



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

February 3, 2010

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

ATTN: Mr. David Baker
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 13 & 33 and Corresponding Section 401 General Certifications 3689 & 3688** for the proposed replacement of Bridge No. 58 over Mirror Lake on SR 1551 (Mirror Lake Road) in Macon County, Federal Aid Project No. BRZ-1551 (1); Division 14; TIP No. B-4574; WBS 33778.1.1. Debit work order \$240.00.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 58 over Mirror Lake on SR 1551 (Mirror Lake Road). It should be noted at this location the Cullasaja River is considered Mirror Lake with water being impounded downstream. Impacts will be 0.02 acres of permanent surface water impacts resulting from the placement of rock embankments along the shoreline and 0.11 acres of temporary surface water impacts resulting from a temporary causeway.

Please see enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, permit drawings, and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed in March 2008. Documents were distributed shortly thereafter. Additional copies are available upon request.

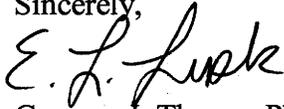
This project calls for a letting date of June 15, 2010 and a review date of April 27, 2010.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the United States Army Corps of Engineers (USACE). By copy of this letter and attachment, 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.

A copy of this permit application will be posted on the NCDOT Website at: <http://www.ncdot.org/doh/preconstruct/pe/>. If you have any questions or need additional information, please call Kris Dramby at (919) 431-6687 or by email at kjdramby@ncdot.gov.

Sincerely,



Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

w/attachment

Mr. Brian Wrenn, NCDWQ (5 copies)
Ms. Marla Chambers, NCWRC
Ms. Marella Buncick, USFWS
Dr. Charles Nicholson, TVA

w/o attachment

Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. J. B. Setzer, P.E., Division Engineer
Mr. Mark Davis, DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Tracy Walter, P.E., Project Bridge Engineer



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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13 33 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input type="checkbox"/> Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

2. Project Information

2a. Name of project:	Replacment of Bridge 58 Over Mirror Lake on SR 1551 (Mirror Lake Road).
2b. County:	Macon
2c. Nearest municipality / town:	Highlands
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	B-4574

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 431-6687
3g. Fax no.:	(919) 431-2002
3h. Email address:	kjdramy@ncdot.gov

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

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.38908 (DD.DDDDDD) Longitude: - 83.20566 (-DD.DDDDDD)
1c. Property size:	.05 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Mirror Lake
2b. Water Quality Classification of nearest receiving water:	WS-III; 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: The site is located in an semi-rural section of Macon County primarily surrounded by residential and the Nantahala National Forest. The topography in the project study area is comprised of moderate gradient transitions with nearly level floodplains along Mirror Lake. Elevation within the project study area measures approximately 3500 feet above mean sea level.	
3b. List the total estimated acreage of all existing wetlands on the property: NA	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 50	
3d. Explain the purpose of the proposed project: Example: To replace a structurally deficient (and/ or) functionally obsolete bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing the existing structure with a 105-foot bridge on the existing alignment with an off-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

C. Proposed Impacts Inventory

1. Impacts Summary

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

- Wetlands Streams - tributaries Buffers
 Open Waters Pond Construction

2. Wetland Impacts

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

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
2g. Total wetland impacts					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 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
3h. Total stream and tributary impacts						

3i. Comments:

4. Open Water Impacts

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

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Mirror Lake	Temporary Causeway	Lake	0.11
O2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Mirror Lake	Rock Embankment	Lake	0.012
O3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Mirror lake	Rock Embankment	Lake	0.003
O4 <input type="checkbox"/> P <input type="checkbox"/> T				
4f. Total open water impacts				0.02 Permanent 0.11 Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

5h. Is a dam high hazard permit required?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

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

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

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Design Standards for Sensitive Watersheds will be implemented resulting from NCDWQ's designation of the Cullasaja River/Mirror Lake within the project study area as a waterbody located in a Critical Area and inclusion on the 303d list. Additionally, the bridge will be spanned over Mirror Lake. Traffic will be routed to a temporary off site detour during construction. 2:1 fill slopes will be used where practicable.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Best management practices will be followed as outlined in "NCDOT's 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, explain: No mitigation will be required for the placement of rock embankments because it is not considered a loss of waters.	
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input type="checkbox"/> Corps	
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation	
3. Complete if Using a Mitigation Bank		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
4. Complete if Making a Payment to In-lieu Fee Program		
4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes	
4b. Stream mitigation requested:	linear feet	
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold	
4d. Buffer mitigation requested (DWQ only):	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?				<input type="checkbox"/> Yes	<input type="checkbox"/> No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.					
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)	
Zone 1			3 (2 for Catawba)		
Zone 2			1.5		
			6f. Total buffer mitigation required:		
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).					
6h. Comments:					

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

1. Diffuse Flow Plan

1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: if yes, see attached permit drawings.	<input type="checkbox"/> Yes	<input type="checkbox"/> 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?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:		
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.		
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input type="checkbox"/> DWQ 401 Unit	

3. Certified Local Government Stormwater Review

3a. In which local government's jurisdiction is this project?	not applicable	
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:	
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

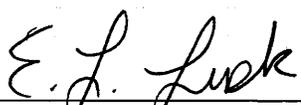
4. DWQ Stormwater Program Review

4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:	
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

5. DWQ 401 Unit Stormwater Review

5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5b. Have all of the 401 Unit submittal requirements been met?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

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

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input type="checkbox"/> Raleigh <input type="checkbox"/> Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NHP and USFWS websites and NCDOT field surveys.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
<u>Dr. Gregory J. Thorpe, Ph D</u> Applicant/Agent's Printed Name	 Applicant/Agent's Signature <small>(Agent's signature is valid only if an authorization letter from the applicant is provided.)</small>	2.3.10 Date

STORMWATER MANAGEMENT PLAN

Project: 33778.1.1
TIP No. B-4574
Macon County

07/28/2009

Hydraulics Project Manager: Dennis Hoyle, P.E. (URS Corporation)
Marshal Clawson, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project B-4574 consists of constructing a new bridge 105 feet long to replace the existing bridge #58 in Macon County on SR-1551 over Cullasaja River (Mirror Lake). The total project length is 0.063 miles. The project creates impacts to the Cullasaja River, which is located in the Little Tennessee River Basin. The project drainage systems consist of modified concrete flumes with permanent soil reinforcement matting (PSRM) at the outlets.

Jurisdiction Stream: Cullasaja River

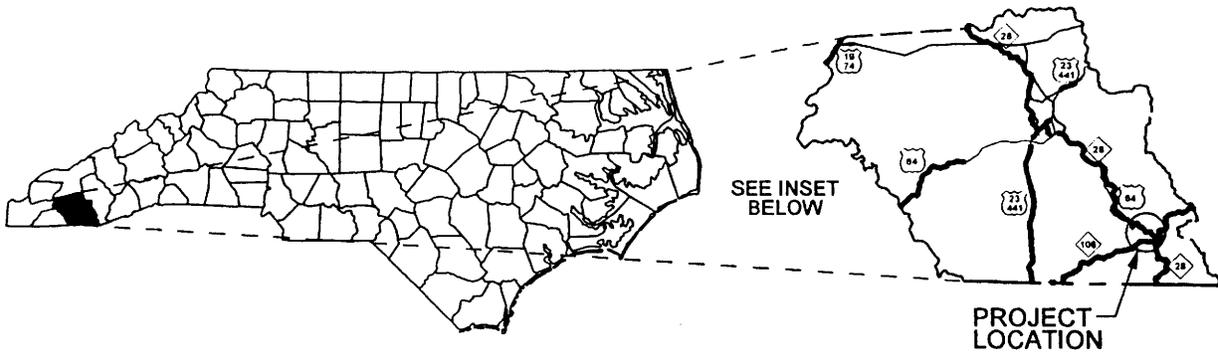
ENVIRONMENTAL DESCRIPTION

The project is located within the Little Tennessee River Basin in Macon County. A temporary causeway will be required for removal of the existing structure and construction of the proposed structure. Impacts have been minimized by using PSRM at the modified concrete flume outlets and reducing the roadway approach work to minimize fill slope encroachment into the Cullasaja River.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

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

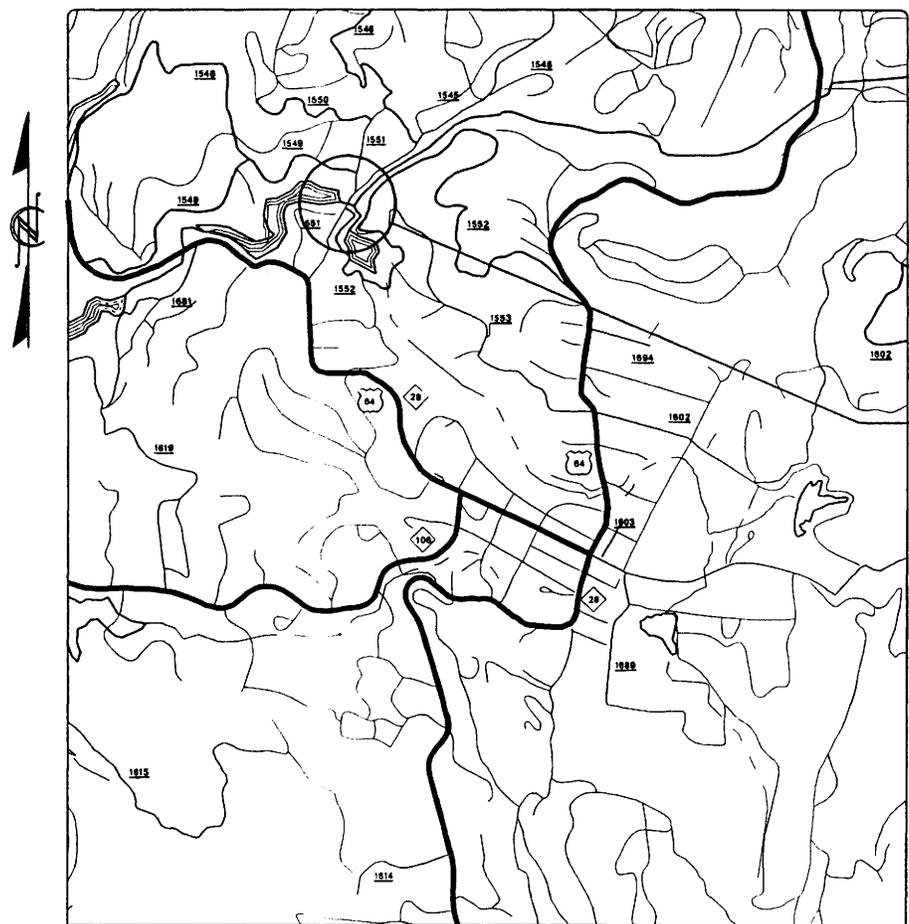
- PSRM at the modified concrete flume outlets.
- Rock Embankment on north approach fill slopes to minimize the impact area.



SEE INSET BELOW

PROJECT LOCATION

MACON COUNTY



PROJECT LOCATION

VICINITY MAP

NTS

WETLAND/STREAM IMPACTS

Permit Drawing
Sheet 1 of 11

NCDOT
 DIVISION OF HIGHWAYS
 MACON COUNTY
 PROJECT: 33778.1.1 (B-4574)
 BRIDGE NO. 58
 OVER THE CULLASAJA RIVER
 ON SR 1551 (MIRROR LAKE ROAD)

SHEET OF 6 / 29 / 2009

PROPERTY OWNERS
NAMES AND ADDRESSES

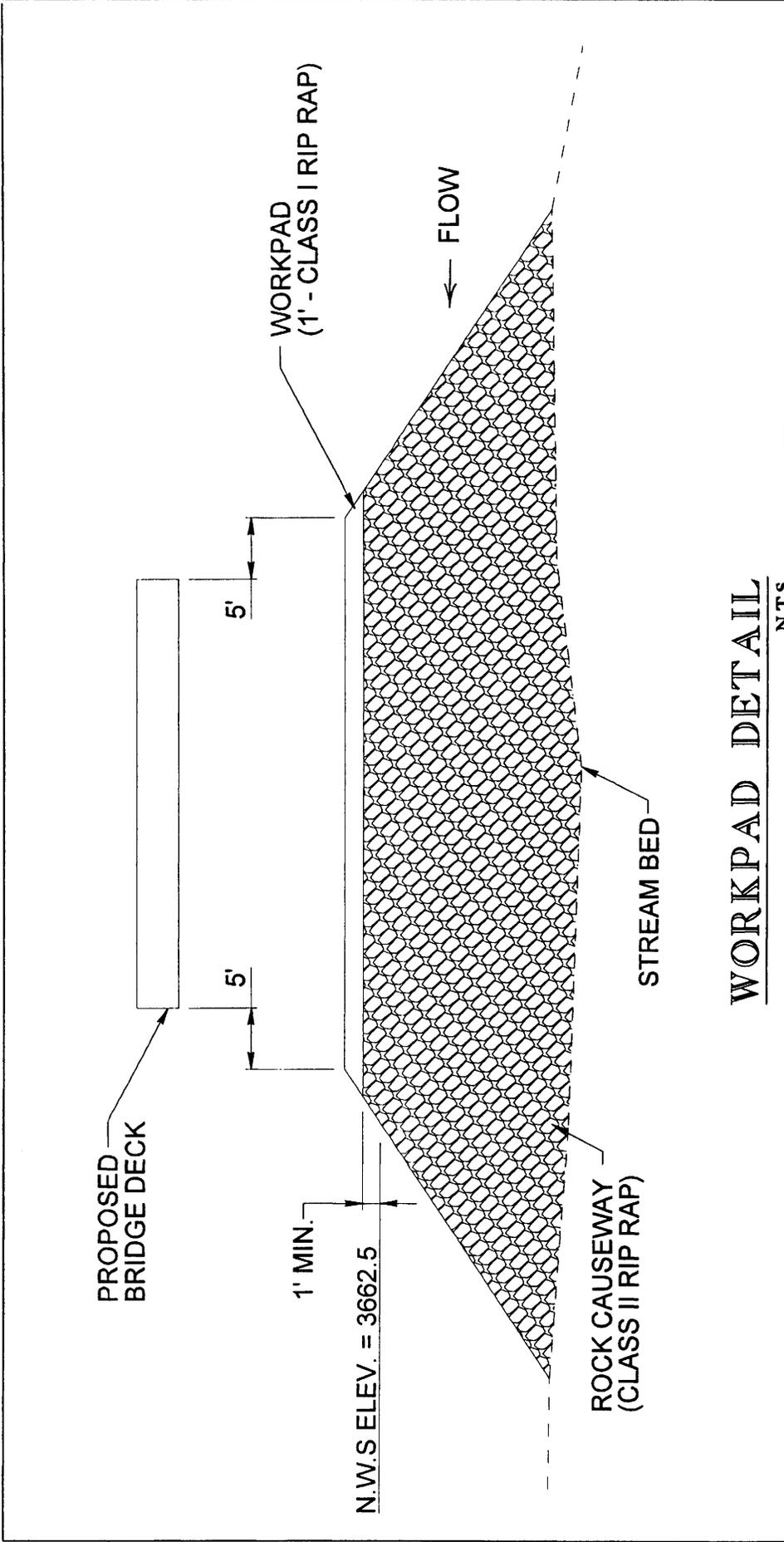
PARCEL NO.	NAMES	ADDRESSES
1	BENSON L. BAGWELL, TRUSTEE	
2	CULLASAJA HEIGHTS MIRROR LAKE IMPROVEMENTS	
3	MARY W. BREITENBACH	

Permit Drawing
Sheet 2 of 17

NCDOT
DIVISION OF HIGHWAYS
MACON COUNTY
PROJECT: 33778.1.1 (B-4574)
BRIDGE NO. 58
OVER THE CULLASAJA RIVER
ON SR 1551 (MIRROR LAKE ROAD)

SHEET OF

6 / 29 / 2009



WORKPAD DETAIL
N.T.S.

ESTIMATE OF QUANTITIES

- VOLUME CLASS I RIP RAP = 117 CY
- ESTIMATE 6 TONS CLASS I RIP RAP
- VOLUME CLASS II RIP RAP = 1001 CY
- ESTIMATE 55 TONS CLASS II RIP RAP
- AREA OF RIP RAP = 0.113 ACRES

Permit Drawing
Sheet 4 of 11

NCDOT

DIVISION OF HIGHWAYS
MACON COUNTY
PROJECT: 33778.1.1 (B-4574)

BRIDGE NO. 58
OVER THE CULLASAJA RIVER
ON SR 1551 (MIRROR LAKE ROAD)

SHEET OF 6 / 29 / 2009

09/08/09

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

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

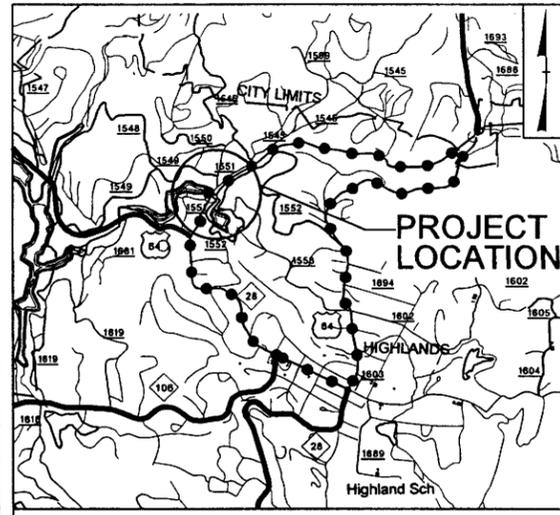
MACON COUNTY

LOCATION: BRIDGE # 58 OVER THE CULLASAJA RIVER
 ON SR 1551 (MIRROR LAKE ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE

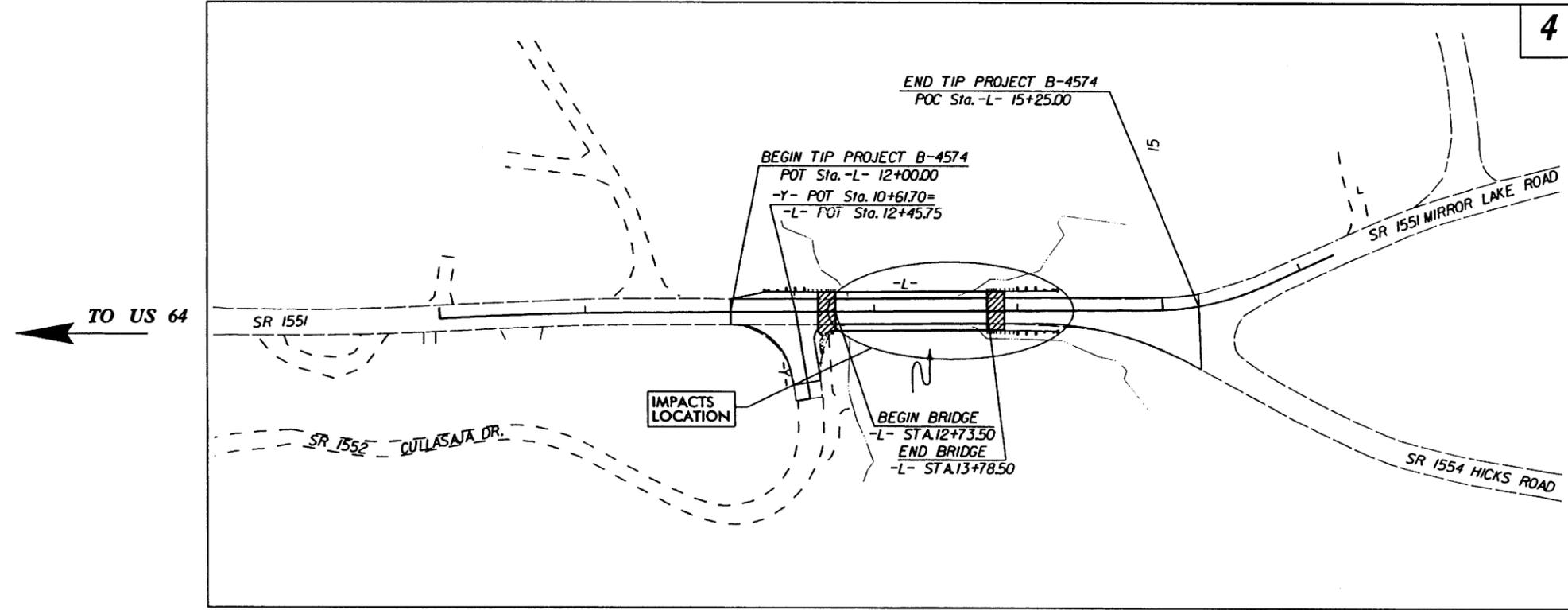
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4574	I	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33778.1.1	BRZ-1551(1)	PE	
33778.1.1	BRZ-1551(1)	RAW	

TIP PROJECT: B-4574



VICINITY MAP

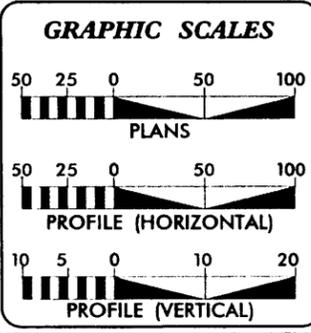
OFF-SITE DETOUR ROUTE



THIS PROJECT IS WITHIN THE TOWN OF HIGHLANDS MUNICIPAL BOUNDARIES.
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

CONTRACT:



DESIGN DATA

ADT 2010 =	2477
ADT 2030 =	3400
DHV =	9 %
D =	65 %
T =	7 % *
V =	30 MPH
FUNC CLASS =	RURAL LOCAL
* TTST 1%	DUAL 6%

PROJECT LENGTH

LENGTH OF ROADWAY F.A. PROJECT BRZ-1551 (1) =	0.046 MI
LENGTH OF STRUCTURE F.A. PROJECT BRZ-1551 (1) =	0.018 MI
LENGTH OF ROADWAY STATE PROJECT 33778.1.1 =	0.063 MI

DESIGN EXCEPTION REQUIRED:
 LANE WIDTH
 SHOULDER WIDTH
 BRIDGE WIDTH

Prepared in the Office of:
SEPI
 ENGINEERING & CONSTRUCTION
 1025 Wade Avenue
 Raleigh, NC 27605
 Tel: 919-789-9977
 Fax: 919-789-9591

FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION
 2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 JUNE 19, 2009

LETTING DATE:
 JUNE 15, 2010

STEVE SCOTT, PE
 PROJECT ENGINEER

AGNIESKA NAU, PE
 ROADWAY PROJECT DESIGN ENGINEER

B. DOUG TAYLOR, PE
 NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

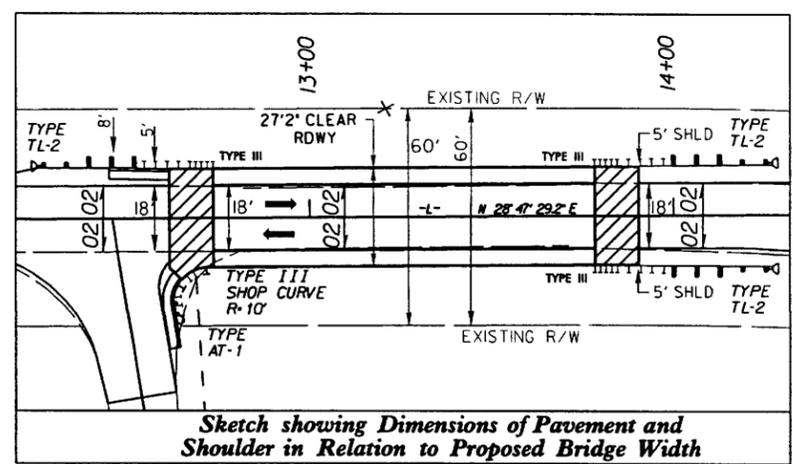
Permit Drawing
 Sheet 5 of 11

STATE HIGHWAY DESIGN ENGINEER

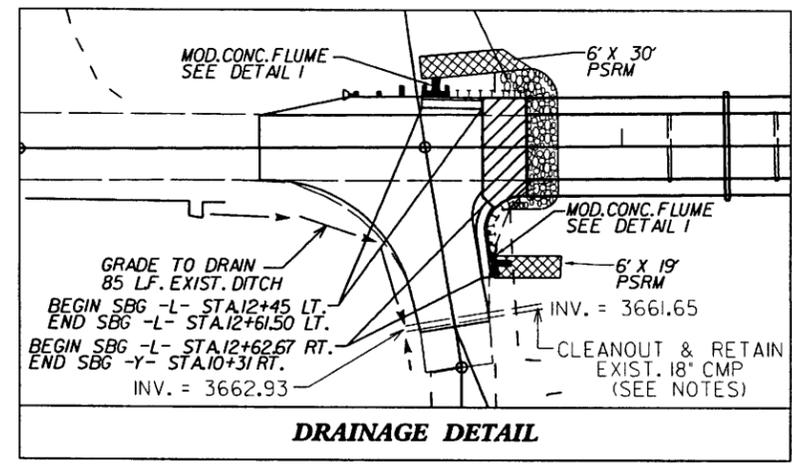
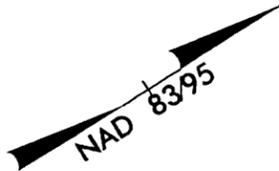
7/20/2009 R:\Roadway\Proj\B4574_RDY_rsh_per.mt.dgn elenl_riggs

5/14/99

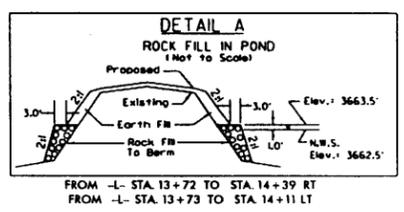
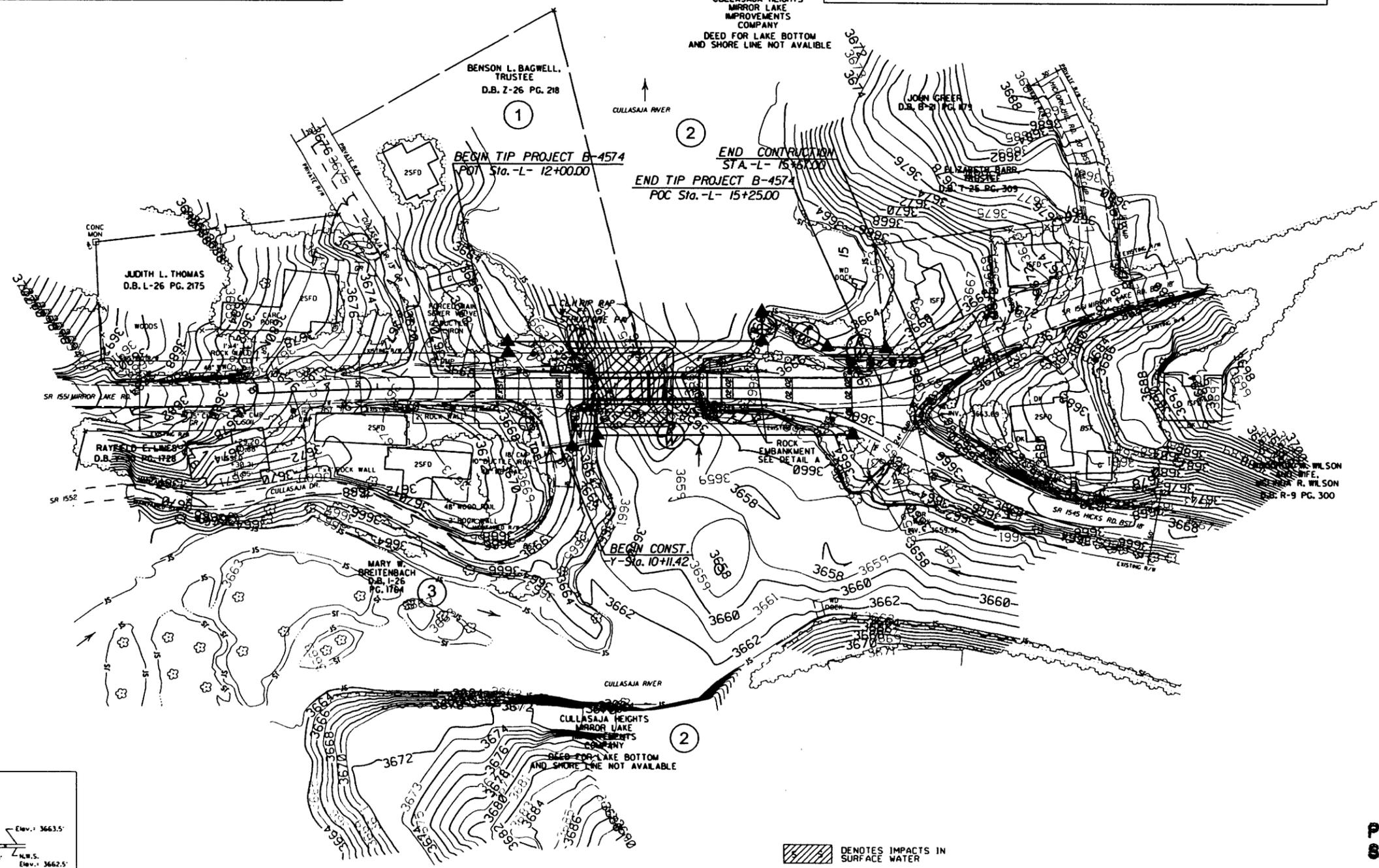
PROJECT REFERENCE NO. B-4574	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



Sketch showing Dimensions of Pavement and Shoulder in Relation to Proposed Bridge Width



DRAINAGE DETAIL



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE: SEE PLAN SHEET 5 FOR PROFILE

Permit Drawing Sheet 7 of 11

7/20/2009 roadwq\p\p\B4574.RDY_psh04_per.mtl00.dgn

5/14/99

PROJECT REFERENCE NO. B-4574	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

DEED FOR LAKE BOTTOM AND SHORE LINE NOT AVAILABLE



BENSON L. BAGWELL, TRUSTEE
D.B. Z-26 PG. 218

1

CULLASAJA RIVER

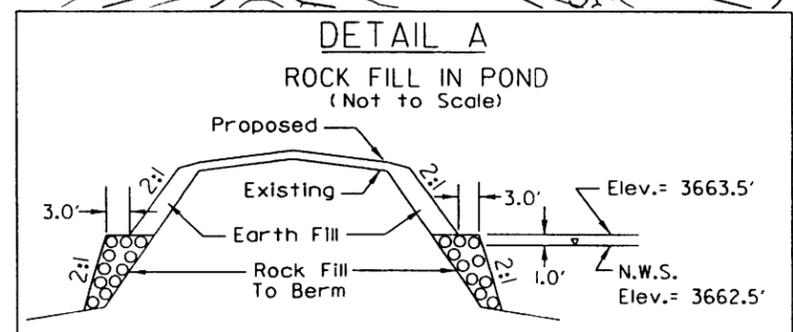
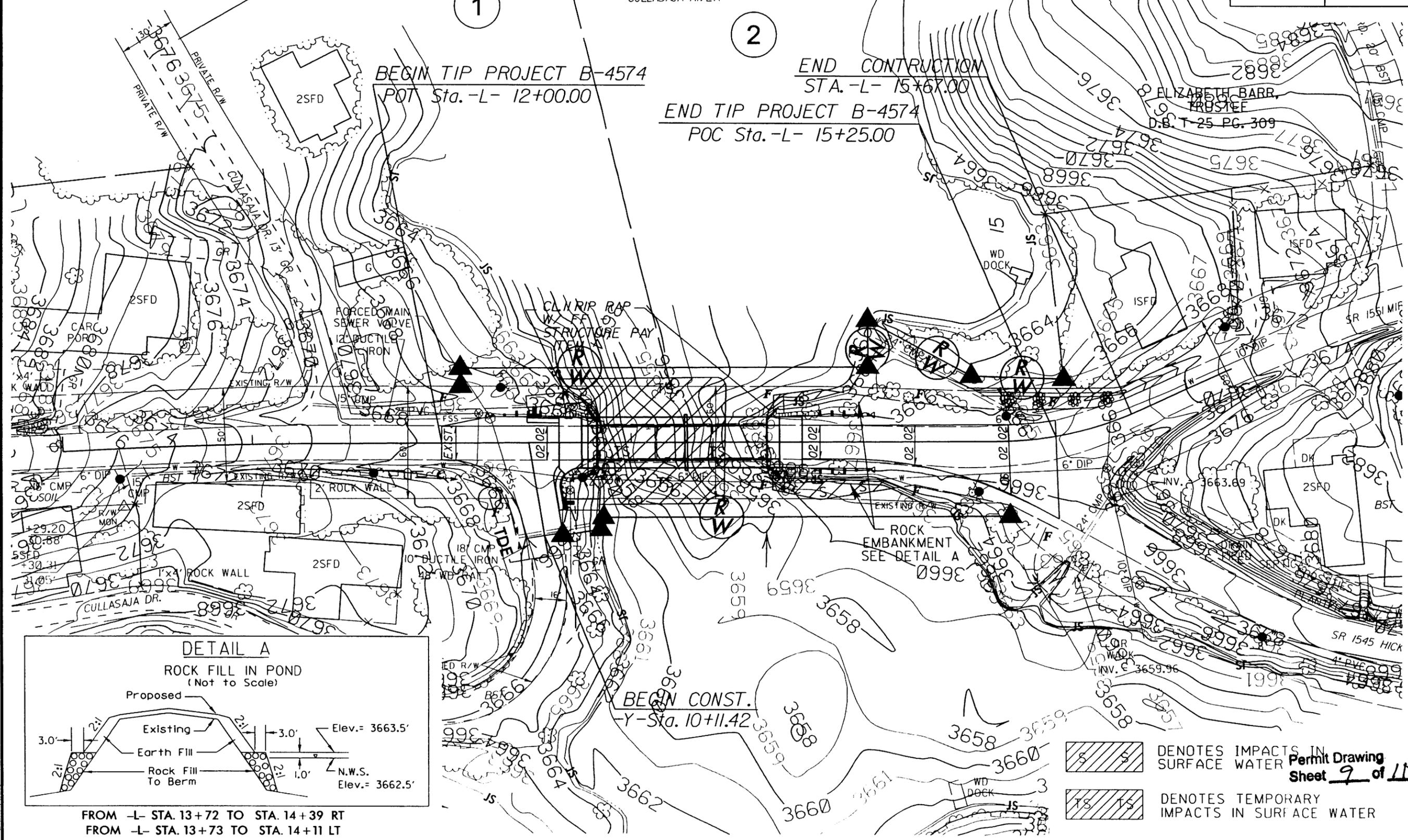
2

JOHN GREER
D.B. B-21 PG. 1179

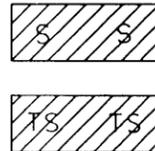
ELIZABETH BARR, TRUSTEE
D.B. T-25 PG. 309

BEGIN TIP PROJECT B-4574
POT Sta.-L- 12+00.00

END CONSTRUCTION
STA.-L- 15+67.00
END TIP PROJECT B-4574
POC Sta.-L- 15+25.00



FROM -L- STA. 13+72 TO STA. 14+39 RT
FROM -L- STA. 13+73 TO STA. 14+11 LT



DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

Permit Drawing Sheet **9** of **11**

7/20/2003
Roadway Design
B-4574_RDW_psh04_permit.dwg

5/14/99

PROJECT REFERENCE NO. B-4574	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DITCH LEGEND	
LEFT DITCH	

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1540 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 3662.5 FT
(MWS CONTROLLED)

BASE DISCHARGE = 2480 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 3658.0 FT

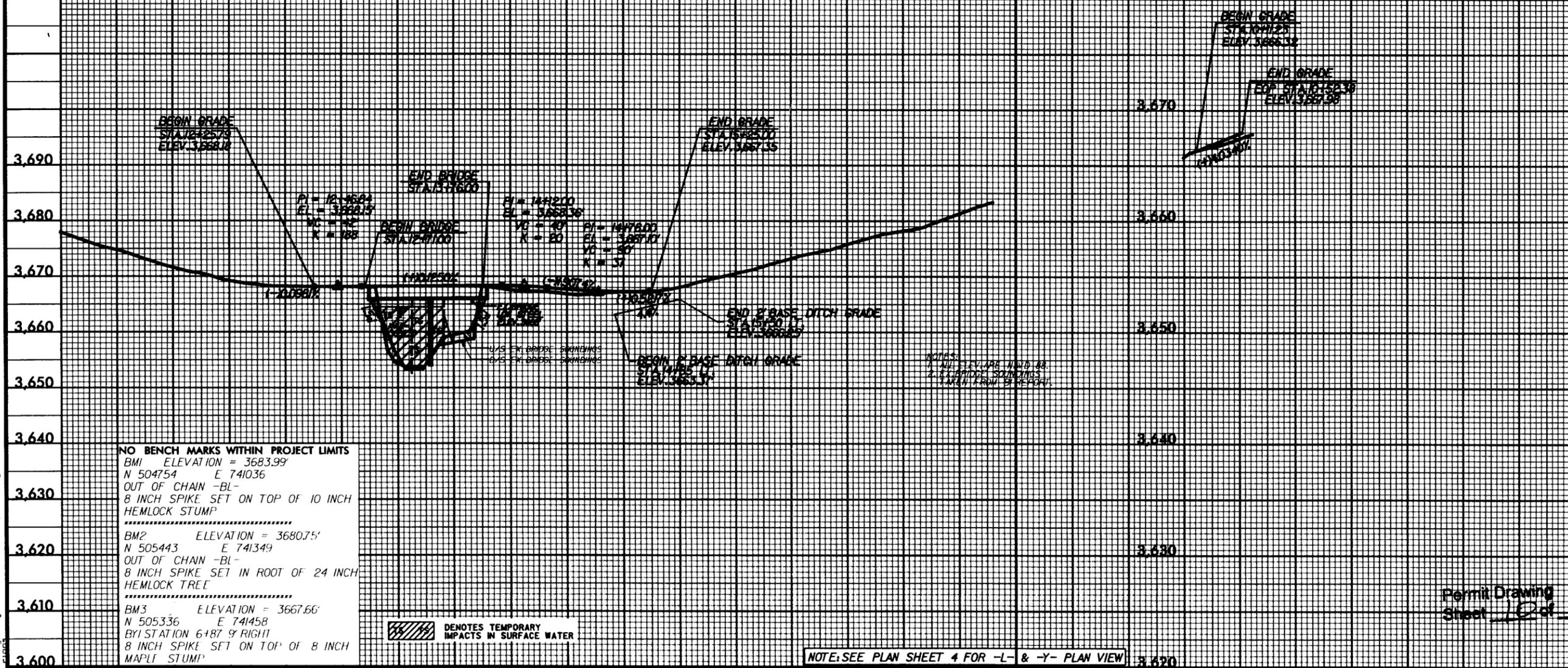
(FEMA MODEL DATA USES LIDAR AND HAS A DIFFERENT DATUM, DATUM VARIANCE UNRESOLVABLE)

OVERTOPPING DISCHARGE = 5500 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 3668.0 FT

DATE OF SURVEY = 4/1/08
W.S. ELEVATION AT DATE OF SURVEY = 3662.5 FT

-L-

-Y-



NO BENCH MARKS WITHIN PROJECT LIMITS
BM1 ELEVATION = 3683.99
N 504754 E 741036
OUT OF CHAIN -BL-
8 INCH SPIKE SET ON TOP OF 10 INCH
HEMLOCK STUMP

BM2 ELEVATION = 3680.75'
N 505443 E 741349
OUT OF CHAIN -BL-
8 INCH SPIKE SET IN ROOT OF 24 INCH
HEMLOCK TREE

BM3 ELEVATION = 3667.66'
N 505336 E 741458
BYI STATION 6+87 9 RIGHT
8 INCH SPIKE SET ON TOP OF 8 INCH
MAPLE STUMP

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTES:
1. ALL ELEVATIONS UNLESS OTHERWISE NOTED ARE IN FEET.
2. ALL BRIDGE DIMENSIONS ARE IN FEET.
3. ALL DISTANCES ARE IN FEET.

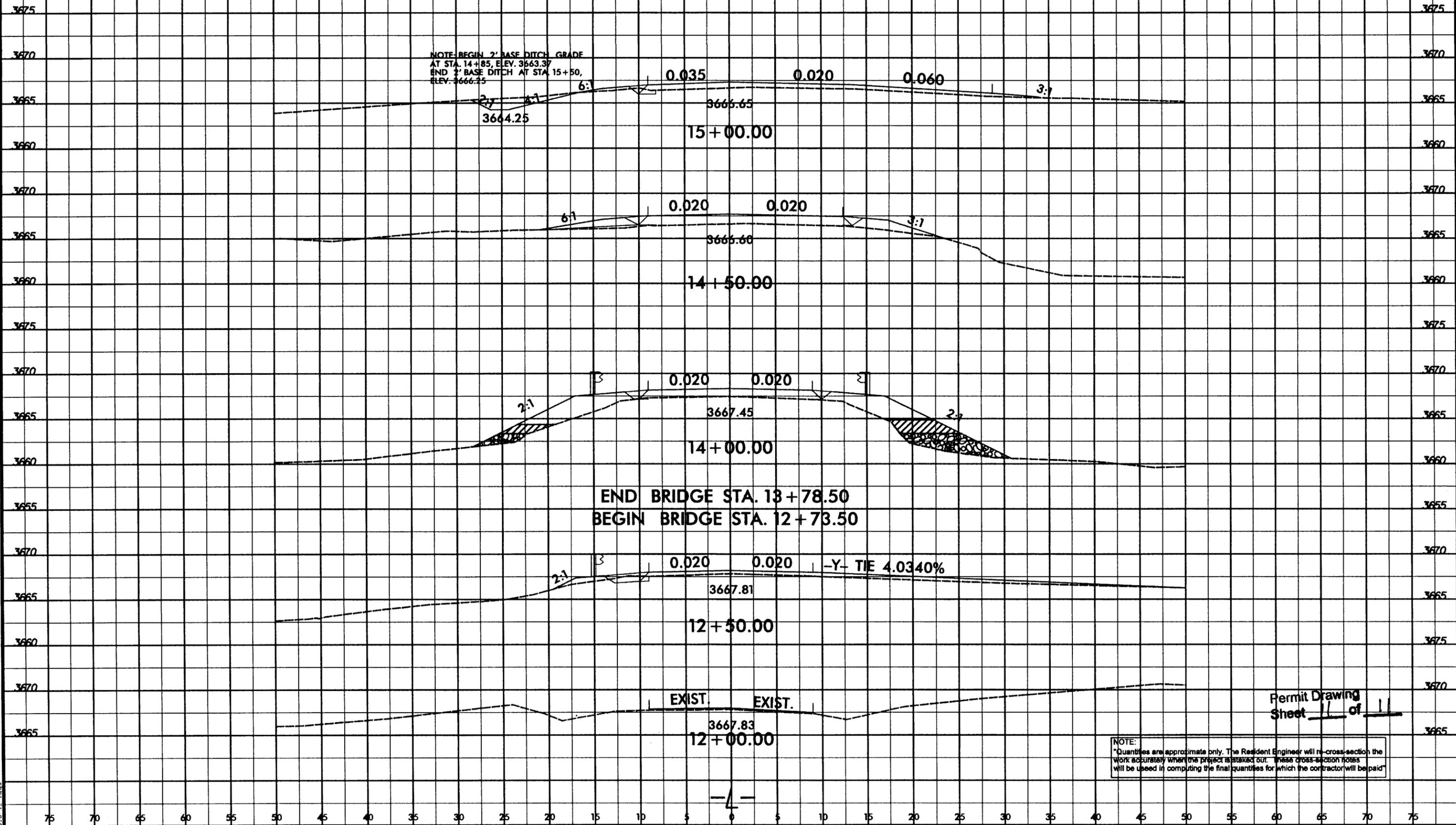
NOTE: SEE PLAN SHEET 4 FOR -L- & -Y- PLAN VIEW

Permit Drawing
Sheet 12 of 11

7/29/2009 10:00:00 AM P:\roadway\p-co\4574-RDY_PSH05.psm.tcdgn

8/23/99

PRELIMINARY PLANS. DO NOT USE FOR CONSTRUCTION.



END BRIDGE STA. 13+78.50
 BEGIN BRIDGE STA. 12+73.50

Permit Drawing
 Sheet 11 of 11

NOTE:
 Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

7/26/2008 P:\S\2008\Proj\B4574.RDY_xb.L_permit.dgn

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4574	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33778.1.1	BRZ-1551(1)	PE	
33778.1.1	BRZ-1551(1)	R/W	

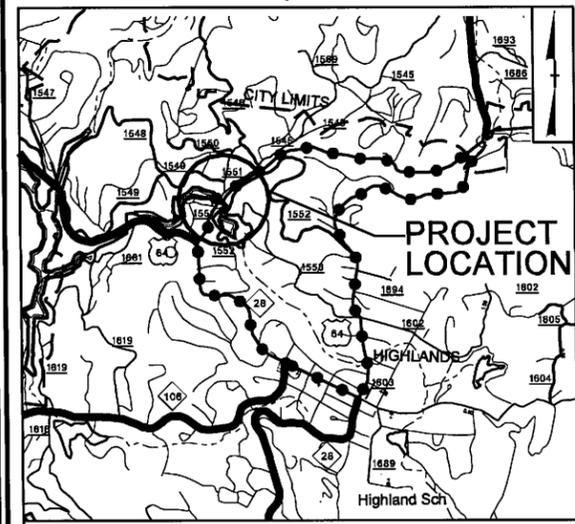
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

LOCATION: BRIDGE # 58 OVER THE CULLASAJA RIVER
ON SR 1551 (MIRROR LAKE ROAD)

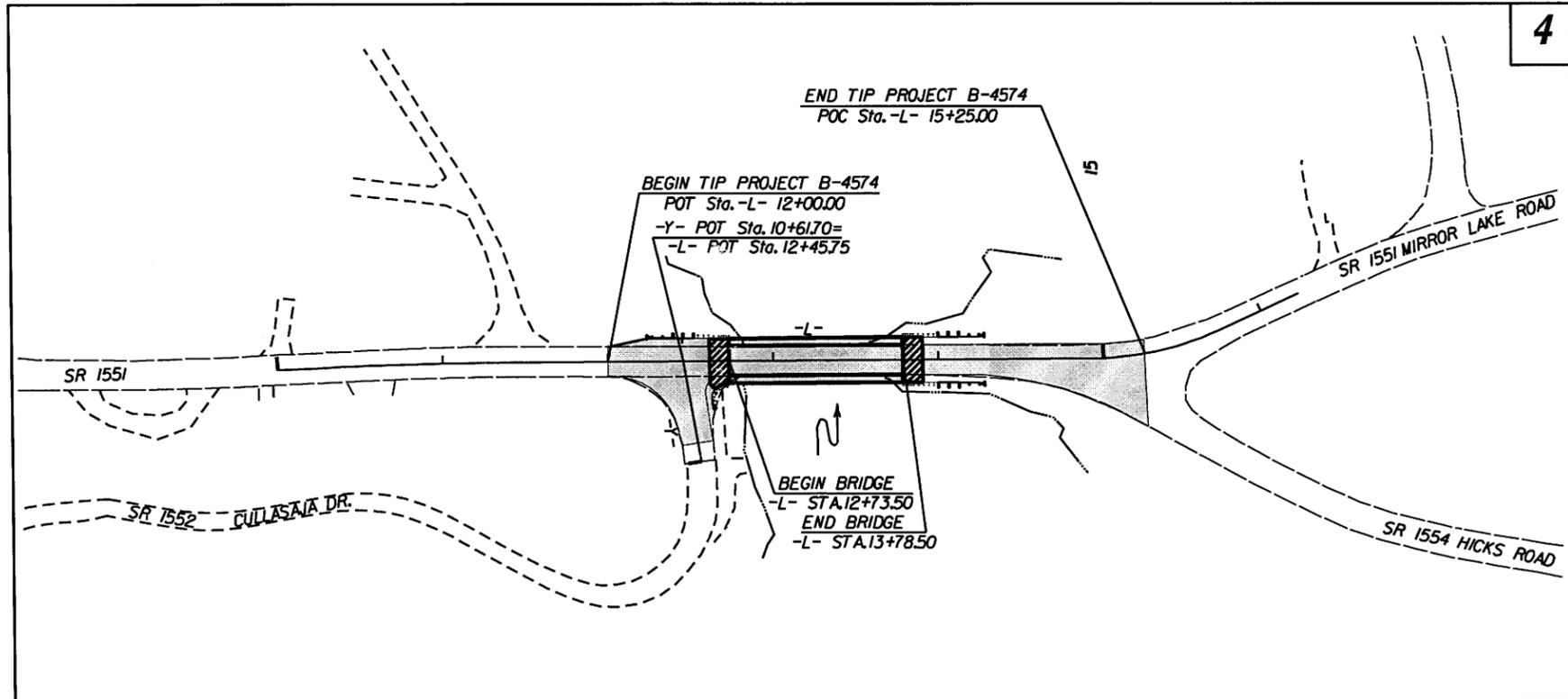
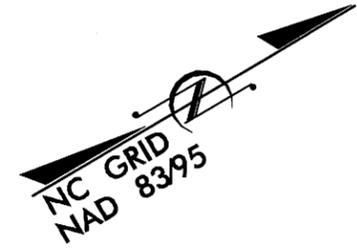
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE

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



VICINITY MAP

OFF-SITE DETOUR ROUTE

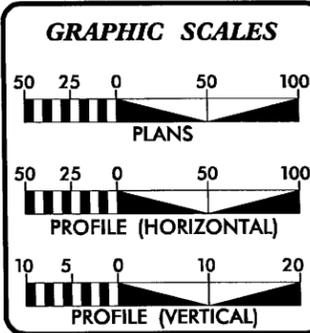


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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TIP PROJECT: B-4574

CONTRACT:



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SHOULDER WIDTH
BRIDGE WIDTH

Prepared in the Office of:
SEPI
ENGINEERING & CONSTRUCTION
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Tel: 919-789-8977
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FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION
2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
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B. DOUG TAYLOR, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$EDGN\$\$\$\$\$
\$\$\$\$\$SERNAME\$\$\$\$\$

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for 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, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker.

ROADS AND RELATED FEATURES:

Table listing symbols for Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Wheel Chair Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for Single Tree, Single Shrub, Hedge, Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

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

TELEPHONE:

Table listing symbols for Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.*).

WATER:

Table listing symbols for Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.*), Above Ground Water Line.

TV:

Table listing symbols for TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.*).

GAS:

Table listing symbols for Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.*).

MISCELLANEOUS:

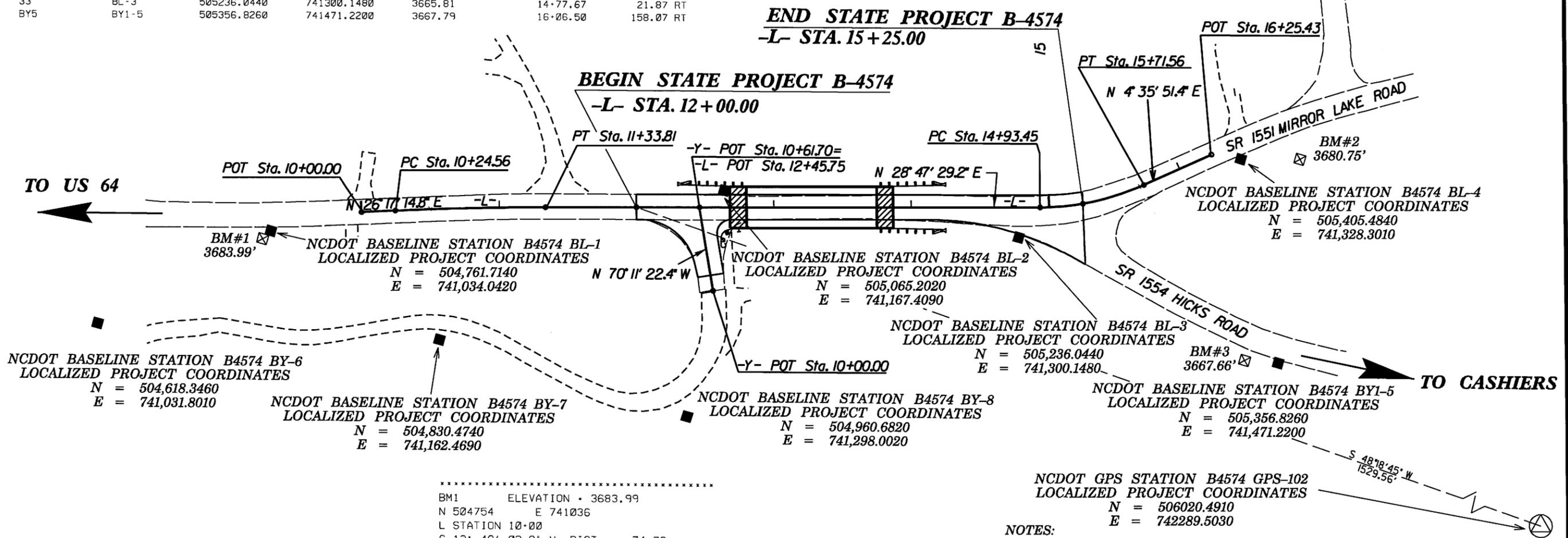
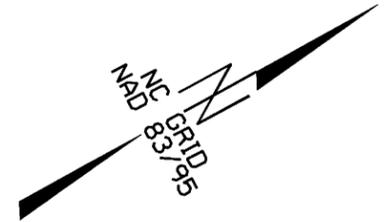
Table listing symbols for Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, A/G Tank; Water, Gas, Oil, U/G Test Hole (S.U.E.*), Abandoned According to Utility Records, End of Information.

SURVEY CONTROL SHEET B-4574

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL1	BL-1	504761.7140	741034.0420	3681.37	OUTSIDE PROJECT LIMITS	
BL2	BL-2	505065.2020	741167.4090	3667.52	12+64.02	12.18 LT
BL3	BL-3	505236.0440	741300.1480	3665.89	14+77.67	21.87 RT
BL4	BL-4	505405.4840	741328.3010	3672.71	OUTSIDE PROJECT LIMITS	

BY POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
BY6	BY-6	504618.3460	741031.8010	3671.43	10+47.02	446.42 LT
BY7	BY-7	504830.4740	741162.4690	3667.16	OUTSIDE PROJECT LIMITS	
BY8	BY-8	504960.6820	741298.0020	3666.20	OUTSIDE PROJECT LIMITS	
22	BL-2	505065.2020	741167.4090	3667.52	OUTSIDE PROJECT LIMITS	

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
33	BL-3	505236.0440	741300.1480	3665.81	14+77.67	21.87 RT
BY5	BY1-5	505356.8260	741471.2200	3667.79	16+06.50	158.07 RT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4574 GPS-102"

WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 506020.491(ft) EASTING: 742289.503(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99970224

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4574 GPS-102" TO -L- STATION 12+00.00 IS
 S 48°18'45" W 1529.56'

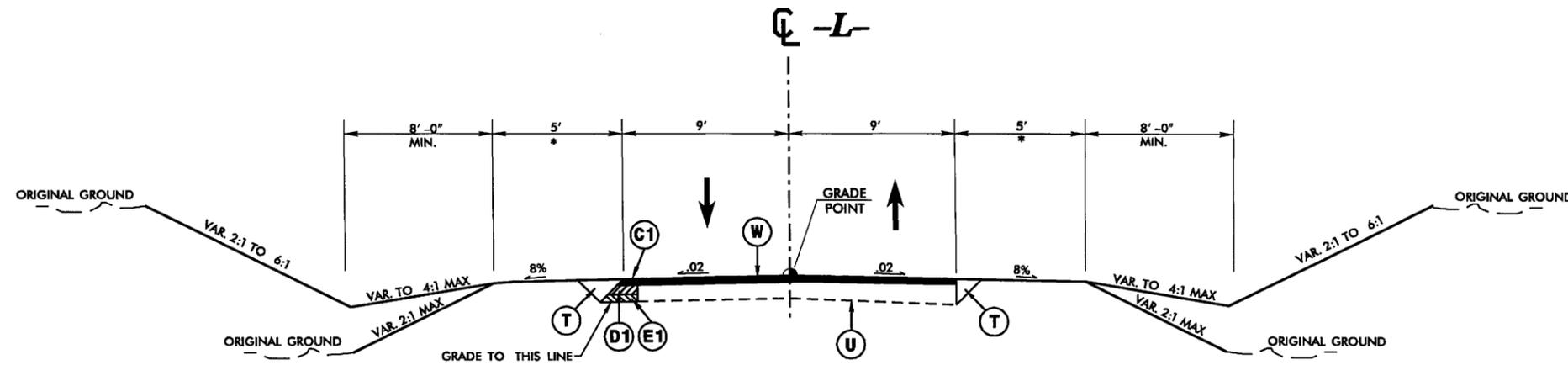
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

```

*****
BM1      ELEVATION = 3683.99
N 504754      E 741036
L STATION 10+00
S 13° 49' 03.8" W DIST 74.78
8" SPIKE SET ON TOP OF 10" HEMLOCK STUMP
*****
BM2      ELEVATION = 3680.75
N 505443      E 741349
L STATION 16+25
N 31° 48' 58.2" E DIST 64.86
8" SPIKE SET IN ROOT OF 24" HEMLOCK TREE
*****
BM3      ELEVATION = 3667.66
N 505336      E 741458
L STATION 15+85 146 RIGHT
8" SPIKE SET ON TOP OF 8" MAPLE STUMP
*****
    
```

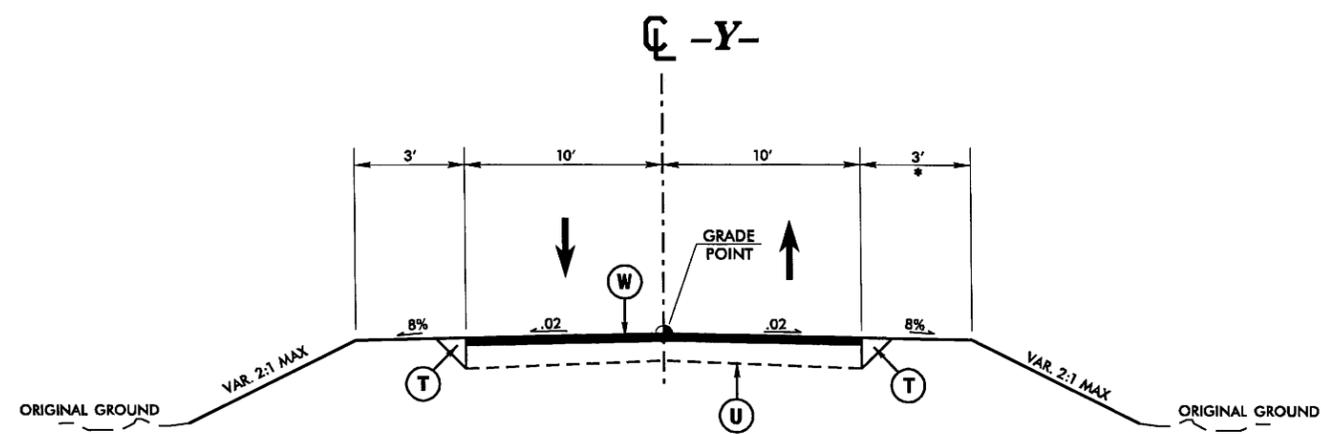
- NOTES:**
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/doh/preconstruct/highway/location/project/)
- THE FILES TO BE FOUND ARE AS FOLLOWS:
 B-4574_LS_CONTROL_070102.TXT
 B-4574_LS_1C_070102.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 USING ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE



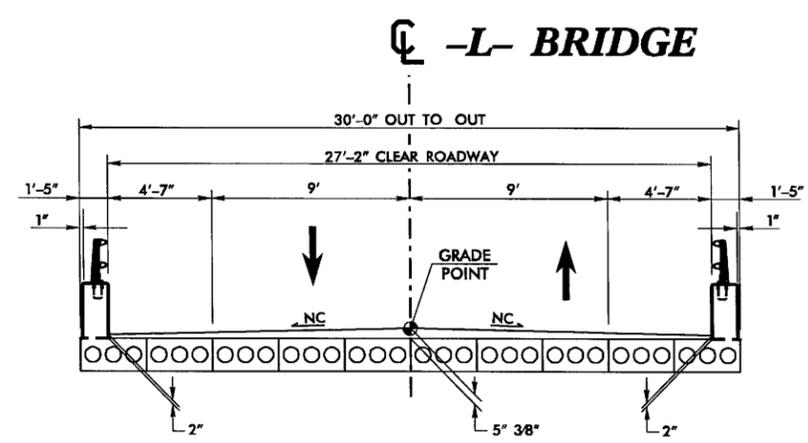
* ADD 3' TO SHOULDERS FOR GUARDRAIL

TYPICAL SECTION NO. 1
 -L- STA. 12+00.00 TO 12+73.50 (BEGIN BRIDGE)
 -L- STA. 13+78.50 (END BRIDGE) TO STA. 15+25.00



* ADD 4' TO SHOULDERS FOR GUARDRAIL

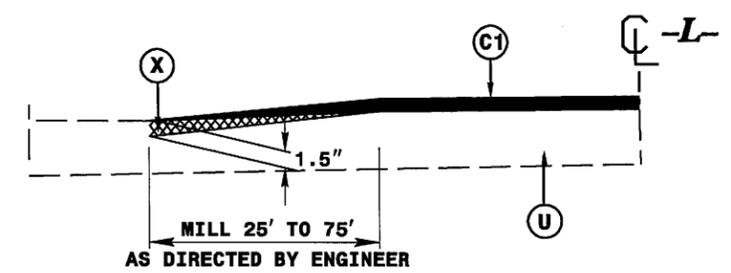
TYPICAL SECTION NO. 2
 -Y- STA. 10+11.42 TO 10+39.37.00



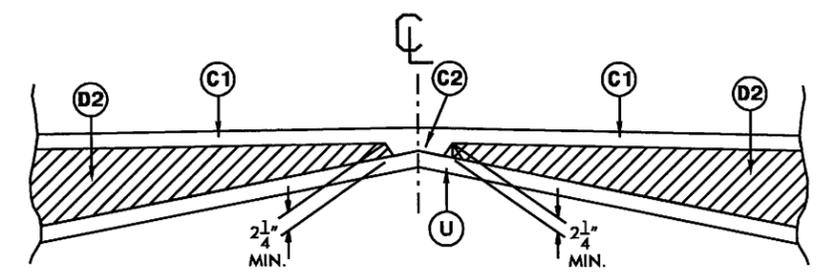
TYPICAL SECTION NO. 3
 CORED SLAB BRIDGE
 -L- STA. 12+73.50 (BEGIN BRIDGE) TO 13+78.50 (END BRIDGE)

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 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 1 1/2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 448 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL)
X	MILL

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



MILLING DETAIL
 -L- 12+00.00, -L- 15+25.00



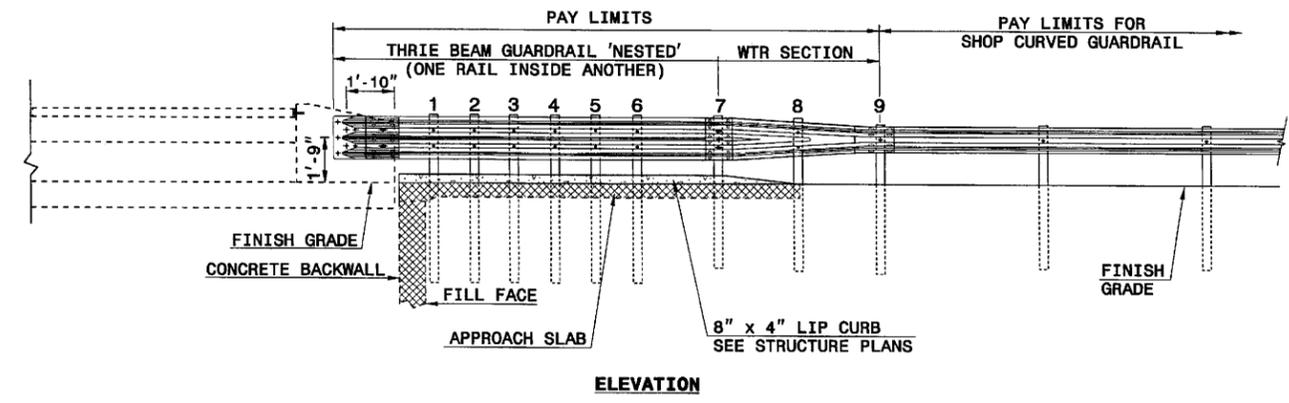
Detail Showing Method of Wedging

5/14/99 14/43

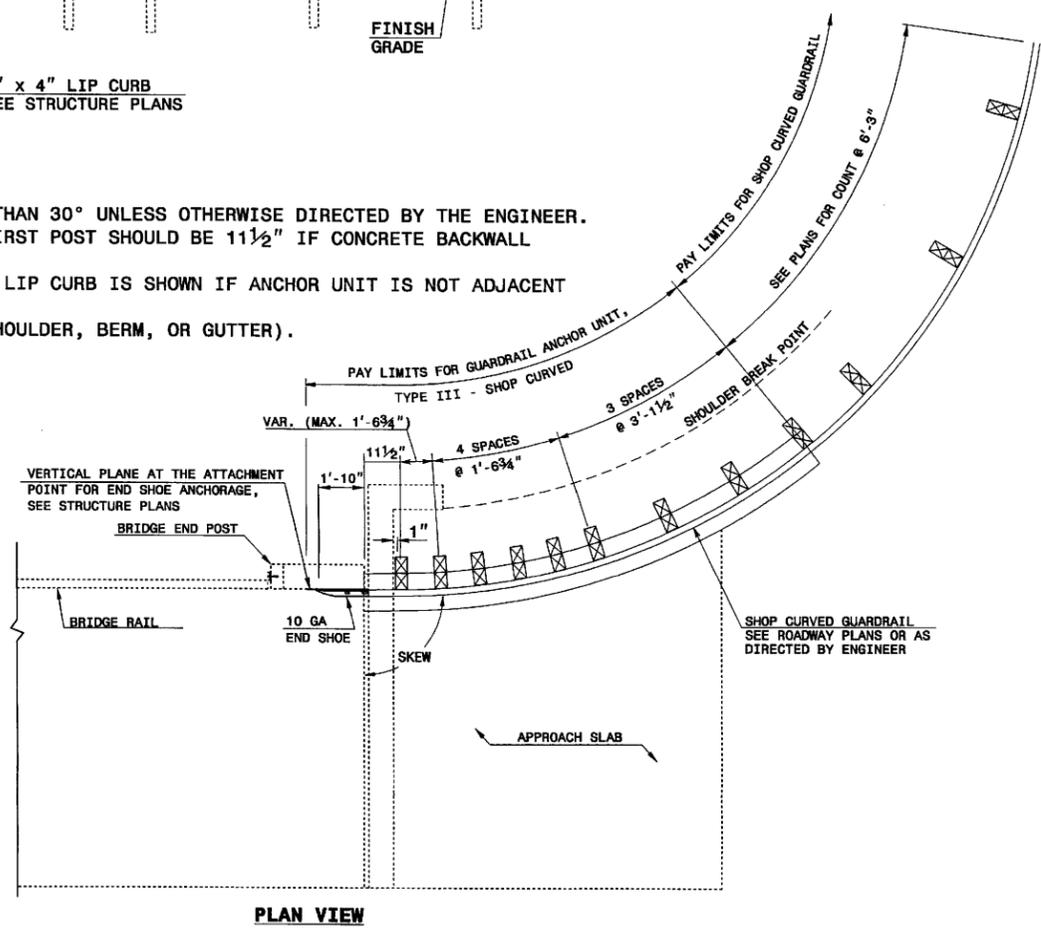
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
TYPE III SC



- NOTE:**
- **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 - *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 - SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 - MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 - USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
 - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 - SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



**GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED
FOR ATTACHMENT TO RAIL ON BRIDGE**

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1
TYPE III SC

SEE ROADWAY PLANS FOR END TREATMENT

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. WARD DATE: 4-4-02
 MODIFIED BY: DATE: 4/16/08
 CHECKED BY: DATE: 4/16/08
 FILE SPEC: \\usr\details\stand\862stds\typeiii.sc.dgn

6/21/00

COMPUTED BY: JFP DATE: 04/07/00
 CHECKED BY: SLS DATE: 04/14/00

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
 B-4574 3A

SUMMARY OF EARTHWORK IN CUBIC YARDS					
LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA. 12+00.00 TO BRIDGE	11		15	4	
SUBTOTAL	11		15	4	
BRIDGE TO -L- STA. 15+25.00	15		320	305	
SUBTOTAL	15		320	305	
-Y- 10+11.42 TO STA. 10+39.37	5		12	7	
SUBTOTAL	5		12	7	
TOTAL	31		347	316	
LOSS DUE TO CLEARING & GRUBBING	-10			10	
PROJECT TOTAL	21		347	326	
EST. FOR REPLACE TOPSOIL ON BORROW PITS				2	
GRAND TOTALS	21			328	
SAY	25				

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEGINNING STATION	END STATION	LOCATION	LENGTH			WARRENT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS			REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU-350 TL-2	AT-1	TYPE III	
-L-	12+23.50	12+73.50	LT	50.0'				12+73.50	5'	8'					1		1	
-Y- /-L-	-Y-10+32.20	-L-12+73.50	RT		20.5'			12+73.50	3'	3'						1		1
-L-	13+78.50	14+28.50	LT	50.0'				13+78.50	5'	8'					1		1	
-L-	13+78.50	14+28.50	RT	50.0'				13+78.50	5'	8'					1		1	
LESS ANCHOR DEDUCTIONS																		
GRAU-350, TL-2 3 @ 25' =				-75'														
AT-1 1 @ 6.25' =				-6.25'														
TYPE III 4 @ 18.75' =				-75'														
TOTAL				14.25'														
SAY				25.0'										3	1	4		

*****SYSTEM*****
 *****SERIAL*****

5/14/99

5/14/99

PROJECT REFERENCE NO.		SHEET NO.	
B-4574		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS			
DO NOT USE FOR CONSTRUCTION			

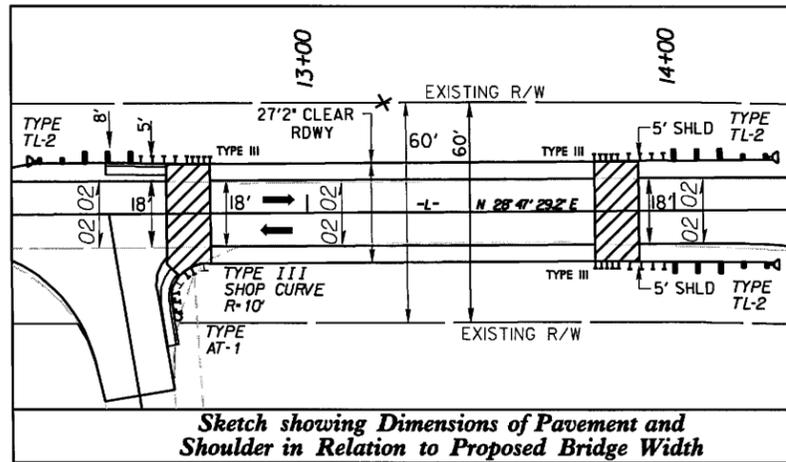
SANITARY SEWER: TOWN OF HIGHLANDS
 PO BOX 460
 HIGHLANDS, N.C. 28741
 828-526-218

WATER: TOWN OF HIGHLANDS
 PO BOX 460
 HIGHLANDS, N.C. 28741
 828-526-218

POWER: TOWN OF HIGHLANDS
 PO BOX 460
 HIGHLANDS, N.C. 28741
 828-526-218

POWER DUKE ENERGY
 WANTAHALA AREA
 JOINT LOOP
 FRANKLIN, N.C. 28734

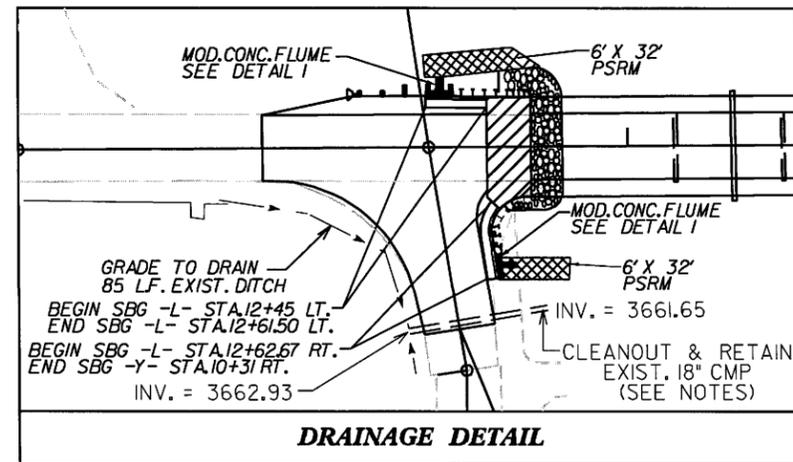
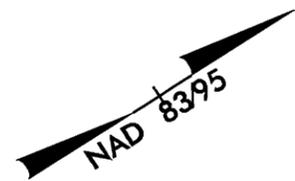
TELEPHONE: VERIZON
 PO BOX 33056
 ST. PETERSBURG, FL 33733-8056
 828-645-1803 ENGINEERING



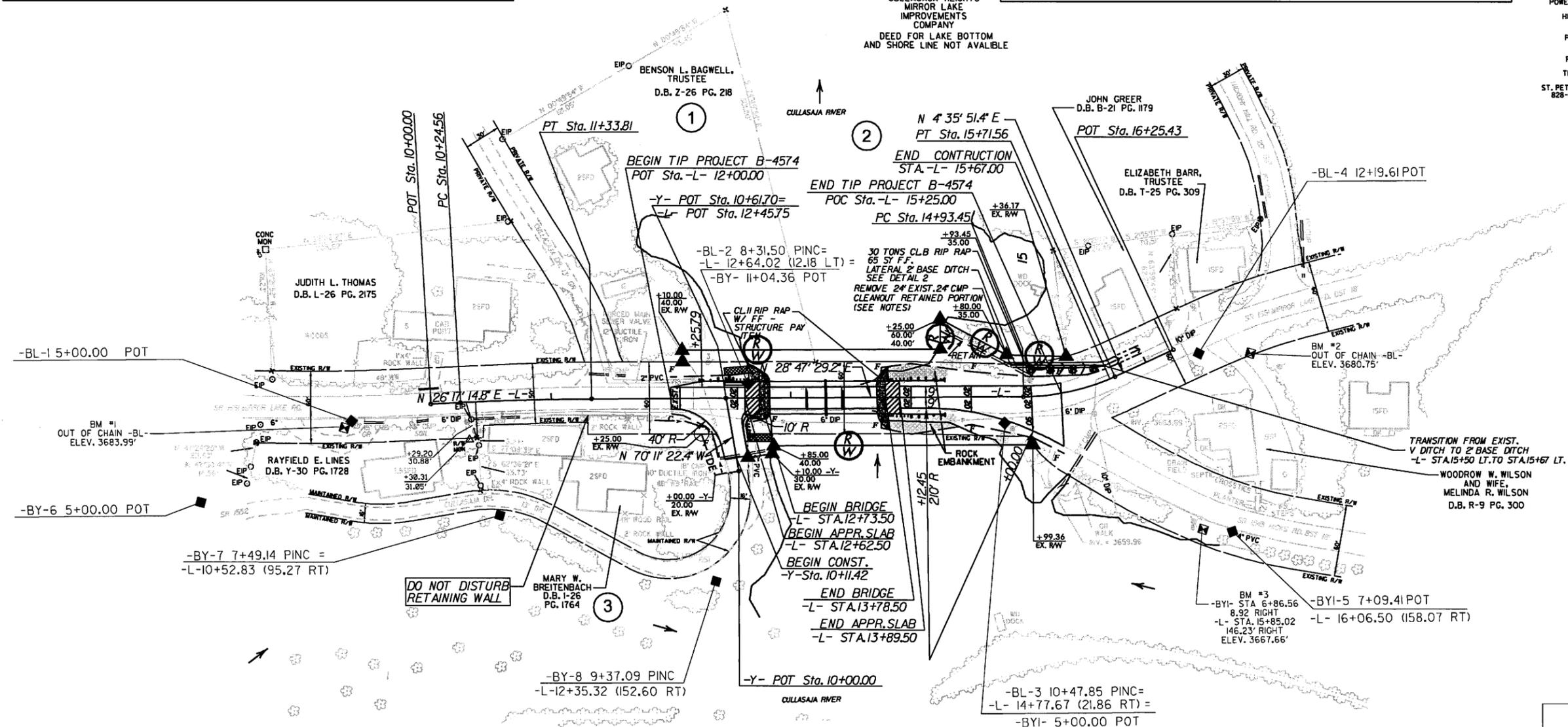
Sketch showing Dimensions of Pavement and Shoulder in Relation to Proposed Bridge Width

PI Sta 10+79.19
 $\Delta = 2' 30'' 14.4''$ (RT)
 $D = 2' 17'' 30.6''$
 $L = 109.26'$
 $T = 54.64'$
 $R = 2,500.00'$
 $Se = NC$

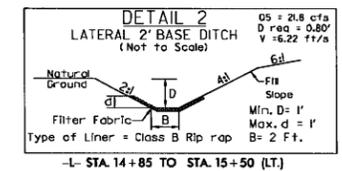
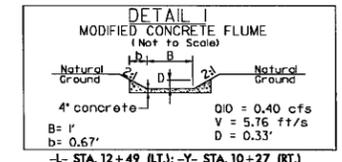
PI Sta 15+33.10
 $\Delta = 24' 11'' 37.8''$ (LT)
 $D = 30' 58'' 14.5''$
 $L = 78.12'$
 $T = 39.65'$
 $R = 185.00'$
 $Se = NC$



DRAINAGE DETAIL



CULLASAJA HEIGHTS MIRROR LAKE IMPROVEMENTS COMPANY
 DEED FOR LAKE BOTTOM AND SHORE LINE NOT AVAILABLE



NOTES:
 REMOVE EXIST. PAVED FLUMES ON MW AND SW BRIDGE APPROACHES.
 INV. 2' CMP AT INLET COULD NOT BE LOCATED IN FIELD. PIPE OUTLET IS IN FAIR CONDITION AND IS PARTIALLY RUSTED.
 18" CMP INLET END IS COVERED AND OUTLET END IS CRUSHED. WATER IS TRAPPED NEAR INLET.
 NOTE: SEE PLAN SHEET 5 FOR PROFILE

5/14/99

INCOMPLETE PLANS
DO NOT USE FOR A/E ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND

LEFT DITCH - - - - -

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1,540 CFS
 DESIGN FREQUENCY = 25 YRS
 DESIGN HW ELEVATION = 3662.5 FT
 (NWS CONTROLLED)

BASE DISCHARGE = 2,480 CFS
 BASE FREQUENCY = 100 YRS
 BASE HW ELEVATION = 3658.0 FT

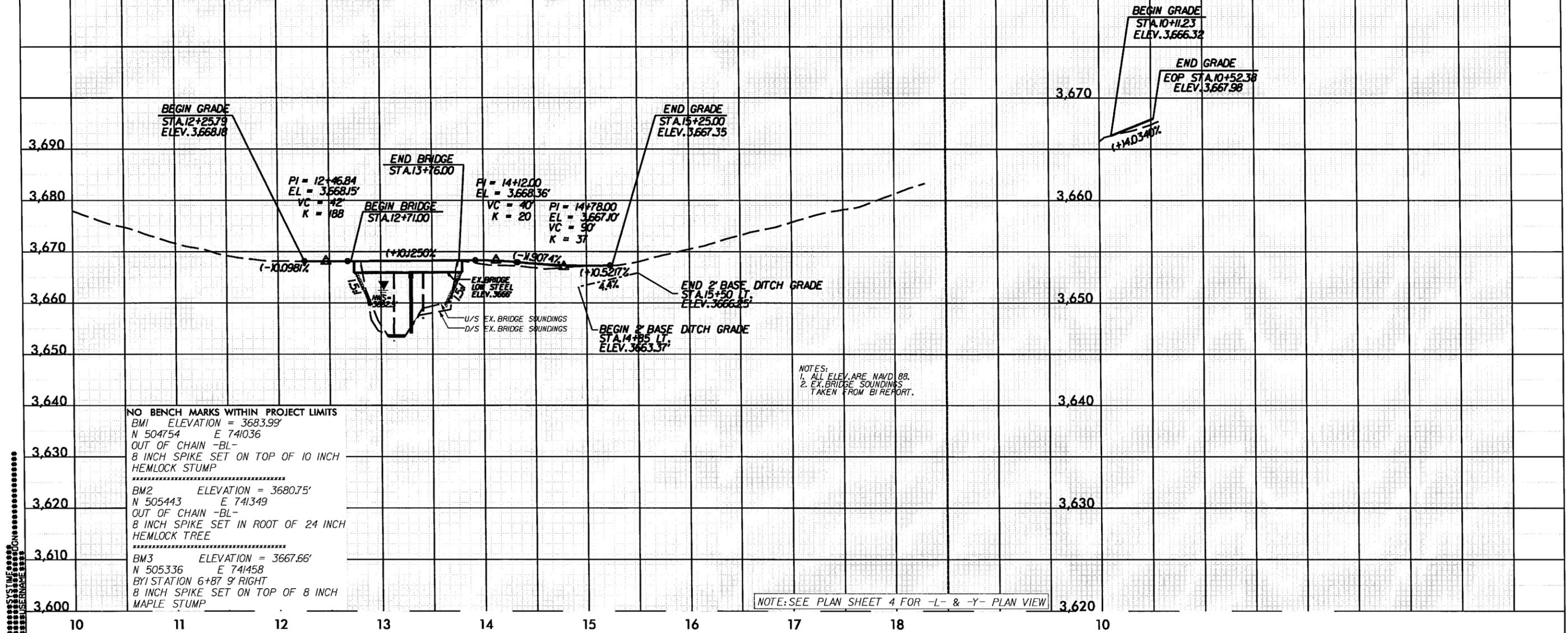
(FEMA MODEL DATA USES LIDAR AND HAS A DIFFERENT DATUM; DATUM VARIANCE UNRESOLVABLE)

OVERTOPPING DISCHARGE = 5,500 CFS
 OVERTOPPING FREQUENCY = 500+ YRS
 OVERTOPPING ELEVATION = 3668.0 FT

DATE OF SURVEY = 4/1/08
 W.S. ELEVATION AT DATE OF SURVEY = 3662.5 FT

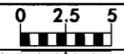
-L-

-Y-



SYSTEM TIME: 05/14/99 10:00:00 AM

8/23/99



PROJ. REFERENCE NO. B-4574

SHEET NO. X-1

PRELIMINARY PLANS. DO NOT USE FOR CONSTRUCTION.

NOTE: BEGIN 2' BASE DITCH GRADE AT STA. 14+85, ELEV. 3663.37 END 2' BASE DITCH AT STA. 15+50, ELEV. 3666.25

3664.25

0.035

0.020

0.060

3:1

3666.65

15+00.00

6:1

0.020

0.020

3:1

3666.60

14+50.00

2:1

0.020

0.020

2:1

3667.45

14+00.00

BEGIN BRIDGE STA. 12+73.50
END BRIDGE STA. 13+78.50

2:1

0.020

0.020

-Y- TIE 4.0340%

3667.81

12+50.00

EXIST.

EXIST.

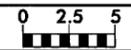
3667.83

12+00.00

NOTE: "Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid"

-4-

8/23/99



PROJ. REFERENCE NO.
B-4574

SHEET NO.
X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3675

3675

3670

3670

3665

3665

3660

3660

3670

3670

3665

3665

3660

3660

TRANSITION FROM EXIST.
V DITCH TO 2' BASE DITCH



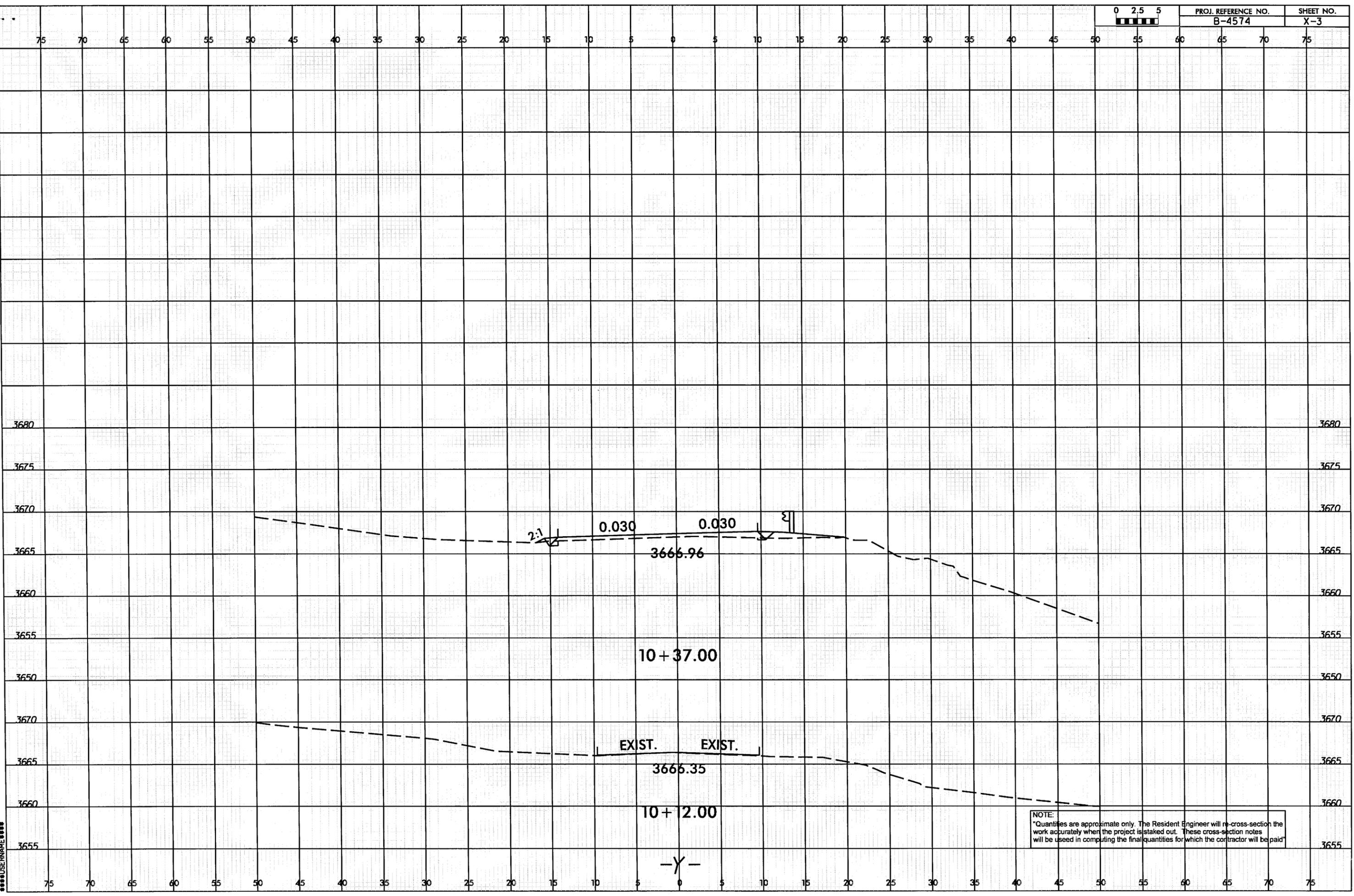
3668.48
15 + 67.00

3667.75
15 + 50.00

4

*****SYSTEMTIME*****
*****USER*****

8/23/99



SYSTEMS
ENGINEERING