STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

November 20, 2009

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

ATTN: Ms. Kim Garvey
NCDOT Coordinator

Dear Sir,

Subject: **Application for Section 404 Nationwide Permit 33** for replacement of Bridge 121 over Densons Creek on SR 1323 (Okeewemee Rd) in Montgomery County, Federal Aid Project Number BRZ 1323 (1), State Project No. 8.2250901, Division 8, T.I.P No. B-4582.

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge number 121 over Denson Creek in Montgomery County. There will be 43 feet of temporary surface water impacts. These impacts occur as a result of the usage of causeways for removal of existing bents.

Please see the enclosed copies of the Pre-Construction Notification (PCN), Stormwater Management Plan, permit drawings, and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in September 2008. Additional copies are available upon request.

NCDOT is the only property owner for the jurisdictional area inside the Right-Of-Way. A jurisdictional determination was made by Richard Spencer with the United States Army Corps of Engineers (USACE) on March 1, 2007. However, Mr. Spencer did not issue a written jurisdictional determination.

This project calls for a letting date of January 18, 2011 and a review date of November 30, 2010. However, the let date may advance as additional funds become available.

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

LOCATION:
4701 Atlantic Ave.,
Suite 116
Raleigh, NC 27604

A copy of this permit application will be posted on the NCDOT Website at: http://www.ncdot.org/doh/preconstruct/pe/neu. If you have any questions or need additional information, please call Deanna Riffey at (919) 431-1594.

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. 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. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Tim Johnson, P.E., Division 8 Engineer
Mr. Art King, Division 8 Environmental Officer
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: 33	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:	Replacment of Bridge 121 over Densons Creek on SR 1323
2b. County:	Montgomery
2c. Nearest municipality / town:	Troy
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4582

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) 431-1594
3g. Fax no.:	(919) 431-2002
3h. Email address:	driffey@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: 35.386993 (DD.DDDDDD)	Longitude: - 79.867931 (-DD.DDDDDD)
1c. Property size:	1.28 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Densons Creek	
2b. Water Quality Classification of nearest receiving water:	C	
2c. River basin:	Yadkin-Pee Dee	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Land use: Rural residential, forested land, and outdoor recreation. Site and surrounding area forested with some maintained edges.		
3b. List the total estimated acreage of all existing wetlands on the property: 0		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 75 ft perennial		
3d. Explain the purpose of the proposed project: Replace a structurally deficient bridge.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 121.5-foot bridge with a 165-foot, 2-span bridge on the existing alignment with an off-site detour and temporary causeways. 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: Site visit on 3/1/07 with Richard Spencer. No JD issued.	☒ 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: Environmental Services Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown	
5b. If yes, explain in detail according to "help file" instructions.		
6. Future Project Plans		
6a. Is this a phased project?	☐ Yes ☒ No	
6b. If yes, explain.		

C. Proposed Impacts Inventory

1. Impacts Summary

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

☐ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

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

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	X Permanent X Temporary

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 ☐ P ☒ T	Fill from Causeways	Denson's Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	32	43
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**	43 Temp

3i. Comments: Two temporary causeways will be placed at the same time and used for removal of existing bents. The

causeways together cover less than half the stream.

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

6. Buffer Impacts (for DWQ)

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

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

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 43.5 feet longer than the existing bridge minimizing impacts to Densons Creek, the proposed bridge will be at approximately the same grade as the existing structure, and an off site detour will be used.

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

Best Management Practices for Surface Waters will be incorporated.

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

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No If no, explain: Temporary impacts
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:	linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	square feet
4e. Riparian wetland mitigation requested:	acres
4f. Non-riparian wetland mitigation requested:	acres
4g. Coastal (tidal) wetland mitigation requested:	acres

4h. Comments:

5. Complete if Using a Permittee Responsible Mitigation Plan

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

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 permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☐ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No

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? NHP, USFWS website, and the NCDOT field surveys conducted in 2007 and 2009. Red - cockaded woodpecker, bald eagle, and eastern cougar all had no habitat present. Smooth coneflower and Schwienitz's sunflower had habitat present, but neither species found. The Biological Conclusion in the NRTR of No Effect remains valid.		
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.L. Luck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	11.20.09 Date

STORMWATER MANAGEMENT PLAN

Project: 33783.1.1
TIP: B-4582
County: Montgomery

Hydraulics Project Engineers: Josh Dalton, P.E. (Sungate Design Group);
Bill Zerman, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project involves the replacement of Bridge No. 121 on SR 1323 over Densons Creek. The overall length of the project with approach work is approximately 775 feet. The proposed bridge will consist of 1 @ 75' and 1 @ 90' box beams. The project drainage systems consist of the bridge and associated bridge end drains. There is only one side ditch proposed.

ENVIRONMENTAL DESCRIPTION

The project is located in the Yadkin River Basin. Currently, there are no buffer rules for this river basin. The project will have one (1) crossing of a jurisdictional stream that will impact Densons Creek. Densons Creek classified as Class C. Densons Creek and the adjacent Suck Branch are not listed on NCDWQ's 303d list. No wetlands will be impacted by the proposed project.

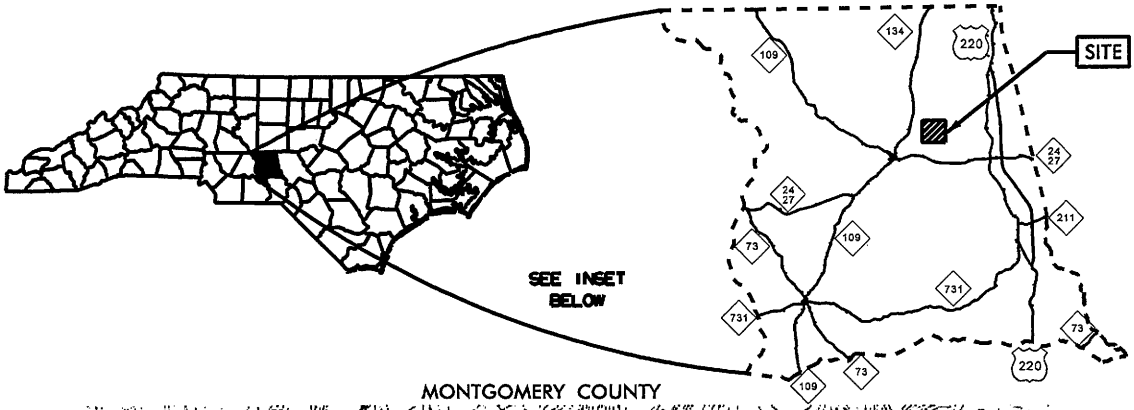
BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

The primary goal of Best Management Practices (BMPs) is to prevent degradation of the states surface waters as a result of the location, construction and operation of the highway system. BMPs are activities, practices and procedures taken to prevent or reduce stormwater pollution. There are no BMPs used on this project.

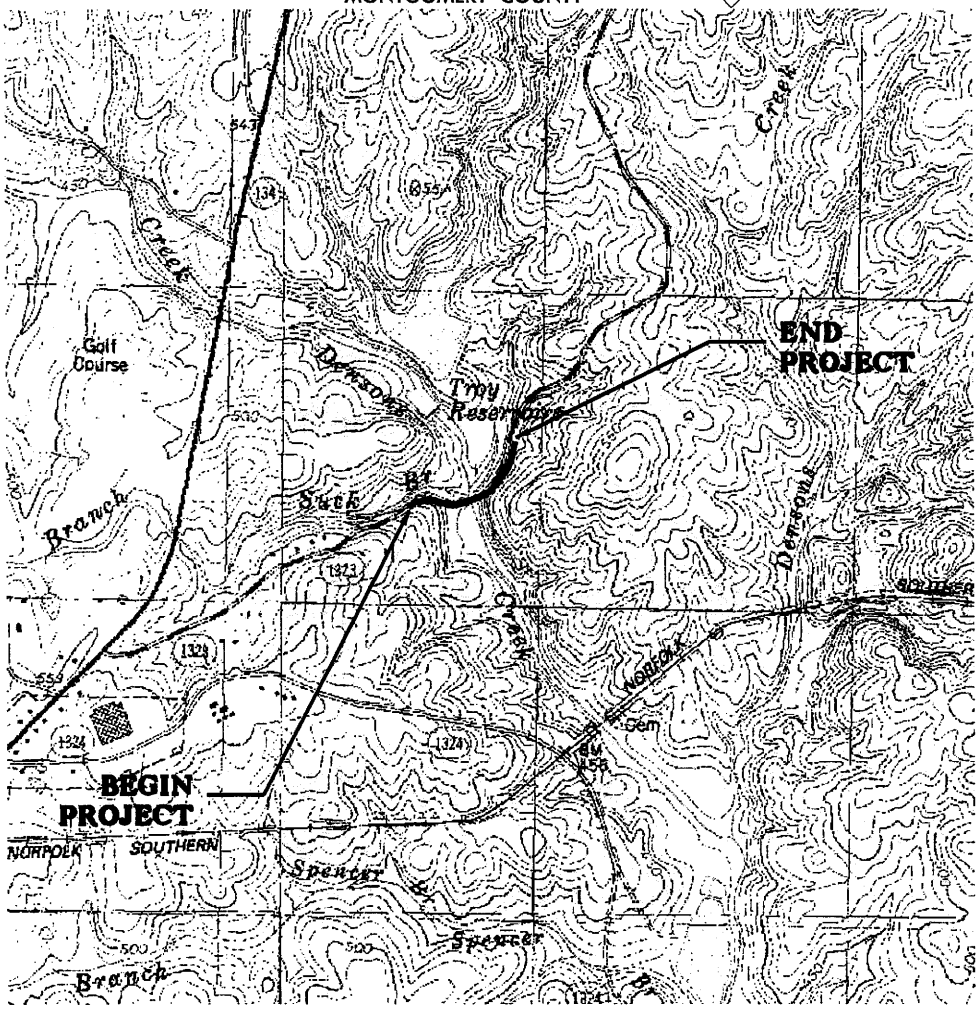
At all the sites, stormwater will be treated and non-erosive velocities will be achieved where practicable.

MINIMIZATION OF IMPACTS

Several design elements provided for minimization of wetland impacts. Bridge end drains are located outside wetland areas. Also, the bridge was lengthened to minimize impacts to the adjacent Suck Branch.



MONTGOMERY COUNTY



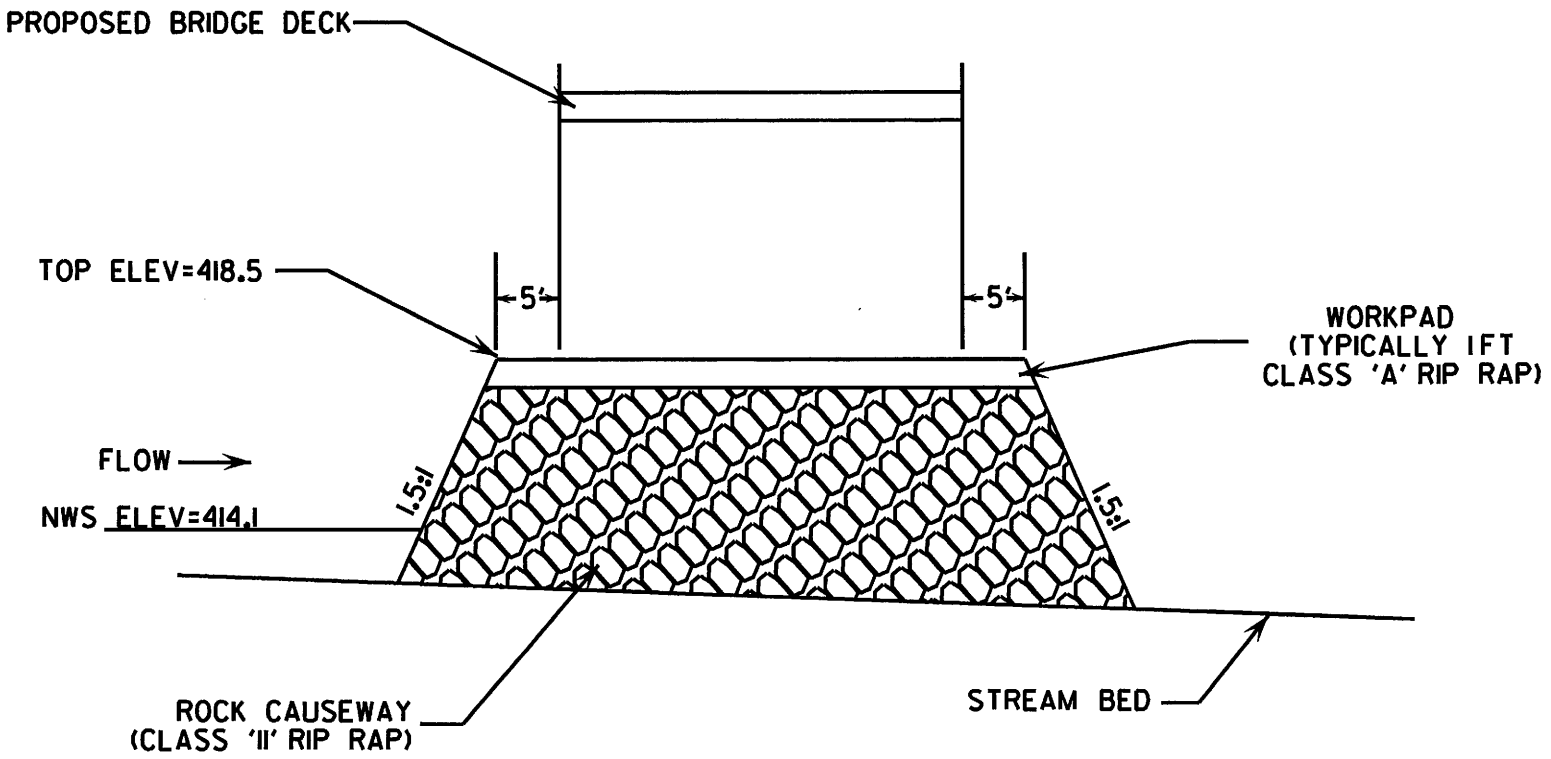
WETLAND/STREAM IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY
PROJECT:33783.1.1 (B-4582)
BRIDGE NO. 121
OVER DENSONS CREEK
ON SR 1323

SHEET 1 OF 8 8/12/09

WORKPAD DETAIL #1
(NOT TO SCALE)



QUANTITIES OF ESTIMATES

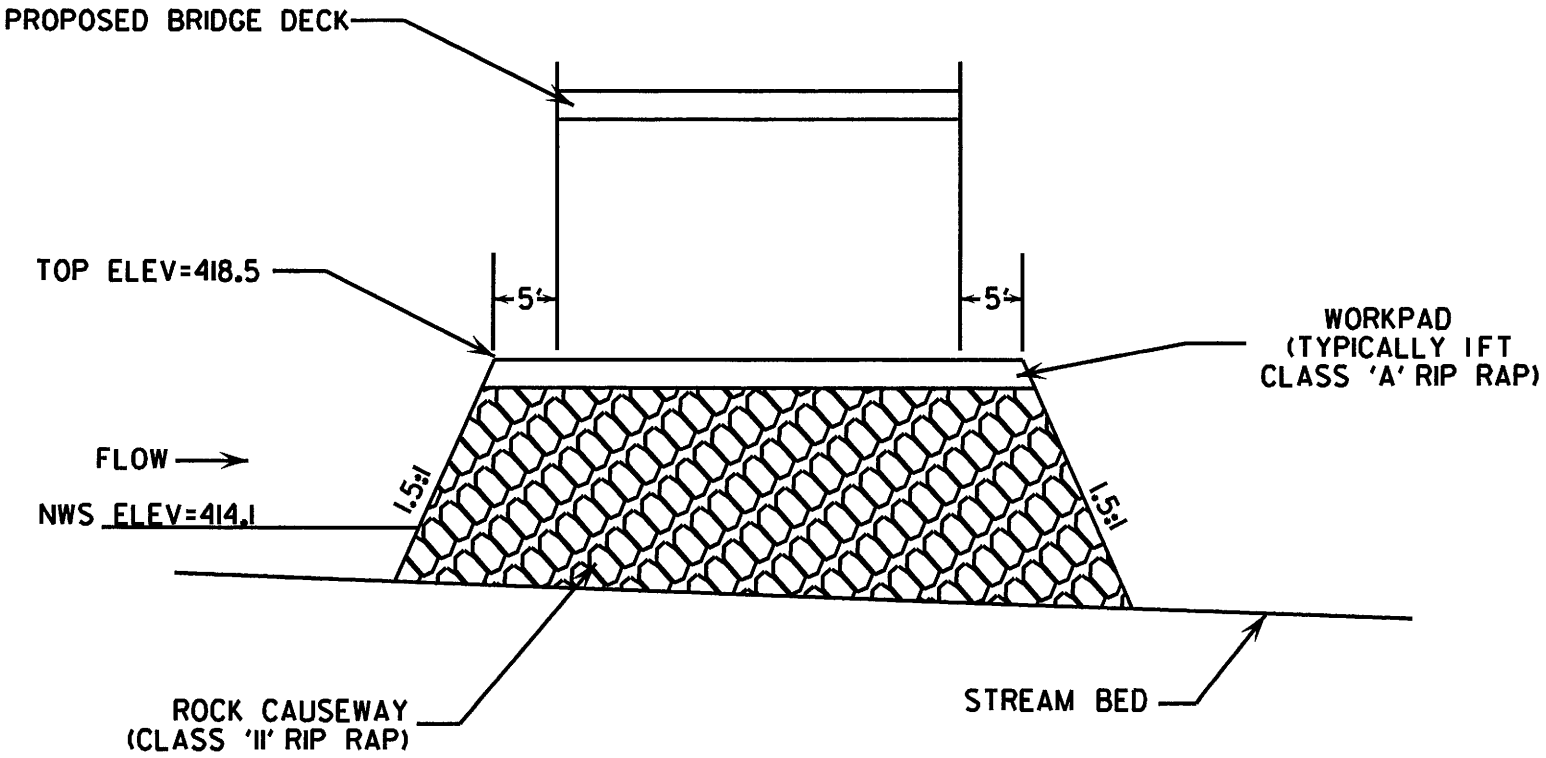
VOLUME OF CLASS II RIP RAP= 55 yds^3
AREA OF CLASS II RIP RAP= 0.028 ac
Estimate 80 Tons Class 'II' Rip Rap
Estimate 20 Tons Class 'A' Rip Rap

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
MONTGOMERY COUNTY

PROJECT: 33783.1.1 (B-4582)
BRIDGE NO. 121 OVER DENSONS CREEK
ON SR 1323 (OKEEWEMEE RD)

SHEET 2 OF 8 8/12/09

WORKPAD DETAIL #2
(NOT TO SCALE)



QUANTITIES OF ESTIMATES

VOLUME OF CLASS II RIP RAP= 80 yds^3
AREA OF CLASS II RIP RAP= 0.021 ac
Estimate 115 Tons Class 'II' Rip Rap
Estimate 20 Tons Class 'A' Rip Rap

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
MONTGOMERY COUNTY

PROJECT: 33783.1.1 (B-4582)
BRIDGE NO. 121 OVER DENSONS CREEK
ON SR 1323 (OKEEWEMEE RD)

SHEET 3 OF 8 8/12/09

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)
	17+10 to 17+66 -L-	Temp. Causeways							0.02		43	
TOTALS:									0.02		43	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY
WBS - 33783.1.1 (B-4582)

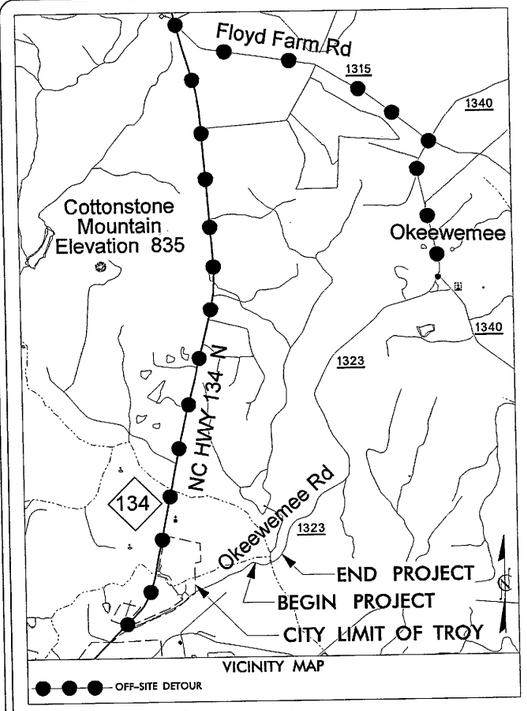
SHEET 4 of 8 8/12/2009

ATN Revised 3/31/05

09/08/09

TIP PROJECT: B-4582

CONTRACT:



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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY

Permit Drawing Sheet 5 of 9

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4582	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33783.1.1	BRZ-1323(1)	PE
33783.2.1	BRZ-1323(1)	R/W /UTL.

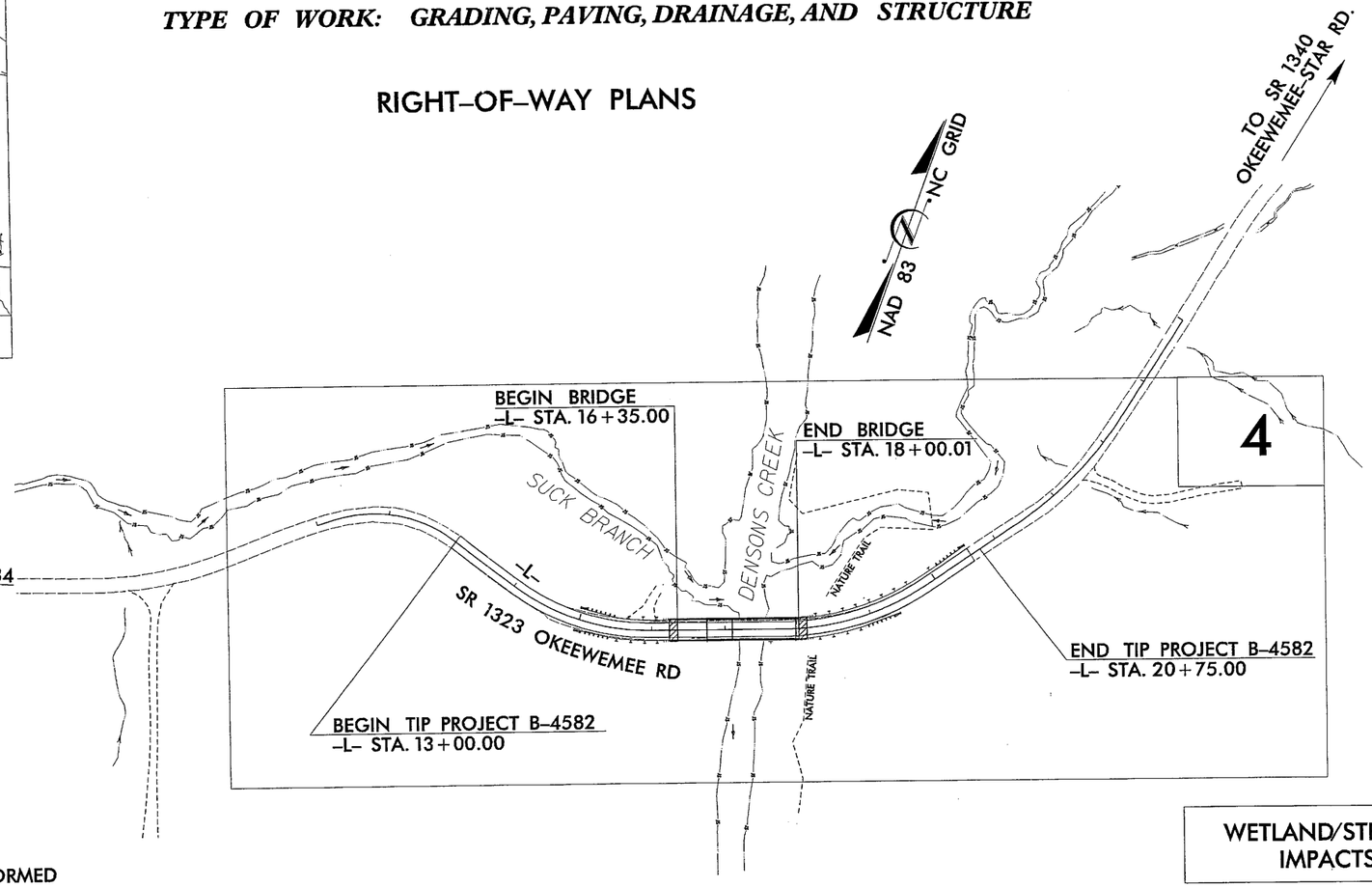
ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: ***BRIDGE NO. 121 OVER DENSONS CREEK ON SR 1323 (OKEEWEMEE RD.).***

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

RIGHT-OF-WAY PLANS



* NOTE:
DESIGN EXCEPTION REQUIRED FOR:
MAXIMUM GRADE
MIN. HORIZONTAL CURVE RADIUS
VERTICAL SAG AND CREST "K" FACTORS
HORIZONTAL SSD

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

WETLAND/STREAM IMPACTS

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2010 = 840
ADT 2030 = 1300
DHV = 13%
D = 65%
T = 5% TTST = 1% DUAL = 4%
* V = 60 MPH
CLASS = RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4582 = 0.116 mi.
LENGTH STRUCTURE TIP PROJECT B-4582 = 0.031 mi.
TOTAL LENGTH TIP PROJECT B-4582 = 0.147 mi.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 17, 2009

LETTING DATE:
JULY 20, 2010

DREW BAIRD, PE
PROJECT ENGINEER

JONATHAN HEFNER, PE
PROJECT DESIGN ENGINEER

DOUG TAYLOR, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

PE
SIGNATURE:

ROADWAY DESIGN ENGINEER

PE
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER

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

PROJECT REFERENCE NO.	SHEET NO.
B-4582	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 8

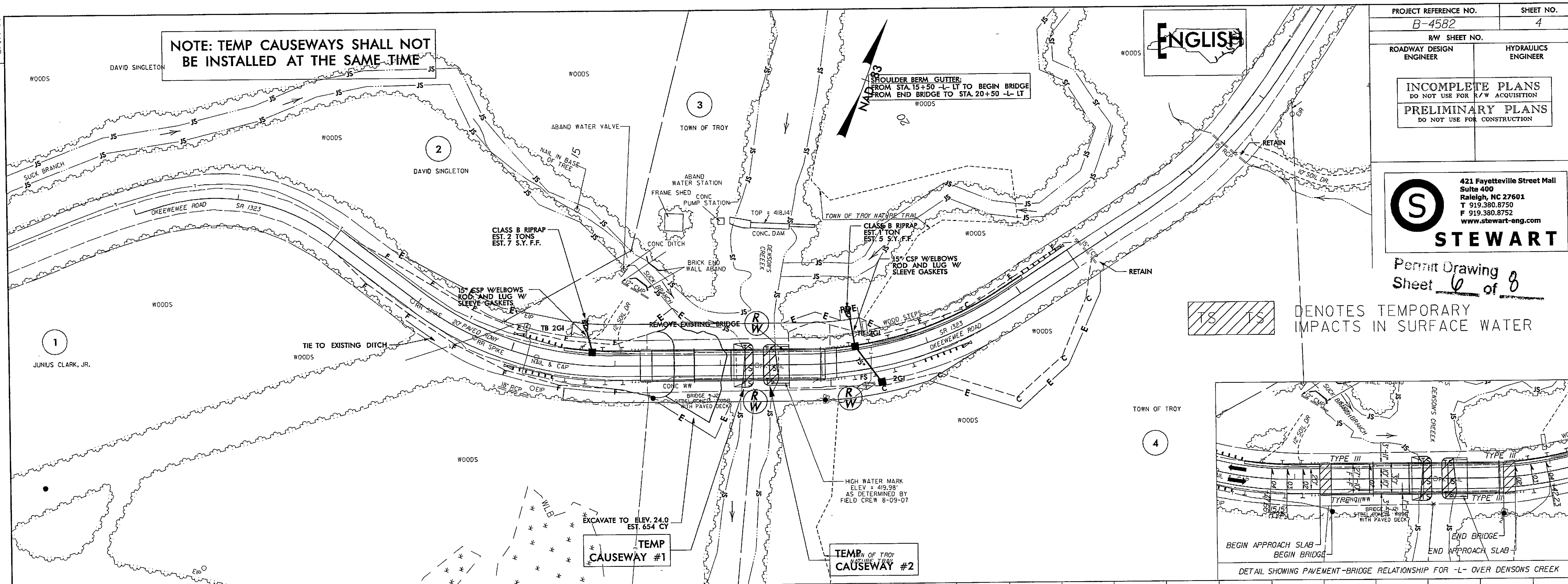
8/17/99

REVISIONS

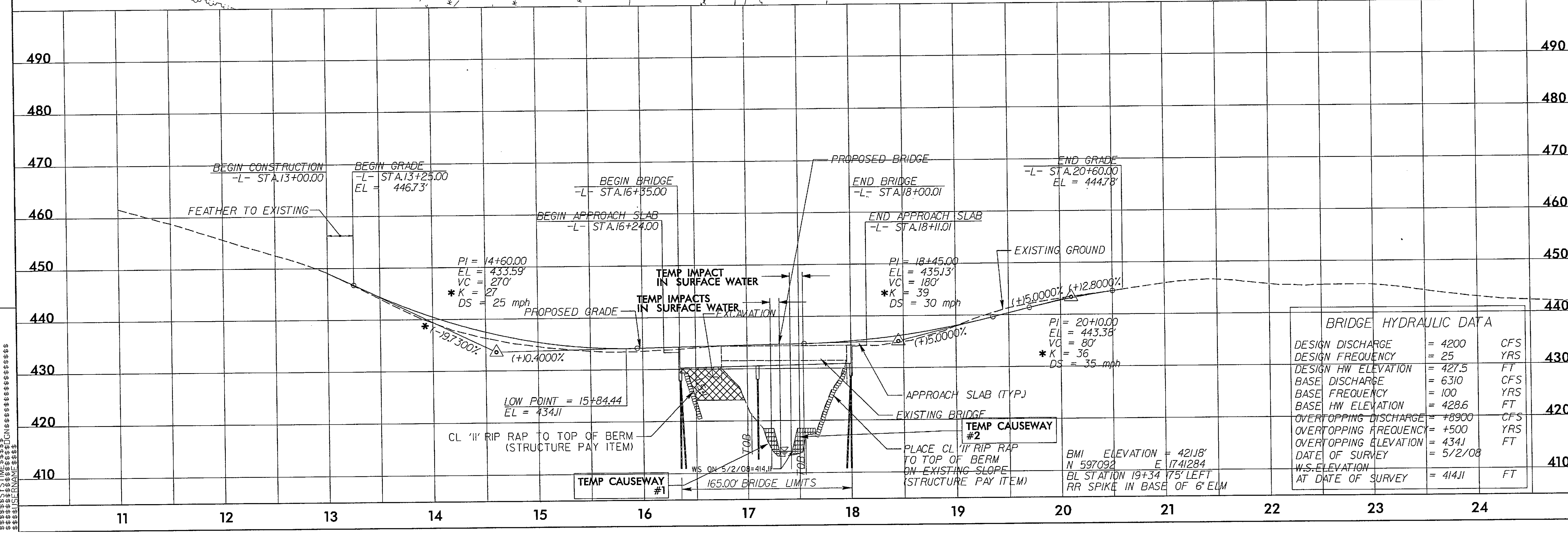
NOTE: TEMP CAUSEWAYS SHALL NOT BE INSTALLED AT THE SAME TIME

ENGLISH

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



DAVID SINGLETON
WOODS
SUCK BRANCH
OKEEWEMEE ROAD
SR 1323
ABAND WATER VALVE
TOWN OF TROY
NAD 83
SHOULDER BERM GUTTER:
FROM STA. 15+50 -L- LT TO BEGIN BRIDGE
FROM END BRIDGE TO STA. 20+50 -L- LT
ABAND WATER STATION
FRAME SHED
CONC PUMP STATION
CONC. DAM
TOWN OF TROY NATURE TRAIL
CLASS B RIPRAP
EST. 2 TONS
EST. 7 S.Y. F.F.
CLASS B RIPRAP
EST. 1 TON
EST. 5 S.Y. F.F.
15" CSP W/ELBOWS ROD AND LUG W/ SLEEVE GASKETS
CONC DITCH
BRICK END WALL ABAND
DENSONS CREEK
RETAIN
REMOVE EXISTING BRIDGE
TIE TO EXISTING DITCH
JUNIUS CLARK, JR.
WOOD STEPS
HIGH WATER MARK
ELEV = 419.98'
AS DETERMINED BY
FIELD CREW 8-09-07
EXCAVATE TO ELEV. 24.0
EST. 654 CY
TEMP CAUSEWAY #1
TEMP CAUSEWAY #2
BEGIN APPROACH SLAB
BEGIN BRIDGE
END BRIDGE
END APPROACH SLAB
TYPE III
DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER DENSONS CREEK



490
480
470
460
450
440
430
420
410
BEGIN CONSTRUCTION
-L- STA.13+00.00
BEGIN GRADE
-L- STA.13+25.00
EL = 446.73'
FEATHER TO EXISTING
BEGIN BRIDGE
-L- STA.16+35.00
BEGIN APPROACH SLAB
-L- STA.16+24.00
PROPOSED BRIDGE
END BRIDGE
-L- STA.18+00.01
END APPROACH SLAB
-L- STA.18+11.01
END GRADE
-L- STA.20+60.00
EL = 444.78'
EXISTING GROUND
PI = 14+60.00
EL = 433.59'
VC = 270'
* K = 27
DS = 25 mph
PI = 18+45.00
EL = 435.13'
VC = 180'
* K = 39
DS = 30 mph
PI = 20+10.00
EL = 443.38'
VC = 80'
* K = 36
DS = 35 mph
TEMP IMPACT IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
EXCAVATION
PROPOSED GRADE
(-)19.7300%
(+)0.4000%
(+)5.0000%
(+)2.8000%
LOW POINT = 15+84.44
EL = 434.11
APPROACH SLAB (TYP)
EXISTING BRIDGE
CL 'II' RIP RAP TO TOP OF BERM (STRUCTURE PAY ITEM)
PLACE CL 'II' RIP RAP TO TOP OF BERM ON EXISTING SLOPE (STRUCTURE PAY ITEM)
TEMP CAUSEWAY #1
TEMP CAUSEWAY #2
WS ON 5/2/08=414.11
165.00' BRIDGE LIMITS
BMI ELEVATION = 421.18'
N 597092 E 1741284
BL STATION 19+34 75' LEFT
RR SPIKE IN BASE OF 6" ELM
11
12
13
14
15
16
17
18
19
20
21
22
23
24

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 427.5	FT
BASE DISCHARGE	= 6310	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 428.6	FT
OVERTOPPING DISCHARGE	= +8900	CFS
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 434.1	FT
DATE OF SURVEY	= 5/2/08	
W.S. ELEVATION AT DATE OF SURVEY	= 414.11	FT

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

PROJECT REFERENCE NO.	SHEET NO.
B-4582	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

Permit Drawing
Sheet 7 of 8

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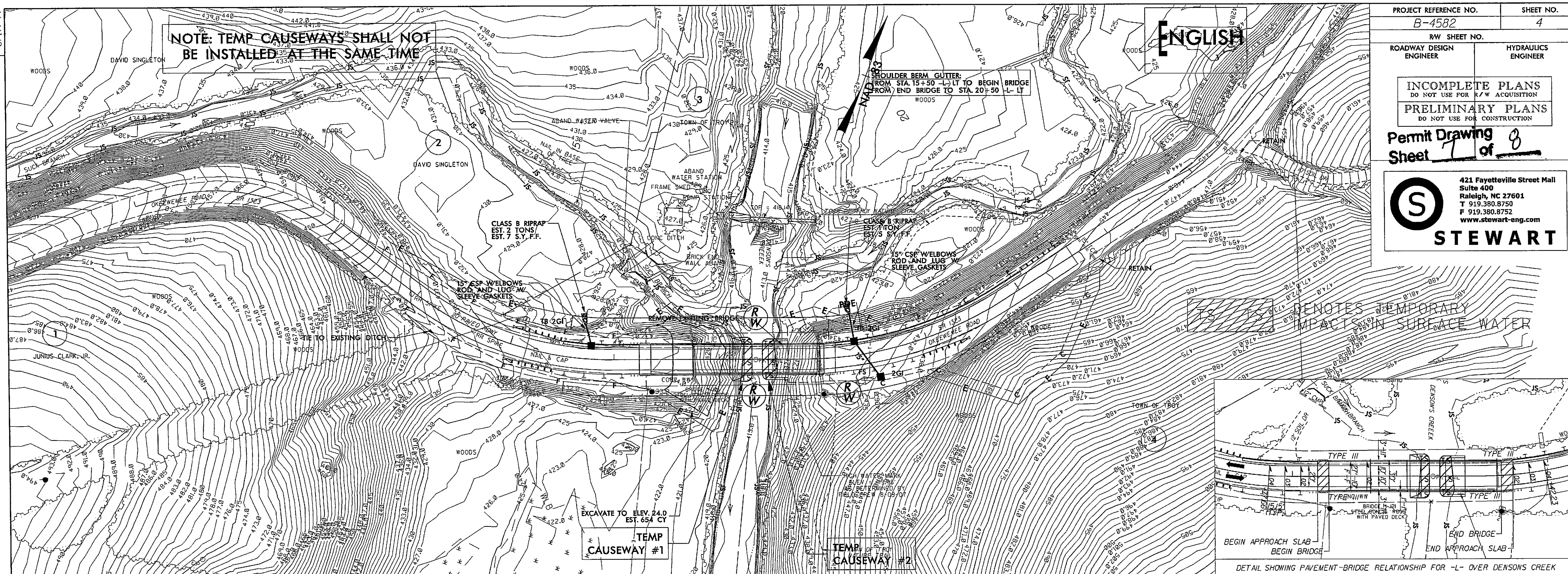
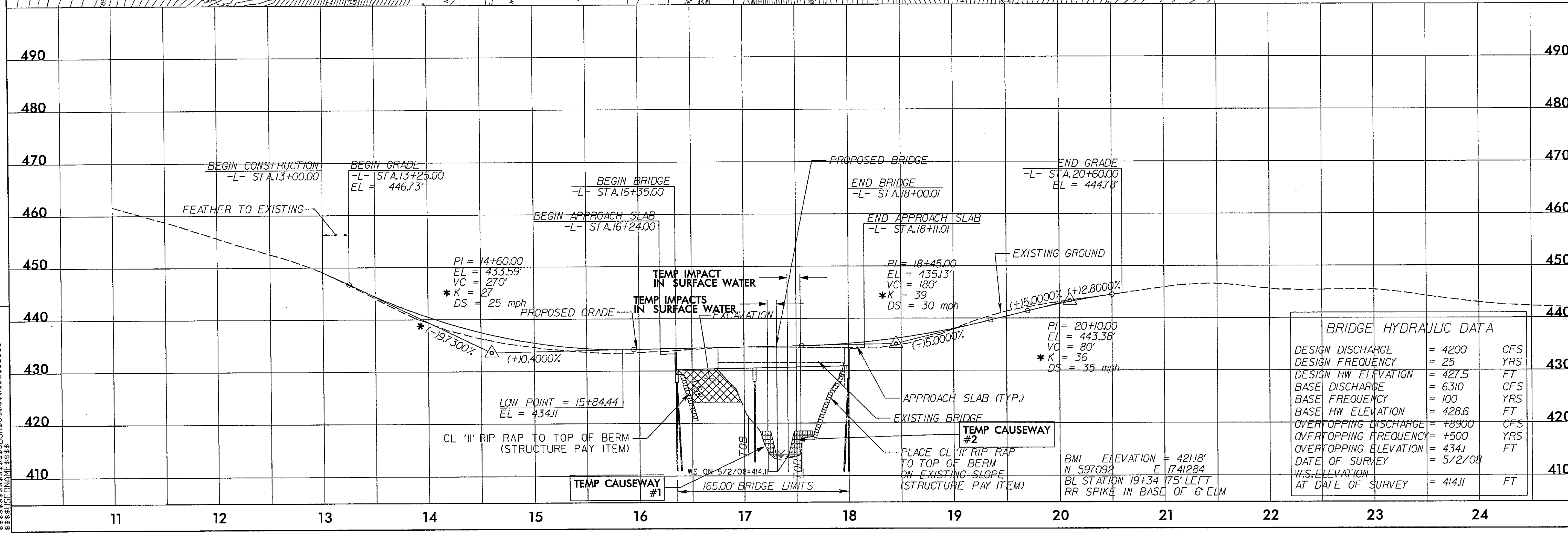
REVISIONS





BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4200	CFS
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BASE DISCHARGE	= 6310	CFS
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OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 434.1	FT
DATE OF SURVEY	= 5/2/08	
W.S. ELEVATION AT DATE OF SURVEY	= 414.11	FT

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4582	X-3

Permit Drawing
Sheet 2 of 3

19+00.00

2:1 0.040 0.040 4:1 2:1

S.S. 435.87

437.95

436.30

S.S. 439.36

18+50.00

2:1 0.040 0.040 4:1 2:1

S.S. 433.99

435.02

434.56

S.S. 436.23

END BRIDGE –L– STA. 18+00.01

434.39

TEMP
CAUSEWAY #2

18+00.01

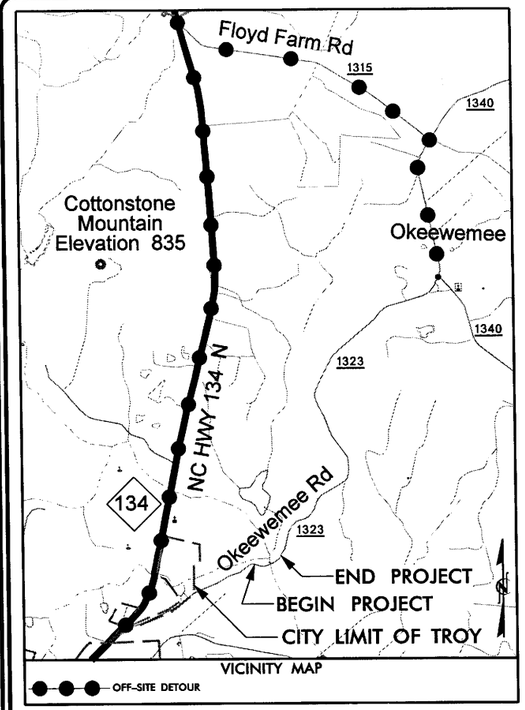
$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

09/08/09

TIP PROJECT: B-4582

CONTRACT:

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



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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4582	1	

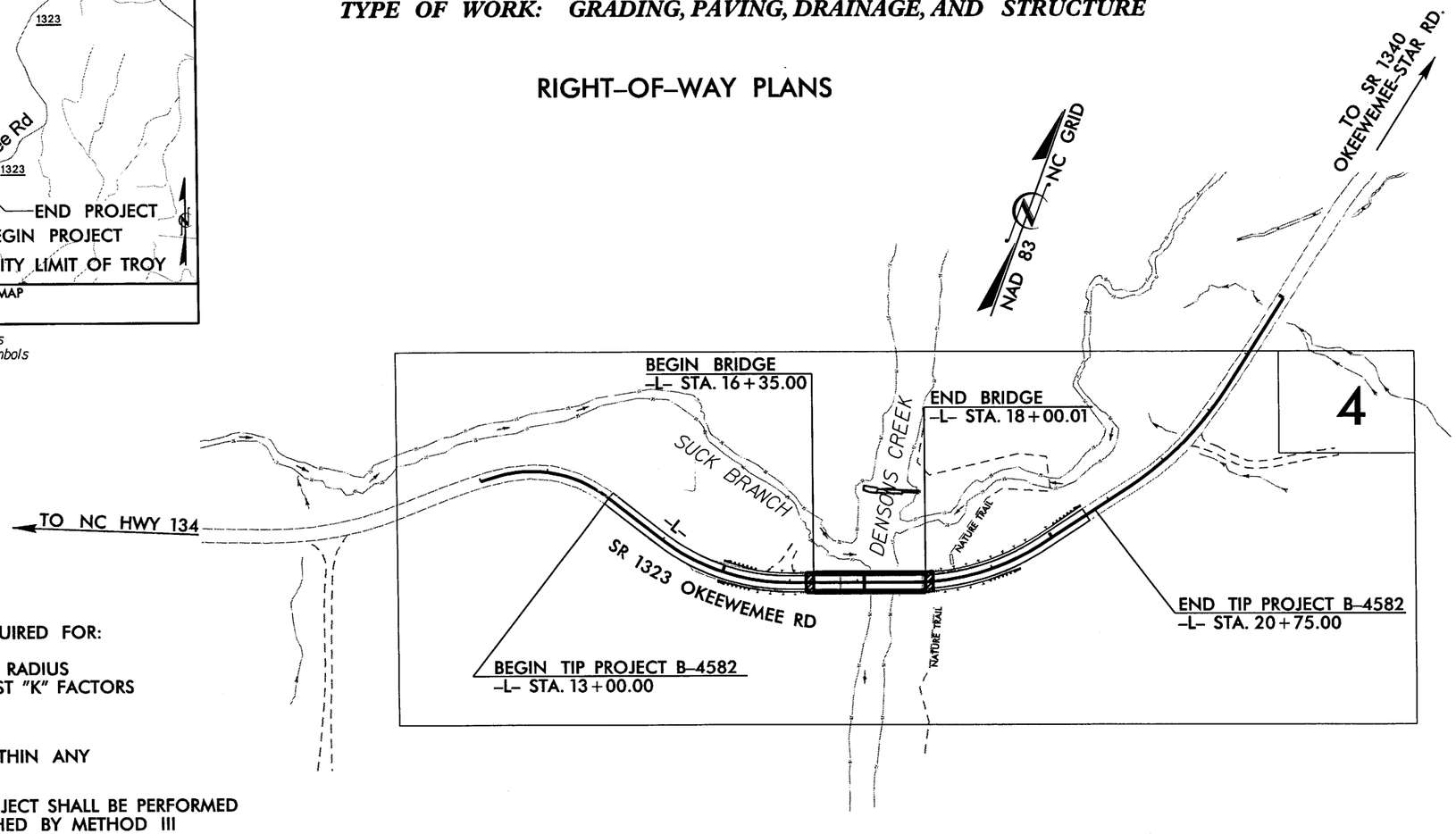
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33783.1.1	BRZ-1323(1)	PE
33783.2.1	BRZ-1323(1)	R/W /UTL.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: ***BRIDGE NO. 121 OVER DENSONS CREEK ON SR 1323 (OKEEWEMEE RD.).***

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

RIGHT-OF-WAY PLANS



* NOTE:
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MAXIMUM GRADE
MIN. HORIZONTAL CURVE RADIUS
VERTICAL SAG AND CREST "K" FACTORS
HORIZONTAL SSD

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

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ADT 2010 = 840
ADT 2030 = 1300
DHV = 13%
D = 65%
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* V = 60 MPH
CLASS = RURAL LOCAL

PROJECT LENGTH

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TOTAL LENGTH TIP PROJECT B-4582 = 0.147 mi.

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2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 17, 2009

LETTING DATE:
JULY 20, 2010

Prepared in the Office of:
STEWART ENGINEERING
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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

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4582	1-B

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 — 23
- 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
- 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
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- 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

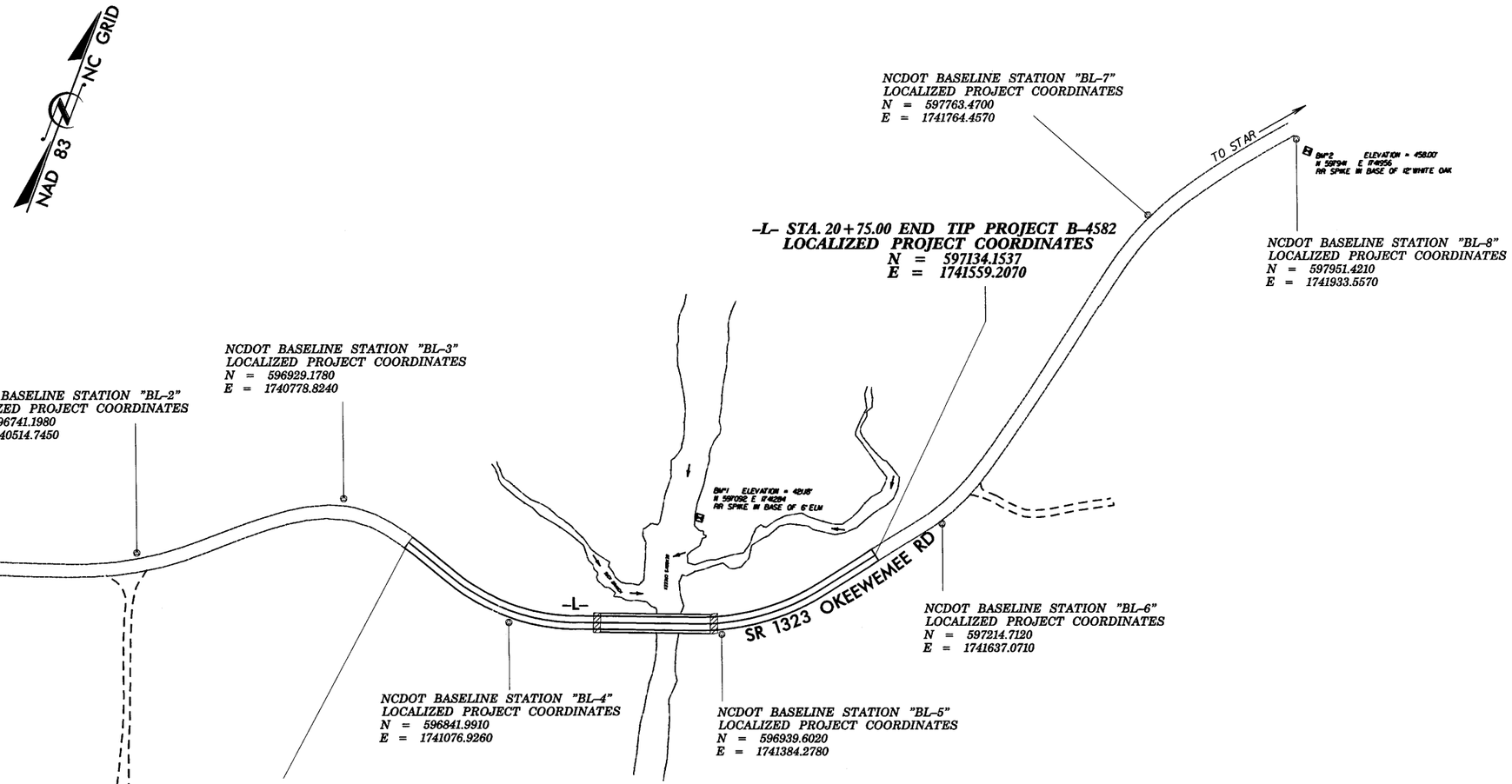
MISCELLANEOUS:

- 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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4582	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4582



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CLUB"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 596065.4122(ft) EASTING: 1738103.1544(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99985390
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"CLUB" TO -L- STATION 13+10.00 IS
N 73° 19' 32.2" E 2911.888'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4582_LS_CONTROL_080422.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.*

BL

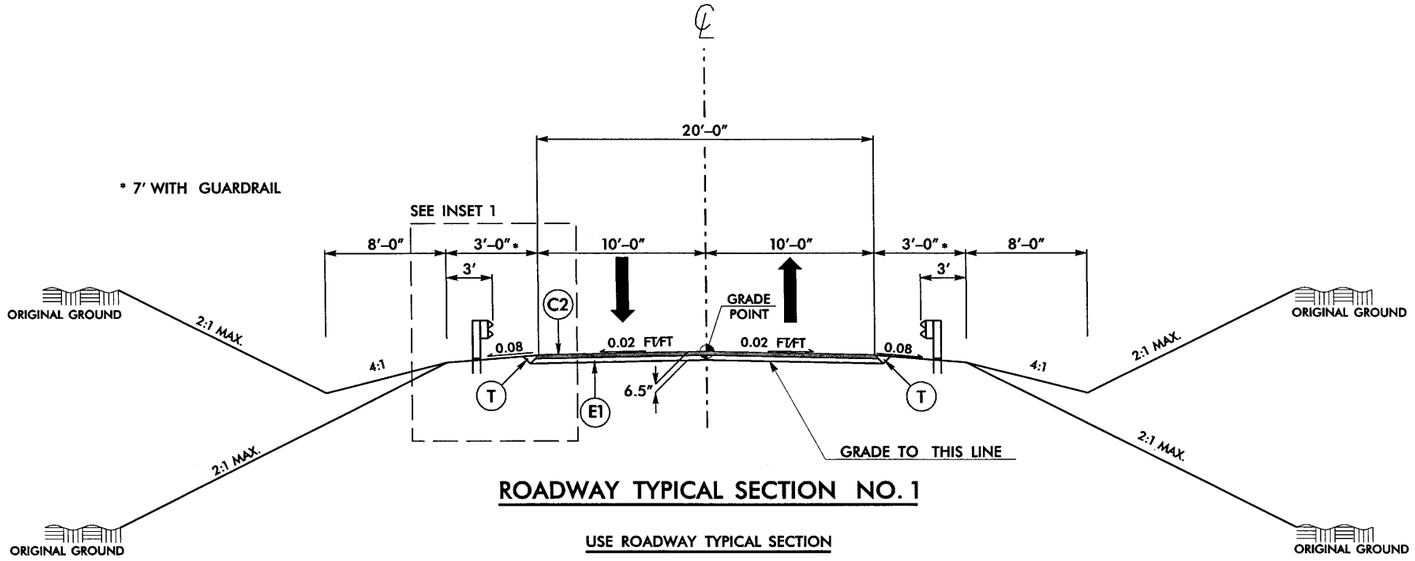
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	596521.7650	1740036.0300	497.98	OUTSIDE PROJECT LIMITS	
2	BL-2	596741.1980	1740514.7450	478.65	OUTSIDE PROJECT LIMITS	
3	BL-3	596929.1780	1740778.8240	455.82	11+99.15	28.99 LT
4	BL-4	596841.9910	1741076.9260	434.47	14+99.85	17.74 RT
5	BL-5	596939.6020	1741384.2780	433.93	18+16.89	17.17 RT
6	BL-6	597214.7120	1741637.0710	446.98	21+84.51	16.86 RT
7	BL-7	597763.4700	1741764.4570	449.55	OUTSIDE PROJECT LIMITS	
8	BL-8	597951.4210	1741933.5570	463.38	OUTSIDE PROJECT LIMITS	

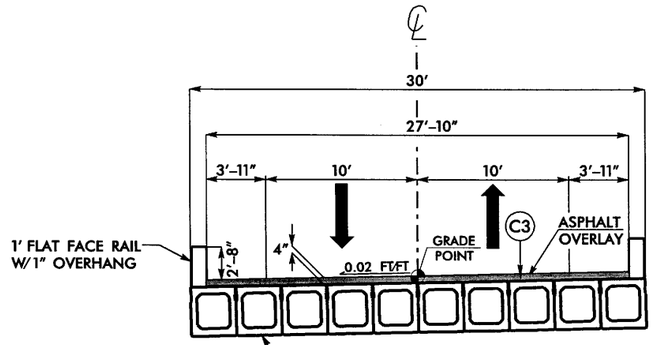
BM1 ELEVATION = 421.18
N 597092 E 741284
L STATION 17+76.162 LEFT
RR SPIKE IN BASE OF 6 INCH ELM

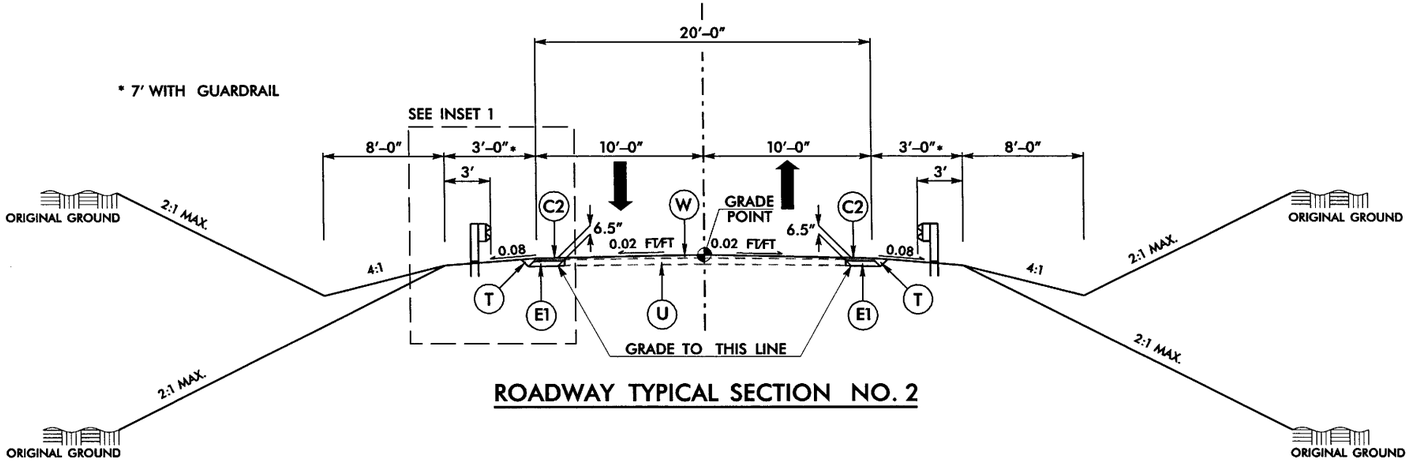
BM2 ELEVATION = 458.00
N 597941 E 741956
L STATION 25+88
N 29° 51' 01" E DIST 481.96
RR SPIKE IN BASE OF 12 INCH WHITE OAK

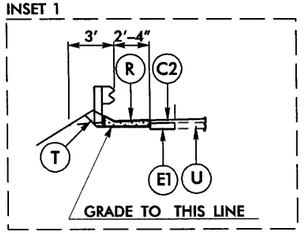
NOTE: DRAWING NOT TO SCALE

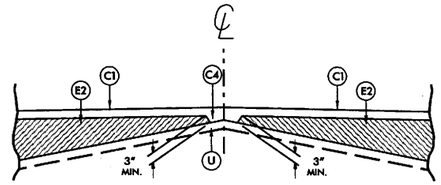
$$$$SYSTIME$$$$
$$$$USERDOMAIN$$$$\$$$$USERNAME$$$$











PROJECT REFERENCE NO.	SHEET NO.
B-4582	2

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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F 919.380.8752
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ROADWAY TYPICAL SECTION NO. 1

USE ROADWAY TYPICAL SECTION

-L- STA. 15+85.00 TO -L- STA. 16+35.00 (BEGIN BRIDGE)
-L- STA. 18+00.01 (END BRIDGE) TO -L- STA. 20+60.00

BRIDGE TYPICAL SECTION

USE BRIDGE TYPICAL SECTION

-L- STA. 16+35.00 TO -L- STA. 18+00.01

ROADWAY TYPICAL SECTION NO. 2

-L- STA. 13+00.00 TO -L- STA. 13+25.00 (FEATHER TO EXISTING)
-L- STA. 13+25.00 TO -L- STA. 15+85.00

	PAVEMENT SCHEDULE
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C3	PROP. APPROX. 4 " ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 146.7 LBS. PER SQ. YD. IN EACH OF THREE LAYERS
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4 " ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 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.

INSET 1

USE INSET 1

-L- STA. 15+50.00 LT TO BEGIN APP. SLAB LT
END APP. SLAB LT TO -L- STA. 20+10.00 LT

Detail Showing Method of Wedging

6/2/99

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

COMPUTED BY: JCH	DATE: 1-15-09
CHECKED BY: DRR	DATE: 1-15-09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4582	3

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. 13+10.00	-L- STA. 16+35.00	655*	122		543
-L- STA. 18+00.01	-L- STA. 20+75.00	1782	125		1657
PROJECT TOTALS:		2437	247		2200
LOSS DUE TO CLEARING AND GRUBBING		122			122
GRAND TOTALS:		2315	247	0	2068
SAY:		2315			

* 655 CY OF EXCAVATION IS THE EXCAVATION AHEAD OF END BENT 1.

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	LENGTH
-L-	15+50.00	16+24.00	LT	74
-L-	18+11.01	20+10.00	LT	198.99
				TOTAL: 272.99
				SAY: 273

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

STATION SIZE THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	TRAFFIC BEARING G.D.I. STD. 840.35	G.D.I. TYPE "B" STD. 840.18 OR 840.27	15" CORR. STEEL PIPE ELBOWS	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	REMARKS
15+78.00	LT	1		433.5																																						1							1			1		
15+78.00	LT	1	2		430.7	426.5											24																																		2			
18+50.00	RT	3		434.3																																						1								1			1	
18+50.00	RT	3	4		431.5	431.3			44																																													
18+30.00	LT	4		435.4																																						1							1			1		
18+30.00	LT	4	5		431.3	422.7											28																																		2			
						TOTALS			44								48																									3							2	1	4	2	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 STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GRAU 350	M-350	III	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	14+97.50	BRIDGE (16+35.00)	LT	137.5					4	7		50		1			1		1											NCDOT ROADWAY STD. 862.01
-L-	14+97.50	BRIDGE (16+35.00)	RT	137.5					4	7	50		1				1		1											NCDOT ROADWAY STD. 862.01
-L-	BRIDGE (18+00.01)	20+62.50	LT	262.5					4	7	50		1				1		1											NCDOT ROADWAY STD. 862.01
-L-	BRIDGE (18+00.01)	19+37.50	RT	137.5					4	7		50		1			1		1											NCDOT ROADWAY STD. 862.01
TOTAL				675													4		4											

TOTAL	675
DEDUCTIONS FOR ANCHOR UNITS	275
TOTAL	400

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

PROJECT REFERENCE NO.	SHEET NO.
B-4582	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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Raleigh, NC 27601
T 919.380.8750
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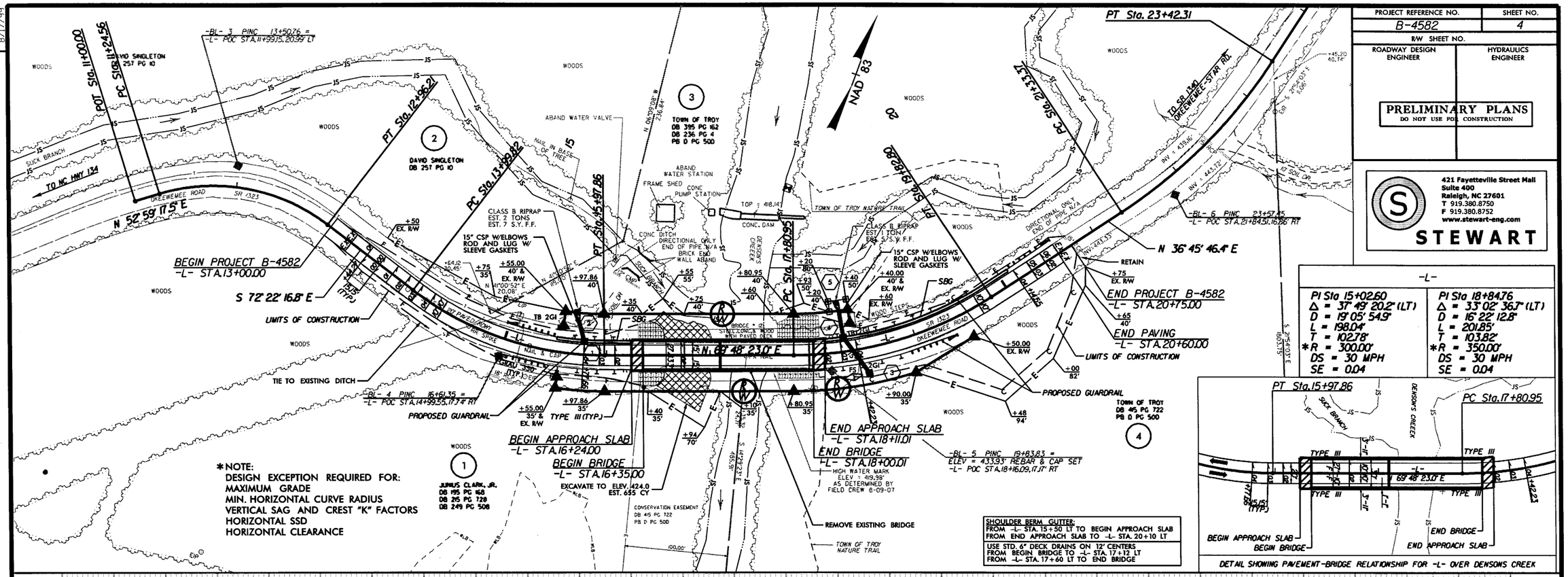
REVISIONS

8/17/99

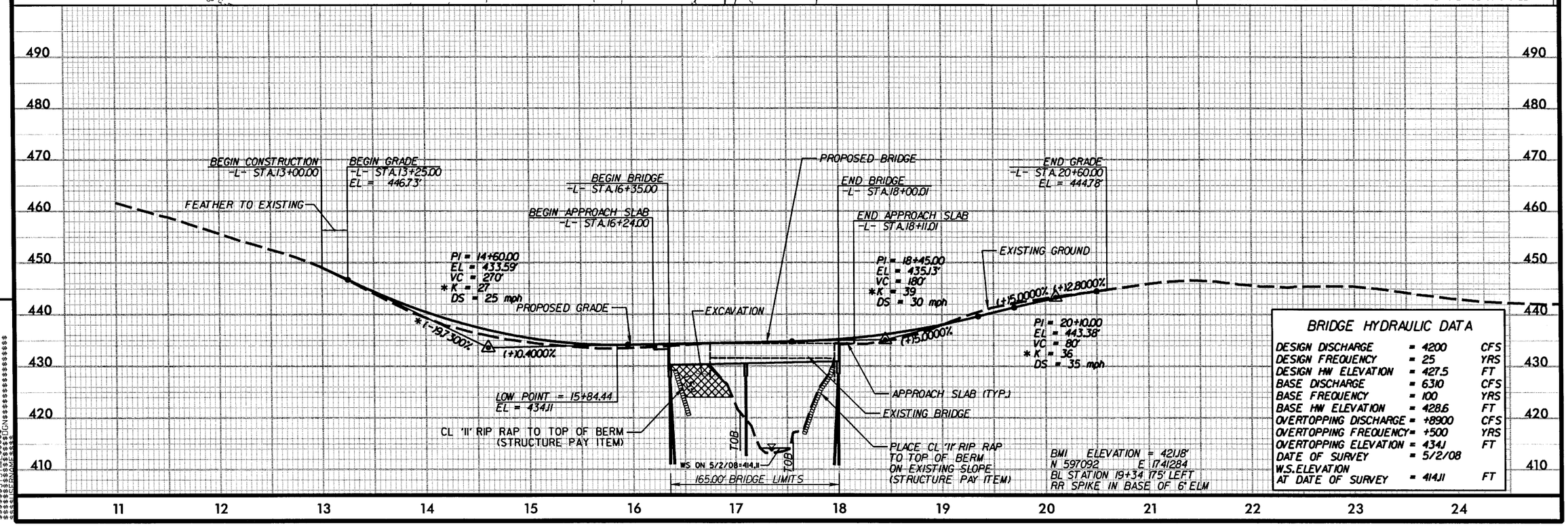


PI Sta 15+02.60	PI Sta 18+84.76
Δ = 37° 49' 20.2" (LT)	Δ = 33° 02' 36.7" (LT)
D = 19° 05' 54.9"	D = 16° 22' 12.8"
L = 198.04'	L = 201.85'
T = 102.78'	T = 103.82'
*R = 300.00'	*R = 350.00'
DS = 25 MPH	DS = 30 MPH
SE = 0.04	SE = 0.04

*NOTE:
DESIGN EXCEPTION REQUIRED FOR:
MAXIMUM GRADE
MIN. HORIZONTAL CURVE RADIUS
VERTICAL SAG AND CREST "K" FACTORS
HORIZONTAL SSD
HORIZONTAL CLEARANCE

SHOULDER BERM GUTTER:
FROM -L- STA. 15+50 LT TO BEGIN APPROACH SLAB
FROM END APPROACH SLAB TO -L- STA. 20+10 LT

USE STD. 6" DECK DRAINS ON 12' CENTERS
FROM BEGIN BRIDGE TO -L- STA. 17+12 LT
FROM -L- STA. 17+60 LT TO END BRIDGE



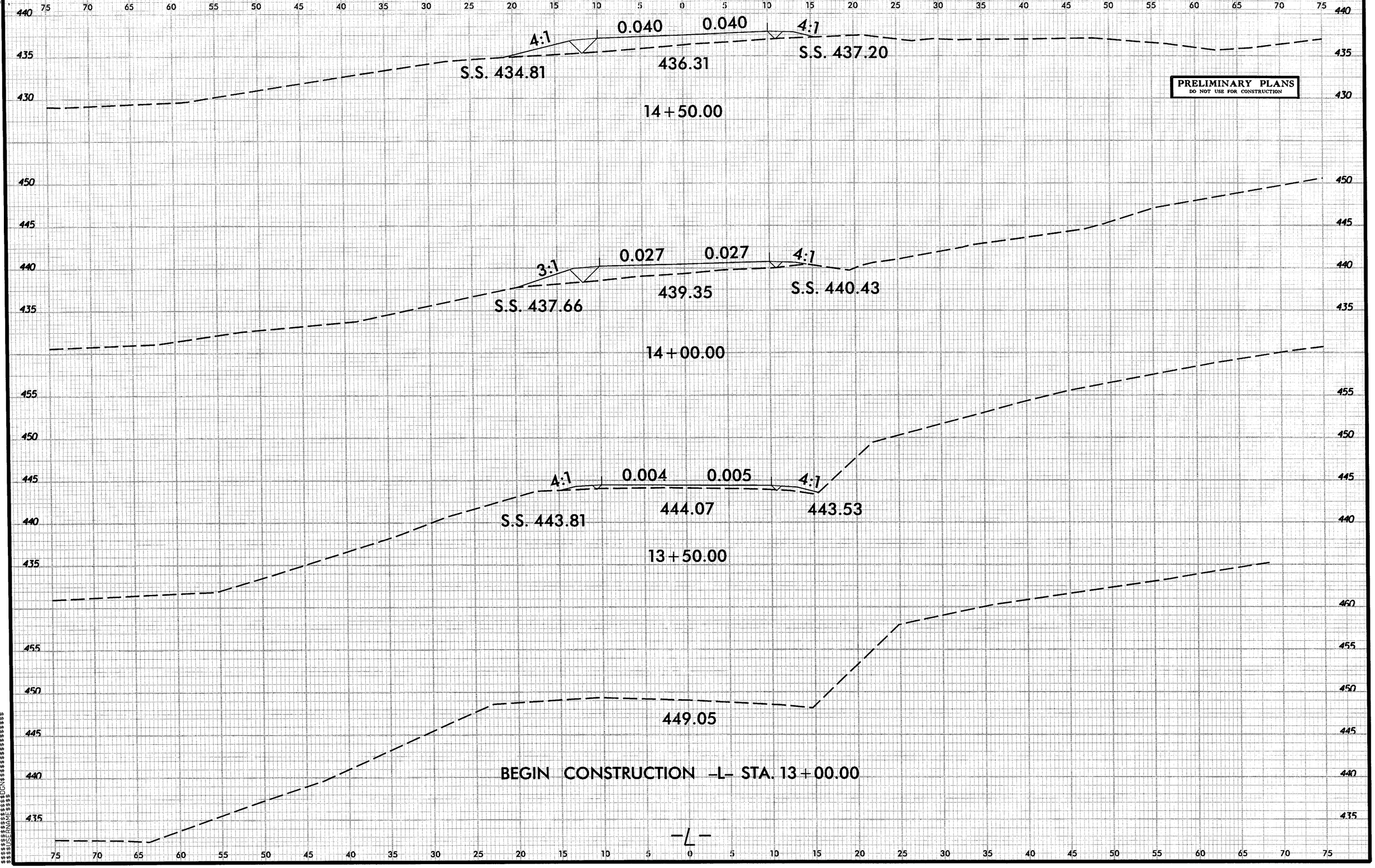
BMI ELEVATION = 421.18'
N 597092 E 1741284
BL STATION 19+34 17.5' LEFT
RR SPIKE IN BASE OF 6" ELM

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 427.5	FT
BASE DISCHARGE	= 6310	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 428.6	FT
OVERTOPPING DISCHARGE	= +8900	CFS
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING ELEVATION	= 434.1	FT
DATE OF SURVEY	= 5/2/08	
W.S. ELEVATION AT DATE OF SURVEY	= 414.11	FT

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4582	X-1



PRELIMINARY PLANS
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$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4582	X-2

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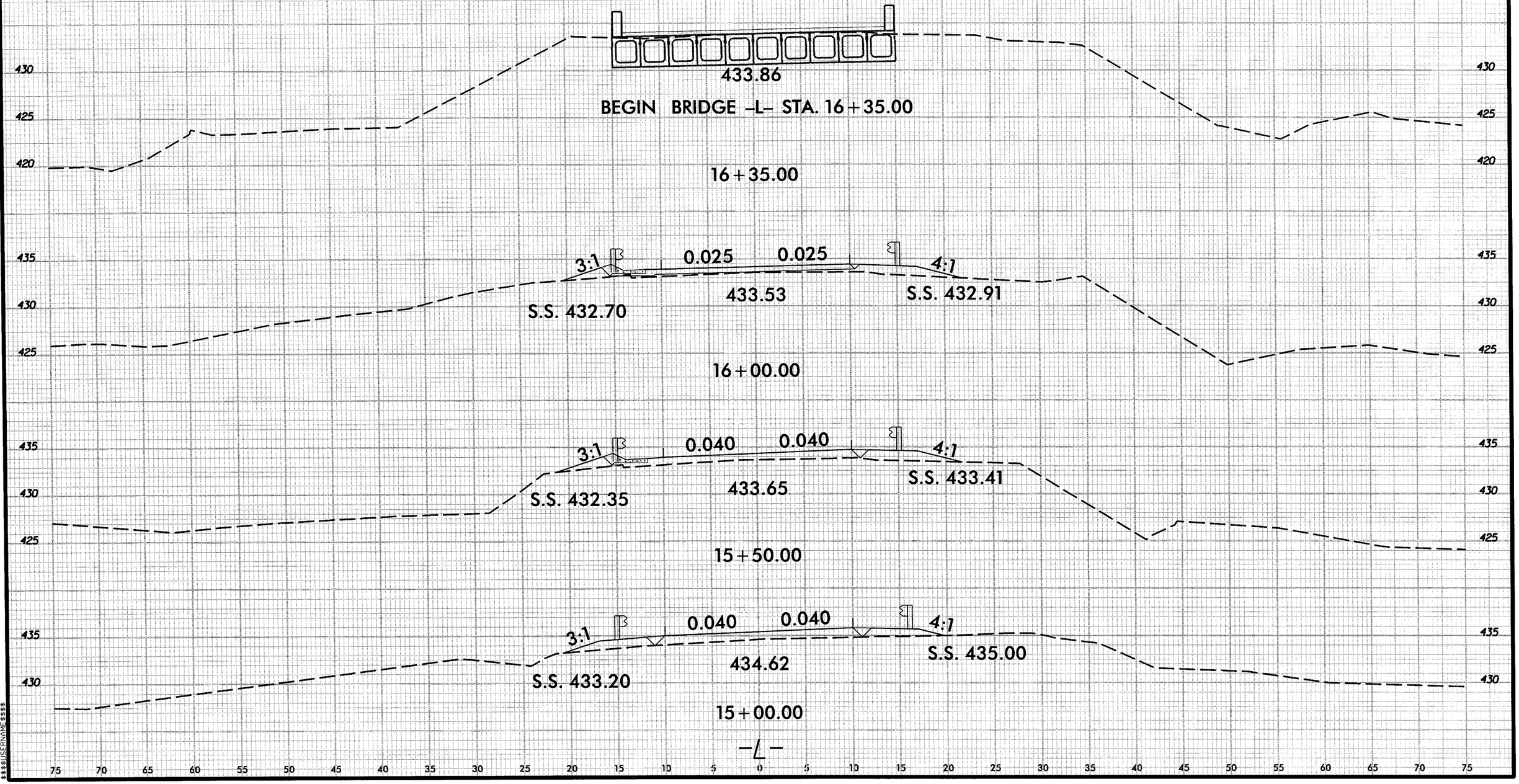

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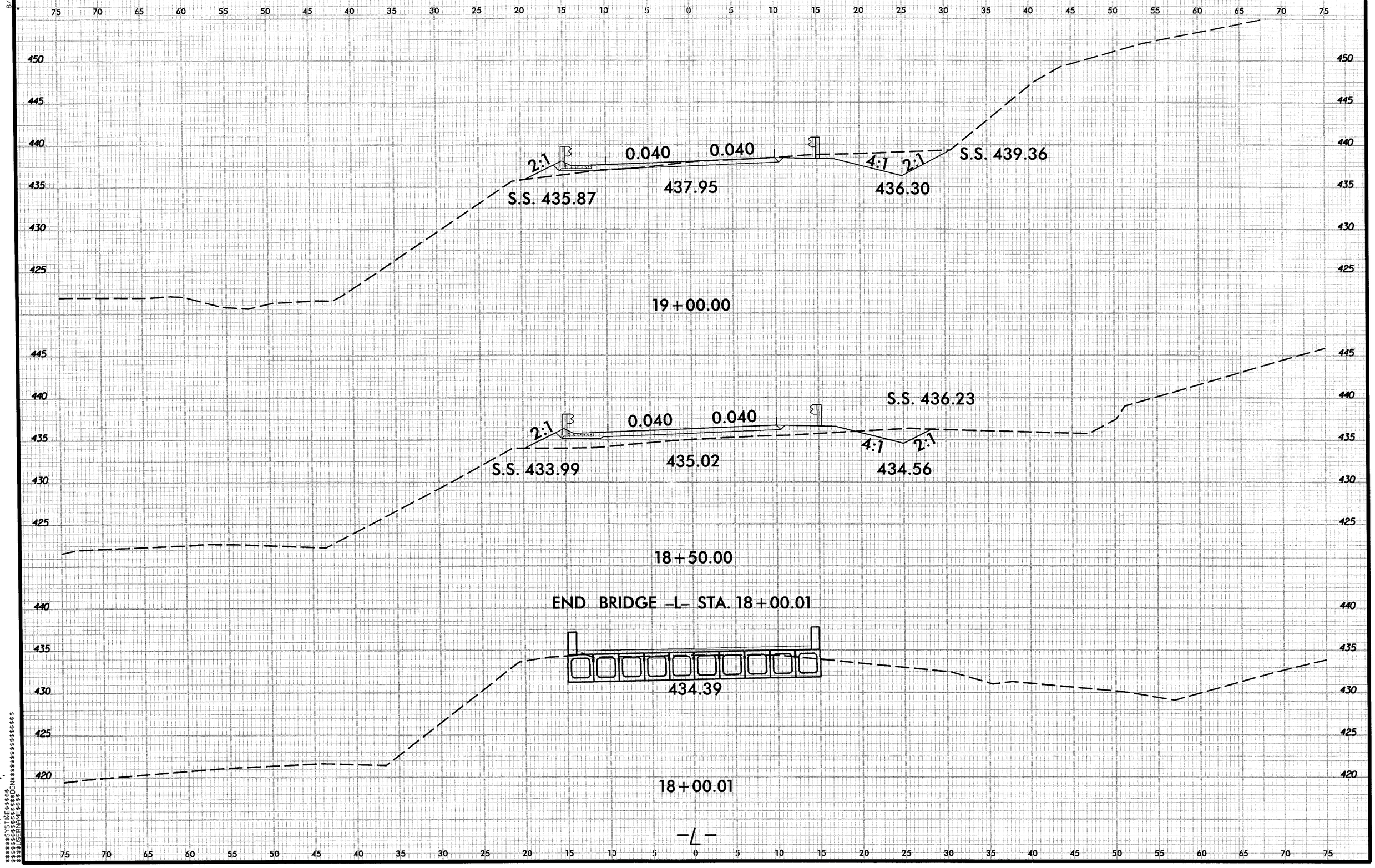
$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

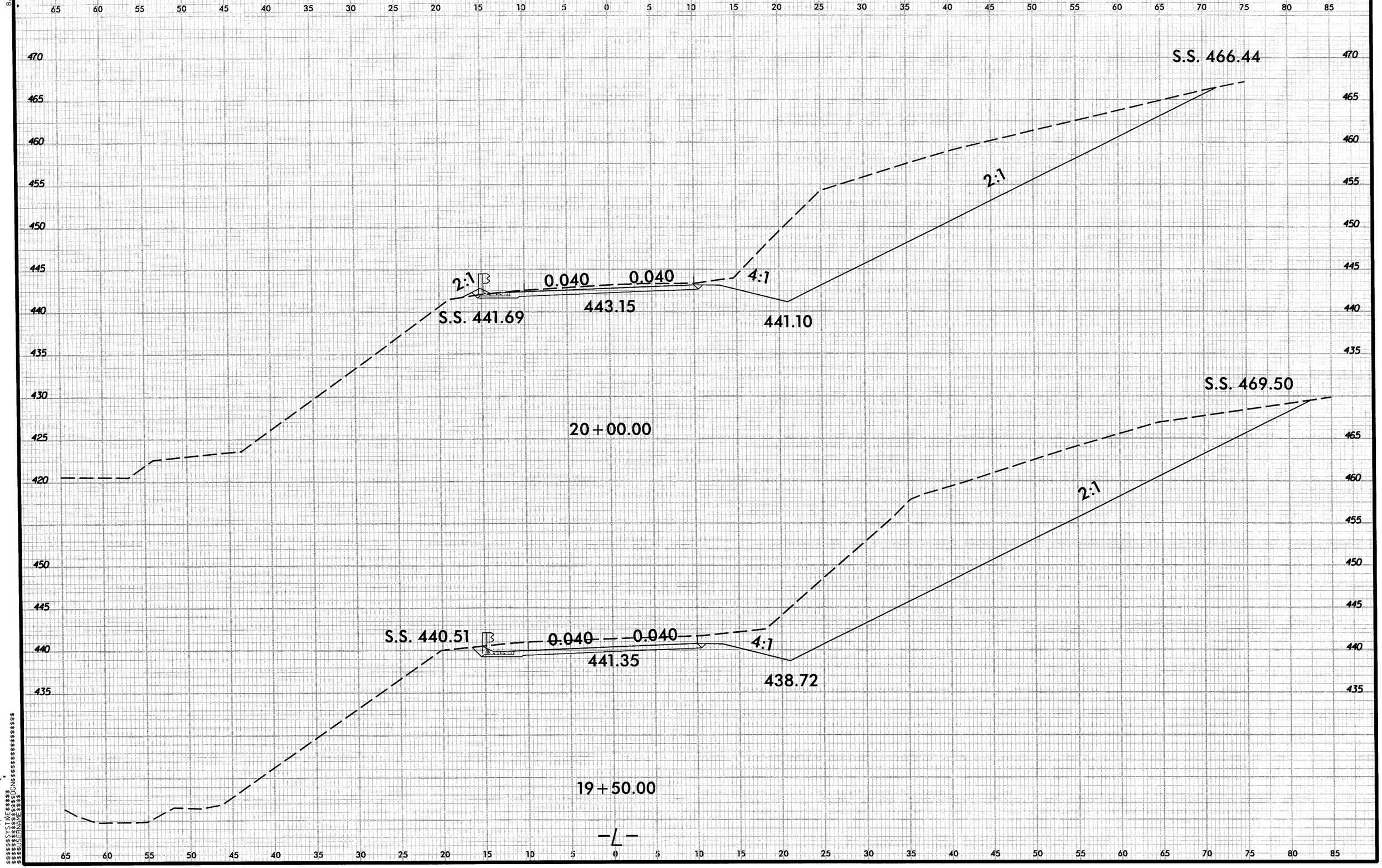
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4582	X-3



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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4582	X-4



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

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4582	X-5

8/23/99

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