STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

June 21, 2012

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

ATTN: Ms. Loretta Beckwith
NCDOT Coordinator

Subject: **Application for Section 404 General Permit 31 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 81 over Long Creek on SR 1117 (Moose Branch Road) in Graham County, Federal Aid Project No. BRZ-1117(8); Division 14; TIP No. B-4122. $240.00 debit WBS 33475.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 81 over Long Creek on SR 1117. There will be 42 linear feet of impacts from the crown span structure and 83 linear feet of bank stabilization impacts on Long Creek. The crown span is a 3-sided structure, allowing the natural stream channel and substrate to be minimally affected. There will be 0.05 acre of temporary impacts during the placement of the structure. The installation of two (2) utility piers for the installation of a re-located aerial sewer line will result in 7 square feet of impacts.

Please see enclosed a Pre-Construction Notification (PCN), a copy of the NCEEP mitigation acceptance letter, jurisdictional determination form, stormwater management plan, permit drawings, utility permit drawing, and design plans for the above mentioned project. Also included is a memorandum from Bob Kopetsky (NCDOT-Roadside Environmental Unit) concerning the value of the tree. The Categorical Exclusion (CE) was completed in February 2011 and distributed shortly thereafter. Additional copies are available upon request.

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

TELEPHONE: 919-707-6100
FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

Background

- February 9, 2010: Application submittal for a proposed bridge that would eliminate a nearby oak tree.
- March 5, 2010: 401 certifications received for bridge structure (expired April 28, 2012).
- May 3, 2010: 404 permits received for bridge structure (expired April 28, 2012).
- July 12, 2011: Application for a proposed culvert (with concrete slab floor) that would not eliminate the oak tree.
- August 8, 2011: Letter from USACE denying issuance of 404 permit due to lack of avoidance and minimization measures.

Bridge No. 81 over Long Creek is located next to a large oak tree with extensive personal value to the landowner. Replacing the existing bridge with a new bridge would involve elimination of the oak tree. The alignment cannot be shifted to avoid the tree due to impacts that would occur to adjacent 4(f) facilities. NCDOT has incorporated contact sensitive solutions to manage this project due to the landowners request to save the tree.

New Proposed Structure

The NCDOT has continued efforts to assess alternative structure design for a suitable structure to replace Bridge No. 81 that would allow the tree to remain at the site and also minimize adverse effects to Long Creek. A vertical abutment bridge that would have minimized impacts to the tree was evaluated. Ultimately however, this design did not meet FEMA floodplain regulations.

With the limitations due to FEMA regulations, a re-designed crown span structure is being proposed. The re-designed crown span structure has an alternative construction design that will utilize sheet piles to key in the span. This alternative construction design will allow the crown span to be a 3-sided structure, allowing the natural stream channel and substrate to be only minimally affected.

Overall, the proposed crown span allows for a smaller "footprint", as compared to the previously permitted bridge. Utilizing the proposed 3-sided crown span structure allows the tree to remain in place (with some pruning of the crown) with minimal excavation near the root system. It also allows the existing wooden abutment to remain in place, which will avoid probable de-stabilization of the streambank that would have occurred from construction of the previously permitted bridge structure.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachments, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

This project calls for a letting date of December 18, 2012 and a review date of October 30, 2012; however, the let date may advance as additional funding becomes available.

A copy of this permit application 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 Bill Barrett at (919) 707-6103.

Sincerely,

E. L. Lusk

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

CC:

NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number:	or General Permit (GP) number: 198200031	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes	☒ No

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

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

☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization

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

2. Project Information

2a. Name of project:	Replacement of Bridge 81 over Long Creek on SR 1117 (Moose Branch Road).
2b. County:	Graham
2c. Nearest municipality / town:	Robbinsvile
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4122

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6103
3g. Fax no.:	(919) 212-5785
3h. Email address:	wabarrett@ncdot.gov

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

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 35.25188 (DD.DDDDDD)	Longitude: - 83.811307 (-DD.DDDDDD)
1c. Property size:	3.5 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Long Creek	
2b. Water Quality Classification of nearest receiving water:	C Tr	
2c. River basin:	Little Tennessee	
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: Residential and minor commerical development. Narrow wooded buffer adjacent to stream.		
3b. List the total estimated acreage of all existing wetlands on the property: 0.0		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 175 feet perennial (Long Creek), 132 feet intermittent (piped section of UT)		
3d. Explain the purpose of the proposed project: To replace a structurally deficient bridge (Sufficiency rating of 35.9 out of 100)..		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing an existing bridge with a 36-foot long, 1 @ 40'X6' crownspan structure on footings supported by sheet piling with a clear roadway width of 33'5". An off-site detour will be utilized during the construction of the project. 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: Determination of Jurisdiction issued by the USACE, dated April 28, 2010. Expires April 28, 2015.	☒ 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): Jason Dilday	Agency/Consultant Company: NCDOT Other: DavidBaker (USACE)	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. April 28, 2010		

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. NCDOT received NW 13 and 25 permits (SAW-2010-0268) from the USACE, issued 4/28/2010, and 401 Water Quality Certifications (Proj. 20100107) from NCDWQ on 3/10/2010. Design changes to the project, undertaken to address the concern regarding a significantly large tree at the site (see Section D 1a. of this PCN for additional information regarding the tree), necessitated the need for acquisition of new permit/certification. A permit application, dated July 11, 2011 (received by USACE on July 15, 2011) proposing a change in the replacement structure, from a bridge to a 42-foot crownspan (that required a concrete slab floor due to the lack of bedrock at the site) was submitted. The USACE determined that the project did not meet the conditions for use of the NWP program, and therefore, verification of use of the NWP program was not issued (USACE letter dated August 8, 2011).			
6. Future Project Plans			
6a. Is this a phased project?	☐ Yes	☒ No	
6b. If yes, explain.			

C. Proposed Impacts Inventory

1. Impacts Summary

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

☐ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

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

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	X Permanent X 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)
Site 1 ☒ P ☐ T	Bank Stabilization	Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	28	83
Site 1 ☒ P ☐ T	Crownspan / fill	Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	28	42
Site 1 ☐ P ☒ T	Crownspan / dewatering	Long Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	28	*
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	125 Perm

3i. Comments: * The 41 LF of Temporary impacts along the west side of stream are included within the length of permanent stream impacts for the structure.

4. Open Water Impacts

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

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

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

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

6. Buffer Impacts (for DWQ)

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

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

D. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

The previously permitted bridge design would have required removal of a significantly large tree at the site, that had been brought to the attention of the NCDOT (see attached letter from Bob Kopetsky with NCDOT Roadside Environmental Unit) . Due to the presence of the significantly large oak tree at the site, several designs were evaluated for their potential for saving the tree, while also minimizing impacts to Long Creek. Shifting the alignment upstream awayfrom the tree, would negatively impact 4F facilities in the southeast quadrant. A vertical abutment bridge that would have minimized impacts to the tree was evaluated. Ultimately, the design did not meet FEMA floodplain regulations.

The proposed crown span structure is 3-sided, allowing the natural stream channel and substrate to be minimally affected, and allowing for a smaller footprint than the previously permitted bridge. Additionally, using the crown span structure allows the significant, large tree at the site to remain in place (with some pruning of the crown) with minimal excavation near the root system. It also allows the existing wooden abutment to remain in place, which will avoid destabilization of the streambank that would have occurred from construction of the previously permitted bridge.

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

Design Standards in Sensitive Watersheds will be used in all phases of construction. A trout moratorium will prohibit In-stream work between October 15 - April 15.The use of NCDOT's Best Management Practices for Bridge Demolition and Removal and Best Management Practices for Construction and Maintenance Activities.

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

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☒ Yes ☐ No If no, explain:
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☒ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☒ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

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

3c. Comments:

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

4a. Approval letter from in-lieu fee program is attached.	☒ Yes
4b. Stream mitigation requested:	42 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☒ cold
4d. Buffer mitigation requested (DWQ only):	square feet
4e. Riparian wetland mitigation requested:	acres
4f. Non-riparian wetland mitigation requested:	acres
4g. Coastal (tidal) wetland mitigation requested:	acres

4h. Comments:

5. Complete if Using a Permittee Responsible Mitigation Plan

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

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?	☐ Yes ☐ No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: If required from 1a, see attached buffer permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
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 web page of T/E species for Graham County and the NHP database of element occurrences. Numerous field surveys for Appalachian elktoe were conducted by NCDOT and NCWRC biologists of Long Creek and the surrounding area resulting in no mussels being found. The last survey was conducted on May 5, 2004. A biological conclusion of "No Effect" was rendered. It was determined that no additional surveys were needed due to poor habitat.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Lusk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	6-21-12 Date

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

June 8, 2011

MEMORANDUM TO: Anthony Houser, P.E.
Roadway Project Engineer

FROM: Bob Kopetsky, RLA
Roadside Environmental Unit

SUBJECT: B-4122, Bridge 81 over Long Creek in Robbinsville
Tree Preservation

Our Roadside field staff has reviewed the project and the large tree adjacent to the bridge and creek. We have not found it to be registered as a "North Carolina Champion Tree" or a "National Register of Big Trees". Although not registered, the tree has unique characteristics of size and age which may set apart as a tree of significance.

Observations:

Tree species: Quercus alba, White Oak
Circumference: 14.2'
Spread: 88'
Height: 65'
Estimated Age: 270 yrs.
Notes: The tree has been found to be in good general health.

Comments:

It being a White Oak of significant size and age (in and of itself) makes it unique and special. It more than likely stood in place while the Cherokee hunted in surrounding forests. It would have first sprouted as settlers reached in to western North Carolina. It stood throughout the Civil War (1861), the establishment of Graham Co (1872) and the construction of Robbinsville's first courthouse (1874); it therefore would be much older than the automobile or paved roads.
Its location adjacent to Long Creek also gives it environmental significance of anchoring the slope and providing shade and shelter along its banks.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
ROADSIDE ENVIRONMENTAL UNIT
1557 MAIL SERVICE CENTER
RALEIGH NC 27699-1557

TELEPHONE: 919-733-2920
FAX: 919-733-9810

WEBSITE: www.NCDOT.GOV

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Recommendations:

The tree's environmental significance is important and measurable. Its historic significance is immeasurable and irreplaceable. NCDOT's greatest effort would be to develop construction plans and establish measures to protect and minimize impacts to the stream and tree.

Central and Division Roadside staff can work together, and in conjunction with the construction project, for the planned preservation of the tree.
Measures to prepare the tree for construction (i.e. pruning and fertilization), protection during construction (i.e. minimal impacts to the trees root system), and planned integrated maintenance post construction should help greatly to assist in the health and welfare of the tree.

[1] estimated age is based on the formula: average diameter of the tree x species factor. As defined, the age is only an estimate. Greater clarity through physical observation of local tree growth patterns, the specific tree characteristics of branching, bark development and size can more accurately define age (by certified Arborist specializing in tree age estimating).

cc: Ed Ingle, CPESC, Roadside Field operations Engineer
Connie Morgan, Roadside Environmental Designer
Richard Queen, Div 14 Roadside Environmental Engineer

Ecosystem Enhancement PROGRAM

June 21, 2011

Mr. Gregory J. Thorpe, Ph.D.
Manager, Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4122, Replace Bridge Number 81 over Long Creek on SR 1117 (Moose Branch Road), Graham County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on June 20, 2011, the impacts are located in CU 06010204 of the Little Tennessee River Basin in the Southern Mountains (SM) Eco-Region, and are as follows:

Little Tennessee 06010204 SM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	42	0	0	0	0	0	0	0

EEP commits to implementing sufficient compensatory stream mitigation credits to offset the impacts associated with this project in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

James B. Stanfill for

William D. Gilmore, P.E.
EEP Director

cc: Mr. Lori Beckwith, USACE – Asheville Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: B-4122

Determination of Jurisdiction:

A. ☐ Based on preliminary information, there appear to be waters of the US including wetlands within the above described project area. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

B. ☐ There are Navigable Waters of the United States within the above described project area subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

C. ☒ There are waters of the US and/or wetlands within the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

D. ☐ The jurisdictional areas within the above described project area have been identified under a previous action. Please reference jurisdictional determination issued ___. Action ID

Basis of Jurisdictional Determination: Long Creek is a tributary to the Little Tennessee River which is a Section 10 navigable-in-fact waterway (TNW).

Appeals Information: (This information does not apply to preliminary determinations as indicated by paragraph A. above).

Attached to this verification is an approved jurisdictional determination. If you are not in agreement with that approved jurisdictional determination, you can make an administrative appeal under 33 CFR 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

District Engineer, Wilmington Regulatory Program
Attn: David Baker, Project Manager
151 Patton Avenue, Room 208
Asheville, North Carolina 28801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address within 60 days from the *Issue Date* below.

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: David Baker

Issue Date: **April 28, 2010** Expiration Date: **April 28, 2015**

SURVEY PLATS, FIELD SKETCH, WETLAND DELINEATION FORMS, PROJECT PLANS, ETC., MUST BE ATTACHED TO THE FILE COPY OF THIS FORM, IF REQUIRED OR AVAILABLE.

Copy Furnished:
Mark Davis, NCDOT, Division 14 Environmental Officer

STORMWATER MANAGEMENT PLAN

Project: 33346.1.1 TIP B-4122 April 27, 2012
Graham County
Hydraulics Designer: Carlas Sharpless, PE
Hydraulics Project Manager: Stephen R. Morgan, PE, NCDOT Hydraulics Unit

ROADWAY DESCRIPTION

The project involves replacing Bridge No. 81 on SR 1117 (Moose Branch Rd.) over Long Creek in Graham County. The overall project length is 0.103 MI. The existing roadway has 18 feet of pavement with 4 feet of grassed shoulder on each side. The existing structure, built in 1962, consists of a timber floor on I-Beams and vertical abutments with a total length of 41 feet and a clear roadway width of 19'. The proposed road will have 20 feet of pavement for two ten foot travel lanes. The upstream or right side of the project will remain shoulder section while the downstream or left side of the project will become curb and gutter with a sidewalk for pedestrian use. The existing bridge will be replaced with a 36 feet long 1@40'x6' crownspan structure on footings supported by sheet piling with a clear roadway width of 33'5". An offsite detour will be utilized during the construction of this project.

ENVIRONMENTAL DESCRIPTION

Land Use

The project location is located just outside of the Robbinsville city limit on a low speed state route. The area is mainly residential with schools and recreational facilities in the near vicinity. The 11.2 square mile watershed is mainly rural.

Topography and Water Resources

This project is located in the Little Tennessee River Drainage Basin. Long Creek has a "C, Tr" stream classification. This stream is not on the 303d list. The total permanent wetland impacts shown on this project is 0.027 Ac and temp wetland impacts are 0.005 Ac. For this project, the bottomless structure will provide an adequate passage for aquatic life and allow for natural stream development through the culvert. The culvert will also shift slightly to minimize the impacts to the tree at the northeast quadrant of the project.

BEST MANAGEMENT PRACTICES

Catch basins placed down station will capture stormwater from the roadway surface and crownspan deck, eliminating direct discharge into the creek. The proposed structure is a 1@40'x6' crownspan, which will provide more conveyance area, and a smaller footprint when compared to the existing 1@ 41' structure. Outlet pipes will be placed on minimum grades to minimize velocities. Rip-Rap pads will be placed at pipe outlets at Sta. 12+92 LT. and Sta. 13+45 Rt. to dissipate energy prior to reaching the creek. A grassed shoulder along with a grass swale will be utilized from –L- Sta.10+50 RT. to –L- 12+50 RT. to provide treatment of the storm water from the roadway prior to the culvert.

B-4122 Property Owner List

1. Mr. Jasper Moose
   Mrs. Wilma Moose
   PO Box 1077
   Robbinsville, NC 28771

2. Leanne Ghormley Ayres
   Daniel B. Ghormley
   Myrtle Ghormley
   194 Moose Branch Rd.
   Robbinsville, NC 28771

3. Graham County
   Board of Education
   52 Moose Branch Rd.
   Robbinsville, NC 28771

4. Herve Cody
   Claudene Cody
   PO Box 218
   Robbinsville, NC 28771

DB 145 PG 144
DB 152 PG 182

DB 153 PG 608
DB 170 PG 680

DB 50 PG 357

DB 87 PG 417
DB 186 PG 746

DB 139 PG 388

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	12+68/13+08	Bank Stabilization						0.025		83		
1	12+68/13+08	40'x6' Crownspan						0.009		42		
TOTALS:								0.034		125		

Note: Bank Stabilization was computed as linear impacts along the stream.
*The 41' of temporary impacts along the west side of the stream are included within the length of the permanent channel impacts for the structure.

Permit Drawing
Sheet 1 of 6

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GRAHAM COUNTY
WBS - 33475.1.1 (B-4122)

SHEET 1 OF 1 5/15/2012

ATN Revised 3/31/05

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

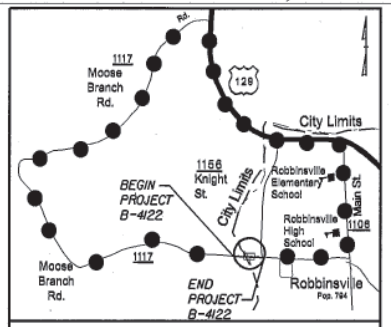
GRAHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4122	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33475.1.1	BRZ-1117(8)	PE
33475.2.1	BRZ-1117(8)	R/W, UTIL.

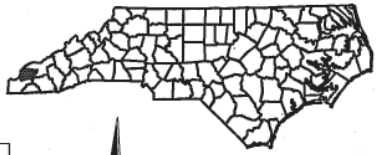
LOCATION: BRIDGE No. 81 OVER LONG CREEK ON SR 1117

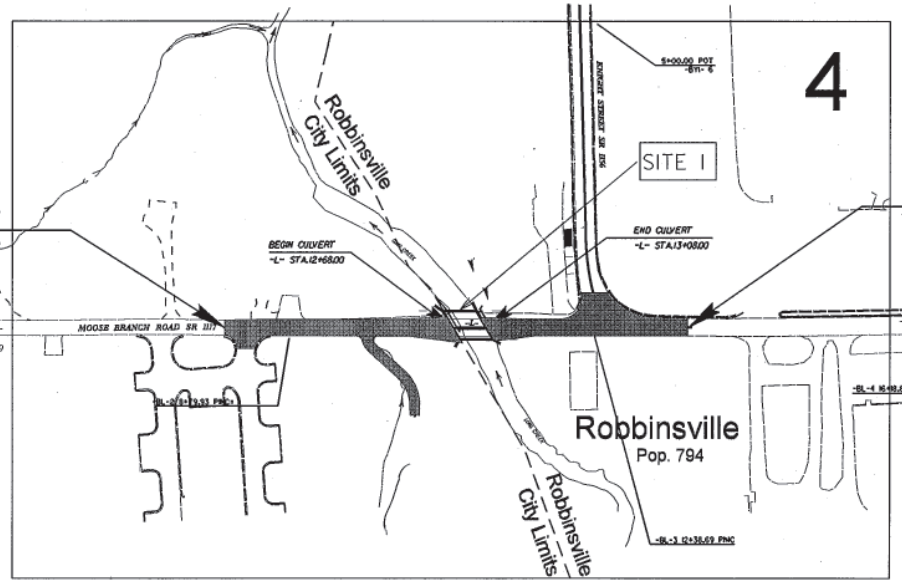
TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, AND CULVERT



DETOUR

VICINITY MAP





WETLAND/STREAM PERMIT

Permit Drawing
Sheet 2 of 6

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS WITHIN MUNICIPAL BOUNDARIES OF ROBBINSVILLE.
CLEARING ON THIS PROJECT SHOULD BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
PROJECT DESIGN FOLLOWS SUB REGIONAL TIER DESIGN GUIDLINES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT: C202429 TIP PROJECT: B-4122

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2010 =	740 VPD
ADT 2030 =	1087 VPD
DHV =	10 %
D =	60 %
T =	4 % *
V =	40 MPH
CLASS =	LOCAL
* TTST 2%	DUAL 2%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4122 = 0.095 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4122 = 0.008 MI.
TOTAL LENGTH OF TIP PROJECT B-4122 = 0.103 MI.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 8, 2009

LETTING DATE: DECEMBER 18, 2012

TONY HOUSER, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

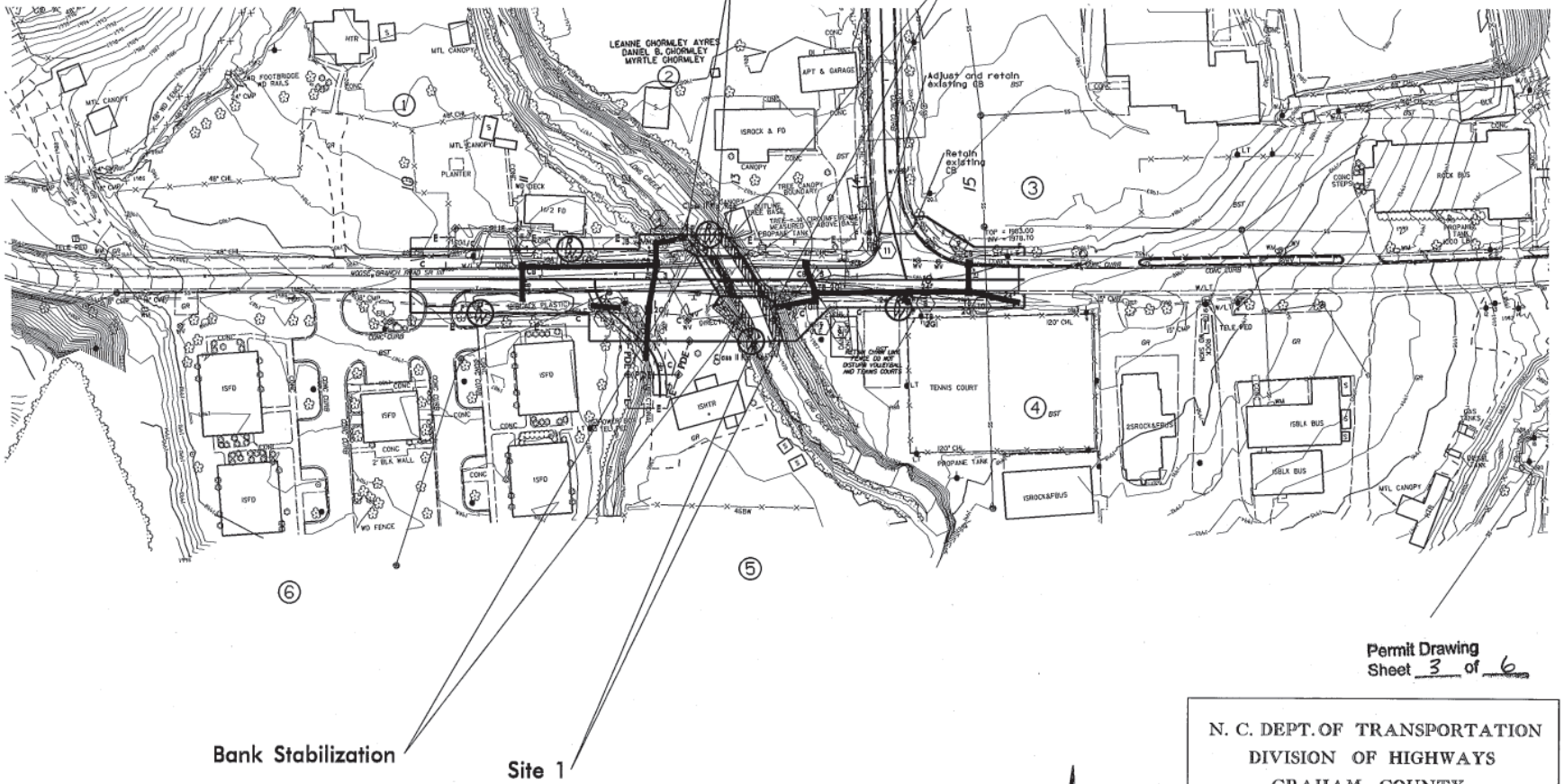
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
B-4122	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



Permit Drawing
Sheet 3 of 6

TS TS DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PLAN VIEW

Scale: 1"=100'

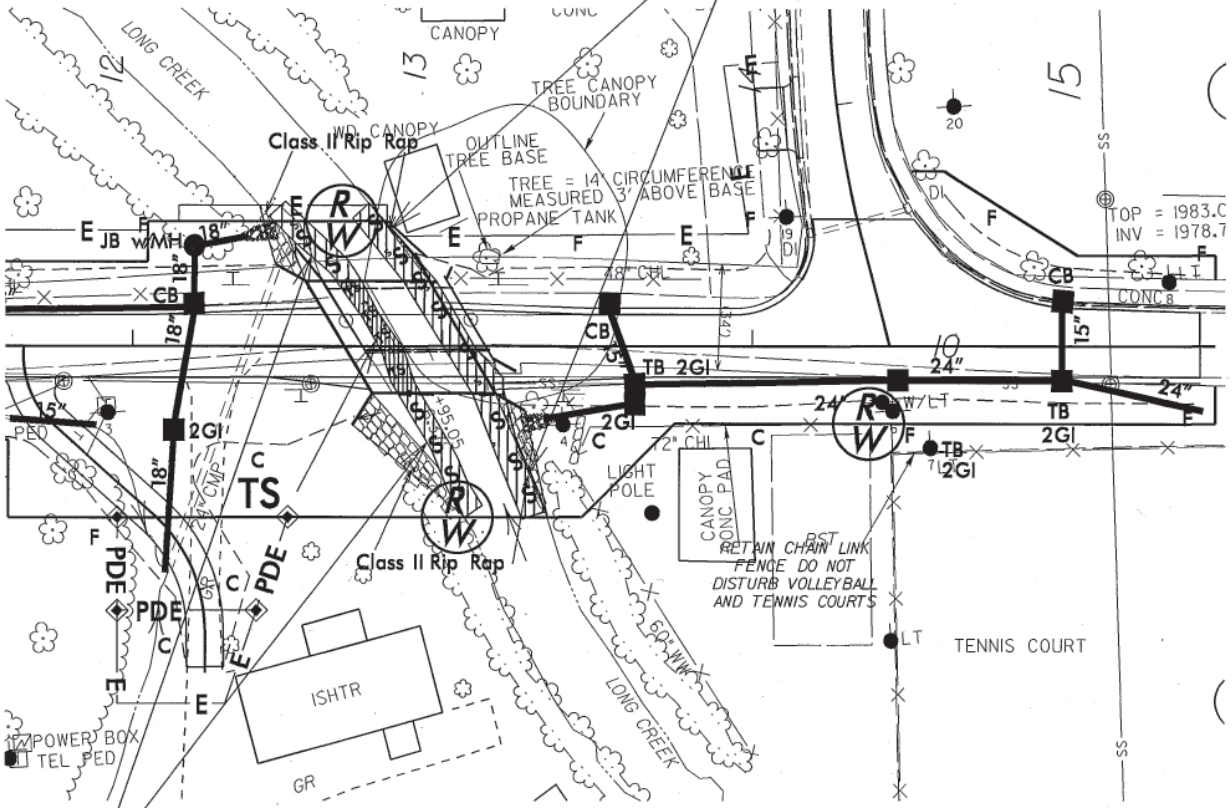
100' 0' 100' 200' 300'
GRAPHIC SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GRAHAM COUNTY
PROJECT: 33475.1.1
(B4122)
BRIDGE NO. 81 ON SR 1117
LONG CREEK

PROJECT REFERENCE NO.	SHEET NO.
B-4122	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



Site 1

PLAN VIEW

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

40' 0' 40' 80' 120'

GRAPHIC SCALE

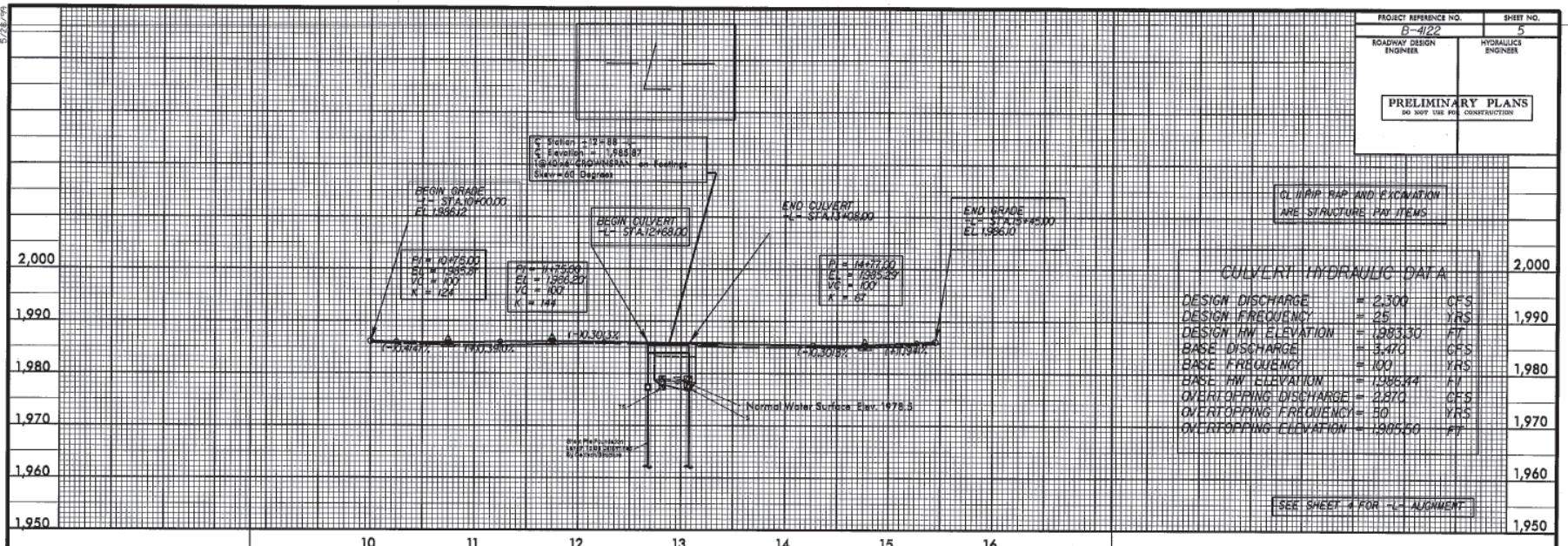
Permit Drawing
Sheet 4 of 6

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
GRAHAM COUNTY
PROJECT: 33475.1.1
(B4122)
BRIDGE NO. 81
SR 1117

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4122	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

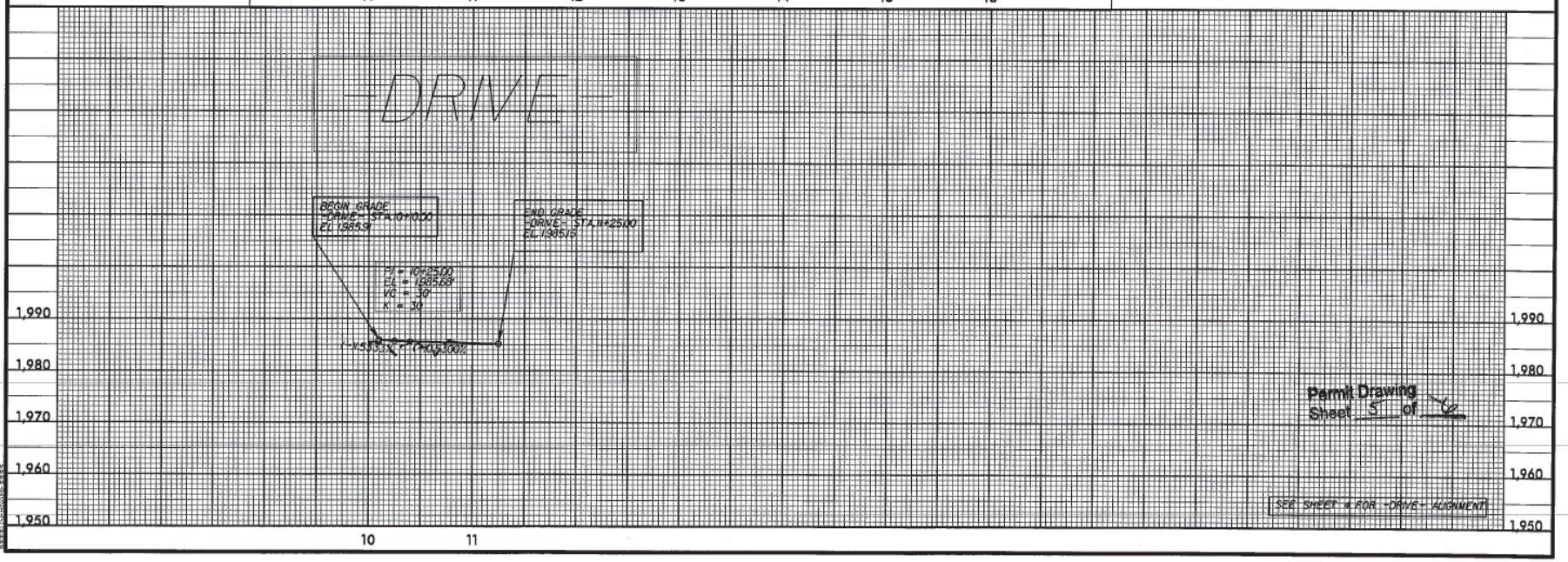


CL RIP RAP AND EXCAVATION ARE STRUCTURE PAY ITEMS

CULVERT HYDRAULIC DATA

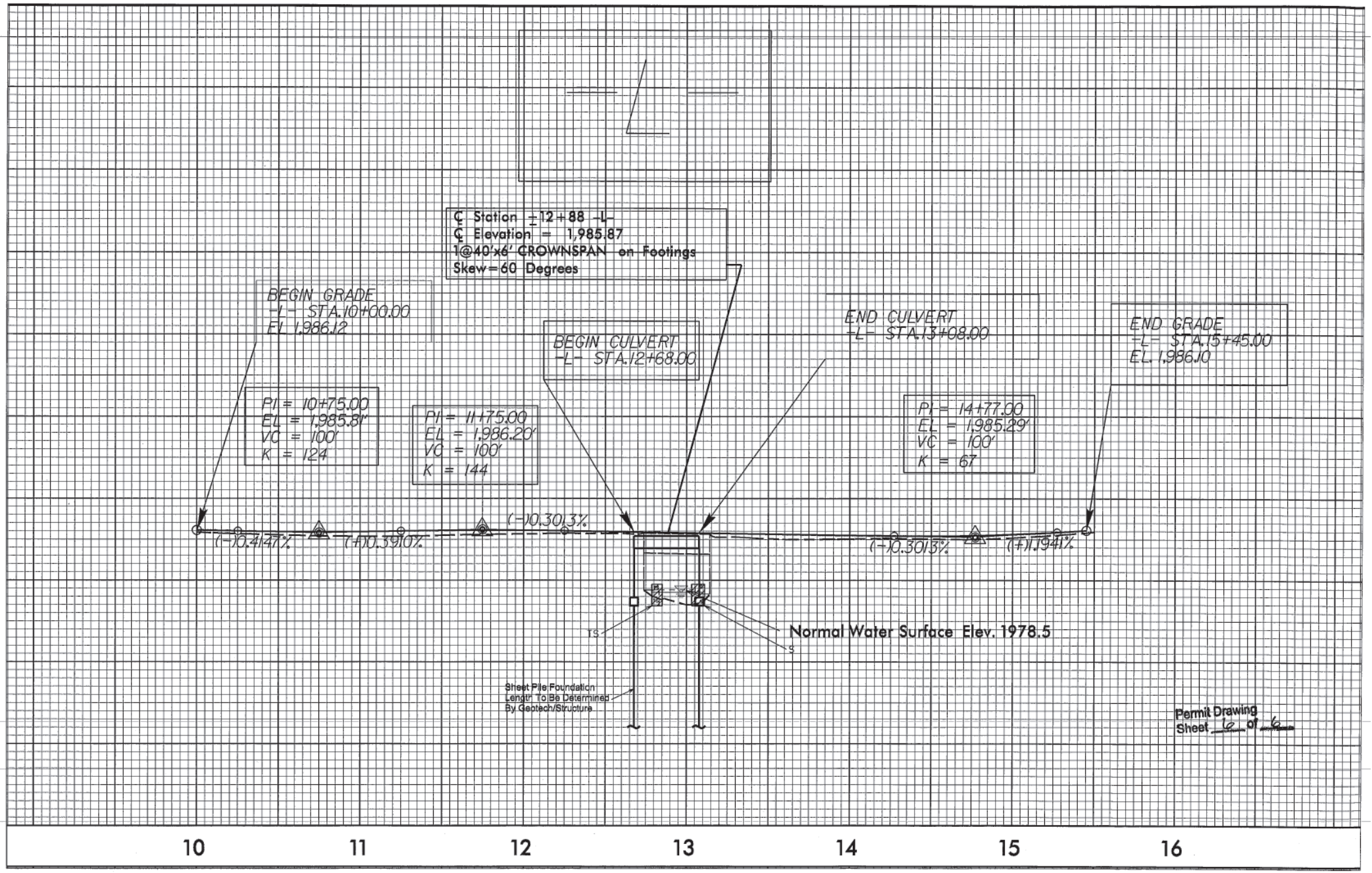
DESIGN DISCHARGE	= 2,300	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1983.30	FT
BASE DISCHARGE	= 3,470	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1986.44	FT
OVERTOPPING DISCHARGE	= 2,870	CFS
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING ELEVATION	= 1985.50	FT

SEE SHEET 4 FOR -L- ALIGNMENT

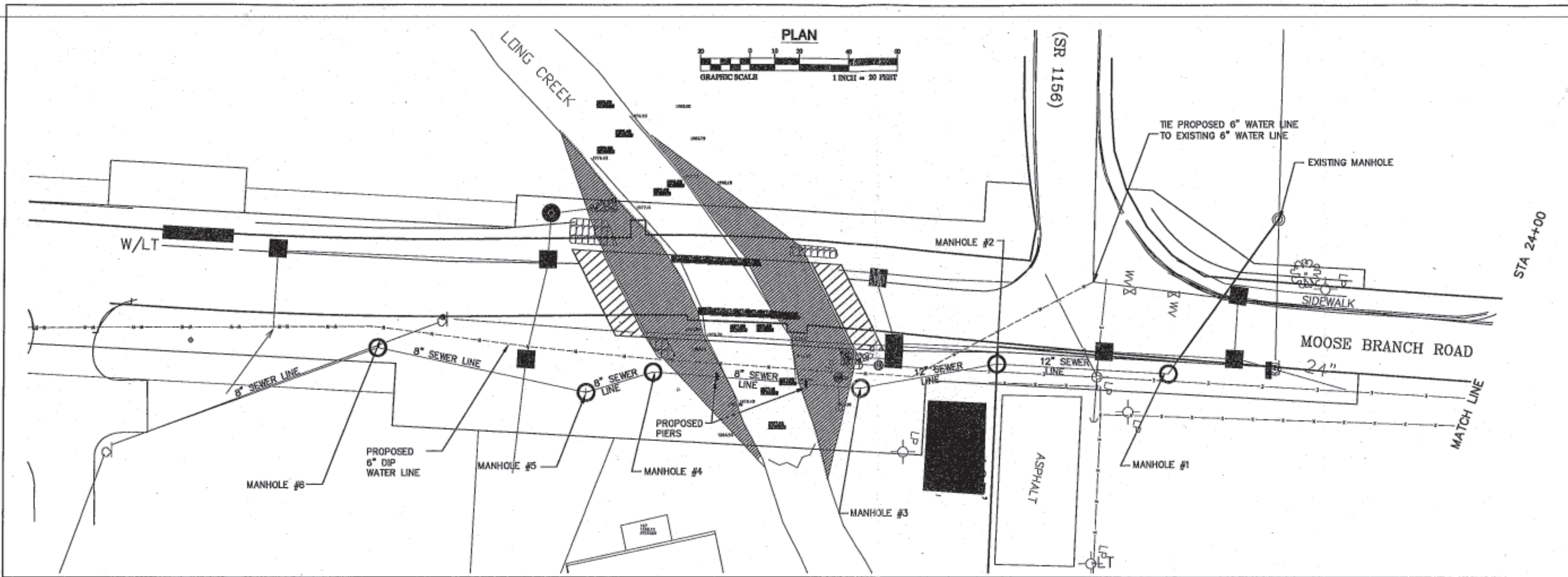


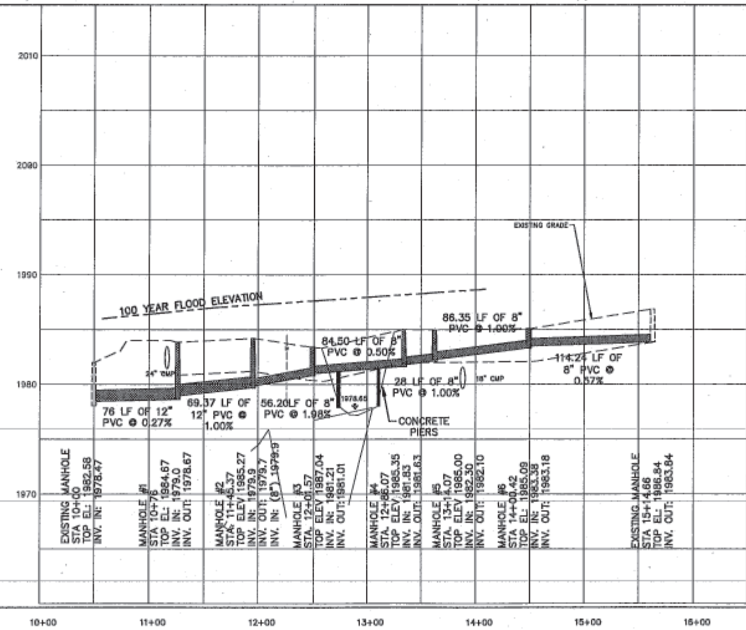
Permit Drawing
Sheet 5 of 12

SEE SHEET 4 FOR -DRIVE- ALIGNMENT


℄ Station = 12+88 -L-
℄ Elevation = 1,985.87
1@40'x6' CROWNSPAN on Footings
Skew=60 Degrees
BEGIN GRADE
-L- STA.10+00.00
EL 1,986.12
BEGIN CULVERT
-L- STA.12+68.00
END CULVERT
-L- STA.13+08.00
END GRADE
-L- STA.15+45.00
EL. 1,986.10
PI = 10+75.00
EL = 1,985.81'
VC = 100'
K = 124
PI = 11+75.00
EL = 1,986.29'
VC = 100'
K = 144
PI = 14+77.00
EL = 1,985.29'
VC = 100'
K = 67
(-)0.30.3%
(-)0.4147%
(+)0.3907%
(-)0.3013%
(+)1.1941%
TS
S
Normal Water Surface Elev. 1978.5
Sheet Pile Foundation
Length To Be Determined
By Geotech/Structure
Permit Drawing
Sheet 12 of 16
10
11
12
13
14
15
16

Utility


PLAN
GRAPHIC SCALE
1 INCH = 20 FEET
LONG CREEK
(SR 1156)
TIE PROPOSED 6" WATER LINE
TO EXISTING 6" WATER LINE
EXISTING MANHOLE
STA 24+00
W/LT
MANHOLE #2
SIDEWALK
MOOSE BRANCH ROAD
24"
12" SEWER LINE
8" SEWER LINE
MATCH LINE
PROPOSED PIERS
PROPOSED 6" DIP WATER LINE
MANHOLE #6
MANHOLE #5
MANHOLE #4
MANHOLE #3
MANHOLE #1
ASPHALT
LP


PROFILE
SCALE: HORIZ. 1"= 50'
VERT. 1"= 5'
EXISTING GRADE
100 YEAR FLOOD ELEVATION
76 LF OF 12" PVC @ 0.27%
69.37 LF OF 12" PVC @ 1.00%
56.20LF OF 8" PVC @ 1.98%
84.50 LF OF 8" PVC @ 0.50%
28 LF OF 8" PVC @ 1.00%
86.35 LF OF 8" PVC @ 1.00%
114.24 LF OF 8" PVC @ 0.57%
CONCRETE PIERS
24" CMP
18" CMP
EXISTING MANHOLE STA 10+00 TOP EL: 1982.58 INV. IN: 1978.47
MANHOLE #1 STA 10+76 TOP EL: 1984.67 INV. IN: 1979.0 INV. OUT: 1978.67
MANHOLE #2 STA. 11+45.37 TOP ELEV 1985.27 INV. IN: 1979.9 INV. OUT: 1979.7 INV. IN: (8") 1979.9
MANHOLE #3 STA. 12+01.57 TOP ELEV 1987.04 INV. IN: 1981.21 INV. OUT: 1981.01
MANHOLE #4 STA. 12+66.07 TOP ELEV 1985.35 INV. IN: 1981.83 INV. OUT: 1981.63
MANHOLE #5 STA. 13+14.07 TOP ELEV 1985.00 INV. IN: 1982.30 INV. OUT: 1982.10
MANHOLE #6 STA 14+00.42 TOP EL: 1985.09 INV. IN: 1983.38 INV. OUT: 1983.18
EXISTING MANHOLE STA 15+14.66 TOP EL: 1986.84 INV. OUT: 1983.64
2010
2090
1990
1980
1970
10+00
11+00
12+00
13+00
14+00
15+00
16+00

Utility
Permit Drawing
Sheet U1 of U1

Utility

McGill ASSOCIATES
ENGINEERING·PLANNING·FINANCE
55 BROAD STREET ASHEVILLE, NC PH. (828) 252-0575

MOOSE BRANCH ROAD
BRIDGE REPLACEMENT
TOWN OF ROBBINSVILLE
GRAHAM COUNTY, NORTH CAROLINA

JOB NO.: 08.00371
DATE: DECEMBER, 2008
DESIGNED BY: MC
CADD BY: BW
DESIGN REVIEW: JM
CONST. REVIEW: RA

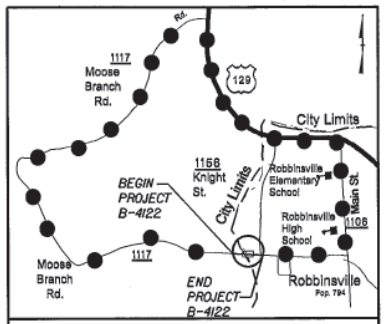
WATER AND SEWER
RELOCATION

SHEET
C1

05/08/98

CONTRACT: C202429 TIP PROJECT: B-4122

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



DETOUR

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

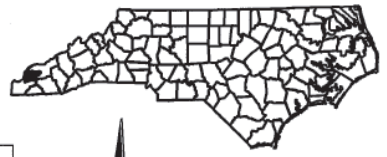
GRAHAM COUNTY

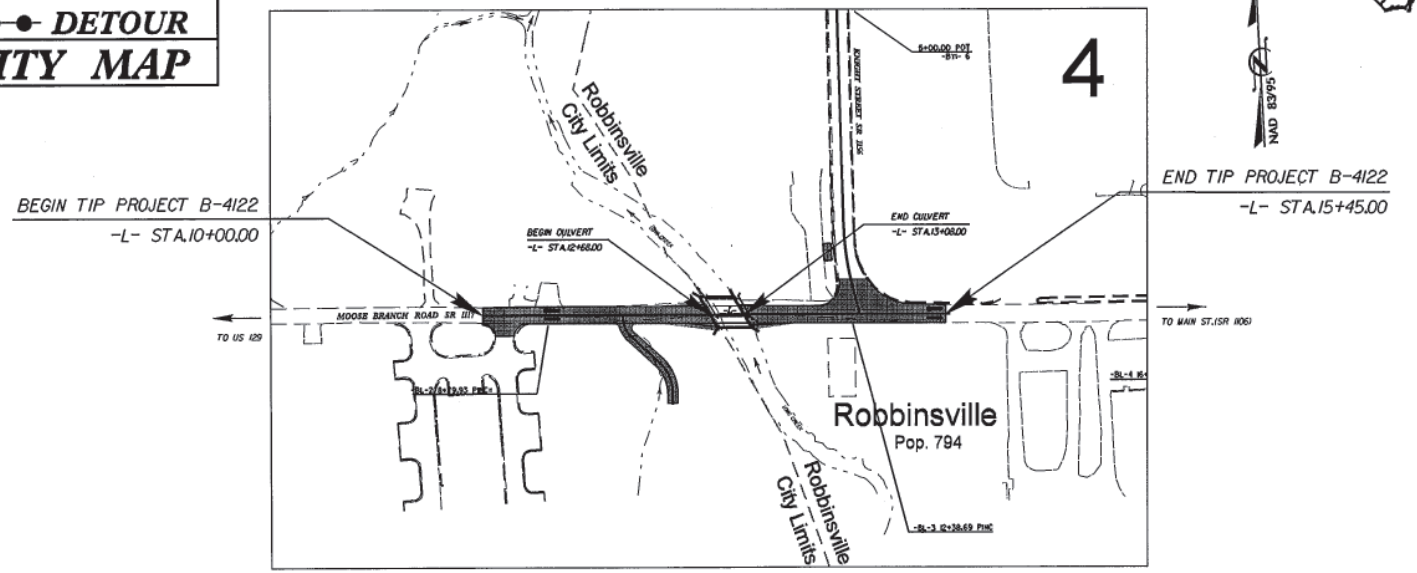
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4122	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33475.1.1	BRZ-1117(8)	PE
33475.2.1	BRZ-1117(8)	R/W, UTIL.

LOCATION: BRIDGE No. 81 OVER LONG CREEK ON SR 1117

TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL, AND CULVERT





THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS WITHIN MUNICIPAL BOUNDARIES OF ROBBINSVILLE.
CLEARING ON THIS PROJECT SHOULD BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
PROJECT DESIGN FOLLOWS SUB REGIONAL TIER DESIGN GUIDLINES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2010 =	740 VPD
ADT 2030 =	1087 VPD
DHV =	10 %
D =	60 %
T =	4 % *
V =	40 MPH
CLASS =	LOCAL
* TTST 2%	DUAL 2%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4122 = 0.095 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4122 = 0.008 MI.
TOTAL LENGTH OF TIP PROJECT B-4122 = 0.103 MI.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 8, 2009

LETTING DATE: DECEMBER 18, 2012

TONY HOUSER, PE
PROJECT ENGINEER

JEFFREY L. TEAGUE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

07-JUN-2012 14:39
R:\Roadway\Proj\b-4122_rdy_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4122	1-B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- 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
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FDH
- 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
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — TCE
- 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 — 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 — T
- Telephone Booth — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — TH
- 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 — T
- TV Tower
- U/G TV Cable Hand Hole — TH
- 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:

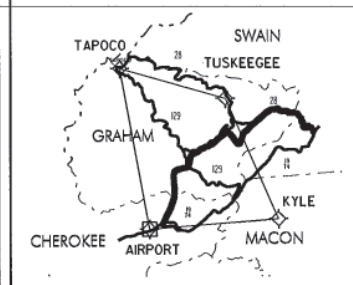
- Sanitary Sewer Manhole — SS
- Sanitary Sewer Cleanout — SS
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object — O
- Utility Traffic Signal Box — SIG
- Utility Unknown U/G Line — ?UTL
- 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.
33475.1.1	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4122



GPS CONTROL NETWORK

NOT TO SCALE

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	608106.8540	564910.8270	1993.47	OUTSIDE PROJECT LIMITS	
2	BL-2	608084.5830	565290.1060	1984.93	10+76.11	12.01 RT
3	BL-3	608067.7340	565648.4690	1984.61	14+34.86	9.48 RT
4	BL-4	608042.2520	566027.7940	1991.42	OUTSIDE PROJECT LIMITS	
5	BL-5	608039.4660	566361.2530	2006.47	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
6	BY1-6	608431.1800	565671.5780	1980.10	10+22.87	20.10 LT
33	BL-3	608067.7340	565648.4690	1984.61	OUTSIDE PROJECT LIMITS	

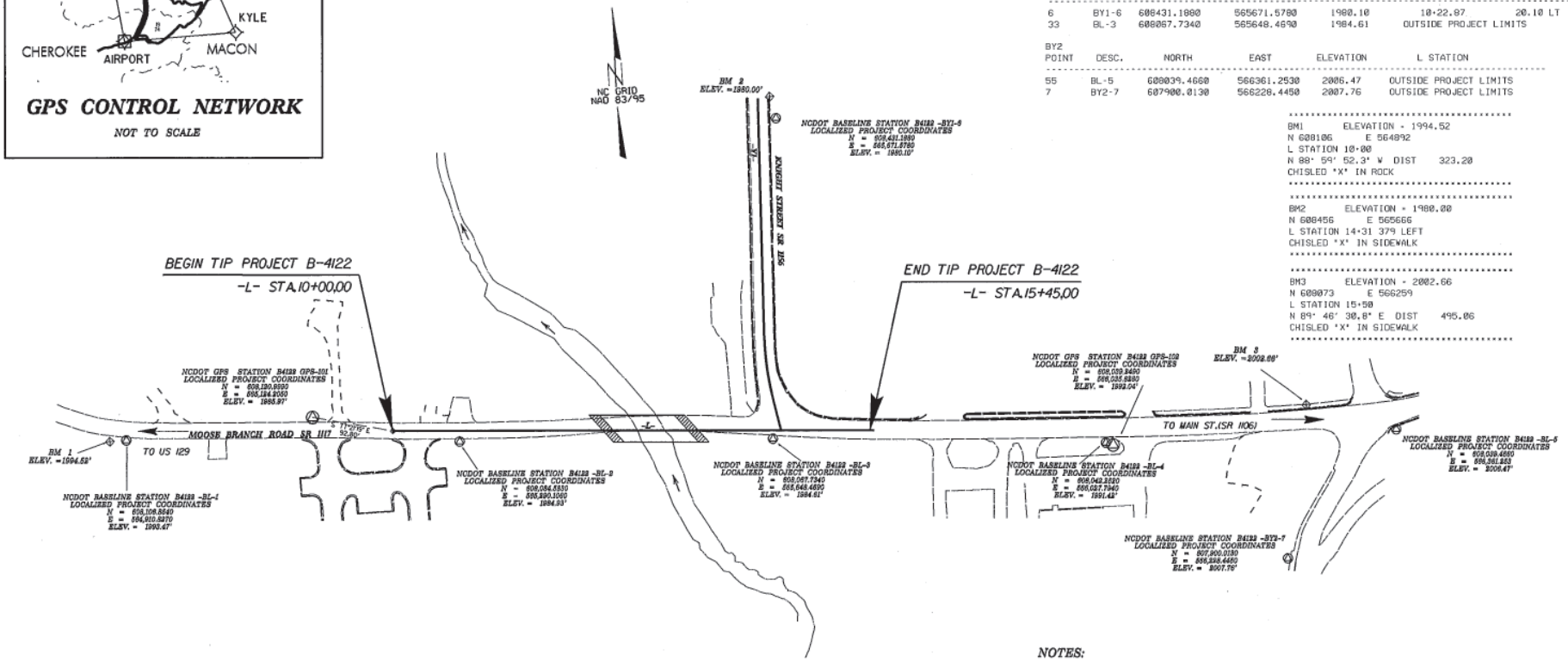
BY2

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION
55	BL-5	608039.4660	566361.2530	2006.47	OUTSIDE PROJECT LIMITS
7	BY2-7	607900.8130	566228.4450	2007.76	OUTSIDE PROJECT LIMITS

BM1 ELEVATION - 1994.52
N 608106 E 564892
L STATION 10+00
N 88° 59' 52.3" W DIST 323.20
CHISLED 'X' IN ROCK

BM2 ELEVATION - 1980.00
N 608456 E 565666
L STATION 14+31.379 LEFT
CHISLED 'X' IN SIDEWALK

BM3 ELEVATION - 2002.66
N 608073 E 566259
L STATION 15+50
N 89° 46' 30.8" E DIST 495.06
CHISLED 'X' IN SIDEWALK



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4122 GPS-101" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 608,120.9990(ft) EASTING: 565,124.2050(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978297 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4122 GPS-101" TO -L- STATION 10+00.00 IS S 77°21'19" E 92.80' 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:

   B4122_LS_CONTROL_080623.TXT
   B4122_LS_IC_080623.DGN

   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

8/2/96

07-JUN-2012 14:32
R:\STRUCTURES\PROJECTS\B4122_ls_ic.pgm

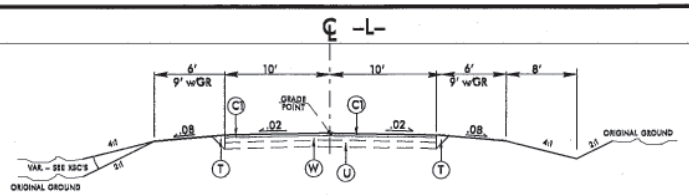
PROJECT REFERENCE NO.	SHEET NO.
B-4122	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

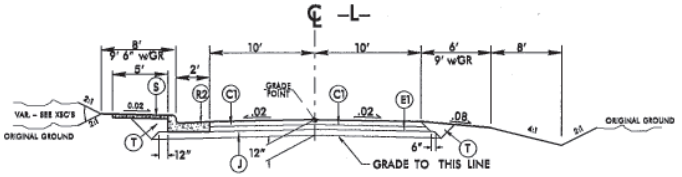
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	2'-9" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
S	5' CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



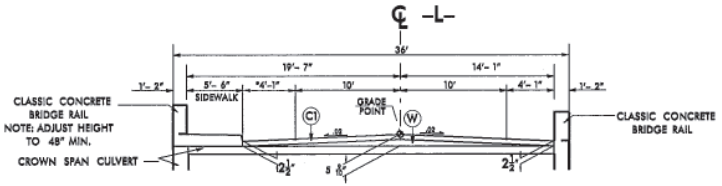
TYPICAL SECTION NO. 1

–L– STA 10+00.00 TO –L– STA 11+00.00



TYPICAL SECTION NO. 2

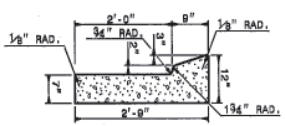
–L– STA 11+00.00 TO –L– STA 12+68.00(BEGIN CROWN SPAN CULVERT)



*ADDITIONAL SHOULDER WIDTH REQUIRED TO ACCOMMODATE HYDRAULIC SPREAD

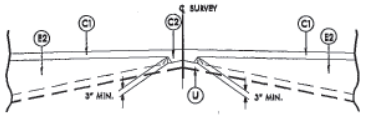
TYPICAL SECTION NO. 3

–L– STA 12+68.00 TO –L– STA 13+08.00

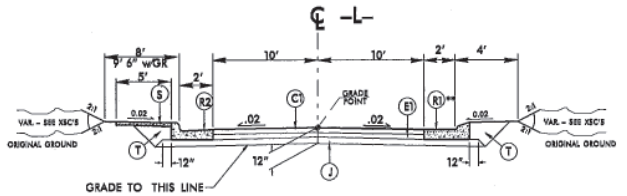


2'–9" CURB AND GUTTER

–L– STA. 13+56.87 TO –L– STA. 15+45.00



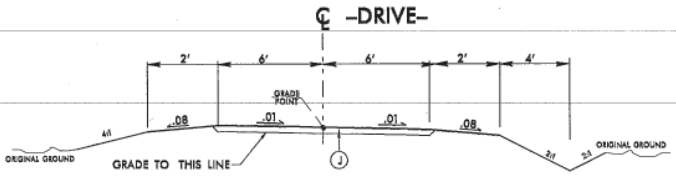
Detail Showing Method of Wedging



** 2'–9" CURB & GUTTER USED TO MINIMIZE IMPACTS TO SCHOOL PROPERTY

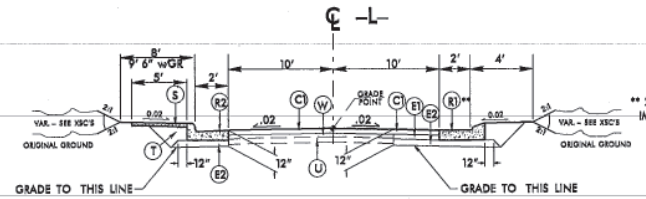
TYPICAL SECTION NO. 4

–L– STA 13+08.00(END CROWN SPAN CULVERT) TO –L– STA 14+00.00



TYPICAL SECTION NO. 6

–DRIVE– STA 10+10.00 TO –DRIVE– STA 11+25.00



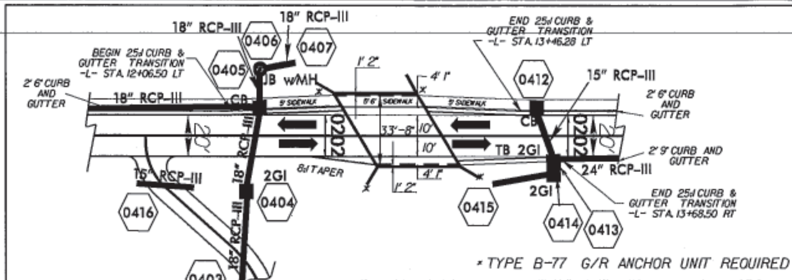
** 2'–9" CURB & GUTTER USED TO MINIMIZE IMPACTS TO SCHOOL PROPERTY

TYPICAL SECTION NO. 5

–L– STA 14+00.00 TO –L– STA 15+45.00

PROJECT REFERENCE NO.	SHEET NO.
B-4122	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



18" RCP-III
0406
0407
BEGIN 25d CURB & GUTTER TRANSITION -L- STA. 12+06.50 LT
0405
JB w/MH
2' 6" CURB AND GUTTER
18" RCP-III
5' SIDEWALK
0202
33'-8"
10'
TB 2GI
2GI
8d TAPER
0416
15" RCP-III
0404
0403
0415
END 25d CURB & GUTTER TRANSITION -L- STA. 13+46.28 LT
0412
15" RCP-III
2' 6" CURB AND GUTTER
2' 9" CURB AND GUTTER
24" RCP-III
2GI
END 25d CURB & GUTTER TRANSITION -L- STA. 13+68.50 RT
0414
0413
* TYPE B-77 G/R ANCHOR UNIT REQUIRED

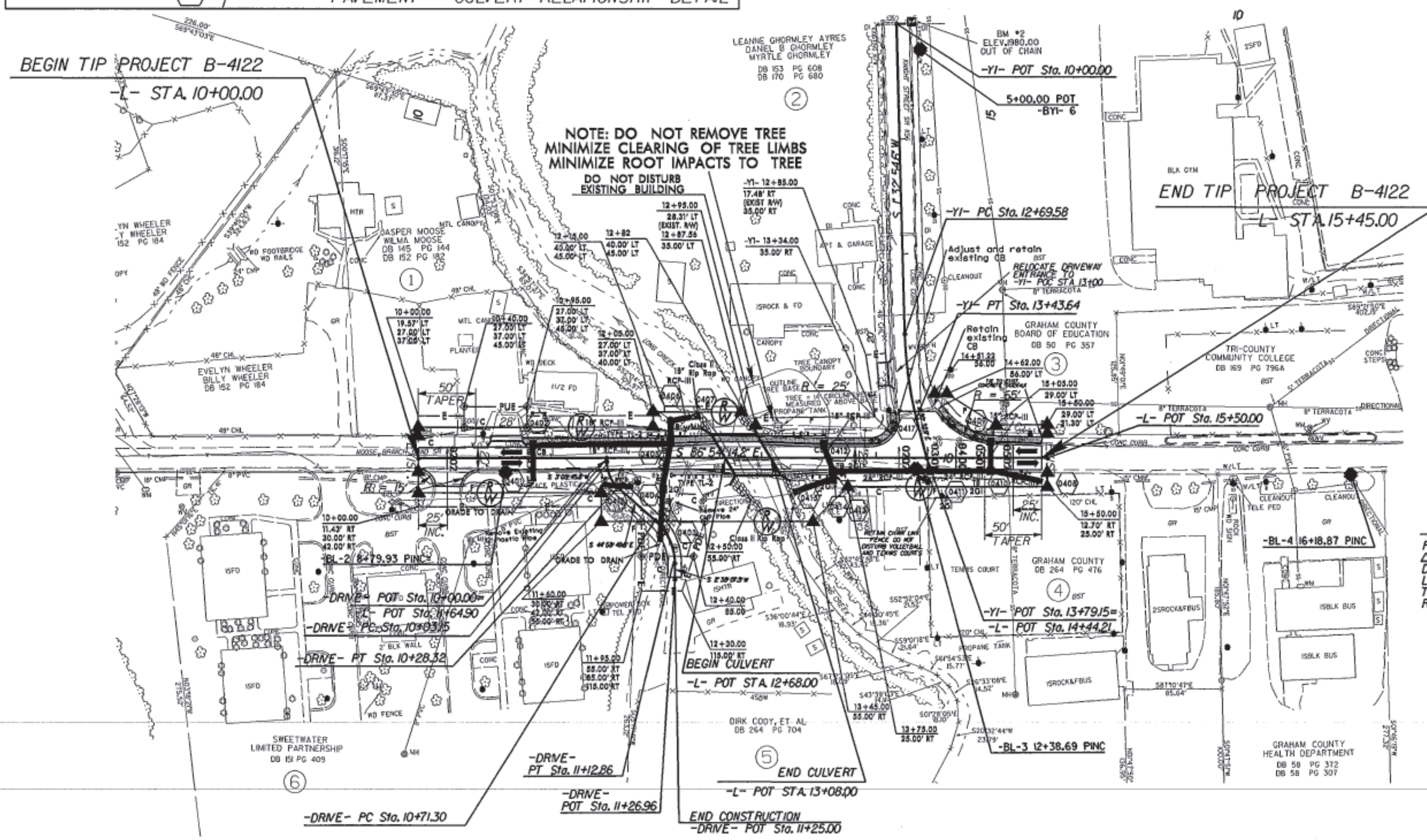
PAVEMENT - CULVERT RELATIONSHIP DETAIL

NOTE:
TREE AT APPROXIMATE -L- STA. 13+15 LT. SHALL BE PRESERVED.
IT WILL BE NECESSARY TO TRIM A PORTION OF THIS TREE PRIOR TO CONSTRUCTION. THE PORTION OF THE TREE THAT IS TO TRIMMED SHALL BEGIN AT A 3.5' OFFSET FROM THE OUTSIDE DIAMETER OF THE TREE AND CONTINUE ACROSS THE EXISTING EDGE OF PAVEMENT TO THE OUTER LIMITS OF THE TREE.

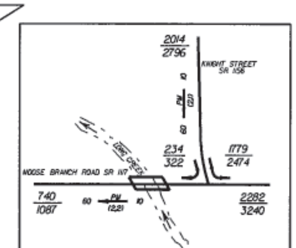
NAD 83/95

DRAINAGE NOTES

STRUCTURE 0407 OUTLET PIPE RIP RAP QUANTITIES	2 TONS CL B RIP RAP & 7 SY FILT. FAB.
STRUCTURE 0415 OUTLET PIPE RIP RAP QUANTITIES	3 TONS CL B RIP RAP & 11 SY FILT. FAB.
NOTE: CLASS II RIP RAP IS A STRUCTURE PAY ITEM	



BEGIN TIP PROJECT B-4122
-L- STA. 10+00.00
NOTE: DO NOT REMOVE TREE
MINIMIZE CLEARING OF TREE LIMBS
MINIMIZE ROOT IMPACTS TO TREE
DO NOT DISTURB EXISTING BUILDING
LEANNE GHORMLEY AYRES
DANIEL B GHORMLEY
MYRTLE GHORMLEY
DB 153 PG 608
DB 170 PG 680
BM #2
ELEV. 1980.00
OUT OF CHAIN
-Y1- POT Sta. 10+00.00
5+00.00 POT -BY1- 6
-Y1- PC Sta. 12+69.58
Adjust and retain existing CB
RELOCATE DRIVEWAY ENTRANCE TO -Y1- POC STA 13+00
-Y1- PT Sta. 13+43.64
Retain existing CB
GRAHAM COUNTY BOARD OF EDUCATION
DB 50 PG 357
TRI-COUNTY COMMUNITY COLLEGE
DB 169 PG 796A
END TIP PROJECT B-4122
-L- STA. 15+45.00
-L- POT Sta. 15+50.00
JASPER MOOSE
WILMA MOOSE
DB 145 PG 144
DB 152 PG 182
EVELYN WHEELER
BILLY WHEELER
DB 152 PG 184
-BL-2 8+79.93 PINC
-DRIVE- POT Sta. 10+00.00=
-L- POT Sta. 11+64.90
-DRIVE- PC Sta. 10+03.15
-DRIVE- PT Sta. 10+28.32
SWEETWATER LIMITED PARTNERSHIP
DB 151 PG 409
-DRIVE- PT Sta. 11+12.86
-DRIVE- POT Sta. 11+26.96
-DRIVE- PC Sta. 10+71.30
BEGIN CULVERT
-L- POT STA. 12+68.00
DIRK CODY, ET. AL
DB 264 PG 704
END CULVERT
-L- POT STA. 13+08.00
END CONSTRUCTION
-DRIVE- POT Sta. 11+25.00
GRAHAM COUNTY
DB 264 PG 476
-Y1- POT Sta. 13+79.15=
-L- POT Sta. 14+44.21
-BL-3 12+38.69 PINC
-BL-4 16+18.87 PINC
GRAHAM COUNTY HEALTH DEPARTMENT
DB 58 PG 372
DB 58 PG 307



2010
2030 ESTIMATED ADT

-DRIVE-

PI Sta 10+16.53
Δ = 48° 04' 35.4" (LT)
D = 190° 59' 09.4"
L = 25.17'
T = 13.38'
R = 30.00'

PI Sta 10+93.36
Δ = 47° 36' 57.5" (RT)
D = 114° 35' 29.6"
L = 41.55'
T = 22.06'
R = 50.00'

-Y1-

PI Sta 13+06.77
Δ = 13° 03' 27.5" (LT)
D = 17° 37' 46.1"
L = 74.07'
T = 37.19'
R = 325.00'
SE = .04
RO = 72

FOR -L- PROFILE SEE SHEET NO. 5
5' SIDEWALK
FOR CULVERT PLANS, SEE SHEET C-?? THRU C-??

NOTE: USING GRAU TL-2 ANCHOR UNITS PER SUB REGIONAL TIER DESIGN GUIDELINES FOR GUARDRAIL

REVISIONS

R/W REVISION: ELIMINATED THE PERMANENT DRAINAGE EASEMENTS ON PARCEL 2 AND PARCEL 4, REDUCED THE RIGHT OF WAY ON PARCEL 4 AT -L- STA 13+50 RT. MINIMIZED RIGHT OF WAY AND TEMPORARY CONSTRUCTION EASEMENT ON PARCEL 2 IN ORDER NOT TO DISTURB WD CANOPY. JWT 06/23/11

8/17/99

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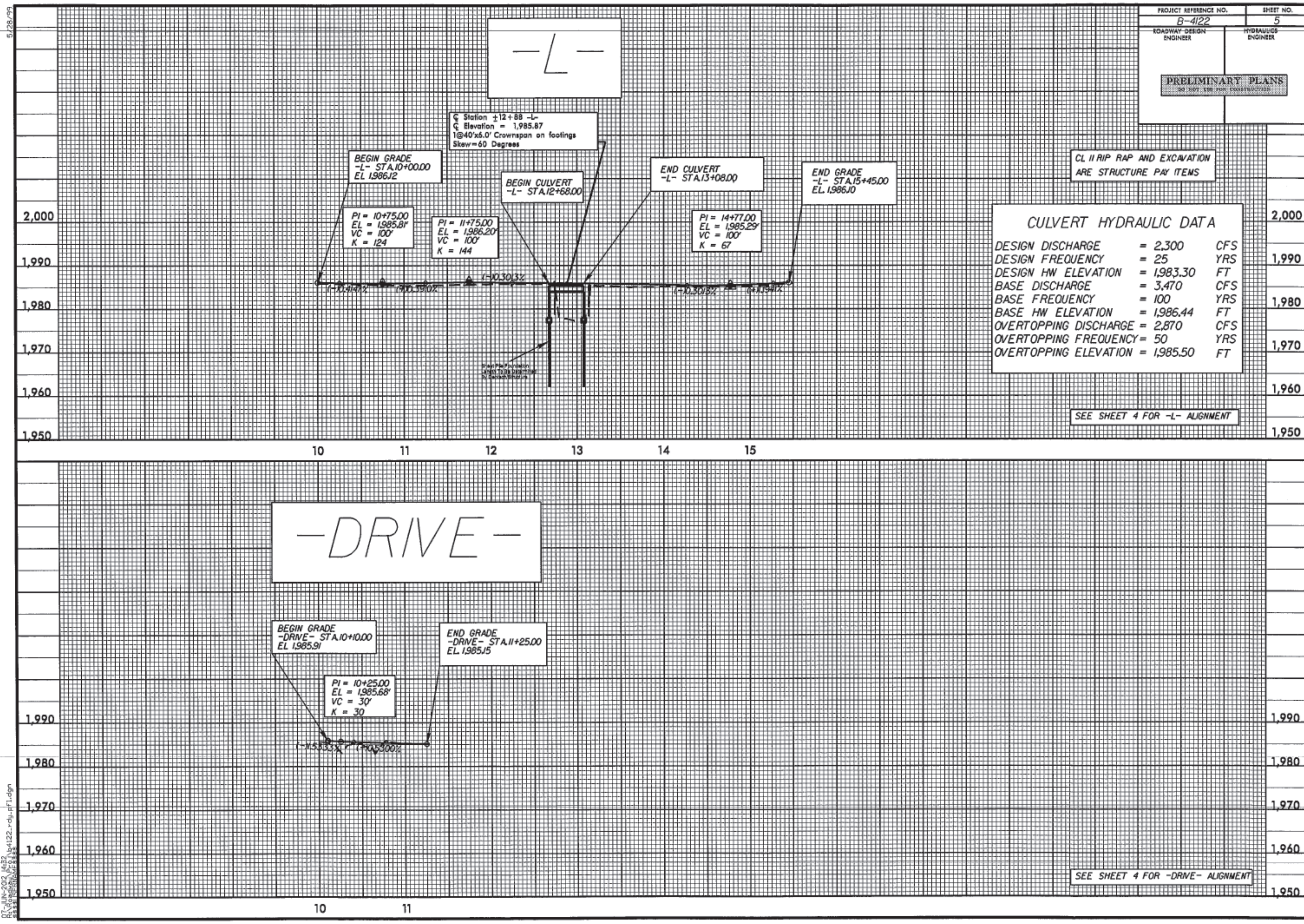
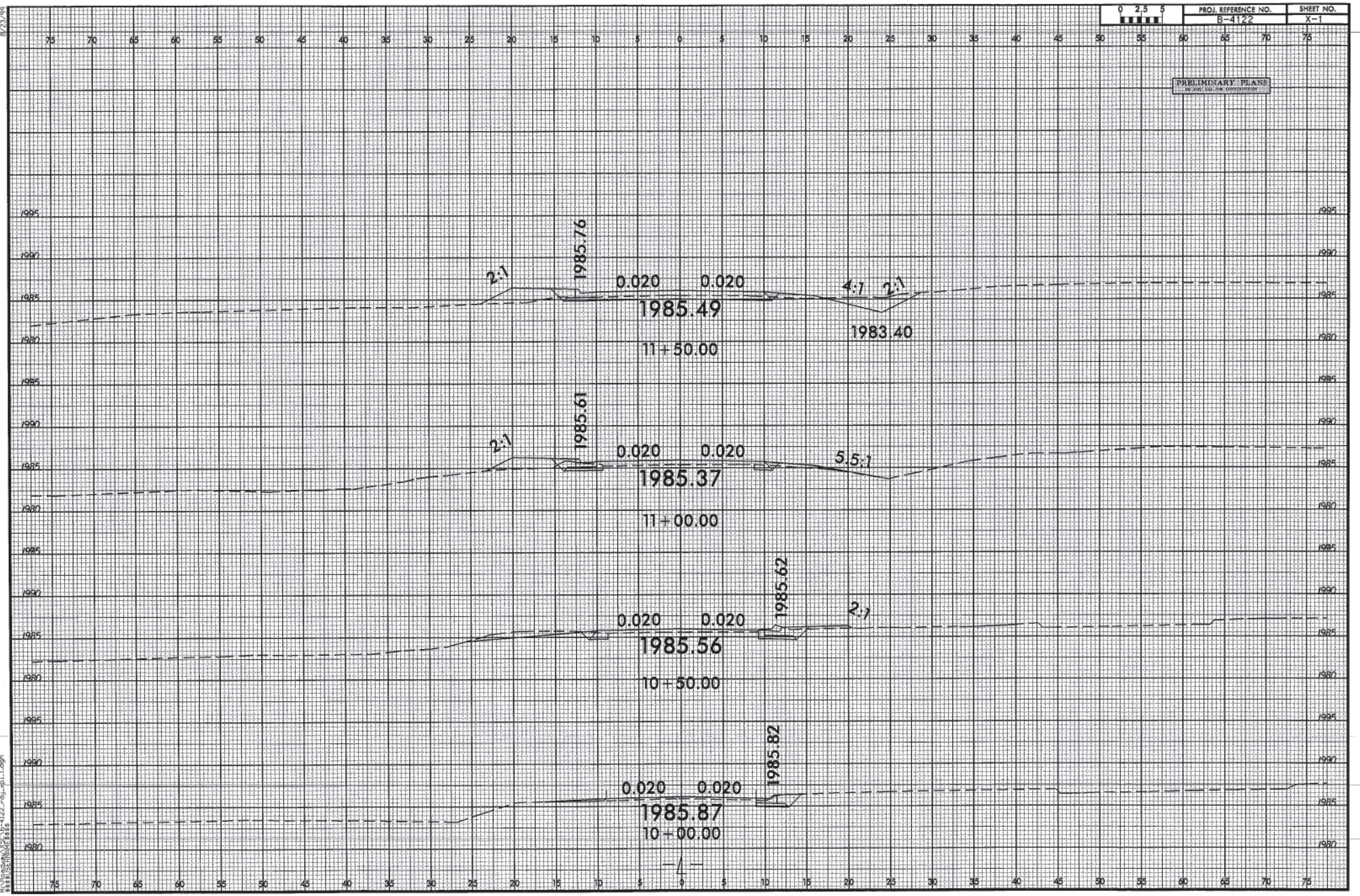
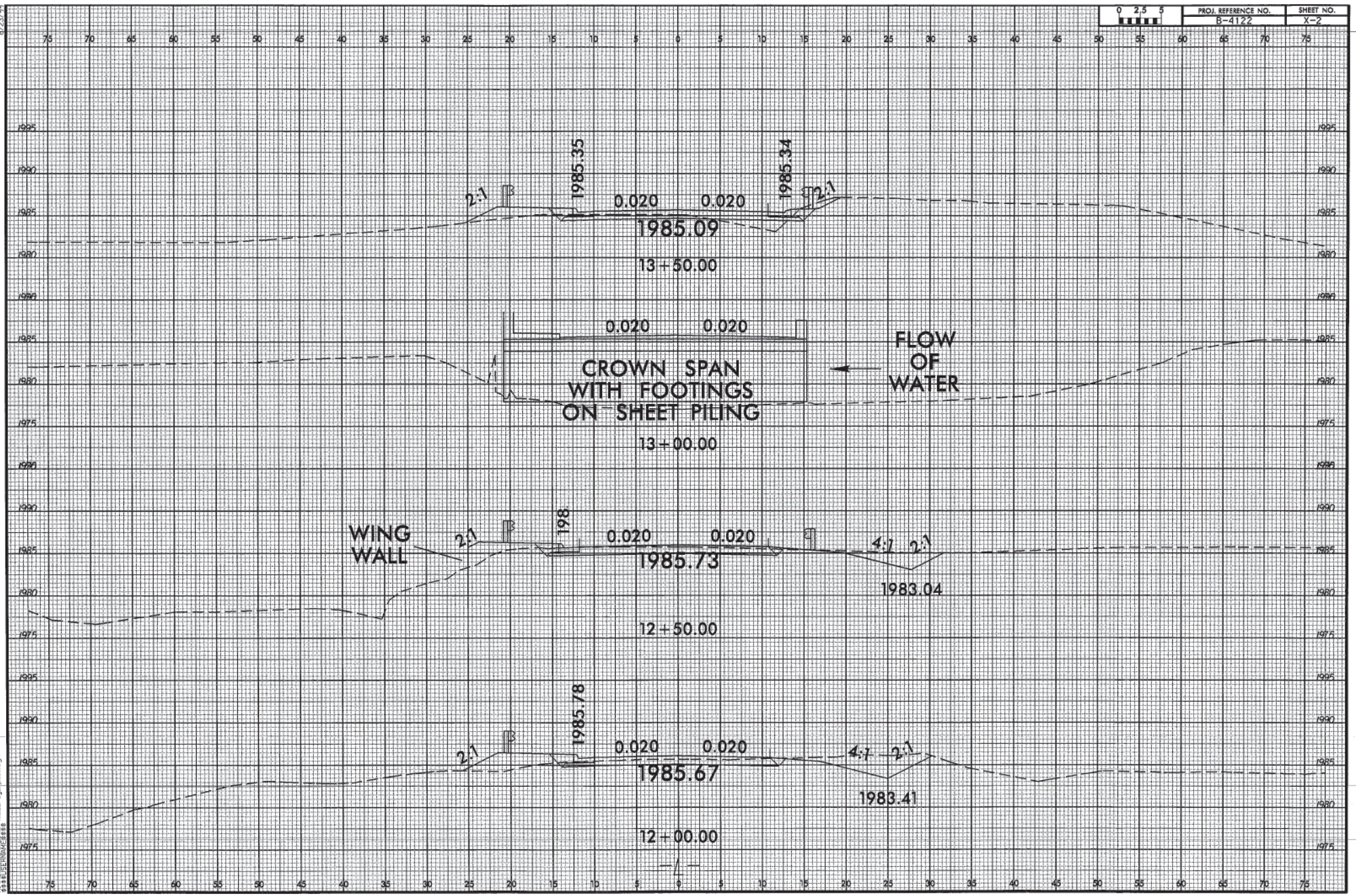
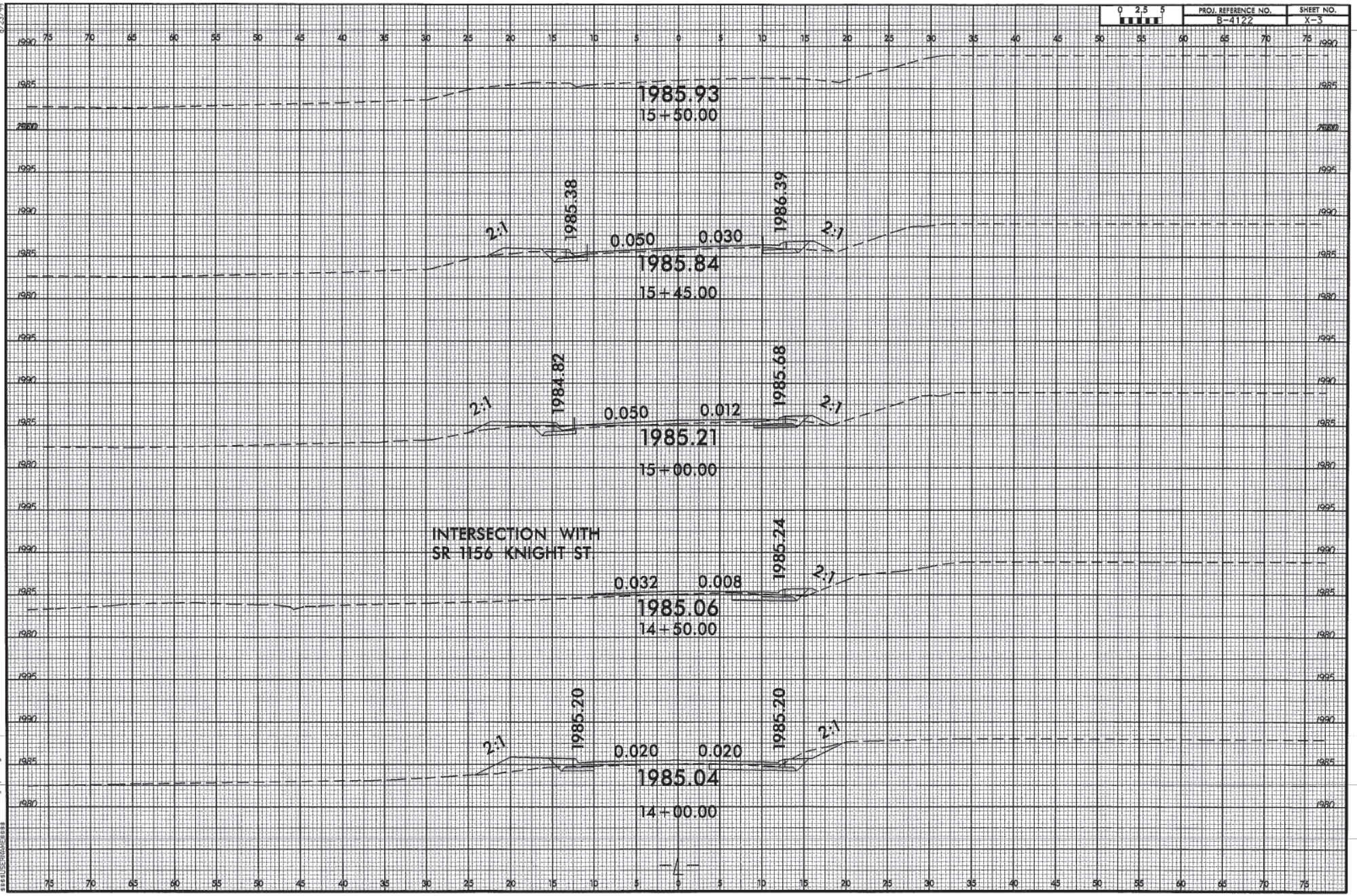
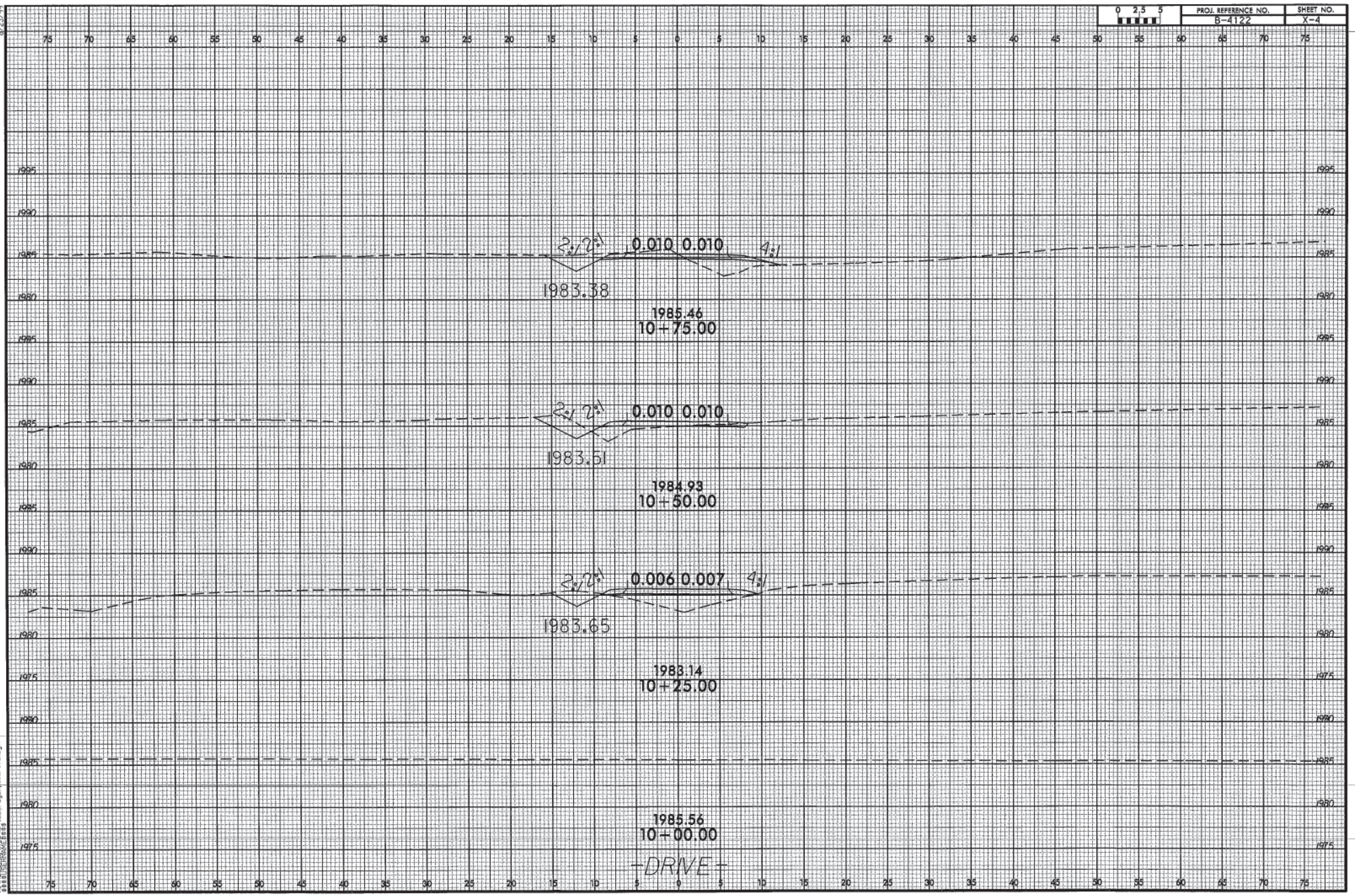
R:\Roadway\Proj\b-4122_rdy_psh.dgn

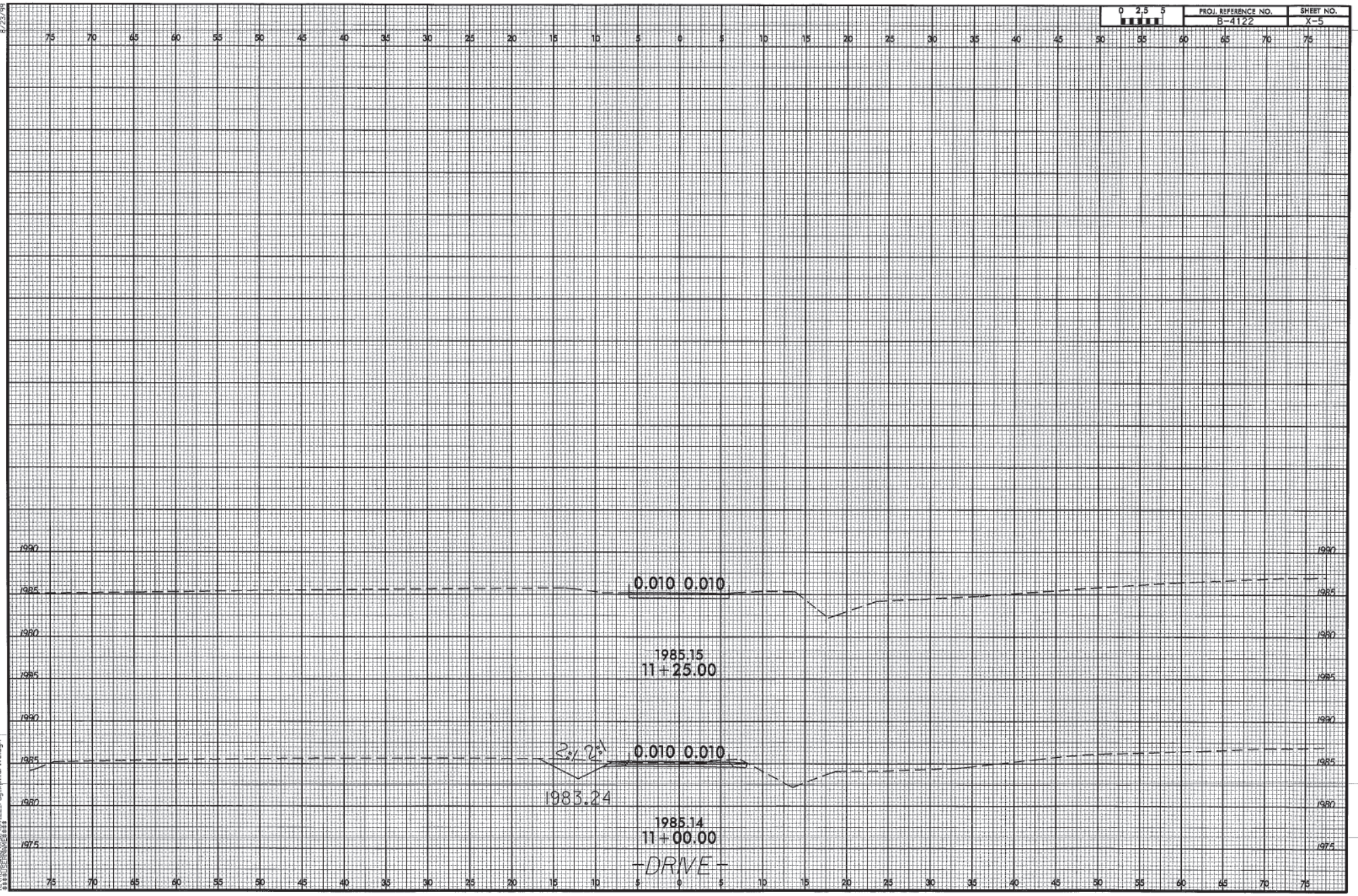

PROJECT REFERENCE NO.
B-4122
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
℄ Station ±12+88 -L-
℄ Elevation = 1,985.87
1@40'x6.0' Crownspan on footings
Skew=60 Degrees
BEGIN GRADE
-L- STA.10+00.00
EL 1,986.12
BEGIN CULVERT
-L- STA.12+68.00
END CULVERT
-L- STA.13+08.00
END GRADE
-L- STA.15+45.00
EL. 1,986.10
PI = 10+75.00
EL = 1,985.81'
VC = 100'
K = 124
PI = 11+75.00
EL = 1,986.20'
VC = 100'
K = 144
PI = 14+77.00
EL = 1,985.29'
VC = 100'
K = 67
(-)0.4140%
(+)0.3910%
(-)0.3013%
(-)0.3013%
(+)1.1941%
CL II RIP RAP AND EXCAVATION
ARE STRUCTURE PAY ITEMS
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 2,300 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 1,983.30 FT
BASE DISCHARGE = 3,470 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 1,986.44 FT
OVERTOPPING DISCHARGE = 2,870 CFS
OVERTOPPING FREQUENCY = 50 YRS
OVERTOPPING ELEVATION = 1,985.50 FT
SEE SHEET 4 FOR -L- ALIGNMENT
2,000
1,990
1,980
1,970
1,960
1,950
10
11
12
13
14
15
-DRIVE-
BEGIN GRADE
-DRIVE- STA.10+10.00
EL 1,985.91
END GRADE
-DRIVE- STA.11+25.00
EL. 1,985.15
PI = 10+25.00
EL = 1,985.68'
VC = 30'
K = 30
(-)1.5533%
(-)0.5300%
SEE SHEET 4 FOR -DRIVE- ALIGNMENT
1,990
1,980
1,970
1,960
1,950
10
11
5/28/99


0 2.5 5
PROJ. REFERENCE NO.
B-4122
SHEET NO.
X-1
PRELIMINARY PLANS
1985.76
2:1
0.020
0.020
4:1
2:1
1985.49
1983.40
11+50.00
1985.61
2:1
0.020
0.020
5.5:1
1985.37
11+00.00
1985.62
0.020
0.020
2:1
1985.56
10+50.00
1985.82
0.020
0.020
1985.87
10+00.00


0 2.5 5
PROJ. REFERENCE NO.
B-4122
SHEET NO.
X-2
1985.35
1985.34
2:1
2:1
0.020
0.020
1985.09
13+50.00
0.020
0.020
CROWN SPAN
WITH FOOTINGS
ON SHEET PILING
FLOW
OF
WATER
13+00.00
WING
WALL
2:1
1985.73
0.020
0.020
4:1
2:1
1983.04
12+50.00
1985.78
2:1
0.020
0.020
4:1
2:1
1985.67
1983.41
12+00.00


0 2.5 5
PROJ. REFERENCE NO.
B-4122
SHEET NO.
X-3
1985.93
15+50.00
1985.38
1986.39
2:1
0.050
0.030
1985.84
15+45.00
1984.82
1985.68
0.050
0.012
1985.21
15+00.00
INTERSECTION WITH
SR 1156 KNIGHT ST.
1985.24
0.032
0.008
1985.06
14+50.00
1985.20
1985.20
0.020
0.020
1985.04
14+00.00
-4-


0 2.5 5
PROJ. REFERENCE NO.
B-4122
SHEET NO.
X-4
2:1
2:1
0.010
0.010
4:1
1983.38
1985.46
10+75.00
2:1
2:1
0.010
0.010
1983.51
1984.93
10+50.00
2:1
2:1
0.006
0.007
4:1
1983.65
1983.14
10+25.00
1985.56
10+00.00
-DRIVE-


0 2,5 5
PROJ. REFERENCE NO.
B-4122
SHEET NO.
X-5
0.010 0.010
1985.15
11+25.00
2:1
0.010 0.010
1983.24
1985.14
11+00.00
-DRIVE-