STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

June 12, 2015

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

ATTN: Mr. David Bailey
NCDOT Division 7 Project Coordinator

Subject: **Application for Section 404 Nationwide Permit 14 and Section 401 Water Quality Certification** for replacement of Bridge No. 110 over Wolf Island Creek on SR 1767 (Mayfield Road), Rockingham County, North Carolina, Federal Aid Project No. BRSTP-1767(5), TIP No. B-5341.

Debit $240.00 from WBS Element No. 46055.1.1

Please find enclosed the Pre-Construction Notification (PCN) form, stormwater management plan, permit drawings, and roadway design plans for the above referenced project.

The proposed let date for the project is January 19, 2016 with a review date of December 1, 2015. However, the let date may advance as additional funds become available.

A copy of this permit application and its distribution list will be posted on the NCDOT website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx . A copy of the PCE (Programmatic Categorical Exclusion) is also available at the above website address. Thank you for your time and assistance with this project. Please contact Deanna Riffey at either driffey@ncdot.gov or (919) 707-6151 if you have any questions or need additional information.

Sincerely,

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

Cc: NCDOT Permit Application Standard Distribution List

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

TELEPHONE: 919-707-6100

FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
Century Center - Building B
1020 Birch Ridge Dr
Raleigh, NC 27610-4328

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.4 January 2009

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: 14	or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☒ Yes ☐ No	
1d. Type(s) of approval sought from the DWQ (check all that apply): ☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit ☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	☐ Yes ☒ No	
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes ☒ No	
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes ☒ No	

2. Project Information

2a. Name of project:	Replacement of Bridge No. 110 over Wolf Island Creek on SR 1767
2b. County:	Rockingham
2c. Nearest municipality / town:	Ruffin
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-5341

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) 707-6151
3g. Fax no.:	(919) 212-5785
3h. Email address:	driffey@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: 36.481497 (DD.DDDDDD) Longitude: - 79.558195 (-DD.DDDDDD)
1c. Property size:	0.89 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Wolf Island Creek
2b. Water Quality Classification of nearest receiving water:	C
2c. River basin:	Roanoke
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Land use within the vicinity is predominately residential and agriculture with forestland along stream corridors.	
3b. List the total estimated acreage of all existing wetlands on the property: 0 acres	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 70 linear feet	
3d. Explain the purpose of the proposed project: The bridge is considered to be structurally deficient due to superstructure condition and functionally obsolete due to structure.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing the 175 foot long bridge with a 190 foot long bridge which includes two 11 foot lanes and two 4 foot 3 inch offsets. Approaches will be widened to include two 11 foot lanes with 6 foot shoulders. The proposed project is approximately 0.123 miles long. 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:	☐ Yes ☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown
5b. If yes, explain in detail according to “help file” instructions.	
6. Future Project Plans	
6a. Is this a phased project?	☐ Yes ☒ No
6b. If yes, explain.	

C. Proposed Impacts Inventory

1. Impacts Summary

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

☐ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

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

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction	2f. Area of impact (acres)
Site 1 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0 0

2h. Comments:

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☐ P ☒ T	Dewatering	Wolf Island Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	30	34
Site 1 ☒ P ☐ T	Bank Stabilization	Wolf Island Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	30	42
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	42 ft Perm 34 ft Temp

3i. Comments:

4. Open Water Impacts

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

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

4g. Comments:

5. Pond or Lake Construction

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

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

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

6. Buffer Impacts (for DWQ)

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

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

6i. Comments: Buffer impacts for this project are less than 40 linear feet for the road crossings and are exempt.

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 bridge is being built at the same location and will be a longer bridge that provides more hydraulic opening. An offsite detour will be used for traffic. One stormwater outfall is proposed in conjunction with a riprap pad to dissipate the energy. Other than no build the minimal effects on this project is unavoidable.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. NCDOT Best Management Practices for Construction and Maintenance Activities and Best Management Practices for the Protection of Surface Waters will be employed.		
2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No If no, explain:	
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps	
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
4. Complete if Making a Payment to In-lieu Fee Program		
4a. Approval letter from in-lieu fee program is attached.	☐ Yes	
4b. Stream mitigation requested:	linear feet	
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold	
4d. Buffer mitigation requested (DWQ only):	square feet	
4e. Riparian wetland mitigation requested:	acres	
4f. Non-riparian wetland mitigation requested:	acres	
4g. Coastal (tidal) wetland mitigation requested:	acres	
4h. Comments:		
5. Complete if Using a Permittee Responsible Mitigation Plan		
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.		

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

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

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes ☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes ☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ 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 the replacement of this bridge, 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? NC Natural Heritage Program data and USFWS website. No Effect/ No habitat present calls were made for James spinymussel and Roanoke logperch after NCDOT biologist conducted aquatic surveys. No Effect/ Habitat present call was made for smooth coneflower. Last field survey done for smooth coneflower was in May 2015.	
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.)	6-12-2015 Date

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.01; Released December 2014)

WBS Element:	46055.1.1	**TIP No.:**	B-5341	**County(ies):**	Rockingham	**Page**	1 of 1

General Project Information

WBS Element:	46055.1.1	**TIP Number:**	B-5341	**Project Type:**	Bridge Replacement	**Date:**	3/25/2015
NCDOT Contact:	Bill Zerman			**Contractor / Designer:**	Frank Fleming, PE - Ecological Engineering		
Address:	1020 Birch Ridge Drive Raleigh, NC 27610			**Address:**	1151 SE Cary Parkway Suite 101 Cary, NC 27518		
Phone:	919-707-6755			**Phone:**	919-557-0929		
Email:	bzerman@ncdot.gov			**Email:**	ffleming@ecologicaleng.com		
City/Town:	Ruffin			**County(ies):**	Rockingham		
River Basin(s):	Roanoke			**CAMA County?**	No		
Wetlands within Project Limits?	No						

Project Description

Project Length (lin. miles or feet):	0.12 Miles	**Surrounding Land Use:**	Rural area with forest and agricultural landuses

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.4 ac.	0.3 ac.
Typical Cross Section Description:	2@ 11 ft lane, 4.3 ft shoulders, with total bridge width of 33.0 ft and total bridge length of 190 ft.	2@ 11 ft lane with total bridge witdh of 22 ft and total bridge length of 175 ft.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 800 Year: 2040	Existing: 720 Year: 2016

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

State Project 46055.1.1 involves the replacement of the existing NCDOT Bridge #110 on SR 1767 over Wolf Island Creek. Bridge #1110 consists of 5@ 35'-0" concrete deck on timber piles with concrete caps. The proposed bridge at #110 will be 1@90', 1@100' 39" Box Beam with 4' caps and sloping abutments. The proposed bridge is located in zone AE of FIRM map number 3710892800J and was studied by "Limited Detailed" methods. The proposed bridge will provide more hydraulic opening than the existing bridge. Deck drains are proposed on both sides of the bridge to meet spread design criteria. One stormwater outfall is proposed along with a Rip Rap pad to dissipate the energy.

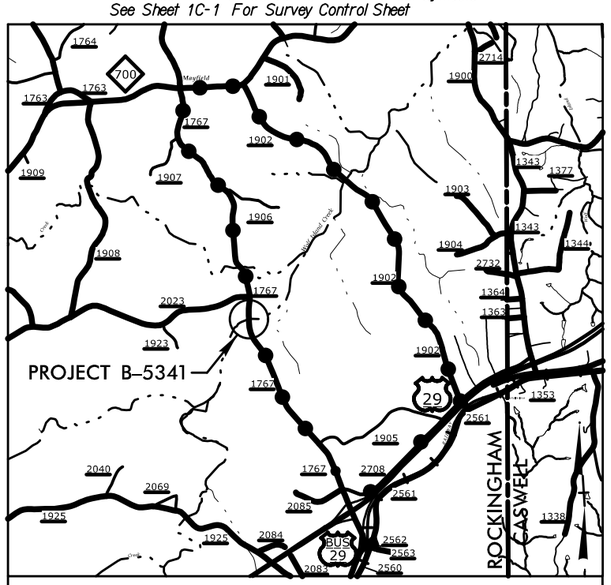
Waterbody Information

Surface Water Body (1):	Wolf Island Creek	**NCDWR Stream Index No.:**	22-48		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:			
Other Stream Classification:	None				
Impairments:	None				
Threatened/Endangered Species?	No	Comments:			
NRTR Stream ID:	Wolf Island Creek		**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No
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)					

TIP PROJECT: B-5341

CONTRACT:

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



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

LOCATION: BRIDGE NO. 110 OVER WOLF ISLAND CREEK ON SR 1767 (MAYFIELD ROAD)

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

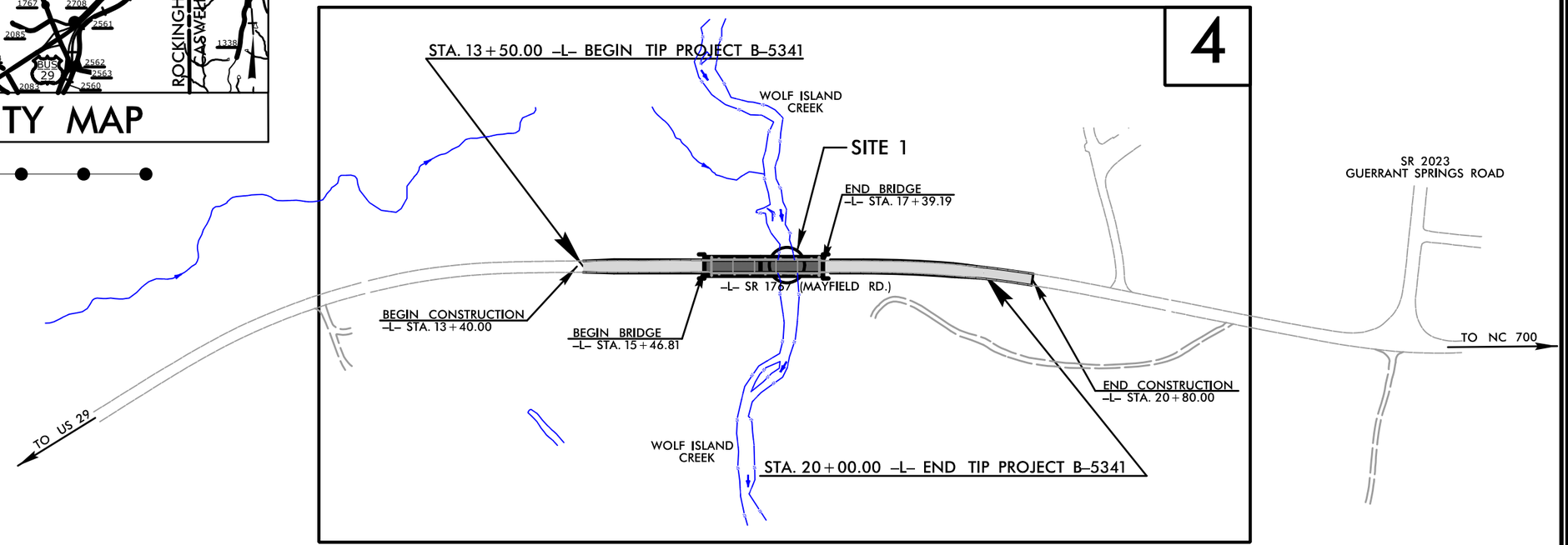
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5341	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46055.1.1	BRSTP-1767(5)	P.E.
46055.2.FD1	BRSTP-1767(5)	R/W & UTILITIES

NAD 83/
NSRS 2007

PERMIT DRAWING
SHEET 1 OF 6

WETLAND AND SURFACE WATER IMPACTS PERMIT



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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = 720
ADT 2040 = 800
K = 12 %
D = 60 %
T = 6 % *
V = 55 MPH
* TTST = 3% DUAL = 3%
FUNC CLASS =
MINOR COLLECTOR
"SUB-REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5341 = 0.087 MI.
LENGTH STRUCTURE TIP PROJECT B-5341 = 0.036 MI.
TOTAL LENGTH OF TIP PROJECT B-5341 = 0.123 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 23, 2015

LETTING DATE:
JANUARY 19, 2016

JAMES A. SPEER, PE
PROJECT ENGINEER

DANIEL W. GARDNER, JR, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

09/08/99

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

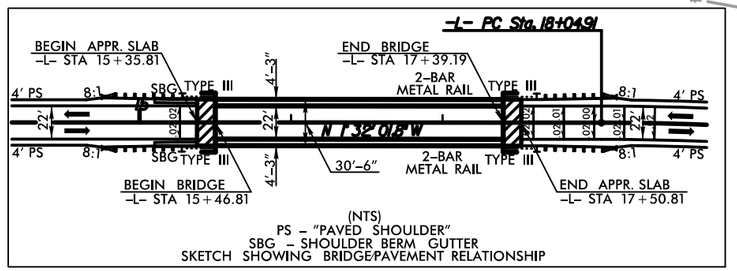
PROJECT REFERENCE NO.	SHEET NO.
B-5341	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

PERMIT DRAWING
SHEET 2 OF 6

-L-		
PI Sta 11+20.61	PI Sta 12+94.22	PI Sta 13+81.00
Δ = 10° 54' 02.5" (RT)	Δ = 2° 01' 20.6" (RT)	Δ = 11° 08' 48.9" (RT)
D = 6° 21' 58.3"	D = 1° 08' 45.3"	D = 3° 09' 55.8"
L = 171.23'	L = 176.49'	L = 351.08'
T = 85.87'	T = 88.25'	T = 176.09'
R = 900.00'	R = 5,000.00'	R = 1,810.00'
	SE = SEE PLANS	SE = SEE PLANS

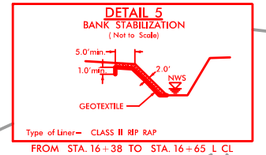


(NTS)
PS - "PAVED SHOULDER"
SBG - SHOULDER BERM GUTTER
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

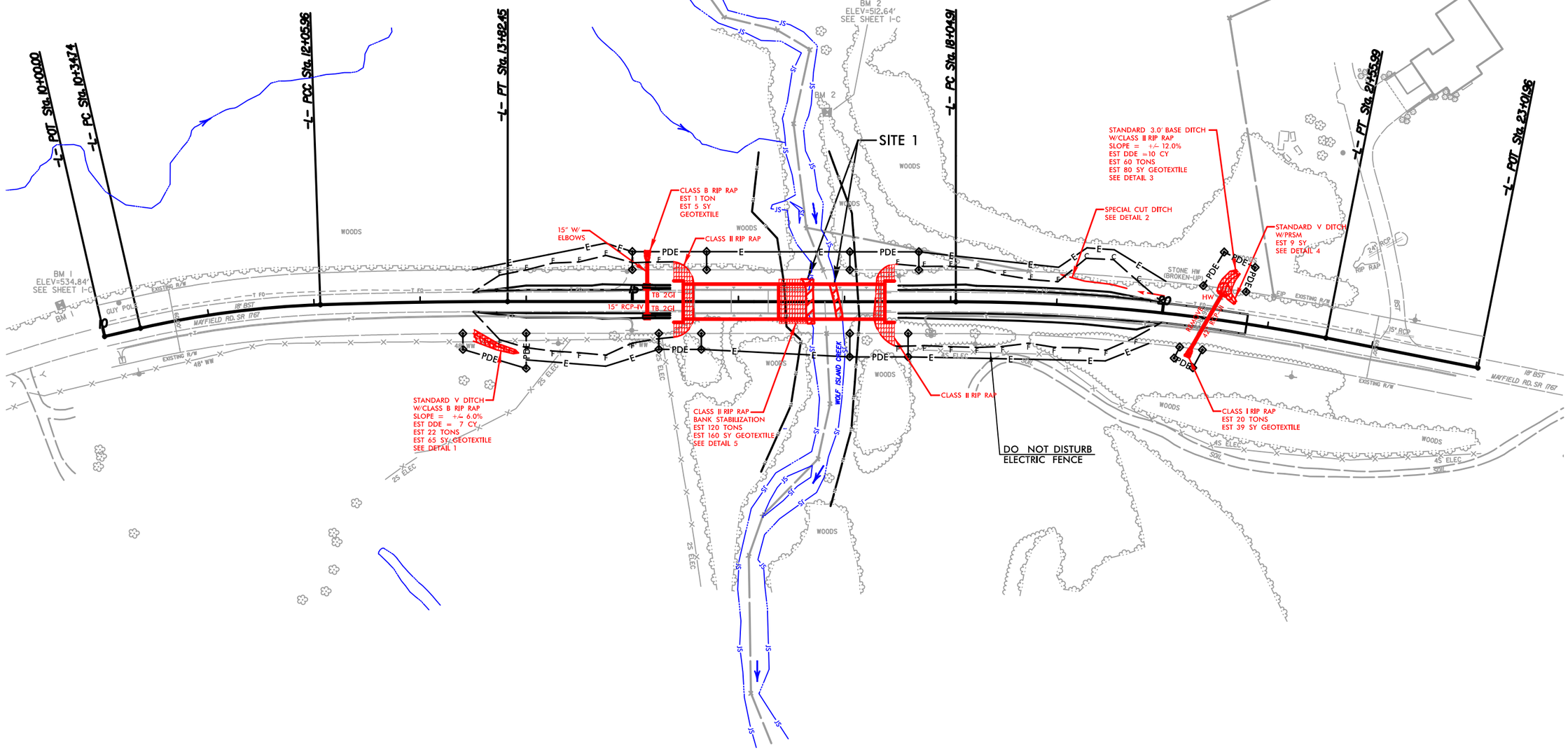
IS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S DENOTES IMPACTS IN SURFACE WATER

DETAIL 5
BANK STABILIZATION
(Not to Scale)



Type of Liner- CLASS II RIP RAP
FROM STA. 16+38 TO STA. 16+65 L CL



SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-? THRU S-? FOR STRUCTURE PLANS

REVISIONS

R/W REVISION 2-6-15 (DWG) - ELIMINATED THE PUE LOCATED AT -L- STA. 13+94.00 LT. ON PARCEL 1 (DIBRELL CHILDREN'S FARM I, LLC) AND REVISED THE STATION LABEL FROM -L- STA. 20+29.00 RT. TO STA. 20+20.00 RT. FOR THE PDE ON PARCEL 4 (TOMMY LEWIS STRADER).

8/17/99

$$$$$SYSTIME$$$$$
$$$$$DGN$$$$$
$$$$$FILENAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5341	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

PERMIT DRAWING
SHEET 3 OF 6

-L-		
PI Sta 11+20.61	PI Sta 12+94.22	PI Sta 19+81.00
Δ = 10° 54' 02.5" (RT)	Δ = 2° 01' 20.6" (RT)	Δ = 11° 08' 48.9" (RT)
D = 6° 21' 58.3"	D = 1° 08' 45.3"	D = 3° 09' 55.8"
L = 171.23'	L = 176.49'	L = 351.08'
T = 85.87'	T = 88.25'	T = 176.09'
R = 900.00'	R = 5,000.00'	R = 1,810.00'
	SE = SEE PLANS	SE = SEE PLANS

(NTS)
PS – "PAVED SHOULDER"
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SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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DETAIL 5
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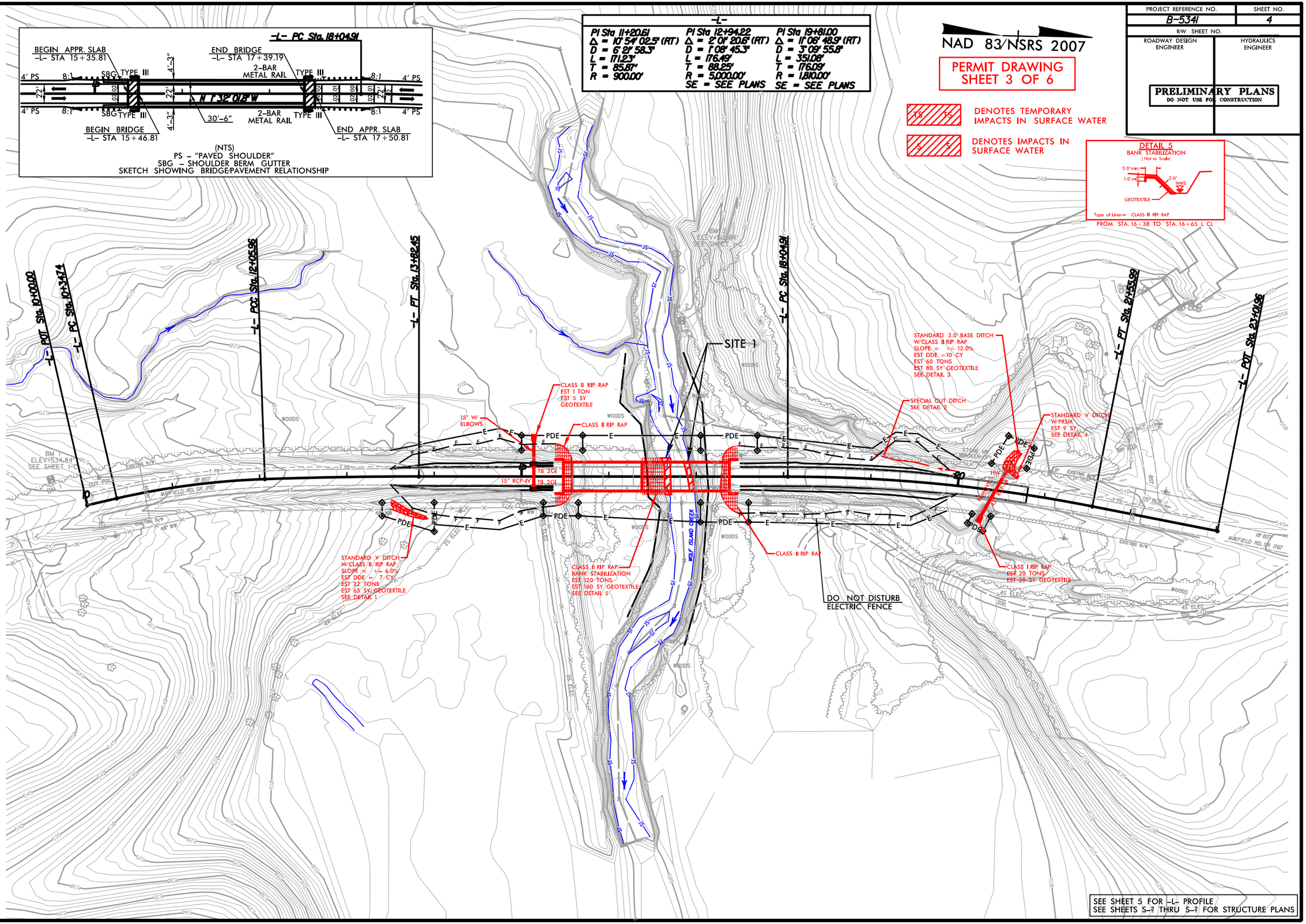
(Not to Scale)

Type of Liner – CLASS II RIP RAP
FROM STA. 16+38 TO STA. 16+65 L CL



SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-? THRU S-? FOR STRUCTURE PLANS

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8/17/99

$$$$$SYSTIME$$$$$ $$$$$DGN$$$$$ $$$$$$

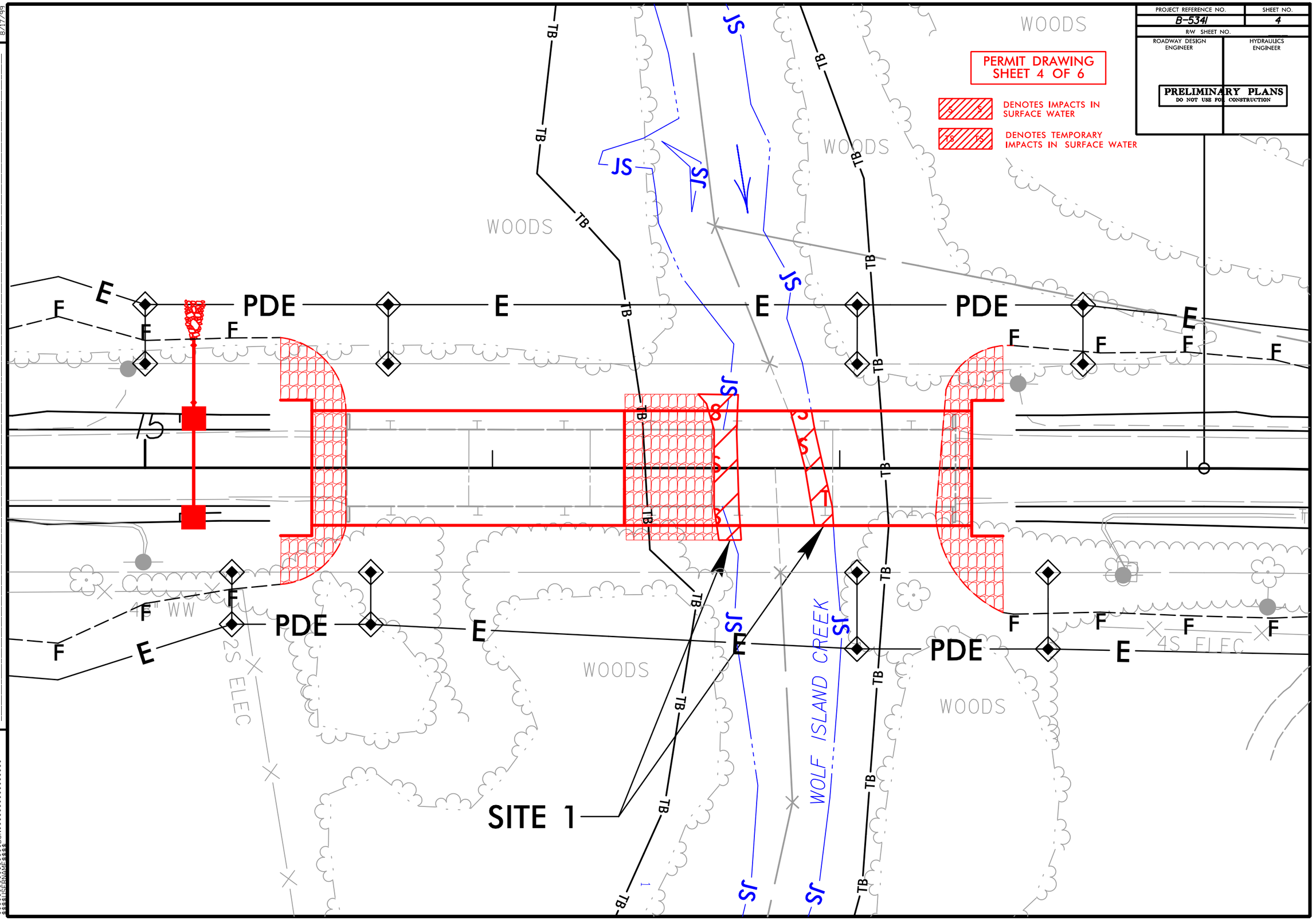
PROJECT REFERENCE NO.	SHEET NO.
B-5341	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 4 OF 6

S — DENOTES IMPACTS IN SURFACE WATER

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER


WOODS
WOODS
WOODS
WOODS
WOODS
PDE
E
E
PDE
E
F
F
F

PROJECT REFERENCE NO.	SHEET NO.
B-5341	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 5 OF 6

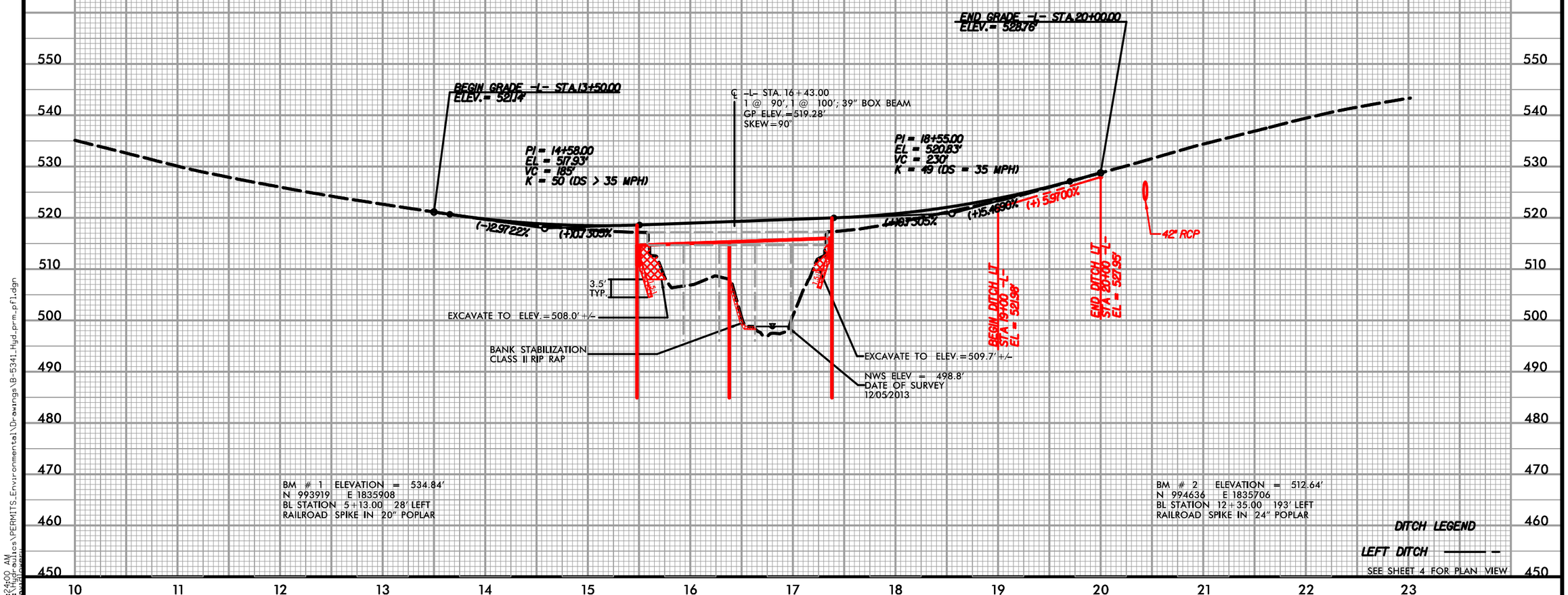
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5300	CFS
DESIGN FREQUENCY	= 25	YR
DESIGN HW ELEVATION	= 512.3	FT
BASE DISCHARGE	= 7814	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 513.62	FT
OVERTOPPING DISCHARGE	= 9600+	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 518.5	FT
	=	FT
DATE OF SURVEY	= 12/05/2013	
W.S.ELEVATION AT DATE OF SURVEY	= 498.8	FT

PIPE HYDRAULIC DATA

42" RCP-III Sta. 20+44 L

DRAINAGE AREA	= 8.8	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 22.0	CFS
DESIGN HW ELEVATION	= 527.0	FT
100 YEAR DISCHARGE	= 24.0	CFS
100 YEAR HW ELEVATION	= 527.1	FT
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING DISCHARGE	= 57.0	CFS
OVERTOPPING ELEVATION	= 529.0	FT



BM # 1 ELEVATION = 534.84'
N 993919 E 1835908
BL STATION 5+13.00 28' LEFT
RAILROAD SPIKE IN 20" POPLAR

BM # 2 ELEVATION = 512.64'
N 994636 E 1835706
BL STATION 12+35.00 193' LEFT
RAILROAD SPIKE IN 24" POPLAR

DITCH LEGEND

LEFT DITCH ——— –

SEE SHEET 4 FOR PLAN VIEW

5/14/99

9:24:00 AM
R:\Hydraulics\PERMITS_Environmental\Drawings\B-5341_Hyd_prm_pfl.dgn

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	16+65 -L-	BANK STABILIZATION						< 0.01		42		
1	16+93 -L-	** COFFER DAM							< 0.01		34	
TOTALS*:								< 0.01	< 0.01	42	34	0

*Rounded totals are sum of actual impacts

NOTES:
** Temporary impacts are for a coffer dam needed to remove existing piers.

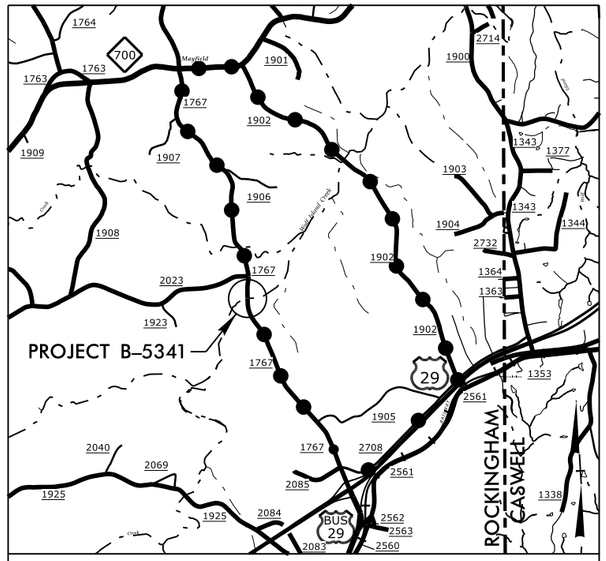
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
03/02/2015
ROCKINGHAM COUNTY
B-5341
46055.1.1

Revised 2013 10 24

09/08/99

TIP PROJECT: B-5341

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



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

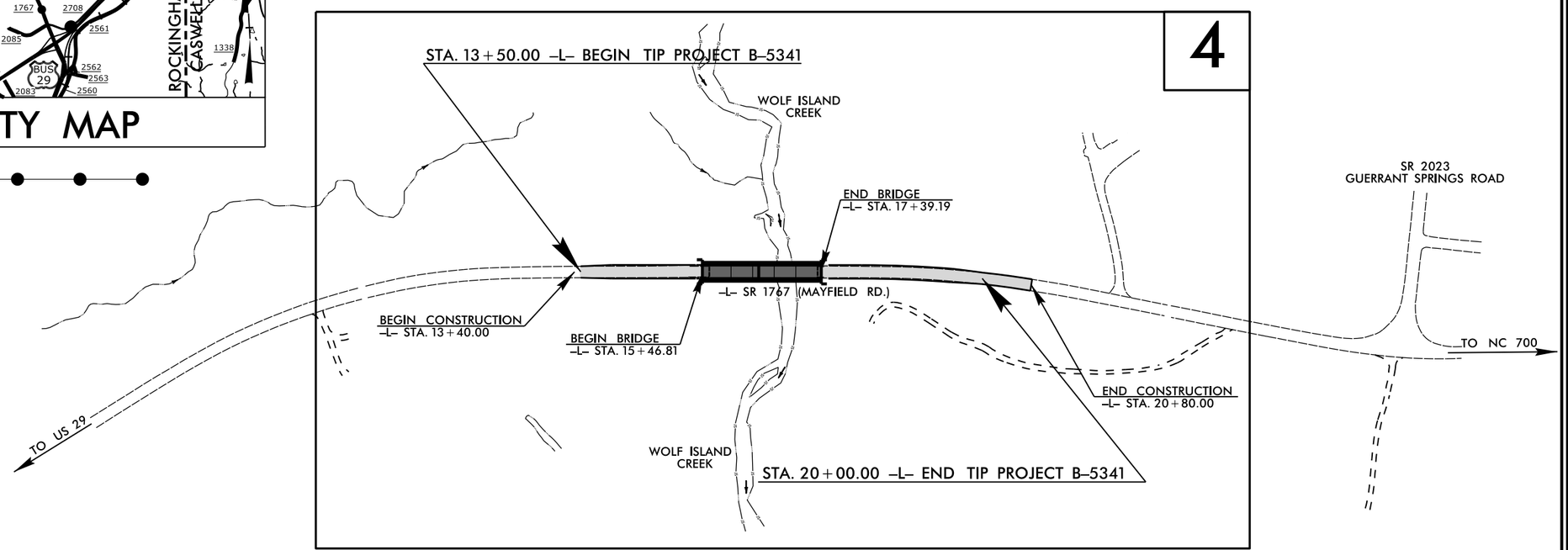
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5341	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46055.1.1	BRSTP-1767(5)	P.E.
46055.2.FD1	BRSTP-1767(5)	R/W & UTILITIES

LOCATION: BRIDGE NO. 110 OVER WOLF ISLAND CREEK ON SR 1767 (MAYFIELD ROAD)

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

NAD 83/
NSRS 2007



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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

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 2016 = 720
ADT 2040 = 800
K = 12 %
D = 60 %
T = 6 % *
V = 55 MPH
* TTST = 3% DUAL = 3%
FUNC CLASS =
MINOR COLLECTOR
"SUB-REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5341 = 0.087 MI.
LENGTH STRUCTURE TIP PROJECT B-5341 = 0.036 MI.
TOTAL LENGTH OF TIP PROJECT B-5341 = 0.123 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 23, 2015

LETTING DATE:
JANUARY 19, 2016

JAMES A. SPEER, PE
PROJECT ENGINEER

DANIEL W. GARDNER, JR, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

06-MAR-2015 08:34
R:\Roadway\Proj\B-5341_Rdy_tsh.dgn
$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-5341	1B

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 — 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:

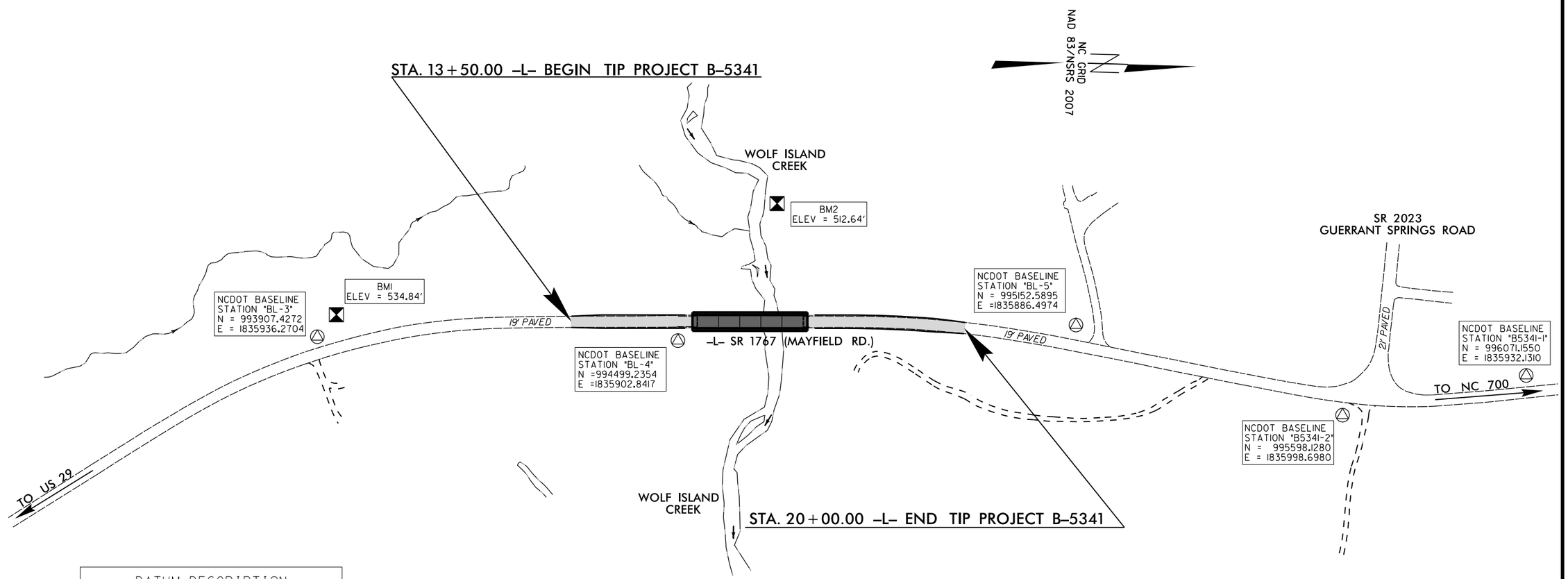
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
B-5341	1C-1
Location and Surveys	

B-5341 SURVEY CONTROL SHEET



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B5341-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 995,598.128(ft) EASTING: 1,835,998.698(ft)
ELEVATION: 546.46'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999169995
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5341-2" TO -L- STATION 13+50 IS
S 4°38'06" W 1,294.79'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

THE FILES TO BE FOUND ARE AS FOLLOWS:
B5341_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.
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	993907.4272	1835936.2704	537.36	OUTSIDE PROJECT LIMITS	
4	BL-4	994499.2354	1835902.8417	516.65	15+41.36	14.01 RT
5	BL-5	995152.5895	1835886.4974	540.13	21+92.72	26.36 LT
2	B5341-2	995598.1280	1835998.6980	546.46	OUTSIDE PROJECT LIMITS	
1	B5341-1	996071.1550	1835932.1310	532.37	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

BM1 ELEVATION = 534.84
N 993919 E 1835908
BL STATION 5+13.00 28 LEFT
RR SPIKE IN 20" POPLAR

BM2 ELEVATION = 512.64
N 994636 E 1835706
BL STATION 12+35.00 193 LEFT
RR SPIKE IN 24" POPLAR

TYPE	STATION	L NORTH	EAST
POT	10+00.00	993961.2078	1835936.3654
PC	10+34.74	993994.8435	1835927.6936
PCC	12+05.96	994163.7049	1835900.9288
PT	13+82.45	994340.0074	1835893.0924
PC	18+04.91	994762.3130	1835881.7843
PT	21+55.99	995111.9819	1835906.3763
POT	23+01.96	995255.9215	1835930.6694

-L- PRELIMINARY NEW PERMANENT DRAINAGE EASEMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	20+35.00	-30.00	994995.1023	1835860.3931
L	20+50.00	-64.00	995013.9542	1835828.1841
L	20+75.00	-30.00	995035.5124	1835864.9137
L	20+80.00	-54.00	995043.5537	1835841.7294
L	20+20.00	30.00	994974.4081	1835918.6742
L	20+16.00	41.00	994969.5036	1835929.2725
L	20+42.00	30.00	994995.9392	1835920.7942
L	20+35.00	48.00	994987.2879	1835938.0007

-L- PRELIMINARY NEW PERMANENT UTILITY EASEMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+84.00	-30.00	994340.7551	1835863.0616
L	13+84.00	-55.00	994340.0859	1835838.0706
L	14+04.00	-55.00	994360.0787	1835837.5352
L	14+04.00	-30.00	994360.7479	1835862.5263

NOTE: DRAWING NOT TO SCALE

12/01/2025

06-MAR-2015 08:34
R:\Roadway\Proj\B5341_LS_1C.DGN
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5341	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

-L-		
PI Sta 11+20.61	PI Sta 12+94.22	PI Sta 19+81.00
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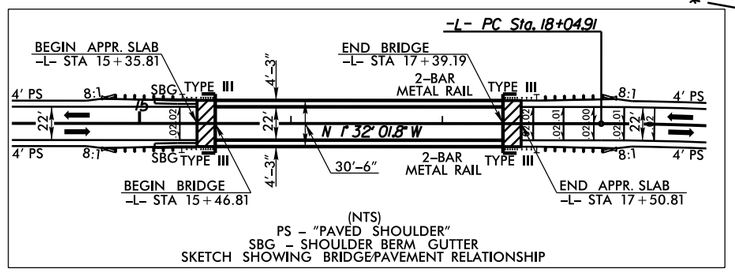
T = 85.87'	T = 88.25'	T = 176.09'
R = 900.00'	R = 5,000.00'	R = 1,810.00'
	SE = SEE PLANS	SE = SEE PLANS



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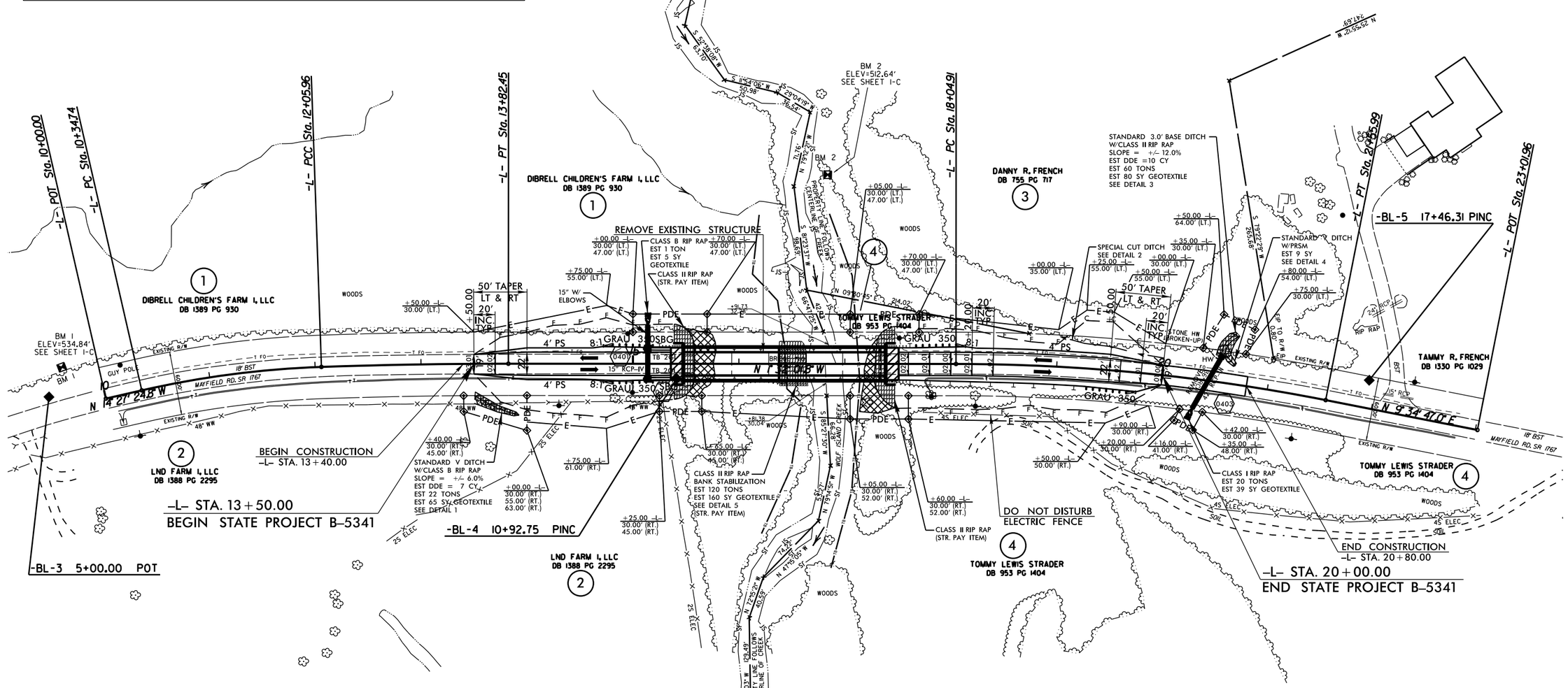
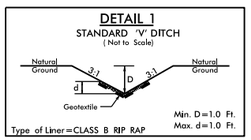
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



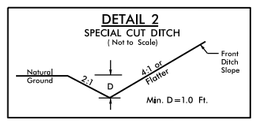
NOTE: SBG – SHOULDER BERM GUTTER
–L– STA. 15+10.00 TO BEGIN APPROACH SLAB LT. & RT.

DETAIL 1
STANDARD 'V' DITCH
(Not to Scale)



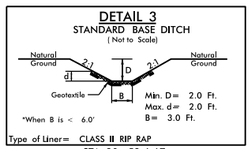
FROM STA. 13+50 L TO STA. 13+93 L RT

DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)



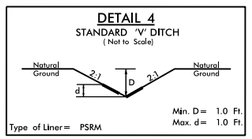
FROM STA. 19+00 L TO STA. 20+00 L LT

DETAIL 3
STANDARD BASE DITCH
(Not to Scale)



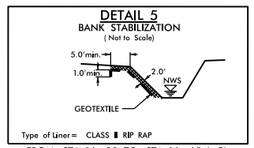
STA. 20+53 L LT

DETAIL 4
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 20+55 TO STA. 20+66 L LT

DETAIL 5
BANK STABILIZATION
(Not to Scale)



FROM STA. 16+38 TO STA. 16+65 L CL

SEE SHEET 5 FOR –L– PROFILE
SEE SHEETS S-? THRU S-? FOR STRUCTURE PLANS

REVISIONS

R/W REVISION 2-6-15 (DNG) - ELIMINATED THE PUE LOCATED AT -L- STA. 13+94.00 LT. ON PARCEL 1 (DIBRELL CHILDREN'S FARM 1, LLC) AND REVISED THE STATION LABEL FROM -L- STA. 20+29.00 RT. TO STA. 20+20.00 RT. FOR THE PDE ON PARCEL 4 (TOMMY LEWIS STRADER).

8/17/99

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5341	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

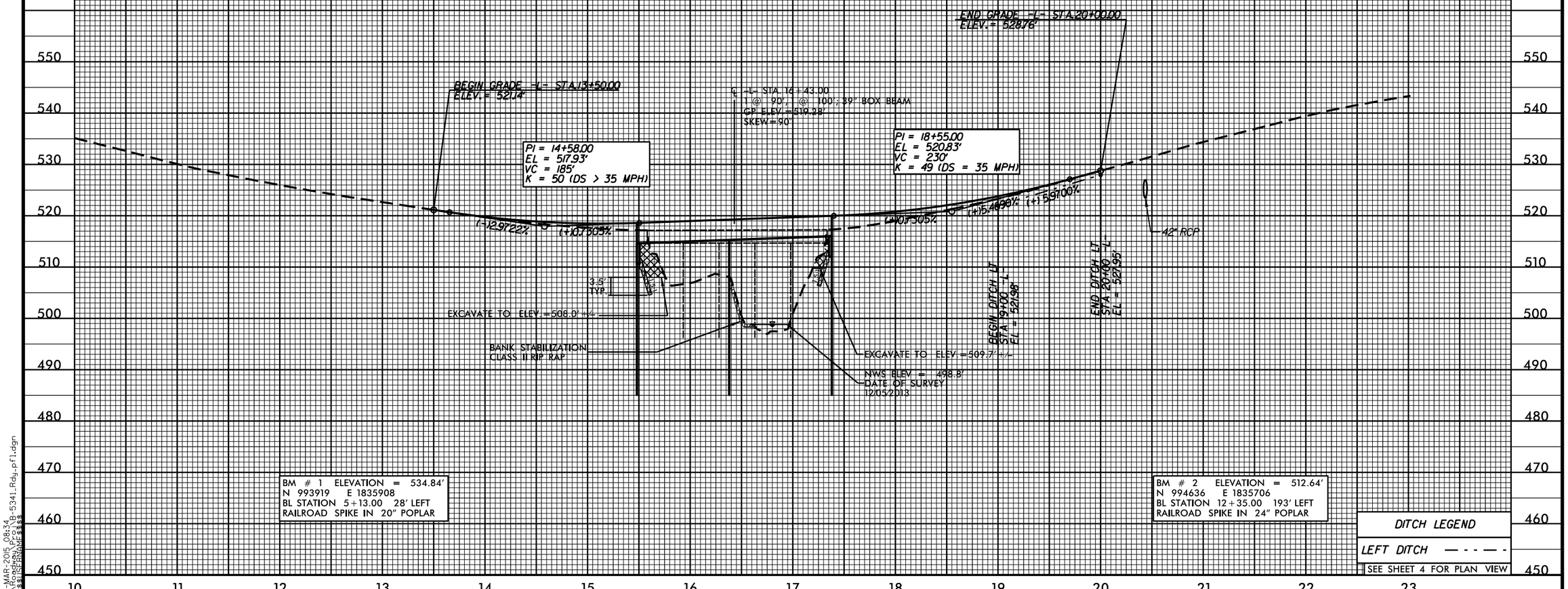
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5300	CFS
DESIGN FREQUENCY	= 25	YR
DESIGN HW ELEVATION	= 511.3	FT
BASE DISCHARGE	= 7814	CFS
BASE FREQUENCY	= 100	YR
BASE HW ELEVATION	= 512.76	FT
OVERTOPPING DISCHARGE	= 9600+	CFS
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING ELEVATION	= 518.5	FT
	=	FT
DATE OF SURVEY	= 12/05/2013	
W.S. ELEVATION AT DATE OF SURVEY	= 498.8	FT

PIPE HYDRAULIC DATA

42" RCP-III Sta. 20+44 L

DRAINAGE AREA	= 8.8	AC
DESIGN FREQUENCY	= 25	YR
DESIGN DISCHARGE	= 22.0	CFS
DESIGN HW ELEVATION	= 527.0	FT
100 YEAR DISCHARGE	= 24.0	CFS
100 YEAR HW ELEVATION	= 527.1	FT
OVERTOPPING FREQUENCY	= 500+	YR
OVERTOPPING DISCHARGE	= 57.0	CFS
OVERTOPPING ELEVATION	= 529.0	FT



BM # 1 ELEVATION = 534.84'
N 993919 E 1835908
BL STATION 5+13.00 28' LEFT
RAILROAD SPIKE IN 20" POPLAR

BM # 2 ELEVATION = 512.64'
N 994636 E 1835706
BL STATION 12+35.00 193' LEFT
RAILROAD SPIKE IN 24" POPLAR

DITCH LEGEND

LEFT DITCH — - - — -

SEE SHEET 4 FOR PLAN VIEW

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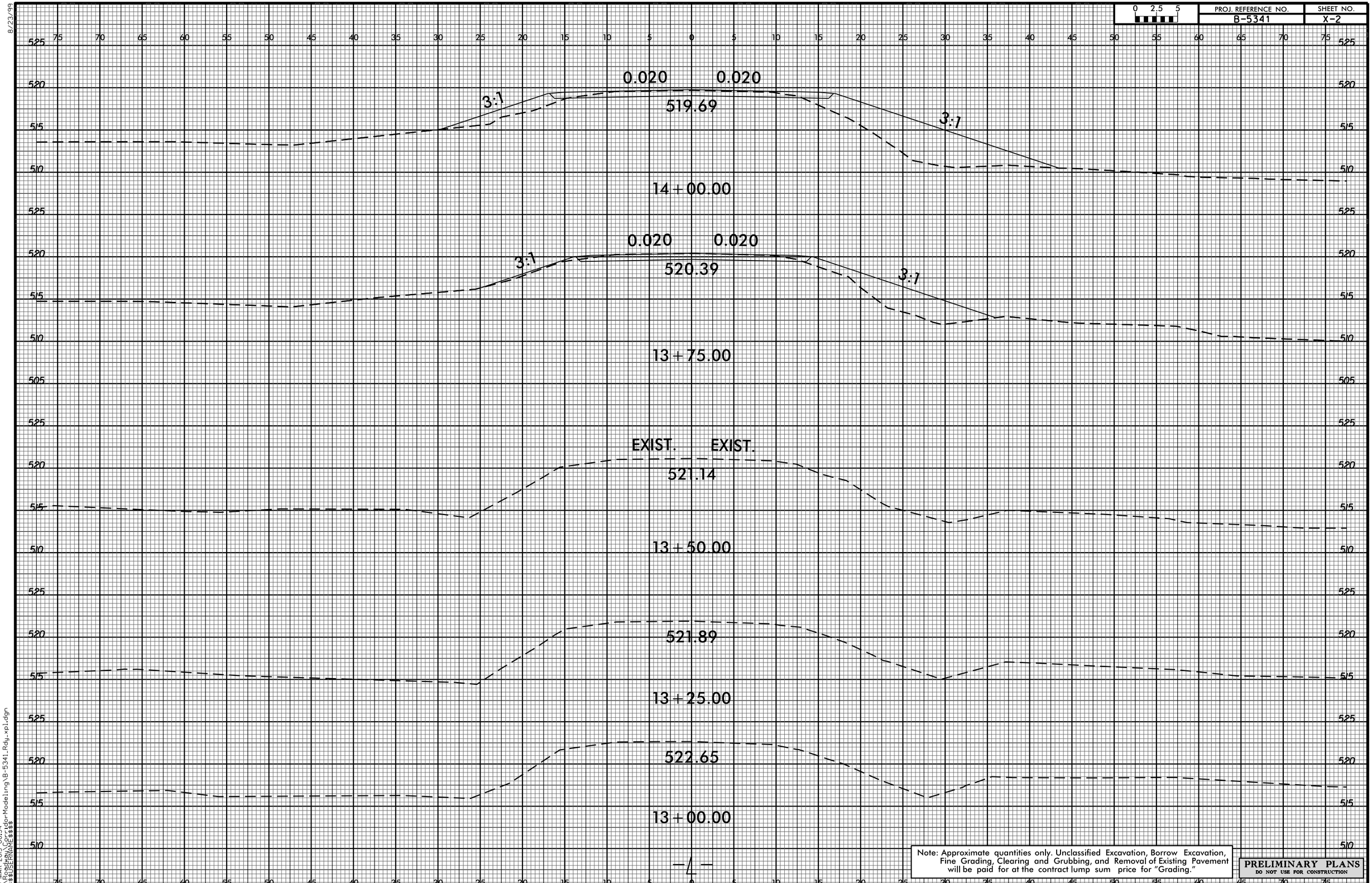

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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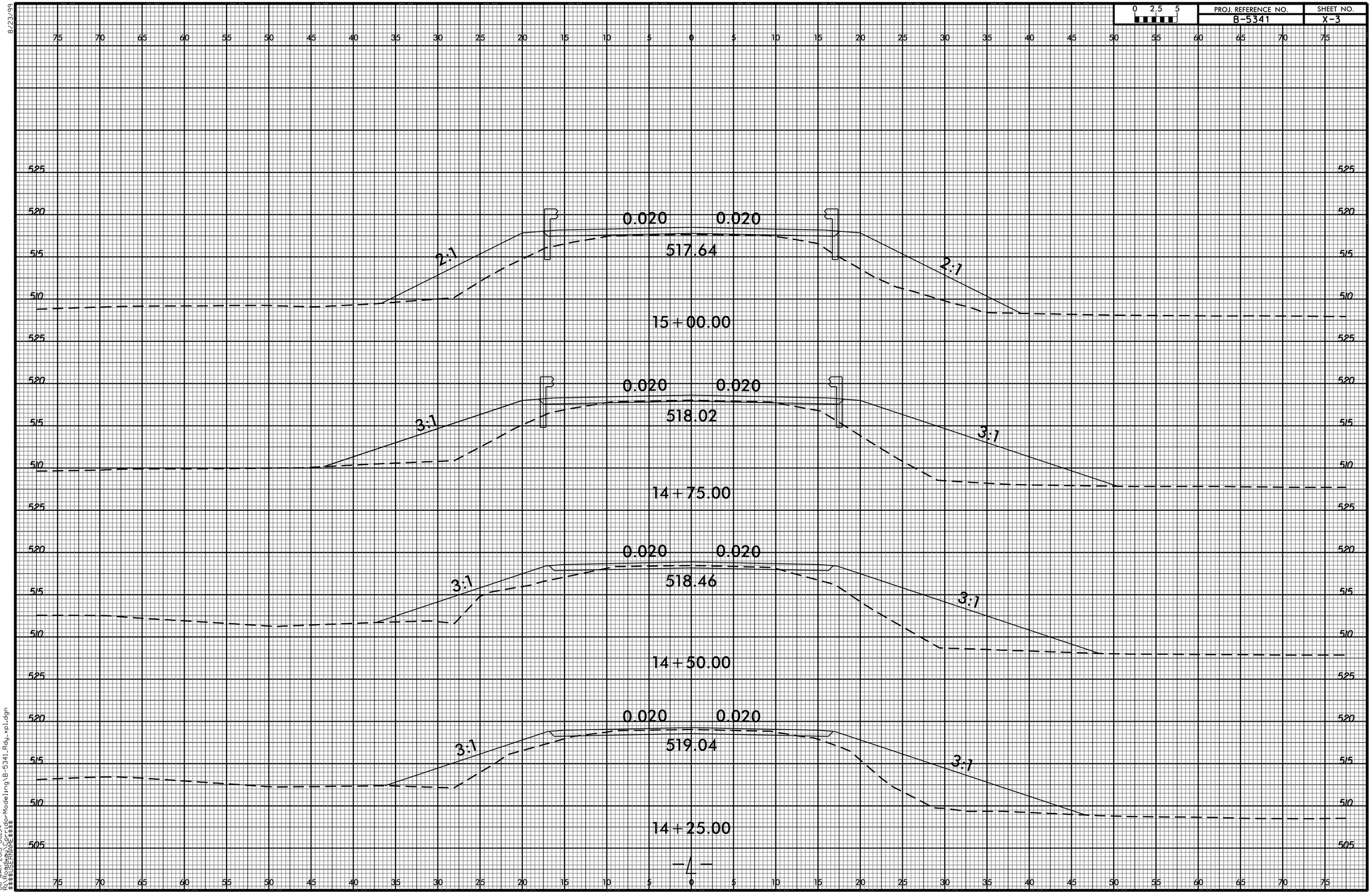

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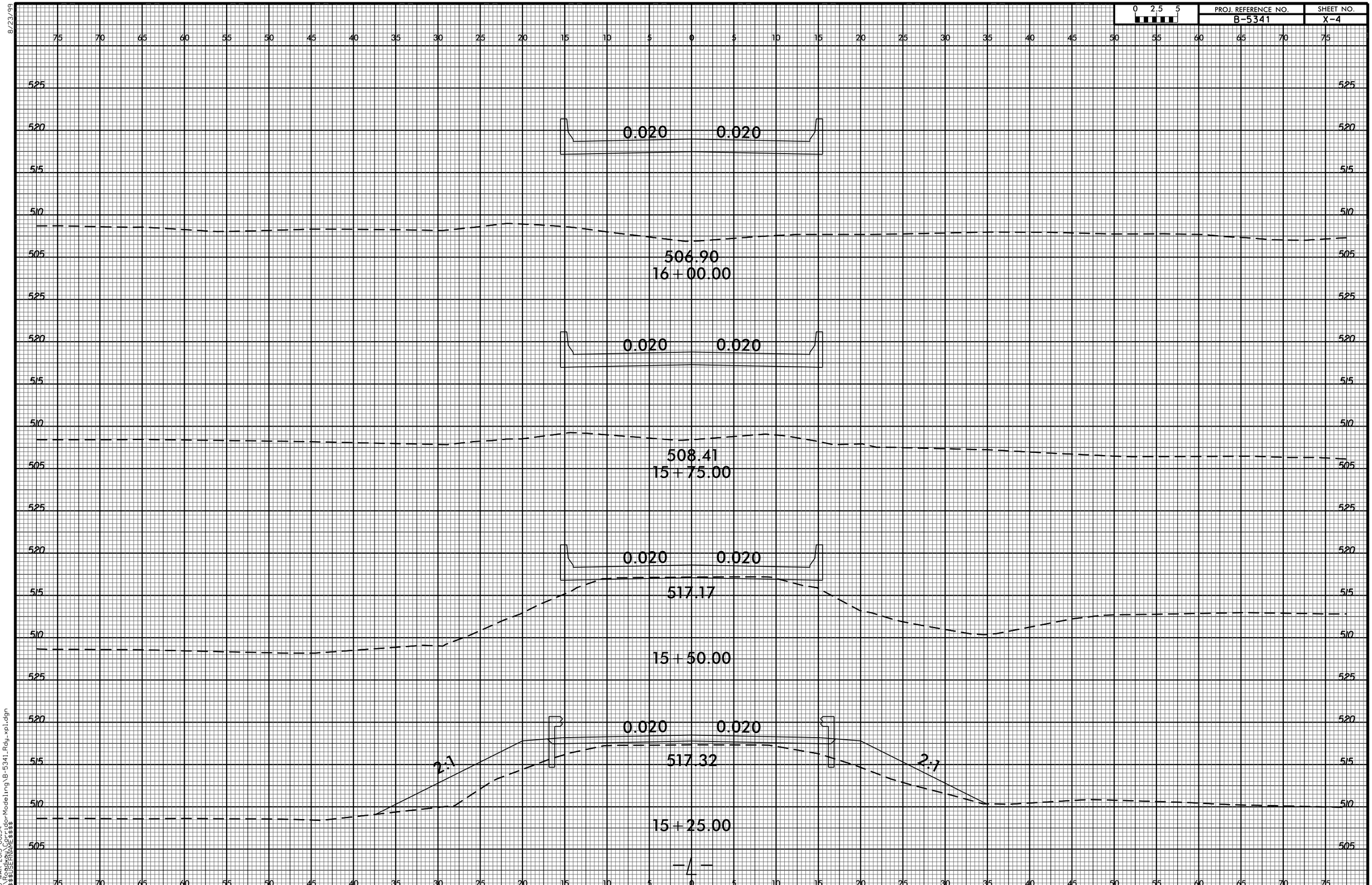
	B-5341	X-4



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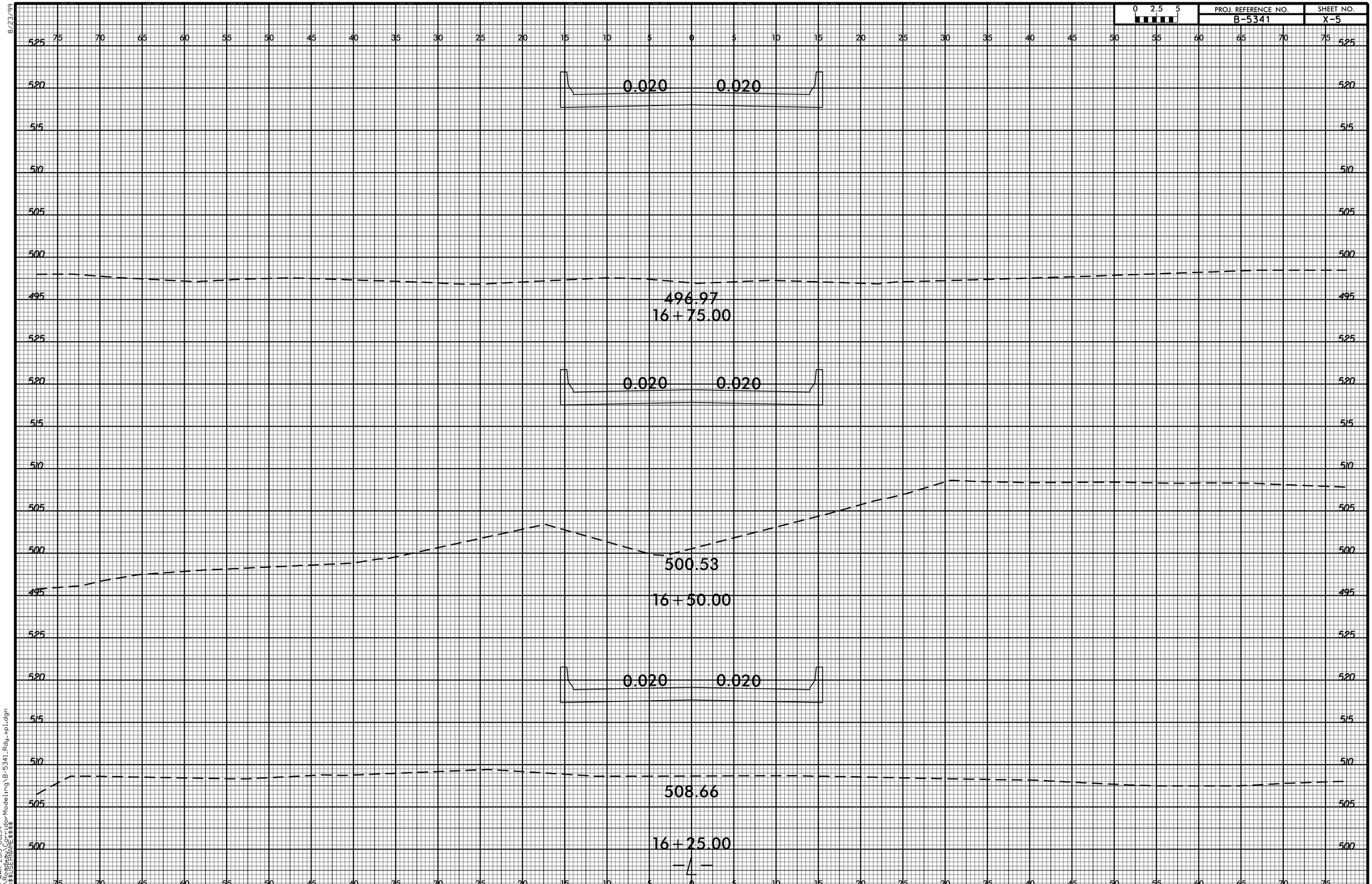
	B-5341	X-5



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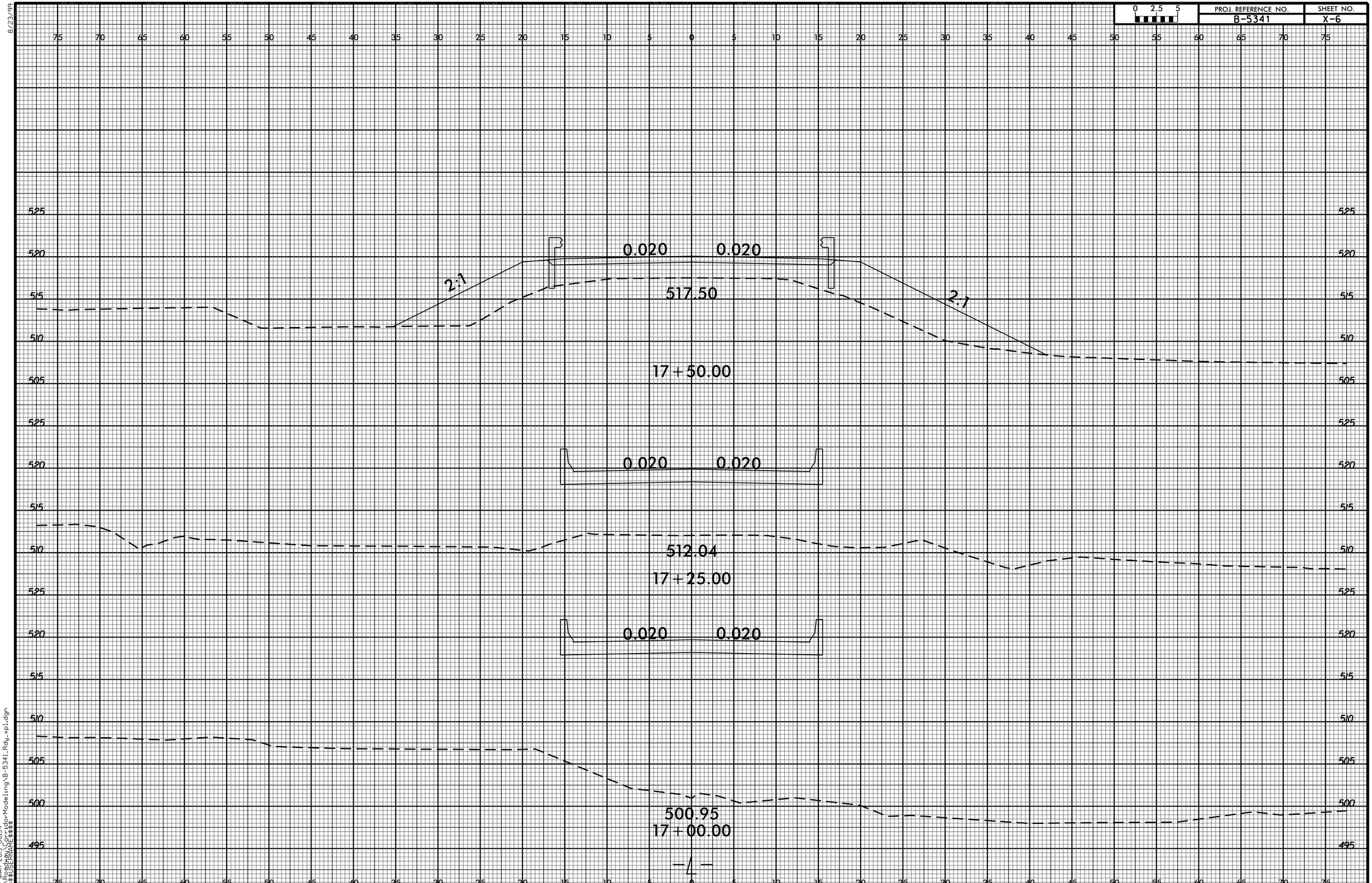
	B-5341	X-6



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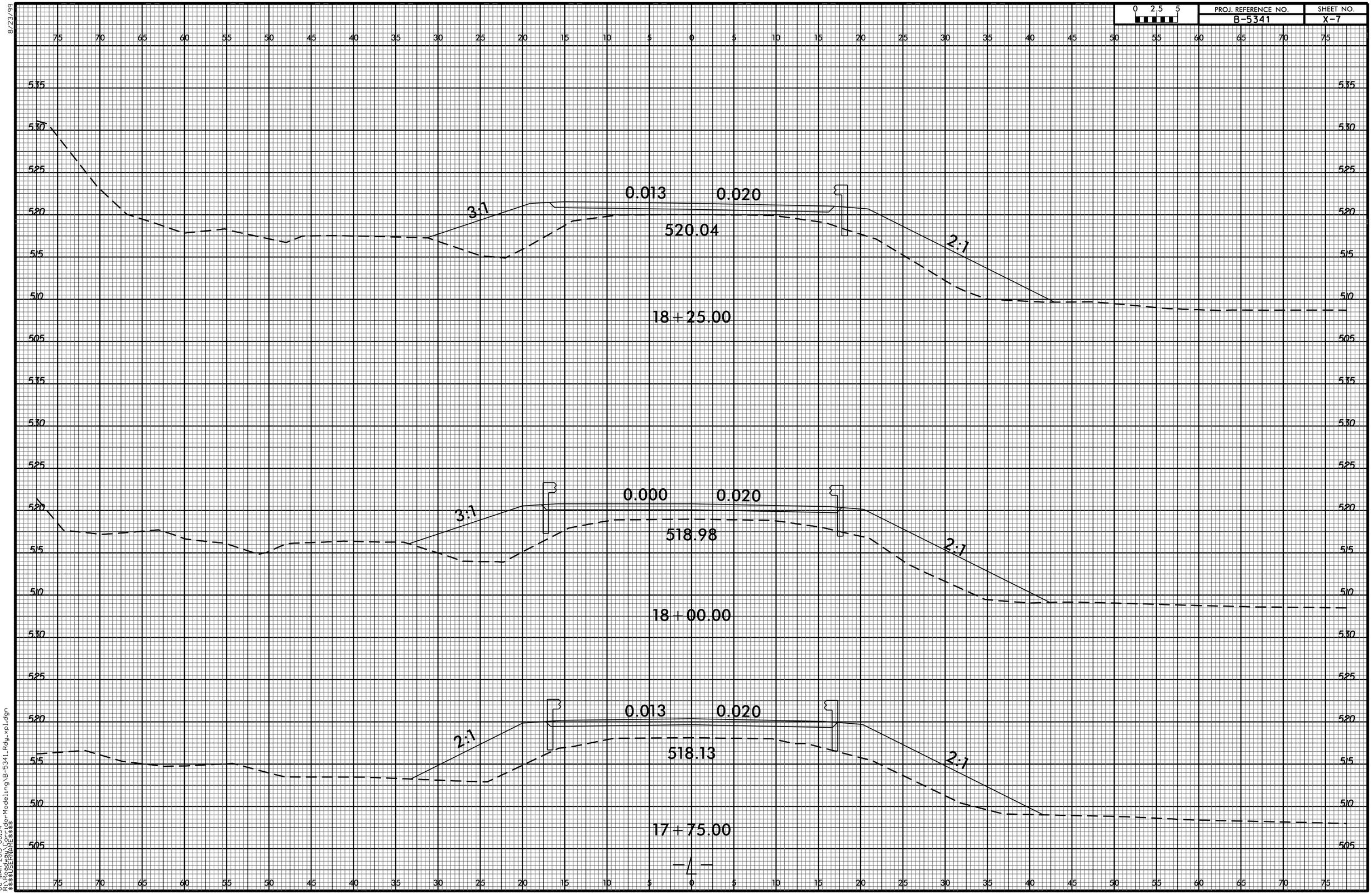

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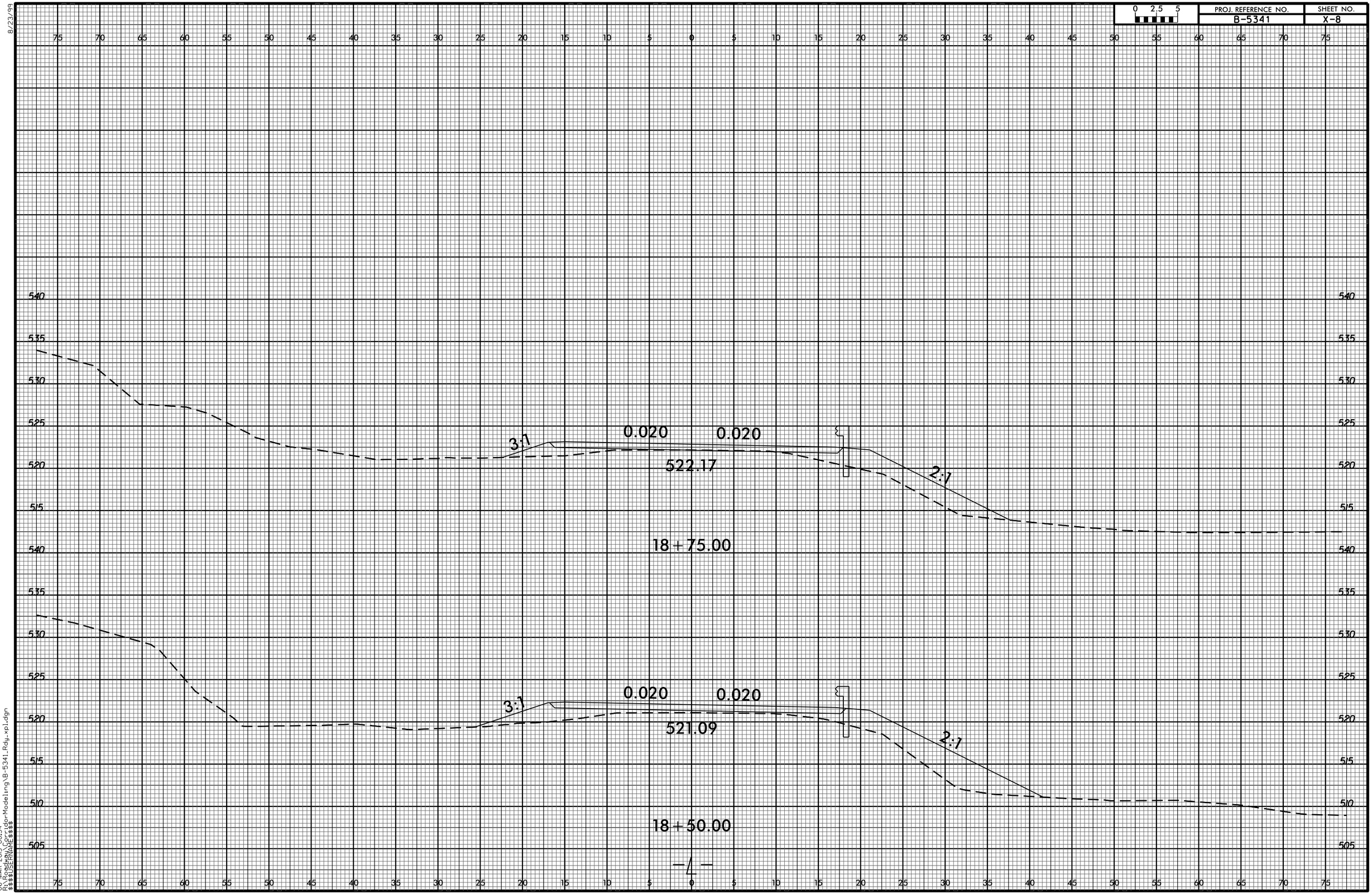
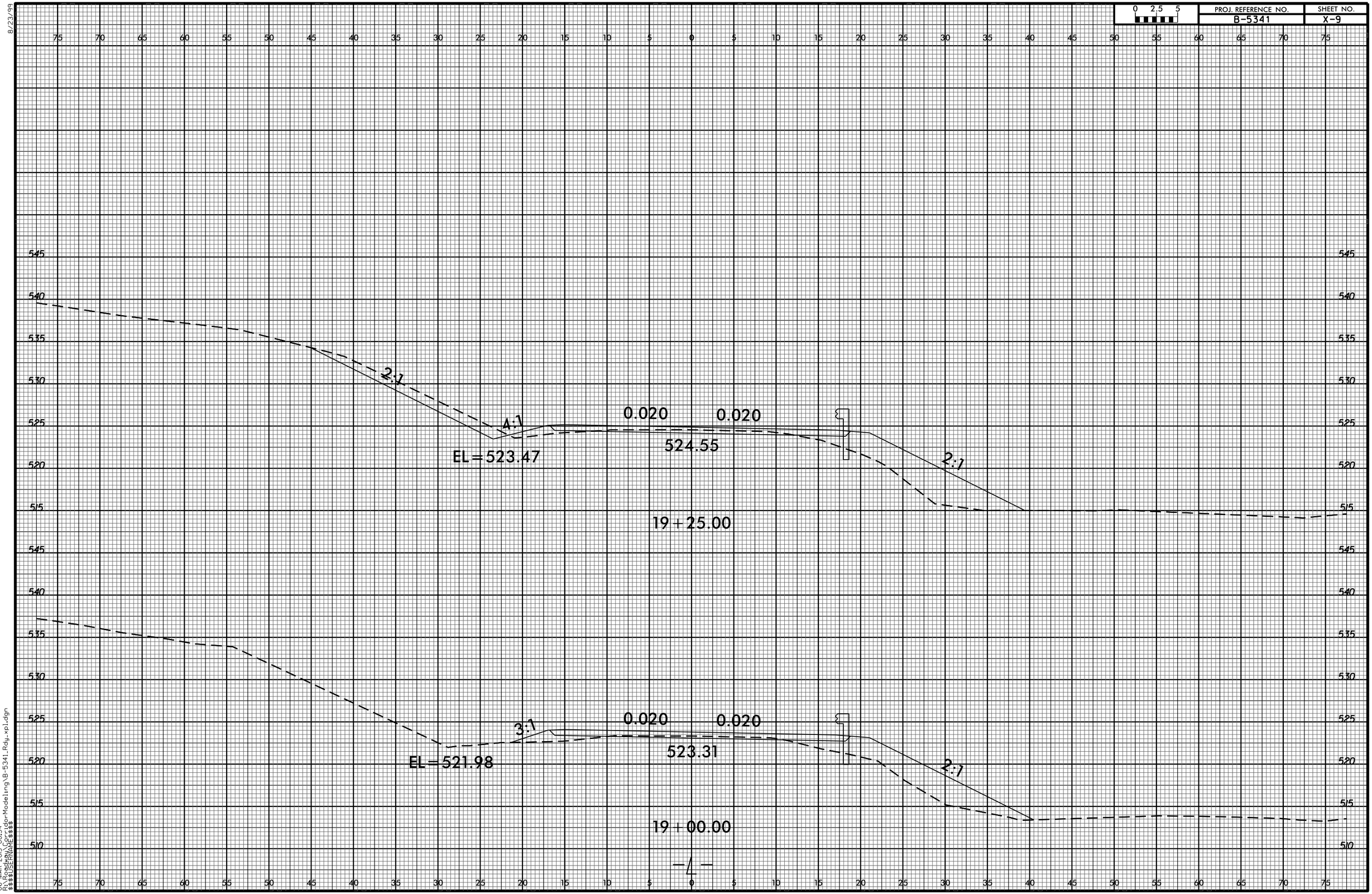
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5341	X-8





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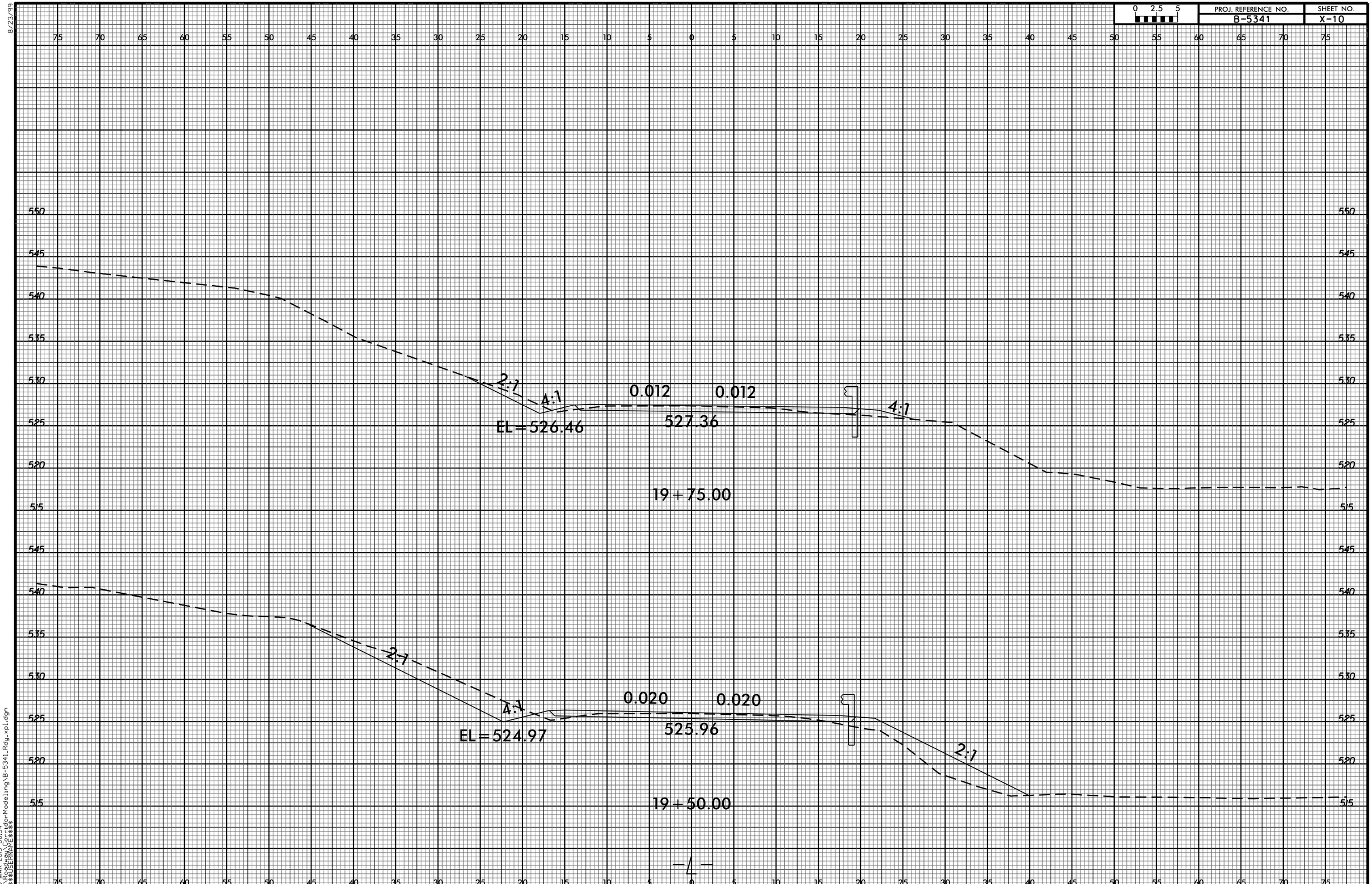
	B-5341	X-10



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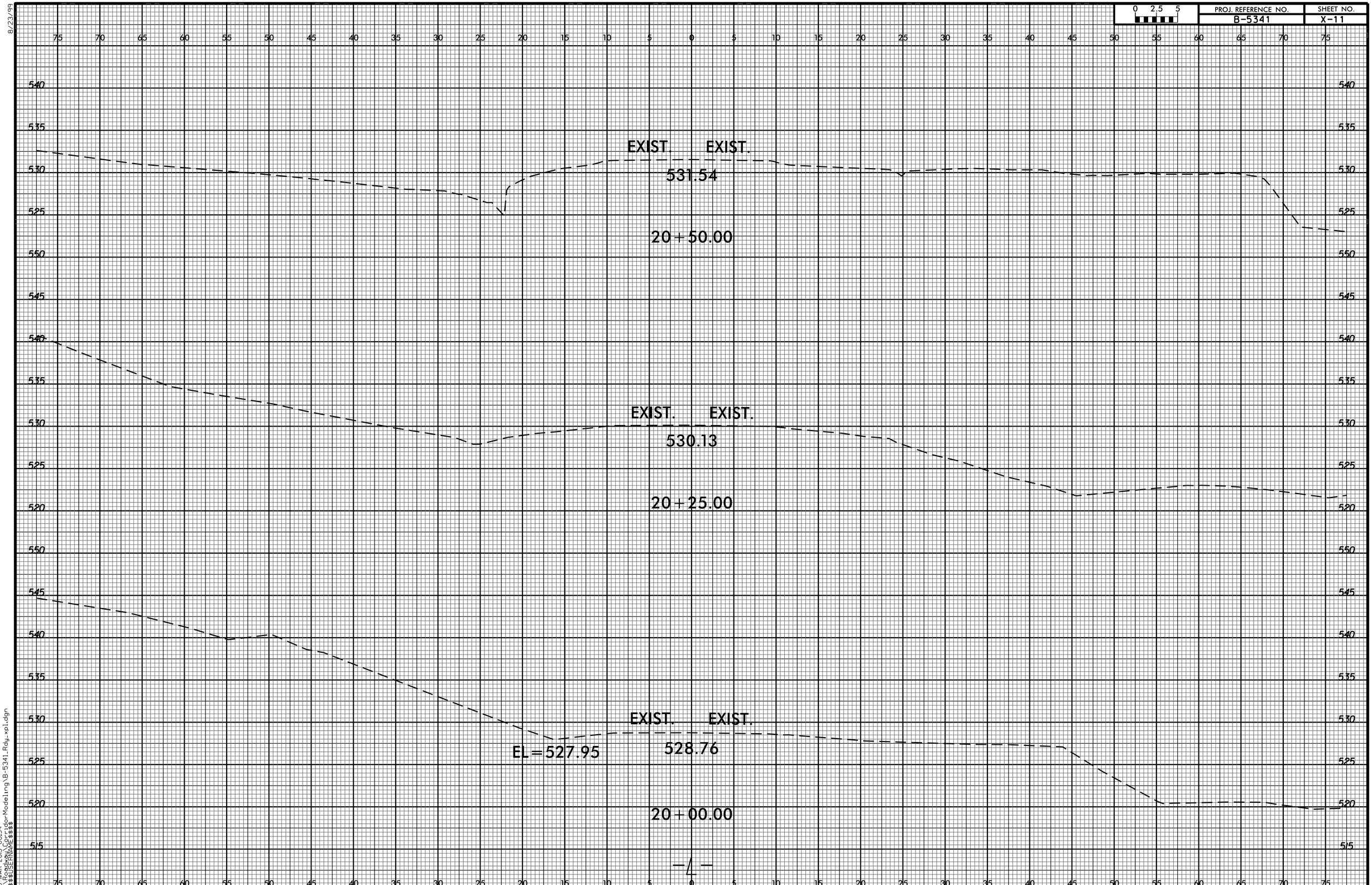
	B-5341	X-11



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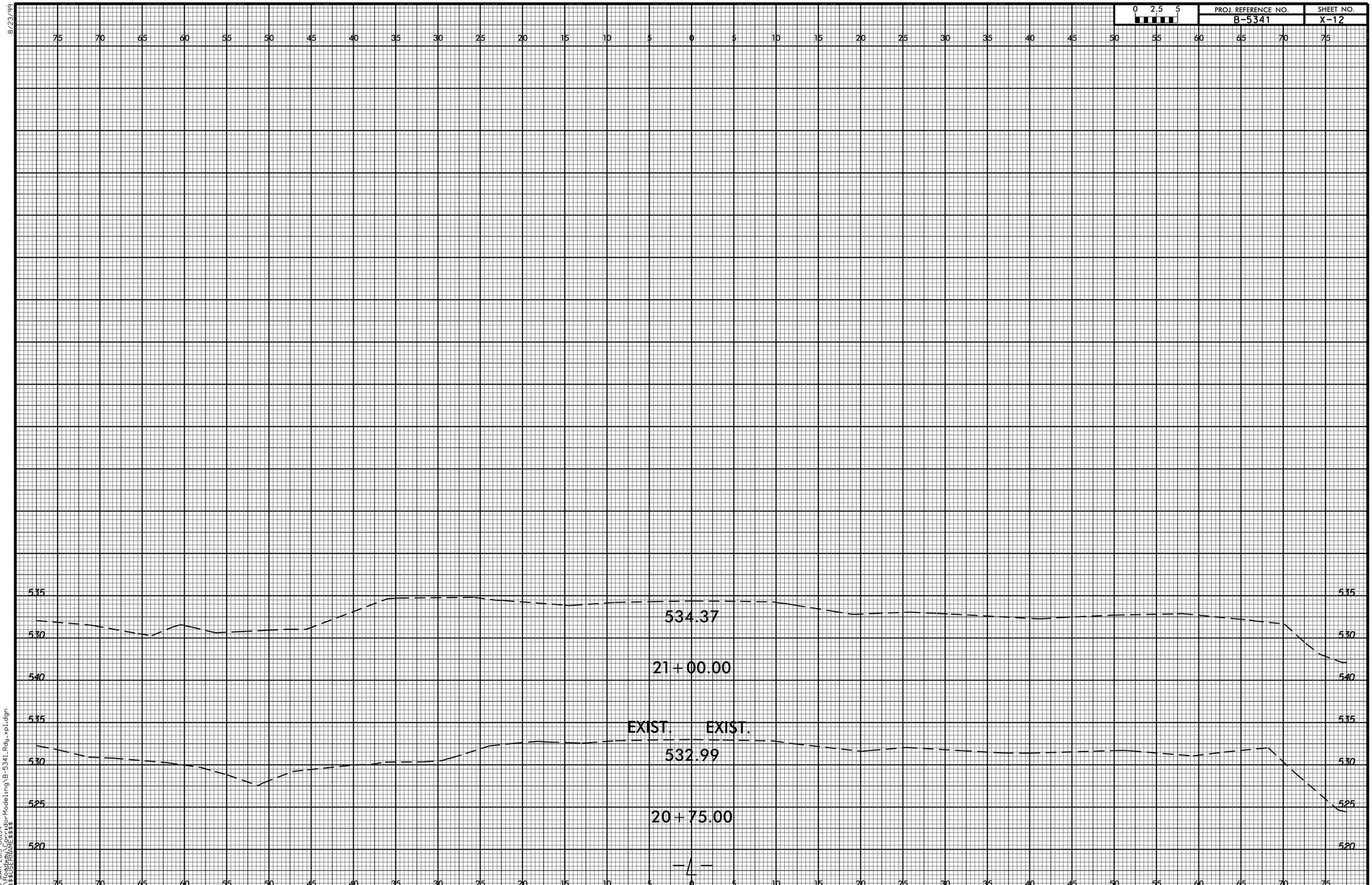
	B-5341	X-12



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