



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

July 18, 2008

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

ATTENTION: Mr. Monte Matthews  
NCDOT Coordinator

SUBJECT: **Nationwide Permit 13 and 23 Application** for the replacement of Bridge No. 302 over Cove Creek on SR 1233 in Watauga County, Federal Aid Project No. BRZ-1217(3), State Project No. 8.2751301, WBS Element 33025.1.1, **TIP No. B-3377**. \$570.00 Debit work order 8.2751301.

Dear Sir:

Please see the enclosed Pre-Construction Notification (PCN), Approved Jurisdictional Determination Form, permit drawings and design plans for the above referenced project. A Categorical Exclusion was completed for this project in August 2007 and distributed shortly thereafter. Additional copies are available upon request. NCDOT proposes to replace the existing two-span, 51-foot long bridge, with a new 90-foot long single-barrel bottomless culvert; same location. There will 186 linear feet of permanent stream impacts from the new structure. There are no temporary impacts to Cove Creek. Traffic will be detoured off-site during construction.

**IMPACTS TO WATERS OF THE UNITED STATES**

General Description:

The water resource impacted for project B-3377 is Cove Creek. Cove Creek is located in the Watauga River Basin (Division of Water Quality (DWQ) subbasin 04-02-01) and is approximately 9.0 feet wide and 1.0 feet deep within the project area. The DWQ Index number for this section of Cove Creek is 8-15 and the Hydrological Cataloguing Unit is 06010103. The DWQ classifies Cove Creek as class "C". Within the project area, Cove Creek is not listed as 303(d) water and no 303(d) waters are within a mile downstream of the project area. There is no High Quality Waters (HQW) and no Water Supplies (WS-I or WSII) located within one mile of the project study area. There are no wetlands in the project area.

**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](http://WWW.NCDOT.ORG)

**LOCATION:**  
PARKER LINCOLN BUILDING,  
2728 CAPITAL BLVD.  
RALEIGH NC 27604

Permanent Impacts:

There will be 90 feet of permanent impacts to Cove Creek due to the use of riprap for bank stabilization at both ends of the new structure. There will also be 96 feet of permanent impacts on one side of Cove Creek due to the installation of a bottomless culvert.

Temporary Impacts:

There will be no temporary impacts to Cove Creek.

Utility Impacts:

No water or sewer lines are present within the project study area. There are underground telephone lines and aerial power lines on the north and south sides of old US 421 (SR 1223). These lines will be relocated without impacting Cove Creek. There are no utility impacts associated with this project.

Bridge Demolition:

Bridge No. 302 is constructed entirely of timber and steel and can be removed without dropping fill into Cove Creek. Best Management Practices (BMPs) for the Protection of Surface Waters and BMPs for Bridge Demolition and Removal will be followed.

**FEDERALLY PROTECTED SPECIES**

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 31, 2008, the United States Fish and Wildlife Service (USFWS) lists eight federally protected species for Watauga County (Table 1). The Bald Eagle has been de-listed from the Endangered Species Act as of August 8, 2007 but is still protected under the Bald and Golden Eagle Act.

**Table 1.** Federally Protected Species for Watauga County

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Habitat</b>	<b>Biological Conclusion</b>
Blue Ridge goldenrod	<i>Solidago spithamaea</i>	T	No	No Effect
Bog Turtle	<i>Clemmys muhlenbergii</i>	T (S/A)	Not Subject	N/A
Carolina northern flying squirrel	<i>Glaucomys sabrinus coloratus</i>	E	No	No Effect
Heller's blazing star	<i>Liatris helleri</i>	T	No	No Effect
Roan mountain bluet	<i>Hedyotis purpurea montana</i>	E	No	No Effect
Spreading avens	<i>Geum radiatum</i>	E	No	No Effect
Spruce-fir moss spider	<i>Microhexura montivaga</i>	E	No	No Effect
Virginia big-eared bat	<i>Hedyotis purpurea montana</i>	E	No	No Effect

## **AVOIDANCE, MINIMIZATION AND MITIGATION**

### Avoidance and Minimization:

Avoidance examines all appropriate and practicable possibilities of averting impacts to “Waters of the United States.” The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional stages; minimization measures were incorporated as part of the project design. In addition, Best Management Practices will be followed as outlined in “NCDOT’s Best Management Practices for Construction and Maintenance Activities”. Additional minimization measures for this project are:

- A trout moratorium on in-water construction is to be enforced from October 15 to March 31.
- Use of a bottomless culvert allows natural stream sediment bottom to remain.

### Mitigation:

There are a total of 186 feet of stream impacts on this project. The 90 feet of impacts due to bank stabilization does not constitute a “loss of waters”. The 96 feet of stream impacts from the bottomless culvert are due to the side of the culvert in the stream bed. Impacts associated with each factor do not exceed mitigation thresholds.

### Schedule:

The project schedule calls for a January 20, 2009 Let date and a review date of **November 28, 2009**.

## **REGULATORY APPROVALS**

### Section 404 Permit:

It is anticipated that the permanent impacts to Cove Creek will be authorized under Section 404 Nationwide Permit 23 (Approved Categorical Exclusion). We are, therefore, requesting the issuance of a Nationwide Permit 23 to encompass the 96 feet of impacts to Cove Creek due to the culvert. A Nationwide Permit 13 (Bank Stabilization) is also requested to authorize the 90 feet of permanent impacts due bank stabilization.

### Section 401 Permit:

We anticipate 401 General Certification numbers 3701 and 3689 will apply to this project. All general conditions of the General Certification will be adhered to. We are requesting written concurrence from the DWQ. In accordance with 15A NCAC 2H .0501(a) We are submitting five copies of this permit application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for your approval.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachments, NCDOT

hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jennifer Harrod at [jwharrod@dot.state.nc.us](mailto:jwharrod@dot.state.nc.us) or (919) 715-7241. The application will be posted at <http://207.4.62.65/PDEA/PermApps/>.

Sincerely,



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

cc:

W/attachment

Mr. Brian Wrenn, NCDWQ (5 copies)  
Ms. Marella Buncick, USFWS  
Ms. Marla Chambers, NCWRC

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics  
Mr. Victor Barbour, P.E., Project Services Unit  
Mr. Greg Perfetti, P.E., Structure Design  
Mr. Mark Staley, Roadside Environmental  
Mr. Michael Pettyjohn, P.E., Division Engineer  
Mr. Heath Slaughter, DEO  
Mr. Jay Bennett, P.E., Roadway Design  
Mr. Majed Alghandour, P.E., Programming and TIP  
Mr. Art McMillian, P.E., Highway Design  
Mr. Scott McLendon, USACE, Wilmington  
Ms. Pam Williams, Project Planning Engineer

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:
 

<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Riparian or Watershed Buffer Rules
<input type="checkbox"/> Section 10 Permit	<input type="checkbox"/> Isolated Wetland Permit from DWQ
<input checked="" type="checkbox"/> 401 Water Quality Certification	<input type="checkbox"/> Express 401 Water Quality Certification
- 2. Nationwide, Regional or General Permit Number(s) Requested: Nationwide 23 and 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: jwharrod@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: Bridge No. 302 on SR 1233 over Cove Ceek.
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3377
3. Property Identification Number (Tax PIN): N/A
4. Location  
County: Watauga Nearest Town: Amantha, NC  
Subdivision name (include phase/lot number): N/A  
Directions to site (include road numbers/names, landmarks, etc.): I-40 West to US 421 N; Continue on US 221; Left on US 321; Right on NC -1233/Old 421; Arrive B-3711.
5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)  
Decimal Degrees (6 digits minimum): 36'16'55.98 °N 81'46'42.85 °W
6. Property size (acres): N/A
7. Name of nearest receiving body of water: Watauga River
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/.](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: Man-Dominated, Old Field and Montane Oak-Hickory Forest.
10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 302 will be replaced with a 90 ft. long single-barrel bottomless culvert.

11. Explain the purpose of the proposed work: NCDOT Bridge Maintenance Unit records indicate Bridge No. 302 has a sufficiency rating of 24.2 out of a possible 100 for a new structure. The bridge is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

#### IV. Prior Project History

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

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#### V. Future Project Plans

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

N/A

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#### 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. There will be 96 feet of permanent impacts to Cove Creek from the new structure and 90 feet of impacts due to bank stabilization.. There will be no temporary stream impacts to Cove Creek.
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: \_\_\_\_\_
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)
1	Cove Creek	Permanent	Perennial	9.0'	186'	<0.01
Total Stream Impact (by length and acreage)					186'	<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)				0

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

Stream Impact (acres):	<0.01 (perm.)
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	<0.01 (perm)
Total Stream Impact (linear feet):	186' (perm.)

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.

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8. Pond Creation

If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.

Pond to be created in (check all that apply):  uplands  stream  wetlands

Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): \_\_\_\_\_

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

Current land use in the vicinity of the pond: \_\_\_\_\_

Size of watershed draining to pond: \_\_\_\_\_ Expected pond surface area: \_\_\_\_\_

**VII. Impact Justification (Avoidance and Minimization)**

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. The current bridge will be replaced at the existing location. Traffic will be maintained through an off-site detour using the following roads: old US 421, Sherwood Road, Joe Shoemaker Road and Silverstone Road. NCDOT Best Management Practices will be implemented during all phases of construction and demolition.

**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. NCDOT proposes no mitigation for the 186 linear feet of permanent impacts to Cove Creek. Of these impacts 90 feet are due to the use of riprap for bank stabilization and are not considered a loss of waters of the United States.
2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at <http://h2o.enr.state.nc.us/wrp/index.htm>. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

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

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

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

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)?  
Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.  
Yes  No
3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes  No

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

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

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify \_\_\_\_\_)? Yes  No
2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		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. Stormwater from this bridge replacement will not be directly discharged into Cove Creek.

**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

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

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

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

**XIV. Cumulative Impacts (required by DWQ)**

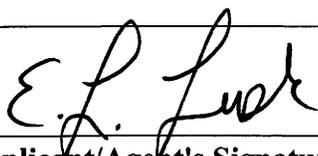
Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes  No   
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina 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: \_\_\_\_\_  
This project is limited to a bridge replacement. No indirect or cumulative impacts are anticipated

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

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

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7.21.08

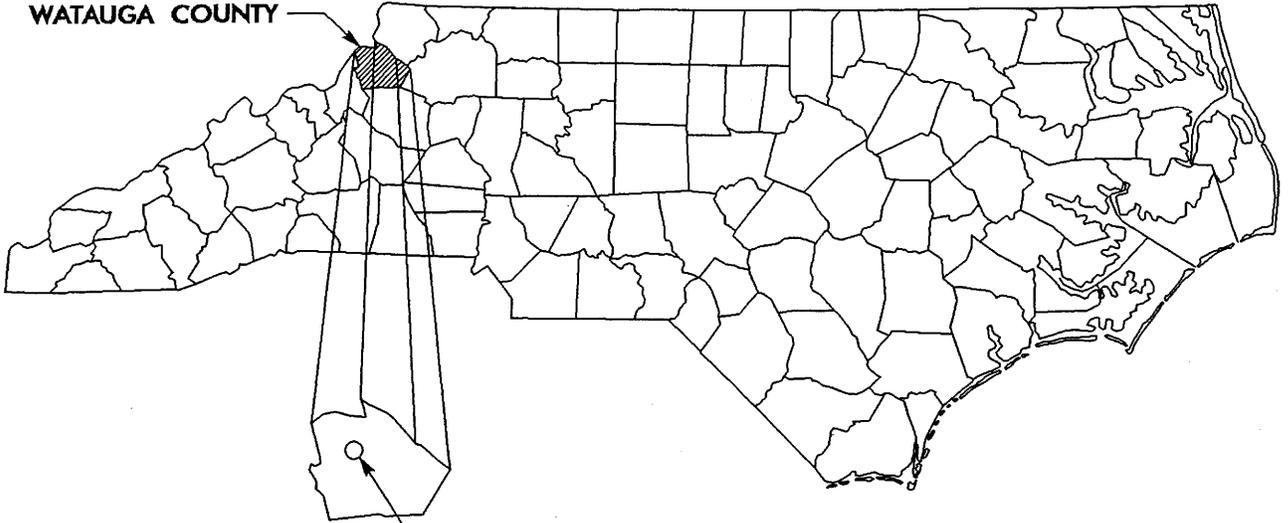
**Applicant/Agent's Signature**

**Date**

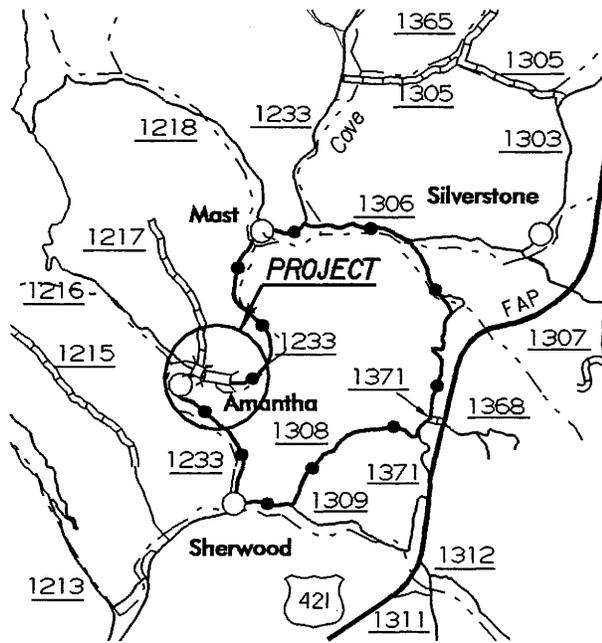
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

# NORTH CAROLINA

WATAUGA COUNTY



PROJECT LOCATION



DETOUR ROUTE

## VICINITY MAPS

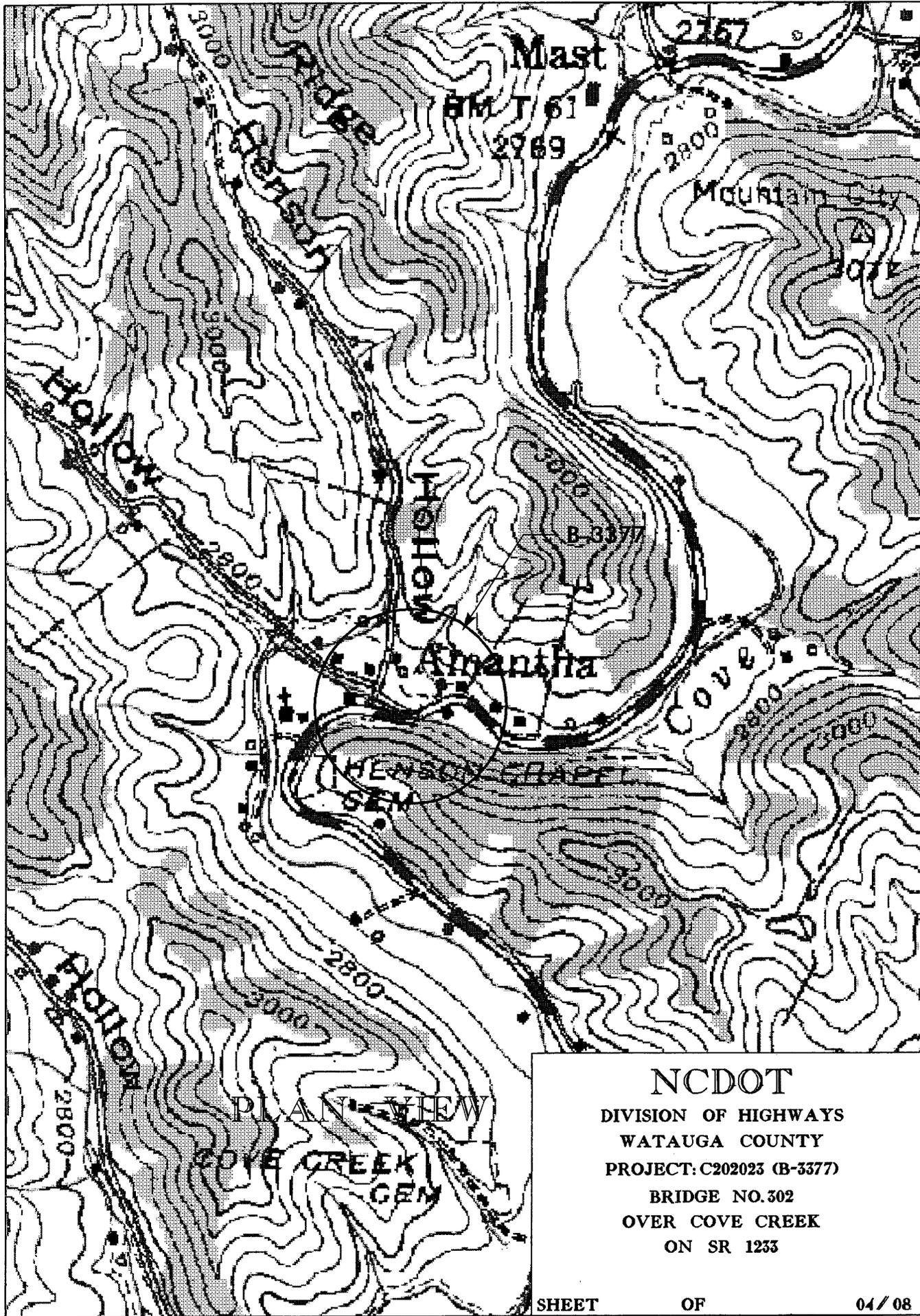
**NCDOT**  
DIVISION OF HIGHWAYS  
WATAUGA COUNTY  
PROJECT: C202023 (B-3377)  
BRIDGE NO. 302  
OVER COVE CREEK  
ON SR 1233

SHEET

OF

04 / 08

Permit Drawing



**NCDOT**  
 DIVISION OF HIGHWAYS  
 WATAUGA COUNTY  
 PROJECT: C202023 (B-3377)  
 BRIDGE NO. 302  
 OVER COVE CREEK  
 ON SR 1233

SHEET OF 04 / 08

Permit Drawing  
 of

# PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
①	STACY C.EGGERS JR.	P.O.BOX 248 BOONE, NC 28607
②	GLEN HENSON	RT.1 BOX 325 VILAS, NC 28692
③	CHRISTINA CALLEJAS	2565 OLD US HWY 421 VILAS, NC 28692

**NCDOT**

DIVISION OF HIGHWAYS

WATAUGA COUNTY

PROJECT: C202023 (B-3377)

BRIDGE NO. 302

OVER COVE CREEK

ON SR 1233

SHEET

OF

04 / 08

Permit Drawing

WETLAND PERMIT IMPACT SUMMARY												
WETLAND IMPACTS						SURFACE WATER IMPACTS						
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	18+00 -L-LT to 19+15 -L-RT	40' X 9.5' Crown Span						<0.01		96		
1	18+00 -L-LT to 19+15 -L-RT	Bank Stabilization						<0.01		90		
TOTALS:											186	

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

Watauga County  
WBS - 33025.1.1.1.1 (B-3377)

ATN Revised 3/31/05

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

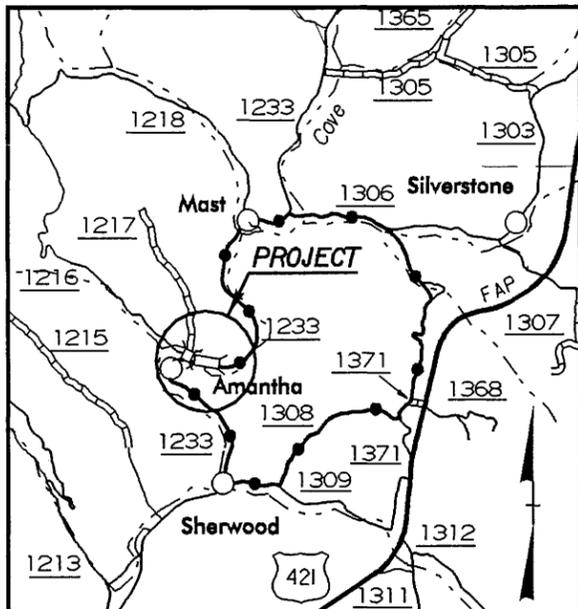
**WATAUGA COUNTY**

LOCATION: **BRIDGE NO. 302 OVER COVE CREEK  
ON SR 1233**

TYPE OF WORK: **GRADING, PAVING, DRAINAGE, & CULVERT**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3377	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33025.1.1	BRZ-1217(3)	PE	
33025.2.2	BRZ-1217(3)	RW & UTILITIES	

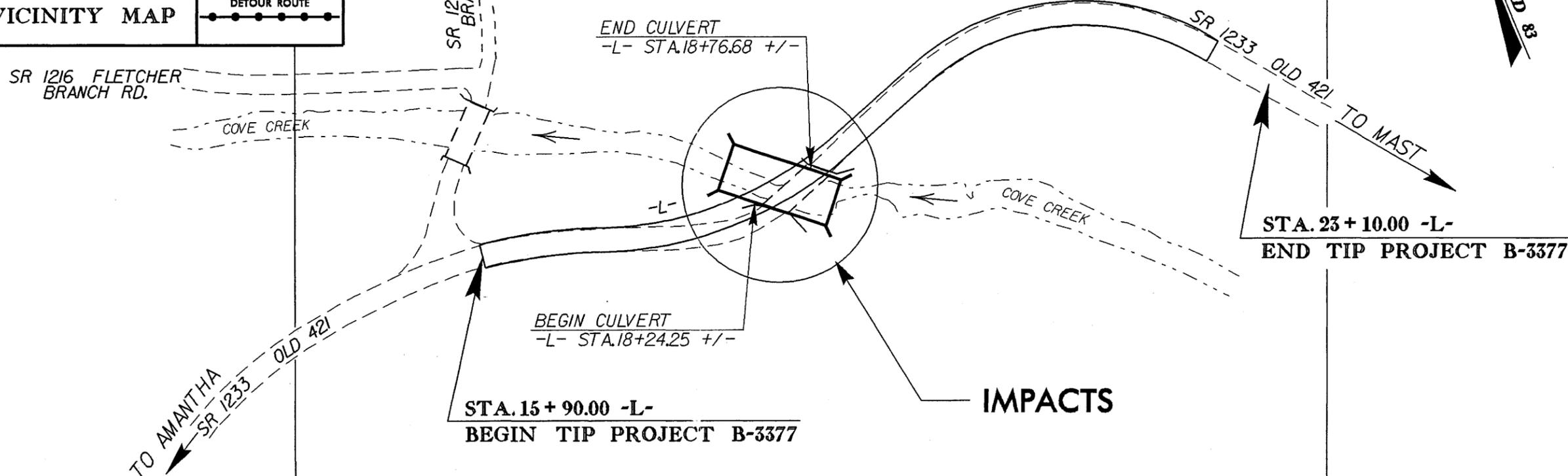
TIP PROJECT: B-3377



VICINITY MAP

DETOUR ROUTE

**STREAM IMPACTS**

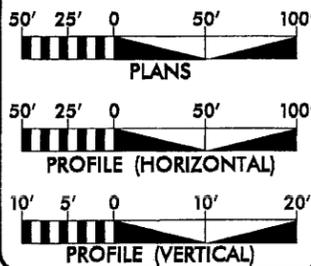


**IMPACTS**

NOTES: (1) CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III  
(2) THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

\*\* DESIGN EXCEPTION FOR DESIGN SPEED

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2007 = 445  
ADT 2030 = 645  
DHV = 10 %  
D = 60 %  
T = 4 % \*  
\*\*V = 30 MPH  
FUNC. CLASS. = LOCAL  
\* TTST 1% DUAL 3%

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-3377 = 0.126 MILES  
LENGTH STRUCTURE TIP PROJECT B-3377 = 0.010 MILES  
TOTAL LENGTH OF TIP PROJECT B-3377 = 0.136 MILES

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**

1000 Birch Ridge Dr.  
Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
JANUARY 3, 2008

LETTING DATE:  
JANUARY 20, 2009

ROGER D. THOMAS, P.E.  
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_

ROADWAY DESIGN  
ENGINEER

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

SIGNATURE: \_\_\_\_\_

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**



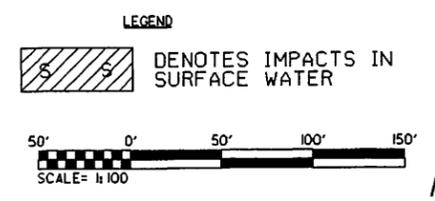
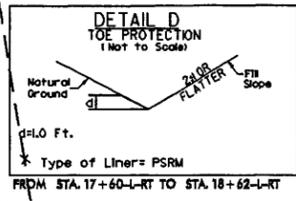
STATE HIGHWAY DESIGN ENGINEER

Hydro  
2008

Darrin Darrin

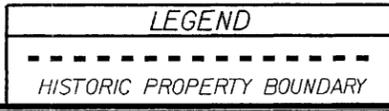
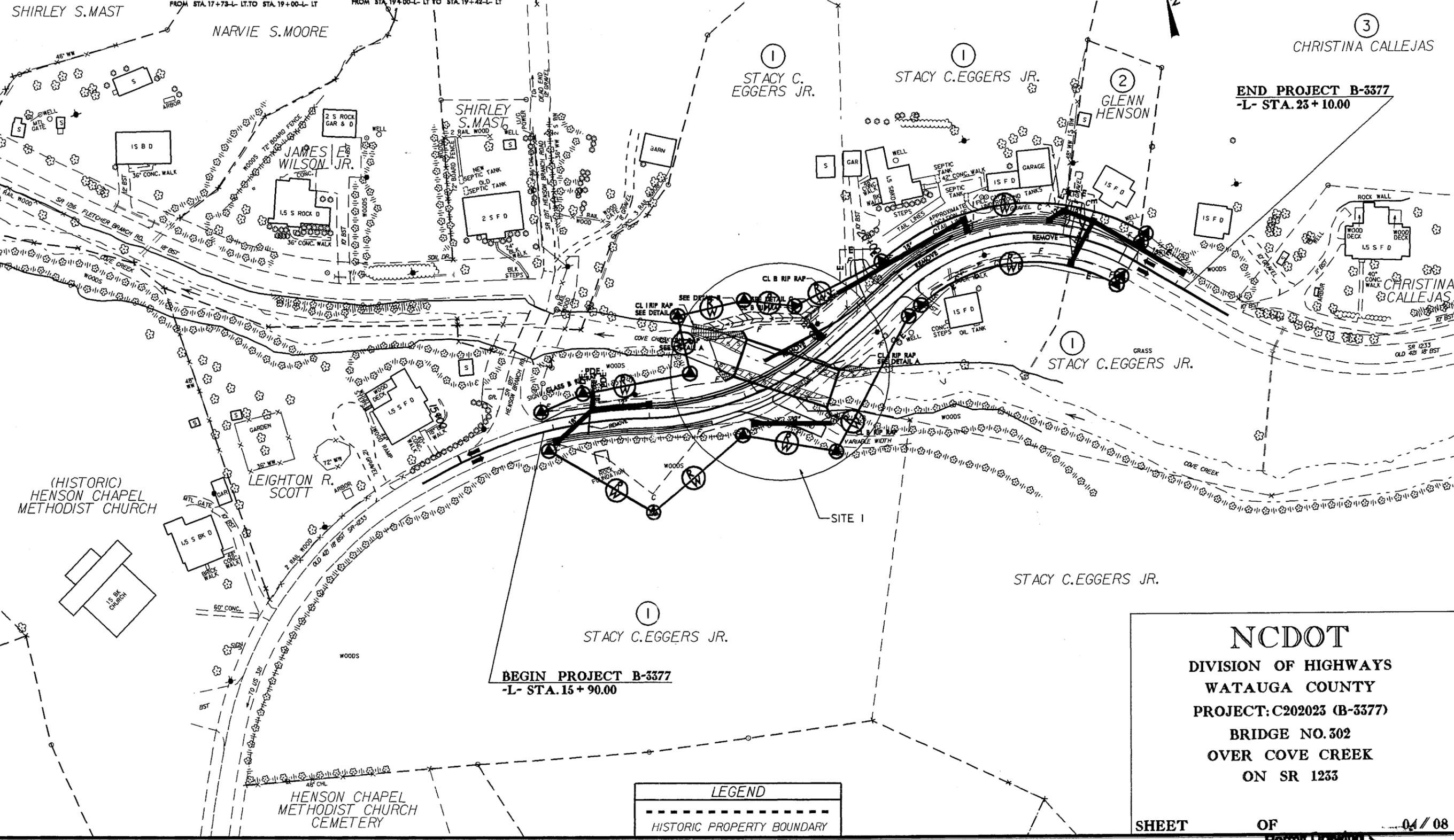
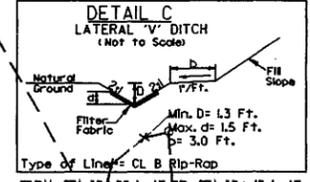
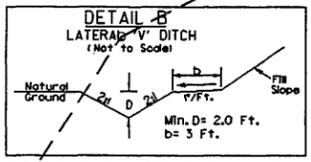
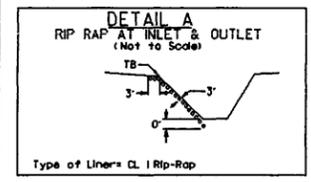
-L-

PI Sta 15+87.68	PI Sta 18+04.59	PI Sta 21+42.33
$\Delta = 27^{\circ} 01' 39.0''$ (RT)	$\Delta = 40^{\circ} 12' 29.0''$ (LT)	$\Delta = 72^{\circ} 08' 49.2''$ (RT)
D = 13' 30.00'	D = 19' 05.54'	D = 28' 38.52'
L = 200.20'	L = 210.53'	L = 251.84'
T = 102.00'	T = 109.81'	T = 145.70'
R = 424.4'	R = 300.00'	R = 200.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS



PROJECT REFERENCE NO. B-3377	SHEET NO. #
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

DESIGN EXCEPTION FOR DESIGN SPEED



**NCDOT**  
 DIVISION OF HIGHWAYS  
 WATAUGA COUNTY  
 PROJECT: C202023 (B-3377)  
 BRIDGE NO. 302  
 OVER COVE CREEK  
 ON SR 1233

SHEET OF 04 / 08

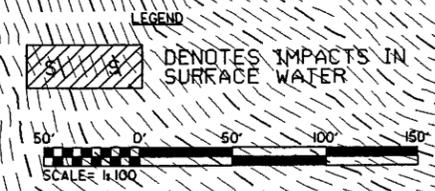
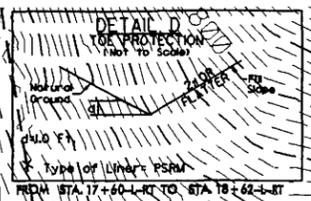
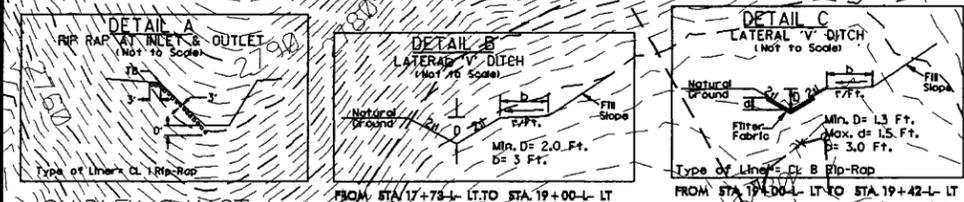
REVISIONS

\*\*\*\*\*  
 SYSTEMS TIME \*\*\*\*\*  
 \*\*\*\*\*  
 USER NAME \*\*\*\*\*

PI Sta 15+87.68  
 $\Delta = 27^{\circ} 03' 39.0''$  (RT)  
 $D = 13' 30.000''$   
 $L = 200.20'$   
 $T = 102.00'$   
 $R = 424.41'$   
 SE = SEE PLANS

PI Sta 18+04.59  
 $\Delta = 40' 12' 29.0''$  (LT)  
 $D = 19' 02' 54.9''$   
 $L = 210.53'$   
 $T = 109.81'$   
 $R = 300.00'$   
 SE = SEE PLANS

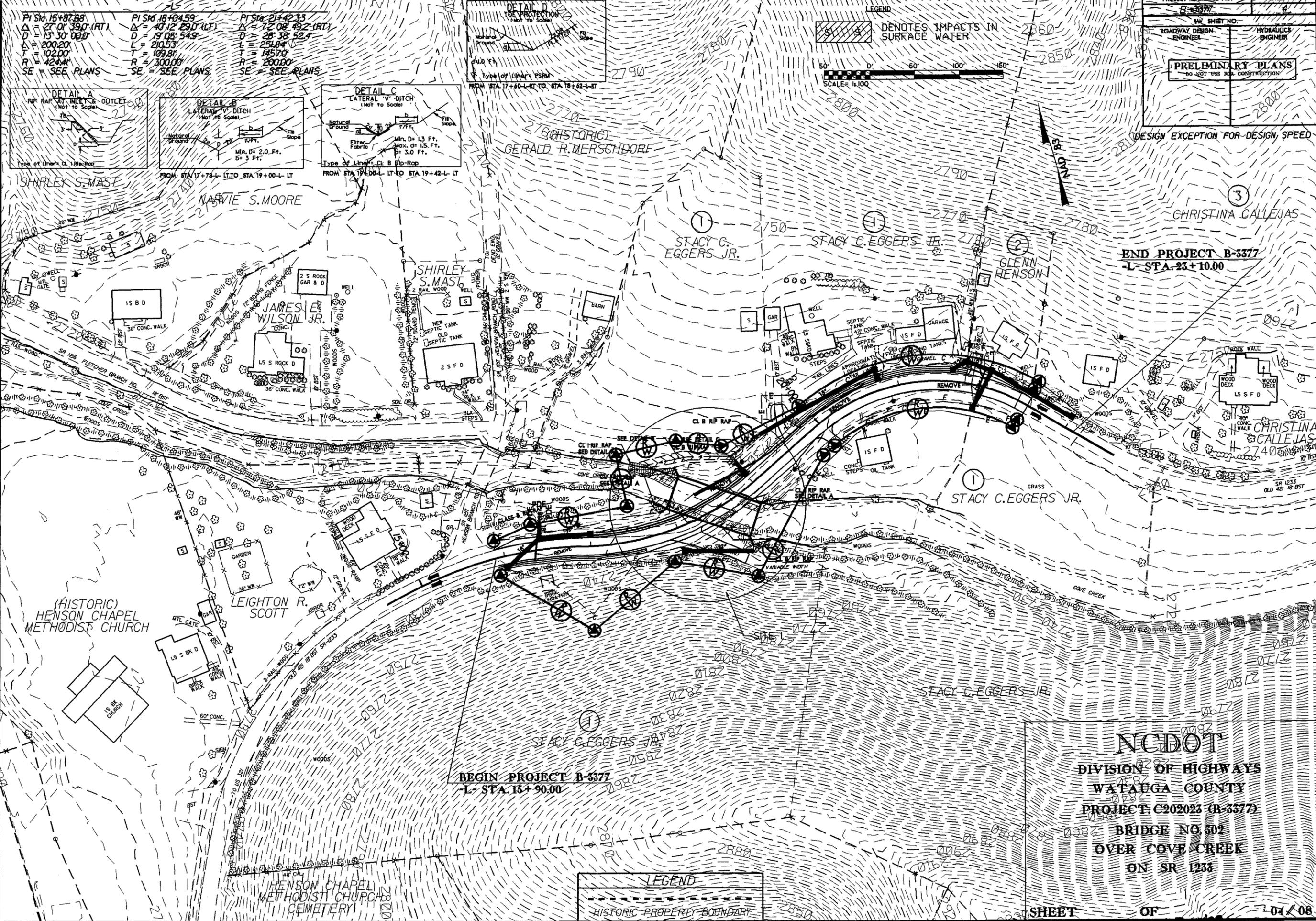
PI Sta 21+42.33  
 $\Delta = 72' 08' 49.2''$  (RT)  
 $D = 28' 38' 52.4''$   
 $L = 251.84'$   
 $T = 145.70'$   
 $R = 200.00'$   
 SE = SEE PLANS



PROJECT REFERENCE NO. B-3377	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

DESIGN EXCEPTION FOR DESIGN SPEED

REVISIONS



BEGIN PROJECT B-3377  
 L- STA. 15+90.00

**NC DOT**  
 DIVISION OF HIGHWAYS  
 WATAUGA COUNTY  
 PROJECT: (202023 (B-3377))  
 BRIDGE NO. 502  
 OVER COVE CREEK  
 ON SR 1235



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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

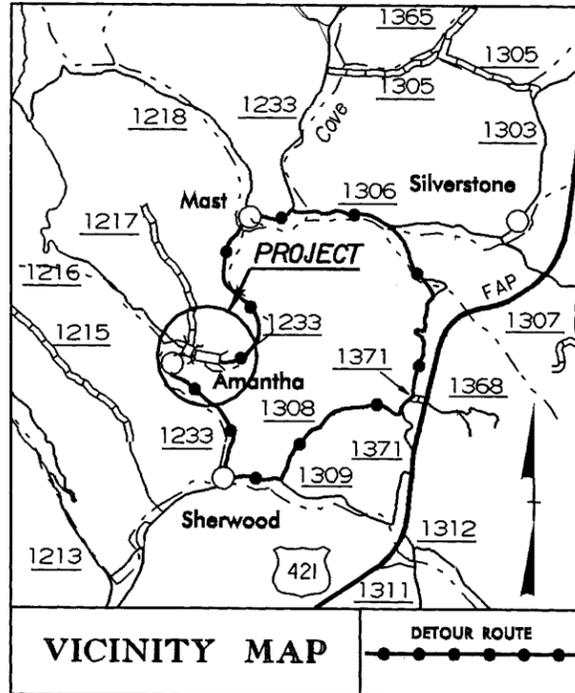
**WATAUGA COUNTY**

LOCATION: BRIDGE NO. 302 OVER COVE CREEK  
ON SR 1233

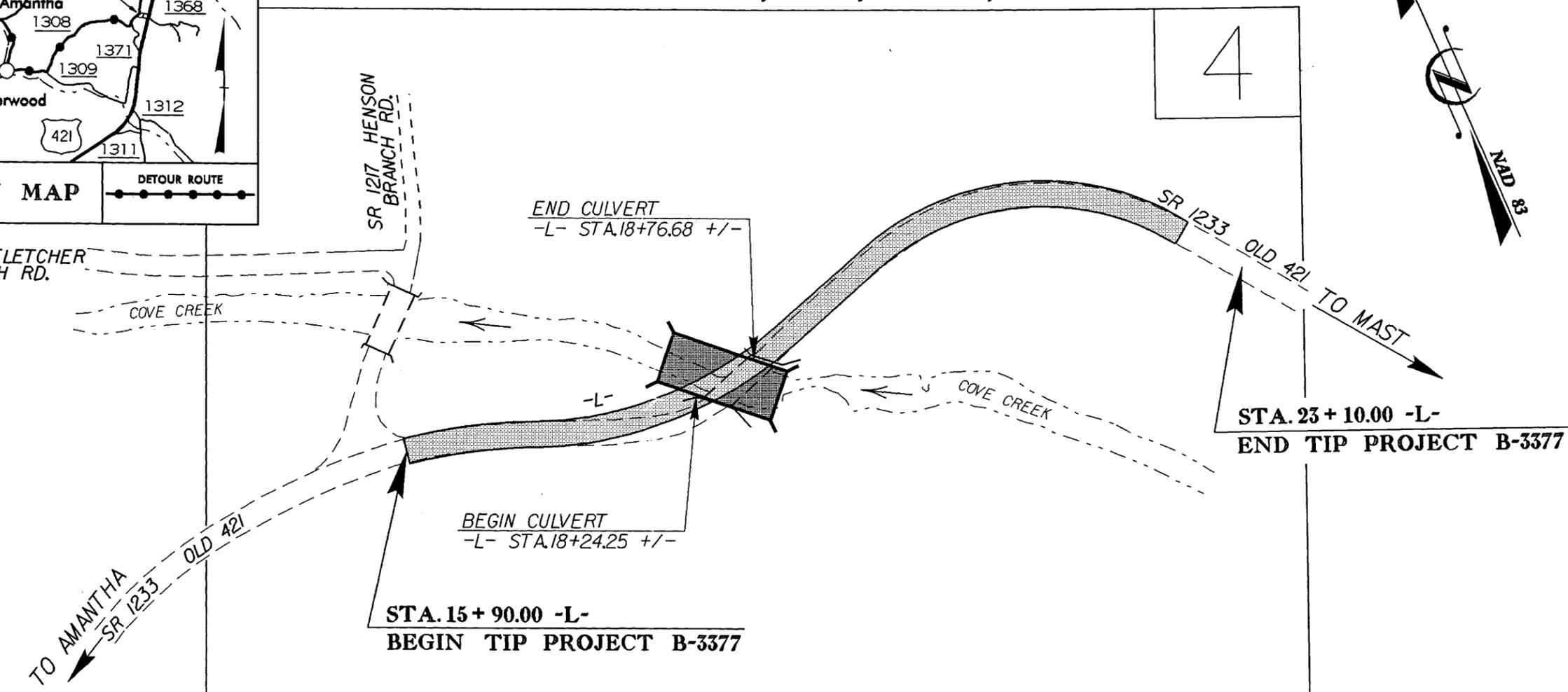
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3377	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33025.1.1	BRZ-1217(3)	PE	
33025.2.2	BRZ-1217(3)	RW & UTILITIES	

TIP PROJECT: B-3377



VICINITY MAP

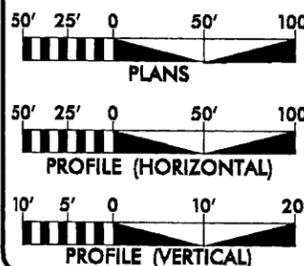


4

NOTES: (1) CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III  
(2) THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

\*\* DESIGN EXCEPTION FOR DESIGN SPEED

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 445  
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PROJECT LENGTH

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Prepared In the Office of:  
**DIVISION OF HIGHWAYS**

1000 Birch Ridge Dr.  
Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
JANUARY 3, 2008

LETTING DATE:  
JANUARY 20, 2009

ROGER D. THOMAS, P.E.  
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

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

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

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

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



Permit Drawing  
Sheet \_\_\_\_\_ of \_\_\_\_\_

STATE HIGHWAY DESIGN ENGINEER

Roadway  
Plans

24-APP-2008 13457  
F:\PROJECTS\B3377\rdy\_tsh.dgn  
\$\$\$\$\$

CONTRACT: C202023

3/15/06

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○
Property Corner	⊕
Property Monument	⊕
Parcel/Sequence Number	Ⓢ
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLB
Proposed Wetland Boundary	WLB
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	Ⓢ
Switch	Ⓢ
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

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

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

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

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	Ⓢ
Storm Sewer	-----

### UTILITIES:

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

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

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

### SANITARY SEWER:

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

### MISCELLANEOUS:

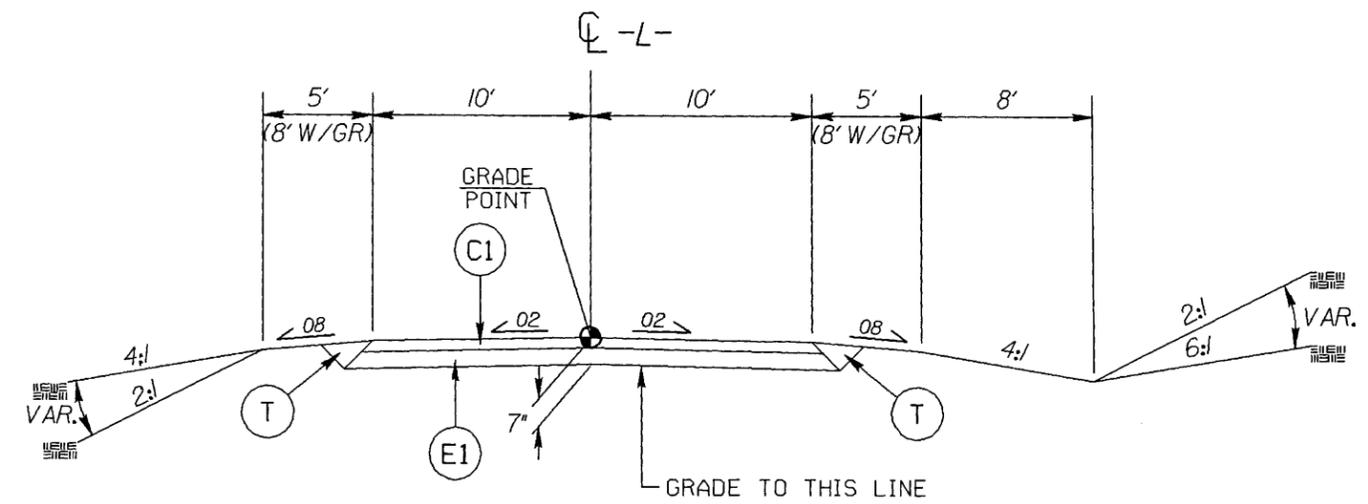
Utility Pole	Ⓢ
Utility Pole with Base	Ⓢ
Utility Located Object	Ⓢ
Utility Traffic Signal Box	Ⓢ
Utility Unknown U/G Line	U/G
U/G Tank; Water, Gas, Oil	▭
A/G Tank; Water, Gas, Oil	▭
U/G Test Hole (S.U.E.*)	Ⓢ
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

Permit Drawing  
Sheet of



PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.6 LBS. PER SQ. YD. IN EACH OF 2 LAYERS
E1	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 613 LBS. PER SQ. YD.
R1	EXPRESSWAY GUTTER
R2	SHOULDER BERM GUTTER
T	EARTH MATERIAL

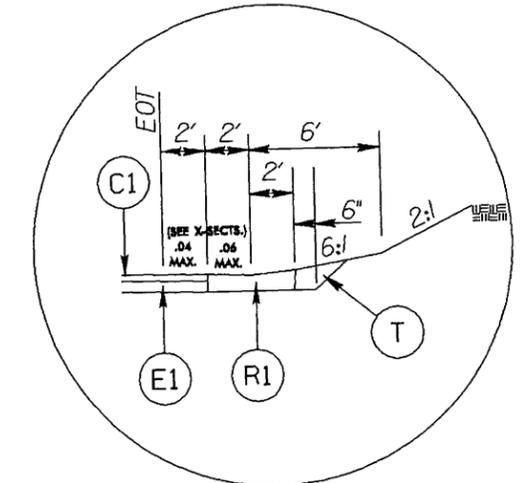
NOTE: PAVEMENT EDGE SLOPES ARE 1/4 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 1

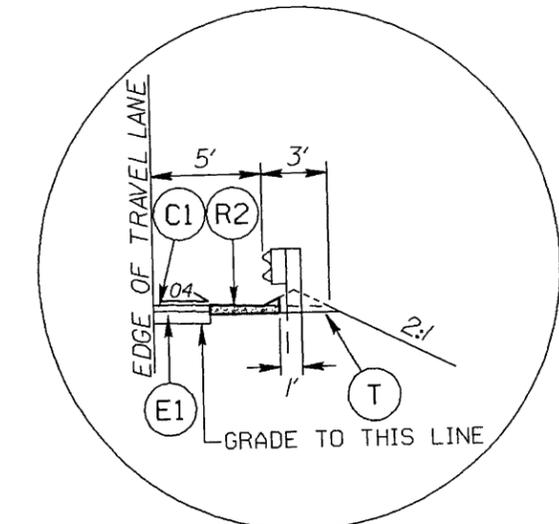
USE TYPICAL SECTION NO. 1 FOR:  
 -L- STA. 16+50.00 TO -L- STA. 22+00.00

NOTES:  
 TRANSITION FROM EXISTING TO T.S. NO. 1  
 -L- STA. 15+90.00 TO -L- STA. 16+50.00  
 TRANSITION FROM T.S. NO. 1 TO EXISTING  
 -L- STA. 22+00.00 TO -L- STA. 22+50.90  
 SHLD. WORK ONLY -L- STA. 22+50.90 TO -L- STA. 23+10.00



INSET NO. 1

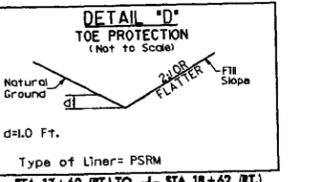
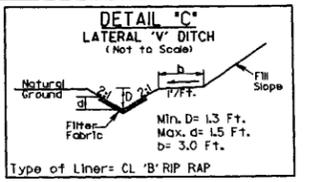
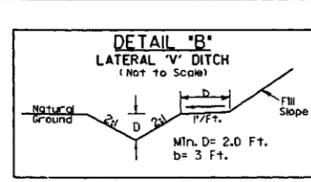
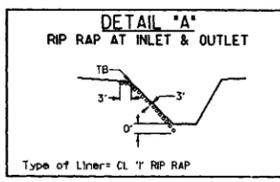
USE INSET NO. 1 WITH TYPICAL SECTION NO. 1  
 -L- STA. 15+90.00 (RT.) TO -L- STA. 17+60.00 (RT.)  
 -L- STA. 19+80.00 (LT.) TO -L- STA. 21+75.00 (LT.)



INSET NO. 2

USE INSET NO. 2 WITH TYPICAL SECTION NO. 1  
 -L- STA. 16+95.00 (LT.) TO -L- STA. 19+05.00 (LT.)

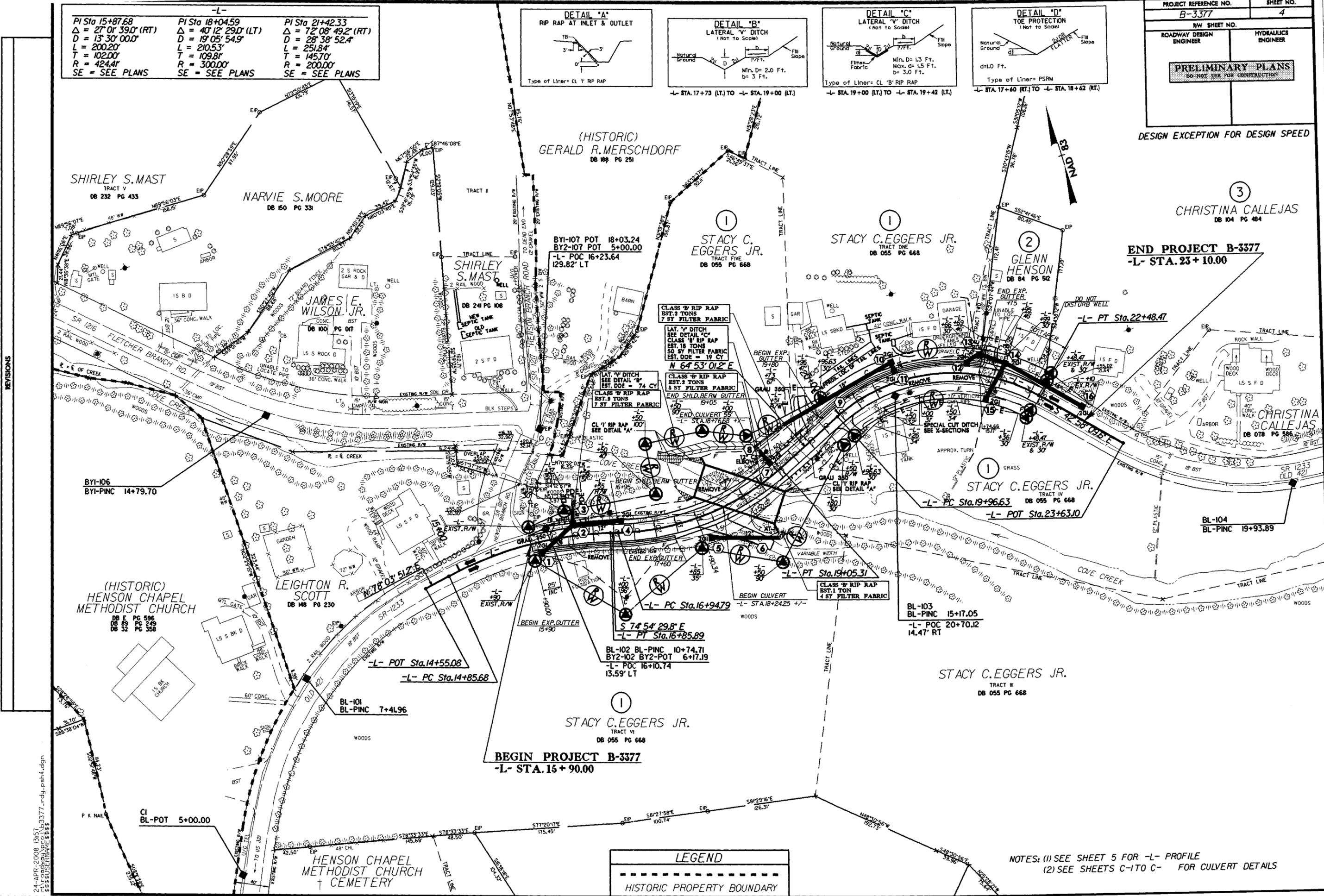
-L-		
PI Sta 15+87.68 Δ = 27° 01' 39.0" (RT) D = 13' 30' 00.0" L = 200.20' T = 102.00' R = 424.41' SE = SEE PLANS	PI Sta 18+04.59 Δ = 40° 12' 29.0" (LT) D = 19' 05' 54.9" L = 210.53' T = 109.81' R = 300.00' SE = SEE PLANS	PI Sta 21+42.33 Δ = 72° 08' 49.2" (RT) D = 28' 38' 52.4" L = 251.84' T = 145.70' R = 200.00' SE = SEE PLANS



PROJECT REFERENCE NO. B-3377	SHEET NO. 4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

DESIGN EXCEPTION FOR DESIGN SPEED

END PROJECT B-3377  
-L- STA. 23+10.00



**LEGEND**

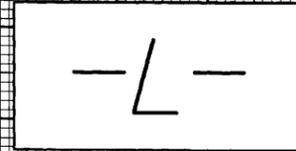
---	HISTORIC PROPERTY BOUNDARY
-----	----------------------------

NOTES: (1) SEE SHEET 5 FOR -L- PROFILE  
(2) SEE SHEETS C-1 TO C- FOR CULVERT DETAILS

24-APR-2008 13:57  
B:\PROJECTS\B-3377\_rdy\_psh4.dgn  
R:\SUN\B-3377

**CULVERT HYDRAULIC DATA**

DESIGN DISCHARGE	= 3100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2725.5	FT
BASE DISCHARGE	= 4600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2728.3	FT
OVERTOPPING DISCHARGE	= 5100	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 2731.0	FT



DESIGN EXCEPTION FOR DESIGN SPEED

**BENCHMARK LIST:**

BM #1 - P.K.NAIL SET ON WEST SIDE OF COVE CREEK IN THE NORTHWEST CORNER OF CONC. WING WALL OF PRIVATE BRIDGE. 196.8' LT. OF -BL- STA.5+05.8  
ELEV. = 2716.41 N 931.629 E 1180.019

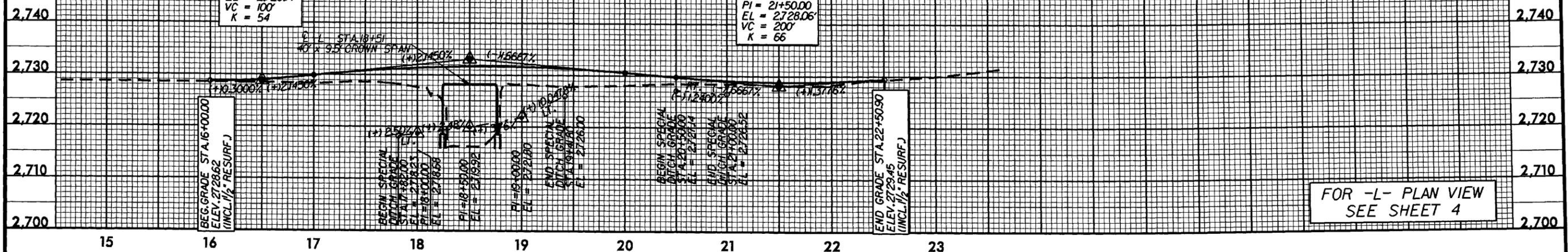
BM #2 - P.K.NAIL SET IN A ROCK IN A CUT ON NORTH SIDE OF SR 1216 (FLETCHER BRANCH RD.), 38.2' LT. OF -BY1- STA.10+49.9  
ELEV. = 2732.36 N 932.330 E 1180.055

BM #3 - 8" SPIKE IN BASE OF 28" MAPLE TREE ON NORTH BANK OF COVE CREEK 57.6' RT. OF -BL- STA.23+30.2  
ELEV. = 2729.86 N 931.554 E 1181.829

PI = 18+50.00  
EL = 2733.06'  
VC = 300'  
K = 79  
SSD = 433'

PI = 16+50.00  
EL = 2728.77'  
VC = 100'  
K = 54

PI = 21+50.00  
EL = 2728.06'  
VC = 200'  
K = 66



24-APR-2008 13:59  
C:\pwworkspace\B-3377\raw\_of\lan

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	<u>B-3377</u>
State Project No.	<u>8.2751301</u>
W.B.S. No.	<u>33025.1.1</u>
Federal Project No.	<u>BRZ-1217(3)</u>

A. Project Description:

The purpose of this project is to replace Watauga County Bridge No. 302 on SR 1233 (Old Highway 421) over Cove Creek. The replacement structure will be a single barrel bottomless culvert approximately 90 feet in length and 40 feet in width. The culvert size is based on preliminary design information and is set by hydraulic requirements. This structure will be of sufficient length and width to provide two 10-foot lanes with 8-foot shoulders on each side. The roadway grade at the new culvert will be raised approximately three feet above the existing structure.

The approach roadway will extend approximately 350 feet from the west side of the new culvert and 390 feet from the east side of the new culvert. The approaches will be widened to include a 20-foot pavement width providing two 10-foot lanes. Five-foot grass shoulders will be provided on each side (8-foot shoulders where guardrail is included). The roadway will be designed as a Rural Local Route with a 30 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1).

B. Purpose and Need:

NCDOT Bridge Maintenance Unit records indicate Bridge No. 302 has a sufficiency rating of 24.2 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to structural appraisal of 2 out of 9 and the deck conditions rating of 4 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA's Bridge Replacement Program. The low rating can be attributed to pier footings have delaminated and spalled, cracking and decay of timber, rust and corrosion in steel beams and bank erosion and settlement.

The posted weight limit on the bridge is down to 11 tons for single vehicles (SV) and 16 tons for truck-tractor semi-trailers (TTST). By comparison, a new bridge would be designed for 25 tons SV and for 45 tons TTST.

The superstructure and substructure of Bridge No. 302 have timber and steel elements that are 45 years old (Figure 3). Timber components have a typical life expectancy between 40 to 50 years due to the natural deterioration rate of wood. Rehabilitation of a timber structure is generally practical only when a few elements are damaged or prematurely deteriorated. However, past a certain degree of deterioration, most timber elements become impractical to maintain and

upon eligibility are programmed for replacement. Timber components of bridge No. 302 are experiencing an increasing degree of deterioration that can no longer be addressed by reasonable maintenance activities, therefore the bridge is approaching the end of its useful life.

Replacement of the bridge will result in safer traffic operations.

C. Proposed Improvements:

Circle one or more of the following Type II improvements that apply to the project:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).
  - a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
  - b. Widening roadway and shoulders without adding through lanes
  - c. Modernizing gore treatments
  - d. Constructing lane improvements (merge, auxiliary, and turn lanes)
  - e. Adding shoulder drains
  - f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
  - g. Providing driveway pipes
  - h. Performing minor bridge widening (less than one through lane)
  - i. Slide Stabilization
  - j. Structural BMP's for water quality improvement
  
2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
  - a. Installing ramp metering devices
  - b. Installing lights
  - c. Adding or upgrading guardrail
  - d. Installing safety barriers including Jersey type barriers and pier protection
  - e. Installing or replacing impact attenuators
  - f. Upgrading medians including adding or upgrading median barriers
  - g. Improving intersections including relocation and/or realignment
  - h. Making minor roadway realignment
  - i. Channelizing traffic
  - j. Performing clear zone safety improvements including removing hazards and flattening slopes
  - k. Implementing traffic aid systems, signals, and motorist aid
  - l. Installing bridge safety hardware including bridge rail retrofit
  
3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.
  - a. Rehabilitating, reconstructing, or replacing bridge approach slabs
  - b. Rehabilitating or replacing bridge decks

- c. Rehabilitating bridges including painting (no red lead paint), scour repair, fender systems, and minor structural improvements
  - d. Replacing a bridge (structure and/or fill)
4. Transportation corridor fringe parking facilities.
  5. Construction of new truck weigh stations or rest areas.
  6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
  7. Approvals for changes in access control.
  8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
  9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
  10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
  11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.
  12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.
  13. Acquisition and construction of wetland, stream and endangered species mitigation sites.
  14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

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

	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4 (preferred)</b>
	29,000	29,000	29,000	14,000
Structure (proposed No. 302)	567,000	273,000	563,000	563,000
Structure (proposed No. 168)	0	343,000	0	0
Detour	0	224,000	0	0
Roadway Approaches	262,000	182,000	518,000	255,000
Miscellaneous & Mobilization	207,000	280,000	322,000	202,000
Engineering and Contingencies	186,000	220,000	219,000	166,000
ROW/Const. Easements/Utilities	197,000	737,000	210,000	16,000
<b>Total</b>	<b>\$1,448,000</b>	<b>\$2,288,000</b>	<b>\$1,861,000</b>	<b>\$1,216,000</b>

**Estimated Traffic:**

Year 2007	-	445 vpd
Year 2030	-	645 vpd
TTST	-	1%
Dual	-	3%

**Accidents:** Traffic Engineering has evaluated a recent three year period and found two accidents occurring in the vicinity of the project. One was associated with the bridge approach roadway and speeding.

**Design Exceptions:** The existing roadway in this area is not designed for a 55-mph statutory speed limit and will be designed for a 30-mph design speed, which is within the character of the roadway.

**Bridge Demolition:** Bridge No. 302 is constructed entirely of timber and steel and should be possible to remove with no resulting debris in the water based on standard demolition practices.

**Alternatives Discussion:**

**No Build** – The no build alternative would result in eventually closing the road which is unacceptable given the volume of traffic served by SR 1233 (Old US 421).

**Rehabilitation** – Bridge No. 302 was constructed in 1962 and the timber materials within the bridge are reaching the end of their useful life. Rehabilitation would require replacing the timber components which would constitute effectively replacing the bridge.

**Alternative 1** replaces Bridge No. 302 with a bridge west (Figure 2A). During construction traffic would be maintained on existing Bridge Nos. 302 and 168. A new roadway parallel to Cove Creek approximately 400 feet in length would connect Old US 421 to Henson Chapel Road and Fletchers Branch Road. When traffic is routed onto the new culvert on SR 1233 and the new connector road, Bridge Nos. 168 and 302 would be removed.

**Alternative 2** replaces Bridge No. 302 with a bridge on new alignment west (Figure 2B) of the existing structure and Bridge No. 168 on the existing alignment. Bridge No. 168 would be constructed first. During construction, the existing Bridge No. 302 would maintain traffic on Old US 421. A temporary connector roadway, approximately 400 feet in length and parallel to Cove Creek would maintain traffic from Old US 421 to Henson Chapel Road and Fletchers Branch Road. After construction of both bridges the connector road would be removed. This alternative would relocate two (2) homes on Fletchers Branch Road.

**Alternative 3** replaces Bridge No. 302 with a culvert at approximately the same location (Figure 2C). During construction, traffic will be maintain by an off site detour along SR 1306 (Silverstone Road), SR 1308 (Joe Shoemaker Road), and SR 1309 (Sherwood Road). A new permanent roadway parallel to Cove Creek approximately 400 feet in length would be build to connect Old US 421 to Henson Chapel Road and Fletchers Branch Road. When traffic is routed onto the culvert on SR 1233, the new connector roadway would be opened and Bridge No. 168 would be removed.

**Alternative 4 (preferred)** will replace Bridge No. 302 on the existing alignment (Figure 2D). Traffic will be detoured offsite during the construction period. Bridge No. 168 will remain in place to provide access to Henson Chapel Road and Fletchers Branch Road.

NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The offsite detour (Figure 1) for this project would be SR 1306 (Silverstone Road), SR 1308 (Joe Shoemaker Road), and SR 1309 (Sherwood Road). The majority of traffic on the road is local traffic. The detour for the average road user would result in nine minutes additional travel time (four miles additional travel). Up to a 10-month duration of construction is expected on this project.

Based on the Guidelines, the criteria above indicate that on the basis of delay alone the detour is acceptable. Watauga County Emergency Services along with Watauga County Schools Transportation have also indicated that the detour is acceptable. NCDOT Division 11 has indicated the condition of all roads, bridges and intersections on the offsite detour are acceptable without improvement and concurs with the use of the detour.

**Onsite Detour** – An onsite detour was not evaluated due to the presence of an acceptable offsite detour.

**Staged Construction** – Staged construction was not considered because of the availability of an acceptable offsite detour.

**Structure Type:** The current structure is a bridge built in 1962. The reason for building a bridge was not because a culvert would not work but because the design, materials and labor were not practical in the time when this structure was built. A culvert has been determined adequate from a hydraulics standpoint. Because a culvert is less than half the cost, twice the life expectancy, and virtually no maintenance in comparison to a bridge, a culvert is the preferred structure type.

**Other Agency Comments:**

The **N.C. Wildlife Resource Commission** in standardized letters provided a request that they prefer any replacement structure to be a spanning structure.

**Response:** At smaller stream crossing it is more economical to replace bridges with box culverts. Culverts cost less than bridges, require less maintenance throughout their service life than bridges, and last longer than bridges. Therefore, where appropriate NCDOT prefers to use box culverts to replace bridges. Since the creek is Hatchery Supported Designated Public Mountain Trout Waters and supports a good rock bass population, the proposed bottomless culvert will be designed according to current NCDOT design practices. If a bottomless culvert is not appropriate for this location measures such as buried box bottoms to facilitate fish passage, dry cell(s) to allow wildlife passage, and placement to minimize channel widening and realignment will be incorporated as appropriate.

**Public Involvement:**

A Citizens Informational Workshop for was held in June 2001 and December 2006 at Henson Chapel Methodist Church. Residents, property owners, and business owners had the opportunity to take part in project development, ask questions, and voice concerns. In the June 2001, Alternatives 1 and 2 were displayed for review and discussion. In December 2006, Alternatives 1, 2, 3 and 4 as previously described were displayed. In December 2006 a small group meeting was held with the property owners prior to the workshop. Approximately 20 citizens attended the workshop and small group meeting for a presentation and then a question and answer session. Since the workshop, 33 comment sheets have been received, including 25 for Alternative 4, seven (7) for Alternative 3, and one (1) for Alternative 1. The Watauga County Board of Commission submitted a

resolution in support of Alternative 4. Most citizens at both meetings were opposed to the physical change that Alternative 1, 2 and 3 would cause.

An informational newsletter was mailed to area residents and appropriate officials in March 2007 identifying Alternative 4 as the preferred alternative. No comments were received in response to the newsletter.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

<u>ECOLOGICAL</u>	<u>YES</u>	<u>NO</u>
(1) Will the project have a substantial impact on any unique or important natural resource?	<input type="checkbox"/>	<u>X</u>
(2) Does the project involve habitat where federally listed endangered or threatened species may occur?	<input type="checkbox"/>	<u>X</u>
(3) Will the project affect anadromous fish?	<input type="checkbox"/>	<u>X</u>
(4) If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	<u>X</u>	<input type="checkbox"/>
(5) Will the project require the use of U. S. Forest Service lands?	<input type="checkbox"/>	<u>X</u>
(6) Will the quality of adjacent water resources be adversely impacted by proposed construction activities?	<input type="checkbox"/>	<u>X</u>
(7) Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?	<input type="checkbox"/>	<u>X</u>
(8) Will the project require fill in waters of the United States in any of the designated mountain trout counties?	<u>X</u>	<input type="checkbox"/>
(9) Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?	<input type="checkbox"/>	<u>X</u>

	<u>YES</u>	<u>NO</u>
<u>PERMITS AND COORDINATION</u>		
(10) If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(11) Does the project involve Coastal Barrier Resources Act resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(12) Will a U. S. Coast Guard permit be required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(13) Will the project result in the modification of any existing regulatory floodway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(14) Will the project require any stream relocations or channel changes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>SOCIAL, ECONOMIC, AND CULTURAL RESOURCES</u>		
(15) Will the project induce substantial impacts to planned growth or land use for the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(16) Will the project require the relocation of any family or business?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(17) Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(18) If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(19) Will the project involve any changes in access control?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(20) Will the project substantially alter the usefulness and/or land use of adjacent property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(21) Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(22) Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(23) Is the project anticipated to cause an increase in traffic volumes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- |      |   |                          |                          |
|------|---|--------------------------|--------------------------|
| (24) | Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?   | <u>  X  </u>             | <input type="checkbox"/> |
| (25) | If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility? | <u>  X  </u>             | <input type="checkbox"/> |
| (26) | Is there substantial controversy on social, economic, or environmental grounds concerning the project?  | <input type="checkbox"/> | <u>  X  </u>             |
| (27) | Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?   | <u>  X  </u>             | <input type="checkbox"/> |
| (28) | Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?  | <input type="checkbox"/> | <u>  X  </u>             |
| (29) | Will the project affect any archaeological remains which are important to history or pre-history?   | <input type="checkbox"/> | <u>  X  </u>             |
| (30) | Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)?             | <input type="checkbox"/> | <u>  X  </u>             |
| (31) | Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended?  | <input type="checkbox"/> | <u>  X  </u>             |
| (32) | Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the National System of Wild and Scenic Rivers?   | <input type="checkbox"/> | <u>  X  </u>             |

F. Additional Documentation Required for Unfavorable Responses in Part E

**Response to Question 8: The proposed bridge will be replaced with a bottomless culvert. Due to the nature of the construction of a bottomless culvert temporary fill will occur in Cove Creek, which is a Hatchery Supported Designated Public Mountain Trout Waters. NCDOT will implement Guidelines for Construction of Highway Improvements Adjacent to or Crossing Trout Waters in North Carolina in the design and construction of this project.**

G. CE Approval

TIP Project No.	<u>B-3377</u>
State Project No.	<u>8.2751301</u>
W.B.S. No.	<u>33025.1.1</u>
Federal Project No.	<u>BRZ-1217(3)</u>

Project Description:

The purpose of this project is to replace Watauga County Bridge No. 302 on SR 1233 (Old Highway 421) over Cove Creek. The replacement structure will be a single barrel bottomless culvert approximately 90 feet in length and 40 feet in width. The culvert size is based on preliminary design information and is set by hydraulic requirements. This structure will be of sufficient length to provide two 10-foot lanes with 8-foot shoulders on each side. The roadway grade at the new culvert will be raised approximately three feet above the existing structure.

The approach roadway will extend approximately 350 feet from the west end of the new culvert and 390 feet from the east end of the new culvert. The approaches will be widened to include a 20-foot pavement width providing two 10-foot lanes. Five-foot grass shoulders will be provided on each side (8-foot shoulders where guardrail is included). The roadway will be designed as a Rural Local Route with a 30 mile per hour design speed. Traffic will be detoured off-site during construction (see Figure 1).

Categorical Exclusion Action Classification:

       TYPE II(A)  
  X   TYPE II(B)

Approved:

<u>9/27/07</u> Date	<u>William J. Steiner</u> Bridge Project Development Engineer Project Development & Environmental Analysis Branch
<u>8/27/07</u> Date	<u>John J. Williams</u> Project Engineer Project Development & Environmental Analysis Branch
<u>8/27/07</u> Date	<u>Samuel R. McLean</u> Project Planning Engineer Project Development & Environmental Analysis Branch

For Type II(B) projects only:

<u>8/29/07</u> Date	<u>Thomas D. Riggbee</u> for John F. Sullivan, III, PE, Division Administrator Federal Highway Administration
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## **PROJECT COMMITMENTS:**

**Watauga County  
Bridge No. 302 on SR 1233 (Old US 421)  
Over Cove Creek  
Federal Aid Project No. BRZ-1217(3)  
State Project No. 8.2751301  
W.B.S. No. 33025.1.1  
T.I.P. No. B-3377**

### **Division Eleven Construction, Resident Engineer's Office – Offsite Detour**

In order to have time to adequately reroute school busses, Watauga County Schools should be contacted at (828) 264-7196 at least one month prior to road closure.

Watauga County Emergency Services needs to be contacted at (828) 264-4235 at least one month prior to road closure to make the necessary temporary reassignments to primary response units.

### **Contracts Unit - Length of Construction**

In order to address specific requests from the School Transportation Director for Watauga County, NCDOT will set the **minimum** reasonable contract time to reduce the period of road closure.

### **All Design Groups/Division Resident Construction Engineer – Trout Issues**

Cove Creek is designated, as Hatchery Supported Designated Public Mountain Trout Waters and supports a good rock bass population.. Therefore a moratorium on all in water work will be in place from October 15 to March 31 of any given year.

NCDOT will implement Guidelines for Construction of Highway Improvements Adjacent to or Crossing Trout Waters in North Carolina in the design and construction of this project.

### **Structure Design – TVA Permit**

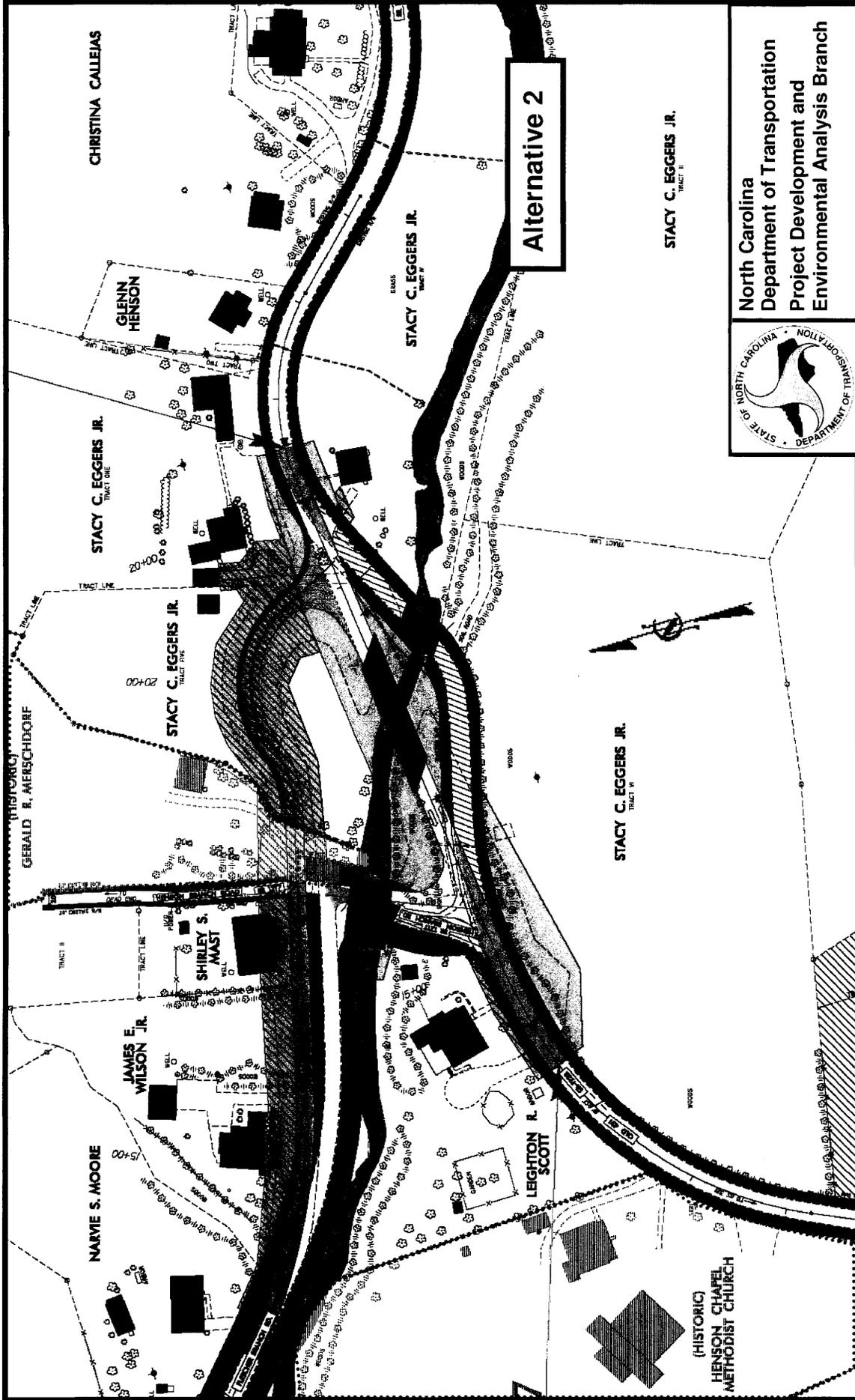
The proposed project is located in the Tennessee Valley Authority's (TVA) Land Management District. If the bridge is replaced along existing alignment, as proposed, an approval under Section 26a of the TVA Act will not be needed. However, TVA will review final bridge design plans to confirm this determination.

### **Roadway Design / Division Eleven Traffic Engineering – Speed Limit**

The existing roadway in this area is not designed for a 55-mph statutory speed limit and a 30-mph design speed will be used, which is within the character of the existing facility.







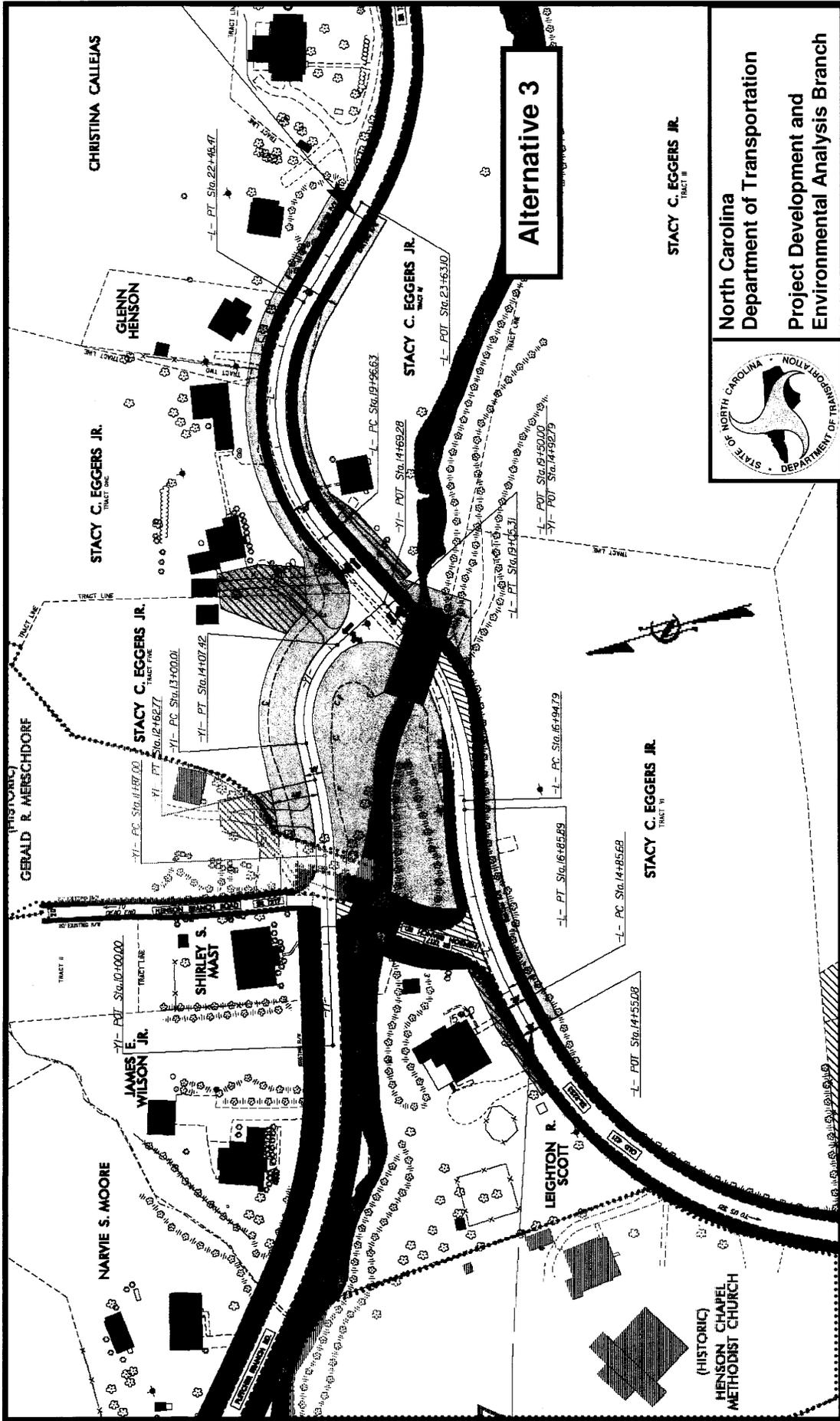
Note: Properties shaded light green are eligible for the National Register of Historic Places



North Carolina  
Department of Transportation  
Project Development and  
Environmental Analysis Branch

Watauga County  
Replace Bridge No. 302 on SR 1233  
Over Cove Creek  
B-3377

Figure 2B



**Alternative 3**



**North Carolina  
Department of Transportation  
Project Development and  
Environmental Analysis Branch**

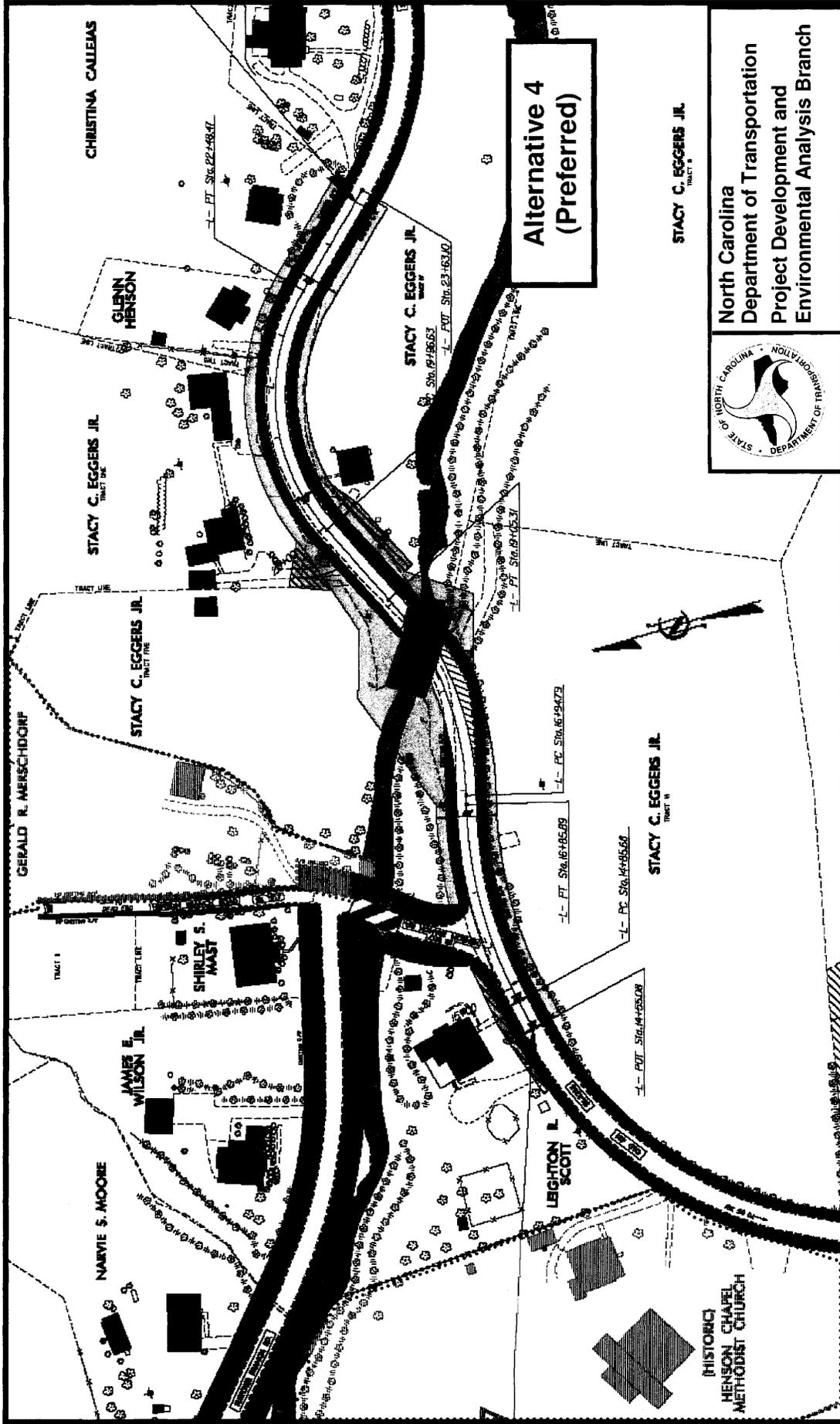
STACY C. EGGERS JR.  
TRACT III

STACY C. EGGERS JR.  
TRACT II

**Watauga County  
Replace Bridge No. 302 on SR 1233  
Over Cove Creek  
B-3377**

**Note:** Properties shaded light green are eligible for the  
National Register of Historic Places

**Figure 2C**



North Carolina  
Department of Transportation  
Project Development and  
Environmental Analysis Branch

STACY C. EGGERS JR.  
TRACT #

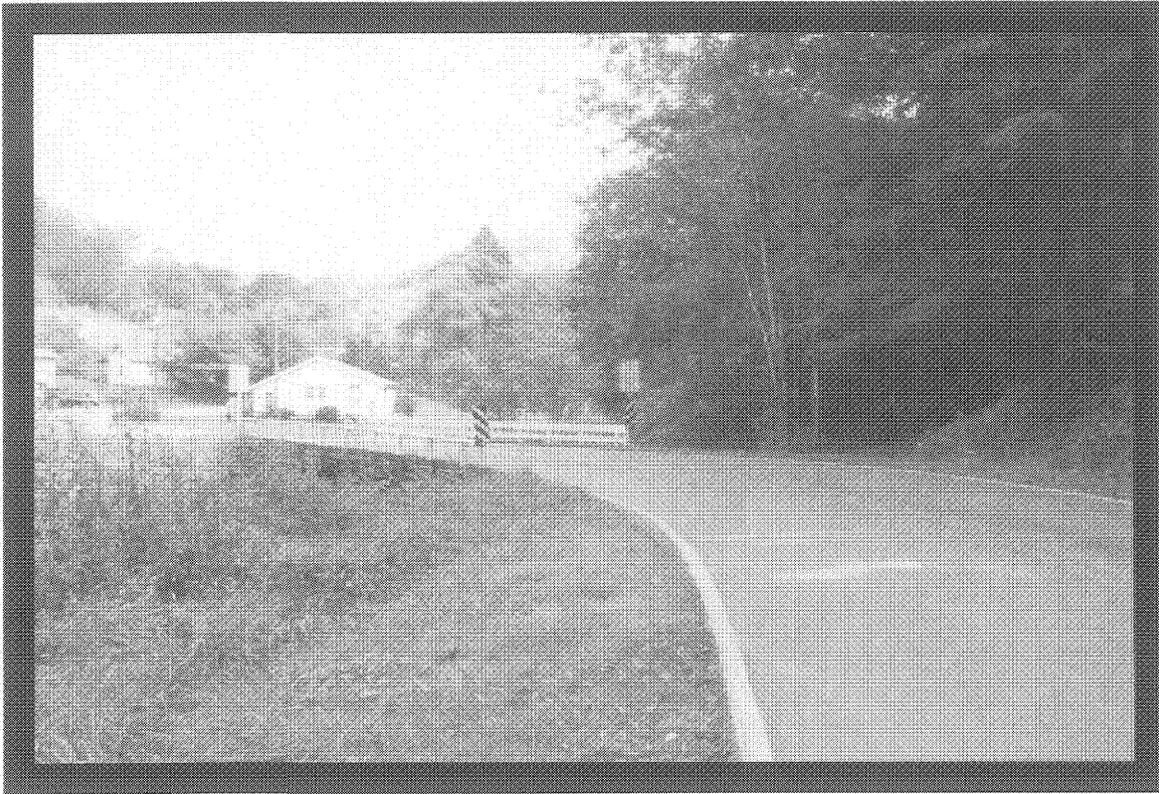
STACY C. EGGERS JR.  
TRACT #

(HISTORIC)  
HENSON CHAPEL  
METHODIST CHURCH

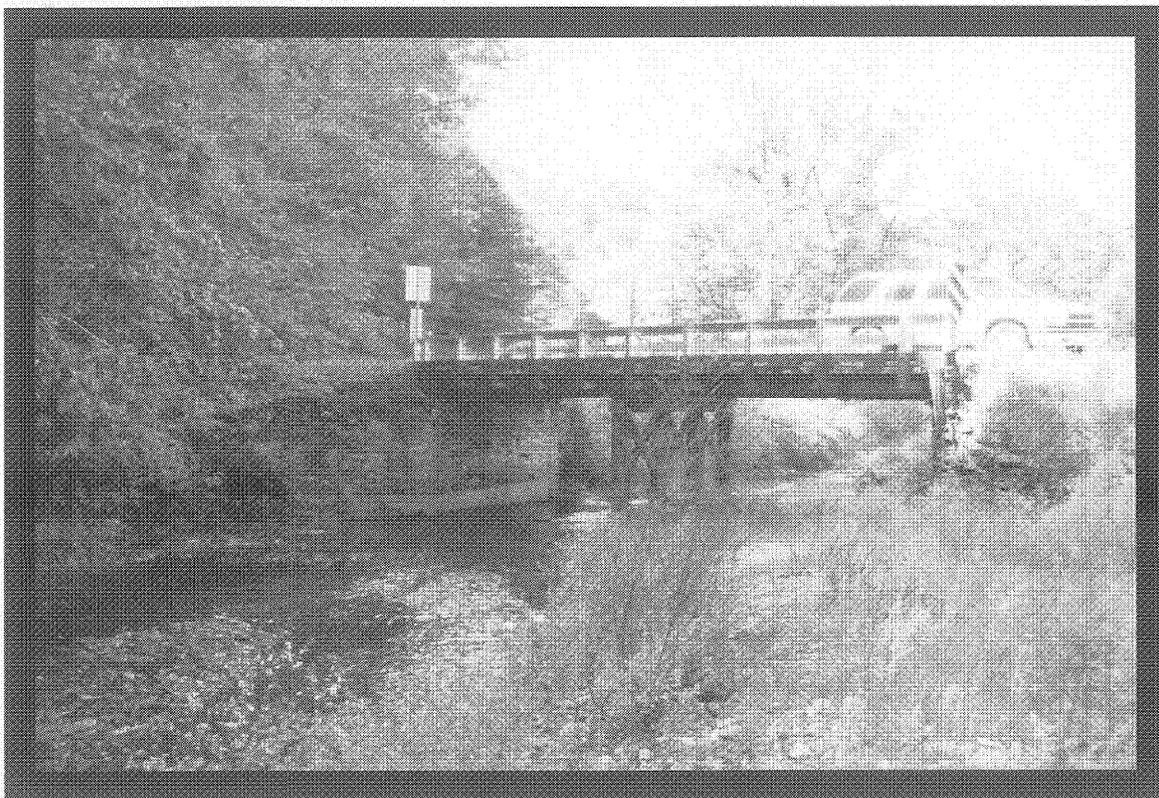
Note: Properties shaded light green are eligible for the  
National Register of Historic Places

Watauga County  
Replace Bridge No. 302 on SR 1233  
Over Cove Creek  
B-3377

Figure 2D



Looking Northeast from South Approach



Looking at East Side of Bridge

B-3377

FIGURE 3

Federal Aid # BRZS-1217(3)

TIP # B-3377

County: Watauga

**CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS**

**Project Description:** Replace Bridge No. 168 on SR 1217 and Bridge No. 302 on SR 1233 over Cove Creek

On 19 December 2006 representatives of

- North Carolina Department of Transportation (NCDOT)
- Federal Highway Administration (FHWA)
- North Carolina State Historic Preservation Office (HPO)
- Other

Reviewed the subject project and agreed

- There are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.
- There are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.
- There is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.
- There is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

*[Signature]* 12/19/2006  
Representative, NCDOT Date

*[Signature]* 1-9-07  
FHWA, for the Division Administrator, or other Federal Agency Date

*[Signature]* 12-19-06  
Representative, HPO Date

*[Signature]* 12.19.06  
State Historic Preservation Officer Date

Federal Aid # BRZS-1217(3)

TIP # B-3377

County: Watauga

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Dr. Filmore Bingham House (DE) – Alternative 4

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Dr. Filmore Bingham House (DE) – Alternatives 1, 2, and 3 – No Adverse Effect

Reason(s) why the effect is not adverse (if applicable).

The setting is not a contributing factor to the property's eligibility.

Initialed:

NCDOT

CF

FHWA

DB

HPO SDM



**North Carolina Department of Cultural Resources  
State Historic Preservation Office**

David L. S. Brook, Administrator

Michael F. Easley, Governor  
Lisbeth C. Evans, Secretary

Division of Archives and History  
Jeffrey J. Crow, Director

September 12, 2001

**MEMORANDUM**

To: Thomas Padgett  
NCDOT

From: David Brook *BIS for David Brook*  
Deputy State Historic Preservation Officer

Re: Bridge #168 on SR 1217 over cove Creek, B-3377, Watauga County, ER 99-8185

Thank you for forwarding the archaeological site form for 31WT333/333\*\*. We have completed our review of the archaeological report for the above project.

During the course of the survey one site was located within the project area. The authors have recommended that no further archaeological investigation be conducted in connection with this project. We concur with this recommendation since this project will not involve significant archaeological resources.

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

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

DB:kgc

cc: John Wadsworth, FHWA

	<b>Location</b>	<b>Mailing Address</b>	<b>Telephone/Fax</b>
<b>Administration</b>	507 N. Blount St, Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 • 733-8653
<b>Restoration</b>	515 N. Blount St, Raleigh, NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 • 715-4801
<b>Survey &amp; Planning</b>	515 N. Blount St, Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 • 715-4801



## North Carolina Department of Cultural Resources

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

Division of Archives and History  
Jeffrey J. Crow, Director

February 24, 1999

### MEMORANDUM

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

FROM: David Brook *David Brook*  
Deputy State Historic Preservation Officer

SUBJECT: Bridge No. 168 on SR 1217 over Cove Creek,  
B-3377, Watauga County, ER 99-8185



Thank you for your letter of January 29, 1999, concerning the above project.

We have reviewed our files and located Henson Chapel Methodist Church (WT 52), a property listed on the state study list for possible nomination to the National Register of Historic Places. We look forward to checking the aerial maps and photographs to determine if this property is within the area of potential effect.

With regard to archaeological resources, site 31WT116 is located nearby. We recommend an archaeological survey be conducted of the project area.

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  
T. Padgett



## North Carolina Department of Cultural Resources

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

Division of Archives and History  
Jeffrey J. Crow, Director

September 25, 1997

### MEMORANDUM

TO: H. Franklin Vick, P.E., Manager  
Planning and Environmental Branch  
Division of Highways  
Department of Transportation

FROM: David Brook *David Brook / VG*  
Deputy State Historic Preservation Officer

SUBJECT: Bridge # 302 on SR 1233 over Cove  
Creek, ~~Bridge # 302~~ Watauga Co. ER 96-9019, ER 98-7374

*B-3377*  
Thank you for your letter of August 19, 1997, transmitting the archaeological survey report by Megan O'Connell concerning the above project.

One site 31WT116 was revisited and evaluated during this survey. The site is not eligible for listing on the National Register. We concur with the recommendation. No further archaeological investigations are recommended in association 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.

cc: Mr. Padgett  
Nicholas Graf

ARCHAEOLOGICAL SURVEY AND EVALUATION  
REPLACEMENTS OF BRIDGE NO. 168  
ON SR 1217 AND BRIDGE NO. 302 ON SR 1233  
OVER COVE CREEK  
WATAUGA COUNTY, NORTH CAROLINA

FEDERAL AID NO. BRZ-1217(3)  
STATE PROJECT 8.2751301  
WBS #33025.1.1

TIP NO. B-3377

**MANAGEMENT SUMMARY**

This management summary has been prepared by the North Carolina Department of Transportation (NCDOT) in Raleigh, North Carolina. It describes the conjoining of TIP projects B-3062 and B-3377, as well as the results of the archaeological investigations that have been conducted for both projects, including the survey and evaluation of archaeological site 31WT116. This is a federally-funded project subject to Section 106 of the National Historic Preservation Act (1966, as amended), which requires consultation with the North Carolina Historic Preservation Office (NC HPO) on possible effects of the proposed project on historic properties. The NC HPO has assigned tracking number ER 99-8185 to this project.

**Project History**

TIP project B-3062 was originally designated to replace Bridge No. 302 on SR 1233 over Cove Creek. Two alternatives were implemented for study. In 1997, NCDOT archaeologists Megan O'Connell and Tom Beaman conducted archaeological survey for these two alternatives (O'Connell 1997). Their survey investigations relocated archaeological site 31WT116, originally recorded in 1974 by students from Appalachian State University. O'Connell (1997:11,12) recommended that site 31WT116's cultural deposits were confined to disturbed soils and that the project would not impact any significant archaeological materials. In correspondence dated 9/25/1997, the NC HPO concurred with O'Connell's recommendations, and further determined that site 31WT116 was not eligible.

TIP project B-3377 was originally designated to replace Bridge No. 168 on SR 1217 over Cove Creek. Bridge No. 168 is approximately 250 feet (76.2 meters) downstream from Bridge No. 302. In 2001, NCDOT archaeologists Jesse Zinn and Shane Petersen conducted archaeological survey for the single alternative (Zinn et al 2001). That survey identified one archaeological site, 31WT333/333\*\*. Zinn et al (2001:12,13) recommended that site 31WT333/333\*\* held no potential to contribute significant information to the understanding of North Carolina's history, and that it was not eligible. In correspondence dated 9/12/2001, the NC HPO concurred with Zinn et al's recommendations.

In 2006, the Archaeology Group of the NCDOT was contacted by the department's Bridge Unit as the two bridge replacement projects had been combined and organized under the B-3377 project designation. TIP project B-3377 now proposes to address both adjacent crossings of Cove Creek (bridges No. 302 and No. 168). At that time, there were four alternatives implemented for study. In email correspondence to the NC HPO dated 10/5/2006, it was notified that projects B-3062 and B-3377 were combined, and recommendations for further archaeological

work were requested. In email correspondence dated 10/10/2006, NC HPO recommended that additional survey testing be conducted in the areas of site 31WT116's limits that would be possibly impacted by the redesign. On 10/13/2006, Zinn conducted archaeological survey across the portions of site 31WT116 proposed to be impacted by the project's new alternatives. Results of this survey work are detailed below.

#### Results of Expanded Archaeological Survey

An expanded intensive archaeological survey for the new alternatives associated with the newly redesignated B-3377 project was conducted in October 2006. This work was accomplished through the excavation of six shovel test pits (STPs). While some archaeological materials were recovered from one of the tests, they were found in disturbed, mixed soil deposits, and found to be associated with the original site 31WT116 site.

A visual inspection of the project area did not identify any structures, deposits or surface features. A visual inspection of the ground surface along Cove Creek did not identify any artifacts, deposits or features. A visual inspection of the creek bank profile did not identify any deposits or features.

No eligible archaeological resources were identified during this expanded archaeological survey. No further archaeological work is recommended.

#### Current Recommendations and Conclusions

In the spring of 2007, the department's Bridge Unit selected Alternative 4 as the Preferred Alternative. Alternative 4 essentially follows the original B-3062 alignment, which was cleared by NC HPO 1997. In email correspondence to the NC HPO, this situation was explained and concurrence requested, to clear the current B-3377 alternative. In an email response from the Office of State Archaeology reviewer, dated 05/08/2007 (see attachment), this clearance was given.

**Subject: Re: B-3062/B-3377 Watauga Co.]**  
**Date: Tue, 8 May 2007 10:43:11 -0400**  
**From: "Linda Hall" <linda.hall@ncmail.net>**  
**To: "Jesse D. Zinn" <jdzinn@dot.state.nc.us>**

Whew! Yes, sounds like clearance is appropriate.

Linda

----- Original Message -----

From: "Jesse D. Zinn" <jdzinn@dot.state.nc.us>  
To: <linda.hall@ncmail.net>  
Cc: "Matt T. Wilkerson" <mtwilkerson@dot.state.nc.us>  
Sent: Tuesday, May 08, 2007 10:29 AM  
Subject: [Fwd: B-3062/B-3377 Watauga Co.]

> Linda,  
> I'm still working on the write-up of the additional work I did at  
> 31WT116 - the addendum to the original B-3377 report from 2001  
> (though, I guess in a way, it's also an addendum to the B-3062  
> report of 1997, as well).  
>  
> However, the project design has changed again, and now the  
> preferred alternative has reverted back to basically the original  
> alternative from the B-3062 project - that is, the replacement of  
> Bridge No. 302. Under the current preferred alternative, Bridge  
> No. 168 (original B-3377) will not be replaced, and the field  
> containing 31WT116 (not eligible) won't be affected any further  
> than basically the original B-3062 limits. Please see the  
> attached PDF file with the current preferred alternative.  
>  
> So, basically, we've had two separate projects - B-3062 and  
> B-3377 - that had merged due to their proximity to each other,  
> and codified under the one's, B-3377, designation, which, through  
> the design process, have now reverted back to the original  
> other's, B-3062, original design, more or less. I've never heard  
> of anything like this happening before, but there it is.  
>  
> Since we've got an original concurrence letter for B-3062 (and  
> also for the original B-3377), it would seem as though we're  
> clear? However, we reopened Sec. 106 consultation with your  
> office because the project changed, but now it's basically  
> changed back. So, where are we? I guess I'd like to request  
> concurrence that the current B-3377 design is covered under the  
> original B-3062 report's concurrence letter. Could we get a  
> letter stating such? Perhaps conditioned on your office's review  
> of the final plans?  
>  
> In the meantime, since I did the additional, now irrelevant, work  
> on 31WT116, I'll write it up as I said, as an addendum to the  
> original B-3377 report. I'll get that to you most likely in  
> June.  
>  
> Would your office just now consolidate the B-3062 and B-3377  
> files/reports?  
>  
> Thanks, Linda,  
> -Jess  
>  
> --  
> Jesse D. Zinn

**Natural Resources Technical Report**

**Proposed Bridge Realignment  
State Route 1233 Bridge 302 over Cove Creek  
Watauga County**

**TIP No. B-3062  
State Project No. 8.2750401  
FAP # BRZ-1233 (2)**

Prepared for:

North Carolina Department of Transportation  
Division of Highways  
Planning and Environmental Branch  
Environmental Unit

Issued by:

Rust Environment & Infrastructure  
5510 Six Forks Road, Suite 200  
Raleigh, North Carolina 27609

Rust Project No. 40530

**January, 1997**  
(Revised February, 1997)

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## 1.0 INTRODUCTION

This Natural Resources Technical Report is submitted to assist in the preparation of a Categorical Exclusion (CE) for the proposed project. The purpose of this technical report is to inventory, catalog and describe the various natural resources likely to be impacted by the proposed action. The report also attempts to identify and estimate the likely consequences of the anticipated impacts to these resources. These descriptions and estimates are relevant only in the context of the preliminary design concepts. It may become necessary to conduct additional field investigations should design parameters and criteria change.

### 1.1 Project Description

The proposed project involves the replacement of Bridge No. 302 over Cove Creek. The project is located in Watauga County, in the northeastern corner of North Carolina (Figure 1). Two alternatives are proposed for this project. The proposed bridge approaches under either alternatives would consist of a 1.8 m (6 ft) shoulder, 3.3 m (11 ft) wide travel lanes with ditches on either side. The total proposed right-of-way is 21 m (70 ft).

#### Alternative 1

Alternative 1 calls for minor realignment of State Route 1233 and bridge replacement in the existing location (Figure 2). Traffic would be detoured along secondary roads during construction. The total project length is 122 m (400 ft).

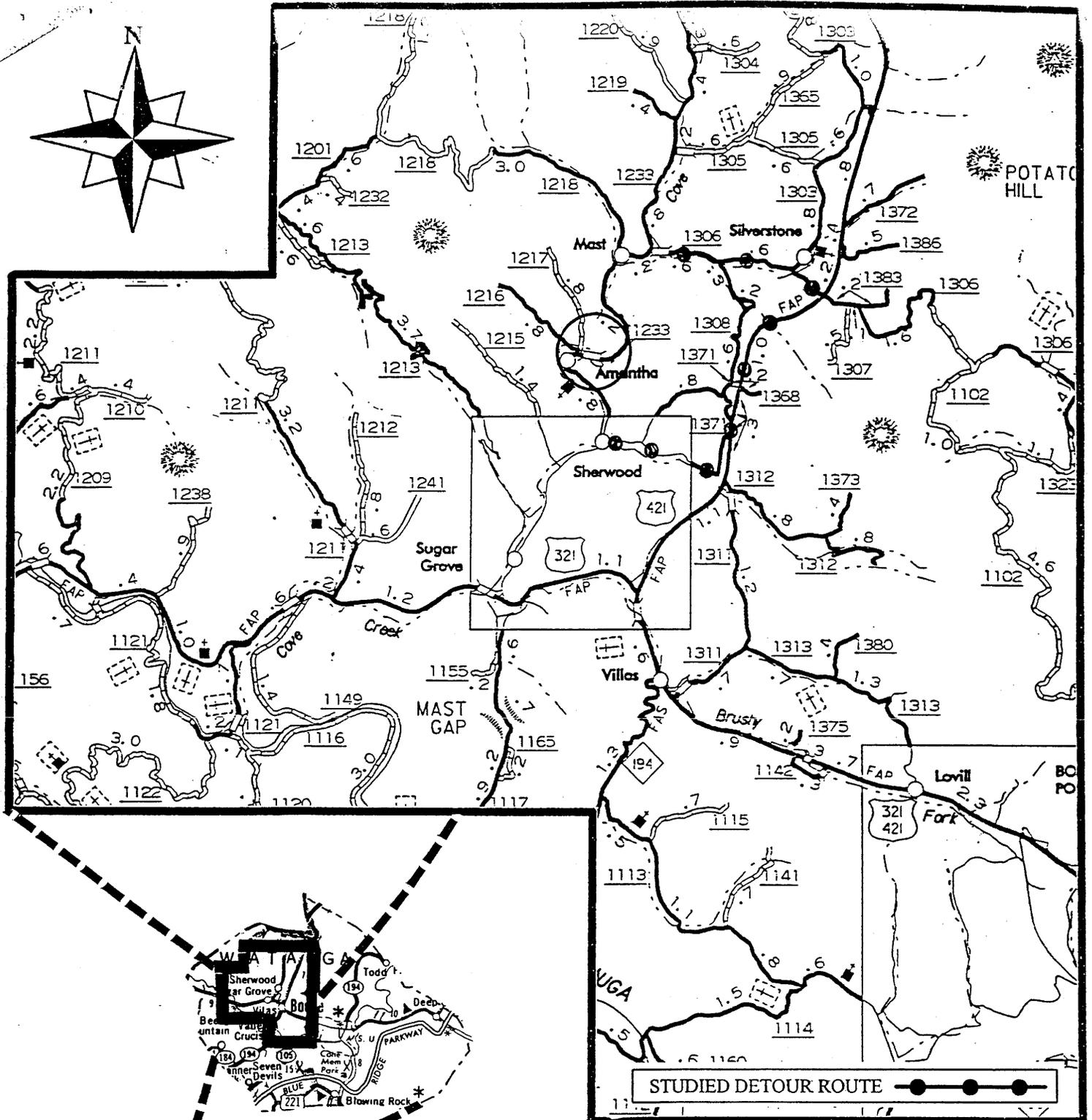
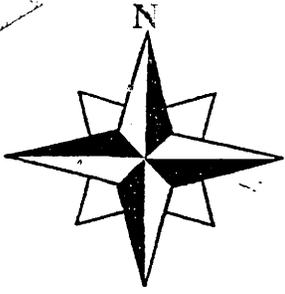
#### Alternative 2

Alternative 2 involves a greater change in the road configuration along State Route 1233 and the replacement of the existing bridge with a bridge in a northern location. Traffic would be maintained on the existing bridge during construction. The total project length is 152 m (500 ft).

### 1.2 Methodology

Research of published information and resources was conducted prior to the field investigation. Information sources used to prepare this report include:

- U.S. Geological Survey (USGS) quadrangle map (Sherwood, 1938, photorevised 1969)
- U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) Map (Sherwood)
- NCDOT aerial photographs of project area (1:100)
- Soil Conservation Service [now known as the Natural Resource Conservation Service (SCS)] soil survey for Watauga County.
- N.C. benthic macroinvertebrate information
- Fish and Wildlife Service (FWS) list of protected and candidate species
- N.C. Natural Heritage Programs (NHP) database of uncommon species and unique habitats.



	North Carolina Department Of Transportation Planning & Environmental Branch		
	<b>WATAUGA COUNTY</b> <b>REPLACE BRIDGE NO. 302 ON SR 1233</b> <b>OVER COVE CREEK</b> <b>B-3062</b>		
0 kilometers    1.6 kilometers    3.2			Figure 1
0 miles    1.0 miles    2.0			

Water resource information was obtained from publications of the North Carolina Department of Environment, Health, and Natural Resources (DEHNR, 1993), Division of Water Quality. Information concerning the occurrence of federal and state protected species in the study area was obtained from the FWS list of protected and candidate species (August 23, 1996) and from the NC Natural Heritage Program (NHP) database of rare species and unique habitats. NHP files were reviewed for documented sightings of state or federally listed species and locations of significant natural areas.

A general field survey was conducted along the proposed project route by Rust biologists on December 10, 1996. Water resources were identified and their physical characteristics were recorded. For the purposes of this study, a qualitative aquatic survey and brief habitat assessment were performed within the project area of Cove Creek. The survey was conducted using a 1,000-micron mesh D-frame hand-held dip net. A composite sample of four locations was collected and preserved immediately after collection for later laboratory identification. Principal identification keys included Merritt and Cummins (1996) and Peckarsky (1990). Macroinvertebrate identification was generally performed to family level.

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). Animal taxonomy follows Robbins *et. al.* (1966), Rohde *et. al.* (1994), Potter, *et. al.* (1980), Palmer and Braswell (1995), and Webster, *et. al.* (1985). Vegetative communities were mapped utilizing 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 identified and evaluated based on criteria established in the U.S. Army Corps of Engineer's (COE's) "1987 Corps of Engineers Wetland Delineation Manual." Wetlands were classified based on Cowardin, *et al.* (1979).

### 1.3 Terminology and Definitions

For the purposes of this report, the following terms are used for describing the limits of natural resources investigations. "Project area" denotes the area bounded by the proposed right-of-way limits along the full length of the project alignment. The "project vicinity" is an area extending 1.0 km (0.6 mile) on all sides of the project area, and "project region" is an area equivalent in size to the area represented by a 7.5 minute USGS quadrangle map (about 163.3 sq km or 61.8 sq mi).

### 1.4 Qualifications of the Principal Investigators

Investigator Stacey E. Moulds, Environmental Scientist  
Education: BA Environmental Science, University of Virginia, May 1992  
Experience: Biologist, Rust Environment & Infrastructure, 3 years  
Expertise: Water quality testing, macro-invertebrates surveys

Investigator: Ron Johnson, Senior Biologist  
Education: MS, Biological Sciences, Illinois State University, Normal, IL, 1982  
Experience: Biologist, Rust Environment & Infrastructure, 10 years  
Expertise: Natural resource surveys, wetland delineations.

## 2.0 PHYSICAL RESOURCES

Soil and water resources which occur in the project area are discussed with respect to possible environmental concerns.

### 2.1 Regional Characteristics

The proposed project lies in Watauga County, in a rural mountain area located in the northwestern corner of North Carolina. The project area lies within the Blue Ridge Mountain Physiographic Province. The topography of the project area is characterized as sloping towards Cove Creek, with a greater degree of sloping on the southern side of State Route 1233. Elevations in the project area range from approximately 836 to 839 m (2,750 to 2,760 ft) National Geodetic Vertical Datum (NGVD).

Watauga County's major economic resources include agriculture, forestry, and tourism. The project site is located in the village of Amantha. Boone, the location of Appalachian State University, is located approximately 6 miles to the southeast of the project area.

### 2.2 Soils

Soils in the project area consist of three main types: Reddies loam; Chestnut -Edneyville complex; and Saunook loam. Reddies loam is described as containing 0 to 3 percent slopes, very deep, moderately well drained soils located on floodplains that are subject to frequent flooding. The Chestnut-Edneyville complex consists of soils having 30 to 60 percent slopes that formed in residuum weathered from granite, schist, and gneiss. Chestnut soils are moderately deep and well drained and contain a significant amount of gravel and cobbles. Edneyville soils are very deep and well drained, have a loamy surface layer with a significant amount of gravel and loamy subsoil. An occasional amount of stones are scattered over the surface. Saunook loams are strongly sloping (8 to 15 percent slopes), very deep, well drained soils located on benches, fans, and coves of the Southern Appalachian mountains.

Site index is a measure of soil quality and productivity. The index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years (typically 50). The site index applies to fully stocked, even-aged, unmanaged stands. The soils in the project area have a site index range of 83 to 95 for Eastern white pine (*Pinus strobus*) and 95 to 115 for yellow poplar (*Liriodendron tulipifera*).

## 2.3 Water Resources

This section contains information concerning water resources likely to be impacted by the proposed project. Water resources assessments include the physical characteristics likely to be impacted by proposed project (determined by field survey), best usage classifications, and water quality aspects of the water resources. Probable impacts to surface water are also discussed as well as means to minimize impacts.

### 2.3.1 Physical Characteristics of Surface Waters

The project is located in the Watauga River drainage basin. One water resource, Cove Creek, will be impacted by the proposed project. Cove Creek originates about 10 km (6 mi) north of the project area and flows to the south to its confluence with the Watauga River.

Cove Creek is approximately 7.6 to 10.6 m (25 to 35 ft) wide within the project area. This is a stream system with normal high flow. The stream contains primarily shallow riffles approximately 15 to 20 cm (6 to 8 in) deep and some runs ranging from 20 to 45 cm (8 in to 1.5 ft) deep. Substrates were estimated in the following percentages: cobbles (35 %), bedrock/boulder (25 %), gravel (25 %), and coarse sand (15 %). Water clarity was good. The stream has an open canopy and riparian vegetation consisted of mostly maintained grass with some shrubs and trees on the banks toward the eastern terminus of the project area. One perennial tributary to Cove Creek was denoted on the USGS quadrangle map within the immediate project area. However, this tributary was not identified during the field survey.

### 2.3.2 Best Usage Classification

Surface waters in North Carolina are assigned a classification by the Division of Environmental Management (DEM) that is designed to maintain, protect, and enhance water quality within the State. Cove Creek (Index # 8-15) is classified as a Class C waterbody. Class C water resources are used for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture.

**No waters classified as Outstanding Resource Waters (ORW), High Quality Waters (HWQ) or Water Supplies (WS-I of WS-II) occur within 1.6 km (1 mi) if the project study area.**

### 2.3.3 Water Quality

This section describes the water quality of the water resources within the project area. Potential impacts to water quality from point and nonpoint sources are evaluated. Water quality assessments are based upon published resource information and field study observations.

#### 2.3.3.1 General Watershed Characteristics

Nonpoint source runoff from agricultural and pasture land are likely to be the primary source of water quality degradation to the water resources located within the project vicinity. The surrounding

vicinity appears to be mainly used for agriculture with forested land on many of the steeper slopes. Nutrient loading and increased sedimentation from agricultural runoff and forestry affects water quality. Inputs of nonpoint source pollution from private residences within the project area also are likely to contribute to water quality degradation.

### **2.3.3.2 Benthic Macroinvertebrate Ambient Network**

The Benthic Macroinvertebrate Ambient Network (BMAN), managed by the DEHNR, Division of Water Quality and established in 1982, is part of an on-going ambient long-term water quality monitoring program. The program has established fixed water quality monitoring stations for selected benthic macroinvertebrates. Four different benthic macroinvertebrate sampling methodologies are used by the Division of Water Quality. For the Cove Creek stations, the EPT method has been employed, which consists of one kick-net sample, one sweep-net sample, one leaf-pack sample, and visual collections. Macroinvertebrate collections focus on the Ephemeroptera, Plecoptera, and Trichoptera (EPT) insect orders. The physical water quality conditions are recorded and a habitat assessment is also performed at each station. The Biological Assessment group has assigned water quality ratings (bioclassifications) based on biotic index values and EPT taxa richness values.

Two BMAN stations are located along Cove Creek, one each at upgradient and downgradient locations. One station is located approximately 3.2 km (2 mi) upstream of the project area at the crossing of State Route 1305. The second station is located approximately 4.8 km (3 mi) downstream of the project area at the crossing of U.S. Route 321. Both stations received "good" bioclassification ratings.

### **2.3.3.3 Point Source Dischargers**

There are no known permitted point source dischargers to Cove Creek within the project vicinity.

### **2.3.4 Summary of Anticipated Impacts**

Any action which affects water quality can adversely affect aquatic organisms. Temporary impacts during the construction phases may have long-term impacts from these processes. Replacing an existing structure in the same location with a road closure is often the preferred environmental approach. Bridge replacement on a new location with a detour on existing location generally results in more severe impacts. Therefore, based on environmental impacts, Alternate 1 is the preferred alignment. Physical impacts will be the most severe at the point of bridge replacement.

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 and vegetation removal.
- 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.
- Alteration of water levels and flows due to interruptions and/or additions to surface and groundwater flow from construction.
- Increased scouring of the existing channel due to increased water flows from the stormwater runoff associated with curb and gutter systems.

It is important to understand that construction impacts may not be restricted to the communities in which the construction activity occurs. Efforts should be made to ensure that no sediment leaves the construction site. NCDOT's Best Management Practices for the Protection of Surface Waters should be followed during the construction phase of the project.

### 3.0 BIOTIC RESOURCES

Terrestrial and aquatic communities are included in the description of biotic resources. Living systems described in the following sections include communities of associated plants and animals. These descriptions refer to the dominant flora and fauna in each community and the relationship of these biotic components. Descriptions of the terrestrial systems are presented in the context of plant community classifications. These classifications follow Schafale and Weakley (1990) where possible. Representative animal species which are likely to occur in these habitats (based on published range distributions) are also cited. Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species are by the common name only.

#### 3.1 Terrestrial Communities

Three distinct terrestrial communities were identified within the project area: a disturbed man-dominated community, old field community, and a developing montane oak-hickory forest. Dominant faunal components associated with these terrestrial areas will be discussed in each community description. Many species are adapted to the entire range of habitats found along the project alignment, but may not be mentioned separately in each community description.

##### 3.1.1 Man-Dominated

This highly disturbed community includes road shoulder, residential lawns, and mowed pasture land. Many plant species are adapted to these disturbed and regularly maintained areas. Regularly maintained areas are dominated by fescue grass, but also contain wild onion (*Allium canadensis*) and clover (*Trifolium* spp.).

The animal species present in these disturbed habitats are opportunistic and capable of surviving on a variety of resources, ranging from vegetation (flowers, leaves, fruits, and seeds) to both living and dead faunal components. Robins (*Turdus migratorius*) and starlings are the two most common birds that use these habitats. Other animal species that may visit these areas for feeding include black rat

snake (*Elaphe obsoleta obsoleta*), Eastern garter snake (*Thamnophis sirtalis sirtalis*), American toad (*Bufo americanus*), and meadow vole (*Microtus pennsylvanicus*).

### 3.1.2 Old Field

Old field communities have typically developed from abandoned pasture land or cultivated farm land. Small patches of this habitat are present on either side of Cove Creek. These communities are dominated by herbaceous vegetation with scattered shrubs or small trees. A variety of grasses are common as well as other herbaceous species such as goldenrods (*Solidago spp.*), asters (*Aster spp.*), milkweed (*Asclepias spp.*), and Queen Ann's lace (*Daucus carota*). Blackberries (*Rubus spp.*) are the principle shrub. At the western end of the project area several large Balm of Gilead (*Populus candicans*) trees and a red maple (*Acer rubrum*) are present, but beneath them the vegetation is similar to the old field.

Old fields are often utilized by white-tailed deer (*Odocoileus virginianus*) for feeding. Additionally, a number of small mammals such as least shrew (*Cryptotis parva*) and meadow vole are found in this community. Birds utilizing old fields include field sparrow (*Spizella pusilla*), cardinal (*Cardinalis cardinalis*), quail (*Colinus virginianus*), white-throated sparrow (*Zonotrichia albicollis*), and slate-sided junco (*Junco hyemalis*). Reptiles and amphibians are similar to those listed above for the pastureland areas.

### 3.1.3 Montane Oak-Hickory Forest

This community is located on the relatively steep slope on the east edge of the project area. This forested area contains a mixture of oaks, hickories, and other hardwoods. The oldest trees in this community are currently about 30 to 40 years in age. The dominant canopy trees are white oak (*Quercus alba*), and red oak (*Q. rubra*). Other trees present included black cherry (*Prunus serotina*) and black locust (*Robina pseudo-acacia*). Rhododendron (*Rhododendron spp.*) is the predominant shrub in this area, although several *Vacciniums* were noted. Herbaceous vegetation is sparse in December when the surveys were conducted. In addition, snow cover obscured many plants. However, Christmas fern (*Polystichum acrostichoides*) and Solomon's seal (*Polygonatum biflorum*) were noted. When mature, this community will likely correspond most closely to the Montane Oak-Hickory Forest community of the NHP system.

Only grey squirrels (*Sciurus carolinensis*) were observed during field activities. However, white-tailed deer, raccoon (*Procyon lotor*), and opossum (*Didelphis virginiana*) probably utilize the forested areas. It is likely that small mammals such as masked shrew (*Sorex cinereus*), Eastern chipmunk (*Tamias striatus*) and white-footed mouse (*Peromyscus leucopus*) also are present in this community. Snakes that can be found in this habitat include northern ringneck snake (*Diadophis punctatus edwardsii*), Eastern milk snake (*Lampropeltis triangulum triangulum*), and northern copperhead (*Agkistrodon contortrix mokasen*).

A wide variety of birds use the forest for foraging and nesting. Species observed during the field survey included robin, slate-sided junco, Carolina chickadee (*Parus carolinensis*), blue jay (*Cyanocitta cristata*), and tufted titmouse (*Parus bicolor*).

### 3.2 Aquatic Communities

The aquatic community composition, including total species number, species richness, taxa richness and density, and species tolerance data, is reflective of the physical, chemical, and biological condition of the water resource.

Within the project area Cove Creek is a high gradient, high velocity, mid order, open canopied stream, containing large substrata and having good water clarity. The riparian community contains mostly maintained grasses.

Although fish populations were not observed during the field survey, habitat was determined to exist for many species of fish. According to Joel Mickey, District Biologist for the North Carolina Wildlife Resources Commission (WRC), Cove Creek is stocked for brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss*). Cove Creek in the project vicinity supports a wild population of brown trout as well. Based on sampling performed in the vicinity of the project area, Cove Creek is also known to support rock bass (*Ambloplites rupestris*), greenfin darter (*Etheostoma chlorbranchium*), black nosed dace (*Rhinichthys atratulus*), Tennessee shiner (*Notropis leuciodus*), river chub (*Nocomis micropogon*), creek chub (*Semotilus atromaculatus*), central stoneroller (*Campostoma anomalum*), and northern hog sucker (*Hypentelium nigricans*) (personal communication, 1997).

Cove Creek is designated as Hatchery Supported Designated Public Mountain Trout Waters from Bridge No. 302 upstream to the bridge over Cove Creek in Zionville.

Benthic macroinvertebrate species found in Cove Creek, during the field survey, are presented in Table 1.

Table 1 Summary of Qualitative Benthic Macroinvertebrate Survey Cove Creek, 12/10/96			
Taxa	Abundant	Common	Present
Phylum Arthropoda			
Class Insecta			
Order Ephemeroptera			
Heptageniidae	X		
Order Plecoptera			
Perlodidae	X		

Table 1 Summary of Qualitative Benthic Macroinvertebrate Survey Cove Creek, 12/10/96			
Taxa	Abundant	Common	Present
Order Trichoptera			
Hydropsychidae	X		
Trichopteran sp. (In Superfamily Limnephiloidea)		X	
Order Coleoptera			
Psephenidae		X	
Elmidae			X
Order Diptera			
Tipulidae		X	
Chironomidae		X	

Based on the above survey results as well as DEHNR survey results (Appendix A), this stream segment generally contains a high diversity and abundance of organisms typical of lotic erosional environments, which generally contain coarse sediments and a high amount of stream riffles. Generally, the most abundant organisms found in the survey performed by Rust were from the Ephemeroptera, Plecoptera, and Trichoptera (EPT) insect orders and are generally indicative of undegraded water conditions. Additional organisms common to both surveys are either present in almost every lotic environment or are also generally found in unimpaired erosional streams.

### 3.3 Summary of Anticipated Impacts

Project construction will have various impacts to the previously described terrestrial and aquatic communities. Any construction activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies potential impacts to the natural communities within the project area in terms of the area impacted and the plants and animals affected. Temporary and permanent impacts are considered here along with recommendations to minimize or eliminate impacts.

#### 3.3.1 Terrestrial Communities

Terrestrial communities in the project area will be impacted by project construction from clearing and paving and loss of the terrestrial community area along State Route 1233. Estimated impacts are derived based on the project lengths for Alternates 1 and 2 of 122 m (400 ft) and 152 m (500 ft), respectively, and the entire proposed right-of-way width of 21 m (70 ft). Table 2 details the potential

impacts to terrestrial communities by habitat type. It should be noted that impacts are based on the entire right-of-way width and actual loss of habitat will likely be less.

<b>Table 2 Estimated Area Impacts to Terrestrial Communities</b>		
<b>Community</b>	<b>Impacted Area in ha (ac)</b>	
	<b>Alternative 1</b>	<b>Alternative 2</b>
Man-dominated Community	(0.0)	0.004 (0.01)
Old Field	0.004 (0.01)	0.16 (0.40)
Montane Oak-Hickory Forest	<0.004 (<0.01)	(0.0)
<b>Total Impacts</b>	0.004 (0.01)	0.17 (0.41)

Destruction of natural communities along the project alignment will result in the loss of foraging and breeding habitats for the various animal species which utilize the area. Animal species within the communities will be displaced into surrounding communities. Adult birds, mammals, and some reptiles are mobile enough to avoid mortality during construction. Young animals and less mobile species may suffer direct loss during construction. Plants and animals found in these communities are generally common throughout North Carolina and are well adapted to life in disturbed areas. The major terrestrial community which will be affected by the project construction is a man-dominated community containing lawn grasses and agricultural fields, and old field habitat. Alternative 1 calls for only minor roadway alignment, thereby minimizing terrestrial impacts.

Impacts to terrestrial communities, particularly in locations having steep to moderate slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. It is important to understand that construction impacts may not be restricted to the communities in which the construction activity occurs. Efforts should be made to ensure that no sediment leaves the construction site.

### **3.3.2 Aquatic Communities**

Impacts to aquatic communities include fluctuations in water temperatures due to the loss of riparian vegetation. Shelter and food resources, both in the aquatic and terrestrial portions of these organisms' life cycles, will be affected by losses in the terrestrial communities. The loss of aquatic plants and animals will affect terrestrial fauna which rely on them as a food source.

Temporary and permanent impacts may result to aquatic organisms from increased sedimentation. Aquatic invertebrates may drift downstream during construction and recolonize the disturbed area once it has been stabilized. Sediments have the potential to affect fish and other aquatic life in several ways including the clogging and abrading of gills and other respiratory surfaces; affecting

the habitat by scouring and filling of pools and riffles; altering water chemistry; and smothering different life stages. Increased sedimentation may caused decreased light penetration with an increase in turbidity.

Although both alternatives involve some terrestrial losses with increased roadway pavement along State Route 1233, Alternative 2 involves a greater amount of roadway paving than Alternative 1. Alternative 1 calls for only minor road realignment and bridge replacement in the existing bridge location, which minimize impacts. Potential adverse effects can be minimized through the utilization of erosion and sediment control measures and implementation of NCDOT Best Management Practices for Protection of Surface Waters.

#### **4.0 JURISDICTIONAL TOPICS**

This section provides inventories and impact analyses for two federal and state regulatory issues: Waters of the U.S. (includes wetlands) and rare and protected species.

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

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), and are regulated by the U.S. Army Corps of Engineers (COE). Any action that proposes to dredge or place fill material into surface waters or wetlands falls under these provisions.

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

No wetlands are present in the project area. Cove Creek meets the definition of surface waters and thus are classified as Waters of the United States.

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

No wetlands will be impacted by the subject project as Cove Creek has well defined banks. Project construction cannot be accomplished without infringing on jurisdictional surface waters. Anticipated surface water impacts fall under the jurisdiction of the U.S. Army Corps of Engineers (COE).

##### **4.1.3 Permits**

Impacts to jurisdictional surface waters are anticipated from the proposed project. Permits and certifications from various state and federal agencies may be required prior to construction activities.

Construction is likely to be authorized by provisions of CFR 330.5 (a) Nationwide Permit (NWP) No. 23, which authorizes activities undertaken, assisted, authorized, regulated, funded, or financed in whole or in part, by another Federal agency or department where that agency or department has determined, pursuant to the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act:

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

This project will also require a 401 Water Quality Certification or waiver thereof, from DEHNR prior to issuance of the NWP 23. Section 401 of the Clean Water Act requires that the state issue or deny water certification for any federally permitted or licensed activity that results in a discharge into Waters of the U.S. In addition, the project is located in a designated "trout" county where NCDOT is required to obtain a letter of approval from the NC Wildlife Resources Commission. Final permit decision rests with the U. S. Army Corps of Engineers.

#### 4.1.4 Avoidance, Minimization, Mitigation

Since this project will likely be authorized under a Nationwide permit, mitigation for impacts to surface waters is generally not required by the COE. A final determination regarding mitigation requirements rests with the COE.

#### 4.2 Rare and Protected Species

Some populations of plants and animals are declining either due to natural forces or due to their inability to coexist with man. Rare and protected species listed for Watauga County, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

##### 4.2.1 Federally Protected Species

Plants and animals with 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 Fish and Wildlife Service (FWS) lists four federally protected species for Watauga County as of August 23, 1996. These species are listed in Table 3.

<b>Table 3</b>		
<b>Federally-protected Species For Watauga County</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status</b>
<i>Glaucomys sabrinus coloratus</i>	Carolina northern flying squirrel	E
<i>Geum radiatum</i>	Spreading avens	E

Table 3 Federally-protected Species For Watauga County		
Scientific Name	Common Name	Federal Status
<i>Houstonia montana</i> (= <i>Hedyotis purpurea</i> var. <i>montana</i> )	Roan Mountain bluet	E
<i>Liatris helleri</i>	Heller's Blazing star	T
Notes: "E" Denotes Endangered (a species that is threatened with extinction throughout all or a significant portion of its range). "T" Denotes Threatened (a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range).		

A brief description of the characteristics and habitat requirements of each species along with a conclusion regarding potential project impact follows.

*Glaucomys sabrinus coloratus* (Carolina northern flying squirrel) **Endangered**  
 Vertebrate Family: Sciuridae  
 Date Listed: 1985

The Carolina northern flying squirrel is a medium-sized, grey squirrel with a broad, flattened tail and dense silky fur. One of the distinguishing characteristics are folds of skin between the front and hind legs that enable the squirrel to glide. Adults are grey with brownish, tan or reddish wash dorsally and grayish white or buffy white ventrally. It is believed that this species is a relict form of the northern flying squirrel that has become isolated in small patches of suitable habitat by changing climatic and vegetational conditions since the last ice age. In North Carolina it is known from Roan Mountain, Mount Mitchell and the Great Smoky Mountains.

The Carolina northern flying squirrel is found in high altitude [above 1,520 m (5,000 ft)] spruce fir forests and the adjacent stands of mature hardwoods. Mature forests dominated by beech (*Fagus grandifolia*), yellow birch (*Betula lutea*), maple (*Acer* spp), hemlock (*Tsuga canadensis*), northern red oak (*Quercus rubra* var. *borealis*), and buckeye (*Aesculus octandra*), are preferred because of their open habitat which is suitable for their gliding form of locomotion and the abundance of natural cavities in old hardwoods. Their diet consists of lichens and fungi, but they occasionally feed on seeds, insects, buds, and fruits.

**Biological Conclusion:**

**No Effect**

No habitat exists in the project area for the Carolina northern flying squirrel. The project site is located at an elevation of 840 m (2,750 ft) with no stands of mature hardwoods or spruce-fir and does not meet the habitat requirement for the Carolina northern flying squirrel. 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.

*Geum radiatum* (spreading avens) **Endangered**

Plant Family: Rosaceae

Federally Listed: 1990

Spreading avens is a perennial herb with basal rosettes of leaves arising from horizontal rhizomes. The basal leaves are odd-pinnately compound. The terminal leaflets are kidney shaped and much larger than the lateral leaflets, which are reduced or absent. Bright yellow radially symmetrical flowers are borne on an indefinite cyme atop a stem 20 to 50 cm (8 to 20 in) tall. The flowers of spreading avens are present from June through September.

Spreading avens, sometimes called cliff avens, is endemic to a few scattered mountaintops in western North Carolina and eastern Tennessee. It grows in shallow acidic soils on scarps, bluffs, cliffs, outcrops, and gravelly talus slopes. Known populations of this plant have been found to occur at elevations of 1,400 to 1,911 m (4,600-6,270 ft). Other habitat requirements for this species include full sunlight and shallow acidic soils (pH 4-5). The soil usually collects in the cracks and crevices of the underlying rock, where it varies in depth from 2 to 36 cm (0.8 to 15 in). These soils contain a composition of sand, pebbles, humus, sandy loam and clay loam. The hydrology of the site is usually uniform and moderately well drained. Soils are intermittently saturated by rain, melting snow, high-elevation fogs, and downslope drainage. Consistent moisture may be one of the most important habitat requirements for this species. Most populations are pioneers on rocky outcrops.

**Biological Conclusion:**

**No Effect**

No suitable habitat exists in the project area for spreading avens. The project site is located at an elevation of 840 m (2,750 ft) with no cliffs, outcrops, or talus slopes and does not meet the habitat requirement for spreading avens. 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**

Plant Family: Rubiaceae

Federally Listed: 1990

Roan Mountain bluet is a caespitose perennial herb with erect or ascending, unbranched or weakly terminally branched stems to 21 cm (8 in) tall from a basal winter rosette. Cauline leaves are opposite, sessile and ovate, 0.8 to 3.0 cm (0.3 to 1.2 in) long and 0.6 to 1.3 cm (0.2 to 0.5 in) 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 1,400 to 1,900 m (4,600 to 6270 ft). 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 suitable habitat exists in the project area for the Roan Mountain bluet. The project site is located at an elevation of 840 m (2,750 ft) with no mafic rocky exposures and does not meet the habitat requirement for the Roan Mountain bluet. A search of the NHP database found no occurrence of the 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 cormlike rootstock. The stiff stems are purple near the base turning to green, 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 20 to 30 cm (8 to 12 in) in length. The stems reach up to 40 cm (16 in) in height and are topped by a showy spike of lavender flowers 7 to 20 cm (0.3 to 8 in) 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 high elevation [1,067 to 1,829 m (3,500 to 6,000 ft)]. 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 suitable habitat exists in the project area for Heller's blazing star. The project site is located at an elevation of 840 m (2,750 ft) with no cliffs or rocky summits and does not meet the habitat requirement for Heller's blazing star. 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.

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

Federal Candidate species 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. Table 3 includes federal candidate species listed for Watauga County

and their state classifications. Organisms which are listed as Endangered (E), Threatened (T), or Special Concern (SC) by 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.

Scientific Name	Common Name	NC Status	Habitat present
<i>Clemmys muhlenbergii</i>	Bog turtle	T	No
<i>Cryptobranchus alleganiensis</i>	Hellbender	SC	Yes
<i>Dendroica cerulea</i>	Cerulean warbler	SR	No
<i>Neotoma magister</i>	Allegheny woodrat	SC*	No
<i>Phenacobius teretulus</i>	Kanawah minnow	SC	No
<i>Sorex palustris punctulatus</i>	Southern water shrew	SC*	No
<i>Sylvilagus obscurus</i>	Appalachian cottontail	Not Listed	Unknown
<i>Lasmigona subviridus</i>	Green floater	E	yes
<i>Speyeria diana</i>	Diana fritillary butterfly	SR	No
<i>Abies fraseri</i>	Fraser fir	C	No
<i>Cardamine clematitidis</i>	Mountain bittercress	C	No
<i>Delphinium exaltatum</i>	Tall larkspur	E-SC*	No
<i>Euphorbia purpurea</i>	Glade spurge	C**	No
<i>Geum geniculatum</i>	Bent avens	T	No
<i>Juglans cinerea</i>	Butternut	Not Listed	Yes
<i>Lilium grayi</i>	Gray's lily	T-SC	No
<i>Poa paludigena</i>	Bog bluegrass	E*	No
<i>Bazzania nudicaulis</i>	A liverwort	C	No

Notes: Source, LeGrand, 1993 and Weakley, 1993  
T - Threatened, E - Endangered, SC - Special Concern, SR - State Rare  
\* Denotes a historic record - the species was last observed in the county more than 50 years ago.  
\*\* Denotes an obscure record - the date and/or location of observation is uncertain.

Surveys for these species were not conducted during the site visit, nor were any of these species observed. A review of the Natural Heritage Program data base of rare species and unique habitats revealed no records of North Carolina rare/and or protected species in or near the project study area.

## 5.0 REFERENCES

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**APPENDIX A**

**Benthic Macroinvertebrate Ambient Network Data**

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Location	COVE CR	COVE CR
Date	SR 1305	NC 321
Taxon	7/88	8/94
<b>EPHEMEROPTERA</b>		
BAETIS FLAVISTRIGA	R	C
BAETIS INTERCALARIS	R	A
BAETIS PROPINQUUS	C	
CAENIS SPP	C	R
CENTROPTILUM SPP	C	
EPHEMERELLA CATAWBA		R
EPEORUS RUBIDUS	A	A
EPHEMERA SPP		C
EPHEMERA BLANDA	C	
EPHORON LEUKON	R	
ISONYCHIA SPP	A	A
LEUCROCUTA SPP		C
LEUCROCUTA APHRODITE	A	
PARALEPTOPHLEBIA SPP	A	
POTAMANTHUS SPP	A	C
PSEUDOCLOEON SPP	C	A
STENONEMA ITHACA	A	C
STENONEMA MODESTUM	C	
STENONEMA PUDICUM		C
SERRATELLA SERRATOIDES	C	A
STENACRON INTERPUNCTATUM	C	
STENACRON PALLIDUM		R
TRICORYTHODES SPP	R	C
<b>PLECOPTERA</b>		
ACRONEURIA ABNORMIS	C	C
ALLOCAPNIA SPP	C	A
PARAGNETINA IMMARGINATA	C	C
PERLESTA PLACIDA	A	
PTERONARCYS SPP	R	
TALLAPERLA SPP	R	
<b>TRICHOPTERA</b>		
CHEUMATOPSYCHE SPP	A	A
CHIMARRA SPP	A	
GLOSSOSOMA SPP	C	C
GOERA SPP	R	
LYPE DIVERSA		R
MICRASEMA WATAGA		R
NEOPHYLAX SPP	A	
NEOPHYLAX CONSIMILIS		C
NEOPHYLAX OLIGIUS		C
NYCTIOPHYLAX SPP		C
OECETIS PERSIMILLIS		R
POLYCENTROPUS SPP	R	C
RHYACOPHILA FUSCULA	R	
SYMPHITOPSYCHE BIFIDA	R	
SYMPHITOPSYCHE BRONTA	A	A
SYMPHITOPSYCHE MOROSA		R
SYMPHITOPSYCHE SPARNA		C
TRIAENODES TARDUS		C

LARSEN ENGINEERS, INC  
5501 Greenwich Road, Suite 120  
Virginia Beach, VA 23462-6540  
Tel. (757) 456-9714

# STANDARD FORM 254

CIVIL/TRANSPORTATION/SURVEYS

1. Firm Name / Business Address:

Larsen Engineers, Inc  
5501 Greenwich Road, Suite 120  
Virginia Beach, VA 23462  
Duns #101911121  
Federal ID # 52-1283163

1a. Submittal is for  Parent Company  Branch or Subsidiary Office

2. Year Present Firm Established:

1983

3. Date Prepared:

2/05/97

4. Specify type of ownership & check below, if applicable.

Corporation, Maryland

- A. Small Business  
 B. Small Disadvantaged Business  
 C. Woman-owned Business

5. Name of Parent Company, if any: 5a. Former Parent Company Name(s), if any, and Year(s) Established:

None

6. Names of not more than Two Principals to Contact: Title / Telephone

- 1) Manu B. Patel, P.E., President (301) 595-4600  
2) Lawrence Gassman, P.E., Vice President (757) 456-9714

7. Present Offices: City / State / Telephone / No. Personnel Each Office

Beltsville, Maryland; (301) 595-4600 Fax (301) 937-9648 - 20  
Virginia Beach, Virginia (757) 456-9714 Fax (757) 456-9717 - 16

7a. Total Personnel 36

8. Personnel by Discipline: (List each person only once, by primary function.)

3	Administrative	4	Electrical Engineers	0	Oceanographers	6	CADD Operators
3	Architects	*	Estimators	0	Planners: Urban/Regional		
0	Chemical Engineers	0	Geologists	1	Sanitary Engineers		
4	Civil Engineers	*	Hydrologists	*	Soils Engineers	*	Our Engineers and Architects are Performing these Disciplines
2	Construction Inspectors	*	Interior Designers	*	Specification Writers		
*	Draftsmen	*	Landscape Architects	2	Structural Engineers		
0	Ecologists	4	Mechanical Engineers	5	Surveyors		
0	Economists	0	Mining Engineers	2	Transportation Engineers		36

9. Summary of Professional Service Fees Received: (Insert index number)

Direct Federal contract work, including overseas All other domestic work All other foreign work*	Last 5 Years (most recent year first)					INDEX	Ranges of Professional Service Fees
	19_96	19_95	19_94	19_93	19_92		
	4	4	5	5	5	1	Less than \$100,000
	2	2	4	3	3	2	\$100,000 to \$250,000
	1	1	3	3	1	3	\$250,000 to \$500,000
						4	\$500,000 to \$1 million
						5	\$1 million to \$2 million
						6	\$2 million to \$5 million
						7	\$5 million to \$10 million
						8	\$10 million or greater

\*Firms interested in foreign work, but without such experience, check here:

10. Profile of Firms' Project Experience, Last 5 Years

Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)
1) 011	4	95	11) 088	9	240	21) 115	8	180
2) 021	18	975	12) 092	7	210	22) 206	3	80
3) 033	10	145	13) 096	5	155	23) 219	4	150
4) 046	20	850	14) 097	5	210	24) 243	8	285
5) 051	3	185	15) 099	5	180	25) 257	5	150
6) 054	5	225	16) 102	42	2,450	26) 258	10	265
7) 056	6	205	17) 104	6	145	27) 265	5	325
8) 059	4	126	18) 106	6	240	28) 273	30	1,250
9) 062	8	305	19) 107	12	350	29) 274	5	215
10) 087	7	1,020	20) 114	4	180	30) 275	14	2,000

11. Project Examples, Last 5 Years

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
005	P	1 General Task Type A/E Services at National and Dulles Airport Bldg. Fac/Runways & Taxiways	MWAA 44 Canal Center Plaza Alexandria, VA 22314-1562	1,300 Fee	06/95
107 046	C	2 Rte 123 & Rte 66, Interchange Washington, D.C.	VDOT, c/o RKK, Inc. 1205 E. Main Street Richmond, VA 23219	20 fee	12/96
088 097 104 211	P	3 Subsurface Investigation, Soil Erosion Control, Deep Creek Lake State Park	MD Dept. of Natural Resources Tawes State Office Bldg., E-4 Annapolis, MD	1,200	06/97
021 046 056 102	P	4 North Service Road Dualization at Washington Dulles International Airport, Herdon, VA	MWAA 44 Canal Center Plaza Alexandria, VA 22314-1562	1,500	06/94
087 102 109	C	5 Surveying Services for Park Road Tunnels, Section E3b Greenbelt Road, WMATA	WMATA, c/o Kajima-Kiska, JV 3636 Georgia Avenue Washington, D.C. 20010	200 Fee	04/96
033 087 102 111	C	6 Section E2c for Greenbelt Line for WMATA, Washington, D.C.	Washington Area Transit Authority c/o Maguire Group, Washington, D.C., 20001	42,000	06/94
010 046 089 113	P	7 Indefinite Delivery Contract for A/E/Services, Forts Eustis and Story, Virginia	U.S. Army COE, District, Norf 803 Front Street Norfolk, VA 23510-1096	4,500	09/97

025	C	8	Design/Widening of Rte. 29 Albemarle County, VA	VDOT c/o H.S.M.M. 1401 E. Broad Street Richmond, VA 23219	5,000	12/97
046	P	9	Centerville Turnpike/Land of Promise Road, City of Chesapeake, VA	City of Chesapeake City Hall Chesapeake, VA 23320	1,500	10/96
102	P	10	Various Surveys of Interstate, Major Arterial & Collection Highway Utilizing Vanguard 505 System, Statewide NC	NC Dept. of Transportation 1020 Brich Ridge Road Raleigh, NC 27610	150 Fee	06/96
111	C	11	Design of Glennmount Storage Yard Section B-12 Montgomery County, MD	WMATA/c/o H.N.T.B. 99 Canal Center Plaza Alexandria, VA 22314-1562	22,000	02/94
046	C	12	IQC Contract for Norfolk Navy Public Works Center NOB Norfolk, VA	U.S. Navy, c/o PBQD 6161 Kempsville Circle Norfolk, VA 23502	400 Fee	06/97
102	C	13	Route 210 Improvement Amherst County, VA	VA DOT, c/o RKK 1205 East Main Street Richmond, VA 23219	115 Fee	09/96
111	C	14	Volvo Parkway Improvement City of Chesapeake, VA	City of Chesapeake c/o HDR Engineering, 5700 Cleveland St. VA. Beach, VA 23462	22 Fee	06/96
104	C	15	Statewide Utility Adjustment Contract Region #5, Suffolk District, VA	Va Dept. of Transportation 1401 East Broad Street, Richmond, VA 23219	100 Fee	06/97
107	IE	16	Paradise Beach (Hines Pond): Water Quality Pond Retrofit	Anne Arundel County Department of Public Works Annapolis, MD 21401	50	02/93
046	C	17	Upgrade Sewage Treatment Plant at Naval Surface Warfare Center Dahlgren, VA	U. S. Navy C/O HSMM Roanoke, VA 24034	500	04/93
102	P	18	Super K-Mart Surveying, Traffic Impact Study, Traffic Signals Norfolk, VA	ASG, Inc. 412 Executive Tower Drive Knoxville, TN 37923	500	12/96
111	C	19	Route 29 Bypass Structures Madison Heights, VA	Va. Dept. of Transportation 1401 E. Broad Street Richmond, Virginia	FEE	08/98

011 046 102 278	C	20	Vanguard 505 Surveying Service I-95, Wilmington, Delaware	Delaware DOT, c/o WBCM 849 Fairmount Avenue Baltimore, MD 21286	Fee 150	06/96
104 112 278	P	21	George Washington Highway/Mount Pleasant Road City of Chesapeake, VA	City of Chesapeake, c/o Langley & McDonald, 5544 Greenwich Rd, VA. Beach, VA.	Fee 85	10/96
046 102 107 211	P	22	Shore Drive Hazard Elimination Project Department of Public Works City of Virginia Beach, VA	City of Virginia Beach, Dept. of Public Works, Municipal Ct Virginia Beach, VA 23456	1,000	09/97
046 062 102 109	P	23	A/E Services for Street and Intersection Improvement Takoma Park, MD	City of Takoma Park 7500 Marple Avenue Takoma Park, MD 20912	100	10/95
010 046 089 113	P	24	Indefinite Delivery Contract U.S. Army COE, Fort Norfolk, VA	U.S. Army COE Fort Norfolk 803 Front Street Norfolk, VA 23510-1096	750 FEE	09/97
011 046 102 111	C	25	Surveying Services for Father Hurley Boulevard Montgomery County, MD	Montgomery County Govt. c/o Sheladia Associates 15825 Shady Gr. Rd, Gaithersburg, MD	Fee 30	03/96
		26	Piscataway Creek Relief Sewer at Bowie, MD Contract #80CT1000-A	WSSC c/o HSMM 1801 Rockville Pike, #205 Rockville, MD 20852	6.5	07/92
102 275 278	P	27	Surveying Services for System/Fossil Engineering Construction Department Statewide, MD, Contract #97130D	Baltimore Gas & Electric Co. P.O. Box 1742, Rutherford Business Ctr, Balt. MD 21203	Fee 100	12/95
048 102	C	28	Surveying Services for VA Hospital Loch Raven Road Baltimore, MD	OMNI Construction, Inc. 7500 Old Georgetown Road Bethesda, MD 20814	Fee 22	04/96
072 102	C	29	Field Survey and Stakeout Services for American Management System Headquarters at Fairfax, VA	Gilbane Building Company 7901 Sandy Spring Road Laurel, MD 20707	Fee 26	06/95
005 102	C	30	Field Survey and Stakeout Services Concourse "C" Addition and Modification at BWI Airport, MD	OMNI Construction Company 7500 Old Georgetown Road Bethesda, MD 20814	Fee 18	06/95

12. The foregoing is a statement of facts

Signature: *Lawrence Gassman*

Typed Name and Title

Lawrence Gassman, P.E., V.P.

Date:

2/05/97

