STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

March 26, 2009

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

ATTN: Mr. Andy Williams
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 33** for the proposed replacement of Bridge No. 54 over Rockhouse Creek on NC 65 in Rockingham County, Federal Aid Project No. BRSTP-65(4); Division 7; TIP No. B-4622

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 54 over Rockhouse Creek on NC 65. There will be 40 feet of temporary surface water impacts due to the placement of a temporary work pad.

Please see enclosed copies of the Pre-Construction Notification (PCN), storm water management plan, permit drawings, and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed in July 2007 and the Right-of-Way Consultation was completed in September 2008. Documents were distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of December 15, 2009 and a review date of October 27, 2009.

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/. If you have any questions or need additional information, please call James Pflaum at (919) 431-6527.

Sincerely,

E. L. Luck

for 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. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Mark Staley, Roadside Environmental
Mr. J. M. Mills, P.E., Division 7 Engineer
Mr. Jerry Parker, Division 7 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Pam Williams, PDEA Project Planning Engineer
Mr. Scott McLendon, USACE, Wilmington
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC

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 No. 54 over Rockhouse Creek on NC 65
2b. County:	Rockingham
2c. Nearest municipality / town:	Wentworth
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4622

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:	4701 Atlantic Ave, Suite 116
3e. City, state, zip:	Raleigh, NC 27604
3f. Telephone no.:	(919) 431-6527
3g. Fax no.:	(919) 431-2002
3h. Email address:	jrpflaum@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: 36.396755 (DD.DDDDDD)	Longitude: - 79.789662 (-DD.DDDDDD)
1c. Property size:	35 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Rock House Creek	
2b. Water Quality Classification of nearest receiving water:	WS-IV	
2c. River basin:	Roanoke	
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: Site is predominantly rural, mostly forested for silviculture use.		
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: 2620 linear feet		
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: Replacement of Bridge No. 54 on NC 65 over Rock House Creek. A single span 150-foot long 30-foot wide 60-inch plate girder bridge is proposed to replace the three span 135-foot long 22-foot wide reinforced concrete deck girder bridge. The bridge will be located approximately 50 feet north and at the same elevation as the existing structure. A temporary causeway is proposed on the western bank to remove an existing bent in Rock House Creek. No bents will be placed in Rock House Creek. An on-site detour will be used to route traffic during construction. Heavy duty excavation equipment will be used such as trucks, dozers, cranes, and other equipment necessary for roadway construction.		
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: No wetlands, all streams perennial	☐ 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):	Agency/Consultant Company: Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ 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)
W1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	

2h. Comments:

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
S1 ☐ P ☒ T	Fill	Rock House Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	25	40
S2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	0 Perm 40 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	

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.

A single span structure is proposed that eliminates the need for bents in Rock House Creek. A preformed scour hole will be constructed to prevent erosion.

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

NCDOT will implement Best Management Practices for Bridge Demolition and Removal. NCDOT BMP's for the protection of surface waters will be strictly enforced during construction of this project.

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

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

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

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	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: See 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 enclosed description	
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.		
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? Field surveys, NHP database, and USFWS website for Rockingham County		
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? Categorical Exclusion document for B-4622		
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: Hydraulics coordinating with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA maps		

Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Luck for Gregory J. Thorpe, PhD Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	Date 3.30.09

STORMWATER MANAGEMENT PLAN

Project: 33801.1.1
TIP No. B-4622
Rockingham County 03/26/2009

Hydraulics Project Manager: James R. Rice, P.E. (HDR),
Marshal Clawson, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project B-4622 consists of constructing a new bridge 150 feet long to replace the existing bridge #54 in Rockingham County on NC 65 over Rock House Creek. The total project length is 0.279 miles. The project creates impacts to Rock House Creek, which is located in the Roanoke River Basin. The project drainage systems consist of grated inlets with associated pipe systems, deck drains, and a preformed scour hole.

Jurisdiction Stream: Roquist Creek

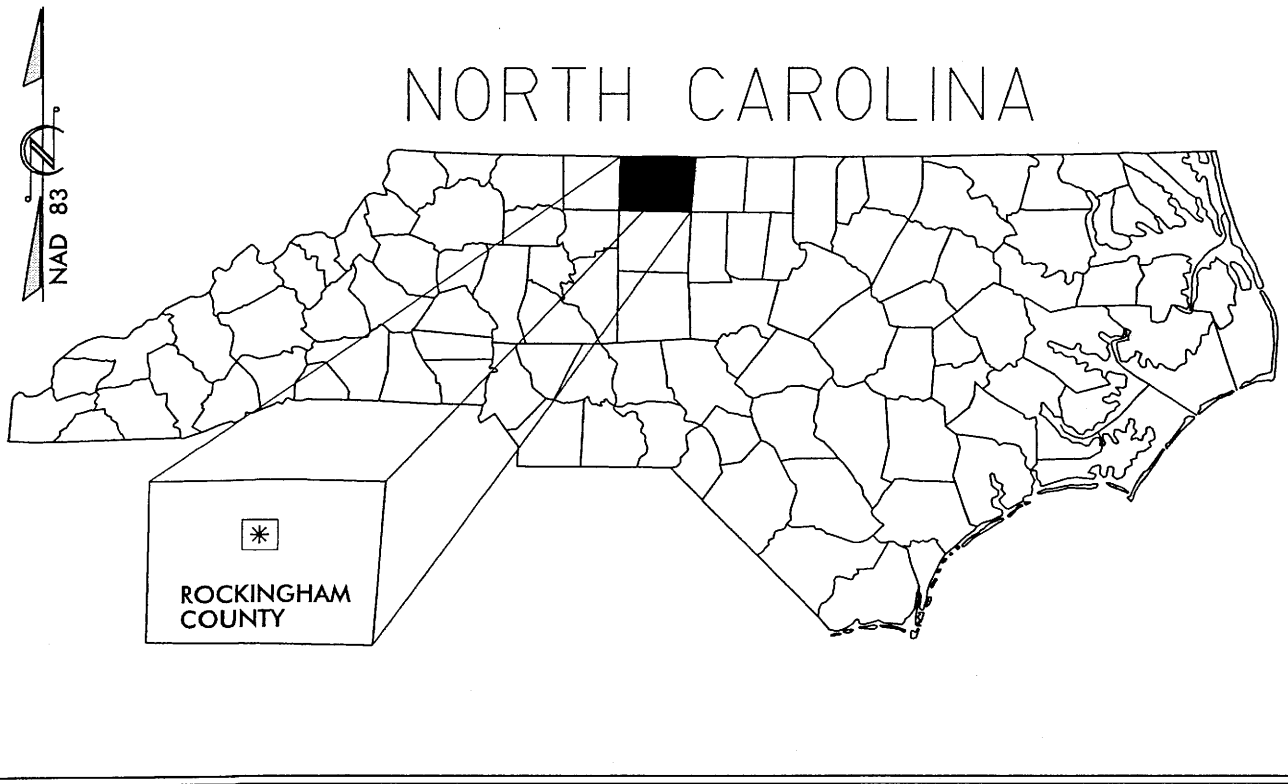
ENVIRONMENTAL DESCRIPTION

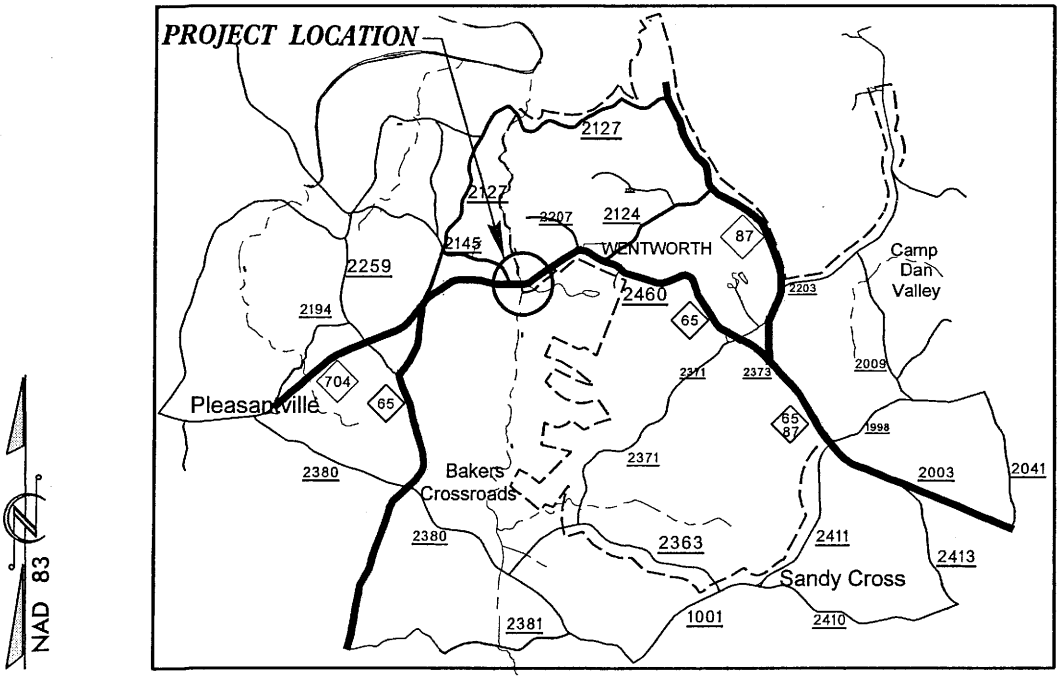
The project is located within the Roanoke River Basin in Rockingham County, which is not a CAMA county. There will not be any impacts to wetlands due to the construction of the bridge and associated road due to the fact that there are no wetlands in the vicinity of the project. A pre-formed scour hole was utilized at the outlet of the lateral ditch to eliminate the need for embankment rip rap where the lateral ditch would need to tie to Rock House Creek. The only environmental impacts anticipated are as a result of removing the existing structure.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

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

- Rip rap preformed scour hole at ditch outlet.





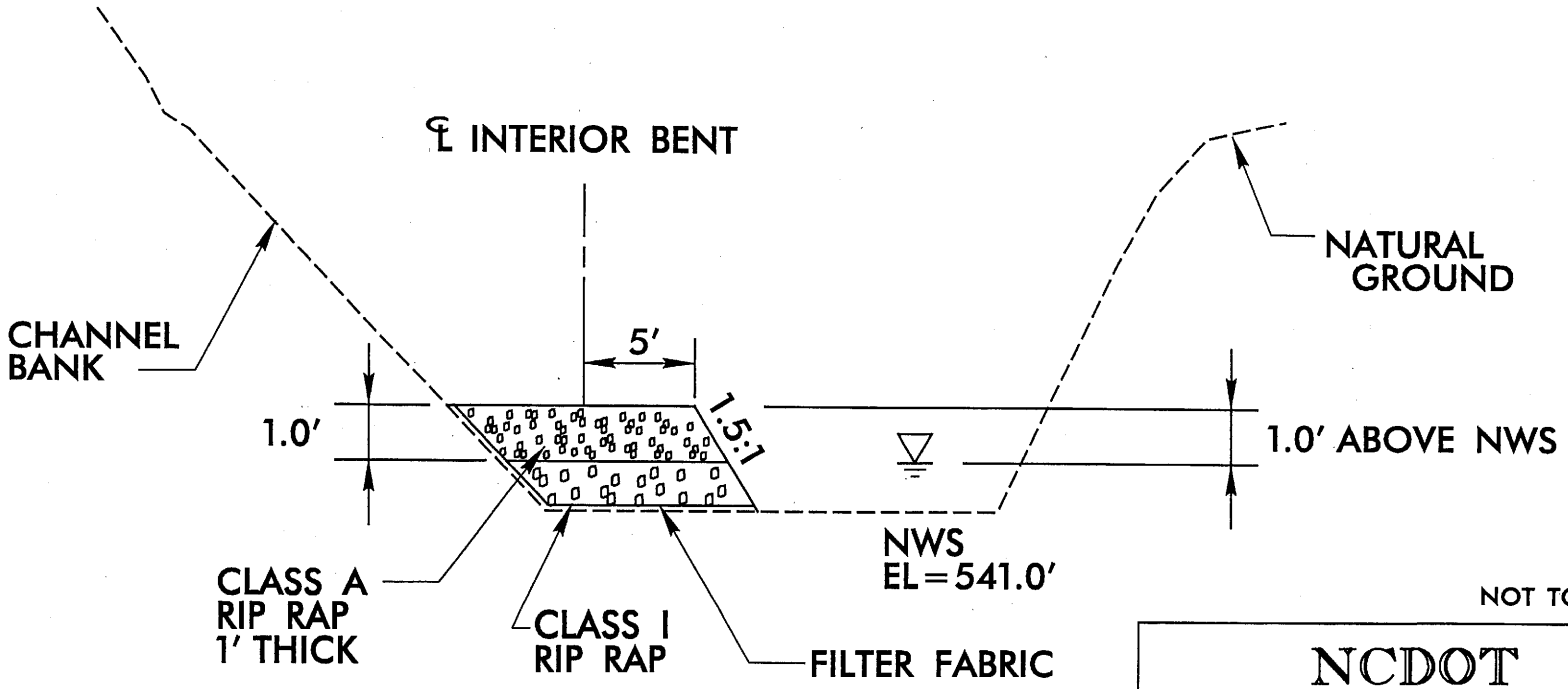
VICINITY MAPS

NORTH CAROLINA

DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33801.1.1 (B-4622)
REPLACEMENT OF BRIDGE #54 OVER ROCK HOUSE CREEK ON NC 65

SHEET 1 **OF** 8 **01/16/09**

TYPICAL SECTION
RIP RAP WORK PAD



NOT TO SCALE

DO NOT BLOCK MORE THAN 50% OF THE CHANNEL WITH WORK PAD AT ANY LOCATION

EST 18 TONS CLASS A RIP RAP
EST 30 TONS CLASS I RIP RAP
EST 60 SQ YDS FILTER FABRIC

NCDOT

DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33801.1.1 (B-4622)
REPLACEMENT OF BRIDGE
#54 OVER ROCK HOUSE CREEK
ON NC 65

Permit Drawing
Sheet 2 of 3

01/16/09

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
1	GREEN FAMILY TRUST	1475 NC 65 REIDSVILLE, NC 27230	1

NORTH CAROLINA

DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

PROJECT: 33801.1.1 (B-4622)

REPLACEMENT OF BRIDGE #54 OVER ROCK HOUSE CREEK ON NC 65

SHEET 3 OF 8 01/16/09

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)
1	16+56 -L- RT	Exist Pier Removal	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0	40	0
TOTALS:			0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0	40	0

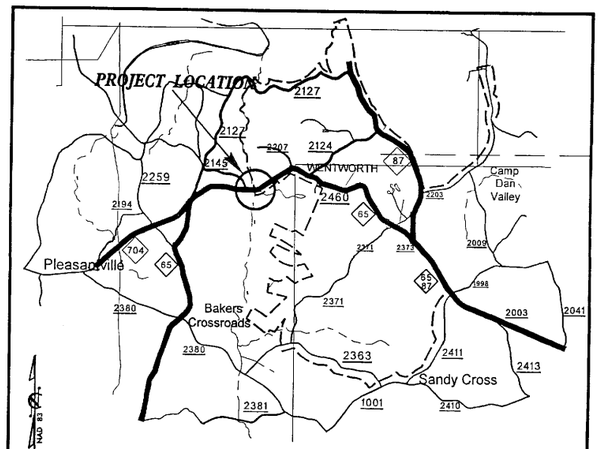
** No more than 50% of the stream may be blocked during the removal of the existing pier.

Permit Drawing
Sheet 4 of 8

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY
33801.1.1 (B-4622)

SHEET 1 1/21/2009



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

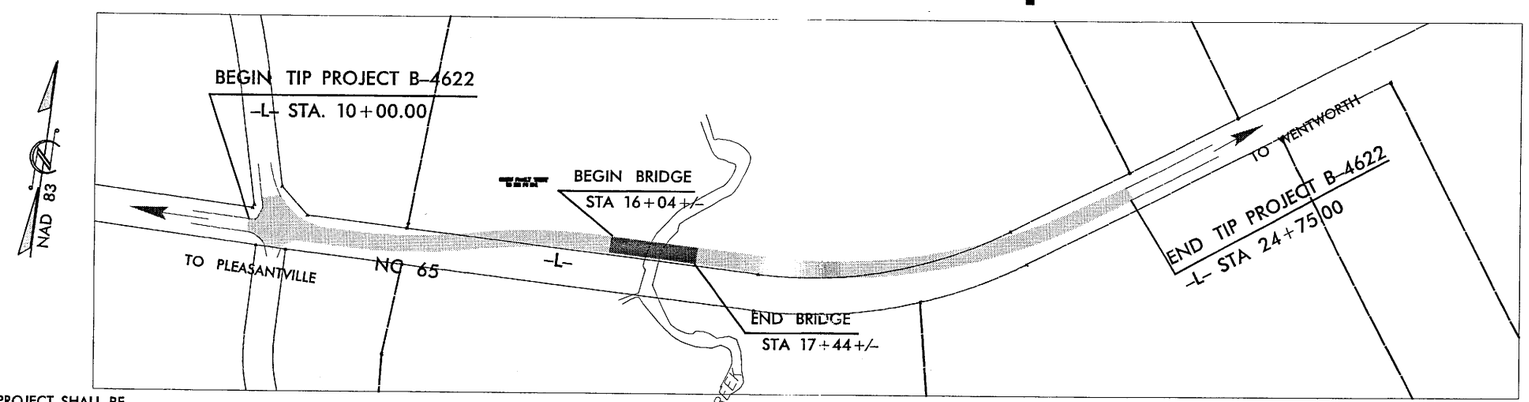
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4622	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33801.1.1	BRSTP-65 (65)	P.E.	

Permit Drawing
Sheet 5 of 8

LOCATION: REPLACEMENT OF BRIDGE NO. 54 ON NC 65 OVER ROCK HOUSE CREEK

TYPE OF WORK: RESURFACING, PAVING, GRADING, GUARDRAIL, AND STRUCTURE

4



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

THIS IS NOT A CONTROLLED ACCESS PROJECT.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

W.B.S. : 33801.1.1

TIP PROJECT: B-4622

GRAPHIC SCALES

PLANS 50 25 0 50 100

PROFILE (HORIZONTAL) 50 25 0 50 100

PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2007 = 6800
ADT 2030 = 14000
DHV = 13 %
D ÷ 60 %
T = 1 % *
V = 50 MPH

* TTST 1 DUAL 2

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4622 = 0.253 MILE
LENGTH STRUCTURE TIP PROJECT B-4622 = 0.027 MILE
TOTAL LENGTH TIP PROJECT B-4622 = 0.279 MILE

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19, 2008

LETTING DATE: DECEMBER 15, 2009

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

TIM GOINS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

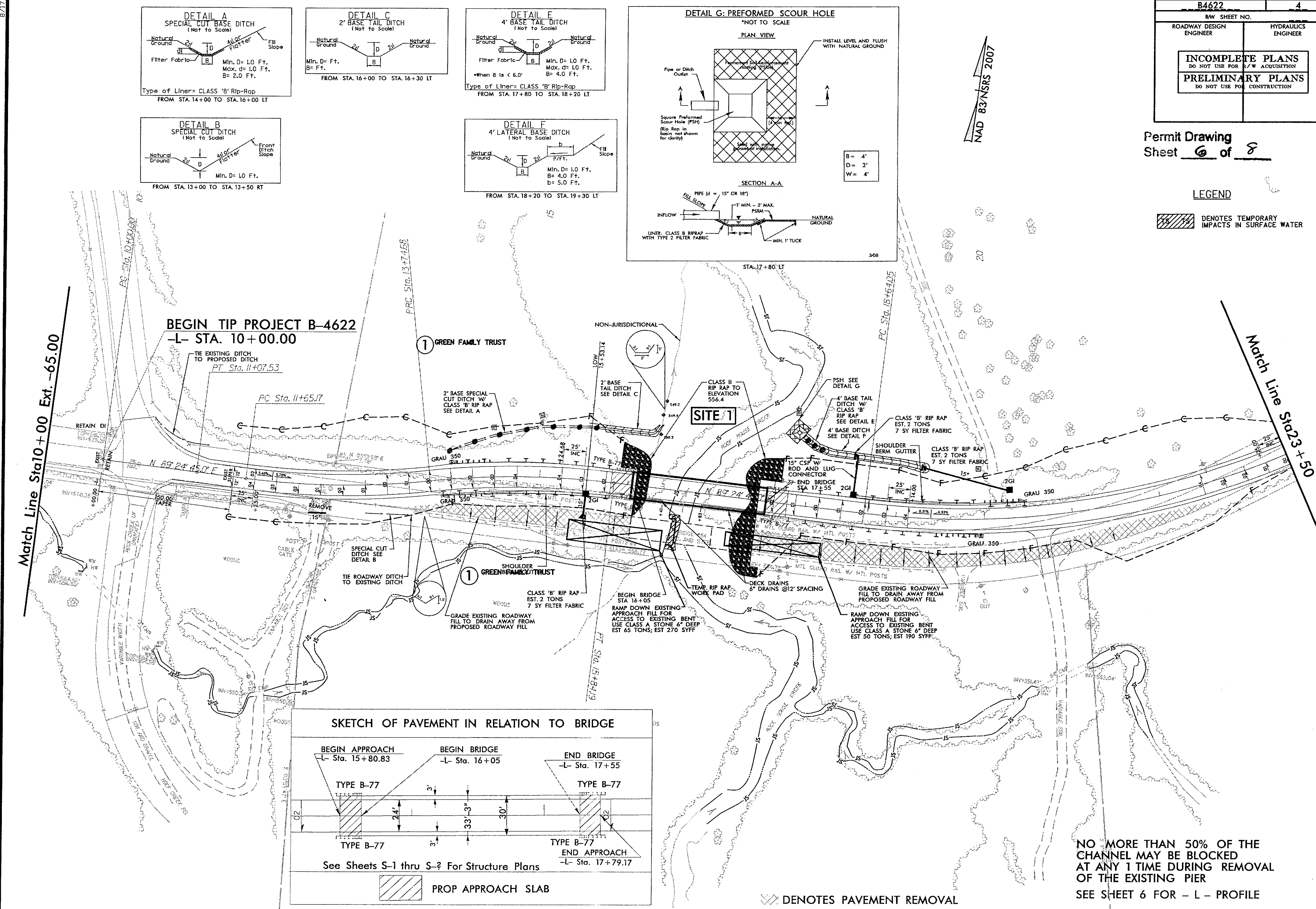
1/16/2009
R:\ZBridge\B4622\Hydraulics\Permits\B4622_hyd_permits_tsh.dgn
cmyers

PROJECT REFERENCE NO.	SHEET NO.
B4622	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 6 of 8



LEGEND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/NSRS 2007
DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 14+00 TO STA. 16+00 LT
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0 Ft.
FROM STA. 13+00 TO STA. 13+50 RT
DETAIL C
2' BASE TAIL DITCH
(Not to Scale)
FROM STA. 16+00 TO STA. 16+30 LT
DETAIL E
4' BASE TAIL DITCH
(Not to Scale)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 17+80 TO STA. 18+20 LT
DETAIL F
4' LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
FROM STA. 18+20 TO STA. 19+30 LT
DETAIL G: PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
SECTION A-A
LINER: CLASS B RIPRAP WITH TYPE 2 FILTER FABRIC
STA. 17+80 LT
BEGIN TIP PROJECT B-4622
-L- STA. 10+00.00
Match Line Sta10+00 Ext. -65.00
Match Line Sta23+50
GREEN FAMILY TRUST
SITE 1
NON-JURISDICTIONAL
TIE EXISTING DITCH TO PROPOSED DITCH
PT Sta. 11+07.53
PC Sta. 11+65.17
2' BASE SPECIAL CUT DITCH W/ CLASS 'B' RIP RAP SEE DETAIL A
2' BASE TAIL DITCH SEE DETAIL C
CLASS II RIP RAP TO ELEVATION 556.4
PSH SEE DETAIL G
4' BASE TAIL DITCH W/ CLASS 'B' RIP RAP SEE DETAIL E
4' BASE DITCH SEE DETAIL F
CLASS 'B' RIP RAP EST. 2 TONS 7 SY FILTER FABRIC
SHOULDER BERM GUTTER
15" CSP W/ ROD AND LUG CONNECTOR
END BRIDGE STA 17+55
SPECIAL CUT DITCH SEE DETAIL B
TIE ROADWAY DITCH TO EXISTING DITCH
GRADE EXISTING ROADWAY FILL TO DRAIN AWAY FROM PROPOSED ROADWAY FILL
BEGIN BRIDGE STA 16+05
RAMP DOWN EXISTING APPROACH FILL FOR ACCESS TO EXISTING BENT USE CLASS A STONE 6" DEEP EST 65 TONS; EST 270 SYFF
TEMP. RIP RAP WORK PAD
DECK DRAINS 6" DRAINS @12' SPACING
RAMP DOWN EXISTING APPROACH FILL FOR ACCESS TO EXISTING BENT USE CLASS A STONE 6" DEEP EST 50 TONS; EST 190 SYFF
SKETCH OF PAVEMENT IN RELATION TO BRIDGE
BEGIN APPROACH -L- Sta. 15+80.83
BEGIN BRIDGE -L- Sta. 16+05
END BRIDGE -L- Sta. 17+55
END APPROACH -L- Sta. 17+79.17
TYPE B-77
See Sheets S-1 thru S-? For Structure Plans
PROP APPROACH SLAB
DENOTES PAVEMENT REMOVAL

NO MORE THAN 50% OF THE CHANNEL MAY BE BLOCKED AT ANY 1 TIME DURING REMOVAL OF THE EXISTING PIER

SEE SHEET 6 FOR - L - PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B4622	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

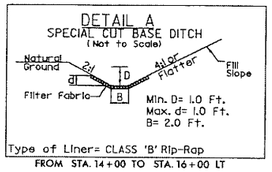
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 7 of 8

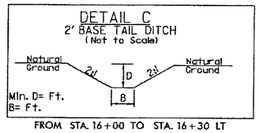
NAD 83/NSRS 2007

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



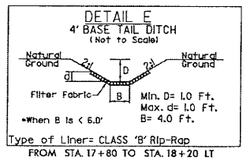
Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 14+00 TO STA. 16+00 LT

DETAIL C
2' BASE TAIL DITCH
(Not to Scale)



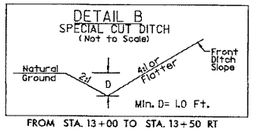
FROM STA. 16+00 TO STA. 16+30 LT

DETAIL E
4' BASE TAIL DITCH
(Not to Scale)



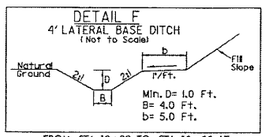
Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 17+80 TO STA. 18+20 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



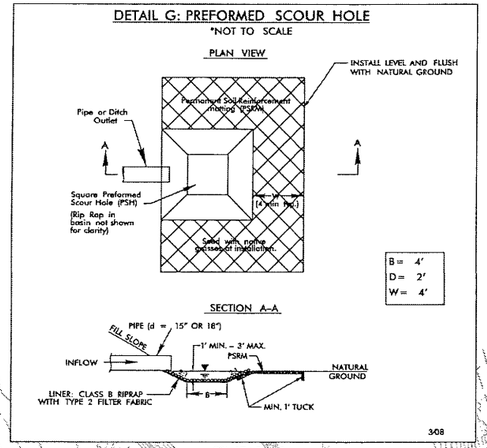
FROM STA. 13+00 TO STA. 13+50 RT

DETAIL F
4' LATERAL BASE DITCH
(Not to Scale)

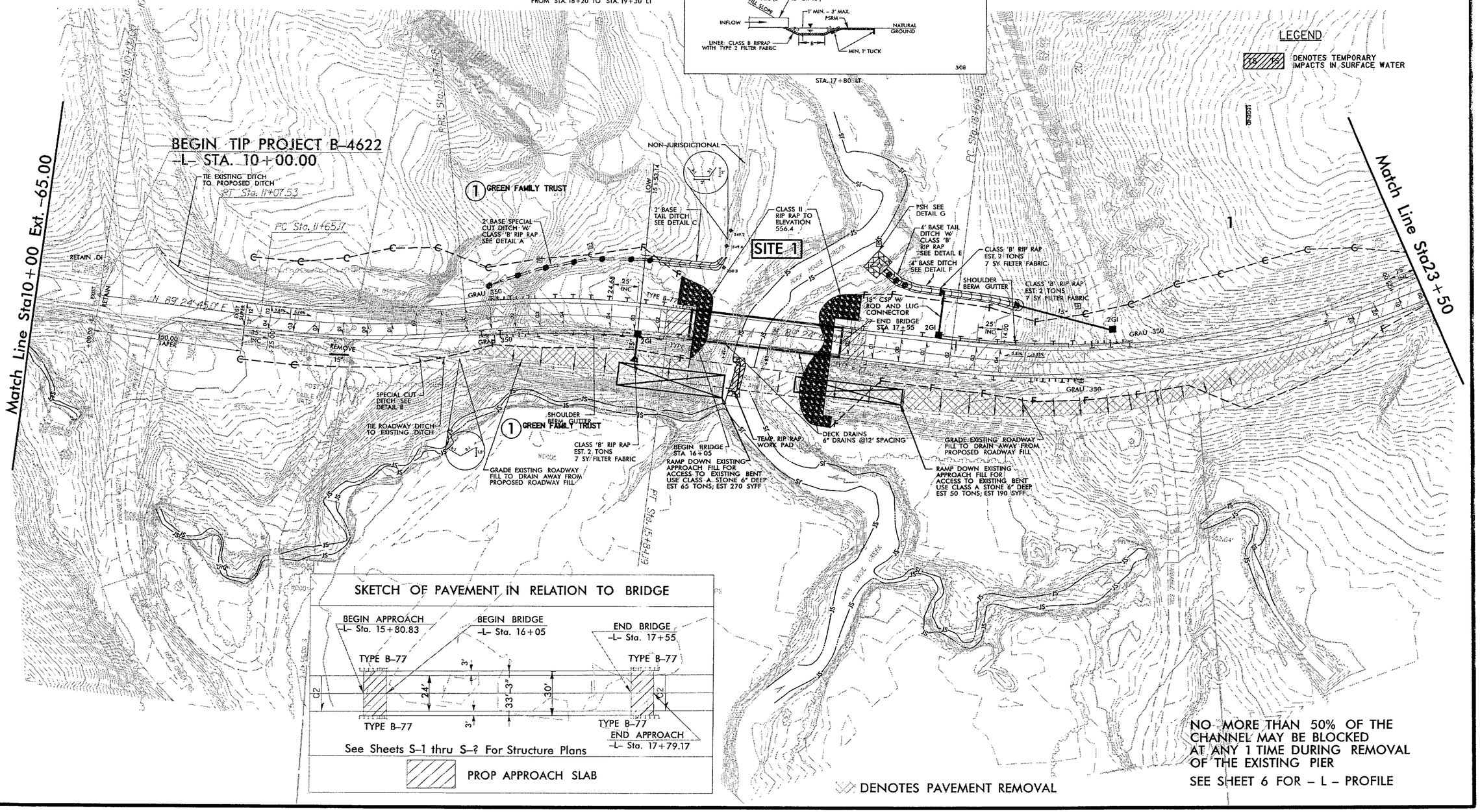


FROM STA. 18+20 TO STA. 19+30 LT

DETAIL G: PREFORMED SCOUR HOLE
*NOT TO SCALE



STA. 17+80 LT



SKETCH OF PAVEMENT IN RELATION TO BRIDGE

See Sheets S-1 thru S-? For Structure Plans

PROP APPROACH SLAB

NO MORE THAN 50% OF THE CHANNEL MAY BE BLOCKED AT ANY 1 TIME DURING REMOVAL OF THE EXISTING PIER

SEE SHEET 6 FOR – L – PROFILE

8/17/9

1/23/2009
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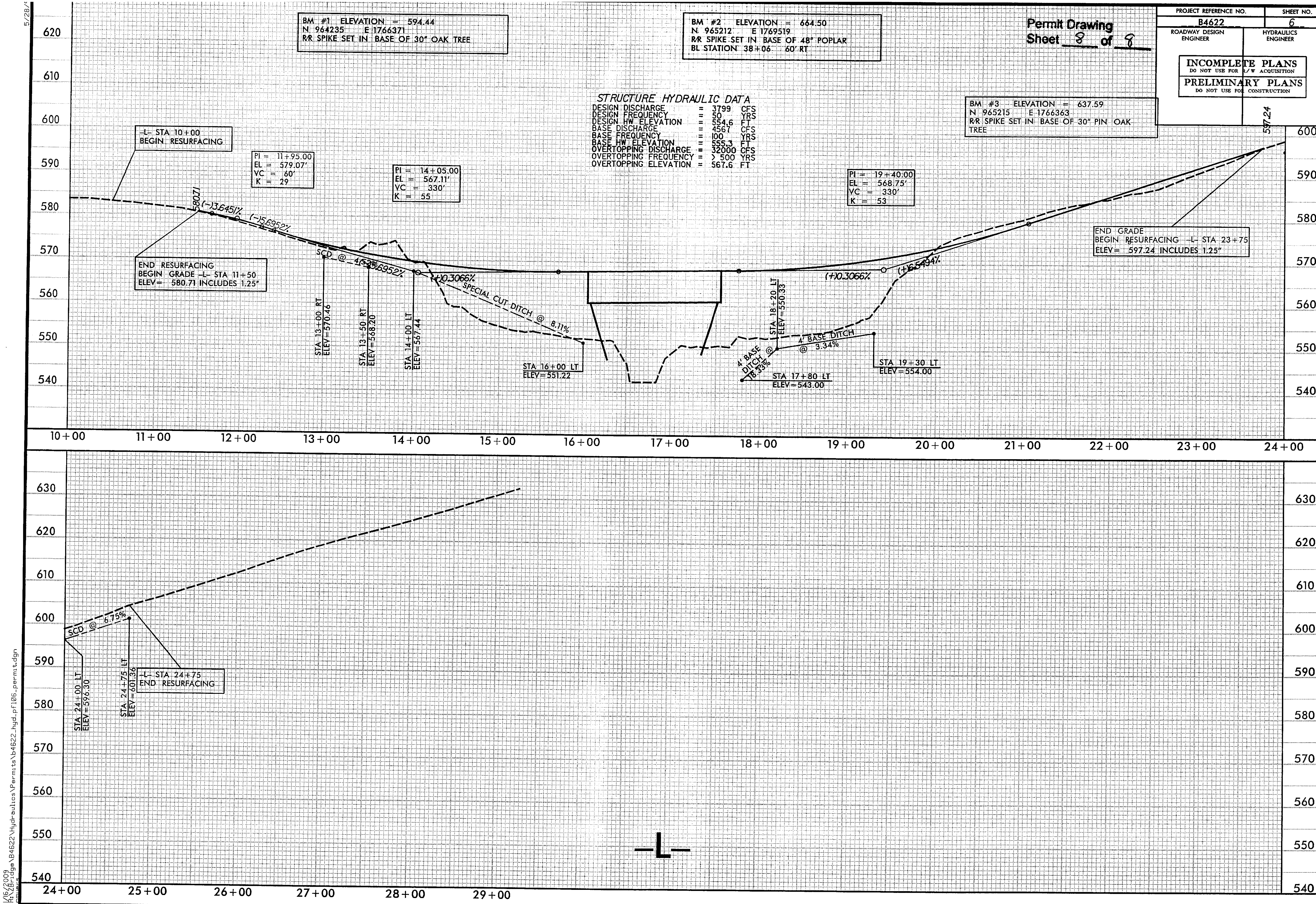
mwhite



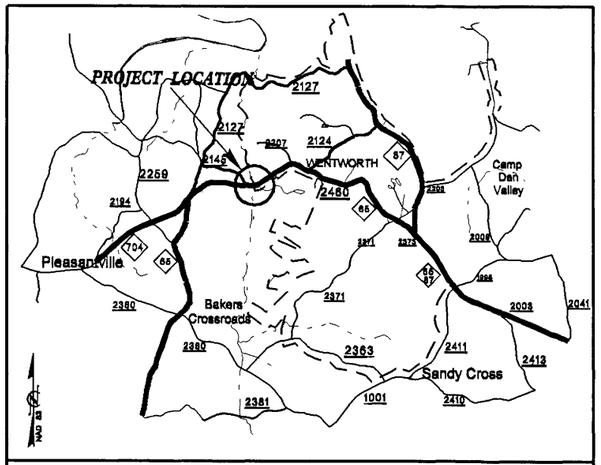
PROJECT REFERENCE NO. B4622
SHEET NO. 6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 8 of 8
BM #1 ELEVATION = 594.44
N 964235 E 1766371
R/R SPIKE SET IN BASE OF 30" OAK TREE
BM #2 ELEVATION = 664.50
N 965212 E 1769519
R/R SPIKE SET IN BASE OF 48" POPLAR
BL STATION 38+06 60' RT
BM #3 ELEVATION = 637.59
N 965215 E 1766363
R/R SPIKE SET IN BASE OF 30" PIN OAK TREE
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 3799 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 554.6 FT
BASE DISCHARGE = 4567 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 555.3 FT
OVERTOPPING DISCHARGE = 32000 CFS
OVERTOPPING FREQUENCY = > 500 YRS
OVERTOPPING ELEVATION = 567.6 FT
-L- STA 10+00 BEGIN RESURFACING
PI = 11+95.00 EL = 579.07' VC = 60' K = 29
PI = 14+05.00 EL = 567.11' VC = 330' K = 55
PI = 19+40.00 EL = 568.75' VC = 330' K = 53
END RESURFACING BEGIN GRADE -L- STA 11+50 ELEV = 580.71 INCLUDES 1.25"
END GRADE BEGIN RESURFACING -L- STA 23+75 ELEV = 597.24 INCLUDES 1.25"
580.71
597.24
(-)3.6451%
(-)5.6952%
(+)0.3066%
(+)0.3066%
(+)6.5494%
SCD @ 4.52%
SPECIAL CUT DITCH @ 8.11%
STA 13+00 RT ELEV=570.46
STA 13+50 RT ELEV=568.20
STA 14+00 LT ELEV=567.44
STA 16+00 LT ELEV=551.22
STA 18+20 LT ELEV=550.33
4' BASE DITCH @ 18.33%
STA 17+80 LT ELEV=543.00
4' BASE DITCH @ 3.34%
STA 19+30 LT ELEV=554.00
10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00
SCD @ 6.75%
STA 24+00 LT ELEV=596.30
STA 24+75 LT ELEV=601.36
-L- STA 24+75 END RESURFACING
24+00 25+00 26+00 27+00 28+00 29+00
-L-

09/08/99

TIP PROJECT: B-4622

W.B.S. : 33801.2.1

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

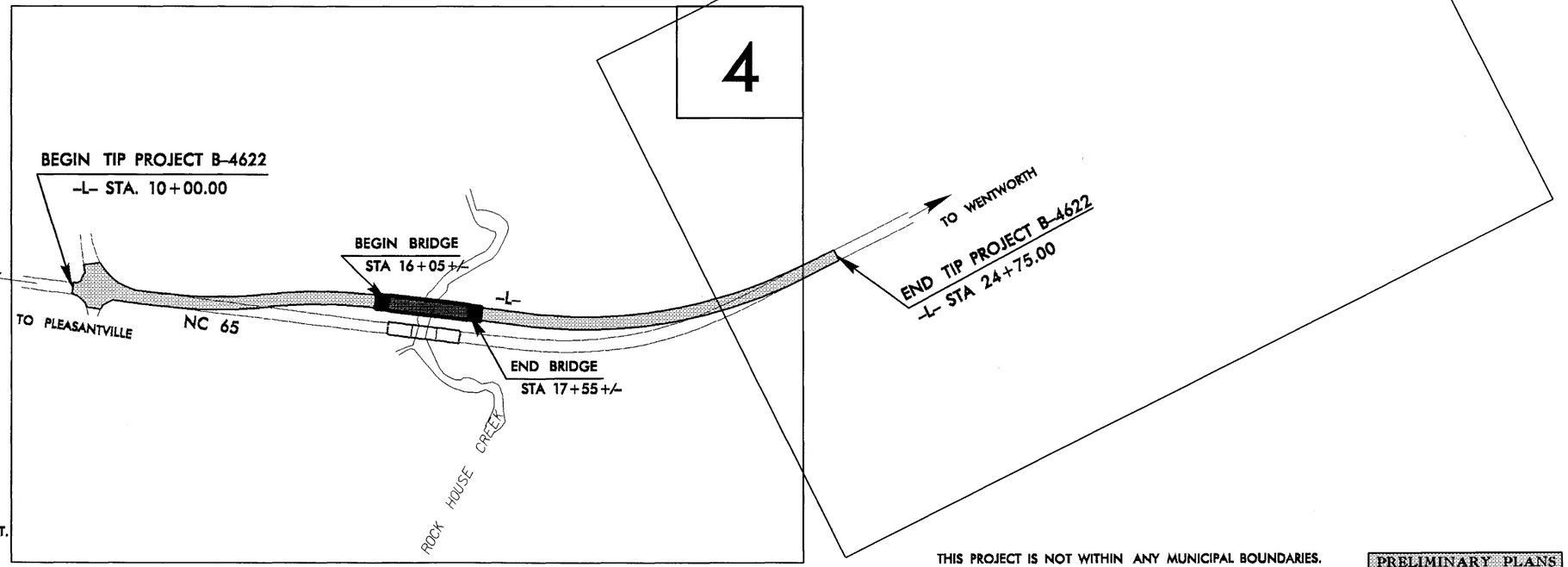
ROCKINGHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4622	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33801.1.1	BRSTP-65 (65)	P.E.
33801.2.1	BRSTP-65 (4)	R/W & UTIL

LOCATION: REPLACEMENT OF BRIDGE NO. 54 ON NC 65 OVER ROCK HOUSE CREEK

TYPE OF WORK: RESURFACING, PAVING, GRADING, GUARDRAIL, AND STRUCTURE



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

THIS IS NOT A CONTROLLED ACCESS PROJECT.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2007 = 6800
ADT 2030 = 14000
DHV = 13 %
D = 60 %
T = 3 % *
V = 50 MPH

* TTST 1 DUAL 2

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4622 = 0.251 MILE
LENGTH STRUCTURE TIP PROJECT B-4622 = 0.028 MILE
TOTAL LENGTH TIP PROJECT B-4622 = 0.279 MILE

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 29, 2008

LETTING DATE: DECEMBER 15, 2009

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

TIM GOINS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

23-JAN-2009 09:23
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$$$$USERNAME$$$$

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4622	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 — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

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

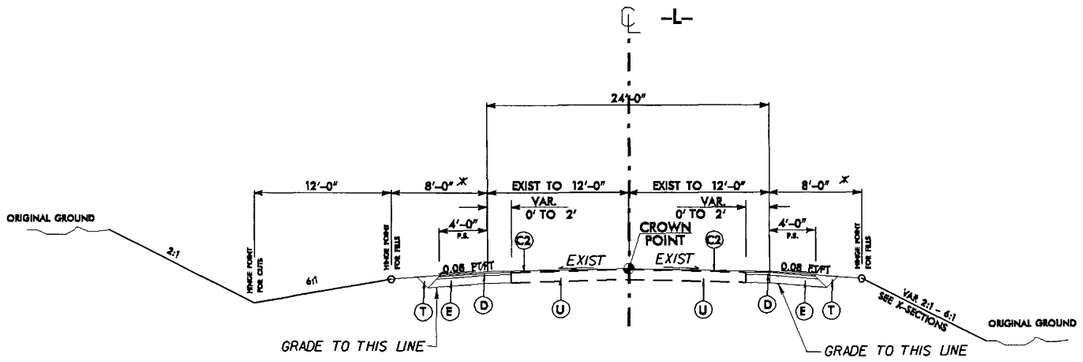
PROJECT REFERENCE NO.	SHEET NO.
B-4622	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.IN EACH OF 2 LAYERS.
C2	PROP. APPROX. 1.5 " ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D1	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 2.5 " IN DEPTH OR GREATER THAN 4" IN DEPTH.
E	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	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 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING.

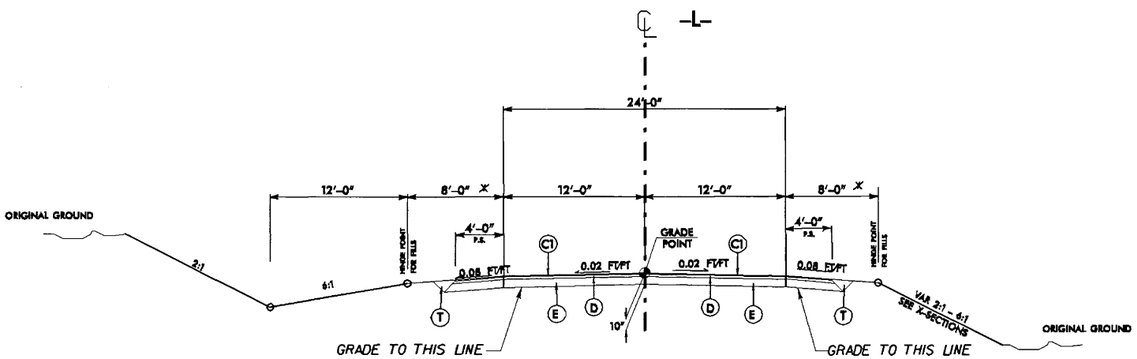
NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN



TYPICAL SECTION NO. 1

x ADD 3'-0" W/ GUARDRAIL

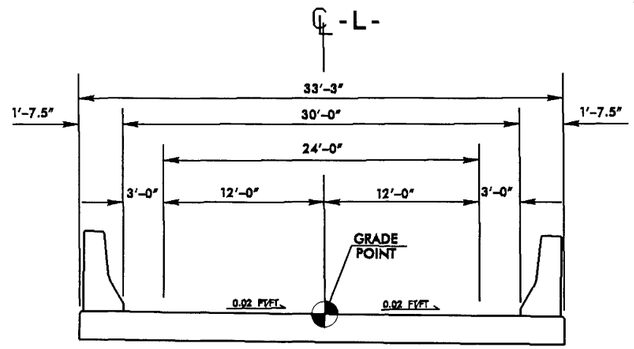
USE TYPICAL SECTION NO. 1
-L- STA. 10+00.00 TO -L- STA. 11+50.00
-L- STA. 23+75.00 TO -L- STA. 24+75.00



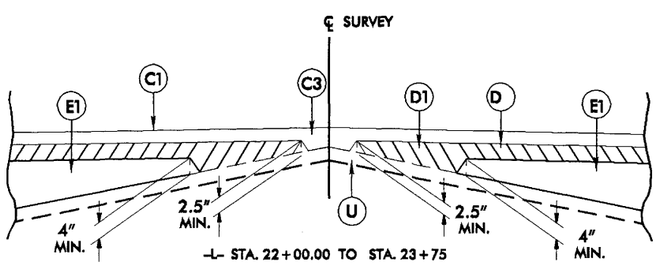
TYPICAL SECTION NO. 2

x ADD 3'-0" W/ GUARDRAIL

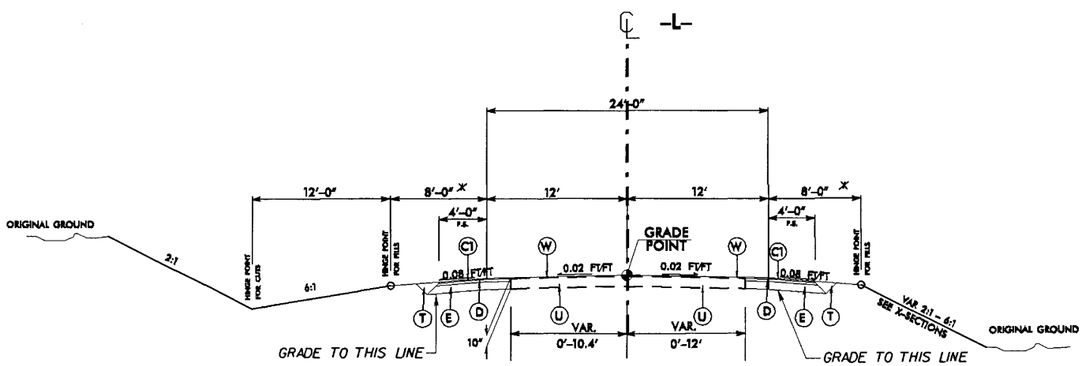
USE TYPICAL SECTION NO. 2
-L- STA. 11+50.00 TO STA. 16+05 (BEGIN BRIDGE)
-L- STA. 17+55.00 (END BRIDGE) TO -L- STA. 22+00.00



TYPICAL SECTION ON STRUCTURE
-L- 16+05 R2 +/- TO 17+55.00 R2 +/-



Detail Showing Method of Wedging



TYPICAL SECTION NO. 3

x ADD 3'-0" W/ GUARDRAIL

USE TYPICAL SECTION NO. 3
-L- STA. 22+00.00 TO STA. 23+75

12/06/07

COMPUTED BY: ____________ DATE: ____________
CHECKED BY: ____________ DATE: ____________

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4622	3-A

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 11+00.00	-L- 16+20.94	4666	6129	1463	
-L- 17+36.08	-L- 24+00.00	4973	9238	4265	
SUBTOTALS:		9639	15367	5728	
SUBTOTALS:					
SUBTOTALS:					
SUBTOTALS:					
PROJECT TOTALS:					
GRAND TOTALS:		9639	15367	5728	
SAY:		9700	15400	5800	
DDE		31			

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
			TOTAL:	
			SAY:	

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
			TOTAL:	
			SAY:	

SUMMARY OF EXISTING CONCRETE PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
			TOTAL:	
			SAY:	

CABLE GUIDERAIL SUMMARY

SURVEY LINE	STATION	STATION	LENGTH	END ANCHOR UNIT	INTERMEDIATE ANCHOR UNIT	COMMENTS
		SUBTOTAL:				
LESS TERMINAL ANCHOR UNITS						
		GRAND TOTALS:				
		SAY:				

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
		TOTAL:	
		SAY:	

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				

23-JAN-2009 09:25
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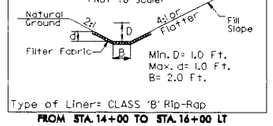
PROJECT REFERENCE NO.	SHEET NO.
B4622	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

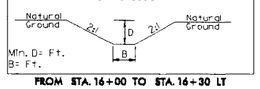
REVISIONS

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



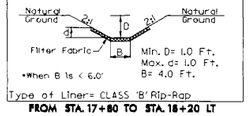
FROM STA. 14+00 TO STA. 16+00 LT

DETAIL C
2' BASE TAIL DITCH
(Not to Scale)



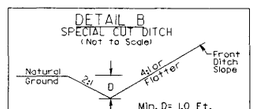
FROM STA. 16+00 TO STA. 16+30 LT

DETAIL E
4' BASE TAIL DITCH
(Not to Scale)



FROM STA. 17+80 TO STA. 18+20 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

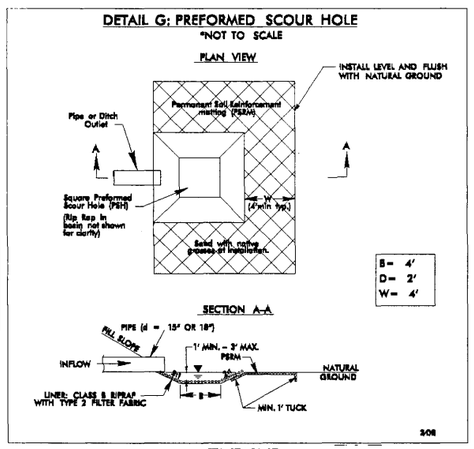


FROM STA. 13+00 TO STA. 13+50 RT

DETAIL F
4' LATERAL BASE DITCH
(Not to Scale)

FROM STA. 18+20 TO STA. 19+30 LT

DETAIL G: PREFORMED SCOUR HOLE
*NOT TO SCALE



STA. 17+80 LT

NAD 83/2001

THOMAS A. MUTARELLI AND WIFE CATHERINE M. MUTARELLI DB 1010 PG 279 PB 40 PG 67

PC Sta. 10+00.00

BEGIN TIP PROJECT B-4622
-L- STA. 10+00.00

TIE EXISTING DITCH TO PROPOSED DITCH

PT Sta. 11+07.53

PC Sta. 11+65.17

PRC Sta. 13+74.68

NON-JURISDICTIONAL

PC Sta. 18+64.05

GREEN FAMILY TRUST DB 823 PG 1641

2' BASE SPECIAL CUT DITCH W/ CLASS 'B' RIP RAP SEE DETAIL A

2' BASE TAIL DITCH SEE DETAIL C

4' BASE TAIL DITCH W/ CLASS 'B' RIP RAP SEE DETAIL E

4' BASE DITCH SEE DETAIL F

PSH SEE DETAIL G

CLASS 'B' RIP RAP EST. 2 TONS 7 SY FILTER FABRIC

CLASS II RIP RAP TO ELEVATION 556.4

RETAIN DI

BILLY JOE WILSON JANICE GATTON HAMBY DB 2225 PG 2096 PB 51 PG 4

-L- STA 10+85.59=
BL-4 PINC 9+33.90
EOT 16+79.59

SPECIAL CUT DITCH SEE DETAIL B

TIE ROADWAY DITCH TO EXISTING DITCH

SHOULDER BERM GUTTER

GRADE EXISTING ROADWAY FILL TO DRAIN AWAY FROM PROPOSED ROADWAY FILL

CLASS 'B' RIP RAP W/ CLASS 1 FILTER FABRIC

BEGIN BRIDGE STA 16+05

END BRIDGE STA 17+55

2GI

ROD AND LUG CONNECTOR

DECK DRAINS @ 12' SPACING

-L- STA 20+30.16=
BL-5 PINC 18+84.41

GRADE EXISTING ROADWAY FILL TO DRAIN AWAY FROM PROPOSED ROADWAY FILL

Pl Sta 10+53.77
Δ = 0° 36' 58.0" (LT)
D = 0° 34' 22.6"
L = 107.53'
T = 53.77'
R = 10,000.00'
SE = SEE PLANS

Pl Sta 12+70.37
Δ = 12° 54' 27.7" (LT)
D = 6° 09' 39.0"
L = 209.51'
T = 105.20'
R = 930.00'
SE = SEE PLANS

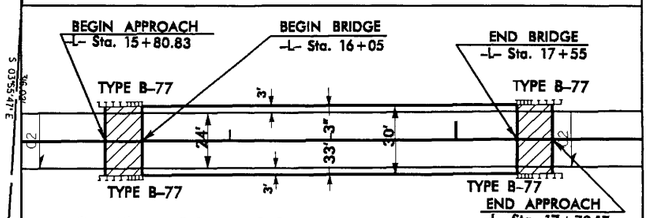
Pl Sta 14+79.88
Δ = 12° 54' 27.7" (RT)
D = 6° 09' 39.0"
L = 209.51'
T = 105.20'
R = 930.00'
SE = SEE PLANS

Pl Sta 21+47.58
Δ = 33° 54' 37.2" (LT)
D = 6° 09' 39.0"
L = 550.42'
T = 283.53'
R = 930.00'
SE = SEE PLANS

Match Line Sta 23+50

SEE SHEET 6 FOR - L - PROFILE

SKETCH OF PAVEMENT IN RELATION TO BRIDGE



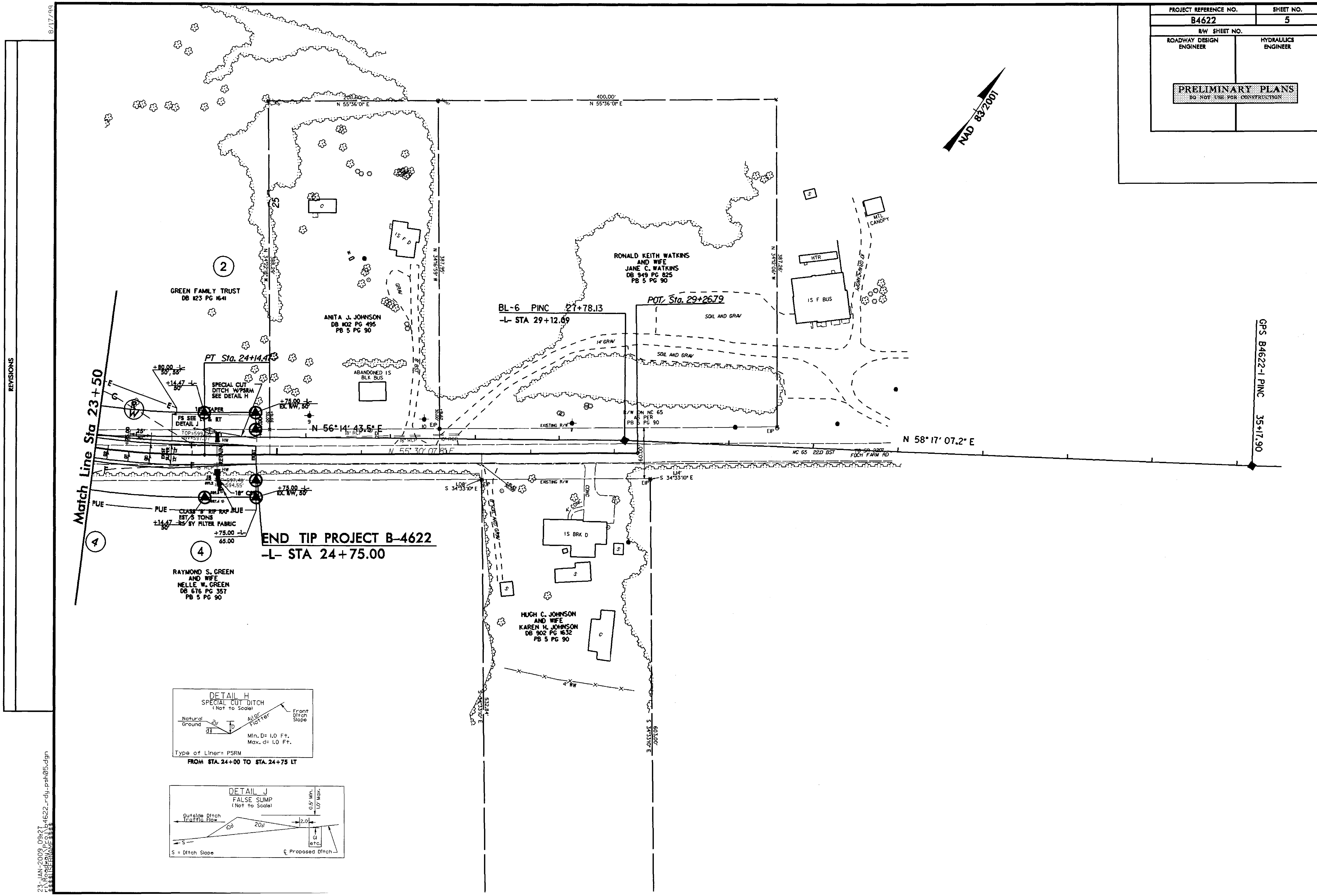
See Sheets S-1 thru S-? For Structure Plans

PROP APPROACH SLAB

DENOTES PAVEMENT REMOVAL

PROJECT REFERENCE NO.	SHEET NO.
B4622	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/2001
REVISIONS
8/17/99
Match Line Sta 23+50
GREEN FAMILY TRUST
DB 1123 PG 1641
ANITA J. JOHNSON
DB 1102 PG 495
PB 5 PG 90
RONALD KEITH WATKINS
AND WIFE
JANE C. WATKINS
DB 949 PG 825
PB 5 PG 90
BL-6 PINC 27+78.13
-L- STA 29+12.69
POT Sta. 29+26.79
PT Sta. 24+14.47
SPECIAL CUT DITCH W/PSRM SEE DETAIL H
FS SEE DETAIL J
ABANDONED 1S BLK BUS
1S F D
1S F BUS
HTR
MTL CANOPY
SOIL AND GRAV
N 56° 14' 43.5" E
N 55°30'07.8" E
N 58° 17' 07.2" E
N 55°36'01" E
200.00'
400.00'
NC 65 22.0' BST
FOCH FARM RD
EXISTING R/W
GPS B4622-1 PINC 35+17.90
END TIP PROJECT B-4622
-L- STA 24+75.00
CLASS 'B' RIP RAP
EST. 5 TONS
25 SY FILTER FABRIC
RAYMOND S. GREEN
AND WIFE
NELLE W. GREEN
DB 676 PG 357
PB 5 PG 90
HUGH C. JOHNSON
AND WIFE
KAREN H. JOHNSON
DB 902 PG 1632
PB 5 PG 90
1S BRK D
S 34°33'10" E
DETAIL H
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
Type of Liner= PSRM
FROM STA. 24+00 TO STA. 24+75 LT
DETAIL J
FALSE SUMP
(Not to Scale)
Outside Ditch
Traffic Flow
S = Ditch Slope
℄ Proposed Ditch
23-JAN-2009 09:27
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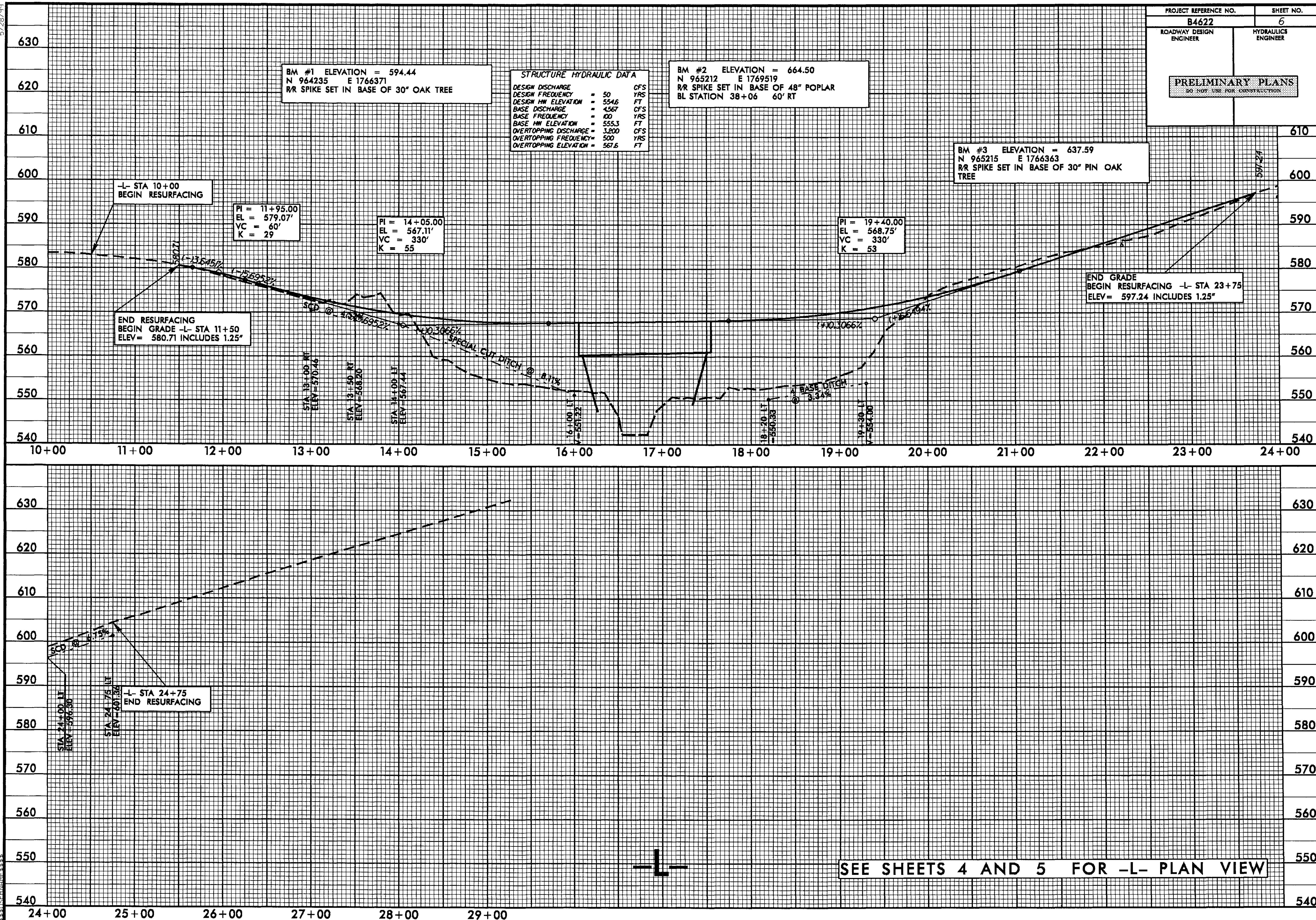
PROJECT REFERENCE NO.	SHEET NO.
B4622	6

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



BM #1 ELEVATION = 594.44
N 964235 E 1766371
R/R SPIKE SET IN BASE OF 30" OAK TREE
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 554.6 FT
BASE DISCHARGE = 4,567 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 555.3 FT
OVERTOPPING DISCHARGE = 3,200 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 567.6 FT
BM #2 ELEVATION = 664.50
N 965212 E 1769519
R/R SPIKE SET IN BASE OF 48" POPLAR
BL STATION 38+06 60' RT
BM #3 ELEVATION = 637.59
N 965215 E 1766363
R/R SPIKE SET IN BASE OF 30" PIN OAK TREE
-L- STA 10+00
BEGIN RESURFACING
PI = 11+95.00
EL = 579.07'
VC = 60'
K = 29
PI = 14+05.00
EL = 567.11'
VC = 330'
K = 55
PI = 19+40.00
EL = 568.75'
VC = 330'
K = 53
580.71
(-1)3.6451%
(-)5.6952%
SCD @ 4.5%
(-)5.6952%
(+)0.3066%
SPECIAL CUT DITCH @ 8.11%
(+)0.3066%
(+)5.5947%
BASE DITCH 3.34%
597.24
END RESURFACING
BEGIN GRADE -L- STA 11+50
ELEV= 580.71 INCLUDES 1.25"
END GRADE
BEGIN RESURFACING -L- STA 23+75
ELEV= 597.24 INCLUDES 1.25"
STA 13+00 RT
ELEV=570.46
STA 13+50 RT
ELEV=568.20
STA 14+00 LT
ELEV=567.44
16+00 LT
V=551.22
18+20 LT
V=550.33
19+30 LT
V=554.00
630
620
610
600
590
580
570
560
550
540
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
SCD @ 4.75%
STA 24+00 LT
ELEV=596.30
STA 24+75 LT
ELEV=601.36
-L- STA 24+75
END RESURFACING
24+00
25+00
26+00
27+00
28+00
29+00
-L-

SEE SHEETS 4 AND 5 FOR -L- PLAN VIEW

5/28/99

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4622	X-1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

600 595 590 585 580 575

EXIST EXIST
582.02
11+00.00

590 585 580 575

EXIST EXIST
582.96
10+50.00

590 585 580 575

EXIST EXIST
583.42
10+00.00

590 585 580 575 570 565

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99

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	B-4622	X-2

2:1

6:1

0.020

0.040

6:1

6:1

573.306

575.49

12+50.00

572.986

2:1

6:1

0.020

0.040

6:1

5:1

576.038

578.18

12+00.00

575.718

2:1

6:1

0.021

0.053

6:1

5:1

578.054

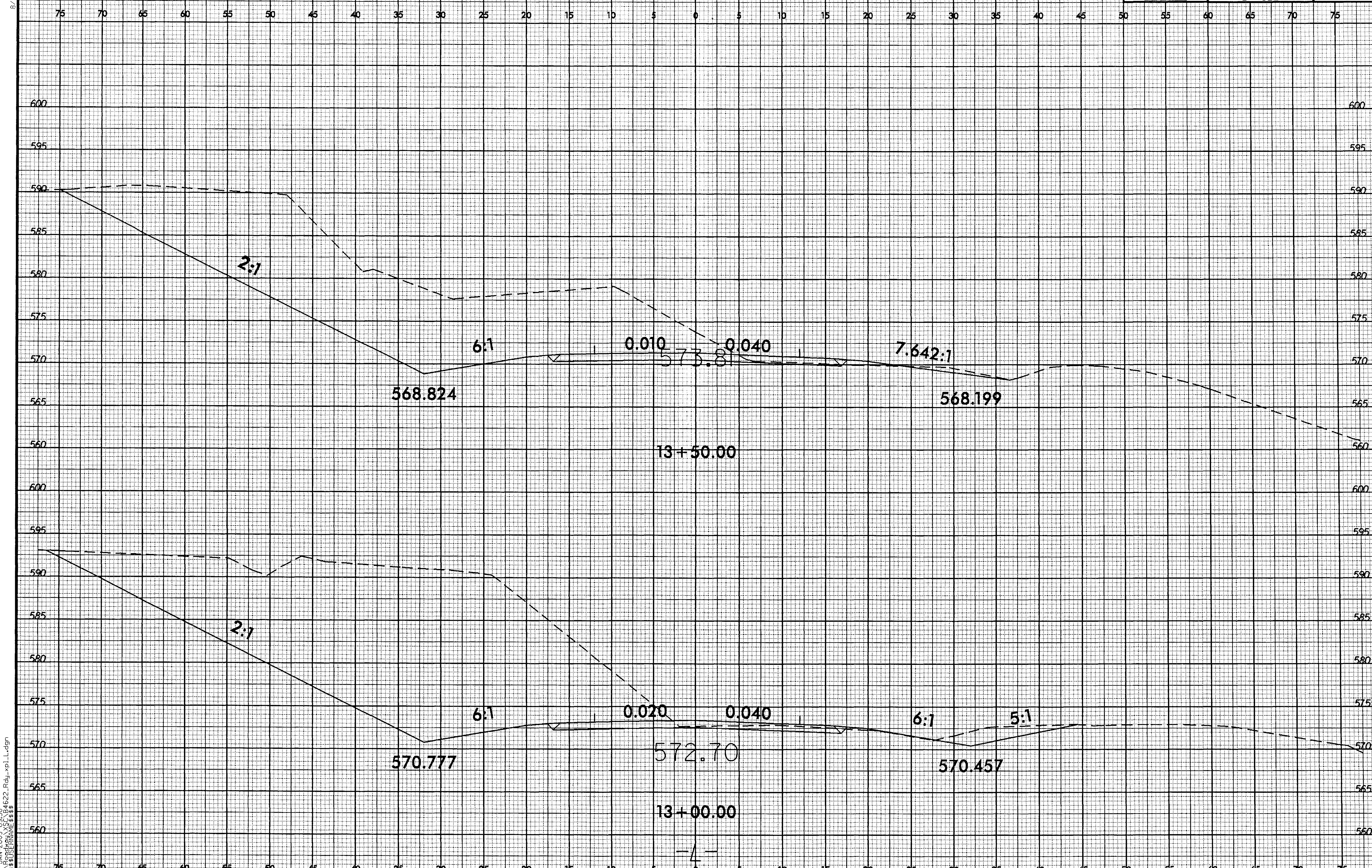
580.60

11+50.00

577.542

-4-

PROJ. REFERENCE NO.	SHEET NO.
B-4622	X-3



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	B-4622	X-4

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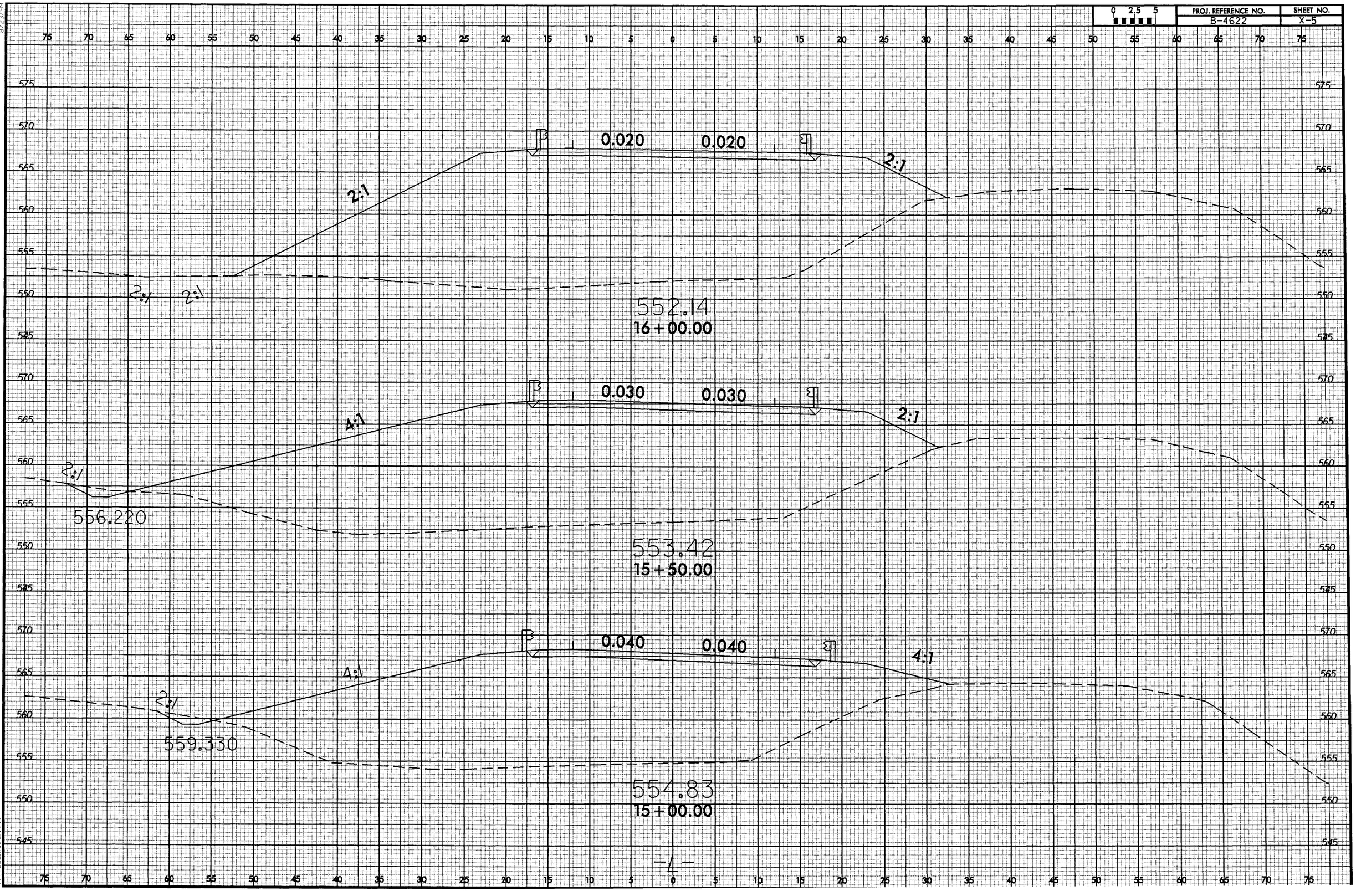

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8/23/99

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	B-4622	X-6

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575 570 565 560 555 550 545 540

0.020 0.020

548.87

17+00.00

0.020 0.020

546.62

16+50.00

-4-

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8/23/99

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	B-4622	X-7

0.006 0.006

2:1

2:1

552.68

18+00.00

0.020 0.020

550.70

17+50.00

-L-

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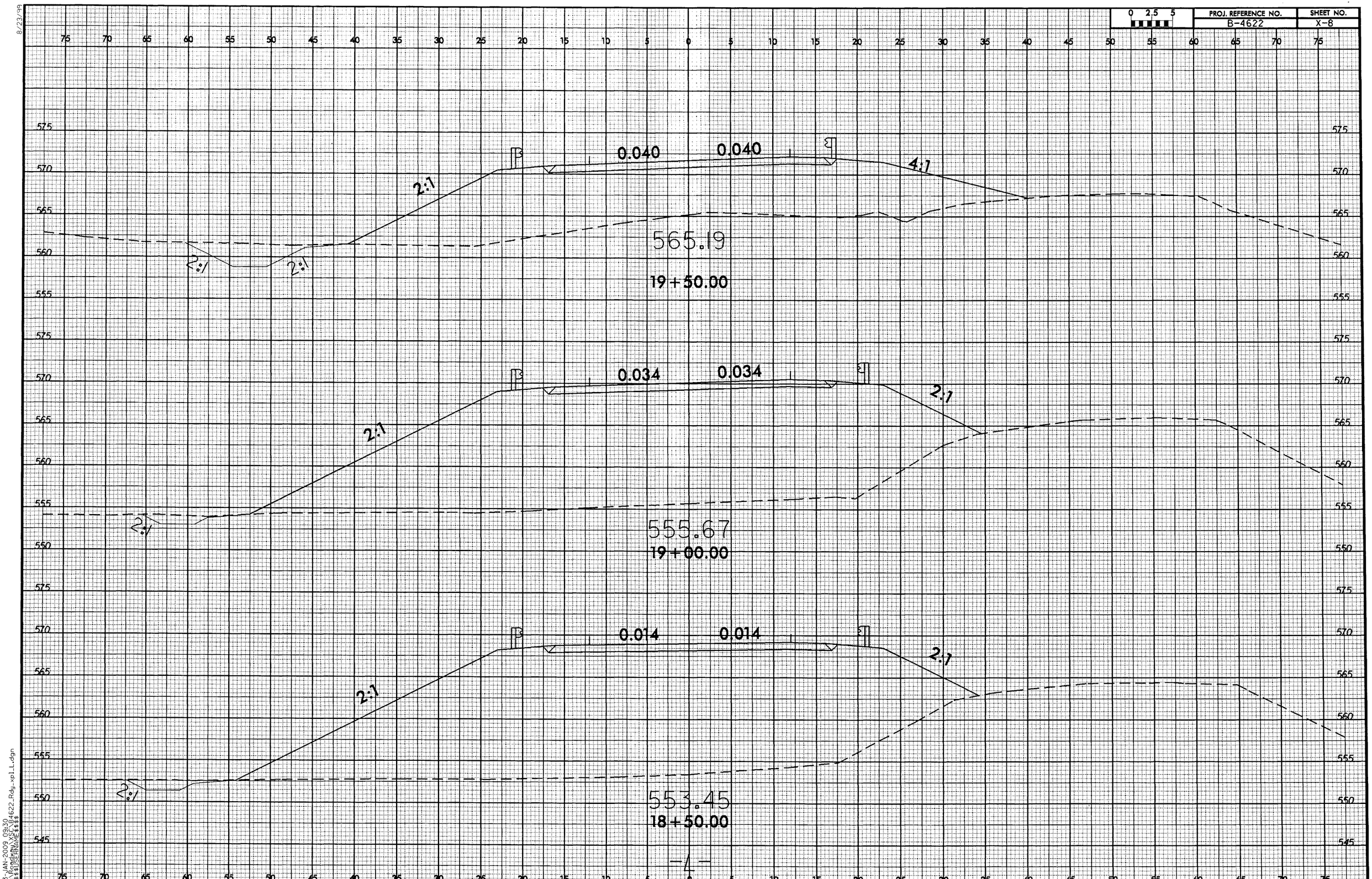

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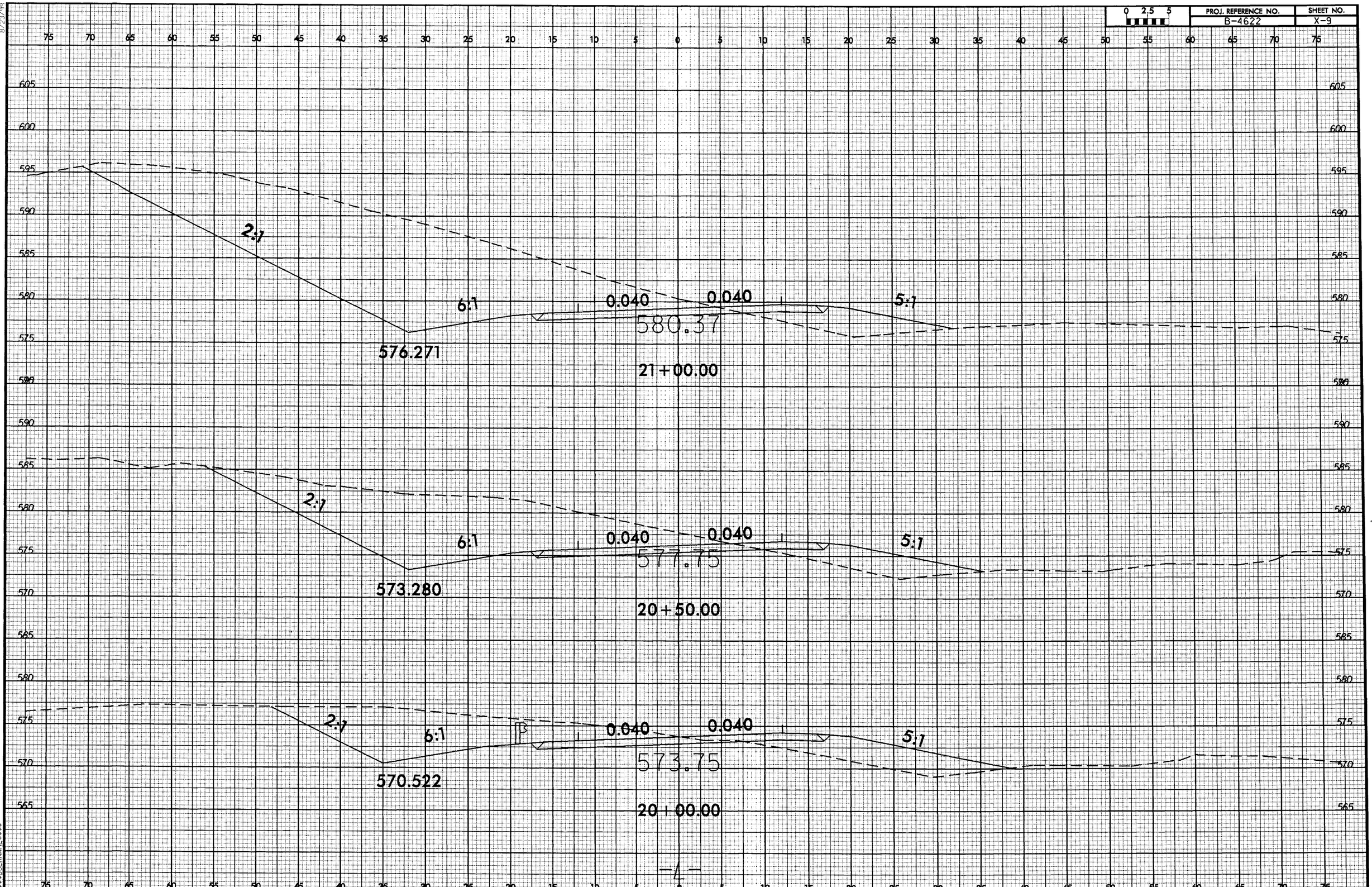

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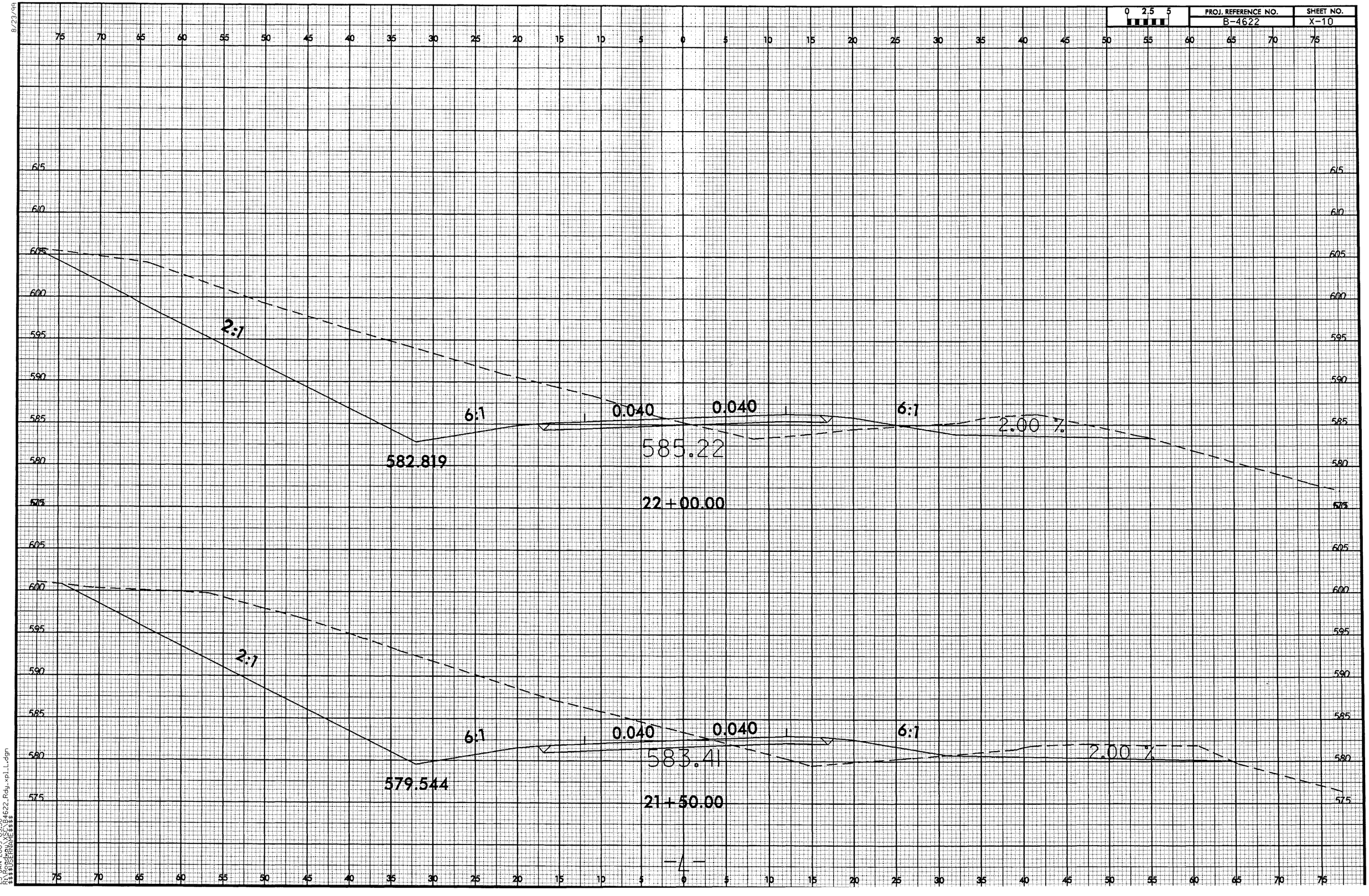

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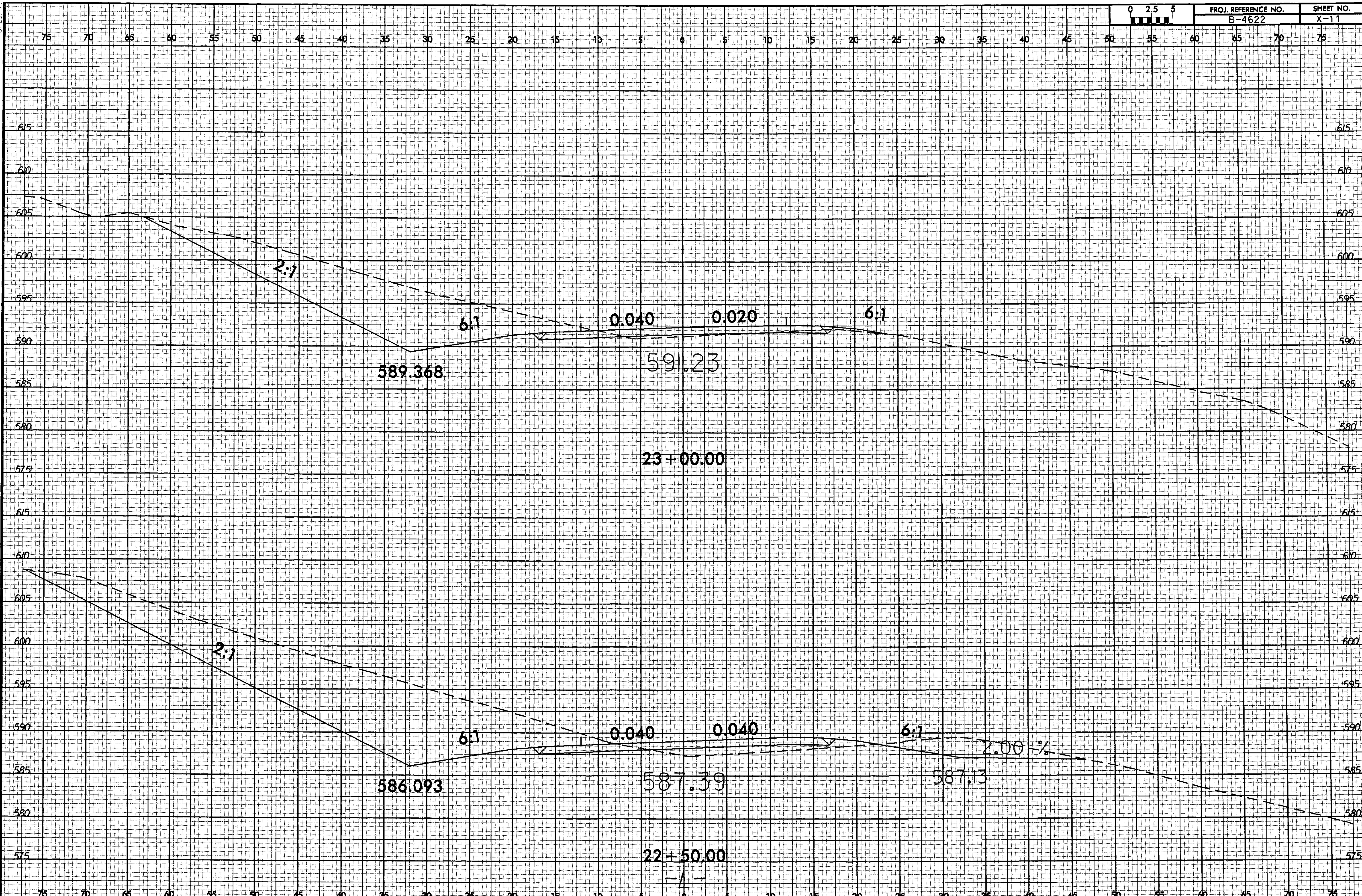

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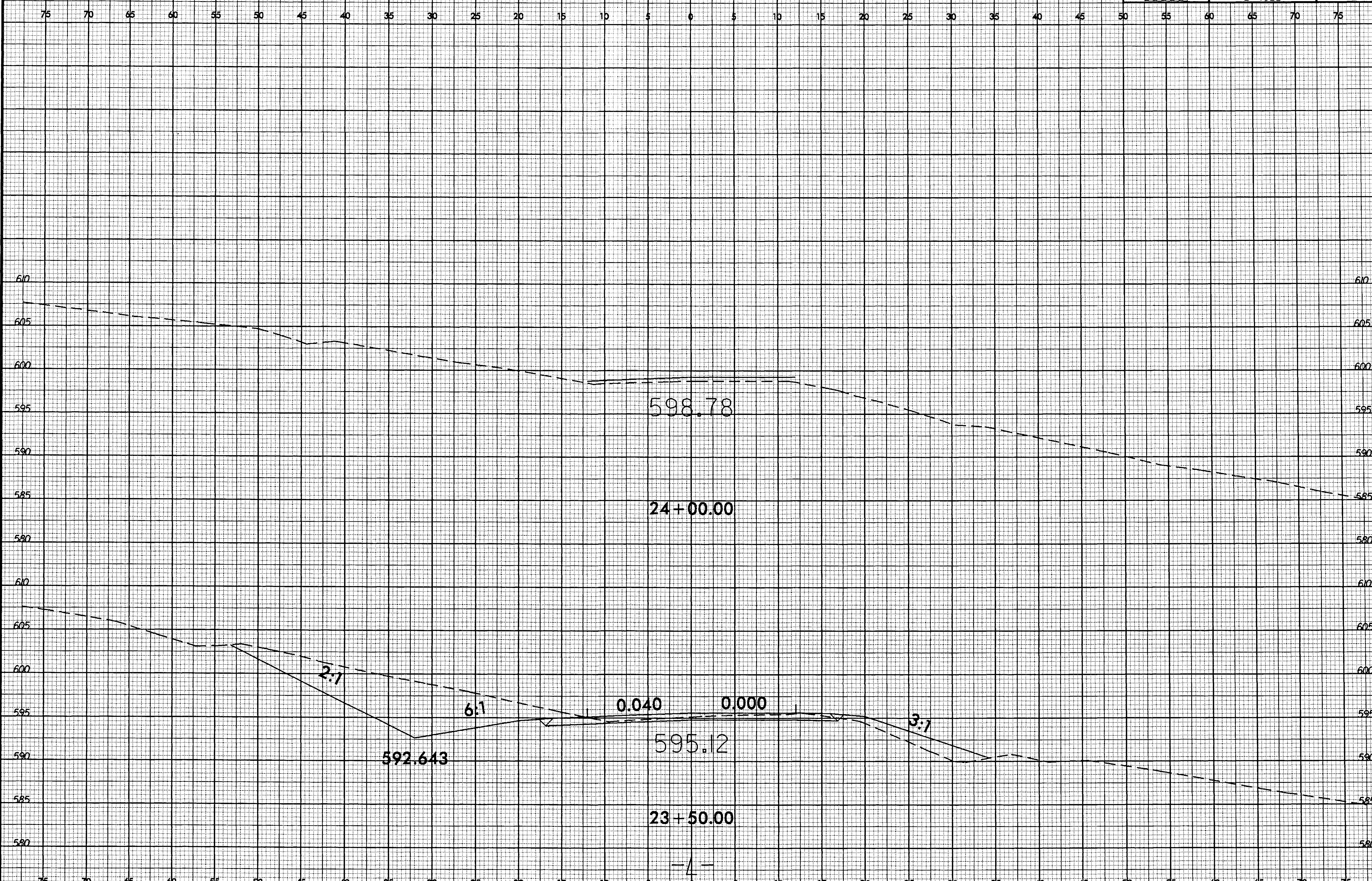
B-4622	X-12



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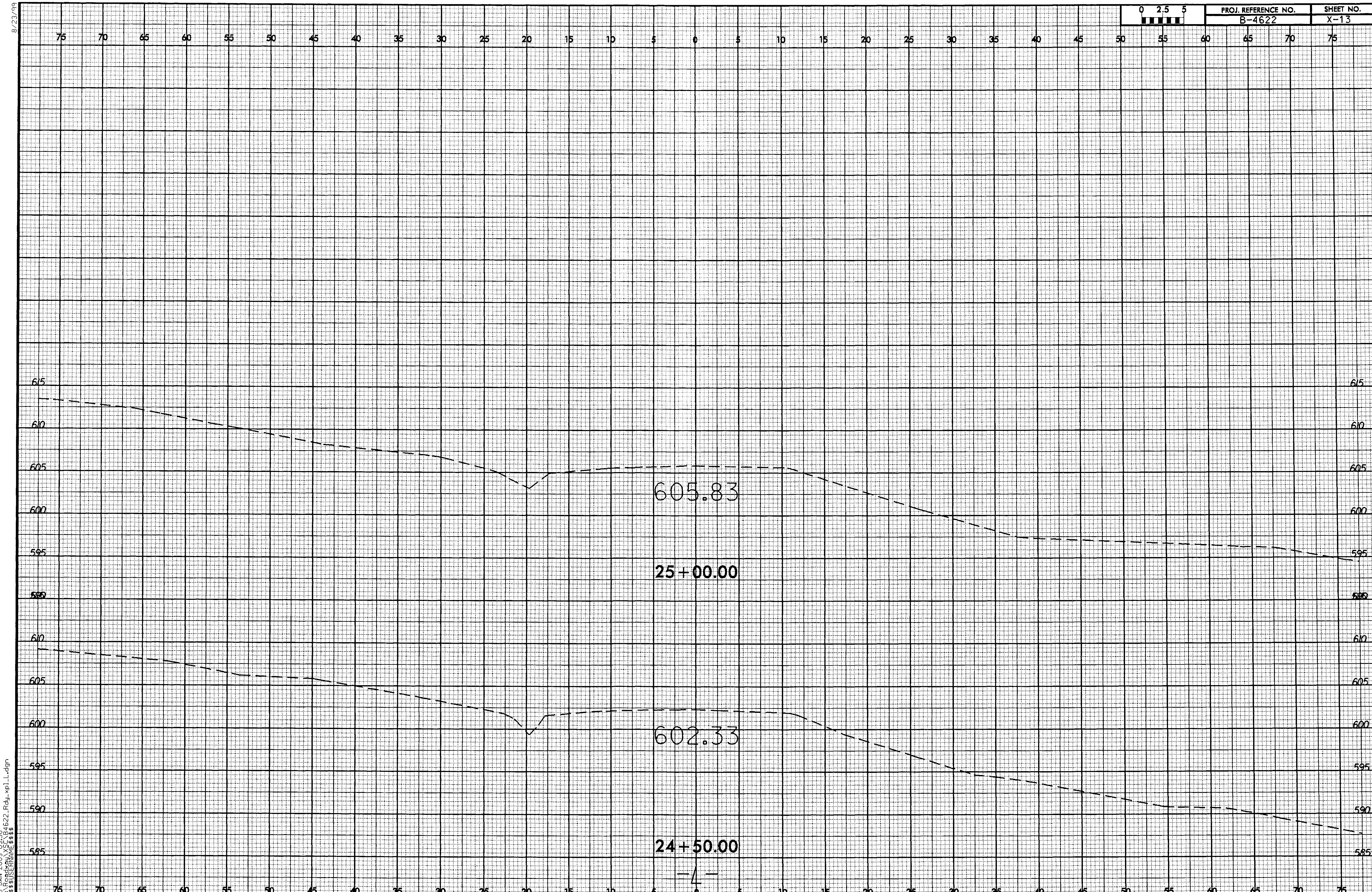
8/23/99



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Rockingham County

Bridge No. 54 on NC 65

over Rock House Creek

Federal-Aid Project No. BRSTP-65(4)

State Project No. 8.1512301

W.B.S. No. 33801.1.1

T.I.P. Project No. B-4622

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

7/9/07
DATE

Gregory J. Thorpe, PhD.
Environmental Management Director
Project Development & Environmental Analysis Branch,
North Carolina Department of Transportation

7/10/07
DATE

for
John F. Sullivan III, PE
Division Administrator
Federal Highway Administration

Rockingham County

Bridge No. 54 on NC 65

over Rock House Creek

Federal-Aid Project No. BRSTP-65(4)

State Project No. 8.1512301

W.B.S. No. 33801.1.1

T.I.P. Project No. B-4622

CATEGORICAL EXCLUSION

June 2007

Document Prepared By:
MA Engineering Consultants, Inc.
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Cary, NC 27511

Gail F. Kogut, PE
Project Manager

NORTH CAROLINA PROFESSIONAL SEAL 23563 ENGINEER GAIL F. KOGUT
06-28-07

For the North Carolina Department of Transportation:

Pamela R. Williams
Bridge Project Planning Engineer

John L. Williams, PE
Bridge Project Engineer
Project Development & Environmental Analysis Branch

PROJECT COMMITMENTS

Rockingham County
Bridge No. 54 on NC 65
over Rock House Creek
Federal-Aid Project No. BRSTP-65(4)
State Project No. 8.1512301
W.B.S. No. 33801.1.1
T.I.P. Project No. B-4622

Wetlands

Division 7 Construction, Resident Engineer's Office and PDEA- NEU

The National Wetland Inventory has mapped a forested wetland adjacent to the southeastern portion of the PSA. Due to its location, over 200-feet east of NC65 and outside of the PSA limits, and low potential for impact, the area was not delineated. Should the project limits increase, this area will be evaluated according to the 1987 *Wetlands Delineation Manual* and field delineated using mapping grade Global Positioning System.

Rockingham County
Bridge No. 54 on NC 65
over Rock House Creek
Federal-Aid Project No. BRSTP-65(4)
State Project No. 8.1512301
W.B.S. No. 33801.1.1
T.I.P. Project No. B-4622

INTRODUCTION: The replacement of Bridge No. 54 is included in the 2007-2013 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

The NCDOT Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 28.0 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to the structural evaluation rating of 2 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA's Highway Bridge Replacement Program.

Bridge No. 54 is considered narrow since the clear roadway width of the bridge is 20.0 ft. which is equal to the approach roadway width of 20 ft. According to current standards, the roadway width of this bridge should be at least 4 ft. wider than the approach roadway width. Due to this insufficient width, the deck geometry was rated 2 out of 9.

The posted weight limit on the bridge is down to 19 tons for single vehicles (SV) and 23 tons for truck-tractor semi-trailers (TTST). By comparison, a new bridge would be designed for 25 tons SV and 45 tons TTST.

II. EXISTING CONDITIONS

Bridge No. 54 is located on NC 65 in Rockingham County over Rock House Creek (Figure 1). NC 65 is classified as a Rural Major Collector Route in the Statewide Functional Classification System.

Bridge No. 54 was constructed in 1932. The existing structure is a two-lane, three-span bridge with an overall length of 134.0 ft. and a clear roadway width of 20.0 ft. The bridge consists of a reinforced concrete T-beams with an asphalt wearing surface. The interior bents are reinforced concrete post and web and the abutments are reinforced concrete spill-through. Bridge No. 54 currently has posted weight limits of 21 tons for SV and 25 tons for TTST. The posted speed limit is 45 mph. The approach roadway for Bridge No. 54 is a two-lane 20.0-foot wide road with 4.0-foot grass shoulders.

Within the project limits, the existing roadway grade is in a sag vertical curve which meets a 35 mph operating speed.

The creek bed to roadway crown point height is 22.0 ft. and the normal depth of Rock House Creek is 1.0 ft.

There are no utilities attached to the existing structure. Aerial power and telephone lines run along the southern side of NC 65. Southern Bell also has underground telephone lines along the southern side of NC 65. Water and gas lines are located just east of the project area.

The 2007 estimated average daily traffic (ADT) volume is 6800 vehicles per day (vpd). The projected ADT is 14,000 vpd by the design year 2030. The percentages of truck traffic are 2% dual-tired vehicles and 1% TTST. The project area is located within the Wentworth City Limits. Wentworth is the county seat. NC 65 is the main thoroughfare connecting Wentworth with the western portion of the Rockingham County.

NC 65 is not a part of a designated bicycle route nor is it listed in the Transportation Improvement Program (TIP) as needing bicycle accommodations. There is no indication that an unusual number of bicyclists use this roadway.

Three accidents were reported in the vicinity of the bridge during a recent three year period. All three crashes were the result of the inadequate bridge width.

Eight school buses cross Bridge No. 54 for a total of 16 trips per day.

Land use within the project area is cultivated or pastureland with scattered single family residential.

There are no U.S. Geological Survey (USGS) geodetic survey markers located within one mile of the proposed project.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide a minimum 30-foot clear roadway width to allow for two 12-foot travel lanes with 3-foot shoulders. The approach roadway will consist of two 12-foot travel lanes with 8-foot shoulders 4 ft. of which will be paved. The design speed will be 50 mph.

The estimated structure requirements are based on the historic performances of the existing structure and field observations of the site. Based on field reconnaissance of the site and a preliminary hydraulic investigation, the existing structure will be replaced with a bridge with an approximate skew of 70 degrees. The length and width of the proposed bridge may increase or decrease as necessary to accommodate peak flows as determined from a more detailed hydraulic analysis to be performed during the final

design phase of the project. A minimum gradient of 0.3% will be utilized to facilitate deck drainage and deck drains should not be placed over the stream channel.

B. Reasonable and Feasible Alternatives

Alternative 2

Alternative 2 replaces the bridge in-place while traffic is maintained on an on-site temporary detour bridge. The proposed structure length would be approximately 145 ft. The temporary detour bridge would be approximately 110 ft. in length and would have two 11-foot wide travel lanes. The roadway grade would be raised approximately one foot over existing. However, a design exception would be required for the vertical alignment with a safe operating speed of 35mph.

Alternative 4 (Preferred)

Alternative 4 proposes to relocate Bridge No. 54 just north of the existing structure. Traffic will be maintained on the existing alignment during construction. The proposed structure would be approximately 145 ft. long and the vertical alignment would be raised 7 ft. above existing. No design exceptions are anticipated.

C. Alternatives Eliminated from Further Consideration

The "do-nothing" alternative will eventually necessitate removal of the bridge effectively removing this section of NC 65 from traffic service. This is not acceptable due to the service NC 65 provides for a high volume of traffic.

Investigation of the existing structure by the Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its age and deteriorated condition. Portions of the bottom layer of reinforcing steel of the girders is exposed and in some areas exhibited a 25% loss of section. The bridge is narrow according to current standards and in order to widen Bridge No. 54, a two T-beam section would be required on each side of the existing bridge. This widening, combined with rehabilitation necessary for the structurally deficient girders, is comparable to the cost of materials for new bridge.

Alternative 1

Alternative 1 would replace the bridge in-place while traffic is maintained on an off-site detour. The proposed structure length would be approximately 145 ft. The roadway grade would be raised approximately one foot over existing. However, a design exception would be required for the vertical alignment with a safe operation design speed of 35mph.

NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The offsite detour for this project would include NC 65, SR 2145 (Settle Bridge Road), SR 2127 (Pannel Road), NC 87, and

SR 2124 (Hancock Road). The majority of traffic on the road is through traffic. The detour for the average road user would result in 6.5 minutes additional travel time (3.6 miles additional travel). Up to an 18-month duration of construction is expected on this project with the off-site detour in use for 12 months. NCDOT Division 7 has indicated that the condition of all roads, bridges and intersections along the detour are acceptable without improvement.

Based on the Guidelines, the criteria above indicate an offsite detour is preferable but a stronger evaluation of other project variables is required. In this case, Rockingham County Emergency Services has indicated that due to the increased call response time to homes and businesses in this area, the delay is unacceptable. Rockingham County School Transportation has indicated that rerouting buses around this project is not preferable and would prefer summer construction if road closure were necessary. However, with a construction period of 12 months, summer closure would be insufficient. In view of the objections from Rockingham County Emergency Services and Rockingham County Schools, an offsite detour is not preferred. NCDOT concurs with these concerns and believes that an offsite detour is not justifiable.

Alternative 3

Alternative 3 would relocate Bridge No. 54 just south of the existing structure. Traffic would be maintained on the existing alignment during construction. The proposed structure would be approximately 290 ft. long and the vertical alignment would be raised 7 ft. above existing. No design exceptions are anticipated.

Alternative 3 was eliminated due to the higher costs associated with R/W costs and longer approach work. In addition, Alternative 3 has the greatest amount of stream impacts.

D. Preferred Alternative

Alternative 4, replacing the bridge slightly north of the existing bridge while maintaining traffic on the existing alignment is the preferred alternative. Alternative 4 was selected because it has the least impacts to the natural environment while maintaining traffic on-site. All alternatives have similar impacts to Rock House Creek. However, Alternatives 1, 2, and 3 each impact more linear feet of UT2 than Alternative 4. In addition, Alternative 4 improves the vertical alignment and may eliminate the need for design exceptions.

NCDOT Division 7 concurs with the selection of Alternative 4 as the preferred alternative.

IV. ESTIMATED COSTS

The estimated costs, based on 2007 prices, are shown in Table 1.

Table 1: Estimated Costs

	Alternative 2	Alternative 4 (Preferred)
Structure Removal (existing)	45,000	60,000
Structure (proposed)	502,000	502,000
Detours Structure and Approaches	409,000	0
Roadway Approaches	200,000	714,000
Miscellaneous and Mobilization	319,000	414,000
Engineering and Contingencies	225,000	260,000
ROW/Const. Easements/Utilities	31,000	56,000
TOTAL	$ 1,731,000	$ 2,006,000

V. NATURAL ENVIRONMENT

A. Physical Characteristics

The project study area (PSA) is an area of thirty-five acres centered about the intersection of Rock House Creek and Bridge No. 54. Not all of the PSA will be affected by the project.

1. Water Resources

The proposed project falls within the Roanoke River Basin, within the NC Division of Water Quality subbasin designated 03-02-03 and the US Geological Survey 8-digit Hydrologic Cataloging Unit Code 03010103. Rock House Creek (Stream Index No. 22-34-(2)) and two small tributaries (UT1 and UT2) to Rock House Creek are the lotic systems within the Project Vicinity. Rock House Creek (Stream Index No. 22-34-(2)) and the two small tributaries (UT1 and UT2) are perennial streams located within the PSA.

Rock House Creek has a classification of "WS-IV". Class "WS-IV" waters are used as sources of water supply for drinking, culinary, or food processing purposes for those users where a WS-I, WS-II, or WS-III classification is not feasible." Rock House Creek has a use support rating of "fully supporting", based on the evaluated method. All tributaries to Rock House Creek will have the same classification and use support rating. Rock House Creek and the two tributaries (UT1 and UT2) do not appear on the Final 2004 303(d) list. No waters classified as Water Supplies (WS-I: undeveloped watershed, or WS-II: predominately undeveloped watersheds), Outstanding Resource Waters (ORW), or that appear on the Final 2004 303(d) list occur within 1.0 mile of the PSA. At the time of this report, the Roanoke River Basin was not subject to riparian buffer regulations.

2. Biotic Resources

Land use and land cover classifications for the natural vegetative communities occurring in the Project Study Area include Dry-Mesic Oak Hickory Forest, Piedmont/Low Mountain Alluvial Forest, Cropland and Pasture, and Residential. Cropland/pasture and residential, the most human influenced communities, account for less than 25 percent of the total land use within the PSA.

Table 2: Impacts to Natural Communities in Project Study Area

Impacts	Direct Impacts (acres)			
	Alternative 2		Alternative 4 (Preferred)	
	Permanent	Temporary	Permanent	Temporary
Cropland/Pasture	0.30	0.32	0.61	0.31
Dry Mesic Oak Hickory Forest	0.40	0.04	1.39	0.76
Piedmont/ Low Mountain Alluvial Forest	1.08	0.85	1.05	0.90
Residential	0	0	0.15	0.03

B. Jurisdictional Topics

1. Surface Waters and Wetlands

The National Wetland Inventory has mapped a forested wetland (Palustrine, Forested, Broad-leaved Deciduous, Temporarily Flooded) adjacent to the southeastern portion of the PSA. Field investigation within this area noted a broad flood-prone area composed of broad-leaved deciduous trees. Chewacla soils are mapped for this area. These soils usually have pedon colors of 10YR4/4 with mottles of 7.5YR 4/6. Samples taken during the field investigation yielded colors of 10YR6/5 with very few mottles present. In addition, evidence of recent hydrology in this area was not noted. Investigation traversed only that portion of it adjacent to the PSA. The area has been modified by the placement of a narrow gravel road, logging activities and forest regeneration. Due to its location, over 200-feet east of NC65 and outside of the PSA limits, and low potential for impact, the area was not delineated. Should the project limits increase, this area will be evaluated according to the 1987 *Wetlands Delineation Manual* and field delineated using mapping grade Global Positioning System.

NC Department of Transportation will ensure that Best Management Practices are employed to prevent or reduce water pollution as described in the NC Department of Transportation handbook *Best Management Practices for the Protection of Surface Waters*. Rockingham County is not a mountain trout county and Rock House Creek does not support trout. Smallmouth bass and anadromous fish are not known to utilize Rock House Creek or its tributaries.

Table 3: Stream Impacts in Project Study Area

Stream Identification	Permanent Direct Impacts (feet)	
	Alternative 2	Alternative 4 (Preferred)
Rock House Creek	30	30
UT1	0	0
UT2	260	190

2. Permits

This project may be processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The U.S. Army Corps of Engineers (USACE) has made available Nationwide Permit (NWP) 23 (67 FR 2020, 2082; January 2002) for CEs due to minimal impacts to waters of the United States expected from bridge construction. The North Carolina Division of Water Quality (NCDWQ) has made available a General 401 Water Quality Certification for NWP 23 (GC 3403). If temporary structures are necessary for construction activities, access fills, or dewatering of the site, then a NWP 33 (67 FR 2020, 2087: January 15, 2002) permit and the associated General 401 Water Quality Certification (GC 3366) will be required.

3. Mitigation

The USACE has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of waters of the United States, specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Avoidance, minimization, and compensatory mitigation must be considered in sequential order.

In accordance with the "Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers. Wilmington District" (MOA) July 22, 2003, the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP) will be requested to provide off-site mitigation if necessary, to satisfy the federal Clean Water Act (CWA) compensatory mitigation requirements of this project. Determination of final compensatory mitigation requirements rests with the USACE.

4. Protected Species

The US Fish & Wildlife Service list two federally-protected species for Rockingham County as of the January 29, 2007 listing: James spinymussel *(Pleurobema collina)* and smooth coneflower (*Echinacea laevigata*).

Table 4: Federally Protected Species for Rockingham County

Common Name	Scientific Name	Federal Status	State Status	Habitat Requirements	Habitat Present	Biological Conclusion
Invertebrates						
James spiny-mussel	*Pleurobema collina*	E	SR	Found in waters with slow to moderate current and relatively hard water on sand and mixed sand and gravel substrates. Documented record in Mayo River.	No	No Effect
Vascular Plants						
Smooth coneflower	*Echinacea laevigata*	E	E-SC	Open woods, cedar barrens and roadsides	Yes	No Effect

NOTES:
E – Endangered. A taxon which is in danger of extinction throughout all or a significant portion of its range.
SC – Special concern.
SR – Significantly rare.

Pleurobema collina (James spinymussel) **Endangered**
Animal Family: Unionidae
Date Listed: July 22, 1988
BIOLOGICAL CONCLUSION: NO EFFECT

A survey to detect the presence or absence of James spineymussel was conducted on October 3, 2004 by Alderman Environmental Services, Inc. Survey limits began over 1,300-feet downstream and ended more than 300-feet upstream of Bridge No. 54. Survey methods employed included visual and tactile searches. Species observed included a native snail (*Elimia proxima*) and an exotic clam (*Corbicula fluminea*). However, no freshwater mussels were observed. The Mayo River is located upstream of the confluence of Rock House Creek and the Dan River, approximately 15-stream miles from the Project Study Area. Therefore, it can be concluded that this project will have no effect on the James spinymussel.

Echinacea laevigata (smooth coneflower) **Endangered**
Plant Family: Asteraceae
Federally Listed: December 9, 1991
BIOLOGICAL CONCLUSION: NO EFFECT

The dominant vegetative communities within and adjacent to the PSA include Basic-Mesic Oak-Hickory Forest and Piedmont/Low Mountain Alluvial Forest, neither of which is suitable habitat for the smooth coneflower. Available roadside habitat is limited due to the lack of well-maintained right-of-ways in this area. Therefore, it can be concluded that this project will have no effect on the smooth coneflower.

The North Carolina Natural Heritage Program County electronic database of rare species and unique habitats was reviewed in January 2005 and showed no occurrences of Federal Species of Concern or C1 species within 1-mile of the Project Study Area. However, there are four recorded occurrences of state protected species within or within

1-mile of the Project Study Area. Three of these occurrences are of Goldenseal (*Hydrastis canadensis*), a state protected plant species which is listed by the state as endangered. The fourth occurrence is of the state protected animal species Roanoke hog sucker (*Hypentelium roanokense*). The Roanoke hog sucker is listed by the state as "SR", indicating that it is significantly rare throughout its range. Neither Goldenseal nor the Roanoke hog sucker are federally listed or Federal Species of Concern species.

5. Bridge Demolition

Dropping any portion of the structure into the waters of the United States will be avoided unless there is no practical method of removal. In the event that practical method is feasible, a worst-case scenario is assumed for calculations of fill entering waters of the United States. The existing structure consists of concrete T-beams with an asphalt wearing surface. The substructure consists of concrete abutments and reinforced concrete post and web interior bents. There is the potential for the concrete superstructure and western interior bent to be dropped into Rock House Creek during removal. The maximum resulting temporary fill associated with the removal of the concrete deck, beams, and bent is approximately 90 cubic yards.

VI. HUMAN ENVIRONMENT

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires that Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

Historic Architecture

In a memorandum dated October 31, 2005 the State Historic Preservation Office (HPO) conducted a search of their files and stated that they were aware of no structures of historical importance that would be affected by the project. Therefore, no further compliance with Section 106 is required. See memorandum dated October 31, 2005 included in the attachments.

Archaeology

The State Historic Preservation Office (HPO), in a memorandum dated October 31, 2005 noted that they are "aware of no historic resources that would be affected by the project". A copy of the HPO memorandum is included in the attachments.

B. Community Impacts

No adverse impact on families or communities is anticipated. Right of way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

The project is not in conflict with any plan, existing land use or zoning regulation. No change in land use is expected to result from the construction of this project.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). According to the Soil Survey for Rockingham County, four types of soil are present in the PSA. One of these soils, Cecil sandy clay loam (2-8%), is considered prime farmland. Another of these soils, Chewacla loam, is considered prime farmland only if the soil is well-drained and protected from flooding. The other two soils are not considered prime or locally important farmland. The impacted area of the PSA with Chewacla loam soil is currently not farmed nor does it appear drained and protected. Of the areas with Cecil sandy clay loam, the alternatives have the potential to impact these areas. See the table below.

Table 5: Farmland Impacts in Acres

Farmland Soil	Alternative 2	Alternative 4 (Preferred)
Chewacla Soil Prime if drained and protected	1.6	1.2
Cecil sandy clay loam Prime	0	0.5
TOTAL	1.6	1.7

Alternative 4 is the preferred alternative. While this alternative does not have the least impacts of all feasible alternatives, it does have the least impact to the Chewacla soil. The impacts to the Cecil soil is minimal or none for all alternatives.

The project will not have a disproportionately high and adverse human health and environmentally effect on any minority or low income population.

C. Noise and Air Quality

This project is an air quality neutral project in accordance with 40 CFR 93.126. It is not required to be included in the regional emissions analysis (if applicable) and project level CO or PM2.5 analyses are not required. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. Therefore, FHWA has determined that this project will generate minimal air

quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs. Any burning of vegetation shall be performed in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality compliance with 15 NCAC 2D.0520.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours. The transmission loss characteristics of nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

VII. GENERAL ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966. There are no publicly owned recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

An examination of North Carolina Department of Environment and Natural Resources (DENR), Division of Water Quality (DWQ), Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section records by the NCDOT GeoEnvironmental Section revealed no hazardous waste sites nor groundwater contamination incidents in the project area.

A field investigation by the NCDOT GeoEnvironmental Section and an examination of records of DENR's Division of Waste Management, Underground Storage Tank Section, revealed that no regulated underground storage tanks exist in the project study area.

Rockingham County is a participant in the National Flood Insurance Program. Rock House Creek is not included in a detailed FEMA flood study. Areas inundated by the 100-year flood are determined by the methods of the detailed study. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

VIII. COORDINATION AND AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: U.S. Army Corps of Engineers, US Environmental Protection Agency, U.S. Fish & Wildlife Service, NC Department of Environment and Natural Resources, N.C

Wildlife Resource Commission, North Carolina State Historic Preservation Office, and the Piedmont Triad Rural Planning Organization.

The N.C. Wildlife Resource Commission and U.S. Fish & Wildlife Service in standardized letters provided a request that they prefer any replacement structure to be a spanning structure.

Response: Bridge No. 54 will be replaced with a bridge.

The Rockingham County Department of Emergency Services has requested that NC 65 remain open during construction. Any off-site detour would greatly hamper response times of emergency services.

Response: Traffic will be maintained on-site.

U.S. Army Corps of Engineers, US Environmental Protection Agency, and the NC Department of Environment and Natural Resources have not responded to requests for input.

IX. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with scoping letters. For this bridge replacement study, the selected alternative will provide for the maintenance of traffic on-site during construction of the replacement structure. There are minimal impacts to surrounding properties and no anticipated relocatees.

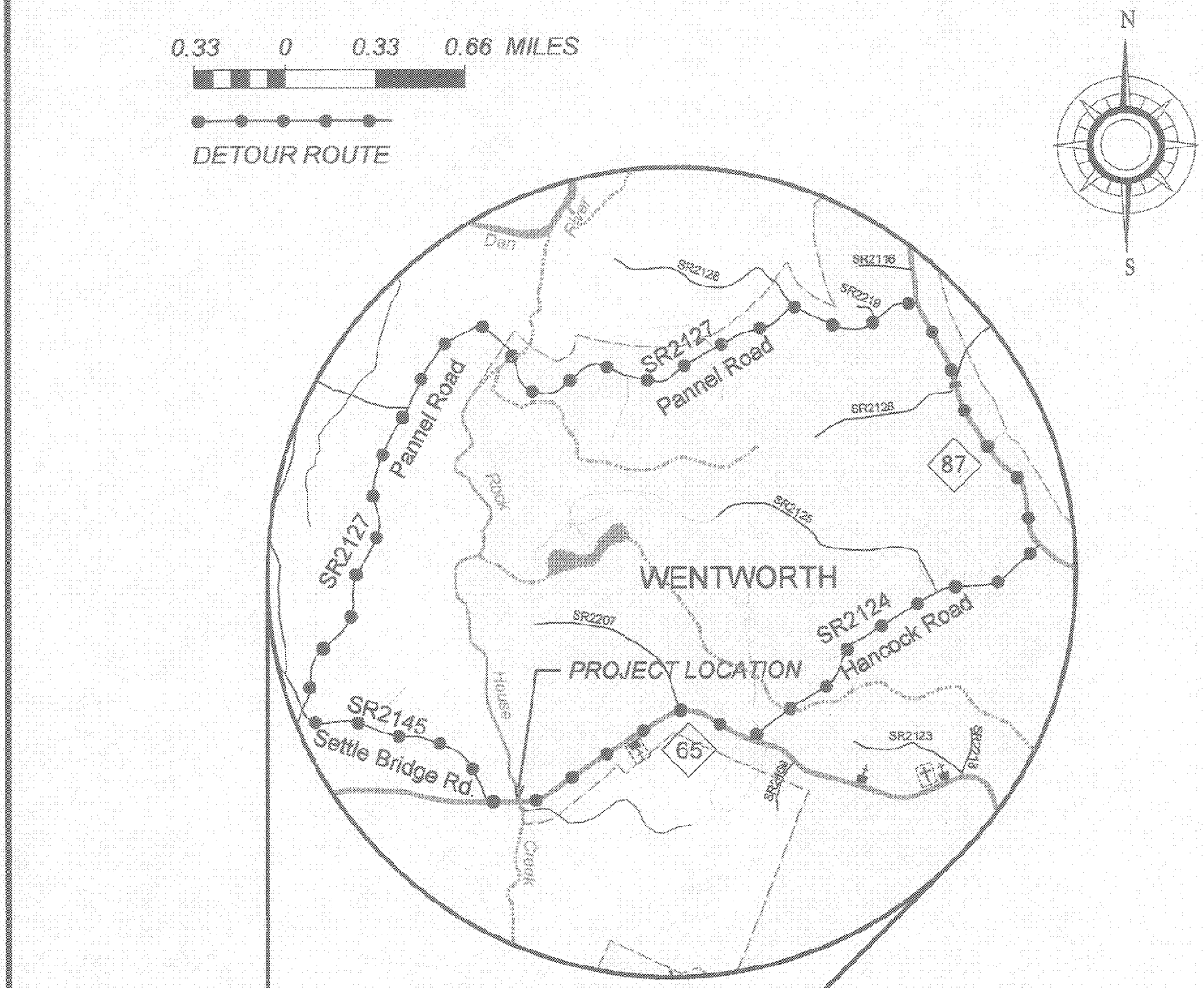
A newsletter has been sent to all those living in an area bound by NC 65, SR 2145, SR 2127, NC 87, and SR 2124 including any cross streets intersected by these roads. One comment has been received to date. The property owner was in favor of replacing the bridge with a wider structure since the existing narrow bridge is a major factor in the high accident rate of this section of NC 65.

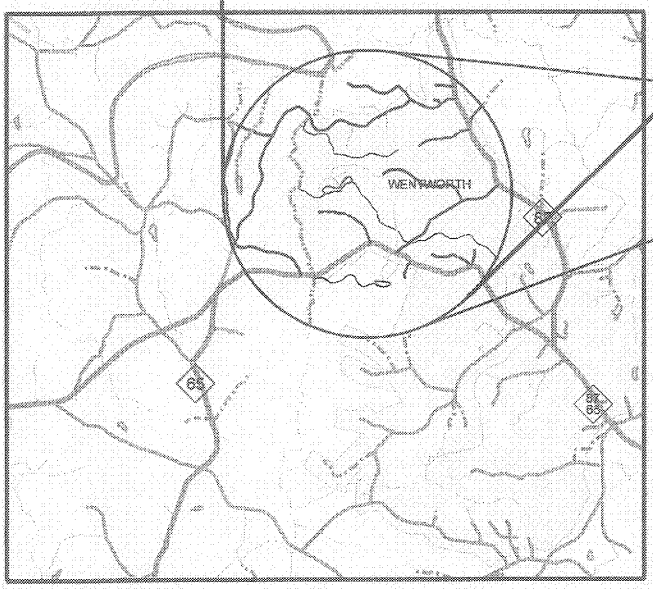
Based on the one response to the newsletter, a Citizens' Informational Workshop was determined unnecessary.

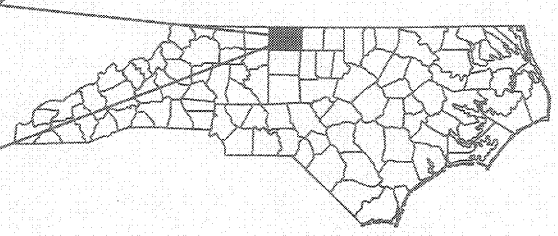
There is not substantial controversy on social, economic, or environmental grounds concerning the project.

X. CONCLUSION

On the basis of the above discussion, it is concluded that no significant adverse environmental effects will result from implementation of the project. The project is therefore considered to be a Federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.







1 0 1 2 MILES

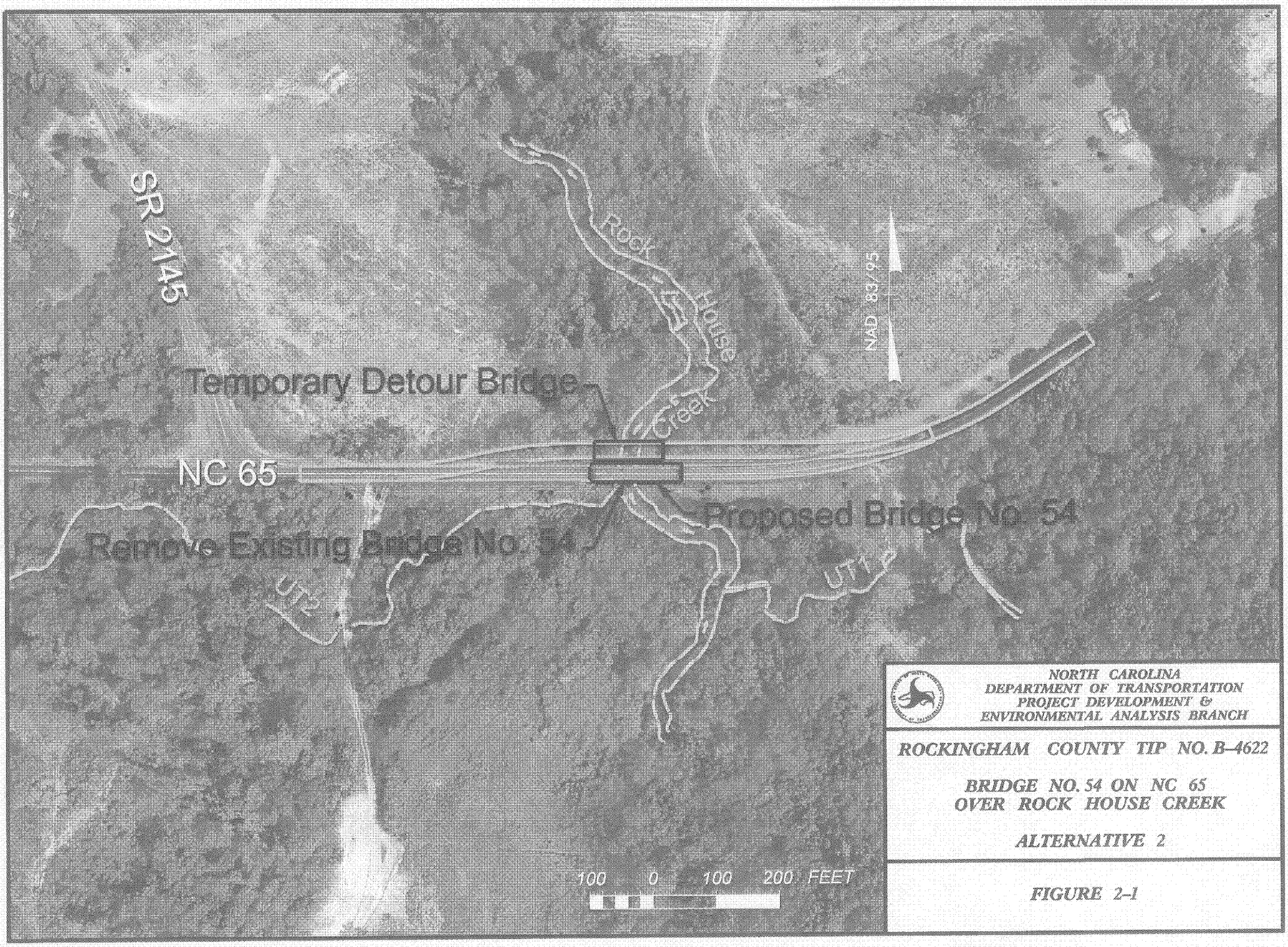
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

ROCKINGHAM COUNTY TIP NO. B–4622

BRIDGE NO.54 ON NC 65
OVER ROCK HOUSE CREEK

VICINTY MAP

FIGURE 1



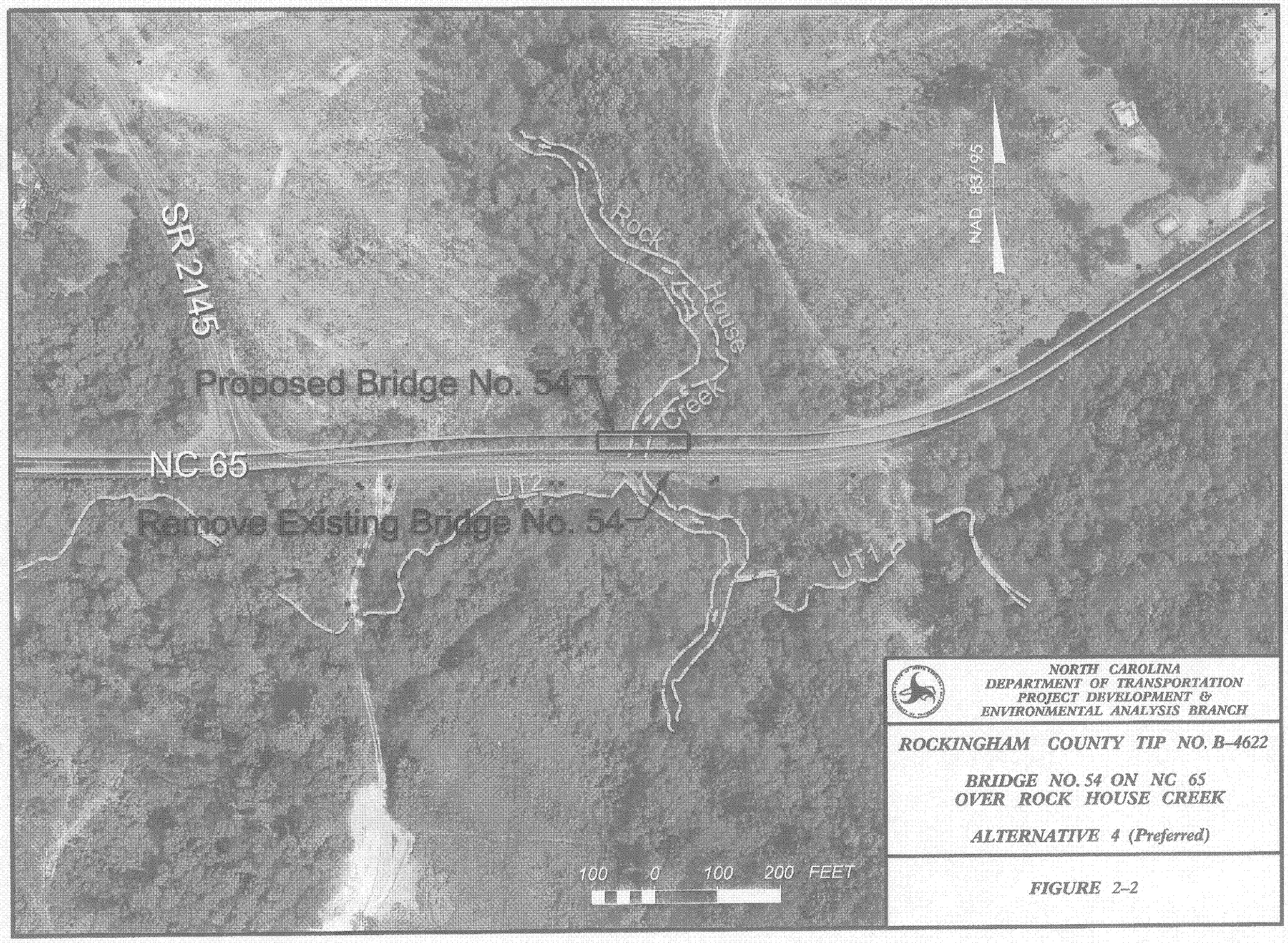
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

ROCKINGHAM COUNTY TIP NO. B-4622

BRIDGE NO. 54 ON NC 65
OVER ROCK HOUSE CREEK

ALTERNATIVE 2

FIGURE 2-1



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PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

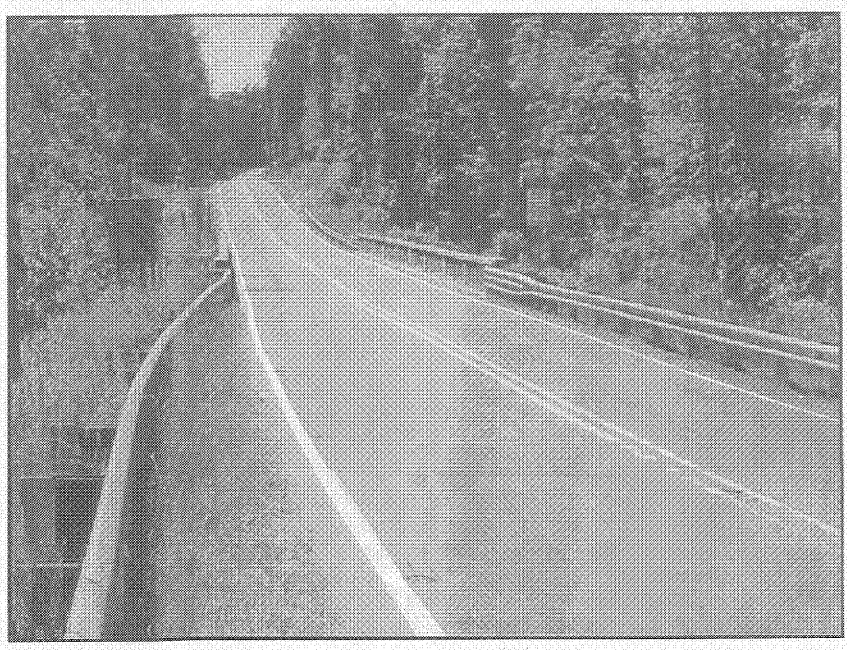
ROCKINGHAM COUNTY TIP NO. B-4622

BRIDGE NO. 54 ON NC 65
OVER ROCK HOUSE CREEK

ALTERNATIVE 4 (Preferred)

FIGURE 2-2

VIEW LOOKING EAST



VIEW LOOKING WEST

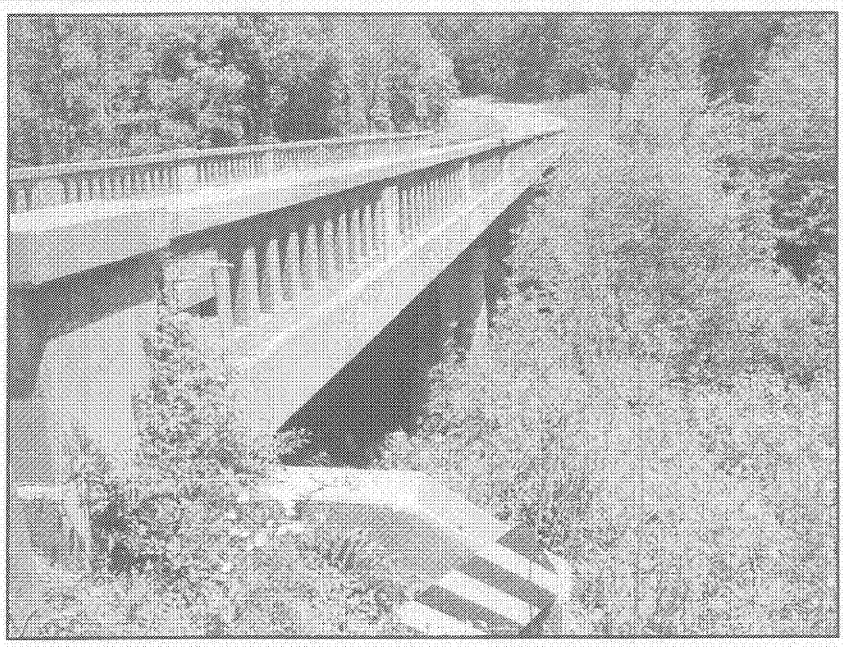
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS

ROCKINGHAM COUNTY TIP NO. B-4622

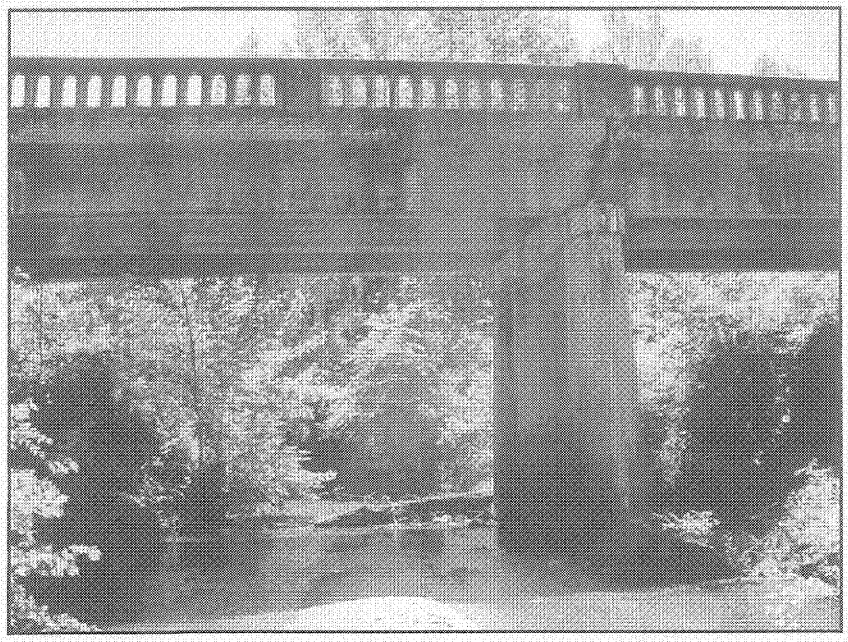
REPLACEMENT BRIDGE NO. 54
OVER ROCK HOUSE CREEK
on NC 65

PHOTOGRAPHS

Figure 3-1



VIEW OF UPSTREAM FACE OF BRIDGE (LOOKING NORTH-EAST)



VIEW OF DOWN-STREAM FACE OF BRIDGE (LOOKING SOUTHWEST)

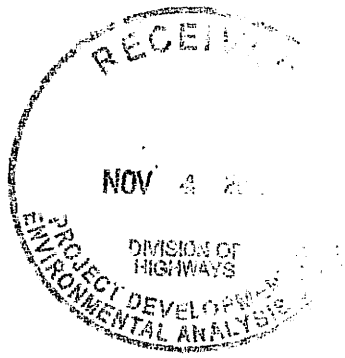
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS

ROCKINGHAM COUNTY TIP NO. B-4622

REPLACEMENT BRIDGE NO. 54
OVER ROCK HOUSE CREEK
on NC 65

PHOTOGRAPHS

Figure 3-2



North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

October 31, 2005

MEMORANDUM

NOV 17 2005

TO: Greg Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter Sandbeck RSH for Peter Sandbeck

SUBJECT: Bridge #54 over Rock House Creek, NC 65, TIP No. B-4622, Rockingham County, ER 05-2409

Thank you for your letter of September 5, 2005, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources that would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Mary Pope Furr, NCDOT
Matt Wilkerson, NCDOT

From: Renee Gledhill-Earley [mailto:renee.gledhill-earley@ncmail.net]
Sent: Monday, June 18, 2007 9:57 AM
To: 'Dolores Hall'; 'Matt T. Wilkerson'
Subject: RE: B-4622 CE comments from FHWA

IF our memo or letter said " no historic resources or properties" that includes archaeological resources. When we get the CE, we will also respond and let FHWA know that we are fine with the document's treatment of historic resources. Dolores says that OSA is okay with no survey for archaeology.
Renee

From: Dolores Hall [mailto:dolores.hall@ncmail.net]
Sent: Monday, June 18, 2007 8:56 AM
To: Matt T. Wilkerson; Renee Gledhill-Earley
Subject: Re: B-4622 CE comments from FHWA

Renee:
I went back and looked at the record for B-4622. My no comment, or no request for archaeological investigation, was based on the poorly drained nature of the soils in the floodplain and the low probability for the presence of eligible archaeological sites.
Would you like me to email FHWA or NCDOT or do you think it should come from you?
Dolores

Dolores A. Hall
Deputy State Archaeologist-Land
Office of State Archaeology
(919) 733-7342

----- Original Message -----
From: Matt T. Wilkerson
To: Renee Gledhill-Earley
Cc: Dolores A. Hall
Sent: Monday, June 18, 2007 8:32 AM
Subject: B-4622 CE comments from FHWA

Good morning,

Note that the TIP project in question is B-4622 *not* B-4662. Sorry for the confusion.

Felix Davila, the FHWA area engineer for the B-4622 project, has requested that NCDOT secure either a letter or email from the HPO clarifying that the October 31, 2005 HPO "no comment letter" means that no archaeological investigations were requested by OSA. Mr. Davila made this request after reviewing the draft CE for the subject project. The letter or email from HPO clarifying the 2005 letter would be included in the revised draft CE. Thank you for your assistance in addressing FHWA's request.

Regards,
Matt Wilkerson