

|                     |                     |
|---------------------|---------------------|
| TIP Project No.     | <b>B-4959</b>       |
| W.B.S. No.          | <b>40151.1.1</b>    |
| Federal Project No. | <b>BRZ-2719 (1)</b> |

A. Project Description:

The purpose of this project is to replace Guilford County Bridge No. 193 on SR 2719 (High Rock Road) over Buffalo Creek. Bridge No. 193 is 92 feet long. The replacement structure will be a bridge approximately 143 feet long providing a minimum 32 feet 6 inches clear deck width. The bridge will include two 11-foot lanes with a 3-foot 9-inch offset to the west and a 6-foot 9-inch offset to the east. 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 the same as the existing structure.

The approach roadway will extend approximately 200 feet from the southern end of the new bridge and 330 feet from the northern end of the new bridge. The approaches will be widened to include a 22-foot pavement width providing two 11-foot lanes. Six-foot grass shoulders will be provided on each side (9-foot shoulders where guardrail is included). Two-foot full depth paved shoulders will be provided on each side. The roadway will be designed as a Rural Local Route using Sub Regional Tier guidelines with a 60 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1). In addition, SR 2797 (Bittle Road) will be realigned due to the increased bridge length and also to improve the sight distance.

B. Purpose and Need:

NCDOT Bridge Management Unit records indicate Bridge No. 193 has a sufficiency rating of 36.77 out of a possible 100 for a new structure.

The bridge is considered structurally deficient due to superstructure condition appraisal of 4 out of 9 according to Federal Highway Administration (FHWA) standards. The bridge also meets the criteria for functionally obsolete due to a deck geometry appraisal of 2 out of 9.

The superstructure of Bridge No. 193 has timber elements that are fifty-eight 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. 193 are experiencing an increasing degree of deterioration that can no longer be addressed by reasonable maintenance activities; therefore the bridge is approaching the end of its useful life.

Components of the concrete substructure have experienced an increasing degree of deterioration as well that can no longer be addressed by maintenance activities. The posted weight limit on the bridge is down to 12 tons for single vehicles and 18 tons for truck-tractor semi-trailers. Replacement of the bridge will result in safer traffic operations.

C. Proposed Improvements:

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

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

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

D. Special Project Information:

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

|                            |              |
|----------------------------|--------------|
| Structure & Approach Slabs | \$ 544,000   |
| Roadway Approaches         | \$ 204,000   |
| Structure Removal          | \$ 28,000    |
| Misc. & Mob.               | \$ 129,000   |
| Eng. & Contingencies       | \$ 145,000   |
| Total Construction Cost    | \$ 1,050,000 |
| Right-of-way Costs         | \$ 17,000    |
| Utility Costs              | -0-          |
| Total Project Cost         | \$ 1,067,000 |

**Estimated Traffic:**

|              |   |   |
|--------------|---|---|
| Current 2014 | - | 450 vpd   |
| Year 2035    | - | 800 vpd (Without High Rock Rd. Extension to I-40) |
| Year 2035    | - | 2600 vpd (With High Rock Rd. Extension to I-40)   |
| TTST         | - | 1%  |
| Dual         | - | 13%   |

**Accidents:** Traffic Engineering has evaluated a recent three year period and found there were no accidents occurring in the vicinity of the project.

**Design Exceptions:** There are no anticipated design exceptions for this project.

**Pedestrian and Bicycle Accommodations:** This portion of SR 2719 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 or temporary bicycle nor pedestrian accommodations are required for this project.

**Bridge Demolition:** Bridge No. 193 is constructed of timber, steel, and concrete and should be possible to remove with no resulting debris in the water based on standard demolition practices.

**Alternatives Discussion:**

**No Build** – The no build alternative would result in eventually closing the road which is unacceptable given the volume of traffic served by SR 2719.

**Rehabilitation** – The bridge was constructed in 1956 and the timber materials within the bridge are reaching the end of their useful life. Rehabilitation would require replacing the timber components which would constitute effectively replacing the bridge.

**Offsite Detour** – Bridge No. 193 will be replaced on the existing alignment. Traffic will be detoured offsite (see Figure 1) during the construction period. 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 2770, SR 2772, and SR 2746. The majority of traffic on the road is through traffic. The detour for the average road user would result in 6 minutes additional travel time (4.3 miles additional travel). Up to a 10-month duration of construction is expected on this project.

Based on the Guidelines, the criteria above indicate that on the basis of delay alone, the detour is acceptable. Guilford County Emergency Services along with Guilford County Schools Transportation have also indicated that the detour is acceptable. NCDOT Division 7 has indicated the condition of all roads, bridges and intersections on the offsite detour are acceptable without improvement and concurs with the use of the detour.

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

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

**New Alignment** – Given that the alignment for SR 2719 is acceptable, a new alignment was not considered as an alternative.

#### **Other Agency Comments:**

The N.C. Division of Water Quality, in a letter dated February 1, 2011, recommends that highly protective sediment and erosion control Best Management Practices be implemented to reduce the risk nutrient runoff to Buffalo Creek. NCDWQ requests that the road design plans provide treatment for the stormwater runoff through BMPs as detailed in the most recent version on NCDWQ Stormwater Best Management Practices.

**Response:** NCDOT will implement sedimentation and erosion control measures that adhere to Design Standards in Sensitive Watersheds within the project area.

The N.C. Wildlife Resource Commission standardized letters recommended replacing the existing bridge with a bridge.

**Response:** See discussion on the project description in Section A.

#### **Public Involvement:**

A landowner notification letter was sent by the Natural Environment Unit to all property owners affected directly by this project. Property owners were invited to comment. One comment has been received to date concerning a nearby cemetery rock wall that will not be impacted by the project.

E. Threshold Criteria

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

| <u>ECOLOGICAL</u>  | <u>YES</u>                          | <u>NO</u>                           |
|--|-------------------------------------|-------------------------------------|
| (1) Will the project have a substantial impact on any unique or important natural resource?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (2) Does the project involve habitat where federally listed endangered or threatened species may occur?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| (3) Will the project affect anadromous fish?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (4) If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated? | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| (5) Will the project require the use of U. S. Forest Service lands?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (6) Will the quality of adjacent water resources be adversely impacted by proposed construction activities?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (7) Does the project involve waters classified as Outstanding Resources Waters (ORW) and/or High Quality Waters (HQW)?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (8) Will the project require fill in waters of the United States in any of the designated mountain trout counties?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (9) Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| <u>PERMITS AND COORDINATION</u>  | <u>YES</u>                          | <u>NO</u>                           |
| (10) If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (11) Does the project involve Coastal Barrier Resources Act resources?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (12) Will a U. S. Coast Guard permit be required?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| (13) Could the project result in the modification of any existing regulatory floodway?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

(14) Will the project require any stream relocations or channel changes?   X

SOCIAL, ECONOMIC, AND CULTURAL RESOURCES

YES      NO

(15) Will the project induce substantial impacts to planned growth or land use for the area?   X

(16) Will the project require the relocation of any family or business?   X

(17) Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?   X

(18) If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?  X

(19) Will the project involve any changes in access control?   X

(20) Will the project substantially alter the usefulness and/or land use of adjacent property?   X

(21) Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?   X

(22) Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)?  X

(23) Is the project anticipated to cause an increase in traffic volumes?   X

(24) Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?  X

(25) If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility?  X

(26) Is there substantial controversy on social, economic, or environmental grounds concerning the project?   X

(27) Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?  X

(28) Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?   X

- (29) Will the project affect any archaeological remains which are important to history or pre-history?    X
- (30) Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)?    X
- (31) Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended?    X
- (32) Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the National System of Wild and Scenic Rivers?    X

F. Additional Documentation Required for Unfavorable Responses in Part E

**Response to Question 2:** Habitat for the Small whorled pogonia exists within the mixed pine/hardwood areas of the project study area, along SR 2719. A survey of all potential areas of habitat within the project study area was performed on June 30, 2011. No individuals of these species were observed. A check on the NCNHP database, which was last updated on January 8, 2014, showed no known occurrences of this species within 1.0 mile of the study area. Therefore a biological conclusion of “No Effect” for the Small whorled pogonia remains valid.

**Response to Question 13:** Guilford County is a participant in the National Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA). Based on the most current information available from the NC Floodplain Mapping Program (FMP), this crossing of Buffalo Creek is located within a flood hazard zone, which is within a Redelineated Detailed Flood Study reach, having a regulated 100-year floodway. The Hydraulics Unit will coordinate with the FMP, the delegated state agency for administering FEMA’s National Flood Insurance Program, to determine the status of the project with regard to applicability of NCDOT’S Memorandum of Agreement with FMP, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

G. CE Approval

|                     |                     |
|---------------------|---------------------|
| TIP Project No.     | <u>B-4959</u>       |
| W.B.S. No.          | <u>40151.1.1</u>    |
| Federal Project No. | <u>BRZ-2719 (1)</u> |

Project Description:

The purpose of this project is to replace Guilford County Bridge No. 193 on SR 2719 (High Rock Road) over Buffalo Creek. Bridge No. 193 is 92 feet long. The replacement structure will be a bridge approximately 143 feet long providing a minimum 32 feet 6 inches clear deck width. The bridge will include two 11-foot lanes with a 3-foot 9-inch offset to the west and a 6-foot 9-inch offset to the east. 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 the same as the existing structure.

The approach roadway will extend approximately 200 feet from the southern end of the new bridge and 330 feet from the northern end of the new bridge. The approaches will be widened to include a 22-foot pavement width providing two 11-foot lanes. Six-foot grass shoulders will be provided on each side (9-foot shoulders where guardrail is included). Two-foot full depth paved shoulders will be provided on each side. The roadway will be designed as a Rural Local Route using Sub Regional Tier guidelines with a 60 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1). In addition, SR 2797 (Bittle Road) will be realigned due to the increased bridge length and also to improve the sight distance.

Categorical Exclusion Action Classification:

TYPE II(A)  
 TYPE II(B)

Approved:

5/9/14  
Date

Gregory A. Blatzney  
Project Planning Engineer  
Project Development & Environmental Analysis Unit

5/9/14  
Date

Byron D. Blair  
Project Engineer  
Project Development & Environmental Analysis Unit

5/9/14  
Date

William T. Hopkins  
Bridge Project Development Engineer  
Project Development & Environmental Analysis Unit

For Type II(B) projects only:

5/9/14  
Date

Felix D'Arba  
John F. Sullivan, III, PE, Division Administrator  
Federal Highway Administration

## **PROJECT COMMITMENTS:**

**Guilford County  
Bridge No. 193 on SR 2719 over Buffalo Creek  
Federal Aid Project No. BRZ-2719 (1)  
W.B.S. No. 40151.1.1  
T.I.P. No. B-4959**

All standard procedures and measures, including NCDOT's Best Management Practices for Protection of Surface Waters, Guidelines for Best Management Practices for Bridge Demolition and Removal, will be implemented, as applicable, to avoid or minimize environmental impacts. The following special commitments have been agreed to by NCDOT:

### ***Division 7 Construction:***

In order to allow Emergency Management Services (EMS) time to prepare for road closure, the NCDOT Resident Engineer will notify the Director of the Guilford County EMS at (336) 641-2278 of the bridge removal 30 days prior to road closure.

In order to allow Guilford County Schools to prepare for road closure, the NCDOT Resident Engineer will notify the Transportation Director at (336) 370-8920 of the bridge removal 30 days prior to road closure.

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.

### ***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).

### ***Hydraulic Design Unit, Natural Environment Section, Roadside Environmental Unit:***

This project is subject to NC Division of Water Quality Riparian Buffer Rules for the Jordan Lake Basin. Also, the best usage classification for Buffalo Creek is listed as WS-V; NSW, therefore, sedimentation and erosion control measures shall adhere to Design Standards in Sensitive Watersheds.

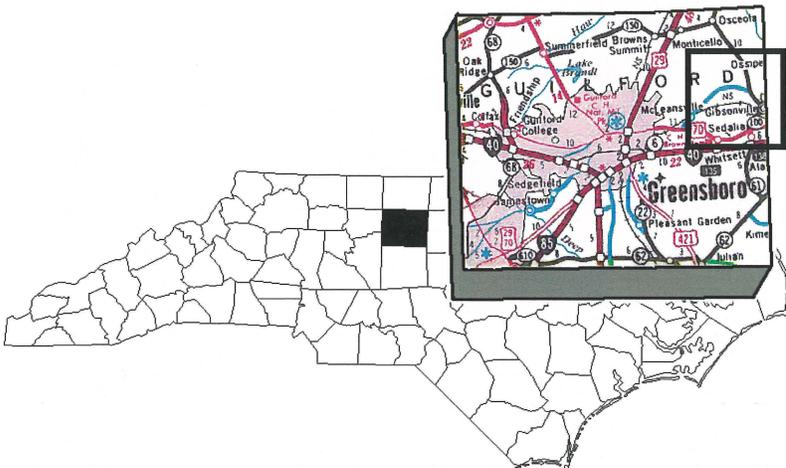
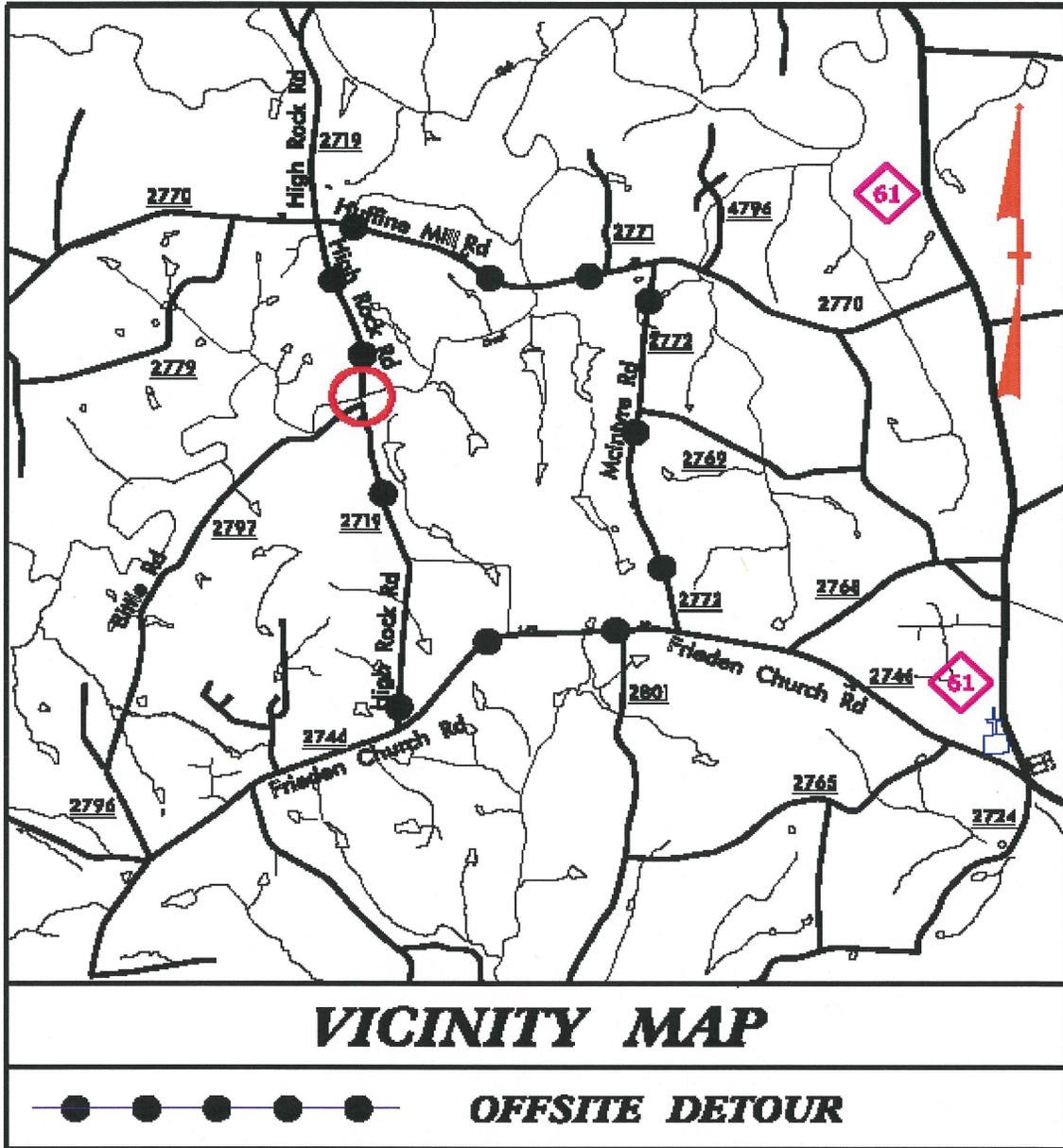
### ***Natural Environment Section:***

A US Fish and Wildlife Service proposal for listing the Northern Long-eared Bat (*Myotis septentrionalis*) as an endangered species was published in the Federal Register in

October 2013. The listing may become effective as soon as October 2014. Furthermore, this species is included in USFWS's current list of protected species for Guilford County. NCDOT is working closely with the USFWS to understand how this proposed listing may impact NCDOT projects. NCDOT will continue to coordinate appropriately with USFWS to determine if this project will incur potential effects to the Northern long-eared bat, and how to address these potential effects, if necessary.

# Appendix A

## Figures



|   |  |
|---|--|
|   | NORTH CAROLINA DEPARTMENT OF<br>TRANSPORTATION<br>DIVISION OF HIGHWAYS<br>PROJECT DEVELOPMENT &<br>ENVIRONMENTAL ANALYSIS UNIT |
| <b>GUILFORD COUNTY</b><br><b>REPLACE BRIDGE NO. 193 ON SR 2719 (HIGH ROCK ROAD)</b><br><b>OVER BUFFALO CREEK</b><br><b>B-4959</b> |  |
| Figure 1  |  |





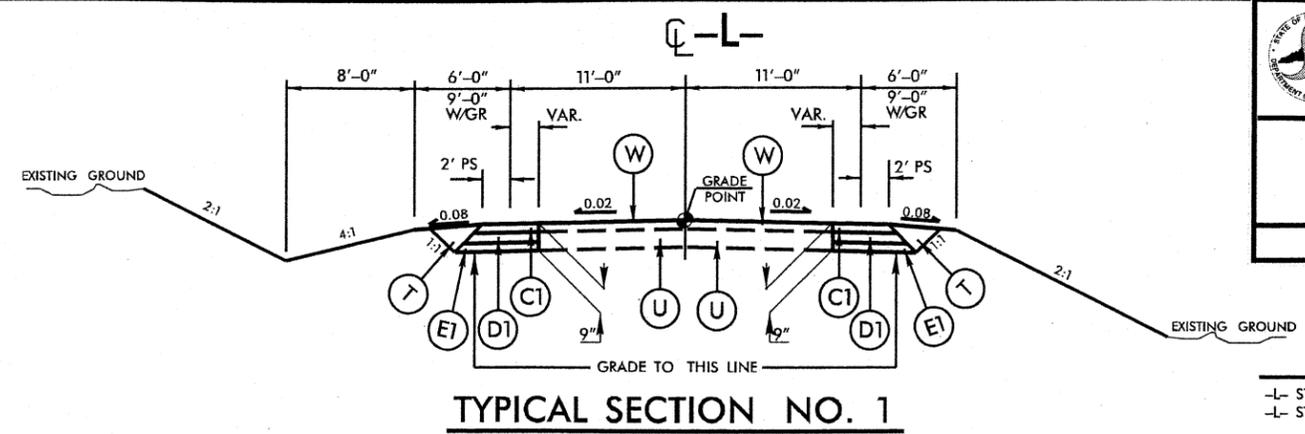
North Carolina Department of Transportation  
Division of Highways  
Project Development & Environmental Analysis Unit

Guilford County  
Replace Bridge No. 193 on SR 2719  
Over Buffalo Creek  
B-4959

Figure 2B

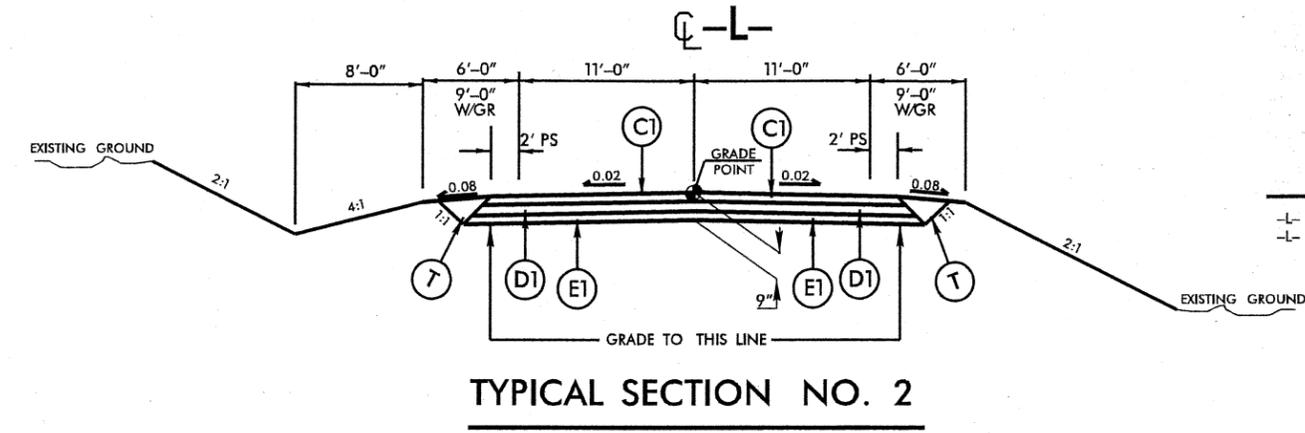
| PAVEMENT SCHEDULE |  |
|-------------------|--|
| C1                | PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.   |
| C2                | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYER NOT TO EXCEED 1.5" IN DEPTH.                                    |
| D1                | PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B' AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.   |
| D2                | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYER NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH. |
| E1                | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B' AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.   |
| E2                | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYER NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.         |
| T_                | EARTH MATERIAL.  |
| U_                | EXISTING PAVEMENT.   |
| W_                | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)  |

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



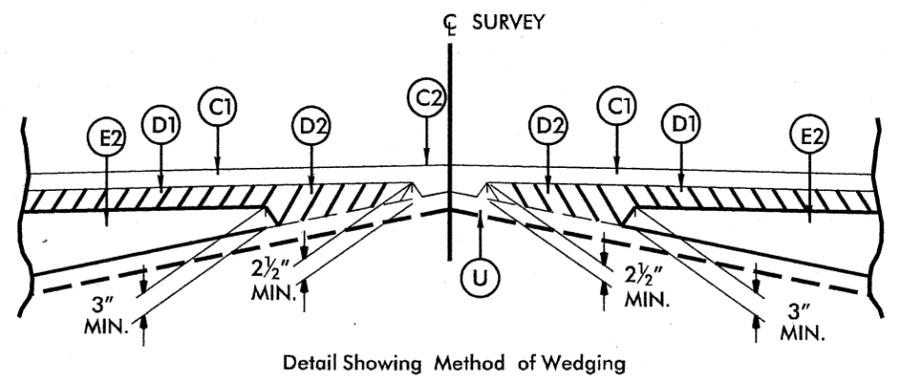
TYPICAL SECTION NO. 1

TYPICAL SECTION NO. 1  
-L- STA. 12+00.00 TO -L- STA. 13+50.00  
-L- STA. 17+50.00 TO -L- STA. 18+70.00

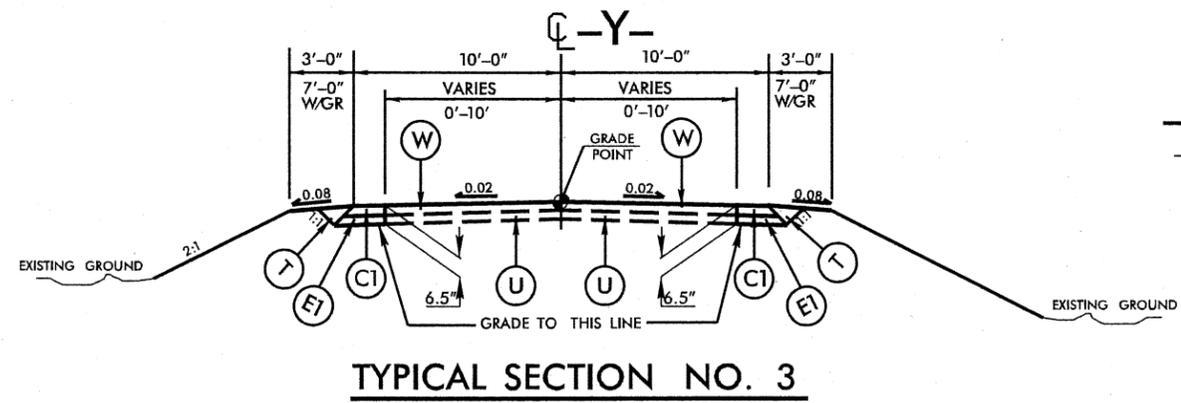


TYPICAL SECTION NO. 2

TYPICAL SECTION NO. 2  
-L- STA. 13+50.00 TO -L- STA. (BEGIN BRIDGE)  
-L- STA. (END BRIDGE) TO -L- STA. 17+50.00

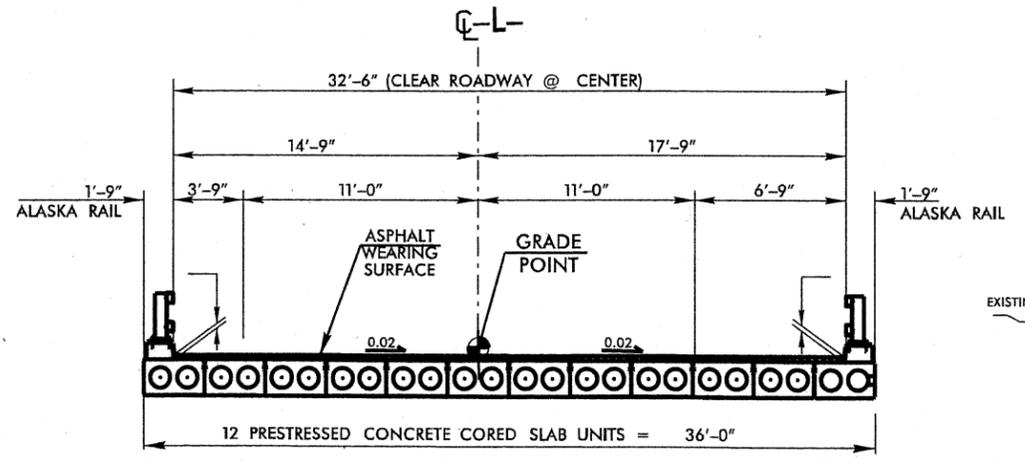


Detail Showing Method of Wedging



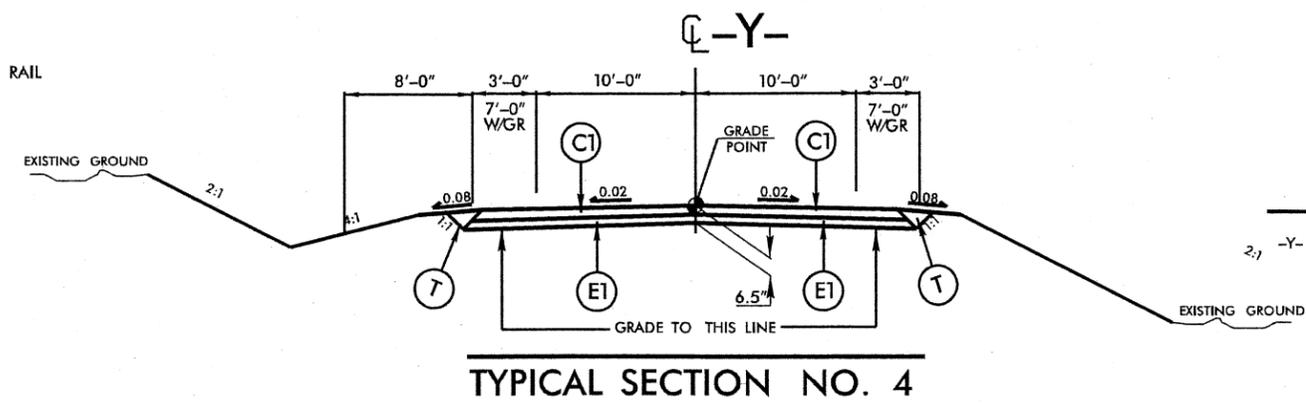
TYPICAL SECTION NO. 3

TYPICAL SECTION NO. 3  
-Y- STA. 10+50.00 TO -Y- STA. 11+32.00



TYPICAL SECTION ON STRUCTURE

BEGIN BRIDGE -L- STA. TO END BRIDGE -L- STA.

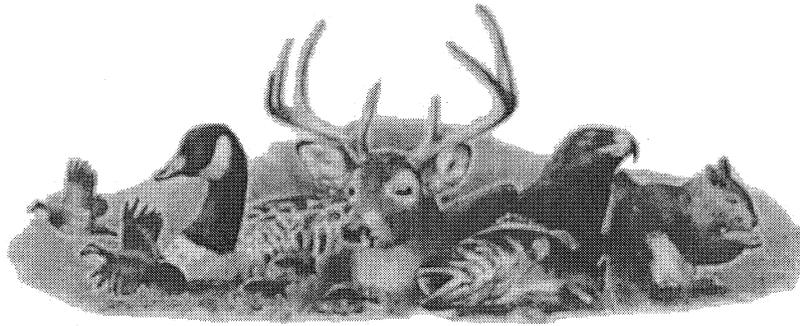


TYPICAL SECTION NO. 4

TYPICAL SECTION NO. 4  
-Y- STA. 11+32.00 TO -Y- STA. 12+59.50

# Appendix B

## Reference Letters



## ◊ North Carolina Wildlife Resources Commission ◊

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Gordon Myers, Executive Director

### MEMORANDUM

**TO:** Rachelle Beauregard  
NCDOT, PDEA-NEU

**FROM:** Travis Wilson, Highway Project Coordinator  
Habitat Conservation Program

**DATE:** March 28, 2011

**SUBJECT:** Bridge Replacements

Biologists with the N. C. Wildlife Resources Commission (NCWRC) have reviewed the information provided and have the following preliminary comments on the subject project. 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).

Our standard recommendations for bridge replacement projects of this scope are as follows:

1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.
2. Bridge deck drains should not discharge directly into the stream.
3. Live concrete should not be allowed to contact the water in or entering into the stream.
4. If possible, bridge supports (bents) should not be placed in the stream.
5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary

structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the stream underneath the bridge.
7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.
8. In streams that contain threatened or endangered species, NCDOT biologist Mr. Logan Williams should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.
9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.
10. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.
11. 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.
12. 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.
13. 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.
14. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.
15. 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.

If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used:

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be

reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.
3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.
4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be utilized as mitigation for the subject project or other projects in the watershed.

#### Project specific comments:

B-4959: Guilford County Bridge No. 193 on SR 2719 over Buffalo Creek. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5239: Alamance County Bridge No. 126 on NC 87 over Mill Race. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5342: Alamance County Bridge No. 169 on SR 1148 Over Gum Creek. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5340: Orange County Bridge No. 234 on SR 1581 over Prong Little River. Our records indicate multiple state and federal listed species in the vicinity of this project: *Villosa constricta* (Notched Rainbow: state SC), *Strophitus undulates* (Creepers: state T), *Lampsilis radiata* (Eastern

Lampmussel: state T, *Lampsilis cariosa* (Yellow Lampmussel: state E, FSC), and *Fusconaia masoni* (Atlantic pigtoe: state E, FSC). Due to the high diversity of listed species we recommend NCDOT follow the Design Standards for Sensitive Watersheds during the design and construction of this project. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5341: Rockingham County Bridge No. 110 on SR 1767 over Wolf Island Creek. The potential exist for *Percina rex* (Roanoke logperch: State E, Federal E) to be found at this site. NCDOT should follow the Design Standards for Sensitive Watersheds during the design and construction of this project, as well as coordinate with NCWRC and USFWS in conducting a survey to determine the presence or absence of this species. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5237: Wake County Bridge No. 248 on SR 2703 over Mahler's Creek. Due to the close proximity of this project to Swift Creek which supports multiple state and federal listed species we recommend NCDOT follow the Design Standards for Sensitive Watersheds during the design and construction of this project. We recommend replacing this bridge with a bridge. Standard recommendations apply.

B-5318: Wake County Bridge No. 126 on SR 2044 over Smiths Creek. The property located in the northeast quadrant of this project has a Clean Water Management Trust Fund conservation easement; impacts to this property should be avoided. We recommend replacing this bridge with a bridge. Standard recommendations apply.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (919) 528-9886. Thank you for the opportunity to review and comment on this project.



North Carolina Department of Environment and Natural Resources

Division of Water Quality  
Coleen H. Sullins  
Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

February 1, 2011

**MEMORANDUM**

To: Gregory M. Blakeney, NCDOT PDEA-Bridge Project Development Unit

From: Amy Euliss, NC Division of Water Quality, Winston Salem Regional Office

Subject: Scoping comments on proposed improvements to Bridge No 193 on SR 2719 (B-4959) in Guilford County, Bridge No. 126 on NC 87 (B-5239) and Bridge No. 169 on SR 1148 (B-5342) in Alamance County, Bridge No. 234 on SR 1581 (B-5340) in Orange County, and Bridge No. 5341 on SR 1767 (B-5341) in Rockingham County.

Reference your correspondence dated December 30, 2010 in which you requested comments for the referenced projects. Preliminary analysis of the project reveals the potential for multiple impacts to streams and jurisdictional wetlands in the project area.

Further investigations at a higher resolution should be undertaken to verify the presence of other streams and/or jurisdictional wetlands in the area. In the event that any jurisdictional areas are identified, the Division of Water Quality requests that NCDOT consider the following environmental issues for the proposed project:

**Project Specific Comments:**

**B-4959: Bridge No. 193 over Buffalo Creek on SR 2719 in Guilford County**

1. Buffalo Creek are class WSV; NSW waters of the State. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to Buffalo Creek. NCDWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ's *Stormwater Best Management Practices*.
2. This project is within the Jordan Lake Basin. Riparian buffer impacts shall be avoided and minimized to the greatest extent possible pursuant to 15A NCAC 2B .0267

**B-5239: Bridge No. 126 at Mill Race on NC 87 in Alamance County**

1. This project is within the Jordan Lake Basin. Riparian buffer impacts shall be avoided and minimized to the greatest extent possible pursuant to 15A NCAC 2B .0267
2. The Haw River are class C; NSW waters of the State. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to the Haw River. NCDWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ's *Stormwater Best Management Practices*.

**B-5340: Bridge No. 234 over South Fork Little River on SR 1581 in Orange County**

North Carolina Division of Water Quality, Winston-Salem Regional Office  
Location: 585 Waughtown St. Winston-Salem, North Carolina 27107  
Phone: 336-771-5000 \ FAX: 336-771-4630 \ Customer Service: 1-877-623-6748  
Internet: www.ncwaterquality.org

One  
North Carolina  
*Naturally*

1. South Fork Little River are class WS II; HQW;NSW; NSW waters of the State. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to South Fork Little River. NCDWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ's *Stormwater Best Management Practices*.
2. This project is within the Neuse River Basin. Riparian buffer impacts shall be avoided and minimized to the greatest extent possible pursuant to 15A NCAC 2B .0233.
3. Review of the project reveals the presence of surface waters classified as WSII; High Quality Waters of the State in the project study area. This is one of the highest classifications for water quality. Pursuant to 15A NCAC 2H .1006 and 15A NCAC 2B .0224, NCDOT will be required to obtain a State Stormwater Permit prior to construction except in North Carolina's twenty coastal counties.

**B-5341: Bridge No. 110 over Wolf Island Creek on SR 1767 in Rockingham County**

\*Class C waters of the State. No project specific comments. See general comments below.

**B-5342: Bridge No. 169 over Gum Creek on SR 1148 in Alamance County**

1. Gum Creek are class WSV; NSW waters of the State. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDWQ recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to Gum Creek. NCDWQ requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ's *Stormwater Best Management Practices*.
2. This project is within the Jordan Lake Basin. Riparian buffer impacts shall be avoided and minimized to the greatest extent possible pursuant to 15A NCAC 2B .0267

**General Project Comments\*:**

(\*Applies to all bridges listed above)

1. The environmental document shall provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping. If mitigation is necessary as required by 15A NCAC 2H.0506(h), it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. Appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.
2. Environmental assessment alternatives shall consider design criteria that reduce the impacts to streams and wetlands from storm water runoff. These alternatives shall include road designs that allow for treatment of the storm water runoff through best management practices as detailed in the most recent version of NCDWQ *Stormwater Best Management Practices*, such as grassed swales, buffer areas, preformed scour holes, retention basins, etc.
3. After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, NCDOT is respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 1 acre to wetlands. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as wetland mitigation.
4. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(h)}, mitigation will be required for impacts of greater than 150 linear feet to any single stream. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.

5. NCDWQ is very concerned with sediment and erosion impacts that could result from this project. NCDOT shall address these concerns by describing the potential impacts that may occur to the aquatic environments and any mitigating factors that would reduce the impacts.
6. If a bridge is being replaced with a hydraulic conveyance other than another bridge, NCDWQ believes the use of a Nationwide Permit may be required. Please contact the US Army Corp of Engineers to determine the required permit(s).
7. If the old bridge is removed, no discharge of bridge material into surface waters is allowed unless otherwise authorized by the US ACOE. Strict adherence to the Corps of Engineers guidelines for bridge demolition will be a condition of the 401 Water Quality Certification.
8. Whenever possible, NCDWQ prefers spanning structures. Spanning structures usually do not require work within the stream or grubbing of the streambanks and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges shall allow for human and wildlife passage beneath the structure. Fish passage and navigation by canoeists and boaters shall not be blocked. Bridge supports (bents) shall not be placed in the stream when possible.
9. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NCDWQ's *Stormwater Best Management Practices*.
10. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.
11. If temporary access roads or detours are constructed, the site shall be graded to its preconstruction contours and elevations. Disturbed areas shall be seeded or mulched to stabilize the soil and appropriate native woody species should be planted. When using temporary structures the area shall be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact allows the area to re-vegetate naturally and minimizes soil disturbance.
12. Placement of culverts and other structures in waters, streams, and wetlands shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in disequilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWQ. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWQ for guidance on how to proceed and to determine whether or not a permit modification will be required.
13. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation, floodplain benches, and/or sills may be required where appropriate. Widening the stream channel shall be avoided. Stream

channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

14. If foundation test borings are necessary; it should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3624/Nationwide Permit No. 6 for Survey Activities.
15. Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.
16. All work in or adjacent to stream waters shall be conducted in a dry work area unless otherwise approved by NCDWQ. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures should be used to prevent excavation in flowing water.
17. Sediment and erosion control measures shall not be placed in wetlands and streams.
18. Borrow/waste areas shall avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas could precipitate compensatory mitigation.
19. While the use of National Wetland Inventory (NWI) maps, NC Coastal Region Evaluation of Wetland Significance (NC-CREWS) maps and soil survey maps are useful tools, their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval.
20. Heavy equipment shall 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. This equipment shall be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.
21. In most cases, NCDWQ prefers the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure shall be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed and restored to the natural ground elevation. The area shall be stabilized with grass and planted with native tree species. Tall fescue shall not be used in riparian areas.
22. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

Thank you for requesting our input at this time. NCDOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact Amy Euliss at (336) 771-4959.

cc: Andy Williams, US Army Corps of Engineers, Raleigh Field Office  
Federal Highway Administration

Chris Militscher, Environmental Protection Agency (electronic copy only)  
Travis Wilson, NC Wildlife Resources Commission (electronic copy only)  
Wetlands/401 Transportation Permitting Unit  
File Copy

10-12-0011

**NO SURVEY REQUIRED FORM****PROJECT INFORMATION**

*Project No:* B-4659 *County:* Guilford  
*WBS No:* 40151.1.1 *Document:* CE  
*F.A. No:* BRZ-2719(1) *Funding:*  State  Federal

*Federal (USACE) Permit Required?*  Yes  No *Permit Type:*

*Project Description:*

Replace Bridge No 193 over Buffalo Creek on SR 2719

**SUMMARY OF CULTURAL RESOURCES REVIEW***Brief description of review activities, results of review, and conclusions:*

Review of HPO quad maps, relevant background reports, historic designations roster, and indexes was undertaken on January 7, 2011. Based on this review, there were no existing NR, SL, LD, DE, or SS properties in the Area of Potential Effects (APE).

*Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:*

The Guilford County Historic Architecture Survey was conducted in 1996. No historic structures were identified near the APE of this project. The Guilford County Tax Parcel Data is considered valid for the purposes of determining the likelihood of historic resources being present.

**SUPPORT DOCUMENTATION**

See attached: Maps

**FINDING BY NCDOT CULTURAL RESOURCES PROFESSIONAL**

NO SURVEY REQUIRED

*Shelby Spillars*

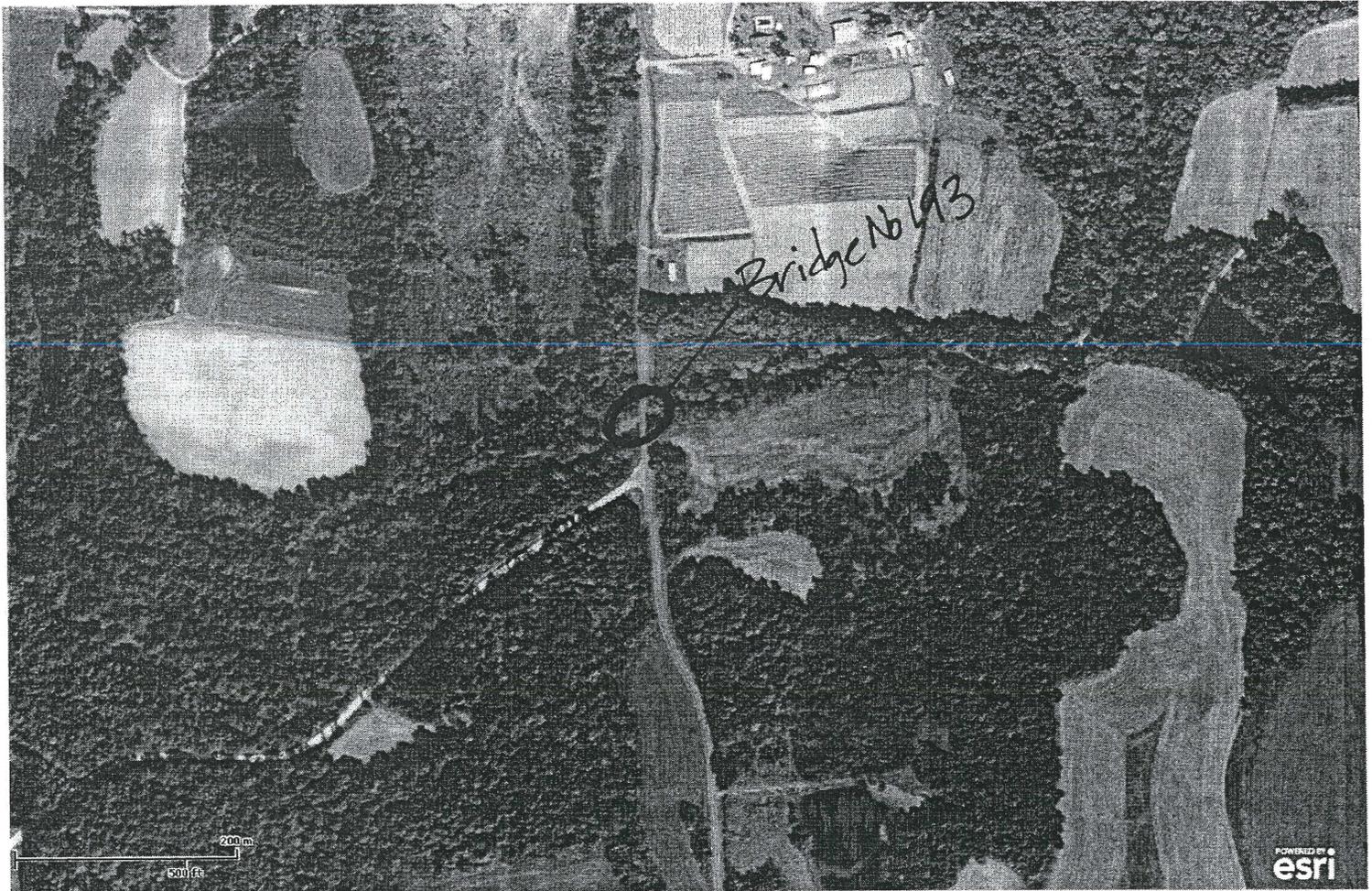
NCDOT Cultural Resources Specialist

*1/7/2011*

Date

# North Carolina State Historic Preservation Mapping Application

National Register



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10-12-0011

## NO PREHISTORIC OR HISTORIC PROPERTIES PRESENT FORM

### PROJECT INFORMATION

Project No: B-4959

County: Guilford

WBS No: 40151.1.1

Document:

F.A. No:

Funding:  State  FederalFederal (USACE) Permit Required?  Yes  No Permit Type: N/A

Project Description: Replace Bridge No. 193 over Buffalo Creek on SR 2719 (High Rock Rd)

### SUMMARY OF FINDINGS

The North Carolina Department of Transportation (NCDOT) reviewed the subject project and determined:

#### Historic Architecture/Landscapes

- There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- There are no properties within the project's area of potential effects.
- There are properties over fifty years old within the area of potential effects, but they do not meet the criteria for listing on the National Register.
- All properties greater than 50 years of age located in the APE have been considered and all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

#### Archaeology

- There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- No subsurface archaeological investigations are required for this project.
- Subsurface investigations did not reveal the presence of any archaeological resources.
- Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register.
- All identified Archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

**SUMMARY OF CULTURAL RESOURCES REVIEW**

*Brief description of review activities, results of review, and conclusions:*

Review of HPO quad maps, archaeological site files was undertaken on 2/24/2011. Based on this review, there were no existing NR, SL, LD, DE, or SS properties in the Area of Potential Effects.

During the initial site visit a small 19<sup>th</sup> century cemetery was recorded within the project APE, approximately 250 feet northwest of the existing bridge. Field notes regarding cemetery are attached. The cemetery was recorded as 31GF480\*\*, an historic site.

Potential detours during replacement of the existing bridge argue for an off-site detour. The location of the cemetery at the northwest end of the APE would deter contemplation of designing a temporary bridge route along the west side of the existing bridge and roadway. The northeast quadrant was inspected on 6/29/2011. The high ground opposite the cemetery held a single wide trailer surrounded by a landscaped lawn. The floodplain below the trailer was thickly overgrown with evidence of recent flood deposition. A narrow levee borders Buffalo Creek with a wide, low swale behind the levee. Attempts at shovel tests demonstrated the presence of recent flood deposition above wetland soils. Further assessment of the quadrant by way of pedestrian survey argued against additional testing. No further work is warranted.

**SUPPORT DOCUMENTATION**

See attached: Map(s), Photos, Photocopy of notes from survey.

Signed:

  
\_\_\_\_\_  
Cultural Resources Specialist, NCDOT

7/6/11  
\_\_\_\_\_  
Date

\_\_\_\_\_  
Representative, HPO

\_\_\_\_\_  
Date

*HPO/OSA Comments:*

