STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

July 21, 2011

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Loretta Beckwith
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 23, 13, 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 31 over Brush Creek on SR 1308 in Yancey County, Federal Aid Project No. BRZ-1308(6); Division 13; TIP No. B-4851
$240.00 debit WBS 38621.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 31 over Brush Creek on SR 1308 with a new 60-foot single-span bridge. There will be 11 linear feet of permanent stream impacts, 31 linear feet of bank stabilization and <0.01 acre (24 linear feet) of temporary stream impacts due to the replacement of a pipe under a driveway.

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, USFWS Concurrence letter, Jurisdictional Determination form, permit drawings, stormwater management plan and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in August 2010. Documents were distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of February 21, 2012 and a review date of January 3, 2012; however, the let date may advance as additional funding becomes available.

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

This project is located in a trout county, therefore comments from the NCWRC will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC Review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

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 Erin Cheely at (919) 707-6108.

Sincerely,

E. L. Lusk

fcv Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

cc:
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: 23 33 13	or General Permit (GP) number:	
1c. Has the N WP 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 31 over Brush Creek on SR 1308
2b. County:	Yancey
2c. Nearest municipality / town:	Green Mountain
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4851

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 i f applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6108
3g. Fax no.:	(919) 212-5785
3h. Email address:	ekcheely@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: 36.00394 (DD.DDDDDD)	Longitude: - 86.23357 (-DD.DDDDDD)
1c. Property size:	27 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Brush Creek	
2b. Water Quality Classification of nearest receiving water:	C-Tr	
2c. River basin:	Broad	
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: Land use in the project vicinity is approximately 20% disturbed land (primarily residential and roadsides) and 80% forest land (mixed hardwood).		
3b. List the total estimated acreage of all existing wetlands on the property: No wetlands		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 220		
3d. Explain the purpose of the proposed project: To replace a structurally deficient bridge (structural evaluation 2 of 9).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 31-foot, two-span bridge with a 60-foot, single-span bridge on the existing alignment with an off-site detour. 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: Jurisdictional Determination form is provided with this permit application to obtain an approved JD with the permit.	☐ 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: No wetlands within the project limits

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	Pipe Replacement	Little Brush Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	5-8	11
Site 2 ☒ P ☐ T	Bank Stabilization	Little Brush Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	5-8	31
Site 3 ☐ P ☒ T	Pipe Replacement	Little Brush Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	5-8	24
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**	42 Perm 24 Temp

3i. Comments: 72" pipe installed by a landowner to be replaced with an 84" corrugated steel pipe. Bank stabilization at outlet.

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: No open waters within project limits

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:

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			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
			6h. **Total buffer impacts**		

6i. Comments: Project is not in a protected buffer area.

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 29 feet longer than the existing bridge and will span the creek. The proposed bridge will be at approximately the same grade as the existing structure and an off site detour will be used. On the right side (west side) of SR 1317, a concrete expressway gutter is used in lieu of a grass ditch due to the steep and rocky topography that will have to be cut for construction. Using the concrete gutter reduces the amount of rock excavation for the project. Rather than construct a concrete gutter on the stream side (east side) of SR 1317, a flume will direct water to a grass swale for treatment before entering the creek.

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

Design Standards in Sensitve Watersheds will be used throughout construction. The streams within the project area will be designated Environmentally Sensitve Areas. No deck drains will discharge directly into the creek. No temporary access is needed to remove and replace the existing bridge. Bridge abutments will only be partly removed in order to preserve channel integrity and avoid disturbance to the streambed. There will be no impacts to the stream from bridge demolition.

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:
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☒ Corps
2c. If yes, which mitigat ion 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:	11 linear feet at a 2:1 ratio = 22 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☒cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres

4h. Comments: The NCDOT does not propose mitigation for the 31 linear feet of stream bank stabilization activities. Stabilizing the bank of a stream does not require fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, does not constitute Loss of Waters of the U.S. and is not subject to compensatory mitigation. Furthermore, the proposed bank stabilization activities are necessary to prevent erosion and sedimentation, i.e. preventing bank destabilization and minimizing impacts to the environment.

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:**			

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:

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 not, explain why. Comments: If required from 1a, see attached buffer 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 N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

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: Programmatic Categorical Exclusion (PCE) approved 8/31/10	☒ 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, ind icate 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? There are eight federally listed species and one species listed for similarity of appearance (bog turtle) in Yancey County. A biolgical conclusion for the bog turtle is not required, but this project will not affect this species. The biological conclusion for Carolina northern flying squirrel, Virginia big-eared bat, spruce-fir moss spider, roan mountain bluet, spreading avens and rock gnome lichen is No Effect due to lack of suitable habitat. There are, however, known populations of Appalachain elktoe (including Critical Habitat for elktoe) and Virginia spiraea less than a mile downstream of the project (neither of these species occur within the project limits). Design modifications (use of a flume and grass swale instead of concrete gutter - see Section D of the PCN) were made to the project to minimize the potential adverse environmental impact to the known populations and critical habitat in the nearby North Toe River downstream. An informal Section 7 concurrence request letter was sent to USFWS on July 8, 2011 proposing a conclusion of May Affect, Not Likely to Adversely Affect for both of these species. Concurrence from USFWS was received on July 21, 2011.		
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. P. Lusk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	7.22.11 Date

Ecosystem Enhancement PROGRAM

July 11, 2011

Mr. Gregory J. Thorpe, Ph.D.
Manager, Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4851, Replace Bridge Number 31 over Brush Creek on SR 1308, Yancey County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on July 7, 2011, the impacts are located in CU 06010108 of the French Broad River Basin in the Northern Mountains (NM) Eco-Region, and are as follows:

French Broad 06010108 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	11	0	0	0	0	0	0	0

EEP commits to implementing sufficient compensatory stream mitigation credits to offset the impacts associated with this project in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

James B. Stanfill for

Michael Ellison
EEP Deputy Director

cc: Mr. Lori Beckwith, USACE – Asheville Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: B-4851

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

July 21, 2011

Dr. Gregory J. Thorpe, Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Subject: Endangered Species Concurrence, Proposed Replacement of Bridge No. 31 over Brush Creek on SR 1308 in Yancey County, North Carolina, Federal Project No. BRZ-1308 (6), WBS Element No. 38621.1.1, T.I.P. No. B-4851

On July 8, 2011 we received your letter (via email) requesting section 7 concurrence on the subject project and its possible effect on the federally threatened Virginia spirea (*Spiraea virginiana*) and federally endangered Appalachian elktoe (*Alasmidonta ravaneliana*). The following comments are provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

North Carolina Natural Heritage Program records indicate that there are multiple occurrences of Appalachian elktoe and Virginia spiraea in the North Toe River. The nearest known records for both species are located about 1.4km downstream from the proposed project site. The North Toe River is critical habitat for Appalachian elktoe. The mouth of Brush Creek empties into the North Toe River about 430m downstream from the proposed project site. Construction projects upstream of, and in close proximity to, occupied critical habitat represent a potential for negative effects to the species. Survey data for Virginia spiraea in the North Toe River is sparse compared to data for aquatic species. The habitat for Virginia spiraea in the North Toe River appears to be of good quality and wide spread. Virginia spiraea uses a specific type of medium disturbance streamside habitat and can rapidly colonize areas that are disturbed. Known records of this species near the project site indicate that the proposed construction could have a negative effect on this species.

Due to the close proximity of records for Appalachian elktoe and Virginia spiraea, it is possible that individuals could be negatively affected by construction activities. Marginal habitat characteristics within the project footprint make it unlikely that either species will be directly affected by construction activities; however, other construction related direct and indirect effects

do have potential to affect the species or critical habitat (Appalachian elktoe) downstream in the North Toe River. Possible direct and indirect effects to the downstream critical habitat and the species include construction runoff, sedimentation, fuel/fluid spills, road runoff pollutants, and destabilization of the stream channel resulting in long term degradation of Brush Creek and subsequent deposition of bank material in the downstream critical habitat. To minimize the potential for these and other negative effects the North Carolina Department of Transportation has committed to the following minimization measures.

1. **Design standards for sensitive watersheds will be used.** The Environmentally Sensitive Area shall be defined as a 50-foot buffer zone on both sides of the stream or depression measured from top of streambank or center of depression. Within Environmentally Sensitive Areas the following will apply:

   (A) Clearing and Grubbing
   In areas identified as Environmentally Sensitive Areas, the Contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations as described in Article 200-1 of the *Standard Specifications*. Only clearing operations (not grubbing) shall be allowed in this buffer zone until immediately prior to beginning grading operations. Erosion control devices shall be installed immediately following the clearing operation.

   (B) Grading
   Once grading operations begin in identified Environmentally Sensitive Areas, work shall progress in a continuous manner until complete. All construction within these areas shall progress in a continuous manner such that each phase is complete and areas are permanently stabilized prior to beginning of next phase. Failure on the part of the Contractor to complete any phase of construction in a continuous manner in Environmentally Sensitive Areas will be just cause for the Engineer to direct the suspension of work in accordance with Article 108-7 of the *Standard Specifications*.

   (C) Temporary Stream Crossings
   Any crossing of streams within the limits of this project shall be accomplished in accordance with the requirements of Subarticle 107-13(B) of the *Standard Specifications*.

   (D) Seeding and Mulching
   Seeding and mulching shall be performed in accordance with Section 1660 of the *Standard Specifications* and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment. Seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment. No appreciable time shall lapse into the contract time without stabilization of slopes, ditches and other areas within the Environmentally Sensitive Areas.

(E) Stage Seeding
The work covered by this section shall consist of the establishment of a vegetative cover on cut and fill slopes as grading progresses. Seeding and mulching shall be done in stages on cut and fill slopes that are greater than 20 feet in height measured along the slope, or greater than 2 acres in area. Each stage shall not exceed the limits stated above.

2. **Storm water from deck drainage and part of the roadway will be filtered through a grassy swale prior to entering the waterway.**

3. **A portion of the existing end abutment may be left in the bank to increase bank stability and to help contain construction. The portion of the abutment left in the bank will not be greater than 1 foot in height. If the abutment is found to be unstable during demolition, it will be removed entirely and the stream bank will be graded to approximate a natural channel profile.**

4. **No in-water work will be performed during demolition or construction.**

5. **No pieces of the existing bridge will be dropped into the waterway during demolition.**

6. **Traffic will be detoured offsite during construction to eliminate the need for temporary crossings.**

7. **The replacement of a driveway culvert on the north-east side of the new bridge will be replaced in a manner that minimizes sediment in the stream; either by diversion into a new culvert parallel along the existing or into a lined temporary diversion ditch, depending on the available work area. The new culvert will be buried 1 foot into the streambed.**

8. **All mechanized equipment operated near surface waters will be inspected daily and maintained regularly in order to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.**

9. **All equipment will be refueled outside of the Environmentally Sensitive Area. Refueling will take place in designated refueling sites that will be provisioned to quickly contain spills of fuel and lubricants.**

We believe that these commitments minimize the potential for negative effects to the Appalachian elktoe and Virginia spiraea. With implementation of the above listed measures, we concur with the NCDOT's determination that the subject bridge construction and demolition may affect, but is not likely to adversely affect, the Appalachian elktoe and Virginia spirea. Therefore, we believe the requirements under section 7(c) of the Act are fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not

previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

If you have questions about these comments, please contact Mr. Jason Mays of our staff at 828/258-3939, Ext. 226. In any future correspondence concerning this project, please reference our Log Number 4-2-09-037.

Sincerely,

Brian P. Cole
Field Supervisor

cc:
Ms. Lori Beckwith, Asheville Regulatory Field Office, U.S. Army Corps of Engineers, 151 Patton Avenue, Room 208, Asheville, NC 28801-5006
Ms. Marla J. Chambers, Western NCDOT Permit Coordinator, North Carolina Wildlife Resources Commission, 12275 Swift Road, Oakboro, NC 28129
Mr. Brian Wrenn, North Carolina Division of Water Quality, Central Office, 2321 Crabtree Blvd., Suite 250, Raleigh, NC 27604

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-4851

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:NC County/parish/borough: Yancey City: Green Mountain
Center coordinates of site (lat/long in degree decimal format): Lat. 36.00394° N, Long. 86.23357° W.
Universal Transverse Mercator:
Name of nearest waterbody: North Toe River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: North Toe River
Name of watershed or Hydrologic Unit Code (HUC): 06010108
☒ 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 **Are 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: 3220.0 linear feet: 4-12 width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      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: .

---

[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: li near 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: NCDWQ scores greater than 30 on stream form.
   - ☐ 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: linear feet 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: .

---

[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 widt h (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): .

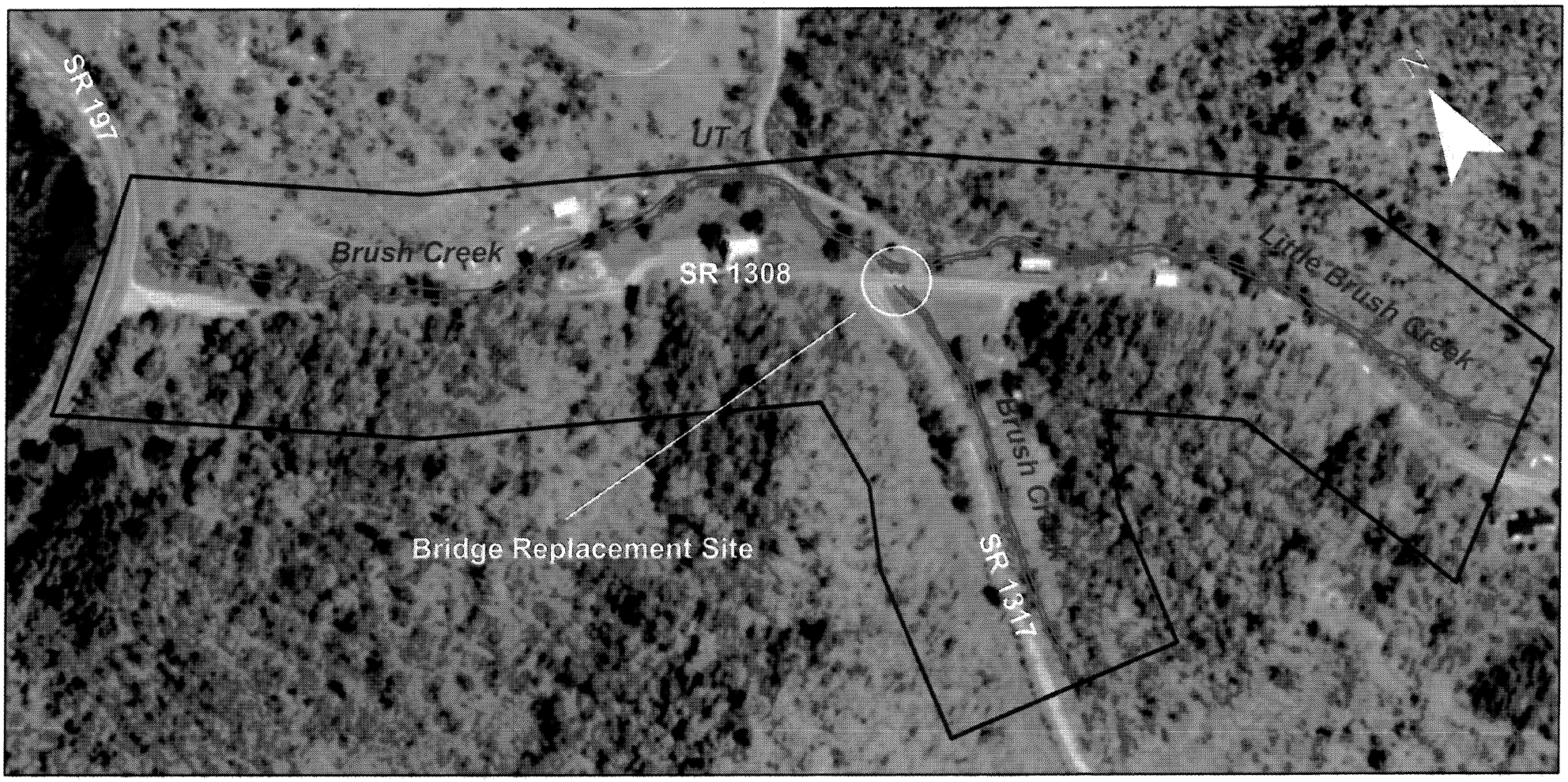
Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): li near 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): li near 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: .



Legend

Project Study Area

Streams

Figure 3. B-4851 - Jurisdictional Features Map
Replace Bridge No. 31 on SR 1308 Over Brush Creek
Yancey County, Division 13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

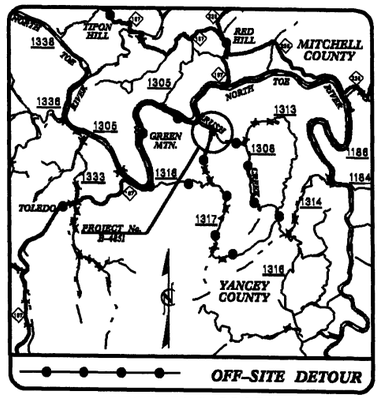
09/08/09

TIP PROJECT NO.: B-4851

CONTRACT No.: 38621.2.1

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

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4851	1	

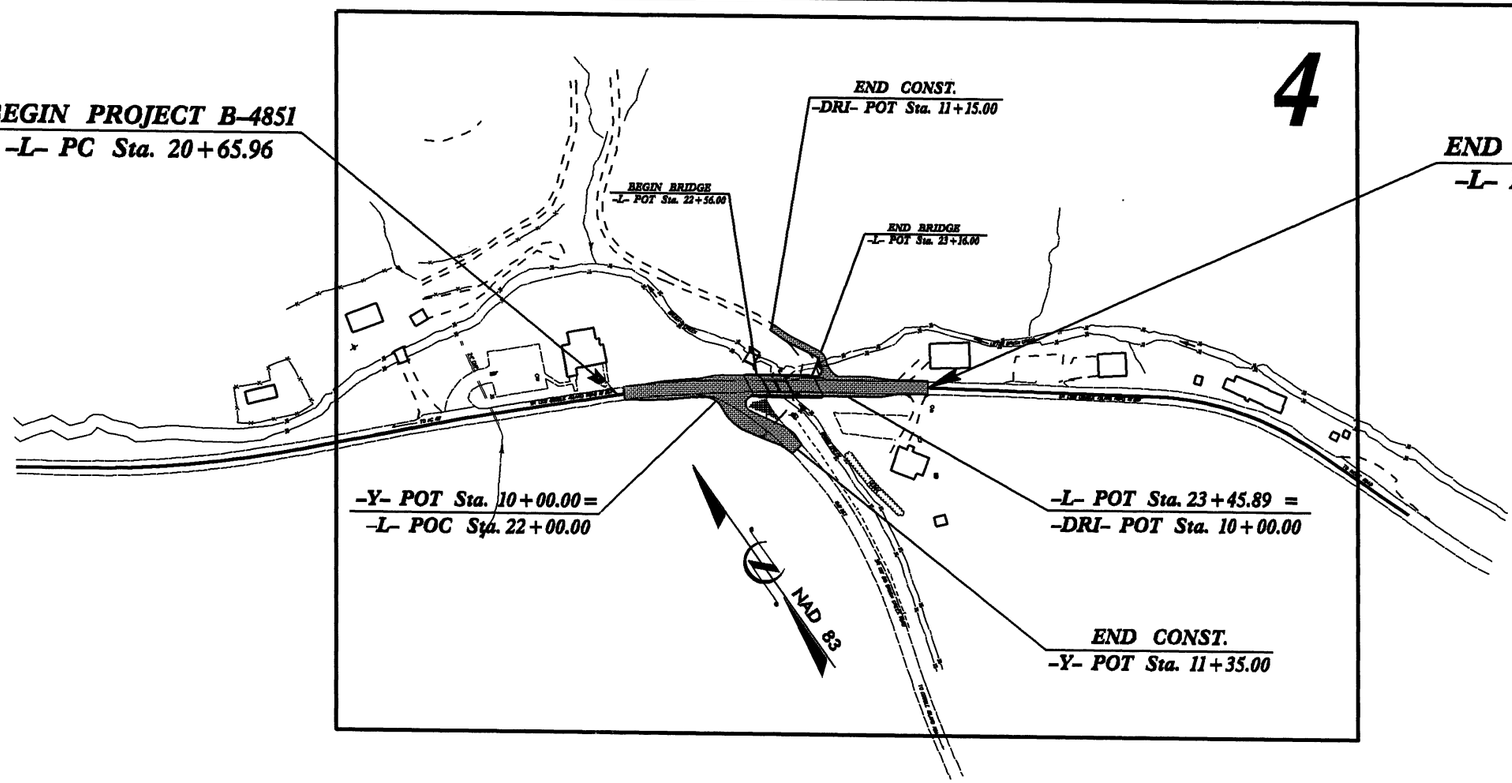
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38621.1.1	BRZ-1308(6)	PE
38621.2.1	BRZ-1308(6)	R/W, UTILITIES

LOCATION: REPLACE BRIDGE No. 31 ON SR 1308 (DOUBLE ISLAND ROAD) OVER BRUSH CREEK.

Permit Drawing Sheet 1 of 6

TYPE OF WORK: GRADING, PAVEMENT, WIDENING, DRAINAGE, STRUCTURE.

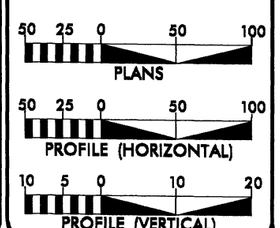
PERMIT DRAWINGS for SURFACE WATER IMPACTS



Clearing on this Project shall be preformed to the limits established by METHOD II

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2010 = 665
ADT 2035 = 1,200
DHV = 11 %
D = 65 %
T = 7 % *
V = 45 MPH
* TTST = 6% DUAL 1%
FUNC CLASS = LOCAL
SUB-TIER GUIDELINES

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT TIP No. B-4851 = 0.069 MILES.
LENGTH OF STRUCTURE PROJECT TIP No. B-4851 = 0.011 MILES.
TOTAL LENGTH OF PROJECT No. B-4851 = 0.080 MILES.

NOTE: This Project is NOT within any Municipal Boundaries.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 15, 2011

LETTING DATE: FEBRUARY 21, 2012

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

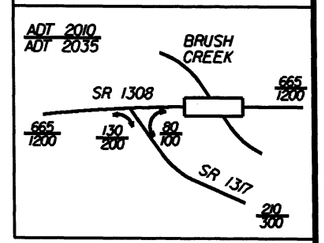
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4851	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHT.5 FOR -L- , -Y- , AND -DRI- PROFILE

SEE SHT.2-B FOR PAVEMENT TO BRIDGE RELATIONSHIP.



Permit Drawing Sheet 2 of 6

NO SURFACE WATER IMPACTS DUE TO REMOVAL & REPLACEMENT OF BRIDGE

SEE DETAIL 1

SEE DETAIL 2

TAIL DITCH SEE DETAIL A

MOLLY BYRD

DEYTON BEND METHODIST CHURCH

DEYTON BEND METHODIST CHURCH 3588

BRUSH CREEK

ABAND. BRIDGE

84" CSP w/HW BURY 1'

WOODS

LITTLE BRUSH CREEK

24" CMP

BST RETAIN

WD RAMP

EXISTING R/W

SR 1308 DOUBLE ISLAND ROAD 18' BST

TO NC 197

"V" GRASS SWALE SEE DETAIL B

NO EROSION IN DITCH

65 Sq. Yds. PERMANENT SOIL REINFORCMENT MAT

4 VIVIAN PHILLIPS

DRAIN FIELD

2 TONS CL I RIP-RAP w/8 Sq. Yds. FILTER FABRIC

SEPTIC TANK

ISFD

SHED

NO EROSION AT CUT/FILL TRANSITION

5 BERNIE FRANKLIN DEYTON AND BILLIE JO DEYTON

BRIDGE NO. 31 OVER BRUSH CREEK ON SR 1308 (DOUBLE ISLAND ROAD.)

WOOD BRIDGE WITH TIMBER DECK AND BST SURFACE, ROCK END WALLS WITH TIMBER BRIDGE SEATS AND TIMBER BEAMS.

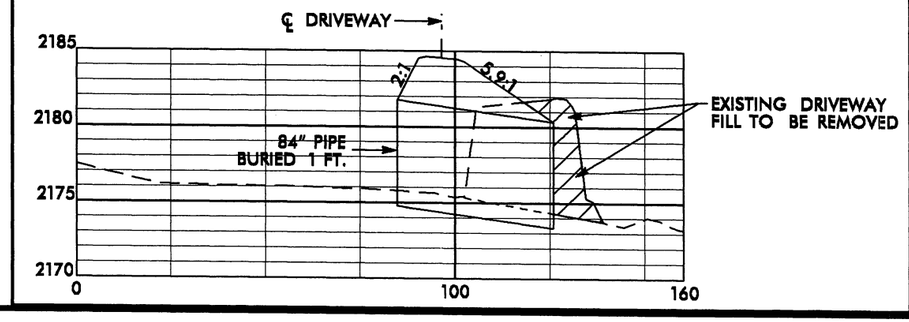
SR 1317 (OLD BRUSH CREEK ROAD)

TO BRIDGE ROAD

TO DOUBLE ISLAND ROAD

NOTES:
1. PROP. SHOULDER BERM GUTTER -L- Sta. 22+40 RT. TO BRIDGE
2. MODIFIED CONCRETE FLUME -L- STA 22+44 RT

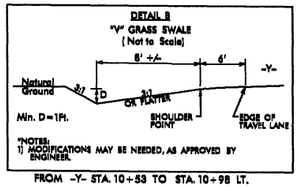
PROFILE ALONG LITTLE BRUSH CREEK AT DRIVEWAY



TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

DETAIL B
"V" GRASS SWALE
(Not to Scale)



*NOTES:
1) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

FROM -Y- STA. 10+53 TO STA. 10+98 LT.

100' 0' 100' 200' 300'

SCALE: 1"= 100'

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

8/17/99

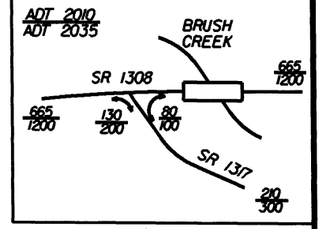
PROJECT REFERENCE NO.	SHEET NO.
B-4851	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHT.5 FOR -L- , -Y- , AND -DRI- PROFILE

SEE SHT.2-B FOR PAVEMENT TO BRIDGE RELATIONSHIP.

ADT 2010
ADT 2035



Permit Drawing
Sheet 3 of 6

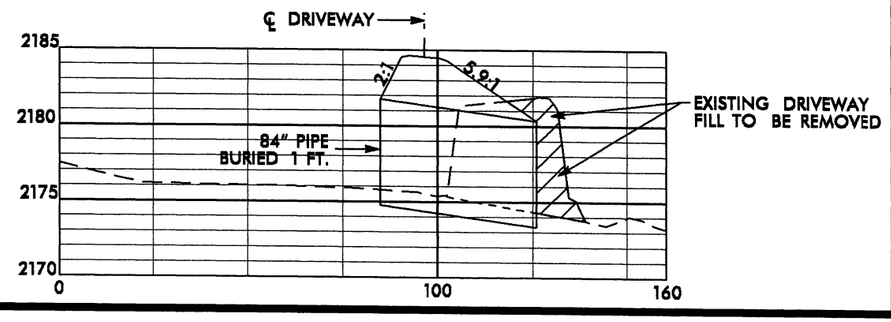
NO SURFACE WATER IMPACTS DUE TO REMOVAL & REPLACEMENT OF BRIDGE

SEE DETAIL 1

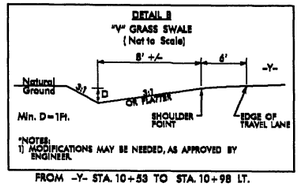
SEE DETAIL 2

NOTES:
1. PROP. SHOULDER BERM GUTTER -L- Sta. 22+40 RT. TO BRIDGE
2. MODIFIED CONCRETE FLUME -L- STA 22+44 RT

PROFILE ALONG LITTLE BRUSH CREEK AT DRIVEWAY



DETAIL B
"V" GRASS SWALE
(Not to Scale)



*NOTES:
1) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

FROM -Y- STA. 10+53 TO STA. 10+98 LT.

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERM PERM DENOTES IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'
SCALE: 1"= 100'

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$FILENAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4851	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 4 of 6

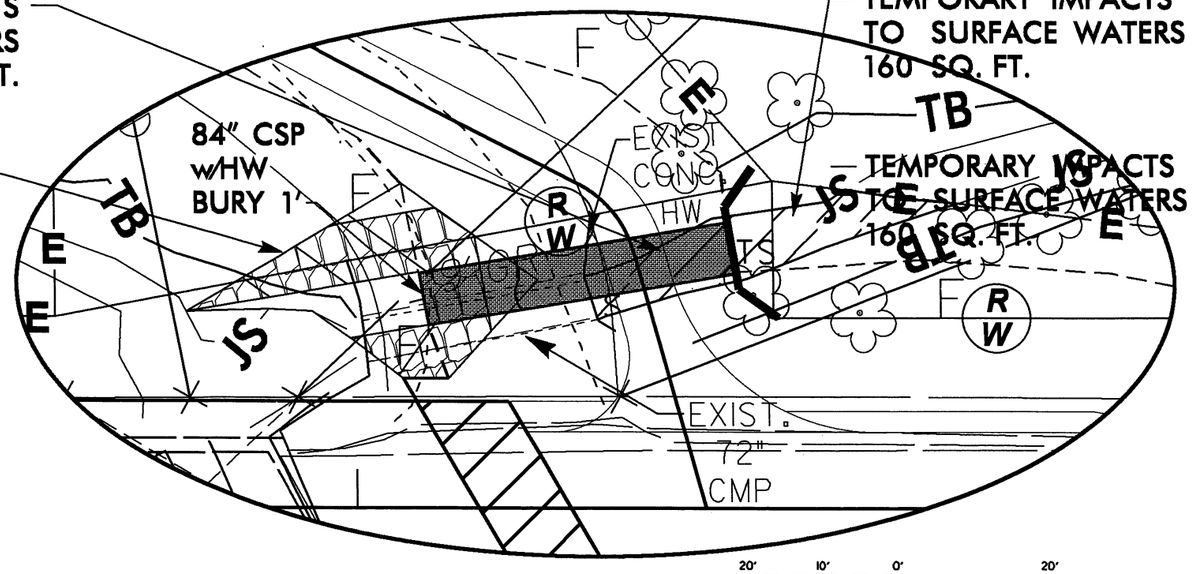
PERMANENT IMPACTS
TO SURFACE WATERS
140 SQ. FT.

BANK STABILIZATION
31'

84" CSP
w/HW
BURY 1'

TEMPORARY IMPACTS
TO SURFACE WATERS
160 SQ. FT.

TEMPORARY IMPACTS
TO SURFACE WATERS
160 SQ. FT.



DETAIL 1

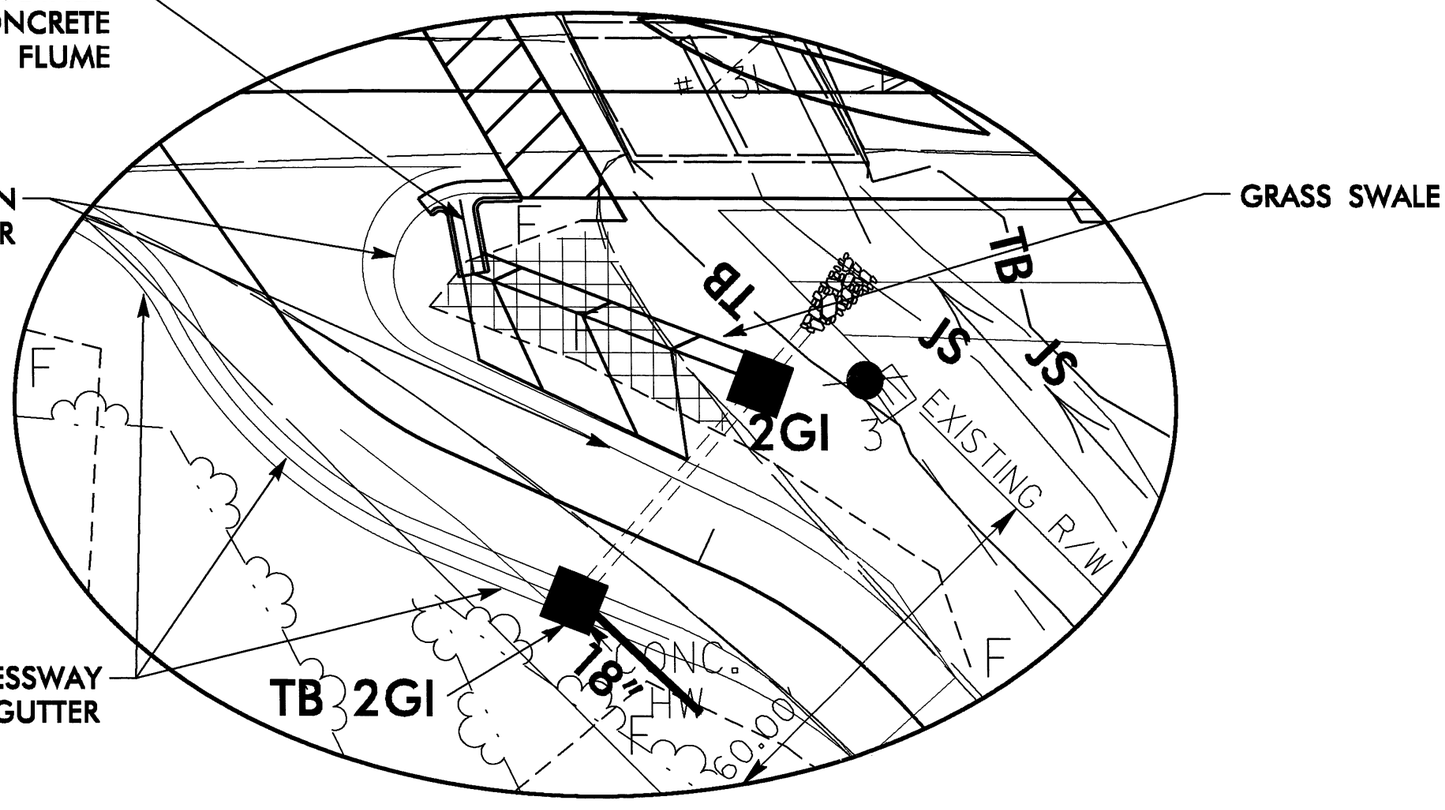
20' 10' 0' 20'
SCALE: 1"= 20'

MODIFIED
CONCRETE
FLUME

OPEN
SHOULDER

GRASS SWALE

EXPRESSWAY
GUTTER



DETAIL 2

20' 10' 0' 20'
SCALE: 1"= 20'

5/14/9

PROJECT REFERENCE NO.	SHEET NO.
B-4851	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
3	Poe, Wilford, R. and	1881 Saddle Hill Road S, Dunedin FL 34698
	Mollye A.	

Permit Drawing
Sheet 5 of 6

PARCEL NO.	NAMES	ADDRESSES

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

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- Sta 23+50 Lt	84" Pipe						<0.01	<0.01	11	24	
1	-L- Sta 23+50 Lt	Bank								31		
		Stabilization										
TOTALS:								<0.01	<0.01	42	24	

Site 1 Permanent SW Impacts = 140 sq. ft.
Temporary SW Impacts = 160 sq. ft.
Existing Pipe Length = 30' Proposed Pipe Length = 41' : Net stream impact = 11'

No Surface Water Impacts due to Removal & Replacement of Bridge

Permit Drawing
Sheet 6 of 16

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

YANCEY COUNTY
WBS - 38621.1.1 (B-4851)

SHEET 6/6/2011

ATN Revised 3/31/05

NCDOT Highway Stormwater Program

Released: July 2010 (DRAFT)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

Version 1.1

Page **of**

General Project Information

Project No.:	38621.1.1		**Date:**	6-Jun-11		
City/Town:			**Designer:**	Ray D. Lovinggood		
County(ies):	Yancey County		**Project Manager:**			
River Basin(s):	**French Broad**		**CAMA County?**	no	**TVA County?**	yes
Primary Receiving Water:	Brush Creek		**NCDWQ Stream Index:**	7-2-60		
NCDWQ Surface Water Classification for Primary Receiving Water		**Primary:**	Class C			
		Supplemental:	Trout Waters (Tr)			
Other Stream Classification:						
303(d) Stream?	no	**Type(s) of Impairment:**				
State Stormwater Permit Required?	no	**If yes, why?**				
Could the Project Impact Threatened or Endangered Species?			no			
Description:						
Anadromous Fish Present?	**no**					
Description:						
Buffer Rules in Effect?	no		**Buffer Rules:**			

Existing Site

Description of Existing Project Area:	Blue Ridge rural and mountainous
Average Daily Traffic (existing):	665
Existing Cross Section:	Two lanes with open shoulders. Roadway width is 18'.
Surrounding Land Use:	Scattered residential and mountain forests
General Comments:	

Project Description

Description of Proposed Project:	Replace bridge #31 on SR 1308 "Double Island Road" over Brush Creek		
Average Daily Traffic (proposed):	1,200		
Proposed Cross-Section:	Two lanes with open shoulders. Roadway width to be 20'.		
Interchange Modification:	no	**Median Type:**	
Terminus:			
Terminus:			
Project Length (lin. miles/feet):	0.080 miles / 423 ft.	**Added Impervious Area (ac.):**	0.08
General Comments:	Original design has been modified. In the original design. Bridge deck water was carried via a shoulder berm gutter to an inlet and then was discharged near the bank of the stream. This has been changed by removal of the concrete shoulder berm gutter and now the bridge deck water runs down a short concrete flume to a grass swale. The grass swale connects to a Two Grated Inlet which conveys the water to the existing outlet. This grass swale also picks up some of the runoff from the -Y- line.		

NCDOT Highway Stormwater Program

Released: July 2010 (DRAFT)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

Version 1.1

Environmental Summary

Riparian Buffer and Jurisdictional Stream Impacts and Associated SCMs

Station	Stream Name	Stream Type	Jurisdict. Stream	Buffer?	Classific-ation?	Proposed Structure	SCM Type	Checklist Complete?	DA (ac.)	Q_2 (ft^3/s)	Q_{10} (ft^3/s)	WQv^c (ft^3)
-L- Sta 23+50 Lt	Little Brush Creek	Perennial	RPW	No	Class C	84" pipe	no	no	1180	180	450	n/a
-Y- Sta 10+75 Lt	Brush Creek	Perennial	RPW	No	Class C	Grass Swale	swale	yes	0.43	0.8	1.1	n/a

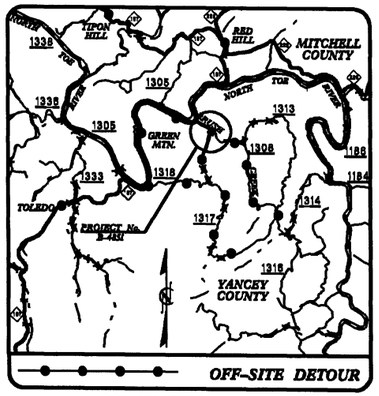
General Comments: No checklist item for "Bank Stabilization."

09/08/99

TIP PROJECT NO.: B-4851

CONTRACT No.: 38621.2.1

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

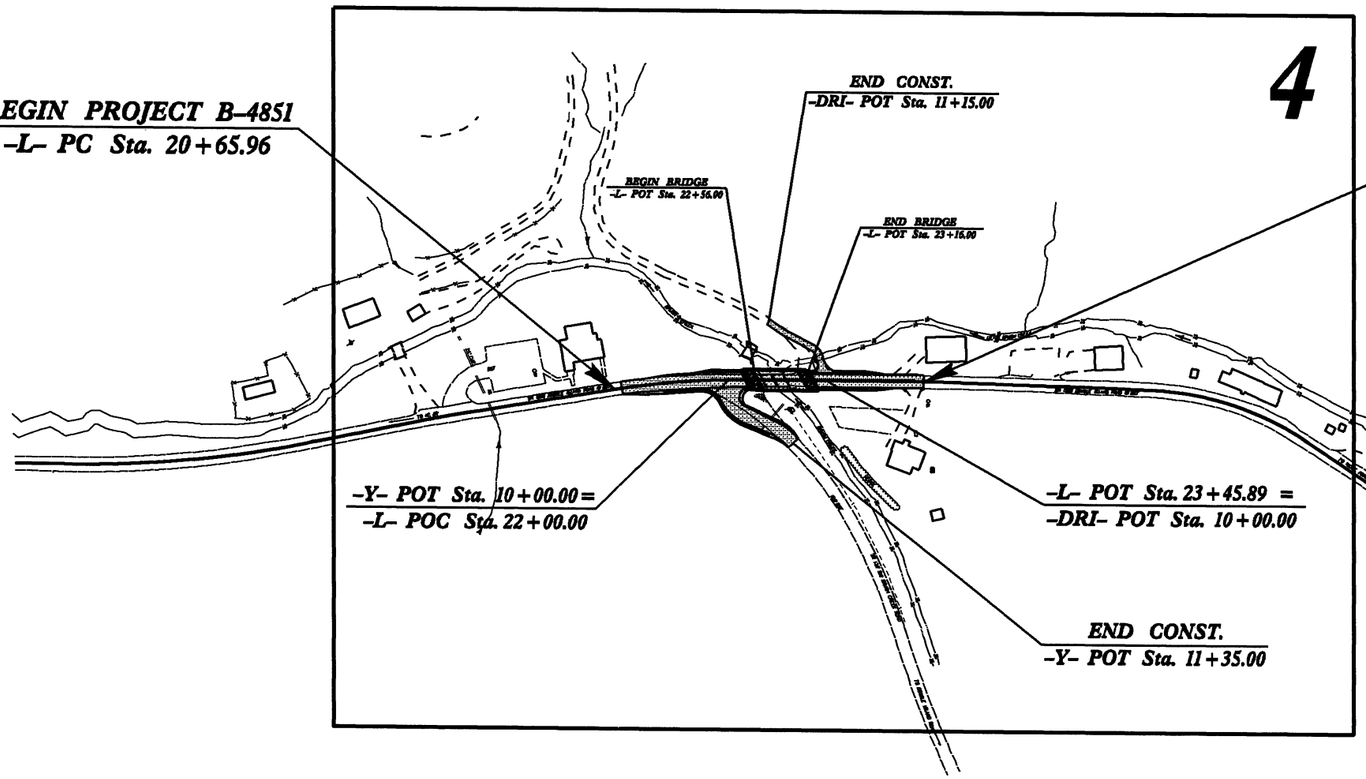
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4851	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38621.1.1	BRZ-1308(6)	PE
38621.2.1	BRZ-1308(6)	RW, UTILITIES

LOCATION: REPLACE BRIDGE No. 31 ON SR 1308 (DOUBLE ISLAND ROAD) OVER BRUSH CREEK.

TYPE OF WORK: GRADING, PAVEMENT, WIDENING, DRAINAGE, STRUCTURE.

NAD 83



Clearing on this Project shall be preformed to the limits established by METHOD II

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 2010 = 665
ADT 2035 = 1,200
DHV = 11 %
D = 65 %
T = 7 % *
V = 45 MPH
* TTST = 6% DUAL 1%
FUNC CLASS = LOCAL
SUB-TIER GUIDELINES

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT TIP No. B-4851 = 0.069 MILES.
LENGTH OF STRUCTURE PROJECT TIP No. B-4851 = 0.011 MILES.
TOTAL LENGTH OF PROJECT No. B-4851 = 0.080 MILES.

NOTE: This Project is NOT within any Municipal Boundaries.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 15, 2011

LETTING DATE: FEBRUARY 21, 2012

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

STEVE KENDALL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

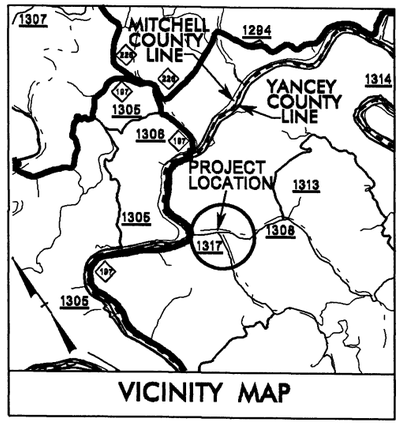
STATE HIGHWAY DESIGN ENGINEER P.E.

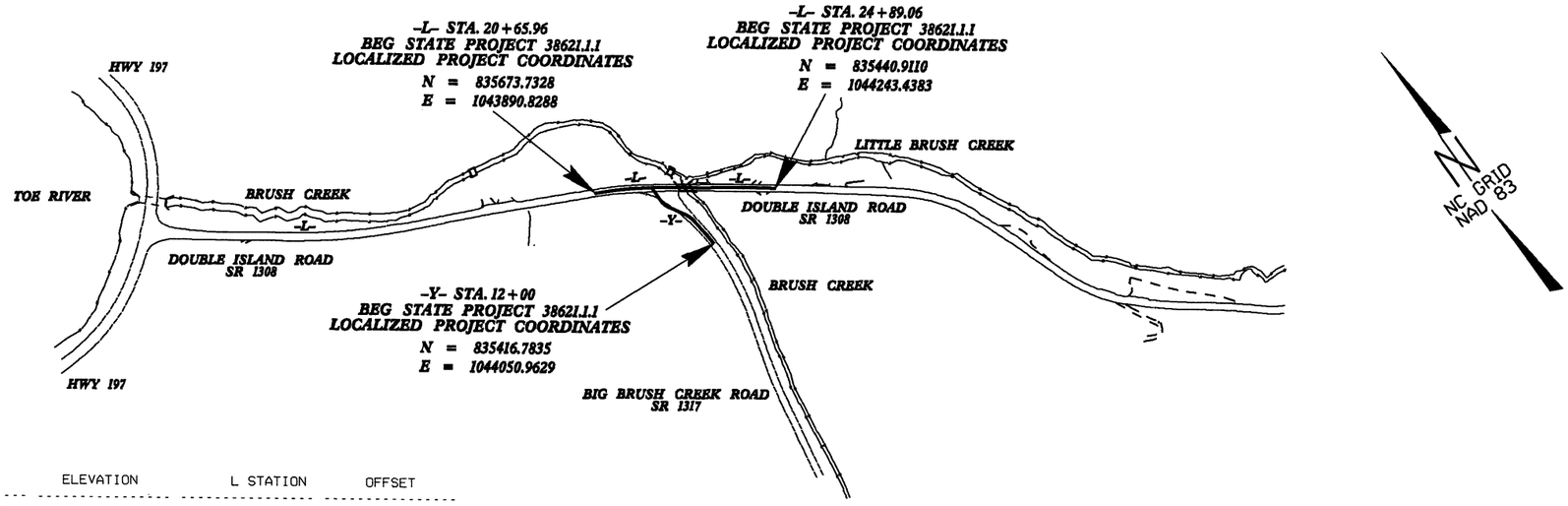
09-JUN-2011 09:10
R:\Roadway\Proj\b-4851_rdy_tsh.dgn
$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
38621.2.1	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-4851





BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
2	BL-2	835896.1436	1043387.6314	2176.62	15+16.67	13.39 RT
3	BL-3	835551.6468	1044120.7475	2182.38	23+24.95	18.94 LT
4	BL-4	835201.7442	1044559.2597	2205.33	28+82.91	13.57 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
EQBY3	BL-3	835551.6468	1044120.7475	2182.38	11+07.08	94.64 LT
8	BY-8	835083.0658	1043971.4272	2195.27	OUTSIDE PROJECT LIMITS	

```
*****************************************
BM1       ELEVATION = 2176.23
N 835709       E 1043898
L STATION 20+57.00 35 LEFT
CHISELED X UNDER WOOD RAMP SE CORNER OF
CHURCH
*****************************************
*****************************************
BM2       ELEVATION = 2186.68
N 835308       E 1044068
Y STATION 12+80.00
 S 36°03'14.39" E  DIST     35.63
8" SPIKE SET INTO A DOUBLE 8" & 10"
SYCAMORE
*****************************************
```

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4851-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 832331.6719(ft) EASTING: 1043558.0212(ft)
ELEVATION: 2246.05(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985346
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4851-2" TO -L- STATION 20+65.96 IS N 05° 41' 13" E 3358.59'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NCDOT GPS STA. "B4851-1"
LOCALIZED PROJECT COORDINATES
N = 833649.9809
E = 1043556.4199

BIG BRUSH CREEK ROAD SR 1317

NCDOT GPS STA. "B4851-2"
LOCALIZED PROJECT COORDINATES
N = 832331.6719
E = 1043558.0212

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:
   B4851_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.
  NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

JUN-2011 09:10
Y:\Design\PRO\B4851_ls_lc.dgn
$$USERNAME$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
38621.2.1	1-D
Location and Surveys	

SURVEY CONTROL SHEET B-4851

Design Alignments

-L-

TYPE	STATION	NORTH	EAST
PC	10+00.00	836214.1137	1042980.1983
PT	11+63.62	836104.4795	1043101.1496
PC	13+43.27	836000.1671	1043247.4222
PT	16+51.28	835848.2443	1043514.7282
PC	18+16.97	835781.5685	1043666.4096
PT	18+74.22	835757.5339	1043718.3712
PC	20+65.96	835673.7328	1043890.8288
PT	22+38.32	835586.1554	1044039.0645
PC	24+39.09	835470.3321	1044203.0547
PT	24+89.06	835440.9110	1044243.4383
PC	27+74.53	835269.4380	1044471.6788
PT	29+99.73	835091.8522	1044605.2804
POT	31+50.87	834950.5849	1044659.0183

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	835607.6940	1044007.3679
PC	10+36.19	835571.5073	1044007.2896
PT	10+63.20	835545.7763	1044014.3539
PC	11+00.76	835513.5224	1044033.6022
PT	11+34.15	835482.3082	1044044.6593
PC	11+66.00	835450.6740	1044048.4045
PT	12+48.02	835368.8074	1044049.6587
POT	12+80.00	835336.9515	1044046.8736

R/W Markers

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
-L-	20+97.00	-25.00	835681.9166	1043930.1237
-L-	20+65.96	-15.32	835687.5160	1043897.5251
-L-	22+38.32	-25.00	835606.5757	1044053.4870
-L-	22+90.00	-25.00	835576.7639	1044095.6965
-L-	23+55.00	-43.00	835553.9680	1044159.1737
-L-	23+55.00	-25.00	835539.2654	1044148.7895
-L-	24+39.09	-25.00	835490.7538	1044217.4754
-L-	24+39.09	-14.11	835481.8591	1044211.1916
-L-	20+65.96	14.68	835660.5307	1043884.4124
-L-	20+65.96	25.00	835651.2474	1043879.9014
-L-	21+80.00	25.00	835597.2928	1043977.2454
-L-	22+87.46	25.00	835537.3862	1044064.7801
-L-	24+39.09	25.00	835449.9118	1044188.6322
-L-	24+39.09	15.89	835457.3514	1044193.8857

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	10+55.00	118.00	835510.0059	1043900.9090
Y	10+83.00	86.00	835484.7000	1043950.6527
Y	11+34.15	30.96	835478.6677	1044013.9096

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
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   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4851_LS_CONTROL.TXT

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   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.

   NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4851-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 832331.6719(ft) EASTING: 1043558.0212(ft) ELEVATION: 2246.05(ft)
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THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4851-2" TO -L- STATION 20+65.96 IS N 05° 41' 13" E 3358.59'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4851	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

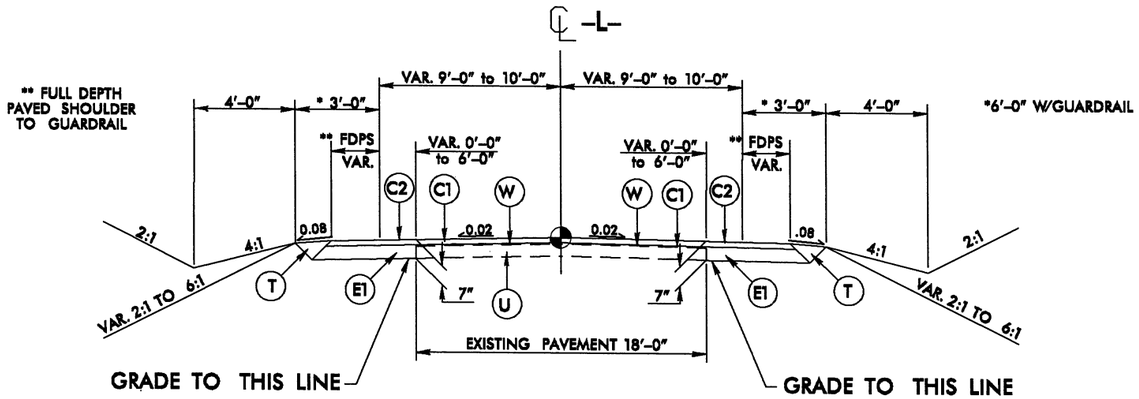
PRELIMINARY PLANS
NOT FOR BID OR CONSTRUCTION

PAVEMENT SCHEDULE

PRELIMINARY PAVEMENT DESIGN

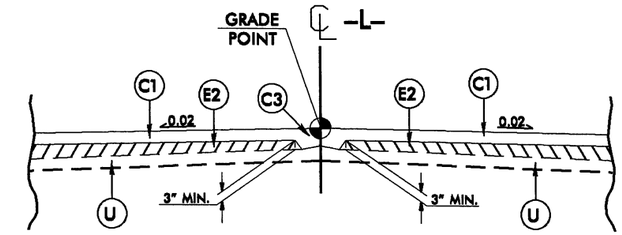
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	E1	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	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.	U	EXISTING PAVEMENT.
C3	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 2" IN DEPTH.	R1	PROPOSED EXPRESSWAY GUTTER.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

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

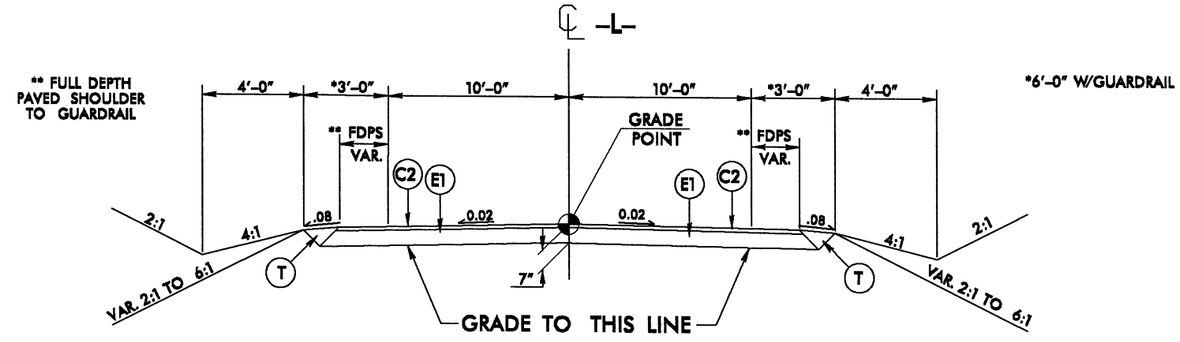


TYPICAL SECTION NO. 1

-L- Sta. 20+75 to Sta. 22+35
-L- Sta. 23+42 to Sta. 24+75

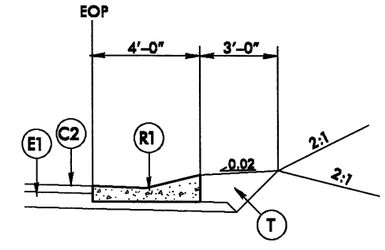


Detail Showing Method of Wedging



TYPICAL SECTION NO. 2

-L- Sta. 22+35 to Sta. 22+56.00 (BEGIN BRIDGE)
-L- Sta. 23+16.00 (END BRIDGE) to Sta. 23+42



USE IN CONJUNCTION WITH TYPICAL SECTION No. 2
-L- Sta. 21+30 to Sta. 21+97.30 RT.

09-JUN-2011 09:10
R:\Roadway Projects\b-4851_rdy_typ.dgn
$$$$USERNAME$$$$

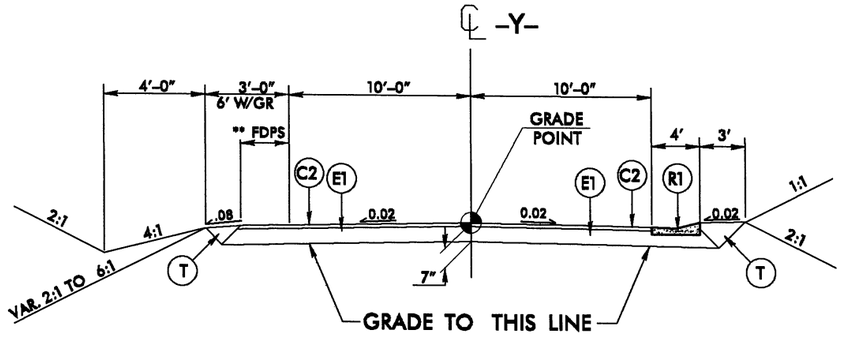
PROJECT REFERENCE NO.	SHEET NO.
B-4851	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

PAVEMENT SCHEDULE
(PRELIMINARY PAVEMENT DESIGN)

C1	1½" S9.5A
C2	2½" S9.5A
C3	VAR. S9.5A
E1	4½" B25.0B
E2	VAR. B25.0
R1	EXPRESS. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

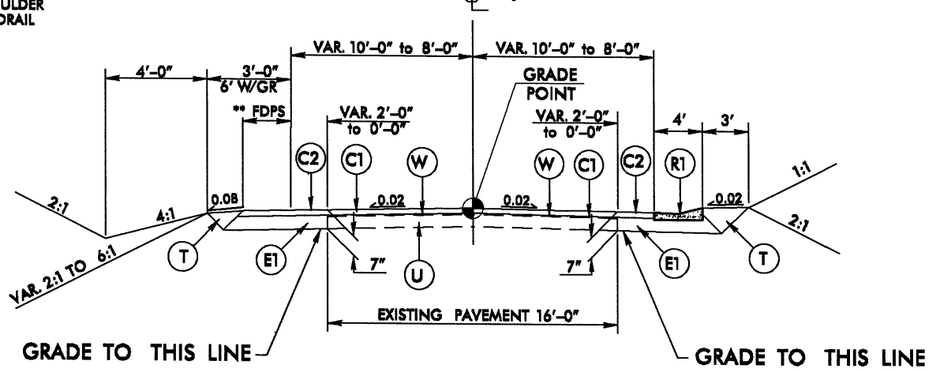
** FULL DEPTH PAVED SHOULDER TO GUARDRAIL



TYPICAL SECTION NO. 3

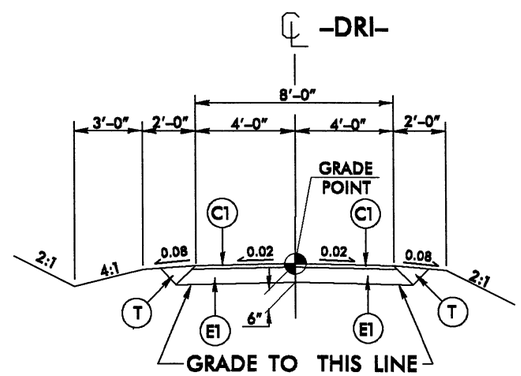
-Y- Sta. 10+12.50 to Sta. 11+00

** FULL DEPTH PAVED SHOULDER TO GUARDRAIL



TYPICAL SECTION NO. 4

-Y- Sta. 11+00 to Sta. 11+35



TYPICAL SECTION NO. 5

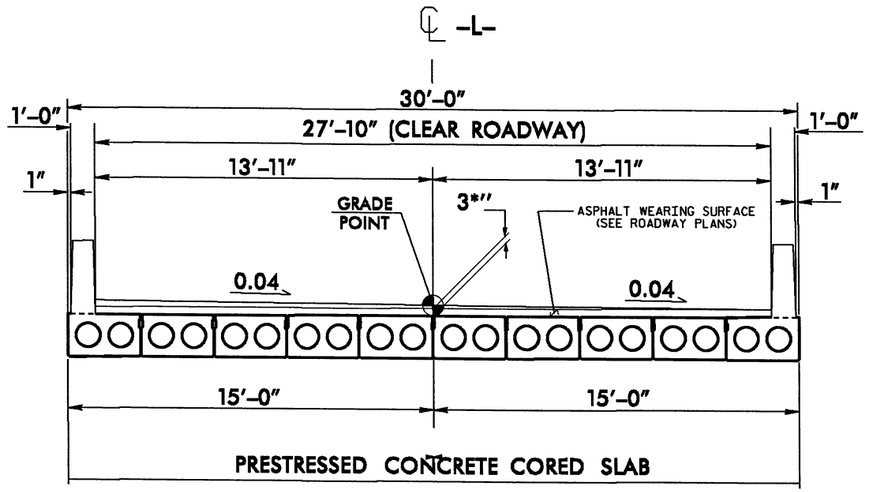
-DW1- Sta. 10+12.50 to Sta. 11+15

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4851	2-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STRUCTURE TYPICAL SECTIONS



TYPICAL SECTION NO. A

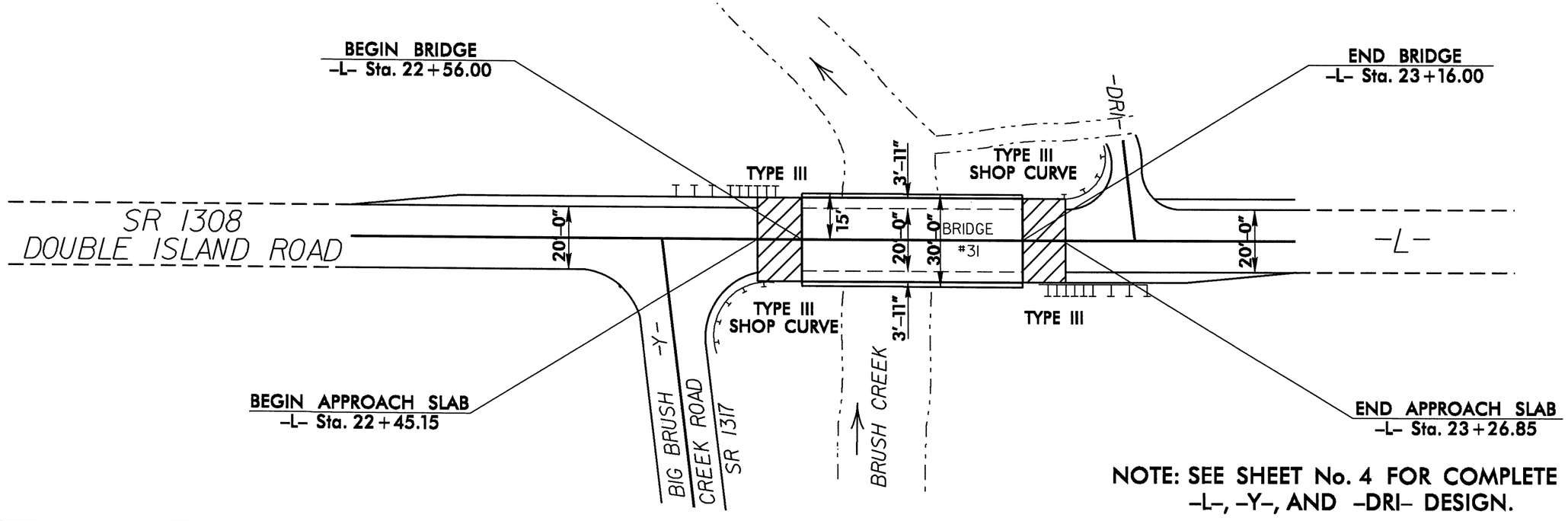
DESIGN DATA

ADT 2010 = 665
ADT 2035 = 1,200
DHV = 11 %
D = 65 %
T = 7 % *
V = 45 MPH
* TTST 1% DUAL 6%
FUNCTIONAL CLASSIFICATION = LOCAL
SUB-REGIONAL TIER

★ BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



NOTE: SEE SHEET No. 4 FOR COMPLETE -L-, -Y-, AND -DRI- DESIGN.

09-JUN-2011 08:10
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$$USERNAME$$

8/17/99

-L-

PI Sta 18+45.60	PI Sta 21+52.33	PI Sta 24+64.08	PI Sta 28+90.20
Δ = 2° 11' 13.0" (RT)	Δ = 9° 19' 00.0" (RT)	Δ = 1° 41' 02.5" (RT)	Δ = 32° 15' 22.9" (RT)
D = 3° 49' 11.0"	D = 5° 24' 18.9"	D = 3° 22' 13.2"	D = 14° 19' 26.2"
L = 57.25'	L = 172.36'	L = 49.97'	L = 225.19'
T = 28.63'	T = 86.37'	T = 24.98'	T = 115.67'
R = 1,500.00'	R = 1,060.00'	R = 1,700.00'	R = 400.00'

-Y-

PI Sta 12+07.16	PI Sta 10+50.03	PI Sta 11+17.73
Δ = 11° 44' 54.5" (RT)	Δ = 30° 57' 05.9" (LT)	Δ = 25° 30' 28.7" (RT)
D = 14° 19' 26.2"	D = 114° 35' 29.6"	D = 76° 23' 39.7"
L = 82.02'	L = 27.01'	L = 33.39'
T = 41.15'	T = 13.84'	T = 16.98'
R = 400.00'	R = 50.00'	R = 75.00'

-DRI-

PI Sta 10+41.25
Δ = 41° 07' 51.6" (LT.
D = 409° 15' 20.0"
L = 11.52'
T = 6.11'
R = 14.00'

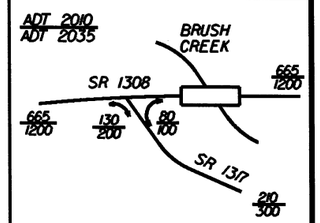
PROJECT REFERENCE NO.	SHEET NO.
B-4851	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR BID OR CONSTRUCTION

SEE SHT.5 FOR -L- , -Y- , AND -DRI- PROFILE

SEE SHT.2-B FOR PAVEMENT TO BRIDGE RELATIONSHIP.

ADT 2010
ADT 2035



NAD 83

(2) TERRY R. SCHMIDT AND NANCY J. SCHMIDT DB 631 PG 158 PB 3 PG 339 WOODS

(AS PER PHONE CONVERSATION WITH LEONARD POE ON JULY 26, 2010, HE CLAIMS TO OWN THIS PARCEL BUT THERE IS NOT A RECORDED DEED OR PLAT.)

LEONARD POE DB 447 PG 138

(3) WILFORD R. POE AND MOLLYE A. POE DB 447 PG 138

(1) DEYTON BEND METHODIST CHURCH DB 86 PG 343-347

(4) VIVIAN PHILLIPS DB 488 PG 490 PB 1 PG 143B

(5) BERNIE FRANKLIN DEYTON AND BILLIE JO DEYTON DB 228 PG 155

MOLLY BYRD PB 3 PG 339

20+00 25+00 30+00

END CONST. -DRI- POT Sta. 11+15.00

-L- PT Sta. 22+38.32

-DRI- PI Sta. 10+90.87

-DRI- PT Sta. 10+46.66

-DRI- PC Sta. 10+35.14

-BL- 3 PINC 13+10.02 = -BY- POT 5+00.00

-L- PC Sta. 24+39.09

END PROJECT B-4851 -L- PT Sta. 24+89.06

-BL- 4 POT 18+71.03

-L- PC Sta. 27+74.53

-L- PT Sta. 29+99.7

TAIL DITCH w/25 Tons Cl. I Rip-Rap w/70 Sq. Yds. Filter Fabric DDE = 110 Cu. Yds. SEE DETAIL 'A'

30' FRENCH BROAD ELECTRIC MEMBERSHIP CORPORATION RIGHT OF WAY EASEMENT

SEE DETAIL 'B'

SBG w/ MODIFIED CONC. FLUME

BM#1 -BL- STA 10+41.43 47.39' RIGHT ELEVATION=2176.23'

DEYTON BEND METHODIST CHURCH 35BB

BST RETAIN

WD RAMP

SR 1308 DOUBLE ISLAND ROAD 18' BST

BEGIN PROJECT B-4851 -L- PC Sta. 20+65.96

-L- PC Sta. 18+16.97

-L- PT Sta. 18+74.22

65 Sq. Yds. PERMANENT SOIL REINFORCMENT MAT

BEGIN PROP. EXPRESSWAY GUTTER -L- +30 RT.

-Y- POT Sta. 10+00= -L- POC Sta. 22+00

-Y- PC Sta. 10+36.19

-Y- PT Sta. 10+63.20

-Y- PC Sta. 11+00.76

END PROP. EXPRESSWAY GUTTER -Y- +00 RT.

-Y- PT Sta. 11+34.15

END CONSTRUCTION -Y- POT Sta. 11+35.00

-Y- POT Sta. 12+80

-BY- 8 POT 9+91.80

DRAIN FIELD

2 TONS CL I RIP-RAP w/8 Sq. Yds. FILTER FABRIC

ISFD

SEPTIC TANK

SHED

BRIDGE NO. 31 OVER BRUSH CREEK ON SR 1308 (DOUBLE ISLAND ROAD.)

WOOD BRIDGE WITH TIMBER DECK AND BST SURFACE, ROCK END WALLS WITH TIMBER BRIDGE SEATS AND TIMBER BEAMS.

-L- POT Sta. 23+45.89 = -DRI- POT Sta. 10+00

-Y- PC Sta. 11+66

-Y- PT Sta. 12+48.02

BM#2 -BY- STA 7+48.07 23.52' RIGHT ELEVATION=2186.68

SR 1317 BRUSH CREEK ROAD

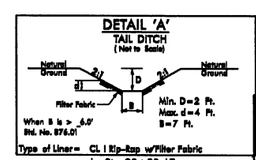
TO DOUBLE ISLAND ROAD

TO RIDGE ROAD

WOODS

NOTES:
1. PROP. SHOULDER BERM GUTTER -L- Sta. 22+38.50 RT. TO BRIDGE
2. MODIFIED CONCRETE FLUME -L- STA 22+44 RT.

DETAIL 'A'
TAIL DITCH
(Not to Scale)

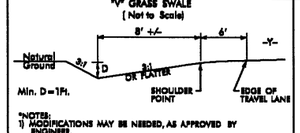


When B is > 6.0' Std. No. 876.01

Type of Liner= Cl. I Rip-Rap w/Filter Fabric

-L- Sta. 23+00 LT. L=15', slope=0

DETAIL 'B'
"V" GRASS SWALE
(Not to Scale)



*NOTES:
1) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

FROM -Y- STA. 10+53 TO STA. 10+98 LT.

03-JUN-2011 08:10
R:\Roadway\Proj\b-4851_rdy_psh4.dgn
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4851	5

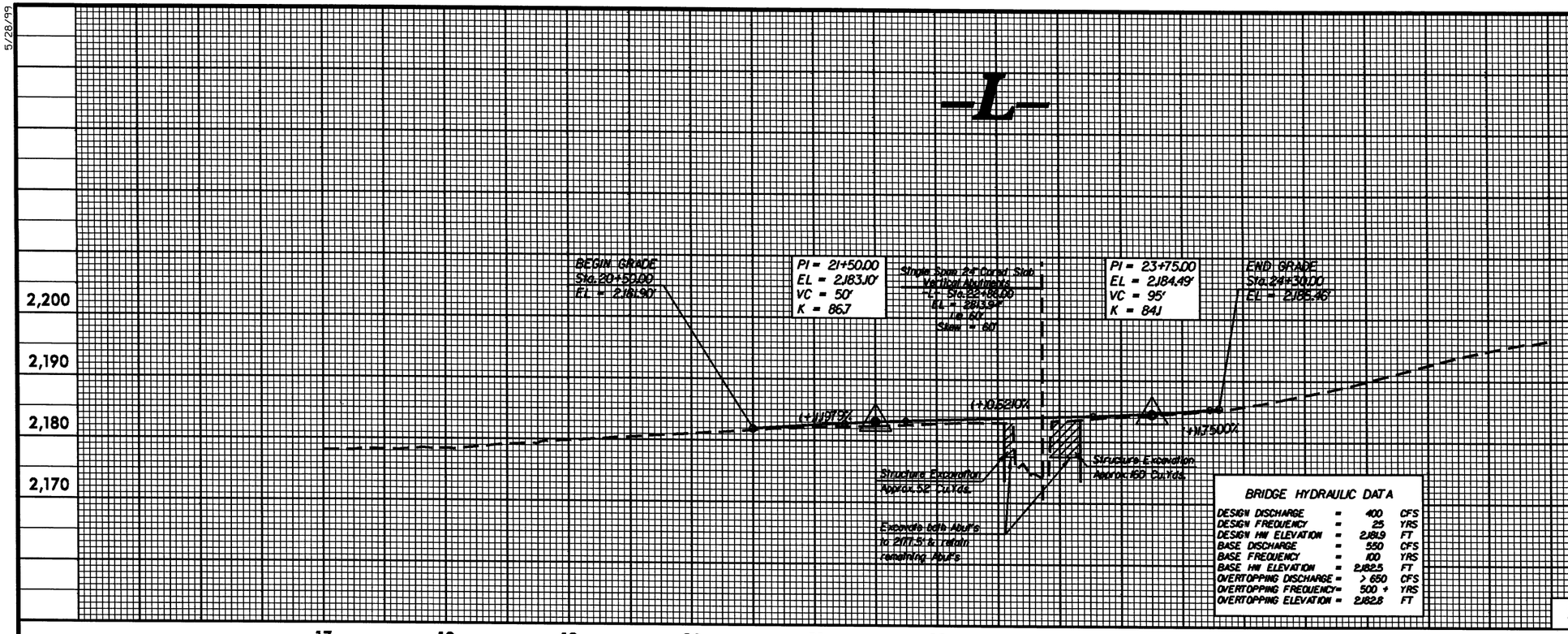
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
Do Not Use For Construction

SEE SHEET No. 1-C FOR BENCH MARKS

-L-

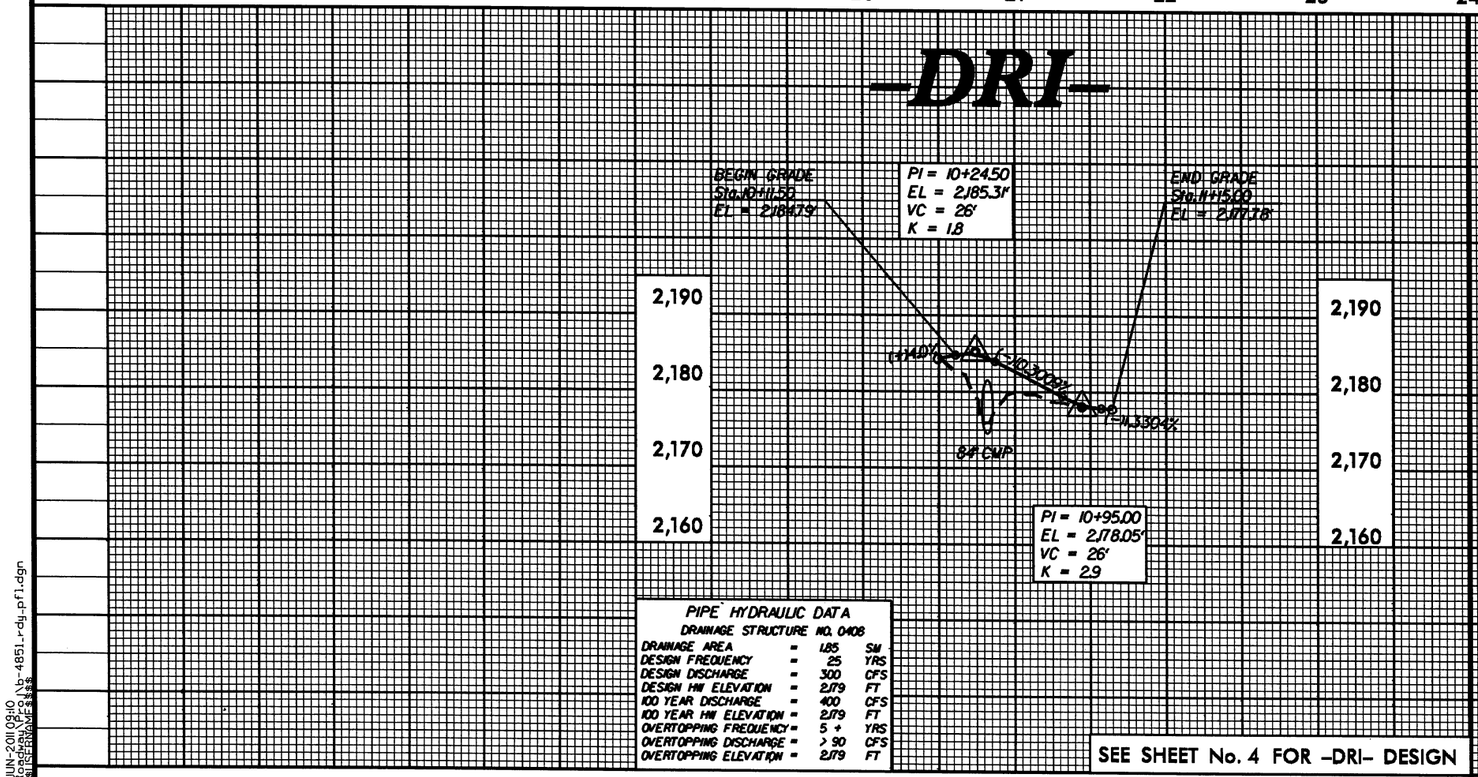


BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	400	CFS
DESIGN FREQUENCY	25	YRS
DESIGN HW ELEVATION	2,181.9	FT
BASE DISCHARGE	550	CFS
BASE FREQUENCY	100	YRS
BASE HW ELEVATION	2,182.5	FT
OVERTOPPING DISCHARGE	> 650	CFS
OVERTOPPING FREQUENCY	500 +	YRS
OVERTOPPING ELEVATION	2,182.8	FT

SEE SHEET No. 4 FOR -L- DESIGN

-DRI-

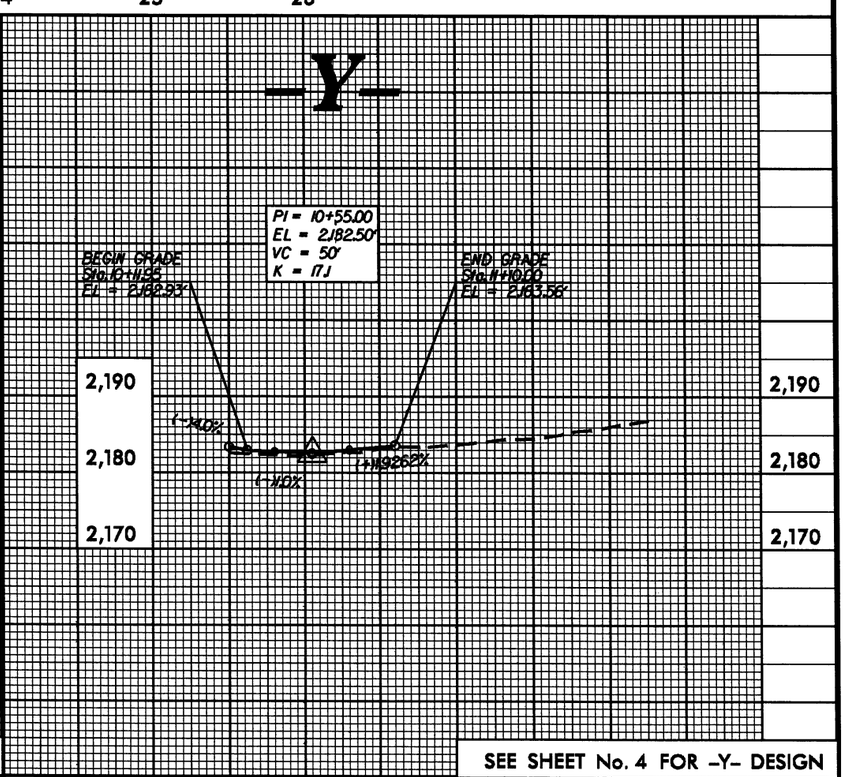


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 0408

DRAINAGE AREA	1.85	SM
DESIGN FREQUENCY	25	YRS
DESIGN DISCHARGE	300	CFS
DESIGN HW ELEVATION	2,179	FT
100 YEAR DISCHARGE	400	CFS
100 YEAR HW ELEVATION	2,179	FT
OVERTOPPING FREQUENCY	5 +	YRS
OVERTOPPING DISCHARGE	> 90	CFS
OVERTOPPING ELEVATION	2,179	FT

SEE SHEET No. 4 FOR -DRI- DESIGN

-Y-



SEE SHEET No. 4 FOR -Y- DESIGN

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4851	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS SECTION INDEX

–L–	***Sta. 20+75.00***	***to Sta. 24+75.00***	***X–2 thru X–13***
–Y–	***Sta. 10+25.00***	***to Sta. 11+50.00***	***X–14 thru X–19***
–DRI–	***Sta. 10+25.00***	***to Sta. 11+00.00***	***X–20 thru X–21***

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-2

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170 2160

VAR. 0.040

2182.05

20+75.00

09-JUN-2011 09:10
R:\Projects\XS\B4851_Rdy_xp1_L.dgn
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-3

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

0.040

2182.78
21+00.00
—L—

09-JUN-2011 09:10
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-4

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

0.040

4%

218.27

21+25.00

09-JUN-2011 09:10
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

4:1

9.040

282.49

21+50.00

09-JUN-2011 09:10
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-6

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

4.1%

0.040

2182.46
21+75.00

09-JUN-2011 09:10
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-7

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

P

0.040

AV

2182.54

22+00.00

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

09-JUN-2011 09:10
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ps:\SURFACE\s#s#

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-8

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

-Y-

VAR. R = 0.040

283.08

22+25.00

-X-

09-JUN-2011 09:10
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8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
B-4851	X-9

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

2280
2270
2260
2250
2240
2230
2220
2210
2200
2190
2180
2170
2160

BEGIN BRIDGE -L- Sta. 22+52.55

0.040

2182.83

22+50.00

09-JUN-2011 09:10
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8/23/99

PROJ. REFERENCE NO.	SHEET NO.
B-4851	X-10

0 5 10

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

2280
2270
2260
2250
2240
2230
2220
2210
2200
2190
2180
2170
2160

0.040

2175.65
22+75.00

09-JUN-2011 09:10
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-11

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

2210 2200 2190 2180 2170 2160 2150 2140 2130 2120 2110 2100 2090 2080 2070

4%

0.0%

2183.99
23+25.00

END BRIDGE -L- Sta. 23+17.55

9.0%

2183.39
23+00.00
-L-

09-JUN-2011 09:10
R:\Roadway\XSC\B4851_Rdy_xp1_L.dgn
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-12

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

2200
2190
2180
2170
2220
2210
2200
2190
2180
2170

4.1%
0.014
0.020
4.1%

2185.13
24+00.00

3.2%
0.026
0.028
4.1%

2184.76
23+75.00

-DRI-

3.8%
0.038
0.038
3.8%

2184.43
23+50.00

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

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-13

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

2190 2180 2170 2200

EXIST. EXIST.

2187.10
24+75.00

EXIST. EXIST.

2186.16
24+50.00

0.002 0.020 4%

2185.35
24+25.00

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-14

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

2250
2240
2230
2220
2210
2200
2190
2180
2170

0.001

2182.59
10+25.00
-Y-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-15

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

3%

VAR.

0.010

2182.26

10+50.00

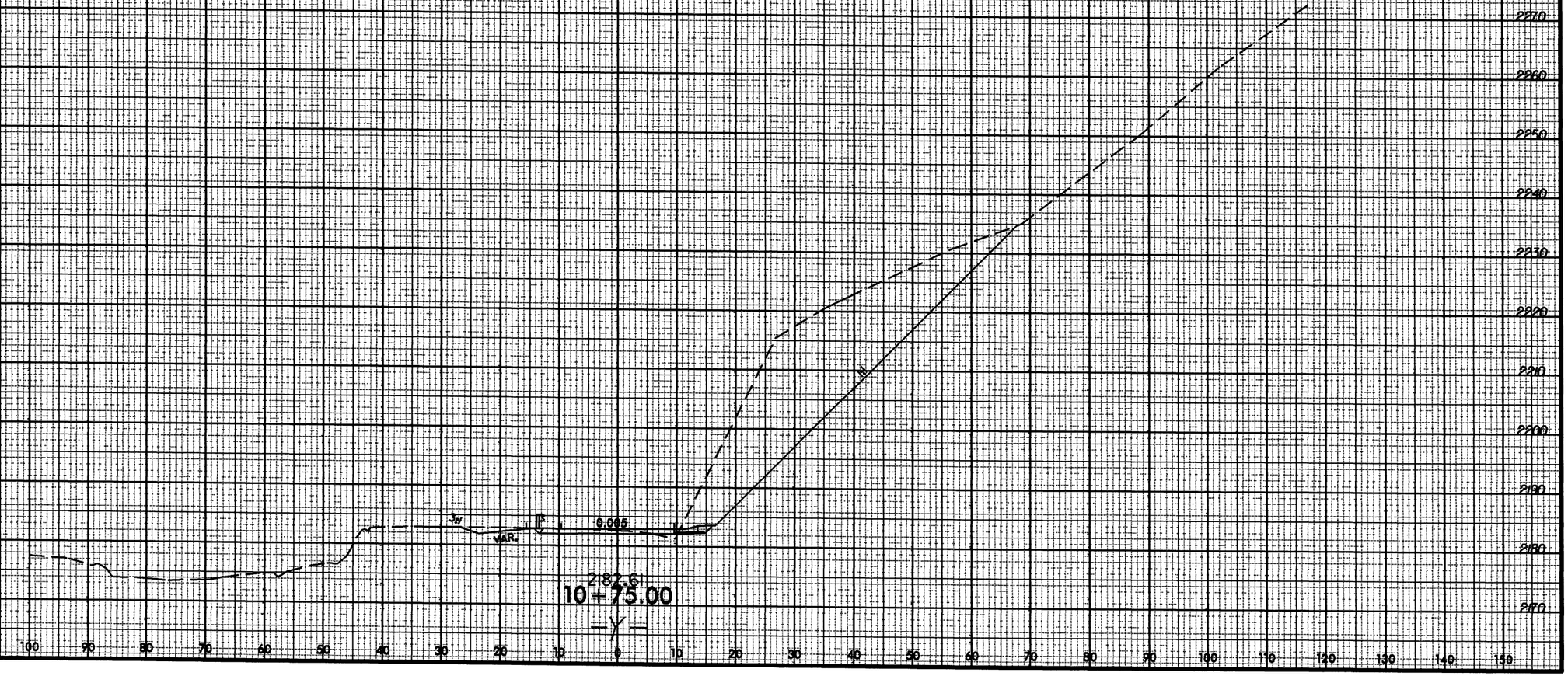
-Y-

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-16

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170



09-JUN-2011 09:10
C:\projects\B4851_Rdy_xpl_Y.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-17

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

VAR. IP 0.010

2182.93
11+00.00
—Y—

09-JUN-2011 09:10
R:\Projects\B4851\Rdy\xpl\B4851_Rdy_xpl_Y.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-18

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

2280
2270
2260
2250
2240
2230
2220
2210
2200
2190
2180
2170

3% 0.010

2183.19
11+25.00

—Y—

09-JUN-2011 09:10
R:\Projects\B4851\Rdy-xpl-Y.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-19

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

2280 2270 2260 2250 2240 2230 2220 2210 2200 2190 2180 2170

2183.41
11+50.00
—Y—

09-JUN-2011 09:10
R:\Projects\B4851\Rdy_xpl_Y.dgn
$$USERNAME$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-20

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

2200
2190
2180
2170
2160

2A 0.013 3A

2178.64
10+75.00

2A 0.016 3A

2179.79
10+50.00

2A 0.025 3A

2179.22
10+25.00

-DRI-

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

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4851	X-21