STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

January 30, 2008

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

ATTENTION: Mr. David Baker
NCDOT Coordinator

SUBJECT: **Nationwide Permit 23 Application** for the replacement of Bridge No. 36 over Crabtree Creek on SR 1503 in Haywood County. Federal Aid Project No. BRZ-1503(4), State Project No. 8.2942001, WBS Element 33206.1.1, Division 14, TIP No. B-3661.

Dear Sir:

Please see the enclosed U.S. Fish and Wildlife Concurrence Letter, permit drawings, and design plans, for the above referenced project. A Categorical Exclusion, signed December 20, 2005, has been completed and distributed for this project. Additional copies are available upon request. The North Carolina Department of Transportation (NCDOT) proposes to replace the 91-foot, three-span bridge with a new 100-foot, single-span bridge over Crabtree Creek. The existing bridge will be replaced in a new location, upstream of the current structure and traffic will be maintained on the existing structure during construction. There will 12 linear feet permanent stream impact to Crabtree Creek.

IMPACTS TO WATERS OF THE UNITED STATES

General Description:
The single water resource impacted for project B-3661 is Crabtree Creek. Crabtree Creek is located in the French Broad River Basin (Division of Water Quality (DWQ) subbasin 04-03-05) and is approximately 34 feet wide and 1-2 feet deep within the project area. The DWQ Index number for this section of Crabtree Creek is 5-22 and the Hydrological Cataloguing Unit is 06010106. The DWQ classifies Crabtree Creek as "C". Within the project area, Crabtree Creek is not listed as a 303(d) water. There are no 303(d) waters within a mile downstream of the project area. No High Quality Waters (HQW), Water Supplies (WS-I or WSII), Outstanding Resource Waters (ORW), or jurisdictional wetlands occur within one mile of the project study area. In a letter dated August 21, 2000, the NC Wildlife Resources Commission commented that "This section of Crabtree Creek is not considered trout waters. We do not anticipate a moratorium would be required."

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

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

WEBSITE: WWW.NCDOT.ORG

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

Permanent Impacts:
There will be 12 linear feet of permanent stream impacts to Crabtree Creek resulting from the rip-rap ditch that runs to the bottom of the creek. This impact is necessary due to the topography, and the limited distance to allow for storm water treatment options.

Temporary Impacts:
There will be no temporary jurisdictional impacts associated with this project.

Utility Impacts:
There will be no jurisdictional impacts associated with relocation of utilities for this project.

Schedule:
The project schedule calls for a May 20, 2008 LET date and a review date of **April 1, 2008**.

BRIDGE DEMOLITION

Bridge No. 26 was built in 1951. The superstructure is primarily timber with reinforced concrete sill on two interior wooden bents. The existing bridge's superstructure consists of a timber floor on I-beams with an asphalt wearing surface and timber railing. The substructure consists of end bents and two wooden interior bents. The superstructure and substructure elements listed above can be cut and removed without any temporary fill falling into Crabtree Creek during demolition. All guidelines for bridge demolition and removal will be followed in addition to Best Management Practices (BMPs) for the Protection of Surface Waters and BMPs for Bridge Demolition and Removal.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of November 5, 2007, the United States Fish and Wildlife Service (USFWS) lists ten federally protected species for Haywood County (Table1). Concurrence was received for the bald eagle, and gray bat on February 4, 2005, and is included in this permit application package.

Table 1. Federally Protected Species for Haywood County

Common Name	Scientific Name	Status	Survey Notes	Biological Conclusion
Bald eagle*	*Haliaeetus leucocephalus*	BGPA	Habitat Present	MANLTAA
Bog turtle	*Clemmys muhlenbergii*	T(S/A)	No Habitat	N/A
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	E	No Habitat	No Effect
Eastern cougar	*Puma concolor couguar*	E	No Habitat	No Effect
Gray bat	*Myotis grisescens*	E	Habitat Present	MANLTAA
Indiana bat	*Myotis sodalis*	E	Habitat Present	No Effect
Appalachian elktoe	*Alasmidonta raveneliana*	E	Habitat Present	No Effect
Spruce-fir moss spider	*Microhexura montivaga*	E	No Habitat	No Effect
Small whorled pogonia	*Isotria medeoloides*	T	Habitat Present	No Effect
Rock gnome lichen	*Gymnoderma lineare*	E	No Habitat	No Effect

MANLTAA= May Affect, Not Likely to Adversely Affect.

*The bald eagle has been delisted from the Endangered Species Act as of August 8, 2007. It is still protected under the Bald and Golden Eagle Protection Act. Previous surveys (in which concurrence was received from the USFS) indicated that there are no nests within, or 660 feet outside of the project area.

AVOIDANCE, MINIMIZATION AND MITIGATION

Avoidance and Minimization:
Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States." The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impact. In addition, Best Management Practices will be followed as outlined in "NCDOT's Best Management Practices for Construction and Maintenance Activities".

- Traffic will be maintained on the existing structure during construction. This eliminates the need for construction of a temporary on-site detour.
- Water will not be directly discharged into Crabtree Creek via deck drains.
- The new structure is a single span structure that will completely span Crabtree Creek.
- All guidelines for bridge demolition and removal will be followed in addition to *Best Management Practices (BMPs) for the Protection of Surface Waters.*

Mitigation:
NCDOT proposes no mitigation for the 12 linear feet of permanent impacts as these are minimal impacts to Crabtree Creek.

REGULATORY APPROVALS

Section 404 Permit:
It is anticipated that the permanent impacts to Crabtree Creek will be authorized under Section 404 Nationwide Permit 23 for the impacts relating to bank stabilization. We are, therefore, requesting the issuance of a Nationwide Permit 23.

Section 401 Permit:
We anticipate 401 General Certification number 3701 will apply to this project. All conditions of the General Certification will be adhered to, therefore we are not requesting concurrence from NCDWQ. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their records.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Michael Turchy at maturchy@dot.state.nc.us or (919) 715-1468.

Sincerely,

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

cc:
W/attachment
Mr. Brian Wrenn, NCDWQ (5 Copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. Harold Draper, TVA TVA

W/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. J. B. Setzer, P.E., Division Engineer
Mr. Mark Davis, DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Joseph Miller, P.E., PDEA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801
February 4, 2005

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: Endangered Species Concurrence for the Proposed Replacement of Bridge No. 36 over Crabtree Creek in Haywood County, North Carolina (TIP No. B-3661)

As requested by the North Carolina Department of Transportation, we have reviewed the natural resources information and biological conclusions for federally protected species for the subject project. We provide the following comments in accordance with the provisions of section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

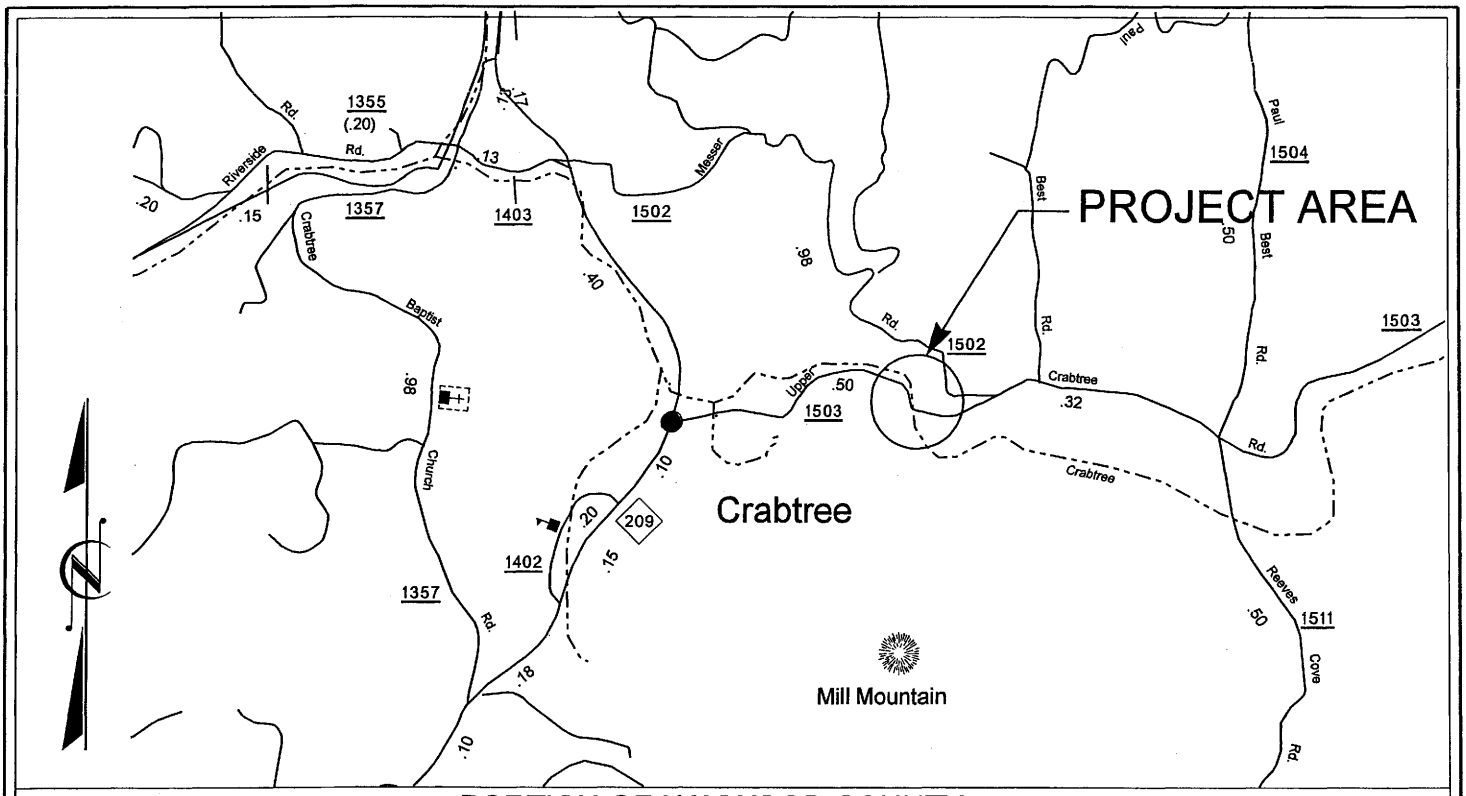
Given the information provided, including habitat assessments and field surveys, we concur with your conclusion of "not likely to adversely affect" for the bald eagle (*Haliaeetus leucocephalus*) and the gray bat (*Myotis grisescens*) for the subject project. We believe the requirements under section 7(c) of the Act are fulfilled regarding listed species for the subject project. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

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 No. 4-2-00-280.

Sincerely,

Brian P. Cole
Field Supervisor

cc:
Mr. Michael Turchy, Environmental Specialist, North Carolina Department of Transportation, 1598 Mail Service Center, Raleigh, NC 27699-1598



PORTION OF HAYWOOD COUNTY

PORTION OF STATE MAP

SURFACE WATER IMPACTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY
33206.2.1 (B-3661)
REPLACE BRIDGE NO.36 AND APPROACHES
OVER CRABTREE CREEK ON SR 1503

Permit Drawing Sheet 1 of 8

SCALE AS SHOWN

SHEET 1 OF 5

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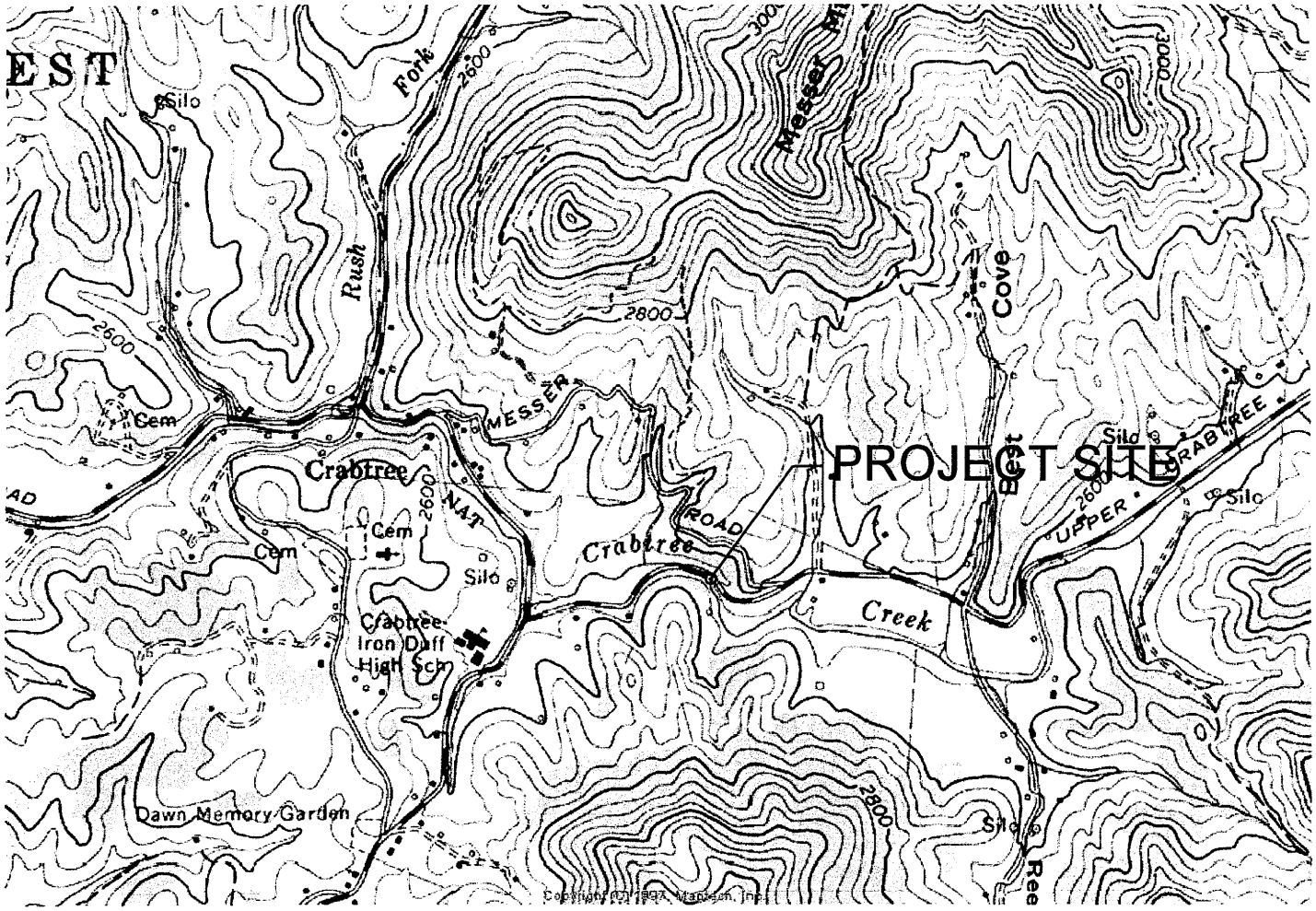

QUAD MAP OVERLAY

WETLAND SITE MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY
33206.2.1 (B-3661)
REPLACE BRIDGE NO.36 AND APPROACHES
OVER CRABTREE CREEK ON SR 1503

Permit Drawing
Sheet 2 of 8

SCALE AS SHOWN

SHEET 2 OF 5

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WETLAND LEGEND

WLB WETLAND BOUNDARY

WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES FILL IN SURFACE WATER

P P DENOTES FILL IN SURFACE WATER (POND)

T T DENOTES TEMPORARY FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

12"-48" PIPES

54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY
33206.2.1 (B-3661)
REPLACE BRIDGE NO.36 AND APPROACHES
OVER CRABTREE CREEK ON SR 1503

Permit Drawing Sheet 3 of 8

SCALE AS SHOWN

SHEET 3 OF 5

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SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(3)	JULIUS P. ROSS	440 LEATHERWOOD COVE RD., WAYNESVILLE, NC 28785	1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY
33206.2.1 (B-3661)
REPLACE BRIDGE NO.36 AND APPROACHES
OVER CRABTREE CREEK ON SR 1503

Permit Drawing
Sheet 4 of 8

SCALE AS SHOWN

SHEET 4 OF 5

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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	14+66 -L- LT	Rip Rap Ditch						<0.01		12		
TOTALS:					0.00		0.00	<0.01		12		

Anticipate no impacts due to proposed bridge or construction phasing.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

HAYWOOD COUNTY
PROJECT: 33206.2.1 (B-3661)

SHEET Jul-07

ATN Revised 3/31/05

Permit Drawing
Sheet 5 of 8

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-3661	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

50 25 0 50 100

NC GRID NAD 83

SITE 1

INSERT

CLASS 'B' RIP RAP
EST. 175 TONS
EST. 275 SY FF

CLASS 'B' RIP RAP @ CF TRANS.
EST. 3 TONS
EST. 7 SY FF

30' LONG 2' BASE TAIL DITCH W/CLASS 'B' RIP RAP (SEE DETAIL B)

CRABTREE CREEK

SR 1503 UPPER CRABTREE RD.

PAVEMENT REMOVAL
EXPRESSWAY GUTTER
BEGIN APPROACH Sta. 16+01.22
BEGIN BRIDGE Sta. 16+15.00
REMOVE STRUCTURE (STR. ITEM)
PAVEMENT REMOVAL
END BRIDGE Sta. 17+15.00
END APPROACH Sta. 17+28.78

BEGIN FENCE +36.74 43.92RT

END FENCE +35J 111.96RT

PROP 4-STRAND BW FENCE

BEGIN FENCE +78.29 67.28RT

MATCH EXIST.

EXPRESSWAY GUTTER

WOODS

SPRING HEAD

5'X12' M'L GATE

48" 45BW GATE

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 2v, D, 4:1 Slope, Front Ditch Slope

Min. D = 1.0 Ft.

STA 15+50 RT TO STA 16+00 RT

DETAIL B
STANDARD BASE TAIL DITCH
(Not to Scale)

Natural Ground, 2v, 3:1, D, 3:1, Natural Ground, Filter Fabric, B

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
* when B is < 6.0'
Type of Liner = CLASS 'B' RIP RAP
EST. = 14 TONS
EST. = 38 SY FF
DDE = 20 CY

STA 14+70 LT

S S DENOTES IMPACTS IN SURFACE WATER

Permit Drawing
Sheet 6 of 8

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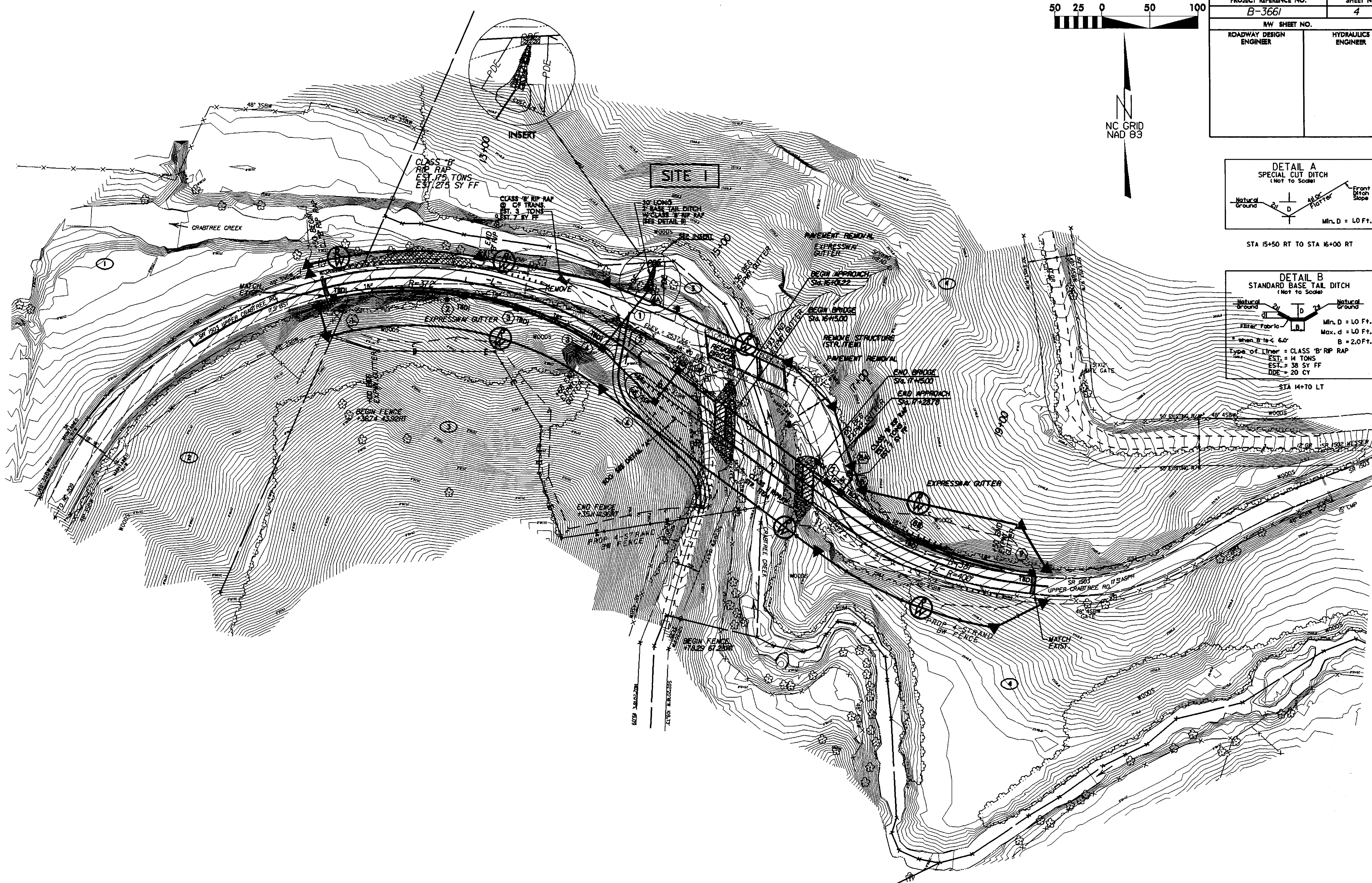
PROJECT REFERENCE NO.	SHEET NO.
B-3661	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — Front Ditch Slope — Min. D = 1.0 Ft.

STA 15+50 RT TO STA 16+00 RT

DETAIL B
STANDARD BASE TAIL DITCH
(Not to Scale)

Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
Filter Fabric
Type of Liner = CLASS 'B' RIP RAP
EST. = 14 TONS
EST. = 38 SY FF
DDE = 20 CY

STA 14+70 LT

DENOTES IMPACTS IN SURFACE WATER

Permit Drawing
Sheet 2 of 8

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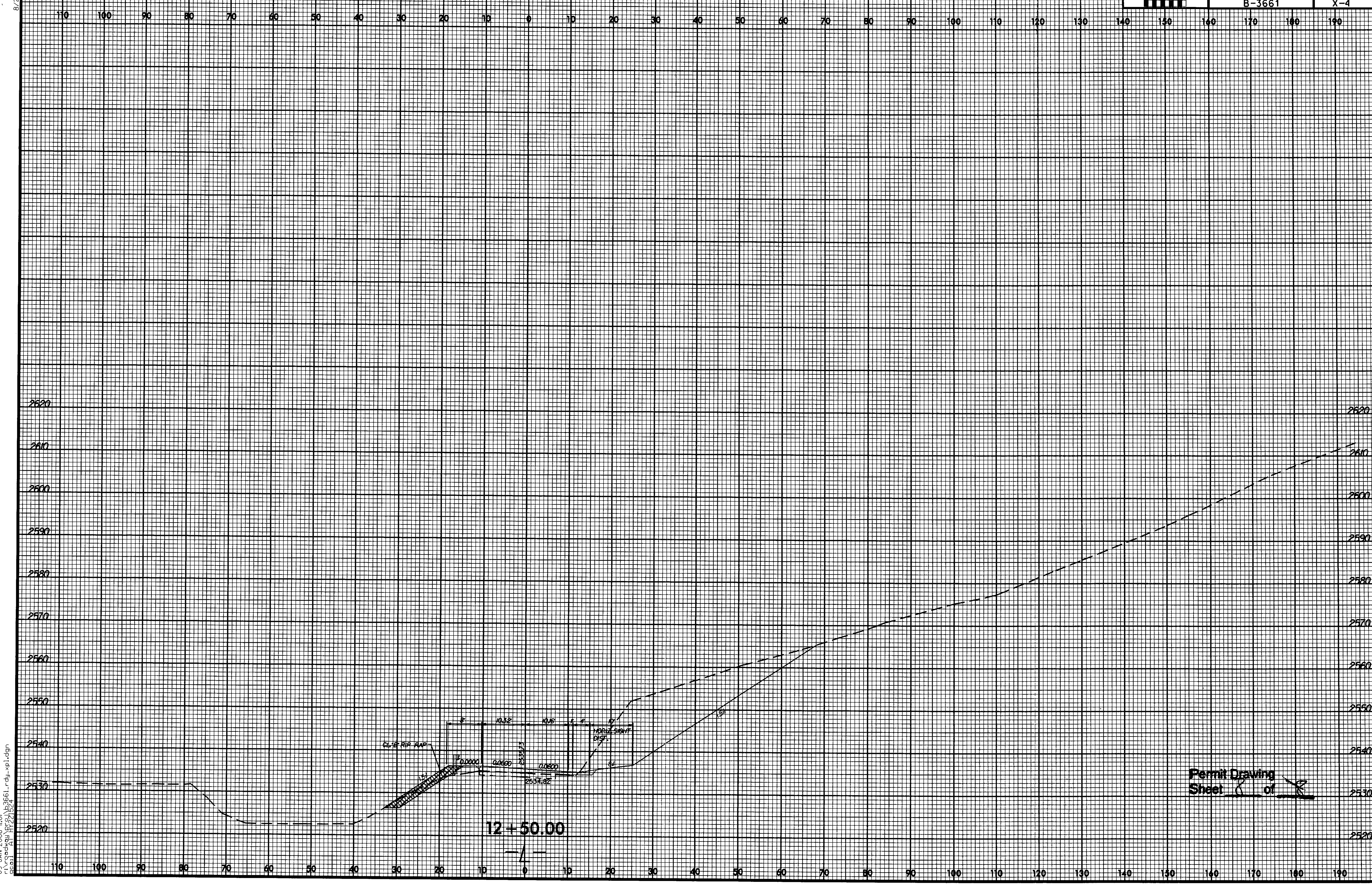
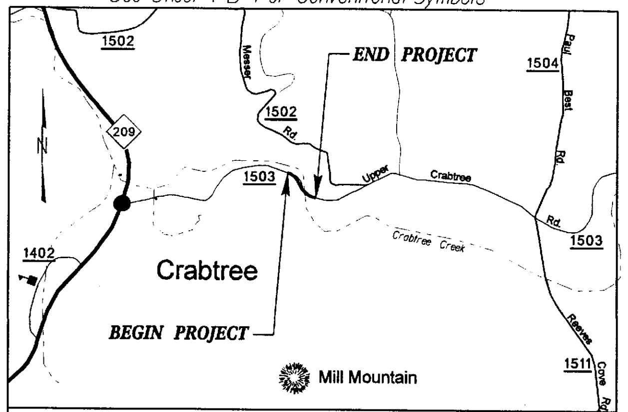
PROJ. REFERENCE NO.	SHEET NO.
B-3661	X-4



TIP PROJECT: B-3661

CONTRACT:

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



VICINITY MAP

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

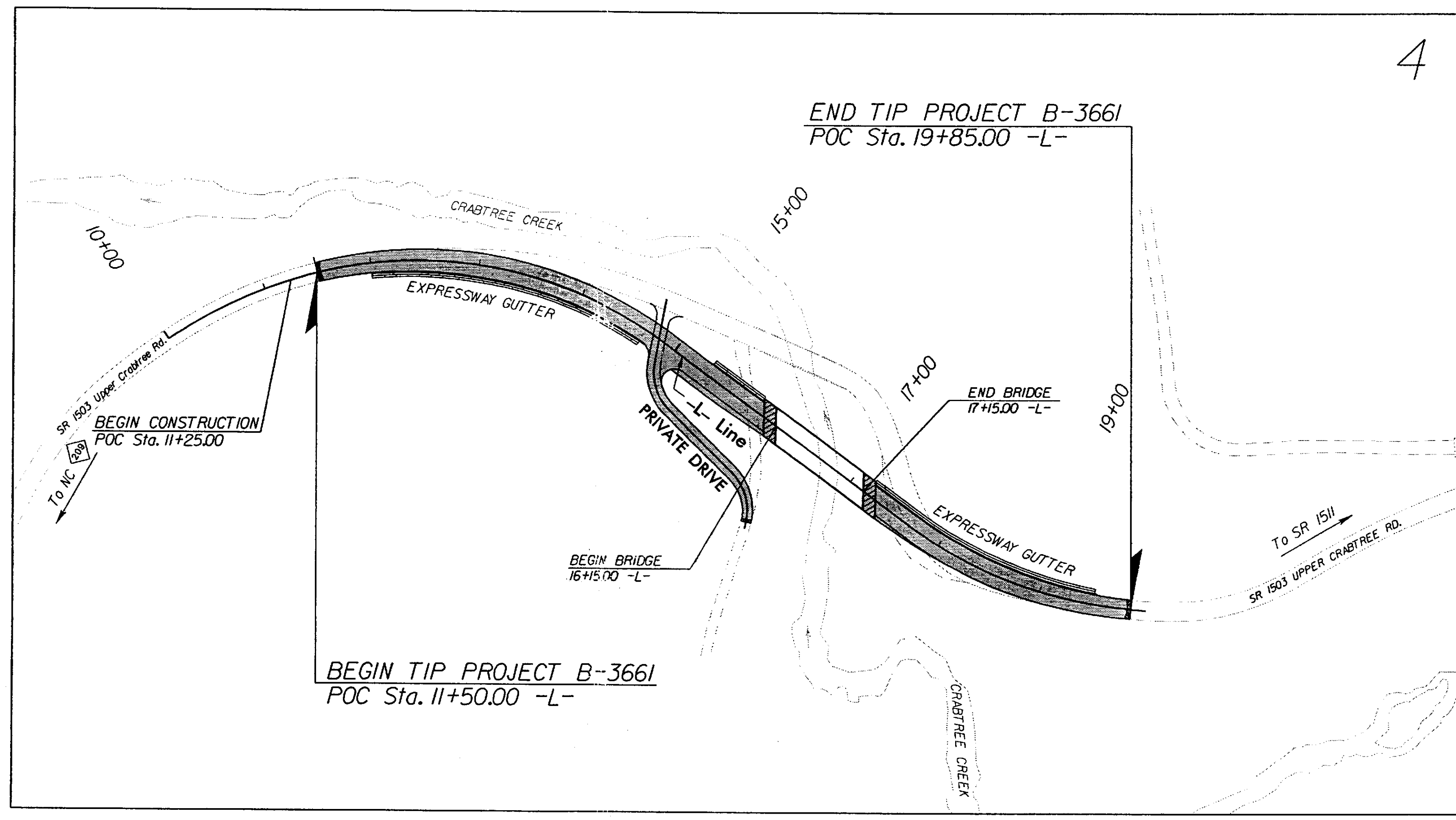
HAYWOOD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3661	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33206.1.1	BRZ-1503 (4)	PE
33206.2.1	BRZ-1503 (4)	R/W & UTIL
33206.3.1	BRZ-1503 (6)	CONSTR

LOCATION: REPLACEMENT OF BRIDGE No. 36 ON SR 1503 (UPPER CRABTREE RD.) OVER CRABTREE CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, TRAFFIC CONTROL & PAVEMENT MARKING PLAN



NC GRID NAD 83

PRELIMINARY NOT FOR CONSTRUCTION

- THIS PROJECT IS NOT WITHIN ANY CITY LIMITS.
- DESIGN EXCEPTION FOR LANE WIDTH, SHOULDER WIDTH AND BRIDGE WIDTH.

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 1500
ADT 2028 = 2225
DHV = 12 %
D = 60 %
T = 4 % *
V = 35 MPH
* TTST 1 % DUAL 3 %
RURAL MINOR COLLECTOR

PROJECT LENGTH

LENGTH OF ROADWAY F.A. PROJECT BRZ-1503 (4) = 0.139 MI.
LENGTH OF STRUCTURE F.A. PROJECT BRZ-1503 (4) = 0.019 MI.
TOTAL LENGTH OF TIP PROJECT B-3661 = 0.158 MI.

Prepared in the Office of:
Stantec
Stantec Consulting Inc.
Suite 300, 801 Jones Franklin Road
Raleigh, NC U.S.A. 27606
Tel. 919.851.6866 Fax. 919.851.7024
www.stantec.com

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DEC. 15, 2006

LETTING DATE: DEC. 18, 2007

G. SCOTT BOYLES, PE — PROJECT ENGINEER

KEITH F. HUDSON — PROJECT DESIGN ENGINEER

NCDOT CONTACT: CATHY S. HOUSER, PE — PROJECT ENGINEER - DESIGN SERVICES

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

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PROJECT REFERENCE NO.	SHEET NO.
B-3661	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (23)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing High Quality Wetland Boundary
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- River Basin Buffer (RBB)
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

- Standard Guage (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer (S)

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

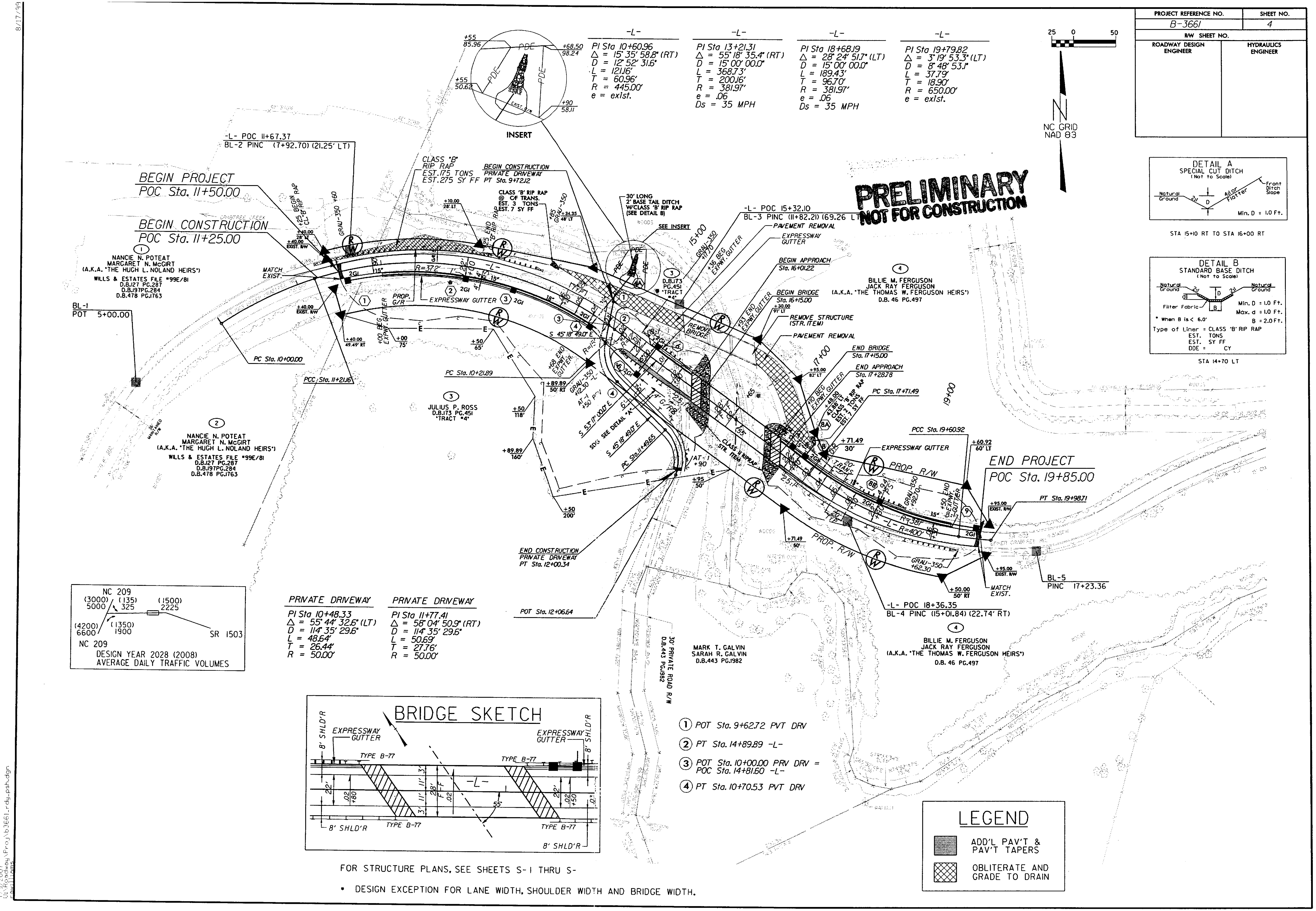
- Gas Valve
- Gas Meter
- Recorded U/G Gas Line (G)
- Designated U/G Gas Line (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

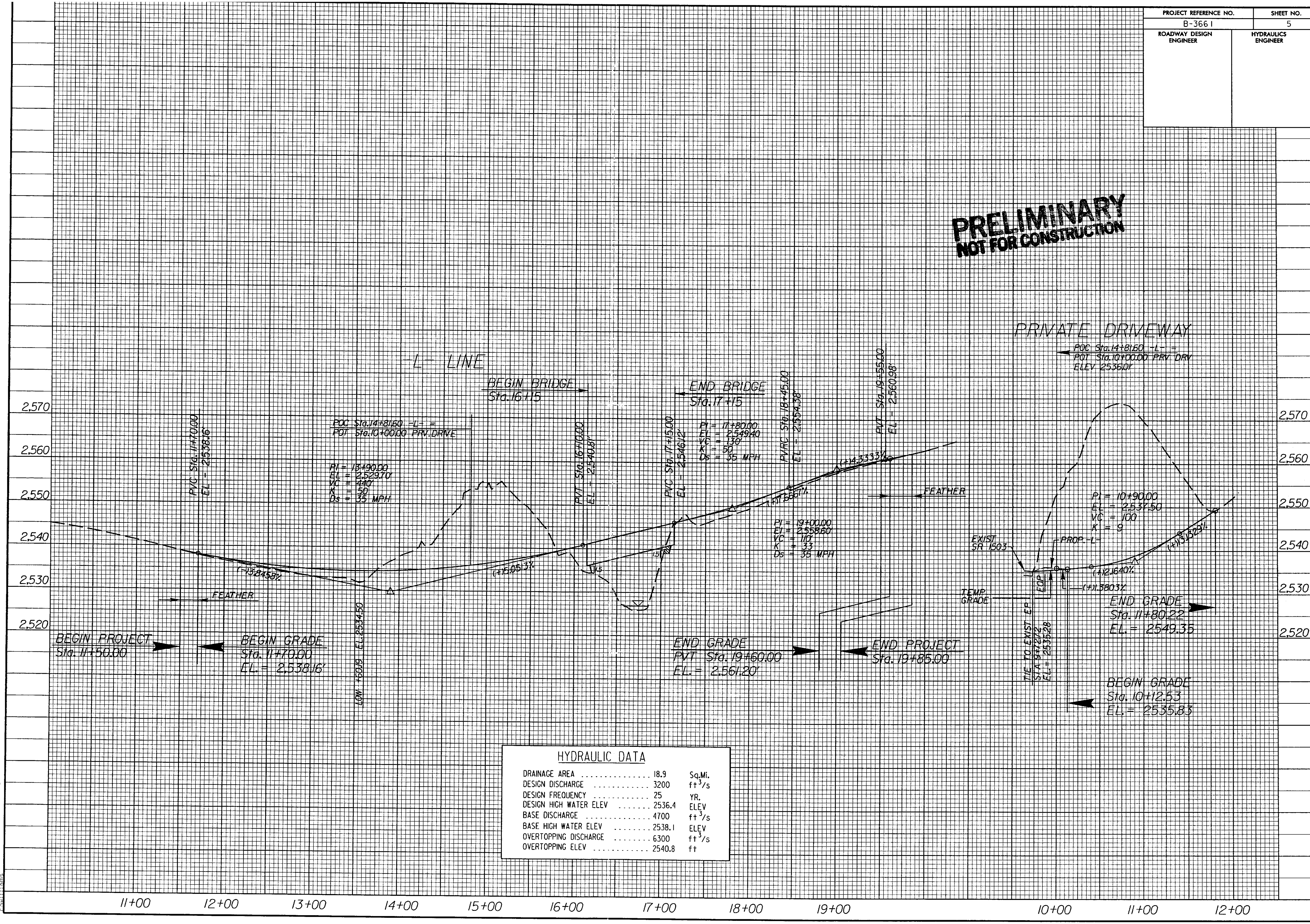
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- Recorded SS Forced Main Line (FSS)
- Designated SS Forced Main Line (S.U.E.*) (FSS)

MISCELLANEOUS:

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


PROJECT REFERENCE NO. B-3661
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY
NOT FOR CONSTRUCTION
NC GRID NAD 83
25 0 50
-L-
PI Sta 10+60.96
Δ = 15° 35' 58.8" (RT)
D = 12° 52' 31.6"
L = 121.16'
T = 60.96'
R = 445.00'
e = exist.
-L-
PI Sta 13+21.31
Δ = 55° 18' 35.4" (RT)
D = 15° 00' 00.0"
L = 368.73'
T = 200.16'
R = 381.97'
e = .06
Ds = 35 MPH
-L-
PI Sta 18+68.19
Δ = 28° 24' 51.7" (LT)
D = 15° 00' 00.0"
L = 189.43'
T = 96.70'
R = 381.97'
e = .06
Ds = 35 MPH
-L-
PI Sta 19+79.82
Δ = 3° 19' 53.3" (LT)
D = 8° 48' 53.1"
L = 37.79'
T = 18.90'
R = 650.00'
e = exist.
INSERT
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D = 1.0 Ft.
STA 15+10 RT TO STA 16+00 RT
DETAIL B
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
* When B is < 6.0'
Type of Liner = CLASS 'B' RIP RAP
EST. TONS
EST. SY FF
DDE = CY
STA 14+70 LT
-L- POC 11+67.37
BL-2 PINC (7+92.70) (21.25' LT)
BEGIN PROJECT
POC Sta. 11+50.00
BEGIN CONSTRUCTION
POC Sta. 11+25.00
CLASS "B" RIP RAP
EST. 175 TONS
EST. 275 SY FF
BEGIN CONSTRUCTION PRIVATE DRIVEWAY PT Sta. 9+72.12
CLASS 'B' RIP RAP @ C/F TRANS. EST. 3 TONS. EST. 7 SY FF
30' LONG 2' BASE TAIL DITCH W/CLASS 'B' RIP RAP (SEE DETAIL B)
SEE INSERT
-L- POC 15+32.10
BL-3 PINC (11+82.21) (69.26 LT)
PAVEMENT REMOVAL
EXPRESSWAY GUTTER
BEGIN APPROACH Sta. 16+01.22
BEGIN BRIDGE Sta. 16+15.00
REMOVE STRUCTURE (STR. ITEM)
PAVEMENT REMOVAL
END BRIDGE Sta. 17+15.00
END APPROACH Sta. 17+28.78
PC Sta. 17+71.49
1 NANCIE N. POTEAT MARGARET N. McGIRT (A.K.A. "THE HUGH L. NOLAND HEIRS") WILLS & ESTATES FILE "99E/81 D.B.127 PG.287 D.B.197 PG.284 D.B.478 PG.1763
2 NANCIE N. POTEAT MARGARET N. McGIRT (A.K.A. "THE HUGH L. NOLAND HEIRS") WILLS & ESTATES FILE "99E/81 D.B.127 PG.287 D.B.197 PG.284 D.B.478 PG.1763
3 JULIUS P. ROSS D.B.173 PG.451 "TRACT "4"
4 BILLIE M. FERGUSON JACK RAY FERGUSON (A.K.A. "THE THOMAS W. FERGUSON HEIRS") D.B. 46 PG.497
MARK T. GALVIN SARAH R. GALVIN D.B.443 PG.1982
30' PRIVATE ROAD R/W D.B.443 PG.1982
BL-1 POT 5+00.00
PC Sta. 10+00.00
PCC Sta. 11+21.16
PC Sta. 10+21.89
EXPRESSWAY GUTTER
MATCH EXIST.
END CONSTRUCTION PRIVATE DRIVEWAY PT Sta. 12+00.34
POT Sta. 12+06.64
PCC Sta. 19+60.92
EXPRESSWAY GUTTER
END PROJECT
POC Sta. 19+85.00
PT Sta. 19+98.71
PROP. R/W
MATCH EXIST.
BL-5 PINC 17+23.36
-L- POC 18+36.35
BL-4 PINC (15+01.84) (22.74' RT)
NC 209
(3000) 5000
(135) 325
(1500) 2225
(4200) 6600
(1350) 1900
SR 1503
NC 209
DESIGN YEAR 2028 (2008)
AVERAGE DAILY TRAFFIC VOLUMES
PRIVATE DRIVEWAY
PI Sta 10+48.33
Δ = 55° 44' 32.6" (LT)
D = 114° 35' 29.6"
L = 48.64'
T = 26.44'
R = 50.00'
PRIVATE DRIVEWAY
PI Sta 11+77.41
Δ = 58° 04' 50.9" (RT)
D = 114° 35' 29.6"
L = 50.69'
T = 27.76'
R = 50.00'
1 POT Sta. 9+62.72 PVT DRV
2 PT Sta. 14+89.89 -L-
3 POT Sta. 10+00.00 PRV DRV = POC Sta. 14+81.60 -L-
4 PT Sta. 10+70.53 PVT DRV
BRIDGE SKETCH
EXPRESSWAY GUTTER
TYPE B-77
8' SHLD'R
-L-
55°
LEGEND
ADD'L PAV'T & PAV'T TAPERS
OBLITERATE AND GRADE TO DRAIN
FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-
• DESIGN EXCEPTION FOR LANE WIDTH, SHOULDER WIDTH AND BRIDGE WIDTH.
8/17/99
7/9/2007
U:\Roadway\Proj\b3661_rdy_psh.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3661	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



HYDRAULIC DATA

DRAINAGE AREA	18.9	Sq.Mi.
DESIGN DISCHARGE	3200	ft^3/s
DESIGN FREQUENCY	25	YR.
DESIGN HIGH WATER ELEV	2536.4	ELEV
BASE DISCHARGE	4700	ft^3/s
BASE HIGH WATER ELEV	2538.1	ELEV
OVERTOPPING DISCHARGE	6300	ft^3/s
OVERTOPPING ELEV	2540.8	ft

Haywood County
Bridge No. 36 on SR 1503 (Liner Road)
over Crabtree Creek
Federal Aid Project No. BRZ-1503(4)
State Project No. 8.2942001
WBS No. 33206.1.1
TIP No. B-3661

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

12/20/05
DATE

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

12/20/05
DATE

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

Haywood County
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TIP No. B-3661

CATEGORICAL EXCLUSION

December 2005

Documentation Prepared by:
Stantec Consulting Services Inc.

Paul R. Koch, P.E.
Project Manager

12-19-05
Date

For the North Carolina Department of Transportation

Joseph H. Miller, P.E.
Project Manager
Consultant Engineering Unit

Haywood County
Bridge No. 36 on SR 1503 (Liner Road)
over Crabtree Creek
Federal Aid Project No. BRZ-1503(4)
State Project No. 8.2942001
WBS No. 33206.1.1
TIP No. B-3661

PROJECT COMMITMENTS

In addition to the Nationwide Permit No. 33 and No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Hydraulics and Structure Design

An approval under Section 26a of the TVA Act will be required.

Haywood County
Bridge No. 36 on SR 1503 (Liner Road)
over Crabtree Creek
Federal Aid Project No. BRZ-1503(4)
State Project No. 8.2942001
WBS No. 33206.1.1
TIP No. B-3661

INTRODUCTION: The replacement of Bridge No. 36 is included in the 2006-2012 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location is shown in Exhibit 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Maintenance Unit records indicate that Bridge No. 36 has a sufficiency rating of 16.9 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. Replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1503 is classified as a rural minor collector. Land use immediately adjacent to the existing bridge is low density residential and forested.

Bridge No. 36 was built in 1951. The structure includes three spans totaling 91 feet (27.7 meters) in length. The substructure is primarily timber with reinforced concrete sills on two interior bents. The depth from crown to bed is 13 feet (3.9 meters). The existing bridge deck width is 20.1 feet (6.0 meters). The posted weight limit is SV 10 / TTST 14 tons (9/13 metric tons).

The drainage area at Bridge No. 36 is 18.9 square miles (49.0 square kilometers).

The westbound and eastbound approaches are both in sharp curves. The existing structure is on a short tangent. The posted speed limit is 35 mph (60 km/h). The existing roadway has a two-lane 17-foot (5.2-meter) wide cross-section with two-foot (0.6-meter) grassed shoulders.

The 2005 estimated average daily traffic volume (ADT) is 1,400 vehicles per day (vpd). The projected traffic volume is expected to increase to 2,300 vpd by the design year 2030. The projected traffic includes three percent duals and one percent tractor-truck-semi-trailers.

Underground telephone lines are located on the north side of the road and cross under the road near the east end of the bridge. Aerial telephone lines cross the stream diagonally from the southeast to the northwest.

There was one accident reported at the bridge, and five others within 0.2 miles (0.3 km) of the structure, during the period from January 1, 2002 to December 31, 2004. This accident was a collision with a fixed object most likely due to the sharp curve in the westbound bridge approach.

Two school buses cross Bridge No. 36 twice daily.

This section of SR 1503 is not part of a designated bicycle route nor is it listed in the TIP as needing incidental bicycle accommodations. There is no indication that there are an unusual number of bicyclists using this roadway.

III. ALTERNATIVES

A. Project Description

The approach roadway will consist of two 12-foot (3.6-meter) travel lanes with eight-foot (2.4-meter) shoulders. Based on a preliminary hydraulic analysis, the new structure will have a length of approximately 105 feet (32 meters). The proposed structure will provide a 30-foot (9.0-meter) clear roadway width to allow for two 12-foot (3.6-meter) travel lanes and 3-foot (0.9-meter) offsets to the bridge rails on each side.

The elevation of the new structure will be approximately the same as the existing structure. The length and opening size of the bridge may increase or decrease as necessary to accommodate peak flows as determined from a more detailed hydraulic analysis, to be performed during the final design phase of the project.

B. Build Alternatives

Two (2) build alternatives for replacing the existing bridge are described below:

Alternative B replaces the bridge on new alignment upstream (south) of the existing structure. During construction, traffic will be maintained using the existing bridge. The roadway approach work will extend from approximately 430 feet (131.1 meters) west of the existing bridge to 640 feet (195 meters) east. The design speed for this alternative is 30 mph (50 km/h). This alternative was not selected because it has greater impacts than the Preferred alternative; specifically to the natural environment and to adjacent properties. A design speed exception would be required.

Alternative C (Preferred) replaces the bridge on new alignment upstream (south) of the existing structure. During construction, traffic will be maintained using the existing bridge. The approach work for Alternative C begins further west than Alternative B, but provides a better tie-in to existing SR 1503 on the east side, with less impact to the undeveloped land north of SR 1503. The roadway approach work will extend from approximately 550 feet (167.6 meters) west of the existing bridge to 370 feet (112.8 meters) east. The design speed for this alternative is 35 mph (60 km/h).

C. Alternatives Eliminated from Further Study

The "Do-Nothing" alternative will eventually necessitate closure of the bridge. This is not desirable due to the service provided by Bridge Number 36.

Rehabilitation of the existing bridge is not feasible due to its age and deteriorated condition.

Alternative A which replaced the bridge on new alignment upstream (south) of the existing structure with a 111-foot (33.8-meter) bridge and a 30 mph (50 km/h) design speed was eliminated because it required channel relocation at both the east and west termini. Minimizing stream impacts would therefore be the most difficult for this alternative. It was also located farthest from the existing bridge, thereby requiring the most right-of-way.

Alternatives with a 40 mph (70 km/h) design speed were eliminated due to constructability issues. Specifically all alternatives meeting the 40 mph (70 km/h) design speed criteria could not be tied into the existing roadway east of the bridge due to the grade dictated by this design speed.

D. Preferred Alternative

Alternative C (Preferred) replaces the bridge on new alignment upstream (south) of the existing structure. During construction, traffic will be maintained using the existing bridge.

Alternative C was recommended because it has less impacts to the natural environment and to adjacent properties.

The existing speed limit through the project area is 35 mph (60 km/h). The roadway both east and west of the proposed project has existing curves with radii which are below a 40 mph (70 km/h) design speed. Based on these conditions, a 35 mph (60km/h) design speed is recommended.

IV. ESTIMATED COSTS

The estimated costs based on current prices are shown in Table 1. The estimated cost of the project listed in the 2006-2012 Transportation Improvement Program (TIP), is $2,025,000 including $75,000 for right-of-way, $1,750,000 for construction, and $200,000 for prior years costs.

V. NATURAL RESOURCES

A. Methodology

Information sources used to prepare this report include: U.S. Geological Survey (USGS) Clyde quadrangle map (1967/photorevised 1978); Natural Resources Conservation Service (NRCS) Soil Survey of Haywood County (1997); United States Fish and Wildlife Service (USFWS) National Wetlands Inventory Map (Clyde 1994); the January 29, 2003 USFWS list of protected and candidate species (reviewed 10/25/05); North Carolina Natural Heritage Program (NCNHP)

TABLE 1
ESTIMATED COSTS

	Alternative B	Alternative C (Preferred)
Structure Removal (existing)	$ 18,600	$ 18,600
Structure (Proposed)	235,200	235,200
Detour Structure and Approaches	---	---
Roadway Approaches	566,800	290,400
Miscellaneous and mobilization	369,400	245,800
Engineering Contingencies	160,000	110,000
ROW/Const. Easements/Utilities	79,475	68,850
TOTAL	$ 1,429,475	$ 968,850

database of rare species and unique habitats (July 1, 2005); NCDOT aerial photography of the project area; and North Carolina Division of Water Quality (DWQ) water resource data. Research using these resources was conducted prior to the field investigation.

A general field survey was conducted along the proposed project corridor on June 6, 2000. Plant communities and their associated wildlife were identified using a variety of observation techniques including active searching, visual observations with binoculars, and identifying characteristic signs of wildlife (sounds, tracks, scats, and burrows).

Investigation into wetland occurrence in the project impact area was conducted using methods of the 1987 Corps of Engineers Wetlands Delineation Manual.

Impact calculations were based on the functional roadway designs, the width and length of the replacement structure, the width of the stream for aquatic impacts, and the length of the project approaches. The actual construction impacts should be less as the worst case was assumed for the impact calculations.

B. Physiography and Soils

The project site lies within the Blue Ridge Mountain Physiographic Province. The topography of the project vicinity is characterized as rolling hills with moderate to steeply sloping banks along the major streams. Elevations in the project vicinity range from approximately 2,560 to 2,800 feet (780 to 850 meters) above mean sea level (msl). Elevations in the project area vary from approximately 2,560 to 2,640 feet (780 to 800 meters) above msl. Current land use in the project vicinity is a mixture of residential, commercial, and agricultural properties.

According to the soil map for Haywood County (NRCS, 1997), the project area is found within the Evard-Cowee-Hayesville-Trimont soil association. Soils in this association are generally found on ridges and side slopes of intermountain hills and low mountains. The soils are

described as gently sloping to very steep, very deep and moderately deep, well-drained loamy clayey soils that are underlain by felsic to mafic high-grade metamorphic and igneous rocks. Field conditions generally conform to the soil survey maps. Soil series found within the project area are described below.

Cullowhee-Nikwasi complex, zero to two percent slopes, frequently flooded is located along Crabtree Creek in the project area. This map unit consists of a nearly level, somewhat poorly drained Cullowhee soil, and a nearly level, poorly drained Nikwasi soil. These soils are found along narrow flood plains. Permeability is moderately rapid and runoff is slow. Nikwasi soil is listed as hydric.

Evard-Cowee complex, 30 to 50 percent slopes, is located in the northeastern and southeastern portions of the project area adjacent to the Cullowhee-Nikwasi complex. This map unit consists of steep, well drained loam soils. These soils are found on side slopes of intermountain hills and low mountains. Permeability is moderate and surface runoff is rapid. Evard and Cowee soils are not listed as hydric.

Fannin loam, 30 to 50 percent slopes, eroded, is located in the southwestern quadrant of the project area adjacent to the Cullowhee-Nikwasi complex. Fannin loam is a steep, very deep, well drained soil found on side slopes of low mountains and intermountain hills. Permeability is moderate and surface runoff is rapid. Fannin loam is not listed on the hydric soils list.

C. Water Resources

1. Waters Impacted

The proposed project falls within the French Broad River Basin, with a subbasin designation of 04-03-05. Waters within the project study area include Crabtree Creek.

2. Water Resource Characteristics

Crabtree Creek is a tributary of Pigeon River. Crabtree Creek flows north through the proposed project area with a width of approximately 34.0 feet (10.4 meters). The drainage area at Bridge No. 36 is 18.9 square miles (49.0 square kilometers). The flow was swift on the day of the field investigation. The substrate consisted of sand with gravel, cobbles, and boulders. The water was clear upstream of the bridge and became more turbid downstream of the bridge at the time of the site visit. The depth of the water ranged from 0.3 foot to over 2.0 feet (0.1 to over 0.6 meters).

Within the project area, Crabtree Creek is classified as "C" by the North Carolina Department of Environment and Natural Resources (NCDENR). Class "C" waters are suitable for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, and agriculture. The classification date and index number for this portion of the creek is 7/1/73, 5-22.

Point source dischargers located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. A search within one mile (1.6 kilometers) of the project revealed no NPDES permitted dischargers.

Non-point source refers to runoff that enters surface waters through stormwater flow or no defined point of discharge. Storm water runoff from SR 1503 may cause water quality degradation through the addition of oil or gas residuals, particulate rubber, or other sources of contamination.

Benthic macroinvertebrates, or benthos, are organisms that live in and on the bottom substrates of rivers and streams. The North Carolina Division of Water Quality (DWQ) uses benthos data as a tool to monitor water quality as benthic macroinvertebrates are sensitive to subtle changes in water quality. Formerly, the DWQ used the Benthic Macroinvertebrate Ambient Network (BMAN) as a primary tool for water quality assessment but phased this method out several years ago and has converted to a basinwide assessment sampling protocol. Each river basin in the state is sampled once every five years and the number of sampling stations has been increased within each basin. Each basin is sampled for biological, chemical, and physical data.

The DWQ includes the North Carolina Index of Biotic Integrity (NCIBI) as another method to determine general water quality in basinwide sampling. The NCIBI is a modification of the Index of Biotic Integrity (IBI) initially proposed by Karr (1981) and Karr, et al. (1986). The method was developed for assessing a stream's biological integrity by examining the structure and health of its fish community. The Index incorporates information about species richness and composition, trophic composition, fish abundance, and fish condition. The NCIBI summarizes the effects of all classes of factors influencing aquatic faunal communities (water quality, energy source, habitat quality, flow regime, and biotic interactions).

According to the information obtained from the French Broad Basinwide Water Quality Plan (2000), the DWQ does not have a sampling station on Crabtree Creek. The nearest sampling station is located on Pigeon River at its confluence with Crabtree Creek, which is approximately 1.3 miles (2.1 kilometers) downstream from the project area. This station was sampled in 1988 and the rating was Fair.

3. Anticipated Impacts to Water Resources

a) General Impacts - Neither High Quality Waters (HWQ), Water Supplies (WS-I: undeveloped watershed, or WS-II: predominately undeveloped watersheds), nor Outstanding Resource Waters (ORW) occur within one mile (1.6 kilometers) of the project study area.

Impacts to the water resources will result due to the placement of a support structure in the creek channel. In the short term, construction of the bridge and approach work will increase sediment loads. Sediment loading can reduce flow and result in a decrease in oxygen levels. The removal of trees that provide shade along stream banks could result in an increase in water temperature and a decrease in oxygen levels as well.

The NCDOT, in cooperation with DWQ has developed a sedimentation control program for highway projects which adopts formal best management practices (BMPs) for the protection of surface waters. The following are methods to reduce sedimentation and water quality impacts:

- strict adherence to BMPs for the protection of surface waters during the life of the project;

- reduction and elimination of direct and non-point discharge into the water bodies and minimization of activities conducted in the creek;

- placement of temporary ground cover or re-seeding of disturbed sites to reduce runoff and decrease sediment loadings;

- reduction of clearing and grubbing along the creek.

b) Impacts Related to Bridge Demolition and Removal - Dropping any portion of the structure into waters of the United States should be avoided unless there is no other practical method of removal. The superstructure of Bridge No. 36 is a timber floor on steel I-beams. The substructure is timber abutments and timber caps, posts, and sills. Two of the interior bents have reinforced concrete sills. Since the bridge can be removed without dropping any components into the water, neither the superstructure nor the substructure will create any temporary fill in the creek.

According to comments received from the North Carolina Wildlife Resources Commission (WRC), Crabtree Creek is not considered trout waters.

D. Biotic Resources

Living systems described in the following sections include communities of associated plants and animals. These descriptions refer to the dominant flora and fauna in each community and the relationship of these biotic components. Classification of plant communities is based on a system used by the NCNHP (Schafale and Weakley, 1990). If a community is modified or otherwise disturbed such that it does not fit into an NCNHP classification, it is given a name that best describes current characteristics. Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species include the common name only. Vascular plant names follow nomenclature found in Radford et al. (1968) unless more current information is available. Terrestrial and aquatic wildlife were determined through field observations, evaluation of habitat, and review of field guides and other documentation (Conant, 1958; Farrand, 1993; Robbins et al., 1966; and Whitaker, 1980).

1. Plant Communities

The predominant terrestrial communities found in the project study area are maintained/disturbed and montane oak-hickory forest communities. Dominant faunal components associated with these terrestrial areas are discussed in each community description. Many species are adapted to the entire range of habitats found along the project alignment but may not be mentioned separately in each community description.

a) Maintained/Disturbed Community - The maintained/disturbed community includes the residential property in the southwestern quadrant and the road shoulders. Many plant species are adapted to these disturbed and regularly maintained areas. The dominant species within the project area include fescue (*Festuca spp.*), ryegrass (*Lolium spp.*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), goldenrod (*Solidago spp.*), wild onion (*Allium cernuum*), dandelion (*Taraxacum officinale*), daisy fleabane (*Erigeron annuus*), narrow-leaved vetch (*Vicia angustifolia*), and plantain (*Plantago spp.*).

b) Montane Oak-Hickory Forest Community – This community is found throughout the project area bordering the maintained/disturbed community. The canopy layer includes white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), pignut hickory (*Carya glabra*), and black locust (*Robinia pseudoacacia*). The understory is dense and consists of dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), mountain laurel (*Kalmia latifolia*), and rhododendron (*Rhododendron spp.*). The herbaceous layer is also dense and includes common greenbrier (*Smilax rotundifolia*), poison ivy (*Toxicodendron radicans*), and honeysuckle (*Lonicera spp.*).

2. Wildlife

The animal species present in the maintained/disturbed community are opportunistic and capable of surviving on a variety of resources, ranging from vegetation (flowers, leaves, fruits, and seeds) to both living and dead faunal components. A house sparrow (*Passer domesticus*), American robin (*Turdus migratorius*), and a five-lined skink (*Eumeces fasciatus*) were observed during the site visit in these areas. Other species such as raccoon (*Procyon lotor*), common rat (*Rattus norvegicus*), American crow (*Corvus brachyrhynchos*), American goldfinch (*Carduelis tristis*), Northern mockingbird (*Mimus polyglottos*), American toad (*Bufo americanus*), and Eastern garter snake (*Thamnophis sirtalis*) are often attracted to these disturbed habitats.

On the day of the site visit, a blue jay (*Cyanocitta cristata*), Northern cardinal (*Cardinalis cardinalis*), and the shell of a box turtle (*Terrapene carolina*) were observed in the Montane Oak-Hickory Forest community. Other species which may reside or forage in these areas include Carolina chickadee (*Parus carolinensis*), great horned owl (*Bubo virginianus*), hairy woodpecker (*Picoides villosus*), white-breasted nuthatch (*Sitta carolinensis*), Eastern phoebe (*Sayornis phoebe*), broad-headed skink (*Eumeces laticeps*), corn snake (*Elaphe guttata*), Southern flying squirrel (*Glaucomys volans*), red fox (*Vulpes vulpes*), and white-tailed deer (*Odocoileus virginianus).*

3. Aquatic Communities

Vegetation along the creek banks includes sycamore (*Platanus occidentalis*), ironwood (*Carpinus caroliniana*), tag alder (*Alnus serrulata*), yellow birch (*Betula lutea*), black locust, red maple, dogwood, mountain laurel, blackberry (*Rubus spp.*), and greenbrier. The banks were well vegetated with no signs of erosion. The banks were well defined and averaged 6.0 feet (1.8 meters) in height above the top of the creek. Species such as the Northern water snake (*Natrix sipedon sipedon*), bullfrog (*Rana catesbeiana*), and spring salamander (*Gyrinophilus porphyriticus)* may reside or forage within this aquatic community or along the waters edge.

According to the WRC, species that are likely to be found in Crabtree Creek include rainbow trout (*Salmo gairdneri*), brown trout (*Salmo trutta*), possibly brook trout (*Salvelinus fontinalis*), northern hog sucker (*Hypentelium nigricans*), stoneroller (*Campostoma anomalum*), shiner (*Notropis spp.*), creek chub (*Semotilus atromaculatus*), and blacknose dace (*Rhinichthys atratulus*).

4. Anticipated Impacts to Biotic Communities

Potential impacts to biotic communities are described in the following sections and summarized in Table 2.

a) Terrestrial Communities - The montane oak-hickory forest and the maintained/disturbed communities serve as nesting, foraging, and shelter habitat for fauna. Removal of plants and other construction related activities will result in the displacement and mortality of faunal species in residence. Individual mortalities are likely to occur to terrestrial animals from construction machinery used during clearing activities.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present in the study area. Project construction will result in clearing and degradation of portions of these communities. Often, project construction does not require the entire right of way, therefore, actual impacts may be considerably less.

b) Wetland Communities – No jurisdictional wetlands were found within the study area.

c) Aquatic Communities - The replacement of Bridge No. 36 over Crabtree Creek will result in up to 0.01 acres (0.004 hectares) of aquatic impacts. This figure is obtained by measuring the width of the bridge over water times the length of the bridge over water.

Activities such as the removal of trees, as well as the construction of the bridge and approach work will likely result in an increase in sediment loads and water temperatures and a decrease in dissolved oxygen in the short term. Construction activities can also increase the possibility of toxins, such as engine fluids and particulate rubber, entering the waterways. The combination of these factors can potentially cause the displacement and mortality of fish and local populations of invertebrates which inhabit these areas.

E. Special Topics

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

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters of the United States are regulated by the United States Army Corps of Engineers (USACE).

Investigation into wetland occurrence in the project impact area was conducted using methods of the 1987 Corps of Engineers Wetlands Delineation Manual. No jurisdictional wetlands were found within the project area.

TABLE 2
ANTICIPATED IMPACTS TO
TERRESTRIAL AND AQUATIC COMMUNITIES

Bridge No. 36 Replacement Alternatives	Maintained / Disturbed Community [ac (Ha)]	Montane Oak-Hickory Forest Community [ac (Ha)]	Aquatic Community [ac (Ha)]	Stream Impacts [ft (m)]	Stream Relocation [ft (m)]	Combined Total [ac (Ha)]
Alternative B	0.62 (0.25)	1.92 (0.78)	0.01 (0.004)	30 (9.0)	0 (0)	2.55 (1.03)
Alternative C	0.78 (0.32)	1.50 (0.61)	0.01 (0.004)	30 (9.0)	0 (0)	2.29 (0.93)

NOTES:

- Actual construction impacts may be less than those indicated above; calculations were based on preliminary roadway designs using the worst-case scenario.

Project construction cannot be accomplished without infringing on jurisdictional surface waters. The creek boundaries were flagged and surveyed and up to 30 linear feet (9.0 meters) of jurisdictional surface waters may be impacted by this project.

2. Permits

a) Section 404 of the Clean Water Act - In accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344), a permit is required from the USACE for projects of this type for the discharge of dredged or fill material into "Waters of the United States". The USACE issues two types of permits for these activities. A general permit may be issued on a nationwide or regional basis for a category or categories of activities when: those activities are substantially similar in nature and cause only a minimal individual or cumulative environmental impacts, or when the general permit would result in avoiding unnecessary duplication or regulatory control exercised by another Federal, state, or local agency provided that the environmental consequences of the action are individually and cumulatively minimal. If a general permit is not appropriate for a particular activity, then an individual permit must be utilized. Individual permits are authorized on a case-by-case evaluation of a specific project involving the proposed discharges.

It is anticipated that this project will fall under Nationwide Permit 23, which is a type of general permit. Nationwide Permit 23 is relevant to approved Categorical Exclusions. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency and that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit. However, final permit decisions are left to the discretionary authority of the USACE.

b) Section 401 Water Quality Certification - A 401 Water Quality Certification, administered through the DWQ, will also be required. This certification is issued for any activity which may

result in a discharge into waters for which a federal permit is required. According to the DWQ, one condition of the permit is that the appropriate sediment and erosion control practices must be utilized to prevent exceedances of the appropriate turbidity water quality standard (50 NTUs in streams and rivers not designated as trout by DWQ and 10 NTUs in trout waters).

c) Section 26a of the TVA Act - This project is located within the jurisdiction of the Tennessee Valley Authority (TVA). Therefore, an approval under Section 26a of the TVA Act will be required.

3. Mitigation

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

Avoidance - The project purpose necessitates traversing Crabtree Creek; therefore, totally avoiding surface water impacts is impossible.

Minimization - No measures are proposed for this project. There are no jurisdictional wetlands within the project area.

Compensatory Mitigation - Compensatory mitigation is not expected to be required for this project. A final determination regarding mitigation requirements rests with the USACE.

F. Rare and Protected Species

Some populations of plants and animals have been or are in the process of decline due to factors such as natural forces, competition from introduced species, or human related impacts such as destruction of habitat. Rare and protected species listed for Haywood County and any likely impacts to these species as a result of the proposed project construction are discussed in the following sections.

1. Federally Protected Species

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The United States Fish and Wildlife Service (USFWS) lists nine federally protected species for Haywood County as of the January 29, 2003 (reviewed 10/25/05) listing. These federally protected species are described in the following section and listed in Table 3.

TABLE 3
FEDERALLY-PROTECTED SPECIES
FOR HAYWOOD COUNTY

Scientific Name (Common Name)	Status
Clemmys muhlenbergii Bog turtle	T(S/A)
Felis concolor cougar Eastern cougar	E
Myotis grisescens Gray bat	E
Glaucomys sabrinus coloratus Carolina northern flying squirrel	E
Haliaeetus leucocephalus Bald eagle	T
Alasmidonta raveneliana Appalachian elktoe	E
Microhexura montivaga Spruce-fir moss spider	E
Gymnoderma lineare Rock gnome lichen	E
Isotria medeoloides Small-whorled pogonia	T

NOTES:

E Denotes Endangered (a species that is in danger of extinction throughout all or a significant portion of its range).

T Denotes Threatened (a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range).

T(S/A) Denotes Threatened due to similarity of appearance (a species that is threatened due to similarity of appearance with other rare species and is listed for its protection).

Clemmys muhlenbergii (Bog turtle) T(S/A)
Family: Emydidae
Date Listed: November 4, 1997

Bog turtles are small [3 to 4.5 inches (76 to 114 millimeters)] semiaquatic turtles that have a

dark brown carapace and black plastrons. They usually exhibit distinctive orange or yellow blotches on each side of the head and neck.

The bog turtle inhabits shallow, spring fed fens, sphagnum bogs, swamps, marshy meadows, pastures which have soft, muddy bottoms, and clear, cool, slow-flowing water, often forming a network of rivulets. Bog turtles inhabit damp grassy fields, bogs, and marshes in the mountains and upper Piedmont. The bog turtle is not biologically endangered or threatened and is not subject to Section 7 consultation.

Felis concolor cougar	(Eastern cougar)	E
Family:	Felidae	
Date Listed:	June 4, 1973	

The **Eastern cougar** is a large, unspotted, long-tailed cat. The body and legs are a uniform tawny color. Its belly is pale reddish to reddish white. The inside of the cat's ears are light-colored with blackish color behind the ears. They feed primarily on deer, but their diet may also include small mammals, wild turkeys, and domestic livestock.

No preference for specific habitat has been noted. The primary need is for a large wilderness area with an adequate food supply. Male cougars of other subspecies have been observed to occupy a range of 25 or more square miles (64 square kilometers), and females from 5 to 20 square miles (13 to 52 square kilometers).

BIOLOGICAL CONCLUSION: NO EFFECT

The project vicinity is residentially developed; since the cougar requires a large wilderness area, it is unlikely that this species would be found here. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. It can be concluded that the construction of the proposed project will not impact the Eastern cougar.

Myotis griscens	(Gray bat)	E
Family:	Vespertilionidae	
Date Listed:	April 28, 1976	

The **gray bat** weighs approximately seven to 16 grams. One feature that distinguishes this species from other bats is its uni-colored dorsal fur. Also, the gray bat's wing membrane connects to the foot at the ankle instead of at the base of the first toe, as with other bats. Gray bats are dark gray for a short period after molt in the summer, but their fur usually bleaches to russet between molts.

Gray bat colonies are restricted entirely to caves or cave-like habitats. During summer, the bats are highly selective for caves providing specific temperature and roost conditions. Usually these caves are located within a kilometer of a river or reservoir. They forage primarily over water

along rivers or lake shores where the majority of insects eaten are aquatic species, particularly mayflies. In the winter, they utilize only deep, vertical caves where temperatures average 42 – 52 degrees F.

BIOLOGICAL CONCLUSION: MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT

The study area was evaluated by NCDOT biologists and it was determined that based on field surveys and habitat assessments, this project may affect, but is not likely to adversely affect this species. A February 4, 2005 letter from the USFWS concurring with this biological conclusion is included in the appendix.

Glaucomys sabrinus coloratus	(Carolina northern flying squirrel)	E
Family:	Sciuridae	
Date Listed:	July 1, 1985	

Carolina northern flying squirrels are small nocturnal mammals that are 3 to 5 ounces in weight and 10 to 12 inches (25 to 30 centimeters) in length. They possess a long, broad, flattened tail, prominent eyes, and dense fur. The northern flying squirrels closely resemble southern flying squirrels but are larger and have richer colors. Adults are gray with a brownish, tan, or reddish wash on the back, and grayish white or buffy white undersides. The northern flying squirrel can apparently subsist on lichens and certain fungi, but also eats certain seeds, buds, fruit, staminate cones, insects, and other animal material.

They typically live at elevations above 5,000 feet (1,524 meters) in spruce-fir forests and forests of mixed conifers and hardwoods. They use both areas to search for food, while the hardwood areas are needed for nesting sites. Research suggests that the more aggressive southern flying squirrel has begun to force the northern species out of the hardwood forests, which reduces favorable nesting sites and, therefore, reproduction by the northern flying squirrel.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat is not present in the project area; the project area is located at approximately 2,600 feet (790 meters) above msl, which is well below the elevation for suitable habitat. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. It can be concluded that the construction of the proposed project will not impact the Carolina northern flying squirrel.

Haliaeetus leucocephalus	(Bald eagle)	T (Proposed for de-listing)
Family:	Accipitridae	
Date Listed:	2/14/78	

Adult **bald eagles** have white heads and tails, a brownish body, and yellow bills, eyes and feet.

The juvenile birds have a dark brown body, tail, and head irregularly blotched with white. The overall length of the bald eagle ranges from 34-43 inches (78-109 centimeters), and the wing span averages approximately 21 inches (53 centimeters). Bald eagles usually lay eggs between mid-January and mid-March. The bluish-white eggs are laid, usually two to a clutch and incubation lasts approximately 36 days.

The bald eagle forages along the coast, rivers, and large lakes. Nests are located in the forks of tall trees and are usually remote from human activity. Nesting sites are usually less than 1.0 mile (1.6 kilometers) from feeding areas and are located adjacent to a clear flight path and open view of the surrounding area. The bald eagle typically feeds on fish; however, waterfowl, muskrats, rabbits, and squirrels are not uncommon items of their diet.

BIOLOGICAL CONCLUSION: MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT

The Pigeon River is located approximately 1.5 miles (2.4 kilometers) west of the project area, which could provide foraging habitat for eagles, no nesting trees were observed in the project area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. It can be concluded that the construction of the proposed project may affect, but is not likely to adversely affect the bald eagle. A February 4, 2005 letter from the USFWS concurring with this biological conclusion is included in the appendix.

Alasmidonta raveneliana	(Appalachian elktoe)	E
Family:	Unionidae	
Date Listed:	November 23, 1994	

The **Appalachian elktoe** has a thin, but not fragile, kidney-shaped shell reaching up to 3 inches (7.6 centimeters) in length, 1.5 inches (3.8 centimeters) in height, and 1 inch (2.5 centimeters) in width. Juveniles generally have a yellowish-brown outer shell, while the outer shell of adults is usually dark brown to greenish-black in color. Although rays are prominent on some shells, many individuals have only obscure greenish rays. The shell nacre is shiny, often white to bluish-white, changing to a salmon, pinkish, or brownish color in the central and beak cavity portions of the shell.

The Appalachian elktoe has been reported from relatively shallow, medium-sized creeks and rivers with cool, moderate to fast flowing water. It has also been observed in gravelly substrates often mixed with cobble and boulders, in cracks in bedrock, and occasionally in relatively silt-free, coarse sandy substrates.

BIOLOGICAL CONCLUSION: NO EFFECT

A survey by NCDOT biologists was conducted on November 28, 2001 to evaluate potential habitat for this species. The survey determined that the Appalachian elktoe does not occur in Crabtree Creek. In addition this species appears to have been extirpated from the Pigeon River downstream of the proposed action. Based on these results, it can be concluded that project

construction will not impact this species.

Microhexura montivaga	(Spruce-fir moss spider)	E
Family:	Dipluridae	
Date Listed:	March 8, 1995	

The **Spruce-fir moss spider** measures 0.10 to 0.15 inches (2.5 to 3.8 millimeters). Coloration ranges from light brown to a darker reddish brown, and there are no markings on the abdomen. The carapace is generally yellowish brown. The most reliable field identification characteristics for the spruce-fir moss spider are chelicerae that project forward well beyond the anterior edge of the carapace, a pair of very long posterior spinnerets, and the presence of a second pair of book lungs, which appear as light patches posterior to the genital furrow.

The typical habitat of the spruce-fir moss spider is found in damp but well-drained moss (and liverwort) mats growing on rocks or boulders, in well-shaded situations in the mature, high-elevation Fraser fir (Abies fraseri) and red spruce (Picea rubens) forests. The forest stands at the sites where the species has been observed are composed primarily of Fraser fir with only scattered spruce being present. The moss mats found to contain the spider have all been found under fir trees.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat is not present in the project area; the project area is approximately 2,600 feet (790 meters) above msl, which is located well below the elevation for suitable habitat. In addition, no Fraser Fir or Red Spruce trees were observed in the forest community within the project area. It can be concluded that the construction of the proposed project will not impact the Spruce-fir moss spider.

Gymnoderma lineare	(Rock gnome lichen)	E
Family:	Cladoniaceae	
Date Listed:	January 18, 1995	

Rock gnome lichen is a squamulose lichen in the reindeer moss family. It occurs in dense colonies of narrow straps (squamules) that are blue-grey on the upper surface and generally shiny-white on the lower surface; near the base they grade to black. The squamules are nearly parallel to the rock surface, but the tips curl away from the rock, approaching or reaching a perpendicular orientation to the rock surface. The fruiting bodies (found from July through September) are borne at the tips of the squamules and are black.

Rock gnome lichen occurs only in areas of high humidity, either at high elevations, where it is frequently bathed in fog, or in deep river gorges at lower elevations. It is primarily limited to vertical rock faces where seepage water from forest soils above the cliffs flows at (and only at) very wet times. Most populations occur above an elevation of 5,000 feet (1,500 meters).

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat (vertical rock faces) does not exist in the project study area for this species; the project area is approximately 2,600 feet (790 meters) above msl, which is located well below the elevation for suitable habitat. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. It can be concluded that the construction of the proposed project will not impact the rock gnome lichen.

Isotria medeoloides	(Small whorled pogonia)	T
Family:	Orchidaceae	
Date Listed:	October 6, 1994	

Small whorled pogonia is a perennial with long, pubescent roots and a smooth, hollow stem 4 to 10 inches (10 to 25 centimeters) tall terminating in a whorl of 5 to 6 light green, elliptical leaves that are somewhat pointed and measure up to 3 by 1.5 inches (7.6 by 3.8 centimeters). One flower (occasionally two flowers) is produced at the top of the stem. Flowering occurs from mid-May to mid-June, with the flowers apparently lasting only a few days to a week or so. This plant does not necessarily flower every year. If pollination occurs, a capsule may be formed which can contain several thousand minute seeds. No evidence of insect pollination has been observed. This plant is believed to be self-pollinating by mechanical processes.

Small whorled pogonia is generally found in open, dry, deciduous woods with acidic soil. If it occurs in habitat where there is relatively high shrub coverage or high sapling density, flowering appears to be inhibited.

BIOLOGICAL CONCLUSION: NO EFFECT

Potential habitat does exist in the project study area for this species; the fringe of woods along the creek is semi-open. A survey for small whorled pogonia was conducted on June 6, 2000; no specimens were observed in the project area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. It can be concluded that the construction of the proposed project will not impact small whorled pogonia.

2. Federal Species of Concern

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened of Endangered. Species designated as FSC are defined as taxa which may or may not be listed in the future. These species were formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing.

Some of these species are listed as Endangered, Threatened, or Special Concern by the NCNHP list of Rare Plant and Animal Species and are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979.

Table 4 includes listed FSC species for Haywood County and their state classifications (July 1, 2005).

The NCNHP database shows no recorded occurrences of FSCs within the project area.

TABLE 4
FEDERAL SPECIES OF CONCERN
HAYWOOD COUNTY

Scientific Name (Common Name)	North Carolina Status	Habitat Present
Aegolius acadicus (Southern Appalachian saw-whet owl)	T	No
Buckleya disticophylla (Piratebush)	E	Yes
Cardamine clematitis (Mountain bittercress)	C	Yes
Contopus borealis (Olive-sided flycatcher)	SC	No
Cryptobranchus alleganiensis (Hellbender)	SC	Yes
Delphinium exaltatum (Tall larkspur)	E-SC	No
Dendroica cerulea (Cerulean warbler)	SR	Yes
Euphorbia purpurea (Glade spurge)	SR-T	Yes
Glyceria nubigena (Smoky Mountain manna grass)	T	No
Loxia curvirostra (Southern Appalachian red crossbill)	SC	No
Lysimachia fraseri (Fraser's loosestrife)	E	Yes
Microtus chrotorrhinus carolinensis (Southern rock vole)	SC	No
Neotoma floridana haematoreia (Southern Appalachian woodrat)	SC	Yes
Parus atricapillus practicus (Southern Appalachian black-capped chickadee)	SC	No
Phyciodes batesii maconensis (Tawny crescent butterfly)	SR	Yes
Plagiochila sharpii (A liverwort)	C	No

Scientific Name (Common Name)	North Carolina Status	Habitat Present
Plagiochila sullivantii var. sullivantii (A liverwort)	C	No
Rugelia nudicaulis (Rugel's ragwort)	T	No
Saxifraga caroliniana (Carolina saxifrage)	SR-T	No
Silene ovata (Mountain catchfly)	SR-T	Yes
Sorex palustris puctulatus (Southern water shrew)	SC	Yes
Spenolobopsis pearsonii (A liverwort)	PE	No
Packera millefolium (Divided-leaf Ragwort)	T	No
Parnassia grandiflora (Large-leaved grass of parnassus)	T	No
Pycnanthemum torrei (Torrey-s Mountain-mint)	SR-T	No
Sphyrapicus varius appalaciensis (Southern Appalachian yellow-bellied sapsucker)	SC	No
Thryomanes bewickii altus (Appalachian Bewick's wren)	E	No
Trillium pusillum var. 1 (Alabama least trillium)	E	Yes

NOTES:

- C — Candidate (species for which population monitoring and conservation action is recommended).
- E — Endangered (species which are afforded protection by state laws).
- T — Threatened (species which are afforded protection by state laws).
- SR — Significantly Rare (species for which population monitoring and conservation action is recommended).
- W — Watch list (any other species believed to be rare and of conservation concern in the state but not warranting active monitoring at this time)
- * — Historic record, the species was last observed in the county more than 50 years ago (USFWS)
- ♦ — Listed by the USFWS but not by the NCNHP.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act

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

B. Historic Architecture

A field survey of the Area of Potential Effects (APE) was conducted on January 10, 2000. All structures within the APE were photographed, and later reviewed by the State Historic Preservation Office (HPO). In a concurrence form dated July 18, 2000, the HPO concurred that there are no historic architectural resources either listed in or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated October 29, 2001, recommended that "no archaeological investigation be conducted in connection with this project". 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 considered to be a Federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.

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

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

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

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

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

This project has been coordinated with the United States Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. According to the NRCS, the Preferred Alternative will impact approximately 0.3 acres (0.12 hectares) of locally important farmland. The average farm size in Haywood County is 84 acres (34 hectares). Therefore, no substantial impacts to prime or locally important farmland are anticipated.

This project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required.

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

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

Based on a field reconnaissance and public record review conducted by the NCDOT Geotechnical Unit, no underground storage tanks or hazardous waste sites are known to be present in the study area.

Haywood County is a current participant in the National Flood Insurance Program. The project is not located within the 100-year floodplain. Therefore, no impacts to the floodplain are anticipated.

This project is located within the jurisdiction of the Tennessee Valley Authority (TVA). Therefore, an approval under Section 26a of the TVA Act will be required.

Based on the above statements, it is concluded that no substantial adverse environmental impacts will result from implementation of the project.

VIII. PUBLIC INVOLVEMENT

In addition to a scoping letter sent to agencies and local officials in June of 2000, a newsletter was mailed in March of 2002 to residents in the vicinity of the project. The newsletter described the alternatives and solicited comments from the public. One letter from the public was received. The comments in the letter stated opposition to maintaining traffic during construction with an offsite detour using Messer Road. {*The recommended alternative will utilize the existing bridge to maintain traffic during construction.*}

IX. AGENCY COMMENTS

Agency comments are summarized below. Letters from the commenting agencies are included in the appendix.

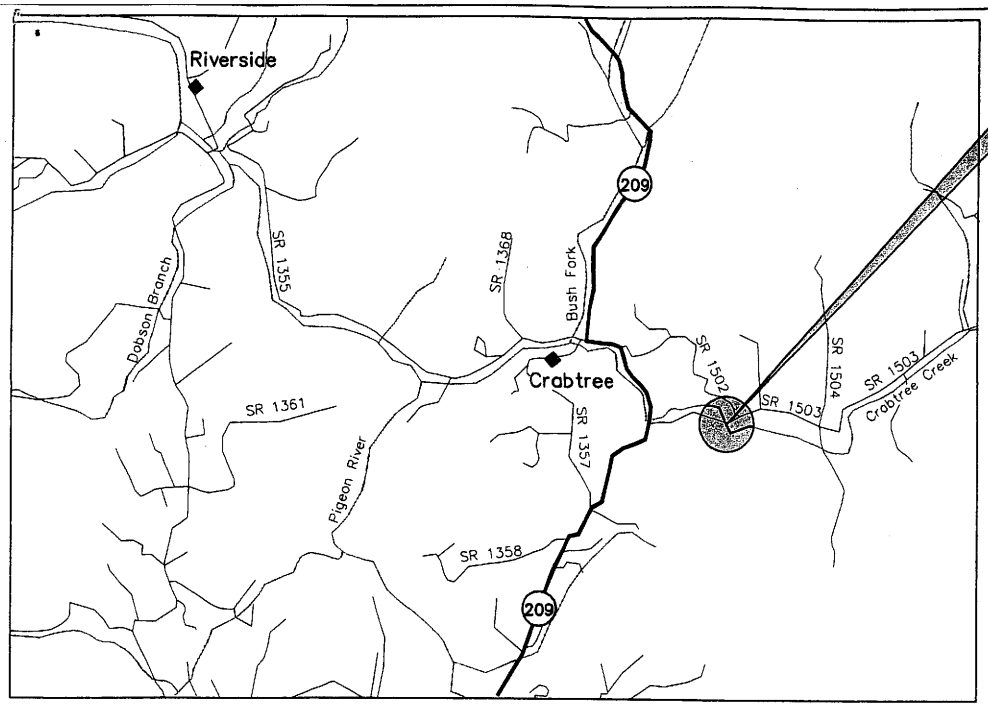
United States Fish and Wildlife Service (USFWS)– USFWS recommends that temporary fill be minimized, that no heavy equipment operates in the stream channel, and removal of woody vegetation along the stream banks be avoided to the extent possible. USFWS also recommends removing any fill in the floodplain associated with the existing structures to restore the natural floodplain elevation and function.

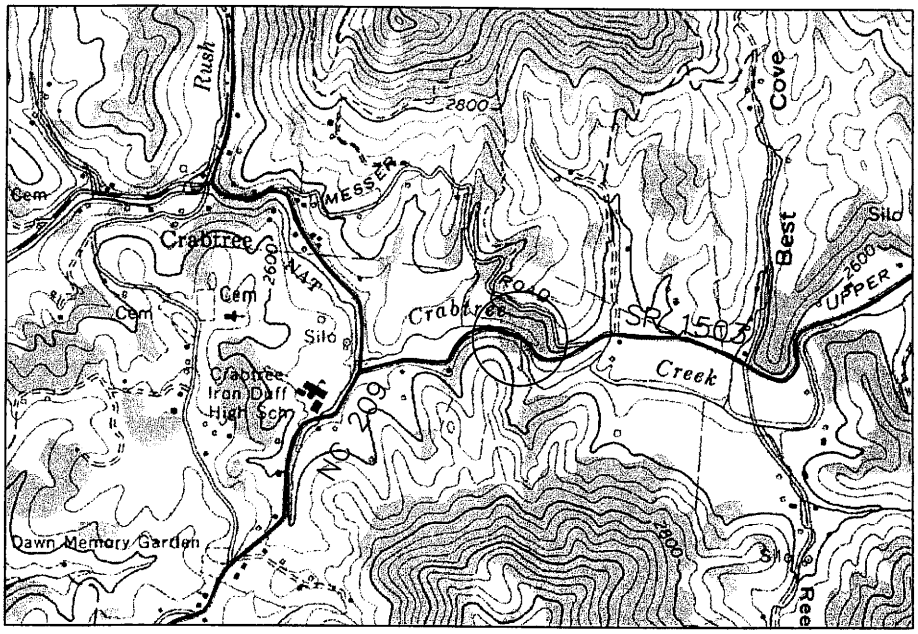
USFWS recommends that the existing structure be replaced with a bridge and the design should include provisions for roadbed and deck drainage to flow through a vegetated buffer. Bridge design should not alter natural stream form or morphology or impede fish passage and piers or bents should be placed outside the bankfull width. Bridge and approaches should be designed to avoid damming the channel or floodplain. USFWS recommends erosion and sedimentation controls to be in place prior to construction. No wet concrete should come into contact with the stream.

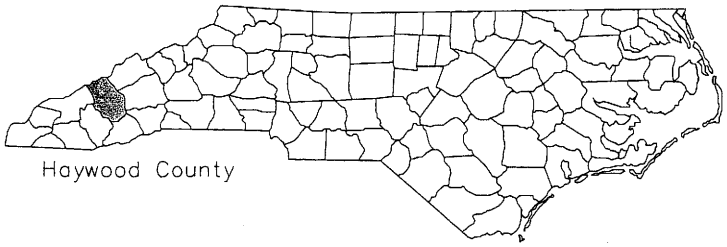
> ***Response***: In order to minimize construction impacts, the construction will be conducted in accordance with "Best Management Practices for the Protection of Surface Waters" and "Pre-Construction Guidelines for Bridge Demolition and Removal.

North Carolina Wildlife Resources Commission (WRC) – WRC stated that this section of Crabtree Creek is not considered trout waters. Therefore, it is not anticipated that a moratorium would be required.

> ***Response***: None required.







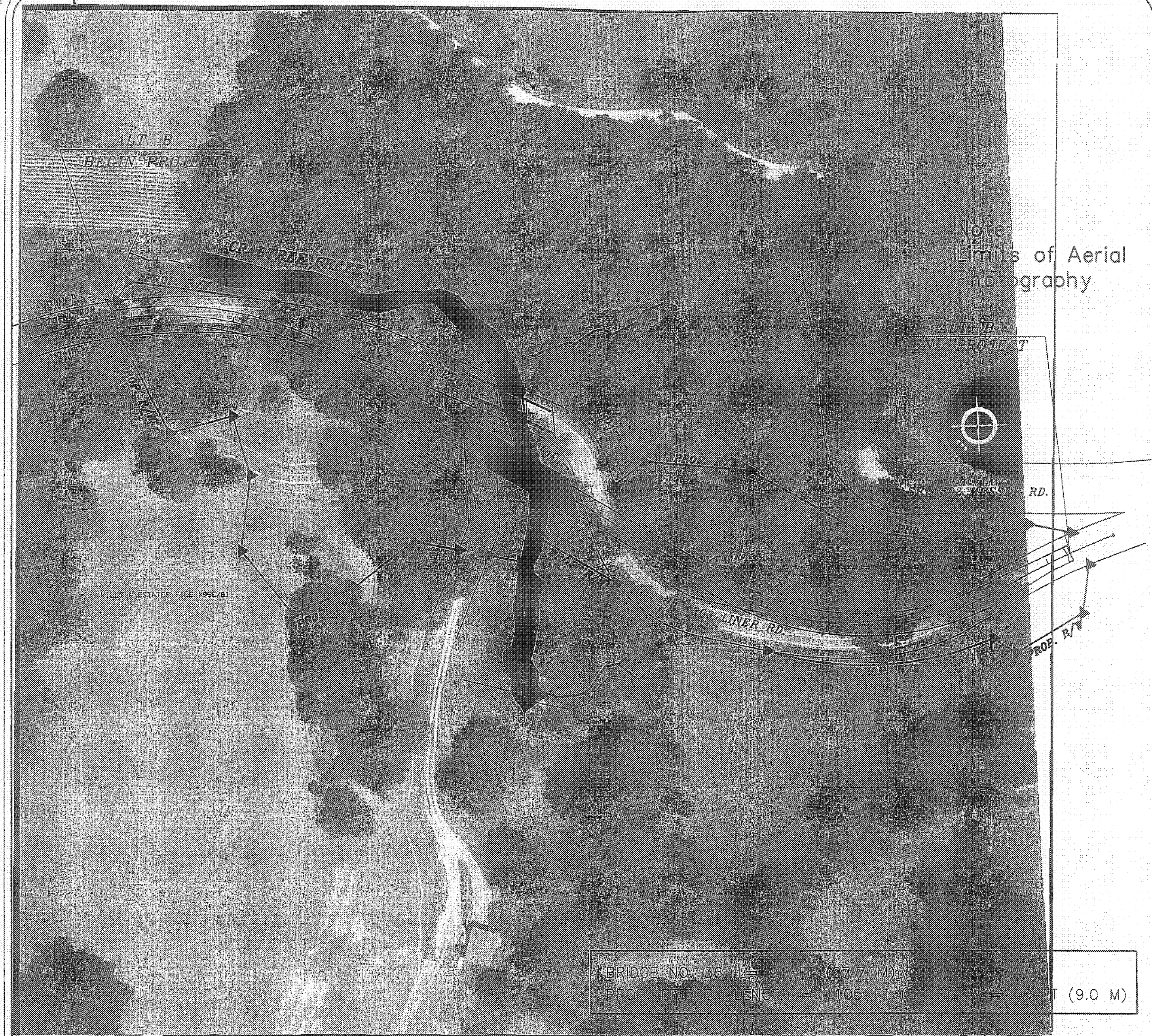
North Carolina
Department of Transportation

SR 1503
Replace Bridge No. 36
over Crabtree Creek
Haywood County, North Carolina

B-3661
Project Vicinity

Not to Scale

Exhibit 1



Legend

Proposed Roadway Improvements

Proposed Bridges

Crabtree Creek

Note:
Area shown is not within limits of 100 Year Floodplain per the National Flood Insurance Program, Flood Insurance Rate Map (FIRM) Community–Panel Number 370120 0095 B dated July 15, 1984

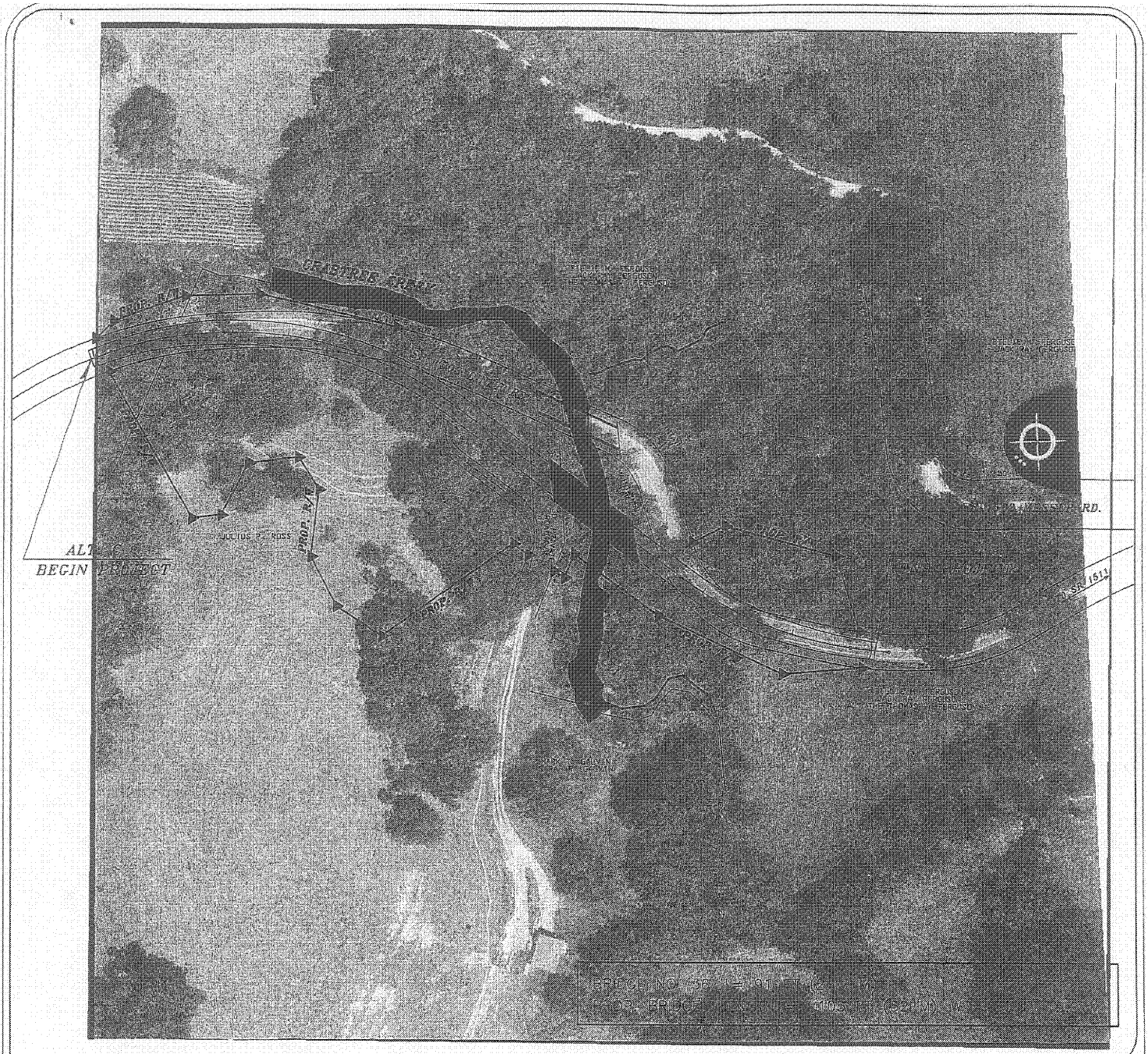
North Carolina
Department of Transportation

SR 1503
Replace Bridge No. 36
over Crabtree Creek
Haywood County, North Carolina

B-3661
Alternative B

Not to Scale

Exhibit 2



Legend

Proposed Roadway Improvements

Proposed Bridges

Crabtree Creek

Note:
Area shown is not within limits of 100 Year Floodplain per the National Flood Insurance Program, Flood Insurance Rate Map (FIRM) Community–Panel Number 370120 0095 B dated July 15, 1984

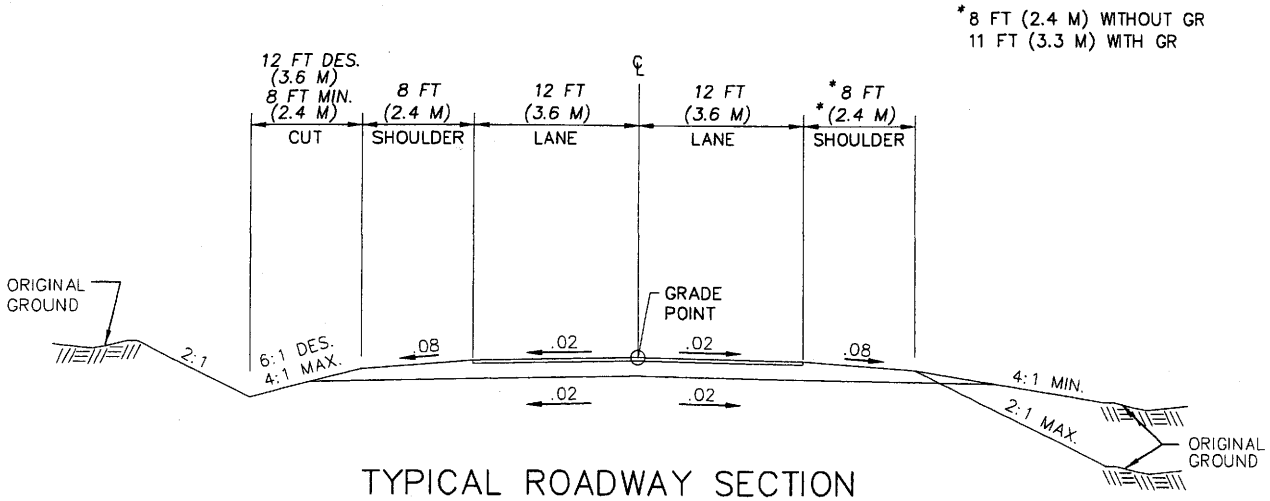
North Carolina
Department of Transportation

SR 1503
Replace Bridge No. 36 over Crabtree Creek
Haywood County, North Carolina

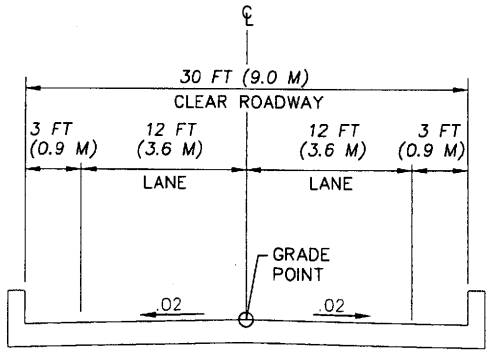
B-3661
Alternative C (Preferred)

Not to Scale

Exhibit 3



TYPICAL ROADWAY SECTION



TYPICAL BRIDGE SECTION

Design Data

ADT 2005	1400	LOS A
ADT 2007	1500	LOS A
ADT 2030	2300	LOS B
DUAL		3%
TTST		1%
DESIGN SPEED		35 mph (60 km/h)
POSTED SPEED		35 mph (60 km/h)
FUNCTIONAL CLASSIFICATION		Rural Minor Collector
MIN RADIUS (Se = .08)		350 (125)
MAX GRADE		10%
MIN DES. K FACTORS	SAG	49 (18)
	CREST	29 (11)

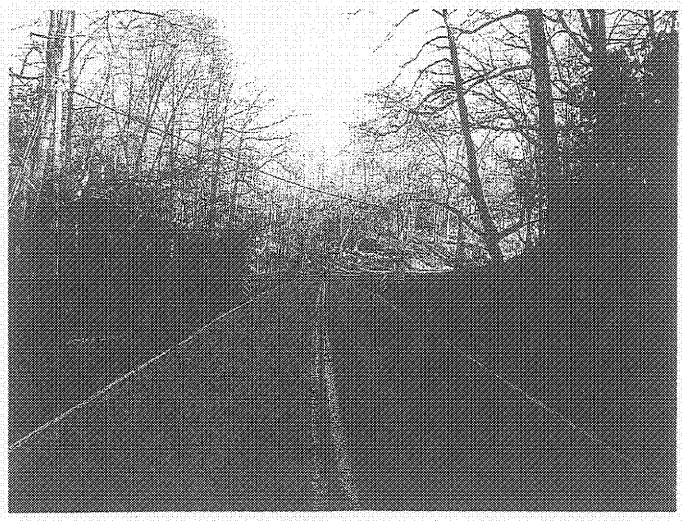
North Carolina Department of Transportation

SR 1503
Replace Bridge No. 36 over Crabtree Creek
Haywood County, North Carolina

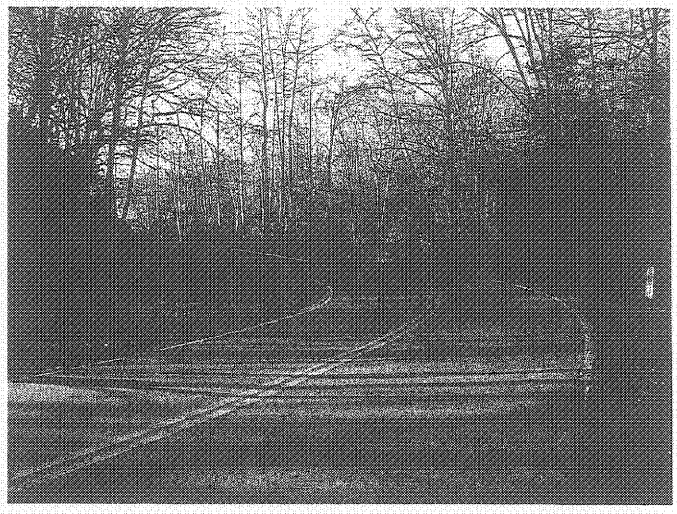
B-3661
Typical Sections

Not to Scale

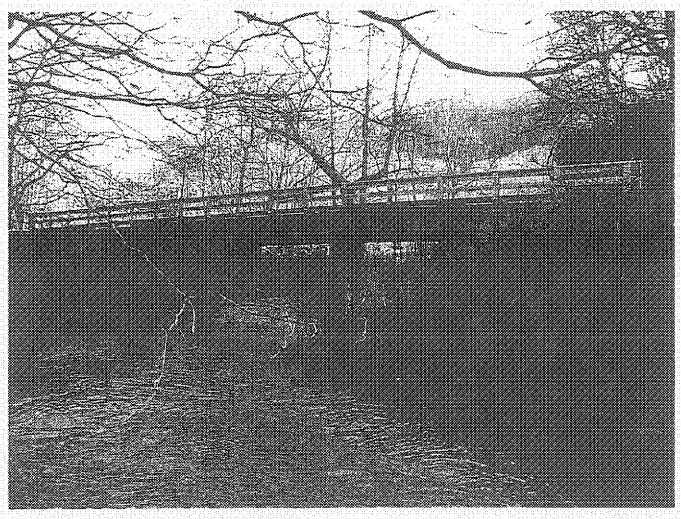
Exhibit 4



Eastbound Approach



Westbound Approach



Looking Upstream

North Carolina
Department of Transportation

SR 1503
Replace Bridge No. 36
over Crabtree Creek
Haywood County, North Carolina

B-3661

Photos

Not to Scale

Exhibit 5

APPENDIX

United States Department of the Interior

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

August 9, 2000

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:

According to your letter of June 7, 2000, the North Carolina Department of Transportation is proposing 12 bridge replacement projects in Buncombe, Burke, Haywood, Jackson, and Madison Counties, North Carolina. These are Group XXXII Bridge Replacement Projects, listed as follows:

Buncombe County
1. B-3614, Replace Bridge No. 300 on SR 1141 over Hominy Creek
2. B-3616, Replace Bridge No. 740 on SR 1319 over Mill Creek
3. B-3619, Replace Bridge No. 56 on SR 3439 over Bill Moore Creek

Burke County
1. B-3620, Replace Bridge No. 292 on SR 1001 over the Henry Fork River
2. B-3621, Replace Bridge No. 148 on SR 1547 over Micol Creek
3. B-3622, Replace Bridge No. 334 on SR 1900 over an unnamed creek

Haywood County
1. B-3470, Replace Bridge No. 163 on US 276 over the Pigeon River Overflow
2. B-3656, Replace Bridge No. 419 on US 19-23 over the Pigeon River
3. B-3659, Replace Bridge No. 112 on SR 1147 over Allens Creek
4. B-3661, Replace Bridge No. 36 on SR 1503 over Crabtree Creek

Jackson County
1. B-3667, Replace Bridge No. 47 on SR 1131 over Trout Creek

Madison County
1. B-3869, Replace Bridge No. 146 on SR 1151 over Big Pine Creek

As requested, we have reviewed the proposed projects and are providing the following comments in accordance with the provisions of Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e). The legal responsibilities of a Federal agency or its designated non-Federal representative under Section 7 of the Act are on file with the Federal Highway Administration. In addition to general comments applicable to all of the projects, specific concerns for listed species are provided with the individual bridge description.

Enclosed is a list of species from Buncombe, Burke, Haywood, Jackson, and Madison Counties that are on the Federal List of Endangered and Threatened Wildlife and Plants, as well as species of Federal concern. Although our records indicate no known locations of these species in the project areas for Buncombe County projects B-3614, B-3616, and B-3619; Haywood County projects B-3659 and B-3661; Jackson County project B-3667; and Madison County project B-386, we recommend surveying each of the project areas for these species prior to any further planning or on-the-ground activities to ensure no adverse impacts occur to these species.

Our records for Burke County indicate there is a known location of the federally threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) near projects B-3620 and B-3621. If this species occurs in the area of either of these projects, additional consultation will be required. Additionally, there is a record for a species of Federal concern--sweet pinesap (*Monotropis odorata*)--from a site near project B-3622. The project areas for these bridges should be surveyed for these species to ensure they are protected from impacts.

Our records for Haywood County indicate that there are known locations for the federally endangered Appalachian elktoe mussel (*Alasmidonta raveneliana*) near projects B-3470 and B-3656. The effects to the Appalachian elktoe must be assessed prior to implementation of these projects.

Species of Federal concern are not legally protected under the Act and are not subject to any of its provisions, including Section 7, unless they are formally proposed or listed as endangered or threatened. We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of these projects.

The information that accompanied your letter concerning these projects related only to the removal of the existing bridges. According to this information, there will be temporary fill associated with several of the projects. We recommend that this fill be minimized, to the extent possible, and that no heavy equipment be operated in the stream channel. To maintain bank stability, any cutting or removal of woody vegetation along the stream banks should be avoided to the maximum extent possible. We also recommend removing any fill in the flood plain associated with the existing structures in order to restore the natural elevation of the flood plain and its function. This will minimize the potential for stream-bank and channel scouring that may

occur during storm flows as a result of any constriction of the flood plain or stream channel associated with the existing structures.

As stated above, the information you provided addressed only the removal of the existing bridges; no information was provided concerning the types of structures that will replace the existing bridges or what measures will be implemented to minimize the potential effects associated with the new structures and their construction. We recommend that the existing structures be replaced with bridges and that each new bridge design include provisions for the roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from the run-off of storm water and pollutants. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. Any piers or bents should be placed outside the bank-full width of the streams. The bridges and approaches should be designed to avoid any fill that will result in the damming or constriction of the channel or flood plain. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approaches in order to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected areas. We recommend that erosion- and sedimentation-control measures be in place prior to any ground-disturbing activities. Wet concrete should never be allowed to come into contact with the stream.

We appreciate the opportunity to provide these comments. If you have any questions or concerns, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. Please reference our Log Number 4-2-00-280 in any future correspondence concerning these projects.

Sincerely,

Brian P. Cole
State Supervisor

Enclosure

cc:
Mr. Mark Davis, Environmental Compliance Officer, North Carolina Department of Transportation, P.O. Box 37, Sylva, NC 28779
Mr. Steve Lund, U.S. Army Corps of Engineers, Asheville Regulatory Field Office, 151 Patton Avenue, Room 143, Asheville, NC 28801-5006
Mr. Tim Savidge, Environmental Biologist, Project Development and Environmental Analysis Branch, North Carolina Department of Transportation, 1548 Mail Service Center, Raleigh, NC 27699-1548
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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801
February 4, 2005

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: Endangered Species Concurrence for the Proposed Replacement of Bridge No. 36 over Crabtree Creek in Haywood County, North Carolina (TIP No. B-3661)

As requested by the North Carolina Department of Transportation, we have reviewed the natural resources information and biological conclusions for federally protected species for the subject project. We provide the following comments in accordance with the provisions of section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

Given the information provided, including habitat assessments and field surveys, we concur with your conclusion of "not likely to adversely affect" for the bald eagle (*Haliaeetus leucocephalus*) and the gray bat (*Myotis grisescens*) for the subject project. We believe the requirements under section 7(c) of the Act are fulfilled regarding listed species for the subject project. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

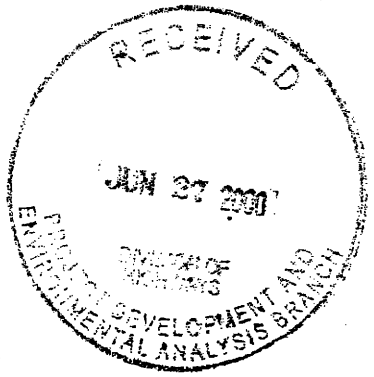
If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log No. 4-2-00-280.

Sincerely,

Brian P. Cole
Field Supervisor

cc:
Mr. Michael Turchy, Environmental Specialist, North Carolina Department of Transportation, 1598 Mail Service Center, Raleigh, NC 27699-1598

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



June 19, 2000

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:

GROUP XXXII BRIDGE REPLACEMENT PROJECTS, FRENCH BROAD AND LITTLE TENNESSEE RIVER WATERSHEDS, BUNCOMBE, HAYWOOD, AND JACKSON COUNTIES, NORTH CAROLINA

Your letter of June 7, 2000 to John Shipp has been referred to me for a reply. TVA has reviewed the project descriptions and maps for the following proposed bridge replacements in western North Carolina:

- B-3614, SR 1141 over Hominy Creek, Buncombe County
- B-3616, SR 1319 over Mill Creek, Buncombe County
- B-3619, SR 3439 over Bill Moore Creek, Buncombe County
- B-3470, US 276 over Bird Creek/Pigeon River overflow, Haywood County
- B-3656, US 19-23 (Park Street) over Pigeon River, Haywood County
- B-3659, SR 1147 over Allen Creek, Haywood County
- B-3661, SR 1503 over Crabtree Creek, Haywood County
- B-3667, SR 1131 over Trout Creek, Jackson County
- B-3869, SR 1151 over Big Pine Creek, Madison County

The federal categorical exclusion documents prepared for these projects should note that an approval under Section 26a of the TVA Act would be required for each of the bridge replacements. At this time, we are not aware of any unusual environmental concerns present at the bridge replacement sites.

When completed, TVA wishes to receive a copy of the federal categorical exclusion documents to assist in its environmental review of the same actions. Inclusion of information related to wetlands and potential mitigation, Floodplain Management Executive Order, National Historic Preservation Act compliance, and Endangered Species Act compliance would greatly facilitate TVA's eventual approval of the projects. Other issues to be discussed would vary according to project location and impacts but may include, as appropriate, state-listed species (biodiversity impacts) and visual impacts.

Should you have any questions, please contact Harold M. Draper at (865) 632-6889 or hmdraper@tva.gov.

Sincerely,

Jon M. Loney, Manager
NEPA Administration
Environmental Policy and Planning

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

Copy - Clem Carter 9/25/2001

DATE: August 21, 2000

SUBJECT: Scoping for Group XXXII Bridge Replacement Projects in Buncombe, Haywood, Jackson, Madison and Bladen/Sampson Counties

This memorandum responds to your request for our concerns regarding impacts on fish and wildlife resources resulting from the subject projects. We apologize for the delay in our response but a staff shortage has put us behind in our reviews. 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 and one project in Bladen/Sampson Counties. Construction impacts on wildlife and fisheries resources will depend on the extent of disturbance in the streambed and surrounding floodplain areas. We prefer bridge designs that do not alter the natural stream morphology or impede fish passage. Bridge designs should also include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the subject surface waters. We are also concerned about impacts to designated Public Mountain Trout Waters (PMTW) and 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-3615 - Bladen/Sampson County Bridge No. 44 on NC 41 over the South River

There is a record of the broad-tailed madtom near the bridge. Additionally, there appear to be significant wetlands associated with this area. This reach is also considered anadromous fish spawning area An in-water work moratorium is requested between February 1-July 1 to minimize impacts to anadromous fish and other spawning fish. We prefer that debris not be discharged to the river during demolition activities to prevent obstructions to navigation and impacts to potential habitat for the broad-tailed madtom.

B-3614 – Buncombe County, Bridge No. 300 on SR 1141 over Hominy Creek

Hominy Creek is considered a spawning stream for trout. We request an instream construction moratorium between November 1-April 15 to minimize impacts to spawning trout.

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

B-3616 – **Buncombe County, Bridge No 740 on SR 1319 over Mill Creek**

This creek is not considered to be trout waters. We have no concerns other than minimization of impacts to water quality and habitat.

B-3619 – **Buncombe County, Bridge No. 10056 on SR 3449 over Bill Moore Creek**

This stream reach is used by trout for spawning. Baldwin Field Branch, which drains off of nearby National Forest Land, is a designated trout stream. The confluence of this stream is in close proximity of the bridge structure. We would prefer the existing bridge be replaced with a spanning structure due to the importance of this area for trout movement. We request an instream construction moratorium between November 1 and April 15 to minimize impacts to trout reproduction.

B-3470 - **Haywood County, Bridge No 163 on US 276 over Pigeon River Overflow**

This reach of the Pigeon River supports trout. We request a moratorium on in-water construction between November 1 and April 15. Additionally, there are records for the Appalachian Elktoe upstream of this site. If suitable habitat exists, the animal may be found downstream of this project. Therefore, we request that you consult with the US Fish and Wildlife on this project concerning impacts to this species.

B-3656 - **Haywood County Bridge No. 419 on US 19-23 over the Pigeon River**

The reach of the Pigeon does not support trout. We do not anticipate a moratorium would be required.

B-3659 – **Haywood County, Bridge No. 112 on SR 1147 over Allens Creek**

Allens Creek is considered trout waters. We prefer that the old bridge be replaced with a spanning structure. We request a moratorium between November 1 and April 15 to minimize impacts to trout reproduction.

B-3661 - **Haywood County, Bridge No. 36 on SR 1503 over Crabtree Creek**

This section of Crabtree Creek is not considered trout waters. We do not anticipate a moratorium would be required.

B-3667 – **Jackson County, Bridge No. 47 on SR 1131 over Trout Creek**

Trout creek is considered trout waters. We request a moratorium on in-water construction between November 1 and April 15.

B-3869 - **Madison County, Bridge No. 146 on SR 1151 over Big Pine Creek**

Big Pine in this reach is not known to support trout. We do not anticipate a moratorium would be required.

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, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

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

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

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

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

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

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

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

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

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

cc: Mr. Steven Lund, NCDOT Coordinator, COE, Asheville
Ms. Stacy Harris, P.E., PD & EA Branch, NCDOT, Raleigh
Mr. Mark Cantrell, Biologist, USFWS Asheville
Mr. David Timpy, NCDOT Coordinator, COE Wilmington

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

October 29, 2001

MEMORANDUM

NOV 1 2001

TO: William D. Gilmore, Manager
Project Development and Environmental Analysis Branch
NCDOT, Division of Highways

From: David Brook for David Brook

Re: Replace Bridge No. 112, SR 1147 over Allens Creek, B-3659, Haywood County, ER 00-10125
Replace Bridge No. 36, SR 1503 over Crabtree Creek, B-3661, Haywood County, ER 00-10126

Thank you for your letter of September 10, 2001, concerning the above project.

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

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

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

DB:kgc

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St. Raleigh. NC	4617 Mail Service Center. Raleigh 27699-4617	(919) 733-4763 •733-8653
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

Federal Aid #BRZ-1503(4) *TIP* #B-3661 *County*: Haywood

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

Project Description: Replace Bridge No. 36 on SR 1503 over Crabtree Creek

On July 7, 2000, representatives of the

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

Reviewed the subject project at

- [ ] a scoping meeting
- [x] photograph review session/consultation
- [ ] other

All parties present agreed

- [x] there are no properties over fifty years old within the project's area of potential effect.
- [x] 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.
- [ ] 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.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope Furr — 7-7-00
Representative, NCDOT — Date

Michael O Dea — 7/12/00
FHWA, for the Division Administrator, or other Federal Agency — Date

Jeff Montgomery — 7/7/00
Representative, SHPO — Date

David Brook, Deputy — 7/18/00
State Historic Preservation Officer — Date

If a survey report is prepared, a final copy of this form and the attached list will be included.