STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

August 6, 2012

U. S. Army Corps of Engineers
Regulatory Field Office
331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. Andy Williams
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 3, Section 401 Water Quality Certification and Jordan Lake Riparian Buffer Authorization** for the proposed replacement of Bridge No. 175 over Buffalo Creek on SR 2795 (Huffine Farm Road) in Guilford County, Federal Aid Project No. BRZ-2795(1); Division 7; TIP No. B-4757

$240.00 debit WBS 38529.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 175 over Buffalo Creek on SR 2795 (Huffine Farm Road) with a bridge. The current structure is a three-span bridge approximately 92 feet in length. The replacement structure will be a two-span bridge approximately 116 feet in length. An off-site detour will be used to control traffic during construction. There will be a total of 78 linear feet of permanent stream impact to Buffalo Creek due to bank stabilization. An additional 0.03 acres of temporary stream impact will occur due to the use of a causeway for demolition and construction of the new structure.

Allowable impact to the Jordan Lake Riparian Buffers will result in 4,213 square feet of impact, due to the road crossing and bridge.

Please see enclosed copies of the Pre-Construction Notification (PCN), jurisdictional determination forms, stormwater management plan, permit drawings and design plans for the above mentioned project. The Programmatic Categorical Exclusion (PCE) was

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

TELEPHONE: 919-707-6100
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

completed in November 2011. Copies were distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of May 21, 2013 and a review date of April 2, 2013; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list 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 Jason Dilday at (919) 707-6111.

Sincerely,

E. L. Luck

for Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Unit

The "cc" List:

NCDOT Permit Application Standard Distribution List

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 3	or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes	☒ No

1d. Type(s) of approval sought from the DWQ (check all that apply):

☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit

☐ 401 Water Quality Certification – Express ☒ Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.		☐ Yes ☒ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.		☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?		☐ Yes ☒ No

2. Project Information

2a. Name of project:	Replacement of Bridge 175 over Buffalo Creek on SR 2795 (Huffine Farm Road)
2b. County:	Guilford
2c. Nearest municipality / town:	Greensboro
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4757

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6111
3g. Fax no.:	(919) 212-5785
3h. Email address:	jldilday@ncdot.gov

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

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 36.142838 (DD.DDDDDD)	Longitude: -79.647947 (-DD.DDDDDD)
1c. Property size:	1.0 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Buffalo Creek	
2b. Water Quality Classification of nearest receiving water:	C, NSW	
2c. River basin:	Cape Fear	
3. Project Description		
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: SR 2795 is a rural local route. Land use within the project vicinity consists of agriculture, interspersed with residential development.		
3b. List the total estimated acreage of all existing wetlands on the property: 0		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 200		
3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a three span, 92-foot bridge with a two span, 116-foot bridge on the existing alignment with an off-site detour. A causeway will be used for bridge bent removal and new bridge construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.		
4. Jurisdictional Determinations		
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:	☐ Yes	☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☐ Final	
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes	☒ No ☐ Unknown
5b. If yes, explain in detail according to "help file" instructions.		
6. Future Project Plans		
6a. Is this a phased project?	☐ Yes	☒ 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 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0 Permanent 0 Temporary

2h. Comments: There are no wetland impacts associated with this project.

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 ☒ P ☐ T	Bank Stabilization	Buffalo Creek	☒ PER ☐ INT	☒ Corps ☒ DWQ	30	78
Site 2 ☐ P ☒ T	Causeway	Buffalo Creek	☒ PER ☐ INT	☒ Corps ☒ DWQ	30	55
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	78 If perm. 55 If temp.

3i. Comments: Pier impacts= 3-3'0" drilled piers in water totaling 21.3 square feet.

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 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
			4f. Total open water impacts	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								
	5f. Total							

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ 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?	☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☒ Other: Jordan

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 ☒ P ☐ T	Bridge Impact	Buffalo Creek	☐ Yes ☒ No	2187	
B2 ☒ P ☐ T	Road Crossing Impact	Poplar Creek	☐ Yes ☒ No	683	1343
B3 ☐ P ☐ T			☐ Yes ☐ No		
			6h. **Total buffer impacts**	2870	1343

6i. Comments: Buffer impacts will occur due to fill slopes and construction access.

D. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

The proposed bridge is 24 feet longer than the existing bridge; the proposed bridge will be at approximately the same grade and alignment as the existing structure; the new bridge will have no deck drains or direct discharge to Buffalo Creek. Stormwater from the bridge will be routed to a grass swale before entering the buffer. Existing lateral roadway ditches habe been redesigned to function as grass swales. All other stormwater will enter the buffer as sheet flow. An off-site detour will be used during construction.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.

NCDOT Best Management Practices for Bridge Demolition and Removal will be implemented during the removal of the existing bridge; Best Management Practices for the Protection of Surface Waters will be employed; Design Standards in Sensitive Watersheds will be employed.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No If no, explain: No impacts considered loss of "Waters of the U.S." will occur to Buffalo Creek.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		

4. Complete if Making a Payment to In-lieu Fee Program	
4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ 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:	

5. Complete if Using a Permittee Responsible Mitigation Plan
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

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?	☐ Yes	☒ 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	
			6f. **Total buffer mitigation required:**	0

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: All buffer impacts are Allowable.

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☒ Yes ☐ No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: See attached permit drawings.	☒ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ 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.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☐ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
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):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ 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)?	☒ Yes	☐ 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:	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
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)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ 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.		
4. Sewage Disposal (DWQ Requirement)		
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		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☒ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? N.C. Natural Heritage Heritage Program database; USFWS-Raleigh Field Office website; biological surveys for protected species listed for Guilford County, which include the small-whorled pogonia. All species received a Biological Conclusion of "No Effect". It was determined that habitat is present for small-whorled pogonia, but a survey conducted of the study area on 6/6/2012 resulted in no specimens being found.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
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)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ 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	E. J. Luck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	8-2-12 Date

Buffalo Creek

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: B-4757 (Bridge No. 175 over Buffalo Creek on SR2795)

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:NC County/parish/borough: Guilford City: Greensboro
Center coordinates of site (lat/long in degree decimal format): Lat. 36.142838° N, Long. 79.647947° W.
Universal Transverse Mercator:
Name of nearest waterbody: Buffalo Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Haw River
Name of watershed or Hydrologic Unit Code (HUC): 03030002
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Appear to be no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 500 linear feet: 30 width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: Pick List
   Drainage area: Pick List
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☒ Tributary flows directly into TNW.
   ☐ Tributary flows through Pick List tributaries before entering TNW.

   Project waters are Pick List river miles from TNW.
   Project waters are Pick List river miles from RPW.
   Project waters are Pick List aerial (straight) miles from TNW.
   Project waters are Pick List aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: .
   Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☒ High Tide Line indicated by:	☒ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

---

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain: .

Surface flow is: Pick List

Characteristics: .

Subsurface flow: Pick List. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.

Project waters are Pick List aerial (straight) miles from TNW.

Flow is from: Pick List.

Estimate approximate location of wetland as within the Pick List floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: Pick List

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: 600 linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Buffalo Creek has a NCDWQ stream rating scores greater than 30.
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **500** linear feet **30** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☒ Tributary waters: linear feet width (ft).
- ☒ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☒ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☒ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☒ Lakes/ponds: acres.
- ☒ Other non-wetland waters: acres. List type of aquatic resource: .
- ☒ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☒ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☒ Lakes/ponds: acres.
- ☒ Other non-wetland waters: acres. List type of aquatic resource: .
- ☒ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☒ Data sheets prepared by the Corps: .
- ☒ Corps navigable waters' study: .
- ☒ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☒ National wetlands inventory map(s). Cite name: .
- ☒ State/Local wetland inventory map(s): .
- ☒ FEMA/FIRM maps: .
- ☒ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☐ Aerial (Name & Date): .
  - or ☐ Other (Name & Date): .
- ☒ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: .
- ☒ Applicable/supporting scientific literature: .
- ☒ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

STORMWATER MANAGEMENT PLAN

B-4757, WBS No. 38529.1.1
GUILFORD COUNTY
Hydraulics Project Manager: Stephen R. Morgan, PE
Date: 7/05/2012

ROADWAY DESCRIPTION

The project involves the replacement of bridge number 175 over Buffalo Creek on SR 2795 (Huffine Farm Road) in Guilford County. The overall length of the project is 0.123 mile. The project will replace an existing 3 span 92 foot length bridge with a new span 135 foot length cored slab bridge. An off-site detour will be required.

ENVIRONMENTAL DESCRIPTION

The project is located in the Cape Fear River Basin. The proposed bridge is over Buffalo Creek which is classified as C, NSW and subject to Jordan Lake Buffer Rules.

Approximately 0.01 acre of surface waters will be impacted and 21.2 sq. ft. permanently impacted due to piers. Approximately 0.03 acre of surface water will be temporarily impacted.
Approximately 4213 square feet of buffer zones will be (allowable) impacted.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

Best Management Practices (BMPs) and measures used on the project are non-structural and are an attempt to reduce the stormwater impacts to the receiving stream due to erosion and runoff as well as attenuate and disperse storm water before entering the receiving waters. Bridge deck drainage will not be allowed to directly discharge into the water and is routed to a grass swale before entering the buffer. Existing lateral roadway ditches have been redesigned to function as grass swales. All other storm water will enter the buffer as sheet flow.

GRASSED SWALES

From STA 12+75 to 13+50 –L- (LT)
From STA 12+75 to 13+25 –L- (RT)
From STA 13+50 to 13+83 –L- (LT)
From STA 13+25 to 13+65 –L- (RT)

BRIDGE

-L- STA 14+25.04
Replace existing bridge over Buffalo Creek.

09/08/99

TIP PROJECT: B-4757

CONTRACT:

$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

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

VICINITY MAP

●—●—●—●—● OFFSITE DETOUR

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4757	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38529.1.1	BRZ-2795(1)	P.E.
38529.2.1	BRZ-2795(1)	R/W, UTIL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: BRIDGE NO. 175 OVER BUFFALO CREEK ON SR 2795 (HUFFINE FARM RD.)

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

WETLAND /SURFACE WATER PERMIT

Permit Drawing
Sheet 1 of 8

CLEARING ON THE PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

DESIGN DATA

ADT 2012 = 115
ADT 2035 = 200
DHV = 10 %
D = 60 %
T = 3 % *
V = 45 MPH
* TTST 1% DUAL 2%
FUNC CLASS = LOCAL RURAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4757 = 0.101 MI
LENGTH STRUCTURE TIP PROJECT B-4757 = 0.022 MI
TOTAL LENGTH OF TIP PROJECT B-4757 = 0.123 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 9, 2012

LETTING DATE:
MAY 21, 2013

JAMES A. SPEER, PE
PROJECT ENGINEER

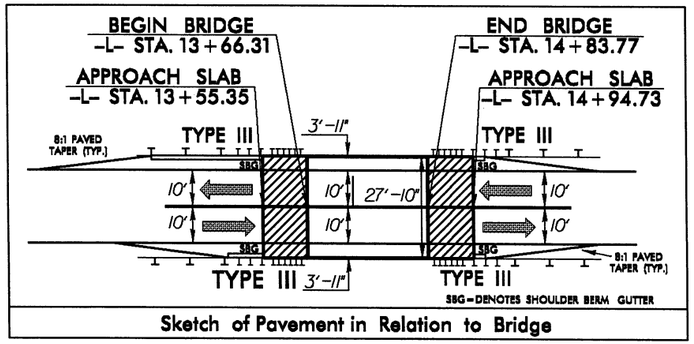
ALLISON K. WHITE
PROJECT DESIGN ENGINEER

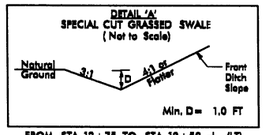
HYDRAULICS ENGINEER

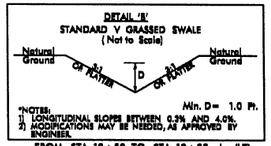
SIGNATURE: P.E.

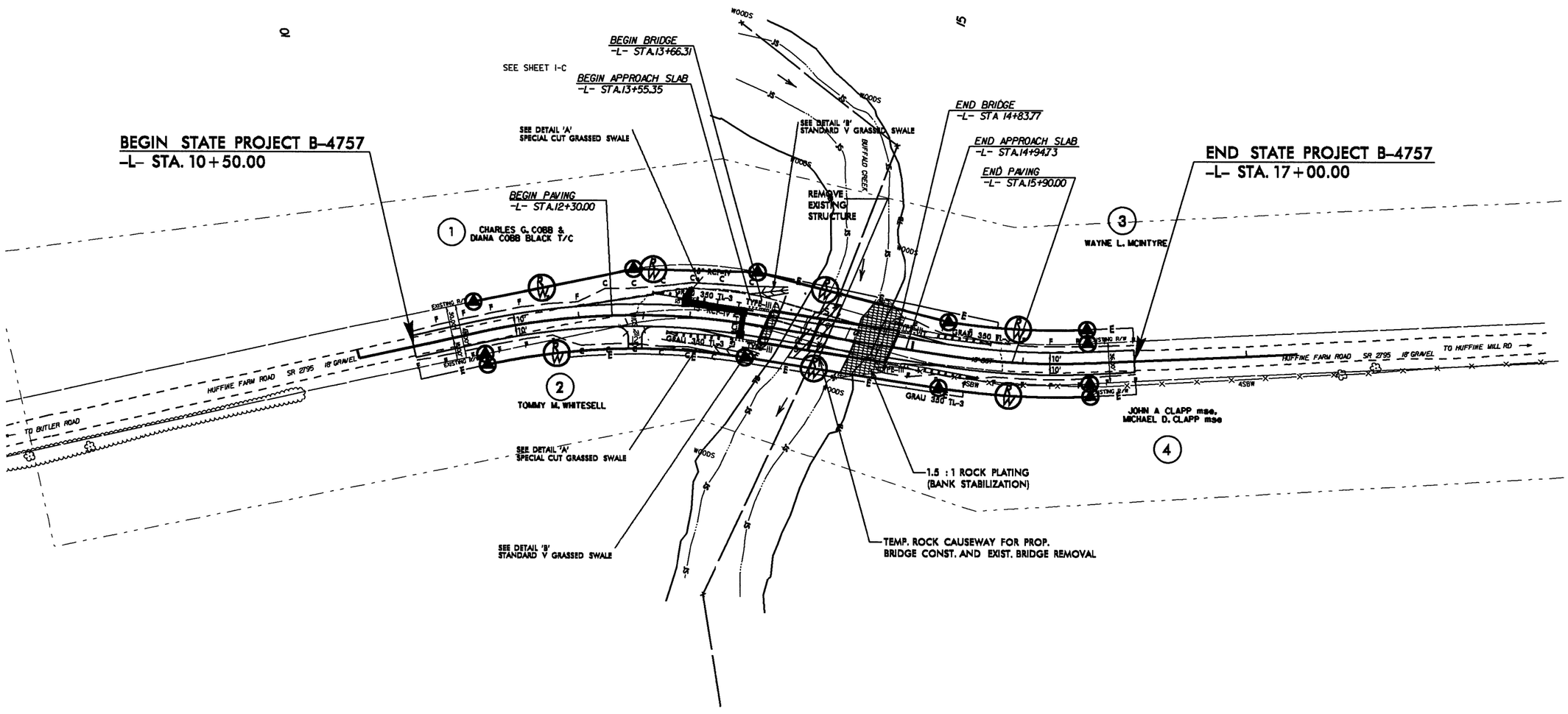
ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.









PROJECT REFERENCE NO.	SHEET NO.
B-4757	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 2 of 8

8/17/99

REVISIONS

SBG=DENOTES SHOULDER BERM GUTTER

Sketch of Pavement in Relation to Bridge

FROM STA. 12+75 TO STA. 13+50 -L- (LT)
FROM STA. 12+75 TO STA. 13+25 -L- (RT)

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

FROM STA. 13+50 TO STA. 13+83 -L- (LT)
DDE=10CY S=0.52%

FROM STA. 13+25 TO STA. 13+65 -L- (RT)
DDE=12CY S=4.0%

▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE: SEE SHEET NO. 5 FOR -L- PROFILE

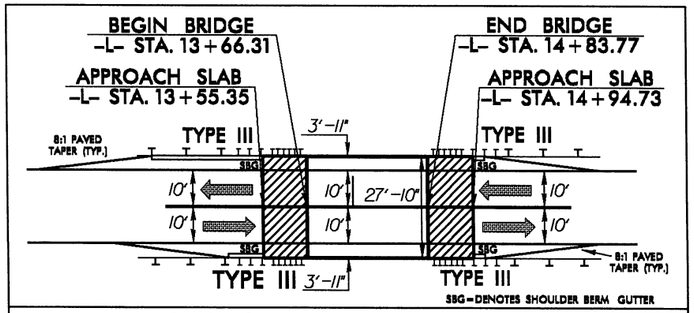
8/17/99

REVISIONS

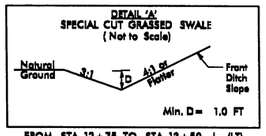
PROJECT REFERENCE NO.	SHEET NO.
B-4757	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

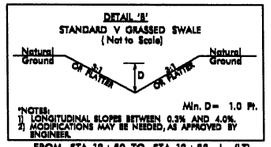
Permit Drawing
Sheet 3 of 8



Sketch of Pavement in Relation to Bridge



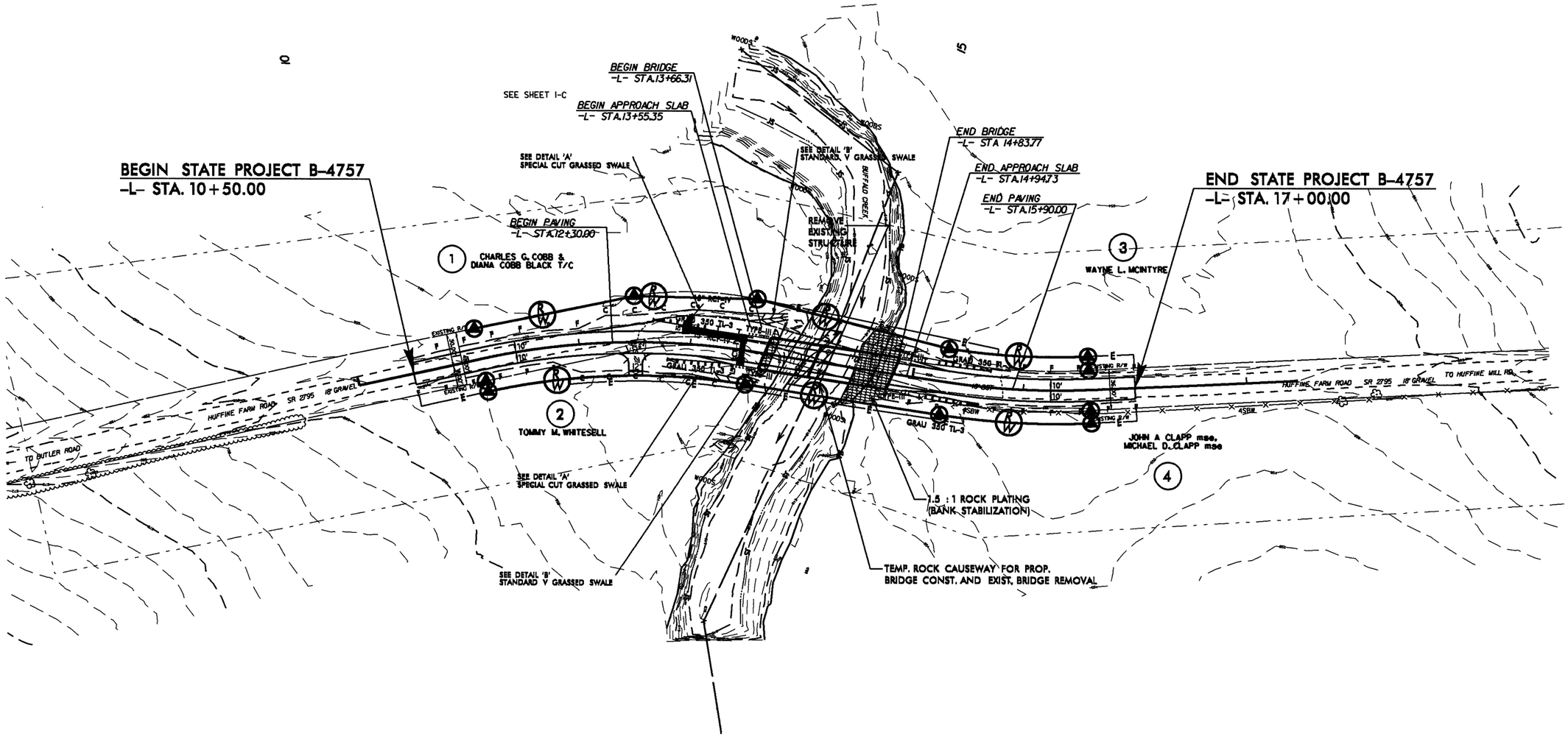
FROM STA. 12+75 TO STA. 13+80 -L- (LT)
FROM STA. 12+75 TO STA. 13+25 -L- (RT)



*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

FROM STA. 13+80 TO STA. 13+83 -L- (LT)
DDE=10CY S=0.82%
FROM STA. 13+25 TO STA. 13+65 -L- (RT)
DDE=12CY S=4.0%

NAD 83



100' 0' 100' 200'
GRAPHIC SCALE

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE: SEE SHEET NO. 5 FOR -L- PROFILE

$$$$$$$USERNAME$$$$$ $$$$$$$SYSTIME$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4757	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 4 of 8

DITCH LEGEND

LEFT DITCH —- - —- -

RIGHT DITCH - - - - - -

BM #1 RR SPIKE IN BASE OF 38" ELM
247" RT OF -BL- STA. 25+22.00
205.33' LT OF -L- STA. 11+80.51
ELEV. 656.38'

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,960	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 654.21	FT
BASE DISCHARGE	= 16,570	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 664.93	FT
OVERTOPPING DISCHARGE	= 3,500	CFS
OVERTOPPING FREQUENCY	= 2	YRS
OVERTOPPING ELEVATION	= 654.68	FT
NORMAL WATER SURFACE ELEVATION	= 641.4	FT
DATE OF SURVEY	= 8/9/11	
W.S. ELEVATION AT DATE OF SURVEY	= 641.40	FT

-L- STA. 14+38.04
PROPOSED 1 @ 45 FT 21" CORED SLAB,
1 @ 70 FT 21" CORED SLAB BRIDGE
LENGTH = 115 FT
SKEW = 105 DEGREES

BEGIN GRADE
-L- STA. 10+50.00
EL = 657.11'

BEGIN BRIDGE
-L- STA 13+66.31

END BRIDGE
-L- STA 14+83.77

PI = 12+10.00
EL = 653.59'
VC = 250'
K = 78
V = 40mph

PI = 16+20.00
EL = 657.69'
VC = 120'
K = 80
V = 45mph

END GRADE
-L- STA. 17+00.00
EL = 657.29'

BEGIN SPECIAL LAT DITCH
-L- STA.12+75.00 (RT)
EL = 651.93

END SPECIAL LAT DITCH
-L- STA.13+25.00 (RT)
EL = 651.78

BEGIN SPECIAL LAT DITCH
-L- STA.12+75.00 (LT)
EL = 651.82

END SPECIAL LAT DITCH
-L- STA.13+50.00 (LT)
EL = 651.48

(+)12.2000%
(+)1.0000%
(-)0.5000%
(-)10.4533%
(+)1.0000%
(-)0.5000%

PROP. CLASS II RIP RAP
PROP. UNCL. STRUCTURE EXCAVATION
EST. 70 CY
(STRUC'S PAY ITEM)
PROP. CLASS II RIP RAP
PROP. UNCL. STRUCTURE EXCAVATION
EST. 182 CY
(STRUC'S PAY ITEM)

BANK STABILIZATION

NWS EL. 641.4
(8/9/11)

TEMP. CAUSEWAY
EL. 643.4±

660 650 640 630 620 610 600 590 580 570 560

10 11 12 13 14 15 16 17 18

SEE SHEET 4 FOR PLAN VIEW

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

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	Charles G. Cobb & Diana Black	5456 Timbermill Rd. Mcleansville, NC 27301
2	Tommy M. Whitesell	6110 Frieden Church Rd. Gibsonville, NC 27249
3	Wayne L. Mcintyre	2665 Mt. Hope Church Rd. Whitsett, NC 27377
4	John A. Clapp & Michael D.	266 Clapp Farms Rd. Greensboro, NC 27405

NCDOT

DIVISION OF HIGHWAYS

GUILFORD COUNTY

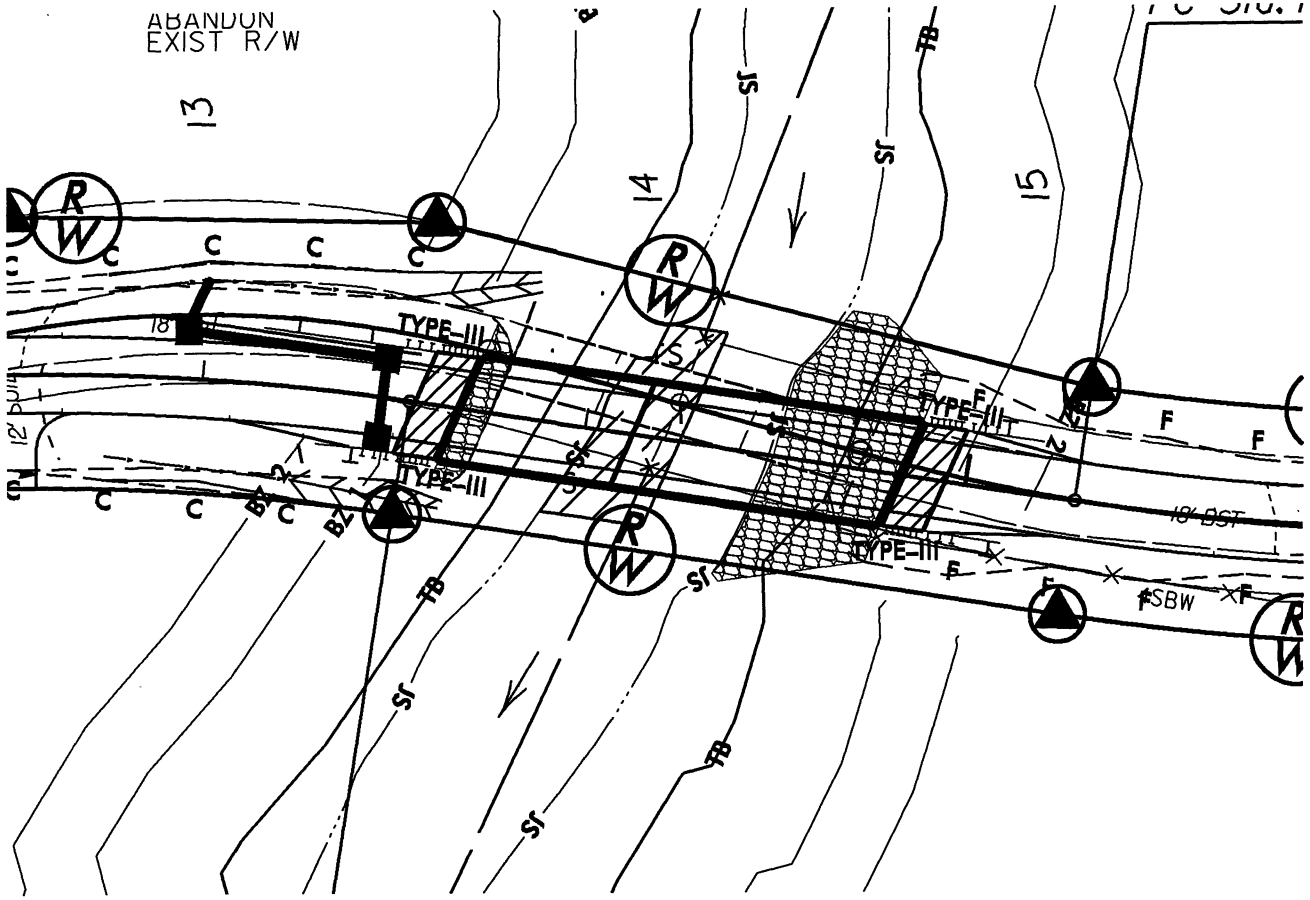
PROJECT: 38529.1.1 (B-4757)

BRIDGE NO. 175

OVER BUFFALO CREEK

ON SR 2795

SHEET 5 OF 8 7/5/12



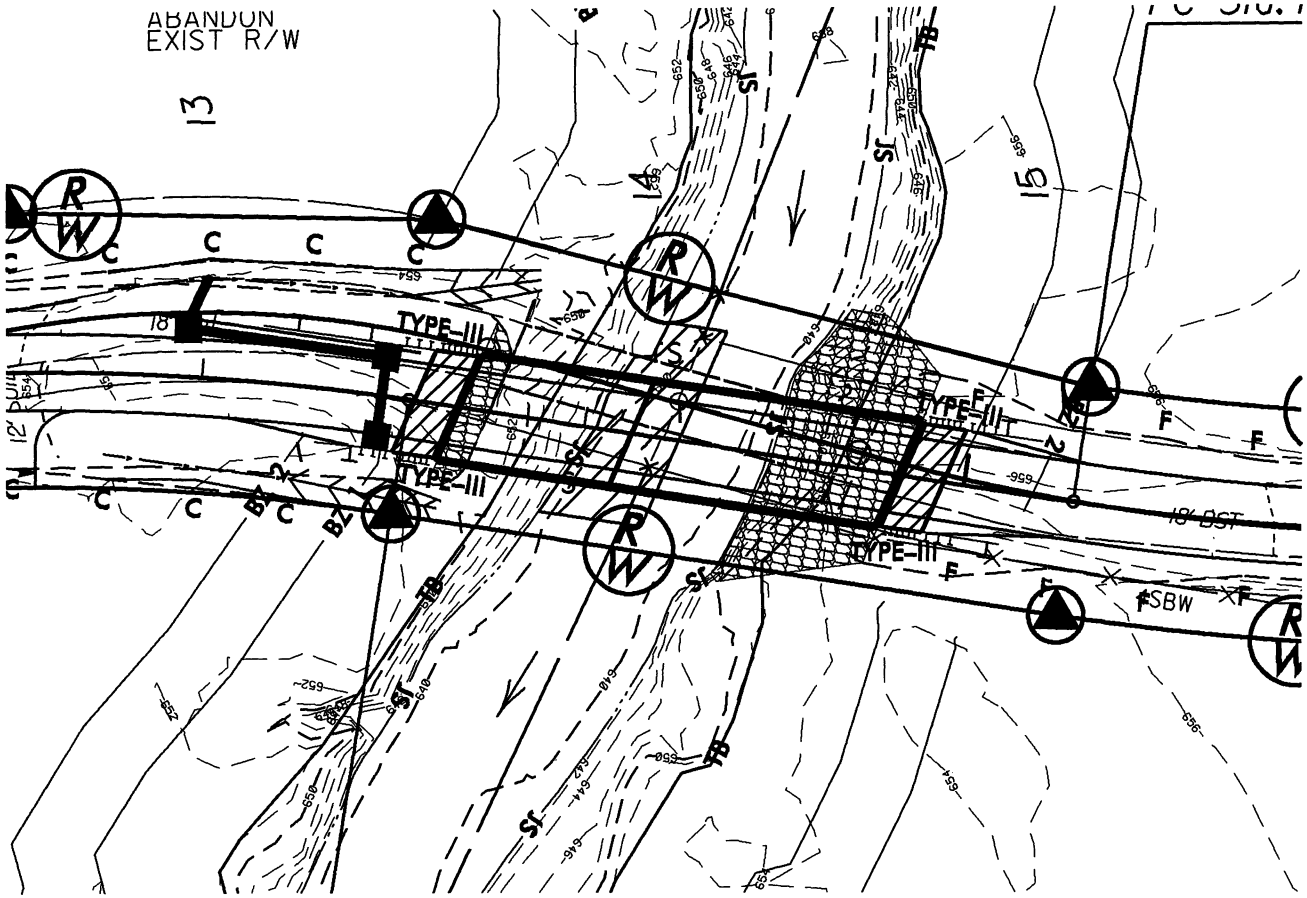
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 38529.1.1 (B-4757)
BRIDGE NO. 175 OVER
BUFFALO CREEK ON
SR 2795 (HUFFINE FARM RD)

SHEET 6 **OF** 8 **07/05/12**



TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS
GUILFORD COUNTY
PROJECT: 38529.1.1 (B-4757)
BRIDGE NO. 175 OVER
BUFFALO CREEK ON
SR 2795 (HUFFINE FARM RD)

SHEET 7 **OF** 8 **07/05/1**

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	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)
1	13+90 / 14+25 -L-	Temporary Rock Causeways							0.03		55	
2	14+50/ 14+65	Bank Stabilization						<0.01		78		
TOTALS:								<0.01	0.03	78	55	

PERMANENT SURFACE WATER IMPACT DUE TO PIER = 21.2 SQ. FT.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
WBS - 38529 (B-4757)

SHEET 8 of 8 7/5/2012

ATN Revised 3/31/05

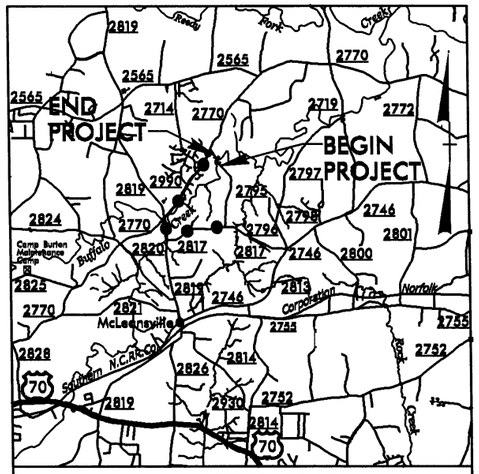
09/06/99

TIP PROJECT: B-4757

CONTRACT:

$$$$$$$$$$SYSTIME$$$$$$$$$$
$$$$$$$$$$DGN$$$$$$$$$$
$$$$$$$$$$USERNAME$$$$$$$$$$

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



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4757	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38529.1.1	BRZ-2795(1)	P.E.
38529.2.1	BRZ-2795(1)	R/W, UTIL

Buffer Drawing Sheet 1 of 4

LOCATION: BRIDGE NO. 175 OVER BUFFALO CREEK ON SR 2795 (HUFFINE FARM RD.)

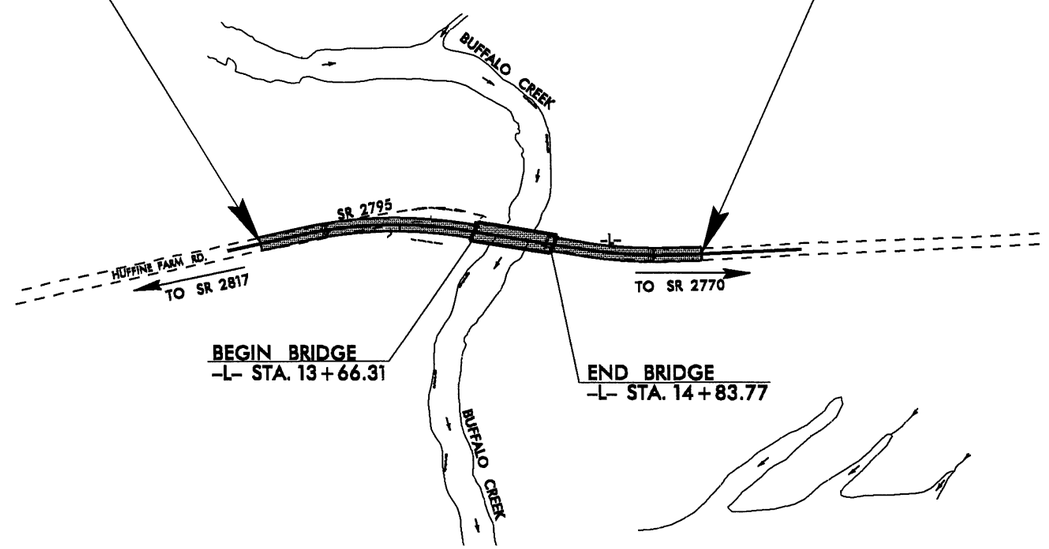
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

BUFFER IMPACT PERMIT

NAD 83

BEGIN TIP PROJECT B-4757
-L- STA. 10+50.00

END TIP PROJECT B-4757
-L- STA. 17+00.00



CLEARING ON THE PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2012 = 115
ADT 2035 = 200
DHV = 10 %
D = 60 %
T = 3 % *
V = 45 MPH
* TTST 1% DUAL 2%
FUNC CLASS = LOCAL RURAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4757 = 0.101 MI
LENGTH STRUCTURE TIP PROJECT B-4757 = 0.022 MI
TOTAL LENGTH OF TIP PROJECT B-4757 = 0.123 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 9, 2012

LETTING DATE:
MAY 21, 2013

JAMES A. SPEER, PE
PROJECT ENGINEER

ALLISON K. WHITE
PROJECT DESIGN ENGINEER

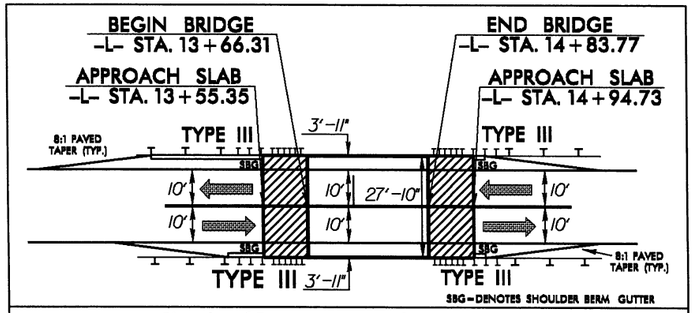
HYDRAULICS ENGINEER

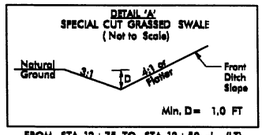
P.E.
SIGNATURE:

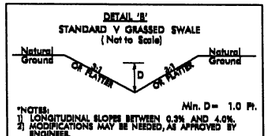
ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION







8/17/99

REVISIONS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4757	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Buffer Drawing
Sheet 2 of 4

Sketch of Pavement in Relation to Bridge

FROM STA. 12+75 TO STA. 13+50 -L- (LT)
FROM STA. 12+75 TO STA. 13+25 -L- (RT)

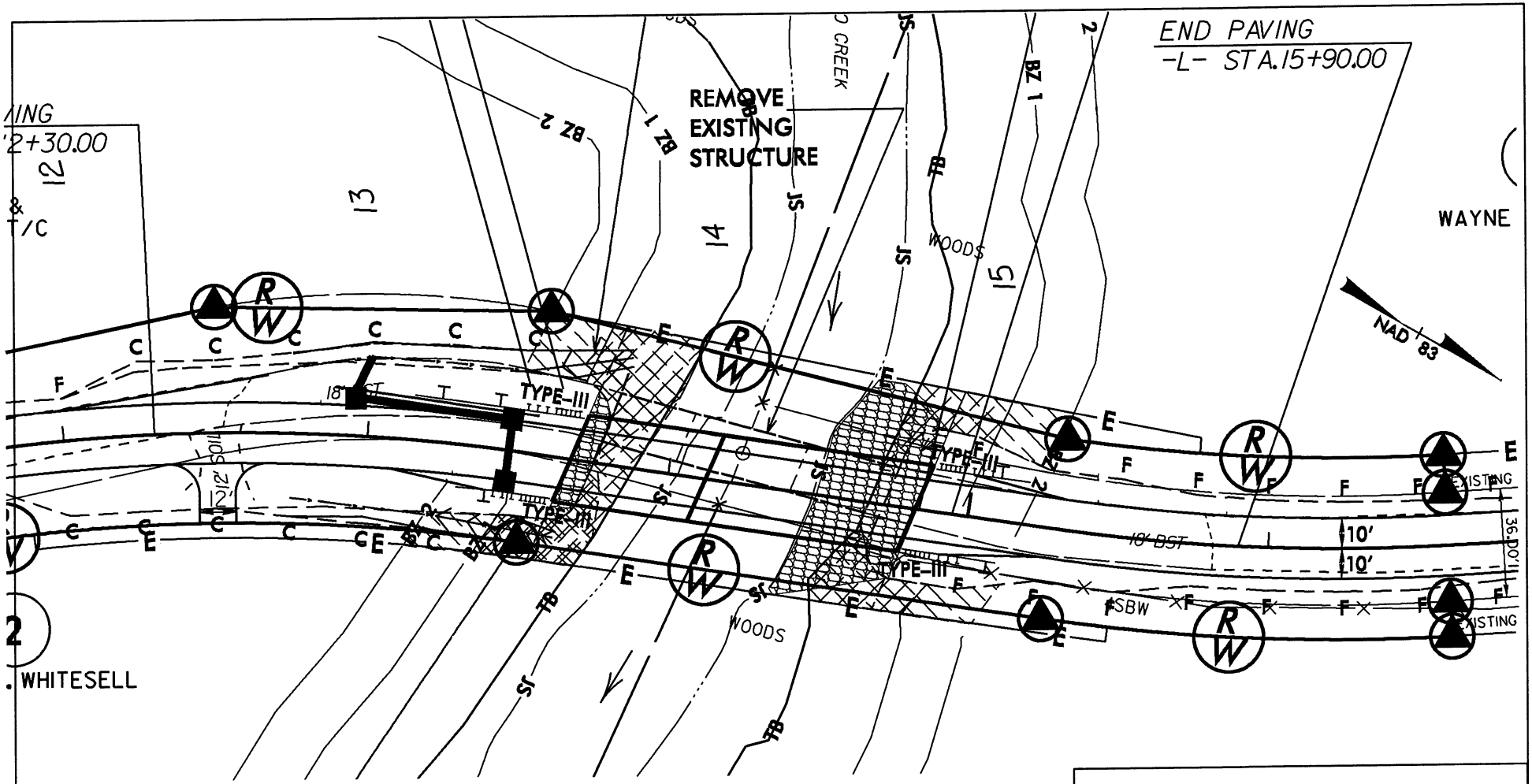
*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

FROM STA. 13+50 TO STA. 13+83 -L- (LT)
DDE=10CY S=0.52%

FROM STA. 13+25 TO STA. 13+65 -L- (RT)
DDE=12CY S=4.0%

▨ ALLOWABLE IMPACTS ZONE 1

▨ ALLOWABLE IMPACTS ZONE 2



ALLOWABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

PLAN VIEW

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GUILFORD COUNTY

PROJECT: 38529.1.1 (B-4757)
BRIDGE NO. 175 OVER
BUFFALO CREEK ON
SR 2795 (HUFFINE FARM RD.)

SHEET 3 OF 4

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	Roadway	13+19 / 13+67 -L-	x			336	713	1049					
1	Bridge	13+67 / 14+82 -L-		x		2187		2187					
1	Roadway	14+82 / 15+29 -L-	x			347	630	977					
TOTALS:						2870	1343	4213					

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
PROJECT: 38529.1.1 (B-4757)

7/5/2012
SHEET 4 OF 4

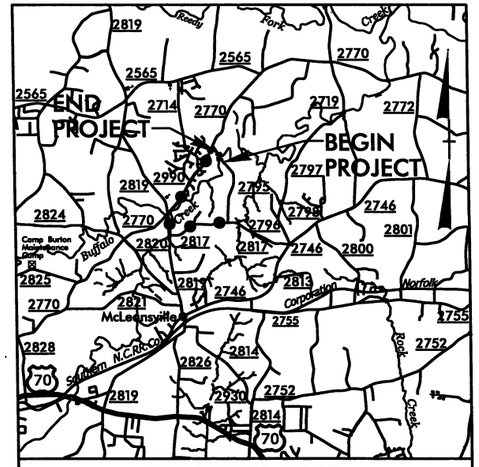
Rev. May 2006

09/08/56

TIP PROJECT: B-4757

CONTRACT: C203151

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



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

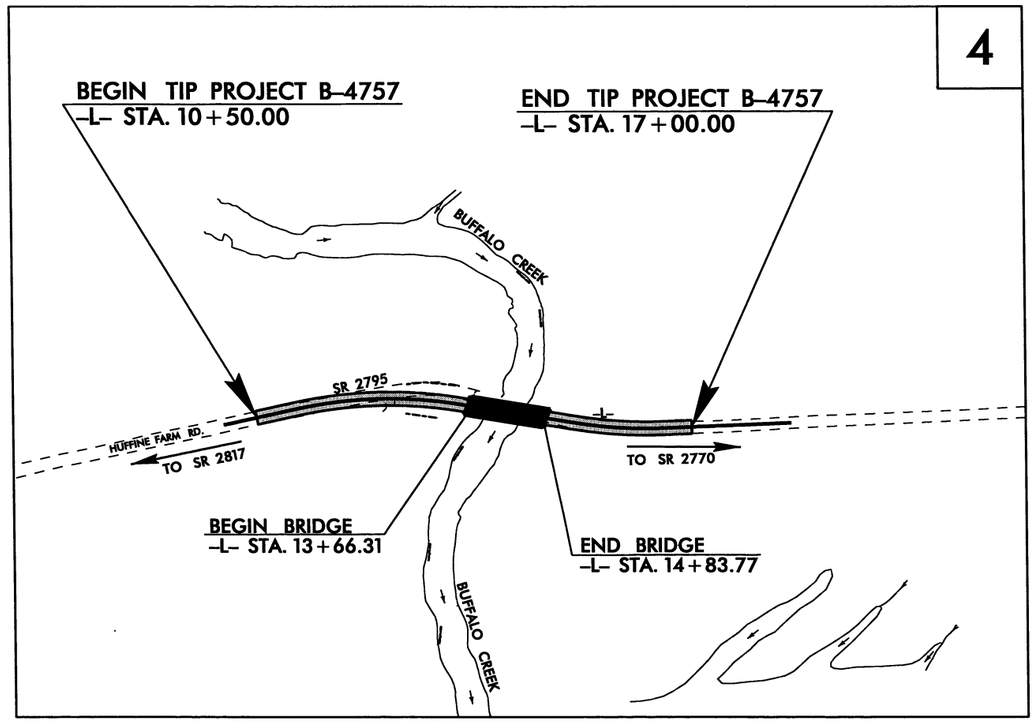
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4757	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38529.1.1	BRZ-2795(1)	P.E.
38529.2.1	BRZ-2795(1)	R/W, UTIL

LOCATION: BRIDGE NO. 175 OVER BUFFALO CREEK ON SR 2795 (HUFFINE FARM RD.)

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

4



NAD 83

CLEARING ON THE PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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 2012 = 115
ADT 2035 = 200
DHV = 10 %
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V = 45 MPH
* TTST 1% DUAL 2%
FUNC CLASS = LOCAL RURAL
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PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4757 = 0.101 MI
LENGTH STRUCTURE TIP PROJECT B-4757 = 0.022 MI
TOTAL LENGTH OF TIP PROJECT B-4757 = 0.123 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 9, 2012

LETTING DATE: MAY 21, 2013

JAMES A. SPEER, PE
PROJECT ENGINEER

ALLISON K. WHITE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

16-JUL-2012 09:10
R:\Roadway\Proj\B4757_Rdy_tsh.dgn
$$$$USERNAME$$$$

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-4757	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line

- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer — PT
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — TV
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

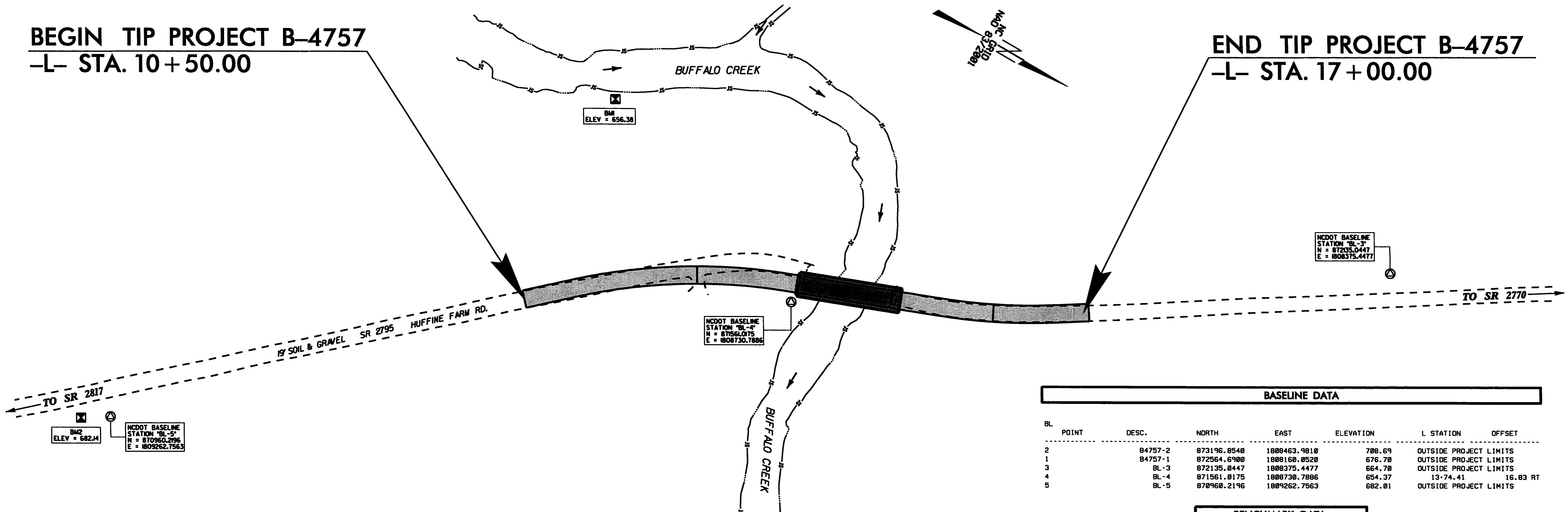
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — TS
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-4757	1C
Location and Surveys	

B-4757 SURVEY CONTROL SHEET



BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	B4757-2	873196.8540	1808463.9810	708.69	OUTSIDE PROJECT LIMITS	
1	B4757-1	872564.6900	1808160.0520	676.70	OUTSIDE PROJECT LIMITS	
3	BL-3	872135.0447	1808375.4477	664.70	OUTSIDE PROJECT LIMITS	
4	BL-4	871561.0175	1808730.7886	654.37	13+74.41	16.83 RT
5	BL-5	870960.2196	1809262.7563	682.01	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

BM1 ELEVATION - 656.38
N 871274 E 1808655
L STATION 11+99.00 203 LEFT
RR SPIKE IN BASE OF 38" ELM

BM2 ELEVATION - 682.14
N 870932 E 1809281
L STATION 10+00.00
S 45°55'37.32" E DIST 475.52
RR SPIKE IN BASE OF 12" POPLAR

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4757-1"
WITH NAD 83/2001 STATE PLANE GRID COORDINATES OF
NORTHING: 872,564.690(ft) EASTING: 1,808,160.052(ft)
ELEVATION: 676.70'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999667293
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4757-1" TO -L- STATION 10+50.00 IS
S 30° 31' 34" E 1,468.52'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

ROW MARKER CONCRETE

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+65.63	-30.45	871810.5256	1808586.2901
L	16+65.60	-18.04	871817.2790	1808596.6915
L	16+65.51	17.96	871836.8838	1808626.8863
L	16+65.48	29.55	871843.1993	1808636.6134
L	15+34.39	-29.95	871700.0559	1808643.1705
L	15+35.47	30.04	871722.0390	1808698.9983
L	13+57.68	-30.00	871530.9227	1808691.0585
L	13+62.12	47.29	871559.2845	1808763.0855
L	12+56.78	-30.00	871433.8258	1808745.0705
L	11+10.73	-29.54	871325.0363	1808843.3516
L	11+11.45	18.46	871357.7116	1808878.5173
L	11+11.60	28.34	871364.4390	1808885.7563

NOTES

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:

B4757_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

Ⓐ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM FROM EXISTING NCGS MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

12/01/2005

16-JUL-2012 09:11
R:\Hydraulics\Proj\b4757_ls_lc.dgn
$$$$USERNAME$$$$

8/17/99

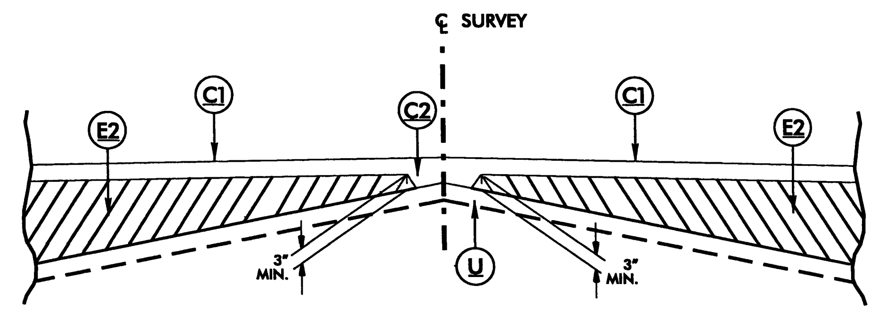
PROJECT REFERENCE NO.	SHEET NO.
B-4757	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

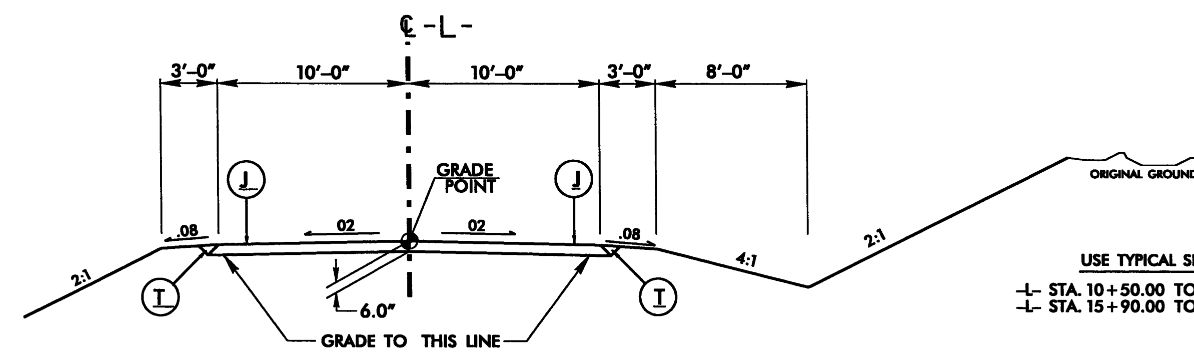
PAVEMENT SCHEDULE

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 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J_	PROP. 6" AGGREGATE BASE COURSE.
T_	EARTH MATERIAL.
U	EXISTING PAVEMENT.

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

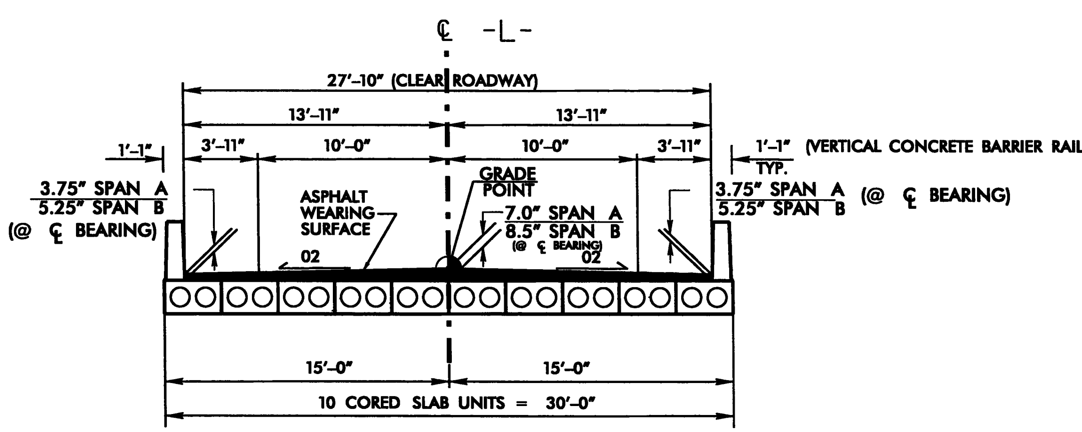


DETAIL SHOWING METHOD OF WEDGING



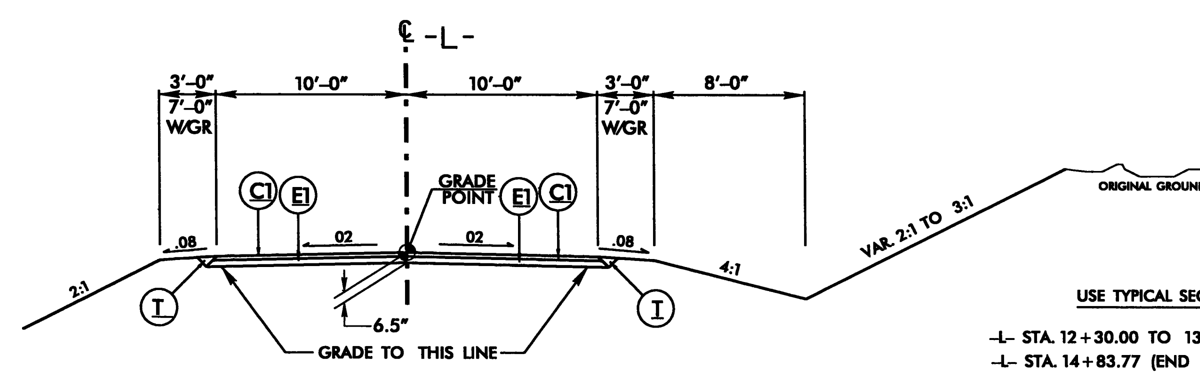
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 10+50.00 TO -L- STA. 12+30.00
-L- STA. 15+90.00 TO -L- STA. 17+00.00



TYPICAL SECTION ON STRUCTURE

BEGIN BRIDGE -L- STA. 13+66.31 TO END BRIDGE -L- STA. 14+83.77



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 12+30.00 TO 13+66.31 (BEGIN BRIDGE)
-L- STA. 14+83.77 (END BRIDGE) TO 15+90.00

REVISIONS

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12/06/07

COMPUTED BY: M. SANTIAGO DATE: 4/30/2012
CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
B-4757	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 10+50.00	-L- 13+66.31	270	86		184
-L- 14+83.77	-L- 17+00.00	21	71	50	
SUBTOTALS:		291	157	50	184
WASTE IN LIEU OF BORROW				-50	-50
PROJECT TOTALS:		291	157	0	134
GRAND TOTALS:		291	157	0	134
SAY:		330			
UNDERCUT EXCAVATION (CONTINGENCY) = 200 CY					

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	R.C. PIPE (CLASS IV) 15"	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29
13+47.00	RT	401		654.58					1	1	1
13+47.00	CT	401	402		652.66	652.60		20			
13+47.00	LT	402		654.63					1	1	1
13+21.00	LT	402	404		652.60	652.45		48			
12+98.00	LT	404		654.00					1	1	1
12+97.50	LT	404	403		652.45	651.82		16			
TOTAL								84	3	3	3

DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC): 12" 15" 18" 24" 30" 36" 42" 48"
C.S. PIPE (UNLESS NOTED OTHRWISE): 12" .064, 15" .064, 18" .064, 24" .064, 30" .079, 36" .079, 42" .109, 48" .109
R.C. PIPE (CLASS IV): 12" 15" 18" 24" 30" 36" 42" 48"
15" SIDE DRAIN PIPE; 18" SIDE DRAIN PIPE; 24" SIDE DRAIN PIPE
ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.: R.C.P., C.S.P.
QUANTITIES FOR DRAINAGE STRUCTURES: PER EACH (0' THRU 5.0'); LIN. *FT. A: 5.0' THRU 10.0'; B: 10.0' AND ABOVE
* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')
C.B. STD. 840.01 OR STD. 840.02
FRAME, GRATES AND HOOD STANDARD 840.03 — TYPE OF GRATE: E F G
SIZE; THICKNESS OR GAUGE

ABBREVIATIONS

- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
- J.B. JUNCTION BOX
- M.H. MANHOLE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

REMARKS

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GRAU 350	ANCHORS TYPE III	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+79.66	13+62.58	RT	81.25			13+62.58		4	7	62.5		1		1	1							
-L-	14+80.04	15+60.55	RT	81.25			14+80.04		4	7		62.5		1	1	1							
-L-	12+66.01	13+70.04	LT	106.25			13+70.04		4	7		87.5	1		1	1							
-L-	14+87.50	15+69.61	LT	81.25			14+87.50		4	7	62.5			1	1	1							
															4	4							
			SUBTOTAL	350																			
		LESS ANCHOR DEDUCTIONS																					
		GRAU-350 TL-3 4 @ 50'		-200																			
		TYPE III 4@ 18.75'		-75																			
			PROJECT TOTAL	75																			
ADDITIONAL GUARDRAIL POSTS = 5			SAY	100																			

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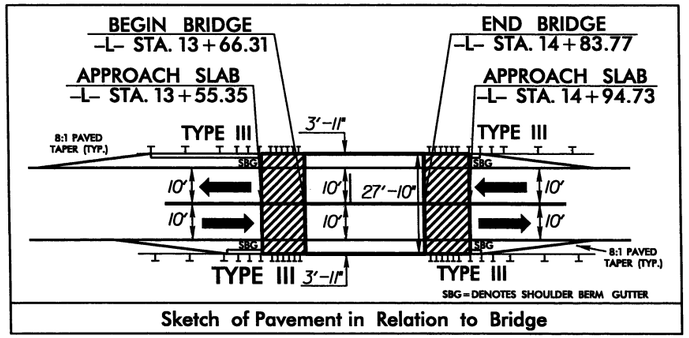
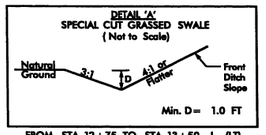
PROJECT REFERENCE NO.	SHEET NO.
B-4757	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

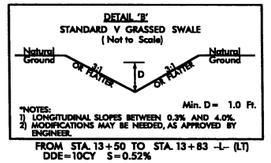
REVISIONS 8/17/99



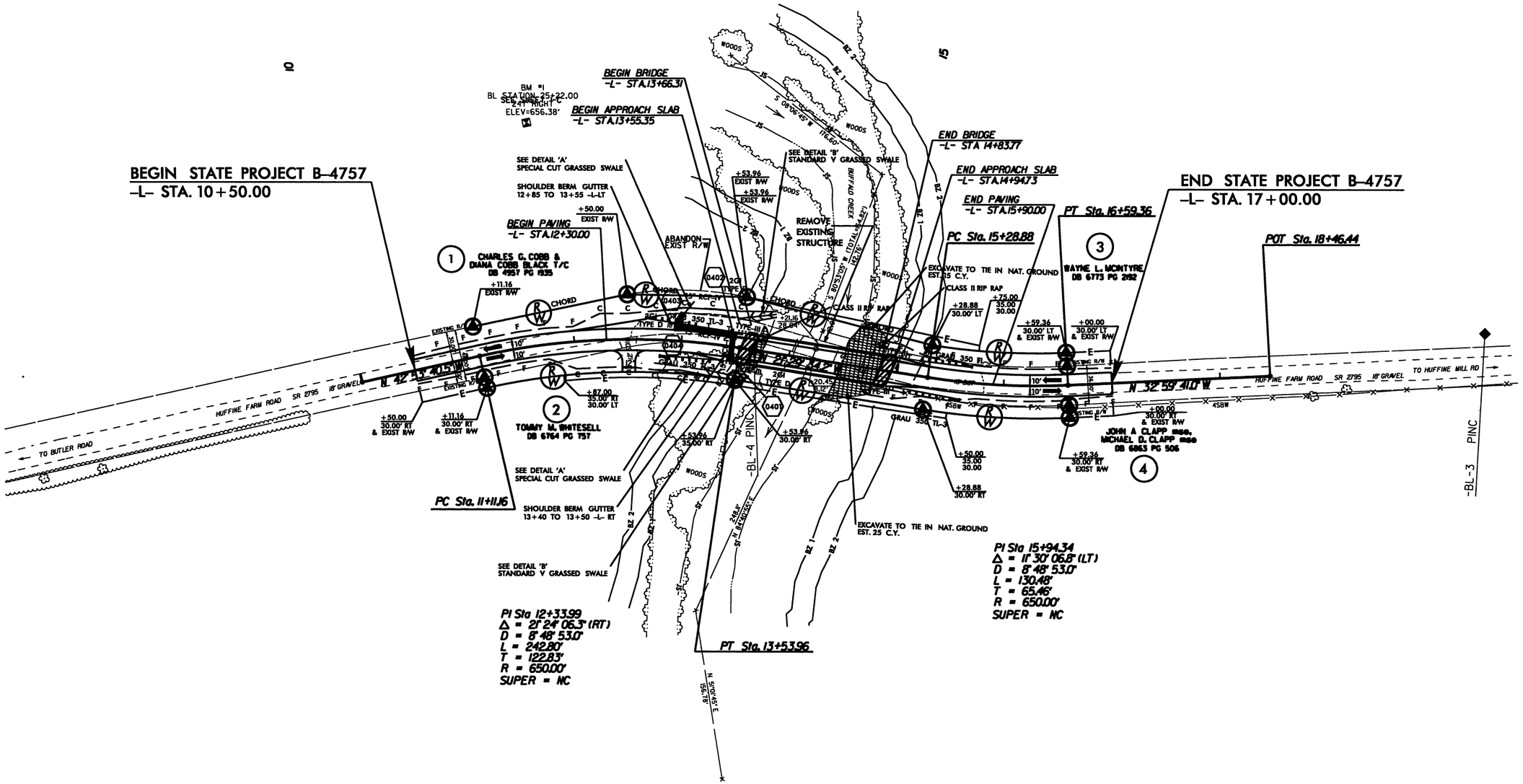
Sketch of Pavement in Relation to Bridge



FROM STA. 12+75 TO STA. 13+50 -L- (LT)
FROM STA. 12+75 TO STA. 13+25 -L- (RT)



FROM STA. 13+50 TO STA. 13+83 -L- (LT)
DDE=10CY S=0.52%
FROM STA. 13+25 TO STA. 13+65 -L- (RT)
DDE=12CY S=4.0%



NOTE: SEE SHEET NO. 5 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
B-4757	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/14/99

DITCH LEGEND

LEFT DITCH	— - - — -
RIGHT DITCH	- - - - - - -

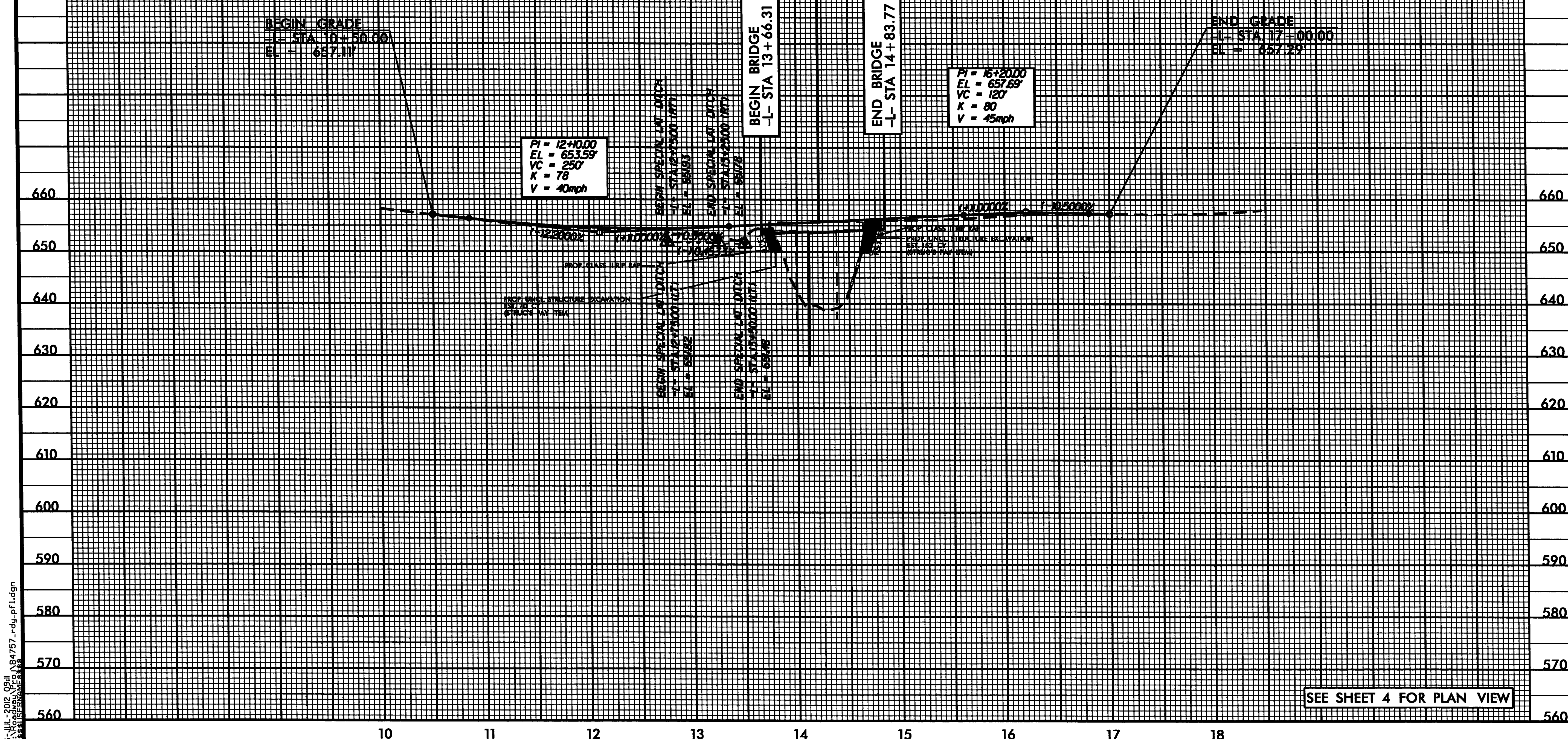
BM #1 RR SPIKE IN BASE OF 38" ELM
247" RT OF -BL- STA. 25+22.00
205.33' LT OF -L- STA. 11+80.51
ELEV. 656.38'

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2,960	CFS
DESIGN FREQUENCY	=	2	YRS
DESIGN HW ELEVATION	=	654.21	FT
BASE DISCHARGE	=	16,570	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	664.93	FT
OVERTOPPING DISCHARGE	=	3,500	CFS
OVERTOPPING FREQUENCY	=	2	YRS
OVERTOPPING ELEVATION	=	654.68	FT
NORMAL WATER SURFACE ELEVATION	=	641.4	FT
DATE OF SURVEY	=	8/9/11	
W.S. ELEVATION AT DATE OF SURVEY	=	641.40	FT

C/L STA 14+25.04 -L-
PROPOSED 1 @ 45 FT 21" CORED SLAB,
1 @ 70 FT 24" CORED SLAB BRIDGE
LENGTH = 115 FT
SKEW = 105 DEGREES



SEE SHEET 4 FOR PLAN VIEW

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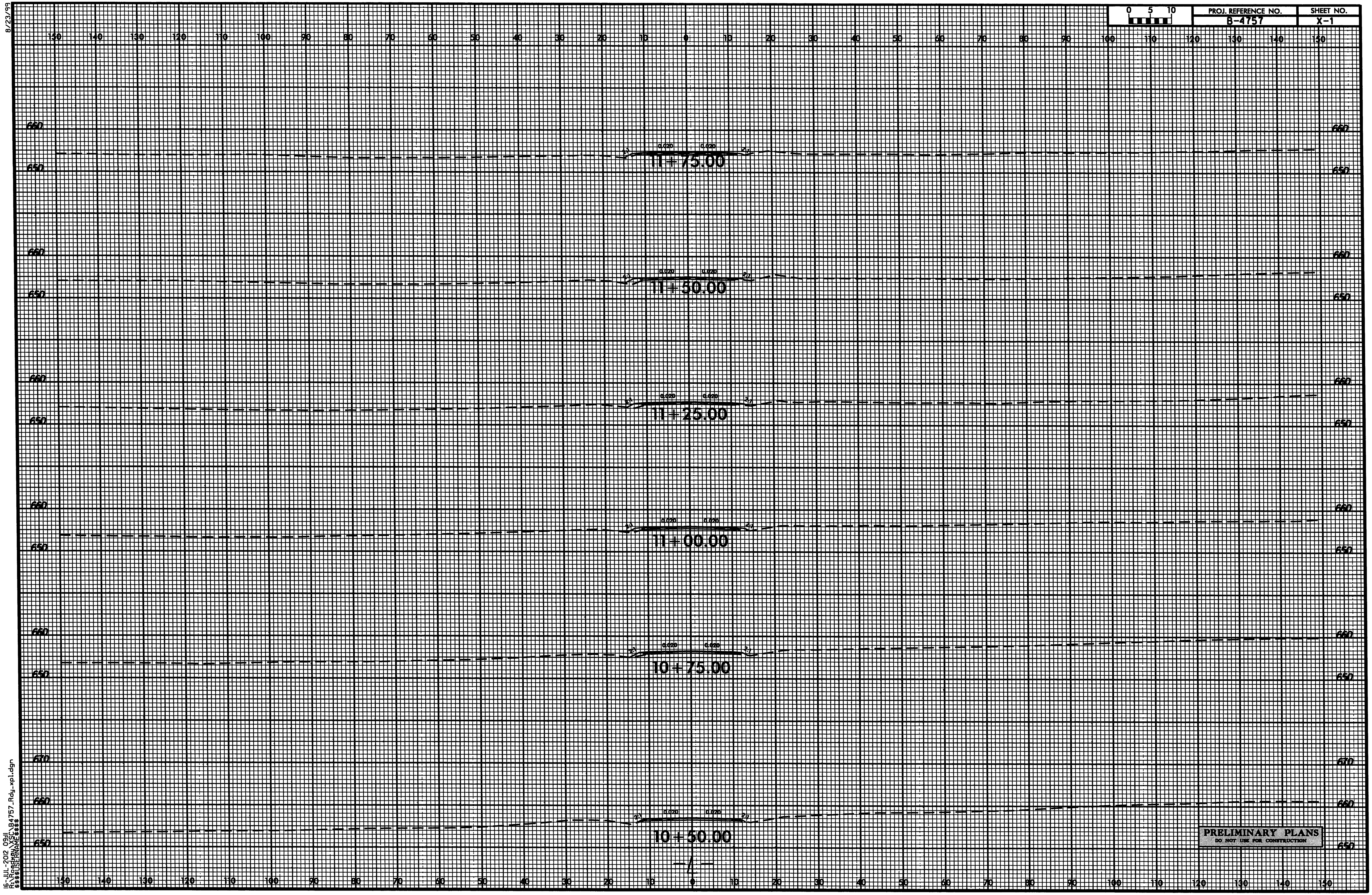

PROJ. REFERENCE NO.
B-4757
SHEET NO.
X-1
0 5 10
11+75.00
11+50.00
11+25.00
11+00.00
10+75.00
10+50.00
0.020
660
650
670
PRELIMINARY PLANS
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4757	X-2

13+25.00

13+00.00

12+75.00

12+50.00

12+25.00

12+00.00

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4757	X-3

14+50.00

14+25.00

14+00.00

13+75.00

13+50.00

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4757	X-4

16+00.00

15+75.00

15+50.00

15+25.00

15+00.00

14+75.00

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4757	X-5

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

660 650

17+00.00

16+75.00

16+50.00

16+25.00

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