



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

June 5, 2006

U. S. Army Corps of Engineers  
Regulatory Field Office  
Post Office Box 1000  
Washington, NC 27889-1000

Attention: Mr. William J. Biddlecome  
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 Permit Application**, for the proposed replacement of Bridge No. 59 on SR 1304 over Sutton Creek in Perquimans County. Federal Aid Project No. BRZ-1304 (7), State Project No. 8.2120401, TIP No. B-4228.

Please find enclosed the permit drawings, Categorical Exclusion (CE) Action Classification Form, Natural Resource Technical Report (NRTR), and half-size plan sheets for the above referenced project. The North Carolina Department of Transportation (NCDOT) proposes to replace existing Bridge No. 59 on SR 1304 over Sutton Creek in Perquimans County. The project involves replacement of the existing bridge structure with a 90-foot single span bridge at approximately the same location and roadway elevation of the existing structure using top-down construction. There will be 0.208-acre of permanent impacts to wetlands adjacent to Sutton Creek. Traffic will be detoured off-site along surrounding roads, during construction.

**Impacts to Waters of the United States**

General Description: The project is located in the Albemarle Sound Basin (Hydrologic Unit 03010205). A best usage classification of "C SW" has been assigned to Sutton Creek [DWQ Index # 30-6-8-(1)]. Neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds), listed Section 303(d) impairments, nor Outstanding Resource Waters (ORW) occur within 1.0 mile (1.6 km) of project study area. Sutton Creek is not designated as a North Carolina Natural or Scenic River, or as a national Wild and Scenic River. According to NCDCM, Sutton Creek does not fall under CAMA Jurisdiction (see attached email, dated July 23, 2003).

Permanent Impacts: Wetlands adjacent to Sutton Creek will be impacted by the proposed project. Construction of the proposed project will result in permanent impacts, including 0.065-acre of fill and 0.143-acre of mechanized clearing (see permit drawings).

Temporary Impacts: No temporary impacts to jurisdictional resources will be necessary for the construction of this project.

**MAILING ADDRESS:**  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS  
1548 MAIL SERVICE CENTER  
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141  
FAX: 919-733-9794

WEBSITE: [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

**LOCATION:**  
TRANSPORTATION BUILDING  
1 SOUTH WILMINGTON STREET  
RALEIGH NC

Utility Impacts: No impacts to jurisdictional resources will occur due to relocation of utilities in the project area. Existing utility lines are in conflict with the proposed project; however, all utility work will be conducted in upland areas and existing road fill. Water lines will be replaced using the directional bore method.

### **Bridge Demolition**

The existing bridge consists of a reinforced concrete deck on timber joists with an asphalt-wearing surface. The substructure is composed of timber end bents and interior bents consisting of timber caps on timber piles. The bridge can be removed without dropping components into Waters of the United States during construction. Best Management Practices for Bridge Demolition and Removal will be followed to avoid any temporary fill from entering Waters of the United States.

During project development, the NC Division of Marine Fisheries (DMF) recommended restricting in-water work between February 15 and June 15. However, DMF suggested, if turbidity curtains are utilized during construction, a moratorium is not necessary. Consequently, NCDOT will use turbidity curtains as part of its erosion control practices.

### **Federally Protected Species**

Prior to the completion of the CE on April 20, 2004, no federally protected species were listed for Perquimans County. However, as of March 8, 2006 the US Fish and Wildlife Service (USFWS) has listed bald eagle (*Haliaeetus leucocephalus*). A field survey on April 4, 2006 determined the Biological Conclusion for bald eagle is **no effect**, due to lack of suitable habitat.

### **Avoidance and Minimization**

Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States". Due to the presence of surface waters and wetlands within the project study area, avoidance of all impacts is not possible. The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Minimization measures were incorporated as part of the project design these included:

- Use of an off-site detour during construction.
- Use of turbidity curtains to control debris and protect aquatic life
- Construction of a 38-foot longer bridge
- The new structure will completely span Sutton Creek.
- Best Management Practices will also be utilized during demolition of the existing bridge and construction of the new bridge.

### **Mitigation**

The North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP) will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the unavoidable impacts to 0.208 acre of wetlands. A copy of the EEP Acceptance Letter, dated March 13, 2006, is attached.

## Regulatory Approvals

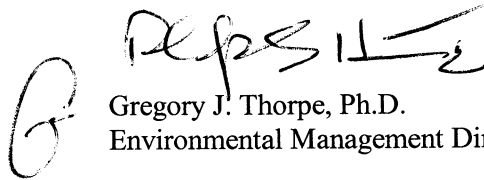
Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095, January 15, 2002).

Section 401 Certification: We anticipate 401 General Water Quality Certification number 3403 will apply to this project. All general conditions of the Water Quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200, we are providing copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality for their review.

A copy of this application will be posted on the NCDOT website at:  
<http://www.doh.dot.state.nc.us/preconstruct/pe/neu/permit.html>

Thank you for your time and assistance with this project. Please contact Tyler Stanton at [tstanton@dot.state.nc.us](mailto:tstanton@dot.state.nc.us) or (919) 715-1439 if you have any questions or need additional information.

Sincerely,



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

Cc W/attachment:

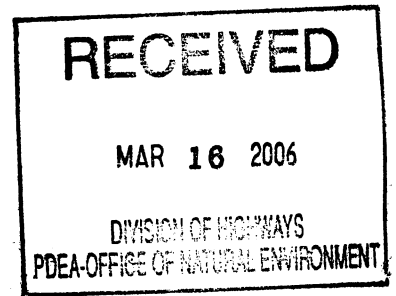
Mr. John Hennessy, NCDWQ (2 Copies)  
Mr. Travis Wilson, NCWRC  
Mr. Gary Jordan, USFWS  
Mr. Ron Sechler, NMFS  
Mr. Michael Street, NCDMF  
Ms. Cathy Brittingham, NCDCM  
Ms. Wanda Gooden, NCDCM  
Dr. David Chang, P.E., Hydraulics  
Mr. Greg Perfetti, P.E., Structure Design  
Mr. Mark Staley, Roadside Environmental  
Mr. Anthony Roper, P.E., Division 1 Engineer  
Mr. Clay Willis, Division 1 Environmental Officer

Cc W/o attachment:

Mr. Scott McLendon, USACE, Wilmington  
Mr. Jay Bennett, P.E., Roadway Design  
Mr. Majed Alghandour, P.E., Programming and TIP  
Mr. Art McMillan, P.E., Highway Design  
Ms. Beth Harmon, EEP  
Mr. Todd Jones, NCDOT External Audit Branch  
Mr. Bill Goodwin, P.E., PDEA



March 13, 2006



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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

**B-4228**, Bridge Number 59 over Sutton Creek on SR 1410, Perquimans  
County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riverine wetland mitigation for the subject project. Based on the information supplied by you in a letter dated February 22, 2006, the impacts are located in CU 03010205 of the Pasquotank River Basin in the Northern Outer Coastal Plain (NOCP) Eco-Region, and are as follows:

Riverine Wetlands: 0.208 acre

Mitigation for this project will be provided in accordance with the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers. EEP will commit to implementing sufficient compensatory riverine wetland mitigation to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impacts amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

William D. Gilmore, P.E.  
EEP Director

cc: Mr. Bill Biddlecome, USACE-Washington  
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit  
File: B-4228

*Restoring... Enhancing... Protecting Our State*







March 13, 2006

Mr. Bill Biddlecome  
U. S. Army Corps of Engineers  
Washington Regulatory Field Office  
Post Office Box 1000  
Washington, North Carolina 27889-1000

Dear Mr. Biddlecome:

Subject: EEP Mitigation Acceptance Letter:

**B-4228**, Bridge Number 59 over Sutton Creek on SR 1410, Perquimans County; Pasquotank River Basin (Cataloging Unit 03010205); Northern Outer Coastal Plain (NOCP) Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riverine wetland mitigation for the unavoidable impact associated with the above referenced project. As indicated in the NCDOT's mitigation request letter dated February 22, 2006, the project will impact 0.208 acre of riverine wetlands.

Mitigation for this project will be provided in accordance with Section X of the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers. EEP commits to implement sufficient compensatory riverine wetland mitigation up to a 2:1 ratio to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the impacts change from the above listed amount, then this mitigation strategy letter will no longer be valid and a new mitigation strategy letter will be required from EEP.

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

Sincerely,

William D. Gilmore, P.E.  
EEP Director

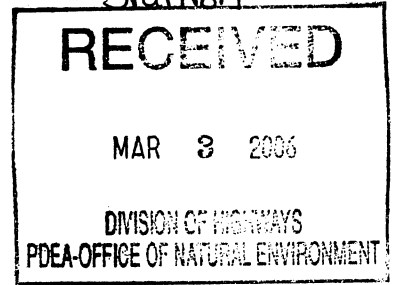
cc: Mr. Gregory J. Thorpe, Ph.D., NCDOT-PDEA  
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit  
File: B-4228

*Restoring... Enhancing... Protecting Our State*



CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM Stanton

TIP Project No.	<u>B-4228</u>
State Project No.	<u>8.2120401</u>
WBS No.	<u>33572.1.1</u>
Federal Project No.	<u>BRZ-1304 (7)</u>



A. Project Description:

This project proposes to replace Bridge No. 59 on SR 1304 over Sutton Creek in Perquimans County (See Figure 1). The bridge will be replaced with an 80-foot long bridge in the same location and elevation as the existing bridge. The cross section of the new bridge will include two 11-foot lanes with 3.0-foot minimum shoulder offsets. Approach work will consist of resurfacing and tying into the existing alignment for approximately 320 feet to the west and approximately 390 feet to the east of the existing bridge. Guardrail will be installed where warranted. Traffic will be detoured along surrounding roads during construction (See Figure 1 and Section D, Studied Detour Route.)

B. Purpose and Need:

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 47.7 out of a possible 100 for a new structure. The existing bridge was constructed in 1972. Bridge No. 59 has a timber substructure that has visible signs of decay. The structural appraisal of the existing bridge is four out of a possible nine. Therefore, the bridge is considered to be structurally deficient according to FHWA standards and therefore eligible for FHWA's Highway Bridge Replacement Program.

C. Proposed Improvements:

Circle one or more of the following Type II improvements which apply to the project:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).
  - a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
  - b. Widening roadway and shoulders without adding through lanes
  - c. Modernizing gore treatments
  - d. Constructing lane improvements (merge, auxiliary, and turn lanes)
  - e. Adding shoulder drains
  - f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
  - g. Providing driveway pipes
  - h. Performing minor bridge widening (less than one through lane)
  - i. Slide Stabilization
  - j. Structural BMP's for water quality improvement

2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.
  - a. Installing ramp metering devices
  - b. Installing lights
  - c. Adding or upgrading guardrail
  - d. Installing safety barriers including Jersey type barriers and pier protection
  - e. Installing or replacing impact attenuators
  - f. Upgrading medians including adding or upgrading median barriers
  - g. Improving intersections including relocation and/or realignment
  - h. Making minor roadway realignment
  - i. Channelizing traffic
  - j. Performing clear zone safety improvements including removing hazards and flattening slopes
  - k. Implementing traffic aid systems, signals, and motorist aid
  - l. Installing bridge safety hardware including bridge rail retrofit
3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.
  - a. Rehabilitating, reconstructing, or replacing bridge approach slabs
  - b. Rehabilitating or replacing bridge decks
  - c. Rehabilitating bridges including painting (no red lead paint), scour repair, fender systems, and minor structural improvements
  - d. Replacing a bridge (structure and/or fill)
4. Transportation corridor fringe parking facilities.
5. Construction of new truck weigh stations or rest areas.
6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.
7. Approvals for changes in access control.
8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.
9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.
10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.
11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such

construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.

12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.
13. Acquisition and construction of wetland, stream and endangered species mitigation sites.
14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

**Estimated Costs:**

Total Construction	\$ 475,000
Right of Way	\$ 60,000
Total	\$ 525,000

**Estimated Traffic:**

Current	-	200 vpd
Year 2025	-	700 vpd
TTST	-	1%
Dual	-	2%

**Proposed Typical Cross Section:**

The existing roadway in the vicinity of the bridge will be widened to a 22-foot pavement width to provide two 11-foot lanes with six-foot shoulders. The shoulders will be widened out to nine feet where guardrail is required.

**Design Speed:**

60 mph

**Design Exceptions:**

A design exception will be required for horizontal sight distance.

**Functional Classification:**

Rural Local Route

**Studied Detour Route:**

The studied detour route utilizes SR 1303 and US 17. The total length of the detour is approximately three miles long with an estimated time of delay of approximately four minutes, which is acceptable based on the Draft NCDOT Guidelines for Evaluation of Offsite Detours.

**Division Office Comments:**

Division 1 concurs with replacing Bridge No. 59 with a new bridge in the same location and approximate roadway elevation as the existing structure. The Division Construction Engineer agrees with detouring traffic on surrounding roads during construction.

**Bridge Demolition:**

Bridge No. 59 is composed of a reinforced concrete deck on timber joists, and W-beam guardrail. The substructure is composed entirely of timber. The overall length of the structure is 52 feet. The clear roadway width is 27' 10". There is no anticipated fill from Bridge Demolition into Sutton Creek.

**Alternatives Discussion:**

The no-build alternate for this project is not practical or feasible. The existing bridge will continue to deteriorate necessitating eventual closure of the bridge. This is unacceptable due to the traffic that SR 1304 serves.

Rehabilitation of the existing structure is not feasible. The substructure is composed of timber, which is showing signs of decay. Therefore, it cannot be rehabilitated.

Maintaining traffic onsite with a temporary structure is not feasible due to environmental impacts. The expected delay on the detour route is four minutes. Please reference the detour discussion under Section D, Studied Detour Route.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

<u>ECOLOGICAL</u>	<u>YES</u>	<u>NO</u>
(1) Will the project have a substantial impact on any unique or important natural resource?	<input type="checkbox"/>	<u>X</u>
(2) Does the project involve habitat where federally listed endangered or threatened species may occur?	<input type="checkbox"/>	<u>X</u>
(3) Will the project affect anadromous fish?	<input checked="" type="checkbox"/>	<u>      </u>
(4) If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	<u>      </u>	<input checked="" type="checkbox"/>
(5) Will the project require the use of U. S. Forest Service lands?	<input type="checkbox"/>	<u>X</u>
(6) Will the quality of adjacent water resources be adversely impacted by proposed construction activities?	<input type="checkbox"/>	<u>X</u>
(7) Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?	<input type="checkbox"/>	<u>X</u>
(8) Will the project require fill in waters of the United States in any of the designated mountain trout counties?	<input type="checkbox"/>	<u>X</u>
(9) Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?	<input type="checkbox"/>	<u>X</u>
 <u>PERMITS AND COORDINATION</u>		
(10) If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?	<input type="checkbox"/>	<u>X</u>
(11) Does the project involve Coastal Barrier Resources Act resources?	<input type="checkbox"/>	<u>X</u>
(12) Will a U. S. Coast Guard permit be required?	<input type="checkbox"/>	<u>X</u>
(13) Will the project result in the modification of any existing regulatory floodway?	<input type="checkbox"/>	<u>X</u>

(14) Will the project require any stream relocations or channel changes?   X

SOCIAL, ECONOMIC, AND CULTURAL RESOURCES

YES      NO

(15) Will the project induce substantial impacts to planned growth or land use for the area?   X

(16) Will the project require the relocation of any family or business?   X

(17) Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?   X

(18) If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?  X

(19) Will the project involve any changes in access control?   X

(20) Will the project substantially alter the usefulness and/or land use of adjacent property?   X

(21) Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?   X

(22) Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)?  X

(23) Is the project anticipated to cause an increase in traffic volumes?   X

(24) Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?  X

(25) If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility?  X

(26) Is there substantial controversy on social, economic, or environmental grounds concerning the project?   X

(27) Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?  X

(28) Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?   X

- |      |   |                          |              |
|------|---|--------------------------|--------------|
| (29) | Will the project affect any archaeological remains which are important to history or pre-history?   | <input type="checkbox"/> | <u>  X  </u> |
| (30) | Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)? | <input type="checkbox"/> | <u>  X  </u> |
| (31) | Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended?  | <input type="checkbox"/> | <u>  X  </u> |
| (32) | Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the National System of Wild and Scenic Rivers?   | <input type="checkbox"/> | <u>  X  </u> |

F. Additional Documentation Required for Unfavorable Responses in Part E

**ITEM NO:**

3. North Carolina Division of Marine Fisheries stated that anadromous fish are found in this section of Sutton Creek. Therefore, an in-stream moratorium from February 15 to June 15 will be in effect. If turbidity curtains can be used during construction, the project may not be subject to the stated moratorium. NCDOT will adhere to the "Stream Guidelines for Anadromous Fish Crossings."
4. The amount of wetland impact is estimated to be approximately 0.20 acre. This estimate is based on preliminary plans and will be refined for the permit application. All practical measures have been taken to avoid and minimize impacts to the wetlands by replacing the existing bridge with a new bridge in the same location and roadway elevation. The approach roadway typical section is the minimum required for safety measures such as guardrail.

In accordance with provisions of Section 404 of the Clean Water Act, a permit will be required from the US Army Corps of Engineers (USACOE) for discharge of fill material into Waters of the United States. Due to the small amount of estimated wetland impacts, a Section 404 Nationwide Permit is anticipated. However, the type of permit will be determined during the final plan design stage.



G. CE Approval

TIP Project No.	<u>B-4228</u>
State Project No.	<u>8.2120401</u>
WBS No.	<u>33572.1.1</u>
Federal Project No.	<u>BRZ-1304 (7)</u>


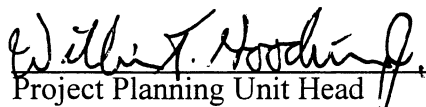
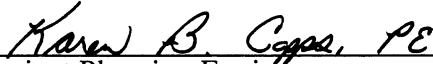
Project Description:

This project proposes to replace Bridge No. 59 on SR 1304 over Sutton Creek in Perquimans County. The bridge will be replaced with an 80-foot long bridge in the same location and elevation as the existing bridge. The cross section of the new bridge will include two 11-foot lanes with 3.0-foot minimum shoulder offsets. Approach work will consist of resurfacing and tying into the existing alignment for approximately 320 feet to the west and approximately 390 feet to the east of the existing bridge. Guardrail will be installed where warranted. Traffic will be detoured along surrounding roads during construction.

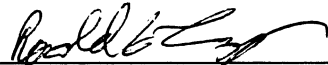
Categorical Exclusion Action Classification: (Check one)

       TYPE II(A)  
  X   TYPE II(B)

Approved:

<u>4/12/04</u> Date	<u></u> Assistant Manager Project Development & Environmental Analysis Branch
<u>4/12/04</u> Date	<u></u> Project Planning Unit Head Project Development & Environmental Analysis Branch
<u>4/12/04</u> Date	<u></u> Project Planning Engineer Project Development & Environmental Analysis Branch

For Type II(B) projects only:

<u>4/20/04</u> Date	<u></u> John F. Sullivan, III, Division Administrator Federal Highway Administration
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# PROJECT COMMITMENTS

Perquimans County  
Bridge No. 59 on SR 1304 Over Sutton Creek  
Federal Aid Project No. BRZ-1304(7)  
State Project No. 8.2120401  
WBS No. 33535.1.1  
T.I.P. No. B-4228

## ***Division 1 Construction Engineer, Structure Design Unit***

The proposed structure should be designed to facilitate top-down construction. If it is determined that top-down construction cannot be used, then additional coordination with the United States Army Corps of Engineers will be required.

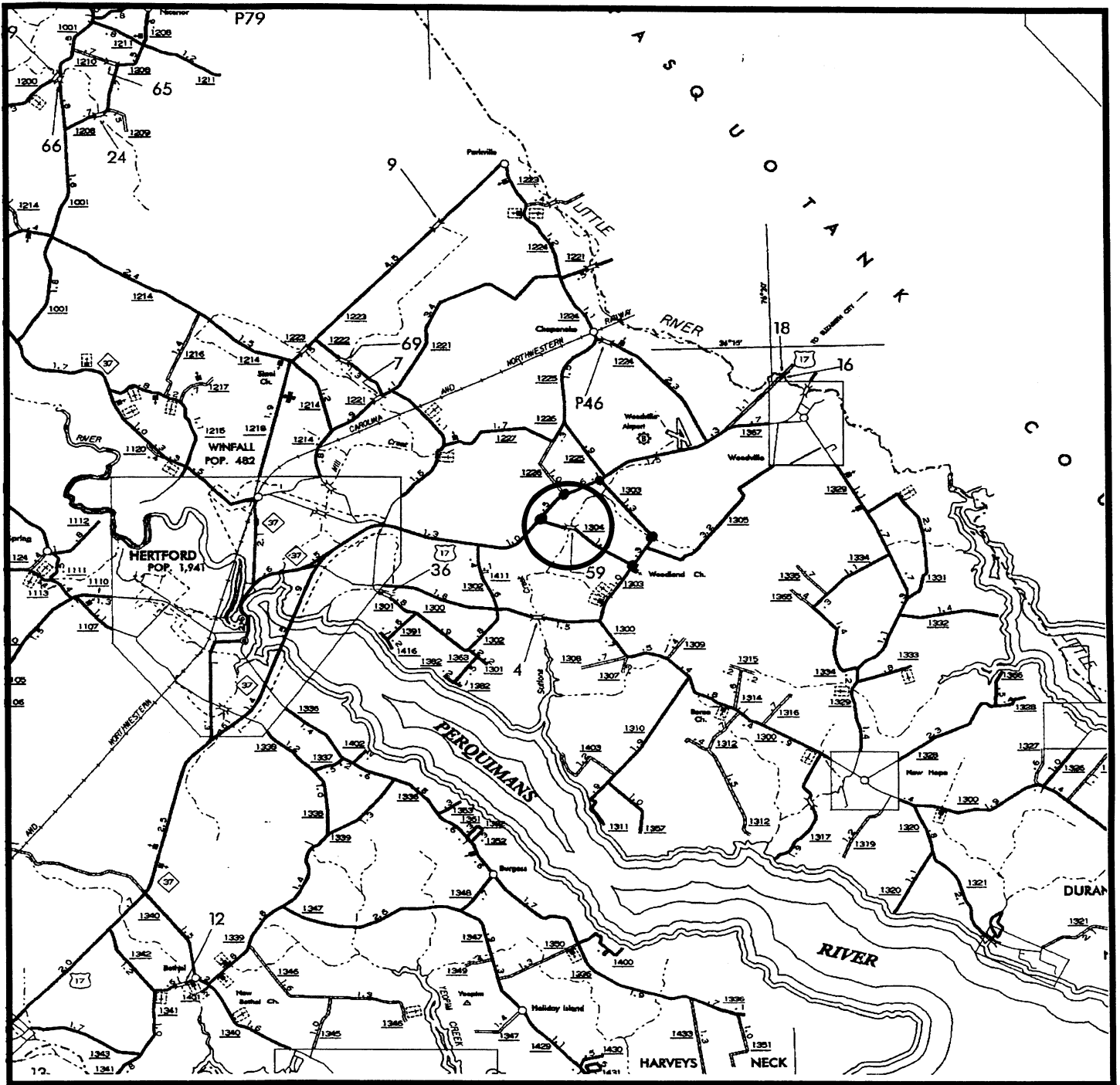
No deck drains will be allowed to discharge directly into Sutton Creek.

## ***Division 1 Construction Engineer, Structure Design Unit, Roadway Design Unit***

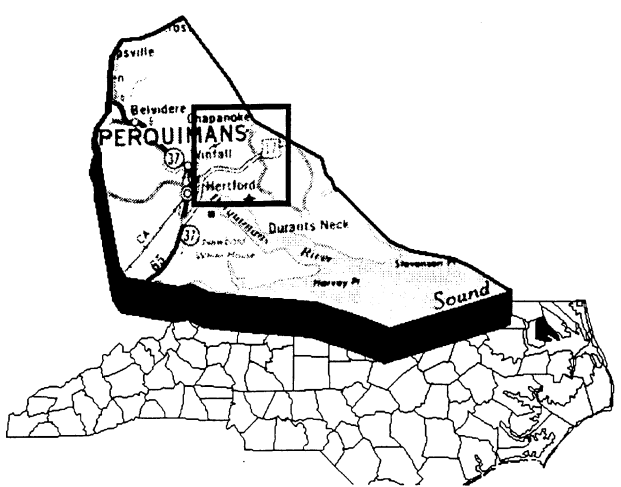
This reach of Sutton Creek has potential as a travel corridor for anadromous fish. Therefore, an in-stream moratorium will be in effect from February 15 to June 15. The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented, as applicable. If turbidity curtains can be used during construction, the project may not be subject to the stated moratorium.

## ***Division 1 Construction Engineer, Project Development and Environmental Analysis Branch, Roadway Design, Structure Design***

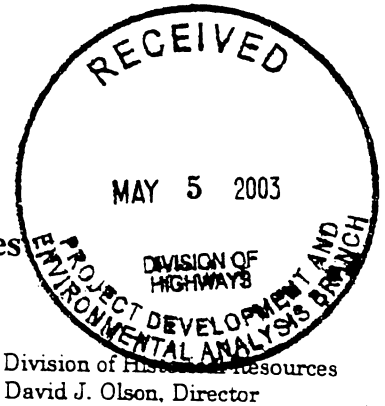
The estimated impacts to wetlands is 0.20 acre, which exceeds 0.1 acre. Therefore, mitigation for this project will be required. During the final design phase, every effort will be made to continue to minimize impacts to the wetlands. A final estimate of wetland impacts will be made during the final plan design phase.



●—●—●— Studied Detour Route



	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT &amp; ENVIRONMENTAL ANALYSIS BRANCH</p>
<p><b>PERQUIMANS COUNTY REPLACE BRIDGE NO. 59 ON SR 1304 OVER SUTTON CREEK B-4228</b></p>	
<p>Figure 1</p>	



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 Historic Resources  
David J. Olson, Director

April 29, 2003

MEMORANDUM

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

FROM: David Brook *for David Brook*

SUBJECT: Replacement of Bridge No. 59 on SR 1304 over Sutton Creek, B-4228,  
Perquimans County, ER03-0959

Thank you for your memorandum of April 7, 2003, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

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.

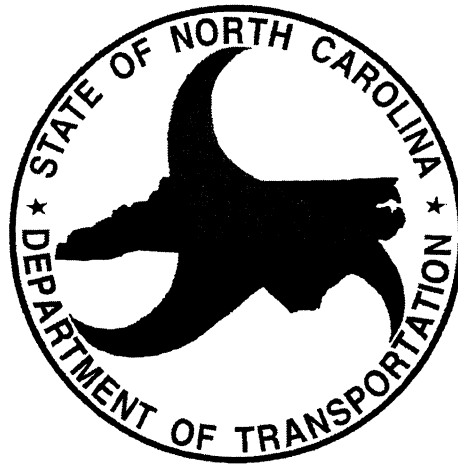
Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Mary Pope Furr

[www.hpo.dcr.state.nc.us](http://www.hpo.dcr.state.nc.us)

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NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION



NATURAL RESOURCES  
TECHNICAL REPORT

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REPLACEMENT BRIDGE # 59  
SR 1304 OVER SUTTON CREEK  
PERQUIMANS COUNTY, NORTH CAROLINA  
NCDOT TIP No. B-4228

March 2003

NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION



NATURAL RESOURCES  
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SR 1304 OVER SUTTON CREEK  
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NCDOT TIP No. B-4228

March 2003

PREPARED BY:

**HDR**

HABITAT  
ASSESSMENT AND  
RESTORATION  
PROGRAM 

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# NATURAL RESOURCES TECHNICAL REPORT

## BRIDGE NO. 59 SR 1304 OVER SUTTON CREEK PERQUIMANS COUNTY, NORTH CAROLINA NCDOT TIP NO. B-4228

### 1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to replace the above-referenced bridge during Fiscal Year 2006. In support of this planned activity, HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) prepared the following Natural Resources Technical Report for the site.

#### 1.1 Project Description

The proposed project is designed to replace Bridge No. 59 on SR 1304 over Sutton Creek in Perquimans County (County), North Carolina (Figure 1). The current bridge structure consists of concrete over steel with wood supports, spanning approximately 50 feet [15.24 meters (m)] of stream. The current bridge is 28 feet (8.53 m) wide and 52 feet (15.85 m) long.

The Study Area, depicted in Figure 2, is based on the project limits provided on the aerial photograph in the October 28, 2002 Request for Environmental Input. This area includes approximately 50 acres (0.20 km<sup>2</sup>) of land to the southeast and northwest of the existing bridge. Land use within the Study Area is approximately 25 percent residential, 25 percent agricultural, and 50 percent forested.

#### 1.2 Project Purpose

This report is submitted to assist in the preparation of a Categorical Exclusion (CE) for the above-referenced project. The purpose of this report is to inventory and describe the natural resources that occur within the proposed Study Area. Assessments of the nature and severity of potential impacts to these natural resources are provided along with recommendations for measures that will minimize resource impacts.

This report identifies areas of particular environmental concern that may affect the selection of a preferred alignment or may necessitate changes in design criteria. Such environmental concerns should be addressed during the preliminary planning stages of the proposed project in order to maintain environmental quality in the most efficient manner. The analyses contained in this document are relevant only in the context of the existing preliminary Study Area. If the Study Area changes, additional field investigations may be necessary.

Some environmental effects could not be determined at this stage of the planning process either due to the lack of design information or the season of the study. These effects are identified in the appropriate section along with recommendations for future action.

### **1.3 Methodology**

Natural resource information for the Study Area (Figure 2) was obtained from several sources. Prior to an on-site evaluation of the Study Area, the Hertford 1:24,000 topographic quadrangle map from the United States Geological Survey (USGS) and the Chowan and Perquimans Counties Soil Survey from the Natural Resource Conservation Service (NRCS) were used to determine existing landscape and soil composition. Aerial photography, supplied by NCDOT, was studied to identify hydrologic and environmental features. The North Carolina Natural Heritage Program (NCNHP) database was used to search for the presence of known populations of Federally threatened and endangered species in the County and in the Hertford Quadrangle. In addition, the NCNHP database was searched for Federal Species of Concern (FSC), as well as State listed species. The United States Fish and Wildlife Service (USFWS) list of protected species for Perquimans County was used to verify the NCNHP data and check for additional listed species. North Carolina Division of Water Quality (NCDWQ) records were reviewed to determine stream index number, classification, and National Pollution Discharge Elimination System (NPDES) permits within the Project vicinity. The Pasquotank River Basinwide Water Quality Plan was used to further characterize environmental resource conditions at and around the project site (NCDENR, 1999). The North Carolina Wildlife Resources Commission (NCWRC) Geographical Information System (GIS) database was searched to identify proposed critical habitats for aquatic species.

Field investigations were conducted by HDR/HARP personnel (Section 1.4) on January 15, 2003. Water resources were identified, and their physical characteristics recorded on field data sheets (Appendix A). Plant communities and their associated wildlife (or potential wildlife habitat) were also identified and described. Terrestrial community classifications generally follow Schafale and Weakley (1990) where applicable, and plant taxonomy follows Radford, et al. (1968). Animal taxonomy follows Brigham et al. (1982), Martof et al. (1980), Menhinick (1991), Potter et al. (1980), and Webster, et al. (1985).

Vegetative communities were mapped based on aerial photography and field verified during the site visit. Wildlife identification involved various techniques including qualitative habitat assessment based on vegetative communities, active searching, and identifying characteristic signs of wildlife (sounds, scat, tracks, burrows, etc.). cursory surveys of aquatic organisms were conducted and tactile searches for benthic organisms were administered. Organisms captured during these searches were identified and released.

Jurisdictional wetlands, if present, were identified and evaluated based on criteria established in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual

(USACE, 1987) and Guidance for Rating the Values of Wetlands in North Carolina (NCDENR, 1995). Wetlands were classified using Cowardin, et al. (1979).

#### 1.4 Qualifications

The following personnel performed and/or supervised the natural resource investigation and preparation of this report. Each individual is listed with qualifications and areas of involvement with the project.

Personnel:	Responsibility:
Mr. Chris Matthews, M.S. Section Manager HDR-Charlotte	Project Management Report QA/QC
Ms. Kerri Snyder, M.S. Environmental Scientist HDR-Charlotte	Preliminary Research Field Inventory Report Preparation
Ms. Jaime Henkels, M.E.M. Environmental Scientist HDR-Charlotte	Preliminary Research Field Inventory Report Preparation
Mr. Philip May Environmental Scientist HDR-Raleigh	Preliminary Research Field Inventory Report Preparation
Mr. Joshua McSwain GIS Analyst HDR-Charlotte	Preliminary Research Field Inventory Report Preparation
Dr. James F. Matthews, Ph.D. Botanist HARP-Charlotte	Field Inventory Report Preparation
Mr. John T. Soule Botanist/Surveyor HARP-Charlotte	Field Inventory Report Preparation

#### 1.5 Definitions

For the purposes of this document, the following terms are used concerning the limits of natural resource investigations. “**Study Area**” denotes the area bounded by the proposed limits supplied by NCDOT on the aerial photograph (Figure 3). “**Project Area**” is defined as the area within which the actual bridge reconstruction will eventually take place.

## 2.0 PHYSICAL RESOURCES

Soil and water resources that occur in the Study Area are discussed below with respect to possible environmental concerns. Soil properties and site topography significantly influence the potential for soil erosion and compaction, along with other possible construction limitations or management concerns. Water resources within the Project Area present important management limitations due to the need to regulate water movement and the increased potential for water quality degradation. Excessive soil disturbance resulting from construction activities can potentially alter both the flow and quality of water resources, limiting downstream uses. In addition, soil characteristics and the availability of water directly influence the composition and distribution of flora and fauna in biotic communities, thus affecting the characteristics of these resources.

### 2.1 Soils

The County lies in the Outer Coastal Plain physiographic region of North Carolina. Flat terrain, slow-moving streams and swamplands, and estuarine areas characterize the landscape. Elevations in the project vicinity are less than 5 feet (1.5 m) above mean sea level (msl).

Soil mapping units are based on the NRCS soil survey for the County (USDA, 1986). The Study Area, located at the intersection of SR 1304 and Sutton Creek, is mapped as Chowan silt loam (*Thapto-Histic Fluvaquents*), Chapanoke silt loam (*Aeric Ochraqults*), and Perquimans silt loam (*Typic Ochraqults*). Chowan and Perquimans soils are listed as hydric, while Chapanoke may contain inclusions of hydric soils.

One hydric soil type, Chowan, has been mapped within the Study Area. Chowan silt loam soils consist of very poorly drained, nearly level acid soils on flood plains of small streams that flow into the Albemarle Sound. The Chowan series is characterized by moderately slow permeability. Most areas with these soils flood frequently for long periods, and slopes in these areas range from 0 to 2 percent. Soils in this group generally have a surface organic layer and contain inclusions of Dorovan muck.

Chapanoke silt loam soils consist of somewhat poorly drained, nearly level acid soils on low flats along small streams that flow into the Albemarle Sound. Chapanoke soils are characterized by having moderately slow permeability and a moderate water capacity. This soil is frequently flooded for long periods and contains inclusions of hydric soils

Another hydric soil type, Perquimans, has been mapped within the Study Area. These silt loam soils consist of poorly drained, nearly level soils on flats and depressions near small streams that flow into the Albemarle Sound. This soil is characterized by having a moderately slow permeability rate with the seasonal high water table at or near the surface. Perquimans soils are very strongly acid or strongly acid.

## 2.2 Water Resources

This section contains information concerning surface water resources likely to be impacted by the proposed project. Water resource assessments include the physical characteristics, best usage standards, and water quality aspects of the water resources, along with their relationship to major regional drainage systems. Probable impacts to surface water resources are also discussed, as are means to minimize impacts.

### 2.2.1 Best Usage Classification

Water resources within the Study Area are located in the Albemarle Sound Basin (USGS Hydrologic Unit 03010205, NCDWQ Subbasin 03-01-52). There is one water resource in the Study Area. SR 1304 crosses Sutton Creek, a third order tributary to Perquimans River, which discharges into the Albemarle Sound. Sutton Creek is considered by NCDWQ to be in the Pasquotank River Basin, as noted in Section 2.2.3.2.

Streams have been assigned a best usage classification by the NCDWQ that reflects water quality conditions and potential resource usage. The classification for Sutton Creek (NCDWQ Index No. 30-6-8-(1), 04/06/61) is Class C-Sw. This classification of waters is protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture, and other uses suitable for Class C. Secondary recreation includes those activities performed in an infrequent, unorganized, or incidental manner. Swamp waters generally have a low pH, low dissolved oxygen, and very low velocities.

The North Carolina Coastal Resources Commission has recently adopted temporary Coastal Shoreline Rules. These rules require a 30-foot setback from the normal high water level of public trust waters and estuaries. This setback applies to all new development, except water dependent uses. The proposed bridge replacement will not require these setbacks.

### 2.2.2 Physical Characteristics of Surface Waters

Sutton Creek at SR 1304 has a channel width of approximately 50 feet (15.24 m) and a water depth of up to approximately four feet (1.22 m). Bankfull width and height measurements were not possible due to the coastal swamp nature of the stream. Sutton Creek has a wide, forested flood plain swamp that has standing water for long periods. Within the Study Area, Sutton Creek has a substrate composed of silt, organic material and muck.

The Rosgen system of stream classification is not applicable to Sutton Creek in the vicinity of the Study Area due to the coastal nature of the stream (1996). The forested flood plain adjacent to the stream is frequently flooded for long periods by both rainfall events, surface water flow, and groundwater input. In many areas, stream banks are not defined. The stream has a very low-grade slope, which is characteristic of swampy areas in the Coastal Plain.

### 2.2.3 Water Quality

This section describes the quality of water resources within and downstream of the Project Area. Potential sediment loads and toxin concentrations of these waters from both point and nonpoint sources are evaluated. Water quality assessments are made based on published resource information and existing general watershed characteristics. These data provide insight into the value of water resources within the Project Area to meet human needs and provide habitat for aquatic organisms.

#### 2.2.3.1 Benthic Macroinvertebrate Ambient Network

The Basinwide Monitoring Program, managed by the NCDWQ, is part of an ongoing ambient water quality monitoring program that addresses long-term trends in water quality. The Program monitors ambient water quality by sampling at fixed sites for selected benthic macroinvertebrate organisms, which are sensitive to water quality conditions. Samples are evaluated on the number of taxa present of intolerant groups [Ephemeroptera, Plecoptera, Trichoptera (EPT)] and a taxa richness value (EPT S) is calculated. A biotic index value is also calculated for the sample that summarizes tolerance data for all species in each collection. The two rankings are given equal weight in final site classification. The biotic index and taxa richness values primarily reflect the effects of chemical pollution and are a poor measure of the effects of such physical pollutants as sediment. There are no benthic monitoring stations on Sutton Creek (NCDENR, 2002a).

#### 2.2.3.2 Water Quality Monitoring

The Pasquotank River Basinwide Water Quality Plan does not rate Sutton Creek or Perquimans River (NCDENR, 2002a). In addition, there are no NPDES facilities on Sutton Creek. The nearest NPDES site to the Study Area is the Town of Hertford Wastewater Treatment Plant (WWTP) on the Perquimans River (NCDENR, 2002b).

Land use within the Subbasin is approximately 32 percent forested/wetland, 28 percent surface water, 39 percent agriculture, and less than one percent urban (NCDENR, 2002). Within the Sutton Creek watershed, a higher percentage of the land usage is agriculture.

Non-point source discharges within the Study Area could occur from several sources. The impervious roadway surface will discharge direct surface runoff during rainfall events along with minimal amounts of potential pollutants present on the road surface. Agricultural areas, forestry practices, and residential runoff through the roadside drainage ditches may introduce nutrients, herbicides, or pesticides if used in the area for lawn, timber, or crop management.

## 2.3 Summary of Anticipated Impacts

Impacts to water resources in the Project Area are likely to result from activities associated with project construction. Activities likely to result in impacts include clearing and grubbing on stream banks, riparian canopy removal, in-stream construction, fertilizers and pesticides used in revegetation, and pavement installation. The following impacts to surface water resources are likely to result from the aforementioned construction activities.

- Increased sedimentation and siltation downstream of the crossing and increased erosion in the Project Area.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
- Changes in and destabilization of water temperature due to vegetation removal.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentrations of toxic compounds in roadway runoff.
- Potential increase of toxic compound releases, such as fuel and oil, from construction equipment and other vehicles.
- Alteration of stream discharge due to silt loading and changes in surface and ground water drainage patterns.

In order to minimize potential impacts to water resources in the Project Area, NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be strictly enforced during the construction phase of the project. In addition, NCDOT's Best Management Practices for Bridge Demolition and Removal will be followed for Case 3 projects. Impacts can be further reduced by limiting in-stream activities and revegetating stream banks immediately following completion of the grading. Uses of turbidity curtains for this project were reviewed and investigated. If instream work is unavoidable, the use of turbidity curtains in the stream should be evaluated by the project engineer. The channel depth may allow the use of this device to prevent excessive siltation of the downstream aquatic environment caused by disturbance to the stream substrate.

## 3.0 BIOTIC RESOURCES

Biotic resources include terrestrial and aquatic communities. This section describes the biotic communities encountered in the Study Area, as well as the relationships between fauna and flora within these communities. The composition and distribution of biotic communities throughout the Study Area are reflective of topography, soils, hydrology, and past and present land usage. Descriptions of the terrestrial systems are presented in the context of plant community classifications. These classifications follow Schafale and Weakley (1990), where possible. In addition to site-specific evidence of fauna, representative animal species that are likely to occur in these habitats (based on published range distributions) are also listed.

Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Subsequent references to the same organism refer to the common name only, unless no common name is designated.

Biotic communities include terrestrial and aquatic elements. Much of the flora and fauna described within biotic communities use resources from adjacent communities, making boundaries between contiguous communities difficult to define.

### 3.1 Terrestrial Resources

There are four distinct terrestrial communities within the Study Area including residential areas, swamp forest, disturbed upland forest, and loblolly pine farm. Each of these communities is described below and shown in Figure 3. Ecotones or gradual changes between communities are often present, but are not described separately unless large enough to be considered a distinct area.

#### Residential Areas

Residential areas within the Study Area have few scattered trees. These are Loblolly pine (*Pinus taeda*), Sycamore (*Platanus occidentalis*), Red maple (*Acer rubrum*), Atlantic white cedar (*Chamaecyparis thyoides*), Sweet gum (*Liquidambar styraciflua*), and Hop hornbeam (*Ostrya virginiana*). Fauna within this community are likely to be transient in nature and reflect the faunal composition in adjacent communities.

#### Swamp Forest

A swamp forest is adjacent to Sutton Creek. This community may have historically been a Coastal Plain Bottomland Hardwood or Cypress-Gum Swamp, but previous timber harvesting has resulted in a mixed community with more rapidly colonizing wetland species. This wetland is dominated by Red maple and Green ash (*Fraxinus pennsylvanica*). Also present are Bald cypress (*Taxodium distichum*), American elm (*Ulmus americana*), Sweet gum, and Yellow poplar (*Liriodendron tulipifera*). The subcanopy contains Sweet gum, Pawpaw (*Asimina triloba*), Water ash (*Fraxinus caroliniana*), Willow (*Salix spp.*), and Box elder maple (*A. negundo*). The shrub layer contains Privet (*Ligustrum sinense*), Elderberry (*Sambucus canadensis*), Virginia willow (*Itea virginica*), and Beautyberry (*Callicarpa americana*). The herb layer includes Giant Cane (*Arundinaria gigantea*), Lizard's-tail (*Saururus cernuus*), Cottongrass bulrush (*Scirpus cyperinus*), Ground ivy (*Glechoma hederacea*), and Violet (*Viola spp.*). Vines present are Japanese honeysuckle (*Lonicera japonica*), Grape (*Vitis spp.*), Carolina supplejack (*Berchemia scandens*), and Greenbrier (*Smilax spp.*). Within this community, an abandoned roadbed exists to the north of the existing bridge. The banks of this area are dominated by Sycamore, with Yellow poplar. In addition, portions of the area exhibit signs of forestry activities such as stumps and ruts.

Fauna, or evidence of fauna, noted within this community included White-tailed deer (*Odocoileus virginianus*), woodpeckers, and crayfish. Additional fauna likely to occur within the community include Opossum (*Didelphis virginiana*), Marsh rabbit (*Sylvilagus*



*palustris*), Muskrat (*Ondatra zibethicus*), and Raccoon (*Procyon lotor*). The long periods of flooding limit the number of forage plants and makes permanent colonization of many terrestrial mammal species unlikely, however, the woody debris and snags create shelter opportunities for fauna, especially avian species. Wood ducks and other species of water birds may inhabit this area, especially during the wet season.

#### Disturbed Upland Forest

A disturbed upland forest is also present to the west of the bridge at the edge of the wetland area and along the road to the east of the bridge. The canopy in these areas is composed of Sweet gum, Red maple, Southern red oak (*Quercus falcata*), Black cherry (*Prunus serotina*), Black walnut (*Juglans nigra*), and Sycamore. The subcanopy contains Atlantic white cedar, Green ash, Sweet gum, and Box elder maple. The shrub layer includes Wax myrtle (*Myrica cerifera*), Pawpaw, Privet, Beautyberry, Spicebush (*Lindera benzoin*) and Elderberry. Trumpetvine (*Campsis radicans*), Greenbrier, and Japanese honeysuckle were also found. The herb layer includes Arrowleaf heartleaf (*Hexastylis arifolia*) and Christmas fern (*Polystichum acrostichoides*).

Fauna likely to inhabit this area include Southeastern shrew (*Sorex longirostris*), Eastern mole (*Scalopus aquaticus*), Red bat (*Lasiurus borealis*), Evening bat (*Nycticeius humeralis*), Eastern cottontail (*S. floridanus*), Gray squirrel (*Sciurus carolinensis*), Southern flying squirrel (*Glaucomys volans*), White-footed mouse (*Peromyscus leucopus*), and Gray fox (*Urocyon cinereoargenteus*).

#### Loblolly Pine Farm

A Loblolly pine farm is present in the northeast portion of the Study Area. The trees are young, with a dense growth of young hardwoods and shrubs. Present are Red maple, Water oak, Sweet gum, Wax myrtle, Horse sugar (*Symplocos tinctoria*), Groundsel-tree (*Baccharis halimifolia*), Greenbrier, Japanese honeysuckle, and Winged sumac (*Rhus copallina*). Faunal community composition is likely to be similar to that of the disturbed upland forest.

### 3.2 Aquatic Resources

There is one aquatic community, Sutton Creek, located in the Study Area. Physical aspects of the aquatic community are described in Section 2.2. In addition, leaf litter and woody debris are present in the stream channel. Algae are also common in the standing water areas.

Macroinvertebrates found in this community include amphipods (Amphipoda). Mollusks observed include clams (Sphaeriidae) and snails (Gastropoda). Crayfish (Decapoda) were also found. Mussel survey data will be supplied by NCDOT.

Juvenile shiner were observed in the shallow areas of the swamp, but no adult fishes were found within this community. The slow moving waters of Sutton Creek provide woody

debris as habitat, however the stream exhibits low dissolved oxygen levels and a relatively homogeneous substrate of silt and muck. Riffle/pool structure is lacking. Overall, Sutton Creek within the Study Area is not likely to provide a diversity of fish habitat. However, it may have potential as a spawning area for fish from the estuarine areas downstream.

A review of the NCWRC database showed no occurrence of Significant Aquatic Endangered Habitats within 1 mile (1.6 km) of the Study Area. There are no Essential Fish Habitats or Anadromous Fish Spawning Areas within the Study Area. Construction moratoria should be determined by consultation with the NCWRC and the National Marine Fisheries Service.

### **3.3 Summary of Anticipated Impacts**

Construction of the proposed project will have various impacts on the biotic resources described in Sections 3.1 and 3.2. Any construction-related activities in or near these resources have the potential to impact biological functions. This section describes potential impacts to the natural communities within the Study Area in terms of the communities and organisms affected. Estimates of impact areas are not included due to the early stage of the planning process for this project. No estimates can be made until the design and footprint of the bridge construction have been determined. However, the natural community boundaries, shown in Figure 3, should be incorporated into the development of alternatives and design of the replacement structure in order to minimize impacts.

#### **3.3.1 Terrestrial Impacts**

Impacts to terrestrial communities will result from project construction due to the widening, clearing, and paving of portions of the Project Area, and thus, the loss of community area. The communities likely to be impacted by the Project include disturbed residential areas, upland forest, and swamp forest. Loss of terrestrial communities could minimally impact the habitat of local fauna. However, natural communities occurring in the Study Area are shown in Figure 3 and may be used during the development of alternatives and design of the replacement structure.

#### **3.3.2 Aquatic Impacts**

Impacts to the aquatic community of Sutton Creek will result from the replacement of Bridge No. 59. Impacts are likely to result from the physical disturbance of aquatic habitats (e.g., substrate and water quality). Disturbance of aquatic habitats has a detrimental effect on aquatic community composition by reducing species diversity and the overall quality of aquatic habitats. Physical alterations to aquatic habitats can result in the following impacts to aquatic communities. Overall, impacts will be temporary due to the short duration of construction and expected stabilization activities.

- Inhibition of plant growth.
- Clogging of feeding structures or filter feeding organisms and gills of fish.
- Burial of benthic organisms.
- Algal blooms resulting from increased nutrient concentrations, which deplete dissolved oxygen supplies.
- Loss of benthic macroinvertebrates through scouring and deposition resulting from an increased sediment load from storm water runoff from the road during large storm events.
- Increased water temperatures due to removal of riparian canopy.

Impacts to aquatic communities can be minimized by strict adherence to the BMPs for Protection of Surface Waters and for Bridge Demolition and Removal and additional measures described in Section 2.3.

## **4.0 JURISDICTIONAL TOPICS**

This section provides inventories and impact analyses pertinent to two significant regulatory issues: Waters of the United States and rare and protected species. These issues retain particular significance because of Federal and State mandates that regulate their protection. This section deals specifically with the impact analyses required to satisfy regulatory authority prior to project construction.

### **4.1 Waters of the United States**

Surface waters and wetlands fall under the broad category of “Waters of the United States”, as defined in Section 33 of Code of Federal Regulations (CFR) Part 328.3. Any action that proposes to dredge or place fill material into surface waters or wetlands falls under the jurisdiction of the USACE under Section 404 of the Clean Water Act (33 U.S.C. 1344). Surface waters include all standing or flowing waters that have commercial or recreational value to the public. Wetlands are identified based on the presence of hydric soils, hydrophytic vegetation, and saturated or flooded conditions during all or part of the growing season.

#### **4.1.1 Characteristics of Wetlands and Surface Waters**

Criteria used to delineate jurisdictional wetlands include evidence of hydric soils, hydrophytic vegetation, and hydrology. There are wetlands adjacent to Sutton Creek within the Study Area. Physical descriptions of surface waters in the Study Area are included in Section 2.2.

A ditch is present on the southeast side of the bridge. Due to the fact that it is constructed within and adjacent to the wetland areas, this feature will likely be considered jurisdictional. The ditch extends along the road and crosses the road at the eastern extent of the Study Area. At this point it becomes non-jurisdictional. USACE and NCDWQ evaluation forms for this feature are included in Appendix A.

Wetlands are present both up- and downstream of the bridge and are adjacent to the stream. This swamp forest area has predominately hydric organic soils and is semi-permanently flooded. Buttressed trees are present throughout the wetlands along with other strongly hydrophytic vegetation listed in Section 3.1. The swamp forest supplies several important functions including flood storage capacity, water quality, and wildlife habitat. This resulted in a rating of 83 using the NCDWQ Rating Form (Appendix A).

Impacts to jurisdictional surface waters are calculated based on the linear feet of the stream that are located within the Study Area. Impacts to Waters of the United States will likely include wetlands and stream channels.

## **4.2 Permit Issues**

Unavoidable impacts to jurisdictional surface waters and wetlands are anticipated for the proposed project. As a result, construction activities will require permits and certifications from various regulatory agencies in charge of protecting the water quality of public water resources.

A Nationwide Permit (NWP) 23 is likely to be applicable for all impacts to Waters of the United States resulting from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined that, pursuant to the Council on Environmental Quality (CEQ) regulation for implementing the procedural provisions of the National Environmental Policy Act:

- (1) the activity, work or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment; and,
- (2) the office of the Chief of Engineers has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination.

This project will also require a 401 Water Quality Certification from the NCDWQ prior to the issuance of the NWP. Section 401 of the Clean Water Act requires that the State issue or deny certification for any Federally permitted or licensed activity that may result in a discharge to Waters of the United States. Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. The issuance of a 401 Certification from the NCDWQ is a prerequisite to issuance of a Section 404 permit.

A NWP 33 may also be required if temporary construction measures are required. This permit authorizes temporary access, dewatering, and construction activities for projects already authorized by USACE or not requiring authorization. This permit does not require notification to NCDWQ as long as all conditions of their certification are met.

A Coastal Area Management Act (CAMA) permit may also be required by the North Carolina Division of Coastal Management (NCDCM). Their jurisdiction, in this case, could apply if Sutton Creek is considered a public trust water. Sutton Creek was considered a public trust water 1.8 miles downstream during the permitting of the SR 1300 bridge replacement. NCDCM has been contacted and will determine their jurisdiction on the site. This will be forwarded to NCDOT upon receipt.

#### 4.2.1 Bridge Demolition

Bridge No. 59 is located on SR 1304 over Sutton Creek in the County. It is constructed of wood, concrete, and steel. All efforts will be made to demolish the bridge without dropping any materials into Waters of the United States. However, there is some potential for materials to enter surface waters or wetlands during construction. Compliance with the BMPs discussed previously will limit these impacts to minimal levels. The NCDOT project engineer will complete bridge materials and fill data at a later time

The B-4228 bridge replacement falls under Case 3 as described in the NCDOT Best Management Practices for Bridge Demolition and Removal. Case 3 has no special restrictions other than those outlined in Best Management Practices for Protection of Surface Waters. There are no construction moratoria and no evidence of protected species within the Project Area.

#### 4.2.2 Avoidance, Minimization, and Mitigation

The USACE, through the CEQ, has adopted a wetland mitigation policy, which embraces the concept of “no net loss of wetlands” and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of Waters of the United States; specifically, wetlands. Mitigation of wetland impacts has been defined by the CEQ to include the following: avoiding, minimizing, rectifying, reducing (over time), and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the U.S. Environmental Protection Agency (EPA) and the USACE, in determining “appropriate and practicable” measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the United States. Implementation of these steps will be required through project modifications and permit conditions.

Minimization typically focuses on decreasing the footprint of the proposed project through the reduction to median widths, ROW widths, fill slopes, and/or road shoulder widths.

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that “no net loss of wetlands” functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable impacts that remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation, and enhancement of Waters of the United States, specifically wetlands. Such actions should be undertaken in areas adjacent or contiguous to the discharge site, if practicable.

Current NWP regulations require compensatory mitigation for those projects that require notification to the USACE. In addition, NCDWQ requires mitigation for impacts greater than 1.0 acres of wetlands and/or more than 150 linear feet (45.72 meters) of streams. For projects in or near streams or other open waters, a common component of any compensatory mitigation plan is to establish and maintain a vegetated buffer next to open waters within the Project vicinity. Generally, the buffer is 25 to 50 feet wide on each side of the stream; however, the District Engineer will determine whether or not the vegetated buffer is required and, if necessary, the appropriate buffer width. The vegetated buffer should consist of native species and cannot account for more than one third of compensatory mitigation acreage.

The impacts from this project are anticipated to meet the minimum mitigation thresholds; therefore, a mitigation requirement is anticipated. However, final authority for the permit/mitigation decisions rests with the USACE.

Stream mitigation potential on-site is limited by the presence of the bridge, which restricts the use of natural channel design. In addition, stream restoration of swamp channels is not an established practice at this time.

Wetland mitigation opportunity should be evaluated for the removal of the old roadbed materials and restoration of the swamp forest. However, this area is removed from the immediate construction area and would need to be accessed through two residences beyond the standard NCDOT Right-of-Way. This would involve additional land acquisition.

### **4.3 Protected Species**

Some populations of fauna and flora have been, or are, in the process of decline either due to natural forces or their inability to co-exist with human development. Federal law [under the provisions of the Endangered Species Act of 1973 (ESA), as amended] requires that any action likely to adversely affect a species classified as Federally

protected, be subject to review by the U.S. Fish and Wildlife Service (USFWS). Other species may receive limited additional protection under separate State laws.

#### 4.3.1 Federally Protected Species

Plants and animals with Federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Sections 7 and 9 of the ESA, as amended. The USFWS (last update: February 25, 2003) and NCNHP (last update: January 2003) list no Federally protected species for the County.

A review of the NCNHP database of rare species and unique habitats shows no occurrence of Federally protected species within 1 mile (1.6 km) of the Study Area (NCDENR, 2002c).

#### 4.3.2 Federal Species of Concern and State Listed Species

There is one FSC listed by the NCNHP for the County (Table 1). FSC are not afforded Federal protection under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. However, the status of these species is subject to change and should be included for consideration. FSC are defined as species that are under consideration for listing for which there is insufficient information to support listing. In addition, organisms that are listed as Endangered (E), Threatened (T), or Special Concern (SC) by the NCNHP list of Rare Plant and Animal Species are afforded limited State protection under the North Carolina State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979.

Table 1 lists the FSC, the State status of each species (if afforded State protection), and the potential for suitable habitat in the Project Area for each species. A review of the NCNHP database of rare species and unique habitats shows no occurrence within 1 mile (1.6 km) of the Study Area (NCDENR, 2002c). This species list is provided for information purposes as the protection status of these species may be upgraded in the future.

<b>TABLE 1</b>			
<b>Federal Species of Concern</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>State Status</b>	<b>Potential Habitat</b>
Rafinesque's Big-eared Bat	<i>Corynorhinus rafinesquii</i>	T	No

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the natural resource investigation described in the preceding sections, the following recommendations and considerations should be evaluated:

- BMPs should be implemented to assure minimal environmental degradation.
- Bridge replacement should occur on the north side of the existing structure, if possible, due to the more extensive swamp forest on the south side of the road.
- Wetland impacts are anticipated and mitigation may be required by the USACE.
- USACE and NCDCM have been contacted to obtain concurrence regarding jurisdictional wetlands and public trust waters. Responses will be forwarded to NCDOT upon receipt. Permitting options should then be evaluated.



## 6.0 REFERENCES

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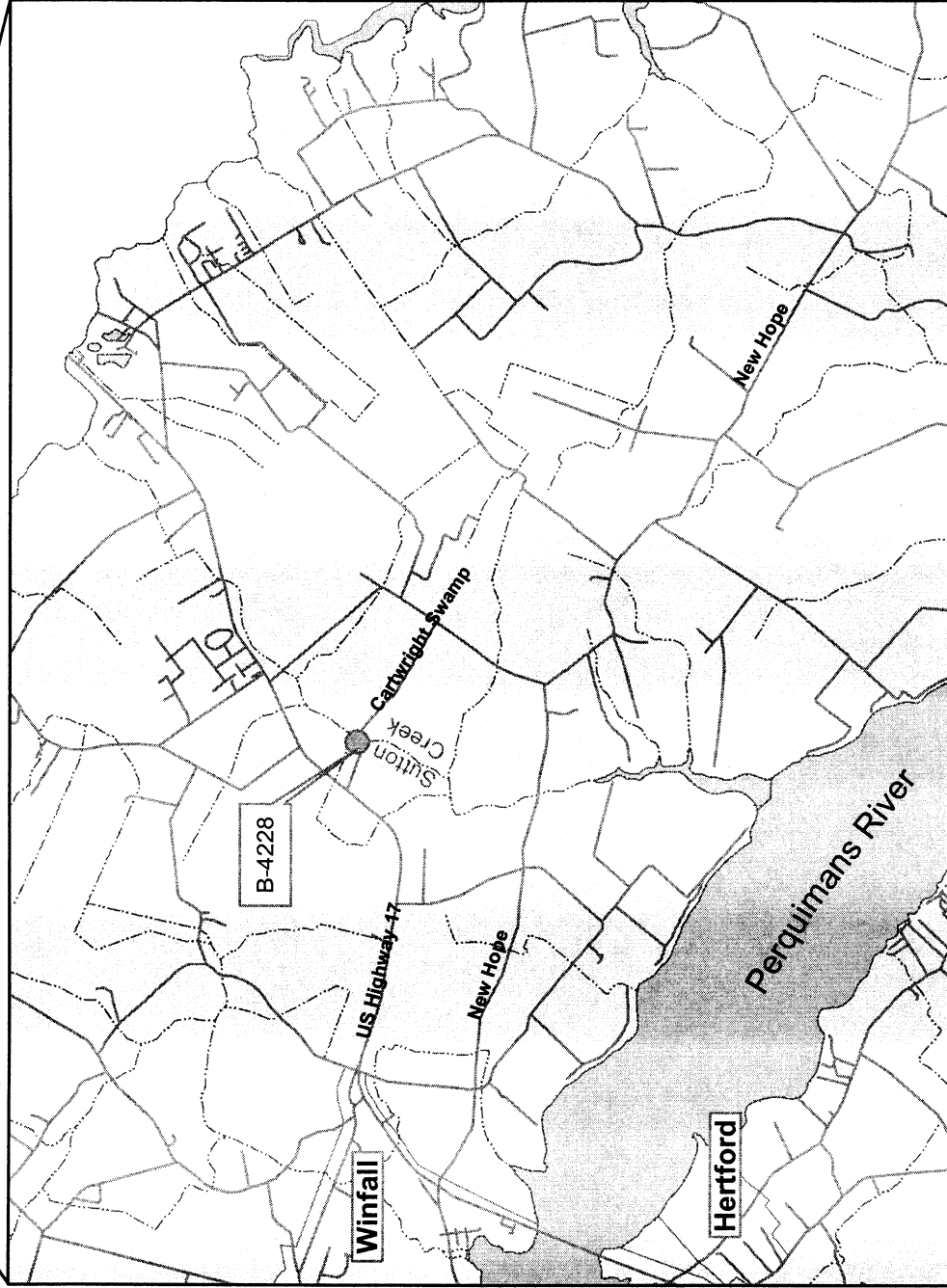
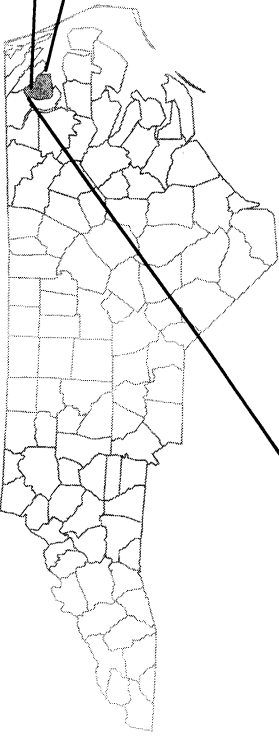
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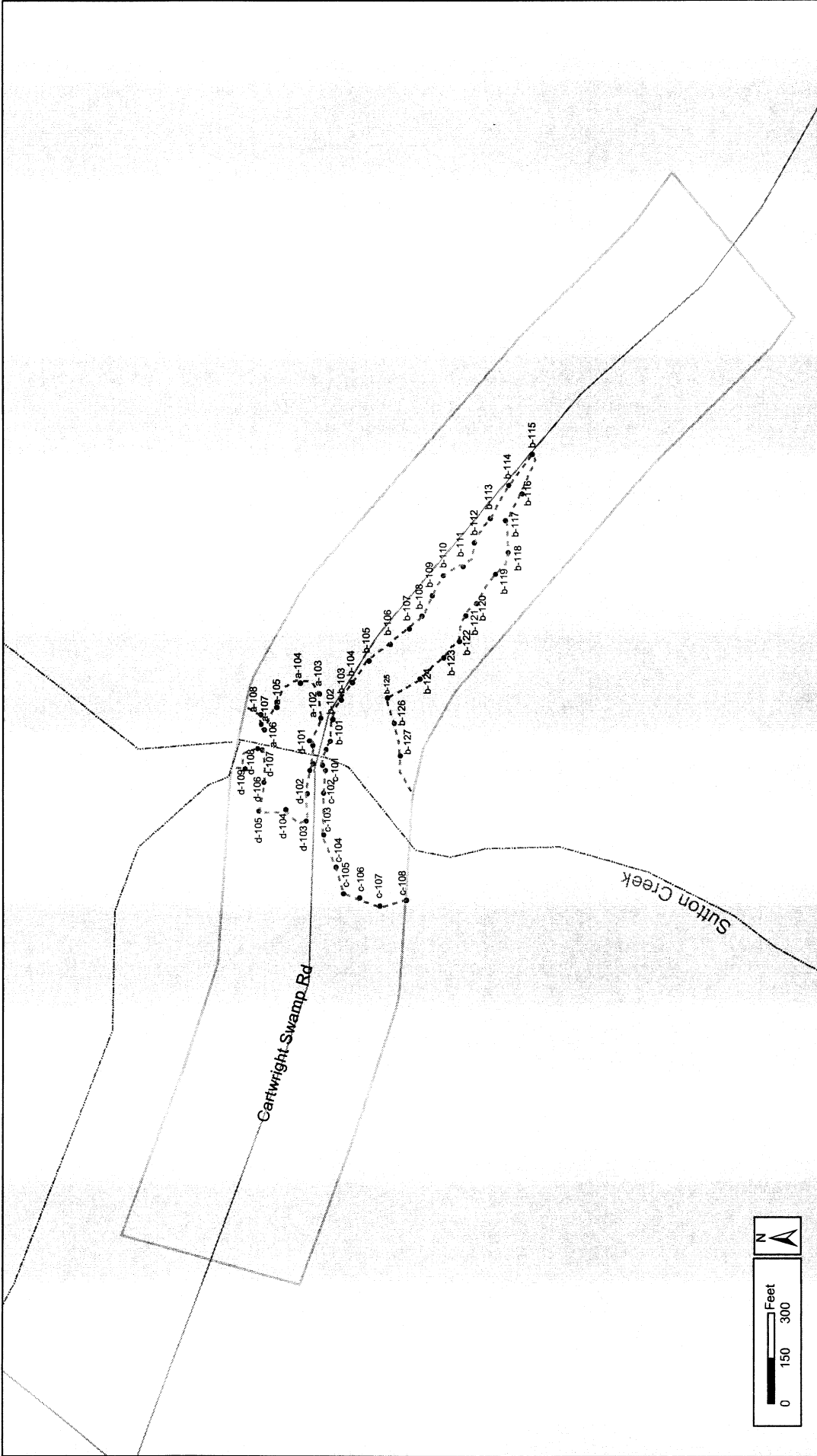
Perquimans  
County



- Municipalities
- County Boundary
- B-4228 Project Location
- Major Roads
- Hydrology
- Roads

**Figure 1: Location Map**  
Perquimans County, North Carolina





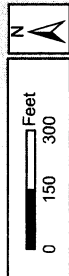
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March, 2003

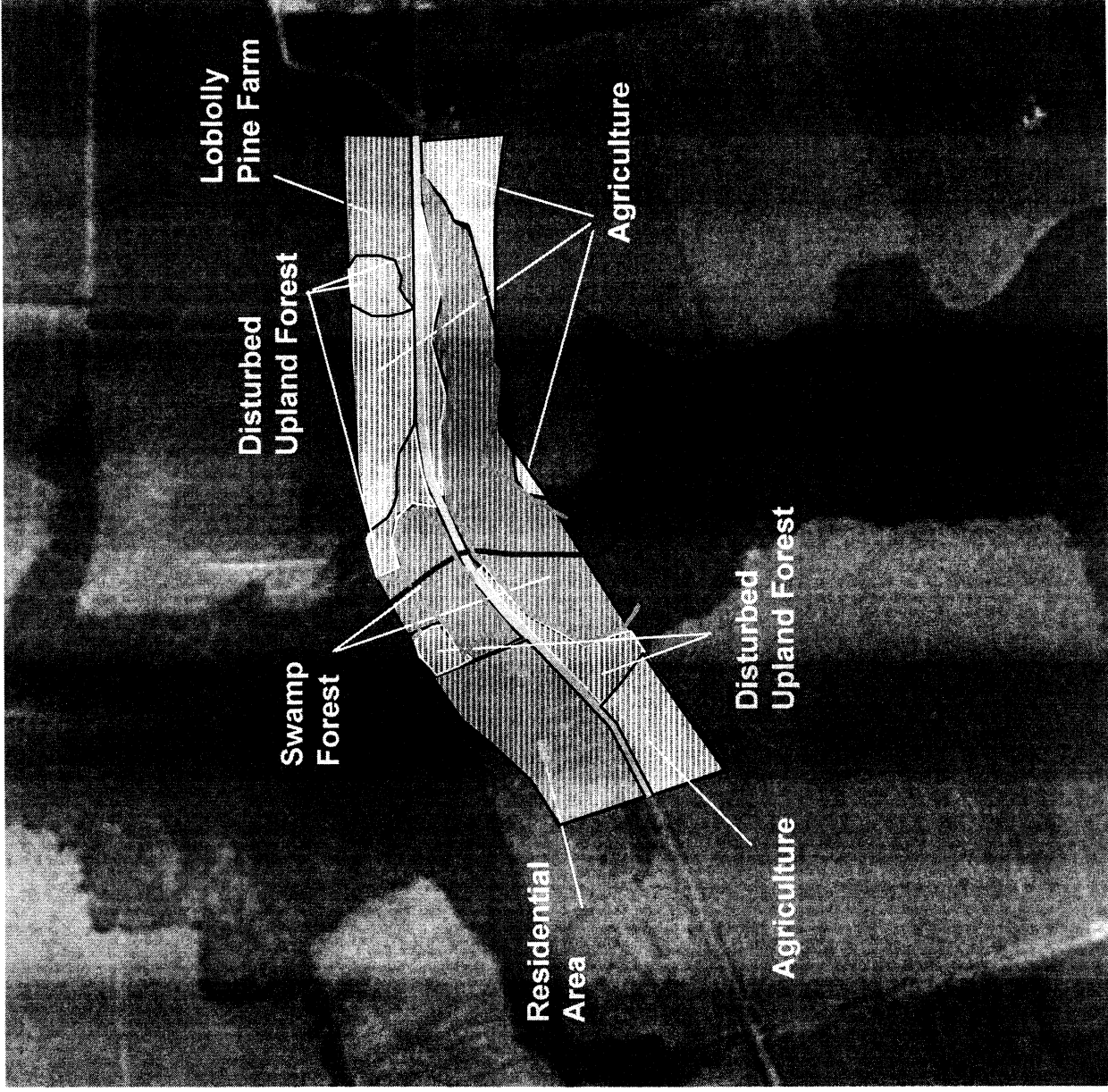
**Figure 2: Jurisdictional Wetlands and Streams  
B-4228 Study Area**

Perquimans County, North Carolina

Jurisdictional	
	Streams
	Wetlands
	Non-jurisdictional channel/ditch
	Major Roads
	Roads



	Municipalities
	County Boundary
	Approximate Study Area
	Data Points



— Approximate Study Area Limits  
 — Jurisdictional Streams  
 — Jurisdictional Wetland Areas

**Figure 3: Terrestrial Communities**  
 B-4228  
 Perquimans County, North Carolina



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March 2003



**Figure 4: B-4228 NHP Occurrences**

Perquimans County, North Carolina

- Municipalities
- County Boundary
- Study Area
- One Mile Buffer of Study Area
- Major Roads
- Hydrology
- Roads
- NHP locations



ONE COMPANY Many Solutions®

March, 2003

**Subject: 2006 Bridge Projects**

**Date:** Wed, 23 Jul 2003 14:37:10 -0400

**From:** Bill Arrington <Bill.Arrington@ncmail.net>

**Organization:** NC DENR DCM

**To:** "Goodwin, William" <bgoodwin@dot.state.nc.us>

**CC:** "Brittingham, Cathy" <Cathy.Brittingham@ncmail.net>

Hi Bill,

I finally visited all the sites in the coastal counties.

The following are my comments for the proposed bridge replacement sites:

B-3811 - No DCM jurisdiction

• B-4021 - No DCM jurisdiction

B-4022 - I have received no request or information

B-4023 - Public Trust Area (PTA) and Public Trust Shoreline (PTS) Areas of Environmental Concern (AEC's) Yellow light project - Access to the farm road approximately 50' from the bridge in the north east quadrant should be maintained

B-4025 - PTA and PTS AEC's. Yellow light project - Access to the roads along the creek in the north east and north west quadrants should be maintained.

B-4027 - PTA and PTS AEC's. Green light project

B-4073 - PTA and PTS AEC's. Yellow light project - Access to driveway approximately 180 feet from the south east corner of the bridge should be maintained.

• B-4085 - PTA and PTS AEC's. Green light project

• B-4088 - No DCM jurisdiction

B-4151 - No DCM jurisdiction

B-4224 - PTA and PTS AEC's. Green light project

B-4225 - No DCM jurisdiction

B-4226 - No DCM jurisdiction

B-4228 - No DCM jurisdiction

B-4313 - No DCM jurisdiction

B-4420 - No DCM jurisdiction

B-4431 - PTA and PTS AEC's. Green light project

B-4486 - PTA and PTS AEC's. Green light project

Replacing the bridges that have DCM AEC impacts with a similar bridge on the same alignment would qualify for a general permit and require little time to permit after the required complete application, fee and adjacent riparian property notifications are received. Adding additional lanes to the bridge, requesting a work bridge or causeway, requesting an on site

detour bridge or causeway, exceeding the allowable impacts for the general permit or constructing the bridge on a new alignment would require the application for a CAMA major permit as well as more coordination between DOT and DCM and additional time to process the permit application.

Thank you for explaining the process for this years bridge scopings. I appreciate your efforts to distribute the lists of projects well in advance of the comment deadline. I believe next year will work more smoothly.

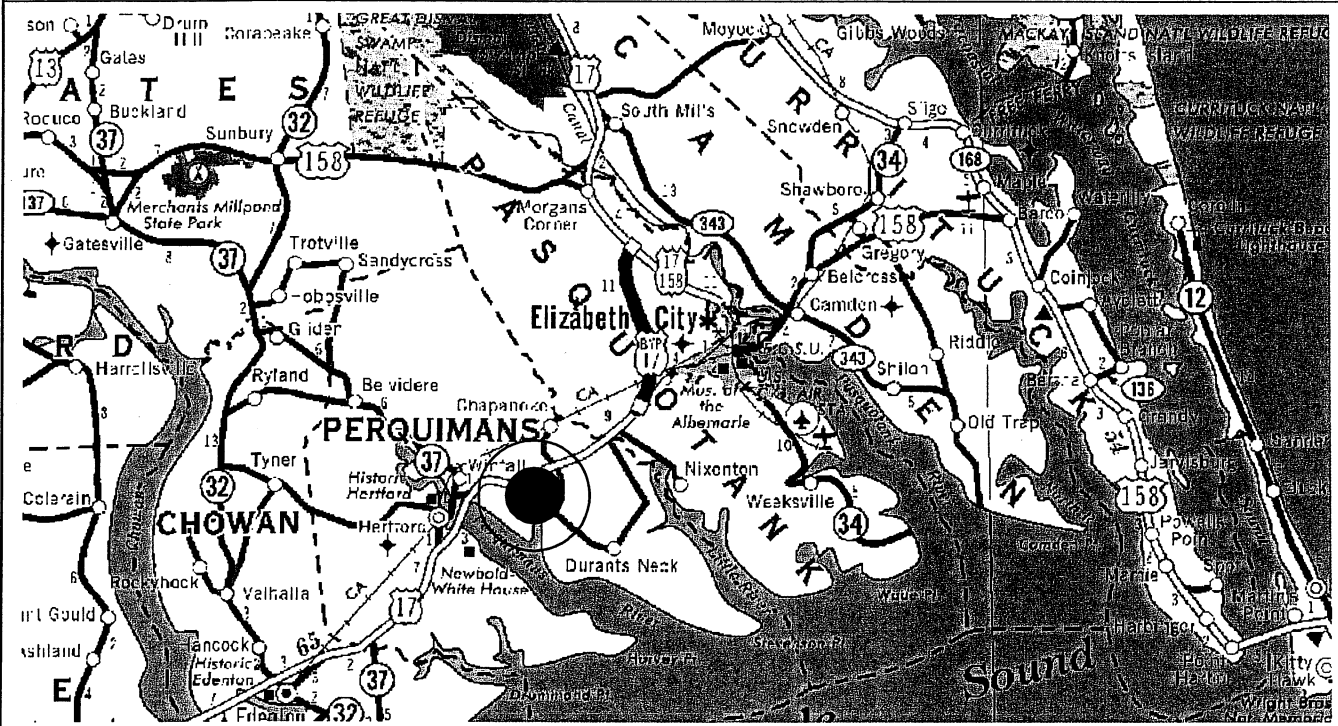
Bill



# NORTH CAROLINA

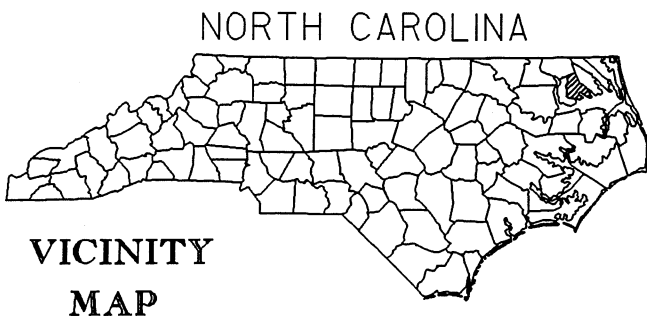
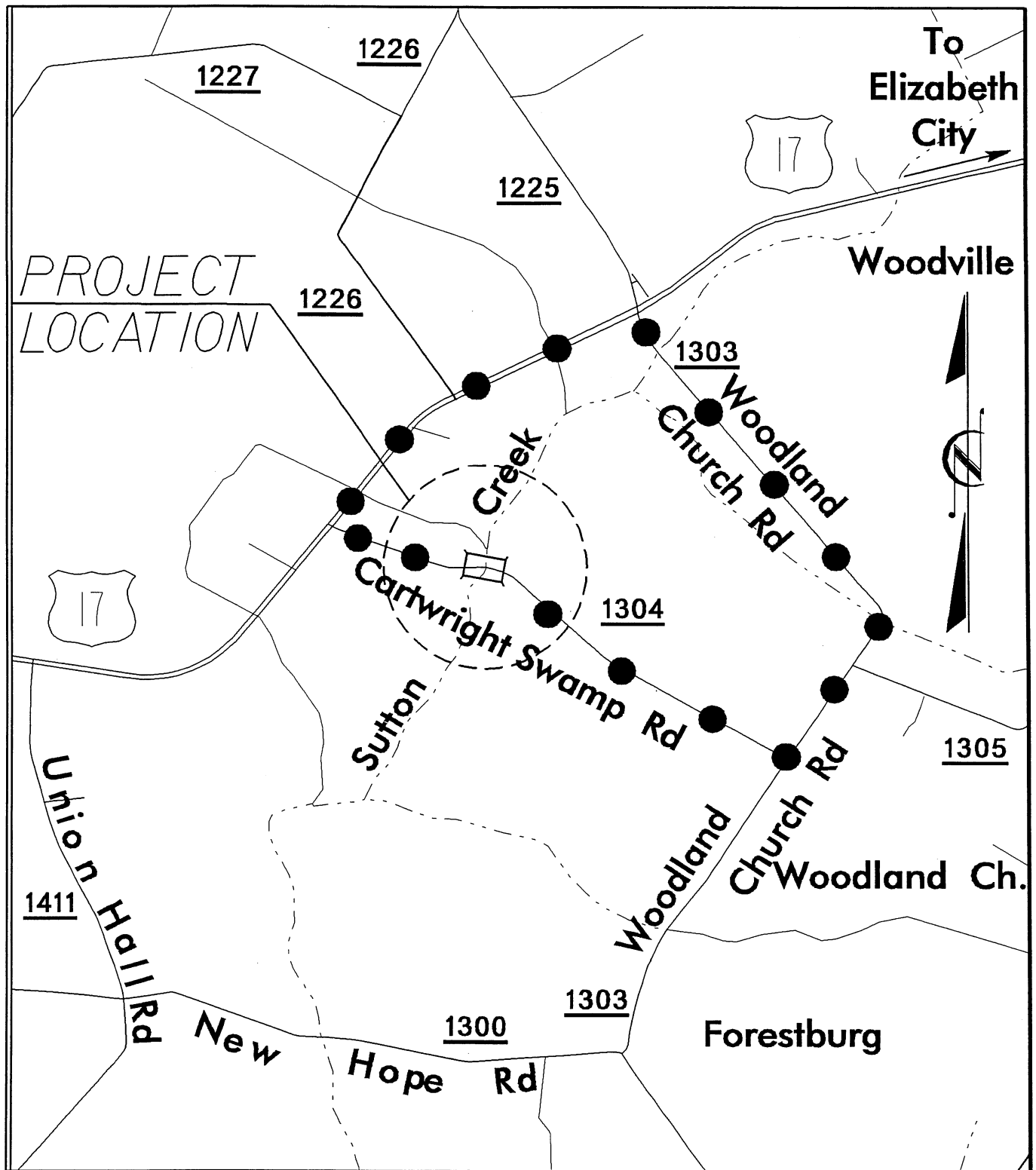


## PERMIT DRAWINGS



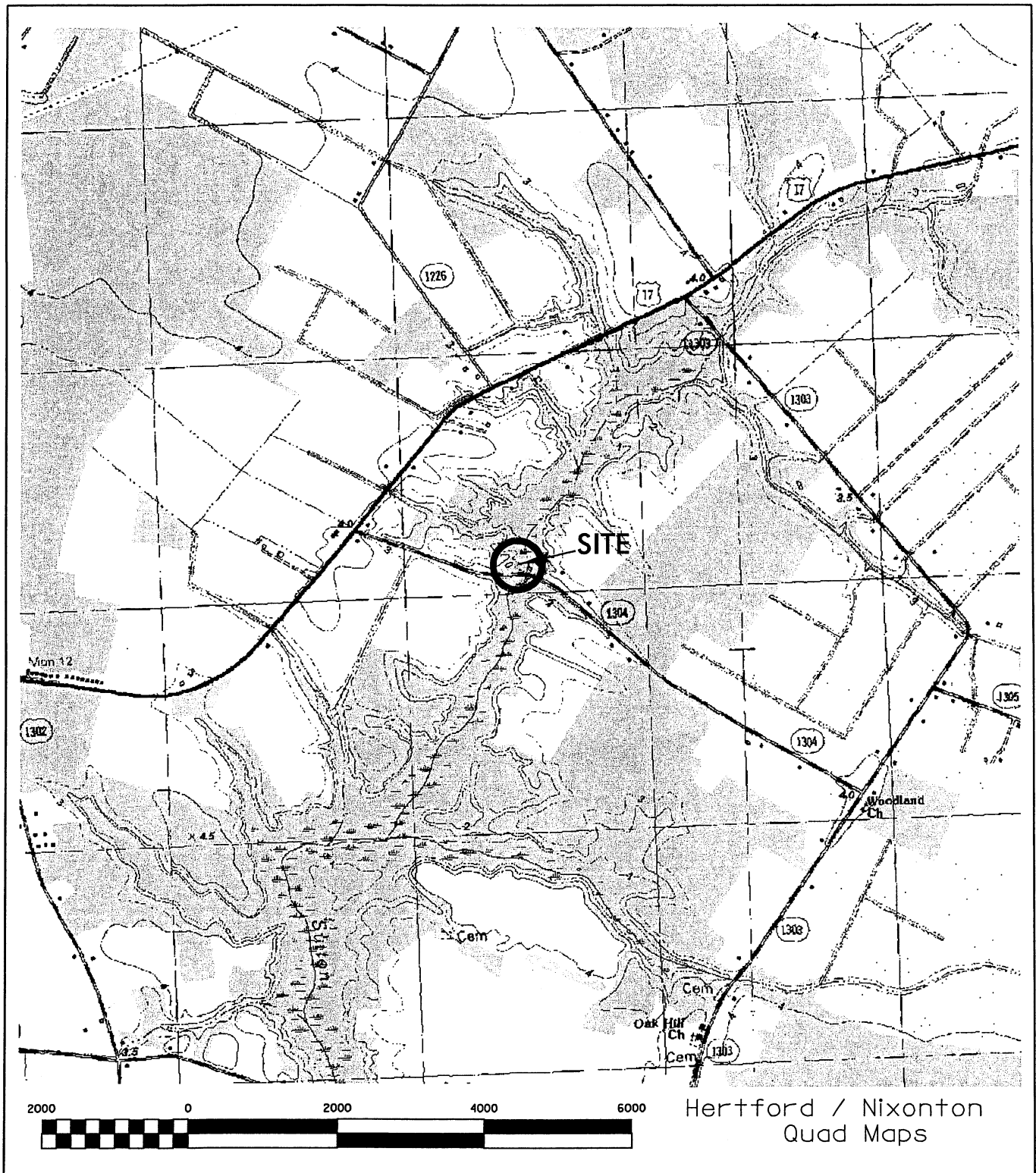
## VICINITY MAP

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**PERQUIMANS COUNTY**  
**PROJECT: 33572.1.1 (B-4228)**  
**BRIDGE #59 OVER SUTTON CREEK**  
**ON SR 1304**



**NCDOT**  
 DIVISION OF HIGHWAYS  
 PERQUIMANS COUNTY  
 PROJECT: 33572.1.1 (B-4228)  
 BRIDGE #59 OVER SUTTON CREEK  
 ON SR 1304

SHEET 2 OF 9      12/05/05



# SITE MAP

**NCDOT**

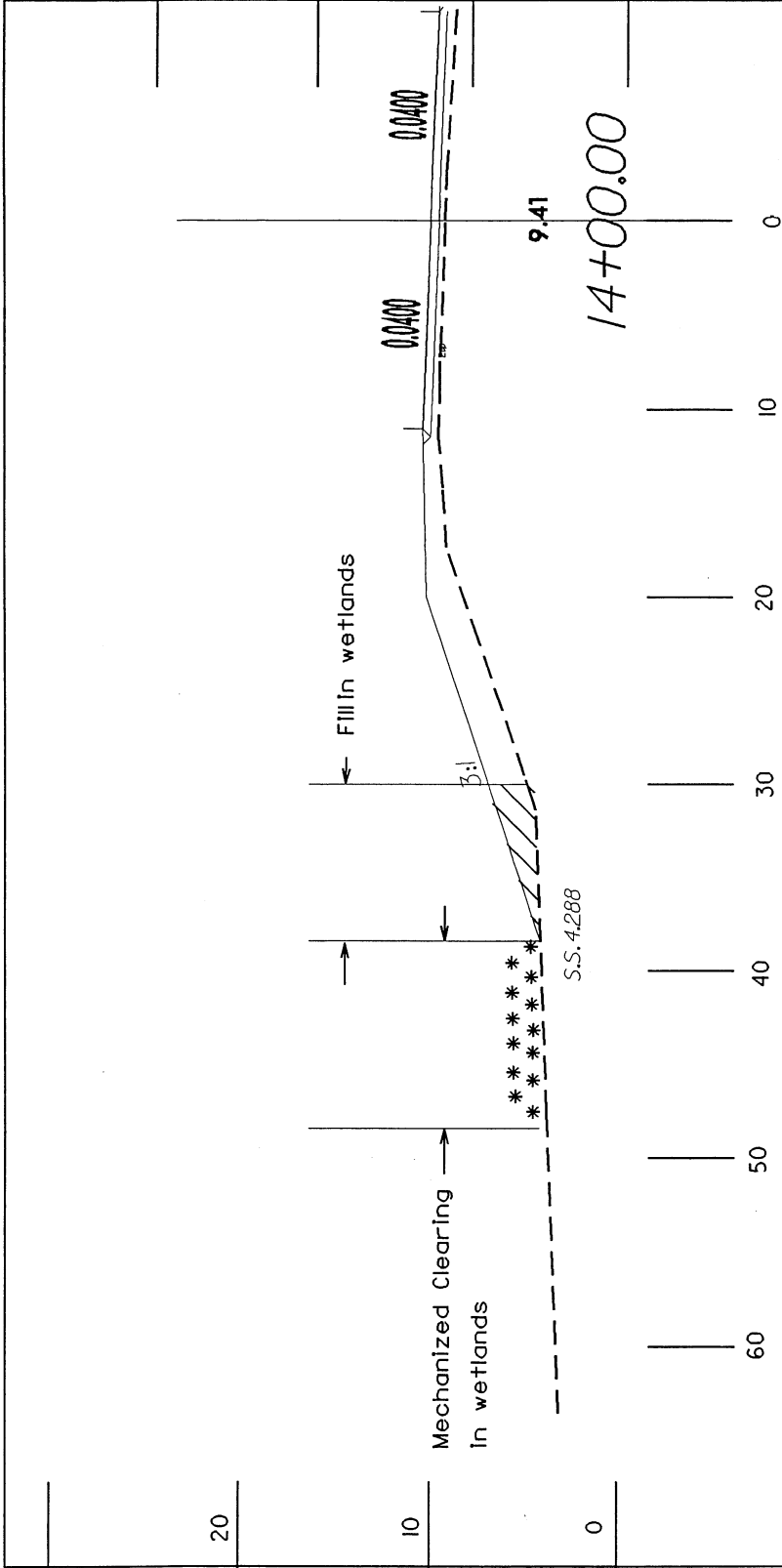
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**PERQUIMANS COUNTY**

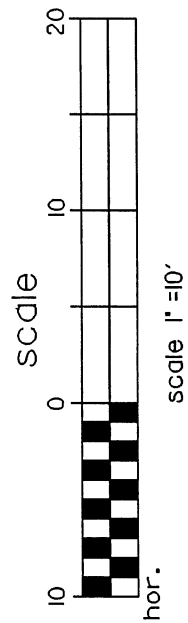
**PROJECT: 33572.1.1 (B-4228)**

**BRIDGE #59 OVER SUTTON CREEK  
ON SR 1304**

**SHEET 3 OF 9 12/05/05**



TYPICAL X-SECTION

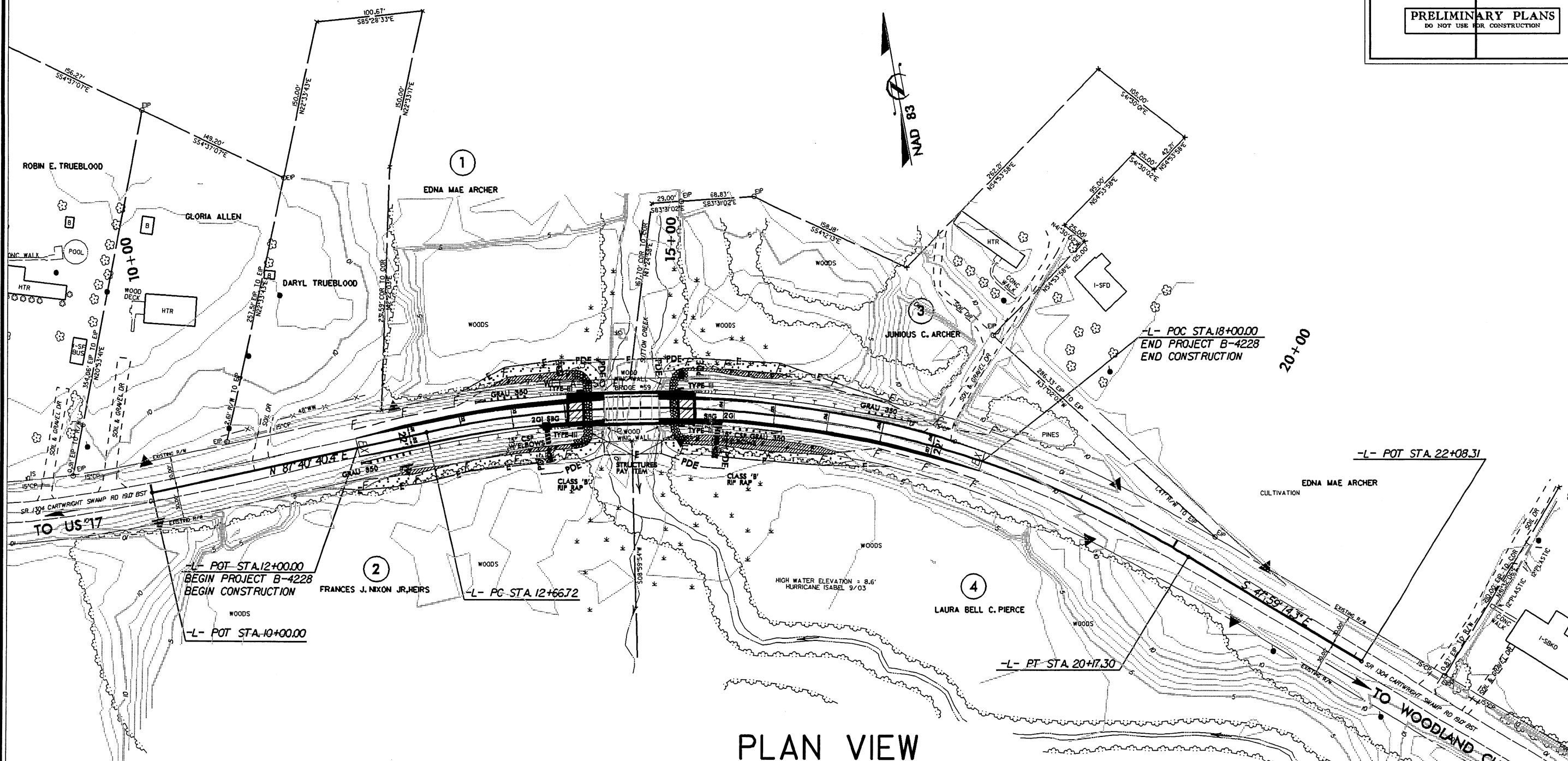


NCDOT

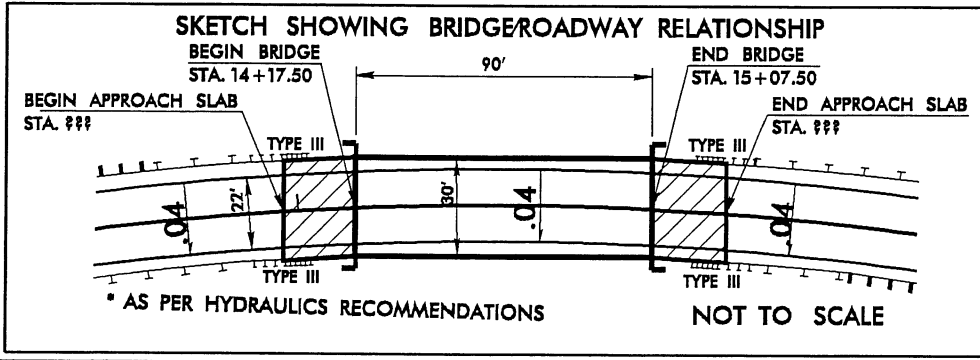
DIVISION OF HIGHWAYS  
 PERQUIMANS COUNTY  
 PROJECT: 33572.1.1 (B-4228)  
 BRIDGE #59 OVER SUTTON CREEK  
 ON SR 1304

SHEET 4 OF 9 12/01/05



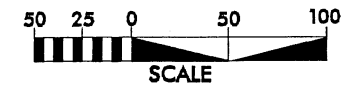


## PLAN VIEW



-L-  
 PI Sta 16+61.93  
 = 44° 20' 05.3" (RT)  
 D = 5° 54' 24.4"  
 L = 750.57'  
 T = 395.2'  
 \*\* R = 970.00' (Meets 50 MPH  $V_c$ )  
 e = See Plans  
 RO = See Plans  
 $V_0$  = 60 MPH

••••• DENOTES MECHANIZED CLEARING  
 ▨ DENOTES FILL IN WETLAND

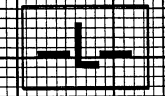


\*\* DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE

13-FEB-2006 08:39 hyd-perm.t.psh4.dgn



# -L- SR 1304



**BEGIN GRADE**  
 -L- STA 12+00.00  
 EL. 9.80

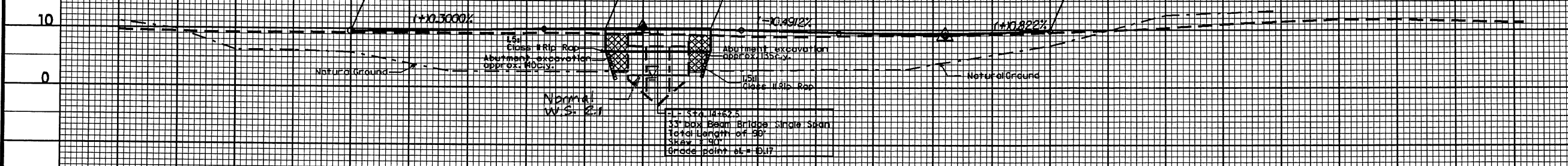
**BEGIN BRIDGE**

**END BRIDGE**

**END GRADE**  
 -L- STA 18+00.00  
 EL. 9.81

PI = 14+50.00  
 EL = 10.38'  
 VC = 170'  
 K = 215

PE = 17+10.80  
 EL = 9.07'  
 VC = 180'  
 K = 137



**BM #10 -L- STA 12+68.70**  
 12.0519 RT. R/R SPIKE IN  
 BASE OF 26" SYCAMORE  
 ELEV. = 4.95'  
 N 886817.046 E 2771484.169

**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 800 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 7.2 FT
BASE DISCHARGE	= 1300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 9.3 FT
OVERTOPPING DISCHARGE	= 1300 CFS
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING ELEVATION	= 9.3 FT
DATE OF SURVEY	= 7/17/02
W.S. ELEVATION AT DATE OF SURVEY	= 21 FT

**BM #11 -L- STA 16+14.94**  
 18.2535 LT. R/R SPIKE IN  
 BASE OF 18" SYCAMORE  
 ELEV. = 5.80'  
 N 996642.564 E 2771760.797

SEE SHEET 4 FOR PLAN SHEET

10-FEB-2006 15:17  
 C:\Users\jrc\Documents\B-4228-du-pl.dgn  
 jrc





**PROPERTY OWNERS**  
**NAMES AND ADDRESSES**

<b>PARCEL NO.</b>	<b>NAMES</b>	<b>ADDRESSES</b>
①	DARYL TRUEBLOOD	183 CARTWRIGHT SWAMP RD. HERTFORD NC. 27944
②	EDNA MAE ARCHER	7205 KATIE LAUREL CT FORT WASHINGTON MD.20744
③	FRANCIS J. NIXON JR. ESTATE	985 FLEET ST.*145 VIRGINIA BEACH VA.23454
④	JUNIOUS C. ARCHER	107 CARTWRIGHT SWAMP RD. HERTFORD NC. 27944
⑤	LAURABELL C. PIERCE	714 BODY RD. HERTFORD NC. 27944

**NCDOT**

**DIVISION OF HIGHWAYS**

**PERQUIMANS COUNTY**

**PROJECT: 33572.11 (B-4228)**

**BRIDGE#59 OVER SUTTON CREEK  
ON SR 1304**



Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	⊙ EP
Property Corner	-----
Property Monument	⊠ ECM
Parcel/Sequence Number	⊙ 23
Existing Fence Line	-----
Proposed Woven Wire Fence	-----
Proposed Chain Link Fence	-----
Proposed Barbed Wire Fence	-----
Existing Wetland Boundary	----- WLB
Proposed Wetland Boundary	----- WLB
Existing High Quality Wetland Boundary	----- HQ WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB

### BUILDINGS AND OTHER CULTURE:

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

### HYDROLOGY:

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

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	-----
Switch	-----
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	-----
Existing Right of Way Marker	-----
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	----- E
Proposed Temporary Construction Easement	----- E
Proposed Temporary Drainage Easement	----- TDE
Proposed Permanent Drainage Easement	----- PDE
Proposed Permanent Utility Easement	----- PUE

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	----- C
Proposed Slope Stakes Fill	----- F
Proposed Wheel Chair Ramp	-----
Curb Cut for Future Wheel Chair Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equallity 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	-----

### 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	-----
Designated U/G Water Line (S.U.E.*)	-----
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:

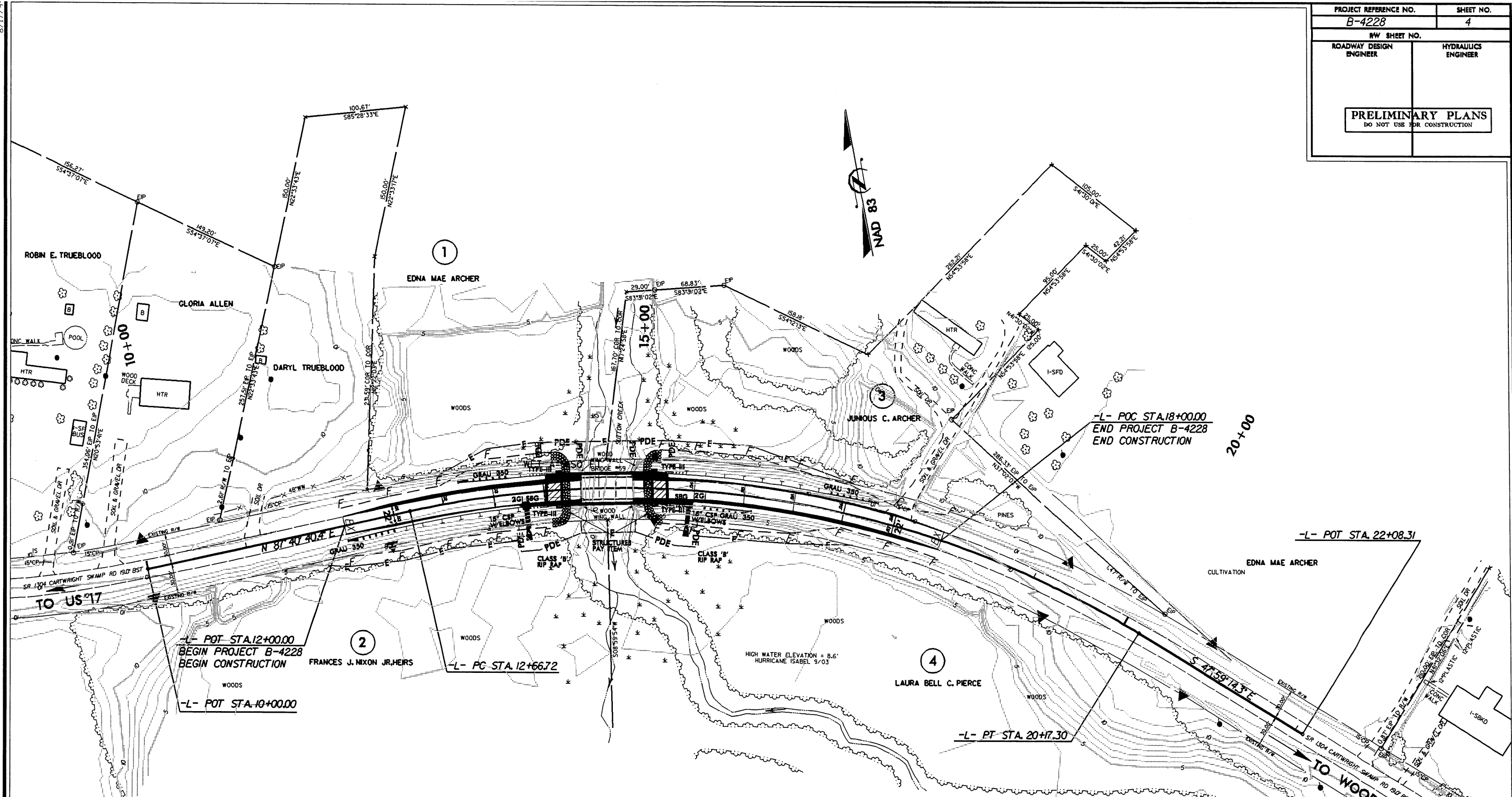
Sanitary Sewer Manhole	-----
Sanitary Sewer Cleanout	-----
U/G Sanitary Sewer Line	----- SS
Above Ground Sanitary Sewer	----- A/G Sanitary Sewer
Recorded SS Forced Main Line	----- FSS
Designated SS Forced Main Line (S.U.E.*)	----- FSS

### MISCELLANEOUS:

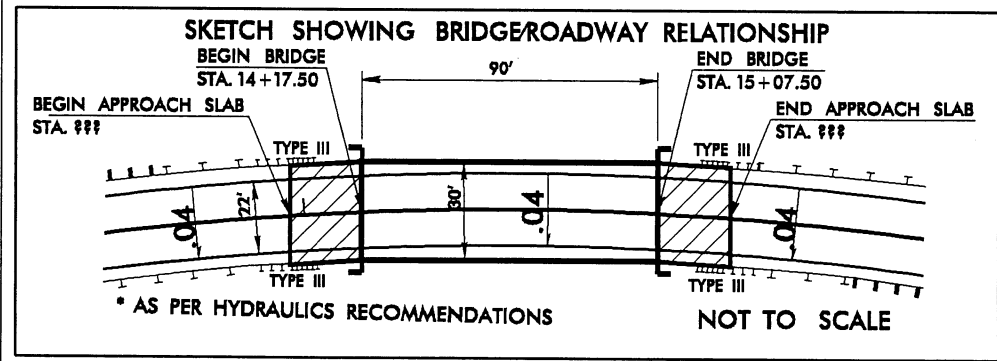
Utility Pole	-----
Utility Pole with Base	-----
Utility Located Object	-----
Utility Traffic Signal Box	-----
Utility Unknown U/G Line	----- UTIL
U/G Tank; Water, Gas, Oil	-----
A/G Tank; Water, Gas, Oil	-----
U/G Test Hole (S.U.E.*)	-----
Abandoned According to Utility Records	----- AATUR
End of Information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







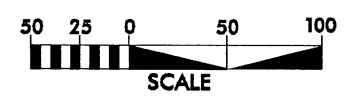
## PLAN VIEW



-L-

PI Sta 16+61.93  
= 44' 20" 05.3" (RT)  
D = 5' 5" 24.4"  
L = 750.57'  
T = 395.2'  
\*\* R = 970.00' (Meets 50 MPH V<sub>s</sub>)  
e = See Plans  
RO = See Plans  
V<sub>s</sub> = 60 MPH

- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND

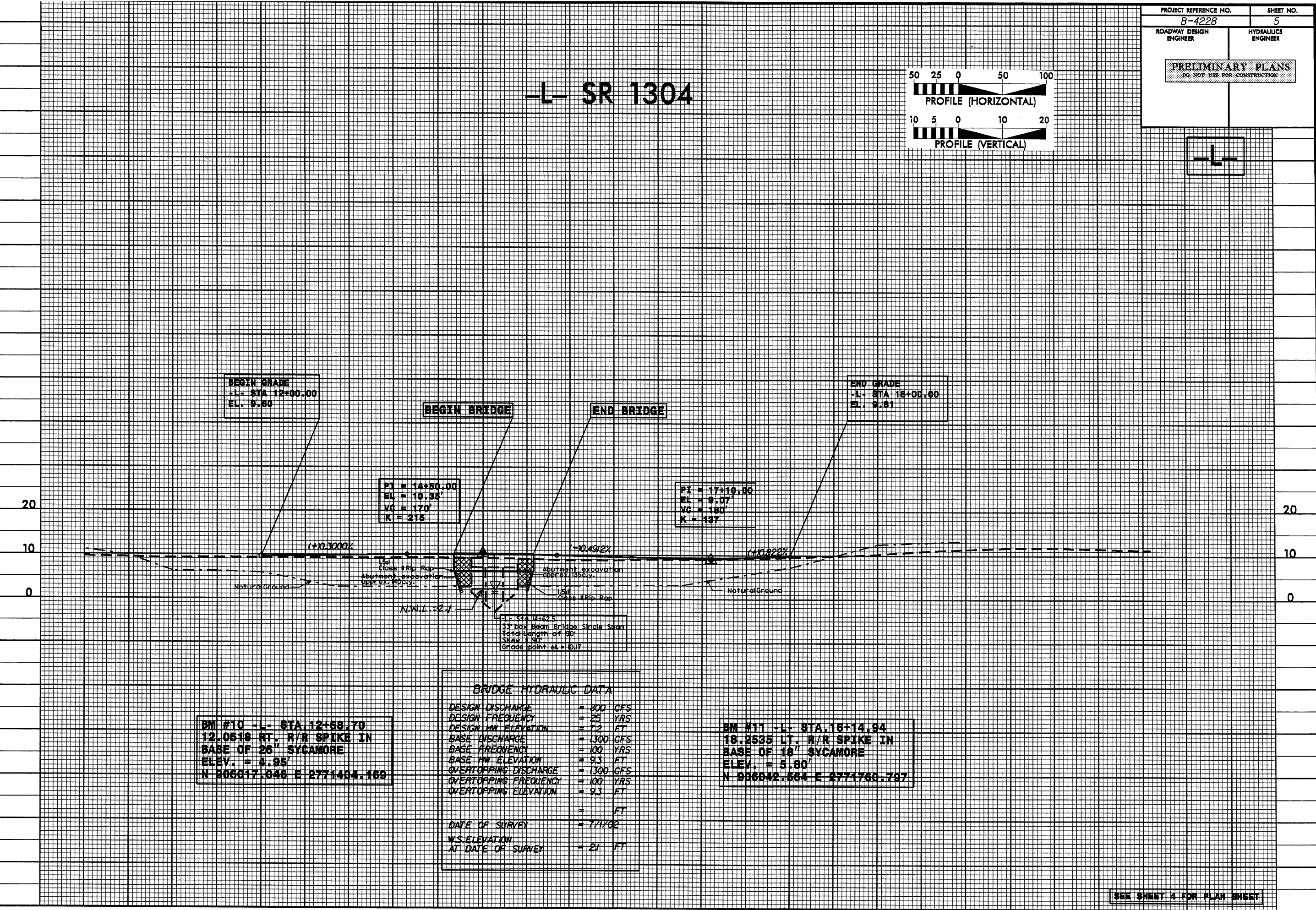
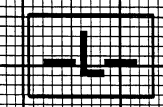
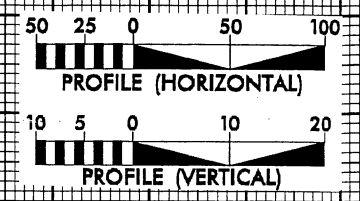


\*\* DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE

13-FEB-2006 08:40  
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AUTIES



# -L- SR 1304



**BM #10 -L- STA. 12+58.70**  
**12.0518 RT. R/R SPIKE IN**  
**BASE OF 26" SYCAMORE**  
**ELEV. = 4.85'**  
**N 906017.046 E 2771404.169**

BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 800 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 7.2 FT
BASE DISCHARGE	= 1300 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 9.3 FT
OVERTOPPING DISCHARGE	= 1300 CFS
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING ELEVATION	= 9.3 FT
	= FT
DATE OF SURVEY	= 7/1/02
WS ELEVATION AT DATE OF SURVEY	= 21 FT

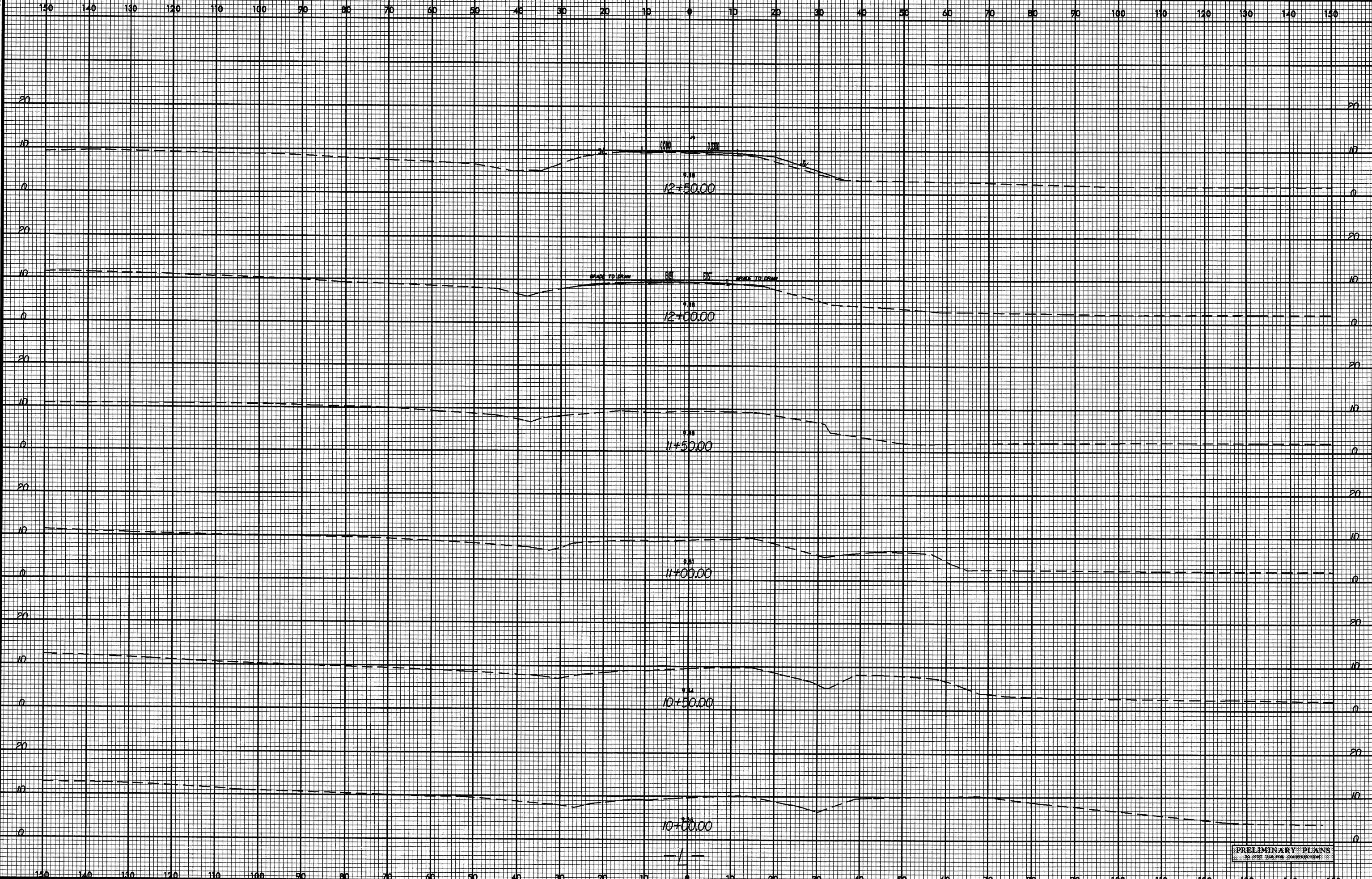
**BM #11 -L- STA. 16+14.94**  
**18.2535 LT. R/R SPIKE IN**  
**BASE OF 18" SYCAMORE**  
**ELEV. = 5.80'**  
**N 986042.564 E 2771760.797**

SEE SHEET 4 FOR PLAN SHEET

5/14/99  
 10-FEB-2006 15:17  
 P:\roadway\p0\B4228\_rdu\_p1.dgn  
 BY 221528

02/03/98

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-4228	X-2	



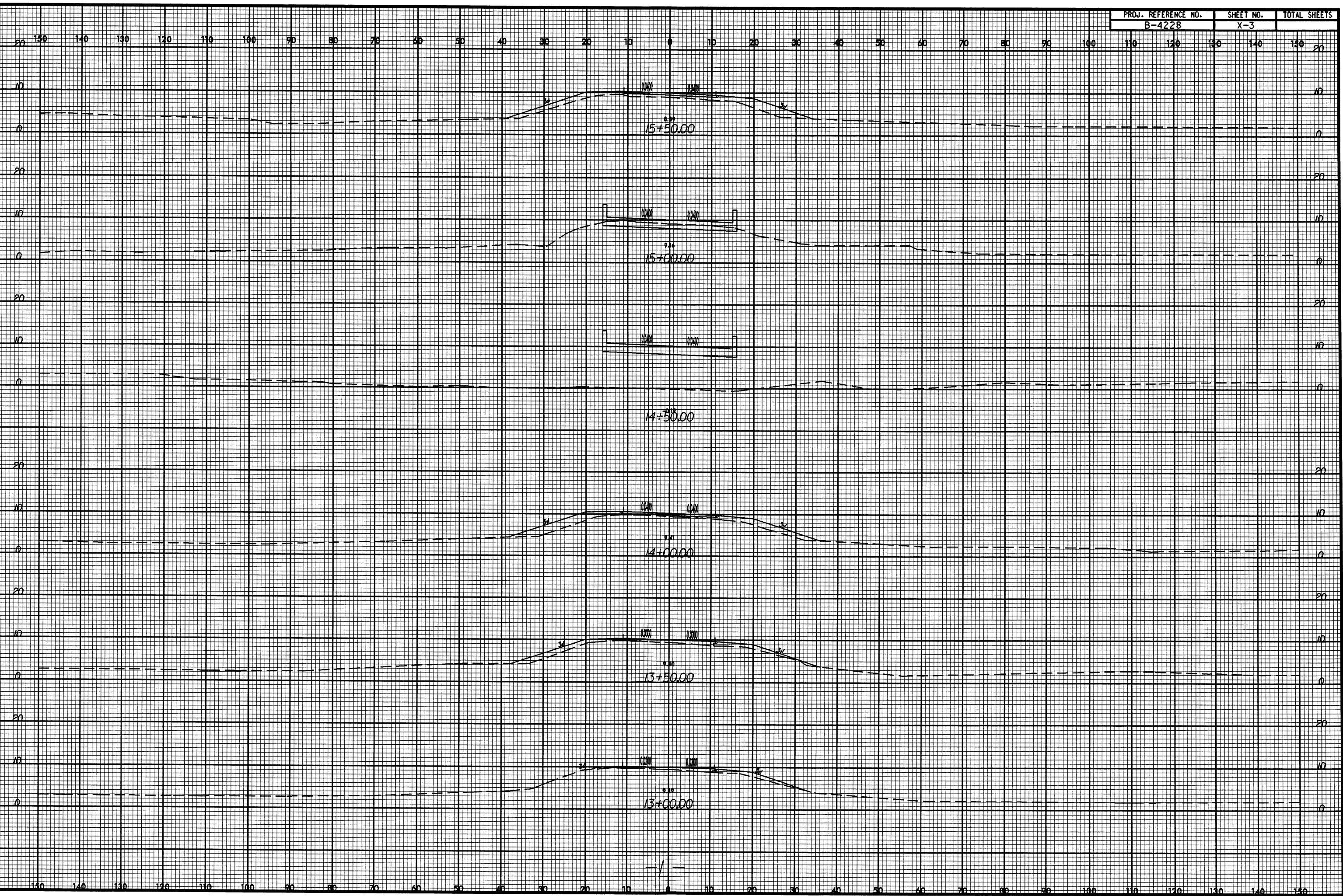
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PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION



02/03/98

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-4228	X-3	

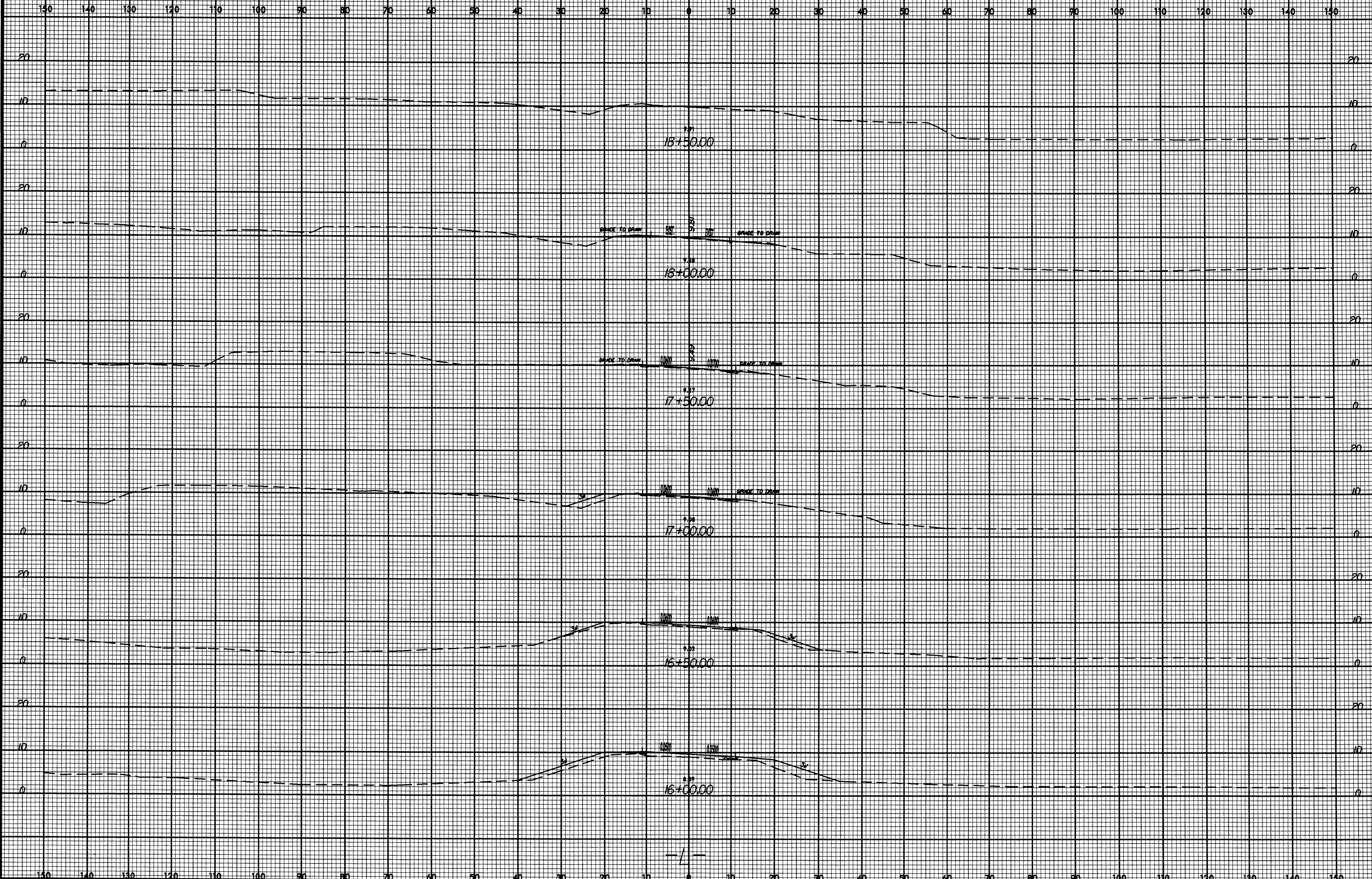


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\*\*\*USERNAME\*\*\*



02/03/98

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B-4228	X-4	



06-DEC-2005 15:48  
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