STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 12, 2006

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1000
Washington, NC 27889-1000

ATTENTION: Mr. William Wescott
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 and 33 Permit Application and Neuse Riparian Buffer Authorization Request** for the Replacement of Bridge No. 415 over Buffalo Creek on SR 1718; Johnston County; TIP Project B-3672; Federal Aid Project No. BRZ-1718(4); State Project No.8.2312401; WBS 33216.1.1.

Please find enclosed the Preconstruction Notification (PCN), permit drawings, half-size plans, Natural Resources Technical Report (NRTR) and the Programmatic Categorical Exclusion (PCE) for the above-mentioned project. The North Carolina Department of Transportation proposes to replace existing Bridge No. 415 over Buffalo Creek on SR 1718 in Johnston County. The project involves replacement of the existing bridge and related approaches with a new bridge and new approaches. The new bridge will feature two 11-foot lanes with 4-foot shoulders. The project schedule calls for a March 20, 2007 let with a review date of January 30, 2007. Proposed permanent impacts include 0.004 acre of wetland impacts. Proposed temporary impacts to surface water will be 0.02 acre and 0.014 acre of hand clearing in wetlands.

Impacts to Water of the United States

General Description: Buffalo Creek is located in the 03020201 CU of the Neuse River Basin. The Division of Water Quality (DWQ) has assigned Buffalo Creek a Stream Index Number of 27-57-16-(3). DWQ has assigned a best usage classification of **C NSW**.

Buffalo Creek is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River, nor is it listed as a 303(d) stream. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 3.0 miles of the project study area.

Permanent Impacts: As stated above, permanent impacts total 0.018 acre of wetland impacts. The impacts are as follows: 0.001 acre for drilled shafts and 0.003 acre for excavation and 0.014 acre for hand clearing.

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

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

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Temporary Impacts: Temporary impacts are 0.02 acre to surface waters for a workpad and 0.014 acre for hand clearing.

Utility Impacts: There will be no impacts to jurisdictional resources due to utilities.

Neuse Buffer Rules: This project lies within the Neuse River Basin; therefore, the regulations pertaining to the Neuse River Buffer Rules will apply. There are 3,417 square feet of impacts to Zone 1 and 2,895 square feet of impacts to Zone 2. Of these impacts, 3,651 square feet are considered allowable and 2,661 square feet are allowable with mitigation.

Bridge Demolition

The superstructure for Bridge No. 415 will allow removal without dropping components into the water. Likewise, it should be possible to remove the timber piles without dropping them into the water. The concrete piers may result in as much as 10 cubic yards of fill depending on the method of removal to be determined after a contractor is selected. Best Management Practices for Bridge Demolition and Removal will be implemented. Any component of the bridge dropped into the water shall be immediately removed.

Avoidance and Minimization

To avoid impacts, NCDOT is replacing Bridge No. 415 in place and utilizing an off-site detour.

NCDOT is also minimizing impacts to surface waters by utilizing longer spans with fewer bents than the existing bridge.

Mitigation

Compensatory mitigation is not proposed for this project. Permanent impacts are 0.004 acre to wetlands and the temporary impacts to surface waters are due to the workpad and bridge demolition. Compensatory mitigation is not proposed for riparian buffer impacts because the threshold has not been exceeded that requires mitigation.

Federally Protected Species

As of April 27, 2006, the US Fish and Wildlife Service (USFWS) lists five federally protected species for Johnston County. The following table lists these species.

Common Name	Scientific Name	Status	Habitat	Conclusion
Red-cockaded Woodpecker	*Picoides borealis*	E	N	No Effect
Bald eagle	*Haliaeetus leucocephalus*	T	N	No Effect
Dwarf wedge mussel	*Alasmidonta heterodon*	E	Y	MANLTAA
Tar spinymussel	*Elliptio steinstansana*	E	N	No Effect
Michaux's sumac	*Rhus michauxii*	E	Y	No Effect

Note: E – endangered; T – threatened; MANLTAA – may affect, not likely to adversely affect

Please refer to the US Fish and Wildlife Service concurrence letter for Dwarf wedge mussel included with this application.

Regulatory Approvals

Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit but propose to proceed under a Nationwide 23 and 33 as authorized by Nationwide Permits 23 and 33 (67 FR 2020; January 15, 2002).

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

Neuse River Riparian Buffer Authorization: This project lies within the Neuse River Basin; therefore, the regulations pertaining to the Neuse River Buffer Rules will apply. However, all improvements associated with B-3672 will remain inside the limits of the existing transportation facility and, therefore, this project is considered exempt from the buffer rules.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html.

If you have any questions or need additional information, please contact Chris Underwood at (919) 715-1451.

Sincerely,

E. L. Lusk

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

W/attachment:

Mr. John Hennessy, NCDWQ (5 copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Mr. Michael Street, NCDMF
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Richard E. Greene, P.E., Division 4 Engineer
Mr. Jamie Guerrero, Division 4 Environmental Officer

W/o attachment

Mr. Scott McLendon, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Marie Sutton, Planning Engineer

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

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

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☒ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

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

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

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   _____
   _____
   _____
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: _____

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   Company Affiliation: _____
   Mailing Address: _____
   _____
   _____
   _____
   Telephone Number: _____ Fax Number: _____
   E-mail Address: _____

III. Project Information

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

1. Name of project: Replacement of Bridge No. 415 on SR 1718 over Buffalo Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3672

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Johnston Nearest Town: Wendell
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): Take NC 231 south out of Wendell to SR 1701 in Johnston County; Take SR 1718 west to Buffalo Creek Crossing

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 35° 45.02 °N 78° 21.62 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Little River

8. River Basin: Neuse
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Residential & Forest

10. Describe the overall project in detail, including the type of equipment to be used: Replacing a structurally deficient bridge using top-down construction. Standard road building equipment will be used.

11. Explain the purpose of the proposed work: To replace a structurally deficient bridge.

IV. Prior Project History

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

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
No.

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: 0.018 acre of wetland impacts and 0.02 acre of temporary fill in surface waters.
2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
1	Fill	Riverine	Yes	0	0.001
1	Excavation	Riverine	Yes	0	0.003
1	Hand clearing	Riverine	Yes	0	0.014
Total Wetland Impact (acres)					0.018

3. List the total acreage (estimated) of all existing wetlands on the property: ~1

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
N/A						
Total Stream Impact (by length and acreage)						

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
	Buffalo Creek	temporary fill	second order stream	0.02
Total Open Water Impact (acres)				0.02

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	N/A
Wetland Impact (acres):	0.018
Open Water Impact (acres):	0.02
Total Impact to Waters of the U.S. (acres)	0.038
Total Stream Impact (linear feet):	N/A

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes ☒ No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.
   N/A

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): N/A
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): N/A
   Current land use in the vicinity of the pond: N/A
   Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. Off-site detour, bridge was lengthened, and minimum widths were used for structures and approaches.

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

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

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

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

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

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

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

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☒ No ☐

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1	3,417	3 (2 for Catawba)	None
2	2,895	1.5	None
Total	6,312		None

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. Buffer mitigation is not required for these allowable impacts.

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Impervious acreage will not appreciably increase as a result of the bridge construction.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
No wastewater will be generated from the implementation of the proposed project.

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:

XV. Other Circumstances (Optional):

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

E. L. Lusk 10-11-06

Applicant/Agent's Signature **Date**

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

Underwood

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

October 8, 2004

Gregory J. Thorpe, Ph.D.
North Carolina Department of Transportation
Project Development and Environmental Analysis
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

This letter is in response to your letter of September 27, 2004 which provided the U.S. Fish and Wildlife Service (Service) with the biological determination of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge No. 415 on SR 1718 over Buffalo Creek in Johnston County (TIP No. B-3672) may affect, but is not likely to adversely affect the federally endangered dwarf wedgemussel (*Alasmidonta heterodon*). These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to the information you submitted, a mussel survey was conducted at the project site on August 12, 2004. The survey extended 100 meters upstream and 100 meters downstream of the crossing. The survey deviated from the usual 400 meters downstream after it was determined that no habitat was present for the dwarf wedgemussel. This portion of the stream is slack water which flows into Wendell Lake, less than one mile downstream. No mussels of any species were observed during the survey. However, the dwarf wedgemussel has been observed in Buffalo Creek several miles downstream of the project area.

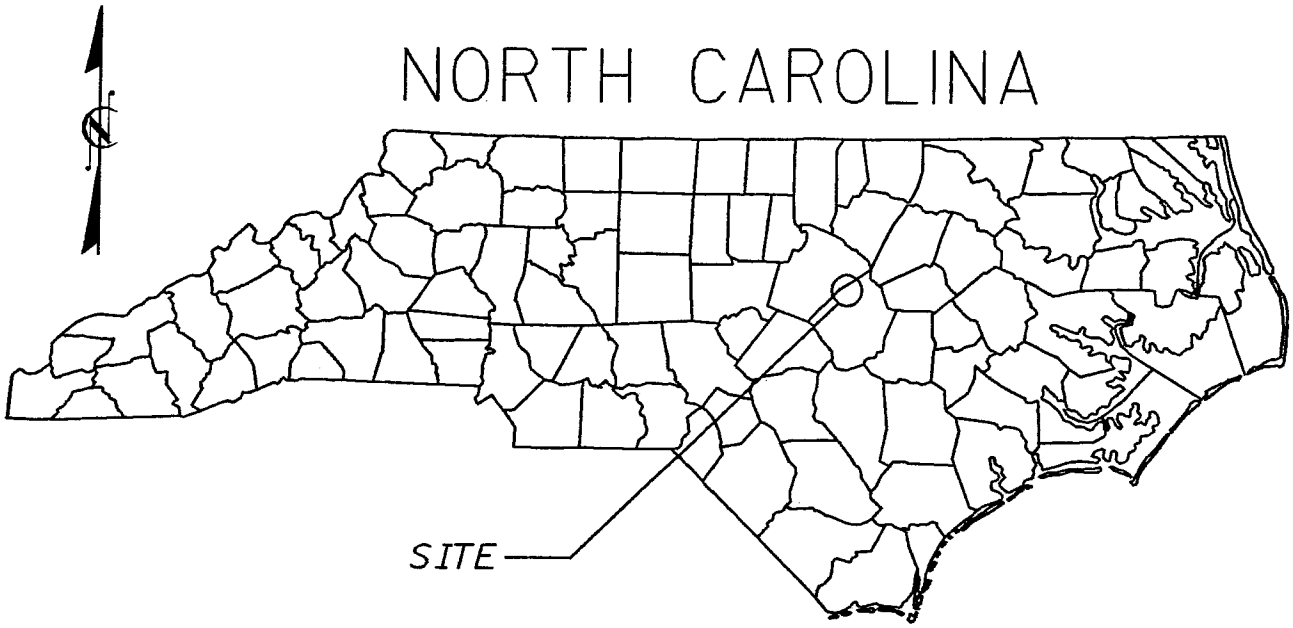
Based on the information provided and other information available, the Service concurs with your determination that the proposed bridge replacement may affect, but is not likely to adversely affect the dwarf wedgemussel. We believe that the requirements of section 7(a)(2) of the ESA have been satisfied for this species. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

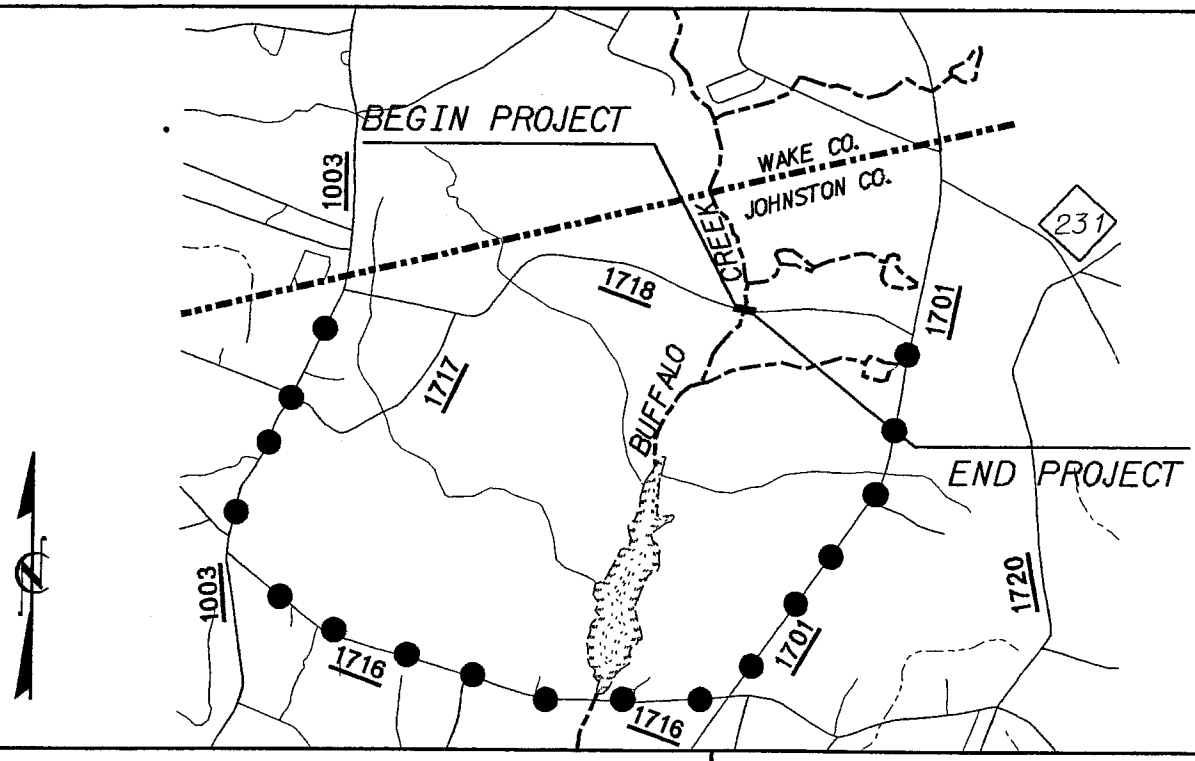
The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

John Hammond
Acting Ecological Services Supervisor

cc: Mike Bell, USACE, Washington, NC
Nicole Thomson, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC





VICINITY MAPS

WETLAND/STREAM

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
BRIDGE NO. 415
OVER BUFFALO CREEK
ON SR 1718

SHEET OF 8/06

Wetland Drawing 1 of 12

WETLAND LEGEND

WLB WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TOP OF BANK

EDGE OF WATER

PROP. LIMIT OF CUT

PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NATURAL GROUND

PROPERTY LINE

TEMP. DRAINAGE EASEMENT

PERMANENT DRAINAGE EASEMENT

EXIST. ENDANGERED ANIMAL BOUNDARY

EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE WITH LEVEL SPREADER (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

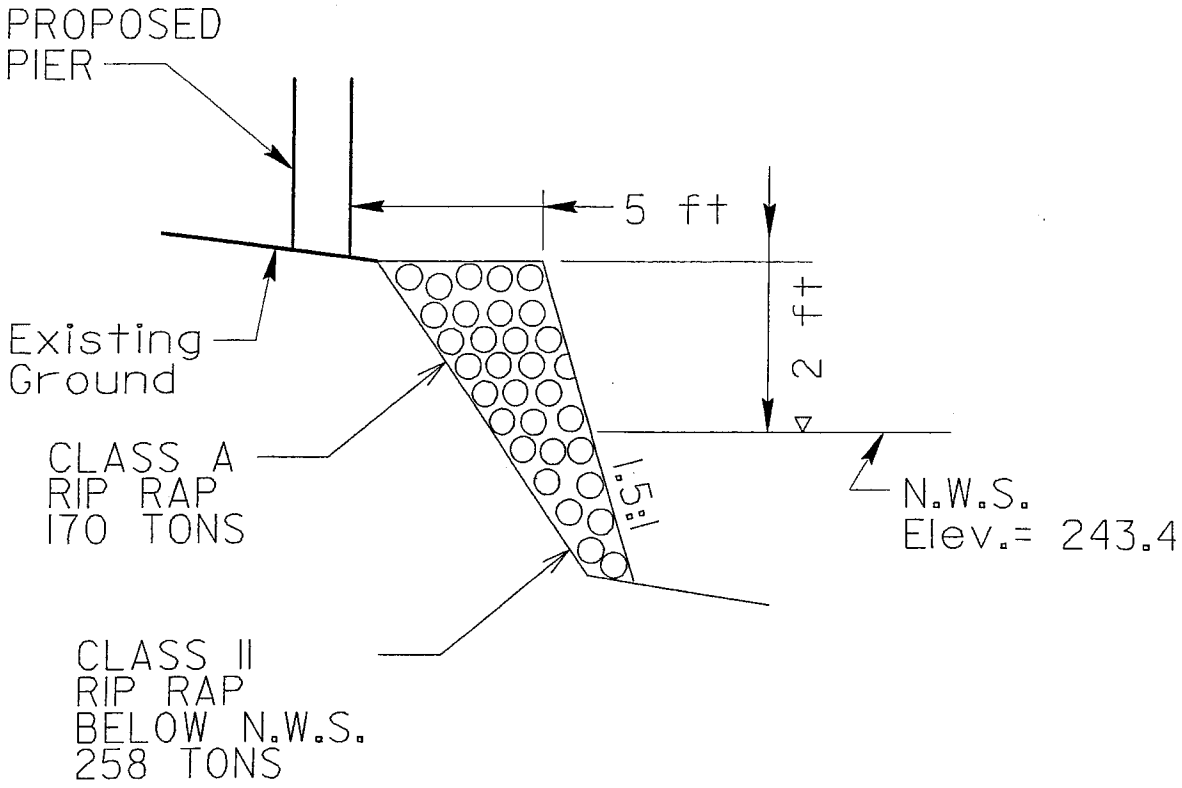
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
BRIDGE NO. 415
OVER BUFFALO CREEK
ON SR 1718

SHEET OF 8 / 06

Wetland Drawing 2 of 12

TEMPORARY WORK PAD

(Not to Scale)



NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
BRIDGE NO. 415
OVER BUFFALO CREEK
ON SR 1718

SHEET **OF** 8.1 06

Wetland Drawing 3 of 12

PROPERTY OWNERS

NAMES AND ADDRESSES

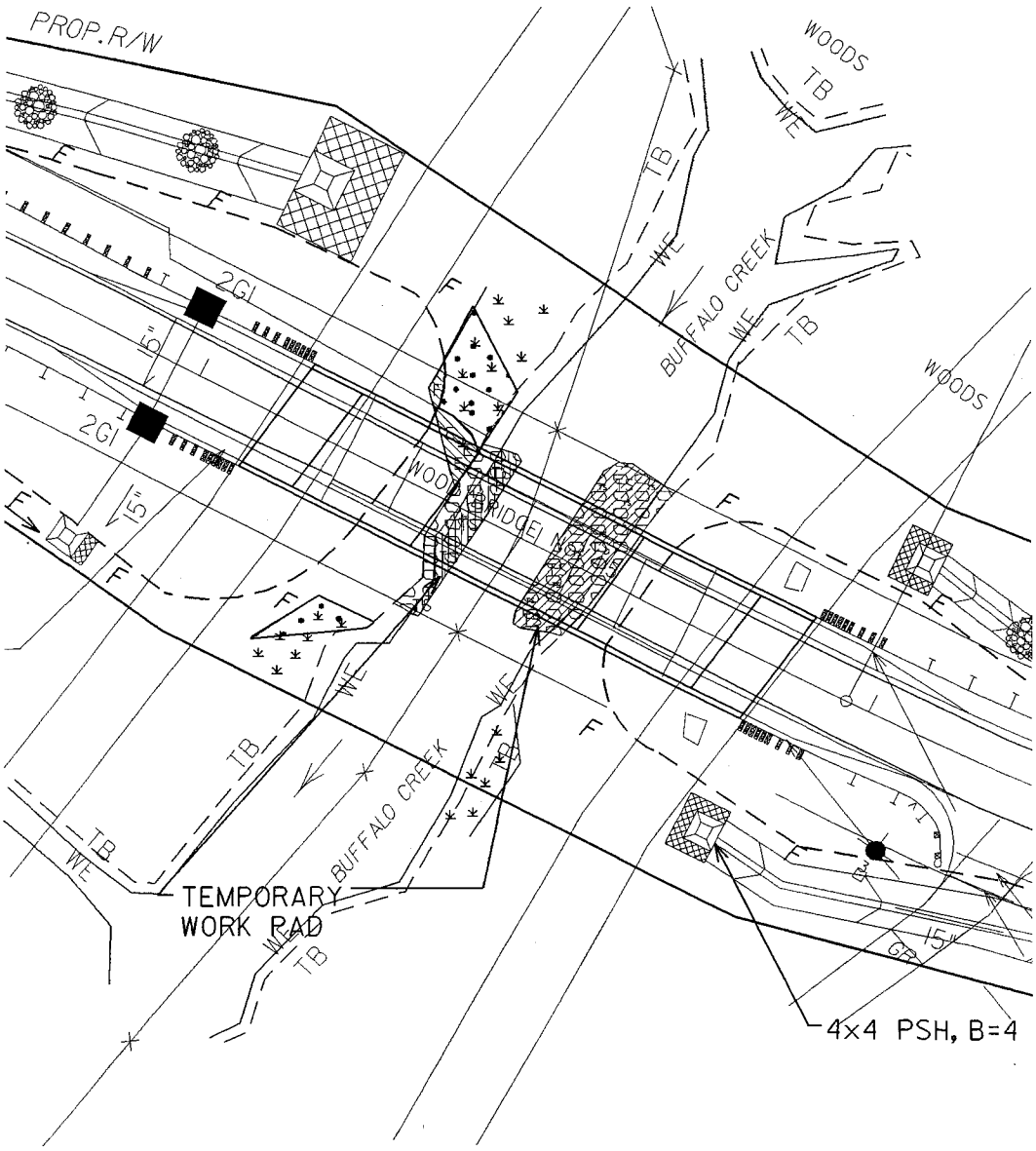
PARCEL NO.	NAMES	ADDRESSES
(1)	ANTHONY L. WHITLEY & KATHY S. WHITLEY	331 STOTTS MILL ROAD WENDEL, NC 27591
(2)	JACK W. LILES & EVA F. LILES	208 N. CHURCH STREET ZEBULON, NC 27597

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
BRIDGE NO. 415
OVER BUFFALO CREEK
ON SR 1718

SHEET OF 8 / 08

Wetland Drawing 4 of 12



PLAN VIEW

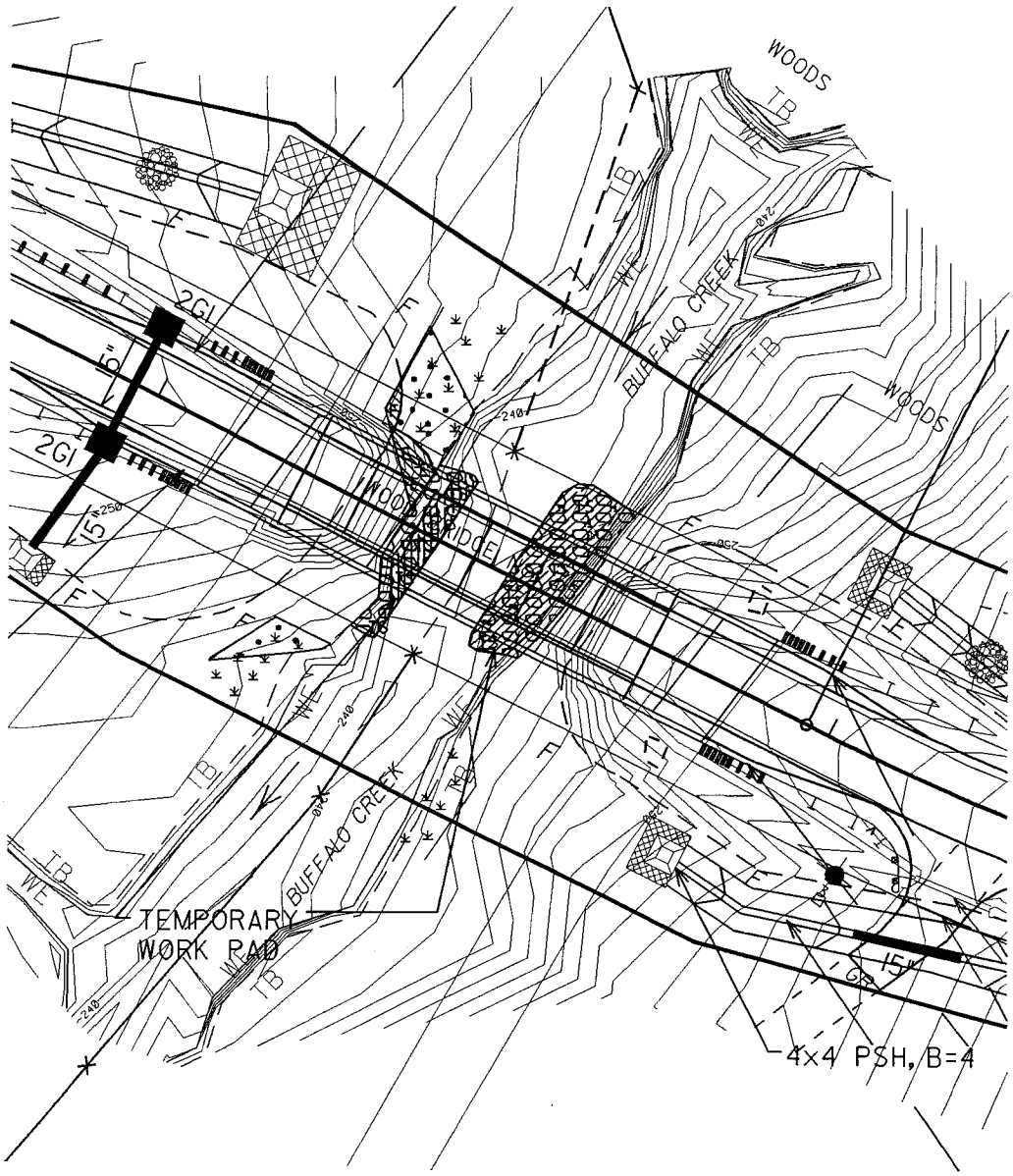
NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
REPLACE BRIDGE #415
OVER BUFFALO CREEK
ON SR 1718

SHEET OF

8/06

Wetland Drawing 5 of 12



PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
REPLACE BRIDGE #415
OVER BUFFALO CREEK
ON SR 1718

SHEET **OF** 8/06

Wetland Drawing 6 of 12

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- Sta 17+66 LT & RT	Bridge/Roadway Fill	0.001		0.003	0.014						
2	-L- Sta 17+98	Temporary Causeway							0.023			
TOTALS:			0.001		0.003	0.014			0.02			

39 ft^2 due to impact of four drilled shafts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY
WBS - 33216.1.1 (B-3672)

SHEET August-06

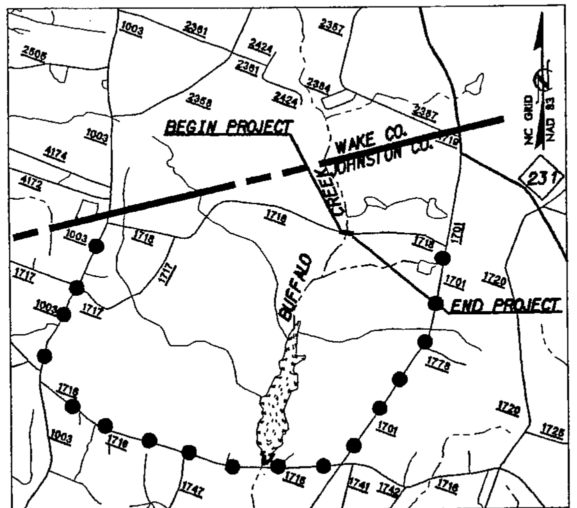
ATN Revised 3/31/05

Wetland Drawing 7 of 12

PROJECT: 33216.1.1 TIP PROJECT: B-3672

09/08/99

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



VICINITY MAP

DETOUR —●—●—●—●—

NOTE: THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARIES OF ANY TOWN OR CITY.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

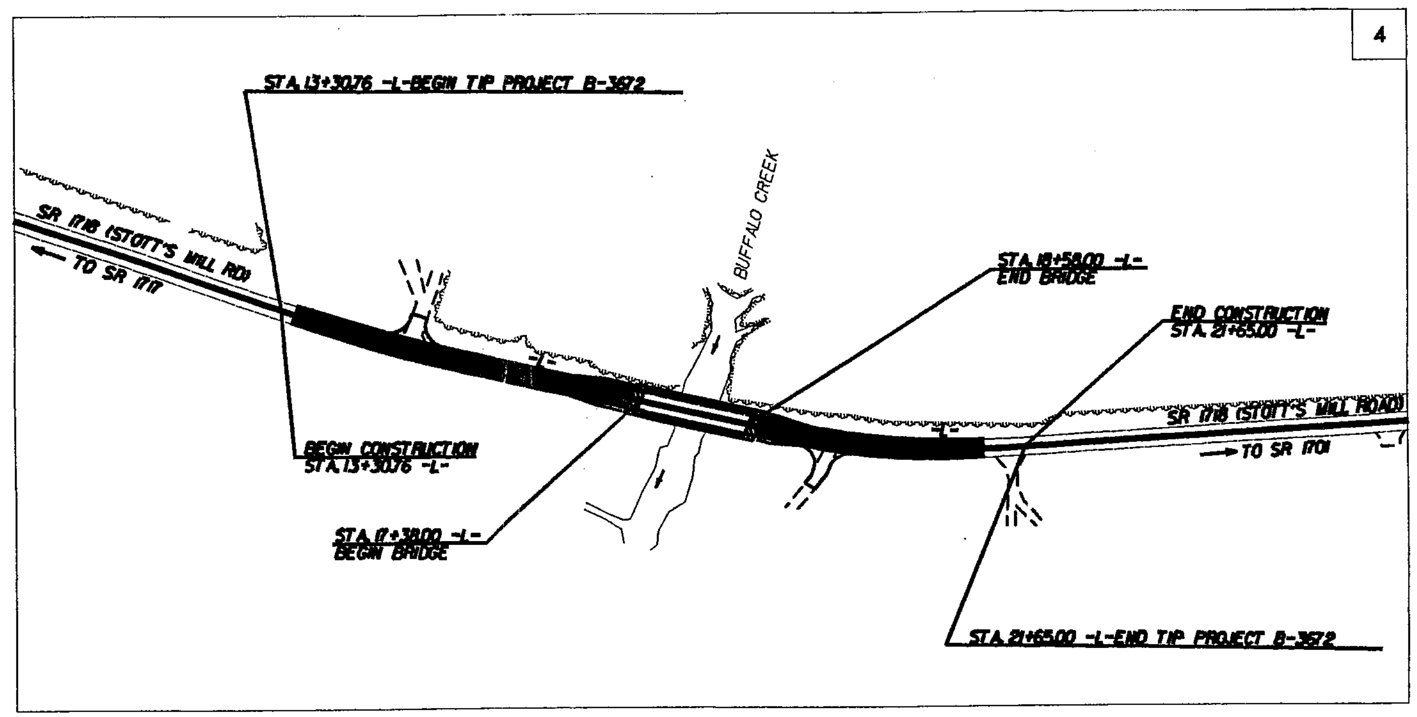
***LOCATION:* BRIDGE NO. 415 OVER BUFFALO CREEK AND APPROACHES ON SR 1718**

***TYPE OF WORK:* GRADING, DRAINAGE, PAVING, GUARDRAIL, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	B-3672		1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION		
33216.1.1	BRZ-1718 (4)	PE		
33216.2.1	BRZ-1718 (4)	R/W, UTIL.		

Wetland Drawing 8 of 12

WETLAND / STREAM



NAD 95

DESIGN EXCEPTION FOR MIN. HORIZONTAL CURVE RADIUS, SAG VERTICAL CURVE K VALUES, VERTICAL SSD, AND SUPERELEVATION.
NCDOT CONTACT: MS. CATHY S. HOUSER, PE, PROJECT ENGINEER

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 430 VPD
ADT 2027 = 730 VPD
DHV = 12%
D = 60%
T = 4% *
V = 60 MPH
* TTST 1% + DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3672 = 0.135 MILE
LENGTH STRUCTURE TIP PROJECT B-3672 = 0.023 MILE
TOTAL LENGTH OF TIP PROJECT B-3672 = 0.158 MILE

Prepared for NCDOT In the Office of:
KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
ENGINEERS ● PLANNERS ● ECOLOGISTS
SUITE 220, LANDMARK CENTER I
4601 SIX FORKS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214

2006 STANDARD SPECIFICATIONS & GENERAL NOTES

RIGHT OF WAY DATE:
MARCH 17, 2006

LETTING DATE:
TO BE DETERMINED

MICHELLE R. BRAME, P.E
PROJECT ENGINEER

KEVIN SU, E.I.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

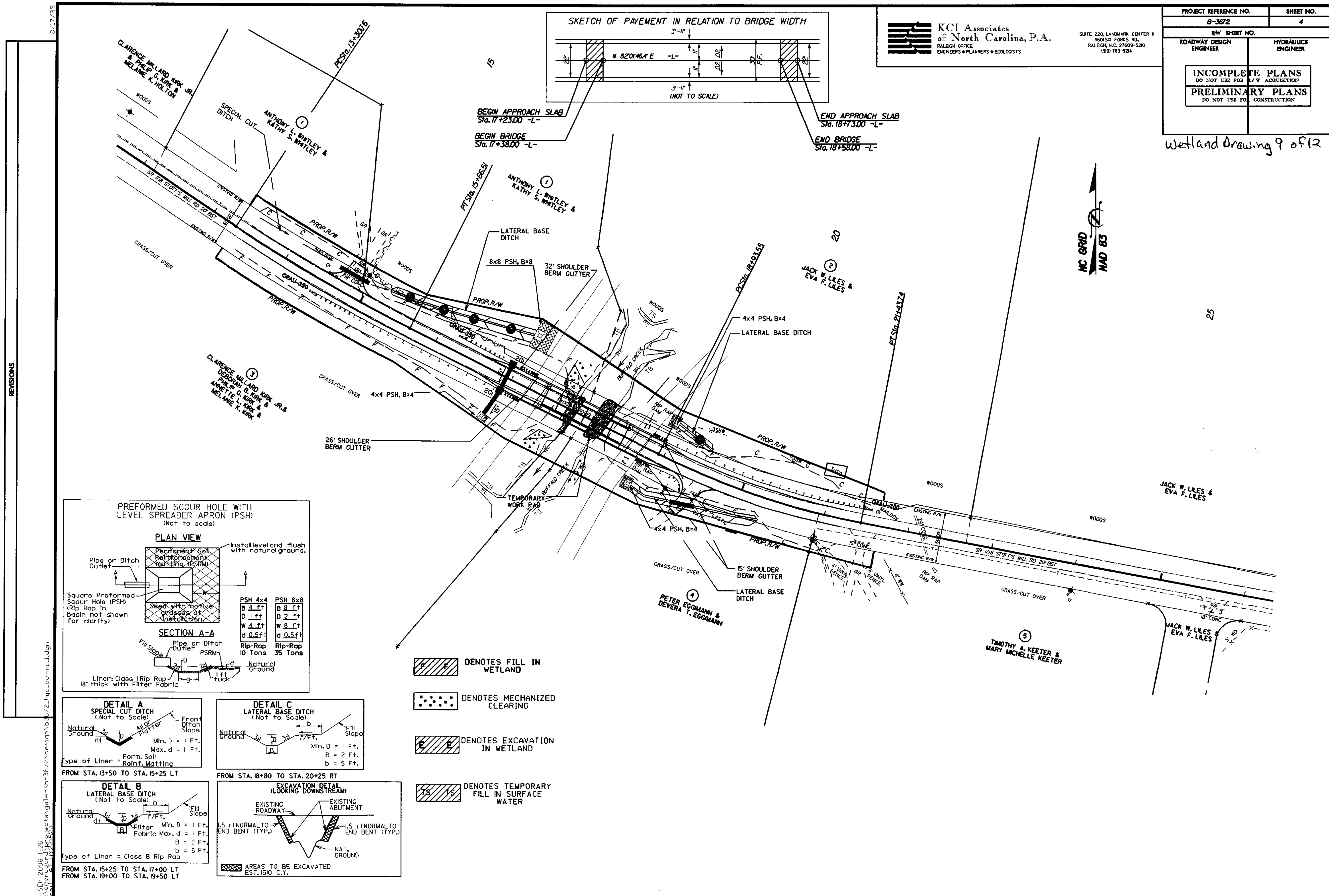
ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

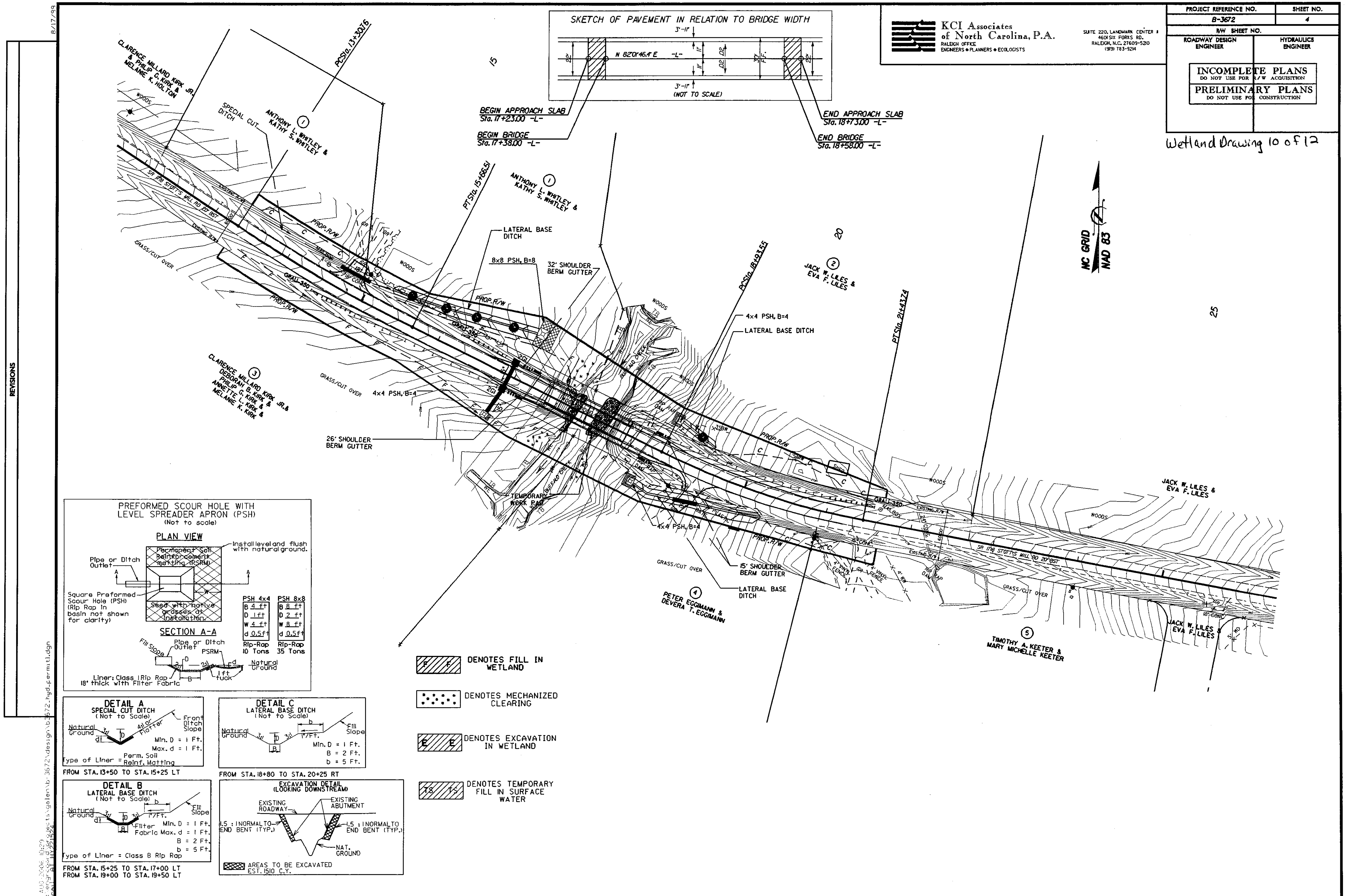
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER DATE

$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$



PROJECT REFERENCE NO.
SHEET NO.
B-3672
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Wetland Drawing 9 of 12
KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
ENGINEERS • PLANNERS • ECOLOGISTS
SUITE 220, LANDMARK CENTER II
4601 SIX FORKS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214
SKETCH OF PAVEMENT IN RELATION TO BRIDGE WIDTH
(NOT TO SCALE)
BEGIN APPROACH SLAB Sta. 17+23.00 -L-
BEGIN BRIDGE Sta. 17+38.00 -L-
END APPROACH SLAB Sta. 18+73.00 -L-
END BRIDGE Sta. 18+58.00 -L-
PC Sta. 13+30.76
PT Sta. 15+66.51
PC Sta. 18+93.55
PT Sta. 21+43.74
NC GRID NAD 83
CLARENCE MILLARD KIRK JR. & PHILIP G. KIRK & MELANIE K. HOLTON
ANTHONY L. WHITLEY & KATHY S. WHITLEY
CLARENCE MILLARD KIRK JR. & DEBORAH B. KIRK & PHILIP G. KIRK & ANNETTE L. KIRK & MELANIE K. KIRK
JACK W. LILES & EVA F. LILES
PETER EGGIMANN & DEVERA T. EGGIMANN
TIMOTHY A. KEETER & MARY MICHELLE KEETER
SR 1718 STOTT'S MILL RD 20' BST
BUFFALO CREEK
SPECIAL CUT DITCH
LATERAL BASE DITCH
8x8 PSH, B=8
32' SHOULDER BERM GUTTER
4x4 PSH, B=4
26' SHOULDER BERM GUTTER
TEMPORARY WORK PAD
15' SHOULDER BERM GUTTER
WOODS
GRASS/CUT OVER
PROP. R/W
EXISTING R/W
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (PSH)
(Not to scale)
PLAN VIEW
Pipe or Ditch Outlet
Permanent Soil Reinforcement matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH) (Rip Rap in basin not shown for clarity)
Seed with native grasses at installation.
SECTION A-A
PSH 4x4: B 4 ft, D 1 ft, W 4 ft, d 0.5 ft, Rip-Rap 10 Tons
PSH 8x8: B 8 ft, D 2 ft, W 8 ft, d 0.5 ft, Rip-Rap 35 Tons
Liner: Class I Rip Rap 18" thick with Filter Fabric
DETAIL A SPECIAL CUT DITCH (Not to Scale)
Min. D = 1 Ft. Max. d = 1 Ft.
Type of Liner = Perm. Soil Reinf. Matting
FROM STA. 13+50 TO STA. 15+25 LT
DETAIL B LATERAL BASE DITCH (Not to Scale)
Min. D = 1 Ft. Max. d = 1 Ft. B = 2 Ft. b = 5 Ft.
Type of Liner = Class B Rip Rap
FROM STA. 15+25 TO STA. 17+00 LT
FROM STA. 19+00 TO STA. 19+50 LT
DETAIL C LATERAL BASE DITCH (Not to Scale)
Min. D = 1 Ft. B = 2 Ft. b = 5 Ft.
FROM STA. 18+80 TO STA. 20+25 RT
EXCAVATION DETAIL (LOOKING DOWNSTREAM)
EXISTING ROADWAY
EXISTING ABUTMENT
1.5 : 1 NORMAL TO END BENT (TYP.)
NAT. GROUND
AREAS TO BE EXCAVATED EST. 1510 C.Y.
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY FILL IN SURFACE WATER
REVISIONS
8/17/99
13-SEP-2006 11:26


PROJECT REFERENCE NO.
SHEET NO.
B-3672
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
ENGINEERS ♦ PLANNERS ♦ ECOLOGISTS
SUITE 220, LANDMARK CENTER II
4601 SIX FORKS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214
Wetland Drawing 10 of 12
SKETCH OF PAVEMENT IN RELATION TO BRIDGE WIDTH
N 82°01'46.4" E -L-
(NOT TO SCALE)
BEGIN APPROACH SLAB
Sta. 17+23.00 -L-
BEGIN BRIDGE
Sta. 17+38.00 -L-
END APPROACH SLAB
Sta. 18+73.00 -L-
END BRIDGE
Sta. 18+58.00 -L-
REVISIONS
8/17/99
CLARENCE MILLARD KIRK JR. & PHILIP G. KIRK & MELANIE K. HOLTON
ANTHONY L. WHITLEY & KATHY S. WHITLEY
SPECIAL CUT DITCH
PC Sta. 13+30.76
PT Sta. 15+66.51
PC Sta. 18+93.55
PT Sta. 21+43.74
LATERAL BASE DITCH
8x8 PSH, B=8
32' SHOULDER BERM GUTTER
4x4 PSH, B=4
26' SHOULDER BERM GUTTER
15' SHOULDER BERM GUTTER
TEMPORARY WORK PAD
SR 1718 STOTTS MILL RD 20' BST
PROP. R/W
WOODS
GRASS/CUT OVER
JACK W. LILES & EVA F. LILES
CLARENCE MILLARD KIRK JR. & DEBORAH G. KIRK & PHILIP G. KIRK & ANNETTE L. KIRK & MELANIE K. KIRK
PETER EGGIMANN & DEVERA T. EGGIMANN
TIMOTHY A. KEETER & MARY MICHELLE KEETER
NC GRID NAD 83
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (PSH)
(Not to scale)
PLAN VIEW
Pipe or Ditch Outlet
Permanent Soil Reinforcement matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH) (Rip Rap in basin not shown for clarity)
Seed with native grasses at installation
PSH 4x4: B 4 ft, D 1 ft, W 4 ft, d 0.5 ft, Rip-Rap 10 Tons
PSH 8x8: B 8 ft, D 2 ft, W 8 ft, d 0.5 ft, Rip-Rap 35 Tons
SECTION A-A
Liner: Class I Rip Rap 18" thick with Filter Fabric
Natural Ground
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY FILL IN SURFACE WATER
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1 Ft.
Max. d = 1 Ft.
Type of Liner = Perm. Soil Reinf. Matting
FROM STA. 13+50 TO STA. 15+25 LT
DETAIL C
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1 Ft.
B = 2 Ft.
b = 5 Ft.
FROM STA. 18+80 TO STA. 20+25 RT
DETAIL B
LATERAL BASE DITCH
(Not to Scale)
Filter Fabric
Min. D = 1 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = 5 Ft.
Type of Liner = Class B Rip Rap
FROM STA. 15+25 TO STA. 17+00 LT
FROM STA. 19+00 TO STA. 19+50 LT
EXCAVATION DETAIL (LOOKING DOWNSTREAM)
EXISTING ROADWAY
EXISTING ABUTMENT
1.5 : 1 NORMAL TO END BENT (TYP.)
NAT. GROUND
AREAS TO BE EXCAVATED EST. 1510 C.Y.

BM#1 = "BENCHLITE" NAIL SET IN 18" OAK, 27.3' RT OF $\overset{\frown}{PL}$ STA 5+75.33 (-L- STA. 10+14.38), ELEV.=277.43', N 728599 E 2189103

BM#2 = "BENCHLITE" NAIL SET IN 10" OAK, 131.45' RT OF $\overset{\frown}{PL}$ STA 14+20.32 (-L- STA. 18+74.41), ELEV.=255.55', N 728566 E 2189979

BM#3 = "BENCHLITE" NAIL SET IN 10" PINE, BEYOND $\overset{\frown}{PL}$, ELEV.=301.03', N 729046 E 2190738

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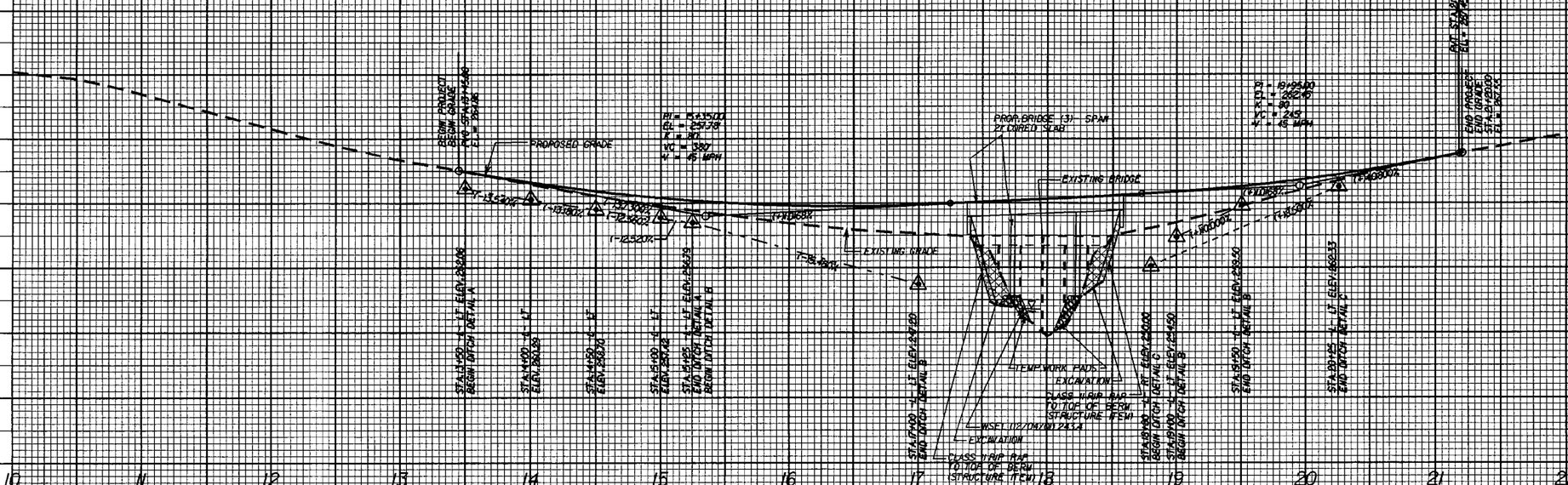
RALEIGH, N.C. 27609-5230
(919) 783-9214

PROJECT REFERENCE NO.	SHEET NO.
B-3672	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Wetland Drawing 11 of 12

HYDRAULIC & OVERTOPPING DATA

DESIGN DISCHARGE	= 3900 cfs
DESIGN FREQUENCY	= 25 yrs.
DESIGN HIGH WATER ELEV.	= 253.2 ft
BASE DISCHARGE	= 5100 cfs
BASE FREQUENCY	= 100 yrs
BASIC HIGH WATER ELEV.	= 255.0 ft
OVERTOPPING DISCHARGE	= 7350+ cfs
FREQUENCY OF OVERTOPPING FLOOD	= >500+ yr
OVERTOPPING FLOOD ELEV.	= 259.3 ft



FOR -L- PLAN, SEE SHEET 4

SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

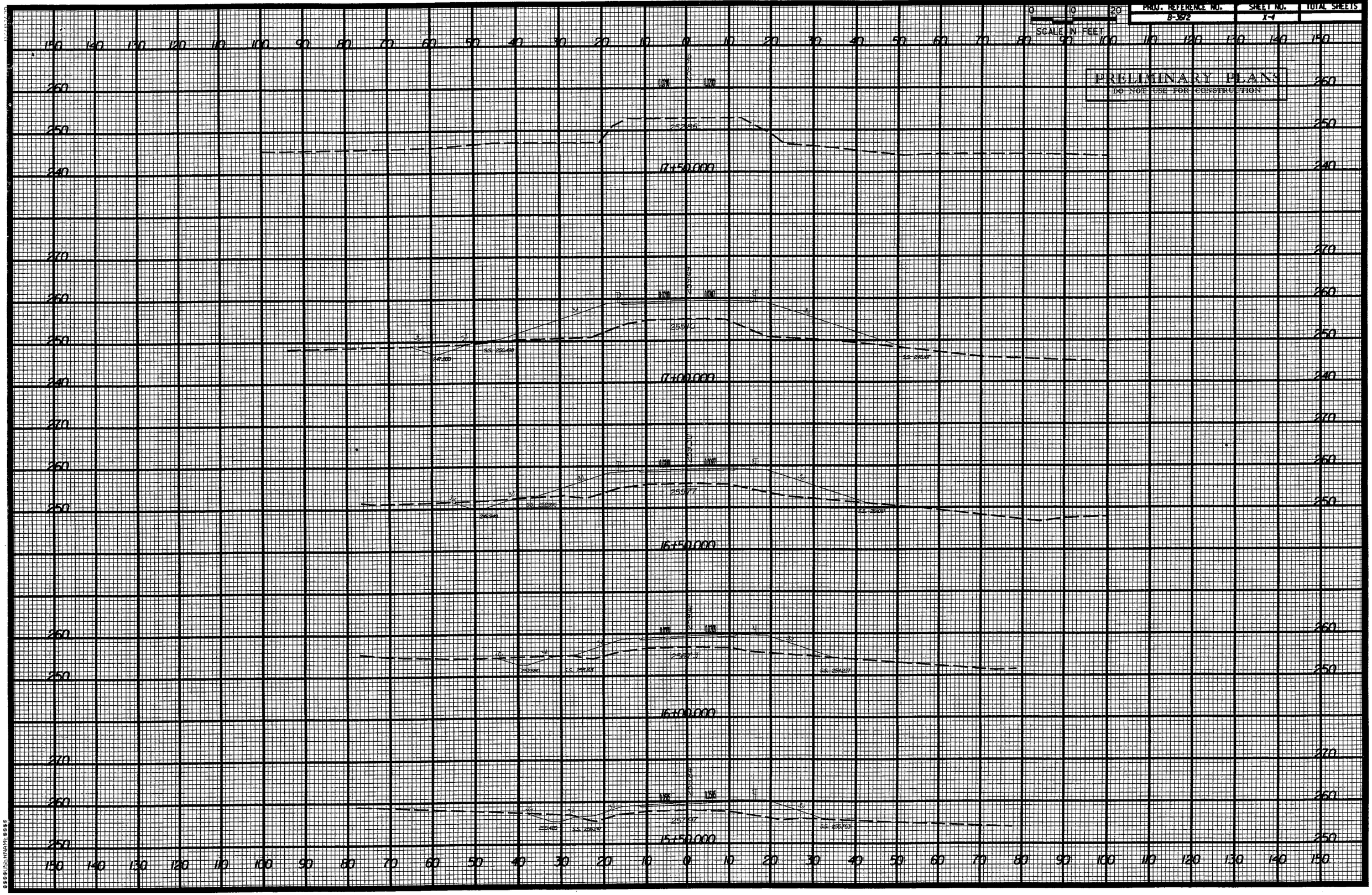
* DESIGN EXCEPTION FOR SAG VERTICAL CURVE AND VERTICAL SSD.

Wetland Drawing 12 of 12

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-3672	X-4	

SCALE IN FEET 0 10 20

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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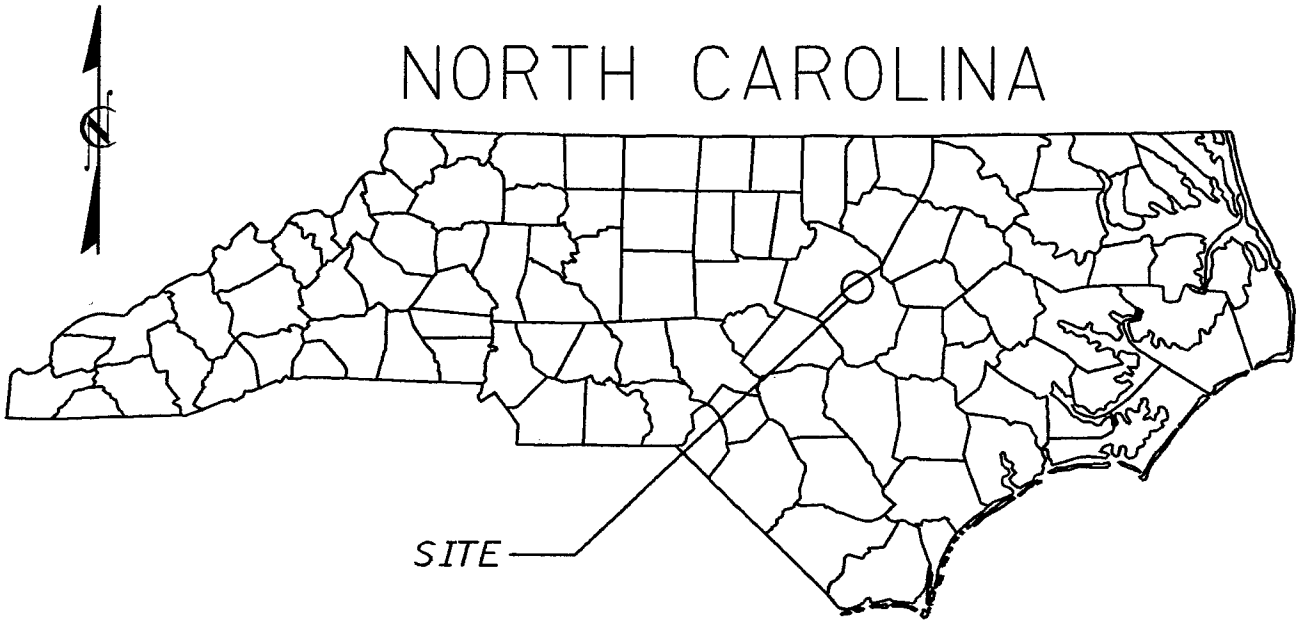
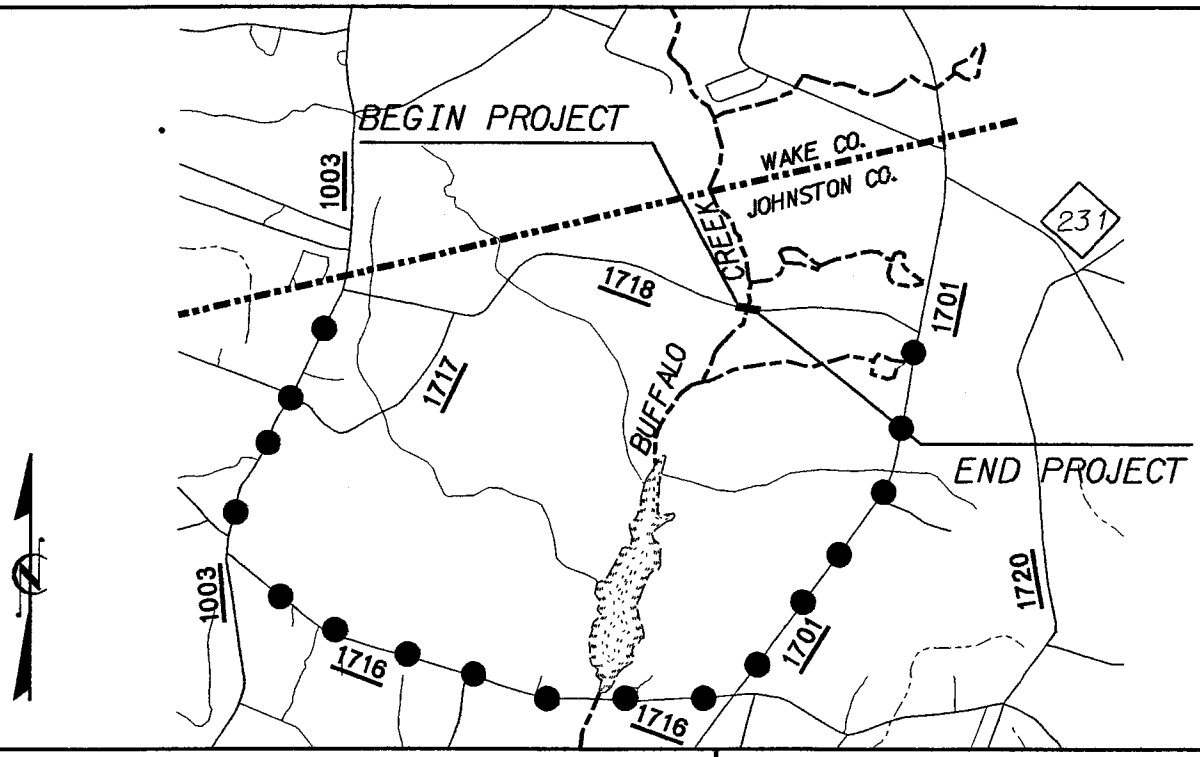




VICINITY MAPS

BUFFER

NCDOT
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
BRIDGE NO. 415
OVER BUFFALO CREEK
ON SR 1718

SHEET OF 8 / 06

Buffer Drawing 1 of 10

BUFFER LEGEND

WLB WETLAND BOUNDARY

WETLAND

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

BZ RIPARIAN BUFFER ZONE

BZ1 RIPARIAN BUFFER ZONE 1
30 ft (9.2m)

BZ2 RIPARIAN BUFFER ZONE 2
20 ft (6.1m)

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

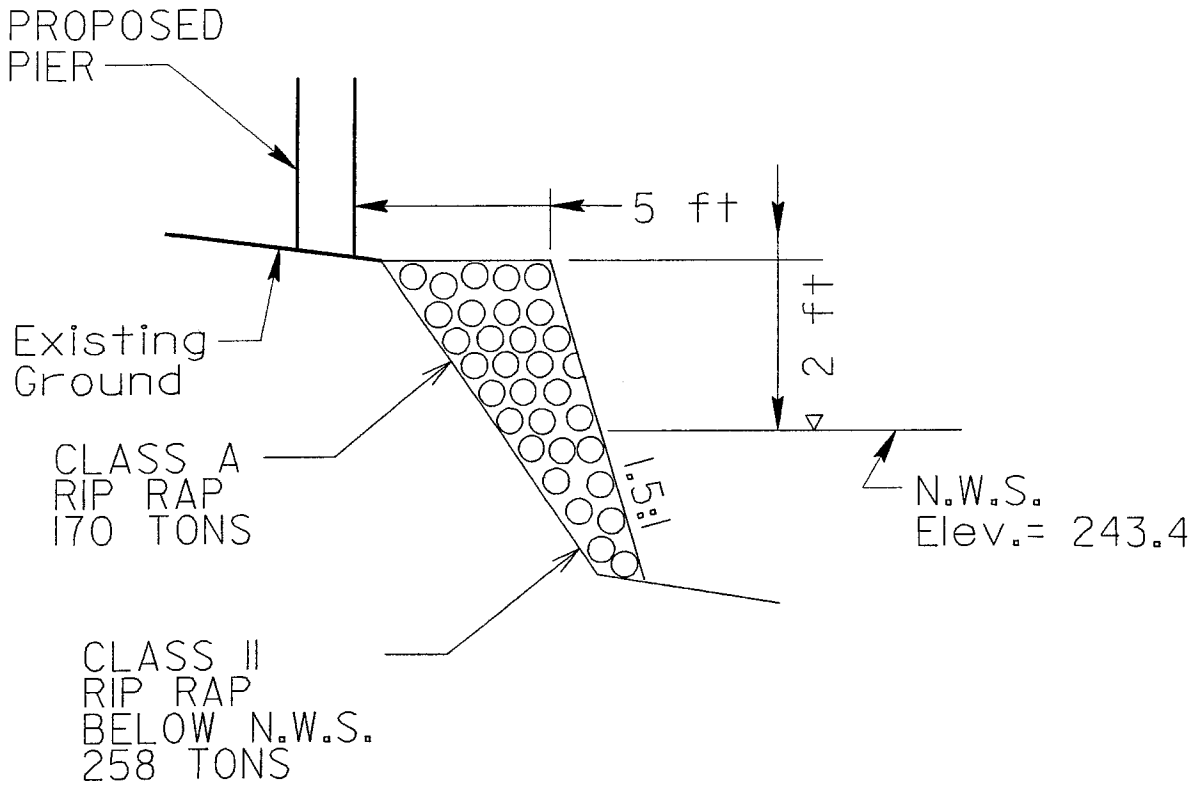
GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
REPLACE BRIDGE #415
OVER BUFFALO CREEK
ON SR 1718
Buffer Drawing 2 of 10
SHEET OF

8/06

TEMPORARY WORK PAD

(Not to Scale)



NCDOT

DIVISION OF HIGHWAYS

JOHNSTON COUNTY

PROJECT: 33216.1.1 (B-3672)

BRIDGE NO. 415

OVER BUFFALO CREEK

ON SR 1718

SHEET OF 8/06

Buffer Drawing 3 of 10

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
(1)	ANTHONY L. WHITLEY & KATHY S. WHITLEY	331 STOTTS MILL ROAD WENDEL, NC 27591
(2)	JACK W. LILES & EVA F. LILES	208 N. CHURCH STREET ZEBULON, NC 27597

NCDOT

DIVISION OF HIGHWAYS
JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)
BRIDGE NO. 415
OVER BUFFALO CREEK
ON SR 1718

SHEET OF 8 / 08

Buffer Drawing 4 of 10

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	3 Span Bridge	-L- 17+38-18+58 LT & RT		X		3349.0	302.0	3651.0					
1	Roadway Fill	-L- 17+20-18+75 LT & R	X						68.0	2593.0	2661.0		
TOTAL:						3349.0	302.0	3651.0	68.0	2593.0	2661.0		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

JOHNSTON COUNTY
PROJECT: 33216.1.1 (B-3672)

October-06
SHEET OF

Rev. May 2006

Buffer Drawing 5 of 10

BUFFER IMPACTS SUMMARY

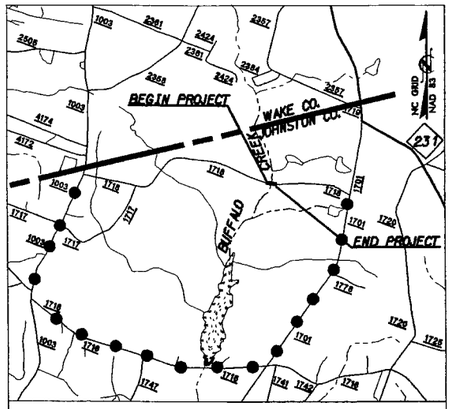
		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 17+66 LT & RT	650.0	
		650.0	0.0

09/28/99

TIP PROJECT: B-3672

PROJECT: 33216.1.1

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



VICINITY MAP

DETOUR

NOTE: THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARIES OF ANY TOWN OR CITY.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

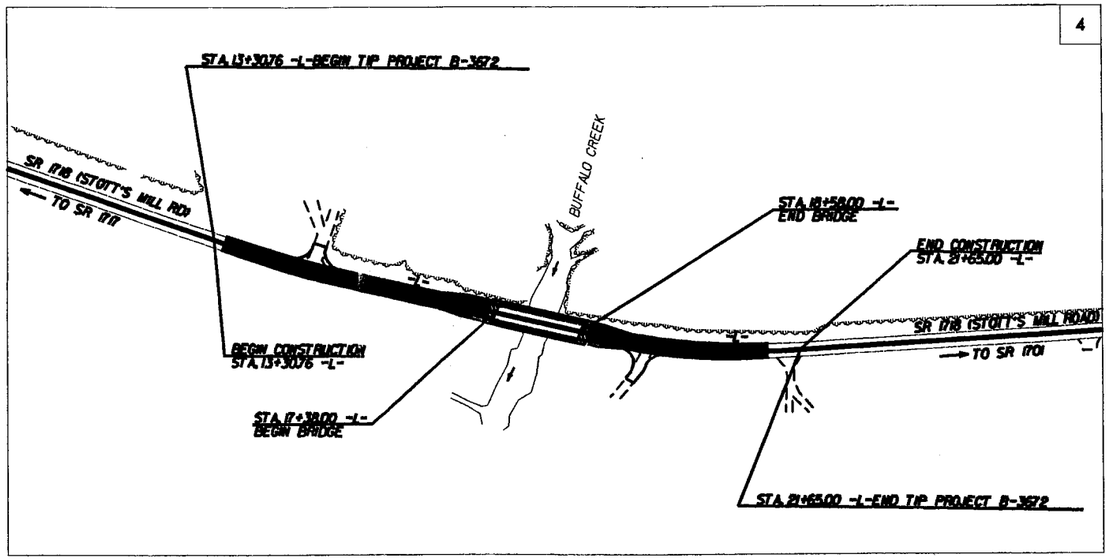
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3672	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33216.1.1	BRZ-1718 (4)	PE
33216.2.1	BRZ-1718 (4)	R/W, UTIL.

Buffer Drawing 7 of 10
BUFFER

LOCATION: ***BRIDGE NO. 415 OVER BUFFALO CREEK AND APPROACHES ON SR 1718***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, GUARDRAIL, AND STRUCTURE***



NAD 83 NC GRID

DESIGN EXCEPTION FOR MIN. HORIZONTAL CURVE RADIUS, SAG VERTICAL CURVE K VALUES, VERTICAL SSD, AND SUPERELEVATION.
NCDOT CONTACT: MS. CATHY S. HOUSER, PE, PROJECT ENGINEER

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 430 VPD
ADT 2027 = 730 VPD
DHV = 12%
D = 60%
T = 4% *
V = 60 MPH
* TTST 1% + DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3672 = 0.135 MILE
LENGTH STRUCTURE TIP PROJECT B-3672 = 0.023 MILE
TOTAL LENGTH OF TIP PROJECT B-3672 = 0.158 MILE

Prepared for NCDOT in the Office of:

KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
ENGINEERS ● PLANNERS ● ECOLOGISTS
SUITE 220, LANDMARK CENTER II
4601EX TOWNS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214

2006 STANDARD SPECIFICATIONS & GENERAL NOTES

RIGHT OF WAY DATE: MARCH 17, 2006

LETTING DATE: TO BE DETERMINED

MICHELLE R. BRAME, P.E
PROJECT ENGINEER

KEVIN SU, E.I.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

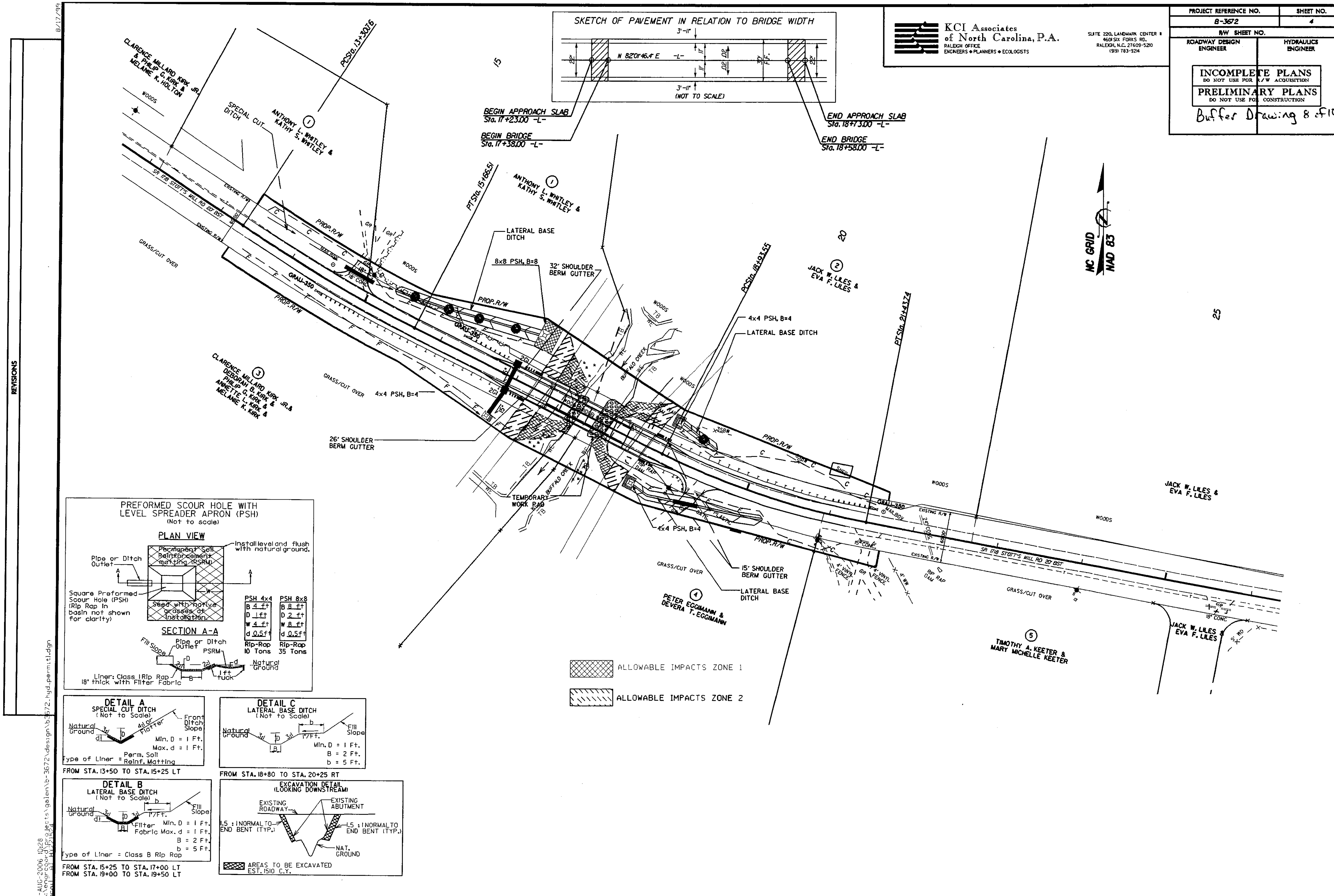
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E. DATE



PROJECT REFERENCE NO. B-3672
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Buffer Drawing 8 of 10
KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
ENGINEERS ◆ PLANNERS ◆ ECOLOGISTS
SUITE 220, LANDMARK CENTER II
4601 SIX FORKS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214
SKETCH OF PAVEMENT IN RELATION TO BRIDGE WIDTH
(NOT TO SCALE)
N 82°01'46.4" E -L-
BEGIN APPROACH SLAB Sta. 17+23.00 -L-
BEGIN BRIDGE Sta. 17+38.00 -L-
END APPROACH SLAB Sta. 18+73.00 -L-
END BRIDGE Sta. 18+58.00 -L-
NC GRID NAD 83
PC Sta. 13+30.76
PT Sta. 15+66.51
PC Sta. 18+93.55
PT Sta. 21+43.74
CLARENCE MILLARD KIRK JR. & PHILIP G. KIRK & MELANIE K. HOLTON
ANTHONY L. WHITLEY & KATHY S. WHITLEY
CLARENCE MILLARD KIRK JR. & DEBORAH B. KIRK & PHILIP G. KIRK & ANNETTE L. KIRK & MELANIE K. KIRK
JACK W. LILES & EVA F. LILES
PETER EGGIMANN & DEVERA T. EGGIMANN
TIMOTHY A. KEETER & MARY MICHELLE KEETER
SR 1718 STOTT'S MILL RD 20' BST
SPECIAL CUT DITCH
LATERAL BASE DITCH
8x8 PSH, B=8
32' SHOULDER BERM GUTTER
4x4 PSH, B=4
26' SHOULDER BERM GUTTER
TEMPORARY WORK PAD
15' SHOULDER BERM GUTTER
PROP. R/W
EXISTING R/W
GRASS/CUT OVER
WOODS
BUFFALO CREEK
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (PSH)
(Not to scale)
PLAN VIEW
Install level and flush with natural ground.
Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Square Preformed Scour Hole (PSH) (Rip Rap in basin not shown for clarity)
Seed with native grasses at installation
SECTION A-A
PSH 4x4: B 4 ft, D 1 ft, W 4 ft, d 0.5 ft, Rip-Rap 10 Tons
PSH 8x8: B 8 ft, D 2 ft, W 8 ft, d 0.5 ft, Rip-Rap 35 Tons
Liner: Class I Rip Rap 18" thick with Filter Fabric
Natural Ground
DETAIL A
SPECIAL CUT DITCH (Not to Scale)
Min. D = 1 Ft. Max. d = 1 Ft.
Type of Liner = Perm. Soil Reinf. Matting
FROM STA. 13+50 TO STA. 15+25 LT
DETAIL B
LATERAL BASE DITCH (Not to Scale)
Min. D = 1 Ft. Max. d = 1 Ft. B = 2 Ft. b = 5 Ft.
Type of Liner = Class B Rip Rap
FROM STA. 15+25 TO STA. 17+00 LT
FROM STA. 19+00 TO STA. 19+50 LT
DETAIL C
LATERAL BASE DITCH (Not to Scale)
Min. D = 1 Ft. B = 2 Ft. b = 5 Ft.
FROM STA. 18+80 TO STA. 20+25 RT
EXCAVATION DETAIL (LOOKING DOWNSTREAM)
EXISTING ROADWAY
EXISTING ABUTMENT
1.5 : 1 NORMAL TO END BENT (TYP.)
NAT. GROUND
AREAS TO BE EXCAVATED EST. 1510 C.Y.
REVISIONS
8/17/99
11-AUG-2006 10:28

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PROJECT REFERENCE NO.	SHEET NO.
B-3672	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

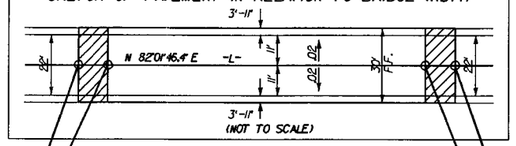
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing 9 of 10

REVISIONS

8/17/99

SKETCH OF PAVEMENT IN RELATION TO BRIDGE WIDTH



BEGIN APPROACH SLAB
Sta. 17+23.00 -L-

BEGIN BRIDGE
Sta. 17+38.00 -L-

END APPROACH SLAB
Sta. 18+73.00 -L-

END BRIDGE
Sta. 18+58.00 -L-

NC GRID
NAD 83

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (PSH)

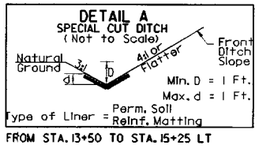
(Not to scale)

PLAN VIEW

PSH 4x4	PSH 8x8
B 4 ft	B 8 ft
D 1 ft	D 2 ft
W 4 ft	W 8 ft
d 0.5 ft	d 0.5 ft
Rip-Rap 10 Tons	Rip-Rap 35 Tons

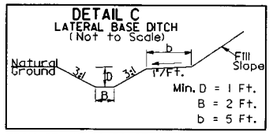
SECTION A-A

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



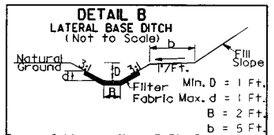
FROM STA. 13+50 TO STA. 15+25 LT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



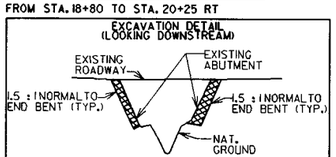
FROM STA. 18+80 TO STA. 20+25 RT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 15+25 TO STA. 17+00 LT
FROM STA. 19+00 TO STA. 19+50 LT

EXCAVATION DETAIL
(LOOKING DOWNSTREAM)



AREAS TO BE EXCAVATED
EST. 1510 C.Y.

BM#1 = "BENCHLITE" NAIL SET IN 18" OAK, 27.3' RT OF $\underset{L}{\mathbb{P}}$ STA 5+75.33 (-L- STA. 10+14.38), ELEV.=277.43', N 728599 E 2189103

BM#2 = "BENCHLITE" NAIL SET IN 10" OAK, 131.45' RT OF $\underset{L}{\mathbb{P}}$ STA 14+20.32 (-L- STA. 18+74.41), ELEV.=255.55', N 728566 E 2189979

BM#3 = "BENCHLITE" NAIL SET IN 10" PINE, BEYOND $\underset{L}{\mathbb{P}}$, ELEV.=301.03', N 729046 E 2190738

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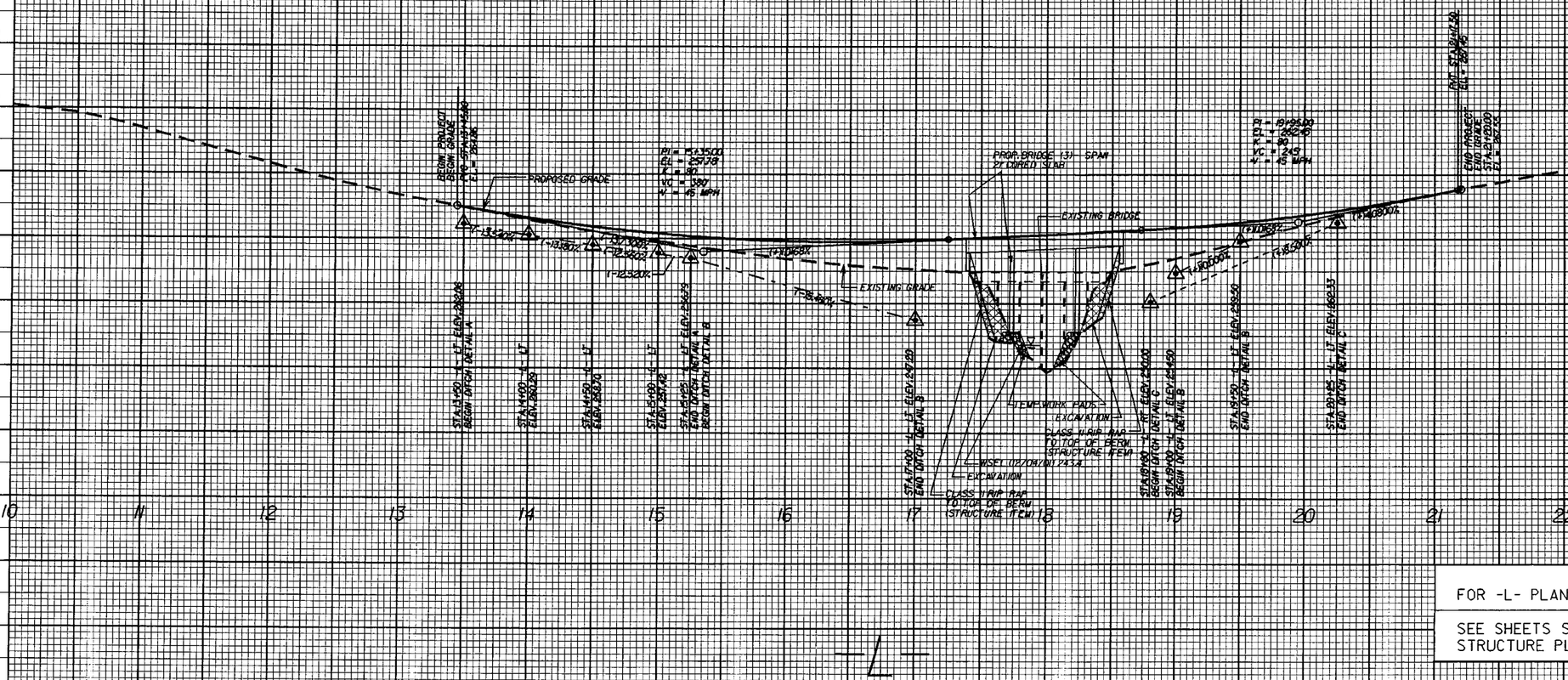
PROJECT REFERENCE NO.	SHEET NO.
B-3672	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing 10 of 10

HYDRAULIC & OVERTOPPING DATA

DESIGN DISCHARGE	= 3900 cfs
DESIGN FREQUENCY	= 25 yrs.
DESIGN HIGH WATER ELEV.	= 253.2 ft
BASE DISCHARGE	= 5100 cfs
BASE FREQUENCY	= 100 yrs
BASIC HIGH WATER ELEV.	= 255.0 ft
OVERTOPPING DISCHARGE	≡ 7350+ cfs
FREQUENCY OF OVERTOPPING FLOOD	= >500+ yr
OVERTOPPING FLOOD ELEV.	= 259.3 ft



FOR -L- PLAN, SEE SHEET 4

SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

* DESIGN EXCEPTION FOR SAG VERTICAL CURVE AND VERTICAL SSD.

PROJECT: 33216.1.1 TIP PROJECT: B-3672

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

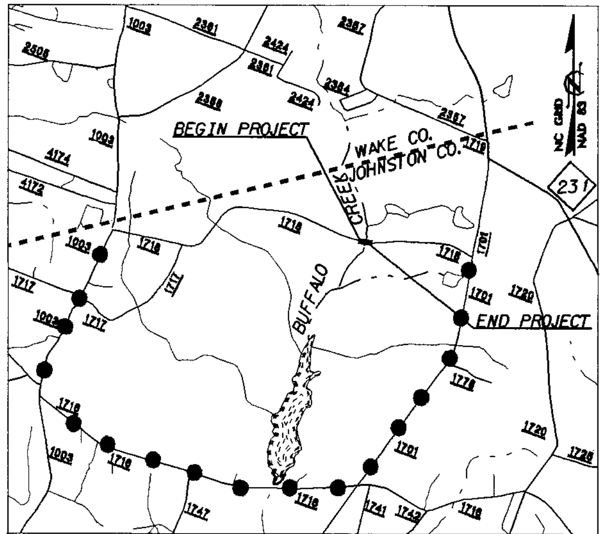
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3672	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33216.1.1	BRZ-1718 (4)	PE
33216.2.1	BRZ-1718 (4)	R/W, UTIL.

JOHNSTON COUNTY

LOCATION: BRIDGE NO. 415 OVER BUFFALO CREEK AND APPROACHES ON SR 1718

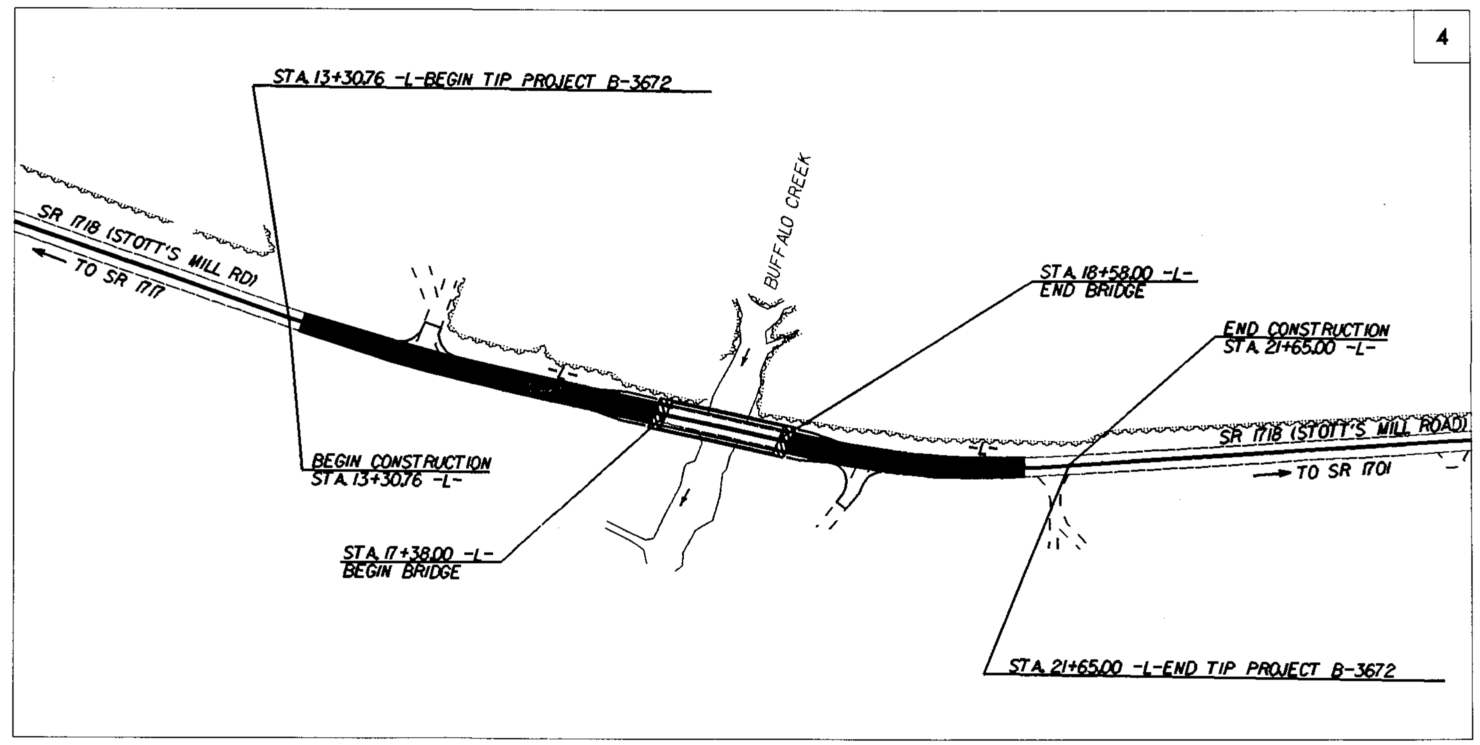
TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL, AND STRUCTURE



VICINITY MAP

DETOUR —●—●—●—●—

NOTE: THIS PROJECT IS NOT WITHIN THE MUNICIPAL BOUNDARIES OF ANY TOWN OR CITY.



NAD 95

DESIGN EXCEPTION FOR MIN. HORIZONTAL CURVE RADIUS, SAG VERTICAL CURVE K VALUES, VERTICAL SSD, AND SUPERELEVATION.
NCDOT CONTACT: MS. CATHY S. HOUSER, PE, PROJECT ENGINEER

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 430 VPD
ADT 2027 = 730 VPD
DHV = 12%
D = 60%
T = 4% *
V = 60 MPH
* TTST 1% + DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3672 = 0.135 MILE
LENGTH STRUCTURE TIP PROJECT B-3672 = 0.023 MILE
TOTAL LENGTH OF TIP PROJECT B-3672 = 0.158 MILE

Prepared for NCDOT In the Office of:
KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
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SUITE 220, LANDMARK CENTER II
4601 SIX FORKS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214

2006 STANDARD SPECIFICATIONS & GENERAL NOTES

RIGHT OF WAY DATE: MARCH 29, 2006

LETTING DATE: MARCH 20, 2007

MICHELLE R. BRAME, P.E
PROJECT ENGINEER

KEVIN SU, E.I.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE HIGHWAY DESIGN ENGINEER P.E. DATE

09/08/9
22-AUG-2006 11:24
r:\roadway\proj\b3672_rdy_tsh.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3672	1-B

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

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

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
- Exist. Control of Access Line
- Prop. Control of Access Line
- Exist. Easement Line (E)
- Prop. Temp. Construction Easement Line (E)
- Prop. Temp. Drainage Easement Line (TDE)
- Prop. Perm. Drainage Easement Line (PDE)

HYDROLOGY

- Stream or Body of Water
- Buffer Zone 1 and Buffer Zone 2 (BZ)
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches (FLOW)

STRUCTURES

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

MINOR
- Head & End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Boxes (CB)
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal
- U/G Telephone Cable Hand Hold
- Cable TV Pedestal
- U/G TV Cable Hand Hold
- U/G Power Cable Hand Hold
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole
- Telephone Booth
- Cellular Telephone Tower
- Water Manhole
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box
- Fiber Optic Splice Box
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement (TS)
- Recorded Water Line (W)
- Designated Water Line (S.U.E.*) (W)
- Sanitary Sewer (SS)
- Recorded Sanitary Sewer Force Main (FSS)
- Designated Sanitary Sewer Force Main(S.U.E.*) (FSS)
- Recorded Gas Line (G)
- Designated Gas Line (S.U.E.*) (G)
- Storm Sewer (S)
- Recorded Power Line (P)
- Designated Power Line (S.U.E.*) (P)
- Recorded Telephone Cable (T)
- Designated Telephone Cable (S.U.E.*) (T)
- Recorded U/G Telephone Conduit (TC)
- Designated U/G Telephone Conduit (S.U.E.*) (TC)
- Unknown Utility (S.U.E.*) (?UTL)
- Recorded Television Cable (TV)
- Designated Television Cable (S.U.E.*) (TV)
- Recorded Fiber Optics Cable (FO)
- Designated Fiber Optics Cable (S.U.E.*) (FO)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record (ATTUR)
- End of Information (E.O.I.)

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol (PL)
- Exist. Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Property Number (123)
- Parcel Number (6)
- Fence Line (WW & ISBW)
- Existing Wetland Boundaries (WLB)
- Medium Quality Wetland Boundaries (MQ WLB)
- Low Quality Wetland Boundaries (LQ WLB)
- Proposed Wetland Boundaries (WLB)
- Existing Endangered Animal Boundaries (EAB)
- Existing Endangered Plant Boundaries (EPB)

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign
- Well
- Small Mine
- Swimming Pool

TOPOGRAPHY

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

VEGETATION

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

RAILROADS

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)

revised 02/02/00

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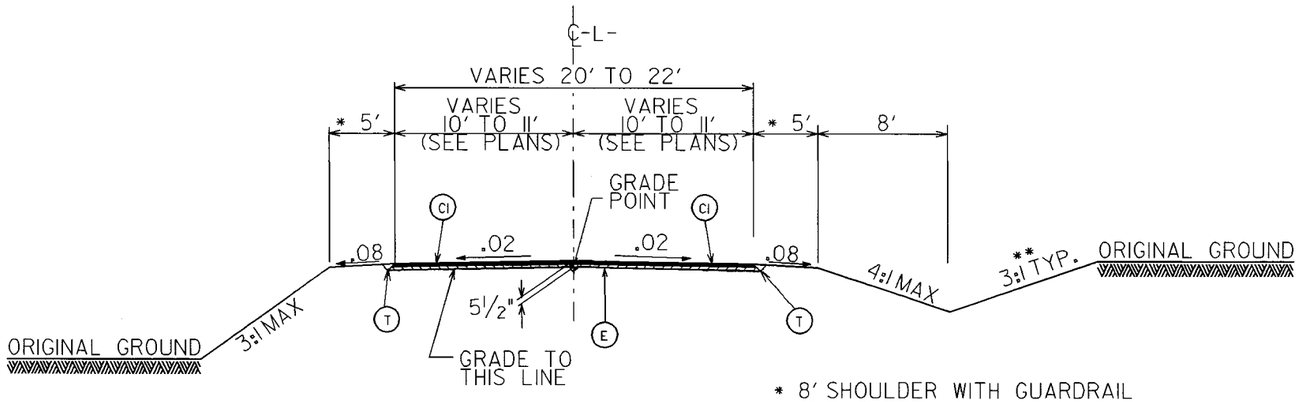
PROJECT REFERENCE NO.	SHEET NO.
B-3672	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



* 8' SHOULDER WITH GUARDRAIL
** 2.5:1 SLOPE AT STA. 21+00 RT.

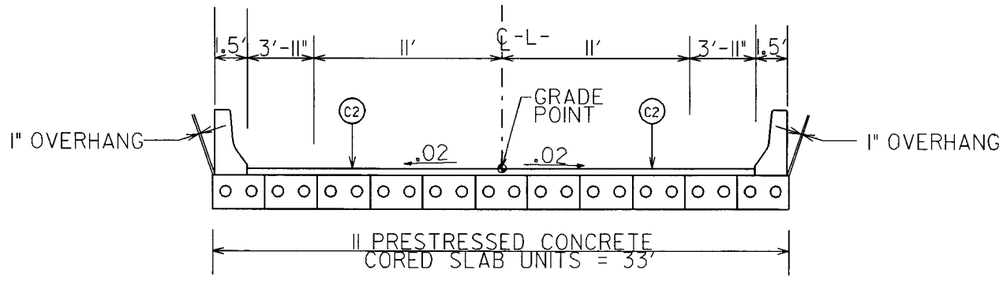
TYPICAL SECTION NO.1

-L- STA. 13+45.00 TO STA. 17+38.00 (BEGIN BRIDGE)
-L- STA. 18+58.00 (END BRIDGE) TO STA. 21+20.00

PAVEMENT SCHEDULE

CODE	DESCRIPTION
(C1)	PROP. APPROX. 2 1/2" ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS PER SQ. YARD IN EACH OF TWO LAYERS.
(C2)	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS PER SQ. YARD PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1-1/2" IN DEPTH.
(E)	PROP. APPROX. 3 " ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS PER SQ. YARD.
(T)	EARTH MATERIAL.

USE 1:1 PAVEMENT EDGE SLOPES UNLESS OTHERWISE NOTED



TYPICAL SECTION NO.2

-L- STA. 17+38.00 TO STA. 18+58.00

REVISIONS
8/17/99

22-AUG-2006 10:47
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$$$$USERNAME$$$$

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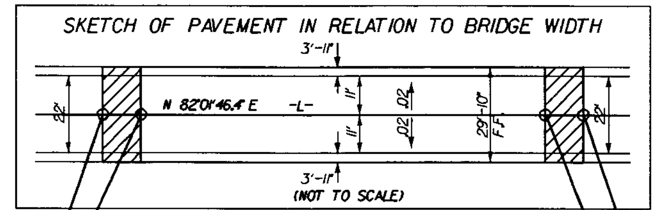
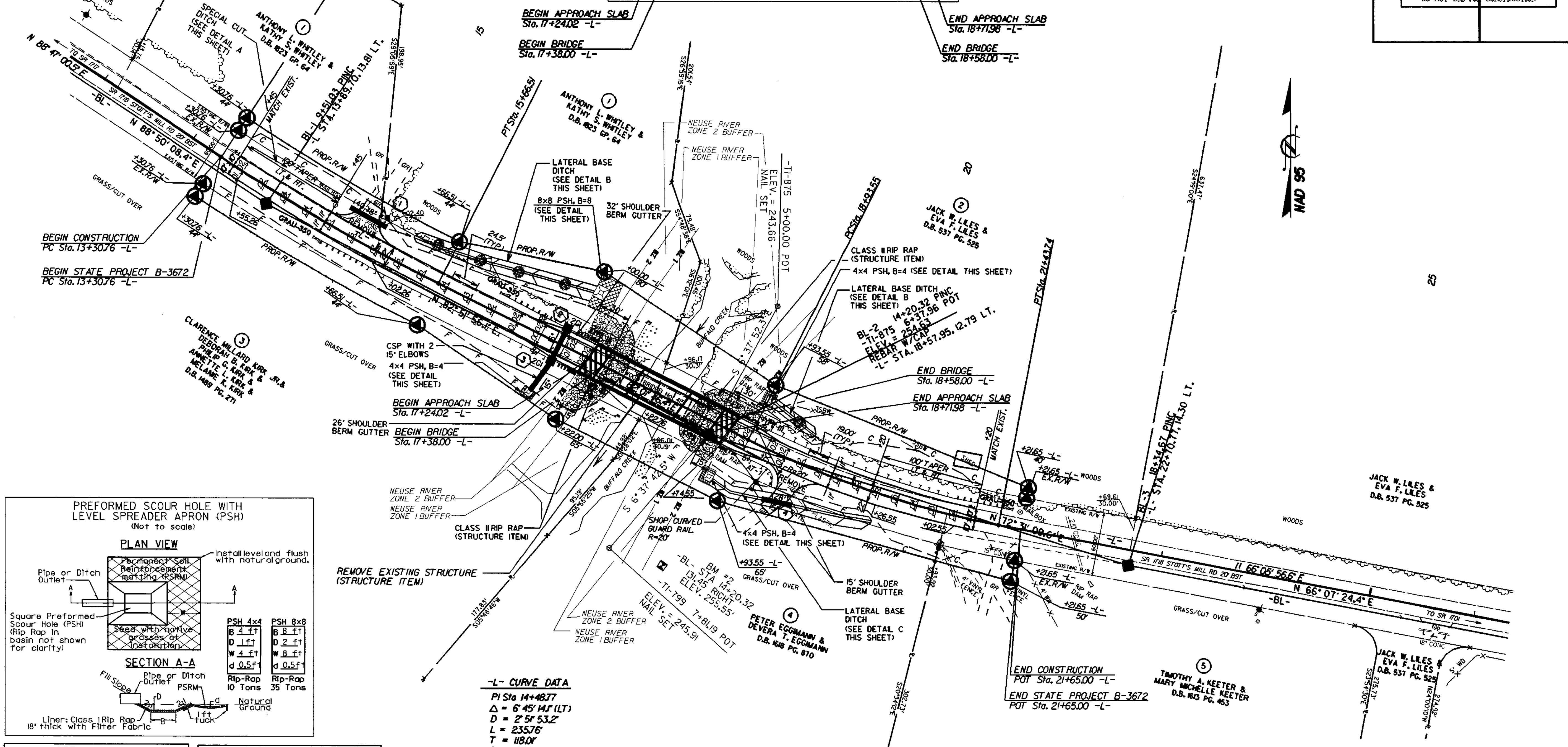
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



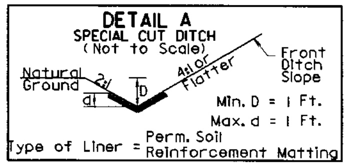


-L- CURVE DATA
PI Sta 14+48.77
Δ = 6°45' 14.1" (LT)
D = 2°51' 53.2"
L = 235.76'
T = 118.01'
R = 2,000.00'
SE = 0.07
RUNOFF = SEE PLANS
V = 60 MPH

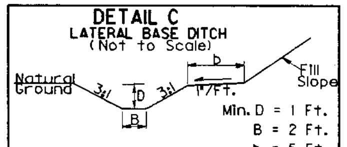
-L- CURVE DATA
PI Sta 20+19.48
Δ = 15°55' 49.8" (LT)
D = 6°21' 58.3"
L = 250.24'
T = 125.93'
*R = 900.00'
SE = 0.06
RUNOFF = SEE PLANS
V = 40 MPH

PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON (PSH)
(Not to scale)
PLAN VIEW
SECTION A-A

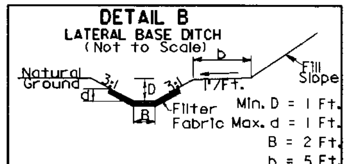
PSH 4x4	PSH 8x8
B 4 ft	B 8 ft
D 1 ft	D 2 ft
W 4 ft	W 8 ft
d 0.5 ft	d 0.5 ft
Rip-Rap 10 Tons	Rip-Rap 35 Tons



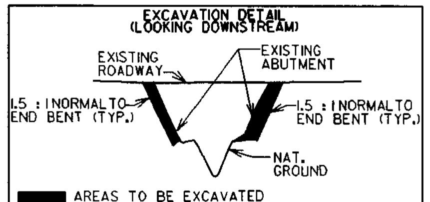
FROM STA. 13+50 TO STA. 15+25 LT



FROM STA. 18+80 TO STA. 20+25 RT



FROM STA. 15+25 TO STA. 17+00 LT
FROM STA. 19+00 TO STA. 19+50 LT



*DESIGN EXCEPTION FOR HORIZONTAL CURVE RADIUS & SUPERELEVATION.

DENOTES APPROACH SLAB

NOTES:
1. SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS.
2. SEE SHEET 5 FOR GRADE AND PROFILE.
3. ALL PROPOSED DRIVEWAY RADII 25 FT UNLESS OTHERWISE SHOWN.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3672-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 728,625.47(ft) EASTING: 2,189,027.51(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990271
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3672-1" TO -L- STATION 13+45.00 IS N 87°00'33" E, 406.13'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

REVISIONS

8/17/99

22-AUG-2006 10:49

BM#1 = "BENCHLITE" NAIL SET IN 18" OAK, 27.3' RT OF ℄
STA 5+75.33 (-L- STA.10+14.38). ELEV.=277.43'.
N 728599 E 2189103

BM#2 = "BENCHLITE" NAIL SET IN 10" OAK, 131.45' RT OF ℄
STA 14+20.32 (-L- STA.18+74.41). ELEV.=255.55'.
N 728566 E 2189979

BM#3 = "BENCHLITE" NAIL SET IN 10" PINE, BEYOND ℄.
ELEV.=301.03'. N 729046 E 2190738

KCI Associates of North Carolina, P.A.
RALEIGH OFFICE
ENGINEERS ◆ PLANNERS ◆ ECOLOGISTS

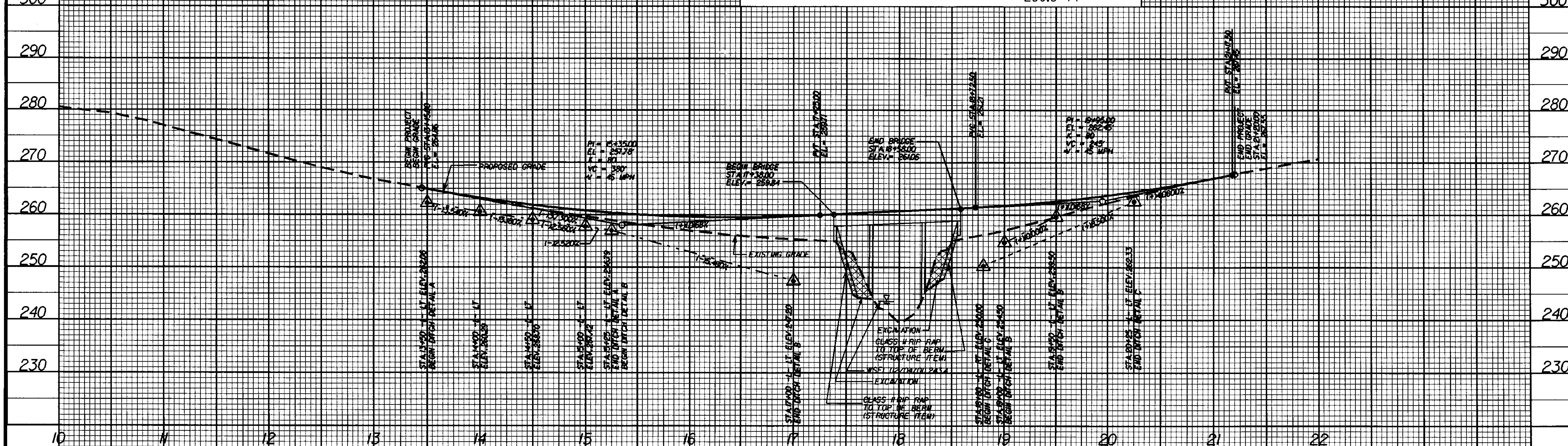
SUITE 220, LANDMARK CENTER II
4601 SIX FORKS RD.
RALEIGH, N.C. 27609-5210
(919) 783-9214

PROJECT REFERENCE NO.	SHEET NO.
B-3672	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HYDRAULIC & OVERTOPPING DATA

DESIGN DISCHARGE	= 3900 cfs
DESIGN FREQUENCY	= 25 yrs.
DESIGN HIGH WATER ELEV.	= 253.2 ft
BASE DISCHARGE	= 5100 cfs
BASE FREQUENCY	= 100 yrs
BASIC HIGH WATER ELEV.	= 255.0 ft
OVERTOPPING DISCHARGE	≡ 7350+ cfs
FREQUENCY OF OVERTOPPING FLOOD	= >500+ yr
OVERTOPPING FLOOD ELEV.	= 259.3 ft



FOR -L- PLAN, SEE SHEET 4

SEE SHEETS S-1 THRU S-? FOR
STRUCTURE PLANS

-L-

* DESIGN EXCEPTION FOR SAG VERTICAL CURVE AND VERTICAL SSD.

S:\Roadway\bridges\B3672\gpk\EW.LOG

PROJ. REFERENCE NO.	SHEET NO.
B-3672	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

Station B3672L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+45.00	0	0
14+00.00	53	21
14+50.00	51	55
15+00.00	23	104
15+50.00	9	155
16+00.00	23	214
16+50.00	33	313
17+00.00	39	483
19+00.00	67	837
19+50.00	49	351
20+00.00	79	177
20+50.00	122	72
21+20.00	134	22

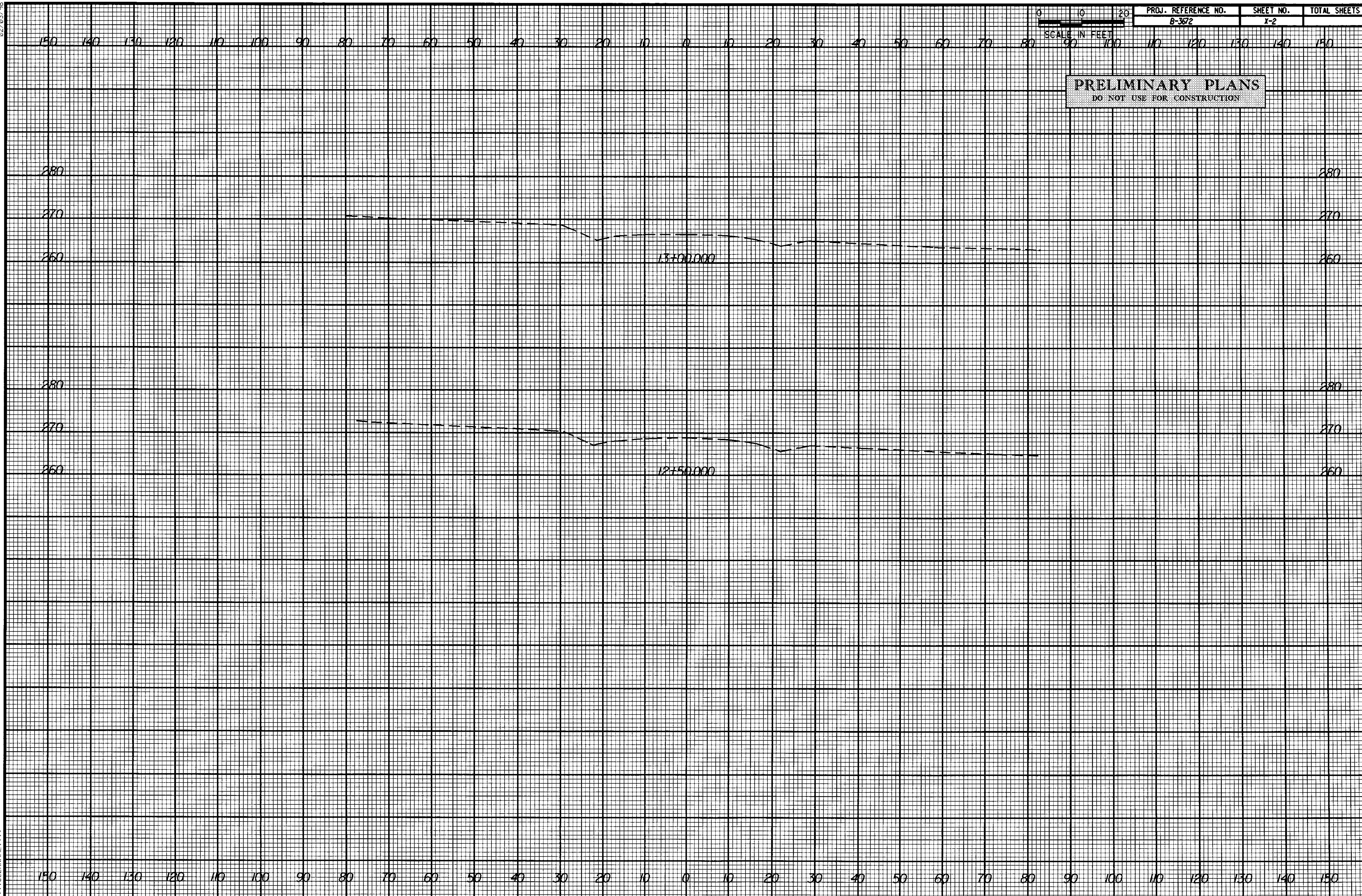
Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-3672	X-2	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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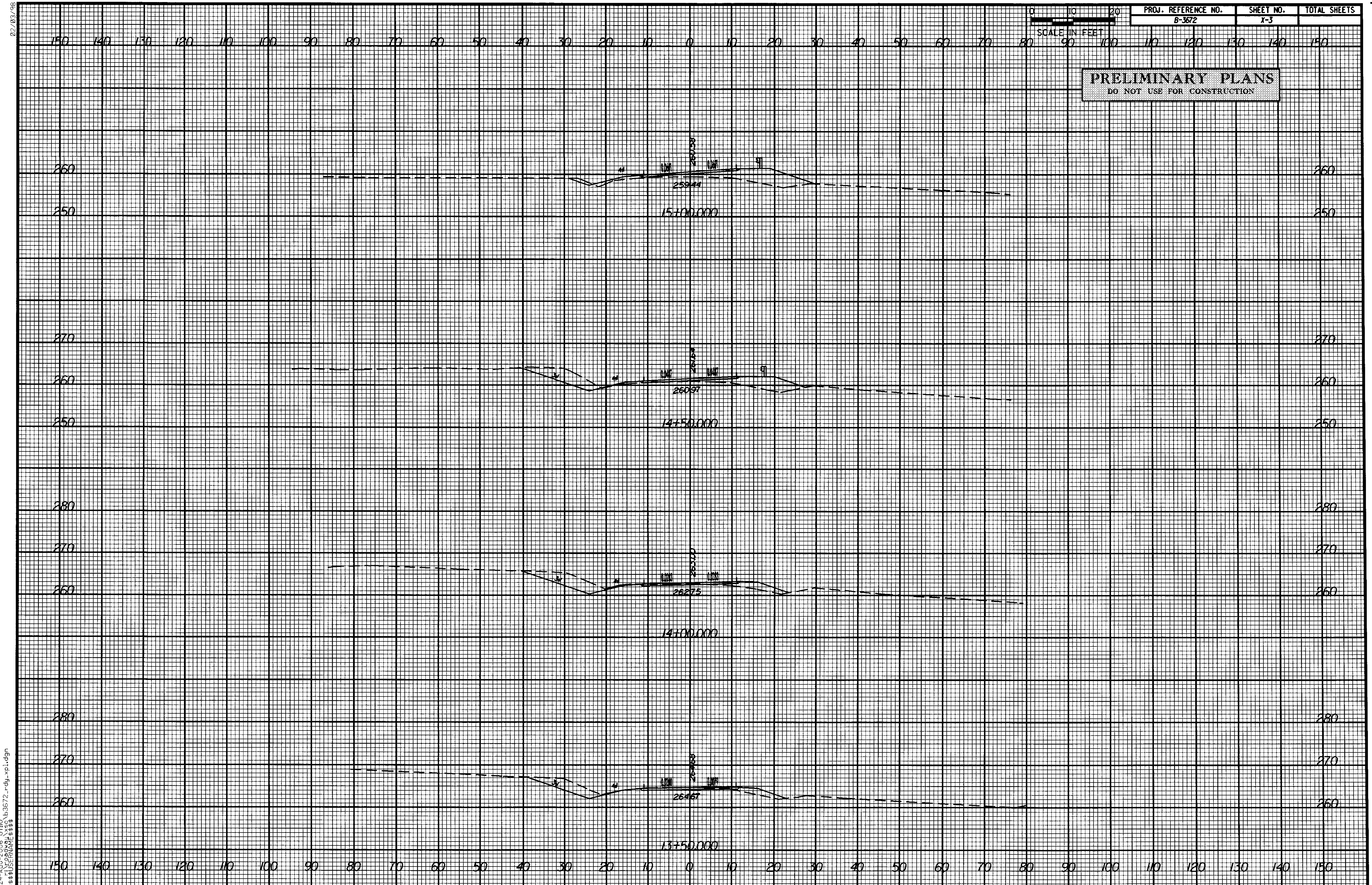

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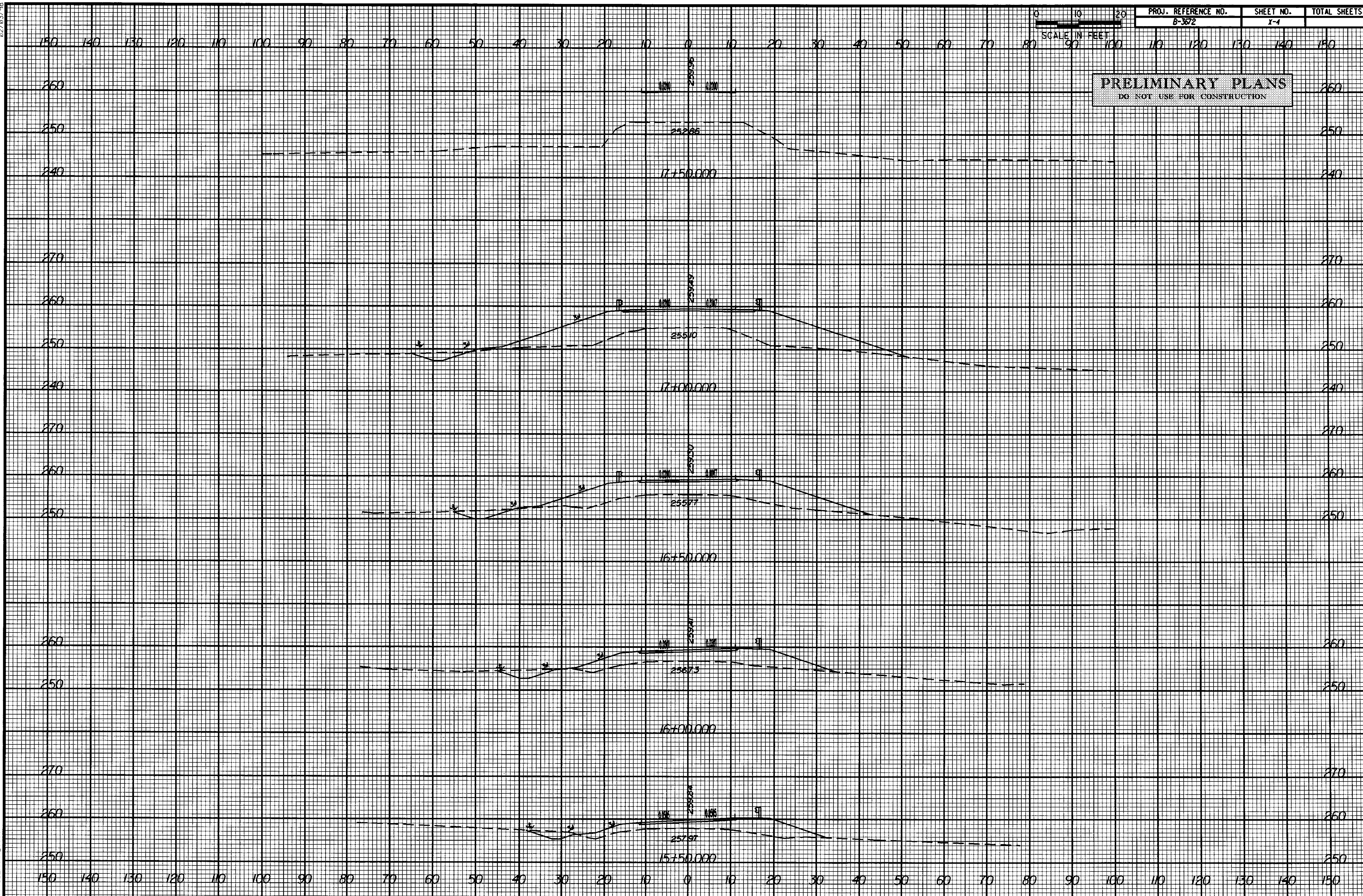

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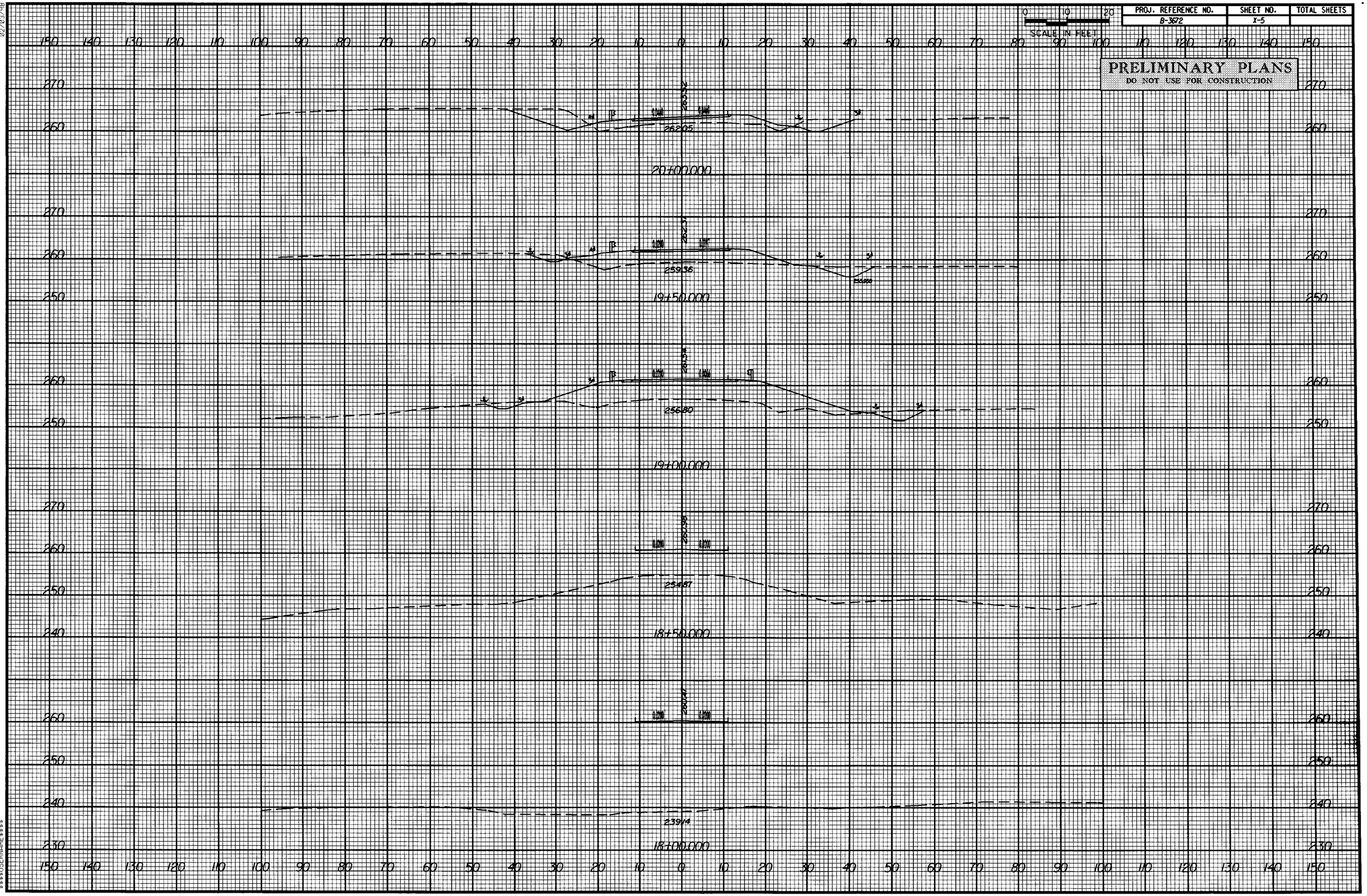
B-3672	X-5	

SCALE IN FEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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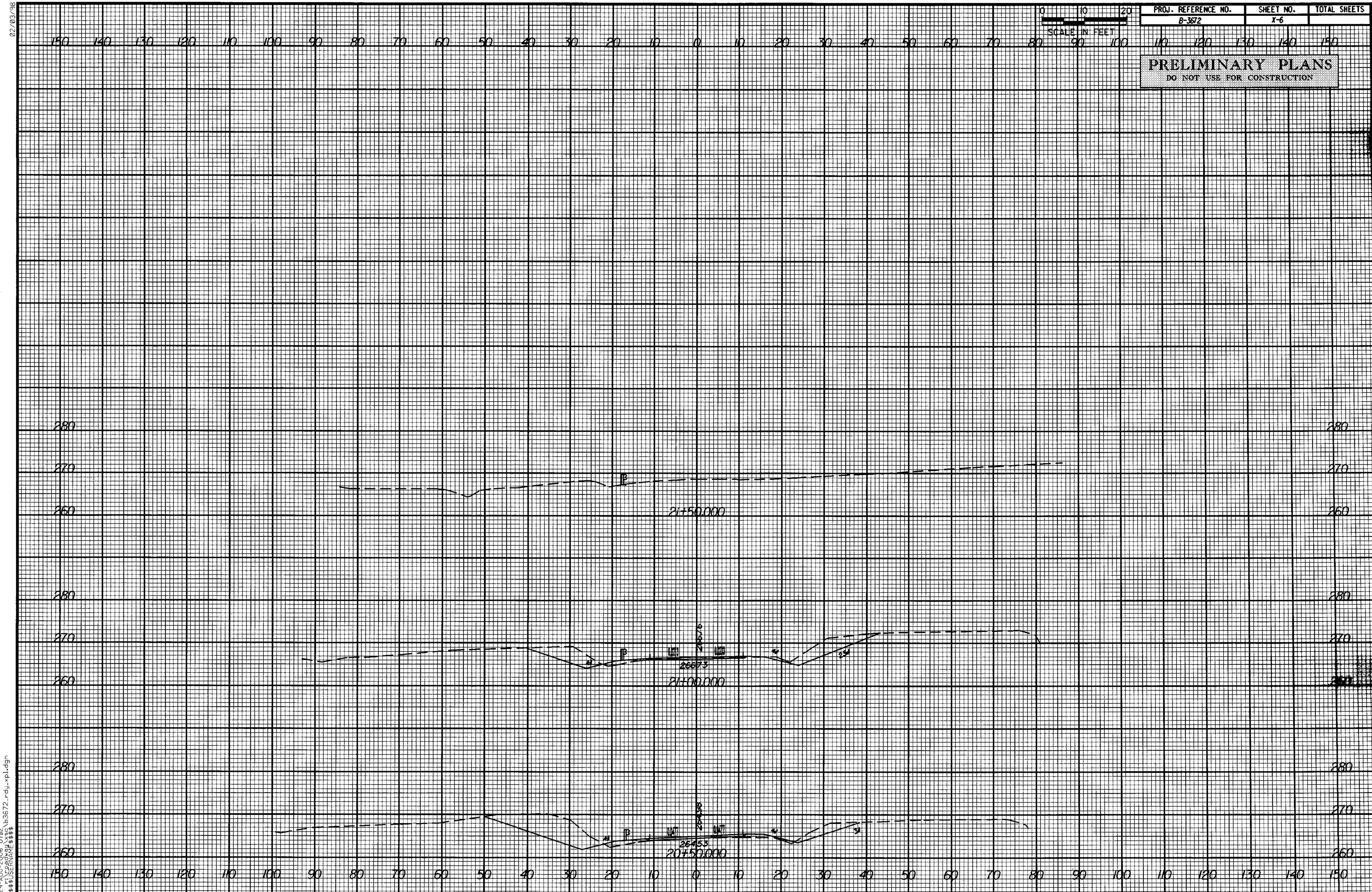
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

1501 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1501

LYNDO TIPPETT
SECRETARY

March 28, 2001

MEMORANDUM TO: Dennis Pipkin, Bridge Replacement Unit
Project Planning Unit

FROM: Lynn Smith, Natural Systems Specialist LS
Natural Systems Unit

SUBJECT: Natural Resources Technical Report for the Proposed Replacement of Bridge No. 415 on SR 1718 over Buffalo Creek, Johnston County, TIP No. B-3672; State Project No. 8.2312401; Federal Aid No. BRZ-1718(4)

The attached Natural Resources Technical Report provides inventories and descriptions of natural resources within the project area, and estimations of impacts likely to occur to these resources as a result of project construction. Pertinent information on Waters of the United States and federally-protected species is also provided.

I would appreciate the opportunity to review the draft Categorical Exclusion for this project. Please contact me if you have any questions, or need this report copied onto disk format (ext. 286).

cc: Randy Turner, Natural Systems Unit Head
File: B-3672

Replacement of Bridge No. 415
On SR 1718 over Buffalo Creek
Johnston County

TIP No. B-3672
Federal Aid Project No. BRZ-1718(4)
State Project No. 8.2312401

Natural Resources Technical Report
B-3672

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

A. Lynn Smith, Natural Systems Specialist
March 28, 2001

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1.0 INTRODUCTION

The following Natural Resources Technical Report is submitted to assist in the preparation of a Categorical Exclusion (CE) for the proposed project. The project is located in northern Johnston County (Figure 1).

1.1 Project Description

The proposed project calls for the replacement of Bridge No. 415 on SR 1718, over Buffalo Creek (Figure 2). The existing right-of-way (ROW) and proposed ROW are 60.0 ft (18.3 m) wide. The existing and proposed cross-sections are two-lane shoulder sections. Project length is approximately 300.0 ft (91.4 m). The project consists of replacing the existing structure with a new bridge on existing location. Traffic will be detoured onto other local roads during construction.

1.2 Bridge Demolition

Bridge No. 415 is comprised of asphalt and timber. Therefore, no components of the bridge will be dropped into Waters of the U.S. Bridge removal for this project is classified as 'Case 3'. Case 3 projects do not have special restrictions beyond those outlined in Best Management Practices for Protection of Surface Waters and the supplements added by the Bridge Demolition document. Restrictions outlined in the Best Management Practices for Bridge Demolition and Removal will be adhered to by NCDOT.

1.3 Environmental Commitments

There are not any site specific environmental commitments at this time. All standard guidelines apply.

1.4 Purpose

The purpose of this technical report is to inventory, catalog and describe the various natural resources likely to be impacted by the proposed action. This report also attempts to identify and estimate the probable consequences of the anticipated impacts to these resources. Recommendations are made for measures which will minimize resource impacts. **These descriptions and estimates are relevant only in the context of existing preliminary design concepts. If design parameters and criteria change, additional field investigations will need to be conducted.**

1.5 Methodology

Research was conducted prior to field investigations. Information sources used in this pre-field investigation of the study area include: U.S. Geological Survey (USGS) quadrangle maps for Johnston and Wake Counties (Flowers & Zebulon), Geographical Information Systems (NC Center for Geographical Information & Analysis), National Wetland Inventory Maps (Flowers & Zebulon), Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) soil maps, and NCDOT aerial photographs of project area (1:1200). Water resource information was obtained from publications of the Department of Environment, Health and Natural Resources (DEHNR, 1992 and 1993) and DENR Internet Page 2001 and from the NC Center for Geographic

Information and Analysis (Environmental Sensitivity Base Map of Johnston County, 1995). Information concerning the occurrence of federal and state protected species in the study area was gathered from the U.S. Fish and Wildlife Service (USFWS) list of protected species and species of concern, and the NC Natural Heritage Program (NCNHP) database of rare species and unique habitats.

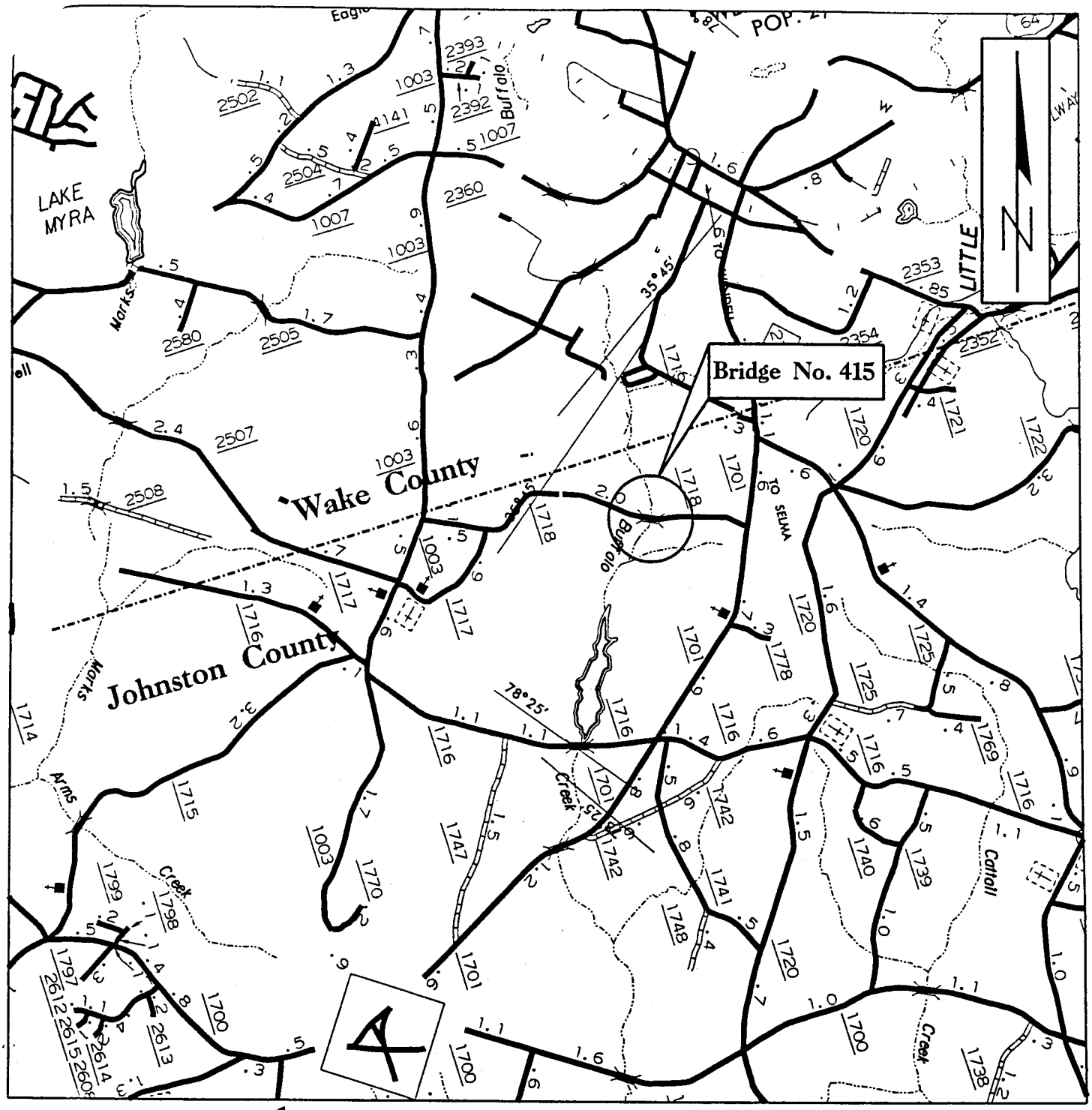
General field surveys were conducted along the proposed alignment by NCDOT biologists Bradley E. Suther and Sue Brady on 30 March 2000. Additional field surveys were conducted on 26 September 2000 by NCDOT biologists Lynn Smith, Chris Rivenbark and Jill Holmes. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved using one or more of the following observation techniques: active searching and capture, visual observations (binoculars) and identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Jurisdictional wetland determinations were performed utilizing delineation criteria prescribed in the "Corps of Engineers Wetland Delineation Manual" (Environmental Laboratory, 1987). Jurisdictional surface water determinations were performed using guidance provided by N.C. Division of Water Quality [(DWQ), formerly known as the Division of Environmental Management (DEM)],"Field Location of Streams, Ditches, and Ponding" (NCDENR-DWQ, 1997).

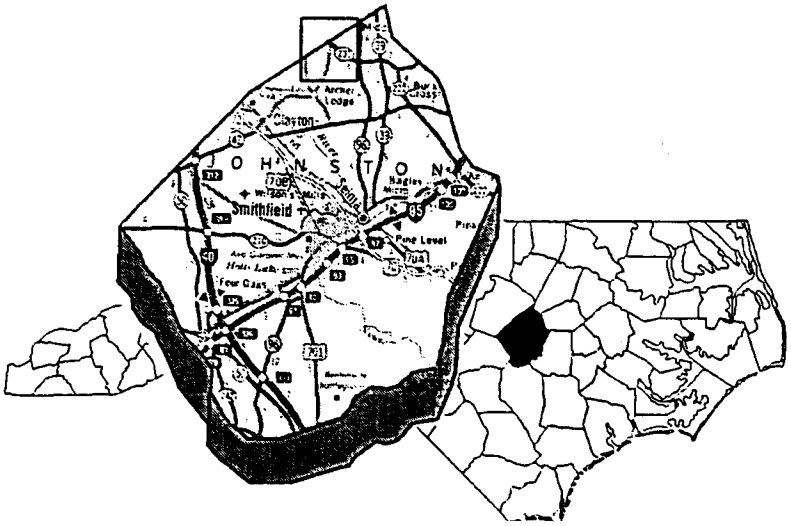
1.6 Qualifications of Investigators

1)	Investigator:	Bradley E. Suther, Natural Systems Specialist, NCDOT
	Education:	B.S. Natural Resources, NC State University, 2000
	Experience:	NC Department of Transportation/ Project Development and Environmental Analysis Branch, June 1999 – June 2000
	Expertise:	Soil classification, wetland delineation, natural history
2)	Investigator:	Susan G. Brady, Natural Systems Specialist, NCDOT
	Education:	B.S. Environmental Studies, University of Maine at Machias, 1993 M.S. Marine Biology, University of North Carolina at Wilmington, 1995
	Experience:	NC Department of Transportation/ Project Development and Environmental Analysis Branch, Oct. 1998-Feb. 2001 Contract Biologist, NC Wildlife Resources Commission/ Nongame and Endangered Species Division, May 1998-Sept. 1998 Research Technician, UNC-Wilmington, Jan. 1995- Dec. 1995
	Expertise:	Field ecology, natural history, mollusk surveys, wetland delineation

1.7 Definitions

Definitions for areal descriptions used in this report are as follows: **Project Study Area** denotes the area bounded by proposed construction limits; **Project Vicinity** describes an area extending 0.5 mi (0.8 km) on all sides of the project study area; and **Project Region** is equivalent to an area represented by a 7.5 minute USGS quadrangle map with the project occupying the central position.



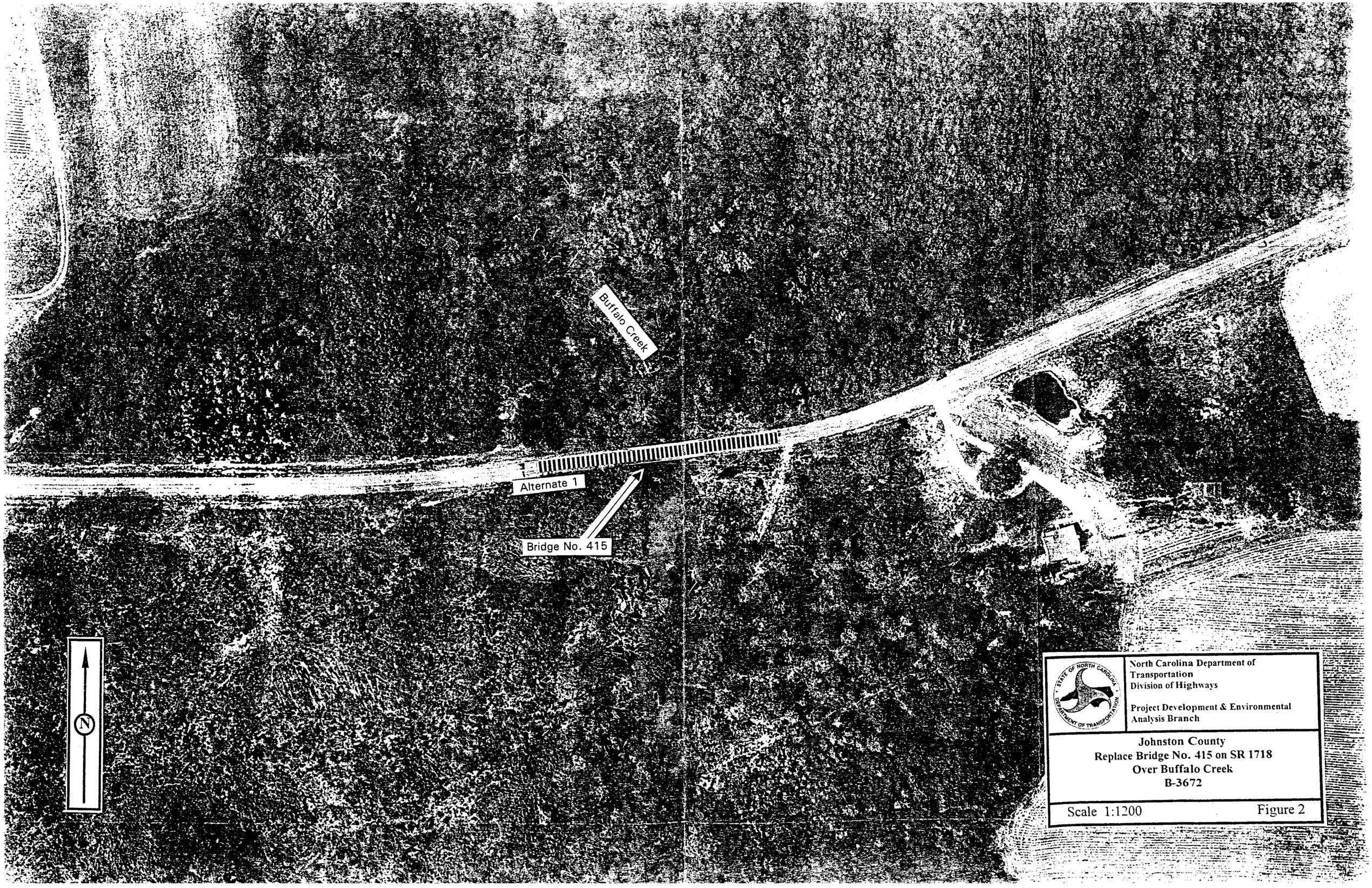


North Carolina Dept. of Transportation
Division of Highways
Project Development &
Environmental Analysis Branch

Johnston County
Replace Bridge No. 415 on SR 1718
Over Buffalo Creek
B-3672

SCALE: 1 in = 1 mi

Figure 1



North Carolina Department of Transportation
Division of Highways

Project Development & Environmental Analysis Branch

Johnston County
Replace Bridge No. 415 on SR 1718
Over Buffalo Creek
B-3672

Scale 1:1200 Figure 2

2.0 PHYSICAL RESOURCES

Soil and water resources, which occur in the study area, are discussed below. Soils and availability of water directly influence composition and distribution of flora and fauna in any biotic community.

The project study area lies within the Southern piedmont physiographic region in the central part of North Carolina. The topography in this section of Johnston County is characterized by gently rolling hills. Project elevation is approximately 240.0 ft (73.2 m) above mean sea level (msl).

2.1 Soils

Three soil map units occur within project vicinity: Wehadkee loam (Wt), Wedowee sandy loam (WoD) and Gilead sandy loam (GeB). Table 1 lists study area soils and their characteristics.

Table 1. Soils within the Project Study Area

Map Unit	Soil	Percent Slope	Drainage Class	Hydric Classification
Wt	Wehadkee loam	0-2	Poorly	Hydric
WoD	Wedowee sandy loam	8-15	Well	Non-hydric
GeB	Gilead sandy loam	2-8	Moderately well	Non-hydric

Wehadkee loam is a nearly level and poorly drained soil generally located along streams. The seasonal high water table is at the surface or within a depth of 1.0 ft (0.3 m). Surface runoff is slow and permeability is moderate. This soil is well suited for woodlands but poorly suited for urban and recreational uses. Main limitations are flooding and wetness. Wehadkee loam is listed as a hydric soil.

Wedowee sandy loam is a well drained soil on side slopes of uplands on the Piedmont. Surface runoff is rapid and permeability is moderate. This soil is best used as woodland and pasture. It is suited for most urban and recreational uses; however, moderate permeability is a limitation. Main limitations include the slope and erosion. Wedowee sandy loam is a non-hydric soil.

Gilead sandy loam is a moderately well drained soil found in the uplands on the Coastal Plain. Surface runoff is medium and permeability is moderately slow or slow. A perched water table is at a depth of 1.5 - 2.5 ft (0.5 – 0.8 m) during the spring. This soil is used as pasture, woodland or cropland. Main limitations include the slope, surface runoff and the clayey subsoil. The hazard of erosion is moderate. The soil is suited to most urban and recreational uses; however, wetness and slow permeability are limitations. Gilead sandy loam is a non-hydric soil.

Soil core samples taken throughout the project area revealed soils with a sandy clay texture. The soils did exhibit hydric conditions, such as low chroma colors, in areas adjacent to Buffalo Creek. Therefore, hydric soil indicators, as defined in the "Corps of Engineers Wetland Delineation Manual", 1987, were observed within the project study area.

2.2 Water Resources

This section contains information concerning those water resources likely to be impacted by the project. Water resource information encompasses physical aspects of the resource, its relationship to major water systems, Best Usage Standards and water quality of the resources. Probable impacts to these water bodies are also discussed, as are means to minimize impacts.

2.2.1 Waters Impacted and Characteristics

Buffalo Creek will be the only surface water resource directly impacted by the proposed project (Figure 2). Buffalo Creek is located in sub-basin 03-04-06 of the Neuse River Basin.

At Bridge No. 415, the channel of Buffalo Creek is approximately 45.0 ft (13.7 m) wide and has an average depth of 5.0 ft (1.5 m). The substrate is composed of sand, silt, clay and organic muck.

2.2.2 Best Usage Classification

Streams are assigned a best usage classification by the DWQ. The classification of Buffalo Creek [Index no. 27-57-16-(3)] is **C NSW**. Class **C** uses include aquatic life propagation and survival, fishing, wildlife, secondary recreation and agriculture. The supplemental classification of **NSW** denotes Nutrient Sensitive Waters which require limitations on nutrient inputs.

Neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within 1.0 mile (1.6 km) of project study area.

2.2.3 Water Quality

The DWQ has initiated a whole basin approach to water quality management for the 17 river basins within the state. The basinwide approach allows for more intensive sampling of biological, chemical and physical data that can be used in basinwide assessment and planning. Benthic macroinvertebrates are intensively sampled for specific river basins. Benthic macroinvertebrates have proven to be a good indicator of water quality because they are sensitive to subtle changes in water quality, have a relatively long life cycle, are nonmobile (compared to fish) and are extremely diverse. The overall species richness and presence of indicator organisms help to assess the health of streams and rivers. All basins are reassessed every five years to detect changes in water quality and to facilitate National Pollution Discharge Elimination System (NPDES)

permit review. **There are not any biological sampling sites located within 1.0 mi (1.6 km) of Bridge No. 415.**

Point source dischargers located throughout North Carolina are permitted through the NPDES Program. Any discharger is required to register for a permit. **One permitted discharger is located approximately 1.6 mi (2.5 km) upstream of Bridge No. 415.** The Wendell WWTP discharges directly into Buffalo Creek with a permitted flow of 0.70 MGD.

Nonpoint source discharge refers to runoff that enters surface waters through stormwater or snowmelt. Agricultural activities may serve as a source for various forms of nonpoint source pollutants. Land clearing and plowing disturb soils to a degree where they are susceptible to erosion, which can lead to sedimentation in streams. Sediment is the most widespread cause of nonpoint source pollution in North Carolina. Pesticides, chemical fertilizers, and land application of animal wastes can be transported via runoff to receiving streams and potentially elevate concentrations of toxic compounds and nutrients. Animal wastes can also be a source of bacterial contamination and elevate biochemical oxygen demand (BOD). Drainage ditches on poorly drained soils enhances the transportation of stormwater into surface waters (NCDEHNR-DEM, 1993).

2.2.4 Summary of Anticipated Impacts

Replacing an existing structure in the same location without constructing a detour bridge during construction is almost always preferred. It poses the least risk to aquatic organisms and other natural resources. Utilizing the full ROW width of 60.0 ft (18.3 m), anticipated impacts to Buffalo Creek will be 60.0 ft (18.3 m). No other alternates are being studied at this time. Usually, project construction does not require the entire ROW; therefore, actual impacts may be considerably less.

Project construction may result in the following impacts to surface waters:

1. Increased sedimentation and siltation from construction and/or erosion.
2. Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
3. Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
4. Changes in water temperature due to streamside vegetation removal.
5. Increased nutrient loading during construction via runoff from exposed areas.
6. Increased concentration of toxic compounds from highway runoff, construction and toxic spills.

Precautions must be taken to minimize impacts to water resources in the study area, NCDOT's Best Management Practices (BMP) for the Protection of Surface Waters must be strictly enforced during the construction stage of the project. Guidelines for these BMPs include, but are not limited to: minimizing built upon area and diversion of stormwater away from surface waters as much as

possible. Provisions to preclude contamination by toxic substances during the construction interval must also be strictly enforced.

3.0 BIOTIC RESOURCES

Biotic resources include aquatic and terrestrial ecosystems. This section describes those ecosystems encountered in the study area, as well as, the relationships between fauna and flora within these ecosystems. Composition and distribution of biotic communities throughout the project area are reflective of topography, hydrologic influences and past and present land uses in the study area. Descriptions of the terrestrial systems are presented in the context of plant community classifications and follow descriptions presented by Schafale and Weakley (1990) where possible. Dominant flora and fauna observed, or likely to occur, in each community are described and discussed.

Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Plant taxonomy generally follows Radford, et al. (1968). Animal taxonomy follows Martof, et al. (1980), Menhinick (1991), Potter, et al. (1980), and Webster, et al. (1985). Subsequent references to the same organism will include the common name only. Fauna observed during the site visit are denoted with an asterisk (*). Published range distributions and habitat analysis are used in estimating fauna expected to be present within the project area.

3.1 Terrestrial Communities

Three distinct terrestrial communities are present in the project study area: Coastal Plain Small Stream Swamp (brownwater subtype), mixed pine hardwood forest and maintained/disturbed. Community boundaries within the study area are generally well defined without a significant transition zone between them. Many faunal species likely to occur within the study area may exploit all communities for shelter and foraging opportunities, or as movement corridors.

3.1.1 Coastal Plain Small Stream Swamp (Brownwater Subtype)

The Coastal Plain Small Stream Swamp is located adjacent to Buffalo Creek and continues away from the creek as the creek extends north and south of the existing bridge. This wetland serves to aid with flood control, retain and filter pollution and provide plant and wildlife habitat. The canopy is primarily composed of tupelo gum (*Nyssa biflora*), red maple (*Acer rubrum*), river birch (*Betula nigra*) and bald cypress (*Taxodium distichum*). The shrub layer consists of saplings of canopy trees and musclewood (*Carpinus caroliniana*). The herbaceous layer consists of giant cane (*Arundinaria gigantea*), rush (*Juncus* sp.), sedge (*Carex* sp.), jewel-weed (*Impatiens capensis*), violets (*Viola* spp.), curly dock (*Rumex* sp.), mayapple (*Podophyllum peltatum*), knotweed (*Polygonum* sp.), blackberry (*Rubus* sp.), goldenrod (*Solidago* sp.) and arrowhead (*Sagittaria* spp.). Poison ivy (*Toxicodendron radicans)* and cross vine (*Anisostichus capreolata*) comprise the vine layer.

3.1.2 Mixed Pine Hardwood Forest

The mixed pine hardwood forest is adjacent to the maintained roadside community and grades into Coastal Plain Small Stream Swamp approximately 75.0 ft (22.9 m) from the centerline of the existing road. Dominant canopy trees include American beech (*Fagus grandifolia*), loblolly pine (*Pinus taeda*) and sweetgum (*Liquidambar styraciflua*). The shrub layer consists primarily of flowering dogwood (*Cornus florida*) and American holly (*Ilex opaca*). Herbaceous species include multiflora rose (*Rosa multiflora*), chickweed (*Stellaria* sp.), bitter cress (*Cardamine* sp.) and St. John's wort (*Hypericum* spp.). Greenbrier (*Smilax rotundifolia*), muskadine grape (*Vitis rotundifolia*) and Japanese honeysuckle (*Lonicera japonica*) comprise the vine layer.

3.1.3 Maintained/Disturbed Community

The maintained/disturbed community includes highly maintained road shoulders along SR 1718 that are present along the entire length of the project and less intensively managed areas that grade into the surrounding natural communities. Significant soil disturbance and compaction, along with frequent mowing or herbicide application, keep this community in an early successional state.

Road shoulders act as buffers between the roadway and surrounding communities by filtering stormwater runoff and reducing runoff velocities. The width of the road shoulder is approximately 8.0 ft (2.4 m). Vegetation occurring along the road shoulder include low growing species such as: fescue grass (*Festuca* sp.), lanced-leaf plantain (*Plantago lanceolata*), vetch *(Vicia* spp.*),* chickweed, Carolina geranium *(Geranium carolinense),* and henbit *(Lamium amplexicaule).* The less maintained areas contained pokeweed (*Phytolacca americana),* dogfennel (*Eupatorium capillifolium),* elderberry *(Sambucus canadensis),* Japanese honeysuckle and blackberry.

3.1.4 Wildlife

Wildlife associated with the communities present within the project vicinity include: white-tailed deer* (*Odocoileus virginianus*), eastern mole (*Scalopus aquaticus*), opossum (*Didelphis virginiana*), meadow vole (*Microtus pennsylvanicus*), muskrat (*Ondatra zibethicus*), gray squirrel (*Sciurus carolinensis*), beaver* (*Castor canadensis*) and raccoon* (*Procyon lotor*). White-tailed deer will use these communities for cover and will forage on twigs and leaves as well as mast.

The wetter areas such as the Coastal Plain small stream swamp may be inhabited by reptiles and amphibians such as green tree frog* (*Rana clamitans*), eastern box turtle (*Terrapene c. carolina),* ground skink (*Sincella lateralis*), Eastern garter snake (*Thamnophis sirtalis),* spotted salamander *(Ambystoma maculatum)* and spring peeper *(Hyla crucifer).*

Avian species utilizing the project vicinity include: American crow* (*Corvus brachyrhynchos*), white-eyed vireo* (*Vireo griseus*), kingfisher* (*Megaceryle alcyon*), Canada geese* (*Branta canadensis*), yellow rumped warblers* (*Dendroica coronata*),

juncos* (*Junco hyemalis*), American goldfinch* (*Carduelis tristis*) and brown cowbird* (*Molothrus ater*).

The maintained habitat within the project area is surrounded by extensive forested areas and represents only a minor constituent of a larger community structure within the project vicinity. Therefore, faunal species frequenting the maintained community will be largely those species inhabiting the adjacent communities.

3.2 Aquatic Communities

One aquatic community, Buffalo Creek, will be impacted by the proposed project. Physical characteristics of the water body and condition of the water resource influence faunal composition of aquatic communities. Terrestrial communities adjacent to a water resource also greatly influence aquatic communities.

Fauna associated with these aquatic communities includes various invertebrate and vertebrate species. Fish species likely to occur in Buffalo Creek include: mosquito fish (*Gambusia holbrooki*), sunfish (*Lepomis* sp.) and bluegill sunfish (*L. macrochirus*). Invertebrates that would be present include: crayfish* (Decapoda), water striders* (*Aquarius* sp.), whirligig beetles (Gyrinidae), and dragonflies and damselflies (Odonata). Mollusks identified in Buffalo Creek includes three species of freshwater mussels* including shells of (*Utterbackia imbecillis)* and green lance (*Elliptio viridulis*) and a live (*Elliptio* sp.) and a snail* *(Campeloma decisum*).

3.3 Summary of Anticipated Impacts

Construction of the subject project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies impacts to the natural resources in terms of area impacted and ecosystems affected. Temporary and permanent impacts are considered here as well.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present within the study area. Project construction will result in clearing and degradation of portions of these communities. Table 2 summarizes potential quantitative losses to these biotic communities, resulting from project construction. Estimated impacts are derived using the entire proposed ROW width of 60.0 ft (18.3 m). The paved roadway width of 20.0 ft (6.1 m) has been excluded from the impact calculations. Usually, project construction does not require the entire ROW, therefore, actual impacts may be considerably less.

Table 2. Anticipated Impacts to Biotic Communities

COMMUNITY	IMPACTS
Mixed Pine Hardwood	0.070 (0.028)
Coastal Plain Small Stream Swamp	0.012 (0.005)
Maintained/Disturbed	0.152 (0.062)
TOTAL:	**0.234 (0.095)**

Note: Values cited are in acres (hectares).

Plant communities found within the proposed project area serve as nesting and sheltering habitat for various wildlife. Replacing Bridge No. 415 and its associated improvements will reduce habitat for faunal species, thereby diminishing faunal numbers. However, due to the size and scope of this project, it is anticipated that impacts to fauna will be minimal.

Areas modified by construction (but not paved) will become road shoulders and early successional habitat. Reduced habitat will displace some wildlife further from the roadway while attracting other wildlife by the creation of more early successional habitat. Animals temporarily displaced by construction activities will repopulate areas suitable for the species.

Aquatic communities are sensitive to even small changes in their environment. Stream channelization, scouring, siltation, sedimentation and erosion from construction-related work will effect water quality and biological constituents. Although direct impacts may be temporary, environmental impacts from these construction processes may result in long term or irreversible effects.

Impacts often associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the stream substrate and may remove streamside vegetation at the site. Disturbances to the substrate will produce siltation, which clogs the gills and/or feeding mechanisms of benthic organisms (sessile filter-feeders and deposit-feeders), fish and amphibian species. Benthic organisms can also be covered by excessive amounts of sediment. These organisms are slow to recover or repopulate a stream.

The removal of streamside vegetation and placement of fill material at the construction site alters the terrain. Alterations of the streambank enhances the likelihood of erosion and sedimentation. Revegetation stabilizes and holds the soil thus mitigating these processes. Erosion and sedimentation carry soils, toxic compounds and other materials into aquatic communities at the construction site. These processes magnify turbidity and can cause the formation of sandbars at the site and downstream, thereby altering water flow and the growth of vegetation. Streamside alterations also lead to more direct sunlight penetration and to elevations of water temperatures which may impact many species.

4.0 JURISDICTIONAL TOPICS

This section provides descriptions, inventories and impact analysis pertinent to two important issues--Waters of the United States and rare and protected species.

4.1 Waters of the United States

Surface waters and wetlands fall under the broad category of "Waters of the United States," as defined in Section 33 of the Code of Federal Register (CFR) Part 328.3. Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Any action that proposes to place fill into these areas falls under the jurisdiction of the U.S. Army Corps of Engineers (USCOE) under Section 404 of the Clean Water Act (33 U.S.C. 1344).

4.1.1 Characteristics of Wetlands and Surface Waters

Potential wetland communities were investigated pursuant to the 1987 "Corps of Engineers Wetland Delineation Manual". The three parameter approach is used where hydric soils, hydrophytic vegetation and prescribed hydrologic characteristics must **all** be present for an area to be considered a wetland.

Wetlands are present within the project area, and are associated with Buffalo Creek (Figure 2). The wetlands can be described as Coastal Plain Small Stream Swamp (Schafale and Weakley, 1990). Soils within the wetlands have a sandy clay texture and a Munsell color notation of 2.5 Y 5/2. Mottles found in the soils have a Munsell color notation of 10 YR 5/8. Hydrological indicators include saturated soils, water in the pit at 2.0 inches, water stained leaves and wrack lines. Vegetation within the wetland includes: river birch, red maple, bald cypress, tupelo gum, musclewood, rush, sedge, giant cane, jewel-weed, violets, curly dock, mayapple, arrowhead, knotweed, goldenrod, blackberry, poison ivy and cross vine.

Buffalo Creek is a jurisdictional surface water under Section 404 of the Clean Water Act (33 U.S.C. 1344). Discussion of the biological, physical and water quality aspects of Buffalo Creek are presented in previous sections of this report.

4.1.2 Summary of Anticipated Impacts

Anticipated impacts to wetland areas are determined by using the entire project ROW width of 60.0 ft (18.3 m). As a result of total impacts to wetlands have been determined to be 0.012 ac (0.005 ha). Impacts to Buffalo Creek have been determined to be 60.0 linear feet (18.3 m). Usually, project construction does not require the entire ROW, therefore, actual wetlands and surface water impacts may be considerably less.

4.1.3 Permits

Impacts to jurisdictional surface waters are anticipated. In accordance with provisions of section 404 of the Clean Water Act (33 U.S.C. 1344), a permit will be

required from the COE for the discharge of dredged or fill material into "Waters of the United States."

A Section 404 Nationwide Permit 33 CFR 330.5(a) (23) is likely to be applicable for all impacts to Waters of the United States from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined that pursuant to the council on environmental quality regulation for implementing the procedural provisions of the National Environmental Policy Act;

(1) that the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and;

(2) that the office of the Chief of Engineers has been furnished notice of the agency' or department's application for the categorical exclusion and concurs with that determination.

A North Carolina Division of Water Quality (DWQ) Section 401 Water Quality General Certification is required prior to the issuance of the Section 404 Nationwide Permit No. 23. Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulations.

4.1.3.1 Neuse River Buffers

As the project is located in the Neuse River Basin, Riparian Area Rules for Nutrient Sensitive Waters apply. The rules state that roads, bridges, stormwater management facilities, ponds and utilities may be allowed where no practical alternative exists. They also state that these structures shall be located, designed, constructed, and maintained to have minimal disturbance, to provide maximum erosion protection, to have the least adverse effects on aquatic life and habitat, and to protect water quality to the maximum extent practical through the use of best management practices. Every reasonable effort will be made to avoid and minimize riparian buffer impacts.

Estimated impacts to the riparian buffers are 0.09 ac (0.04 ha). Natural communities impacted include the Coastal Plain Small Stream Swamp and maintained/ disturbed habitats. It is possible the water resource listed below may be exempted when an on-site determination by the Division of Water Quality is conducted. Therefore impacts may be considerably less.

4.1.4 Mitigation

The USCOE has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological and physical integrity of Waters of the United States, specifically wetlands. Mitigation of

wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization and compensatory mitigation) must be considered sequentially.

4.1.4.1 Avoidance

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the COE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes.

4.1.4.2 Minimization

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, ROW widths, fill slopes and/or road shoulder widths. Other practical mechanisms to minimize impacts to Waters of the United States crossed by the proposed project include: strict enforcement of sedimentation control BMP's for the protection of surface waters during the entire life of the project; reduction of clearing and grubbing activity; reduction/elimination of direct discharge into streams; reduction of runoff velocity; re-establishment of vegetation on exposed areas, judicious pesticide and herbicide usage; minimization of "in-stream" activity; and litter/debris control. By keeping construction within the proposed right-of-way and detouring traffic along existing roads, the NCDOT will minimize, to the extent possible, all impacts to Waters of the U.S.

4.1.4.3 Compensatory Mitigation

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the United States have been avoided **and** minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation and enhancement of Waters of the United States. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site. Compensatory mitigation is not usually necessary with a Nationwide Permit No. 23, however the final decision lies with the USCOE.

4.2 Rare and Protected Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. Federal law

(under the provisions of the Endangered Species Act of 1973, as amended) requires that any action, likely to adversely affect a species classified as federally-protected, be subject to review by the USFWS. Other species may receive additional protection under separate state laws.

4.2.1 Federally-Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of 26 February 2001, the USFWS lists the following federally-protected species for Johnston County (Table 3). A brief description of each species' characteristics and habitat follows.

Table 3. Federally-Protected Species for Johnston County

Scientific Name	Common Name	Status
Picoides borealis	Red-cockaded woodpecker	Endangered
Alasmidonta heterodon	Dwarf wedge mussel	Endangered
Elliptio steinstansana	Tar spinymussel	Endangered
Rhus michauxii	Michaux's sumac	Endangered*

Endangered – A taxon "which is in danger of extinction throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
"*" Indicates the species was last observed in the county more than 50 years ago.

Picoides borealis (red-cockaded woodpecker) **Endangered**
Animal Family: Picidae
Date Listed: 13 October 1970

The adult red-cockaded woodpecker (RCW) has a plumage that is entirely black and white except for small red streaks on the sides of the nape in the male. The back of the RCW is black and white with horizontal stripes. The breast and underside of this woodpecker are white with streaked flanks. The RCW has a large white cheek patch surrounded by the black cap, nape, and throat.

The RCW uses open old growth stands of southern pines, particularly longleaf pine (*Pinus palustris*), for foraging and nesting habitat. A forested usually contains at least 50% pine, lack a thick understory, and be contiguous with other stands to be appropriate habitat for the RCW. These birds nest particularly in trees that are ≥60 years old and are contiguous with pine stands at least 30 years of age. The foraging range of the RCW is up to 500.0 ac (200.0 ha). This acreage must be contiguous with suitable nesting sites.

These woodpeckers nest exclusively in living pine trees and usually in trees that are infected with the fungus that causes red-heart disease. Cavities are located in colonies from 12.0-100.0 ft (3.6-30.3 m) above the ground and average 30.0-50.0 ft (9.1- 15.7 m) high. They can be identified by a large incrustation of running sap that surrounds the

tree. The RCW lays its eggs in April, May, and June; the eggs hatch approximately 38 days later.

BIOLOGICAL CONCLUSION **NO EFFECT**

Suitable nesting habitat in the form of large pine trees with little understory is not present within the project vicinity. The mixed pine hardwood forest present is primarily comprised of hardwoods and has a dense understory. A review of the NCNHP database of rare species and unique habitats, on 30 November 2000, has no record for the presence of red-cockaded woodpecker within the project vicinity. Therefore, project construction will not affect the red-cockaded woodpecker.

Alasmidonta heterodon (dwarf wedge mussel) **Endangered**
Animal Family: Unionidae
Date Listed: 14 March 1990

The dwarf wedge mussel is a small mussel ranging in size from 2.5 cm to 3.8 cm in length. It has a distinguishable shell noted by two lateral teeth on the right half and one on the left half. The periostracum (outer shell) is olive green to dark brown in color and the nacre (inner shell) is bluish to silvery white.

Successful reproduction is dependent on the attachment of larval mussels to a host fish. It is not known what the host fish is but evidence suggests that it is either an anadromous or catadromous species. Known populations of the dwarf wedge mussel in North Carolina are found in Middle Creek and the Little River of the Neuse River Basin and in the upper Tar River and Cedar, Crooked, and Stony Creeks of the Tar River system. This mussel is sensitive to agricultural, domestic, and industrial pollutants and requires a stable silt free streambed with well oxygenated water to survive.

BIOLOGICAL CONCLUSION **Unresolved, pending further survey**

NCDOT biologists have not adequately surveyed Buffalo Creek within the project study area. Suitable habitat for dwarf wedge mussel is present within this portion of Buffalo Creek; therefore a scuba survey is necessary. The survey will be conducted as soon as possible. A review of the NCNHP database on 30 November 2000 indicated that there are no known occurrences of dwarf wedge mussel within the project study area. However, the effect this project will have on the dwarf wedge mussel can not be determined until an additional survey has been conducted.

Elliptio steinstansana (Tar spinymussel) **Endangered**
Animal Family: Unionidae
Date Listed: 29 July 1985

The Tar River spinymussel is endemic to the Tar River drainage basin, from Falkland in Pitt County to Spring Hope in Nash County. Populations of the Tar River spinymussel can be found in streams of the Tar River Drainage Basin and of the Swift Creek Drainage Sub-Basin.

This mussel requires a stream with fast flowing, well oxygenated, circumneutral pH water. The bottom is composed of uncompacted gravel and coarse sand. The water needs to be relatively silt-free. It is known to rely on a species of freshwater fish to act as an intermediate host for its larvae.

The Tar River spinymussel is a very small mussel. This mussel is named for its spines which project perpendicularly from the surface and curve slightly ventrally. As many as 12 spines can be found on the shell which is generally smooth in texture. The nacre is pinkish (anterior) and bluish-white (posterior).

BIOLOGICAL CONCLUSION **NO EFFECT**

NCDOT biologists Logan Williams, Sue Brady and Jeffrey Burleson surveyed Buffalo Creek within the project study area. Suitable habitat for tar spinymussel is not present within this portion of Buffalo Creek nor were any mussels found during the survy. The survey was conducted by wading through the stream and utilizing visual and tactile survey techniques. A review of the NCNHP database on 30 November 2000 indicated that there are no known occurrences of tar spinymussel within the project study area. Therefore, this project will not affect tar spinymussel.

Rhus michauxii (Michaux's sumac) **Endangered**
Family: Cashew (Anacardiaceae)
Federally Listed: September 28, 1989
Best Search Time: During the growing season (June - September)

Michaux's sumac is a dioecious shrub growing to a height of 1.0–2.0 ft (0.3–0.6 m). Plants flower in June, producing a terminal, erect, dense cluster of 4-5 parted greenish-yellow to white flowers. Fruits, produced from August through September, are red, densely short-pubescent drupes, 0.25 in (5-6 mm) across. Most populations, however, are single sexed and reproduce only by rhizomes. The entire plant is densely pubescent. The deciduous leaves are composed of 9-13 sessile, oblong leaflets on a narrowly winged or wingless rachis. The acute to acuminate leaflets have rounded bases and are 1.5-3.5 in (4-9 cm) long and 1.0-2.0 in (2-5 cm) wide. They are simply or doubly serrate. Distinctive characteristics include short stature, densely pubescent throughout, evenly serrate leaflets.

This species prefers sandy, rocky, open woods and roadsides. Its survival is dependent on disturbance (mowing, clearing, fire) to maintain an open habitat. It is often found with other members of its genus as well as with poison ivy (*Toxicodendron radicans*). There is no longer believed to be an association between this species and specific soil types.

Michaux's sumac is endemic to the inner Coastal Plain and Piedmont physiographic provinces of Virginia, North Carolina, South Carolina and Georgia. Most populations occur in North Carolina. This species is threatened by loss of habitat. Since its discovery, 50 percent of Michaux's sumac habitat has been lost due to its conversion to silvicultural and agricultural purposes and development. Fire suppression and herbicide drift have also negatively impacted this species.

BIOLOGICAL CONCLUSION **NO EFFECT**

Potential habitat for Michaux's sumac is present within the road shoulder portions of the project area. A plant by plant survey for Michaux's sumac, within areas of potential habitat, was conducted by NCDOT biologists on 30 March and 26 September 2000. No Michaux's sumac was observed during these surveys. A review of the NCNHP database of rare species and unique habitats on 30 November 2000 indicated that there are no known occurrences of Michaux's sumac within the project study area. Therefore, project construction will not affect Michaux's sumac.

4.2.2 Federal Species of Concern and State Listed Species

There are nine Federal Species of Concern (FSC) listed for Johnston County. Federal Species of Concern are not afforded federal protection under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Federal Species of Concern are defined as those species which may or may not be listed in the future. These species were formally candidate species, or species under consideration for listing for which there was insufficient information to support a listing of Endangered, Threatened, Proposed Endangered and Proposed Threatened. Organisms which are listed as Endangered (E), Threatened (T), Significantly Rare (SR) or Special Concern (SC) by the North Carolina Natural Heritage Program (NCNHP) list of rare plant and animal species are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979.

Table 4 lists Federal Candidate and State listed species, the species state status and the existence of suitable habitat for each species in the study area. This species list is provided for information purposes as the status of these species may be upgraded in the future.

Table 4. Federal Species of Concern for Johnston County

Scientific Name	Common Name	State Status	Habitat
Lythrurus matutinus	Pinewoods shiner	SR	Yes
Elliptio lanceolata	Yellow lance	T (PE)	Yes
Fusconaia masoni	Atlantic pigtoe	T (PE)	Yes
Lampsilis cariosa	Yellow lampmussel	T (PE)	Yes
Lasmigona subviridus	Green floater	E	Yes
Procambarus medialis	Tar River crayfish	W3	Yes
Solidago verna	Spring-flowering goldenrod	T	No
Tofieldia glabra	Carolina asphodel	C*	No
Trillium pusillum var. *pusillum*	Carolina least trillium	E	No

"*"-------Historic record (Last observed in Johnston County more than twenty years ago.)
"E"------"Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the WRC to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987). "Any species or higher taxon of plant whose continued existence as a viable component of the State's flora is determined to be in jeopardy" (GS 19B 106; 202.12). _
"T"----- A Threatened species is one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
"C"----- A Candidate species is one which is very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction, direct exploitation or disease. The species is also either rare throughout its range or disjunct in North Carolina from a main range in a different part of the country or the world.
"SR"---- A Significantly Rare species is one which has not been listed by the N.C. Wildlife Resources Commission as an Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring. Species which are very rare in N.C., generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction (and sometimes also by direct exploitation or disease.
"(PE)"—Species has been proposed by a Scientific Council as a status that is different from the current status, but the status has not yet completed the legally mandated listing process.
"W3" A Watch Category 3 includes species that are poorly known in N.C., but are not necessarily considered to be declining or otherwise in trouble.

A review of the NCNHP database of rare species and unique habitats on 30 November 2000 revealed no records of North Carolina rare and/or protected species in or near the project study area. Surveys for these species were not conducted during the site visit, nor were any of these species observed.

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Underwood

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

April 5, 2005

MEMORANDUM TO: Mr. Omar Sultan
Program Development Branch

FROM: Gregory J. Thorpe, PhD
Environmental Management Director, PDEA

SUBJECT: Programmatic Categorical Exclusion Approval for Federal Aid Project BRZ-1718 (4), Replacement of Bridge No. 415 on SR 1718 over Buffalo Creek, Johnston County, WBS 33216.1.1, State Project 8.2312401, TIP No. **B-3672**

Attached are four copies of the subject report, including 2 copies for your files and 1 copy for distribution to FHWA. No significant adverse environmental effects are expected as a result of the project; therefore, no other distribution of the report is necessary.

GJT/cdb
Attachment
cc/atta:
Mrs. Deborah M. Barbour
Mr. Art McMillan
Mr. Jay Bennett (2 copies)
Mr. Greg Perfetti (2 copies)
Mr. Victor Barbour
Mr. D. R. Henderson
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LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	**B-3672**
State Project No.	**8.2312404**
W.B.S. No.	**33216.1.1**
Federal Project No.	**BRZ-1718(4)**

A. Project Description:

The purpose of this project is to replace Johnston County Bridge No. 415 on SR 1718 over Buffalo Creek. The replacement structure will be a bridge 120 feet long with 30 feet clear deck width. The cross section will include two 11-foot lanes and 4-foot offsets. The roadway grade of the new structure will be raised approximately six feet.

The approach roadway will extend 393 feet from the northwest end of the new bridge and 262 feet from the southeast 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). The roadway will be designed as a Rural Local Route with a 60 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1).

B. Purpose and Need:

Bridge No. 415 includes a six-span superstructure composed of a timber deck on timber joists. The substructure includes timber caps on timber piles.

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 27.7 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to a structural appraisal of 2 out of 9 and functionally obsolete due to a deck geometry appraisal of 2 out of 9 according to Federal Highway Administration (FHWA) standards and is therefore eligible for FHWA's Highway Bridge Replacement and Rehabilitation Program.

Timber sub-structures typically do not last beyond 30 to 40 years of age due to the natural deterioration rates of wood. Rehabilitation of timber structure is generally practical only when a few members are damaged or prematurely deteriorated. However, past a certain degree of deterioration, timber structures become impractical to maintain and upon eligibility are programmed for replacement. Bridge 415 is approaching the end of its useful life.

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:

Estimated Costs:

Total Construction	$ 575,000
Right of Way	$ 16,000
Total	$ 591,000

Estimated Traffic:

Year 1999 – 400 vpd	Year 2025 – 700 vpd
TTST - 1%	Dual – 3%

Design Exceptions: There are design exceptions for horizontal curve radius and sag vertical curves. A 45mph speed limit is required for the vertical alignment.

Bridge Demolition: Most timber and steel structures (as is Bridge No. 415) can be removed using standard practices without any resulting fill in the stream.

Offsite Detour: 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 1701, SR 1716, and SR 1003. The detour for the average road user would result in 7.0 minutes additional travel time (2.4 miles additional travel). Up to a seven-month duration of construction is expected on this project. According to the guidelines, a project with an offsite detour route requiring five to ten minutes travel time and at least six months of closure must be evaluated to determine if an onsite detour is appropriate. In this particular case, maintaining traffic onsite would result in higher costs. Johnston County Emergency Services has indicated that an offsite detour is acceptable and that services can be adequately re-routed during construction. The Division concurs in this recommendation. Johnston County School Transportation has indicated that rerouting buses around this project will be a problem due to a lack of a good turn around. NCDOT will coordinate a turn around for the school buses on this project for safety of the students. Coordination with Johnston County Schools will be done prior to bridge closure. In view of the cost savings and no major opposition, an offsite detour is recommended.

E. Threshold Criteria

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

ECOLOGICAL		YES	NO
(1)	Will the project have a substantial impact on any Unique or important natural resource?		X
(2)	Does the project involve habitat where federally Listed endangered or threatened species may occur?	X	
(3)	Will the project affect anadromous fish?		X
(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?	X	
(5)	Will the project require the use of U. S. Forest Service lands?		X
(6)	Will the quality of adjacent water resources be adversely impacted by proposed construction activities?		X
(7)	Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?		X

(8)	Will the project require fill in waters of the United States in any of the designated mountain trout counties?		X
(9)	Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?		X

PERMITS AND COORDINATION		YES	NO
(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)?		X
(11)	Does the project involve Coastal Barrier Resources Act resources?		X
(12)	Will a U. S. Coast Guard permit be required?		X
(13)	Will the project result in the modification of any existing regulatory floodway?		X
(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 exists for the Dwarf wedgemussel. A survey in August 2004 indicates no species found near the bridge. However, the species is present downstream. US Fish and Wildlife Service has concurred in the biological conclusion of May Effect, Not Likely to Adversely Effect for the Dwarf wedgemussel. The USFWS concurrence letter is located in the appendix.

G. CE Approval

TIP Project No.	**B-3672**
State Project No.	**8.2312401**
W.B.S. No.	**33216.1.1**
Federal Project No.	**BRZ-1718(4)**

Project Description:

The purpose of this project is to replace Johnston County Bridge No. 415 on SR 1718 over Buffalo Creek. The replacement structure will be a bridge 120 feet long with 30 feet clear deck width. The cross section will include two 11-foot lanes and 4-foot offsets. The roadway grade of the new structure will be raised approximately six feet.

The approach roadway will extend 393 feet from the northwest end of the new bridge and 262 feet from the southeast 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). The roadway will be designed as a Rural Local Route with a 60 mile per hour design speed.

Traffic will be detoured off-site during construction (see Figure 1).

Categorical Exclusion Action Classification: (Check one)

____ TYPE II(A)
__X__ TYPE II(B)

Approved:

4/4/05 — Date
Assistant Manager
Project Development & Environmental Analysis Branch

3/28/05 — Date
Project Planning Unit Head
Project Development & Environmental Analysis Branch

3/28/05 — Date
Project Planning Engineer
Project Development & Environmental Analysis Branch

For Type II(B) projects only:

4/4/05 — Date
for John F. Sullivan, III, Division Administrator
Federal Highway Administration

PROJECT COMMITMENTS:

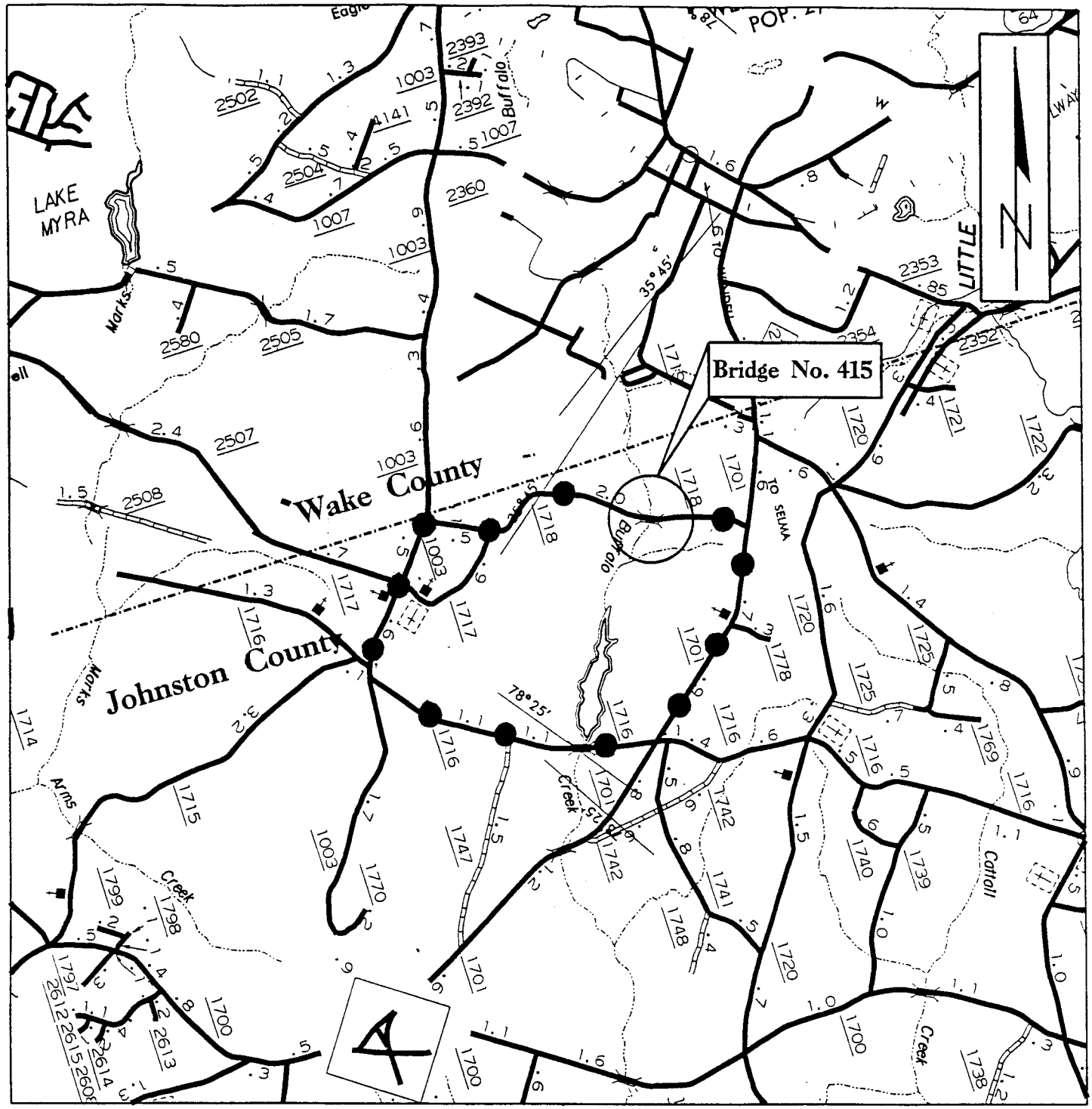
Johnston County
Bridge No. 415 on SR 1718
Over Buffalo Creek
Federal Aid Project No. BRZ-1718 (4)
State Project No. 8.2312401
W.B.S. No. 33216.1.1
T.I.P. No. B-3672

Division Construction Engineer

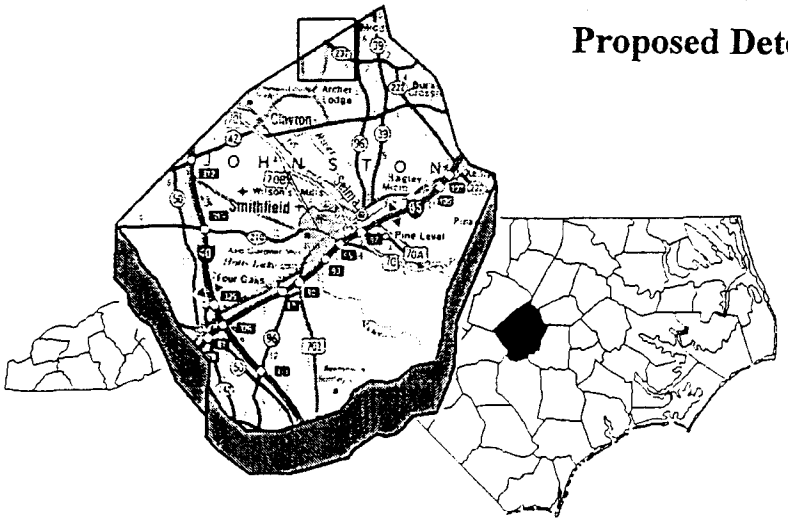
NCDOT will coordinate a turn around for the school buses near the bridge.

Office of Natural Environment/Hydraulic Design Unit

This project is subject to the Neuse River Riparian Buffer Rules.



Proposed Detour Route



North Carolina Dept. of Transportation
Division of Highways
Project Development &
Environmental Analysis Branch

Johnston County
Replace Bridge No. 415 on SR 1718
Over Buffalo Creek
B-3672

SCALE: 1 in = 1 mi

Figure 1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

October 8, 2004

Gregory J. Thorpe, Ph.D.
North Carolina Department of Transportation
Project Development and Environmental Analysis
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

This letter is in response to your letter of September 27, 2004 which provided the U.S. Fish and Wildlife Service (Service) with the biological determination of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge No. 415 on SR 1718 over Buffalo Creek in Johnston County (TIP No. B-3672) may affect, but is not likely to adversely affect the federally endangered dwarf wedgemussel (*Alasmidonta heterodon*). These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to the information you submitted, a mussel survey was conducted at the project site on August 12, 2004. The survey extended 100 meters upstream and 100 meters downstream of the crossing. The survey deviated from the usual 400 meters downstream after it was determined that no habitat was present for the dwarf wedgemussel. This portion of the stream is slack water which flows into Wendell Lake, less than one mile downstream. No mussels of any species were observed during the survey. However, the dwarf wedgemussel has been observed in Buffalo Creek several miles downstream of the project area.

Based on the information provided and other information available, the Service concurs with your determination that the proposed bridge replacement may affect, but is not likely to adversely affect the dwarf wedgemussel. We believe that the requirements of section 7(a)(2) of the ESA have been satisfied for this species. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

John Hammond
Acting Ecological Services Supervisor

cc: Mike Bell, USACE, Washington, NC
Nicole Thomson, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

Federal Aid #BRZ-1718(4) *TIP* #B-3672 *County*: Johnston

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

Project Description: Replace Bridge No. 415 on SR 1718 over Buffalo Creek

On November 2, 2000, representatives of the

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

Reviewed the subject project at

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

All parties present agreed

- [ ] there are no properties over fifty years old within the project's area of potential effect.
- [X] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [X] there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Pics #1 are considered not eligible for the National Register and no further evaluation of them is necessary.
- [X] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

[signature] 11/2/00
Representative, NCDOT — Date

[signature] 12/19/00
FHWA, for the Division Administrator, or other Federal Agency — Date

[signature] 11/2/00
Representative, SHPO — Date

[signature] 11/14/00
State Historic Preservation Officer — Date

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

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

March 30, 2001

MEMORANDUM

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

From: David Brook
Deputy State Historic Preservation Officer

Re: Replacement of Bridge No. 415 on SR 1718 over Buffalo Creek.
TIP No. B-3672, Johnston County, ER 00-7677

On November 3, 2000, April Montgomery of our staff met with North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above project. We reported our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project area photographs and aerial photographs at the meeting.

Based upon our review of the photographs and the information discussed at the meeting, we offer our preliminary comments regarding this project.

In terms of historic architectural resources we are aware of no historic structures located within the area of potential effect. However, we recommend that an historic architectural survey be conducted for this project.

To date, we have received the results of the archaeological survey and determined that there are no historic properties within the project's area of potential effect.

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

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

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 any questions concerning the above comment, contact Renee Gledhill-Earley, Environmental Review Coordinator, at 919 733-4763.

CC: Mary Pope Furr
Tom Padgett