



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

February 6, 2013

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

ATTN: Mr. Eric Alsmeyer  
NCDOT Coordinator

Dear Sir,

Subject: **Application for Section 404 Nationwide Permits 33 and 23, Section 401 Water Quality Certification, and Jordan Lake Riparian Buffer Authorization** for the replacement of Bridge No. 55 on SR 1600 Over White Oak Creek, Wake County, Federal Aid Project No. BRZ-1600(9), Division 5, T.I.P No. B-4697.

Debit \$240.00 from WBS No. 38474.1.1

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge No. 55 over White Oak Creek on SR 1600. The project has already let, and is currently under construction. Permits were issued on November 29, 2011 and expired on March 18, 2012. There has been no change in design or impacts from the original application, dated September 30, 2011. We are requesting issuance of a new permit under the 2012 Nationwide Permit guidelines.

Please see the enclosed copies of the Pre-Construction Notification (PCN), Stormwater Management Plan, Final Jurisdictional Determination, permit drawings, and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed for this project in September 2010. Additional copies are available upon request.

There will be 0.25 acres of wetland impacts from permanent fill and mechanized clearing. Mitigation will be through the Ecological Enhancement Program (EEP).

**MAILING ADDRESS:**  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT  
1598 MAIL SERVICE CENTER  
RALEIGH NC 27699-1548

TELEPHONE: 919-707-6000  
FAX: 919-212-5785  
WEBSITE: [NCDOT.GOV](http://NCDOT.GOV)

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

A copy of this permit application will be posted on the NCDOT Website at:  
<https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx>. If you have any  
questions or need additional information, please call Jason Dilday at (919) 707-6111.

Sincerely,

  
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:	<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 23,33 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <span style="margin-left: 100px;"><input type="checkbox"/> Non-404 Jurisdictional General Permit</span> <input type="checkbox"/> 401 Water Quality Certification – Express <span style="margin-left: 100px;"><input checked="" type="checkbox"/> Riparian Buffer Authorization</span>		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

#### 2. Project Information

2a. Name of project:	Replace Bridge No. 55 Over White Oak Creek on SR 1600 (Green Level Church Road)
2b. County:	Wake
2c. Nearest municipality / town:	Apex
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no.:	B-4697

#### 3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6111
3g. Fax no.:	(919) 212-5785
3h. Email address:	jldilday@ncdot.gov

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

<b>B. Project Information and Prior Project History</b>	
<b>1. Property Identification</b>	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.7760 (DD.DDDDDD) Longitude: -78.9026 (-DD.DDDDDD)
1c. Property size:	8 acres
<b>2. Surface Waters</b>	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	White Oak Creek
2b. Water Quality Classification of nearest receiving water:	WS-IV, NSW
2c. River basin:	Cape Fear
<b>3. Project Description</b>	
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: Urban and Developed Land	
3b. List the total estimated acreage of all existing wetlands on the property: 0.25	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 187	
3d. Explain the purpose of the proposed project: To replace Bridge No. 55 on SR 1600 over White Oak Creek	
3e. Describe the overall project in detail, including the type of equipment to be used: The North Carolina Department of Transportation (NCDOT) proposes to replace bridge No. 55 on SR 1600 (Green Level Church Road) over White Oak Creek. The project will be a replace in place with an off-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
<b>4. Jurisdictional Determinations</b>	
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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: RK&K Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. The initial verification was on January 10, 2006 with Eric Alsmeyer of the U.S. Army Corp of Engineers. As per a conversation with Eric Alsmeyer on August 12, 2011, Jurisdictional Determination Forms have been included with this permit application. NCDOT is requesting an approved JD with this application.	
<b>5. Project History</b>	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions. Permits expired on 3/18/2012. Work in jurisdictional areas will not be completed by 3/18/2013.	
<b>6. Future Project Plans</b>	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

<b>C. Proposed Impacts Inventory</b>						
<b>1. Impacts Summary</b>						
1a. Which sections were completed below for your project (check all that apply):						
<input checked="" type="checkbox"/> Wetlands		<input checked="" type="checkbox"/> Streams - tributaries		<input checked="" type="checkbox"/> Buffers		
<input type="checkbox"/> Open Waters		<input type="checkbox"/> Pond Construction				
<b>2. Wetland Impacts</b>						
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 <input checked="" type="checkbox"/> P <input checked="" type="checkbox"/> T	Permanent Fill, Temporary Fill, Excavation	Riverine	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	0.25 Perm. 0.20 Temp.	
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T Utility Impacts	Hand Clearing for Utilities and Permanent Fill	Riverine	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	<0.01 Perm. 0.20 Hand Clearing	
<b>2g. Total wetland impacts</b>					0.25 Perm 0.20 Temp	
2h. Comments: * There will be <0.01 ac of permanent wetland impacts from fill associated with utility poles and 0.20 ac of hand clearing.						
<b>3. Stream Impacts</b>						
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 <input checked="" type="checkbox"/> P <input checked="" type="checkbox"/> T	Bank Stabilization, Temporary Impacts from Boardwalk	White Oak Creek and Bachelor Branch	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	4 - 6	20 (T) 106 (P)
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
<b>3h. Total stream and tributary impacts</b>						20 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 <input type="checkbox"/> P <input type="checkbox"/> T				
O2 <input type="checkbox"/> P <input type="checkbox"/> T				
O3 <input type="checkbox"/> P <input type="checkbox"/> T				
O4 <input type="checkbox"/> P <input type="checkbox"/> T				
<b>4f. Total open water impacts</b>				0 Permanent 0 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								
<b>5f. Total</b>								

5g. Comments:

5h. Is a dam high hazard permit required?	<input type="checkbox"/> Yes	<input type="checkbox"/> 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?		<input type="checkbox"/> Neuse <input type="checkbox"/> Catawba		<input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Randleman		<input checked="" type="checkbox"/> Other: Jordan	
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 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bridge	White Oak Creek and Bachelor Branch	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4294	2456		
B2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	*Road Crossing	White Oak Creek and Bachelor Branch	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3318	3283		
B3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Greenway	White Oak Creek and Bachelor Branch	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1365	762		
B3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Utility Poles	White Oak Creek and Bachelor Branch	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4804	624		
<b>6h. Total buffer impacts</b>				13781	7125		
6i. Comments: * While the road crossing impacts are >150 feet, they are allowable with mitigation. The entire buffered areas are within wetlands that will already be mitigated for, therefore, no buffer mitigation is proposed.							

<b>D. Impact Justification and Mitigation</b>		
<b>1. Avoidance and Minimization</b>		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. See Stormwater Management Plan. The project is a replace in place, spanning the creek which reduces current bents in the water. The new bridge is longer bridge and will have an off-site detour.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. 2:1 slopes are to be used at jurisdictional sites,, and Best Management Practices for Surface Waters.		
<b>2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State</b>		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
2b. If yes, mitigation is required by (check all that apply):	<input checked="" type="checkbox"/> DWQ <input checked="" type="checkbox"/> Corps	
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input checked="" type="checkbox"/> Permittee Responsible Mitigation	
<b>3. Complete if Using a Mitigation Bank</b>		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
<b>4. Complete if Making a Payment to In-lieu Fee Program</b>		
4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes	
4b. Stream mitigation requested:	0	
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold	
4d. Buffer mitigation requested (DWQ only):	0 square feet	
4e. Riparian wetland mitigation requested:	0	
4f. Non-riparian wetland mitigation requested:	0 acres	
4g. Coastal (tidal) wetland mitigation requested:	0 acres	
4h. Comments: Mitigation was not proposed for the 106 linear feet of permanent stream impacts because the impacts are from bank stabilization.		
<b>5. Complete if Using a Permittee Responsible Mitigation Plan</b>		

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

The Bryan Boulevard Mitigation Sites are located in Guilford County, adjacent to the Bryan Boulevard Extension. Site 1 (Horsepen Creek) is located at the intersection of Bryan Boulevard and Flemming Road; site 2 (Oak Ridge Road) is located near the intersection of Bryan Boulevard and Old Oak Ridge Road. These two sites provide 31.17 acres of mitigation to offset wetland impacts associated with project U-608, the extension of Bryan Boulevard.

In order to offset unavoidable stream impacts associated with B-4697, the Bryan Boulevard Mitigation Site will be debited .25 acres of riparian wetland restoration. This debit is reflected in the table below.

See Attached Sheet

**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.

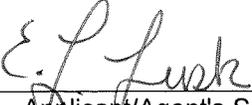
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1				
Zone 2				
<b>6f. Total buffer mitigation required:</b>				

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:

<b>E. Stormwater Management and Diffuse Flow Plan (required by DWQ)</b>	
<b>1. Diffuse Flow Plan</b>	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: See permit drawings and stormwater management plan.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2. Stormwater Management Plan</b>	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input checked="" type="checkbox"/> DWQ 401 Unit
<b>3. Certified Local Government Stormwater Review</b>	
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):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>4. DWQ Stormwater Program Review</b>	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>5. DWQ 401 Unit Stormwater Review</b>	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes    NA <input type="checkbox"/> No
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes    NA <input type="checkbox"/> No

<b>F. Supplementary Information</b>	
<b>1. Environmental Documentation (DWQ Requirement)</b>	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>2. Violations (DWQ Requirement)</b>	
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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
<b>3. Cumulative Impacts (DWQ Requirement)</b>	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 project, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
<b>4. Sewage Disposal (DWQ Requirement)</b>	
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	

<b>5. Endangered Species and Designated Critical Habitat (Corps Requirement)</b>		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input type="checkbox"/> Raleigh <input type="checkbox"/> Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NHP, USFWS website, NCDOT field surveys on May 26, 2009 for red-cockaded woodpecker, and Michaux's sumac. Surveys for dwarf wedgemussel was conducted on April 23, 2009.		
<b>6. Essential Fish Habitat (Corps Requirement)</b>		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
<b>7. Historic or Prehistoric Cultural Resources (Corps Requirement)</b>		
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)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation.		
<b>8. Flood Zone Designation (Corps Requirement)</b>		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> 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	 _____ Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	2.6.13 Date

## B-4697 Bryan Boulevard Mitigation

The Bryan Boulevard Mitigation Sites are located in Guilford County, adjacent to the Bryan Boulevard Extension. Site 1 (Horsepen Creek) is located at the intersection of Bryan Boulevard and Flemming Road; site 2 (Oak Ridge Road) is located near the intersection of Bryan Boulevard and Old Oak Ridge Road. These two sites provide 31.17 acres of mitigation to offset wetland impacts associated with project U-608, the extension of Bryan Boulevard.

In order to offset unavoidable stream impacts associated with B-4697, the Bryan Boulevard Mitigation Site will be debited .25 acres of riparian wetland restoration. This debit is reflected in the table below.

MITIGATION TYPE	DEBIT AMOUNT (ac)	DEBITS
Riparian Wetland Restoration	0.58	U-3110B
Riparian Wetland Restoration	1.59	R-2413C
Riparian Wetland Restoration	1	U-608
Riparian Wetland Restoration	0.25	B-4697

**APPROVED JURISDICTIONAL DETERMINATION FORM**  
**U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):**

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Wilmington, B-4697**

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** This form is for White Oak Creek, Bachelor Brance, and abutting wetlands.

State: North Carolina County/parish/borough: Wake City: Apex  
Center coordinates of site (lat/long in degree decimal format): Lat. 35.7760° **N**, Long. -78.9026° **W**  
Universal Transverse Mercator:

Name of nearest waterbody: White Oak Creek and Bachelor Branch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Jordan Lake

Name of watershed or Hydrologic Unit Code (HUC): 03030002

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

Office (Desk) Determination. Date:

Field Determination. Date(s): 01/10/2006

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.  
Explain: .

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<sup>1</sup>**

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: li near feet: width h (ft) and/or acres.

Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on: Pick List**

Elevation of established OHWM (if known): .

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup>**

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: .

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.

### SECTION III: CWA ANALYSIS

#### A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent": .

#### B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody<sup>4</sup> is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 268.59 square miles

Drainage area: 7.19 square miles

Average annual rainfall: 50 inches

Average annual snowfall: 2-4 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 2 tributaries before entering TNW.

Project waters are 10-15 river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 2-5 aerial (straight) miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW<sup>5</sup>: Bachelor Branch flows into White Oak Creek. White Oak Creek flows into Jordan Lake, Jordan Lake empties into the Haw River and the Haw River flows into the Cape Fear River. .

<sup>4</sup> Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

<sup>5</sup> Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is:  Natural  
 Artificial (man-made). Explain:  
 Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):

Average width: 6-8 feet  
Average depth: 1-3 feet  
Average side slopes: 2:1.

Primary tributary substrate composition (check all that apply):

Silts  Sands  Concrete  
 Cobbles  Gravel  Muck  
 Bedrock  Vegetation. Type/% cover:  
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:

Presence of run/riffle/pool complexes. Explain:

Tributary geometry: Meandering

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: Seasonal flow

Estimate average number of flow events in review area/year: 2-5

Describe flow regime:

Other information on duration and volume:

Surface flow is: Confined. Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks  
 OHWM<sup>6</sup> (check all indicators that apply):  
 clear, natural line impressed on the bank  the presence of litter and debris  
 changes in the character of soil  destruction of terrestrial vegetation  
 shelving  the presence of wrack line  
 vegetation matted down, bent, or absent  sediment sorting  
 leaf litter disturbed or washed away  scour  
 sediment deposition  multiple observed or predicted flow events  
 water staining  abrupt change in plant community  
 other (list):

Discontinuous OHWM.<sup>7</sup> Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by:  Mean High Water Mark indicated by:  
 oil or scum line along shore objects  survey to available datum;  
 fine shell or debris deposits (foreshore)  physical markings;  
 physical markings/characteristics  vegetation lines/changes in vegetation types.  
 tidal gauges  
 other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: Water was clear.

Identify specific pollutants, if known:

<sup>6</sup>A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

<sup>7</sup>Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
  - Federally Listed species. Explain findings:
  - Fish/spawn areas. Explain findings:
  - Other environmentally-sensitive species. Explain findings:
  - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: 0.012 acres

Wetland type. Explain: Riverine.

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **2-5** river miles from TNW.

Project waters are **1-2** aerial (straight) miles from TNW.

Flow is from: **Wetland to navigable waters**.

Estimate approximate location of wetland as within the **2-year or less** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
  - Federally Listed species. Explain findings:
  - Fish/spawn areas. Explain findings:
  - Other environmentally-sensitive species. Explain findings:
  - Aquatic/wildlife diversity. Explain findings: Evidence of birds, deer and other wildlife using wetland area.

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **2**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
WA Yes	3.57	WB Yes	0.79

Summarize overall biological, chemical and physical functions being performed:

### C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

**Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:**

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

### D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:  
 TNWs: li near feet width (ft), Or, acres.  
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**  
 Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: White Oak Creek and Batchelor Branch both had water in them during the driest part of the summer of 2011.  
 Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters: .

3. **Non-RPWs<sup>8</sup> that flow directly or indirectly into TNWs.**

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetlands are directly abutting White Oak Creek and Batchelor Branch.**
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: **0.012** acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.<sup>9</sup>**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. **ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):<sup>10</sup>**

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

<sup>8</sup>See Footnote # 3.

<sup>9</sup>To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

<sup>10</sup>Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

**Identify water body and summarize rationale supporting determination:**

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters:
- Wetlands: acres.

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
- Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource:
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource:
- Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - Office concurs with data sheets/delineation report.
  - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
  - USGS NHD data.
  - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: Lexington West (NC).
- USDA Natural Resources Conservation Service Soil Survey. Citation: Davidson Co.
- National wetlands inventory map(s). Cite name:
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs:  Aerial (Name & Date):  
or  Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

**B. ADDITIONAL COMMENTS TO SUPPORT JD:** This form is for UT7 and UT8 to Rat Spring Branch. Wetland E (WE) is associated with UT8.



General Project Information	
<b>Project No.:</b>	B-4697
<b>City/Town:</b>	Town of Cary
<b>County(ies):</b>	Wake County
<b>River Basin(s):</b>	Cape Fear
<b>Primary Receiving Water:</b>	White Oak Creek
<b>NCDWQ Surface Water Classification for Primary Receiving Water</b>	<b>Primary:</b> Water Supply IV (WS-IV) <b>Supplemental:</b> Nutrient Sensitive Waters (NSW)
<b>Date:</b>	10/15/2010
<b>Designer:</b>	Brook Anderson, PE
<b>Project Manager:</b>	John W. Twisdale, Jr., PE
<b>CAMA County?</b>	no
<b>TVA County?</b>	no
<b>NCDWQ Stream Index:</b>	16-41-6-(0.7)
<b>Other Stream Classification:</b>	
<b>303(d) Stream?</b>	no
<b>Type(s) of Impairment:</b>	
<b>State Stormwater Permit Required?</b>	no
<b>If yes, why?</b>	
<b>Could the Project Impact Threatened or Endangered Species?</b>	no
<b>Description:</b>	Biological conclusion for B-4697 is No Effect
<b>Anadromous Fish Present?</b>	no
<b>Description:</b>	
<b>Buffer Rules in Effect?</b>	yes
<b>Buffer Rules:</b>	Jordan Lake Watershed
<b>Existing Site</b>	
<b>Description of Existing Project Area:</b>	Bridge No. 55 on SR 1600 over White Oak Creek. SR 1600 is classified as local subregional tier route and is not part of the NHS route.
<b>Average Daily Traffic (existing):</b>	7900 VPD (2012)
<b>Existing Cross Section:</b>	Roadway: 24' pavement width with 2-foot grass shoulders. Bridge: 24' clear width.
<b>Surrounding Land Use:</b>	Immediate project area is woods and swamp. Surrounding area is urbanized with single family home subdivisions and commercial/retail development.
<b>General Comments:</b>	There is an existing Town of Cary greenway that connects to the roadway on the eastern side.
<b>Project Description</b>	
<b>Description of Proposed Project:</b>	Replace Bridge No. 55 on SR 1600 over White Oak Creek
<b>Average Daily Traffic (proposed):</b>	7900 VPD (2012); 22,000 VPD (2035)
<b>Proposed Cross-Section:</b>	Roadway: 2, 12' lanes, total pavement width 32', and 43'-54' shoulder pt to shoulder pt. Bridge: 42'-6" clear width.
<b>Interchange Modification:</b>	no
<b>Median Type:</b>	none
<b>Terminus:</b>	
<b>Terminus:</b>	
<b>Project Length (lin. miles/feet):</b>	0.29 miles
<b>Added Impervious Area (ac.):</b>	Approx. 0.5ac
<b>General Comments:</b>	Town of Cary will construct greenway under proposed bridge.





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

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-4697</b>	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38474.1.1	BRZ-1600(9)	PE	
38474.2.1	BRZ-1600(9)	ROW, UTL.	
Permit Drawing			
Sheet <b>3</b> of <b>12</b>			

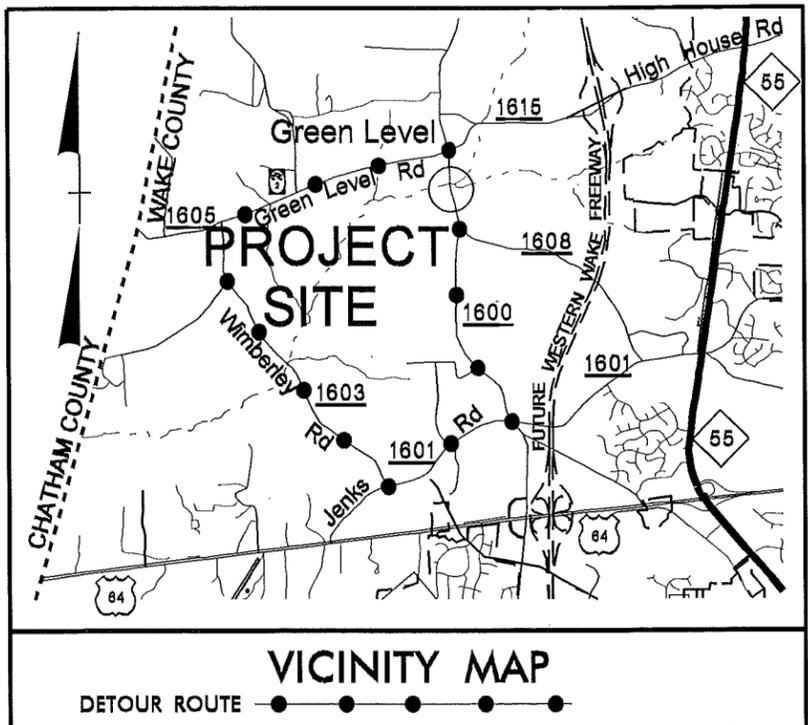
**WAKE COUNTY**

LOCATION: BRIDGE NO. 55 OVER WHITE OAK CREEK  
ON SR 1600 (GREEN LEVEL CHURCH RD)

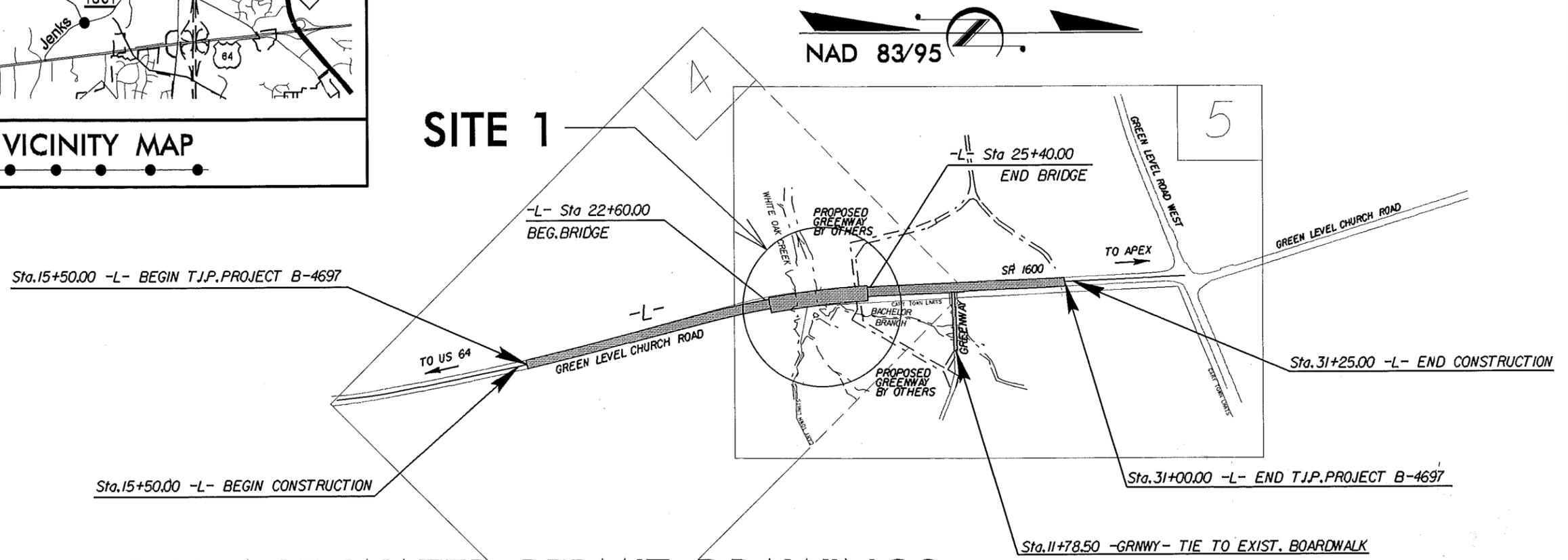
TYPE OF WORK: GRADING, PAVING, DRAINAGE  
BOARDWALK AND STRUCTURE



TIP PROJECT: B-4697



**SITE 1**

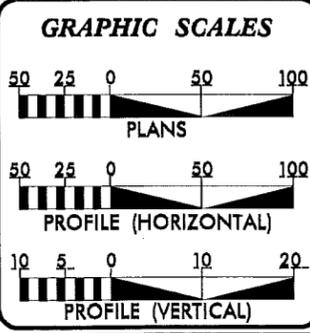


**WETLAND & SURFACE WATER PERMIT DRAWINGS**

THIS IS NOT A CONTROL OF ACCESS PROJECT.  
 THIS PROJECT IS PARTIALLY WITHIN THE CARY CITY LIMITS.  
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS  
 DO NOT USE FOR CONSTRUCTION

CONTRACT:



**DESIGN DATA**

ADT 2012 =	7,900
ADT 2035 =	22,000
DHV =	8 %
D =	60 %
T =	5 % *
V =	50 MPH
* TTST 2% DUAL 3%	
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4697	=	0.241 MILES
LENGTH STRUCTURE TIP PROJECT B-4697	=	0.053 MILES
TOTAL LENGTH TIP PROJECT B-4697	=	0.294 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	MARCH 17, 2011
LETTING DATE:	APRIL 17, 2012
	JASON MOORE, PE PROJECT ENGINEER
	KEVIN E. MOORE, PE 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

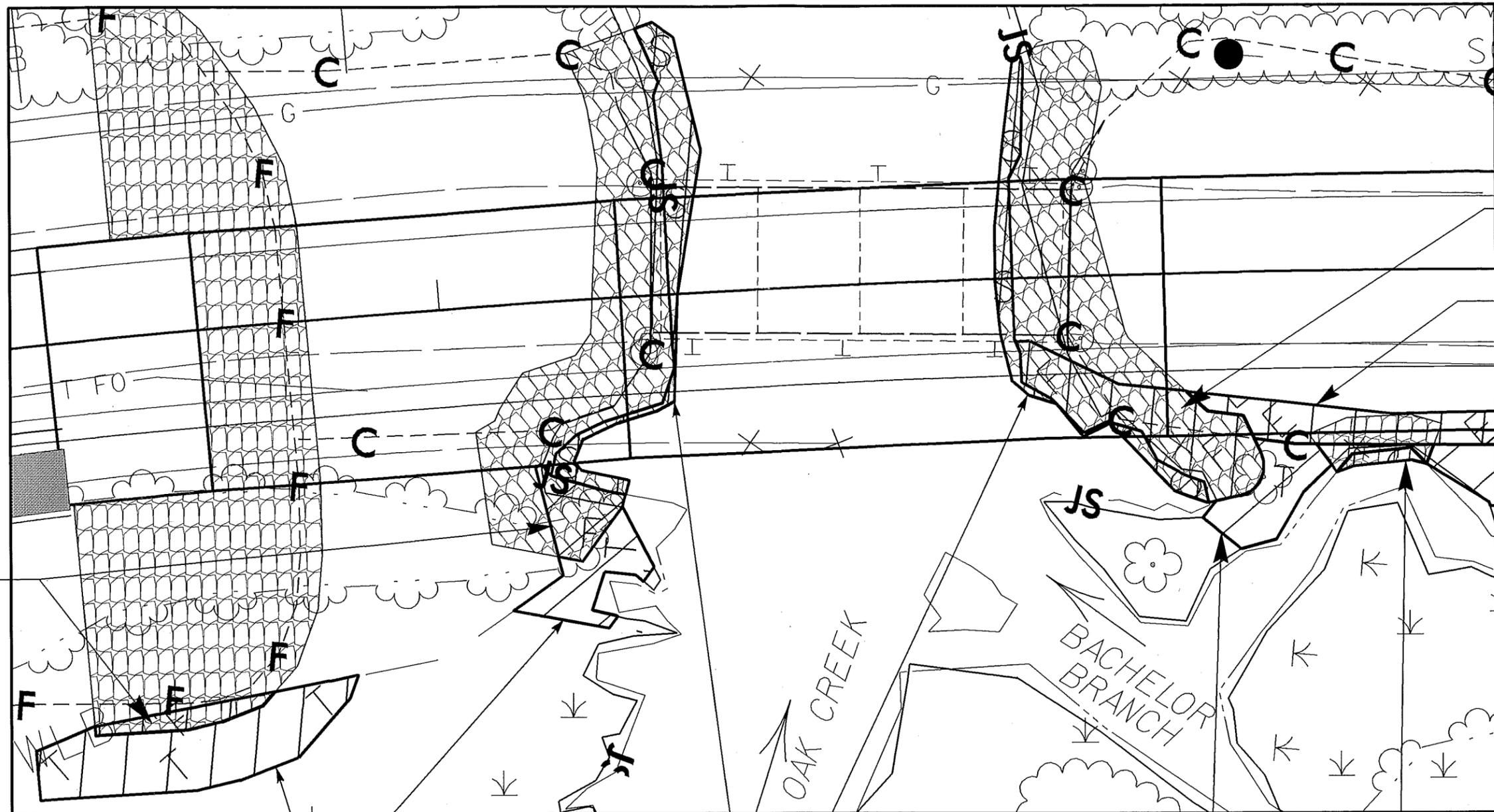
09/08/99  
 SYSTEMS  
 USER NAME





# ENLARGEMENT 1

Permit Drawing  
Sheet 5 of 12



FILL IN  
WETLANDS

FILL IN  
WETLANDS  
EXCAVATION  
IN WETLANDS

TEMPORARY FILL  
IN WETLANDS

TEMPORARY FILL  
IN WETLANDS

SURFACE WATER IMPACTS  
(BANK STABILIZATION)

SURFACE WATER IMPACTS  
(BANK STABILIZATION)

OAK CREEK

BACHELOR  
BRANCH

8/17/99

PROJECT REFERENCE NO. <b>B-4697</b>	SHEET NO. <b>5</b>
RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

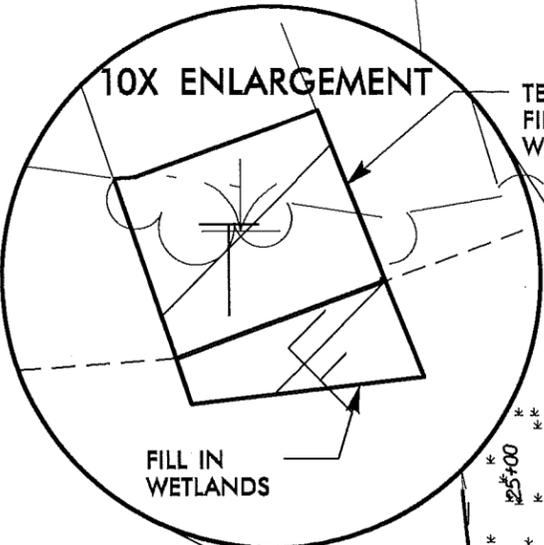
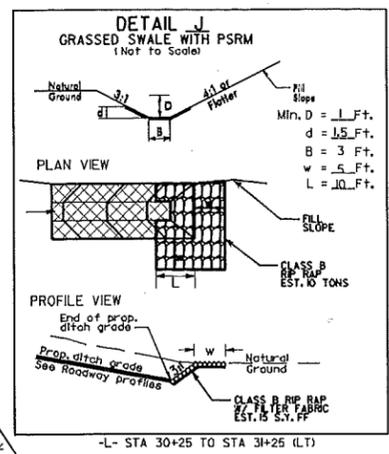
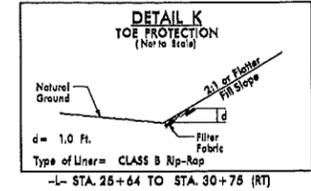
PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

Permit Drawing  
Sheet 5 of 12

VEASEY, LNWOOD



NAD 83/95



FILL IN WETLANDS

TEMPORARY FILL IN WETLANDS

TEMPORARY FILL IN WETLANDS

EXCAVATION IN WETLANDS

FILL IN WETLANDS

TEMPORARY FILL IN WETLANDS

EXCAVATION IN WETLANDS

TEMPORARY FILL IN WETLANDS

FILL IN WETLANDS

SEE ENLARGEMENT 2

- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND

7  
CARY, TOWN OF

7  
CARY, TOWN OF

-GRNWX - POT Sta. 12+43.09

-GRNWX - PI Sta. 11+81.65

-GRNWX - POT Sta. 10+00.00  
-L- POT STA. 27+83.08

-L- POT Sta. 34+44.17

COUNCIL HERS. ALBERT M.

ALBERT COUNCIL

CLOER, THOMAS G. TREE STORAGE AREA

FERRELL, CARL J. GRASS

JOHNSON, WILLIAM H.

REVISIONS

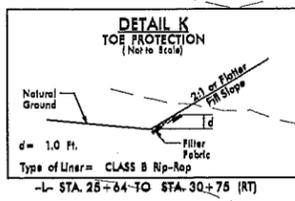
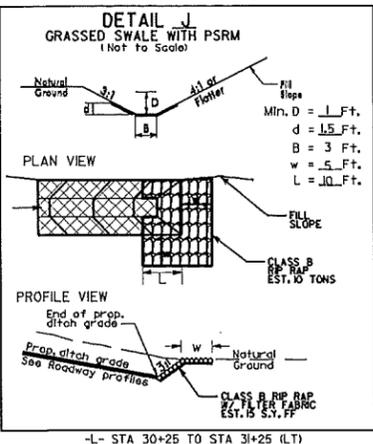
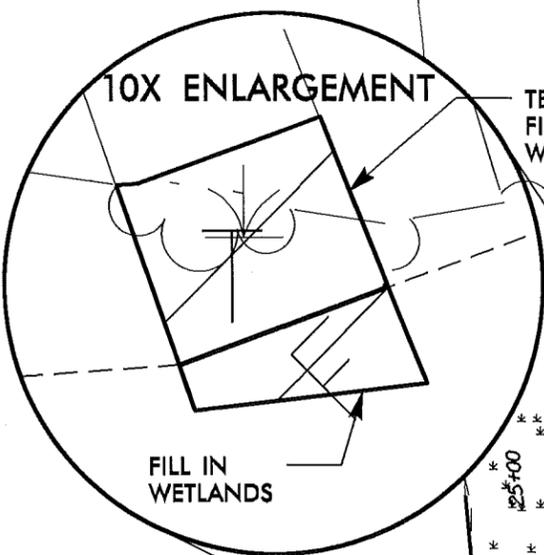
SYSTEMS DESIGN

8/17/99

PROJECT REFERENCE NO. <b>B-4697</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	
<b>Permit Drawing</b>	

**ENGLISH**

NAD 83/95



Sheet 5 of 12

VEASEY, LINWOOD

-L- POT Sta. 34+44.17

-GRNWy - POT Sta. 10+00.00  
-L- POT Sta. 27+83.08

COUNCIL MRS. ALBERT M.

ALBERT-GOUNCE

CLOER, THOMAS G. TREE STORAGE AREA

TEMPORARY FILL IN WETLANDS

EXCAVATION IN WETLANDS

FILL IN WETLANDS

TEMPORARY FILL IN WETLANDS

EXCAVATION IN WETLANDS

TEMPORARY FILL IN WETLANDS

FILL IN WETLANDS

SEE ENLARGEMENT 2

7  
CARY, TOWN OF

7  
CARY, TOWN OF

-GRNWy - POT Sta. 12+43.09

-GRNWy - PI Sta. 11+81.65

FERRELL, CARL J. GRASS

JOHNSON, WILLIAM H.

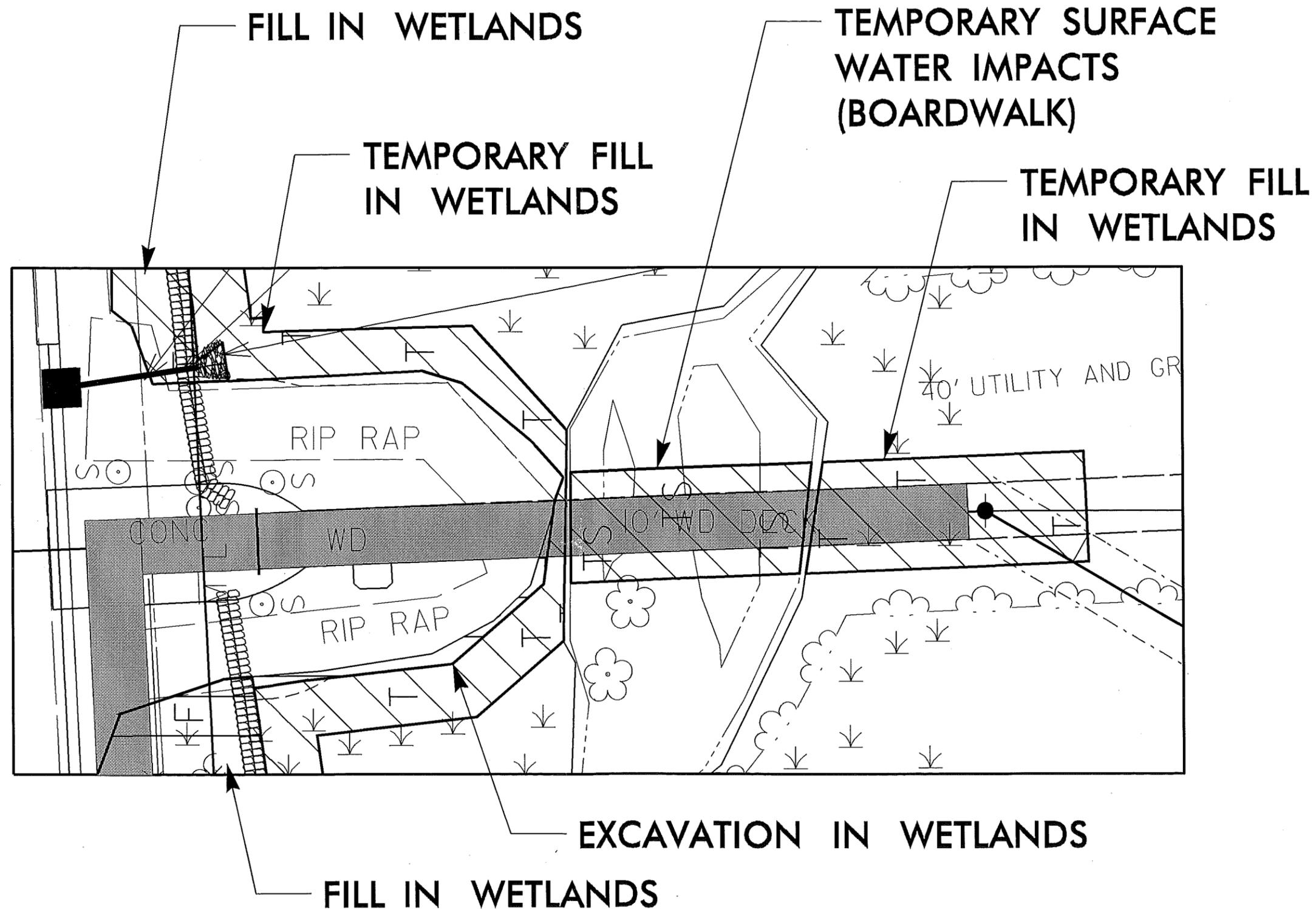
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND

REVISIONS

Y:\CADD\PROJECTS\B-4697\DWG\B-4697-5.DWG

# ENLARGEMENT 2

Permit Drawing  
Sheet 8 of 12



5/28/99

BM # 59 ELEVATION = 317.82  
N 738673 E 2029409  
L STATION 10+51.92 239.73' RIGHT  
RRS IN 10" INCH POPLAR

BM # 88 ELEVATION = 268.07  
N 737259 E 2029274  
L STATION 22+13.57 367.02' RIGHT  
RR SPIKE IN 10" MAPLE

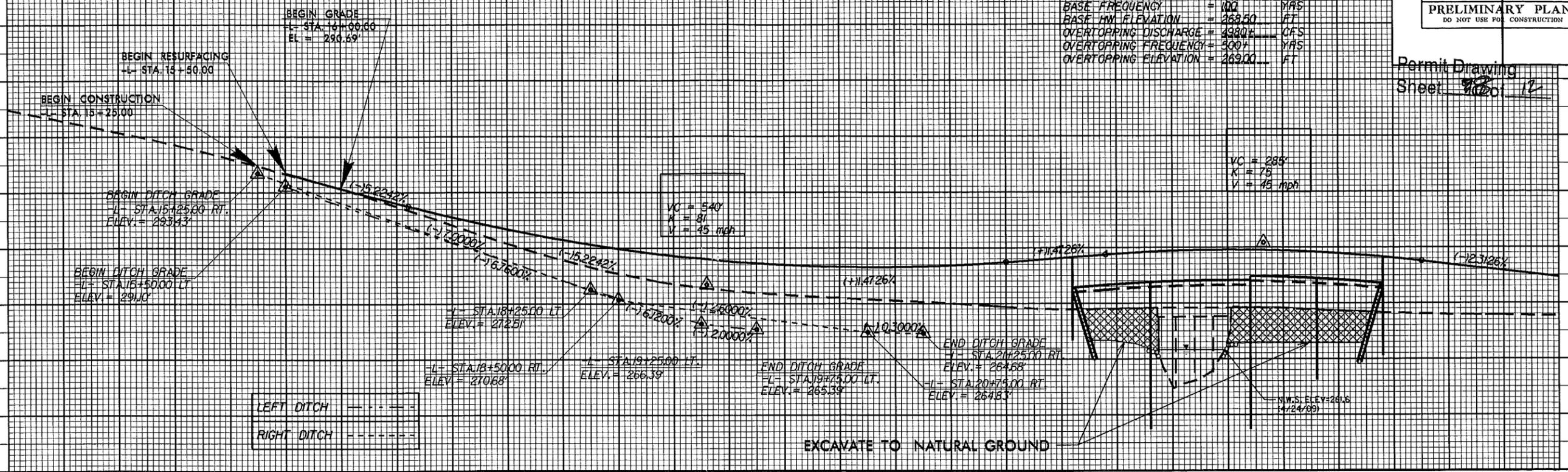
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 2100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 267.20	FT
BASE DISCHARGE	= 1380	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 268.50	FT
OVERTOPPING DISCHARGE	= 4380	CFS
OVERTOPPING FREQUENCY	= 300	YRS
OVERTOPPING ELEVATION	= 269.00	FT

PROJECT REFERENCE NO. B-4697 SHEET NO. 6

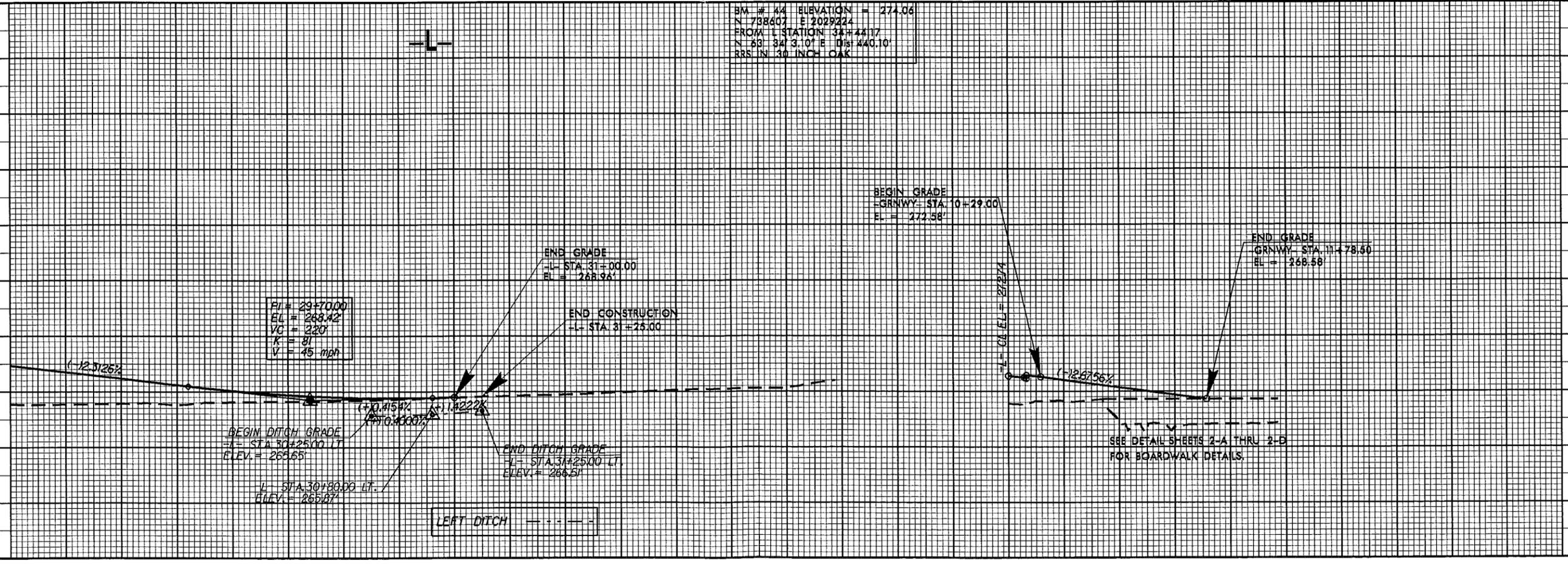
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER  
**INCOMPLETE PLANS**  
DO NOT USE FOR A/W ACQUISITION  
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

Permit Drawing  
Sheet 7801 12



LEFT DITCH	----
RIGHT DITCH	-----

BM # 44 ELEVATION = 274.06  
N 738607 E 2029224  
FROM L STATION 34+44.17  
N 63° 34' 3.10" E DIST 440.10'  
RRS IN 30" INCH OAK

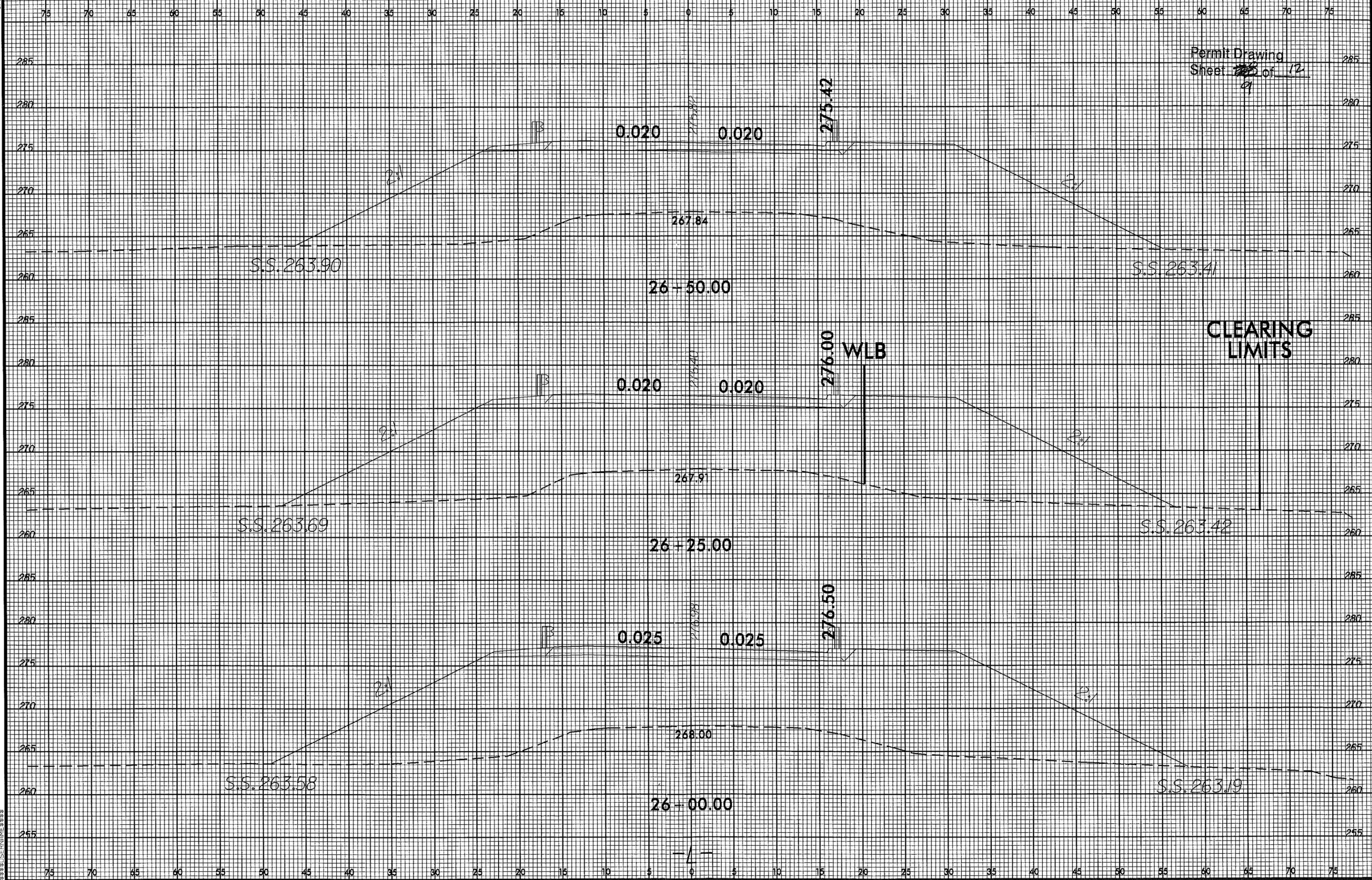


PI = 29+70.00
EL = 268.42
VC = 220
K = 81
V = 45 mph

LEFT DITCH	----
------------	------

SYTIME/ED/CON/DESIGN/STATIONING

8/23/99



Permit Drawing  
 Sheet ~~12~~ of 12  
 91

**CLEARING LIMITS**





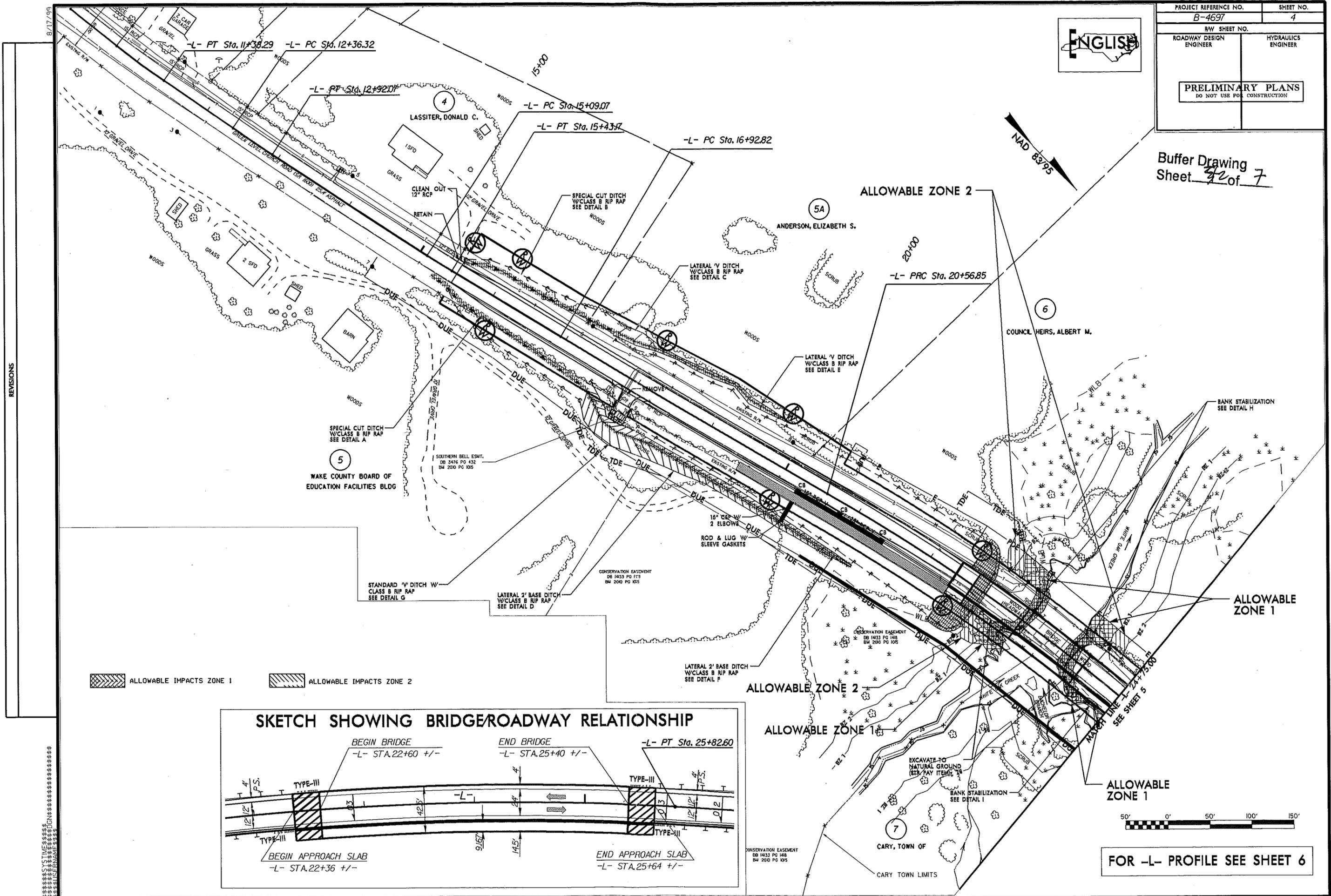




PROJECT REFERENCE NO. B-4697	SHEET NO. 4
RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

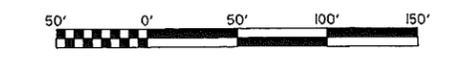
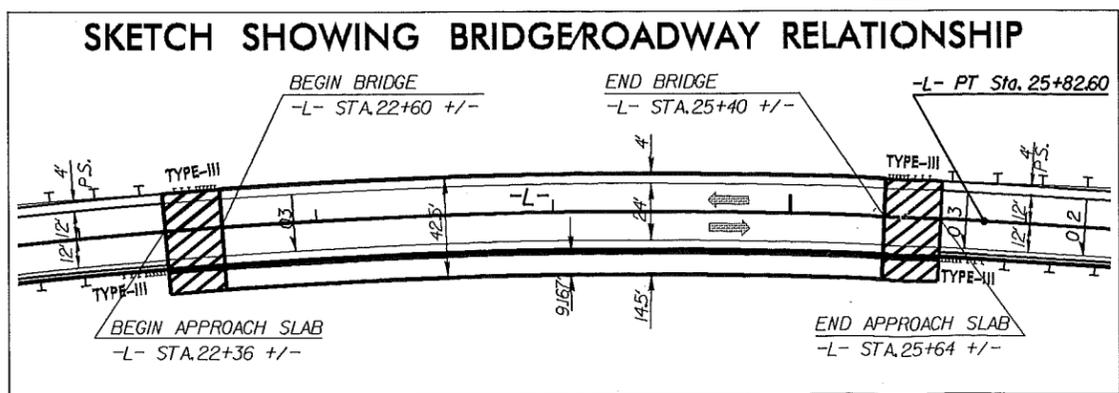


Buffer Drawing Sheet 32 of 7



REVISIONS

ALLOWABLE IMPACTS ZONE 1    
 ALLOWABLE IMPACTS ZONE 2



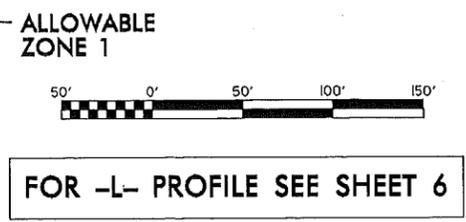
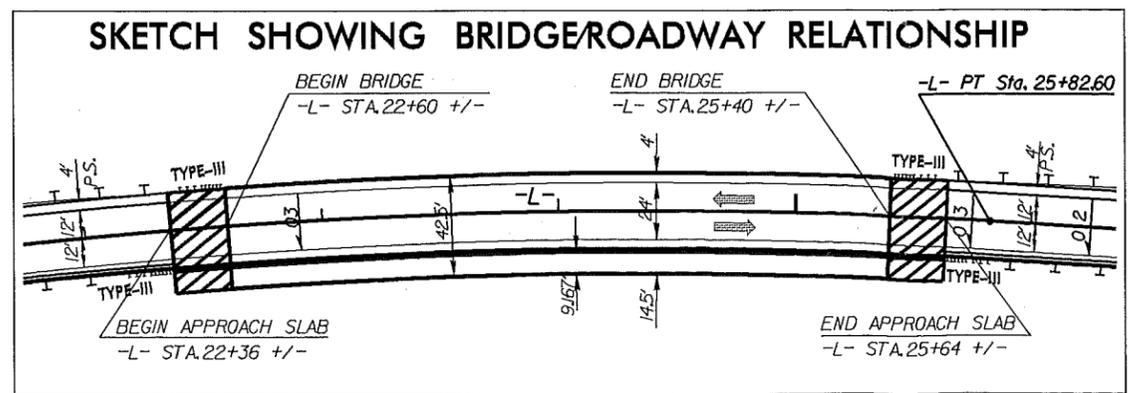
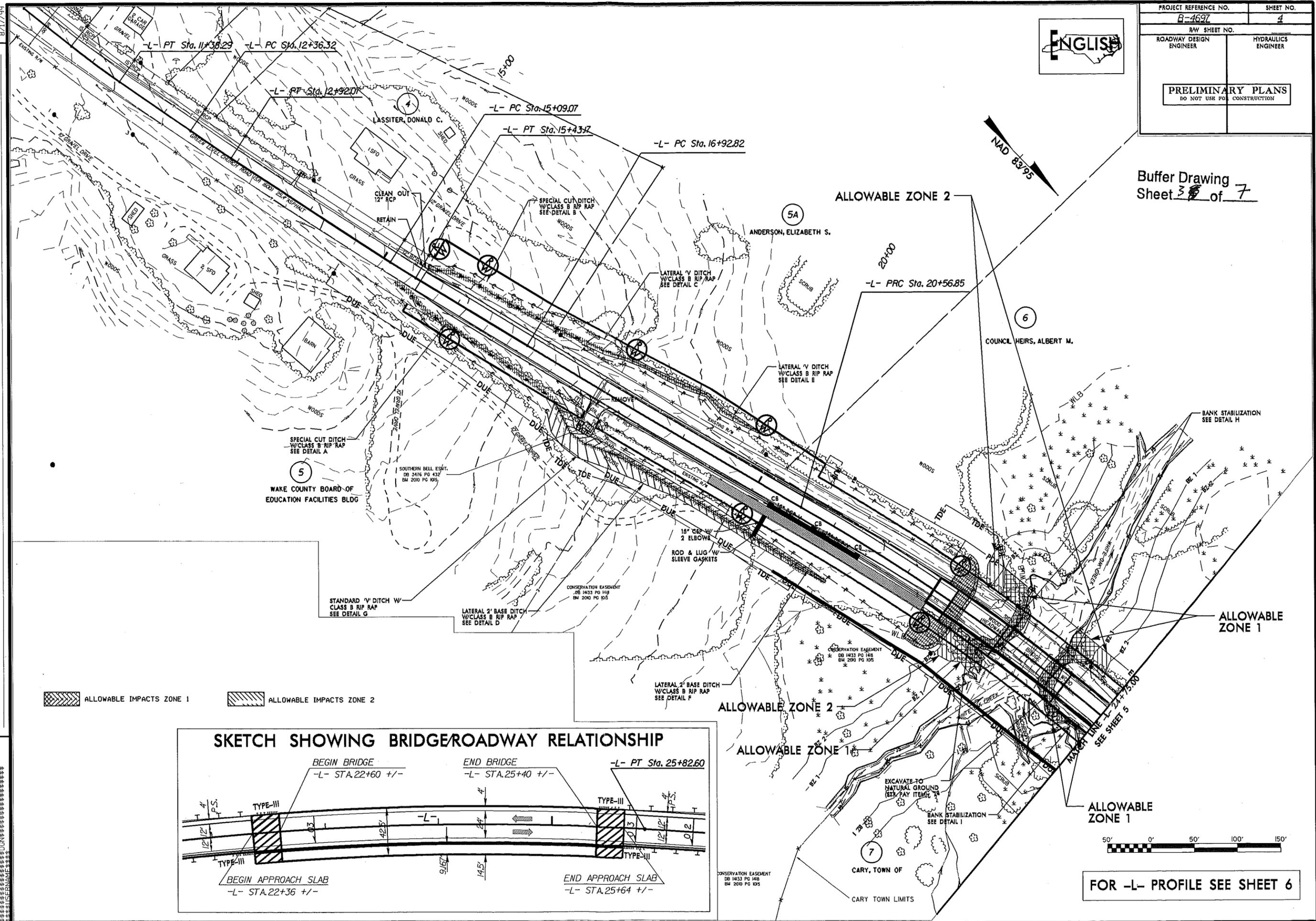
FOR -L- PROFILE SEE SHEET 6

8/17/99  
 SYSTEMS  
 DON  
 49-04-1

PROJECT REFERENCE NO. B-469Z	SHEET NO. 4
RAW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



Buffer Drawing  
Sheet 3 of 7

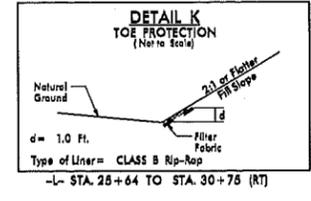
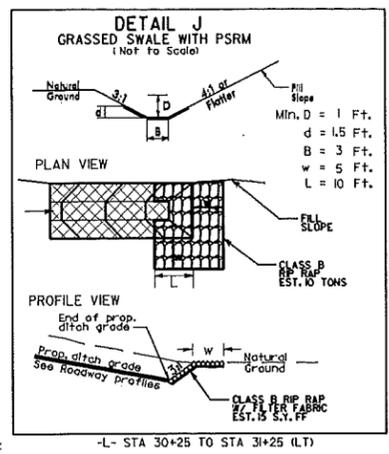


REVISIONS

8/17/99

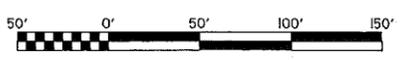
SYSTEMS ENGINEER DONALD C. LASSITER

AVERAGE DAILY TRAFFIC		2012	2035
		2,800	8,000
7,900	900	200	6,200
22,000	2,400	500	21,000
GREEN LEVEL CHURCH RD			
1,700	800		
4,800	5,700		
GREEN LEVEL RD			
	3,400		
	15,600		

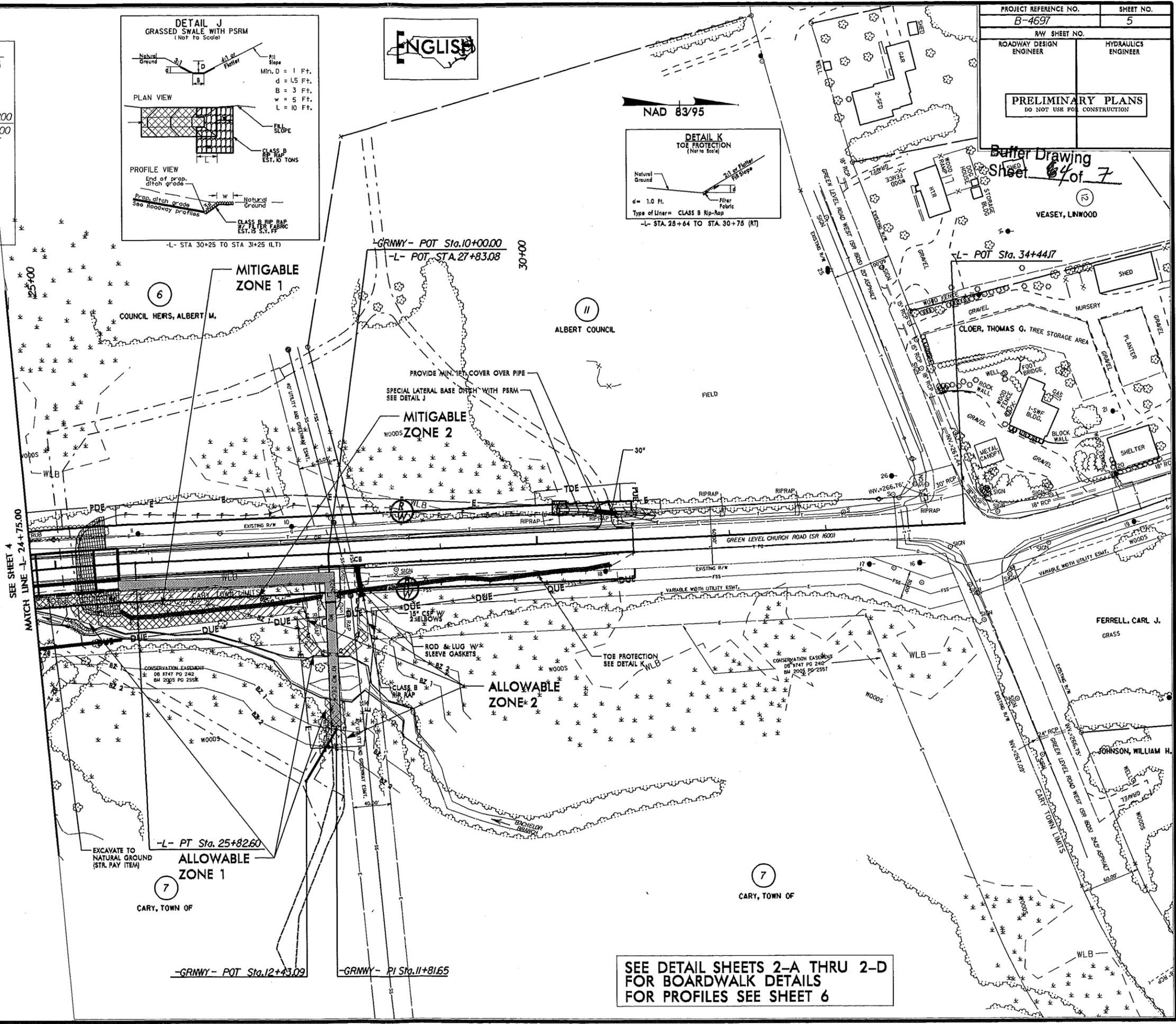


NAD 83/95

- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 1



SEE DETAIL SHEETS 2-A THRU 2-D FOR BOARDWALK DETAILS FOR PROFILES SEE SHEET 6



8/17/99

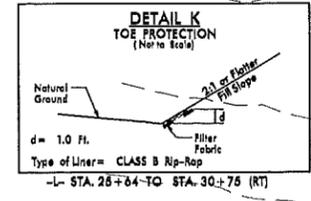
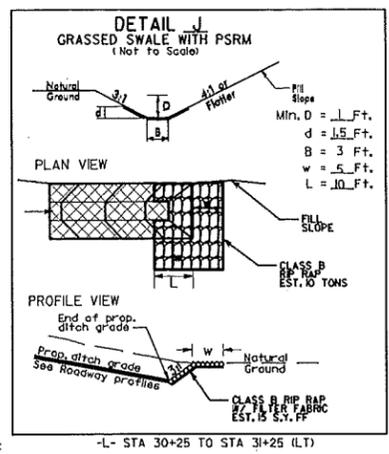
REVISIONS

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 100. 08/17/99

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

Buffer Drawing  
Sheet 7 of 7  
VEASEY, LNWOOD

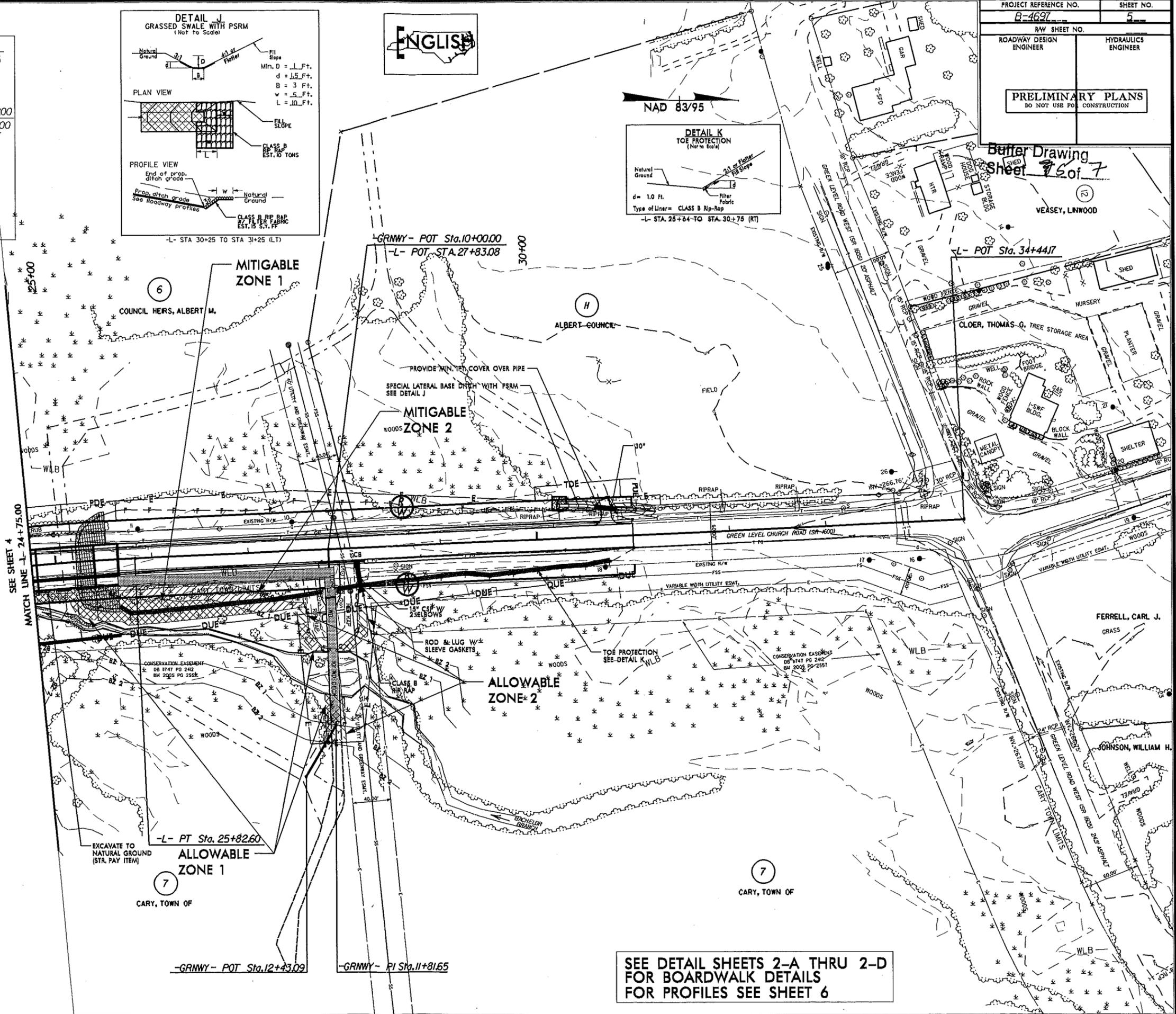
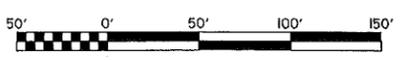
AVERAGE DAILY TRAFFIC		2012	2035
2,800	8,000		
7,900	22,000	900	200
		2,400	500
GREEN LEVEL CHURCH RD		6,200	21,000
1,700	4,800	800	5,700
GREEN LEVEL RD		3,400	15,600



ENGLISH

NAD 83/95

- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 1



SEE DETAIL SHEETS 2-A THRU 2-D  
FOR BOARDWALK DETAILS  
FOR PROFILES SEE SHEET 6

8/17/99

REVISIONS

SYSTEMS CONDITION

## BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT						BUFFER REPLACEMENT				
			TYPE		ALLOWABLE		MITIGABLE		ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )			
			GREENWAY	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	TOTAL (ft <sup>2</sup> )			ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	
1	BRIDGE	-L- STA. 23+68		X		4294	2456	6750					
	ROAD	FROM -L- 25+40 (RT) TO -L- 27+47 (RT)			X				3318	3283	6601		
	GREENWAY	-L- STA. 27+84 (RT)	X			1365.0	762.0	2127					
<b>TOTAL:</b>						5659.0	3218.0	8877.0	3318.0	3283.0	6601.0		

METHOD III CLEARING

10,081 ft<sup>2</sup> of wetland impacts fall within the reflected buffer impacts. See attached for details.

N.C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS

WAKE COUNTY  
PROJECT: 38474.1.1 (B-4697)

5/6/2011  
SHEET **6** OF **7**

Rev. May 2006





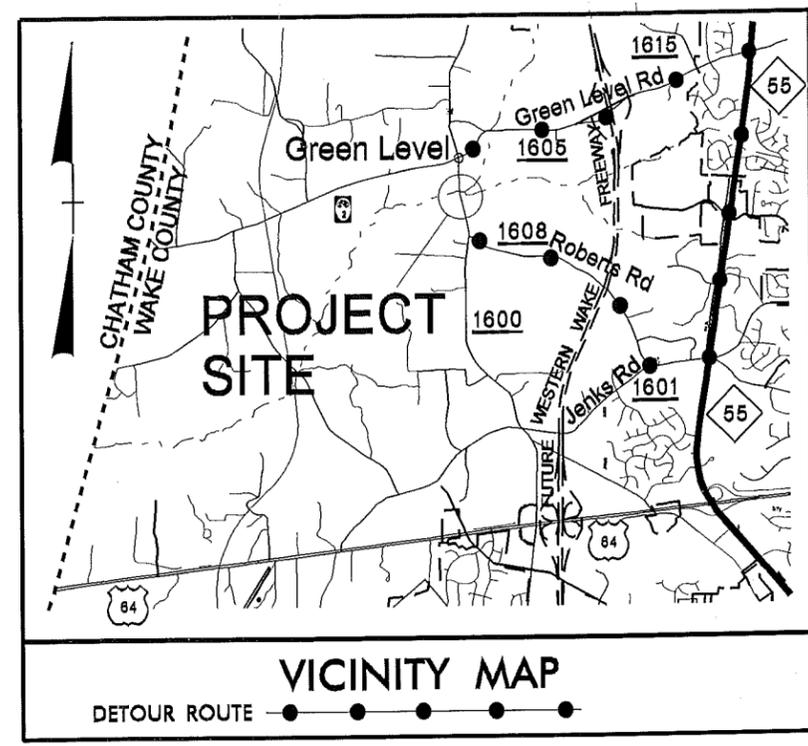
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS**  
**WAKE COUNTY**

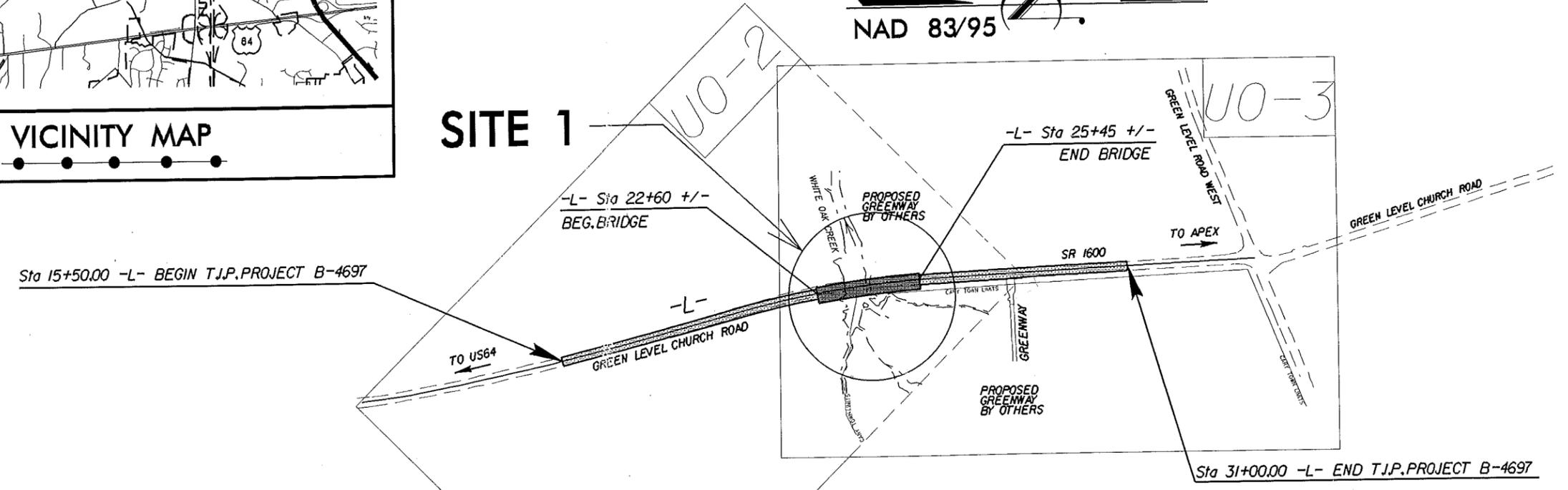
LOCATION: BRIDGE NO. 55 OVER WHITE OAK CREEK  
ON SR 1600 (GREEN LEVEL CHURCH ROAD)  
TYPE OF WORK: UTILITY RELOCATION



**TIP PROJECT:**



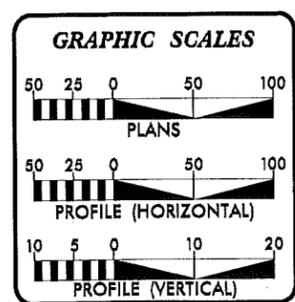
**SITE 1**



**WETLAND & SURFACE WATER PERMIT DRAWINGS**

THIS IS NOT A CONTROL OF ACCESS PROJECT  
THIS PROJECT IS PARTIALLY WITHIN THE CARY & APEX CITY LIMITS.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD \_\_\_\_

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION



SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-3	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT
(A) PROGRESS ENERGY - POWER DISTRIBUTION
(B) A T & T - TELEPHONE
(C) PSNC - NATURAL GAS
(D) TOWN OF CARY - SANITARY SEWER

PREPARED IN THE OFFICE OF:  
**DIVISION OF HIGHWAYS**  
UTILITIES UNIT  
ENGINEERING SECTION

1455 MAIL SERVICES CENTER  
RALEIGH NC 27699-1491  
PHONE (919) 107-6690  
FAX (919) 250-4119

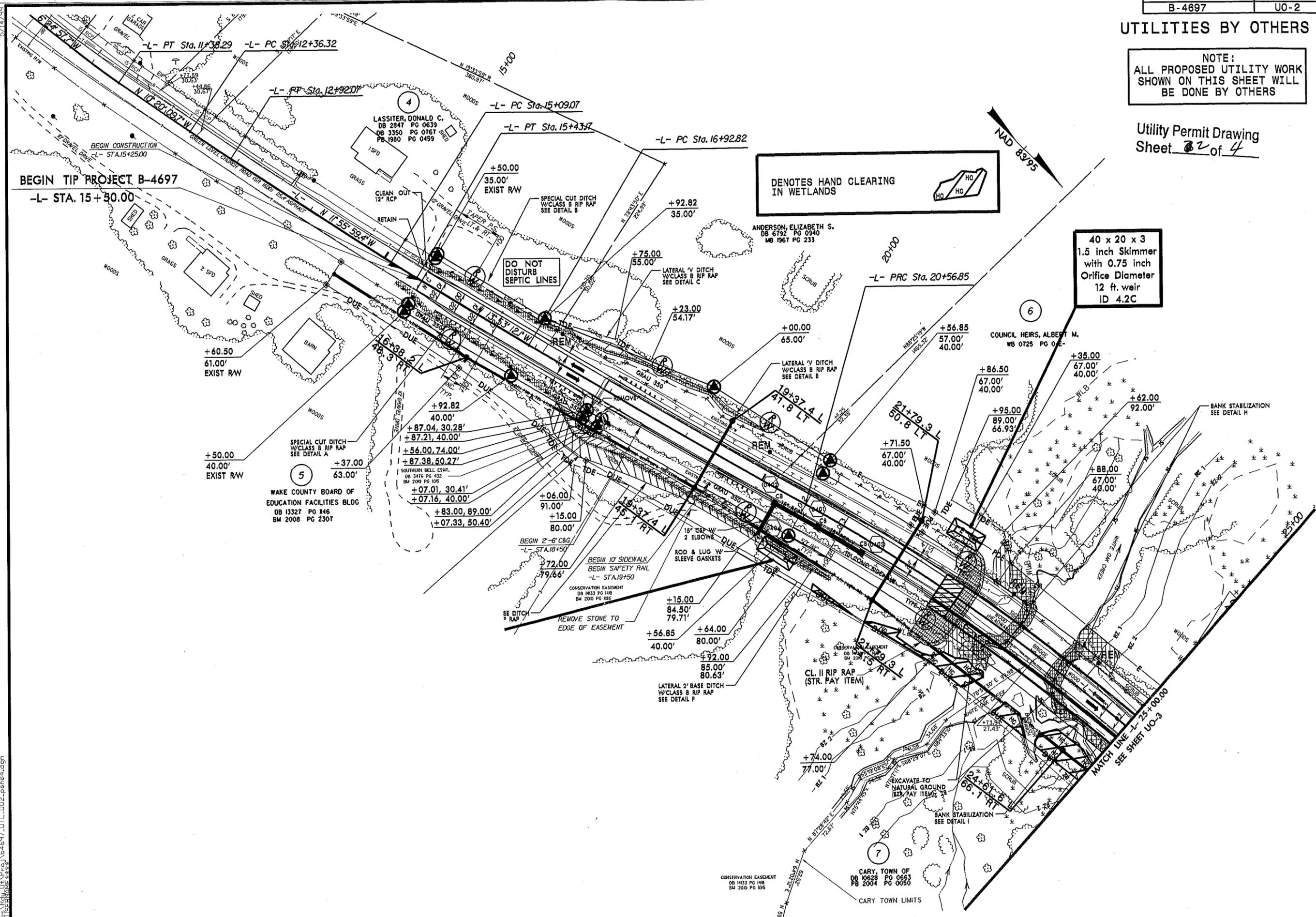
**Roger Worthington, P.E.** UTILITIES SECTION ENGINEER  
**Steve McKee, P.E.** UTILITIES SQUAD LEADER PROJECT ENGINEER  
**John A. Nigro, P.E.** UTILITIES PROJECT DESIGNER

22-JUN-2011 14:24  
C:\UT\14697\14697.dwg  
\$\$\$\$\$PRNAME\$\$\$\$\$

UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

Utility Permit Drawing  
Sheet 2 of 4



22-JUN-2011 16:43  
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UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

Utility Permit Drawing  
Sheet 3 of 4

VEASEY, LINWOOD  
WB 0984 PG 0-E-  
PB 1984 PG 0738

L- POT Sta. 34+44.7

CLOER, THOMAS G. TREE STORAGE AREA  
DB 3841 PG 0832  
PB 1980 PG 0765

FERRELL, CARL J.  
DB 1175 PG 0540  
GRASS

JOHNSON, WILLIAM I.  
WB 1900 PG 0-E-  
WOODS

7  
CARY, TOWN OF  
DB 10628 PG 0663  
PB 2004 PG 0050

7  
CARY, TOWN OF  
DB 10628 PG 0663  
PB 2004 PG 0050

HC HC HC  
DENOTES HAND CLEARING  
IN WETLANDS

END TIP PROJECT B-4697  
-L- STA. 31+00.00

+30.00  
EXIST. RW &  
40.00'

END CONSTRUCTION  
-L- STA. 31+25.00

GRNWX - POT Sta. 10+00.00  
-L- POT - STA. 27+83.08

ALBERT COUNCIL  
DB 6302 PG 0279  
PB 1994 PG 145

6  
COUNCIL HEIRS, ALBERT M.  
WB 0725 PG 0-E-

PROPOSED  
GREENWAY  
BY OTHERS

PROPOSED  
MAINT. ACCESS  
BY OTHERS

+82.60  
40.00'

+50.00  
62.00'

+89.00  
58.00'  
40.00'

SPECIAL LATERAL BASE DITCH WITH PSRM  
SEE DETAIL J

+00.00  
54.00'  
40.00'

SEE SHEET 4  
MATCH LINE -L- 25+00.00

-L- N 2° 37' 50.9" W

10' CONC. SIDEWALK  
CARY, TOWN OF

END SAFETY FENCE  
-L- STA. 27+47.77

PROPOSED  
GREENWAY  
BY OTHERS

+64.00  
78.00'

CL. II RIP RAP  
(STR. PAY ITEM)

+82.60  
40.00'

EXCAVATE TO  
NATURAL GROUND  
(STR. PAY ITEM)

-L- PT Sta. 25+82.60

BEGIN BOARDWALK  
-GRNWX - Sta. 10+50

REMOVE EXIST.  
EMBANKMENT

-L- PT Sta. 12+43.09

-GRNWX - PI Sta. 11+81.65

TIE TO EXIST.  
BOARDWALK  
-GRNWX - Sta. 11+78.50

+30.00  
61.00'

+47.36  
66.32'

28+29.41  
45.6' RT

30+97.0  
32.7' RT

WOODS 40.00'

WOODS 40.00'

WOODS 40.00'

WOODS 40.00'

WOODS 40.00'

NAD 83/95

22-JUN-2011 16:20  
\\u:\projects\11\11620  
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5/14/99



09/08/99

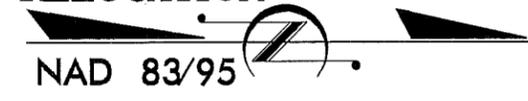
T.I.P. NO.	SHEET NO.
B-4697	UO-1

Utility Buffer Drawing  
Sheet 1 of 4

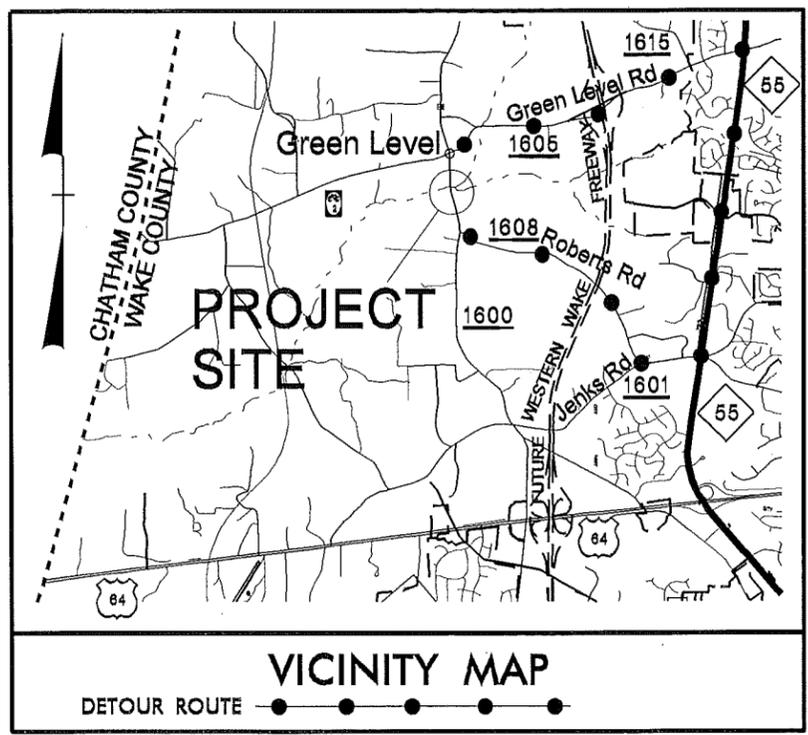
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES BY OTHERS PLANS WAKE COUNTY

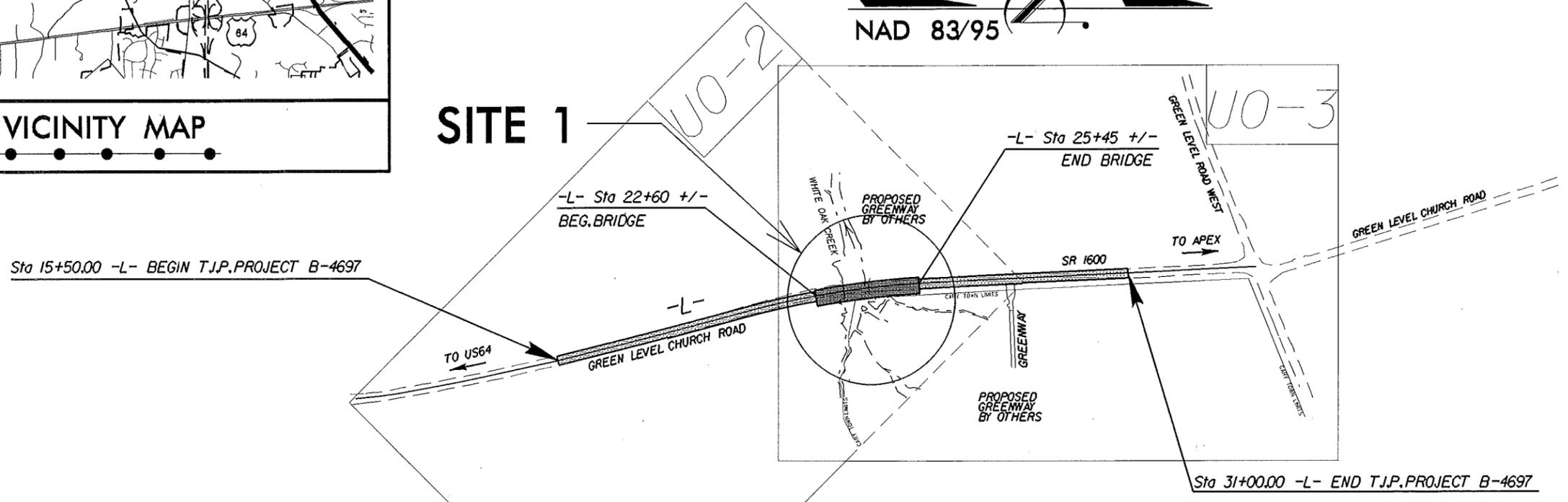
LOCATION: BRIDGE NO. 55 OVER WHITE OAK CREEK  
ON SR 1600 (GREEN LEVEL CHURCH ROAD)  
TYPE OF WORK: UTILITY RELOCATION



TIP PROJECT:



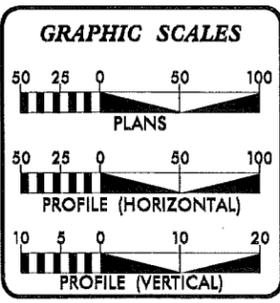
SITE 1



### BUFFER PERMIT DRAWINGS

THIS IS NOT A CONTROL OF ACCESS PROJECT  
THIS PROJECT IS PARTIALLY WITHIN THE CARY & APEX CITY LIMITS.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD \_\_\_\_\_

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION



**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-3	UTILITY BY OTHERS PLAN SHEETS

**UTILITY OWNERS ON PROJECT**

- (A) PROGRESS ENERGY - POWER DISTRIBUTION
- (B) A T & T - TELEPHONE
- (C) PSNC - NATURAL GAS
- (D) TOWN OF CARY - SANITARY SEWER



PREPARED IN THE OFFICE OF:  
DIVISION OF HIGHWAYS  
UTILITIES UNIT  
ENGINEERING SECTION

1555 MAIL SERVICES CENTER  
RALEIGH NC 27699-1591  
PHONE (919) 707-6690  
FAX (919) 256-4119

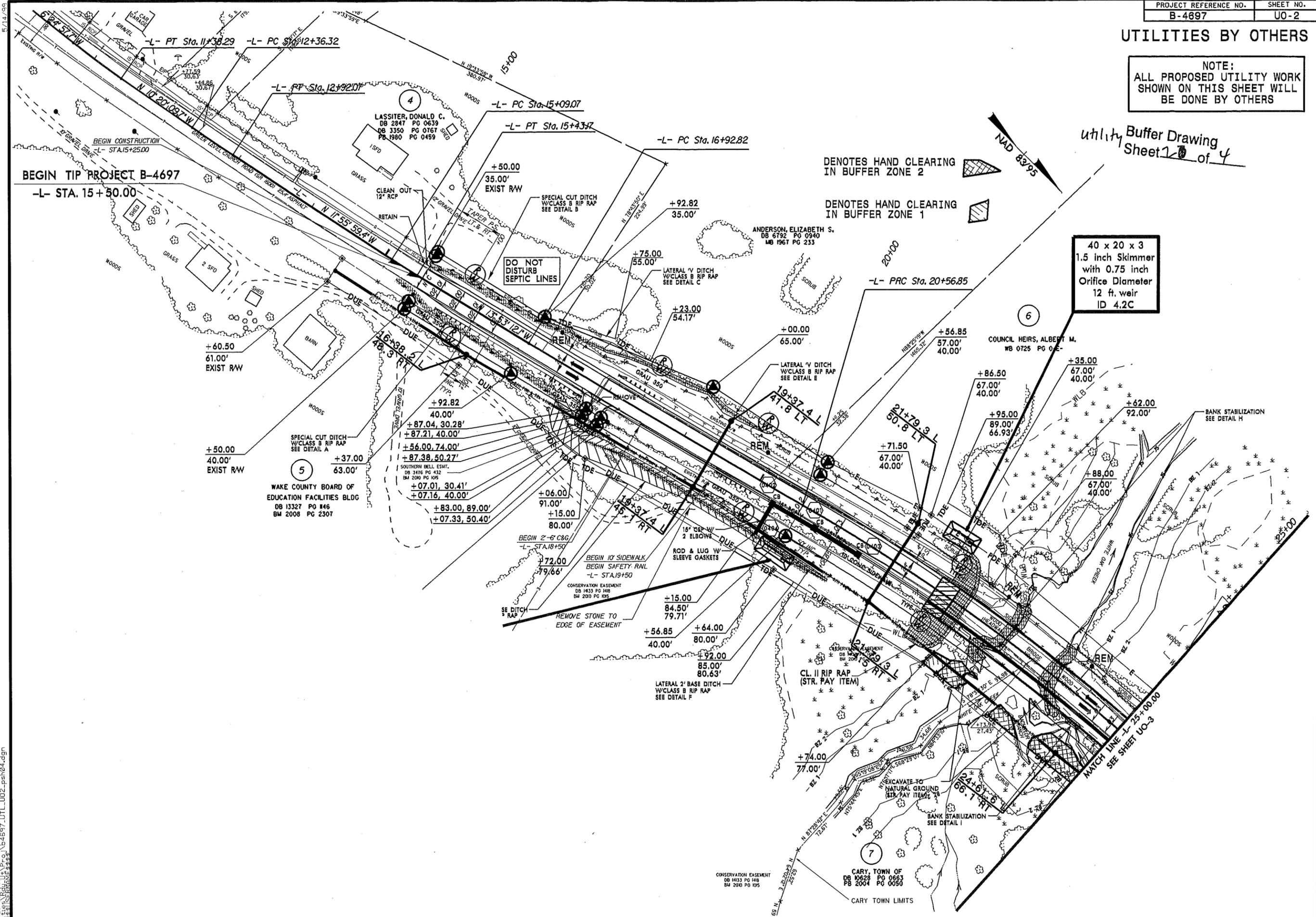
Roger Worthington, P.E. UTILITIES SECTION ENGINEER  
Steve McKee, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER  
John A. Nigro, P.E. UTILITIES PROJECT DESIGNER

23-JUN-2011 13:27 U:\Proj\B4697\util\_envir\_permit\_tsh.dgn  
R:\UTIL\PERMITS\B4697\B4697.dwg  
\$\$\$\$\$USERNAME\$\$\$\$\$

UTILITIES BY OTHERS

NOTE:  
 ALL PROPOSED UTILITY WORK  
 SHOWN ON THIS SHEET WILL  
 BE DONE BY OTHERS

utility Buffer Drawing  
 Sheet 10 of 4



DENOTES HAND CLEARING  
 IN BUFFER ZONE 2

DENOTES HAND CLEARING  
 IN BUFFER ZONE 1

40 x 20 x 3  
 1.5 inch Skimmer  
 with 0.75 inch  
 Orifice Diameter  
 12 ft. weir  
 ID 4.2C

BEGIN TIP PROJECT B-4697  
 -L- STA. 15+50.00

5  
 WAKE COUNTY BOARD OF  
 EDUCATION FACILITIES BLDG  
 DB 13327 PG #46  
 BM 2008 PG 2307

7  
 CARY TOWN OF  
 DB 10623 PG 0653  
 PB 2004 PG 0050

23-JUN-2013 09:25  
 \\littleserver\cadd\proj\B-4697\_UTL\_UO2\_psh04.dgn

UTILITIES BY OTHERS

NOTE:  
ALL PROPOSED UTILITY WORK  
SHOWN ON THIS SHEET WILL  
BE DONE BY OTHERS

DENOTES HAND CLEARING  
IN BUFFER ZONE 2

DENOTES HAND CLEARING  
IN BUFFER ZONE 1

Buffer Drawing  
Sheet 3 of 4

VEASEY, LINWOOD  
WB 0964 PG 0-E-  
PB 1984 PG 0738

-L- POT Sta. 34+44.17

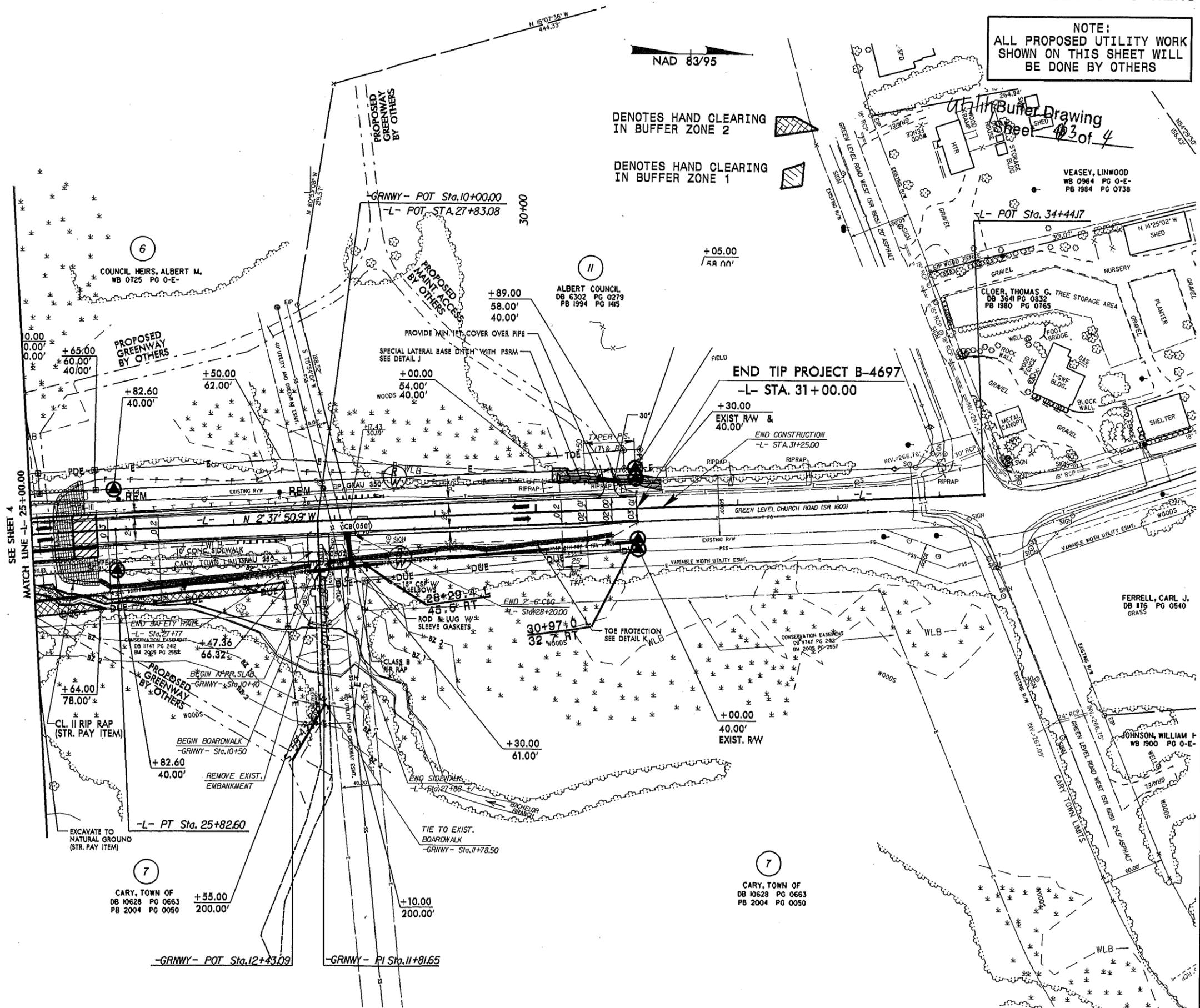
ALBERT COUNCIL  
DB 6302 PG 0279  
PB 1994 PG 1415

END TIP PROJECT B-4697  
-L- STA. 31+00.00

+30.00  
EXIST. RW &  
40.00'  
END CONSTRUCTION  
-L- STA. 31+25.00

FERRELL, CARL J.  
DB 476 PG 0540  
GRASS

JOHNSON, WILLIAM F.  
WB 1900 PG 0-E-  
WOODS



SEE SHEET 4  
MATCH LINE -L- 25+00.00

7

CARY, TOWN OF  
DB 10623 PG 0663  
PB 2004 PG 0050

-GRNWX- POT Sta. 12+43.09

-GRNWX- PI Sta. 11+81.65

7

CARY, TOWN OF  
DB 10623 PG 0663  
PB 2004 PG 0050

5/14/99

23- LIN-20113-24  
11:15:00 AM  
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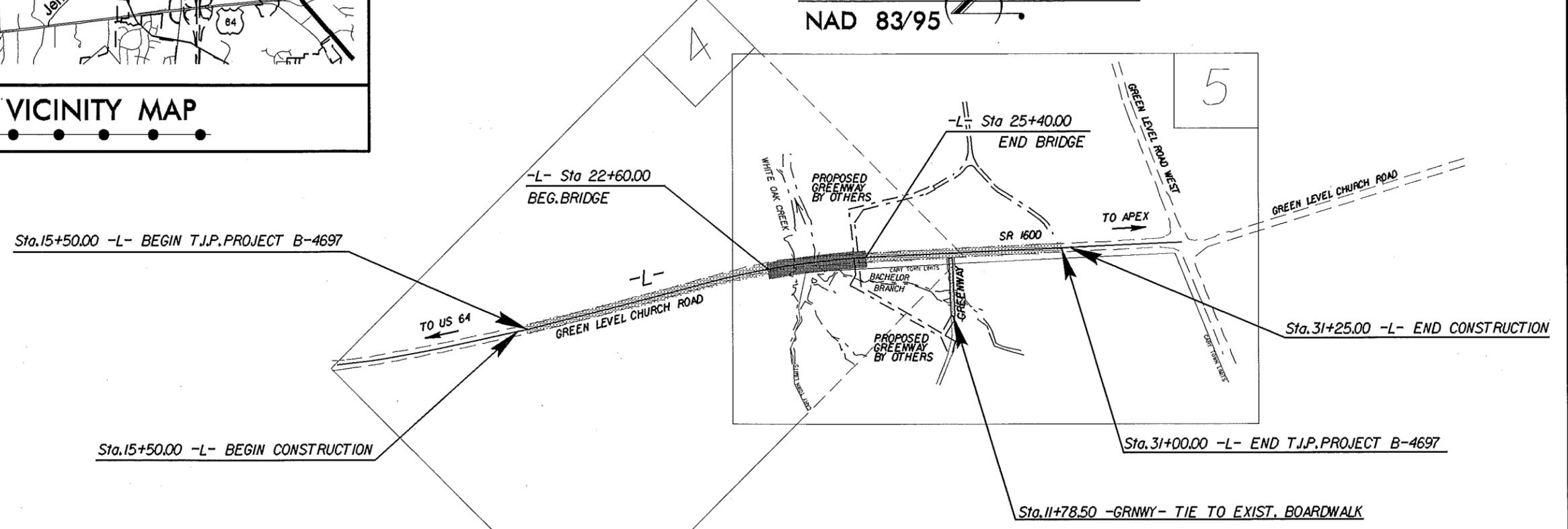
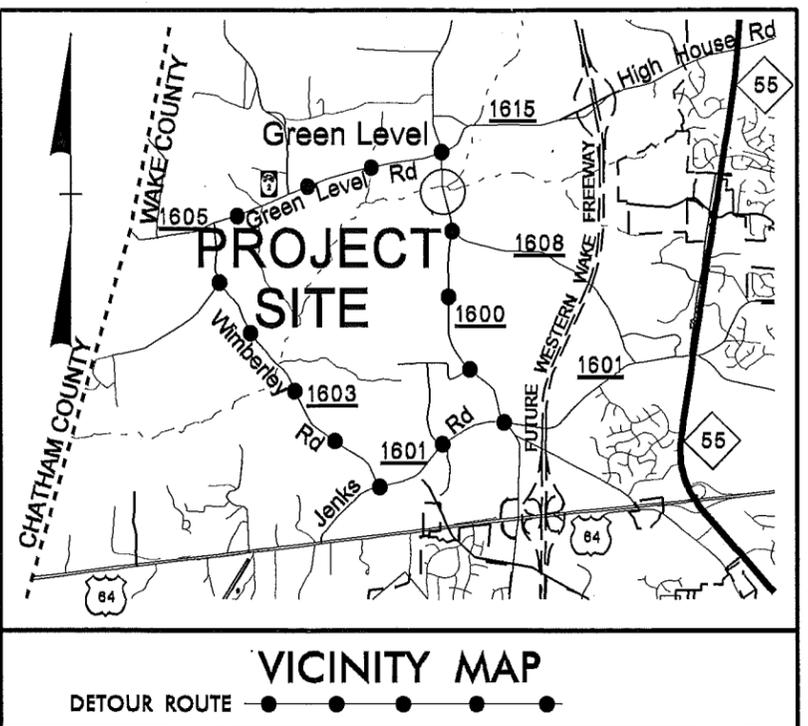


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4697	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38474.1.1	BRZ-1600(9)	PE	
38474.2.1	BRZ-1600(9)	ROW, UTL.	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**WAKE COUNTY**

LOCATION: BRIDGE NO. 55 OVER WHITE OAK CREEK  
ON SR 1600 (GREEN LEVEL CHURCH RD)

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

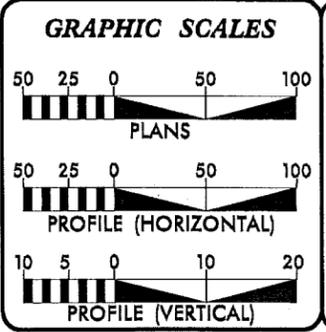


THIS IS NOT A CONTROL OF ACCESS PROJECT.  
THIS PROJECT IS PARTIALLY WITHIN THE CARY CITY LIMITS.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

TIP PROJECT: B-4697

CONTRACT:



**DESIGN DATA**

ADT 2012 =	7,900
ADT 2035 =	22,000
DHV =	8 %
D =	60 %
T =	5 % *
V =	50 MPH
* TTST 2% DUAL 3%	
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4697	=	0.241 MILES
LENGTH STRUCTURE TIP PROJECT B-4697	=	0.053 MILES
TOTAL LENGTH TIP PROJECT B-4697	=	0.294 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 17, 2011	JASON MOORE, PE PROJECT ENGINEER
LETTING DATE: APRIL 17, 2012	KEVIN E. MOORE, PE 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

02-MAY-2011 14:37 R:\Roadway\Projects\B4697\_rdy\_tsh.dgn \$\$\$USERNAME\$\$\$

01/20/11

**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	⊙
Property Corner	⊙
Property Monument	⊙
Parcel/Sequence Number	⑫③
Existing Fence Line	-----
Proposed Woven Wire Fence	-----
Proposed Chain Link Fence	-----
Proposed Barbed Wire Fence	-----
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	⊗
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	▭
Dam	▭

**HYDROLOGY:**

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

**RAILROADS:**

Standard Gauge	-----
RR Signal Milepost	⊙
Switch	⊙
RR Abandoned	-----
RR Dismantled	-----

**RIGHT OF WAY:**

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----

Existing Control of Access	⊙
Proposed Control of Access	⊙
Existing Easement Line	E
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent 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 Wheel Chair Ramp	WCR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊙
Pavement Removal	-----

**VEGETATION:**

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

**EXISTING STRUCTURES:**

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

**UTILITIES:**

POWER:	
Existing Power Pole	⊙
Proposed Power Pole	⊙
Existing Joint Use Pole	⊙
Proposed Joint Use Pole	⊙
Power Manhole	⊙
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊙
H-Frame Pole	⊙
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

**TELEPHONE:**

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

**WATER:**

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

**TV:**

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

**GAS:**

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

**SANITARY SEWER:**

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

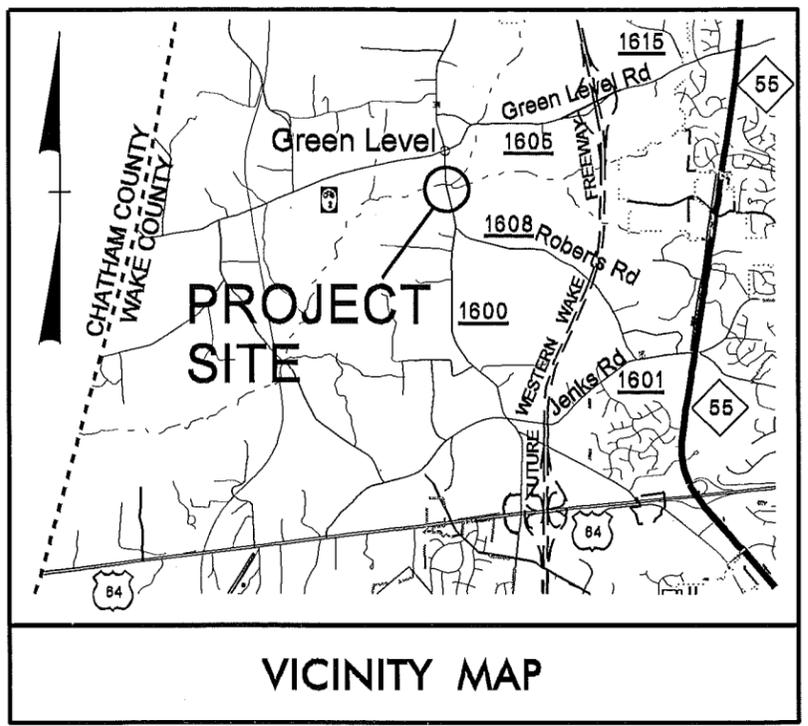
**MISCELLANEOUS:**

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

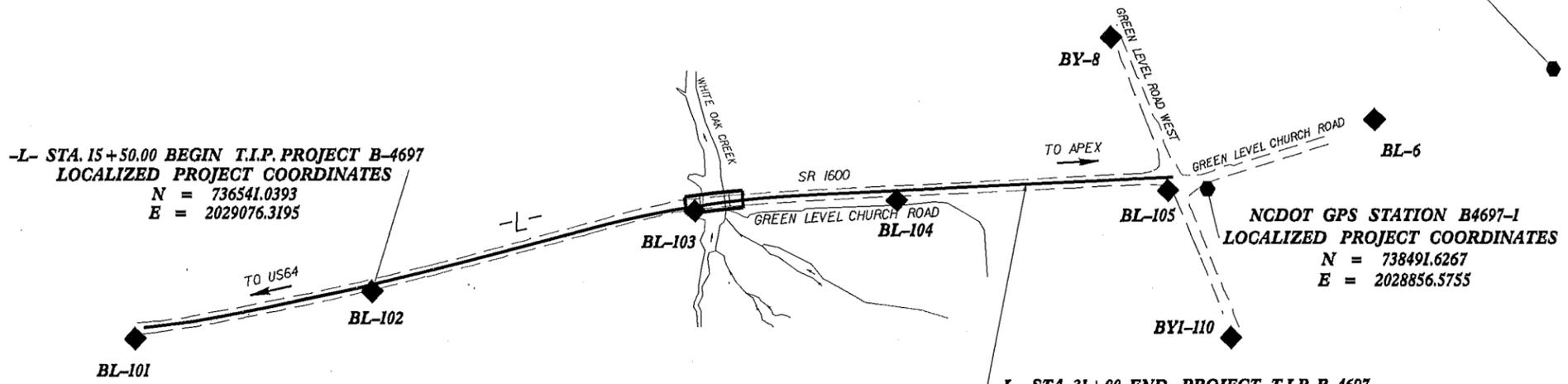
6/2/99

PROJECT REFERENCE NO. B-4697	SHEET NO. 1-C
Location and Surveys	

# SURVEY CONTROL SHEET B4697



-L- STA. 15+50.00 BEGIN T.I.P. PROJECT B-4697  
**LOCALIZED PROJECT COORDINATES**  
 N = 736541.0393  
 E = 2029076.3195



**NCDOT GPS STATION B4697-2  
 LOCALIZED PROJECT COORDINATES**  
 N = 739466.5394  
 E = 2028532.5079

**NCDOT GPS STATION B4697-1  
 LOCALIZED PROJECT COORDINATES**  
 N = 738491.6267  
 E = 2028856.5755

-L- STA. 31+00 END PROJECT T.I.P. B-4697  
**LOCALIZED PROJECT COORDINATES**  
 N = 738067.2849  
 E = 2028845.7031

**CONTROL DATA**

BLREV POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	BL-101	735981.0758	2029201.9905	314.37	OUTSIDE PROJECT LIMITS	
102	BL-102	736537.0797	2029092.2653	293.30	15+42.34	14.53 RT
103	BL-103	737290.9909	2028904.7212	268.62	23+20.31	9.06 RT
104	BL-104	737764.5867	2028880.8662	267.65	27+96.01	21.23 RT
105	BL-105	738399.6460	2028859.4952	270.55	34+31.38	29.03 RT
6	BL-6	738883.3462	2028695.1300	282.82	OUTSIDE PROJECT LIMITS	
BYREV POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
8	BY-8	738266.9945	2028501.5777	275.92	33+15.29	334.68 LT
Y105	BL-105	738399.6460	2028859.4952	270.55	34+31.38	29.03 RT
110	BYI-110	738545.7861	2029203.2038	271.01	OUTSIDE PROJECT LIMITS	

```

.....
44 ELEVATION - 274.06
N 738607 E 2029224
L STATION 34+44.17
N 63°34'03.1" E DIST 440.10'
RRS IN 30 INCH OAK
.....
59 ELEVATION - 317.02
N 736079 E 2029409
L STATION 10+51.92 239.73' RIGHT
RRS IN 10 INCH POPLAR
.....
88 ELEVATION - 265.07
N 737259 E 2029274
L STATION 22+15.57 367.02' RIGHT
RR SPIKE IN 10' MAPLE
.....
  
```

**NOTES:**

- 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/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4697\_LS\_CONTROL\_100517.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)

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4697-2" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 739466.5394(±) EASTING: 2028532.5079(±) ELEVATION: 322.22(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991087

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4697-2" TO -L- STATION 15+50.00 IS S 10 31 49.2 E 2975.61'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

02-MAY-2011 14:37 N:\B4697-1s-1c.dgn  
 56.841 56.841 56.841

# SURVEY CONTROL SHEET B4697

## Design Alignments

L

TYPE	STATION	NORTH	EAST
POT	10+00.01	736000.6245	2029176.5714
PC	10+69.88	736070.0546	2029168.7639
PT	11+38.29	736137.7282	2029158.7997
PC	12+36.32	736234.1640	2029141.2117
PT	12+92.07	736288.8642	2029130.4456
PC	15+09.07	736501.1761	2029085.5761
PT	15+43.17	736534.4078	2029077.9589
PC	16+92.82	736679.6869	2029042.0418
PRC	20+56.85	737032.0564	2028950.6870
PT	25+82.60	737550.4295	2028869.4518
POT	34+44.17	738411.0915	2028829.9058

GRNWX

TYPE	STATION	NORTH	EAST
POT	10+00.00	737750.6989	2028860.2497
POT	11+81.65	737758.1076	2029041.7508
POT	12+43.09	737727.1304	2029094.8103

### DATUM DESCRIPTION

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 ELEVATION: 322.22(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991087  
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 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

### NOTES:

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[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)  
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 B4697\_LS\_CONTROL\_100517.TXT

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2. 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)

NOTE: DRAWING NOT TO SCALE

5/2/99

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6/2/09

PROJECT REFERENCE NO. B-4697	SHEET NO. 1-E
Location and Surveys	

# SURVEY CONTROL SHEET B4697

## ROW MARKER BRIDGE SPIKE

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+50.00	-55.00	736527.8391	2029022.9270
L	15+50.00	40.00	736550.6394	2029115.1503
L	16+92.82	-55.00	736666.4848	2028988.6498
L	20+56.85	-40.00	737021.5808	2028912.0830
L	25+82.60	-40.00	737548.5935	2028829.4940
L	16+92.82	40.00	736689.2870	2029080.8727
L	20+56.85	40.00	737042.5319	2028989.2909
L	25+82.60	40.00	737552.2655	2028909.4096
L	31+00.00	-40.00	738065.4489	2028805.7453
L	31+00.00	40.00	738069.1209	2028885.6610
L	31+00.00	-30.00	738065.9079	2028815.7347
L	31+00.00	30.00	738068.6619	2028875.6715
L	15+50.00	30.00	736548.2394	2029105.4426
L	15+50.00	-30.00	736533.8392	2029047.1963
L	19+00.00	-65.00	736864.0733	2028928.1317
L	20+56.85	-57.00	737017.1287	2028895.6764
L	17+87.04	30.28	736778.5274	2029048.5089
L	17+87.21	40.00	736781.0762	2029057.8941
L	18+07.01	30.41	736797.9479	2029043.7076
L	18+07.16	40.00	736800.4627	2029052.9676

## ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	22+35.00	-67.00	737192.8598	2028844.6676
L	22+88.00	-67.00	737246.4610	2028834.9300
L	22+88.00	-40.00	737250.9934	2028861.5469
L	22+35.00	-40.00	737197.9788	2028871.1779
L	25+10.00	-40.00	737474.9245	2028833.9964
L	25+65.00	-40.00	737530.7229	2028830.3808
L	25+65.00	-60.00	737529.6584	2028810.4091
L	25+10.00	-60.00	737473.4027	2028814.0544
L	14+60.50	30.00	736459.8552	2029124.9714
L	14+60.50	61.00	736466.2651	2029155.3015
L	16+37.00	63.00	736640.6166	2029116.5979
L	18+15.00	80.00	736817.9705	2029089.7829
L	20+64.00	80.00	737059.6816	2029026.0944
L	22+74.00	84.00	737258.4973	2028986.0940
L	25+64.00	78.00	737536.0372	2028948.2652
L	20+56.85	-68.00	737014.2479	2028885.0603
L	20+72.85	-68.00	737030.1424	2028880.8040
L	20+72.85	-40.00	737037.2949	2028907.8751
L	28+30.00	61.00	737800.3694	2028919.0318
L	30+89.00	-58.00	738053.6343	2028788.2692
L	31+05.00	-58.00	738069.6174	2028787.5348
L	31+05.00	-30.00	738070.9026	2028815.5052
L	30+89.00	-40.00	738054.4605	2028806.2502
L	17+87.38	50.27	736783.7691	2029067.8098
L	18+07.33	50.40	736803.1903	2029063.0077

### DATUM DESCRIPTION

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 VERTICAL DATUM USED IS NAVD 88

### NOTES:

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[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)  
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 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

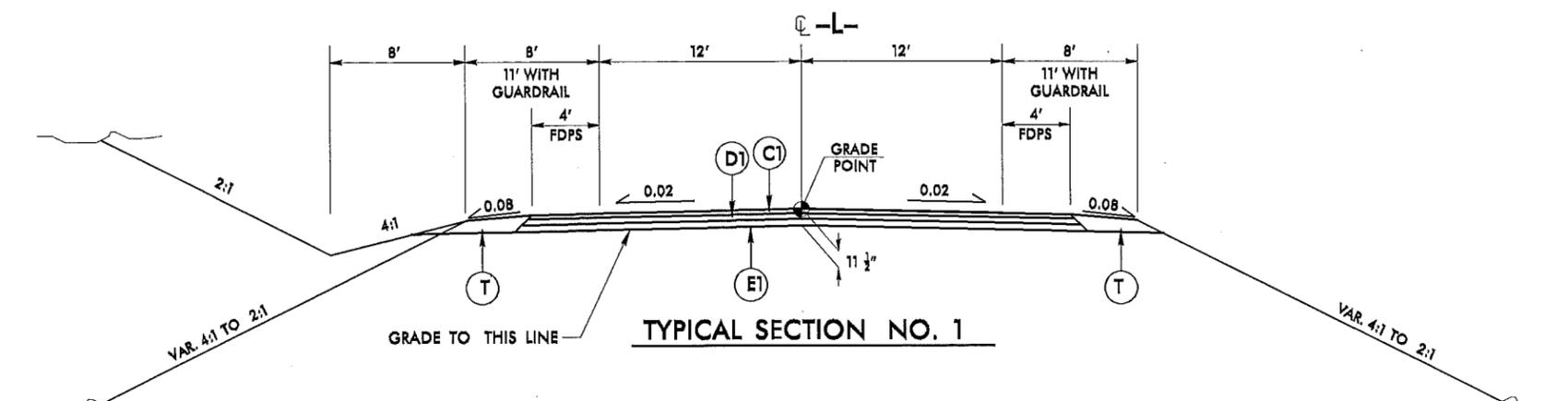
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5/14/98  
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PROJECT REFERENCE NO. <b>B-4697</b>	SHEET NO. <b>2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> <small>DO NOT USE FOR CONSTRUCTION</small>	

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	BICYCLE SAFE RAIL, SEE DETAIL SHEET XX
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 468 LBS. PER SQ. YD.	S	4" CONCRETE SIDEWALK
E1	PROP. APPROX. 4 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B26.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL
R1	2'-6" CONCRETE CURB AND GUTTER	U	EXISTING PAVEMENT

Note: Pavement Edge Slopes are 1:1 Unless Noted Otherwise.

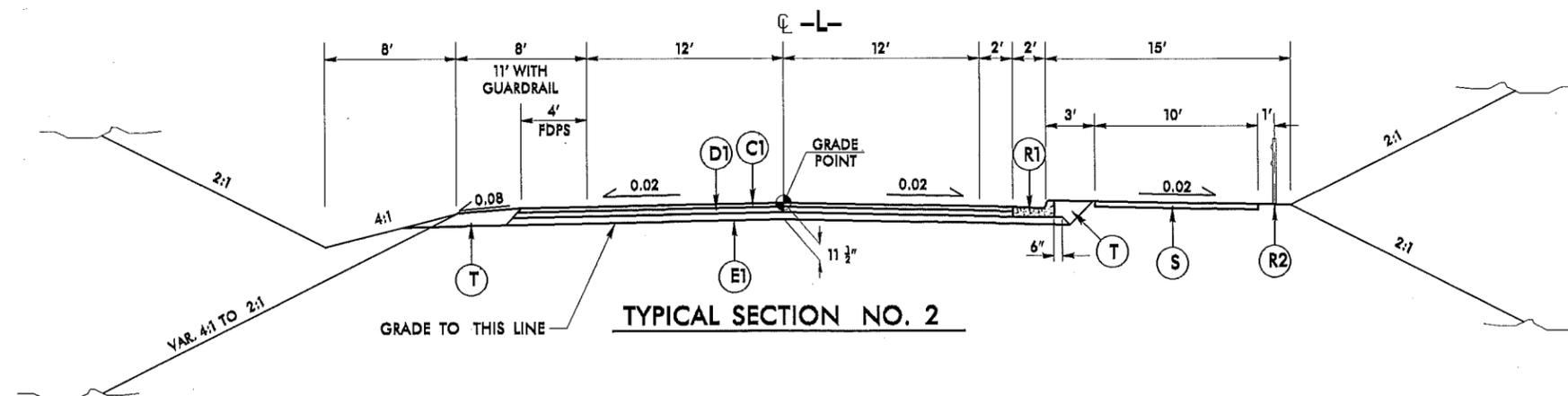


NOTE: TRANSITION FROM EXISTING TO T.S. NO.1 FROM -L- STA. 15+50.00 TO STA. 16+00.00

USE TYPICAL SECTION NO. 1

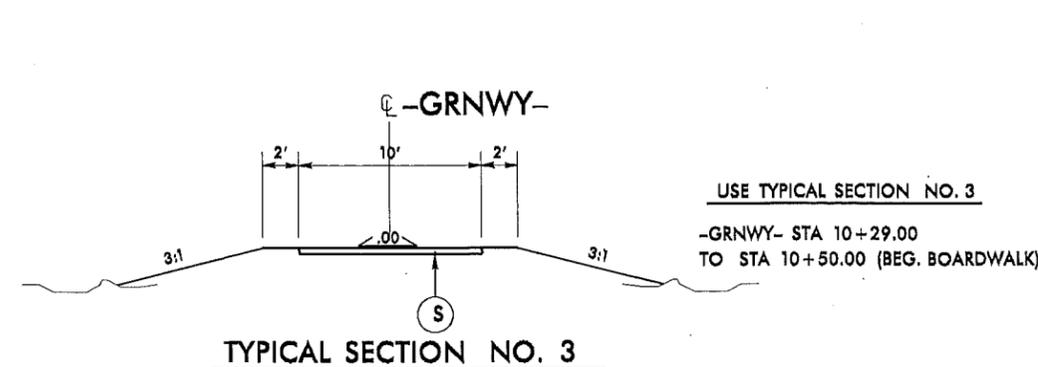
-L- STA 16+00.00 TO STA 18+50.00  
 -L- STA 28+20.00 TO STA 30+50.00

NOTE: TRANSITION FROM T.S. NO.1 TO EXISTING FROM -L- STA. 30+50.00 TO -L- STA. 31+00.00

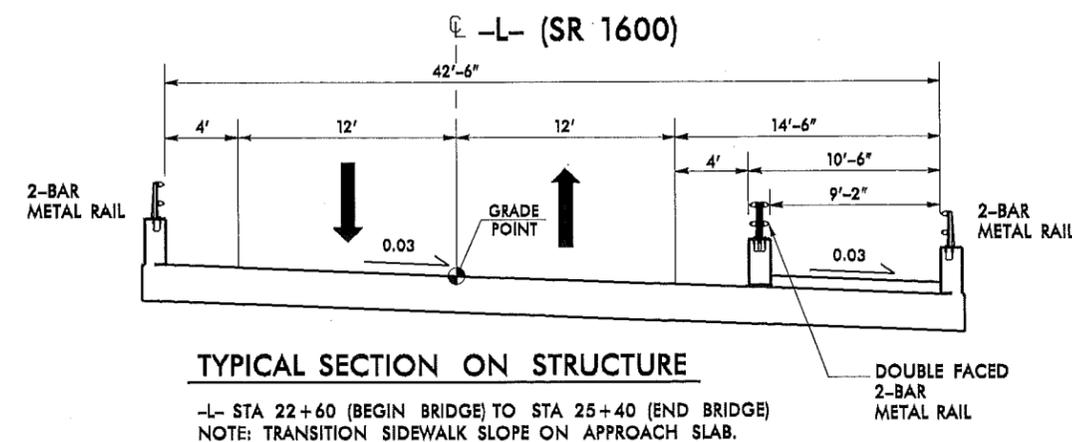


USE TYPICAL SECTION NO. 2

-L- STA 18+50.00 TO STA 22+60.00 (BEGIN BRIDGE)  
 -L- STA 25+40.00 (END BRIDGE) TO STA 28+20.00  
 NOTE: BERM SLOPES AWAY FROM THE CURB.  
 NOTE: SIDEWALK BEGINS -L- STA. 19+50 AND ENDS -L- STA. 27+88.00  
 NOTE: RAIL BEGINS -L- STA. 19+50 AND ENDS -L- STA. 27+77.00

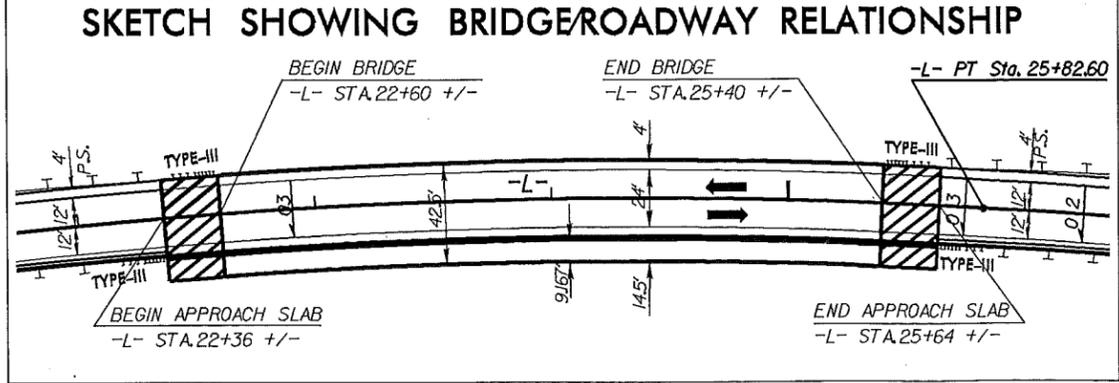
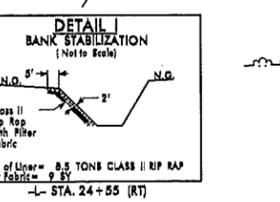
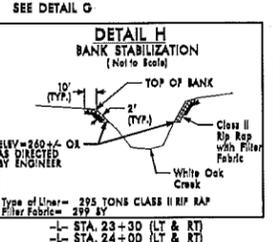
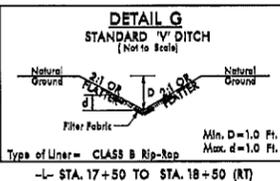
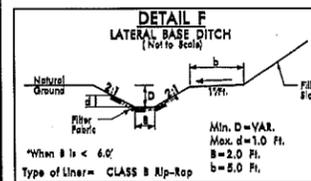
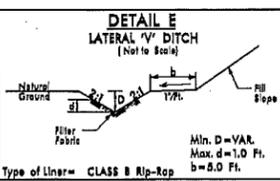
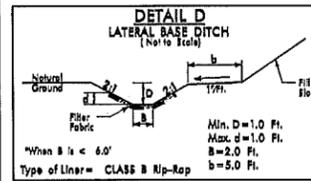
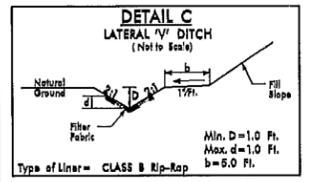
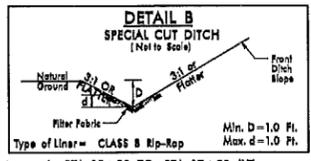
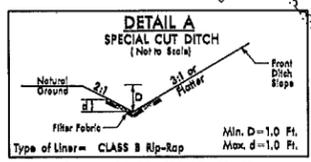
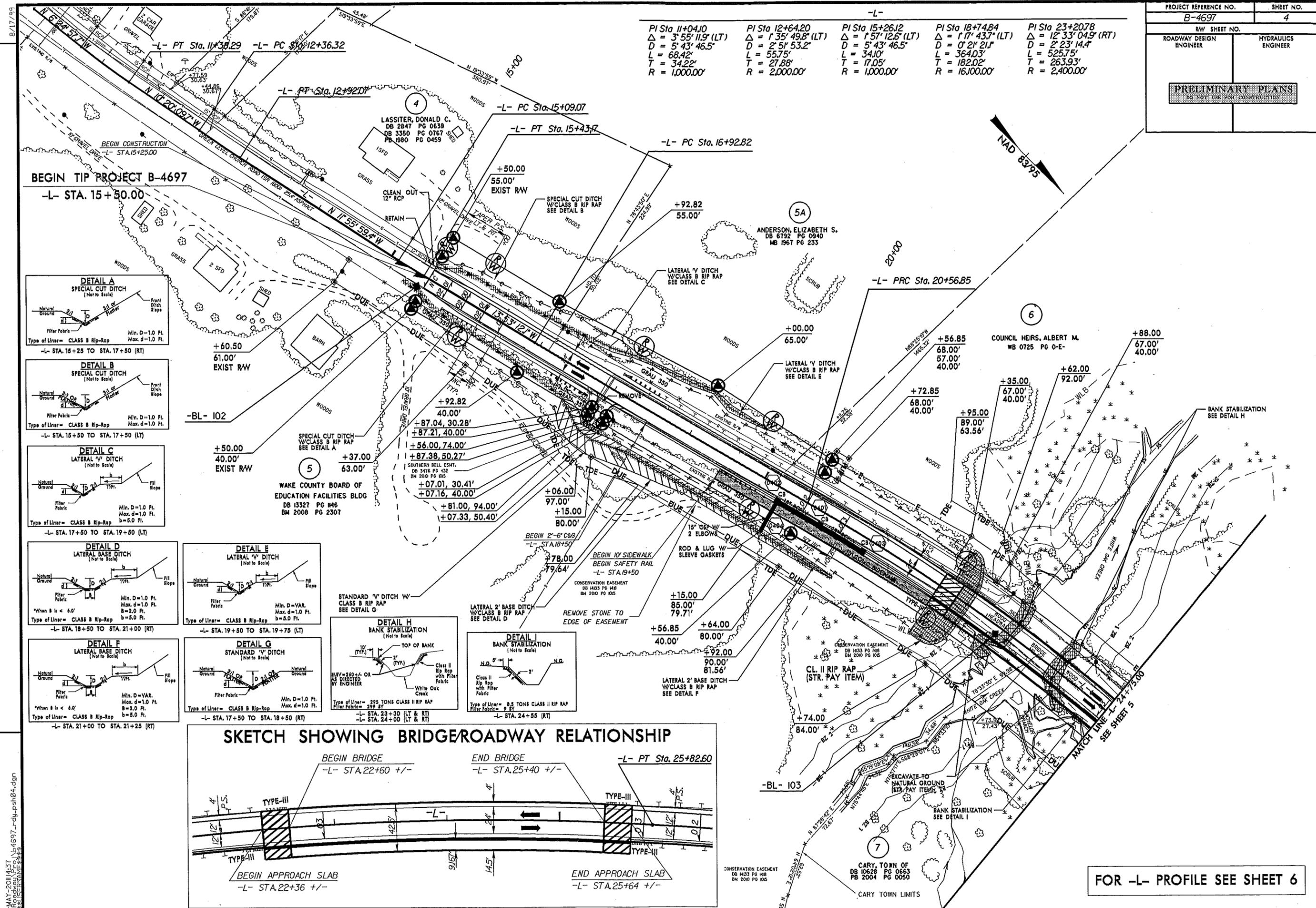


USE TYPICAL SECTION NO. 3  
 -GRNWY- STA 10+29.00 TO STA 10+50.00 (BEG. BOARDWALK)



-L- STA 22+60 (BEGIN BRIDGE) TO STA 25+40 (END BRIDGE)  
 NOTE: TRANSITION SIDEWALK SLOPE ON APPROACH SLAB.

-L-				
PI Sta 11+04.10 Δ = 3° 55' 11.9" (LT) D = 5' 43' 46.5" L = 68.42' T = 34.22' R = 1,000.00'	PI Sta 12+64.20 Δ = 1° 35' 49.8" (LT) D = 2' 51' 53.2" L = 55.75' T = 27.88' R = 2,000.00'	PI Sta 15+26.12 Δ = 1° 57' 12.6" (LT) D = 5' 43' 46.5" L = 34.10' T = 17.05' R = 1,000.00'	PI Sta 18+74.84 Δ = 1° 17' 43.7" (LT) D = 0' 21' 21.1" L = 364.03' T = 182.02' R = 16,100.00'	PI Sta 23+20.78 Δ = 12° 33' 04.9" (RT) D = 2' 23' 14.4" L = 525.75' T = 263.93' R = 2,400.00'

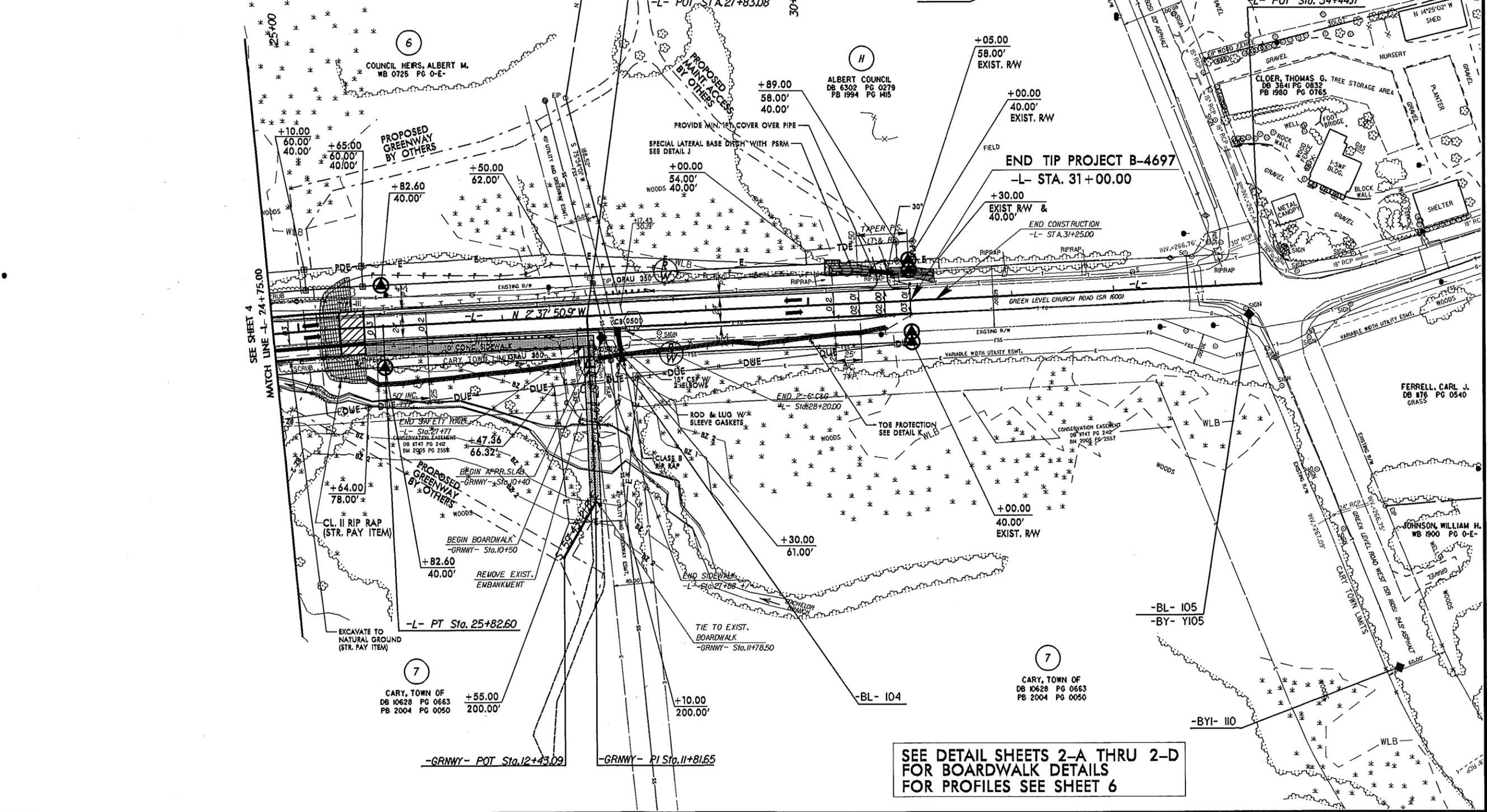
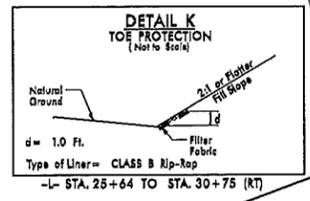
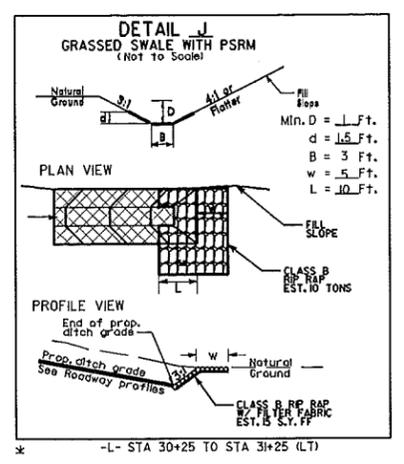


FOR -L- PROFILE SEE SHEET 6

02-MAY-2011 14:37 P:\Roadway\B-4697-rd\psh04.dgn

PROJECT REFERENCE NO. <b>B-4697</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

AVERAGE DAILY TRAFFIC		2012	2035
$\frac{2,800}{8,000}$			
$\frac{900}{2,400}$	$\frac{200}{500}$		
$\frac{7,900}{22,000}$	$\frac{6,200}{21,000}$		
GREEN LEVEL CHURCH RD			
$\frac{1,700}{4,800}$	$\frac{800}{5,700}$		
GREEN LEVEL RD			
$\frac{3,400}{15,600}$			



REVISIONS

SEE DETAIL SHEETS 2-A THRU 2-D FOR BOARDWALK DETAILS FOR PROFILES SEE SHEET 6

8/17/99

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5/28/99

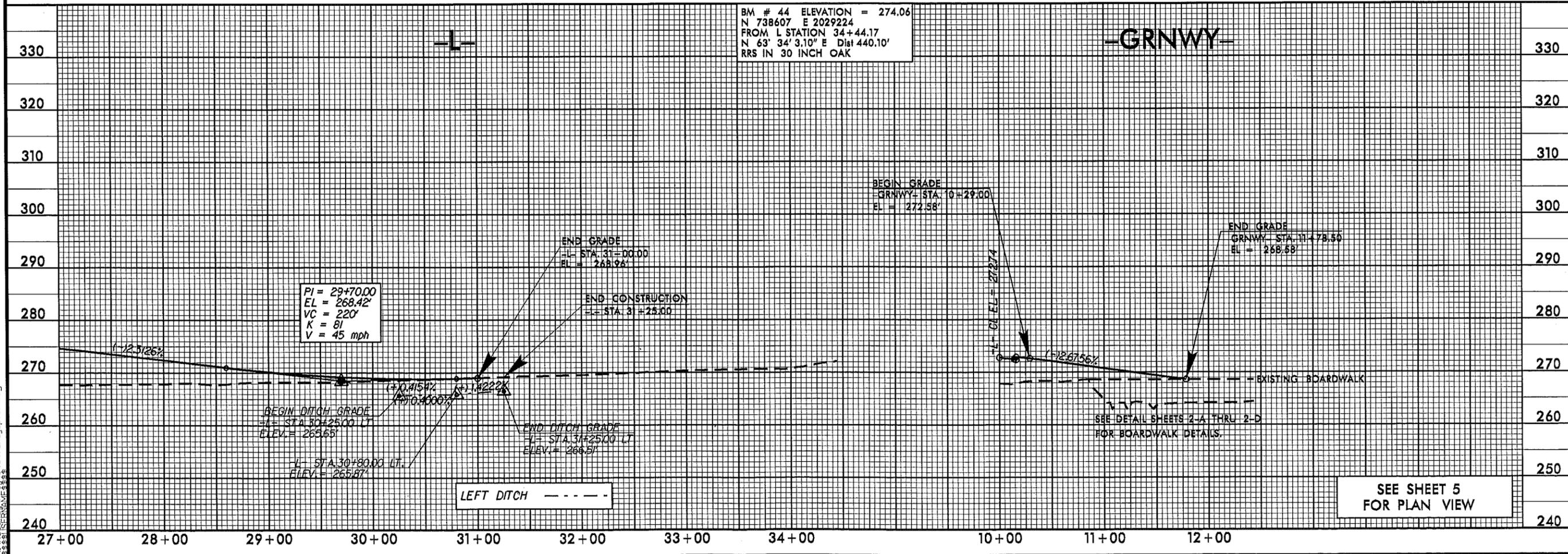
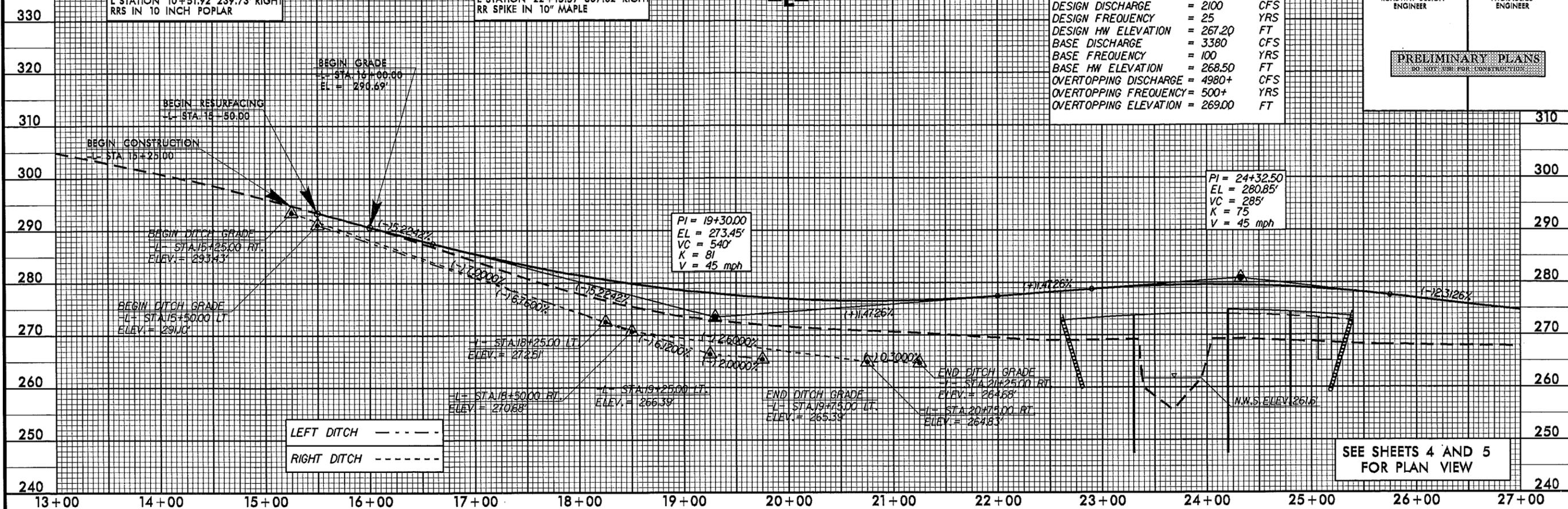
BM # 59 ELEVATION = 317.82  
N 736079 E 2029409  
L STATION 10+51.92 239.73' RIGHT  
RRS IN 10 INCH POPLAR

BM # 88 ELEVATION = 265.07  
N 737259 E 2029274  
L STATION 22+15.57 367.02' RIGHT  
RR SPIKE IN 10" MAPLE

STRUCTURE HYDRAULIC DATA

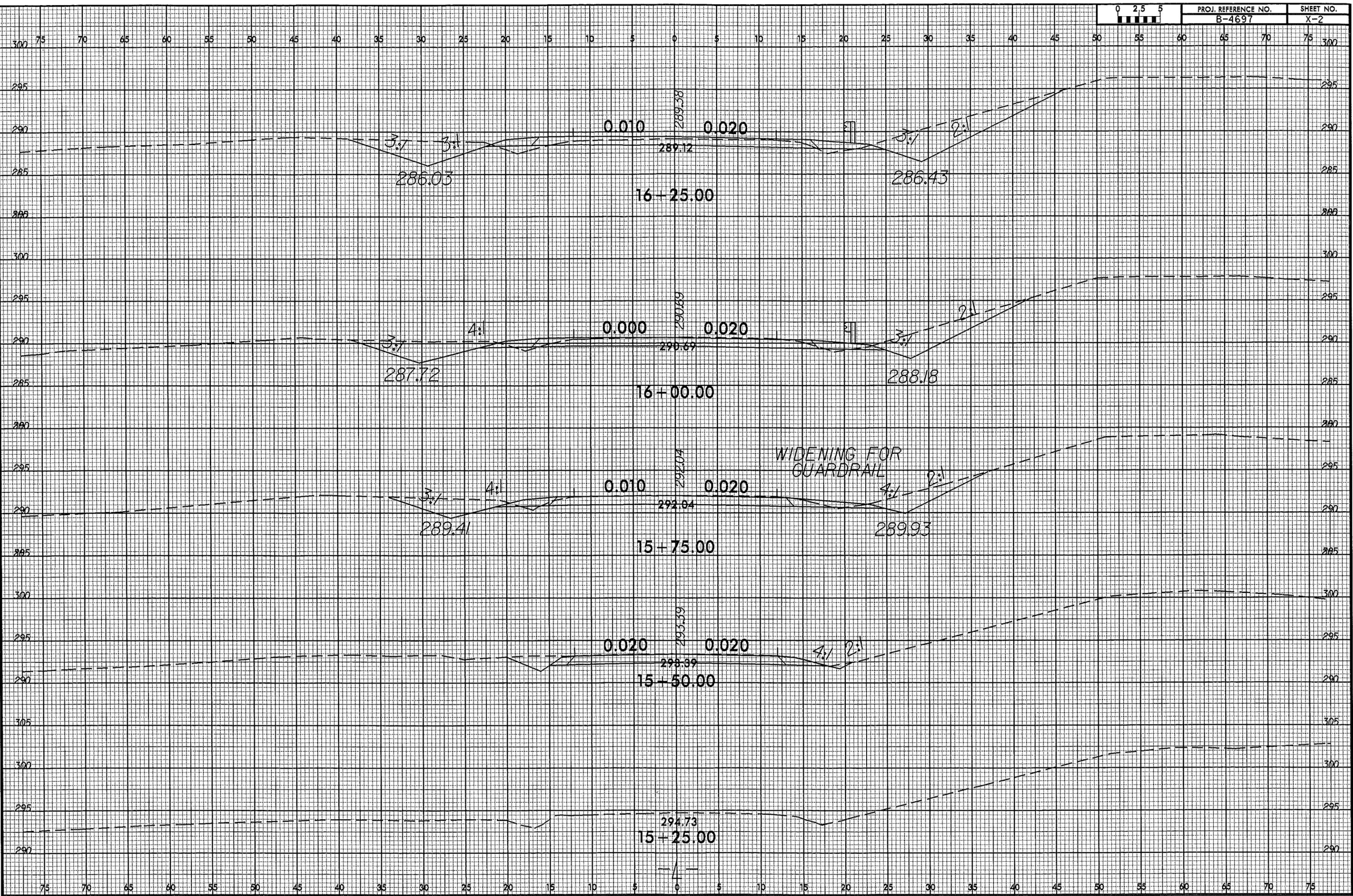
DESIGN DISCHARGE = 2100 CFS  
DESIGN FREQUENCY = 25 YRS  
DESIGN HW ELEVATION = 267.20 FT  
BASE DISCHARGE = 3380 CFS  
BASE FREQUENCY = 100 YRS  
BASE HW ELEVATION = 268.50 FT  
OVERTOPPING DISCHARGE = 4980+ CFS  
OVERTOPPING FREQUENCY = 500+ YRS  
OVERTOPPING ELEVATION = 269.00 FT

PROJECT REFERENCE NO. B-4697	SHEET NO. 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	



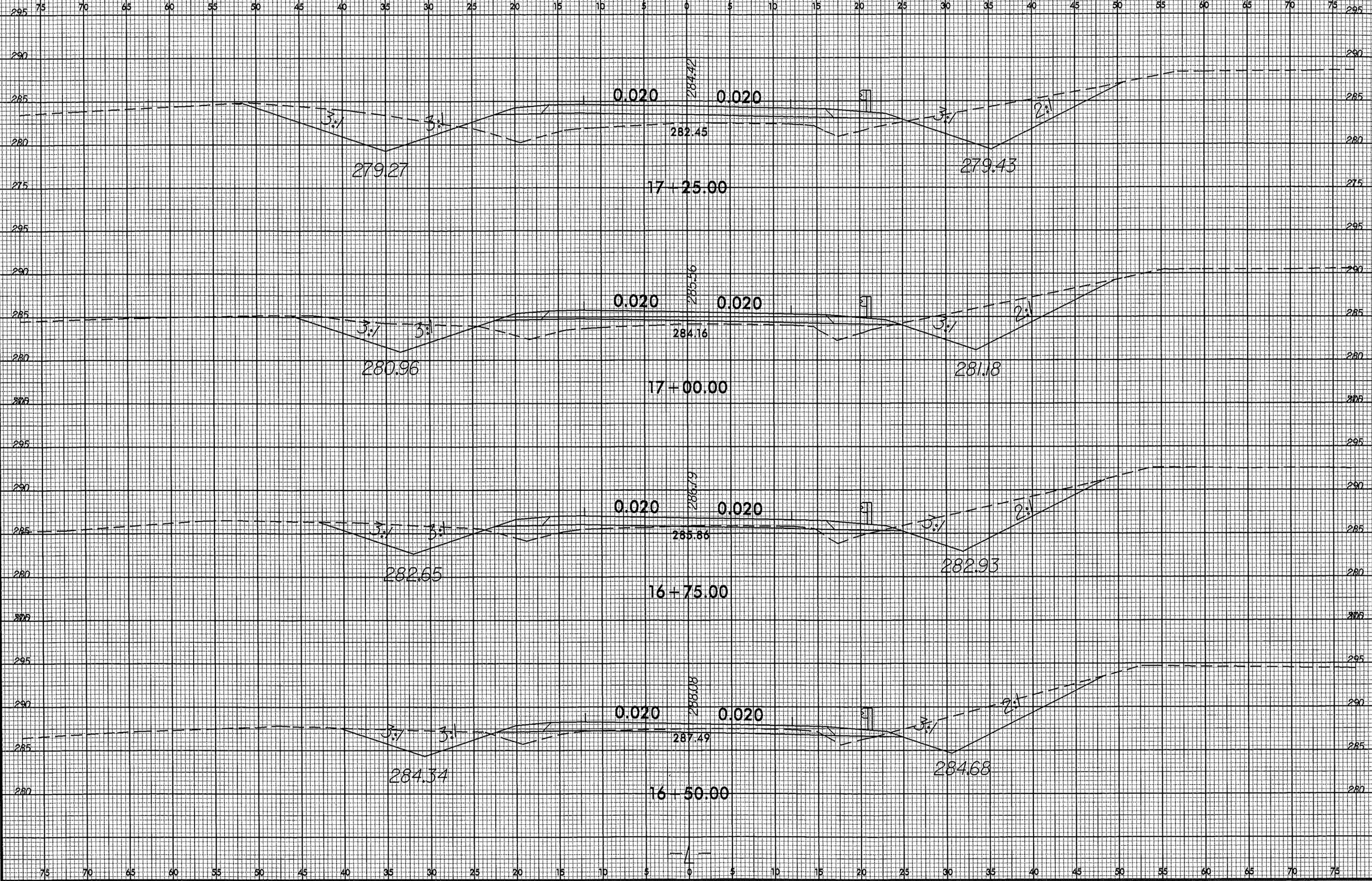
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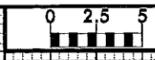
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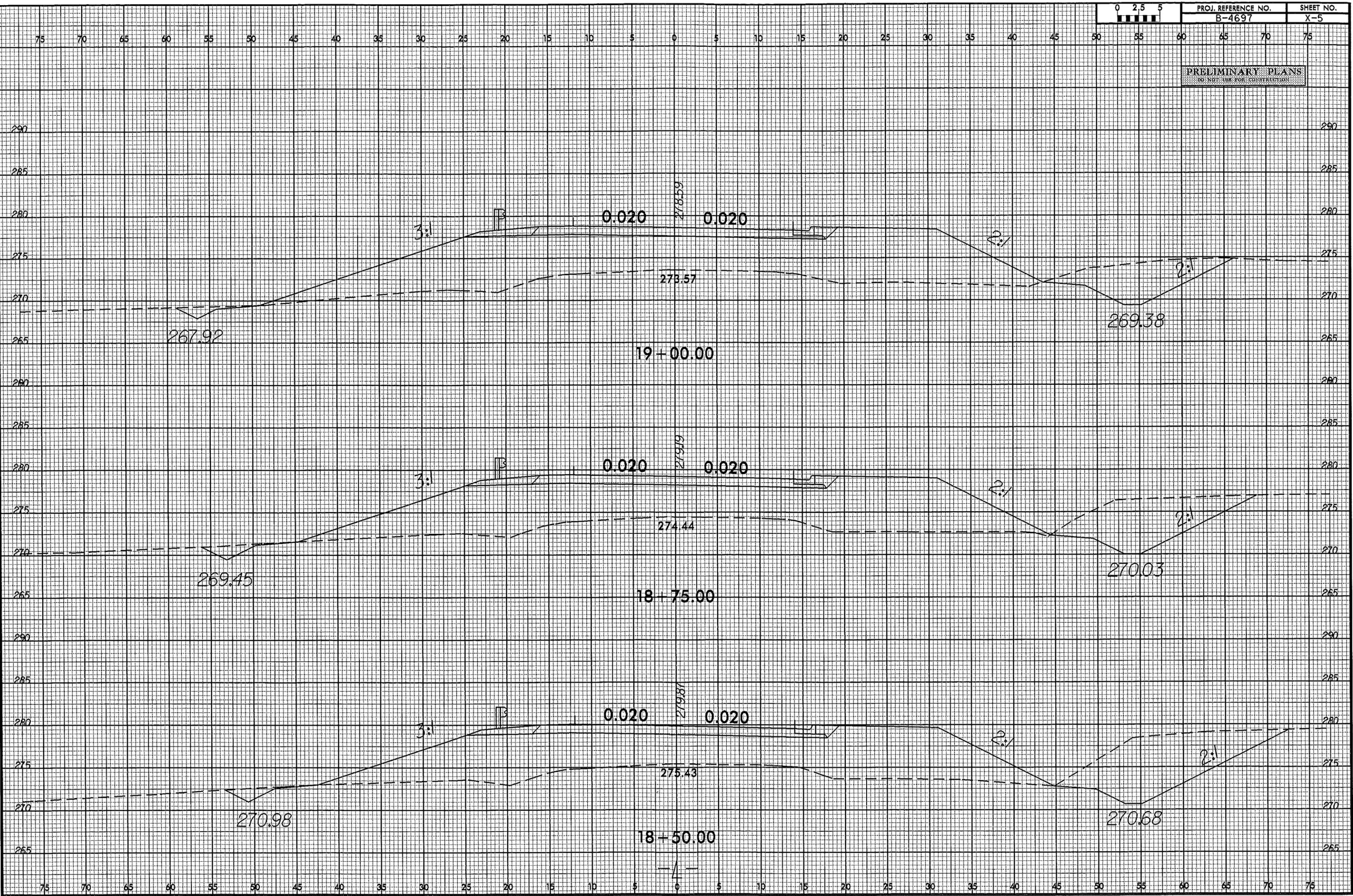


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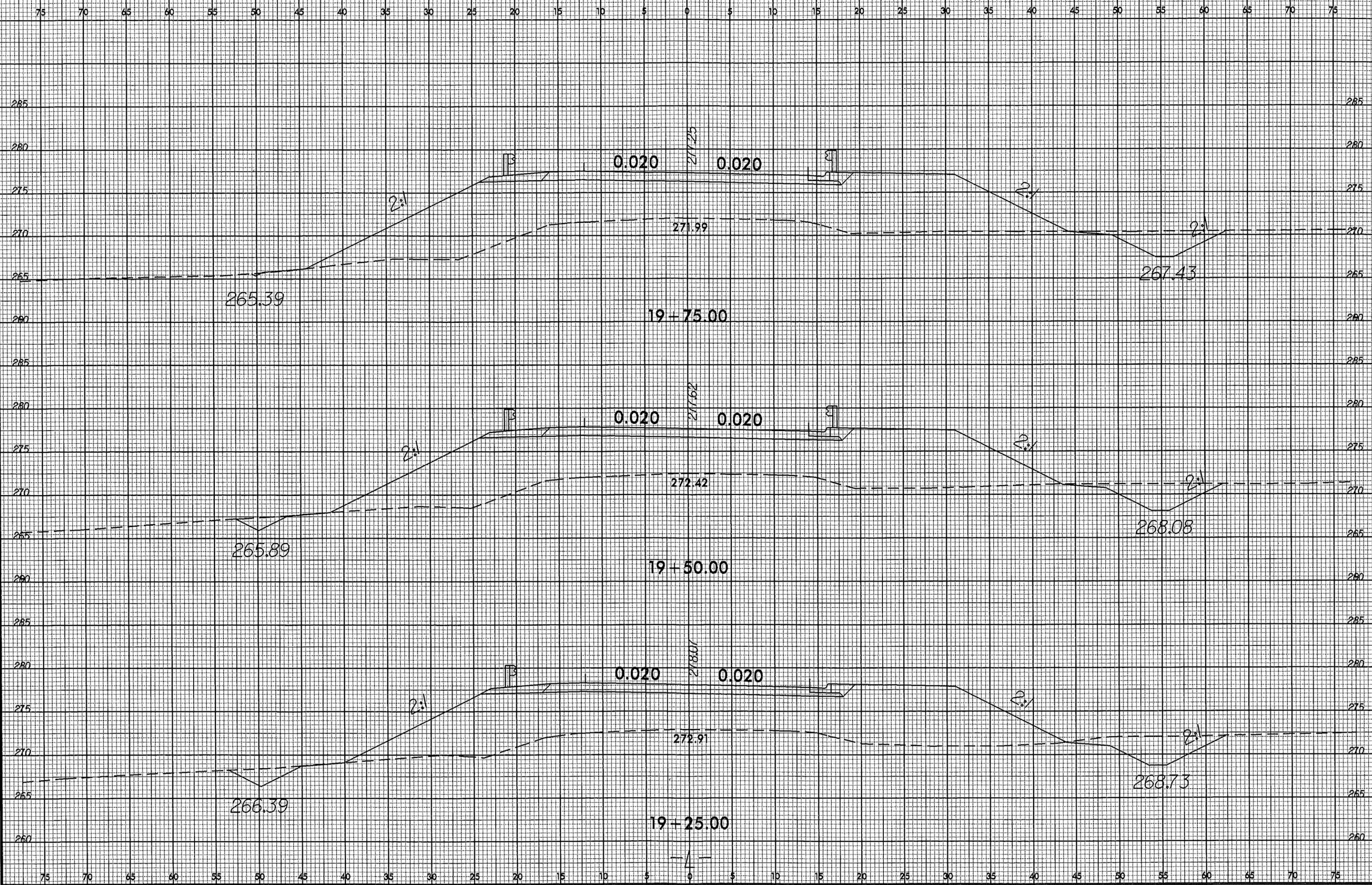
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PRELIMINARY PLANS  
NOT TO BE USED FOR CONSTRUCTION



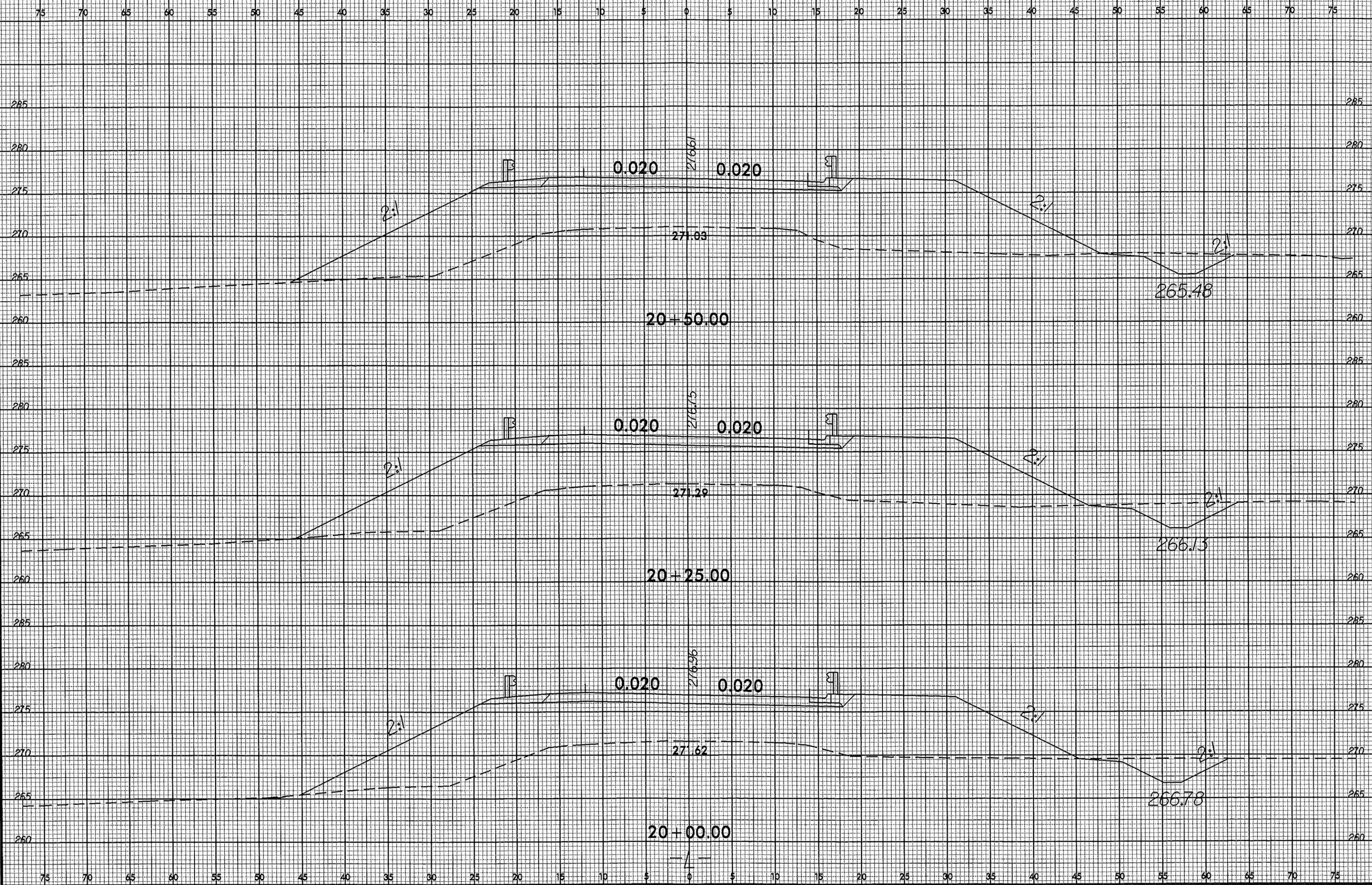
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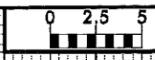
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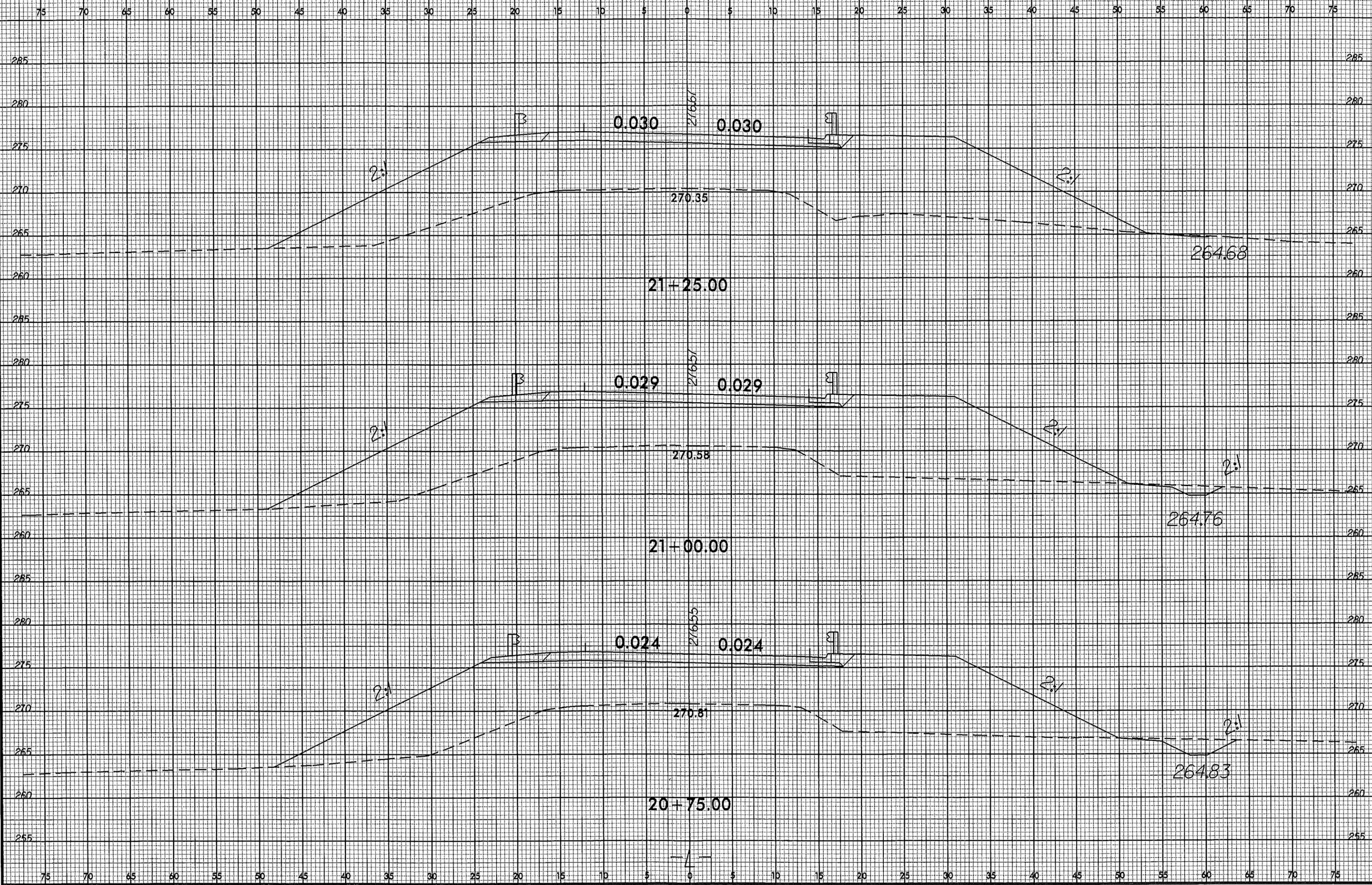


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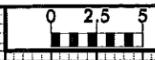


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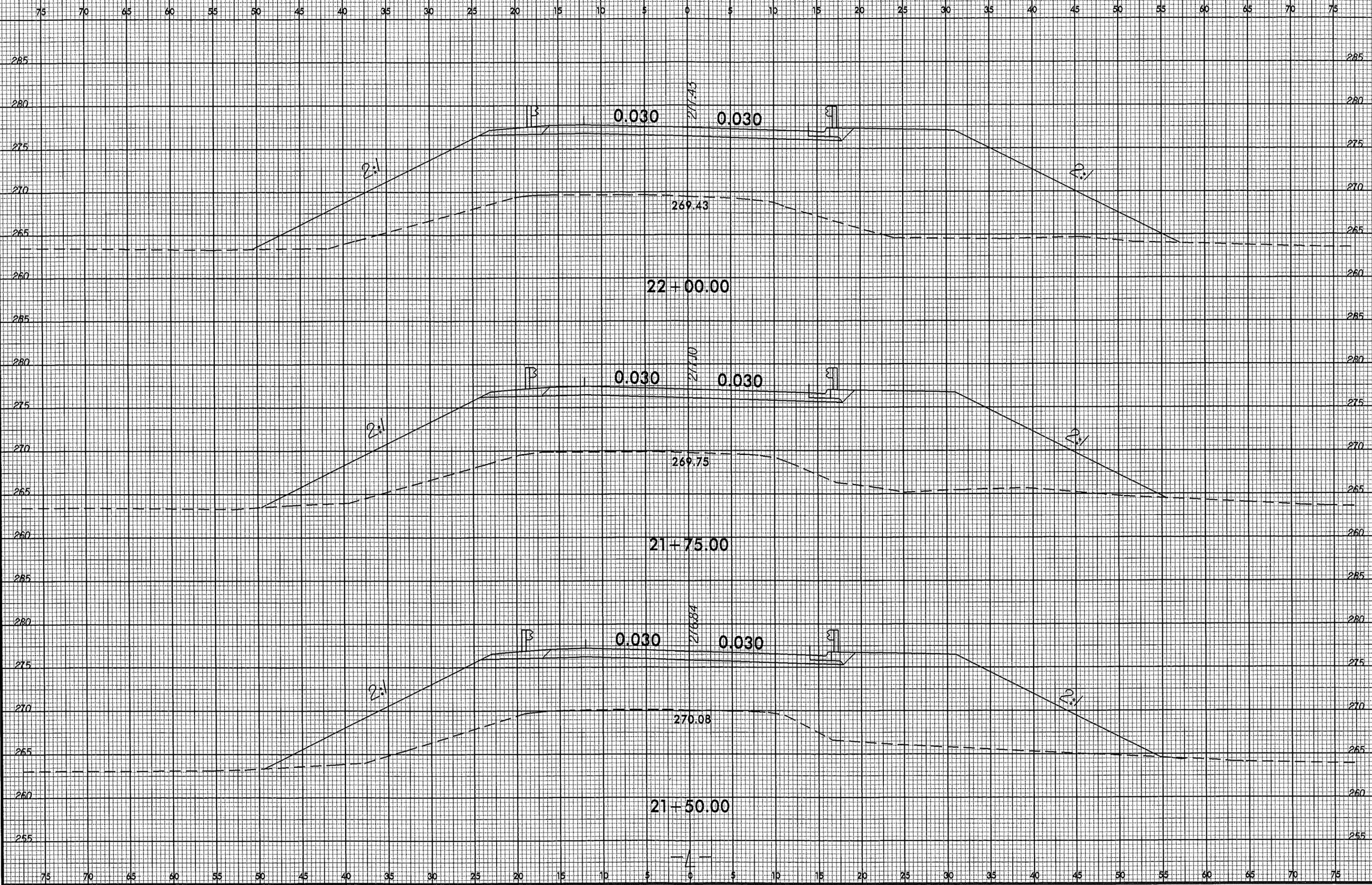


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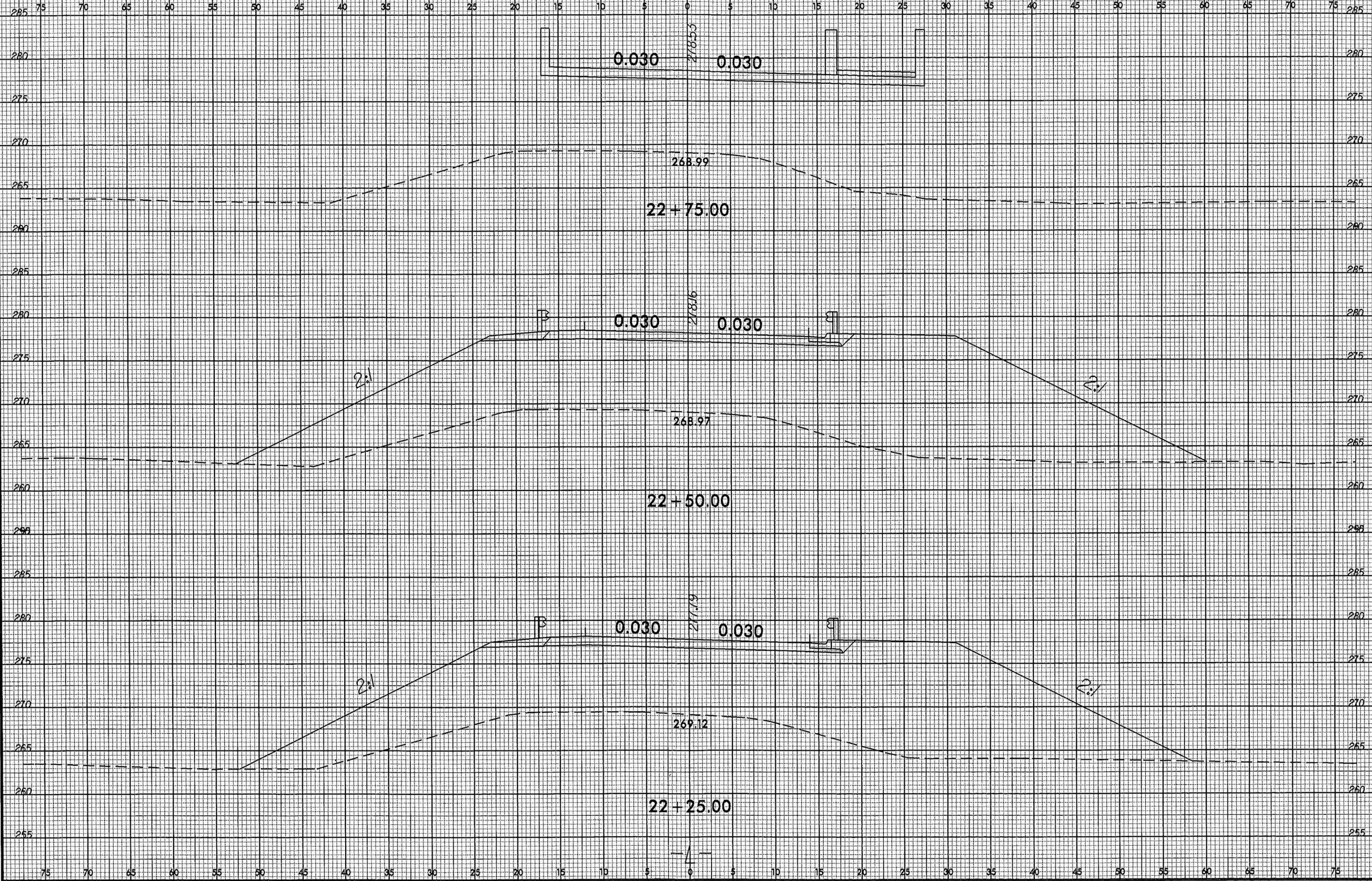


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B-4697	X-9



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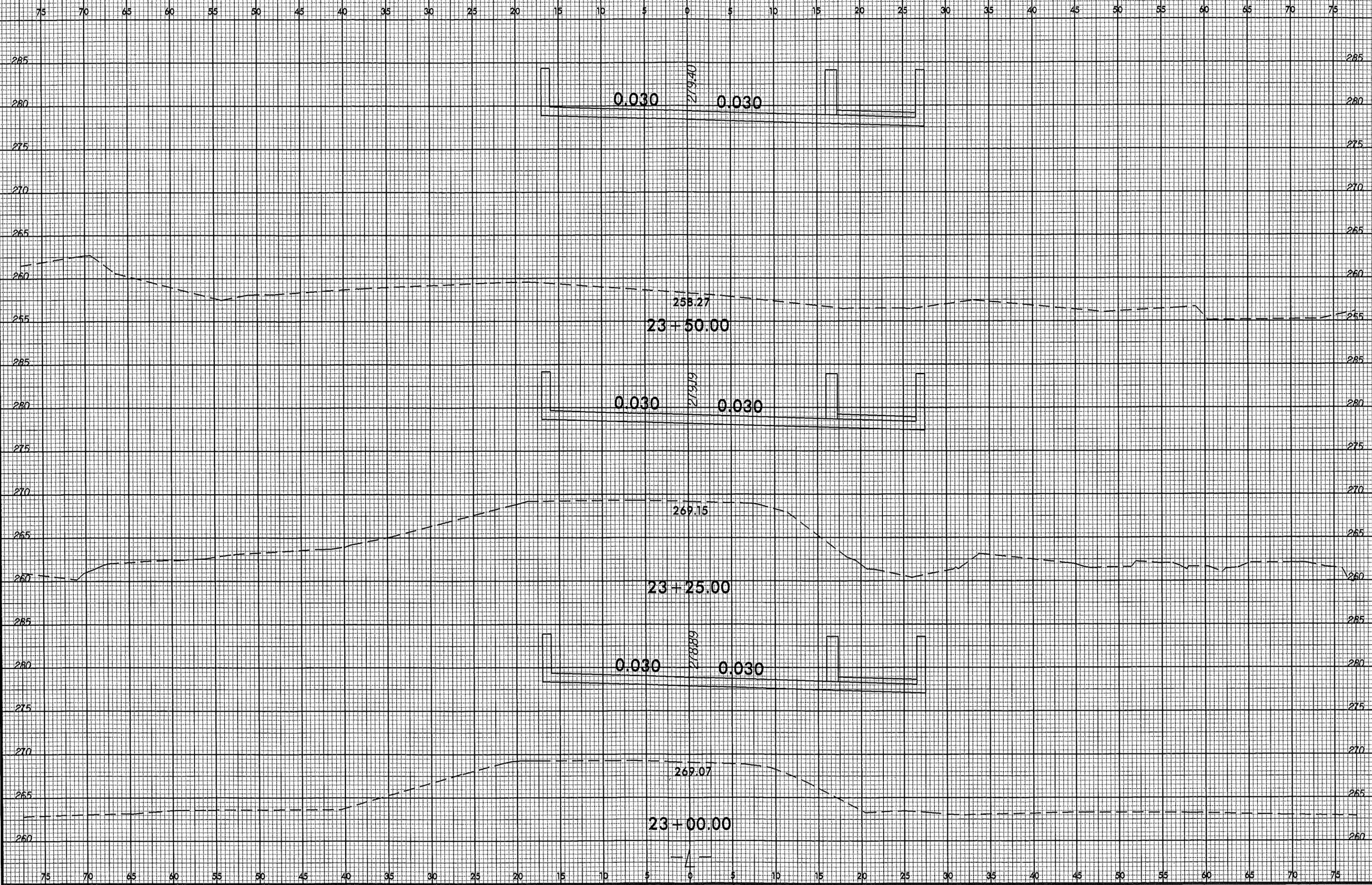


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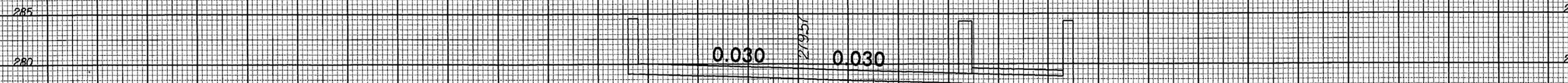
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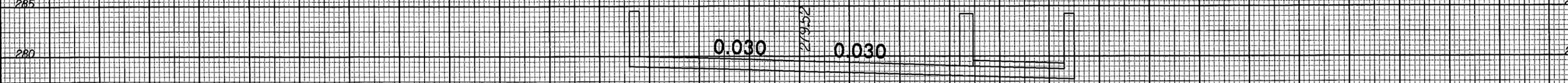
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B-4697	X-12

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285 280 275 270 265 260 255 250 245 240 235 230 225 220 215 210 205 200 195 190 185 180 175 170 165 160 155 150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 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

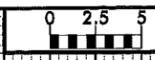


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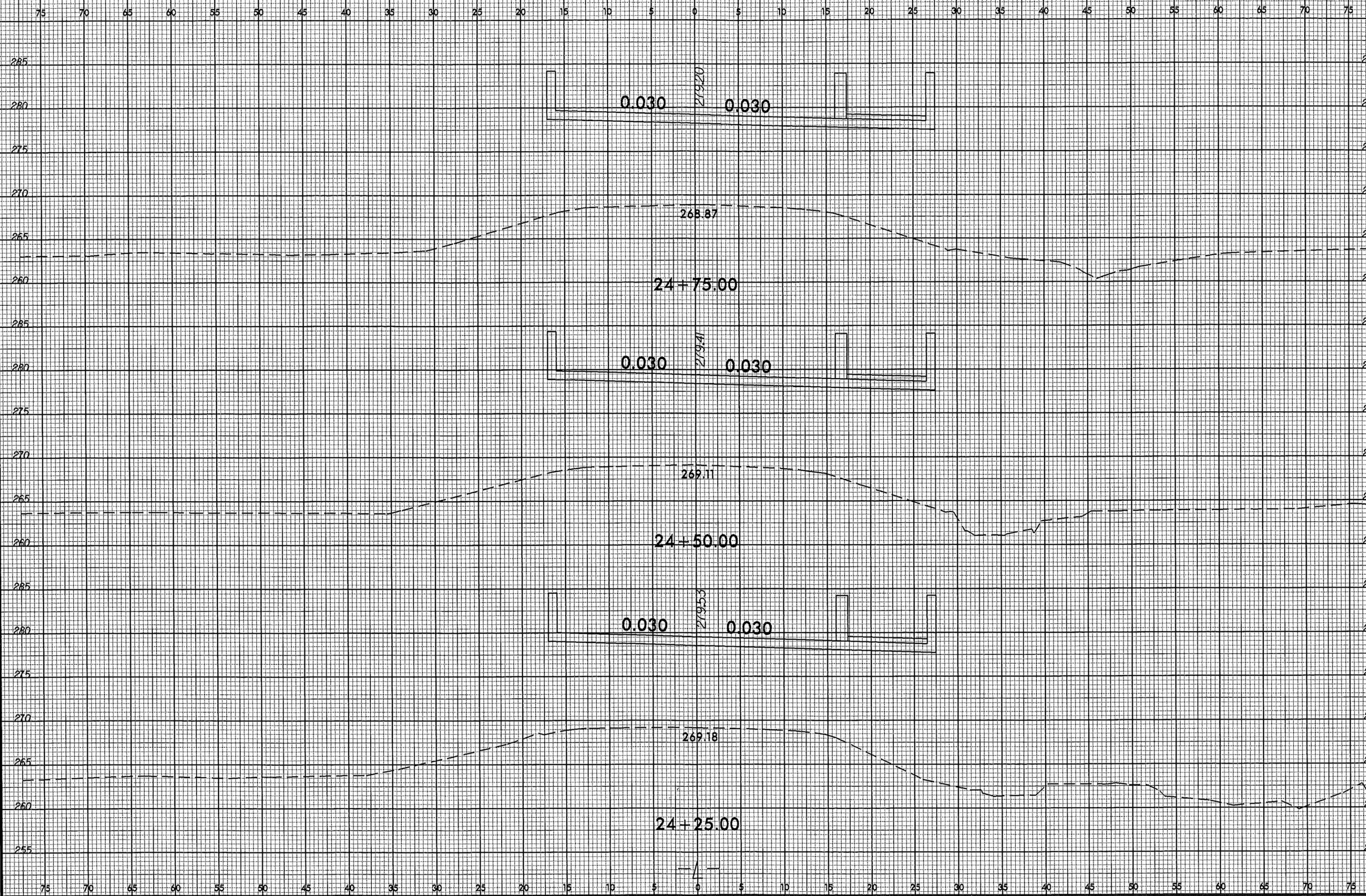
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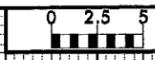


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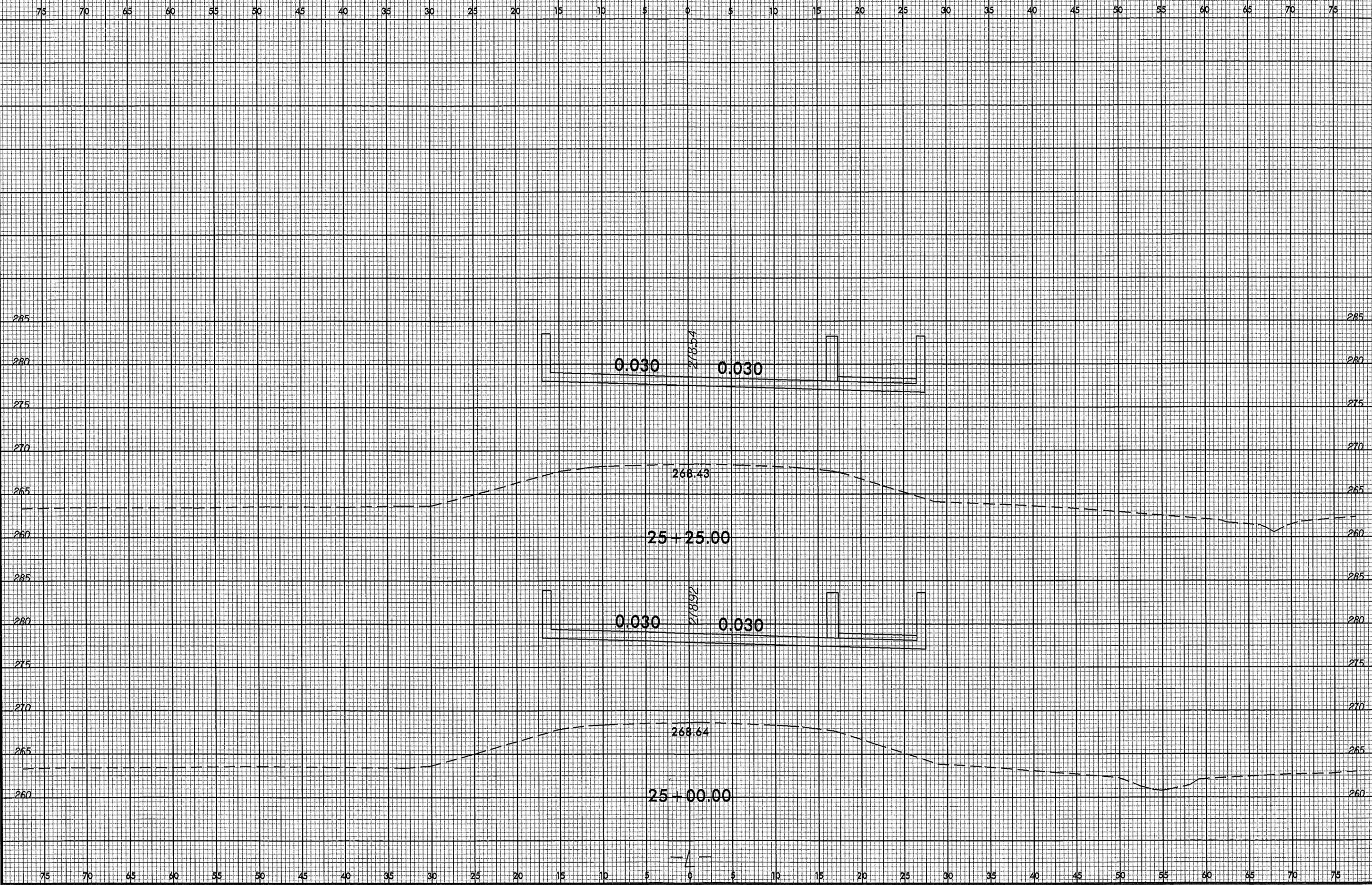


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265 265

260 260

285 285

280 280

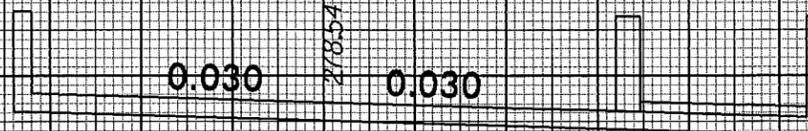
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265 265

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268.43

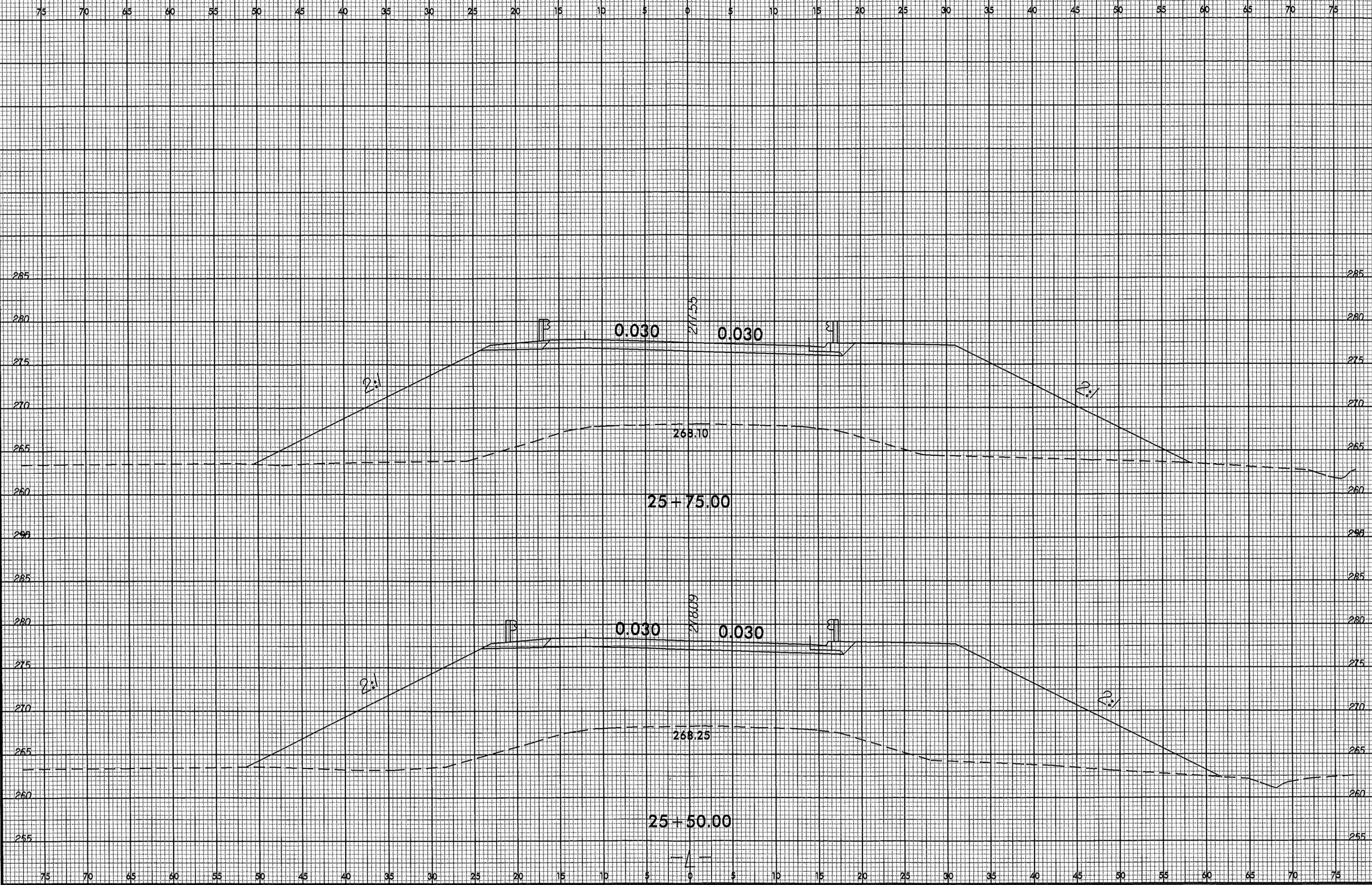
268.64

25 + 25.00

25 + 00.00

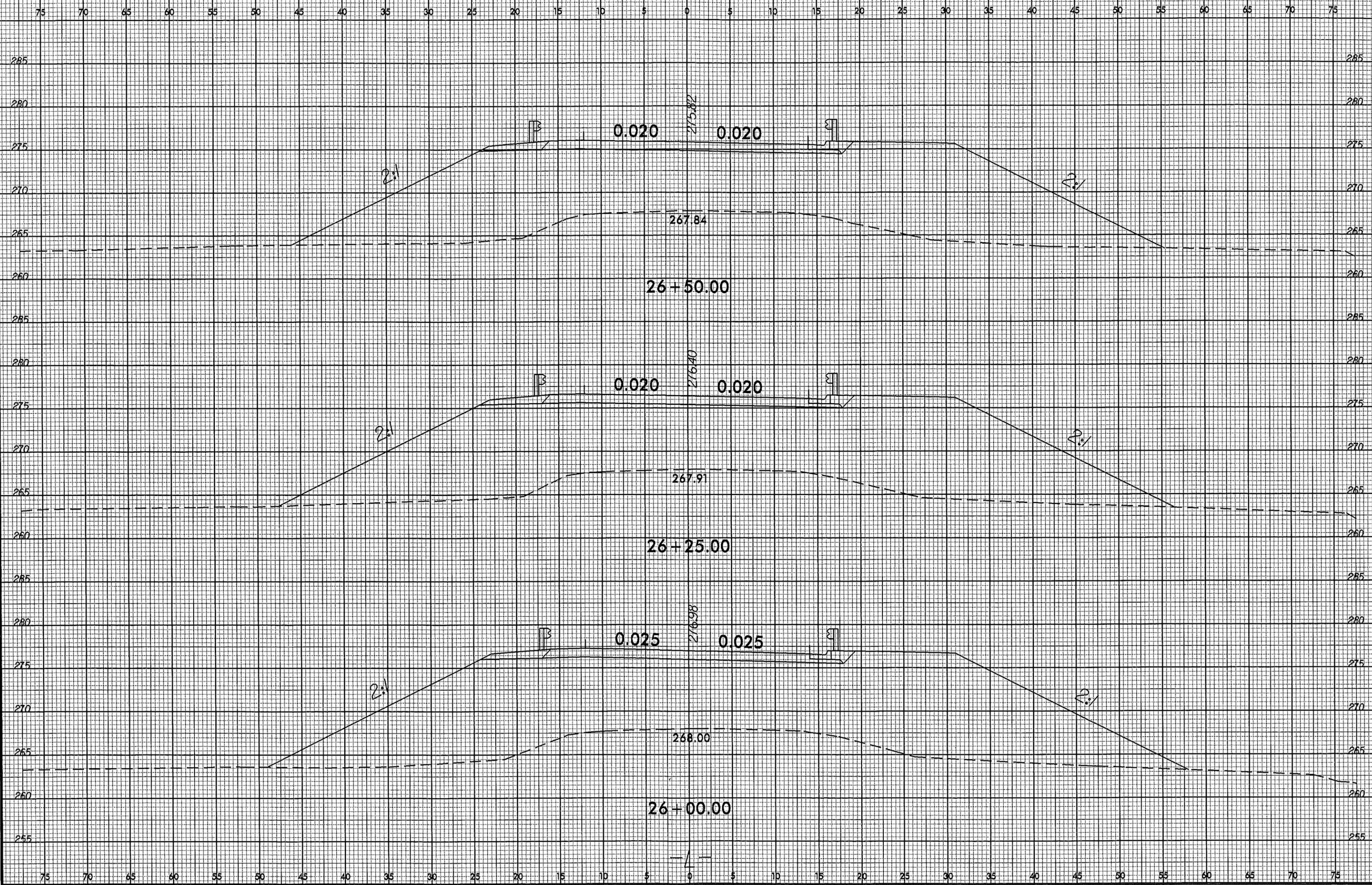
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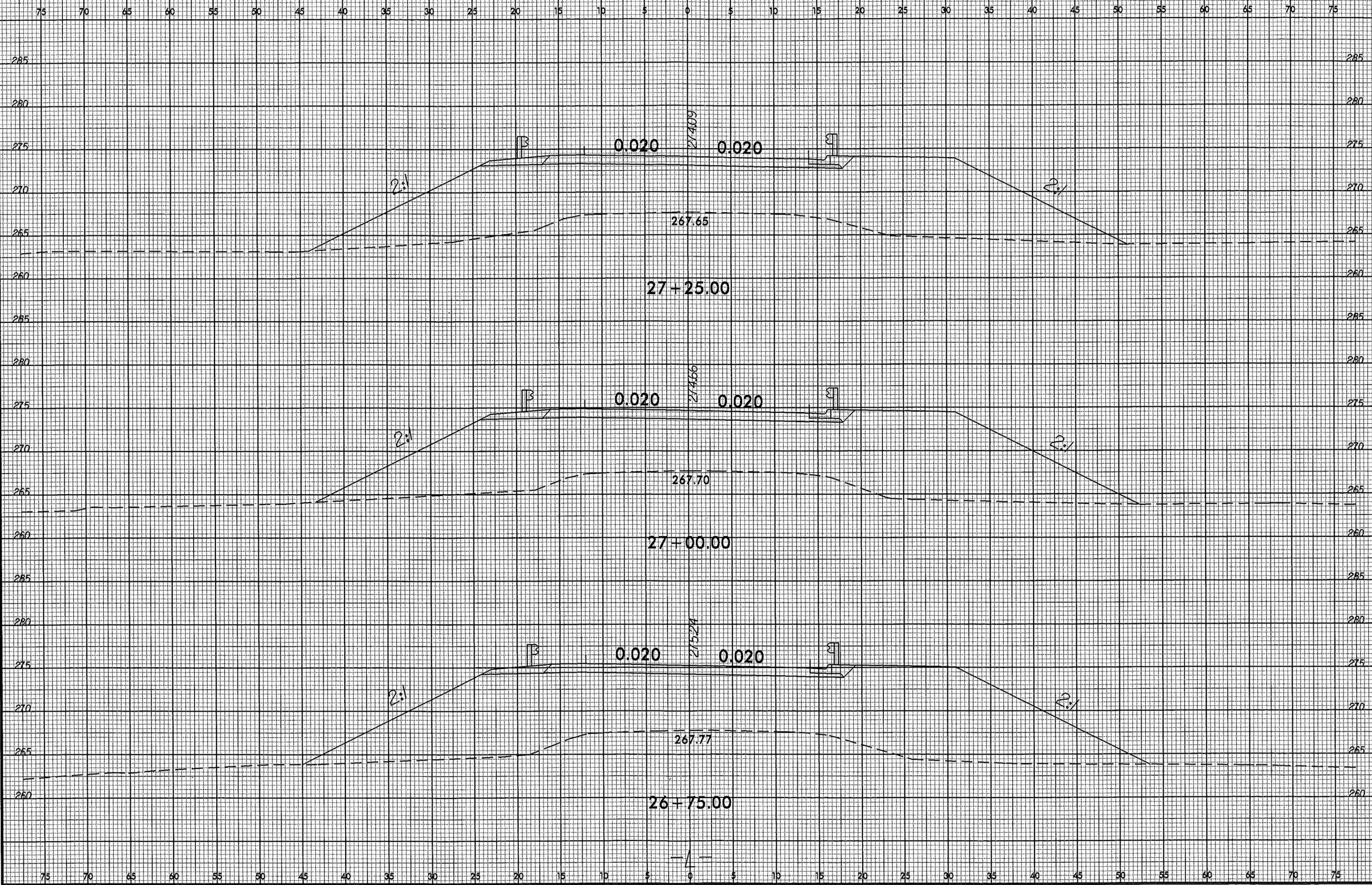
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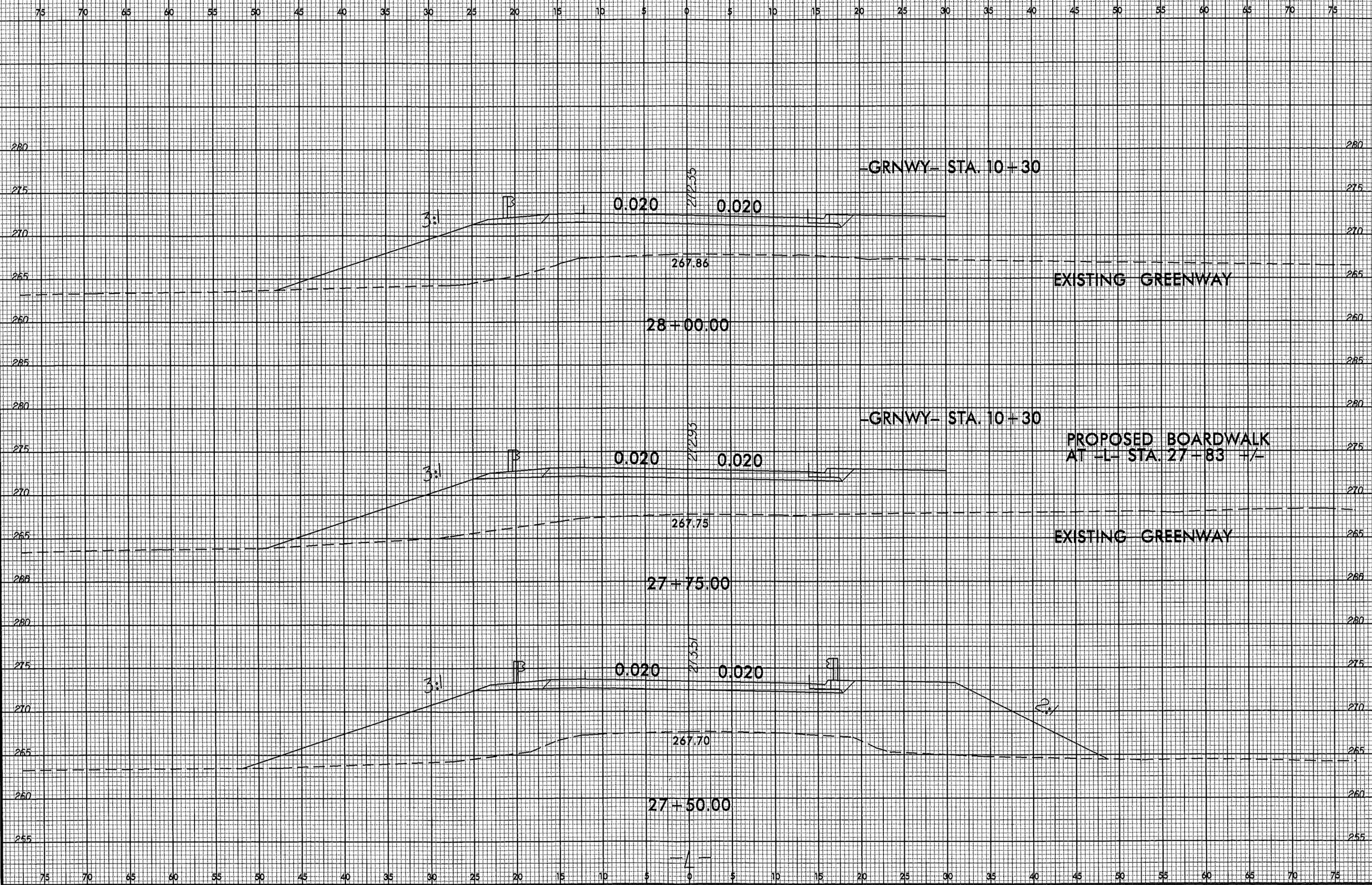
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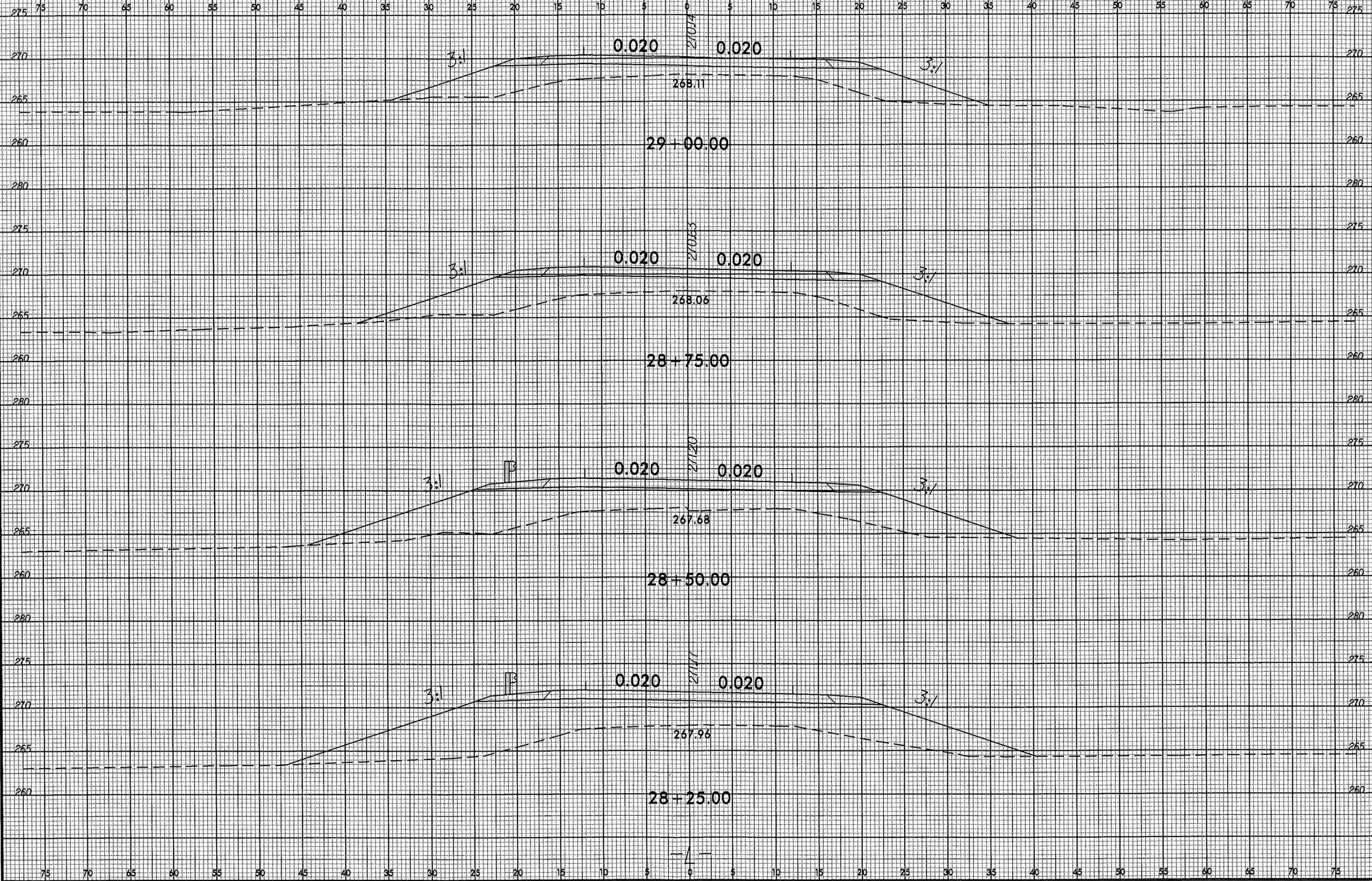
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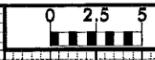
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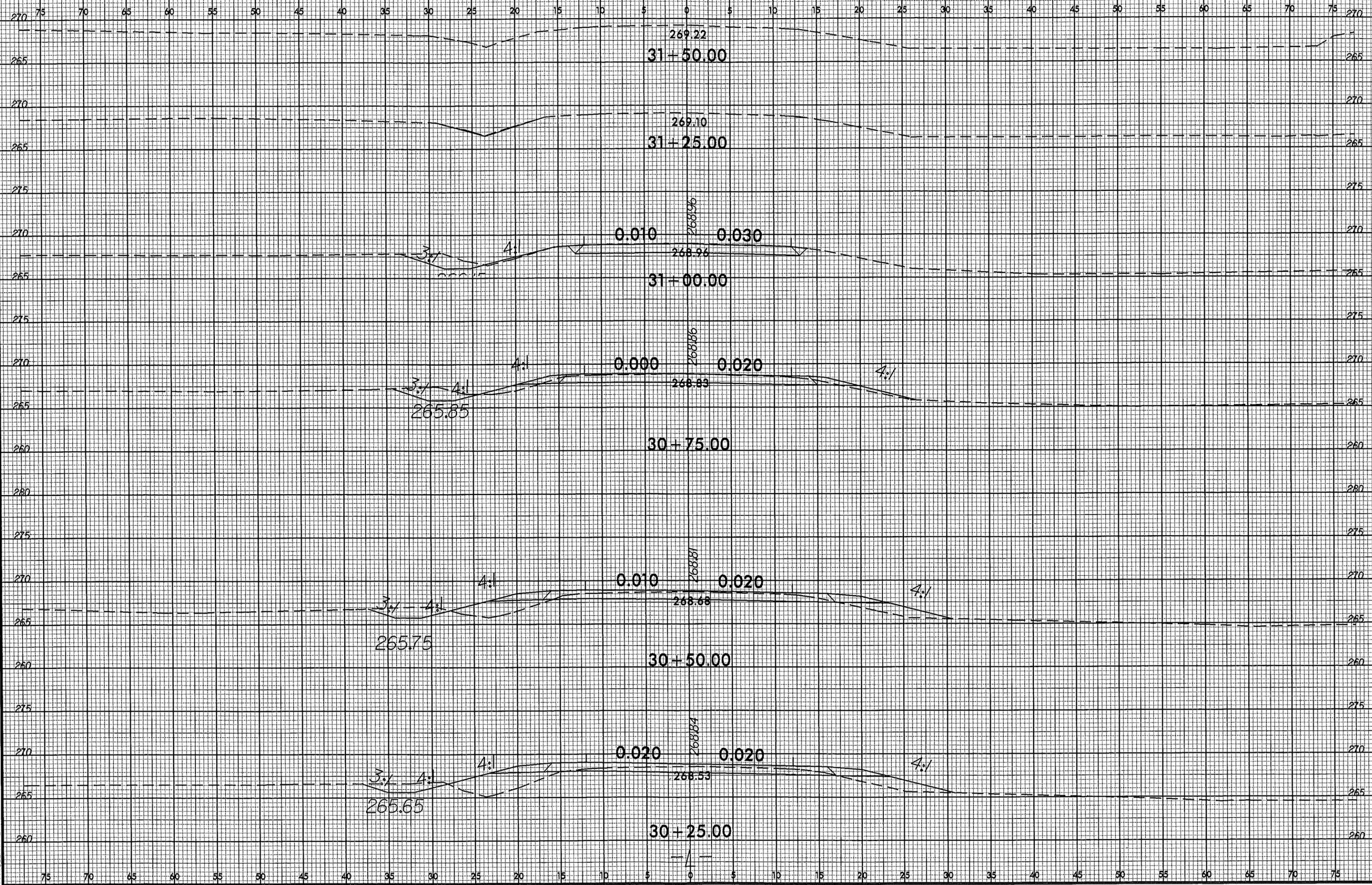


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PROJ. REFERENCE NO.  
B-4697

SHEET NO.  
X-21

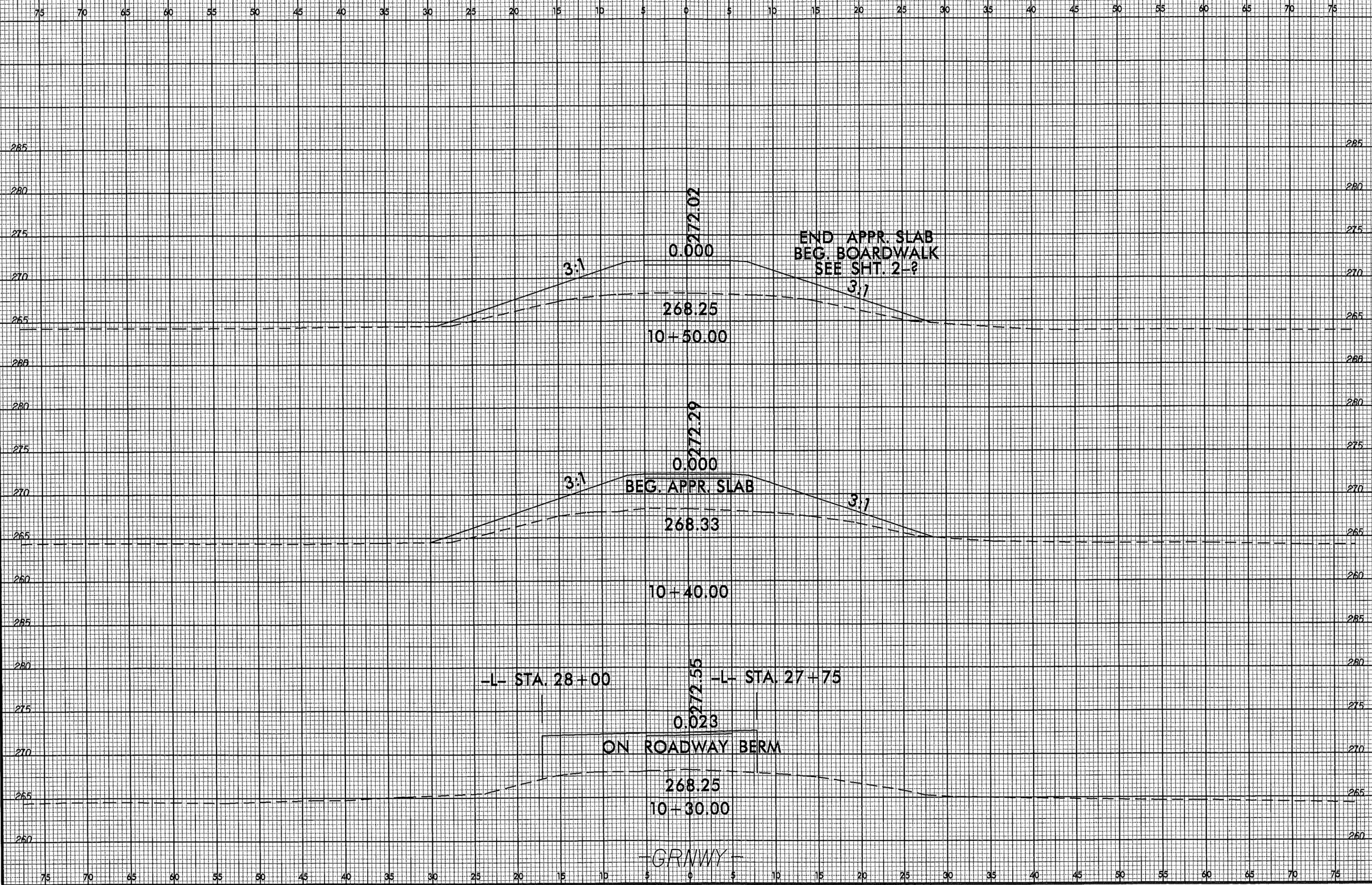


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3388USERRA\ME888

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PROJ. REFERENCE NO.	SHEET NO.
D-4697	X-22



272.02  
0.000

END APPR. SLAB  
BEG. BOARDWALK  
SEE SHT. 2-?

3:1

3:1

268.25  
10+50.00

272.29  
0.000

BEG. APPR. SLAB

3:1

3:1

268.33  
10+40.00

-L- STA. 28+00

-L- STA. 27+75

272.56  
0.023

ON ROADWAY BERM

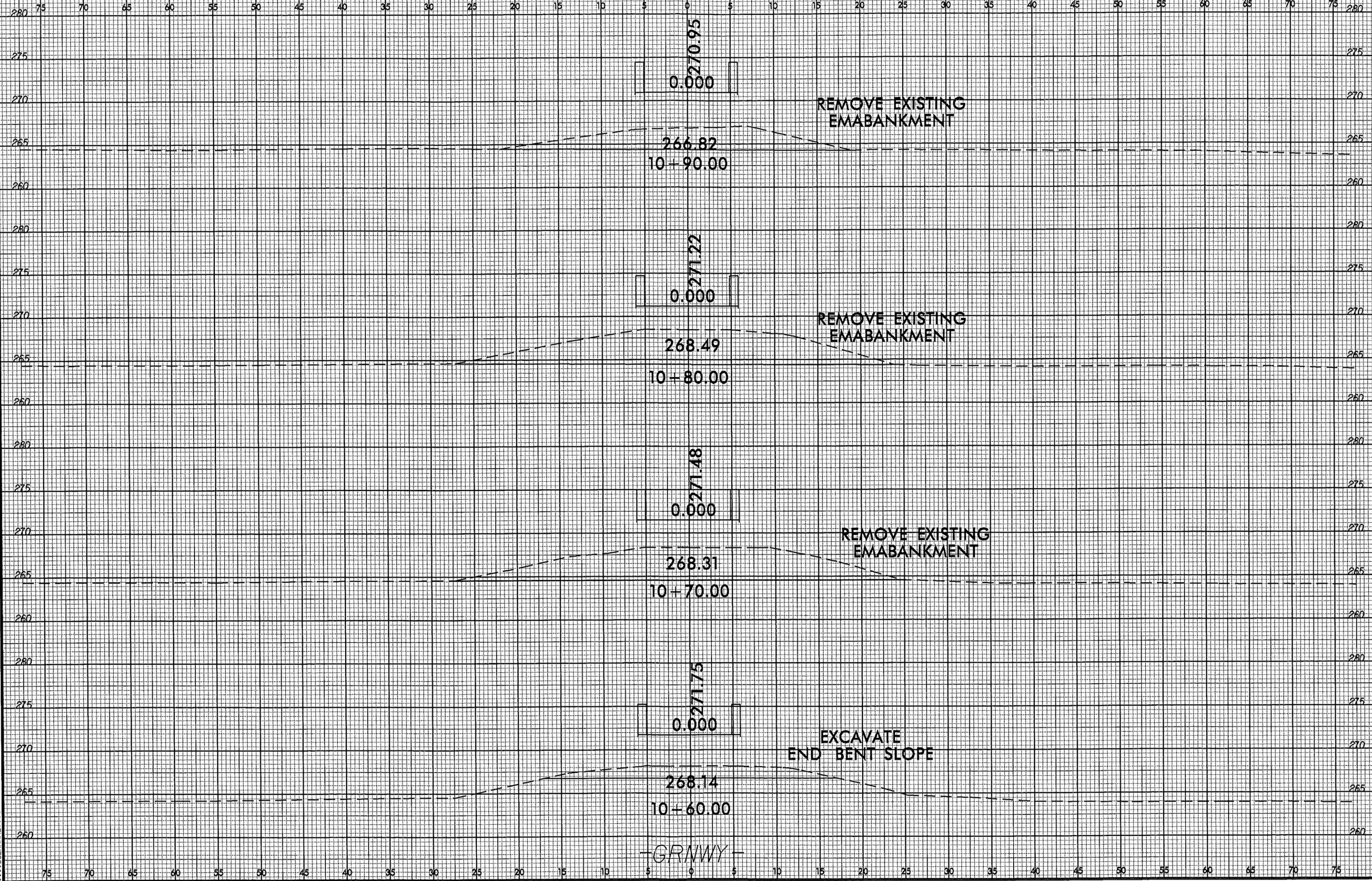
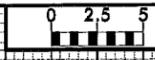
268.25  
10+30.00

GRNWAY

02-MAY-2011 14:39  
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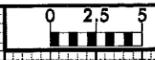
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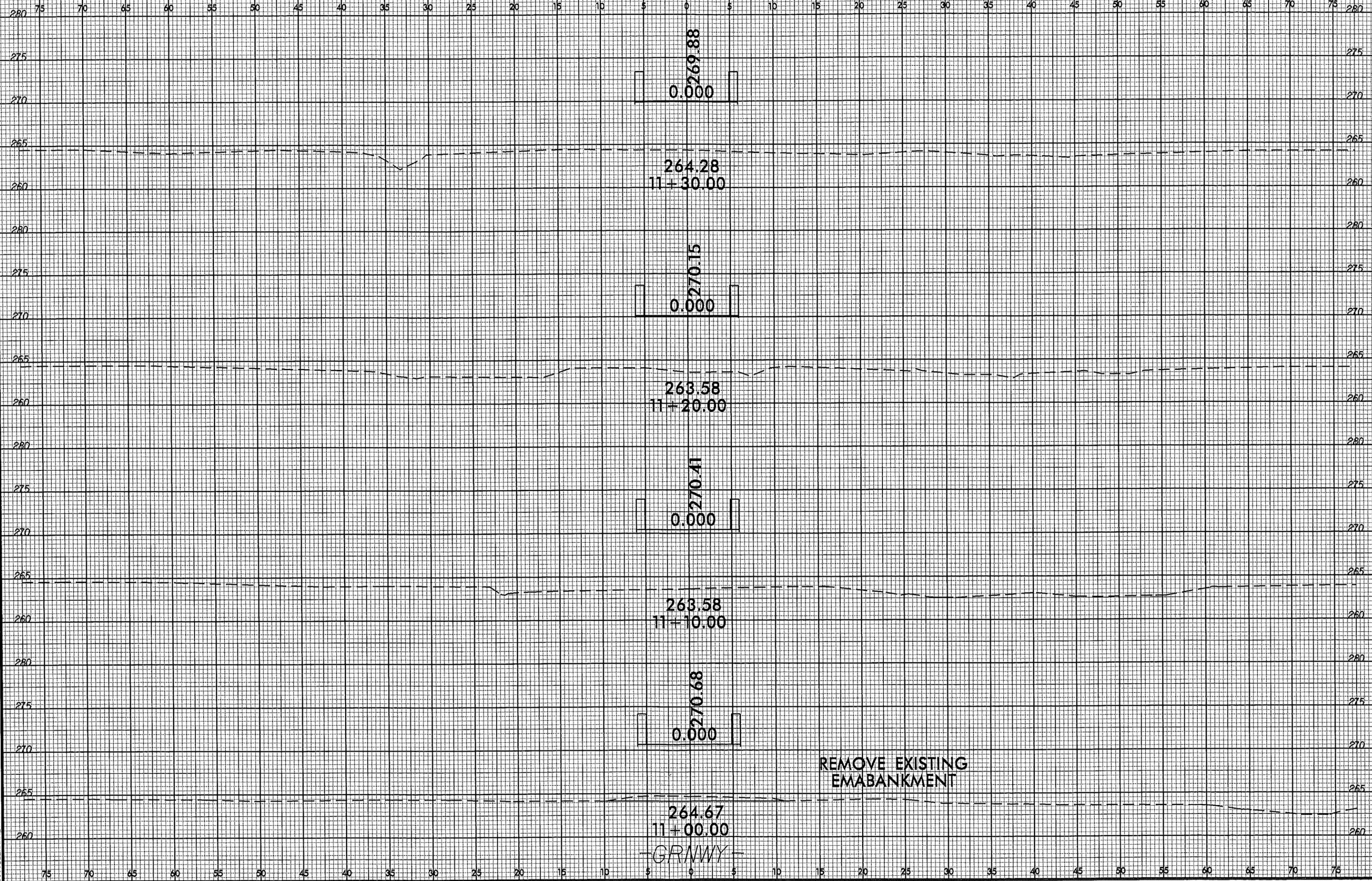
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-GRWY-

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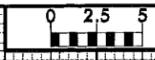


REMOVE EXISTING EMABANKMENT

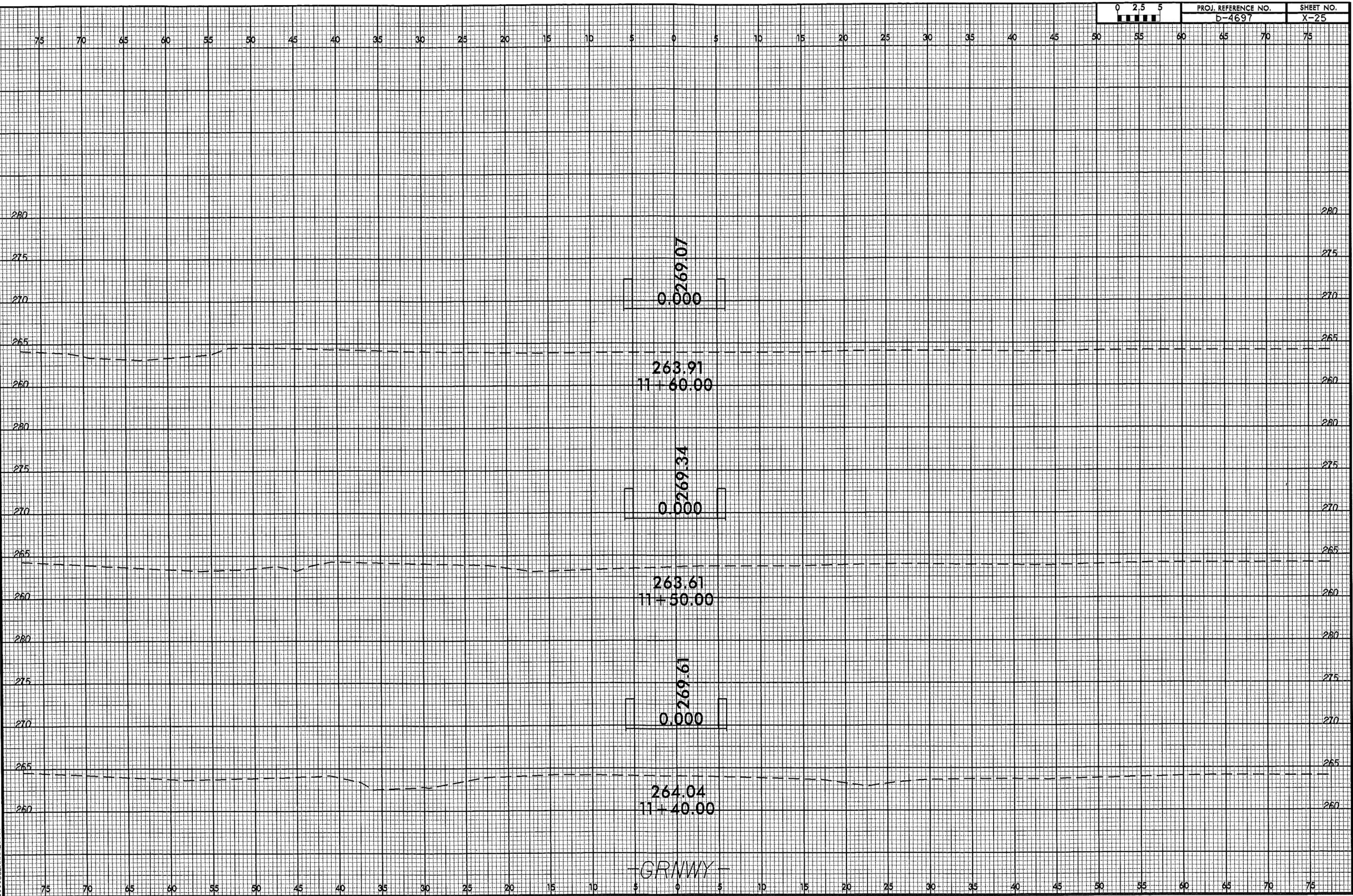
GRNWy

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PROJ. REFERENCE NO.	SHEET NO.
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