



Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

February 12, 2016

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

ATTN: Mr. Steven Kichefski
NCDOT Coordinator

SUBJECT: **Application for Section 404 Nationwide Permits 23, 33, and Section 401 Water Quality Certification** for the Proposed Replacement of Bridge 327 on SR 1509 over Little Buffalo Creek in Ashe County, Federal Aid Project No. BRZ-1509(8); Division 11; TIP No. B-5147; \$240.00 debit WBS No. 42308.1.1.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge number 327 on SR 1509 over Little Buffalo Creek in Ashe County with a 49 lf, twin barrel (including a low flow channel), 9'x 8' reinforced concrete box culvert (RCBC) on a new alignment to the north. The existing bridge will be utilized as an onsite detour during construction. There will be 135 lf of permanent impacts to surface waters including 49 lf of fill from the culvert installation and 86 lf of bank stabilization (including floodplain benches) for the project. There will be <0.01 acre of temporary impacts to surface waters resulting from dewatering.

Please see enclosed copies of the Pre-Construction Notification (PCN), DMS Acceptance Letter, Stormwater Management Plan, Permit Drawings, and Roadway Plansheets. A Categorical Exclusion (CE) was completed in July 2015 and distributed shortly thereafter. Additional copies are available upon request.

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



This project calls for a letting date of May 17, 2016 and a review date of March 29, 2016 (permits need to be received by this date); 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 Jeff Hemphill at (919) 707-6126.

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:	<input checked="" type="checkbox"/> Section 404 Permit <input type="checkbox"/> Section 10 Permit	
1b. Specify Nationwide Permit (NWP) number: 23,33 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input checked="" type="checkbox"/> Yes <input 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 checked="" type="checkbox"/> Yes <input 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:	Replacement of Bridge 327 over Little Buffalo Creek on SR 1509	
2b. County:	Ashe	
2c. Nearest municipality / town:	Smethport	
2d. Subdivision name:	<i>not applicable</i>	
2e. NCDOT only, T.I.P. or state project no:	B-5147	
3. Owner Information		
3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation	
3b. Deed Book and Page No.	<i>not applicable</i>	
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>	
3d. Street address:	1598 Mail Service Center	
3e. City, state, zip:	Raleigh, NC 27699-1598	
3f. Telephone no.:	(919) 707-6126	
3g. Fax no.:	(919) 212-5785	
3h. Email address:	jhemphill@ncdot.gov	

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

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 36.4270 (DD.DDDDDD) Longitude: - 81.5017 (-DD.DDDDDD)
1c. Property size:	4.5 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Little Buffalo Creek
2b. Water Quality Classification of nearest receiving water:	C;Tr+
2c. River basin:	New
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: Forest communities, minor commercial and residential development.	
3b. List the total estimated acreage of all existing wetlands on the property: 0.0 acre	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 951 lf	
3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 2 span, 26-foot timber deck bridge with a 49-foot, twin barrel (including a low flow channel), 9' x 8' RCBC on a new alignment to the north with the existing bridge utilized as an onsite detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	<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		
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <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)
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Fill	Little Buffalo Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input checked="" type="checkbox"/> DWQ	10	49
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bank Stabilization (Floodplain Bench)	Little Buffalo Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input checked="" type="checkbox"/> DWQ	10	60
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bank Stabilization	Little Buffalo Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input checked="" type="checkbox"/> DWQ	10	26
Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Dewatering	Little Buffalo Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input checked="" type="checkbox"/> DWQ	10	23
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
3h. Total stream and tributary impacts						135 Perm 23 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 <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				X Permanent X Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

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

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			<input type="checkbox"/> Neuse <input type="checkbox"/> Catawba	<input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Randleman	<input type="checkbox"/> Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required? <input type="checkbox"/> Yes <input type="checkbox"/> No	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
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. See Stormwater Management Plan. Proposed culvert slope is consistent with the existing stream slope. Proposed low flow dimensions through the culvert are consistent with the existing low flow channel dimensions in the stream. Alternating low flow sills/baffles may be required to achieve this. Proposed low flow velocities through the culvert are consistent with the existing low flow velocities in the stream. Proposed culvert is appropriately buried such that the bed material will be retained throughout the culvert length. The dimension pattern and profile of the stream above and below the culvert is not modified by widening the stream channel or by reducing the depth of the stream in the vicinity of the culvert. A low flow floodplain bench is evaluated at the inlet and outlet of multiple barrel culverts. Culvert length has been minimized as much as possible. Culvert alignment avoids sharp bends at inlet and outlet as much as practicable to avoid bank erosion. The amount of stream work to be done up and down stream is minimized as much as possible. The existing bridge will be utilized as an onsite detour.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Best Management Practices for Surface Waters will be used during all phases of construction.		
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	
	<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 checked="" type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> 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.	<input checked="" type="checkbox"/> Yes	
4b. Stream mitigation requested:	49 linear feet	
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input checked="" type="checkbox"/> 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:		
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.

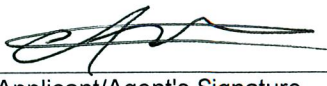
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1				
Zone 2				
6f. Total buffer mitigation required:				

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 checked="" 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.	
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?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input checked="" 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:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No NA
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No NA
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes <input type="checkbox"/> No NA

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:	<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. 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?	<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 checked="" type="checkbox"/> Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? N.C. Natural Heritage Program database; USFWS-website; biological surveys for protected species listed for Ashe County which includes: Bog turtle, Heller's blazing star, Roan mountain bluet, spreading avens, swamp pink, rock gnome lichen, Blue Ridge goldenrod, Carolina northern flying squirrel, Virginia spiraea and the northern long-eared bat. Biological Conclusions of "No Effect" were rendered for these species. Habitat for the Virginia spiraea exists in a small margin along Little Buffalo Creek, but surveys conducted in the study area in 2009 and 2013 resulted in no specimens being found. NCDOT and USFWS are currently formulating guidance for a new protocol with the NLEB. Once this protocol is established, NCDOT will contact the Corps and other pertinent agencies with the updated guidance.		
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? 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)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
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: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
<i>for</i> 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.)	2-12-2016 Date



PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

January 26, 2016

Mr. Richard W. Hancock, P.E.
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: Mitigation Acceptance Letter:

B-5147, Replace Bridge 327 on SR 1509 over Little Buffalo Creek, Ashe County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on January 26, 2016, the impacts are located in CU 03040101 of the Yadkin River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

Yadkin 03040101 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	49.0	0	0	0	0	0	0	0

*Some of the stream impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

This impact and associated mitigation need were under projected by the NCDOT in the 2015 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

If you have any questions or need additional information, please contact Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
Credit Management Supervisor

cc: Mr. Steve Kichefski, USACE – Asheville Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: B-5147





North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.02; Released April 2015)

WBS Element: 42308.1.1 TIP No.: B-5147 County(ies): Ashe Page 1 of 2

General Project Information

WBS Element:	42308.1.1	TIP Number:	B-5147	Project Type:	Bridge Replacement	Date:	9/22/2015
NCDOT Contact:	William S. Zerman, PE			Contractor / Designer:			
	Address:	NC DOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699			Address:		
	Phone:	919-707-6755			Phone:		
	Email:	bzerman@ncdot.gov			Email:		
City/Town:				County(ies):	Ashe		
River Basin(s):	New			CAMA County?	No		
Wetlands within Project Limits?							

Project Description

Project Length (lin. miles or feet):	0.037 Miles	Surrounding Land Use:	Residential and Commercial					
	Proposed Project			Existing Site				
Project Built-Upon Area (ac.)	0.4	ac.	0.2	ac.				
Typical Cross Section Description:	Two -11 ft. travel lane, 3 ft. to 7ft. Shoulders (2 ft. paved)			Two- 10 ft. travel lanes, 3 ft. grass shoulders.				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	1415	Year:	2037	Existing:	1262	Year:	2017
General Project Narrative: (Description of Minimization of Water Quality Impacts)	<p>The project consists of replacing Bridge #327 on SR 1509 over Little Buffalo Creek with approximately 200 ft. of approach roadway. The approach roadway will extend approximately 150 ft from the north end of the proposed culvert and 50 ft. from the south end of the proposed culvert. The approaches will include a 22-foot pavement width providing two lanes. Three-foot grass shoulders will be provided on each side (7-foot shoulders where guardrail is required). The Existing single span 26 ft long bridge will be replaced with new 48.5 ft. long (2- barrel 9'x8' RCBC) located 50 ft. north of existing location.</p> <p>The proposed culvert will be buried 1 ft. with additional 1 ft., bench in barrel 1 for low flow fish passage. The culvert maintains the existing stream slope, low flow channel dimensions, low flow velocities and provides a smooth transition from upstream to downstream with no sharp bend at the inlet or outlet. The stream channel is relatively straight through the reach of the stream. The stream slope is also constant through the reach of the stream up and downstream of where the culvert will be placed.</p> <p>NCWRC has identified Little Buffalo Creek as supporting a trout population. Therefore, a moratorium on all in-stream work and land disturbance within the 25-foot trout buffer will be in place from October 15 to April 15 of any given year. Sediment and erosion control measures should adhere to the design standards for sensitive watersheds.</p> <p>Floodplain benches will be used up and downstream of the culvert.</p>							

Waterbody Information

Surface Water Body (1):	Little Buffalo Creek		NCDWR Stream Index No.:	10-2-20-1			
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C					
	Supplemental Classification:	Trout Waters (Tr)+					
Other Stream Classification:							
Impairments:	Benthos Fair						
Aquatic T&E Species?	Comments:						
NRTR Stream ID:							
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Buffer Rules in Effect:	N/A		
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		Dissipator Pads Provided in Buffer?			
(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)			



North Carolina Department of Transportation
 Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.02; Released April 2015)

WBS Element: 42308.1.1 **TIP No.:** B-5147 **County(ies):** Ashe **Page** 2 **of** 2

Bridge to Culvert Avoidance and Minimization

Proposed Structure Summary

Sheet No. & Station	Sheet No.: 4	Station: 10+66 -L-	Number of Culverts:	1 (2 barrels)
Drainage Area (ac or sq mi):	3.96 sq mil		Culvert Width/Diameter (ft):	9
Surface Water Body:	(1) Little Buffalo Creek		Culvert Height (ft):	8
Culvert Type:	Reinforced Concrete box culvert		Culvert Length (ft)	48.5

Avoidance and Minimization Efforts: (Bridge to Culvert)
 Proposed culvert slope is consistent with the existing stream slope. Proposed low flow dimensions through the culvert are consistent with the existing low flow channel dimensions in the stream. Alternating low flow sills/baffles may be required to achieve this. Proposed low flow velocities through the culvert are consistent with the existing low flow velocities in the stream. Proposed culvert is appropriately buried such that the bed material will be retained throughout the culvert length. The dimension pattern and profile of the stream above and below the culvert is not modified by widening the stream channel or by reducing the depth of the stream in the vicinity of the culvert. A low flow floodplain bench is evaluated at the inlet and outlet of multiple barrel culverts. Culvert length has been minimized as much as possible. Culvert alignment avoids sharp bends at inlet and outlet as much as practicable to avoid bank erosion. The amount of stream work to be done up and down stream is minimized as much as possible.

Stream Slope

Existing Average Stream Slope (%):	2.00	%
Proposed Culvert Slope (%):	2.00	%

Fish and/or Aquatic Life Passage

Existing Low Flow Channel Dimensions in the Stream:	10'x0.75'
Proposed Low Flow Dimensions Through the Culvert:	9'x1'
Existing Low Flow Velocities in the Stream (ft/s):	3.8
Proposed Low Flow Velocities Through the Culvert (ft/s):	3.9
Alternating Low Flow Sills/Baffles:	no

Culvert Burial

Proposed Culvert Burial Depth (ft):	1.0'
Existing Streambed Material:	cobble, boulder
Proposed Sills/Baffles:	culvert buried 1', additional 1' sill in barrel 1, barrel 2 is low flow channel

Culvert/Stream Alignment

Stream Patterns Upstream and Downstream of the Culvert that Could Affect Fish Passage and Bank Stability:	none	
Bed Forms Impacted by Culvert (riffles, pools, glides, etc.):	none	
Low Flow Floodplain Bench Required? (provide justification)	Yes	low flow bench was used to direct flow to low flow channel in barrel 2
Sharp Bends at Inlet/Outlet? (describe culvert alignment with stream)	No	
Stream Realignment Necessary? (provide justification)	No	
Bank Stabilization:	bank stabilization and floodplain benching used both 44' up and 39' downstream of proposed culvert	

Outlet Velocities

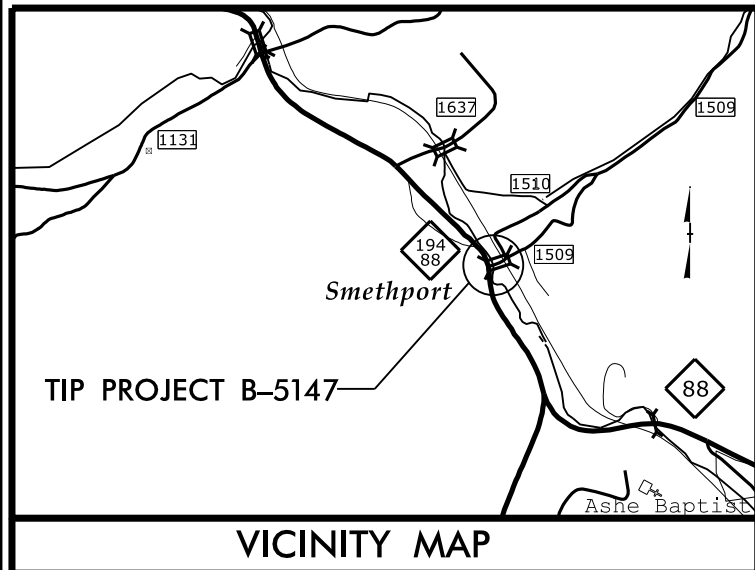
Natural Stream Channel 2-yr Velocity (ft/s):	6.3	Natural Stream Channel 10-yr Velocity (ft/s):	8.6
Proposed Culvert 2-yr Outlet Velocity (ft/s):	7.8	Proposed Culvert 10-yr Outlet Velocity (ft/s):	10.5

Roadway Geometric Considerations

Evaluate/Describe Roadway Geometric Constraints:
 none

09/08/99

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**PERMIT DRAWING
SHEET 1 OF 6**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5147	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42308.1.1	BRZ-1509(8)	PE	
42308.2.1		ROW /UTIL.	

ASHE COUNTY

**LOCATION: BRIDGE 327 OVER LITTLE BUFFALO CREEK
ON SR 1509 (CLAYBANK ROAD)**

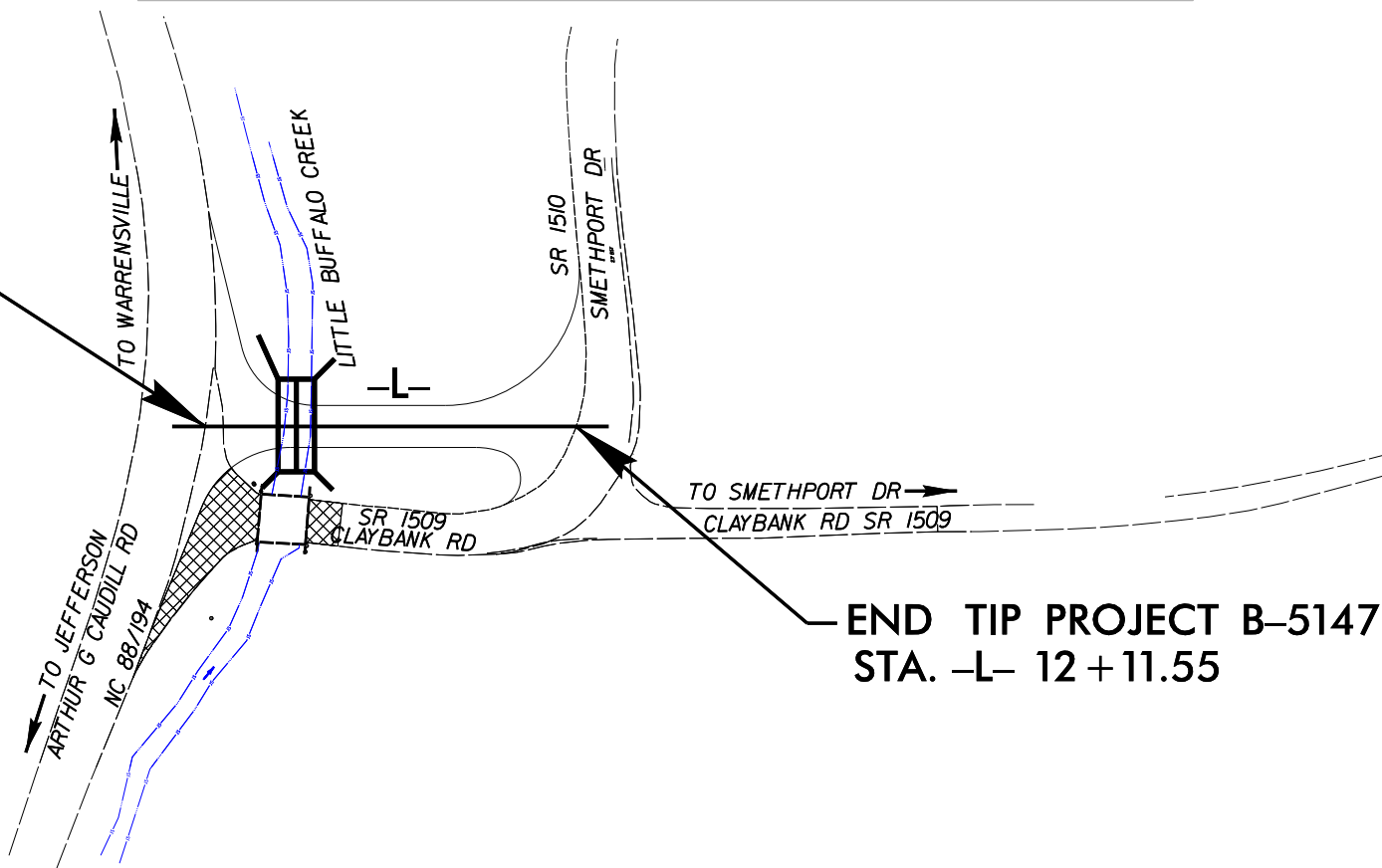
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT

SURFACE WATER IMPACTS PERMIT



CONTRACT: TIP PROJECT: B-5147

**BEGIN TIP PROJECT B-5147
STA. -L- 10+17.43**



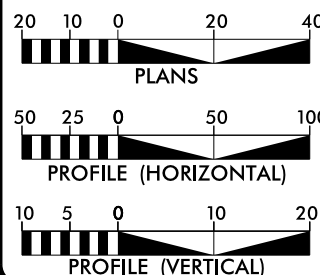
**END TIP PROJECT B-5147
STA. -L- 12+11.55**



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

**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 1262
ADT 2037 = 1415
K = 10 %
D = 55 %
T = 39 % *
V = 40 MPH
* TTST = 1% DUAL 38%
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5147 = 0.037 MILES
TOTAL LENGTH OF TIP PROJECT B-5147 = 0.037 MILES

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

2012 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
SEPTEMBER 18, 2015

LETTING DATE:
FEBRUARY 21, 2017

G. E. BREW, PE
PROJECT ENGINEER

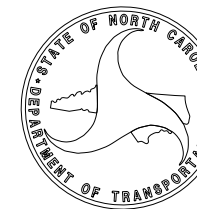
BRYAN KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

**ROADWAY DESIGN
ENGINEER**

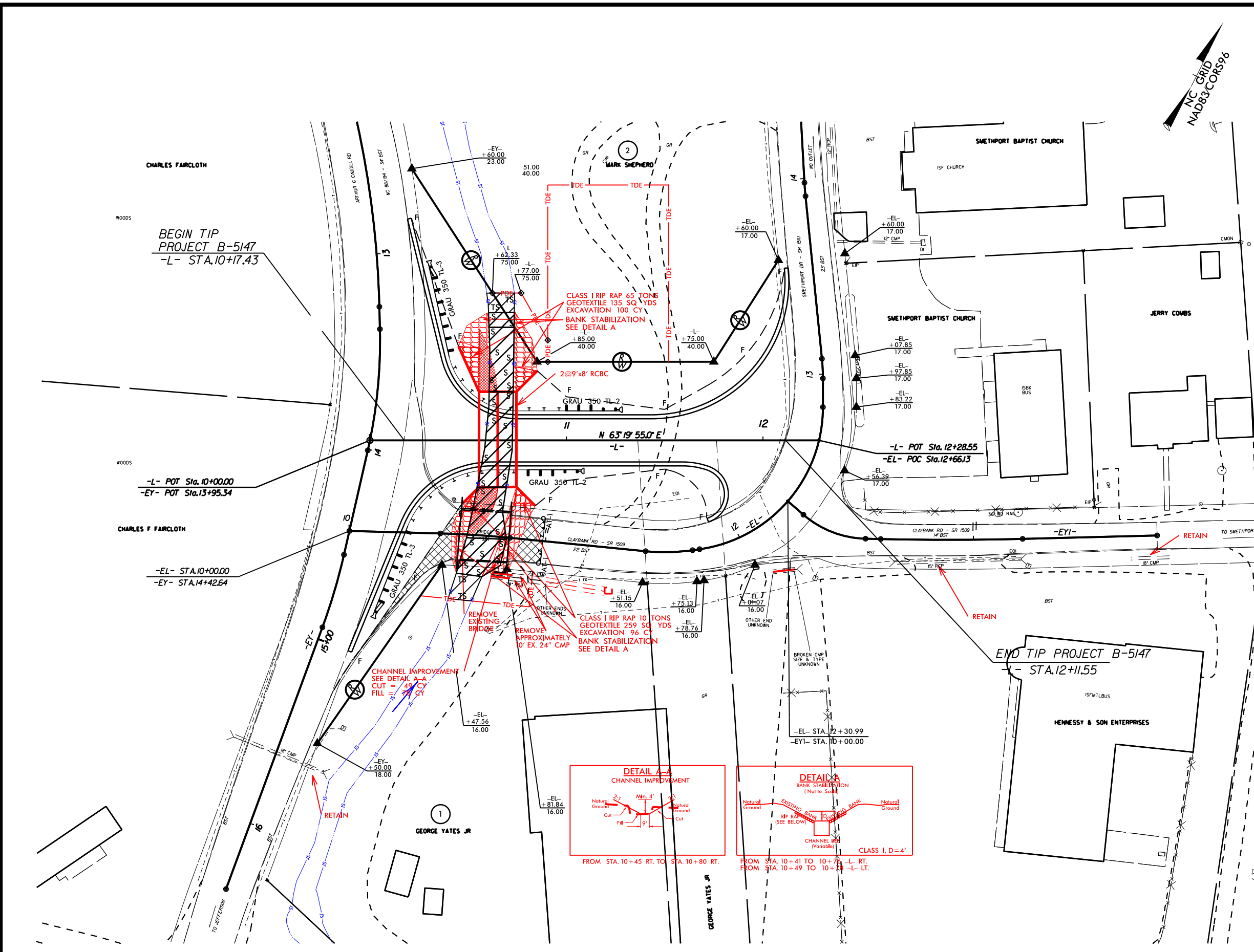
SIGNATURE: _____ P.E.



9/24/2015
amypwen
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\$\$\$\$\$DCN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

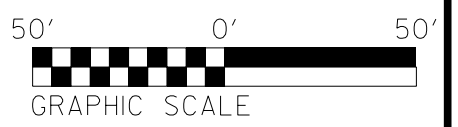
PROJECT REFERENCE NO. B-5147	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PERMIT DRAWING SHEET 2 OF 6



REVISIONS

10/22/2015
 qnguyen
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DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

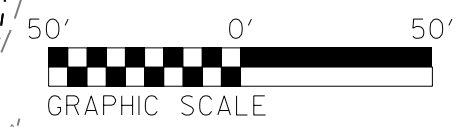
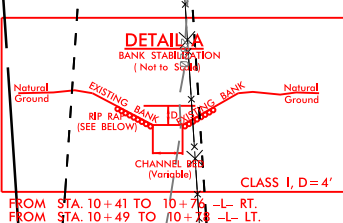
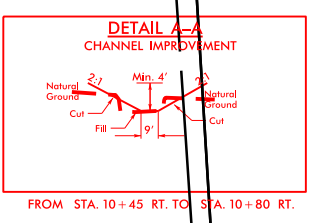
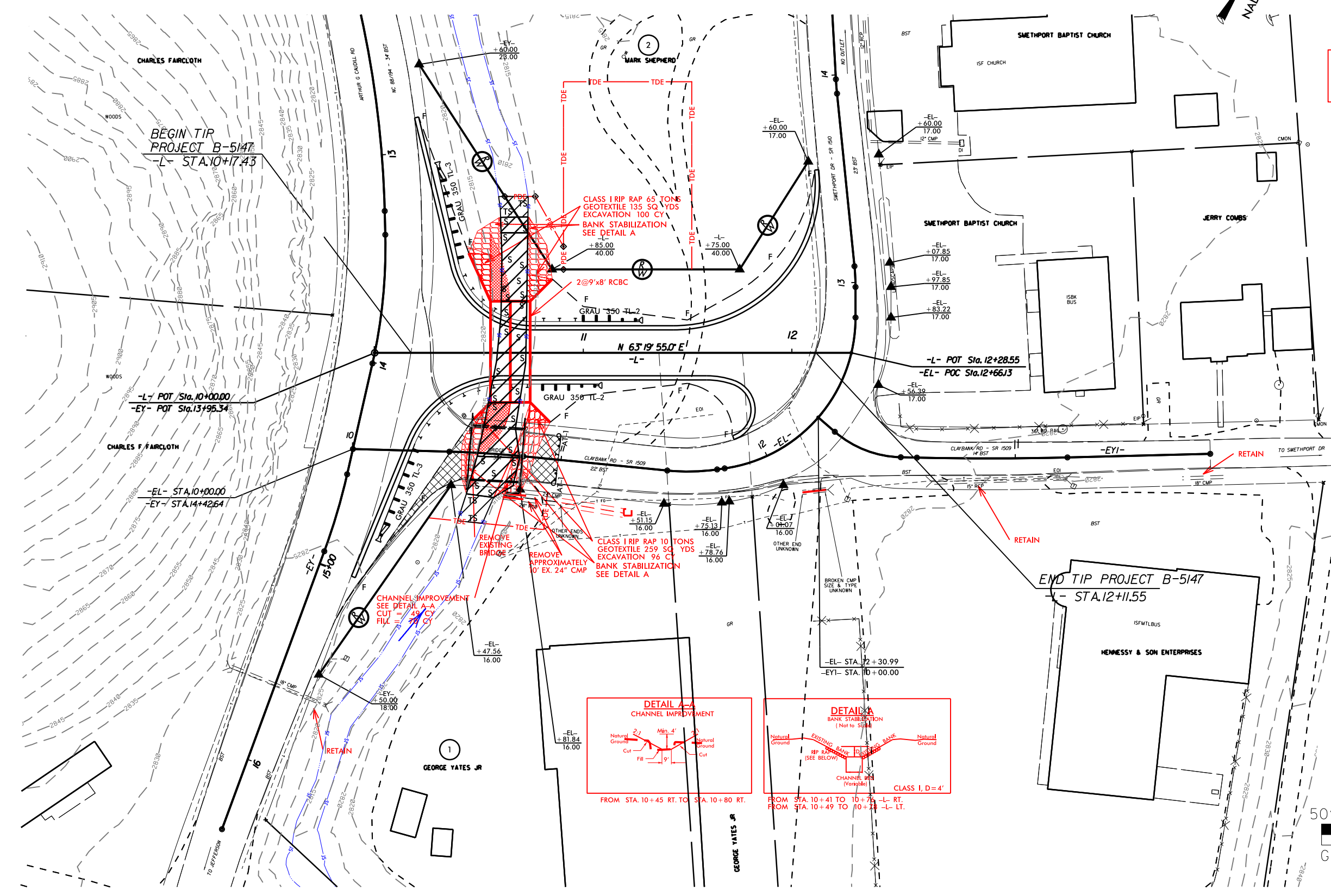
Pavement Removal
 SEE SHEET 2B-1 FOR EXISTING ALIGNMENT DATA
 SEE SHEET 5 FOR -L- PROFILE

PROJECT REFERENCE NO. B-5147	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PERMIT DRAWING
 SHEET 3 OF 6

8/17/99

REVISIONS



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

Pavement Removal
 SEE SHEET 2B-1 FOR EXISTING ALIGNMENT DATA
 SEE SHEET 5 FOR -L- PROFILE

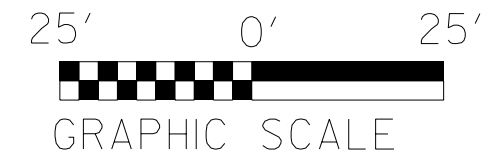
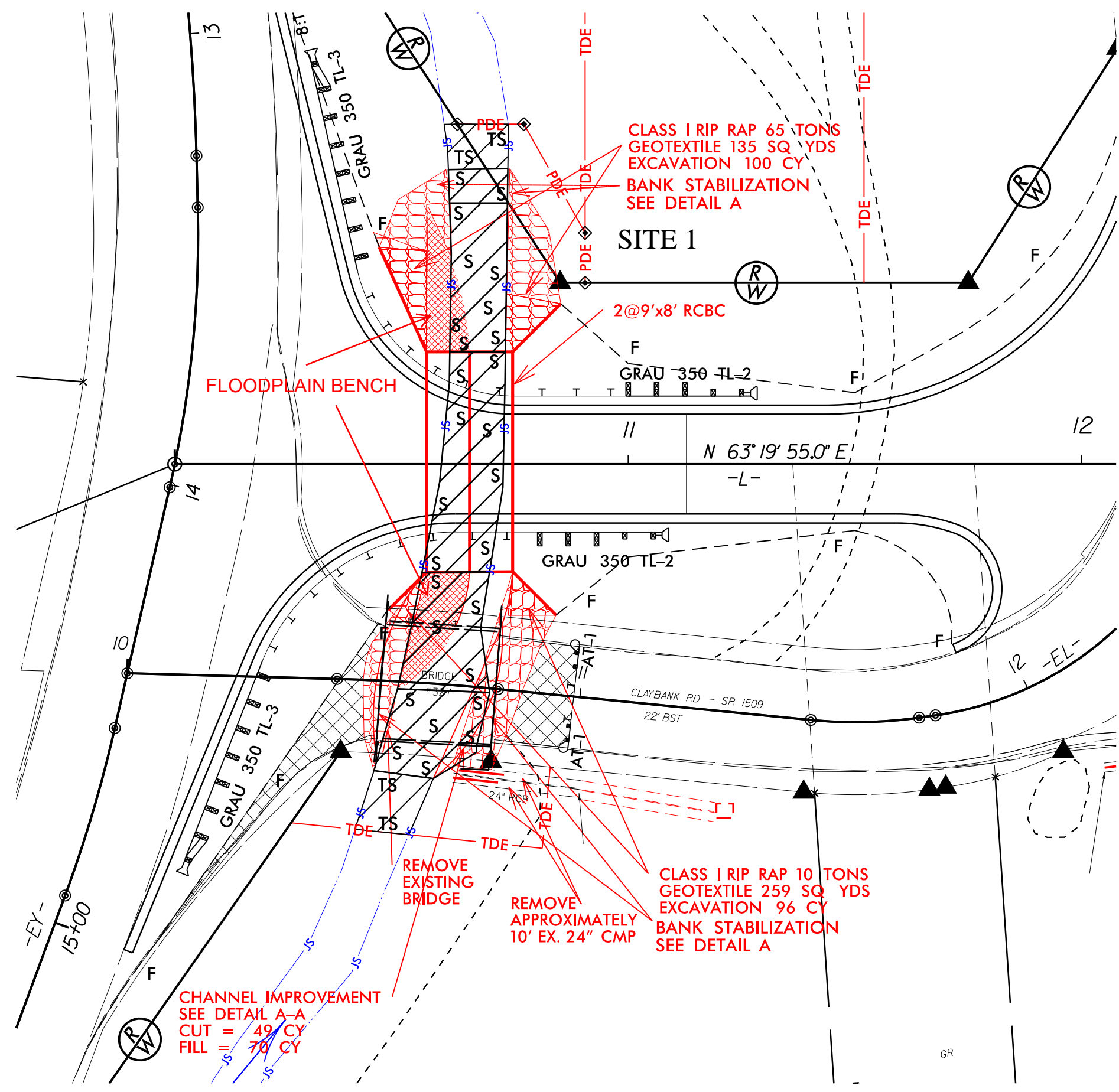
10/22/2015
 qnguyen
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PROJECT REFERENCE NO. B-5147	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

**PERMIT DRAWING
SHEET 4 OF 6**



SITE 1 ENLARGEMENT



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- Pavement Removal

REVISIONS

8/17/99

10/22/2015
 qtnguyen
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5/14/99

PROJECT REFERENCE NO. SHEET NO.

B-5147 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 5 OF 6

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 590	CFS
DESIGN FREQUENCY	= 5+	YRS
DESIGN HW ELEVATION	= 2818J	FT
BASE DISCHARGE	= 1500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2820.88	FT
OVERTOPPING DISCHARGE	= 602	CFS
OVERTOPPING FREQUENCY	= 5+	YRS
OVERTOPPING ELEVATION	= 2818J	FT

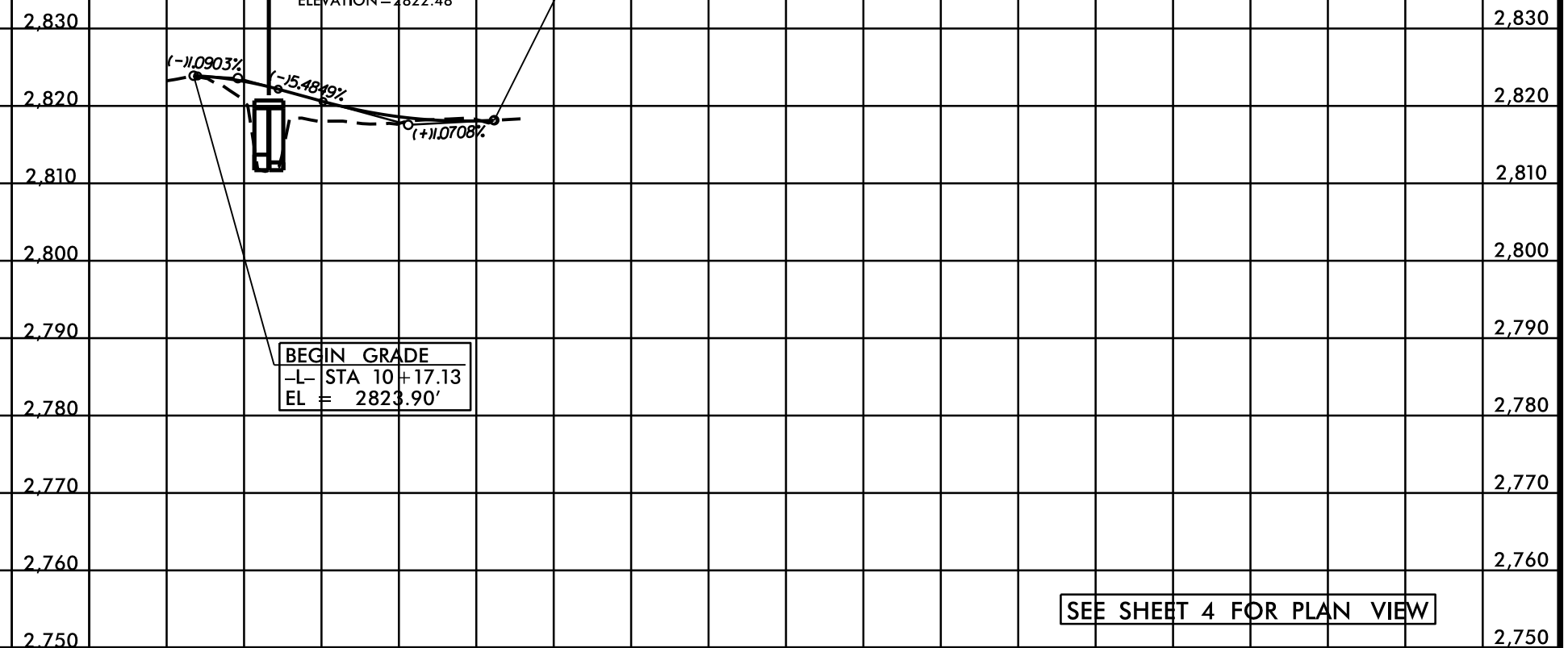
PI = 10+46.00
EL = 2823.59'
VC = 32'
K = 12
20 = mph

PI = 11+56.00
EL = 2817.56'
VC = 10'
K = 17
15 = mph

END GRADE
-L- STA 12+11.55
EL = 2818.15'

STA 10+66 -L-
2@ 9'X8' RCBC EMBEDDED 1 FT
SKEW 90
ELEVATION = 2822.48

BEGIN GRADE
-L- STA 10+17.13
EL = 2823.90'



SEE SHEET 4 FOR PLAN VIEW

10/2/2015
qtnguyen
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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
	10+54 / 10+72 -L-	2 @ 9' X 8' RCBC						0.02		49		
	10+49 / 10+69 -L- RT	FLOODPLAIN BENCH						< 0.01		27		
	10+60 / 10+73 -L- LT	FLOODPLAIN BENCH						< 0.01		33		
	10+43 / 10+66 -L- RT	BANK STABILIZATION						< 0.01	< 0.01	19	13	
	10+60 / 10+73 -L- LT	BANK STABILIZATION						< 0.01	< 0.01	7	10	
TOTALS*:								0.05	< 0.01	135	23	0

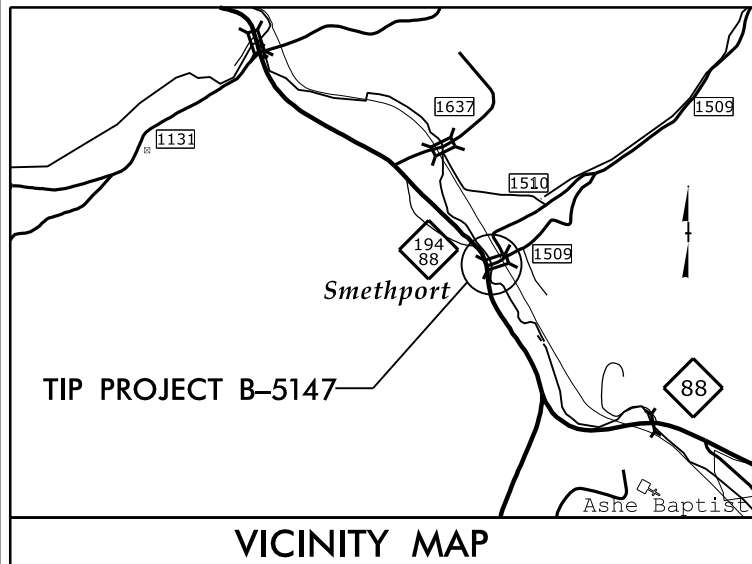
*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 10/02/2015
 ASHE COUNTY
 B-5147
 42308.1.1
 SHEET 6 OF 6

09/08/99

See Sheet 1-A For Index of Sheets



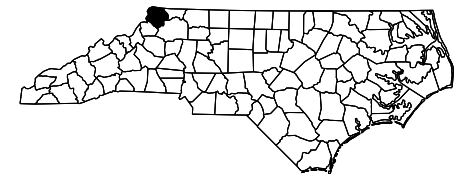
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

**LOCATION: BRIDGE 327 OVER LITTLE BUFFALO CREEK
ON SR 1509 (CLAYBANK ROAD)**

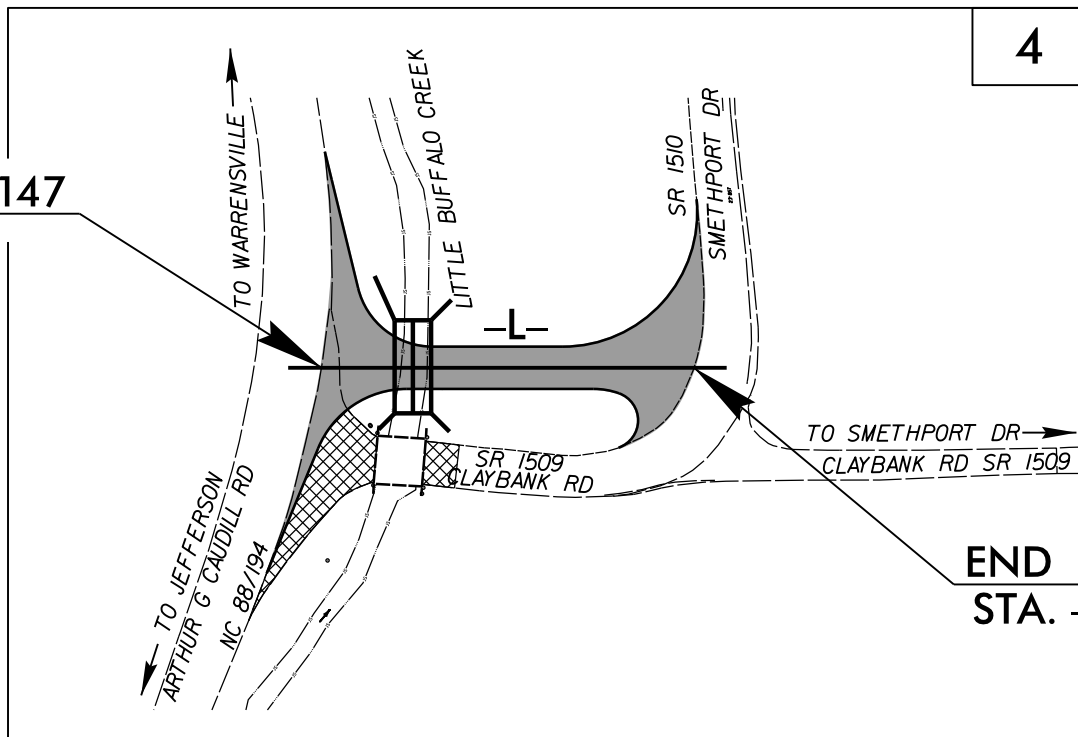
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5147	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42308.1.1	BRZ-1509(8)	PE	
42308.2.1		ROW /UTIL.	



CONTRACT: TIP PROJECT: B-5147

**BEGIN TIP PROJECT B-5147
STA. -L- 10+17.43**



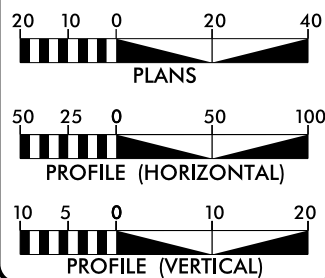
**END TIP PROJECT B-5147
STA. -L- 12+11.55**



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THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2017 = 1262
ADT 2037 = 1415
K = 10 %
D = 55 %
T = 39 % *
V = 40 MPH
* TTST = 1% DUAL 38%
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5147 = 0.037 MILES
TOTAL LENGTH OF TIP PROJECT B-5147 = 0.037 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 18, 2015

LETTING DATE:
MAY 17, 2016

G. E. BREW, PE
PROJECT ENGINEER

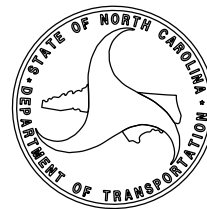
BRYAN KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



19-OCT-2015 10:58 R:\Roadway\Proj\B5147_Rdy_Tsh.dgn \$\$\$USERNAME\$\$\$

02/03/15

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	○ EP
Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	MLB
Proposed Wetland Boundary	MLB
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	○
Well	○
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	□
Dam	▬

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⚡
Proposed Lateral, Tail, Head Ditch	▬
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	□
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite R/W Marker	○
Proposed Control of Access Line with Concrete CA Marker	○
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----
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	XXXX

VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	☼☼☼☼
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	⊕
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
H-Frame Pole	●
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	⊕
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
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	□
TV Tower	⊗
U/G TV Cable Hand Hole	⊕
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

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

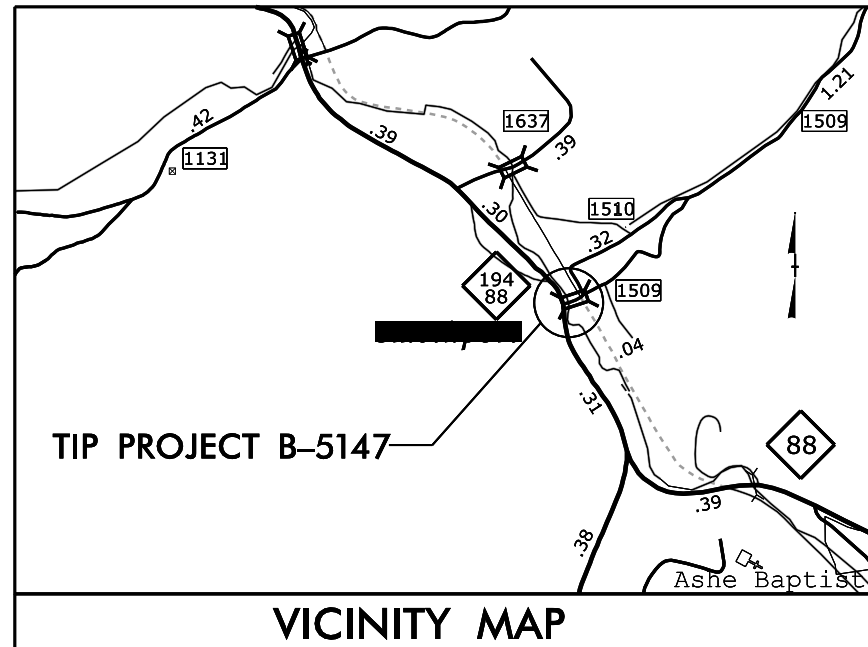
SANITARY SEWER:

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	⊕
Utility Unknown U/G Line	UTUL
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.

SURVEY CONTROL SHEET B-5147



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	983564.9889	1263901.9576	2821.03	OUTSIDE PROJECT LIMITS	
4	BL-4	983579.1061	1264217.3353	2820.10	OUTSIDE PROJECT LIMITS	
1	GPS B5147-1	983784.2400	1264030.8120	2817.10	11+93.90	198.34 LT
2	GPS B5147-2	984314.9780	1264890.1120	2838.44	OUTSIDE PROJECT LIMITS	

BY POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5	BY-5	984013.1664	1263569.4436	2816.63	OUTSIDE PROJECT LIMITS	
30	BY	983564.9889	1263901.9576	2821.03	OUTSIDE PROJECT LIMITS	
6	BY-6	983253.7653	1264012.8072	2825.97	OUTSIDE PROJECT LIMITS	

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
40	BY-1	983579.1061	1264217.3353	2820.10	OUTSIDE PROJECT LIMITS	
7	BY1-7	983779.9049	1264496.5067	2832.64	OUTSIDE PROJECT LIMITS	

 BM1 ELEVATION = 2827.58
 N 983265 E 1264033
 L STATION 12+29.00
 S 18°13'34.33" W DIST 376.37
 BM #1 RR SPIKE IN 16" PINE

 BM2 ELEVATION = 2822.55
 N 983945 E 1264211
 L STATION 12+29.00
 N 10°39'14.80" E DIST 328.35
 BM #2 RR SPIKE IN 18" PINE

●
 NC DOT GPS STATION B5147-2
 LOCALIZED PROJECT COORDINATES
 N= 984314.9780
 E= 1264890.1120
 ELEVATION= 2838.4400.

●
 NC DOT GPS STATION B5147-1
 LOCALIZED PROJECT COORDINATES
 N= 983784.2400
 E= 1264030.8120
 ELEVATION= 2817.1040'

BEGIN TIP PROJECT B-5147
 STA. -L- 10+17.43
 N=983527.7909
 E=1263962.1353

NC GRID
 NAD83/CORS96

DATUM DESCRIPTION

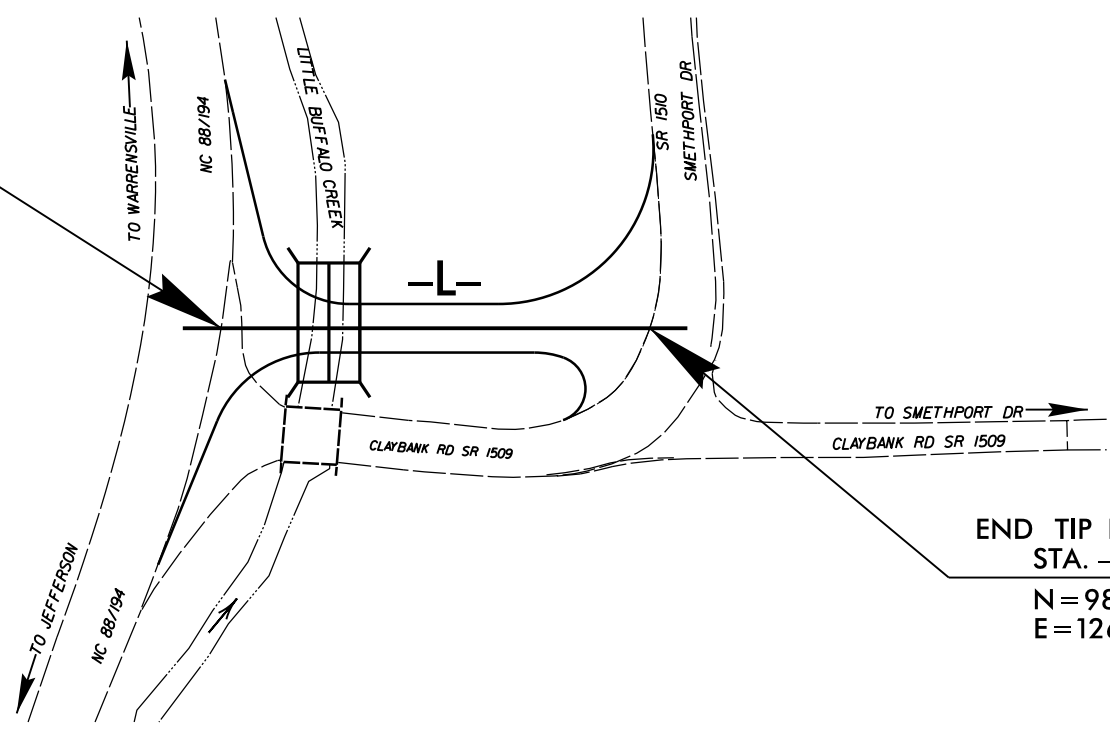
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5147-1"

WITH NAD 83/CORS96 STATE PLANE GRID COORDINATES OF
 NORTHING: 983784.2398(ft) EASTING: 1264030.8118(ft)
 ELEVATION: 2817.1040(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .9999534122

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5147-1" TO -L- STATION 10+17.43 IS
 S 14°59'31" W 265.49'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88



END TIP PROJECT B-5147
 STA. -L- 12+11.55
 N=983614.9160
 E=1264135.6051

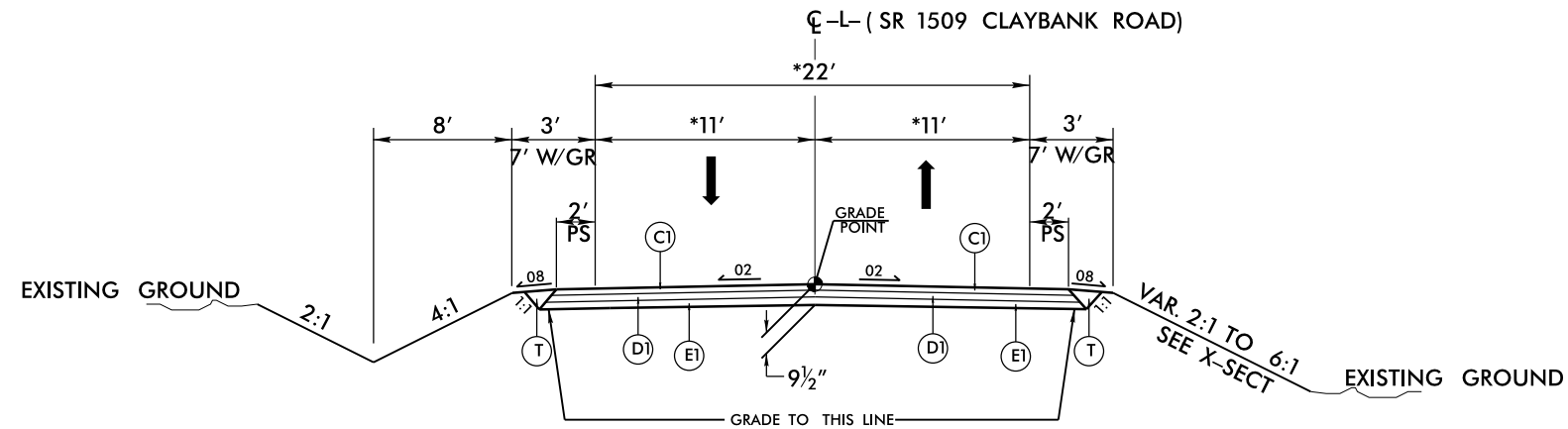
NOTE: DRAWING NOT TO SCALE

6/2/99
 19-OCT-2015 10:58
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PROJECT REFERENCE NO. B-5147	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
T	EARTH MATERIAL.

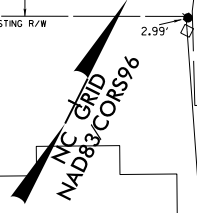
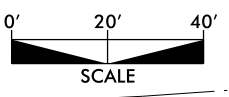
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

- L- STA 10+17.43 TO STA 12+11.55
- *VARIABLE WIDTHS AT INTERSECTIONS SEE PLANS



PI Sta 10+88.93 $\Delta = 2' 45" 25.8" (LT)$ $D = 3' 49" 11.0"$ $L = 72.18'$ $T = 36.0'$ $R = 1500.00'$	PI Sta 10+28.52 $\Delta = 39' 37" 34.1" (LT)$ $D = 114' 35" 29.6"$ $L = 34.58'$ $T = 18.0'$ $R = 500.00'$
---	---

PI Sta 11+67.82 $\Delta = 3' 01" 42.0" (RT)$ $D = 11' 27" 33.0"$ $L = 26.43'$ $T = 13.22'$ $R = 500.00'$	PI Sta 12+68.26 $\Delta = 13' 41" 21.5" (RT)$ $D = 11' 36" 10.4"$ $L = 117.98'$ $T = 59.27'$ $R = 493.81'$
--	--

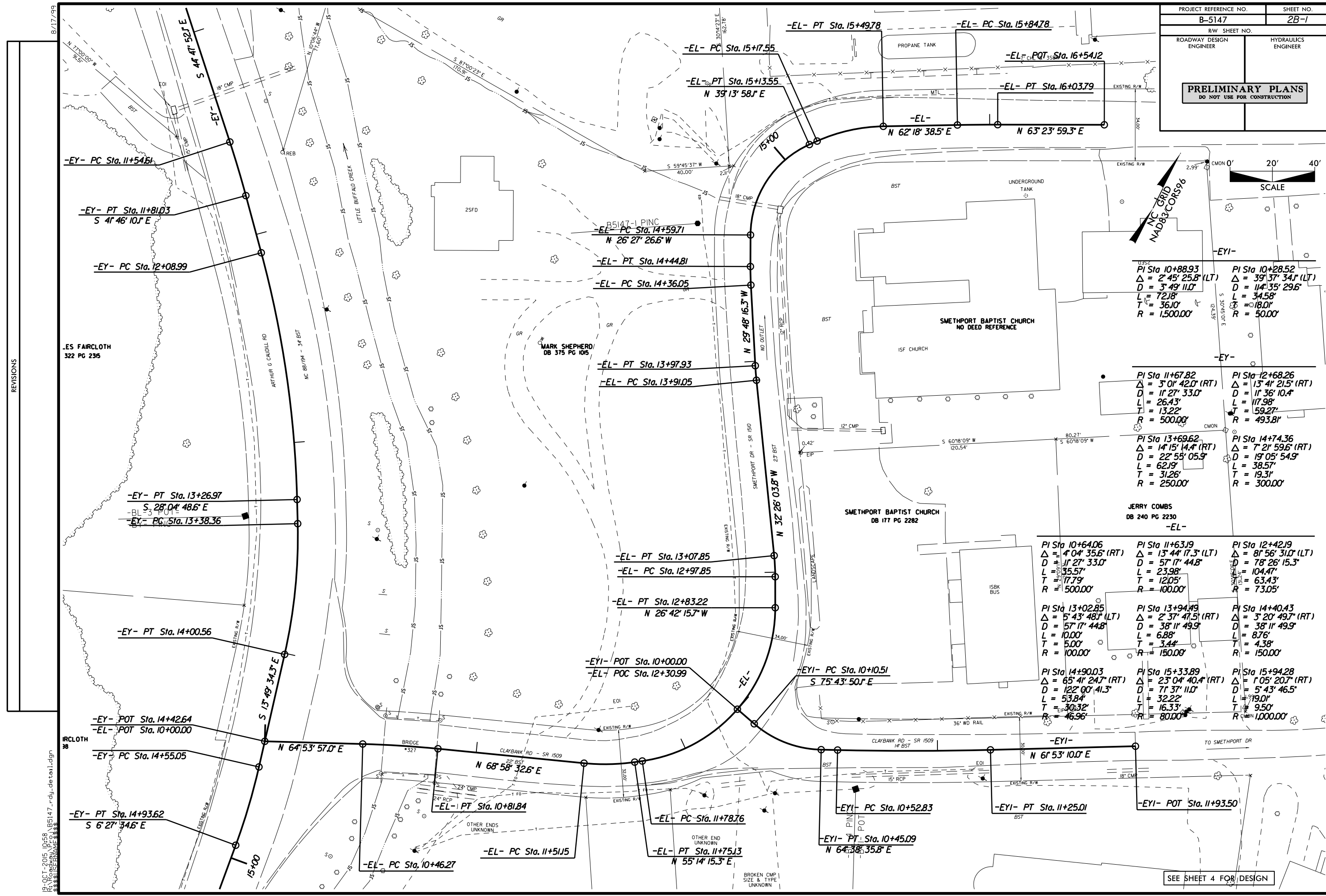
PI Sta 13+69.62 $\Delta = 14' 15" 14.4" (RT)$ $D = 22' 55" 05.9"$ $L = 62.19'$ $T = 31.26'$ $R = 250.00'$	PI Sta 14+74.36 $\Delta = 7' 21" 59.6" (RT)$ $D = 19' 05" 54.9"$ $L = 38.57'$ $T = 19.31'$ $R = 300.00'$
---	--

JERRY COMBS DB 240 PG 2230 -EL-

PI Sta 10+64.06 $\Delta = 4' 04" 35.6" (RT)$ $D = 11' 27" 33.0"$ $L = 35.57'$ $T = 17.79'$ $R = 500.00'$	PI Sta 11+63.19 $\Delta = 13' 44" 17.3" (LT)$ $D = 57' 17" 44.8"$ $L = 23.98'$ $T = 12.05'$ $R = 100.00'$	PI Sta 12+42.19 $\Delta = 81' 56" 31.0" (LT)$ $D = 78' 26" 15.3"$ $L = 104.47'$ $T = 63.43'$ $R = 73.05'$
--	---	---

PI Sta 13+02.85 $\Delta = 5' 43" 48.1" (LT)$ $D = 57' 17" 44.8"$ $L = 10.00'$ $T = 5.00'$ $R = 100.00'$	PI Sta 13+94.49 $\Delta = 2' 37" 47.5" (RT)$ $D = 38' 11" 49.9"$ $L = 6.88'$ $T = 3.44'$ $R = 150.00'$	PI Sta 14+40.43 $\Delta = 3' 20" 49.7" (RT)$ $D = 38' 11" 49.9"$ $L = 8.76'$ $T = 4.38'$ $R = 150.00'$
---	--	--

PI Sta 14+90.03 $\Delta = 65' 41" 24.7" (RT)$ $D = 122' 00" 41.3"$ $L = 53.84'$ $T = 30.32'$ $R = 46.96'$	PI Sta 15+33.89 $\Delta = 23' 04" 40.4" (RT)$ $D = 71' 37" 11.0"$ $L = 32.22'$ $T = 16.33'$ $R = 80.00'$	PI Sta 15+94.28 $\Delta = 1' 05" 20.7" (RT)$ $D = 5' 43" 46.5"$ $L = 99.01'$ $T = 9.50'$ $R = 1000.00'$
---	--	---

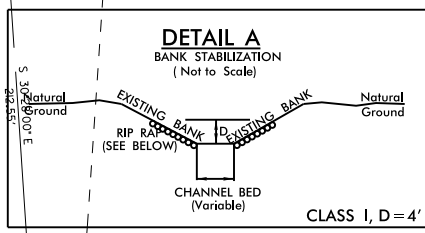
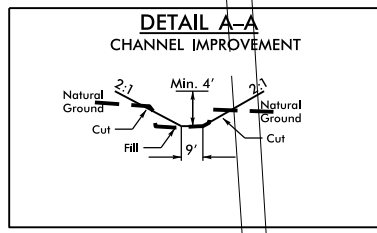
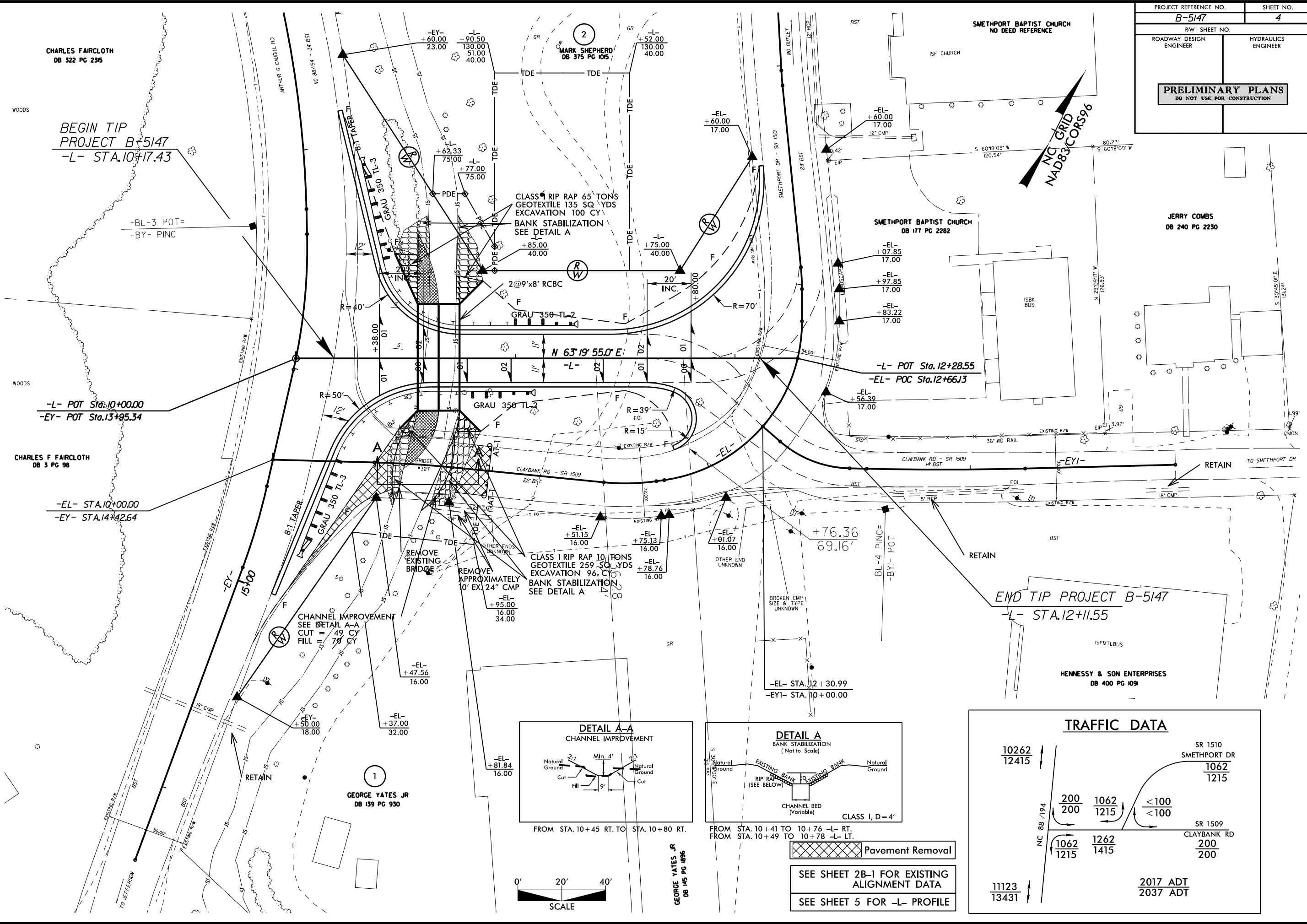


REVISIONS

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 B5147-1-PIN

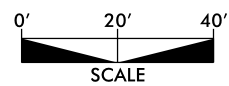
SEE SHEET 4 FOR DESIGN

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 8/17/99
 REVISIONS
 GEORGE YATES JR DB 145 PG 1896



TRAFFIC DATA

10262 12415	SR 1510 SMETHPORT DR 1062 1215
200 200	1062 1215
1062 1215	<100 <100
11123 13431	SR 1509 CLAYBANK RD 200 200
	2017 ADT 2037 ADT



Pavement Removal
 SEE SHEET 2B-1 FOR EXISTING ALIGNMENT DATA
 SEE SHEET 5 FOR -L- PROFILE

5/14/99

PROJECT REFERENCE NO. SHEET NO.

B-5147 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

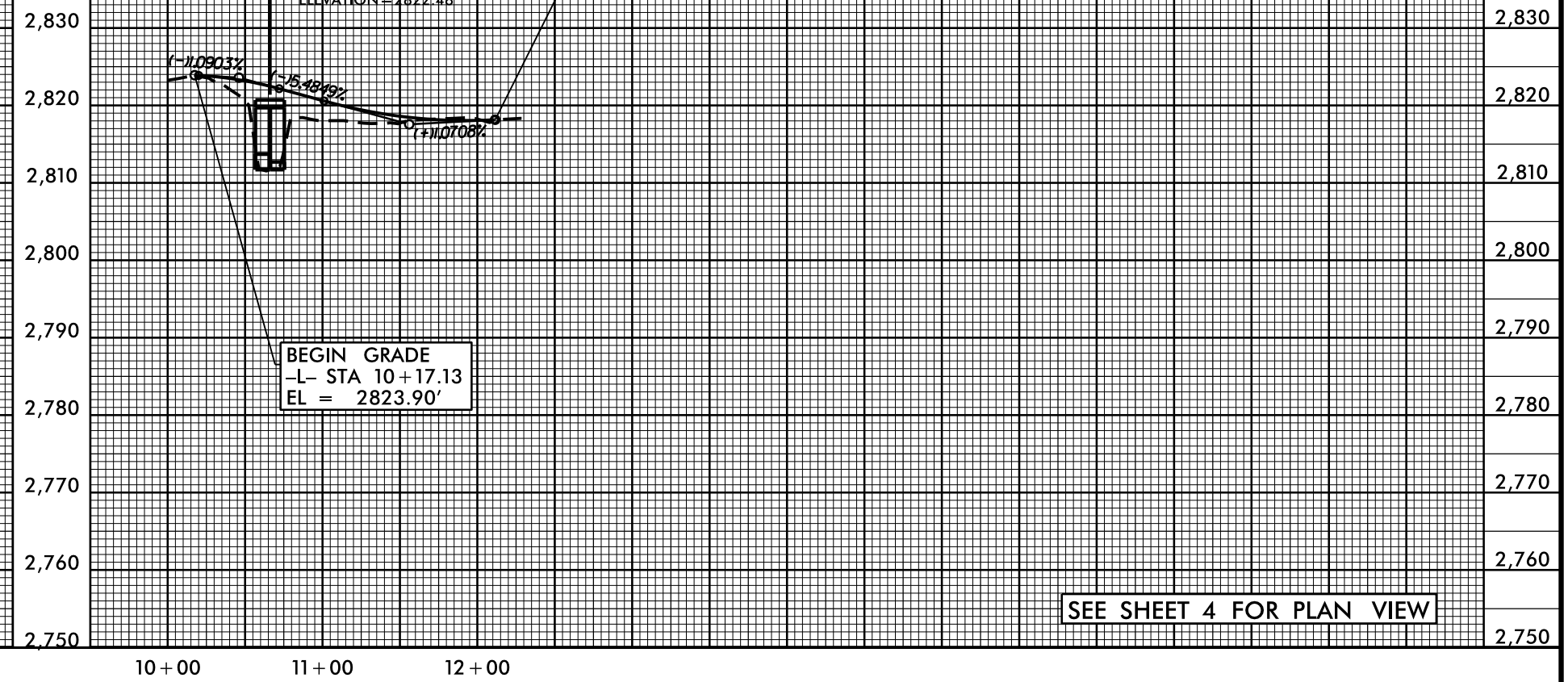
CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 590	CFS
DESIGN FREQUENCY	= 5+	YRS
DESIGN HW ELEVATION	= 2818J	FT
BASE DISCHARGE	= 1500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2820.88	FT
OVERTOPPING DISCHARGE	= 602	CFS
OVERTOPPING FREQUENCY	= 5+	YRS
OVERTOPPING ELEVATION	= 2818J	FT

PI = 10+46.00
EL = 2823.59'
VC = 52'
K = 12
20= mph

PI = 11+56.00
EL = 2817.56'
VC = 110'
K = 17
15= mph

END GRADE
-L- STA 12+11.55
EL = 2818.15'

STA 10+66 -L-
2 @ 9'X8' RCBC EMBEDDED 1 FT
SKW 90
ELEVATION = 2822.48



SEE SHEET 4 FOR PLAN VIEW

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