



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 22, 2004

U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue / Room 208
Asheville, North Carolina 28801-5006

Attention: Mr. Steve Lund
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide Permit Application 23 and 33** for the proposed replacement of Bridge No. 356 on SR 1127 (Kanuga Rd) over Wash Creek. Henderson County in Division 14. Federal Project No. BRSTP-1127(5), State Project No. 8.2951601, T.I.P. No. B-3475.

Please find enclosed three copies of the project planning report for the above referenced project, along with a project site map, and permit drawings. NCDOT plans to replace bridge No. 356 with a reinforced concrete box culvert containing three barrels at 10 feet by 9 feet and approximately 80 feet in length on the existing alignment. The proposed roadway cross section will include two 14 foot outside travel lanes and one 12 foot center turning lane. The proposed grade will be approximately the same as the existing roadway. Bicycle accommodations (14-foot lanes) will be included on the replacement structure as well as on the approaches to the new structure. Sidewalks will also be provided across both sides of the proposed structure. The west approach will provide 2-foot valley gutter with sidewalk, along the right side of SR 1127 up to the new structure. Curb and gutter with sidewalk, will be provided on the left side of the road. The approach work extends approximately 270 feet to the west and approximately 150 feet to the east of the existing bridge. Traffic will be detoured along surrounding roads during construction. The offsite detour will be approximately 0.6 miles and include Lilly Pond Drive, West Allen Street, and Main Street. Truck traffic will be detoured along White Street.

Bridge Demolition

The superstructure of Bridge No. 356 consists of a continuous reinforced concrete slab supported by reinforced concrete post and beam bents with vertical reinforced concrete abutments. There are four spans. There is potential for dropping up to 100 cubic yards of material into Wash Creek. This project is classified as Case 3, which does not require special restrictions for bridge demolition, however, all guidelines for bridge demolition and removal will be followed in addition to Best Management Practices for the Protection of Surface Waters and BMP's for Bridge Demolition and Removal.

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

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

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Jurisdictional Issues

Permanent Impacts: Wash Creek will be impacted by the proposed project. The replacement of Bridge No. 356 over Wash Creek on SR 1127(Kanuga Rd.) in Hendersonville will require the construction of a 3 @ 10' x 8' Reinforced Concrete Box Culvert (RCBC). This will result in 0.019 acre of permanent fill and 128 feet of impacts to the stream channel.

Temporary Impacts: The initial phase of construction of the RCBC will require the installation of an impervious dike on the eastern side of the stream so the easternmost barrel can be constructed in a dry work area. After the completion of this barrel, the stream will be diverted into the easternmost barrel by installing impervious dikes upstream and downstream, and the remaining barrels will be constructed.

If necessary, the culvert construction area will be dewatered by pumping into a stilling basin before the effluent is released back into the existing stream. The impervious dikes may be constructed from a combination of materials that will be selected during the construction of the project in order to minimize the temporary impacts. Examples of these methods include sheet piling, sandbags, concrete traffic barrier, or soil encased in fabric. Culvert Phasing will proceed as outlined below:

1. Construct Stilling Basin (40 CY)
2. Install Impervious Dike A
3. Construct Barrel 1
4. Remove Impervious Dike A and install Impervious Dike B and C
5. Divert water through Barrel 1
6. Construct Barrels 2 and 3
7. Complete Roadway

Restoration Plan: The area impacted by the culvert construction will be restored to pre-project conditions and contours following the completion of the permanent structure and roadway. The impacted areas will be revegetated according to the Seeding & Mulching special provisions.

Schedule: All steps will be taken to minimize stream impacts for Wash Creek. NCDOT will request the Contractor to complete the construction of the culvert in a timely manner so that all exposed areas will be stabilized to prevent erosion. The project schedule calls for a letting of June 16, 2004 with a date of availability of July 16, 2004. It is expected that the Contractor will choose to start construction of the RCBC at that time.

Removal and Disposal Plan: The Contractor will be required to submit a reclamation plan for the removal of and disposal of all materials off-site at an upland location. The Contractor will use excavating equipment to remove any materials from the stream. Heavy-duty trucks, dozers, cranes and various other pieces of mechanical equipment necessary for construction of roadways and culverts will be used on site. All material placed in the stream will be removed at that time. The Contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of the project. After the impervious dikes are no longer needed, all materials will become the property of the Contractor.

Federally-Protected Species

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of February 24, 2003, the Fish and Wildlife Service (FWS) lists eight federally protected species (Table 1) for Henderson County. At the time the CE was signed, biological conclusions of No Effect were reached for Small whorled pogonia and White irisette. No individuals were located within the project area, however suitable habitat was present. Therefore, the Biological Conclusion should be changed to, May Affect, Not

Likely to Adversely Affect. These Biological Conclusions are based on the results of a June 7, 2001 field survey. As a result, NCDOT biologists are committed to conducting an additional investigation during late May 2004, prior to construction.

Table 1. Federally-protected species of Henderson County.

Scientific Name	Common Name	Federal Status	Biological Conclusion
<i>Clemmys muhlenbergii</i>	Bog turtle	Threatened (S/A)	No Effect
<i>Alasmidonta raveneliana</i>	Appalachian elktoe	Endangered	No Effect
<i>Epioblasma capsaeformis</i>	Oyster mussel	Endangered	No Effect
<i>Isotria medeoloides</i>	Small-whorled pogonia	Threatened	May Affect, Not Likely to Adversely Affect
<i>Helonias bullata</i>	Swamp pink	Threatened	No Effect
<i>Sagittaria fasciculata</i>	Bunched arrowhead	Endangered	No Effect
<i>Sarracenia jonesii</i>	Mountain sweet pitcher plant	Endangered	No Effect
<i>Sisyrinchium dichotomum</i>	White irisette	Endangered	May Affect, Not Likely to Adversely Affect

Endangered – A taxon “in danger of extinction throughout all or a significant portion of its range.”

Threatened – A taxon “likely to become endangered within the foreseeable future throughout all or a significant portion of its range.”

Threatened (S/A) – Threatened due to similarity of appearance (e.g., American alligator)—a species that is threatened due to similarity of appearance with other rare species and is listed for its protection.

Regulatory Approvals

Section 404 Permit: It is anticipated that the construction of the impervious dikes will be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33 authorizing construction of the impervious dikes. All other aspects of this project are being processed by the Federal Highway Administration as a “Categorical Exclusion” in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit, but propose to proceed under a Nationwide 23 as authorized by a Nationwide Permits 23 (67 FR 2020; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0500(a) and 15A NCAC 2B .0200 we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

Thank you for your assistance in this project. If you have any questions or need additional information please contact Tyler Stanton at (919) 715-1439.

Sincerely,



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

cc: w/attachment

- Mr. John Hennessy, Division of Water Quality (2 copies)
- Ms. Marella Buncick, USFWS
- Ms. Marla Chambers, NCWRC
- Mr. Harold Draper, TVA
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Omar Sultan, Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. David Chang, P.E., Hydraulics
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Mark Staley, Roadside Environmental
- Mr. John F. Sullivan, III, FHWA
- Mr. Ron Watson, P.E., Division Engineer
- Mr. Mark Davis, DEO
- Mr. David Franklin, USACE, Wilmington (Cover Letter Only)

USACE Action ID No. _____

DWQ No. _____

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

I. Processing

1. Check all of the approval(s) requested for this project:

Section 404 Permit

Riparian or Watershed Buffer Rules

Section 10 Permit

Isolated Wetland Permit from DWQ

401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: Nationwide 23 & 33

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

4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here:

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

II. Applicant Information

1. Owner/Applicant Information

Name: North Carolina Department of Transportation

Mailing Address: 1548 Mail Service Center, Raleigh, NC 27699

Telephone Number: 919-733-7844 Fax Number: 919-715-1501

E-mail Address: _____

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

Name: N/A

Company Affiliation: _____

Mailing Address: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

III. Project Information

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

1. Name of project: Replacement of Bridge No. 356 on SR 1127 (Kanuga Rd) over Wash Creek.
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3475
3. Property Identification Number (Tax PIN): N/A
4. Location
County: Henderson Nearest Town: Hendersonville
Subdivision name (include phase/lot number): _____
Directions to site (include road numbers, landmarks, etc.): Located between Lily Pond Rd and Washington St., west of US 25
5. Site coordinates, if available (UTM or Lat/Long): 294920.6870 / 178676.40625
(Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
6. Property size (acres): N/A
7. Nearest body of water (stream/river/sound/ocean/lake): Wash Creek
8. River Basin: Broad
(Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at <http://h2o.enr.state.nc.us/admin/maps/>.)
9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application Urban Minor Collector. Project area is Urban, with commercial development dominant.

10. Describe the overall project in detail, including the type of equipment to be used: _____
Bridge replacement using mechanical highway construction equipment

11. Explain the purpose of the proposed work: Investigations by the Bridge Maintenance Unit indicate that rehabilitation of the existing structure is not feasible due to its age and deteriorated condition. Bridge No. 356 is not presently posted for single vehicle (SV) or truck-tractor semi trailer (TTST). It carries a sufficiency rating of 51.1 out of a possible 100, and is considered functionally obsolete.

IV. Prior Project History

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

N/A

V. Future Project Plans

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

N/A

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

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

Provide a written description of the proposed impacts: There will be no impacts to jurisdictional streams from the construction of the proposed bridge.

1. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***
No Impact	No Impacts	0	N/A	N/A	N/A

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

List the total acreage (estimated) of all existing wetlands on the property: 0
 Total area of wetland impact proposed: 0

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

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
1	Permanent Fill	128	Wash Creek	8 feet	Perennial

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

Cumulative impacts (linear distance in feet) to all streams on site: 128

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

Open Water Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Name of Waterbody (if applicable)	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)
1	Fill	0.019	Wash Creek	Stream

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

4. Pond Creation

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

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

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

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

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 selected design was chosen to minimize the impacts to local businesses and is more cost-effective.

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland

and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

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

N/A

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

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

IX. Environmental Documentation (required by DWQ)

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

Yes No

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

Yes No

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

Yes No

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

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

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

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

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

Zone*	Impact (square feet)	Multiplier	Required Mitigation
Total			

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

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

XI. Stormwater (required by DWQ)

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

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.

XIII. Violations (required by DWQ)

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

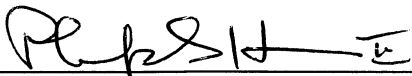
Yes No

Is this an after-the-fact permit application?

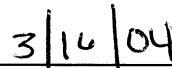
Yes No

XIV. Other Circumstances (Optional):

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



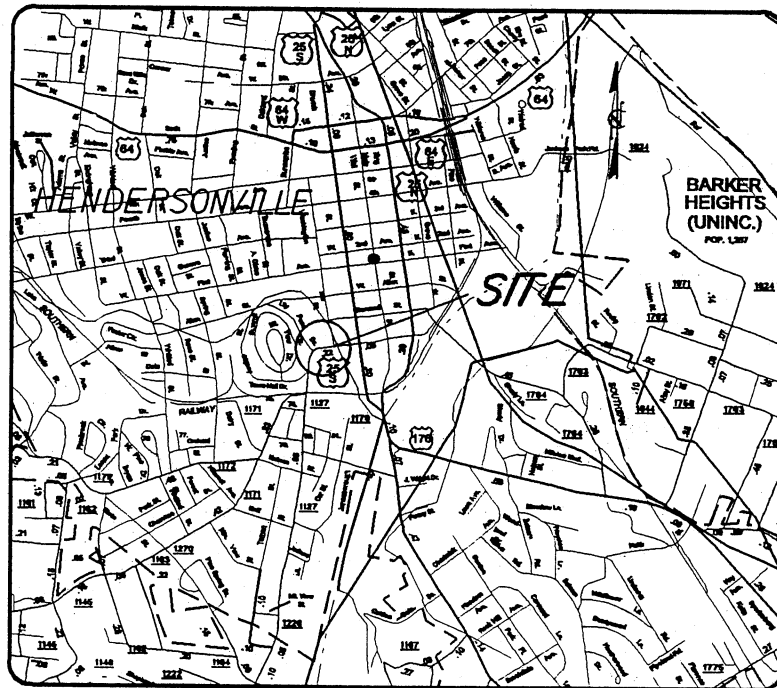
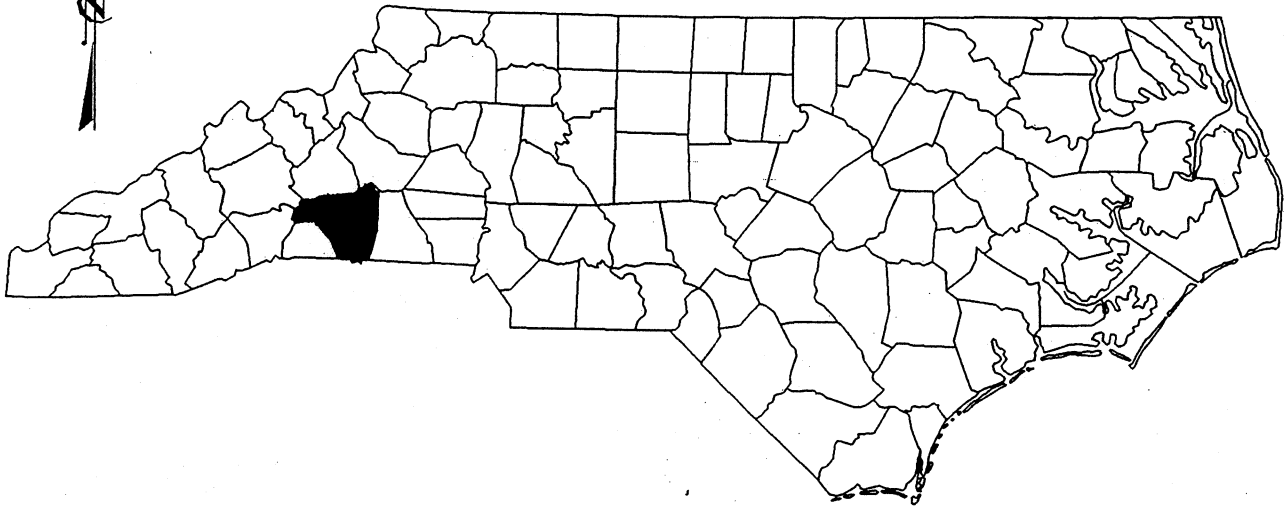
Applicant/Agent's Signature



Date

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

NORTH CAROLINA



VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS

HENDERSON COUNTY

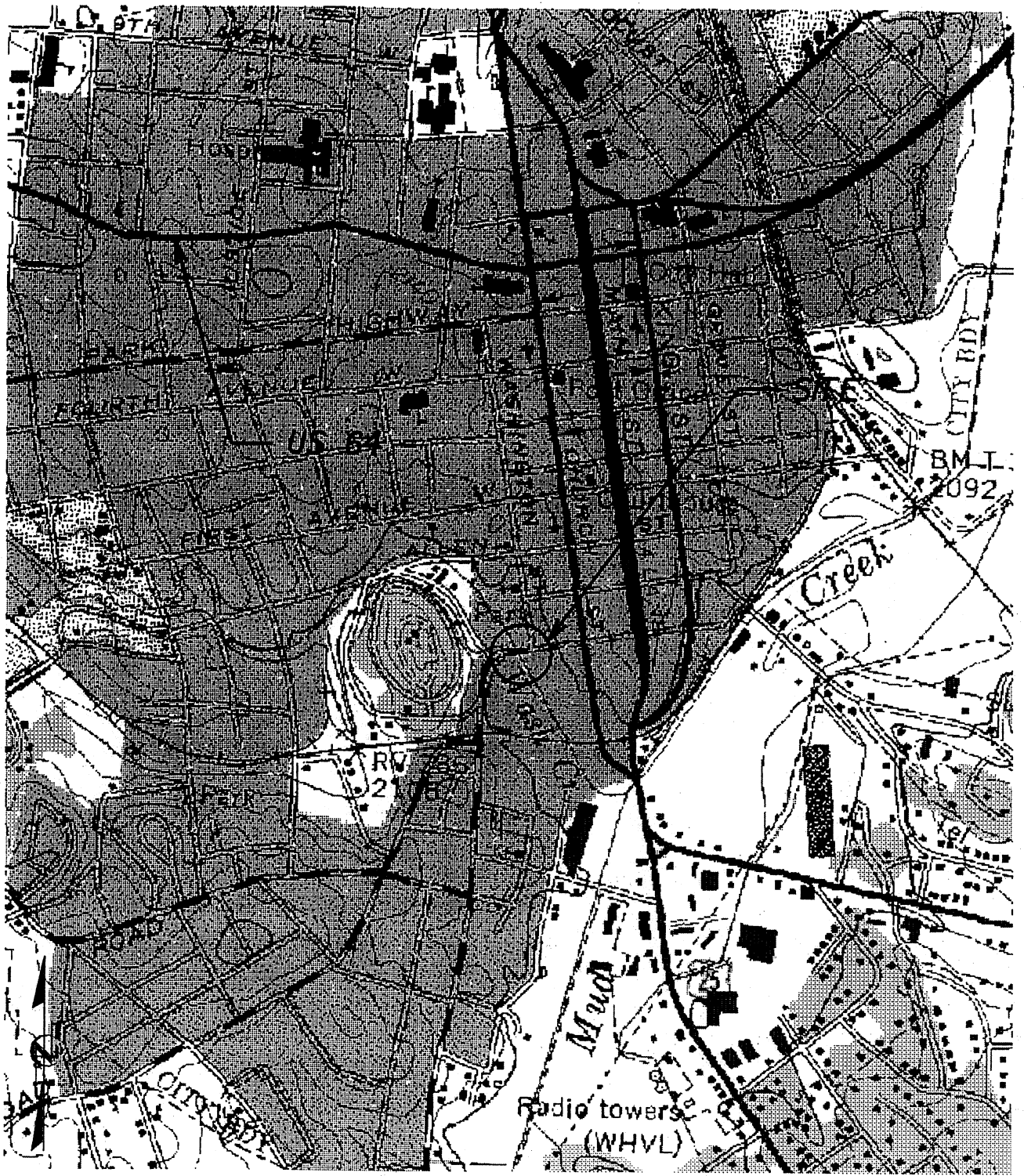
PROJECT: 8.2951601 (B-3475)

BRIDGE NO. 356 ON SR 1127

OVER WASH CREEK

SHEET 1 OF 8

6 / 23 / 2003



SITE
MAP

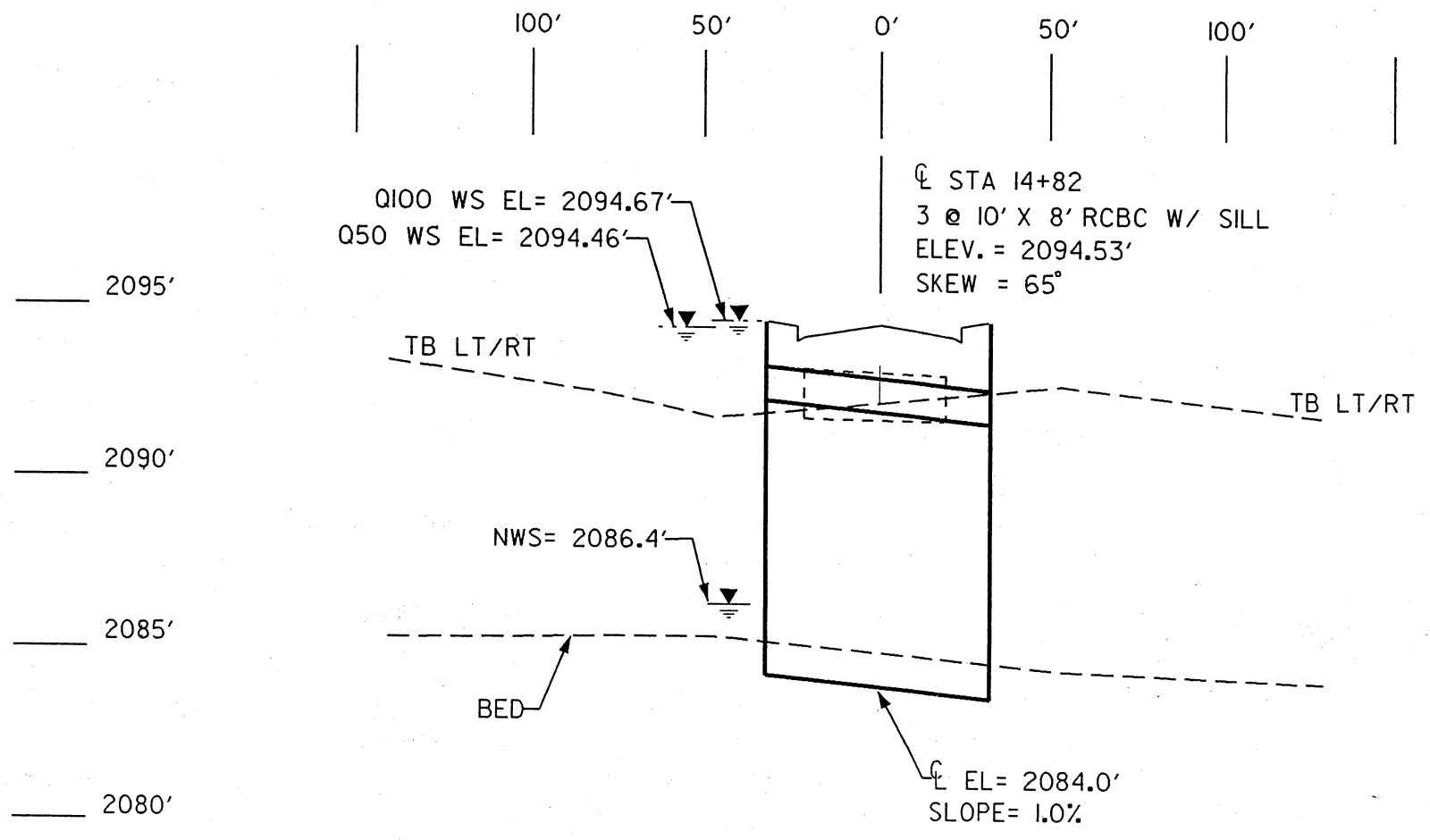
NCDOT

DIVISION OF HIGHWAYS
HENDERSON COUNTY
PROJECT: 8.2951601 (B-3475)

BRIDGE NO. 356 ON SR 1127
OVER WASH CREEK

ENGLISH

PROJECT REFERENCE NO. B-3662	SHEET NO. 6
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	



PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.

NAMES

ADDRESSES

2	DAL-KAWA CYCLE CENTER, INC.	312 KANUGA STREET HENDERSONVILLE, NC 28739
4	GLADYS MACE FISHER et al	P O BOX 6504 HENDERSONVILLE, NC 28793
6	PHILLIP M. POULOS	P O BOX 8097 ASHEVILLE, NC 28814

NCDOT

DIVISION OF HIGHWAYS

HENDERSON COUNTY

PROJECT: 8.2951601 (B-3475)

**BRIDGE NO. 356 ON SR 1127
OVER WASH CREEK**

SHEET

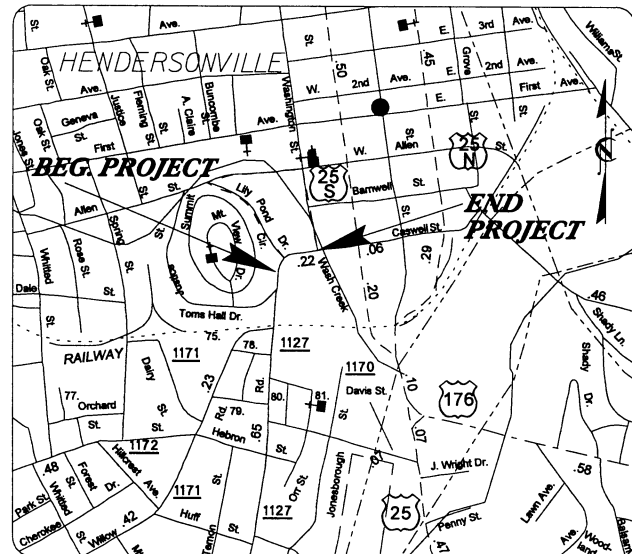
8 OF 8

6 / 23 / 2003

09/08/99

See Sheet 1-A For Index of Sheets

CONTRACT: C200842 TIP PROJECT B-3475



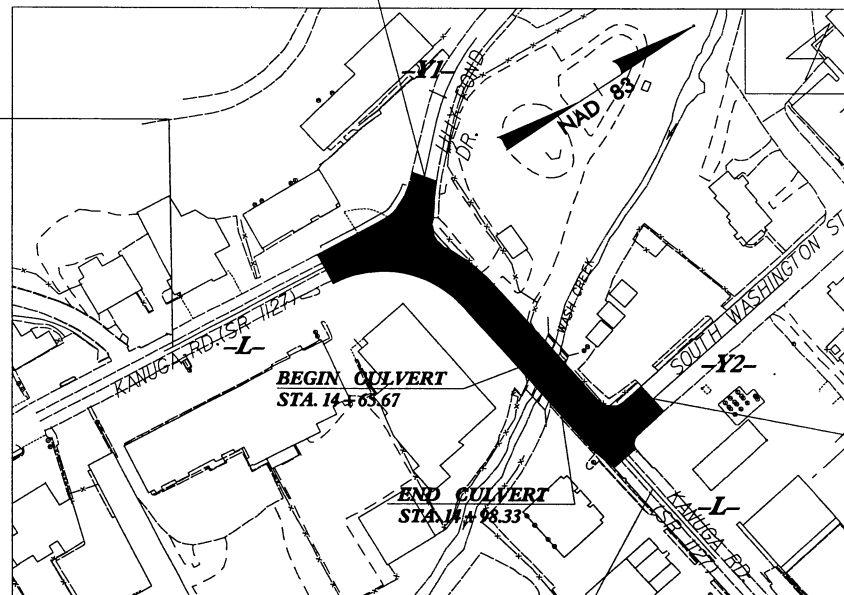
VICINITY MAP
--- OFFSITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
HENDERSON COUNTY

**LOCATION: BRIDGE NO. 356 OVER WASH CREEK ON
SR 1127 (KANUGA RD.) IN HENDERSONVILLE**
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT,
& SIGNALS**

**BEG. CONSTRUCTION
-Y1- STA 11+60**

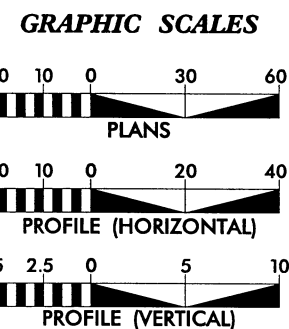
STA 10+10.00 -L- BEGIN TIP PROJECT B-3475



**BEGIN CONSTRUCTION
-Y2- STA 11+94**

STA 16+20.00 - L- END TIP PROJECT B-3475

**DESIGN EXCEPTION REQUIRED FOR
DESIGN SPEED, FROM 35 mph TO 20 mph



DESIGN DATA

ADT 2004 =	11655
ADT 2024 =	16270
DHV =	12 %
D =	60 %
T =	7 % *
V =	20 MPH**
* TTST 2 % + DUAL 5 %	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3475 =	0.110 MILES
LENGTH STRUCTURE TIP PROJECT B-3475 =	0.006 MILES
TOTAL LENGTH OF TIP PROJECT B-3475 =	0.116 MILES

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

2002 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: MAY 28, 2003	GARY LOVERING, PE PROJECT ENGINEER
LETTING DATE: JUNE 15, 2004	ANTHONY C. WEST PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE DESIGN ENGINEER _____ P.E.

**DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION**

APPROVED _____ DATE _____
DIVISION ADMINISTRATOR

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3475	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33093.1.1	BRSTP-1127(5)	P.E.	
33093.2.1	BRSTP-1127(5)	R/W & UTILITY	
33093.3.1	BRSTP-1127(5)	CONSTRUCTION	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

Edge of Pavement	---
Curb	---
Prop. Slope Stakes Cut	C
Prop. Slope Stakes Fill	F
Prop. Woven Wire Fence	○—○
Prop. Chain Link Fence	□—□
Prop. Barbed Wire Fence	◇—◇
Prop. Wheelchair Ramp	(WCR)
Curb Cut for Future Wheelchair Ramp	(CCFR)
Exist. Guardrail	—+—+—+—+—
Prop. Guardrail	—+—+—+—+—
Equality Symbol	⊕
Pavement Removal	▨

RIGHT OF WAY

Baseline Control Point	◆
Existing Right of Way Marker	△
Exist. Right of Way Line w/Marker	—△—
Prop. Right of Way Line with Proposed RW Marker (Iron Pin & Cap)	—▲—
Prop. Right of Way Line with Proposed (Concrete or Granite) RW Marker	—●—
Exist. Control of Access Line	—(C/A)—
Prop. Control of Access Line	—(C/A)—
Exist. Easement Line	—E—
Prop. Temp. Construction Easement Line	—E—
Prop. Temp. Drainage Easement Line	—TDE—
Prop. Perm. Drainage Easement Line	—PDE—

HYDROLOGY

Stream or Body of Water	—
River Basin Buffer	—RBB—
Flow Arrow	→
Disappearing Stream	—Y—
Spring	○
Swamp Marsh	—
Shoreline	—
Falls, Rapids	—
Prop Lateral, Tail, Head Ditches	—

STRUCTURES

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

MINOR

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

UTILITIES

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

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

BOUNDARIES & PROPERTIES

State Line	—
County Line	—
Township Line	—
City Line	—
Reservation Line	—
Property Line	—
Property Line Symbol	⊕
Exist. Iron Pin	⊕
Property Corner	+
Property Monument	⊕
Property Number	⊕
Parcel Number	⊕
Fence Line	—X—X—
Existing Wetland Boundaries	—WW & ISBW—
Proposed Wetland Boundaries	—WLB—
Existing Endangered Animal Boundaries	—EAB—
Existing Endangered Plant Boundaries	—EPB—

BUILDINGS & OTHER CULTURE

Buildings	—
Foundations	—
Area Outline	—
Gate	—
Gas Pump Vent or UG Tank Cap	—
Church	—
School	—
Park	—
Cemetery	—
Dam	—
Sign	—
Well	—
Small Mine	—
Swimming Pool	—

TOPOGRAPHY

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

VEGETATION

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

RAILROADS

Standard Gauge	—
RR Signal Milepost	—
Switch	—

5/28/99

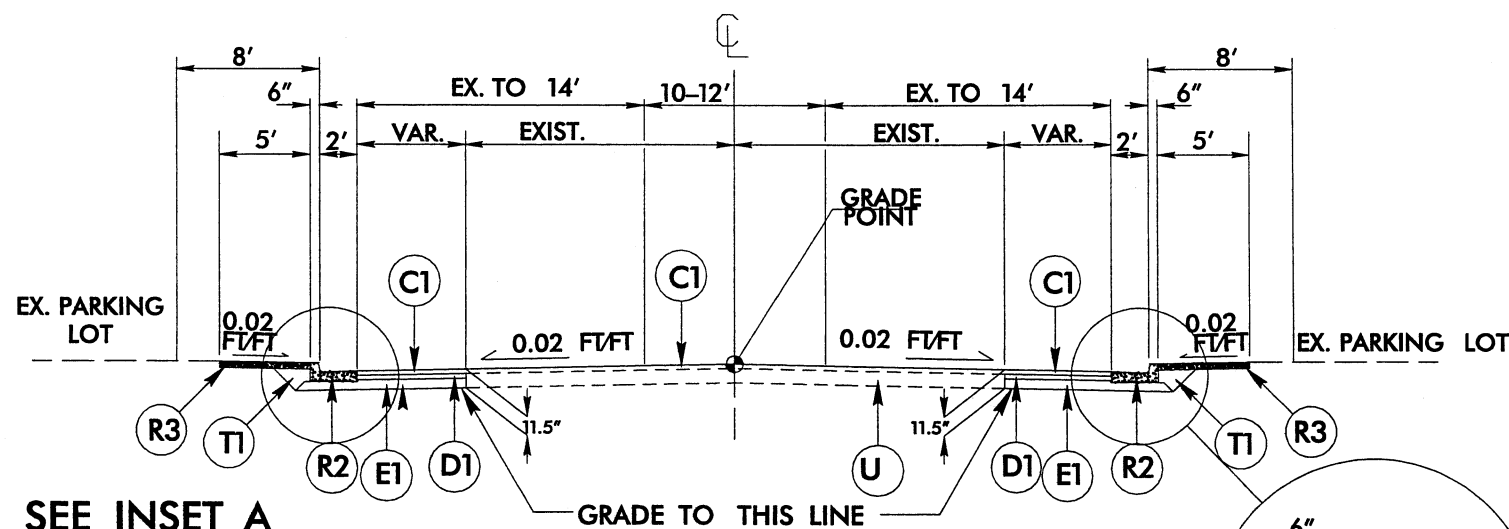
6/2/99

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R1	5" MONOLITHIC CONCRETE ISLAND
R2	2'-6" CONCRETE CURB AND GUTTER.
R3	4" CONC. SIDEWALK
U	EXISTING PAVEMENT.
T1	EARTH MATERIAL.

PROJECT REFERENCE NO. B-3475	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

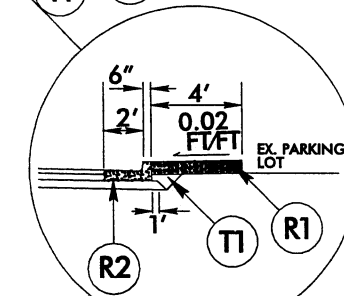
NOTE: 1) ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
 2) OFFSITE DETOUR ROUTE SHALL BE RESURFACED WITH ACSC TYPE S 9.5B AND PATCHED WITH ACBC TYPE B 25B AS DIRECTED BY THE ENGINEER



SEE INSET A

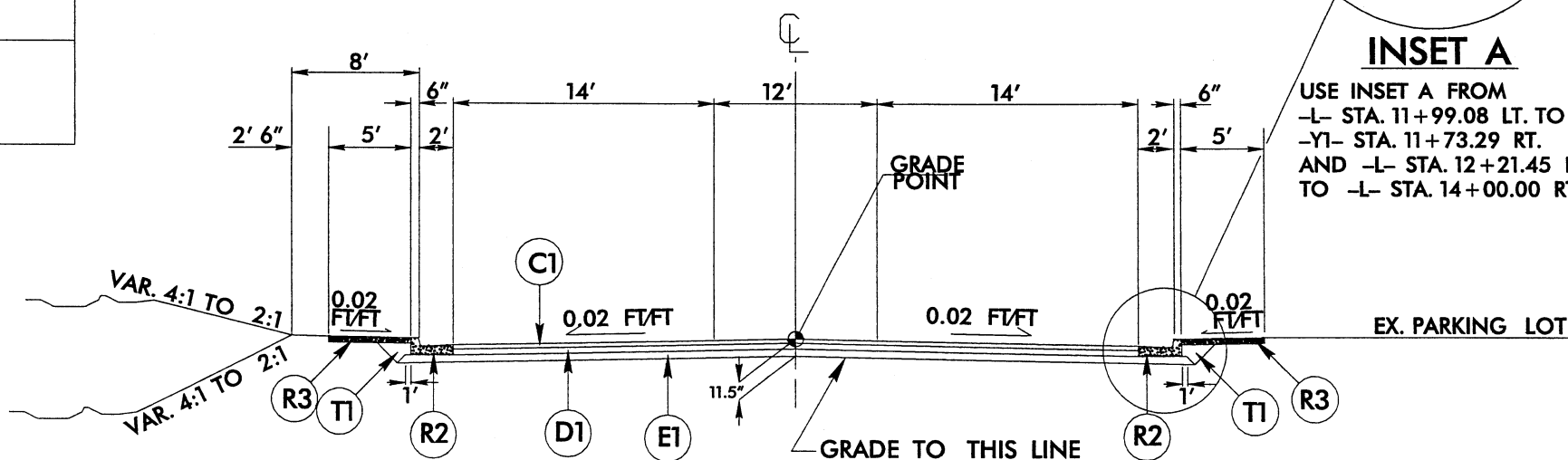
TYPICAL SECTION NO. 1

-L- STA. 11+50 TO STA. 14+50
 -L- STA. 15+20.00 TO 16+06.17



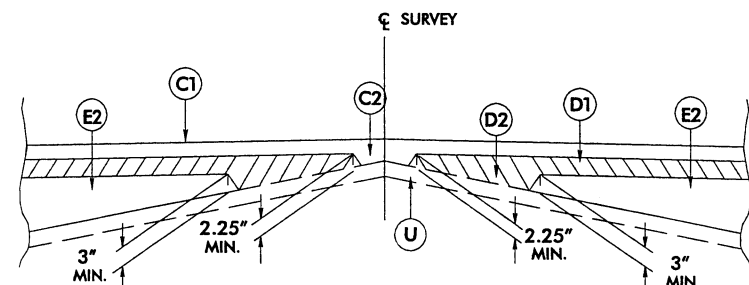
INSET A

USE INSET A FROM
 -L- STA. 11+99.08 LT. TO
 -YI- STA. 11+73.29 RT.
 AND -L- STA. 12+21.45 RT.
 TO -L- STA. 14+00.00 RT.



TYPICAL SECTION NO. 2

-L- STA. 14+50 TO STA. 15+20.00



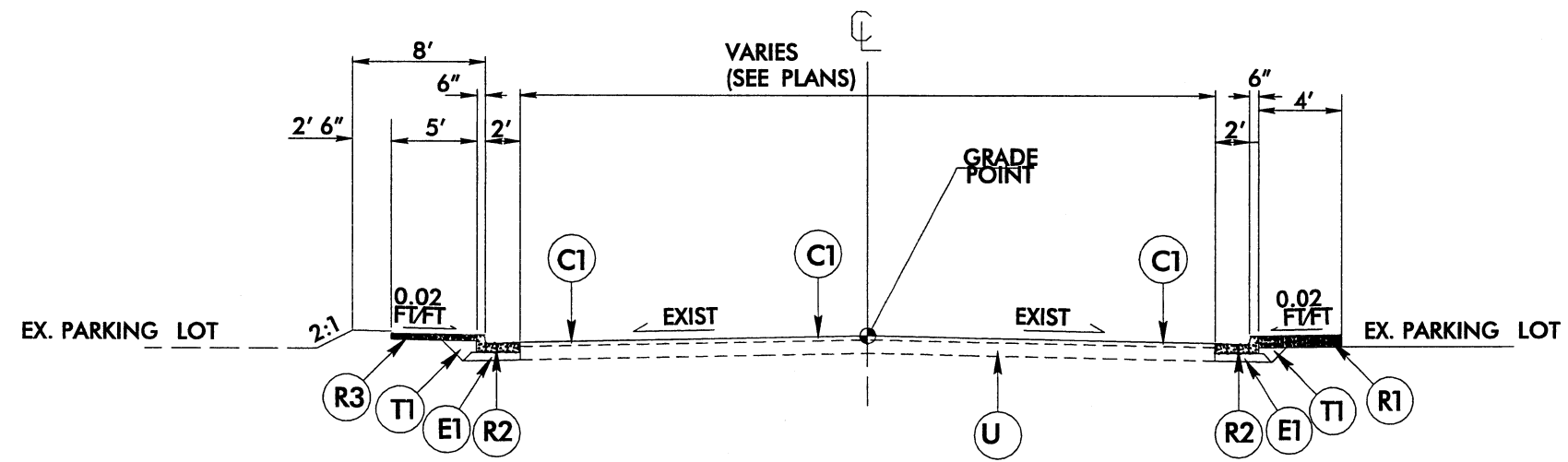
Detail Showing Method of Wedging

SYSTEMS CONSULTANTS
 10000 WILSON BLVD
 SUITE 100
 WASHINGTON DC 20037
 TEL: (703) 441-1111
 FAX: (703) 441-1112
 WWW: WWW.SCENETWORK.COM

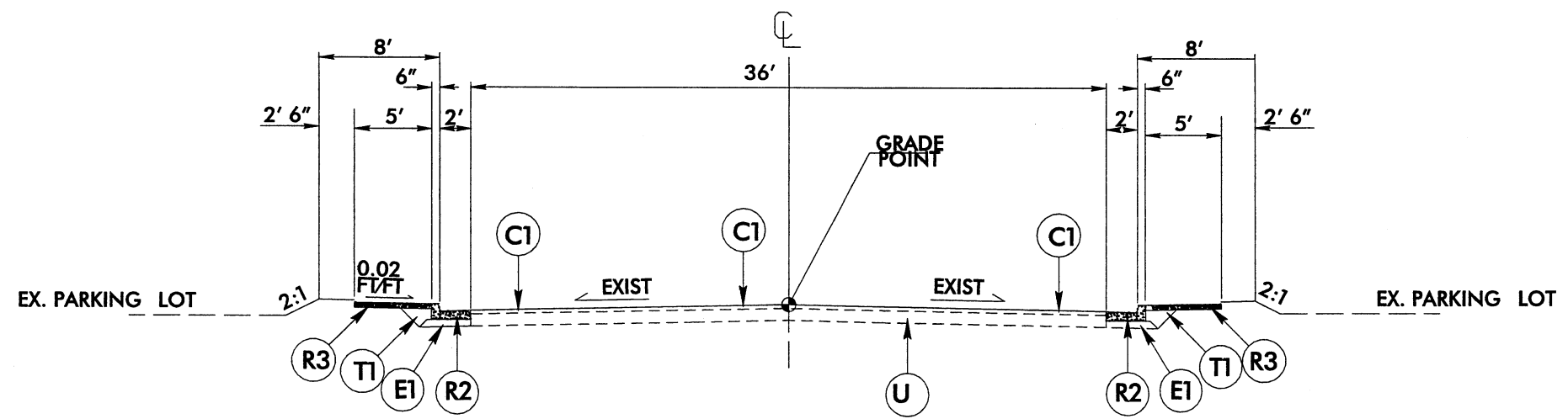
6/2/99

PROJECT REFERENCE NO. B-3475	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

C1	3.0" TYPE S9.5B
C2	VAR. DEPTH S9.5B
D1	4.0" I19.0B
D2	VAR. DEPTH I 19.0B
E1	4.5" B25.0B
E2	VAR. DEPTH B25.0B
R1	5" CONCRETE MONOLITHIC ISLAND
R2	2'-6" CONCRETE CURB AND GUTTER.
R3	4" CONC. SIDEWALK
U	EXISTING PAVEMENT.
T1	EARTH MATERIAL.



TYPICAL SECTION NO. 3
-Y1- STA. 11+60.00 TO STA. 12+20.71



TYPICAL SECTION NO. 4
-Y2- STA. 11+94.00 TO STA. 12+42.44

SYSTEMS DESIGN CONSULTANTS INC.

8/17/99

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "JENNINGS" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 585473.9767(11) EASTING: 967996.7746(11) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997780195 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "JENNINGS" TO -L- STATION 10+00 IS N 65° 49' 55.4" W 854.16' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

-Y1-
 PI Sta 10+52.53
 $\Delta = 26^\circ 16' 46.0"$ (LT)
 $D = 25^\circ 27' 48.7"$
 $L = 103.20'$
 $T = 52.53'$
 $R = 225.01'$

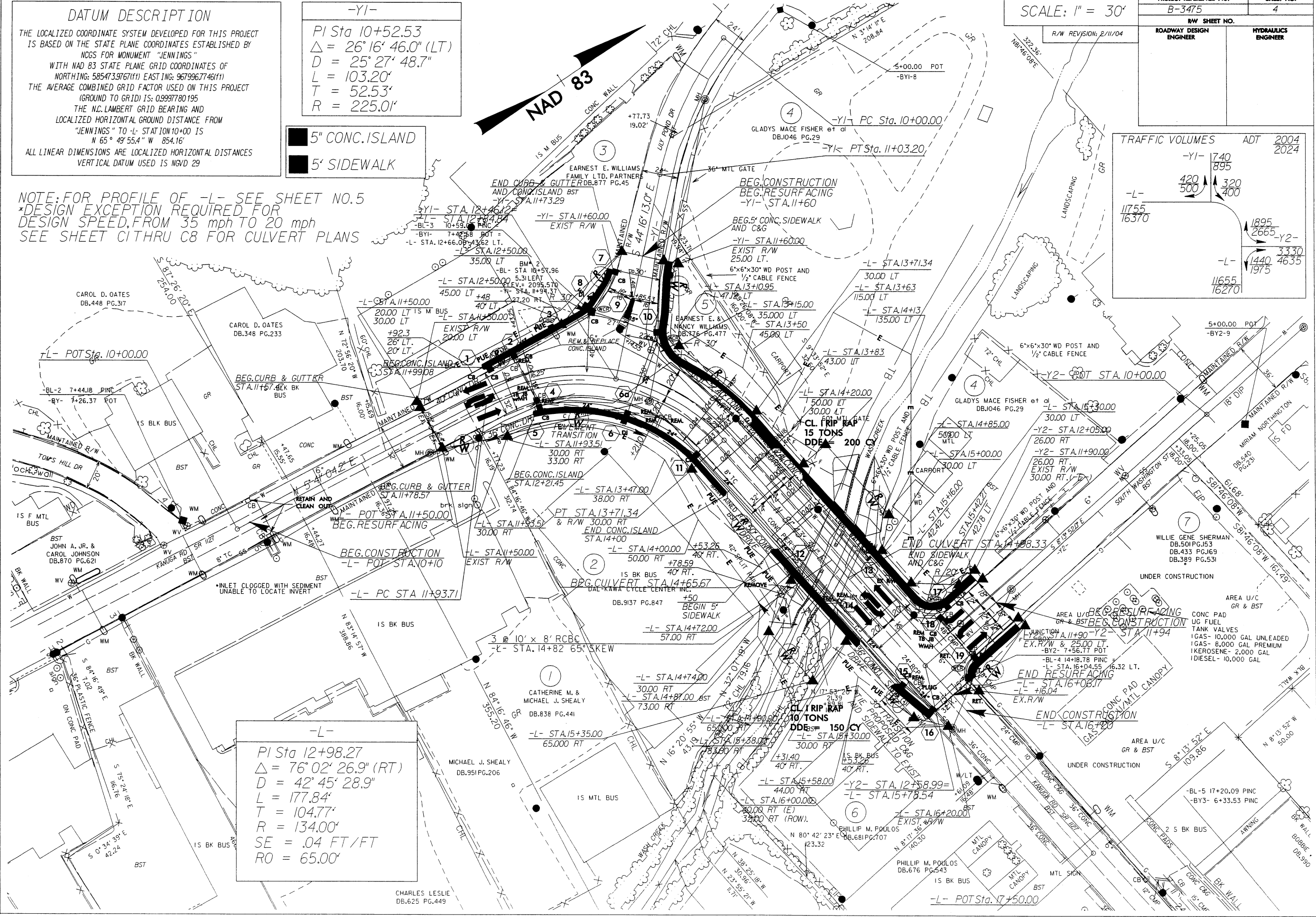
5" CONC. ISLAND
 5' SIDEWALK

NOTE: FOR PROFILE OF -L- SEE SHEET NO.5
 *DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED FROM 35 mph TO 20 mph
 SEE SHEET CITHRU C8 FOR CULVERT PLANS

SCALE: 1" = 30'

PROJECT REFERENCE NO. B-3475	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TRAFFIC VOLUMES		ADT	2004
-Y1-	740	895	
-L-	420	320	
	500	400	
	11755	16370	
		1895	
		2665	
		3330	
		1440	4635
		11655	16270



-L-
 PI Sta 12+98.27
 $\Delta = 76^\circ 02' 26.9"$ (RT)
 $D = 42^\circ 45' 28.9"$
 $L = 177.84'$
 $T = 104.77'$
 $R = 134.00'$
 $SE = .04$ FT/FT
 $RO = 65.00'$

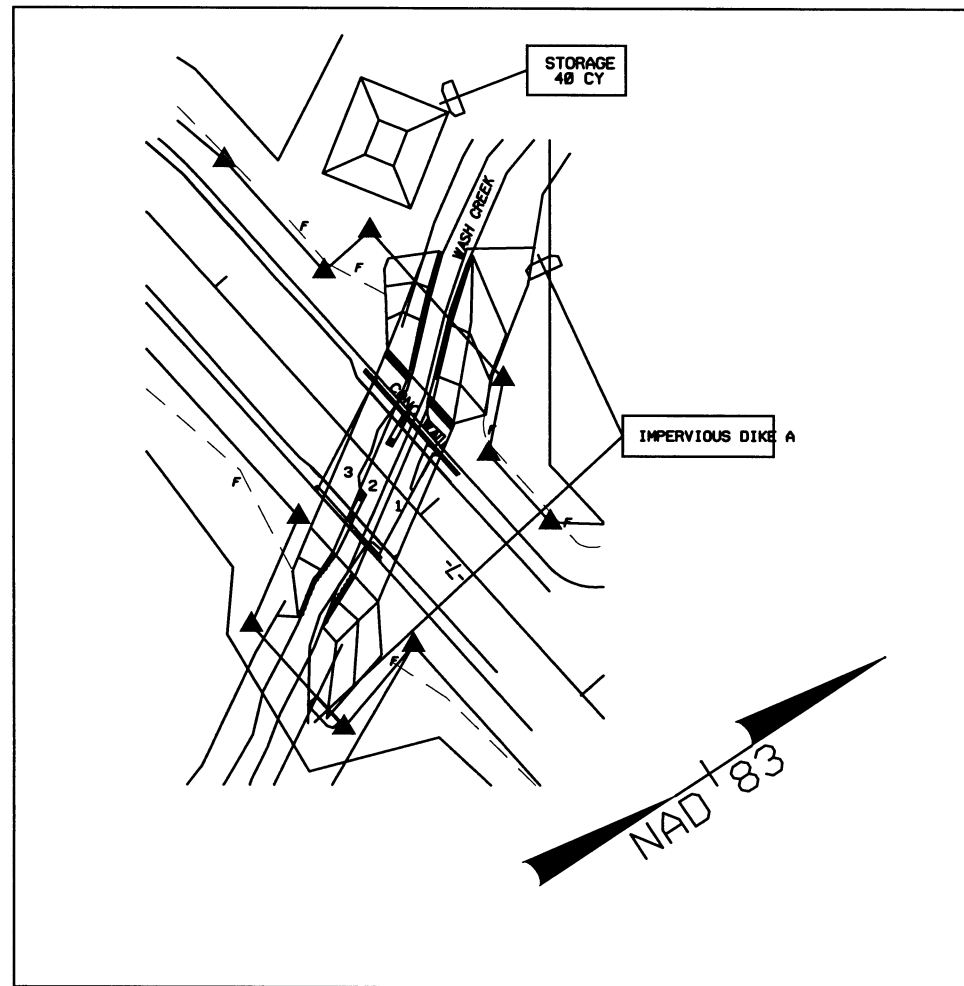
*****SYSTIME*****
 *****DODSON*****
 *****SUSARIN*****

CHARLES LESLIE
 DB.625 PG.449

CULVERT PHASING

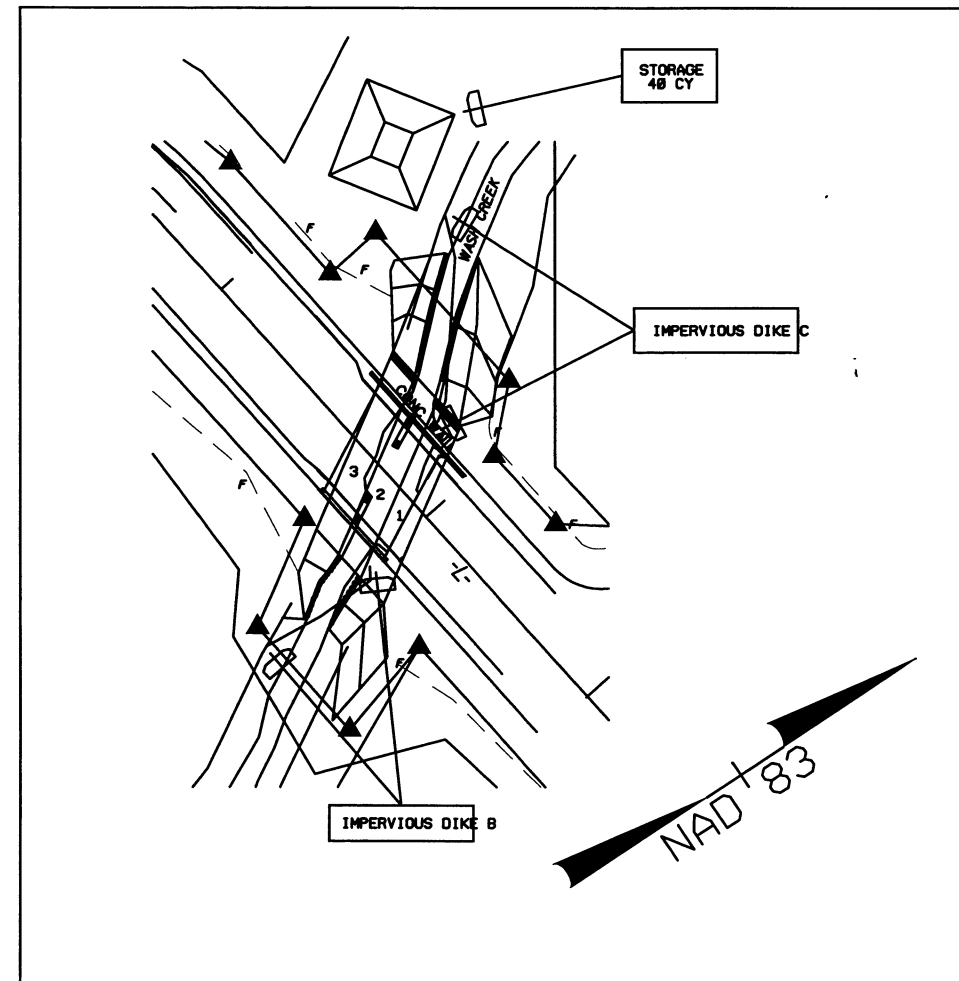
PROJECT REFERENCE NO. B-3475	SHEET NO. EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PHASE 1



1. CONSTRUCT STILLING BASIN (48 CY).
2. INSTALL IMPERVIOUS DIKE A.
3. CONSTRUCT BARREL 1.

PHASE 2



4. REMOVE IMPERVIOUS DIKE A AND INSTALL IMPERVIOUS DIKES B AND C.
5. DIVERT WATER THROUGH BARREL 1.
6. CONSTRUCT BARRELS 2 AND 3.
7. COMPLETE ROADWAY.

Henderson County
SR 1127 (Kanuga Road)
Bridge No. 356 Over Wash Creek
Federal-Aid Project No. BRSTP-1127(5)
State Project No. 8.2951601
T.I.P. No. B-3475

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

08.30.02
DATE

for Stacy B Harris
Gail Grimes, P.E., Assistant Manager
Project Development and Environmental Analysis Branch,
NCDOT

8/30/02
DATE


for Clarence W. Coleman, Jr.
Nicholas L. Graf, P.E.
Division Administrator, FHWA

Henderson County
SR 1127 (Kanuga Road)
Bridge No. 356 Over Wash Creek
Federal-Aid Project No. BRSTP-1127(5)
State Project No. 8.2951601
T.I.P. No. B-3475

CATEGORICAL EXCLUSION


August, 2002

Documentation Prepared by:
Barbara H. Mulkey Engineering, Inc.

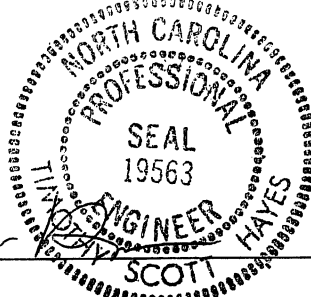


Tommy Register, EI
Project Manager

8/30/02
Date




Tim Hayes, PE
Principle-In-Charge



8/30/02
Date

For the North Carolina Department of Transportation



John Wadsworth, PE
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

Henderson County
SR 1127 (Kanuga Road)
Bridge No. 356 Over Wash Creek
Federal-Aid Project No. BRSTP-1127(5)
State Project No. 8.2951601
T.I.P. No. B-3475

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

Project Development and Environmental Analysis Branch:

A copy of the environmental planning document will be submitted to the Tennessee Valley Authority (TVA) and United States Army Corps of Engineers (COE).

Hydraulics Unit / Structure Design Unit:

This project will be reviewed under Section 26a of the Tennessee Valley Authority (TVA) Act. The final bridge plans, hydraulic analysis of the effects of the replacement structure on the 100-year flood elevation, and notice of compliance with the Historic Preservation Act of 1966 will be forwarded to TVA for approval.

Roadway Design / Structure Design Unit / Division Construction:

Aesthetic enhancement: The headwall will be extended and arched. A formed and stained facing will be applied to the headwall, wing walls and exterior giving the appearance of stone.

Henderson County
SR 1127 (Kanuga Road)
Bridge No. 356 Over Wash Creek
Federal-Aid Project No. BRSTP-1127(5)
State Project No. 8.2951601
T.I.P. No. B-3475

INTRODUCTION: The replacement of Bridge No. 356 is included in the North Carolina Department of Transportation (NCDOT) 2002-2008 Transportation Improvement Program (T.I.P.) and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate that Bridge No. 356 has a sufficiency rating of 51.1 out of a possible 100 for a new structure. The bridge is considered functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 356 is located on SR 1127 (Kanuga Road) in Henderson County (Figure 1). Kanuga Road is classified as an Urban Minor Collector by the statewide functional classification system. Land use in the project area is urban, with commercial development dominant. Kanuga Road is a three-lane facility near the bridge, which currently serves commuting and local traffic. This section of Kanuga Road is part of a soon to be designated bicycle route system for Henderson County (part of TIP Project No. E-3417).

The existing bridge is a four-span structure with an overall length of 46 feet (14 meters) and a clear roadway width of 30.4 feet (9.3 meters). It was constructed in 1952 (Figure 4). The bridge consists of a continuous reinforced concrete slab supported by reinforced concrete post and beam bents with vertical reinforced concrete abutments. Bridge No. 356 is not presently posted for single vehicle (SV) or truck-tractor semi trailer (TTST).

Replacement of Bridge No. 356 was added to the TIP in 1995. The sufficiency rating at that time was 49.7. The bottom of the slab was in poor condition with numerous areas of exposed reinforcing steel. The footing and breastwalls also needed repairs. A continuous slab bridge does not lend itself to rehabilitation. Investigation of the existing structure by the Bridge Maintenance Unit indicates that rehabilitation of the existing structure is not feasible due to its age and deteriorated condition.

The approach roadway consists of two travel lanes and a center turn lane near the bridge. The clear roadway width of the approach is 30 feet (9.1 meters). The approach roadway from the west is on a curve with a radius of 134 feet (40.8 meters) approximately 80 feet (24 meters) from the bridge, and the east approach is tangent to the existing road (See Figure 2 & 2A). The existing horizontal curve only provides for a safe speed of approximately 20 mph (30 km/h). The posted speed limit is 35 miles per hour (mph) {60 kilometers per hour (km/h)}.

Land use to the north (upstream) and to the south (downstream) is urban and commercial. An overhead power line is located north of the existing bridge. The power line crosses Kanuga Road just west of the bridge. A 2-inch (50-millimeter) gas line is attached to the downstream face of the bridge. An 8-inch (205-milimeter) sewer line is located at the downstream face of the bridge at stream level, and a 6-inch (150-milimeter) water line is attached to the underside of the bridge near the upstream face. A 36-inch (900-milimeter) concrete storm drainpipe enters the creek at the upstream face of the bridge and an 18-inch (450-milimeter) metal storm drainpipe enters the creek approximately 10 feet (3 meters) downstream of the existing bridge. It is anticipated that the utilities will be impacted during construction of this project.

The 2002 estimated average daily traffic (ADT) volume is 11,200 vehicles per day (vpd). The projected ADT is 16,500 vpd by the design year 2025. The percentages of truck traffic is 5% dual tired vehicles (DUALS) and 2% TTST (Figure 3).

Four school buses cross Bridge No. 356 each day.

There were nineteen accidents reported in the vicinity of Bridge No. 356 during the period from June 1997 to May 2000. These accidents consisted of twelve non-fatal injury crashes and seven property damage only crashes.

III. ALTERNATIVES

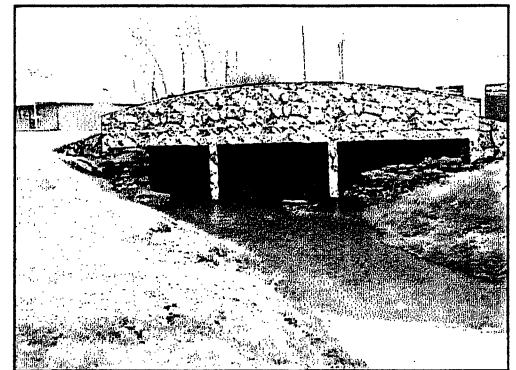
A. Project Description

The proposed replacement structure for Bridge No. 356 will be a reinforced concrete box culvert with three barrels at 10 feet (3.0 meters) by 9 feet (2.7 meters) and approximately 80 feet (24.4 meters) in length. The structure will be replaced on existing alignment.

Bicycle accommodations (14-foot lanes) will be included on the replacement structure as well as on the approaches to the new structure. Sidewalks will also be provided across both sides of the proposed structure.

The proposed approach roadway will consist of two 14-foot (4.2 meter) out side travel lanes and one 12-foot (3.6 meter) center turning lane. The proposed grade will be approximately the same as the existing roadway (Figure 3).

During construction, traffic will be routed to an off-site detour. The off-site detour is approximately 0.6 miles in length, along Lilly Pond Drive, West Allen Street, and Main Street. Truck traffic will be routed on to White Street.



Rendering of Proposed Structure

B. Aesthetic Enhancement

Aesthetic enhancement is proposed in response to Context Sensitive Design. The headwall will be extended and arched. A formed and stained facing will be applied to the headwall, wing walls and exterior giving the appearance of stone (See Figure 6).

C. Build Alternatives

Alternative A replaces the bridge with a triple barrel, 10 feet (3.0 meters) by 9 feet (2.7 meters) culvert on existing alignment. Alternative A provides curb and gutter with sidewalks along both sides of Kanuga Road (SR 1127). The approach work extends approximately 360 feet (110 meters) to the west and approximately 240 feet (73 meters) to the east of the existing bridge. Alternative A was not selected as the preferred alternative because of the impacts to the local business. Seven businesses would have to be relocated. (See Figure 2)

Alternative C (Preferred) replaces the bridge with a triple barrel, 10 feet (3.0 meters) by 9 feet (2.7 meters) culvert on existing alignment. Alternative C minimizes the approach work. The west approach will provide two-foot (0.6 m) valley gutter along the right side of Kanuga road up to the new structure and sidewalk will be provided across the structure. Curb and gutter with sidewalk will be provided on the left side of Kanuga Road. The approach work extends approximately 270 feet (886 m) to the west and approximately 150 feet (492 m) to the east of the existing bridge. (See Figure 2A)

D. Alternatives Eliminated From Further Study

Alternative B replaces the bridge with a culvert on existing alignment. During construction, traffic will be routed off-site. Alternative B provides curb and gutter along both sides of Kanuga Road (SR 1127), but sidewalk is only provided along left side of Kanuga Road. The approach work extends approximately 360 feet (1181 m) to the west and approximately 240 feet (787 m) to the east of the existing bridge.

Alternative B was eliminated from further study because it does not provide any improvement in the design or substantially reduce the right-of-way cost.

The “do-nothing” alternative will eventually necessitate removal of the existing structure and closure of Kanuga Road (SR 1127). This is not desirable due to the service provided by Kanuga Road.

Use of an on-site detour was not considered a reasonable or feasible alternative due to the impacts on local businesses.

E. Preferred Alternative

Alternative C was selected as the preferred alternative because it minimizes the impacts to local businesses and is more economical than Alternative A (Figure 2A).

Based on the preliminary hydraulics report the drainage area of Wash Creek at the proposed crossing is approximately two square miles (5.2 square kilometers). The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined, by a detailed hydraulic analysis to be performed during the final design phase of the project.

The Division Engineer concurs with Alternative C as the preferred alternate.

F. Anticipated Design Exception

The posted speed limit on Kanuga Street is 35 mph (60 km/h). This section of Kanuga Street is a business district where vehicles are turning in and out of parking lots. The approach roadway from the west is on a curve with a radius of 134 feet (41 meters) providing a safe speed of approximately 20 mph (30 km/h).

Due to the existing the horizontal and vertical constraints the proposed design speed is 20 mph (30 km/h). A design exception for the proposed design speed of 20 mph (30 km/h) will be required.

IV. ESTIMATED COST

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

	ALTERNATIVES	
	A	C
Structure Removal (Existing)	\$ 11,300	\$ 11,300
Structure Proposed	115,750	115,750
Roadway Approaches	169,050	163,100
Miscellaneous and Mobilization	133,900	130,850
Engineering Contingencies	70,000	79,000
ROW/Const. Easements/Utilities	1,707,500	132,000
	-----	-----
TOTAL	\$2,207,500.00	\$632,000.00

The estimated cost of the project as shown in the 2002-2008 Transportation Improvement Program (T.I.P.) is \$450,000, including \$30,000 for right-of-way and \$420,000 for construction.

V. NATURAL RESOURCES

A. Methodology

Materials and literature supporting this investigation have been derived from a number of sources including U.S. Geological Survey (USGS) topographic mapping (Hendersonville, NC 7.5 minute quadrangle), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping (NWI) (Hendersonville, NC 7.5 minute quadrangle), Natural Resources Conservation Service (NRCS; formerly the Soil Conservation Service) soils mapping (SCS 1980), and recent aerial photography and design plans.

The site was visited on January 24, 2001. The study corridor was walked and visually surveyed for substantial features. The study corridor is located on SR 1127 (Kanuga Road) at Wash Creek in an urban area of Hendersonville, NC. The study corridor is nested between Kanuga Road approximately 0.3 mile (0.5 kilometer) to the west and NC 25 approximately 0.2 mile (0.3 kilometer) to the east (Figure 1). The study corridor spans the channel of Wash Creek and adjacent uplands along an east-west orientation for a distance of approximately 850 feet (259.3 meters). An approximately 50 foot (15.3

meters) wide corridor along Wash Creek is vegetated. The remainder of the study corridor (approximately 93 percent) is impervious surface. Within the study corridor, the vegetated buffer along Wash Creek supports a maintained, disturbed plant community.

Actual impacts will be limited to fill boundaries and are expected to be less than those shown for the study corridor. Special concerns evaluated in the field include:

- 1) Potential protected species habitat and
- 2) Wetlands and water quality protection in Wash Creek.

Plant community descriptions are based on a classification system utilized by North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968) with exceptions for updated nomenclature. Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof *et al.* 1980, Potter *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Hamel 1992, Palmer and Braswell 1995, Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (DWQ 2000a, 2000b). Quantitative sampling was not undertaken to support existing data.

The most current FWS listing of federally protected species with ranges extending into Henderson County (March 7, 2002 FWS list) was reviewed prior to generation of this document. In addition, NHP records documenting presence of federally or state listed species were consulted before commencing field investigations.

B. Physiography and Soils

The study corridor is underlain by Henderson Gneiss intrusive rocks and occurs within the Blue Ridge physiographic province of North Carolina. Topography is characterized as a broad, rolling, intermountain plateau. The study corridor is located on uplands and across the floodplain of Wash Creek. The elevation of the study corridor is approximately 2100 feet (640.5 meters) (National Geodetic Vertical Datum [NGVD]) (USGS Hendersonville, NC quadrangle).

Soil mapping units underlying the study corridor are Codorus loam (*Fluvaquentic Dystrochrepts*) and Hayesville loam (*Typic Hapludults*). The Codorus series occurs in depressions in wide floodplains and on narrow floodplains. This series occurs along the Wash Creek floodplain and extends outward to approximately 175 feet (53.4 meters) west of the bridge and approximately 25 feet (7.6 meters) east of the bridge. The Codorus series is moderately well drained to somewhat poorly drained; permeability is moderate. Codorus soils are non-hydric in Henderson County, but in depressional areas may have inclusions of the hydric Toxoway (*Cumulic Humaquepts*) and Hatboro (*Typic Fluvaquents*) soils. The Hayesville series occurs on broad, smooth ridge tops at lower elevations. This series occurs all upland areas of the study corridor where the Codorus series does not occur. Hayesville loam is a well-drained soil with moderate permeability. This soil is non-hydric in Henderson County (SCS 1980, NRCS 1996).

C. Water Resources

1. Waters Impacted

The study corridor is located within sub-basin 04-03-02 of the French Broad River Basin (DWQ 2000). This area is part of USGS Hydrologic Unit 06010105 of the Tennessee Region. Structures targeted for replacement span the open water stream associated with Wash Creek. There is no direct involvement of additional streams or tributaries. Wash Creek has been assigned Stream Index Number 6-55-7 by the N.C. Division of Water Quality (DWQ 2000b). The nearest tributary to Wash Creek is an unnamed tributary, which joins Wash Creek from the west approximately 1400 feet (427.0 meters) upstream (north) of the study corridor.

2. Stream Characteristics

Wash Creek is a well-defined stream with moderate flow over a gravel/sand/silt substrate. Within the study corridor, the stream is entrenched and channelized, but maintains a slight riffle/pool structure. At Bridge No. 356, Wash Creek is approximately 8 feet (2.4 meters) wide. The banks are approximately 8 feet (2.4 meters) high and steeply sloping. The banks are stabilized with grass on the north side of the bridge and riparian shrub vegetation south of the bridge. During field investigations of Wash Creek, water clarity was good, flow velocity was moderate, and water depth varied from 4 to 14 inches (10.2 to 35.6 centimeters). Bridge height above the water surface was approximately 5 feet (1.5 meters).

3. Best Usage Classifications and Water Quality

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A best usage classification of **B** has been assigned to this section of Wash Creek. The designation **B** denotes that appropriate uses include fishing, wildlife, agriculture, fish and aquatic life propagation and survival, and primary recreation. Primary recreation refers to activities such as swimming that involves human body contact and takes place in an organized manner or on a frequent basis. There are no High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), Water Supply II (**WS-II**) or Trout (**Tr**) waters within 1.0 mile (1.6 kilometers) of the study corridor (DWQ 2000a, DWQ 2000b).

The Division of Water Quality (DWQ) (previously known as the Division of Environmental Management, Water Quality Section [DEM]) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed study corridor is summarized in the French Broad River basinwide water quality plan (DWQ 2000a). Wash Creek is not rated or designated uses by DWQ; however, Mud Creek, approximately 0.7 mile (0.2 kilometer) downstream of the study corridor, is classified as **Not Supporting** of designated uses. This section of Mud Creek has received a bioclassification rating of **Poor** based on fish community sampling performed in 1997 (DWQ 2000a).

This sub-basin (04-03-02) supports six major point-source dischargers and 77 minor point-source dischargers. Total permitted flow for the six major dischargers is 53.8 million gallons per day (MGD) (203.9 million liters per day [MLD]). Total permitted flow for the 77 minor dischargers is 2.1 MGD (8.0 MLD). There are no point-source dischargers directly associated with Wash Creek. Major non-point sources of pollution for the entire French Broad River Basin are agriculture, construction, forestry,

mining, on-site wastewater disposal, solid waste disposal, and atmospheric deposition. Sedimentation and nutrient inputs are major problems associated with non-point source discharges and often result in fecal coliform, heavy metals, oil from roads and parking lots, and increased nutrient levels in surface waters (DWQ 2000a).

4. Anticipated Impacts to Water Resources

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion control schedule and the use of best management practices. The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into streams by catch basins and roadside vegetation.

The proposed bridge replacement will allow for continuation of pre-project stream flows in Wash Creek, thereby protecting the integrity of these waterways. Long-term impacts to adjacent reaches resulting from construction are expected to be negligible. In order to minimize impacts to water resources, NCDOT Best Management Practices (BMPs) for the Protection of Surface Waters will be strictly enforced during the entire life of the project.

There is potential for components of the deck and superstructure of Bridge No. 356 to be dropped into waters of the U.S. during construction. The resulting temporary fill associated with the concrete deck and piers is approximately 100 cubic yards (76.5 cubic meters). **NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR) will be applied to the removal of this bridge.**

D. Biotic Resources

1. Plant Communities

One distinct plant community was identified within the study corridor: urban/disturbed land. This plant community is described below.

Urban/Disturbed Land - Urban/disturbed land is defined as the vegetated corridor along Wash Creek and residential lawn at the northeast portion of the study corridor. This community represents approximately 7 percent of the total study corridor area. Plant species include black willow (*Salix nigra*), boxelder (*Acer negundo*), eastern red cedar (*Juniperus virginiana*), yaupon holly (*Ilex vomitoria*), wild grape (*Vitis rotundifolia*), Chinese privet (*Ligustrum sinense*), Japanese clover (*Lespedeza striata*), Japanese honeysuckle (*Lonicera japonica*), wild rose (*Rosa* sp.), evening primrose (*Oenothera biennis*), fescue (*Festuca* sp.), firethorn (*Pyracantha* sp.), and landina (*Landina* sp.).

2. Potential Impacts to Terrestrial Plant Communities

Plant community area is estimated based on the amount of the plant community present within the fill boundaries. A summary of potential plant community impacts is presented in Table 1. Based on the proposed study corridor area, there will be no impacts to natural plant communities.

Table 1. Area of Plant Communities within the Fill Boundaries.

Plant Community	Area [acres (hectares)]
Urban/ Disturbed Land	0.041 (0.017)
Total	0.041 (0.017)

3. Wildlife

a. Terrestrial

No signs of mammals were observed within the study corridor during the site visit. Mammal species expected to occur within the study corridor are raccoon (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), red fox (*Vulpes vulpes*), long-tailed weasel (*Mustela frenata*), Virginia opossum (*Didelphis virginiana*), little brown myotis (*Myotis lucifugus*), short-tailed shrew (*Blarina brevicauda*), white-footed mouse (*Peromyscus leucopus*), house mouse (*Mus musculus*), and norway rat (*Rattus norvegicus*).

Birds observed within or adjacent to the corridor were European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), song sparrow (*Melospiza melodia*), northern mockingbird (*Mimus polyglottos*), and Cooper's hawk (*Accipiter cooperii*). Other avian species expected to occur in the study corridor are tufted titmouse (*Baeolophus bicolor*), Carolina chickadee (*Poecile carolinensis*), white-throated sparrow (*Zonotrichia albicollis*), American robin (*Turdus migratorius*), house finch (*Carpodacus mexicanus*), bluejay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), American goldfinch (*Carduelis tristis*), and eastern phoebe (*Sayornis phoebe*).

No terrestrial reptile or amphibian species were observed during the site visit. Some terrestrial reptiles and amphibians which may occur within the study corridor include eastern box turtle (*Terrapene carolina*), eastern fence lizard (*Sceloporus undulatus*), five-lined skink (*Eumeces fasciatus*), rough green snake (*Opheodrys aestivus*), black rat snake (*Elaphe obsoleta*), eastern garter snake (*Thamnophis sirtalis*), copperhead (*Agkistrodon contortrix*), and American toad (*Bufo americanus*).

b. Aquatic

Limited surveys resulted in no observations of aquatic reptile or amphibian species within the study corridor. Aquatic or semi-aquatic reptiles and amphibians which are expected to occur within the study corridor include snapping turtle (*Chelydra serpentina*), northern water snake (*Nerodia sipedon*), queen snake (*Regina septemvittata*), green frog (*Rana clamitans*), spring peeper (*Pseudacris crucifer*), and northern dusky salamander (*Desmognathus fuscus*).

No sampling was undertaken in Wash Creek to determine fishery potential. Visual surveys of Wash Creek did not reveal the presence of fish, molluscan fauna, or other aquatic life. Fish species that may be present in Wash Creek include creek chub (*Semotilus atromaculatus*), bluehead chub (*Nocomis leptocephalus*), northern hog-sucker (*Hypentelium nigricans*), Tennessee shiner (*Notropis leuciodus*), and yellow bullhead (*Ameiurus natalis*). Potential game fish which may be present within the study corridor include redbreast sunfish (*Lepomis auritus*), bluegill (*Lepomis macrochirus*), and smallmouth bass (*Micropterus dolomieu*).

c. Anticipated Impacts to Wildlife

Due to the lack of infringement on natural communities, the proposed bridge replacement will not result in substantial loss or displacement of known terrestrial animal populations. No substantial habitat fragmentation is expected since most improvements will be restricted to existing roadside margins. Placement of the proposed culvert will compromise in-stream aquatic habitat only within the culvert footprint; however, normal stream flow and integrity will be maintained to minimize impacts to aquatic habitat upstream and downstream of the project. Short-term impacts associated with turbidity and suspended sediments will affect benthic populations. Temporary impacts to downstream habitat from increased sediment during construction will be minimized by the implementation of stringent erosion control measures.

Based on a letter from N.C. Wildlife Resources Commission (WRC) to NCDOT (January 10, 2001), there are no substantial concerns regarding construction activities causing adverse impacts to wildlife and fisheries resources (including trout). **Therefore, this project will not require a moratorium on instream construction activities during the trout spawning period.** Construction activities should minimize impacts to water quality and aquatic and riparian habitat. COE recognizes Henderson County as a “trout water county”; therefore, WRC will review any nationwide or general 404 permits for the proposed project. **Wash Creek is not classified by DWQ as Trout Waters..**

E. Special Topics

1. Waters of the United States

Surface waters within the embankments of Wash Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR section 328.3). Wash Creek is not characterized on NWI Mapping. Field investigations indicate that, within the study corridor, Wash Creek is a perennial, bank-to-bank stream system. The area and linear distance of stream within the fill boundaries are shown in Table 2.

Table 2. Area and Linear Distance of Stream within the Fill Boundaries.

Jurisdictional Type	Area / Linear Distance
Stream Area, acres (hectares)	0.015 (0.006)
Stream Linear Distance, feet (meters)	80 (24.4)

Wetlands subject to review under section 404 of the Clean water Act (33 U.S.C. 1344) are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (DOA 1987). Based on these criteria, there are no wetlands within the study corridor.

Replacement of the bridge with a culvert will result in a maximum fill of approximately 0.015 acre (0.006 hectare) and approximately 80 linear feet (24.4 meters) of stream. There is also potential for components of the deck and superstructure to be dropped into waters of the U.S. during construction. Potential, temporary fill associated with removal of the concrete deck and piers will be approximately 100 cubic yards (76.5 cubic meters). Upon completion of construction, temporary impacts associated with construction activities and temporary alignments will be restored to pre-project conditions. **This project can be classified as Case 3, where there are no special restrictions other than those outlined in Best Management Practices for Protection of Surface Waters.** NCDOT will coordinate with the various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved.

2. Permits

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The COE has made available Nationwide Permit (NWP) #23 (61 FR 65874, 65916; December 13, 1996) for CEs due to minimal impacts expected with bridge construction. DWQ has made available a General 401 Water Quality Certification for NWP No. 23. However, authorization for jurisdictional area impacts through use of this permit will require written notice to DWQ. In the event that NWP No. 23 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit 031 issued by the Wilmington COE District. Notification to the Asheville COE office is required if this general permit is utilized. COE recognizes Henderson County as a “trout water county”; therefore, WRC will review any nationwide or general 404 permits for the proposed project.

3. Mitigation

Compensatory mitigation is not proposed for this project due to the limited nature of project impacts. However, utilization of BMPs is recommended in an effort to minimize impacts. Temporary impacts to floodplains associated with construction activities could be mitigated by replanting disturbed areas with native wetland species and removal of temporary fill material upon project completion. Fill or alteration of more than 150 linear feet (45.8 linear meters) of stream may require compensatory mitigation in accordance with 15 NCAC 2H .0506(h). A final determination regarding mitigation rests with the COE and DWQ.

F. Rare and Protected Species

1. Federally Protected Species

Species with the federal classification of Endangered (E), Threatened (T), Threatened due to Similarity of Appearance (T [S/A]), or officially Proposed (P) for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term “Endangered Species” is

defined as “any species which is in danger of extinction throughout all or a substantial portion of its range”, and the term “Threatened Species” is defined as “any species which is likely to become an Endangered species within the foreseeable future throughout all or a substantial portion of its range” (16 U.S.C. 1532). The term “Threatened due to Similarity of Appearance” is defined as a species which is not “Endangered” or “Threatened”, but “closely resembles an Endangered or Threatened species” (16 U.S.C. 1532). Federally protected species listed for Henderson County (as of the March 7, 2002 FWS list) are presented in Table 3.

Table 3. Federally Protected Species Listed for Henderson County (March 7, 2002 FWS list).

Common Name	Scientific Name	Status
Bog turtle	<i>Clemmys muhlenbergii</i>	T (S/A)
Appalachian elktoe	<i>Alasmidonta raveneliana</i>	E
Oyster mussel*	<i>Epioblasma capsaeformis</i>	E
Swamp pink	<i>Helonias bullata</i>	T
Small-whorled pogonia	<i>Isotria medeoloides</i>	T
Bunched arrowhead	<i>Sagittaria fasciculata</i>	E
Mountain sweet pitcher plant	<i>Sarracenia jonesii</i>	E
White irisette	<i>Sisyrinchium dichotomum</i>	E

Bog Turtle -The bog turtle is a small turtle reaching an adult size of approximately 3 to 4 inches (8 to 10 centimeters). This otherwise dark-colored species is readily identifiable by the presence of bright orange or yellow blotches on the sides of the head and neck (Martof *et. al.* 1980). The bog turtle is typically found in bogs, marshes, and wet pastures, usually in association with aquatic or semi-aquatic vegetation and small, shallow streams over soft bottoms (Palmer and Braswell 1995). In North Carolina, bog turtles have a discontinuous distribution in the mountains and western Piedmont. The bog turtle has declined drastically within the northern portion of its range due to over-collection and habitat alteration. As a result, the FWS officially proposed in the January 29, 1997 Federal Register (62 FR 4229) to list bog turtle as threatened within the northern portion of its range. Within the southern portion of its range, which includes North Carolina, the bog turtle is listed as T (S/A) because of similarity in appearance to individuals of the northern population.

No bogs or other habitat suitable for bog turtles exists within the study corridor. NHP records do not document bog turtles within 1.0 mile (1.6 kilometers) of the study corridor, and bog turtle was not observed during the site visit. T (S/A) species are not subject to Section 7 consultation and a biological conclusion is not required. However, the proposed project is not expected to affect the bog turtle.

Appalachian Elktoe - Appalachian elktoe is a small, subovate- to kidney-shaped freshwater mussel that grows to approximately 3.1 inches (8.0 centimeters) in length, 1.4 inches (3.5 centimeters) in height, and 1.0 inch (2.5 centimeters) in width (Clarke 1981). The shell is thin, but not fragile, and exhibits slight inflation along the posterior ridge near the center of the shell. Beaks project only slightly above the hinge line. Lateral teeth are absent; however, the hinge plate of both valves is thickened. Small,

pyramidal, compressed pseudocardinal teeth are present, and an interdental projection is present in the left valve. Juveniles are yellowish brown, but the periostracum (outer shell surface) is thicker and dark brown in adults. Individuals may be variably marked with prominent to obscure greenish rays. The nacre (shell interior) is shiny, blue to bluish white with salmon, pinkish, or brownish coloring in the central portion of the shell and beak cavity.

Appalachian elktoe is endemic to the upper Tennessee River system in the mountains of western North Carolina and eastern Tennessee. In North Carolina, this species may now be restricted to the Little Tennessee and Nolichucky drainages (LeGrand and Hall 1999). Recent N.C. Wildlife Resources Commission surveys have documented this species in the Little Tennessee River in Macon and Swain Counties, Cane River in Yancey County, Nolichucky and North Toe Rivers in Yancey and Mitchell Counties. A new population has recently been found in the Little River near the Henderson-Transylvania County line (personal communication, Mark Cantrell, FWS, July 11, 2001). The Pigeon River once supported a population of this mussel, but now is reported to be severely polluted and no longer likely to support the species (TSCFTM 1990). Suitable habitat for Appalachian elktoe is well-oxygenated riffle areas with sand and gravel substrate among cobbles and boulders. Current is usually moderate to swift and depth is no more than 3 feet (0.9 meter) (Parmalee and Bogan 1998).

Within the study corridor, Wash Creek is a large stream characterized as having shallow water, a riffle/pool structure, and moderate flow over a gravel/sand/silt substrate. Therefore, suitable habitat for Appalachian elktoe does potentially exist within the study corridor. NHP records do not document the occurrence of Appalachian elktoe within 1.0 mile (1.6 kilometers) of the study corridor. The nearest known population occurs in the Little River approximately 9 miles (14.5 kilometers) west of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that the Appalachian elktoe has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor; however, the study corridor does contain potentially suitable habitat for this species. Based on habitat types within the study corridor, this project could potentially affect Appalachian elktoe, and surveys for this species may be required. BMPs for the protection of surface waters and HQW guidelines (*Design Standards in Sensitive Watersheds*) will be strictly enforced during the life of the project. NO EFFECT

Oyster Mussel - The oyster mussel is a small, freshwater mussel reaching approximately 2.1 inches (7.0 centimeters) in length. The shell is dull to sub-shiny and yellowish to green with numerous dark green rays. The nacre (inside shell surface) is whitish to bluish in color. Shells of females are slightly inflated and thinner toward the posterior margin. Oyster mussels inhabit small to medium-sized rivers with sand/gravel substrate, in shallow riffles and fast water less than 3 feet (0.9 meter) deep (Parmalee and Bogan 1998). This species is sometimes associated with water willow (*Justicia americana*) and is found in gravel pockets between bedrock and swift currents. Four species of fish have been identified as hosts: spotted darter (*Etheostoma maculatum*), redline darter (*E. rufilineatum*), dusky darter (*Percina sciera*), and banded sculpin (*Cottus carollinae*) (FWS 2000).

The oyster mussel is endemic to the Cumberland and Tennessee River drainages in Alabama, Kentucky, Tennessee, Virginia, and North Carolina. Within North Carolina, the species was known to have been abundant in the early 1900s in the upper Tennessee River system of the mountains of western North Carolina and Tennessee. Currently the oyster mussel survives in nine tributaries of the Tennessee and Cumberland River systems in Kentucky, Tennessee, and Virginia.

This species is now considered to have been “formerly reported” from the French Broad River (LeGrand and Hall 1999). Much of the historic range of this species has been impounded by projects of the Tennessee Valley Authority and the U.S. Army Corps of Engineers. Other populations have probably been lost due to pollution and siltation. All known populations are small and vulnerable to disturbance.

Within the study corridor, Wash Creek is a large stream characterized as having shallow water, a riffle/pool structure, and moderate flow over a gravel/ sand/silt substrate. Therefore, suitable habitat for oyster mussel does potentially exist within the study corridor. Oyster mussels have been documented within the French Broad River basin historically. NHP do not document the occurrence of oyster mussel within 1.0 mile (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that the oyster mussel has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor; however, the study corridor does contain potentially suitable habitat for this species. Based on habitat types within the study corridor, this project could potentially affect oyster mussel, and surveys for this species may be required. BMPs for the protection of surface waters and HQW guidelines (*Design Standards in Sensitive Watersheds*) should be strictly enforced during the life of the project. NO EFFECT

Swamp Pink - Swamp pink is a perennial, hydrophytic herb in the lily family with simple leaves in a basal rosette. Small scale-like leaves or bracts are found on a hollow flowering stem which may be 16 inches (40.6 centimeters) tall in flower and 24 inches (61.0 centimeters) tall in fruit. The inflorescence consists of pink to lavender flowers borne on a raceme without bracts. Fruits consist of three-lobed papery capsules. Vegetative portions of the plant may emerge in April and persist through September. Flowering occurs in April and May, with fruits present from May through July (Massey *et al.* 1983). In North Carolina, swamp pink is found in mountain swamps and bogs. Swamp pink occurs along small watercourses in permanently saturated, acidic, organic soils or black muck, which is mostly sphagnum (Porter and Wieboldt 1991). Swamp pink does not tolerate prolonged inundation, but can survive infrequent and brief flooding. In North Carolina, the current distribution is restricted to Henderson, Jackson, and Transylvania Counties (Amoroso 1999).

No swamp or bog areas occur within the study corridor. Therefore, suitable habitat for swamp pink does not exist within the proposed study corridor. Swamp pink is not detectable during the dormant winter season, when the site visit was undertaken. NHP records do not document swamp pink within 1.0 mile (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that the swamp pink has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor, and the study corridor contains no suitable habitat for this species. Based on a NHP record search and habitat types within the study corridor, this project will not affect swamp pink. NO EFFECT

Small-whorled Pogonia - Small whorled pogonia is a terrestrial orchid growing to about 10 inches (25.4 centimeters) high. Five or six drooping, pale dusty green, widely rounded leaves with pointed tips are arranged in a whorl at the apex of the greenish or purplish, hollow stem. Typically a single, yellowish green, nearly stalkless flower is produced just above the leaves; a second flower rarely may be present. Flowers consist of three petals, which may reach lengths of 0.7 inch (1.7 centimeters),

surrounded by three narrow sepals up to 1 inch (2.5 centimeters) in length. Flower production occurs from May to July and is followed by the formation of an erect ellipsoidal capsule 0.7 to 1.2 inches (1.7 to 3.0 centimeters) in length (Massey *et al.* 1983). This species may remain dormant for periods up to 10 years between blooming periods (Newcomb 1977).

Populations of small whorled pogonia are sparse and widely distributed. The species is found in open, dry deciduous or mixed pine-deciduous forest and along stream banks. Examples of suitable habitat conditions (open canopy and shrub layer with a sparse herb layer) where small whorled pogonia has been found include oldfields, pastures, windthrow areas, cutover forests, old orchards, and semi-permanent canopy breaks along roads, streams, lakes, and cliffs (Massey *et al.* 1983). Suitable forest is generally of second- or third-growth. Soils are often sandy or stony, acid, nutrient-poor soils overlain by leaf litter. Beyond the common characteristics of soils, sparse ground cover and open canopy with persistent breaks, myriad exceptions and local variations occur (FWS 1992). In the mountains and Piedmont of North Carolina, this species is usually found in association with white pine (Weakley 1993), or at scattered locations in the mountains, Piedmont, and Sandhills (Amoroso 1999), including wooded slopes and streamsides (Radford *et al.* 1968).

Much of the of the Wash Creek riparian zone within the study corridor is sparsely vegetated and open, and therefore may provide suitable habitat for small-whorled pogonia. A systematic survey for small-whorled pogonia was conducted by ESC personnel within the proposed alternative area and during the flowering period (on June 7, 2001); however, no specimens of this species were found. NHP records do not document small whorled pogonia within 1.0 mile (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that small whorled pogonia has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor; however, the study corridor does contain suitable habitat for this species. A systematic plant survey of the proposed alternative did not locate this species. Based on a systematic plant survey conducted at the site and on NHP records, this project will not affect small whorled pogonia. NO EFFECT

Bunched Arrowhead - Bunched arrowhead is a perennial, emergent, aquatic herb growing to 14 inches (35.6 centimeters) in height with simple, basal leaves. Two leaf forms are produced: phyllodes (bladeless) early in the season, and progressively longer, broader leaves later in the season (Kral 1983). The phyllodes are linear, distinctively flattened, spongy-tissued, and are up to 4 inches (10.2 centimeters) long and 0.8 inch (2.0 centimeters) wide. Later leaves may be spoon-shaped or narrowly oblanceolate and strap-like, growing to lengths of 14 inches (35.6 centimeters) and widths of 1.6 inches (4.0 centimeters). Unisexual flowers are borne on an erect flowering stem in two to four whorls, with each whorl subtended by three bracts fused at the base. Fruits consist of a round aggregate of large, distinctively crested achenes. Flowering has been reported to occur from May to July, with fruits present from May through September. Vegetative portions of the plant may emerge in April and persist through September (Massey *et al.* 1983, Kral 1983). Bunched arrowhead is found rooted in shallow water in or along shallow, sluggish streams flowing through mountain swamps or bogs (Kral 1983). Typical substrate is reported to be siliceous and micaceous silty muck, often with high sulfide content (Kral 1983). The current distribution is restricted to Buncombe and Henderson Counties in the mountains of North Carolina (Amoroso 1999) and Greenville County in the upper Piedmont of South Carolina.

No swamp or bog areas occur within the study corridor, and Wash Creek is not characterized as having a silt/muck substrate. Therefore, suitable habitat for bunched arrowhead does not exist within the proposed study corridor. Bunched arrowhead is not detectable during the dormant winter season, when the site visit was undertaken. NHP records do not document swamp pink within 1.0 mile (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that the bunched arrowhead has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor, and the study corridor contains no suitable habitat for this species. Based on a NHP record search and habitat types within the study corridor, this project will not affect bunched arrowhead. NO EFFECT

Mountain Sweet Pitcher Plant - Mountain sweet pitcher plant is an insectivorous, perennial, hydrophytic herb growing to 30 inches (76.2 centimeters) in height with hollow, trumpet-shaped leaves. The pitcher chamber is narrow but expands sharply along the upper quarter of the length. An ascending, cordate-shaped hood is held high over the exposed pitcher chamber orifice. Solitary flowers are produced on erect flowering stems. Petals are dark red to maroon on the outside, with the inner surface often yellow-green tinged with red. Flowering has been reported from April to June with fruits formed by August. Vegetative portions of the plant may emerge in April and persist through August (Massey *et al.* 1983). Mountain sweet pitcher plant is treated as a subspecies of the more common sweet pitcher plant (*S. rubra*). Mountain sweet pitcher plant is found in mountain bogs and along streams on granite rock faces. The current distribution is restricted to Buncombe, Henderson, and Transylvania Counties in the mountains of North Carolina (Amoroso 1999) and Greenville and Pickens Counties in western South Carolina.

No swamps, bog areas, or granite rock faces occur within the study corridor. Therefore, suitable habitat for mountain sweet pitcher plant does not exist within the proposed study corridor. NHP records do not document mountain sweet pitcher plant within 1.0 mile (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that the mountain sweet pitcher plant has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor, and the study corridor contains no suitable habitat for this species. Based on a NHP record search and habitat types within the study corridor, this project will not affect mountain sweet pitcher plant. NO EFFECT

White Irisette - White irisette is a perennial herb in the iris family that grows to 16 inches (40.6 centimeters) tall. Stem leaves are at least as wide as the winged stem and may reach 5.5 inches (14.0 centimeters) long and 0.2 inch (0.5 centimeter) wide. Basal leaves reach one-third to one-half the height of the plant and may be up to 7.5 inches (19.0 centimeters) long and 0.14 inch (0.4 centimeters) wide. White irisette differs from other blue-eyed grasses by having three to five nodes with successively shorter internodes between dichotomous branches (FWS 1995). Four to six flowers with white, recurved perianth units are borne per spathe. Flowering occurs from late May through July. White irisette is found in dry to mesic, open oak-hickory forest on mid-elevation mountain slopes at elevations from 1300 to 3300 feet (400 to 1000 meters) with aspects ranging primarily from southeast to southwest (FWS 1995). White irisette grows in shallow, circumneutral soils, especially over weathered amphibolite. White irisette is reported to grow best on regularly disturbed sites, such as power lines, roadsides, and woodland edges, which mimic suppressed natural disturbances and maintain open habitat

(FWS 1995). The current distribution is restricted to Forsyth, Henderson, Polk, and Rutherford Counties in North Carolina (Amoroso 1999) and Greenville County in western South Carolina.

Vegetated, open areas within the study corridor are characterized as urban/disturbed land dominated by lawn grasses. These areas are maintained on a regular basis. Therefore, suitable habitat for white irisette potentially exists within the proposed study corridor. A systematic survey for white irisette was conducted by ESC personnel within the proposed alternative area and during the flowering period (on June 7, 2001); however, no specimens of this species were found. NHP records do not document small whorled pogonia within 1.0 mile (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: NHP records indicate that white irisette has not been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor; however, the study corridor contains suitable habitat for this species. A systematic plant survey of the proposed alternative did not locate this species. Based on a systematic plant survey conducted at the site and on NHP records, this project will not affect white irisette.

NO EFFECT

2. Federal Species of Concern

The **March 7, 2002** FWS list also includes a category of species designated as "Federal species of concern" (FSC). A species with this designation is one that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing). The FSC designation provides no federal protection under the ESA for the species listed. FSC species listed for Henderson County are presented in Table 4. NHP files have no documentation of FSC listed species within the study corridor or within 1.0 mile (1.6 kilometers) of the study corridor.

Table 4. Federal Species of Concern listed for Henderson County (March 7, 2002 FWS list).

Common Name	Scientific Name	Potential Habitat	State Status*
Green salamander	<i>Aneides aeneus</i>	no	E
Hellbender	<i>Cryptobranchus alleganiensis</i>	no	SC
Eastern small-footed myotis	<i>Myotis leibii</i>	yes	SC
Southern Appalachian woodrat	<i>Neotoma floridana haematoreaia</i>	no	T
French Broad crayfish**	<i>Cambarus reburrus</i>	yes	W2
Tennessee heelsplitter	<i>Lasmigona holstonia</i>	yes	E
Diana fritillary butterfly**	<i>Speyeria diana</i>	no	SR
Schweinitz's sedge	<i>Carex schweinitzii</i>	no	E
Mountain heartleaf	<i>Hexastylis contracta</i>	no	E
French Broad heartleaf	<i>Hexastylis rhombiformis</i>	no	C
Butternut	<i>Juglans cinerea</i>	no	W5
Rough rush	<i>Juncus caesariensis</i>	no	E
Gray's lily	<i>Lilium grayi</i>	no	T-SC
Fraser's loosestrife***	<i>Lysimachia fraseri</i>	yes	E
Large-flowered Barbara's buttons**	<i>Marshallia grandiflora</i>	no	C
Sweet pinesap**	<i>Monotropsis odorata</i>	yes	C
Bog asphodel**	<i>Narthecium americanum</i>	no	E
White fringeless orchid	<i>Plantantherea integrilabia</i>	no	E
Divided-leaf ragwort**	<i>Senecio millefolium</i>	no	T
Mountain catchfly	<i>Silene ovata</i>	yes	C

* E = Endangered; T = Threatened; SC = Special concern; SR = Significantly Rare; C = Candidate; P = Species has been formally proposed for listing as Endangered, Threatened, or Special Concern; W2 = NC Plant Watch List: rare, but taxonomically questionable; W5 = NC Plant Watch List: rare because of severe decline (Amoroso 1999; LeGrand and Hall 1999).

** Historic occurrence in county - last seen more than 50 years ago

*** Obscure record date and/or location of observation is uncertain

3. State Protected Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), Special Concern (SC), Candidate (C), Significantly Rare (SR), or Proposed (P) (Amoroso 1999; LeGrand and Hall 1999) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202 *et seq.*). NHP

records indicate that no state listed species have been documented to occur within 1.0 mile (1.6 kilometers) of the study corridor.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

A field survey of the Area of Potential Effects (APE) was conducted on October 10, 2000. All structures within the APE were photographed, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a concurrence form dated December 8, 2000 the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated February 5, 2001 stated, "We have conducted a review of the project and are aware of no properties of architectural, historic, or archaeological significance which would be affected by the project. Therefore, we have no comment on the project as currently proposed." A copy of the SHPO memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

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

The project is a Federal "Categorical Exclusion" due to its limited scope and lack of significant environmental consequences.

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

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

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

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) a review was conducted to determine whether minority or low-income populations were receiving disproportionately high and adverse human health or environmental impacts as a result of this project. The investigation determined the project would not disproportionately impact any minority or low-income populations.

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

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

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

The project is located in Henderson County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Parts 51 and 93 are not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

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

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

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area

Henderson County is not currently participating in the National Flood Insurance Program. However, the City of Hendersonville does participate in the National Flood Insurance Program. The project site on Wash Creek is located in a detail study flood study area. Attached is a copy of the Flood Insurance Rate Map, Figure 5, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project.

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

VIII. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with scoping letters. A newsletter was also mailed to local residents explaining the planning process and the selected Alternative.

A Local Officials Meeting and Citizens Informational Workshop was held on October 29, 2001 between the hours of 4:30 PM and 6:30 PM at the Whitmire Building of the Public Works Department located at 301 Lillpond Road in Hendersonville. The purpose of this workshop was to present information, answer questions, and receive comments regarding the Replacement of Bridge No. 356. The local officials endorsed Alternative A as the preferred alternative and asked that additional funding for aesthetic enhancements be provided. See appendix for comments from the City of Hendersonville.

Aesthetic enhancements will also be included in this project. The proposed enhancements included are:

- The headwall will be raised to form an arched wall along the length of the structure.
- The raised arched headwall and the visible exterior of the culvert will be cast-in-place concrete that will be shaped and stained to look like natural stone.

On March 25, 2002 a special meeting of the city council was held in the Council Chambers at City Hall in Hendersonville, NC. The purpose of this meeting was to conduct an informational meeting regarding the alternative selected for the replacement of Bridge No. 356 on Kanuga Road (SR 1127) and proposed aesthetic enhancements to the proposed structure.

The council members found the aesthetic enhancements to be favorable, however the council members were concerned that the quality of the stained cast-in-place stonewalls may not be acceptable.

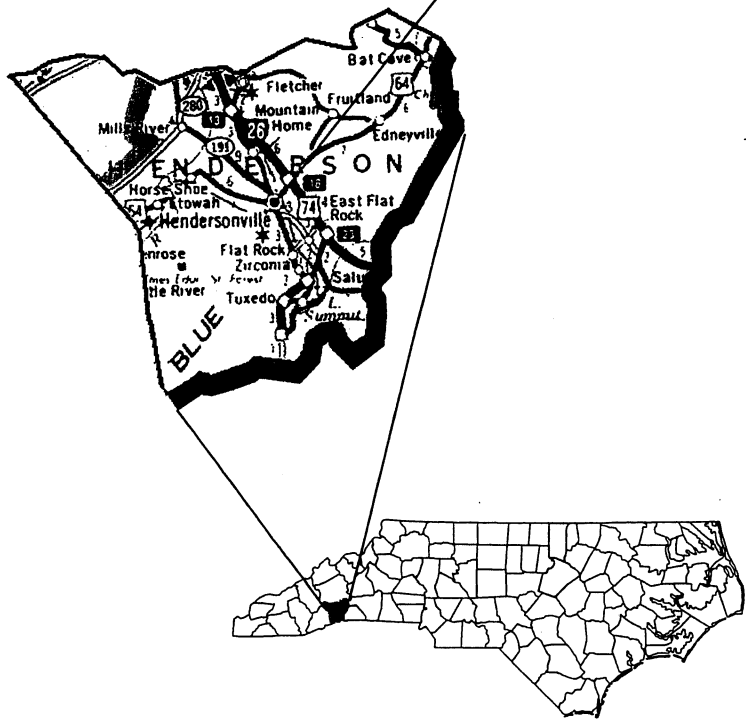
The Public Arts Committee asked to be given an opportunity to present alternatives to the cast-in-place wall. The city council and NCDOT agreed to give the Public Arts Committee 30 days to develop alternative aesthetic enhancements for the proposed replacement structure. NCDOT informed the city council that the city would be responsible for any additional cost incurred by the enhancements out side of standard construction techniques. Also, any enhancements must comply with state safety guidelines.

IX. AGENCY COMMENTS

US Fish and Wildlife Service:


Comment: *"Known locations of the federally endangered bunched arrowhead (Sagittaria fasciculata) and the federally threatened small-whorled pogonia (Isotria medeoloides) occur near this project. We recommend surveying the project area for these species prior to any further planning or on-the-ground activities."*

Response: A survey was conducted for these species. This project will not affect the small whorled pogonia or the bunched arrowhead.



LEGEND

● ● ● Studied Detour Route


 North Carolina Department of Transportation
 Project Development & Environmental Analysis

HENDERSON COUNTY
BRIDGE NO. 356 ON SR 1127
OVER AN WASH CREEK
B-3475

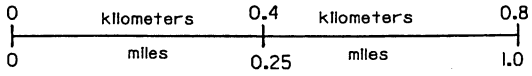








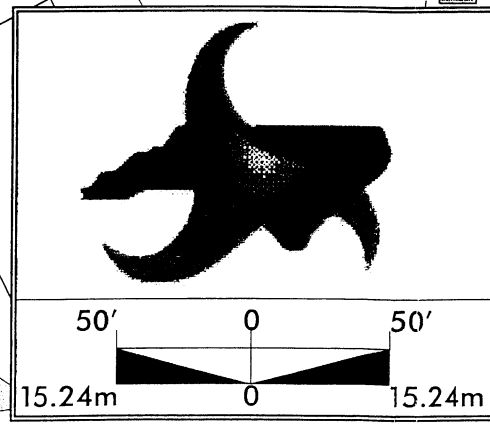
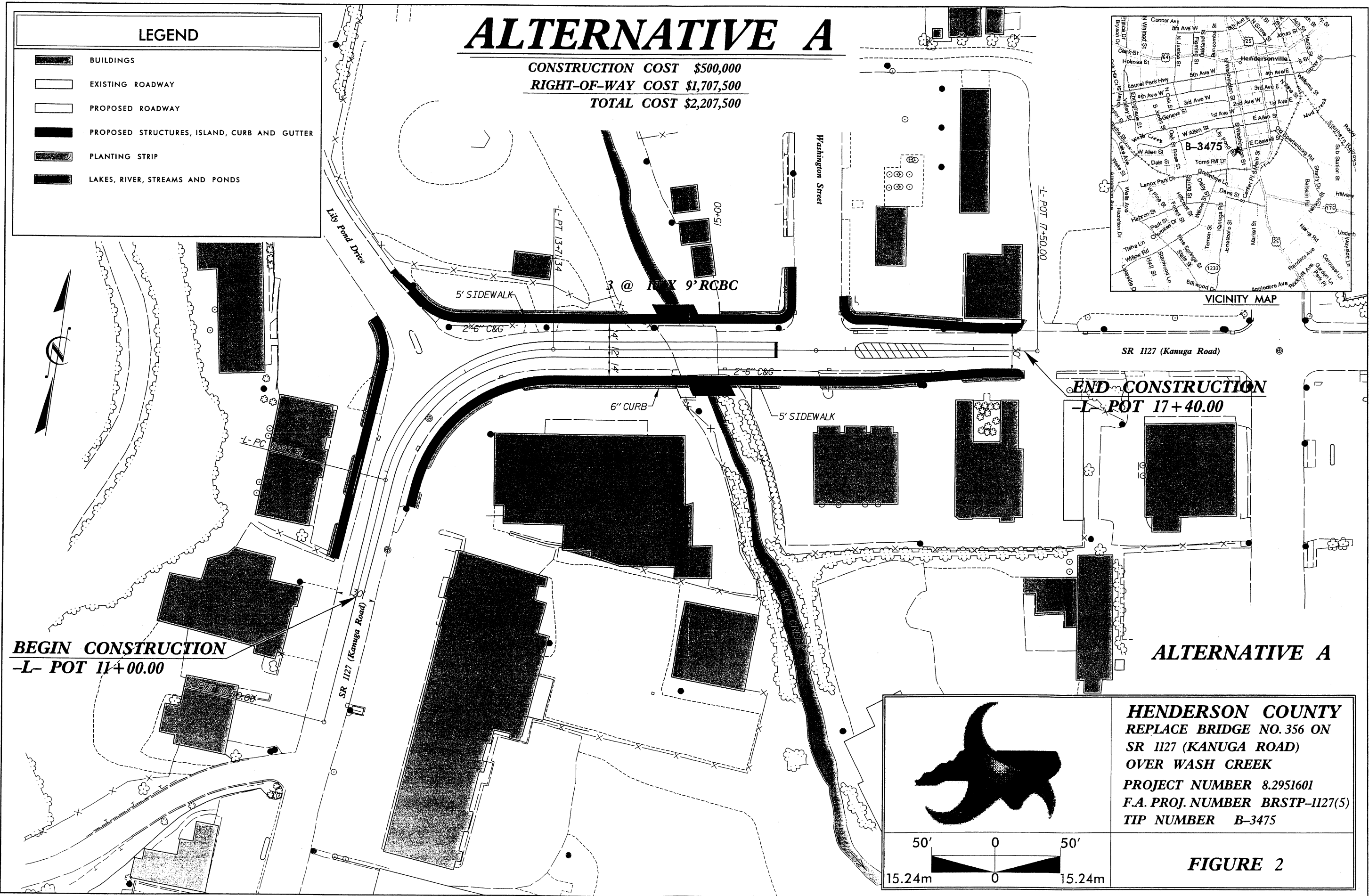
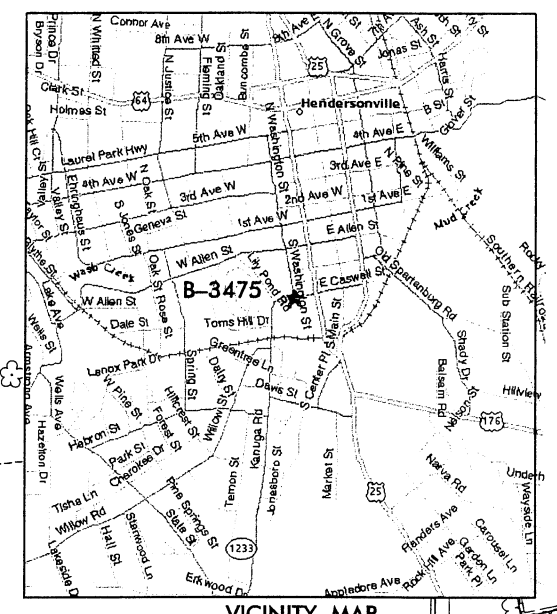
FIGURE 1

LEGEND

-  BUILDINGS
-  EXISTING ROADWAY
-  PROPOSED ROADWAY
-  PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
-  PLANTING STRIP
-  LAKES, RIVER, STREAMS AND PONDS

ALTERNATIVE A

CONSTRUCTION COST \$500,000
 RIGHT-OF-WAY COST \$1,707,500
 TOTAL COST \$2,207,500








HENDERSON COUNTY
 REPLACE BRIDGE NO. 356 ON
 SR 1127 (KANUGA ROAD)
 OVER WASH CREEK
 PROJECT NUMBER 8.2951601
 F.A. PROJ. NUMBER BRSTP-1127(5)
 TIP NUMBER B-3475

ALTERNATIVE A

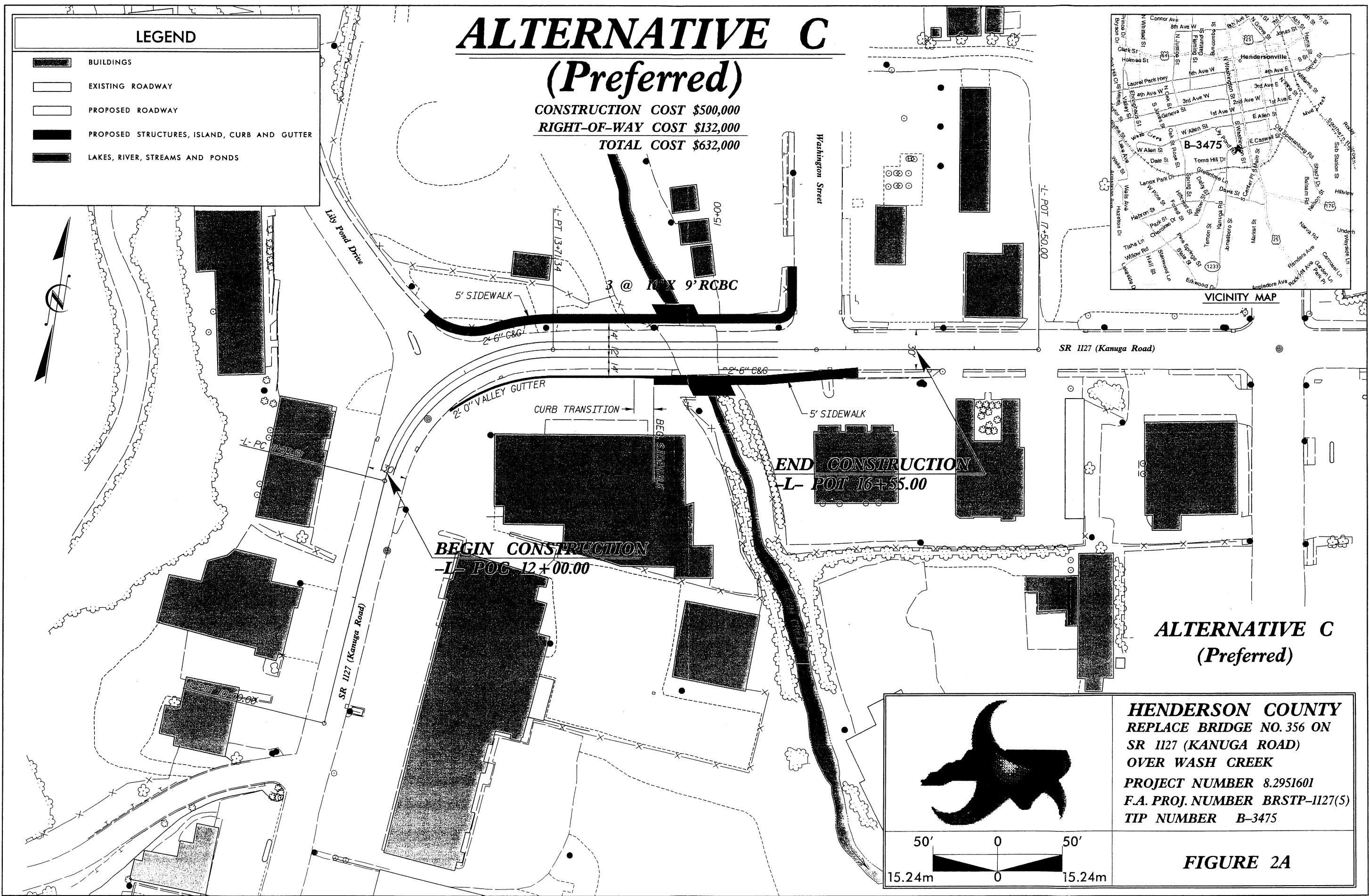
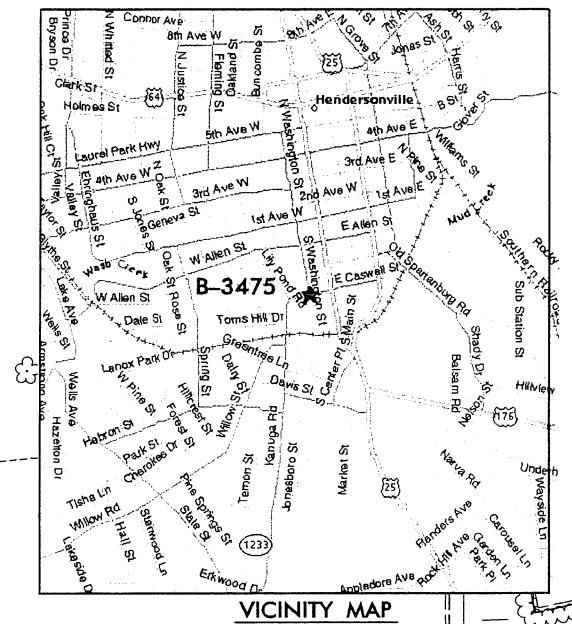
FIGURE 2

LEGEND

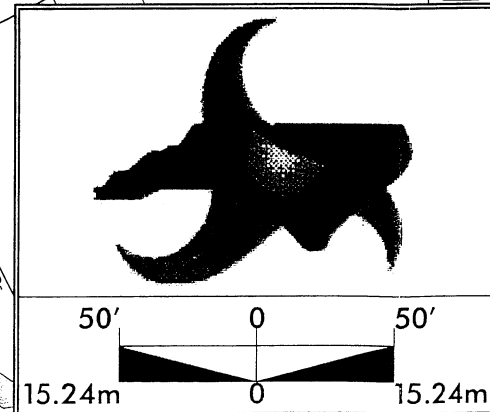
-  BUILDINGS
-  EXISTING ROADWAY
-  PROPOSED ROADWAY
-  PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
-  LAKES, RIVER, STREAMS AND PONDS

ALTERNATIVE C (Preferred)

CONSTRUCTION COST \$500,000
RIGHT-OF-WAY COST \$132,000
TOTAL COST \$632,000

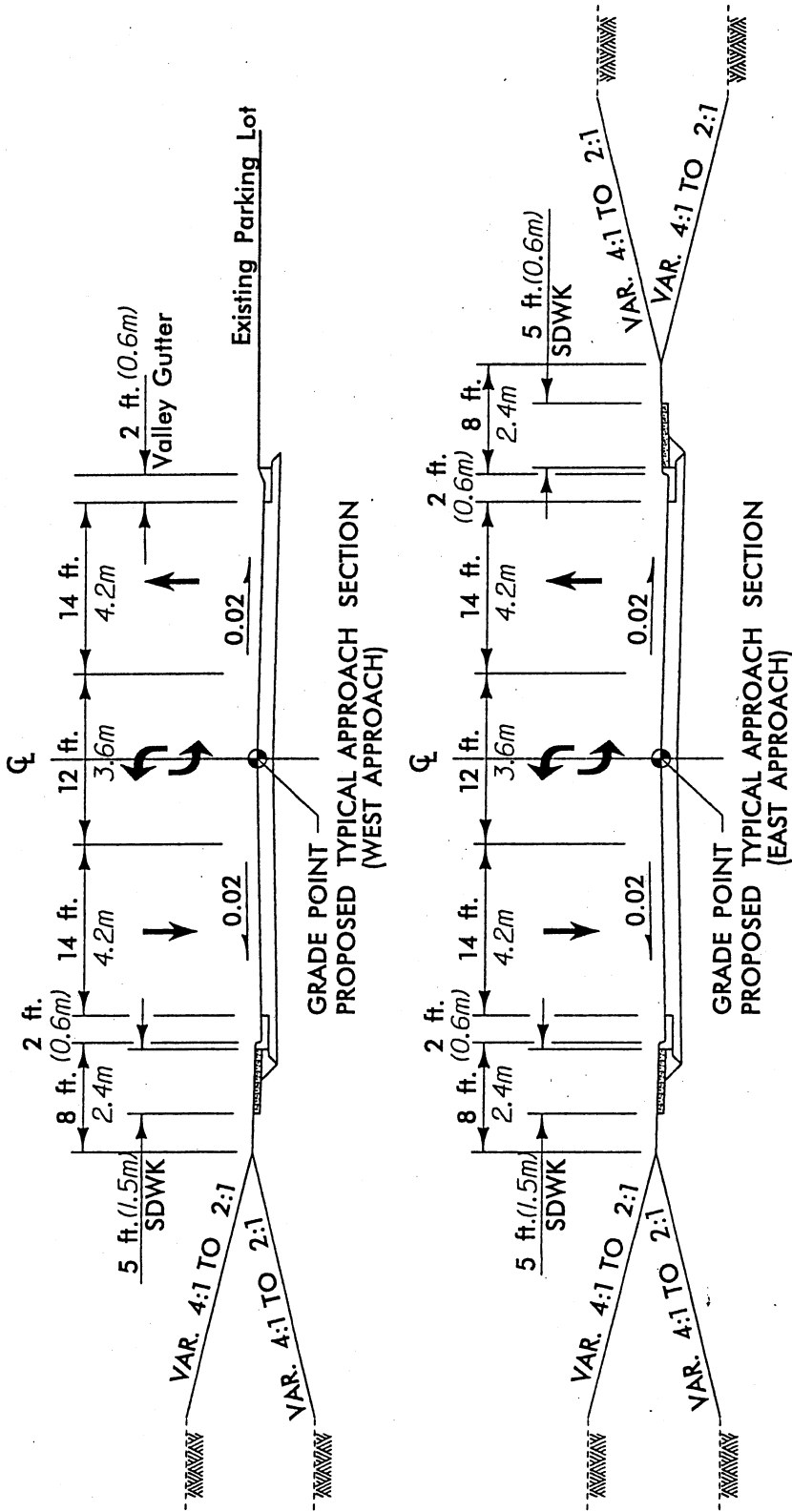


**ALTERNATIVE C
(Preferred)**



**HENDERSON COUNTY
REPLACE BRIDGE NO. 356 ON
SR 1127 (KANUGA ROAD)
OVER WASH CREEK
PROJECT NUMBER 8.2951601
F.A. PROJ. NUMBER BRSTP-1127(5)
TIP NUMBER B-3475**

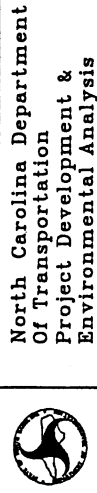
FIGURE 2A



BRIDGE NO. 356 WILL BE REPLACED WITH A
 REINFORCED CONCRETE BOX CULVERT WITH
 3 BARRELS @ 10' X 9'

DESIGN DATA

(EXISTING)	2002 ADT = 11,200	LOS E	DESIGN SPEED	20 MPH (30 KWH)
(CONST. YR.)	2003 ADT = 11,400	LOS E	(Design Exception Required for Design Speed)	
(DESIGN YR.)	2025 ADT = 16,500	LOS E	POSTED SPEED LIMIT	35 MPH (60 KWH)
DUAL	5%		MIN Radius:	125 FT. (35 METERS)
TTST	2%		MAX. GRADE	9%
			MIN. DES. K FAC.:	Kcrest = 7, Ksag = 17
			MIN. DES. K FAC.(METRIC):	Kcrest = 2, Ksag = 6
FUNCTIONAL CLASSIFICATION : URBAN MINOR COLLECTOR				
emax = .04				
terrain = mountainous				



North Carolina Department
 Of Transportation
 Project Development &
 Environmental Analysis

HENDERSON COUNTY
 BRIDGE NO. 356 ON SR 1127
 KANUGA ROAD
 OVER WASH CREEK
 TIP NO: B-3475

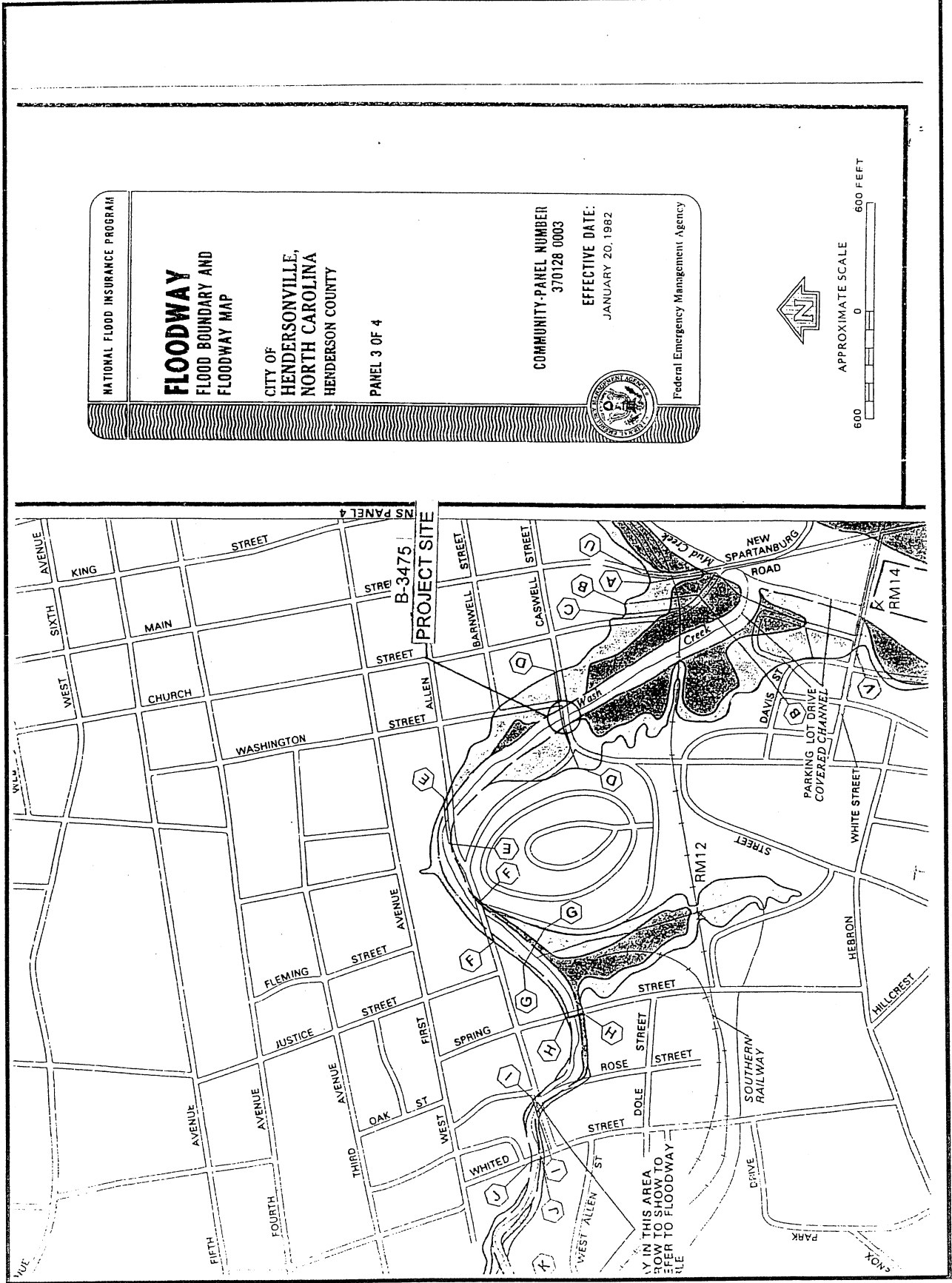
FIGURE 3



Looking west along SR 1127 across Bridge No. 356.



Side view of Bridge No. 356.



NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY
FLOOD BOUNDARY AND
FLOODWAY MAP

CITY OF
HENDERSONVILLE,
NORTH CAROLINA
HENDERSON COUNTY

PANEL 3 OF 4

COMMUNITY-PANEL NUMBER
370128 0003

EFFECTIVE DATE:
JANUARY 20, 1982

Federal Emergency Management Agency

600 0 600 FEET
APPROXIMATE SCALE

FIGURE 5



Rendering
of
proposed
structure.
Looking
east across
structure



Side view
rendering
of
proposed
structure.

APPENDIX



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

February 7, 2001

Mr. William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Gilmore:

Subject: Bridge Replacements - Avery County (B-3808); Henderson County (B-3475, B-3662, B-3663, B-3664, B-3665, B-3666, and B-3857); McDowell County (B-3673); and Watauga County (B-3709 and B-3710)

We have reviewed the subject projects and are providing the following comments in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

The information we received for these 11 projects does not include descriptions of the structures that will replace the existing bridges, and it does not include any environmental information regarding the streams or whether habitat assessments or surveys for rare species have been conducted for any of the projects. Therefore, our comments are limited primarily to the known locations of listed species and species of Federal concern. When the categorical exclusions are prepared and more information is available regarding environmental effects, we can then offer more substantive comments.

Enclosed is a list of species from the four counties involved. This list provides the names of species that are on the Federal List of Endangered and Threatened Wildlife and Plants, as well as species of Federal concern. Federal species of concern are not legally protected under the Act and are not subject to any of its provisions, including Section 7, unless they are formally proposed or listed as endangered or threatened. We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of these projects. Our records indicate the following:

Henderson County

Project B-3475. Known locations of the federally endangered bunched arrowhead (*Sagittaria fasciculata*) and the federally threatened small-whorled pogonia (*Isotria medeoloides*) occur near this project. We recommend surveying the project area for these species prior to any further planning or on-the-ground activities. If these species occur in the project area, further consultation will be required.

Project B-3665. Known locations of the federally endangered bunched arrowhead (*Sagittaria fasciculata*) and mountain sweet pitcher plant (*Sarracenia jonesii*) occur in the vicinity of this project. We recommend surveying the project area for these species prior to any further planning or on-the-ground activities. If these species occur in the project area, further consultation will be required.

Projects B-3662 and B-3664. These projects occur in the general vicinity of Mud Creek, an area with several occurrences of bunched arrowhead (*Sagittaria fasciculata*) and mountain sweet pitcher plant (*Sarracenia jonesii*). Currently there are no known locations of these species in the immediate project area. However, a lack of any systematic surveys throughout the Mud Creek drainage may account for the apparent absence of these species. In the areas affected by these projects, we recommend conducting habitat assessments and surveying any suitable habitat for these species.

Projects B-3666, B-3663, and B-3857. Our records for Henderson County indicate no known locations of listed species in the project areas. However, we recommend conducting habitat assessments and surveying any suitable habitat in the project areas for these species prior to any further planning or on-the-ground activities to ensure that no adverse impacts occur.

McDowell County

Project B-3673. Our records indicate known locations for the bog turtle (*Clemmys muhlenbergii*) near this project. Habitat assessments and surveys of suitable habitat should be conducted in the project area for this species. If the bog turtle occurs in the project area, it should be protected from impacts.

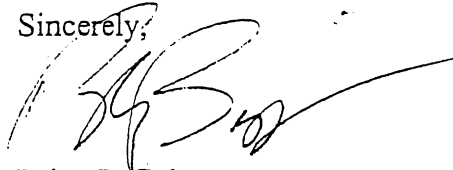
Watauga and Avery Counties

Projects B-3709, B-3710, and B-3808. Although our records for Watauga and Avery Counties indicate no known locations of listed species in the project areas, we recommend conducting habitat assessments in the affected area of each project. Any suitable habitat should be surveyed for these species prior to any further planning or on-the-ground activities to ensure that no adverse impacts occur.

We are interested in the types of structures that will replace these existing bridges and would recommend spanning structures, preferably bridges, in all cases. We look forward to reviewing the completed categorical exclusion documents.

If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log Number 4-2-01-278.

Sincerely,



for

Brian P. Cole
State Supervisor

Enclosure

cc:

Ms. Stacy Harris, Project Development and Environmental Analysis Branch, North Carolina
Department of Transportation, 1548 Mail Service Center, Raleigh, NC 27699-1548
Mr. Owen Anderson, Mountain Region Coordinator, North Carolina Wildlife Resources
Commission, 20830 Great Smoky Mtn. Expressway, Waynesville, NC 28786
Ms. Cynthia Van Der Wiele, North Carolina Department of Environment and Natural Resources,
Division of Water Quality, Wetlands Section, 1621 Mail Service Center, Raleigh, NC
27699-1621

Updated: 05/31/2002

U.S. Fish & Wildlife Service
HENDERSON COUNTY


Common Name	Scientific Name	Status
Vertebrates		
<u>Bog turtle</u>	<i>Clemmys muhlenbergii</i>	T(S/A) ¹
Eastern small-footed myotis	<i>Myotis leibii</i>	FSC
Green salamander	<i>Aneides aeneus</i>	FSC
Hellbender	<i>Cryptobranchus alleganiensis</i>	FSC
Southern Appalachian woodrat	<i>Neotoma floridana haematoreia</i>	FSC
Invertebrates		
<u>Appalachian elktoe</u>	<i>Alasmidonia raveneliana</i>	Endangered
Diana fritillary butterfly	<i>Speyeria diana</i>	FSC*
French Broad crayfish	<i>Cambarus reburrus</i>	FSC*
<u>Oyster mussel</u>	<i>Epioblasma capsaeformis</i>	Endangered
Tennessee heelsplitter	<i>Lasmigona holstonia</i>	FSC
Vascular Plants		
Bog asphodel	<i>Narthecium americanum</i>	C1*
<u>Bunched arrowhead</u>	<i>Sagittaria fasciculata</i>	Endangered
Butternut	<i>Juglans cinerea</i>	FSC
Divided-leaf ragwort	<i>Senecio millefolium</i>	FSC*
Fraser's loosestrife	<i>Lysimachia fraseri</i>	FSC**
French Broad heartleaf	<i>Hexastylis rhombiformis</i>	FSC
Gray's lily	<i>Lilium grayi</i>	FSC
Large-flowered Barbara's buttons	<i>Marshallia grandiflora</i>	FSC*
Mountain catchfly	<i>Silene ovata</i>	FSC
Mountain heartleaf	<i>Hexastylis contracta</i>	FSC
<u>Mountain sweet pitcher plant</u>	<i>Sarracenia jonesii</i>	Endangered
Rough rush	<i>Juncus caesariensis</i>	FSC
Schweinitz's sedge	<i>Carex schweinitzii</i>	FSC
<u>Small-whorled pogonia</u>	<i>Isotria medeoloides</i>	Threatened

Sweet pinesap	<i>Monotropsis odorata</i>	FSC*
White fringeless orchid	<i>Plantantherea integrilabia</i>	FSC
<u>White irisette</u>	<i>Sisyrinchium dichotomum</i>	Endangered

KEY:

- | Status | Definition |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Endangered - | A taxon "in danger of extinction throughout all or a significant portion of its range." |
| Threatened - | A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range." |
| Proposed - | A taxon proposed for official listing as endangered or threatened. |
| C1 - | A taxon under consideration for official listing for which there is sufficient information to support listing. |
| FSC - | A Federal species of concern--a species that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing). |
| T(S/A) - | Threatened due to similarity of appearance (e.g., <u>American alligator</u>)--a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section 7 consultation. |
| EXP - | A taxon that is listed as experimental (either essential or nonessential). Experimental, nonessential endangered species (e.g., red wolf) are treated as threatened on public land, for consultation purposes, and as species proposed for listing on private land. |

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

*Historic record - the species was last observed in the county more than 50 years ago.

**Obscure record - the date and/or location of observation is uncertain.

***Incidental/migrant record - the species was observed outside of its normal range or habitat.

****Historic record - obscure and incidental record.

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



Harris

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

February 5, 2001

MEMORANDUM

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

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

Re: Replace Bridge #356 on SR 1127 (Caswell Street) over Wash Creek, B-3475,
Henderson County, ER 01-8264

Thank you for your letter of December 6, 2000, concerning the above project.

We have conducted a review of the project and are aware of no properties of architectural, historic, or archaeological significance which would be affected by the project. Therefore, we have no comment on the project as currently proposed.

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

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

DB:kgc

cc: Mary Pope Furr, NCDOT

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



Handwritten: H. 01-20

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

February 5, 2001

MEMORANDUM

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

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

Re: Replace Bridge No. 356 on SR 1127 over Wash Creek, TIP No. B-3475, Henderson County,
ER 01-8264

Thank you for your letter of December 6, 2000, concerning the above project.

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area. However, since a survey has not been conducted in over a decade, there may be structures of which we are unaware located within the planning area.

If there are any structures more than fifty years old on or adjacent to the project site, please send us photographs (Polaroid type snapshots are fine) of each structure. These photographs should be keyed to a map that clearly shows the site location. If there are no building over fifty years old on or adjacent to the project, please notify us of this in writing.

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

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

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

DB:kgc

cc: Mary Pope Furr, NCDOT

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CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

Project Description: Replace Bridge No.356 on SR 1127 over creek

On December 8, 2000, representatives of the

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

Reviewed the subject project at

- a scoping meeting
- photograph review session/consultation
- other

All parties present agreed

- there are no properties over fifty years old within the project's area of potential effect.
- there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- WHP SHPO* there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as _____ are considered not eligible for the National Register and no further evaluation of them is necessary.
- there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Poppe 12/8/00
 Representative, NCDOT Date

Michael O. Dawson 12/19/00
 FHWA, for the Division Administrator, or other Federal Agency Date

Mary B. 12/8/00
 Representative, SHPO Date

David Book 12/20/00
 State Historic Preservation Officer Date



☒ North Carolina Wildlife Resources Commission ☒

Charles R. Fullwood, Executive Director

MEMORANDUM

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

FROM: Owen F. Anderson, Mountain Region Coordinator
Habitat Conservation Program

DATE: January 10, 2001

SUBJECT: Scoping for Bridge Replacements ~~B-3475~~, B-3662, B-3663, B-3664, B-3665, B-3666, B-3673, and B-3857, Henderson and McDowell Counties

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

The proposed work involves nine bridge replacement projects in western North Carolina. Construction impacts on wildlife and fisheries resources will depend on the extent of disturbance in the streambed and surrounding riparian areas. We prefer bridge designs that do not alter the natural stream morphology or impede fish passage and provide for wildlife passage under the bridge. We prefer that existing bridges be replaced with another spanning structure. Bridge designs should also include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the subject surface waters. In some cases, we are specifically concerned about impacts to trout waters. Environmental documentation for these projects should include description of any streams or wetlands on the project site and surveys for any threatened or endangered species that may be affected by construction.

B-3475 – Bridge No. 356 on SR1127 (Caswell Street) over Wash Creek, Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat.

B-3662 – Bridge No. 20 on SR 1006 (Howard Gap Road) over Featherstone Creek in Henderson County.

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat.

B-3663 – Bridge No 320 on SR 1212 (Old Homestead Road) over Shaws Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat.

B-3664 – Bridge No. 21 on SR 1528 (Brookside Camp Road) over Mud Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat.

B-3665 - Bridge No. 265 on SR 1791 (Ballenger Road) over North Branch Bat Fork Creek in Henderson County

No specific concerns other than minimization of impacts to water quality and aquatic and riparian habitat.

B-3666 - Bridge No. 53 on SR 1799 (Deep Gap Road) over Hungry River in Henderson County.

This bridge appears to be located at the edge of the Pisgah Game Lands. This reach is classified as trout water by the Division of Water Quality and is designated by the NCWRC as Hatchery Supported Waters. The new bridge should span the adjacent floodplain and provide sufficient space for wildlife to move under the bridge. An inwater work moratorium from October 15-April 15 is requested for this project.

B-3673 – Bridge No. 17 on US 221 over Second Broad River in McDowell County

This stream is Classified WS-IV. No specific fish and wildlife concerns other than minimization of impacts to water quality and aquatic and riparian habitat. The new bridge should span the adjacent floodplain and/or provide a wildlife movement corridor under the bridge.

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

1. Adequate sedimentation and erosion control measures must be implemented and maintained on the project site to avoid impacts to downstream aquatic resources. Structures should be inspected and maintained regularly, especially following rainfall events.
2. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.
3. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, cofferdams, or other diversion structures should be used to minimize impacts to downstream aquatic resources. Spoil materials and wastewater captured in the cofferdam should be pumped out and disposed of on upland sites.

4. If concrete is used during construction, a dry work area must be maintained to prevent direct contact between curing concrete and stream water. Uncured concrete affects water quality and is highly toxic to fish and other aquatic organisms.
5. Grading and backfilling should be minimized, and tree and shrub growth should be retained if possible to ensure long term availability of shoreline cover for gamefish and wildlife.
6. **In trout waters, instream construction is prohibited during the trout-spawning period of October 15 to April 15, to avoid impacts on trout reproduction.**
7. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.
8. If multi-celled reinforced concrete box culverts are utilized, they should be designed so that all water flows through a single cell (or two if necessary) during low flow conditions. This could be accomplished by constructing a low sill on the upstream end of the other cells that will divert water to a single cell during below bankfull events. This will facilitate fish passage at low flows.
9. Notched baffles should be placed in reinforced concrete box culverts at 15-foot intervals to allow for the collection of sediments in the culvert, reduce flow velocities, and to provide resting areas for fish moving through the structure.
10. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural river bottom when construction is completed. Temporary causeways should not block more than 30% of the stream width to prevent an impediment to fish movement.
11. Equipment operated near surface waters should be inspected daily and maintained to prevent contamination of waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.
12. Stormwater should be directed to upland buffer areas or retention basins and should not be discharged directly into streams.

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

cc: Mr. Steven Lund, NCDOT Coordinator, COE, Asheville
Ms. Stacy Harris, P.E., PD & EA Branch, NCDOT, Raleigh
Ms. Marella Buncick, Biologist, USFWS Asheville

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



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

December 11, 2000

MEMORANDUM

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

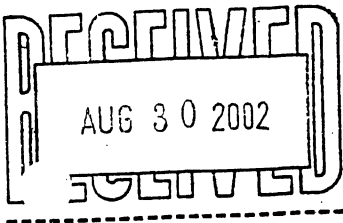
Through: John Dorney, NC Division of Water Quality *J. Dorney*

From: Cynthia F. Van Der Wiele *cvdw*

Subject: Scoping comments on the proposed replacement of Bridge No. 356 on SR 1127 over Wash Creek in Henderson County, T.I.P. Projects B-3475.

This memo is in reference to your correspondence dated December 6, 2000, in which you requested scoping comments for the above project. The DWQ index number for the stream is 6-55-7 and is classified as Class B waters. Class B standards apply to surface waters that are for primary recreation including frequent or organized swimming. The Division of Water Quality requests that NCDOT consider the following environmental issues for the proposed project:

- A. DWQ prefers replacement of bridges with bridges, particularly in higher quality waters. However, if the new structure is to be a culvert, it should be countersunk to allow unimpeded fish and other aquatic organisms passage through the crossing. Please be aware that floodplain culverts are required.
- B. The document should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping.
- C. There should be a discussion on mitigation plans for unavoidable impacts. If mitigation is required, it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.
- D. Since the project is located in a trout county, please be aware that trout moratoriums set by the NC Wildlife Resource Commission may apply, based on their findings.
- E. When practical, the DWQ requests that bridges be replaced on the existing location with road closure. If a detour proves necessary, remediation measures in accordance with the NCDWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 29, 2002

Memorandum To: John Wadsworth, P.E., Project Manager
Consultant Unit

Attention: Rachelle Beauregard, Permit Specialist

From: Sharon Snider, Section 7 Strike Team

Subject: Freshwater mussel survey report of unnamed creek for proposed replacement of bridge # 356 on SR 1127, Henderson County; TIP # B-3475.

The proposed action calls for the replacement of bridge No. #356 over an unnamed creek in Henderson County. Two federally Endangered freshwater mussel species, the Appalachian elktoe (*Alasmidonta raveniliana*) and the oyster mussel (*Epioblasma capsaeformis*) are listed by the US Fish and Wildlife Service as occurring in Henderson County.

NCDOT Environmental Specialists Tim Savidge, Jeff Burleson and Sharon Snider visited the project site on March 05, 2002. The creek, a tributary to Mud Creek, exists in a heavily urbanized setting; no water flow was observed at the time of the visit. Mud Creek was surveyed at two sites near this project (B-3475) and no mussels were observed. The project creek habitat was examined and deemed to be unsuitable to support mussel life.

Biological Conclusion:

No Effect

Given the unsuitable habitat of unnamed creek at SR 1127 and the Mud Creek mussel survey results, it is apparent that the Appalachian elktoe and the oyster mussel do not occur in the project stream. Additionally, there are no known extant populations of these two species in the French Broad River downstream of the project stream. It can be concluded that project construction will not impact these two species.

cc: Stacy Harris P.E., Consultant Engineering Unit Head
V. Charles Bruton, Ph.D., Assistant Branch Manager

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

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

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

**March 25, 2002
Special Meeting of the City Council
Council Chambers - City Hall**

Present: Mayor Fred H. Niehoff, Jr., City Council Members: Barbara Volk, Mary Jo Padgett, Londa Murray, Ron Stephens

Staff Present: City Manager Chris Carter, City Clerk Tammie Drake

Others Present: Stacy Harris, Tommy Register, Jay Setzer

The purpose of the special meeting was to conduct an informational meeting with NCDOT regarding the alternative selected for the Kanuga Road bridge replacement project.

The meeting began at 11:00 a.m. with City Manager introducing Tommy Register and Stacy Harris of NCDOT. He explained the City Council passed a resolution recommending Alternative A as the preferred alternative for the bridge replacement on Kanuga Road subsequent to a meeting held October 29, 2001. He explained Alternative C has been selected by NCDOT as the preferred and chosen alternative for the bridge replacement. He stated NCDOT representatives are present to explain why Alternative C was chosen. He stated the design of the bridge from an aesthetic standpoint will also be discussed.

Mr. Tommy Register addressed the Council and presented a rendering of the proposed bridge replacement project. He stated Alternative A should not have been presented and offered as an alternative for the project because of the expense (cost of approximately 92% more than Alternative C) and impact to local businesses. He reviewed the design implications of Alternative C including two-foot valley gutters for access to businesses' parking lots, 14-foot outside lanes (two feet provided for bicycle access/curb and gutter), a 12-foot center lane, and two five-foot sidewalks are provided on the structure. He stated the arched head wall was extended. He stated a stained facing could be applied to the head wall giving the appearance of stone similar to the culvert upstream on Allen Street. Discussion followed on the sidewalks proposed, existing sidewalks, current travel lane widths and the right-of-way. Mr. Register stated the proposed sidewalk will tie into the sidewalk on Lily Pond Lane. He stated they will not be adding sidewalks where none are currently existing.

Mr. Register explained the bridge will actually be a culvert with three 8x10-foot open barrels with a similar appearance as it has now. He stated the inside of the head wall facing will have the same rock or stone appearance applied. There was discussion on the life and quality of the facing. Mr. Carter reiterated the importance of the quality of the facing and that the quality of the construction is monitored.

Ms. Brenda Coates, Member of the Public Arts Committee, suggested the possibility of opening up the space so travelers are aware they are going over water. She also suggested the possibility of decorative metal railing or implementing metal designs in the facing and repeating that design in the sidewalk possibly using enhancement funds. Ms. Harris explained the bridge is very small with not much opportunity for opening the space. She explained any design must use bridge building industry products and must meet safety standards. She explained there is a minimum length for decorative metal railings and the size of the bridge would disqualify this option. She stated this may also require the City to enter an agreement to participate in the cost and maintenance. Mayor Pro Tem Padgett requested a sign be placed on the bridge identifying Wash Creek. Mr. Setzer explained the current trend is to reduce signage but the request will be investigated. There was also discussion on whether actual rock could be used. Mr. Setzer explained that

option may be cost prohibitive and would require more maintenance. He estimated the facing will last longer than actual rock. There was discussion of the color and texture which varies by vendor/contractor. Council Member Stephens suggested providing the Council with an opportunity to view the alternatives presented by the lowest responsible bidder. Mr. Setzer stated the contractor will work through NCDOT and will be open to the suggestions of the City Council.

Discussion followed on the amount of water flowing under the bridge. Mr. Register explained the proposed project will have more water conveyance than the existing bridge does.

There was discussion of the plans for traffic during the construction. Mr. Register explained traffic will be detoured onto Lily Pone Lane, West Allen Street to Church Street. He stated there may be a temporary signal at Allen Street and the island may be adjusted. He predicted up to 7-12 months for completion of the project. Mayor Niehoff also suggested a route (White Street) for large trucks.

Ms. Coates asked if the Council would consider appointing a committee to discuss the aesthetics and enhancement of the pedestrian walkways and make recommendations to the Council and NCDOT. Mayor Niehoff commented any group, i.e., Public Arts Committee, could present ideas and suggestions to the Council for consideration which will be presented to NCDOT.

After discussion of the time line for designing the project, Mayor Niehoff asked the representatives of NCDOT to allow one month for Council's consideration at which time they will be notified whether to continue with the design presented or an alternative will be presented for their consideration. Ms. Harris agreed, stating the design work is now on hold and but agreed they will wait until a recommendation is received by the Council. She stated this will move the completion dates back. She further explained they want to ensure the environmental report shows they are coordinating with the City. **By consensus, the Council expressed agreement with lane widths, sidewalk width and basic design but asked for one month to consider alternatives for the aesthetic design of the bridge and walkways.** Ms. Harris stated NCDOT is willing to wait for one month. She stated NCDOT will consider the alternatives presented by the Council after one month. She explained the State will be willing to pay for designs using materials classified as industry standard but if not, the City will be required to participate or possibly pay the entire cost.

•**Utility Line Extension Agreements:** Mr. Ezra Allman presented the following utility line extension agreements for Council's consideration.

Water and Sewer Line Extension for Wolfpen Subdivision, Phase 6: This project will provide water and sewer service to property located in the Hendersonville Corporate Limits off U.S. Highway 64 East. The project requires approximately 1,700 lineal feet of six-inch PVC, C900 water lines. Fire protection will be provided via the installation of one additional fire hydrant located inside Phase 6. He reported water pressure and flow in this area as follows: static pressure = 95 psi., residual = 60 psi., flow = 860 GPM. It also requires approximately 1,610 lineal feet of eight-inch SDR-35 PVC sewer lines and the installation of 13 precast concrete manholes. The intended use of this property is residential with 24 residences proposed. The entire cost of the proposed water line extension is to be paid for by the owner/developer, Nappier & Turner Construction Company, Inc. of Hendersonville, North Carolina. Based on this information, Mr. Allman predicted the Water Department can support the additional connections and recommended approval of the project contingent upon approval of the final plans and specifications from the Water and Sewer Department.

Stacy Harris

B-3475

OFFICERS:

Fred H. Niehoff, Jr.
Mayor
Mary Jo Padgett
Mayor Pro-Tem
Chris A. Carter
City Manager
Tammie K. Drake
City Clerk

CITY OF HENDERSONVILLE

"The City of Four Seasons"

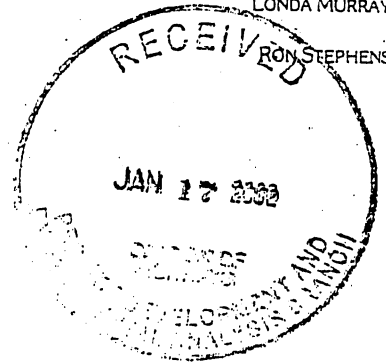
OFFICE OF THE MAYOR

Fred H. Niehoff, Jr.

January 14, 2002

CITY COUNCIL:

BARBARA VOLK
MARY JO PADGETT
LONDA MURRAY
RON STEPHENS



Mr. William Gilmore, PE, Manager
Project Development and Environmental Analysis
Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Gilmore:

This will acknowledge receipt of your letter of January 10, 2002 regarding the replacement of Bridge number 356.

I will discuss your letter with our City Council at its next meeting. In the meantime, I would like to share my thoughts with you. I am completely at a loss to understand if Alternative A was not a viable approach, why was it even developed for our consideration. The City of Hendersonville is in no position to pay for the additional cost of over \$1,500,000 to accomplish Alternative A. An additional one cent of property tax raises only \$86,000, so you can understand that this is not feasible.

In recent years, the City of Hendersonville has undertaken programs designed to play catch-up with our sidewalk situation. We have spent almost \$2,000,000 for new sidewalks and repair of existing ones. We require all new developments to install sidewalks. So we are certainly not interested in seeing a bridge constructed on a main artery that does not have sidewalks on both sides.

At this time I do not know what the reaction of the City Council will be, but I would expect that they will ask DOT to go back to the drawing board and arrive at a more satisfactory approach. Or perhaps we can ask for some enhancement funds to make up the difference.

I will keep you informed.

Sincerely,

Fred H. Niehoff, Jr., Mayor
City of Hendersonville

Cc: City Council
Chris Carter, City Manager

OFFICERS:

Fred H. Niehoff, Jr.
Mayor
Mary Jo Padgett
Mayor Pro-Tem
Chris A. Carter
City Manager
Tammie K. Drake
City Clerk

CITY OF HENDERSONVILLE

"The City of Four Seasons"

CITY COUNCIL:

BARBARA VOLK
MARY JO PADGETT
LONDA MURRAY
RON STEPHENS

January 2, 2002

Ms. Stacy Harris, PE
Project Manager
NCDOT - Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Re: TIP No. B-3475, Bridge No 356, Henderson County

Dear Ms. Harris:

Enclosed are drafts of the City's proposal for the bridge over Wash Creek, that include the following:

- 1) Suggestions to be considered in engineering design of bridge
- 2) 2 images or artist's rendition of steel frame and decorative panel inserts. This is only a suggestion of panels. It would be our position to ask artists to submit these panels taking into consideration the history of the creek and the area it is to be located in.
- 3) Image of steel bridge construction showing a pedestrian bridge on the outside of the bridge. The decorative railing could be on the outside of this pedestrian bridge or the inside of the vehicular bridge. This latter would be our recommendation.
- 4) One image of a decorative railing bridge that is similar in design to what we have in mind.

We would appreciate your reviewing our suggestions and giving us your comments on the possibility of including these design suggestions into the engineering plan you are preparing.

I had previously called and left word for you to return my call regarding the enclosed so we might discuss it prior to my forwarding it on. However I have taken the liberty of sending these directly on should you be away for the holidays.

I would appreciate your calling me after you have reviewed the enclosed so that I may further discuss them with you.

Best Wishes for a good 2002.



SUGGESTIONS:

1. Steel frame construction bridge:

- A. Create a metal armature so that metal/composite panels can be attached after artist has submitted proposal:
 - All rails to be fabricated from flat sheets of steel
 - All rails to run horizontally
- B. Slightly curved top railing
- C. Height no more than four feet to apex of curve on top railing
- D. Pedestrian walkways on the outside of bridge railing with bike trails on inside creating a more safe passage for pedestrians as well as bikers

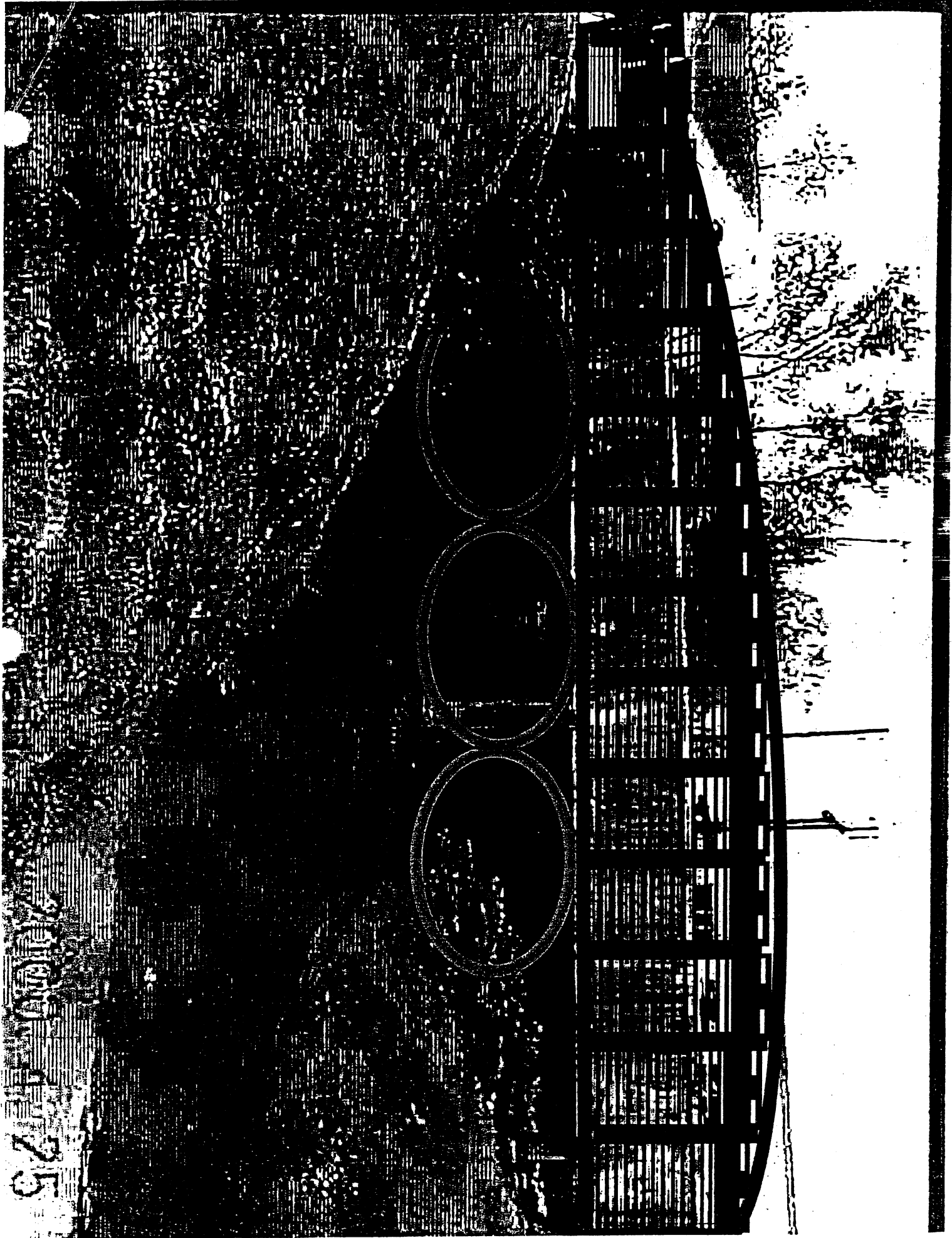
Intent:

Apply for TEA-21 funds for enhancement of bridge for pedestrian walkway on outside of bridge rather than inside.

As a part of TEA-21 funds and/or in addition to add to the façade of the bridge's railing an artist's rendition of the history of Wash Creek through a series of panels to be attached to bridge and/or pedestrian railing.

This type of open design of the bridge permits the following:

- A. Open view for vehicular traffic since traffic moving from east to west is tested by vehicles turning onto Third Avenue, as well as patrons exiting from the numerous businesses lining Kanuga Road as it moves into the "Busy Bend of Kanuga."
- B. Open view for vehicular traffic as it moves from west to east and travels around the very sharp curve of Kanuga Road towards the more busy intersection of Church Street and Washington Street and Kanuga Road.
- C. Putting pedestrians on the outside of the bridge offers safety from vehicular traffic that is more visually concentrating on other vehicles turning into or off Kanuga Road into the various businesses lining the roadway. Also this permits more room for a bike trail on the inside railing of the bridge.



97-00-47218







MR. BUIE

OFFICERS:

Fred H. Niehoff, Jr.
Mayor
Mary Jo Padgett
Mayor Pro-Tem
Chris A. Carter
City Manager
Tammie K. Drake
City Clerk

CITY OF HENDERSONVILLE

"The City of Four Seasons"

CITY COUNCIL:

J. CRITTENDEN HARLEY

LONDA MURRAY

MARY JO PADGETT

BARBARA VOLK

November 15, 2001

Ms. Stacy Harris, PE
Project Manager
NCDOT
Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh NC 27611

Dear Ms. Harris:

Enclosed you will find a resolution adopted by the City Council of the City of Hendersonville at their regular meeting held November 8, 2001.

Please feel free to call me at 828/697-3005 if you have questions or need further information.

Sincerely,

Tammie K. Drake

Tammie K. Drake, CMC, City Clerk

cc: Mr. Jay Setzer, PE, Division Construction Engineer

G:\Clerk\A-Clerk\Correspondence\Y01\SHarris NCDOT alt a res.wpd

**A RESOLUTION URGING THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
TO APPROVE ALTERNATIVE A FOR THE
WASH CREEK BRIDGE REPLACEMENT PROJECT (8.2951601)**

WHEREAS, the North Carolina Department of Transportation has completed engineering and environmental studies for the replacement of Bridge 306 over Wash Creek on Kanuga Road (SR1172) and;

WHEREAS, during this process two alternatives were identified: Alternative A and Alternative C and;

WHEREAS, Alternative A replaces the current bridge with a culvert and includes both curb and guttering and sidewalks on both sides of Kanuga Road for approximately 360 Feet westward and approximately 240 feet to the east of the existing bridge and:

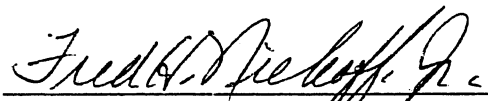
WHEREAS, Alternative C replaces the existing bridge with a culvert but includes much less approach work both on the west and east sides of the exiting bridge, but in doing so can be accomplished with less cost and less impact to the existing businesses on Kanuga Road, especially those located on south of the Road and for that reason is listed as the preferred NCDOT option.

NOW, THEREFORE BE IT RESOLVED, the City Council of the City of Hendersonville does hereby endorse Alternative A as being in the best interest of the City and the traveling public for reasons of both safety for motorists and accessibility and safety for pedestrians and bicyclists due to the provision of additional sidewalks and bike paths along the new structure and its approaches.

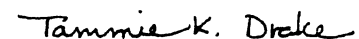
BE IT FURTHER RESOLVED, that the City Council desires that additional funding be pursued to enhance the visual attractiveness of the bridge structure and its appurtenances by requesting the NCDOT set aside a portion of the project cost for this purpose and to pursue additional enhancement funds solely for this purpose.

NOW BE IT THEREFORE DIRECTED, that an executed copy of this Resolution be forwarded to the Project Manager, Ms. Stacy Harris, P.E., in the Project Development and Environmental Analysis Branch.

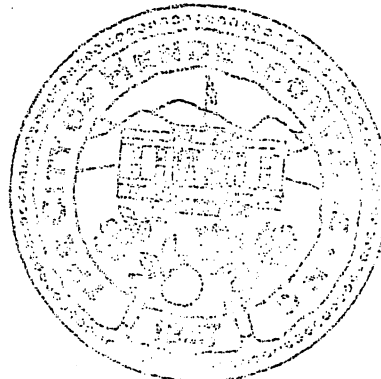
Adopted this 8th day of November, 2001.


Fred H. Niehoff, Jr., Mayor, City of Hendersonville

ATTEST:


Tammie K. Drake, CMC, City Clerk

G:\Clerk\Resolutions\Y01\NCDOT Alt A res.wpd



I, Tammie K. Drake, City Clerk of the City of Hendersonville, North Carolina, being first duly sworn, do hereby certify that the attached is a true and correct copy of a resolution adopted by the City Council of the City of Hendersonville at their November 8, 2001 Regular Meeting.

In witness whereof, I have hereunto set my hand and affixed the official Seal of the City of Hendersonville, North Carolina, this fifteenth day of November, 2001.

Tammie K. Drake

Tammie K. Drake, CMC, City Clerk

(SEAL)



HENDERSON COUNTY
OFFICE OF THE COUNTY MANAGER

100 NORTH KING STREET
HENDERSONVILLE, N.C. 28792-5097
PHONE (828) 697-4809 FAX (828) 698-6014
www.henderson.lib.nc.us/county

David E. Nicholson
County Manager

Avalina Merrill
Administrative Assistant

January 10, 2001

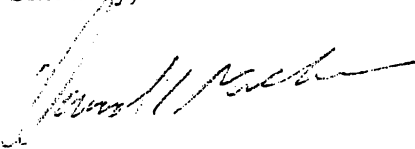
William D. Gilmore, P.E., Manager
NC Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh NC 27699-1548

Dear Mr. Gilmore,

I am writing in response to your December 6, 2000 letter concerning the bridge replacement projects for Henderson County that are contained within the NCDOT's 2002-2008 Draft Transportation Improvement Program. Attached is a report that contains our comments on these projects.

Should you have any additional questions, please contact me.

Sincerely,



David E. Nicholson
County Manager

DEN/abm

Attachment

Cc: Board of Commissioners
Transportation Advisory Committee Members

Henderson County Government Report on
NCDOT BRIDGE REPLACEMENT PROJECTS
B-3475, B-3662, B-3663, B-3665, B-3666 and B-3857

January 10, 2001

Henderson County appreciates the opportunity to study and comment on the proposed bridge replacement projects identified by NCDOT as B-3475, B-3662, B-3663, B-3665, B-3666 and B-3857. The following report contains the County's comments regarding the projects.

B-3475 - Bridge No. 356 on SR 1127 (Caswell Street) over Wash Creek

Bridge No. 356 is located in the City of Hendersonville on Caswell Street, between Washington Street and Lily Pond Road, in an area known as "Busy Bend." According to the Flood Insurance Rate map for that area, the area around and including the bridge is in the flood zone for Wash Creek.

The area around the bridge is commercial in character. Dal-Kawa Cycle Center is located adjacent to the bridge on the south and an automobile detailing business is located next to the bridge to the north. There are a number of other small businesses and a couple of churches in the area as well as the Whitmire Activity Building/Tom's Park owned by the City of Hendersonville. There is a considerable amount of traffic that enters/exits Hendersonville via Kanuga Road. Residents and businesses around the bridge area as well as those that use Kanuga Road to access Hendersonville will be impacted. The detour that is shown on the NCDOT map (using Lily Pond Drive, West Allen Street and Washington Street), is approximately 0.5 mile in length.

Erica Thompson, Program Coordinator for the *Start with Your Heart* program with the Henderson County Partnership for Health, Inc., has been working on a Bicycle/Pedestrian Assessment Project in the Henderson County. At her request, Henderson County has agreed to ask NCDOT to consider widening the sidewalk on Bridge No. 356 when the bridge itself is widened. According to Ms. Thompson, the current sidewalk is too narrow.

Henderson County understands that the City of Hendersonville is submitting its own comments regarding the subject bridge project as well.

B-3662 - Bridge No. 20 on SR 1006 (Howard Gap Road) over Featherstone Creek

The subject bridge is located on Howard Gap Road in an area that is mainly residential in character but which also contains several churches, small businesses and an industry. The intersection of Howard Gap Road and Brookside Camp Road is located to the northwest. Vulcan Materials (including the APAC asphalt plant) is located at the intersection of Howard Gap Road and Clear Creek Road, to the southeast. The Mountain Home Volunteer Fire and Rescue department has a substation located to the southeast of the intersection of Salisbury Road and Howard Gap Road. The bridge is located in the Mountain Home Fire District.

The "studied detour route" shown on the map provided by NCDOT requires that one travel approximately 2.5 miles using Brookside Camp Road and Salisbury Road, both of which are paved. The route passes through a residential area once it leaves Howard Gap Road and it is somewhat hilly and curvy. Heavy truck traffic and others that make regular use of Howard Gap

Road as north-south route may find US 25 to be a better alternative. Access to/from US 25 may be made via the new road to Park Ridge Hospital, Brookside Camp Road, Clear Creek Road, and, possibly, Balfour Road.

Residents and business owners in the area of the proposed bridge project will probably be impacted the most. However, there may be impacts on alternative routes due to the need to detour trucks, including those from Vulcan, around the bridge construction project.

While it is probably unlikely that NCDOT would undertake the subject project and project B-3664 on Brookside Camp Road simultaneously, the County would like to specifically request that the projects be scheduled at different times. If they were to occur together, the impacts on the area would be intensified, particularly because the bridge to be replaced on Howard Gap Road is on the detour route for the Brookside Camp Road bridge project (described below).

B-3663 - Bridge No. 320 on SR 1212 (Old Homestead Road) over Shaws Creek

Old Homestead Road, located off of US 64 West, has a paved surface. The subject bridge crosses Shaws Creek, adjacent to a Southern Railway track. One must cross the bridge, then the track. There is no railroad crossing signal on the road.

There are a number of residences that are served by Old Homestead Road once it crosses Shaws Creek. The area is zoned R-30 by the County and is within a WS-IV Water Supply Watershed. The land immediately adjacent to the bridge is undeveloped. According to the Flood Insurance Rate Map of the area, Shaws Creek is shown to have a narrow area of flood zone which includes the area around the bridge.

As one approaches the bridge from US 64, there is a gravel area adjacent to, but at a lower elevation than, the left side of the bridge. Rocky Hyder, Henderson County Fire Marshal/Emergency Management Director, identified this as a fire department draft point. The draft point would allow water to be drawn from Shaws Creek if needed to fight a fire in the vicinity.

Because there is no outlet from Old Homestead Road, the NCDOT map does not show a detour route. Homes on the southwestern end of Old Homestead Road as well as those on Summer Rain Drive, Kilpatrick Road and Abbey Lane will be impacted during replacement of the bridge. Henderson County expects that NCDOT will maintain some sort of bridge so residents may continue to use Old Homestead Road while the bridge is upgraded. Also, the fire department draft point should be taken into consideration during the project.

B-3664 - Bridge No. 21 on SR 1528 (Brookside Camp Road) over Mud Creek

Bridge No. 21 on Brookside Camp Road is located south of the I-26 overpass. Double Tee Golf Center is located to the northwest and Wolverine Paintball is located to the northeast. Vacant fields are located immediately adjacent to the bridge, along Mud Creek. The bridge is in a low area that has been subject to flooding in the past. The area is within a flood zone, according to the Flood Insurance Rate Map. It is also in the Mountain Home Fire District.

Brookside Camp Road provides access from US 25 to Grimesdale, Hickory Hills and several smaller subdivisions. It also serves to connect US 25 to Howard Gap Road and the residences and businesses in that area.

The detour shown on the map provided by NCDOT is comprised of a loop, approximately 6.7 miles in length, which uses Brookside Camp Road, US 25, Berkeley Road, Balfour Road, Clear Creek Road and Howard Gap Road. The detour passes over another bridge proposed for replacement, bridge No. 20 over Featherstone Creek (see B-3663, above). It is possible that to avoid some of the curves on Balfour Road, some detoured truck traffic may take US 25 to either the new road over I-26 (to Park Ridge Hospital) or to Clear Creek Road to get to Howard Gap Road.

The replacement of the bridge may cause some inconvenience to area residents and to business owners. According to Rocky Hyder, Henderson County Fire Marshal/Emergency Management Director, emergency services personnel and local property owners are probably accustomed to using alternate routes because of the flooding history of the road.

B-3665 - Bridge No. 265 on SR 1791 (Ballenger Road) over North Branch, Bat Fort Creek

Ballenger Road is located to the east of I-26, between Tracy Grove Road and Upward Road. Land Uses in the area around the bridge include Lakewood RV Park and some single-family dwellings. The Flood Insurance Rate Map for the area shows the land in the vicinity of the bridge as being in a flood zone.

The detour shown on the NCDOT map makes use of Tracy Grove Road and McMurray Road, both of which are paved. Much of the northern end of Mc Murray Road consists of orchards and some single-family dwellings. As one approaches Upward Road, there are some commercial uses, including an antique shop, a quilt shop, a produce stand, an RV supply store and the Dish Barn. A commercial project is currently underway near the intersection of Upward Road and McMurray Road. Since Ballenger Road is not a major thoroughfare, the bridge project is more likely to affect local traffic. The detour will probably increase the number of vehicles entering/exiting Upward Road near the I-26 ramps.

B-3666 - Bridge No. 53 on SR 1799 (Deep Gap Road) over North Branch, Hungry River

The subject bridge on Deep Gap Road is the third bridge as one travels east along the road. While the majority of Deep Gap Road is paved, the road has a gravel surface beginning at a point just before the subject bridge.

The eastern end of Deep Gap Road has a few single family dwellings, however much of the land, particularly that near the bridge, is undeveloped. Deep Gap Road has a number of curves as one descends into the river valley. Because there is only "one way in," the NCDOT map does not show a detour route.

Since Deep Gap road is not a "through" road, people would need to have a reason to travel its full length. That property (or properties) accessed by Deep Gap Road beyond Bridge No. 53 will be impacted primarily. Hungry River LLC is listed as the owner of approximately 2073 acres at and beyond the subject bridge.

B-3857 - Bridge No. 8 on SR 1314 (Ladson Road) over Boylston Creek

The subject bridge is located on Ladson Road approximately 0.2 mile from its intersection with NC 191. Land use in the area surrounding the bridge is agricultural, except that there is one dwelling just to the southwest of the bridge. Other residences are located further along Ladson Road. The bridge is located in a flood zone, according to the Flood Insurance Rate Map for the

area. The area around the bridge is in the County's R-30 zoning district and it is also within the WS-IV Water Supply Watershed.

The detour route shown on the map provided by NCDOT requires one to travel along Banner Farm Road and Schoolhouse Road, which will add several miles to the trip for those who normally use Ladson Road. The detour route also passes by Mills River Elementary School.

There is a change in fire districts as one travels along Ladson Road. Mills River Fire and Rescue services the portion of Ladson Road near the subject bridge while the area further south of the bridge is serviced by Etowah-Horse Shoe Fire and Rescue. According to Rocky Hyder, Henderson County Fire Marshal/Emergency Management Director, both departments typically respond to all calls in the area. However, for the Mills River department to respond to the area in its district that is south of the bridge, it will have to use the proposed detour along Schoolhouse Road, which will probably increase its response time slightly.

Other General Comments

County staff did not have a chance to fully investigate the environmental conditions in the areas around the bridges other than to note areas that may be subject to flooding. However, as with any projects undertaken near waterways, the County expects that NCDOT will use erosion and sedimentation controls and other measures to minimize negative impacts on water quality.

Also, because of ongoing projects in the County to establish safe pedestrian walkways and bike routes adjacent to roadways, the County suggests that, when reasonable and feasible, NCDOT consider ways to improve the bridges for these purposes as well as for vehicle travel.

Finally, if it is not already a customary practice, Henderson County suggests that some time prior to initiation of each bridge replacement project, it would be helpful if NCDOT forwarded information regarding the actual detours to the Superintendent of Henderson County Public Schools in order for County bus routes to be adjusted accordingly. In addition, such detour information would be helpful to other County departments and agencies. Therefore, NCDOT should also consider sending such information to the County Manager's office for distribution.

Note: Henderson County does not participate in the federal flood insurance program. Flood Insurance Rate Maps referenced in comments for projects in the County's jurisdiction (B-3662, B-3663, B-3665, B-3666 and B-3857) are dated March 1, 1982. The City of Hendersonville does participate in the federal flood insurance program. The Federal Insurance Rate Map referenced in the comments for the project in the City's jurisdiction (B-3475) is dated January 20, 1982.

OFFICERS:

Fred H. Niehoff, Jr.
Mayor
Mary Jo Padgett
Mayor Pro-Tem
Chris A. Carter
City Manager
Tammie K. Drake
City Clerk

CITY OF HENDERSONVILLE

"The City of Four Seasons"

CITY COUNCIL:

J. CRITTENDEN HARLEY
LONDA MURRAY
MARY JO PADGETT
BARBARA VOLK

Friday, December 22, 2000

William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
NCDOT
1548 Mail Service Center
Raleigh, NC 7699-1548

RE: Bridge Replacement Project B-3475

Dear Mr. Gilmore:

Stacy Harris

I am writing on behalf of Mayor Niehoff and City Council regarding your request for comments concerning the above bridge replacement project.

Due to the strategic location of this bridge in an entry corridor of the City we have several comments relating to traffic flow during construction. If it appears traffic cannot be maintained over the bridge during construction, even one lane, there will be significant disruption to small businesses located on both sides. If traffic is re-routed to W. Allen Street and Lily Pond Lane, (both City streets) the width of those two streets, especially Lily Pond Lane, may not carry the traffic that Kanuga (your SR1127) handles currently.

There are events during the summer months at Whitmire Building, the recreational facility of the City, including shuffleboard tournaments that require users to park on the shoulder of the road of Lily Pond Lane as an over flow. Of course this would further restrict flow.

We also think the NCDOT should consider maintaining pedestrian access across Wash Creek during construction since there are sidewalks on both sides of the project.

We very much hope that the NCDOT will construct the bridge to accommodate wider sidewalks since there is significant pedestrian traffic along Kanuga Street/SR 1127.

Also there are water and sewer lines that will have to be relocated. Attached is a map showing the location relative to the existing bridge. Since this project is partially being funded with federal bridge replacement funds we are aware that utility relocation is reimbursable and hope the cost of the utility relocation of up to 80% will be included in the project budget.

Lastly, due to volume of traffic this entry corridor handles I believe this project should be "fast-tracked" as much as possible. Any construction period over 30 days I believe would be detrimental to the number of small business on both sides of the bridge project.

Thank you for the opportunity to respond and let us know if we can be of further assistance.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris A. Carter".

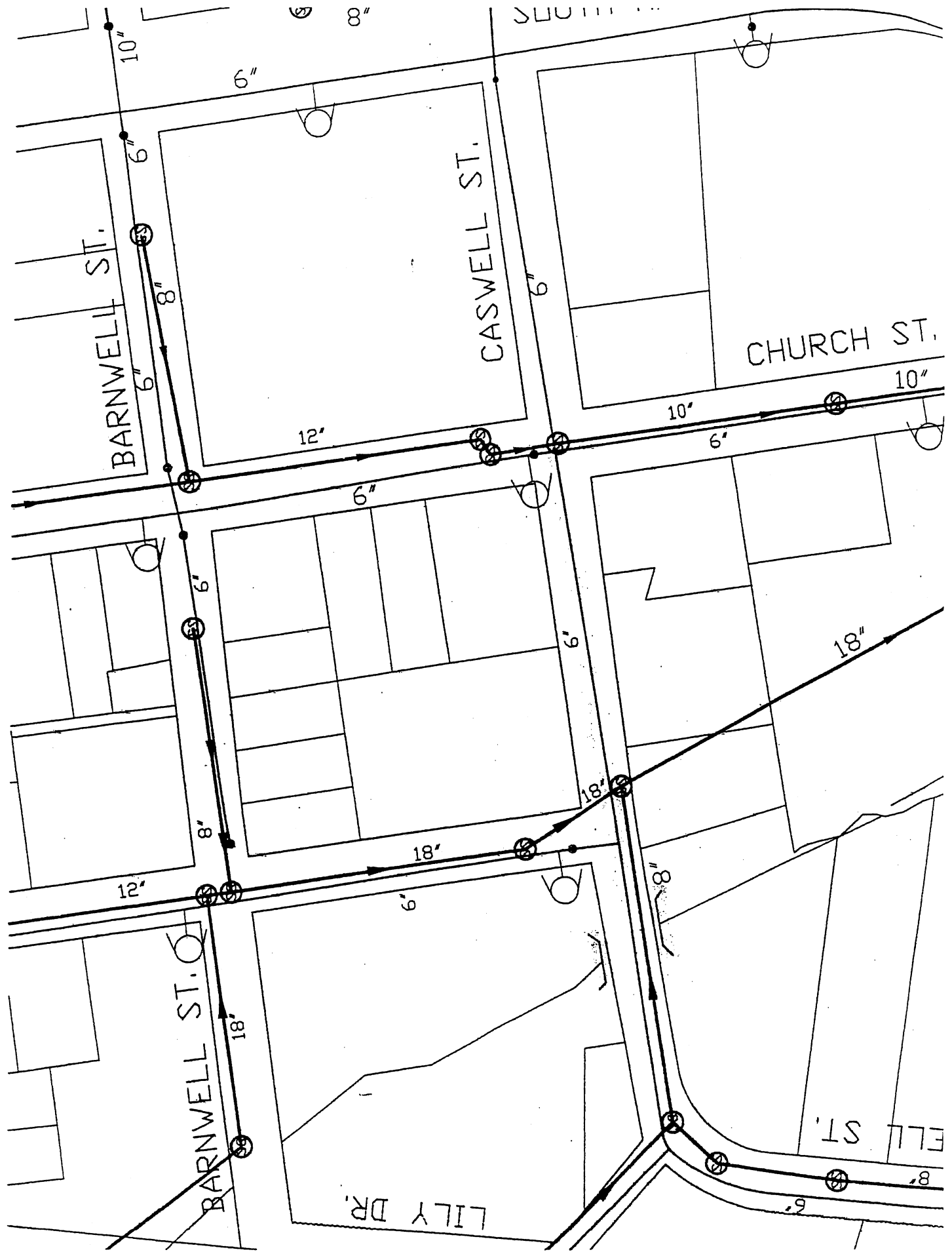
Chris A. Carter, City Manager

Cc Fred Niehoff, Mayor
Don Sides, Public Works Director
Ezra Allman, W&S Director

EXISTING WATER

EXISTING SEWER

CASWELL BRIDGE



Tommy Register

From: Chris Carter [ccarter@cityofhendersonville.org]
Sent: Friday, June 07, 2002 1:40 PM
To: 'Tommy Register'
Subject: RE: B-3475, Replacement of Bridge on Kanuga Road
Mr. Register,

Last night at the City Council meeting I relayed to the members that any alternative designs that they wish to be considered for the Kanuga Road bridge replacement need to be submitted immediately, per your instructions and their previous agreement to do so. I, nor they, have recieved any suggestions. So it is my opinion you are unencumbered from any reason not to proceed with the poured in place concrete design displayed at the meeting. But please try to put as much articulation as possible in the stamp design because that bridge should have some aesthetic quality if at all possible.

Thank you Mr. Register for your time.

Original Message-----

From: Tommy Register [mailto:TRegister@bhme.com]
Sent: Friday, May 31, 2002 9:51 AM
To: Carter, Chris
Subject: B-3475, Replacement of Bridge on Kanuga Road

Mr. Carter

The city council and NCDOT agreed to give the Public Arts Committee 30 days to develop alternative aesthetic enhancements for the proposed replacement structure. Any enhancements must comply with state safety guidelines. I have not received any correspondence concerning alternatives to the cast-in-place wall presented to the city. Therefore we shall proceed with the design presented to the city. If you have any comments please contact me or

Stacy Harris at 919-733- 7844 ext 264 or stacyharris@dot.state.nc.us

Tommy Register, EI
Barbara H. Mulkey Engineering, Inc.
PO Box 33127
Raleigh, NC 27636-3127
Phone (919) 858-1792
Main Office Phone (919) 851-1912
Fax (919) 851-1918
Email tregister@bhme.com
Web page www.bhme.com

