STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

June 4, 2012

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

ATTN: Ms. Sarah Elizabeth Hair
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 33** for the proposed replacement of Bridge No. 453 over Norkett Branch on SR 1003 (White Store Road) in Union County, Federal Aid Project No. BRSTP-1003(40), WBS Element 38594.1.1, Division 10, TIP No. B-4824.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 453 over Norkett Branch on SR 1003 with a new 32'x9'x60' crownspan bottomless culvert on the existing alignment. There will be <0.01 acre (8 linear feet) of temporary stream impacts due to the installation of temporary impervious dikes during culvert installation.

Please see enclosed copies of the Pre-Construction Notification (PCN), permit drawings, stormwater management plan and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in June 2010 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of March 19, 2013 and a review date of January 29, 2013; however, the let date may advance as additional funding becomes available.

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

TELEPHONE: 919-707-6100
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,

E. L. Lusk

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

cc:
NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 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:	Replacement of Bridge No. 453 over Norkett Branch on SR 1003 (White Store Road)
2b. County:	Union
2c. Nearest municipality / town:	Marshville
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4824

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6108
3g. Fax no.:	(919) 212-5785
3h. Email address:	ekcheely@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: 34.90200 (DD.DDDDDD)	Longitude: - 80.35637 (-DD.DDDDDD)
1c. Property size:	1.2 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Norkett Branch	
2b. Water Quality Classification of nearest receiving water:	WS-V	
2c. River basin:	Yadkin-Pee Dee	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The land use within the vicinity of the project consists of about 30% forest land (including mixed hardwood forests), 60% cultivated land (pastures and agricultural fields) and 10% developed or disturbed land (roadsides and residential areas).		
3b. List the total estimated acreage of all existing wetlands on the property: 0 (No wetlands)		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 180 linear feet		
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a structurally deficient bridge (sufficiency rating 30.5 out of 100).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 46-foot bridge with a 60' long, 32' wide and 9' high crownspan bottomless culvert on the existing alignment with an off-site detour. Standard road building equipment, (trucks, dozers, cranes, etc.) will be used.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: Rapanos and JD request package sent 1/30/08. NCDOT is requesting a final JD with this permit.	☒ 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): Erin Cheely	Agency/Consultant Company: NCDOT Other: No JD issued due to only perennial streams.	
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**	0 Permanent 0 Temporary

2h. Comments: No wetlands within the project limits

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	Impervious Dike	Norkett Branch	☒ PER ☐ INT	☒ Corps ☐ DWQ	10	8 (<0.01ac)
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	0 Perm 8 Temp

3i. Comments: <0.01ac (8lf) of temporary impact from installation of impervious dikes. Once dikes are in place, a 32'x9'x60' crownspan culvert will be installed. No permanent impacts. No impacts from bridge demolition or utility relocation.

4. Open Water Impacts

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

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

4g. Comments: No open waters within project limits

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: Project is not in a protected buffer area.

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 new crownspan bottomless culvert will be located on the same alignment as the existing bridge. There is a reduction of impervious area for this project, due to the elimination of the paved shoulder at the existing bridge deck location. Water will not discharge directly from the roadway into the creek. The roadway runoff will receive treatment from the open, grass shoulders and fill slopes. The walls of the proposed final crownspan structure will be set back from the existing top of stream bank at least 1 foot.

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

By using a bottomless culvert, the natural streambed will be preserved and fish passage will not be impeded. The use of impervious dikes during culvert construction will avoid any permanent impacts to the stream and minimize the temporary impacts as well.

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: Only temporary impacts, no permanent.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigat ion option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

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

3c. Comments:

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

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

4h. Comments: The NCDOT does not propose mitigation for the <0.01ac of temporary impacts from impervious dike installation. This impact does not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act,does not constitute Loss of Waters of the U.S. and is not subject to compensatory mitigation.

5. Complete if Using a Permittee Responsible Mitigation Plan

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

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?			☐ Yes	☒ No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments:				

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

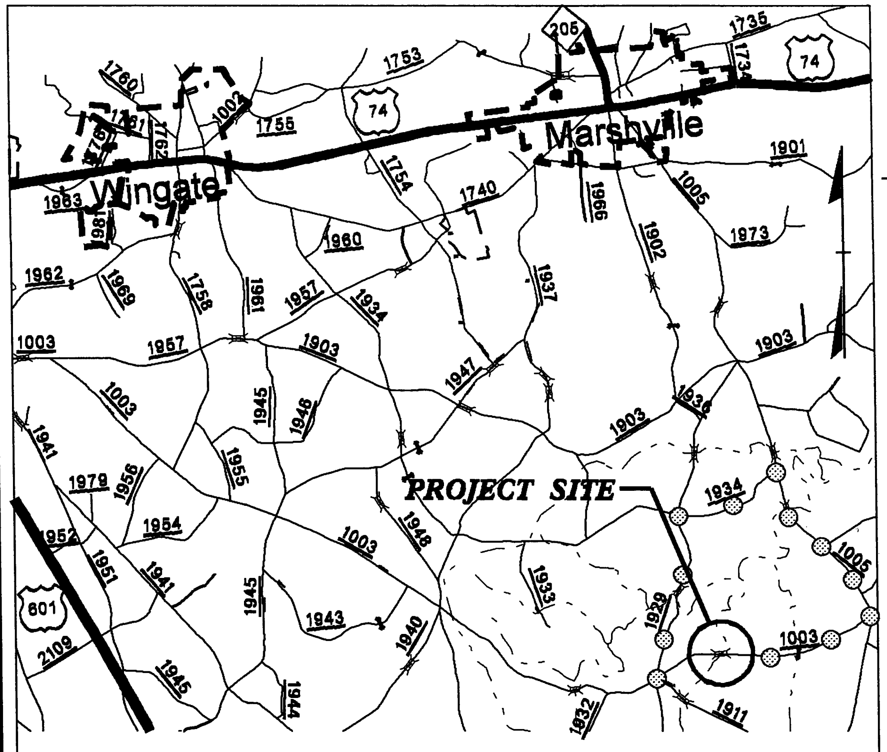
F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes	☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments: PCE signed June 2010	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No	
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, ind icate the USFWS Field Office you have contacted.	☐ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? While habitat exists within the project area for Michaux's sumac and Schweinitz's sunflower, no individuals of these species are found within the project limits (project area was surveyed by NCDOT biologists in 2007, 2009 and 2011). The project has also been surveyed for Carolina heelsplitter by NCDOT biologists, and no mussels of any species were found, with the nearest heelsplitter occurance being over 15 miles (straight-line distance) away. This project will have no effect on any Federally Threatened or Endangered species listed for Union 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? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☐ Yes	☒ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Lusk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	6-1-12 Date

09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional symbols
See Sheet 1-C For Survey Control



VICINITY MAP

OFF-SITE DETOUR ●—●—●—●

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UNION COUNTY

LOCATION: BRIDGE No. 453 ON SR 1003 (WHITE STORE RD.) OVER NORKETT CREEK

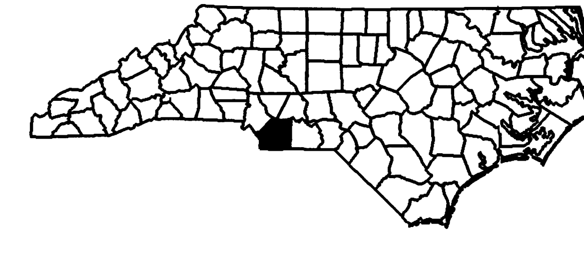
TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL, & CULVERT

WETLAND & STREAM IMPACTS

ENGLISH

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4824	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38594.1.1	BRSTP-1003(40)	PE
38594.2.1	BRSTP-1003(40)	ROW /UTL.



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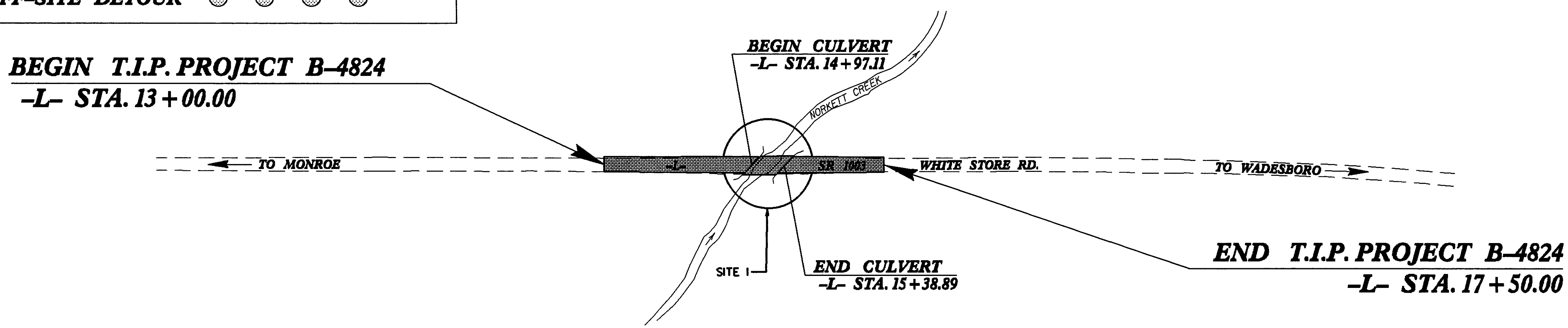
NC GRID
NAD 83/2001



Permit Drawing
Sheet 1 of 7

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PREFORMED TO THE LIMITS ESTABLISH BY METHOD III.

TIP PROJECT: B-4824

CONTRACT: C203084

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 2013 = 656
ADT 2035 = 900
DHV = 13 %
D = 65 %
T = 8 % *
V = 50 MPH
* TTST 2% DUAL 6%
FUNC CLASS = RURAL COLL.
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT = 0.077 MI.

LENGTH STRUCTURE T.I.P. PROJECT = 0.008 MI.

TOTAL LENGTH OF T.I.P. PROJECT = 0.085 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 16, 2012

LETTING DATE:
MARCH 19, 2013

JASON MOORE, PE
PROJECT ENGINEER

BRYAN C. KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

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

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES

ALL IMPACTS EXIST WITHIN NCDOT ROW

Permit Drawing
Sheet 2 of 7

NCDOT

DIVISION OF HIGHWAYS
UNION COUNTY
PROJECT: 38594.1.1 (B-4824)
BRIDGE NO. 453 ON
SR 1003 (WHITE STORE RD.)
OVER NORKETT CREEK

SHEET OF **4/17/12**

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND 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)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 15+32 to 15+37 LT.	1@32'x9'x60' Crownspan							<0.01		8	
TOTALS:			0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	8	0.00

Temporary surface water impact due to temporary impervious dike.

N.C.D.O.T.
DIVISION OF HIGHWAYS
UNION COUNTY
PROJECT: 38594.1.1 (B-4824)
REPLACEMENT OF BRG. #453
ON SR 1003 (WHITE STORE ROAD)
OVER NORKETT CREEK
SHEET (4/12/2012)

ATN Revised 3/31/05

Permit Drawing
Sheet 3 of 7

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4824	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

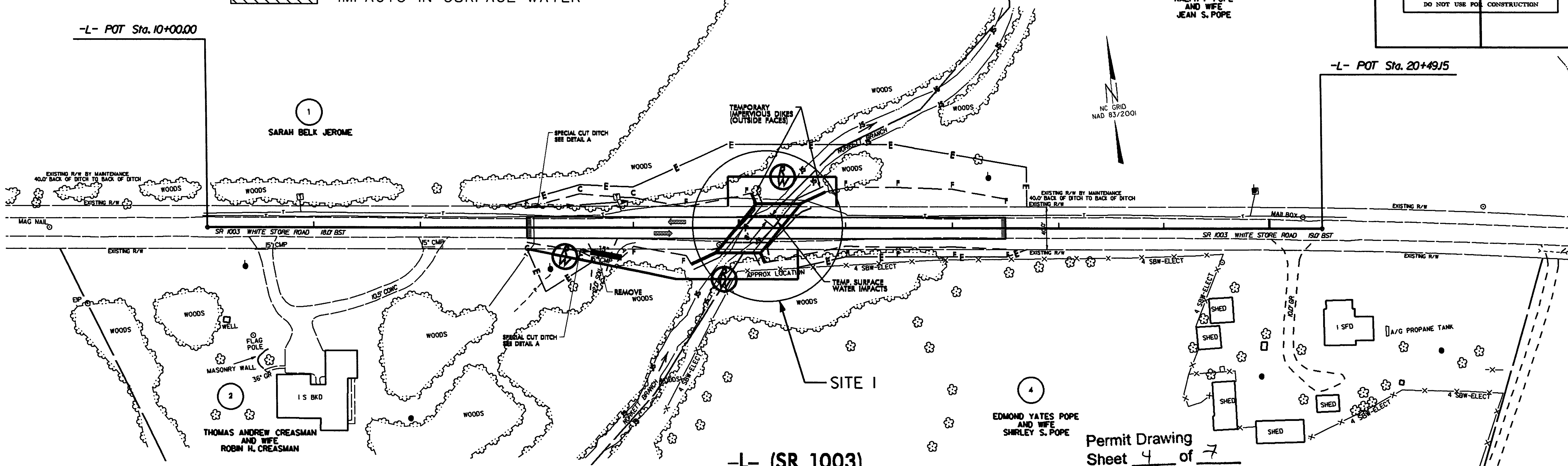
WETLAND & STREAM IMPACTS

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D=1.0 Ft.

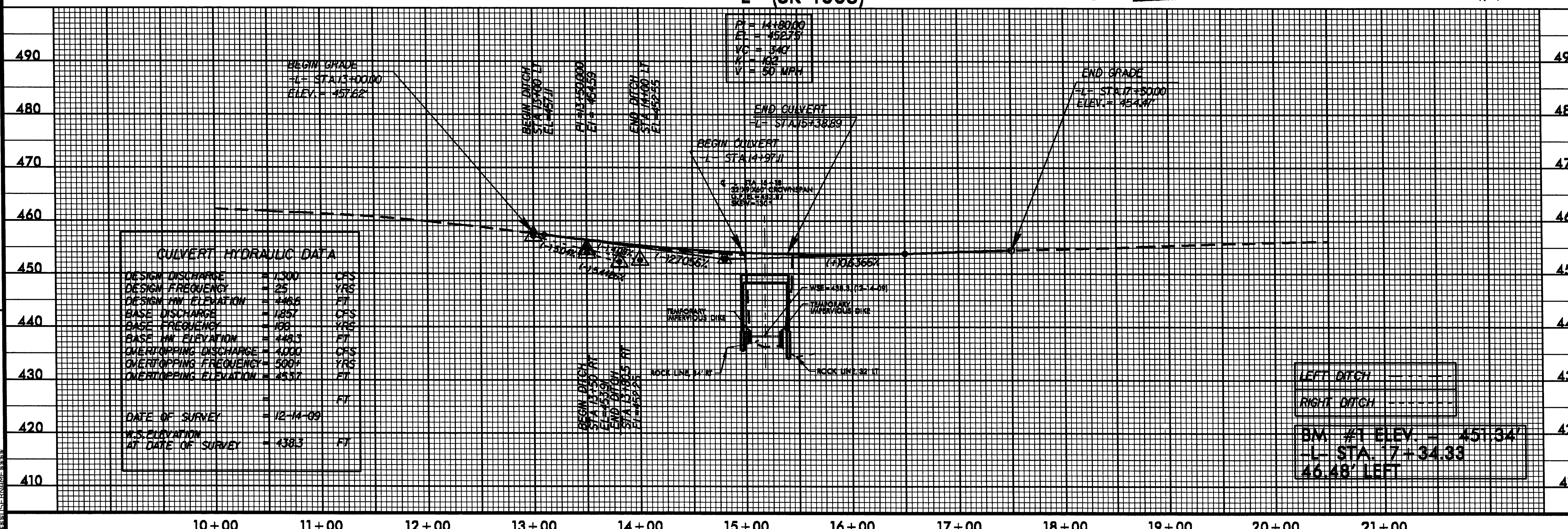
-L- STA. 13+50 TO STA. 13+59 RT.
-L- STA. 13+00 TO STA. 14+00 LT.

100' 0' 100'
GRAPHIC SCALE

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



-L- (SR 1003)



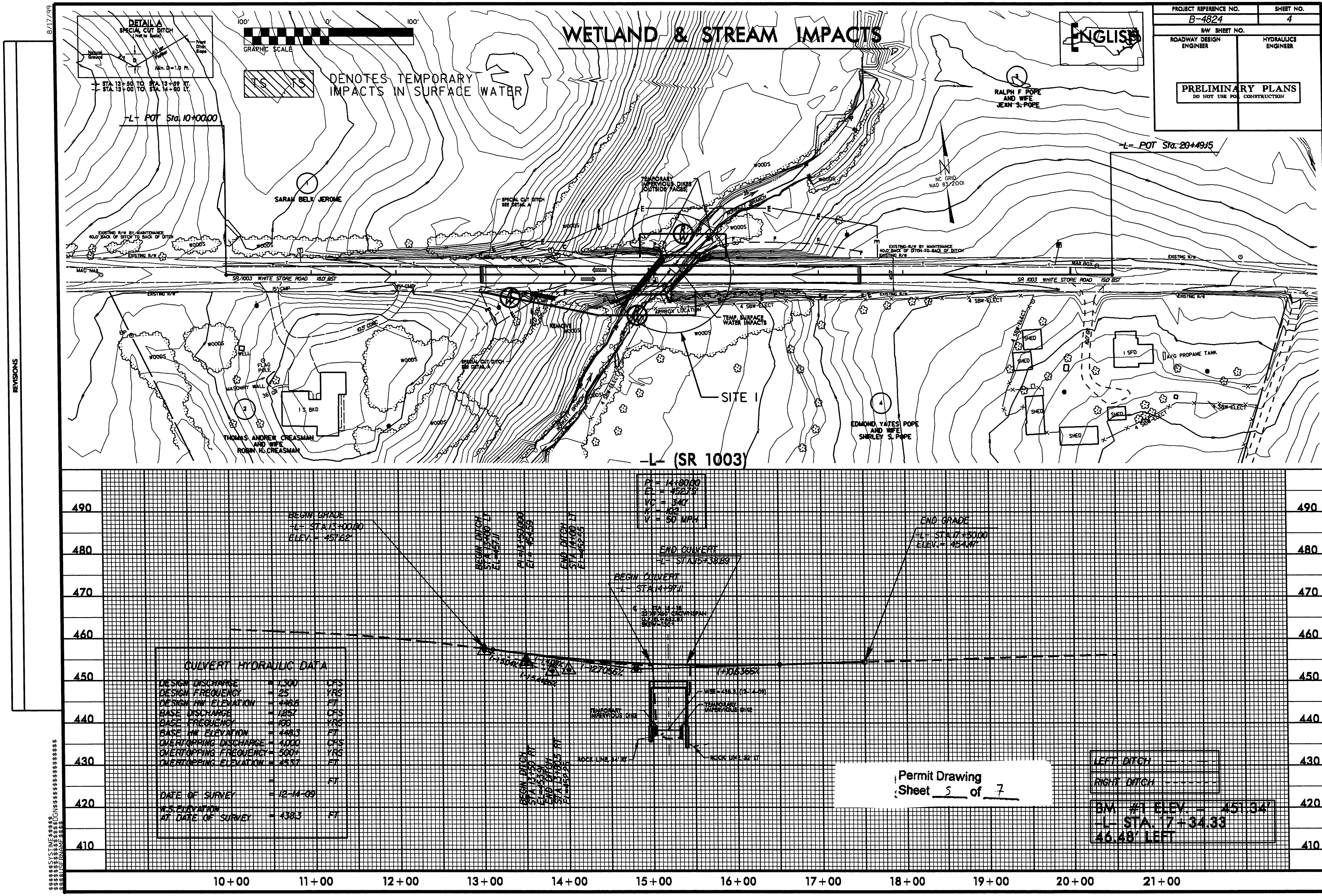
CULVERT HYDRAULIC DATA

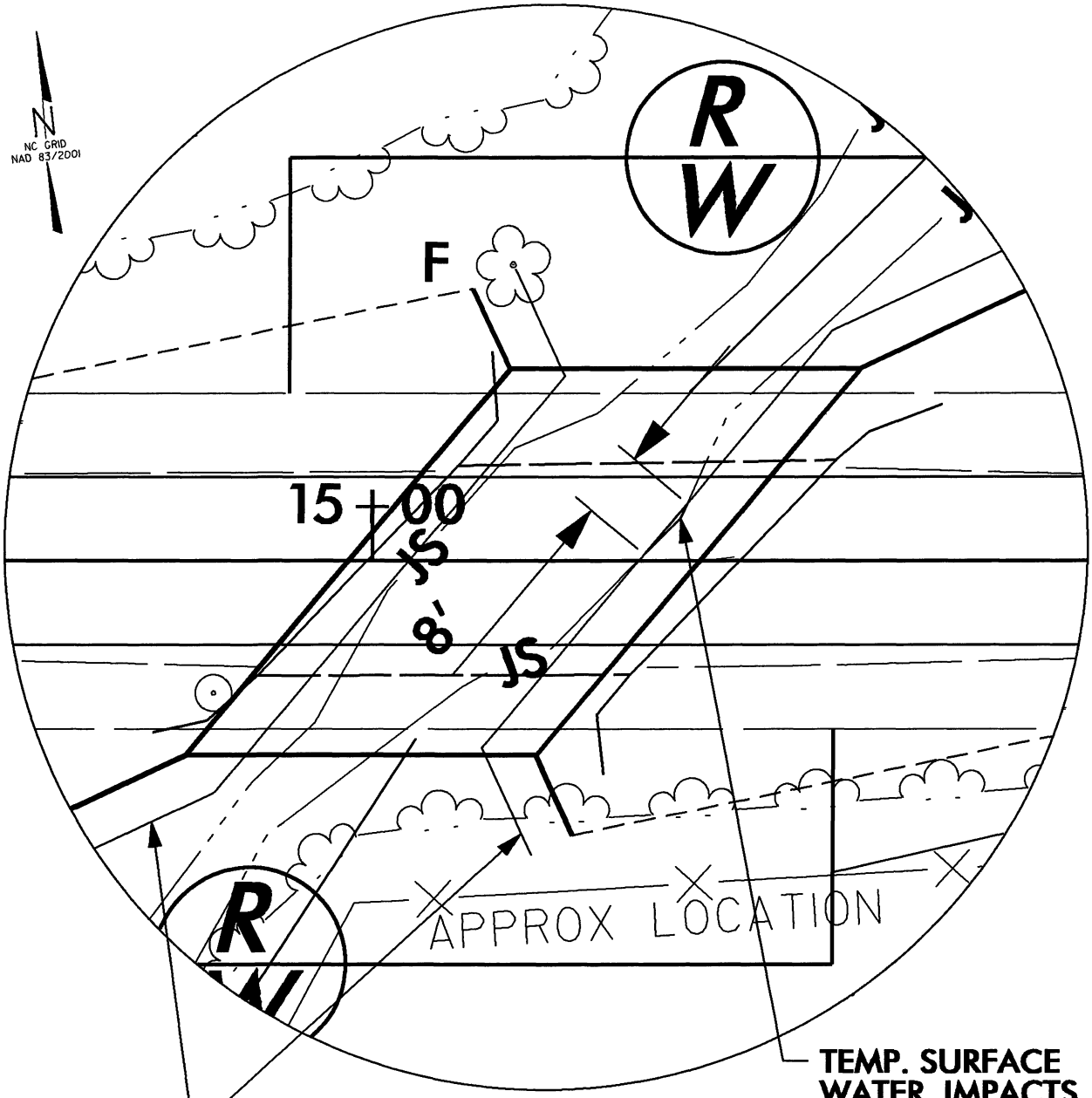
DESIGN DISCHARGE	=	1,300	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	446.6	FT
BASE DISCHARGE	=	1,857	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	448.3	FT
OVERTOPPING DISCHARGE	=	4,000	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	453.7	FT
	=		FT
DATE OF SURVEY	=	12-14-09	
W.S. ELEVATION AT DATE OF SURVEY	=	438.3	FT

BM #1 ELEV. = 451.34'
-L- STA. 17+34.33
46.48' LEFT

Permit Drawing
Sheet 4 of 7

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


WETLAND & STREAM IMPACTS
PROJECT REFERENCE NO.
B-4824
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
ENGLISH
8/17/99
REVISIONS
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D=1.0 Ft.
-L- STA. 13+50 TO STA. 13+59 RT.
-L- STA. 13+00 TO STA. 14+00 LT.
GRAPHIC SCALE
100'
0'
100'
TS
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-L- POT Sta. 10+00.00
-L- POT Sta. 20+49.15
SARAH BELK JEROME
RALPH F POPE AND WIFE JEAN S. POPE
THOMAS ANDREW CREASMAN AND WIFE ROBIN H. CREASMAN
EDMOND YATES POPE AND WIFE SHIRLEY S. POPE
NC GRID NAD 83/2001
EXISTING R/W BY MAINTENANCE 40.0' BACK OF DITCH TO BACK OF DITCH
EXISTING R/W
MAG NAIL
SR 1003 WHITE STORE ROAD 18.0' BST
SR 1003 WHITE STORE ROAD 19.0' BST
15" CMP
10.5' CONC
SPECIAL CUT DITCH SEE DETAIL A
TEMPORARY IMPERVIOUS DIKES (OUTSIDE FACES)
NORKETT BRANCH
APPROX LOCATION
TEMP. SURFACE WATER IMPACTS
SITE 1
REMOVE WOODS
WOODS
WELL
FLAG POLE
MASONRY WALL
1 S BKD
1 SFD
SHED
A/G PROPANE TANK
MAIL BOX
4 SBW-ELECT
-L- (SR 1003)
PI = 14+80.00
EL = 452.75'
VC = 340'
K = 192
V = 50 MPH
BEGIN GRADE -L- STA.13+00.00 ELEV. = 457.62'
END GRADE -L- STA.17+50.00 ELEV. = 454.47'
BEGIN DITCH STA 13+00 LT EL=457.11
PI =13+50.000 El = 454.59
END DITCH STA 14+00 LT EL=452.55
BEGIN DITCH STA 13+50 RT EL=453.91
END DITCH STA 13+80.5 RT EL=452.25
BEGIN CULVERT -L- STA.14+97.11
END CULVERT -L- STA.15+38.89
℄ -L- STA 15+18 32'X9'X60' CROWNSPAN G.P. EL=433.87 SKEW=130°
(-)1.504%
(-)1.4%
(-)5.4420%
(-)1.27056%
(+)0.6366%
WSE=438.3 (12-14-09)
TEMPORARY IMPERVIOUS DIKE
ROCK LINE 34' RT
ROCK LINE 32' LT
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 1,300 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 446.6 FT
BASE DISCHARGE = 1,857 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 448.3 FT
OVERTOPPING DISCHARGE = 4,000 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 455.7 FT
= FT
DATE OF SURVEY = 12-14-09
W.S. ELEVATION AT DATE OF SURVEY = 438.3 FT
LEFT DITCH
RIGHT DITCH
BM #1 ELEV. = 451.34'
-L- STA. 17+34.33
46.48' LEFT
Permit Drawing
Sheet 5 of 7
490
480
470
460
450
440
430
420
410
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$



SITE 1 ENLARGEMENT

TS | TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

20′ 0′ 20′

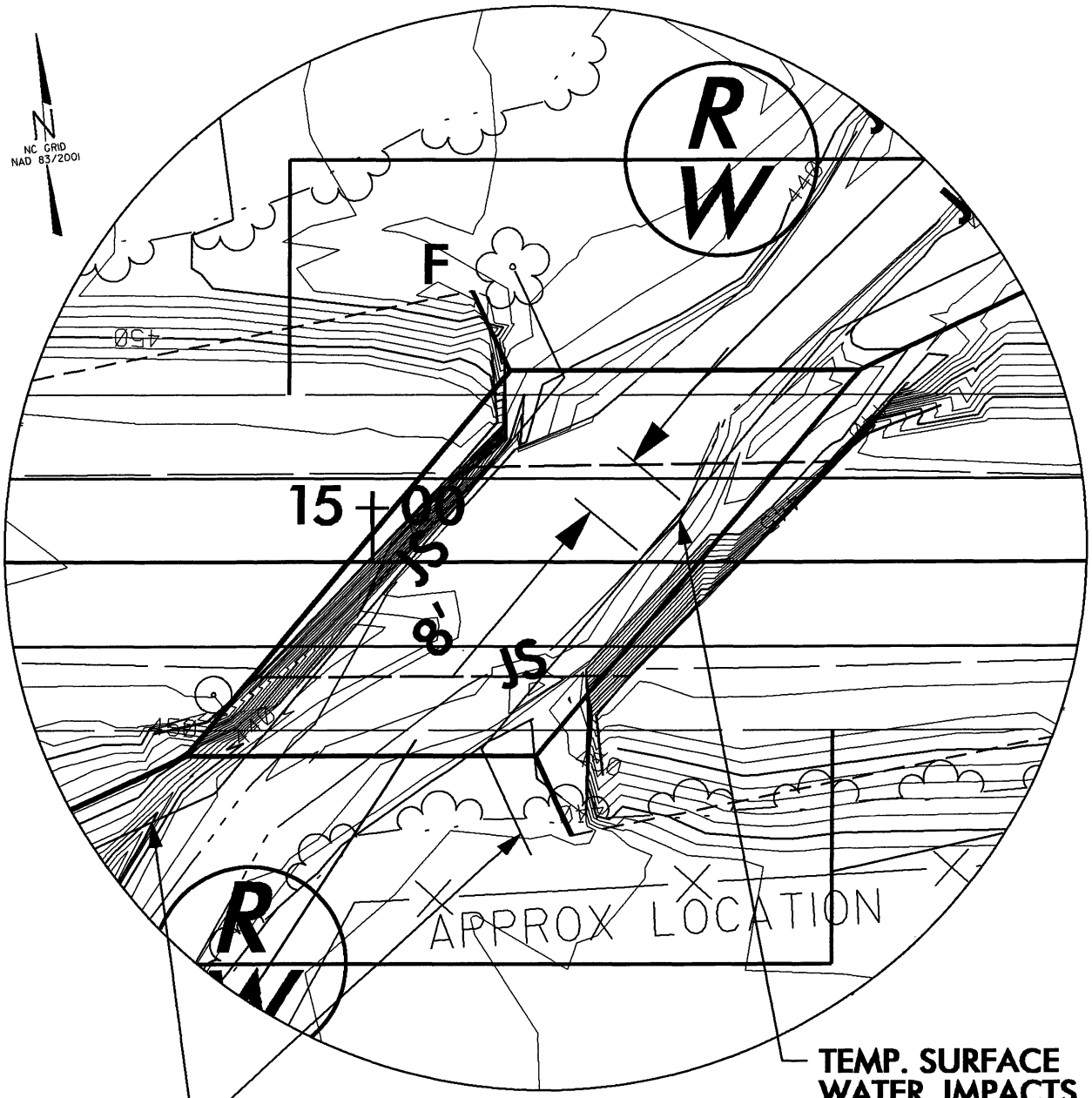
GRAPHIC SCALE

Permit Drawing
Sheet 6 of 7

NCDOT

DIVISION OF HIGHWAYS
UNION COUNTY
PROJECT: 38594.1.1 (B-4824)
BRIDGE NO. 453 ON
SR 1003 (WHITE STORE RD.)
OVER NORKETT CREEK

SHEET OF 4/12/12



SITE 1 ENLARGEMENT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

20′ 0′ 20′

GRAPHIC SCALE

Permit Drawing
Sheet 7 of 7

NCDOT

DIVISION OF HIGHWAYS
UNION COUNTY
PROJECT: 38594.1.1 (B-4824)
BRIDGE NO. 453 ON
SR 1003 (WHITE STORE RD.)
OVER NORKETT CREEK

SHEET OF 4/12/12

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: B-4824 **County(ies):** Union

General Project Information

Project No.:	B-4824		**Project Type:**	Bridge Replacement	**Date:** 4/20/2012
NCDOT Contact:	Linda Johns		**Contractor / Designer:**	NCDOT Division of Highways is the designer	
	Address: NCDOT 1590 MSC Raleigh, NC 27699-1590			**Address:** (Same as NCDOT contact)	
	Phone: (919) 707-6700			**Phone:** (919) 707-6700	
	Email: lmjohns@ncdot.gov			**Email:**	
City/Town:	Marshville		**County(ies):**	Union	
River Basin(s):	Yadkin-Pee Dee		**CAMA County?**	No	
Primary Receiving Water:	Norkett Branch		**NCDWQ Stream Index No.:**		
NCDWQ Surface Water Classification for Primary Receiving Water		**Primary:**	Water Supply V (WS-V)		
		Supplemental:			
Other Stream Classification:	None				
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	0.077 miles	**Surrounding Land Use:**	Agriculture, forests and rural residential.

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.21 ac.	0.22 ac.
Typical Cross Section Description:	This roadway is a rural major collector using subregional tier design guidelines, 2@10' lanes, 3' unpaved shldrs. Where guardrail is present, shoulder is 7' unpaved.	The existing -L- line is 2@9' wide with 5 foot unpaved shoulders. The runoff from the existing bridge deck receives treatment from grass shoulders and fill slopes.
Average Daily Traffic (veh/hr/day):	Design/Future: 644/900	Existing: not posted

General Project Narrative:

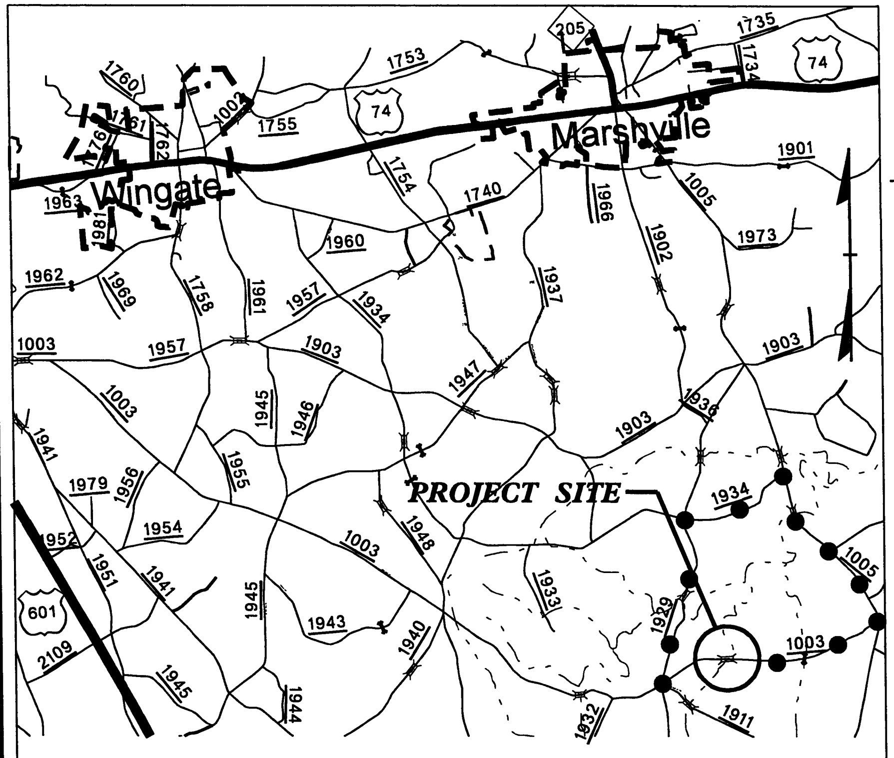
Replace bridge #453 and approaches for SR 1003 (White Store Road) with a 32'x9'x60' Crownspan bottomless culvert. The new culvert will be located along the same roadway alignment. There is a reduction of impervious area for this project, due to the elimination of the paved shoulder at the existing bridge deck location. The roadway runoff will receive treatment from the open, grass shoulders and fill slopes.

References

09/08/99

TIP PROJECT: B-4824

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional symbols
See Sheet 1-C For Survey Control



VICINITY MAP

OFF-SITE DETOUR ●—●—●—●

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

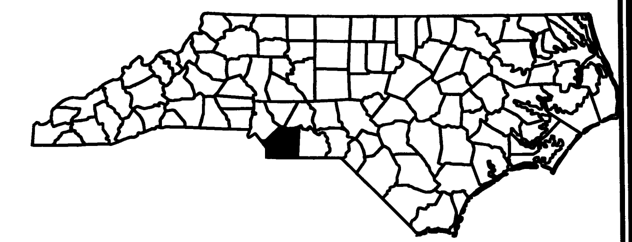
UNION COUNTY

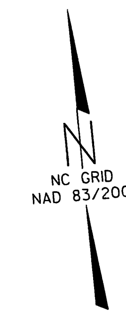
LOCATION: BRIDGE No. 453 ON SR 1003 (WHITE STORE RD.) OVER NORKETT CREEK

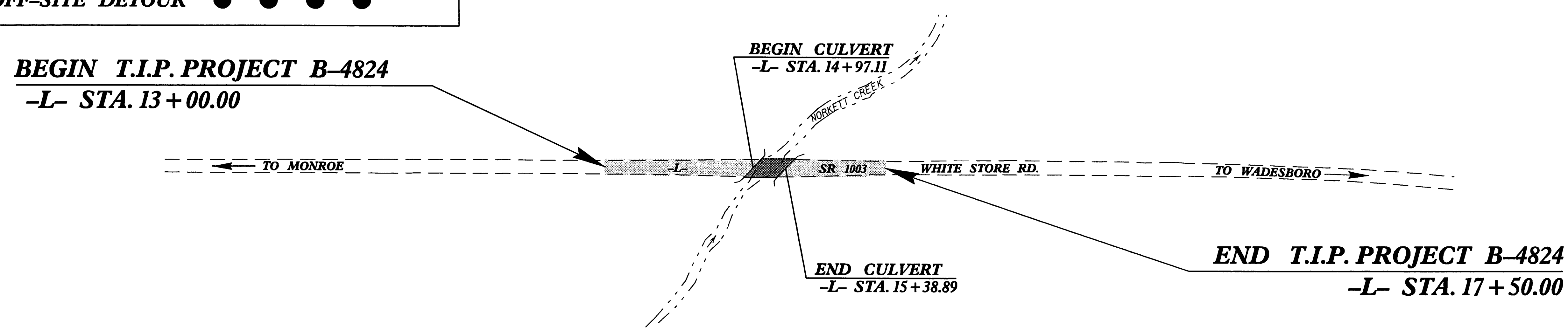
TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL, & CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4824	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38594.1.1	BRSTP-1003(40)	PE
38594.2.1	BRSTP-1003(40)	ROW /UTL.







THIS PROJECT IS NOT WITHIN MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PREFORMED TO THE LIMITS ESTABLISH BY METHOD III.

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 2013 = 656
ADT 2035 = 900
DHV = 13 %
D = 65 %
T = 8 % *
V = 50 MPH
* TTST 2% DUAL 6%
FUNC CLASS = RURAL COLL.
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT = 0.077 MI.

LENGTH STRUCTURE T.I.P. PROJECT = 0.008 MI.

TOTAL LENGTH OF T.I.P. PROJECT = 0.085 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 16, 2012

LETTING DATE:
MARCH 19, 2013

JASON MOORE, PE
PROJECT ENGINEER

BRYAN C. KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

CONTRACT:

21-MAR-2012 12:18
R:\Roadway\Proj\b4824_rdy_tsh.dgn
$$$$USERNAME$$$$

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4824	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth — T
- 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

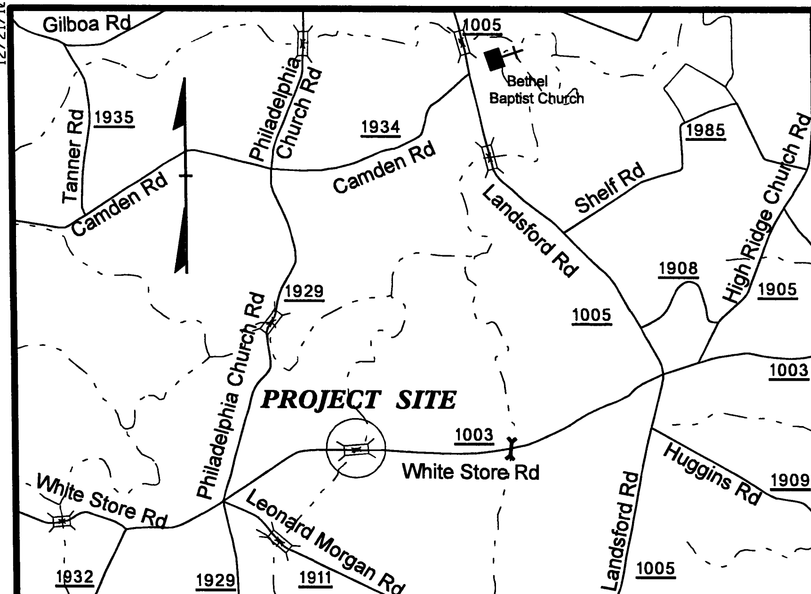
MISCELLANEOUS:

- 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.

12/21/10

PROJECT REFERENCE NO.	SHEET NO.
B-4824	1-C
Location and Surveys	

SURVEY CONTROL SHEET



VICINITY MAP

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4824-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 422153.073(ft) EASTING: 1592202.103(ft)
ELEVATION: 470.38(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4824-1" TO -L- STATION 10+00.00 IS
S 83°28'48.7" E 617.143
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4824_LS_CONTROL.TXT
   B4824_LS_LOCAL.TXT

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

3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)*

MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:

● *INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL.*
■ *INDICATES BASELINE MONUMENTS FOR HORIZONTAL CONTROL*
☒ *INDICATES BENCHMARKS FOR VERTICAL CONTROL*

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4824-1	422153.0730	1592202.1030	470.38	OUTSIDE PROJECT LIMITS	
101	BL-101	422069.8550	1592813.4990	461.57	OUTSIDE PROJECT LIMITS	
102	BL-102	422055.1090	1593322.9010	453.20	15+08.17	15.82 LT
103	BL-103	421973.8410	1593883.7080	455.18	OUTSIDE PROJECT LIMITS	
2	B4824-2	421933.8800	1594399.3300	456.25	OUTSIDE PROJECT LIMITS	

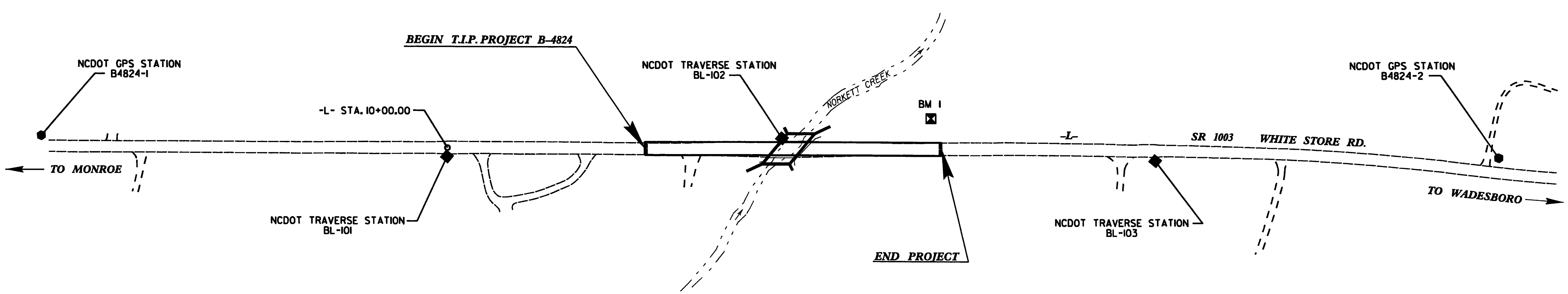
****
BM1 ELEVATION = 451.34
N 422066 E 1593551
L STATION 17+34 46 LEFT
RR SPIKE IN POWER POLE
****

R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+00.00	20.00	422037.3043	1593112.4277
L	14+40.00	48.00	421997.3827	1593249.5053
L	14+90.00	-20.00	422060.8367	1593305.1613
L	14+90.00	-48.00	422088.7332	1593307.5663
L	15+55.00	48.00	421987.5049	1593364.0803
L	15+55.00	20.00	422015.4014	1593366.4853
L	15+92.00	-48.00	422079.9720	1593409.1893
L	15+92.00	-20.00	422052.0755	1593406.7843

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	422082.9986	1592815.2543
POT	20+49.15	421992.8830	1593860.5269



NOTE: DRAWING NOT TO SCALE

15-MAR-2012 18:28
R:\Roadway\Proj\b4824_ls_1c.dgn
$$$$USERNAME$$$$

6/2/99

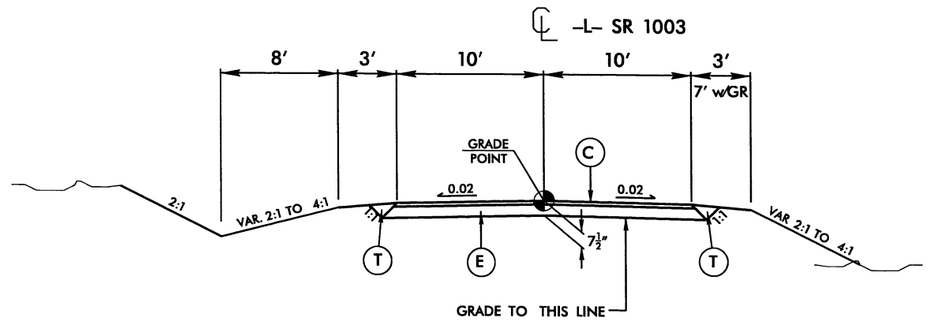
PROJECT REFERENCE NO.	SHEET NO.
B-4824	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

C	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL.
E	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.

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



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA. 13+00.00 TO –L– STA. 17+50.00

15-MAR-2012 18:28
B-4824_rdy_typ.dgn

6/16/99

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIERS	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	GRAU 350	AT-1	CAT-1	TYPE III	B-77				NO.	PERMITTED G	PERMITTED NG				
-L-	14+00.00	17+50.00	RT	350.00	25.00		14+85.37	15+30.33	4'	7'	50'	50'	1'	1'		1	1													
-L-	17+50.00	13+50.00	LT	400.00			15+50.63	15+08.86	4'	7'	50'	50'	1'	1'		2														
			-L- SUBTOTALS	750.00	25.00											3	1													
	DEDUCTION FOR GUARDRAIL ANCHOR FT =			-156.25											GRAU 350 3 EA @ 50.00 FT = 150.00															
															AT-1 1 EA @ 6.25 FT = 6.25															
			TOTALS	593.75	25.00										DEDUCTION FOR GUARDRAIL ANCHOR FT = 156.25															
			SAY	600.00	25.00																									
ADDITIONAL GUARDRAIL POSTS 5 EA																														

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBT+%	BORROW	WASTE
-L- STA. 13+00.00 TO STA. 17+50.00	131	342	211	0
SUBTOTAL	131	342	211	0
PROJECT SUBTOTALS	131	342	211	0
LOSS DUE TO CLEAR. & GRUB.			30	0
WASTE IN LIEU OF BORROW				
REPLACE TOPSOIL IN BORROW PIT			12	
GRAND TOTALS	131		253	
SAY	150		300	

UNDERCUT EXCAVATION = 100 CU. YD.

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.

SUMMARY OF PAVEMENT REMOVAL

IN SQUARE YARDS

LINE	STATION	LOCATION	REMOVAL
-L-	13+00.00 TO 14+98.00	CL	450
-L-	15+45.00 TO 17+50.00	CL	462
		PROJECT TOTAL	912.44
		SAY	920

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUB-REGIONAL & REGIONAL

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

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

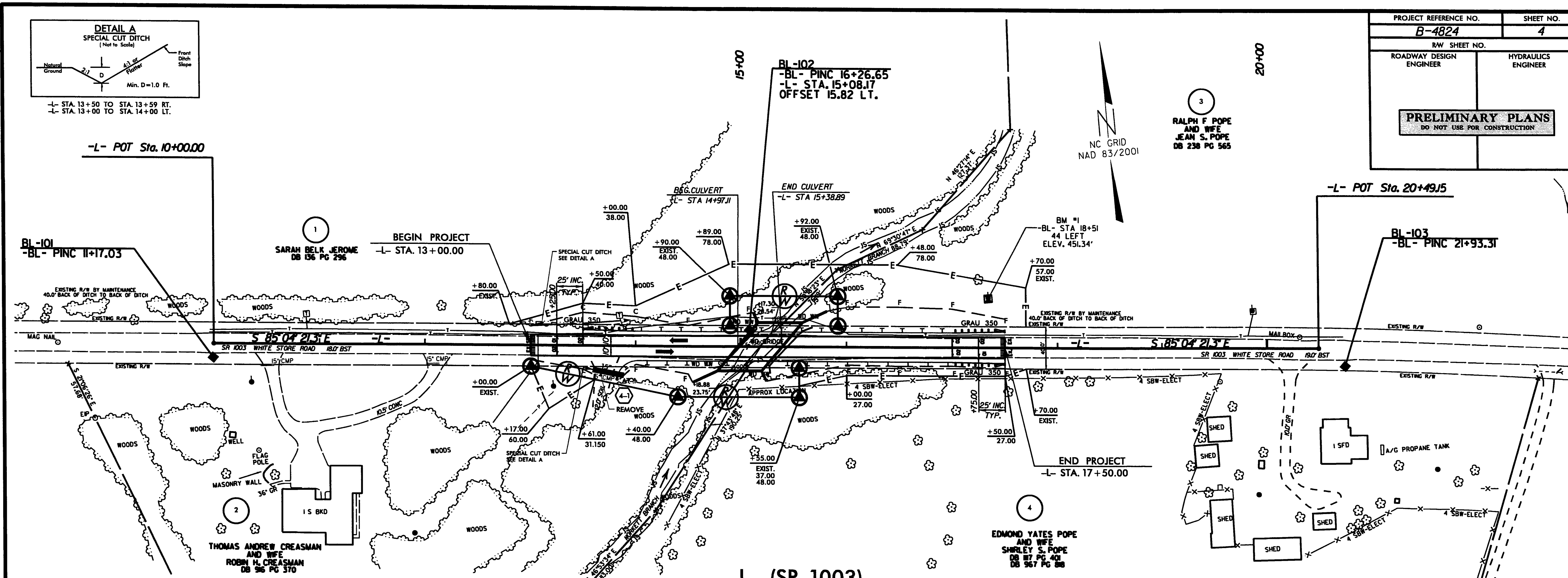
STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	*** R. C. PIPE (CLASS V)	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET		G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L-																																																																					
13+65	RT.	4-1							24'																																																												REMOVE EXIST. PIPE
TOTAL									24'																																																												
SAY									24'																																																												

ABBREVIATIONS

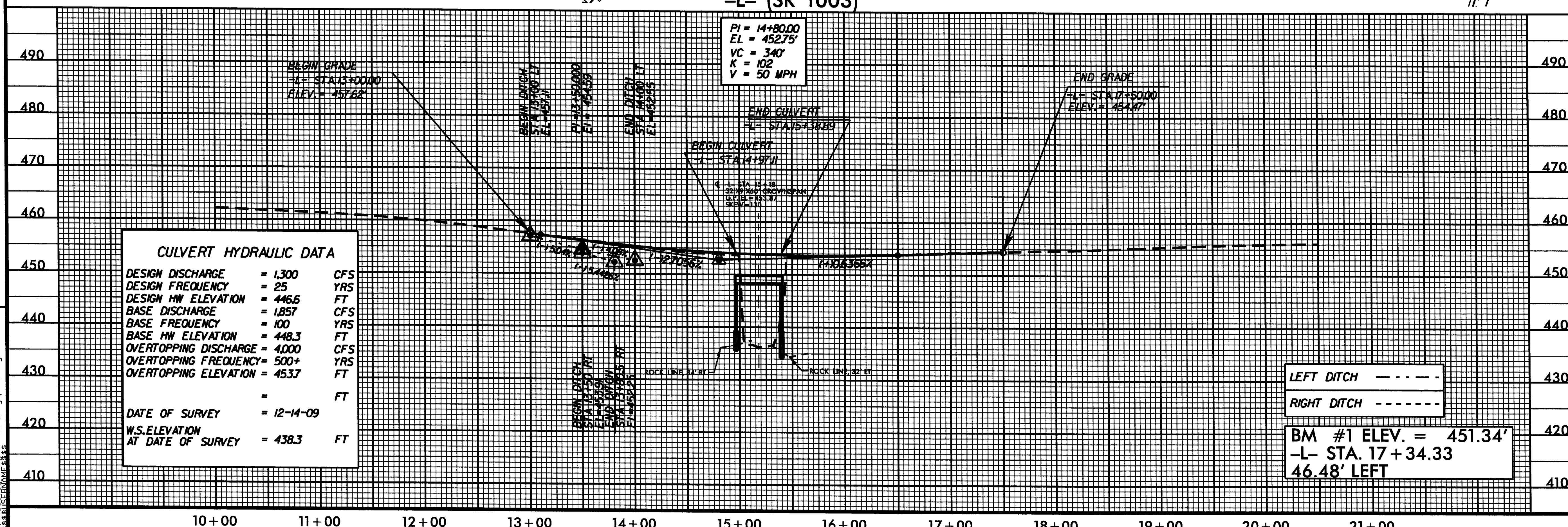
- C.B. CATCH BASIN
- N.D.I. NARROW DROP INLET
- D.I. DROP INLET
- G.D.I. GRATED DROP INLET
- G.D.I. (N.S.) GRATED DROP INLET (NARROW SLOT)
- J.B. JUNCTION BOX
- M.H. MANHOLE
- T.B.D.I. TRAFFIC BEARING DROP INLET
- T.B.J.B. TRAFFIC BEARING JUNCTION BOX

PROJECT REFERENCE NO.	SHEET NO.
B-4824	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L- (SR 1003)



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1,300	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	446.6	FT
BASE DISCHARGE	=	1,857	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	448.3	FT
OVERTOPPING DISCHARGE	=	4,000	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	453.7	FT
	=		FT
DATE OF SURVEY	=	12-14-09	
W.S. ELEVATION AT DATE OF SURVEY	=	438.3	FT

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

BM #1 ELEV. = 451.34'
-L- STA. 17+34.33
46.48' LEFT

REVISIONS

8/17/99

19-MAR-2012 10:16
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4824	X-1

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

470 465 460 455 450

4:1 2:1 4:1 2:1

0.020 0.020

454.59 456.33 453.91

13+50.00

GRADE TO EXIST. SHOULDER

GRADE TO EXIST. SHOULDER

0.000 0.010

457.107 457.65 457.250

13+00.00

458.85

12+50.00

459.98

12+00.00

—L—

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8/23/99

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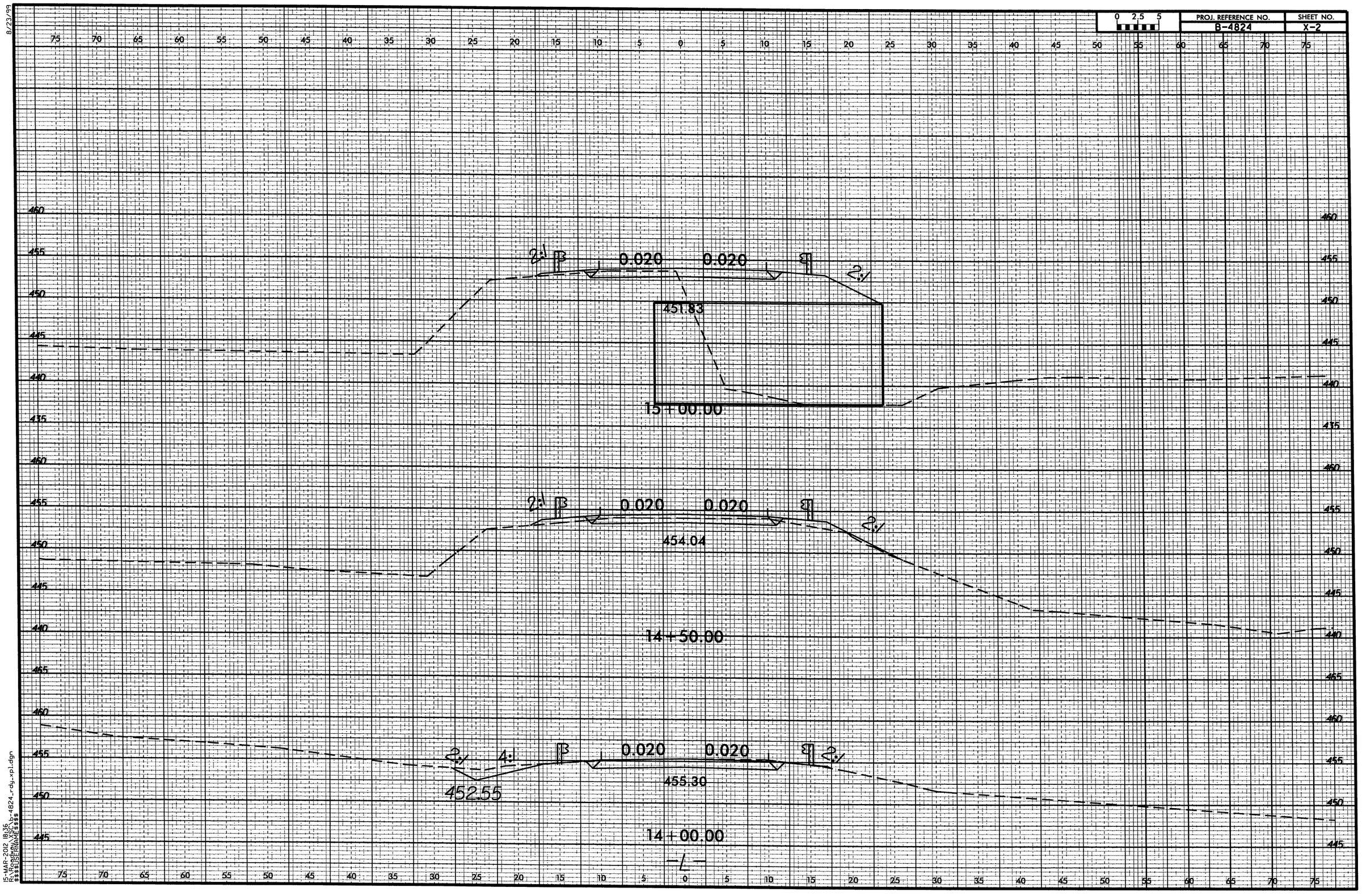

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4824	X-3

16+50.00

0.020 0.020

2:1 2:1

453.87

16+00.00

0.020 0.020

2:1 2:1

453.68

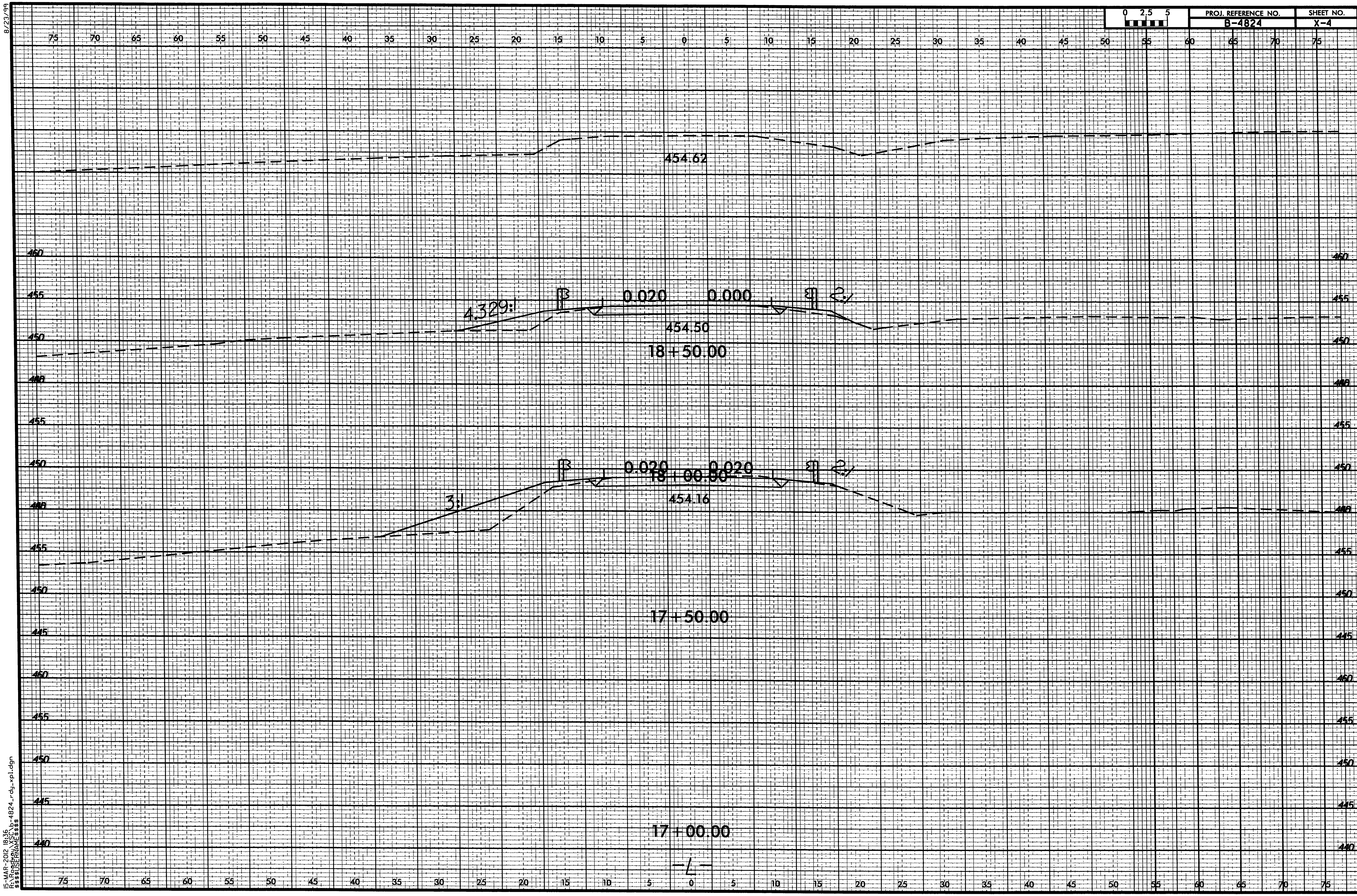
15+50.00

0.020 0.020

2:1

453.51

8/23/99



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