



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE  
GOVERNOR

EUGENE A. CONTI, JR.  
SECRETARY

November 6, 2009

Ms. Kimberly Garvey  
U. S. Army Corps of Engineers  
Regulatory Field Office  
Post Office Box 1890  
Wilmington, NC 28402-1890

Dear Madame:

Subject: **Application for Section 404 Nationwide Permit 23** for the replacement of Bridge No. 48 over Big Creek on SR 1851 in Cumberland County. State Project No. 8.2444201. Federal Aid Project Number BRZ-1851(1). TIP No. B-4493.

The North Carolina Department of Transportation (NCDOT), Division of Highways, in consultation with the Federal Highway Administration (FHWA), proposes to replace Bridge No. 48 in Cumberland County. The project involves replacement of the existing structurally deficient 87-foot bridge with a new 125-foot bridge. The new bridge will feature two 11-foot lanes and 3-foot offsets on each side. Proposed permanent impacts are 0.02 acre to riparian wetlands for fill.

Please note that this project is an accelerated bridge project on NCDOT's Maintenance of Effort list. The NCDOT Administration has deemed these projects highest priority. This project calls for a letting date of March 16, 2010 and a review date of January 26, 2010; however, the let date may advance as additional funding becomes available.

Please find enclosed a site map, a Pre-Construction Notification (PCN) form, permit drawings, roadway plans, utility plans drawings and plans, and a copy of the state stormwater management plan for the above referenced project. A Categorical Exclusion (CE) was completed for this project on August 06, 2009, and distributed shortly thereafter. Additional copies are available upon request.

### Regulatory Approvals

Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that a Nationwide Permit 23 authorize these activities.

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

TELEPHONE: 919-431-2000  
FAX: 919-431-2002

WEBSITE: [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

**LOCATION:**  
4701 ATLANTIC AVENUE  
SUITE 116  
RALEIGH NC 27604

Section 401 Permit: We anticipate 401 General Certification number 3701 will apply to this project. All general conditions of the Water Quality Certifications will be met and we are not requesting written approval from DWQ. In accordance with 15A NCAC 2H, Section .0500(a), we are providing two copies of this application to the NCDWQ for their review.

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 call or email:  
Dr. Lance P. Fontaine at 919-431-6667 or [lpfontaine@ncdot.gov](mailto:lpfontaine@ncdot.gov).

Sincerely,



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

w/attachment

Mr. Brian Wrenn, NCDWQ (2 Copies)

W/o attachment (see website for attachments):

Dr. David Chang, P.E., Hydraulics  
Mr. Greg Perfetti, P.E., Structure Design  
Mr. Victor Barbour, P.E., Project Services Unit  
Mr. Mark Staley, Roadside Environmental  
Mr. Terry Gibson, P.E., Division 6 Engineer  
Mr. Jim Rerko, Division 6 Environmental Officer  
Mr. Jay Bennett, P.E., Roadway Design  
Mr. Majed Alghandour, P. E., Programming and TIP  
Mr. Art McMillan, P.E., Highway Design  
Mr. Scott McLendon, USACE, Wilmington  
Mr. Travis Wilson, NCWRC  
Mr. Gary Jordan, USFWS  
Ms. Anne Deaton, NCDMF  
Mr. Ron Sechler, NMFS  
Mr. Tracy Walter, PDEA, Project Planning Engineer



<b>4. Applicant Information (if different from owner)</b>	
4a. Applicant is:	<input type="checkbox"/> Agent <input type="checkbox"/> Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
<b>5. Agent/Consultant Information (if applicable)</b>	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

<b>B. Project Information and Prior Project History</b>	
<b>1. Property Identification</b>	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.422 (DD.DDDDDD)                      Longitude: - 78.6692 (-DD.DDDDDD)
1c. Property size:	1.4 acres
<b>2. Surface Waters</b>	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Big Creek
2b. Water Quality Classification of nearest receiving water:	C; Sw
2c. River basin:	Cape Fear

<b>3. Project Description</b>	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Low-density residential; agriculture-cropland and pasture; mixed pine/hardwood forest; cypress-gum swamp	
3b. List the total estimated acreage of all existing wetlands on the property: 0.5 ac	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 115 ft	
3d. Explain the purpose of the proposed project: To replace a structurally deficient bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing an 87-foot bridge with a 125-foot, 3-span bridge on the existing alignment with an off-site detour. The bridge length is based on by minimum hydraulic requirements with slope and spill-through abutments with a larger hydraulic conveyence. Standard road building equipment, such as trucks, dozers, and cranes will be used. Three-foot shoulders will be provided on each side; six-foot shoulders will be provided where guardrail is used in accordance with the current Highway Design Policy. The bridge matches the current low steel elevation which results in an increased grade and therefore longer approaches.	
<b>4. Jurisdictional Determinations</b>	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known): M. Smith, C. Mahan	Agency/Consultant Company: Environmental Services, Inc. Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. Field verified on July 15, 2008 by Richard Spencer (USACE) and Ken Averitte (NCDWQ). A written verification was not issued.	
<b>5. Project History</b>	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
<b>6. Future Project Plans</b>	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

### C. Proposed Impacts Inventory

#### 1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

- Wetlands                       Streams - tributaries                       Buffers  
 Open Waters                       Pond Construction

#### 2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Permanent Fill	Riparian	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	0.02
Site 2 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Temporary Fill	Riparian	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	<0.01
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
<b>2g. Total wetland impacts</b>					0.02 Permanent 0.00 Temporary

2h. Comments: There will be 0.67 ac of hand clearing. Specifically, 0.59 ac of this work will be performed to allow for aerial line clearance through wetland areas on the east side of the project. The hand clearing impacts will result in the cutting down of trees and brush; however, grubbing will not occur. These hand clearing impacts will not result in the permanent conversion of the currently forested wetland to a persistent emergent herbaceous wetland.

#### 3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		

<b>3h. Total stream and tributary impacts</b>						X Perm X Temp
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3i. Comments: Impacts due to the proposed bents is 14.4 square feet (<0.01 ac.)

**4. Open Water Impacts**

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 <input type="checkbox"/> P <input type="checkbox"/> T				
O2 <input type="checkbox"/> P <input type="checkbox"/> T				
O3 <input type="checkbox"/> P <input type="checkbox"/> T				
O4 <input type="checkbox"/> P <input type="checkbox"/> T				
<b>4f. Total open water impacts</b>				0 Permanent 0 Temporary

4g. Comments:

**5. Pond or Lake Construction**

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
<b>5f. Total</b>								

5g. Comments:

5h. Is a dam high hazard permit required?	<input type="checkbox"/> Yes <input type="checkbox"/> No      If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

**6. Buffer Impacts (for DWQ)**

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?		<input type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Other: <input type="checkbox"/> Catawba <input type="checkbox"/> Randleman			
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>6h. Total buffer impacts</b>					
6i. Comments:					

<b>F. Supplementary Information</b>	
<b>1. Environmental Documentation (DWQ Requirement)</b>	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.)  Comments:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2. Violations (DWQ Requirement)</b>	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
<b>3. Cumulative Impacts (DWQ Requirement)</b>	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description.  Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
<b>4. Sewage Disposal (DWQ Requirement)</b>	
4a. 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.  not applicable	

<b>E. Stormwater Management and Diffuse Flow Plan (required by DWQ)</b>	
<b>1. Diffuse Flow Plan</b>	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments:	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2. Stormwater Management Plan</b>	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings and packet.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input type="checkbox"/> DWQ 401 Unit
<b>3. Certified Local Government Stormwater Review</b>	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>4. DWQ Stormwater Program Review</b>	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>5. DWQ 401 Unit Stormwater Review</b>	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5b. Have all of the 401 Unit submittal requirements been met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
<b>6f. Total buffer mitigation required:</b>				
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments:				

<b>D. Impact Justification and Mitigation</b>		
<b>1. Avoidance and Minimization</b>		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. The proposed bridge is 38 feet longer than the existing bridge; the proposed bridge will be at approximately the same grade as the existing structure; an off site detour will be used, 3:1 fill slopes where practicable.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Sedimentation and erosion control measures; Design Standards in Sensitive Watersheds; top-down construction; off-site detour will be used		
<b>2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State</b>		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, explain: Due to the minimal amount of permanent impacts, NCDOT is not proposing compensatory mitigation.	
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input type="checkbox"/> Corps	
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation	
<b>3. Complete if Using a Mitigation Bank</b>		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
<b>4. Complete if Making a Payment to In-lieu Fee Program</b>		
4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes	
4b. Stream mitigation requested:	linear feet	
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold	
4d. Buffer mitigation requested (DWQ only):	square feet	
4e. Riparian wetland mitigation requested:	acres	
4f. Non-riparian wetland mitigation requested:	acres	
4g. Coastal (tidal) wetland mitigation requested:	acres	
4h. Comments:		
<b>5. Complete if Using a Permittee Responsible Mitigation Plan</b>		
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.		

<b>5. Endangered Species and Designated Critical Habitat (Corps Requirement)</b>		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input type="checkbox"/> Raleigh <input type="checkbox"/> Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NCDOT field surveys, NCNHP and USFWS databases		
<b>6. Essential Fish Habitat (Corps Requirement)</b>		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
<b>7. Historic or Prehistoric Cultural Resources (Corps Requirement)</b>		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
<b>8. Flood Zone Designation (Corps Requirement)</b>		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	11.6.09 Date

# STORMWATER MANAGEMENT PLAN

October 23, 2009

Project: 33729.1.1

TIP No.: B-4493

County: Cumberland

Hydraulics Project Manager: Kevin B. Alford, PE (Mulkey Engineers and Consultants)  
Marshall W. Clawson, PE (NCDOT Hydraulics Unit)

## ROADWAY DESCRIPTION

The project B-4493 consists of constructing a new bridge 125 feet long to replace the existing bridge #48 in Cumberland County on SR 1851 (Bainbridge Road) over Big Creek. The total project length is 0.111 miles. The project creates impacts to Big Creek (which is located in the Cape Fear River Basin) and the surrounding wetlands. The project drainage consists of grated inlets with associated pipe systems and rip rap dissipater pads at the pipe outlets.

## ENVIRONMENTAL DESCRIPTION

The project is located within the Cape Fear River Basin, which no buffer regulations have been implemented. Big Creek is the only stream crossing on this project. Big Creek is listed on the NCDENR classifications list as a Class C and Class Sw. Big Creek is not listed on the 303(d) list for impaired streams. There is a wetland site surrounding the bridge on all four quadrants of the bridge that will be impacted by the proposed project. Impacts have been minimized by using rip rap dissipater pads at the pipe outlets and reducing the roadway approach work to minimize fill slopes encroachment into the wetlands.

## BEST MANGEMENT PRACTICES AND MAJOR STRUCTURE

The primary goal of Best Management Practices (BMP's) is to prevent degradation of the states surface waters by location, construction and operation of the highway system. The BMP's are activities, practices and procedures taken to prevent or reduce stormwater pollution. The BMP measures used on this project to reduce stormwater impacts are:

- ***Rip Rap Dissipater Pads***

Rip Rap pads dissipater pads were used in order to dissipate energy and attain non-erosive velocities at pipe outlets. These structures were used at the pipe outlets in the wetlands in lieu of Preformed Scour holes to prevent excavation in wetlands. These structures are located at -L- Stations 18+32 Rt. and 20+00 Rt.

- ***Major Structure***

A three span bridge will be placed from –L- Station 18+53.50 to –L- Station 19+78.50 in order to replace the existing bridge that is constructed of a reinforced concrete deck on timber joists with timber caps and timber piles. The existing bridge has vertical timber abutments. The proposed bridge will have spill thru abutments. The existing bridge has 4 bents in the channel, while the proposed bridge only has 2 bents in the channel. The proposed bridge will be constructed by “top down” methods in order to reduce impacts to Big Creek. The existing abutment will be cut off at elevation 100.0 (one foot above normal water surface) in order to hold back the existing fill and keep from impacting Big Creek. The bridge is also designed so that no deck drains will be used in order to avoid any direct discharges into Big Creek. All deck drainage will be picked up in a storm system and discharge at the toe of slope near the bridge onto a rip rap dissipater pad.



# PROPERTY OWNERS

## NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	Author P. & Pansy H. Royal	1661 Bainbridge Rd. Stedman, NC 28391
2	Henry K. Autry	4254 S. US 301 Dunn, NC 28334
3	Martin V. & Lyndia Autry	1690 Bainbridge Rd. Stedman, NC 28391
4	Faye Autry McDaniel	1812 Bainbridge Rd. Stedman, NC 28391

Permit Drawing  
Sheet 2 of 5

**NCDOT**  
DIVISION OF HIGHWAYS  
CUMBERLAND COUNTY  
PROJECT: 33729.1.1 (B-4493)  
BRIDGE #48 OVER  
BIG CREEK ON SR 1851  
(BAINBRIDGE ROAD)

**WETLAND PERMIT IMPACT SUMMARY**

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS						SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)					
	-L- Sta. 16+65 to 22+12	Bridge	0.02					0.08									
<b>TOTALS:</b>			0.02					0.08									

NOTE: Permanent SW Impacts due to the proposed bents is 14.4 square feet (<0.01 acres)

**Permit Drawing**  
**Sheet 3 of 5**

NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 CUMBERLAND COUNTY  
 WBS - 33729.1.1 (B-4493)





**WETLAND PERMIT IMPACT SUMMARY**

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS						SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)					
	-L- Sta. 16+20 to 22+05	Bridge		< 0.01		0.59											
<b>TOTALS:</b>				< 0.01		0.59											

Impacts due to utility relocation as shown on NEU permit drawing (11-03-09)

Utility  
Permit Drawing  
Sheet 1 of 2

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
CUMBERLAND COUNTY  
WBS - 33729.1.1 (B-4493)  
11/4/2009  
SHEET

8/17/99  
SYSTEMS  
DESIGN  
INCORPORATED

NEU PERMIT DRAWING  
B-4493 (CUMBERLAND COUNTY)  
NOVEMBER 3, 2009



UTILITY CONSTRUCTION

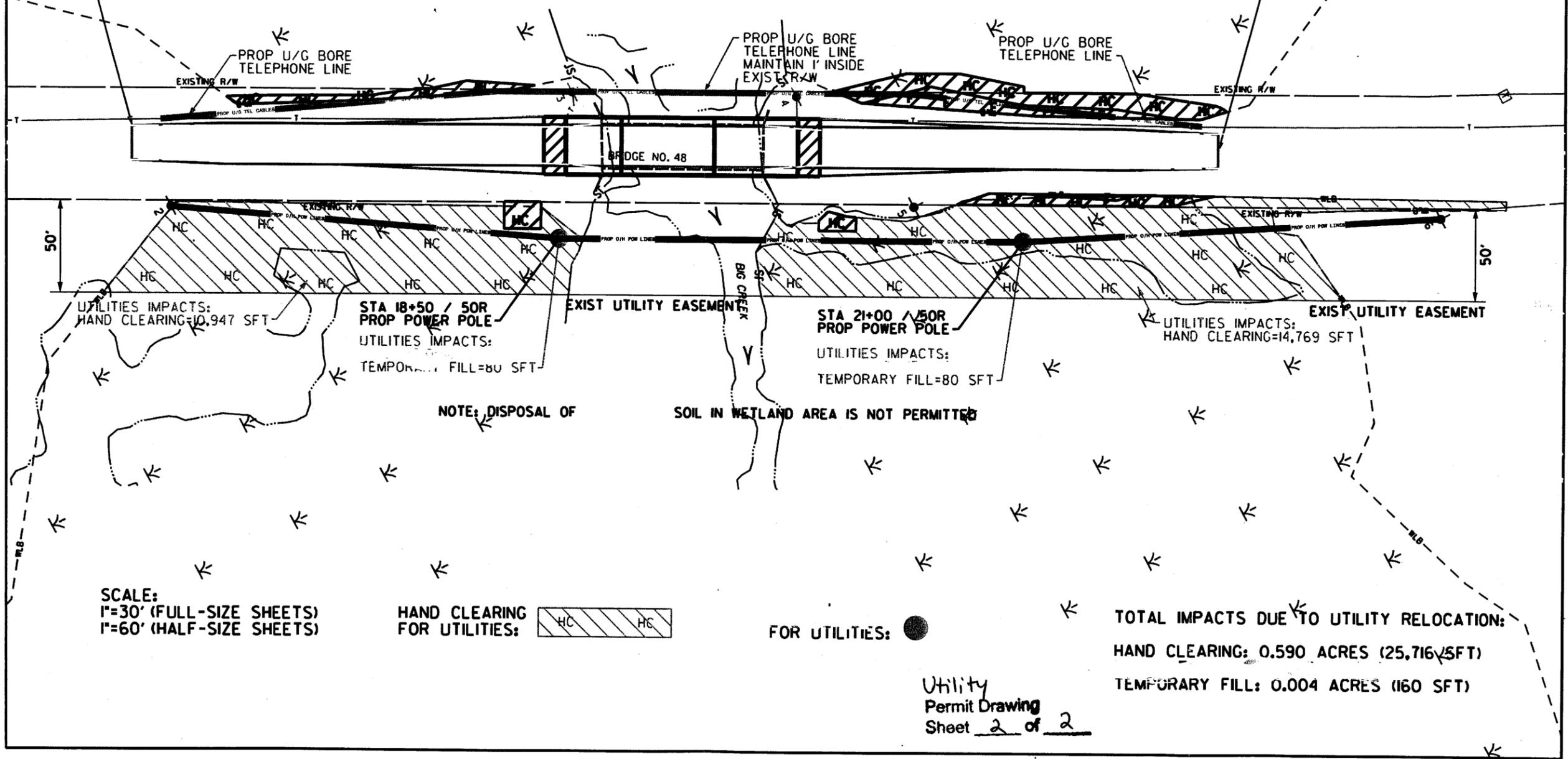
**BEGIN TIP PROJECT B-4493**

**-L- POT STA 16+20.00**

20

**END TIP PROJECT B-4493**

**-L- POT STA 22+05.00**



50'

50'

UTILITIES IMPACTS:  
HAND CLEARING=10,947 SFT

STA 18+50 / 50R  
PROP POWER POLE  
UTILITIES IMPACTS:  
TEMPORARY FILL=80 SFT

EXIST UTILITY EASEMENT

STA 21+00 / 50R  
PROP POWER POLE  
UTILITIES IMPACTS:  
TEMPORARY FILL=80 SFT

UTILITIES IMPACTS:  
HAND CLEARING=14,769 SFT

EXIST UTILITY EASEMENT

NOTE: DISPOSAL OF SOIL IN WETLAND AREA IS NOT PERMITTED

SCALE:  
1"=30' (FULL-SIZE SHEETS)  
1"=60' (HALF-SIZE SHEETS)

HAND CLEARING FOR UTILITIES:

FOR UTILITIES:

TOTAL IMPACTS DUE TO UTILITY RELOCATION:  
HAND CLEARING: 0.590 ACRES (25,716 SFT)  
TEMPORARY FILL: 0.004 ACRES (160 SFT)

Utility  
Permit Drawing  
Sheet 2 of 2

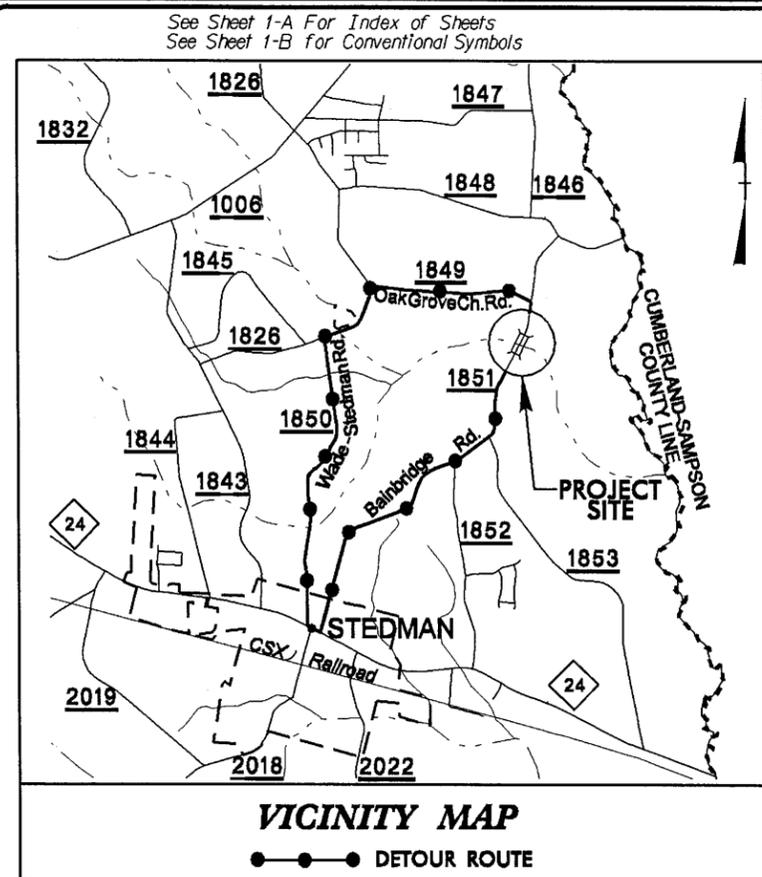
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4493	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33729.1.1	BRZ-1851(1)	PE	
33729.2.1	BRZ-1851(1)	RAW & UTIL.	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

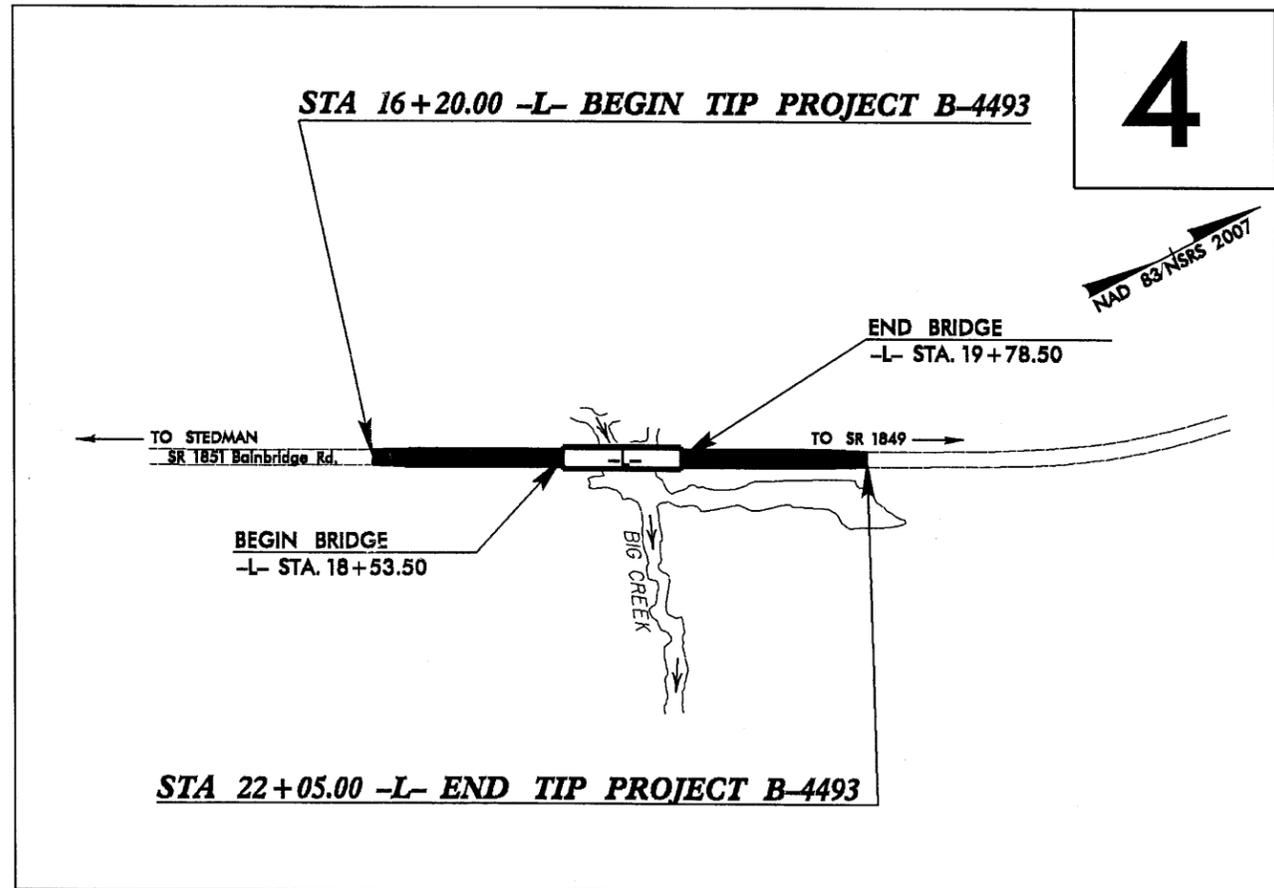
**CUMBERLAND COUNTY**

LOCATION: BRIDGE NO. 48 OVER BIG CREEK ON  
SR 1851 (BAINBRIDGE RD)

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

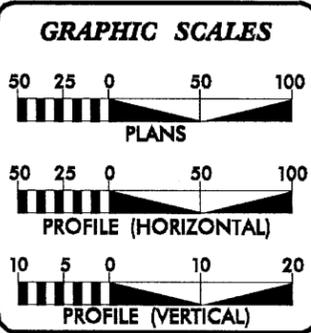


TIP PROJECT: B-4493



- NOTE:
1. THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
  2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
  3. SUB REGIONAL TIER DESIGN GUIDELINES FOR BRIDGE PROJECTS WERE USED TO DEVELOP THIS PROJECT.

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION



**DESIGN DATA**

ADT 2010 = 1260  
ADT 2030 = 2000

DHV = 13 %  
D = 55 %  
T = 3 % \*  
V = 60 MPH

FUNC. CLASS = RURAL LOCAL

SUB-REGIONAL TIER  
\* TTST 1% DUAL 2%

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-4493 = .087 MILES

LENGTH OF STRUCTURE TIP PROJECT B-4493 = .024 MILES

TOTAL LENGTH OF TIP PROJECT B-4493 = .111 MILES

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
DECEMBER 18, 2009

LETTING DATE:  
DECEMBER 21, 2010

GARY R. LOVERING, PE  
PROJECT ENGINEER

ANTHONY C. WEST  
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

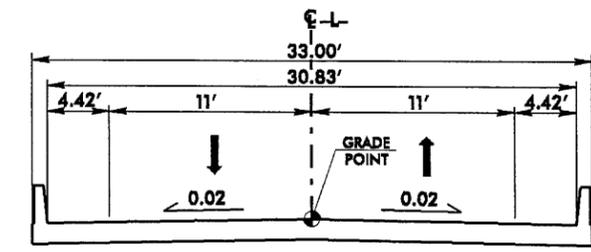
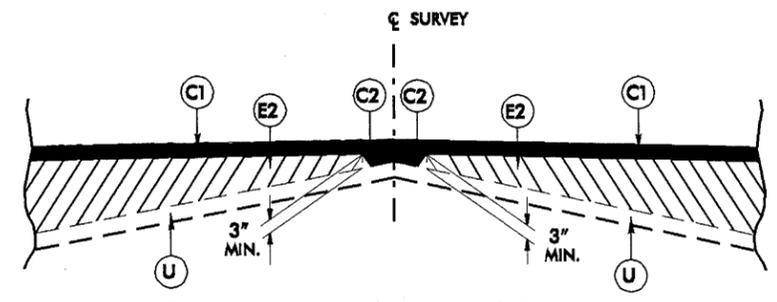
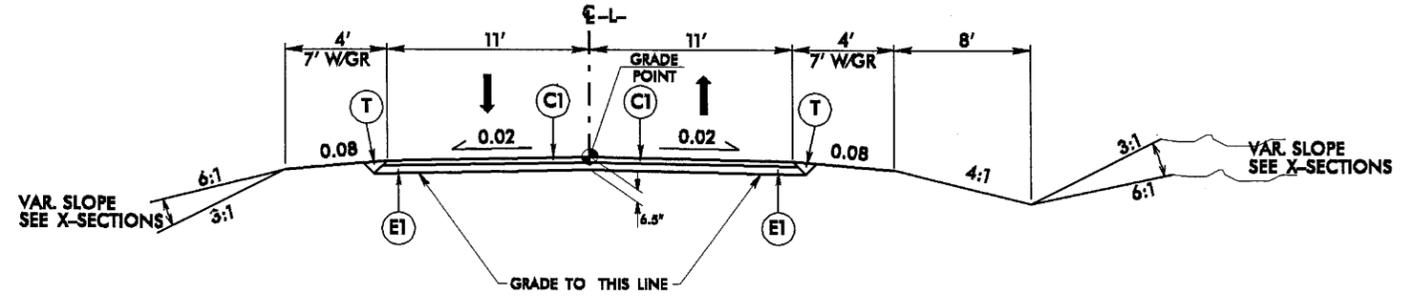
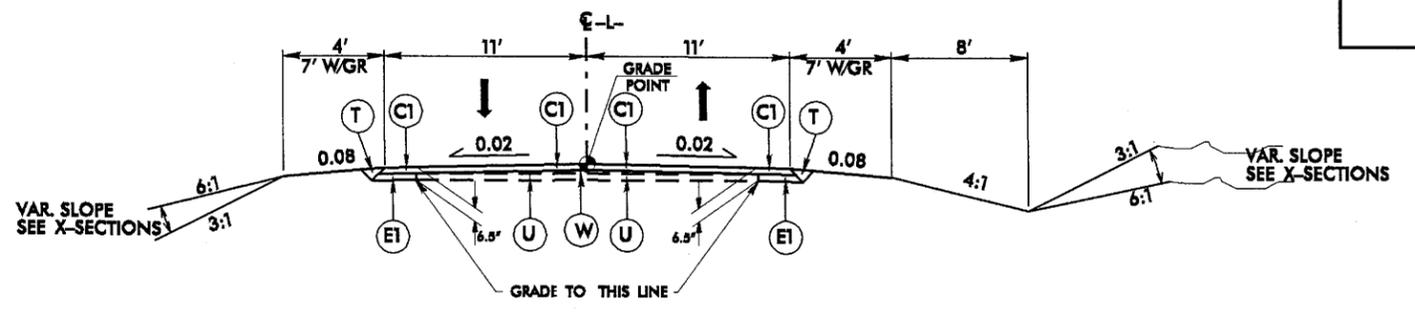
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09/08/09

6/2/99

PROJECT REFERENCE NO. B-4493	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 480 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET.)

ALL PAVEMENT EDGE SLOPES ARE 1:1



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5/14/99

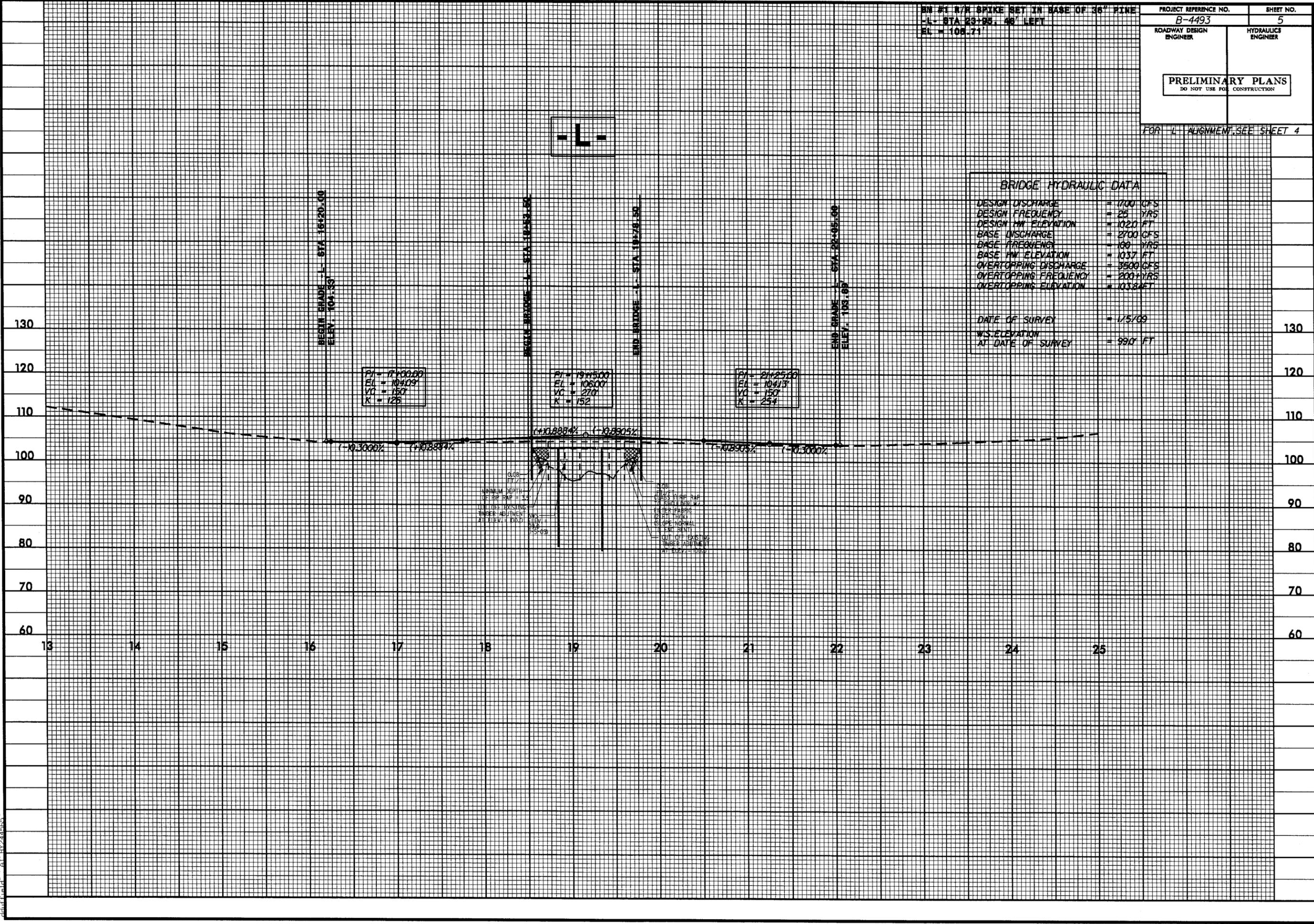
BN #1 R/R SPIKE SET IN BASE OF 36" PINE  
-L- STA 23+85.48' LEFT  
EL = 108.71'

PROJECT REFERENCE NO. B-4493	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

FOR -L- ALIGNMENT, SEE SHEET 4

-L-

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1700 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 1020 FT
BASE DISCHARGE	= 2700 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 1037 FT
OVERTOPPING DISCHARGE	= 3500 CFS
OVERTOPPING FREQUENCY	= 200 YRS
OVERTOPPING ELEVATION	= 1038.4 FT
DATE OF SURVEY	= 1/5/99
WS ELEVATION AT DATE OF SURVEY	= 990 FT



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C:\Users\pfl\Documents\Projects\4493\21-OCT-2009 08:10:44 4493\_rdu.pfl.dgn



