

**Wilkes County
Bridge No. 29 on SR 1001 (Oakwood Rd.)
over Cub Creek
Federal Aid Project No. BRZ-1001(29)
W.B.S. No. 33831.1.1
State Project No. 8.2761801
S.T.I.P. No. B-4676**

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

DATE

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DATE

John F. Sullivan, III, Division Administrator
Federal Highway Administration

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Documentation Prepared in
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INTRODUCTION: Bridge No. 29 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and is eligible for the Federal-Aid Highway Bridge 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. 29 has a sufficiency rating of 8.89 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to Superstructure and Substructure ratings of 4 out of 9 as well as a Structural Evaluation of 3 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA’s Highway Bridge Program. The structure is also considered to be functionally obsolete due to Structural Evaluation and Deck Geometry evaluations of 2 out of 9.

Components of the concrete superstructure as well as the concrete and timber substructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities. The posted weight limit on the bridge is down to 25 tons for single vehicles and 29 tons for truck-tractor semi-trailers. The bridge has reached the end of its useful life. Replacement of the bridge will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located within the town limits of Wilkesboro in Wilkes County, near the intersection of SR 1001 (Oakwood Rd.) and SR 2557 (Old US 421/East Main Street); see Figure 1. Development in the area is commercial and residential in nature.

SR 1001 is classified as a urban local route in the Statewide Functional Classification System and is not a National Highway System Route.

In the vicinity of the bridge, SR 1001 has a 21-foot pavement width with 2-foot grass shoulders (see Figure 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 14.0 feet above the creek bed.

Bridge No. 29 is a three-span structure that consists of precast, prestressed concrete channels with an asphalt-wearing surface. The end bents and interior bents consist of precast

prestressed concrete caps on timber piles. The existing bridge (see Figure 3) was constructed in 1969. The overall length of the structure is 81 feet. The clear roadway width is 29.7 feet.

There are utilities attached to the existing structure as well as overhead power lines cross the branch just south of the bridge. Utility impacts are anticipated to be low.

The current traffic volume of 7,200 vehicles per day (VPD) is expected to increase to 9,000 VPD by the year 2035. The projected volume includes one percent truck-tractor semi-trailer (TTST) and three percent dual-tired vehicles (DT). The posted speed limit is 35 miles per hour in the project area. Two school buses cross the bridge daily on their morning and afternoon routes.

There were five accidents reported in the vicinity of Bridge No. 29 during a recent five-year period. None of the five accidents were associated with the alignment or geometry of the bridge or its approach roadway. All five were either driver related error or animal caused accident.

This section of SR 1001 is not part of a designated bicycle route nor is it listed in the S.T.I.P. as needing incidental bicycle accommodations. However, it is located within the Urban Area Boundary of the Town of Wilkesboro and is a popular route for a local bike association. A separate pedestrian bridge exists alongside the existing structure which will be incorporated into the proposed design. The Town of Wilkesboro has stated temporary pedestrian accommodations will not be required during construction (see letter).

A feasibility study indicates that SR 1001 (Oakwood Road) would need to be upgraded to a four lane facility in the future. However, upgrading to a four lane divided facility is not included in the 20 year Long Range Transportation Plan (LRTP).

The Town of Wilkesboro has recently completed a stream restoration for Cub Creek which began at the intersection of Cub Creek and Bridge Street and continued east along Cub Creek to Oakwood Road.

III. ALTERNATIVES

A. Project Description

The replacement structure will consist of a bridge approximately 182-foot long. The bridge length is based on preliminary design information and is set by hydraulic requirements. The bridge will be of sufficient width to provide for one 12-foot lane with a minimum of 4-foot offset (left side) and a 14'-9" lane with a minimum of 2'-0" offset (right side). The roadway grade of the new structure will be approximately seven-foot higher than the existing grade. A five-foot sidewalk, on the west side of the proposed bridge, will be separated from the travel lanes by a vertical barrier.

The existing roadway will be widened to a 32-foot pavement width to provide two 12-foot lanes. Six-foot shoulder will be provided along west side, four feet of which will be paved in

accordance with the current NCDOT Design Policy (The shoulder will include three additional feet where guardrail is required); eight-foot shoulder will be provided along the east side with 2'-6" curb and gutter. This roadway will be designed as a local route.

B. Reasonable and Feasible Alternatives

Two alternatives for replacing Bridge No. 29 that were studied in detail are described below.

Alternate 1

Alternate 1 involves replacement of the structure along the existing roadway alignment. Improvements to the approach roadways will be required for a distance of approximately 300 feet to the west and 330 feet to the east of the new structure. This alternate would be designed using subregional tier guidelines with a design speed of 35 miles per hour. A vertical and horizontal curve design exception would be required. Traffic would need to be detoured offsite during the construction period (see figure 1).

Alternate 2 (Preferred)

Alternate 2 involves replacement of the structure along a new roadway alignment to the south. Improvements to the approach roadways will be required for a distance of approximately 377 feet to the west and 395 feet to the east of the structure. This alternate will be designed using subregional tier guidelines with a design speed of 40 miles per hour. Traffic would need to be detoured offsite during the construction period (see figure 1).

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 US 421 Bypass, NC18, and NC18/NC268. The majority of traffic on the road is through traffic. The detour for the average road user would result in 4 minutes additional travel time (2.5 miles additional travel). Up to a 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 11 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.

C. 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 1001.

"Rehabilitation" of the old bridge is not practical due to it being functionally obsolete. The superstructure components do not lend for widening; therefore, meeting FHWA requirements would require complete structure replacement.

Staged Construction is not feasible for this bridge because of the superstructure components. An Alternate involving replacement of the structure along a new roadway alignment to the north was proposed. Traffic would be maintained along the existing structure during the construction period. Improvements to the approach roadways will be required for a distance of approximately 400 feet to the west and 420 feet to the east of the structure. This alternate would have been designed using subregional tier guidelines with a design speed of 25 miles per hour. A vertical and horizontal curve design exception as well as a horizontal sight distance design exception would be required. This alternate would decrease horizontal sight distance as well as require the posted speed limit to be decreased. This alternate was determined not to improve travel conditions at the location of the bridge; therefore, was determined not to be feasible and was removed from further study.

D. Preferred Alternative

Bridge No. 29 will be replaced along a new alignment as shown by Alternative 2 in Figure 2a. Although cost and impacts to park property are higher than Alternate 1, Alternative 2 is considered to be a better replacement alternative than Alternate 1.

NCDOT Division 11 concurs with the selection of Alternative 2 as the preferred alternative.

IV. ESTIMATED COSTS

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

	Alternative 2 Preferred
Structure	\$ 829,000
Roadway Approaches	\$ 540,000
Detour Structure and Approaches	N/A
* Structure Removal	\$ 29,000
Misc. & Mob.	\$ 218,000
Eng. & Contingencies	\$ 254,000
Total Construction Cost	\$ 1,850,000
** Right-of-way Costs	\$ 88,000
Utility Costs	\$ 99,000
Total Project Cost	\$ 2,037,000

* Structure Removal cost includes existing bridge and existing pedestrian bridge.

** The Right-of-way costs include an additional cost for the conversion of Section 6(f) and PARTF property for Alternate 2.

V. NATURAL ENVIRONMENT

Physical Characteristics

The study area lies in the northern mountains physiographic region of North Carolina. Topography in the project vicinity is comprised of gently rolling hills with narrow, level floodplains along most streams and a more substantial floodplain along the Yadkin River. Elevations in the study area range from 950 to 1050 foot above sea level. Land use in the project vicinity consists primarily of residential and industrial development interspersed with forestland and some agriculture.

Water Resources

Water resources in the study are part of the Yadkin River basin [U.S. Geological Survey (USGS) Hydrologic Unit 03040101]. One stream; Cub Creek, was identified in the study area. Cub Creek is identified by a NCDWQ Index Number of 12-41 and has a Best Usage Classification (BUC) of “C”.

There are no designated High Quality Waters (HQW), Outstanding Resource Waters (ORW) or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. Cub Creek is not designated as a North Carolina Wildlife Resources Commission (WRC) trout stream. The North Carolina Final 2012 303(d) list does not identify Cub Creek as impaired water and there are no 303(d) streams within 1.0 mile of the study area.

Biotic Resources

Two terrestrial communities were identified in the study area: maintained/disturbed and alluvial forest. The majority of the study area consists of habitat that is considered maintained/disturbed where the vegetation is periodically mowed, such as roadside shoulders and residential lawns. Alluvial forest communities occur along the floodplain of Cub Creek where periodic overbank flooding occurs.

Terrestrial communities in the study area may be impacted by project construction as a result of grading and paving of portions of the study area.

Jurisdictional Topics

One jurisdictional stream was identified in the study area; Cub Creek, and is classified as a perennial stream. Cub Creek is not subject to river basin buffers. No jurisdictional wetlands were identified in 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 Quality (DWQ) 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. As of September 10, 2010, the United States Fish and Wildlife (USFWS) list one federally protected species for Wilkes County.

Bog turtle

Biological Conclusion: Not Required

The Bog turtle has been assigned a classification of T(S/A); Threatened due to similarity of appearance, by the USFWS. Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS. However, this project is not expected to affect the bog turtle because no suitable habitat is present within the study area. A review of NCNHP records on August 1, 2011 indicates no known bog turtle occurrence 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. Suitable habitat for the bald eagle is not present in the study area or within a distance of 660 feet on all sides.

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

NCDOT – Human Environment Unit, under the provisions of a Programmatic Agreement with FHWA, NCDOT, HPO, OSA and the Advisory Council on Historic Preservation (effective July 1, 2009), reviewed the proposed project and determined that no surveys are required.

Archaeology

NCDOT – Human Environment Unit, under the provisions of a Programmatic Agreement with FHWA, NCDOT, HPO, OSA and the Advisory Council on Historic Preservation (effective July 1, 2009), reviewed the proposed project and determined that no surveys are required.

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. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

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

The project is located in Wilkes County, which has been determined to comply with the National 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.

This project will not result in any meaningful changes in traffic volume, 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. As such 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 MSAT's.

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.

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 require right-of-way acquisition or easement from land protected under Section 4(f) of the Department of Transportation Act of 1966. Acquisition of Right-of-Way will not result in an adverse effect to the activities, features, or attributes of Cub Creek Park; therefore, by virtue of approval of this Categorical Exclusion the FHWA has made a de minimus call for this park (see Town of Wilkesboro letter(s)); impacts to the park will no longer subject to Section 4(f) requirements of avoidance or minimization.

NC Division of Parks & Recreation (on behalf of US Department of Interior – National Park Service (USDOI – NPS)) and the Town of Wilkesboro has identified the Cub Creek Park property being impacted by the NCDOT project as property protected by Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 as well as PARTF of NCDENR Parks and Recreation Trust Fund. NCDOT is working with the Town of Wilkesboro as well as NCDENR to establish a compensatory area of property of equal or greater value for the conversion of Section 6(f) property. The conversion property areas as well as the replacement property area will be defined in the required USDOI-NPS LWCF Proposal Description and Environmental Screening Form.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Environmental Management, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no underground storage tanks or hazardous waste sites in the project area.

Wilkes 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 US Coast Guard has determined that a US 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 Natural Resources, US Fish & Wildlife Service, NC Wildlife Resource Commission, NC Division of Parks & Recreation, North Carolina State Historic Preservation Office, Wilkes County Planning Department, and Town of Wilkesboro.

The NC 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 Town of Wilkesboro requested NCDOT provide a hard separation between vehicular traffic and pedestrian traffic on the bridge.

Response: NCDOT will provide a vertical barrier to provide a separation between vehicular and pedestrian traffic.

The Town of Wilkesboro requested the road remain open during construction.

Response: NCDOT will minimize the road closure to no more than a six month period.

NC Division of Water Quality requested discussion of a four lane facility be provided in the document.

Response: A feasibility study indicates that SR 1001 (Oakwood Road) will need to be upgraded to a four lane facility in the future. Funding for upgrading the existing facility to four lanes is not currently provided within the 20 year LRTP.

The Army Corps of Engineers and Wilkes County Planning Department 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.

A newsletter was sent in 2007 to businesses and residents living along SR 1001 to provide information concerning the proposed project. Responses provided gave additional area information as well as favor for the project. No comments received were in opposition of the project.

A postcard was sent in 2012 to businesses and residents living along SR 1001 in the area of the project to notify residents of impacts to property protected by Section 6(f) of the Land and Water Conservation Fund Act of 1965, as amended, as well as intent to request *de minimus* for impacted property protected by Section 4(f) of the Department of Transportation Act of 1966, as amended. Subject postcard provided information stating the existing road would not be closed to traffic during construction; however, this method of construction has since changed and the road will now be closed for construction. No comments were received due to this mailer.

A postcard was sent in January 2014 to businesses and residents living along SR1001 as well as the proposed detour route to notify residents of the proposed road closure as part of the project as well as impacts to property protected by Section 6(f) and Section 4(f). One resident returned comment stating his concern that our current proposal for the existing bridge replacement would create a greater hazard with any future widening of SR 1001 when a second bridge is constructed across Cub Creek.

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.