STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 10, 2015

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 Permit 13** for the proposed replacement of Bridge No. 13 over Nicholson Creek on SR 1119 in Transylvania County, Federal Aid Project No. BRZ-1119(4), Division 14, WBS 38592.1.1, TIP No. B-4822.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 13 over Nicholson Creek with a 71' long cored slab bridge just west of the existing alignment. Traffic will be maintained on the existing bridge during construction.

As a result of the bridge replacement, there will be 135 linear feet of stream bank stabilization impacts.

Please see enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, permit drawings and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed in June 3, 2014 and distributed shortly thereafter. Additional copies are available upon request.

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

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE:NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

This project calls for a letting date of January 19, 2016 and a review date of December 1, 2015; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: http://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,

for Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

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: 13	or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes	☒ No

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

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

☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization

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

2. Project Information

2a. Name of project:	Replacement of Bridge 13 over Nicholson Creek on SR 1119
2b. County:	Transylvania
2c. Nearest municipality / town:	Brevard
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4822

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6108
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: 35.2166 (DD.DDDDDD) Longitude: - 82.7287 (-DD.DDDDDD)
1c. Property size:	0.62 acre
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Nicholson Creek
2b. Water Quality Classification of nearest receiving water:	C; Tr
2c. River basin:	French 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: The land use within the vicinity of the project consists of about 45% forest land, 30% developed or disturbed lands (roadsides and residential areas), and 25% cultivated land (agricultural fields and pastures).	
3b. List the total estimated acreage of all existing wetlands on the property: 0	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 200	
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a structurally deficient bridge (sufficiency rating of 6 of 100 and structural evaluation appraisal of 3 of 9).	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 31-foot single-span bridge with a 71-foot single-span cored slab bridge just west of the existing alignment. Traffic will be maintained on the existing bridge during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: Only 1 perennial stream, Nicholson Creek.	☐ 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): Erin Cheely	Agency/Consultant Company: NCDOT 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	
				2g. **Total wetland impacts**	0 Permanent 0 Temporary

2h. Comments: No wetlands within the construction footprint.

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Bank Stabilization	Nicholson Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	18	135
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	135 Perm 0 Temp

3i. Comments:

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 water within construction 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: This project is not located within 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 new bridge will be just over twice as long as the existing bridge and will span Nicholson Creek. Stormwater runoff from the bridge deck will be conveyed through a grated inlet and 15" pipe into the existing roadway ditch at the north-eastern corner of the proposed bridge. A rip-rap pad will be provided at the outlet of the 15' pipe to protect against erosion. Drainage from the northwest will be conveyed in a proposed V-ditch to Nicholson Creek. Class 'I' rip rap will be provided at the outlet of the proposed V-ditch to protect the streambank from erosion. Drainage from the southwest being carried in the existing roadway ditch will be picked up with an 18" open ended pipe to be carried under the two existing driveways at the south-western corner of the project. Drop-inlets will be provided up-grade of each driveway to pick up drainage flowing in existing ditches beside the driveways. This drainage system will outlet into a proposed 2' base ditch which will flow to Nicholson Creek. A rip-rap pad will be provided at the outlet of the drainage system and class 'I' rip rap will be provided at the outlet of the proposed 2' base ditch to protect against erosion. Existing drainage patterns will convey project drainage on the eastern side of the proposed roadway. Class 'I' rip rap will be added at the outlet of the existing roadway ditch at the the north-eastern corner of the proposed bridge to protect the streambank from erosion. As the proposed roadway and bridge are located upstream of the existing structure, the existing bridge abutments and existing pavement will be removed. Streambanks are nearly vertical within the project area; therefore streambanks will be laid back at a slope of 1.5:1 and lined with class 'I' rip-rap to protect against erosion.

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

Traffic will be maintained on the existing bridge during construction. Though no trout moratorium is required for this project, Design Standards in Sensitive Watersheds will be utilized during construction to attempt to reduce the stormwater impacts to the receiving streams due to erosion and runoff.

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

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No If no, explain: No loss of Waters of the U.S. from bank stabilization. See section 4h below.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	none
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 135 linear feet stream bank stabilization impacts. These impacts do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation.

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: Categorical Exclusion (CE) approved 6/3/14	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No	
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☐ Asheville	

5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat?

As of April 2, 2015, there are eleven federally listed species for Transylvania County. The biological conclusion for nine of these species is No Effect due to lack of habitat or no individuals found during walking visual surveys (small whorled pogonia surveys conducted in May 2009 and June 2011 and Virginia spiraea surveys conducted in June 2009, June 2011 and June 2013).

Though no habitat exists for Appalachian elktoe within the study area, proximity to recently discovered populations in the French Broad River result in a biological conclusion of May Affect, Not Likely to Adversely Affect for this species. Surveys for the northern long-eared bat (NLEB) were conducted in May 2015. Due to habitat for NLEB within the project area, the biological conclusion for this species is also May Affect, Not Likely to Adversely Affect. A letter was sent to the USFWS on July 2, 2015 requesting concurrence for these species. It is anticipated that concurrence will be obtained prior to the January 2016 let date.

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

for Richard W. Hancock, P.E. Applicant/Agent's Printed Name	Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	7-10-2015 Date

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: B-4822 (38592.1.1) **County(ies):** Transylvania

General Project Information

Project No.:	B-4822 (38592.1.1)	**Project Type:**	Bridge Replacement	**Date:**	8/19/2014
NCDOT Contact:	Andrew Nottingham, PE	**Contractor / Designer:**	Sungate Design Group, PA		
Address:	Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590	**Address:**	915 Jones Franklin Road Raleigh, NC 27606		
Phone:	(919) 707-6726	**Phone:**	(919) 859-2243		
Email:	anottingham@ncdot.gov	**Email:**	jclemmons@sungatedesign.com		
City/Town:	Brevard	**County(ies):**	Transylvania		
River Basin(s):	French Broad	**CAMA County?**	No		
Primary Receiving Water:	Nicholson Creek	**NCDWQ Stream Index No.:**	6-28		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	Class C			
	Supplemental:	Trout Waters (Tr)			
Other Stream Classification:	None				
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	910'	**Surrounding Land Use:**	Urban		
	Proposed Project		**Existing Site**		
Project Built-Upon Area (ac.)	0.62 ac.		0.41 ac.		
Typical Cross Section Description:	2 @ 10' Paved Lanes w/ 4' Paved Shoulders and 2' Grassed Shoulders 32' SP-SP		2 @ 10' Paved Lanes w/ 4' Grassed Shoulders 28' SP-SP		
Average Daily Traffic (veh/hr/day):	Design/Future: 300		Existing: 230		
General Project Narrative:	This project involves the replacement of Bridge No. 870013 over Nicholson Creek on SR 1119 (Sugarloaf Rd.) in Transylvania County, NC. The existing bridge, a 1@ 31' timber floor on I-beams with timber caps and timber piles will be replaced with a 1@70' 24" Cored Slab Bridge with 2'-6" End Bent Caps. Bridge replacement and associated roadway improvements have been designed in a manner to minimize the increase in impervious surface area to the maximum extent possible. No deck drains will be required with this project. Stormwater runoff from the bridge deck will be conveyed through a grated inlet and 15" pipe into the existing roadway ditch at the north-eastern corner of the proposed bridge. A rip-rap pad will be provided at the outlet of the 15' pipe to protect against erosion. Drainage from the North-West will be conveyed in a proposed V-ditch to Nicholson Creek. Class 'I' rip rap will be provided at the outlet of the proposed V-ditch to protect the streambank from erosion. Drainage from the South-West being carried in the existing roadway ditch will be picked up with an 18" open ended pipe to be carried under the two existing driveways at the south-western corner of the project. Drop-inlets will be provided up-grade of each driveway to pick up drainage flowing in existing ditches beside the driveways. This drainage system will outlet into a proposed 2' base ditch which will flow to Nicholson Creek. A rip-rap pad will be provided at the outlet of the drainage system and class 'I' rip rap will be provided at the outlet of the proposed 2' base ditch to protect against erosion. Existing drainage patterns will convey project drainage on the eastern side of the proposed roadway. Class 'I' rip rap will be added at the outlet of the existing roadway ditch at the the north-eastern corner of the proposed bridge to protect the streambank from erosion. As the proposed roadway and bridge are located upstream of the existing structure, the existing bridge abutments and existing pavement will be removed. Streambanks are nearly vertical within the project area; therefore streambanks will be laid back at a slope of 1.5:1 and lined with class 'I' rip-rap to protect against erosion. It will be necessary to excavate 2' below the low steel of the proposed bridge in order to provide maintenance access. This overbank excavation will extend to the downstream side of the existing bridge to avoid creating abrupt changes in overbank geometry.				

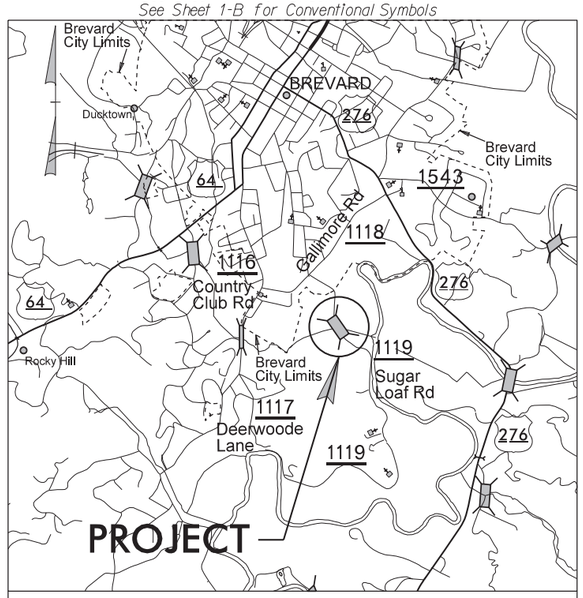
References

09/08/99

TIP PROJECT: B–4822

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

LOCATION: ***BRIDGE NO. 13 OVER NICHOLSON CREEK ON SR 1119 (SUGAR LOAF ROAD)***

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

WETLAND AND SURFACE WATER IMPACTS PERMIT

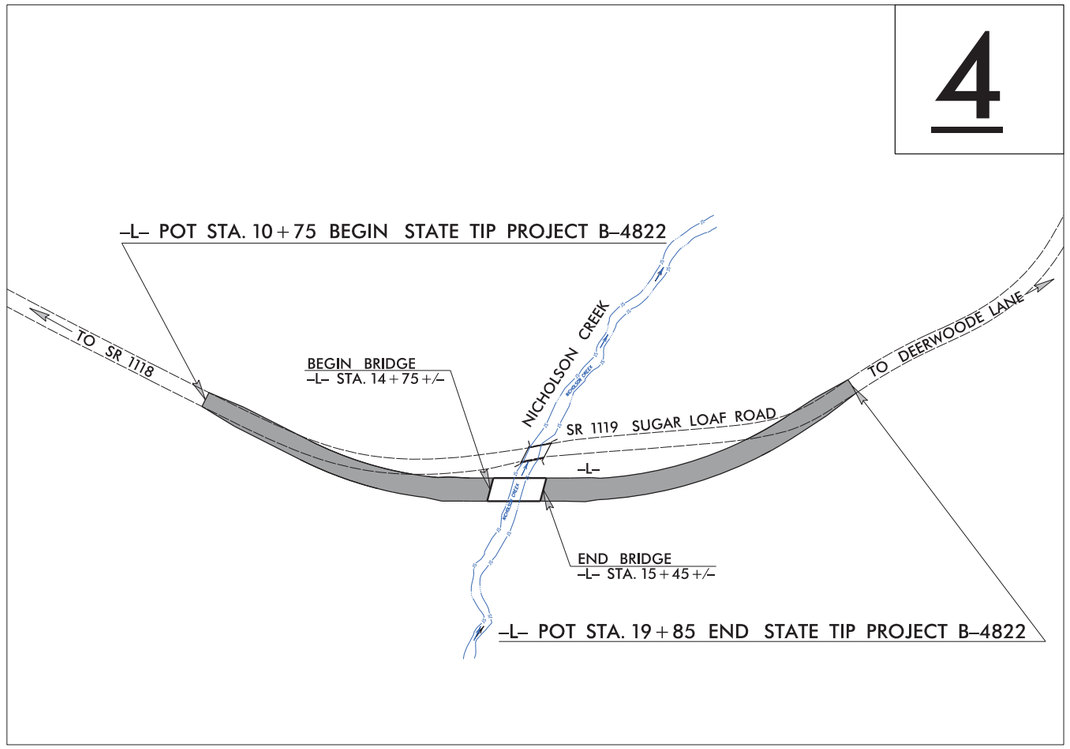
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4822	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38592.1.1	BRZ–1119(4)	P.E.
38592.2.FD1	BRZ–1119(4)	R/W & UTIL.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 1 OF 6

4



NAD 83/
NSRS 2007

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

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-490

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2016 = 230
ADT 2036 = 300
K = 9 %
D = 55 %
T = 6 % *
V = 40 MPH
* (TTST = 2% DUAL = 4%)
FUNC CLASS = RURAL LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–4822	=	0.159 MILES
LENGTH OF STRUCTURE TIP PROJECT B–4822	=	0.013 MILES
TOTAL LENGTH OF TIP PROJECT B–4822	=	0.172 MILES

Prepared In the Office of:
KCI Associates of N.C., P.A.
4601 Six Forks Road
Landmark Center II, Suite 220
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266
http://www.kci.com

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 20, 2015

LETTING DATE: JANUARY 19, 2016

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

DEWAYNE L. SYKES, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: ***RON E. MCCOLLUM, PE,***
PROJECT ENGINEER – ROADWAY DESIGN

HYDRAULICS ENGINEER

_____ P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

_____ P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

3/11/2015
B4822_Hyd_prm_wet_PSh01.dgn
jclemmons

PROJECT REFERENCE NO.	SHEET NO.
B-4822	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KCI http://www.kci.com
Engineers • Planners • Scientists • Construction Managers
4601 Six Forks Road, Landmark Center II, Suite 220
Raleigh, NC 27609-5210
Phone (919) 783-9214 • Fax (919) 783-9266

PERMIT DRAWING SHEET 2 OF 6

NAD 83/ NSRS 2007

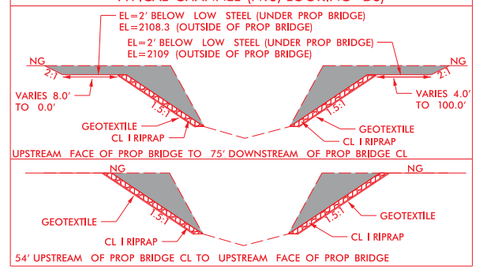
8/17/99

REVISIONS

DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner = 18 TONS,CL I Rip-Rap
Geotextile = 25 SY
FROM STA. 14+70 TO STA. 14+85 -L- RT
FROM STA. 15+09 TO STA. 15+26 -L- RT
FROM STA. 15+37 TO STA. 15+56 -L- LT

DETAIL 4
TYPICAL CHANNEL (NTS; LOOKING DS)



BEGIN STATE TIP PROJECT B-4822 -L- POT STA 10+75.00

END STATE TIP PROJECT B-4822 -L- POT STA 19+85.00

ALLISON FAMILY TRUST
ESTATE FILE 98-E-27
3

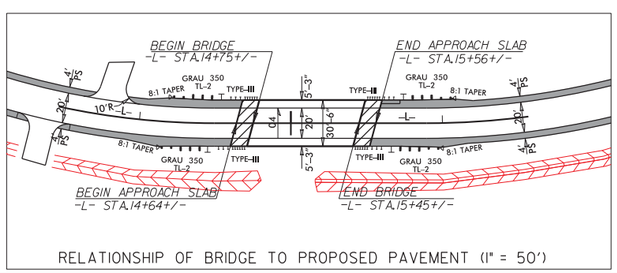
TRANSYLVANIA COUNTY BOARD OF EDUCATION
DB 330 PG 470
1

ALLISON FAMILY TRUST
DB 335 PG 126
2

ALLISON FAMILY TRUST
ESTATE FILE 98-E-27
3

SR 1119 SUGAR LOAF RD.
21' BST
10' BST
EXIST. R/W
BL-1
BL-2
BL-3
BM #1
BM #2
2 - 10' DOUBLE GATES
MTL GATE
WD SIGN
CONC MON
NICHOLSON CREEK
WOODS
ROCK & DIRT AREA
POWER BOX & SPIGOT
325 GAL PROPANE TANK
WELL HOUSE
ISFD
CONC
CATV & TELE PED
18" CMP
BARN
S
ISBLKD
ISBKD
EIP
40 " POPLAR
GTD
GR
JS
F
E
L

S S DENOTES IMPACTS IN SURFACE WATER



RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT (1" = 50')

FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-1 TO S-?

NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE STATED.

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

3/4/2015
B4822_prelim_prm_wet_PHS04.dgn
jclemmons

S S DENOTES IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
B-4822	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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PERMIT DRAWING
SHEET 3 OF 6

REVISIONS

GTD

EIP

EIP

JS JS JS JS JS JS JS JS

F F F F F F F F F F

NICHOLSON CREEK

WOODS

WD SIGN

MTL GATE

E

R/W

10 5 0 10 20
PLANS

3/4/2015
B4822_hyd_prm_wet_PHS04_inset.dgn
jclemmons

PROJECT REFERENCE NO.	SHEET NO.
B-4822	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 4 OF 6

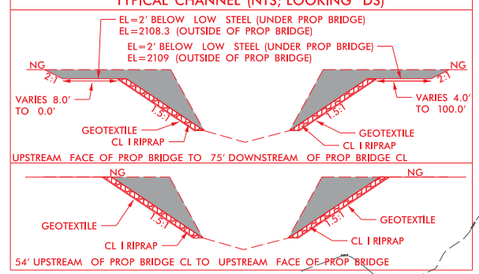
NAD 83/
NSRS 2007

REVISIONS
8/17/99

DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner = 18 TONS,CL I Rip-Rap
Geotextile = 25 SY
FROM STA. 14+70 TO STA. 14+85 -L- RT
FROM STA. 15+09 TO STA. 15+26 -L- RT
FROM STA. 15+37 TO STA. 15+56 -L- LT

DETAIL 4
TYPICAL CHANNEL (NTS; LOOKING DS)

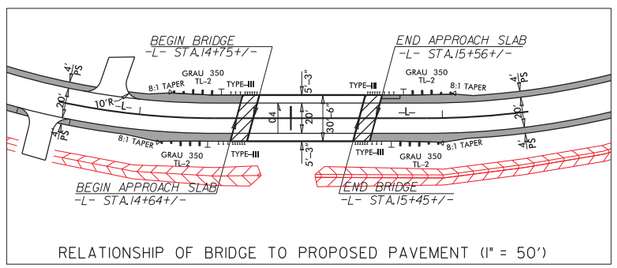


BEGIN STATE TIP PROJECT B-4822
-L- POT STA 10+75.00

END STATE TIP PROJECT B-4822
-L- POT STA 19+85.00

SR 1119 SUGAR LOAF RD.
2' BST
EXIST. R/W
BL
TRANSYLVANIA COUNTY BOARD OF EDUCATION
DB 330, PG 470
ALLISON FAMILY TRUST
ESTATE FILE 98-E-27
ALLISON FAMILY TRUST
DB 335 PG 126
WOODS
BM #1
2 - 10' DOUBLE GATES
BM #2
MTL GATE
WD SIGN
CONC MON
ROCK & DIRT AREA
POWER BOX & SPIGOT
325 GAL PROPANE TANK
WELL HOUSE
ISFD
CONC
TELE PED
BARN
ISBLKD
ISBKD
18" CMP
40 " POPLAR
EIP
GR
GTD
MICHAELSON CREEK
1
2
3

S S DENOTES IMPACTS IN SURFACE WATER



RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT (1" = 50')

FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-1 TO S-?

NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE STATED.

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-690

3/11/2015
B4822_prod_prm_wet_PHS04_con.dgn
jclemmons

5/14/99

BM #1 - 8" SPIKE SET IN BASE OF 15" OAK TREE
-L- STA. 13+12.15, 10.11' RT
EL = 2113.19'

BM #2 - 8" SPIKE SET IN BASE OF 10" BIRCH TREE
-L- STA. 19+01.92, 38.20' RT
EL = 2127.01'

PERMIT DRAWING
SHEET 5 OF 6

PROJECT REFERENCE NO.	SHEET NO.
B-4822	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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Engineers • Planners • Scientists • Construction Managers
4601 Six Forks Road, Landmark Center II, Suite 220
Raleigh, NC 27609-5310
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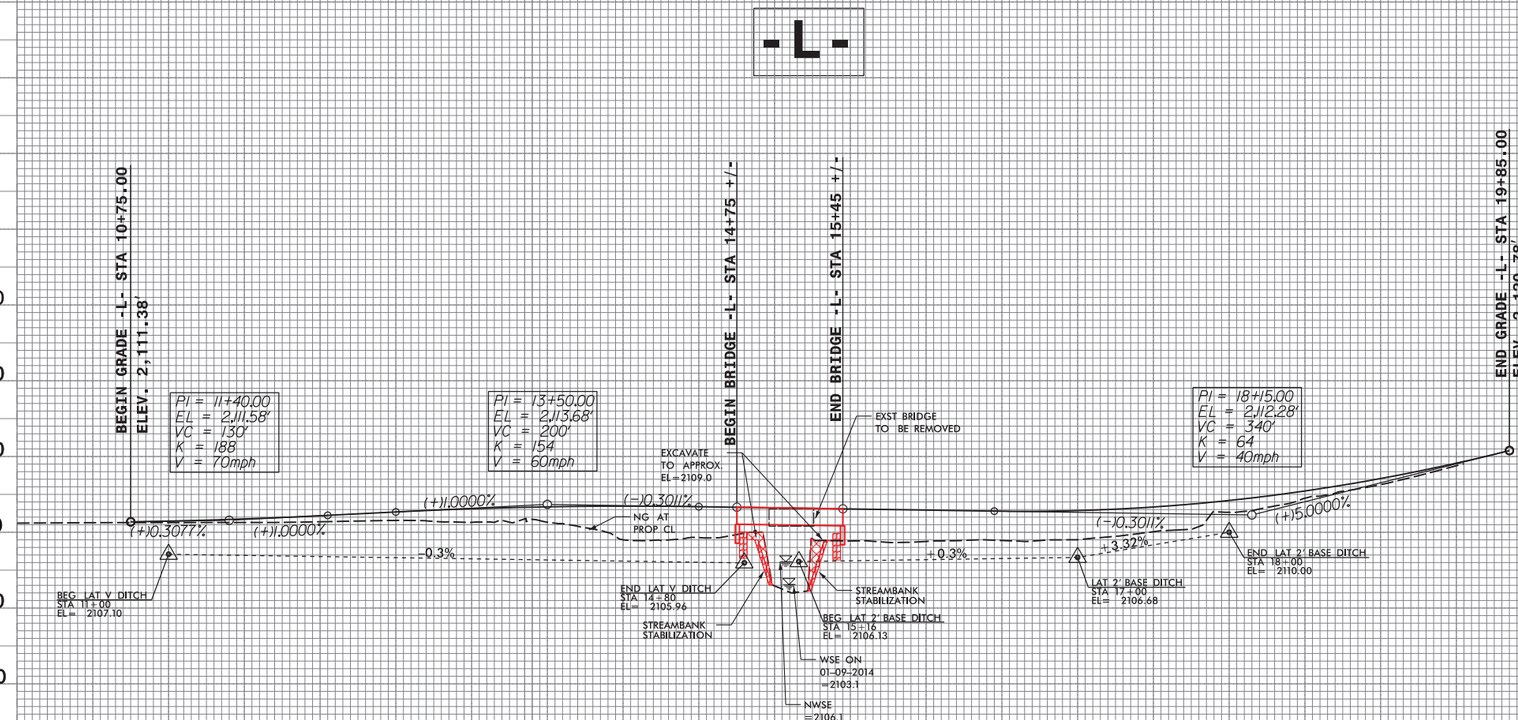
SUNGATE DESIGN GROUP, P.A.
515 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-2058
ENGINEERING DESIGN NO. C-865

FOR -L- ALIGNMENT, SEE SHEET 4



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 2110.4	FT
BASE DISCHARGE	= 4180	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2112.08	FT
OVERTOPPING DISCHARGE	= 1900	CFS
OVERTOPPING FREQUENCY	= 5	YRS
OVERTOPPING ELEVATION	= 2110.3	FT
DATE OF SURVEY	= 01/09/2014	
W.S. ELEVATION AT DATE OF SURVEY	= 2103.1	FT

$$$$USERNAME$$$$ $$$$DGN$$$$ $$$$FILENAME$$$$

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)
	14+80 -15+59 -L-	STREAMBANK STABILIZATION						0.01		135		
TOTALS*:								0.01		135	0	0

*Rounded totals are sum of actual impacts

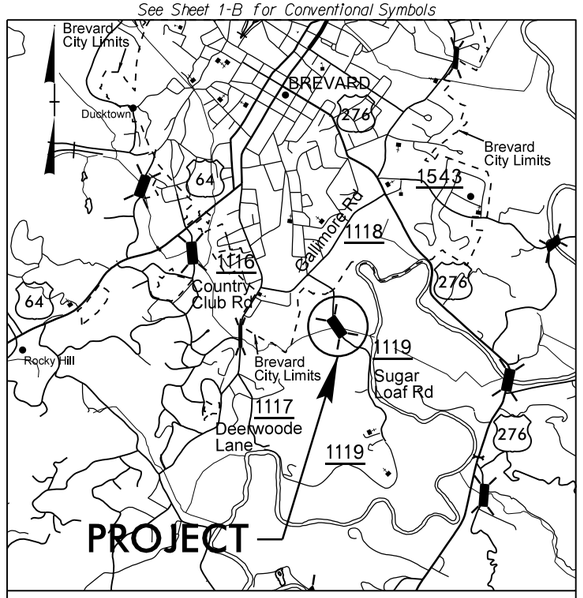
NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03-11-2015
B-4822 TRANSYLVANIA COUNTY
BRIDGE 13 ON SR 1119
OVER NICHOLSON CREEK

ATN Revised 3/12/13

09/08/99

TIP PROJECT: B-4822



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSYLVANIA COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4822	1	

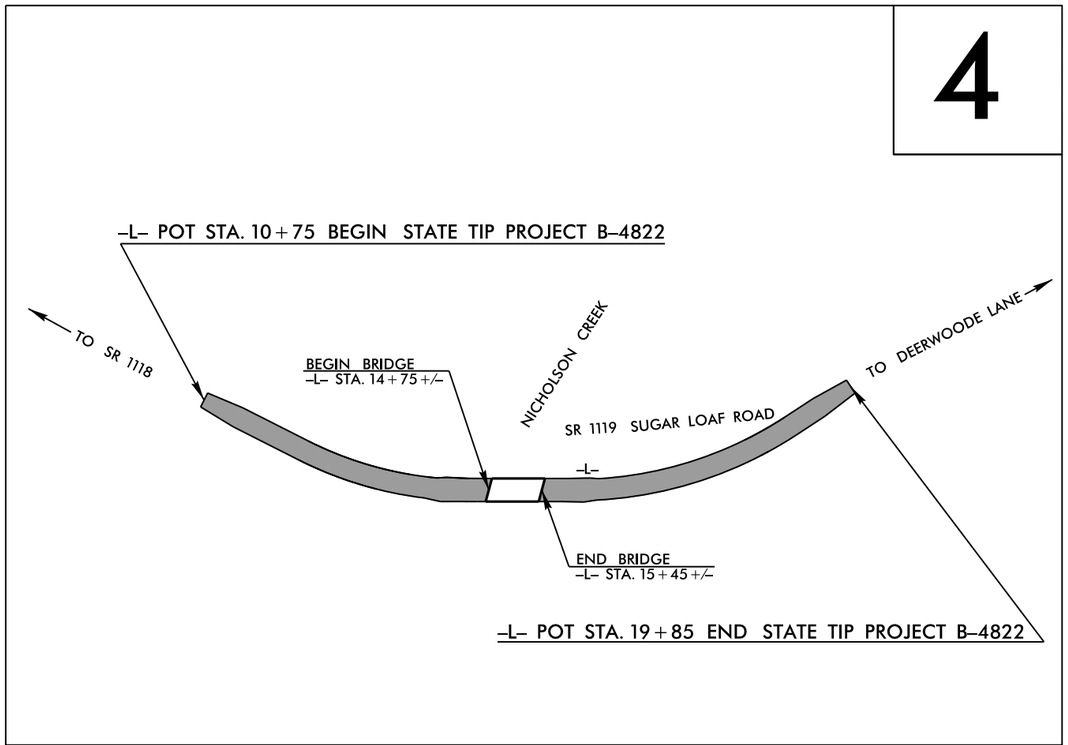
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38592.1.1	BRZ-1119(4)	P.E.
38592.2.FD1	BRZ-1119(4)	R/W & UTIL.

LOCATION: BRIDGE NO. 13 OVER NICHOLSON CREEK ON SR 1119 (SUGAR LOAF ROAD)

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

4



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

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

CONTRACT:

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 2016 = 230
ADT 2036 = 300
K = 9 %
D = 55 %
T = 6 % *
V = 40 MPH
* (TTST = 2% DUAL = 4%)
FUNC CLASS = RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4822	=	0.159 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4822	=	0.013 MILES
TOTAL LENGTH OF TIP PROJECT B-4822	=	0.172 MILES

Prepared In the Office of:
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2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 20, 2015

LETTING DATE:
JANUARY 19, 2016

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

DEWAYNE L. SYKES, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: ***RON E. MCCOLLUM, PE,***
PROJECT ENGINEER - ROADWAY DESIGN

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

16-FEB-2015 09:31
R:\Roadway\Proj\B4822_Rdy_tsh.dgn
$$$$USERNAME$$$$

02/03/15

PROJECT REFERENCE NO.	SHEET NO.
B-4822	1B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
38592.1.1	1C-1
Location and Surveys	

SURVEY CONTROL SHEET B-4822
-PRELIMINARY-

BL

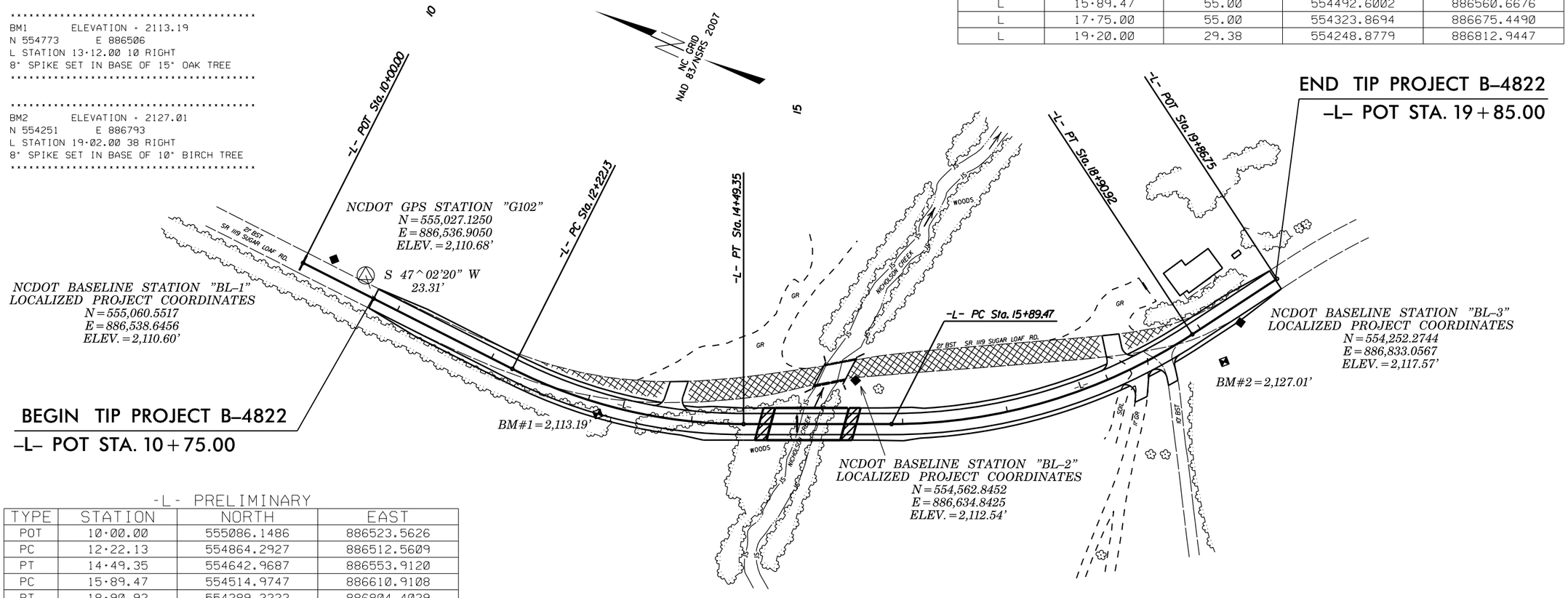
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	555060.5517	886538.6456	2110.60	10+24.82	16.33 LT
2	BL-2	554562.8452	886634.8425	2112.54	15+55.47	41.34 LT
3	BL-3	554252.2744	886833.0567	2117.57	19+35.07	15.63 RT

BM1 ELEVATION = 2113.19
N 554773 E 886506
L STATION 13+12.00 10 RIGHT
8" SPIKE SET IN BASE OF 15" OAK TREE

BM2 ELEVATION = 2127.01
N 554251 E 886793
L STATION 19+02.00 38 RIGHT
8" SPIKE SET IN BASE OF 10" BIRCH TREE

-PRELIMINARY- ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+75.00	30.00	555012.7265	886489.8848
L	12+25.00	55.00	554863.8231	886457.4795
L	14+49.35	55.00	554620.5941	886503.6688
L	15+89.47	55.00	554492.6002	886560.6676
L	17+75.00	55.00	554323.8694	886675.4490
L	19+20.00	29.38	554248.8779	886812.9447



-L- PRELIMINARY

TYPE	STATION	NORTH	EAST
POT	10+00.00	555086.1486	886523.5626
PC	12+22.13	554864.2927	886512.5609
PT	14+49.35	554642.9687	886553.9120
PC	15+89.47	554514.9747	886610.9108
PT	18+90.92	554289.3222	886804.4029
POT	19+86.75	554237.4414	886884.9684

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "G102"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 555027.125(ft) EASTING: 886536.905(ft)
ELEVATION: 2110.68(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977651
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "G102" TO -L- STATION 10+75.00 IS
S 47°02'20" W 23.31'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

GEOID MODEL—GEOID 03
NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B-4822_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.

16-FEB-2015 09:46
R:\Roadway\Proj\b4822_ls_1c.dgn
$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4822	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

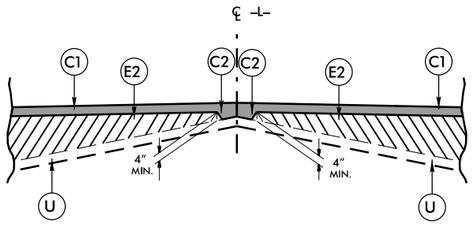
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KCI
Engineers • Planners • Scientists • Construction Managers
4601 Six Forks Road, Landmark Center II, Suite 220
Raleigh, NC 27609-5210
http://www.kci.com
Phone (919) 783-9214 • Fax (919) 783-9266

FINAL PAVEMENT SCHEDULE

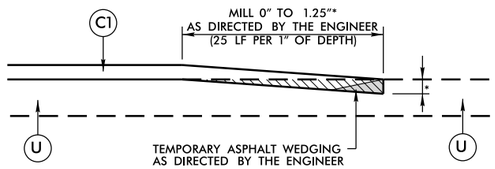
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



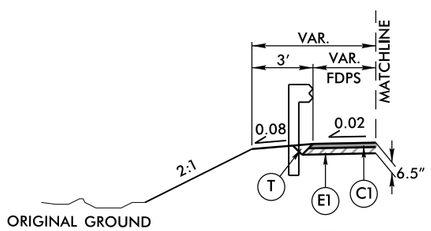
Detail Showing Method of Wedging

PROFILE KEY–IN DETAIL

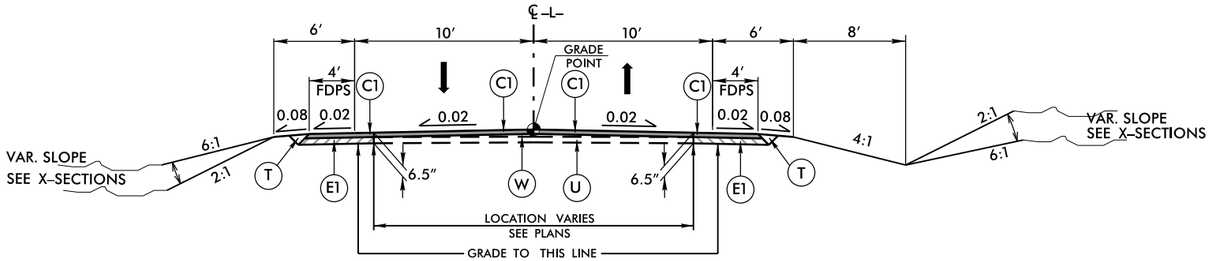


* MILL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

** SEE TYPICALS FOR MIX TYPE

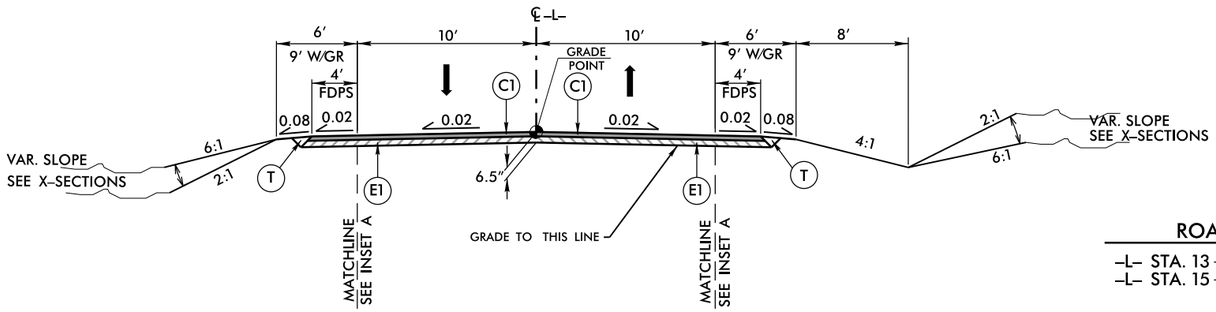


INSET A
USE IN GUARDRAIL LOCATIONS



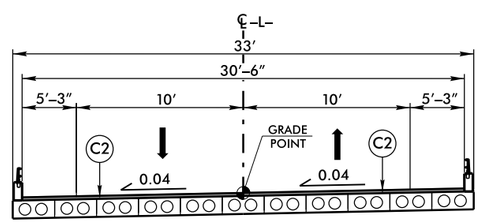
ROADWAY TYPICAL SECTION NO. 1

ROADWAY TYPICAL SECTION NO. 1
–L– STA. 10+75.00 TO STA. 13+25.00
–L– STA. 18+25.00 TO STA. 19+85.00



ROADWAY TYPICAL SECTION NO. 2

ROADWAY TYPICAL SECTION NO. 2
–L– STA. 13+25.00 TO STA. 14+75+/– (BEGIN BRIDGE)
–L– STA. 15+45+/– (END BRIDGE) TO STA. 18+25.00



STRUCTURE TYPICAL SECTION

TYPICAL SECTION ON STRUCTURE
–L– STA. 14+75+/– TO STA. 15+45+/–

16-FEB-2015 09:47
R:\Roadway\Proj\B4822_Rdy_typ.dgn
$$$$USERNAME$$$$

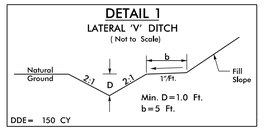
8/17/99

REVISIONS

05/06/15 - R/W REVISION: ADDED OFFSETS TO EXISTING RIGHT OF WAY CALLOUTS. - BCS

04-MAY-2015 16:20
M:\2014\14350A NCDOT B-4822\Roadway\Proj\B4822_Rdy_psh_4.dgn
$$$$USERNAME$$$$

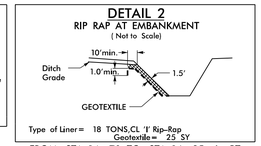
DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)



DDE= 150 CY

FROM STA. 11+00 TO STA. 14+80 -L- RT

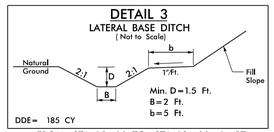
DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 18 TONS,CL 'I' Rip-Rap
Geotextile= 25 SY

FROM STA. 14+70 TO STA. 14+85 -L- RT
FROM STA. 15+09 TO STA. 15+26 -L- RT
FROM STA. 15+37 TO STA. 15+56 -L- LT

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



DDE= 185 CY

FROM STA. 15+16 TO STA. 18+00 -L- RT

-L-

PI Sta 13+37.87	PI Sta 17+44.56
△ = 26° 50' 36.6" (LT)	△ = 33° 12' 56.0" (LT)
D = 11° 48' 48.8"	D = 11° 01' 06.3"
L = 227.23'	L = 301.45'
T = 115.74'	T = 155.10'
R = 485.00'	R = 520.00'
SE = .06	SE = .06
RO = 103.5'	RO = 103.5'

NAD 83/ NSRS 2007

DETAIL 4
TYPICAL CHANNEL (NTS; LOOKING DS)

PROJECT REFERENCE NO.	SHEET NO.
B-4822	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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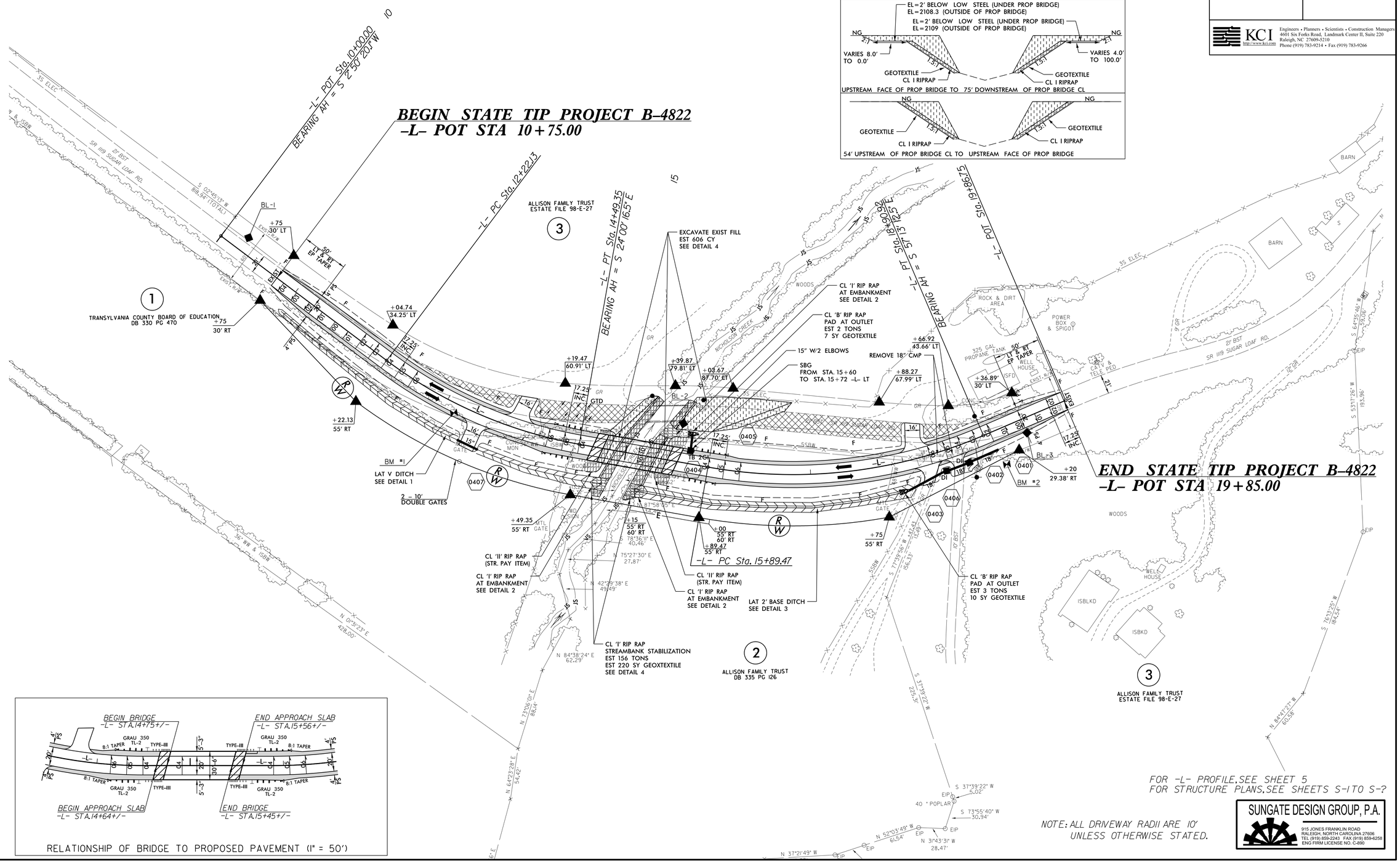
BEGIN STATE TIP PROJECT B-4822
-L- POT STA 10+75.00



RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT (1" = 50')

FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEETS S-1 TO S-?

NOTE: ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE STATED.

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

END STATE TIP PROJECT B-4822
-L- POT STA 19+85.00

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4822	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-990

BM #1 - 8" SPIKE SET IN BASE OF 15" OAK TREE
-L- STA. 13+12.00, 10' RT
EL = 2113.19'

BM #2 - 8" SPIKE SET IN BASE OF 10" BIRCH TREE
-L- STA. 19+02.00, 38' RT
EL = 2127.01'

-L-

BEGIN GRADE -L- STA 10+75.00
ELEV. 2,111.38'

PI = 11+40.00
EL = 2,111.58'
VC = 130'
K = 188
V = 70mph

PI = 13+50.00
EL = 2,113.68'
VC = 200'
K = 154
V = 60mph

PI = 18+15.00
EL = 2,112.28'
VC = 340'
K = 64
V = 40mph

END GRADE -L- STA 19+85.00
ELEV. 2,120.78'

BEGIN BRIDGE -L- STA 14+75 +/-

END BRIDGE -L- STA 15+45 +/-

EXST BRIDGE TO BE REMOVED

EXCAVATE TO APPROX EL = 2102.0

NG AT BRDG CL

(+)11.0000%

(-)10.3011%

(+)10.3077%

(+)11.0000%

(-)10.3011%

(+)5.0000%

-0.3%

+0.3%

-3.32%

BEG LAT V DITCH
STA 11+00
EL = 2107.10

END LAT V DITCH
STA 14+80
EL = 2105.94

STREAMBANK STABILIZATION

STREAMBANK STABILIZATION

BEG LAT 2 BASE DITCH
STA 15+10
EL = 2106.13

WSE ON 01-09-2014
=2103.1

NWSE
=2106.1

LAT 2 BASE DITCH
STA 17+00
EL = 2106.68

END LAT 2 BASE DITCH
STA 18+90
EL = 2110.60

2,140
2,130
2,120
2,110
2,100
2,090
2,080

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 2110.4	FT
BASE DISCHARGE	= 4180	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2112.08	FT
OVERTOPPING DISCHARGE	= 1900	CFS
OVERTOPPING FREQUENCY	= 5	YRS
OVERTOPPING ELEVATION	= 2110.3	FT
DATE OF SURVEY	= 01/09/2014	
W.S.ELEVATION AT DATE OF SURVEY	= 2103.1	FT

FOR -L- ALIGNMENT, SEE SHEET 4

16-FEB-2015 09:55
R:\Roadway\PROJ\B4822_Rdy_pf1_5.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4822	X-1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

UNDERCUT EXCAVATION

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

2120 / 2110

14+00.00
4:1 0.060 0.060 2:1
2109.01 2:1 2:1 2106.20

13+50.00
3:1 0.060 0.060 2:1
211.32 2:1 2:1 2106.35

13+00.00
3:1 0.060 0.060 2:1
211.31 2:1 2:1 2106.50

12+50.00
3:1 0.056 0.056 2:1
211.56 2:1 2:1 2106.65

12+00.00
3:1 0.027 0.027 2:1
211.39 2:1 2:1 2106.80

11+50.00
3:1 0.020 0.002 2:1
211.29 2:1 2:1 2106.95

11+00.00
3:1 0.020 0.031 2:1
211.28 2:1 2:1 2107.10

10+75.00
3:1 0.020 0.040 2:1
211.27

BEGIN PROJECT –L– STA. 10+75.00

10+50.00
211.26

–L–

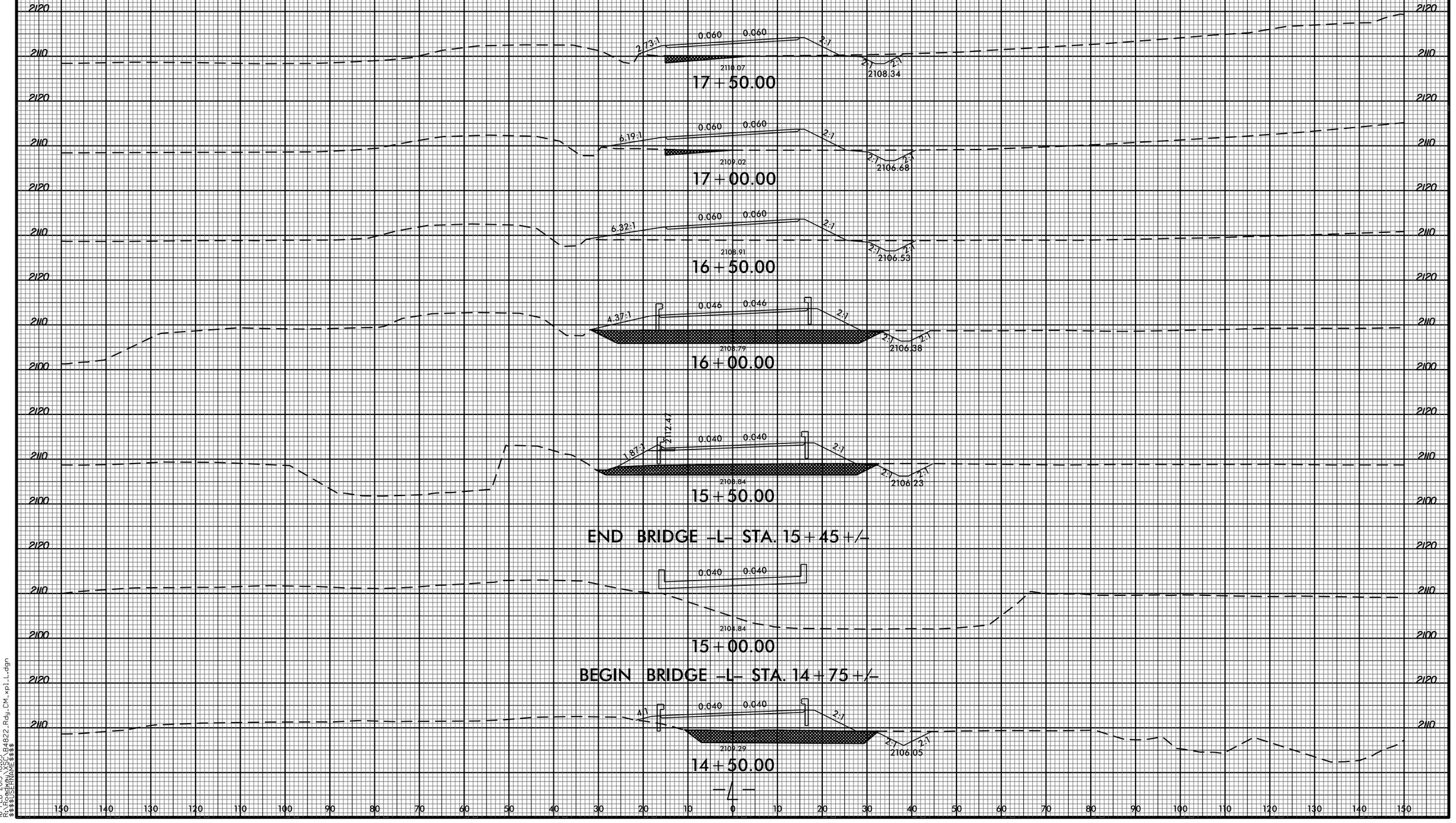
16-FEB-2015 09:59
R:\Roadway\XS\B4822_Rdy_CM_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
B-4822	X-2

0 5 10

UNDERCUT EXCAVATION



16-FEB-2015 10:03
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$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4822	X-3

UNDERCUT EXCAVATION

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

2180 2170 2160 2150 2140 2130 2120 2110 2100

2:1 0.020 0.019 2:1

2116.30

19+00.00

2:1 0.048 0.048 2:1

2112.50

18+50.00

2:1 0.060 0.060 2:1 2:1 2:1

2112.63 2110.00

18+00.00

16-FEB-2015 10:04
R:\Roadway\XS\B4822_Rdy_CM_xp1_L.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4822	X-4

END PROJECT –L– STA. 19+85.00

19+85.00

19+50.00

–L–

2:1 0.030 0.030 2:1
2120.68

2:1 0.020 0.010 2:1
2118.78

2180 2170 2160 2150 2140 2130 2120 2110

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

16-FEB-2015 10:05
R:\Roadway\XS\B4822_Rdy_CM_xpl_L.dgn
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