



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

November 2, 2009

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

ATTN: Mr. Monte Matthews
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 13, 23 and 33 and 401 Water Quality Certification** for the proposed replacement of Bridge Nos. 62, 68, and 70 over Bairds Creek on NC 194 in Watauga County, Federal Aid Project No. BRSTP-194(5); Division 11; TIP No. B-4315
Debit work order \$570.00

Dear Mr. Matthews:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge Nos. 62, 68 and 70 over Bairds Creek on NC 194. There will be 42 feet of permanent impacts from culvert fill, 186 feet of bank stabilization (shoring on banks in the culvert), and 0.09 acre of temporary surface water impacts with this project.

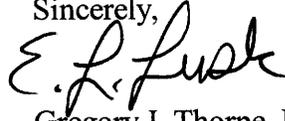
Please see enclosed copies of the Pre-Construction Notification, State Stormwater Permit Application, permit drawings, and design plans. A Programmatic Categorical Exclusion was completed in June 2009 and distributed shortly thereafter. Additional copies are available upon request.

Please note that this project is an accelerated bridge project on NCDOT's Maintenance of Effort list. The NCDOT Administration has deemed these projects highest priority. This project calls for a letting date of March 16, 2010 and a review date of January 26, 2010; however, the let date may advance as additional funding becomes available.

This project is located in a trout county; therefore comments from the WRC will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests WRC Review. NCDOT requests that WRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

A copy of this permit application will be posted on the NCDOT Website at: <http://www.ncdot.org/doh/preconstruct/pe/>. If you have any questions or need additional information, please call Brett Feulner at (919) 431-6663.

Sincerely,



Gregory J. Thorpe, Ph.D.

Environmental Management Director

w/attachment

Mr. Brian Wrenn, NCDWQ (5 Copies)

Ms. Marla Chambers, NCWRC

Ms. Marella Buncick, USFWS

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics

Mr. Victor Barbour, P.E., Project Services Unit

Mr. Mark Staley, Roadside Environmental

Mr. Jay Bennett, P.E., Roadway Design

Mr. Art McMillan, P.E., Highway Design

Mr. Scott McLendon, USACE, Wilmington

Mr. Greg Perfiti, P.E., Structure Design

Mr. Michael A. Pettyjohn, P.E. Div. 11 Eng.

Mr. Heath Slaughter, Division 11 EO

Mr. Jay Bennett, P.E., Roadway Design

Mr. Majed Alghandour, P. E., Program. and TIP

Mr. Vince Rhea, PDEA Proj. Plan. Engineer



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: 13, 23 & 33 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input type="checkbox"/> Yes <input checked="" 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 <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input type="checkbox"/> Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <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 type="checkbox"/> Yes <input checked="" 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:	Replacement of Bridges 62, 66 and 70 over Bairds Creek on NC 194	
2b. County:	Watauga	
2c. Nearest municipality / town:	Villas	
2d. Subdivision name:	<i>not applicable</i>	
2e. NCDOT only, T.I.P. or state project no:	B-4315	
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) 431-6663	
3g. Fax no.:	(919) 431-2002	
3h. Email address:	bmfeulner@ncdot.gov	

4. Applicant Information (if different from owner)	
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:	
5. Agent/Consultant Information (if applicable)	
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. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 36.4135 (DD.DDDDDD) Longitude: - 81.3363 (-DD.DDDDDD)
1c. Property size:	2.0 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Bairds Creek
2b. Water Quality Classification of nearest receiving water:	C
2c. River basin:	Watauga
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The land use onsite and in the vicinity is a mixture of predominately forestland with interspread agriculture and very low density residential development	
3b. List the total estimated acreage of all existing wetlands on the property: 0	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 750	
3d. Explain the purpose of the proposed project: To replace three bridges, one that is structurally deficient and three that are functionally obsolete.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing three bridges of which three are functionally obsolete and one structurally deficient bridge, with three bottomless culverts. Traffic will use an offsite detour during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	<input type="checkbox"/> Yes <input checked="" 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 type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

C. Proposed Impacts Inventory

1. Impacts Summary

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

- Wetlands Streams - tributaries Buffers
 Open Waters Pond Construction

2. Wetland Impacts

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

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
W1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
W2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
W3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
W4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
W5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
W6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
2g. Total wetland impacts					0 Permanent 0 Temporary

2h. Comments:

3. Stream Impacts

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

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
<input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bottomless Culverts	Bairds Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	6-8	42
<input type="checkbox"/> P <input checked="" type="checkbox"/> T	Dewatering	Bairds Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	6-8	404 (0.09 acres)
<input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bank Stabilization (shoring)	Bairds Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	6-8	186
<input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
<input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
3h. Total stream and tributary impacts						228 Permanent 404 Temporary

3i. Comments: In order to prevent the bottomless culverts from resulting in an over-widened stream channel, the NCDOT plans to line one or both interior walls of the culverts with riprap. The culverts will be lined with large riprap, potentially Class 2 or Class 7 riprap, countersunk into the proposed flood plain areas. Sediments

and sand will fill in the spaces between the riprap, thus creating a floodplain. The culvert construction sequence will be as follows, with some potential in field adjustments as deemed necessary,

- Install impervious dikes
- Excavate and pour footers for entire culvert
- Countersink rock into the proposed flood plain areas
- Remove impervious dikes
- Install culvert sections

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				
4f. Total open water impacts				X Permanent X Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

5h. Is a dam high hazard permit required?	<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"/> Tar-Pamlico <input type="checkbox"/> Other: <input type="checkbox"/> Catawba <input type="checkbox"/> Randleman			
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 type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
6h. Total buffer impacts					
6i. Comments:					

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Traffic will use an offsite detour during construction and the bottomless culverts will be constructed in the same location of the existing crossings.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. "Design Standards for Sensitive Watersheds" will be used during all phases of construction.		
2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No mitigation is proposed because permanent impacts are minimal. There will be 186 linear feet of impacts from shoring up the banks along Bairds Creek under the bottomless culverts and 42 feet of permanent impacts from the installation of the bottomless culverts.	
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input 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 type="checkbox"/> Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
4. Complete if Making a Payment to In-lieu Fee Program		
4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes	
4b. Stream mitigation requested:	linear feet	
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 acres	
4f. Non-riparian wetland mitigation requested:	0 acres	
4g. Coastal (tidal) wetland mitigation requested:	0 acres	
4h. Comments:		
5. Complete if Using a Permittee Responsible Mitigation Plan		
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.		

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

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)

1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments:	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	NA
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 Stormwater Permit	
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 type="checkbox"/> DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<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
4. DWQ Stormwater Program Review	
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 checked="" 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No-Pending
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No-Pending

F. Supplementary Information**1. Environmental Documentation (DWQ Requirement)**

1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	<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

2. Violations (DWQ Requirement)

2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	<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):		

3. Cumulative Impacts (DWQ Requirement)

3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	<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 bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		

4. Sewage Disposal (DWQ Requirement)

4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable
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5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	<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? NCDOT field surveys conducted July 2008 and NHP Database checked March 2009, USFWS Website		
6. Essential Fish Habitat (Corps Requirement)		
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		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	<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		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements:		
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 <small>(Agent's signature is valid only if an authorization letter from the applicant is provided.)</small>	11.2.09 Date

OFFICE USE ONLY		
Date Received	Fee Paid	Permit Number

State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
LINEAR ROADWAY PROJECT

This form may be photocopied for use as an original.

DWQ Stormwater Management Plan Review:

A complete stormwater management plan submittal includes this application form, a supplement form for each BMP proposed (see Section V), design calculations, and plans and specifications showing all road and BMP details.

I. PROJECT INFORMATION

NCDOT Project Number: 33476.1.1 County: Watauga

Project Name: B-4315

Project Location: Bridge #'s 62.68, & 70 over Baird's Creek on NC-194

Contact Person: Marshall Clawson, PE Phone: (919) 250-4100 Fax: (919) 250-4108

Receiving Stream Name: Baird's Creek River Basin: Watuga Class: "C w/HWQ WS-I"

Proposed linear feet of project: 605 ft

Proposed Structural BMP and Road Station *(attach a list of station and BMP type if more room is needed):*

Type of proposed project: *(check all that apply):*

- New
 Widening
 2 lane*
 4 lane*
 Curb and Gutter
 Bridge Replacement
 Other *(Describe)* _____

**2 lane and 4 lane imply that roadside ditches are used unless Curb and Gutter is also checked.*

II. REQUIRED ITEMS CHECKLIST

Initial in the space provided below to indicate the following design requirements have been met and supporting documentation is attached. Supporting documentation shall, at a minimum, consist of a brief narrative description including (1) the scope of the project, (2) how the items below are met, (3) how the proposed best management practices minimize water quality impacts, and (4) any significant constraints and/or justification for not meeting a, b, c and d to the maximum extent practicable.

Designer's Initials

- RSW a. The amount of impervious surface has been minimized as much as possible.
RSW b. The runoff from the impervious areas has been diverted away from surface waters as much as possible.
RSW c. Best Management Practices are employed which minimize water quality impacts.
N/A d. Vegetated roadside ditches are 3:1 slope or flatter.

III. OPERATION AND MAINTENANCE AGREEMENT

I acknowledge and agree by my initials below that the North Carolina Department of Transportation is responsible for the implementation of the four maintenance items listed. I agree to notify DWQ of any operational problems with the BMP's that would impact water quality or prior to making any changes to the system or responsible party.

Maintenance Engineer's Initials

- _____ a. BMP's shall be inspected and maintained in good working order.
- _____ b. Eroded areas shall be repaired and reseeded as needed.
- _____ c. Stormwater collection systems, including piping, inlets, and outlets, shall be maintained to insure proper functioning.

Maintenance Engineer's Name: _____

Title: _____

IV. APPLICATION CERTIFICATION

I, *(print or type name)* _____ of _____ Branch, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans and that the proposed project complies with the requirements of 15A NCAC 2H .1000.

Title: Marshall Clawson, PE - Project Engineer Special Studies

Address: 1020 Birch Ridge Raod Raleigh, NC

Signature: _____ Date: _____

V. SUPPLEMENT FORMS

The applicable state stormwater management permit supplement form(s) listed below must be submitted for each BMP specified for this project. Contact the Stormwater and General Permits Unit at (919) 733-5083 for the status and availability of these forms.

Form SW401-Low Density	Low Density Supplement
Form SW401-Curb Outlet System	Curb Outlet System Supplement
Form SW401-Off-Site System	Off-Site System Supplement
Form SW401-Wet Detention Basin	Wet Detention Basin Supplement
Form SW401-Infiltration Basin	Infiltration Basin Supplement
Form SW401-Infiltration Trench	Underground Infiltration Trench Supplement
Form SW401-Bioretenion Cell	Bioretention Cell Supplement
Form SW401-Level Spreader	Level Spreader/Filter Strip/Restored Riparian Buffer Supplement
Form SW401-Wetland	Constructed Wetland Supplement
Form SW401-Grassed Swale	Grassed Swale Supplement
Form SW401-Sand Filter	Sand Filter Supplement

STORMWATER MANAGEMENT PLAN

Project: 33476.1.1

TIP #: B-4315

Watauga County

10/23/2009

Hydraulics Project Manager: Roger Weadon, P.E. (MA Engineering),
Marshal Clawson, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project B-315 consists of constructing 3 new bottomless culverts to replace existing bridges 62, 68 & 70 in Watauga County on NC-194 over Bairds's Creek. The total project length is 0.106 miles. The project creates impacts to Bairds's Creek, which is located in the Watauga River Basin. The project drainage systems consist of roadside ditches and driveway culverts.

Jurisdiction Stream: Baird's Creek

ENVIRONMENTAL DESCRIPTION

The project is located within the Watauga River Basin in Watauga County. Stream impacts have been minimized by the use of bottomless culverts, a retaining wall along a short portion Baird's Creek and minimizing fill slopes to avoid impact to the stream.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

The primary goal of Best Management Practices (BMPs) is to prevent degradation of the states surface waters by the location, construction and operation of the highway system. The BMPs are activities, practices and procedures taken to prevent or reduce stormwater pollution. The BMP measures used on this project to reduce stormwater impacts are:

- Bottomless Culverts
- Grass Lined Roadside Ditches

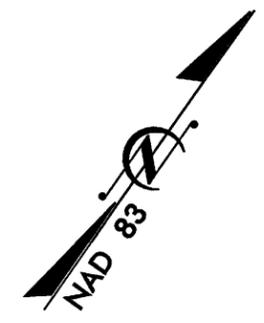
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4315	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33652.1.1	BRSTP-194 (5)	PE	
33562.2.1	BRSTP-194 (5)	R/W, UTILITIES	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

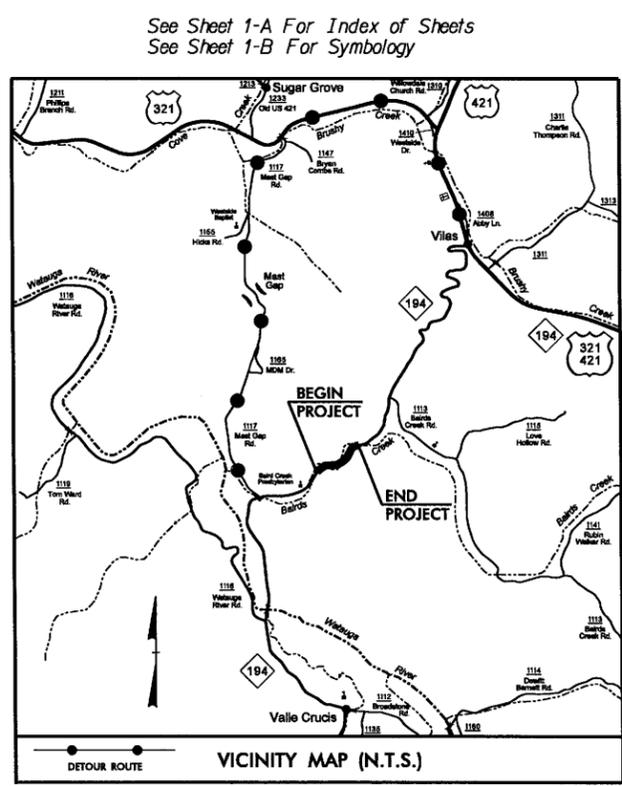
WATAUGA COUNTY

LOCATION: BRIDGE NOS. 62, 68, & 70 OVER BAIRDS CREEK ON NC 194
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERTS,
AND RETAINING WALL

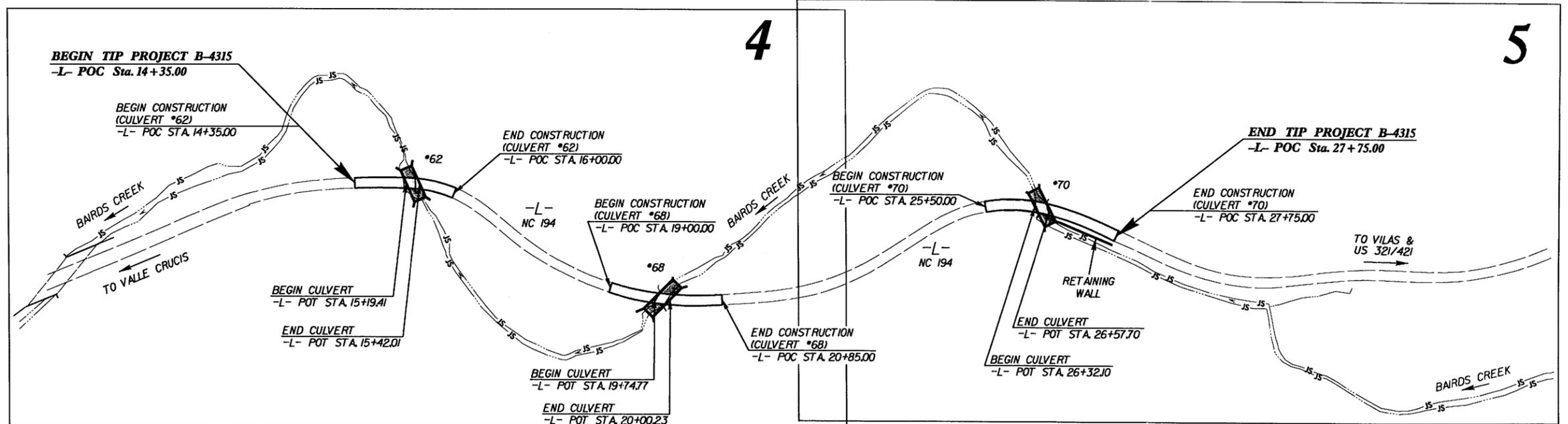
WETLAND PERMIT



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TIP PROJECT: B-4315

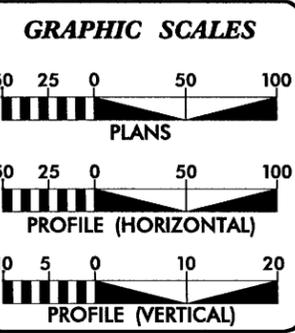


****DESIGN EXCEPTIONS**
DESIGN SPEED
LANE WIDTH
HORIZONTAL CLEARANCE

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

Permit Drawing
Sheet 1 of 2

NCDOT CONTACT:
MR. DOUG TAYLOR, PE - ENGINEERING
COORDINATION - PROJECT ENGINEER -
ROADWAY DESIGN UNIT



DESIGN DATA

ADT 2010	=	1,420
ADT 2030	=	2,460
DHV	=	9 %
D	=	55 %
T	=	6 % *
V	=	25 MPH **
* (TTST 1% + DUAL 5%)		
FUNC. CLASS	=	RURAL MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4315 (CULVERT #62)	=	0.027 mile
LENGTH STRUCTURES TIP PROJECT B-4315 (CULVERT #62)	=	0.004 mile
TOTAL LENGTH TIP PROJECT B-4315 (CULVERT #62)	=	0.031 mile
LENGTH ROADWAY TIP PROJECT B-4315 (CULVERT #68)	=	0.030 mile
LENGTH STRUCTURES TIP PROJECT B-4315 (CULVERT #68)	=	0.005 mile
TOTAL LENGTH TIP PROJECT B-4315 (CULVERT #68)	=	0.035 mile
LENGTH ROADWAY TIP PROJECT B-4315 (CULVERT #70)	=	0.038 mile
LENGTH STRUCTURES TIP PROJECT B-4315 (CULVERT #70)	=	0.005 mile
TOTAL LENGTH TIP PROJECT B-4315 (CULVERT #70)	=	0.043 mile
TOTAL LENGTH TIP PROJECT B-4315	=	0.109 mile

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610
By:
M A Engineering Consultants, Inc. 598 East Chatham Street - Suite 137
Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221

2006 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
NOVEMBER 1, 2009

LETTING DATE:

ROBERT W. PORTER, JR PE
PROJECT ENGINEER

KEVIN S. HUTCHENS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

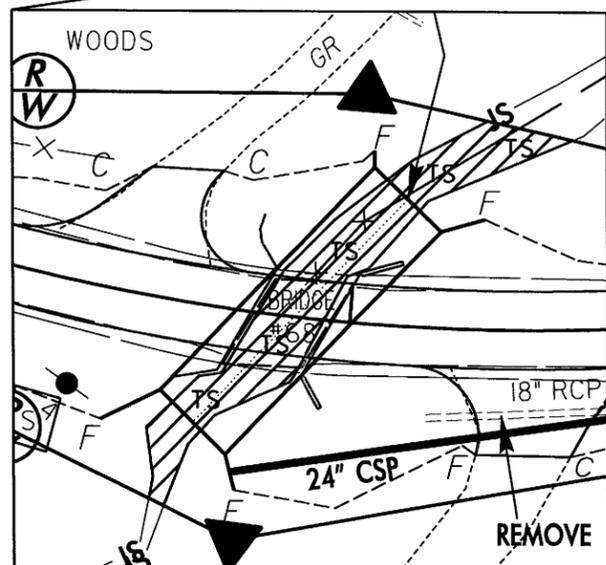
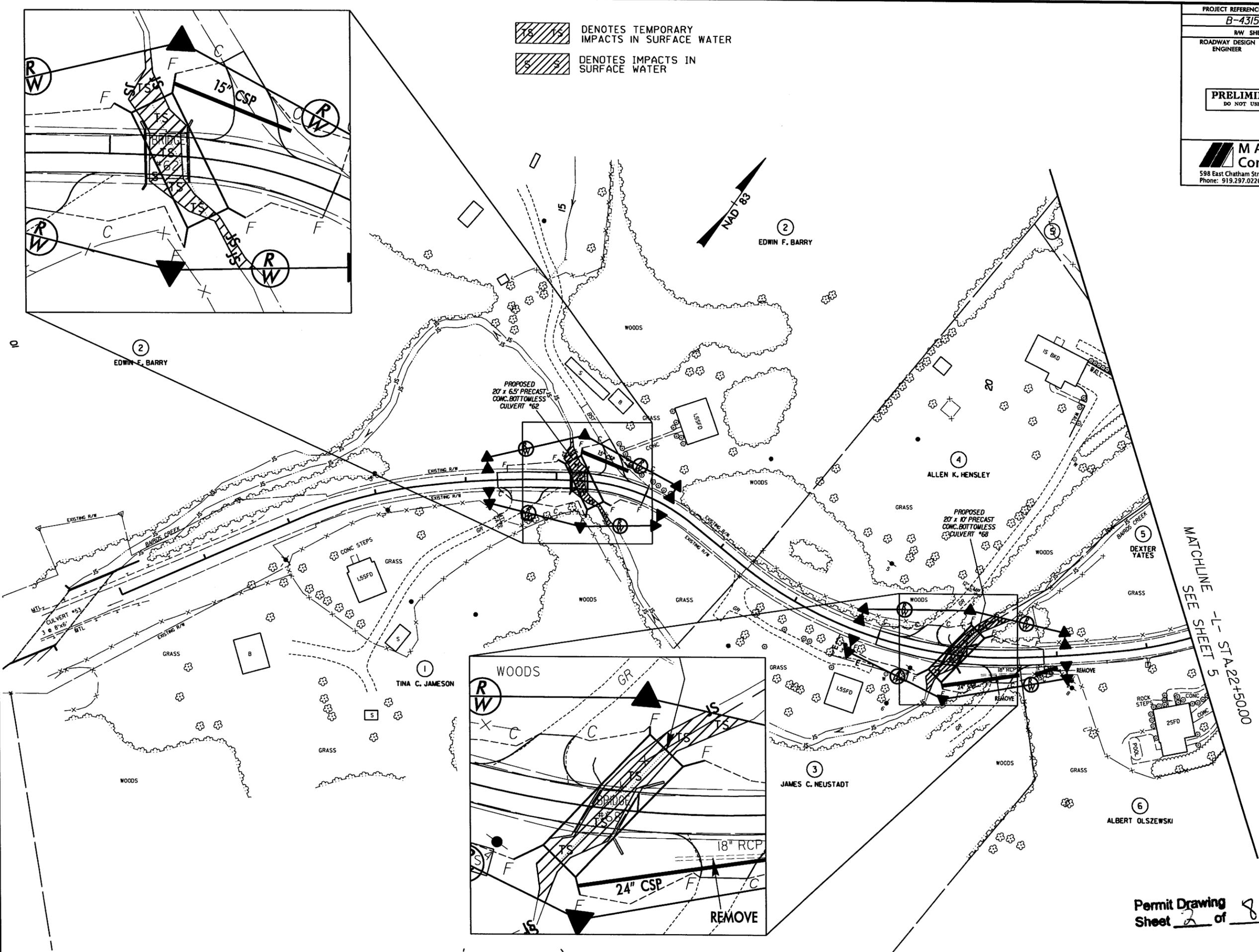
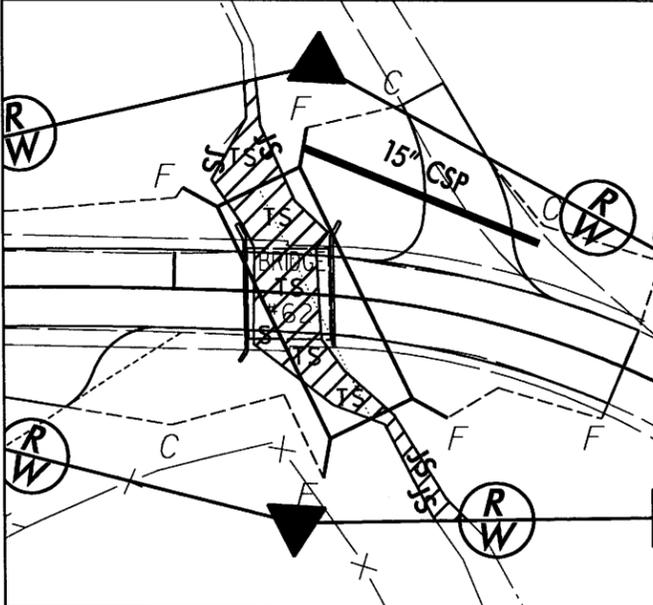
STATE HIGHWAY DESIGN ENGINEER

CONTRACT:

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PROJECT REFERENCE NO. B-4315	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 DENOTES IMPACTS IN SURFACE WATER



MATCHLINE SEE SHEET 5
 -L- STA 22+50.00

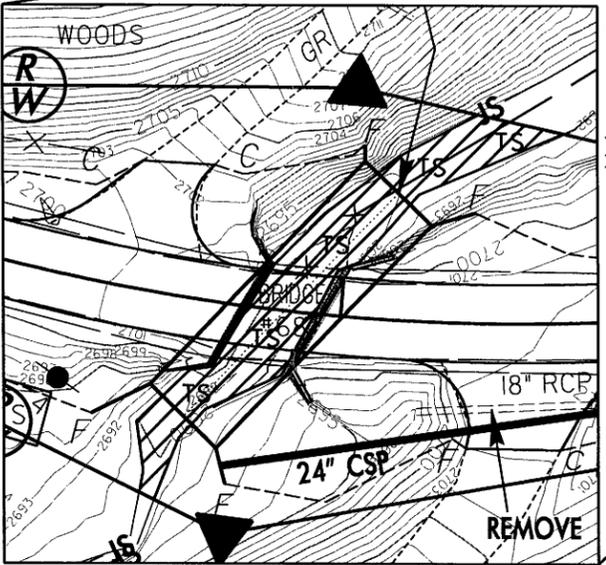
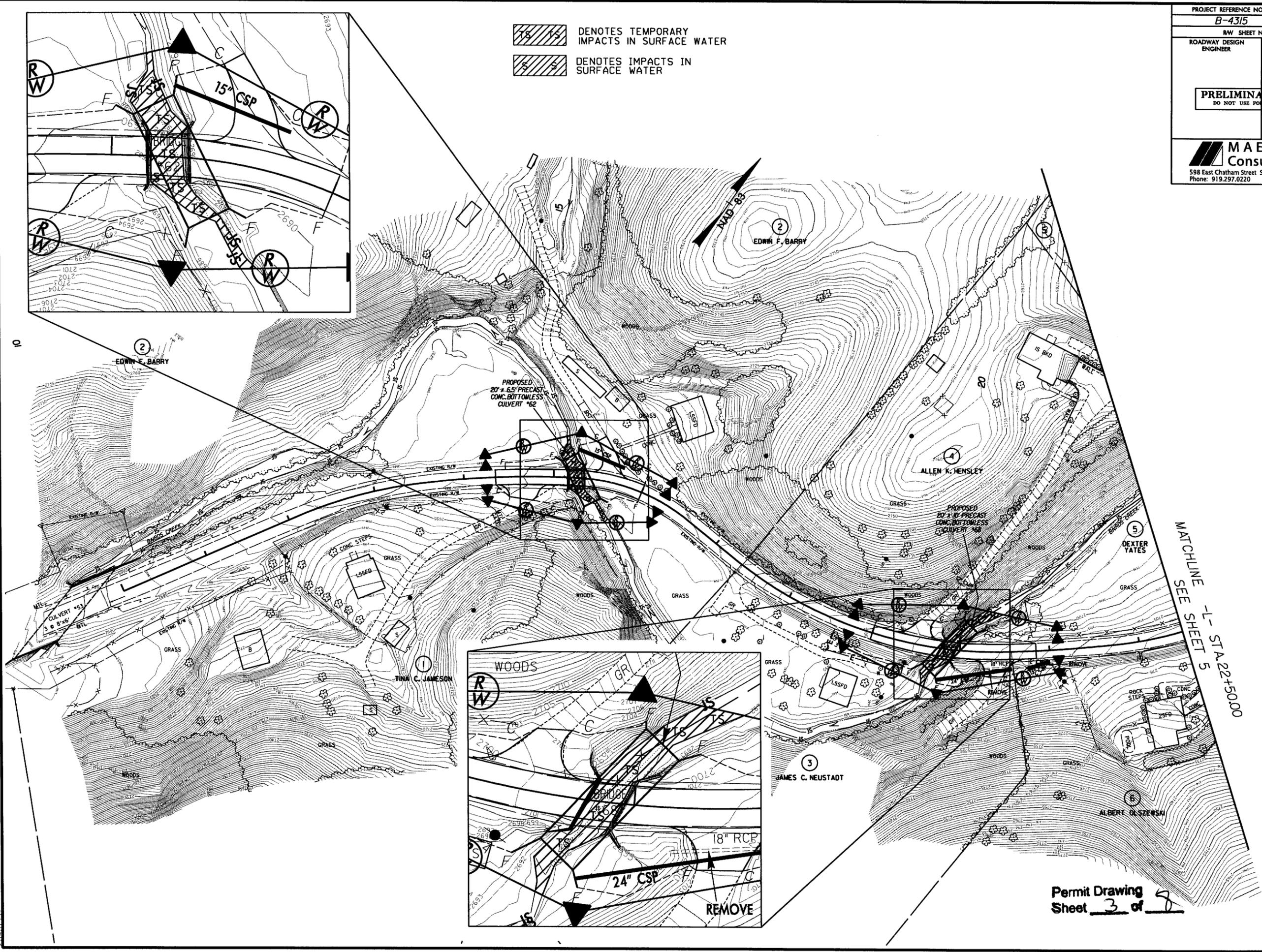
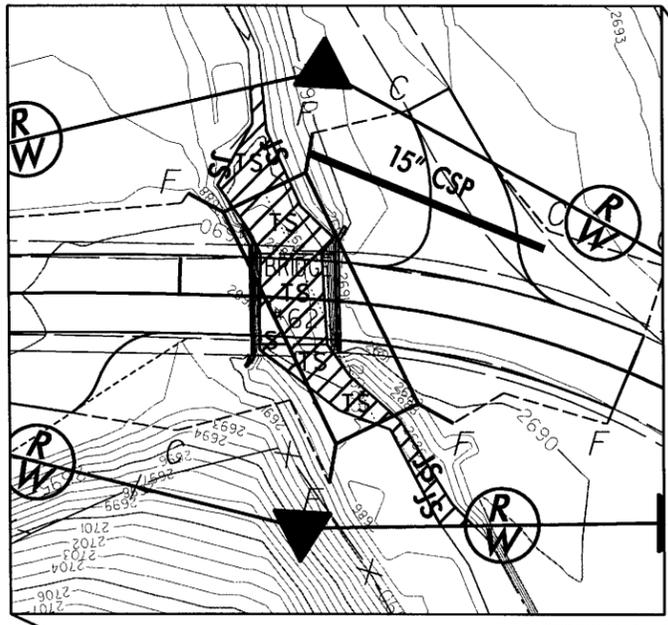
Permit Drawing
 Sheet 2 of 8

REVISIONS

8/17/99
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PROJECT REFERENCE NO. B-4315	SHEET NO. 4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 DENOTES IMPACTS IN SURFACE WATER



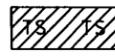
MATCHLINE
 SEE SHEET 5
 -1- STA 22+50.00

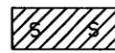
Permit Drawing Sheet 3 of 8

REVISIONS

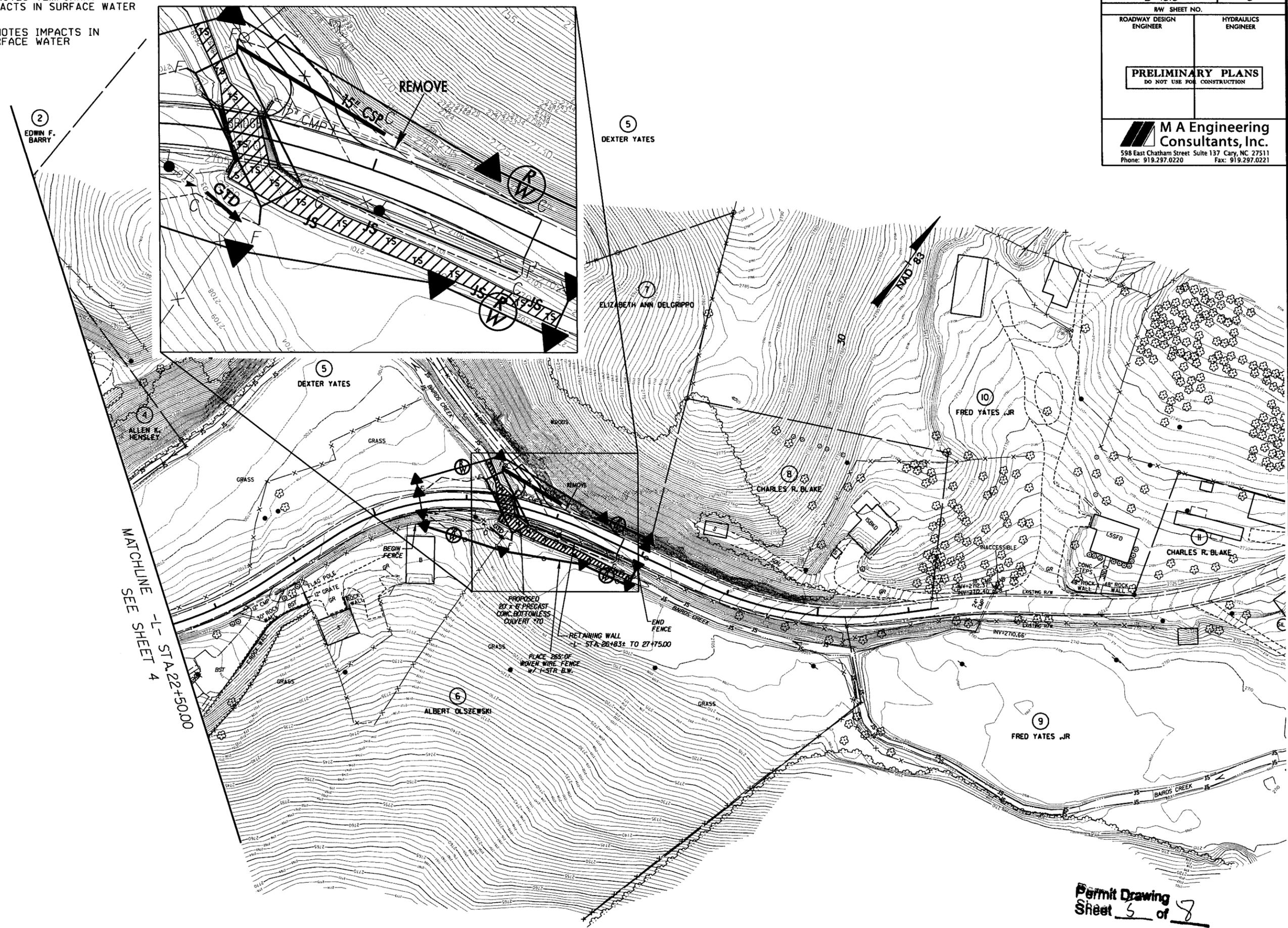
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8/17/99

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

 DENOTES IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. B-4315	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	

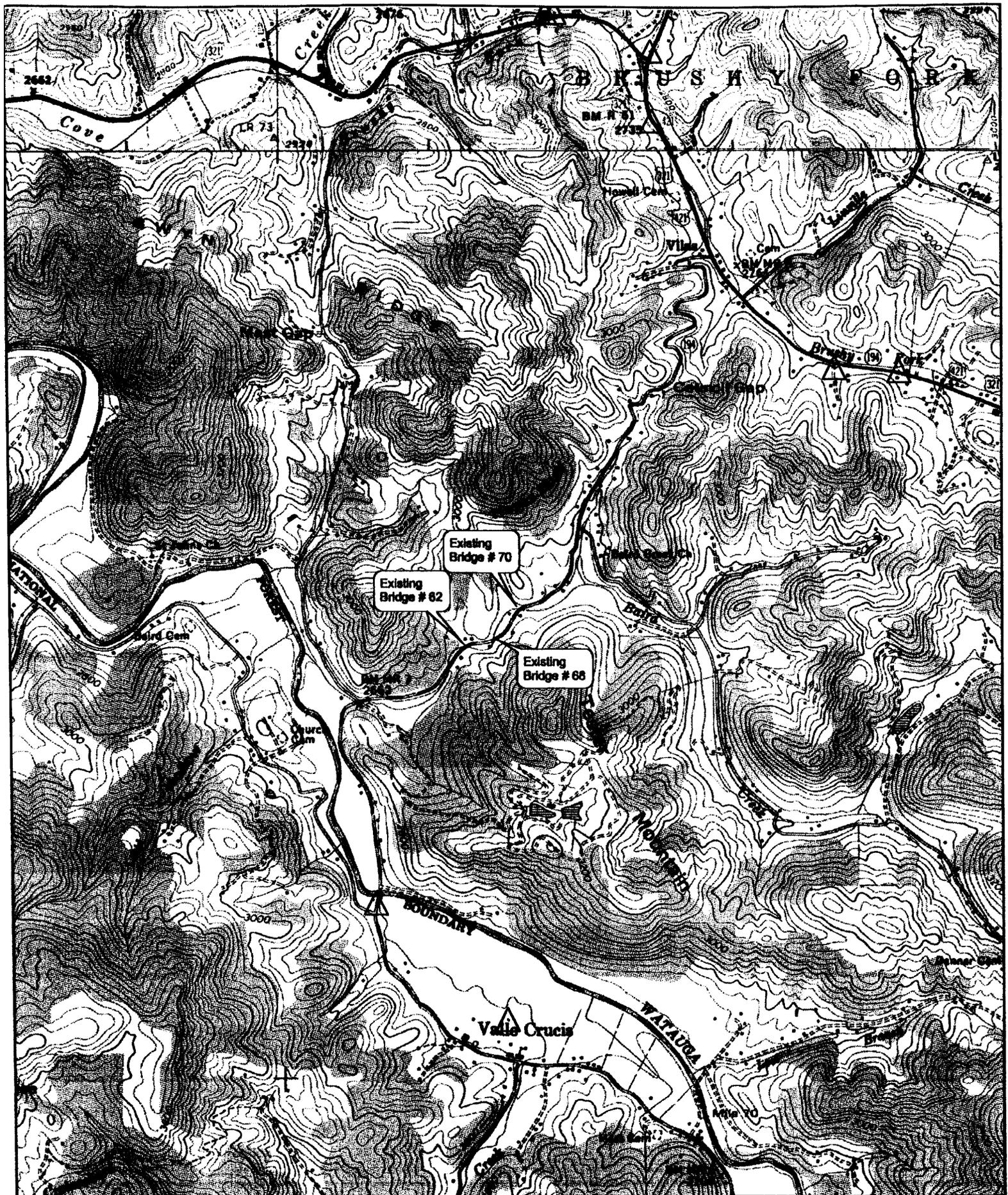


MATCHLINE
-L- STA 22+50.00
SEE SHEET 4

REVISIONS

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Permit Drawing
Sheet 5 of 8



Name: VALLE CRUCIS
 Date: 10/14/2009
 Scale: 1 inch equals 2000 feet

Location: 036° 13' 47.28" N 081° 46' 45.41" W
 Caption: B-4315 - Watauga County

Permit Drawing
 Sheet 6 of 8

Property Owners

Parcel Number	Names	Addresses			
1	Tina C. Jackson	2023 Hwy 194 S.	Vilas	NC	28692
2	Edwin F. Barry	2154 Hwy 194 S.	Vilas	NC	28692
3	James C. Neustadt	366 Maries Path	Sugar Grove	NC	28679
4	Allen K. Hensley	1950 Hwy 194 S.	Vilas	NC	28692
5	Dexter Yates	1676 NC Hwy 194 S.	Vilas	NC	28692
6	Albert Olszewski	1857 Hwy 194 S.	Vilas	NC	28692

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Watauga COUNTY
WBS - 33476.1.1 (B-4315)

SHEET

10/21/2009

Permit Drawing
Sheet 7 of 8

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	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	W.B.
Proposed Wetland Boundary	W.B.
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB

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	W.B.
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 Utility Easement	PUE

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
Proposed Wheel Chair Ramp Curb Cut	WCC
Curb Cut for Future Wheel Chair Ramp	CCFR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	XXXX

VEGETATION:

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

EXISTING STRUCTURES:

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

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	PH
H-Frame Pole	●
Recorded U/G Power Line	P
Designated U/G Power Line (S.U.E.*)	P

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	⊠
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	PH
Recorded U/G Telephone Cable	T
Designated U/G Telephone Cable (S.U.E.*)	T
Recorded U/G Telephone Conduit	TC
Designated U/G Telephone Conduit (S.U.E.*)	TC
Recorded U/G Fiber Optics Cable	T FO
Designated U/G Fiber Optics Cable (S.U.E.*)	T FO

WATER:

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

TV:

TV Satellite Dish	⊗
TV Pedestal	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	PH
Recorded U/G TV Cable	TV
Designated U/G TV Cable (S.U.E.*)	TV
Recorded U/G Fiber Optic Cable	TV FO
Designated U/G Fiber Optic Cable (S.U.E.*)	TV FO

GAS:

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

SANITARY SEWER:

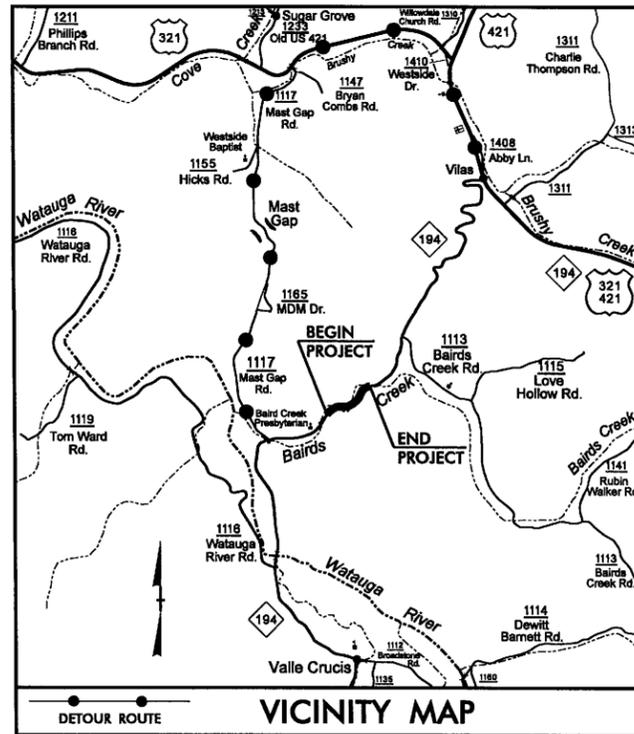
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
Recorded SS Forced Main Line	FSS
Designated SS Forced Main Line (S.U.E.*)	FSS

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line	U/G
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.

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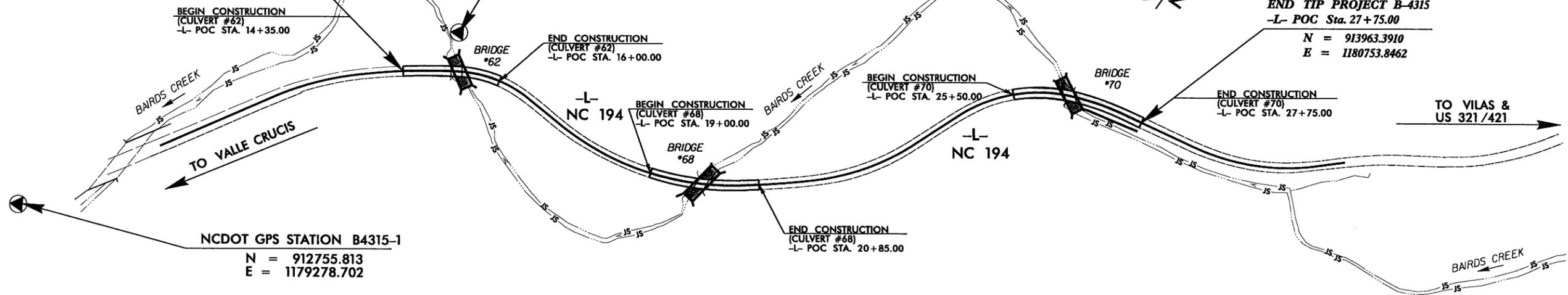
SURVEY CONTROL SHEET B-4315



BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B43151	GPS B4315-1	912755.8130	1179278.7020	2681.64	OUTSIDE PROJECT LIMITS	
BL3	BL-3	913182.1334	1179533.4874	2689.99	12+35.26	12.88 LT
BL4	BL-4	913364.9661	1179734.7900	2690.28	15+04.12	11.47 LT
BL5	BL-5	913379.6831	1179981.8492	2694.34	17+54.95	13.52 RT
BL6	BL-6	913459.3778	1180249.1887	2702.12	20+29.63	14.82 RT
BL7	BL-7	913714.3402	1180475.4515	2707.69	23+68.19	12.20 RT
BL8	BL-8	913899.6866	1180553.7766	2705.05	25+67.34	13.97 LT
BL9	BL-9	914031.4213	1181003.1658	2716.91	30+32.48	11.46 RT
BL10	BL-10	914340.6550	1181359.2263	2727.91	OUTSIDE PROJECT LIMITS	

BM1 ELEVATION = 2686.50	BM2 ELEVATION = 2737.36	BM3 ELEVATION = 2701.29
N 913455 E 1179586	N 913296 E 1180259	N 913798 E 1180421
L STATION 14+41 171 LEFT	L STATION 19+68 161 RIGHT	L STATION 24+25 70 LEFT
8" SPIKE IN ROOT OF 8" WALNUT	8" SPIKE IN ROOT OF 24" POPLAR	8" SPIKE IN ROOT OF 12" MAPLE

BEGIN TIP PROJECT B-4315
 -L- POC Sta. 14+35.00
 N = 913315.3844
 E = 1179684.7508



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4315-1"

WITH NAD 83/ STATE PLANE GRID COORDINATES OF
 NORTHING: 912755.8130(ft) EASTING: 1179278.7020(ft)
 ELEVATION: 2681.64'

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989409

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B43151" TO -L- STATION 14+35 IS
 N 35°57'58" E 691.37'

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

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[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:
 B4315_LS_CONTROL.TXT

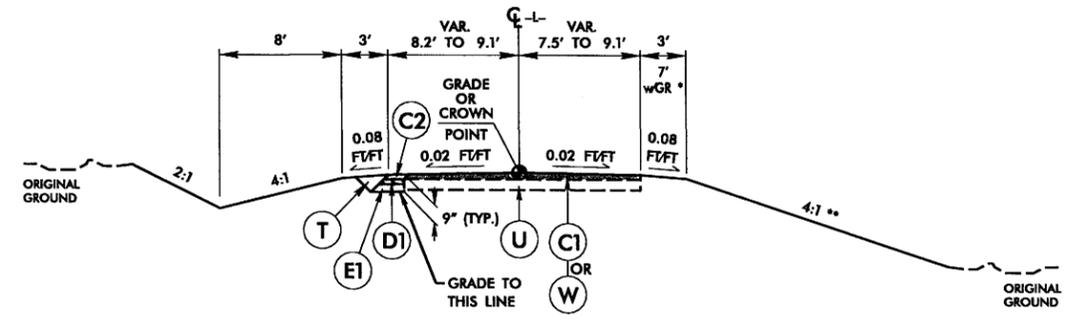
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

NOTE: DRAWING NOT TO SCALE

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SP9.5A, AT AN AVERAGE RATE OF 137.5 Lbs PER SQUARE YARD.
C2	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SP9.5A, AT AN AVERAGE RATE OF 137.5 Lbs PER SQUARE YARD IN EACH OF TWO LAYERS.
C3	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SP9.5A, AT AN AVERAGE RATE OF 110 Lbs PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.0" OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 Lbs PER SQUARE YARD.
D2	PROP. VARIABLE DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 Lbs PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4.0" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 Lbs PER SQUARE YARD.
E2	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 Lbs PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3.0" OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

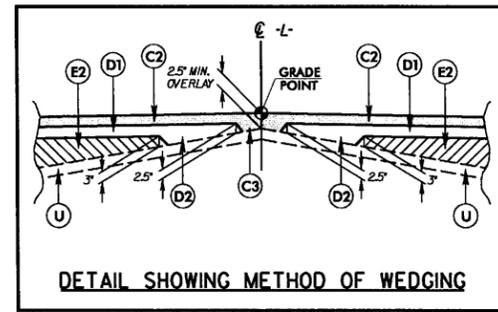


TYPICAL SECTION NO. 1

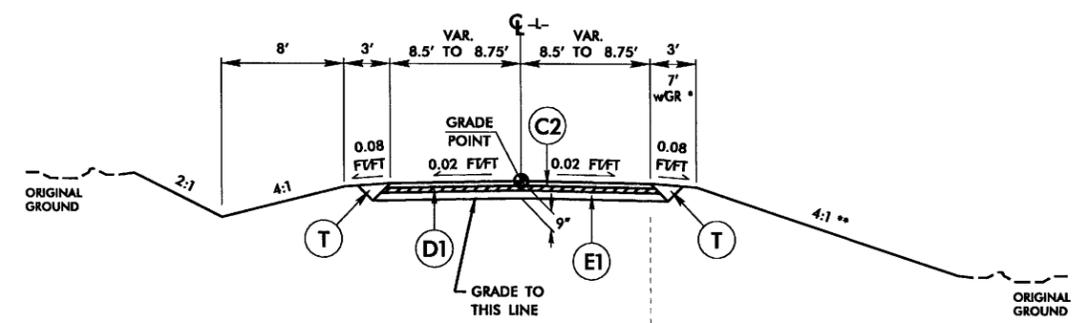
USE TYPICAL SECTION NO. 1 AS FOLLOWS:

RESURFACE USING 1.25" OF S9.5A:
FROM -L- STA. 14+35.00 TO 14+90.00
FROM -L- STA. 15+70.00 TO 16+00.00
FROM -L- STA. 25+50.00 TO 26+10.00
FROM -L- STA. 26+85.00 TO 27+75.00

WEDGE USING WEDGING DETAIL:
FROM -L- STA. 19+00.00 TO 19+50.00
FROM -L- STA. 20+25.00 TO 20+85.00



DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 2

THE INTENT OF THE TYPICAL SECTIONS AND PROPOSED DESIGN IS TO SHOW RESURFACING OR REPLACEMENT OF THE EXISTING PAVEMENT IN ITS EXISTING LOCATION WITHIN THE CONSTRUCTION LIMITS, HOWEVER, THE USE OF SOME NARROW PAVEMENT WIDENING ON THE RIGHT OR LEFT SIDE MAY BE NECESSARY TO OBTAIN A SMOOTH AND CONSISTENT EDGE OF PAVEMENT ALIGNMENT.

USE TYPICAL SECTION NO. 2:
FROM -L- STA. 14+90.00 TO 15+70.00
FROM -L- STA. 19+50.00 TO 20+25.00
FROM -L- STA. 26+10.00 TO 26+85.00

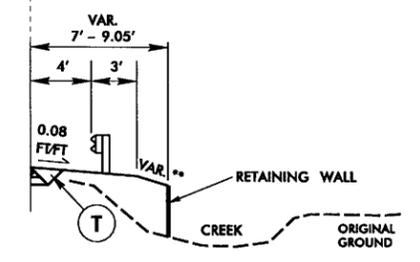
SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+15%	BORROW	WASTE
CULVERT #62 -L- 14+50.00 TO 16+00.00	70		83	13	
CULVERT #68 -L- 19+00.00 TO 20+85.00	46		258	212	
CULVERT #70 -L- 25+50.00 TO 27+75.00	86		254	168	
TOTAL	202		595	393	
EST. LOSS DUE TO CLEARING AND GRUBBING	-1			1	
PROJECT TOTAL	201		595	394	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				20	
GRAND TOTAL	201		595	414	
SAY	300			500	

EST. SELECT GRANULAR MATERIAL (CL II or III) = CY (CONTINGENCY ITEMS PER 'GEOTECHNICAL REPORT - DESIGN AND CONSTRUCTION RECOMMENDATIONS' LETTER DATED 111)
EST. UNDERCUT = CY
EST. CLASS IV SUBGRADE STABILIZATION = TONS

APPROXIMATE QUANTITIES ONLY. CLEARING AND GRUBBING, UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADINGS, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.



TYPICAL SECTION NO. 2A

USE PARTIAL TYPICAL SECTION NO. 2A IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 AND NO. 2:
FROM -L- STA. 26+81.67 TO STA. 27+75.00 RT.

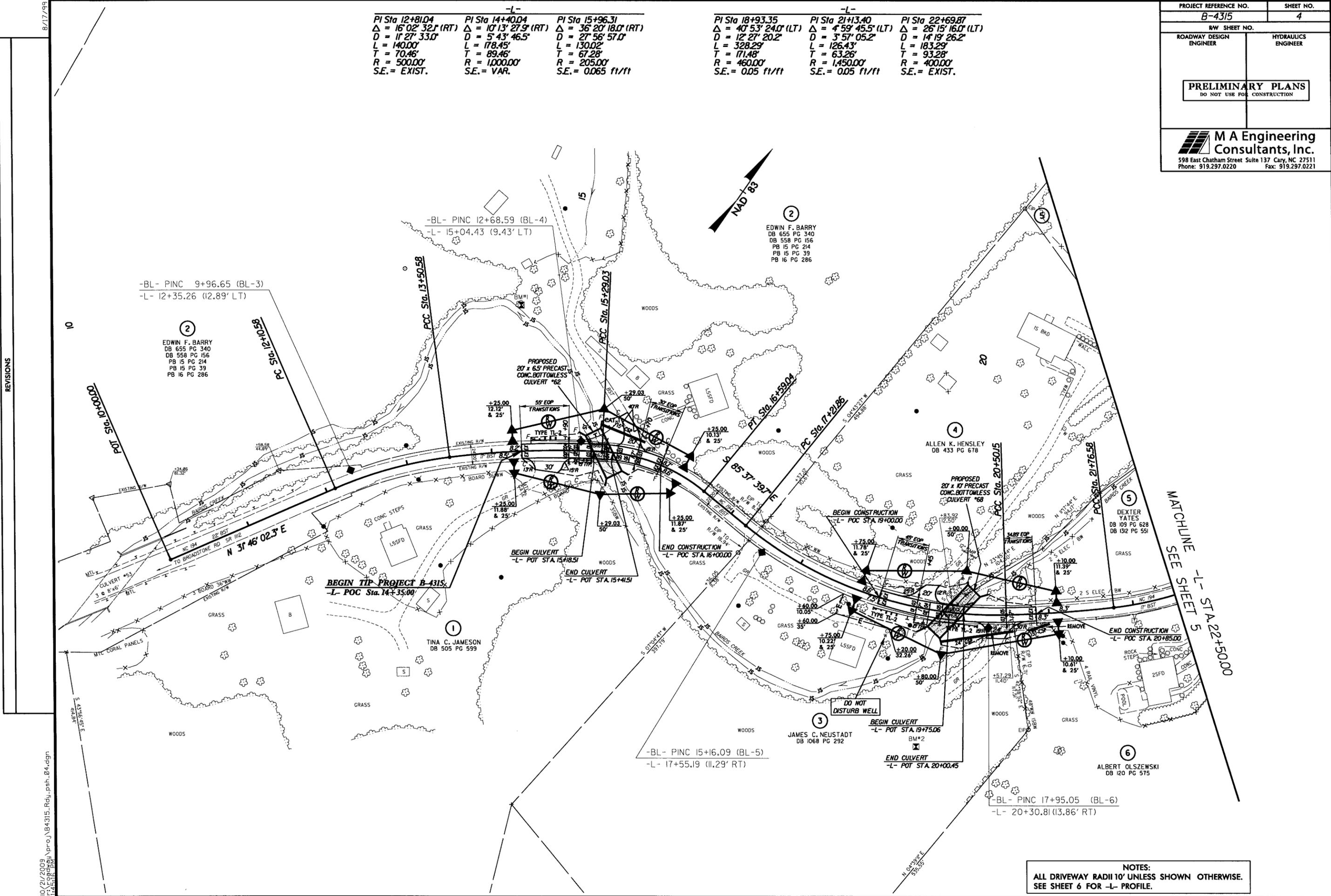
NOTES:
SEE CROSS SECTIONS FOR WALL /SLOPE TRANSITION
FROM -L- STA. 27+50.00 TO 27+75.00.

NOTES
MIRROR TYPICAL SECTIONS AS NECESSARY.
* - PLACE FACE OF GUARDRAIL A MINIMUM OF 4' FROM EOP
** - TYPICAL (SEE CROSS SECTIONS FOR VAR. SLOPE LOCATIONS)

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8/2/99

PROJECT REFERENCE NO. B-4315	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	

-L-			-L-		
PI Sta 12+81.04	PI Sta 14+40.04	PI Sta 15+96.31	PI Sta 18+93.35	PI Sta 21+13.40	PI Sta 22+69.87
$\Delta = 16^{\circ} 02' 32.1''$ (RT)	$\Delta = 10^{\circ} 13' 27.9''$ (RT)	$\Delta = 36^{\circ} 20' 18.0''$ (RT)	$\Delta = 40^{\circ} 53' 24.0''$ (LT)	$\Delta = 4^{\circ} 59' 45.5''$ (LT)	$\Delta = 26^{\circ} 15' 16.0''$ (LT)
D = 1127' 33.0'	D = 5' 43' 46.5'	D = 27' 56' 57.0'	D = 12' 27' 20.2'	D = 3' 57' 05.2'	D = 14' 19' 26.2'
L = 140.00'	L = 178.45'	L = 130.02'	L = 328.29'	L = 126.43'	L = 183.29'
T = 70.46'	T = 89.46'	T = 67.28'	T = 171.48'	T = 63.26'	T = 93.28'
R = 500.00'	R = 1000.00'	R = 205.00'	R = 460.00'	R = 1,450.00'	R = 400.00'
S.E. = EXIST.	S.E. = VAR.	S.E. = 0.065 ft/ft	S.E. = 0.05 ft/ft	S.E. = 0.05 ft/ft	S.E. = EXIST.



REVISIONS

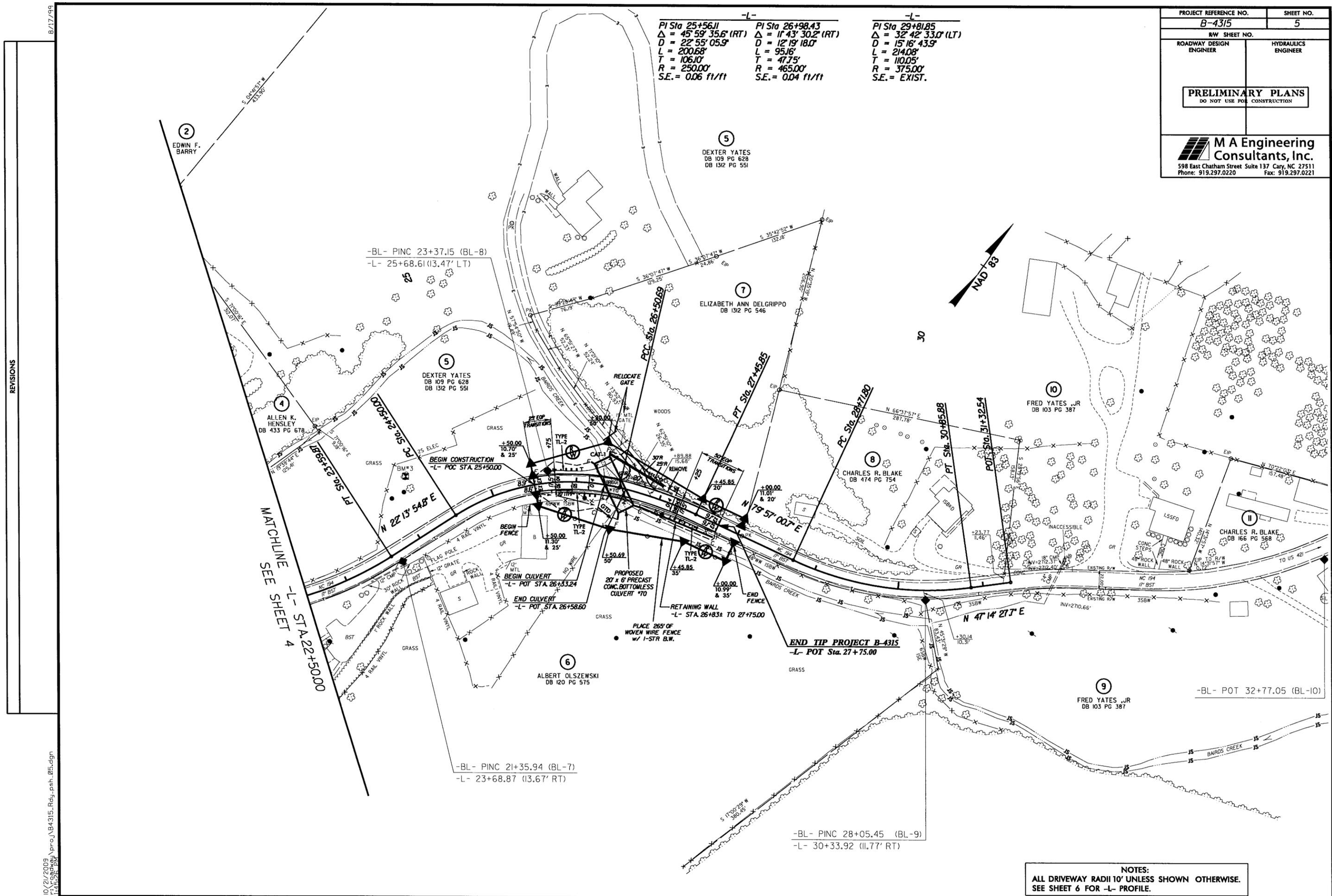
MATCHLINE SEE SHEET 5
-L- STA 22+50.00

NOTES:
ALL DRIVEWAY RADII 10' UNLESS SHOWN OTHERWISE.
SEE SHEET 6 FOR -L- PROFILE.

8/17/99
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PROJECT REFERENCE NO. B-4315	SHEET NO. 5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
 M A Engineering Consultants, Inc. 598 East Chatham Street Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221	

-L-	-L-	-L-
PI Sta 25+56.11	PI Sta 26+98.43	PI Sta 29+81.85
$\Delta = 45^{\circ} 59' 35.6''$ (RT)	$\Delta = 11^{\circ} 43' 30.2''$ (RT)	$\Delta = 32^{\circ} 42' 33.0''$ (LT)
$D = 22^{\circ} 55' 05.9''$	$D = 12^{\circ} 19' 18.0''$	$D = 15^{\circ} 16' 43.9''$
$L = 200.68'$	$L = 95.16'$	$L = 214.08'$
$T = 106.10'$	$T = 47.75'$	$T = 110.05'$
$R = 250.00'$	$R = 465.00'$	$R = 375.00'$
$S.E. = 0.06$ ft/ft	$S.E. = 0.04$ ft/ft	$S.E. =$ EXIST.



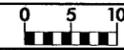
REVISIONS

MATCHLINE
SEE SHEET 4
-L- STA 22+50.00

NOTES:
ALL DRIVEWAY RADII 10' UNLESS SHOWN OTHERWISE.
SEE SHEET 6 FOR -L- PROFILE.

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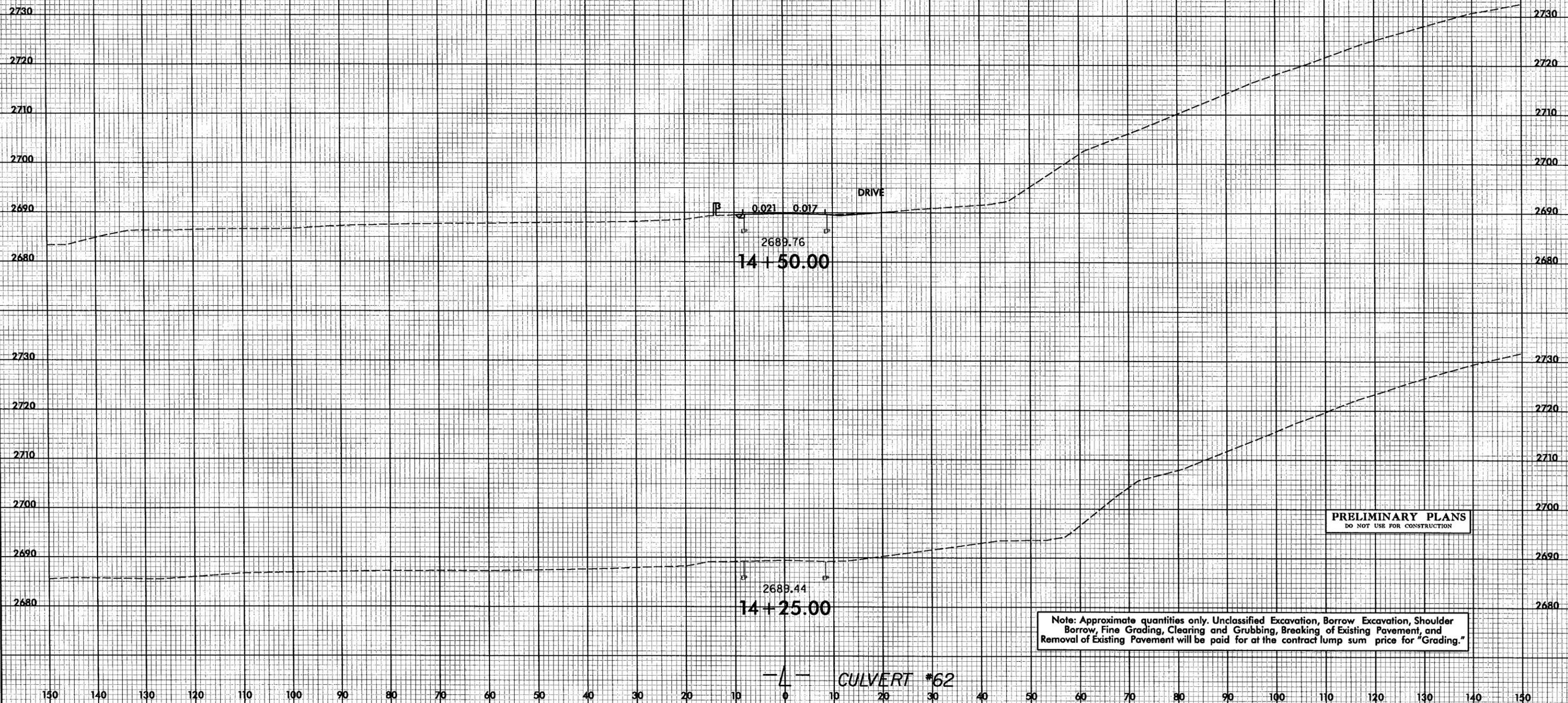
8/23/99



PROJ. REFERENCE NO.
B-4315

SHEET NO.
X-1

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

10/21/2009
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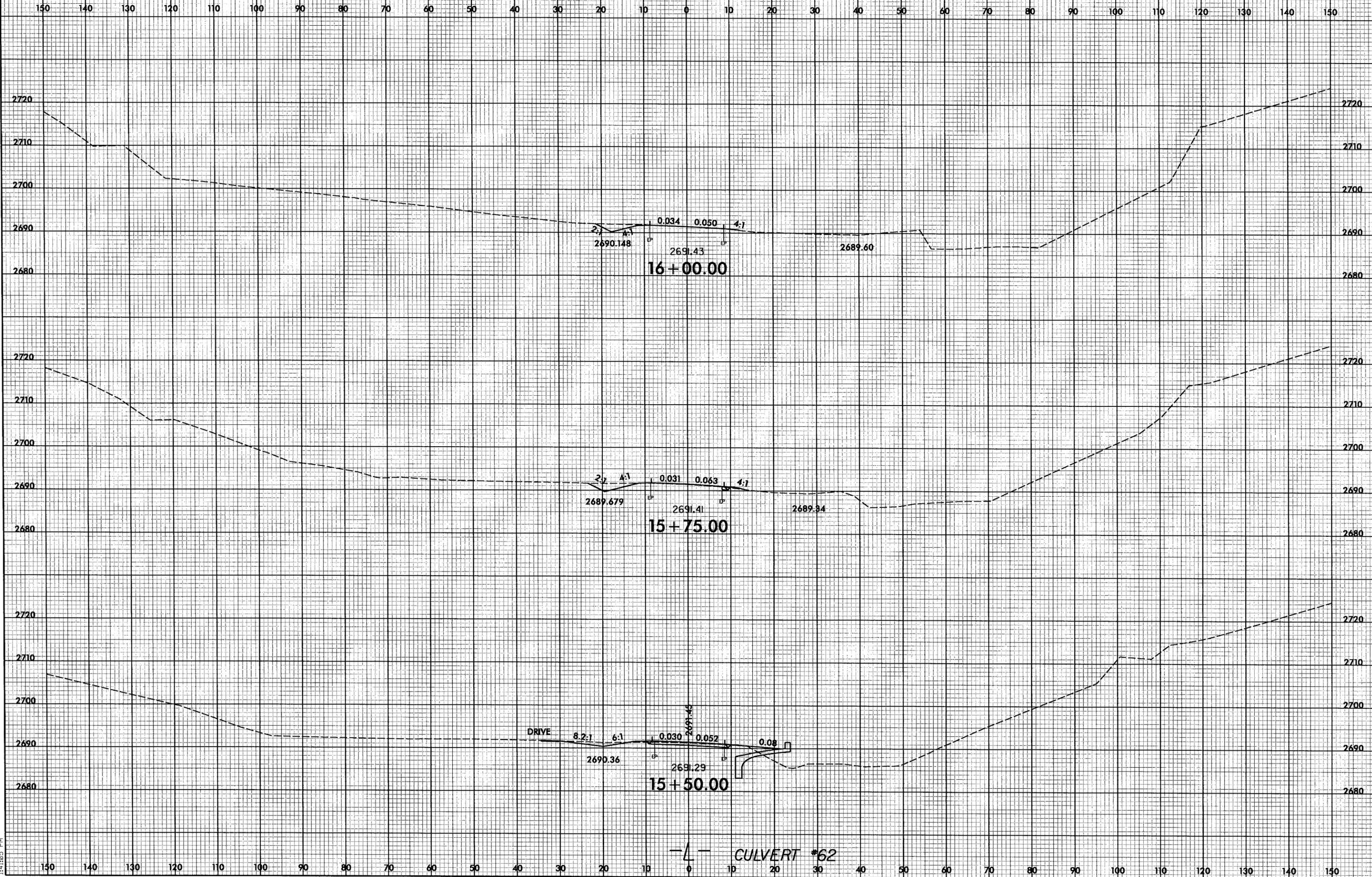
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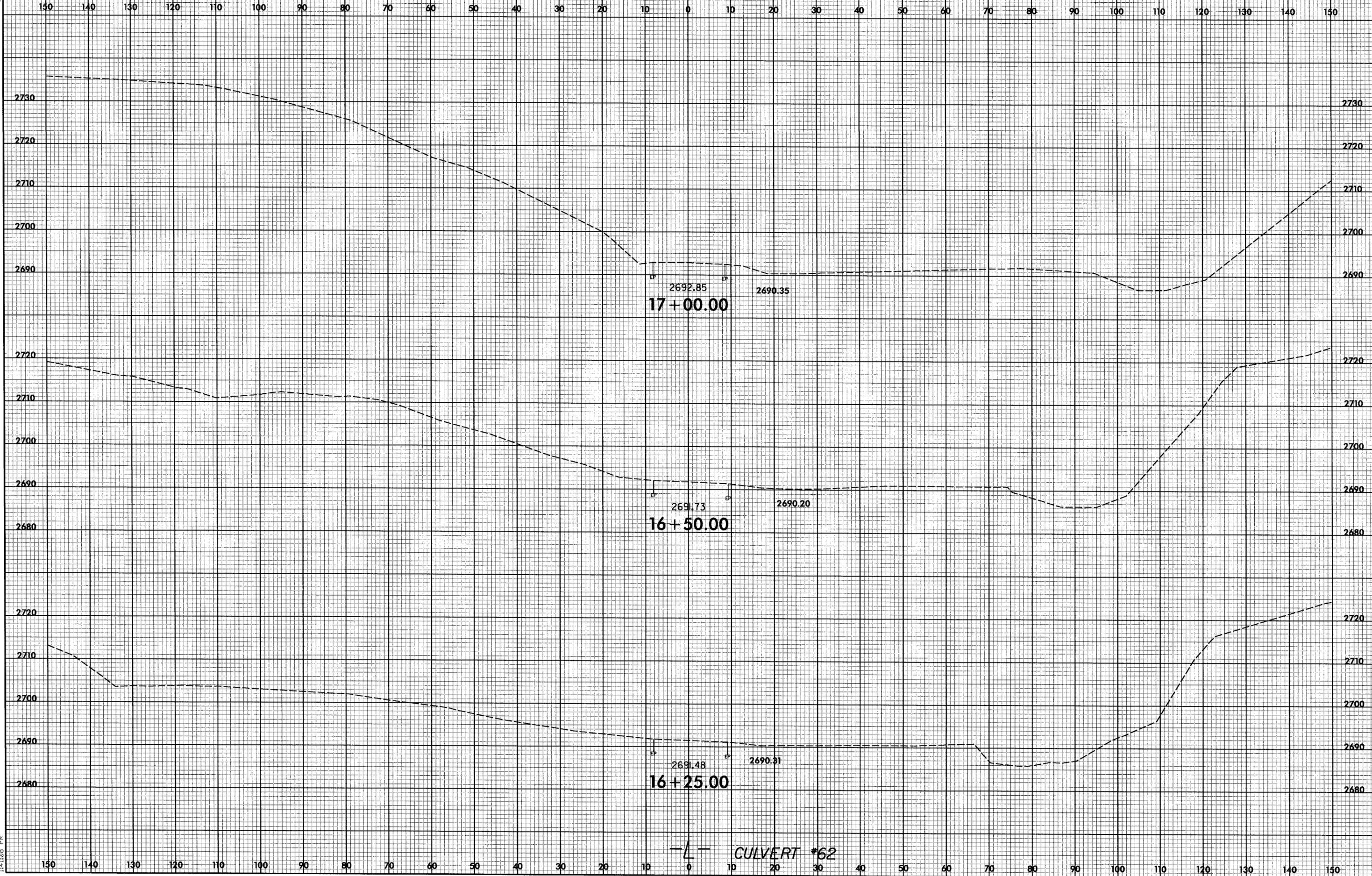
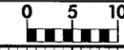


PROJ. REFERENCE NO.
B-4315

SHEET NO.
X-3

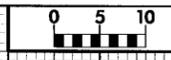


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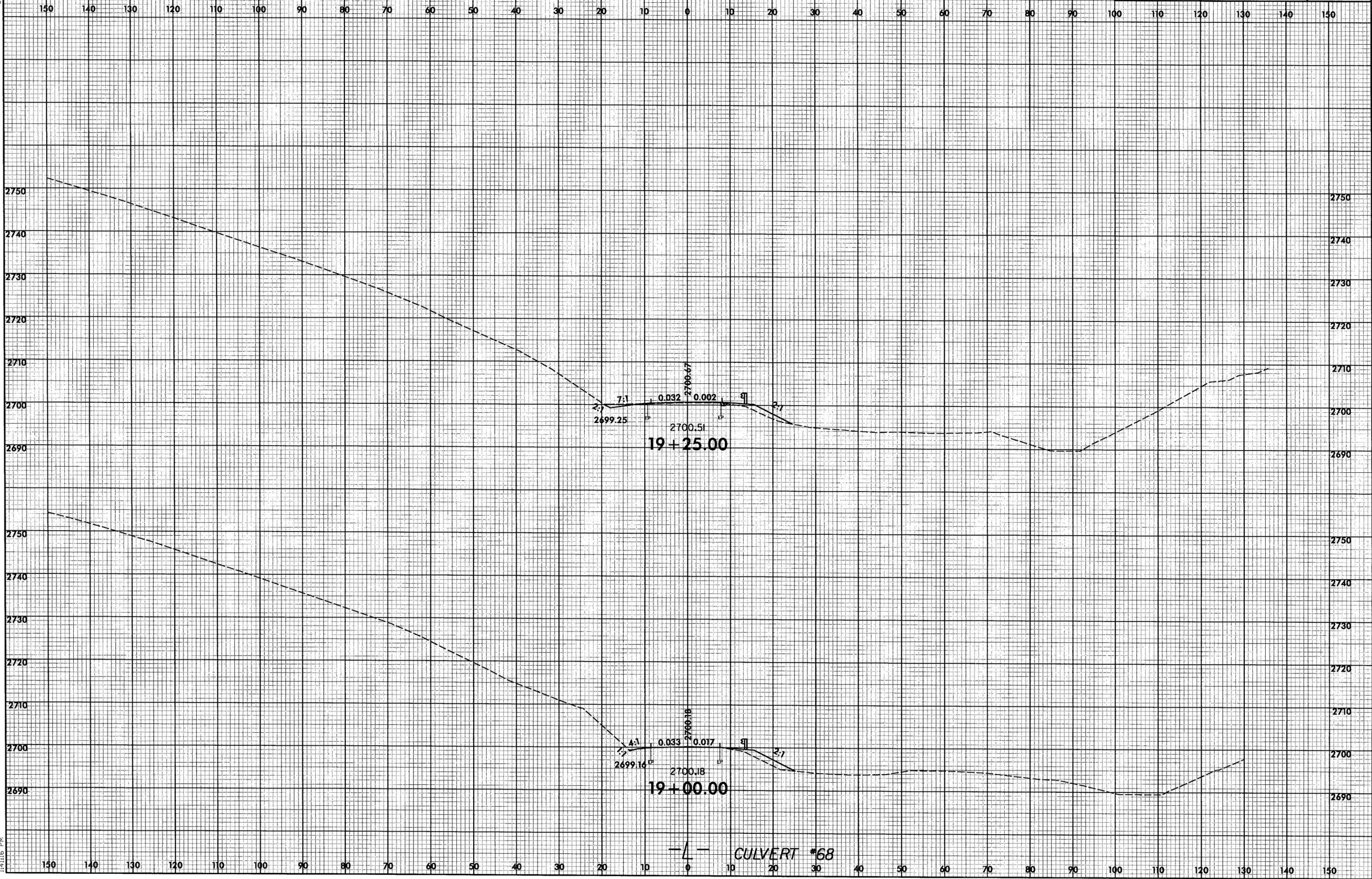


CULVERT #62

8/23/99



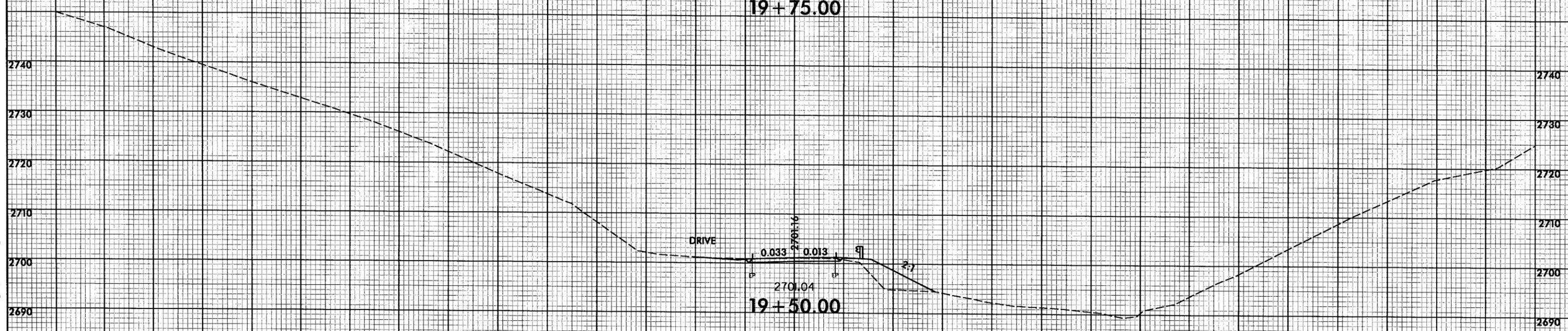
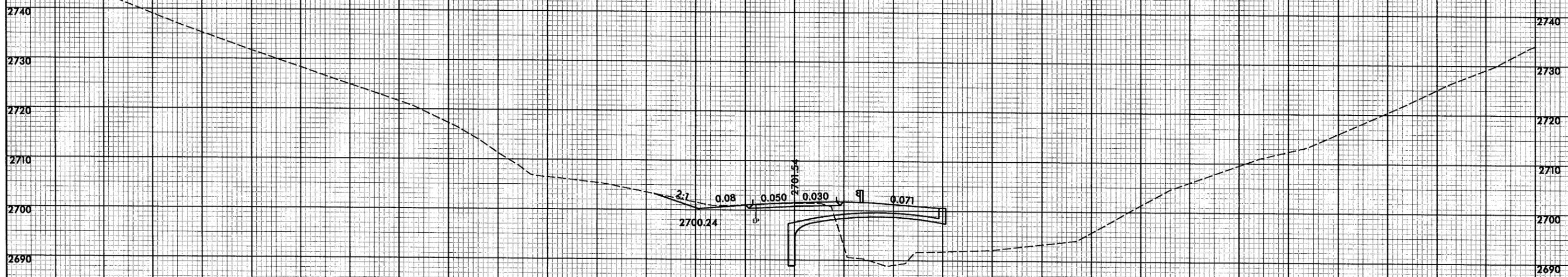
PROJ. REFERENCE NO.	SHEET NO.
B-4315	X-6



CULVERT #68

0/21/2009
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CULVERT #68

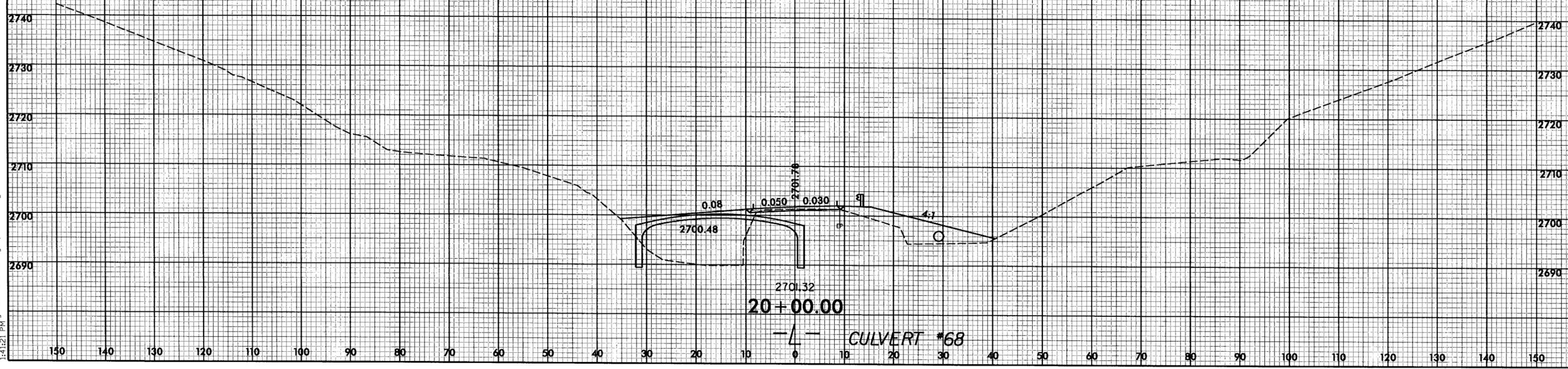
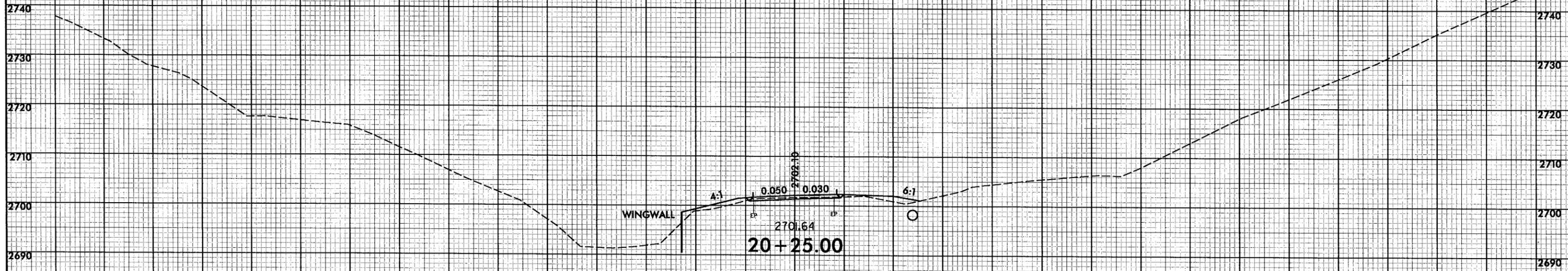
8/23/09



PROJ. REFERENCE NO.
B-4315

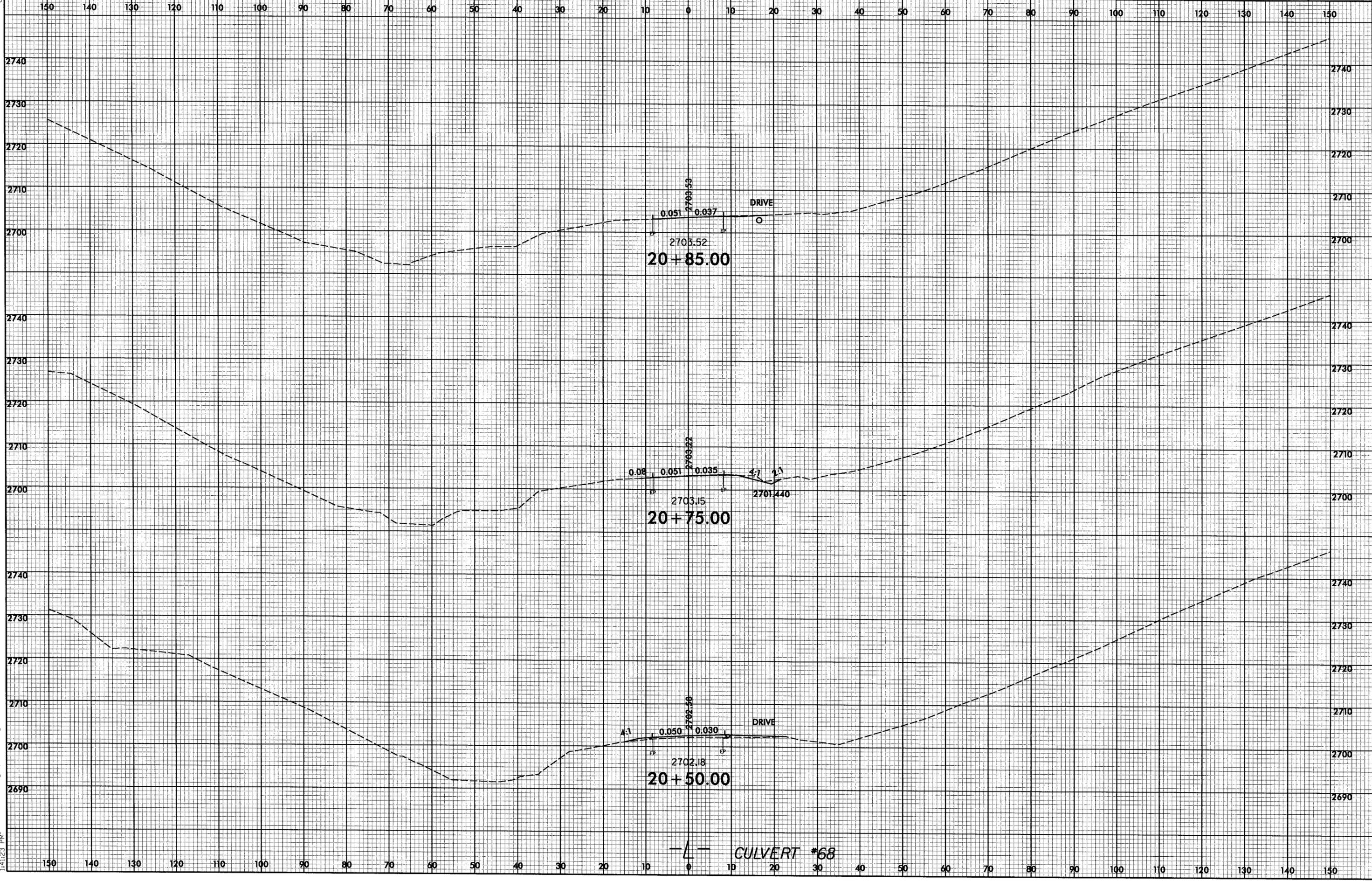
SHEET NO.
X-8

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CULVERT #68

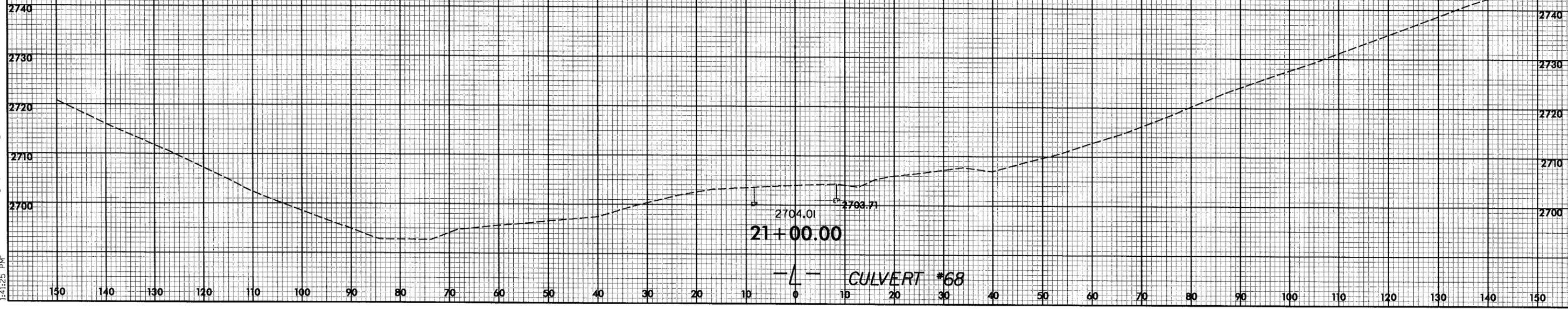
8/23/99



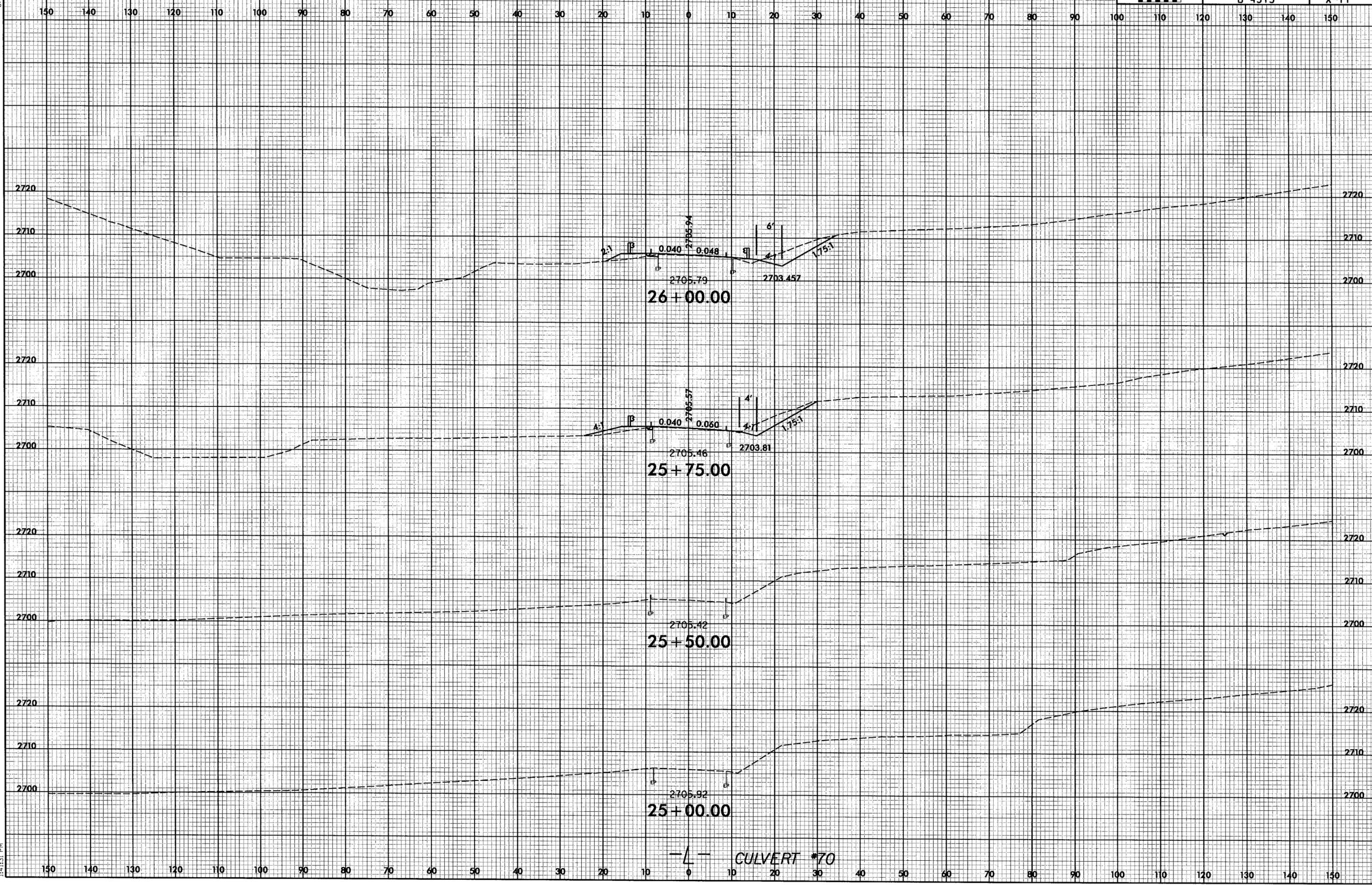
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B-4315

SHEET NO.
X-10

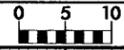
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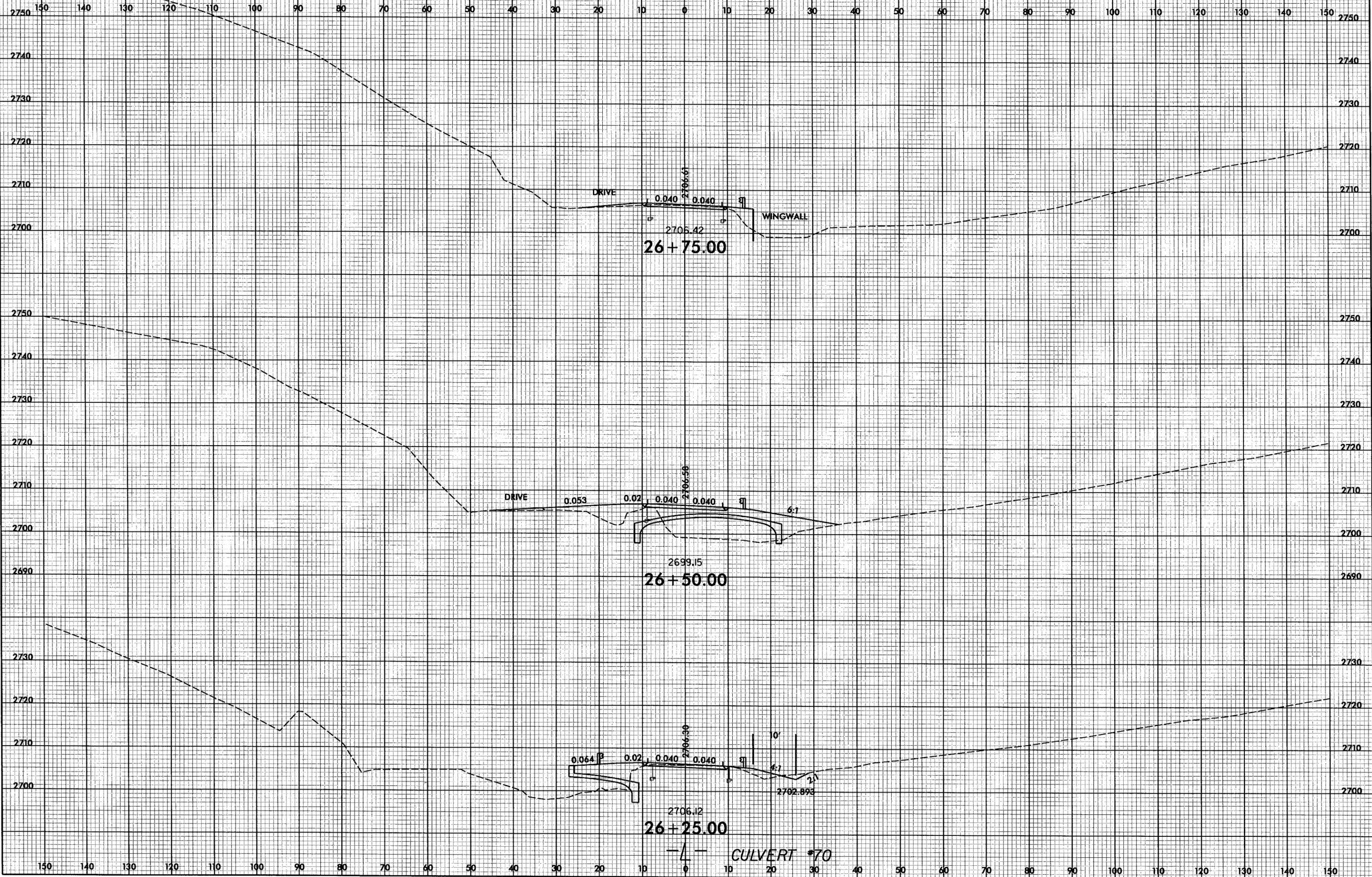


8/23/99



PROJ. REFERENCE NO.
B-4315

SHEET NO.
X-12



26+75.00

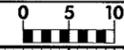
26+50.00

26+25.00

CULVERT #70

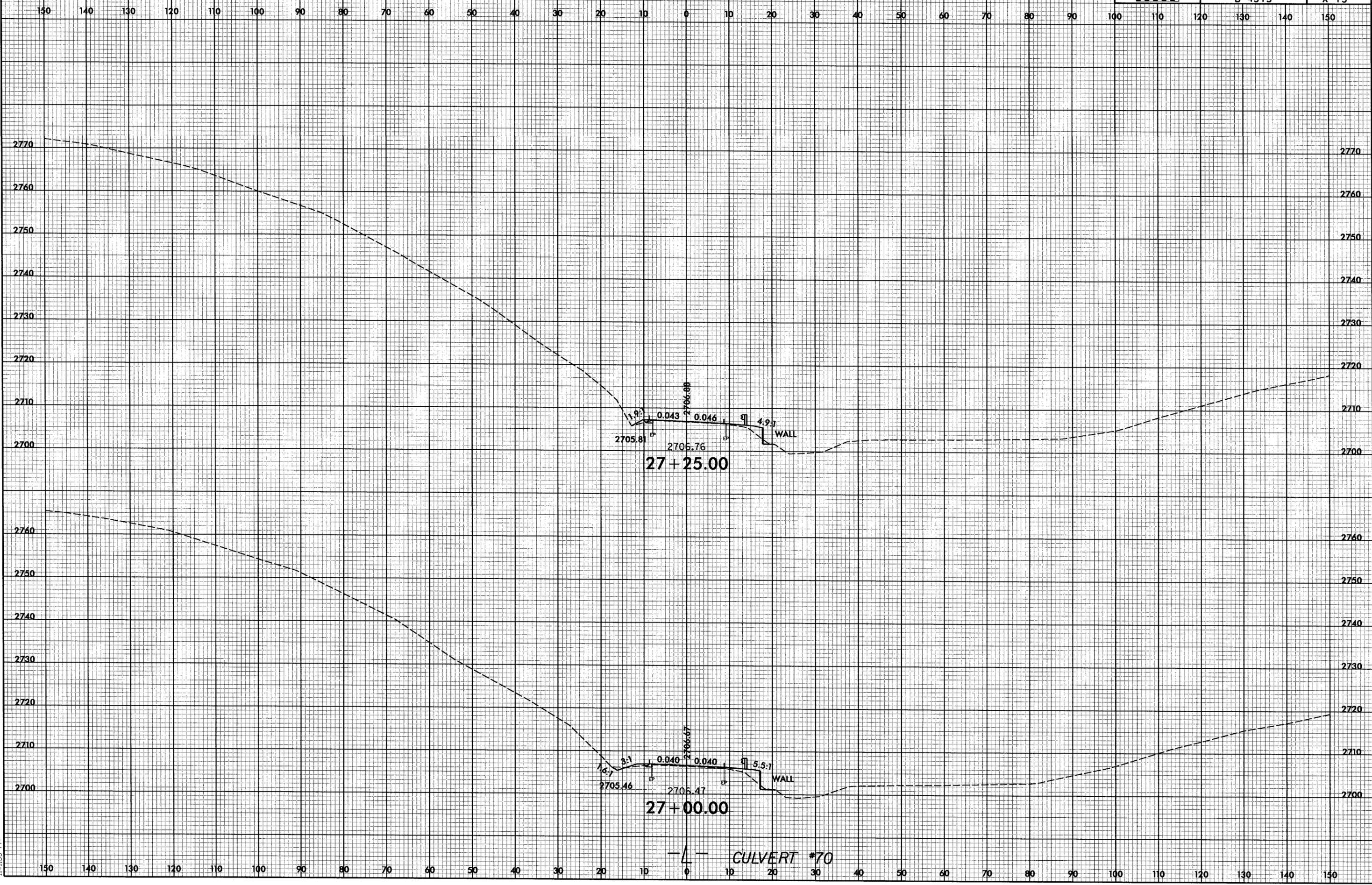
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8/23/99



PROJ. REFERENCE NO.
B-4315

SHEET NO.
X-13



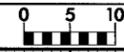
27 + 25.00

27 + 00.00

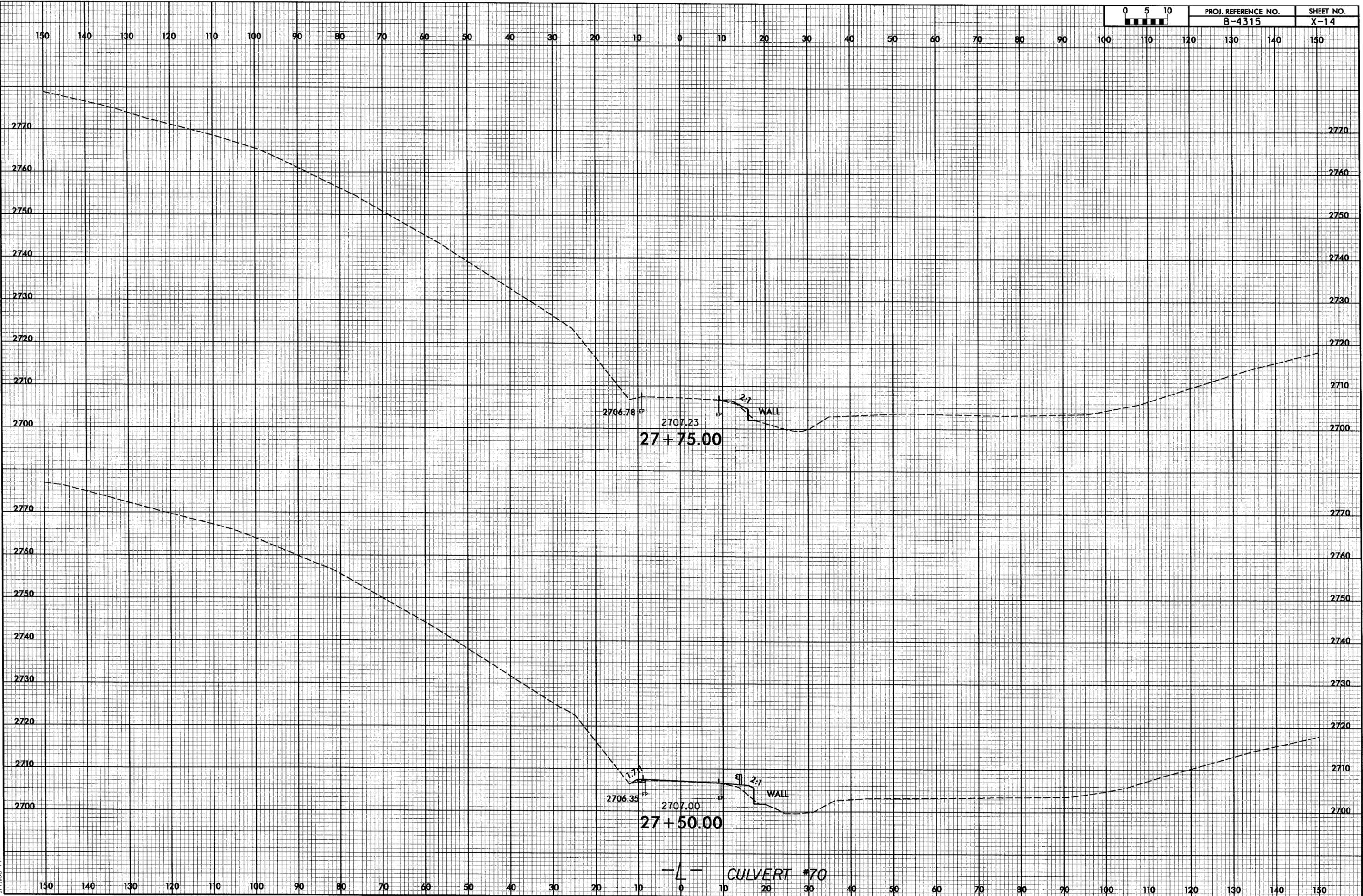
CULVERT #70

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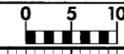


PROJ. REFERENCE NO.	SHEET NO.
B-4315	X-14

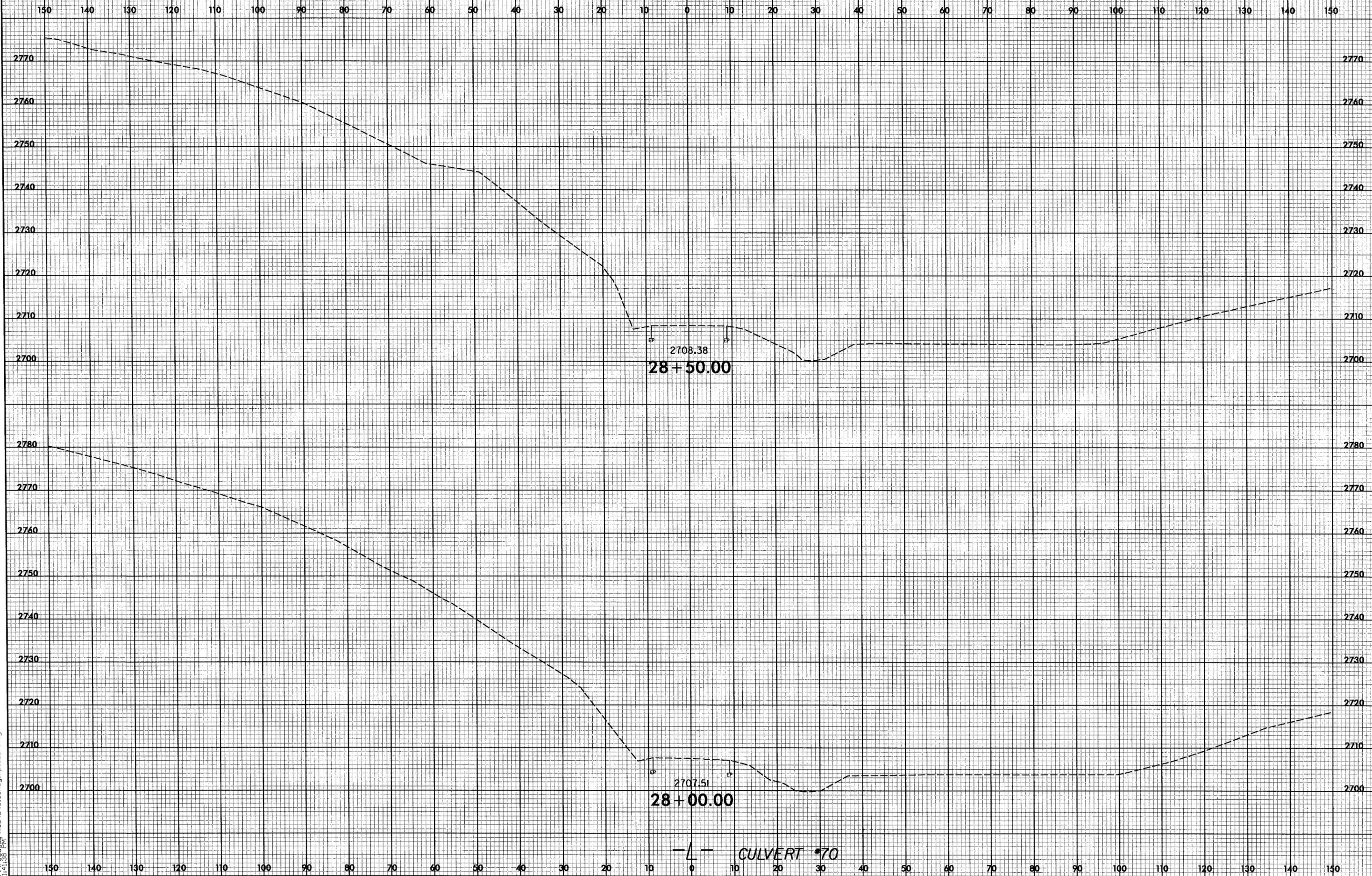


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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-4315	X-15



2708.38
28+50.00

2707.51
28+00.00

— L — CULVERT #70

10/21/2009
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