STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 16, 2005

Division of Coastal Management
1367 U.S. 17 South
Elizabeth City, NC 27909

ATTENTION: Ms. Lynn Mathis
NCDOT Coordinator

Dear Madam:

Subject: **CAMA Major Development Permit Application** for the Replacement of Bridge No. 32 over Rose Bay Creek on US 264, Hyde County. Federal Aid Project No. BRSTP-264(11), State Project No. 8.1080701, TIP Project No. B-3349.

Please find enclosed the CAMA major permit application, permit drawings, half-size plans, and the landowner receipts for the above-mentioned project. Work Order 8.1080701 will be debited for $400.00 for the application of the subject project. The project's Caterogical Exclusion (CE) states that Bridge No. 32 over Rose Bay Canal on US 264 in Hyde County will be replaced with a new bridge twelve feet to the west. The proposed structure for Bridge No. 32 will provide a 24-foot travel-way with eight-foot shoulders for a total clear structure width of 42.5 feet. The bridge approach will have a 24-foot travel-way with eight-foot shoulders of which four feet would be paved for bicyclists. The preferred alternative involves staged, simultaneous construction. This will allow one-lane, two-way traffic.

Proposed impacts include 0.069 acre of permanent impacts to coastal wetlands (0.009 acre of fill and 0.06 acre of excavation) and 0.30 acre of fill in surface waters. The 0.30 acre of fill in surface waters is due to widening of the causeway. There will also be 15,681.6 sq. ft. of impacts to the riparian buffer in zone 1 with no impacts to zone 2.

Water Resources

Rose Bay Canal is located in the 03020105 CU of the Tar-Pamlico River Basin. The Division of Water Quality (DWQ) has assigned Rose Bay Canal a Stream Index Number of 29-44-1-1. DWQ has assigned a best usage classification of **SC**. Class **SC** waters are defined as saltwaters protected for aquatic life propagation and survival, wildlife, and secondary recreation. Rose Bay Canal is a well-defined brackish marsh stream.

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

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Bridge Demolition

Bridge Demolition: Bridge No. 32 is a two-lane structure with reinforced concrete caps on timber piles supporting steel I-beams and a reinforced concrete deck. Bridge No. 32 is 100 feet long with a 26-foot clear roadway width. No bridge components will be dropped into the "Waters of the United States". Best Management Practices for Bridge Demolition and Removal will be implemented.

As noted in the project's CE document, NCDOT will observe an in-stream construction moratorium from March 1 to September 30 and utilize Stream Crossing Guidelines for Anadramous Fish Passage.

Avoidance and Minimization

Due to the location of this project and the juxtaposition of adjacent wetlands and surface waters, total avoidance of the surrounding marsh and wetland is impossible during the construction of this project. NCDOT has taken steps to minimize the impacts to this resource.

Bridge No. 32 is on a primary US Route. Therefore traffic flow must be maintained throughout construction. Road closure during construction is unfeasible due to the lack of a suitable off-site detour. A temporary on-site detour that would have affected a brackish marsh complex was rejected in favor of staged construction. Staged construction will allow one lane to remain open to traffic during construction while minimizing necessary encroachment into the surrounding wetlands and surface waters.

NCDOT is utilizing sheet piles to reduce encroachment into jurisdictional areas and to keep fill from entering the adjacent wetland.

Minimum width for the approaches and structure has been utilized. Fill slopes in wetlands on this project will be 3:1 due to the soils being loose alluvial sandy soils without clay or cohesion in order to avoid major erosion and slope failure.

Design Standards for Sensitive Watersheds will be followed for this project.

Mitigation

NCDOT proposes to debit 0.069 acre of the remaining 0.38 acre of restored coastal wetlands from project B-3348 in Hyde County. NCDOT restored 0.64 acre of wetlands on project B-3348 (Action ID 200411262) and used 0.26 acre as on-site mitigation for that project. The resource agencies agreed to debit this surplus of restored wetlands at a 1:1 ratio to offset impacts for B-3349 at the Interagency Hydraulic Design Review Meeting held on December 12, 2002. A balance of 0.31 acre remains available for other approved projects in the CU.

Federally Protected Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to co-exist with human activities. Federal law (under the provisions of the Endangered Species Act (ESA) of 1973, as amended) requires that any action likely to adversely affect a species classified as federally protected be subject to review by the United States Fish and Wildlife Service (USFWS). Other species may receive additional protection under separate state laws. Plants and animals with federal classifications of

Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of ESA §§7 and 9, as amended.

As of January 29, 2003, the US Fish and Wildlife Service (USFWS) lists 13 federally protected species for Hyde County. Table 1 depicts these species. The biological conclusions of **No Effect** remain valid.

Table 1. Federally Protected Species in Hyde County.

Common Name	Scientific Name	Status	Bio. Conclusion
Leatherback sea turtle	*Dermochelys coriacea*	E	No Effect
Hawksbill sea turtle	*Eretomochelys imbricata*	E	No Effect
Kemp's Ridley sea turtle	*Lepidochelys kempii*	E	No Effect
Red-cockaded woodpecker	*Picoides borealis*	E	No Effect
Manatee	*Trichecus manatus*	E	No Effect
Sensitive joint-vetch	*Aeschynomene virginica*	T	No Effect
Seabeach amaranth	*Amaranthus pumilus*	T	No Effect
Loggerhead sea turtle	*Caretta caretta*	T	No Effect
Piping plover	*Charadrius melodus*	T	No Effect
Green sea turtle	*Chelonia mydas*	T	No Effect
Bald Eagle	*Haliaeetus leucocephalus*	T	No Effect
American alligator	*Alligator mississippiensis*	T	No Effect
Red wolf	*Canis rufus*	EXP	N/A

Utilities

Tideland EMC: Power lines will be aerial into the project to pole at STA L12+40 left 58'. At this point, the line will be directionally bored under the Rose Bay Creek to a depth of approximately 20 feet moving east bound. The bore will emerge at power pole at STA 17+ 71 left 58'. It will then become aerial again and will proceed east out of the construction limits.

Sprint Telephone: Existing copper and fiber buried cables will be abandoned throughout the construction limits. The fiber optic phone aerial will also be removed. Existing aerial lines will come into the project and end at pole at STA L12+ 40 left 58'. Copper and fiber cables will be combined and buried and will run 140' west along ROW on north side of project. It will then cross the road at a 90° turn and will be spliced into existing line outside construction limits at approximately STA 9+00.00. Directional bore will be made proceeding along the existing right of way line approximately 28 feet south of aerial poles. Directional bore will continue east along the existing right of way, under the creek at a 15 foot depth and will stop at approximately STA. 21 +00.00. Then it will take a 90° turn north, splice into existing copper and fiber cable, turn 90° and head west approximately 100 feet along the north side of existing road. It will next take another 90° turn and will emerge at the pole at STA 17+71 left 58'. It will then proceed east aerial outside of the project limits.

Hyde County Water: The following work was completed on August 24, 2004. While these activities did not result in impacts to Waters of the U.S., there was a subaqueous crossing of a CAMA AEC without prior approval from DCM. DCM was notified on February 8, 2005 of the crossing. Hyde County performed the directional bore, however NCDOT is ultimately responsible for construction activities associated with this project. NCDOT units have been made aware of the possible requirement of a permit for any utility crossing in the 20 coastal counties. NCDOT hereby requests that this activity be permitted after the fact by means of this permit application.

The 10" water line and the 6" water line was combined into one pipe. They were tied into existing facilities outside the construction limits on the west side and then a directional bore was made along the existing right of way line south of existing aerial poles. The pipe was bored under Rose Bay Creek at a depth of 15 feet under the creek. It continued east and then tied into existing PVC pipe on the east side of the project along the right of way outside of the project limits.

Regulatory Approvals

NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Development Permit. The landowner receipts are attached. NCDOT has also applied for the issuance of a United States Army Corps of Engineers NWP 23, a 401 Water Quality Certification, and a Riparian Buffer Authorization under separate cover. NCDOT has received a stormwater permit for this project.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html.

If you have any questions or need additional information, please contact Chris Underwood at (919) 715-1451.

Sincerely,

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

w/ attachment:

Mr. John Hennessy, DWQ Raleigh
Ms. Cathy Brittingham, DCM
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. John Sullivan, FHWA
Mr. D.R. Conner, P.E., Division Engineer
Mr. Clay Willis, DEO
Mr. David Franklin, USACE, Wilmington
Ms. Stacy Baldwin, P.E., PDEA

Form DCM-MP-1

APPLICATION

(To be completed by all applicants)

1. APPLICANT

a. Landowner:

Name N. C. Department of Transportation

Address 1548 Mail Service Center

City Raleigh State NC

Zip 27699-1548 Day Phone 919-733-3141

Fax 919-733-9794

b. Authorized Agent:

Name Phil Harris, PE

Address Same as above

City State

Zip Day Phone

Fax

c. Project name (if any) **B-3349 Brg. # 32 over Rosebay Creek on US 264 8.1080701**

NOTE: Permit will be issued in name of landowner(s), and/or project name.

2. LOCATION OF PROPOSED PROJECT

a. County: Hyde

b. City, town, community or landmark Rosebay Oyster Co.

c. Street address or secondary road number US 264

d. Is proposed work within city limits or planning jurisdiction? _ Yes x No

e. Name of body of water nearest project (e.g. river, creek, sound, bay) Rosebay Creek

3. DESCRIPTION AND PLANNED USE OF PROPOSED PROJECT

a. List all development activities you propose (e.g. building a home, motel, marina, bulkhead, pier, and excavation and/or filling activities.

Replace existing bridge with a new one

b. Is the proposed activity maintenance of an existing project, new work, or both? **both**

c. Will the project be for public, private or commercial use? Public

Give a brief description of purpose, use, methods of construction and daily operations of proposed project. If more space is needed, please attach additional pages.
To replace Bridge # 32 using staged construction.

4. LAND AND WATER CHARACTERISTICS

a. Size of entire tract N/A

b. Size of individual lot(s) N/A

c. Approximate elevation of tract above (MHW) or NWL
1.2 ft

d. Soil type(s) and texture(s) of tract
Delcomb muck, Udorthents

e. Vegetation on tract black needlerush, salt grass, narrow-leaved cattail

f. Man-made features now on tract
Roesbay Oyster Co., manmade canals

g. What is the CAMA Land Use Plan land classification of the site? *(Consult the local land use plan.)*

x Conservation	____ Transitional
____ Developed	____ Community
x Rural	____ Other

h. How is the tract zoned by local government?
N/A

i. Is the proposed project consistent with the applicable zoning? X Yes ____ No
(Attach zoning compliance certificate, if applicable)

j. Has a professional archaeological assessment been done for the tract? X Yes ____ No
If yes, by whom? NCDOT

k. Is the project located in a National Registered Historic District or does it involve a National Register listed or eligible property?
____ Yes x No

l. Are there wetlands on the site? x Yes ____ No
Coastal (marsh) x Other x
If yes, has a delineation been conducted? yes
(Attach documentation, if available)

m. Describe existing wastewater treatment facilities.
N/A

n. Describe location and type of discharges to waters of the state. (For example, surface runoff, sanitary wastewater, industrial/commercial effluent, "wash down" and residential discharges.) Surface runoff

o. Describe existing drinking water supply source.
Water line - Le inch

5. ADDITIONAL INFORMATION

In addition to the completed application form, the following items must be submitted:

- **A copy of the deed** (with state application only) or other instrument under which the applicant claims title to the affected properties. If the applicant is not claiming to be the owner of said property, then forward a copy of the deed or other instrument under which the owner claims title, plus written permission from the owner to carry out the project.

- **An accurate, dated work plat** (including plan view and cross-sectional drawings) drawn to scale in black ink on an 8 1/2" by 11" white paper. (Refer to Coastal Resources Commission Rule 7J.0203 for a detailed description.)

  Please note that original drawings are preferred and only high quality copies will be accepted. Blue-line prints or other larger plats are acceptable only if an adequate number of quality copies are provided by applicant. (Contact the U.S. Army Corps of Engineers regarding that agency's use of larger drawings.) A site or location map is a part of plat requirements and it must be sufficiently detailed to guide agency personnel unfamiliar with the area to
  the site. Include highway or secondary road (SR) numbers, landmarks, and the like.

- **A Stormwater Certification**, if one is necessary.

- A list of the **names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail.** Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management. Upon signing this form, the applicant further certifies that such notice has been provided.

  Name See attached list
  Address _____
  Phone _____

  Name _____
  Address _____
  Phone _____

  Name _____
  Address _____
  Phone _____

- **A list of previous state or federal permits** issued for work on the project tract. Include permit numbers, permittee, and issuing dates.

  _____

- **A check for $400** made payable to the Department of Environment, Health, and Natural Resources (DEHNR) to cover the costs of processing the application.

- **A signed AEC hazard notice** for projects in oceanfront and inlet areas.

- **A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A - 1 to 10)** If the project involves the expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

6. CERTIFICATION AND PERMISSION TO ENTER ON LAND

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to conditions and restrictions contained in the permit.

I certify that to the best of my knowledge, the proposed activity complies with the State of North Carolina's approved Coastal Management Program and will be conducted in a manner consistent with such program.

I certify that I am authorized to grant, and do in fact, grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project.

I further certify that the information provided in this application is truthful to the best of my knowledge.

This is the _____ day of _____, 19___.

Print Name _____

Signature _____
Landowner or Authorized Agent

Please indicate attachments pertaining to your proposed project.

___ DCM MP-2 Excavation and Fill Information
___ DCM MP-3 Upland Development
___ DCM MP-4 Structures Information
_X_ DCM MP-5 Bridges and Culverts
___ DCM MP-6 Marina Development

NOTE: *Please sign and date each attachment in the space provided at the bottom of each form.*

Form DCM-MP-5

BRIDGES AND CULVERTS

Attach this form to Joint Application for CAMA Major Permit, Form DCM-MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project.

1. BRIDGES

a. Public __X__ Private _____

b. Type of bridge (construction material)
Cored slab, concrete piles,and deck

c. Water body to be crossed by bridge
Rosebay Creek

d. Water depth at the proposed crossing at (MLW) or +/- 7.0 feet

e. Will proposed bridge replace an existing bridge?
__x__ Yes __ ___ No
If yes,
(1) Length of existing bridge 100 ft
(2) Width of existing bridge 26 ft
(3) Navigation clearance underneath existing bridge +/- 3.0 ft.
(4) Will all, or a part of, the existing bridge be removed? (Explain)
All the existing bridges will be removed except end bents which will help with stabilization

f. Will proposed bridge replace an existing culvert(s)?
__ __ Yes __x__ No
If yes,
(1) Length of existing culvert N/A
(2) Width of existing culvert N/A
(3) Height of the top of the existing culvert above the MHW or NWL
(4) Will all, or a part of, the existing culvert be removed? (Explain)

g. Length of proposed bridge 138 ft.

h. Width of proposed bridge 42.5 ft.

i. Height of proposed bridge above wetlands
+/- 5 ft.

j. Will the proposed bridge affect existing water flow?
__ __ Yes __X__ No
If yes, explain

k. Navigation clearance underneath proposed bridge
+/-4 ft.

l. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? __X__ Yes __ __ No
If yes, explain __It will increase the opening.

m. Will the proposed bridge cross wetlands containing no navigable waters? __ ___ Yes __x__ No
If yes, explain

n. Have you contacted the U.S. Coast Guard concerning their approval?
__ ___ Yes __x__ No
If yes, please provide record of their action.

2. CULVERTS N/A

a. Water body in which culvert is to be placed _____

b. Number of culverts proposed _____

c. Type of culvert (construction material, style) _____

d. Will proposed culvert replace an existing bridge?
__ __ Yes __ __ No
If yes,
(1) Length of existing bridge _____
(2) Width of existing bridge _____
(3) Navigation clearance underneath existing bridge _____
(4) Will all, or a part of, the existing bridge be removed? (Explain) _____

e. Will proposed culvert replace an existing culvert?
__ __ Yes __ __ No
If yes,
(1) Length of existing culvert _____
(2) Width of existing culvert _____
(3) Height of the top of the existing culvert above the MHW or NWL _____
(4) Will all, or a part of, the existing culvert be removed? (Explain) _____

f. Length of proposed culvert _____

g. Width of proposed culvert _____

h. Height of the top of the proposed culvert above the MHW or NWL _____

i. Will the proposed culvert affect existing water flow?
__ __ Yes __ __ No
If yes, explain _____

j. Will the proposed culvert affect existing navigation potential? __ __ Yes __ __ No
If yes, explain _____

3. EXCAVATION AND FILL

a. Will the placement of the proposed bridge or culvert require any excavation below the (MHW) or NWL?
__x__ Yes __ __ No
If yes,
(1) Length of area to be excavated 300 ft.
(2) Width of area to be excavated 20 ft
(3) Depth of area to be excavated 4 ft
(4) Amount of material to be excavated in cubic yards 905

b. Will the placement of the proposed bridge or culvert require any excavation within: NO
__x__ Coastal Wetlands __ __ SAVs __ __ Other Wetlands
If yes,
(1) Length of area to be excavated 300 ft.
(2) Width of area to be excavated 20 ft.
(3) Amount of material to be excavated in cubic yards 905

c. Will the placement of the proposed bridge or culvert require any highground excavation?
__ __ Yes __x__ No
If yes,
(1) Length of area to be excavated _____
(2) Width of area to be excavated _____
(3) Amount of material to be excavated in cubic yards _____

d. If the placement of the bridge or culvert involves any excavation, please complete the following:
(1) Location of the spoil disposal area
At contractor's discretion
(2) Dimensions of spoil disposal area _____
(3) Do you claim title to the disposal area?
__ __ Yes __ __ No
If no, attach a letter granting permission from the owner.
(4) Will the disposal area be available for future maintenance? __ __ Yes __ __ No
(5) Does the disposal area include any coastal wetlands (marsh), SAVs, or other wetlands?
__ __ Yes __ __ No
If yes, give dimensions if different from (2) above. _____
(6) Does the disposal area include any area below the MHW or NWL? __ __ Yes __ __ No
If yes, give dimension if different from No. 2 above. _____

e. Will the placement of the proposed bridge or culvert result in any fill (other than excavated material

described in Item d. above) to be placed below MHW or NWL? x Yes __ No
If yes,
(1) Length of area to be filled 1078 ft.
(2) Width of area to be filled 10 ft.
(3) Purpose of fill Rock fill to stabilize embankments and lessen impacts to marshland

f. Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d. above) to be placed within:
x Coastal Wetlands _ SAVs __ Other Wetlands If yes,
(1) Length of area to be filled ~ 400'
(2) Width of area to be filled ~ 1'
(3) Purpose of fill Rock fill to stabilize embankments and lessen impacts to marshland

g. Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d. above) to be placed on highground? __ Yes x No
If yes,
(1) Length of area to be filled
(2) Width of area to be filled
(3) Purpose of fill

4. GENERAL

a. Will the proposed project involve any mitigation?
x Yes _ No
If yes, explain in detail Using remaining created coastal wetlands from Wallace Canal (B-3348) to offset these impacts

b. Will the proposed project require the relocation of any existing utility lines? x Yes __ No
If yes, explain in detail 6 inch waterline, telephone and electrical lines

c. Will the proposed project require the construction of any temporary detour structures?
_ Yes x No
If yes, explain in detail

d. Will the proposed project require any work channels? x Yes __ No
If yes, complete Form DCM-MP-2

e. How will excavated or fill material be kept on site and erosion controlled? NCDOT High Quality Waters Erosion Control Methods will be used

f. What type of construction equipment will be used (for example, dragline, backhoe or hydraulic dredge)? Heavy highway construction equipment

g. Will wetlands be crossed in transporting equipment to project site? __ Yes x No
If yes, explain steps that will be taken to lessen environmental impacts.

h. Will the placement of the proposed bridge or culvert require any shoreline stabilization?
__ Yes x No
If yes, explain in detail

Applicant or Project Name

Signature

Date

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

RECEIVED
JUL 31 2002
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

NCH D-3544

DIVISION OF WATER QUALITY
July 25, 2002

NC Dept of Transportation
Attn: Mr. Randy Henegar
1548 Mail Service Center
Raleigh, NC 27699

Subject: Stormwater Permit No. SW7020603
Bridge Replacement for
Bridge No. 32, Hwy 264
General Stormwater Permit
Hyde County

Dear Mr. Henegar:

The Washington Regional Office received the completed Stormwater Application and supporting information on June 13, 2002. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7020603 dated July 25, 2002 to the NC Department of Transportation.

This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein. Any future development at this site will require an additional Stormwater review and a permit for any Stormwater control measures deemed appropriate.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the office of Administrative Hearings, P.O. Drawer 27447, Raleigh, NC 27611-7447. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact Bill Moore at (252) 946-6481, extension, 264.

Sincerely,

Jim Mulligan
Water Quality Regional Supervisor
Washington Regional Office

cc: Washington Regional Office
Central Files

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

STATE STORMWATER MANAGEMENT PERMIT

GENERAL PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations

PERMISSION IS HEREBY GRANTED TO

NC Department of Transportation
Hyde County

FOR THE

construction, operation and maintenance of stormwater management systems in compliance with the provisions of 15A NCAC 2H.1000 (hereafter referred to as the *"stormwater rules"*) and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit for Best Management Practices to serve Bridge No. 32 replacement project located near Rose Bay, NC.

The Permit shall be effective from the date of issuance until rescinded and shall be subject to the following specific conditions and limitations.

I. DESIGN STANDARDS

1. This project involves replacement of Bridge No. 32 on Highway 264 near Rose Bay, NC. BMP's include bridge deck diversion pipes and grassed shoulders.

2. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.

3. No stormwater piping in addition to the existing piping shall be allowed except:

a. That minimum amount necessary to direct runoff beneath an impervious surface such as a road.
b. That minimum amount needed under driveways to provide access to lots.

II. SCHEDULE OF COMPLIANCE

1. Grasslined swales, vegetated buffers and other Best Management Practices used for stormwater runoff control shall be adequately maintained throughout the life of the project.

2. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.

3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

III. GENERAL CONDITIONS

1. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the Division of Water Quality, in accordance with North Carolina General Statutes 143-215.6A to 143.215.6C.

2. The permit may be modified, revoked or terminated for cause. The filing of a request for a permit modification, or termination does not void any permit condition.

3. The issuance of this permit does not prohibit the Director from reopening and modifying laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et.al.

4. The following items will require a modification to the permit:

   a. Any revision to the approved plans, regardless of size
   b. Project name change
   c. Change of ownership
   d. Redesign or addition to the approved amount of built-upon area.
   e. Further subdivision of the project area

f. In addition, the Director may determine that other revisions to the project should require a modification to the permit.

5. For any additions or modifications of the previously permitted built-upon area, the permittee shall submit to the Director revised plans and specifications and shall receive approval prior to construction.

6. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.

7. The permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved.

8. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.

Permit issued this the 25 th day of July, 2002.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Roy K Thom

Alan W. Klimek, PE, Director
Division of Water Quality
By Authority of the Environmental Management Commission

Permit Number SW7020603

US 264
Hyde County
Bridge No. 32 over Rose Bay Canal
Federal-Aid Project No. BRSTP-264(11)
State Project 8.1080701
T.I.P. No. B-3349

CATEGORICAL EXCLUSION

U. S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N. C. DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

3/30/00
Date

for William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation

3/30/00
Date

for Nicholas L. Graf, P.E.
Division Administrator
Federal Highway Administration

US 264
Hyde County
Bridge No. 32 over Rose Bay Canal
Federal-Aid Project No. BRSTP-264(11)
State Project 8.1080701
T.I.P. No. B-3349

CATEGORICAL EXCLUSION

April 2000

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PROJECT COMMITMENTS

US 264
Hyde County
Bridge No. 32 over Rose Bay Canal
Federal-Aid Project No. BRSTP-264(11)
State Project 8.1080701
T.I.P. No. B-3349

Division

- To avoid adverse impacts to spawning populations of fish, anadromous and resident species at the project site, NCDOT will follow the "Stream Crossing Guidelines for Anadromous Fish Passage".
- In order to minimize negative effects on the early stage development of the marine organisms found in the Primary Nursery Area, no in-water work will be conducted between March 1 and September 30.
- If possible, bridge deck drains will not discharge directly into Rose Bay Canal.
- If possible, the area of the temporary detour will be cleared but not grubbed.
- The detour will be removed to original ground upon completion of the project and disturbed areas will be seeded and mulched to stabilize the soil and planted with native tree species.
- Live concrete will not be allowed to contact the water or enter into the stream.

Design/Division/Roadside Environmental

- The proposed Tar-Pamlico River Basin Rules will be implemented during the design, construction and maintenance of this project.

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INTRODUCTION: Bridge No. 32 is included in the 2000-2006 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and in the Federal Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicate the bridge has a current sufficiency rating of 31.6 out of a possible 100 for a new structure. The bridge has an estimated remaining life of 6 years. 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

US 264 is classified as a minor arterial on the Statewide Functional Classification System. This section of US 264 is included in the Pamlico Scenic Byway. The Pamlico Scenic Byway extends from the City of Washington waterfront, following the Pamlico River, to Pamlico Sound and the junction of Croatan Sound. This section of US 264 is also a designated bicycle route, NC Bicycling Highways "Mountains to Sea", Map 15 (Mattamaskeet), and is used by a substantial number of bicyclists. The speed limit along US 264 is posted at 55 miles per hour.

Bridge No. 32 is located on US 264 west of the community of Rose Bay approximately 1.4 miles (2.2 kilometers) east of the junction with SR 1139. It provides the only east-west roadway access in southern Hyde County. The terrain in the project area is flat and marshy. The land uses in the area include marshland, low farmland, and commercial timberland with low-density residential beginning approximately one mile east of the bridge. An exception to this is the Rose Bay Oyster Company located immediately southeast of the bridge. A covered pier attached to the building is approximately 25 feet (7.6 meters) south of the bridge. Two soil driveways located 100 feet (30.5 meters) and 250 feet (76.2 meters), respectively, east of the bridge provide access to the Rose Bay Oyster Company and the adjacent boat docks.

Bridge No. 32 is a two-lane structure, built in 1955 (Figures 3 and 4), with reinforced concrete caps on timber piles supporting steel I-beams and a reinforced concrete deck. The bridge has concrete post and railing measuring 33 inches (0.83 meters) in height. The bridge consists of four spans totaling 100 feet (30.5 meters) in length. The bridge deck contains weep holes to facilitate drainage. There is no current posted weight limit. The bridge is signed "No Fishing from Bridge".

The existing bridge has a clear roadway width of 26 feet (7.9 meters). The existing structure has a deck width of 27.7 feet (8.4 meters). Near the bridge, US 264 is a two-lane facility with a 22.5-foot (6.8 meter) pavement and approximately 7-foot (2.1 meter) grass shoulders. Existing right of way is 60 feet (18 meters) wide with no control of access.

US 264 is on a straight horizontal alignment with relatively flat grades in the vicinity of the existing bridge. The bridge is situated approximately 14.2 feet (4.3 meters) above the canal, measured from the top of the rail, with the observed high water mark 7 feet (2.1 meter) below the top of rail.

The estimated 1999 traffic volume was 2,600 vehicles per day (vpd) on US 264. The traffic volumes are expected to increase to 4,400 vpd by the year 2025. The projected volume includes 2 percent truck-tractor semi-trailer (TTST) and 6 percent dual-tired vehicles (DTT).

Multiple utility lines, both aerial and underground, parallel US 264 across the bridge. Aerial cables include telephone lines on the south side and electrical power lines on the north side of the bridge. Underground utilities include an insulated 6-inch water line suspended from the south side of the bridge. An underground telephone cable runs parallel to the roadway and becomes aerial near the canal.

Three accidents occurred in the vicinity of the bridge during the period of January 1, 1995 to December 31, 1997. Two of these accidents involved either turning vehicles or rear end of vehicles stopped or slowed in the travel lane. No fatalities were recorded during this period.

Two (2) school buses cross Bridge No. 32 twice daily, for a total of 4 school bus crossings per day.

III. ALTERNATIVES

A. Project Description

The proposed roadway approaches will consist of two 12-foot (3.6-meter) lanes with 8-foot (2.4-meter) shoulders including 4 feet (1.2 meters) paved. The proposed project will be constructed within the existing 60-foot (18.3-meter) right-of-way. Construction easements will be required. The 4-foot paved shoulders will accommodate the substantial number of bicyclists using this route.

Based on a preliminary hydraulic analysis the new structure is recommended to have a length of approximately 135 feet (41.2 meters). The elevation of the new structure will be approximately the same as the existing structure to facilitate deck drainage and to match existing road approaches. The length and opening size of the proposed bridge may be increased or decreased as necessary to accommodate peak flows as determined from a more detailed analysis during the final design phase of the project. Bridge rail height of 54 inches (1.4 meters) will be provided for bicycle safety.

B. Reasonable and Feasible Alternatives

Three (3) reasonable and feasible alternatives were studied for this project (Figure 5): Alternatives A, B, and N. All three alternatives involved replacement of the bridge at its existing location. Alternatives A and B involve staged construction; Alternative N includes an on-site detour to the north.

Alternate A involves replacing the bridge with a 45-foot (13.7 meter) wide structure at the existing location. A portion, 8 feet (2.4 meters), of the existing structure will be demolished and two-way, one-lane traffic will be maintained on the remaining 18 feet (5.5 meters) of bridge. This will allow 16 feet (4.9 meters) of the new structure to be constructed. Once the new structure is sufficient to allow one-lane, two-way traffic to be shifted, the remainder of the existing structure will be removed. To maintain the existing centerline, 29 feet (8.8 meters) of additional structure will be constructed resulting in a cross-section of two 12-foot (3.7 meters) lanes with one 8-foot (2.4 meter) shoulder and one 13-foot (4.0 meter) shoulder. Temporary traffic control signals will be required on both approaches to the bridge during construction to control the one-lane, two-way traffic. The construction of this alternative will require re-channelization and filling of the existing 30-foot (9-meter) wide canal. This Alternative is not recommended because it is not practicable to maintain the high traffic volumes on US 264 with a one-lane pattern for the extended time period required for construction and the relocation of the Rose Bay Oyster Company.

Alternate B involves widening and replacing the bridge with a 66-foot (20.1-meter) wide structure at the existing location. To replace the existing bridge a new structure adjacent to the existing structure will be built with two 12-foot (3.7 meter) travel lanes. A safe distance of 4 feet (1.20 meters) of separation will be maintained between the structures. When constructed two-way traffic will be shifted to the new portion of the bridge. The existing structure will be demolished, reconstructed and attached to the detour section with two 12-foot (3.7 meter) lanes and an 8-foot (2.4 meter) shoulder, maintaining the existing centerline, for a total width of 66 feet (20.1 meters). The construction of this alternative will require re-channelization and filling of the existing 30-foot (9.1-meter) wide canal. This Alternative was not recommended because it would result in greater permanent impacts to brackish marsh.

Alternate N (Preferred) involves replacing the bridge at the existing location. The structure will provide two 12-foot (3.6-meter) lanes with 8-foot (2.4-meter) shoulders for a clear roadway width of 40 feet (12.2 meters) (see Figure 2). During construction, traffic will be maintained on a two-lane temporary detour just north (upstream) of the existing bridge. A 25-mph (40-kph) design speed is proposed on the detour structure to limit the intrusion into the brackish marsh and to minimize environmental impacts. The detour will require re-channelization and filling of the existing 30-foot (9 meter) wide canal, which parallels the roadway to the north. Following construction of the new bridge, the detour embankment will be removed and the area will be restored to its natural topography.

C. Alternatives Eliminated from Further Study

Alternative S involves replacing the bridge at its existing location using an on-site detour to the south (downstream). This detour would result in the elimination of the loading area of the Rose Bay Oyster Company. Alternative S was eliminated from further study

due to adverse impacts to the oyster facility and constructability issues associated with the temporary bridge.

A "do-nothing" alternative would eventually necessitate closure of the bridge due to its poor condition. The "do-nothing" alternative is not considered reasonable and feasible due to the essential traffic service provided by US 264.

"Rehabilitation" of the existing bridge is not feasible due to its age and deteriorated condition.

An off-site detour is not available.

D. Preferred Alternative

Bridge No. 32 will be replaced on its existing location (Figure 5). Alternative N is recommended because it minimizes permanent impacts to the brackish marsh complex and the Rose Bay Oyster Company. The Division Engineer concurs with the selection of Alternate N as the Preferred Alternative.

IV. ESTIMATED COSTS

The estimated costs, based on current prices, are as follows:

	Alternate A	Alternate B	**Alternate N (Preferred)**
Structure Removal (existing)	$ 22,905	$ 22,905	$ 42,630
Structure (proposed)	458,700	675,675	530,600
Building removal	10,000		
Roadway Approaches	243,564	241,762	257,288
Miscellaneous and Mobilization	339,831	434,658	369,482
Engineering and Contingencies	175,000	225,000	200,000
ROW/Const. Easements/Utilities:	33,950	33,925	34,400
TOTAL	$1,283,950	$1,633,925	$1,434,400

The estimated cost of the project, shown in the NCDOT Transportation Improvement Program is $675,000. This cost is based upon an estimated right-of-way cost of $55,000 and a construction cost of $540,000.00. The project is scheduled for right of way acquisition in 2001 and construction in 2002.

V. NATURAL RESOURCES

A. Methodology

The site was visited on December 28, 1998. The study corridor was walked and visually surveyed for important features. For purposes of this evaluation, the study corridor was assumed to measure approximately 970 feet (295.6 meters) in length. Impact

calculations for each alternative are based on corridor width of approximately 80 feet (24 meters) for each alternative. Special concerns evaluated in the field include potential habitat for protected species, wetlands, and protection of water quality in Rose Bay Canal.

Hyde County participates in the National Flood Insurance Program (NFIP). According to the Flood Insurance Rate Map (FIRM), the bridge crosses a canal within the 100-year flood plain. The hydrological source for the marshes and Rose Bay Canal is a combination of: 1) inland runoff from the region north, west and east of the subject bridge; 2) wind-blown tides from the lower Pamlico River and Pamlico Sound; and 3) direct precipitation. The bridge is located in a detailed study area and the base (100 year) flood elevation is 9 feet (2.7 meters). Since the proposed bridge is an in-kind replacement, it is anticipated that this project will not have any adverse effect or impact on the existing floodplain or the adjacent properties and existing structures.

Materials and research data for the project were derived from a number of sources, including applicable U.S. Geological Survey (USGS) topographic mapping (Scranton, NC 7.5 minute quadrangle), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping (7.5 minute quadrangle), Natural Resources Conservation Service (NRCS) draft soils mapping (USDA unpublished), and recent aerial photography (scale: 1 inch = 100 feet).

Plant community descriptions are based on a classification system utilized by North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968). Jurisdictional areas were evaluated using the three-parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (COE) wetland delineation guidelines (COE 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Habitat used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Martof *et al.* 1980, Webster *et al.* 1985, Potter *et al.* 1980, Menhinick 1991, Palmer and Braswell 1995, Hamel 1992, Robins *et al.* 1986, Parnell *et al.* (1991), Fussell 1994, Wiegert and Freeman 1990, Linzey 1998, Gosner 1978, and Odum *et al.* 1984). Water quality information for area streams and tributaries was derived from available sources (DEM 1994, DWQ 1998). Quantitative sampling was not undertaken to support existing data.

The most current FWS listing of federal-protected species with ranges, which extend into Hyde County, was obtained prior to initiation of the field investigation. In addition, NHP records documenting presence of federal- or state-listed species were consulted before commencing the field investigation.

B. Physiography and Soils

The study corridor is located in the Outer Coastal Plain or Tidewater physiographic province of North Carolina. Regional topography is generally flat, and consists primarily of an emergent shrub/marsh grass complex transected by natural streams; man-made canals and a highway causeway consisting of fill material. The landscape elevation does not exceed 5 feet (1.5 meter) National Geodetic Vertical Datum (NGVD) within 1 mile (1.6 kilometers) of the study corridor. The highest elevation within the study corridor is approximately 3 feet (0.9 meters) NGVD at the road facility surface.

Marshes adjacent to the road facility are underlain by Delcomb muck (*Terric Medisaprists*). Fill material under the shellfish processing plant is mapped as Udorthents.

Delcomb muck is characterized as very poorly drained and with a moderate to moderately rapid permeability. This mapping unit typically underlies nearly level landscapes supporting brackish marshes. This soil is frequently flooded for long periods. The seasonal high water table is one-foot (0.3 meters) above the marsh surface, and the seasonal low water table is one-foot (0.3 meters) below the marsh surface (NRCS unpublished). Within Hyde County, Delcomb muck is considered to be a hydric soil (NRCS 1996).

The designation "Udorthents" refers to areas where fill material has covered most or all of the natural soil. Within this mapping unit, characteristics of the original soils (drainage, horizons, and compaction) have been drastically altered by development. The land supporting the Rose Bay Oyster Company and associated storage yard is mapped as Udorthents (NRCS unpublished).

C. Water Resources

1. Stream Crossing

The study corridor is located within sub-basin 03-03-08 of the Tar-Pamlico River Basin (DEM 1994). This area is part of USGS accounting unit 03020105 of the South Atlantic-Gulf Region. Rose Bay Canal has been assigned a Stream Index Number of 29-44-1-1 by the N.C. Division of Water Quality (1998). The bridge proposed for replacement crosses a tributary to Rose Bay Creek (known as Rose Bay Canal) located approximately 1500 feet above the confluence of Rose Bay Canal with Rose Bay Creek. Aerial photographic interpretation indicates that Rose Bay Canal was constructed to drain Lake Mattamuskeet as well as forested peat lands west of Lake Mattamuskeet. The hydrological source for the marshes and Rose Bay Canal is a combination of: 1) inland runoff from the region north, west, and east of the subject bridge; 2) wind-blown tides from the lower Pamlico River and Pamlico Sound; and 3) direct precipitation. A result of the unpredictability of these hydrological forces is that marshes within the project corridor are characterized by irregular flooding.

2. Stream Characteristics

Rose Bay Canal is a well-defined brackish marsh stream characterized by slow flow. Flow direction varies due to wind tides and inland runoff. The stream and marsh substrate consists of unconsolidated sediments flocculated (precipitated) out of the water column - a result of fresh water (carrying organics from upstream) meeting with saline waters of the estuary. In the vicinity of the subject bridge, the Rose Bay Canal is oriented in a north-south direction and generally drains from north to south. The Canal is approximately 105 feet (32 meters) wide and 7 feet (2.1 meters) deep at mid-stream. The highway causeway approaches the Canal at right angles (on an east-west axis) and makes a perpendicular bridge crossing. The causeway is bounded to the north and southwest by man-made, roadside canals approximately 30 feet (9.1 meters) wide and 3 feet (0.9 meters) deep. The roadside canals are not identified on USGS mapping; however, the canals exhibit characteristics of waters of the United States. At the time of the field survey, water in Rose Bay Canal (and the associated tributary canals) was flowing slowly southward, toward Rose Bay Creek and the Pamlico Sound. Water-column turbidity was high during the visit, possibly due to runoff from an extended rainfall event, which initiated several days prior to, and continued during, the field efforts.

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams within a basin. A best usage classification of **SC** has been assigned to the entire extent of Rose Bay Canal (DWQ 1998). The designation **SC** denotes tidal salt waters suitable for uses such as aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation refers to any activity in which bodily contact with water occurs on an infrequent or incidental basis (DWQ 1998).

No waters designated High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), or Water Supply II (**WS-II**) occur within 1.0 mile (1.6 kilometers) of the study corridor. The nearest waters with any of the aforementioned designations are **ORWs** associated with Swanquarter National Wildlife Refuge, located approximately 6.3 miles (10.1 kilometers) southeast of the project corridor. Rose Bay Canal is not designated a North Carolina Natural and Scenic River or a national Wild and Scenic River.

The Division of Water Quality (DWQ) (previously known as the Division of Environmental Management [DEM], Water Quality Section) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project area is summarized in *Tar-Pamlico River Basinwide Water Quality Management Plan* (DEM 1994). The proposed project area is located in Subbasin 08 of the Tar-Pamlico River Basin. No major dischargers reside in this subbasin, and the only non-point discharger noted within the project corridor is the Rose Bay Oyster Company. User-support information concerning water quality indicates that Rose Bay Canal is **supporting** its intended uses.

The proposed Tar-Pamlico River Basin Rules will be implemented during the design, construction and maintenance of the proposed bridge.

3. Anticipated Impacts

Short-term impacts to water quality, such as sedimentation and turbidity, can be anticipated from construction-related activities. Alternates A, B and N, will impact man-made canals adjacent to the existing road causeway; however, re-constructed channels will allow for a continuation of area drainage. Impacts will be minimized by: 1) removal of temporary causeway fills and filling temporary channels after bridge construction, and 2) using the NCDOT Best Management Practices for Protection of Surface Waters (BMPs) during construction, as applicable.

The contractor will follow, as applicable, contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures). These measures may include: the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in wetlands and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into steams by catch basins and roadside vegetation.

The proposed bridge replacement will allow for continuation of present water flows, thereby protecting system integrity. Long-term impacts to Rose Bay Canal are expected to be negligible. In order to minimize impacts to water resources, the NCDOT Best Management Practices for Protection of Surface Waters (BMPs) will be implemented, as applicable during construction of the project.

D. Biotic Resources

1. Plant Communities

Two distinct plant communities were identified within the study corridor: brackish marsh complex and roadside/disturbed land. These plant communities are described below.

Brackish Marsh Complex - This community occurs on relatively flat landscapes at approximate sea level near the upper (landward) extent of estuaries, where fresh water runoff from inland dilutes saline waters from the ocean. Salinities within the brackish marsh complex may vary from less than 0.5 parts per thousand (ppt) to greater than 30 ppt; however, salinities within this community are typically low (approximately 0.5 to 5.0 ppt; considered an oligohaline environment). This community is very similar to that described as Brackish Marsh by Schafale and Weakley (1990). The brackish marsh complex consists primarily of emergent grasses and also contains herbs. Scattered shrubs and stunted trees occur on mounds and along upland fringes. Brackish marsh complex occurs in all but the southeastern quadrant of the bridge crossing.

Species diversity is low in this community, and species are generally distributed in homogeneous bands or zones within the marsh. The dominant species is black needlerush (*Juncus roemerianus*), which accounts for approximately 80 percent of marsh cover. Other grasses and herbs include salt grass (*Distichlis spicata*), salt meadow cordgrass (*Spartina patens*), narrow-leaved cattail (*Typha angustifolia*),

seaside goldenrod (*Solidago sempervirens*), broomsedge (*Andropogon virginicus*), and sawgrass (*Cladium jamaicense*). Scattered shrubs include: marsh elder (*Iva frutescens*), silverling (*Baccharis halimifolia*), and sea oxeye (*Borrichia frutescens*). The few areas where soil is mounded above sea level support scattered, stunted individuals of loblolly pine (*Pinus taeda*) and southern red cedar (*Juniperus silicicola*).

Roadside/Disturbed Land - Roadside/disturbed land consists of road shoulders and a shellfishery (including associated parking lot and storage yard) located in the southeastern quadrant of the bridge crossing. This community appears to have established on fill material placed in a brackish marsh. The road shoulders support low herbs and grasses, which are maintained by regular mowing. The shellfishery yard includes docks, buildings, and a surface pavement consisting of gravel and oyster shells. The yard is used to store boats, tractor-trailers, crab traps, and building debris.

Roadside/disturbed land is dominated by invasive grasses and herbs. Common species include: vasy grass (*Paspalum urvillei*), dandelion (*Taraxacum officinale*), foxtail grass (*Setaria geniculata*), spiny-leaved sow-thistle (*Sonchus asper*), seaside goldenrod, broomsedge, trumpet creeper (*Campsis radicans*), and pepper-vine (*Ampelopsis arborea*).

The following table indicates the amount of each plant community present within the 80 foot (24 meter) project corridor width for each alternative (actual impacts within construction limits will be less), except Alternative N. Alternative N areas include communities located within both the rights-of-way of the existing road facility and the on-site detour N.

Plant Community	Estimated Area Acres (hectares)			
	Alternative A	Alternative B	Alternative N	
			Replacement	Detour
Brackish Marsh Complex	0.34 (.14)	0.40 (.16)	0.13 (.05)	0.14 (.06)
Roadside/Disturbed Land	0.30 (.12)	0.24 (.10)	0.13 (.05)	0.90 (.36)
Total	0.64 (.26)	0.64 (.26)	0.26 (.10)	1.04 (.42)

Implementation of Alternate N will require two temporary causeways and a temporary bridge north of the existing bridge. Approximately 79 percent of community coverage within Alternate N right-of-way is disturbed and maintained as such (roadside disturbed land), while only approximately 21 percent of community coverage is in a natural state (brackish marsh complex).

Implementation of Alternate A will require staged construction on the existing bridge alignment. The existing facility will remain in use throughout construction so there will be no need for temporary causeways or bridges. The ratio of disturbed and maintained areas (roadside maintained area) to natural community area (brackish marsh complex) is relatively even (47 percent to 53 percent, respectively) within the Alternate A right-of-way.

Implementation of Alternate B will require widening of the existing facility without the use of temporary causeways or bridges. Approximately 63 percent of community coverage within Alternate B right-of-way is in a natural state (brackish marsh complex), while approximately 37 percent of community coverage is disturbed and maintained as such (roadside disturbed land).

From an ecological perspective, the impacts of bridge replacement in place are minimal relative to construction on new location. All three alternatives will require that fill material be placed on existing brackish marsh and canals be constructed in the marsh adjacent to the temporary causeways to maintain roadside drainage. Following construction of the new bridge in Alternative N, the detour embankment will be removed and the area will be restored to its natural topography. The footprint of these temporary structures is expected to re-vegetate with native species rapidly, a recovery process, which is a characteristic of brackish marsh vegetation. All three alternatives will avoid residential and commercial structures.

2. Wildlife

Within the brackish marsh complex, species that are primarily terrestrial in nature utilize the upper levels of marsh vegetation and air space over the marsh. The road causeway provides a travel corridor for terrestrial mammals and reptiles to access marsh resources. No mammal signs (tracks, scat, etc.) or sightings were noted during the investigation. However, opportunistic and characteristic species which are expected to frequent these habitats include: Virginia opossum (*Didelphis virginiana*), southeastern shrew (*Sorex longirostris*), least shrew (*Cryptotis parva*), silver-haired bat (*Lasionvcteris noctivagans*), red bat (*Lasiurus borealis*), Seminole bat (*L. seminolus*), marsh rabbit (*Sylvilagus palustris*), marsh rice rat (*Oryzomys palustris*), eastern harvest mouse (*Reithrodontomys humulis*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pinetorum*), Norway rat (*Rattus norvegicus*), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*).

Primarily terrestrial birds observed within or adjacent to the project corridor include: American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), fish crow (*Corvus ossifragus*), eastern meadowlark (*Sturnella magna*), red-winged blackbird (*Agelaius phoeniceus*), European starling (*Sternus vulgaris*), and savannah sparrow (*Passerculus sandwichensis*). Other species expected within these habitats include: northern harrier (*Circus cyaneus*), barred owl (*Strix varia*), marsh wren (*Cistothorus palustris*), gray catbird (*Dumetella carolinensis*), eastern kingbird (*Tyrannus tyrannus*), tree swallow (*Tachycineta bicolor*), barn swallow (*Hirundo rustica*), palm warbler (*Dendroica palmarum*), yellow-rumped warbler (*D. coronata*), common yellowthroat (*Geothlypis trichas*), boat-tailed grackle (*Quiscalus major*), song sparrow (*Melospiza melodia*), and seaside sparrow (*Ammosdrammus maritimus*).

Due to the time of year and weather conditions (cold and rainy) in which fieldwork was conducted, no reptiles and amphibians were documented. All reptiles expected to occur within the project corridor are aquatic oriented, and no amphibians are expected due to fluctuating saline conditions.

No scat or sign of primarily aquatic mammals was observed during field surveys. Mammals expected to utilize the brackish marshes and open water creeks and canals include: muskrat (*Ondatra zibethicus*), nutria (*Myocastor coypus*), mink (*Mustela vison*), and river otter (*Lutra canadensis*).

Aquatic-oriented birds observed during field surveys include: pied-billed grebe (*Podilymbus podiceps*), double-crested cormorant (*Phalacrocorax auritus*), great blue heron (*Ardea herodias*), osprey (*Pandion haliaetus*), ring-billed gull (*Larus delawarensis*), and belted kingfisher (*Ceryle alcyon*). Other species expected to utilize local aquatic habitats include: little blue heron (*Egretta caerulea*), snowy egret (*E. thula*), tricolor heron (*E. tricolor*), great egret (*Casmerodius albus*), cattle egret (*Bubulcus ibis*), black-crowned night-heron (*Nycticorax nycticorax*), least bittern (*Ixobrychus exilis*), clapper rail (*Rallus longirostris*), American coot (*Fulica americana*), laughing gull (*Larus atricilla*), and herring gull (*L. argentatus*).

Aquatic reptiles expected within the project corridor include: snapping turtle (*Chelydra serpentina*), diamondback terrapin (*Malaclemys terrapin*), eastern mud turtle (*Kinosternum subrubrum*), yellow rat snake (*Elaphe obsoleta*), rainbow snake (*Farancia erytrogramma*), Carolina water snake (*Nerodia sipedon williamengelsi*), brown water snake (*N. taxipilota*), ribbon snake (*Thamnophis sauritus*), eastern cottonmouth (*Agkistrodon piscivorus*), and American alligator (*Alligator mississippiensis*).

Irregularly flooded, oligohaline waters and marshes are characterized by periodic fluctuations in water level, water chemistry (salinity, dissolved oxygen), and temperature. For this reason, aquatic species that occur in estuaries either migrate with the fluctuations or are adapted to the dynamic environment. Fishes expected in and adjacent to the project corridor include permanent resident estuarine or brackish species, migratory (anadromous, semianadromous, and catadromous) species, and larval forms of marine species that utilize estuarine and brackish marshes as nurseries. Expected permanent residents include mosquitofish (*Gambusia holbrooki*), spotfin killifish (*Fundulus luciae*), Atlantic croaker (*Micropogon undulatus*), oyster toadfish (*Opsanus tau*), and sheepshead minnow (*Cyprinodon variegatus*). Anadromous fishes that may be found near the project corridor include alewife (*Alosa pseudoharengus*), blueback herring (*A. aestivalis*), American shad (*A. sapidissima*), hickory shad (*A. mediocris*), shortnose sturgeon (*Acipenser brevirostrum*), and striped bass (*Morone saxitilis*). Semianadromous fishes that may occur in the vicinity include white perch (*Morone americana*), yellow perch (*Perca flavescens*), and gizzard shad (*Dorosoma cepedianum*). The American eel (*Anguilla rostrata*) is an expected catadromous species. Nursery utilizers include striped mullet (*Mugil cephalus*), pinfish (*Lagodon rhomboides*), and spot (*Leiostomus xanthrus*).

Aquatic invertebrates observed within the project corridor include blue crab (*Callinectes sapidus*) and brackish-water fiddler (*Uca minax*). Other notable invertebrates expected to occur within the project corridor include blue mussel (*Mytilus edulis*), Carolina marsh clam (*Polymesoda carolinana*), and penaeid and caridean shrimps. These organisms serve as prey items for fish and other wildlife.

Due to the limited extent of infringement on natural communities, neither alternative will result in substantial loss or displacement of known fish and wildlife populations. No substantial habitat fragmentation is expected, as most improvements will be restricted to

roadside margins. Construction noise and associated disturbances will have short-term impacts on fish and wildlife movement patterns. However, long-term impacts are expected to be negligible. Potential down-stream impacts to aquatic habitat will be avoided by bridging the system to maintain regular flow and stream integrity. In addition, temporary impacts to downstream habitat from increased sediment during construction will be minimized by the implementation of the NCDOT Best Management Practices for Protection of Surface Waters, as applicable.

Loss of marsh and open-water habitat will occur within all three alternatives. This disturbance is expected to have little effect on local wildlife populations. Construction of temporary structures associated with these alternatives will result in substantial short-term disturbance to open-water habitats. The mobile nature of estuarine fish populations will allow them to vacate the project area during construction and return following bridge replacement and removal of temporary structures.

E. Special Topics

1. Waters of the United States

Surface waters within Rose Bay Canal and the canals adjacent to the bridge access causeways are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR 328.3). The waters of Rose Bay Canal exhibit characteristics of estuarine, subtidal, open-water streams that are permanently flooded, with unconsolidated bottoms (E1OWL) (Cowardin *et al.* 1979).

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 wetland hydrology (COE 1987). According to these criteria, both the brackish marsh complex and the maritime forest are subject to jurisdictional review. The brackish marsh complex exhibits characteristics of estuarine, intertidal, emergent persistent vegetation, that is subject to irregular flooding (E2EM1P5); and the maritime forest exhibits characteristic of estuarine, intertidal, needle-leaved evergreen forested, saturated, partially drained or ditched (E2FO4Bd) (Cowardin *et al.* 1979). Vegetative composition of these communities was previously characterized in V.D.1 of this document.

The area (in acres [hectres]) of open waters and vegetated wetlands (brackish marsh complex) and the length (in feet [meters]) of open-waters (both the main canal and roadside canals) which occur within the 80-feet (24 meters) wide alternative corridors are depicted in the following table:

Type of Jurisdictional Area In acres (hectares)	Jurisdictional Totals within Right-of-Way			
	Alternative A	Alternative B	Alternative N Replacement	Alternative N Detour
Vegetated Wetland	0.34 (.14)	0.40 (.16)	0.13 (.05)	0.17 (.07)
Open Water	0.20 (.08)	0.22 (.09)	0.24 (.10)	0.49 (.20)
Linear Distance in ft (m)	620 (188.9)	680 (207)	640 (195)	887 (270)

Alternative N includes the construction of temporary bridge approach causeways through existing canals and brackish marsh complex. All three alternatives require the excavation of temporary canals adjacent to the temporary causeways to maintain roadway drainage.

Both surface waters and wetlands are considered to be high quality habitat and have been designated as Areas of Environmental Concern (AECs) by the N.C. Coastal Resources Commission. Consideration will be given to avoiding disturbances within these areas to the fullest extent practicable.

2. Permits

The proposed project will require a Coastal Area Management Act (CAMA) permit from the N.C. Division of Coastal Management (DCM) as a result of probable impacts to AECs. AECs anticipated to be impacted by this project include coastal wetlands, estuarine waters, public trust areas, and estuarine shorelines. The proposed project will also require notification to the COE concerning Section 404 permitting and consultation with DWQ concerning Section 401 Water Quality Certification.

Bridge demolition will be addressed at the time of the permit application.

3. Mitigation

Compensatory mitigation is not proposed for this project, due to the limited nature of project impacts. However, the NCDOT BMPs will be implemented, as applicable, to minimize impacts. Temporary impacts to vegetated wetlands associated with construction activities will be mitigated by removal of temporary fill material and replanting disturbed areas with native wetland species upon project completion. A final determination regarding mitigation for impacts to Waters of the U.S. rests with DCM, in consultation with the COE and DWQ.

F. Rare and Protected Species

1. Federally-Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), Proposed for such listing (P), Threatened due to Similarity of Appearance (T[S/A]), or Experimental (EXP) are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The following federal-protected and FSC species are listed for Hyde County (December 1999 FWS list):

Common Name	Scientific Name	Status
Leatherback sea turtle	*Dermochelys coriacea*	E
Hawksbill sea turtle	*Eretomochelys imbricata*	E
Kemp's ridley sea turtle	*Lepidochelys kempii*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Manatee	*Trichechus manatus*	E
Sensitive jointvetch	*Aeschynomene virginica*	T
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T*
Bald eagle	*Haliaeetus leucocephalus*	T
American alligator	*Alligator mississippiensis*	T (S/A)
Red wolf	*Canis rufus*	EXP
Black rail	*Laterallus jamaicensis*	FSC
Dune blue curls	*Trichostema* sp. *1*	FSC*

Note:

E Denotes Endangered (a species that is in danger of extinction throughout all or a significant portion of its range)

T Denotes 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) Denotes Threatened due to Similarity of Appearance

EXP Denotes Experimental (a species that involves a local population which has been recently introduced into the species historic range and habitat).

FCS Denotes Federal Species of Concern (a species that may or may not be listed in the future, dependent on the information known about the species). FSC species receive no formal protection under the ESA.

* Historic record - the species was last observed in the county more than 50 years ago.

Leatherback sea turtle - The leatherback turtle is distinguished by its large size (46- to 70-inch) carapace, (650 to 1,500 pounds) and a shell of soft, leathery skin. This species is primarily tropical in nature, but the range may extend to Nova Scotia and Newfoundland (Martof *et al.* 1980). The leatherback is a powerful swimmer, often seen far from land; however, it has been known to move into shallow bays, estuaries, and even river mouths. Most living specimens of leatherback sea turtle observed in North Carolina were observed off shore of ocean beaches. Very few individuals have been documented in sounds and estuaries. Preferred food of the leatherback is jellyfish, although the diet includes other sea animals and seaweed. The leatherback generally nests on sandy, tropical beaches.

BIOLOGICAL CONCLUSION: NO EFFECT

The leatherback is primarily an oceanic species. The project corridor is located approximately 36 miles from the nearest ocean inlet (Ocracoke Inlet) and up a restricted brackish marsh creek, so there is a low probability of the leatherback traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to leatherback sea turtle.

Hawksbill sea turtle - The hawksbill is a medium-sized turtle (carapace length of 30 to 35 inches) and a maximum of 58 lbs. with a carapace characterized by red, yellow, brown, and black streaking. This is a primarily oceanic turtle whose population center is the Caribbean; it rarely ranges as far north as North Carolina (Martof *et al.* 1980). Of the eight recent records of hawksbill in North Carolina, only one was reported from inland waters - the Pamlico Sound. Preferred food of the hawksbill includes marine plants and invertebrates (Palmer and Braswell 1995). The hawksbill generally nests on sandy tropical beaches.

BIOLOGICAL CONCLUSION: NO EFFECT

The hawksbill is primarily an oceanic species. The project corridor is located approximately 36 miles from the nearest ocean inlet (Ocracoke Inlet) and up a restricted brackish marsh creek so there is a low probability of the hawksbill traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to hawksbill sea turtle.

Kemp's ridley sea turtle - The Kemp's ridley sea turtle is the smallest of the sea turtles (23- to 30-inch carapace, 79 to 110 lb), and is generally considered the most endangered species of sea turtle in the world (Palmer and Braswell 1995). This species ranges from the Gulf of Mexico and the east coast, to Nova Scotia and Europe. In addition to its small size, this species is discernible by the heart shaped carapace and gray coloration. Kemp's ridley prefers shallow coastal waters, including sounds and the lower portions of large rivers, where it feeds on crabs, shrimp, snails, clams, and some saltwater plants. Nearly all members of this species are believed to nest on a short strand of ocean beach in the state of Tamaulipas, Mexico. Only a single nesting record exists for North Carolina - on Long Beach in Brunswick County (1992). The nearest suitable nesting habitat for this species is the Outer Banks ocean beaches.

BIOLOGICAL CONCLUSION: NO EFFECT

The Kemp's ridley is primarily an oceanic species; however, it may also frequent high-saline waters of sounds near ocean inlets. The project corridor is located approximately 36 miles from the nearest ocean inlet (Ocracoke Inlet) and up a restricted brackish marsh creek, so there is a low probability of the Kemp's ridley traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to Kemp's ridley sea turtle.

Red-cockaded Woodpecker - This small woodpecker (7 to 8.5 inches long) has a black head, prominent white cheek patch, and black-and-white barred back. Males often have red markings (cockades) behind the eye, but the cockades may be absent or difficult to see (Potter *et al.* 1980). Primary habitat consists of mature to over-mature southern pine forests dominated by loblolly (*Pinus taeda*), long-leaf (*P. palustris*), slash (*P. elliottii*), and pond (*P. serotina*) pines (Thompson and Baker 1971). Nest cavities are constructed in the heartwood of living pines (generally older than 70 years) that have been infected with red-heart disease. Nest cavity trees tend to occur in clusters, which are referred to as colonies (FWS 1985). The woodpecker drills holes into the bark around the cavity entrance, resulting in a shiny, resinous buildup around the entrance, which allows for easy detection of active nest trees. Pine flatwoods or pine-dominated savannas, which have been maintained by frequent natural fires, serve as ideal nesting and foraging sites for this woodpecker. Development of a thick understory may result in abandonment of cavity trees.

BIOLOGICAL CONCLUSION: NO EFFECT

The red-cockaded woodpecker requires pine forest for foraging and reproduction and the project corridor contains no pine forest. NHP records have no documentation of red-cockaded woodpecker within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to red-cockaded woodpecker.

Manatee - The manatee is a large, gray or brown aquatic mammal that averages 10 to 13 feet in length and weighs up to 1,000 lbs. This species occurs from Brazil to the West Indies to the east coast of the United States. During summer months manatees migrate from their Florida wintering areas as far north as coastal Virginia. These mammals inhabit warm waters, both fresh and salt, where their diet consists mostly of aquatic vegetation (Linzey 1998, Clark 1987, Webster *et al.* 1985).

BIOLOGICAL CONCLUSION: NO EFFECT

The manatee rarely occurs in North Carolina inland waters, although there have been recent sightings in the Cape Fear and Neuse Rivers. The project corridor is not expected to support forage sufficient for the manatee. NHP records have no documentation of manatee within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to the manatee.

Sensitive Jointvetch - Sensitive joint-vetch is a robust, bushy-branched, annual legume often exceeding 3.3 feet in height. Young stems have bristly hairs with large, swollen bases (Leonard 1985). The alternate, compound leaves are even-pinnate, approximately 1.3 to 2 inches wide, with 30 to 56 toothless leaflets (Radford *et al.* 1968). Flowers are bright greenish-yellow with red veins, about 0.5 inches long, and are subtended by bractlets with toothed margins (Leonard 1985). Flowers are produced on few-flowered racemes from July to October. The jointed legume (loment) is about 2 inches long, has 6 to 10 segments, and a 0.5- to 1.0-inch long stalk.

Sensitive jointvetch occurs in the intertidal zone near the upper limit of tidal fluctuation. It seems to prefer sparsely vegetated areas where annuals predominate (FWS 1995). Habitat for this species in North Carolina consists of moist to wet coastal roadside ditches and moist fields that are nearly tidal (FWS 1995), especially in full sun (Leonard 1985). Associated plants listed for this jointvetch in North Carolina are all fresh water species. Sensitive jointvetch is not expected to be found in association with salt-tolerant species such as saltmarsh cordgrass or giant cordgrass (Rouse 1994). This species seems to favor microhabitats where there is a reduction in competition from other plant species and usually some form of soil disturbance (FWS 1995). The traditional range of sensitive jointvetch is Atlantic coastal areas from New Jersey to the Savannah River. This species has been documented in Hyde and Beaufort Counties, North Carolina (Leonard 1985).

BIOLOGICAL CONCLUSION: NO EFFECT

Sensitive jointvetch occurs in intertidal areas, near the upper extent of tidal flooding, on open ground surfaces with sparse vegetation. The NHP has documented this species approximately 1.8 miles west of the project corridor near the intersection of SR 1311 and SR 1314. A visual search for this species during site surveys did not result in the identification of this species. Intertidal areas within the project corridor are brackish in nature and densely vegetated, and therefore do not provide appropriate habitat for this species. Based on available information, the proposed project will not result in an adverse impact to sensitive jointvetch.

Seabeach Amaranth - Seabeach amaranth is a low-growing, fleshy, annual herb. The spatula-shaped leaves are pink and range from 0.5 to 1.0 inch in diameter. The leaves are clustered near the end of the stem and are notched apically. Flowers and fruits are inconspicuous and occur along the stem. This plant is primarily found on foredunes and sand spits of Atlantic coast barrier beaches and inlets in areas where periodic overwash eliminates vegetative competition. Some of the largest remaining populations of this species occur in North Carolina (FWS 1993). This species has been documented on sand spits and ocean-fronting beaches of the Outer Banks.

BIOLOGICAL CONCLUSION: NO EFFECT

Seabeach amaranth prefers the open sand of foredunes, overwash fans, and inlet spits associated with ocean-fronting barrier islands. Potential habitat for seabeach amaranth does not exist within the project corridor. NHP records indicate no documentation of this species within 2.0 miles of the project corridor, and this species was not observed during field surveys. Based on available information, the proposed project will not result in an adverse impact to seabeach amaranth.

Loggerhead sea turtle - The loggerhead sea turtle is the most common sea turtle on the coast of the Carolinas; this species occurs along the coast of North America from Texas to Nova Scotia. This species averages 31 to 47 inches in length and weighs from 170 to 500 lbs. (Martof *et al.* 1980). The loggerhead is basically temperate or subtropical in nature, and is primarily oceanic, but may also be found in estuarine bays, sounds, and large coastal rivers. This species occurs along the coast of North Carolina from late April to October. Preferred nesting habitat is ocean beaches, generally south of Cape Lookout. Traditionally, the largest concentration of loggerhead nests each year occurs on Smith Island, located at the mouth of the Cape Fear River (Palmer and Braswell 1995).

BIOLOGICAL CONCLUSION: NO EFFECT

The loggerhead primarily occurs south of Cape Lookout in North Carolina; however, it may also wander into estuarine waters of coastal sounds such as the Pamlico. The project corridor is located approximately 36 miles from the nearest ocean inlet (Ocracoke Inlet), so there is a low probability of the loggerhead traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to loggerhead sea turtle.

Piping plover - Piping plovers are the smallest of the plovers found in the Carolinas, measuring only 6 to 8 inches in length (Golder and Parnell 1987). This species is characterized by a white head and back and white breast and belly, yellow legs, narrow black neck band, a narrow band above the eyes, and a black bill in the winter and yellow and black bill in the summer (Potter *et al.* 1980). These small Nearctic birds occur along beaches above the high tide line, sand flats at the ends of sand spits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, and washover areas cut into or between dunes (Dyer *et al.* 1987). Nests most often occur on open, wide, sandy stretches of beach similar to those associated with inlets and capes.

BIOLOGICAL CONCLUSION: NO EFFECT

The piping plover occurs along beaches, sand flats, sand spits, and among dunes. No plover habitat exists within the project corridor. NHP records have no documentation of this species within 2.0 miles of the project corridor. Based on available information, this project will not result in an adverse impact to piping plover.

Green sea turtle - The green sea turtle is a medium to large turtle 30 to 60 inches long, 220 to 650 lbs. in weight) with a smooth, heart-shaped shell (Martof *et al.* 1980). Adults are believed to be primarily herbivorous (including jellyfish) while the young are believed to be primarily carnivorous. The green sea turtle is most commonly found in the Caribbean where it breeds, although individuals (usually immatures) are occasionally found as far north as the North Carolina coast. Preferred nesting habitat occurs on ocean-fronting beaches. The FWS has listed the green sea turtle for Hyde County based on a historic record, which means the species was last observed in the County more than 50 years ago.

BIOLOGICAL CONCLUSION: NO EFFECT

The green sea turtle rarely occurs in North Carolina waters, and then primarily in ocean waters. The project corridor is located approximately 36 miles from the nearest ocean inlet (Ocracoke Inlet) up a restricted brackish marsh creek, so there is a low probability of the green sea turtle traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles of the project corridor, and no evidence of this species has been reported in Hyde County during the last 50 years. Based on available information, this project will not result in an adverse impact to the green sea turtle.

Bald Eagle - The bald eagle is a large raptor with a wingspan greater than 6 feet. Adult bald eagles are dark brown with a white head and tail. Immature eagles are brown with whitish mottling on the tail, belly, and wing linings. The bald eagle typically feeds on fish, but may also take birds and small mammals. In the Carolinas, nesting season extends from December through May (Potter *et al.* 1980). The bald eagle typically nests in tall, living trees in a conspicuous location near open water. Eagles forage over large bodies of water and utilize adjacent trees for perching (Hamel 1992).

Disturbance activities within a primary zone extending 750 to 1500 feet from a nest tree are considered to result in unacceptable conditions for eagles (FWS 1987). The FWS recommends avoiding disturbance activities, including construction and tree cutting, within this primary zone. Within a secondary zone, extending from the primary zone boundary out to a distance of 1 mile from a nest tree, construction and land-clearing activities should be restricted to the non-nesting period. The FWS also recommends avoiding alteration of natural shorelines where bald eagles forage, and avoiding significant land-clearing activities within 1500 feet of known roosting sites.

BIOLOGICAL CONCLUSION: NO EFFECT

The bald eagle typically nests in large trees near open water. The project corridor includes open water but no large trees. Although there are large trees within 1 mile of the project corridor, NHP records have no documentation of this species in the project corridor vicinity, and no individuals were observed during recent field surveys. Based on available information, this project will not result in an adverse impact to the bald eagle.

2. Federal Species of Concern

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. Species designated as FSC are defined as taxa, which may or may not be listed in the future. These species were formally Candidate 2 (C2) species or species under consideration for listing as Endangered, Threatened, or Special Concern by the NCNHP database of rare plant and animal species and are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979. The following are listed as Federal Species of Concern in Hyde County.

Black rail - FSC species do not receive protection under federal law, but should be considered during project planning. The black rail is a rare, permanent resident of coastal North Carolina. This species requires dense, herbaceous cover characteristic of marshes and wet meadows where it nests and feeds on small invertebrates, seeds, and vegetation (Hamel 1992). The project corridor supports appropriate habitat for this species; however, NHP records have no documentation of this species within 2.0 miles of the project corridor. Due to the mobility of this species, and the extensive marshes in the project vicinity, the proposed project will not result in an adverse impact to black rail.

Dune blue curls - FSC species do not receive protection under federal law, but should be considered during project planning. Dune blue curls is a perennial, profusely branching herbaceous member of the mint family that grows to 1.0 foot high. This species is endemic to barrier islands from just north of Cape Hatteras south to Cape Romain, South Carolina. Habitat consists of barrier island dunes vegetated with perennial grasses and openings in maritime shrub (Weakley unpublished). The project corridor does not support appropriate habitat for this species. NHP records have no documentation of this species within 2.0 miles of the project corridor, and this species was not observed during site surveys. Based on available information, the proposed project will not adversely affect dune blue curls.

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 that for federally funded, licensed, or permitted projects having an effect on a property listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given an opportunity to comment.

B. Historic Architecture

A field survey of the Area of Potential Effect (APE) was conducted. All structures within the APE were photographed, and later an NCDOT staff architectural historian reviewed these photos. A Historical Architectural Resources Survey Report, which meets the guidelines for survey procedures for NCDOT and the National Park Service, was prepared. This report was submitted to SHPO for their concurrence. In a memorandum dated March 1, 2000 the SHPO concurred that the Rose Bay Oyster Company is not eligible for listing in the National Register of Historic Places. A copy of the memorandum is included in the Appendix.

C. Archaeology

The State Historic Preservation Officer, in a memorandum dated January 13, 1999, stated, "it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places will be affected by the project construction" and recommended, "no archaeological investigations be conducted in connection with this project." A copy of the SHPO memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

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

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

The bridge replacement will not have an adverse effect on the quality of the human or natural environments with the use of current North Carolina Department of Transportation standards and specifications.

The project does not conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from construction of this project. Therefore, no secondary impacts are anticipated.

No adverse impact on families or communities is anticipated. No additional right of way is anticipated with the proposed alternative. The construction of the project will require temporary construction easements. 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.

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.

Bridge No. 32 is located on US 264 over the Rose Bay Canal in Hyde County. The four spans are composed of reinforced concrete caps on timber piles supporting steel I-beams and a reinforced concrete deck.

The project has been coordinated with the United States Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

This project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required.

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and for air quality (1990 CAAA and NEPA) and 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 or hazardous waste sites in the project area.

Hyde County is a participant in the National Flood Insurance Program (NFIP). According to the Flood Insurance Rate Map, the bridge crosses a canal within the 100-year flood elevations. The base (100-year) flood elevation is 9 feet (2.7 meters).

There are no practical alternatives to crossing in the floodplain area. Any shift in alignment will result in a crossing of about the same magnitude. All reasonable measures will be taken to minimize any possible harm.

The project will not increase the level of extent of the flood hazard.

On the basis of the above discussion, it is concluded that no substantial adverse environmental impacts will result from implementation of this project.

VIII. PUBLIC INVOLVEMENT

Throughout the project development process, citizen and agency participation was encouraged. A scoping letter was mailed in December of 1998, to the Chair of the Hyde County Commission, the Hyde County Manager, the Superintendent of Hyde County

Schools, and to state and Federal environmental regulatory and resource agencies to request input into the project development process. A copy of the responses are included in the Appendix. No interagency meetings were held as part of this project.

IX. AGENCY COMMENTS

In April of 1999, members of the project team met with the US Army Corps of Engineers (COE) to discuss the project alternatives and impacts. The COE indicated that total impacts were minimal and preferred Alternative N.

In addition to the scoping letters, additional information was sent to the US Coast Guard and the North Carolina Department of Environment and Natural Resources, Division of Coastal Management in June and August of 1999.

The following comments were received:

1. US Department of Interior – Fish and Wildlife Service, December 29, 1999

   Comment - "Habitat requirements for any federally-listed species that occur in the project impact areas should be compared with the available habitat at the project site. If suitable habitat is present within the action area of the project, field surveys for the species should be performed. Note that a listed species, the sensitive joint-vetch (*Aeschynomene virginica*), is known to occur in the vicinity of bridges B-3448 and B-3449 in Hyde County."

   Reply – *See Biological Conclusion (page 19) section of this report*

2. US Department of the Army – Corps of Engineers, Wilmington District, February 24, 1999

   Comment - "Project Commitments should include the removal of all temporary fills from waters and wetlands and "time-of-the-year" restrictions in the in-stream work if recommended by the NC Wildlife Resources Commission."

   Reply –*So noted. See Project Commitments, Green Sheet.*

3. NC Department of Environment and Natural Resources – Division of Marine Fisheries, January 13, 1999

   Comment - "Both these bridges are located in Primary Nursery Areas (PNA) and the surrounding habitat is almost identical. Because of the importance of PNA's to the initial development of post larval fish and shellfish species, NCDMF must stress our concerns relating to construction activities at these two sites. NCDMF requests that replacement of these bridges occur between October 1 and April 1 in order to minimize negative effects..."

   Reply – *See comment 5, North Carolina Wildlife Resources Commission.*

4. NC Department of Environment and Natural Resources – Division of Water Quality, January 15, 1999

   Comment – "Identify the linear feet of stream channelization/relocations. If the original stream banks were vegetated, it is requested that the channelized/relocated stream banks be revegetated.

   Reply – *So noted. See page 15 of this report and Project Commitments, Green Sheet.*

   Comment - "Borrow/waste areas should avoid wetlands to the maximum extent practicable. Prior to the approval of any borrow/waste site in a wetland, the contractor shall obtain a 401 Water Certification from DWQ."

   Reply – *Use of wetlands for borrow/waste areas will be avoided to the maximum extent practicable. Prior to use of these areas for borrow/waste, a 401 Water Certification will be obtained from DWQ.*

   Comment - "DWQ is also concerned about secondary wetland impacts."

   Reply – *See Environmental Effects (page 24) section of this report.*

5. North Carolina Wildlife Resources Commission, January 25, 1999

   Comment – "Live concrete should not discharge directly into the stream"

   Reply – *So noted.*

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

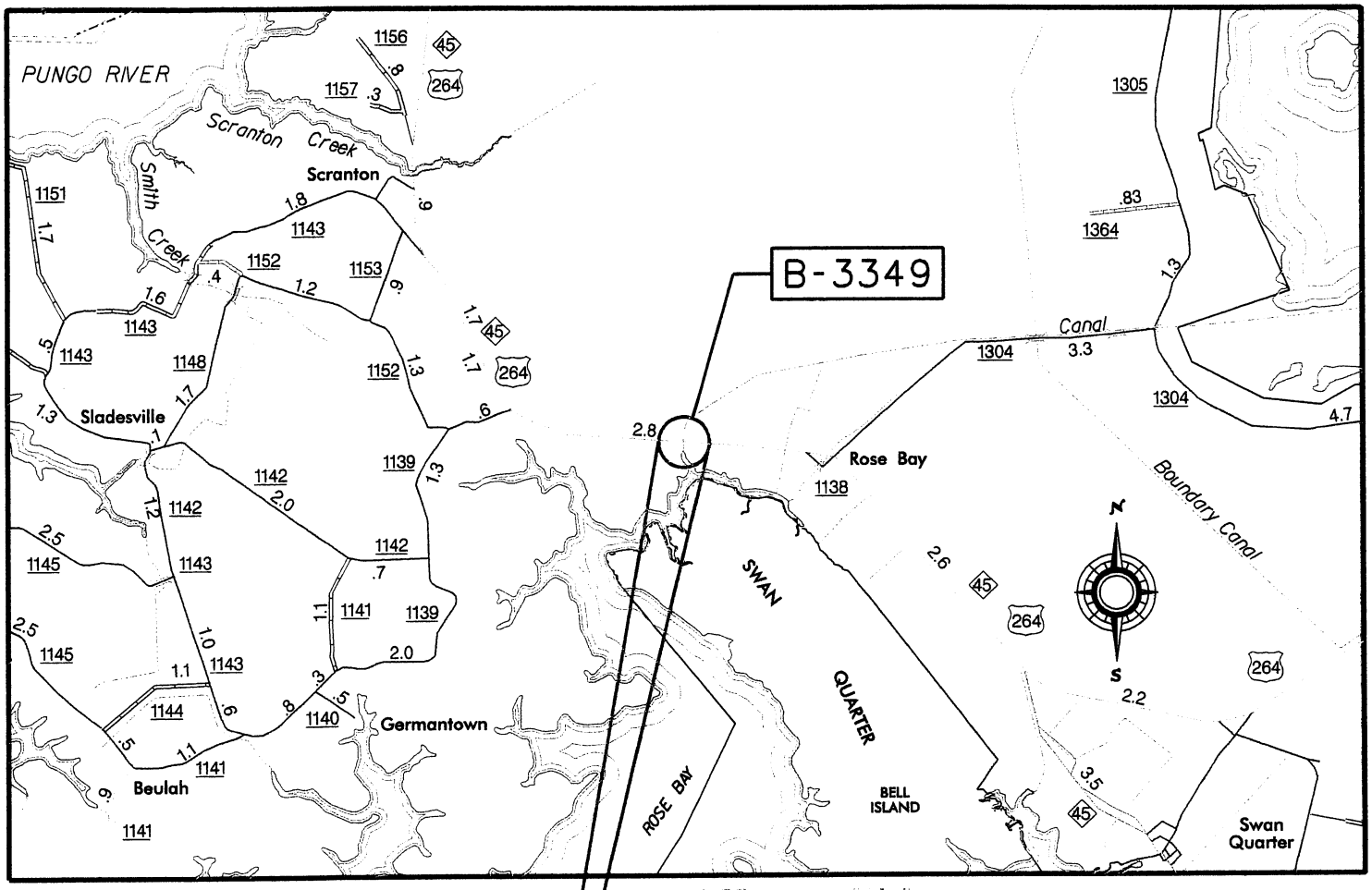
   Reply – *So noted. If possible, bridge supports (bents) will not be placed in the stream.*

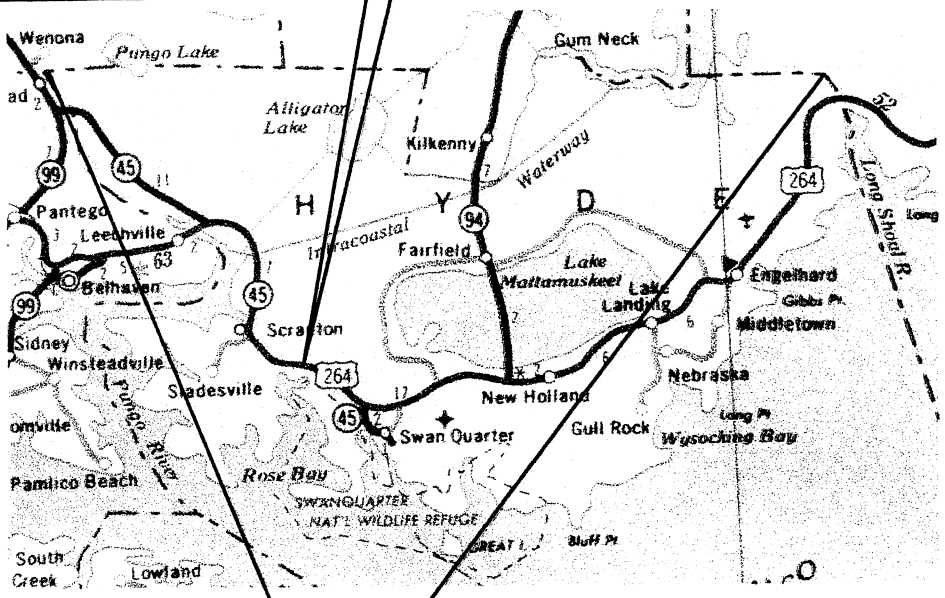
   Comment – "If possible, when using temporary structures the area should be cleared but not grubbed."

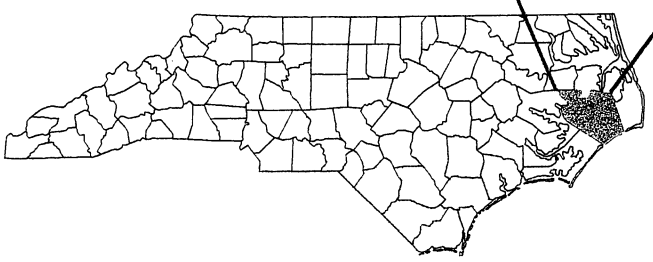
   Reply – *So noted. See Project Commitments, Green Sheet.*

   Comment - "To avoid adverse impacts to spawning populations of fish species at the proposed site, NCDOT should follow the "Stream Crossing Guidelines for Anadromous Fish Passage". We specifically request that this structure be replaces with a spanning structure. No in-water work should be conducted between March 1 and September 30."

   Reply – *So noted. See Project Commitments, Green Sheet.*







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS BRANCH

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

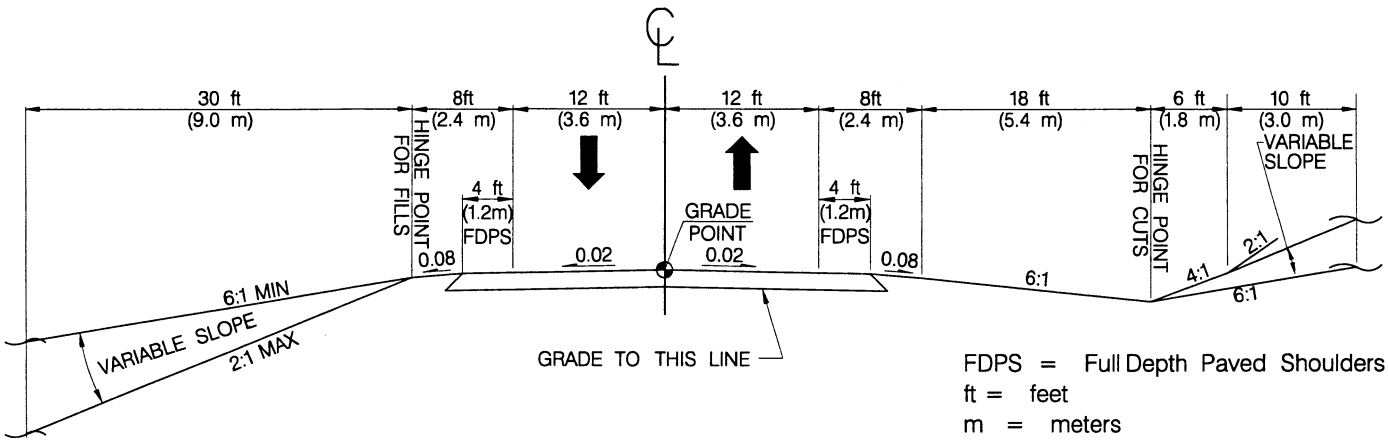
HYDE COUNTY
BRIDGE NUMBER 32
ON US 264
OVER ROSE BAY CANAL
B-3349

FIGURE 1

1.6 0 1.6 3.2 4.8 6.4 KILOMETERS
1 0 1 2 3 4 MILES

BRIDGE REPLACEMENT GROUP XIX

B–3349 (HYDE COUNTY)
US 264 OVER CANAL



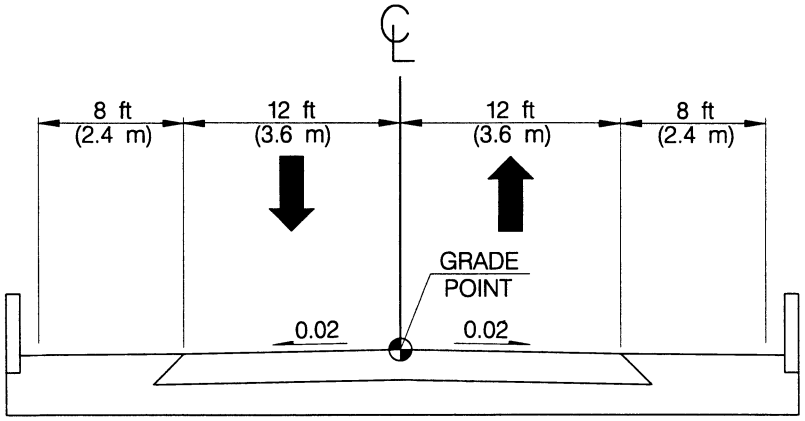
FDPS = Full Depth Paved Shoulders
ft = feet
m = meters

TYPICAL SECTION FOR ROADWAY APPROACH

DESIGN DATA

1999 ADT – 2,600 vpd (LOS B)
2002 ADT – 2,800 vpd (LOS B)
2025 ADT – 4,400 vpd (LOS C)

vpd = Vehicles Per Day
LOS = Level of Service



TYPICAL SECTION FOR PROPOSED STRUCTURE

ON–SITE DETOUR DESIGN DATA

On–Site Detour (Signalized)
Clear Roadway Width – 32 ft (9.6 m)
Paved Width – 20 ft (6.0 m)

FIGURE 2

HYDE COUNTY
BRIDGE NO. 32
B-3349

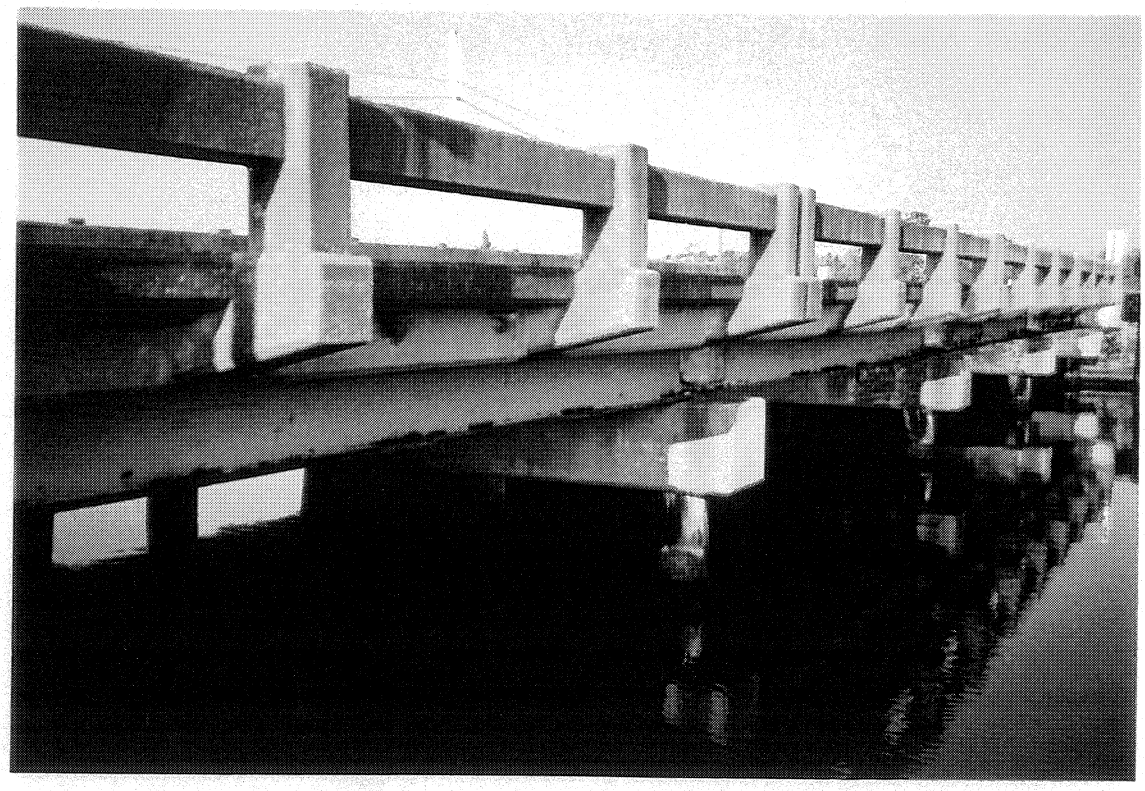
LOOKING WEST
AT EAST APPROACH

LOOKING EAST
AT WEST APPROACH

FIGURE 3

HYDE COUNTY
BRIDGE NO. 32
B-3349

VIEW FROM
SOUTHEAST CORNER



VIEW FROM
NORTHEAST CORNER

FIGURE 4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS BRANCH

HYDE COUNTY
BRIDGE NUMBER 32
ON US 264
OVER ROSE BAY CANAL
B-3349

FIGURE 5

10 0 20

ALT. N DETOUR

US 264

ALT. A,B,N

ROSE BAY CANAL

FLOW SUBJECT TO TIDAL INFLUENCE

X. APPENDIX

USDA

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

4405 Bland Rd.
Suite 205
Raleigh, NC 27609

(919) 873-2134

December 18, 1998

Mr. William D. Gilmore, P. E. Manager
Planning and Environmental Branch
NCDOT
P. O. Box 25201
Raleigh, NC 27611-5201

Dear Mr. Gilmore:

Thank you for the opportunity to provide comments on Group XIX Bridge Replacement Projects:

1. B-3348, Hyde County, Bridge No. 54 on US 264 over Canal on Pamlico Sound,
2. B-3349, Hyde County, Bridge No. 32 on US 264 over Rose Bay Canal,
3. B-3442, Cumberland County, Bridge No. 224 on SR 1006 (Person Street) over Locks Creek,
4. B-3443, Cumberland County, Bridge No. 219 on SR 1006 (Person Street) over the Cape Fear River,
5. B-3445, Currituck County, Bridge No. 7 on NC 615 over northern canal between Back Bay and Currituck Sound,
6. B-3524, Wake County, Bridge No. 259 on SR 1370 (Tryon Road) over Norfolk Southern Railroad,
7. B-3537, Wayne County, Bridge No. 62 on NC 581 over the Little River.

The Natural Resources Conservation Service does not have any comments at this time.

Sincerely,

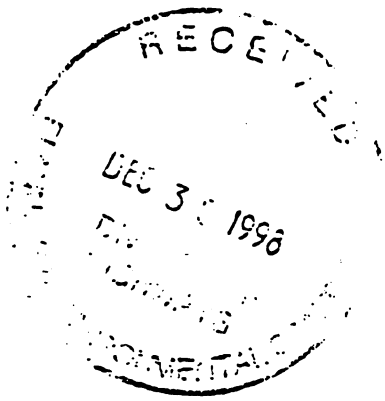
Mary T. Kollstedt

Mary T. Kollstedt
State Conservationist

United States Department of the Interior

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

December 29, 1998



Mr. William D. Gilmore, P.E., Manager
Planning and Environmental Branch
North Carolina Department of Transportation
Division of Highways
P.O. Box 25201
Raleigh, NC 27611-520

Attention: Ms. Stacy Baldwin, P.E.

Dear Mr. Gilmore:

Thank you for your letter of December 8, 1998, requesting information from the U.S. Fish and Wildlife Service (Service) for the purpose of evaluating the potential environmental impacts of the following proposed bridge replacement projects:

1. B-3348, Hyde County, Bridge No. 54 on US 264 over Canal on Pamlico Sound;

2. B-3349, Hyde County, Bridge No. 32 on US 264 over Rose Bay Canal;

3. B-3442, Cumberland County, Bridge No. 224 on SR 1006 (Person Street) over Locks Creek;

4. B-3443, Cumberland County, Bridge No. 219 on SR 1006 (Person Street) over the Cape Fear River;

5. B-3445, Currituck County, Bridge No. 7 on NC 615 over northern canal between Back Bay and Currituck Sound,

6. B-3524, Wake County, Bridge No. 259 on SR 1370 (Tryon Road) over Norfolk Southern Railroad; and,

7. B-3537, Wayne County, Bridge No. 62 on NC 581 over the Little River.

This report provides scoping information and is provided 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 these projects.

The mission of the Service is to provide leadership in the conservation, protection, and enhancement of fish and wildlife, and their habitats, for the continuing benefit of all people. Due to staffing limitations, we are unable to provide you with detailed site-specific comments at this time. However, the following recommendations are provided to assist you in your planning process and to facilitate a thorough and timely review of the project.

Generally, the Service recommends that wetland impacts be avoided and minimized to the maximum extent practical as outlined in Section 404 (b)(1) of the Clean Water Act Amendments of 1977. In regard to avoidance and minimization of impacts, we recommend that proposed highway projects be aligned along or adjacent to existing roadways, utility corridors, or previously developed areas in order to minimize habitat fragmentation and encroachment. Areas exhibiting high biodiversity or ecological value important to the watershed and/or region should be avoided. Crossings of streams and associated wetland systems should use existing crossings and/or occur on a structure wherever feasible. Where bridging is not feasible, culvert structures that maintain natural water flows and hydraulic regimes without scouring, or impeding fish and wildlife passage, should be employed. Highway shoulder and median widths should be reduced through wetland areas. Roadway embankments and fill areas should be stabilized by using appropriate erosion control devices and/or techniques. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons.

The National Wetlands Inventory (NWI) maps of the appropriate 7.5 Minute Quadrangles for each site should be consulted to determine if wetlands may be impacted by the respective projects. However, while the NWI maps are useful for providing an overview of a given area, they should not be relied upon in lieu of a detailed wetland delineation by trained personnel using an acceptable wetland classification methodology.

We reserve the right to review any required federal or state permits that may be required for these projects at the public notice stage. We may have no objection, provide recommendations for modification of the project, or recommend denial. Therefore, it is important that resource agency coordination occur early in the planning process in order to resolve any conflicts that may arise and minimize delays in project implementation.

In addition to the above guidance, we recommend that the environmental documentation for each project include the following in sufficient detail to facilitate a thorough review of the action:

1. A clearly defined purpose and need for each proposed project, including a discussion of the projects's independent utility;

2. A description of the proposed action with an analysis of all alternatives being considered, including the upgrading of existing bridges, new bridges on existing alignments, new bridges on new alignments, and a "no action" alternative;

3. A description of the fish and wildlife resources, and their habitats, within the project impact areas that may be directly or indirectly affected;

4. The extent and acreage of waters of the U.S., including wetlands, that are to be impacted by filling, dredging, clearing, ditching, and/or draining. Acres of wetland impact should be differentiated by habitat type based on the wetland classification scheme of the National Wetlands Inventory (NWI). Wetland boundaries should be determined by using the 1987 Corps of Engineers Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers (Corps);

5. The anticipated environmental impacts, both temporary and permanent, that would be likely to occur as a direct result of the proposed project. The assessment should also include the extent to which the proposed project would result in secondary impacts to natural resources, and how this and similar projects contribute to cumulative adverse effects:

6. Design features and/or construction techniques which would be employed to avoid or minimize the fragmentation or direct loss of wildlife habitat value;

7. Design features, construction techniques, and/or any other mitigation measures which would be employed at wetland crossings and stream channel relocations to avoid or minimize impacts to waters of the United States; and,

8. If unavoidable wetland impacts are proposed, we recommend that every effort 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.

The attached pages identify the federally-listed endangered, threatened, and candidate species that are known to occur in the respective counties. Habitat requirements for any federally-listed species that occur in the project impact areas should be compared with the available habitat at the project site. If suitable habitat is present within the action area of the project, field surveys for the species should be performed. Note that a listed species, the sensitive joint-vetch (*Aeschynomene virginica*), is known to occur in the vicinity of bridges B-3348 and B-3349 in Hyde County.

Habitat for sensitive joint-vetch is a rare and specialized community known as a freshwater tidal marsh. These communities are close enough to the coast to be influenced by tidal fluctuations, yet far enough upstream to consist of fresh or only slightly brackish water.

Environmental documentation should include survey methodologies and results. In addition to this guidance, the following information should be included in the document regarding protected species:

1. A map and description of the specific area used in the analysis of direct, indirect, and cumulative impacts;

2. A description of the biology and status of the listed species and the habitat of the species that may be affected by the action, including the results of any onsite inspections;

3. An analysis of the "effects of the action" on the listed species and associated habitat which includes consideration of:

   a. The environmental baseline which is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species and its habitat;

   b. The impacts of past and present federal, state, and private activities in the project area and cumulative impacts area;

   c. The direct and indirect impacts of the proposed action. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur;

   d. The impacts of interrelated actions (those that are part of a larger action and depend on the larger action for their justification) and interdependent actions (those that have no independent utility apart from the action under consideration); and,

   e. The cumulative impacts of future state and private activities (not requiring federal agency involvement) that will be considered as part of future Section 7 consultation,

4. A description of the manner in which the action may affect any listed species or associated habitat including project proposals to reduce/eliminate adverse effects. Direct mortality, injury, harassment, the loss of habitat, and/or the degradation of habitat are all ways in which listed species may be adversely affected;

5. A summary of evaluation criteria to be used as a measure of potential effects. Criteria may include post-project population size, long-term population viability, habitat quality, and/or habitat quantity; and,

6. Based on evaluation criteria, a determination of whether the project is not likely to adversely affect or may affect threatened and endangered species.

Candidate species are those plant and animal species for which the Service has sufficient information on their biological status and threats to their survival to propose them as endangered or threatened under the ESA. Although candidate species receive no statutory protection under the ESA, Federal agencies are required to informally confer with the Service on actions likely to jeopardize the continued existence of these species or that may destroy or modify proposed critical habitat.

Federal species of concern (FSC) include those species for which the Service does not have enough scientific information to support a listing proposal or species which do not warrant listing at the present time. These species receive no statutory protection under the ESA, but could become candidates in the future if additional scientific information becomes available indicating that they are endangered or threatened. Formal listing places the species under the full protection of the ESA, and necessitates a new survey if its status in the project area is unknown. Therefore, it would be prudent for the North Carolina Department of Transportation (NCDOT) to avoid any adverse impacts to candidate species or their habitat. The North Carolina Natural Heritage Program should be contacted for information on species under state protection.

The Service appreciates the opportunity to comment on these projects. 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 these comments, please contact Tom McCartney at 919-856-4520, ext. 32.

Sincerely,

John M. Hefner
Ecological Services Supervisor

Enclosures

FWS/R4:TmcCartney:TM:12/28/98:919/856-4520 extension 32:\7-bridge:rep

cc:
Michael Bell, COE, Washington, NC
Eric Alsmeyer, COE, Raleigh, NC
Scott McLendon, COE, Wilmington, NC
David Cox, DNR, Creedmoor, NC
Cyndi Bell, NCDWQ, Raleigh, NC
Nicholas Graf, FHWA, Raleigh, NC
Ted Bisterfield, EPA, Atlanta, GA

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

February 24, 1999

Planning Services Section

Mr. William D. Gilmore, P.E., Manager
Planning and Environmental Branch
North Carolina Division of Highways
Post Office Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Gilmore:

This is in response to a letter from your office dated December 8, 1998, to Mr. Mike Bell of our Washington Regulatory Field Office, subject: "Request for Comments for Group XIX Bridge Replacement Projects." The bridge replacement projects are located in Hyde, Currituck, and Wayne Counties.

Our comments involve impacts to flood plains and jurisdictional resources that include waters, wetlands, and U.S. Army Corps of Engineers projects. The proposed bridge replacements would not cross any Corps-constructed flood control or navigation project. Enclosed are our comments on the other issues.

We appreciate the opportunity to comment on these projects. If we can be of further assistance, please contact us.

Sincerely,

W. Coleman Long
Chief, Technical Services Division

Enclosure

U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT, COMMENTS ON:

"Request for Comments for Group XIX Bridge Replacement Projects" in Hyde, Currituck, and Wayne Counties

1. FLOOD PLAINS; POC - Bobby L. Willis, Planning Services Section, at (910) 251-4728

All of the bridges are within counties which participate in the National Flood Insurance Program (NFIP). From the various Flood Insurance Rate Maps (FIRMs), it appears that detail study streams or waterways are involved. For Hyde and Currituck Counties, the bridges cross canals with 100-year flood elevations determined from coastal storm surge but no floodways defined. For the Little River crossing in Wayne County, this stream has both 100-year flood elevations determined and a floodway defined. A summary of flood plain information pertaining to the bridges is contained in the following table. The FIRMs are from the county flood insurance study.

Bridge No.	Route No.	County	Study Stream	BFE*	Date Of Firm
32	US 264	Hyde	Rose Bay Canal	9	2/87
54	US 264	Hyde	Canal	5	2/87
7	NC 615	Currituck	Northern Canal	5	11/84
62	NC 581	Wayne	Little River	94	3/98

* Base (100-year) Flood Elevation in feet N.G.V.D.

For the Little River crossing, we refer you to the Federal Emergency Management Agency's (FEMA's) "Procedures for 'No Rise' Certification for Proposed Developments in Regulatcry Floodways", copies of which have been furnished previously to your office. The project should be designed to meet the requirements of the NFIP, administered by FEMA, and be in compliance with all local ordinances. Specific questions pertaining to community flood plain regulations or developments should be referred to the local building official.

2. WATERS AND WETLANDS: POC - Michael Bell, Project Manager, Washington Field Office, Regulatory Division, at (252) 975-1616, Extension 26

The bridge replacements in Hyde and Currituck Counties appear to impact CAMA designated coastal marsh. The Little River bridge replacement in Wayne County could impact a high quality riverine system.

All work restricted to existing high ground will not require prior Federal permit authorization. However, Department of the Army permit authorization pursuant to Section 404 of the Clean Water Act of 1977, as amended, will be required for the discharge of excavated or fill material in waters of the United States or any adjacent and/or isolated wetlands in conjunction with your proposed bridge replacements, including disposal of construction debris. Specific permit requirements will depend on design of the projects, extent of fill work within waters of the United States, including wetlands (dimensions, fill amounts, etc.), construction methods, and other factors.

Although these projects may qualify as a Categorical Exclusion, in order for the proposal to be considered for authorization under Nationwide Permit #23, the project planning report should contain sufficient information to document that the proposed activity does not have more than a minimal individual or cumulative impact on the aquatic environment. Our experience has shown that replacing bridges with culverts often results in sufficient adverse impacts to consider the work as having more than minimal impacts on the aquatic environment. Accordingly, the following items need to be addressed in the project planning report:

a. The report should contain the amount of permanent and temporary impacts to waters and wetlands as well as a description of the type of habitat that will be affected.

b. Offsite detours are always preferable to onsite (temporary) detours in wetlands. If an onsite detour is the recommended action, justification should be provided.

c. Project commitments should include the removal of all temporary fills from waters and wetlands and "time-of-the-year" restrictions on in-stream work if recommended by the NC Wildlife Resources Commission. In addition, if undercutting is necessary for temporary detours, the undercut material should be stockpiled to be used to restore the site.

d. All restored areas should be planted with endemic vegetation, including trees, if appropriate.

2. WATERS AND WETLANDS: (Continued)

e. The report should provide an estimate of the linear feet of new impacts to streams resulting from construction of the project.

f. If a bridge is proposed to be replaced with a culvert, NCDOT must demonstrate that the work will not result in more than minimal impacts on the aquatic environment, specifically addressing the passage of aquatic life, including anadromous fish. In addition, the report should address the impacts that the culvert would have on recreational navigation.

g. In addition, to be considered for authorization, discharge of demolition material into waters and wetlands and associated impacts must be disclosed and discussed in the project planning report.

At this point in time, construction plans are not available for review. When final plans are complete, including the extent and location of any work within waters of the United States and wetlands, our Regulatory Division would appreciate the opportunity to review those plans for a project-specific determination of DA permit requirements.

If you have questions or need further information, please contact Mr. Bell.

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and H
Jeffrey J. Crow, D

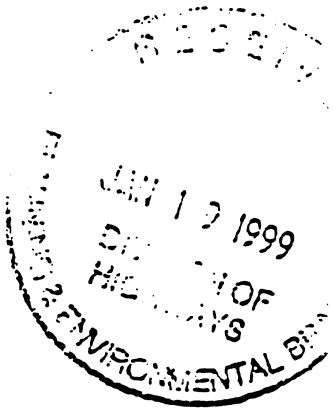
January 13, 1999

MEMORANDUM

TO: William D. Gilmore, P.E., Manager
Planning and Environmental Branch
Division of Highways
Department of Transportation

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: Bridge Group XIX, Bridge 7 on US 264 over Rose Bay Canal, Hyde County, B-3349, ER 99-7921



Thank you for your memorandum of December 8, 1998, concerning the above project.

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area. We look forward to meeting with an architectural historian from the North Carolina Department of Transportation to review the aerial and photographs of the project area so we can make our survey recommendation.

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places will be affected by the project construction. 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, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

cc: N. Graf
B. Church
L. Novick

6.

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

James B. Hunt, Jr., Governor
Wayne McDevitt, Secretary
A. Preston Howard, Jr., P.E., Director

NCDENR

January 15, 1999

MEMORANDUM

TO: William D. Gilmore Manager
Planning and Environmental Branch

FROM: Gloria Putnam, DWQ SEPA Coordinator

RE: Comments on DOT Scoping Sheets, DWQ# 12307
Group XIX Bridge Replacement Projects

The Division of Water Quality (DWQ) requests that the following topics be discussed in the environmental review document (s):

A. Identify the streams potentially impacted by the project. The current stream classifications and use support ratings for these streams should be included. This information is available from DWQ through the following contacts:

Liz Kovasckitz - Classifications - 919-733-5083, ext. 572
Andrea Leslie - Use Support Ratings - 919-733-5083, ext. 577

B. Identify the linear feet of stream channelization/relocations. If the original stream banks were vegetated, it is requested that the channelized/relocated stream banks be revegetated.

C. Identify the number and locations of all proposed stream crossings.

D. Will permanent spill catch basins be utilized? DWQ requests that these catch basins be placed at all water supply stream crossings. Identify the responsible party for maintenance.

E. Identify the stormwater controls (permanent and temporary) that will be used.

F. Please ensure that sediment and erosion control measures are not placed in wetlands.

G. Wetland Impacts

i) Identify the federal manual used for identifying and delineating jurisdictional wetlands.
ii) Have wetlands been avoided as much as possible?
iii) Have wetland impacts been minimized?
iv) Mitigation measures to compensate for habitat losses.
v) Wetland impacts by plant communities affected.
vi) Quality of wetlands impacted.
vii) Total wetland impacts.
viii) List the 401 General Certification numbers requested from DWQ.

H. Borrow/waste areas should avoid wetlands to the maximum extent practicable. Prior to the approval of any borrow/waste site in a wetland, the contractor shall obtain a 401 Certification from DWQ.

I. Please provide a conceptual wetland mitigation plan to help the environmental review. The mitigation plan may state the following:

1. Compensatory mitigation will be considered only after wetland impacts have been avoided and minimized to the maximum extent possible.
2. On-site, in-kind mitigation is the preferred method of mitigation. In-kind mitigation within the same watershed is preferred over out-of-kind mitigation.
3. Mitigation should be in the following order: restoration, creation, enhancement, and lastly preservation.

J. The EA should discuss in detail project alternatives that alleviate traffic problems without road widening, such as mass transit and traffic congestion management techniques.

DWQ is also concerned about secondary wetland impacts. For DWQ to concur with an alternative in the mountains or the piedmont, DOT will need to commit to full control of access to the wetland parcels or DOT to purchase these parcels for wetland mitigation.

Written concurrence of 401 Water Quality Certification may be required for this project. Applications requesting coverage under our General Certification 14 or General Permit 31 (with wetland impact) will require written concurrence. Please be aware that 401 Certification may be denied if wetland or water impacts have not been avoided and minimized to the maximum extent practicable.

Please have the applicant call Cyndi Bell at 919-733-1786 if they have any questions on these comments.

mek:\12307; NCDOT Scoping

cc: Cyndi Bell - DWQ- ESB, Ecological Assessment Group

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27604-1188, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Stacy Baldwin, Project Planning Engineer
Planning & Environmental Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: January 25, 1999

SUBJECT: NCDOT Group XIX Bridge Replacement Projects. TIP Nos. B-3348, B-3349, B-33442, B-3443, B-3445, B-3524, and B-3537.

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).

On bridge replacement projects of this scope our standard recommendations 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.

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. Tim Savidge 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.

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

1. The culvert must be designed to allow for fish passage. Generally, this means that the culvert or pipe invert is buried at least 1 foot below the natural stream bed. If multiple cells are required the second and/or third cells should be placed so that their bottoms are at stream bankful stage (similar to Lyonsfield design). This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate fish movements. If culverts are long, baffle systems are required to trap gravel and provide resting areas for fish and other aquatic organisms.

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 so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance.

4. Riprap should not be placed on the stream bed.

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 that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

Project specific comments:

1. B-3348 – Hyde County - Bridge # 54 is located on an unnamed canal connected to Pamlico Sound. The shallow water habitat in this canal is used by numerous species of anadromous and resident fish as spawning, rearing, feeding, and escape areas. This location likely supports migrating populations of blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*). Populations of these species in northeastern North Carolina are currently classified as depressed. Increased turbidity in these areas results in the destruction of spawning habitat, and greatly diminishes egg and fry survival. To avoid adverse impacts to spawning populations of fish species at the project site, NCDOT should follow the "Stream Crossing Guidelines for Anadromous Fish Passage". We specifically request that this structure be replaces with a spanning structure. No in-water work should be conducted between March 1 and September 30.

2. B-3349 – Hyde County – Bridge # 54 is located over Rose Bay Canal. The shallow water habitat in Rose Bay Canal is used by numerous species of anadromous and resident fish as spawning, rearing, feeding, and escape areas. This location is especially important for migrating populations of blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*) into Lake Mattamuskeet. Populations of these species in northeastern North Carolina are currently classified as depressed. Increased turbidity in these areas results in the destruction of spawning habitat, and greatly diminishes egg and fry survival. To avoid adverse impacts to spawning populations of fish species at the project site, NCDOT should follow the "Stream Crossing Guidelines for Anadromous Fish Passage". We specifically request that this structure be replaces with a spanning structure. No in-water work should be conducted between March 1 and September 30.

3. B-3442 & B-3443 – Bridge # 224 is located over Locks Creek and Bridge # 219 is over the Cape Fear River. Both of these projects cross in locations known to support anadromous fish. Therefore, we recommend NCDOT follow the "Stream Crossing Guidelines for Anadromous Fish Passage". Coffer dams or turbidity curtains may be required to reduce sediment during construction of in-stream bridge supports. No in-water work should be performed from February 1 to June 15. Any work involving utility lines should be restricted to the north or upstream side of the bridge as there is a cleared construction corridor on this side of the bridge.

4. B-3445 – Currituck County - Bridge # 7 is located over Northern Canal which runs between Currituck Sound and Back Bay. Tributaries and cnals of Currituck Sound and Back Bay provide important spawning refugia for many freshwater fish species especially during periods of high salinity. The shallow

water habitat in this canal also provides, rearing, feeding, and escape areas for many fish species. Increased turbidity in these areas results in the destruction of spawning habitat, and greatly diminishes egg and fry survival. To avoid adverse impacts to spawning populations of fish species at the project site, no in-water work should be conducted between March 31 and September 30.

5. B-3524 – Wake County – No specific concerns.

6. B-3537 – Wayne County – Bridge # 62 is located over the Little River. The Little River is known to support populations of anadromous fish at this site. We request that this bridge be replaced with a spanning structure. NCDOT should follow the "Stream Crossing Guidelines for Anadromous Fish Passage". No in-water work should be conducted between February 15 and June 15.

We request that NCDOT routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. The 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, reducing habitat fragmentation and vehicle related mortality at highway crossings.

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.

NCDENR

JAMES B. HUNT JR.
GOVERNOR

WAYNE McDEVITT
SECRETARY

DEVIN D. SHEPHERD
DIRECTOR

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF COASTAL MANAGEMENT

14 July 1999

Mr. William Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
Post Office Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Gilmore:

This letter is in reference to your 3 June 1999 request to review two bridge replacement projects in Hyde County to determine if CAMA jurisdiction is warranted.

Bridges No. 52 and 54 on US 264 over a canal and Kitty Creek, and Bridge No. 32 on U.S. 264 over Rose Bay Creek, were inspected on 30 June 1999. It was determined that these areas do fall within the definition of Estuarine Waters as described in Subchapter 7H.0206, and Public Trust Areas as described in Subchapter 7H.0207 of the North Carolina Administrative Code. Therefore, CAMA permits are required from this Division for development at these sites. As proposed, these projects would require CAMA Major Permits. There is not enough information included in this package to allow a complete assessment of the proposed alternatives.

I appreciate your concern and effort to comply with the permit requirements of this Division and encourage you to continue to consult representatives of this Division for future questions regarding CAMA jurisdiction. If you have any questions about this or any other matter, please call me at (252) 946-6481, ext. 299.

Sincerely,

Tracey L. Wheeler

Tracey L. Wheeler
Coastal Management Representative

Cc: Terry Moore- District Manager, Washington Regional Office, DCM

WASHINGTON REGIONAL OFFICE
943 WASHINGTON SQUARE MALL, WASHINGTON, NC 27889
PHONE 252-946-6481 FAX 252-975-3716

REVISIONS

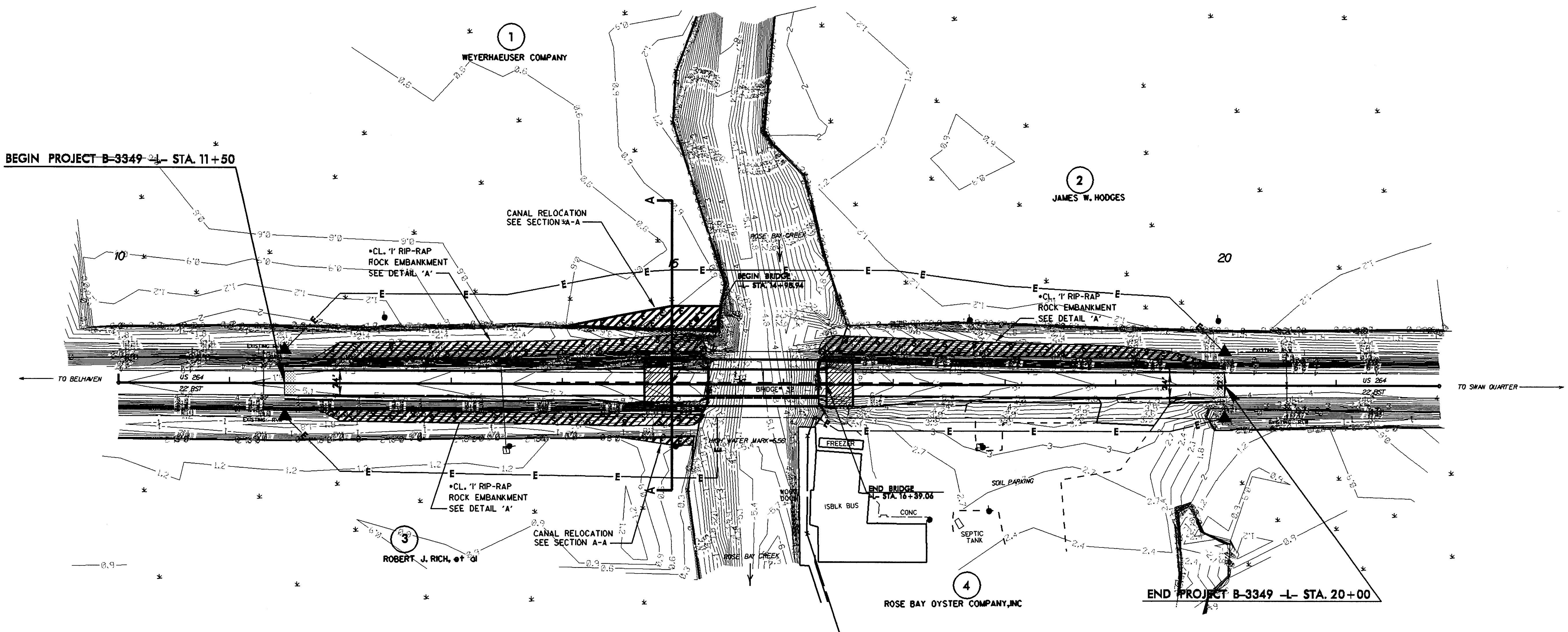
PROJECT REFERENCE NO.	SHEET NO.
B-3349	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

ENGLISH

REVISED 01/18/05

NAD 83

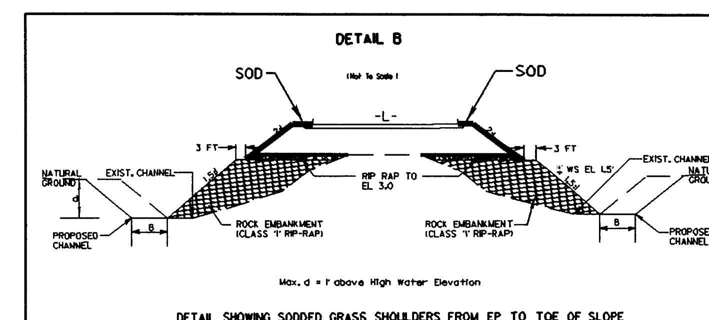


BEGIN PROJECT B-3349 -L- STA. 11+50
WEYERHAEUSER COMPANY
CANAL RELOCATION SEE SECTION A-A
•CL. 'I' RIP-RAP ROCK EMBANKMENT SEE DETAIL 'A'
ROSE BAY CREEK
BEGIN BRIDGE -L- STA. 14+98.94
JAMES W. HODGES
TO BELHAVEN
US 264
22' BST
BRIDGE
TO SWAN QUARTER
HIGH WATER MARK=5.56
FREEZER
END BRIDGE -L- STA. 16+39.06
SOIL PARKING
SEPTIC TANK
ROBERT J. RICH, et al
ROSE BAY OYSTER COMPANY,INC
END PROJECT B-3349 -L- STA. 20+00

DENOTES FILL IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

SCALE: 1"= 100' HORIZ.



STA 11+50 -L- TO STA 20+00 -L- RT & LT

REVISED 1/18/05

DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTHS.

NOTE: SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-44 FOR STRUCTURE PLANS
SEE SHEET 4A FOR DETOUR ALIGNMENT

7/2/99

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7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3349	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

ENGLISH

REVISED 01/18/05

NAD 83

BEGIN PROJECT B-3349 -L- STA. 11+50

1 WEYERHAEUSER COMPANY

2 JAMES W. HODGES

3 ROBERT J. RICH, et al

4 ROSE BAY OYSTER COMPANY, INC

CANAL RELOCATION SEE SECTION A-A

ROSE BAY CREEK

BEGIN BRIDGE -L- STA. 14+98.94

*CL. 'I' RIP-RAP ROCK EMBANKMENT SEE DETAIL 'A'

TO BELHAVEN

TO SWAN QUARTER

US 264 22 BST

EXISTING R/W

30'

24'

BRIDGE* 32

HIGH WATER MARK=6.56'

FREEZER

WOOD DOCK

ISBLK BUS

CONC

END BRIDGE -L- STA. 16+39.06

SOIL PARKING

SEPTIC TANK

END PROJECT B-3349 -L- STA. 20+00

DENOTES FILL IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

50 0 25 50

SCALE: 1"= 100' HORIZ.

REVISED 1/18/05

DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTHS.

DETAIL B

SOD (Not to Scale) SOD

-L-

3 FT 3 FT

NATURAL GROUND EXIST. CHANNEL RIP RAP TO EL 3.0 * WS EL 15' EXIST. CHANNEL NATURAL GROUND

d

PROPOSED CHANNEL ROCK EMBANKMENT (CLASS 'I' RIP-RAP) B ROCK EMBANKMENT (CLASS 'I' RIP-RAP) B PROPOSED CHANNEL

Max. d = 1' above High Water Elevation

DETAIL SHOWING SODDED GRASS SHOULDERS FROM EP TO TOE OF SLOPE

STA 11+50 -L- TO STA 20+00 -L- RT & LT

NOTE: SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-44 FOR STRUCTURE PLANS
SEE SHEET 4A FOR DETOUR ALIGNMENT

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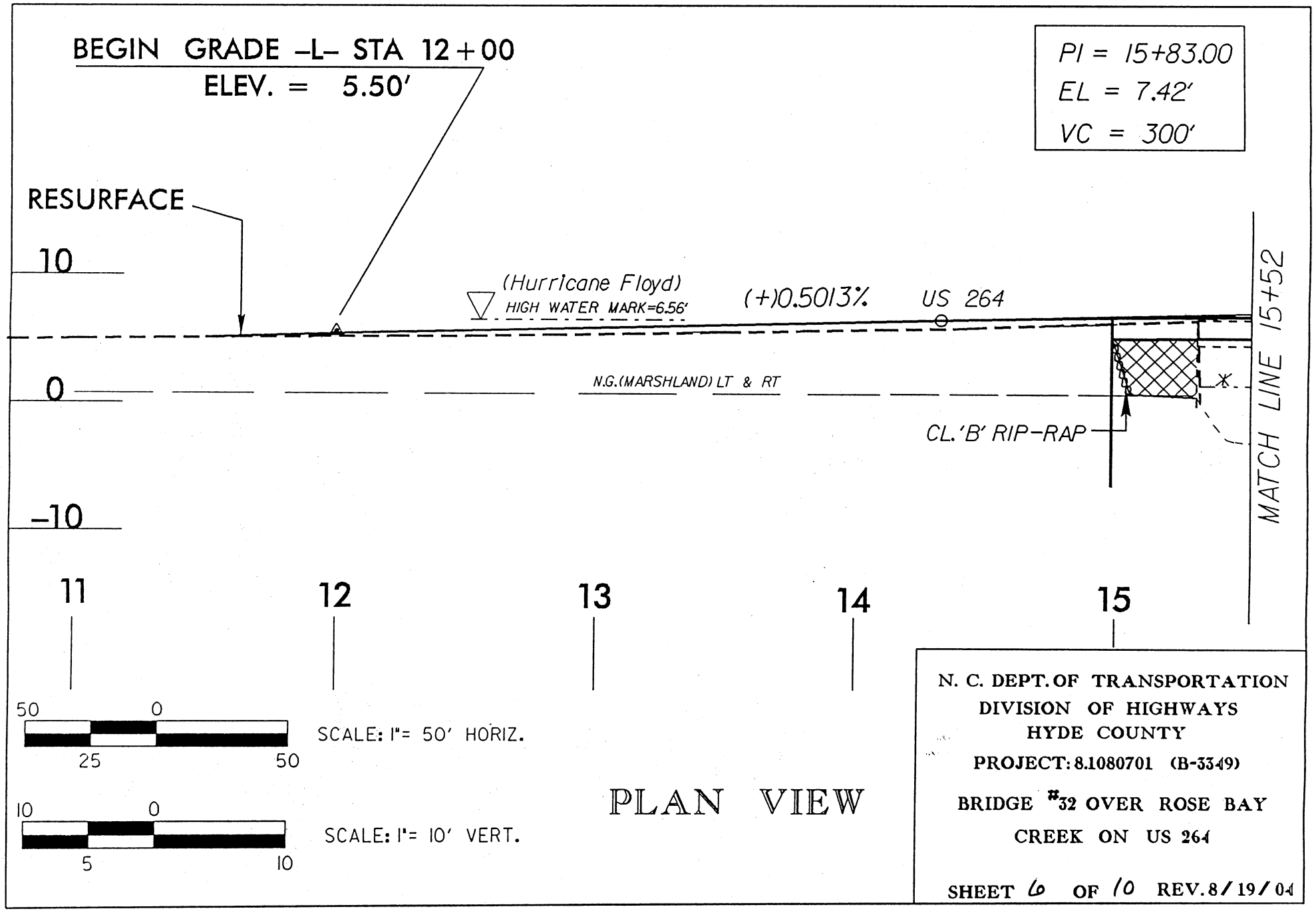
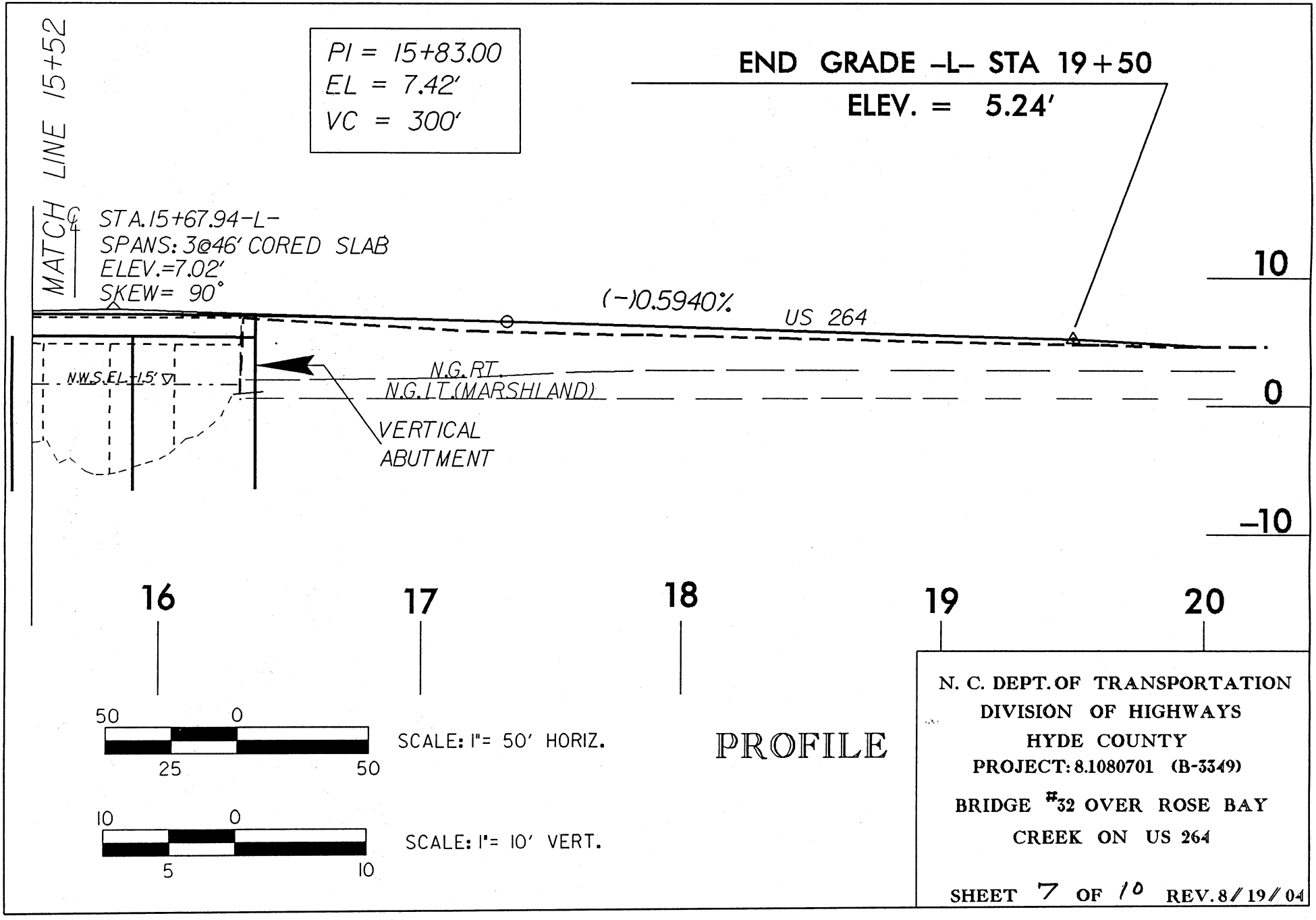
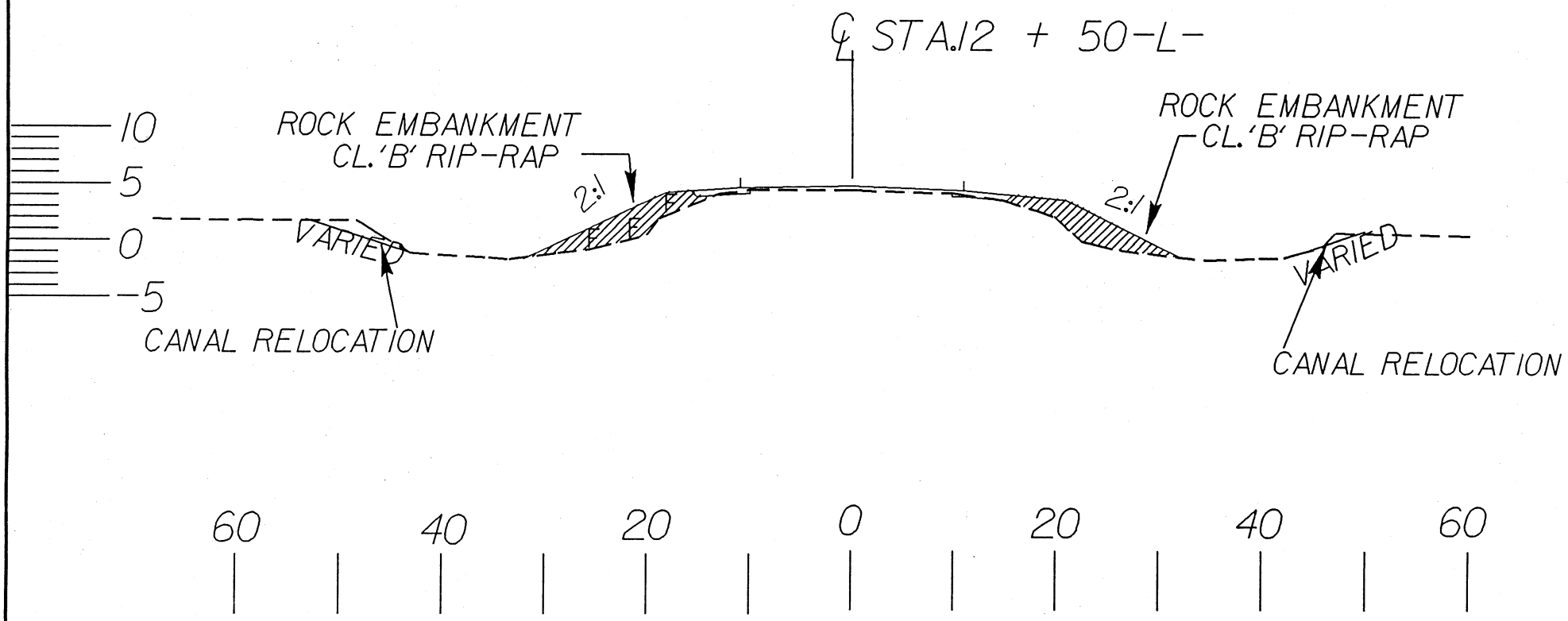


N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)
BRIDGE #32 OVER ROSE BAY CREEK ON US 264

SHEET 6 OF 10 REV. 8/19/04


MATCH LINE 15+52
PI = 15+83.00
EL = 7.42'
VC = 300'
END GRADE -L- STA 19+50
ELEV. = 5.24'
℄ STA. 15+67.94 -L-
SPANS: 3@46' CORED SLAB
ELEV.=7.02'
SKEW= 90°
(-)0.5940%
US 264
10
0
-10
N.W.S. EL. 1.5'
N.G.RT.
N.G.LT.(MARSHLAND)
VERTICAL ABUTMENT
16
17
18
19
20
50 0 25 50
SCALE: 1"= 50' HORIZ.
10 0 5 10
SCALE: 1"= 10' VERT.
PROFILE
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)
BRIDGE #32 OVER ROSE BAY CREEK ON US 264
SHEET 7 OF 10 REV. 8/19/04

SECTION A ——— A



PROFILE

5' 0 10'

HORIZONTAL SCALE

5' 0 10'

VERTICAL SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)

BRIDGE NO. 32 OVER ROSE BAY CREEK ON US264

SHEET 8 OF 10 revised 8/19/04

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
4	MATTAMUSKEET SEAFOOD (ROSE BAY OYSTER COMPANY)	RT.1 BOX 136 SWAN QUARTER, N.C. 27885
2	JAMES W. HODGES	695 E. MAIN ST. BELHAVEN, N.C. 27810
3	ROBERT J. RICH	1468 CAROLINA AVE. WASHINGTON, N.C. 27889
1	WEYERHAEUSER COMPANY	P.O. BOX 1392 NEW BERN, N.C. 28560

NCDOT

DIVISION OF HIGHWAYS

HYDE COUNTY

PROJECT: 8.1080701 (B-3349)

REPLACE BRG# 32 OVER ROSE BAY CREEK ON US 264

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Relocated Channel (ft)
1	11+75 to 20+00-L-	Bridge:3@46' cored slab	0.009		0.06		0.3			1080	214
TOTALS:			0.009	0	0.06	0	0.3	0	0	1080	214

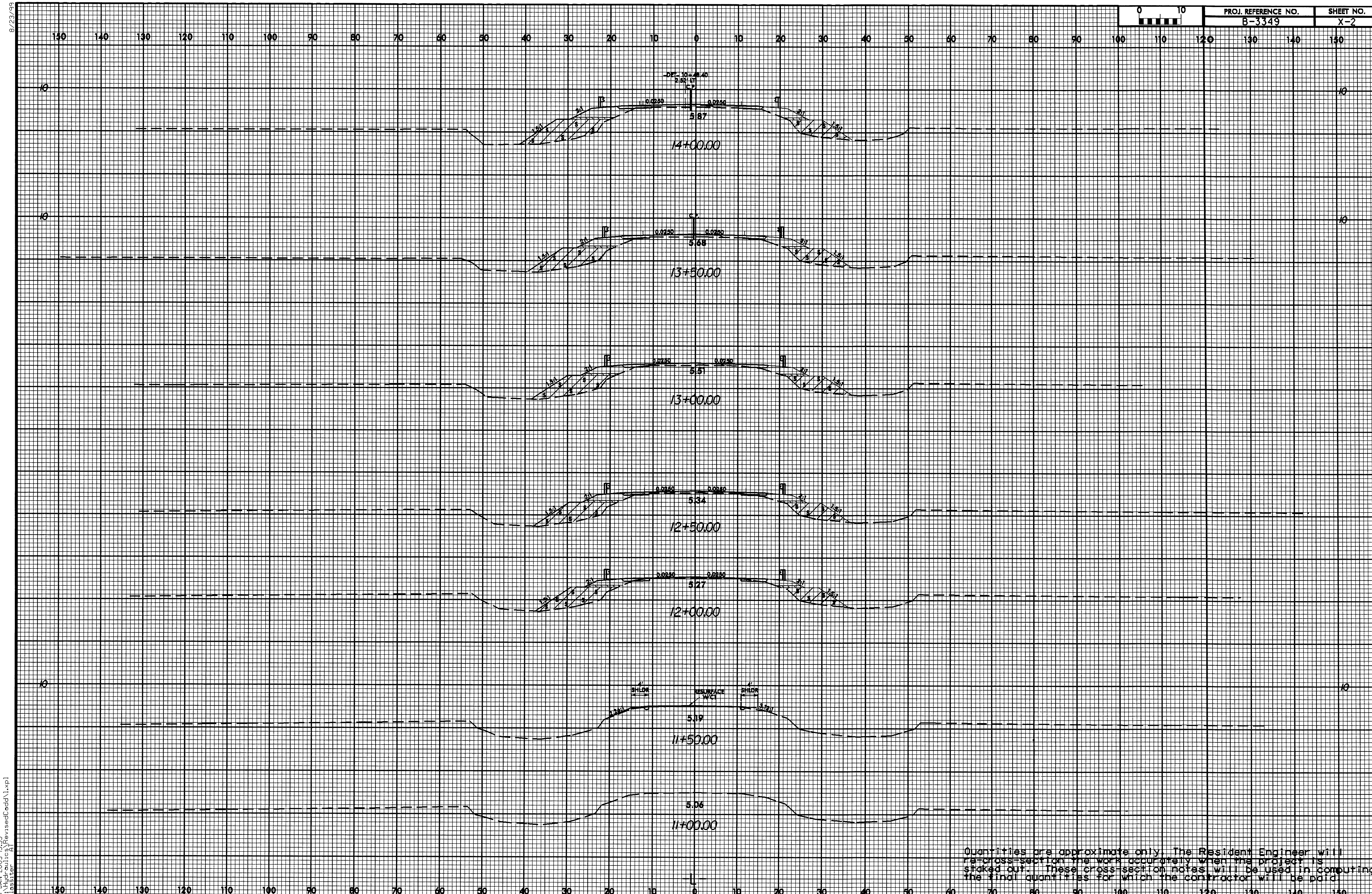
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

HYDE COUNTY
PROJECT 8.1080701 B3349

SHEET 10 OF 10 Revised 1/19/2005

Form Revised 3/22/01

PROJ. REFERENCE NO.	SHEET NO.
B-3349	X-2



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

8/23/99

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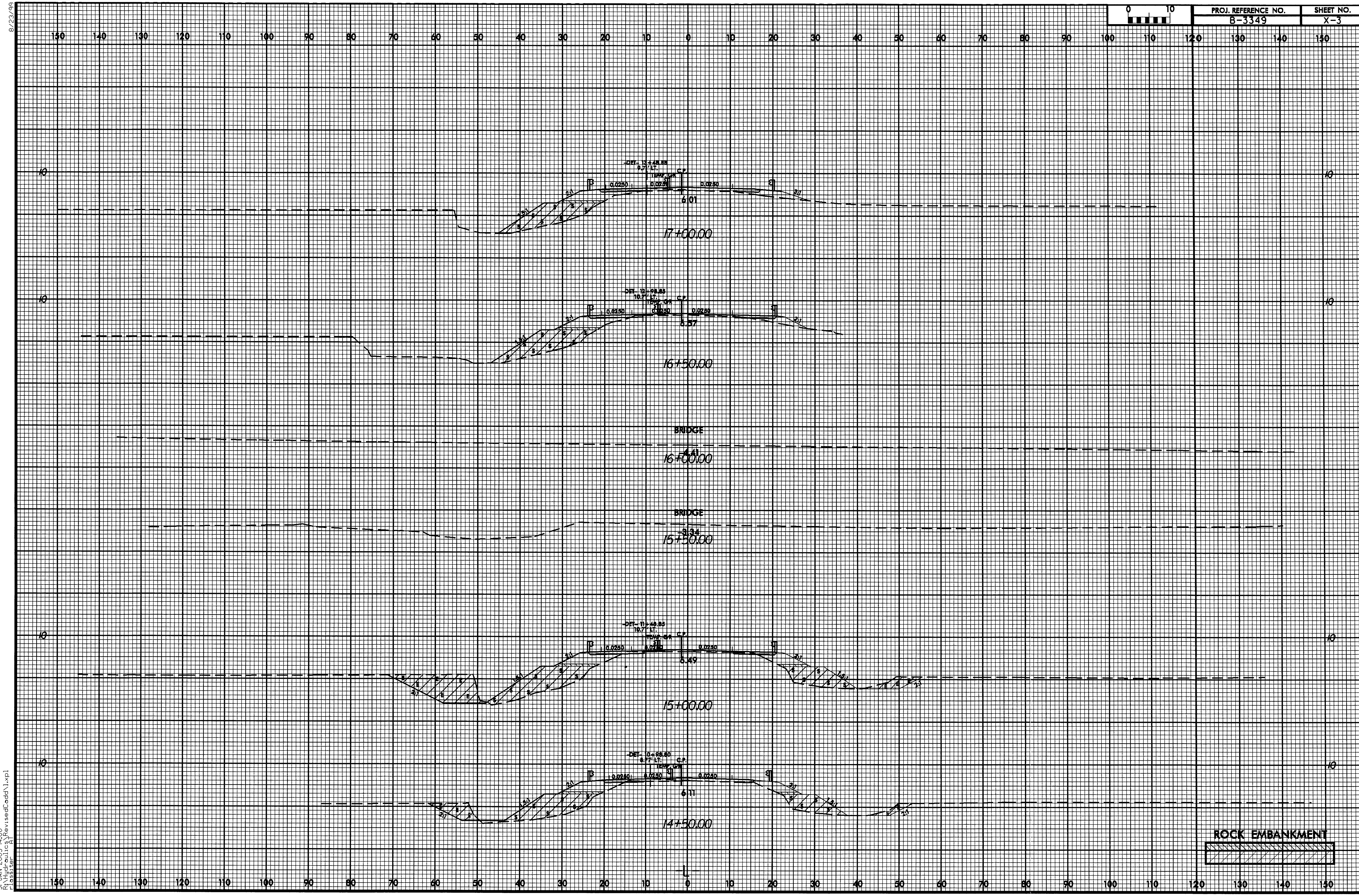
PROJ. REFERENCE NO.	SHEET NO.
B-3349	X-3



8/23/99

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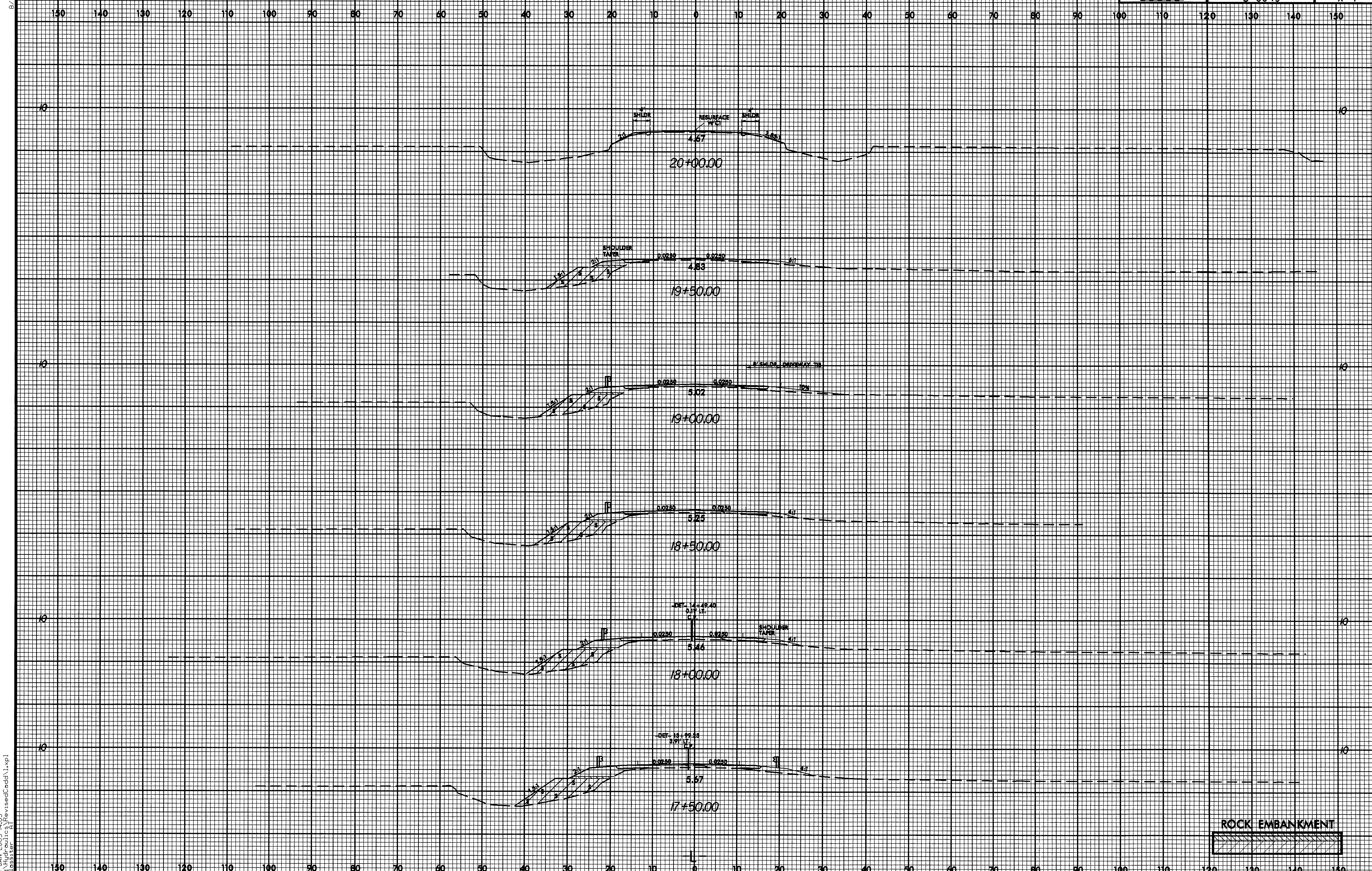
0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3349	X-4



8/23/99

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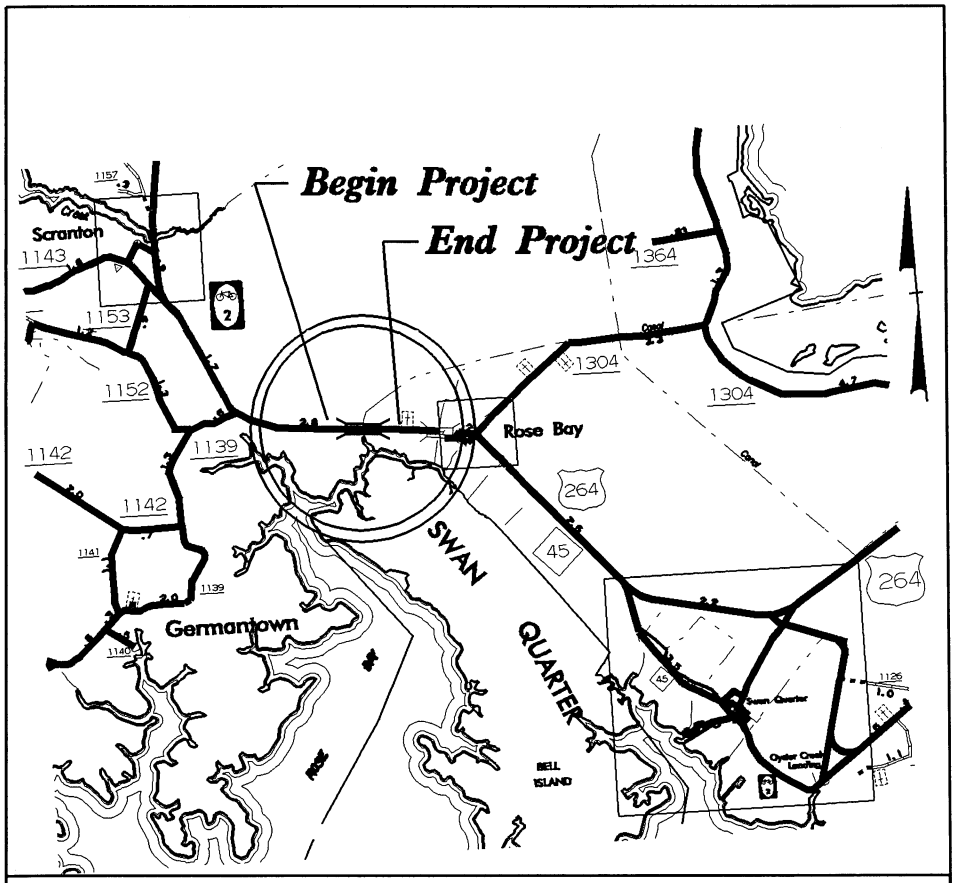


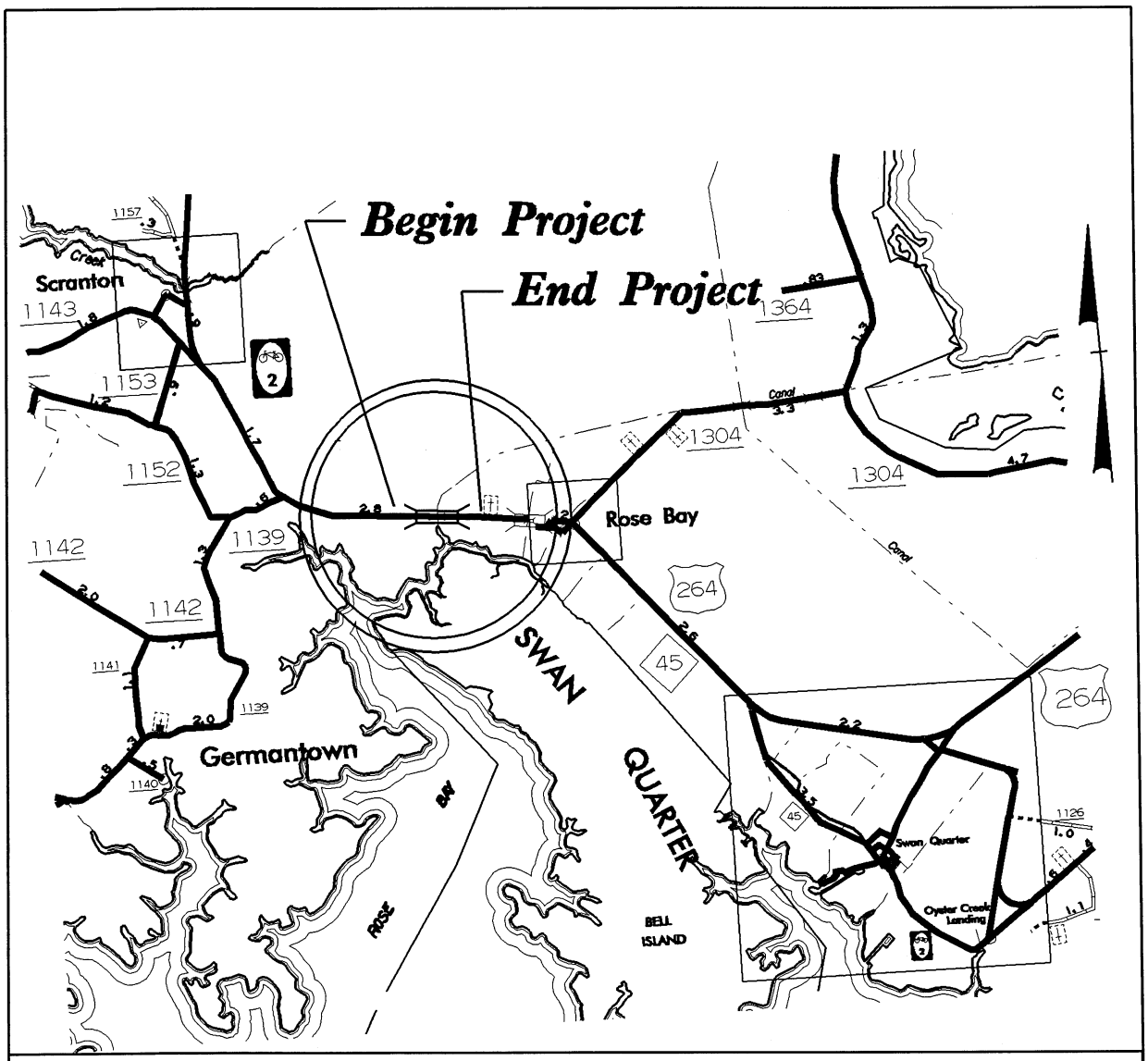
Vicinity Map

BUFFER ZONE IMPACTS

VICINITY MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)
REPLACEMENT OF BRIDGE NO.32
OVER ROSE BAY CREEK ON US264

SHEET 1 OF 12 REVISED 8/19/04



Site Map

SITE MAPS

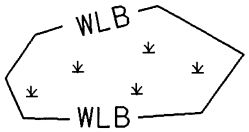
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)

REPLACEMENT OF BRIDGE NO. 32
OVER ROSE BAY CREEK ON US 64

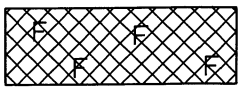
SHEET 2 OF 12 REVISED 8/19/04

LEGEND

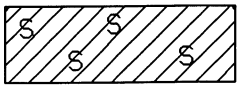
WLB — WETLAND BOUNDARY



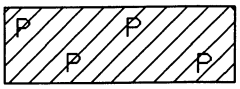
WETLAND



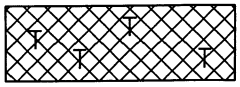
DENOTES FILL IN WETLAND



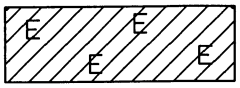
DENOTES FILL IN SURFACE WATER



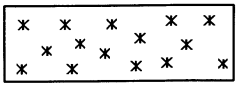
DENOTES FILL IN SURFACE WATER (POND)



DENOTES TEMPORARY FILL IN WETLAND



DENOTES EXCAVATION IN WETLAND


DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMPORARY DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

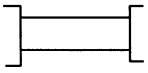
WATER SURFACE

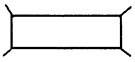
X X X X X — LIVE STAKES


BOULDER

CORE FIBER ROLLS

ADJACENT PROPERTY OWNER OR PARCEL NUMBER

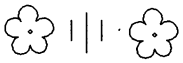

PROPOSED BRIDGE


PROPOSED CULVERT


PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTING STRUCTURES)

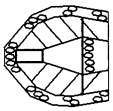

SINGLE TREE


WOODS LINE


DRAINAGE INLET


ROOTWAD


RIP RAP


RIP RAP ENERGY DISSIPATOR BASIN

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT:
8.1080701 (B-3349)

7/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3349	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

ENGLISH

REVISED 2/01/05

NAD 83

BEGIN PROJECT B-3349 -L- STA. 11+50

1
WEYERHAEUSER COMPANY

2
JAMES W. HODGES

3
ROBERT J. RICH, et al

4
ROSE BAY OYSTER COMPANY, INC

ROSE BAY CREEK

BEGIN BRIDGE -L- STA. 14+98.94

END BRIDGE -L- STA. 16+39.06

END PROJECT B-3349 -L- STA. 20+00

TO BELHAVEN

TO SWAN QUARTER

US 264
22 BST

•CL. 'I' RIP-RAP ROCK EMBANKMENT SEE DETAIL 'A'

GRAU-350

BRIDGE# 32

HIGH WATER MARK=6.56

FREEZER

WOOD DOCK

ISBLK BUS

CONC

SEPTIC TANK

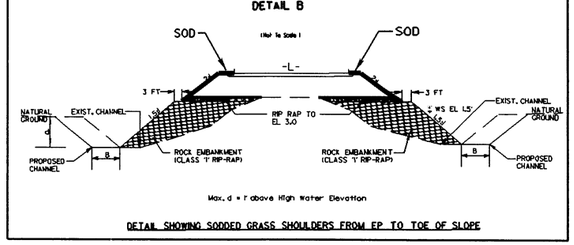
SOIL PARKING

EXISTING R/W

MITIGABLE IMPACTS ZONE I

50 0 25 50
SCALE: 1"= 50' HORIZ.

DETAIL B



DETAIL SHOWING SODDED GRASS SHOULDERS FROM EP TO TOE OF SLOPE

STA 11+50 -L- TO STA 20+00 -L- RT & LT

DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTHS.

NOTE: SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-44 FOR STRUCTURE PLANS
SEE SHEET 4A FOR DETOUR ALIGNMENT

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PROJECT REFERENCE NO.	SHEET NO.
B-3349	85
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

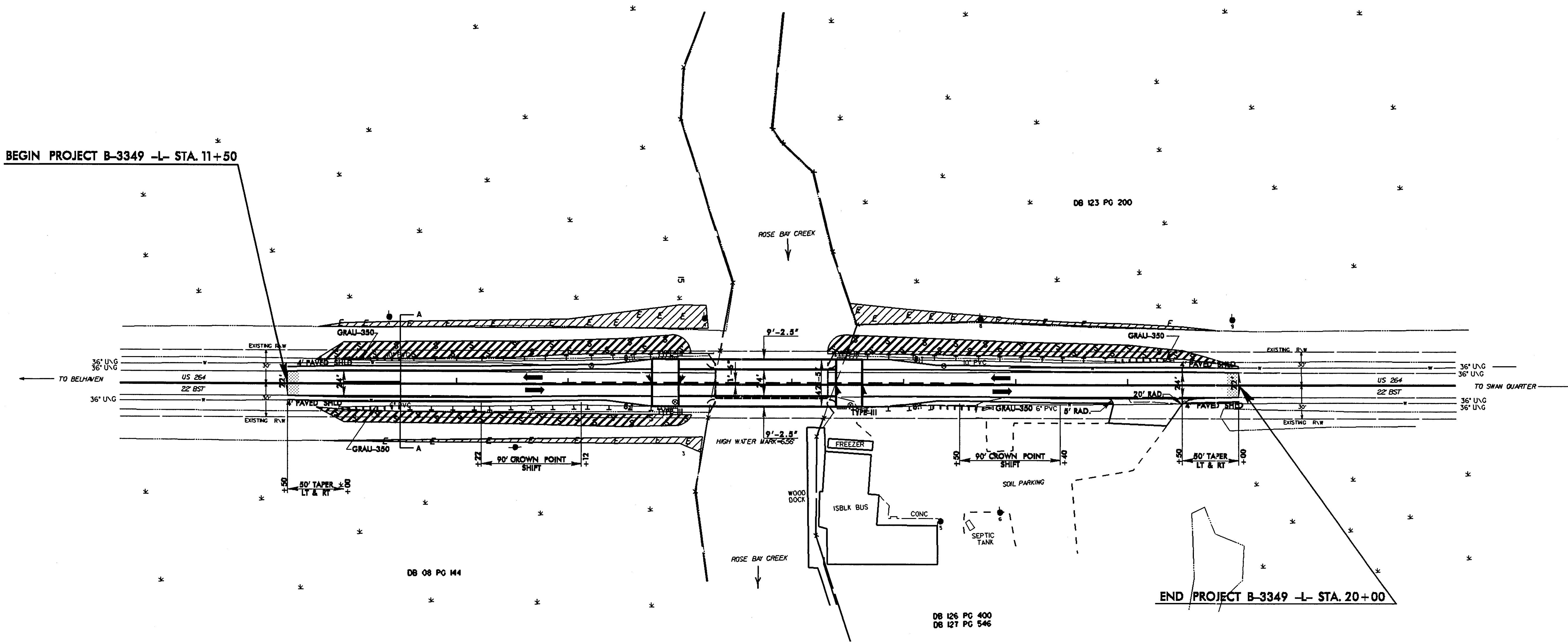
ENGLISH

REVISED 3/15/04

NAD 83

REVISIONS

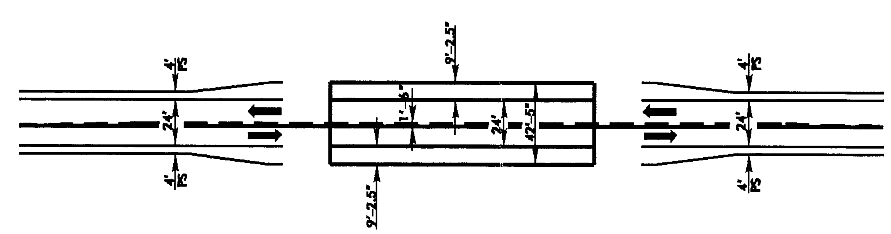
7/2/99



DENOTES FILL IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

SCALE: 1"= 100' HORIZ.



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7/2/96

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3349	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L-

ENGLISH

REVISED 2/01/05

NAD 83

BEGIN PROJECT B-3349 -L- STA. 11+50

1 WEYERHAEUSER COMPANY

2 JAMES W. HODGES

3 ROBERT J. RICH, et ux

4 ROSE BAY OYSTER COMPANY, INC

*CL. 'I' RIP-RAP ROCK EMBANKMENT SEE DETAIL 'A'

ROSE BAY CREEK

BEGIN BRIDGE -L- STA. 14+98.94

END BRIDGE -L- STA. 16+39.06

BRIDGE # 38

TO BELHAVEN

TO SWAN QUARTER

US 264

22 BST

GRAU-350

GRAU-550

GRAU-650

EXISTING R/W

HIGH WATER MARK-1998

FREEZER

ISBLY BUS

CONC

SEPTIC TANK

SOIL PARKING

WOOD DOCK

END PROJECT B-3349 -L- STA. 20+00

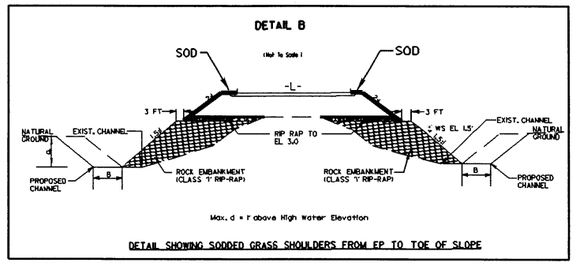
MITIGABLE IMPACTS ZONE I

50 0 25 50

SCALE: 1"= 50' HORIZ.

DETAIL B

(Not to Scale)



DETAIL SHOWING SODDED GRASS SHOULDERS FROM EP TO TOE OF SLOPE

STA 11+50 -L- TO STA 20+00 -L- RT & LT

DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTHS.

NOTE: SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-44 FOR STRUCTURE PLANS
SEE SHEET 4A FOR DETOUR ALIGNMENT

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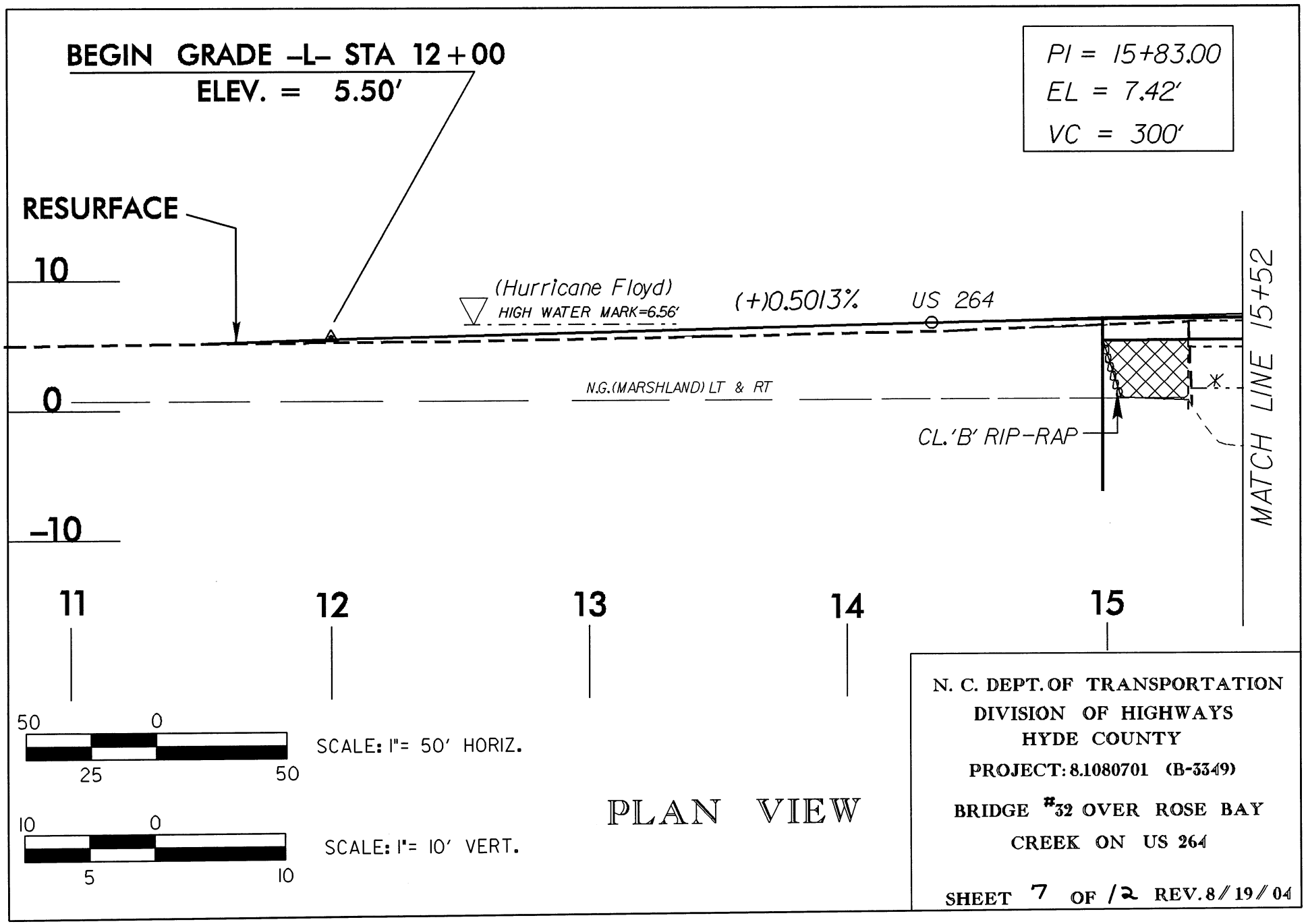
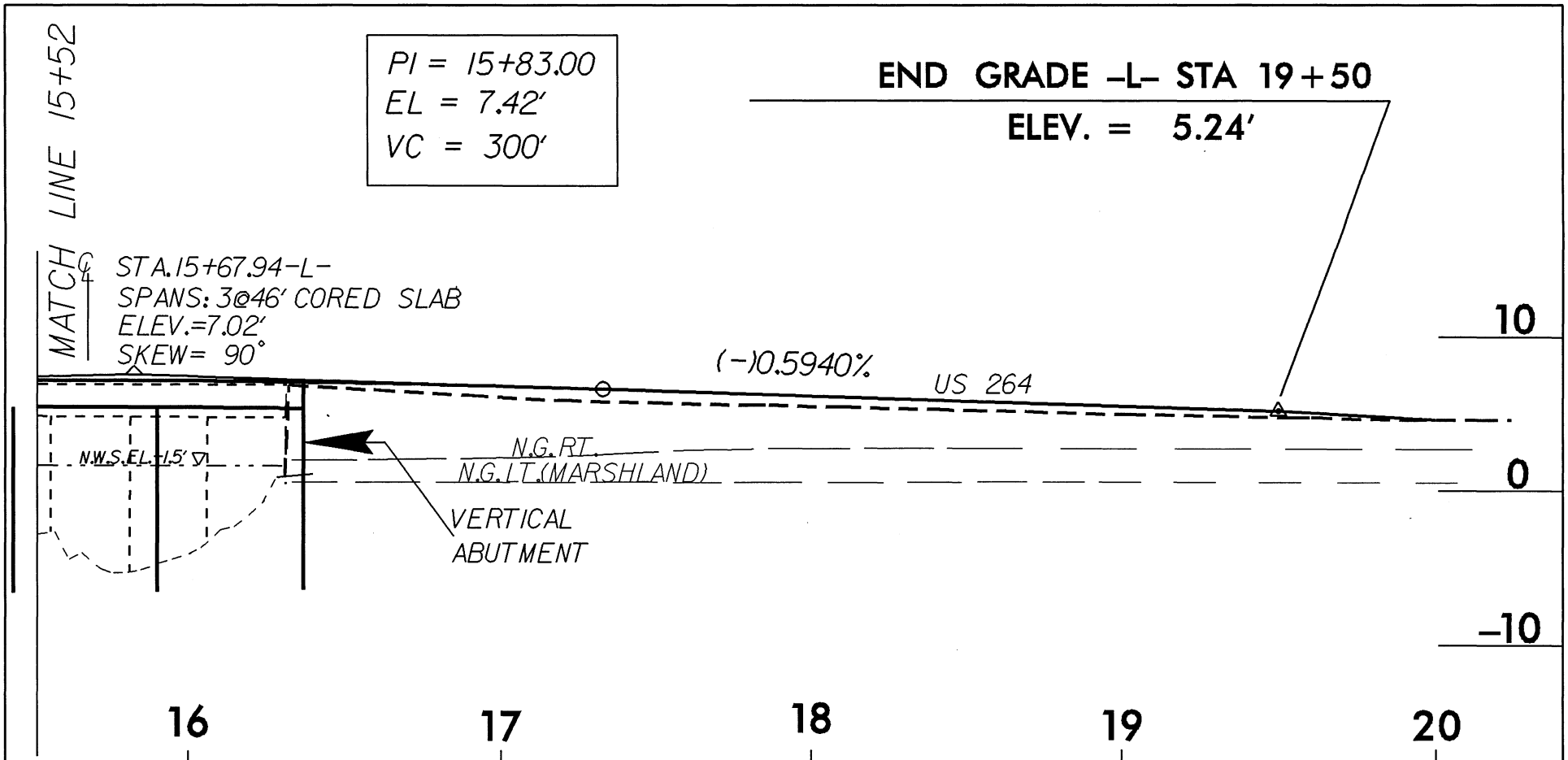
rlassiter



PLAN VIEW

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)
BRIDGE #32 OVER ROSE BAY CREEK ON US 264

SHEET 7 OF 12 REV. 8/19/04

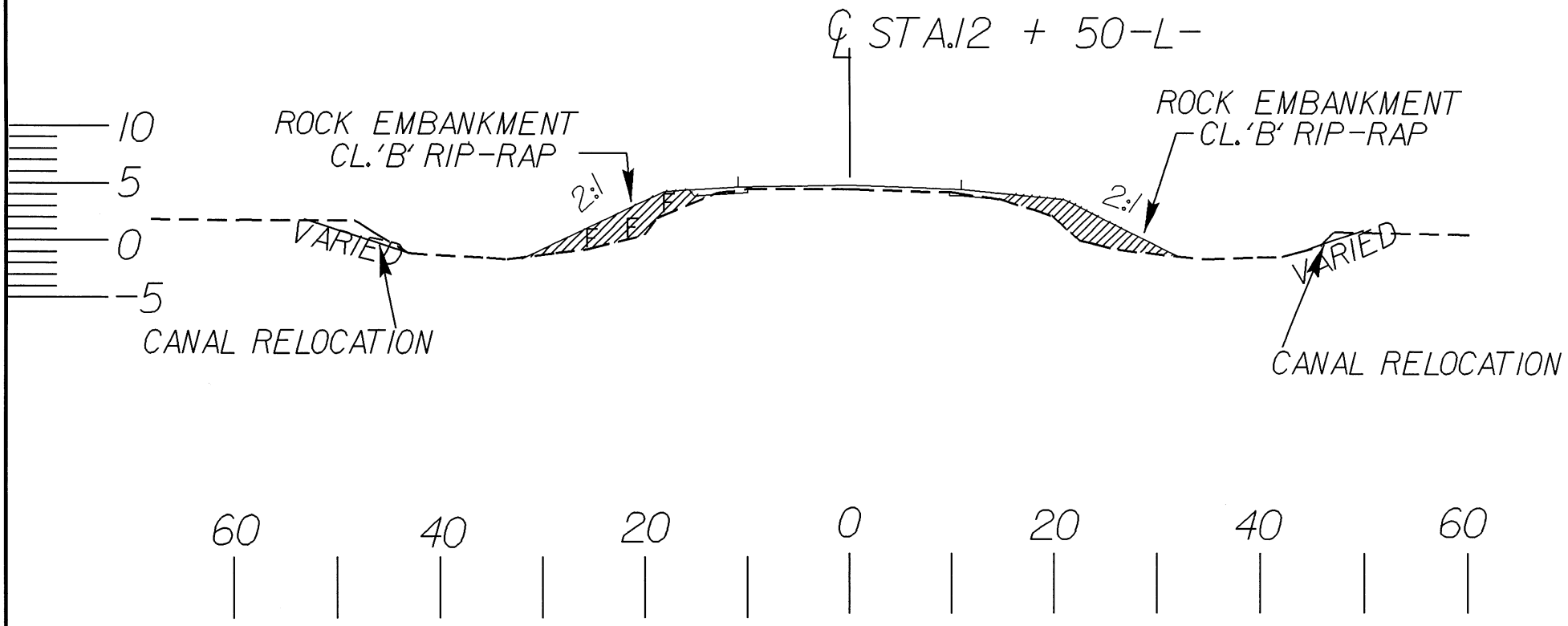


PROFILE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)
BRIDGE #32 OVER ROSE BAY CREEK ON US 264

SHEET 8 OF 12 REV. 8/19/04

SECTION A ——— A



PROFILE

5′ 0 10′ HORIZONTAL SCALE

5′ 0 10′ VERTICAL SCALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
HYDE COUNTY
PROJECT: 8.1080701 (B-3349)

BRIDGE NO. 32 OVER ROSE BAY CREEK ON US264

SHEET 9 OF 12 revised 8/19/04

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
4	MATTAMUSKEET SEAFOOD (ROSE BAY OYSTER COMPANY)	RT.1 BOX 136 SWAN QUARTER, N.C. 27885
2	JAMES W. HODGES	695 E. MAIN ST. BELHAVEN, N.C. 27810
3	ROBERT J. RICH	1468 CAROLINA AVE. WASHINGTON, N.C. 27889
1	WEYERHAEUSER COMPANY	P.O. BOX 1392 NEW BERN, N.C. 28560

NCDOT

DIVISION OF HIGHWAYS

HYDE COUNTY

PROJECT: 8.1080701 (B-3349)

REPLACE BRG# 32 OVER ROSE BAY CREEK ON US 264

SHEET 10 OF 12 REVISED 03/15/0

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Relocated Channel (ft)
1	11+75 to 20+00-L-	Bridge:3@46' cored slab			0.06		0.3			1080	214
TOTALS:			0	0	0.06	0	0.3	0	0	1080	214

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

HYDE COUNTY
PROJECT 8.1080701 B3349

SHEET 11 OF 12 Revised 1/19/2005

Form Revised 3/22/01

BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ac)	ZONE 2 (ac)	TOTAL (ac)	ZONE 1 (ac)	ZONE 2 (ac)	TOTAL (ac)	ZONE 1 (ac)	ZONE 2 (ac)
1	3@46'	11 + 75-L-	X									
	CORED SLAB	TO		X				0.360		0.360		
	BRIDGE	20+00-L-										
TOTAL:					0.0	0.0	0.0	0.36	0.0	0.36		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

HYDE COUNTY
PROJECT:8.1080701
B-3349

REVISED 2/01/2005
SHEET 12 OF 12

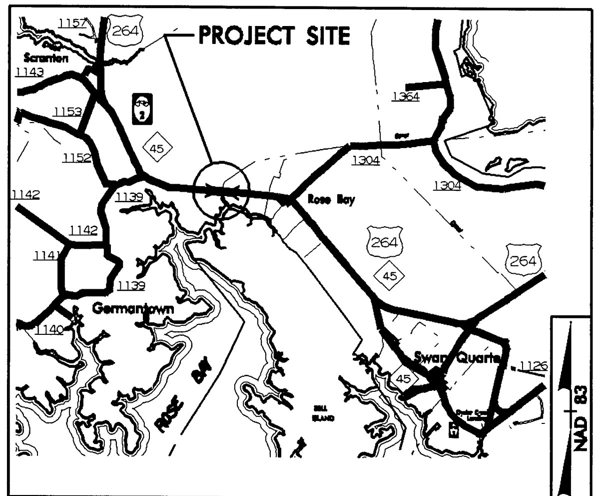
CONTRACT: C200857 TIP PROJECT: B-3349

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3349	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33007.1.1	BRSTP-264(11)	PE
33007.2.1	BRSTP-264(11)	R/W & UTILITIES
33007.3.1	BRSTP-264(27)	CONST.

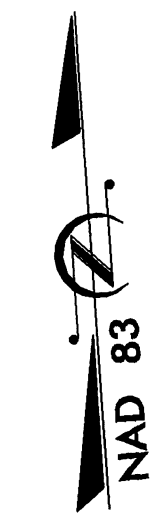


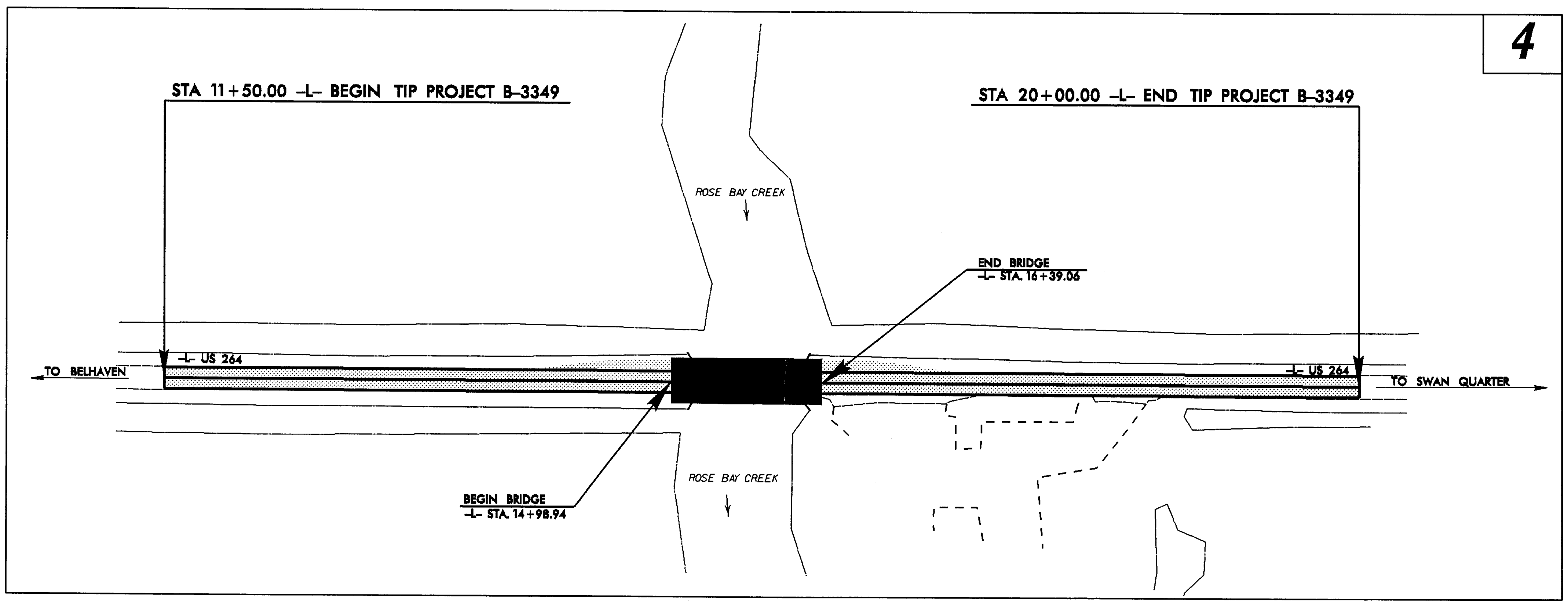
VICINITY MAP

HYDE COUNTY

LOCATION: BRIDGE NO. 32 OVER ROSE BAY CREEK ON US 264

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, GUARDRAIL, AND TEMPORARY SIGNALS





** DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTHS.

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 2004	=	2,922
ADT 2025	=	4,400
DIR.	=	55%
DHV	=	10%
T	=	8% *
V	=	60 MPH
Vdet	=	35 MPH

* TTST 2% DUALS 6%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3349 = 0.134 MILES

LENGTH STRUCTURE TIP PROJECT B-3349 = 0.027 MILES

TOTAL LENGTH OF TIP PROJECT B-3349 = 0.161 MILES

Prepared in the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 26, 2001

LETTING DATE: MAY 17, 2005

JAMES A. SPEER, PE
PROJECT ENGINEER

DANNY GARDNER
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

9/09/99

01-FEB-2005 16:10

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-3349	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut
- Prop. Slope Stakes Fill
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp
- Curb Cut for Future Wheelchair Ramp
- Exist. Guardrail
- Prop. Guardrail
- Exist. Cable Guiderail
- Prop. Cable Guiderail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
- Exist. Control of Access Line
- Prop. Control of Access Line
- Exist. Easement Line
- Prop. Temp. Construction Easement Line
- Prop. Temp. Drainage Easement Line
- Prop. Perm. Drainage Easement Line

HYDROLOGY

- Stream or Body of Water
- River Basin Buffer
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches

STRUCTURES

MAJOR

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

MINOR

- Head & End Wall
- Pipe Culvert
- Footbridge
- Drainage Boxes
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal
- Cable TV Pedestal
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole
- Telephone Booth
- Water Manhole
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box
- Fiber Optic Splice Box
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement
- Recorded Water Line
- Designated Water Line (S.U.E.*)
- Sanitary Sewer
- Recorded Sanitary Sewer Force Main
- Designated Sanitary Sewer Force Main(S.U.E.*)
- Recorded Gas Line
- Designated Gas Line (S.U.E.*)
- Storm Sewer
- Recorded Power Line
- Designated Power Line (S.U.E.*)
- Recorded Telephone Cable
- Designated Telephone Cable (S.U.E.*)
- Recorded U/G Telephone Conduit
- Designated U/G Telephone Conduit (S.U.E.*)
- Unknown Utility (S.U.E.*)
- Recorded Television Cable
- Designated Television Cable (S.U.E.*)
- Recorded Fiber Optics Cable
- Designated Fiber Optics Cable (S.U.E.*)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record — ATTUR
- End of Information — E.O.I.

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol
- Exist. Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Property Number — 123
- Parcel Number — 6
- Fence Line — WW & ISBW
- Existing Wetland Boundaries — WLB
- Proposed Wetland Boundaries — WLB
- Existing Endangered Animal Boundaries — EAB
- Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign
- Well
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol — R/W
- Guard Post — GP
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

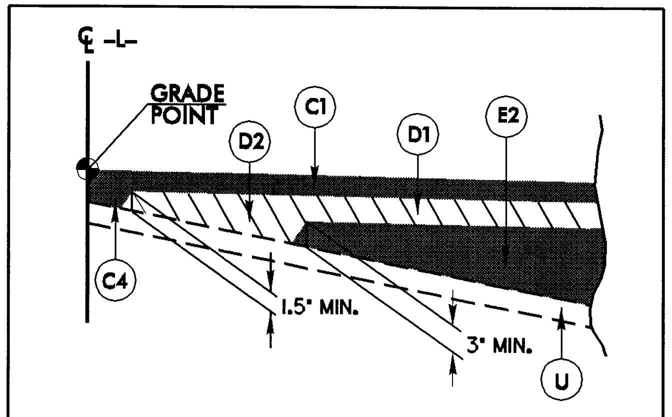
- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — VINEYARD

RAILROADS

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

revised 11/09/00

PROJECT REFERENCE NO.	SHEET NO.
B-3349	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

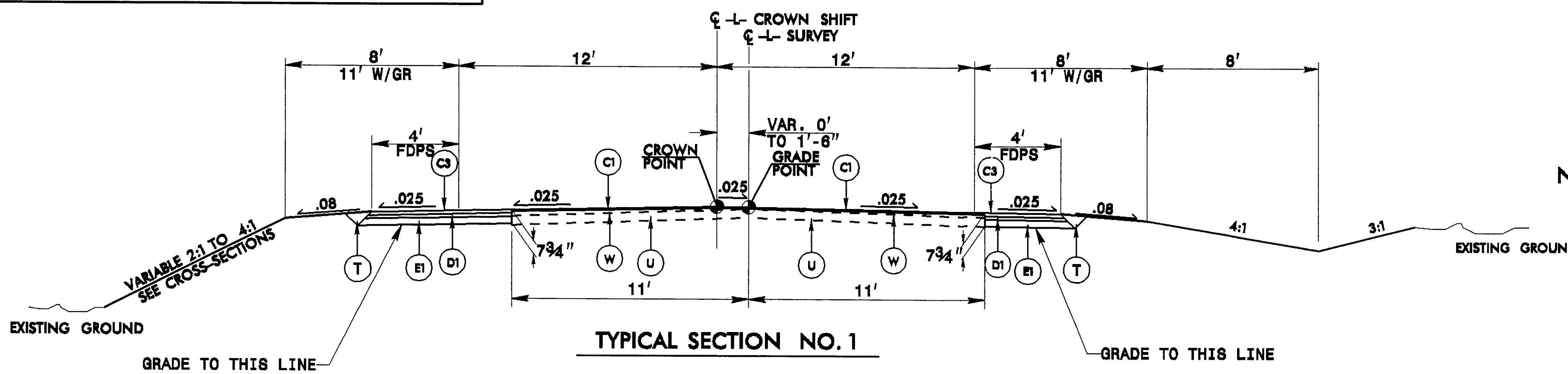


STANDARD WEDGING DETAIL

PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD.	E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C3	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	T	EARTH MATERIAL
C4	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 1½" IN DEPTH.	U	EXISTING PAVEMENT.
D1	PROP. APPROX. 2¼" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 256.50 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.		

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



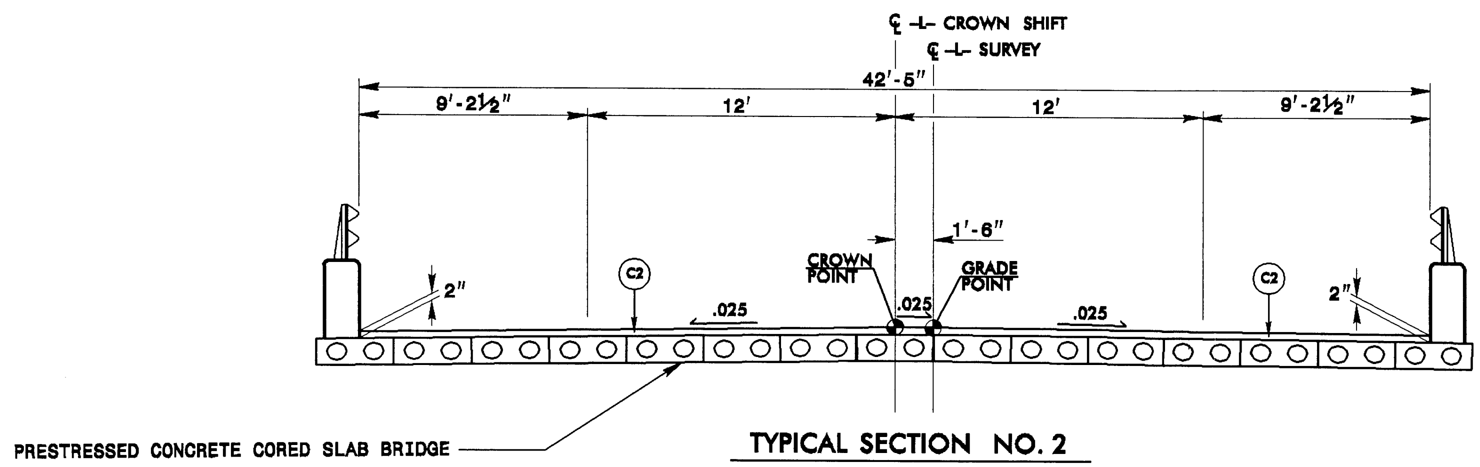
TYPICAL SECTION NO. 1

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA. 11+50 TO STA. 12+00

USE TYPICAL SECTION NO. 1

-L- STA. 12+00 TO STA. 14+98.94 (BEGIN BRIDGE)
-L- STA. 16+39.06 (END BRIDGE) TO STA. 19+50

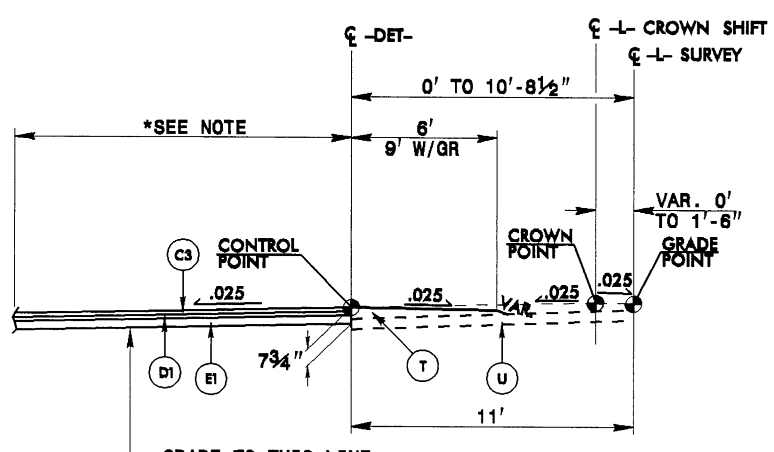
NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING
-L- STA. 19+50 TO STA. 20+00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 14+98.94 (BEGIN BRIDGE) TO STA. 16+39.06 (END BRIDGE)



*NOTE: TRAFFIC TO BE DETOURED ALONG 10' TRAVELWAY USING -L- LANE WIDENING AND PAVED SHOULDER ACCORDING TO T.S. NO. 1. (SEE SHEET 4A FOR PLAN VIEW)

TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-DET- STA. 10+28.13 TO STA. 11+47.79 (BEGIN BRIDGE)
-DET- STA. 12+87.91 (END BRIDGE) TO STA. 14+25.92

6/2/99

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COMPUTED BY: JBG DATE: 1-30-03
CHECKED BY: DWG DATE: 2-11-04

"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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3349	3-A

GUARDRAIL SUMMARY
IN FEET

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS TYPE III	ANCHORS GRAU 350	ANCHORS TEMP TYPE B-77	ANCHORS TEMP GRAU 350	IMPACT ATTENUATOR TYPE 350 EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	14+98.94	11+98.94	LT	300			14+98.94	11+98.94	8	11		60.4167		1.2083	1	1									
-L-	16+39.06	19+39.06	LT	300			19+39.06	16+39.06	8	11	60.4167		1.2083		1	1									
-L-	11+98.94	14+98.94	RT	300			11+98.94	14+98.94	8	11	60.4167		1.2083		1	1									
-L-	16+39.06	17+76.56	RT	137.50			16+39.06	16+39.06	8	11		31.213		1.2083	1	1									
			SUBTOTALS	1037.5											4	4									
	DEDUCTION FOR ANCHORS 4 GRAU-350 @ 50'			-200																					
	4 TYPE III @ 18.75'			-75																					
			PROJECT TOTAL	762.5											4	4									
			SAY	800																					
		ADDITIONAL GUARDRAIL POSTS = 10 EA.																							
		TEMPORARY GUARDRAIL																							
-DET-	10+72.79	11+47.79	RT	75			11+47.79		2.7083								1	1							
-DET-	12+87.91	13+75.41	RT	87.5			12+87.91		2.7083								1	1							
			SUBTOTALS	162.5													2	2							
	DEDUCTION FOR ANCHORS 2 GRAU-350 @ 50'			-100																					
	2 TYPE B-77 @ 18.75'			-37.5																					
			PROJECT TOTAL	25													2	2							
			SAY	50																					

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCL. EXCAVATION	EMBT+%	BORROW	WASTE
PHASE NO. I (-L- & -DET- LT. SIDE)				
-L- STA. 11+50 TO STA. 14+98.94 (BB)	262	1099	198	151
-L- STA. 16+39.06 (EB) TO STA. 20+00	26	1060	271	3
PHASE NO. 1 TOTALS	288	2159	469	154
PHASE NO. II (-L- LINE RT. SIDE)				
-L- STA. 11+50 TO STA. 14+98.94 (BB)	139	688	128	45
-L- STA. 16+39.06 (EB) TO STA. 20+00	50	147	121	4
PHASE NO. II TOTALS	189	835	249	49
PHASE TOTALS	477	2994	718	203
5% FOR REPLACING TOPSOIL ON BORROW PIT			36	
GRAND TOTAL	477	2994	754	203
SAY:	500		775	
ESTIMATED UNDERCUT = 300 CY				

NOTE: QUANTITIES ARE APPROXIMATE ONLY. THE RESIDENT ENGINEER WILL RE-CROSS-SECTION THE WORK ACCURATELY WHEN THE PROJECT IS STAKED OUT. THESE CROSS-SECTION NOTES WILL BE USED IN COMPUTING THE FINAL QUANTITIES FOR WHICH THE CONTRACTOR WILL BE PAID.

SUMMARY OF ASPHALT PAVEMENT REMOVAL
IN SQUARE YARDS

LINE	STATION TO STATION	LOCATION	LENGTH	WIDTH	SQUARE YARDS
-L-	14+74.94 TO 15+32.00	LT & RT	57.06	22	139.48
-L-	16+32.00 TO 16+63.06	LT & RT	31.06	22	75.92
				TOTAL	215.40
				SAY	230.00

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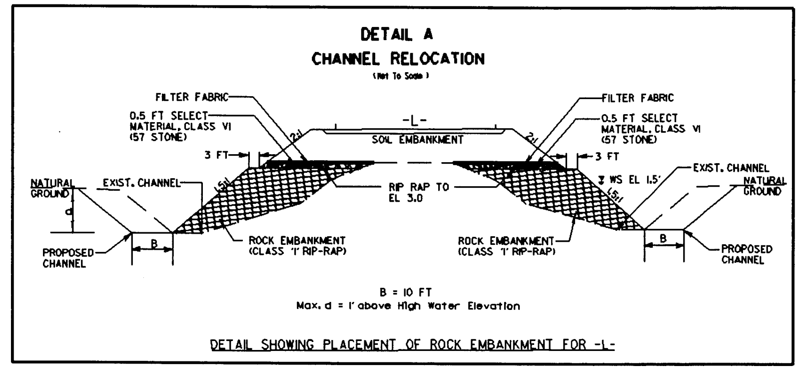
PROJECT REFERENCE NO.	SHEET NO.
B-3349	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

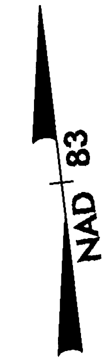
-L-

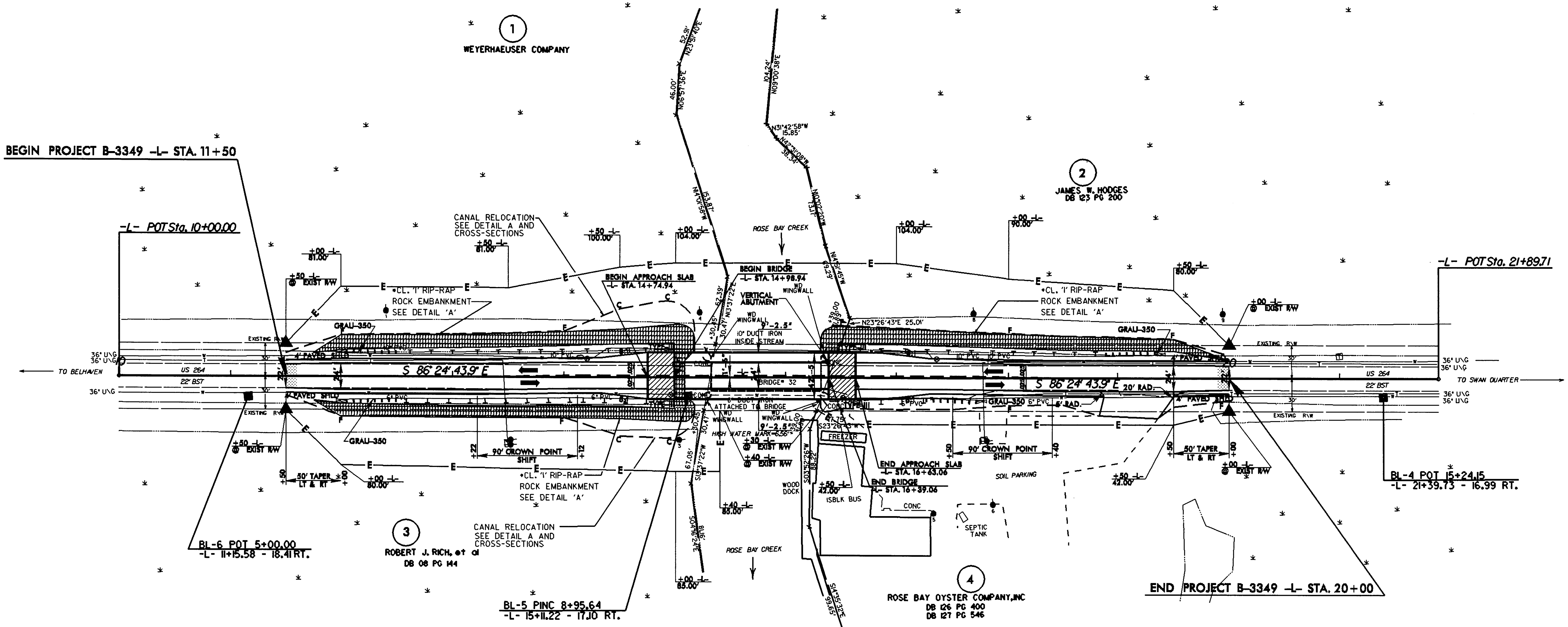
REVISIONS

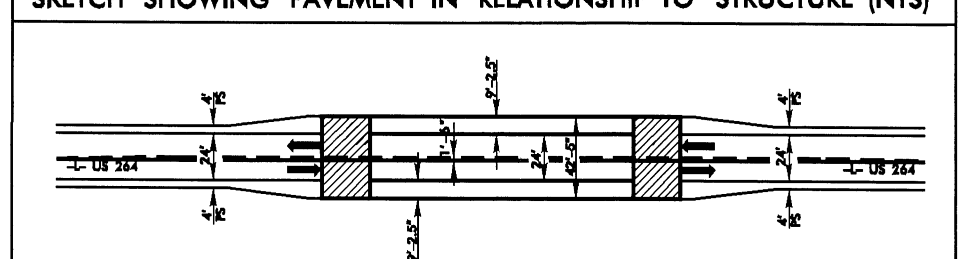
7/2/99

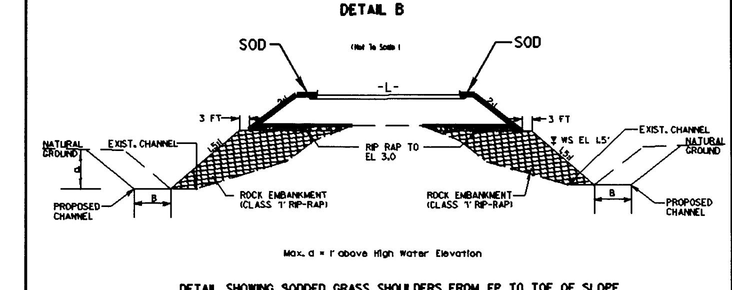


STA 14+50 -L- TO STA 15+30 -L- RT
STA 14+50 -L- TO STA 15+30 -L- LT









STA 11+50 -L- TO STA 20+00 -L- RT & LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "DRILL"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 633232.676(ft) EASTING: 2775751.374(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998791
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "DRILL" TO -L- POT STATION 11+50 IS
N 86° 29' 52.92" W 3131.11 FT
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTHS.

NOTE: SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-44 FOR STRUCTURE PLANS
SEE SHEET 4A FOR DETOUR ALIGNMENT

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JBGauthier AT RD195127

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3349	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-DETOUR-

Vdet = 35 MPH

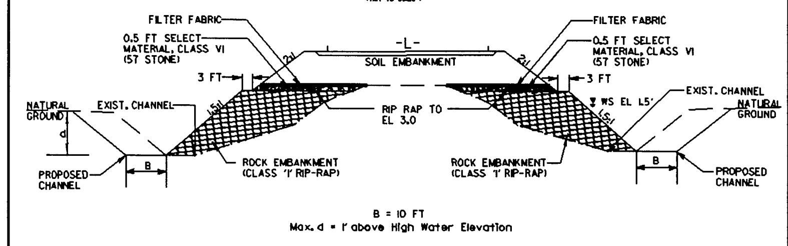
-DETOUR-			
PI Sta 10+35.38	PI Sta 11+06.02	PI Sta 13+53.73	PI Sta 14+24.36
Δ = 8° 42' 11.2" (LT)	Δ = 8° 42' 11.2" (RT)	Δ = 8° 42' 11.2" (RT)	Δ = 8° 42' 11.2" (LT)
D = 12° 19' 18.0"	D = 12° 19' 18.0"	D = 12° 19' 18.0"	D = 12° 19' 18.0"
L = 70.63'	L = 70.63'	L = 70.63'	L = 70.63'
T = 35.38'	T = 35.38'	T = 35.38'	T = 35.38'
R = 465.00'	R = 465.00'	R = 465.00'	R = 465.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

NAD 83

DETAIL A

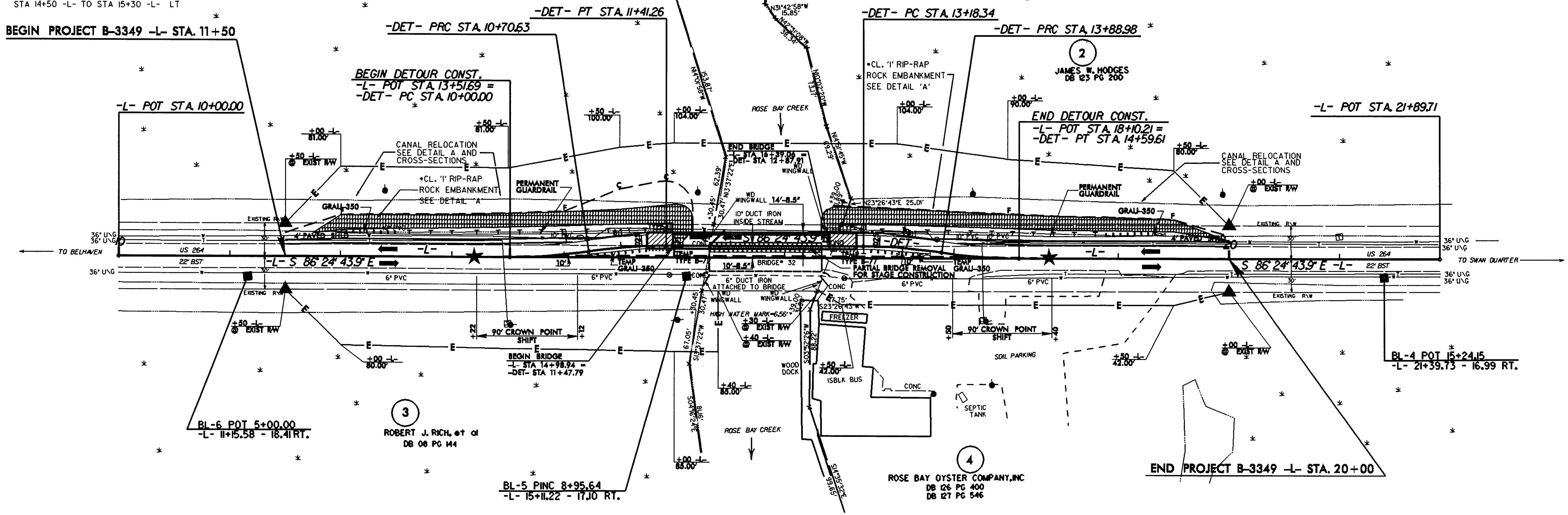
CHANNEL RELOCATION

(Not To Scale)



DETAIL SHOWING PLACEMENT OF ROCK EMBANKMENT FOR -L-

STA 14+50 -L- TO STA 15+30 -L- LT



BEGIN PROJECT B-3349 -L- STA. 11+50
-DET- PRC STA. 10+70.63
-DET- PT STA. 11+41.26
-DET- PC STA. 13+18.34
-DET- PRC STA. 13+88.98
BEGIN DETOUR CONST. -L- POT STA. 13+51.69 = -DET- PC STA. 10+00.00
END DETOUR CONST. -L- POT STA. 18+10.21 = -DET- PT STA. 14+59.61
-L- POT STA. 10+00.00
-L- POT STA. 21+89.71
WEYERHAEUSER COMPANY
JAMES W. HODGES DB 123 PG 200
ROBERT J. RICH, et al DB 06 PG 144
ROSE BAY OYSTER COMPANY, INC DB 126 PG 400 DB 127 PG 546
ROSE BAY CREEK
CANAL RELOCATION SEE DETAIL A AND CROSS-SECTIONS
*CL. 'I' RIP-RAP ROCK EMBANKMENT SEE DETAIL 'A'
PERMANENT GUARDRAIL
GRAU-350
END BRIDGE -L- STA. 15+39.09 -DET- STA. 12+87.91
BEGIN BRIDGE -L- STA. 14+98.94 -DET- STA. 11+47.79
10" DUCT IRON INSIDE STREAM
6" DUCT IRON ATTACHED TO BRIDGE
PARTIAL BRIDGE REMOVAL FOR STAGE CONSTRUCTION
90' CROWN POINT SHIFT
TO BELHAVEN
TO SWAN QUARTER
US 264
-L- S 86° 24' 43.9" E
HIGH WATER MARK=6.56'
FREEZER
WOOD DOCK
1SBLK BUS
SEPTIC TANK
SOIL PARKING
BL-6 POT 5+00.00 -L- 11+15.58 - 18.41 RT.
BL-5 PINC 8+95.64 -L- 15+11.22 - 17.10 RT.
BL-4 POT 15+24.15 -L- 21+39.73 - 16.99 RT.
END PROJECT B-3349 -L- STA. 20+00

NOTE: THE DETOUR ALIGNMENT WILL USE THE PROJECTION OF THE -L- GRADE AT THE .025 SUPER RATE FOR THE DETOUR GRADE.

DESIGN EXCEPTION REQUIRED FOR -L- LINE SHOULDER WIDTH.

★ DENOTES SIGNAL REQUIRED FOR ONE LANE TWO-WAY DETOUR OPERATION
SEE SHEETS TCP-1 THRU TCP-10 FOR DETOUR OPERATION
SEE SHEETS S-1 THRU S-44 FOR STRUCTURE PLANS

7/2/99

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JBGauthier AT RD195127

PROJECT REFERENCE NO.	SHEET NO.
B-3349	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

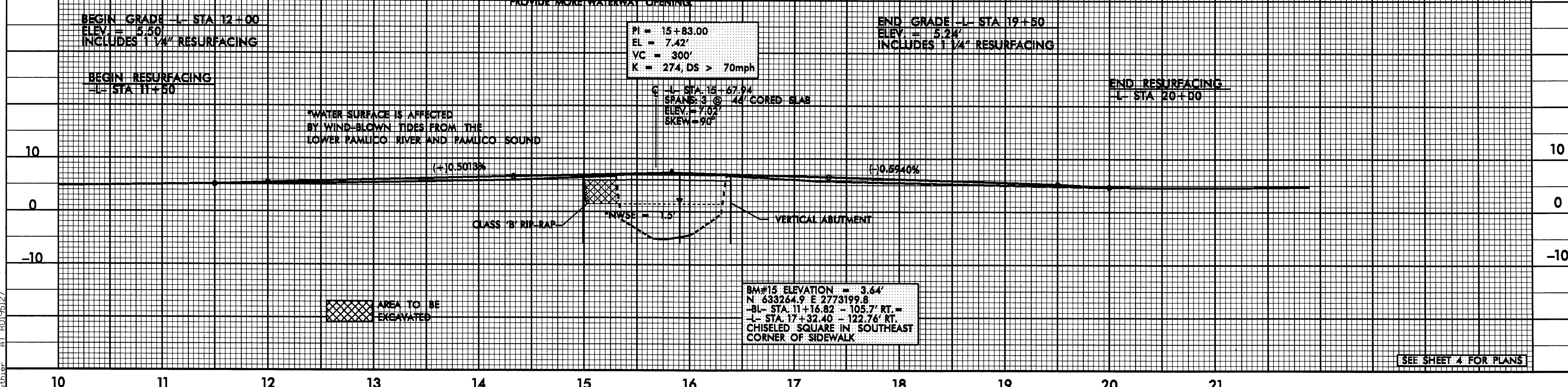
-L-

-L-

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= *2700CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= *2.54 FT
BASE DISCHARGE	= *3300CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= *2.94 FT
OVERTOPPING DISCHARGE	= *5000CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 4.8 FT

* THE DESIGN AND 100 yr. STORMS WERE ANALYZED IN HEC-RAS AND DID NOT TAKE INTO ACCOUNT STORM SURGE SITUATIONS. THE PROPOSED BRIDGE IS AN IN-KIND REPLACEMENT AND WILL PROVIDE MORE WATERWAY OPENING.



BEGIN GRADE -L- STA 12+00
ELEV. = 5.50'
INCLUDES 1 1/4" RESURFACING
BEGIN RESURFACING
-L- STA 11+50
PI = 15+83.00
EL = 7.42'
VC = 300'
K = 274, DS > 70mph
END GRADE -L- STA 19+50
ELEV. = 5.24'
INCLUDES 1 1/4" RESURFACING
END RESURFACING
-L- STA 20+00
℄ -L- STA. 15+67.94
SPANS: 3 @ 46' CORED SLAB
ELEV. = 7.02'
SKEW = 90°
*WATER SURFACE IS AFFECTED BY WIND-BLOWN TIDES FROM THE LOWER PAMLICO RIVER AND PAMLICO SOUND
(+)0.5013%
(-)0.5940%
*NWSE = 1.5'
CLASS 'B' RIP-RAP
VERTICAL ABUTMENT
10
0
-10
BM#15 ELEVATION = 3.64'
N 633264.9 E 2773199.8
-BL- STA. 11+16.82 - 105.7' RT. =
-L- STA. 17+32.40 - 122.76' RT.
CHISELED SQUARE IN SOUTHEAST CORNER OF SIDEWALK
AREA TO BE EXCAVATED
10 11 12 13 14 15 16 17 18 19 20 21

SEE SHEET 4 FOR PLANS

5/14/99
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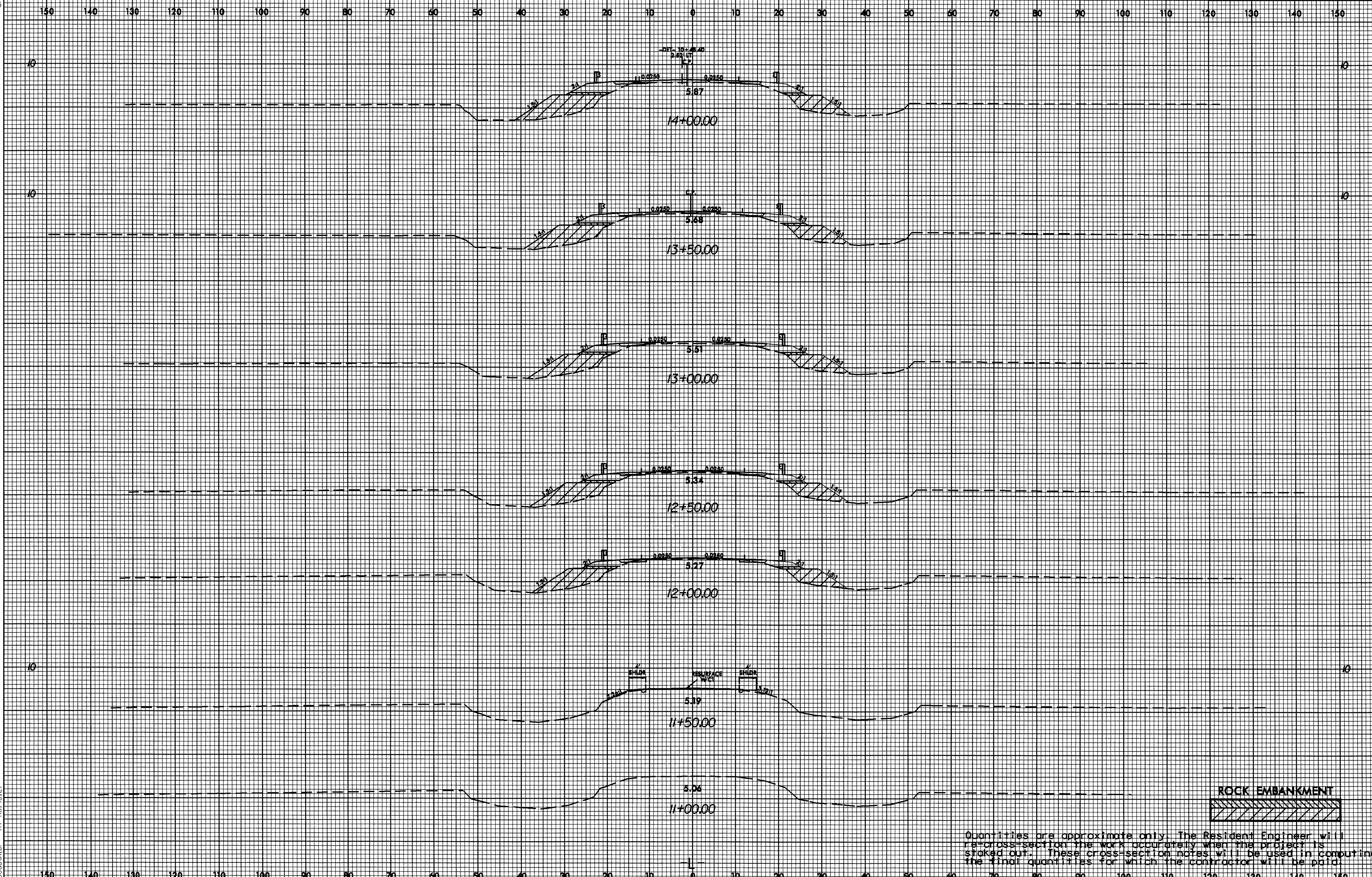
PROJ. REFERENCE NO.	SHEET NO.
B-3349	X-2



ROCK EMBANKMENT

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

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JBGauthier

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0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3349	X-3

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

10

-DET.- 13+48.88
9.71' Lt.
ITEM: CMP
SIZE: 0.0250
C.P.
6.01
0.0250
0.0250
2:1
2:1
2:1
2:1
17+00.00

10

-DET.- 12+98.83
10.71' Lt.
ITEM: CMP
SIZE: 0.0250
C.P.
6.57
0.0250
0.0250
2:1
2:1
2:1
2:1
16+50.00

BRIDGE
4.41
16+00.00

BRIDGE
3.34
15+50.00

10

-DET.- 11+48.85
10.71' Lt.
ITEM: CMP
SIZE: 0.0250
C.P.
6.49
0.0250
0.0250
2:1
2:1
2:1
2:1
15+00.00

10

-DET.- 10+98.80
6.77' Lt.
ITEM: CMP
SIZE: 0.0250
C.P.
6.11
0.0250
0.0250
2:1
2:1
2:1
2:1
14+50.00

ROCK EMBANKMENT

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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AT RD195127

8/23/99

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3349	X-4

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

10

4' SHLDR

RESURFACE W/C1

4' SHLDR

4.67

20+00.00

SHOULDER TAPER

0.0250

0.0250

4.83

19+50.00

4' SHLDR DRIVEWAY TIE

5.02

19+00.00

5.25

18+50.00

PT. - STA. 18+49.40 3.91' LT. C.L.

5.46

18+00.00

PT. - STA. 17+99.33 3.91' LT. C.L.

5.47

17+50.00

ROCK EMBANKMENT

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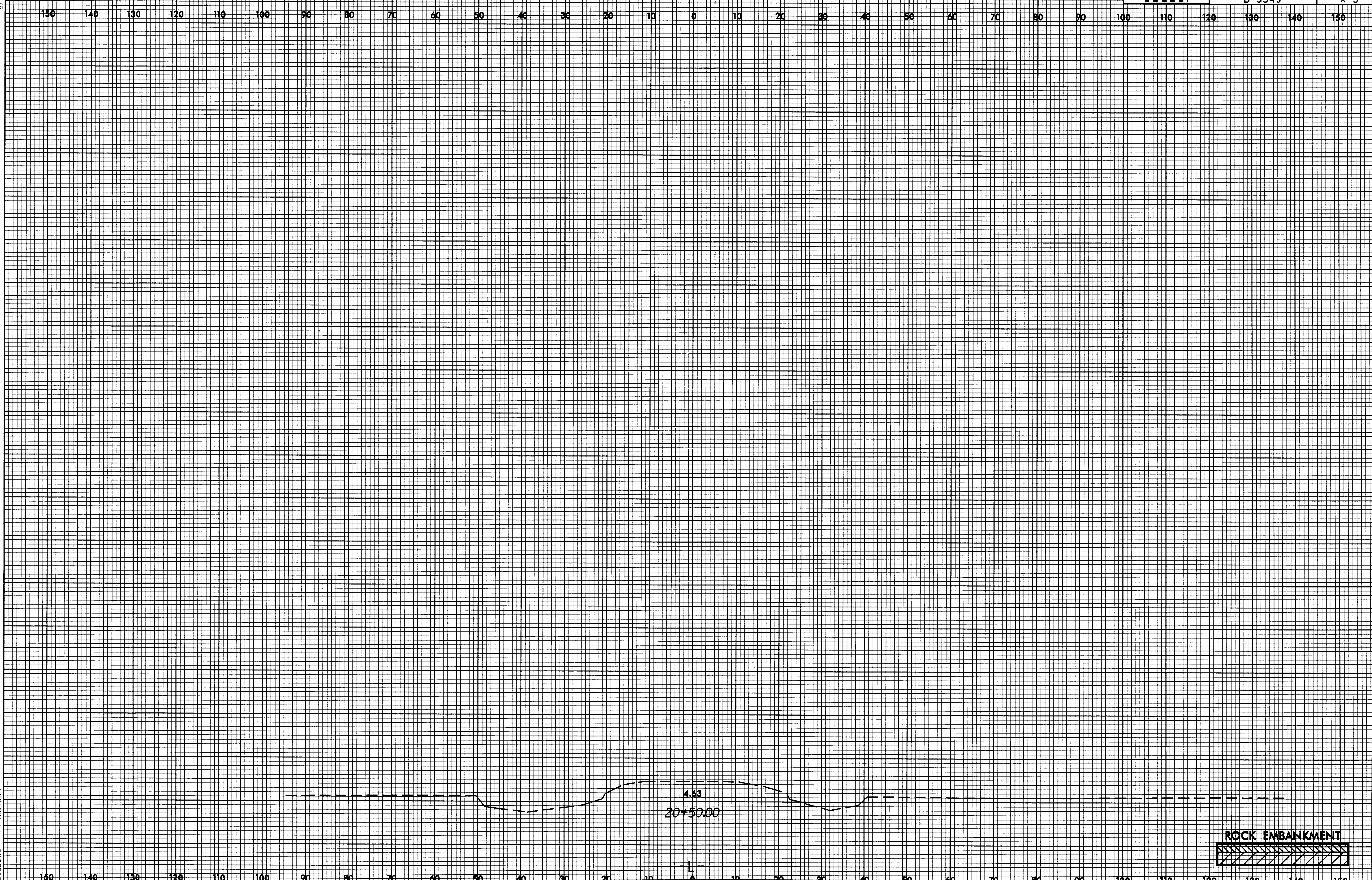
Roadway

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

PROJ. REFERENCE NO.	SHEET NO.
B-3349	X-5



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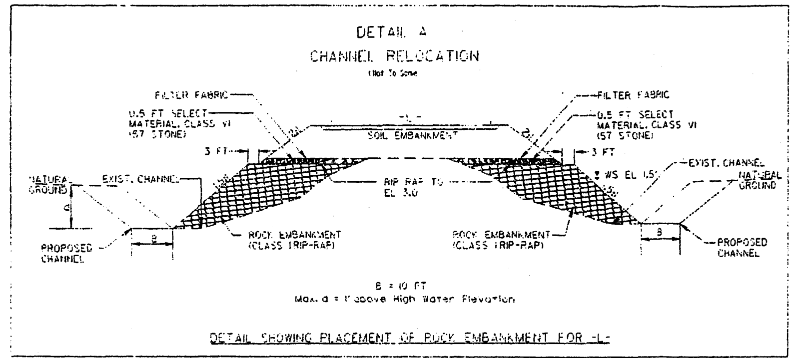
JBGauthier AT RD195127

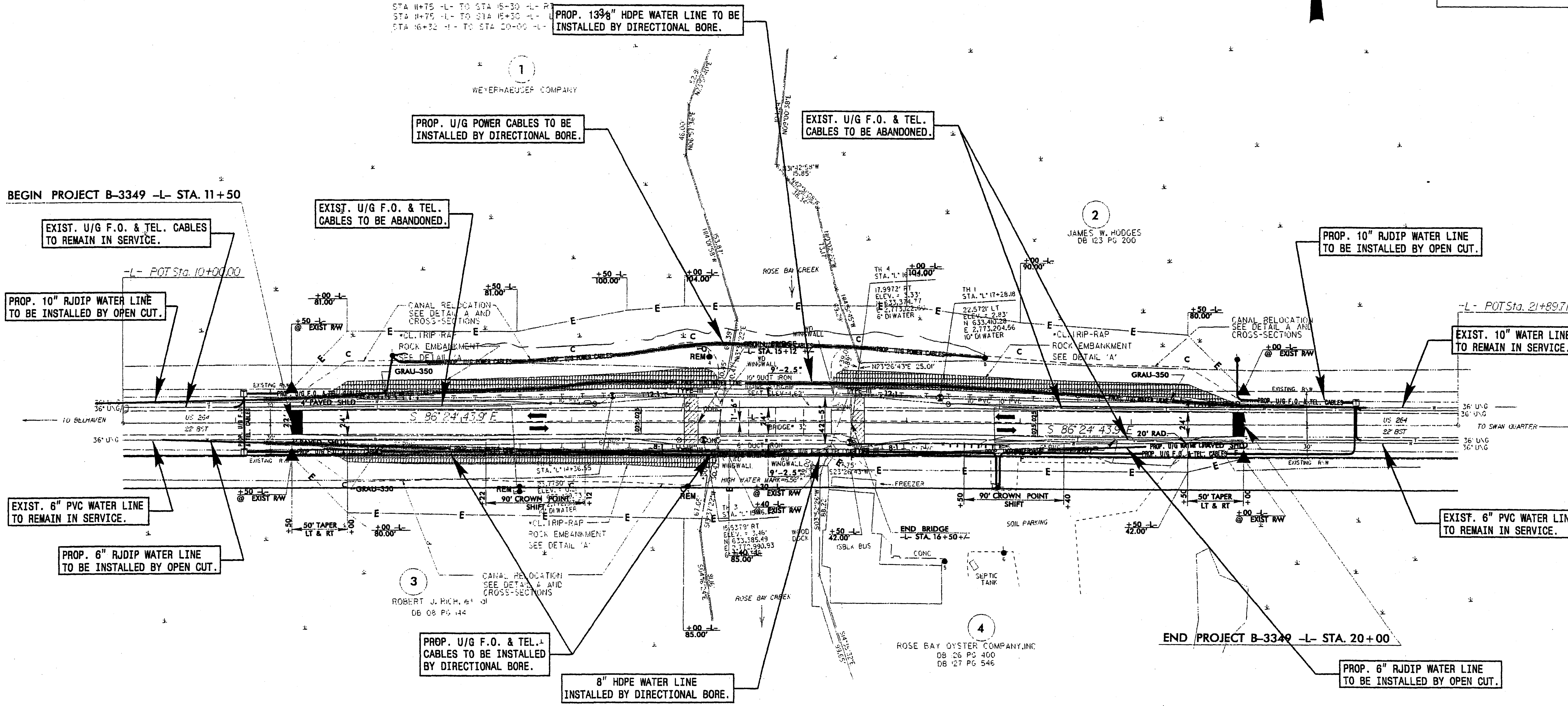
PROJECT REFERENCE NO.	SHEET NO.
B-3349	U0-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

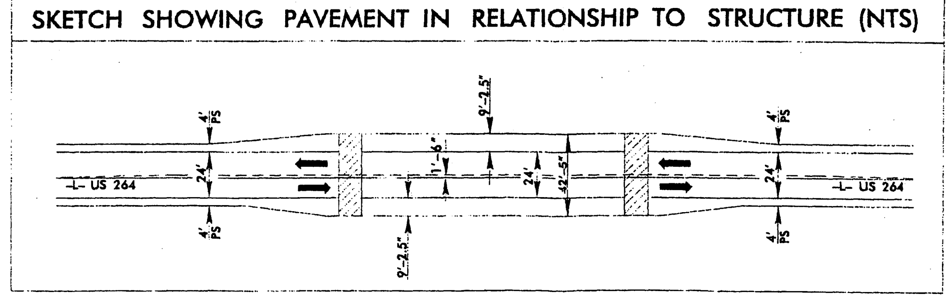
-L-





NAD 83
PROP. 13⅜" HDPE WATER LINE TO BE INSTALLED BY DIRECTIONAL BORE.
WEYERHAEUSER COMPANY
PROP. U/G POWER CABLES TO BE INSTALLED BY DIRECTIONAL BORE.
EXIST. U/G F.O. & TEL. CABLES TO BE ABANDONED.
BEGIN PROJECT B-3349 -L- STA. 11+50
EXIST. U/G F.O. & TEL. CABLES TO REMAIN IN SERVICE.
EXIST. U/G F.O. & TEL. CABLES TO BE ABANDONED.
JAMES W. HODGES
DB 123 PG 200
PROP. 10" RJDIP WATER LINE TO BE INSTALLED BY OPEN CUT.
-L- POT Sta. 10+00.00
PROP. 10" RJDIP WATER LINE TO BE INSTALLED BY OPEN CUT.
ROSE BAY CREEK
-L- POT Sta. 21+89.71
EXIST. 10" WATER LINE TO REMAIN IN SERVICE.
CANAL RELOCATION SEE DETAIL A AND CROSS-SECTIONS
ROCK EMBANKMENT SEE DETAIL 'A'
GRAU-350
BEGIN BRIDGE -L- STA. 15+12
S 86°24'43.9" E
TO BELHAVEN
TO SWAN QUARTER
US 264
EXIST. 6" PVC WATER LINE TO REMAIN IN SERVICE.
EXIST. 6" PVC WATER LINE TO REMAIN IN SERVICE.
PROP. 6" RJDIP WATER LINE TO BE INSTALLED BY OPEN CUT.
90' CROWN POINT SHIFT
50' TAPER LT & RT
END BRIDGE -L- STA. 16+50
SOIL PARKING
SEPTIC TANK
ROBERT J. RICH
ROSE BAY OYSTER COMPANY, INC
DB 126 PG 400
DB 127 PG 546
END PROJECT B-3349 -L- STA. 20+00
PROP. U/G F.O. & TEL. CABLES TO BE INSTALLED BY DIRECTIONAL BORE.
8" HDPE WATER LINE INSTALLED BY DIRECTIONAL BORE.
PROP. 6" RJDIP WATER LINE TO BE INSTALLED BY OPEN CUT.

SKETCH SHOWING PAVEMENT IN RELATIONSHIP TO STRUCTURE (NTS)



NOTE: SEE SHEET 5 FOR -L- PROFILE
SEE SHEETS S-1 THRU S-__ FOR STRUCTURE PLANS
SEE SHEET 4A FOR DETOUR ALIGNMENT