STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

June 8, 2012

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

ATTN: Mr. Monte Matthews
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 23 & 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 59 over the South Fork of the New River on SR 1331 in Watauga County, Federal Aid Project No. BRZ-1331(12); Division 11; TIP No. B-4836 $570.00 debit WBS No. 38606.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 59 (a one-lane bridge) over the South Fork of the New River on SR 1331 with a 2-lane, 217-foot long, 4-span bridge. Impacts will be as follows:

To South Fork New River (SFNR):
- 63 linear feet of streambank stabilization to minimize erosion and sedimentation, and
- 0.05 acre of temporary impacts for the placement of temporary work pads. Please note that the temporary work pads on one bank are to be removed before installation of the temporary work pads on the opposite bank, as noted on the permit drawings (Sheet 4-6 of 8).

To a UT to SFNR, due to relocation of the UT:
- 174 linear feet of permanent stream impact (158 LF of fill and 16 LF of stream bank stabilization) and,
- 0.06 acre of permanent impacts to a wetland.

NCDOT does not propose mitigation for stream bank stabilization along the **SFNR**. Stabilizing the bank of a stream does not require 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 by the USACE.

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

Mitigation for the stream bank stabilization along the **UT to SFNR** will be required by NCDWQ, as the total impacts to the UT exceed 150 linear feet. Mitigation confirmation has been received from EEP. As noted in the PCN, the USACE is not requiring mitigation for impacts to the **UT to SFNR** (due to lack of function) or for impacts to the associated wetland (due to limited function). This determination was made in the field by Monte Mathews during the June 17, 2011 site visit, and confirmed by him in a March 9, 2012 e.mail.

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, Stormwater Management Plan, permit drawings, and design plans. Rapanos forms were included in a letter submitted (dated September 21, 2011), requesting a Jurisdictional Determination at the time of permitting. A Categorical Exclusion (CE) was completed in July 2011 and distributed shortly thereafter. Additional copies are available upon request.

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.

This project calls for a letting date of January 15, 2013 and a review date of November 27, 2012; however, the let date may advance as additional funding becomes available.

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 Bill Barrett at (919) 707-6103.

Sincerely,

E. L. Lusk

fcv 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: 23 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. 59 over the South Fork of the New River on SR 1331
2b. County:	Watauga County
2c. Nearest municipality / town:	Boone
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4836

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) 707-6103
3g. Fax no.:	(919) 212-5785
3h. Email address:	wabarrett@ncdot.gov

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

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 36.2487 (DD.DDDDDD)	Longitude: - 81.6210 (-DD.DDDDDD)
1c. Property size:	2.1 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	South Fork of the New River	
2b. Water Quality Classification of nearest receiving water:	C+	
2c. River basin:	New	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Land use in the project area is generally forested with several small fields on the west side of SR 1331.		
3b. List the total estimated acreage of all existing wetlands on the property: 0.06		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 3,500		
3d. Explain the purpose of the proposed project: To replace a structurally deficient bridge (sufficiency rating of 46.1 out of 100) / functionally obsolete bridge (deck geometry of 2 out of 9).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 153-foot bridge with a 217-foot, 4-span bridge on new alignment west of the existing structure. Traffic will be maintained on-site using the existing bridge during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: JD Site visit conducted June 17, 2011.	☒ 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): Jason Dilday	Agency/Consultant Company: NCDOT-NES Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. NCDWQ Determination dated September 21, 2011. JD package submitted to USACE (dated 9/21/2011) requesting JD at time of permitting.		
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	fill	non-tidal FW marsh	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.06
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**	0.06 Permanent

2h. Comments: Per June 17, 2011 JD site visit, mitigation will not be required for impacts to wetland, per USACE.

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	bank stabilization	South Fork New River	☒ PER ☐ INT	☒ Corps ☐ DWQ	80	63
Site 1 ☐ P ☒ T	work pads	South Fork New River	☒ PER ☐ INT	☒ Corps ☐ DWQ	80	65
Site 2 ☒ P ☐ T	fill	UT to South Fork New River	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	158
Site 2 ☒ P ☐ T	bank stabilization	UT to South Fork New River	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	16
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	237 Perm 65 Temp

3i. Comments:

4. Open Water Impacts

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

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

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

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

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ 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 54 feet longer than the existing bridge; Design Standards in Sensitive Watersheds will be implemented; 2:1 slopes will be utilized where practicable (see Plans); and there will be no riprap in the channel of the South Fork New River, just along the banks. Public access and parking for anglers has been maintained and NCDOT has incorporated canoe access into the project design.

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

The temporary work pads installed one one bank of the South Fork New River will be removed before installation of temporary work pads on the opposite bank.

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:	174 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:	NA acres
4f. Non-riparian wetland mitigation requested:	acres
4g. Coastal (tidal) wetland mitigation requested:	acres

4h. Comments: Mitigation was not requested, nor is it required, for streambank stabilization along the South Fork New River (SFNR), as bank stabilization does not require fill in the stream bed; therefore, under Section 404 of the CWA, does not constitute Loss of Waters of the US and is not subject to compensatory mitigation. Bank stabilization is necessary to prevent erosion and sedimentation.

Mitigation is required by NCDWQ, and has been obtained, for the streambank stabilization impacts to the intermittent UT to SFNR, as the combined impacts to the UT exceed 150 linear feet (158 LF of impact from fill and 16 LF of streambank stabilization to the UT to SFNR).

Pursuant to a 6/17/2011 site visit, the USACE is not requiring mitigation for the stream impacts to the UT to SFNR (due to lack of function), nor for impacts to the wetland (due to limited function).

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

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

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, 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? On-site surveys, NHP and USFWS websites. Habitat is present for only one species, the bog turtle, and no biological conclusion is required fo rthe bog turtle.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Luck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	June 7, 2012 Date

Ecosystem Enhancement PROGRAM

March 14, 2012

Mr. Gregory J. Thorpe, Ph.D.
Manager, Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4836, Replace Bridge Number 59 on SR 1331 over the South Fork of the New River, Watauga County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on March 12, 2012, the impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	174	0	0	0	0	0	0

EEP commits to implementing sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. 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

Michael Ellison
EEP Deputy Director

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: B-4836

NCDOT Highway Stormwater Program

Released: July 2010 (DRAFT)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

Version 1.1

Page of

General Project Information

Project No.:	B-4836		**Date:**	11-May-11		
City/Town:	BOONE		**Designer:**	PA/DDC		
County(ies):	Watauga County		**Project Manager:**	JWT		
River Basin(s):	New		**CAMA County?**	no	**TVA County?**	no
Primary Receiving Water:	New River		**NCDWQ Stream Index:**	10-1-(3.5)		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:** (C+)		Class C			
	Supplemental:					
Other Stream Classification:						
303(d) Stream?	no	**Type(s) of Impairment:**				
State Stormwater Permit Required?	no	**If yes, why?**				
Could the Project Impact Threatened or Endangered Species?			no			
Description:						
Anadromous Fish Present?	no					
Description:						
Buffer Rules in Effect?	no		**Buffer Rules:**			

Existing Site

Description of Existing Project Area:	BRIDGE NO. 59 OVER THE SOUTH FORK OF THE NEW RIVER ON SR 1331 (ROBY GREENE RD)
Average Daily Traffic (existing):	ADT 2013 = 115
Existing Cross Section:	24' WIDE GRAVEL ROAD SHOULDER SECTION. EXISTING BRIDGE: GRAVEL SURFACE, 1 LANE, 11.2 FT. CURB-TO-CURB
Surrounding Land Use:	WOODED MOUNTAINSIDE or FIELD/CROPLAND
General Comments:	

Project Description

Description of Proposed Project:	REALIGN ROADWAY IMMEDIATELY UPSTREAM OF EXISTING CROSSING. CONSTRUCT NEW BRIDGE, SHIFT TRAFFIC TO PROPOSED ALIGNMENT, & REMOVE EXISTING BRIDGE. IMPROVE (1) -Y- ALIGNMENT & POSSIBLY ADD A CANOE ACCESS PARKING LOT.		
Average Daily Traffic (proposed):	ADT 2033 = 192		
Proposed Cross-Section:	(2) 9 FT. LANES w/ 4 FT. to 9 FT. SHOULDERS ON -L- ALIGNMENT. SAME CONFIG. WITH 2 FT. SHOULDERS ON -Y- ALIGNMENT.		
Interchange Modification:	no	**Median Type:**	N/A
West **Terminus:**	APPROX. 300' SOUTH OF S. FORK OF THE NEW RIVER TOWARD SR 1391.		
East **Terminus:**	APPROX. 554' NORTH OF S. FORK OF THE NEW RIVER TOWARD SR 1356.		
Project Length (lin. miles/feet):	0.160 MI.	**Added Impervious Area (ac.):**	0.3+/-
General Comments:			

NCDOT Highway Stormwater Program

Released: July 2010 (DRAFT)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

Version 1.1

Environmental Summary

Riparian Buffer and Jurisdictional Stream Impacts and Associated SCMs

Station	Stream Name	Stream Type	Jurisdict. Stream	Buffer?	Classific-ation?	Proposed Structure	SCM Type	Checklist Complete?	DA (ac.)	Q_2 (ft^3/s)	Q_{10} (ft^3/s)	WQv^c (ft^3)
-L- 13+96 to 15+36	(POSSIBLE JS) UT			No			no					
-L- 12+76 to 14+91	SOUTH FORK NEW RIVER	Perennial	RPW	No	Class C	1@45', 1@70', 2@50' 24" CORED SLAB	no		71.6 SQ. MI.			

General Comments:

Jurisdictional Wetlands

Station	Type of Impact	Minimization of Impact
-L- 13+96 to 15+36	REDIRECT POSSIBLE JS TO SOUTH FORK NEW RIVER	MINIMIZE LENGTH OF CHANNEL IMPACT BY TIEING AS QUICKLY AS POSSIBLE
General Comments:		

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS						SURFACE WATER IMPACTS				
			CAMA Permanent Fill In Wetlands (ac)	404 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	-L- STA 13+15 TO	BRIDGE								0.05		58	
	-L- STA 14+07												
1	-L- STA 13+07 TO	BANK STABILIZATION									63		
	-L- STA 14+12												
2	-L- STA 13+95 TO	BRIDGE		0.06					<0.01		158		
	-L- STA 15+52												
2	-L- STA 15+37 TO	BANK STABILIZATION									16		
	-L- STA 15+52												
TOTALS:			0.00	0.06	0.00	0.00	0.00	0.00	<0.01	0.05	237	58	0

N.C.D.O.T.
DIVISION OF HIGHWAYS
WATAUGA COUNTY
PROJECT: 38606.1.1 (B-4836)
BRDGE NO. 59 OVER
THE SOUTH FORK OF THE
NEW RIVER ON SR 1331
SHEET 8 OF 8 (03/07/2012)

ATN Revised 3/31/05

Permit Drawing Sheet 1 of 8

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
2	Blackburn Charles	675 Tracy Circle Boone NC 28607

Permit Drawing
Sheet 2 of 8

NCDOT

DIVISION OF HIGHWAYS

CATAWBA COUNTY

PROJECT: 38606.1.1 (B-4836)

BRIDGE NO. 59 OVER THE SOUTH FORK OF THE NEW RIVER ON SR 1331

09/08/99

TIP PROJECT: B-4836

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ENGLISH

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4836	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38606.1.1	BRZ-1331(12)	P.E.
38606.2.1	BRZ-1331(12)	R/W & UTIL.

Permit Drawing
Sheet 3 of 8

WATAUGA COUNTY

LOCATION: BRIDGE NO. 59 OVER THE SOUTH FORK OF THE NEW RIVER ON SR 1331

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

WETLAND/SURFACE WATER PERMIT DWG.

VICINITY MAP N.T.S.

ROW PLANS

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

CONTRACT:

GRAPHIC SCALES

DESIGN DATA

ADT 2013 = 115
ADT 2033 = 195
DHV = 10 %
D = 60 %
T = 5 % *
V = 20 MPH
* (TTST = 2% + DUAL 3%)
FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4836 =	0.109 MI
LENGTH OF STRUCTURES TIP PROJECT B-4836 =	0.041 MI
TOTAL LENGTH OF TIP PROJECT B-4836 =	0.160 MI

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 19, 2011

LETTING DATE:
JANUARY 15, 2013

BRENDA MOORE, PE
PROJECT ENGINEER

TATIA L. WHITE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: ______ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: ______ P.E.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4836	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100' 0' 100'
GRAPHIC SCALE

ENGLISH

WETLAND/SURFACE WATER PERMIT DWG.

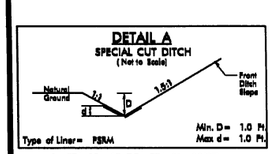
F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

Permit Drawing Sheet 4 of 8

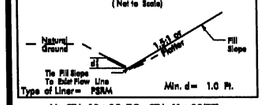
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM
Min. D= 1.0 Ft.
Max d= 1.0 Ft.

-L- STA. 10+65 TO STA. 11+50(RT)

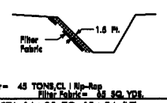
DETAIL B
SPECIAL LATERAL "V" DITCH
(Not to Scale)



Type of Liner= PSRM
Min. d= 1.0 Ft.

-Y- STA. 10+25 TO STA. 11+80(RT)

DETAIL G
BANK STABILIZATION
(Not to Scale)



Type of Liner= 45 TONS,CL I Rip-Rap
Filter Fabric= 68 SQ. YDS.

-L- STA. 14+95 TO 15+54 (LT)

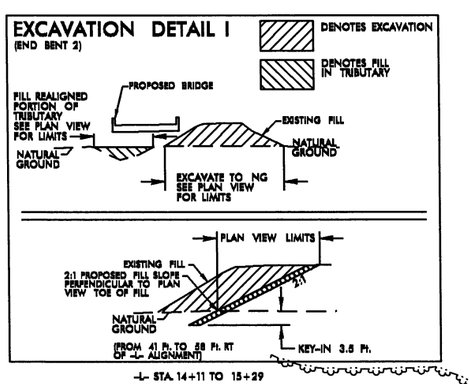
DETAIL H
BANK STABILIZATION
(Not to Scale)

Type of Liner= 131 TONS,CL II Rip-Rap
Filter Fabric= 133 SQ. YDS.
-L- STA. 13+12
-L- STA. 14+00

AVERY MORETZ
1

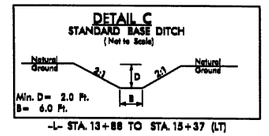
EXCAVATION DETAIL I
(END BENT 2)

DENOTES EXCAVATION
DENOTES FILL IN TRIBUTARY



-L- STA. 14+11 TO 15+29

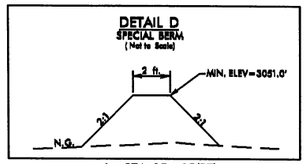
DETAIL C
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2.0 Ft.
B= 6.0 Ft.

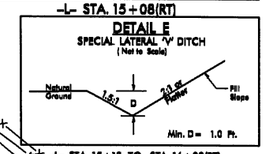
-L- STA. 13+88 TO STA. 15+37 (LT)

DETAIL D
SPECIAL BERM
(Not to Scale)



-L- STA. 15+08(RT)

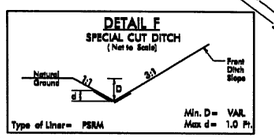
DETAIL E
SPECIAL LATERAL "V" DITCH
(Not to Scale)



Min. D= 1.0 Ft.

-L- STA. 15+13 TO STA. 16+00(RT)

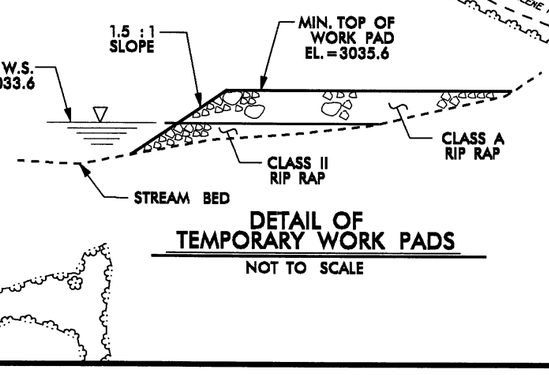
DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM
Min. D= VAR.
Max d= 1.0 Ft.

-L- STA. 17+50 TO STA. 19+00(RT)

NAD 83/CORS 96



DETAIL OF TEMPORARY WORK PADS

NOT TO SCALE

**********SYSTIME**********
**********USERNAME**********

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4836	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

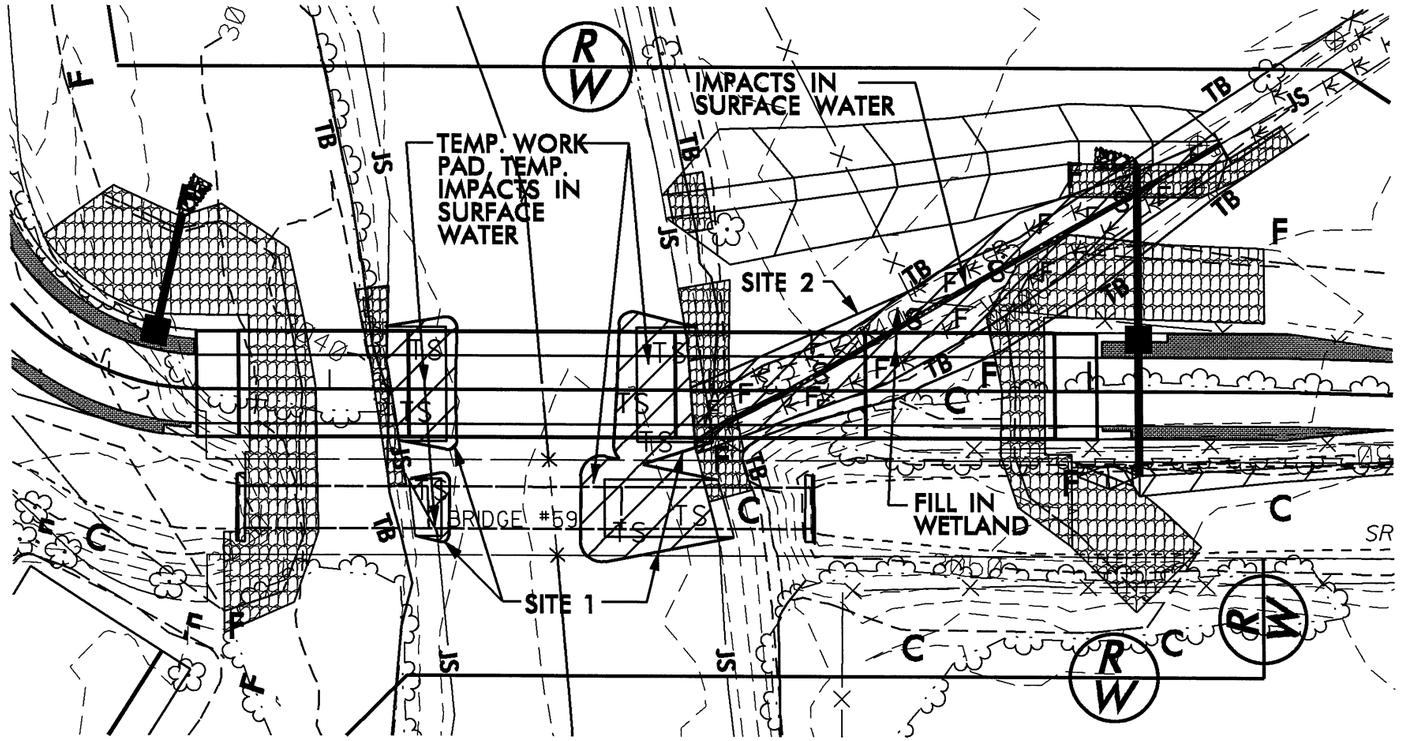
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETLAND/SURFACE WATER PERMIT DWG.

- F ▨ F DENOTES FILL IN WETLAND
- S ▨ S DENOTES IMPACTS IN SURFACE WATER
- TS ▨ TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

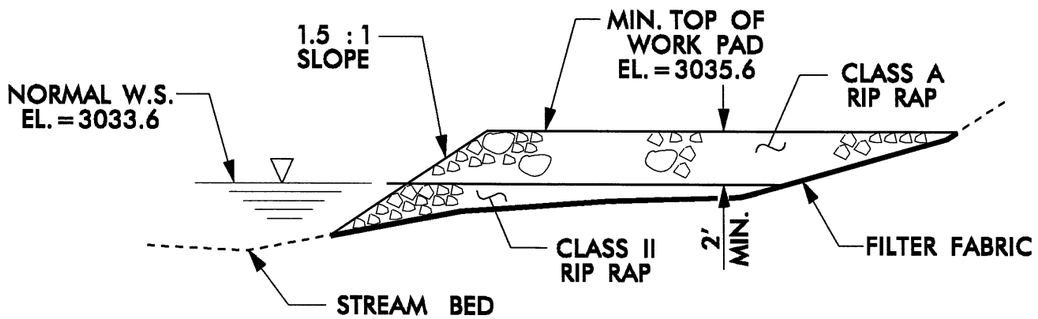
Permit Drawing
Sheet 5 of 8

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



SITES ENLARGEMENT

NOTE: TEMP. WORK PAD RIP RAP NOT SHOWN FOR CLARITY.
NOTE: TEMP. WORK PADS ON ONE BANK TO BE REMOVED BEFORE INSTALLATION OF TEMP. WORK PADS ON OPPOSITE BANK.



DETAIL OF TEMPORARY WORK PADS

NOT TO SCALE

NAD 83/CORS 96

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

40' 0' 40'
GRAPHIC SCALE

NCDOT

DIVISION OF HIGHWAYS
WATAUGA COUNTY
PROJECT: 38606.1.1 (B-4836)
BRIDGE NO. 59 OVER THE SOUTH FORK OF THE NEW RIVER ON SR 1331

5/28/99

REVISIONS

WETLAND/SURFACE WATER PERMIT DWG.

PROJECT REFERENCE NO.	SHEET NO.
B-4836	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 7 of 5

-L-

PIPE HYDRAULIC DATA
-L- Sta.11+08

DRAINAGE AREA	= 2.3	AC
~~DESIGN FREQUENCY~~	~~= 25~~	~~YRS~~
DESIGN DISCHARGE	= 3.8	CFS
DESIGN HW ELEVATION	= 3051.5	FT
100 YEAR DISCHARGE	= 4.5	CFS
~~100 YEAR HW ELEVATION~~	~~= 3051.6~~	~~FT~~
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 5.4	CFS
OVERTOPPING ELEVATION	= 3052.4	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 16,000	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 3,052.7	FT
~~BASE DISCHARGE~~	~~= 25,302~~	~~CFS~~
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3,056.8	FT
OVERTOPPING DISCHARGE	= 16,000+/-	CFS
~~OVERTOPPING FREQUENCY~~	~~= 25+/-~~	~~YRS~~
OVERTOPPING ELEVATION	= 3,052.1	FT
~~DATE OF SURVEY~~	~~= 11/9/2010~~	
W.S.ELEVATION AT DATE OF SURVEY	= 3,033.6	FT

TS ▨ TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SEE SHEET 4 FOR -L- PLAN

-Y-

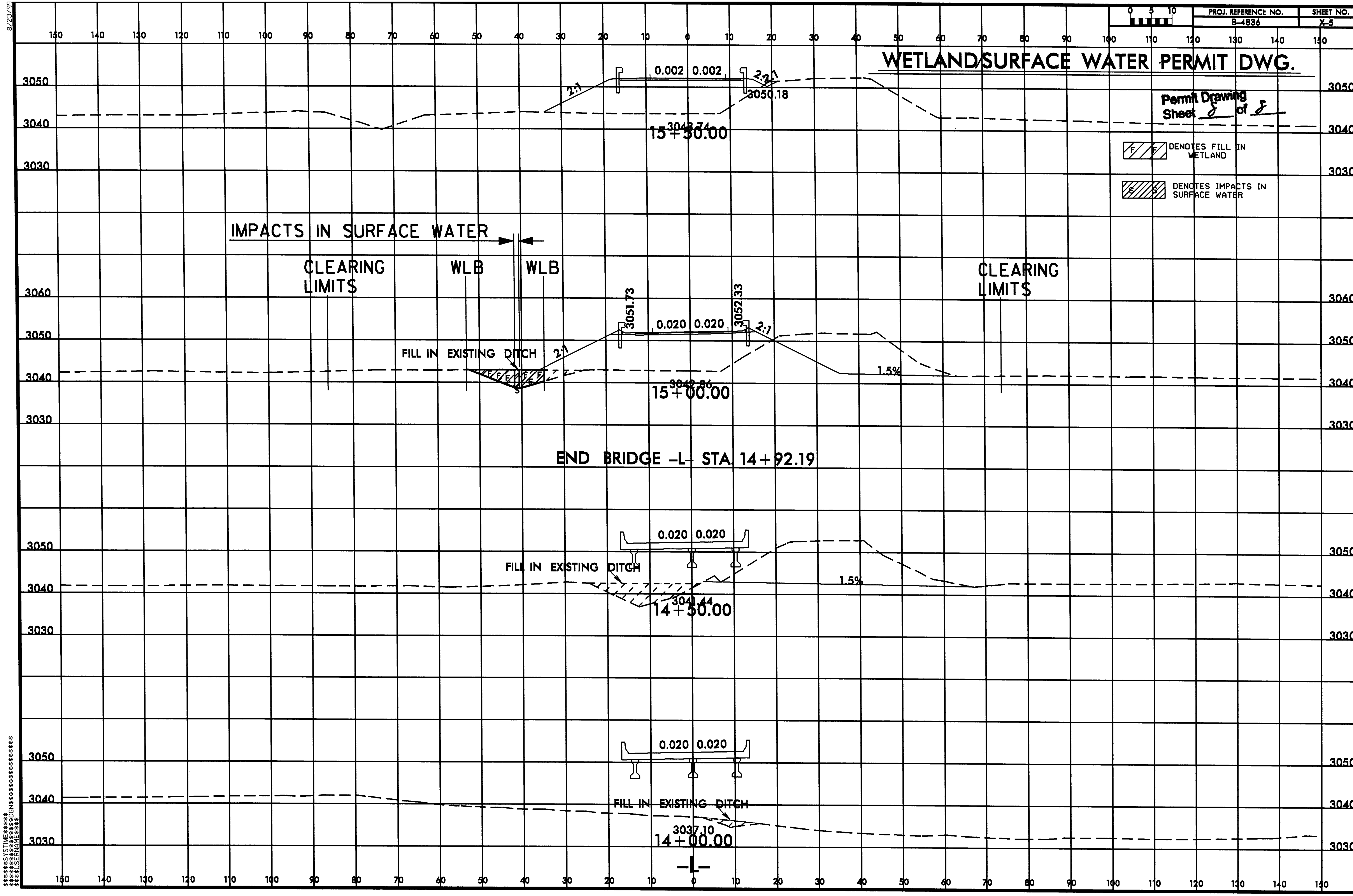
-DR-

PIPE HYDRAULIC DATA
-DR- Sta.10+80

DRAINAGE AREA	= 0.16	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.7	CFS
DESIGN HW ELEVATION	= 3043.6	FT
~~100 YEAR DISCHARGE~~	~~= 0.9~~	~~CFS~~
100 YEAR HW ELEVATION	= 3043.6	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 1.0	CFS
~~OVERTOPPING ELEVATION~~	~~= 3044.9~~	~~FT~~

SEE SHEET 4 FOR -Y- PLAN

SEE SHEET 4 FOR -DR- PLAN



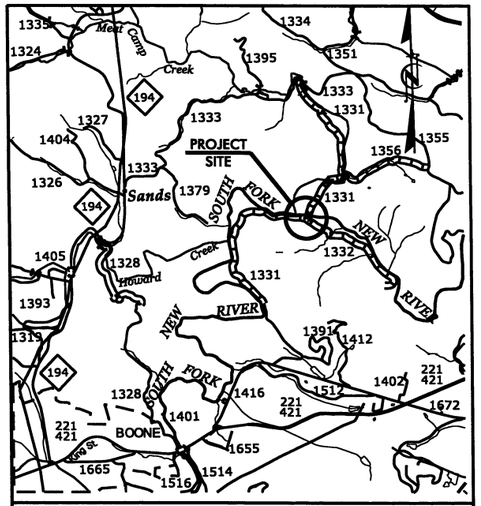
8/23/99
PROJ. REFERENCE NO.
B-4836
SHEET NO.
X-5
WETLAND/SURFACE WATER PERMIT DWG.
Permit Drawing Sheet 8 of 8
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
0.002 0.002
2:1
3050.18
3043.74
15+50.00
IMPACTS IN SURFACE WATER
CLEARING LIMITS
WLB
WLB
CLEARING LIMITS
3051.73
3052.33
0.020 0.020
FILL IN EXISTING DITCH
1.5%
3042.86
15+00.00
END BRIDGE -L- STA. 14+92.19
0.020 0.020
FILL IN EXISTING DITCH
1.5%
3041.44
14+50.00
0.020 0.020
FILL IN EXISTING DITCH
3037.10
14+00.00
-L-
$$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

09/08/99

TIP PROJECT: B-4836

CONTRACT:

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



VICINITY MAP N.T.S.

ROW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA COUNTY

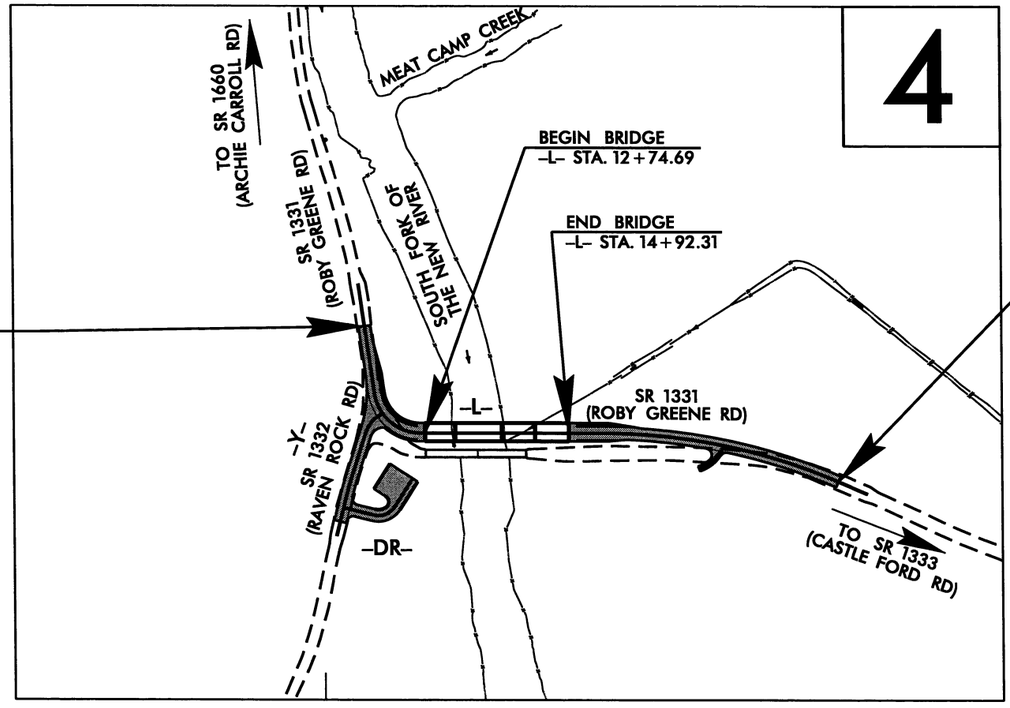
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4836	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
38606.1.1	BRZ-1331(12)	P.E.
38606.2.1	BRZ-1331(12)	R/W & UTIL.

LOCATION: BRIDGE NO. 59 OVER THE SOUTH FORK OF THE NEW RIVER ON SR 1331

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

NAD 83/CORS 96



BEGIN TIP PROJECT B-4836
-L- STA. 10+65.00

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2013 = 115
ADT 2033 = 195
DHV = 10 %
D = 60 %
T = 5 % *
V = 20 MPH
* (TTST = 2% + DUAL 3%)
FUNC CLASS = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4836 = 0.109 MI

LENGTH OF STRUCTURES TIP PROJECT B-4836 = 0.041 MI

TOTAL LENGTH OF TIP PROJECT B-4836 = 0.160 MI

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19,2011

LETTING DATE: JANUARY 15, 2013

BRENDA MOORE, PE
PROJECT ENGINEER

TATIA L. WHITE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

21-DEC-2011 08:57
R:\Roadway\PROJ\B4836_Rdy_tsh.dgn
$$$$USERNAME$$$$

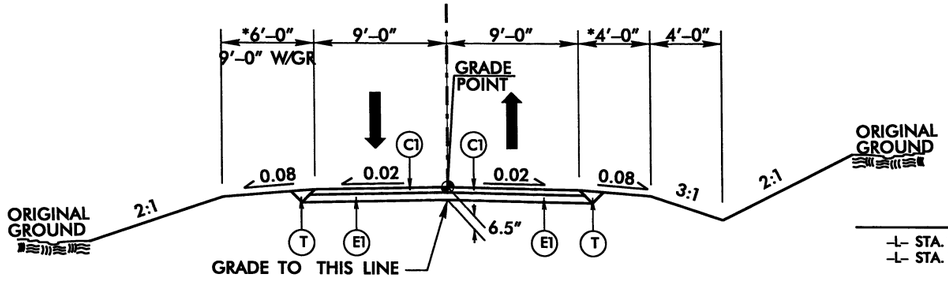
6/2/99

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
J	PROP. 6" AGGREGATE BASE COURSE.
T	EARTH MATERIAL

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

℄ –L–



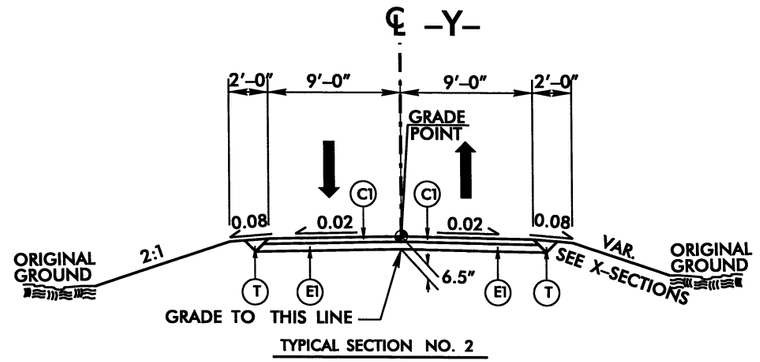
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
AT THE FOLLOWING LOCATIONS:

–L– STA. 10+65.00 TO –L– STA. 12+74.69 (BEGIN BRIDGE)
–L– STA. 14+92.31 (END BRIDGE) TO 19+10.00

* PAVE TO THE FACE OF GUARDRAIL

℄ –Y–

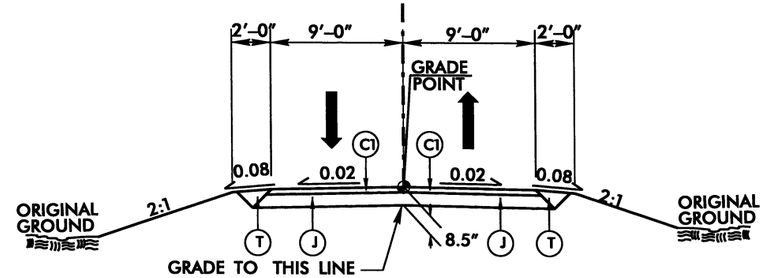


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
AT THE FOLLOWING LOCATIONS:

–Y– STA. 10+09.04 TO –Y– STA. 11+80.00

℄ –DR–



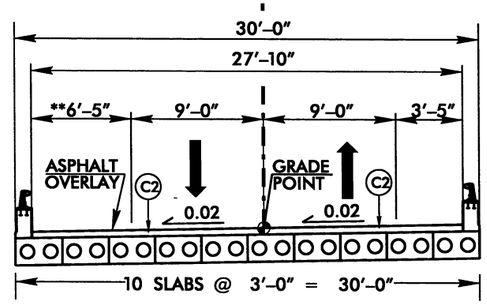
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS:

–DR– STA. 10+09.00 TO –DR– STA. 11+34.50

NOTE: USE THE SAME PAVEMENT FOR PARKING AREA

℄ –L–



TYPICAL SECTION ON STRUCTURE

USE TYPICAL SECTION ON STRUCTURE
AT THE FOLLOWING LOCATIONS:

–L– STA. 12+74.69 (BEGIN BRIDGE) TO –L– STA. 14+92.31 (END BRIDGE)

** ADDITIONAL WIDTH FOR HYDRAULIC SPREAD

PROJECT REFERENCE NO.	SHEET NO.
B-4836	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

04/16/11

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	S
B-4836	

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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- 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 — FSW
- 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 R/W Marker
- Proposed Control of Access Line with Concrete C/A 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 Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- 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 Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

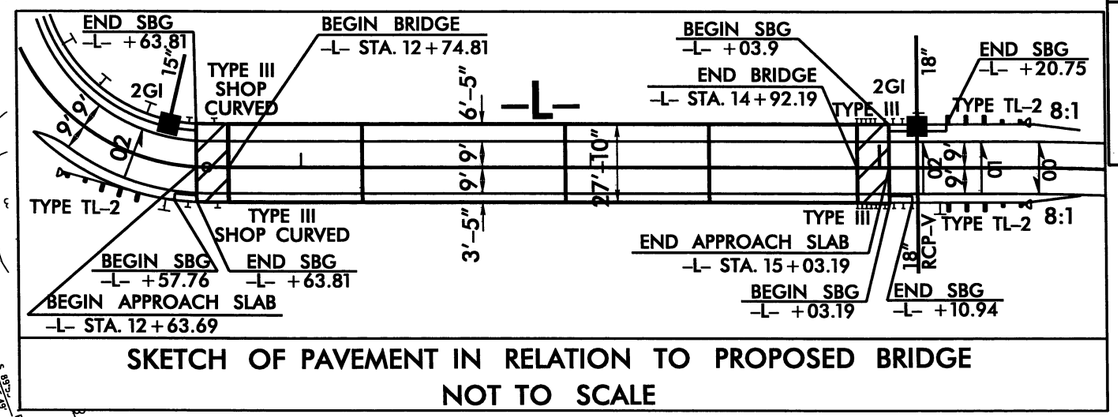
- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

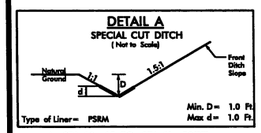
SANITARY SEWER:

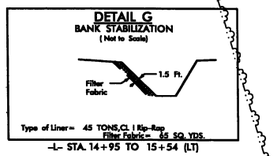
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

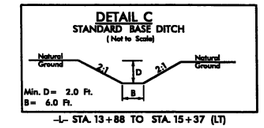
MISCELLANEOUS:

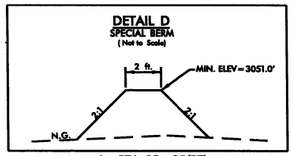
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?U/G
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

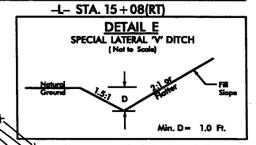


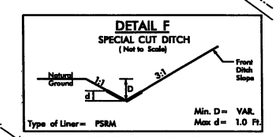


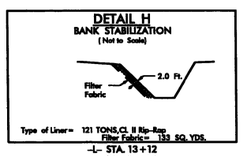


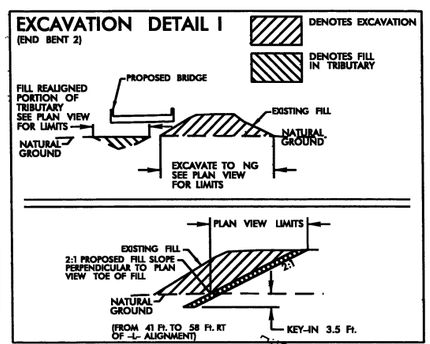












PROJECT REFERENCE NO.	SHEET NO.
B-4836	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

-L-

PI Sta 12+28.05	PI Sta 17+29.60
Δ = 81° 51' 21.1" (LT)	Δ = 23° 08' 15.5" (RT)
D = 81° 51' 04.0"	D = 6° 21' 58.3"
L = 100.01'	L = 363.45'
T = 60.70'	T = 184.23'
R = 70.00'	R = 900.00'
SE = 02	SE = 04
DS < 15 MPH**	DS = 45 MPH

-Y-		-DR-
PI Sta 10+21.46	PI Sta 11+26.66	PI Sta 10+68.25
Δ = 46° 27' 45.0" (LT)	Δ = 4° 11' 20.6" (LT)	Δ = 71° 04' 45.5" (LT)
D = 114° 35' 29.6"	D = 11° 27' 33.0"	D = 190° 59' 09.4"
L = 40.55'	L = 36.56'	L = 37.22'
T = 21.46'	T = 18.29'	T = 21.43'
R = 50.00'	R = 500.00'	R = 30.00'
SE = SEE PLANS	SE = SEE PLANS	① N 33° 11' 37.4" E
		② N 37° 53' 08.1" W

NOTES:

1. SEE SHEET 5 FOR -L-, -Y-, AND -DR- PROFILES.
2. SEE SHEETS S-1 THROUGH S-?? FOR STRUCTURE PLANS.
3. DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.

REVISIONS

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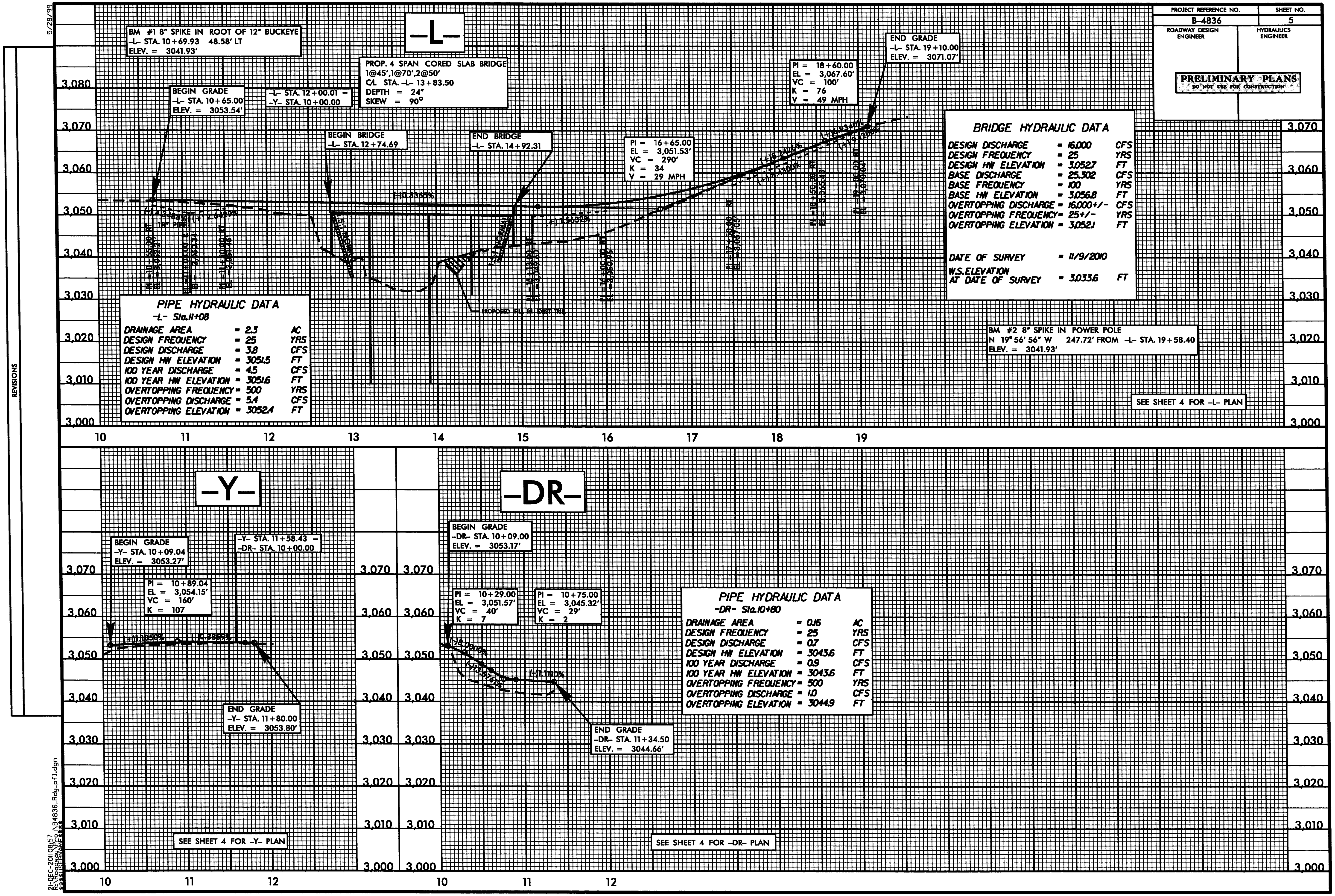
PROJECT REFERENCE NO.
B-4836
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5/28/99
REVISIONS
-L-
BM #1 8" SPIKE IN ROOT OF 12" BUCKEYE
-L- STA. 10+69.93 48.58' LT
ELEV. = 3041.93'
BEGIN GRADE
-L- STA. 10+65.00
ELEV. = 3053.54'
-L- STA. 12+00.01 =
-Y- STA. 10+00.00
PROP. 4 SPAN CORED SLAB BRIDGE
1@45',1@70',2@50'
C/L STA. -L- 13+83.50
DEPTH = 24"
SKEW = 90°
BEGIN BRIDGE
-L- STA. 12+74.69
END BRIDGE
-L- STA. 14+92.31
PI = 16+65.00
EL = 3,051.53'
VC = 290'
K = 34
V = 29 MPH
PI = 18+60.00
EL = 3,067.60'
VC = 100'
K = 76
V = 49 MPH
END GRADE
-L- STA. 19+10.00
ELEV. = 3071.07'
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 16,000 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 3,052.7 FT
BASE DISCHARGE = 25,302 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 3,056.8 FT
OVERTOPPING DISCHARGE = 16,000+/- CFS
OVERTOPPING FREQUENCY = 25+/- YRS
OVERTOPPING ELEVATION = 3,052.1 FT
DATE OF SURVEY = 11/9/2010
W.S. ELEVATION AT DATE OF SURVEY = 3,033.6 FT
PIPE HYDRAULIC DATA
-L- Sta.11+08
DRAINAGE AREA = 2.3 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 3.8 CFS
DESIGN HW ELEVATION = 3051.5 FT
100 YEAR DISCHARGE = 4.5 CFS
100 YEAR HW ELEVATION = 3051.6 FT
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING DISCHARGE = 5.4 CFS
OVERTOPPING ELEVATION = 3052.4 FT
BM #2 8" SPIKE IN POWER POLE
N 19° 56' 56" W 247.72' FROM -L- STA. 19+58.40
ELEV. = 3041.93'
SEE SHEET 4 FOR -L- PLAN
(-) 0.3365%
(+) 2.5532%
3,080
3,070
3,060
3,050
3,040
3,030
3,020
3,010
3,000
10
11
12
13
14
15
16
17
18
19
-Y-
BEGIN GRADE
-Y- STA. 10+09.04
ELEV. = 3053.27'
PI = 10+89.04
EL = 3,054.15'
VC = 160'
K = 107
-Y- STA. 11+58.43 =
-DR- STA. 10+00.00
END GRADE
-Y- STA. 11+80.00
ELEV. = 3053.80'
(+) 0.3365%
SEE SHEET 4 FOR -Y- PLAN
-DR-
BEGIN GRADE
-DR- STA. 10+09.00
ELEV. = 3053.17'
PI = 10+29.00
EL = 3,051.57'
VC = 40'
K = 7
PI = 10+75.00
EL = 3,045.32'
VC = 29'
K = 2
END GRADE
-DR- STA. 11+34.50
ELEV. = 3044.66'
PIPE HYDRAULIC DATA
-DR- Sta.10+80
DRAINAGE AREA = 0.16 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 0.7 CFS
DESIGN HW ELEVATION = 3043.6 FT
100 YEAR DISCHARGE = 0.9 CFS
100 YEAR HW ELEVATION = 3043.6 FT
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING DISCHARGE = 1.0 CFS
OVERTOPPING ELEVATION = 3044.9 FT
SEE SHEET 4 FOR -DR- PLAN
3,070
3,060
3,050
3,040
3,030
3,020
3,010
3,000
10
11
12
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CROSS SECTION INDEX

-L-	X-2 TO X-8
-Y-	X-9 TO X-11
-DR-	X-12

8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
B-4836	X-2

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

3100 3090 3080 3070 3060 3050 3040 3030

2% 0.020 0.013 2% 4%

3052.97 3050.69

11+00.00

3110 3100 3090 3080 3070 3060 3050 3040 3030

2% 0.028 0.023 2%

3053.34

10+65.00

BEGIN PROJECT -L- STA. 10+65.00

-L-

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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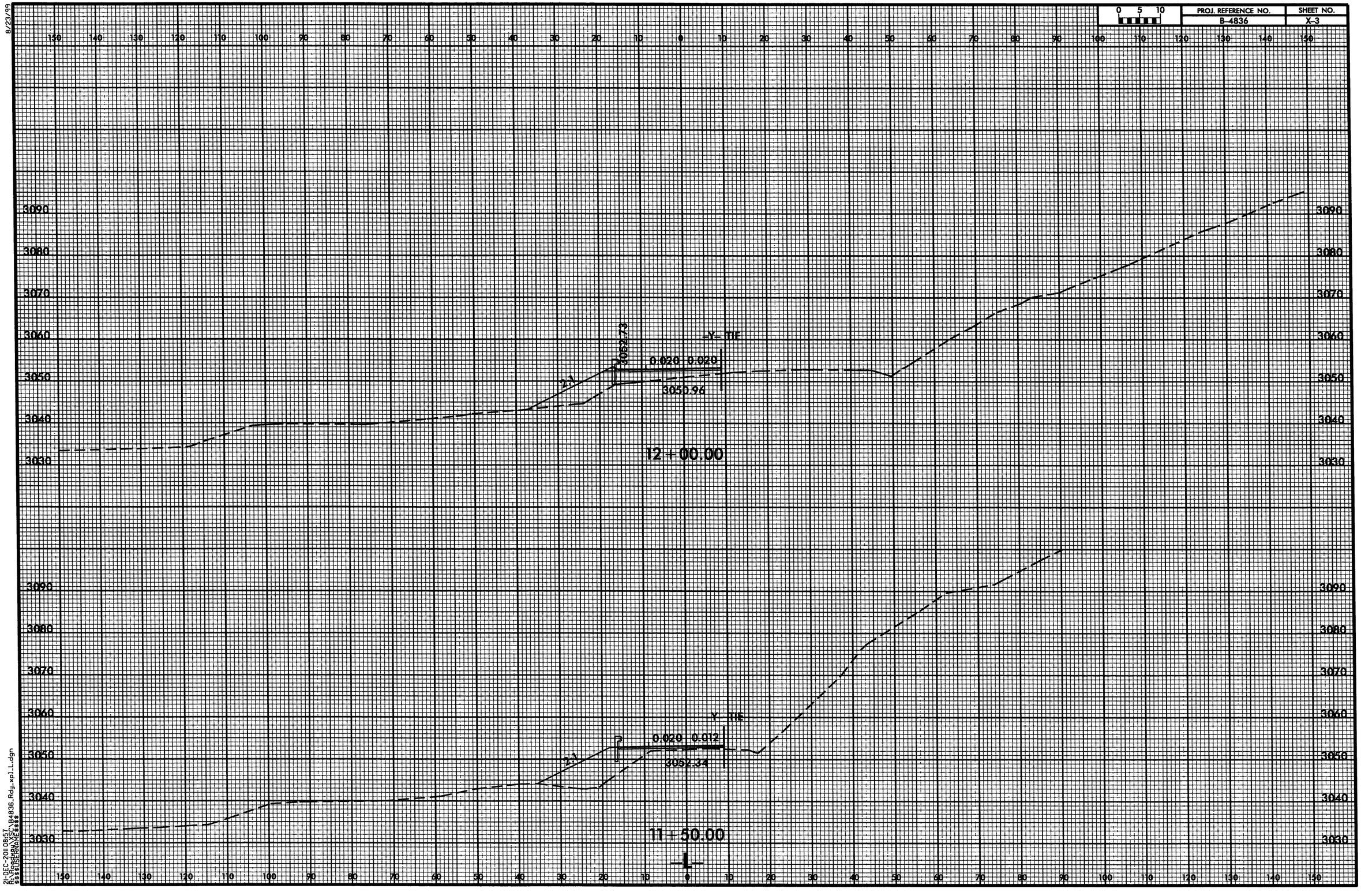
	B-4836	X-3



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8/23/99

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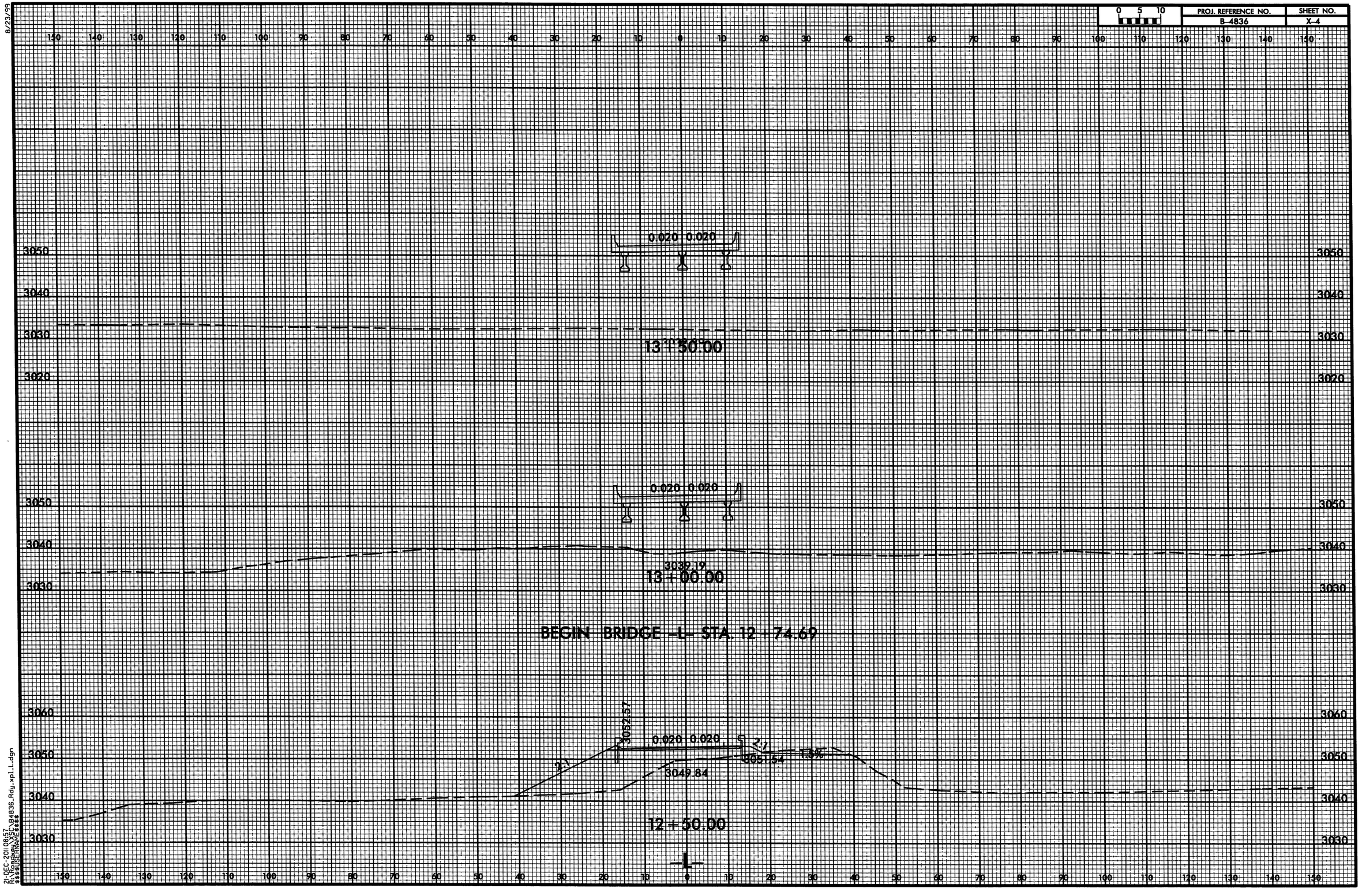
	B-4836	X-4



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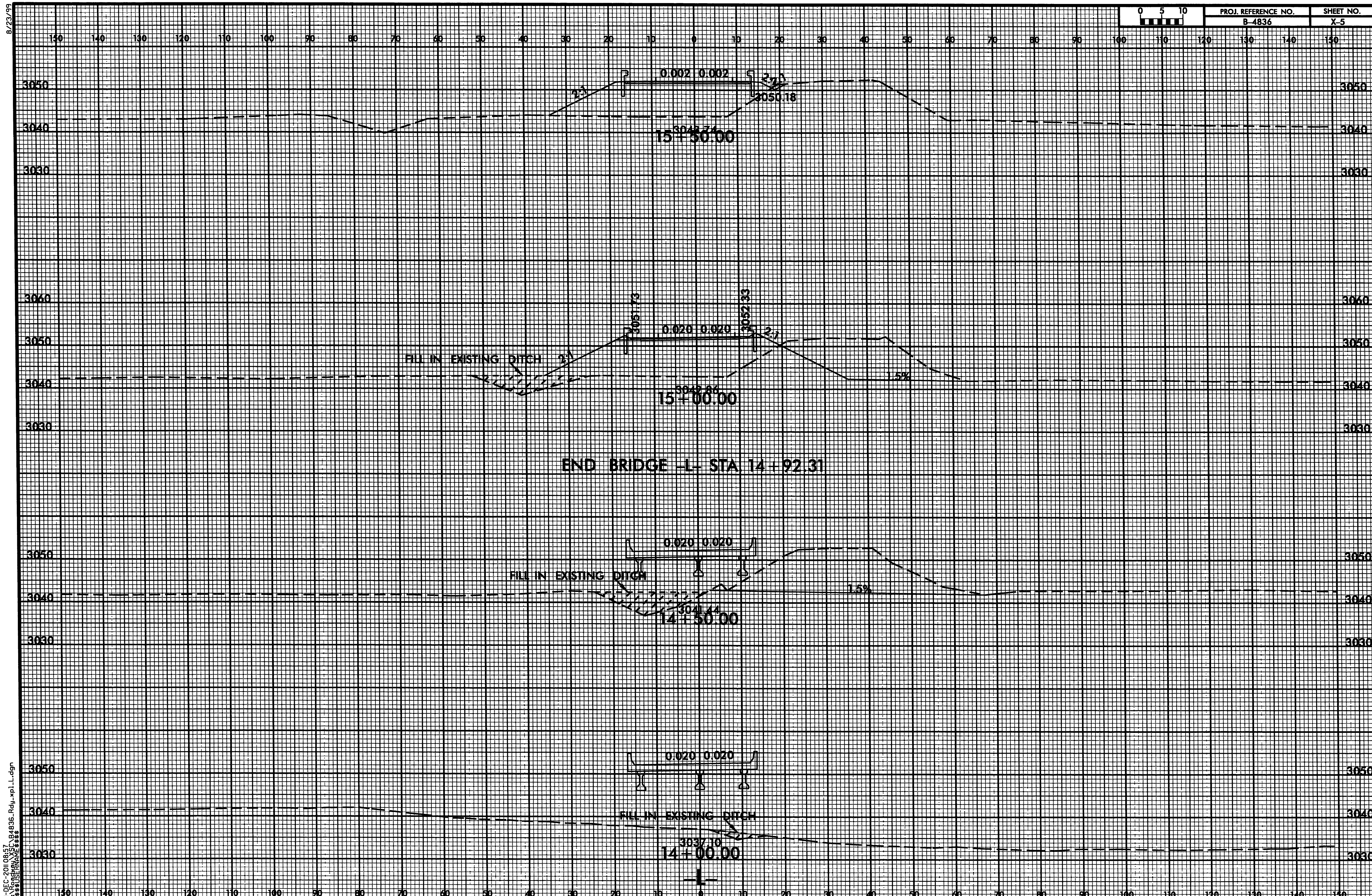
B-4836	X-5



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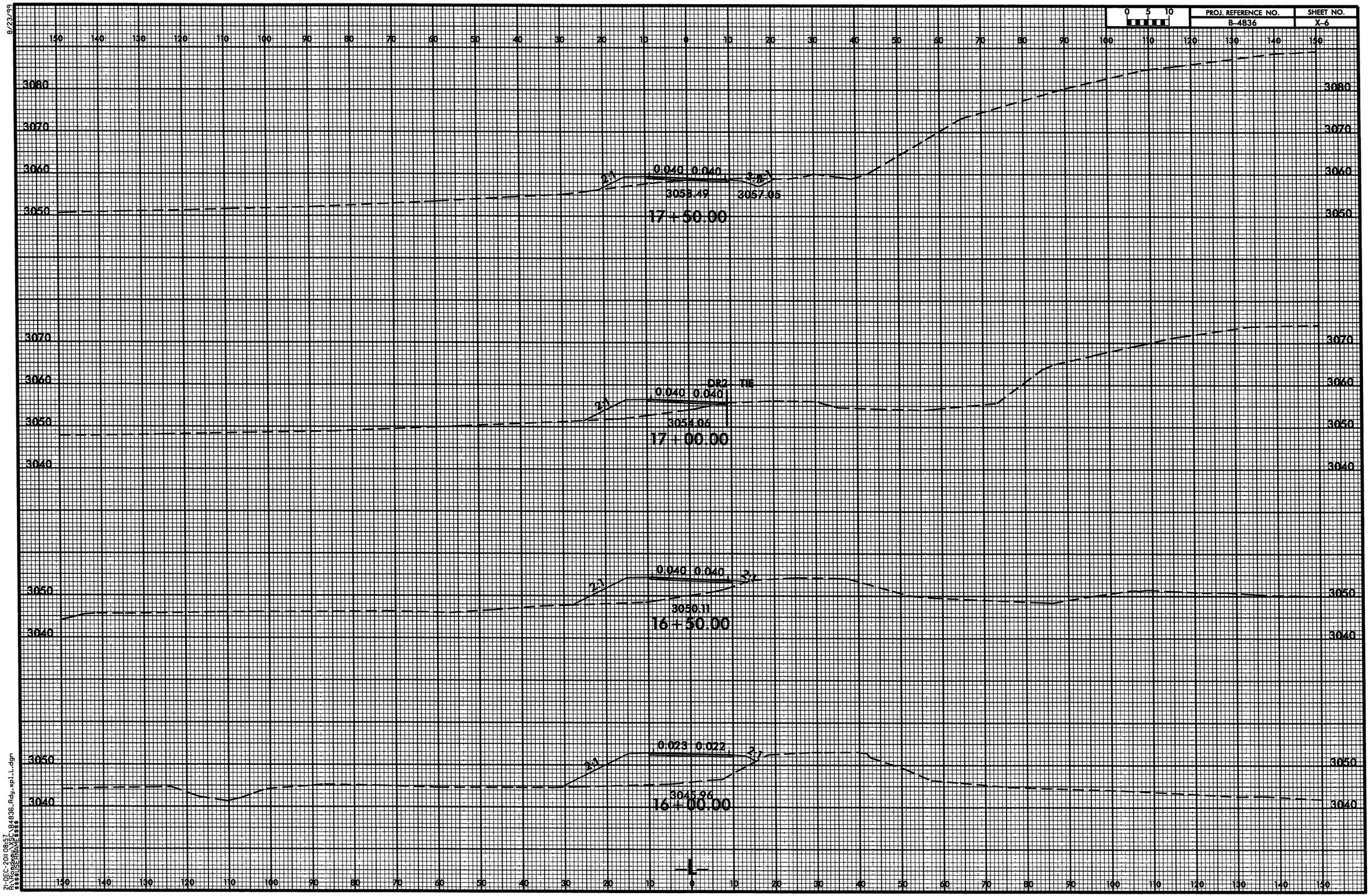
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4836	X-6



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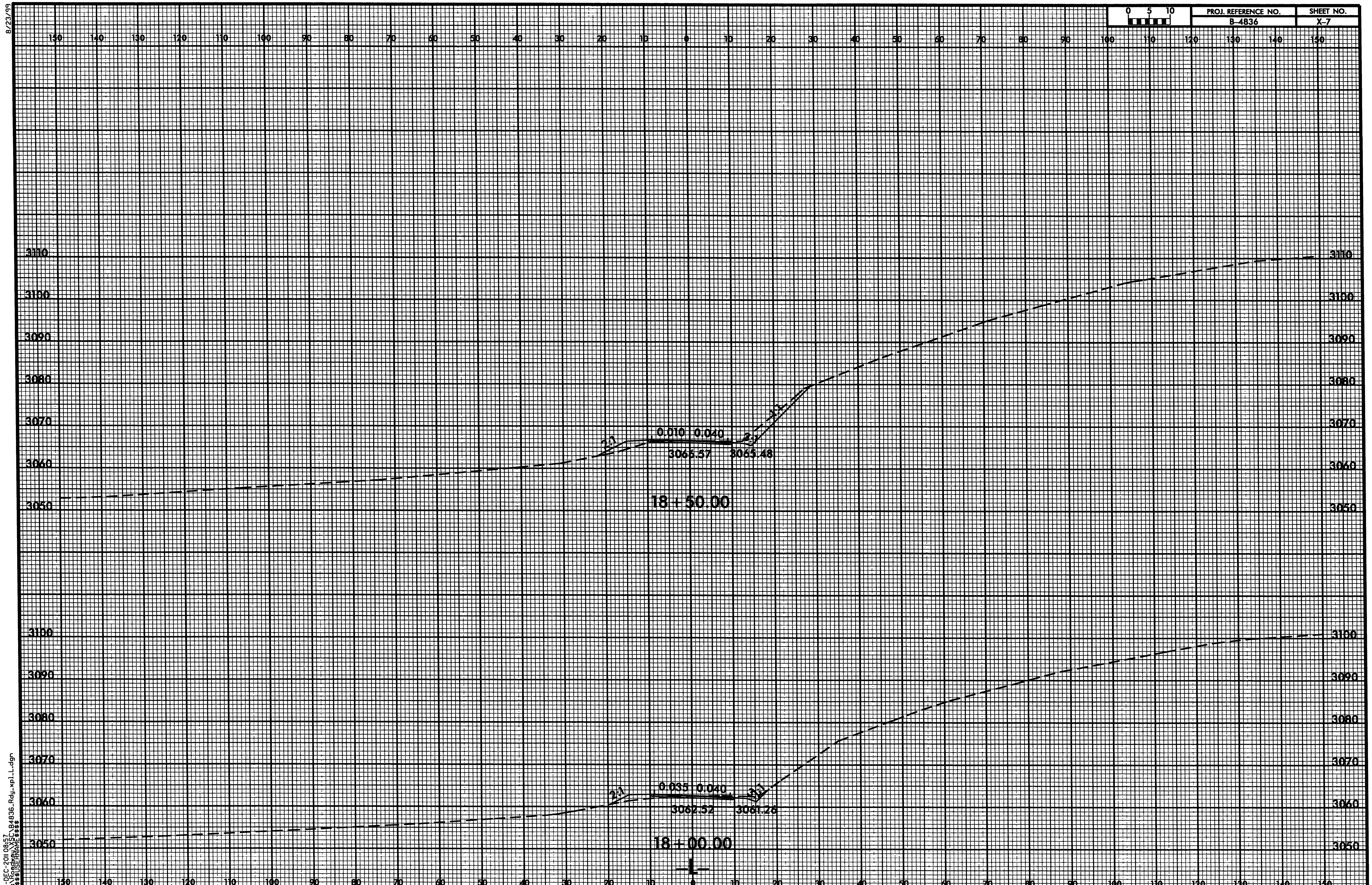
PROJ. REFERENCE NO.	SHEET NO.
B-4836	X-7



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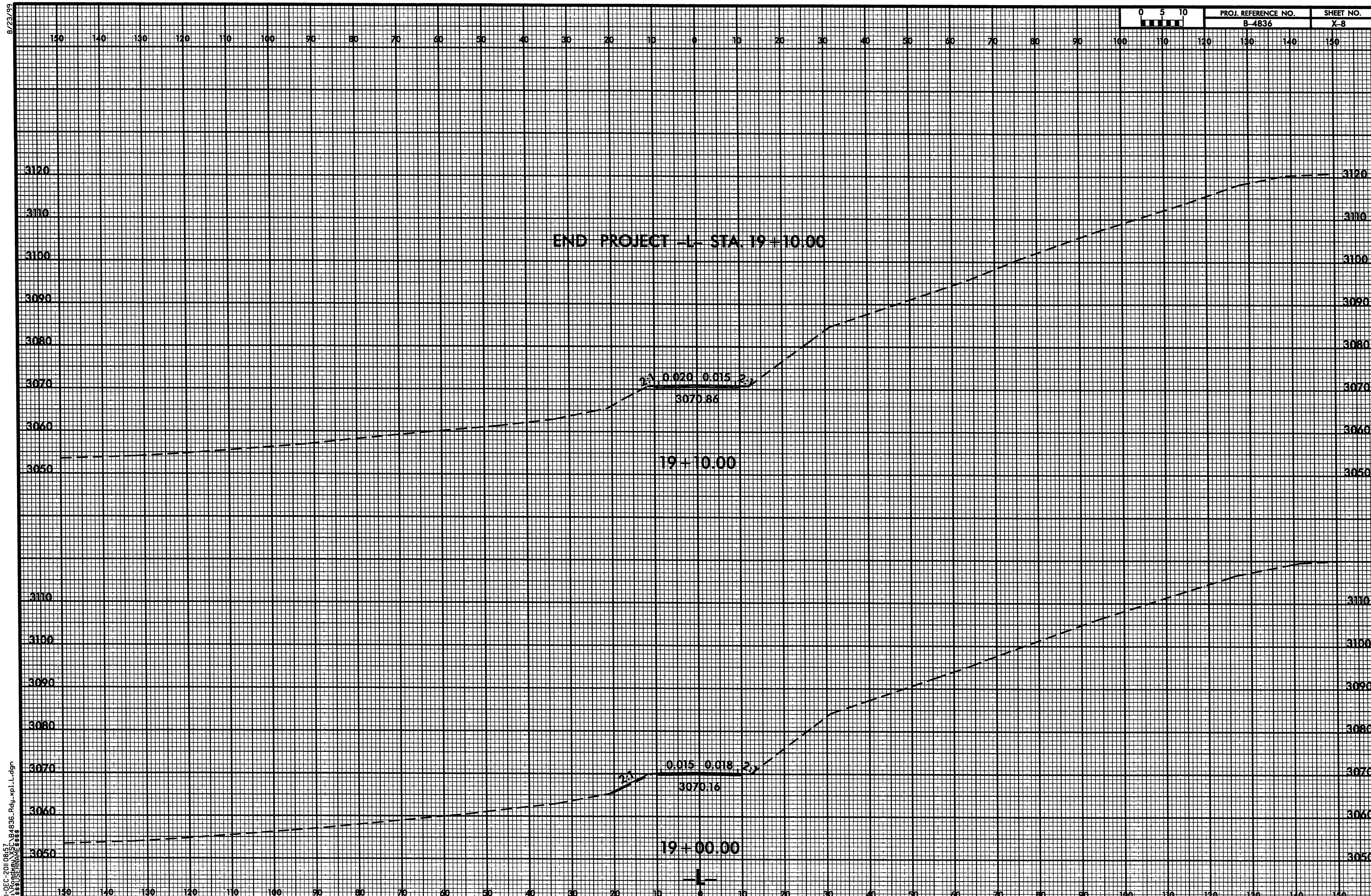

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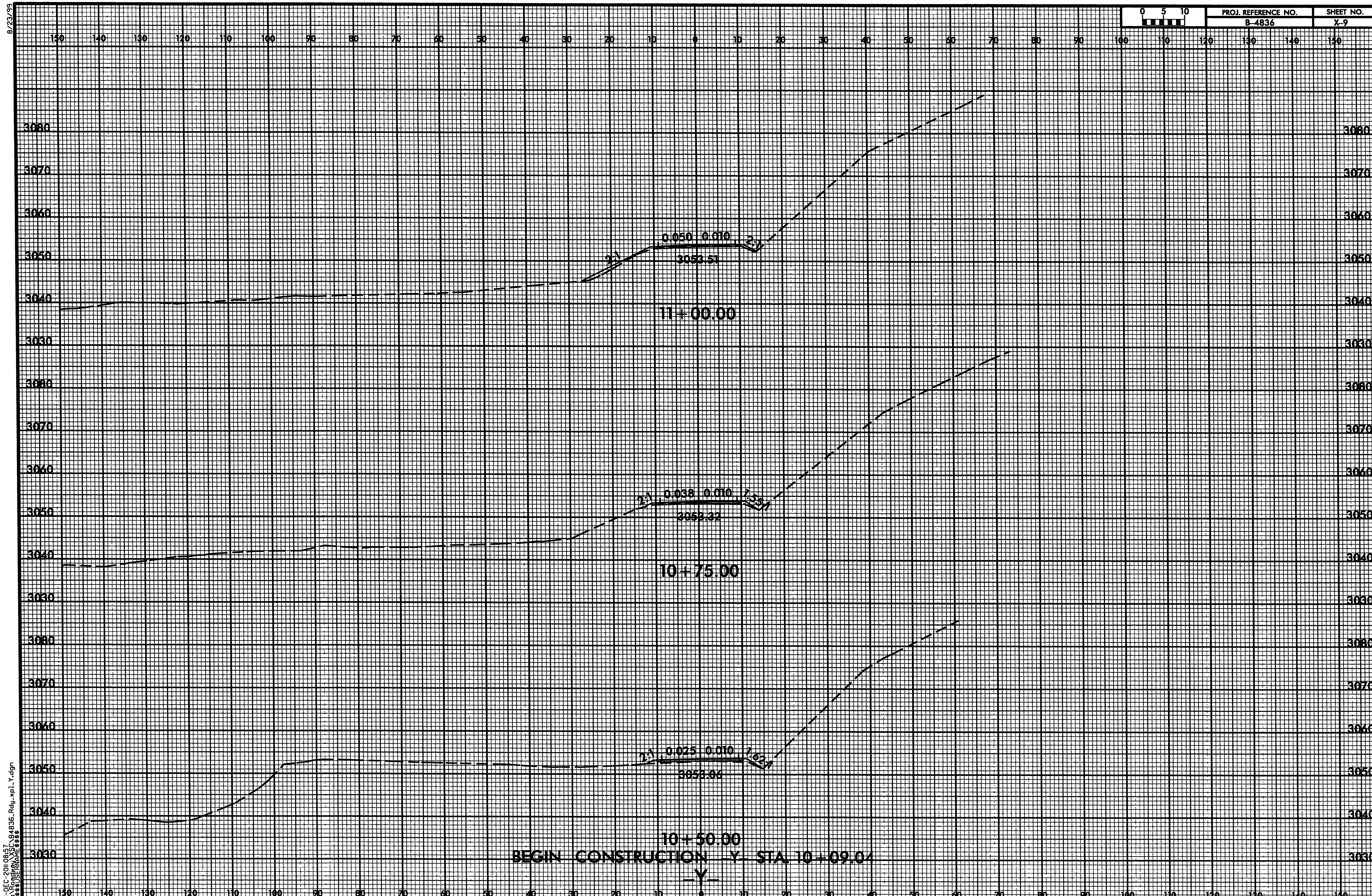
PROJ. REFERENCE NO.	SHEET NO.
B-4836	X-9



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8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
B-4836	X-10

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

3090 3080 3070 3060 3050 3040 3030

0.075 0.005

3058.68

11+50.00

0.063 0.008

3058.63

11+25.00

-Y-

3090 3080 3070 3060 3050 3040 3030

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

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4836	X-11

END CONSTRUCTION -L- STA. 11+90.00

END GRADE -L- STA. 11+80.00

1.5:1

0.085 0.013 2:1

3058.60

11+80.00

0.083 0.012 2:1

3053.61

11+75.00

-Y-

21-DEC-2011 08:57
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4836	X-12

END CONSTRUCTION -DR- STA. 11+34.50

3042.60

11+34.50

0.020 0.020 2:1 2:1

3041.59

11+25.00

0.020 0.020 2:1 2:1

3042.67

10+75.00

0.011 0.010 2:1 2:1

3046.46

10+25.00

BEGIN CONSTRUCTION -DR- STA. 10+09.00

-DR-

3070 3060 3050 3040 3030

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

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