STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 7, 2008

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

ATTN: Mr. Richard Spencer
NCDOT Coordinator

Dear Sir:

Subject: **Application for Section 404 Nationwide Permits 23 and 33 and Section 401 Water Quality Certification,** for the replacement of Bridge No. 25 over the Waccamaw River Overflow on NC 130, Columbus County; State Project No. 8.1431901; WBS 33439.1.1; TIP No. B-4077. Debit $240 from WBS 33439.1.1.

Please find enclosed permit drawings, roadway plans, and a Pre-construction Notice (PCN) for the above referenced project proposed by the North Carolina Department of Transportation (NCDOT). A Categorical Exclusion (CE) was completed for this project on October 28, 2004, and distributed shortly thereafter. Additional copies are available upon request.

The North Carolina Department of Transportation proposes to replace existing Bridge No. 25 over the Waccamaw River Overflow on NC 130 in Columbus County. The project involves replacing the 77-foot bridge on the existing location, with a single-span bridge approximately 90 feet long and 43 feet wide. Traffic will be maintained with an on-site detour during construction. Proposed permanent impacts to wetlands will be 0.47 ac. Proposed temporary impacts to wetlands are 1.41 ac.

Impacts to Waters of the United States

General Description: The Waccamaw River Overflow is the only surface water within the study area and is located in the Lumber River Drainage Basin, Subbasin 03-07-57. The Waccamaw River Overflow consists of a large pool located under and west of Bridge No. 25. The pool is not connected by surface water to the Waccamaw River or any of its tributaries and therefore, has not been assigned a Best Usage Classification (BUC). The Waccamaw River (Index No. 15-1) in the project vicinity has been assigned a BUC of C Sw by the North Carolina Department of Environment and Natural Resources (NCDENR) and is in Hydrologic Unit 03040206. The Waccamaw River Overflow is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River. No designated High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters

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

TELEPHONE: 919-733-3141
FAX: 919-715-1501
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

occur within 1.0 mile of the project study area. Finally, the Waccamaw River Overflow is not listed on the Final 2006 303(d) list of impaired waters due to sedimentation for the Lumber River Basin, nor does it drain into any Section 303(d) waters within 1.0 mile of the project study area.

Permanent Impacts: NCDOT anticipates permanent impacts for this project. There will be 0.47 ac of permanent fill in non-riverine wetlands due to widening the road at the bridge approach. There will be no permanent impacts to surface waters.

Temporary Impacts: NCDOT anticipates temporary impacts to non-riverine wetlands. Proposed temporary impacts to wetlands are 1.41 ac. Temporary impacts of 1.29 ac will result from the construction of the on-site detour bridge, and temporary fill of 0.12 ac in wetlands in a portion of the hand clearing areas for the installation of erosion control measures, including some or all of the following: Temporary Silt Fence, Special Sediment Control Fence, and Temporary Rock Silt Checks.

Hand Clearing: There will be 0.12 ac of hand clearing in jurisdictional areas for the installation of erosion control measures described above. There will be 0.26 ac of hand clearing for the temporary utility installation described below. A portion of these hand clearing areas will overlap in coverage, therefore the total hand clearing acreage will be less than 0.38 ac.

Utility Impacts: There will be no permanent impacts due to utilities for this project. Existing power lines are in conflict with the proposed project. A temporary power pole line will be placed within the wetland boundary approximately 120 feet right of the –L-Line from Station 25+70 to Station 35+60 for temporary power during construction, resulting in <0.01 ac of temporary fill due to installation of three poles and 0.26 ac. of hand clearing in wetlands. After construction is complete, the power line will be permanently installed within the fill slope of the project.

Bridge Demolition: The existing structure is approximately 77 feet long and 28 feet wide. The superstructure consists of three 25.7-foot spans of reinforced concrete deck on I beam supports. The existing substructure consists of timber caps on timber piles. It is likely that all components can be removed without any appreciable debris falling into the water.

Federally Protected Species

As of January 31, 2008, the U.S. Fish and Wildlife Service (FWS) lists seven protected species for Columbus County (Table 2). Since the CE was completed in 2004, the wood stork has been added to the list for Columbus County. A survey conducted on September 6, 2007 found some suitable foraging habitat, therefore the biological conclusion is May Affect, Not Likely to Adversely Affect. Concurrence from USFWS was received on December 26, 2007.

Table 2. Federally Protected Species for Columbus County

Common Name	Scientific Name	Federal Status	Habitat	Biological Conclusion
American alligator	*Alligator mississippiensis*	T (S/A)	N/A	N/A
Red-cockaded woodpecker	*Picoides borealis*	E	No Habitat	No Effect
Shortnose sturgeon	*Acipenser brevirostrum*	E	No Habitat	No Effect
Waccamaw silverside	*Menidia extensa*	T	No Habitat	No Effect
Wood stork	*Mycteria americana*	E	Habitat	MANLAA
Cooley's meadowrue	*Thalictrum cooleyi*	E	Habitat	No Effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	Habitat	No Effect

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was delisted from the Endangered Species Act as of August 8, 2007. However, it is still protected under the Bald and Golden Eagle Protection Act. A survey conducted on September 6, 2007 found no bald eagle habitat within 660 feet of the project area.

In-stream Work Moratorium

An in-stream moratorium from April 1 to June 30 to protect sunfish was originally requested by the NC Wildlife Resources Commission (NCWRC). NCWRC has since determined that the suggested moratorium is not necessary (see attached correspondence).

Avoidance and Minimization

NCDOT has minimized impacts to the fullest extent possible. Minimization efforts include:

- Reducing the number of bents in the water from two for the existing bridge to none for the new bridge,
- In compliance with 15A NCAC 02B.0104(m) we have incorporated the use of BMP's for the Protection of Surface Water in the design of the project,
- All measures will be taken to avoid any temporary fill from entering Waters of the United States. Best Management Practices (BMP's) for Bridge Demolition and Removal will be implemented.

Mitigation

The proposed project will have permanent impacts to 0.47 ac. of non-riverine wetland due to fill and excavation. As mitigation, NCDOT proposes debiting 0.47 ac. of non-riverine wetland from the Juniper Bay Mitigation Site. While the site is not located in the same hydrologic unit as the project, it is found in an adjacent one within the same river basin. Also, this site is in its second year of successful hydrology and vegetation monitoring. See the attached summary and debit ledger for further information.

Project Schedule

The project schedule calls for a September 16, 2008 let with a review date of July 29, 2008.

Regulatory Approvals

Section 404: All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (72 CFR; 11092-11198, March 12, 2007). We are also requesting the issuance of a Nationwide Permit 33 for the temporary fill due to the installation a temporary detour bridge. (72 CFR; 11092-11198, March 12, 2007).

Section 401: We anticipate 401 General Certification numbers 3701 and 3688 will apply to this project. All general conditions of the Water Quality Certifications will be met. The NCDOT is requesting written concurrence from the N.C. Division of Water Quality. Therefore, in accordance with 15A NCAC 2H, Section .0500(a), we are providing five copies of this application to the NCDWQ for their review and approval. Authorization to debit the $240 Permit Application Fee from WBS Element 33439.1.1 is hereby given.

If there are any questions, please contact Ms. Veronica Barnes of my staff at vabarnes@dot.state.nc.us or (919) 715-7232.

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

Sincerely,

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

Cc:
w/attachment
Mr. Brian Wrenn, NCDWQ (5 Copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Ms. Jeanne Hardy, NCDMF

W/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Mark Staley, Roadside Environmental
Mr. Terry Gibson, P.E, Division 6 Engineer
Mr. Jim Rerko, Division 6 Environmental Officer
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
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch
Ms. Theresa Ellerby, PDEA
Ms. LeiLani Paugh, NEU
Mr. Randy Griffin, NEU

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: NW 23 and 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☐ N/A

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐ N/A

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐ N/A

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: vabarnes@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name:
   Company Affiliation:
   Mailing Address:
   Telephone Number: Fax Number:
   E-mail Address:

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Replacement of Bridge No. 25 over the Waccamaw River Overflow on NC 130

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4077

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Columbus Nearest Town: New Britton
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): From US 74 take the exit for Whiteville travelling south on US 701 Bypass. Turn left on NC 130 for aprox. 18 miles to Bridge 25.

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 34.104928 °N -78.556152 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Waccamaw River

8. River Basin: Lumber River Basin
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The site is mostly forested. The surrounding area is dedicated mostly to forestry operations.

10. Describe the overall project in detail, including the type of equipment to be used: The existing structure is approximately 77 feet long and 28 feet wide. The superstructure consists of three 25.7-foot spans of reinforced concrete deck on I beam supports. The existing substructure consists of timber caps on timber piles. The project consists of replacing the existing bridge with a new single-span bridge approximately 90 feet long and 43 feet wide in the existing location.

11. Explain the purpose of the proposed work: The current bridge has a sufficiency rating of 38.8 out of 100. It is therefore considered functionally obsolete and structurally deficient by the Federal Highway Administration standards and rehabilitation is not feasible due to the bridge's age and condition.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. A jurisdictional determination was issued on December 27, 2004 under action ID 2002-00646.

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
No future permit requests are anticipated for this project.

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: There will be 0.47 acre of permanent fill in non-riverine wetlands due to widening the road at the bridge approach. There will be no

permanent impacts to surface waters. Proposed temporary impacts to wetlands are 1.41 ac. Proposed temporary impacts due to the construction of the on-site detour bridge are 1.29 ac and temporary fill of 0.12 ac in wetlands for the installation of erosion control measures, including some or all of the following: Temporary Silt Fence, Special Sediment Control Fence, and Temporary Rock Silt Checks.

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
1	Temporary fill	Forested	Yes	900	0.10
2	Permanent fill	Herbaceous	Yes	50	0.43
2	Temporary fill	Herbaceous	Yes	50	1.10
3	Permanent fill	Herbaceous	Yes	25	0.04
3	Temporary fill	Herbaceous	Yes	25	0.09
n/a	Temp, fill (EC measures)	Herbaceous	Yes	25	0.12
Total Wetland Impact (acres)					1.88

3. List the total acreage (estimated) of all existing wetlands on the property: 3.5 acres

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent ?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
N/A						
Total Stream Impact (by length and acreage)					0	0.0

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
N/A				0
Total Open Water Impact (acres)				0

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.00
Wetland Impact (acres):	1.88
Open Water Impact (acres):	0.00
Total Impact to Waters of the U.S. (acres)	1.76
Total Stream Impact (linear feet):	1.88

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes ☒ No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.
   N/A

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): N/A
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): N/A
   Current land use in the vicinity of the pond: N/A
   Size of watershed draining to pond: N/A Expected pond surface area: N/A

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. NCDOT has minimized impacts to the fullest extent possible. The number of bents in the water is being reduced from two for the existing bridge to none for the new bridge. In compliance with 15A NCAC 02B.0104(m) we have incorporated the use of BMP's in the design of the project. All measures will be taken to avoid any temporary fill from entering Waters of the United States.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   The proposed project will have permanent impacts to 0.47 acre of non-riverine wetland due to fill and excavation. As mitigation, NCDOT proposes debiting 0.47 acre of non-riverine wetland from the Juniper Bay Mitigation Site. While the site is not located in the same hydrologic unit as the project, it is found in an adjacent one within the same river basin. Also, this site is in its second year of successful hydrology and vegetation monitoring. See the attached summary and debit ledger for further information.

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:
   Amount of stream mitigation requested (linear feet): 0.0
   Amount of buffer mitigation requested (square feet): 0.0
   Amount of Riparian wetland mitigation requested (acres): 0.0
   Amount of Non-riparian wetland mitigation requested (acres): 0.0
   Amount of Coastal wetland mitigation requested (acres): 0.0

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☐ No ☒

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1	0	3 (2 for Catawba)	0.0
2	0	1.5	0.0
Total	0		0.0

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. N/A

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. N/A

XII. Sewage Disposal (required by DWQ)

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.
N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:
The project is a relatively small bridge in a residential area. There will be no new road created and no additional lanes added, therefore it is unlikely to attract development.

XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).
N/A.

E. P. Lusk 3.6.08

Applicant/Agent's Signature **Date**
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Juniper Bay Mitigation Site Debit Ledger

There are no available nonriverine mitigation credits within HU 03040206. NCDOT proposed debiting the Juniper Bay Mitigation site (JBMS) at a 1:1 ratio for the 0.47 acres of unavoidable impacts due to B-4077. The JBMS is in the adjacent HU within the Lumber River Basin and has been in the ground for 2 years, as described below.

The JBMS is a Carolina bay located in Robeson County, North Carolina comprising 728.5 acres. The site, located in HU 03040203, was constructed by the North Carolina Department of Transportation in 2005.

The JBMS previously was used for agricultural production with a drainage ditch network constructed to drain the site. The hydrologic restoration plan involves systematically plugging and backfilling the interior ditch network to increase surface and subsurface water storage capacity and to increase the retention of water onsite. The wetland vegetation restoration plan is to establish two natural community types: Peatland Atlantic White Cedar Forest/Bay Forest and Pond Pine Woodland/Bay Forest.

The JBMS has met the hydrologic and vegetative success criteria over the majority of the site. The monitoring report is posted on the EEP webpage at the following link: http://www.nceep.net/business/monitoring/Monitoring_report_web/2006pdfs/JUNIPER_BAY_2006/Juniper_Bay_Summary_thru_Results.pdf

Site name	Site TIP	HUC	River Basin	Div.	County	Mitigation type	As Built Quantity	Available	Debit
Juniper Bay Mitigation Site		03040203	Lumber	6	Robeson	Nonriverine		1	B-4077 0.47

Subject: RE: B-4077 Columbus County Sunfish moratorium
Date: Tue, 20 Nov 2007 10:39:56 -0500
From: "Travis Wilson" <travis.wilson@ncwildlife.org>
To: "'Veronica A. Barnes'" <vabarnes@dot.state.nc.us>

You can remove the sunfish moratorium from this project.

-----Original Message-----
From: Veronica A. Barnes [mailto:vabarnes@dot.state.nc.us]
Sent: Friday, November 16, 2007 10:36 AM
To: travis.wilson@ncwildlife.org; Chris Rivenbark
Subject: B-4077 Columbus County Sunfish moratorium

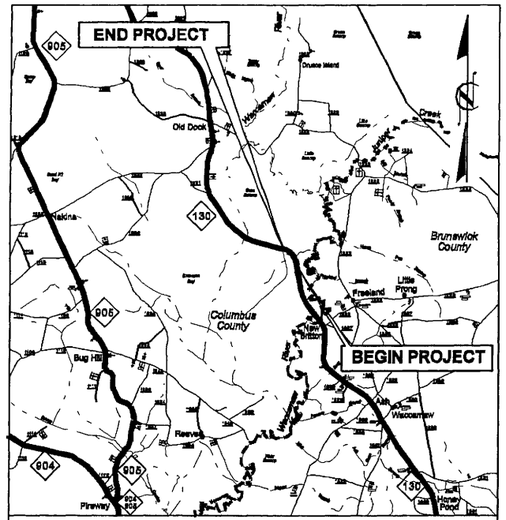
Travis,
In a letter dated March 10, 2003 you recommended an April 1-June 30 in-water work moratorium for a significant sunfish fishery, for B-4077 in Columbus County (Bridge 25 over the Waccamaw River Overflow). I am preparing the permit applications for this project and wanted to check if this moratorium still stands. Thanks.
--
Veronica A. Barnes
Environmental Specialist
Project Management Group
PDEA Natural Environment Unit
N.C. Department of Transportation
919-715-7232

09/08

TIP PROJECT: B-4077

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

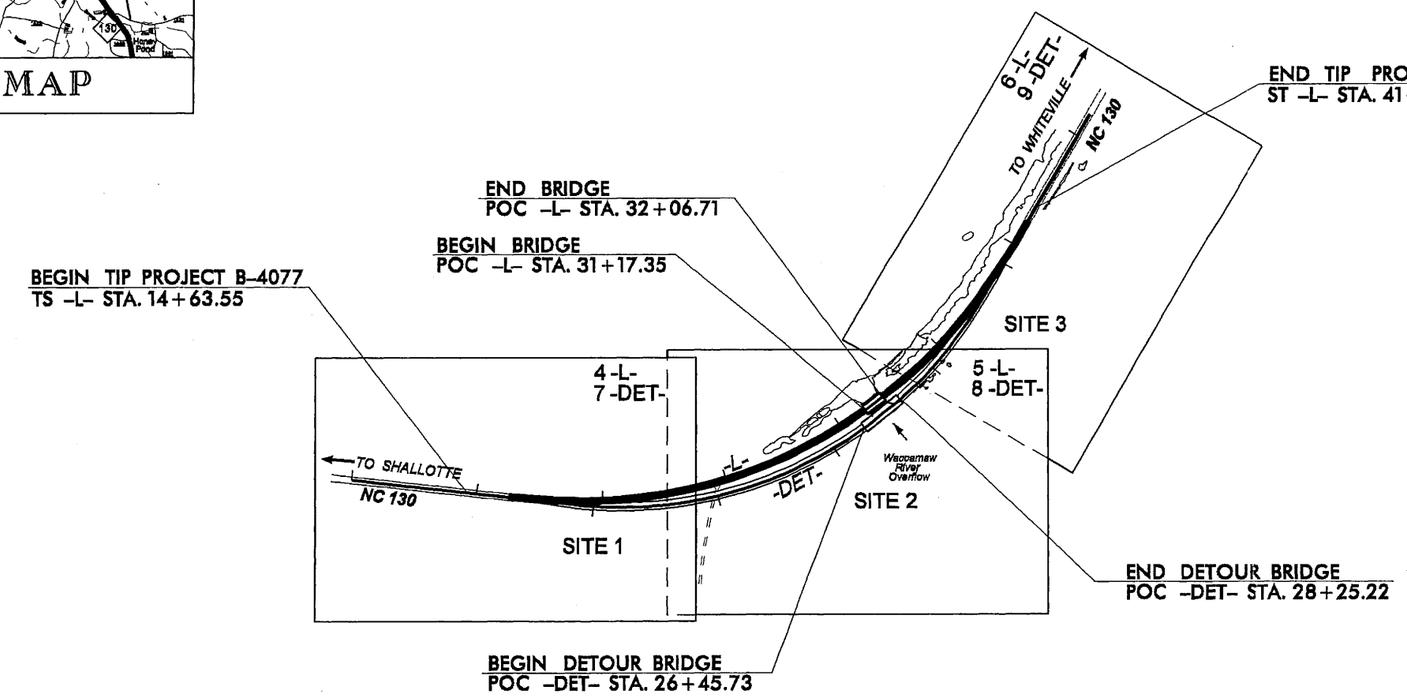
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4077	1	

STATE PROJ. NOS.	F. A. PROJ. NO.	DESCRIPTION
33439.1.1	BRSTP-130(2)	PE
33439.2.1	BRSTP-130(2)	R/W
		CONST

LOCATION: BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW

TYPE OF WORK: GRADING, DRAINAGE, PAVING, GUARDRAIL, THERMOPLASTIC PAVEMENT MARKINGS, SNOW PLOWABLE PAVEMENT MARKERS & STRUCTURE

NAD 83/95



NCDOT CONTACT:
CATHY S. HOUSER, PE
ROADWAY DESIGN

** DESIGN EXCEPTION REQUIRED FOR HORIZONTAL STOPPING SIGHT DISTANCE.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 5000
ADT 2028 = 9000
DHV = 13 %
D = 60 %
T = 7 % *
** V = 60 MPH
FUNC CLASS: RURAL MINOR ARTERIAL
* TTST 4% DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4077	= 0.495 mi.
LENGTH REPLACEMENT STRUCTURE TIP PROJECT B-4077	= 0.017 mi.
TOTAL LENGTH OF TIP PROJECT B-4077	= 0.512 mi.

Prepared In the Office of:
QK4, INC.
300 EAST MAIN STREET
SUITE 302-H
JOHNSON CITY, TN 37601

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 16, 2006

LETTING DATE: SEPTEMBER 16, 2008

ALBERT H. ZIMMERMAN, PE
PROJECT ENGINEER

BRIAN P. JOHNSON, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZIMMERMAN
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON
P.E.
SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION
P.E.
STATE HIGHWAY DESIGN ENGINEER

09-OCT-2007 11:31
r:\hydraulics\permit\b4077_rdy_tsh.dgn
gamber A1 H122158

Permit Drawing
Sheet 1 of 25

WETLAND PERMIT IMPACT SUMMARY

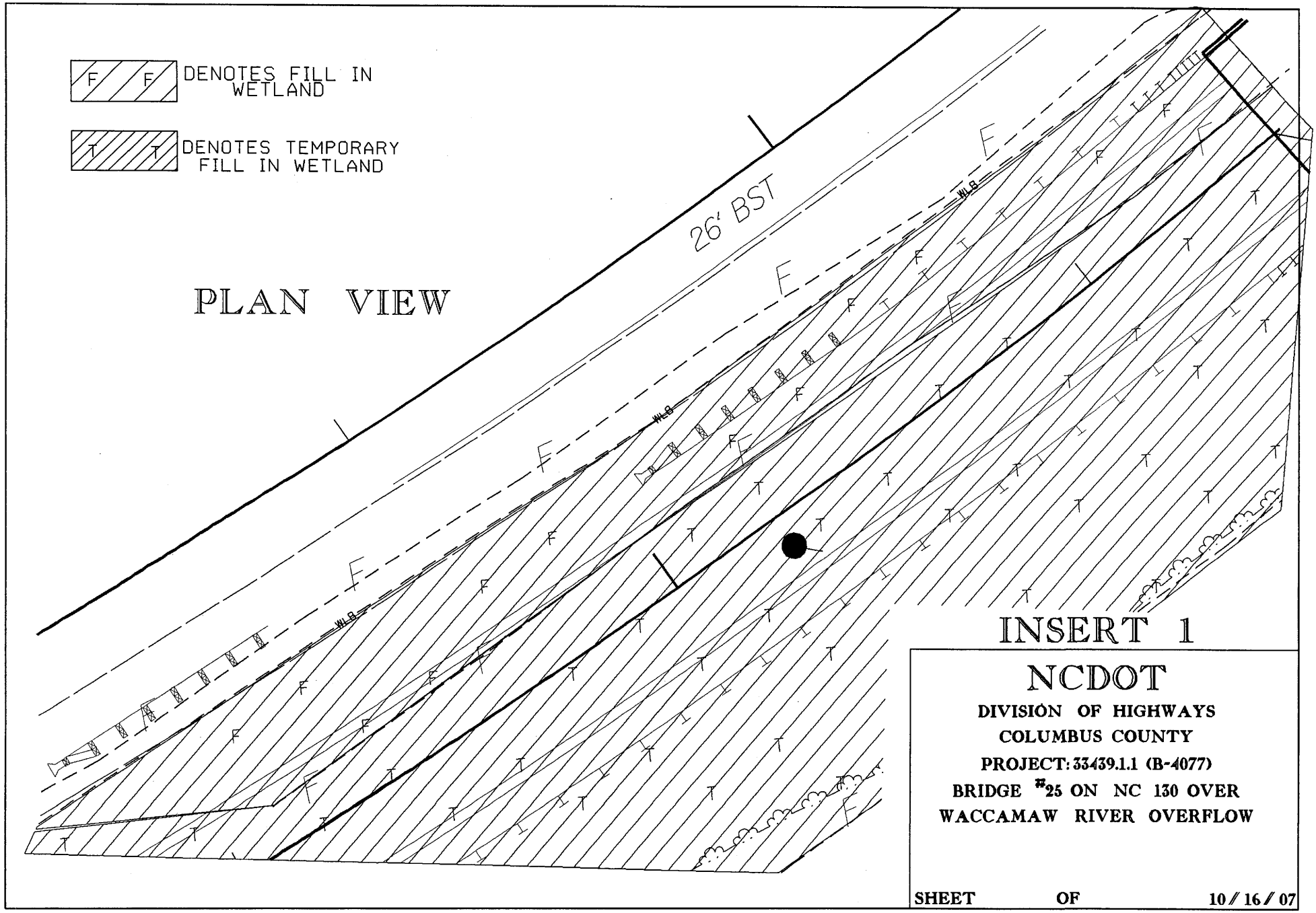
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Plan Sheet	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	4	ROADWAY FILL		0.10								
2	5	BRIDGE	0.43	1.10								
2	5	UTILITIES					0.26					
3	6	ROADWAY FILL	0.04	0.09								
TOTALS:			0.47	1.29			0.26					

NOTE:
0.12 AC OF TEMPORARY FILL WILL BE PLACED IN HAND CLEARING DUE TO EROSION CONTROL DEVICES

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
COLUMBUS COUNTY
WBS - 33439.1.1 (B-4077)
BRIDGE #25 on NC 130 over
WACCAMAW RIVER OVERFLOW
SHEET 3/5/2008

ATN Revised 3/31/05

Permit Drawing
Sheet 2 of 20



NCDOT

DIVISION OF HIGHWAYS

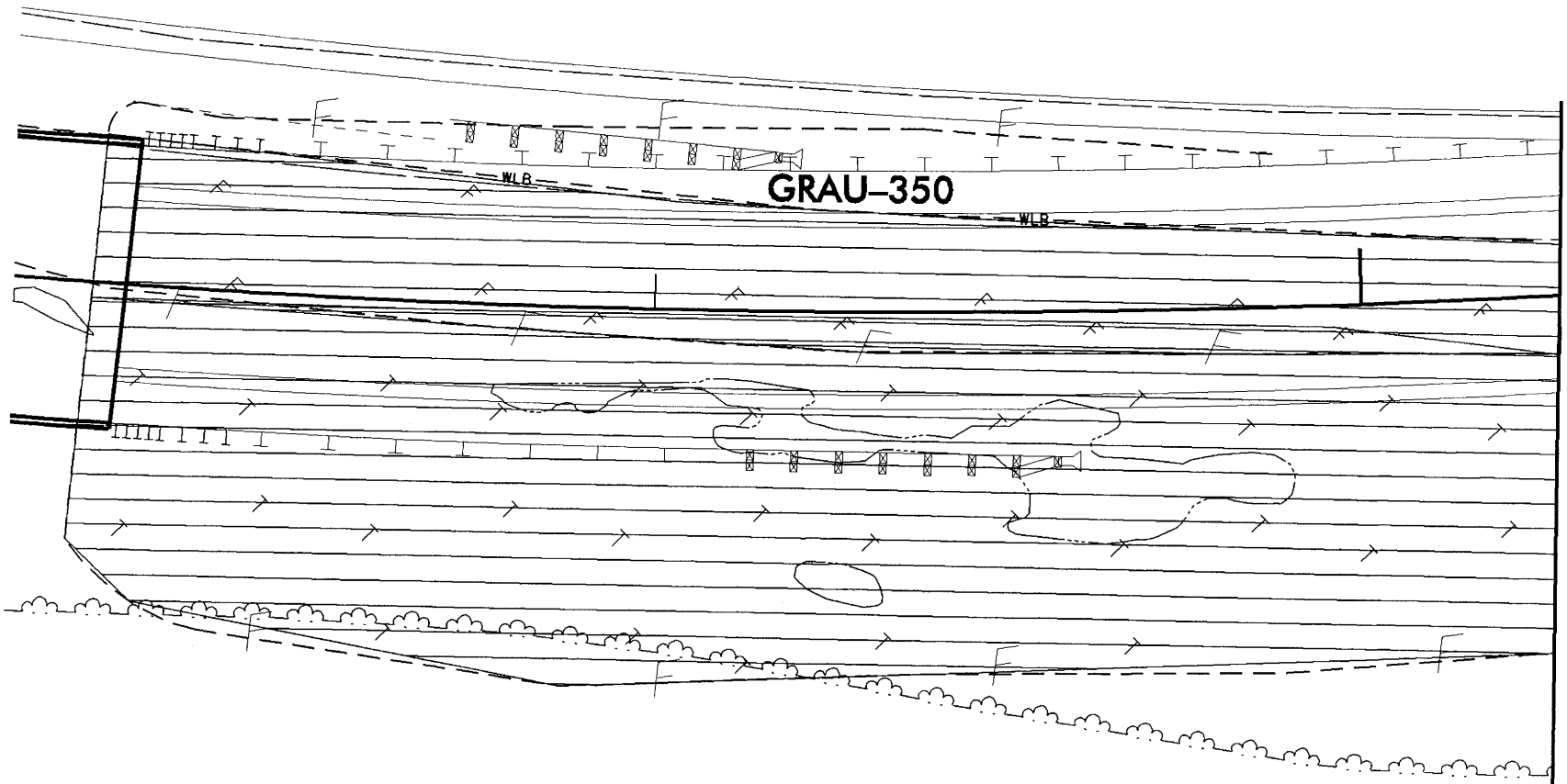
COLUMBUS COUNTY

PROJECT: 33439.1.1 (B-4077)

BRIDGE #25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW

SHEET OF 10 / 16 / 07

Permit Drawing Sheet 3 of 20



F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

PLAN VIEW

INSERT 2

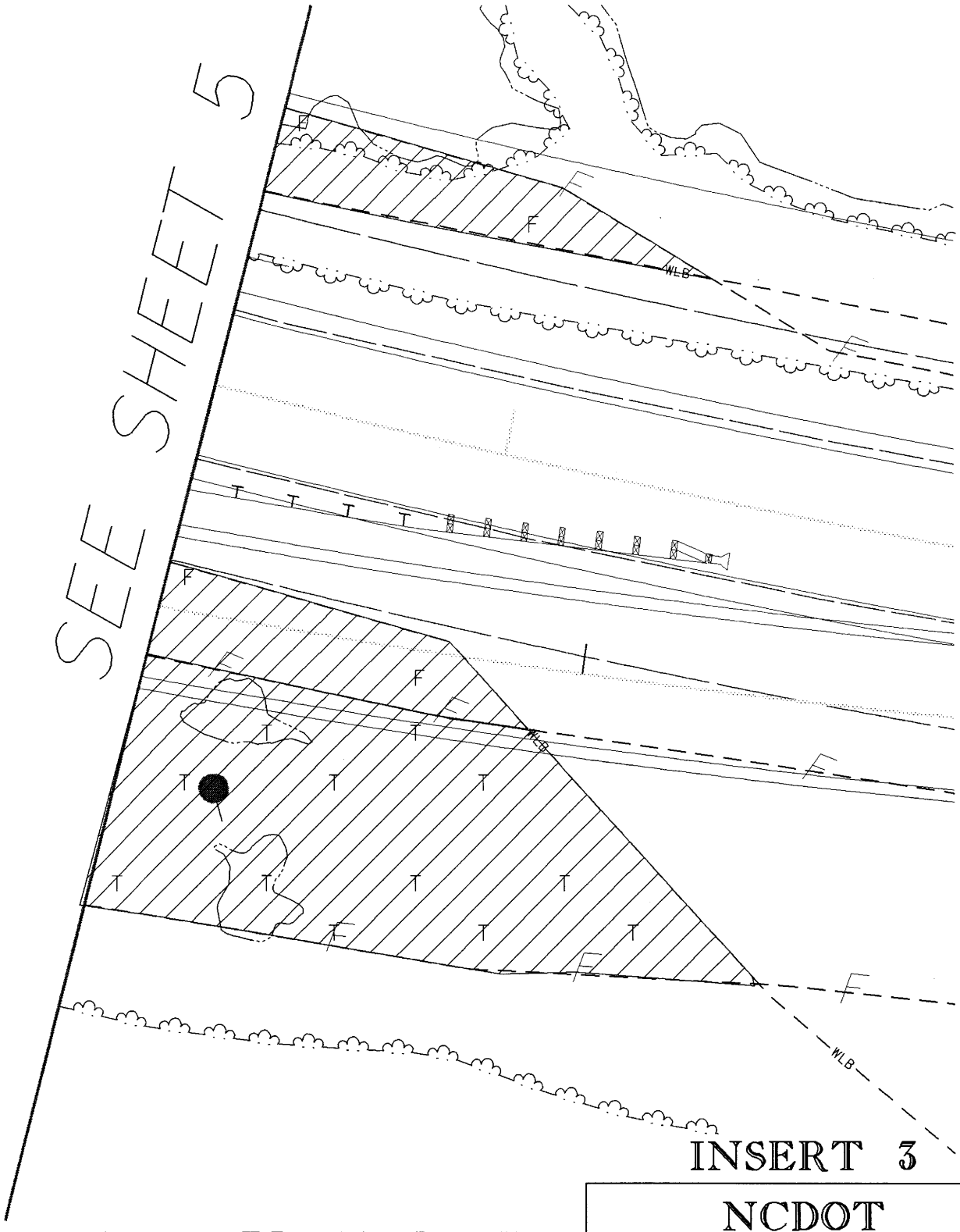
NCDOT

DIVISION OF HIGHWAYS
COLUMBUS COUNTY
PROJECT: 33439.1.1 (B-4077)
BRIDGE # 25 ON NC 130 OVER
WACCAMAW RIVER OVERFLOW

SHEET OF 10/16/07

Permit Drawing
Sheet 4 of 20

Permit Drawing
Sheet ____ of ____



INSERT 3

PLAN VIEW

F F DENOTES FILL IN WETLAND

T T DENOTES TEMPORARY FILL IN WETLAND

NCDOT

DIVISION OF HIGHWAYS

COLUMBUS COUNTY

PROJECT: 33439.1.1 (B-4077)

BRIDGE #25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW

SHEET OF **10/16/07**

Permit Drawing

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	Plum Creek Timberlands, LP Attn: Craig Albright	987 Griswoldville Rd Macon, GA 31217

NCDOT

DIVISION OF HIGHWAYS
COLUMBUS COUNTY
PROJECT: 33439.1.1 (B-4077)
BRIDGE NO. 25 ON NC 130 OVER
WACCAMAW RIVER OVERFLOW

9/14/05

Permit Drawing
Sheet 6 of 20

PROJECT REFERENCE NO.	SHEET NO.
B-4077	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON

NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZIMMERMAN

REVISIONS

8/17/2

NAD 83/95

POT -L- STA.10+00.00

1

BEGIN TIP PROJECT B-4077
BEGIN DETOUR
TS -L- Sta.14+63.55 =
POT -DET- Sta.10+00.00

-L- 15

-DET- 15

-L- 20

PLUM CREEK TIMBERLANDS, LP

SC -L- Sta. 19+63.55

MATCHLINE -L- STA 22+50
SEE SHEET 5

SHALOTTE

N 09° 39' 12.3" W

-L-

EXISTING R/W

26' BST

EXISTING R/W

DET

TEMP SLOPE STAKE LINE

PLUM CREEK TIMBERLANDS, LP

1

PC -DET- Sta. 14+35.70

WOODS

EXISTING WETLAND TO BE RESTORED

SITE 1
PLAN VIEW

DENOTES TEMPORARY FILL IN WETLAND

NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER.
SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

SEE SHEET 10 FOR -L- PROFILE

09-OCT-2007 10:35
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psadmin

Permit Drawing

PROJECT REFERENCE NO.	SHEET NO.
B-4077	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON

NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZIMMERMAN

REVISIONS

8/17/95

NAD 83/95

POT -L- STA.10+00.00

1

BEGIN TIP PROJECT B-4077
BEGIN DETOUR
TS -L- Sta.14+63.55 =
POT -DET- Sta.10+00.00

-L- 15

-DET- 15

-L- 20

PLUM CREEK TIMBERLANDS, LP

SC -L- Sta. 19+63.55

MATCHLINE -L- STA 22+50
SEE SHEET 5

N 09° 39' 12.3" W

N 09° 39' 12.3" W

TEMP. SLOPE STAKE LINE

PLUM CREEK TIMBERLANDS, LP

1

PC -DET- Sta. 14+35.70

WOODS

EXISTING WETLAND TO BE RESTORED

SITE 1
PLAN VIEW

DENOTES TEMPORARY FILL IN WETLAND

NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER.
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SEE SHEET 10 FOR -L- PROFILE

09-OCT-2007 10:36
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preplan

Permit Drawing

PROJECT REFERENCE NO.	SHEET NO.
B-4077	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON

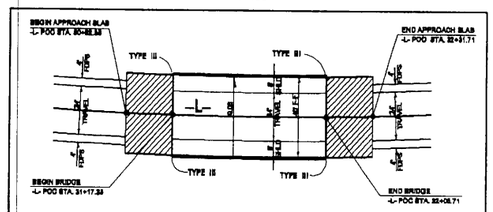
NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZINCHERMAN

8/17/99

REVISIONS

-L- STRUCTURE

NC 130



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

NAD 1983

-DET- 30

MATCHLINE SEE SHEET 6 -L- STA 34+50

INSERT 2

EXISTING WETLAND TO BE RESTORED

POC -DET- Sta. 28+25.22
END DETOUR BRIDGE

WACCAMAW RIVER OVERFLOW

POC -DET- Sta. 26+45.73
BEGIN DETOUR BRIDGE

-DET- 25

-DET- 30

-DET- 20

-L- 25

INSERT 1

MATCHLINE SEE -L- STA 22+50 SHEET 4

EXISTING WETLAND TO BE RESTORED

WOODS

25' BST

EXISTING EOP

-DET-

TEMP SLOPE STAKE LINE

WOOD WING WALL

REMOVE EXIST. BRIDGE NO. 35 (STA./ITEM)

(1) PLUM CREEK TIMBERLANDS, LP

NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER.
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F/F DENOTES FILL IN WETLAND

T/T DENOTES TEMPORARY FILL IN WETLAND

SEE SHEET 10 FOR -L- PROFILE

Permit Drawing

7-OCT-2007 14:53
c:\hydraulics\permit\b4077_rdy_psh5.dgn
Bentley MicroStation V8 (SELECTseries 1)

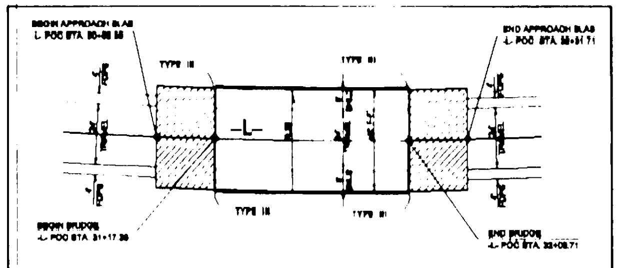
PROJECT REFERENCE NO.	SHEET NO.
B-4077	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON	NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZIMMERMAN

REVISIONS

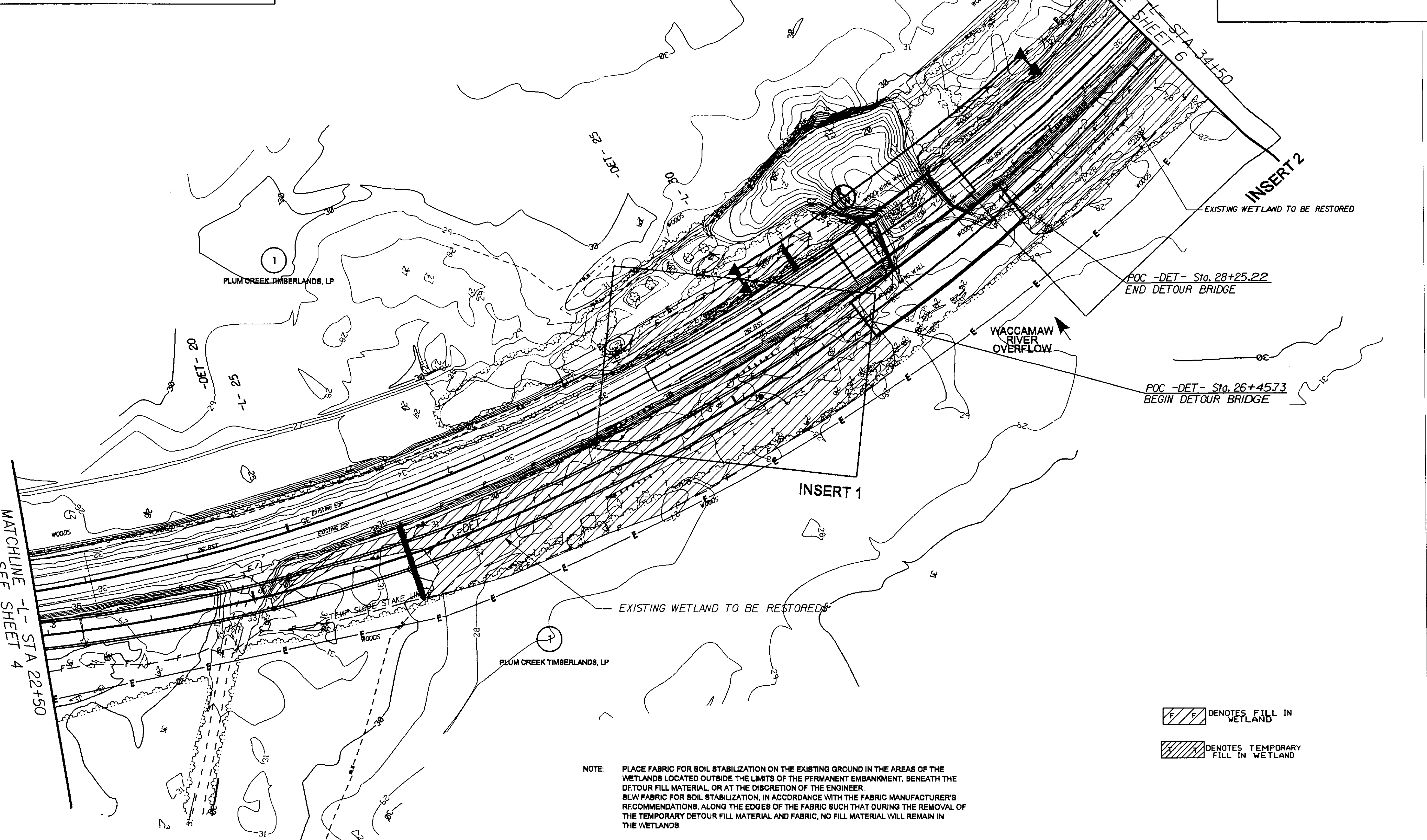
8/17/99

-L- STRUCTURE

NC 130



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE



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F DENOTES FILL IN WETLAND

T DENOTES TEMPORARY FILL IN WETLAND

SEE SHEET 10 FOR -L- PROFILE

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Permit Drawing

PROJECT REFERENCE NO.	SHEET NO.
B-4077	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON

NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZIMMERMAN

REVISIONS

8/17/99

(1)
PLUM CREEK TIMBERLANDS, LP

NAD 83/95

-L- 35

-DET- 35

-L- 40

-L- 45

MATCHLINE -L- STA 34+50
SEE SHEET 5

CS -L- Sta. 36+67.63

END TIP PROJECT B-4077
END DETOUR
POT -DET- Sta. 37+51.77 =
ST -L- Sta. 41+67.63

POT -L- STA. 46+00.00

WOODS

EXISTING EOP

-L-

-DET-

25' BST

N 75° 25' 36.2" W

WHITEVILLE

PT -DET- Sta. 33+16.06

INSERT 3

EXISTING WETLAND TO BE RESTORED

(1)
PLUM CREEK TIMBERLANDS, LP

DENOTES TEMPORARY FILL IN WETLAND

DENOTES FILL IN WETLAND

NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER.
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SEE SHEET 10,11 FOR -L- PROFILE

Permit Drawing
Sheet 11 of 20

17-OCT-2007 12:55
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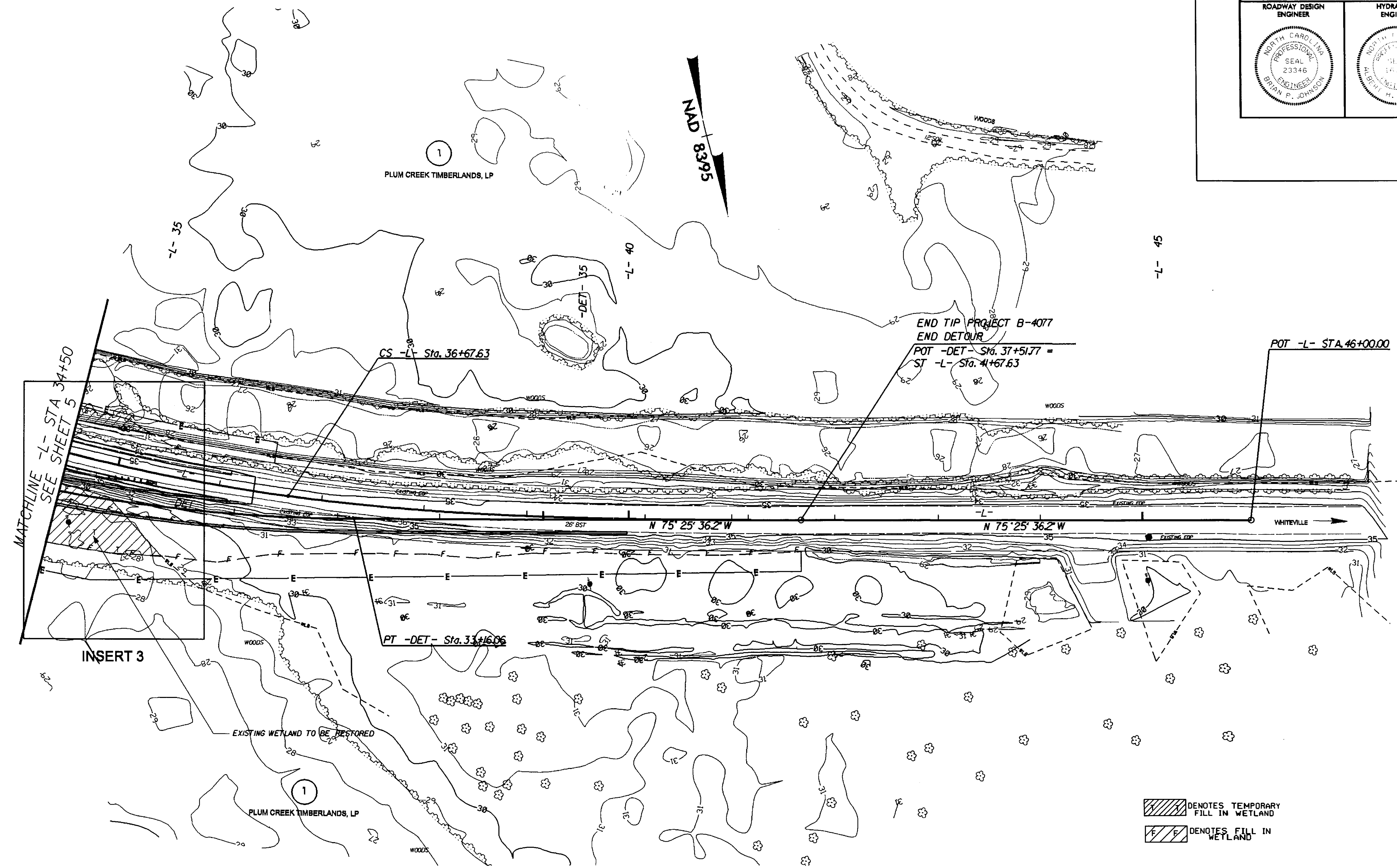
mwilson

PROJECT REFERENCE NO.	SHEET NO.
B-4077	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON

REVISIONS



DENOTES TEMPORARY FILL IN WETLAND

DENOTES FILL IN WETLAND

NOTE: PLACE FABRIC FOR SOIL STABILIZATION ON THE EXISTING GROUND IN THE AREAS OF THE WETLANDS LOCATED OUTSIDE THE LIMITS OF THE PERMANENT EMBANKMENT, BENEATH THE DETOUR FILL MATERIAL, OR AT THE DISCRETION OF THE ENGINEER. SEW FABRIC FOR SOIL STABILIZATION, IN ACCORDANCE WITH THE FABRIC MANUFACTURER'S RECOMMENDATIONS, ALONG THE EDGES OF THE FABRIC SUCH THAT DURING THE REMOVAL OF THE TEMPORARY DETOUR FILL MATERIAL AND FABRIC, NO FILL MATERIAL WILL REMAIN IN THE WETLANDS.

SEE SHEET 10,11 FOR -L- PROFILE

8/17/99

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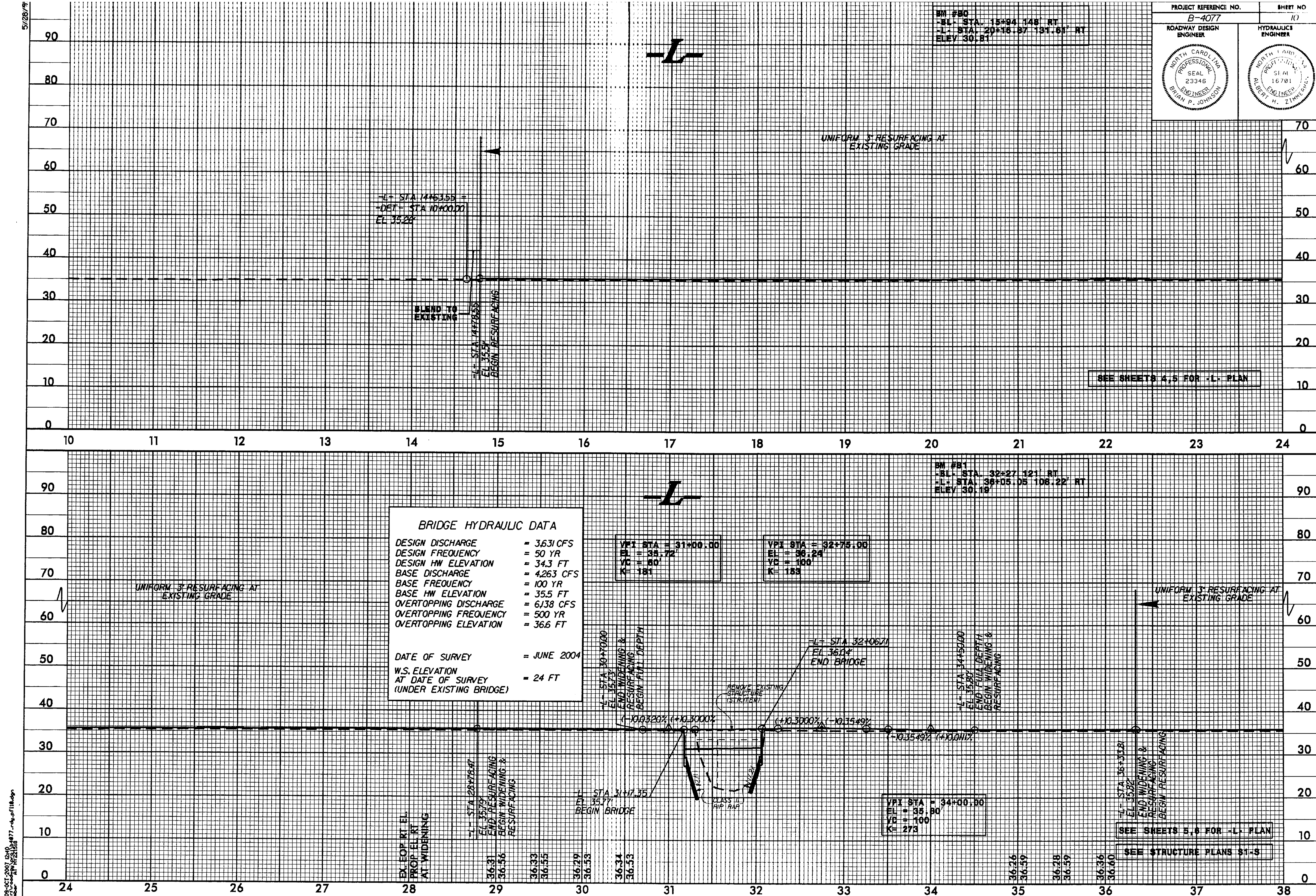
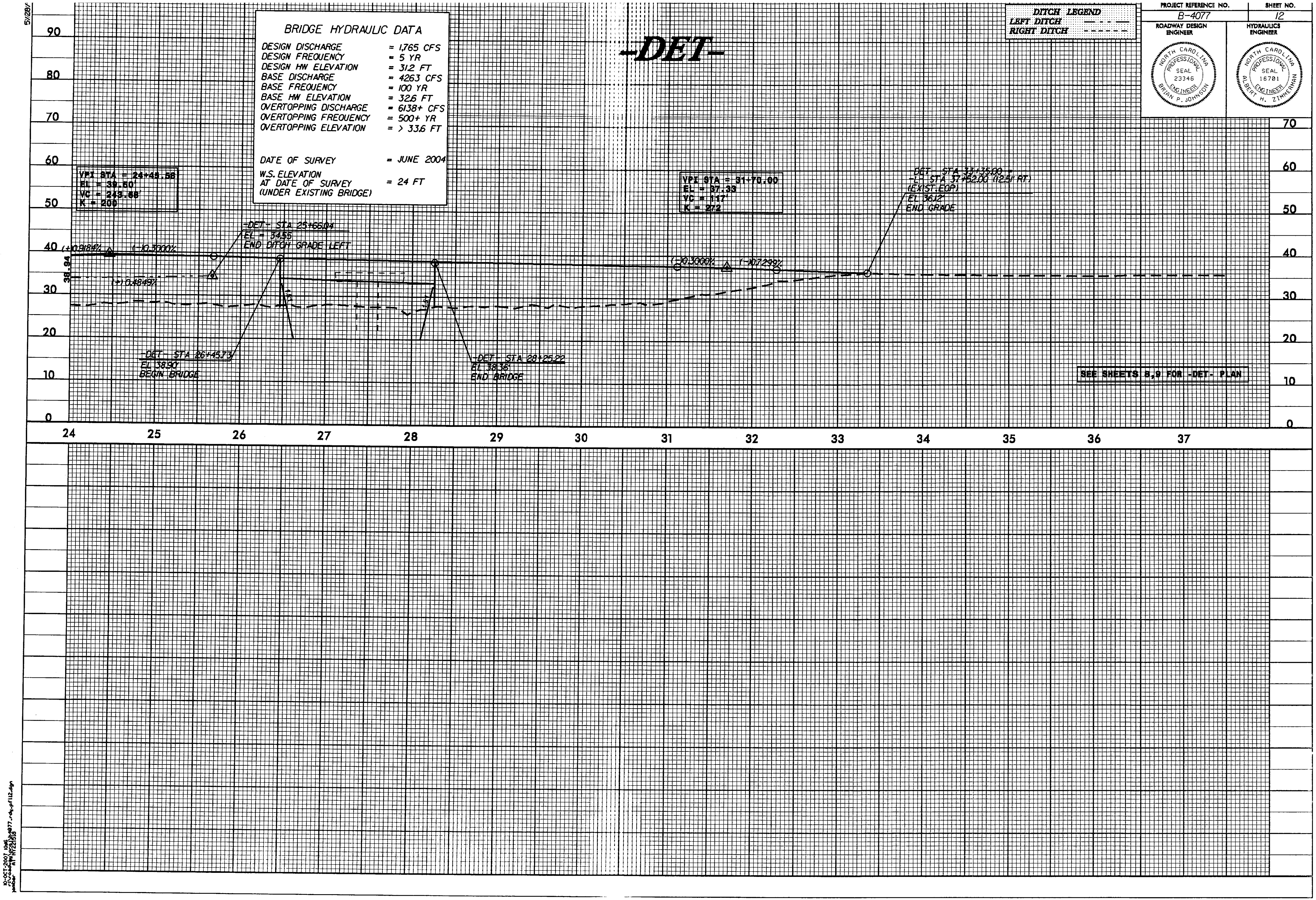


BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3,631 CFS
DESIGN FREQUENCY	= 50 YR
DESIGN HW ELEVATION	= 34.3 FT
BASE DISCHARGE	= 4,263 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 35.5 FT
OVERTOPPING DISCHARGE	= 6,138 CFS
OVERTOPPING FREQUENCY	= 500 YR
OVERTOPPING ELEVATION	= 36.6 FT
DATE OF SURVEY	= JUNE 2004
W.S. ELEVATION AT DATE OF SURVEY (UNDER EXISTING BRIDGE)	= 24 FT



PROJECT REFERENCE NO. B-4077
SHEET NO. 12
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23346 ENGINEER BRIAN P. JOHNSON
NORTH CAROLINA PROFESSIONAL SEAL 16701 ENGINEER ALBERT H. ZIMMERMAN
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
-DET-
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 1,765 CFS
DESIGN FREQUENCY = 5 YR
DESIGN HW ELEVATION = 31.2 FT
BASE DISCHARGE = 4263 CFS
BASE FREQUENCY = 100 YR
BASE HW ELEVATION = 32.6 FT
OVERTOPPING DISCHARGE = 6138+ CFS
OVERTOPPING FREQUENCY = 500+ YR
OVERTOPPING ELEVATION = > 33.6 FT
DATE OF SURVEY = JUNE 2004
W.S. ELEVATION AT DATE OF SURVEY (UNDER EXISTING BRIDGE) = 24 FT
VPI STA = 24+45.58
EL = 39.60'
VC = 243.68'
K = 200
(+)0.9184%
(-)0.3000%
(+) 0.4849%
38.94
-DET- STA 25+66.04
EL = 34.55
END DITCH GRADE LEFT
-DET- STA 26+45.73
EL 38.90'
BEGIN BRIDGE
-DET- STA 28+25.22
EL 38.36'
END BRIDGE
VPI STA = 31+70.00
EL = 37.33
VC = 117'
K = 272
(-)0.3000%
(-)0.7299%
-DET- STA 33+35.00 =
-L- STA 37+62.00 (12.51' RT)
(EXIST. EOP)
EL 36.12'
END GRADE
SEE SHEETS 8,9 FOR -DET- PLAN
90
80
70
60
50
40
30
20
10
0
24
25
26
27
28
29
30
31
32
33
34
35
36
37

PROJ. REFERENCE NO. B-4077

SHEET NO. X-3

8/23

-DET- STA 16+91.67

37.69

0.0600 0.0600

3% 4% 3%

35.44

30 30

21+50.00

-DET- STA 16+40.64

37.63

0.0600 0.0600

3% 4% 3%

35.42

30 30

21+00.00

DET- STA 15+89.70

37.42

0.0507 0.0600

3% 4% 3%

35.39

30 30

20+50.00

-DET- STA 15+38.85

37.68

0.0602 0.0600

3% 4% 3%

35.35

30 30

20+00.00

-DET- STA 14+88.09

37.68

0.0574 0.0600

3% 4% 3%

35.32

30 30

19+50.00

-DET- STA 14+37.46

36.33

0.0416 0.0600

3% 4% 3%

35.31

30 30

19+00.00

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

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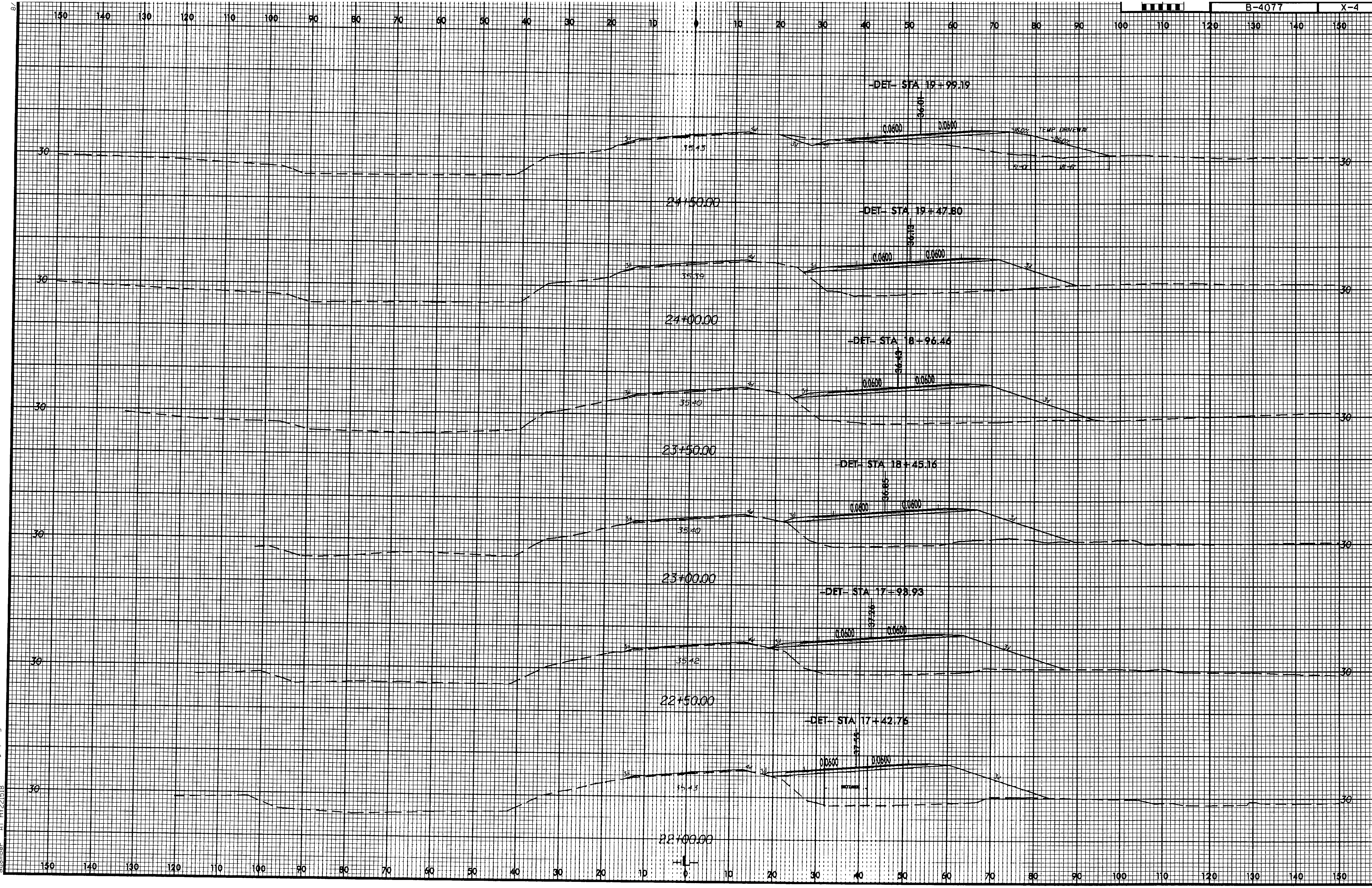
aamber
AT HY22518

Permit Drawing
Sheet 15 of 20



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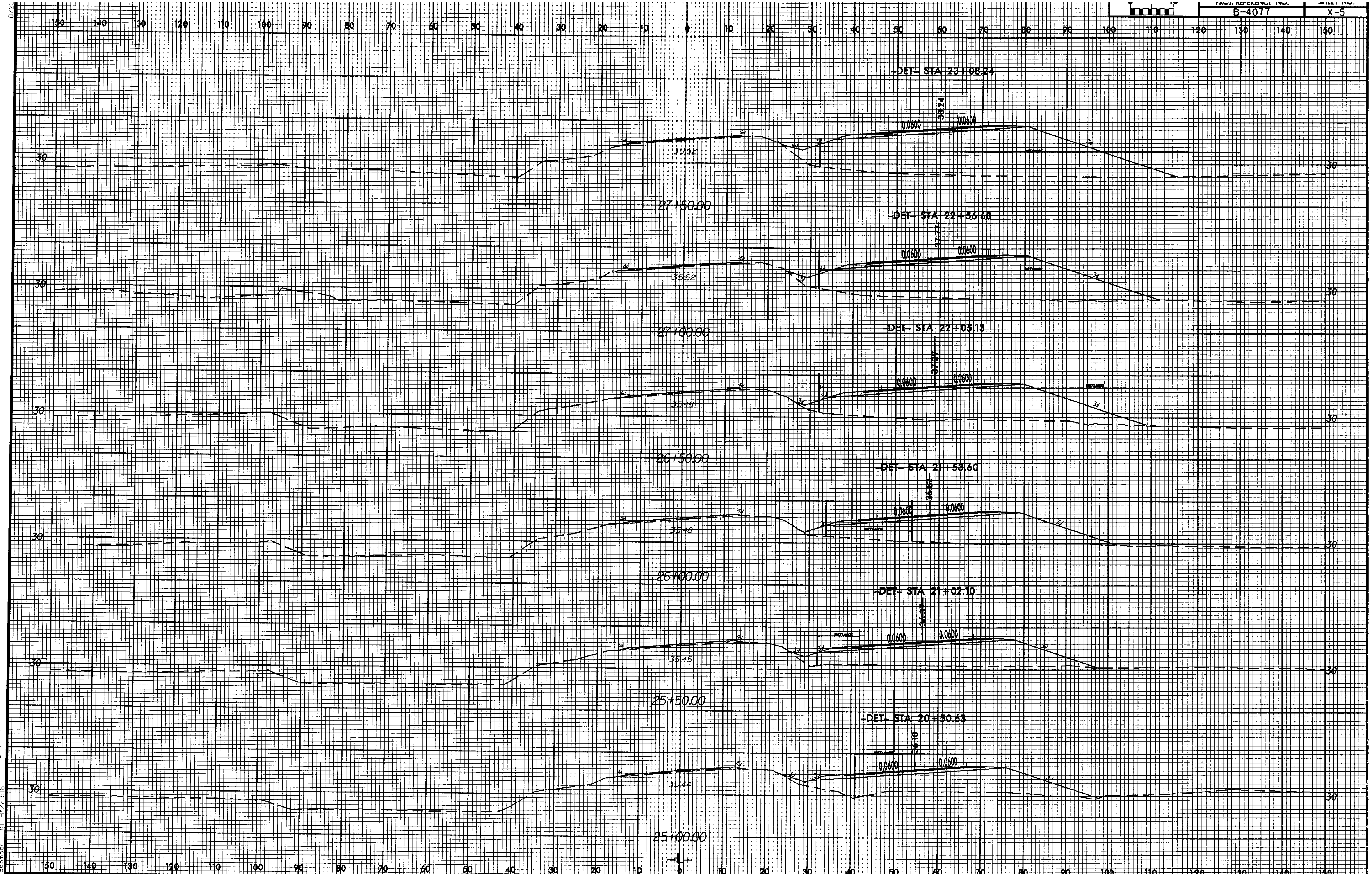
agamber AT HY22I5I8



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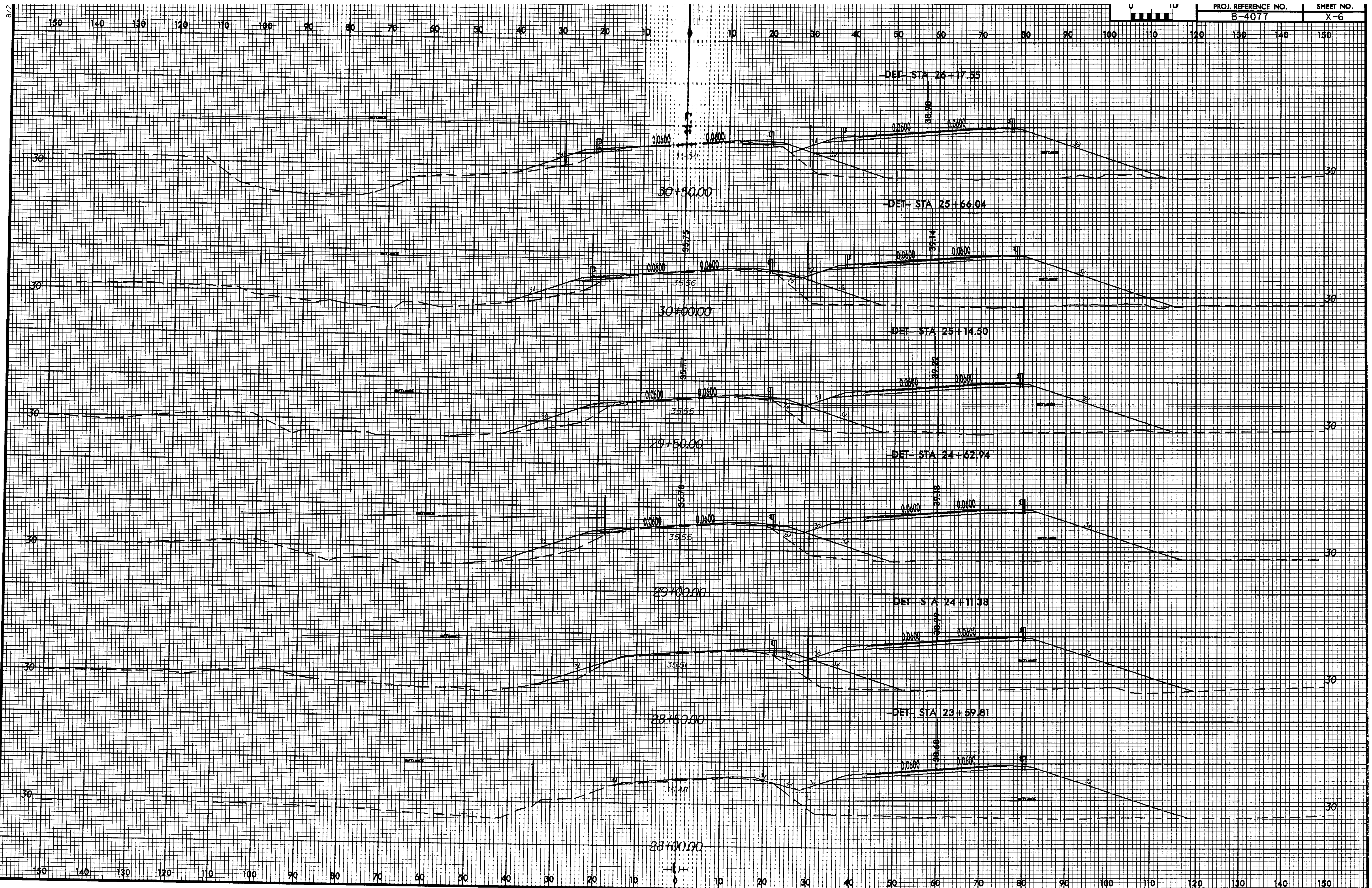
PROJ. REFERENCE NO.	SHEET NO.
B-4077	X-6



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Permit Drawing
Sheet 18 of 20

PROJ. REFERENCE NO.
B-4077

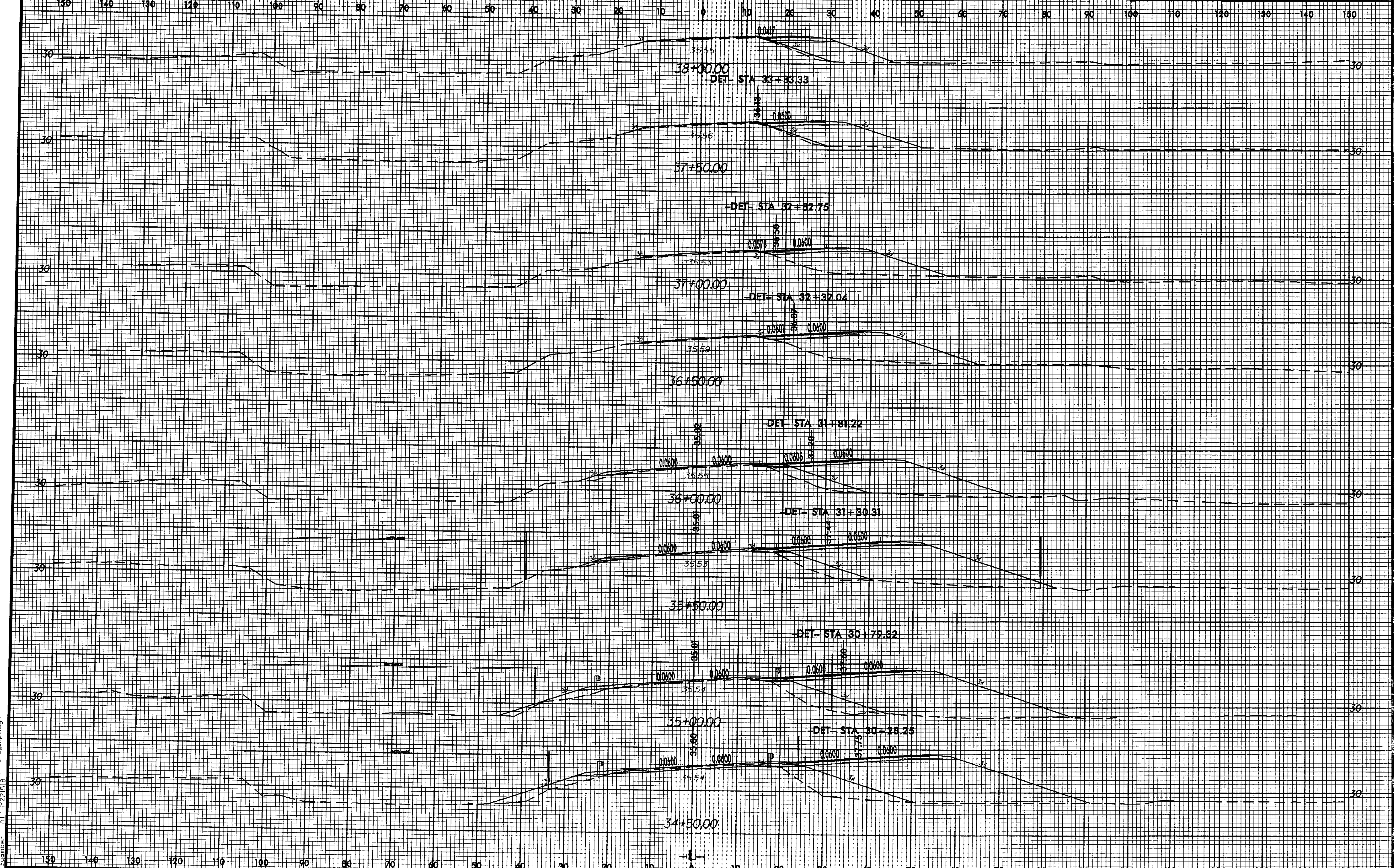
SHEET NO.
X-7

-DET- STA 29+77.11
34+00.00
-DET- STA 29+25.90
33+50.00
-DET- STA 28+74.63
33+00.00
-DET- STA 28+23.30
-DET- STA 28+25.22
END DETOUR BRIDGE
-L- STA 32+06.71
END BRIDGE
32+50.00
-DET- STA 27+71.93
32+00.00
-DET- STA 27+20.50
-L- STA 31+17.35
BEGIN BRIDGE
31+50.00
-DET- STA 26+69.05
31+00.00
-DET- STA 26+46.73
BEGIN DETOUR BRIDGE

10-OCT-2007 10:07
r:\hydraulics\permits\b4077_rdy_xpl.dgn
Engineer
AT HY22518

Permit Drawing
Sheet 19 of 20

PROJ. REFERENCE NO.	SHEET NO.
B-4077	X-8



10-OCT-2007 10:06
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Permit Drawing
Sheet 20 of 20

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4077	1	

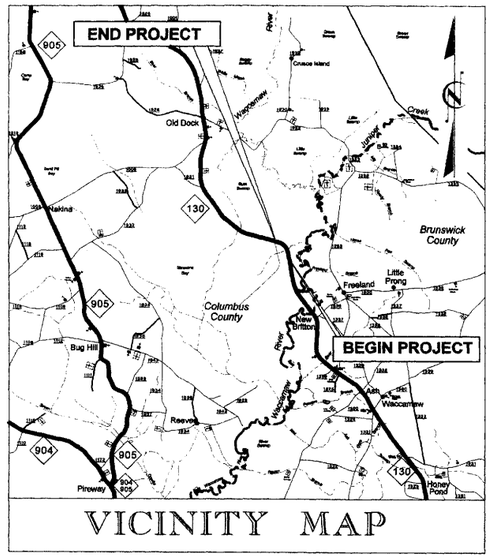
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33439.1.1	BRSTP-130(2)	PE

LOCATION: ***BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW***

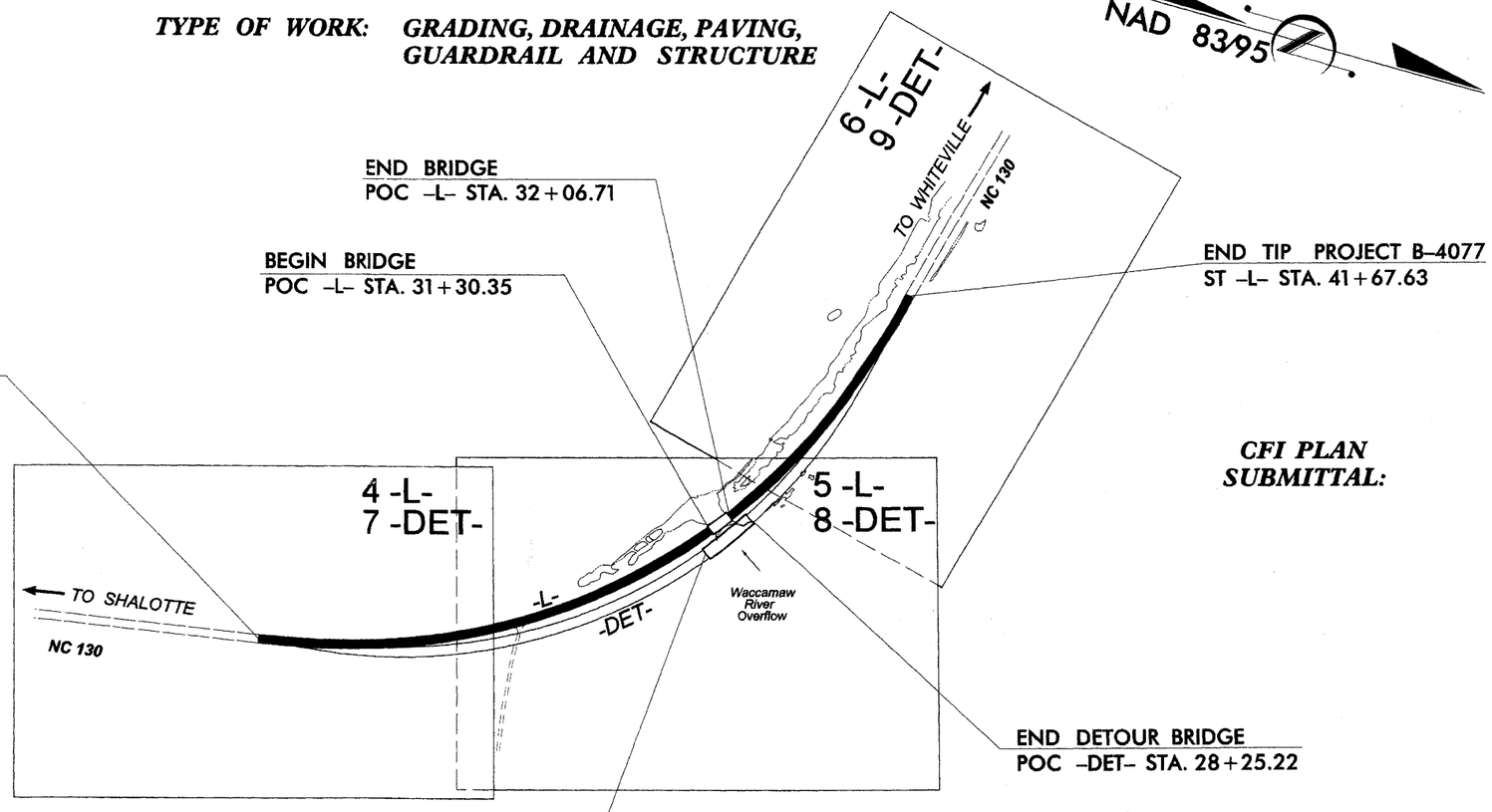
TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, GUARDRAIL AND STRUCTURE***

TIP PROJECT: B-4077

CONTRACT:



VICINITY MAP



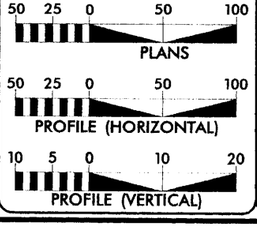
CFI PLAN SUBMITTAL:

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.
** DESIGN EXCEPTION REQUIRED FOR HORIZONTAL STOPPING SIGHT DISTANCE.

NCDOT CONTACT:
CATHY S. HOUSER, PE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 4800
ADT 2027 = 8800
DHV = 13 %
D = 60 %
T = 7 % *
** V = 60 MPH
* TTST 4 % DUAL 3 %
FUNC CLASS: RURAL MINOR ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4077	- 0.497 mi.
LENGTH REPLACEMENT STRUCTURE TIP PROJECT B-4077	- 0.015 mi.
TOTAL LENGTH OF TIP PROJECT B-4077	- 0.512 mi.

Prepared In the Office of:
7520 East Independence Blvd.
Suite 120
Charlotte NC, 28227
(704) 532-9544

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 2006

LETTING DATE: MAY 2007

RICHARD L. MODLIN, PE
PROJECT ENGINEER

CHRISTOPHER J. EASTERLY, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
4 THRU 6	PLAN SHEETS
7 THRU 9	DETOUR SHEETS
10 THRU 12	PROFILE SHEETS
TCP-1 THRU TCP-	TRAFFIC CONTROL PLANS
PM-1	PAVEMENT MARKING PLAN
EC-1 THRU EC-	EROSION CONTROL PLANS
UO-1 THRU UO-	UTILITIES BY OTHERS PLANS
X-1 THRU X-9	CROSS-SECTIONS

GENERAL NOTES:

[illegible] SPECIFICATIONS:
EFFECTIVE: 07-18-06
REVISED:

GRADING AND SUBGRADING OR INCIDENTAL GRADING AND WIDENING:

THE GRADE LINES SHOWN REPRESENT THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROJECT SHOULD BLEND THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTERLINE OR SURVEY LINE WITH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE DEVELOPED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND [illegible] SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

UTILITIES:

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

UTILITY OWNERS ON THIS PROJECT ARE

EFF. 07-18-06

2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method 1
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

Note: Not to Scale

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

PROJECT REFERENCE NO.	SHEET NO.
B-4077	1-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing High Quality Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- River Basin Buffer
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Guage — 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 — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equiality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

SURVEY CONTROL SHEET B-4077

NOTES

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

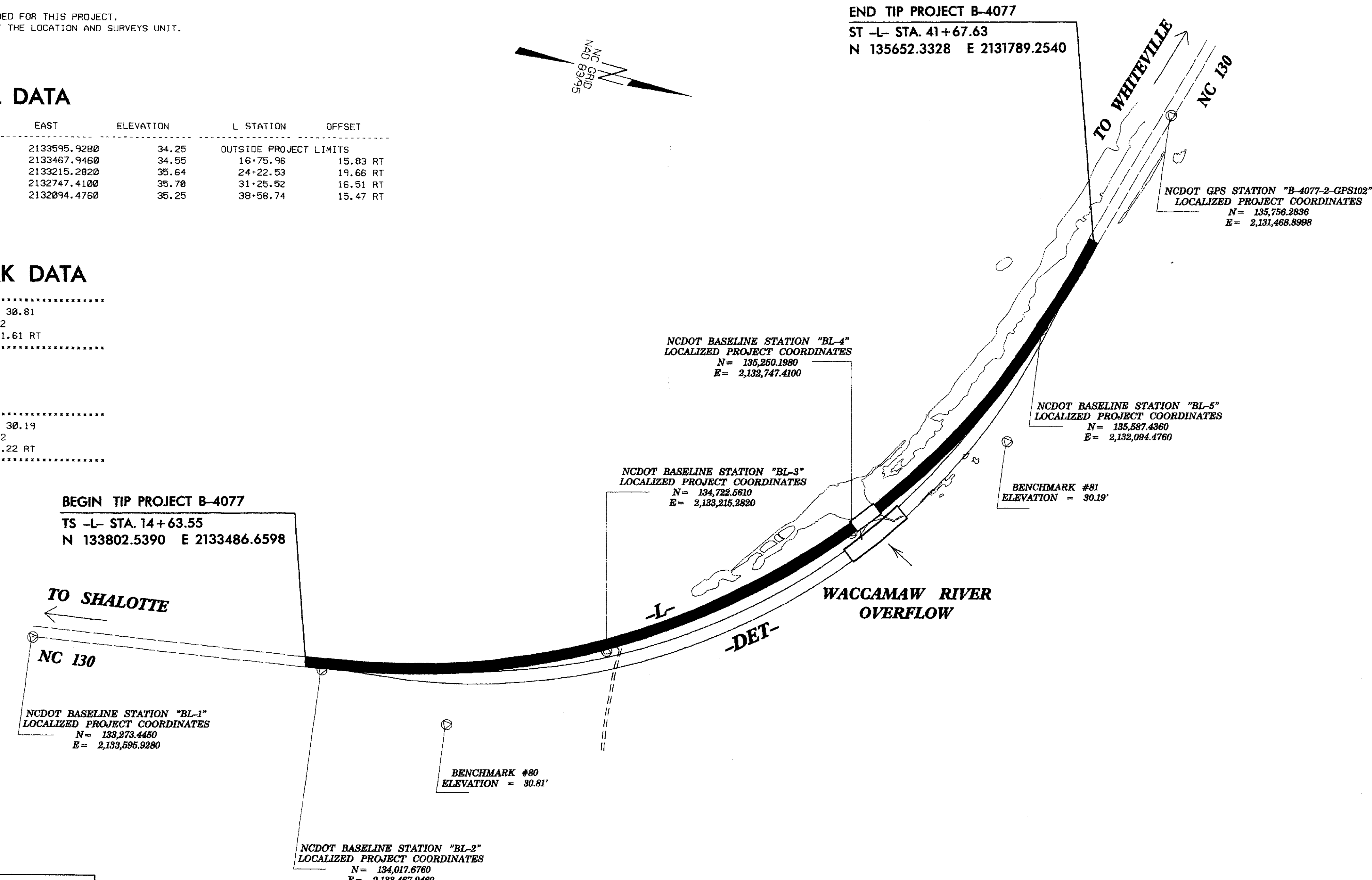
CONTROL DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	133273.4450	2133595.9280	34.25	OUTSIDE PROJECT LIMITS	
2	BL-2	134017.6760	2133467.9460	34.55	16+75.96	15.83 RT
3	BL-3	134722.5610	2133215.2820	35.64	24+22.53	19.66 RT
4	BL-4	135250.1980	2132747.4100	35.70	31+25.52	16.51 RT
5	BL-5	135587.4360	2132094.4760	35.25	38+58.74	15.47 RT

BENCHMARK DATA

BM80 ELEVATION = 30.81
N 134386 E 2133492
L STATION 20+16.87 131.61 RT

BM81 ELEVATION = 30.19
N 135595 E 2132342
L STATION 36+35.05 108.22 RT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4077-2"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 135756.283605(ft) EASTING: 2131468.89978(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00006900
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4077-2" TO -L- STATION 14+63.55 IS 2,809.09'
S 46°0' 7.40" E
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

⊚ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-4077	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

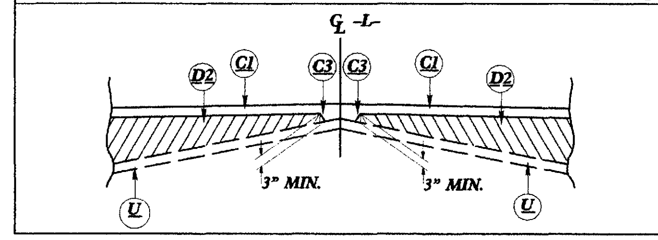
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

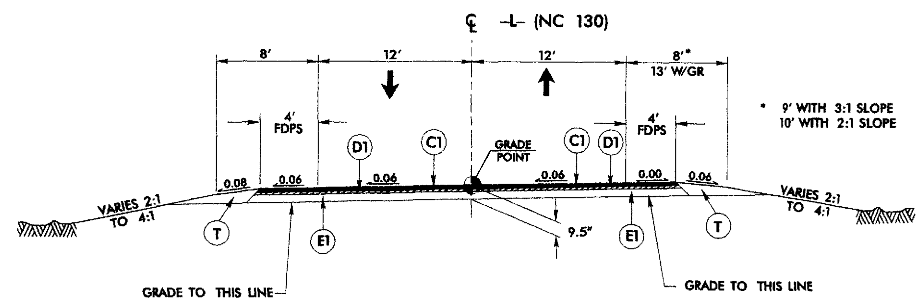
PAVEMENT SCHEDULE

ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH	J1	PROP. APPROX. 8" AGGREGATE BASE COURSE
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 3" IN DEPTH	T	EARTH MATERIAL
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH	U	EXISTING PAVEMENT
D2	PROP. VAR DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT NOT LESS THAN 3" IN DEPTH OR GREATER THEN 5.5" IN DEPTH	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH		

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

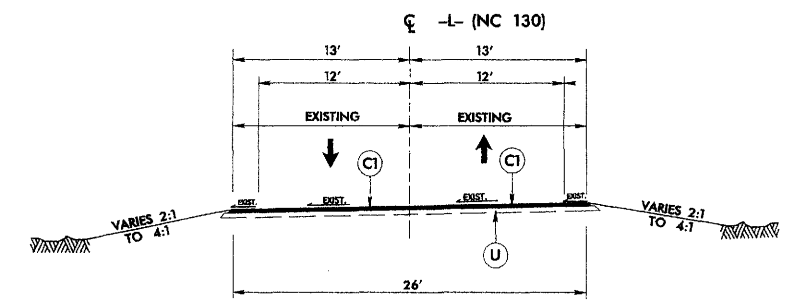
Detail Showing Method of Wedging





TYPICAL SECTION NO. 1

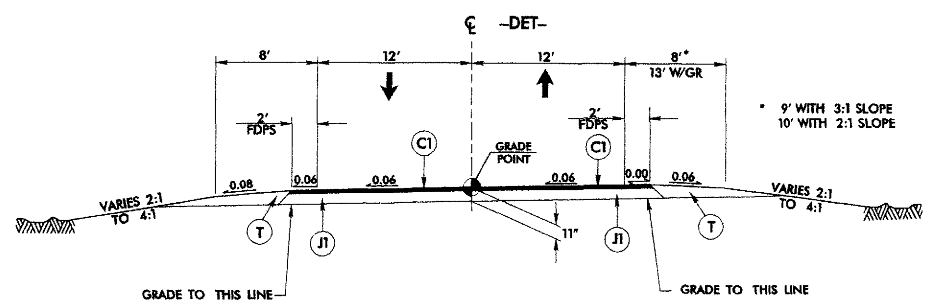
USE TYPICAL SECTION No. 1
-L- STA. 30+70.00 TO 31+30.35 (Begin Bridge)
-L- STA. 32+06.71 (End Bridge) TO 34+50.00



TYPICAL SECTION NO. 4

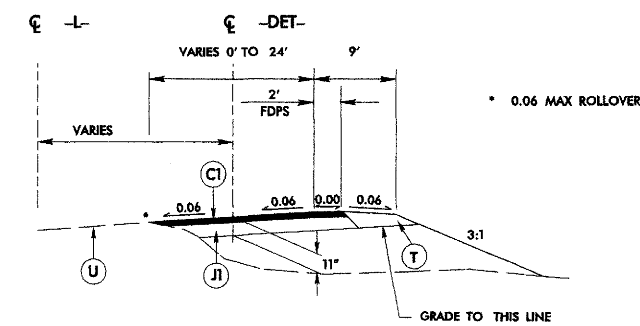
USE TYPICAL SECTION No. 4
-L- STA. 14+88.55 TO 28+78.47
-L- STA. 36+33.81 TO 41+42.63

NOTE: BLEND PAVEMENT FROM:
-L- STA. 14+63.55 TO 14+88.55
-L- STA. 41+42.63 TO 41+67.63



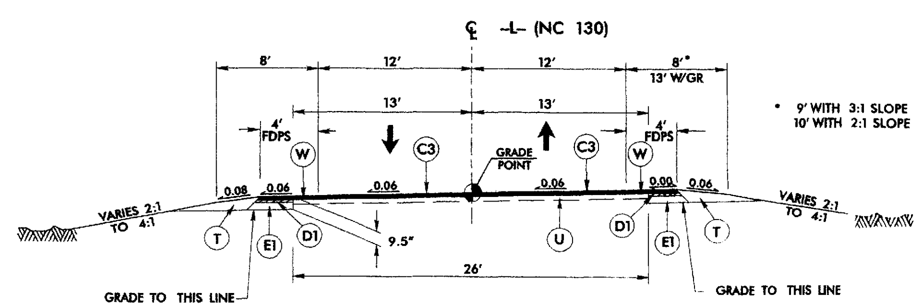
TYPICAL SECTION NO. 2

USE TYPICAL SECTION No. 2
-DET- STA. 15+75.00 TO 26+45.73 (Begin Bridge)
-DET- STA. 28+25.22 (End Bridge) TO 31+75.00



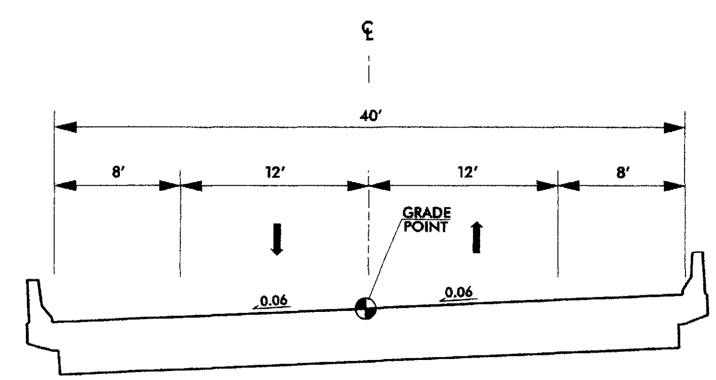
TYPICAL SECTION NO. 5

USE TYPICAL SECTION No. 5
-DET- STA. 11+75.00 TO 15+75.00
-DET- STA. 31+75.00 TO 36+00.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION No. 3
-L- STA. 28+78.47 TO 30+70.00
-L- STA. 34+50.00 TO 36+33.81



TYPICAL SECTION NO. 6

USE TYPICAL SECTION No. 6
-L- STA. 31+30.35 TO 32+06.71
-DET- STA. 26+45.73 TO 28+25.22

COMPUTED BY: CJE DATE: 5-10-05
CHECKED BY: TRG DATE: 5-10-05

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4077	3

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

STATION / SIZE / THICKNESS OR GAUGE / -DET-	LOCATION (LT.RT. OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 STD. 838.11 OR STD. 838.80 UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0')	LIN. *FT. A (5.0' THRU 10.0')	LIN. *FT. B (10.0' AND ABOVE)	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	C.B. STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
21+53.60	CL				32.55	30.05	3.47												72																																TEMPORARY 18" CMP
TOTAL																			72																															

ABBREVIATIONS

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

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END. STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS TYPE III	ANCHORS TYPE 350	IMPACT ATTENUATOR TYPE 350' EA	IMPACT ATTENUATOR TYPE 350' G	IMPACT ATTENUATOR TYPE 350' NG	REMARKS
L	28+30.35	31+30.35	RT	300.00'			BRIDGE		10'	13'	50'		1'		1	1				
L	29+92.85	31+30.35	LT	137.50'				BRIDGE	10'	13'		50'		1'	1	1				
L	32+06.71	35+06.71	LT	300.00'			BRIDGE		10'	13'	50'		1'		1	1				
L	32+06.71	33+44.21	RT	137.50'				BRIDGE	10'	13'		50'		1'	1	1				
DET	23+45.73	26+45.73	RT	300.00'			BRIDGE		10'	13'	50'		1'		1	1				
DET	25+08.23	26+45.73	LT	137.50'				BRIDGE	10'	13'		50'		1'	1	1				
DET	28+25.22	31+25.22	LT	300.00'			BRIDGE		10'	13'	50'		1'		1	1				
DET	28+25.22	29+62.72	RT	137.50'				BRIDGE	10'	13'		50'		1'	1	1				
SUBTOTAL				1750.00'																
				- 550.00'																
TOTAL				1200.00'											8	8				

DEDUCTION FOR ANCHOR UNITS

TYPE 350	8 @ 50'	=	400.00'
TYPE III	8 @ 18.75'	=	150.00'
		TOTAL	550.00'

* ASPHALT PAVEMENT REMOVAL AND BREAKING SUMMARY

IN SQUARE YARDS

LINE	STATION TO STATION	LOCATION	REMOVAL	BREAK-UP
-L-	30+70.00 TO 31+30.35	EXISTING ROADBED	175	
-L-	32+06.71 TO 34+50.00	EXISTING ROADBED	703	
-DET-	15+75.00 TO 26+45.73	TEMPORARY DETOUR	3,332	
-DET-	28+25.22 TO 31+75.00	TEMPORARY DETOUR	1,089	
	TOTAL		5,299	
	SAY		5,300	

* *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".*

* SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- STA. 14+63.55 TO 31+30.35 (BEGIN BRIDGE)			662	662	
-L- STA. 32+06.71 (END BRIDGE) TO 41+67.63			916	916	
-DET- STA. 16+50 TO 26+45.73 (BEGIN BRIDGE)			23,674	23,674	
-DET- STA. 28+25.22 (END BRIDGE) TO 40+00.00	16		8,999	8,983	
-DET- STA. 16+50 TO 26+45.73 (BEGIN BRIDGE) (REMOVAL)					20,008
-DET- STA. 28+25.22 (END BRIDGE) TO 40+00.00 (REMOVAL)					6,796
GRAND TOTAL	16		34,251	34,235	26,804
SAY TOTAL	20		34,300	34,300	26,900

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PROJECT REFERENCE NO.	SHEET NO.
B-4077	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

NAD 83/95

POT -L- STA. 10+00.00

1
PLUM CREEK TIMBERLANDS, LP
DB 668 PG 741

-L- 15

TS - L- Sta. 14+63.55 =
POT - DET- Sta. 10+00.00
BEGIN DETOUR
BEGIN PROJECT

POS -L- STA. 14+88.55
BEGIN RESURFACING

-L- SPIRAL DATA
Pls Sta 17+97.18
Θ s = 7°27' 37.4"
Ls = 500.00'
Rc = 1,920.00'
LT = 333.63'
ST = 166.94'
SE = EX
RO = EX

-DET- 15

-L- 20

SC -L- Sta. 19+63.55

MATCHLINE -L- STA 22+50
SEE SHEET 5

SHALOTTE

EXISTING EOP

EXISTING R/W

N 09° 39' 12.3" W

N 9° 45' 26.8" W

-L-

NC 130

BLEND TO EXISTING

26' BST

N 09° 39' 12.3" W

N 19° 43' 12.3" W

-BL- 1 5+00.00 POT=
-L- STA. 10+00.00
S 20° 48' 12.56" E
80.35'

-L- +63.55
EX. R/W
@ 50.00'

-BL- 2 12+55.16 PINC=
-L- STA. 16+75.96
15.83' RT

-DET- 8

TEMP SLOPE STAKE LINE

-L- +88.33
65.00'

-L- +07.15
106.82'

2
PLUM CREEK TIMBERLANDS, LP
DB 668 PG 741

PC -DET- Sta. 14+35.70

BM 80
-BL- STA 15+94
148' RIGHT
ELEV. 30.81'
-L- STA. 20+16.87
131.61' RT

WOODS

SEE SHEET 10 FOR -L- PROFILE

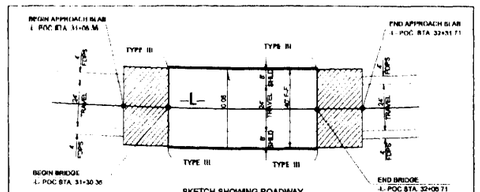
PROJECT REFERENCE NO.	SHEET NO.
B-4077	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

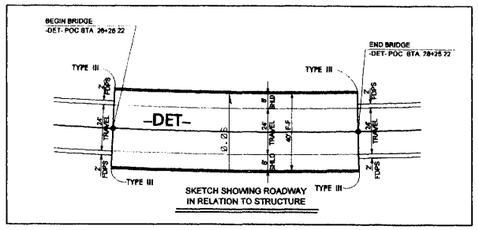
REVISIONS 8/17/99

-L- STRUCTURE
NC 130



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

-DET- STRUCTURE
DETOUR ALIGNMENT



SKETCH SHOWING ROADWAY IN RELATION TO STRUCTURE

1 PLUM CREEK TIMBERLANDS, LP DB 868 PG 741

2 PLUM CREEK TIMBERLANDS, LP DB 868 PG 741

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

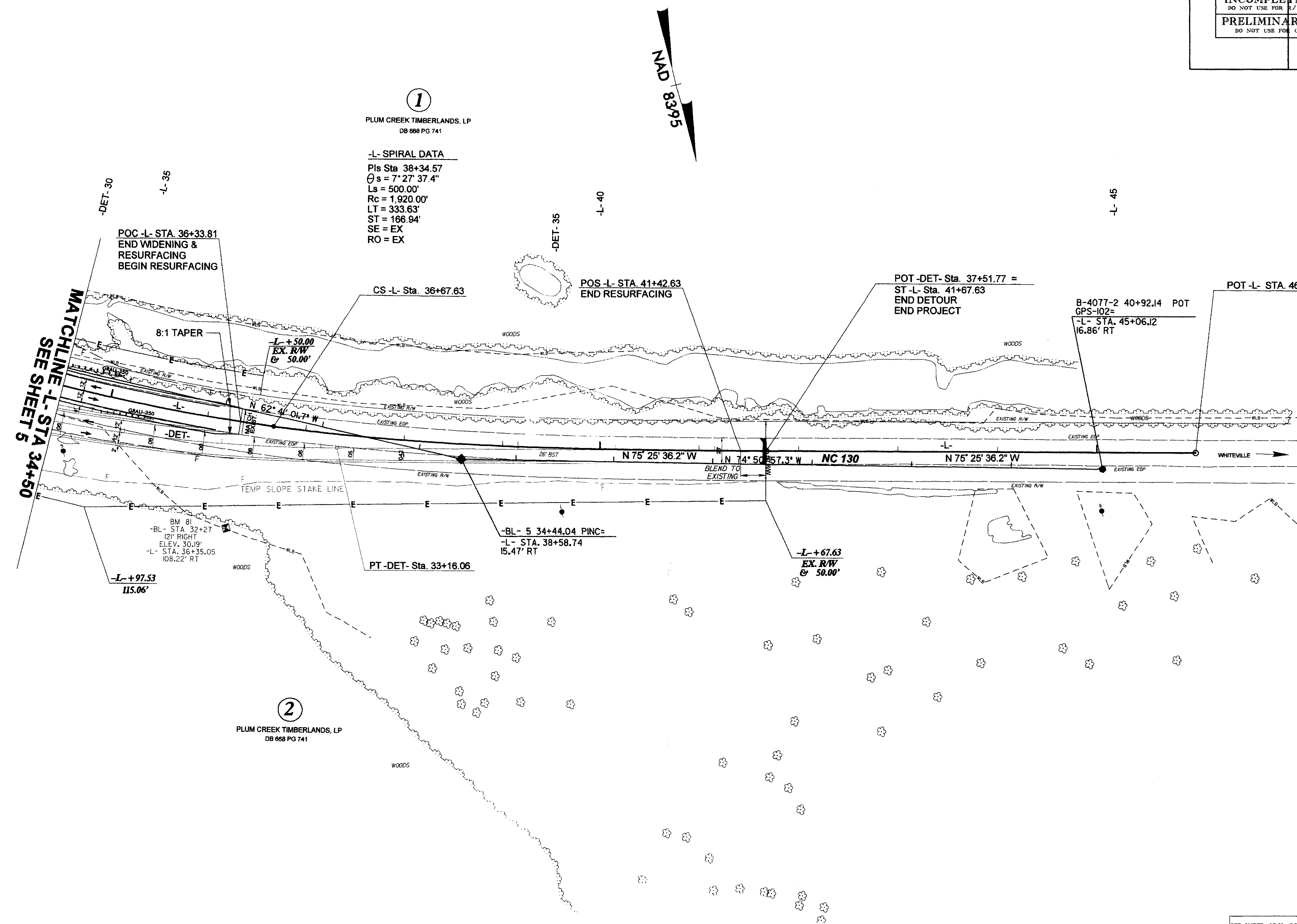
-DET- STA. 19+99.19 TO 25+66.04 LT

SEE SHEET 10 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B-4077	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SEE SHEET 10,11 FOR -L- PROFILE

REVISIONS

8/17/99

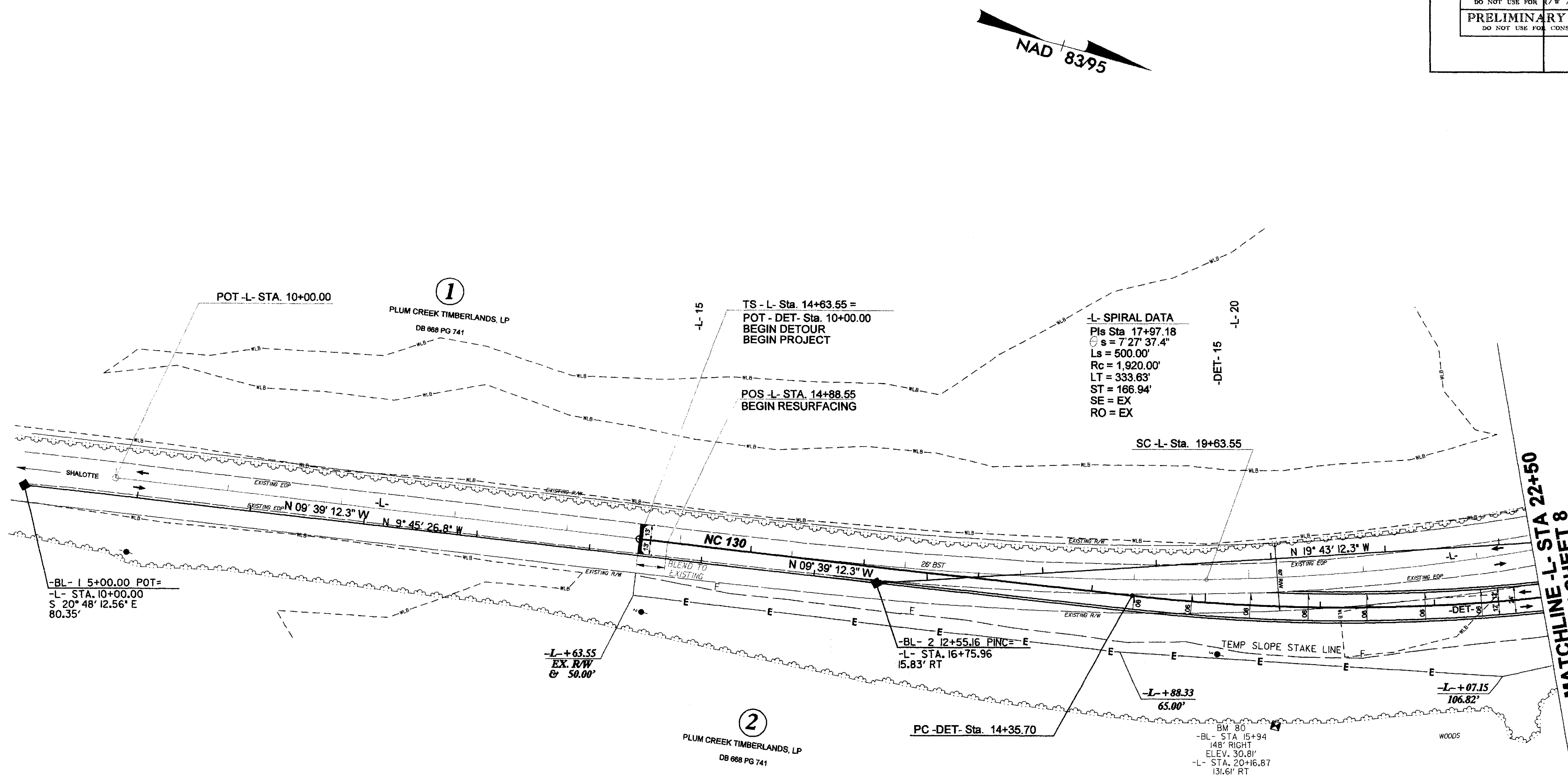
PROJECT REFERENCE NO.	SHEET NO.
B-4077	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



SEE SHEET 11 FOR -DET- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B-4077	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

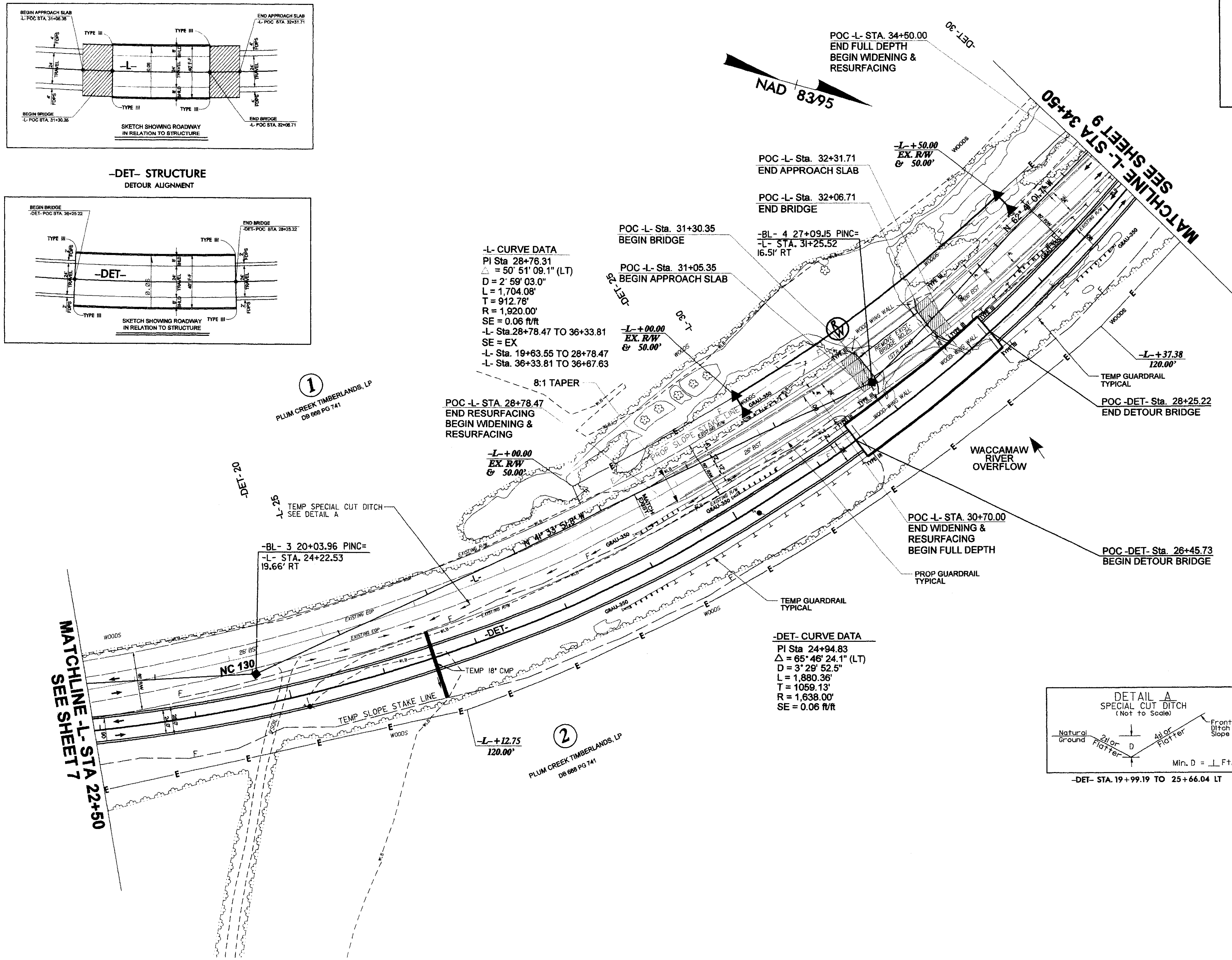
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

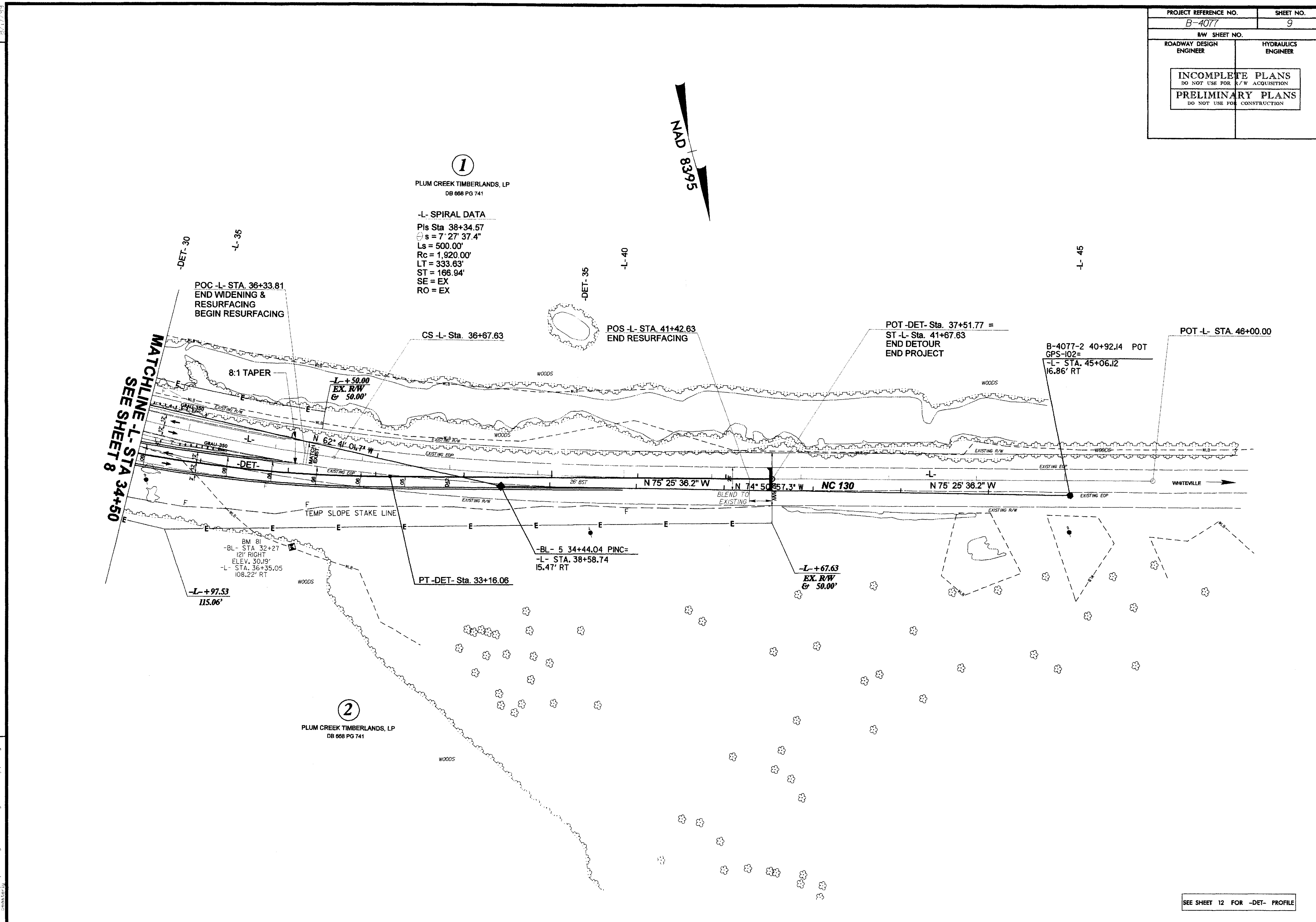
-L- STRUCTURE
NC 130

-DET- STRUCTURE
DETOUR ALIGNMENT

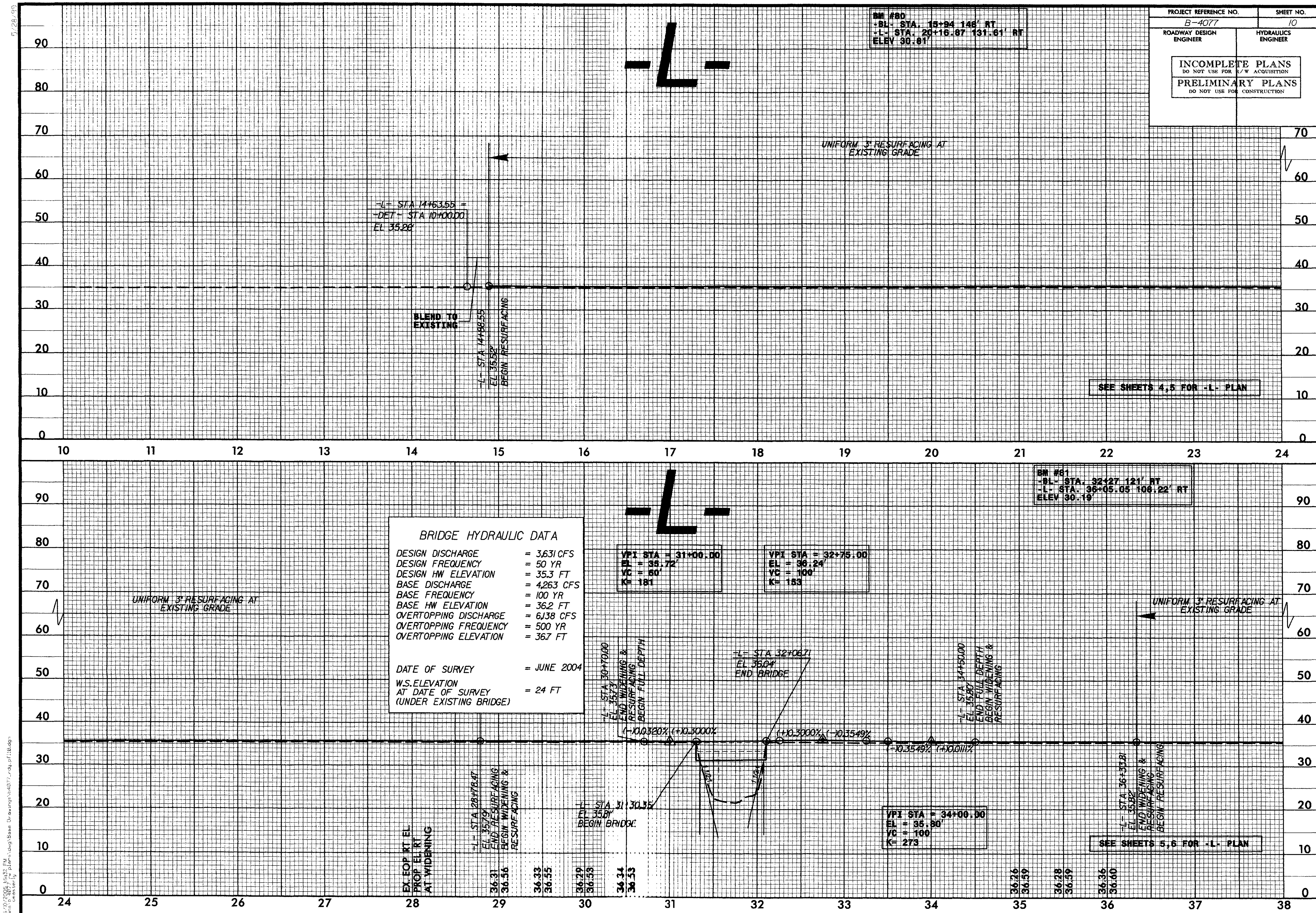


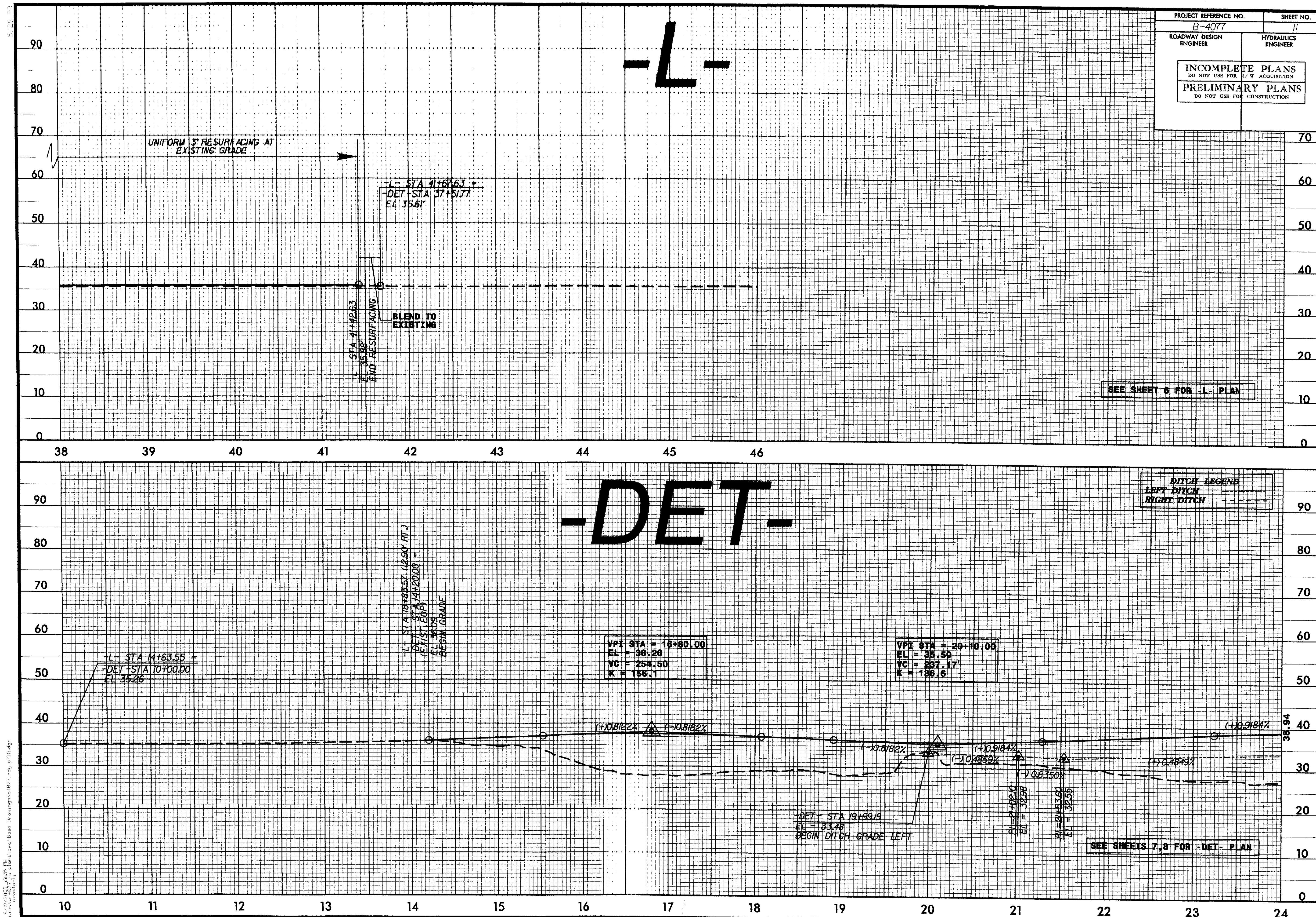
-DET- STA. 19+99.19 TO 25+66.04 LT

SEE SHEET 11,12 FOR -DET- PROFILE



PROJECT REFERENCE NO.
SHEET NO.
B-4077
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/95
REVISIONS
1
PLUM CREEK TIMBERLANDS, LP
DB 668 PG 741
-L- SPIRAL DATA
PIs Sta 38+34.57
θs = 7° 27' 37.4"
Ls = 500.00'
Rc = 1,920.00'
LT = 333.63'
ST = 166.94'
SE = EX
RO = EX
-DET- 30
-L- 35
-L- 40
-DET- 35
-L- 45
POC -L- STA. 36+33.81
END WIDENING &
RESURFACING
BEGIN RESURFACING
CS -L- Sta. 36+67.63
POS -L- STA. 41+42.63
END RESURFACING
POT -DET- Sta. 37+51.77 =
ST -L- Sta. 41+67.63
END DETOUR
END PROJECT
POT -L- STA. 46+00.00
B-4077-2 40+92.14 POT
GPS-102=
-L- STA. 45+06.12
16.86' RT
MATCHLINE -L- STA 34+50
SEE SHEET 8
8:1 TAPER
-L- +50.00
EX. R/W
& 50.00'
N 62° 41' 01.7" W
N 75° 25' 36.2" W
N 74° 50' 57.3" W
NC 130
N 75° 25' 36.2" W
WHITEVILLE
BLEND TO EXISTING
TEMP SLOPE STAKE LINE
BM 81
-BL- STA 32+27
121' RIGHT
ELEV. 30.19'
-L- STA. 36+35.05
108.22' RT
-BL- 5 34+44.04 PINC=
-L- STA. 38+58.74
15.47' RT
PT -DET- Sta. 33+16.06
-L- +67.63
EX. R/W
& 50.00'
-L- +97.53
115.06'
2
PLUM CREEK TIMBERLANDS, LP
DB 668 PG 741
SEE SHEET 12 FOR -DET- PROFILE


PROJECT REFERENCE NO. B-4077
SHEET NO. 10
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
BM #80
-BL- STA. 15+94 148' RT
-L- STA. 20+16.87 131.61' RT
ELEV 30.81'
UNIFORM 3" RESURFACING AT EXISTING GRADE
-L- STA 14+63.55 =
-DET- STA 10+00.00
EL 35.28'
BLEND TO EXISTING
-L- STA 14+88.55
EL 35.52'
BEGIN RESURFACING
SEE SHEETS 4,5 FOR -L- PLAN
-L-
BM #81
-BL- STA. 32+27 121' RT
-L- STA. 36+05.05 108.22' RT
ELEV 30.19'
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 3,631 CFS
DESIGN FREQUENCY = 50 YR
DESIGN HW ELEVATION = 35.3 FT
BASE DISCHARGE = 4,263 CFS
BASE FREQUENCY = 100 YR
BASE HW ELEVATION = 36.2 FT
OVERTOPPING DISCHARGE = 6,138 CFS
OVERTOPPING FREQUENCY = 500 YR
OVERTOPPING ELEVATION = 36.7 FT
DATE OF SURVEY = JUNE 2004
W.S. ELEVATION AT DATE OF SURVEY (UNDER EXISTING BRIDGE) = 24 FT
VPI STA = 31+00.00
EL = 35.72'
VC = 60'
K= 181
VPI STA = 32+75.00
EL = 36.24'
VC = 100'
K= 153
UNIFORM 3" RESURFACING AT EXISTING GRADE
UNIFORM 3" RESURFACING AT EXISTING GRADE
-L- STA 30+70.00
EL 35.73'
END WIDENING & RESURFACING
BEGIN FULL DEPTH
-L- STA 32+06.71
EL 36.04'
END BRIDGE
-L- STA 34+50.00
EL 35.80'
END FULL DEPTH
BEGIN WIDENING & RESURFACING
(-)0.0320% (+)0.3000%
(+)0.3000% (-)0.3549%
(-)0.3549% (+)0.0111%
EX. EOP RT EL.
PROP EL RT
AT WIDENING
-L- STA 28+78.47
EL 35.79'
END RESURFACING
BEGIN WIDENING & RESURFACING
-L- STA 31+30.35
EL 35.81'
BEGIN BRIDGE
VPI STA = 34+00.00
EL = 35.80'
VC = 100
K= 273
-L- STA 36+33.81
EL 35.82'
END WIDENING & RESURFACING
BEGIN RESURFACING
SEE SHEETS 5,6 FOR -L- PLAN
36.31 36.56
36.33 36.55
36.29 36.53
36.34 36.53
36.26 36.59
36.28 36.59
36.36 36.60
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38
0 10 20 30 40 50 60 70 80 90



PROJECT REFERENCE NO.
SHEET NO.
B-4077
11
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
UNIFORM 3" RESURFACING AT EXISTING GRADE
-L- STA 41+67.63 = -DET- STA 37+51.77
EL 35.61'
-L- STA 41+42.63
EL 35.58'
END RESURFACING
BLEND TO EXISTING
SEE SHEET 6 FOR -L- PLAN
-DET-
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
-L- STA 18+83.57 (12.90' RT.) -DET- STA 14+20.00 = (EXIST. EOP)
EL 36.09
BEGIN GRADE
-L- STA 14+63.55 = -DET- STA 10+00.00
EL 35.26
VPI STA = 16+80.00
EL = 38.20
VC = 254.50
K = 156.1
VPI STA = 20+10.00
EL = 35.50
VC = 237.17'
K = 136.6
(+)0.8122%
(-)0.8182%
(-)0.8182%
(+)0.9184%
(-)1.0859%
(-)0.8350%
(+)0.4849%
(+)0.9184%
38.94
-DET- STA 19+99.19
EL = 33.48
BEGIN DITCH GRADE LEFT
PI = 21+02.10
EL = 32.98
PI = 21+53.60
EL = 32.55
SEE SHEETS 7,8 FOR -DET- PLAN

-DET-

PROJECT REFERENCE NO.	SHEET NO.
B-4077	12

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

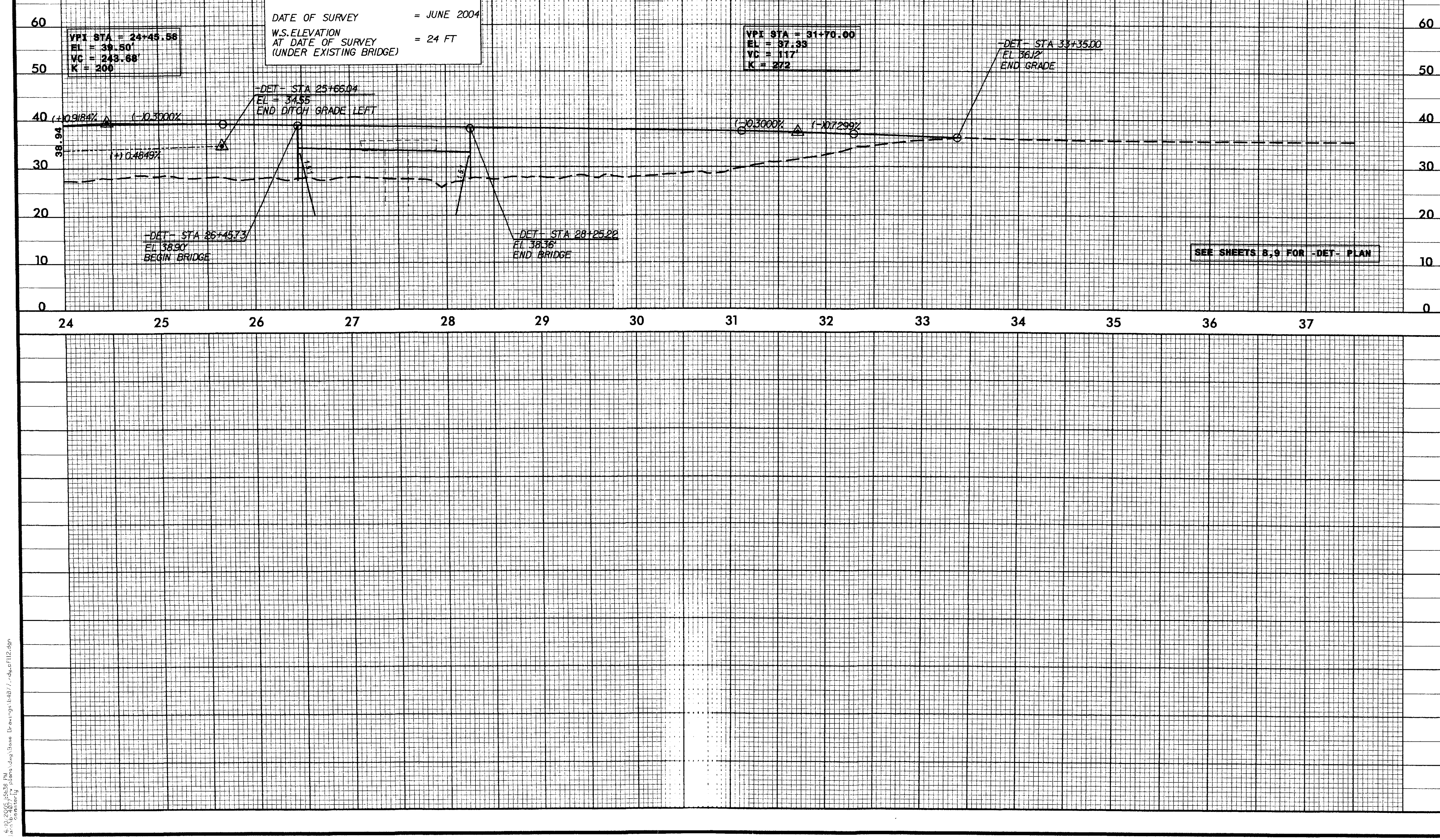
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1,765 CFS
DESIGN FREQUENCY	= 5 YR
DESIGN HW ELEVATION	= 31.2 FT
BASE DISCHARGE	= 4263 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 32.6 FT
OVERTOPPING DISCHARGE	= 6138+ CFS
OVERTOPPING FREQUENCY	= 500+ YR
OVERTOPPING ELEVATION	= > 33.6 FT
DATE OF SURVEY	= JUNE 2004
W.S. ELEVATION AT DATE OF SURVEY (UNDER EXISTING BRIDGE)	= 24 FT



SEE SHEETS 8,9 FOR -DET- PLAN

NC 130 (NEW BRITTON ROAD)
BRIDGE NO. 25 OVER THE WACCAMAW RIVER OVERFLOW
COLUMBUS COUNTY

FEDERAL-AID PROJECT NO. BRSTP-130(2)
STATE PROJECT NO. 8.1431901
TIP NO. B-4077

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION,
FEDERAL HIGHWAY ADMINISTRATION,
AND NORTH CAROLINA DEPARTMENT OF TRANSPORTATION,
DIVISION OF HIGHWAYS

APPROVED:

10/28/04
Date

for Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development & Environmental
Analysis Branch
North Carolina Department of
Transportation

10/28/04
Date

for John F. Sullivan, III, P.E.
Division Administrator
Federal Highway Administration

NC 130 (NEW BRITTON ROAD)
BRIDGE NO. 25 OVER THE WACCAMAW RIVER OVERFLOW
COLUMBUS COUNTY

FEDERAL-AID PROJECT NO. BRSTP-130(2)
STATE PROJECT NO. 8.1431901
TIP NO. B-4077

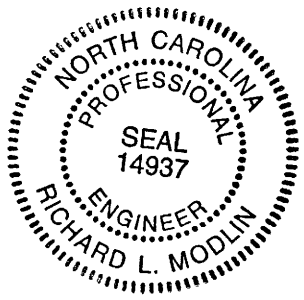
CATEGORICAL EXCLUSION

OCTOBER 2004

Document Prepared by:
Qk4, Inc.
7520 East Independence Blvd.
Suite 120
Charlotte, NC 28227

10-26-04

Richard L. Modlin, P.E.
Regional Manager



For the North Carolina Department of Transportation

Theresa Ellerby

Theresa Ellerby, Project Manager
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

NC 130 (NEW BRITTON ROAD)
BRIDGE NO. 25 OVER THE WACCAMAW RIVER OVERFLOW
COLUMBUS COUNTY

FEDERAL-AID PROJECT NO. BRSTP-130(2)
STATE PROJECT NO. 8.1431901
T.I.P. NO. B-4077

In addition to the standard Nationwide Permit #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Design Standards for Sensitive Watersheds, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

1. An in-water work moratorium will be in effect from April 1 to June 30 to minimize impacts to spawning sunfish.

2. A mussel survey will be conducted for the Waccamaw spike *(Elliptio waccamawensis)* in inundated areas of the project site within two years of construction of the proposed project.

3. Any construction activities for the project involving the use of borrow and waste sites will be located outside the 400-foot buffer area established for jurisdictional areas.

4. With NC 130 being designated as a Hurricane Evacuation Route, ample staging areas will be provided prior to construction to ensure the project does not hamper an evacuation.

5. The NCDOT will coordinate with the North Carolina Geodetic Survey (NCGS) prior to the removal and/or transfer of the US Coastal and Geodetic benchmark set in the concrete wheel guard stamped: "A 227-1942".

NC 130 (NEW BRITTON ROAD)
BRIDGE NO. 25 OVER WACCAMAW RIVER OVERFLOW
COLUMBUS COUNTY

FEDERAL-AID PROJECT NO. BRSTP-130(2)
STATE PROJECT NO. 8.1431901
TIP NO. B-4077

INTRODUCTION: The replacement of Bridge No. 25, located on NC 130 over the Waccamaw River Overflow, is included in the 2004-2010 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location of the proposed project is shown in **Figure 1**. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 38.8 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 25 is located in a rural area of southeastern Columbus County. Refer to **Figure 2** for photos of existing project area.

Bridge No. 25 was constructed in 1938. It is a 3-span bridge consisting of a reinforced concrete deck on I-beams. The substructure consists of end bents and bents on timber caps/timber piles. The total length of the bridge is 77'- 0". It has a clear roadway width of 25'- 11" that includes two travel lanes over the bridge. The existing structure has a crown-to-bed height of 14'- 0" and the normal depth of flow is 11'- 0". The bridge has a single vehicle (SV) weight limit of 37 tons and a truck-tractor semitrailer (TTST) posted weight limit of 99 tons.

NC 130 (New Britton Road) is classified as a rural minor arterial in the Statewide Functional Classification System. The estimated 2004 average daily traffic (ADT) volume for NC 130 is approximately 4,200 vehicles per day (vpd). Traffic is expected to increase to 9,400 vpd by the design year 2030. The volumes include 3 percent dual trucks and 4 percent TTST's. The posted speed limit in the vicinity of the bridge is 55 miles per hour (mph).

The two-lane facility measures approximately 24 feet in width and has 6-foot unpaved shoulders on each side of the roadway. The bridge is located on a curve and on a very slight vertical grade. The existing right-of-way is approximately 60 feet in width. Overhead utilities (telephone lines) are located within 30 feet to the east of the existing bridge and roadway. Utility impacts are anticipated to be low.

There were 2 accidents reported in the vicinity of the bridge during the period from August 1, 2000 to July 31, 2003.

There are no school buses that currently cross Bridge No. 25.

There is one project listed in the North Carolina Department of Transportation's 2004-2010 Transportation Improvement Program (TIP) that is in the same geographic area as the proposed project. This project is identified as TIP No. R-4450, which includes the resurfacing of NC 130 with minor widening and safety improvements from US 701 to the Brunswick County line. This project is currently under construction.

This section of NC 130 is not part of a designated bicycle route nor is it listed in the Transportation Improvement Program as needing incidental bicycle accommodations. There is no indication that an unusual amount of bicyclists use this roadway.

Land use within the project area is primarily rural agricultural. There are no residences located in the immediate vicinity of the bridge. Land use surrounding the project area is wooded swampland utilized for timber logging.

NC 130 (New Britton Road) has been designated as a Hurricane Evacuation Route for the Brunswick County Beaches. Ample staging areas will be provided prior to construction to ensure that an evacuation is not hampered by the project.

There is a US Coastal and Geodetic benchmark set in the concrete wheel guard stamped: "A 227-1942". The NCDOT will coordinate with the North Carolina Geodetic Survey (NCGS) prior to the removal and/or transfer of the Geodetic benchmark.

III. ALTERNATIVES

A. Project Description

Based upon the preliminary hydraulics report, the proposed replacement structure will be approximately 80 feet long with a 40-foot clear roadway width. The proposed approach roadway will consist of two 12-foot travel lanes with eight-foot shoulders (4-foot paved). The proposed structure will provide two 12-foot travel lanes with 8 feet of lateral clearance on each side of the bridge **(see Figure 3).** The design speed is 60 mph.

The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined by a more detailed hydraulic analysis to be performed during the final design phase of the bridge.

B. Build Alternatives

Two (2) Build Alternatives studied for replacing the bridge are described as follows:

Alternate A (Preferred) – Replace In-Place With Temporary Detour To The East

Alternate A consists of replacing the existing bridge at its existing location with a new structure **(see Figure 4).** The length of the proposed replacement structure is approximately 77 feet. The proposed bridge and approach grades should approximately match those of the existing structure. The length of the approach roadway will extend approximately 400 feet north of the existing bridge and approximately 400 feet south of the existing bridge. During construction, traffic will be maintained by an onsite temporary detour structure located approximately 70 feet east of the existing bridge. The length of the temporary detour structure is approximately 180 feet. The roadway approaches for the temporary structure extend approximately 1,800 feet north of the structure and 1,300 feet south of the structure.

Alternate B - New Alignment To The West

Alternate B consists of replacing the existing bridge on new alignment approximately 50 feet west of the existing bridge **(see Figure 5).** The new bridge would be approximately 80 feet in length. The proposed roadway grades and bridge grade will approximately match those of the existing structure. The proposed roadway approaches will extend approximately 1,700 feet north and approximately 1,700 feet south of the new structure. During construction, traffic will be maintained on the existing bridge.

Alternative B was not selected as the preferred alternative because of its greater impacts to wetlands and more permanent impacts to the ecosystem.

C. Alternatives Eliminated from Further Study

The "Do-Nothing" Alternative will eventually necessitate closure of the bridge due to its poor condition. This is not desirable due to the traffic service provided by NC 130. Investigation of the existing structure by the NCDOT Bridge Maintenance Unit indicates that rehabilitation of the existing bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternative

Alternate A, consists of replacing the existing bridge at its existing location with a new bridge. During construction, traffic will be maintained by an onsite temporary detour. Alternate A was selected as the "Preferred Alternative" because it has less wetland impacts and less permanent impacts to the ecosystem.

The Division Engineer concurs with Alternative A as the Preferred Alternative.

IV. ESTIMATED COSTS

The estimated costs, based on current dollars, are shown in Table 1.

Table 1
Estimated Costs

	Alternate A (Preferred)	Alternate B
Structure Removal (existing)	$ 21,560.00	$ 21,560.00
Structure (proposed)	231,000.00	224,000.00
Detour Structure and Approaches	286,400.00	-
Roadway Approaches	658,693.50	858,465.50
Miscellaneous and Mobilization	296,000.00	386,000.00
Engineering and Contingencies	226,000.00	223,000.00
ROW/Const. Easements/Utilities	80,346.50	36,974.50
TOTAL	$ 1,800,000.00	$1,750,000.00

The estimated cost of the project, as shown in the 2004-2010 NCDOT Transportation Improvement Program is $760,000, including $100,000 spent in prior years, $60,000 for right of way acquisition and $600,000 for construction.

V. NATURAL RESOURCES

Natural resources within the project study area were evaluated to provide: 1) an assessment of existing vegetation, wildlife, protected species, streams, wetlands, and water quality; 2) an evaluation of probable impacts resulting from construction; and 3) a preliminary determination of permit needs.

This section provides a description of the various natural resources within the study area and those likely to be impacted by the proposed project.

A. Methodology

Published information and resources were collected prior to the field investigation. Sources used to prepare this information include, but are not limited to, the following:

- United States Geological Survey (USGS) quadrangle map (Freeland, 1989)
- United States Fish and Wildlife Service (USFWS) Draft National Wetlands Inventory (NWI) Map (Freeland, 1989)
- NCDOT aerial photograph of project area
- Soil Survey of Columbus County (Natural Resources Conservation Service (USDA 1990)
- North Carolina Department of Environment and Natural Resources (DENR) basin-wide assessment information (DWQ 2002)

- North Carolina Natural Heritage Program (NHP) files of rare species and unique habitats
- USFWS list of protected and candidate species (USFWS 2003)

Water resource information was obtained from publications posted on the World Wide Web by NCDENR Division of Water Quality (DWQ). Information concerning the occurrence of federally protected species in the project study area was obtained from the USFWS list (USFWS 2003) of protected and candidate species (last updated 29 January 2003), posted on the World Wide Web by the Ecological Services branch of the USFWS office in North Carolina. Information concerning species under state protection was obtained from the NHP database of rare species and unique habitats (NHP 2003). NHP files were reviewed on 29 June 2001 and updated on 23 December 2003 for documented sightings of species on state or federal lists and locations of significant natural areas.

A general field survey was conducted along the proposed project route on 24 July 2001. Biologists conducted an additional field survey on 7 January 2004 for an expanded project study area that included two alternatives. Water resources were identified and their physical characteristics were recorded. For the purposes of this study, a brief habitat assessment was performed within the project study area to include the Waccamaw River overflow. Plant communities and their associated wildlife were identified using a variety of observation techniques, including active searching, visual observations, and identifying characteristic signs of wildlife (sounds, tracks, scats, and burrows). Terrestrial community classifications generally follow Schafale and Weakley (1990) where appropriate and plant taxonomy follows Radford *et al.* (1968). Vertebrate taxonomy follows Rohde *et al.* (1994), Conant *et al.* (1998), the American Ornithologist's Union (2001), Thorpe and Covich (1991), and Webster *et al.* (1985). Vegetative communities were mapped using aerial photography of the project study area. Predictions regarding wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities.

Jurisdictional wetlands, if present, were identified using the three-parameter approach (hydrophytic vegetation, hydric soils, and hydrology) outlined in *U.S. Army Corps of Engineers Wetlands Delineation Manual* (DOA, 1987). Wetlands were classified based on Cowardin *et al.* (1979).

The study limits used to evaluate the existing natural resources were approximately 4,600 feet in length and 250 feet in width, which equates to an area of approximately 26.4 acres.

B. Physiography and Soils

The project study area lies in the southeastern portion of North Carolina within the Coastal Plain physiographic province. Elevation in the project study area is approximately 30 feet (National Geodetic Vertical Datum, 1929). The project vicinity is rural in nature with flat topography and gentle slopes from uplands to

wide hardwood swamps. Almost all of the surrounding area of the bridge is wooded swampland used for timber logging.

Information about soils in the project study area was taken from the *Soil Survey of Columbus County, North Carolina* (USDA 1990). Two hydric soil-mapping units (Lumbee fine sandy loam and Muckalee sandy loam) and one non-hydric soil-mapping unit that may contain inclusions (Johns fine sandy loam) are within the project study area (USDA 1991).

- **Muckalee sandy loam, frequently flooded (Mk)** is mapped throughout the project study area on both sides of NC 130. This poorly drained soil is on floodplains of shallow meandering streams and has a seasonal high water table of 0.5-1.5 feet below the surface. Slopes are less than 2 percent. Wetness and flood hazard limit the use of these areas.

- **Johns fine sandy loam (Jo)** is mapped on both sides of NC 130 at the northern project terminus and adjacent the east side of NC 130 near the southern project terminus. This moderately well drained to somewhat poorly drained soil is on stream terraces of the Waccamaw River and has a seasonal high water table of 1.5-3.0 feet below the surface. This soil is subject to rare flooding and its use limited somewhat by wetness and seepage.

- **Lumbee fine sandy loam (Lu)** is mapped in one small area east of NC 130 at the southern project terminus. This poorly drained soil is on smooth flats and in shallow depressions on stream terraces of the Waccamaw River and the seasonal high water table is at or near the surface. Wetness and flood hazard limit the use of these areas.

Site index is a measure of soil quality and productivity. The index is the average height, in feet, that dominant and co-dominant trees of a given species attain in a specified number of years (typically 50). The site index applies to fully stocked, even-aged, unmanaged stands. The soils in the project study area have the following site indices:

- The Muckalee soils have a site index of 90 for sweetgum (*Liquidambar styraciflua*), 90 for loblolly pine (*Pinus taeda*), 90 for slash pine (*Pinus elliottii*), 90 for water oak (*Quercus nigra*), 85 for green ash (*Fraxinus pennsylvanica*), and 100 for eastern cottonwood (*Populus deltoides*).

- The Johns soils have a site index of 86 for loblolly pine, 90 for sweetgum, and 86 for longleaf pine (*Pinus palustris*).

- The Lumbee soils have a site index of 94 for loblolly pine.

C. Water Resources

This section contains information concerning water resources likely to be impacted by the proposed project. Water resources assessments include the physical characteristics likely to be impacted by the proposed project (determined by field

survey), best usage classifications, and water quality aspects of the water resources.

Waters Impacted

The project study area is located within sub-basin 030757 of the Lumber River Basin (DWQ 2002, DWQ 2004a) and is part of USGS hydrologic unit 03040206 (USGS 1974). The Waccamaw River originates approximately 10 miles north of the project study area from Lake Waccamaw and flows through River Swamp, Boggy Swamp, Gum Swamp, and Simmons Bay; where the project is located. Eventually the Waccamaw River empties into the Pee Dee River approximately 10 miles southwest of the project study area. The drainage area at the bridge crossing is approximately 88 acres (0.14 square miles).

The project study area is located in the broad Waccamaw River floodplain, approximately 3,600 feet west of the Waccamaw River. Within the project study area, a large pool (Waccamaw River overflow) is located under and west of the bridge **(see Figure 2)**. Severe flooding and erosion during Hurricane Floyd created the pool. The pool is connected to large roadside canals and floodplain swamp but is not connected to any freely flowing streams. The pool and canals have well vegetated banks 6 feet high and widths of about 50 feet. The pool has no aquatic vegetation.

The depth of the water in the roadside canals ranged from saturated soil to 1.5 feet deep. The substrate is sandy with some organic matter. The depth and substrate of the pool is unknown. The canals are well vegetated with shrubs and herbaceous species.

1. Water Resource Characteristics

Surface waters in North Carolina are assigned a classification by the DWQ that is designed to maintain, protect, and enhance water quality within the state. Best Usage Classifications (BUC) and Stream Index Numbers (SIN) follow Classifications and Water Quality Standards published for each river basin (DEM 1993), as updated through January 2004. The Waccamaw River overflow area is not classified because it is not a stream. The Waccamaw River in the project vicinity [SIN 15 – (1)] has been assigned a BUC of **C Sw** from its source at the dam at Lake Waccamaw to NC 904 (DEM 1993, DWQ 2004a).

Class **C** waters are freshwaters protected for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation is any activity involving human body contact with water on an infrequent or incidental basis (DEM 1996). The **Sw** designation refers to the swampy low flow, low oxygen nature of the stream. There are no restrictions on watershed development activities (DEM 1996).

No waters classified as High Quality Water (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occurs within 1.0 mile of the project study area (DWQ 2004a). The Waccamaw River overflow within the project

study area has not been listed as an impaired water according to the 303(d) list (DWQ 2002).

The project study area is in a forested, largely undeveloped watershed. Small areas of agriculture and residences are within the watershed. Excavated canals and a pool, a clear-cut on the north side of the road north of the bridge, and a maintained powerline right of way beside the road were disturbances to the landscape observed in the immediate vicinity. Potential threats to stream quality in this area are forestry operations that would result in increased soil erosion.

Basin-wide water quality assessments are conducted by the Environmental Sciences Branch of the DWQ. The program has established monitoring stations for sampling selected benthic macroinvertebrates, which are known to have varying levels of tolerance to water pollution. An index of water quality can be derived from the number of taxa present and the ratio of tolerant to intolerant taxa. Streams can then be given a bioclassification ranging from Poor to Excellent.

There are no monitoring stations on the Waccamaw River overflow area, however there is a monitoring station on the Waccamaw River where it passes under NC 130, approximately 2 miles downstream from the project site. This site was sampled in September of 1997 and was classified as Good-Fair, and in 2001 was classified as Good (DWQ 2002).

Discharges that enter surface waters through a pipe, ditch, or other well-defined point of discharge are broadly referred to as "point sources." Wastewater point source discharges include municipal (city or county) Waste Water Treatment Plants (WWTP), industrial WWTP, small domestic wastewater treatment plants serving schools, commercial offices, residential subdivisions, and individual homes (DWQ 2004b). Point source discharges in North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program administered by the DWQ. Point source discharges must apply for and obtain an NPDES permit to discharge.

There are no permits issued to discharge in the Waccamaw River overflow area. There are two permits to discharge into Waccamaw River tributaries upstream of the project study area. The Town of Lake Waccamaw WWTP holds permit NC0021881 to discharge domestic-municipal waste into an unnamed tributary of Bogue Swamp, approximately 11 miles upstream of the project area. The Columbus County school system Old Dock Elementary School holds permit NC0043745 to discharge domestic-school waste [0.005 million gallons per day (mgd)] into an unnamed tributary of Gum Swamp Run, approximately 3 miles upstream of the project study area.

2. Anticipated Impacts to Water Resources

Any action that affects water quality can adversely affect aquatic organisms. Temporary impacts during the construction phases may result in long-term impacts to the aquatic community. In general, replacing an existing structure in the same location with an off-site detour is the preferred environmental approach. Bridge

replacement on a new alignment results in more severe impacts, and physical impacts are incurred at the point of bridge replacement.

Project construction may result in the following impacts to surface water resources:

- Increased sediment loading and siltation as a consequence of watershed vegetation removal, erosion, and/or construction.
- Decreased light penetration/water clarity from increased sedimentation.
- Changes in water temperature with vegetation removal.
- Changes in the amount of available organic matter with vegetation removal.
- Increased concentration of toxic compounds from highway runoff, construction activities and construction equipment, and spills from construction equipment.
- Alteration of water levels and flows as a result of interruptions and/or additions to surface and groundwater flow from construction.

Construction impacts may not be restricted to the communities in which the construction activity occurs, but may also affect downstream communities. Efforts will be made to ensure that no sediment leaves the construction site. NCDOT's *Best Management Practices for the Protection of Surface Waters* will be implemented, as applicable, during the construction phase of the project to ensure that no sediment leaves the construction site.

3. Impacts Related to Bridge Demolition and Removal

No adverse long-term impacts to the pool, roadside canals or associated floodplain swamp are expected to result from the alternatives being considered. The proposed bridge replacement will allow for continuation of present surface water overflow within the existing canals, thereby protecting the integrity of the Waccamaw River floodplain.

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled: *Pre-Construction Guidelines for Bridge Demolition and Removal, Policy: Bridge Demolition and Removal in Waters of the United States,* and *Best Management Practices for Bridge Demolition and Removal.*

The superstructure for Bridge No. 25 consists of a reinforced concrete deck on continuous I-beams. The substructure consists of end bents, bents and timber caps on timber piles. The bridge has 3 spans and totals approximately 77 feet in length. There is the potential for the concrete deck to be dropped into waters of the United States during demolition and removal. The maximum resulting temporary fill associated with the removal of the bridge is approximately 31.8 cubic yards.

The Waccamaw River overflow area in the vicinity of the proposed project is not classified as surface waters; therefore no restrictions are imposed on watershed development activities. The North Carolina Wildlife Resources Commission

(WRC) has identified the Waccamaw River Overflow as having a substantial fishery for sunfish in the project area. An in-stream work moratorium will be in effect from April 1st to June 30th to minimize impacts to spawning sunfish. Therefore, Case 2 of the BMP applies to the proposed replacement of Bridge No. 25 over the Waccamaw River Overflow.

The substrate in the project study area is sand and organic matter. Due to lack of stream flow through the overflow area a turbidity curtain is not recommended.

D. Biotic Resources

1. Plant Communities

Distribution and composition of plant communities throughout the project study area reflect landscape level variations in topography, soils, hydrology, and past and present land use practices. When appropriate, the plant community names have been adopted from the NHP classification system (Schafale and Weakley 1990) and the descriptions written to reflect local variations within the project study area. Six plant terrestrial communities were identified within the project study area: maintained roadside, powerline right-of-way, scrub-shrub woodland, canal wetland, swamp forest, and pine plantation.

Maintained Roadside - This community covers the area along the road shoulders and the fill banks in the project study area. The approximate width is 20 feet from the edge of pavement. Species in this community include fescue grass (*Festuca* sp.), blackberry (*Rubus argutus*), and trumpet creeper (*Campsis radicans*).

Powerline right-of-way - The powerline right-of-way is located to the east of NC 130 and is approximately 70 feet wide. This area is maintained in a low shrubby state and is predominantly in wetlands. The extreme northern end of the powerline right-of-way is upland. The dominant species are button bush (*Cephalanthus occidentalis*), bald cypress (*Taxodium distichum*), silverling (*Baccharis halimifolia*), and red maple (*Acer rubrum*). Herbaceous species include royal fern (*Osmunda regalis*), dog fennel (*Eupatorium capillifolium*), bullrush (*Scirpus cyperinus*), and St. John's wort (*Hypericum fasciculatum*).

Scrub-Shrub Woodland - The scrub-shrub woodland community is located west of the canal wetland in the project study area. A loblolly pine plantation is located to the west of this community just outside of the project area. Most of the area is on a dry sand ridge with an overgrown jeep road. Loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), red maple, and sweetbay (*Magnolia virginiana*) are the dominant species. Herbaceous species include dogfennel, goldenrod (*Solidago* sp.), and soft rush (*Juncus effusus*).

Canal Wetland - The canal wetland community occupies the bottom of the large canals adjacent to NC 130. This is a disturbed community dominated by shrubs and small trees. Species include buttonbush, bald cypress, titi (*Cyrilla racemiflora*), and red maple. Herbaceous species include giant cane (*Arundinaria*

gigantea), waterleaf (*Hydrolea quadrivalvis*), and cinnamon fern (*Osmunda cinnamomea*).

Swamp Forest - The swamp forest community is located east of NC 130 outside of the powerline right-of-way throughout the project study area. Mature hardwoods dominate this wetland community. Overstory species include swamp tupelo (*Nyssa aquatica*) and bald cypress. The sub-canopy is composed of red maple and buttonbush. Herbaceous species include royal fern, cinnamon fern, meadow beauty (*Rhexia mariana*), and beakrush (*Rhynchospora macrostachya*).

Pine Plantation - The pine plantation community is located east of NC 130 outside of the powerline right-of-way in the center of the project study area. Areas designated as pine plantation are characterized by a predominance (greater than 80 percent cover) of planted pines in the canopy. This community contains a mono-typic canopy of loblolly pine. Shrub species in this community include sweetgum, northern red oak (*Quercus rubra*), blackgum (*Nyssa sylvatica*), and wax myrtle. Ground cover species includes common greenbrier (*Smilax rotundifolia*). This community is not described by Schafale and Weakley (1990).

2. Wildlife

The project study area was visually surveyed for signs of terrestrial and aquatic wildlife. Little evidence of wildlife was observed during the field effort. The project study area is rural in nature and is surrounded by a state maintained highway, maintained roadside, powerline right-of-way, scrub-shrub woodland, canal wetland, swamp forest, and pine plantation areas. The swamp forest and pine plantation provide cover and limited food for many species of wildlife. Other expected wildlife species are those adapted to ecotones between maintained roadsides and powerline rights-of-way and adjacent forested areas.

Pine warbler (*Dendroica pinus*), eastern towhee (*Pipilo erythrophthalmus*), downy woodpecker (*Picoides pubescens*), and Carolina wren (*Thryothorus ludovicianus*) were heard or observed within the project study area. Avifaunal species expected to occur in the swamp forest include barred owl (*Strix varia*), great blue heron (*Ardea herodias*), prothonotary warbler (*Protonotaria citrea*), Louisiana waterthrush (*Seiurus motacillo*), and white-eyed vireo (*Vireo griseus*). Other avifaunal species expected to occur within the project study area include American crow (*Corvus brachyrynchos*), American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), and blue jay (*Cyanocitta cristata*).

No mammals were observed within the project study area. Mammal species expected to occur within the project study area include white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), gray fox (*Urocyron cinereoargenteus*), gray squirrel (*Sciurus carolinensis*), and southeastern shrew (*Sorex longirostris*). Other species that may use the swamp forest and pine plantation include possibly bobcat (*Felis rufus*).

No reptiles were observed within the project study area. Common reptiles expected to occur within the project study area include eastern box turtle (*Terrapene carolina*), eastern garter snake (*Thamnophis sirtalis*), northern black racer (*Coluber constrictor*), black rat snake (*Elaphe obsoleta*), southern ringneck snake (*Diadophis punctatus*), and ground skink (*Scincella lateralis*). No terrestrial or arboreal amphibians were observed within the project study area. Common terrestrial or arboreal amphibians expected to occur within the project study area include American toad (*Bufo americanus*), southern toad (*Bufo terrestris*), and spring peeper (*Pseudacris crucifer*).

3. Aquatic Communities

Within the project study area, the only aquatic community is the large pool (Waccamaw River overflow) located under and west of the bridge. On the day of the site visit, the water was opaque. The pool is not connected by surface water to the Waccamaw River or any of its tributaries.

The Waccamaw River overflow area is likely not inhabited by a diverse fish community due to the small, isolated nature of the surface waters. Mosquito fish (*Gambusia holbrooki*) and bullfrogs (*Rana catesbiana*) were observed near the bridge.

4. Anticipated Impacts to Biotic Communities

Terrestrial Communities – Potential impacts to plant communities are based on the approximate area of each plant community within the proposed right of way and temporary construction limits. Terrestrial communities in the project study area will be impacted permanently by project construction from clearing and paving. Table 2 describes the potential impacts to terrestrial communities by habitat type. Plant community mapping has been provided on an aerial photograph **(Figure 7)**.

Table 2
Potential Impact to Terrestrial Communities

	Area of Impact in Acres (Hectares)		
	Alternate A		*Alternate B*
Community	**Temporary**	**Permanent**	**Permanent**
Disturbed Roadside	0.00 (0.00)	1.93 (0.78)	1.91 (0.77)
Powerline Right-of-Way	1.81 (0.73)	1.71 (0.69)	0.60 (0.24)
Scrub-Shrub Woodland	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Canal Wetland	0.00 (0.00)	0.99 (0.40)	3.10 (1.25)
Swamp Forest	0.06 (0.02)	0.00 (0.00)	0.00 (0.00)
Pine Forest	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Total Impact	**1.87 (0.75)**	**4.63 (1.87)**	**5.61 (2.26)**

Destruction of natural communities along the project alignment will result in the loss of foraging and breeding habitats for the various animal species that utilize the area. Animal species will be displaced into surrounding communities. Adult birds, mammals, and some reptiles are mobile enough to avoid mortality during construction. Young animals and less mobile species, such as many amphibians,

may suffer direct loss during construction. The plants and animals that are found in the upland communities are generally common throughout central North Carolina.

Impacts to terrestrial communities, particularly in locations having steep to moderate slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. Construction impacts may not be restricted to the communities in which the construction activity occurs, but may also affect downstream communities. Efforts should be made to ensure that no sediment leaves the construction site.

Aquatic Communities - Impacts to aquatic communities include fluctuations in water temperatures as a result of the loss of riparian vegetation. Shelter and food resources, both in the aquatic and terrestrial portions of these organisms' life cycles, will be affected by losses in the terrestrial communities. The loss of aquatic plants and animals will affect terrestrial fauna, which rely on them as a food source.

Temporary and permanent impacts to aquatic organisms may result from increased sedimentation. Aquatic invertebrates may drift downstream after construction and recolonize the disturbed area once it has been stabilized. Sediments have the potential to affect fish and other aquatic life in several ways, including the clogging and abrading of gills and other respiratory surfaces, affecting the habitat by scouring and filling of pools and riffles, altering water chemistry, and smothering different life stages. Increased sedimentation may also cause decreased light penetration through an increase in turbidity.

Wet concrete should not come into contact with surface water during bridge construction. Potential adverse effects can be minimized through the implementation of NCDOT *Best Management Practices for Protection of Surface Waters.*

E. Special Topics

1. "Waters of the United States": Jurisdictional Issues

Surface waters within the Waccamaw River overflow areas are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "Waters of the United States" (33 CFR 328.3)

Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) are defined by the presence of three primary criteria; hydric soils, hydrophytic vegetation, and evidence of hydrology within 12 inches of the soil surface for a portion (12.5) percent of the growing season (DOA 1987).

Wetland Descriptions - Jurisdictional wetlands in the project study area are primarily palustrine in nature, as defined in Cowardin *et al.* (1979), and as identified on NWI mapping. Palustrine systems include all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses and all such

wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5% (Cowardin *et al.* 1979). Some wetland systems are defined as palustrine but are hydrologically influenced by adjacent streams through periodic overbank flooding and are considered riparian wetlands. The riparian wetlands are commonly referred to as riverine wetlands, not to be confused with the Riverine system of Cowardin *et al* (1979). Non-riparian wetlands are not typically influenced by overbank flooding and are commonly referred to as non-riverine wetlands.

The wetlands within the project study area are large in areal extent and function as palustrine wetlands. These jurisdictional areas are associated with the Waccamaw River overflow and the large wetlands within the Waccamaw River floodplain **(see Figure 6).**

Wetland Classifications - Wetland systems vary in vegetative composition, depending in part on hydrological regime and site-specific disturbances. Three wetland types were identified (palustrine forested, palustrine emergent, and palustrine unconsolidated bottom) and are discussed below.

Palustrine forested (PFO) - These areas are identified as forested jurisdictional wetlands, which are palustrine in nature. The PFO community within the project study area is located within the swamp forest community type. Forested broad-leaved deciduous forests located within the project study area are defined as palustrine by Cowardin *et al.* (1979). These wetlands can potentially act as major receptors of upland runoff and are expected to have high value for sediment stabilization, sediment/toxicant retention, and nutrient removal/transformation purposes. These systems also act as buffers during times of flooding by reducing runoff rates, thereby increasing absorption and infiltration (high value for flood flow alteration). Wildlife habitat value in these deciduous systems is also expected to be high. Vegetation diversity and aquatic affiliation offer vital components (food, water, and cover) for high wildlife value.

Palustrine emergent (PEM) – These areas are identified as palustrine emergent wetland systems. Within the project study area, these systems typically have persistent vegetation and are found in low landscape depressions or partially excavated areas where woody shrubs and trees cannot establish or are kept from establishing by routine maintenance or disturbance. Within the project study area, these emergent communities are limited to the maintained power line right of way. Wetland values such as sediment stabilization, sediment/toxicant retention, nutrient removal/transformation, and flood flow alteration have largely been negated by the nature of the community (*i.e.,* disturbed and small size). Although this wetland type may provide occasional habitat for passerine birds and breeding habitat for some amphibians, wildlife habitat value is considered minimal.

Palustrine unconsolidated bottom (excavated) (PUBx) – These areas are identified as jurisdictional wetlands that are palustrine in nature and consist of man-made (excavated) canals and the Waccamaw River overflow. Unconsolidated bottoms are characterized by the lack of large stable surfaces for plant and animal attachment. These communities are usually found in areas with

lower energy than rock bottoms and may be very unstable. Within the project study area, these canal communities are located along the road shoulders of NC 130, and are dominated by species that include buttonbush, bald cypress, titi (*Cyrilla racemiflora*), and red maple. Herbaceous species include giant cane (*Arundinaria gigantea*), waterleaf (*Hydrolea quadrivalvis*), and cinnamon fern (*Osmunda cinnamomea*). Although this wetland type may provide occasional habitat for passerine birds and breeding habitat for some amphibians, wildlife habitat value is considered minimal.

Characteristics of Wetlands and Surface Waters - Jurisdictional wetlands occur within the project study area and may be impacted by project construction. Wetlands are present on both sides of NC 130 along the entire project study area. These powerline right-of-way wetlands, canal wetlands, and swamp forest wetlands are described in the previous section under Biotic Resources. The Waccamaw River Overflow area does not meet the definition of surface waters, but is part of the wetland area.

2. Potential Impacts to Waters of the United States

Temporary and permanent impacts to wetlands and surface waters are estimated based on the amount of each jurisdictional area within the project limits. Permanent impacts are those areas that will be in the construction limits and/or the proposed right-of-way of the new structure and approaches. Temporary impacts include those impacts that will result from temporary construction activities outside of the proposed right-of-way and/or those associated with staging areas and/or temporary detours. A large amount of fill material will be required for the temporary on-site detour. Any construction activities involving the potential use of borrow and waste sites must be located outside the 400 foot buffer areas established for jurisdictional areas. Temporary impacts will be restored to their original condition after the project has been completed. Potential wetland and surface water impacts are included in Table 3.

Table 3
Potential Impacts to Jurisdictional Areas

Wetlands			
	Area of Potential Impact [Acres (Hectares)]		
Wetland #	Alternate A		Alternate B
	Permanent	Temporary	Permanent
W4A (PUB)	0.02 (0.007)	0.00 (0.000)	0.10 (0.040)
W4B (PUB)	1.00 (0.407)	0.00 (0.000)	3.00 (1.214)
W4C (PEM)	0.48 (0.195)	1.05 (0.424)	0.00 (0.000)
W4C (PFO)	0.00 (0.000)	0.06 (0.023)	0.00 (0.000)
W5 (PEM)	0.06 (0.026)	0.05 (0.019)	0.04 (0.016)
Total Impact	**1.56 (0.635)**	**1.16 (0.466)**	**3.14 (1.270)**

Potential Impacts to Jurisdictional Wetlands - Alternate A has the potential to permanently impact approximately 1.56 acres (0.635 ha) [1.16 acres (0.466 ha) of temporary impacts] of wetlands opposed to Alternate B's potential to permanently

impact 3.14 acres (1.270 ha) of wetlands. Avoidance and minimization of wetland impacts are preferred, but may not be possible due to the constraints of project design, surrounding landscape features, and existing infrastructure. A portion of the wetlands in Alternate A are within the maintained powerline right-of-way. Complete avoidance of all wetlands would be preferred but utilizing the already disturbed areas associated with the powerline during construction would lessen impacts to the portion of wetland that is forested. It is recommended that palustrine forested (PFO) wetlands have the least amount of impacts during construction. Alternate B (replacement on new alignment) has the potential to permanently impact more wetlands.

3. Permits

Section 404 of the Clean Water Act - In accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344), a permit is required from the USACE for projects of this type for the discharge of dredged or fill material into "Waters of the United States". The USACE issues two types of permits for these activities. A general permit may be issued on a nationwide or regional basis for a category of categories of activities when: those activities are substantially similar in nature and cause only a minimal individual or cumulative environmental impacts, or when the general permit would result in avoiding unnecessary duplication of regulatory control exercised by another Federal, state, or local agency provided that the environmental consequences of the action are individually and cumulatively minimal. If a general permit is not appropriate for a particular activity, then an individual permit must be utilized. Individual permits are authorized on a case-by-case evaluation of a specific project involving the proposed discharges.

It is anticipated that this project will fall under Nationwide Permit 23, which is a type of general permit. Nationwide Permit 23 is relevant to approved Categorical Exclusions. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency and that the activity is "categorically excluded" from environmental documentation because it is included with a category of actions which neither individually nor cumulatively have a significant effect on the environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit. However, final permit decisions are left to the discretionary authority of the USACE.

Section 401 Water Quality Certification - A 401 Water Quality Certification, administered through the DWQ, will also be required. This certification is issued for any activity, which may result in a discharge into waters for which a federal permit is required. According to the CDQ, one condition of the permit is that the appropriate sediment and erosion control practices must be utilized to prevent exceedances of the appropriate turbidity water quality standard.

4. Mitigation Evaluation

Because this project will likely be authorized under a Nationwide Permit, mitigation for impacts to surface waters may or may not be required by the USACE. In accordance with the Division of Water Quality Wetland Rules [15A NCAC 2H .0506 (h)] "Fill or alteration of more than one acre of wetlands will require compensatory mitigation; and fill or alteration of more than 150 linear feet of streams may require compensatory mitigation." If the final length of stream impact is greater than 150 linear feet, compensatory mitigation may be required.

Avoidance - Due to the location of wetlands within the project study area, avoidance of all jurisdictional impacts may not be possible. Avoidance of specific wetlands may be accomplished by utilizing the existing maintained/disturbed land and powerline rights-of-way in both alternatives. Avoidance of all wetlands and streams may not be practicable. Bridging the Waccamaw River overflow and its associated wetlands from high-ground to high-ground would avoid additional impacts to palustrine unconsolidated bottom (excavated) (PUBx) and palustrine forested (PFO) wetlands.

Minimization - The approved jurisdictional delineation within this project study area will be utilized to minimize wetland impacts when choosing a corridor and designing the proposed alignment within the project study area. Reduction of fill slopes at wetland crossings will reduce unnecessary wetland impacts. Due to the sandy soils found in the project area, 3:1 side slopes are the minimum that will be accepted at this site. Bridging of the Waccamaw River overflow from high-ground to high-ground will further satisfy minimization requirements. Utilizing the plant community mapping will minimize impacts to wetlands, terrestrial and aquatic fauna, and natural vegetative communities.

Mitigation - Compensatory mitigation will likely be required for all unavoidable losses after all practical avoidance and minimization options are utilized. Limited opportunities are available for compensatory mitigation in the project vicinity for in-kind mitigation.

F. Rare and Protected Species

1. Federally Protected Species

Plant and animal species with a federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. seq.)

The USFWS lists 6 species under federal protection for Columbus County as of 5 February 2003 (USFWS 2003). These species are listed in Table 4.

Table 4
Species Under Federal Protection in Columbus County

Common Name	Scientific Name	Federal Status	Biological Conclusion
Vertebrates			
Shortnose sturgeon	*Acipenser brevirostrum*	E	No Effect
American alligator	*Alligator mississippiensis*	T (S/A)	N/A
Waccamaw silverside	*Menidia extensa*	T	No Effect
Red-cockaded woodpecker	*Picoides borealis*	E	No Effect
Vascular Plants			
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E*	No Effect
Cooley's meadowrue	*Thalictrum cooleyi*	E	No Effect

E - Endangered-A species that is threatened with extinction throughout all or a significant portion of its range.
T - Threatened-A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
T (S/A) Similarity of Appearance-A species that is listed as threatened due to similarity of appearance with other rare species.
* Historic Record – the species was last observed in the county more than 50 years ago.

***Alligator mississippiensis* (American alligator)** **Threatened (Similar Appearance)**
Family: Alligatoridae
Federally Listed: 1967

Male alligators may reach lengths of 15 feet while females tend to only reach 6 feet. These animals have a large, slightly rounded body with thick limbs, a broad head, and a very powerful tail used for propulsion in the water as well as for defense. These reptiles frequent wetland areas and are the top predator of the food chain. Alligators will eat just about anything but prefer fish, turtles, and snails. Small mammals that venture to the water's edge may also be eaten. Young alligators mostly feed on insects, crustaceans, snails, and fish.

The alligator's greatest value to the wetland is the "gator holes" created by adults as a resting area. After removing vegetation with its mouth an adult gator will thrash about in the depression to create a hole that will trap and retain water during rain events. These holes serve as refugia and watering areas for fish, birds, turtles, snakes and many other animals. Alligators may expand their holes by digging underneath an overhanging bank up to 20 feet away from the water body. These areas are then expanded and used by the animals to survive dry seasons and winters.

A search of the NHP database found no recorded occurrences of American alligator within the project vicinity. The roadside canals and Waccamaw River floodplain may provide suitable habitat during periods of high water. The mobile nature of this species should protect it from any direct impacts but some habitat may be lost. Although habitat is present, the federal listing for the alligator is due to "Similarity of Appearance" and does not afford it any special protection.

Biological Conclusion: **N/A**

***Picoides borealis* (Red-cockaded woodpecker)** **Endangered**

Vertebrate Family: Picidae
Federally Listed: 1970

The red-cockaded woodpecker is federally listed as Endangered. It is a small to medium sized bird about 8 inches long, with a wingspan of 13.8 to 14.96 inches. The back and top of the head are black. The cheek is white. Numerous small white spots arranged in horizontal rows give a ladder-back appearance. The chest is dull white with small black spots on the side. Males and females look alike except males have a small red streak above the cheek.

Among woodpeckers, the red-cockaded has an advanced social system. They live in a group termed a "clan". The clan may have from two to nine birds, but never more than one breeding pair. The other adults are usually males and are called helpers. The helpers are usually the sons of the breeding male and can be from 1 to 3 years old. The helpers assist in incubating eggs, feeding young, making new cavities, and defending the clans' area from other red-cockaded woodpeckers.

Roosting cavities are excavated in living pines, and usually in those that are infected with a fungus producing red-heart disease. A clan nests and roosts in a group of cavity trees called a colony. The colony may have one or two cavity trees to more than 12, but only one clan uses a cavity. In most colonies, all the cavity trees are within a circle about 1,500 feet wide. Open stands of pines with a minimum age of 80 to 120 years provides suitable nesting habitat. Longleaf pines are the most commonly used, but other species of southern pine are also acceptable. Dense stands of pines, or stands that have a dense hardwood understory are avoided. Foraging habitat is provided in pine and pine hardwood stands 30 years or older with foraging preference for pine trees 10 inches or larger in diameter. The woodpeckers diet consists mainly of insects, which includes ants, beetles, wood-boring insects, and caterpillars.

Biological Conclusion: **No Effect**

A search of the NHP files found no occurrences of the red-cockaded woodpecker in the project vicinity. A field survey of the project study area did not reveal any mature pine habitat necessary for this species. It can be concluded that the project will not impact this endangered species.

***Acipenser brevirostrum* (Shortnose sturgeon)** **Endangered**

Vertebrate Family: Acipenseridae
Federally Listed: 1967

The shortnose sturgeon is a medium-sized [17 to 35 in] fish, with a relatively short snout and a wide mouth. Its body is somewhat elongate and pentagonal in cross section and armored with five bony plates (scutes) and dorsal and anal fins far back on the body.

Shortnose sturgeon habitat includes rivers, estuaries, and the sea, but populations are confined mostly to natal rivers and estuaries (NMFS 1998). They typically inhabit lower sections of larger rivers and coastal waters along the Atlantic Coast.

It may spend most of its year in brackish or salt water and move into fresh water only to spawn in spring or fall (Gilbert 1989). The ideal spawning habitat for the shortnose sturgeon is faster moving freshwater systems (USFWS 1992). During the fall and winter, an unknown portion of the population appears to leave the estuaries and move short distances into the Atlantic Ocean, but different patterns of movement have been found for different populations. Adults are found in deep water [33 to 66 feet] in the winter and shallow water [6 to 33 feet] in summer. Juveniles are nonmigratory and typically inhabit deep channels of swiftly flowing rivers above the salt wedge. This species is anadromous, spawning in freshwater at a temperature of 48° to 54° F from February to mid-May. Shortnose sturgeons are benthic forgers and prefer areas with soft substrate and vegetated bottoms. Juveniles feed on small crustaceans and insect larvae. Adults in freshwater feed mostly on crustaceans, insect larvae, and mollusks; in estuaries they mainly eat polychaete worms, crustaceans, and mollusks.

Biological Conclusion: **No Effect**

A search of the NHP files found no occurrence of shortnose sturgeon in the project vicinity and no habitat exists within the project study area. It can be concluded that the project will not impact this endangered species.

***Menidia extensa* (Waccamaw silverside)** **Threatened**
Vertebrate Family: Cladoniaceae
Federally Listed: 1987

Waccamaw silversides are slender fish 1.2 to 2.6 inches long with a silvery stripe on the side. The species is endemic to Lake Waccamaw and has only been found outside of the lake after flooding. In the lake it is abundant and forms large schools near the surface.

Spawning peaks in spring during lake warming and females lay their eggs on the sandy bottom. Both sexes mature after the first winter and most individuals die after their first spawning season.

The Waccamaw silverside is listed as threatened because the population's restricted range and short lifespan make it susceptible to rapid extinction. If nutrient overloading in Lake Waccamaw disrupted one spawning season, the population would be jeopardized.

Biological Conclusion: **No Effect**

A search of the NHP database found no occurrences of Waccamaw silverside in the project vicinity. The project is over 10 miles from Lake Waccamaw. It can be concluded that the project will not impact this species.

Thalictrum cooleyi **(Cooley's meadowrue)** **Endangered**
Plant Family: Ranunculaceae
Federally Listed:

Cooley's meadowrue is a perennial herb that grows from 3 to 6 feet tall. In full sun the stems are erect, while under shady conditions they are leaning or trailing on the ground. The small linear leaflets are in groups of three. The flowers are few, small, and have no petals. The sepals may be yellow-white or green.

Flowering occurs in June and fruiting occurs in August and September. The fruits are hard, dry, and small and remain on the plant until October.

Preferred habitat is moist to wet bogs and savannahs kept open by frequent fire or other disturbance. Roadside ditches and powerline rights-of way are also sometimes utilized when moisture and soil conditions are appropriate. The plant is often found in association with tulip poplar, cypress, and/or Atlantic white cedar (Chamaecyparis thyoides).

Biological Conclusion: **No Effect**

A search of the NHP files found no occurrences of Cooley's meadowrue in the project vicinity. A field survey of the project study area did not reveal any suitable habitat for this species. It can be concluded that the project will not impact this endangered species.

Lysimachia asperulaefolia **(Rough-leaved loosestrife)** **Endangered**
Plant Family: Primulacae
Federally Listed: 1987

The rough-leaved loosestrife is a perennial rhizomatous herb, with erect stems 12 to 24 in height. Leaves are unusually sessile, occurring in whorls of 3 or 4. They are broadest at the base [0.3 to 0.8 in wide], entire, and have three prominent veins. The yellow, bisexual flowers are borne on a loose, terminal raceme. The inflorescence usually has five petals with ragged margins near the apex and with dots or streaks. Flowering occurs from late May to early June, and seeds are formed by August. Despite winter dormancy, the plant is easy to recognize in the fall because of the reddish color and distinctive leaf patterns.

The habitat for the rough-leaved loosestrife is generally the ecotone between longleaf pine or oak savannas and wetter, shrubby areas, where moist, sandy, or peaty soils occur and where low vegetation allows abundant sunlight into the herb layer. Fire is the main factor for the suppression of taller vegetation. The rough-leaved loosestrife is associated with six natural community types: low pocosin, high pocosin, wet pine flatwoods, pine savannah, streamhead pocosin, and sandhill seep.

Biological Conclusion: **No Effect**

A search of the NHP files found no occurrences of rough-leaved loosestrife in the project vicinity. A field survey of the project study area did not reveal any suitable

habitat for this species. It can be concluded that the project will not impact this endangered species.

2. Federal Species of Concern

The February 5, 2003 FWS list also includes a category of species designated as "Federal Species of Concern" (FSC).

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Table 5 includes FSC species listed for Columbus County (NHP 2004) and their state classifications. Organisms, which are listed as Endangered (E), Threatened (T), or Special Concern (SC) on the North Carolina Natural Heritage Program list of Rare Plant and Animal Species, are afforded state protection under the State Endangered Species Act of 1987 and the North Carolina Plant Protection and Conservation Act of 1979. However, the level of protection given to state-listed species does not apply to NCDOT activities.

Table 5
Federal Species of Concern in Columbus County

Common Name	Scientific Name	State Status	Habitat Present
Vertebrates			
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Eastern Henslow's sparrow	*Ammodramus henslowii susurrans*	SR	No
Rafinesque's big-eared bat – Coastal Plain subspecies*	*Corynorhinus rafinesquii macrotis*	T	No
Carolina pygmy sunfish	*Elassoma boehlkei*	T	Yes
Waccamaw darter	*Etheostoma perlongum*	T	No
Waccamaw killifish	*Fundulus waccamensis*	SC	No
Southeastern myotis	*Myotis austroiparius*	SC	No
Broadtail madtom*	*Noturus* sp. 1	SC	Yes
Mimic glass lizard*	*Ophisaurus mimicus*	SC	No
Invertebrates			
Waccamaw spike	*Elliptio waccamawensis*	E	No
Yellow lampmussel	*Lampsilis cariosa*	E	No
Waccamaw fatmucket	*Lampsilis fullerkati*	T	No
Townes' clubtail	*Stylurus townesi*	SR	No
Savannah lilliput	*Toxolasma pullus*	E	No
Cape Fear threetooth*	*Triodopsis soelneri*	T	Yes
Vascular Plants			
Savannah indigo-bush	*Amorpha georgiana* var. *confusa*	T	No
Venus flytrap	*Dionaea muscipula*	SR-L, SC	No
Harper's fimbry	*Fimbristylis perpusilla*	T	No
Raven's seedbox	*Ludwigia ravenii*	SR-T	Yes

Common Name	Scientific Name	State Status	Habitat Present
Carolina bogmint	*Macbridea caroliniana*	T	Yes
Large-leaved grass-of-parnassus	*Parnassia grandifolia*	T	No
Pineland plantain	*Plantago sparsiflora*	E	No
Swamp forest beaksedge	*Rhynchospora decurrens*	SR-P	Yes
Grassleaf arrowhead	*Sagittaria graminea* var *weatherbiana*	SR-T	Yes
Spring-flowering goldenrod	*Solidago verna*	SR-L	No
Wireleaf dropseed	*Sporobolus teretifolius sensu stricto*	T	No

Sources: Franklin *et al.*, 2004; LeGrand *et al.*, eds., 2004

Key: E = Endangered - any species whose continued existence is determined to be in jeopardy; T = Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range; SC = Special Concern – any species native or once-native to North Carolina which requires monitoring; SR = Significantly Rare – species which are very rare in North Carolina, generally with 1-100 populations in the state; SR-L = Significantly Rare – Limited – the range of this species is limited to North Carolina and adjacent states; SR-T = Significantly Rare – Throughout – these species are rare throughout their ranges; SR-P = Significantly Rare – Peripheral – species is at the periphery of its range in North Carolina.

* The species was last observed in the county more than 20 years ago.

Marginally suitable habitat is present for Carolina pygmy sunfish, broadtail madtom, Cape Fear threetooth, Raven's seedbox, Carolina bogmint, swamp forest beaksedge, and grassleaf arrowhead. A review of the NHP rare plant files revealed no recorded occurrences of these species within 2 miles of the project study area and no federal species of concern were identified during the field survey.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included or eligible for inclusion in the National Register of Historic Places, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO) in accordance with the Advisory Council's regulations and FHWA procedures.

B. Historic Architecture

In a memorandum dated March 22, 2002, the Deputy State Historic Preservation Officer (SHPO) requested that an architectural historian evaluate Bridge No. 25 for National Register eligibility. In July 2002, Columbus County Bridge No. 25 (built in 1938) was identified in the first phase of the Statewide Historic Bridge Survey as warranting further research as an early example of a rolled stringer bridge. The report stated that the development of the rolled steel stringer type was and example of continuous design principles developed in the mid-twentieth century that achieved a greater economy of material than simple concrete spans of comparable lengths.

Since that time the architectural historians who are conducting the survey have undertaken additional research, visited the site, and compared this bridge to its peers across the state. It is their conclusion that Bridge No. 25 is not eligible for the National Register because it is not among the state's technologically significant examples if the continuous steel stringer bridge types. More than 2,000 steel stringer bridges dating from the 1920s to the 1050s have been identified in the survey. Ten of these were constructed before 1938 and remain intact. With a construction date of the late 1930s, the bridge is beyond the significant period (1920s) in bridge building of the initial application and experimentation with continuous design principles. Furthermore the bridge length is not an impressive application of these principles, with modest span lengths of less than twenty-six feet.

Based on these findings, Bridge No. 25 is not eligible for the National Register because it is an undistinguished example of the most common mid-twentieth-century bridge type in the state and is therefore neither historically or architecturally significant. The SHPO, in a memorandum dates July 8, 2004, stated "For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is not eligible for listing in the National Register of Historic Places." Copies of the SHPO memoranda and NCDOT's Bridge Evaluation are included in the Appendix.

C. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated March 22, 2002, stated "There are no known archaeological sites with in the proposed project area. Based on our knowledge of the area, it is unlikely that any archaeological resources that may be eligible for conclusion in the National Register of Historic Places will be affected by the project. We therefore recommend that no archaeological investigation be conducted in connection with this project." A copy of the SHPO memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safe traffic operations.

The project is considered a Federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.

The replacement of Bridge No. 25 will not have an adverse effect on the quality of the human or natural environment with the use of the current North Carolina Department of Transportation standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

No adverse impact on families or communities is anticipated. Right-of-way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) a review was conducted to determine whether minority of low-income populations were receiving disproportionately high and adverse human health and environmental impacts as a result of this project. The investigation determined the project would not disproportionately impact any minority or-low-income populations. The studied route does not contain any bicycle accommodations, nor is it a designated bicycle route; therefore, no bicycle accommodations have been included as part of this project.

This project has been coordinated with the United States Department of Agriculture, Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland for all land acquisition and construction projects. The proposed project involves replacing the bridge in its existing location. No impacts to prime or locally important farmland are anticipated.

No publicly owned parks or recreational facilities, wildlife and waterfowl refuges, or historic sites of national, state or local significance in the immediate vicinity of the project will be impacted.

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

No adverse effects to air quality are expected to result from this project. This project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis (if applicable), and a project level CO analysis is not required. Since the project is located in an attainment area, 40 CFR Part 51 is not applicable. If vegetation or wood debris is disposed of by open burning, it shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520 and 1990 Clean Air Act Amendments and the National Environmental Policy Act. This evaluation completes the assessment requirements for air quality, and no additional reports are required.

Ambient noise levels may increase during the construction of this project; however this increase will be only temporary and usually confined to daylight hours. There should be no notable change in traffic volumes after this project is complete. Therefore, this project will have no adverse effect on existing noise levels. Noise receptors in the project area will not be impacted by this project. This evaluation completes the assessment requirements for highway noise set forth in 23 CFR Part 772. No additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Environmental Management, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no underground storage tanks (UST) or hazardous waste sites in the project area.

No adverse effect on the overall public is expected. There will be some inconvenience to local travel due to the construction of an onsite temporary detour. Columbus County Emergency Services Department indicates that this project will not substantially impact their response time.

Columbus County is a participant in the National Flood Insurance Program. As shown in the Flood Insurance Rate Map (FIRM) for Columbus County (panel 275 or 350), the proposed project is located in an area within the 100-year flood (Zone AE), and where base flood elevations have been determined **(see Figure 8).** The project is also located in an area in which a Flood Insurance Study (June 3, 1991) was prepared for the unincorporated areas of Columbus County, North Carolina by the Federal Emergency Management Agency (FEMA).

Geotechnical borings for the bridge foundation will be necessary.

Based on the above discussion, it is concluded that no substantial adverse environmental impacts will result from the replacement of Bridge No. 25.

VIII. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process (January 31, 2003) to contact local officials to involve them in the project development with scoping letters and newsletters.

IX. AGENCY COMMENTS

Agency comments are summarized below. Letters from the commenting agencies are included in the Appendix.

1. United States Department of the Interior, Fish and Wildlife Service (USFWS)

   Comment: The Service would like to emphasize our recommendation to conduct additional surveys for Cooley's meadowrue (*Thalictrum cooleyi*) and rough-leaved loosestrife (*Lysimachia asperulaefolia*). Surveys for these two species should be conducted within two years of actual project construction and should be conducted at the appropriate time of year for accurate identification.

   Response: A search of NHP files found no occurrences of Cooley's meadowrue or rough-leaved loosestrife in the project vicinity. A field survey of the project study area did not reveal any suitable habitat for these species. Therefore, it can be concluded that the project will not impact these endangered species.

2. North Carolina Wildlife Resources Commission (NCWRC)

Comment: We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at this site, we recommend an in-water work moratorium from April 1 – June 30 to minimize impacts to spawning sunfish. A mussel survey should be conducted for the Waccamaw spike *(Elliptio waccamawensis)* if the project area is inundated.

Response: The bridge will be replaced by a new bridge. An in-water work moratorium will be in effect from April 1st to June 30th to minimize impacts to spawning sunfish. A mussel survey will be conducted for the Waccamaw spike in inundated areas of the project site within two years of construction.

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[USFWS] U.S. Fish and Wildlife Service. 1989. NWI for Freeland, N.C. 7.5-Minute Topographic Quadrangle.

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[USFWS] U.S. Fish and Wildlife Service. 2003. Endangered, Threatened, and Candidate Species and Federal Species of Concern, by County, in North Carolina: Columbus County. 29 January 2003. Asheville, NC.

[USGS] U.S. Geological Survey. 1989. Freeland, N.C. 7.5-Minute Topographic Quadrangle.

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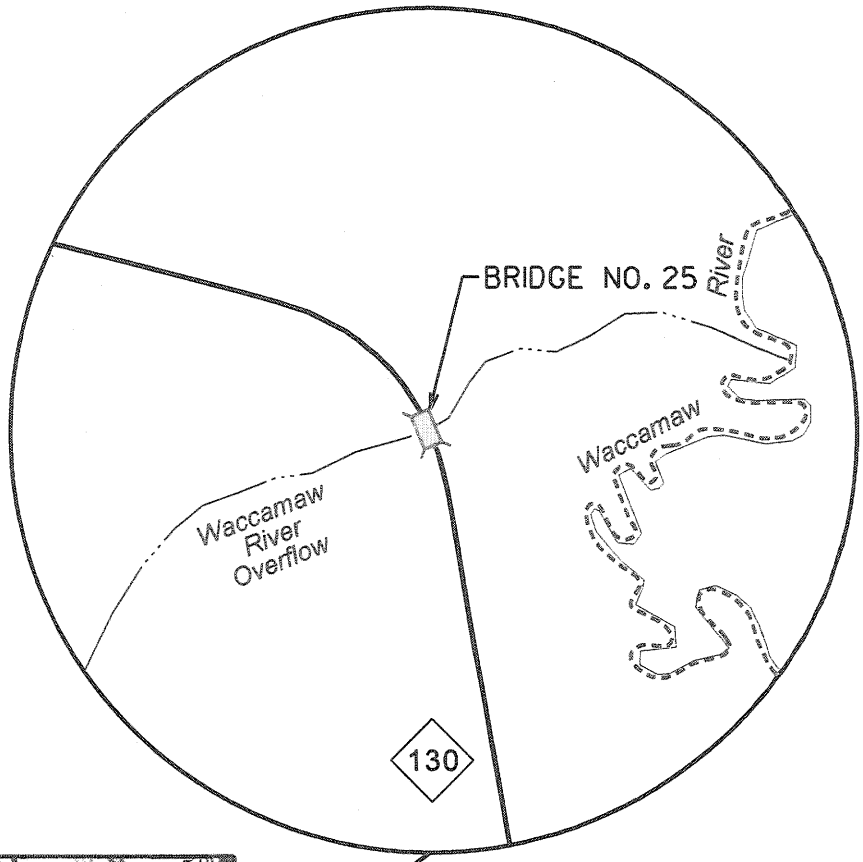
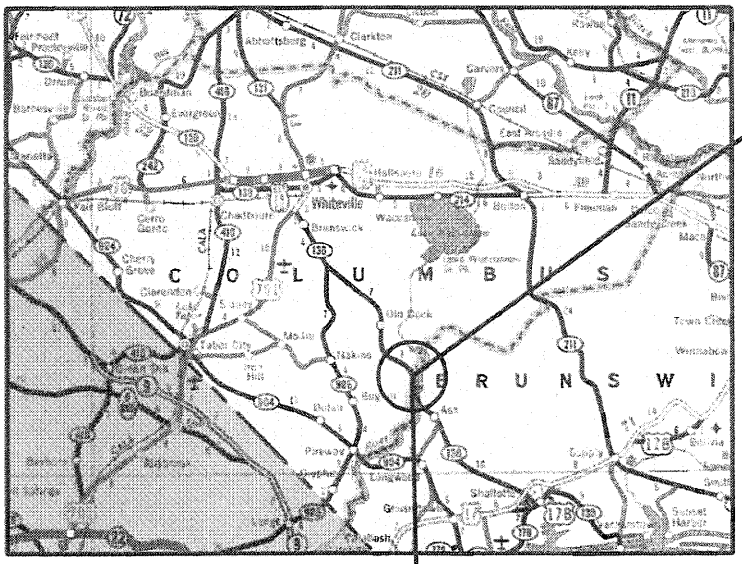
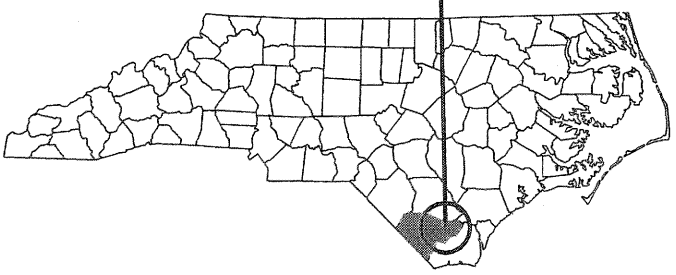
FIGURES

N.T.S.



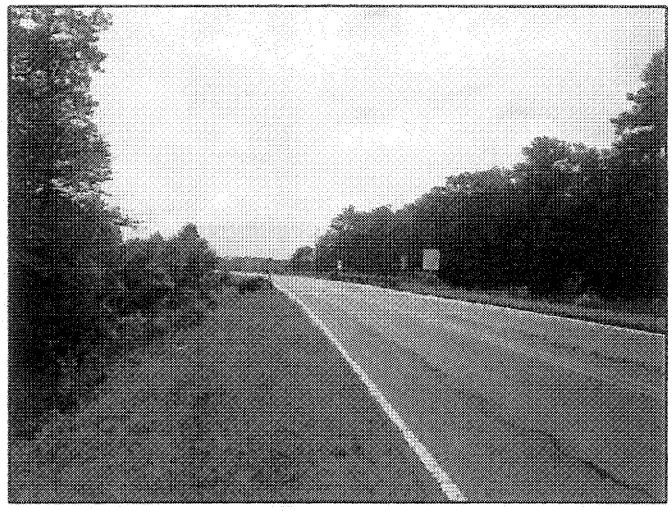




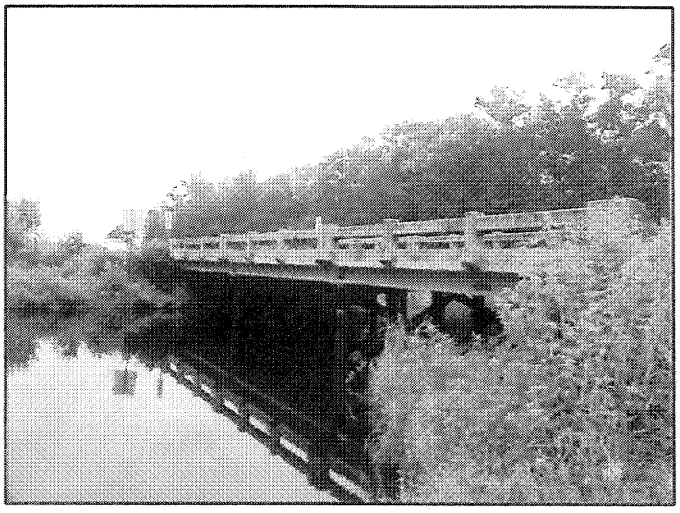
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

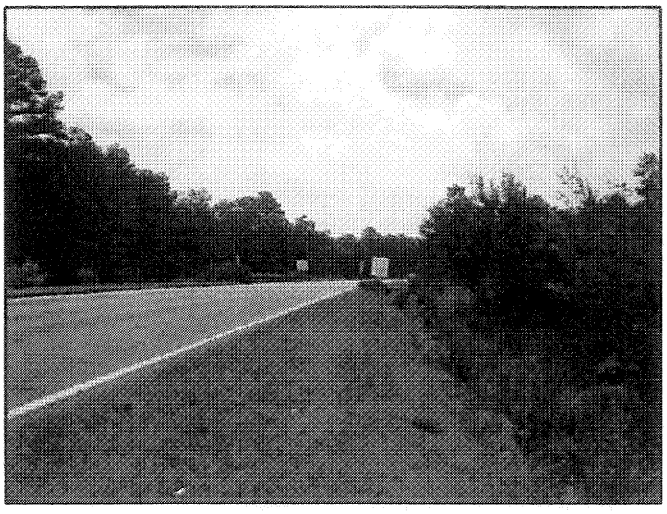
LOCATION MAP
FIGURE 1



NORTHBOUND APPROACH



WEST SIDE OF BRIDGE
(VIEW UPSTREAM)



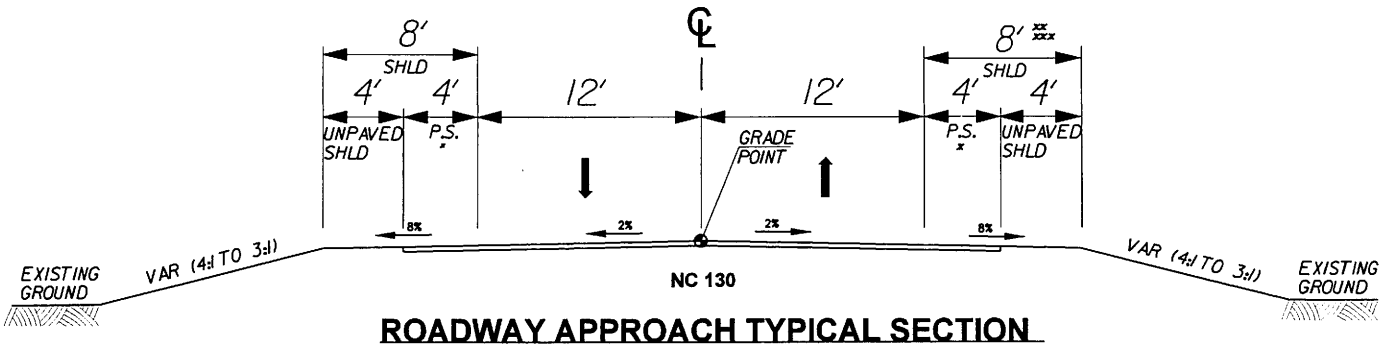
SOUTHBOUND APPROACH

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

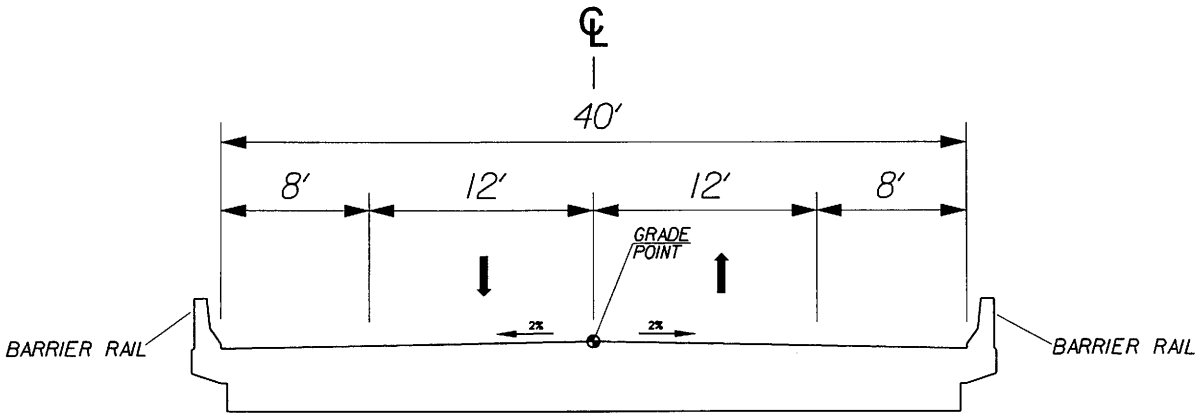
COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

NOT TO SCALE

PROJECT PHOTOGRAPHS
FIGURE 2



ROADWAY APPROACH TYPICAL SECTION



BRIDGE TYPICAL SECTION

x P.S. ------ PAVED SHOULDER

xx ------ 9' WITH 3:1 SLOPE

xxx ------ 13' WITH GUARDRAIL

DESIGN DATA

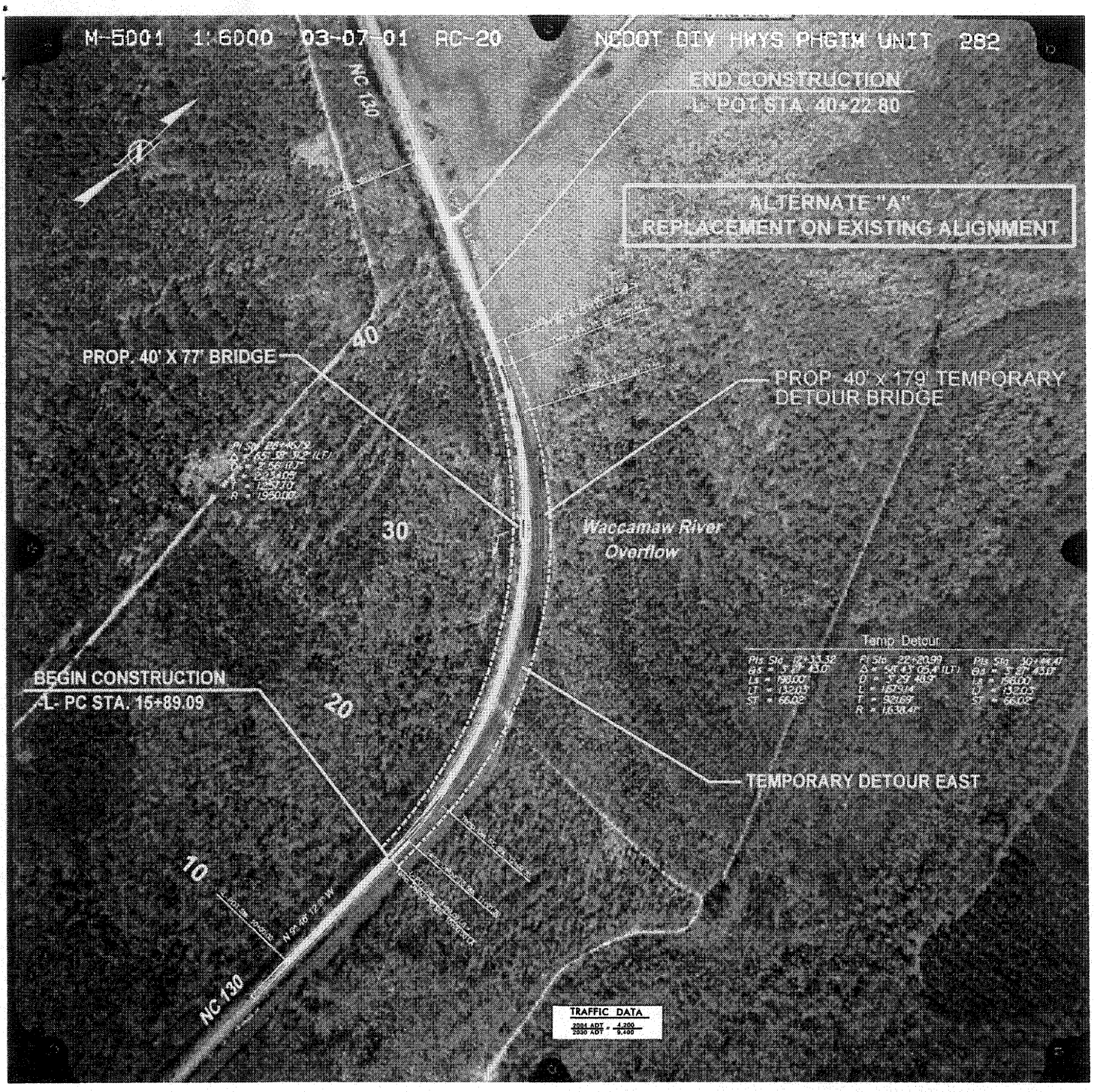
ADT 2004	4,200	
ADT 2030	9,400	
DUAL	3%	
TTST	4%	
DESIGN SPEED	60 mph	
POSTED SPEED	55 mph	
FUNCTIONAL CLASSIFICATION	Rural Minor Arterial	
MIN RADIUS (Se = .06)	1340 ft	
MAX GRADE	3%	
MIN DESIGN K FACTORS	Sag	136
	Crest	151

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

NOT TO SCALE

TYPICAL SECTIONS
FIGURE 3

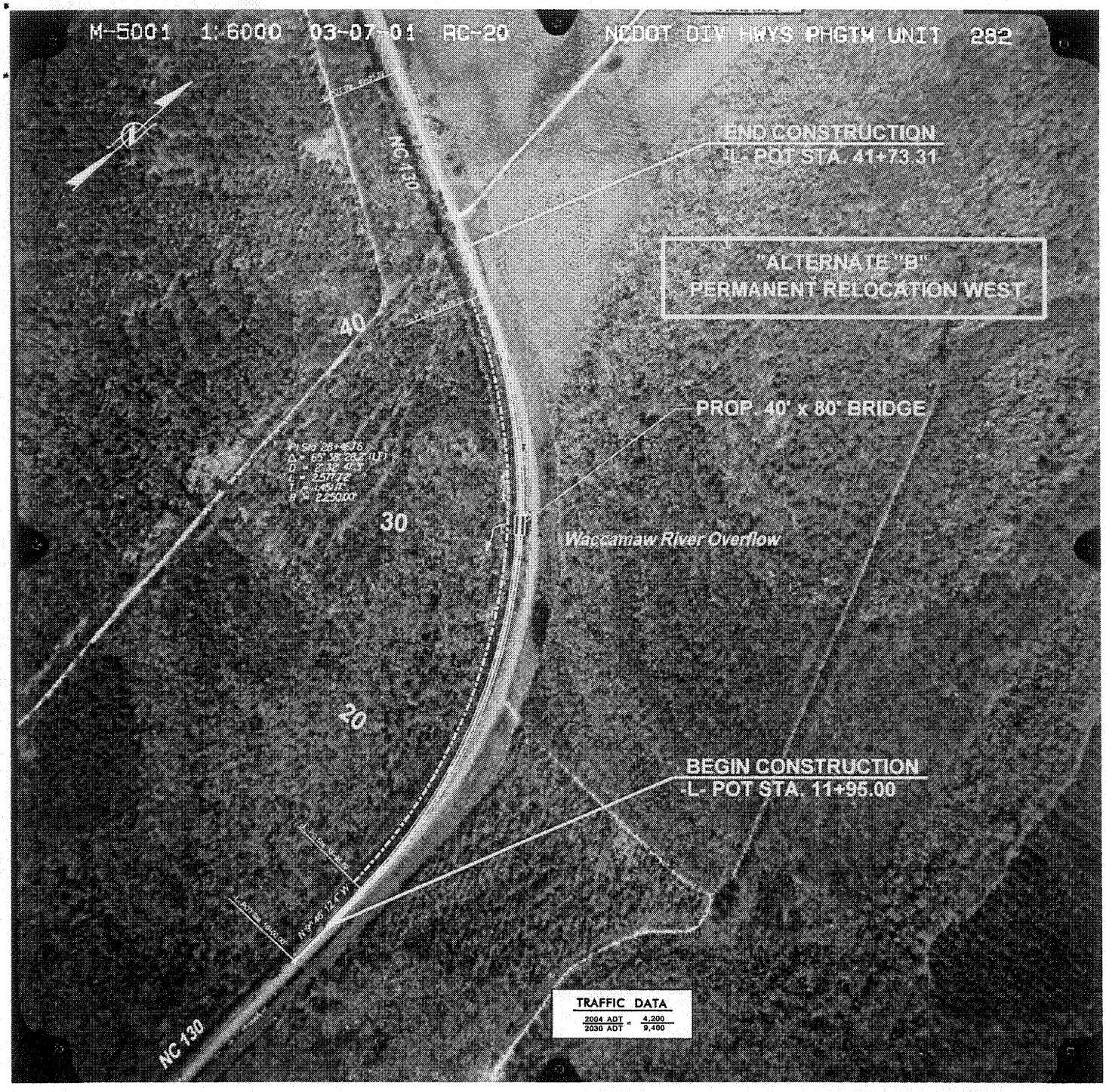


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

SCALE IN FEET
0 200 400

ALTERNATE A
FIGURE 4



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

SCALE IN FEET
0 200 400

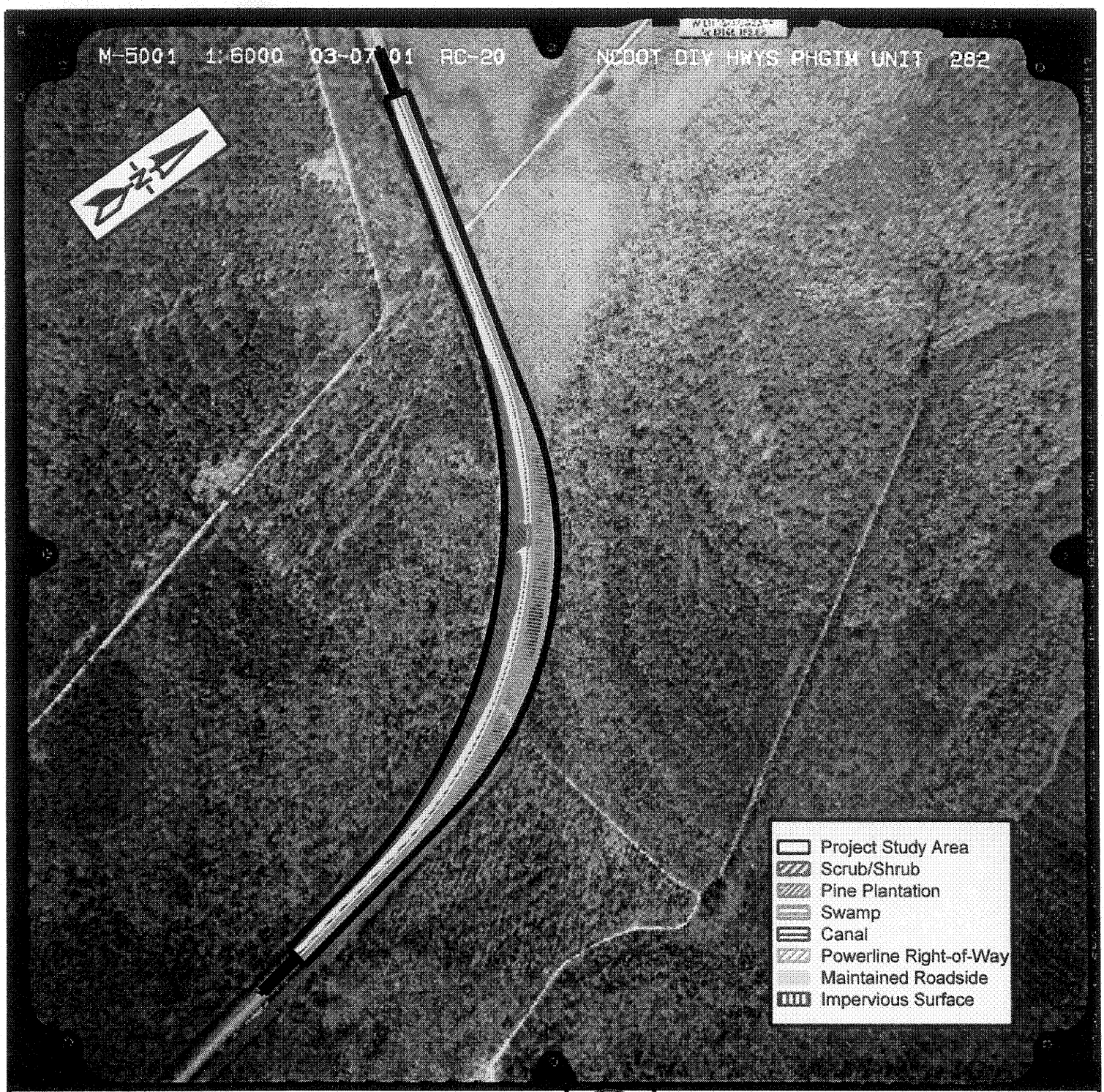
ALTERNATE B
FIGURE 5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

SCALE IN FEET
0 200 400

JURISDICTIONAL WETLANDS
FIGURE 6

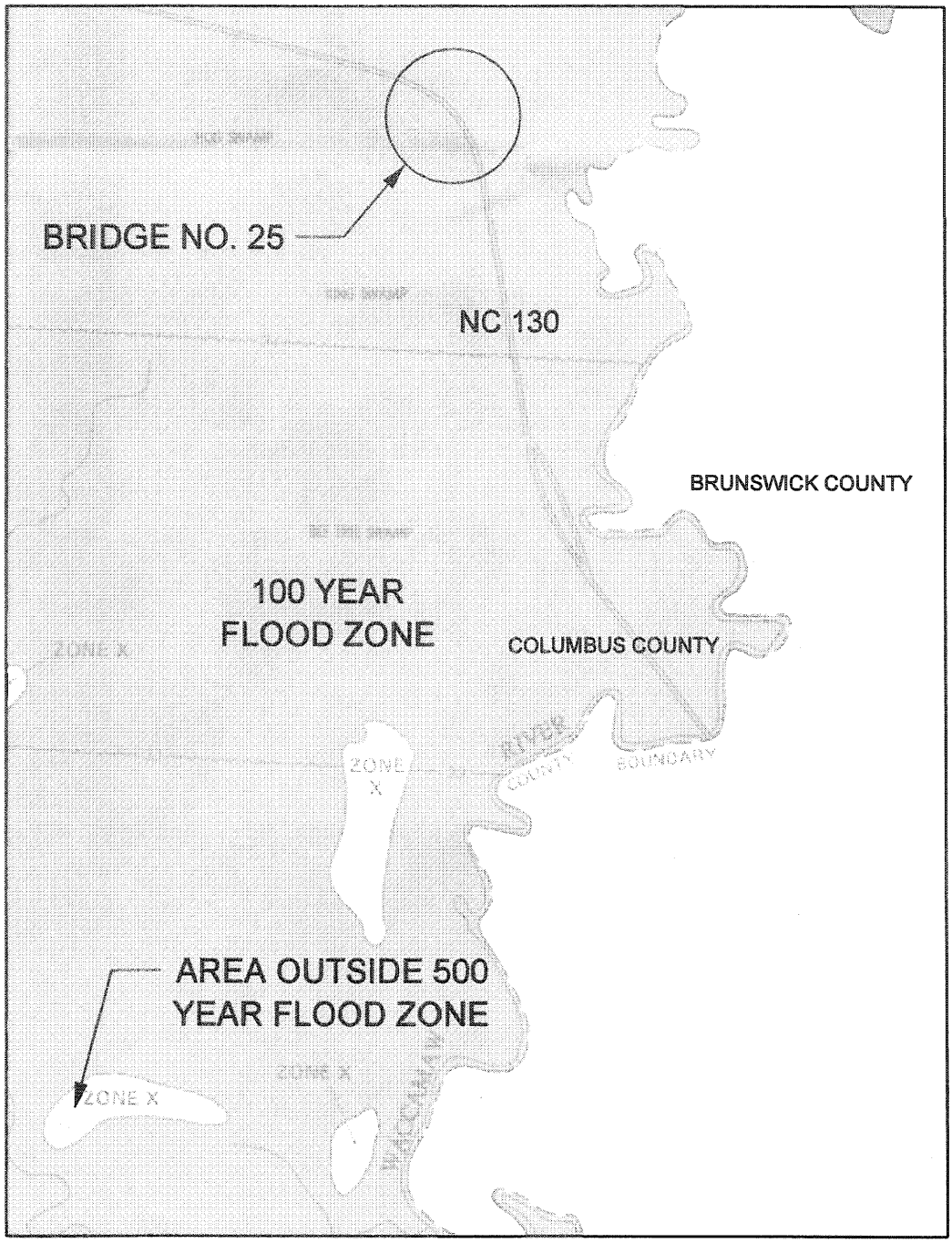


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

SCALE IN FEET
0 200 400

PLANT COMMUNITIES
FIGURE 7



N.T.S.

FEMA FLOOD INSURANCE RATE MAP
COMMUNITY - PANEL NUMBER
PANEL 275 OF 350

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

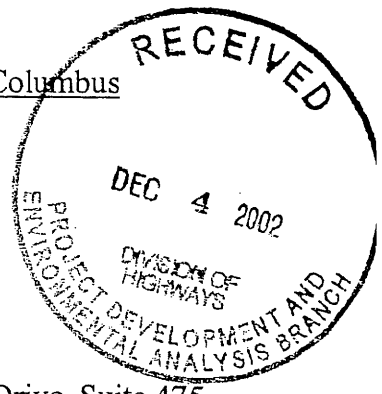
COLUMBUS COUNTY
BRIDGE NO. 25 ON NC 130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

NOT TO SCALE

FEMA RATE MAP
FIGURE 8

APPENDIX

U.S. ARMY CORPS OF ENGINEERS
Wilmington District



Action ID: 200200646 **County:** Columbus

Notification of Jurisdictional Determination

Requestor:
Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, N.C. 27699-1548

Authorized Agent:
Mr. George Lankford
Earth Tech. Inc.
701 Corporate Center Drive, Suite 475
Raleigh, North Carolina 27607

Size and Location of Project (waterbody, Highway name/number, town, etc.): TIP Project No. B-4077, Bridge No. 10 on NC 130 over the Waccamaw River overflow, Columbus County, North Carolina.

Basis for Determination: Onsite field inspection of jurisdictional area.

On **October 24, 2002,** the undersigned inspected the Section 404 jurisdictional line as field delineated by the NCDOT and/or its representatives for the subject NCDOT project/corridor. The project site was inspected and the delineated jurisdictional boundaries were found to accurately reflect the limits of Corps jurisdiction. The field delineated wetland jurisdictional limits, as shown on the attached plan can be relied on for project planning and impact assessment. This verification is valid for five (5) years from the date of this letter.

Any placement of dredged or fill material within the delineated jurisdictional limits will require Department of the Army authorization pursuant to Section 404 of the Clean Water Act, as amended (33 USC 1344). Any un-authorized placement of dredged or fill material within the delineated jurisdictional limits would be a violation of Section 301 of the Clean Water Act (33 USC 1311) and subject to enforcement action. If you have any questions regarding this verification or the Corps of Engineers' regulatory program, please contact Mr. Richard K. Spencer at 910-251-4172.

Project Manager Signature Richard K. Spencer

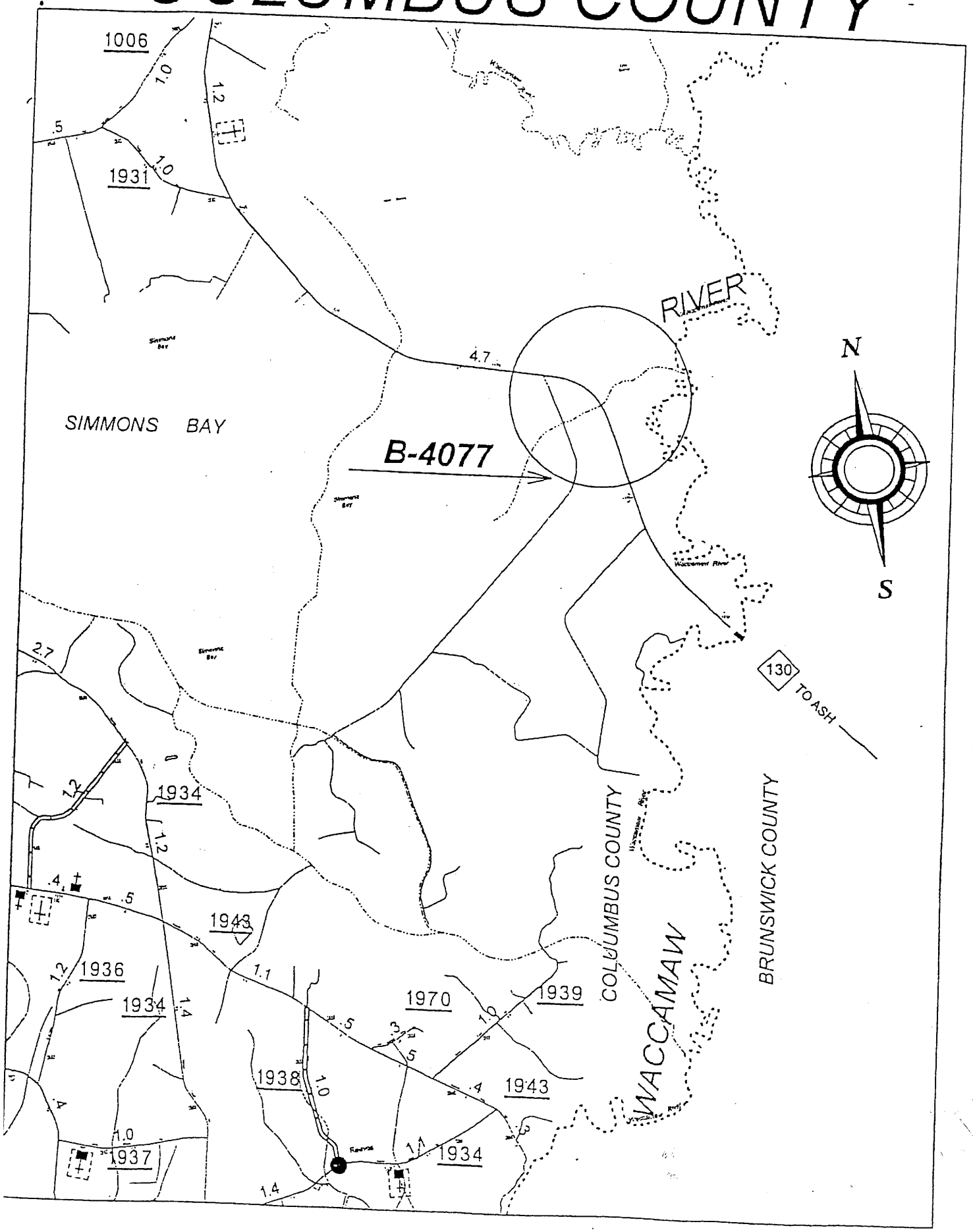
Richard K. Spencer

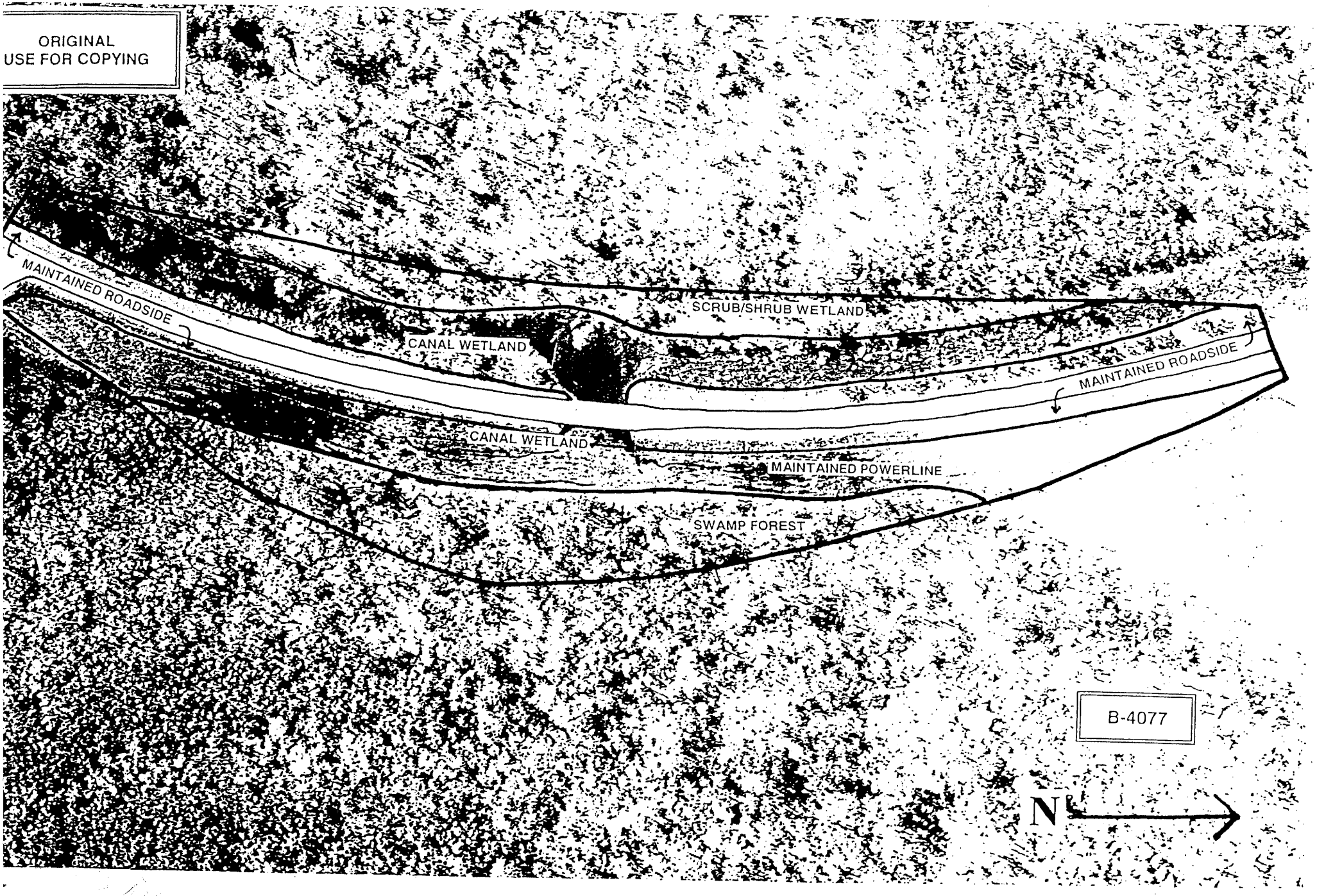
Date November 29, 2002 **Expiration Date** November 29, 2007

Attachments

CF: NCDOT, Division 6, Jim Rerko

COLUMBUS COUNTY




ORIGINAL
USE FOR COPYING
MAINTAINED ROADSIDE
CANAL WETLAND
SCRUB/SHRUB WETLAND
MAINTAINED ROADSIDE
CANAL WETLAND
MAINTAINED POWERLINE
SWAMP FOREST
B-4077
N

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

June 12, 2002

Mr. William T. Goodwin, Jr.
North Carolina Department of Transportation
Project Development and Environmental Analysis
Unit Head, Bridge Replacement Planning
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Goodwin:

This responds to your letters of March 1 and March 18, 2002, providing the U. S. Fish and Wildlife Service (Service) with Natural Resources Technical Reports (NRTR) on 26 bridges proposed for replacement in Construction Fiscal Year (CFY) 2005. Your letters requested the Service to review these reports and determine the level of concerns we might have for trust resources under our jurisdiction. This report provides scoping information in accordance with provisions of the Fish and Wildlife, Coordination Act (FWCA) (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). This report also serves as initial scoping comments to federal and state resource agencies for use in their permitting and/or certification processes for this project.

The bridges scheduled for replacement are:

1. B-3611, Bridge No. 77 on NC 99 over Pantego Creek, Beaufort County;
2. B-4024, Bridge No. 136 on SR 1626 over Pantego Creek [Canal?], Beaufort County
3. B-4026, Bridge 45 on SR 1110 over Choowatic Creek, Bertie County;
4. B-4028, Bridges Nos. 12 and 18 over the Cape Fear River, Bladen County;
5. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County;
6. B-4077, Bridge No. 25 on NC 130 over Waccamaw River outflow, Columbus County
7. B-4082, Bridge 280 on SR 1843 over Dan's Creek, Columbus County;
8. B-4086, Bridge No. 10 on SR 1111 over Brices Creek, Craven County;
9. B-4090 - Bridge No. 125 on NC 24 over Cross Creek, Cumberland County;
10. B-4125, Bridge No. 46 on SR 1091 over Wheat Swamp Creek, Greene County;
11. B-4126, Bridge No. 49 on SR 1434 over Wheat Swamp Creek, Greene and Lenoir Counties;
12. B-4127, Bridge No. 43 on SR 1438 over Rainbow Creek, Green County;
13. B-4150, Bridge No. 67 on SR 1118 over Ahoskie Creek, Herford County;
14. B-4154, Bridge No. 108 on SR 1340 over Old State Canal, Hyde County;
15. B-4169, Bridge No. 7 on SR 1129 (Free Bridge Road) over Big Chinquapin Branch Jones County;

16. B-4187, Bridge No. 5 on SR 1417 over Conoho Creek, Martin County;
17. B-4214, Bridge No. 24 on US 17 over the New River, Onslow County;
18. B-4215, Bridge No. 19 on NC 210 over Stones Creek, Onslow County;
19. B-4219, Bridge No. 65 on SR 1304 over an unnamed tributary to the Neuse River, Pamlico County;
20. B- 4221 , Bridge No. 4 on SR 1344 over South Prong Bay River, Pamlico County;
21. B- 4223, Bridge No. 21 on NC 210 over the Northeast Cape Fear River, Pender County;
22. B-4227, Bridge No. 69 on SR 1222 over Unnamed tributary to Mill Creek, Perquimans County;
23. B-4234, Bridge No. 98 on SR 1407 over Conetoe Creek, Pitt County;
24. B-4235, Bridge No. 118 on SR 1538 over Grindel Creek, Pitt County;
25. B-4248, Bridge No. 170 on SR 1101 over Shoe Heel Creek (Gaddy Mill Road), Robeson County;
26. B-4272, Bridge No. 191 on SR 1845 over Great Coharie Creek, Sampson County; and,

General Scoping Comments

Some NRTRs contained only maps of the immediate project site and a verbal description of the project location. In reviewing our records of known locations for Federally listed species, it would be beneficial to the Service to have a map showing the location of the project. Each location map should include at least one municipality or sizable community to facilitate locating the project area.

The title page for B-4024 (Beaufort County) states that Bridge No. 136 on SR 1626 is over "Canal." The body of the report states that this bridge crosses Pantego Creek which appears to be the correct designation. Title pages should reflect the correct location of the project.

General Fish and Wildlife Habitat and Wetlands

For each project, we recommend the following conservation measures to avoid or minimize adverse environmental impacts to fish and wildlife resources:

1. Wetland impacts should be avoided and minimized to the maximum extent practical as outlined in Section 404 (b)(1) of the Clean Water Act Amendments of 1977. Areas exhibiting high biodiversity or ecological value important to the watershed and region should be avoided. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons.

2. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along or adjacent to existing, roadways, utility corridors, or previously developed areas in order to minimize habitat fragmentation and encroachment. At the completion of construction, the entire detour area, including any previous detour from past construction

activities, should be entirely removed and the impacted areas should be planted with appropriate, endemic vegetation, including trees if necessary;

3. If unavoidable wetland impacts are proposed, every effort should be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity, preferably via conservation easement, should be explored at the outset;

4. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning, and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 15;

5. Best Management Practices (BMP) for Protection of Surface Waters should be implemented; and,

6. Activities within designated riparian buffers should be avoided or minimized.

Federal Species of Concern and State Listed Species

Federal Species of Concern (FSC) are those plant and animal species for which the Service remains concerned, but further biological research and field study are needed to resolve the conservation status of these taxa. Although FSCs receive no statutory protection under the ESA, we would encourage the NCDOT to be alert to their potential presence, and to make every reasonable effort to conserve them if found. The North Carolina Natural Heritage Program should be contacted for information on species under state protection.

Federally Protected Species

Several NRTRs make determinations that a project will not affect a particular species, primarily plants based on surveys in the recent past. The Service believes such determinations are premature and that additional surveys will be required prior to construction in approximately 2004-2005. It would be more appropriate to note that the species was not found during preliminary surveys and that results provide early indications that the project is not likely to adversely affect the species.

Effect determinations for plants based on surveys within the project area may require work at a particular time of year for accurate identification. The biological conclusions of the NCDOT for plants should include the time of year that a survey was conducted, the person hours of surveying, and the approximate size of the area surveyed. Surveys should be done within two or three years of actual construction for those species inhabiting stable and/or climax communities. Plant species that utilize disturbed communities, e.g., Michaux sumac (*Rhus michauxii*) and Cooley's meadowrue (*Thalictrum cooleyi*), should be done within two years of actual

construction if vegetation disturbing activities, e.g., regular mowing or timber harvesting, occur at the project site.

The NCDOT should carefully consider potential impacts to the West Indian manatee (*Trichechus manatus*) of bridge replacement projects in coastal counties. Several NRTRs, e.g., B-4235 (Pitt County), state that manatees require at least five feet of water. Manatees are able to use shallow channels that may not seem suited for such a large mammal. O'Shea and Ludlow (1992) wrote that the primary habitat requirements for the species are access to vascular aquatic plants, freshwater source, and proximity to channel 1-2 meters deep (3.3 -6.6 feet). Therefore, the NCDOT should only consider reaching a "no effect" determination for the manatee when water depths at the project site do not rise above one meter. Manatees may become entangled in erosion control and siltation fences placed in shallow water. Measures to prevent these devices from harming manatees are addressed in our 1996 guidelines to NCDOT (USFWS 1996). The biological conclusion of the NCDOT on impacts to manatees cannot be based on negative visual surveys of the project area. These mobile animals may not inhabit a given area for extended periods, and manatees may move into a given project site where the species has never been reported previously. The best procedure for ensuring the safety of these endangered mammals is to follow the Service's precautions if the area is suitable manatee habitat.

Surveys for mussels should extend 100 meters (328 feet) upstream and 300 meters (984 feet) downstream from the project site. Environmental documentation that includes survey methodologies, results, and NCDOT's recommendations based on those results, should be provided to this office for review and comment.

If surveys for a Federally protected species should determine that a given project would adversely affect the species, a biological assessment (BA) may be prepared to fulfill the section 7(a)(2) requirement and in determining whether formal consultation with the Service is necessary. Please notify this office with the results of the surveys for the listed species that may occur in the project area. Please include survey methodologies and an analysis of the effects of the action, including consideration of direct, indirect, and cumulative effects.

Project Specific Comments

In addition to the general comments applicable to all bridge replacement project, we offer the following project-specific comments:

B-3611, Bridge No. 77 on NC 99 over Pantego Creek, Beaufort County - The NRTR states (p. 16) that habitat for the manatee exists in the project area, but that no manatees were seen during natural resources investigations. The report concludes that the project would have "no effect" on the manatee. The Service does not concur with this determination. Manatees are seasonal transients in North Carolina from (primarily June through October). As noted, potential impacts on this species cannot be based on limited field inspections. The Service recommends that future project documentation include

commitments to follow procedures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina" that the Service provided the NCDOT in 1996. A copy is provided with this letter.

Intertidal zones and marsh edges preferred by Federally threatened sensitive jointvetch (*Aeschynomene virginica*) are present in the project area, but the species was not observed during natural resources investigation. The NRTR provided a biological conclusion of "no effect." The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the species.

The NRTR states that "marginal habitat exists for rough-leaved loosestrife [*Lysimachia asperulaefolia*] in the form of shallow organic soils adjacent to a forest community" in the project area. While the NRTR states that no plants were seen, the Service requires greater details of survey methodology before we can concur with the determination that the project will have no effect on rough-leaved loosestrife.

B-4024, Bridge No. 136 on SR 1626 over Pantego Creek, Beaufort County - The NRTR states (p. 3) that the average depth of Pantego Creek is 4.5 feet, but concludes (p. 14) that the necessary water depth for the manatee is not present. The Service disagrees and recommends that project plans should incorporates measures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina" that the Service provided the NCDOT in 1996. Suitable habitat for sensitive jointvetch exists in the project area (p. 17), but the NRTR concludes that the project would have "no effect" on the species based, in part, on the fact that no plant were "found in the project area." The Service cannot concur with this determination. The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the sensitive jointvetch.

B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County - The NRTR states (p. 4) that water depths range from two to six feet, and concludes (p. 21) that "vagrant manatees visiting the lower Lumber river system would not be expected within the project area." The Service does concur with the biological conclusion of "no effect" on the manatee and requests that the project utilize the standard precautions for general construction in areas which may be used by manatees. The NRTR states that the biological conclusions for the bald eagle (*Haliaeetus leucocephalus*) and Federally endangered wood stork (*Mycteria americana*) are "unresolved." Wood storks may undertake post-breeding season dispersals from June through early autumn in search of food in swamps, marshes, and mudflats. The NCDOT should seek to determine whether the project area is used, if even on a temporary basis, by these species. If wood storks do feed in the project area during a limited portion of the year, the Service would recommend that this project be scheduled outside this particular period.

B-4086, Bridge No. 10 on SR 1111 over Brices Creek, Craven County - With an average depth of three feet, Brices Creek is not likely to used by manatees. The Service cannot concur with the determination that the project would have "no effect" on the sensitive jointvetch based the lack of observation during site survey in 2001 and an absence of historical occurrence in the project area. The NRTR notes that suitable habitat for this species is present in the project area. The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the sensitive jointvetch..

B-4154, Bridge No. 108 on SR 1340 over Old State Canal, Hyde County - The NRTR notes that habitat for the sensitive jointvetch is present in the project area, but concludes that the project will have no impacts on the species, based in part, on a failure to find the species during surveys. The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the sensitive jointvetch..

B-4219, Bridge No. 65 on SR 1304 over an unnamed tributary to the Neuse River, Pamlico County - The tributary to be crossed has an average depth of approximately four feet and the NRTR notes (p. 15) that "marginal" habitat for the manatee exists in the project area. The Service does not concur with the biological conclusion of "no effect" for the manatee and recommends that future project documentation include commitments to follow procedures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina."

B- 4221 , Bridge No. 4 on SR 1344 over South Prong Bay River, Pamlico County - The NRTR (p. 3) notes that the average depth of the water to be bridged is approximately 3.5 feet and later concludes (p. 15) that the waterway is not deep enough or contain sufficient vegetation to provide habitat for the manatee. The Service cannot concur with the stated conclusion that "no impact to the West Indian manatee will result from project construction." We recommend that future project documentation include commitments to follow procedures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina."

B- 4223, Bridge No. 21 on NC 210 over the Northeast Cape Fear River, Pender County - The NRTR notes (p. 20) that manatees could occur in the project area and states that impacts to the species are "unresolved." The NRTR also recommends that a "follow-up survey" be conducted. A one time survey will not determine the presence of this species at a particular construction site. The species moves through North Carolina coastal waters on a seasonal basis. If there is any chance that the species could occur at a construction site, the Service's guidelines (USFWS 1996) should be incorporated into project plans.

B-4234, Bridge No. 98 on SR 1407 over Conetoe Creek, Pitt County - As noted in the NRTR, surveys should be conducted for the Tar River spinymussel (*Elliptio steinstansana*). The area surveyed should extend from 100 meters (328 feet) upstream to 300 meters (984 feet) downstream.

B-4235, Bridge No. 118 on SR 1538 over Grindel Creek, Pitt County - Survey for the Tar River spinymussel will be required from 100 meters (328 feet) upstream to 300 meters (984 feet) downstream.

B-4272, Bridge No. 191 on SR 1845 over Great Coharie Creek, Sampson County - The NRTR concludes that the project would have "no effect" on pondberry (*Lindera melissifolia*) due to a lack of habitat in the project area. The two habitats mentioned are shallow ponds with sandy substrate and Carolina bays. This species is associated with wetland habitats such as bottomland and hardwoods in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites. The plants generally grow in shaded areas but may also be found in full sun. Since the project area includes 0.5 acre of coastal plain bottomland hardwood forest, the Service requests that this area be survey for pondberry.

The Service appreciates the opportunity to comment on these project. Please continue to advise us of the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding these comments, please contact Howard Hall at 919-856-4520, ext. 27.

Sincerely,

John E. Ellis

for Dr. Garland B. Pardue
Ecological Services Super-visor

Attachment

Literature cited

O'Shea, T. J. and M. E. Ludlow. 1992. Florida manatee. pp. 190-200. In S. R. Humphrey (ed.). Rare and Endangered Biota of Florida, Volume I. Mammals. University of Florida Press. Gainesville. 392 pp.

U. S. Fish and Wildlife Service. 1996. Communication to the North Carolina Department of Transportation. USFWS, Raleigh Field Office. Raleigh, NC. 4 pp.

cc:
Ted Bisterfeld, U. S. Environmental Protection Agency, Atlanta, GA
Ron Sechler, NMFS, Beaufort, NC
Michael Bell. U. S. Army Corps of Engineers, Washington Regulatory Field Office, Washington, NC
Eric Alsmeyer, U. S. Army Corps of Engineers, Raleigh Regulatory Field Office, Raleigh NC
David Timpy, U. S. Army Corps of Engineers, Wilmington Regulatory Field Office, Wilmington NC
John Hennessy, NC Division of Water Quality, Raleigh, NC
David Cox, NC Wildlife Resources Commission, Northside, NC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

March 4, 2003

Dr. Gregory J. Thorpe
Environmental Management Director
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed replacement of the following bridges:

Bridge No. 25 on NC 130 over Waccamaw River Overflow, Columbus County, TIP No. B-4077

Bridges No. 280 and 281 on SR 1843 over Dan's Creek, Columbus County, TIP No. B-4082

The Service previously provided scoping comments for these projects in a June 12, 2002 letter. We would like to emphasize our recommendation to conduct additional surveys for Cooley's meadowrue (*Thalictrum cooleyi*) and rough-leaved loosestrife *(Lysimachia asperulaefolia*). Surveys for these two species should be conducted within two years of actual project construction and should be conducted at the appropriate time of year for accurate identification.

The Service appreciates the opportunity to comment on this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Garland B. Pardue

Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: Richard Spencer, USACE, Wilmington, NC
John Hennessy, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmore, NC
Chris Militscher, USEPA, Raleigh, NC

Ellerby

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

July 18, 2002

William T. Goodwin, Jr., PE, Unit Head
Bridge Replacement Unit
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Goodwin

The National Marine Fisheries Service (NMFS) has reviewed the Natural Systems Technical Reports (NSTR) - Group 3, for 5 bridge replacement projects identified in your March 18, 2002, letter. These projects are scheduled for construction in fiscal year 2005. By letter dated May 9, 2002, the Wilmington District, U.S. Army Corps of Engineers identified the following issues and concerns as being relevant to the proposed bridge replacement projects:

- Replacing bridges with culverts
- Permanent and temporary wetland losses
- Offsite versus onsite detours
- Time of year restrictions on instream work
- Treatment of wetland restoration areas
- Existing bridge demolition and removal
- Lengthening existing bridges as a wetland restoration measure

The NMFS agrees that these issues should be fully addressed with regard to impacts and mitigation.

Section I - Yellow Light Projects (YLPs)

The bridge replacement projects listed below are located in areas that do not support NMFS trust fishery resources. Otherwise, they have normal environmental concerns and, therefore, are identified as YLPs.

Bridge Number	Project Number	Location
Bridge No. 170	B - 4248	Robeson County
Bridge No. 25	B - 4077	Columbus County

Section II - Red Light Projects (RLPs)

Red Light Projects are those that include extraordinary resources or concerns that will require close coordination to complete successfully. These projects involve high quality wetlands, extremely valuable or rare endangered species habitats, or other limited or unusual resources. The bridge replacement projects listed below are located in the Cape Fear River basin which is likely to support NMFS trust anadromous fishery resources including the threaten shortnose sturgeon and are, therefore, classified as RLPs.

Bridge Number	Project Number	Location
Bridge No. 125	B - 4090	Cumberland County
Bridge No. 280	B - 4082	Columbus County
Bridge Nos. 12 and 18	B-4028	Bladen County

Spawning and nursery habitat for anadromous fishes may be adversely impacted by these projects unless measures to avoid and minimize impacts to waters and wetlands are included in the project plans. Accordingly, the NMFS may recommend against Department of the Army authorization of these projects under Nationwide Permit 23 unless the following recommendations are incorporated:

1. Following impact avoidance and minimization, unavoidable wetland losses shall be offset through implementation of a compensatory mitigation plan that has been approved by the Corps of Engineers and in consultation with the NMFS.

2. All construction related activities in waters and associated wetlands shall utilize techniques that avoid and minimize adverse impacts to those systems and their associated flora and fauna.

3. In order to protect anadromous fishery resources that may utilize the project areas as spawning or nursery habitat, work in the waters of the creek shall be restricted to the period October 1 and March 1 of any year unless prior approval is granted by the Corps of Engineers following consultation with the NMFS.

If these projects are processed under Nationwide 23, they will be carefully reviewed for incorporation of the recommendations listed above and we may elect to provide additional comments and recommendations that are intended to avoid, minimize, and offset impacts to living marine resources. Our recommendations, if any, will be sent to the Wilmington District, U. S. Army Corps of Engineers, and a copy will be forwarded to you.

Finally, the shortnose sturgeon, a Federally protected species under the purview of the NMFS is found in the Cape Fear and Roanoke Rivers. These comments do not satisfy Federal agency consultation responsibilities under Section 7 of the Endangered Species Act of 1973, as amended. If any activity "may effect" listed species and habitats under NMFS purview, consultation should be initiated with our Protected Resources Division at 9721 Executive Center Drive North, St. Petersburg, Florida 33702.

We appreciate the opportunity for early participation in the review of these bridge replacement projects. If I can be of further assistance, please contact me at the letterhead address or at 252-728-5090.

Sincerely,

Ron Sechler

Ronald S. Sechler
Fishery Biologist

cc:
COE, Wilmington, NC
USFWS, Raleigh, NC
NCDMF, Raleigh

Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

March 7, 2003

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

Attention: Theresa Ellerby

Dear Dr. Thorpe

The National Marine Fisheries Service (NOAA Fisheries) has reviewed your February 11, 2003 letter requesting comments on the alternative planning and environmental studies (Categorical Exclusions) for the following bridge replacement projects.

Bridge Number	Project Number	Location
Bridge No. 25	B - 4077	Columbus County
Bridge No. 280	B - 4028	Columbus County
Bridge No. 281	B - 4028	Columbus County

NOAA Fisheries supports the decision to replace the above listed bridges with new bridges of equal or longer lengths. By letters dated July18, 2002 (copy enclosed), we previously commented on the Natural Resources Technical Reports for these projects and provided recommendations for avoidance and minimization of adverse impacts to anadromous fishery resources. Since no additional information on these projects is included in your January 23rd letter, the recommendations provided in our July 18th letter remain valid.

Although avoidance of wetland impacts may not be possible in all cases, the environmental studies should identify highway and bridge design alternatives that would, to the extent practicable, avoid or minimize wetland losses. The environmental studies should also evaluate removal of the existing

causeways as a means of reducing and offsetting wetland losses. Also, since required traffic diversion may necessitate temporary filling or other wetland alteration, the environmental document should identify the least damaging alternative for maintaining traffic flow, including the use of existing roads as alternate routes. NOAA Fisheries is likely to recommend against the use of temporary onsite fill to establish construction bypass routes.

Adverse impacts to fishery resources in waters affected by these projects can be minimized through use of prudent and responsible construction techniques and use of seasonal work restrictions. Development of seasonal work restrictions within the project area should be coordinated with the North Carolina Wildlife Resources Commission, and the results of this effort should be presented in the environmental documents.

We appreciate the opportunity to provide these comments. If I may be of further assistance, please contact me at the letterhead address, or at 252-728-5090.

Sincerely,

Ron Sechler

Ronald S. Sechler
Fishery Biologist

Enclosure

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Ms. Theresa Ellerby, Project Development Engineer
Project Development and Environmental Analysis Branch, NCDOT

FROM: Travis Wilson, Highway Project Coordinator
Habitat Conservation Program

DATE: March 10, 2003

SUBJECT: NCDOT Bridge Replacements Columbus, Harnett, and Cumberland counties. TIP Nos. B-4090, B-4091, B-4077, B-4082 and B-4137.

Biologists with the N. C. Wildlife Resources Commission (NCWRC) have reviewed the information provided and have the following preliminary comments on the subject project. Our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Our standard recommendations for bridge replacement projects of this scope are as follows:

1. We generally prefer spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoeists and boaters.

2. Bridge deck drains should not discharge directly into the stream.

3. Live concrete should not be allowed to contact the water in or entering into the stream.

4. If possible, bridge supports (bents) should not be placed in the stream.

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 733-3633 ext. 281 • Fax: (919) 715-7643

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the steam underneath the bridge.

7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.

8. In streams that contain threatened or endangered species, NCDOT biologist Mr. Hal Bain should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.

9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.

10. In areas with significant fisheries for sunfish, seasonal exclusions may also be recommended.

11. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.

12. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.

13. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

14. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.

15. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

16. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used:

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.

3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be utilized as mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-4090, Cumberland County, Replace Bridge No. 125 on NC 24 over Cross Creek. A significant fishery for sunfish exist at this site, we recommend an in-water work moratorium from April 1 to June 30 to minimize impacts to spawning sunfish. Other standard recommendations apply.

2. B-4091, Cumberland County, Replace bridge No. 85 on I-95 Business Loop and US 301 over SR 1738, SR 1741, and the Cape Fear River. We recommend replacing this bridge with a bridge. NCDOT should conduct a mussel survey at this site to determine any

presence of the state listed, endangered, Yellow lampmussel (*Lampsilis cariosa*). We recommend an in-water work moratorium from February 15 – June 30, for sunfish and anadromous fish. NCDOT should adhere to Stream Crossing Guidelines for Anadromous Fish Passage. Other standard recommendations apply.

3. B-4077, Columbus County, Replace bridge No. 25 on NC 130 over Waccamaw river Overflow. We recommend replacing this bridge with a bridge. A significant fishery for sunfish exists at this site, we recommend an in-water work moratorium from April 1 – June 30 to minimize impacts to spawning sunfish. A mussel survey should be conducted for the Waccamaw spike (*Elliptio waccamawensis*) if the project area is inundated.

4. B-4082, Columbus County, Replace Bridge Nos. 280 and 281 over Dan's Creek. We recommend replacing each bridge with a bridge. A significant fishery for sunfish exists at this site, we recommend an in-water work moratorium from April 1 – June 30 to minimize impacts to spawning sunfish. Other standard recommendations apply.

5. B-4137, Harnett County, Replace bridge No. 35 on NC 42 over the Norfolk and Southern Railroad. We have no concerns with this project.

NCDOT should routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. Restoring previously disturbed floodplain benches should narrow and deepen streams previously widened and shallowed during initial bridge installation. NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks and reduce habitat fragmentation.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (919) 528-9886. Thank you for the opportunity to review and comment on these projects.

Cc: Gary Jordan, U.S. Fish and Wildlife Service, Raleigh

Hart Unit

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

Division of Historical Resources
David J. Olson, Director

March 22, 2002

MEMORANDUM

TO: William D. Gilmore, Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

MAR 28 2002

FROM: David Brook DSH for David Brook

SUBJECT: Replace Bridge No. 25 and NC 130 over Waccamaw River, B-4077
Columbus County, ER 02-8601

Thank you for your memorandum of September 25, 2001, concerning the above project.

There are no known archaeological sites within the project area. Based on our knowledge of the area, it is unlikely that any archaeological resources that may be eligible for conclusion in the National Register of Historic Places will be affected by the project. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

Because the Department of Transportation is in the process of surveying and evaluating the National Register eligibility of all of its concrete bridges, we are unable to comment on the National Register eligibility of the subject bridge. Please contact Mary Pope Furr, in the Architectural History Section, to determine if further study of the bridge is needed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 296 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/72929-47629. In all future communication concerning this project, please cite the above-referenced tracking number.

DB:kgc

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St, Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 •733-8653
Restoration	515 N. Blount St, Raleigh , NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 •715-4801
Survey & Planning	515 N. Blount St, Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 •715-4801

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources
David J. Olson, Director

March 11, 2003

MEMORANDUM

TO: Greg Thorpe, Manager
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: David Brook for David Brook

SUBJECT: Replacement, Bridge No. 25 over Waccamaw River Overflow, on NC 130, B-4077, Columbus County, ER02-8601

Thank you for your memorandum of February 11, 2003, concerning the above project.

Because the Department of Transportation is in the process of surveying and evaluating the National Register eligibility of Bridge No. 25, we are unable to comment on the potential effect of this project at the present time.

There are no known archaeological sites within the proposed project area. Based on our knowledge of the area, it is unlikely that any archaeological resources that may be eligible for conclusion in the National Register of Historic Places will be affected by the project. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Mary Pope Furr
Matt Wilkerson

North Carolina Department of Cultural Resources
State Historic Preservation Office

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

July 8, 2004

MEMORANDUM

TO: Gregory J. Thorpe, Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

FROM: David Brook RSE for David Brook

SUBJECT: Bridge No. 25 on NC 130 over Waccamaw River, B-4077, Columbus County, ER02-8601

Thank you for your letter of June 4, 2004, concerning the above project.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is not eligible for listing in the National Register of Historic Places.

Overflow Bridge No. 3, (I.D. No. 25) carrying NC 130 over Waccamaw River Overflow, Columbus County. The bridge has Common features and, although an example of "continuous design," it is a modest example and not among the significant early continuous-design bridges in the state.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Mary Pope Furr

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

Michael Easley, Governor
Bill Ross, Secretary
Gregory Thorpe, Director

NCDENR
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

June 18, 2002

Memorandum To: William T. Goodwin, Jr., PE, Unit Head
Bridge Replacement Planning Unit
Project Development and Environmental Analysis Branch

Through: John Dorney
NC Division of Water Quality

From: Robert Ridings
NC Division of Water Quality

Subject: Review of Natural Systems Technical Reports for bridge replacement projects scheduled for construction in CFY 2005: "Green Light" Projects: B-4077, B-4082, B-4090, B-4152, B-4248, B-4036, B-4059, B-4060, B-4155, B-4158, B-4177, B-4178, B-4198, B-4197, B-4194, & B-4192.

On all projects, use of proper sediment and erosion control will be needed. Sediment and erosion control measures should not be placed in wetlands. Sediment should be removed from any water pumped from behind a cofferdam before the water is returned to the stream.

This office would prefer bridges to be replaced with new bridges. However if the bridge must be replaced by a culvert and 150 linear feet or more of stream is impacted, a stream mitigation plan will be needed prior to the issuance of a 401 Water Quality Certification. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification

For permitting, any project that falls under the Corps of Engineers' Nationwide Permits 23 or 33 do not require written concurrence by the NC Division of Water Quality. Notification and courtesy copies of materials sent to the Corps, including mitigation plans, are required. For projects that fall under the Corps of Engineers Nationwide Permit 14 or Regional General Bridge Permit 31, the formal 401 application process will be required including appropriate fees and mitigation plans.

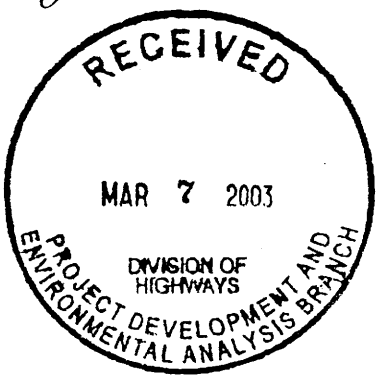
Any proposed culverts shall be installed in such a manner that the original stream profile is not altered (i.e. the depth of the channel must not be reduced by a widening of the streambed). Existing stream dimensions are to be maintained above and below locations of culvert extensions.

Do not use any machinery in the stream channels unless absolutely necessary. Additionally, vegetation should not be removed from the stream bank unless it is absolutely necessary. NCDOT should especially avoid removing large trees and undercut banks. If large, undercut trees must be removed, then the trunks should be cut and the stumps and root systems left in place to minimize damage to stream banks.

Special Note on projects B-4077 and B-4090: these waters are classified as 303(d) waters. Special measures for sediment control will be needed

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost.

Columbus County Emergency Services



March 4, 2003

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
N C Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Thorpe:

SUBJECT: Response to request for Input NCDOT Bridge Replacement Group # 39

After careful review of the area around Bridge No. 25 over Waccamaw River Overflow, the following determination was made. Traffic could be rerouted using a series of roads in Brunswick County. However, Highway 130, New Britton Hwy E., has been designated as an EVACUATION Route for the Brunswick County Beaches.

Careful review of the area around Bridge No. 280 and 281 over Dan's Creek finds a home located down a private drive between the two bridges. All other traffic could be rerouted.

Attached please find aerial views of the locations in question.

If you have any questions concerning my response, please contact me at (910) 640-6610.

Sincerely,

John H. Moore, Director
Columbus County Emergency Services

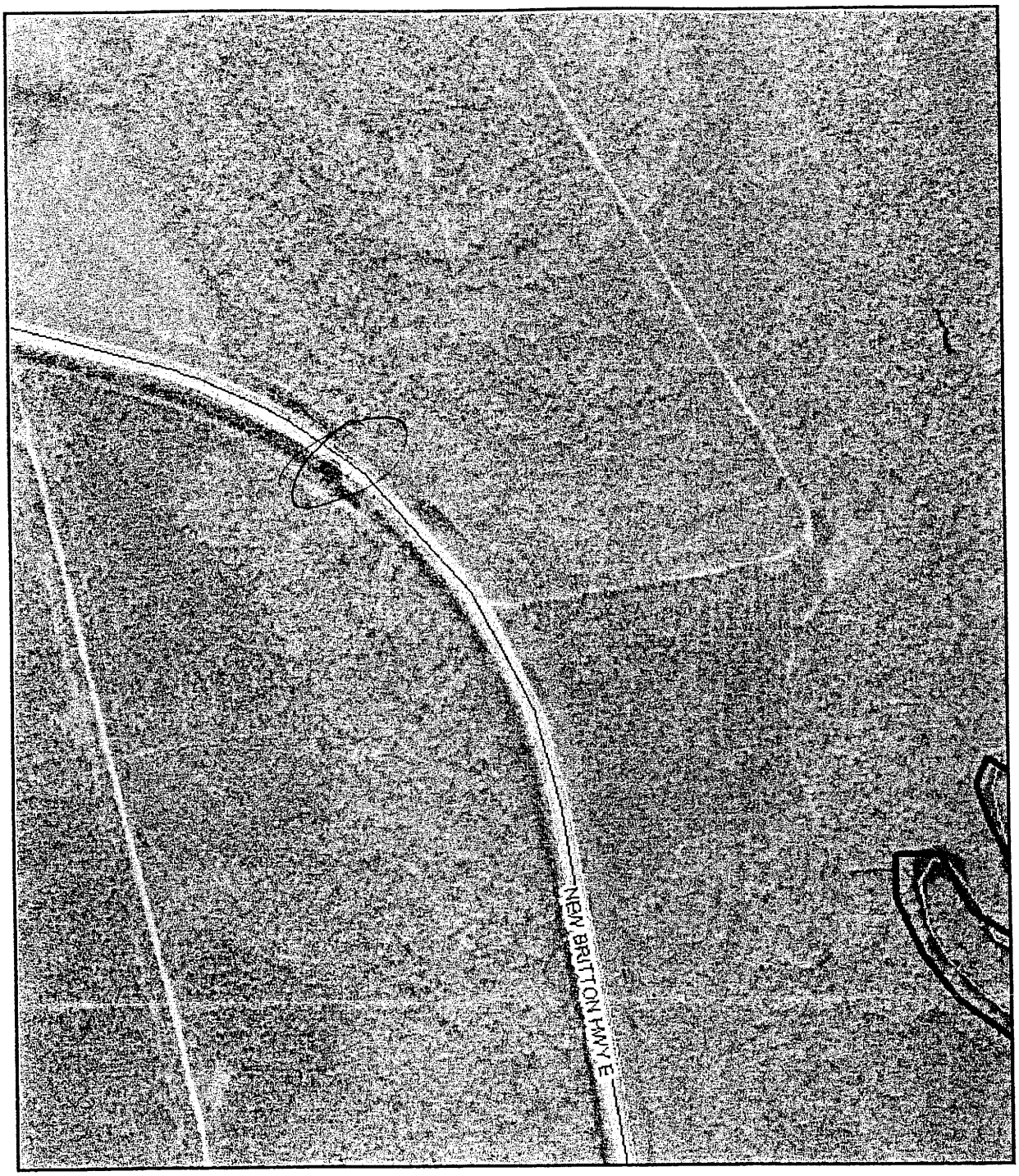
JHM/vgw

Emergency Services
Telephone: (910) 640-6610
Fax: (910) 640-1241

9-1-1/Columbus Central
Telephone: (910) 640-1428
Fax: (910) 640-2296

Addressing
Telephone: (910) 640-1518 or (910) 641-0016
Fax: (910) 914-4112

608 North Thompson Street, Whiteville, NC 28472



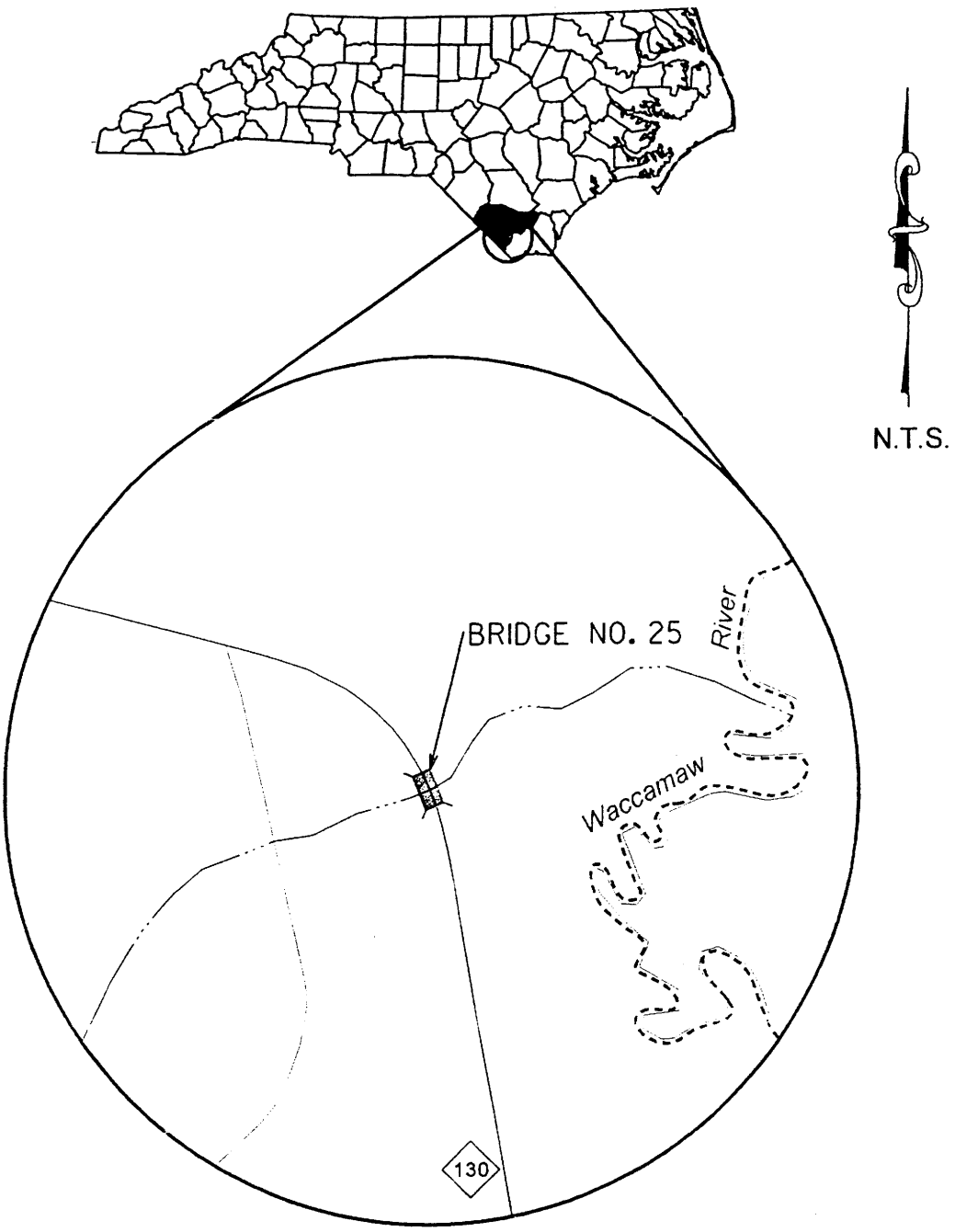
0 114 Feet

This is a designated Evacuation Route

Bridge # 25

Waccamaw River Area

New Britton Hwy E - (Hwy 130)



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

COLUMBUS COUNTY
BRIDGE NO. 25 ON NC130 OVER WACCAMAW RIVER OVERFLOW
TIP NO. B-4077

LOCATION MAP
FIGURE 1

Public Schools of North Carolina

NC Department of Public Instruction
School Planning, Division of School Support
6322 Mail Service Center
Raleigh, NC 27699-6322

Phone: (919) 807-3554
Fax: (919) 807-3558
Www.schoolclearinghouse.org

March 6, 2003

MEMORANDUM

TO: Gregory J. Thorpe, Ph.D.
Project Development and Environmental Analysis Branch

FROM: David Edwards, Section Chief, School Planning de

SUBJECT: Notification of Start of Study and Request for Environmental Input NCDOT Bridge Replacement Group #39

Enclosed is a response from Columbus County Schools in regard to the National Environmental Policy Act inquiry.

/ed
Enclosure

COLUMBUS COUNTY SCHOOLS

Accredited by the State Board of Education and the Southern Association of Colleges & Schools

March 3, 2003

Dr. J. David Edwards
NC Department of Public Instruction
School Planning, Division of School Support
6322 Mail Service Center
Raleigh, NC 27699-6322

Dear Dr. Edwards:

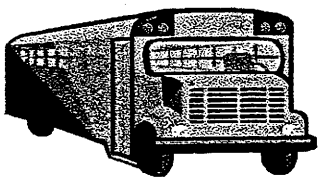
I received your letter of February 27, 2003, regarding the effect of bridge replacements on our school bus routes. I referred this information to our Director of Transportation, Jimmy Hewett, and he has prepared the enclosed response. If you should need additional information, please do not hesitate to contact me.

Sincerely,

Thomas A. Nance
Superintendent

brp

Enclosure



Columbus County/Whiteville City School Bus Garage
1231 Chadbourn Hwy, Whiteville, NC 28472
Phone # (910) 642-2586 Fax # (910) 641-0875

To: Mr. Davis Moore, Department of Transportation,
Project Development & Environmental Analysis Branch

From: Mr. William Gore, Transportation Director, Columbus County Schools

Date: June 26, 2001

Re: Bridge No. 280, TIP Project # B-4082 & Bridge No. 25, TIP Project # B-4077

There are three (3) buses that cross Bridge No. 280 per day. These buses could be rerouted to avoid crossing the bridge.

There are no buses that cross Bridge No. 25. There will be no effect on the school bus routes in Columbus County if this bridge is closed.