STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

April 7, 2011

U. S. Army Corps of Engineers
Regulatory Field Office
69 Darlington Ave.
Wilmington, NC 28402

ATTN: Mr. Ronnie Smith
NCDOT Coordinator

Dear Sir:

Subject: **Application for Section 404 Nationwide 3 Permit** for the replacement of Bridge No. 125 over Cross Creek on NC 24 in Cumberland County. Federal Aid Project Number BRSTP-0024(12); WBS 33448.1.1; TIP No. B-4090.

Please find enclosed the Pre-Construction Notification (PCN) form, reforestation detail sheet, permit drawings, and half-size plan sheets. A request for a Preliminary Jurisdictional Determination is also included with this application. A Categorical Exclusion (CE) was completed for this project on May 25, 2010, and distributed shortly thereafter. Additional copies are available upon request.

The North Carolina Department of Transportation (NCDOT), Division of Highways, in consultation with the Federal Highway Administration (FHWA), proposes to replace Bridge No. 125 on NC 24 over Cross Creek in Cumberland County. The existing structure is a 5-span, 201-foot long bridge with a reinforced concrete floor supported by steel I-beams with a substructure of concrete caps on concrete post and beam. The proposed structure will be a 3-span, 230-foot long prestressed girder bridge with steel pile bents. There will be no permanent impacts to wetlands or streams due to this project. There will be 0.01 acre of temporary wetland impacts and 166 linear feet of temporary stream impacts due to temporary fill for an onsite detour bridge necessary to maintain traffic during construction.

The proposed let date for the project is November 15, 2011 with a review date of September 27, 2011; however, the let date may advance as additional funds become available.

Regulatory Approvals

Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that a Nationwide Permit 3 authorize these activities (72 CFR; 11092-11198, March 12, 2007).

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

TELEPHONE: 919-707-6000
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
CENTURY CENTER
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Section 401 Permit: We anticipate 401 General Certification number 3687 will apply to this project. In accordance with 15A NCAC 2H, Section .0500(a), we are providing two copies of this application to the NCDWQ for their review.

A copy of this permit application and its distribution list will be posted on the NCDOT website at http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html

If you have any questions or need additional information, please call or email Mrs. Veronica Barnes, at 919-707-6102 or vabarnes@ncdot.gov.

Sincerely,

E. L. Lusk

for Gregory J. Thorpe, Ph.D. Environmental Management Director
Project Development and Environmental Analysis Branch

cc:
NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit ☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 3	or General Permit (GP) number:
1c. Has the N WP or GP number been verified by the Corps?	☐ Yes ☒ No

1d. Type(s) of approval sought from the DWQ (check all that apply):

☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit

☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☒ Yes ☐ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.		☐ Yes ☒ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.		☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?		☐ Yes ☒ No

2. Project Information

2a. Name of project:	Replace Bridge No. 125 over Cross Creek on NC 24
2b. County:	Cumberland
2c. Nearest municipality / town:	Fayetteville
2d. Subdivision name:	not applicable
2e. NCDOT only, T.I.P or state project no:	B-4090

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	not applicable
3c. Responsible Party (for LLC if applicable):	not applicable
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699
3f. Telephone no..	(919) 707-6102
3g. Fax no..	(919) 212-5785
3h. Email address:	vabarnes@ncdot.gov

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

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	N/A	
1b. Site coordinates (in decimal degrees):	Latitude: 35.55533 (DD.DDDDDD)	Longitude: - 78.871918 (-DD.DDDDDD)
1c. Property size:	N/A acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Cross Creek	
2b. Water Quality Classification of nearest receiving water:	C	
2c. River basin:	Cape Fear	
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: Existing conditions on the site include woodland areas and a small area of Headwater Forest. Land use in the general vicinity is high denisty urban residential and commercial properties.		
3b. List the total estimated acreage of all existing wetlands on the property: 0.01		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 266		
3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a structurally deficient bridge with a three-span pre-stressed girder bridge with concrete overlay on steel pile bents. The existing structure is a five-span bridge with reinforced concrete floor on steel I-beams over concrete caps and steel piles. Standard road building equipment will be used. Existing utilities will be relocated on-site via the directional bore method and will not result in any impacts to jurisdictional areas.		
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: SAW 2002-00648 JD was issued by Richard Spencer on Dec 27.2004 and expired on Dec. 27, 2009. A new preliminary JD is being requested with this permit application.	☒ Yes ☐ No ☐ Unknown	
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☒ Final	
4c. If yes, who delineated the jurisdictional areas? Name (if known): Josh Witherspoon and Robert Turnbull	Agency/Consultant Company: Environmental Services, Inc Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. December 27, 2004		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown	
5b. If yes, explain in detail according to "help file" instructions. N/A		

B. Project Information and Prior Project History

6. Future Project Plans		
6a. Is this a phased project?	☐ Yes	☒ No
6b. If yes, explain. N/A		

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 ☐ P ☒ T	Temporary fill	Riparian	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.01
W2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
W6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0.01

2h. Comments: Additional proposed temporary impacts to wetlands of < 0.01 acre of Temporary Fill in Wetlands in the Hand Clearing areas for the installation of erosion control measures, including Temporary Silt Fence and/or Special Sediment Control Fence.

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)
S1 ☐ P ☒ T	Temporary Fill	UT to Cross Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	166
S2 ☐ P ☐ T			☒ PER ☐ INT	☒ Corps ☐ DWQ		
S3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
S6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	166

3i. Comments:

4. Open Water Impacts

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

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

4g. Comments: N/A

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: N/A

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

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?	☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☐ Other:

6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
B4 ☐ P ☐ T			☐ Yes ☐ No		
B5 ☐ P ☐ T			☐ Yes ☐ No		
B6 ☐ P ☐ T			☐ Yes ☐ No		
B7 ☐ P ☐ T			☐ Yes ☐ 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.

Measures taken during the design process to avoid or minimize impacts include: increasing the length of the propsed bridge spanning Cross Creek; decreasing the number of bents from 4 to 2; no deck drains over jurisdictional areas; grass swale treatment for detour structure outlet.

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

Construction techniques used to minimize impacts include: the use of NCDOT Best Management Practices for the Protection Surface Waters; top down construction; 3:1 fill slopes where practicable; temporary fills in jurisdictional areas will be removed. These areas will be returned to pre-construction elevations and revegetated, as appropriate.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No The project will not result in any permanent impacts to wetlands or streams, therefore NCDOT does not propose any compensatory mitigation.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigat ion option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	N/A square feet
4e. Riparian wetland mitigation requested:	acres
4f. Non-riparian wetland mitigation requested:	N/A acres
4g. Coastal (tidal) wetland mitigation requested:	N/A acres

4h. Comments: N/A

5. Complete if Using a Permittee Responsible Mitigation Plan

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

6. **Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ**				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?			☐ Yes ☒ No	
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1	N/A		3 (2 for Catawba)	
Zone 2	N/A		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). N/A				
6h. Comments: N/A				

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

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes	☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H 1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes	☒ No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? USFWS list of Threatened and Endangered Species for Cumberland County (September 22, 2010);Natural Heritage Program Database (updated Feb. 3, 2011).		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? Index of Waterbodies with Essential Fish Habitat		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☒ Yes	☐ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NC State Historic Preservation Office correspondence (see CE)		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☐ Yes	☒ No
8b. If yes, explain how project meets FEMA requirements:		
8c. What source(s) did you use to make the floodplain determination? FEMA maps		

Gregory J. Thorpe, PhD Applicant/Agent's Printed Name	E. L. Lusk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	4-6-11 Date

PROJECT REFERENCE NO.	SHEET NO.
B-4090	RF-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

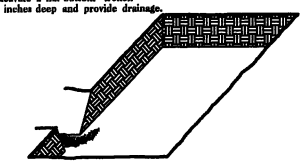
PLANTING DETAILS

SEEDLING / LINER BAREROOT PLANTING DETAIL

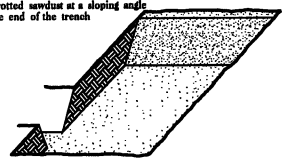
HEALING IN

1 Locate a healing-in site in a shady well protected area.

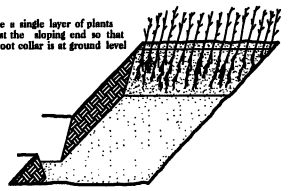
2 Excavate a flat bottom trench 12 inches deep and provide drainage.



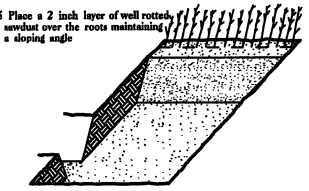
3 Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench



4 Place a single layer of plants against the sloping end so that the root collar is at ground level

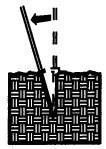


5 Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle



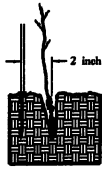
6 Repeat layers of plants and sawdust as necessary and water thoroughly

DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



1 Insert planting bar as shown and pull handle toward planter

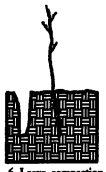
2 Remove planting bar and place seedling at correct depth



3. Insert planting bar 2 inches toward planter from seedling

4. Pull handle of bar toward planter, firming soil at bottom

5. Push handle forward firming soil at top



6. Leave compaction hole open Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT TO 10 FT ON CENTER, RANDOM SPACING, AVERAGING 8 FT ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25% QUERCUS PHELLOS	WILLOW OAK	12 in - 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

September 9, 2009

MEMORANDUM TO: File

FROM: Paul F Fisher, P.E.
Hydraulics Unit

SUBJECT Stormwater Management Plan
B-4090, Cumberland County

The following items were incorporated into the Hydraulic design of this project for stormwater quality considerations:

-Existing storm drainage systems used where possible.

-Deck Drains not allowed directly over water.

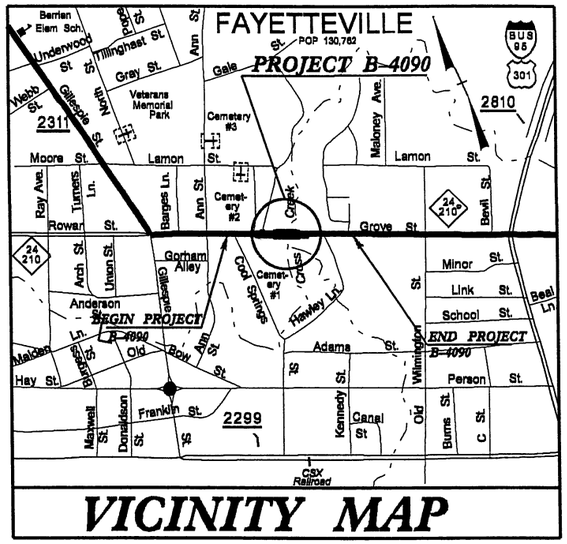
-Grass Swale treatment for detour structure outlet.

PFF

09/08/99

TIP PROJECT: B-4090

~~See Sheet 1-A For Index of Sheets~~
See Sheet 1-B For Conventional Plan Sheet Symbols



VICINITY MAP

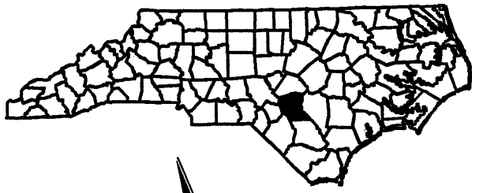
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

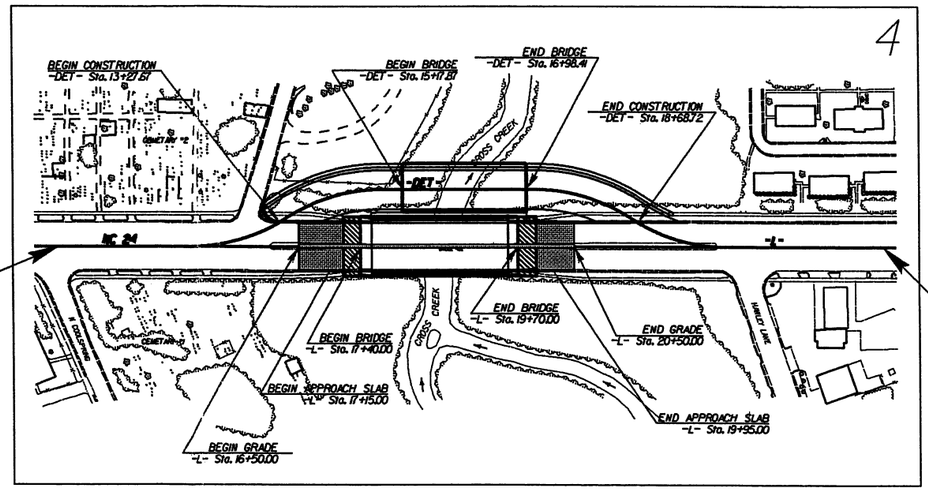
CUMBERLAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4090	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33448.1.1	BRSTP-0024(12)	P.E.	

LOCATION: BRIDGE No. 125 ON NC 24 (GROVE ST.) OVER CROSS CREEK

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





TO SR 2311 GREEN ST.

TO BUS 95/US 301

BEGIN TIP PROJECT B-4090
-L- STA. 13+00.00

END TIP PROJECT B-4090
-L- STA. 25+00.00

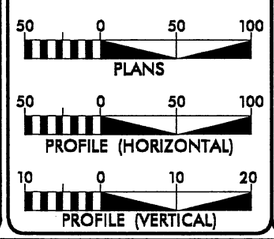
WETLAND & STREAM IMPACTS

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF FAYETTEVILLE
A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH
CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT 2010 =	40,135
ADT 2030 =	63,700
DHV =	10 %
D =	60 %
T =	5 % *
V =	40 MPH
* TTST 2 +	DUAL 3

CLASS = PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4090 = 0.19 MILE
LENGTH STRUCTURE TIP PROJECT B-4090 = 0.04 MILE
TOTAL LENGTH TIP PROJECT B-4090 = 0.23 MILE

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOT AUTHORIZED

LETTING DATE:
NOVEMBER 15, 2011

TONY HOUSER, P.E.
PROJECT ENGINEER

JASON TALLEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

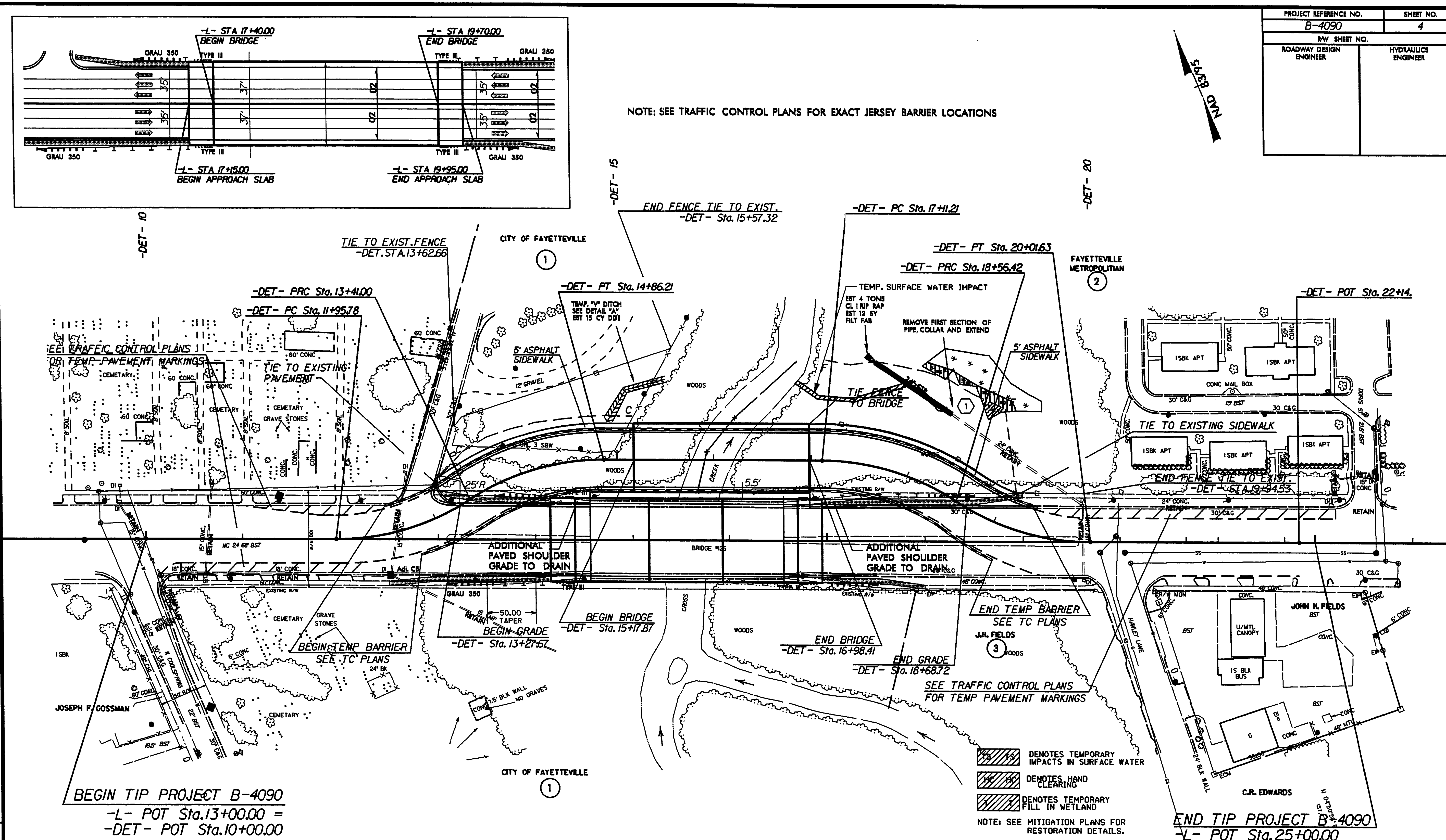
Permit Drawing
Sheet 1 of 16

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

8/17/99

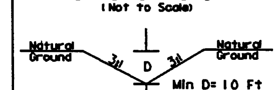
PROJECT REFERENCE NO.	SHEET NO.
B-4090	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS



A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.

DETAIL A
STANDARD 'V' DITCH
(Not To Scale)



FROM STA 17+75 TO STA. 18+35 -L- (LT)

-DET- CURVE DATA

PI Sta 12+70.50	PI Sta 14+15.71	PI Sta 17+85.92	PI Sta 19+31.14
Δ = 33° 16' 47.6" (LT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (LT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 145.21'	L = 145.21'	L = 145.21'	L = 145.21'
T = 74.72'	T = 74.72'	T = 74.72'	T = 74.72'
R = 250.00'	R = 250.00'	R = 250.00'	R = 250.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

HPB HPB

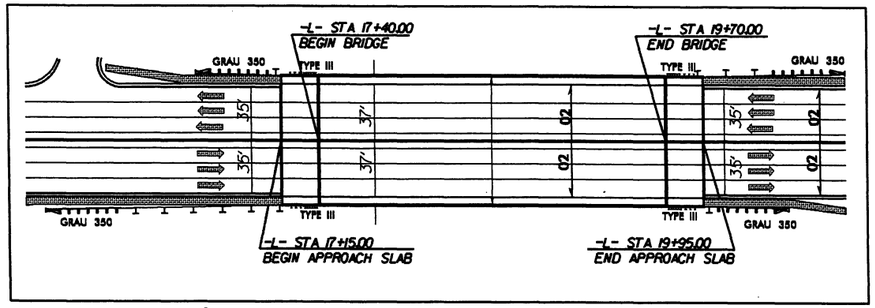
Permit Drawing
Sheet 2 of 6

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

PROJECT REFERENCE NO.	SHEET NO.
B-4090	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

8/17/99

REVISIONS



NOTE: SEE TRAFFIC CONTROL PLANS FOR EXACT JERSEY BARRIER LOCATIONS

NAD 83/95

-DET- 10

-DET- 15

-DET- 20

TIE TO EXIST. FENCE
-DET. STA. 13+62.66

END FENCE TIE TO EXIST.
-DET- Sta. 15+57.32

-DET- PC Sta. 17+11.21

-DET- PT Sta. 20+01.63

-DET- PRC Sta. 18+56.42

-DET- PRC Sta. 13+41.00

-DET- PC Sta. 11+95.78

-DET- PT Sta. 14+86.21

-DET- POT Sta. 22+14.

CITY OF FAYETTEVILLE (1)

FAYETTEVILLE METROPOLITAN (2)

SEE TRAFFIC CONTROL PLANS FOR TEMP. PAVEMENT MARKINGS

TIE TO EXISTING PAVEMENT

TEMP. SURFACE WATER IMPACT

TEMP. "V" DITCH SEE DETAIL "A" EST. 15 CY D/F

5' ASPHALT SIDEWALK

12' GRAVEL

REMOVE PIPE SECTION OF PIPE, CONN. AND EXTEND

END FENCE TIE TO BRIDGE

TIE TO EXISTING SIDEWALK

END FENCE TIE TO EXIST.
-DET- STA 19+94.35

ADDITIONAL PAVED SHOULDER GRADE TO DRAIN

BEGIN GRADE
-DET- Sta. 13+72.61

BEGIN BRIDGE
-DET- Sta. 15+20.91

END BRIDGE
-DET- Sta. 16+98.41

END GRADE
-DET- Sta. 18+68.72

BEGIN TEMP BARRIER SEE TC PLANS

END TEMP BARRIER SEE TC PLANS

SEE TRAFFIC CONTROL PLANS FOR TEMP. PAVEMENT MARKINGS

CEMETARY

GRAVE STONES

JOSEPH F. GOSSMAN

JOHN H. FIELDS

C.R. EDWARDS

ISBK APT

CONC MAIL BOX

U/MTL CANOPY

I S BLK BUS

BEGIN TIP PROJECT B-4090
-L- POT Sta. 13+00.00 =
-DET- POT Sta. 10+00.00

END TIP PROJECT B-4090
-L- POT Sta. 25+00.00

NOTE: SEE MITIGATION PLANS FOR RESTORATION DETAILS

A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.

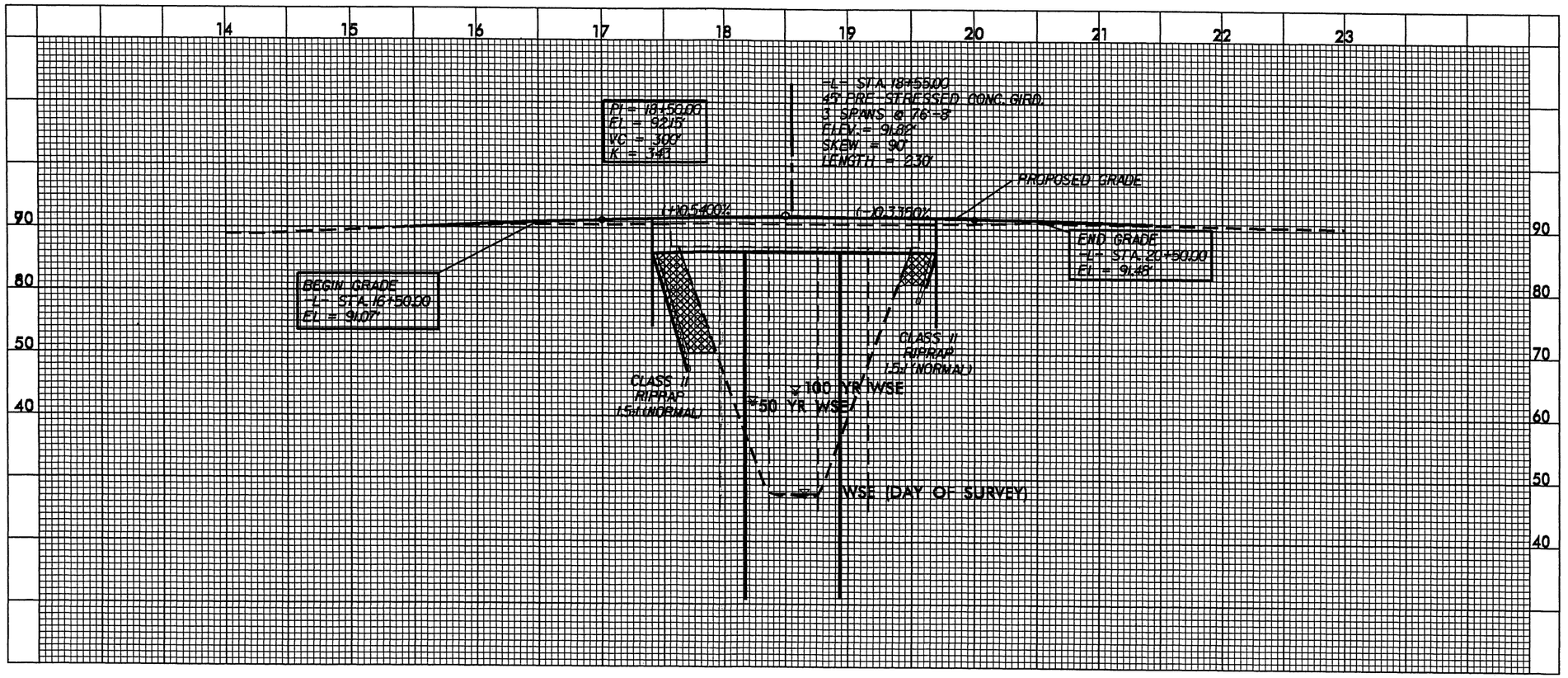
-DET- CURVE DATA

PI Sta 12+70.50	PI Sta 14+15.71	PI Sta 17+85.92	PI Sta 19+31.14
Δ = 33° 16' 47.6" (LT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (LT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 145.21'	L = 145.21'	L = 145.21'	L = 145.21'
T = 74.72'	T = 74.72'	T = 74.72'	T = 74.72'
R = 250.00'	R = 250.00'	R = 250.00'	R = 250.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

HPB HPB

Permit Drawing
Sheet 3 of 6

PROJECT REFERENCE NO.	SHEET NO.
B-4090	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PROFILE

Permit Drawing
Sheet 4 of 6

Property Owner Contact Report

Parcel #	Owner Last Name/ Business	First Name	Address	State	Zip Code
1	CITY OF FAYETTEVILLE		433 HAY STREET	NC	28301
2	FAYETTEVILLE METROPOLITAN		P O. DRAWER 2349	NC	28302
3	FIELDS	J.H.	3700 TAYLOR GLEN LANE	NC	28027

Permit Drawing
Sheet 6 of 6

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp (ft)	Natural Stream Design (ft)
1	20+95 -L-	24"CSP		0.01			0.02		0.02		166	
TOTALS.				0.01			0.02		0.02		166	

NOTE <0 01 ACRES OF TEMPORARY FILL IN WETLANDS IN THE HAND CLEARING AREAS FOR EROSION CONTROL MEASURES

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY
WBS - 34488 1 1 (B-4090)

SHEET 2/25/2011

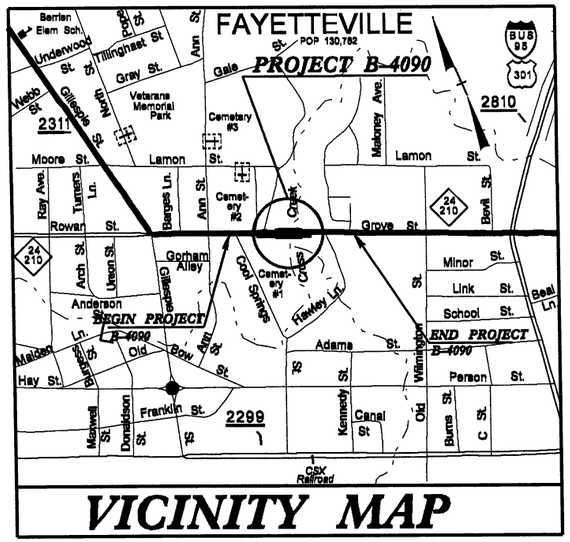
ATN Revised 3/31/05

09/06/99

TIP PROJECT: B-4090

~~See Sheet 1-A For Index of Sheets~~

See Sheet 1-B For Conventional Plan Sheet Symbols



VICINITY MAP

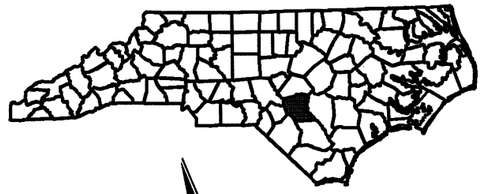
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

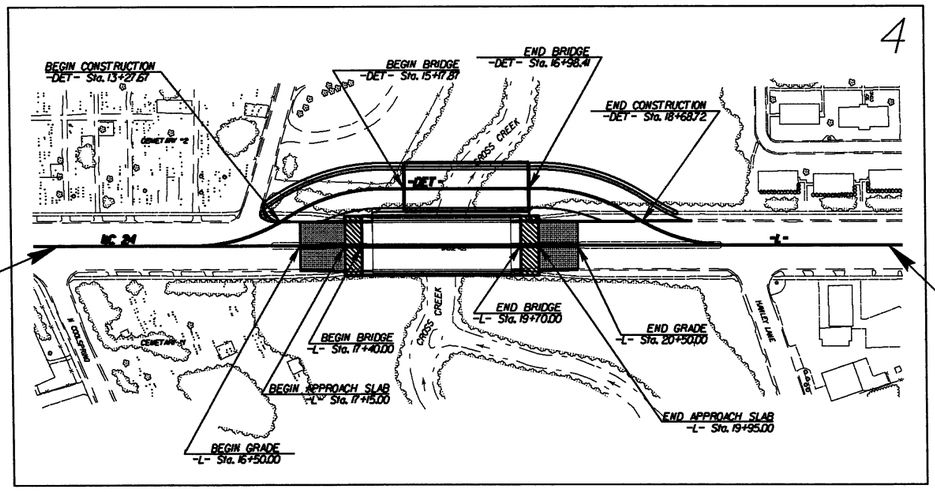
CUMBERLAND COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4090	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33448.1.1	BRSTP-0024(12)	P.E.	

LOCATION: BRIDGE No. 125 ON NC 24 (GROVE ST.) OVER CROSS CREEK

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





TO SR 2311 GREEN ST.

TO BUS 95/US 301

BEGIN TIP PROJECT B-4090
-L- STA. 13+00.00

END TIP PROJECT B-4090
-L- STA. 25+00.00

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CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES

PLANS 50 0 50 100

PROFILE (HORIZONTAL) 50 0 50 100

PROFILE (VERTICAL) 10 0 10 20

DESIGN DATA

ADT 2010 = 40,135
ADT 2030 = 63,700
DHV = 10 %
D = 60 %
T = 5 % *
V = 40 MPH
* TTST 2 + DUAL 3
CLASS = PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4090 = 0.19 MILE
LENGTH STRUCTURE TIP PROJECT B-4090 = 0.04 MILE
TOTAL LENGTH TIP PROJECT B-4090 = 0.23 MILE

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOT AUTHORIZED

LETTING DATE: NOVEMBER 15, 2011

TONY HOUSER, P.E.
PROJECT ENGINEER

JASON TALLEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

01-DEC-2010 14:05
r:\roadway\prod\b4090_rdy_tsh.dgn
$$$$USERNAME$$$$

09/08/09

PROJECT REFERENCE NO.	SHEET NO.
B-4090	1-B

Note: Not to Scale

S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — EPM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access — CA
- Proposed Control of Access
- 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 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 — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — TUTL
- 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.

PROJECT REFERENCE NO.	SHEET NO.
B-4090	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4090

BL

POINT	DESC	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4090 -BL1-	475549 8000	2037539 7520	88 72	OUTSIDE PROJECT LIMITS	
2	B4090 -BL2-	475371 9719	2037948 8271	88 23	14 38 51	43 87 LT
3	B4090 -BL3-	475165 8770	2038431 5511	90 44	19 63 39	40 97 LT
4	B4090 -BL4	474955 4110	2038959 2299	88 04	25+31 39	51 46 LT
5	B4090 -BL5	474812 7591	2039292 9919	88 52	28+94.35	49 31 LT
6	B4090 -BL5-	474622 9321	2039731 4450	87 86	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
20	B4090 -BL2-	475371 9719	2037948 8271	88 23	14 38 51	43.87 LT
7	B4090 -BY-7-	475201 1661	2037797 8420	86 95	13+65 53	172 10 RT

BY1

POINT	DESC	NORTH	EAST	ELEVATION	L STATION	OFFSET
40	B4090 -BL4-	474955 4110	2038959 2299	88 04	25 31 39	51.46 LT
8	B4090 -BY1-8-	474860 7219	2038676 6479	87 03	23+07 59	145 34 RT

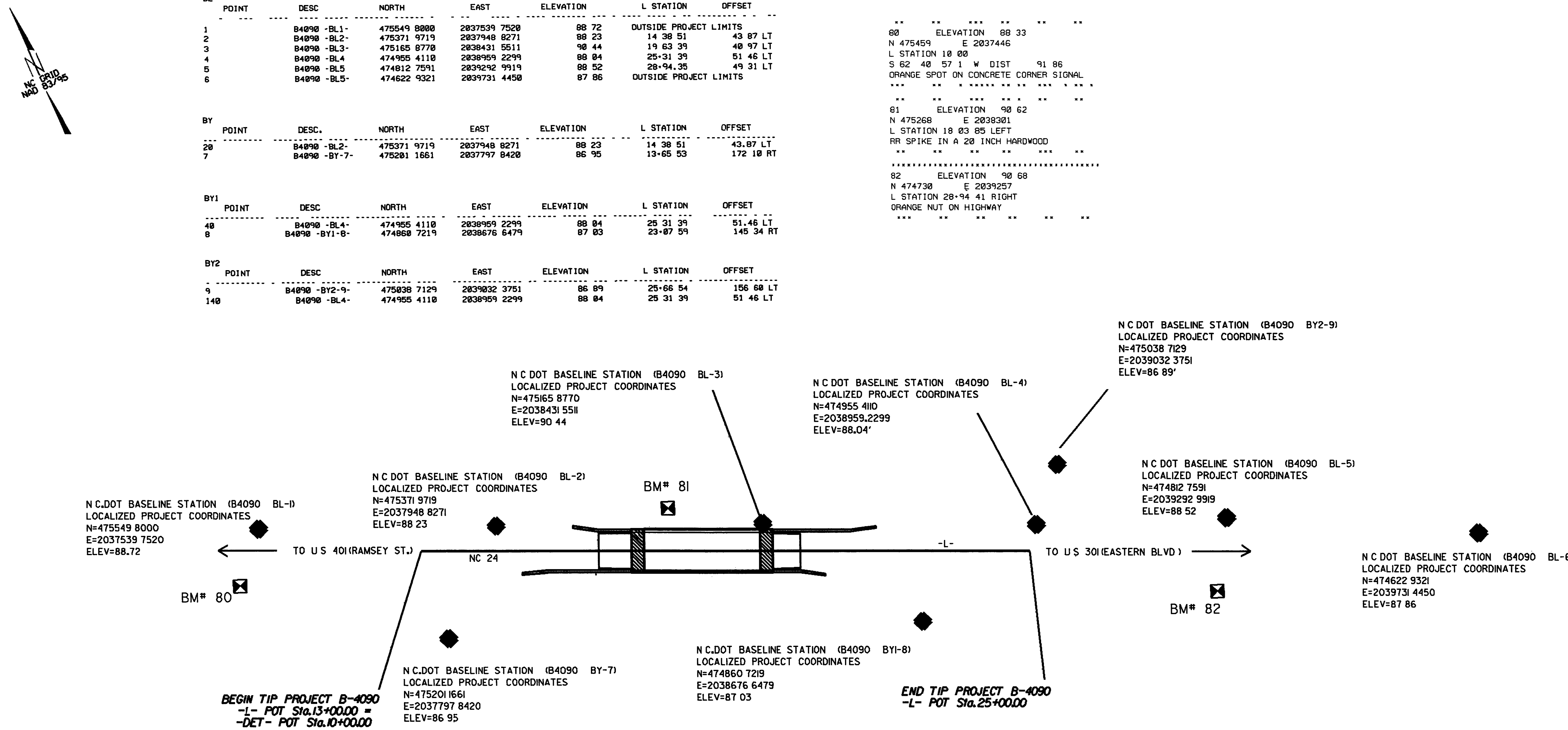
BY2

POINT	DESC	NORTH	EAST	ELEVATION	L STATION	OFFSET
9	B4090 -BY2-9-	475038 7129	2039032 3751	86 89	25+66 54	156 60 LT
140	B4090 -BL4-	474955 4110	2038959 2299	88 04	25 31 39	51 46 LT

80 ELEVATION 88 33
N 475459 E 2037446
L STATION 10 00
S 62 40 57 1 W DIST 91 86
ORANGE SPOT ON CONCRETE CORNER SIGNAL

81 ELEVATION 90 62
N 475268 E 2038301
L STATION 18 03 85 LEFT
RR SPIKE IN A 20 INCH HARDWOOD

82 ELEVATION 90 68
N 474730 E 2039257
L STATION 28+94 41 RIGHT
ORANGE NUT ON HIGHWAY



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT ""VANDER RM3"" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 464925.9500(ft) EASTING: 2069182.4200(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999879130 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM ""VANDER RM3"" TO -L- STA 13+00.00 IS N 71° 33' 55.19" W 33,075.56' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
B4090_LS_CONTROL_090903.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 EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES

6/2/99
01-DEC-2010 14:58
R:\LocationSurveys\b4090_ls_1c_090903.dgn
$$$$USERNAME$$$$

6/2/99

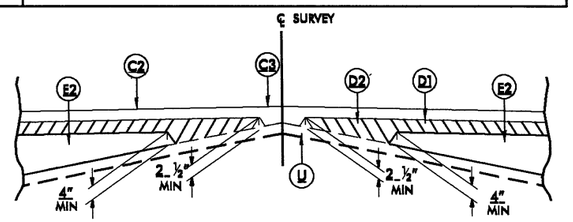
PROJECT REFERENCE NO.	SHEET NO.
B-4090	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

PAVEMENT SCHEDULE

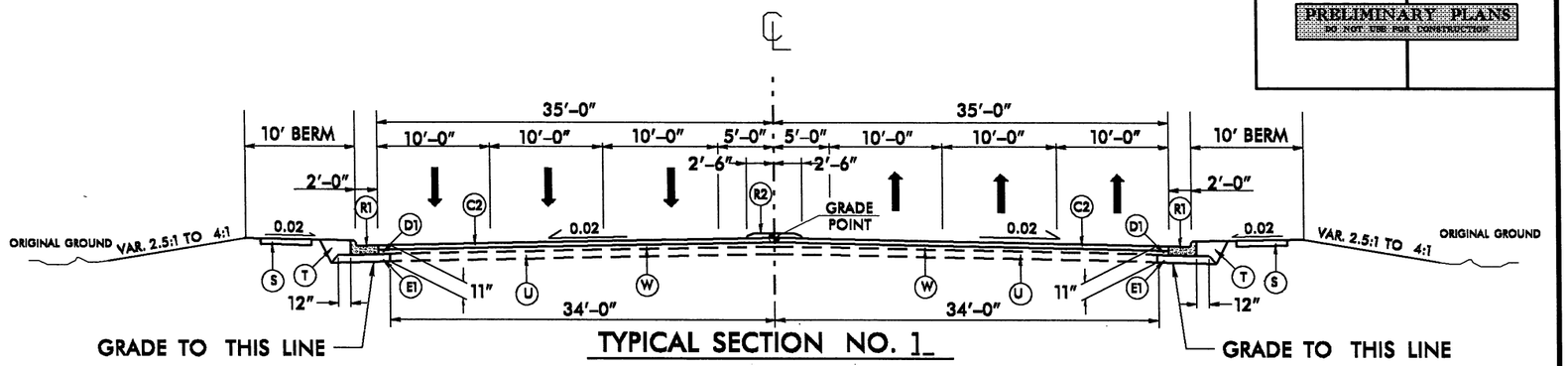
FINAL PAVEMENT DESIGN

C1	PROP APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9 5B, AT AN AVERAGE RATE OF 168 LBS PER SQ YD IN EACH OF TWO LAYERS
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ YD IN EACH OF TWO LAYERS
C3	PROP VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19 0C, AT AN AVERAGE RATE OF 456 LBS PER SQ YD
D2	PROP VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS PER SQ YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP APPROX 4" ASPHALT CONCRETE BASE COURSE TYPE B25 0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ YD
E2	PROP VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH
J1	PROP 10" AGGREGATE BASE COURSE
R1	2'- 6" CONCRETE CURB AND GUTTER
R2	5" MONOLITHIC CONCRETE ISLAND
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXIST PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)



Detail Showing Method of Wedging

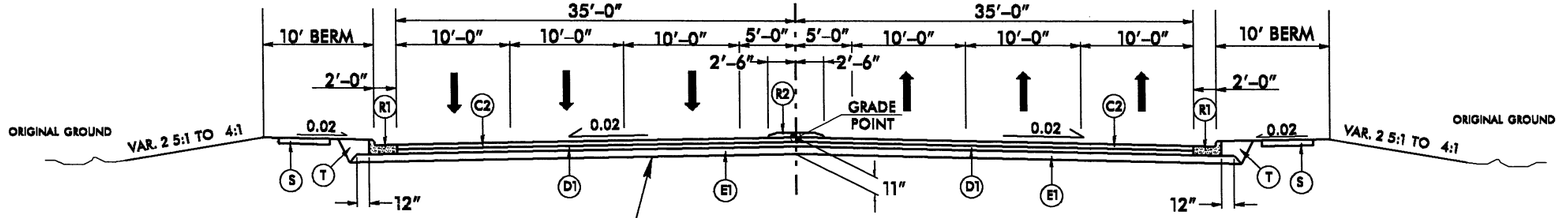
A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.



GRADE TO THIS LINE — GRADE TO THIS LINE

TYPICAL SECTION NO. 1

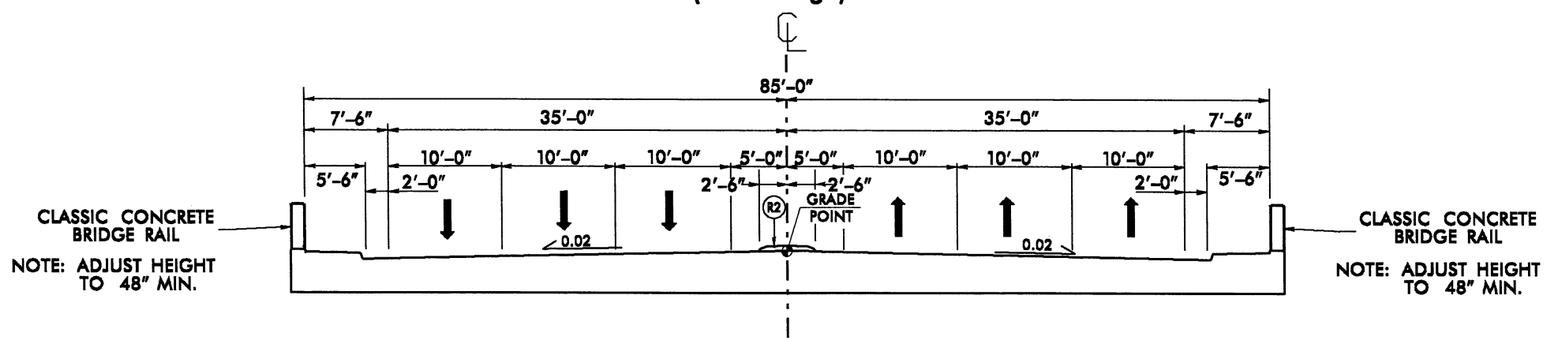
–L– STA. 16+50.00 to –L– STA. 16+75.00
–L– STA. 20+25.00 to –L– STA. 20+50.00



GRADE TO THIS LINE

TYPICAL SECTION NO. 2

–L– STA. 16+75.00 to –L– STA. 17+40.00 (Begin Bridge)
–L– STA. 19+70.00 (End Bridge) to –L– STA. 20+25.00



NOTE: ADJUST HEIGHT TO 48" MIN.

NOTE: ADJUST HEIGHT TO 48" MIN.

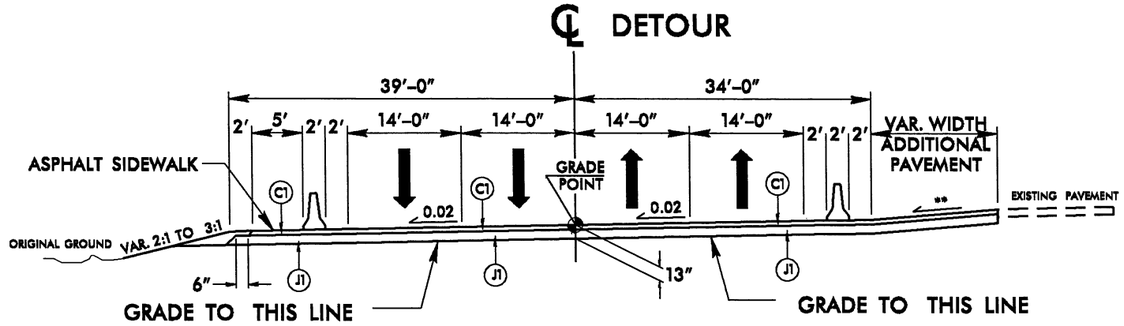
TYPICAL SECTION 3:

–L– STA. 17+40.00 to –L– STA. 19+70.00

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4090	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

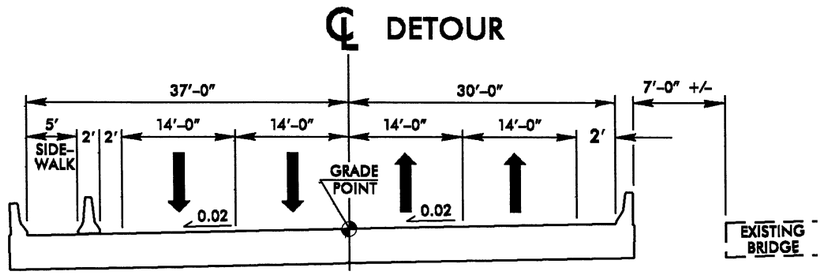
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 4

–DET– STA. 13+27.67 to –DET– STA. 15+17.87 (Begin Bridge)
–DET– STA. 16+98.41 (End Bridge) to –DET– STA. 18+68.72
** NOTE: GRADE TO DRAIN PAVED SHOULDER AS NEEDED

PAVEMENT SCHEDULE *FINAL PAVEMENT DESIGN*	
C1	3" S9.5B
J1	10" ABC
T	EARTH MATERIAL

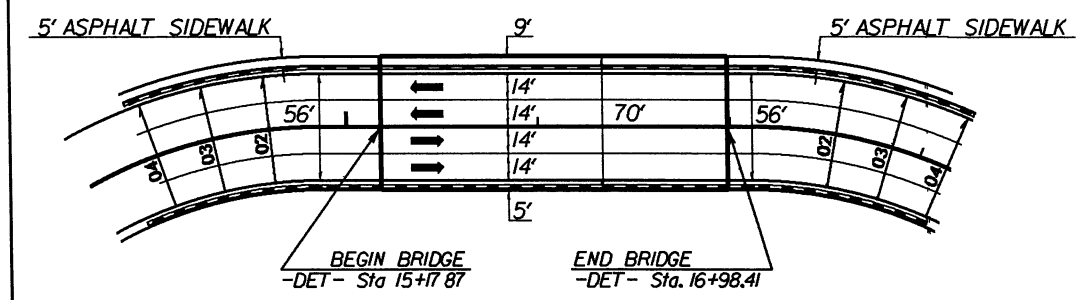


TYPICAL SECTION NO. 5

–DET– STA. 15+17.87 to –DET– STA. 16+98.41

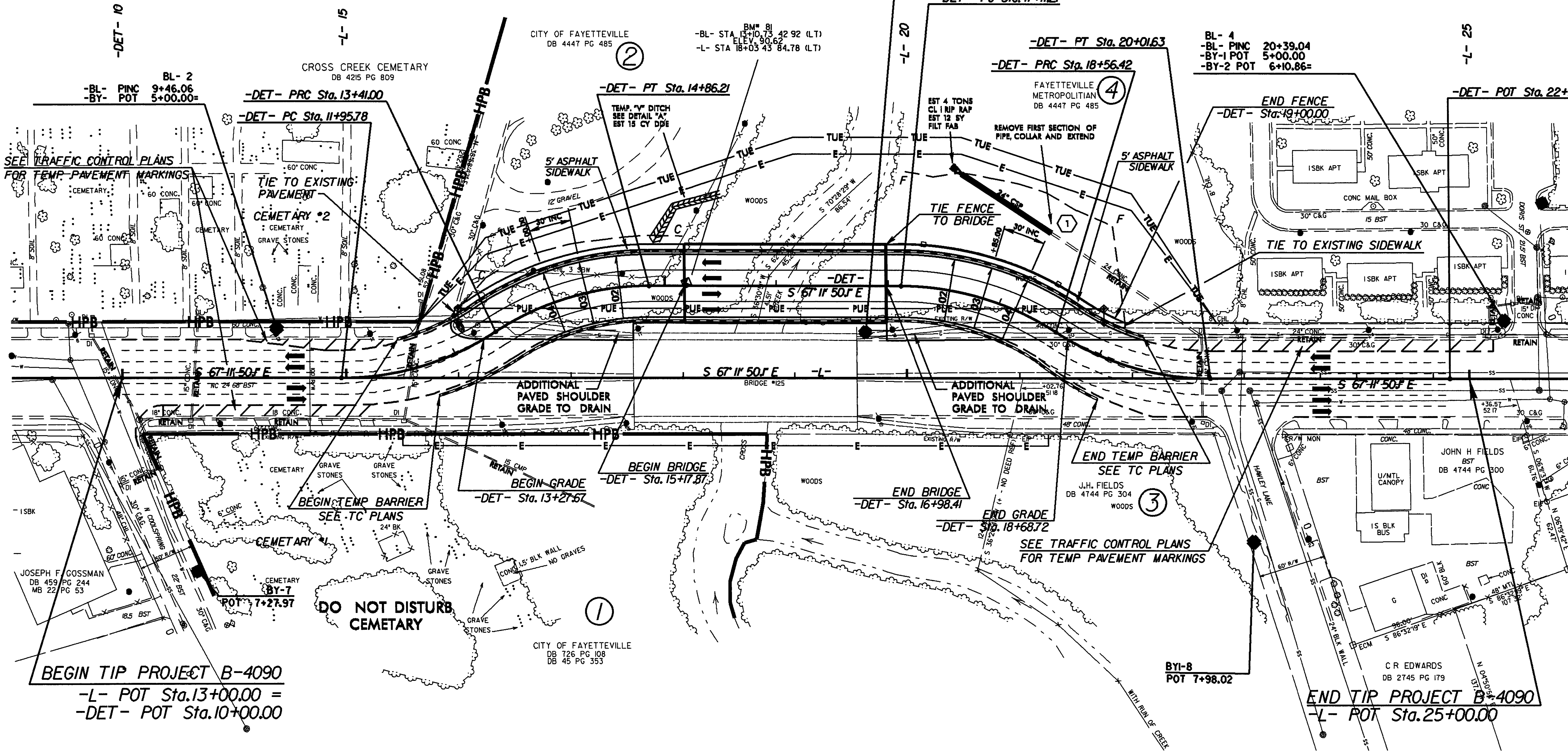
PROJECT REFERENCE NO.	SHEET NO.
B-4090	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

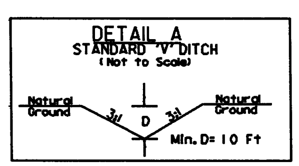


DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP

NOTE: SEE TRAFFIC CONTROL PLANS FOR EXACT JERSEY BARRIER LOCATIONS



DETOUR IS DESIGNED FOR 25 MPH.



-DET- CURVE DATA

PI Sta 12+70.50	PI Sta 14+15.71	PI Sta 17+85.92	PI Sta 19+31.14
Δ = 33°16' 47.6" (LT)	Δ = 33°16' 47.6" (RT)	Δ = 33°16' 47.6" (RT)	Δ = 33°16' 47.6" (LT)
D = 22°55' 05.9"	D = 22°55' 05.9"	D = 22°55' 05.9"	D = 22°55' 05.9"
L = 145.21'	L = 145.21'	L = 145.21'	L = 145.21'
T = 74.72'	T = 74.72'	T = 74.72'	T = 74.72'
R = 250.00'	R = 250.00'	R = 250.00'	R = 250.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

NOTES:

- FOR -L- SEE SHEET No. 4
- FOR -DET- PROFILE, SEE SHEET No. 5
- 2' JERSEY BARRIER
- HPB HISTORIC PROPERTY BOUNDARY
- FOR STRUCTURE PLANS, SEE SHEET S-? THRU S-??

REVISIONS

8/17/99

01-DEC-2010 14:01
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6/21/00

COMPUTED BY: JMT DATE: 5/2010
CHECKED BY: RJD DATE: 6/2010

PROJECT REFERENCE NO.	SHEET NO.
B-4090	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"
-L- STA 15+52	RT	2													
-DET- STA 18+16	LT	1	OUT												
SAY TOTALS															

STATION	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"
-L- STA 15+52																					
-DET- STA 18+16					96																
SAY TOTALS					96																

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU YDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN FT A 5.0' THRU 10.0'	LIN FT B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	
-L- STA 15+52													
-DET- STA 18+16													
SAY TOTALS													

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL 'B')

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32								CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- STA 15+52																						ADJUST EXISTING CATCH BASIN
-DET- STA 18+16																			5526		8	REMOVE 56' OF C S PIPE WITH DETOUR
SAY TOTALS																			1		64	

ABBREVIATIONS

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

SUMMARY OF EARTHWORK

	UNCL. EXCAV	EMBANK. +%	BORROW	WASTE
STAGE 1: DETOUR CONSTRUCTION				
-DET- STA 13+09.61 TO -DET- STA 15+17.87 (BEG. BR.)	574	631	57	
-DET- STA 16+98.41 (END BR.) TO -DET- STA 19+33.14	215	16,983	16,768	
SUBTOTALS:	789	17,614	16,825	
STAGE 2: L CONSTRUCTION				
-L- STA 16+00 00 TO -L- STA 17+40 00 (BEG BR.)	60	99	39	
-L- STA 19+70.00 (END BR.) TO -L- STA 20+50.00	64	38		26
SUBTOTALS:	124	137	39	26
STAGE 3: DETOUR REMOVAL				
-DET- STA 13+09 61 TO -DET- STA 15+17 87 (BEG BR.)	605	621	16	
-DET- STA 16+98 41 (END BR.) TO -DET- STA 19+33 14	11,174			11,174
SUBTOTALS:	11,779	621	16	11,174
STAGE 4: CONSTRUCT REMAINDER OF L LT.				
-L- STA 15+98.50 TO -L- STA. 17+40.00 (BEG. BR.)	6	73	67	
-L- STA 19+70.00 (END BR.) TO -L- STA 22+15.00	31	244	213	
SUBTOTALS:	37	317	280	
TOTALS:	12,729	18,689	17,160	11,200
WASTE IN LIEU OF BORROW			-26	-26
PROJECT TOTALS:	12,729	18,689	17,134	11,174
EST 5% TO REPLACE BORROW PIT TOP SOIL			857	
GRAND TOTALS:	12,729	18,689	17,991	11,174
SAY:	12,750		18,000	

UNDERCUT = 300 CY AS A CONTINGENCY
ESTIMATE DDE = 15 CY

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
L	16+75	17+40	CL	505.56
L	19+70	20+25	CL	427.78
DET	13+41	15+18	CL	1,365.83
DET	13+96	14+70	RT	60.06
DET	16+98	18+56	CL	1,220.19
DET	16+98	18+01	RT	88.33
			TOTAL:	3,667.75
			SAY:	3,670

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST FROM E O L	TOTAL SHOUL WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
L	16+08.75	17+40.00	RT	131.25			17+40.00 (BR)				112.5		2.25				1		1											
L	16+58.75	17+40.00	LT	81.25				17+40 00 (BR)				62.5		1.25			1		1											
L	19+70.00	20+51.25	RT	81.25				19+70.00 (BR)				62.5		1.25			1		1											
L	19+70 00	21+51.25	LT	181.25			19+70.00 (BR)				162.5		3.25				1		1											
			SUB-TOTAL	475																										
			ANCHOR DEDUCTION	-275																										
			TOTAL	200																										
			SAY	225																										

ANCHOR DEDUCTIONS
TYPE III: 4 @ 18 75' = 75'
TYPE 350: 4 @ 50' = 200'
GRAND TOTAL = 275'

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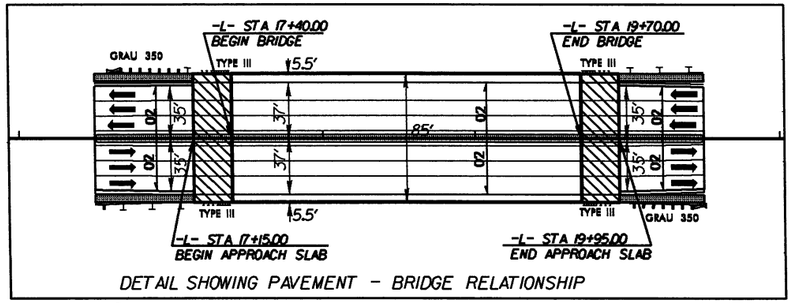
PROJECT REFERENCE NO.	SHEET NO.
B-4090	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS



DETAIL SHOWING PAVEMENT - BRIDGE RELATIONSHIP

NAD 83/95

-DET- 10 -L- 15 -DET- 15 -L- 20 -DET- 20 -L- 25

BL- 2
-BL- PINC 9+46.06
-BY- POT 5+00.00=

BL-3 PINC 14+70.93=

BL- 4
-BL- PINC 20+39.04
-BY-1 POT 5+00.00
-BY-2 POT 6+10.86=

CROSS CREEK CEMETARY
DB 4215 PG 809

CITY OF FAYETTEVILLE
DB 4447 PG 485

FAYETTEVILLE METROPOLITIAN
DB 4447 PG 485

JOSEPH F. GOSSMAN
DB 459 PG 244
MB 22 PG 53

J.H. FIELDS
DB 4744 PG 304

JOHN H FIELDS
DB 4744 PG 300

C R EDWARDS
DB 2745 PG 179

CITY OF FAYETTEVILLE
DB 726 PG 108
DB 45 PG 353

-DET- PC Sta. 11+95.78
-DET- PRC Sta. 13+41.00
-DET- PT Sta. 14+86.21
-DET- PC Sta. 17+11.21
-DET- PRC Sta. 18+56.42
-DET- PT Sta. 20+01.63
-DET- POT Sta. 22+14.

BM# 81
-BL- STA 12+10.03 42.92 (LT)
ELEV. 90.62
-L- STA 18+03.43 84.78 (LT)

REMOVE 56' OF CSP AND RELOCATE CL I RIP RAP AS SHOWN
EST 4 TONS CL I RIP RAP
EST 12 SY FILT FAB

BEGIN RETAINING WALL
-L- Sta. 19+75.00
END RETAINING WALL
-L- Sta. 20+25.00

-DET- S 67° 11' 50.5" E

TIE TO EXISTING C&G
-L- Sta. 15+98.50
O/S 66.50' LT

TIE TO EXISTING SIDEWALK
-L- Sta. 15+50.00

TIE TO EXISTING SIDEWALK
-L- Sta. 21+00.00

TIE TO EXISTING SIDEWALK
-L- Sta. 22+00.80

TIE TO EXISTING C&G
-L- Sta. 22+15.00

BEGIN RETAINING WALL
-L- Sta. 16+50.00
END RETAINING WALL
-L- Sta. 17+25.00

BEGIN RETAINING WALL
-L- Sta. 19+75.00

END RETAINING WALL
-L- Sta. 20+20.00

END APPROACH SLAB
-L- Sta. 19+95.00

END BRIDGE
-L- Sta. 19+70.00

BEGIN BRIDGE
-L- Sta. 17+40.00

BEGIN APPROACH SLAB
-L- Sta. 17+15.00

BEGIN TIP PROJECT B-4090
-L- POT Sta. 13+00.00 =
-DET- POT Sta. 10+00.00

BEGIN -L- GRADE
-L- POT Sta. 16+50.00

END -L- GRADE
-L- POT Sta. 20+50.00

END TIP PROJECT B-4090
-L- POT Sta. 25+00.00

BY-7
POT 7+27.97

BY1-8
POT 7+98.02

DO NOT DISTURB CEMETERY

A DESIGN EXCEPTION IS REQUIRED FOR THE PROPOSED LANE WIDTH.

-DET- CURVE DATA

PI Sta 12+70.50	PI Sta 14+15.71	PI Sta 17+85.92	PI Sta 19+31.14
Δ = 33° 16' 47.6" (LT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (RT)	Δ = 33° 16' 47.6" (LT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 145.21'	L = 145.21'	L = 145.21'	L = 145.21'
T = 74.72'	T = 74.72'	T = 74.72'	T = 74.72'
R = 250.00'	R = 250.00'	R = 250.00'	R = 250.00'
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS

NOTES:

SEE SHEET 2-B FOR DETOUR
FOR -L- PROFILE, SEE SHEET NO 5
SIDEWALK
BRIDGE APPROACH SLAB
HPB HPB HISTORIC PROPERTY BOUNDARY
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-11

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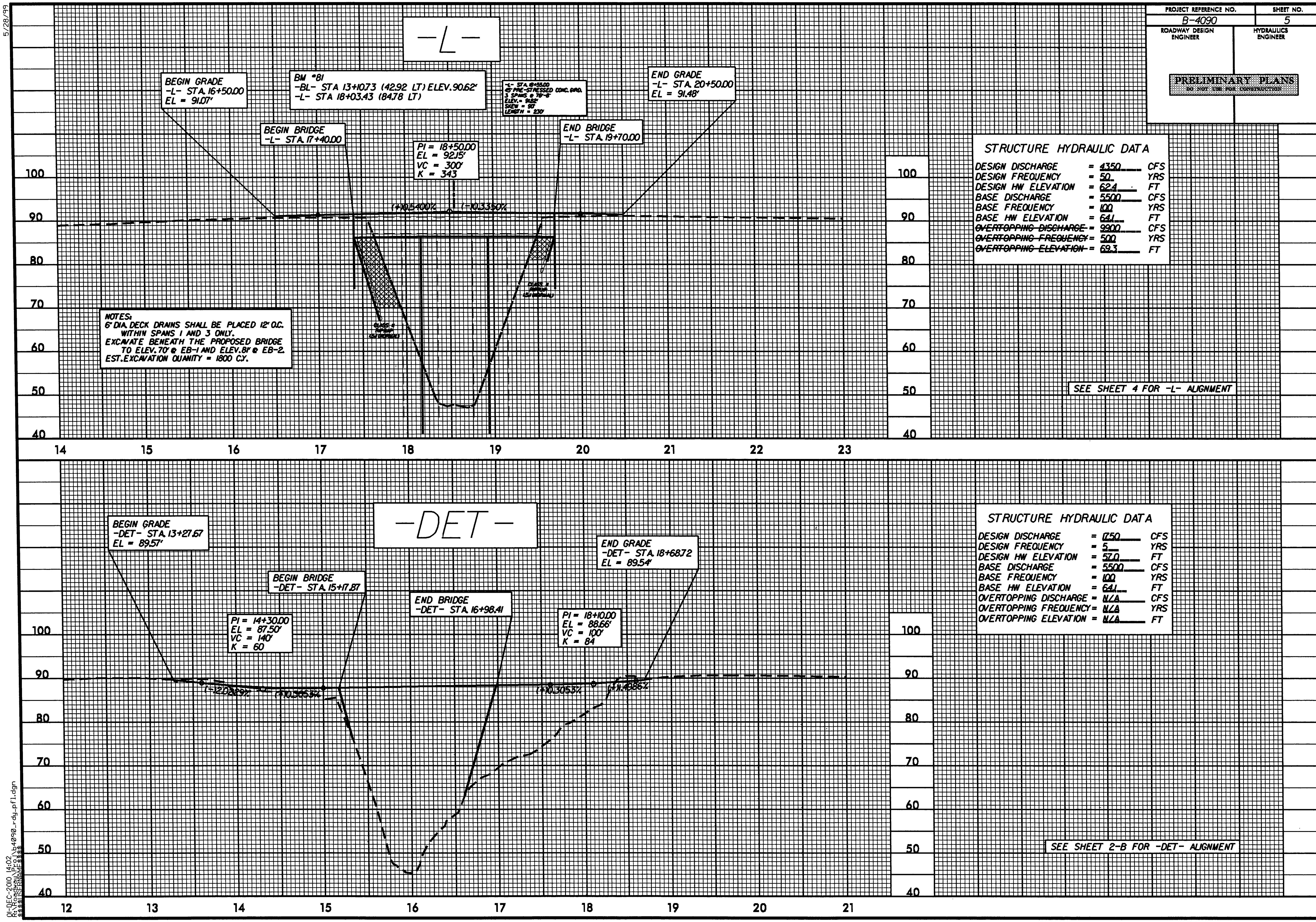
PROJECT REFERENCE NO.	SHEET NO.
B-4090	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99
-L-
BEGIN GRADE
-L- STA. 16+50.00
EL = 91.07'
BM #B1
-BL- STA 13+10.73 (42.92 LT) ELEV. 90.62'
-L- STA 18+03.43 (84.78 LT)
-L- STA. 18+55.00
45" PRE-STRESSED CONC. GIRD.
3 SPANS @ 76'-8"
ELEV. = 91.82'
SKEW = 90°
LENGTH = 230'
END GRADE
-L- STA. 20+50.00
EL = 91.48'
BEGIN BRIDGE
-L- STA. 17+40.00
END BRIDGE
-L- STA. 19+70.00
PI = 18+50.00
EL = 92.15'
VC = 300'
K = 343
(+)0.5400%
(-)0.3350%
NOTES:
6" DIA. DECK DRAINS SHALL BE PLACED 12' O.C. WITHIN SPANS 1 AND 3 ONLY.
EXCAVATE BENEATH THE PROPOSED BRIDGE TO ELEV. 70' @ EB-1 AND ELEV. 81' @ EB-2.
EST. EXCAVATION QUANITY = 1800 C.Y.
SEE SHEET 4 FOR -L- ALIGNMENT
100
90
80
70
60
50
40
14
15
16
17
18
19
20
21
22
23
-DET-
BEGIN GRADE
-DET- STA. 13+27.67
EL = 89.57'
BEGIN BRIDGE
-DET- STA. 15+17.87
END BRIDGE
-DET- STA. 16+98.41
END GRADE
-DET- STA. 18+68.72
EL = 89.54'
PI = 14+30.00
EL = 87.50'
VC = 140'
K = 60
PI = 18+10.00
EL = 88.66'
VC = 100'
K = 84
(-)2.0229%
(+)0.3053%
(+)0.3053%
(+)1.4686%
SEE SHEET 2-B FOR -DET- ALIGNMENT
12
13
14
15
16
17
18
19
20
21
01-DEC-2010 14:02
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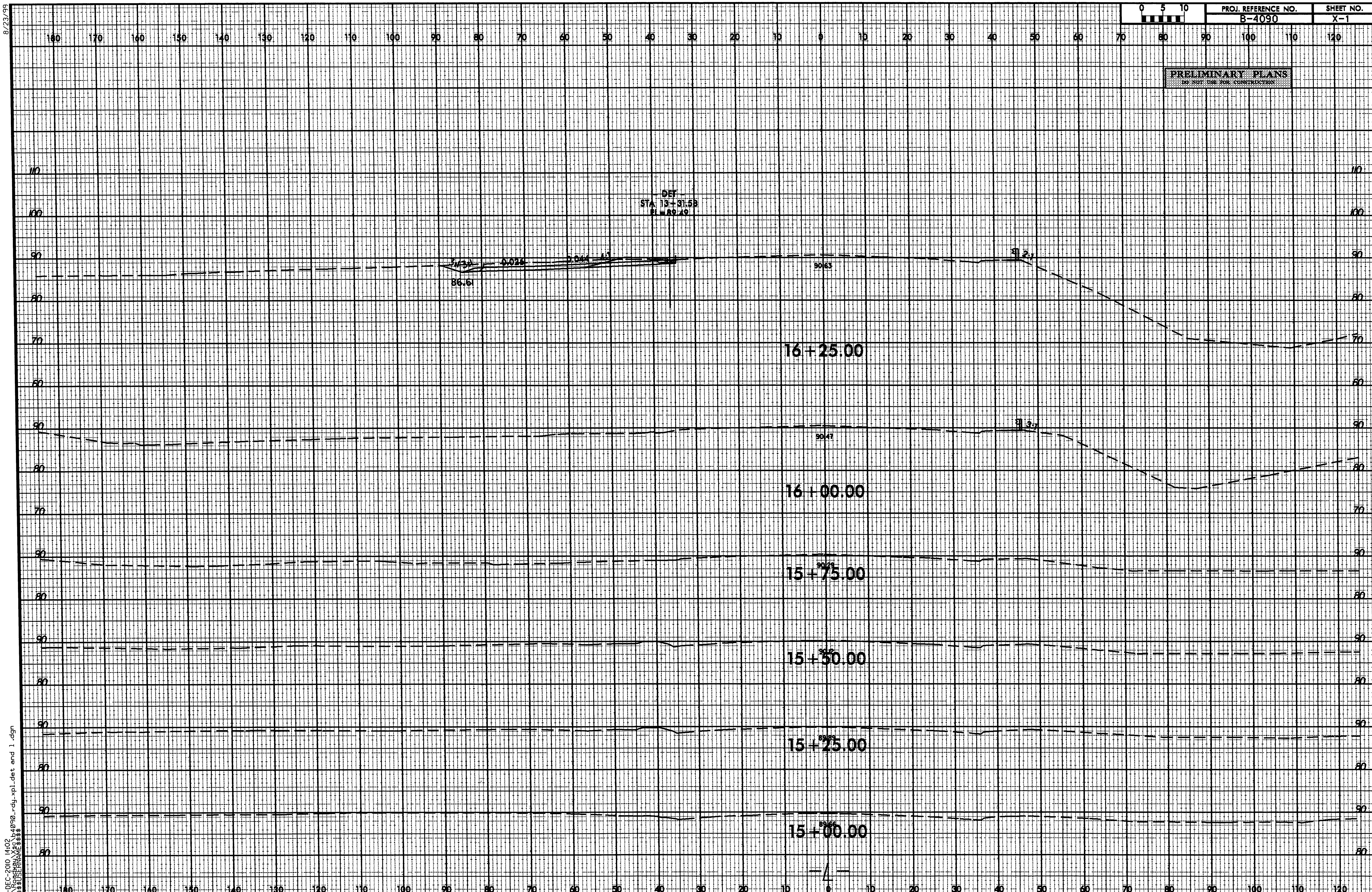
STRUCTURE HYDRAULIC DATA (-L-)

DESIGN DISCHARGE	=	4350	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	62.4	FT
BASE DISCHARGE	=	5500	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	64.1	FT
~~OVERTOPPING DISCHARGE~~	=	9900	CFS
~~OVERTOPPING FREQUENCY~~	=	500	YRS
~~OVERTOPPING ELEVATION~~	=	69.3	FT

STRUCTURE HYDRAULIC DATA (-DET-)

DESIGN DISCHARGE	=	1750	CFS
DESIGN FREQUENCY	=	5	YRS
DESIGN HW ELEVATION	=	57.0	FT
BASE DISCHARGE	=	5500	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	64.1	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	N/A	YRS
OVERTOPPING ELEVATION	=	N/A	FT

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-1



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-2

180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120

110 100 90 80 70 60 50

– DET –
STA 14+15.10
EL=88.05

3:1 3:1 0.019 0.034 4:1 0.043 0.020 0.020

85.73 90.70 91.28 84.30 0.02

17+00.00

– DET –
STA 13+88.60
EL=88.41

3:1 3:1 0.021 0.042 4:1 0.044 0.025 0.025

85.78 90.67 90.98 84.19 0.02

16+75.00

– DET –
STA 13+60.87
EL=88.90

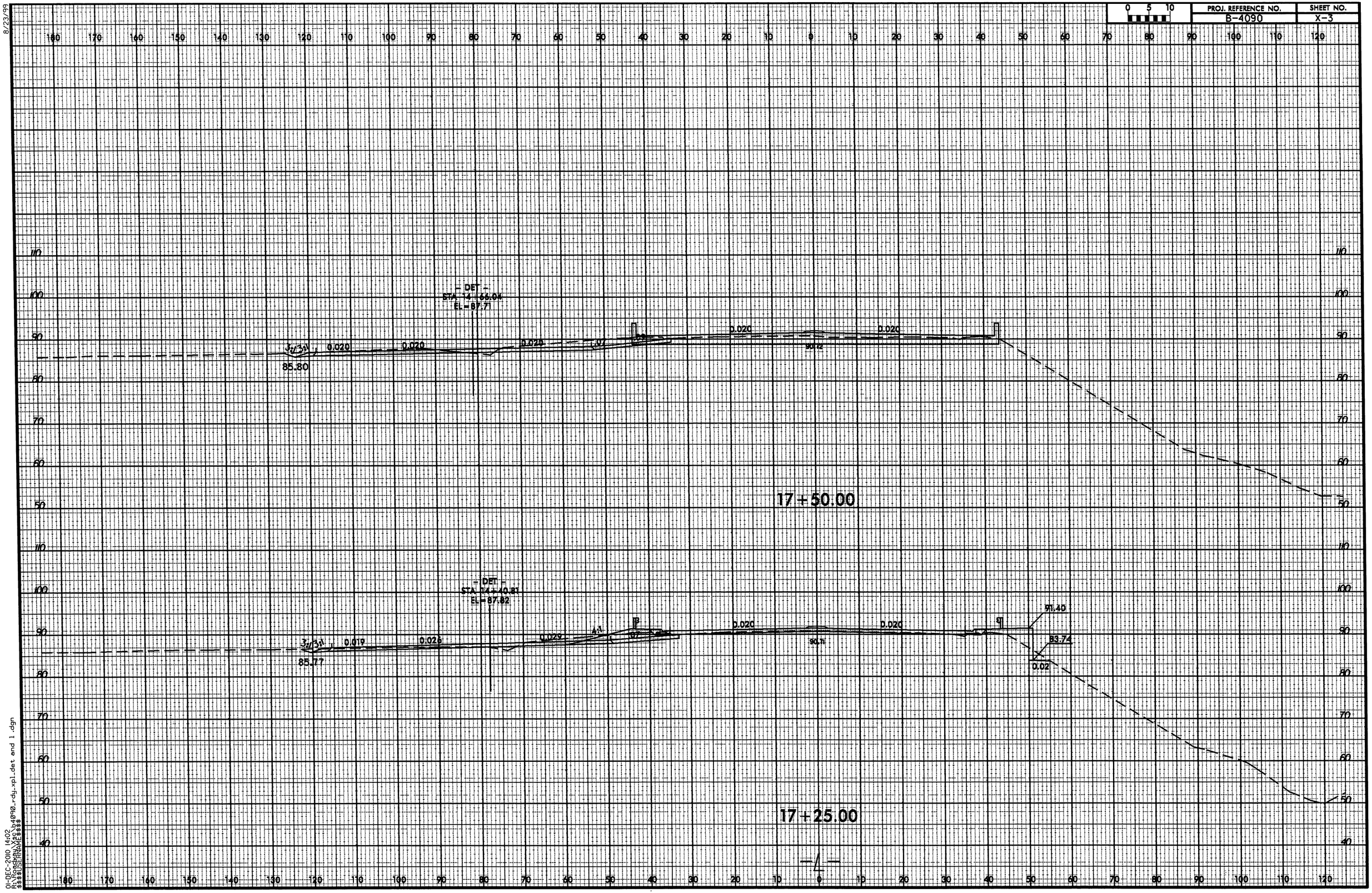
3:1 3:1 0.026 0.044 4:1 0.045 0.030 0.030

86.13 90.65 90.68 84.87 0.02

16+50.00

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-3



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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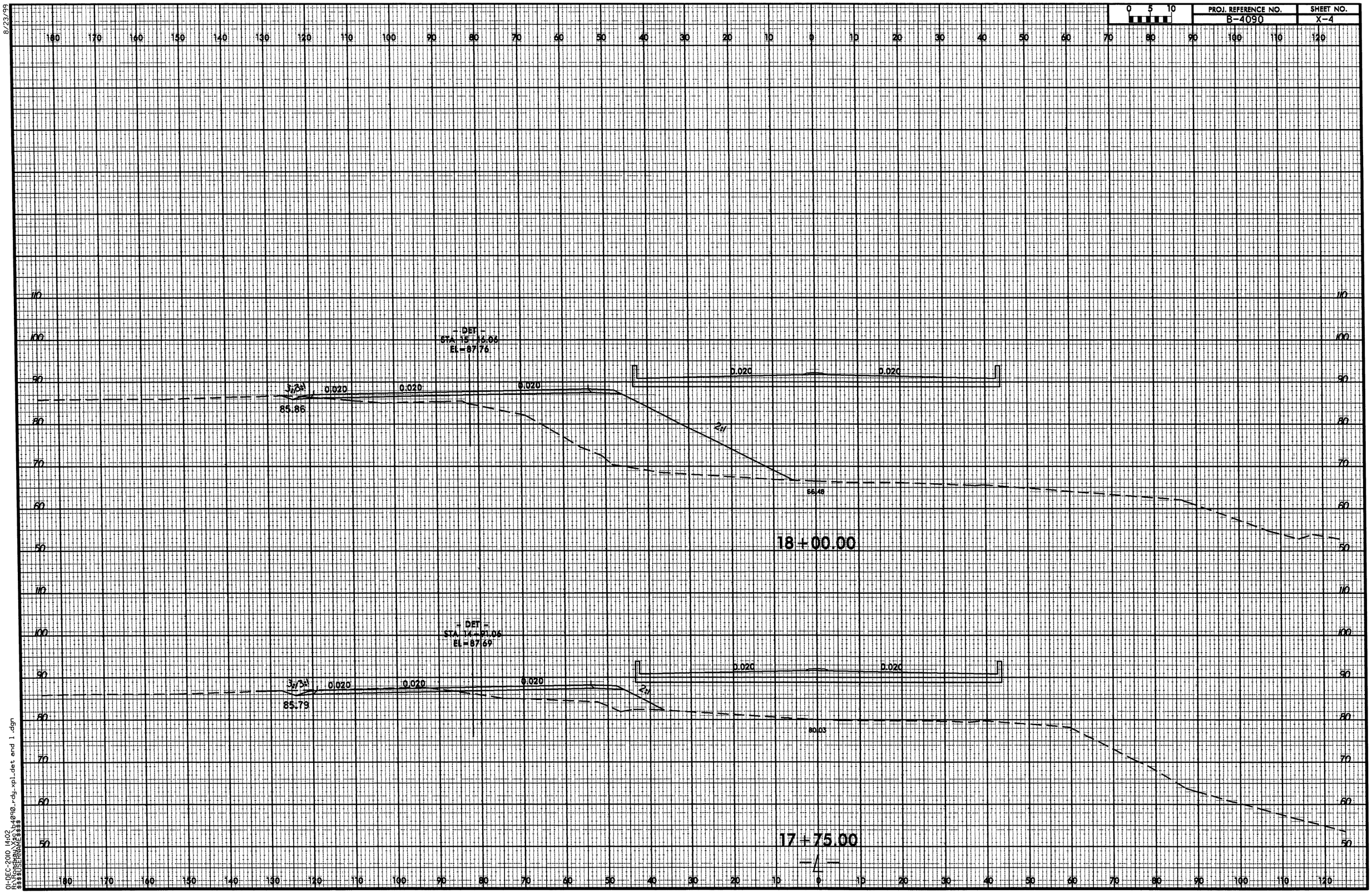

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$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-5

- DET -
STA 15+56.06
EL=87.92

0.020 0.020 0.020

0.020 0.020

18+50.00

- DET -
STA 15+41.06
EL=87.84

0.020 0.020 0.020

0.020 0.020

52.92

18+25.00

-4-

01-DEC-2010 14:02
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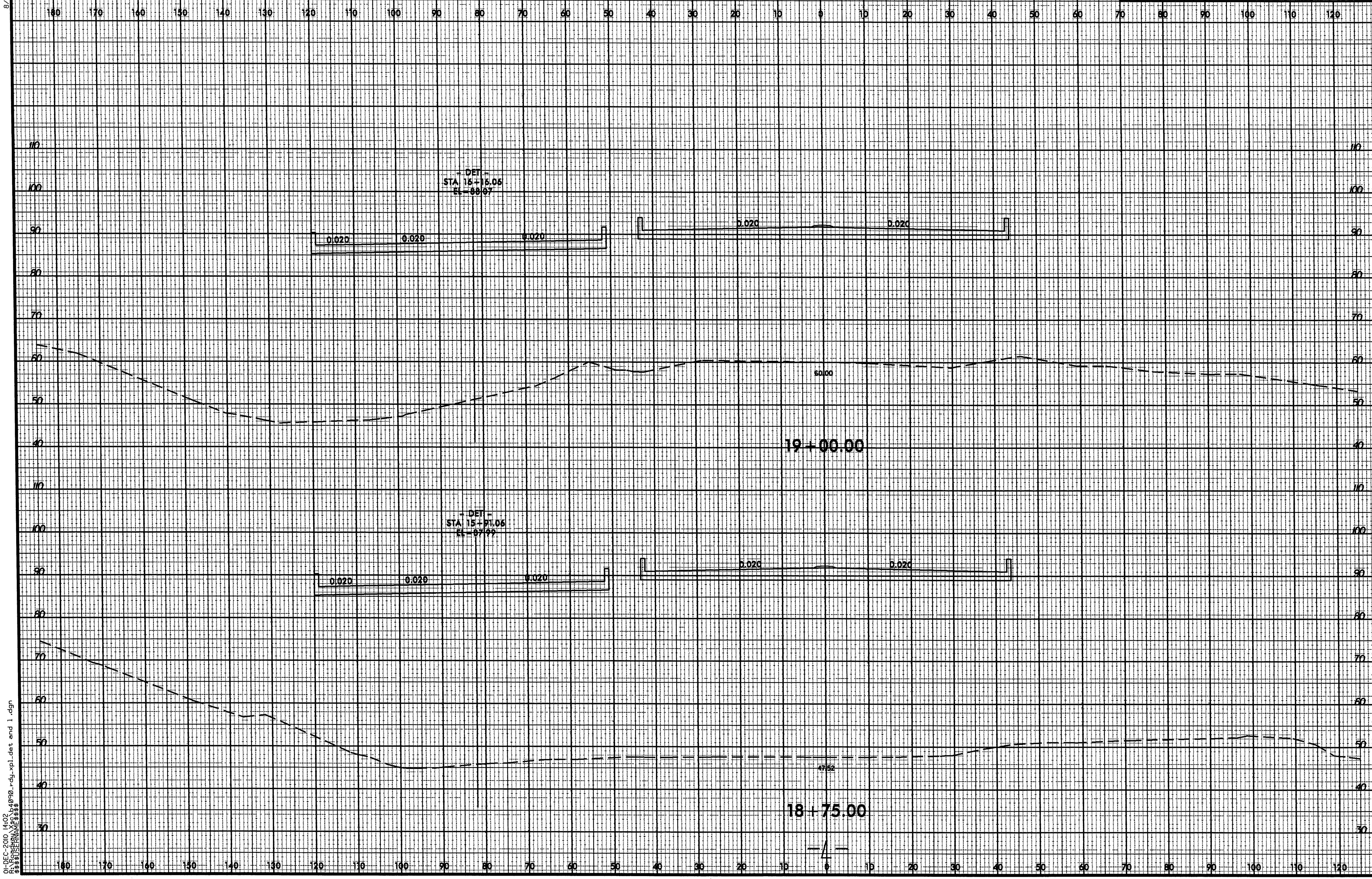
PROJ. REFERENCE NO.	SHEET NO.
B-4090	X-6



8/23/99

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-7

180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120

110 100 90 80 70 60 50 40

– DET –
STA 16+56.06
EL= 88.22

0.020 0.020 0.020

0.020 0.020

86.97

19+50.00

– DET –
STA 15+41.06
EL= 88.14

0.020 0.020 0.020

0.020 0.020

73.50

19+25.00

01-DEC-2010 14:02
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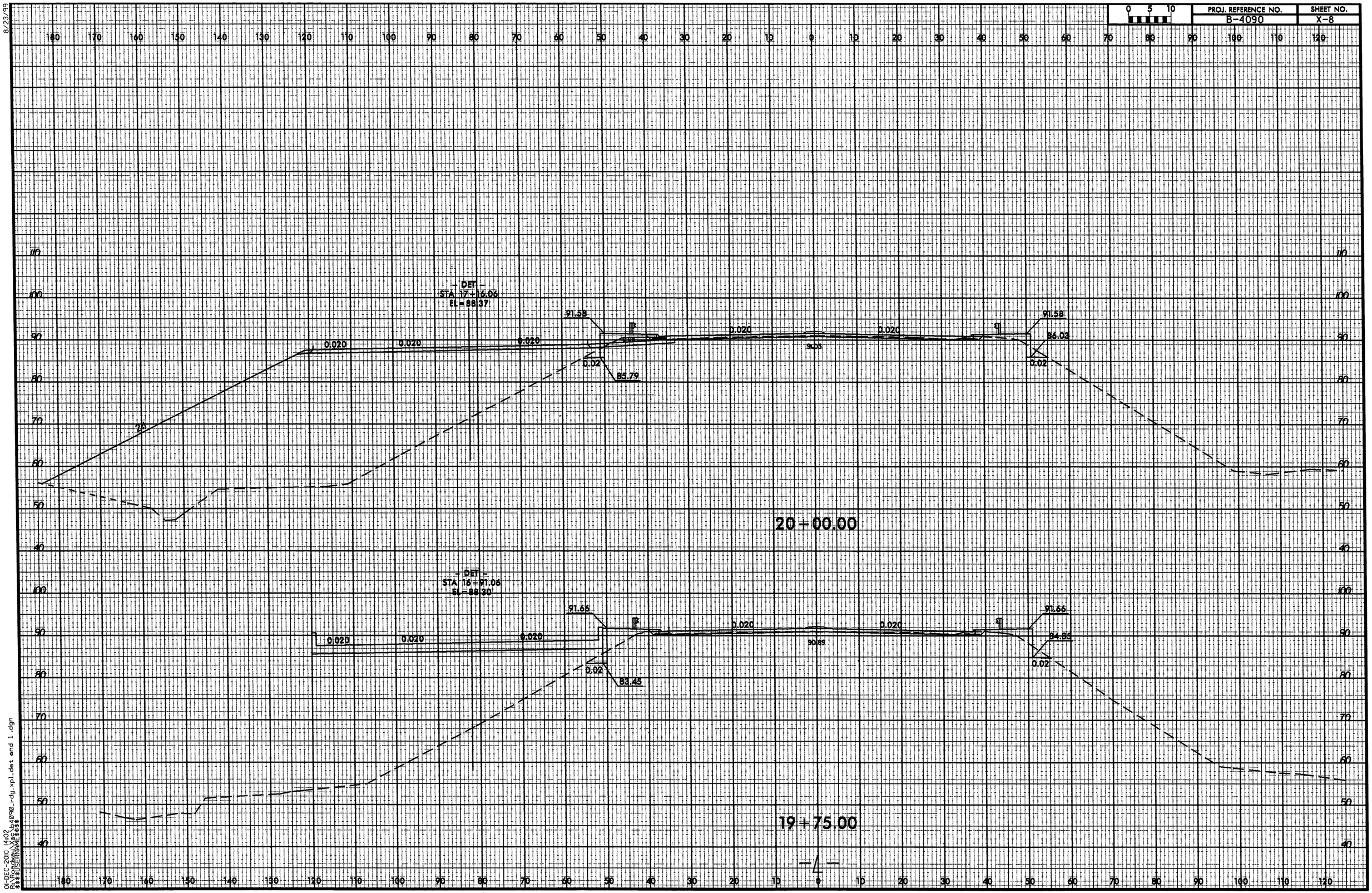
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-8



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01-DEC-2010 14:02
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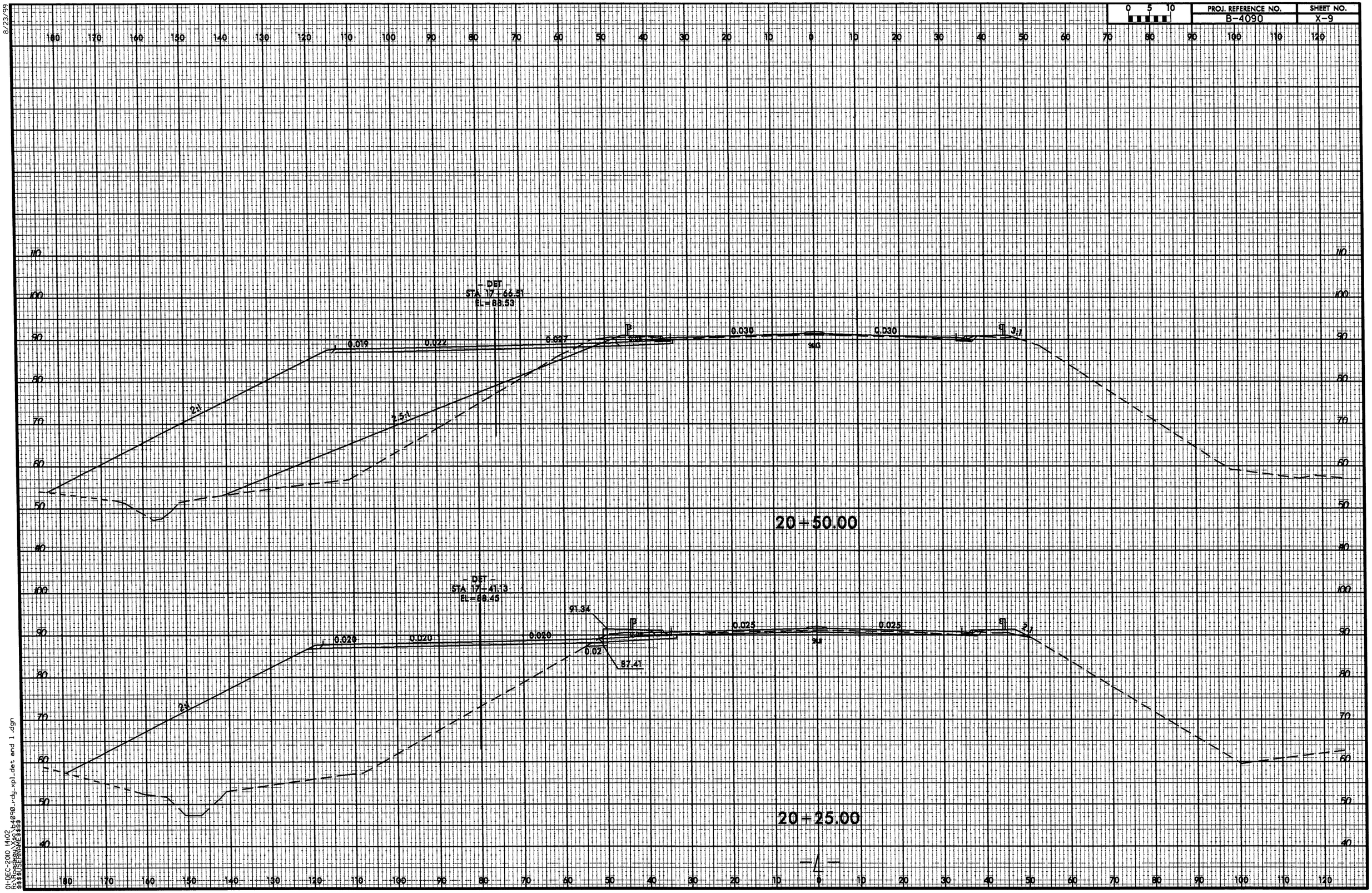
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-9



01-DEC-2010 14:02
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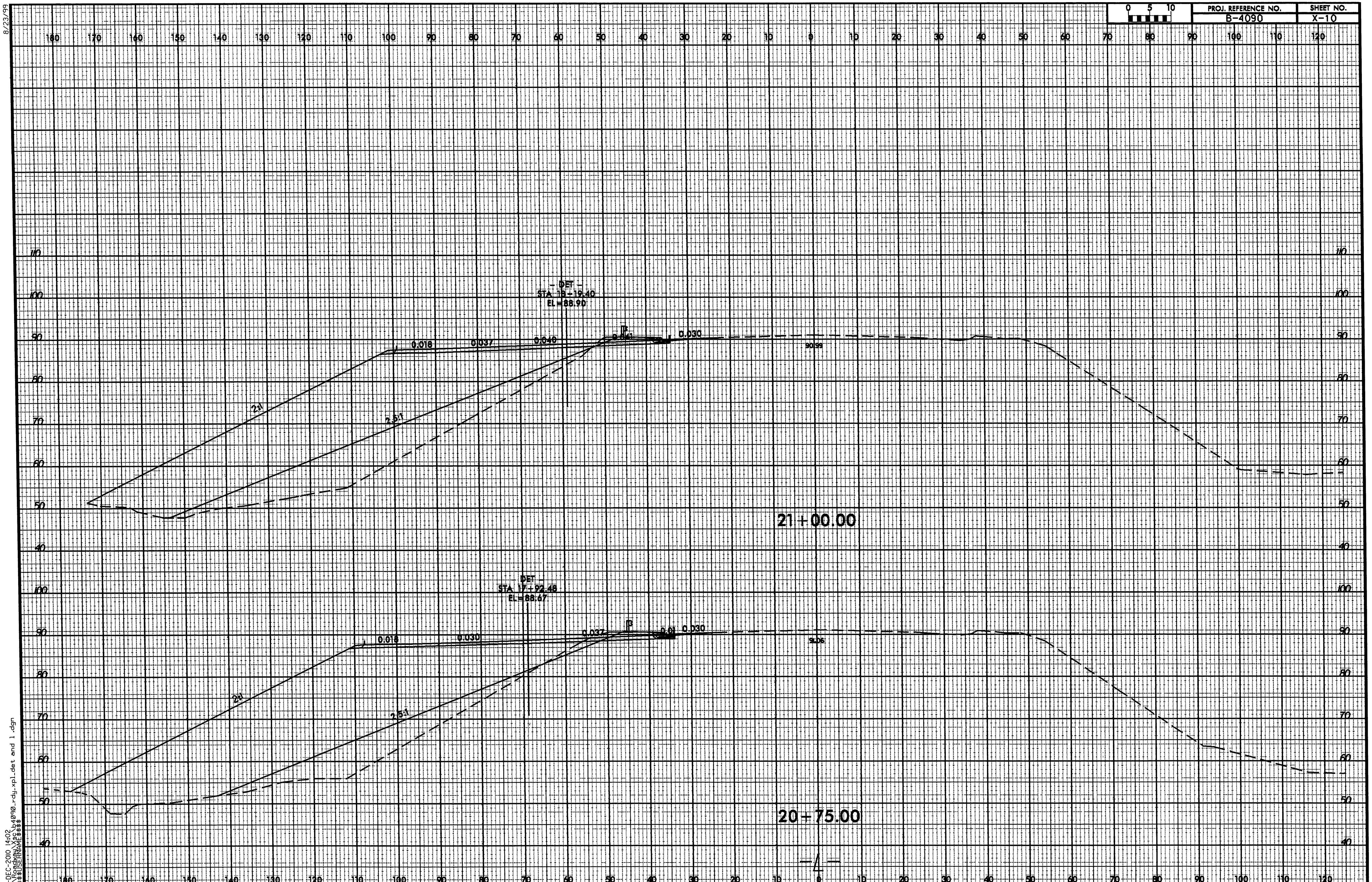
PROJ. REFERENCE NO.	SHEET NO.
B-4090	X-10



8/23/99
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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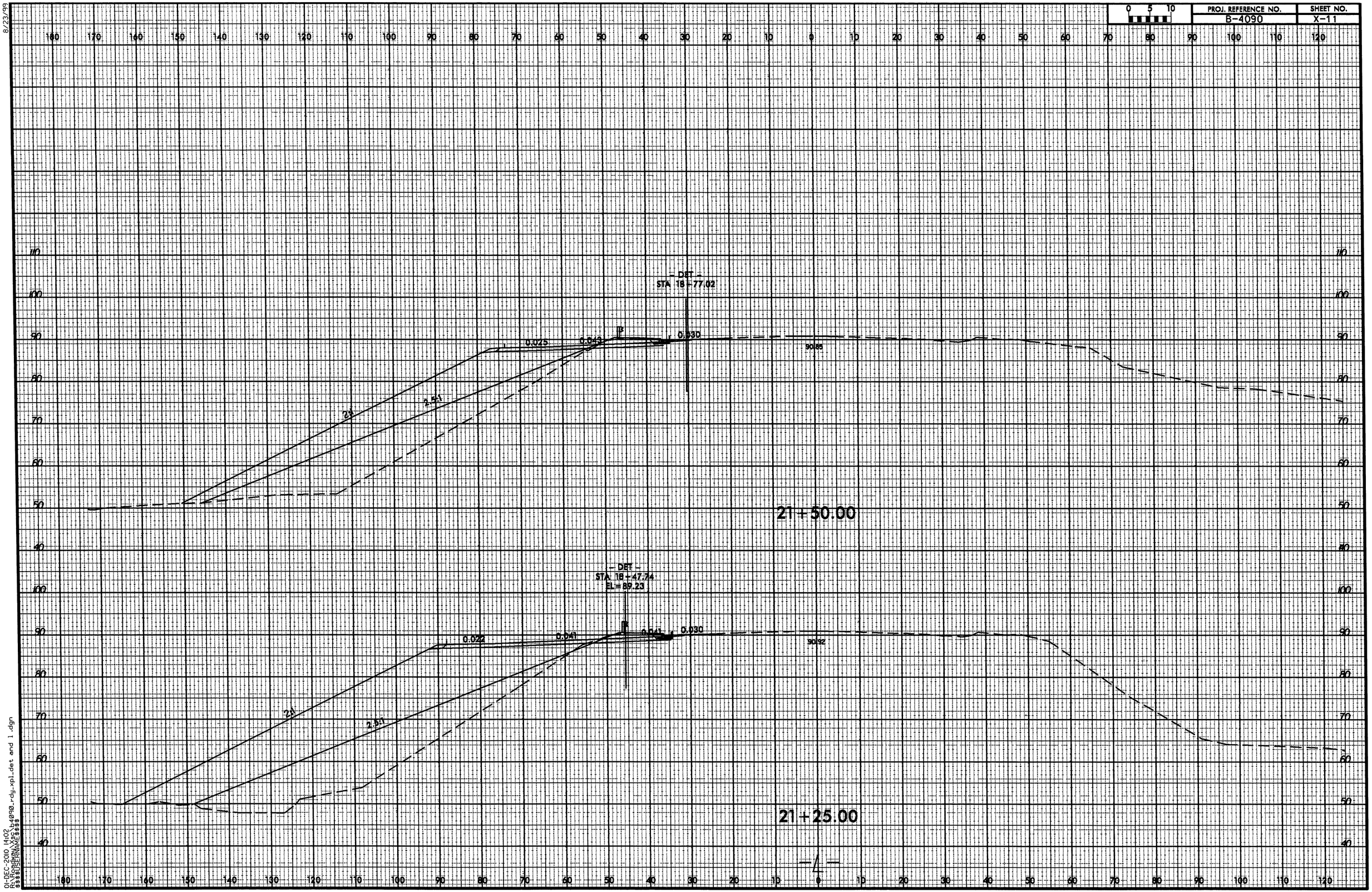

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4090	X-12

22+25.00

22+00.00

21+75.00

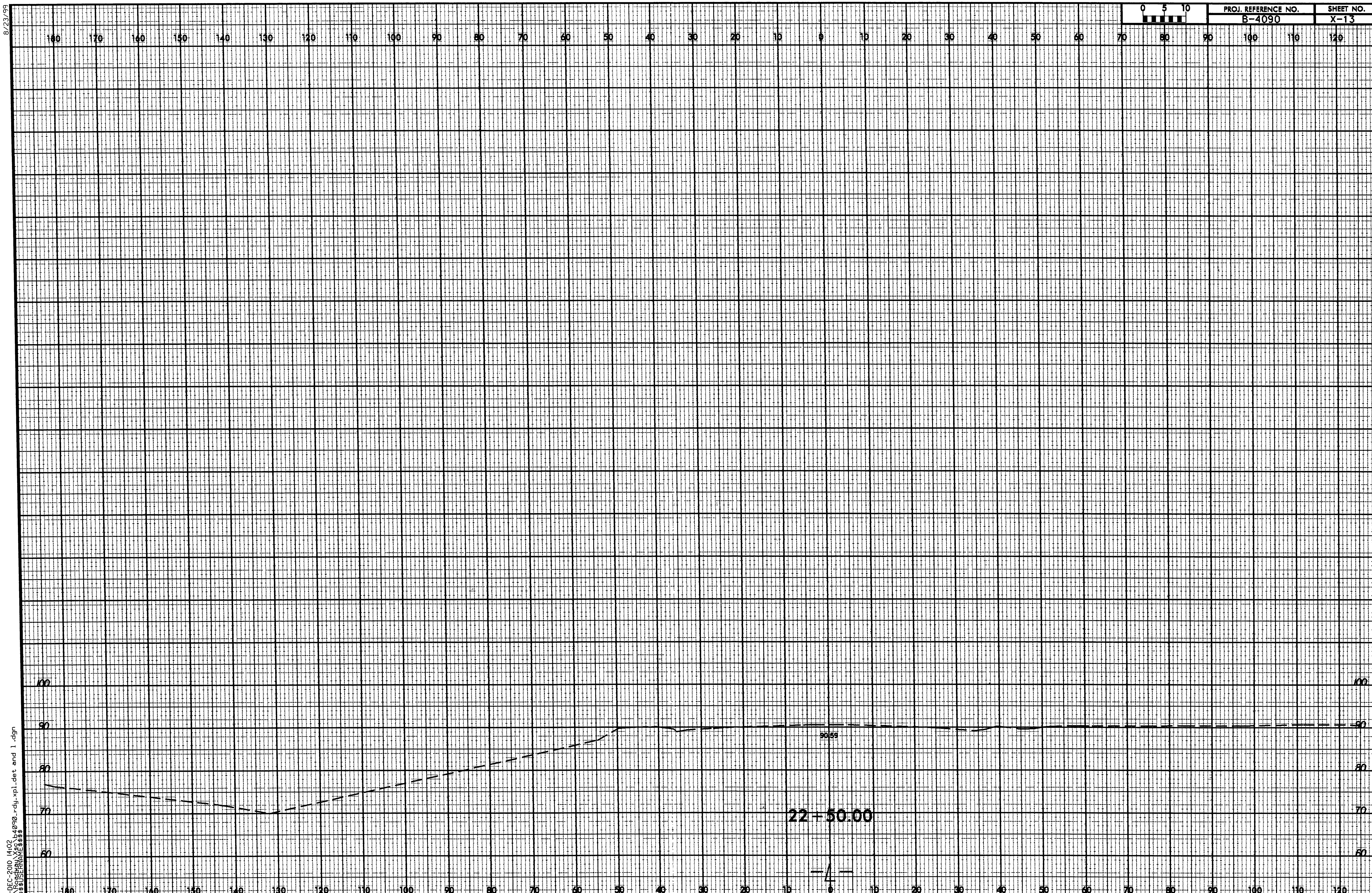
90.65

90.72

90.78

2.5:1

PROJ. REFERENCE NO.	SHEET NO.
B-4090	X-13



8/23/99

01-DEC-2010 14:02
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