STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

November 4, 2009

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

ATTN: Ms. Kim Garvey
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 3** for the proposed replacement of Bridge No. 41 over Naked Creek on NC 73, Richmond County, Division 8. State Project No. 8.1581401, F.A. Project No. BRSTP – 73(10), T.I.P. Project No. B-4614.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 41 over Naked Creek on NC 73. Impacts will be <0.03 acres of permanent riparian wetland impacts resulting from roadway fill and excavation and 0.06 acres of temporary wetland impacts. An additional 16 square feet (<0.01 acre) of permanent stream impacts will result from the placement of the two interior bents associated with the new bridge.

In addition to the above-mentioned jurisdictional impacts, a total of 0.06 acres of hand clearing will result from the relocation of an aerial power line. Specifically, this work will be performed to allow for aerial line clearance through wetland areas on the north side of the project. The hand clearing impacts will result in the cutting down of trees and brush; however, grubbing will not occur. These hand clearing impacts will not result in the permanent conversion of the currently forested wetland to a persistent emergent herbaceous wetland.

Please see the enclosed copies of the Pre-Construction Notification (PCN), permit drawings, roadway design plans, and stormwater management plan for the subject project. A state stormwater permit is currently pending. A Jurisdictional Determination (JD) request packet was submitted to the Corps in January 2007. However, only a verbal verification was received following the March 1, 2007 site visit between Regulatory Specialist Richard Spencer and Environmental Services, Inc. biologists. A Programmatic Categorical Exclusion (PCE) was completed for this project in April 2009 and distributed shortly after completion. Additional copies are available upon request.

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

TELEPHONE: 919-431-2000

FAX: 919-431-2001

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
4701 Atlantic Ave.
Suite 116
Raleigh, NC 27604

Please note that this project is an accelerated bridge project on NCDOT's Maintenance of Effort list. The NCDOT Administration has deemed these projects highest priority. This project calls for a letting date of March 16, 2010 and a review date of January 26, 2010; however, the let date may advance as additional funding becomes available.

A copy of this notice will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/. If you have any questions or need additional information, please contact Jim Mason at either (919) 431-1593 or jsmason@ncdot.gov.

Sincerely,

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

w/attachment
Mr. Brian Wrenn, NCDWQ (2 copies)

w/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Tim Johnson, P.E., Division 8 Engineer
Mr. Art King, Division 8 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Tracy Walter, PDEA Project Planning Engineer

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

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

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

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

☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization

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

2. Project Information

2a. Name of project:	Replacement of Bridge No. 41 over Naked Creek on NC 73
2b. County:	Richmond
2c. Nearest municipality / town:	Norman
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4614

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 431-1593
3g. Fax no.:	(919) 431-2002
3h. Email address:	jsmason@ncdot.gov

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

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 35.17108 (DD.DDDDDD)	Longitude: - 79.68237 (-DD.DDDDDD)
1c. Property size:	1.40 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Naked Creek	
2b. Water Quality Classification of nearest receiving water:	WS-II ORW	
2c. River basin:	Lumber	
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: NC 73 is classified as a Rural Major Collector. Land use within the project vicinity includes residential, cropland and pasture, confined animal operations, young pine plantations, hardwood swamp, and oak-hickory forest.		
3b. List the total estimated acreage of all existing wetlands on the property: 0.13		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 92		
3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge (see Programmatic Categorical Exclusion document).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing the existing four-span, 69-foot bridge with a three-span, 140-foot bridge on the existing alignment. The proposed structure will be a cored slab bridge with a clear roadway width of 35 feet, 10 inches. An off-site detour will be utilized during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: Neither a preliminary nor an approved JD has been issued for this project. However, all features were verified during a site visit between Regulatory Specialist Richard Spencer and Environmental Services, Inc. (ESI) biologists on March 1, 2007.	☒ Yes ☐ No ☐ Unknown	
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☐ Final	
4c. If yes, who delineated the jurisdictional areas? Name (if known): Gail Tyner, Todd Milam	Agency/Consultant Company: ESI Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. March 1, 2007 (site visit only)		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown	
5b. If yes, explain in detail according to "help file" instructions.		

6. **Future Project Plans**		
6a. Is this a phased project?	☐ Yes	☒ No
6b. If yes, explain.		

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

☒ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 ☒ P ☐ T	Roadway Fill	Riverine Swamp Forest	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.02
Site 2 ☒ P ☐ T	Excavation	Riverine Swamp Forest	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 3 ☐ P ☒ T	Temporary Fill in Wetlands (Mechanized Clearing)*	Riverine Swamp Forest	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.06
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	<0.03 Perm. 0.06 Temporary

2h. Comments: All impacts are located at Site 1 of the project and are listed above based on impact type.
* Areas of temporary impact will be restored to pre-construction grade, contour, and elevation. They will not be required to be re-planted with tree species (per Kim Garvey, USACE). However, for erosion control purposes, these areas will be seeded with a native seed mix developed for wetland/riparian areas. Once this seed mix is established, the temporary impact areas within the construction easement, but outside of the ROW, will not be maintained and will be allowed to naturally recover. Areas within the ROW and/or permanent utility easement (PUE) will likely be maintained to a certain degree for access and safety purposes. However, these areas will be allowed to re-vegetate with natural species and not be maintained as grassy areas. It should be noted that areas which are going to be temporarily impacted that are within the currently maintained portion of the PUE on the north side of the road do not contain trees and primarily consist of persistent emergent species (pictures and description of community provided via email on November 3, 2009).

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Bents (2) in Creek	Naked Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	40	<0.01 ac.*
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		

Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
				3h. **Total stream and tributary impacts**		<0.01 Perm. 0 Temporary

3i. Comments: *Actual permanent impact is 16 square feet

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
			4f. Total open water impacts	0 Permanent 0 Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba ☐ Tar-Pamlico ☐ Randleman ☐ Other:		
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**		0	0
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.

The proposed bridge is 71 feet longer than the existing bridge and the number of spans has been reduced from four on the existing bridge to three on the proposed bridge. As a result, the number of interior bents in the creek will be reduced from three to two; the proposed bridge will be at approximately the same grade and alignment as the existing structure; the project is a replace-in-place with an offsite detour; Wetlands are present in all four quadrants of the project. Therefore, it is not feasible to avoid wetland impacts. However, the following measures have been taken: roadway approach work has been reduced to minimize fill slope encroachment into the wetlands, no pipes or stormwater devices will directly discharge into wetlands, and areas where temporary jurisdictional impacts (mechanized clearing) will occur will be restored to pre-construction grade, contour, and elevation instead of permanently impacting those sites; Due to Naked Creek's designation as a WS-II ORW water, a Hazardous Spill Basin will be constructed, outside of any jurisdictional wetlands, in the northwest quadrant of the project. Additionally, no direct discharge from the bridge or roadway into Naked Creek will occur; 2:1 slopes will be used (instead of the typical 6:1) on this project; a rip rap energy dissipator will be constructed at the outlet of the pipe system.

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

NCDOT will implement Best Management Practices (BMPs) for Bridge Demolition and Removal. NCDOT's BMPs for the Protection of Surface Waters will be strictly enforced during construction of this project. In addition to standard BMPs, Design Standards in Sensitive Watersheds will be employed during construction. Furthermore, top-down construction will be employed and no temporary structures will be used during 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?	☐ Yes ☒ No
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

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

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

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	0 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres

4h. Comments: Due to the minimal amount of permanent (and overall) impact and the quality of the areas that are being impacted, NCDOT does not propose mitigation for either the <0.03 acres of permanent wetland impacts or the 0.06 acres of temporary impacts. Written and photo documentation regarding the quality of the wetland areas being impacted was sent to USACE electronically on November 3, 2009.

5. Complete if Using a Permittee Responsible Mitigation Plan

5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?	☐ Yes ☒ No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments:	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	n/a %
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached stormwater management plan.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☐ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☒ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☒ No In Process
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☒ No Pending
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☒ No Pending

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes	☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes	☒ No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☒ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? Based on NCDOT field surveys, the N.C. Natural Heritage Program database (last updated July 31, 2009), and the U.S. Fish and Wildlife Service website for Richmond County, it has been determined that the proposed project will have No Effect on either Endangered or Threatened Species (bald eagle [BGPA], red-cockaded woodpecker [E], shortnose sturgeon [E], Carolina heelsplitter [E], Michaux's sumac [E], or rough-leaved loosestrife [E]) or Designated Critical Habitat. Section 7 consultation is not required for the bald eagle. Foraging habitat was present for the red-cockaded woodpecker; however, a survey by NCDOT biologists on August 30, 2007 identified no individuals or nesting habitat. Therefore, a biological conclusion of No Effect was rendered for this species. A re-survey for Michaux's sumac was performed on June 2, 2009 due to the presence of suitable habitat. No Michaux's individuals were present, resulting in the initial biological conclusion of No Effect remaining vaild. No habitat was present for the remaining species and re-surveys were not required.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. J. Thorpe Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	11.4.09 Date

STORMWATER MANAGEMENT PLAN

Project: 33797.1.1
TIP No. B-4614
Richmond County 10/15/2009

Hydraulics Project Manager: W. Henry Wells, Jr., P.E., PLS, CPESC (Sungate Design Group, PA)
Marshal Clawson, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project B-4614 consists of constructing a new bridge 140 feet long to replace the existing bridge #41 in Richmond County on NC 73 over Naked Creek. The total project length is 0.121 miles. The project creates impacts to Naked Creek, which is located in the Lumber River Basin. The project drainage systems consist of grated inlets with associated pipe systems, and a hazardous spill basin at the outlet of the pipe system.

Jurisdiction Stream: Naked Creek

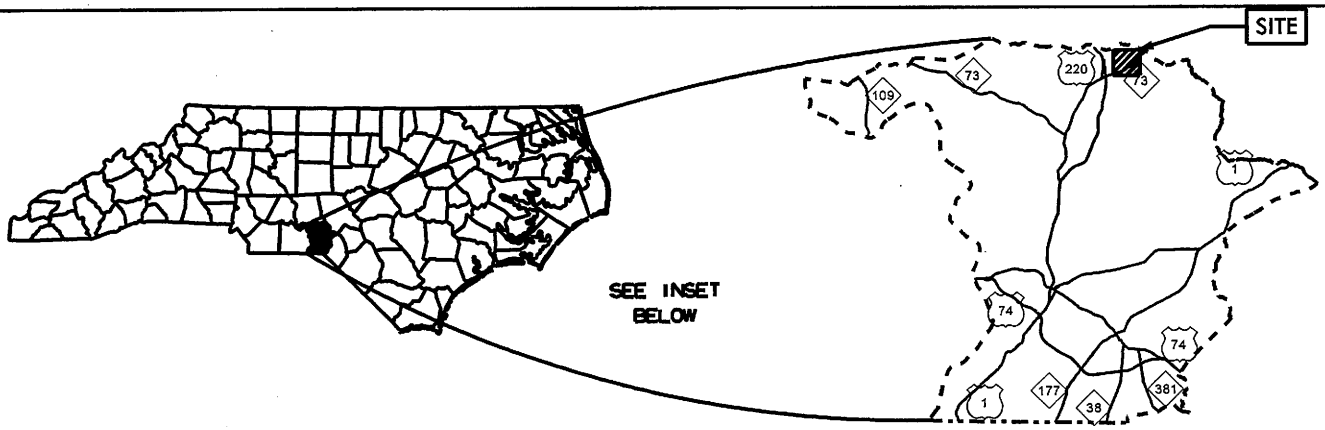
ENVIRONMENTAL DESCRIPTION

The project is located within the Lumber River Basin in Richmond County. There is a wetland site surrounding the bridge that will be impacted by the proposed project. Impacts have been minimized using a hazardous spill at the pipe outlets and reducing the roadway approach work to minimize fill slope encroachment into the wetlands. There is not direct discharge of stormwater into Naked Creek or associated wetlands.

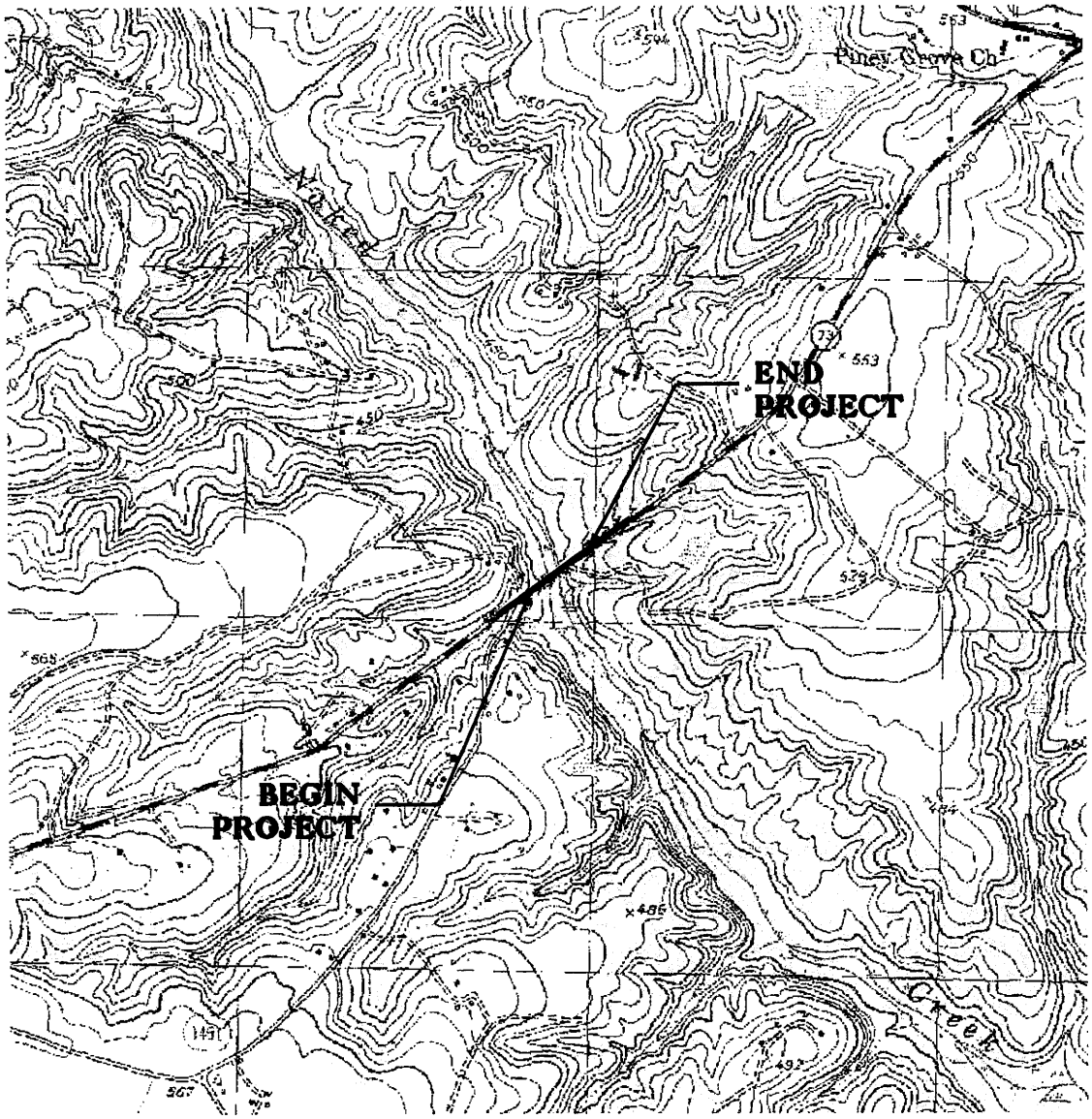
BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

The primary goal of Best Management Practices (BMPs) is to prevent degradation of the states surface waters by the location, construction and operation of the highway system. The BMPs are activities, practices and procedures taken to prevent or reduce stormwater pollution. The BMP measures used on this project to reduce stormwater impacts are:

- Hazardous Spill Basin.
- No direct discharge from the bridge or roadway into Naked Creek.
- Rip Rap energy dissipater at the outlet of the pipe system.



RICHMOND COUNTY



WETLAND/STREAM
IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RICHMOND COUNTY

PROJECT: 33797.1.1 (B-4614)
BRIDGE NO. 41 ON NC 73
OVER NAKED CREEK

SHEET 1 OF 7 10-23-09

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
3	WILLIAM D.CAPEL	1004 MINT ST HIGH POINT, NC 27260
1	LEROY CAPEL	104 CAPEL DR ELLERBE, NC 28338
4	LILLAN ETTA MCFAYDEN SHERRILL	2795 US 220 N HIGHWAY ELLERBE, NC 28338

NCDOT

DIVISION OF HIGHWAYS
RICHMOND COUNTY
PROJECT: 33797.1.1 (B-4614)
BRIDGE NO. 41 ON NC 73
OVER NAKED CREEK

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	21+50-24+50 -L-	Bridge/Road Fill	0.02	0.06	<0.01							
TOTALS:			0.02	0.06	<0.01							

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RICHMOND COUNTY
WBS - 33797.1.1 (B-4614)

SHEET 3 of 7 10/23/09

ATN Revised 3/31/05

09/08/99

TIP PROJECT: B-4614

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4614	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33797.1.1	BRSTP-73(10)	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RICHMOND COUNTY

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

rmit Drawing
eet 4 of 7

ENGLISH

VICINITY MAP

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

LOCATION: BRIDGE NO. 41 OVER NAKED CREEK ON NC 73

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

CFI PLANS

WETLAND/STREAM IMPACTS

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD __

CONTRACT:

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2011 = 1960
ADT 2031 = 3270
DHV = 12%
D = 55%
T = 6% TTST = 2% DUAL = 4%
V = 60 MPH
CLASS = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4614	=	0.095 mi.
LENGTH STRUCTURE TIP PROJECT B-4614	=	0.026 mi.
TOTAL LENGTH TIP PROJECT B-4614	=	0.121 mi.

STEWART
421 Fayetteville Street Mall
Suite 400
Raleigh, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 22, 2010

LETTING DATE:
JANUARY 18, 2011

Prepared in the Office of:
STEWART ENGINEERING
For
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

DREW BAIRD, PE
PROJECT ENGINEER

JONATHAN HEFNER, PE
PROJECT DESIGN ENGINEER

DOUG TAYLOR, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: PE

ROADWAY DESIGN ENGINEER

SIGNATURE: PE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
B-4614	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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Permit Drawing
Sheet 5 of 7

ENGLISH

- ▨ E — DENOTES EXCAVATION IN WETLAND
- ▨ F — DENOTES FILL IN WETLAND
- ⠿ — DENOTES TEMPORARY FILL IN WETLANDS (MECHANIZED CLEARING)

AT MECHANIZED CLEARING LOCATION, RETURN TO PRE-PROJECT CONDITIONS.

DETAIL I
HAZARDOUS SPILLBASIN
TOTAL CAPACITY REQUIRED : 4007cu. ft.
TOTAL CAPACITY PROVIDED : 4188cu. ft.
@ ELEV. 427 W/1Ft. FREEBOARD

DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER NAKED CREEK

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	700	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	424.5	FT
BASE DISCHARGE	=	800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	424.8	FT
OVERTOPPING DISCHARGE	=	>1200	CFS
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING ELEVATION	=	429.06	FT
DATE OF SURVEY	=	9/11/08	
W.S. ELEVATION AT DATE OF SURVEY	=	421.30	FT

PROJECT REFERENCE NO.	SHEET NO.
B-4614	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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Permit Drawing
Sheet 6 of 7

BRIDGE HYDRAULIC DATA

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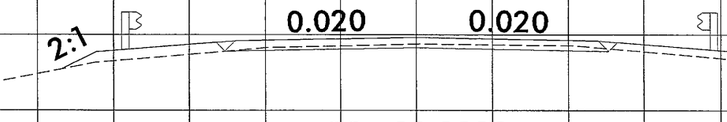
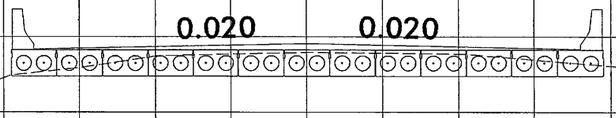
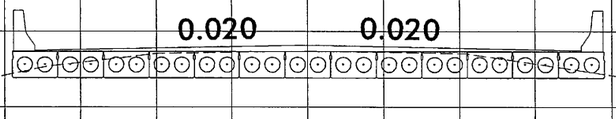
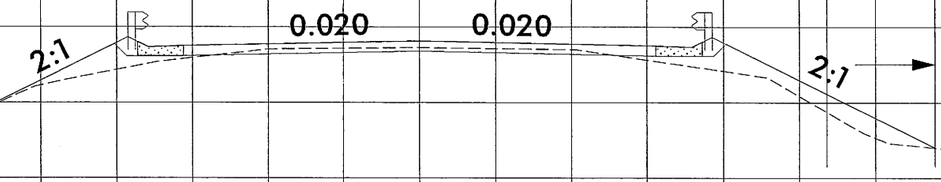








PROJ. REFERENCE NO.	SHEET NO.
B-4614	X-2

Permit Drawing
Sheet 7 of 7

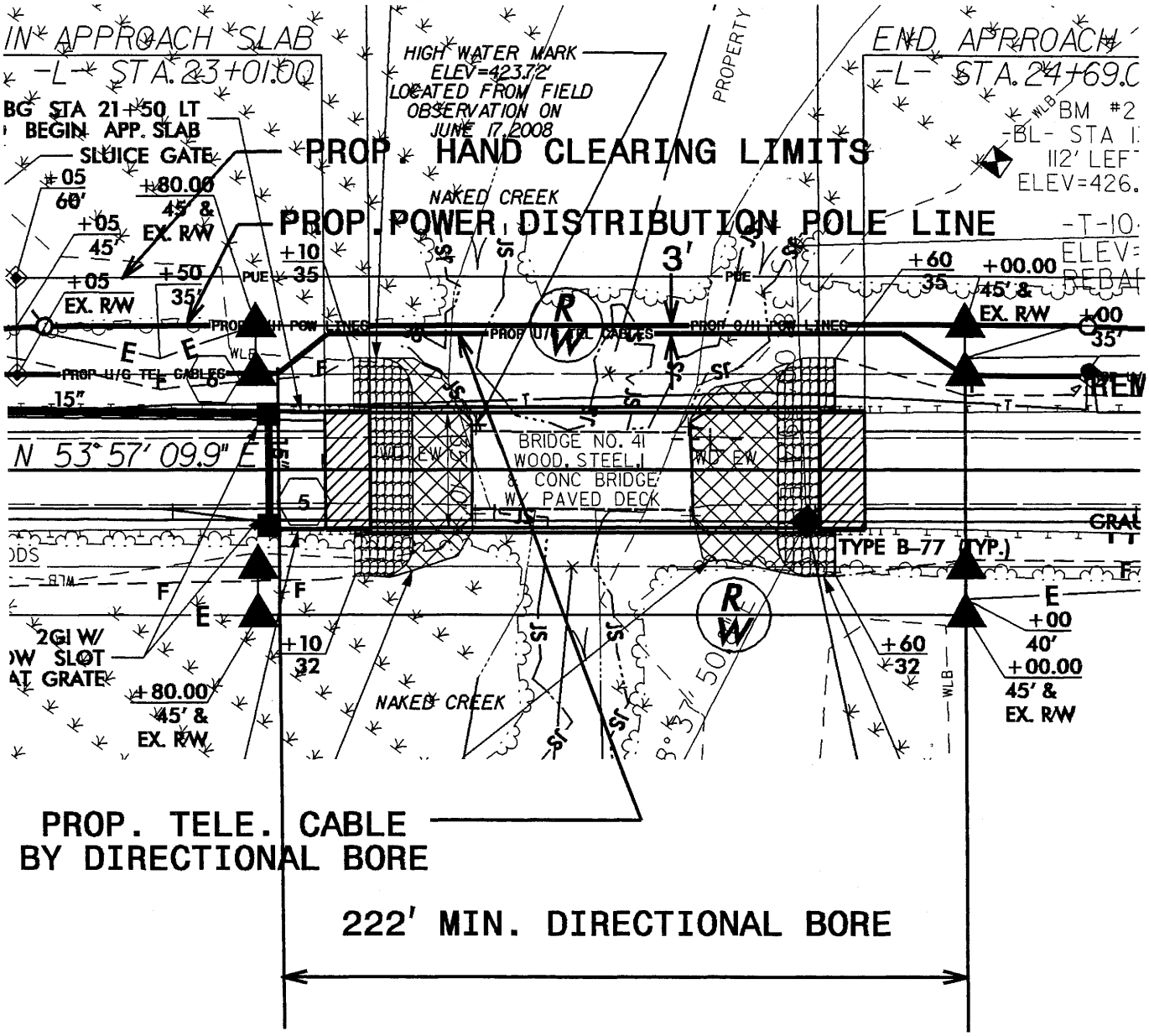
8/23/99

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

B-4614 Richmond County Bridge Project
Utility Impacts

Utility impacts on this project involve two (2) poles in conflict that will be moved back away from the bridge. The existing pole left at station 21+87.00 will be moved to approximate station 22+15.00, 45 feet left of -L- line. A new pole will be installed 45 feet left of -L- line at approximate station 25+40.00. This new pole will replace the existing pole 30 feet left of station 25+40.00. A PUE will be acquired on the left side of the project starting at the PDE monument 60 feet left of station 22+05.00, running 60 feet from centerline until turning 90 degrees and connecting back to existing R/W at station 27+65.00. Both new poles will be outside of the wetland boundary but there will be non-mechanized, hand clearing performed to the PUE limit, inside wetland boundaries in order to give the aerial line clearance on both sides.

Area of Stream Impact (acres)	Area of Wetland Impact (acres)	Hand Clearing in Wetland Areas (acres)	Total Area of Impact (acres)
0	0	0.060	0.060



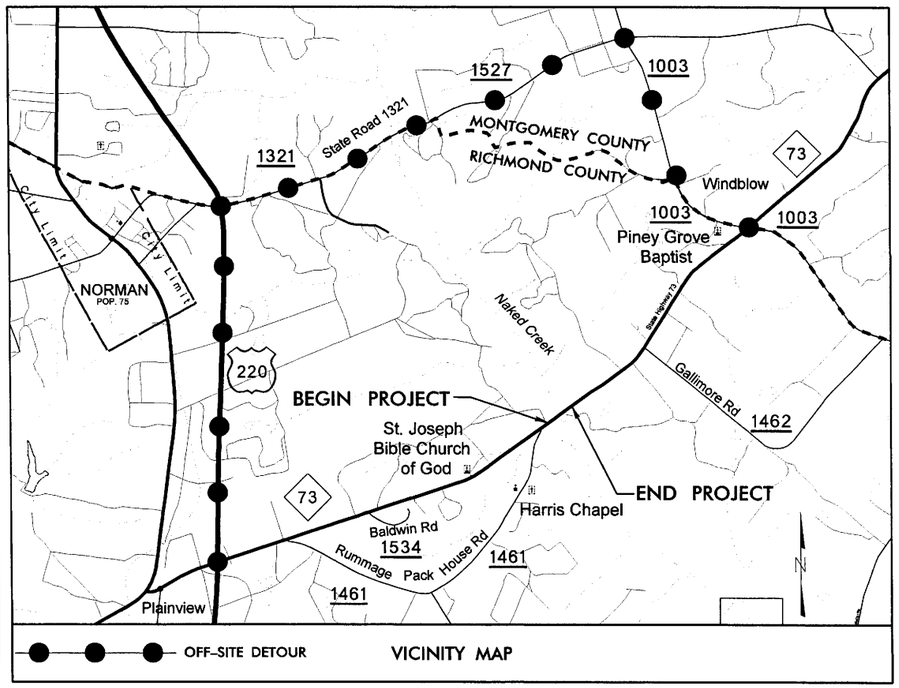
PUE&WLB AREA : 2635.8665SQFT

SCALE

0 50' 100'

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RICHMOND COUNTY
WBS 33797.1.1
B-4614 UTILITY
BRIDGE 41 OVER NAKED
CREEK ON NC 73

TIP PROJECT: B-4614



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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RICHMOND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4614	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33797.1.1	BRSTP-73(10)	PE	

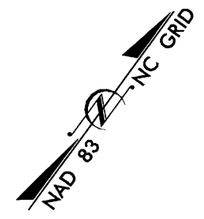
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

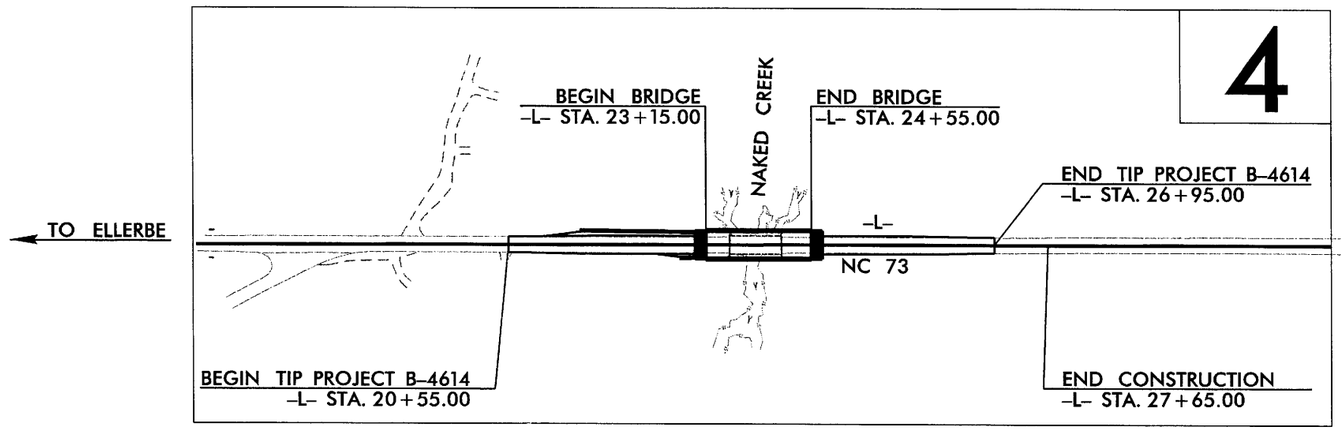
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: ***BRIDGE NO. 41 OVER NAKED CREEK ON NC 73***

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

CFI PLANS





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CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

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CLASS = RURAL MAJOR COLLECTOR

PROJECT LENGTH

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TOTAL LENGTH TIP PROJECT B-4614 = 0.121 mi.

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STEWART

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RIGHT OF WAY DATE:
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PROJECT DESIGN ENGINEER

DOUG TAYLOR, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: PE

ROADWAY DESIGN ENGINEER

SIGNATURE: PE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER

10/16/2009
\\Pr2\NB4614_RDY_PLANSHEETS.dgn
USER:jhefner

PROJECT REFERENCE NO.	SHEET NO.
B-4614	1B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed 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 Wheel Chair Ramp — WCR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4614	1-C
Location and Surveys	

SURVEY CONTROL SHEET B4614

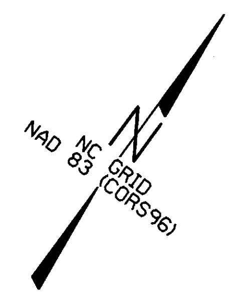
BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	512705.9470	1795158.5680	436.53	16-53.54	14.11 RT
102	BL-102	513173.6860	1795804.2600	428.10	24-50.85	15.88 RT
103	BL-103	513611.4690	1796407.5730	455.74	31-96.26	16.94 RT

BM1 ELEVATION = 432.55
N 512681 E 1795177
L STATION 16+53 45 RIGHT
RR-SPIKE IN BASE OF 12IN FORKED PINE TREE

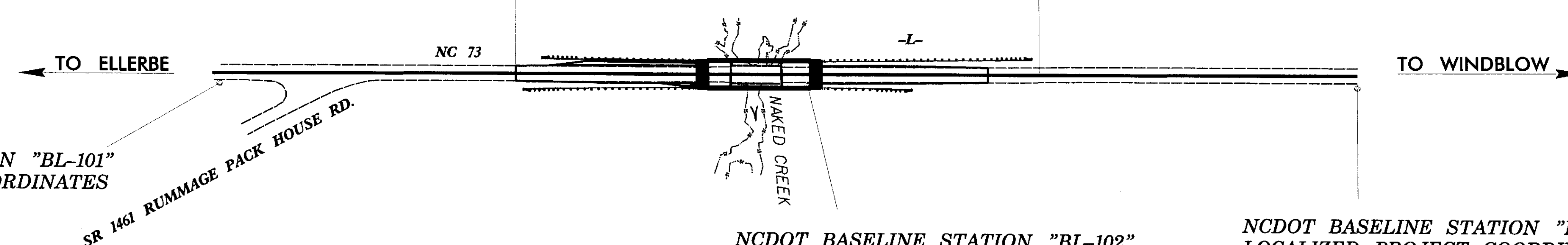
BM2 ELEVATION = 426.02
N 513299 E 1795786
L STATION 25+10 96 LEFT
RR-SPIKE IN BASE OF 22IN PINE TREE

BM3 ELEVATION = 459.08
N 513684 E 1796334
L STATION 31-80 85 LEFT
RR-SPIKE IN BASE OF 14IN PINE TREE



-L- STA. 20+55.00 BEGIN TIP PROJECT B-4614
LOCALIZED PROJECT COORDINATES
N = 512953.5912
E = 1795474.8570

-L- STA. 27+65.00 END TIP PROJECT B-4614
LOCALIZED PROJECT COORDINATES
N = 513371.3922
E = 1796048.9147



NCDOT BASELINE STATION "BL-101"
LOCALIZED PROJECT COORDINATES
N = 512705.9470
E = 1795158.5680

NCDOT BASELINE STATION "BL-102"
LOCALIZED PROJECT COORDINATES
N = 513173.6860
E = 1795804.2600

NCDOT BASELINE STATION "BL-103"
LOCALIZED PROJECT COORDINATES
N = 513611.4690
E = 1796407.5730

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4614-1" WITH NAD 83 (CORS 96) STATE PLANE GRID COORDINATES OF NORTHING: 514877.957(ft) EASTING: 1797940.417(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985280 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4614-1" TO -L- STATION 16+44.11 IS S 52 15 05.3 W 3538.33' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

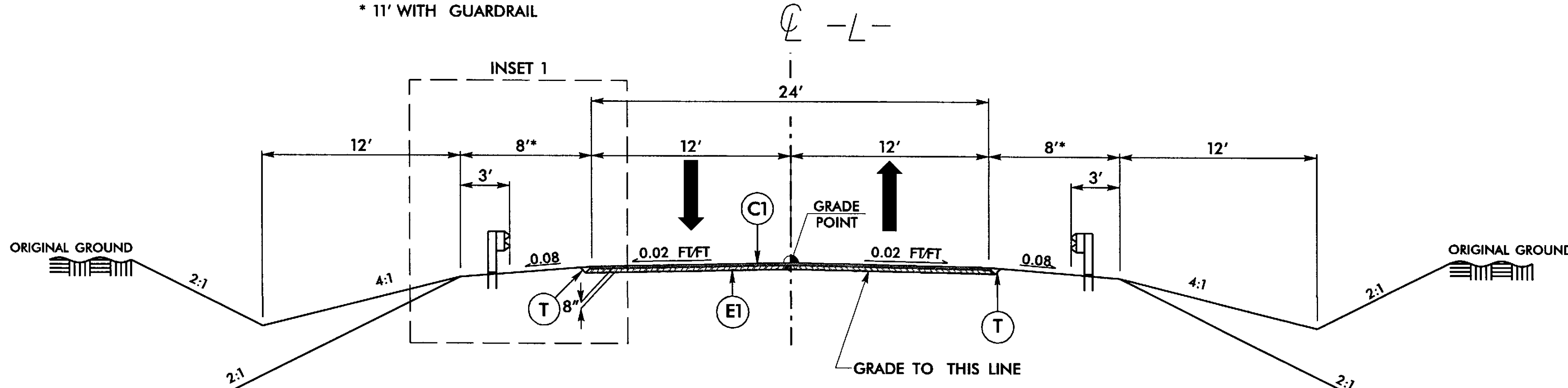
NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   http://www.ncdot.org/doh/preconstruct/highway/location/project/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4614_LS_CONTROL_081104.TXT

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

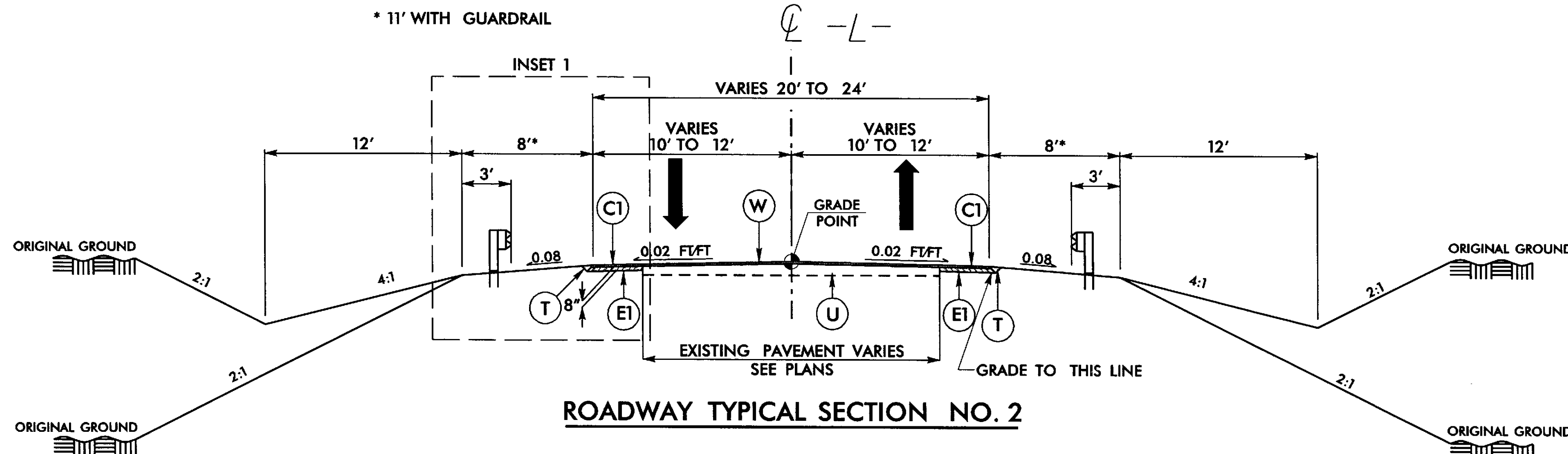
◎ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING NAD83(CORS96) MONUMENTATION



ROADWAY TYPICAL SECTION NO. 1

USE ROADWAY TYPICAL SECTION

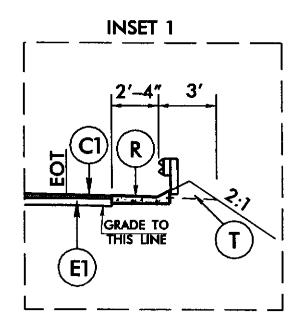
-L- STA. 22+65.00 TO -L- STA. 23+15.00 (BEGIN BRIDGE)
-L- STA. 24+55.00 (END BRIDGE) TO -L- STA. 25+05.00



ROADWAY TYPICAL SECTION NO. 2

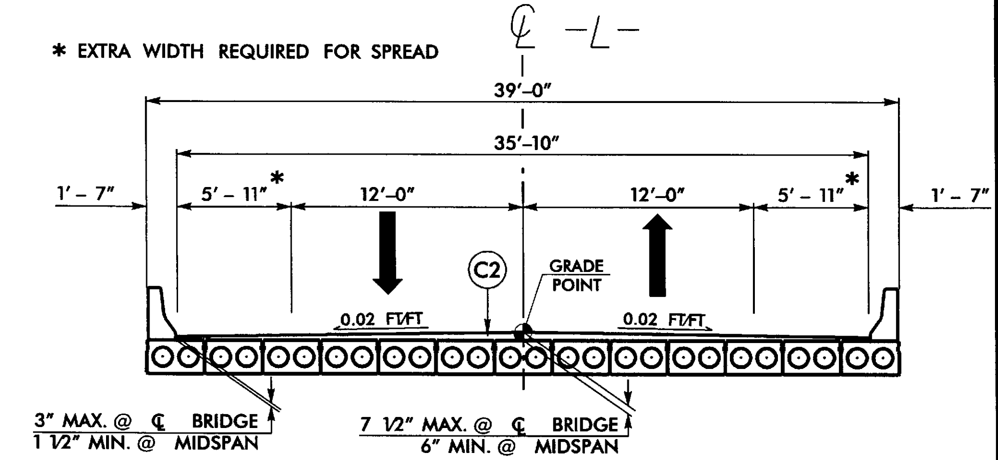
USE ROADWAY TYPICAL SECTION

-L- STA. 20+55.00 TO -L- STA. 21+75.00 (FEATHER TO EXISTING)
-L- STA. 21+75.00 TO -L- STA. 22+65.00
-L- STA. 25+05.00 TO -L- STA. 25+75.00
-L- STA. 25+75.00 TO -L- STA. 26+95.00 (FEATHER TO EXISTING)



USE INSET 1 AT THE FOLLOWING LOCATIONS:

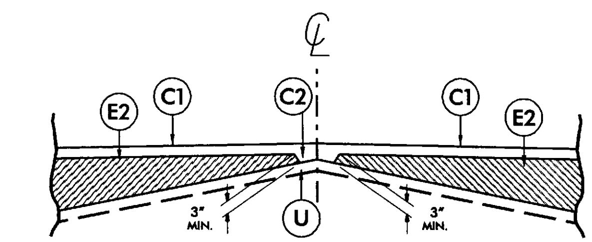
-L- STA. 21+50.00 LT TO -L- STA. 23+01.00 LT (BEGIN APPROACH SLAB)
-L- STA. 22+80.00 RT TO -L- STA. 23+01.00 RT (BEGIN APPROACH SLAB)



BRIDGE TYPICAL SECTION NO. 1

USE BRIDGE TYPICAL SECTION

-L- STA. 23+15.00 TO -L- STA. 24+55.00



DETAIL SHOWING METHOD OF WEDGING

PAVEMENT SCHEDULE

FINAL PAVEMENT DESIGN

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
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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

12/05/07

COMPUTED BY: JCH	DATE: 6-5-09
CHECKED BY: DRR	DATE: 6-5-09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4614	3

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

421 Fayetteville Street Mall
Suite 400
Raleigh, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com
STEWART

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- STA. 20+55.00	-L- STA. 23+15.00	135	396	261	
-L- STA. 24+55.00	-L- STA. 27+65.00	25	114	89	
PROJECT SUBTOTAL:		160	510	350	
LOSS DUE TO CLEARING AND GRUBBING		-8		+8	
PROJECT TOTAL:		152		358	
EST 5% TO REPLACE TOP SOIL ON BORROW PIT				18	
PROJECT TOTAL:		152		376	
SAY:		155		380	

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	LENGTH
-L-	21+50.00	23+01.00	LT	151
-L-	22+80.00	23+01.00	RT	21
TOTAL:				172
SAY:				172

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE)							
SIZE								12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE		FROM	TO												
21+50.00	LT	1		429.3											
21+50.00	LT	1	2		425.0	424.1			16						
21+57.00	RT	3													
21+57.00	RT	3	4		424.0	423.7				40					
22+84.00	RT	5		428.6											
22+84.00	RT	5	6		425.9	425.7			36						
22+84.00	LT	6		428.6											
22+84.00	LT	6	1		425.7	425.0			136						
						TOTALS			188	40					

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE)													CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D								15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
SIZE	12"	15"	18"	24"		30"		36"		42"		48"		12"	15"	18"	24"	30"	36"	42"	48"			
THICKNESS OR GAUGE	.064	.064	.064	.064		.079		.079		.109		.109												
21+50.00																								
21+50.00																								
21+57.00																								
21+57.00																								
22+84.00																								
22+84.00																								
22+84.00																								
22+84.00																								
TOTALS																								

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.		QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE					G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	CONCRETE ENDWALL AND SLUICE GATE STD. 838.02																		REMARKS
	R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE		E	F	G																							
21+50.00			1									1	1																			
21+50.00																																
21+57.00	1.0													1																		
21+57.00																																
22+84.00			1									1	1																			
22+84.00																																
22+84.00			1									1	1																			
22+84.00																																
TOTALS	1.0		3									3	3	1																		

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	B-77	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	20+90.00	BRIDGE (23+15.00)	LT	225					5'-11"	8'-11"		206'-3"		3'-1"			1		1											NCDOT ROADWAY STD. 862.01
-L-	20+65.00	BRIDGE (23+15.00)	RT	250					5'-11"	8'-11"	231'-3"		3'-1"				1		1											NCDOT ROADWAY STD. 862.01
-L-	BRIDGE (24+55.00)	27+55.00	LT	300					5'-11"	8'-11"	281'-3"		3'-1"				1		1											NCDOT ROADWAY STD. 862.01
-L-	BRIDGE (24+55.00)	25+92.50	RT	137.5					5'-11"	8'-11"		118'-9"		1'-4.5"			1		1											NCDOT ROADWAY STD. 862.01
TOTAL				912.5													4		4											

TOTAL	912.5
DEDUCTIONS FOR ANCHOR UNITS	275
TOTAL	637.5

DEDUCTIONS FOR ANCHOR UNITS		
4	TYPE B-77 @ 18.75' =	75
4	GRAU 350 @ 50' =	200
	TOTAL =	275

10/16/2009
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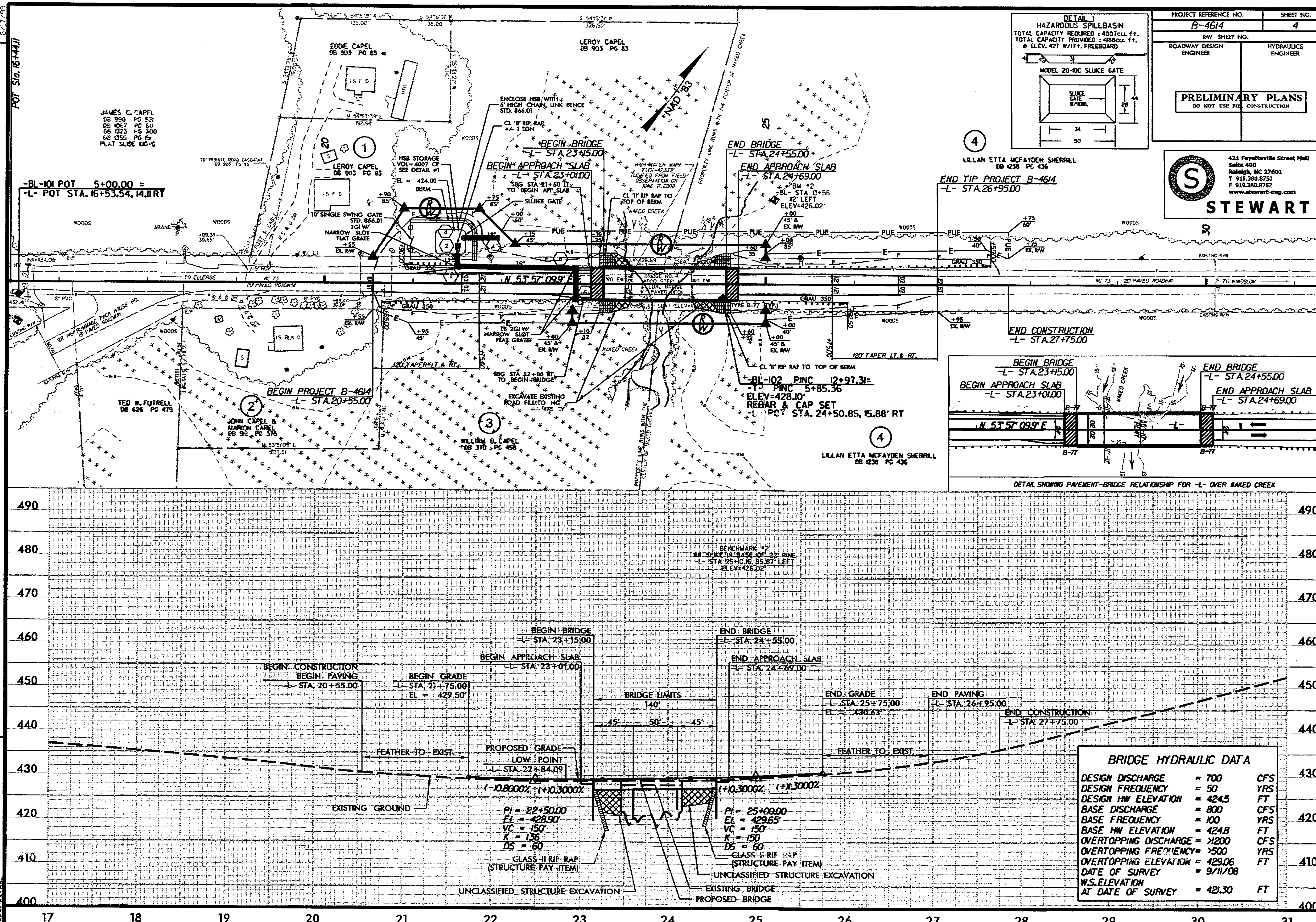
PROJECT REFERENCE NO.	SHEET NO.
B-4614	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART
421 Fayetteville Street Mall
Suite 400
Raleigh, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com



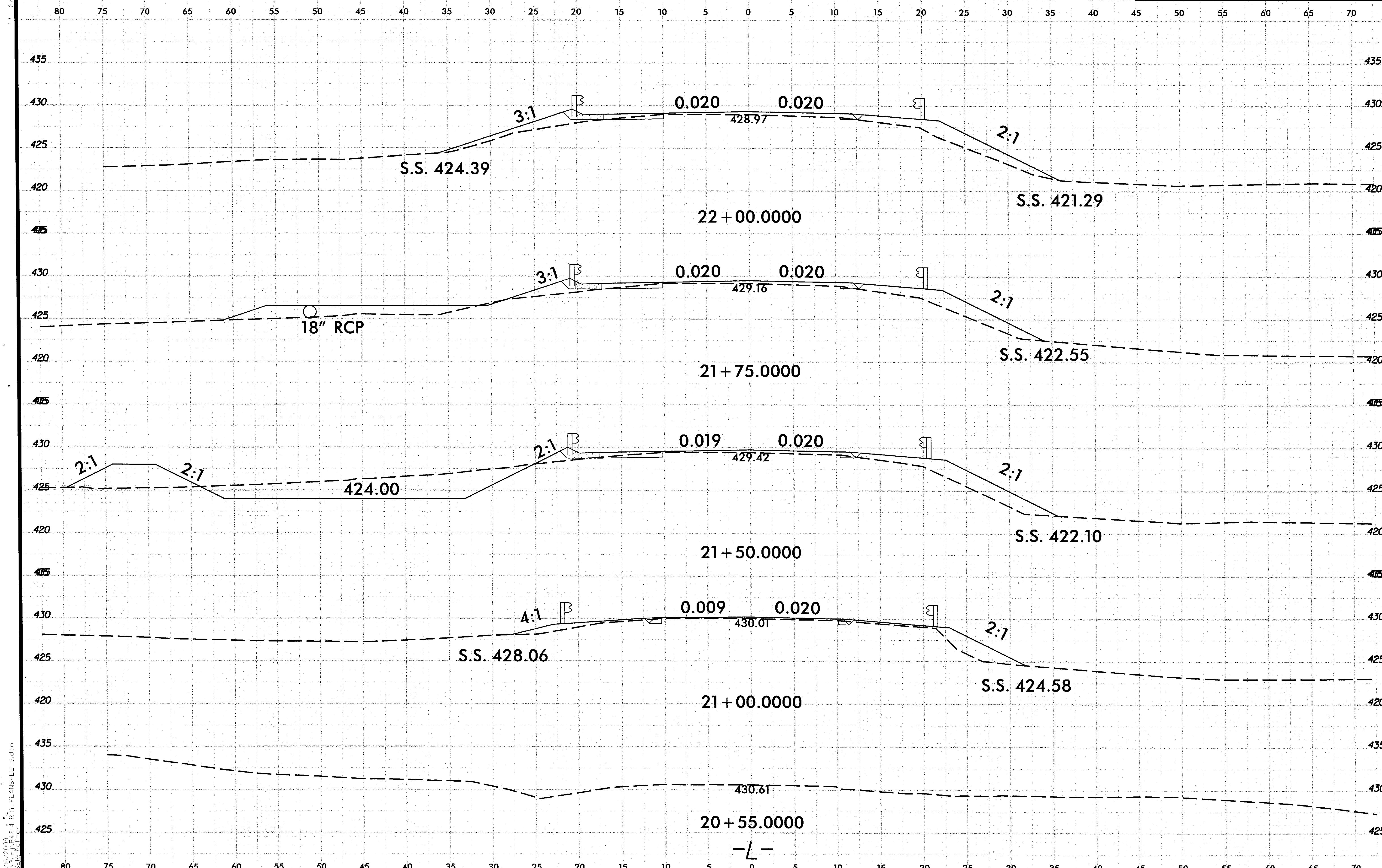
DETAIL 1
HAZARDOUS SPILLBASIN
TOTAL CAPACITY REQUIRED : 4007cu. ft.
TOTAL CAPACITY PROVIDED : 4188cu. ft.
@ ELEV. 427 W/1Ft. FREEBOARD
MODEL 20-10C SLUICE GATE
POT Sta. 16+44.11
JAMES C. CAPEL
EDDIE CAPEL
DB 903 PG 85
LEROY CAPEL
DB 903 PG 83
NAD 83
ENCLOSE HSB WITH 6' HIGH CHAIN LINK FENCE STD. 866.01
CL 'B' RIP RAP +/- 1 TON
HSB STORAGE VOL=4007 CF SEE DETAIL #1
EL = 424.00
BERM
SLUICE GATE
10' SINGLE SWING GATE STD. 866.01
2GI W/ NARROW SLOT FLAT GRATE
-BL-101 POT 5+00.00 =
-L- POT STA. 16+53.54, 14.11 RT
BEGIN BRIDGE
-L- STA. 23+15.00
BEGIN APPROACH SLAB
-L- STA. 23+01.00
SBG STA 21+50 LT TO BEGIN APP SLAB
HIGH WATER MARK ELEV=425.72'
CL 'II' RIP RAP TO TOP OF BERM
NAKED CREEK
END BRIDGE
-L- STA. 24+55.00
END APPROACH SLAB
-L- STA. 24+69.00
BM #2
-BL- STA 13+56
112' LEFT
ELEV=426.02'
END TIP PROJECT B-4614
-L- STA. 26+95.00
LILLIAN ETTA MCFAYDEN SHERRILL
DB 1238 PG 436
N 53°57' 09.9" E
NC 73
TO ELLERBE
TO WINDBLOW
20' PAVED ROADWAY
SR 1468 RUMMAGE PACK HOUSE RD.
TB 2GI W/ NARROW SLOT FLAT GRATE
120' TAPER LT. & RT.
SBG STA 22+80 RT TO BEGIN BRIDGE
EXCAVATE EXISTING ROAD FILL TO NG
END CONSTRUCTION
-L- STA. 27+75.00
120' TAPER LT. & RT.
CL 'II' RIP RAP TO TOP OF BERM
-BL-102 PINC 12+97.31=
-Y- PINC 5+85.36
ELEV=428.10'
REBAR & CAP SET
-L- POT STA. 24+50.85, 15.88' RT
BEGIN PROJECT B-4614
-L- STA. 20+55.00
TED W. FUTRELL
DB 626 PG 479
JOHN CAPEL & MARION CAPEL
WILLIAM D. CAPEL
PROPERTY LINE RUNS WITH THE CENTER OF NAKED CREEK
WOODS
DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER NAKED CREEK
BENCHMARK #2
RR SPIKE IN BASE OF 22" PINE
-L- STA. 25+10.16, 95.87' LEFT
ELEV=426.02'
BEGIN CONSTRUCTION
BEGIN PAVING
-L- STA. 20+55.00
BEGIN GRADE
-L- STA. 21+75.00
EL = 429.50'
BRIDGE LIMITS
140'
45' 50' 45'
END GRADE
-L- STA. 25+75.00
EL = 430.63'
END PAVING
-L- STA. 26+95.00
END CONSTRUCTION
-L- STA. 27+75.00
FEATHER TO EXIST.
PROPOSED GRADE
LOW POINT
-L- STA. 22+84.09
(-)0.8000% (+)0.3000%
(+)0.3000% (+)3.000%
PI = 22+50.00
EL = 428.90'
VC = 150'
K = 136
DS = 60
PI = 25+00.00
EL = 429.65'
VC = 150'
K = 150
DS = 60
EXISTING GROUND
CLASS II RIP RAP (STRUCTURE PAY ITEM)
UNCLASSIFIED STRUCTURE EXCAVATION
EXISTING BRIDGE
PROPOSED BRIDGE
490 480 470 460 450 440 430 420 410 400
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
REVISIONS

BRIDGE HYDRAULIC DATA

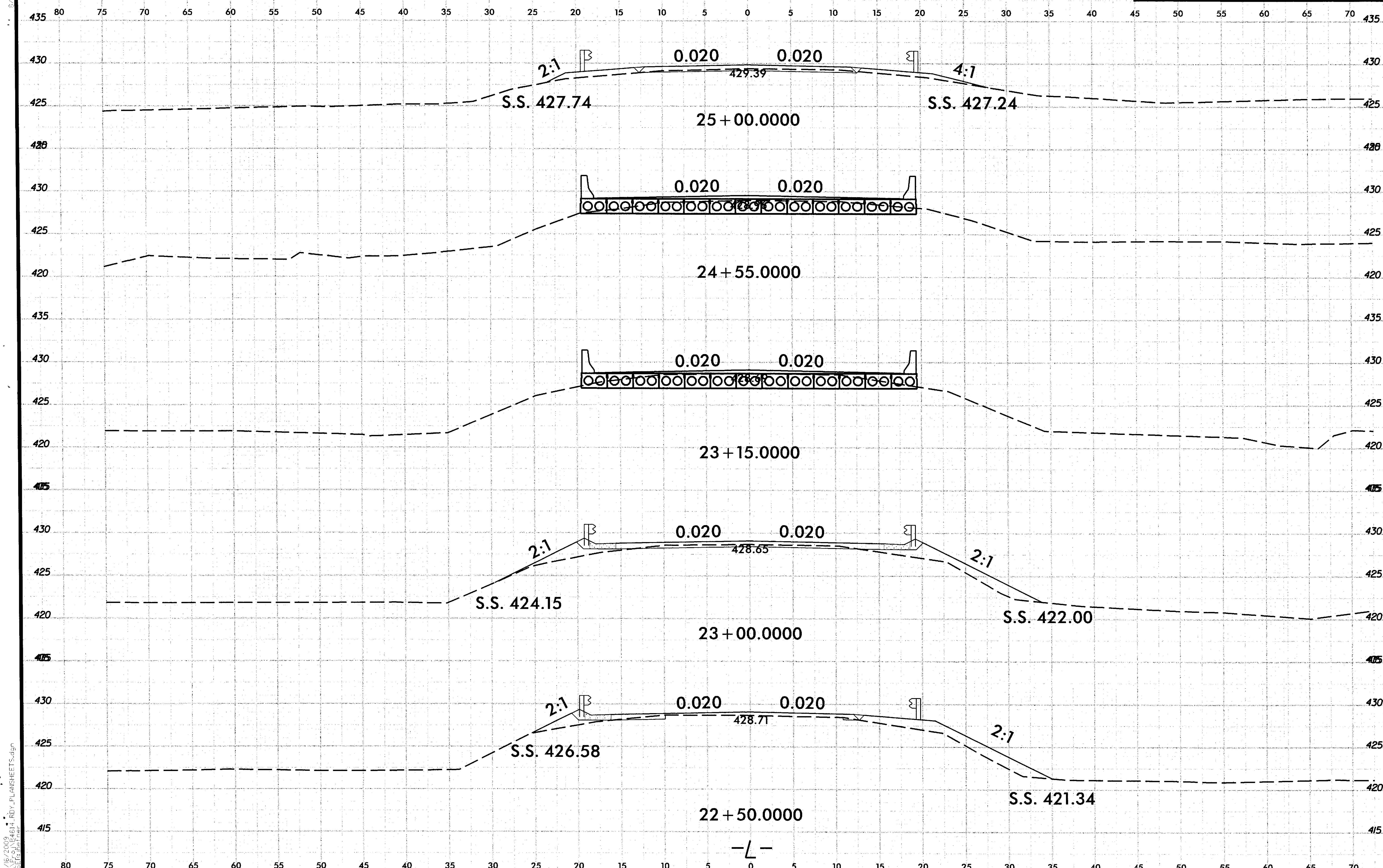
DESIGN DISCHARGE	=	700	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	424.5	FT
BASE DISCHARGE	=	800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	424.8	FT
OVERTOPPING DISCHARGE	=	>1200	CFS
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING ELEVATION	=	429.06	FT
DATE OF SURVEY	=	9/11/08	
W.S. ELEVATION AT DATE OF SURVEY	=	421.30	FT

10/27/2009 B4614_RDY_PLANSHEETS.dgn

PROJ. REFERENCE NO.	SHEET NO.
B-4614	X-1



PROJ. REFERENCE NO.	SHEET NO.
B-4614	X-2



PROJ. REFERENCE NO.	SHEET NO.
B-4614	X-3