Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

February 12, 2016

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

ATTN: Mr. Steve Kichefski
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 13, 23 and 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 69 over Rocky Creek on NC 115 in Iredell County, Federal Aid Project No. BRSTP-0115(7), Division 12, TIP No. B-4766, Debit $570 from WBS 38538.1.2.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 69 over Rocky Creek with a 150' long, two-span bridge with pre-stressed concrete girders on the existing alignment. Traffic will be maintained during construction via an off-site detour.

As a result of the bridge replacement and new roadway slopes resulting in a pipe extension, there will be 73 linear feet of permanent stream impacts, 155 linear feet of stream bank stabilization and 0.03 acre (92 linear feet) of temporary stream impacts.

Please see enclosed copies of the Pre-Construction Notification (PCN), DMS acceptance letter, stormwater management plan, permit drawings and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed on May 5, 2015 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of June 21, 2016 and a review date of May 3, 2016; 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://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,

for Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc:
NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13, 23 & 33 or General Permit (GP) number:		
1c. Has the 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 69 over Rocky Creek on NC 115
2b. County:	Iredell
2c. Nearest municipality / town:	New Hope
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4766

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: 36.01543 (DD.DDDDDD)	Longitude: - 80.95629 (-DD.DDDDDD)
1c. Property size:	6 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Rocky Creek	
2b. Water Quality Classification of nearest receiving water:	C	
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 40% forest land, 20% developed or disturbed lands (roadsides and residential areas), and 40% cultivated land (agricultural fields and pastures).		
3b. List the total estimated acreage of all existing wetlands on the property: 0		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 960		
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a functionally obsolete bridge (deck geometry rating 2 of 9).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 134-foot five-span bridge with a 150-foot two-span bridge with pre-stressed concrete girders on the existing alignment. All traffic will be detoured off-site 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: Only perennial streams within project study area.	☐ Yes	☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary	☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. See 4a above.		
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	
				2g. **Total wetland impacts**	0 Permanent 0 Temporary

2h. Comments: No wetlands within project footprint.

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	Rocky Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	50	120
Site 1 ☐ P ☒ T	Temporary fill /Causeway	Rocky Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	50	72 (0.03 ac)
Site 2 ☒ P ☐ T	30" RCP extension	SA (UT to Rocky Creek)	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	73
Site 2 ☒ P ☐ T	Bank Stabilization	SA (UT to Rocky Creek)	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	35
Site 2 ☐ P ☒ T	Temporary	SA (UT to Rocky Creek)	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	20 (<0.01 ac)
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	228 Perm 92 Temp (0.03 ac Temp)

3i. Comments:

- Of the 228 total feet of permanent stream impacts, 155 total feet are from bank stabilization (120' to Rocky Creek and 35' to SA). DWR does not require mitigation for impacts to streams totaling less than 150 feet per stream. Therefore, stream mitigation required by the USACE = 73 linear feet, required by DWR = 0 linear feet.
- Temporary impacts totals are based on rounding, due to some of the individual impacts being <0.01 acre.
- The temporary causeway will not block greater than 50% of the stream channel.

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 water within construction 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: This project is not located within 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 proposed replacement bridge will be on the same alignment as the existing bridge and will be slightly longer and have only one interior bent as opposed to four. There will be no deck drains installed on the new bridge. Instead, runoff from the proposed bridge will collect via shoulder berm gutter into a storm drain system and flow overland before reaching the creek. A retaining wall in the northwest quadrant will be constructed to completely avoid impacts to the parallel UT to Rock Creek (SB). Roadway improvements have been designed to minimize water quality impacts by promoting sheet flow and infiltration along grassed shoulders.

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

Traffic will be maintained via an off-site detour during construction. Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving streams due to erosion and runoff.

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 * Total stream impacts requiring USACE mitigation = 73' (no mitigation required by USACE for bank stabilization impacts <500') * Total stream impacts requiring DEQ mitigation = 0' (Of the 228 total feet of permanent stream impacts, 155 total feet are from bank stabilization (120' to Rocky Creek and 35' to SA). DEQ does not require mitigation for impacts to streams totaling less than 150 feet per stream.) 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:	73 linear feet
4c. If using stream mitigation, stream temperature:	☒ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acre
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres

4h. Comments: The NCDOT does not propose mitigation for the 155 linear feet of bank stabilization or the 92 linear feet (0.03 acre) of temporary stream impacts. These impacts do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are 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: 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 N/A
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: Categorical Exclusion (CE) approved 5/5/15	☒ 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? As of July 24, 2015 there are three federally listed species for Iredell County. Neither the bog turtle nor the dwarf-flowered heartleaf has habitat present within the construction limits of this project (surveys were conducted for dwarf-flowered heartleaf in all areas of habitat that exist near the construction footprint in March 2015, and no individuals were found). The remaining species is the Northern long-eared bat (NLEB). Screenings and/or surveys will be conducted for the recently listed NLEB and concurrence will be requested as soon as a memo is prepared with the results of the screening/survey. It is anticipated that the biological conclusion for this species will be "May Affect, Not Likely to Adversely Affect" and that concurrence from USFWS will be obtained prior to the June 2016 let date (the need for concurrence may change when the new 4(d) rule goes into effect on February 16, 2016).		
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		

for Richard W. Hancock, P.E. Applicant/Agent's Printed Name	Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	2-12-2016 Date

Environmental Quality

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

November 12, 2015

Mr. Richard W. Hancock, P.E.
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: Mitigation Acceptance Letter:

B-4766, Replace Bridge 69 on NC 115 over Rocky Creek, Iredell County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on November 12, 2015, the impacts are located in CU 03040102 of the Yadkin River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Yadkin 03040102 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	73.0	0	0	0	0	0

*Some of the stream impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

This impact and associated mitigation need were under projected by the NCDOT in the 2015 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the 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 DMS.

If you have any questions or need additional information, please contact Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
Credit Management Supervisor

cc: Mr. Steve Kichefski, USACE – Asheville Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: B-4766

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element: 38538.1.2 **TIP No.:** B-4766 **County(ies):** Iredell

General Project Information

WBS Element:	38538.1.2	**TIP Number:**	B-4766	**Project Type:**	Bridge Replacement	**Date:**	9/14/2015
NCDOT Contact:	Linda Johns			**Contractor / Designer:**	Ernest Hahn		
Address:	North Carolina Department of Transportation 1590 Mail Service Center Raleigh, NC 27699-1590			**Address:**	North Carolina Department of Transportation 1590 Mail Service Center Raleigh, NC 27699-1590		
Phone:	919-707-6728			**Phone:**	919-707-6724		
Email:	lmjohns@ncdot.gov			**Email:**	ejhahn@ncdot.gov		
City/Town:	Lake Norman RPO			**County(ies):**	Iredell		
River Basin(s):	Yadkin-Pee Dee			**CAMA County?**	No		
Wetlands within Project Limits?	No						

Project Description

Project Length (lin. miles or feet):	0.145 miles	**Surrounding Land Use:**	predominantly forested		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	0.6 ac.			0.4 ac.	
Typical Cross Section Description:	two twelve-foot lanes with eight-foot vegetated shoulders			two ten-foot lanes with two-foot vegetated shoulders	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 3600	Year: 2040		Existing: 2100	Year: 2012

General Project Narrative: (Description of Minimization of Water Quality Impacts)

This project proposes to replace bridge 69 over Rocky Creek and to construct associated roadway grade improvements along NC 115, Wilkesboro Highway, in Iredell County. The existing structure is a 134'-0" five-span bridge (1@24'-7", 1@25'-0", 1@35'-0", 1@25'-0", 1@24'-7") constructed in 1934, and the proposed replacement structure is a 150'-0" double-span bridge (1@70'-0", 1@80'-0") at the existing location.

The existing bridge had deck drains over Rocky Creek; spread calculations indicate deck drains will not be required for the proposed bridge. Instead, runoff from the proposed bridge will collect via shoulder berm gutter into a storm drain system and flow overland before reaching the waterbody. In addition, the proposed design reduces surface water impacts by reducing the number of interior bents from four to one. Roadway improvements are designed to minimize water quality impacts by promoting sheet flow and infiltration along grassed shoulders.

Surface water impacts primarily occur at the rip-rap bank stabilization along both banks and the temporary rock causeway. The cumulative total area of impacts equals approximately 0.04 acres of permanent and 0.03 acres of temporary surface water impacts. Existing channel impacts equals approximately 228 linear feet of permanent and 92 feet of temporary impacts.

Waterbody Information

Surface Water Body (1):	Rocky Creek		**NCDWR Stream Index No.:**	12-108-11	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	Rocky Creek			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element:	38538.1.2	**TIP No.:**	B-4766	**County(ies):**	Iredell			**Page**	2 of 2

Additional Waterbody Information

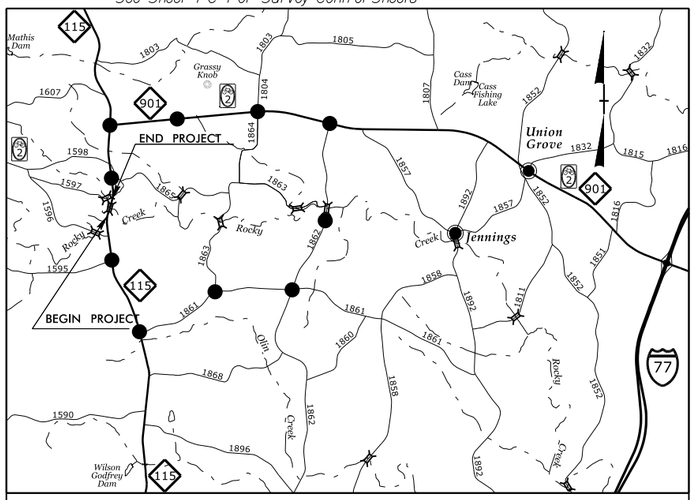
Surface Water Body (2):	Unnamed Tributary of Rocky Creek		**NCDWR Stream Index No.:**	12-108-11		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SA			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

09/26/99

TIP PROJECT: B-4766

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Convention Symbols
See Sheet 1-C For Survey Control Sheets



VICINITY MAP

OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

PERMIT DRAWING
SHEET 1 OF 8

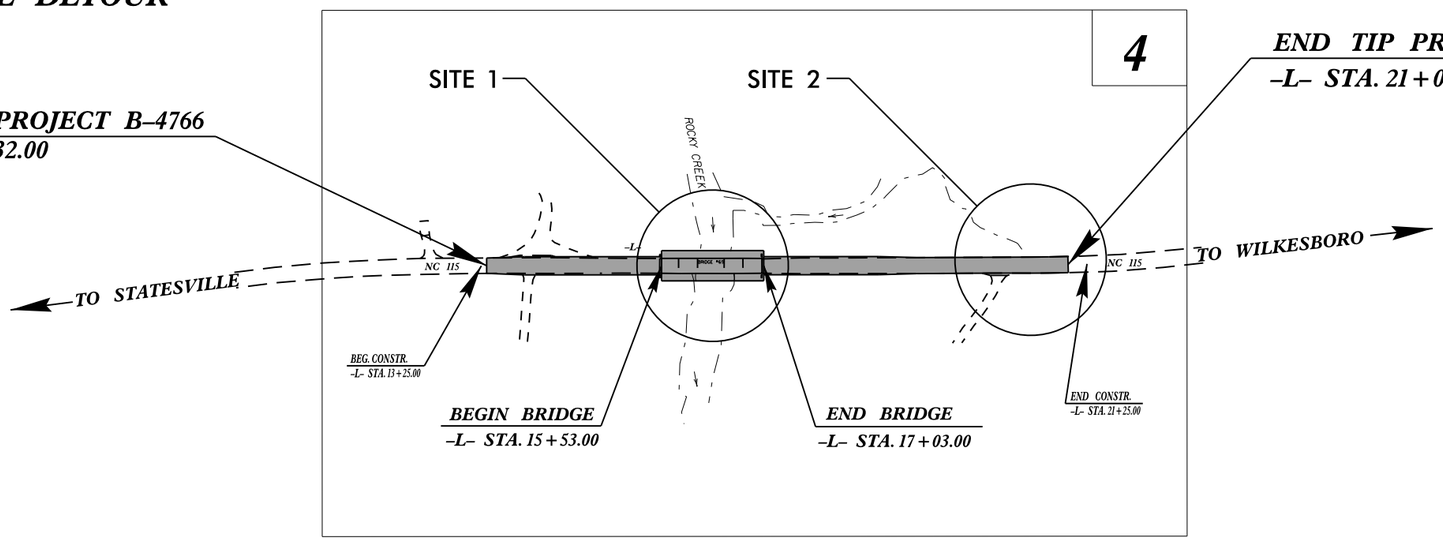
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4766	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
38538.1.2	BRSTP-0115(7)	PE	

NAD 83/95

LOCATION: BRIDGE No. 69 OVER ROCKY CREEK ON NC 115

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

WETLAND AND SURFACE WATER IMPACTS PERMIT



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.
NOT A CONTROL OF ACCESS PROJECT.
DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVE.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 2,100
ADT 2040 = 3,600
DHV = 10 %
D = 55 %
T = 13 % *
V = 60 MPH
* TTST = 5% DUAL 8%
FUNC CLASS =
MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B-4766 = 0.117 MI

LENGTH STRUCTURE T.I.P. PROJECT B-4766 = 0.028 MI

TOTAL LENGTH OF T.I.P. PROJECT B-4766 = 0.145 MI

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2015

LETTING DATE:
JUNE 21, 2016

JASON MOORE, PE
PROJECT ENGINEER

NYA K. BOAYUE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

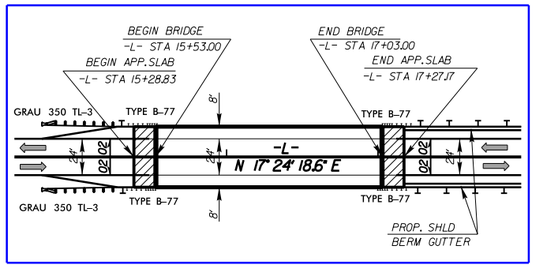
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/1/2015
ejhahn
R:\Hydraulics\PERMITS_Environmental\Drawings\B4766_Hyd_prm_wet_01_tsh.dgn
$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$
$$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4766	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 2 OF 8



SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

NAD 83/95

10+00 15+00 20+00

SITE 1 SITE 2

LINDA R. PATTERSON

DWIGHT C. YOUNGER AND WIFE HILDA W YOUNGER

VICTOR EARL CALL AND WIFE VICKILYNN CALL

CAOLYN W. YOUNGER FERNE W. CAUDILL

MICHELE DURHAM WARD, TRUSTEE DANA MARIE SUMMERS DANIAL JACOB SUMMERS

RETAIN EXISTING ABUTMENT TO APPROXIMATE ELEVATION 1,000.0

ABUTMENT EXCAVATION TO APPROXIMATE ELEVATION 1,003.0

RETAIN EXISTING ABUTMENT TO APPROXIMATE ELEVATION 1,003.0

ABUTMENT EXCAVATION TO APPROXIMATE ELEVATION 1,000.0

BEGIN SHOULDER BERM GUTTER AT BRIDGE STA 17+03 LT AND RT

END SHOULDER BERM GUTTER STA 18+20 LT

BANK STABILIZATION SEE DETAIL C

GRADE TO DRAIN

REMOVE

CLASS II RIP RAP

ELBOWS

END SHOULDER BERM GUTTER STA 17+50 RT

CLASS B RIP RAP

TOE PROTECTION SEE DETAIL A

TOE PROTECTION SEE DETAIL B

FS SEE DETAIL B

BANK STABILIZATION SEE DETAIL D

BANK STABILIZATION CLASS II RIP RAP 200 TONS

UNCLASSIFIED EXCAVATION 125 CY

BM#2
-BL- STA. 9+89.152' RT
ELEV. = 1008.63'

BANK STABILIZATION CLASS II RIP RAP 350 TONS

UNCLASSIFIED EXCAVATION 250 CY

N 15° 32' 01.1" E

N 11° 37' 09.9" E

TO STATESVILLE

TO NORTH WILKESBORO

NC 115 21' BST

36' CHL

EXISTING R/W

PDE

PUE

ROCKY CREEK

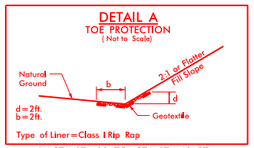
S PERMANENT SURFACE WATER IMPACTS

TS TEMPORARY SURFACE WATER IMPACTS

100' 0' 100' 200'

GRAPHIC SCALE

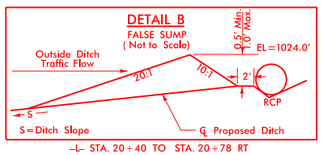
DETAIL A
TOE PROTECTION
(Not to Scale)



Type of Liner=Class I Rip Rap

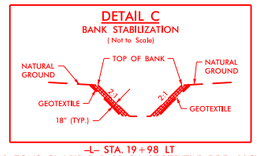
-L- STA. 17+00 TO STA. 17+40 RT
-L- STA. 19+00 TO STA. 19+25 RT

DETAIL B
FALSE SUMP
(Not to Scale)



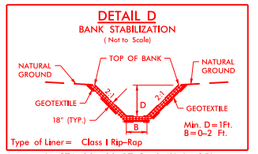
-L- STA. 20+40 TO STA. 20+78 RT

DETAIL C
BANK STABILIZATION
(Not to Scale)



-L- STA. 19+98 LT
12 TONS CL I RIP RAP, 30 SY GEOTEXTILE, DDE=10CY

DETAIL D
BANK STABILIZATION
(Not to Scale)



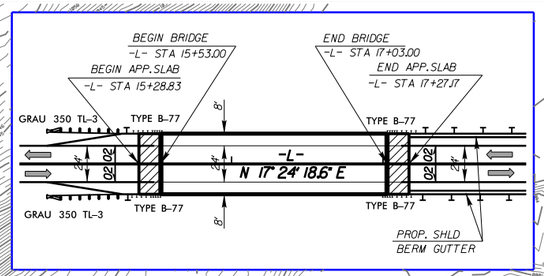
Type of Liner= Class I Rip-Rap

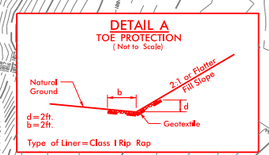
-L- STA. 20+80 RT, S=6.4%, L=25'
28 TONS CL I RIP RAP, 55 SY GEOTEXTILE, DDE=20CY

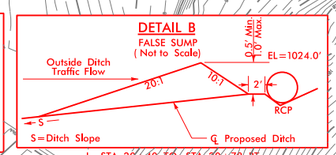
SEE SHEET 5 FOR -L- PROFILE

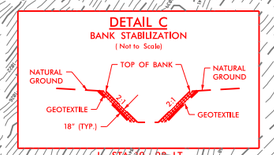
REVISIONS 8/17/99

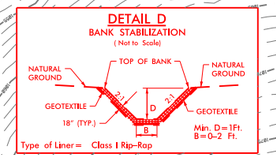
9/1/2015
dthorn
R:\Hydraulics\PERMITS_Environmental\Drawings\B4766_Hyd_prm_wet_02_psh.dgn
$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$











PROJECT REFERENCE NO.	SHEET NO.
B-4766	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 3 OF 8

SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

▨ S ▨ S PERMANENT SURFACE WATER IMPACTS

▨ TS ▨ TS TEMPORARY SURFACE WATER IMPACTS

GRAPHIC SCALE

DETAIL A

TOE PROTECTION

(Not to Scale)

d = 2ft.
b = 2ft.

Type of Liner = Class I Rip Rap

-L- STA. 17+00 TO STA. 17+40 RT
-L- STA. 19+00 TO STA. 19+25 RT

DETAIL B

FALSE SUMP

(Not to Scale)

-L- STA. 20+40 TO STA. 20+78 RT

DETAIL C

BANK STABILIZATION

(Not to Scale)

-L- STA. 19+98 LT
12 TONS CL I RIP RAP, 30 SY GEOTEXTILE, DDE = 10CY

DETAIL D

BANK STABILIZATION

(Not to Scale)

Min. D = 1Ft.
B = 0-2 Ft.

Type of Liner = Class I Rip-Rap

-L- STA. 20+80 RT, S = 6.4%, L = 25'
28 TONS CL I RIP RAP, 55 SY GEOTEXTILE, DDE = 20CY

SEE SHEET 5 FOR -L- PROFILE

REVISIONS

8/17/99

9/11/2015
ejhahn
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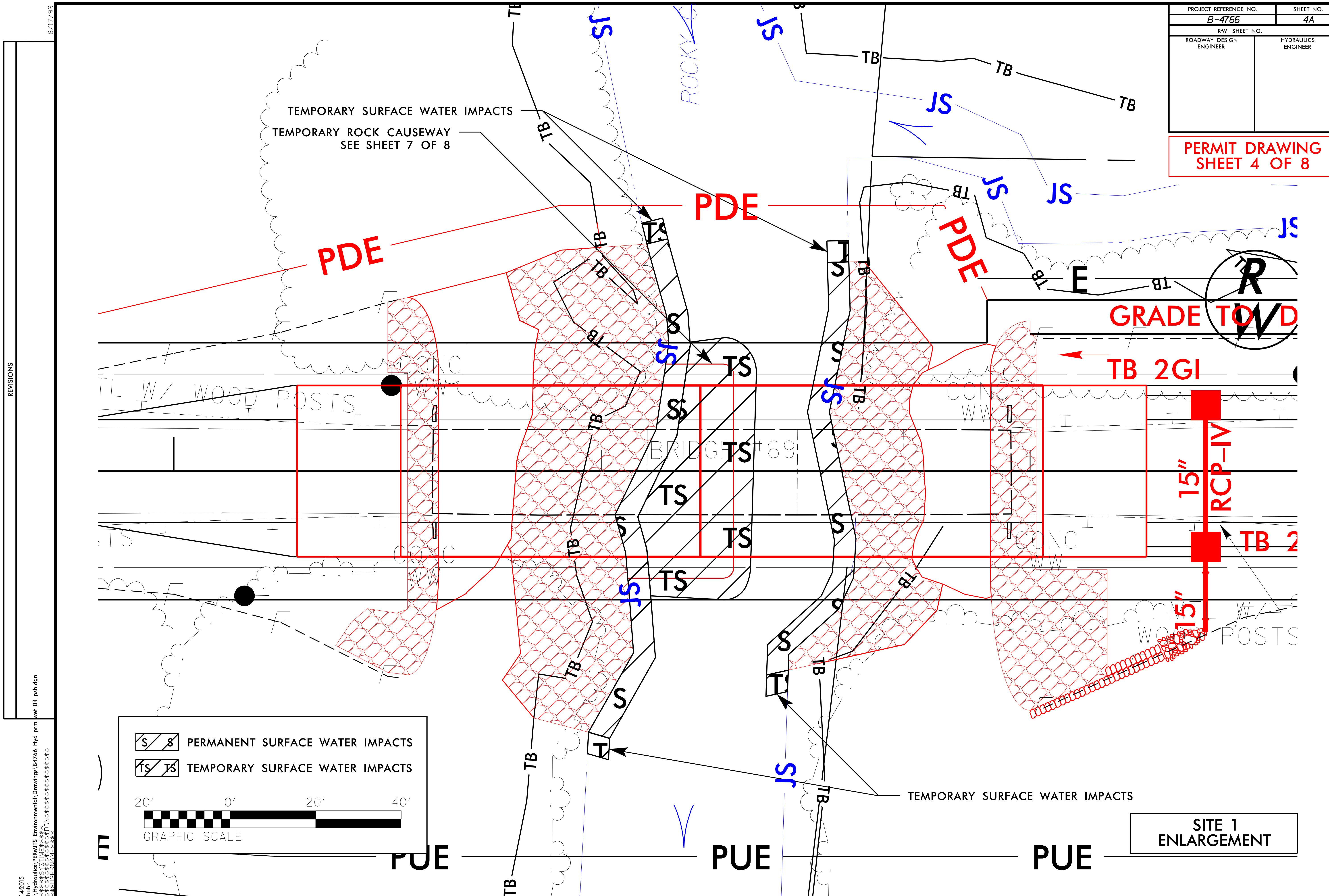
PROJECT REFERENCE NO.
B-4766
SHEET NO.
4A
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PERMIT DRAWING
SHEET 4 OF 8
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY ROCK CAUSEWAY
SEE SHEET 7 OF 8
PDE
PDE
PDE
GRADE TO D
TB 2GI
15" RCP-IV
15"
TB 2
BRIDGE #69
CONC WW
WOOD POSTS
TEMPORARY SURFACE WATER IMPACTS
PERMANENT SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
20' 0' 20' 40'
GRAPHIC SCALE
PUE
PUE
PUE
SITE 1
ENLARGEMENT
REVISIONS
8/17/99
9/14/2015
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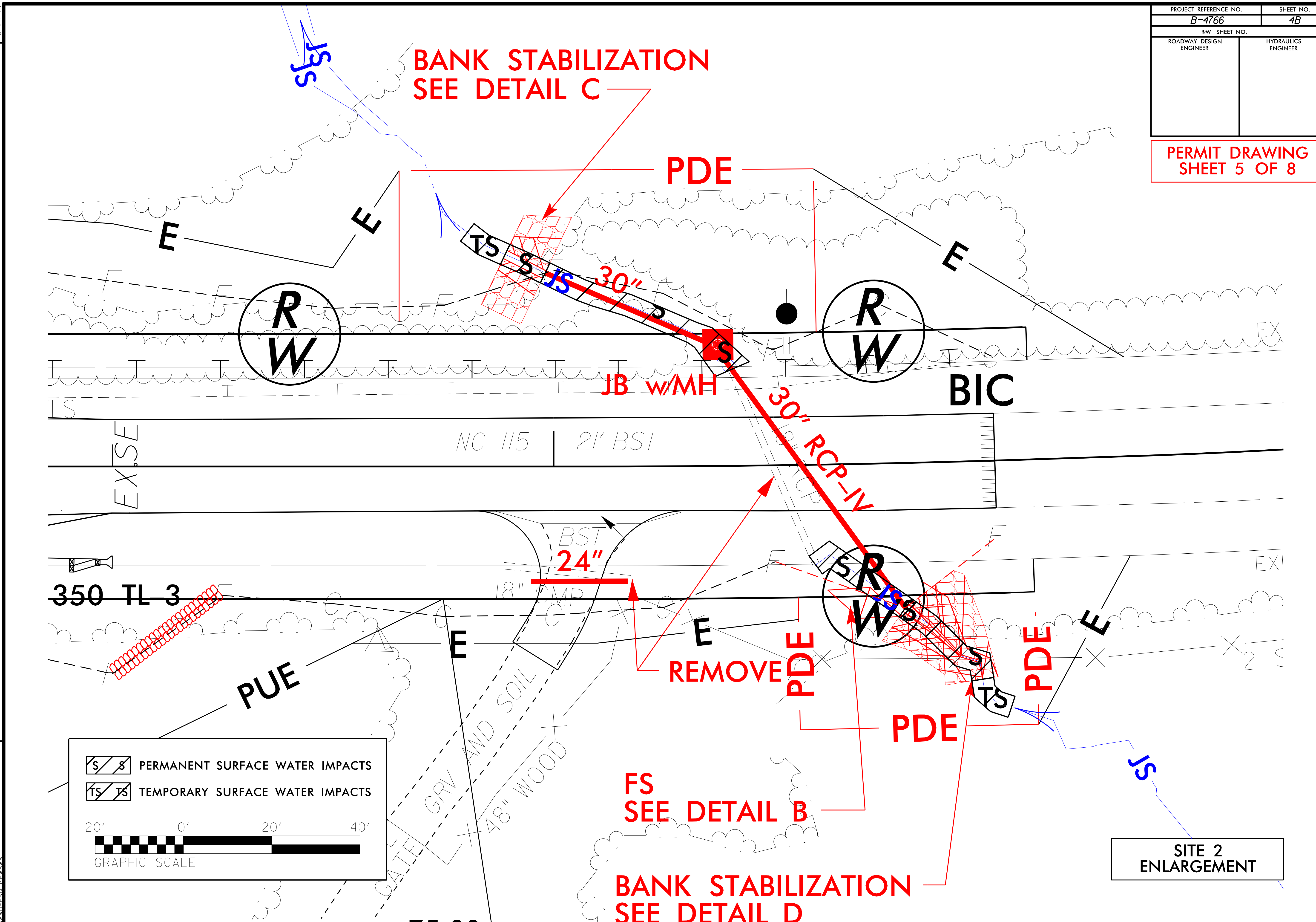
PROJECT REFERENCE NO.	SHEET NO.
B-4766	4B

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 5 OF 8



REVISIONS

9/1/2015
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-L- NC 115

* DESIGN EXCEPTION REQUIRED FOR VERTICAL
CURVE K-VALUES AND ASSOCIATED SSD.

PROJECT REFERENCE NO.	SHEET NO.
B-4766	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 6 OF 8

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	5,360	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1,002.8	FT
BASE DISCHARGE	=	6,409	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1,004.12	FT
OVERTOPPING DISCHARGE	=	18,000	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	1,014.4*	FT
	=		FT
DATE OF SURVEY	=	MAY 19, 2015	
W.S. ELEVATION AT DATE OF SURVEY	=	989.6	FT

*OVERTOPPING ELEVATION EQUALS NORMAL CROWN AT SAG LOCATION, STATION 17+41 -L-

BM#2 ELEV. = 1008.63'
BL STATION 9+89.00 152' RIGHT
R/R SPIKE SET IN ROOT OF 28"X48" TRI
FORKED BEECH TREE

BM#1 ELEV. = 1055.47'
-BL- STA. 20+08.73 0' RIGHT
REBARAND CAP STAMPED "B4766 BL-4"
SET FLUSH WITH THE GROUND IN
GRAVE DRIVEWAY

PIPE HYDRAULIC DATA
30" RCP CL.IV Sta. 20+56.15 -L-

DRAINAGE AREA	=	19.7	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	28	CFS
DESIGN HW ELEVATION	=	1023.71	FT
100 YEAR DISCHARGE	=	34	CFS
100 YEAR HW ELEVATION	=	1024.16	FT
OVERTOPPING FREQUENCY	=	100+/-	YRS
OVERTOPPING DISCHARGE	=	33	CFS
OVERTOPPING ELEVATION	=	1024.00	FT

BRIDGE PROFILE
SITE 1

5/28/99

9/14/2015
ejhahn
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$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
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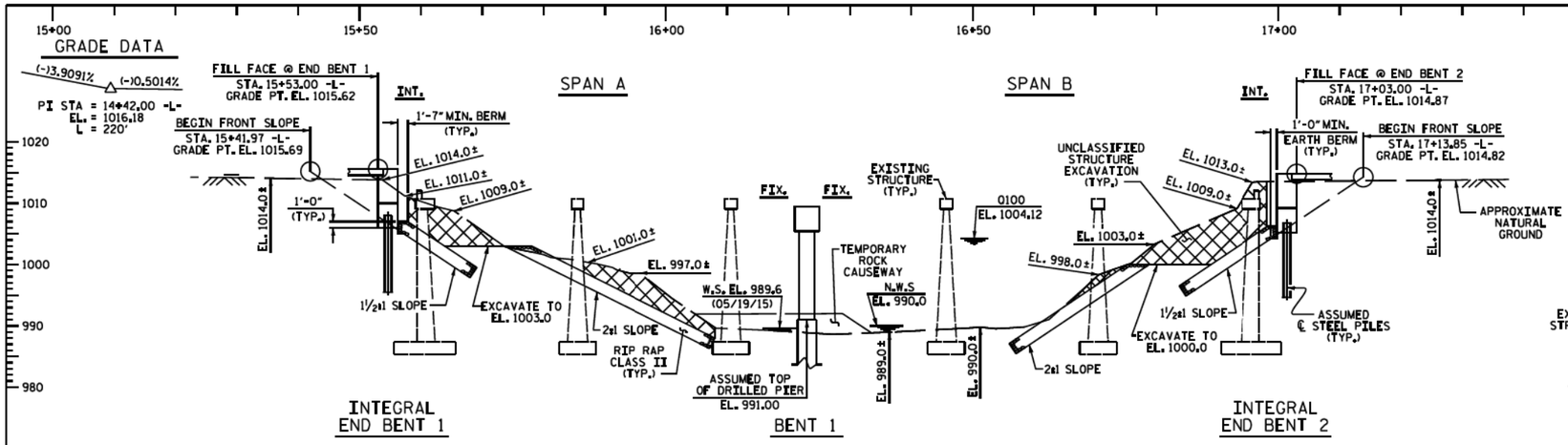
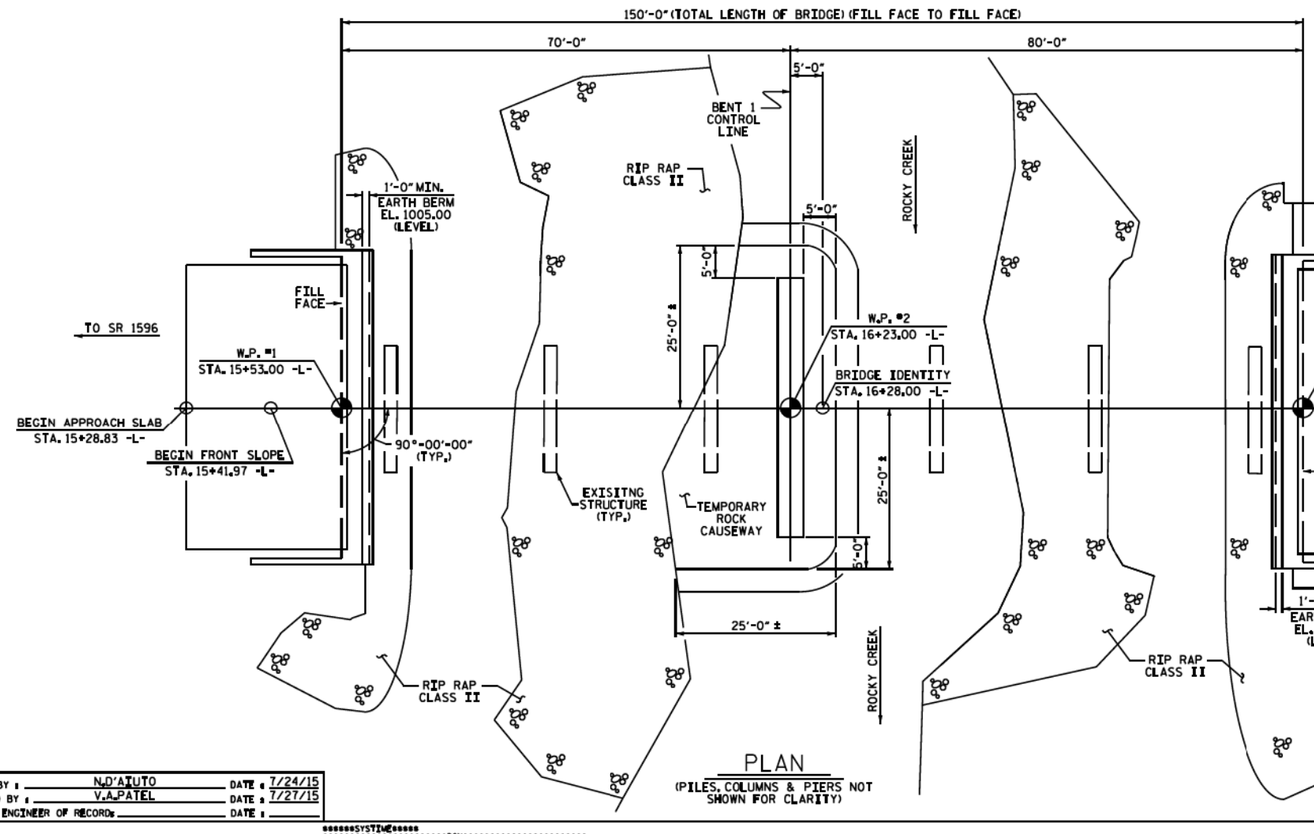
F.A. PROJECT NO. BRSTP-0115(7)

PERMIT DRAWING
SHEET 7 OF 8



SECTION ALONG -L-

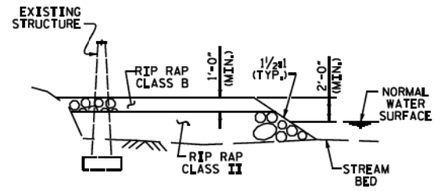


PLAN
(PILES, COLUMNS & PIERS NOT SHOWN FOR CLARITY)

GRADE DATA

(-)0.5014%
(+)2.3918%
PI STA = 18+03.00 -L-
EL. = 1014.37
L = 190'

TEMPORARY ROCK CAUSEWAY



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-4766
IREDELL COUNTY
STATION: 16+28.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 69

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING
FOR BRIDGE OVER ROCKY CREEK
ON NC 115 BETWEEN
SR 1596 (TAYLOR SPRINGS RD.)
& SR 1597 (RACE PATH RD.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			

DRAWN BY : N.D'AIUTO DATE : 7/24/15
CHECKED BY : V.A.PATEL DATE : 7/27/15
DESIGN ENGINEER OF RECORD: _____ DATE : _____

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

9/1/2015
@Hydraulics
R:\Hydraulics\PERMITS_Environmental\Drawings\B4766_Hyd_prm_wet_04_psh.dgn
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 15+76 / 16+80	bank stabilization						0.03	< 0.01	120	10	
1	-L- 16+00 / 16+36	temporary rock causeway							0.03			
2	-L- 20+50	30-inch RCP-IV						< 0.01		73		
2	-L- 19+94 LT / 20+79 RT	bank stabilization						< 0.01	< 0.01	35	20	
TOTALS*:								0.04	0.03	228	30	0

*Rounded totals are sum of actual impacts

NOTES:
1. 62 feet of temporary surface water impacts due to temporary rock causeway are within permanent surface water impacts due to bank stabilization
2. permanent surface water impacts due to interior bent equals 21 square feet

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
September 14, 2015
Iredell County
B-4766
38538.1.2
SHEET 8 OF 8

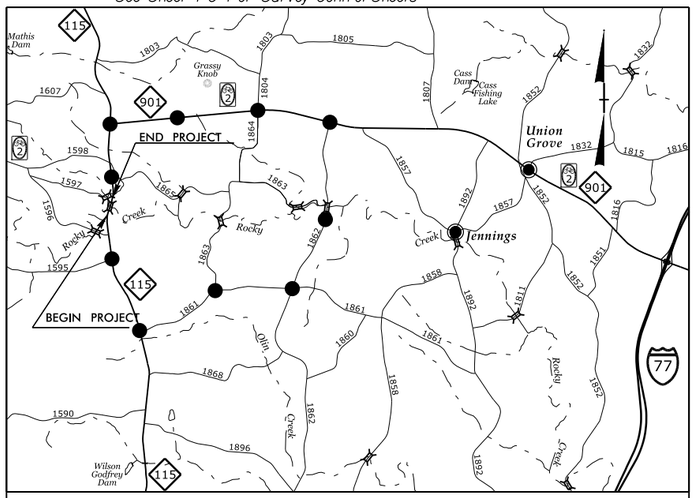
Revised 2013 10 24

09/30/60

TIP PROJECT: B–4766

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Convention Symbols
See Sheet 1-C For Survey Control Sheets



VICINITY MAP

●—●—● *OFF–SITE DETOUR*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

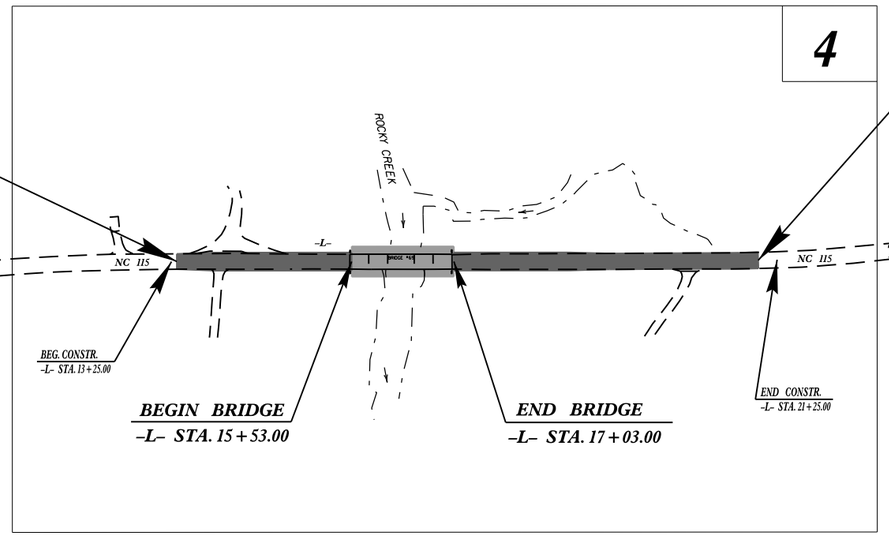
LOCATION: BRIDGE No. 69 OVER ROCKY CREEK ON NC 115

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4766	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38538.1.2	BRSTP–0115(7)	PE
38538.2.1	BRSTP–0115(7)	R/W, UTIL

NAD 83/95



BEGIN TIP PROJECT B–4766
–L– STA. 13+32.00

END TIP PROJECT B–4766
–L– STA. 21+00.00

BEGIN BRIDGE
–L– STA. 15+53.00

END BRIDGE
–L– STA. 17+03.00

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
NOT A CONTROL OF ACCESS PROJECT.
DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVE.

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 2012 = 2,100
ADT 2040 = 3,600
DHV = 10 %
D = 55 %
T = 13 % *
V = 60 MPH
* TTST = 5% DUAL 8%
FUNC CLASS = MAJOR COLLECTOR REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT B–4766 = 0.117 MI

LENGTH STRUCTURE T.I.P. PROJECT B–4766 = 0.028 MI

TOTAL LENGTH OF T.I.P. PROJECT B–4766 = 0.145 MI

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2015

LETTING DATE:
JUNE 21, 2016

JASON MOORE, PE
PROJECT ENGINEER

NYA K. BOAYUE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

30-SEP-2015 14:12
R:_ROADWAY\PROJ\B4766_RDY_TSH.dgn
$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4766	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- 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 — 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent 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
- 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
- Designated U/G Water Line (S.U.E.*)
- 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
- 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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4766	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

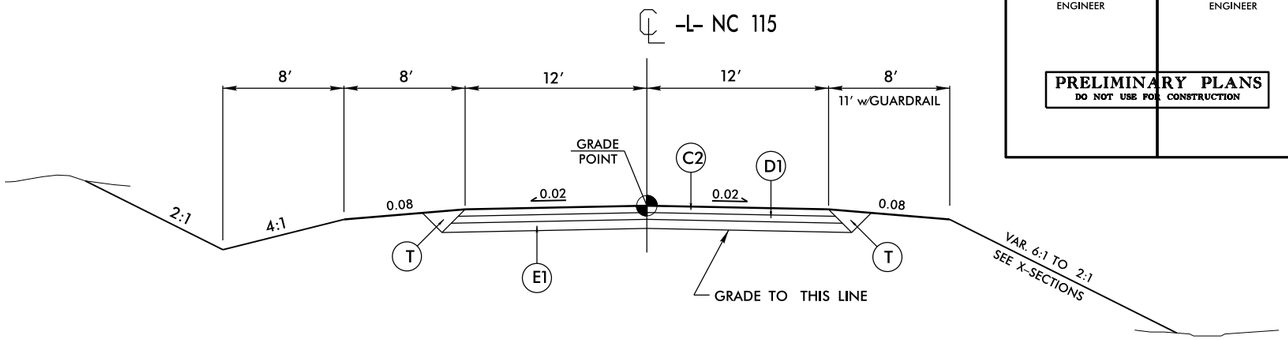
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

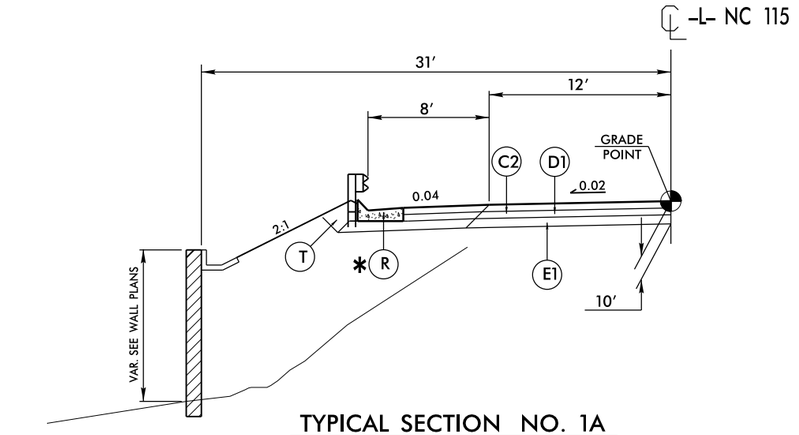
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	SHOULDER BERM GUTTER.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.

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



TYPICAL SECTION NO. 1

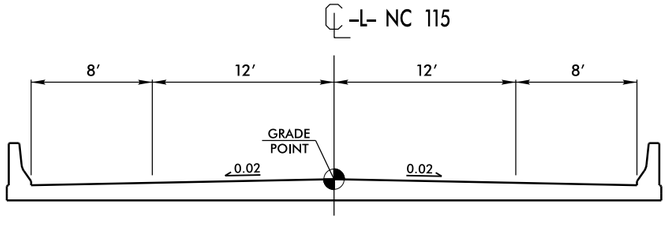
USE TYPICAL SECTION NO. 1
-L- STA. 13+32.00 TO STA. 15+53.00
-L- STA. 17+03.00 TO STA. 19+00.00



NOTE: LOCATION OF RETAINING WALL
-L- LT. STA 17+12.00 TO STA. 18+15.00
USE T.S. No. 1A INCONJUNCTION W/ T.S. No. 1

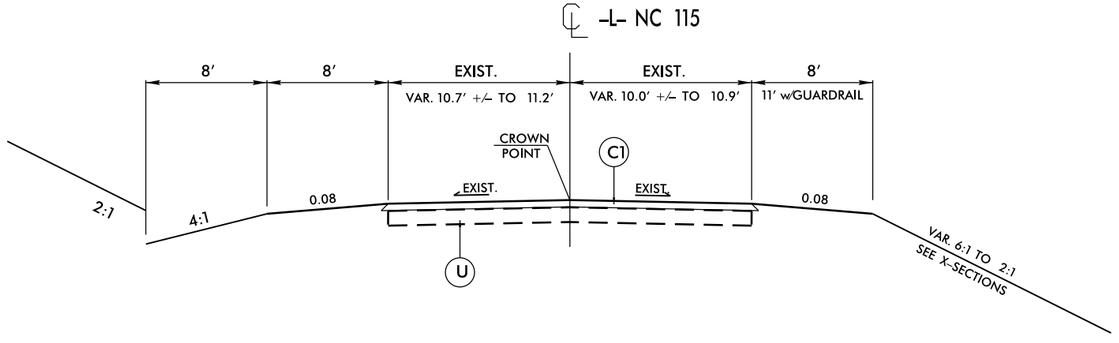
* SEE PLANS FOR LOCATION OF SHLOULDER BERM GUTTER AND DETAIL ??? FOR PLACEMENT

TYPICAL SECTION NO. 1A



TYPICAL SECTION ON STRUCTURE

-L- STA. 15+53.00 TO STA. 17+03.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 19+00.00 TO STA. 21+00.00

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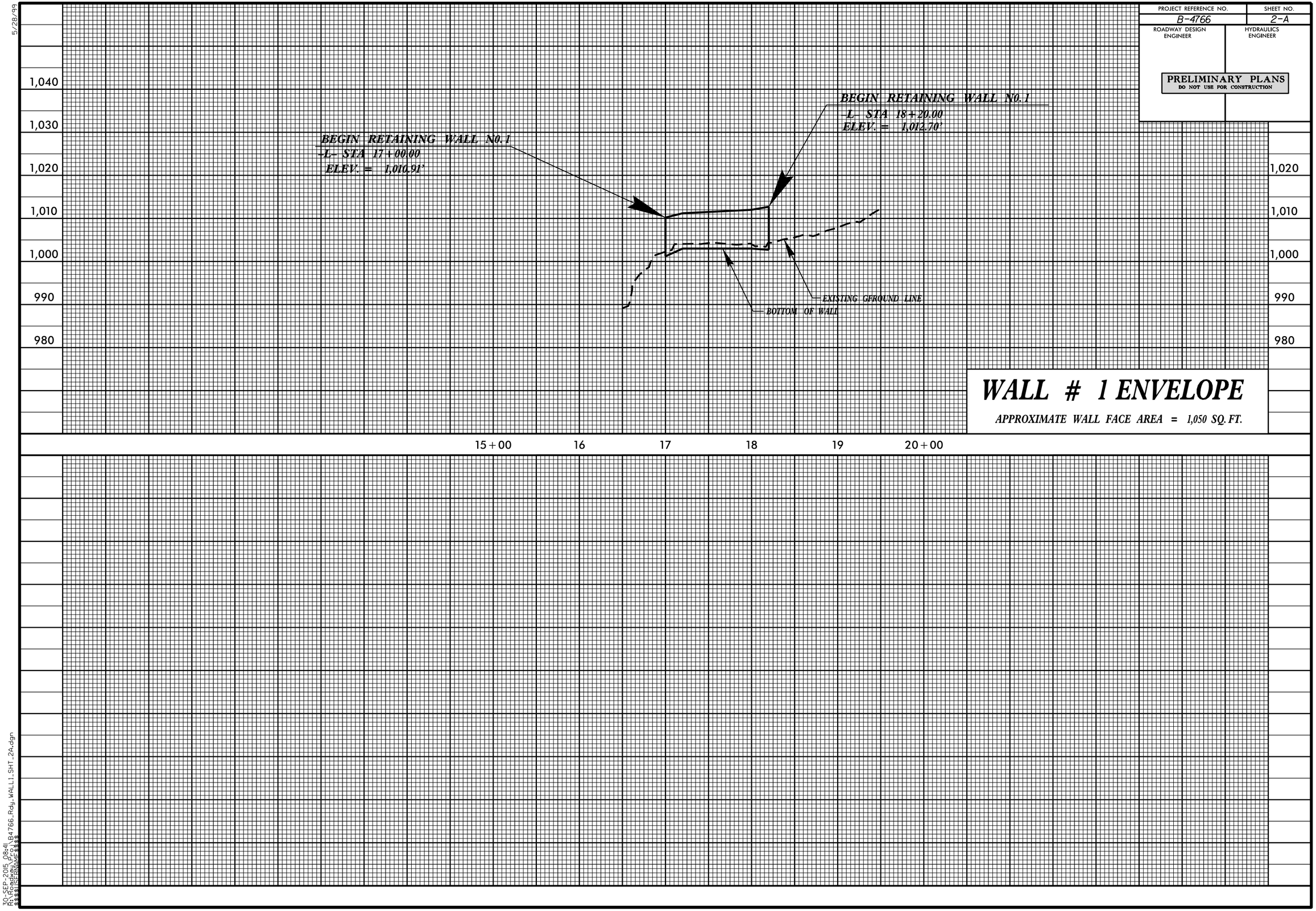
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4766	2-A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



WALL # 1 ENVELOPE

APPROXIMATE WALL FACE AREA = 1,050 SQ. FT.

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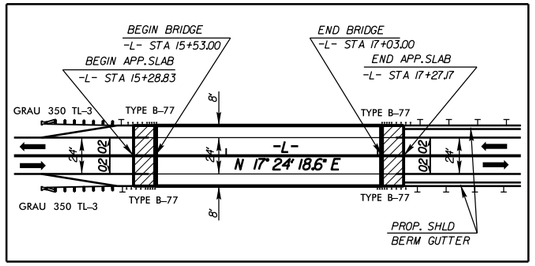
PROJECT REFERENCE NO.	SHEET NO.
B-4766	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99



SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

-L-

PI Sta 11+49.47	PI Sta 20+59.03	PI Sta 21+82.80
Δ = 7° 07' 38.4" (RT)	Δ = 1° 52' 17.5" (LT)	Δ = 3° 54' 51.2" (LT)
D = 2° 23' 14.4"	D = 1° 54' 35.5"	D = 3° 49' 11.0"
L = 298.55'	L = 97.99'	L = 102.47'
T = 149.47'	T = 49.00'	T = 51.26'
R = 2,400.00'	R = 3,000.00'	R = 1,500.00'

NAD 83/95

BEGIN T.I.P. PROJECT B-4766
-L- STA. 13+32.00

END T.I.P. PROJECT B-4766
-L- STA. 21+00.00

-L- POT Sta. 22+77.70

-L- PC Sta. 10+00.00

-L- PT Sta. 12+98.55

-L- PC Sta. 20+10.03

-L- PT Sta. 21+08.02

-L- PC Sta. 21+31.54

-L- PT Sta. 22+34.02

LINDA R. PATTERSON
DB 2053 PG 1270 (1)

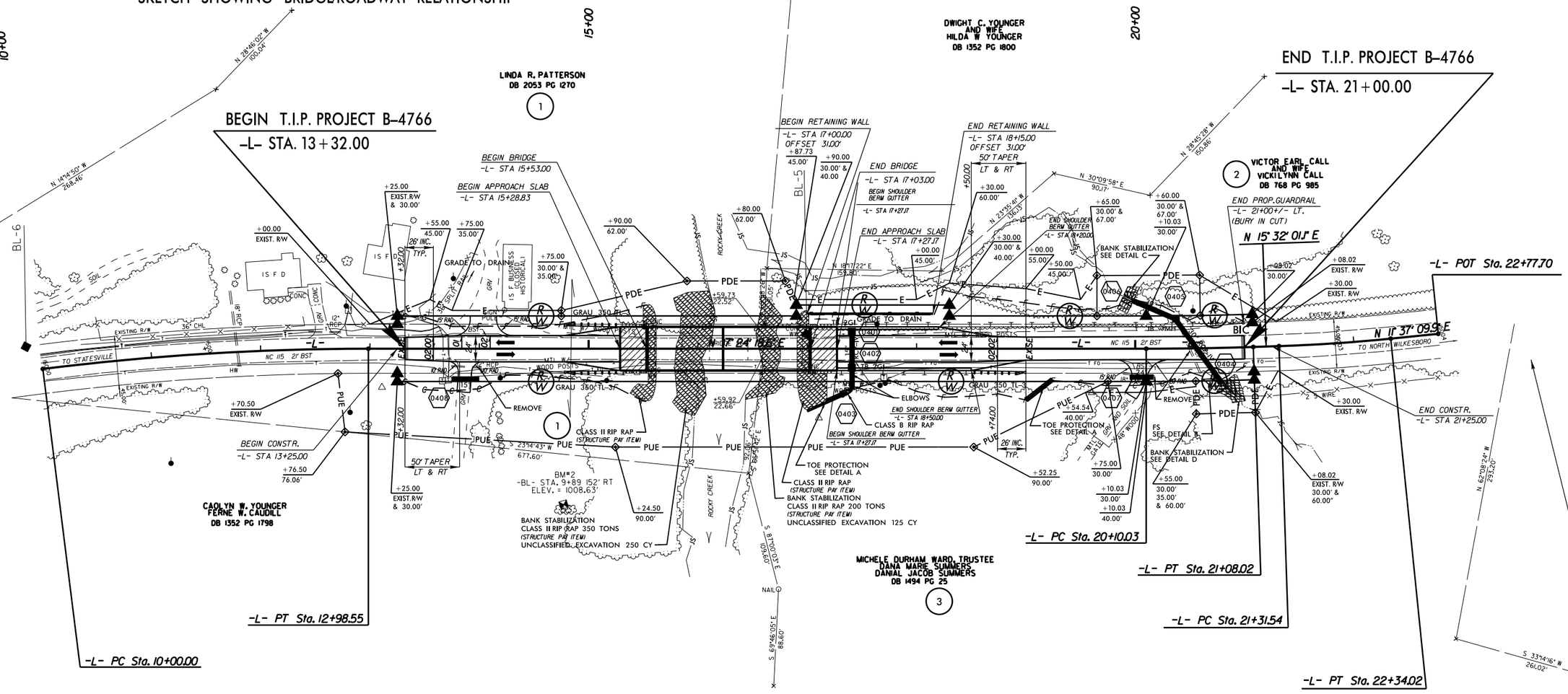
DWIGHT C. YOUNGER AND WIFE HILDA W YOUNGER
DB 1352 PG 1800

VICTOR EARL CALL AND WIFE VICKILYNN CALL
DB 768 PG 985 (2)

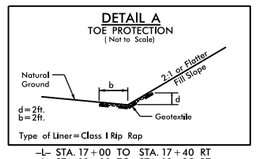
CAOLYN W. YOUNGER
FERNE W. CAUDILL
DB 1352 PG 1798

MICHELE DURHAM WARD, TRUSTEE
DANA MARIE SUMMERS
DANIAL JACOB SUMMERS
DB 1494 PG 25 (3)

BM#2
-BL- STA. 9+89.152' RT
ELEV. = 1008.63'

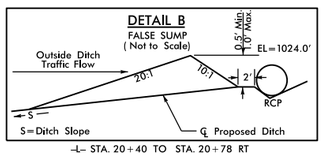


DETAIL A
TOE PROTECTION
(Not to Scale)



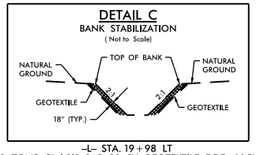
Type of Liner = Class I Rip Rap
-L- STA. 17+00 TO STA. 17+40 RT
-L- STA. 19+00 TO STA. 19+25 RT

DETAIL B
FALSE SUMP
(Not to Scale)



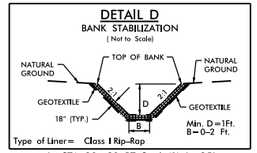
-L- STA. 20+40 TO STA. 20+78 RT

DETAIL C
BANK STABILIZATION
(Not to Scale)



-L- STA. 19+98 LT
12 TONS CL I RIP RAP, 30 SY GEOTEXTILE, DDE=10CY

DETAIL D
BANK STABILIZATION
(Not to Scale)



Type of Liner = Class I Rip-Rap
-L- STA. 20+80 RT, S=6.4%, L=25'
28 TONS CL I RIP RAP, 55 SY GEOTEXTILE, DDE=20CY

SEE SHEET 5 FOR -L- PROFILE

30-SEP-2015 14:13
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$$$$USERNAME$$$$

ROADWAY DESIGN ENGINEER

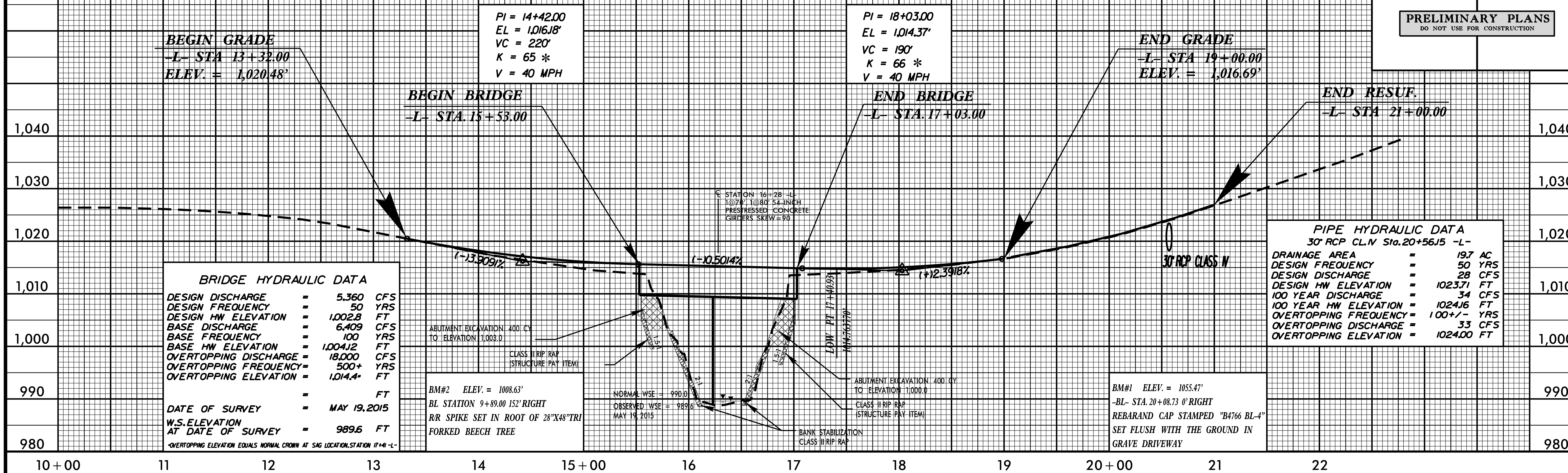
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

* DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVE K–VALUES AND ASSOCIATED SSD.

-L- NC 115



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	5,360	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1,002.8	FT
BASE DISCHARGE	=	6,409	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1,004.12	FT
OVERTOPPING DISCHARGE	=	18,000	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	1,014.4*	FT
	=		FT
DATE OF SURVEY	=	MAY 19, 2015	
W.S. ELEVATION AT DATE OF SURVEY	=	989.6	FT

*OVERTOPPING ELEVATION EQUALS NORMAL CROWN AT SAG LOCATION, STATION 17+41 -L-

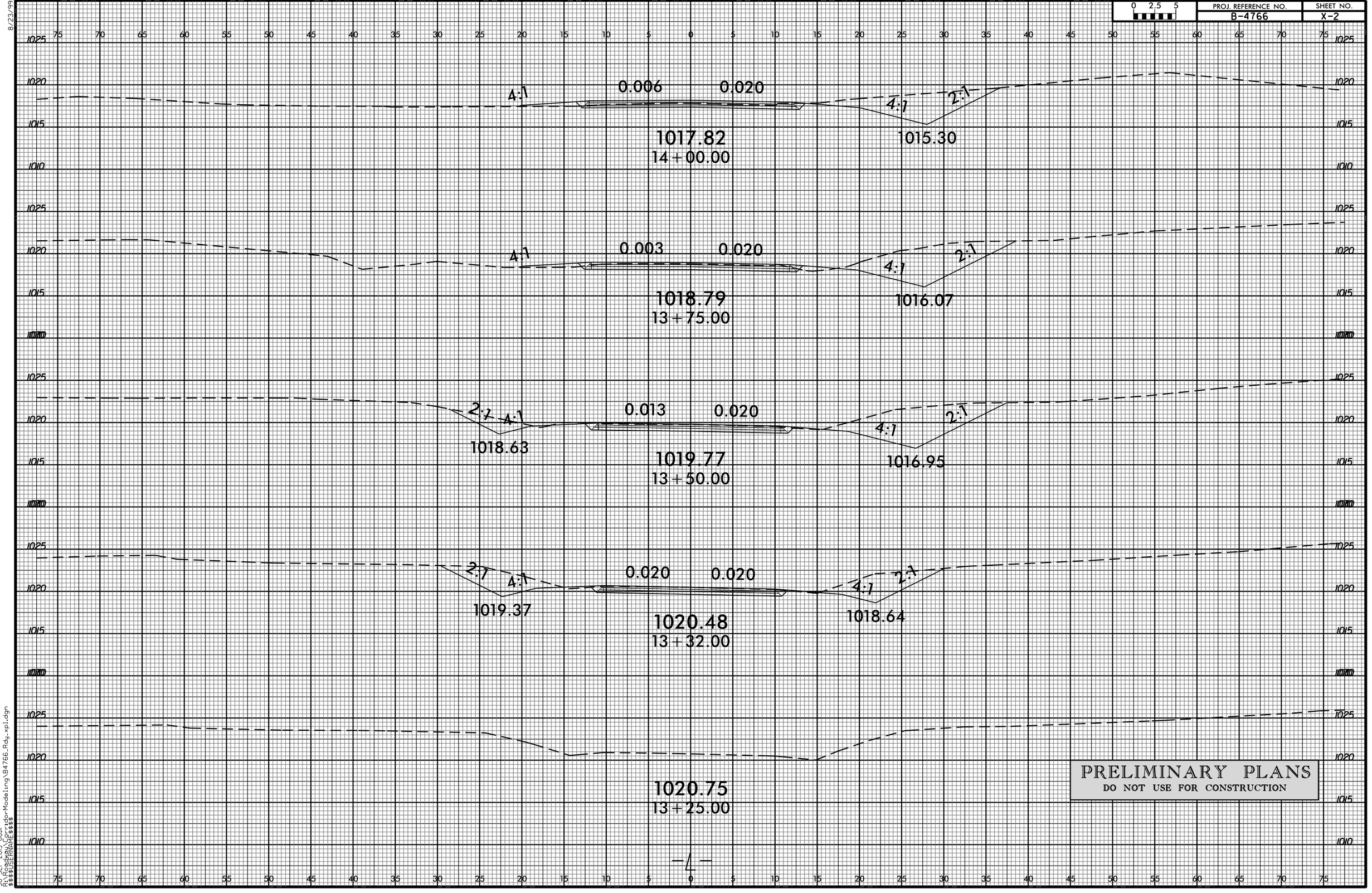
PIPE HYDRAULIC DATA

30" RCP CL.IV Sta.20+56.15 -L-

DRAINAGE AREA	=	19.7	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	28	CFS
DESIGN HW ELEVATION	=	1023.71	FT
100 YEAR DISCHARGE	=	34	CFS
100 YEAR HW ELEVATION	=	1024.16	FT
OVERTOPPING FREQUENCY	=	100+/-	YRS
OVERTOPPING DISCHARGE	=	33	CFS
OVERTOPPING ELEVATION	=	1024.00	FT

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-2



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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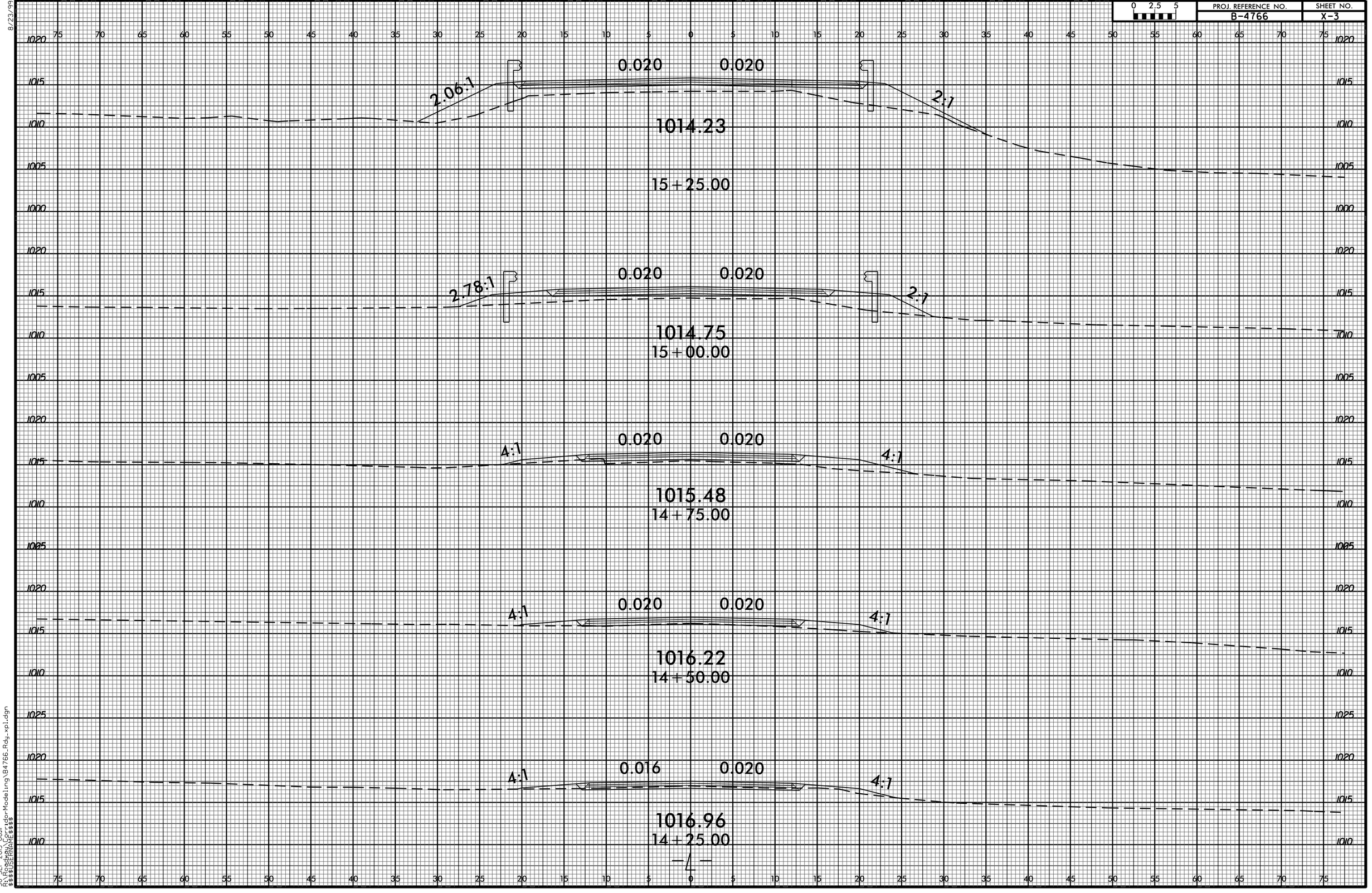
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-3



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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-4

0.020 0.020

1006.48

15+75.00

0.020 0.020

1013.82

15+53.00

0.020 0.020

2:1

1013.82

2:1

15+52.90

0.020 0.020

2:1

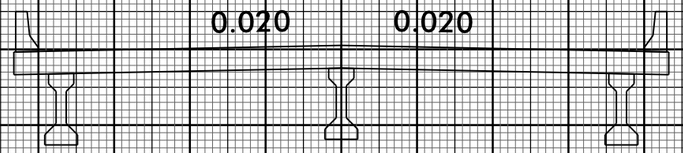
1013.87

2:1

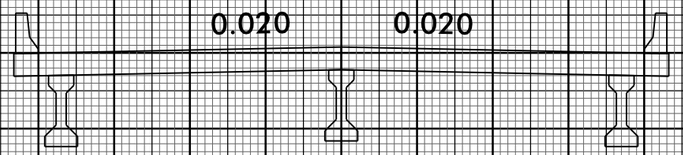
15+50.00

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-5



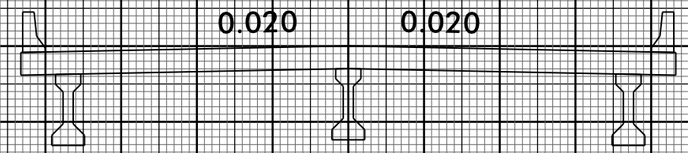
988.76
16+25.00



995.27
16+00.00

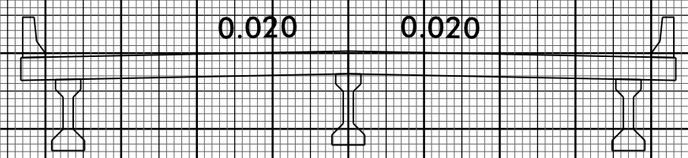
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-6



999.92

16+75.00



989.70

16+50.00

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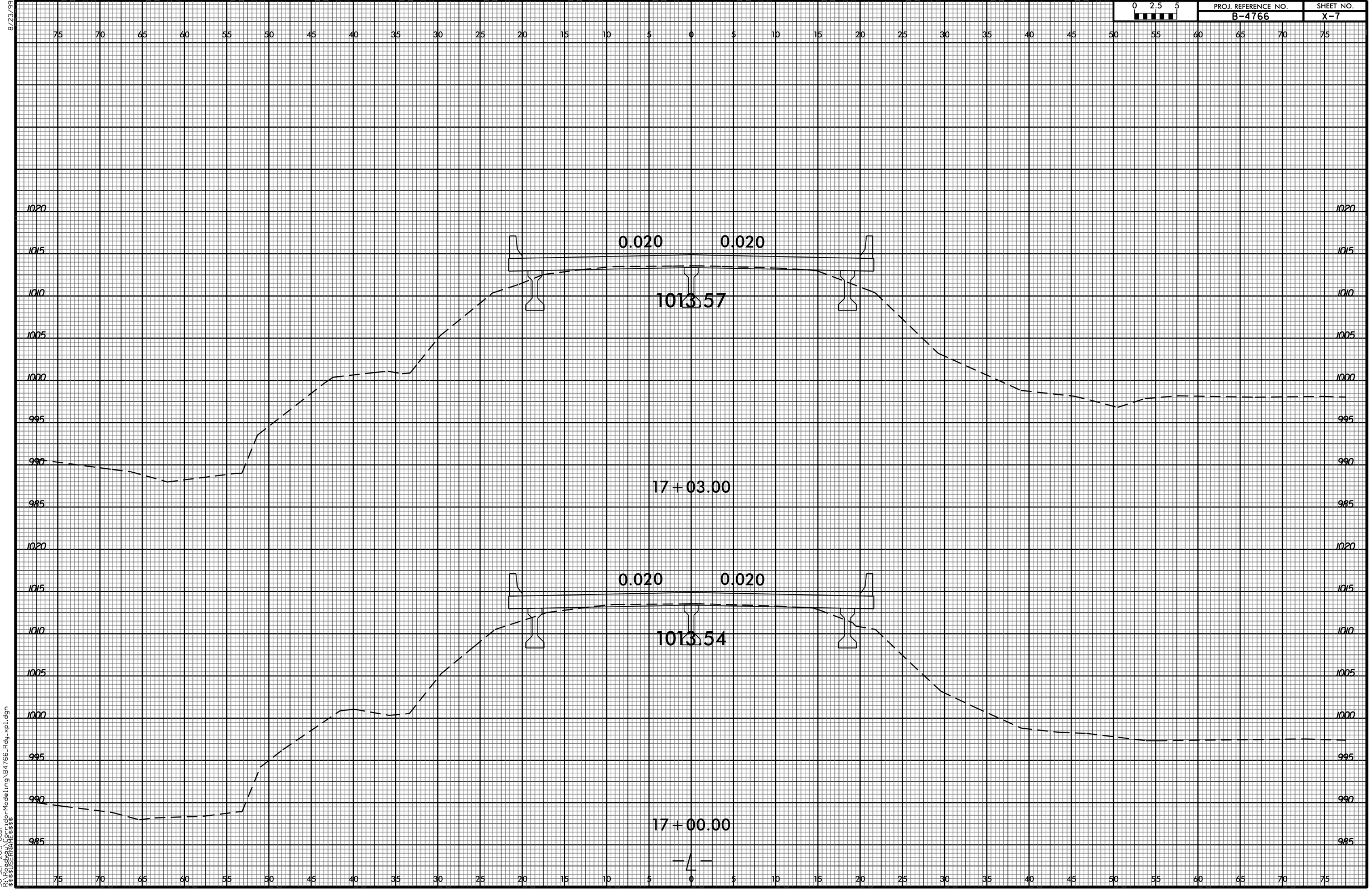
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-7



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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-8

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

1025 1020 1015 1010 1005 1000 995 990 985

1014.34 1014.34

0.020 0.020

1013.76

2:1

17+25.00

1014.42 1014.42

0.020 0.020

1013.57

2:1

17+03.10

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

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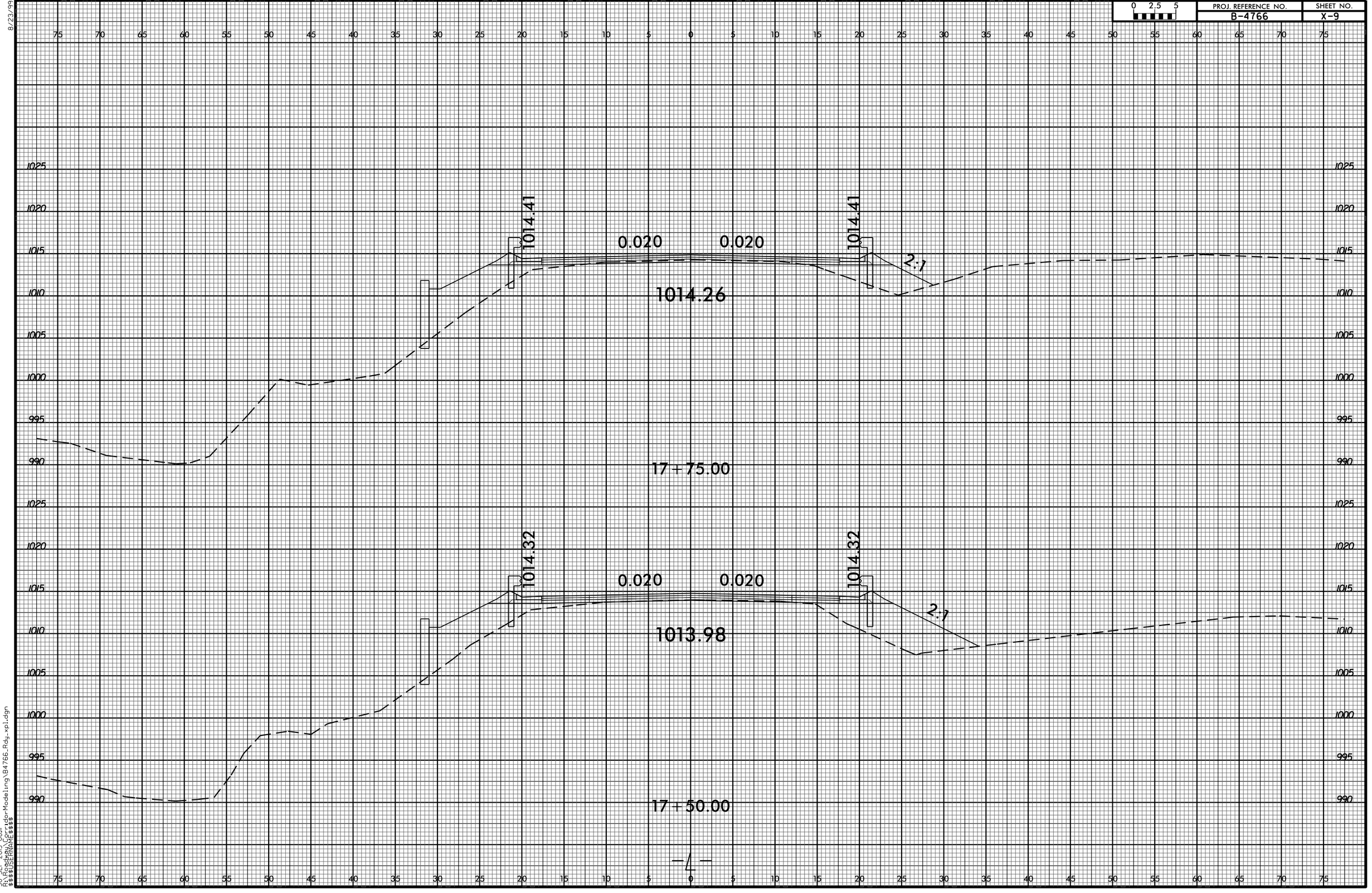
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-9



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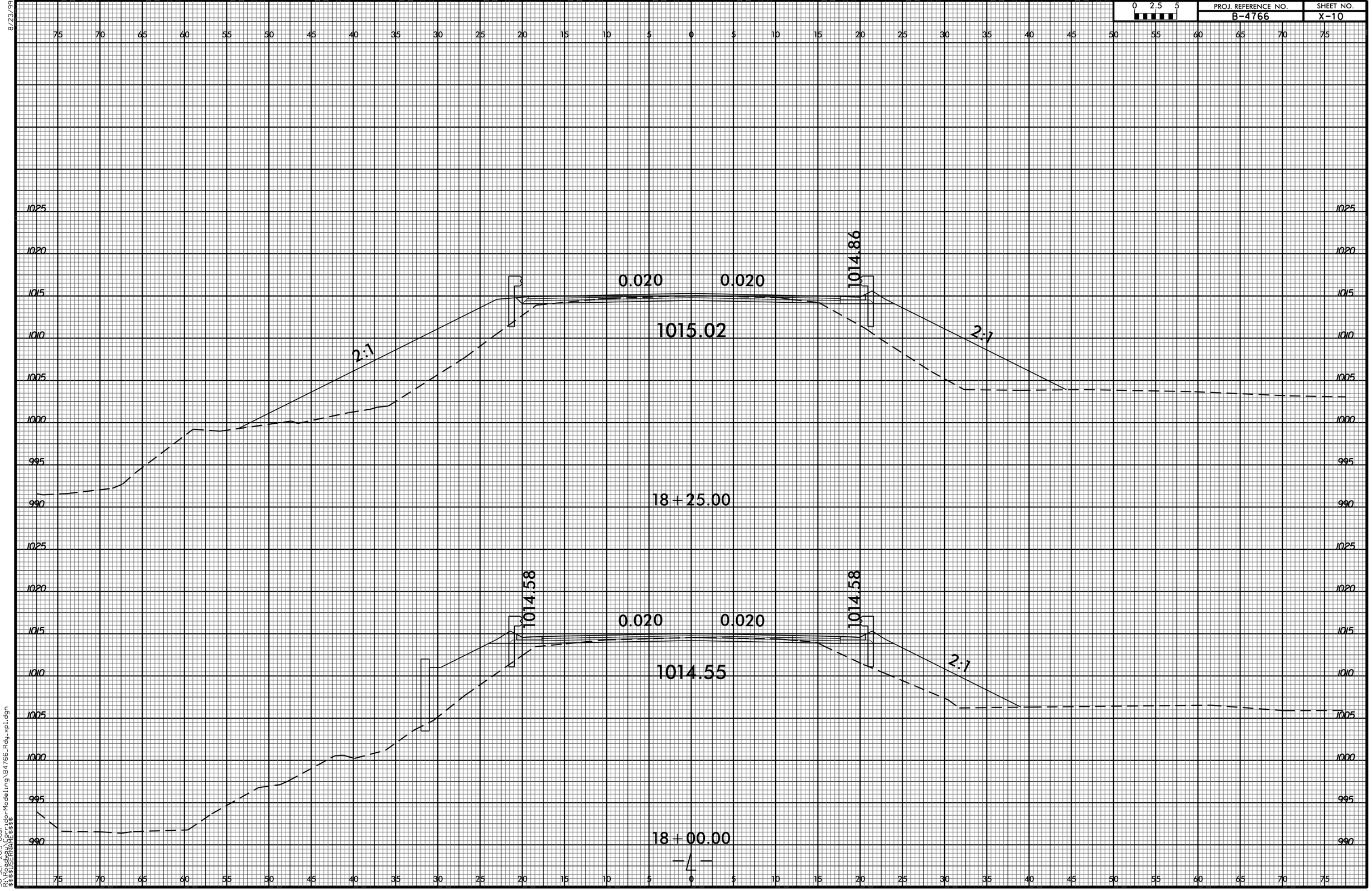
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-10



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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-11

19+00.00

0.030 0.010

1016.69

2:1

4:1

18+75.00

0.020 0.020

1016.09

2:1

2:1

18+50.00

0.020 0.020

1015.49

1015.22

2:1

2:1

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-12

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

1025 1020 1015 1010 1005

2:1 4:7 2:1

1019.56

1017.32

19+75.00

1025 1020 1015 1010 1005

2:1 4:7 2:1

1018.49

1016.19

19+50.00

1020 1015 1010 1005 1000

2:1 6:1

1017.56

19+25.00

—4—

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

30-SEP-2015 08:12
R:\Roadway\Corridor Modeling\B4766_Rdy_xpl.dgn
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-13

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

1030 1025 1020 1015 1010 1005

2:1 4:1 4:1

1022.58

1025.14
20+75.00

4:1 4:1

1023.56
20+50.00

4:1 2:1

2:1

1022.08

20+25.00

1020.05

2:1 4:1 2:1

1020.74

20+00.00

1018.66

—L—

30-SEP-2015 08:12
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4766	X-14

1030.23
21+50.00

1028.51
21+25.00

1025.23

4:1

1026.63

1026.82
21+00.00

30-SEP-2015 08:12
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