



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

May 30, 2017

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

ATTN: Ms. Crystal Amschler
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 13, 23, 33, and 401 Water Quality Certification** for the proposed replacement of Bridge No. 44 over Long Creek on SR 1435 (Poplin Road) in Stanly County, Federal Aid Project No. BRZ-1435(9), Division 10,
TIP No. B-5373. Debit \$240 from WBS 46088.1.1.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 44 over Long Creek on Poplin Road (SR 1435) in Stanly County. Bridge No 44 is a low-water, single span 41- foot long bridge that is considered structurally deficient and functionally obsolete. The replacement structure will be a single span, 65 foot-long low water bridge replaced in the same location as the existing structure. Traffic will be maintained on an off-site detour during construction.

Impacts:

There will be 97 linear feet of permanent impact, by way of 72 feet of stream stabilization, and 25 feet of riprap embankment.

The 72 feet of stream stabilization is not considered bank stabilization because the riprap will be keyed in at the banks of Long Creek, and considered a "channelization activity" pursuant to the Nationwide 13 General Conditions. Since the new bridge will be a low-water bridge, this type of stabilization is required due to the "down-forces" that the banks may be subject to during high flow/ overtopping events. The bridge will also be secured to the abutments to prevent uplift.

The remaining 25 feet of riprap embankment will be placed at the outlet of the base ditches at the edge of Long Creek to prevent bank erosion. This impact is considered, and is consistent with, ditch outlet bank stabilization.

There will also be 52 linear feet of temporary impacts for the above mentioned activities, by way of 15 feet of temporary de-watering for the installation of temporary dikes, 10 feet of temporary impact to install the stream stabilization, and 27 feet of temporary impact to install the riprap embankment at the outlet of the base ditches.

Mitigation

“Debit Ledger” mitigation is available within the same HUC as the project site. The Afton Run Mitigation Site is located in Cabarrus County within the USGS hydrologic unit 03040105 of the Yadkin Pee Dee River. NCDOT restored the 1,013 linear foot stream site to mitigate for unavoidable, jurisdictional impacts associated with TIP U-2009B. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03040105. Table 2 indicates all mitigation debits that have occurred per regulatory agency approval.

In order to offset unavoidable impacts to B-5373, NCDOT will debit 72 linear feet of stream mitigation at a 2:1 ratio, totaling 144 linear feet.

Table 1. Mitigation Quantities Approved

HUC	Mitigation Type	Starting Amount	Additional Notes
03040105	Stream Restoration	1,013	

Table 2. Mitigation Debits

Mitigation Type	Debit Amount	Status	SITE TIP	Notes
Stream Restoration	752	Close Out	U-2009B	
Stream Restoration	144	Close Out	B-5373	72 feet of impacts at 2:1 ratio

Please see enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, permit drawings and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in September 2015 and distributed shortly thereafter. Additional copies are available upon request.

This project has been identified as a candidate for acceleration, and be awarded once permits are received. The current schedule calls for a letting date of February 20, 2018 and a review date of January 2, 2018.

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 contact Michael Turchy at maturchy@ncdot.gov or (919) 707-6157.

Sincerely,



Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head

cc: NCDOT Standard Permit Application Distribution List



Office Use Only:
 Corps action ID no. _____
 DWQ project no. _____
 Form Version 1.4 January 2009

Pre-Construction Notification (PCN) Form		
Applicant Information		
1. Processing		
1a. Type(s) of approval sought from the Corps:	<input checked="" type="checkbox"/> Section 404 Permit <input type="checkbox"/> Section 10 Permit	
1b. Specify Nationwide Permit (NWP) number: 13, 23, 33 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input type="checkbox"/> 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: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
2. Project Information		
2a. Name of project:	B-5373 Replacement of Bridge 44 over Long Creek on SR 1435 (Poplin Road).	
2b. County:	Stanly	
2c. Nearest municipality / town:	New London	
2d. Subdivision name:	n/a	
2e. NCDOT only, T.I.P. or state project no:	B-5373	
3. Owner Information		
3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation	
3b. Deed Book and Page No.		
3c. Responsible Party (for LLC if applicable):		
3d. Street address:	1598 Mail Service Center	
3e. City, state, zip:	Raleigh, NC 27699-1598	
3f. Telephone no.:	919-707-6157	
3g. Fax no.:	919-212-5785	
3h. Email address:	maturchy@ncdot.gov	

4. Applicant Information (if different from owner)	
4a. Applicant is:	<input type="checkbox"/> Agent <input type="checkbox"/> Other, specify:
4b. Name:	
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:	
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):	n/a
1b. Site coordinates (in decimal degrees):	Latitude: 35.409440 Longitude: - 80.258337 (DD.DDDDDD) (-DD.DDDDDD)
1c. Property size:	Approximately 1 acre
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Long Creek
2b. Water Quality Classification of nearest receiving water:	C
2c. River basin:	Yadkin-Pee Dee River Basin
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 primary land use is farmland with maintained disturbed homes and small businesses dispersed throughout.
3b. List the total estimated acreage of all existing wetlands on the property:	The project study area has been reduced and wetlands are no longer located in the project area.
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property:	Approximately 130 linear feet of stream exist within project study area.
3d. Explain the purpose of the proposed project:	The purpose of the project is to replace a structurally deficient and functionally obsolete bridge, built in 1961 that is approaching the end of its useful life.
3e. Describe the overall project in detail, including the type of equipment to be used:	The project involves replacing a 41-foot long, single- span bridge with a 65-foot long, single-span bridge replaced in the same location as the current bridge. Traffic will be maintained on an off-site detour during construction. Standard bridge and 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:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

C. Proposed Impacts Inventory						
1. Impacts Summary						
1a. Which sections were completed below for your project (check all that apply):						
<input type="checkbox"/> Wetlands <input checked="" type="checkbox"/> Streams - tributaries <input type="checkbox"/> Buffers <input type="checkbox"/> Open Waters <input type="checkbox"/> Pond Construction						
2. Wetland Impacts						
If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.						
2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)	
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
2g. Total wetland impacts						
2h. Comments:						
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)
						Perm Temp
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Riprap Embankment	Long Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	37	25
Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Installation of Riprap Embankment	Long Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	37	27
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Stream Stabilization	Long Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	37	72
Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Installation of Stream Stabilization	Long Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	37	10
Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Installation Impervious Dikes	Long Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	37	15
3h. Total stream and tributary impacts						Permanent = 97' Temporary = 52' NW 23 = 72' NW 13 = 25' NW 33 = 52'
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 <input type="checkbox"/> P <input type="checkbox"/> T				
O2 <input type="checkbox"/> P <input type="checkbox"/> T				
O3 <input type="checkbox"/> P <input type="checkbox"/> T				
O4 <input type="checkbox"/> P <input type="checkbox"/> T				

4f. Total open water impacts

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

5h. Is a dam high hazard permit required? Yes No If yes, permit ID no:

5i. Expected pond surface area (acres):

5j. Size of pond watershed (acres):

5k. Method of construction:

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin? Neuse Tar-Pamlico Other:
 Catawba Randleman

6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		

6h. Total buffer impacts

6i. Comments:

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.		
<p>The new bridge will be replaced on the same alignment as the current structure, thus minimizing the project footprint. Also, an off-site detour will be used during project construction.</p> <p>The bridge will be replaced with a wider structure which will allow for a larger hydraulic opening.</p> <p>The new structure will be considered a “low water” structure similar to the current structure. NCDOT examined raising the height of the bridge, but costs and environmental impacts became cost prohibitive.</p> <p>There will be no direct discharge of stormwater into Long Creek.</p>		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.		
<p>Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving streams due to erosion and runoff.</p>		
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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input checked="" type="checkbox"/> Corps	
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input checked="" type="checkbox"/> Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank:		
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.	<input type="checkbox"/> Yes	
4b. Stream mitigation requested:	linear feet	
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold	
4d. Buffer mitigation requested (DWQ only):	square feet	
4e. Riparian wetland mitigation requested:	acres	
4f. Non-riparian wetland mitigation requested:	acres	
4g. Coastal (tidal) wetland mitigation requested:	acres	
4h. Comments:		

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.

See attached cover letter for description of use of Debit Ledger mitigation.

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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments:	<input type="checkbox"/> Yes <input type="checkbox"/> No
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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: see attached permit drawings	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input checked="" type="checkbox"/> DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	n/a
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other: N/A
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No n/a
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No n/a
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments: - PCE completed September 2015.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description.	
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?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input type="checkbox"/> Raleigh <input type="checkbox"/> Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? USFWS website: Schweinitz's sunflower- No Effect, habitat present, surveys: 8/27/2013, 10/19/2015 Northern long-eared bat: NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT may presume its determination is informed by best available information and consider Section 7 responsibilities fulfilled for NLEB. Per protocol, the 4(d) consistency determination was sent to the USFWS on 10/21/2016. No comments were received.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat?		
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)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources?		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements:		
8c. What source(s) did you use to make the floodplain determination? approved NEPA document		
<i>For</i> Philip S. Harris C.P.M., P.E. Applicant/Agent's Printed Name	 Applicant/Agent's Signature <small>(Agent's signature is valid only if an authorization letter from the applicant is provided.)</small>	05-30-2017 Date



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 46088.1.1 TIP No.: B-5373 County(ies): Stanly Page 1 of 7

General Project Information

WBS Element:	46088.1.1	TIP Number:	B-5373	Project Type:	Bridge Replacement	Date:	3/28/2017
NCDOT Contact:	WILLIAM G. (GALEN) CAIL, P.E.		Contractor / Designer:	JEFF RECK, P.E.			
Address:	HYDRAULICS UNIT 1590 MAIL SERVICE CENTER RALEIGH, NC 27600		Address:	MOFFATT & NICHOL 4700 FALLS OF NEUSE RD, SUITE 300 RALEIGH, NC 27609			
	Phone: (919) 707-6711			Phone: (919) 781-4626			
	Email: gcail@ncdot.gov			Email: jreck@moffattnichol.com			
City/Town:	Albermarle		County(ies):	Stanly			
River Basin(s):	Yadkin-Pee Dee		CAMA County?	No			
Wetlands within Project Limits?	No						

Project Description

Project Length (lin. miles or feet):	0.086 miles	Surrounding Land Use:	Agriculture, Woods, Pasture					
	Proposed Project			Existing Site				
Project Built-Up Area (ac.)	0.3 ac.			0.2 ac.				
Typical Cross Section Description:	11' TRAVEL LANES. NO SHOULDERS ON BOTH SIDES OF THE ROADWAY UNTIL BRIDGE APPROACH SECTION WHICH HAS 4' 5" SHOULDERS. 33' BRIDGE OUT TO OUT.			9' TRAVEL LANES. NO SHOULDERS ON BOTH SIDES OF THE ROADWAY. 18' 6" BRIDGE OUT TO OUT				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	223	Year:	2018	Existing:	314	Year:	2038
General Project Narrative: (Description of Minimization of Water Quality Impacts)	<p>The project will replace Bridge #44 and its approaches. Bridge #44 crosses over Long Creek on SR 1435 Poplin Road between SR 1426 Harwood Rd and SR 1438 Kendalls Church Rd in Stanly County. The proposed replacement structure is a 70' - 24" cored slab with 4' caps with a fill face to fill face length of 72.6' and a clear roadway width of 30' 10". This structure provides for 2 - 11' travel lanes with 4' 5" shoulders.</p> <p>There are no wetlands present with the proposed limits of construction. Riprap bank stabilization at the end of proposed ditches and on the banks under the existing bridge will result in 97 linear feet of permanent stream impacts.</p> <p>STORMWATER CONTROLS: The proposed bridge project does not utilize deck drains. A stormwater inlet at station -L- 13+19 LT and at station -L- 13+00 RT collects runoff from the bridge deck and discharges it through pipes to riprap outlet pads located in ditches which flow into Long Creek.</p>							

Waterbody Information

Surface Water Body (1):	Long Creek		NCDWR Stream Index No.:	13-17-31			
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C				
	Supplemental Classification:						
Other Stream Classification:							
Impairments:	copper (Cu)		mercury (Hg)				
Aquatic T&E Species?	Comments:						
NRTR Stream ID:						Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A		Dissipator Pads Provided in Buffer?	N/A	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)			(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
	(If yes, provide justification in the General Project Narrative)						

09.08/99

3/28/2017
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jgavenport

TIP PROJECT: B-5373

CONTRACT:

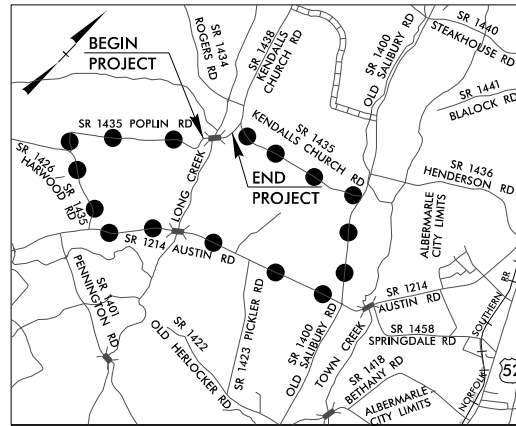
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANLY COUNTY

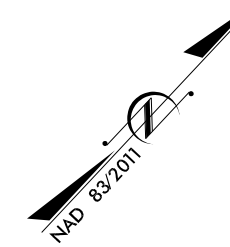
LOCATION: BRIDGE NO.44 ON SR 1435 (POPLIN RD)
OVER LONG CREEK

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

WETLAND AND SURFACE WATER IMPACTS PERMIT

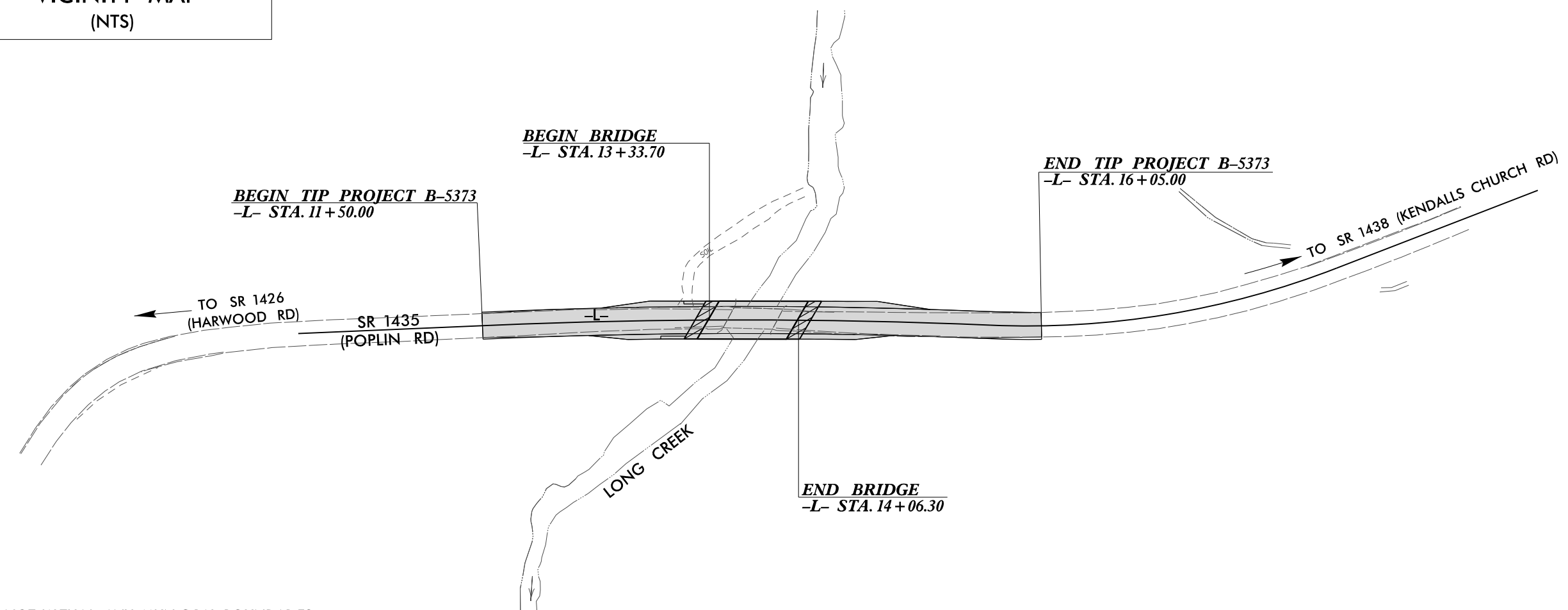


OFF-SITE DETOUR
VICINITY MAP
(NTS)



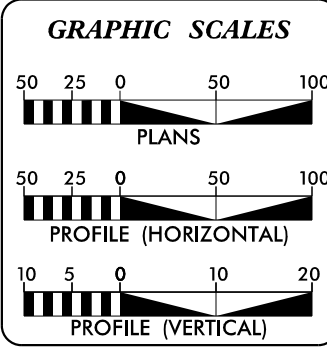
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5373	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46088.1.1	BRZ-1435(9)	P.E.	
46088.2.1	BRZ-1435(9)	RW & UTL	

PERMIT DRAWING
SHEET 2 OF 7



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

NCDOT CONTACT: GALEN CAIL, PE
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2018 =	223
ADT 2038 =	314
K =	13 %
D =	60 %
T =	12 % *
V =	40 MPH
* TTST = 1% DUAL 11%	
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5373 =	0.072 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5373 =	0.014 MILES
TOTAL LENGTH OF TIP PROJECT B-5373 =	0.086 MILES

Prepared For NCDOT In the Office of:

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4868 FAX
NC License NO.: F-0105

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 24, 2017

LETTING DATE:
FEBRUARY 20, 2018

TIM R. REID, P.E.
PROJECT ENGINEER

TRENT E. HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

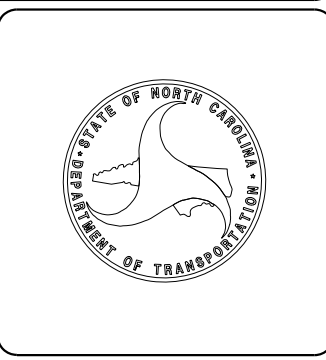
moffatt & nichol

SIGNATURE: _____ P.E.

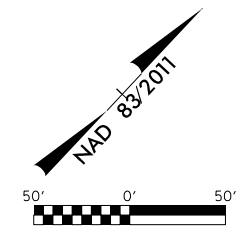
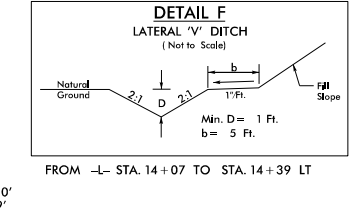
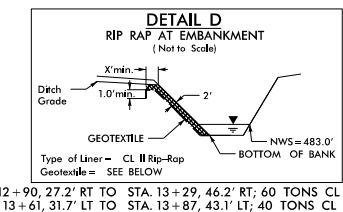
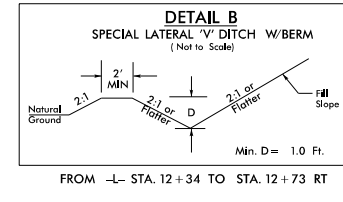
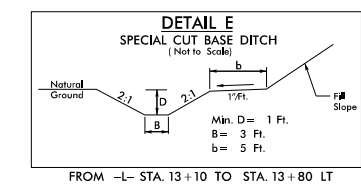
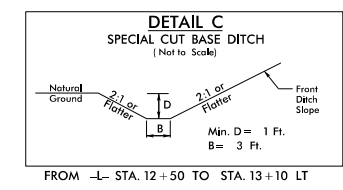
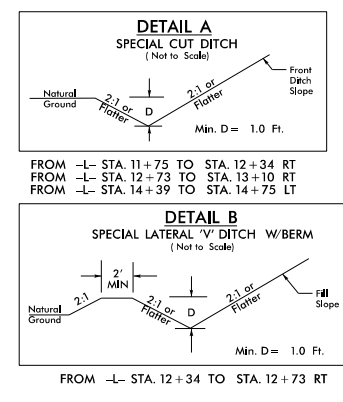
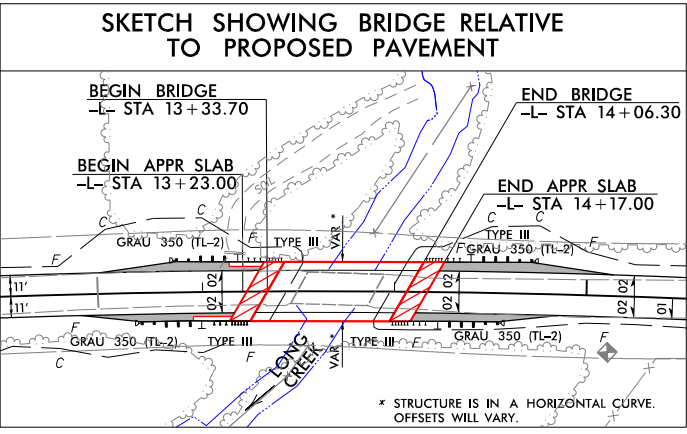
ROADWAY DESIGN ENGINEER

moffatt & nichol

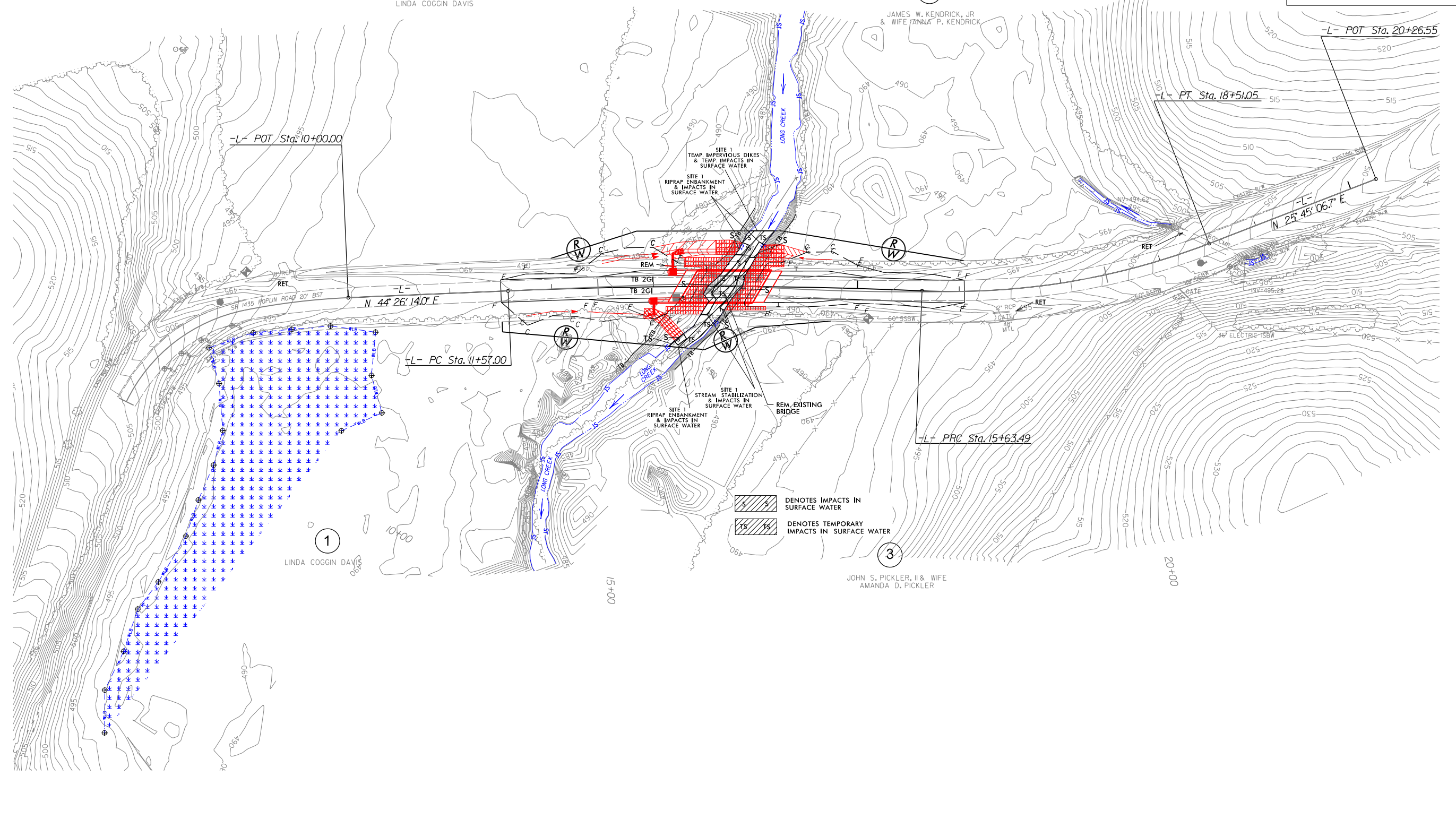
SIGNATURE: _____ P.E.



8/17/99
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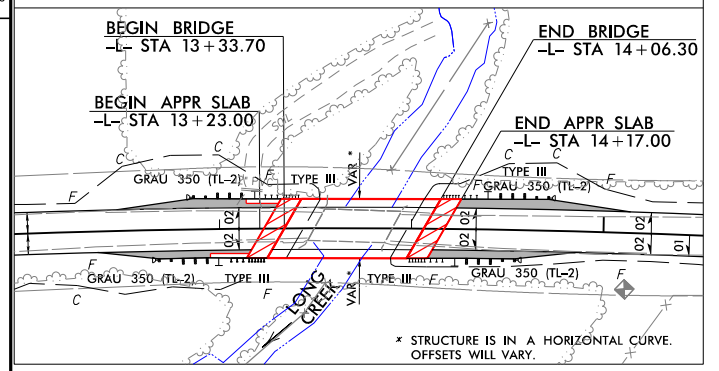


PROJECT REFERENCE NO. B-5373	SHEET NO. PRM-2
RW SHEET NO. 4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
4700 FALLS OF NEUSE ROAD, SUITE 300 WALEDO, NORTH CAROLINA 27609 (919) 781-4626 VOIC (919) 781-4869 FAX NC License NO.: F-0105	
PERMIT DRAWING SHEET 3 OF 7	

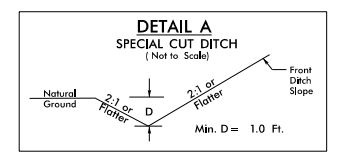


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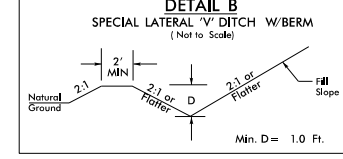
SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT



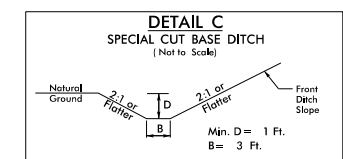
* STRUCTURE IS IN A HORIZONTAL CURVE. OFFSETS WILL VARY.



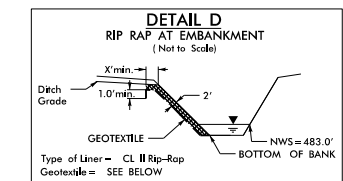
FROM -L- STA. 11+75 TO STA. 12+34 RT
 FROM -L- STA. 12+73 TO STA. 13+10 RT
 FROM -L- STA. 14+39 TO STA. 14+75 LT



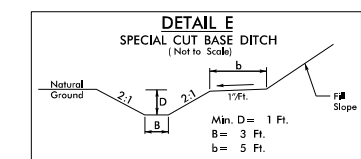
FROM -L- STA. 12+34 TO STA. 12+73 RT



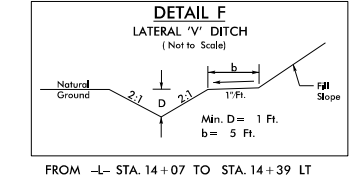
FROM -L- STA. 12+50 TO STA. 13+10 LT



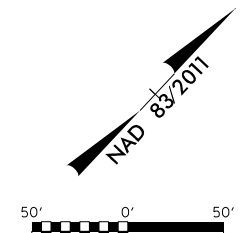
FROM -L- STA. 12+90, 27.2' RT TO STA. 13+29, 46.2' RT; 60 TONS CL II, 65 SY GT; X=20'
 FROM -L- STA. 13+61, 31.7' LT TO STA. 13+87, 43.1' LT; 40 TONS CL II, 45 SY GT; X=19'
 FROM -L- STA. 14+04, 33.0' LT TO STA. 14+28, 32.5' LT; 35 TONS CL II, 40 SY GT; X=21'



FROM -L- STA. 13+10 TO STA. 13+80 LT



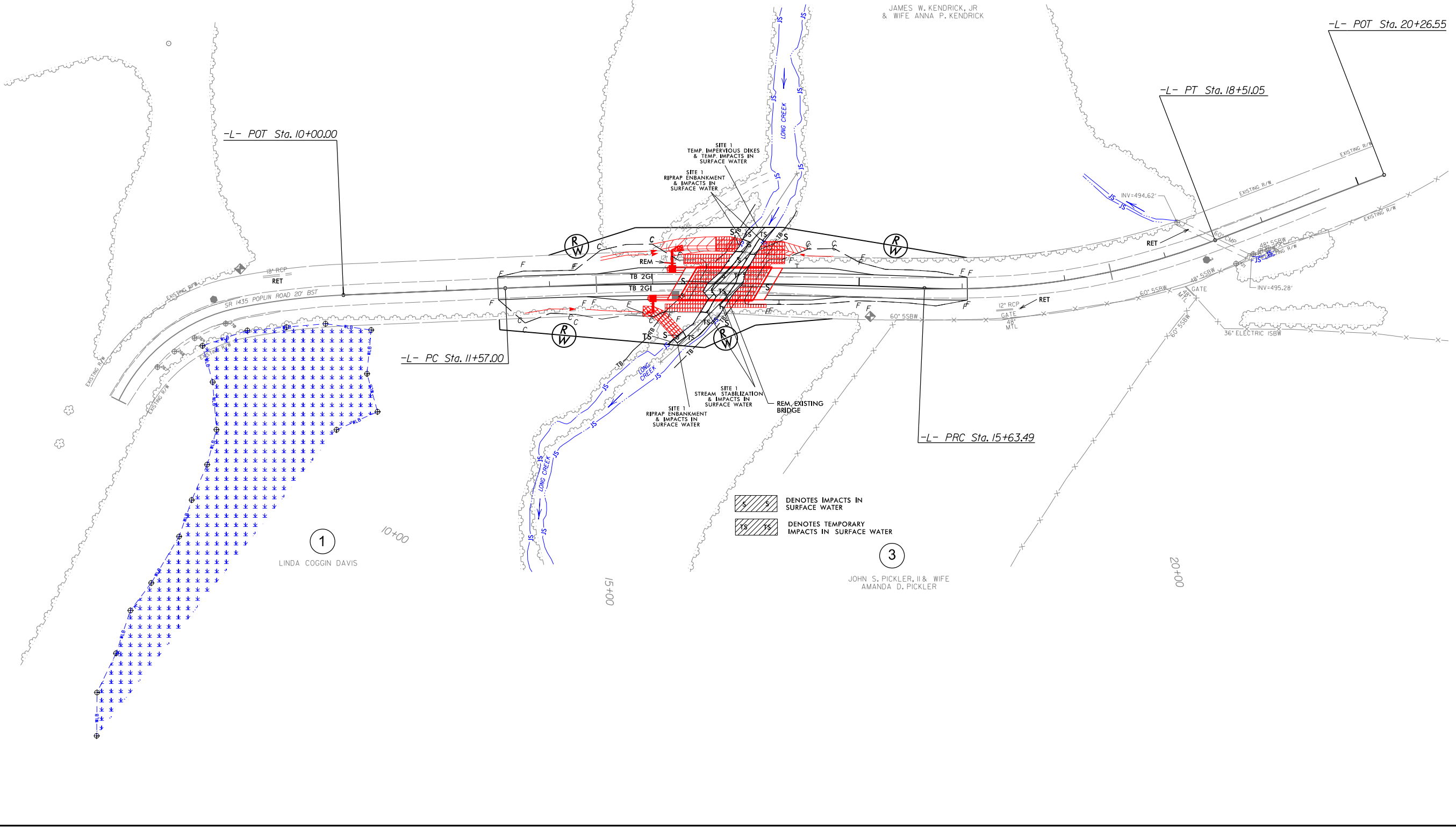
FROM -L- STA. 14+07 TO STA. 14+39 LT



PROJECT REFERENCE NO. B-5373	SHEET NO. PRM-3
RW SHEET NO. 4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
PERMIT DRAWING SHEET 4 OF 7	

2
LINDA COGGIN DAVIS

4
JAMES W. KENDRICK, JR
& WIFE ANNA P. KENDRICK



1
LINDA COGGIN DAVIS

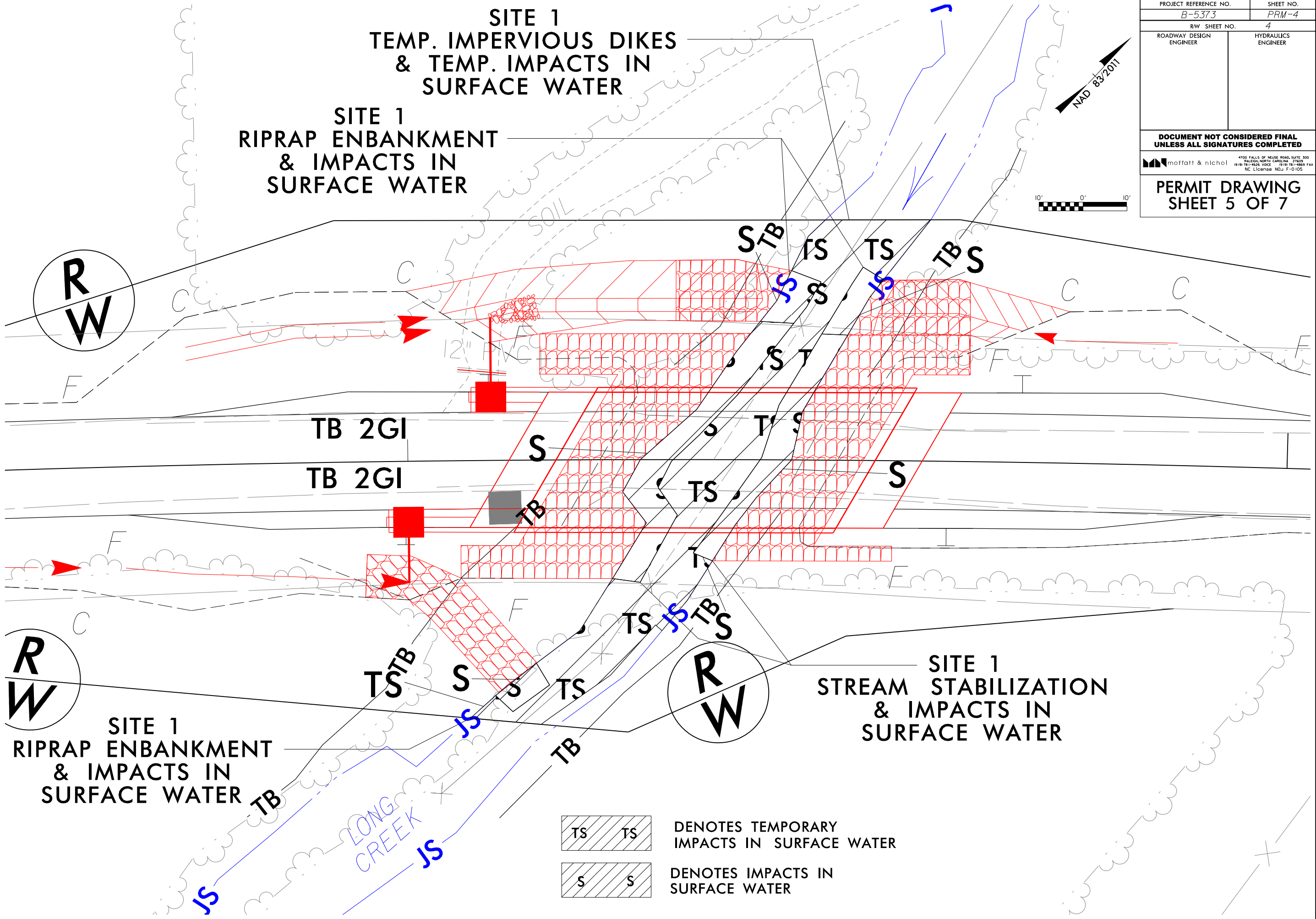
3
JOHN S. PICKLER, II & WIFE
AMANDA D. PICKLER

8/17/99
REVISIONS
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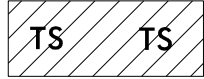
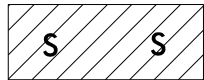
SITE 1 TEMP. IMPERVIOUS DIKES & TEMP. IMPACTS IN SURFACE WATER

SITE 1 RIPRAP ENBANKMENT & IMPACTS IN SURFACE WATER

SITE 1 STREAM STABILIZATION & IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. B-5373	SHEET NO. PRM-4
RW SHEET NO. 4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
moftatt & nichol 4700 FALLS OF NEUSE ROAD, SUITE 300 DALEBORO, NORTH CAROLINA 27629 (919) 781-4626 VOICE (919) 781-4869 FAX NC License NO.: F-0105	
PERMIT DRAWING SHEET 5 OF 7	

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 DENOTES IMPACTS IN SURFACE WATER

5/14/99

PROJECT REFERENCE NO. B-5373	SHEET NO. PRM-5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

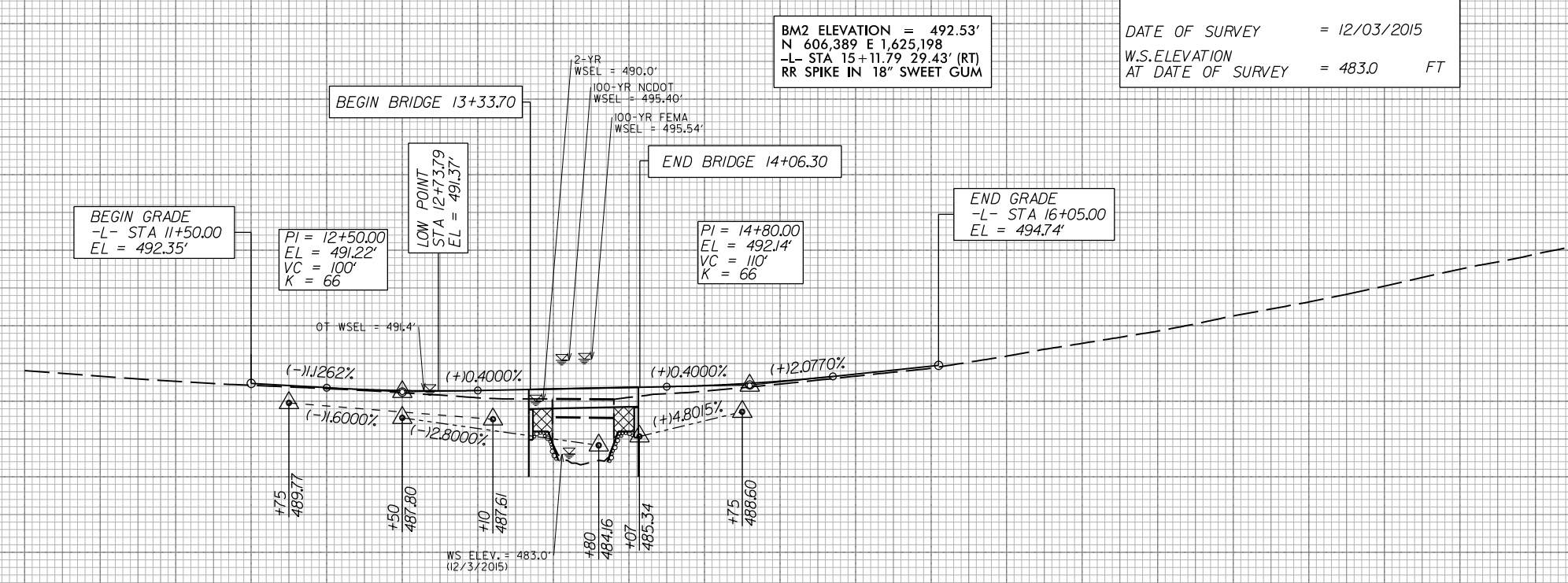
moftatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
Raleigh, North Carolina 27609
(919) 781-4200 FAX
NC License No. F-10105

PERMIT DRAWING SHEET 6 OF 7

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1100	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 490.0	FT
BASE DISCHARGE (FEMA)	= 4806	CFS
BASE FREQUENCY (FEMA)	= 100	YRS
BASE HW ELEV.(FEMA)	= 495.54	FT
BASE DISCHARGE (NCDOT)	= 4500	CFS
BASE FREQUENCY (NCDOT)	= 100	YRS
BASE HW ELEV.(NCDOT)	= 495.40	FT
OVERTOPPING DISCHARGE	= 1800	CFS
OVERTOPPING FREQUENCY	= >2.5	YRS
OVERTOPPING ELEVATION	= 491.4	FT
DATE OF SURVEY = 12/03/2015		
W.S.ELEVATION AT DATE OF SURVEY = 483.0 FT		

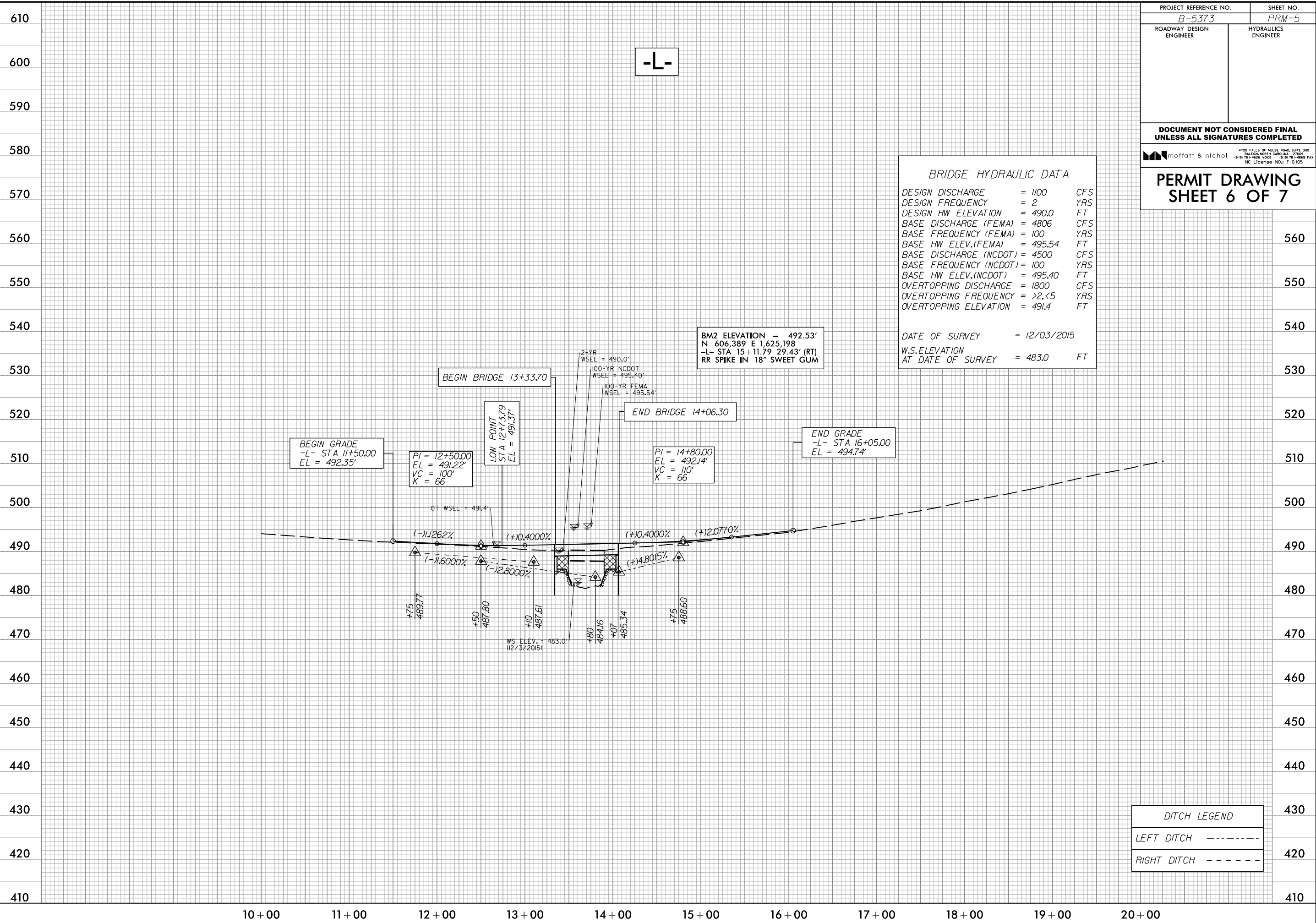
-L-

BM2 ELEVATION = 492.53'
N 606,389 E 1,625,198
-L- STA 15+11.79 29.43' (RT)
RR SPIKE IN 18" SWEET GUM



DITCH LEGEND	
LEFT DITCH	-----
RIGHT DITCH	-----

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12/28/2015 10:56:21 AM



WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 13+79 LT to 14+08 LT	Riprap Enbankment						< 0.01	< 0.01	15	10	
1	-L- 13+12 RT to 14+21 RT	Temporary Impervious Dikes							0.03		15	
1	-L- 13+88 LT to 13+46 RT	Stream Stabilization						0.02	< 0.01	72	10	
1	-L- 13+20 RT to 13+32 RT	Riprap Enbankment						< 0.01	< 0.01	10	17	
TOTALS*:								0.02	0.04	97	52	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 03/28/2017
 STANLY COUNTY
 B-5373
 46088.1.1
 SHEET 7 OF 7

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

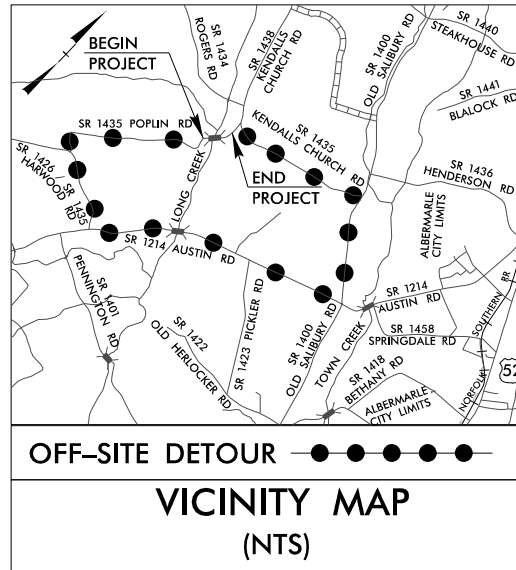
STANLY COUNTY

**LOCATION: BRIDGE NO.44 ON SR 1435 (POPLIN RD)
OVER LONG CREEK**

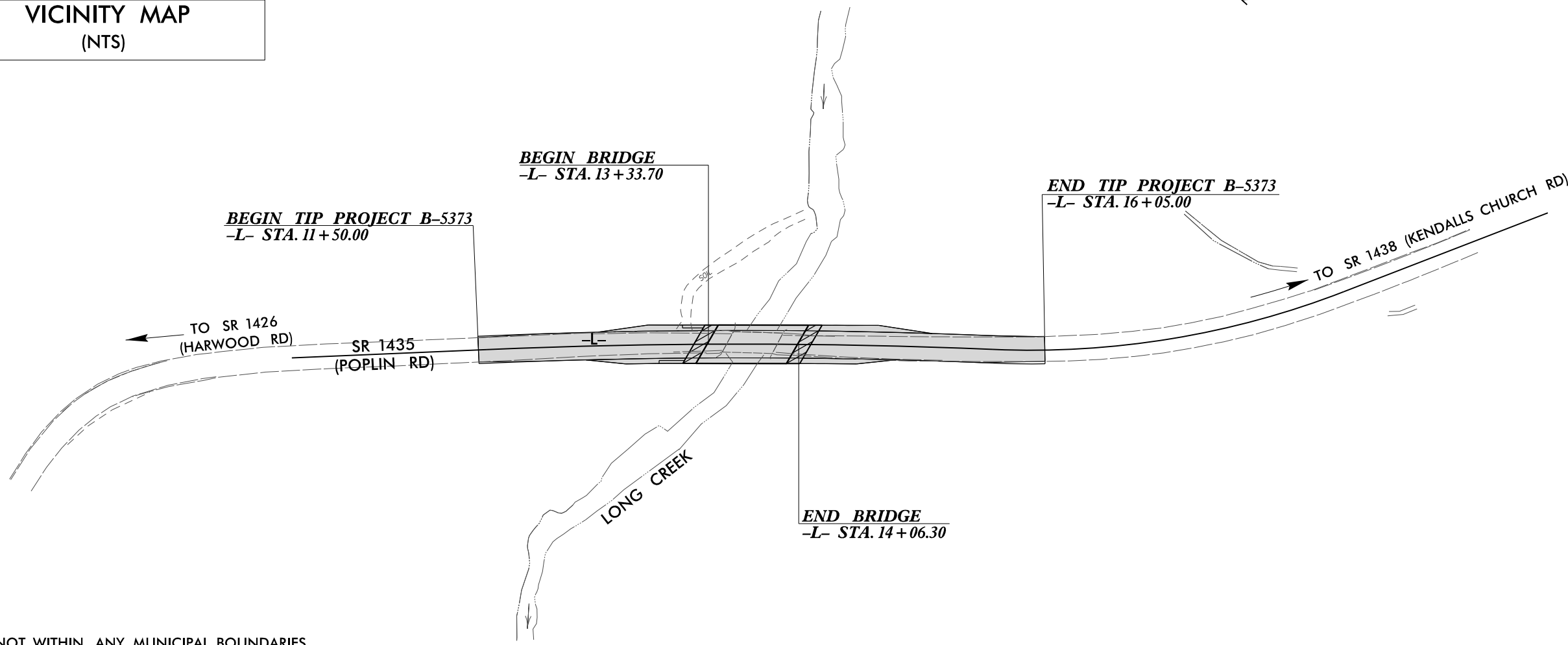
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5373	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46088.1.1	BRZ-1435(9)	P.E.	
46088.2.1	BRZ-1435(9)	RW & UTL	

TIP PROJECT: B-5373



RIGHT OF WAY PLANS

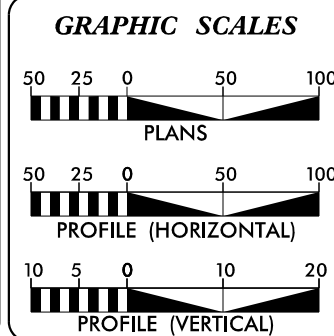


THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

NCDOT CONTACT: THAD DUNCAN, PE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

ADT 2018	=	223
ADT 2038	=	314
K	=	13 %
D	=	60 %
T	=	12 % *
V	=	40 MPH
* TTST = 1% DUAL 11%		
FUNC CLASS	=	LOCAL
SUB-REGIONAL TIER	=	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5373	=	0.072 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5373	=	0.014 MILES
TOTAL LENGTH OF TIP PROJECT B-5373	=	0.086 MILES

Prepared For NCDOT In the Office of:

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4889 FAX
NC License NO.: F-0105

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 24, 2017

LETTING DATE:
FEBRUARY 20, 2018

TIM R. REID, P.E.
PROJECT ENGINEER

TRENT E. HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

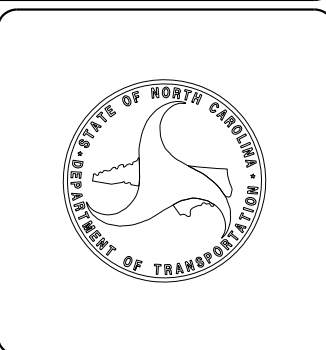
moffatt & nichol

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

moffatt & nichol

SIGNATURE: _____ P.E.



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ EGM
Parcel/Sequence Number	① 23
Existing Fence Line	-x-x-x-
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 Contamination Area: Soil	☠ S ☠
Potential Contamination Area: Soil	☠ S ☠
Known Contamination Area: Water	☠ W ☠
Potential Contamination Area: Water	☠ W ☠
Contaminated Site: Known or Potential	☠ ?

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	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	◆
Primary Horiz Control Point	○
Primary Horiz and Vert Control Point	●
Exist Permanent Easement Pin and Cap	◇
New Permanent Easement Pin and Cap	◆
Vertical Benchmark	⊠
Existing Right of Way Marker	△
Existing Right of Way Line	-----
New Right of Way Line	○ R W
New Right of Way Line with Pin and Cap	○ R W ▲
New Right of Way Line with Concrete or Granite R/W Marker	▲ R W
New Control of Access Line with Concrete C/A Marker	△ C/A
Existing Control of Access	△ C/A
New Control of Access	△ C/A
Existing Easement Line	----- E
New Temporary Construction Easement	----- E
New Temporary Drainage Easement	----- TDE
New Permanent Drainage Easement	----- PDE
New Permanent Drainage / Utility Easement	----- DUE
New Permanent Utility Easement	----- PUE
New Temporary Utility Easement	----- TUE
New Aerial Utility Easement	----- AUE

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	○

Note: Not to Scale *S.U.E. = *Subsurface Utility Engineering*

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	●
U/G Power Line LOS B (S.U.E.*)	----- P
U/G Power Line LOS C (S.U.E.*)	----- P
U/G Power Line LOS D (S.U.E.*)	----- P

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Pedestal	□
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	○
U/G Telephone Cable LOS B (S.U.E.*)	----- T
U/G Telephone Cable LOS C (S.U.E.*)	----- T
U/G Telephone Cable LOS D (S.U.E.*)	----- T
U/G Telephone Conduit LOS B (S.U.E.*)	----- TC
U/G Telephone Conduit LOS C (S.U.E.*)	----- TC
U/G Telephone Conduit LOS D (S.U.E.*)	----- TC
U/G Fiber Optics Cable LOS B (S.U.E.*)	----- T FO
U/G Fiber Optics Cable LOS C (S.U.E.*)	----- T FO
U/G Fiber Optics Cable LOS D (S.U.E.*)	----- T FO

WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	----- W
U/G Water Line LOS C (S.U.E.*)	----- W
U/G Water Line LOS D (S.U.E.*)	----- W
Above Ground Water Line	----- A/G Water

TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	○
U/G TV Cable LOS B (S.U.E.*)	----- TV
U/G TV Cable LOS C (S.U.E.*)	----- TV
U/G TV Cable LOS D (S.U.E.*)	----- TV
U/G Fiber Optic Cable LOS B (S.U.E.*)	----- TV FO
U/G Fiber Optic Cable LOS C (S.U.E.*)	----- TV FO
U/G Fiber Optic Cable LOS D (S.U.E.*)	----- TV FO

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	----- G
U/G Gas Line LOS C (S.U.E.*)	----- G
U/G Gas Line LOS D (S.U.E.*)	----- G
Above Ground Gas Line	----- A/G Gas

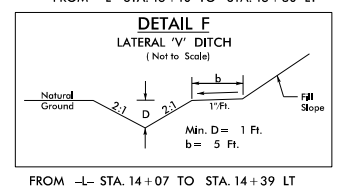
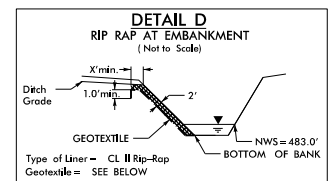
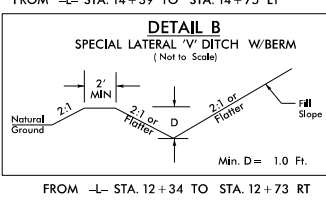
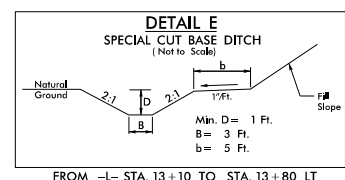
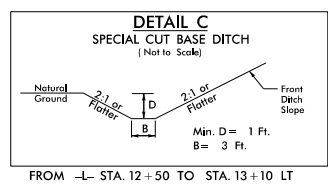
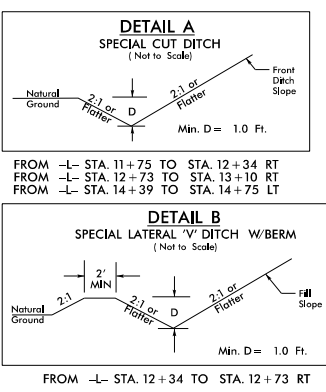
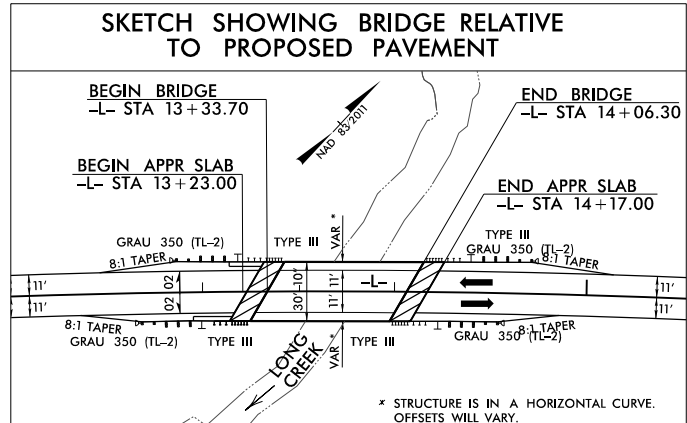
SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
SS Forced Main Line LOS B (S.U.E.*)	----- FSS
SS Forced Main Line LOS C (S.U.E.*)	----- FSS
SS Forced Main Line LOS D (S.U.E.*)	----- FSS

MISCELLANEOUS:

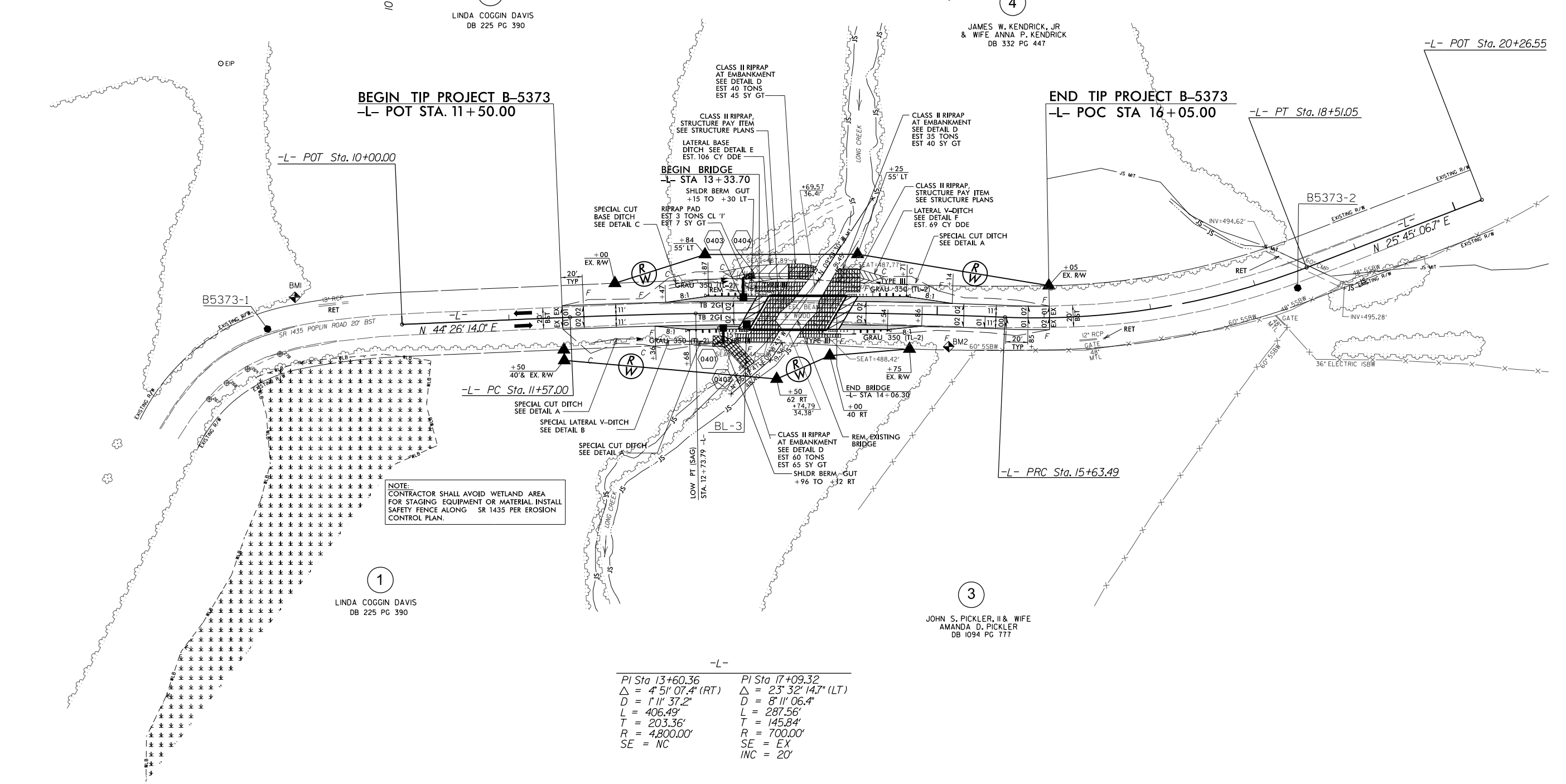
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	----- U/TL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	□ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)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

PROJECT REFERENCE NO. B-5373	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
4700 FALLS OF NEUSE ROAD, SUITE 300 DALEBORO, NORTH CAROLINA 27629 (919) 781-4626 VOICE (919) 781-4869 FAX NC License No. F-0105	



2
LINDA COGGIN DAVIS
DB 225 PG 390

4
JAMES W. KENDRICK, JR
& WIFE ANNA P. KENDRICK
DB 332 PG 447



1
LINDA COGGIN DAVIS
DB 225 PG 390

3
JOHN S. PICKLER, II & WIFE
AMANDA D. PICKLER
DB 1094 PG 777

-L-

PI Sta 13+60.36	PI Sta 17+09.32
$\Delta = 4' 51' 07.4''$ (RT)	$\Delta = 23' 32' 14.7''$ (LT)
D = 111' 37.2"	D = 811' 06.4"
L = 406.49'	L = 287.56'
T = 203.36'	T = 145.84'
R = 4,800.00'	R = 700.00'
SE = NC	SE = EX
	INC = 20'

5/14/99

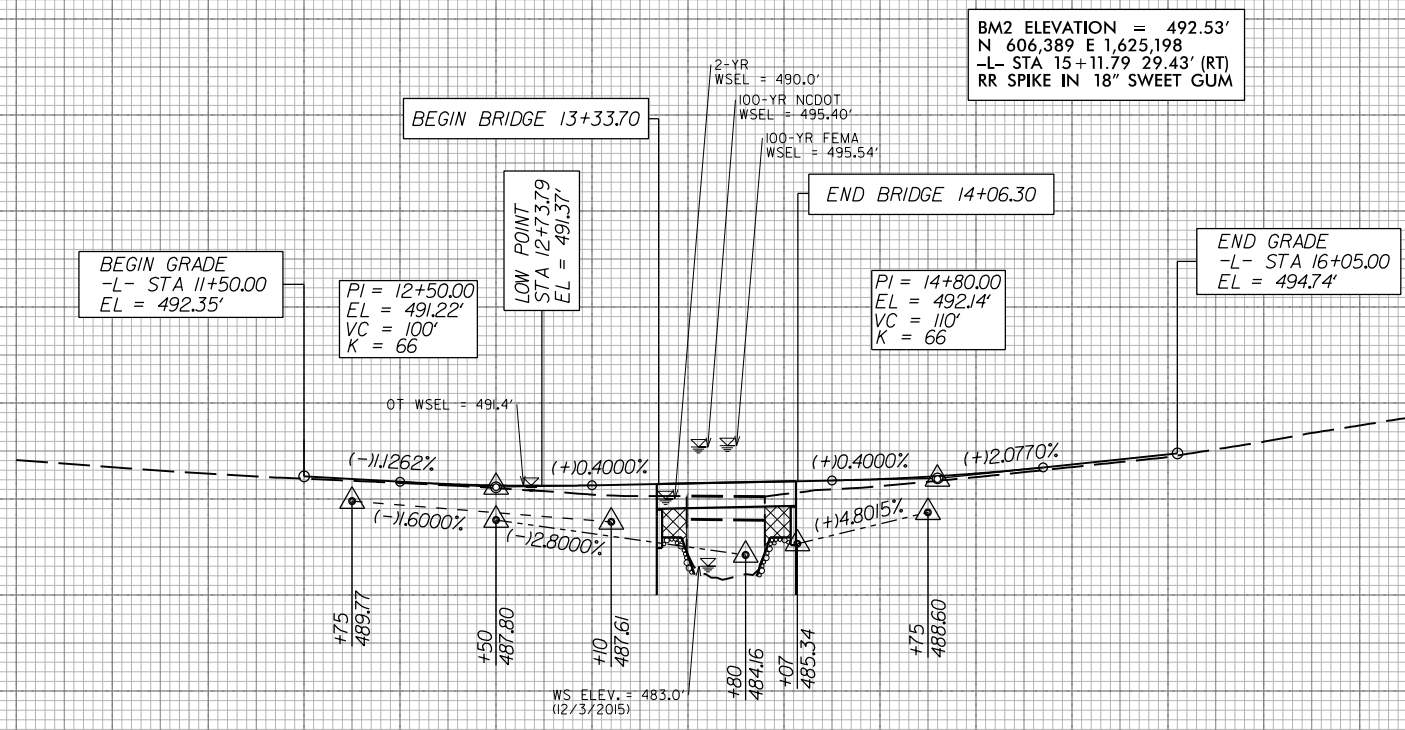
PROJECT REFERENCE NO. <i>B-5373</i>	SHEET NO. <i>5</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

moftatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
Raleigh, North Carolina 27609
(919) 781-4200 FAX
NC License No. F-10105

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 1100	CFS
DESIGN FREQUENCY	= 2	YRS
DESIGN HW ELEVATION	= 490.0	FT
BASE DISCHARGE (FEMA)	= 4806	CFS
BASE FREQUENCY (FEMA)	= 100	YRS
BASE HW ELEV.(FEMA)	= 495.54	FT
BASE DISCHARGE (NCDOT)	= 4500	CFS
BASE FREQUENCY (NCDOT)	= 100	YRS
BASE HW ELEV.(NCDOT)	= 495.40	FT
OVERTOPPING DISCHARGE	= 1800	CFS
OVERTOPPING FREQUENCY	= >2.5	YRS
OVERTOPPING ELEVATION	= 491.4	FT
DATE OF SURVEY	= 12/03/2015	
W.S.ELEVATION AT DATE OF SURVEY	= 483.0	FT

-L-



DITCH LEGEND	
LEFT DITCH	-----
RIGHT DITCH	-----

FOR PLAN SEE SHEET 4

P:\2015\05\CA000\B5373\Roadway\Proj\B5373_rdy.pfl_05.dgn