STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY PERDUE
GOVERNOR

GENE CONTI
SECRETARY

July 29, 2009

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

ATTN: Mr. David Baker
NCDOT Coordinator

Subject: **Application for Section 404 General Permit 31 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 134 over Stony Fork Creek on NC 151 in Buncombe County, Federal Aid Project No. BRSTP-151(10); Division 13; TIP No. B-4034
$570.00 debit WBS 33401.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 134 over Stony Fork Creek on NC 151. There will be 439 feet of permanent surface water impacts. This project has an unusually complex design due to steep topography. Please consider the following as a further explanation of impacts:

1) Stream relocation: The UT to Stony Fork Creek is being relocated from the fill slopes on the new road. It may appear that it is the detour route that pushes it over when it is actually the fill. Natural stream design was investigated for the stream location. However, due to steep topography in this area, natural stream design is not possible. (Permit drawing 5 of 14)
2) Existing pipe location: Channel work in this area will impact the bottom of the stream and therefore not qualify as bank stabilization. (Permit drawing 6 of 14)
3) Existing bridge location: Due to hydraulic modeling and the bend just downstream of the bridge, there is evidence to indicate that the stream will have a tendency to scour over time, and compromise the bridge abutment. Because of this, the existing abutment will remain in place to stabilize the bank. To create a larger hydraulic opening, the abutment will be cut so that it is one foot above the normal water mark and the bank will be rip-rap up to the abutment. There is a cross section which illustrates the areas to be excavated in order to provide a larger hydraulic opening. (Permit drawing 14 of 14)

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-431-6680
FAX: 919-431-2002

WEBSITE: WWW.NCDOT.ORG

LOCATION:
ENVIRONMENTAL RESOURCE CENTER
4701 ATLANTIC AVENUE, SUITE 116
RALEIGH NC 27604

4) As a minimization measure, Corrugated Steel Pipe Arches (CSPA) will be installed where the private drive and new road crosses the relocated UT to Stony Fork Creek. CSPA pipes decrease the amount of needed fill, reduce fill slopes and reduce over-all length of pipes. (Permit drawing 8 of 14)

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, Stormwater Management Plan, permit drawings and design plans. The Categorical Exclusion (CE) was completed in August 2007 and the Right-of-Way Consultation was completed in October 2008. Documents were distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of February 16, 2011 and a review date of December 29, 2010. However, the project may be advanced as funding becomes available.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachments, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

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 Jeremy Leamer at (919) 431-6680.

Sincerely,

E. L. Luck

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

w/attachment
Mr. Brian Wrenn, NCDWQ (5 copies)
Ms. Marla Chambers, NCWRC
Ms. Marella Buncick, USFWS

w/o attachment (see permit website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
J. J. (Jay) Swain, Jr., P.E., Division 13 Engineer
Mr. Mark Davis, DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Pam Williams, PDEA
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch

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:	or General Permit (GP) number: 198200031	
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 134 over Stony Fork Creek on NC 151
2b. County:	Buncombe
2c. Nearest municipality / town:	Asheville
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4034

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 431-6680
3g. Fax no.:	(919) 431-2002
3h. Email address:	jtleamer@ncdot.gov

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

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 35.474488 (DD.DDDDDD)	Longitude: - 82.741119 (-DD.DDDDDD)
1c. Property size:	3.97 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Stony Fork Creek	
2b. Water Quality Classification of nearest receiving water:	C Tr	
2c. River basin:	French Broad	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: NC 151 is a two lane highway transecting a semi-rural area with mostly residential development.		
3b. List the total estimated acreage of all existing wetlands on the property: .75 acres		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 1,430		
3d. Explain the purpose of the proposed project: To replace a functionally obsolete bridge.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 42-foot bridge with a 85-foot, box-beam spanning structure on the existing alignment with an on-site detour utilizing a temporary bridge, which will be removed. A UT to Stony Fork Creek is being relocated due to the fill slopes for the new road. Natural stream design was investigated. However, due to very steep topography in the area, this is not possible. Standard road building equipment, such as trucks, dozers, and cranes will be used, including manual labor.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☐ Yes	☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☐ Final	
4c. If yes, who delineated the jurisdictional areas? Name (if known):	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)
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	X Permanent X Temporary

2h. Comments:

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Fill, piping, relocating	UT to Stony Fork	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	375
Site 2 ☒ P ☐ T	Bridge Installation	Stony Fork	☒ PER ☐ INT	☒ Corps ☐ DWQ	16	64
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	439 Perm 0 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	N/A	Fill	Pond	<0.01
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
			4f. Total open water impacts	<0.01 Permanent 0 Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

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

6. Buffer Impacts (for DWQ)

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

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

D. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

The proposed bridge is 44 feet longer than the existing bridge and the hydraulic connectivity will be increased by excavating material beneath the old bridge. It will be in the same location as the existing structure with a temporary on-site detour using a temporary bridge; an off site detour is not practical. The "do-nothing" alternative was not considered due to the resulting elimination of the use of NC 151 and closing or removing the bridge. A moratorium for in-stream work to protect trout is in effect from January 1 to April 15 in addition to Design Standards in Sensitive Waters.

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

Corrogated Steel Pipe Arches will be installed at the private drive and new road crossing for the relocated UT to Stony Fork Creek. These pipes (CSPA) reduce the amount of fill and the over-all length of pipes. Impacts will also be minimized by constructing a spanning structure and surficial bridge runoff will not be directed into Stony Fork Creek via deck drains

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

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☒ Yes ☐ No If no, explain:
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:	439 linear feet @ 2:1 = 878 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: if yes, see attached permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☐ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No
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: CE distributed. Additional copies available per request.	☒ 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. N/A		
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. N/A		

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? USFWS website, NHP and NCDOT field surveys. All Biological Conclusions are No Effect.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☐ Yes	☒ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Lupk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	7.29.09 Date

Ecosystem Enhancement PROGRAM

May 12, 2009

Mr. David Baker
U. S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, North Carolina 28801

Dear Mr. Baker:

Subject: EEP Mitigation Acceptance Letter:

B-4034, Replace Bridge Number 134 over Stony Fork Creek on NC 151, Buncombe County; French Broad River Basin (Cataloging Unit 06010105); Southern Mountains (SM) Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the unavoidable impact associated with the above referenced project. As indicated in the NCDOT's mitigation request dated May 4, 2009, stream mitigation from EEP is required for 439 feet of cold stream impact.

Mitigation associated with this project will be provided in accordance with Section X of Amendment No. 2 to the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers fully executed on March 8, 2007 (Tri-Party MOA). EEP commits to implement sufficient stream mitigation up to 878 cold stream credits to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

James B Stanfill for

William D. Gilmore, P.E.
EEP Director

cc: Mr. Gregory J. Thorpe, Ph.D., NCDOT-PDEA
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: B-4034

STORMWATER MANAGEMENT PLAN

Project: 33401.1.1
TIP No. B-4034
Buncombe County 5/19/2009

Hydraulics Project Manager: Max Price, P.E. (Wetherill Engineering),
Marshal Clawson, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

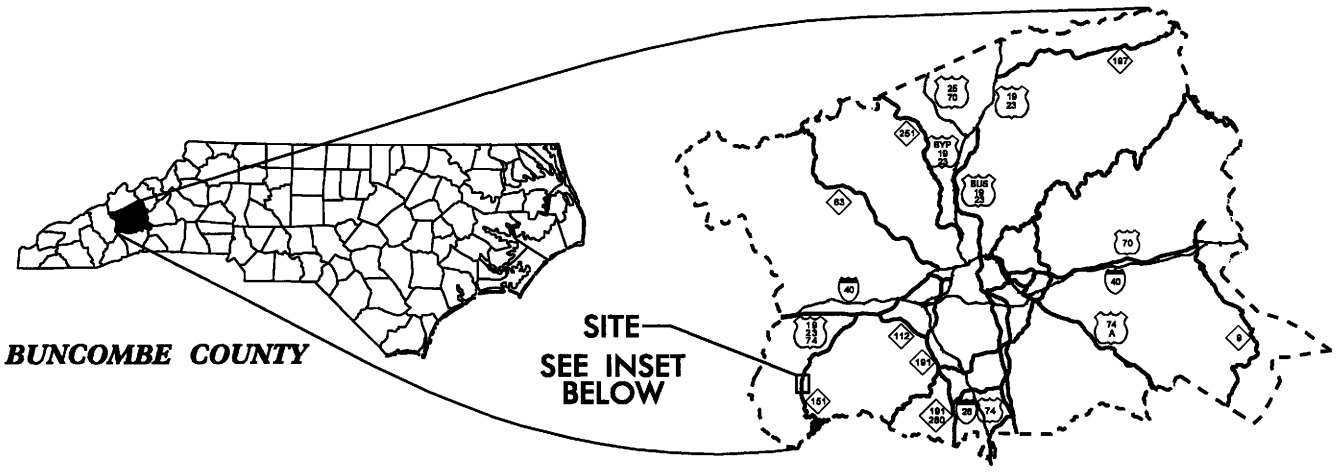
The project B-4034 involves the replacement of Bridge No. 134 on NC151 over Stony Fork Creek in Buncombe County. The existing bridge is a 1 @ 41.3' reinforced concrete thru girder with concrete abutments, it is 20.3 feet wide. The proposed replacement structure is a 1@ 85' box beam bridge with spill through abutments, and will be 33.5 feet wide. The roadway grade will be raised approximately 1.8 feet in the vicinity of the bridge in order to maintain the same low steel elevation as the existing structure. The existing roadway approach section is 18 feet of pavement with grass shoulders that are approximately 2 feet wide. The proposed roadway approaches to the bridge will consist of 2- 12 foot lanes with 8 foot shoulders (4 foot paved, 4 foot grassed). The intersection of SR-1102 (Davis Chapel Church Road) on the south end of the bridge, and a private drive on the north end of the bridge require relocating to improve sight distances. A temporary one lane detour will be constructed on the west side of NC 150. A temporary detour bridge 85 feet in length will be constructed approximately 40 feet downstream of the existing bridge. The project drainage system will consist of cross pipes, grated inlets with associated pipe systems, drive pipes, roadway swales, and lateral storm water swales.

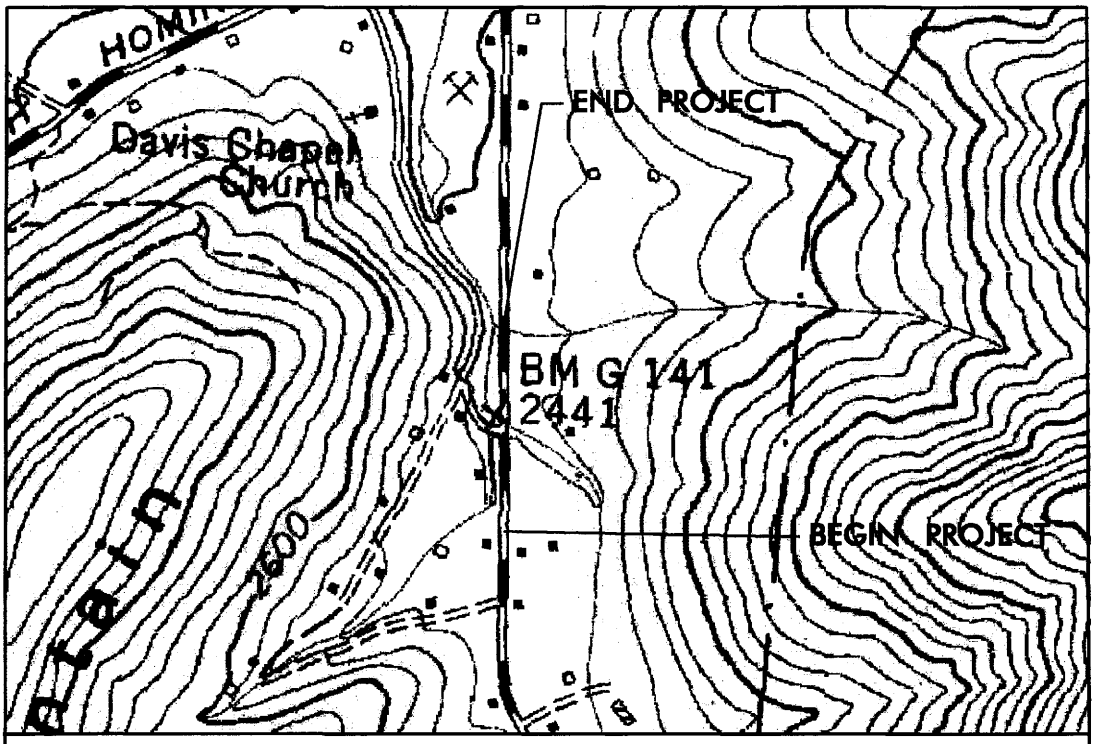
ENVIRONMENTAL DESCRIPTION

The project is located in the French Broad River Basin. The NCDWQ surface water classification for Stony Fork Creek is C (Aquatic Life and Secondary Recreation) and Trout Waters. There are also four unnamed tributaries and a pond located in the project area, and they receive the same classification as Stony Fork Creek. No Outstanding Resource Waters, Water Supply Watersheds or watershed Critical Areas occur within one mile of the project area. There will be no impacts to jurisdictional wetland as a result of this project. There will be +/- 0.05 acres permanent surface water impacts, and 459 feet of permanent channel impacts.

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 BMPs and measures that will be used on this project to reduce stormwater impacts are rip rap energy dissipater pads to diffuse velocities at pipe outlets. No direct discharge from the bridge deck into Stony Creek. Storm drainage was designed to discharge runoff from paved surfaces in such a way as to maximize the grass swale or natural vegetated swale flow length before discharging into stream. The temporary detour was located on the west side on NC 150 in order to avoid impacts to the wetland located on the east side on NC 150. A one lane detour with signals was utilized in order to minimize the foot print of the temporary detour construction. A single span permanent bridge structure was utilized in order to avoid placing bridge bents in the stream or at the water edge in order to avoid local scour.





VICINITY MAP

Permit Drawing
Sheet 1 of 14

WETLAND / STREAM IMPACTS VICINITY MAP

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

PROJECT: 33401.1.1 (B-4034)

BRIDGE NO. 134 OVER STONY FORK CREEK ON NC 151

SHEET OF 2/17/09

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
8	NOREEN F. KLAUS	6768 Trammel Drive Milton, Fla. 32570
9	KATHLEEN A. KLAUS	RR1, P.O. Box 665A Candler, NC 28715
10	BEN R. MORGAN AND DEBORAH H. MORRELL	87 Davis Chappel Rd. Candler, NC 28715
11	ROCKLAND D. MCKINNEY AND CELESTE S. MCKINNEY	1937 Pisgah Highway Candler, NC 28715

Permit Drawing Sheet 2 of 14

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

PROJECT: 33401.1.1 (B-4034)

BRIDGE NO. 134 OVER
STONY CREEK FORK
ON NC 151

SHEET OF 2/07/09

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-DET- 10+50 to 13+80 +/- LT.		0.00	0.00	0.00	0.00	0.00	0.03	0.00	375 *	0	0
2	-L- 17+55 to 18+13 +/- RT.	85' - Box Beam (33")	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	64	0	0
3	-L- 19+50 to 20+00 +/- RT.	N/A	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	0	0	0
TOTALS:			<0.01	0.00	0.00	0.00	0.00	0.05	0.00	439	0	0

* 18' of existing pipe under the road has been accounted for and removed from the total

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY
WBS - 33401.1.1 (B-4034)

SHEET 5/29/2009

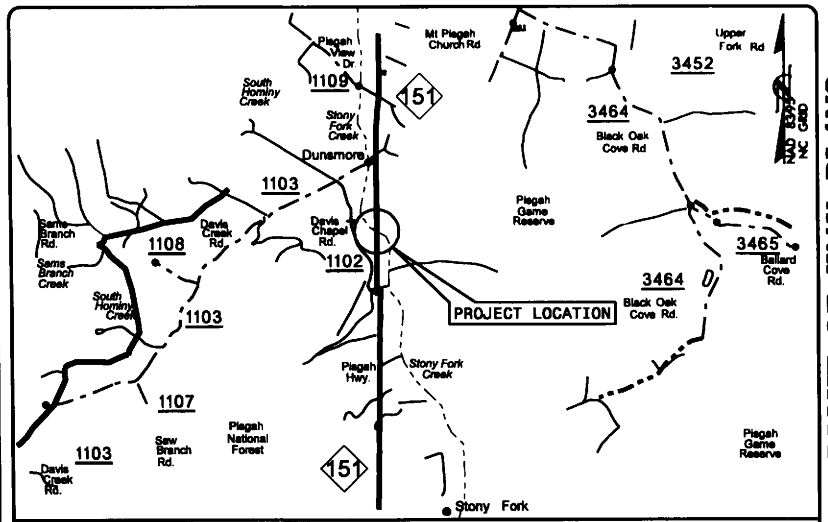
ATN Revised 3/31/05

Permit Drawing
Sheet 3 of 14

TIP PROJECT: B-4034

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbology



VICINITY MAP

RIGHT OF WAY PLANS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4034	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33401.1.1	BRSTP-151(10)	P.E.
33401.2.1	BRSTP-151(10)	R/W & UTIL.

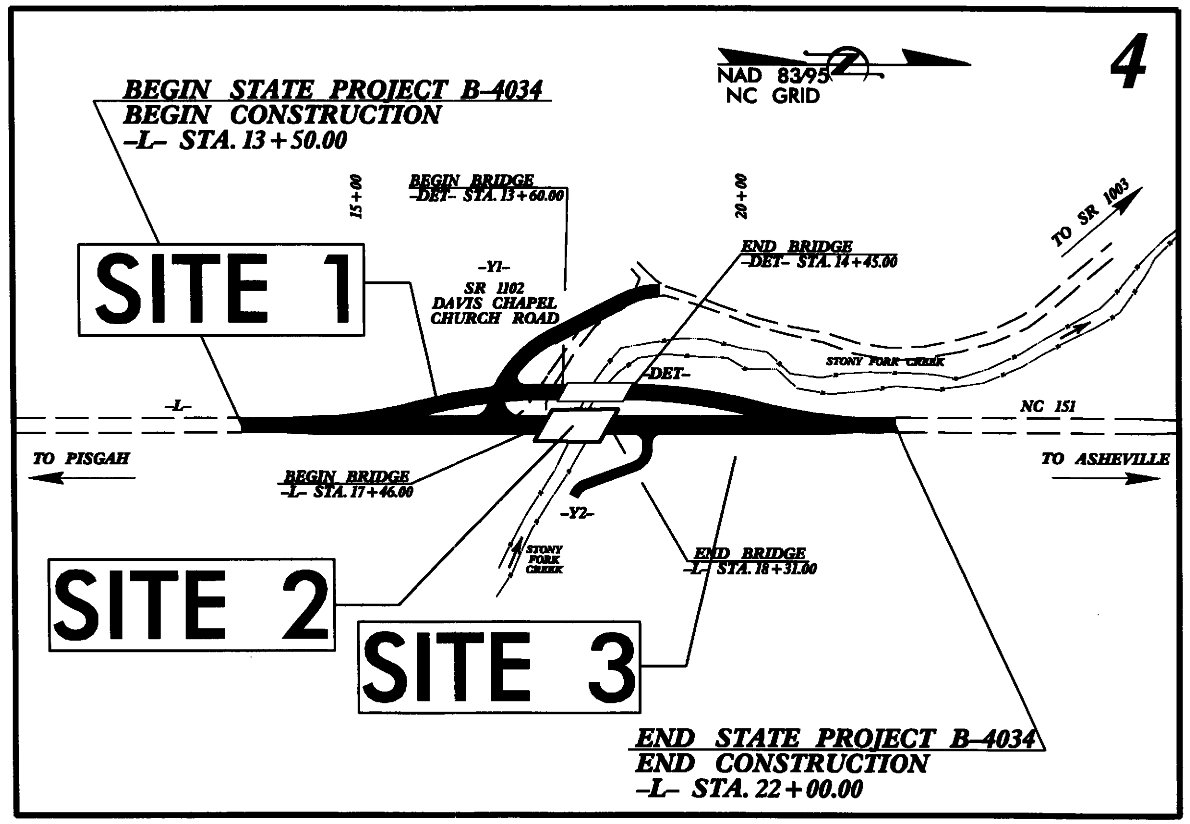
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 134 OVER STONY FORK CREEK ON NC 151

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES

WETLAND/STREAM IMPACTS



NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED BRIDGE WIDTH AND CREST VERTICAL CURVE K VALUE FOR -L-.

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

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 2010 = 1785
ADT 2030 = 2740
DHV = 10 %
D = 60 %
T = 3 % *
V = 60 MPH
* TTST 1% DUAL 2%
FUNC. CLASS. = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4034	=	0.145 MILES
LENGTH STRUCTURE TIP PROJECT B-4034	=	0.016 MILES
TOTAL LENGTH TIP PROJECT B-4034	=	0.161 MILES

WETHERILL ENGINEERING
Prepared for the North Carolina Department of Transportation in the Office of:
559 JONES FRANKLIN ROAD SUITE 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 20, 2009
LETTING DATE: FEBRUARY 16, 2010

EDWARD G. WETHERILL, PE — PROJECT ENGINEER
BOB A. MAY, PE — PROJECT DESIGN ENGINEER

NCDOT CONTACT — DOUG TAYLOR, PE — ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

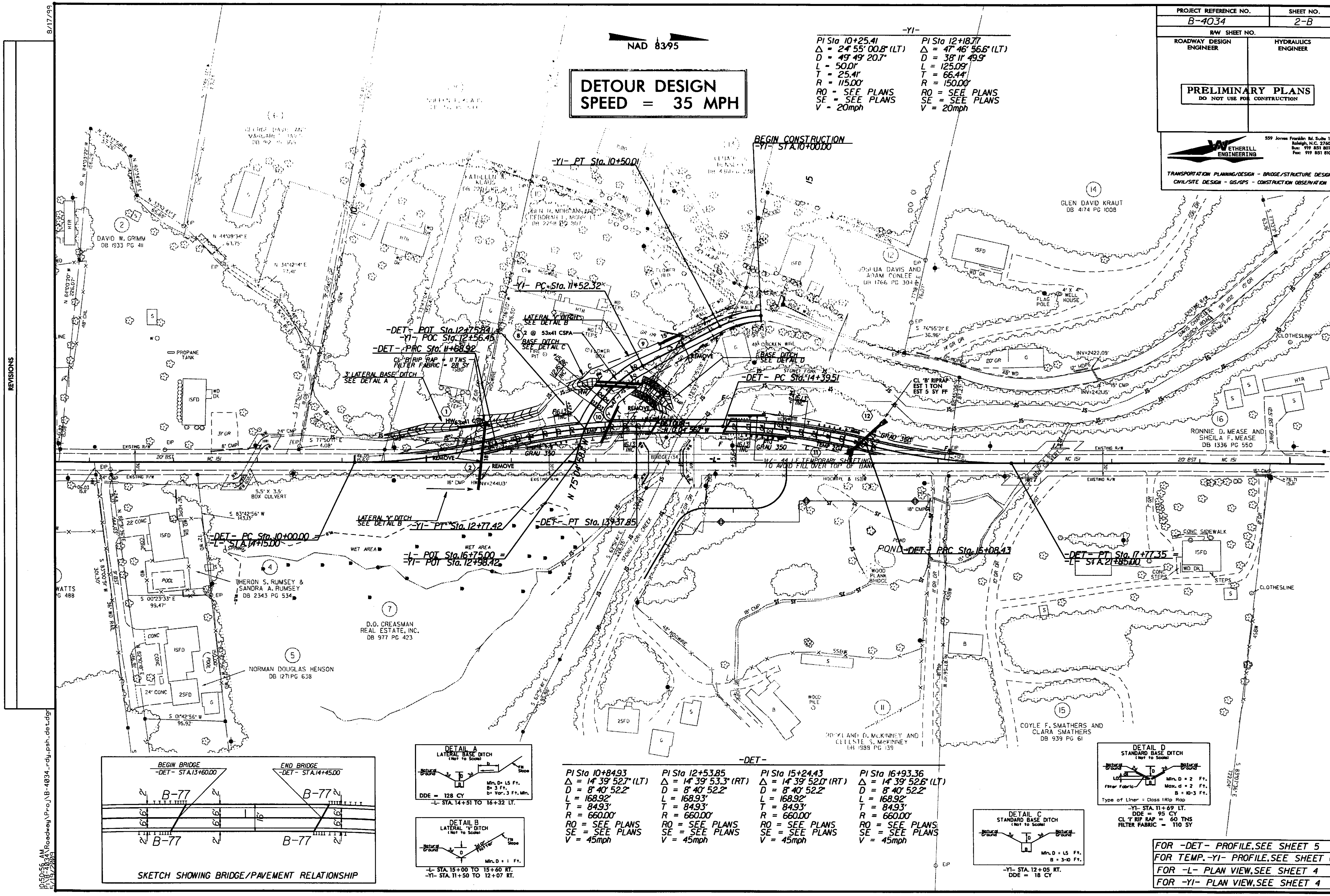
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE HIGHWAY DESIGN ENGINEER P.E.

Permit Drawing
Sheet 4 of 14

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

09/08/99

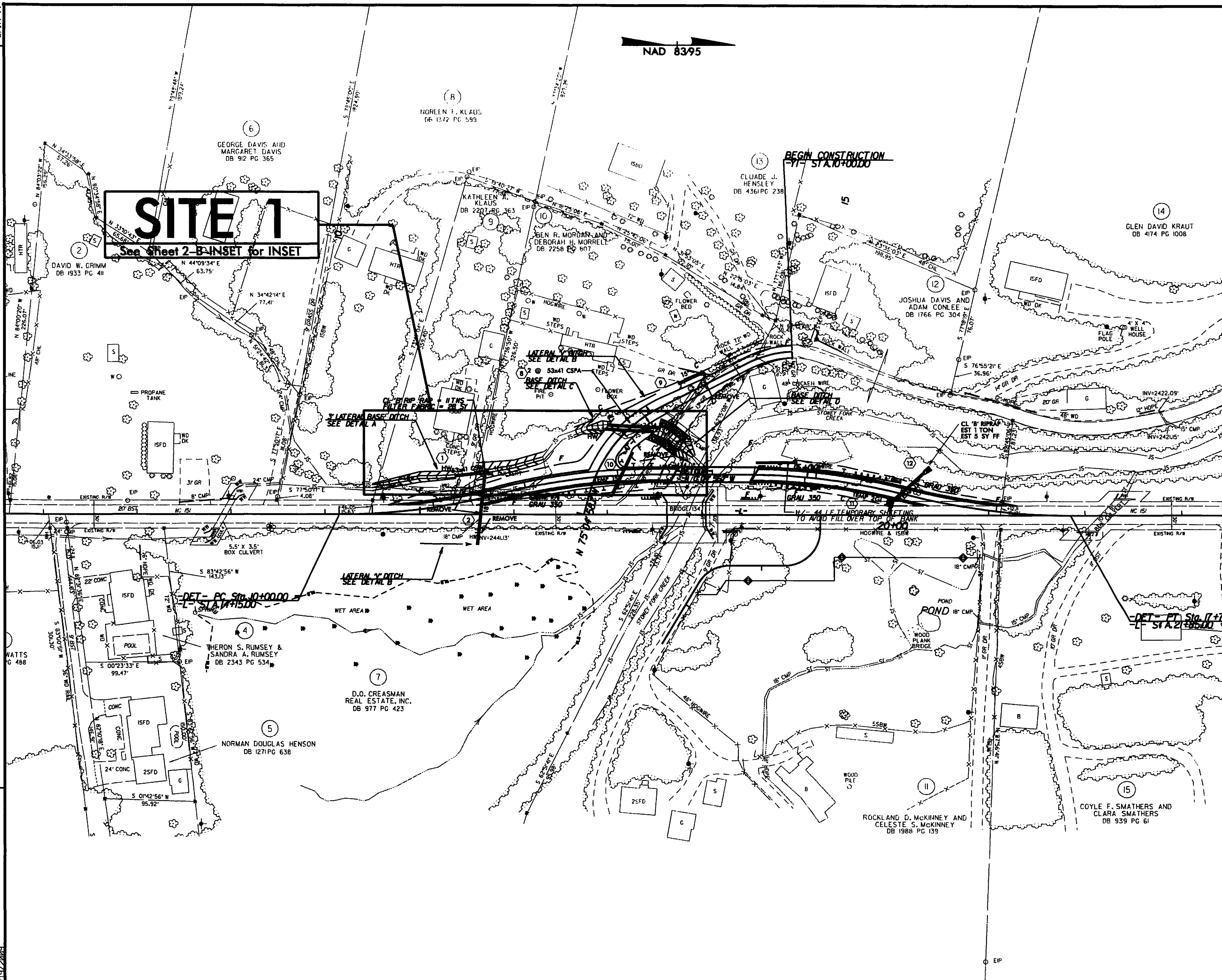


Permit Drawing Sheet 5 of 14

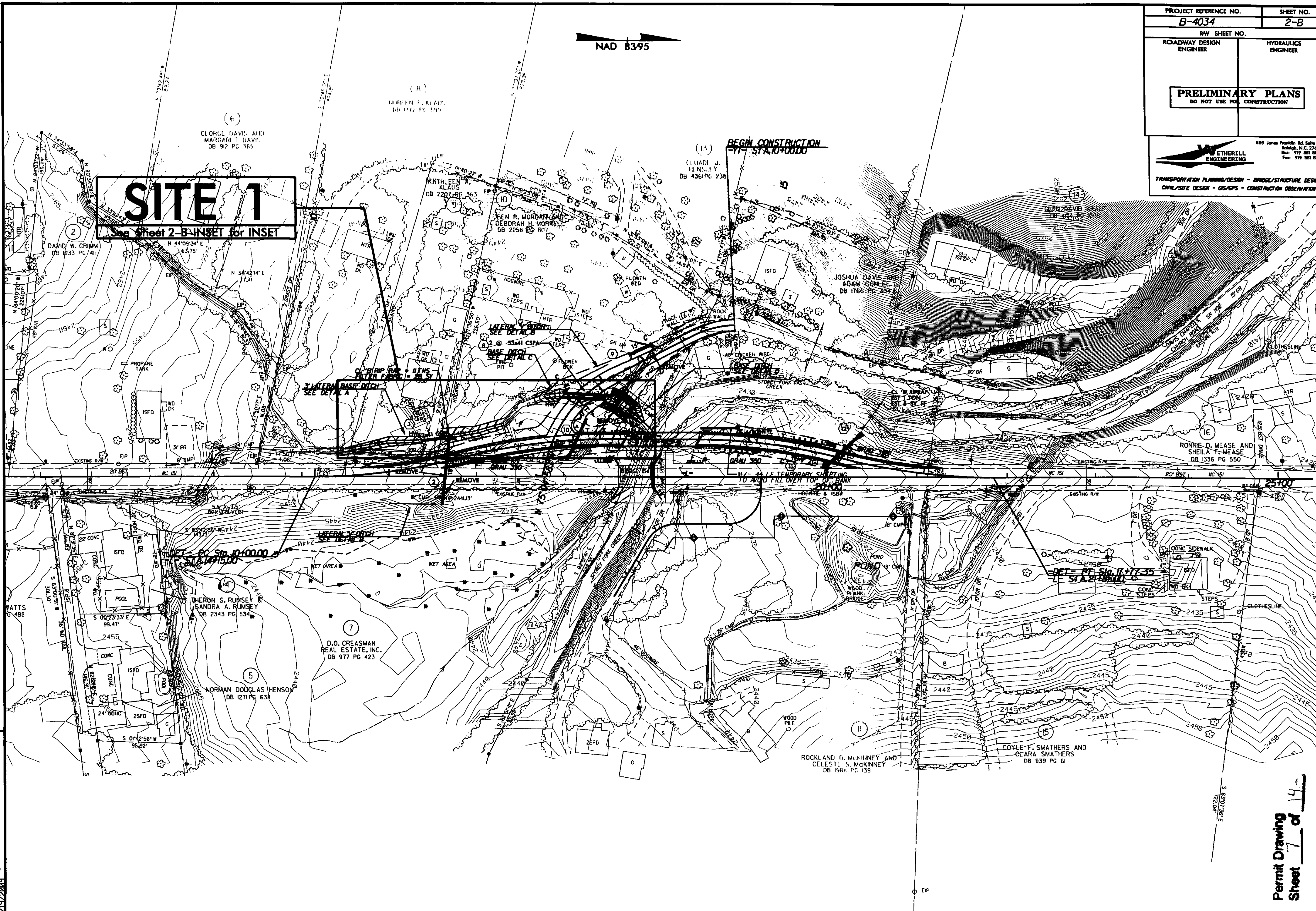
PROJECT REFERENCE NO.	SHEET NO.
B-4034	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION


NAD 83/95
SITE 1
See Sheet 2-B-INSET for INSET
REVISIONS
8/17/99
DAVID W. GRIMM
DB 1933 PG 411
GEORGE DAVIS AND
MARGARET DAVIS
DB 912 PG 365
NORLEN F. KLAUS
DB 1372 PG 599
KATHLEEN F. KLAUS
DB 2207 PG 363
BEN R. MORGAN AND
DEBORAH H. MORRELL
DB 2258 PG 807
CLUADE J. HENSLEY
DB 4361 PG 238
BEGIN CONSTRUCTION
-Y1- STA.10+00.00
GLEN DAVID KRAUT
DB 4174 PG 1006
JOSHUA DAVIS AND
ADAM CONLEE
DB 1766 PG 304
RONNIE D. MEASE AND
SHEILA F. MEASE
DB 1336 PG 550
THERON S. RUMSEY &
SANDRA A. RUMSEY
DB 2343 PG 534
D.O. CREASMAN
REAL ESTATE, INC.
DB 977 PG 423
NORMAN DOUGLAS HENSON
DB 1271 PG 638
ROCKLAND D. McKINNEY AND
CELESTE S. McKINNEY
DB 1988 PG 139
COYLE F. SMATHERS AND
CLARA SMATHERS
DB 939 PG 61
LATERAL 'V' DITCH
SEE DETAIL B
BASE DITCH
SEE DETAIL C
BASE DITCH
SEE DETAIL D
LATERAL BASE DITCH
SEE DETAIL A
2 @ 53x41 CSPA
CL 'B' RIPRAP
EST 1 TON
EST 5 SY FF
STONEY FORK CREEK
-DET- PC Sta. 10+00.00 =
-L- STA.14+15.00
-DET- PT Sta. 17+77.35 =
-L- STA.21+85.00
+/- 44 LF TEMPORARY SHORING
TO AVOID FILL OVER TOP OF BANK
20+00
25+00
NC 151
WET AREA
POND
WOOD PLANK BRIDGE
5.5' X 3.5' BOX CULVERT
PROPANE TANK
CLOTHESLINE
CONC SIDEWALK
FLAG POLE
4' X 4' WELL HOUSE
REMOVE

Permit Drawing
Sheet 6 of 14

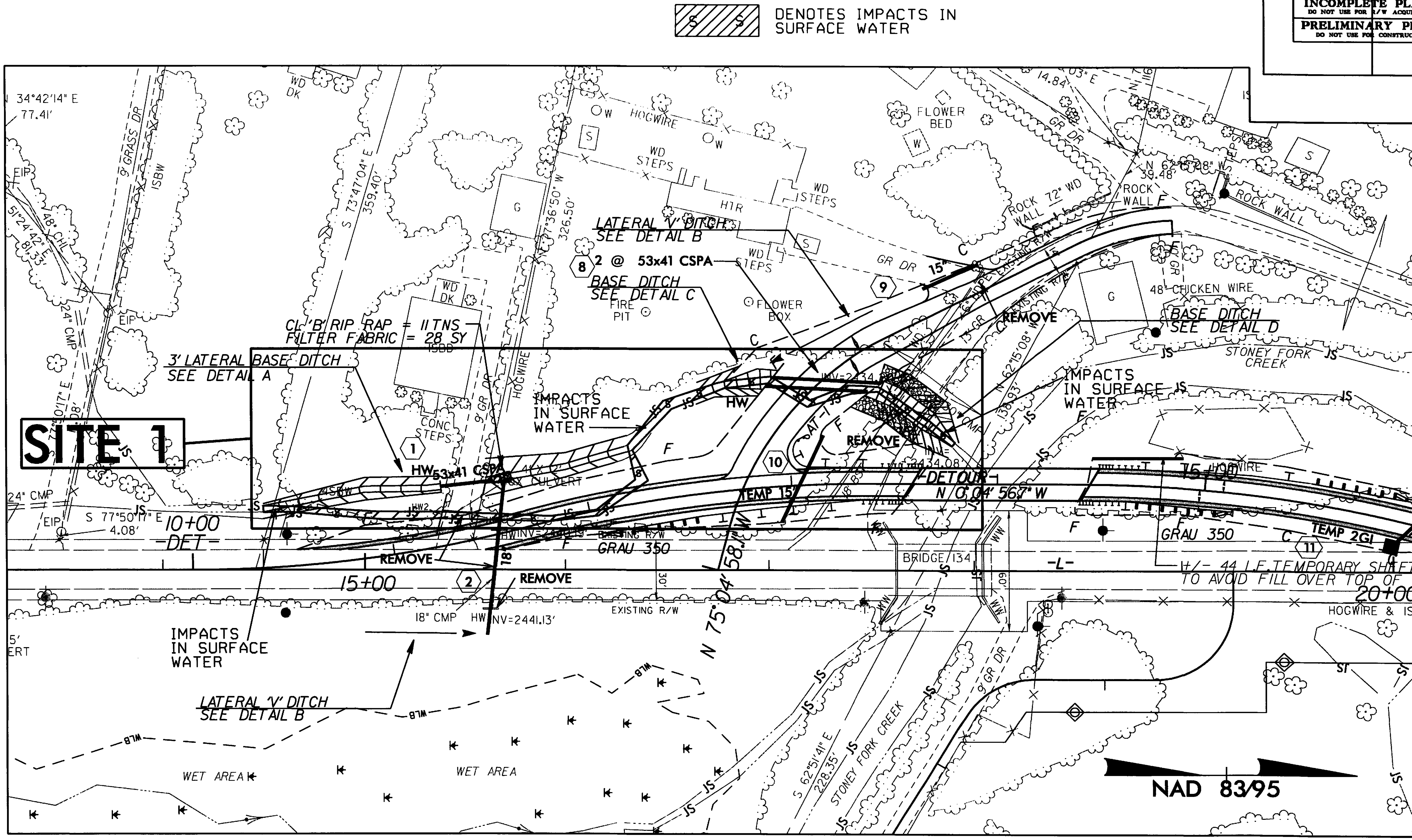


PROJECT REFERENCE NO.
B-4034
SHEET NO.
2-B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NAD 83/95
SITE 1
See Sheet 2-B INSET for INSET
BEGIN CONSTRUCTION -Y1- STA.10+00.00
GEORGE DAVIS AND MARGARET DAVIS DB 912 PG 365
DAVID W. CRIMM DB 1833 PG 411
KATHLEEN A. KLAUS DB 2207 PG 363
BEN R. MORGAN AND DEBORAH H. MORRELL DB 2258 PG 807
CLAUDE J. HENSLEY DB 436 PG 238
JOSHUA DAVIS AND ADAM CONLEE DB 1766 PG 304
RONNIE D. MEASE AND SHEILA F. MEASE DB 1336 PG 550
THERON S. RUMSEY SANDRA A. RUMSEY DB 2343 PG 534
D.O. CREASMAN REAL ESTATE, INC. DB 977 PG 423
NORMAN DOUGLAS HENSON DB 1271 PG 638
ROCKLAND D. McKINNEY AND CELESTE S. McKINNEY DB 1981 PG 139
COYLE F. SMATHERS AND CLARA SMATHERS DB 939 PG 61
LATERAL V DITCH SEE DETAIL B
BASE DITCH SEE DETAIL C
LATERAL BASE DITCH SEE DETAIL A
LATERAL V DITCH SEE DETAIL B
STONEY FORK CREEK
POND
WET AREA
NC 151
25+00
+/- 44 L.F. TEMPORARY SHORING TO AVOID FILL OVER TOP OF BANK
-DET- PC Sta. 10+00.00 -L- Sta.14+15.00
-DET- PT Sta. 11+77.35 -L- Sta.21+95.00
REVISIONS
8/17/99
9:01:38 AM
P:\B-4034\Hydraulics\Permits_Environmental\Drawings\B-4034_HDY_psh_det.dgn
5/19/2009
Permit Drawing
Sheet 7 of 14

PROJECT REFERENCE NO.	SHEET NO.
B-4034	2-B-INSET
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



GRAPHIC SCALE

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PROJECT: 33401.1.1 (B-4034)

SITE 1

REVISIONS

8/17/99

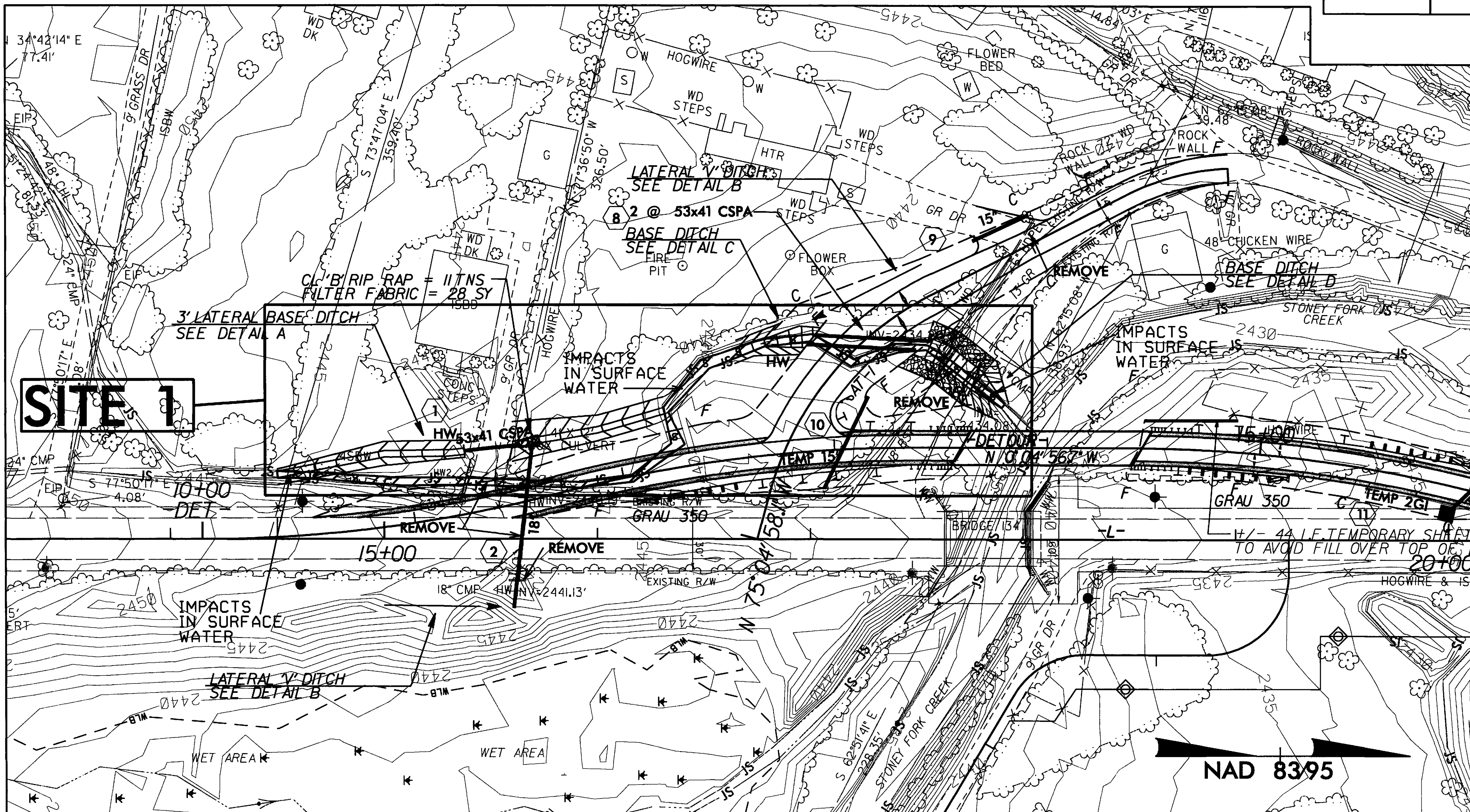
Permit Drawing Sheet 8 of 14

PROJECT REFERENCE NO.	SHEET NO.
B-4034	2-B-INSET
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

DENOTES IMPACTS IN SURFACE WATER



GRAPHIC SCALE

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PROJECT: 33401.1.1 (B-4034)

SITE 1

Permit Drawing Sheet 9 of 14

REVISIONS

8/17/99

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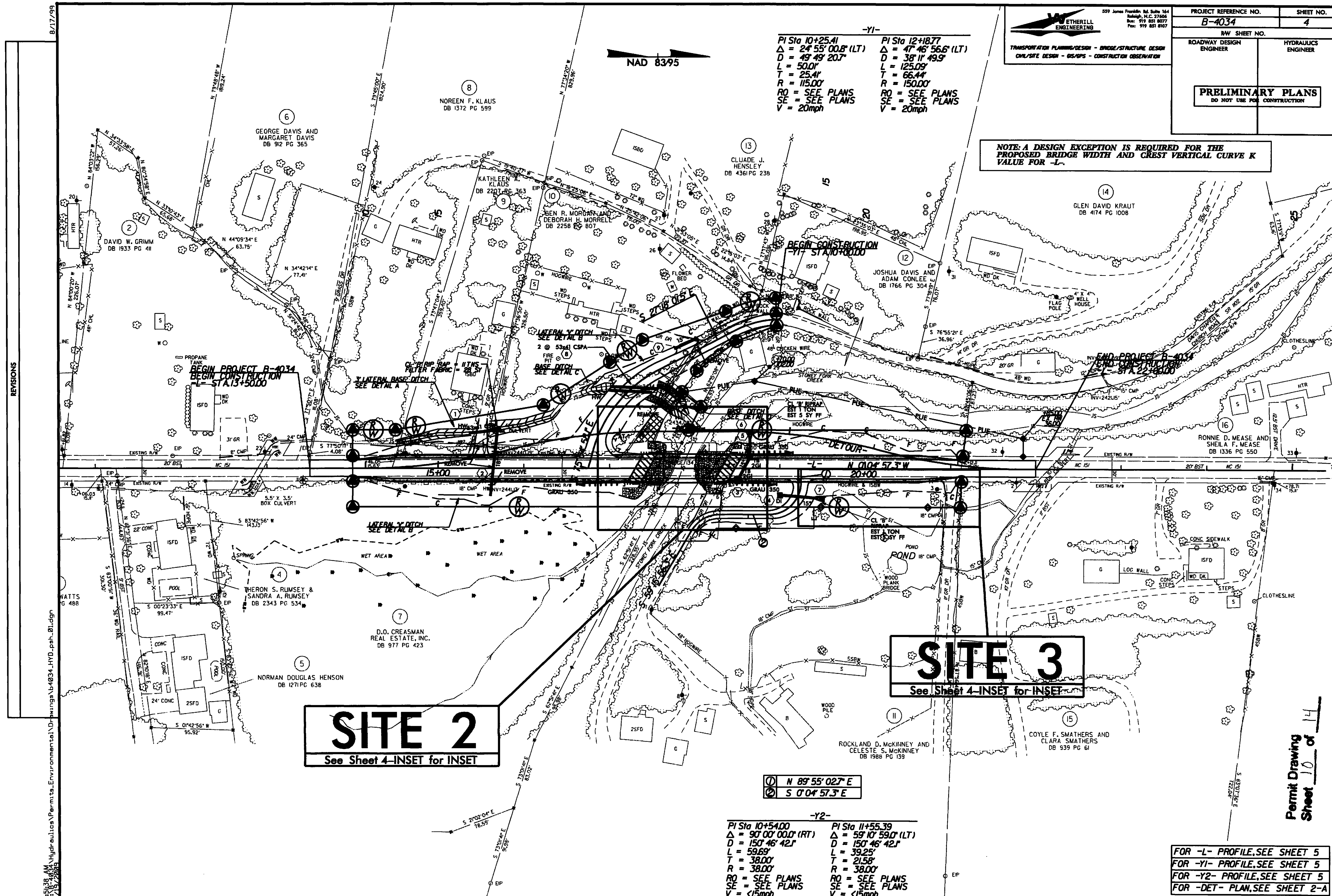
5/19/2009


WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
PROJECT REFERENCE NO. B-4034
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED BRIDGE WIDTH AND CREST VERTICAL CURVE K VALUE FOR -L-.
NAD 83/95
-Y1-
PI Sta 10+25.41
Δ = 24° 55' 00.8" (LT)
D = 49° 49' 20.7"
L = 50.01'
T = 25.41'
R = 115.00'
RO = SEE PLANS
SE = SEE PLANS
V = 20mph
PI Sta 12+18.77
Δ = 47° 46' 56.6" (LT)
D = 38° 11' 49.9"
L = 125.09'
T = 66.44'
R = 150.00'
RO = SEE PLANS
SE = SEE PLANS
V = 20mph
NOREEN F. KLAUS DB 1372 PG 599
GEORGE DAVIS AND MARGARET DAVIS DB 912 PG 365
DAVID W. GRIMM DB 1933 PG 411
KATHLEEN A. KLAUS DB 2207 PG 363
BEN R. MORGAN AND DEBORAH H. MORRELL DB 2258 PG 807
CLUADE J. HENSLEY DB 4361 PG 238
GLEN DAVID KRAUT DB 4174 PG 1008
JOSHUA DAVIS AND ADAM CONLEE DB 1766 PG 304
BEGIN CONSTRUCTION -Y1- STA.10+00.00
BEGIN PROJECT B-4034
BEGIN CONSTRUCTION -L- STA.13+50.00
END PROJECT B-4034
END CONSTRUCTION -L- STA.22+80.00
RONNIE D. MEASE AND SHEILA F. MEASE DB 1336 PG 550
THERON S. RUMSEY & SANDRA A. RUMSEY DB 2343 PG 534
D.O. CREASMAN REAL ESTATE, INC. DB 977 PG 423
NORMAN DOUGLAS HENSON DB 1271 PG 638
ROCKLAND D. McKINNEY AND CELESTE S. McKINNEY DB 1988 PG 139
COYLE F. SMATHERS AND CLARA SMATHERS DB 939 PG 61
STONEY FORK CREEK
DETOUR
SITE 2
See Sheet 4-INSET for INSET
SITE 3
See Sheet 4-INSET for INSET
① N 89° 55' 02.7" E
② S 0° 04' 57.3" E
-Y2-
PI Sta 10+54.00
Δ = 90° 00' 00.0" (RT)
D = 150° 46' 42.1"
L = 59.69'
T = 38.00'
R = 38.00'
RO = SEE PLANS
SE = SEE PLANS
V = <15mph
PI Sta 11+55.39
Δ = 59° 10' 59.0" (LT)
D = 150° 46' 42.1"
L = 39.25'
T = 21.58'
R = 38.00'
RO = SEE PLANS
SE = SEE PLANS
V = <15mph
FOR -L- PROFILE, SEE SHEET 5
FOR -Y1- PROFILE, SEE SHEET 5
FOR -Y2- PROFILE, SEE SHEET 5
FOR -DET- PLAN, SEE SHEET 2-A
Permit Drawing Sheet 10 of 14
REVISIONS
8/17/99
8:54:38 AM
5/19/2009

PROJECT REFERENCE NO.	SHEET NO.
B-4034	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

8/17/99

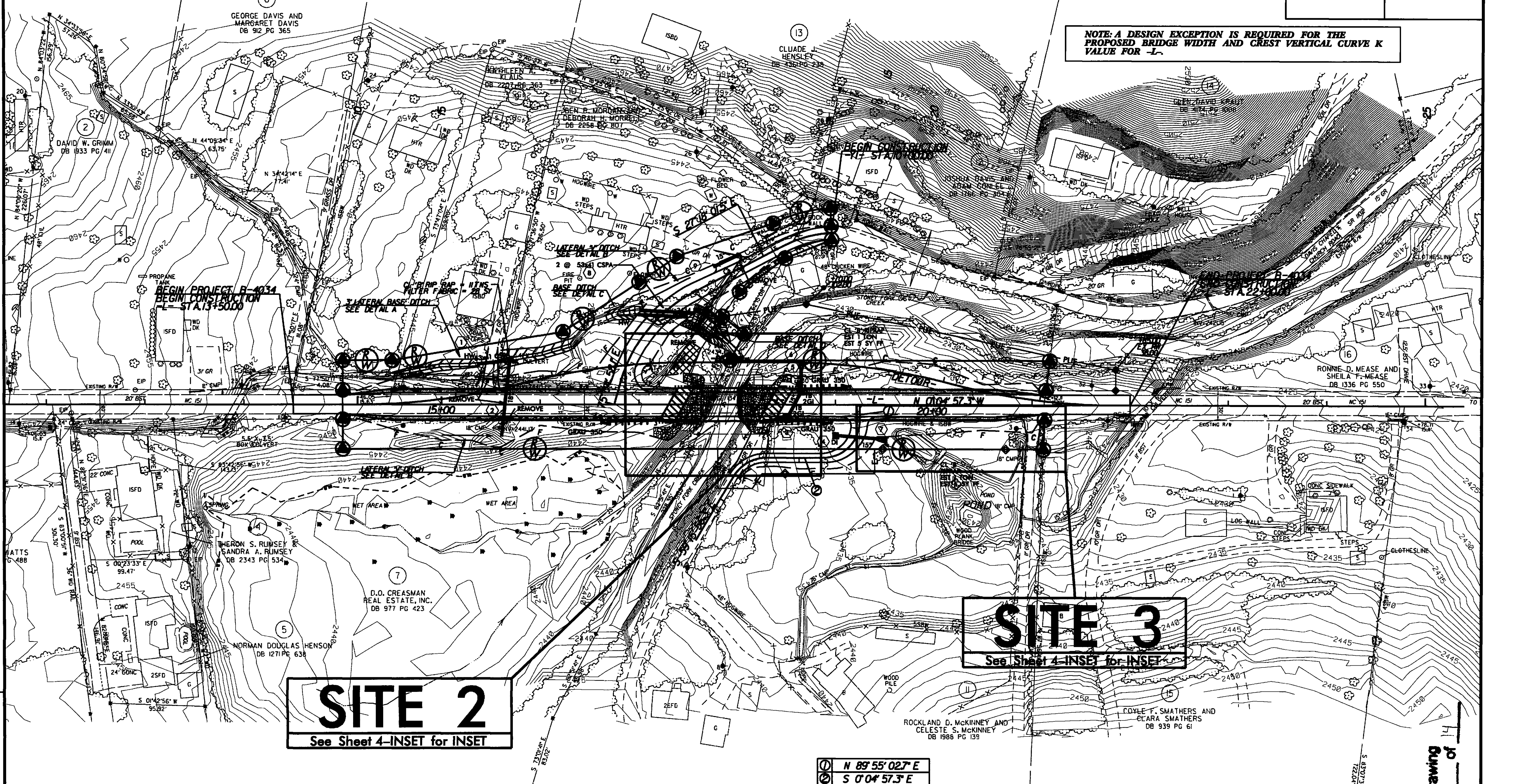
REVISIONS

NAD 83/95

-Y1-

PI Sta 10+25.41	PI Sta 12+18.77
Δ = 24° 55' 00.8" (LT)	Δ = 47° 46' 56.6" (LT)
D = 49° 49' 20.7"	D = 38° 11' 49.9"
L = 50.01'	L = 125.09'
T = 25.41'	T = 66.44'
R = 115.00'	R = 150.00'
RO = SEE PLANS	RO = SEE PLANS
SE = SEE PLANS	SE = SEE PLANS
V = 20mph	V = 20mph

NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED BRIDGE WIDTH AND CREST VERTICAL CURVE K VALUE FOR -L-.



①	N 89° 55' 02.7" E
②	S 0° 04' 57.3" E

-Y2-

PI Sta 10+54.00	PI Sta 11+55.39
Δ = 90° 00' 00.0" (RT)	Δ = 59° 10' 59.0" (LT)
D = 150° 46' 42.1"	D = 150° 46' 42.1"
L = 59.69'	L = 39.25'
T = 38.00'	T = 21.58'
R = 38.00'	R = 38.00'
RO = SEE PLANS	RO = SEE PLANS
SE = SEE PLANS	SE = SEE PLANS
V = <15mph	V = <15mph

FOR -L- PROFILE, SEE SHEET 5
FOR -Y1- PROFILE, SEE SHEET 5
FOR -Y2- PROFILE, SEE SHEET 5
FOR -DET- PLAN, SEE SHEET 2-A

Permit Drawing
Sheet 11 of 14

15:56 AM
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7/31/2003

PROJECT REFERENCE NO.	SHEET NO.
B-4034	4-INSET

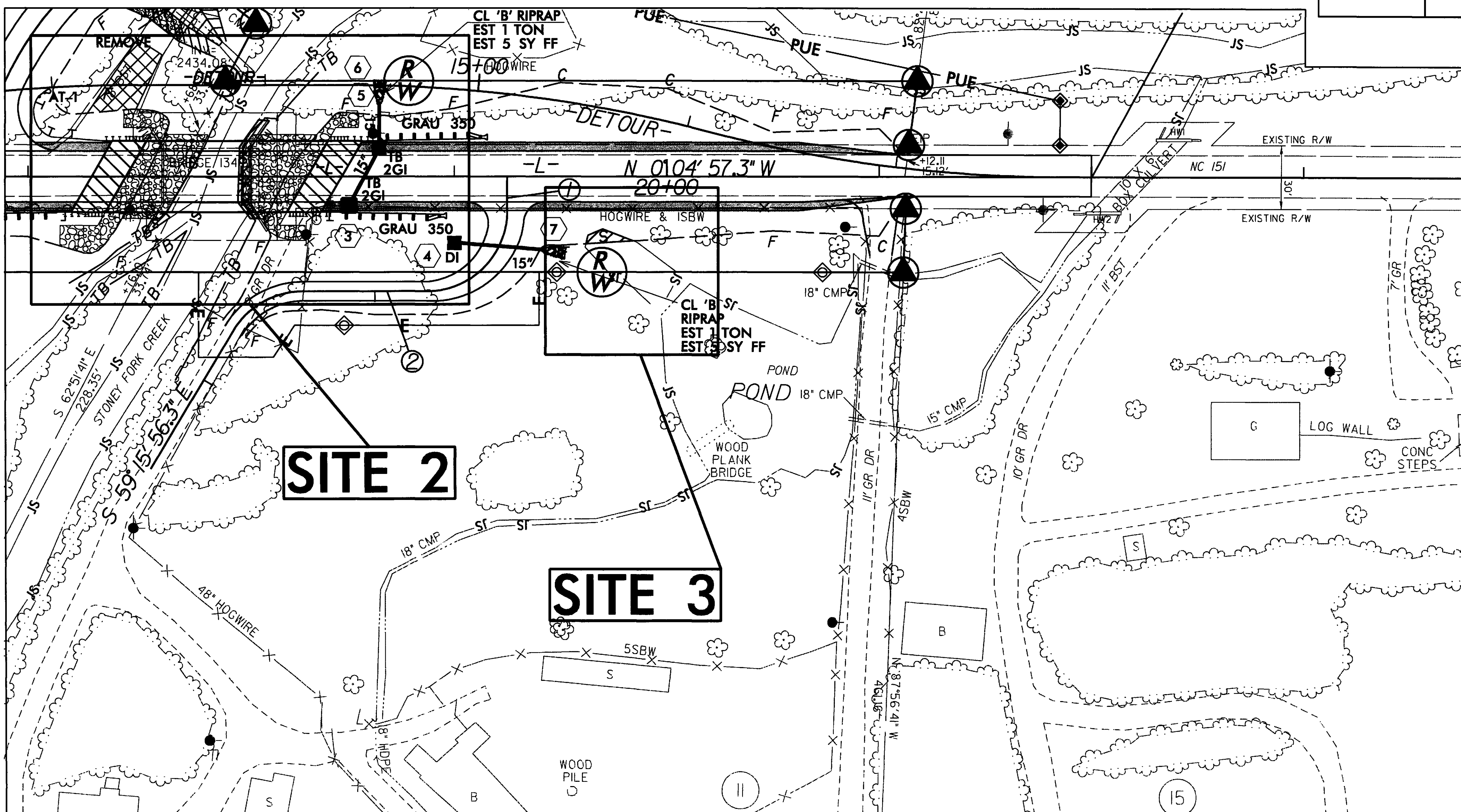
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DENOTES IMPACTS IN SURFACE WATER



GRAPHIC SCALE

50 25 0 50 100

PROJECT: 33401.1.1 (B-4034)
SITE 2 & 3

Permit Drawing Sheet 12 of 14

REVISIONS

8/17/99

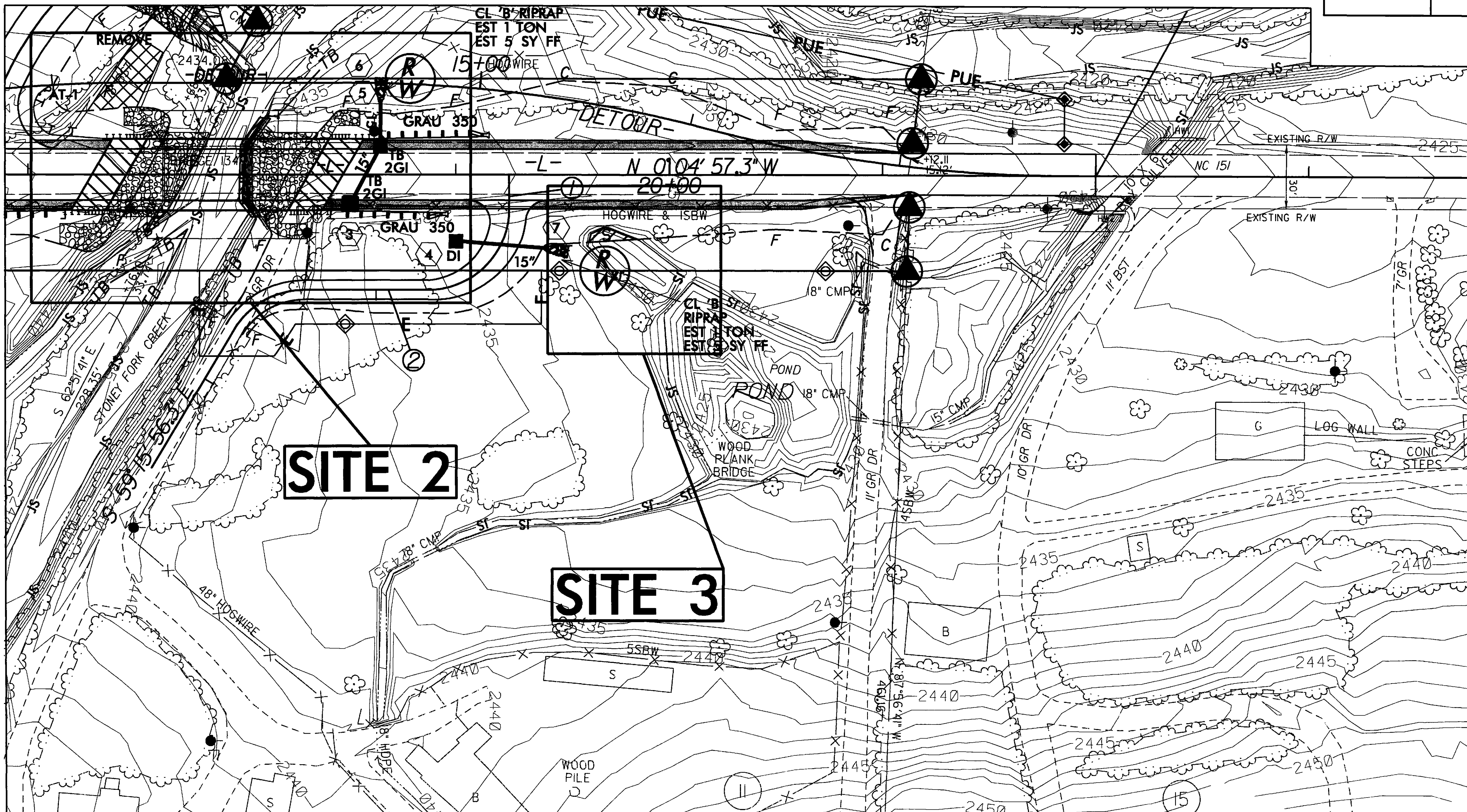
8:53:36 AM
5/19/2009

PROJECT REFERENCE NO.	SHEET NO.
B-4034	4-INSET
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

DENOTES IMPACTS IN SURFACE WATER



GRAPHIC SCALE

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PROJECT: 33401.1.1 (B-4034)
SITE 2 & 3

Permit Drawing Sheet 13 of 14

REVISIONS

8/17/99

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5/19/2009
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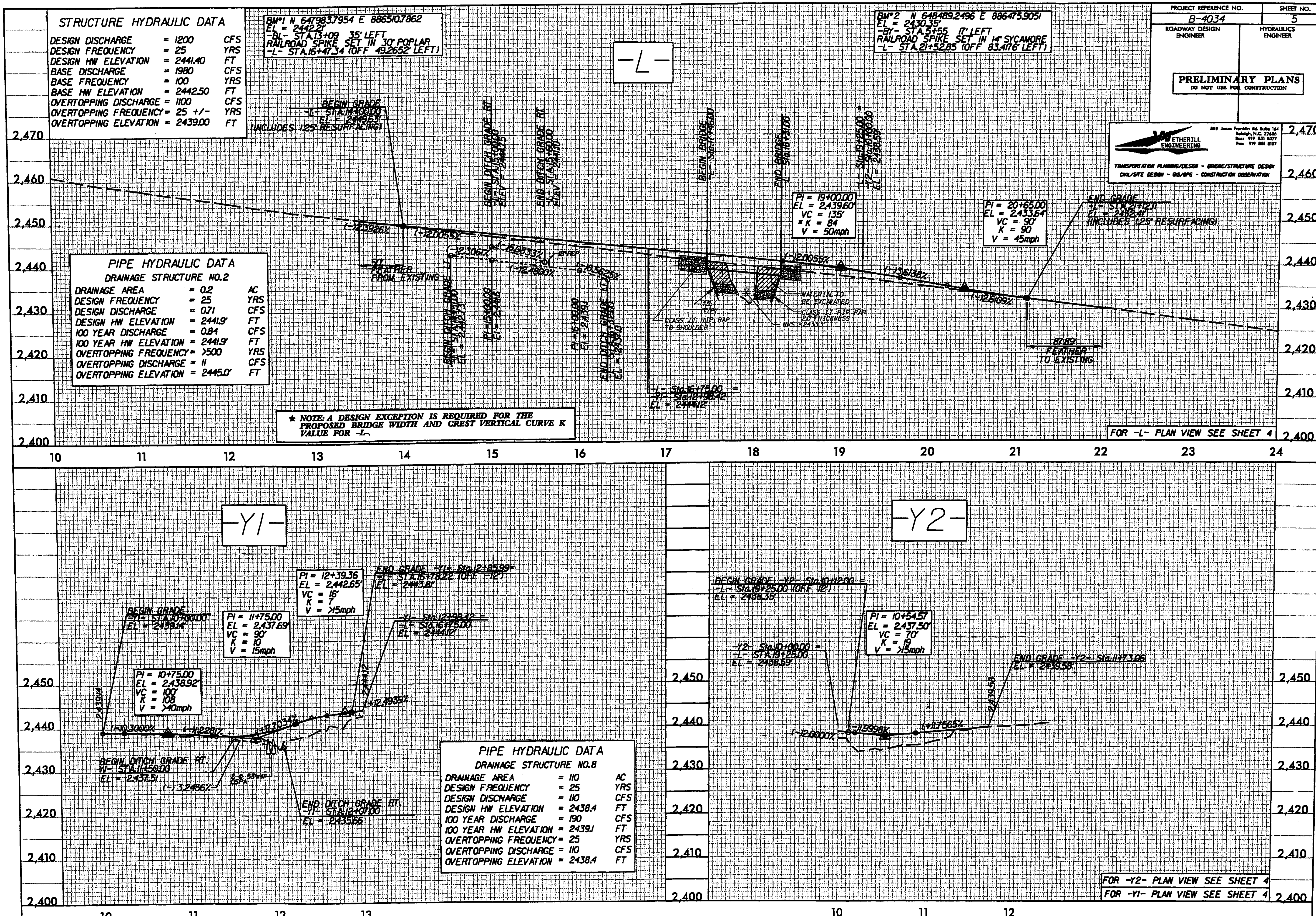


STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2441.40	FT
BASE DISCHARGE	= 1980	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2442.50	FT
OVERTOPPING DISCHARGE	= 1100	CFS
OVERTOPPING FREQUENCY	= 25 +/-	YRS
OVERTOPPING ELEVATION	= 2439.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.2

DRAINAGE AREA	= 0.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.71	CFS
DESIGN HW ELEVATION	= 2441.9'	FT
100 YEAR DISCHARGE	= 0.84	CFS
100 YEAR HW ELEVATION	= 2441.9'	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 11	CFS
OVERTOPPING ELEVATION	= 2445.0'	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.8

DRAINAGE AREA	= 110	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 110	CFS
DESIGN HW ELEVATION	= 2438.4	FT
100 YEAR DISCHARGE	= 190	CFS
100 YEAR HW ELEVATION	= 2439.1	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 110	CFS
OVERTOPPING ELEVATION	= 2438.4	FT

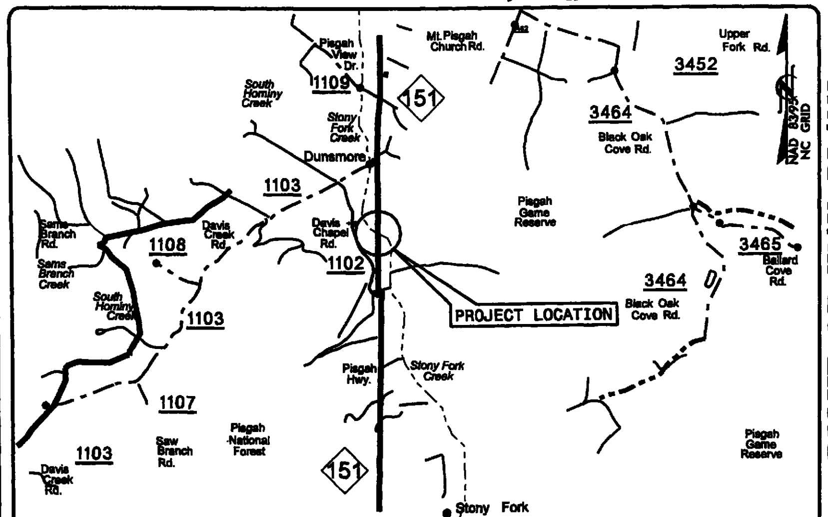
09/08/99

TIP PROJECT: B-4034

CONTRACT:

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

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbology



VICINITY MAP

RIGHT OF WAY PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

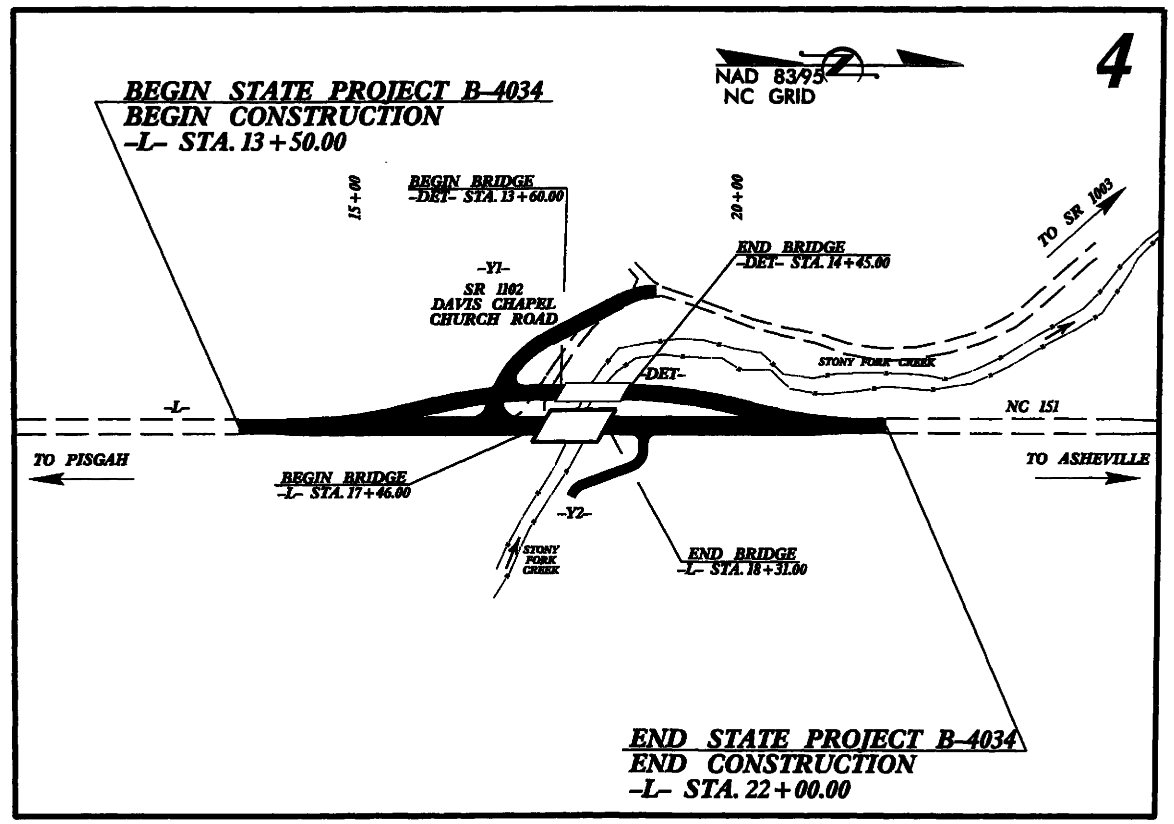
BUNCOMBE COUNTY

LOCATION: BRIDGE NO. 134 OVER STONY FORK CREEK ON NC 151

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4034	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33401.1.1	BRSTP-151(10)	P.E.
33401.2.1	BRSTP-151(10)	R/W & UTIL.



NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED BRIDGE WIDTH AND CREST VERTICAL CURVE K VALUE FOR -L-.

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

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 2010 = 1785
ADT 2030 = 2740
DHV = 10 %
D ± 60 %
T = 3 % *
V = 60 MPH
* TTST 1% DUAL 2%
FUNC. CLASS. = RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4034	=	0.145 MILES
LENGTH STRUCTURE TIP PROJECT B-4034	=	0.016 MILES
TOTAL LENGTH TIP PROJECT B-4034	=	0.161 MILES

WETHERILL ENGINEERING

Prepared for the North Carolina Department of Transportation in the Office of:

559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 20, 2009

LETTING DATE: FEBRUARY 16, 2010

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT

DOUG TAYLOR, PE
ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

P.E.
STATE HIGHWAY DESIGN ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
B-4034	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 — IP
- Property Corner
- Property Monument — CM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — 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 — W
- Proposed Lateral, Tail, Head Ditch — FWR
- 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
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

- TV Satellite Dish
- TV Pedestal — T
- 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 — SUTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-4034	2-B

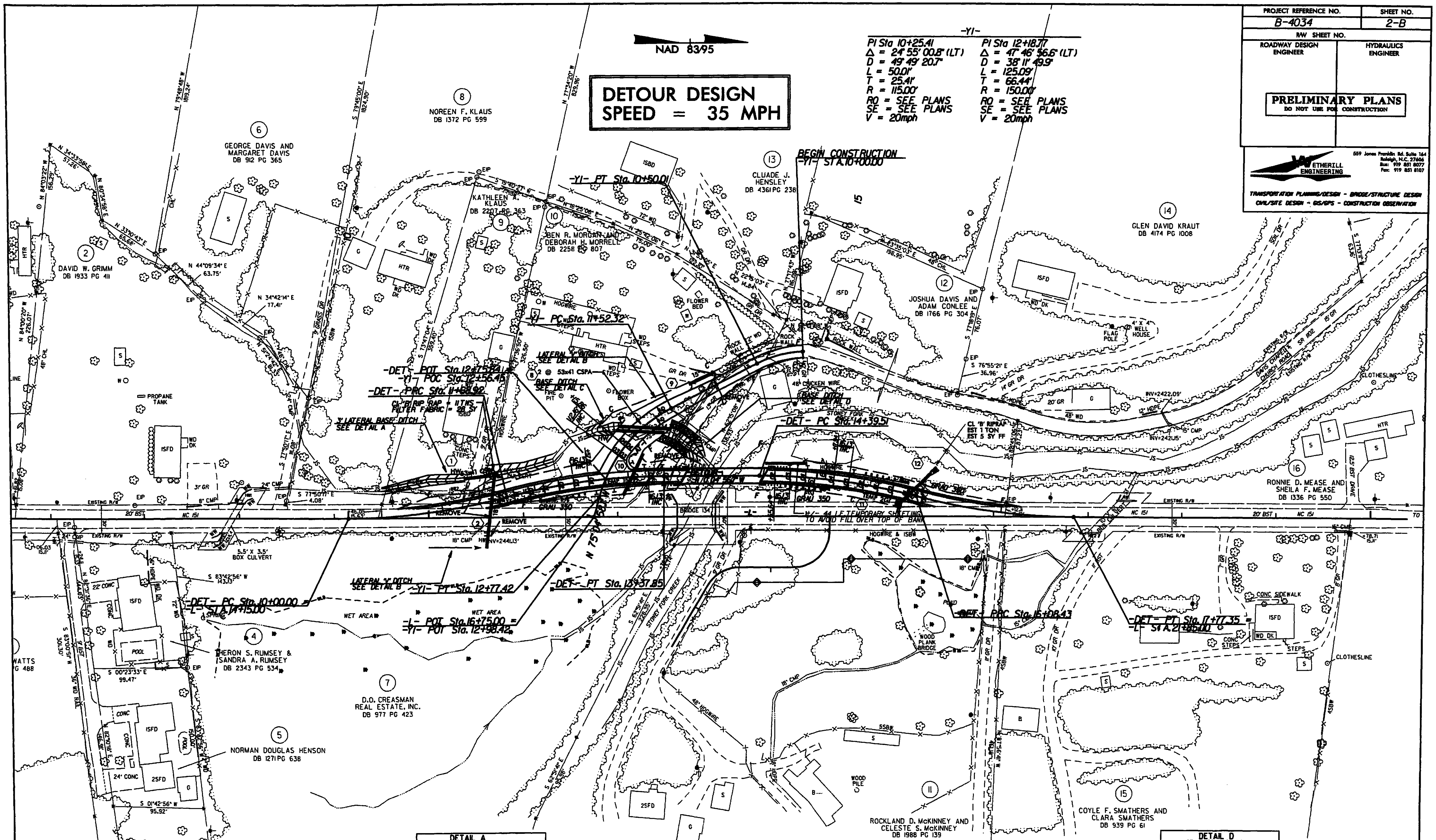
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DETOUR DESIGN SPEED = 35 MPH

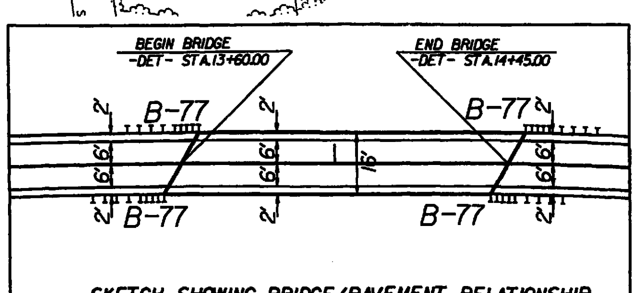


-Y1-

PI Sta 10+25.41	PI Sta 12+18.77
Δ = 24° 55' 00.8" (LT)	Δ = 47° 46' 56.6" (LT)
D = 49° 49' 20.7"	D = 38° 11' 49.9"
L = 50.01'	L = 125.09'
T = 25.41'	T = 66.44'
R = 115.00'	R = 150.00'
RO = SEE PLANS	RO = SEE PLANS
SE = SEE PLANS	SE = SEE PLANS
V = 20mph	V = 20mph

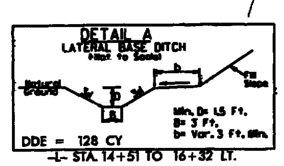
-DET-

PI Sta 10+84.93	PI Sta 12+53.85	PI Sta 15+24.43	PI Sta 16+93.36
Δ = 14° 39' 52.7" (LT)	Δ = 14° 39' 53.3" (RT)	Δ = 14° 39' 52.0" (RT)	Δ = 14° 39' 52.6" (LT)
D = 8° 40' 52.2"	D = 8° 40' 52.2"	D = 8° 40' 52.2"	D = 8° 40' 52.2"
L = 168.92'	L = 168.93'	L = 168.92'	L = 168.92'
T = 84.93'	T = 84.93'	T = 84.93'	T = 84.93'
R = 660.00'	R = 660.00'	R = 660.00'	R = 660.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
V = 45mph	V = 45mph	V = 45mph	V = 45mph



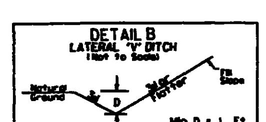
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

DETAIL A
LATERAL BASE DITCH
(Not to Scale)



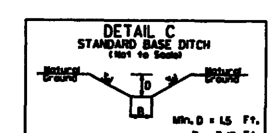
DDE = 128 CY
-L- STA. 14+51 TO 16+32 LT.

DETAIL B
LATERAL "V" DITCH
(Not to Scale)



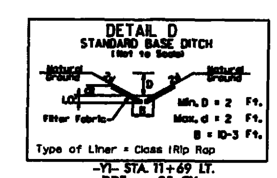
-L- STA. 15+00 TO 15+60 RT.
-Y1- STA. 11+50 TO 12+07 RT.

DETAIL C
STANDARD BASE DITCH
(Not to Scale)



-Y1- STA. 12+05 RT.
DDE = 18 CY

DETAIL D
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = Class I Rip Rap

-Y1- STA. 11+69 LT.
DDE = 95 CY
CL 'I' RIP RAP = 60 TNS
FILTER FABRIC = 110 SY

FOR -DET- PROFILE, SEE SHEET 5
FOR TEMP. -Y1- PROFILE, SEE SHEET 6
FOR -L- PLAN VIEW, SEE SHEET 4
FOR -Y1- PLAN VIEW, SEE SHEET 4

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
B-4034	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

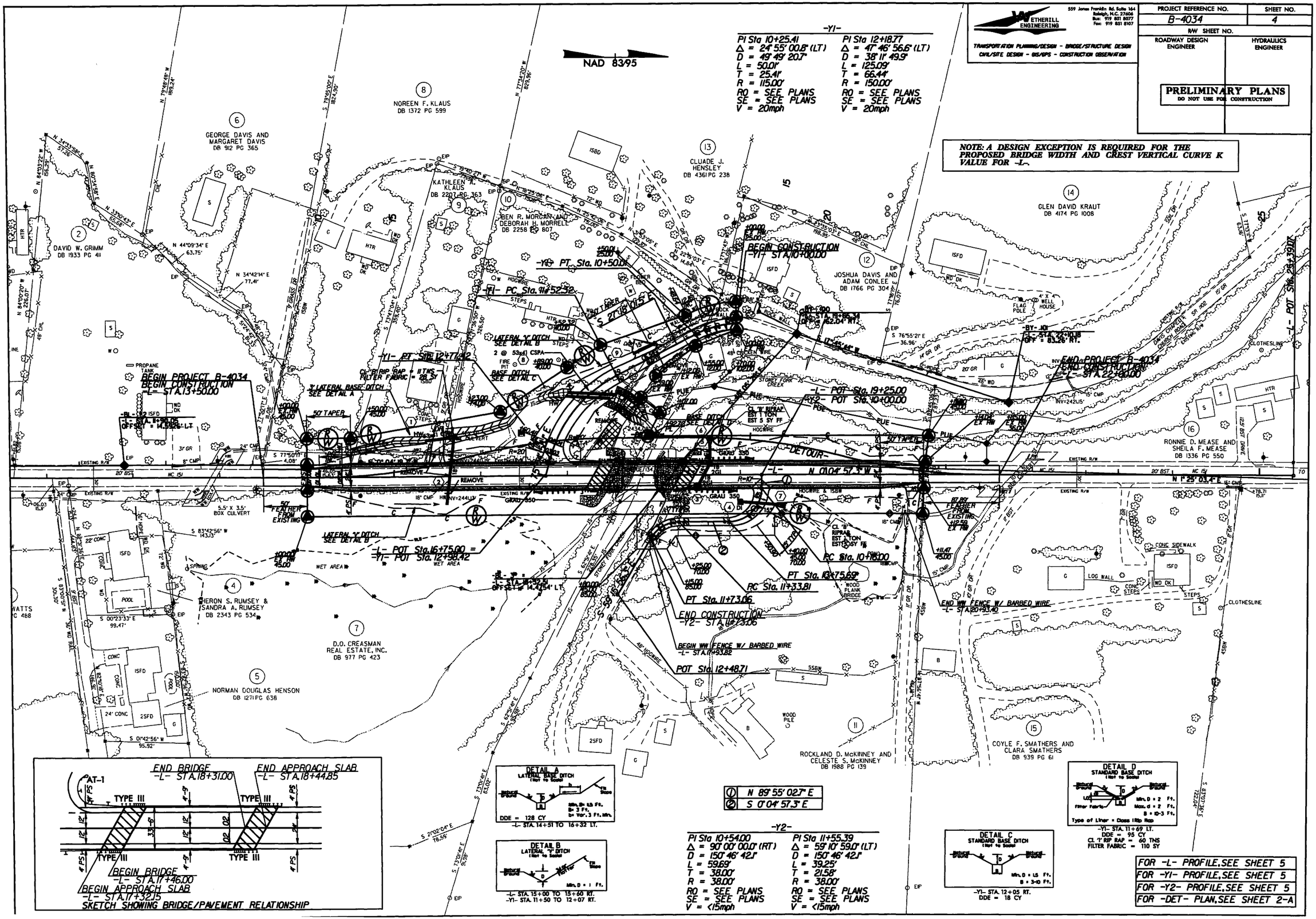
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

-Y1-

PI Sta 10+25.41	PI Sta 12+18.77
Δ = 24° 55' 00.8" (LT)	Δ = 41° 46' 56.6" (LT)
D = 49° 49' 20.7"	D = 38° 11' 49.9"
L = 50.01'	L = 125.09'
T = 25.41'	T = 66.44'
R = 115.00'	R = 150.00'
RO = SEE PLANS	RO = SEE PLANS
SE = SEE PLANS	SE = SEE PLANS
V = 20mph	V = 20mph

NOTE: A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED BRIDGE WIDTH AND CREST VERTICAL CURVE K VALUE FOR -L-.



ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
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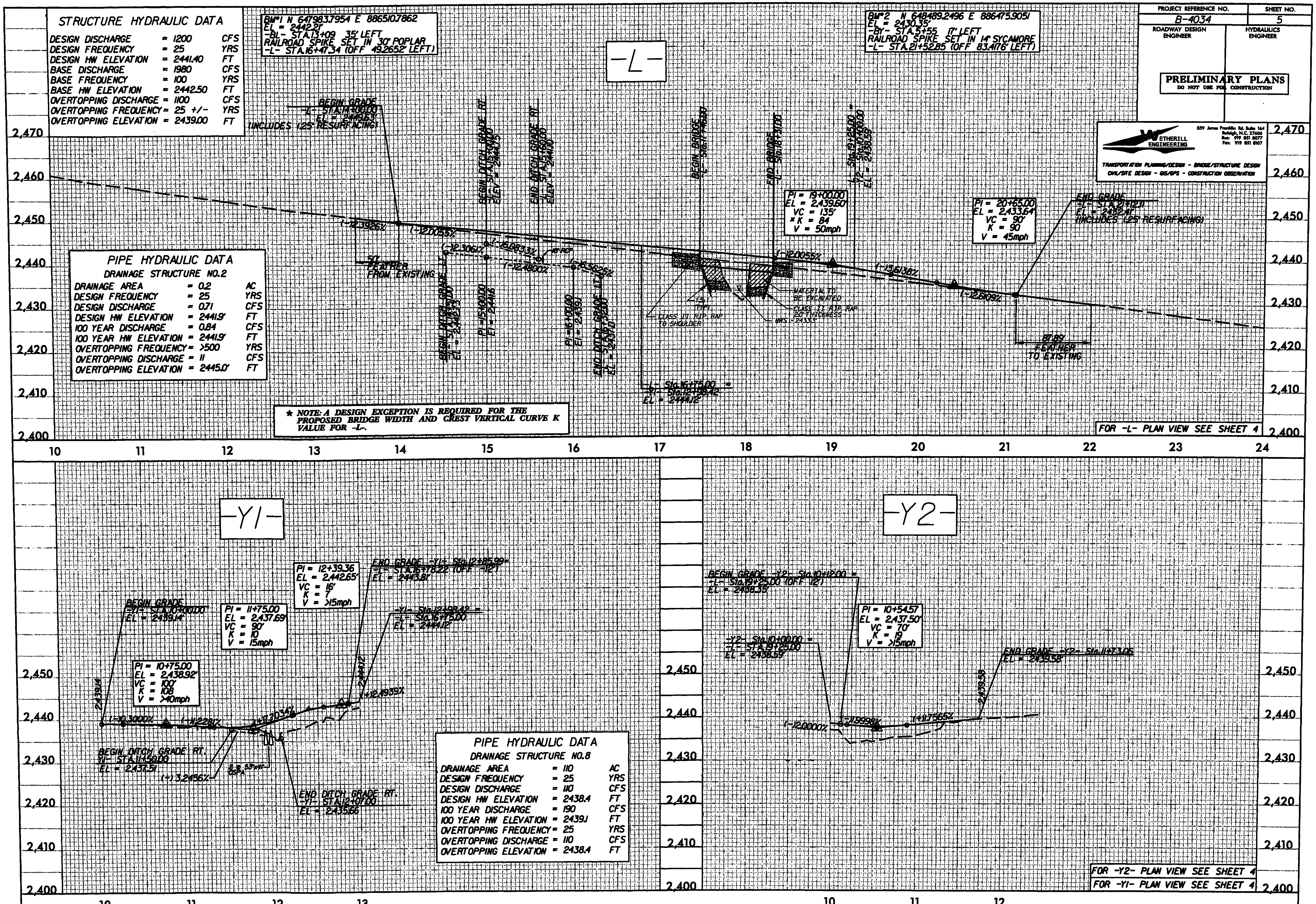
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2441.40	FT
BASE DISCHARGE	= 1980	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2442.50	FT
OVERTOPPING DISCHARGE	= 1100	CFS
OVERTOPPING FREQUENCY	= 25 +/-	YRS
OVERTOPPING ELEVATION	= 2439.00	FT

BM#1 N 6479837.954 E 886510.7862
EL = 2442.21'
-BL- STA.13+09 35' LEFT
RAILROAD SPIKE SET IN 30" POPLAR
-L- STA.16+47.34 (OFF 49.2652' LEFT)

BM#2 N 6484189.2496 E 886475.9051
EL = 2430.35'
-BY- STA.5+55 17' LEFT
RAILROAD SPIKE SET IN 14" SYCAMORE
-L- STA.21+52.85 (OFF 83.4176' LEFT)



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.2

DRAINAGE AREA	= 0.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.71	CFS
DESIGN HW ELEVATION	= 2441.9'	FT
100 YEAR DISCHARGE	= 0.84	CFS
100 YEAR HW ELEVATION	= 2441.9'	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= 11	CFS
OVERTOPPING ELEVATION	= 2445.0'	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.8

DRAINAGE AREA	= 110	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 110	CFS
DESIGN HW ELEVATION	= 2438.4	FT
100 YEAR DISCHARGE	= 190	CFS
100 YEAR HW ELEVATION	= 2439.1	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 110	CFS
OVERTOPPING ELEVATION	= 2438.4	FT

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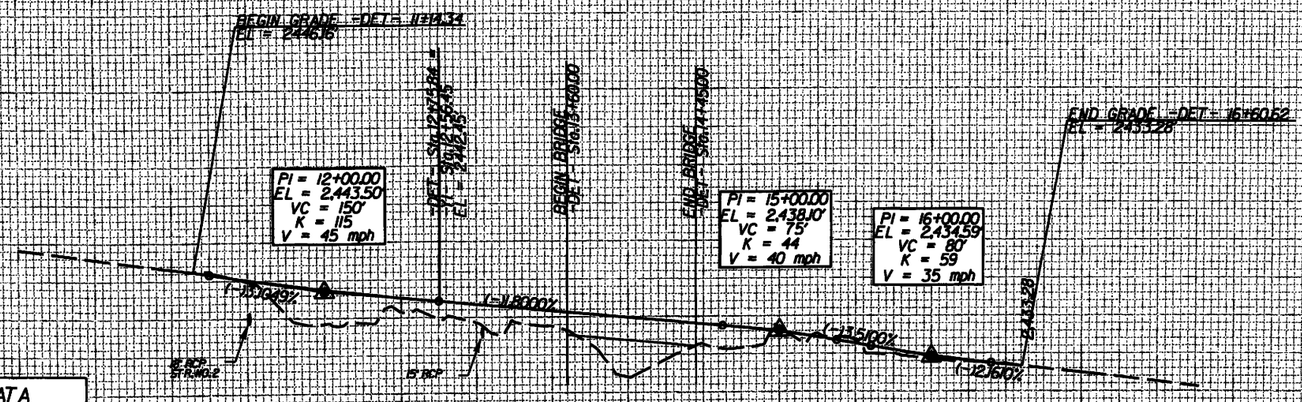
PROJECT REFERENCE NO.	SHEET NO.
B-4034	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DET-



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.10

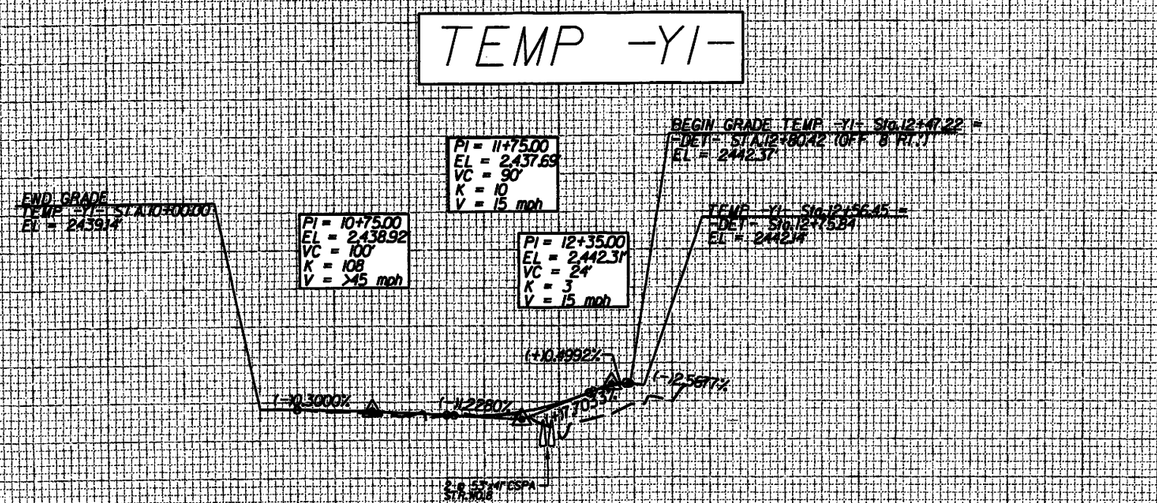
DRAINAGE AREA	= 0.17	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 0.61	CFS
DESIGN HW ELEVATION	= 2438.9	FT
100 YEAR DISCHARGE	=	CFS
100 YEAR HW ELEVATION	=	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 6	CFS
OVERTOPPING ELEVATION	= 2440.0	FT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1500	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 2436.10	FT
BASE DISCHARGE	=	CFS
BASE FREQUENCY	=	YRS
BASE HW ELEVATION	=	FT
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING FREQUENCY	=	YRS
OVERTOPPING ELEVATION	=	FT

FOR -DET- PLAN VIEW SEE SHEET 2-A

TEMP -Y1-



FOR TEMP -Y1- PLAN VIEW SEE SHEET 2-A

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4034	X-1

15+50.00

15+30.00

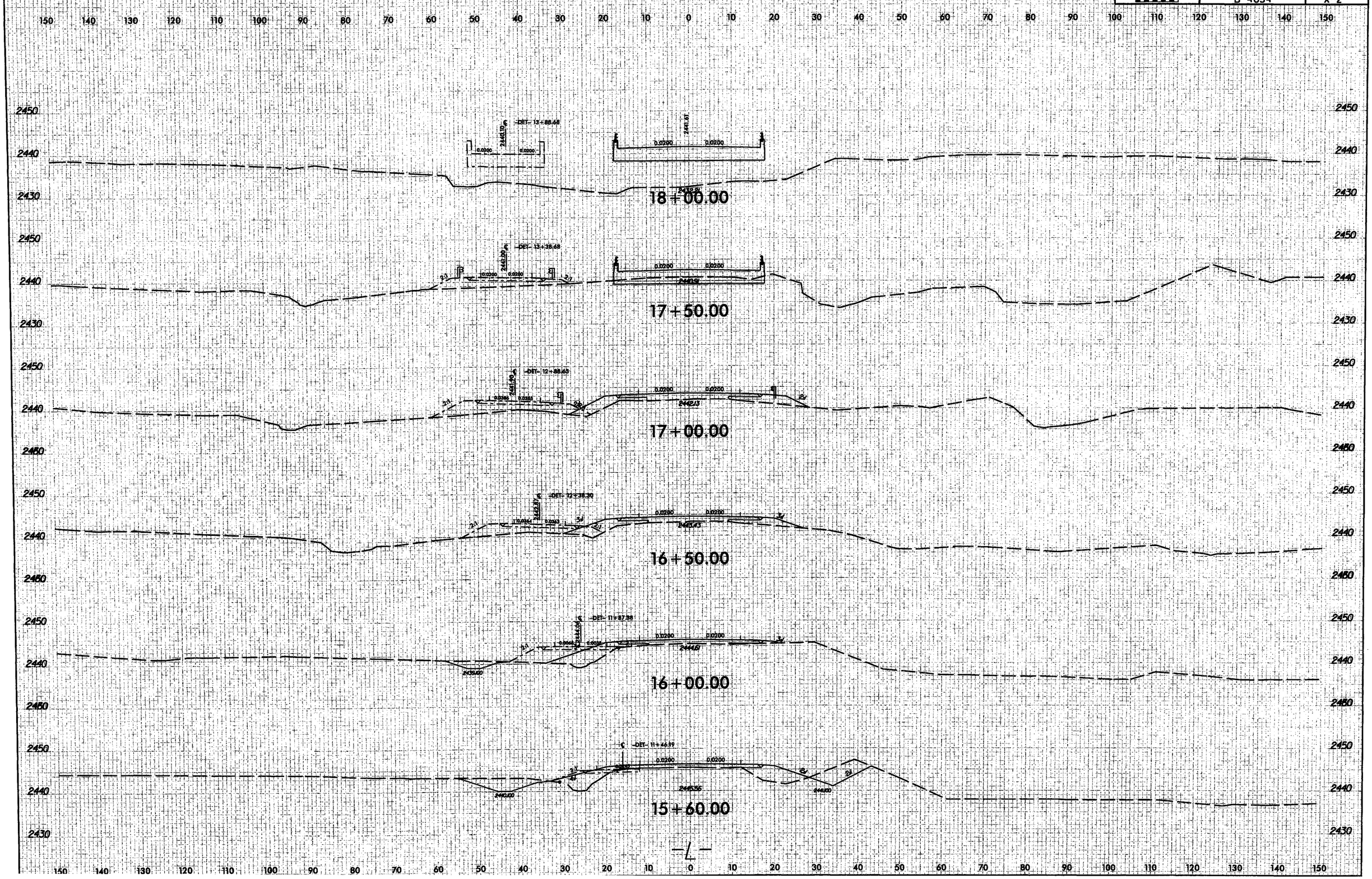
15+00.00

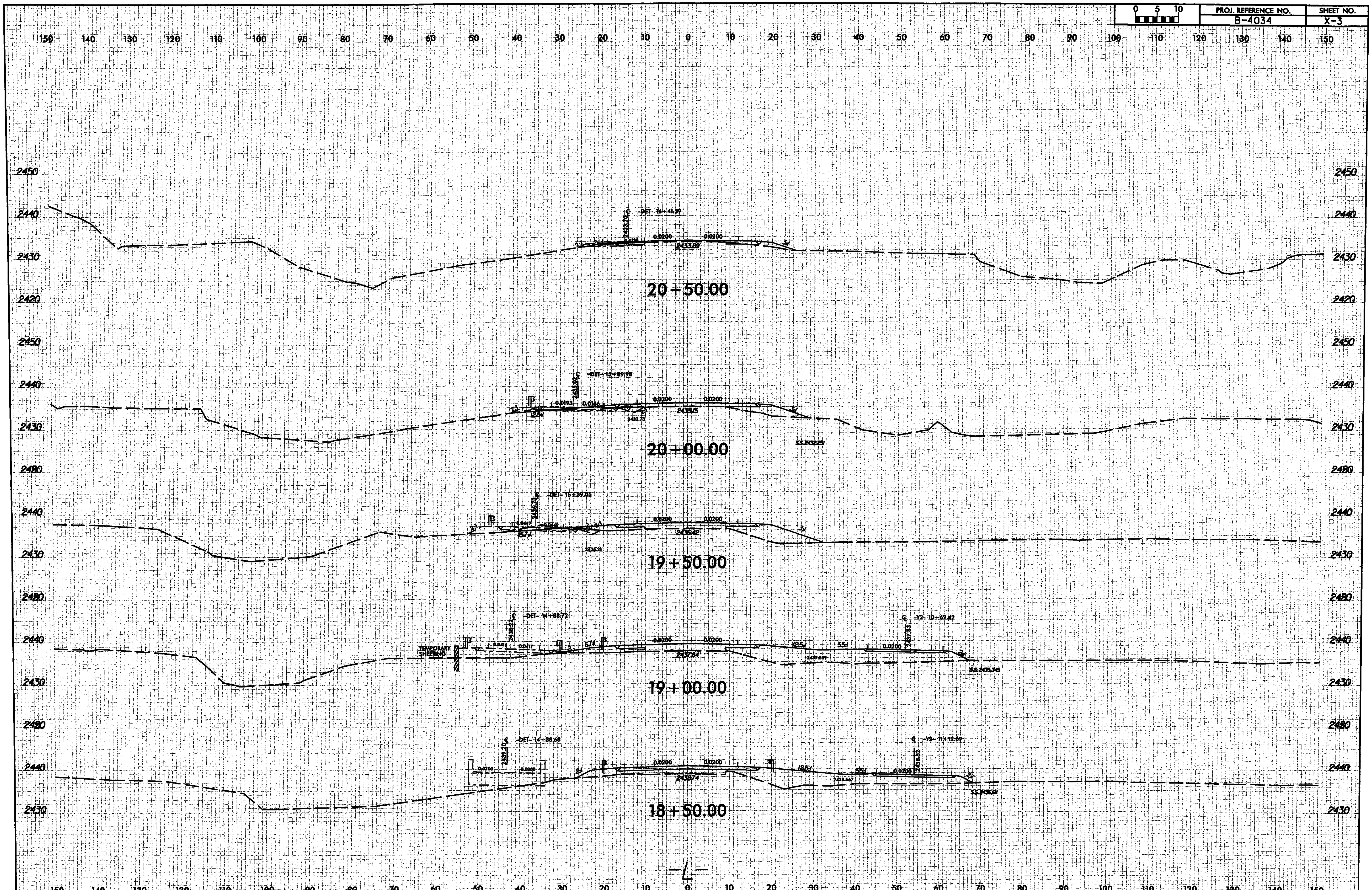
14+50.00

14+00.00

13+50.00

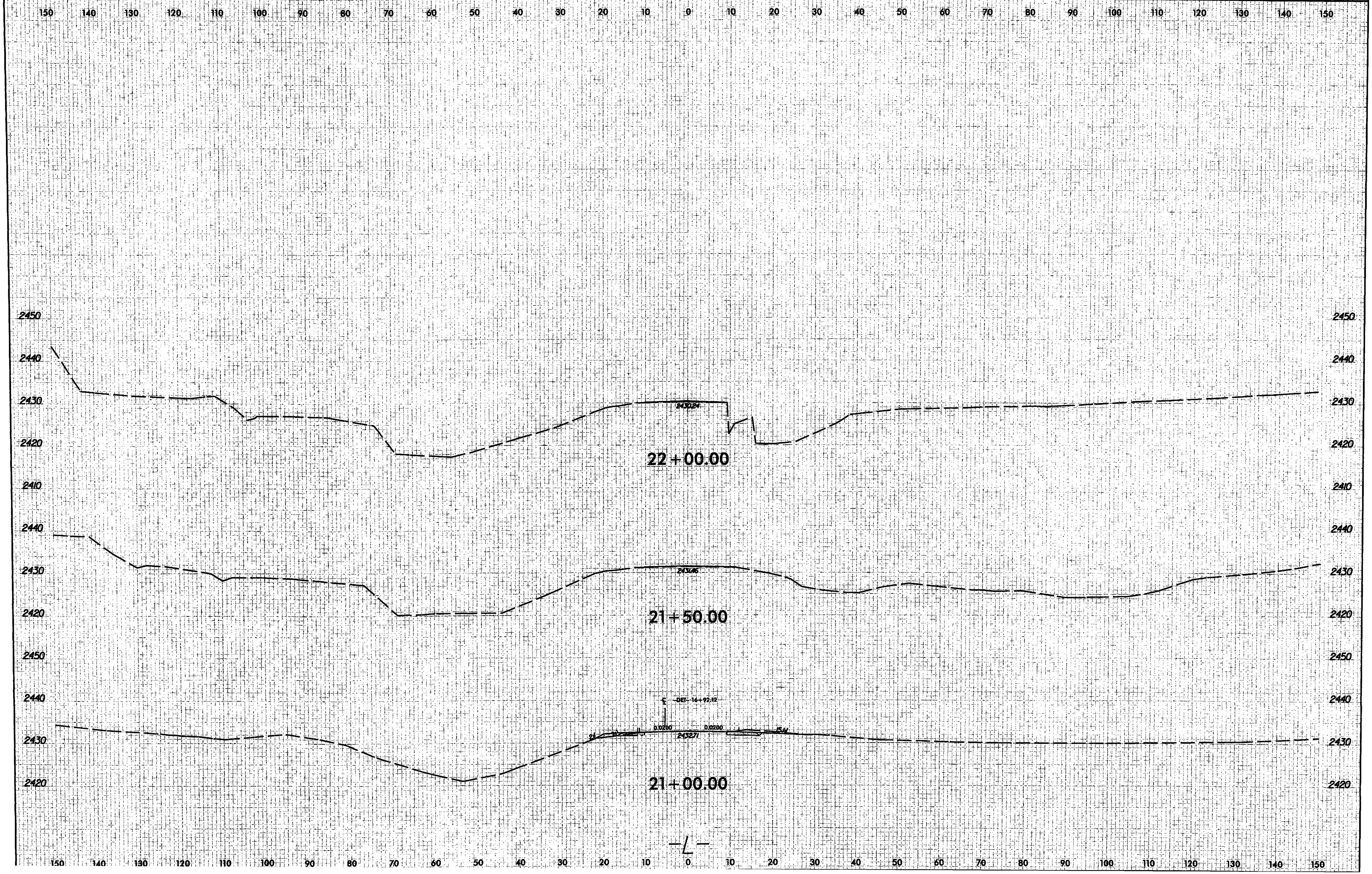
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4034	X-2



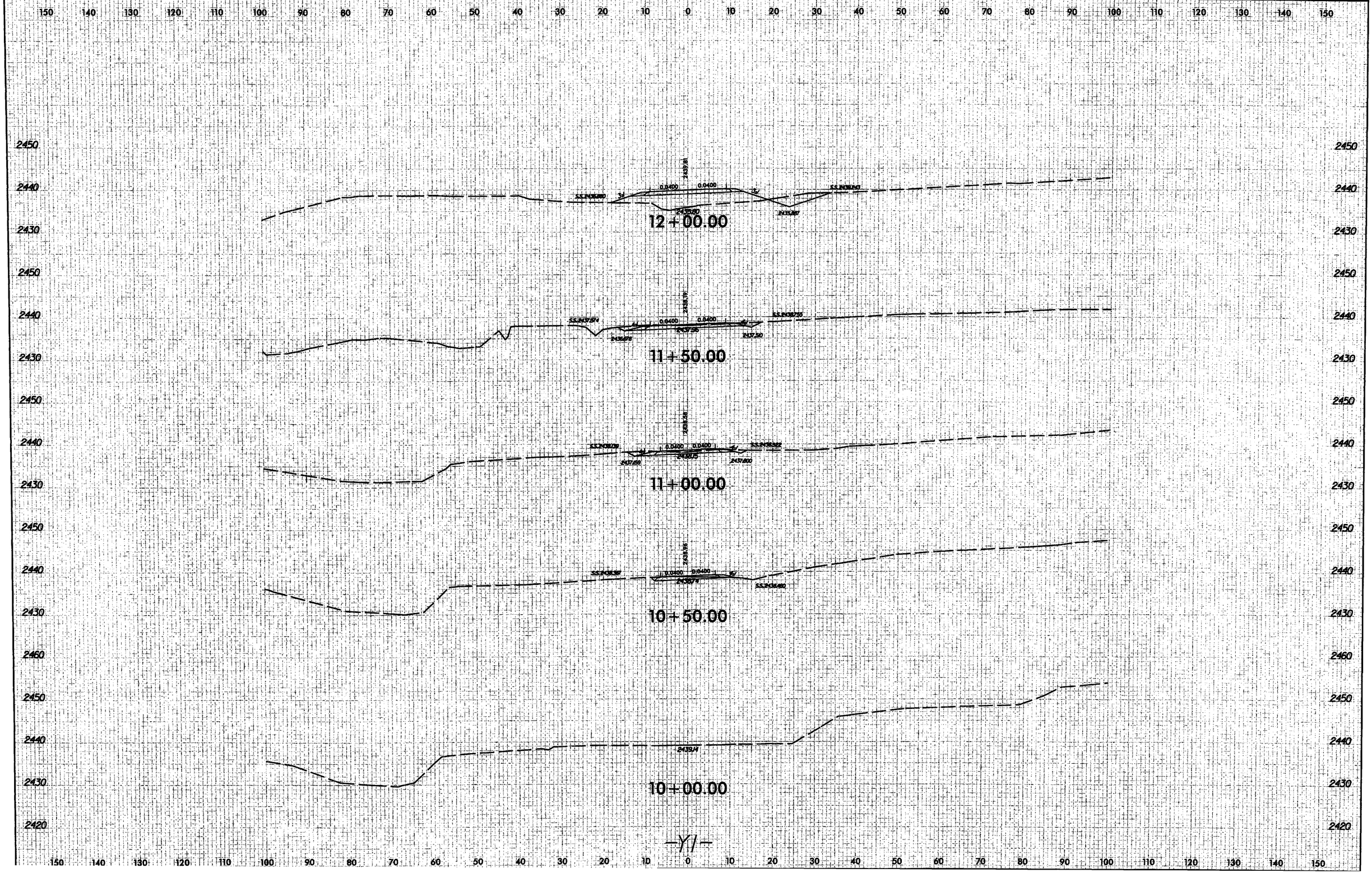


PROJ. REFERENCE NO.
B-4034
SHEET NO.
X-3
0 5 10
-DET- 16+41.39
20+50.00
-DET- 15+89.98
20+00.00
-DET- 15+39.05
19+50.00
-DET- 14+88.72
-Y2- 10+62.42
TEMPORARY SHEETING
19+00.00
-DET- 14+38.68
-Y2- 11+12.69
18+50.00
-L-

PROJ. REFERENCE NO.	SHEET NO.
B-4034	X-4



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4034	X-5



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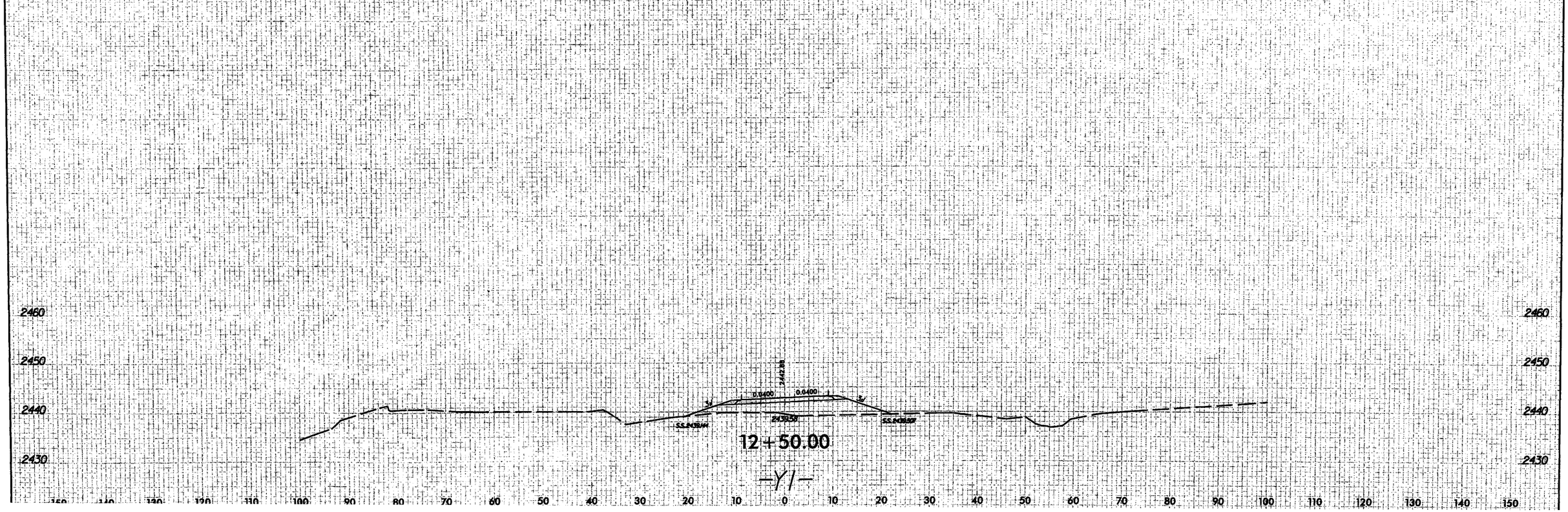
	B-4034	X-6



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4034	X-7

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

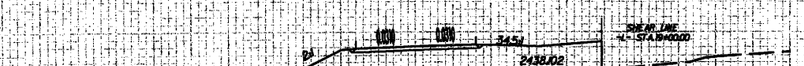
2450
2440
2430
2420

11+25.00

11+00.00

10+75.00

10+50.00



10+25.00

10+00.00

-Y2-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4034	X-8

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2450
2440
2430

11+75.00

2450
2440
2430

11+50.00

-Y2-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150