

DESIGN EXCEPTION REQUIRED FOR VERTICAL SAG 'K' FACTOR AND SUPERELEVATION
FOR -L- PLAN VIEW, SEE SHEET 4

-DETOUR- PROFILE – SITE 2



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 240 CFS
DESIGN FREQUENCY	= 2 YRS
DESIGN HW ELEVATION	= 3036.0 FT
BASE DISCHARGE	= 570 CFS
BASE FREQUENCY	= 10 YRS
BASE HW ELEVATION	= 3038.0 FT
OVERTOPPING DISCHARGE	= 230 CFS
OVERTOPPING FREQUENCY	= 2 YRS
OVERTOPPING ELEVATION	= 3035.8 FT
OVERTOPPING POINT IS ON ROADWAY APPROACH NOT BRIDGE	
DATE OF SURVEY	= 07/23/2001
W.S.ELEVATION AT DATE OF SURVEY	= 3031.5 FT

FOR -DETOUR- PLAN VIEW, SEE SHEET 2-D

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
AVERY COUNTY
PROJECT: 8.2721201 (B-3406)
BRIDGE NO. OVER CURTIS CREEK
ON SR 1321

SHEET OF

6 of 9

WETLAND LEGEND

WLB WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
AVERY COUNTY
PROJECT: 33037.2.1 (B-3406)

REPLACE BRIDGE #28
OVER CURTIS CREEK ON SR 1321

SHEET 7 OF 9

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	13+44 -L-	* 1@40' CORED SLAB BRIDGE						0.010		121		
2	12+66 -DETOUR-	58' SPAN TEMP BRIDGE										
TOTALS:			0.00	0.00	0.00	0.00	0.00	0.01	0.00	121	0	0

* Existing Bridge is 1 @ 30.5' Structure

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

AVERY COUNTY
B-3406 (33037.2.1)

SHEET 8 of 9 #######

ATN Revised 3/31/05

List of Property Owners:

PARCEL #	PROPERTY OWNER	ADDRESSES
5	Heaton Christian Church	P.O. Box 217 Elk Park, NC 28622
4	Kenneth and Muriel Waymire	1640 S. Bayshore Drive Miami, FL 33133
3	Jason McKinney	520 Curtis Creek Road Elk Park, NC 28622

NC DEPARTMENT OF TRANSPORTION
DIVISION OF HIGHWAYS
AVERY COUNTY
33037.1.1 (B-3406)
Replace Br#28 Over Curtis Creek on SR 1321
Sheet 9 of 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 26, 2006

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

Permit drawings should be the 1st attachment (preceding) 1/2 size design plans) as listed in 1st sentence.

ATTENTION: Mr. John Thomas
NCDOT Coordinator

SUBJECT: **Nationwide Permit 13 Application** for the proposed replacement of Bridge No. 28 on SR 1321 over Curtis Creek. Avery County in Division 11. Federal Project No. BRZ-1321, State Project No. 8.2721201, T.I.P. No. B-3406.

should list here in the order they are attached

Dear Mr. Thomas:

Please find enclosed the Categorical Exclusion (CE) for the above referenced project, along with permit drawings, ½ size design plans and a Preconstruction notification (PCN). NCDOT plans to replace bridge No. 28 with a new 40 feet long and 30-foot wide cored slab bridge on existing location that will completely span Curtis Creek. Traffic will use an onsite detour located to the south of the existing structure during construction. The onsite detour will completely span Curtis Creek. There are no wetlands located in the project area. Project impacts consist of the placement of 121 feet of riprap on the banks of Curtis Creek.

and will not have any associated temporary impacts.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Watauga River basin (HUC 06010108). The project will cross Curtis Creek. Curtis Creek is has been assigned a best usage classification of **C Tr**, by the N.C. Division of Water Quality. Curtis Creek is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River, nor is it listed as a 303(d) stream. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 miles of the project study area.

Temporary Impacts: No temporary impacts will occur.

Permanent Impacts: This project will place 121 feet of riprap on the banks of Curtis Creek. There will be no impacts to surface waters.

Green sheet recommends mountain trout stream. This makes it HQW.

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

TELEPHONE: 919-715-1334
FAX: 919-715-5501
WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
2728 CAPITAL BLVD
RALEIGH NC

Utility Impacts: No impacts will occur due to utility relocations

Bridge Demolition
Bridge No. 28's superstructure consists of a timber floor on I-beams. The substructure consists of timber caps on timber posts and sills. The existing bridge can be removed in sections without dropping bridge components into the water. NCDOT will follow NCDOT's Best Management Practices for Bridge Demolition and Removal.

Bank Stabilization delete space
Measures necessary for erosion prevention will be required, in order to protect the integrity of Curtis Creek. Rip-Rap will be placed from the top of the bank to the waters edge to eliminate potential erosion in the project area.

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 April 27, 2006 the Fish and Wildlife Service (FWS) lists eight federally protected species for Avery County (Table 1). A Biological Conclusion of "No Effect" was reached for all applicable species.

Table 1. Federally Protected Species for Avery County

Scientific Name	Common Name	Status	Biological Conclusion	Habitat available
Clemmys muhlenbergii	Bog turtle	T (S/A)	NA	NA
Corynorhinus towsendii virginianus	Virginia big-eared bat	E	No Effect	No
Geum radiatum	Spreading avens	E	No Effect	No
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	E	No Effect	No
Gymnoderma lineare	Rock gnome lichen	E	No Effect	No
Liatris helleri	Heller's blazing star	T	No Effect	No
Microhexura montivaga	Spruce-fir moss spider	E	No Effect	No
Solidago spithamaea	Blue Ridge goldenrod	T	No Effect	No

AVOIDANCE AND MINIMIZATION:
The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design and include:

- Best Management Practices for the Protection of Surface Waters and Bridge Demolition and Removal will be followed.
- No bents will be placed in the water.
- Replace at existing location.
- ↑ Should the ~~trout buffer~~ proj. commitment listed on Green Sheet re: trout be listed as an A-M measure?

MITIGATION
Mitigation is not proposed because riprap will be placed on the stream bank.

Regulatory Approvals
Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit, but propose to proceed under a Nationwide 13 (67 FR 2020; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification number 3495 will apply to this project. In accordance with 15A NCAC 2H .0501(a), we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

Thank you for your assistance in this project. If you have any questions or need additional information please contact Brett Feulner at (919) 715-1488.

Sincerely,

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

cc: w/attachment
Mr. John Hennessy, NCDWQ (2 Copies)
Ms. Marla Chambers, NCWRC
Ms. Marella Buncick, USFWS
Mr. Harold Draper, TVA
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Michael A. Pettyjohn, P.E. Division 11 Engineer
Mr. Heath Slaughter, Division 11 Environmental Officer
w/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Stacy Baldwin, P.E., PDEA
Mr. Scott McLendon, USACE, Wilmington