STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 10, 2013

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

ATTN: Ms. Loretta Beckwith
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 33 and 13** for the proposed replacement of Bridge No. 37 over Hoyle's Creek on SR 1314 in Lincoln County, Federal Aid Project No. BRZ-1314(5), WBS 42323.1.1, Division 12, TIP No. B-5155.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 37 over Hoyle's Creek on SR 1314 with a 71' long, 42'x12' bottomless reinforced concrete box culvert (RCBC) on the existing alignment. Traffic will be maintained during construction via an offsite detour.

There will be 165 linear feet (0.09 ac) of temporary stream impacts due to the installation of the bottomless RCBC using impervious dikes and 18 linear feet of stream bank stabilization at the outlet of a special cut ditch.

Please see enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, permit drawings and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in March 2012 and distributed shortly thereafter. Additional copies are available upon request.

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

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE:NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

This project calls for a letting date of February 18, 2014 and a review date of December 31, 2013; 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,

E. L. Luck

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

cc:
NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13 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 37 over Hoyle's Creek on SR 1314
2b. County:	Lincoln
2c. Nearest municipality / town:	Iron Station
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-5155

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: 35.43271 (DD.DDDDDD)	Longitude: - 81.17220 (-DD.DDDDDD)
1c. Property size:	1.2 acre	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Hoyle's Creek	
2b. Water Quality Classification of nearest receiving water:	WS-IV	
2c. River basin:	Catawba	
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 45% forest land (including mixed hardwood forests), 20% developed or disturbed lands (roadsides and residential areas) and 35% 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: 200		
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a structurally deficient (sufficiency rating of 20.3 of 100 and structural evaluation appraisal of 2 of 9) and functionally obselete (deck geometry appraisal of 2 out of 9) bridge.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 51-foot two-span bridge with a 71' long, 42'x12' bottomless reinforced concrete box culvert (RCBC) on the existing alignment with an off-site detour. 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, no prior JD needed	☐ 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): Kris Dramby	Agency/Consultant Company: NCDOT Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes	☒ No ☐ Unknown
5b. If yes, explain in detail according to "help file" instructions.		
6. Future Project Plans		
6a. Is this a phased project?	☐ Yes	☒ No
6b. If yes, explain.		

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

☐ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0 Permanent 0 Temporary

2h. Comments: No wetlands within construction limits

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Bank Stabilization	Hoyle's Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	30	18
Site 1 ☐ P ☒ T	Impervious dikes	Hoyle's Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	30	86 (0.04 ac)
Site 1 ☐ P ☒ T	Culvert (RCBC)	Hoyle's Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	30	79 (0.05 ac)
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	18 Perm 165 Temp (0.09 ac Temp)

3i. Comments: Replace bridge with 71' long bottomless 42' x 12' RCBC. Bank stabilization proposed at outlet of special cut ditch in northwest quadrant. Temporary impervious dikes will be used to protect the stream channel during construction of the bottomless culvert. Additional temporary impacts are associated with the installation of the RCBC.

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 RCBC will be bottomless, preserving the natural streambed at the crossing. Water will not discharge directly into the creek at the crossing. A stabilized, lined ditch is proposed to carry runoff, which will replace the existing highly eroded ditch. Class II riprap bank stabilization will be provided at the confluence of the new ditch and Hoyle's Creek to prevent erosion. The drainage area for the existing crossing is only 5.75 square miles and the proposed culvert has been designed such that the slope, low flow velocities and low flow channel designs are consistent with the existing stream.

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

Traffic will be maintained off-site during construction. Temporary impervious dikes will protect the existing streambed and bank during construction of the RCBC. Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving stream 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 If no, explain: No loss of waters of U.S.
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:	0 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 acres
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 18 linear feet of stream bank stabilization activities or the 165 linear feet (0.09 ac) of temporary stream impacts. None of these impacts require 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. Furthermore, the proposed bank stabilization activities are necessary to prevent erosion and sedimentation, i.e. preventing bank destabilization and minimizing impacts to the environment.

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: Programmatic Categorical Exclusion (PCE) approved 3/5/12	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No	
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, ind icate the USFWS Field Office you have contacted.	☐ Raleigh ☒ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? There are two federally listed species for Lincoln County – Michaux's sumac and dwarf-flowered heartleaf. The project area was surveyed by NCDOT biologists for both of these species in 2009 and 2011. No individual of either species were located within the project limits. However, a small population of dwarf-flowered heartleaf was identified just outside of the original project study boundaries. Per e-mail correspondence with Jason Mays of the USFWS in July 2012, it was determined that this project would not affect this population of heartleaf. This project will have no effect on any Federally Threatened or Endangered species listed for Lincoln County,		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☐ Yes	☒ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Luck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	7.9.13 Date

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 42323.1.1/B-5155 **County(ies):** Lincoln

General Project Information

Project No.:	42323.1.1/B-5155	**Project Type:**	Bridge Replacement	**Date:**	3/20/2013
NCDOT Contact:	Marshall Clawson, P.E.	**Contractor / Designer:**	Mark Kamprath, P.E.		
Address:	Hydraulics Unit 1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	AECOM 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607		
Phone:	919-707-6713	**Phone:**	919-854-6232		
Email:	mclawson@ncdot.gov	**Email:**	mark.kamprath@aecom.com		
City/Town:	Iron Station	**County(ies):**	Lincoln		
River Basin(s):	Catawba	**CAMA County?**	No		
Primary Receiving Water:	Hoyle Creek	**NCDWQ Stream Index No.:**	11-129-15-(1)		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	Water Supply IV (WS-IV)			
	Supplemental:	None			
Other Stream Classification:	None				
303(d) Impairments:	None				
Buffer Rules in Effect	Catawba				

Project Description

Project Length (lin. Miles or feet):	0.133 mile	**Surrounding Land Use:**	Pastures and Wooded, Rural

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.16 ac.	0.16 ac.
Typical Cross Section Description:	10' Travel Lanes, 3' Grass Shoulders, and 7' Grass Shoulders with Guard Rail. Side Slopes varies 2:1 to 4:1	10' Travel Lanes, 3' Grass Shoulders. Side Slopes varies 2:1 to 4:1
Average Daily Traffic (veh/hr/day):	Design/Future:	Existing:

General Project Narrative:

SEE PAGE 2 FOR GENERAL PROJECT NARRATIVE.

References

North Carolina Department of Transportation

Highway Stormwater program

STORMWATER MANAGEMENT PLAN

For Linear Roadway Projects

TIP # B-5155

Project Type: Bridge Replacement

County: Lincoln

General Project Narrative:

The project consists of replacing Bridge # 37 on SR 1314 (Will Schronce Road) over Hoyle Creek with a 42' x 12' Con-Span or 42’ x 12’ Crownspan and approximately 325' of approach work on either side of the structure. The inlet and out banks of the structure will be stabilized with Class II Rip Rap. The project also includes approximately 52 feet of Class B Rip Rap Toe Protection from Sta. 13+75 to Sta. 14+07 RT, about 85 feet of Class B Rip Rap in a Standard 2’ Base Ditch from Sta. 14+40 to Sta. 15+25 Rt, and 125 feet of Class B Rip Rap in a Special Cut “V” Ditch from Sta. 15+25 to Sta. 16+50 Rt.

Surface water impacts permanent is 0.002 ac. and temporary is 0.09 ac.

Best Mgmt. Practices:
-Promotion of sheet flow and infiltration with grassed shoulders and swales.

It is our belief that the stormwater design of the B-5155 project has minimized impacts to the maximum extent practical. Several options were explored during design to provide treatment of storm water runoff prior to discharge. A detail list of alternatives and reasons why they were not employed are provided below.

1. Grass Swale – Steep grades caused high velocities thus grass swale criteria was unable to be met.
2. Level Spreader – This option was not feasible due to steep ditch grades and topography.
3. Preformed Scour Hole – No flat areas to construct preformed scour hole. Rip rap lined ditch will provide some degree of treatment even with steep grades.
4. Permanent Ditch Check – Due to steep ditch grades several ditch checks would be required to provide non-erosive velocities. Use of ditch checks could result of standing water in the ditch.

For the above reasons the following design option was chosen.

5. Provide stabilized ditch to carry runoff from roadside ditch to stream. Existing ditch observed to be eroded and dumping water down creek banks into stream. In order to protect culvert wingwalls from ditch erosion the proposed design uses lined ditch. Class II Rip Rap has been provided at ditch outlet to provide stream bank stabilization. Driveway pipe discharges into stream bank stabilization to minimize bank erosion. The proposed ditch and pipe will reduce bank erosion from existing conditions.

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
4	14+05 14+63	Stream	Perennial	Hoyle Creek	N/A	11-129-15-(1)	WS-IV	None	Stabilization	N/A	N/A

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 42323.1.1/B-5155 **County(ies):** Lincoln

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
4	12+25 13+25		0.0	2:1	2:1	0.80	80	100	6.07%	1.1	3.1	1.4	3.2	
4	14+40 15+25		2.0	2:1	2:1	2.95	295	85	12.00%	4.5	3.7	5.9	4.0	
4	15+25 16+50		0.0	2:1	2:1	2.82	282	125	9.58%	4.2	3.6	5.5	3.8	
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☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

We are continuing existing "V" ditch right of sta. 12+25 to proposed drive pipe and discharging onto banks stabilization Class II Rip Rap. PSH was not considered due to location of pipe outlet. Continuing existing "V" ditch left of sta. 16+50 with proposed "V" ditch with Class B Rip Rap that transitions to 2' base ditch with Class B Rip Rap and outlets at sta. 14+40 onto Class II Rip Rap embankment stabilization. PSH was not considered due to location of ditch outlet.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 42323.1.1/B-5155 **County(ies):** Lincoln

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
4	14+39 Lt.	Riprap Apron / Pad	Class II	2.95	Ditch	N/A	5.9	4.0
4	14+22 Rt.	Riprap Apron / Pad	Class II	0.80	Pipe	18" CSP	1.4	3.2

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

Additional Comments

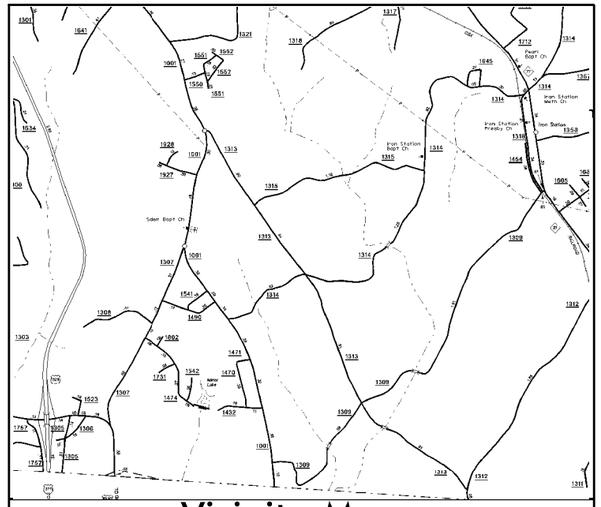
* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

09/08/99

TIP PROJECT: B-5155

CONTRACT:

See Sheet 1-A For Index of Sheets



Vicinity Map

OFFSITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LINCOLN COUNTY

LOCATION: BRIDGE NO. 37 ON SR 1314 OVER HOYLE'S CREEK

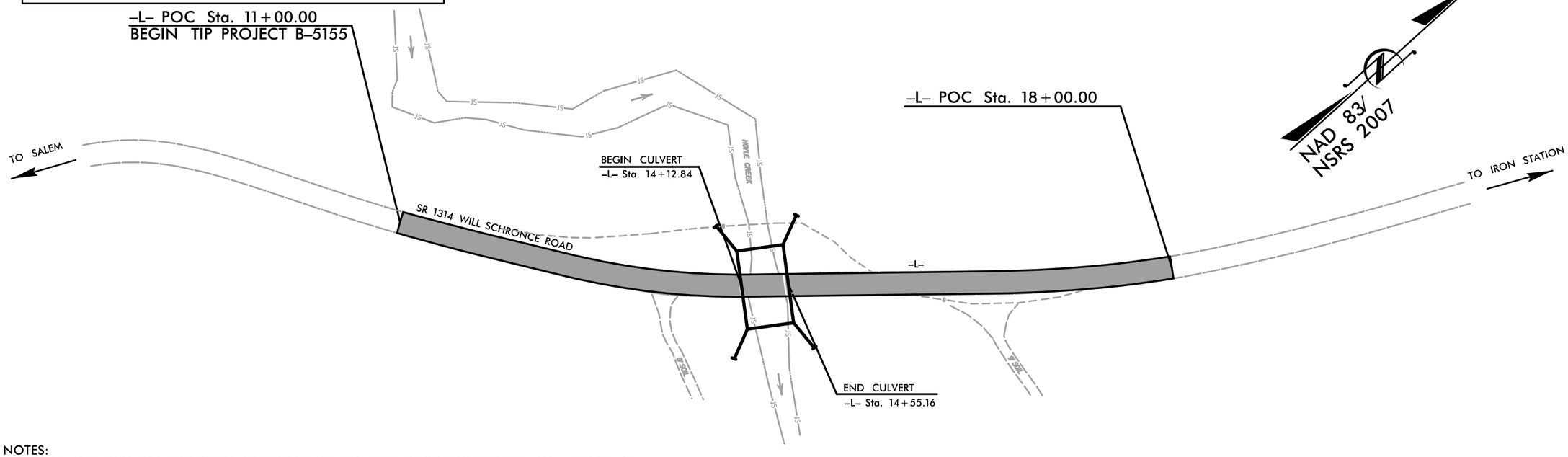
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5155	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
42323.1.1	BRZ-1314(5)	PE
42323.2.1	BRZ-1314(5)	RW,UTIL
42323.3.1	BRZ-1314(5)	CONST.

PERMIT DRAWING
1 OF **7**

WETLAND AND SURFACE WATER IMPACTS PERMIT



NOTES:
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
TRAFFIC IS TO BE MAINTAINED WITH AN OFFSITE DETOUR.
LOW VOLUME DESIGN GUIDE USED.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 250 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 223
ADT 2035 = 400
DHV = 12 %
D = 55 %
T = 8 % *
V = 45 MPH
* TTST =1% DUAL 7%
FUNC CLASS =
RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT BRZ-1314(5) = 0.125
LENGTH STRUCTURE F.A. PROJECT BRZ-1314(5) = 0.008
TOTAL LENGTH STATE PROJECT 42323.1.1 = 0.133

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 19, 2012

LETTING DATE: OCTOBER 15, 2013

JASON MOORE, PE
PROJECT ENGINEER

JEANIE TYSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER *P.E.*

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lowerydl

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	14+05 -L- TO	42'x12' BOTTOMLESS							0.05		79	
	14+63 -L-	RCBC ON FOOTINGS										
1	14+29 -l- TO	BANK						0.002		18		
	14+47 -L-	STABILIZATION										
1	14+05 -L- TO	IMPERVIOUS							0.04		86	
	14+67 -L-	DIKE										
TOTALS:								0.00	0.09	18	165	

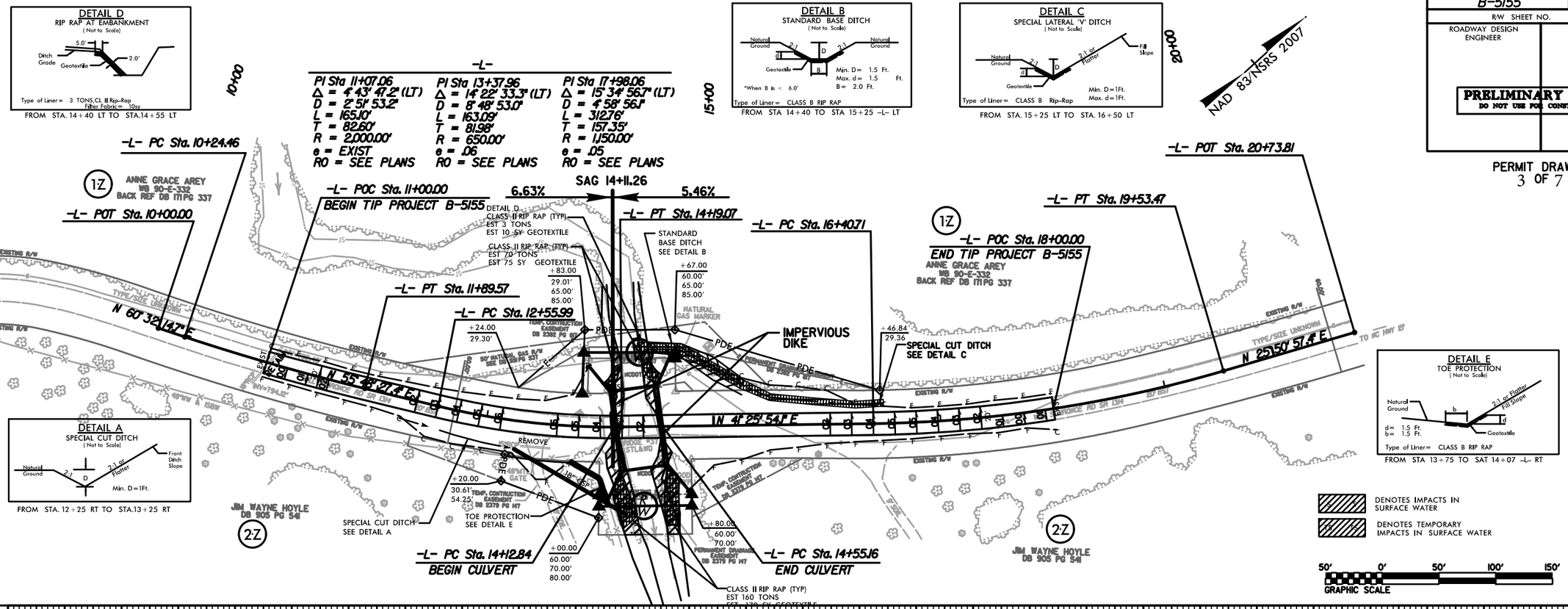
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE NO. 35 OVER HOYLE'S CREEK
LINCOLN COUNTY
WBS - 42323.2.1 (B-5155)

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5155	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
3 OF 7



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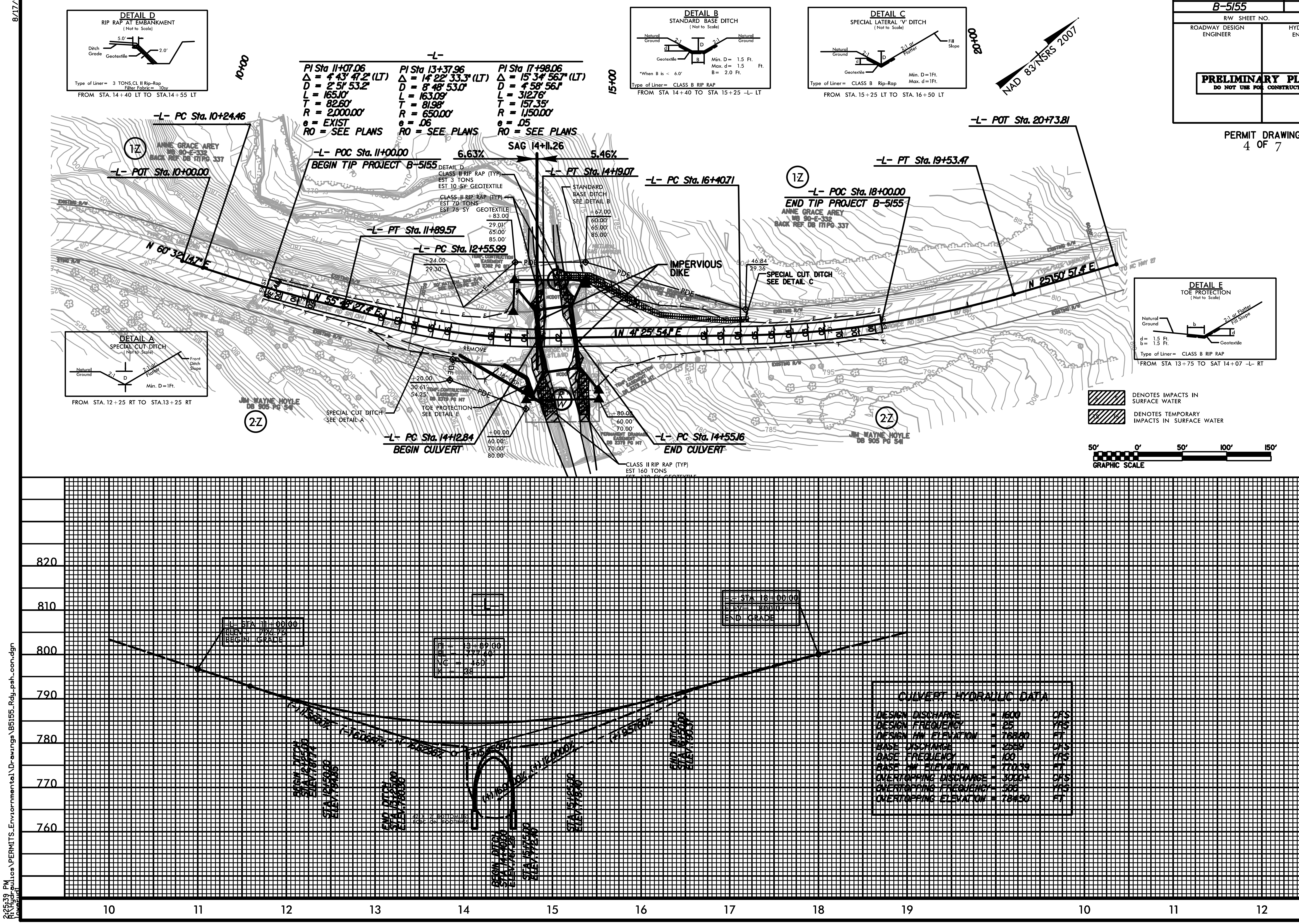
PROJECT REFERENCE NO.	SHEET NO.
B-5155	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
4 OF 7



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1600	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	768.80	FT
BASE DISCHARGE	=	2559	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	770.39	FT
OVERTOPPING DISCHARGE	=	3000+	CFS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	784.50	FT

8/17/99

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

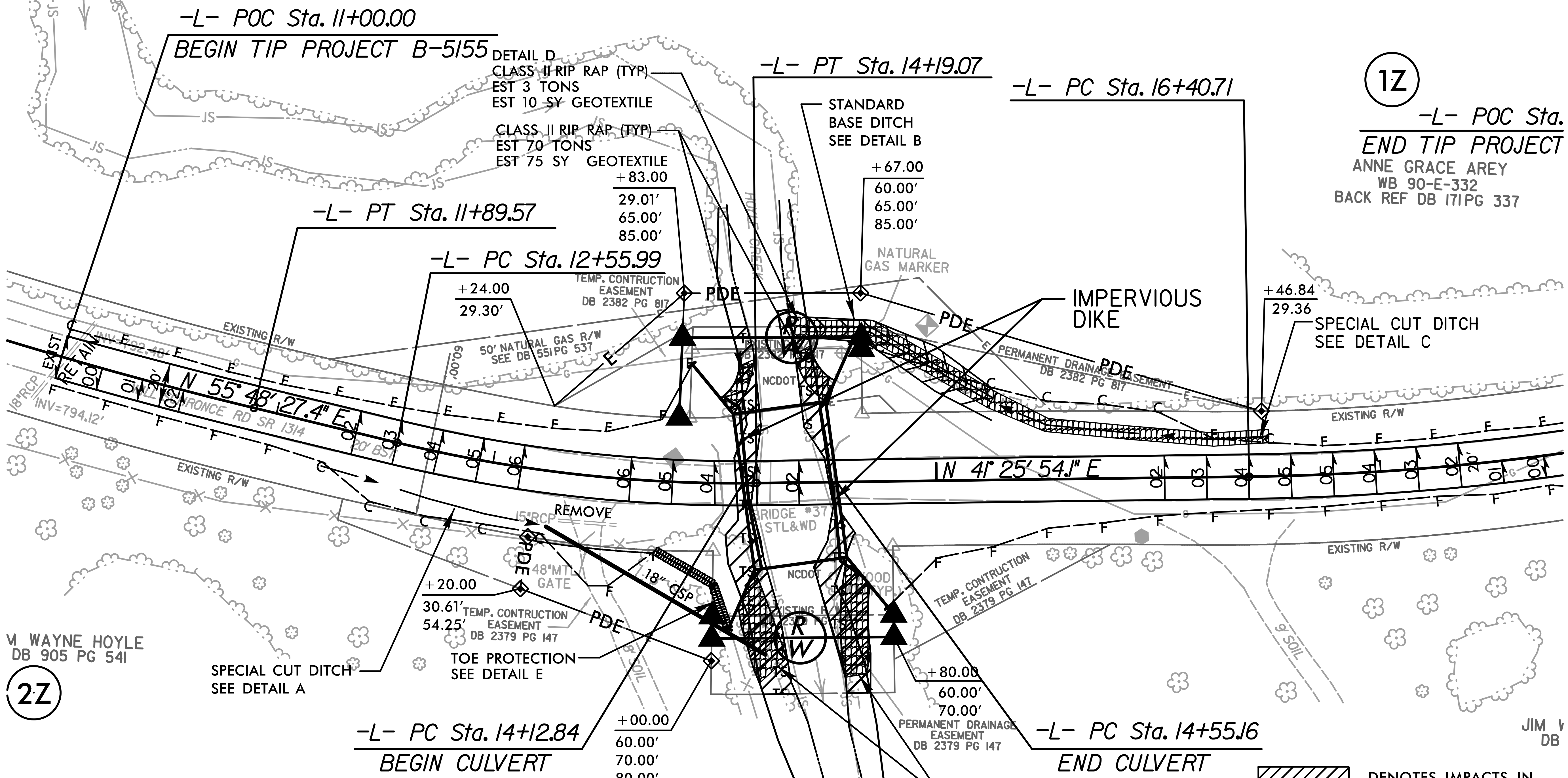
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
5 OF 7

ENLARGEMENT SHEET

-L-

PI Sta 11+07.06	PI Sta 13+37.96	PI Sta 17+98.06
△ = 4° 43′ 47.2″ (LT)	△ = 14° 22′ 33.3″ (LT)	△ = 15° 34′ 56.7″ (LT)
D = 2° 51′ 53.2″	D = 8° 48′ 53.0″	D = 4° 58′ 56.1″
L = 165.10′	L = 163.09′	L = 312.76′
T = 82.60′	T = 81.98′	T = 157.35′
R = 2,000.00′	R = 650.00′	R = 1,150.00′
e = EXIST	e = .06	e = .05
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS



50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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8/17/99

ENLARGEMENT SHEET

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

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

PERMIT DRAWING
6 OF 7

-L-

PI Sta 11+07.06
△ = 4° 43′ 47.2" (LT)
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RO = SEE PLANS

PI Sta 17+98.06
△ = 15° 34′ 56.7" (LT)
D = 4° 58′ 56.1"
L = 312.76′
T = 157.35′
R = 1,150.00′
e = .05
RO = SEE PLANS

15+00

-L- POC Sta. 11+00.00
BEGIN TIP PROJECT B-5155

DETAIL D
CLASS II RIP RAP (TYP)
EST 3 TONS
EST 10 SY GEOTEXTILE

CLASS II RIP RAP (TYP)
EST 70 TONS
EST 75 SY GEOTEXTILE

+83.00
29.01′
65.00′
85.00′

-L- PT Sta. 11+89.57

-L- PC Sta. 12+55.99

+24.00
29.30′

TEMP. CONTRUCTION EASEMENT
DB 2382 PG 817

50′ NATURAL GAS R/W
SEE DB 551 PG 537

EXIST C
RETAIN E
EXISTING R/W
N 55° 48′ 27.4" E
EXISTING R/W

PDE

REMOVE

+20.00
30.61′
54.25′

TEMP. CONTRUCTION EASEMENT
DB 2379 PG 147

48" MTL GATE

18" CSP

TOE PROTECTION
SEE DETAIL E

SPECIAL CUT DITCH
SEE DETAIL A

W WAYNE HOYLE
DB 905 PG 541

2Z

-L- PT Sta. 14+19.07

STANDARD
BASE DITCH
SEE DETAIL B

+67.00
60.00′
65.00′
85.00′

NATURAL GAS MARKER

-L- PC Sta. 16+40.71

IMPERVIOUS DIKE

+46.84
29.36

SPECIAL CUT DITCH
SEE DETAIL C

PERMANENT DRAINAGE EASEMENT
DB 2382 PG 817

EXISTING R/W

N 41° 25′ 54.1" E

EXISTING R/W

TEMP. CONTRUCTION EASEMENT
DB 2379 PG 147

+80.00
60.00′
70.00′

PERMANENT DRAINAGE EASEMENT
DB 2379 PG 147

-L- PC Sta. 14+12.84
BEGIN CULVERT

+00.00
60.00′
70.00′
80.00′

-L- PC Sta. 14+55.16
END CULVERT

CLASS II RIP RAP (TYP)
EST 160 TONS
EST 170 SY GEOTEXTILE

1Z

-L- POC Sta.
END TIP PROJECT
ANNE GRACE AREY
WB 90-E-332
BACK REF DB 171 PG 337

JIM W
DB

NCDOT

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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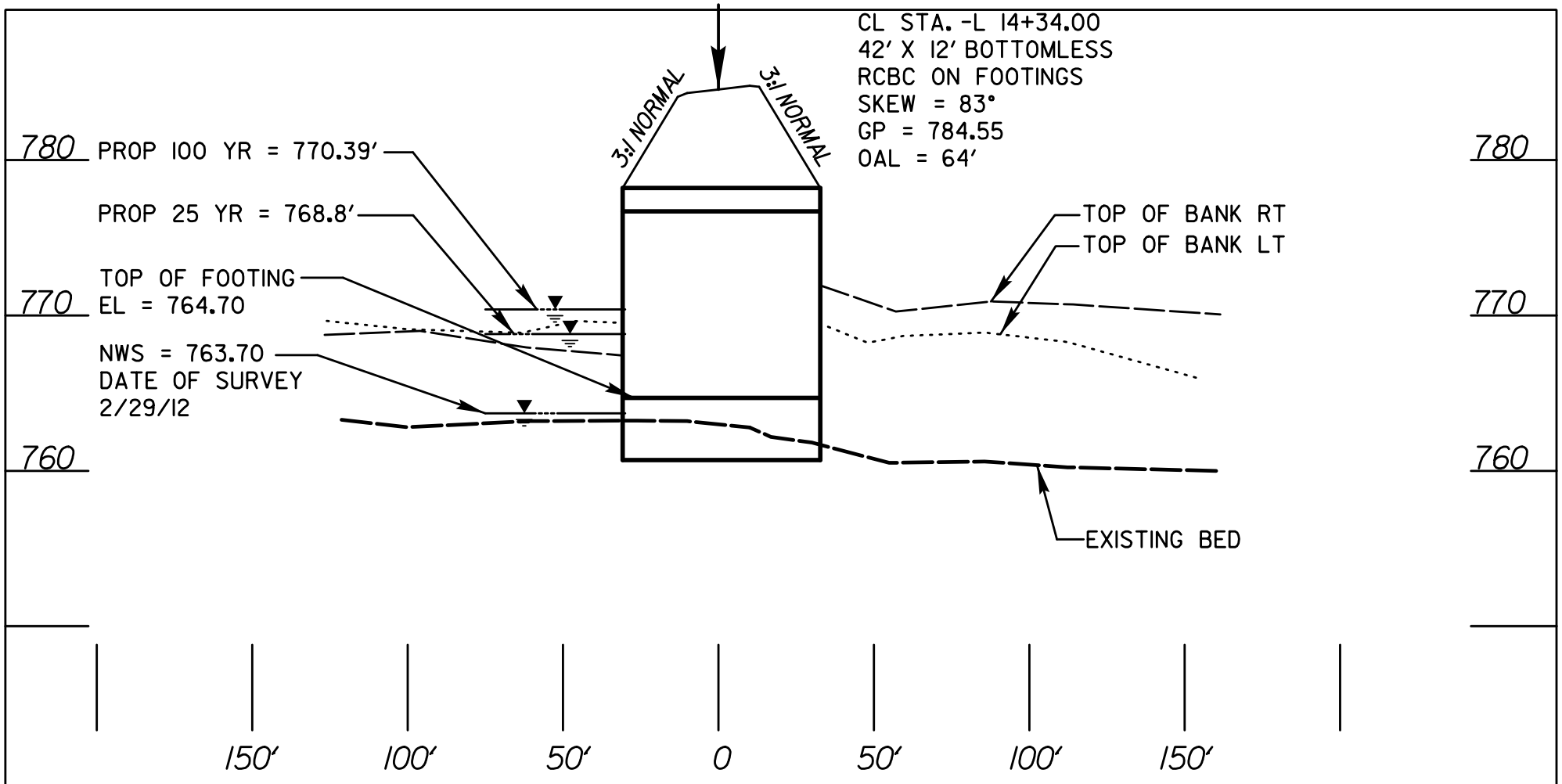

PROFILE

NCDOT

DIVISION OF HIGHWAYS
LINCOLN COUNTY
PROJECT: 42323.2.1 (B-5155)
BRIDGE NO. 37 ON SR 1314
OVER HOYLE'S CREEK

SHEET 7 **OF** 7 **3/20/13**

05/08/99

TIP PROJECT: B-5155

CONTRACT:

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LINCOLN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5155	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42323.1.1	BRZ-1314(5)	PE
42323.2.1	BRZ-1314(5)	RW,UTIL
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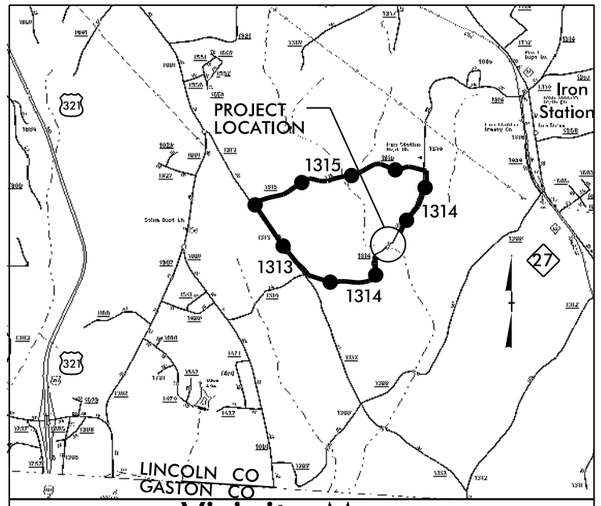
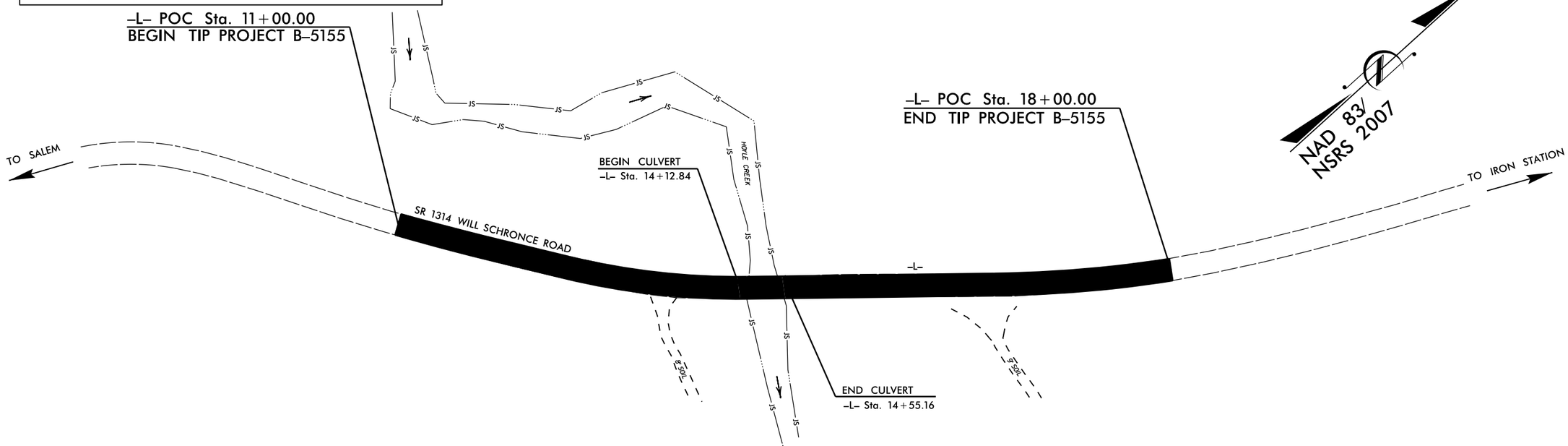
LOCATION: BRIDGE NO. 37 ON SR 1314 OVER HOYLE'S CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT



Vicinity Map

OFFSITE DETOUR ROUTE



NOTES:
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PRELIMINARY PLANS
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GRAPHIC SCALES

50 250 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

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ADT 2012 = 223
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DHV = 12 %
D = 55 %
T = 8 % *
V = 45 MPH
* TTST =1% DUAL 7%
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SUBREGIONAL TIER

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LENGTH STRUCTURE F.A. PROJECT BRZ-1314(5) = 0.008
TOTAL LENGTH STATE PROJECT 42323.1.1 = 0.133

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 19, 2012

LETTING DATE:
OCTOBER 15, 2013

JASON MOORE, PE
PROJECT ENGINEER

JEANIE TYSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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$$$$USERNAME$$$$

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-5155	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
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access — 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 — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

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

GAS:

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

SANITARY SEWER:

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

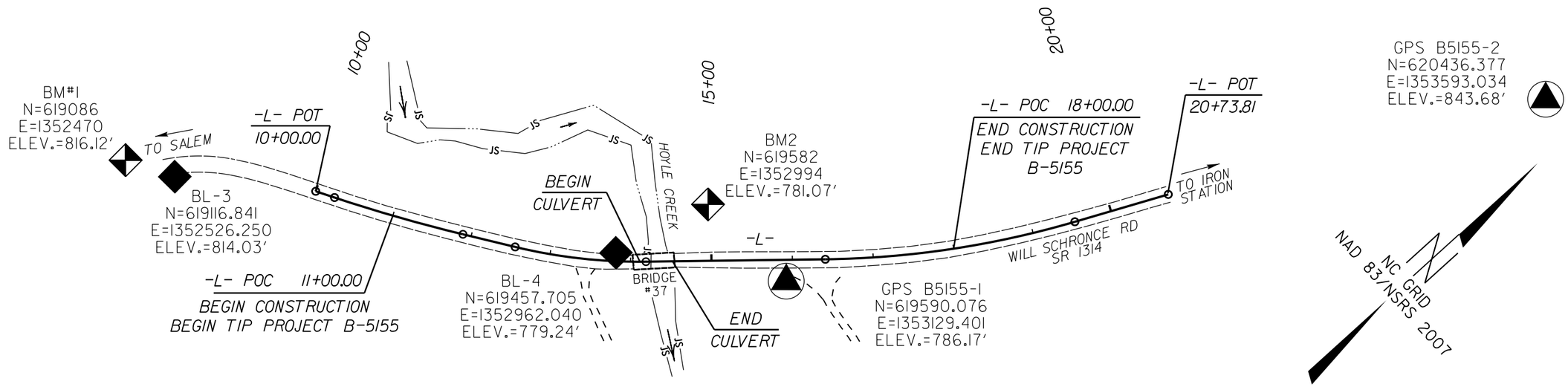
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- 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-5155	1C
Location and Surveys	

SURVEY CONTROL SHEET B-5155



BENCHMARKS (NAVD88)

****

BM#1 ELEVATION = 816.12'

N 619086 E 1352470

BM#1 TO L STATION 10+00

N 51°29'20" E DIST 238'

CHISELED "X" IN NORTH END OF 18" CONC PIPE

****

****

BM#2 ELEVATION = 781.07'

N 619582 E 1352994

L STATION 14+97 70' LEFT

RR SPIKE IN NORTHERNMOST ROOT OF 24" OAK

****

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	619116.8413	1352526.2504	814.03	OUTSIDE PROJECT LIMITS	
4	BL-4	619457.7054	1352962.0395	779.24	13+81.46	10.46 LT
1	GPS B5155-1	619590.0760	1353129.4010	786.17	15+92.07	26.35 RT
2	GPS B5155-2	620436.3770	1353593.0340	843.68	OUTSIDE PROJECT LIMITS	

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5155_LS_CONTROL.TXT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5155-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 619590.076(ft) EASTING: 1353129.401(ft)
ELEVATION: 786.17(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984300
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5155-1" TO -L- STATION 10+00.00 IS
S 53°00'14.5" W 591.93'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

25-SEP-2012 14:51
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###USERNAME###

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5155	1D
Location and Surveys	

SURVEY CONTROL SHEET B-5155

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+88.00	-70.00	619503.7856	1352923.8464
L	14+00.00	95.00	619398.7666	1353051.6872
L	14+67.00	-70.00	619560.0600	1352974.3982
L	14+80.00	95.00	619460.6218	1353106.7086
L	16+46.84	-29.36	619667.8926	1353123.7579

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+88.00	-60.00	619496.8176	1352931.0190
L	13+88.00	-29.11	619475.2946	1352953.1742
L	14+00.00	60.00	619422.6870	1353026.1370
L	14+00.00	30.59	619442.7893	1353004.6651
L	14+19.07	-60.00	619517.5110	1352950.1822
L	14+19.07	60.00	619438.1038	1353040.1516
L	14+67.00	-60.00	619553.4428	1352981.8956
L	14+67.00	-30.72	619534.0691	1353003.8462
L	14+80.00	60.00	619483.7822	1353080.4675
L	14+80.00	29.18	619504.1769	1353057.3601

DESIGN ALIGNMENT

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	619233.8763	1352656.6388
PC	10+24.46	619245.9093	1352677.9395
PT	11+89.57	619332.9527	1352818.1759
PC	12+55.99	619370.2788	1352873.1153
PT	14+19.07	619477.8074	1352995.1669
PC	16+40.71	619643.9770	1353141.8285
PT	19+53.47	619903.5568	1353314.5574
POT	20+73.81	620011.8587	1353367.0275

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5155_LS_CONTROL.TXT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5155-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 619590.076(ft) EASTING: 1353129.401(ft)
ELEVATION: 786.17(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984300
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5155-1" TO -L- STATION 10+00.00 IS
S 53°00'14.5" W 591.93'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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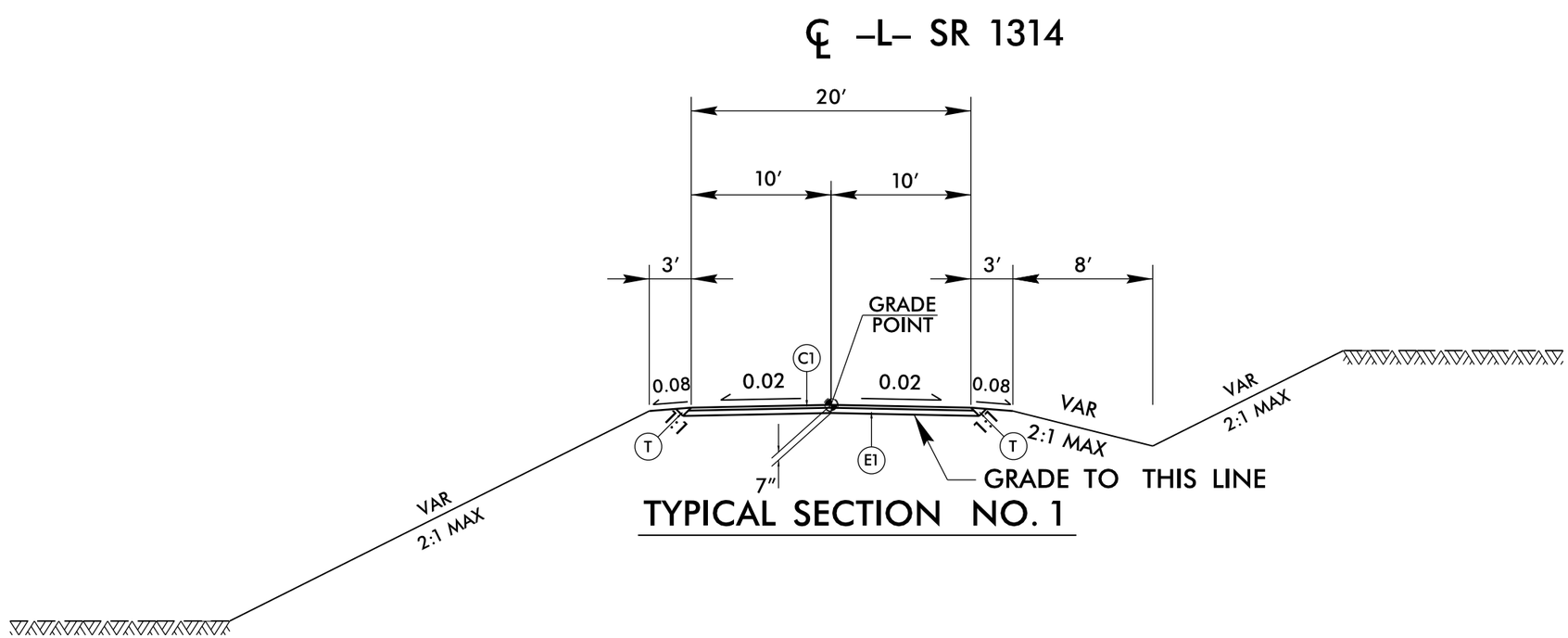
PROJECT REFERENCE NO.	SHEET NO.
B-5155	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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.
E1	PROP. APPROX. 4.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
T	EARTH MATERIAL.

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



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS

–L– STA. 11+00.00 TO STA. 18+00.00

COMPUTED BY: TO	DATE: 09-17-12
CHECKED BY:	DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5155	3

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
11+00	18+00	224	3,306	3,082	
SUBTOTALS:		224	3,306	3,082	
TOTAL:		224	3,306	3,082	
PROJECT TOTAL:		224	3,306	3,082	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				154	
GRAND TOTALS:		224		3,236	
SAY:		300		3,500	

UNDERCUT CONTINGENCY	150 CY
SHALLOW UNDERCUT CONTINGENCY	100 CY
CLASS IV SUBGRADE STABILIZATION	200 TON
EST. DRAINAGE DITCH EXCAVATION	520 CY

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	11+00	12+75	CL	388.89
-L-	13+52	14+02	CL	111.11
-L-	14+54	15+04	CL	111.11
-L-	16+00	18+00	CL	444.44
			TOTAL:	1,055.56
			SAY:	1,110

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	12+75	13+52	CL	171.11
-L-	15+04	16+00	CL	10.67
			TOTAL:	181.78
			SAY:	190

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

STATION / SIZE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	24"	30"	30"	36"	36"	42"	42"	48"	48"	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G			D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32							CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
THICKNESS OR GAUGE																.064	.064	.064	.064		.079		.079		.109		.109																																												
13+32	RT																																					32																																25	
TOTAL																																						32																																25	
SAY																																						32																																25	

ABBREVIATIONS

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

12/06/07

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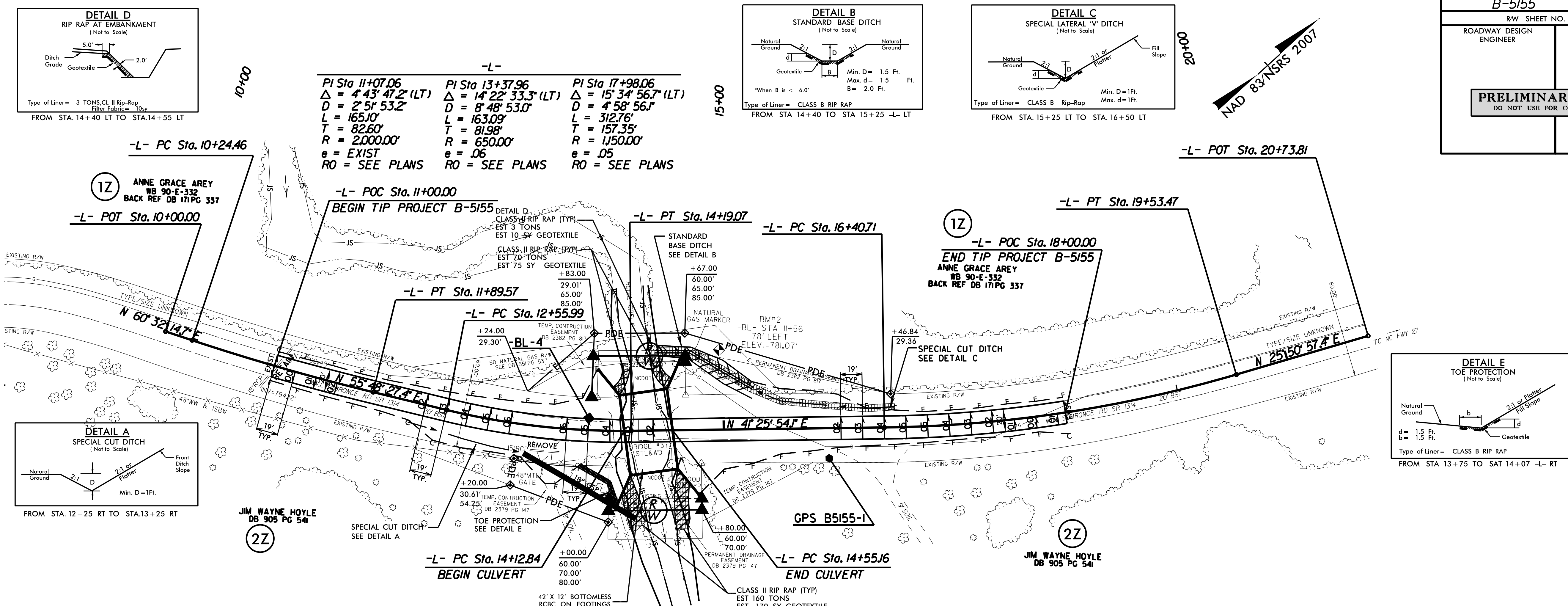
PROJECT REFERENCE NO.	SHEET NO.
B-5155	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

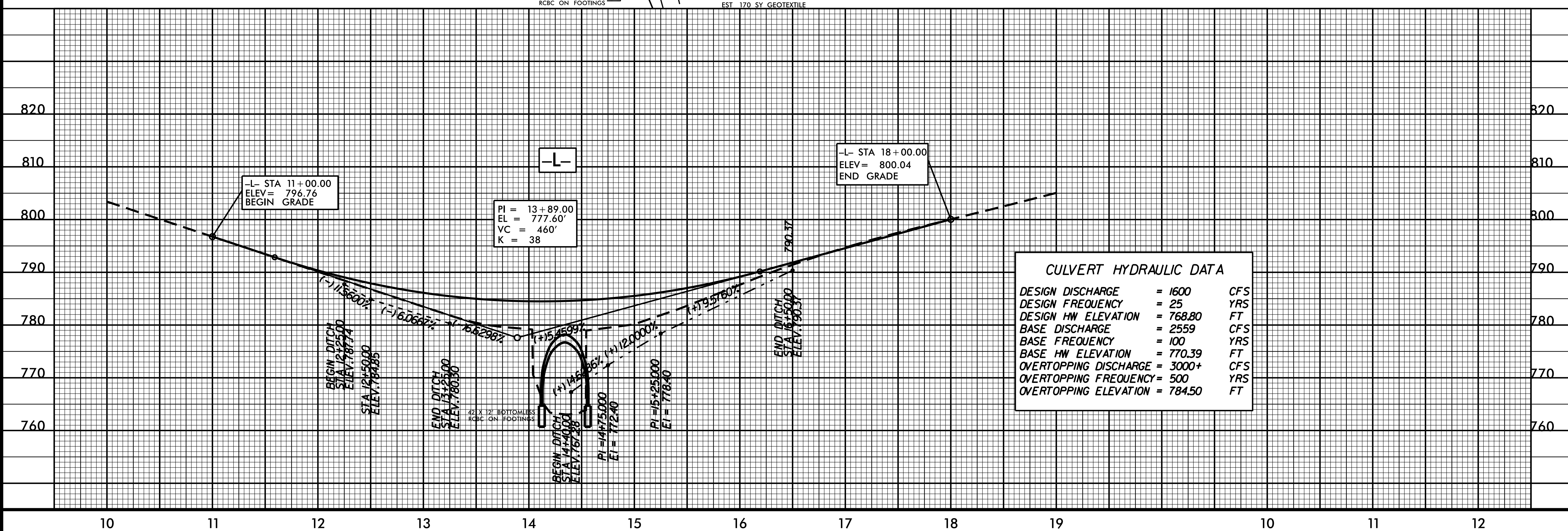
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

R/W REVISION: ADJUSTED PROPOSED ROW AND PERMANENT DRAINAGE EASEMENT MARKERS ALONG WITH ASSOCIATED ROW/EASEMENT LINES ON PARCEL 1Z AT -L- STA.13+83.00 AND STA.14+67.00 LT. ADJUSTED PROPOSED ROW MARKERS AND PERMANENT DRAINAGE EASEMENT ON PARCEL 2Z AT -L- STA.13+20.00, -L- STA.14+00.00, AND -L- STA.14+80.00 RT. -- SEC 4/18/13

8/17/99





CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1600	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	768.80	FT
BASE DISCHARGE	=	2559	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	770.39	FT
OVERTOPPING DISCHARGE	=	3000+	CFS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	784.50	FT

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5155	X-1

806.07

10+50.00

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8/23/99

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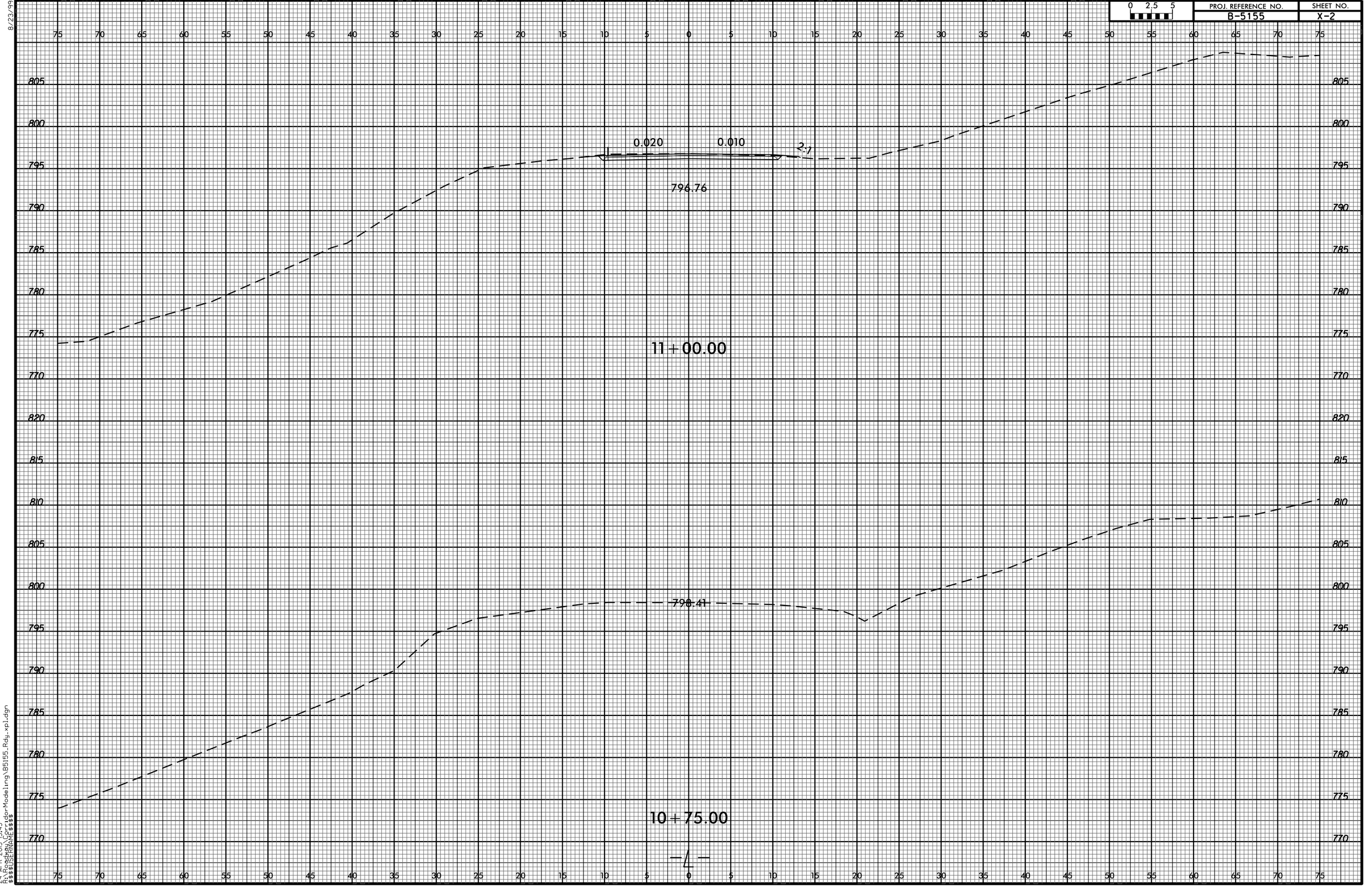
	B-5155	X-2



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8/23/99

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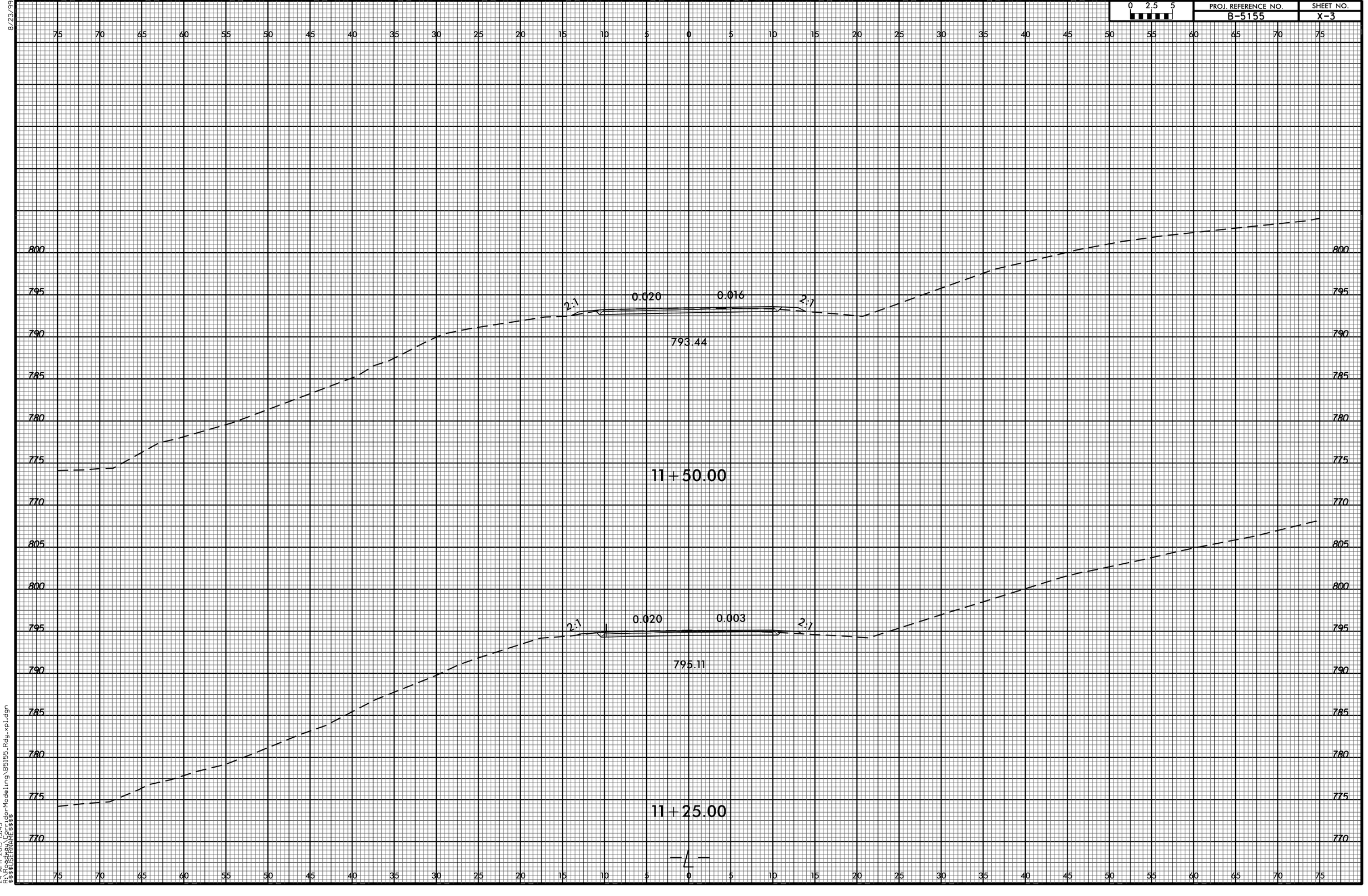

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5155	X-4

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800
795
790
785
780
775
770

2:1 0.020 0.020 2:1

790.10

12+00.00

2:1 0.020 0.020 2:1

791.77

11+75.00

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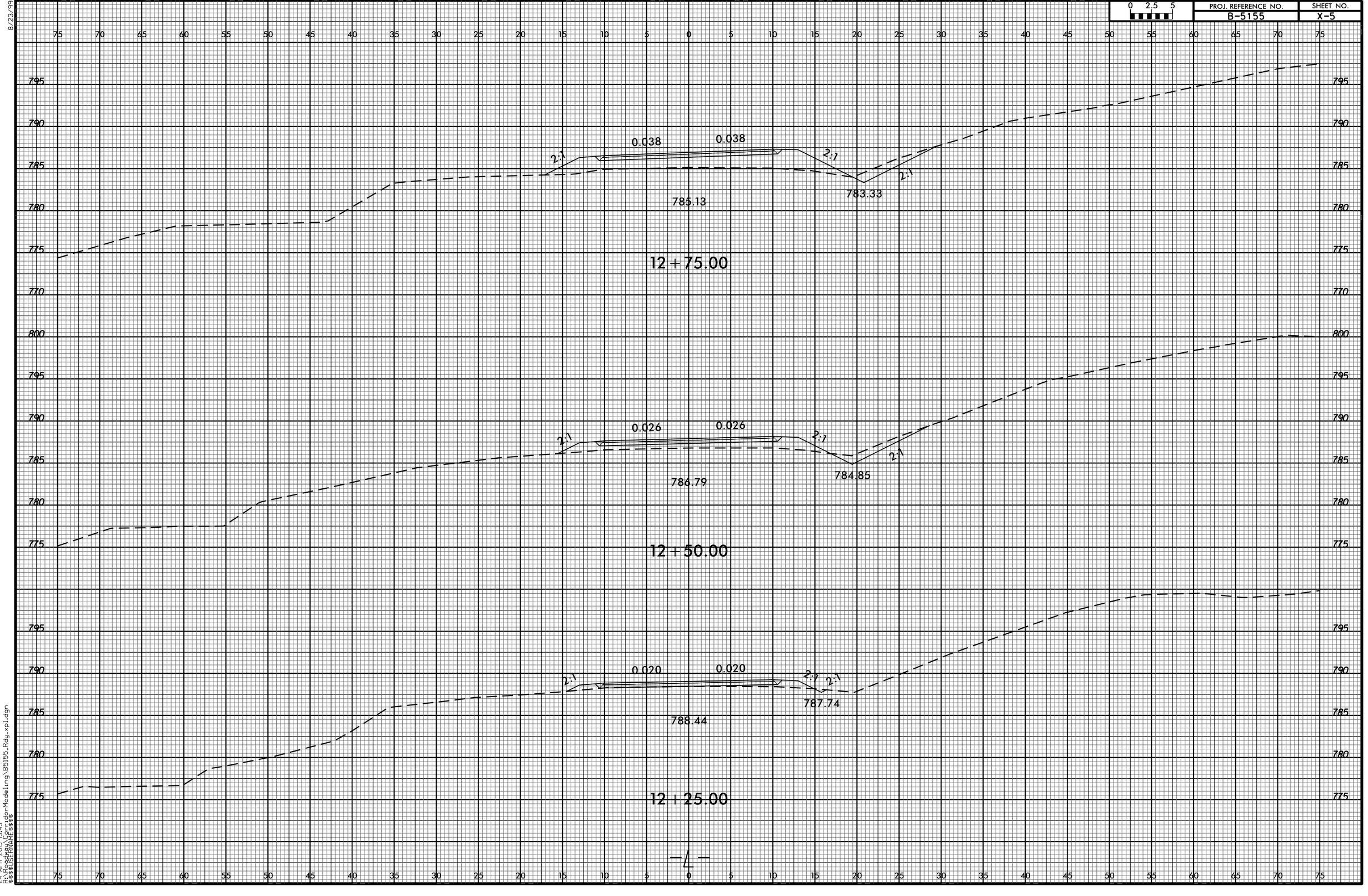

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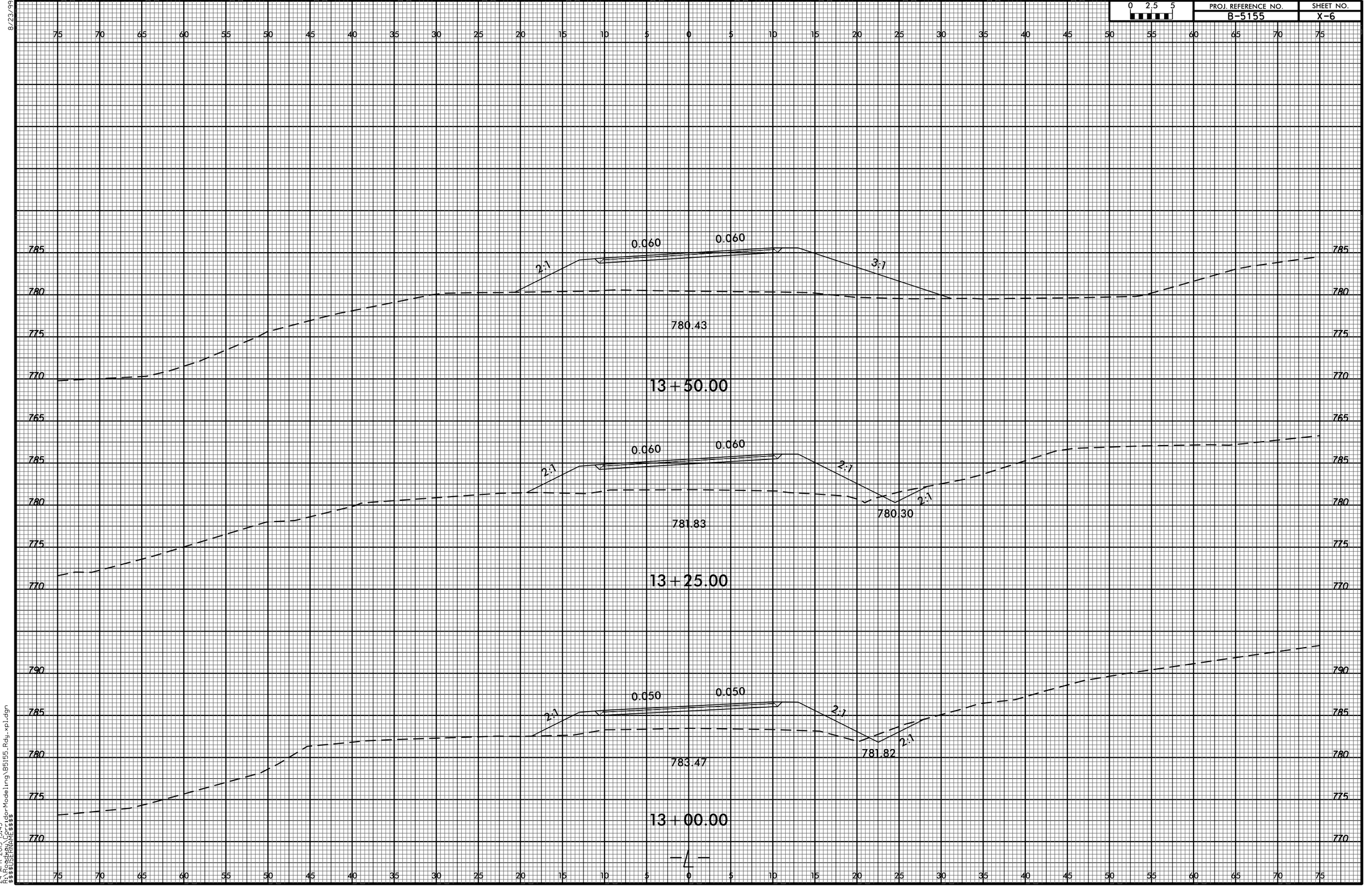
	B-5155	X-6



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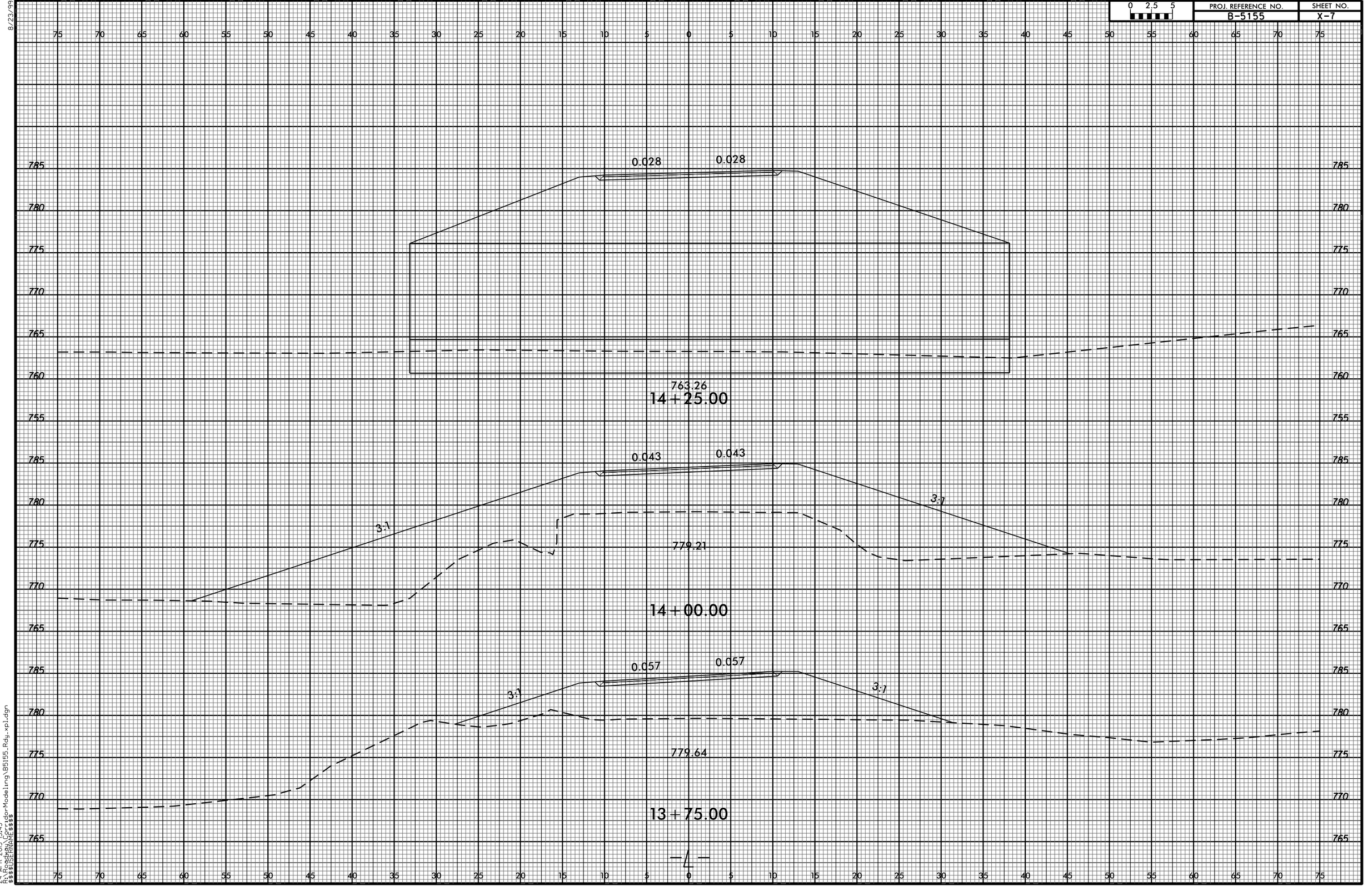

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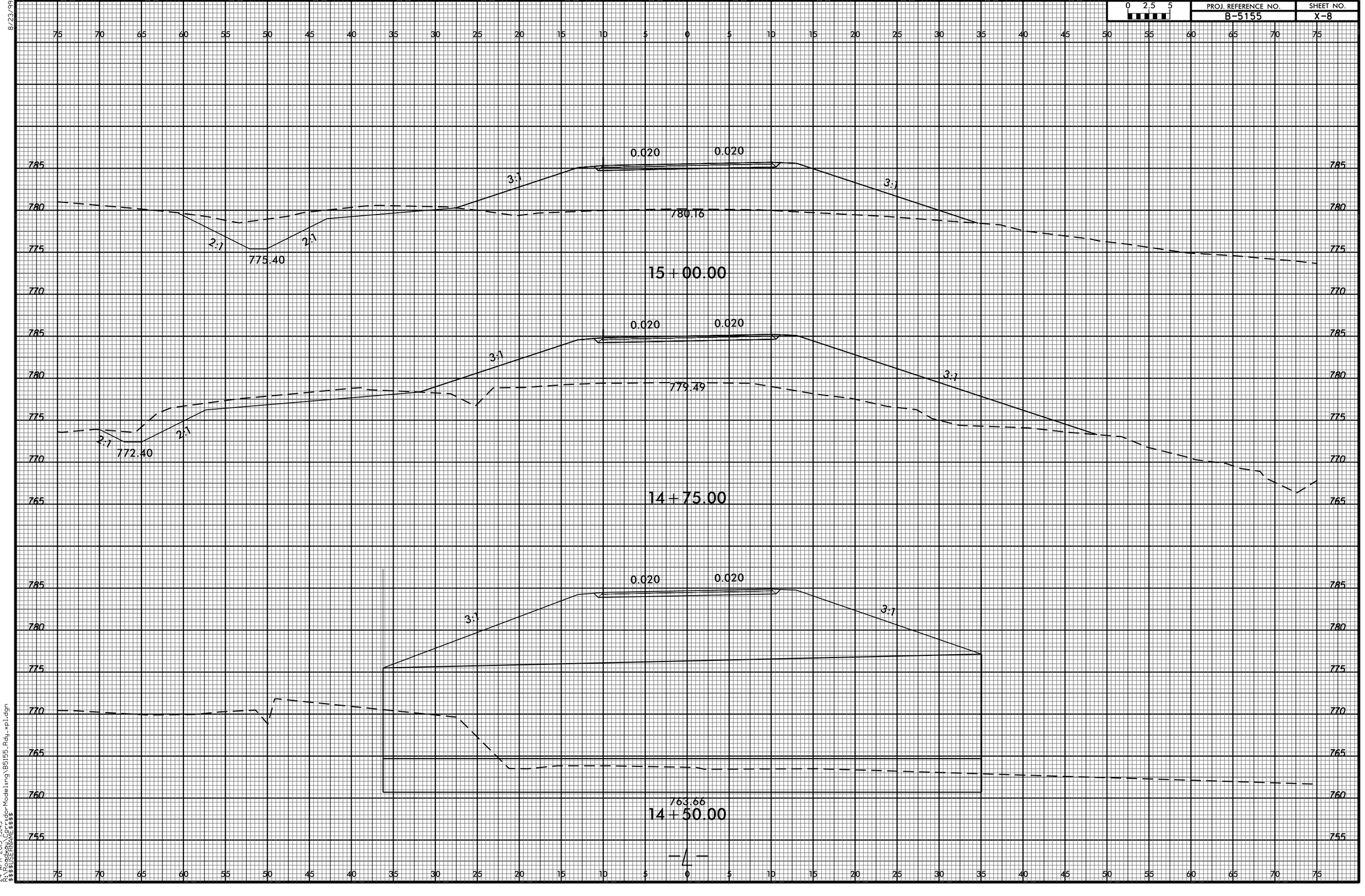
	B-5155	X-8



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8/23/99

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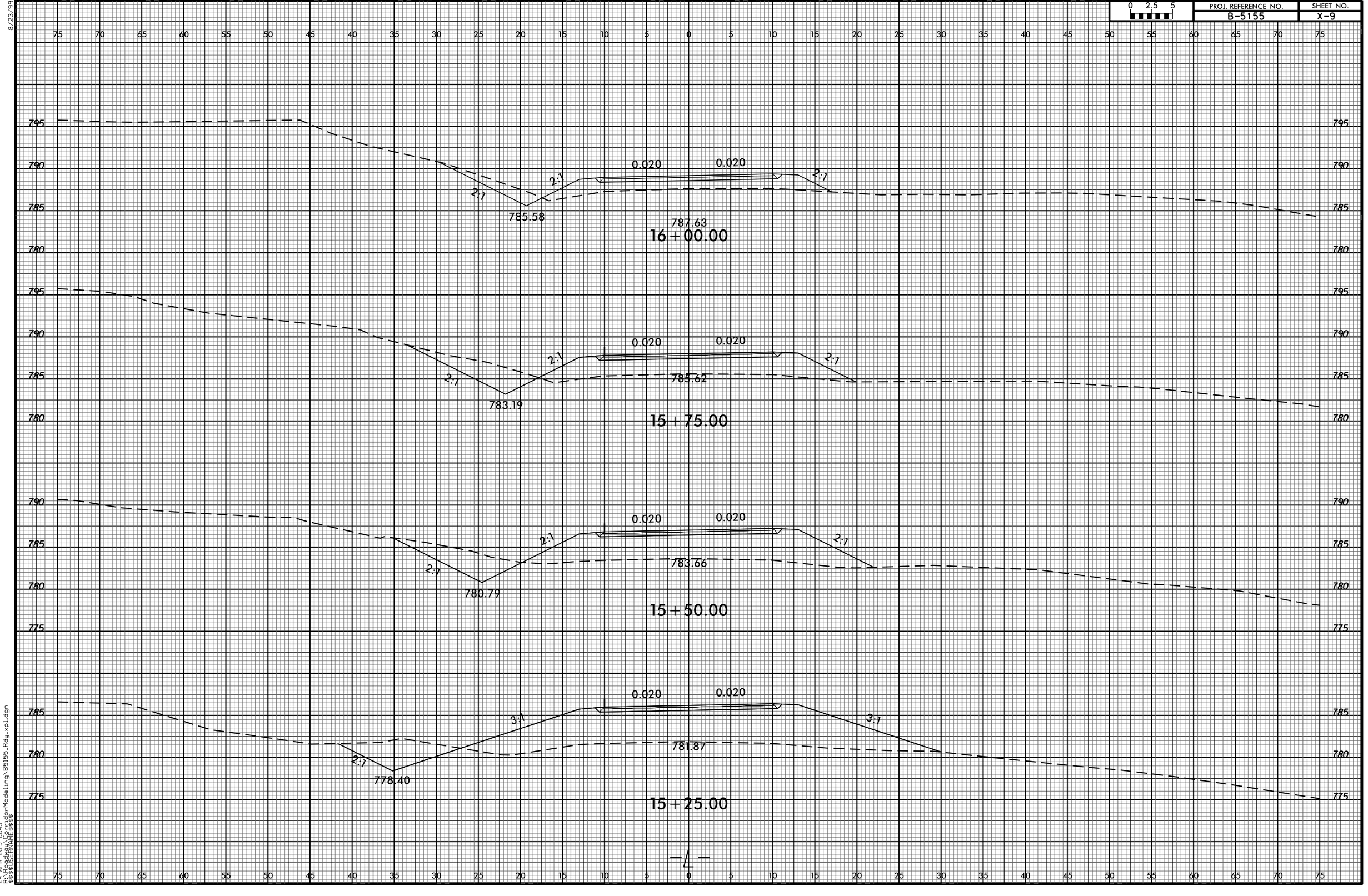
	B-5155	X-9



8/23/99

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800 795 790 785

2:1 0.039 0.039 2:1

794.70
17+00.00

800 795 790 785

2:1 0.050 0.050 2:1

793.11
16+75.00

795 790 785

2:1 2:1 0.045 0.045 2:1

790.37

791.42
16+50.00

795 790 785

2:1 2:1 0.032 0.032 2:1

787.98

789.62
16+25.00

785 780

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

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	B-5155	X-11

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805
800
795
790

0.020 0.020

800.04

18+00.00

805
800
795
790

2:1 0.020 0.001

798.79

17+75.00

805
800
795
790

0.020 0.012

797.51

17+50.00

800
795
790

2:1 0.026 0.026 2:1

796.16

17+25.00

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	B-5155	X-12

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825 820 815 810 805 800 795 790 785 780 775

801.28

18+25.00

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8/23/99

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825 820 815 810 805 800 795 790 785 780 775

802.52

18+50.00

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