STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI
SECRETARY

March 19, 2012

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive Suite 105
Wake Forest, NC 27587

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Dear Sirs:

Subject: **Application for Section 404 Nationwide Permits 13, 23, and 33, Section 401 Water Quality Certification, and Tar-Pamlico Riparian Buffer Authorization** for the Replacement of Bridge No. 73 on SR 1002 (Seven Paths Rd.) over Prong Cypress Creek in Franklin County, North Carolina. TIP No. B-4513. Federal Aid Project No. BRSTP-1002(15); State Project No. 8.2361001

Debit $240.00 from WBS Element 33738.1.1.

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 73 over Prong Cypress Creek on SR 1002 in Franklin County. The project involves replacement of the existing 40-foot structure with a 143-foot long bridge in the same location. There will be 0.03 acre of permanent riparian wetland impacts due to mechanized clearing, 69 feet of bank stabilization, 0.01 acre of temporary stream impacts due to a coffer dam, and 1,709 square feet of riparian buffer impacts on this project.

Please find enclosed the Pre-Construction Notification (PCN) form, stormwater management plan, permit drawings, and design plans for the above referenced project. A Programmatic Categorical Exclusion (PCE) was completed for this project on April 27, 2009 and distributed shortly thereafter. Additional copies are available upon request.

The proposed let date for the project is November 20, 2012 with a review date of October 2, 2012. However, the let date may advance as additional funds become available.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-707-6100
FAX: 919-212-5785
WEBSITE: WWW.NCDOT.ORG

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

A copy of this permit application will be posted on the NCDOT Website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Amy James at aejames@ncdot.gov or (919) 707-6129.

Sincerely,

for Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Unit

cc: NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13 23 33 or General Permit (GP) number:		
1c. Has the N WP 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. 73 over Prong Cypress Creek on SR 1002
2b. County:	Franklin
2c. Nearest municipality / town:	Seven Paths
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4513

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6129
3g. Fax no.:	(919) 212-5785
3h. Email address:	aejames@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: 36.26026 (DD.DDDDDD)	Longitude: - 78.197639 (-DD.DDDDDD)
1c. Property size:	1.6 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Prong Cypress Creek	
2b. Water Quality Classification of nearest receiving water:	B;NSW	
2c. River basin:	Tar Pamlico	
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 in the project vicinity consists primarily of agricultural and forested land with low density residential development.		
3b. List the total estimated acreage of all existing wetlands on the property: 2.8		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 672		
3d. Explain the purpose of the proposed project: To 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 40-foot bridge with a 143-foot, 3-span bridge on the existing alignment with an off-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☒ 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 & Steve Kichefski	Agency/Consultant Company: ESI Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. A JD site visit was conducted on October 31, 2006; however, no paper copy was ever received.		
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	Fill	Freshwater Marsh	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 1 ☒ P ☐ T	Mechanized Clearing	Freshwater Marsh	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.03
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0.03 Permanent 0.0 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 2 ☒ P ☐ T	Bank Stabilization	Prong Cypress Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	35	69
Site 3 ☐ P ☒ T	Temporary Coffer Dam	Prong Cypress Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	35	58
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	69 Perm 58 Temp

3i. Comments:

4. Open Water Impacts

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

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
			4f. Total open water impacts	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	Bridge	Prong Cypress Creek	☐ Yes ☒ No	896	813
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
			6h. **Total buffer impacts**	896	813

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 103 feet longer than the existing bridge and will be at approximately the same grade and alignment; 3:1 fill slopes where practicable; no deck drains on bridge; and the implementation of Design Standards in Sensitive Watersheds.

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

NCDOT Best Management Practices for Bridge Demolition, Removal and Construction will be followed, as well as those for Sedimentation and Erosion Control; the shoulder berm and gutter system will drain to a preformed scour hole instead of Prong Cypress Creek; and the utilization of an off-site detour.

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: Wetland impacts will occur on the edge of a much larger system and as such should not cause any change in wetland quality or function. Therefore, no compensatory mitigation is proposed.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigat ion 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 not, explain why. Comments: see attached buffer permit drawings.	☒ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☒ No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes	☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ 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, ind icate 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? USFWS county list.		
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. Luck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	3.15.12 Date

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: 33738.1.1 **County(ies):** Franklin

General Project Information

Project No.:	33738.1.1		**Project Type:**	Bridge Replacement	**Date:**	12/9/2011
NCDOT Contact:	Marshall Clawson		**Contractor / Designer:**	Henry Wells, PE		
	Address: 1020 Birch Ridge Rd Raleigh, NC 27610			**Address:** 915 Jones Franklin Rd Raleigh, NC 27606		
	Phone: 919-250-4100			**Phone:** 919-859-2243		
	Email: mclawson@ncdot.gov			**Email:** hwells@sungatedesign.com		
City/Town:	Seven Paths		**County(ies):**	Franklin		
River Basin(s):	Tar-Pamlico		**CAMA County?**	No		
Primary Receiving Water:	Prong Cypress Creek		**NCDWQ Stream Index No.:**	28-31-(1)		
NCDWQ Surface Water Classification for Primary Receiving Water		**Primary:**	Class B			
		Supplemental:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
303(d) Impairments:	None					
Buffer Rules in Effect	Tar-Pamlico					

Project Description

Project Length (lin. Miles or feet):	0.13	**Surrounding Land Use:**	Rural Woodland and Agriculture
	Proposed Project		**Existing Site**
Project Built-Upon Area (ac.)	0.44 ac.		0.31 ac.
Typical Cross Section Description:	11' lanes with shoulder section and guardrail near bridge		
Average Daily Traffic (veh/hr/day):	Design/Future: 2920 vpd		Existing: 1460 vpd
General Project Narrative:	B-4513, in Frankling County, consists of replacing bridge number 73 over Prong Cypress Creek and approaches on SR 1002. The project site is in the Tar-Pamlico River Basin where buffer rules apply. The proposed bridge will not have deck drains. There are stream, wetland and buffer impacts on this project. Preformed Scour holes have been utlized as BMP's where applicable.		

References

TIP PROJECT: B-4513

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4513	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33738.1.1	BRSTP-1002(15)	PE
33738.2.1	BRSTP-1002(15)	R/W & UTILITIES

ENGLISH

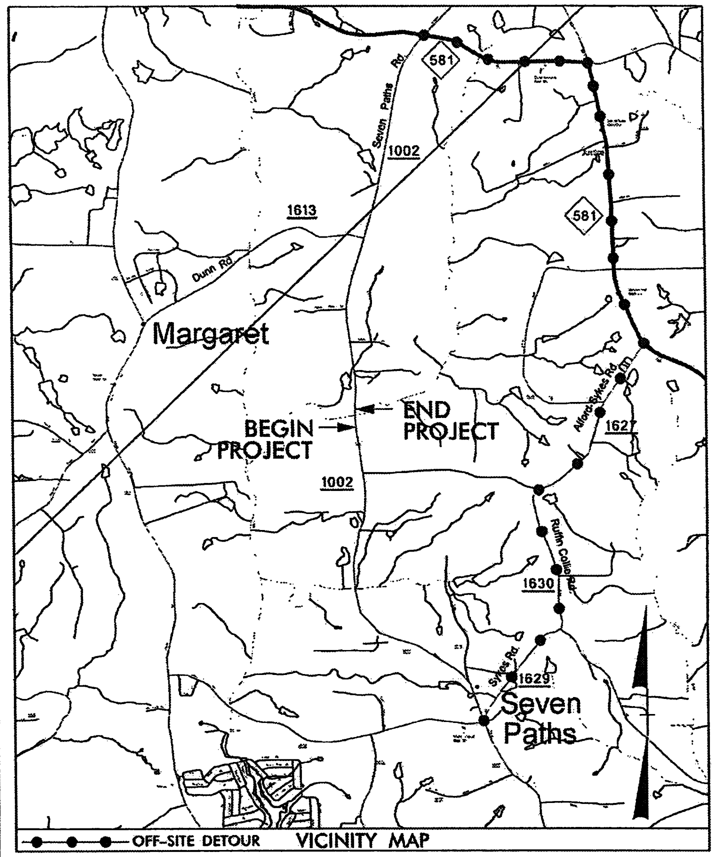
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: ***BRIDGE NO. 73 OVER PRONG CYPRESS CREEK ON SR 1002 (SEVEN PATHS RD.)***

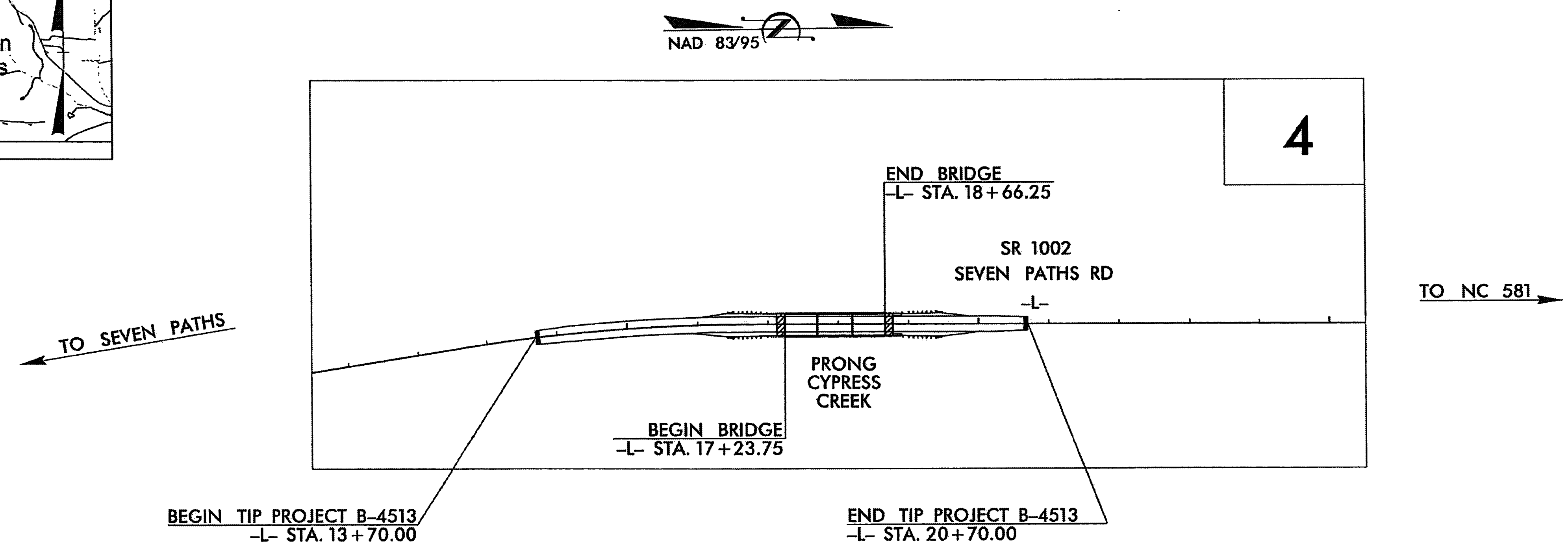
TYPE OF WORK: ***GRADING, PAVING, DRAINAGE, AND STRUCTURE***

R/W PLANS

WETLAND/STREAM IMPACTS



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



Permit Drawing
Sheet 1 of 8

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

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 2012 = 1550
ADT 2032 = 2990
DHV = 10%
D = 60%
T = 3% *
* (TTST 1% + DUAL 2%)
V = 40 MPH
CLASS = RURAL MINOR COLLECTOR
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4513	=	0.106 mi.
LENGTH STRUCTURE TIP PROJECT B-4513	=	0.027 mi.
TOTAL LENGTH TIP PROJECT B-4513	=	0.133 mi.

STEWART

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 18, 2011

LETTING DATE:
NOVEMBER 20, 2012

BEN CRAWFORD, PE
PROJECT ENGINEER

JONATHAN HEFNER, PE
PROJECT DESIGN ENGINEER

BRENDA L. MOORE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

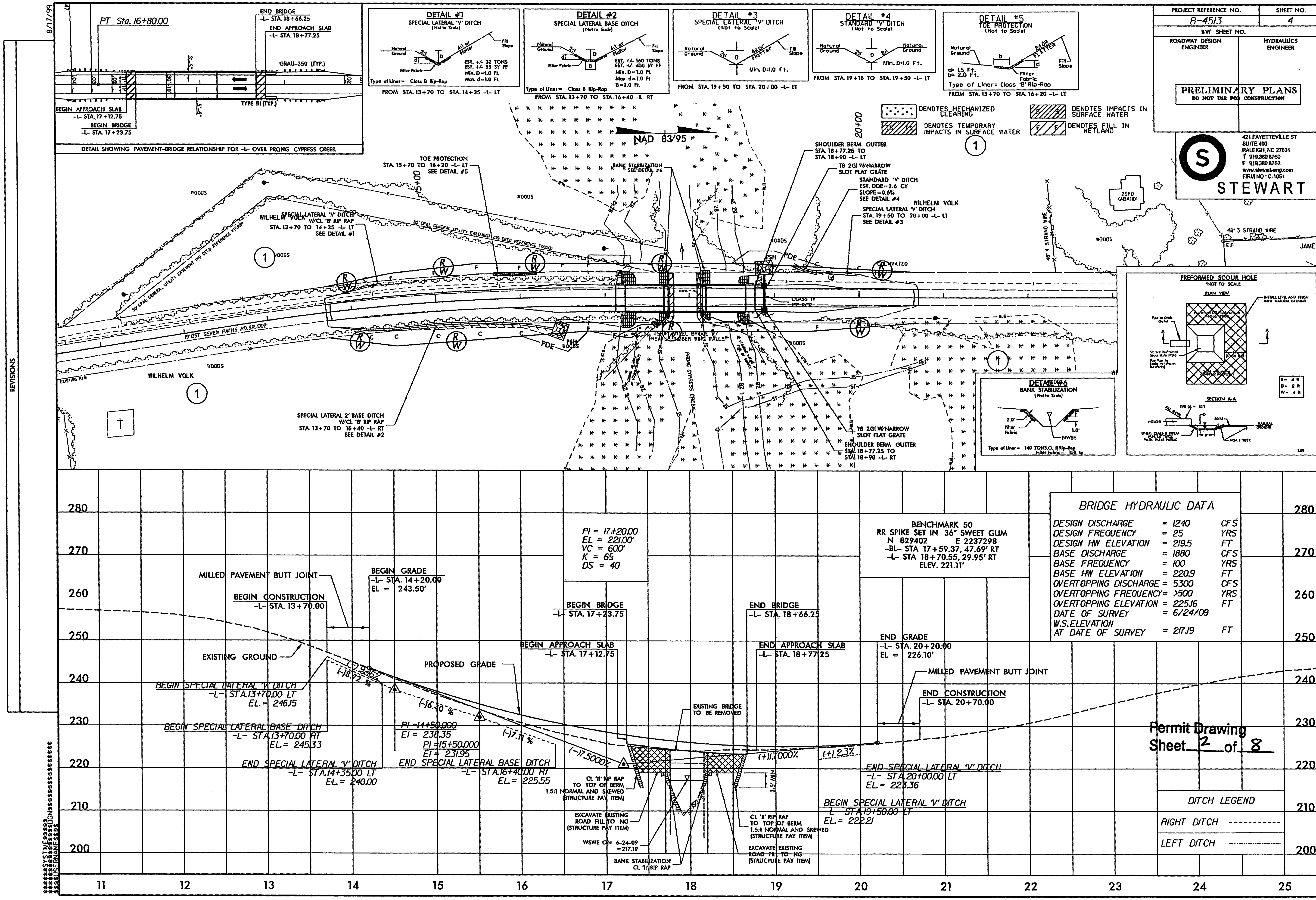
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER

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

09/08/99

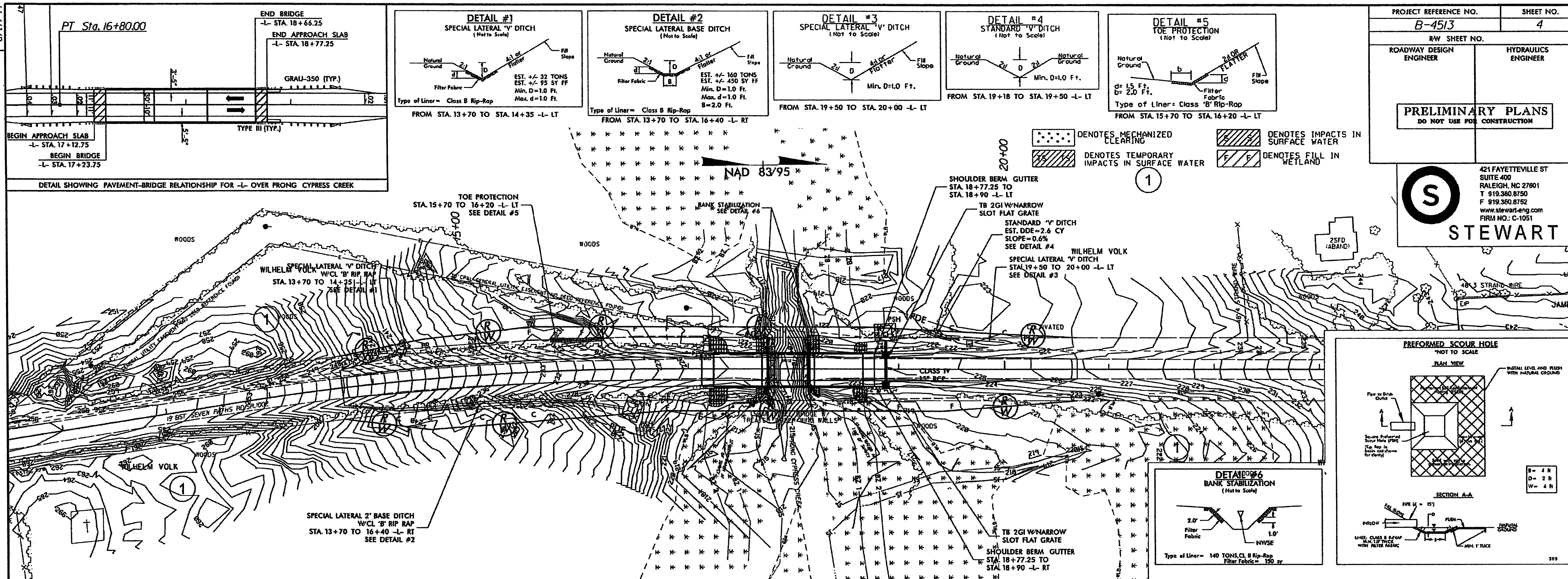


PROJECT REFERENCE NO. B-4513
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
421 FAYETTEVILLE ST SUITE 400 RALEIGH, NC 27601 T 919.380.8750 F 919.380.8752 www.stewart-eng.com FIRM NO: C-1051
STEWART
DETAIL #1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
FROM STA. 13+70 TO STA. 14+35 -L- LT
DETAIL #2
SPECIAL LATERAL BASE DITCH
(Not to Scale)
FROM STA. 13+70 TO STA. 16+40 -L- RT
DETAIL #3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
FROM STA. 19+50 TO STA. 20+00 -L- LT
DETAIL #4
STANDARD 'V' DITCH
(Not to Scale)
FROM STA. 19+18 TO STA. 19+50 -L- LT
DETAIL #5
TOE PROTECTION
(Not to Scale)
FROM STA. 15+70 TO STA. 16+20 -L- LT
DETAIL #6
BANK STABILIZATION
(Not to Scale)
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
PT Sta. 16+80.00
END BRIDGE -L- STA. 18+66.25
END APPROACH SLAB -L- STA. 18+77.25
GRAU-350 (TYP.)
TYPE III (TYP.)
BEGIN APPROACH SLAB -L- STA. 17+12.75
BEGIN BRIDGE -L- STA. 17+23.75
DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER PRONG CYPRESS CREEK
NAD 83/95
TOE PROTECTION STA. 15+70 TO 16+20 -L- LT SEE DETAIL #5
BANK STABILIZATION SEE DETAIL #6
SHOULDER BERM GUTTER STA. 18+77.25 TO STA. 18+90 -L- LT
TB 2GI W/NARROW SLOT FLAT GRATE
STANDARD 'V' DITCH EST. DDE=2.6 CY SLOPE=0.6% SEE DETAIL #4
SPECIAL LATERAL 'V' DITCH STA. 19+50 TO 20+00 -L- LT SEE DETAIL #3
SPECIAL LATERAL 'V' DITCH W/CL 'B' RIP RAP STA. 13+70 TO 14+35 -L- LT SEE DETAIL #1
SPECIAL LATERAL 2' BASE DITCH W/CL 'B' RIP RAP STA. 13+70 TO 16+40 -L- RT SEE DETAIL #2
WILHELM VOLK
SR 1002 SEVEN PATHS RD.
PRONG CYPRESS CREEK
WOODS
JAMES
PREFORMED SCOUR HOLE
REVISIONS
PI = 17+20.00
EL = 221.00'
VC = 600'
K = 65
DS = 40
BENCHMARK 50
RR SPIKE SET IN 36" SWEET GUM
N 829402 E 2237298
-BL- STA 17+59.37, 47.69' RT
-L- STA 18+70.55, 29.95' RT
ELEV. 221.11'
MILLED PAVEMENT BUTT JOINT
BEGIN GRADE -L- STA. 14+20.00 EL = 243.50'
BEGIN CONSTRUCTION -L- STA. 13+70.00
BEGIN BRIDGE -L- STA. 17+23.75
END BRIDGE -L- STA. 18+66.25
BEGIN APPROACH SLAB -L- STA. 17+12.75
END APPROACH SLAB -L- STA. 18+77.25
END GRADE -L- STA. 20+20.00 EL = 226.10'
END CONSTRUCTION -L- STA. 20+70.00
EXISTING GROUND
PROPOSED GRADE
EXISTING BRIDGE TO BE REMOVED
BEGIN SPECIAL LATERAL 'V' DITCH -L- STA.13+70.00 LT EL.= 246.15
BEGIN SPECIAL LATERAL BASE DITCH -L- STA.13+70.00 RT EL.= 245.33
END SPECIAL LATERAL 'V' DITCH -L- STA.14+35.00 LT EL.= 240.00
PI =14+50.000 El = 238.35
PI =15+50.000 El = 231.95
END SPECIAL LATERAL BASE DITCH -L- STA.16+40.00 RT EL.= 225.55
END SPECIAL LATERAL 'V' DITCH -L- STA.20+00.00 LT EL.= 223.36
BEGIN SPECIAL LATERAL 'V' DITCH -L- STA.19+50.00 LT EL.= 222.21
CL 'II' RIP RAP TO TOP OF BERM 1.5:1 NORMAL AND SKEWED (STRUCTURE PAY ITEM)
EXCAVATE EXISTING ROAD FILL TO NG (STRUCTURE PAY ITEM)
WSWE ON 6-24-09 =217.19
BANK STABILIZATION CL 'II' RIP RAP
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 1240 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 219.5 FT
BASE DISCHARGE = 1880 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 220.9 FT
OVERTOPPING DISCHARGE = 5300 CFS
OVERTOPPING FREQUENCY = >500 YRS
OVERTOPPING ELEVATION = 225.16 FT
DATE OF SURVEY = 6/24/09
W.S.ELEVATION AT DATE OF SURVEY = 217.19 FT
Permit Drawing Sheet 2 of 8
DITCH LEGEND
RIGHT DITCH
LEFT DITCH
8/17/99

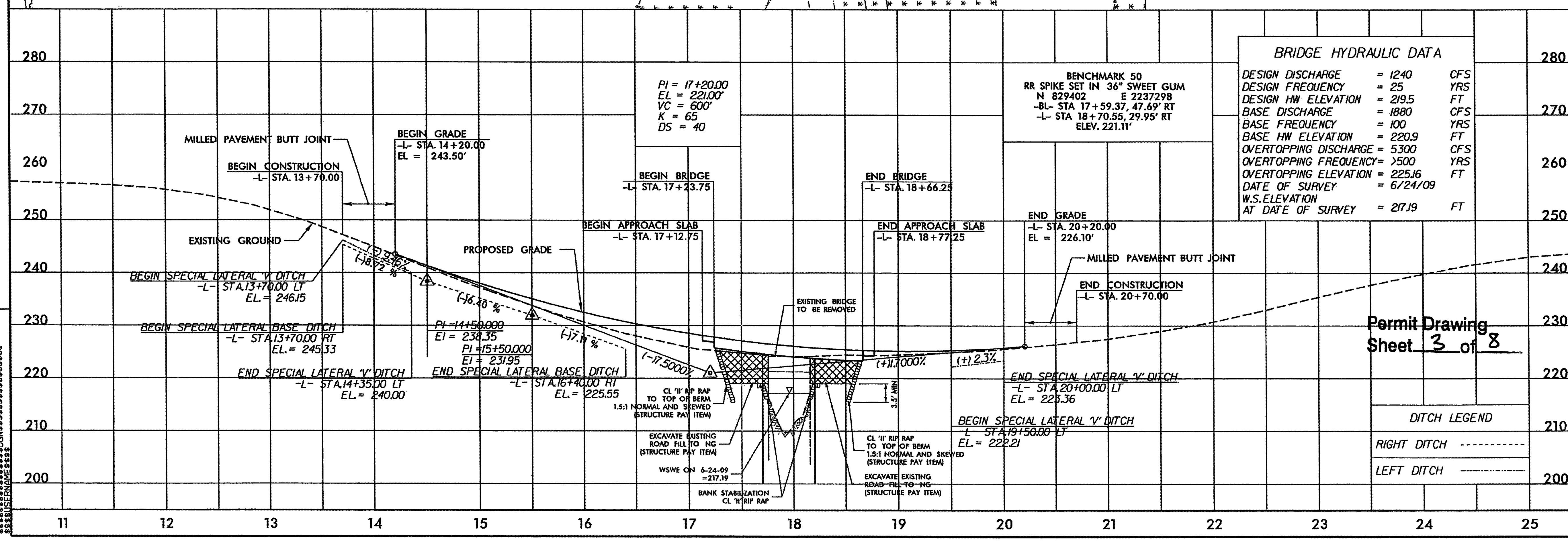
PROJECT REFERENCE NO.	SHEET NO.
B-4513	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STEWART
421 FAYETTEVILLE ST
SUITE 400
RALEIGH, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com
FIRM NO.: C-1051



PT Sta. 16+80.00
END BRIDGE -L- STA. 18+66.25
END APPROACH SLAB -L- STA. 18+77.25
GRAU-350 (TYP.)
TYPE III (TYP.)
BEGIN APPROACH SLAB -L- STA. 17+12.75
BEGIN BRIDGE -L- STA. 17+23.75
DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER PRONG CYPRESS CREEK
DETAIL #1
SPECIAL LATERAL 'V' DITCH
FROM STA. 13+70 TO STA. 14+35 -L- LT
DETAIL #2
SPECIAL LATERAL BASE DITCH
FROM STA. 13+70 TO STA. 16+40 -L- RT
DETAIL #3
SPECIAL LATERAL 'V' DITCH
FROM STA. 19+50 TO STA. 20+00 -L- LT
DETAIL #4
STANDARD 'V' DITCH
FROM STA. 19+18 TO STA. 19+50 -L- LT
DETAIL #5
TOE PROTECTION
FROM STA. 15+70 TO STA. 16+20 -L- LT
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
NAD 83/95
TOE PROTECTION STA. 15+70 TO 16+20 -L- LT SEE DETAIL #5
BANK STABILIZATION SEE DETAIL #6
SHOULDER BERM GUTTER STA. 18+77.25 TO STA. 18+90 -L- LT
TB 2GI W/NARROW SLOT FLAT GRATE
STANDARD 'V' DITCH EST. DDE=2.6 CY SLOPE=0.6% SEE DETAIL #4
SPECIAL LATERAL 'V' DITCH STA. 19+50 TO 20+00 -L- LT SEE DETAIL #3
WILHELM VOLK
SPECIAL LATERAL 'V' DITCH W/CL 'B' RIP RAP STA. 13+70 TO 14+35 -L- LT SEE DETAIL #1
SPECIAL LATERAL 2' BASE DITCH W/CL 'B' RIP RAP STA. 13+70 TO 16+40 -L- RT SEE DETAIL #2
TB 2GI W/NARROW SLOT FLAT GRATE
SHOULDER BERM GUTTER STA. 18+77.25 TO STA. 18+90 -L- RT
WOODS
JAMES
DETAIL #6
BANK STABILIZATION
Type of Liner= 140 TONS,CL II Rip-Rap Filter Fabric= 150 sy
PREFORMED SCOUR HOLE
NOT TO SCALE
PLAN VIEW
SECTION A-A



PI = 17+20.00
EL = 221.00'
VC = 600'
K = 65
DS = 40
BENCHMARK 50
RR SPIKE SET IN 36" SWEET GUM
N 829402 E 2237298
-BL- STA 17+59.37, 47.69' RT
-L- STA 18+70.55, 29.95' RT
ELEV. 221.11'
MILLED PAVEMENT BUTT JOINT
BEGIN GRADE -L- STA. 14+20.00 EL = 243.50'
BEGIN CONSTRUCTION -L- STA. 13+70.00
BEGIN BRIDGE -L- STA. 17+23.75
END BRIDGE -L- STA. 18+66.25
BEGIN APPROACH SLAB -L- STA. 17+12.75
END APPROACH SLAB -L- STA. 18+77.25
END GRADE -L- STA. 20+20.00 EL = 226.10'
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EXISTING GROUND
PROPOSED GRADE
BEGIN SPECIAL LATERAL 'V' DITCH -L- STA.13+70.00 LT EL.= 246.15
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CL 'II' RIP RAP TO TOP OF BERM 1.5:1 NORMAL AND SKEWED (STRUCTURE PAY ITEM)
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WSWE ON 6-24-09 =217.19
BANK STABILIZATION CL 'II' RIP RAP
END SPECIAL LATERAL 'V' DITCH -L- STA.20+00.00 LT EL.= 223.36
BEGIN SPECIAL LATERAL 'V' DITCH -L- STA.19+50.00 LT EL.= 222.21
DITCH LEGEND
RIGHT DITCH
LEFT DITCH

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1240	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 219.5	FT
BASE DISCHARGE	= 1880	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 220.9	FT
OVERTOPPING DISCHARGE	= 5300	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 225.16	FT
DATE OF SURVEY	= 6/24/09	
W.S.ELEVATION AT DATE OF SURVEY	= 217.19	FT

Permit Drawing
Sheet 3 of 8

8/17/99

REVISIONS

NAD 85/95

BANK STABILIZATION
SEE DETAIL #6

WOODS

WLB

BZ 2

BZ 1

JS

E

EASEMENT (NO DEED REFERENCE FOUND)

F

R W

SURFACE WATER IMPACTS

WOODS

PSH

PDE

C

CULTIVATED

BRIDGE # 73

FILL IN WETLAND

FILL IN WETLAND

15"

CLASS IV 15" RCP

STEEL BRIDGE W/ TREATED TIMBER WING WALLS

PSH

WOODS

PDE

MECHANIZED CLEARING

STANDING WATER AT TIME OF SURVEY

PRONG CYPRESS CREEK

WRB

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS

WOODS

FILL IN WETLAND

MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
B-4513	BLOW UP
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

421 FAYETTEVILLE ST
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STEWART

Permit Drawing
Sheet 4 of 8

PROJECT REFERENCE NO.	SHEET NO.
B-4513	BLOW UP
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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www.stewart-eng.com
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DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

BANK STABILIZATION SEE DETAIL #6

WOODS

EASEMENT (NO DEED REFERENCE FOUND)

SURFACE WATER IMPACTS

WOODS

PSH

PDE

FILL IN WETLAND

FILL IN WETLAND

CLASS IV 15" RCP

BRIDGE NO. 72

STEEL BRIDGE W/ TREATED TIMBER WING WALLS

WOODS

FILL IN WETLAND

MECHANIZED CLEARING

PSH

WOODS

PDE

MECHANIZED CLEARING

STRONG CYPRESS CREEK

TEMP. SURFACE WATER IMPACTS

SURFACE WATER IMPACTS

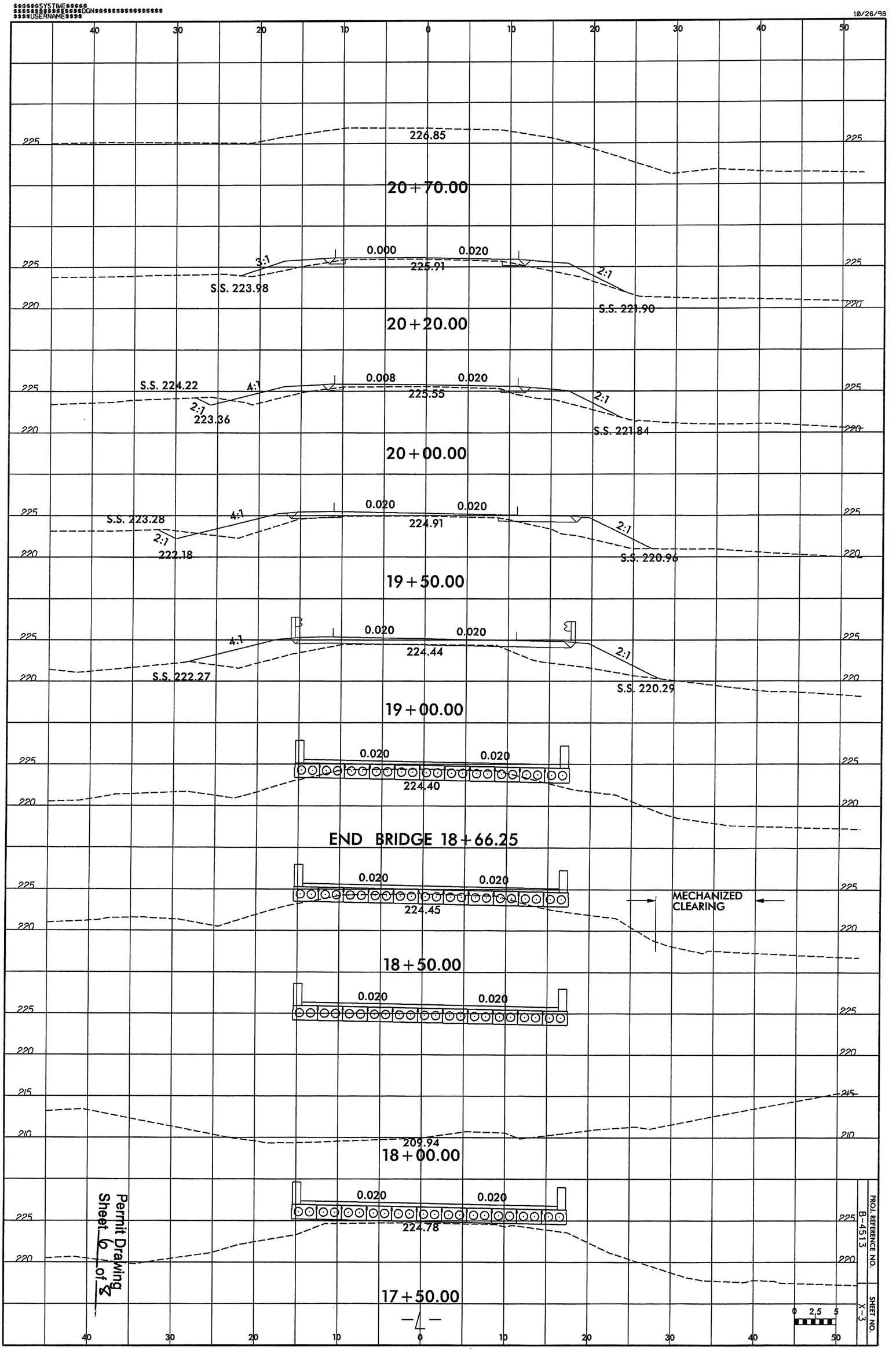
Permit Drawing
Sheet 5 of 8

REVISIONS

8/17/99

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

10/26/98



Permit Drawing
Sheet 6 of 8

PROJ. REFERENCE NO.
B-4513

SHEET NO.
X-3

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	WILHELM & INGRID VOLK	P.O. BOX 452 FRANKLINTON, NC 27525

WETLAND / STREAM IMPACTS

NCDOT

DIVISION OF HIGHWAYS

FRANKLIN COUNTY

PROJECT: 33738.1.1 (B-4513)

BRIDGE NO. 73 OVER

PRONG CYPRESS CREEK

ON SR 1002 (SEVEN PATHS RD)

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+15 - 18+95 -L-	1@45',1@50',1@45'	<0.01			0.03						
	17+75 - 18+16 -L-	Bank Stabilization						0.01		69		
	17+76 - 18+14 -L-	Temp. Coffer Dam							0.01		58	
TOTALS:			<0.01			0.03		0.01	0.01	69	58	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

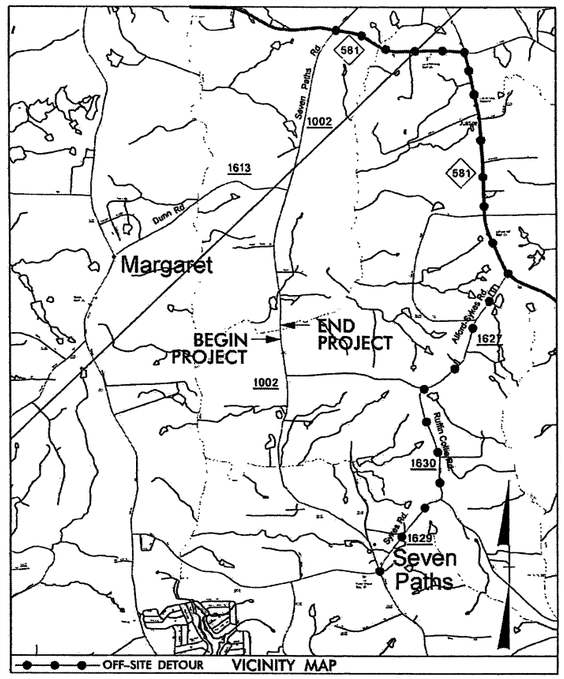
FRANKLIN COUNTY
WBS - 33738.1.1 (B-4513)

SHEET 8 of 8 2/3/2012

ATN Revised 3/31/05

09/05/99

TIP PROJECT: B-4513



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

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FRANKLIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4513	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33738.1.1	BRSTP-1002(15)	PE
33738.2.1	BRSTP-1002(15)	R/W & UTILITIES

ENGLISH

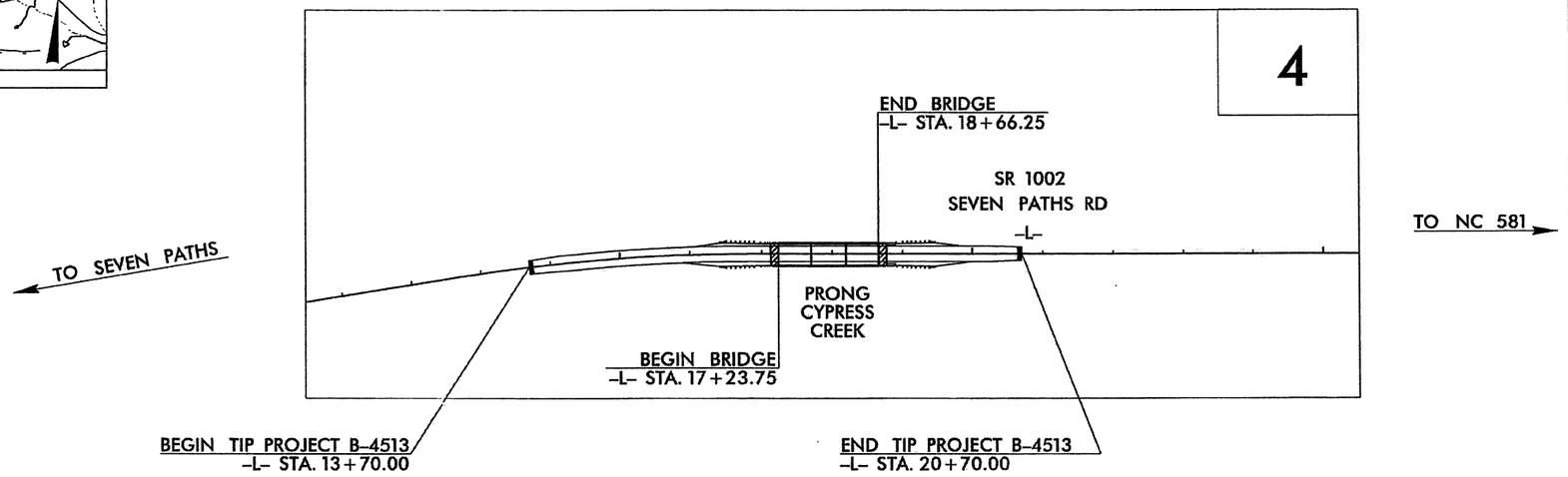
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: *BRIDGE NO. 73 OVER PRONG CYPRESS CREEK ON SR 1002 (SEVEN PATHS RD.)*

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

BUFFER IMPACTS

NAD 83/95



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

Buffer Drawing Sheet 1 of 3

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 2012 = 1550
ADT 2032 = 2990
DHV = 10%
D = 60%
T = 3% *
* (TTST 1% + DUAL 2%)
V = 40 MPH
CLASS = RURAL MINOR COLLECTOR

SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4513	=	0.106 mi.
LENGTH STRUCTURE TIP PROJECT B-4513	=	0.027 mi.
TOTAL LENGTH TIP PROJECT B-4513	=	0.133 mi.

STEWART
425 Fayetteville Street Mall
Suite 600
Raleigh, NC 27601
T 919.380.8750
F 919.380.8732
www.stewartengineering.com
FIRM NO. C-1045

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 18, 2011

LETTING DATE:
NOVEMBER 20, 2012

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

BEN CRAWFORD, PE
PROJECT ENGINEER

JONATHAN HEFNER, PE
PROJECT DESIGN ENGINEER

BRENDA L. MOORE, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

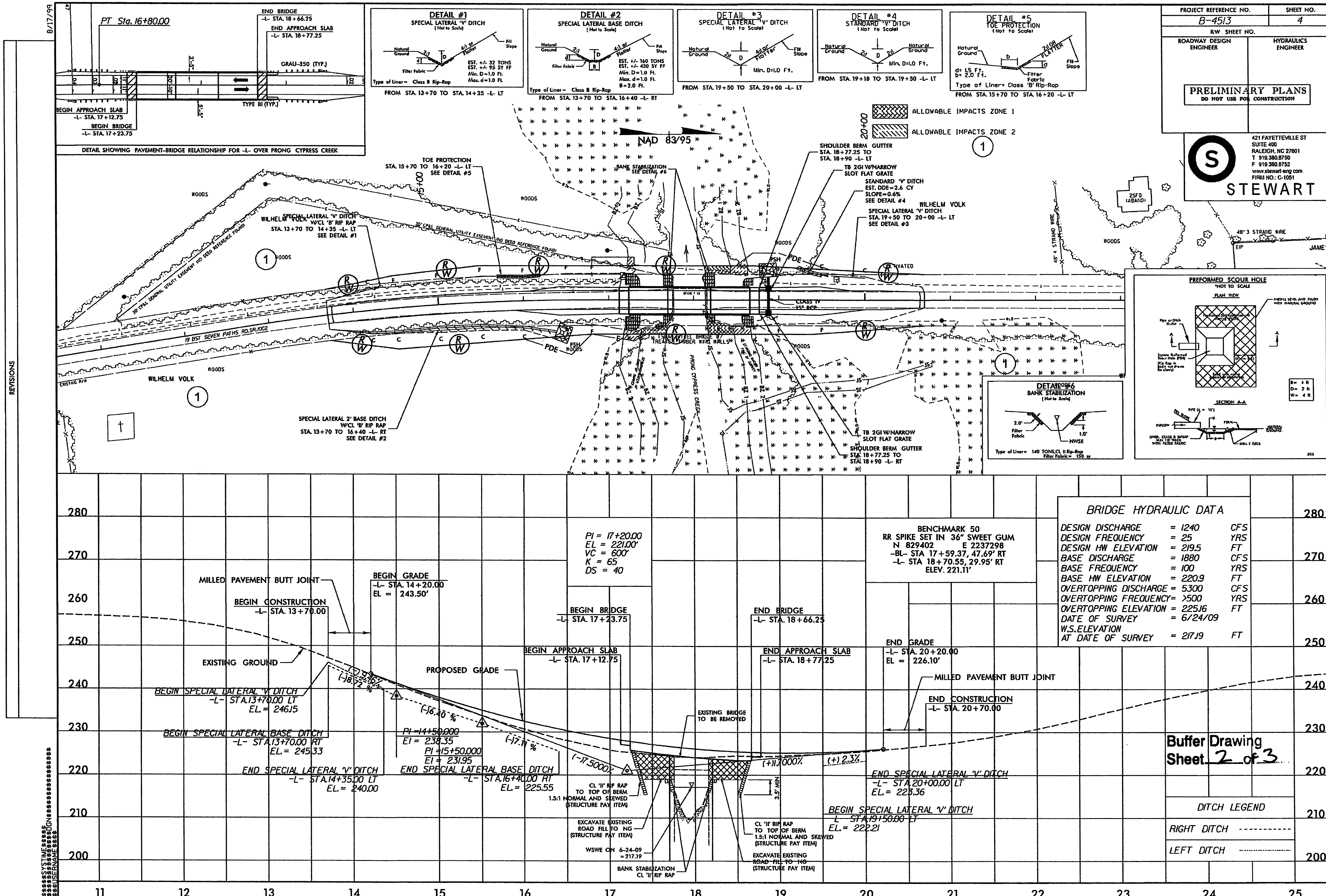
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1240	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 219.5	FT
BASE DISCHARGE	= 1880	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 220.9	FT
OVERTOPPING DISCHARGE	= 5300	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 225.16	FT
DATE OF SURVEY	= 6/24/09	
W.S.ELEVATION AT DATE OF SURVEY	= 217.19	FT

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
	1@45', 1@50', 1@45'	17+24 - 18+66 -L-		X		896	813	1709					
TOTAL:						896	813	1709					

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

FRANKLIN COUNTY
PROJECT: 33738.1.1 (B-4513)

1/30/2012
SHEET 1 OF 2

Buffer Drawing
Sheet 3 of 3

Rev. May 2006

09/08/99

TIP PROJECT: B-4513

CONTRACT:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4513	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33738.1.1	BRSTP-1002(15)	PE
33738.2.1	BRSTP-1002(15)	R/W & UTILITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

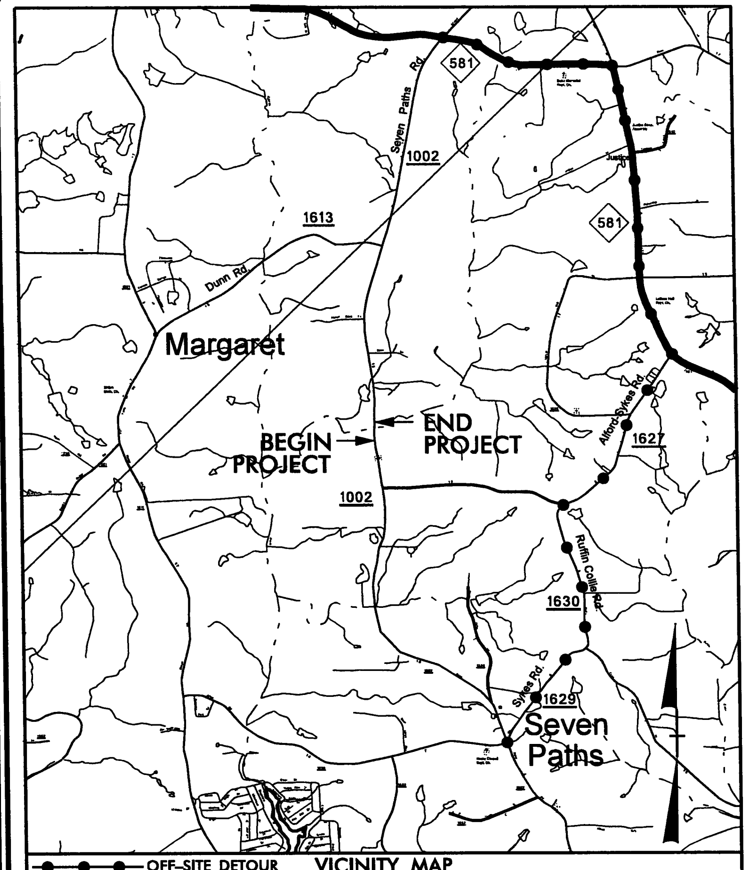
FRANKLIN COUNTY

LOCATION: ***BRIDGE NO. 73 OVER PRONG CYPRESS CREEK ON SR 1002 (SEVEN PATHS RD.)***

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

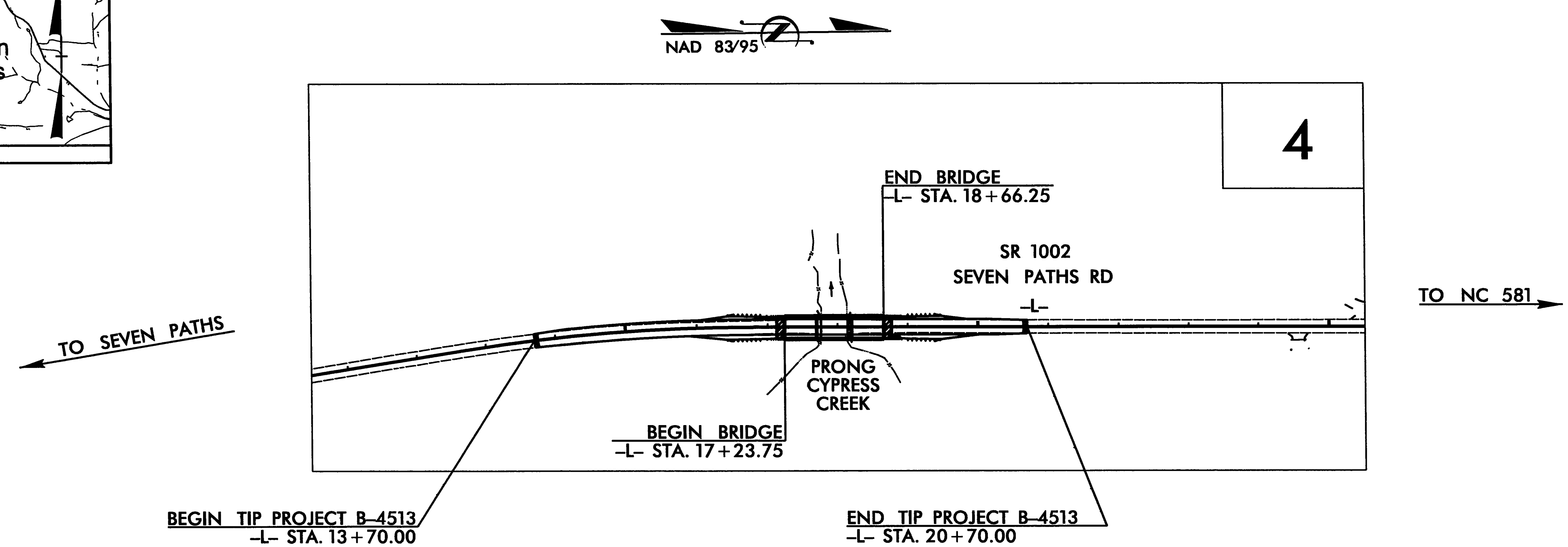
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

R/W PLANS



VICINITY MAP

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



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

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 2012 = 1550
ADT 2032 = 2990
DHV = 10%
D = 60%
T = 3% *
* (TTST 1% + DUAL 2%)
V = 40 MPH
CLASS = RURAL MINOR COLLECTOR

SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4513	=	0.106 mi.
LENGTH STRUCTURE TIP PROJECT B-4513	=	0.027 mi.
TOTAL LENGTH TIP PROJECT B-4513	=	0.133 mi.

STEWART

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 18, 2011

LETTING DATE:
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HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ART McMILLAN, PE
STATE HIGHWAY DESIGN ENGINEER

14-NOV-2011 09:39
\\dot\dfsroot01\Proj\TIPProjects-B\B4513\Roadway\Proj\b4513_rdy_tsh.dgn
$$$$USERNAME$$$$

6/2/99

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 2 -L- STA. 13+70.00 TO -L- STA. 14+20.00
TRANSITION FROM TYPICAL SECTION NO. 2 TO EXISTING -L- STA. 20+20.00 TO -L- STA. 20+70.00

STEWART
421 FAYETTEVILLE ST
SUITE 400
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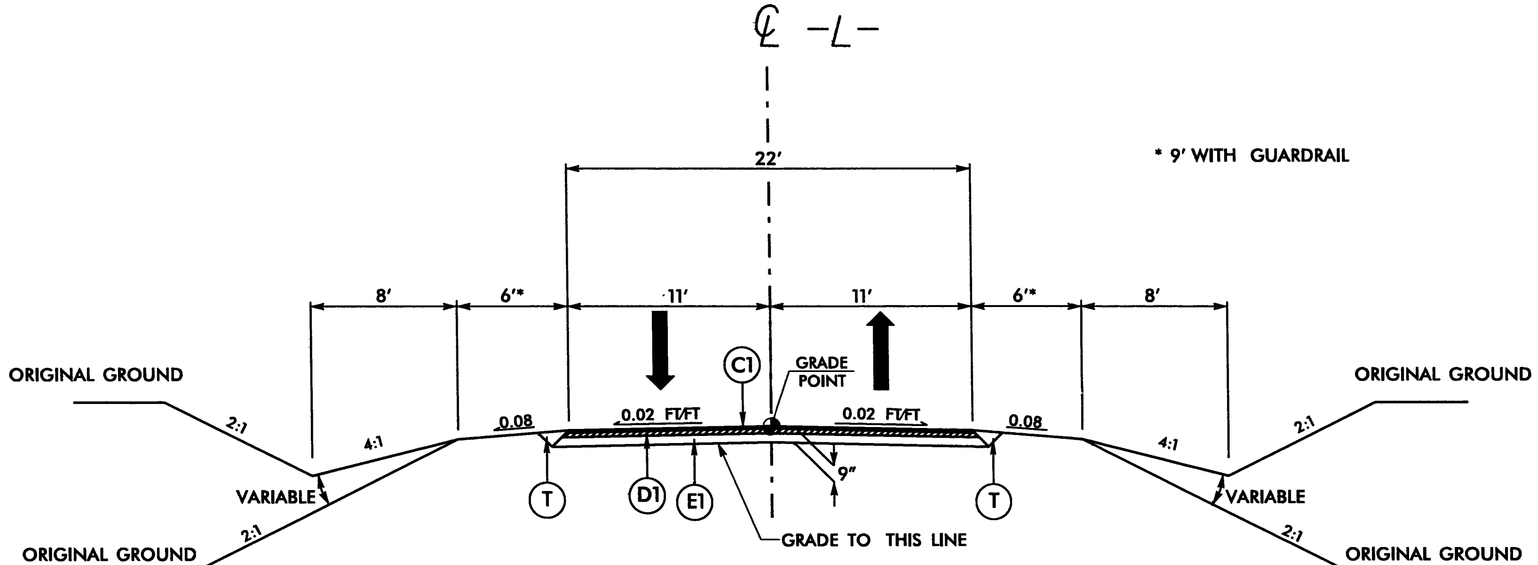
www.stewart-eng.com
FIRM NO.: C-1051

PROJECT REFERENCE NO.	SHEET NO.
B-4513	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

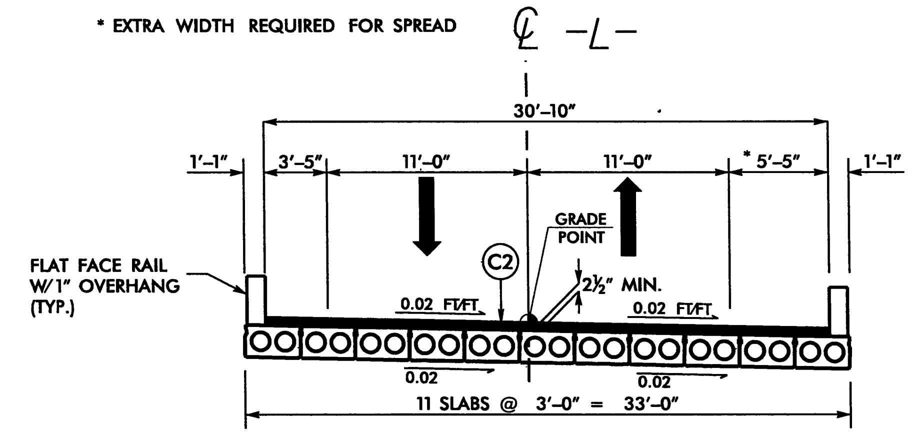
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



ROADWAY TYPICAL SECTION NO. 1

USE ROADWAY TYPICAL SECTION

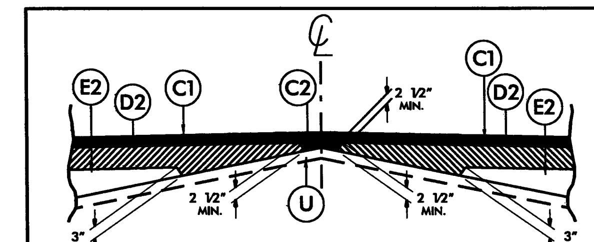
-L- STA. 15+00.00 TO -L- STA. 17+23.75 (BEGIN BRIDGE)
-L- STA. 18+66.75 (END BRIDGE) TO -L- STA. 19+50.00



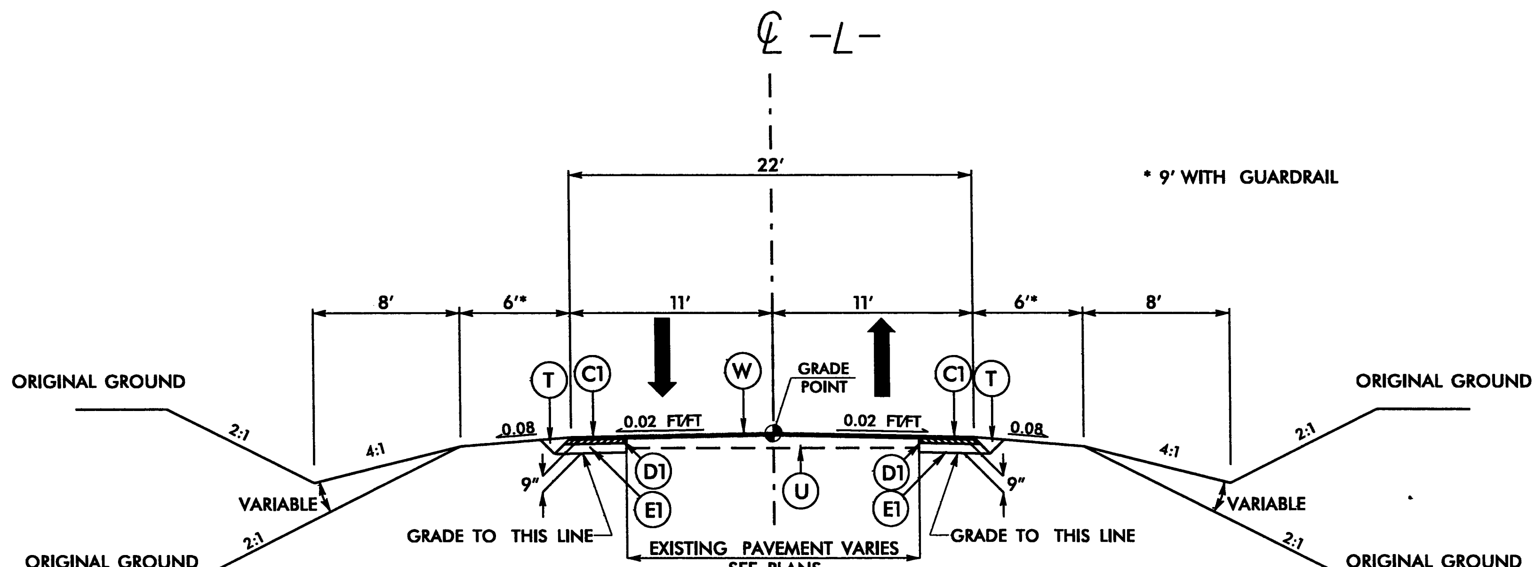
BRIDGE TYPICAL SECTION

USE BRIDGE TYPICAL SECTION

-L- STA. 17+23.75 TO -L- STA. 18+66.75
ASSUMED BRIDGE TYPE = CORED SLAB



W: DETAIL SHOWING METHOD OF WEDGING



ROADWAY TYPICAL SECTION NO. 2

USE ROADWAY TYPICAL SECTION

-L- STA. 14+20.00 TO -L- STA. 15+00.00
-L- STA. 19+50.00 TO -L- STA. 20+20.00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" 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 B25.0, 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.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE STANDARD WEDGING DETAIL)

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

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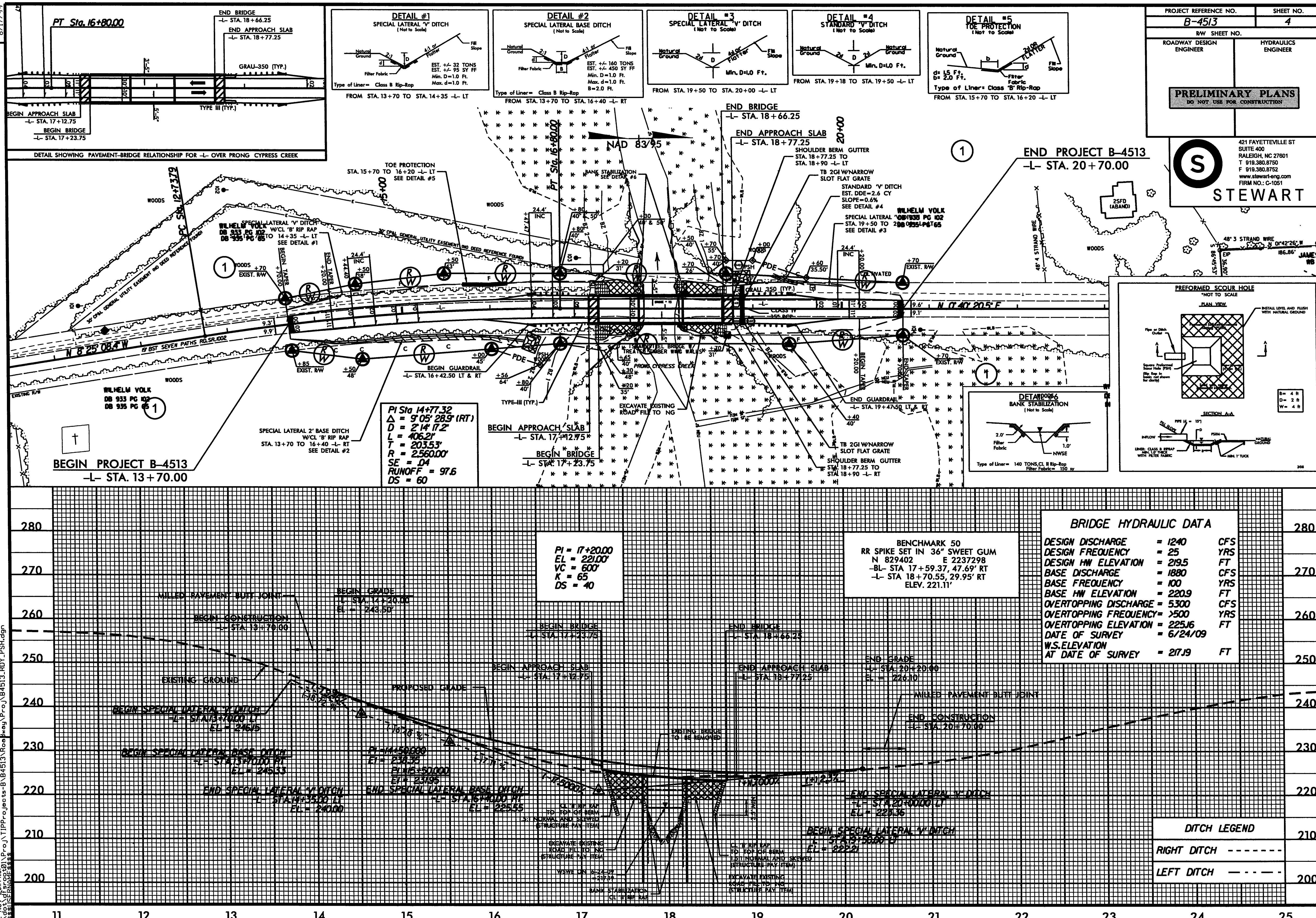

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1240	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 219.5	FT
BASE DISCHARGE	= 1880	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 220.9	FT
OVERTOPPING DISCHARGE	= 5300	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 225.16	FT
DATE OF SURVEY	= 6/24/09	
W.S.ELEVATION AT DATE OF SURVEY	= 217.19	FT

DITCH LEGEND

RIGHT DITCH	- - - - - -
LEFT DITCH	— - · - —

PROJECT REFERENCE NO.	SHEET NO.
B-4513	X-1

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

421 FAYETTEVILLE ST
SUITE 400
RALEIGH, NC 27601
T 919.380.8750
F 919.380.8752
www.stewart-eng.com
FIRM NO.: C-1051
STEWART

CROSS SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

STATION L	UNCL. EXC. (CU. YD.)	EMBT. (CU. YD.)
13+70.00	-	-
14+20.00	7	14
14+50.00	11	19
15+00.00	42	49
15+50.00	54	107
16+00.00	30	175
16+50.00	8	227
16+80.00	0	159
17+23.75	0	247
18+66.25	-	-
19+00.00	1	76
19+50.00	3	88
20+00.00	5	53
20+20.00	2	14
20+70.00	1	16

CROSS SECTION INDEX

SHEET	BEGIN STATION	END STATION
X-2	13+70.00	17+23.75
X-3	17+50.00	20+70.00

REVISIONS

8/17/99

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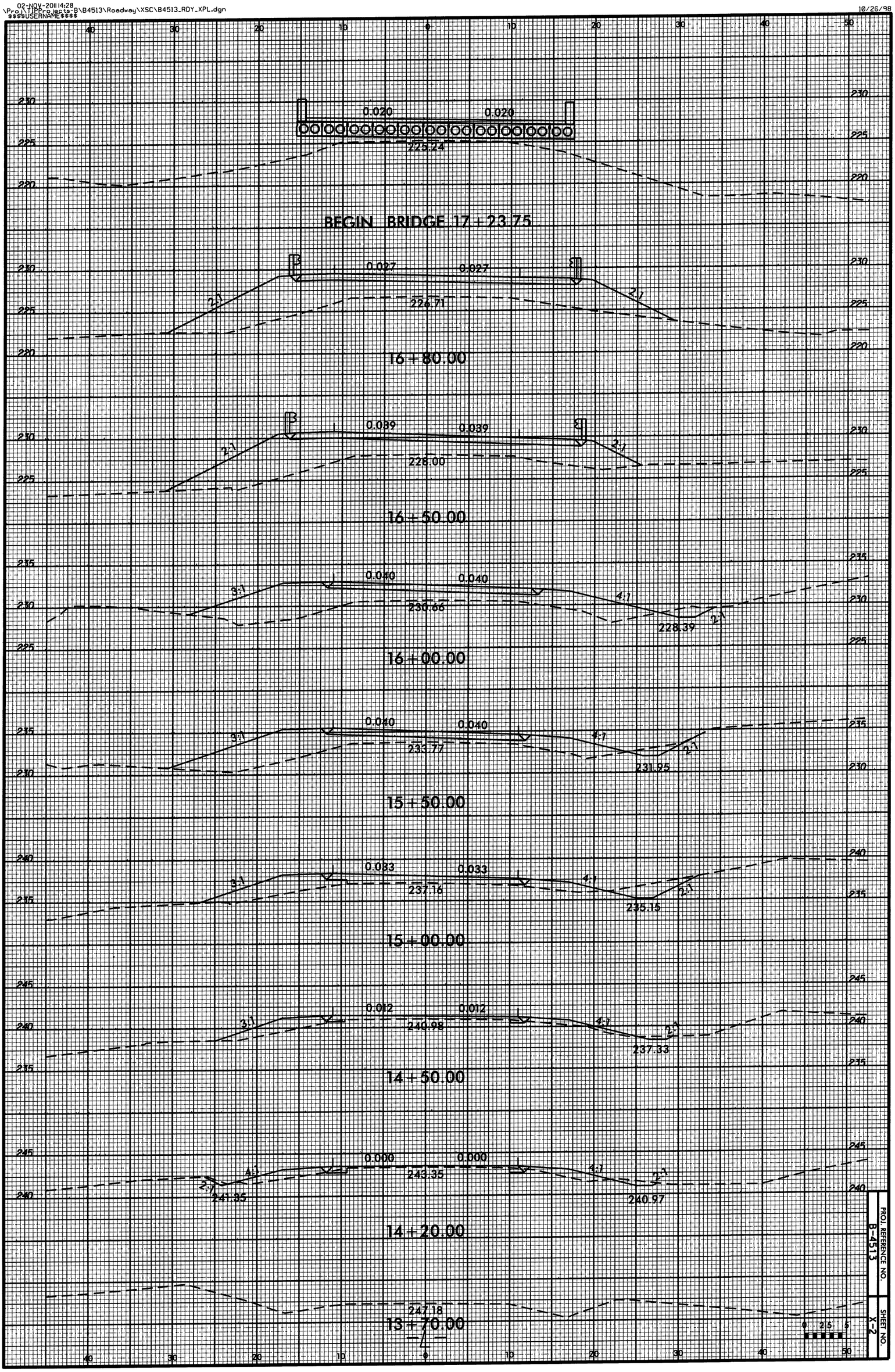
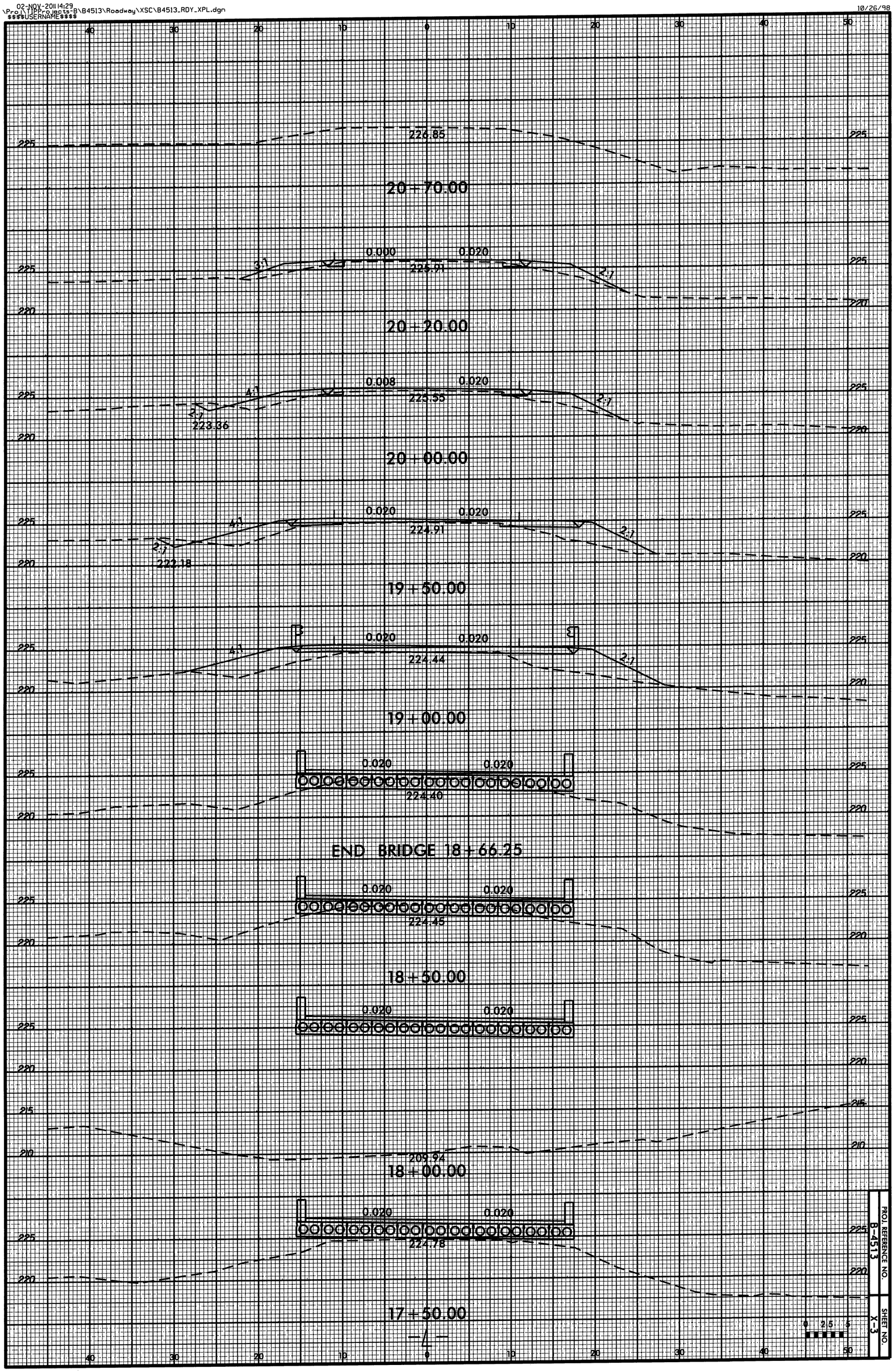


PROJ. REFERENCE NO. B-4513

SHEET NO. X-2



PROJ. REFERENCE NO. B-4513

SHEET NO. X-3