

**Granville County
Bridge No. 178 on SR 1304 (Sunset Road)
over Fox Creek
Federal Aid Project No. BRZ-1304 (10)
W.B.S. No. 42332.1.1
S.T.I.P. No. B-5157**

CATEGORICAL EXCLUSION

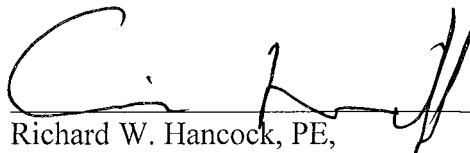
UNITED STATES DEPARTMENT OF TRANSPORTATION

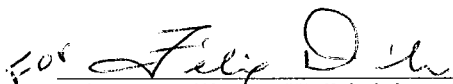
FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

1-20-15
DATE
FOR 
Richard W. Hancock, PE,
Manager, Project Development & Environmental Analysis Unit


1/26/15
DATE
FOR 
John F. Sullivan, III, Division Administrator
Federal Highway Administration

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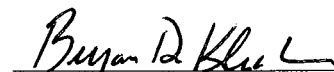
Documentation Prepared in
Project Development and Environmental Analysis Unit By:

1/20/2015
DATE

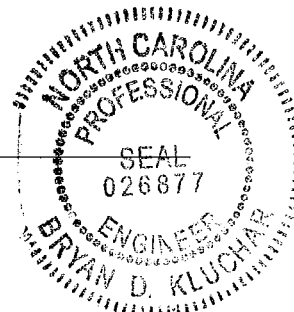


Tracy A. Walter
Support Section Engineer

1-20-2015
DATE



Brian D. Kluchar, PE
Project Engineer



PROJECT COMMITMENTS:

**Granville County
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Division Five Construction, Resident Engineer's Office – Offsite Detour

In order to have time to adequately reroute school busses, Granville County Schools will be contacted at least one month prior to road closure.

Granville County Emergency Services will be contacted at least one month prior to road closure to make the necessary temporary reassignments to primary response units.

Hydraulic Unit – FEMA Coordination

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

Division Construction-FEMA

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Roadside Environmental - Mussels

Due to the possible presence of a federally endangered species, NCDOT will implement erosion and sedimentation control measures, as specified by NCDOT's "Design Standards in Sensitive Watersheds" (15A NCAC 04B.0124).

Hydraulic Unit, Natural Environment Section –Buffer Rules

The Tar-Pamlico River Basin Rule applies to this project.

Granville County
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over Fox Creek
Federal Aid Project No. BRZ-1304 (10)
W.B.S. No. 42322.1.1
S.T.I.P. No. B-5157

INTRODUCTION: Bridge No. 178 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal “Categorical Exclusion”.

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Management Unit records indicate Bridge No. 178 has a sufficiency rating of 20.98 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to substructure condition appraisal of 3 out of 9 according to Federal Highway Administration (FHWA) standards. The bridge also meets the criteria for functionally obsolete due to structural evaluation as well as deck geometry appraisal of 3 out of 9.

The superstructure and substructure of Bridge No. 178 have timber elements that are sixty-one years old. Timber components have a typical life expectancy between 40 to 50 years due to the natural deterioration rate of wood. Rehabilitation of a timber structure is generally practical only when a few elements are damaged or prematurely deteriorated. However, past a certain degree of deterioration, most timber elements become impractical to maintain and, upon eligibility, are programmed for replacement. Timber components of Bridge No. 178 are experiencing an increasing degree of deterioration that can no longer be addressed by reasonable maintenance activities; therefore, the bridge has reached the end of its useful life.

II. EXISTING CONDITIONS

The project is located outside the town limits of Berea in Granville County (see Figure 1). Development in the area is residential in nature.

SR 1304 is classified as a rural local route in the Statewide Functional Classification System and it is not a National Highway System Route.

In the vicinity of the bridge, SR 1304 has a 18-foot pavement width with 1-foot grass shoulders (see Figures 3). The roadway grade is in a sag vertical curve through the project area. The existing bridge is on a tangent. The roadway is situated approximately 12.0 feet above the creek bed.

Bridge No. 178 is a three-span structure that consists of timber floor on I-beams with an asphalt-wearing surface. The end bents and interior bents consist of timber caps on timber piles. The existing bridge (see Figure 3) was constructed in 1953. The overall length of the

structure is 72 feet. The clear roadway width is 18.0 feet. The posted weight limit on this bridge is 11 tons for single vehicles and 11 tons for TTST's.

There are no utilities attached to the existing structure.

The current traffic volume of 225 vehicles per day (VPD) is expected to increase to 305 VPD by the year 2035. The projected volume includes two percent truck-tractor semi-trailer (TTST) and one percent dual-tired vehicles (DT). The road is currently not posted for speed limitations in the project area.

Traffic Engineering has evaluated a recent ten year period and found five accidents occurring in the vicinity of the project. One accident was not related to the bridge, however, four could possibly be contributed to the narrowness of the structure as well as other environmental issues (darkness and snowy conditions).

This portion of SR 1304 is not a part of a designated bicycle route nor is it listed in the Transportation Improvement Program (TIP) as a bicycle project. Neither permanent nor temporary bicycle nor pedestrian accommodations are required for this project.

III. ALTERNATIVES

A. Preferred Alternative

Bridge No. 178 will be replaced on the existing alignment while traffic is maintained utilizing an offsite detour (see Figure 1).

The permanent replacement structure will be a bridge approximately 100 feet long providing a minimum 27.8333 feet clear deck width. The bridge will include two 10-foot lanes and 3.9167-foot offsets. The bridge length is based on preliminary design information and is set by hydraulic requirements. The roadway grade of the new structure will be approximately seven feet above the existing structure.

The approach roadway will extend approximately 420 feet from the west end of the new bridge and 400 feet from the east end of the new bridge. The approaches will be widened to include a 20-foot pavement width providing two 10-foot lanes. Four-foot grass shoulders will be provided on each side (7-foot shoulders where guardrail is included). The roadway will be designed as a Rural Local Route using Sub-Regional Tier Guidelines with a 35 mile per hour design speed.

NCDOT Division 5 concurs that this is the preferred alternative.

NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The offsite detour for this project would include SR 1309 and SR 1150. The majority of traffic on the road is through traffic. The detour for

the average road user would result in three minutes additional travel time (2.9 miles additional travel). Up to six-month duration of construction is expected on this project.

Based on the Guidelines, the criteria above indicate that on the basis of delay alone the detour is acceptable. NCDOT Division 5 has indicated the condition of all roads, bridges and intersections on the offsite detour are acceptable without improvement and concur with the use of the detour.

B. Alternatives Eliminated From Further Consideration

The “do-nothing” alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 1304.

“Rehabilitation” of the timber structure is not practical since replacement of age and deteriorated timber elements would result in a complete structure replacement.

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

New alignment was not considered given the alignment of SR 1304 is acceptable.

IV. ESTIMATED COSTS

The estimated costs, based on 2014 prices, are as follows:

	Alternative 1 Preferred
Structure	\$ 303,000
Roadway Approaches	\$ 150,000
Detour Structure and Approaches	- 0 -
Structure Removal	\$ 22,000
Misc. & Mob.	\$ 121,000
Eng. & Contingencies	\$ 104,000
Total Construction Cost	\$ 800,000
Right-of-way Costs	\$ 13,000
Utility Costs	\$ 8,000
Total Project Cost	\$ 821,000

V. NATURAL ENVIRONMENT

Physical Characteristics

The study area lies in the piedmont physiographic region of North Carolina. Topography in the project vicinity is comprised of gently rolling hills with narrow, level floodplains along streams. Elevations in the study area range from approximately 450 to 500 feet above sea level. Land use in the project vicinity consists primarily of agriculture, interspersed with residential development along roadways and forestland along stream corridors.

Water Resources

Water resources in the study area are part of the Tar-Pamlico river basin (US Geological Survey [USGS] Hydrologic Unit 03020101). Two streams were identified in the study area: Fox Creek (NCDWR Index Number 28-4-1; Best Usage Classification (BUC) WS-IV, NSW), and an unnamed tributary to Fox Creek (NCDWR Index Number 28-4-1; BUC WS-IV, NSW).

There are no designated anadromous fish waters, trout waters or Primary Nursery Areas present in the study area. There are no designated High Quality Waters (HQW), water supply watersheds (WS-I or WS-II), or Outstanding Resource Waters (ORW) within 1.0 mile downstream of the study area. Neither Fox Creek nor any streams within 1.0 mile downstream of the study area are listed on the North Carolina 2012 303(d) list of impaired waters.

Biotic Resources

Three terrestrial communities were identified in the study area: maintained/disturbed, mesic mixed hardwood forest and piedmont/mountain bottomland forest.

Surface Waters and Wetlands

Two jurisdictional streams were identified in the study area. All jurisdictional streams in the study area have been designated as warm water streams for the purposes of stream mitigation.

No jurisdictional wetlands were identified with the study area.

Permits

In accordance with provisions of Section 404 of the Clean Water Act (33 USC 1344) a section 404 Nationwide Permit (NWP) 23 from the USACE is likely to be applicable for all impacts to Waters of the United States resulting from this project. A NWP 33 may be required for this project. A North Carolina Division of Water Resources (NCDWR) Section 401 Water Quality General Certification is required prior to the issuance of the Section 404 NWP 23 and/or NWP 33.

Federally Protected Species

Plants and animals with a federal classification of Endangered or Threatened are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973. The United States Fish and Wildlife Service (USFWS) lists three species under federal protection for Granville County as of October 15, 2014:

Dwarf Wedgemussel

May Affect: Not Likely to Adversely Affect

A survey for the dwarf Wedgemussel (DWM) was conducted in the project area on July 22, 2010. No DWM specimens were encountered during this survey; however, in 2005 the DWM was encountered at the bridge site. Fox Creek was subject to a long period of dry conditions during the drought of 2007, which is presumed to be responsible for the reduction of mussel species in the area.

Smooth Coneflower

No Effect

A survey was conducted on August 4, 2009. Habitat is present within the study area along the edges of the fields and parts of the roadside areas. Most of the roadside areas are mowed right up to the more densely vegetated tree line. No specimens of smooth coneflower were found during the 1.5 man-hour survey. A review of the NCNHP records, updated July 15, 2014 indicates no known occurrences within 1.0 mile of the study area.

Harperella

No Effect

A survey was conducted on August 4, 2009. Habitat was present in rocky areas near the bridge and 100 feet upstream. No individuals of this species were found during a 1.0 man-hour survey. A review of NCNHP records, updated July 15, 2014 indicates no known occurrences within 1.0 mile of the study area.

Bald and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominate trees are utilized for nesting sites, typically within 1.0 mile of open water. No suitable foraging habitat was found within 1.0 mile of the 660 foot radius of the study area during a desktop evaluation; therefore no surveys were conducted. The study area also does not contain any foraging or nesting habitat. This project will not effect the bald eagle.

VI. HUMAN ENVIRONMENT

Section 106 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 Title 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 afford the Advisory Council a reasonable opportunity to comment on such undertakings.

Historic Architecture

In a memo dated June 5, 2009, the N.C. Historic Preservation Office (HPO) indicated no surveys for historic properties are required (see attached).

Archaeology

In a memo dated June 5, 2009, the N.C. Historic Preservation Office (HPO) indicated no surveys for archaeology is required (see attached).

Community Impacts

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 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.

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. All construction will take place along existing alignment. There are soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will involve the direct conversion of farmland acreage within these classifications. A preliminary screening with the AD 1006 form resulted in a score of 52 points out of 160. A preliminary score of less than 60 cannot result in a notable impact on protected farmland soils.

The project will not have a disproportionately high and adverse human health and environmental effect on any minority or low-income population.

Noise & Air Quality

This project is an air quality neutral project in accordance with 40 CFR 93.126. It is not required to be included in the regional emissions analysis (if applicable) and project level CO or PM2.5 analyses are not required. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. Therefore, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs. Any burning of vegetation shall be performed in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality compliance with 15 NCAC 2D.0520.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours. The transmission loss characteristics of

nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

This project has been determined to be a Type III Noise Project and therefore, no traffic noise analysis is required to meet the requirements of 23 CFR 772.

VII. GENERAL ENVIRONMENTAL EFFECTS

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

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 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.

An examination of local, state, and federal regulatory records by the GeoEnvironmental Section revealed no sites with a Recognized Environmental Concern (REC) within the project limits. RECs are most commonly underground storage tanks, dry cleaning solvents, landfills and hazardous waste disposal areas.

Granville County is a participant in the National Flood Insurance Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in an impact area of about the same magnitude. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

The Federal Highways Administration has determined that a U.S. Coast Guard Permit is not required for this project.

VIII. COORDINATION & AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: U.S. Army Corps of Engineers, NC Department of Environment & Natural Resources, U.S. Fish & Wildlife Service, N.C Wildlife Resource Commission, N.C. Division of Parks & Recreation, North Carolina State Historic Preservation Office, and Granville County Planning Department.

The **N.C. Wildlife Resource Commission** and **U.S. Fish & Wildlife Service** in standardized letters provided a request that they prefer any replacement structure to be a spanning structure.

Response: NCDOT will be replacing the existing structure with a new bridge.

The **N.C. Division of Water Resources and the Army Corps of Engineers** had no special concerns for this project.

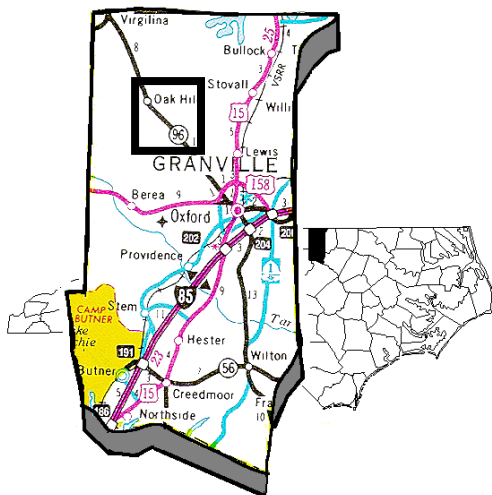
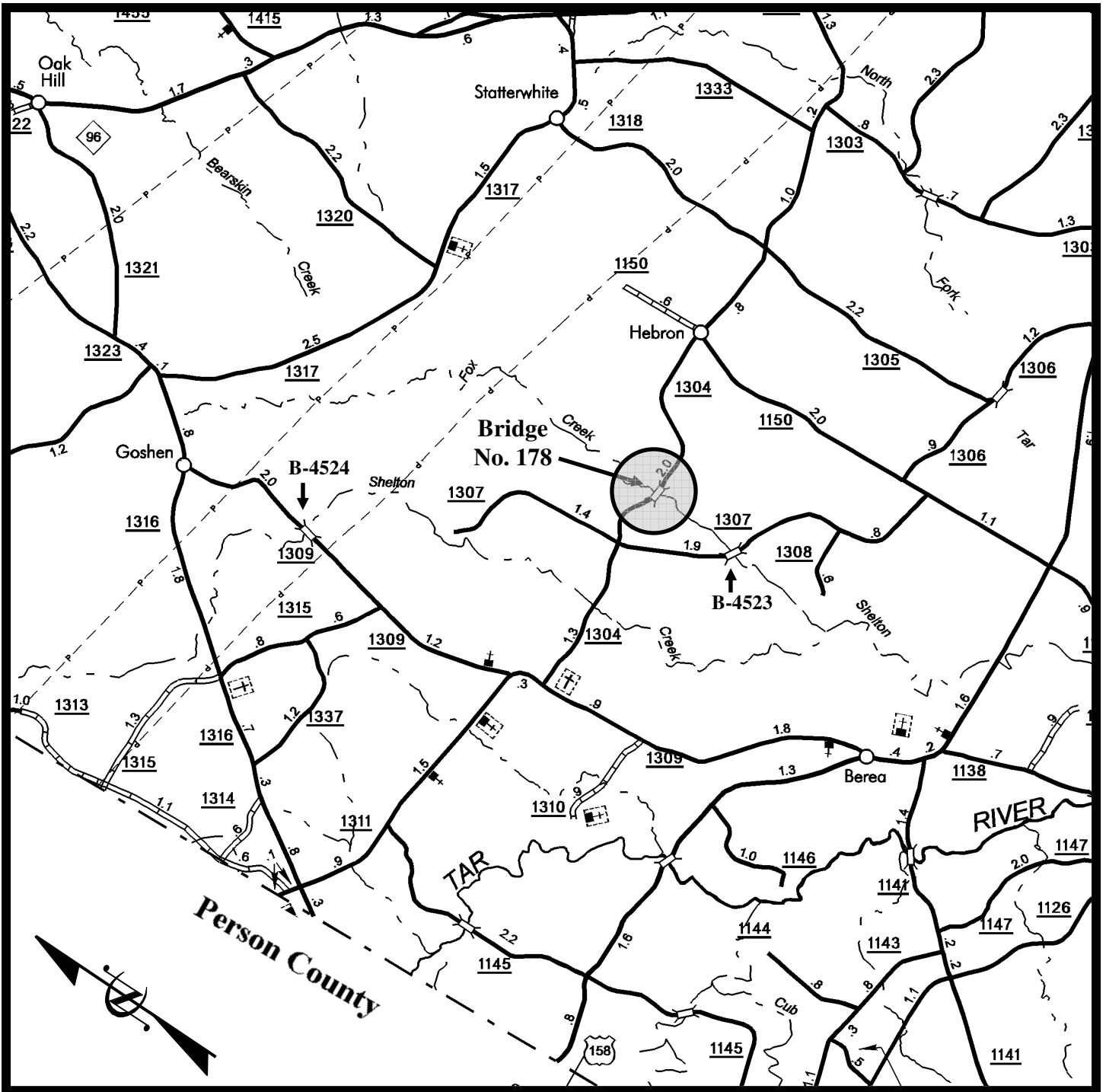
IX. PUBLIC INVOLVEMENT

A letter was sent by the Location & Surveys Unit to all property owners affected directly by this project. Property owners were invited to comment. No comments have been received to date.

There is not substantial controversy on social, economic, or environmental grounds concerning the project.

X. CONCLUSION

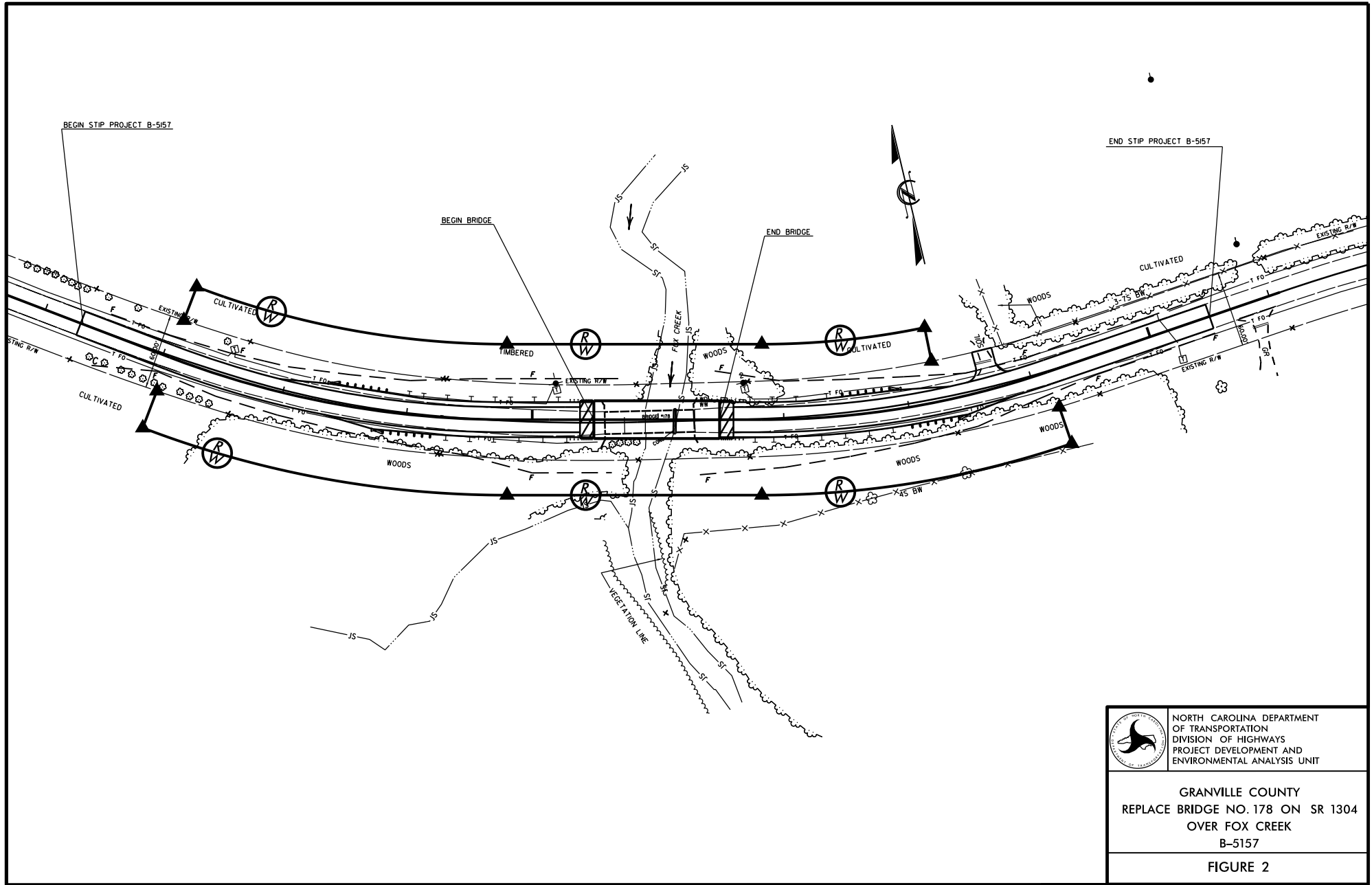
On the basis of the above discussion, it is concluded that no substantial adverse environmental impacts will result from implementation of the project. The project is therefore considered to be a federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.



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

**GRANVILLE COUNTY
REPLACE BRIDGE NO. 178 ON SR 1304
OVER FOX CREEK
B-5157**

Figure 1



NORTH CAROLINA DEPARTMENT
 OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 PROJECT DEVELOPMENT AND
 ENVIRONMENTAL ANALYSIS UNIT

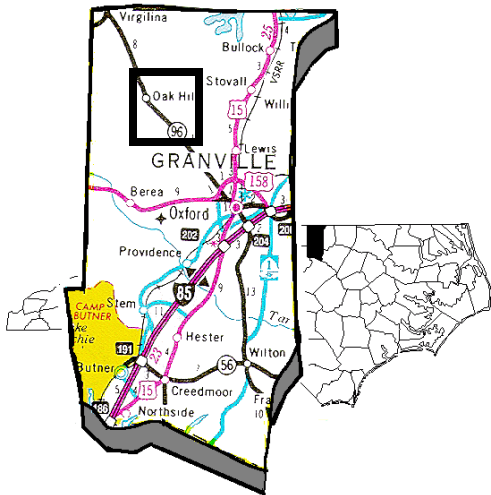
GRANVILLE COUNTY
 REPLACE BRIDGE NO. 178 ON SR 1304
 OVER FOX CREEK
 B-5157

FIGURE 2

Bridge No. 178
looking west



Bridge No. 178
looking east




	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT
	GRANVILLE COUNTY REPLACE BRIDGE NO. 178 ON SR 1304 OVER FOX CREEK B-5157

Figure 3



RECEIVED
Division of Highways

JUN - 9 2009

North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

Preconstruction
Project Development and
Environmental Analysis Branch

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

June 5, 2009

MEMORANDUM

TO: Tracy Walter
Project Development and Environmental Analysis
NCDOT Bridge Unit

FROM: Peter Sandbeck *PSB for Peter Sandbeck*

SUBJECT: Bridge 178 on SR 1304 over Fox Creek, B-5157, Granville County, ER 09-1295

Thank you for your letter of May 29, 2009, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Mary Pope Furr, NCDOT
Matt Wilkerson, NCDOT