STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

January 2, 2004

N. C. Dept. of Environment and Natural Resources
Division of Coastal Management
Hestron Plaza II
151-B NC Highway 24
Morehead City, NC 28557

ATTENTION: Mr. Bill Arrington

SUBJECT: **Application for CAMA Major Development Permit** for the proposed replacement of Bridge No. 49 on SR 1101 and SR 1442 over White Oak River in Carteret and Onslow County, NCDOT Division 2. Federal Project No. BRZ-1101(5), $475 Debit Work Order 8.2160801 (WBS Element 32767.1.1), T.I.P. No. B-2938.

Dear Sir:

Please find enclosed copies of the Categorical Exclusion (CE), Onsite Mitigation Plan, the Coastal Area Management Act (CAMA) permit application, permit drawings, half size plan sheets, Utilities By Others sheets, copies of green cards from the Adjacent Riparian Property Owners Notification process, and a copy of the North Carolina Division of Water Quality (DWQ) Stormwater Permit.

PROJECT DESCRIPTION

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 49 over the White Oak River on SR 1101 and 1442, at Stella. This project lies on the Carteret/Onslow County line. Bridge No. 49 will be replaced downstream of the existing bridge with a much longer bridge over the river and the marshland on the Onslow County approach. During construction, traffic will be maintained on the existing structure. Once the new bridge is completed, the old roadway will be removed and the wetlands restored.

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

STATE OF NORTH CAROLINA
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January 2, 2004

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

ATTENTION: Mr. David Timpy
NCDOT Coordinator

SUBJECT: **Nationwide Permit Application 23 and 33 application** for the for the proposed replacement of Bridge No. 49 on SR 1101 and SR 1442 over White Oak River in Carteret and Onslow County, NCDOT Division 2. Federal Project No. BRZ-1101(5), State Project No. 8.2160801, T.I.P. No. B-2938.

Dear Sir:

Please find enclosed three copies of the CE document along with a PCN form, project site map, permit drawings, roadway design plan sheets, utilities by others plans, and the onsite mitigation plan dated May 2003. NCDOT proposes to replace Bridge No. 49 over the White Oak River on SR 1101 and 1442, at Stella. This project lies on the Carteret/Onslow County line. Bridge No. 49 will be replaced downstream of the existing bridge with a much longer bridge over the river and the marshland on the Onslow County approach. During construction, traffic will be maintained on the existing structure. Once the new bridge is completed, the old roadway will be removed and the wetlands restored.

PROPOSED IMPACTS

Bridge Demolition:
Best Management Practices for Bridge Demolition and Removal will be followed. Bridge No. 49 will be removed without dropping any portion of the structure into waters of the United States (as indicated on Pages 9-10, Section 3.b. of the CE document).

Utility Relocation:
No wetland or surface water impacts will result from the relocation of utility lines (Carteret/Craven EMC, Sprint Telephone, and Time Warner). All areas associated with utility relocation will be within the existing causeway. The excavation for the proposed onsite restoration (see attached plan dated May 2003) will take place around the relocated poles by grading the remaining area to the elevation of the adjacent wetland.

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LOCATION:
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1 SOUTH WILMINGTON STREET
RALEIGH NC

Permanent Wetland Impacts:
Construction of the proposed project will result in 0.0227 acre of permanent fill in wetlands. There will be 0.0141 acre of impact due to concrete piles for the proposed bridge at Site 3, 0.00079 acre due to rip rap slope protection for the proposed bridge at Site 4, and 0.0078 acre due to rip rap fill for the proposed boat ramp at Site 5.

Temporary Wetland Impacts:
A temporary work bridge (depicted on the attached drawings) will also be necessary for construction. The resulting temporary impacts to wetlands will be 0.0494 acre. There will be 0.0238 acre of impact due to H-piles for the temporary work bridge at Site 1 and 0.0256 acre due to H-piles for fingers on the work bridge at Site 2.

Permanent Surface Water Impacts:
White Oak River [DWQ Index No. 20-(18)] Class C HQW will be impacted by the proposed project. Construction of the proposed project will result in 0.0344 acre of permanent surface water fill. There will be 0.0017 acre of fill due to the installation of the drilled shafts for the proposed bridge at Site 4 and 0.0327 acre of fill due to the rip rap fill for the proposed boat ramp at Site 5.

Temporary Surface Water Impacts:
The temporary surface water fill due to the construction of the temporary work bridge will be 0.0143 acre. There will be 0.0057 acre of surface water fill for the temporary bridge H-piles at Site 1 and 0.00858 acre of surface water fill for the H-piles on the fingers on the work bridge at Site 2.

Restoration Plan: The temporary fill will consist of H-piles in the river. Following construction of the temporary work bridge, the construction of permanent bridge will be completed. Once the temporary work bridge is no longer needed, all material used in the construction of the temporary work bridge will be removed. The temporary impact area associated with the work bridge is expected to recover naturally.

Schedule: The project schedule calls for a let date of June 15, 2004 with an estimated date of availability of approximately 41 days later. It is expected that the contractor will choose to start construction of the portion of the temporary work bridge in the river shortly after the end of the moratorium of February 15 – September 30. The only bents in the water are bents 21 through 30. It will take approximately 2 ½ to 3 months to drive the piles for the footings, and form and pour the footings for these bents. After that, all work can be done from barges in the water and the temporary work bridge for the approach spans. Removal of the existing bridge at the end of construction is expected to take approximately 1 month. The temporary surface water fill resulting from the construction will probably be in place for approximately twelve (12) months.

Removal and Disposal Plan: After the temporary work bridge is no longer needed, all temporary work bridge material will become the property of the contractor. The contractor will be required to submit a reclamation plan for the removal of and disposal of all materials off-site at an upland location.

FEDERALLY PROTECTED SPECIES

As of January 29, 2003, the United States Fish and Wildlife Service lists a combined total of seventeen federally protected species for Carteret and Onslow Counties. This list includes sixteen originally listed species for which biological conclusions of "No Effect" were rendered. Since the completion of the referenced CE, the bald eagle has been added to this list. A habitat determination and survey for the bald eagle was conducted by a consultant firm on January 28, 2003 and rendered a biological conclusion of May Affect-Not Likely to Adversely Affect. Concurrence from the United States Fish and Wildlife Service, dated December 2, 2003, has been requested. A copy of letter is attached. See attached Protected Species Update Report, dated February 2003 for bald eagle survey information and biological conclusion. The Natural Heritage Program database (last updated on October 16, 2003) revealed no occurrences of federally listed species within 1.0 mile (1.6 km) of the project study area. Therefore, the biological conclusions for each of these species remain valid.

An in-stream construction moratorium will be in effect from February 15 to September 30. This moratorium is required due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only, not to the marsh areas.

REGULATORY APPROVALS

It is anticipated that the construction of the temporary work bridge and associated fingers will be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). Therefore, the NCDOT is requesting the issuance of a Nationwide Permit 33 authorizing construction of the temporary work bridge and associated fingers. All other aspects of this project are being processed by the Federal Highway Administration as a programmatic "Categorical Exclusion" in accordance with 23 CFR § 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

We anticipate a 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

In a separate application, NCDOT is requesting a Coastal Area Management Act Major Development Permit for this project from the NC Division of Coastal Management. Copies of this application as well as the CAMA application will be posted on our website at the following address: (http://www.ncdot.org/planning/pe/naturalunit/Permit.html).

Thank you for your assistance with this project. If you have any questions or need additional information please call Ms. Deanna Riffey at (919) 715-1409.

Sincerely,

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

GJT/hwm

w/attachment
Mr. John Dorney, Division of Water Quality
Mr. Gary Jordan, USFWS
Ms. Cathy Brittingham, NCDCM
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Mr. Mike Street, NCDMF
Mr. Travis Wilson, NCWRC
Mr. Greg Perfetti, P.E., Structure Design

w/o attachment
Mr. David Franklin, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Ms. Debbie Barbour, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Neil Lassiter, P.E., Division 2 Engineer
Mr. Jay Johnson, DIV 2 DEO
Ms. Stacy Baldwin, P.E., PDEA Project Planning Engineer

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 2, 2003

Gary Jordan
US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636-3726

Dear Mr. Jordan:

This letter is in reference to NCDOT's proposed replacement of Bridge #49 on SR #1101 and SR 1442 over White Oak River in Carteret and Onslow County (TIP project B-2938). This purpose of this letter is to summarize federally protected species surveys to date and to request concurrence from the U.S. Fish and Wildlife Service (Service) pursuant to Section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*) (ESA).

The CE (Categorical Exclusion) for this project was completed in October 2001. Biological Conclusions of No Effect were found for all species listed at the time of the CE. Since the completion on the CE, the bald eagle has been added to those species protected in Onslow County. The current USFWS listing of protected species (January 29, 2003) and current Biological Conclusions are listed in the following table.

Common Name	Scientific Name	Federal Status	Biological Conclusion
Shortnose sturgeon	*Acipnser brevirostrum*	Endangered	No Effect
American alligator	*Alligator mississippiensis*	T(S/A)	Not Required
Bald eagle	*Haliaeetus leucocephalus*	Threatened (proposed for delisting)	May Affect-Not Likely to Adversely Affect
Seabeach amaranth	*Amaranthus pumilus*	Threatened	No Effect
Loggerhead sea turtle	*Caretta caretta*	Threatened	No Effect
Golden Sedge	*Carex lutea*	Proposed Endangered	No Effect
Piping plover	*Charadrius melodus*	Threatened	No Effect
Green sea turtle	*Chelonia mydas*	Threatened	No Effect

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

Common Name	Scientific Name	Federal Status	Biological Conclusion
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	No Effect
Hawksbill turtle	*Eretmochelys imbricata*	Endangered	No Effect
Eastern cougar	*Puma concolor couguar*	Endangered	No Effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered	No Effect
Red-cockaded woodpecker	*Picoides borealis*	Endangered	No Effect
Cooley's meadowrue	*Thalictrum cooleyi*	Endangered	No Effect

The American alligator is protected due to similarity of appearance and does not require a Biological Conclusion.

According to written communication on August 16, 2001 with Mr. Fritz Rhode of the U.S. Marine Fisheries, there are no records of shortnose sturgeon occurring in the White Oak River and it is unlikely that the shortnose sturgeon would be present. Therefore, a Biological Conclusion of "No Effect" has been found for this species.

Potential habitat for the bald eagle is found within the project area. However, Buck Engineering, biologists did not observe any bald eagles or their nests in the potential habitat area. Therefore, a biological conclusion of "May Effect, Not Likely to Adversely Affect" has been found. Survey methodology and qualifications of the investigators are listed below.

Biological conclusions of "No Effect" have been found for the remaining species due to lack of habitat.

SURVEY METHODOLOGY

A survey was conducted within the area of bridge replacement for bald eagles and habitat. The survey area included evaluation of potential habitat within approximately 1-mile radius of bridge. The field survey was conducted on January 28, 2003 by Biologists Greg Price and Jessica Rohrbach of Buck Engineering. Approximately one hour was spent walking the potential habitat areas and scanning the area with binoculars for nests and individuals. While the bald eagle is listed on for Onslow County and not Carteret County, potential habitat on the Carteret County side of the bridge was scanned as well. The closest potential habitat observed on the Onslow Count side exists approximately 1,800 feet west of the existing bridge. Bridge construction will occur outside the potential primary zone. Potential primary zone, as defined by U.S. Fish and Wildlife Service, is the critical area that encompasses an area extending from 750 to 1500 feet outward from the nest tree. No bald eagles or nests were observed in the potential habitat area of Onslow County. Two potential habitat areas along the Carteret County side of the bridge were also scanned. One area begins approximately 400 feet north of the bridge and the other begins approximately 1200 feet southeast of the bridge. These areas are within the potential primary zone range from the bridge construction, however the bald eagle is not currently listed for Carteret County. No bald eagles or

nests were observed in the potential habitat areas of Carteret County. These areas are also adjacent to the Stella community, which may be too disturbed for bald eagle nesting and roosting.

QUALIFICATIONS OF PRINCIPAL INVESTIGATORS

Investigator:	Gregory W. Price, PWS
Education:	MS, Biology, Appalachian State University, 1989 BA, Biology, Appalachian State University, 1985
Experience:	Senior Biologist, Buck Engineering, 2000 to present. Senior Engineering Technician, City of Durham Storm Water Services, 1997-2000. Biology Instructor, Wake Technical Community College, 1993-1997. Environmental Biologist, NC Division of Water Quality, 1991-1997. Environmental Technician III, NC Division of Environmental Management, 1990-1991. Biology Laboratory Instructor/Research Assistant, Appalachian State University, 1985-1989. Summer Naturalist, Duke Power State Park, 1985.
Expertise:	NEPA investigations; Section 7 field investigations; wetland and stream delineation and mitigation; water quality/biological monitoring of streams and lakes, environmental education.

Investigator:	Jessica M. Rohrbach, Biologist
Education:	BS, Horticulture, North Carolina State University, 1999
Experience:	Biologist, Buck Engineering, 2001 to present. Grounds Worker, NC Zoological Park, 2000-2001. Research Technician, NCSU, 1999-2000. Summer Intern, Southern Garden, Inc., 1998.
Expertise:	NEPA investigations; Section 7 field investigations; stream survey for Rosgen classification; native and tropical plant horticulture.

Based on our surveys, it appears that the project area does not contain any federally listed species known to occur in Carteret and Onslow Counties. The NCDOT concludes that the proposed project will have "No Effect" on shortnose sturgeon, seabeach amaranth, loggerhead sea turtle, golden sedge, piping plover, green sea turtle, leatherback sea turtle, hawksbill turtle, eastern cougar, Kemp's Ridley sea turtle, rough-leaved loosestrife, red-cockaded woodpecker, roseate tern, manatee, and Cooley's meadowrue and "May Effect, Not Likely to Adversely Affect" on the bald eagle. We believe that the requirements of Section 7(a)(2) of the ESA have been satisfied and hereby request your concurrence.

Sincerely,

E. L. Luck

for Phillip S. Harris, III, PE.
Manager, Office of Natural Environment

cc: Stacey Harris, P.E., Project Engineer, PDEA
File: B-2938

Office Use Only: Form Version May 2002

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

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

I. Processing

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

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

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

4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here: ☐

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

II. Applicant Information

1. Owner/Applicant Information
   Name: NCDOT Project Development & Environmental Analysis Branch
   Mailing Address: North Carolina Department of Transportation
   Project Dev & Environmental Analysis Branch
   Attention: Gregory J. Thorpe, Ph.D.
   1548 Mail Service Center
   Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9747
   E-mail Address: _____

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

III. Project Information

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

1. Name of project: Bridge 49 over White Oak River on SR 1101 in Carteret County and SR 1442 in Onslow County.

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-2938

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

4. Location
   County: Carteret and Onslow Nearest Town: Stella
   Subdivision name (include phase/lot number):
   Directions to site (include road numbers, landmarks, etc.):
   From Maysville, follow Hwy 58 South. Make a right onto Kuhns Road and travel to a T-intersection with Stella Road. Make a right onto Stella Road, to crossing of the White Oak River.

5. Site coordinates, if available (UTM or Lat/Long): 34° 46.474' N, 77° 09.195' W
   (Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)

6. Property size (acres): approximately 9.8 acres, for whole project

7. Nearest body of water (stream/river/sound/ocean/lake): White Oak River

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

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The project area has a mixture of residental/commerical properties and a brackish marsh wetland system surrounding the White Oak River. SR 1101 and SR 1442 run through the project with Bridge No. 49 serving residential uses.

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 49 will be replaced on new location (down stream) with a much longer bridge over the river and the marshland on the Onslow County approach. Construction of the new bridge will necessitate the need for a temporary work bridge. During construction, traffic will be maintained on the existing structure. Once the new bridge is completed, the old roadway will be removed and the wetlands restored. Construction will be performed using heavy duty construction equipment and barges.

11. Explain the purpose of the proposed work: To replace a functionally obsolete and structurally deficient structure.

IV. Prior Project History

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

N/A

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.

N/A

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: Permanent and temporary fill in wetlands and surface water will result from the use of a work bridge, fingers on the work bridge, along with construction of the proposed bridge and proposed boat ramp.

2. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***
Site 1 H-piles Temp work bridge	temporary	0.0238	Yes	zero	Brackish Marsh
Site 2 H-piles Fingers on work bridge	temporary	0.0256	Yes	zero	Brackish Marsh
Site 3 Concrete piles Proposed bridge	Permanent	0.0141	Yes	zero	Brackish Marsh
Site 4 Rip rap slope protection Proposed bridge	Permanent	0.00079	Yes	zero	Brackish Marsh
Site 5 Rip rap fill Proposed boat ramp	Permanent	0.0078	Yes	zero	Brackish Marsh

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at http://www.fema.gov.

*** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: approx 6.5 acres
Total area of wetland impact proposed: 0.0721 acre (0.0227 ac perm. and 0.0494 ac temp.)

3. Individually list all intermittent and perennial stream impacts below:

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
N/A	N/A	N/A	N/A	N/A	N/A

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.

** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site: N/A

4. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.) below:

Open Water Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Name of Waterbody (if applicable)	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)
Site 1 H-piles Temp work bridge	temporary	0.0057	White Oak River	River
Site 2 H-piles Fingers on work bridge	temporary	0.00858	White Oak River	River
Site 3 Drilled shafts Proposed bridge	permanent	0.0017	White Oak River	River
Site 4 Rip rap slope protection Proposed bridge	N/A	N/A	White Oak River	River
Site 5 Rip rap fill Proposed boat ramp	permanent	0.0327	White Oak River	River

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: fill, excavation, dredging, flooding, drainage, bulkheads, etc.

5. Pond Creation

If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.

Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands

Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): N/A

Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.): N/A

Size of watershed draining to pond: N/A Expected pond surface area: N/A

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts.

1) replacing 432- foot bridge with a 2,310-foot bridge.
2) Using a work bridge in stead of a temporary causeway.
3) Reduced spans and girder depth to maintain clearance over the White Oak River.
4) Old causeway removal for onsite wetland restoration of approximately 1.7 acre.
5) An instream construction moratorium will be in effect from Feb 15 to Sept 30.
6) All existing piers will be removed down to streambed.
7) Bridge deck drains will not discharge directly into the White Oak River.

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   Proposed impacts to jurisdictional wetlands due to the replacement of Bridge No. 49 are below the threshold for compensatory mitigation. Therefore, the entire 1.7 acre of brackish marsh restoration will be available for future projects in the White Oak River Basin, 03030001 Cataloging Unit. (See attached for the B-2938 Mitigation Plan dated, May 2003).

2. Mitigation may also be made by payment into the North Carolina Wetlands Restoration Program (NCWRP). Please note it is the applicant's responsibility to contact the NCWRP at (919) 733-5208 to determine availability and to request written approval of mitigation prior to submittal of a PCN. For additional information regarding the application process for the NCWRP, check the NCWRP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCWRP is proposed, please check the appropriate box on page three and provide the following information:

   Amount of stream mitigation requested (linear feet): N/A
   Amount of buffer mitigation requested (square feet): N/A
   Amount of Riparian wetland mitigation requested (acres): N/A
   Amount of Non-riparian wetland mitigation requested (acres): N/A
   Amount of Coastal wetland mitigation requested (acres): N/A

IX. Environmental Documentation (required by DWQ)

Does the project involve an expenditure of public (federal/state) funds or the use of public (federal/state) land?

Yes ☒ No ☐

If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.

Yes ☒ No ☐

If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter.

Yes ☒ No ☐

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

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

Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)?

Yes ☐ No ☒ If you answered "yes", provide the following information:

Identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3	
2	N/A	1.5	
Total	N/A		

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

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

N/A

XI. Stormwater (required by DWQ)

Describe impervious acreage (both existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property.

N/A

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.

N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?

Yes ☐ No ☒

Is this an after-the-fact permit application?

Yes ☐ No ☒

XIV. Other Circumstances (Optional):

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

N/A

Ralph Smith III 12/27/03

Applicant/Agent's Signature **Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

T.I.P. No. B-2938

CATEGORICAL EXCLUSION
AND
PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

10·8·01
DATE

for William D. Gilmore, P.E., Manager
Project Development and Environmental
Analysis Branch, NCDOT

10-9-01
DATE

for Nicholas L. Graf, P.E.
Division Administrator, FHWA

Carteret and Onslow Counties

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CATEGORICAL EXCLUSION

AND

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

October 2001

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10-5-01

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NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG

For the North Carolina Department of Transportation

Stacy B. Harris, P.E.
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, North Carolina Department of Transportation's (NCDOT) Guidelines for Best Management Practices for Bridge Demolition and Removal, Guidelines for Best Management Practices for Protection of Water Surfaces, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed by NCDOT:

Project Development & Environmental Analysis Branch, Structure Design, Design Branch
The following measures will be carried out for the replacement of Bridge No. 49 per the approved Memorandum of Agreement:

1. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the Bridge and its surroundings as well as the General Store/Post Office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan (Appendix A). The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/ State Historic Preservation Office (HPO) to be made part of the permanent statewide survey and iconographic collection.

2. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to right of way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

3. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina State Historic Preservation Officer (SHPO). To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

4. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, Federal Highway Administration (FHWA) shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

    a. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

b. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

Division Engineer

An in-stream construction moratorium will be in effect from February 15 to September 30. This moratorium is required due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only not to the marsh areas.

The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented, as applicable.

Access for emergency services will be maintained to the existing boat dock during construction.

All existing piers will be removed down to the streambed.

Hydraulic Design

Bridge deck drains will not discharge directly into the White Oak River.

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

INTRODUCTION: The replacement of Bridge No. 49 is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1 (Appendix B). No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 31.5 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of an inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1101 and SR 1442 are classified as rural minor collectors and are, together, designated as a bike route, *Jacksonville: City to the Sea*. Land use in the project area is predominantly residential and High Quality Marsh (Brackish Marsh). The small riverside community of Stella is on the east approach and is eligible for the National Register of Historic Places as an historic district (see Figure 6). Bridge No. 49 is a contributing element to the district. There is a privately owned boat ramp on the southeast quadrant that is the only deep-water ramp in the area usable for water rescue vehicles.

Bridge No. 49 (Figure 3) was constructed in 1950 and reconstructed in 1975 with an overall length of 131.7 meters (432 feet). The clear roadway width is 5.7 meters (19 feet). The superstructure consists of twenty-three timber spans and one steel girder main span. The posted weight limit is 12.7 metric tons (14 tons) for single vehicles and 18.1 metric tons (20 tons) for truck-tractors, semi-trailers.

The approach at the west end of the bridge is on a 13.5-degree (136.5 meter radius) curve. The approach at the east end of the bridge is on a 25-degree (70 meter radius) curve. The approach roadway provides two 2.7-meter (nine foot) travel lanes with 1.8-meter (six foot) grass shoulders. The bed to crown height is nine meters (30 feet), and the normal water depth is approximately 4.2 meters (14 feet). The speed limit is not posted and the statutory speed limit is 90 kilometers per hour (km/h) (55 miles per hour (mph)). Advisory posted speed limit is 30 km/h (20 mph) on the approaches to the bridge.

The 2001 estimated average daily traffic volume is 1,600 vehicles per day (vpd). The projected traffic volume is expected to increase to 2,500 vpd by the design year 2025. The volumes include one percent truck-tractor semi-trailer (TTST) and two percent dual-tired vehicles (DT).

There is a private boat ramp in the southeast quadrant of the project site and a parking lot on the northeast side. Telephone, cable television and power lines cross the stream parallel to the roadway on the south side of the structure. Utility impacts are anticipated to be low.

Three accidents were reported near the bridge during the period from September 1, 1993 to August 31, 1996.

No school busses cross Bridge No. 49.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide two 3.6-meter (12-foot) travel lanes with 1.2-meter (four foot) shoulders for a total clear roadway width of 9.6 meters (32 feet). Bicycle safe rails will be provided (two-bar metal bridge rails at 1372 mm (54-inches) in height) (Figure 4, Appendix B). The proposed approach roadway will consist of two 3.6-meter (12-foot) travel lanes with 2.4-meter (eight foot) shoulders. The design speed will be 70 kilometers per hour (km/h) [45 miles per hour (mph)]. A design exception has been approved for the design speed of 70 km/h (45 mph) and the horizontal sight distance, and is attached in Appendix D.

The new structure will be approximately 704 meters (2347 feet) in length and will span the White Oak River and the high quality marshland. The existing navigational clearance will be maintained.

B. Reasonable and Feasible Alternatives

One (1) "reasonable and feasible" constructible alternative studied for replacing the existing bridge is described below.

Alternate D (Preferred) replaces the bridge downstream of the existing bridge and spans the White Oak River and the marshland on the Onslow County approach. The new structure is recommended to have a length of approximately 704 meters (2347 feet). During construction, traffic will be maintained on the existing structure and roadway.

C. Alternatives Eliminated From Further Study

Alternates A, B^1, B^2, C and E were eliminated due to the poor soil conditions on the bridge approach on the Onslow County side. It was determined that the soil could not be stabilized and differential settlement would occur if the roadway was raised for the end bent approach embankment.

Alternate A replaces the bridge at the existing location. During construction, traffic would be maintained by a two lane temporary detour structure, approximately 170 meters (567 feet) in length, located downstream of the existing bridge. The proposed bridge would be approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve. The approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet) and includes placement of rock fill at the ox bow and guardrail from west of the ox bow to the bridge. The project length is 853 meters (2843 feet).

Alternate B^1 replaces the bridge downstream of the existing bridge. During construction, traffic would be maintained on the existing bridge. The proposed bridge would be approximately 214 meters (713 feet) in length on a two degree (875 meter radius) curve with a five degree (350 meter radius) east approach curve. Onslow County approach work includes a minimum resurfacing grade beginning west of the ox bow and placement of rock fill at the ox bow and guardrail from west the ox bow to the bridge. The project length is 704 meters (2347 feet).

Alternate B^2 alignment is identical to Alternate B^1, but the approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet). The project length is 845 meters (2817 feet).

Alternate C replaces the bridge at the existing location. During construction, one lane of traffic would be maintained on the existing bridge. The proposed bridge would be approximately 143 meters (477 feet) in length on a seven degree (250 meter radius) curve. Traffic would be routed off-site during the construction of the temporary approaches for the one lane detour structure. Alternate C was eliminated at the early phase of the study because it provided a one-lane detour bridge to maintain traffic during the anticipated two-year project duration and would require a road closure to construct the detour approaches.

Alternate E involves replacing the bridge with a new bridge approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve and minimum approach work. During construction, traffic would be maintained with an on-site detour. Alternate E includes additional rock fill in the ox bow to avoid further erosion. The project length is 378 meters (1260 feet).

The "Do-Nothing" Alternative would eventually necessitate removal of the bridge, effectively removing this section of SR 1101/SR 1442 from traffic service. This is not desirable due to the traffic service provided by SR 1101/SR 1442 and the estimated 22-kilometer (13.8 miles) detour route.

Investigation of the existing structure by the Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternate

Alternate D, replacing the bridge downstream of the existing bridge and raising the grade on the Onslow County approach, was selected as the preferred alternate because it minimizes wetland impacts, minimizes impacts to Stella's Historic District, and restores high quality wetlands. In addition, Alternate D was the only alternate considered to be constructible. The proposed bridge will be constructed utilizing a temporary work bridge located south of the existing structure. The length of approach work will be approximately 342.4 meters (1141 feet).

The NEPA/404 Merger Team concurred with Alternate D as the preferred alternative and as the least environmentally damaging, practical alternative (Appendix C).

For avoidance and minimization of adverse impacts, the following measures will be accomplished:

1. Anticipated impacts to wetlands minimized to approximately 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 132-meter (440-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

IV. ESTIMATED COST

The estimated costs, based on current 2001 prices, are as follows:

	Alternate D (Preferred)
Structure Removal (existing)	$ 65,500
New Structure (with Temp. Work Bridge)	6,082,600
Roadway Approaches	339,800
Miscellaneous and Mobilization	699,100
Engineering and Contingencies	1,113,000
ROW/Const. Easements/Utilities:	69,000
TOTAL	**$8,369,000**

The estimated cost of the project, as shown in the 2002-2008 Transportation Improvement Program, is $7,174,000 including $74,000 for right-of-way and $7,100,000 for construction.

V. NATURAL RESOURCES

A. Methodology

Informational sources used to prepare this report include: USGS Stella, NC 7.5 minute series topographic map (1988); Soil Conservation Service (SCS) Soil Survey of Onslow County, NC (July, 1992) and Soil Survey of Carteret County, NC (September, 1987); United States Fish and Wildlife Service (USFWS) National Wetlands Inventory map (Stella, NC, 1995); USFWS Endangered, Threatened, and Candidate Species and Federal Species of Concern in North Carolina (March 22, 2001); North Carolina Natural Heritage Program (NCNHP) computer database of rare species and unique habitats (January 2001); and NCDOT aerial photography of the study area.

A general field survey was conducted along the proposed project corridor on March 19, 1998 and October 7, 1998. Plant communities and their associated wildlife were identified

using a variety of observation techniques including active searching, and identifying characteristic signs of wildlife such as sounds, tracks, scats, and burrows.

Impact calculations were based on the construction limits for each individual alternate, the width of the replacement structure, the width of the river, and the length of the project approaches.

B. Physiography And Soils

The proposed project lies within the Coastal Plain Physiographic Province, which includes all parts of North Carolina east of the Fall Line. This province typically consists of unconsolidated sands, silts, clays, and peats. The topography of the project vicinity can be characterized as nearly level to gently rolling, with elevations ranging from approximately <1.5 meters to 7.5 meters (< five feet to 25.0 feet) above mean sea level (msl). The elevation in the project area ranges from approximately <1.5 meters to 4.5 meters (< five feet to 15.0 feet) above msl. Current land use in the project vicinity includes agricultural and rural residential, with much of the undeveloped areas being jurisdictional wetlands.

According to the soil surveys for Carteret and Onslow Counties, three different soil associations are located within the project area. The Muckalee-Dorovan association is located north and south of the approach west of the White Oak River and consists of nearly level, poorly and very poorly drained soils. The Lafitte-Hobucken-Carteret and Baymeade-Onslow-Lynchburg soil associations are located in the project area on the east side of the river. The Lafitte-Hobucken-Carteret association consists of very poorly drained, mucky and sandy soils found in marshes flooded frequently with salt water. The Baymeade-Onslow-Lynchburg association is located in areas that parallel drainageways, and includes well drained to somewhat poorly drained sandy and loamy soils. Field conditions generally conform to soil survey mapping.

Seabrook fine sand occurs directly adjacent to the bridge east of the river, and also south of SR 1101 east of the river in the project area (USDA-SCS, 1987). This soil is moderately well drained, with rapid permeability. The seasonal high water table is 0.6 to 1.2 meters (two to four feet) below the surface and flooding occurs rarely in low-lying areas. A small irregularly shaped wet area occurs directly adjacent to the bridge on the east side of the river. This area is more sandy than mucky and is probably Leon sand, which occasionally occurs as an inclusion in the Seabrook fine sand. Leon sand is poorly drained and is listed as hydric (USDA-SCS, 1991).

Norfolk loamy fine sand, two to six percent slopes, is located on the north side of SR 1101 west of the river. The seasonal high water table is 1.2 to 1.8 meters (four to six feet) below the surface. This soil is well drained, permeability is moderate, and erosion is a moderate hazard in areas not protected by vegetation. This soil is not listed as hydric.

Lafitte muck is found on both sides of the roadway approach west of the White Oak River (USDA-SCS, 1992). This soil is typically found <1.5 meters (< five feet) above msl and is flooded daily with brackish water. Infiltration and permeability are moderate and the water table is at or near the surface most of the time. Lafitte muck is listed as hydric (USDA-SCS, 1991).

C. Water Resources

1. Surface Waters

The proposed project falls within the White Oak River Basin, with a subbasin designation of WOK1 (03-05-01) and a federal hydrologic unit designation of White Oak-03020106.

2. Water Resource Characteristics

The White Oak River is a low flowing, coastal river which discharges into Bogue Sound approximately 8.1 kilometers (five miles) southeast of the project study area. Within the project study area of Bridge No. 49, the White Oak River flows south to southeast and is approximately 119 meters (390 feet) wide with a drainage area of 373 square kilometers (233 square miles). The White Oak River and SR 1101 cross at this location perpendicular to each other but there is a sharp curve on the western end of the bridge. On the day of the field investigation the river had a deep, tannin tea color and a low flow. The depth of the river along the riverbanks ranged from approximately 0.6 to 1.2 meters (two to four feet). The riverbank substrate consisted of fine silts and sands. The White Oak River is tidal but also has some wind driven tidal influence as well and is considered brackish. The river's salinity on the day of the site visit was three parts per thousand. The White Oak River has a Class SA rating from the North Carolina Department of Environment and Natural Resources (NCDENR). The Class SA indicates the White Oak River is designated as tidal salt waters protected for shellfishing for market purposes, primary recreation, aquatic life propagation and survival, fishing, wildlife and secondary recreation. The Classification Date and Index for this portion of the river are 6/1/56, 20-(18). Approximately 1.6 kilometers (one mile) upstream from the bridge crossing, the White Oak River is classified as C HQW. The C indicates that the river is suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. HQW indicates High Quality Waters, which are rated as excellent based on biological and physical/chemical characteristics through monitoring or special studies.

Point-source discharges located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. A search within the project vicinity [0.8 kilometers (0.5 miles)] was conducted for NPDES permitted discharges and none were revealed.

Non-point source refers to runoff that enters surface waters through storm water flow or no defined point of discharge. In the project study area, storm water runoff from SR 1101 may cause water quality degradation as well as surface runoff from the boat ramp area in the southeast quadrant of the project study area.

The North Carolina Division of Water Quality (NCDWQ) includes the North Carolina Index of Biotic Integrity (NCIBI), as another method to determine general water quality in the basinwide sampling. The NCIBI is a modification of the Index of Biotic Integrity (IBI) initially proposed by Karr (1981) and Karr, et. al. (1986). The IBI method was developed for assessing a stream's biological integrity by examining the structure and health of its fish community. The Index incorporates information about species richness and composition, trophic composition, fish abundance, and fish condition. The NCIBI summarizes the effects of all classes of factors influencing aquatic faunal communities (water quality, energy source, habitat quality, flow regime, and biotic interactions).

According to NCDWQ, the Division has a sampling station located on SR 1101 at Bridge No. 49 on the White Oak River. This station was last sampled in April of 1995, and includes a fish community (IBI) sample. The NCDWQ sampling identification number is 95-22. The NCIBI rating of the White Oak River at this location was determined to be Good.

3. Anticipated Impacts

a) General Impacts

Other than the one water resource mentioned in the previous section, neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watershed, or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within 1.6 km (one mile) of project study area. Impacts to water resources will result due to the placement of support structures (bents) in the river. In the short term, construction of the bridge and approach work will increase sediment loads. The NCDOT, in cooperation with the NCDENR, has developed a sedimentation control program for highway projects that adopts formal Best Management Practices for the Protection of Surface Waters. The following are methods to reduce sedimentation and water quality impacts:

- strict adherence to BMPs for the protection of surface waters in sensitive water sheds during the life of the project
- reduction and elimination of direct and non-point discharge into the water bodies and minimization of activities conducted in streams
- placement of temporary ground cover or re-seeding of disturbed sites to reduce runoff and decrease sediment loadings
- reduction of clearing and grubbing along the river.

b) Impacts Related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", and "Best Management Practices for Bridge Demolition and Removal" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for Best Management Practices for the Protection of Surface Waters.

Dropping any portion of the structure into waters of the United States will be avoided unless there is no other practical method of removal. The superstructure of Bridge No. 49 consists of timber flooring on steel I-Beams, with an asphalt-wearing surface. The substructure consists of timber caps on timber piles. The end bents are timber abutment design. Since Bridge No. 49 is composed of timber and steel, the bridge can be removed without dropping any components into waters of the United States. If removal of the substructure will create disturbance in the streambed, a turbidity curtain can be used to address sediment concerns.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project would fall under Case 2, which states that no work shall be performed in the water during moratorium periods (February 15 to September 30) associated with fish migration, spawning, and larval recruitment into nursery areas. This conclusion is based upon the classification of the waters within the project area and vicinity, the Stream Crossing Guidelines for Anadromous Fish Passage, and comments received from the North Carolina Wildlife Resources Commission (NCWRC).

D. Biotic Resources

1. Plant Communities

Living systems described in the following sections include communities of associated plants and animals in the project area. These descriptions refer to the dominant flora and fauna in each community and the relationship of these biotic components. Classification of natural plant communities is based on the system used by the NCNHP (Schafale and Weakley 1990). Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species include the common name only. Vascular plant names follow nomenclature found in Radford et al. (1968) unless more current information is available. Terrestrial and aquatic wildlife were determined through field observations, evaluation of habitat, and review of field guides and other documentation.

a) Man-Dominated Community

The Man-Dominated Community found at this site includes the road shoulders, parking lots, and residential and commercial properties within the project area. Dominant vegetation includes dandelion (*Taraxacum officinale*), plantain (*Plantago sp.*), white clover (*Trifolium repens*), and planted grass. Parking lots and some parts of the road shoulders consist of exposed soil. Most areas of the Man-Dominated community appear to be regularly maintained.

b) Brackish Marsh

This wetland community is located west of the river, north and south of the roadway approach, and in a small patch that extends under the bridge east of the river. Dominant vegetation includes black needlerush (*Juncus roemerianus*), cord grass (*Spartina patens*), Olney threesquare (*Scirpus olneyi*), and common reed (*Phragmites australis*). Wax myrtle (*Myrica cerifera*), yaupon holley (*Ilex vomitoria*), and eastern redcedar (*Juniperus virginiana*) are widely scattered throughout. The depth of surface water in this community on the day of the initial site investigation ranged from approximately zero to 30 centimeters (zero to 12 inches) and salinity was three parts per thousand.

2. Wildlife

Plant diversity is low in the Man-Dominated community and there are no areas of vines or brush that might provide shelter for wildlife. Limited habitat may be available for such species as American robin (*Turdus migratorium*), starling (*Sturnus vulgaris*), and house mouse (*Mus musculus*).

The Brackish Marsh community provides important habitat for a variety of wildlife and serves as nursery grounds for many aquatic species. Wildlife seen or heard in this community on the day of the visit included double-crested cormorant (*Phalacrocorax auritus*), ring-billed gull (*Larus delawarensis*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), and common crow (*Corvus brachyrhynchos*).

Other species of ducks and gulls may find food sources in the marsh. King rail (Rallus elegans) and short-billed marsh wren (Cistothorus platensis) could find suitable winter habitat in this community and other birds such as least bittern (*Ixobrychus exilis*) may find good nesting habitat here. Mammals such as muskrat (*Ondatra zibethicus*) and marsh rice rat (*Oryzomys palustris*) may be found nesting in this community as well. Diamondback terrapin (*Malaclemys terrapin*) may be seen here feeding on crabs, small mollusks, and dead fish, and marsh fiddler crab (*Uca pugnax*) could reside here, feeding on organic matter and burying into the substrate. Many other species of wildlife not listed here may be found in this very productive community.

3. Aquatic Communities

The aquatic community in the project study area exists within the White Oak River. A cursory search of the shoreline was conducted for evidence of mussel and clam species. Hard clam shells (*Mercenaria mercenaria*) and eastern oyster shells (*Crassostrea virginica*) were found along the riverbanks but no other signs of mollusks or bi-valves were revealed. Signs were posted along both sides of the White Oak River by the North Carolina Division of Marine Fisheries (NCDMF) closing the shellfish beds and warning of serious illness if shellfish from this area were consumed. Dip-netting along the riverbank yielded only juvenile brown shrimp (*Penaeus aztecus*).

According to the North Carolina Wildlife Resources Commission (NCWRC), the following freshwater fish species are found within the White Oak River; redbreast sunfish (*Lepomis auritus*), chain pickerel (*Esox niger*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), and largemouth bass (*Micropterus salmoides*). NCWRC stated the following saltwater species were also found in the White Oak River at this location: herring (*Alosa spp.*), hickory shad (*Alosa mediocris*), and striped bass (*Morone saxatilis*). NCWRC recommended no instream work from April 1 to June 15, as these are critical spawning periods for most sunfish and bass (*Centrarchidae* family) and additionally NCWRC recommended no instream activity from February 15 to May 30 due to anadromous fish migrations. NCWRC also made other bridge replacement recommendations such as placing the new structure as close as possible to the existing structure, deck drains should not discharge directly into the river, live concrete should not be allowed to contact the water and a clear bank (riprap free) area of at least three meters (ten feet) should remain on each side of the river underneath the bridge.

NCWRC stated in response to a scoping letter that the bridge should be replaced, in place, with a spanning structure and with off-site detour. No in-water work should occur from February 15 to September 30, and that the marsh adjacent to the bridge should be avoided.

The North Carolina Division of Marine Fisheries (NCDMF) stated that they have a longstanding sampling station at Stella, below Bridge No. 49. From 1978 through 1996

for the months of May and June these are the most frequently sampled species found at this location in descending order of abundance; brown shrimp (*Penaeus aztecus*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), American eel (*Anguilla rostrata*), bay anchovie (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), grass shrimp (*Palaemonetes spp.*), hog choker (*Triunectes maculatus*), blue crab (*Callinectes sapidus*), weakfish (*Cynoscion regalis*), pinfish (*Lagondon rhomboides*), and southern flounder (*Paralichthys lethostigma*). NCDMF stated that this is a primary marine nursery area that has a variable salinity rate depending on rainfall and wind tides. NCDMF stated the waters are navigable, primarily for recreation purposes, but some commercial gill netting also occurs here. NCDMF recommended a dredge moratorium from April 1 to September 30 and advised that the NCDOT needs to practice strict best management practices (BMPs) when work does begin to replace the bridge due to it being a primary nursery area.

4. Anticipated Impacts to Biotic Communities

Biotic community impacts expected to result from project construction are addressed separately as terrestrial impacts and aquatic impacts. However, impacts to terrestrial communities, particularly in wetland areas and in locations exhibiting slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. It is important to note that construction impacts may not be restricted to the communities in which the construction activity occurs. Efforts will be made to ensure that no sediment leaves the construction site.

a) Plant Communities

Plant communities provide nesting, foraging, and shelter habitat for fauna. The loss of these habitats will result in the displacement and mortality of faunal species in residence. Individual mortalities may occur to terrestrial animals from construction machinery used during clearing activities.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present in the study area. Project construction will result in clearing and degradation of portions of these communities. Alternate D will result in the least amount of permanent impacts and will restore a portion of the existing road back to Brackish Marsh. Table 1 details the anticipated impacts to terrestrial and aquatic communities by habitat type.

TABLE 1
ANTICIPATED IMPACTS TO
TERRESTRAIL AND AQUATIC COMMUNTIES

ALTERNATE	*PROJECT LENGTH METERS (FEET)*	*BRIDGE LENGTH METERS (FEET)*	*SURFACE WATER IMPACTS LINEAR METERS (FEET)*	*BRACKISH MARSH IMPACTS HA (ACRE)*	*WETLAND RESTORATION HA (ACRES)*	*AQUATIC COMMUNITY HA (ACRES)*
D (Preferred)	1077.525 (3,534)	704 (2,310)	9.6 (32)	0.008 (0.021)	0.68 (1.70)	0.16 (0.40)

NOTES:
- Calculations for impacts are based on the construction limits.
- Aquatic community impacts are based upon the entire width and length of the bridge over water.

b) Aquatic Communities

The aquatic community in the study area exists within the White Oak River. The new replacement structure construction and approach work will likely increase sediment loads in the river in the short term. Construction related sedimentation is harmful to local populations of invertebrates that are an important part of the aquatic food chain. Construction activities also increase the possibility of potentially toxic substances, such as engine fluids and particulate rubber, entering the waterway and harming aquatic organisms.

The BMPs for the protection of surface waters will be strictly enforced to minimize potential adverse impacts due to this project. Since White Oak River is potentially anadromous fish spawning habitat, the NCDOT's Stream Crossing Guidelines for Anadromous Fish Passage will be adhered to for this project. The purpose of these guidelines is to provide guidance to the NCDOT to ensure that replacement of existing and new highway stream crossing structures will not impede the movement of anadromous fish.

E. Special Topics

1. Waters of the United States

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). "Waters of the United States" are regulated by the United States Army Corps of Engineers (USACE).

Investigation into wetland occurrence in the project study area was conducted during the initial site visit using methods of the 1987 Corps of Engineers Wetlands Delineation Manual. Wetland areas consisting of Brackish Marsh were found within the western quadrants of the project study area and in a small patch east of the river.

On October 7, 1998, the wetlands were delineated and surveyed. On December 1, 1998, the USACE and the Division of Coastal Management met on-site and gave their agreement of the delineation.

Project construction cannot be accomplished without infringing on jurisdictional surface waters. Anticipated surface water impacts fall under the jurisdiction of the USACE.

2. Permits

In accordance with provisions of Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), a permit would be required from the USACE for the discharge of dredged or fill material into "Waters of the United States". Since no significant impacts are expected from this project, a Categorical Exclusion level study will be initiated. Categorical Exclusions are subject to the provisions of Nationwide Permit 23. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency. It states that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. The Categorical Exclusion report is submitted to the USACE to

document that the terms and conditions of the Nationwide Permit 23 are met. However, final permit decisions are left to the discretionary authority of the USACE.

If filling from a proposed project will impact wetlands or waters, a Section 401 Water Quality Certification may be required from the North Carolina Division of Water Quality. North Carolina has developed General Certifications (GC) that will satisfy Section 401 of the CWA and correspond to the USACE's Nationwide Permits. An application must be made if there are any impacts to "Waters of the United States".

If no practical alternative exists to remove the current bridge other than to drop it into the water, prior to removal of debris off-site, fill related to demolition procedures will need to be considered during the permitting process. A worst-case scenario should be assumed with the understanding that if there is any other practical method available, the bridge will not be dropped into the water. Permitting should be coordinated such that any permit needed for bridge construction should also address issues related to bridge demolition. Since this bridge is of timber and steel construction, removal should be possible without dropping portions of the bridge into the water.

The White Oak River is subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes by the U.S. Coast Guard. This waterway meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70, stating that advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given advance approval of the construction of the bridge over the White Oak River. Therefore, a Coast Guard permit will not be required for this project.

3. Division of Coastal Management Consultation

The Division of Coastal Management must be consulted regarding application of the Coastal Area Management Act (CAMA) to this project. Section .2300 of the CAMA discusses general permits for the replacement of existing bridges. The water at this site is brackish and the marsh is considered estuarine and will not meet the CAMA general permit condition of the bridge replacement spanning no more than 75 meters (250 feet) of estuarine water. A CAMA major permit will be required.

General permit conditions include but are not limited to; single bridge and culvert projects that do not require temporary fill causeways or temporary bridges associated with replacements; bridge replacements spanning no more than 75 meters (250 feet) of estuarine water, public trust area, and coastal wetland Areas of Environmental Concern; bridge projects which do not increase the vertical clearance to more than 1.5 meters (five feet) above normal water level or normal high water, or by vertical clearance to more than 25 percent over the existing clearance, whichever is greater; projects in which the total area of public trust area, estuarine waters, and wetlands to be excavated or filled do not exceed 232 square meters (2500 square feet) except that the wetland component shall not exceed 46.5 square meters (500 square feet); and projects which DENR determines that the proposed activity would not adversely affect areas which possess historic, cultural, scenic, conservation, fisheries, water quality, or recreational values.

4. Mitigation

The USACE usually requires compensatory mitigation for activities authorized under Section 404 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.04 hectares (0.1 acre) of wetlands or 45.0 linear meters (150 linear feet) of perennial and intermittent streams.

The DWQ may require compensatory mitigation for activities authorized under Section 401 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.40 hectares (one acre) of wetlands and/or 45.0 linear meters (150 linear feet) of perennial streams. A final determination regarding mitigation requirements rests with DCM, with input from the COE and DWQ.

F. Protected Species

Some populations of plants and animals are in the process of decline due either to natural forces or their inability to coexist with humans. Rare and protected species listed for Carteret and Onslow Counties, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

1. Federally Protected Species

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The USFWS lists fourteen federally protected species for Carteret County (Table 2) and for Onslow County (Table 2A). Information pertinent to each species and the possibility of impact due to the proposed project is listed on the following table.

TABLE 2
FEDERALLY PROTECTED SPECIES
FOR CARTERET COUNTY
(MARCH 22, 2001)

Common Name	*Scientific Name*	Status
Shortnose sturgeon	*Acipnser brevirostrum*	E
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Hawksbill turtle	*Eretmochelys imbricata*	E
Eastern cougar	*Felis concolor couguar*	E** #

TABLE 2 FEDERALLY PROTECTED SPECIES FOR CARTERET COUNTY (MARCH 22, 2001)		
Common Name	*Scientific Name*	Status
Kemp's (Atlantic) ridley sea turtle	*Lepidochelys kempii*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Roseate tern	*Sterna dougallii*	E
Manatee	*Trichechus manatus*	E

NOTES:

	Denotes Federally Protected Species for both Carteret and Onslow Counties
*	Denotes obscure record, date this species was last observed in the county is unknown
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 endangered within the foreseeable future throughout all or a significant portion of its range)
T(S/A)	Denotes Threatened due to similarity of appearance (species which are threatened due to similarity of appearance with other rare species and are listed to protect these species)
**	Historic record at NCNHP. Last observed in the county more than 20 years ago.
#	Historic record at USFWS. Last observed in the county more than 50 years ago.

TABLE 2A FEDERALLY PROTECTED SPECIES FOR ONSLOW COUNTY (MARCH 22,2001)		
Common Name	*Scientific Name*	Status
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Golden Sedge	*Carex Lutea*	PE
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Eastern cougar	*Felis concolor couguar*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Cooley's meadowrue	*Thalictrum cooleyi*	E

NOTES:

	Denotes Federally Protected Species for both Carteret and Onslow Counties
*	Denotes obscure record, date this species was last observed in the county is unknown
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 endangered within the foreseeable future throughout all or a significant portion of its range)
T(S/A)	Denotes Threatened due to similarity of appearance (species that are threatened due to similarity of appearance with other rare species and are listed to protect these species)
PE	Proposed Endangered

Species: *Acipnser brevirostrum* (shortnose sturgeon)
Family: Acipenseridae
Date Listed: 3/11/67

The shortnose sturgeon is a small (usually less than three ft [0.9 meters] in length) species of fish that occurs in the lower sections of large rivers and in coastal marine habitats from the St. John River, Canada to the Indian River, Florida. It can be differentiated from the Atlantic sturgeon because of its shorter snout, wider mouth, and the pattern of its preanal shields (the shortnose having one row and the Atlantic having two).

The shortnose sturgeon prefers deep channels with a salinity less than sea water. It feeds on benthic invertebrates and plant material and is most active at night. It is an anadromous species that spawns upstream in the spring and spends most of its life within close proximity of the rivers mouth. The sturgeon inhabits the lower sections of larger rivers and coastal waters along the Atlantic coast. It may spend most of the year in brackish or salt water and move into fresh water only to spawn. At least two entirely freshwater populations have been recorded, in South Carolina and Massachusetts.

BIOLOGICAL CONCLUSION: NO EFFECT

The White Oak River may provide suitable habitat for the shortnose sturgeon. Through written communication on August 16, 2001 with Fritz Rohde of the N.C. Division of Marine Fisheries, it was determined that there are no records of this species occurring in the White Oak River and it is unlikely that the shortnose sturgeon would be present. However, best management practices will insure this project will not affect this species. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of the shortnose sturgeon within one mile (1.6 kilometers) of the project area.

Species: *Alligator mississippiensis* (American alligator)
Family : *Crocodylidae*
Date Listed: 6/4/87

The **American alligator** is a large (1.8 to 3.7 meters / six to 12 feet long) rough-backed reptile with a broad, rounded snout. Its fourth tooth on the lower jaw fits into a notch in the upper jaw. This distinguishes the American alligator from the American crocodile which has its fourth tooth exposed when the jaw is closed.

American alligators are sexually mature at about six or seven years of age. Nesting occurs in late spring or early summer when females produce approximately 35 to 40 eggs. American alligators inhabit fresh to slightly brackish river systems, canals, lakes, ponds, swamps, bayous, and coastal marshes. The American alligator is not biologically endangered or threatened and is not subject to Section 7 consultation.

BIOLOGICAL CONCLUSION: NO EFFECT

This species is listed as threatened due to similarity of appearance to the American crocodile (*Crocodylus acutus*). Habitat is present for the alligator in the project area, but not for the crocodile. The range of the American crocodile currently includes southern portions of the Everglades National Park as well as areas south of there. The American alligator will not be affected by this project.

Species: *Amaranthus pumilus* (seabeach amaranth)
Family : *Amaranthaceae*
Date Listed: 4/7/93

Seabeach amaranth is an annual plant that grows on Atlantic Ocean beaches. The stems are fleshy and pink-red or reddish, with small rounded leaves. The leaves are clustered toward the tip of the stem and have a small notch at the rounded tip. Flowering occurs in July and continues until the death of the plant in late fall.

Seabeach amaranth is found on the upper beach and lower foredune of coastal barrier islands. The species is an effective sand binder, building dunes where it grows.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable beach habitat does not exist in the project area for this species. The NCNHP database shows no recorded occurrences of the seabeach amaranth in the vicinity of the project. The seabeach amaranth will not be affected by this project.

Species: *Caretta caretta* (Loggerhead sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **Loggerhead sea turtle** is characterized by a large head with blunt jaws. The carapace and flippers are a reddish-brown color and the plastron is yellow. Adults grow to an average weight of about 91 kilograms (200 pounds), although some specimens may occasionally reach 1000 pounds. The species feeds on mollusks, crustaceans, fish and other marine animals. The loggerhead is typically found at sea but may enter bays and lagoons. It nests on beaches in late spring and early summer.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat does not exist for this species however it could occasionally be found feeding in the vicinity of the project. If the loggerhead is observed in the project area during construction, activities will cease until the turtle leaves. The Loggerhead sea turtle will not be affected by this project.

Species: *Carex Lutea (Golden Sedge)* **Proposed Endangered**
Family: *Cyperaceae*
Date Listed: 8/16/99

The golden sedge has yellowish green, grass-like leaves and produces stems that may reach three feet (0.9 meter) or more with many flowers. This perennial plant is native to the coastal plain of North Carolina, where it is associated with wet partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps on sites underlain with calcareous (chalky) deposits. Historically, its open habitat was maintained by periodic wildfires.

The golden sedge currently is known only from eight populations in Pender and Onslow counties. Most of the populations are small, and seven are on privately owned lands vulnerable to draining, development, mining, fire suppression, and a variety of other changes in habitat management.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for golden sedge in the form of partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps does not exist within the project area. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of golden sedge within one mile (1.6 kilometers) of the project area. Therefore, this project will not affect this species.

Species: *Charadrius melodus* (piping plover)
Family: *Charadriidae*
Date Listed: 12/11/85

The **piping plover** is a small, stocky shorebird resembling a sandpiper. The plover is pale brownish above and white below. A black band across the forehead over the eye, and a black ring around the base of the neck are distinguishing marks in adults during the summer, but are obscure during the winter.

The piping plover nests on sand beaches, preferring sparsely vegetated areas that are slightly raised in elevation. The species is primarily coastal during the winter, choosing areas with expansive sand or mudflats for feeding that lie in close proximity to a sandy beach for roosting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist in the project area for this species since no tidal flats or sandy beaches are in the area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The piping plover will not be affected by this project.

Species: *Chelonia mydas* (Green sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **green sea turtle** grows to a maximum size of about four feet and a weight of 200 kilograms (440 pounds). It has a heart-shaped shell, small head, and single-clawed flippers. The adult carapace is smooth, keelless, and light to dark brown with dark mottling. The plastron is whitish to light yellow and the head is light brown with yellow markings. Adult green turtles feed mainly on marine algae and grasses in shallow water areas.

Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. Open beaches with a sloping platform and minimal disturbance are required for nesting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist for this species since no beaches are within the project area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Green sea turtle will not be affected by this project.

Species: *Dermochelys coriacea* (leatherback sea turtle)
Family: *Dermochelyidae*

Date Listed: 6/2/70

The **leatherback sea turtle** is the largest of all sea turtles and is easily distinguished by its leathery skin. Adults generally weigh from 290 and 590 kilograms (640 to 1300 pounds). The neck and limbs are thick and feebly retractable. The triangular shaped carapace is covered with a layer of rubbery skin rather than horny shields. The head and neck are black or dark brown with a few white or yellow blotches.

The leatherback sea turtle is typically found at sea. It requires sandy-nesting beaches backed with vegetation and sloped sufficiently so that the crawl to dry sand is not too far. The preferred beaches are in close proximity to deep water and generally rough seas.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no sandy beaches in the project vicinity for nesting and this species is typically found at sea. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The leatherback sea turtle will not be affected by this project.

Species: *Eretmochelys imbricata* (hawksbill turtle)
Family: *Cheloniidae*
Date Listed: 6/2/70

The **hawksbill turtle** weighs between 43 and 75 kilograms (95 and 165 pounds) and measures approximately 76 to 89 centimeters (30 to 35 inches) in length. The shell is oval and usually brown with scattered areas of yellow, orange, or reddish-brown. The flippers have two claws and barnacles are often attached to the carapace and plastron.

The hawksbill turtle inhabits shallow coastal waters and feeds on mollusks, sea urchins, barnacles, fish, sponges, and algae. It usually nests on islands in tropical and subtropical seas. Continental United States nesting is limited to Florida, however this species can be found along the coastline from Massachusetts southward.

BIOLOGICAL CONCLUSION: NO EFFECT

The project vicinity does not provide nesting habitat for this species and it is unlikely that it would be found feeding there. In the event that a sea turtle is spotted during construction, activities will be halted until it is out of the project area. The hawksbill turtle will not be affected by this project.

Species: *Felis concolor couguar* (Eastern cougar)
Family : *Felidae*
Date Listed: 6/4/73

Cougars are tawny colored with the exception of the muzzle, the backs of the ears, and the tip of the tail, which are black. In North Carolina, the cougar is thought to occur in only a few scattered areas, possibly including coastal swamps and the southern Appalachian Mountains. The eastern cougar is found in large remote wilderness areas where there is an abundance of their primary food source, whitetail deer. A cougar will usually occupy a range of 40 kilometers (25 miles), and is usually most active at night.

BIOLOGICAL CONCLUSION: NO EFFECT

The project is not adjacent to an undisturbed area that could provide food and shelter for the cougar. The NCNHP database reports no recorded occurrences of this species within the vicinity of the project. The Eastern cougar will not be affected by this project.

Species: *Lepidochelys kempii* (Kemp's (Atlantic) ridley)
Family: *Cheloniidae*
Date Listed: 12/2/70

The **Kemp's ridley sea turtle** has a triangular-shaped head and a hooked beak with crushing surfaces. The shell is heart-shaped and gray to olive green. This species ranges in length from about 56 to 71 centimeters (22 to 28 inches) and weighs between 35 and 42 kilograms (77 and 93 pounds).

Adult turtles are restricted to the Gulf of Mexico, however immatures have been seen along the Atlantic coast as far north as Massachusetts. The Kemp's ridley feeds primarily on crabs, but also eats shrimp, snails, sea urchins and fish.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat for this species does not exist in the vicinity of the project. In the event that immatures wander into the project area, construction activities will be halted until they have left. The NCNHP reports no sitings of this species within the project vicinity. The Kemp's ridley will not be affected by this project.

Species: *Lysimachia asperulaefolia* (rough-leaved loosestrife)
Family : *Primulaceae*
Date Listed: 6/12/87

The **rough-leaved loosestrife** is a rhizomatous perennial herb with whorls of three to four leaves encircling a slender stem. This plant reaches 0.3 to 0.6 meters (one to two feet) in height. Showy yellow flowers are produced from mid-May through June and fruits are present from July through October.

The rough-leaved loosestrife is endemic to the coastal plain and sandhills of North Carolina and South Carolina. It occurs in open ecotones between longleaf pine uplands and pond pine pocosin, on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found on deep peat in the low shrub community of large Carolina bays.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no areas of longleaf pines or adjacent pond pine pocosins. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The rough-leaved loosestrife will not be affected by this project.

Species: *Picoides borealis* (red-cockaded woodpecker)
Family : *Picidae*
Date Listed: 10/13/70

The **red-cockaded woodpecker** is a small 18 to 20 centimeters (seven to eight inches) long bird with black and white horizontal stripes on its back, a black cap and a large white cheek patch. The male has a small red spot or "cockade" behind the eye.

The preferred nesting habitat of the red-cockaded woodpecker is open stands of pine with a minimum age of 60 to 120 years. Longleaf pine (Pinus palustris) is preferred for nesting; however other mature pines such as loblolly (Pinus taeda) may be utilized. Typical nesting areas, or territories, are pine stands of approximately 81 hectares (200 acres), however nesting has been reported in stands as small as 24 hectares (60 acres). Preferred foraging habitat is pine and pine-hardwood stands of 80 to 125 acres with a minimum age of 30 years and a minimum diameter of 25 centimeters (ten inches). The red-cockaded woodpecker utilizes these areas to forage for food sources such as ants, beetles, wood-boring insects, caterpillars, and seasonal wild fruit.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no pine stands in the project area to support nesting or foraging activities for this species. The NCNHP database reports no recorded occurrences of the woodpecker in the vicinity of the project. The red-cockaded woodpecker will not be affected by this project.

Species: *Sterna dougallii* (roseate tern)
Family: *Laridae*
Date Listed: 11/2/87

The **roseate tern** is approximately 40 centimeters (16 inches) in length, with light gray wings and a black cap. The back is gray and the rest of the body is white, with a rosy blush on the chest and belly during the breeding season. The tail is deeply forked and the bill is black.

This species breeds from Florida through the West Indies and islands off Central America and northern South America. Habitat includes small offshore islands, rocks, and cays. These birds are often seen nesting on open beaches or near the shoreline on rocks.

BIOLOGICAL CONCLUSION: NO EFFECT

Although a breeding pair was noted in Carteret County in the 1970's, this species is mainly a rare coastal transient. Breeding habitat is not located within the project area and the NCNHP reports no recorded occurrences of the tern within the project vicinity. The roseate tern will not be affected by this project.

Species: *Thalictrum cooleyi* (Cooley's meadowrue)
Family : *Ranunculaceae*
Date Listed: 2/7/89

Cooley's meadowrue is a perennial herb that grows from an underground rhizome. Under ideal conditions, in full sun, the stems are erect, however in the shade they are lax and may trail along the ground. The leaflets are green and the leaves are usually in groups of three. Cooley's meadowrue flowers in mid- to late June.

Cooley's meadowrue is found in moist to wet bogs and savannahs. It grows along fireplow lines, roadside ditches, woodland clearings, and power line right-of-ways, requiring some type of disturbance to maintain its open habitat.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no wet bogs or wet pine savannahs and a search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Cooley's meadowrue will not be affected by this project.

Species: *Trichechus manatus* (manatee)
Family: *Trichechidae*
Date Listed: 6/2/70

The **West Indian manatee** is a large aquatic mammal that reaches a length of approximately three meters (ten feet) and a weight of about 454 kilograms (1,000 pounds). The forelimbs are paddlelike and the tail is oval and horizontally flattened. The body is gray to brown and hair is mostly absent except for stiff whiskers on the upper lip.

This species inhabits coastal waters, estuaries, and freshwater streams bordering tropical and subtropical seas, but may enter waters near North Carolina in summer months. The manatee is herbivorous and feeds on aquatic vegetation, preferring grasses.

BIOLOGICAL CONCLUSION: NO EFFECT

Although it is possible that this species could migrate into the project area during summer months, occurrences would be rare. The NCNHP database reports no recorded occurrence of the manatee in the vicinity of the project, however if one is sighted, construction activities will be halted until it has left the area. The manatee will not be affected by this project.

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 of Endangered. Species designated as FSC are defined as taxa that may or may not be listed in the future. These species were formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing. Some of these species are listed 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. Table 3 provides the Federal Species of Concern in Carteret County and their state classifications, and Table 3A provides the same information for Onslow County.

TABLE 3
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN CARTERET COUNTY
(March 22, 2001)

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Argos skipper	*Atrytone argos argos*	SR	No
Bogue Banks endemic skipper	*Atrytonopsis spl*	SR	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Savanna campylopus	*Campylopus carolinae*	C	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus**	SR	No
Venus flytrap cutworm moth	*Hemipachnobia subporphyrea subporphyrea*	SR	No
Black rail	*Laterallus jamaicensis*	SR	Yes
Pondspice	*Litsea aestivalis*	C	No
Northern diamondback terrapin	*Malaclemys terrapin terrapin* ♦	SC	Yes
Loose watermilfoil	*Myriophyllum laxum*	T	No
Mimic glass lizard	*Ophisaurus mimicus*	SC	No
Savanna cowbane	*Oxypolis ternata* ♦	NL	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*♦	SR	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna* ■	T	No
Carter's noctuid moth	*Spartiniphaga carterae*	SR	No
Carolina asphodel	*Tofieldia glabra*	C	No
Dune bluecurls	*Trichostema sp. 1*	C	No

NOTES: Denotes FSCs for both Carteret and Onslow Counties
* Indicates species was last observed in the county more than 20 years ago.
♦ Listed by USFWS but not by NCNHP.
■ Listed by NCNHP but not by USFWS.
E Denotes Endangered (species which are afforded protection by state laws).
T Denotes Threatened (species which are afforded protection by state laws).
SC Denotes Special Concern (species which are afforded protection by state laws).
PT Denotes Proposed Threatened (species which are proposed for official listing as threatened).
C Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL Not listed.

TABLE 3A
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN ONSLOW COUNTY

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Carolina spleenwort	*Asplenium heteroresiliens*	E	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Hirst's panic grass	*Dichanthelium sp. 1 (= hirstii)*	E	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus*	SR	No
black rail	*Laterallus jamaicensis*	SR	Yes
pondspice	*Litsea aestivalis*	C	No
Boykin's lobelia	*Lobelia boykinii*	C	No
loose watermilfoil	*Myriophyllum laxum*	T	No
mimic glass lizard	*Ophisaurus mimicus*	SC	No
savanna cowbane	*Oxypolis ternata* ♦	NL	No
Carolina grass-of-parnassus	*Parnassia caroliniana*	E	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*	NL	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
awned meadow beauty	*Rhexia aristosa*	T	No
Thorne's beaksedge	*Rhynchospora thornei*	E	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna*	T	No
Carolina asphodel	*Tofieldia glabra*	C	No

NOTES:

♦	Listed by USFWS but not by NCNHP.
E	Denotes Endangered (species which are afforded protection by state laws).
T	Denotes Threatened (species which are afforded protection by state laws).
SC	Denotes Special Concern (species which are afforded protection by state laws).
C	Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR	Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL	Not listed.

A search of the NCNHP database showed no recorded occurrences of any FSC within the project vicinity.

3. Summary of Anticipated Impacts

Habitat is present in the project area for the American alligator; however, this species is listed as threatened by similarity of appearance to a rare species. It is not biologically threatened and it is not subject to a Section 7 consultation. No individuals were observed at the time of the site visit. No habitat is present for any other federally protected species.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historical 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 properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

B. Historic Architecture

A preliminary field survey of the Area of Potential Effects (APE) was conducted on February 18, 1998. All structures within the APE were photographed, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a memorandum dated June 18, 1998, the Deputy State Historic Preservation Officer (SHPO) recommended a survey of the project's APE. A copy of the memorandum is included in the Appendix A.

In a letter dated April 23, 1999, the SHPO concurred with the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the HPO letter is included in the Appendix A.

In a concurrence form dated August 5, 1999, the SHPO concurred with the Federal Highway Administration (FHWA) that the replacement of Bridge No. 49 over the White Oak River will have an adverse effect on the Stella Historic District since the existing bridge will be demolished. The Advisory Council on Historic Preservation filed a Memorandum of Agreement (MOA) between the Federal Highway Administration and the SHPO for mitigating the adverse effects of the bridge replacement project on the historic district. A copy of the MOA is included in the Appendix A.

C. Archaeology

The SHPO, in a memorandum dated June 18, 1998, recommended, "no archeological investigation be conducted in connection with this project". A copy of the SHPO memorandum is included in the Appendix A.

VII. ENVIRONMENTAL EFFECTS

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

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

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

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

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

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

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

No geodetic survey markers will be impacted.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

This project is located in Carteret and Onslow Counties, which have been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be significant.

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, Health and Natural Resources, Division of Environmental Management, Groundwater Section and the North

Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area. There are no underground storage tanks located in the project area.

Onslow County and Carteret County are participants in the National Flood Insurance Program. This site on White Oak River is included in an approximate Federal Emergency Management study. Attached is a copy of the Flood Insurance Rate Map, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project (Figure 5, Appendix B).

Adverse impacts to the historic district are anticipated, but will be compensated through mitigation (see Appendix A).

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

VIII. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials and residents to involve them in the project development. Two Local Officials Meetings and two Citizens Informational Workshops were held at the Midway United Methodist Church in Stella on December 14, 1998, and September 14, 1999, where preliminary alternatives were reviewed and discussed with local officials and concerned citizens.

Alternate D was not presented at the first local officials meeting and citizens workshop but was discussed. The local official preferred Alternate D. Alternate D was presented (required removing the warehouse) at the second local officials meeting and workshop. Approximately 30 people attended the second Citizen's Informational Workshop and 11 comment sheets were received at the workshop, most of which are in favor of replacing the bridge. (Alternate A-3, Alternate B-0, Alternate D-5, Undecided-3)

Citizens and local officials concerns included the necessity to maintain traffic onsite, maintaining the existing boat ramp, improving safety for bridge approaches and minimizing affects to the post office.

Alternate D was revised so the proposed design would not remove the warehouse or post office in response to the comments received at the workshop. The proposed new bridge will be constructed as close to the existing bridge as practicable to avoid and minimize impacts to the proposed historic district. The proposed design speed of 70 km/h (45 mph) will minimize impacts to the post office and warehouse, and also allows for the existing clearance over the White Oak River to be maintained. For approach roadway tie-ins, traffic will be temporarily detoured off site.

IX. AGENCY COORDINATION

March 18, 1999 a meeting was held with USACE and NCWRC to review Alternatives A, B, C and D. As a result it was determined a detailed Bridge Survey Report should be prepared to eliminate concerns that Alternate A, B and C provided adequate flood protection and to present alternates at an interagency review meeting.

On October 28, 1999, an interagency review meeting was held at NCDOT's Transportation Building Room 467. Agencies in attendance were DCM, USFWS, NCDWQ, FHWA, NCWRC,

USACE, and NCDMF. Results of the Bridge Survey Report recommended raising the grade 2.5 feet to reduce flooding of the roadway for Alternate A and B. It was also decided that the ox bow area along the approach would require stabilization for Alternates A and B. FHWA suggested realigning Alternate D to avoid impacting the warehouse.

On February 20, 2000, a Merger Team Meeting was held on site. Representatives from USFWS, FHWA, NCWRC, USACE, NMF, DCM and NCDOT were present. As a result of the field meeting the following was concluded:

- Based on the roadway history and visual observation of the site it is not anticipated that the river will migrate at the ox bow within the life of the proposed new bridge.

- NCDOT-Geotechnical Unit does not recommend Alternate A or Alternate B due to differential settling where the grade will be raised on the Onslow County approach.

- It was recommended that an alternate with minimum approach work be designed (Alternate E).

- Alternates needed updated cost with barge construction over the river and top-down construction over the marshland.

On June 9, 2000 a Merger Team Meeting was held at NCDOT's Century Center. As a result of this meeting, forms for Concurrence Point No. 1, 2, and 3 were signed. It was the consensus of all the agencies present that Alternate D is the preferred alternate with top down construction (Appendix C).

On May 17, 2001 a Merger Team Meeting was held at NCDOT's Transportation Building Board of Transportation Conference Room to revise Concurrence Point 3 to show Alternate D as preferred and to present Concurrence Point 4-Avoidance and Minimization.

Alternate D revision included a temporary work bridge for the construction of the proposed bridge. This was recommended by NCDOT since the bridge will be built with prestressed girders due to the vertical and horizontal alignment. Building with temporary bridges will minimize wetland impacts and lessen construction duration.

Concurrence Point 4 – Avoidance and Minimization was discussed. For avoidance and minimization, the following measures will be accomplished:

1. Anticipated impacts to wetlands 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 131.7-meter (432-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office and to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

All team members present except DCM signed Concurrence Points 3 and 4 at the meeting. SHPO, DCM and NMF concurred and signed after the meeting (Appendix C).

X. SECTION 4(F) EVALUATION

Part 23 CFR 771.135 Section 4(f) (49 U.S.C. 303) states that "The Administrator may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

(i) There is no feasible and prudent alternative to the use of land from the property; and

(ii) The action includes all possible planning to minimize harm to the property resulting from such use."

In accordance with the criteria set forth in the Federal Register December 23, 1986, the following Programmatic Section 4(f) for Minor Involvements with Historic Sites evaluation was prepared:

Stella retains a significant collection of buildings dating from the late nineteenth and early twentieth centuries, including a general store/post office, warehouse, and several dwellings and outbuildings. Bridge No. 49 on SR 1101 and SR 1442 over the White Oak River was built in 1950. The approximate 131.7-meter (432-foot) long, multiple-span structure contains twenty-three timber spans and one steel-deck girder main span.

In a letter dated April 23, 1999, the State Historic Preservation Officer concurred with FHWA the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District (see Figure 2A and Figure 6) is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the SHPO letter is included in the Appendix A.

Since this project necessitates the use of a minor amount of land from a historic site, which is adjacent to the existing roadway, and since the project meets the criteria set forth in the Federal Register (December 23, 1986), a programmatic Section 4(f) evaluation satisfies the requirements of Section 4(f).

The following alternatives, which avoid use of the historic site, have been fully evaluated: (1) do nothing; (2) improve the highway without using the adjacent historic site; (3) build the replacement structure on new location without using the historic site.

No Build Alternative: The No Build or "Do-Nothing" alternative is not considered feasible and prudent because the bridge will eventually deteriorate beyond repair and necessitate closure of the bridge. This is not prudent due to the traffic service provided by SR 1101 and SR 1442.

Rehabilitation of the Existing Bridge: This alternative is not considered to be feasible and prudent due to the age and deteriorated condition of the existing bridge. In addition, the existing bridge deck is only 7.2 meters (24 feet) wide and is functionally obsolete. The NCDOT Bridge Policy requires a minimum clear roadway width of 8.6 meters (28 feet) based on the traffic volumes and design speed.

Replacement of Bridge No. 49 on New Location (Figure 2A): Moving the bridge location to a point either upstream or downstream of the current location to avoid impacts to the proposed historic district would negatively impact the district by disrupting a major element of the setting for the district and will result in substantial disruption to the environment and local businesses. An alternative on new location will not provide the same transportation access and service as the current location. Therefore, this alternative is not considered feasible or prudent.

These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the historic site has been performed as an integral part of this project. The following mitigation measures will be carried out for the replacement of Bridge No. 49:

1. A design exception to reduce the design speed to 70 km/h (45 mph) from 90 km/h (55 mph) to minimize impacts to the 4(f) property will be processed.
2. The proposed bridge will be within 3 meters (10 feet) of the existing bridge and a temporary shoring will be required during construction to maintain traffic and to minimize impacts to the 4(f) property.
3. The approved Memorandum of Agreement (MOA):

    a. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

    b. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right of Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

    c. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

    d. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

i. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or
ii. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO), whose correspondence is included in Appendix A. The SHPO has concurred that this project, as proposed, has an adverse effect, because the bridge will be replaced with regard to the historic district. Approval of the Programmatic Section 4(f) evaluation by the FHWA Division of Administrator is included in this document.

The owners of the general store/post office and warehouse have concurred with Alternate D as the preferred alternative and all possible planning and coordination to minimize impact to the Historic District were incorporated into this project. The approved Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvement with Historic Sites is included in Appendix A.

APPENDIX A

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

AND

MEMORANDUM OF APPROVAL

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4(f) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS WITH MINOR INVOLVEMENTS WITH HISTORIC SITES

F. A. Project **BRZ-1101(5)**

State Project **8.2160801**

T. I. P. No. **B-2938**

DESCRIPTION:

Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River in Carteret/Onslow Counties in North Carolina. The Proposed Bridge will span the White Oak River and brackish marsh in Onslow County. The bridge, as well as several buildings located on the east approach, comprise the Stella Historic District. See Figure 2A and 6 in Appendix B.

		YES	NO
1.	Is the proposed project designed to improve the operational characteristics, safety, and/or physical condition of the existing highway facility on essentially the same alignment?	X	☐
2.	Is the project on new location?	☐	X
3.	Is the historic site adjacent to the existing highway?	X	☐
4.	Does the project require the removal or alteration of historic buildings, structures, or objects?	X	
5.	Does the project disturb or remove archaeological resources which are important to preserve in place rather than to recover for archaeological research?	☐	X
6.	a. Is the impact on the Section 4(f) site considered minor (i.e. no effect, no adverse effect)?		X
	b. If the project is determined to have "no adverse effect" on the historic site, does the Advisory Council on Historic Preservation object to the determination of "no adverse effect"?	☐	X
7.	Has the SHPO agreed, in writing, with the assessment of impacts and the proposed mitigation?	X	☐

☐

8. Does the project require the preparation of an EIS? X

ALTERNATIVES CONSIDERED AND FOUND NOT TO BE FEASIBLE AND PRUDENT

The following alternatives were evaluated and found not to be feasible and prudent:

		YES	NO
1.	Do nothing		
	Does the "do nothing" alternative:		
	(a) correct capacity deficiencies?	☐	X
or	(b) correct existing safety hazards?	☐	X
or	(c) correct deteriorated conditions?	☐	X
and	(d) create a cost or impact of extraordinary measure	☐	X
2.	Improve the highway without using the adjacent historic site.		
	(a) Have minor alignment shifts, changes in standards, use of retaining walls, etc., or traffic management measures been evaluated?	X	☐

(b) The items in 2(a) would result in:
(circle, as appropriate)

	(i)	substantial adverse environmental impacts
or	(ii)	substantial increased costs
or	(iii)	unique engineering, transportation, maintenance, or safety problems
or	(iv)	substantial social, environmental, or economic impacts
or	(v)	a project which does not meet the need
or	(vi)	impacts, costs, or problems which are of extraordinary magnitude

		Yes	No
3.	Build an improved facility on new location without using the historic site.	X	☐

(a) An alternate on new location would result in: (circle, as appropriate)

(i) a project which does not solve the existing problems

or (ii) substantial social, environmental, or economic impacts

or (iii) a substantial increase in project cost or engineering difficulties

and (iv) such impacts, costs, or difficulties of truly unusual or unique or extraordinary magnitude

MINIMIZATION OF HARM

		Yes	No
1.	The project includes all possible planning to minimize harm necessary to preserve the historic integrity of the site.	X	☐
2.	Measures to minimize harm have been agreed to, in accordance with 36 CFR Part 800, by the FHWA, the SHPO, and as appropriate, the ACHP.	X	☐

3. Specific measures to minimize harm are described as follows:

- The "Two-bar metal rail with concrete parapet" will be utilized on the proposed structure as mitigation for impacts.
- Design exception has been approved to reduce the design speed to 70 km/h (45 mph) to minimize impacts to the post office/ general store and warehouse.
- A Design Exception for the horizontal clearance has been approved to maintain the existing canopy attached to the post office and to minimize impacts to the proposed historic district.
- Reduced spans and girder depth in the structure design will be incorporated to maintain clearance over the White Oak River and minimize impacts to the historic district.
- A Memorandum of Agreement was approved and attached to the Categorical Exclusion.

Note: Any response in a box requires additional information prior to approval. Consult Nationwide 4(f) evaluation.

COORDINATION

The proposed project has been coordinated with the following (attach correspondence):

a. State Historic Preservation Officer	X
b. Advisory Council on Historic Preservation	X
c. Property owner	X
d. Local/State/Federal Agencies	X
e. US Coast Guard (for bridges requiring bridge permits)	X

SUMMARY AND APPROVAL

The project meets all criteria included in the programmatic 4(f) evaluation approved on December 23, 1986.

All required alternatives have been evaluated and the findings made are clearly applicable to this project. There are no feasible and prudent alternatives to the use of the historic site.

The project includes all possible planning to minimize harm, and the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed with local and state agencies.

Approved:

10/8/2001 _____
Date for Manager, Project Development and Environmental Analysis Branch, NCDOT

10/15/2001 _____
Date for Division Administrator, FHWA

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA HISTORIC PRESERVATION OFFICER
FOR
THE REPLACEMENT OF BRIDGE NO. 49
ON SR 1101 OVER WHITE OAK RIVER,
CARTERET/ONSLOW COUNTIES, NORTH CAROLINA

WHEREAS, the Federal Highway Administration (FHWA) has determined that the replacement of Bridge No. 49 on SR 1101 over the White Oak River, Carteret/Onslow Counties, North Carolina (the undertaking) will have an effect upon the Stella Historic District, a community determined eligible for listing in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT), Nido L. Hamilton, and Edward E. and Judith M. Grafton participated in the consultation and have been invited to concur in this Memorandum of Agreement:

NOW, THEREFORE, FHWA and the North Carolina SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take in to account the effect of the undertaking on the historic properties.

STIPULATIONS

FHWA will ensure that the following measures are carried out:

I. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with a Historic Structures and Landscape Recordation Plan {Appendix A}. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

II. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right-of-Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

III. Future Widening of Shoulders or Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by division and district engineers.

IV. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

A. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

B. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this agreement that are not the subject of the dispute will remain unchanged.

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Advisory Council on Historic Preservation, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the replacement of Bridge No. 49 on SR 1101 over the White Oak River and its effects on the Stella Historic District, and that FHWA has taken into account the effects of the undertaking on the historic property.

AGREE:

John C. Wadsworth 2/20/01
FEDERAL HIGHWAY ADMINISTRATION DATE

Jeffrey J. Crow 4/2/01
NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER DATE

CONCUR:

Gail Grimes 1/29/01
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DATE

Louise P Hamilton 02/20/01
Louise P. Hamilton (Owner of warehouse) DATE

Edward E Grafton Judith K Grafton 2-20-01
Edward E. & Judith M. Grafton (Owners of general store/post office) DATE

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION DATE

APPENDIX A

Historic Structures and Landscape Recordation Plan
For the Replacement of Bridge No. 49 on SR 1101
Over the White Oak River
Carteret and Onslow Counties, North Carolina
TIP No. B-2938, State Project No. 8.2160801
Federal Aid No. BRZ-1101(5)

Landscape

Site plan sketch of the existing conditions of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse in Stella.

Photographic Requirements:

Selected photographic views of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse as a whole, and views of the structures and their settings, including:

- Overall views of the structures (elevations and oblique views)
- Overall views of the project area, showing the relationship of the structures to their settings

Photographic Format

- Color slides (all views)
- 35 mm or larger black and white negatives (all views)
- Black and white contact sheet (all views)
- All processing to be done to archival standards
- All photographs and negatives to be labeled according to Division of Archives and History standards

Copies and Curation

One (1) set of all photographic documentation will be deposited with the North Carolina Division of Archives and History/State Historic Preservation Office to be made a permanent part of the statewide survey and iconographic collection.

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No.49 on SR 1101 over White Oak River

On August 5, 1999, representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☐ Federal Highway Administration (FHWA)
- ☒ North Carolina State Historic Preservation Office (SHPO)

reviewed the subject project and agreed

☐ there are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.

☐ there are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.

☐ there is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.

☒ there is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Mary Pope Furr — Aug. 5, 1999
Representative, NCDOT — Date

Mary C. Shelton — 8/10/99
FHWA, for the Division Administrator, or other Federal Agency — Date

FOR

Peggy Allen — Aug. 5 1999
Representative, SHPO — Date

David Brook Deputy — 8/17/99
State Historic Preservation Officer — Date

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Stella Historic District (DE) - adverse effect

Reason(s) why the effect is not adverse (if applicable).

Initialed: NCDOT MPT FHWA RCS SHPO DVB

North Carolina Department of Cultural Resources

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

Division of Archives and Histo
Jeffrey J. Crow, Direct

April 23, 1999

Roy C. Shelton
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Replacement of Bridge 49 over White Oak River, Carteret-Onslow Counties, Federal-Aid Project BRZ-1101(5), State No. 8.2160801, B-2938, ER 99-8587

Dear Mr. Shelton:

Thank you for your letter of March 24, 1999, transmitting the historic architectural resources report by Mattson, Alexander & Associates, Inc., concerning the above project.

We concur that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture.

Further, we concur with the district's boundaries, except for the western edge that we believe should encompass Bridge 49 as a contributing element to the district. While Bridge 49 lacks one year of being fifty years old, it appears to be compatible with the rural character of the district as a whole and to reinforce the district's relationship to the White Oak River. Bridge 49 also appears to be rather unique in design and length for a timber bridge.

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.

Sincerely,

David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: William D. Gilmore
Barbara Church
Mattson, Alexander & Associates

North Carolina Department of Cultural Resources

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

Division of Archives and History
Jeffrey J. Crow, Director

June 18, 1998

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 XVII, Bridge 49 on SR 1101/1442 over White Oak River, Carteret and Onslow Counties, B-2938, ER 98-9258

Thank you for your memorandum of June 5, 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. However, since a comprehensive survey of Carteret County has never been conducted, there may be structures of which we are unaware within the planning area. Therefore, we recommend that an architectural historian with the North Carolina Department of Transportation survey the project's area of potential effect and report the findings to us.

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
T. Padgett

Hagrill

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

August 7, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

As required by 36 CFR 800.6(a)(1) of the 1999 revisions to 36 CFR Part 800, this is to provide notice to the Advisory Council that Bridge No. 49 will be removed and replaced by the subject Federal-aid bridge replacement project. After consultation with the North Carolina State Historic Preservation Officer, it was determined the subject project will have an adverse effect on the Stella Historic District, a community eligible for listing in the National Register of Historic Places. Enclosed is one copy of the documentation specified in Section 800.11(e) and the North Carolina Department of Transportation's transmittal letter dated July 24, 2000. Your review pursuant to 36 CFR Part 800.6(a)(1) is requested.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

Kaye Shelton

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

September 18, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

Your letter, dated August 22, 2000, on the subject project advised that the background information submitted with the notification of adverse effect did not meet the requirements of 36 CFR 800.11(e) and requested copies or summaries of any views provided by the public. Enclosed is a copy of all public comments received on this project as a part of our public involvement process.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

John C. Wadsworth

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

OCT 25 2000

Mr. Nicholas L. Graf, P.E.
Division Administrator
Federal Highway Administration
310 New Bern Avenue
Raleigh, NC 27601

BRZ-1101(5)

REF: Proposed Replacement of Bridge No. 49 on SR 1101 over White Oak River
Carteret and Onslow Counties, North Carolina

Dear Mr. Graf:

The Council recently received the additional information in support of your notification regarding the adverse effects of the proposed undertaking on properties listed on and eligible for listing on the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases,* of our regulations, "Protection of Historic Properties" (36 CFR Part 800) does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed.

Pursuant to 36 CFR 800.6(b)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the North Carolina State Historic Preservation Officer (SHPO), and related documentation at the conclusion of the consultation process. The filing of this MOA with the Council is required in order for the Federal Highway Administration to complete its compliance responsibilities under Section 106 of the National Historic Preservation Act.

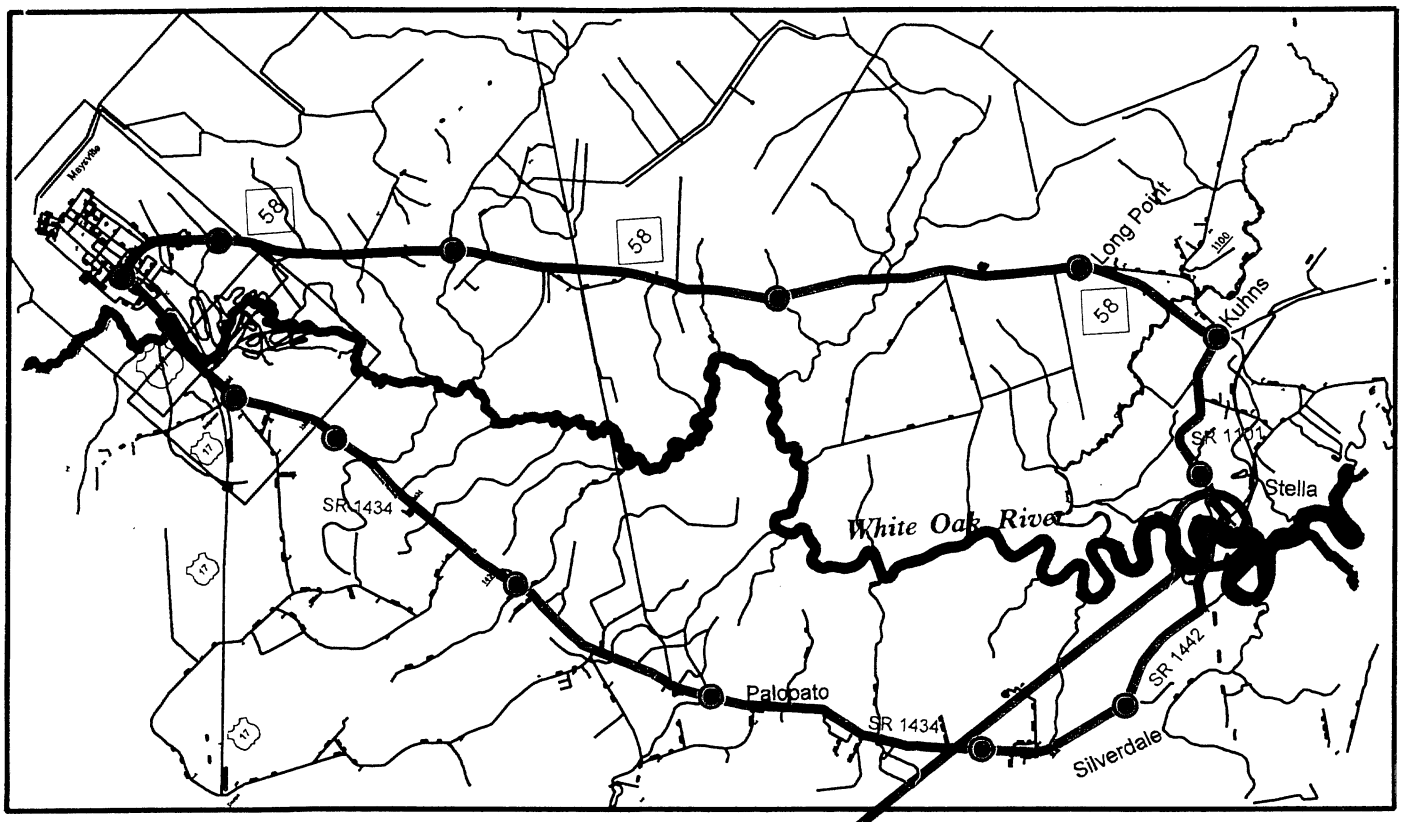
Should you have any questions or require further assistance, please contact us at 202-606-8505.

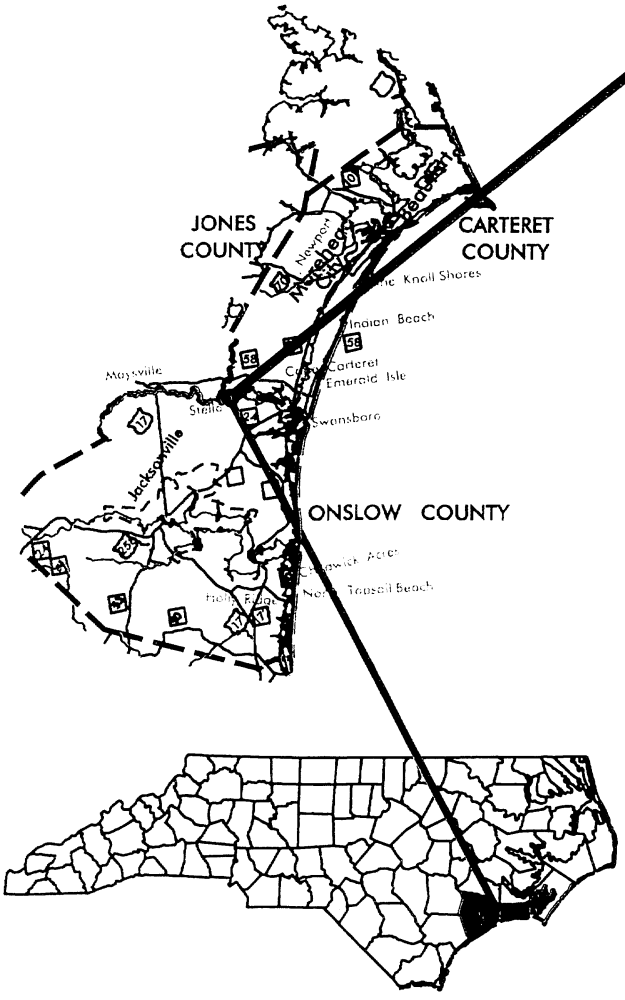
Sincerely,

Don L. Klima
Director
Office of Planning and Review

APPENDIX B

FIGURES





N

S

LEGEND

Studied Detour Route

1.5 1 0.5 0 1 2 3 4 5 6 *Kilometers*

1 0 1 2 3 4 *Miles*

SCALE

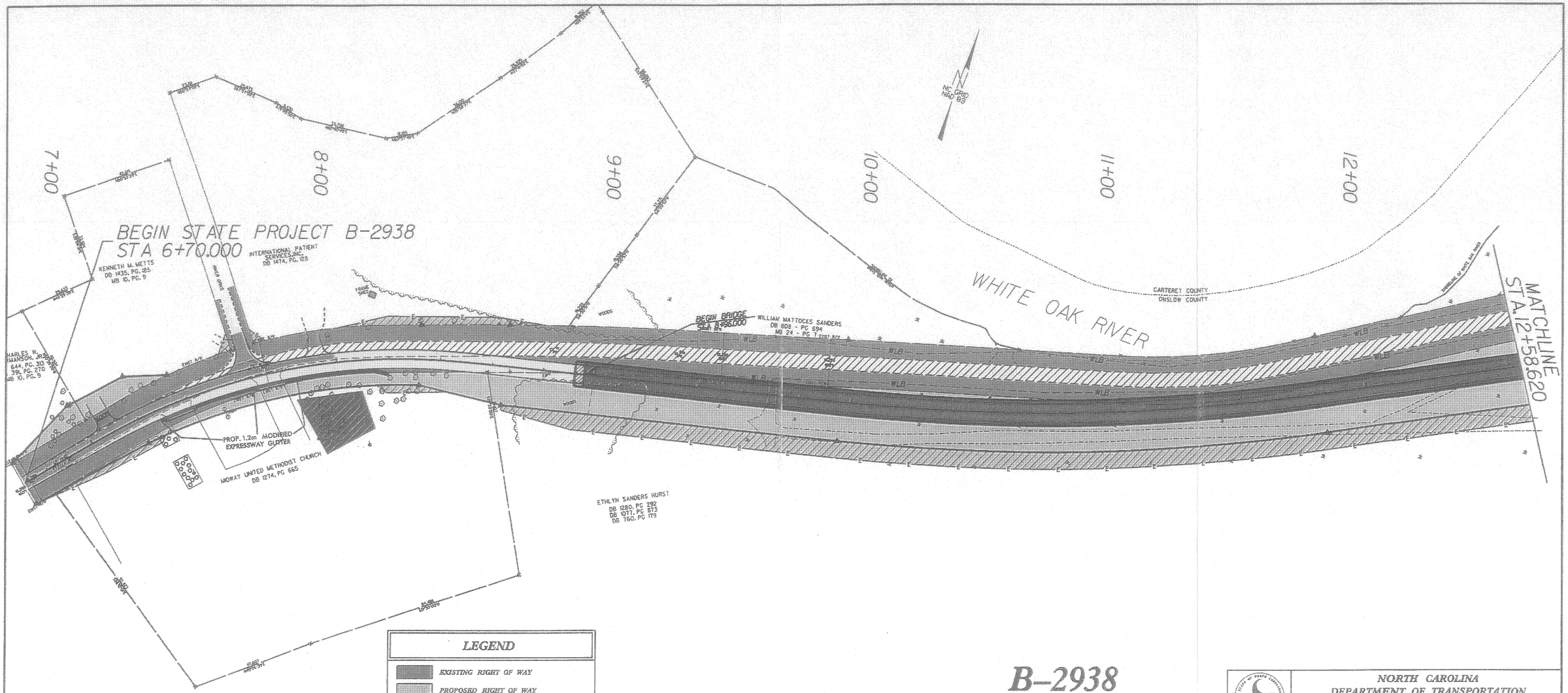
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP No. B-2938

FIGURE 1



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B-2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

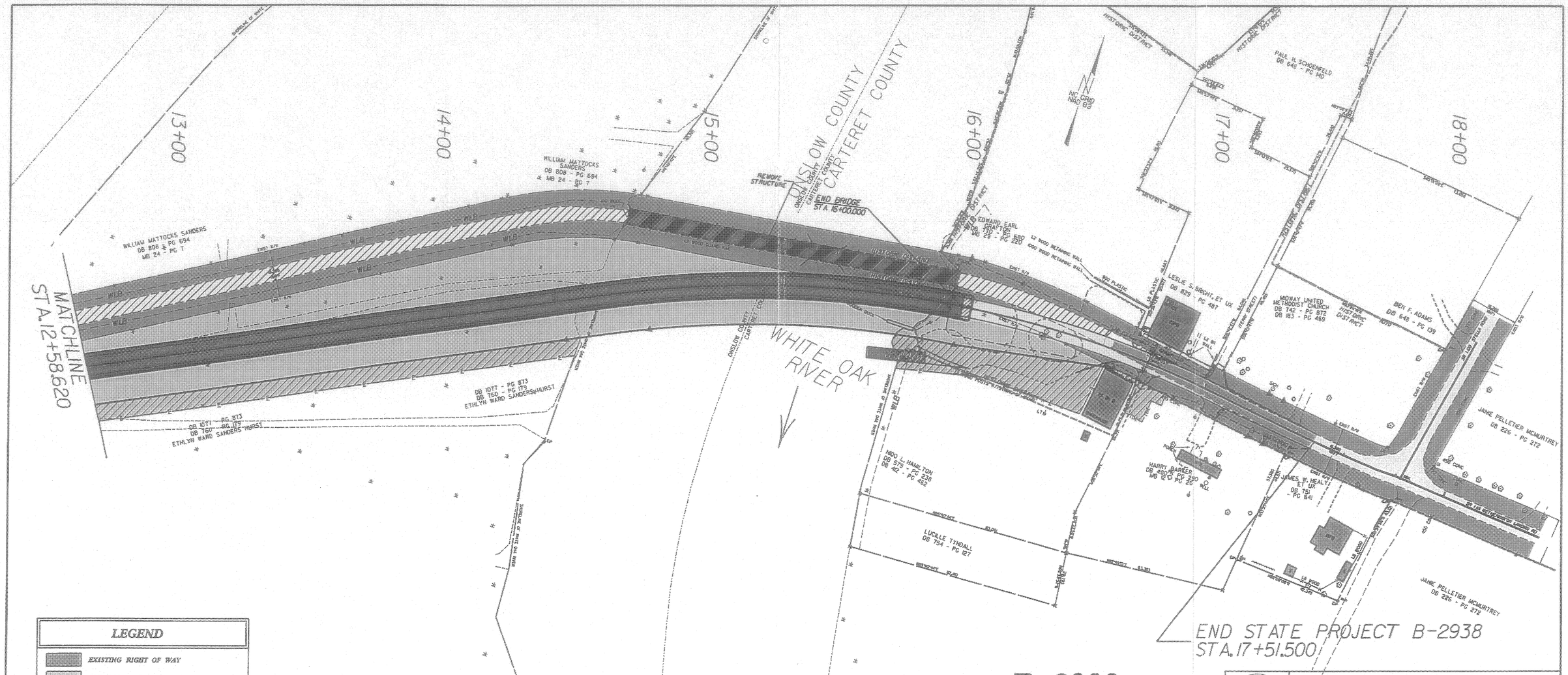
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B-2938

10 0 20

FIGURE 2



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B-2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

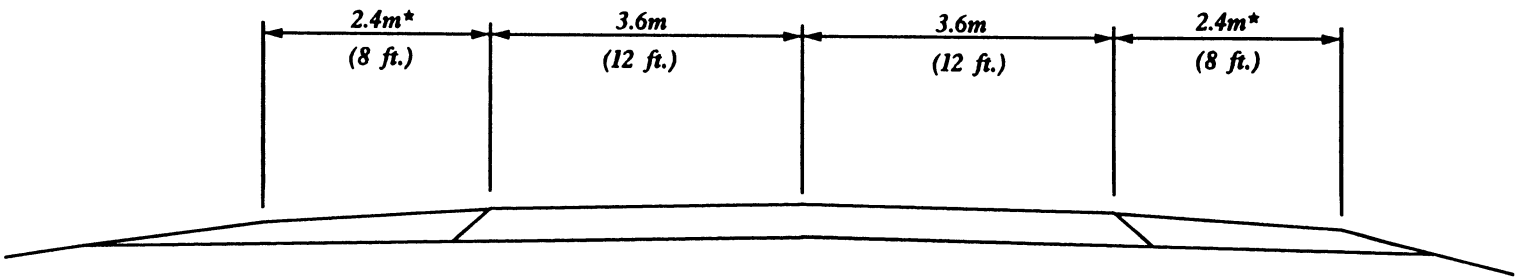
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B-2938

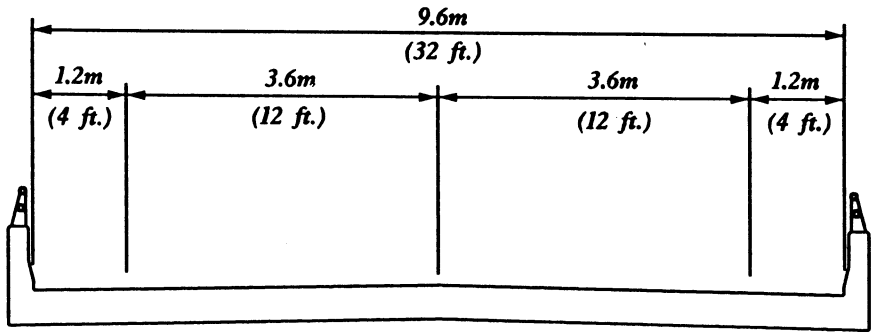
10 0 20

FIGURE 2A



TYPICAL ROADWAY APPROACH SECTION
(PROPOSED)

* ADD 1.0m (3 ft.) WHERE GUARDRAIL IS WARRANTED



TYPICAL SECTION ON STRUCTURE
(PROPOSED)

TRAFFIC DATA

ADT 2001	1,600
ADT 2002	1,600
ADT 2025	2,500
DUAL	2%
TTST	1%

FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR

DESIGNATED BICYCLE ROUTE: JACKSONVILLE: CITY TO THE SEA

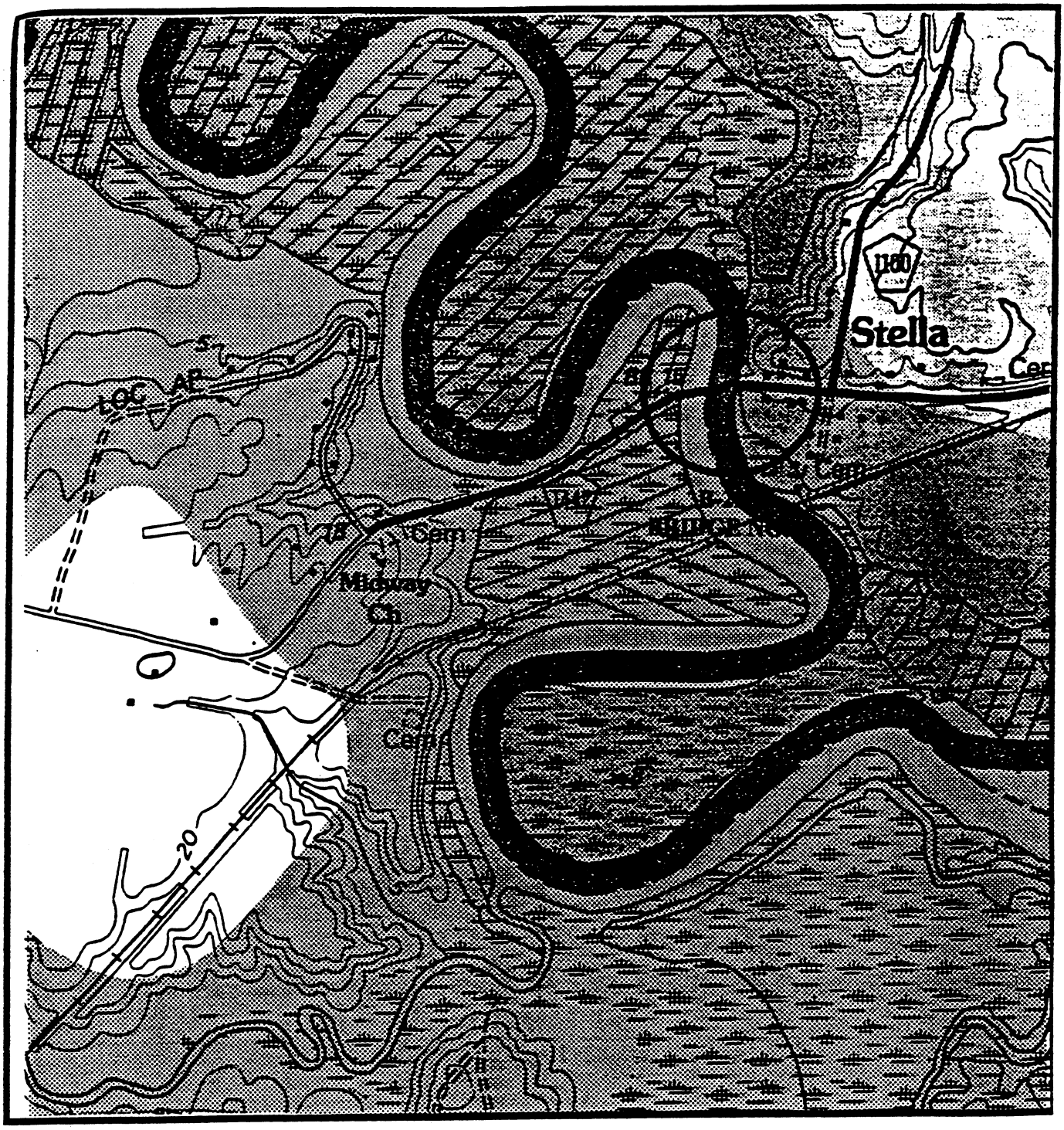
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP B-2938

FIGURE 4



APPROXIMATE FEMA FLOOD STUDY
100 YEAR FLOOD PLAIN
SCALE 1" = 1000 FEET

0 1000 2000 FEET

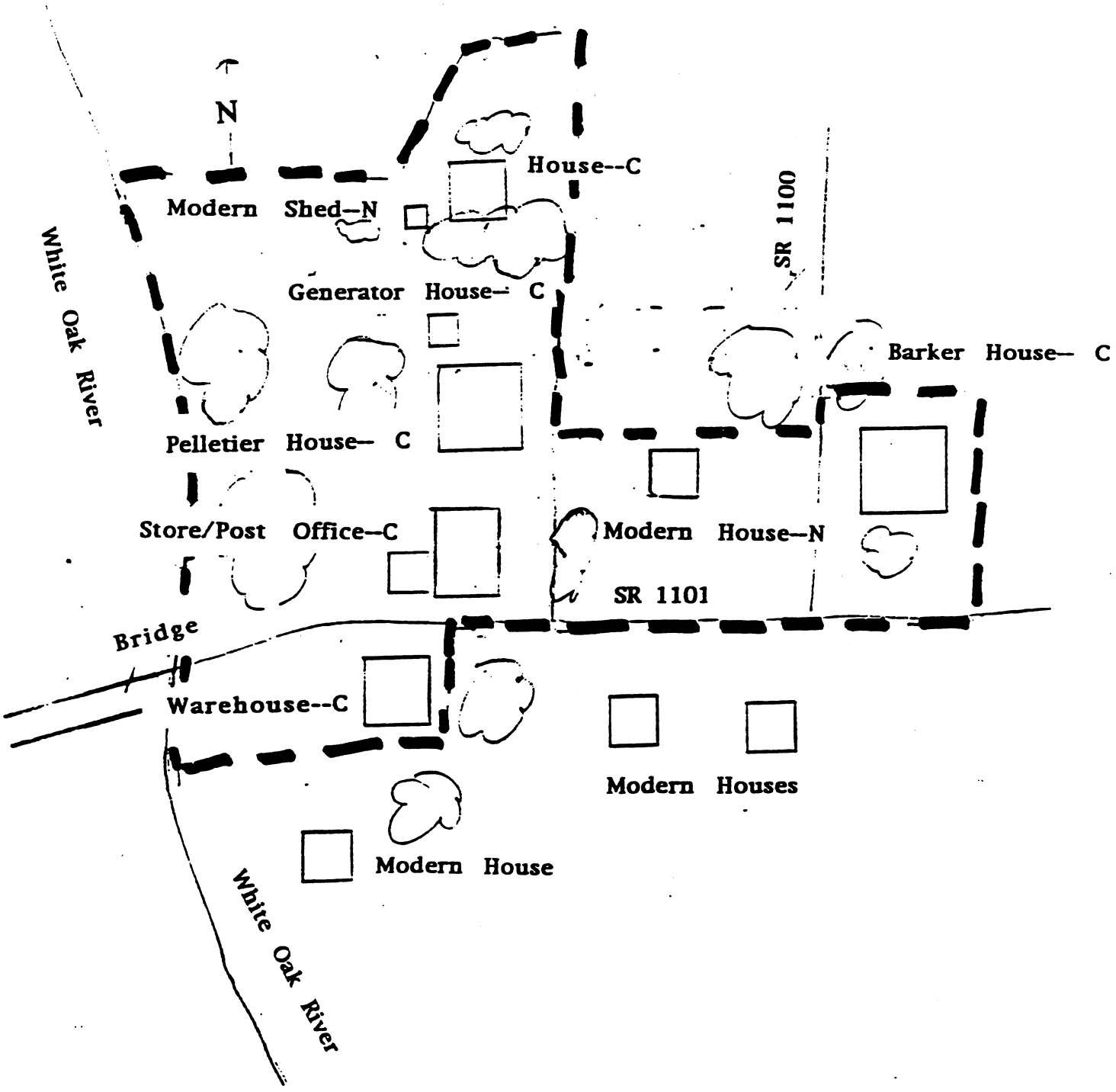
FIGURE 5

FIGURE 6

Stella Historic District
Site Plan

(not to scale)

C--Contributing Resource
N--Non-Contributing Resource



APPENDIX C

NEPA/404 MERGER TEAM CONCURRENCE POINTS 1, 2, 3, AND 4

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 1 – Purpose and Need

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Purpose and Need of the Proposed Project:

To replace a functionally obsolete and structurally deficient structure with a safer and improved structure and approaches. To do-nothing will eventually necessitate removal of the bridge and this is not desirable due to the traffic service provided by SR 1101/SR 1442.

The Project Team has concurred on this date of June 8, 2000 with the purpose and need for the proposed project as stated above.

USACE		NCDOT	
USEPA		USFWS	
NMFS		NPS	
DCM		NCDWQ	
NCWRC		NCDCR	
NCDMF		FHWA	
SHPO			

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 2 – Reasonable and Feasible Alternatives Studied

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternatives studied in detail:

1. No build/routine maintenance continue
2. Alternate A - Maintain traffic with on-site detour and raise grade on Onslow County approach.
3. Alternate B1 - Maintain traffic on existing bridge and minimum work on Onslow County approach.
4. Alternate B2 - Maintain traffic on existing bridge and raise grade on Onslow County approach.
5. Alternate C – Maintain traffic on one lane bridge and raise grade on Onslow County approach: eliminated because of maintaining traffic on one lane bridge was not desirable and amount of roadclosure required to build the one lane bridge approaches.
6. Alternate D - Maintain traffic on existing bridge and bridge the marshland.
7. Alternate E -Maintain traffic with on-site detour and minimum approach work on Onslow County approach.

The Project Team has concurred on this date of June 8, 2000 with the "alternatives to be studied in detail in the NEPA document" as stated above.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

SHPO _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 3 – Alternative Selection

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternative recommended:

Alternate D
Replace the bridge downstream of the existing bridge and spanning the wetland (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge.

The Project Team has concurred on this date of May 17, 2001 with the "alternative to be recommended in the NEPA document" as stated above.

USACE _____

USEPA _____

NMFS _____

DCM _____

NCWRC _____

NCDMF _____

NCDOT _____

USFWS _____

NPS _____

NCDWQ _____

NCDCR _____

FHWA _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 4 – Avoidance and Minimization of Impacts

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties
TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternate D

Replace the bridge downstream of the existing bridge and spanning the wetlands (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge. For avoidance and minimization, the following measures will be accomplish:

1. Anticipated impacts to wetlands 0.021 acres.
2. ~~Restoration~~ of wetlands of approximately 1.70 acres. and enhancement (undetermined amount).
3. Replacing 432-foot bridge with a 2,310-foot bridge.
4. Design exception to reduce the design speed from 55 mph to a design speed of 45 mph to minimize impacts in the historic district and eliminate impacts ~~to~~ the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and impacts to historic district.

The Project Team has concurred on the avoidance and minimization as stated above for the subject project on this date of May 17, 2001.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

APPENDIX D

DESIGN EXCEPTION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

P.O. BOX 25201, RALEIGH, NC 27611-5201

December 21, 2000

MEMO TO: D. M. Barbour, PE
State Design Engineer

FROM: J. V. Barbour, PE
State Design Services Engineer

SUBJECT: State Project: 8.2160801 (B-2938) Carteret & Onslow County
F. A. Project: BRZ-1101(5)
Replace Bridge No. 49 over White Oak River and approaches on SR 1101 & SR 1442

Request for Design Exception

This is a request for a design exception for the design speed and horizontal clearance to minimize impacts to the cemetery and the historic district. SR 1101/SR 1442 is currently not posted and has a statutory speed of 90 km/h (55 mph) with advisory signs at the bridge of 30 km/h (20 mph). The horizontal clearance from the edge of the roadway to the post office and warehouse in the historical district is currently less than the recommended clearance by AASHTO. The design elements that require exceptions are as follows.

Proposed Design Speed: The statutory speed limit for SR 1101/SR 1442 in the project vicinity is 90 km/h (55 mph). The proposed design speed is 70 km/h (45 mph). In order to minimize the impacts to the cemetery in the western part of the project and the historic district in the eastern part of the project we are requesting an exception for the proposed design speed. The crest or sag vertical curves on the eastern end of the project cannot be increased without major impacts to the historic district. Also, the horizontal curve at the western end of the project cannot be flattened without major impacts to the cemetery.

Horizontal Clearance: The standard horizontal clearance for this type of facility is 6.0 to 8.0 meters per AASHTO *Roadside Design Guide,* 1996, and 3 meters per AASHTO *Green Book*, 1974, page 425. Currently the historic post office has a canopy that is less than 1.0 meter from the edge of pavement, which is less than the horizontal clearance recommended by AASHTO. The post office and warehouse are less than 5.4 meters from the roadway, which is greater than the 3m minimum desirable horizontal clearance given in the AASHTO *Green Book*, but less than AASHTO's clear zone distance of 6.0 to 8.0 meters (AASHTO *Roadside Design Guide,* 1996). Since the historic district is on both sides of the roadway, appropriate horizontal clearances cannot be obtained without major impacts to the post office and warehouse. This exception for horizontal clearance would minimize any impacts to the historic post office and warehouse.

NCDOT DESIGN EXCEPTION REQUEST
(Project does not require FHWA design approval)

F.A. Project No.: BRZ-1101(5) State Project No.: 8.2160801

TIP No.: B-2938 County: Carteret & Onslow County

Design Exception Requested for: design speed and horizontal clearance.

Location of Design Feature in Question: -L- (SR 1101/SR 1442) entire project.

PROJECT DATA

Current ADT (2002): 1,630 Design ADT (2022): 2,380

% Trucks: 3 Proposed Design Speed: 70 km/hr (45 mph)

Posted Speed: Current: Not posted. Statutory 90 km/h (55 mph). Advisory-posted 30 km/h (20 mph) on the east approach.
Proposed: Posted 45 mph (70 km/h) with advisory posting for 30 km/h (20 mph) on the east approach.

Functional Classification: Rural Minor Collector

Minimum AASHTO Dimensions:
Horizontal Clearance= 3 m minimum
Horizontal Sight Distance=94.1 m

Dimensions Proposed:
Horizontal Clearance=0.4616 m
Horizontal Sight Distance=100 m

Total Estimated Cost of Project: $7,169,000

Additional Cost to Meet Minimum AASHTO Requirements: N/A

BASIS FOR EXCEPTION

1. There have only been three reported accidents in the project vicinity, and there appears to be no relation between the proposed design exception and the accident history. See current 3-year accident history, attached (number, type, rates, severity, cause, comparison to statewide average, etc.).

2. There are no future plans for upgrading this roadway either at or in the vicinity of this project.

3. SR 1101 and SR 1442 are classified as rural minor collectors and are designated as part of the bike route *Jacksonville: City to the Sea*. The existing roadway provides two 2.7-meter (9-foot) travel lanes with 1.8-meter (6-foot) grass shoulders. The existing approach at the west end of the bridge is on a 13.5-degree curve. The existing approach at the east end of the bridge is on a 25-degree curve.

Rev. 3/25/96

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 12/14/00

Project Engineer: Cathy Houser, PE

TIP No: B-2938

Functional Classification: Rural Minor Collector

Posted Speed 90 km/h (55 mph)

Terrain Level – Coastal

Items requiring formal approval	Prop Design	AASHTO Std(1)	Exception Req'd
Design Speed(2)	70 km/h	Minimum Green Book - 100 km/h Proposed 70 km/h	Yes
Lane Width	3.6 m	3.6 m	
Shoulder Width	2.4 m	2.4 m	
Bridge Width (bicycle route)	9.6 m	9.6 m	
Structural Capacity(3)			
Maximum Grade	2.82%	7%	
Min. Horizontal Curve Radius	230m	195m	
Sag Vertical Curve K	21	20-25	
Crest Vertical Curve K	30	22-31	
Horizontal SSD	100m	94.1m	
Vertical SSD	115m	94.1m	
Pavement Cross Slope	0.02	0.02	
Superelevation	0.05	0.06	
Vertical Clearance	Match existing	N/A	
Horizontal Clearance	• 0.4616m to edge of canopy of historic post office • 5.3407m to post office building • 4.549m to historic warehouse	• 3m, min. desirable, per AASHTO-*Green Book*, 1994, page 425 • 6.0m – 8.0m per AASHTO-*Roadside Design Guide* (1996)	Yes

Listed below are the known non-complying items not requiring an approved design exception.

(1) The AASHTO STD. as it relates to the design speed should be equal to the higher of either the posted speed or the minimum "Greenbook" value for design speeds.

(2) If design speed is less than the posted or statutory speed, a design exception is required.

(3) Structure Design's responsibility - be sure they have checked for need of design exception.

APPENDIX E

CORRESPONDENCE

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

REPLY TO
ATTENTION OF

Planning Services Section

September 29, 1998

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 June 5, 1998, subject: "Request for Comments for Group XVII Bridge Replacement Projects." The bridge replacement projects are located in various Eastern and Piedmont North Carolina counties.

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

Sincerely,

C. Alex Morrison, Jr., P.E.
Chief, Technical Services Division

Enclosure

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

412 West Queen St.
Edenton, NC
27932

SUBJECT: Farmland Conversion Impact Rating form AD1006

DATE: 06/06/99

TO: Pamela Williams
Wang Engineering Company, Inc.

The following information is in response to your request asking for information on farmlands in the (3 bridge replacement projects). Projects B-2938, B-2950, B-2965.

Prime farmland does not include land already in or committed to urban development or water storage. When funds have already been commited for utilities, water lines, and road or bridge replacement and widening, the land is committed to development and is be exempt from having to make a determination. Other prime farmland "already in" urban development includes all land that has been designated for commercial or industrial use or residential use that is not intended at the same time to protect farmland in a

1. Zoning code or ordinance adopted by the state or local unit of government or,

2. A comprehensive land use plan which has expressly been either adopted or reviewed in its entirety by the unit of local government in whose jurisdiction it is operative within 10 years preceding the implementation of the project.

If the area in question meets the above criteria, you will not need to complete a Farmland Conversion Impact Rating form (AD1006). Otherwise please proceed to submit a Farmland Conversion Impact Rating form AD1006. The AD1006 should be generated by the corresponding federal agency who will provide the permits and/or funds. If you have any questions please feel free to call me at:252-482-7437.

Thank You,

John Gagnon
Resource Soil Scientist

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

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

All of the bridges are within counties and communities which participate in the National Flood Insurance Program. From the various Flood Insurance Rate Maps (FIRMs), it appears that both approximate study and detail study streams are involved. (Detail study streams are those with 100-year flood elevations determined and, if controlled by riverine flooding, normally have floodways defined. Of these bridge crossings, only the Tar River in Edgecombe County has a floodway defined.) Based on a review of the FIRM's and pertinent United States Geological Survey topo maps, none of the bridges over railroads appear to be in identified flood hazard areas. A summary of flood plain information pertaining to the other bridges is contained in the following table. The FIRMs are from the county or countywide flood insurance study unless otherwise noted.

Bridge No.	Route No.	County	Study Stream	Type	Date Of Firm
B2938 49	SR 1101	Carteret	White Oak River	Approx	8/85
"	SR 1442	Onslow	"	"	7/87
B2950 4	SR 1222	Currituck	Tull Creek	Detail	11/84
B2965 24	US 64 Bus	Edgecombe	Tar River	Detail	2/88 *
"	"	"	"	"	4/80 **
B3045 17	NC 89	Stokes	Dan River	Approx	9/88
B3230 64	US 220 Bus	Rockingham	Mayo River	Approx	5/91

* Map is Town of Tarboro FIRM.
** Map is Town of Princeville FIRM.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

1. **FLOOD PLAINS: (Continued)**

For the Tar River crossing, we refer you to the Federal Emergency Management Agency's "Procedures for 'No Rise' Certification for Proposed Developments in Regulatory Floodways", copies of which have been furnished previously to your office. In addition, we suggest coordination with the respective counties or communities for compliance with their flood plain ordinances and any changes, if required, to their flood insurance maps and reports.

2. **WATERS AND WETLANDS: POC - Raleigh, Washington, and Wilmington Field Offices, Regulatory Division (Individual POC's are listed following the comments.)**

Based upon a review of Projects B-3013 and B-3231 (bridge replacements over railroads), it appears that the proposed work is not likely to impact any jurisdictional waters subject to Department of the Army (DA) permit authority. In addition, from a review of submitted information and all available maps for the bridge-over-railroad Project B-3214, it was determined that no jurisdictional wetlands will be impacted by this proposed project. Accordingly, no DA authorization will be required in this case.

All work restricted to existing high ground will not require prior Federal permit authorization. However, DA 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. Also, please be reminded that Stokes County is one of the twenty-five mountain counties of North Carolina that contain trout waters. Review and comments are required from the North Carolina Wildlife Resources Commission prior to any action being taken on DA permit authorization for identified trout water counties.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. WATERS AND WETLANDS: (Continued)

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. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site 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.

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.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. **WATERS AND WETLANDS: (Continued)**

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.

For additional information, please contact the following individuals:

Raleigh Field Office -

- Jean Manuele at (919) 876-8441, Extension 24, for Edgecombe and Northampton Counties (Regulatory Division Action ID Nos. 199820969 & 199820970)
- John Thomas at (919) 876-8441, Extension 25, for Person, Stokes, and Rockingham Counties (Action ID's 1998-20821, 20822, 20823, and 20824)
- Todd Tugwell at (919) 876-8441, Extension 26, for Wake County (ID 199820971)

Washington Field Office -

- Mike Bell at (252) 975-1616, Extension 26, for Currituck County (TIP B-2950)

Wilmington Field Office -

- Dave Timpy at (910) 251-4634 for Richmond and Carteret/Onslow Counties (Action ID Nos. 199801809 and 199801810)

3. **U.S. ARMY CORPS OF ENGINEERS PROJECTS: POC - Howard Varnam, Navigation Section at (910) 251-4411**

Bridge No. 24 on US 64 Business over the Tar River at Tarboro appears to cross a U.S. Army Corps of Engineers navigation project. This project provides for a channel 20 inches deep and 60 feet wide to Tarboro. There should be no problem from the provision of the proposed improvements if navigational clearances and channel setbacks for the existing project are maintained.

If you have questions or need further information related to the Federal project, please contact Mr. Varnam.

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Aowb
Phone: (757)398-6587

16590
July 7, 1998

Mr. Richard Davis, P.E.
Planning and Environmental Branch
N.C. Division of Highways
P.O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Davis:

This is in response to your letter dated June 5, 1998 requesting the Coast Guard to review the proposed projects to replace ten bridges of which five are over waterways. The following are the five bridge numbers and their locations: #49 White Oak River; #4 Tull Creek; #24 Tar River; #17 Dan River; and #64 Mayo River. B2938 B2950 B2965 B3045 B3230

The Coast Guard Authorization Act of 1982 exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used, susceptible to use in their natural condition, or susceptible to use by reasonable improvement as a means to transport interstate commerce. Ms. Pam Williams confirmed such conditions in a telephone conversation on June 30, 1998. Due to this, the bridge projects on the Dan and Mayo Rivers are exempt, and will not require Coast Guard Bridge Permits.

Tull Creek, and the White Oak and Tar Rivers are subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes. However, these waterways also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for these three projects.

The fact that Coast Guard permits are not required does not relieve you of the responsibility for compliance with the requirements of any other Federal, State, or local agency who may have jurisdiction over any aspect of the project.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

Grines/Baldwin

United States Department of the Interior

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

June 17, 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

Dear Mr. Gilmore:

Thank you for your letter of June 5, 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-2938, Carteret/Onslow Counties, Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River;

2. B-2950, Currituck County, Replace Bridge No. 4 on SR 1222 over Tull Creek;

3. B-2965, Edgecombe County, Replace Bridge No. 24 on US 64 Business over the Tar River;

4. B-3013, Person County, Replace Bridge No. 48 on US 501 over the Norfolk Southern Railway;

5. B-3045, Stokes County, Replace Bridge No. 17 on NC 89 over the Dan River;

6. B-3214, Northampton County, Replace Bridge No. 64 on US 301 over the CSX Railway;

7. B-3230, Rockingham County, Replace Bridge No. 64 on US 220 Business over the Mayo River;

8. B-3231, Rockingham County, Replace Bridge No. 243 on SR 1378 over the North/Western Railway;

9. B-3256, Wake County, Replace Bridge No. 337 on SR 1108 over the Norfolk Southern Railway; and,

10. B-3380, Richmond County, Replace Bridge No. 43 on Rice Street over the CSX Railway in Hamlet.

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 following is applicable to all the projects listed above except Item #5, B-3045. Stokes County is in an area of the state under the jurisdiction of the Services' Asheville Office. They should be contacted for resource information pertinent to this project.

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. Listed species have been known to occur in the vicinity of two of the bridge replacement sites.

The red-cockaded woodpecker (RCW) (*Picoides borealis*) is known from the vicinity of project B-2938, Carteret/Onslow Counties. In addition to the recommendations listed below, if the proposed project will be removing pines 9" DBH or greater, or 30 years of age in pine or pine/hardwood habitat, surveys should be conducted for active RCW cavity trees in appropriate habitat within a 0.5 mile radius of project boundaries. If the RCW is observed within the project area or active cavity trees are found, the project has the potential to affect the RCW, and you should contact this office for further information.

The Tar spinymussel (*Elliptio steinstansana*) has been recorded upstream of project B-2965, Edgecombe County. A mussel survey should be conducted at the proposed bridge replacement site, covering 100 meters upstream, and 400 meters downstream of the crossing. In addition, the applicant must implement the following measures to insure protection for all aquatic resources occurring downstream:

1. Installation of instream silt curtain weighted at the bottom, and stringent bank erosion control. If tree removal is required, stumps and roots should remain intact for bank stabilization;

2. Instream construction activities should be initiated only during low flow conditions that permit the effective deployment of the silt curtain; and,

3. Before stream crossings are to begin, the contractor should notify the Service within one week of the construction initiation date. The Service would like the opportunity to inspect the installation of the silt curtain and check any possible changes in stream flow conditions when scheduling allows.

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 this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding these comments, please contact Tom McCartney at 919-856-4520, ext. 32.

Sincerely,

John M. Hefner
Field Supervisor

Enclosures

cc:
COE, Mike Bell, Washington, NC
COE, Eric Alsmeyer, Raleigh, NC
COE, Scott McLendon, Wilmington, NC
NCDWQ, John Dorney, Raleigh, NC
FHWA, Nicholas Graf, Raleigh, NC
EPA, Ted Bisterfield, Atlanta, GA

FWS/R4:TMcCartney:TM:06/16/98:919/856-4520 extension 32:\10-brdge.rpl

Threatened and Endangered Species

Birds

- Bald Eagle
- Peregrine Falcon
- Piping Plover
- Red-cockaded Woodpecker
- Roseate Tern
- Wood Stork

Fish

- Cape Fear Shiner
- Waccamaw Silverside

Mussels

- Dwarf-wedge Mussel
- Tar Spinymussel

Mammals

- Eastern Cougar
- Red Wolf

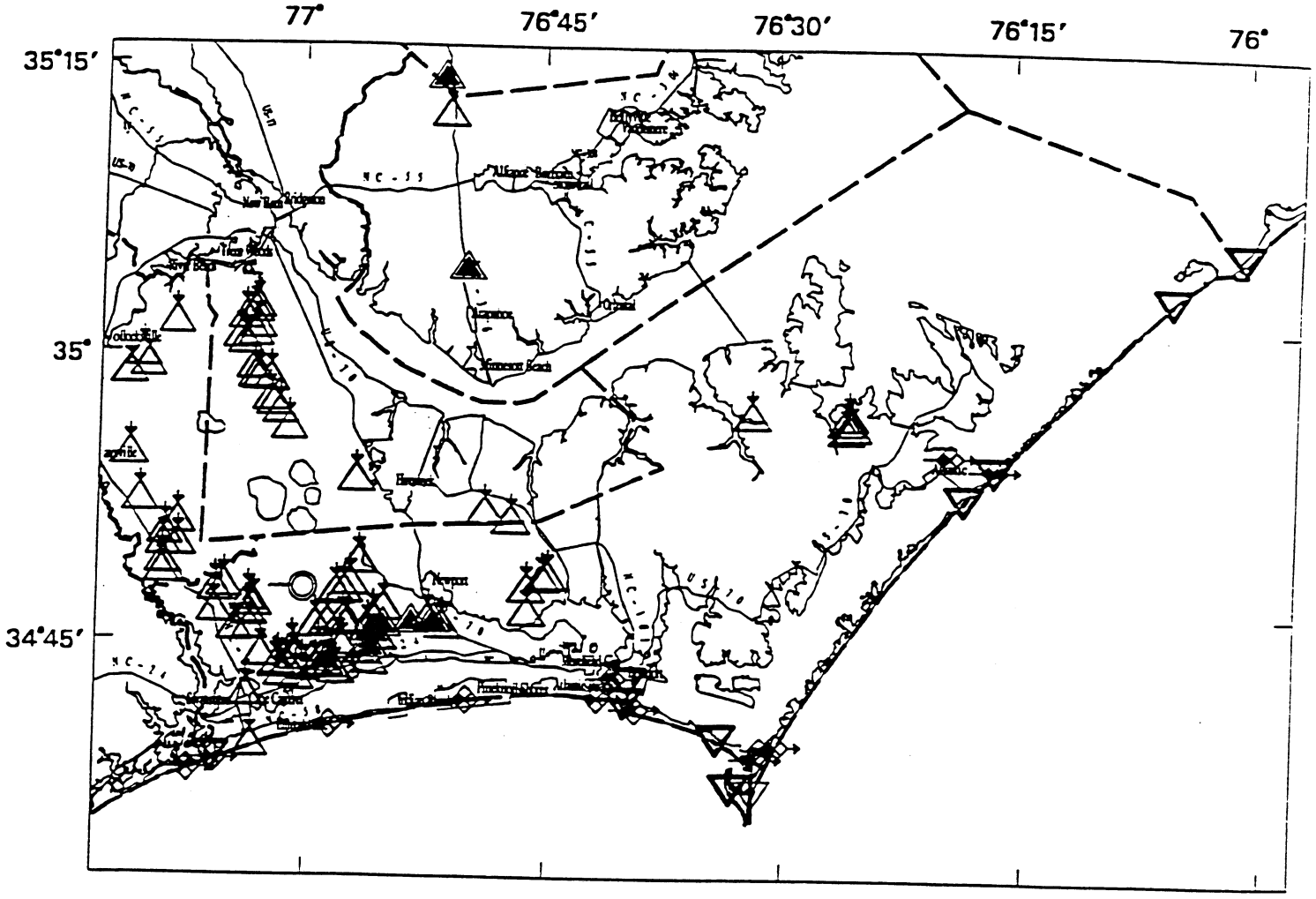
Plants

- American Chaffseed
- Harperella
- Michaux's Sumac
- Pondberry
- Rough-leaved Loosestrife
- Schweinitz's Sunflower
- Seabeach Amaranth
- Sensitive Joint-vetch
- Small Whorled Pogonia
- Smooth Coneflower

Seaturtles are seasonally ubiquitous along coastal regions, and therefore, are not labeled. Shortnosed Sturgeon and Manatees are seasonally ubiquitous in estuarine areas and are also not labeled.

Accounts of Selected Federally Listed Species In CARTERET County

Data represented on these maps are not based on comprehensive inventories of this county. Lack of data must not be construed to mean that listed species are not present.



Prepared by U.S. Fish and Wildlife Service
based on data provided by NC Natural Heritage Program
D. Newcomb, K. Tripp 1/15/98

0 1 2 3 4 5 MILES
012345 KILOMETERS

expires 1/31/99

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 Harris, PE, Project Manager
Project Development and Environmental Analysis Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: July 28, 1999

SUBJECT: North Carolina Department of Transportation (NCDOT) Bridge Demolition Projects B-2938, B-2950, B-2965, B-3045, and B-3230.

We have reviewed the information provided by you regarding the subject bridge demolition projects. These projects were reviewed during the scoping process and we preformed site visits as needed.

After reviewing the new information we do not object to the projects as proposed, provided that the new Bridge Demolition and Removal Best Management Practices are followed. If we can be of any further assistance please call me at (919) 528-9886.

cc: David Franklin, Special Projects Manager, USACOE, Wilmington

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: July 27, 1998

SUBJECT: NCDOT Group XVII Bridge Replacements

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-2938 - The bridge should be replaced with a spanning structure, in place with an off-site detour. This area of the White Oak River is a primary nursery area and is closed to shellfishing. There is a fringe of salt marsh adjacent to the bridge on the North/West side which should be avoided. The White Oak River supports anadromous runs of striped bass, river herring, and American shad. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation.

2. B-2950 - This bridge should be replaced with a spanning structure, in place with an off-site detour. Tulls Creek is designated as a primary nursery area. This creek is known to support anadromous runs of striped bass as well as quality runs of largemouth bass, sunfish and other gamefish. Our agency collects brood fish for largemouth bass restocking efforts from this section of Tulls Creek. Turbidity resulting from in-water work could damage critical freshwater spawning habitat not only in Tulls Creek but also in Tulls Bay. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation. There are also several Bald eagle nests along Tulls Creek. If any trees are to be removed eagle nest surveys should be performed.

3. B-2965 - This bridge should be replaced in place with an off-site detour if possible. The Tar river supports important runs of anadromous striped bass, hickory shad, American shad and river herring. The standard anadromous fish moratorium, February 15 to June 15, will be required. Also the federally listed, endangered, Tar spineymussel occurs in the Tar River in the vicinity of the bridge. A survey for this species should be performed 100 meters above the bridge to 400 meters downstream of the bridge. Based on the results of this survey additional conservation measures may be required. (Contact NCDOT Biologist, Tim Savidge.)

4. B-3013 - No specific concerns.

5. B-3045 - No specific concerns.

6. B-3214 - No specific concerns.

7. B-3230 - Nice riffles which provide excellent fish habitat are located 20-30 meters upstream of Bridge No. 64. This area should be avoided during the bridge replacement.

8. B-3231 - No specific concerns.

9. B-3256 - No specific concerns.

10. B-3380 - No specific concerns.

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.

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

June 19, 1998

MEMORANDUM

To: Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch

From: Cyndi Bell

Subject: Request for Comments for Group XVII Bridge Replacement Projects

Reference is made to your memorandum of June 5, 1998, in which you requested early scoping comments for ten bridge replacement projects. Of the ten bridges on your list, only five involve streams, while the other five are railroad bridges. Please see the attached Water Quality Checklist for Bridge Replacement Projects for general recommendations. Based upon our records, Standard Sediment and Erosion Control measures will be acceptable for these fiver projects. I do ask that you investigate whether riparian wetlands are located at any of these crossings. The potential for occurrence of riparian wetlands is higher at B-2938, B-2950, and B-2965. Please note that we prefer bridging of riparian wetlands, especially if you are considering replacement of an existing bridge with a culvert.

Thank you for your inquiry. If you have any questions, please contact me at (919) 733-1786 or Cyndi_Bell@dem.ehnr.state.nc.us.

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-5083 FAX 919-733-9919

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

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director

DEHNR

February 26, 1997

MEMORANDUM

To: Mr. H. Franklin Vick, P.E., Manager, NCDOT, Planning & Environmental Branch

From: Cyndi Bell, NC Division of Water Quality CLB

Subject: Water Quality Checklist for Bridge Replacement Projects

Reference your correspondence dated January 21, 1997, in which you requested scoping comments for five bridge replacement projects. As I will be unable to attend the scoping meeting for these projects on March 11, 1997, I am forwarding these comments to you and the appropriate project engineers in writing. The Division of Water Quality requests that NCDOT consider the following generic environmental commitments for design and construction of bridge replacements:

A. DWQ requests that DOT strictly adhere to North Carolina regulations entitled "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0024) throughout design and construction for this project in the area that drains to streams having WS (Water Supply), ORW (Outstanding Resource Water), HQW (High Quality Water), B (Body Contact), SA (Shellfish Water) or Tr (Trout Water) classifications to protect existing uses.

B. DWQ requests that bridges be replaced on existing location with road closure, when practical. If an on-site detour is necessary, remediation measures in accordance with DWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.

C. DWQ requests that hazardous spill catch basins be installed at any bridge crossing a stream classified as HQW or WS (Water Supply). The number of catch basins installed should be determined by the design of the bridge, so that runoff would enter said basin(s) rather than directly flowing into the stream.

D. To the maximum extent practicable, DOT should not install the bridge bents in the creek.

E. Wetland impacts should be avoided (including sediment and erosion control structures/measures) to the maximum extent practical. If this is not possible, alternatives that minimize wetland impacts should be chosen. Mitigation for unavoidable impacts will be required by DWQ if impacts exceed one acre. Smaller impacts may require mitigation by the U.S. Army Corps of Engineers.

F. Borrow/waste areas should not be located in wetlands. It is likely that compensatory mitigation will be required if wetlands are impacted by waste or borrow.

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-9960 FAX # 733-9919

G. DWQ prefers replacement of bridges with bridges. If the new structure is to be a culvert, it should be countersunk to allow unimpeded fish passage through the crossing.

H. If foundation test borings will be required, this should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No. 6 for Survey Activities. Written concurrence from the North Carolina Wildlife Resources Commission and U.S. Army Corps of Engineers is required in designated mountain trout counties.

I. If this project is processed as a Categorical Exclusion, NCDOT is reminded that mitigation will be required if wetland impacts exceed one acre, in accordance with DWQ Wetland Rules (15A NCAC 2H.0506 (h)(2)).

The attached table has been prepared by DWQ for your assistance in studying the systems involved in these bridge replacements. This information includes the DWQ Index Number, DWQ Stream Classification, river basin, and preliminary comments for each crossing. Please note that National Wetland Inventory (NWI) map references are not to be replaced by onsite wetland determinations by qualified biologists.

Thank you for your request for DWQ input. DOT is reminded that issuance of a 401 Water Quality Certification requires satisfaction of water quality concerns, to ensure that water quality standards are met and designated uses are not lost or degraded. Questions regarding the 401 Certification or other water quality issues should be directed to Cyndi Bell at (919) 733-1786 in DWQ's Water Quality Environmental Sciences Branch.

cc: Michelle Suverkrubbe
Melba McGee
Jeff Ingham
Bill Goodwin
John Williams

B1443.DOC

Carteret County Transportation Committee

Post Office Box 825 • Morehead City, North Carolina 28557
Phone: (252) 726-7822 • Fax: (252) 726-7822 • Email: carteret.edc@gtp.net

July 24, 1998

Ms. Stacy Baldwin, P.E.
Planning and Environmental Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Ms. Baldwin:

The Carteret County Transportation Committee met last night and discussed the above-captioned project. The Committee unanimously adopted alternative 3 identified on the June 5, 1998 letter from Richard B. Davis to Carteret County Manager Robert Murphy. If traffic is closed on the Stella Bridge during the construction of the new bridge, it will result in a severe inconvenience and dislocation for those individuals who utilize the bridge on a daily basis. The nearest detour across the White Oak River would require approximately 20 miles of additional travel. Many area farmers farm property on both sides of the White Oak River, and a closure of the bridge would be both inconvenient and expensive for them.

It was also brought to the attention of the Committee that there is significant flooding of the roadway on the Onslow County side of the bridge during full moon/high tide events. The Committee requests that the Department of Transportation try to address the flooding problem as part of the bridge project. If you have any questions regarding the exact location of the flooding, please feel free to contact Mr. John Jones, who is a member of the Transportation Committee. Mr. Jones' telephone number is 252.393.2093.Mr. Jones regularly utilizes the Stella Bridge, and he is very familiar with the flooding problem.

Thank you very much for your consideration and assistance. Please do not hesitate to contact me or Mr. Donald Kirkman, who provides staff support to the Carteret County Transportation Committee. I can be reached at 252.728.2141, and Mr. Kirkman can be reached at 252.726.7822.

Sincerely,

Hunter Chadwick, Chairman

HC:cy
cc: Mr. John Jones
Mr. Donald A. Kirkman

CARTERET COUNTY
ECONOMIC DEVELOPMENT COUNCIL

Carteret County is a member of the Global TransPark Development Commission and North Carolina East

P. O. Box 825
Morehead City NC
28557
919.726.7822
800.462.4252
FAX 919.726.4215
carteret.edc@gtp.net

June 29, 1998

Mr. Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch
N.C. Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Mr. Davis:

I am responding to your June 5 correspondence to Carteret County Manager Robert Murphy regarding the above-captioned bridge project. Mr. Murphy forwarded your letter to me because I provide staff support to the Carteret County Transportation Committee, as well as being the Executive Director of the Carteret County Economic Development Council.

Unfortunately, neither the Transportation Committee nor the Economic Development Council Board of Directors has met since June 5th, and therefore they have not had an opportunity to review your correspondence or provide input. Both Carteret County and the Carteret County Transportation Committee feel that the replacement of the Stella Bridge is a very high priority, and both have previously corresponded with representatives of the Department of Transportation regarding the importance of replacing the bridge.

Consequently, I am confidant that the "No-Build" alternative is inconsistent with the preferences of the Carteret County Commissioners and the Carteret County Transportation Committee. Based on informal discussions with residents of the region near the bridge, including Transportation Committee representatives from the communities most affected, there is a consensus that a new bridge should be built in the vicinity of the existing bridge, while maintaining traffic on the existing bridge during construction. This is reflected as alternate 3 in your June 5 correspondence.

Please also be advised that there is a Carteret County Thoroughfare Plan currently in progress, as well as a thoroughfare plan for the region which includes the Highway 58 and Highway 24 corridors. Those plans are being coordinated by Travis Marshall and

James Upchurch, respectively, in your Statewide Planning Branch. Because the Stella Bridge is the only road connection between Carteret and Onslow Counties other than N.C. 24, it is likely to play an increasingly important role in the county's future transportation plans. Therefore, I urge you and/or Wang Engineering to speak with Messrs. Marshall and Upchurch regarding the location and design of the bridge.

It is likely that the Transportation Committee will meet in late July, at which time they would be in a position formally to comment on your alternates. Even though their meeting will be past your June 30 comment deadline, I will let you know their recommendation.

Thank you very much for your consideration. Please contact me if you have any questions.

Sincerely,

Donald A. Kirkman
Executive Director

cc: Robert Murphy, Carteret County Manager
Hunter Chadwick, Carteret County Transportation Committee Chair
John Jones, Carteret County Transportation Committee
Travis Marshall, P.E.
James Upchurch, P.E.

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B of 4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A			
DESCRIPTION OF PROJECT:	Replace on existing alignment					

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

D. R. Vick — Approved by — 10-27-98 — Date

m 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy: Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate A of 4 Alternate	
I.D. NO.:	B-2938	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	Replace Bridge #49 on SR 1101/SR 1442 over White Oak River				
	Replace on existing location with a on-site Detour on South Side.				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

rm 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B	of	4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A					
DESCRIPTION OF PROJECT:	Replace on existing alignment							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

orm 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation,
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate D C of 4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	Replace on existing alignment, maintain traffic on one lane of existing bridge				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

1 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	8.2160801	COUNTY	CARTERET/ONSLOW	Alternate D of	Alternate
I.D. NO.:	B-2938	F.A. PROJECT			
		REPLACEMENT BRIDGE NO. 49 ON SR 1101/SR 1442 OVER WHITE OAK RIVER			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential			0	
Businesses			0	
Farms			0	
Non-Profit			0	

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

NOTE: The only structure involved on this project is an old abandoned brick building. Therefore, there is no relocation involved.

MANAGER OF
RIGHT OF WAY BRANCH

MAR 3 0 1999

N.C. DEPT. OF TRANSPORTATION

R. B. CHADWICK — Relocation Agent — 03-26-99 — Date

Approved by — 3-30-99 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy: Area Relocation Office

Protected Species Update Report

Bridge No. 49 Over the White Oak River
SR 1101 and SR 1442
Carteret and Onslow Counties
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. Project No. B-2938

North Carolina Department of Transportation
Project Development and Environmental Analysis Branch

February 2003

Two potential habitat areas along the Carteret County side of the bridge were also scanned. One area begins approximately 400 feet (122 meters) north of the bridge and the other area begins approximately 1200 feet (366 meters) southeast of the bridge. While these areas may be within potential primary zone range from the bridge construction, the bald eagle is currently not listed for Carteret County. Also these areas, located adjacent to the Stella community, may be too disturbed for bald eagle nesting and roosting. No bald eagle individuals or nests were observed in these areas.

The North Carolina Natural Heritage Program (NHP) database of rare species and unique habitats, checked on January 22, 2003, indicates no records of occurrences in the study area. While no bald eagle nests or individuals were observed or recorded in the study area, potential habitat does exist within the potential secondary zone (Onslow County), as described by the USFWS. Therefore, a Biological Conclusion of **May Affect-Not Likely to Adversely Affect** may result from the proposed bridge construction.

References

FWS. January 1987. Habitat Management Guidelines for the Bald Eagle in the Southeast Region.

NCDOT. October 2001. Carteret and Onslow Counties, SR 1101 and SR 1442, Bridge No. 49 over the White Oak River Categorical Exclusion.

At the request of the North Carolina Department of Transportation (NCDOT), Buck Engineering prepared a protected species update report for the replacement of Bridge No. 49 over the White Oak River in Carteret and Onslow Counties, T.I.P. No. B-2938. This report supplements the Categorical Exclusion (CE) for this project. Since the completion of the CE in October 2001, the bald eagle (*Haliaeetus leucocephalus*) was added to the United States Fish and Wildlife Service (USFWS) federally threatened and endangered species list for Onslow County as of January 29, 2003.

This study involved conducting a survey for bald eagle habitat and individuals within the area of bridge replacement. This included an evaluation of potential habitat within an approximately 1-mile (1.6-kilometer) radius of the bridge. Buck Engineering biologists, Greg Price and Jessica Rohrbach, conducted the field survey on January 28, 2003. Approximately one hour was spent conducting the survey, which involved walking in potential habitat areas and scanning the area with binoculars for nests and individuals. While the bald eagle is listed only for Onslow County and not Carteret County, potential habitat on the Carteret County side of the bridge was scanned as well. Included in the protected species update report below are descriptions of the bald eagle along with the project's Biological Conclusion explanations for this species.

Haliaeetus leucocephalus (Bald eagle) **Threatened-Proposed for Delisting**

Animal Family: Accipitridae
Federally Listed: March 11, 1967

Adult bald eagles can be identified by their large white head and short white tail. The body plumage is dark-brown to chocolate-brown in color. In flight bald eagles can be identified by their flat wing soar.

Eagle nests are found in close proximity to water [within 0.5 mile (0.8 kilometer)] with a clear flight path to the water, in the largest living tree in an area, and having an open view of the surrounding land. Human disturbance can cause an eagle to abandon otherwise suitable habitat. The breeding season for the bald eagle begins in December or January. Fish are the major food source for bald eagles. Other sources include coots, herons, and wounded ducks. Food may be live or carrion.

Biological Conclusion: **May Affect-Not Likely to Adversely Affect**

The closest potential habitat observed for the bald eagle on the Onslow County side exists approximately 1,800 feet (549 meters) west of the existing bridge. Bridge construction therefore would occur outside the potential primary zone, as described by the USFWS. The primary zone is the critical area that encompasses an area extending from 750 to 1500 feet (229 to 457 meters) outward from the nest tree. The secondary zone encompasses an area extending outward from the boundary of the primary zone, a distance of 750 feet to 1 mile (457 meters to 1.6 kilometers) (USFWS, 1987). No bald eagles or bald eagle nests were observed in the potential habitat area.

Stella Bridge Mitigation Plan
Bridge No.49 over the White Oak River on SR 1101 in Carteret County
and SR 1442 in Onslow County.

TIP B-2938
Federal Aid Project No.BRZ-1101(5)
State Project No. 8.2160801

North Carolina Department of Transportation
Division of Highways
Project Development and Environmental Analysis Branch
Office of Natural Environment

May 2003

1.0 Introduction

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No.49 over the White Oak River on SR 1101 in Carteret County and SR 1442 in Onslow County (see Figure 1). As a component of the project, the existing causeway will be removed and the area will be graded to the elevation of the adjacent wetland.

1.1 Wetland Resources

Within the project area, a brackish marsh lies along the southern and western banks of the White Oak River. Existing marsh vegetation primarily consists of big cordrass (*Spartina cynosuroides*), black needle rush (*Juncus roemerianus*), saltmeadow cordgrass (*Spartina patens*), and common reed (*Phragmites australis*) along the edges of the causeway. An occasional Eastern red cedar (*Juniperus virginiana*), wax myrtle (*Myrica cerifera*), and yaupon holly (*Ilex vomitoria*) exists throughout the marsh.

1.2 Summary of Mitigation

Wetland restoration associated with TIP B-2938 will be accomplished by removal of 1.7 ac of the existing causeway and vegetating with species matching the target wetland community (see Figure 2). Proposed impacts to jurisdictional wetlands due to the replacement of Bridge No. 49 are below the threshold for compensatory mitigation. Therefore, the entire 1.7 ac of restoration will be available for future projects in the White Oak River Basin (03030001 CU).

2.0 B-2938 Onsite Mitigation

The purpose of this report is to document the existing site conditions at the location of the proposed replacement of Bridge No. 49, to describe the wetland restoration, and to establish the monitoring for the onsite restoration site. This plan includes on-site wetland restoration associated with the planned removal of the bridge causeway.

2.1 Site Descriptions

The total project area for the bridge replacement is approximately 9.8 ac in size. The change in elevation across the site is from 0.5 feet above mean sea level (msl) to 5.0 feet above msl.

The soils in this area are mapped by the Soil Survey of Onslow County (SCS, 1992) as the Muckalee-Dorovan association. However, Lafitte muck is the dominant soil type in the study area and is found on both sides of the roadway approach west of the White Oak River. This soil is typically found less than 5ft above msl and is flooded daily with brackish water. Infiltration and permeability are moderate and the water table is at or near the surface most of the time.

2.2 Methodology

The goal of the mitigation plan is to establish a wetland community classified as Brackish Marsh. The proposed replacement of Bridge No. 49 will provide 1.7 ac of on-site wetland restoration by the removal of the existing bridge causeway to the elevation of the adjacent marsh.

Fill material will be graded down approximately 2.5 ft. to the elevation of the adjacent jurisdictional wetlands. Exact elevations will be determined during construction by matching grades at cross sections of the marsh. If the depth of excavation of the existing roadway surface layers falls below the adjacent wetland elevation and excess waste soil is not available onsite, clean sand will be added to bring the restored area to the correct elevation. The area will be disked as necessary to reduce compaction. Soil amendments may be added if needed. Marsh vegetation (See Figure 3) consisting of the species mix in the table below will be planted on 3 x 3 feet centers (4,840 plants per acre).

TABLE 1. Species mix for B-2938 marsh restoration

Species	Proportion
Big cordgrass (*Spartina cynosurroides*)	40%
Black needle rush (*Juncus romerianus*)	30%
Saltmeadow cordgrass (*Spartina patens*)	30%

2.3 Monitoring

Hydrologic monitoring will occur throughout the growing season in the restoration area by using surface water gauges. Two surface water gauges will be placed in the restored Brackish Marsh area. Two surface water gauges will be placed in the reference adjacent Brackish Marsh area located within the project area. Hydrologic success criteria will be based on the establishment of hydrologic conditions comparable in hydrologic frequency and duration to those of the existing reference wetlands adjacent to the areas being restored. Hydrographs from gauges in the reference marsh will be compared to those in the restored marsh as a component of the annual monitoring report.

Vegetation monitoring will consist of thirty 1m X 1m random plots in the Brackish Marsh community. The vegetative marsh success of the wetland site will be determined in accordance with National Marine Fisheries Service Guidelines. The vegetation component of the wetland site will be deemed successful if the following criteria are met.

1. At year five, the average of all plots should have a scale value of 5 (75% vegetative cover) consisting of wetland herbaceous species, not including any invasive species.

2. A minimum of 70% of the plots shall contain the target (planted) species. Visual observation of plant establishment will be recorded using photo reference points.

2.4 Mitigation Credit Ratios

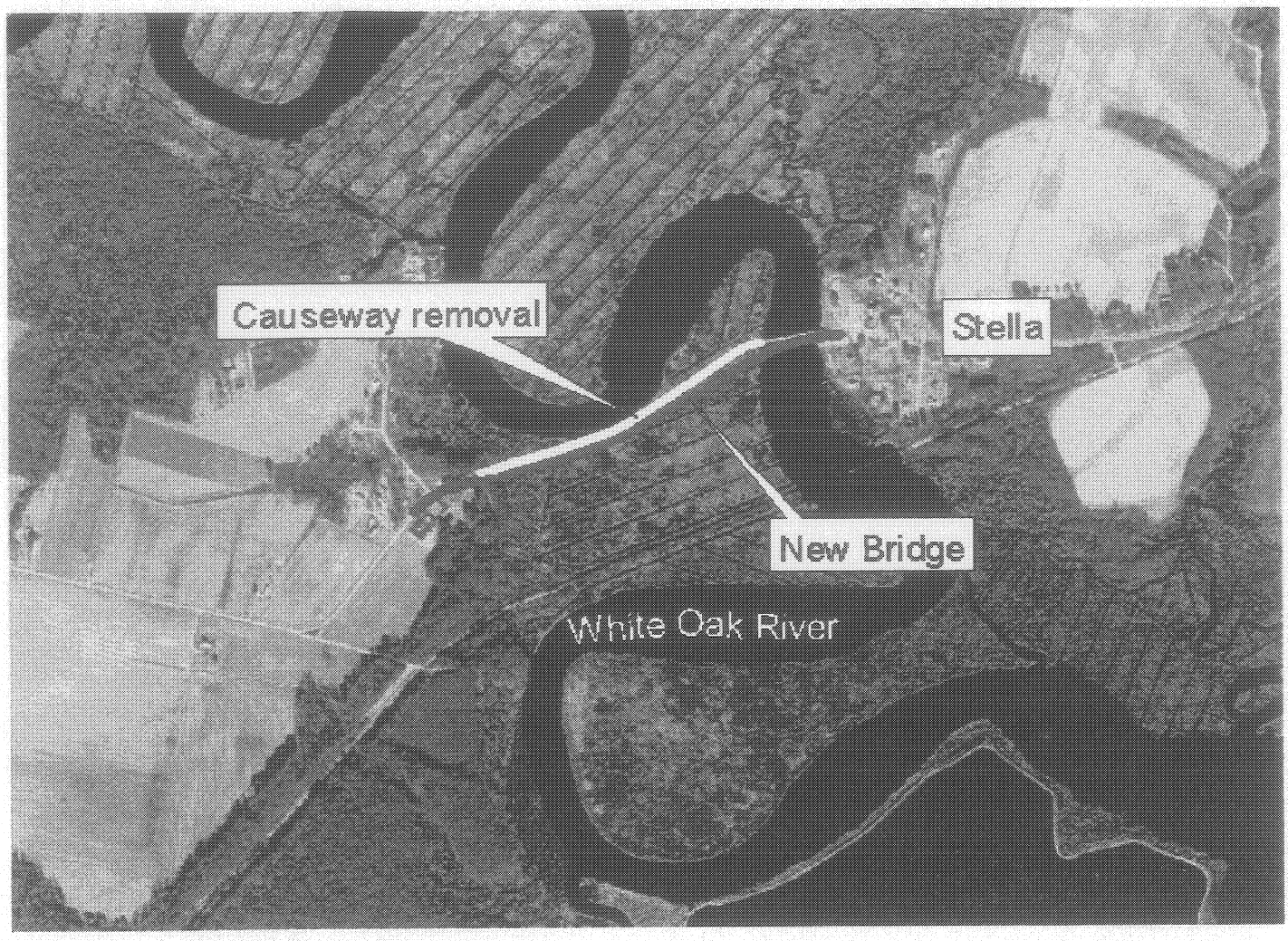
The following table outlines the onsite mitigation from the proposed replacement of Bridge No. 49. NCDOT proposes to use this surplus mitigation for impacts from projects in the White Oak River Basin (03030001 CU).

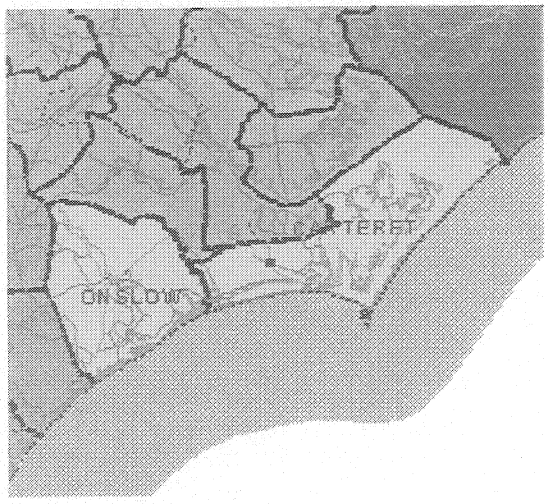
TABLE 2. B-2938 Onsite Mitigation Debit Ledger

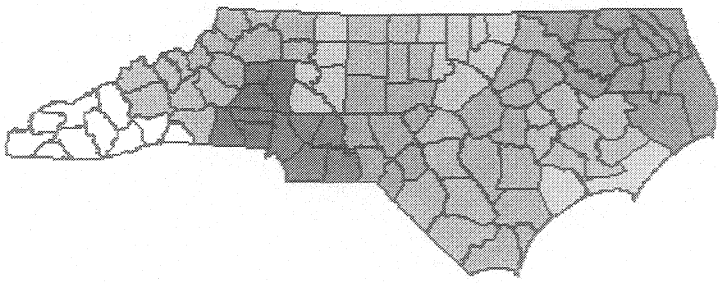
Community Type	Wetland Mitigation Remaining
Brackish Marsh Restoration	1.7 ac

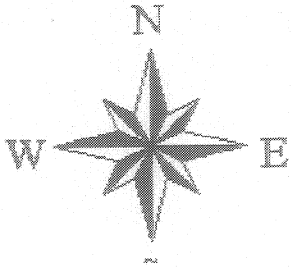
2.5 Final Dispensation of Property

NCDOT will retain ownership of the mitigation site until all monitoring requirements are fullfilled and an appropriate recipient is identified. If and when the deed is transferred, restrictions will be placed on the property to ensure protection in perpetuity.









TIP B-2938 Onsite Mitigation
Bridge No. 49 on SR 1442/ SR1101
Carteret and Onslow Counties

Figure 2. Plan view of marsh restoration area

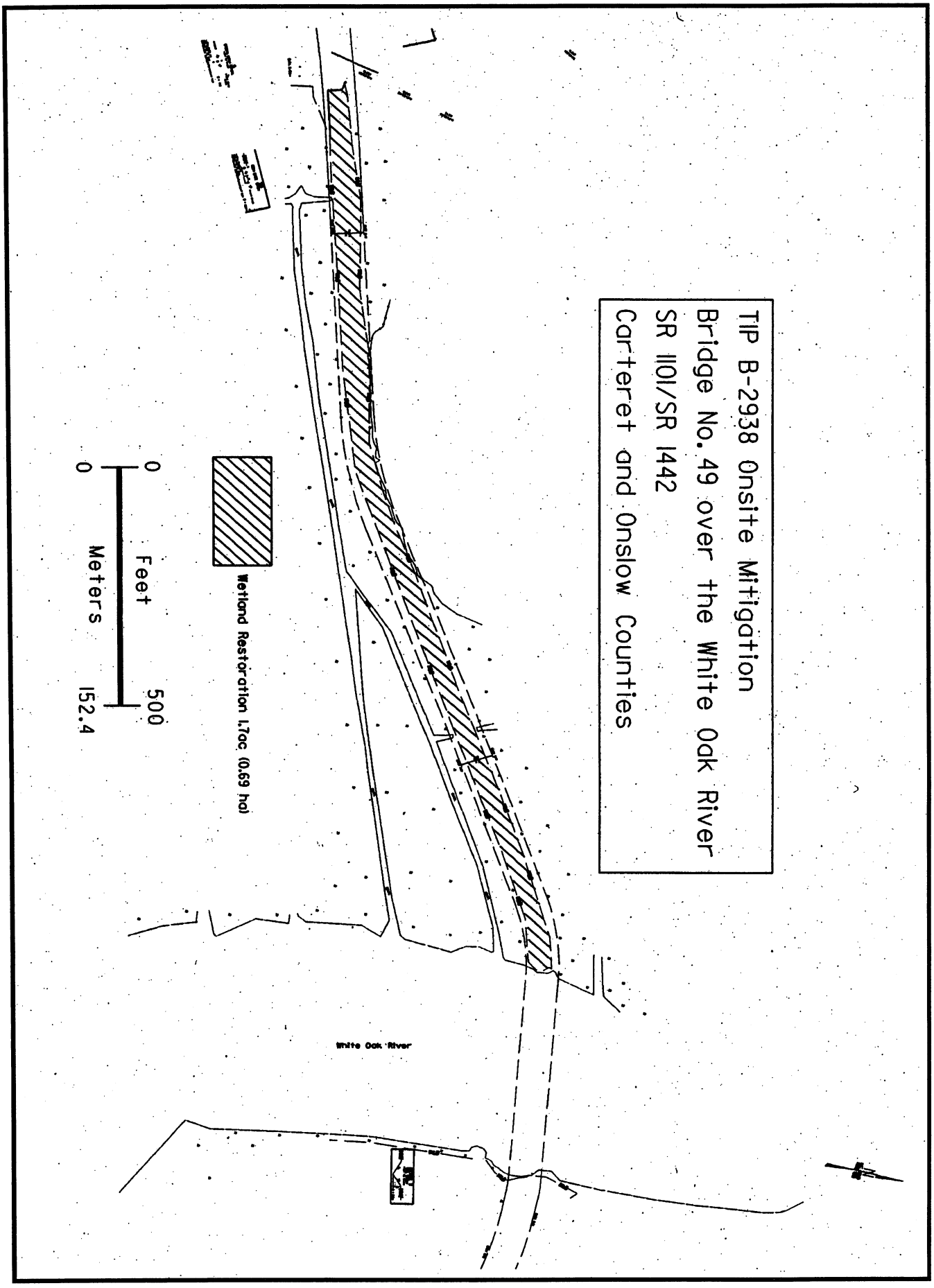
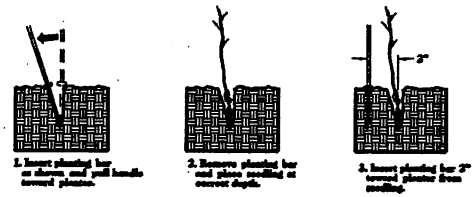


Figure 3. Planting plan detail

PLANTING DETAILS

MARSH GRASS PLANTING DETAIL

DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



PLANTING NOTES:

PLANTING BAG
Planting seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12" long, 4" wide and 3" thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches (10") below the root collar.

N.C.	B-2938	RP-1	

WETLAND GRASS PLANTING

WETLAND GRASS SPECIES SHALL BE PLANTED 0.6m TO 1.2m ON CENTER, RANDOM SPACING, AVERAGING 0.9m ON CENTER, APPROXIMATELY 11955 PLANTS PER HECTARE.

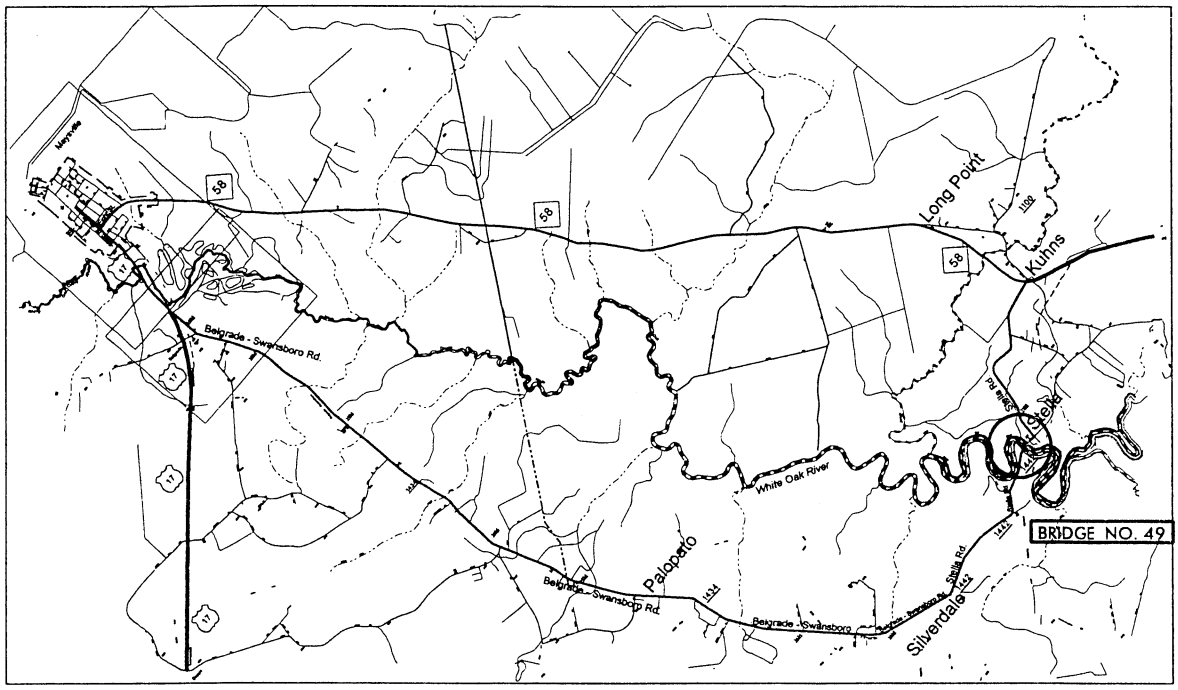
WETLAND GRASS PLANTING

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

40% SPARTINA CYNOSUROIDES	BIG CORDGRASS	50 mm PEAT POT
30% JUNCUS ROMERIANUS	BLACK NEEDLE RUSH	50 mm PEAT POT
30% SPARTINA PATENS	SALTMEADOW CORDGRASS	50 mm PEAT POT

WETLAND GRASS PLANTING DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT



VICINITY MAP

N.C.D.O.T.

DIVISION OF HIGHWAYS

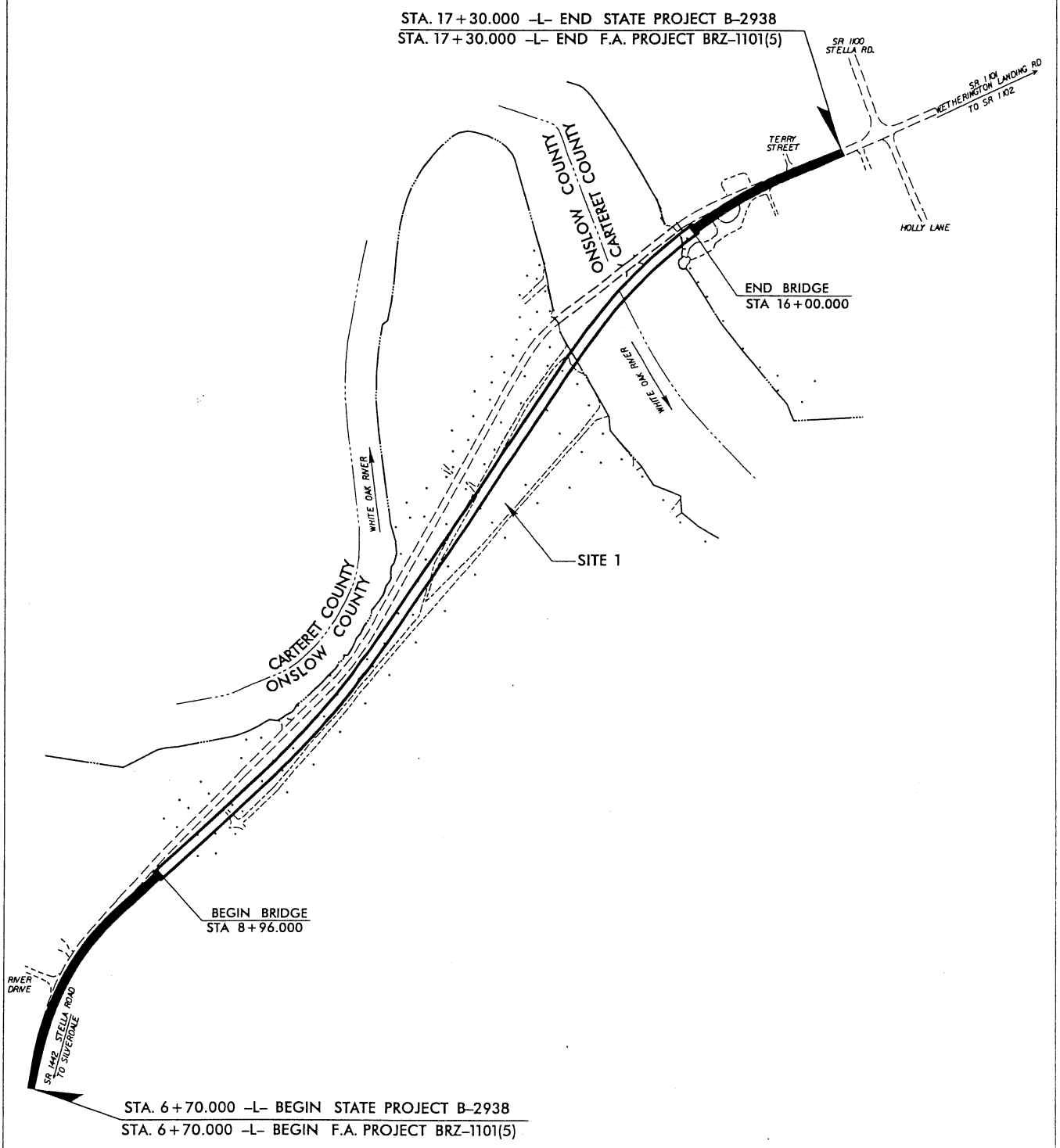
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 1 OF 22

05 / 31 / 01



VICINITY MAP

N.C.D.O.T.

DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 2 OF 22

05 / 31 / 01

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 TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

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 TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

BZ1 BUFFER ZONE 1

BZ2 BUFFER ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

PROJECT: 8.2160801 (B-2938)

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

SHEET 3 OF 22 05/31/01

METRIC

5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
B-2938	2A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

2/17/03

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S.J. WANG

2/18/03

WANG ENGINEERING
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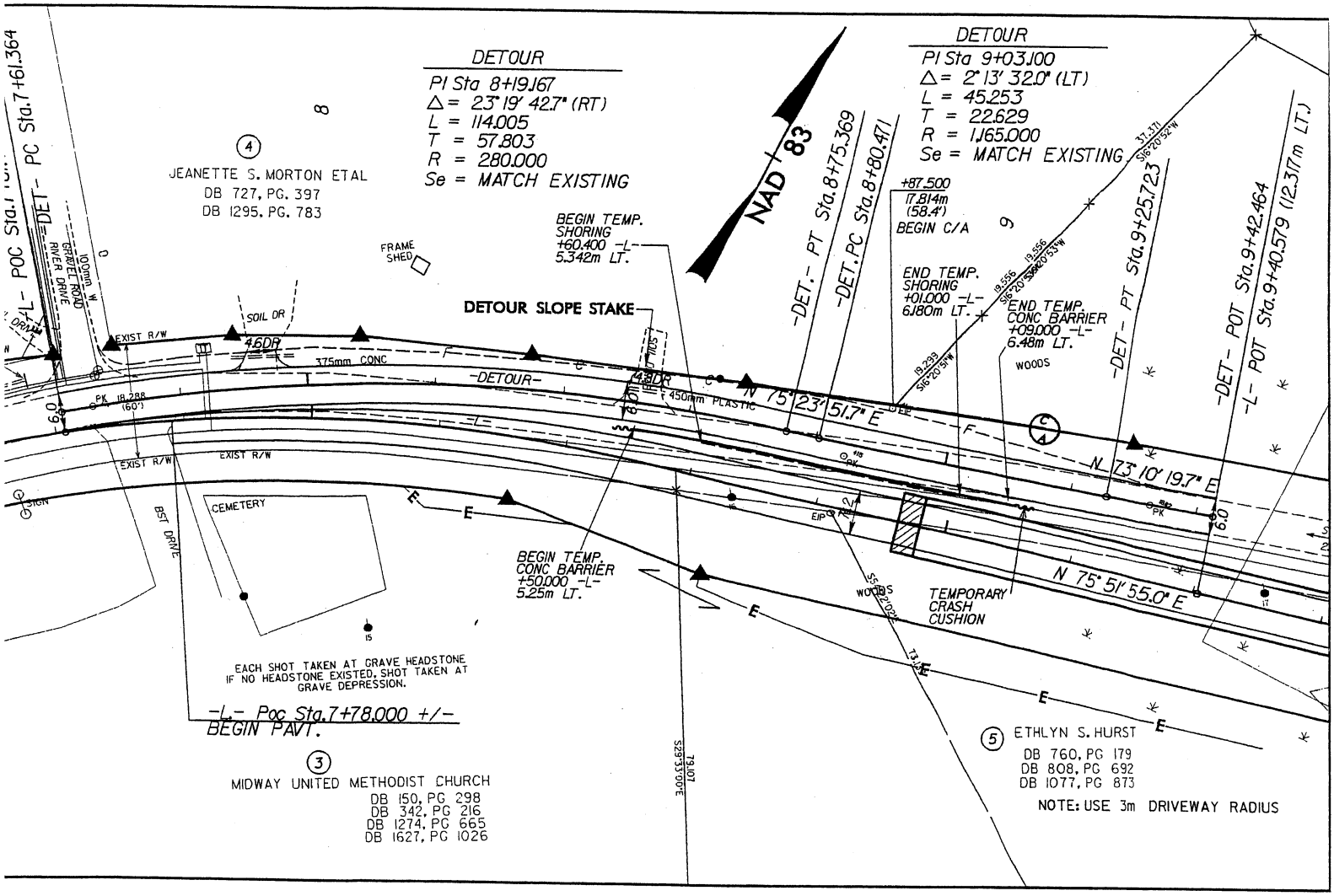
CARY, NC 27513

DETOUR #1



N.C.D.O.T.

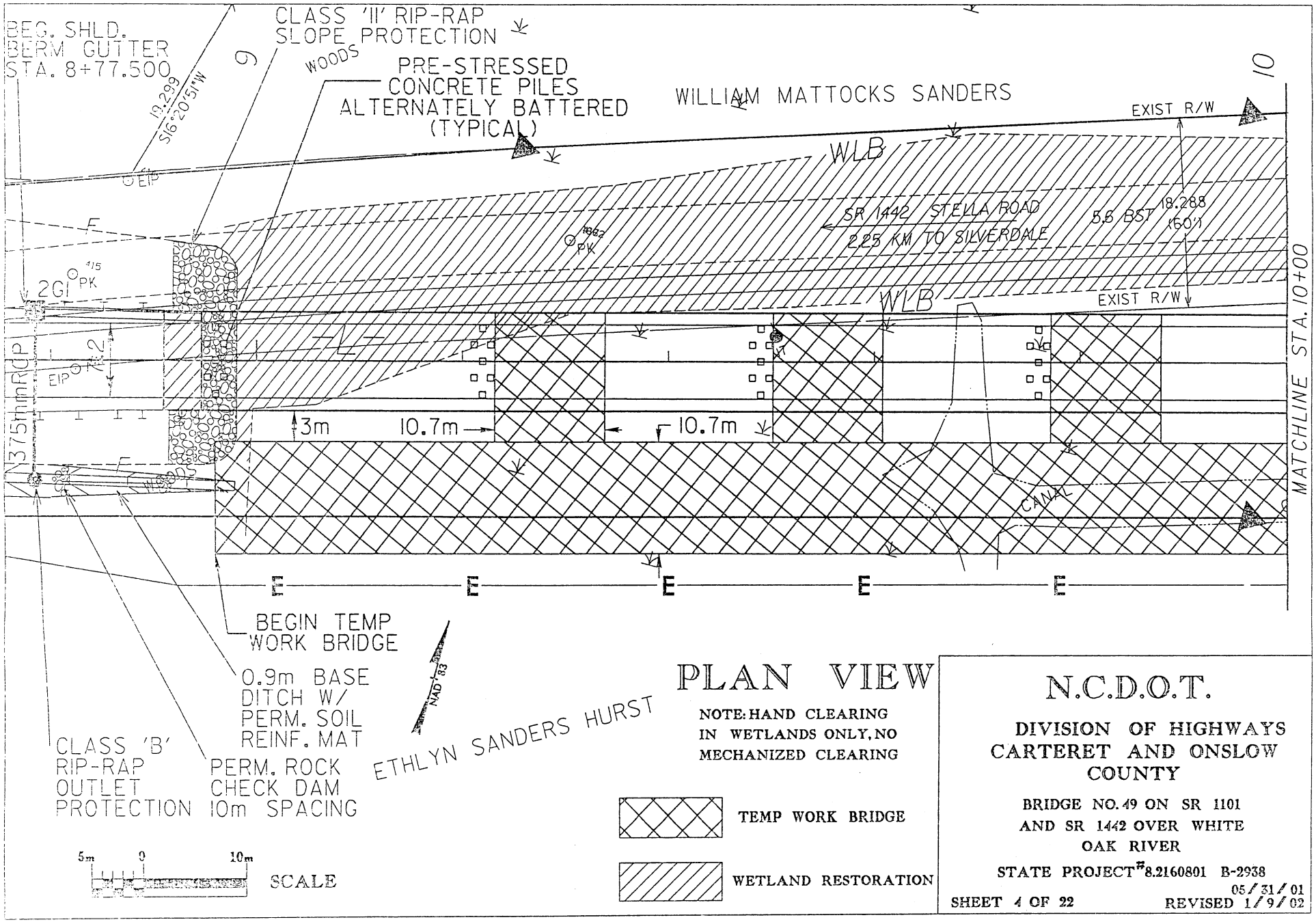
DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET **3A** OF 22



PLAN VIEW

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 4 OF 22

05/31/01
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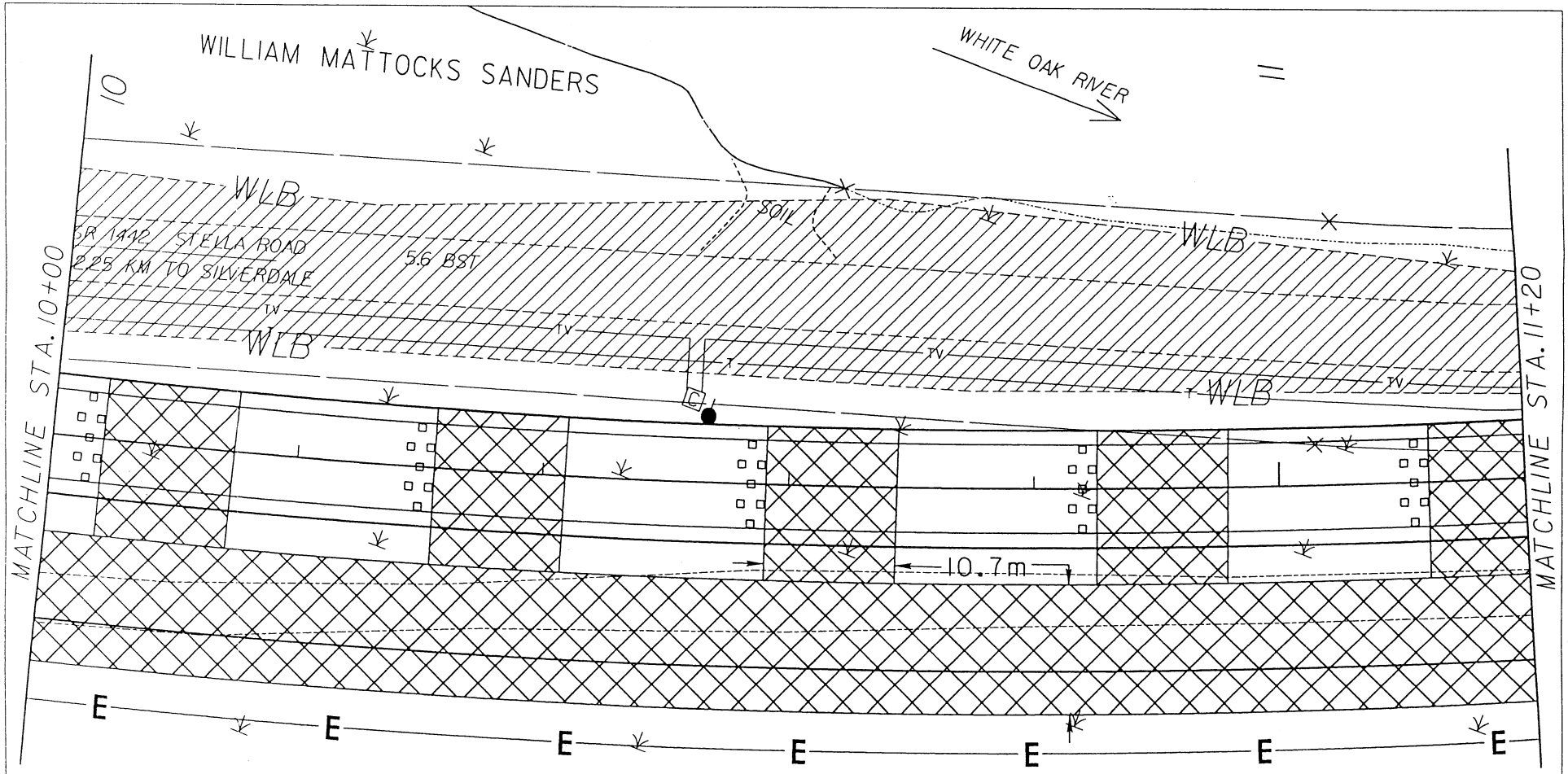


ETHLYN SANDERS HURST

PLAN VIEW

NAD 83

5m 0 10m

SCALE

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

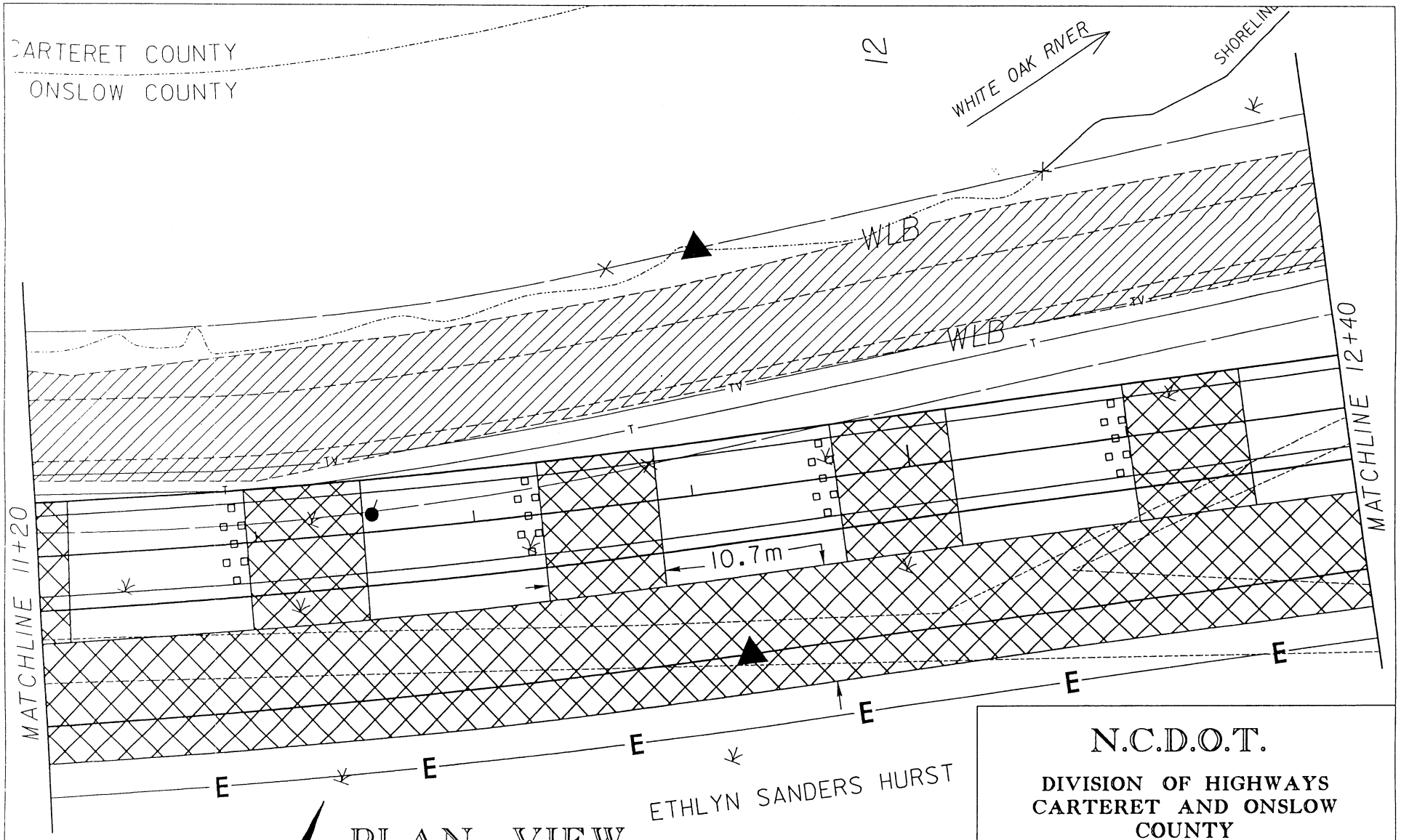
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 5 OF 22

05 / 31 / 01



PLAN VIEW

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

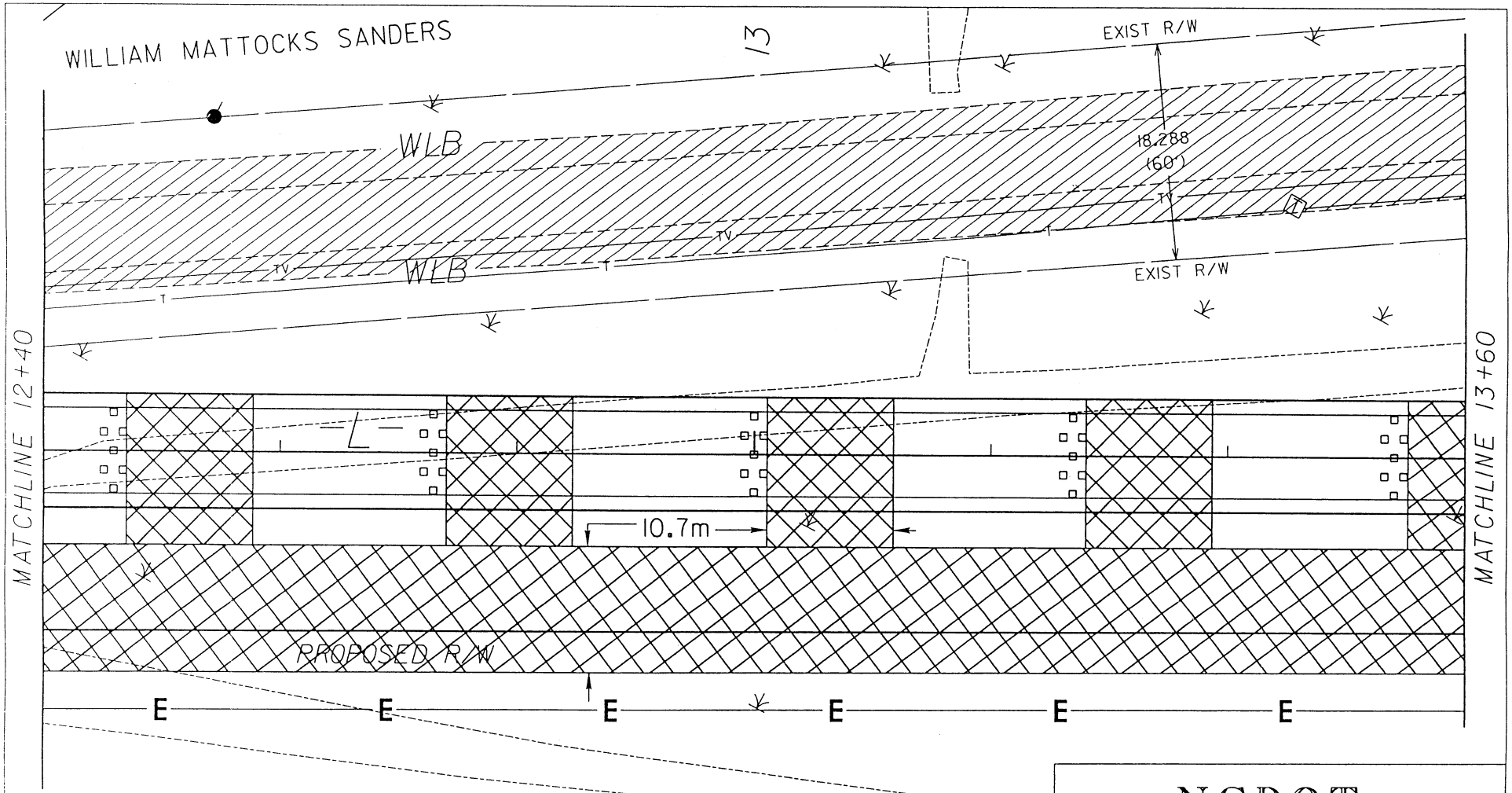
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 6 OF 22

05/31/01



PLAN VIEW

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

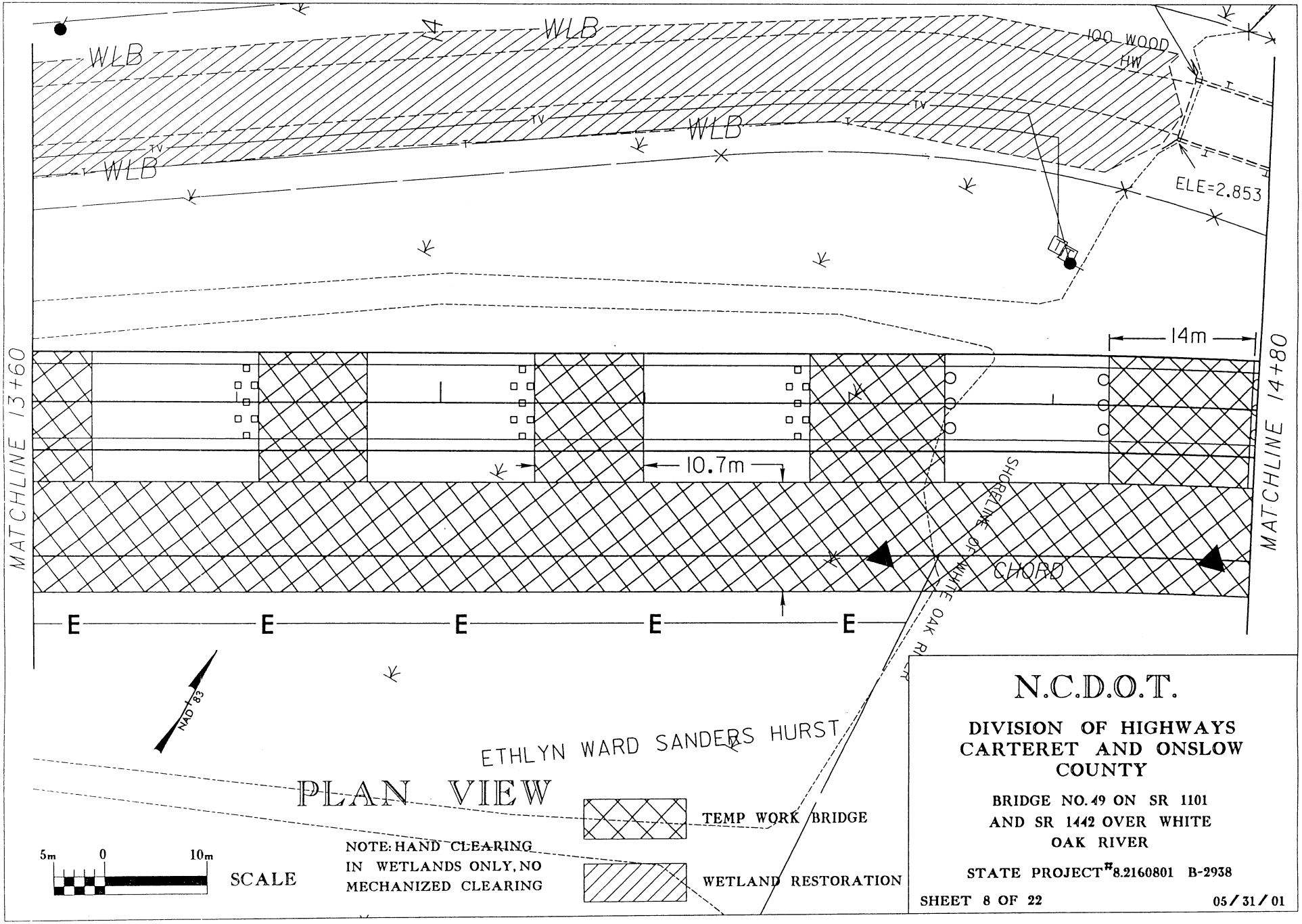
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 7 OF 22 **05/31/01**



N.C.D.O.T.

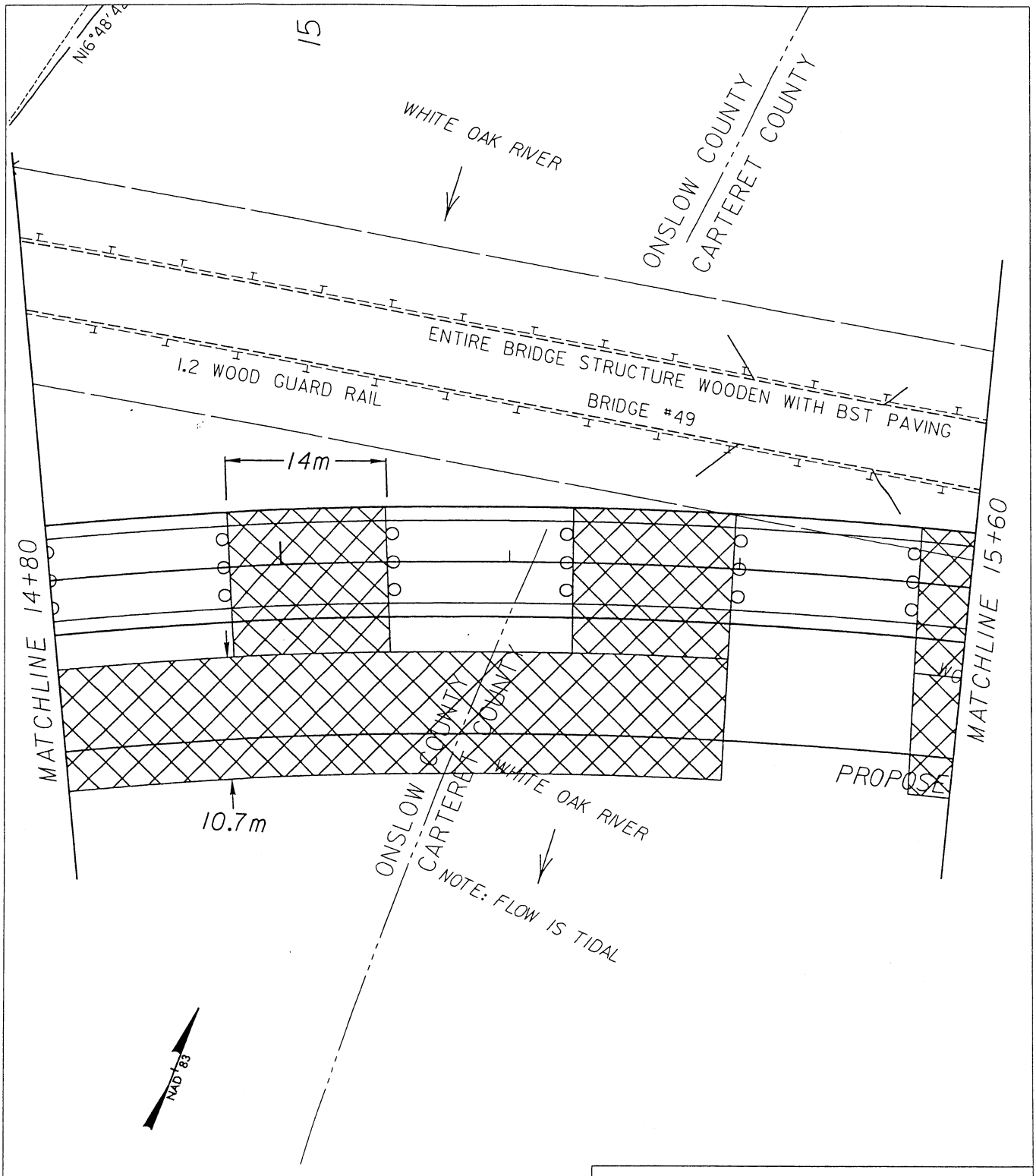
DIVISION OF HIGHWAYS CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 8 OF 22

05 / 31 / 01



PLAN VIEW

TEMP WORK BRIDGE

5m 0 10m

SCALE

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 9 OF 22

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METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
B-2938	2A
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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S.J. WANG

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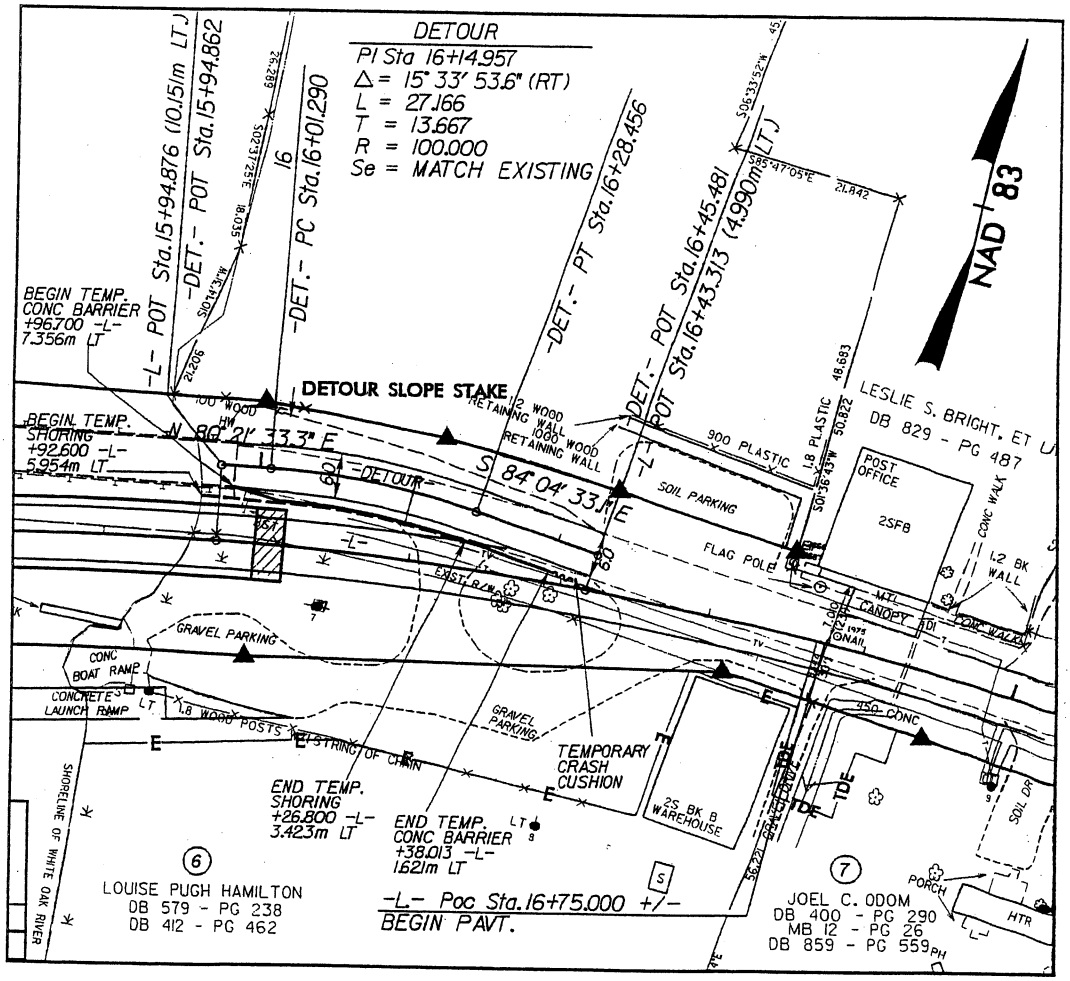
CARY, NC 27513

DETOUR #2



N.C.D.O.T.

DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

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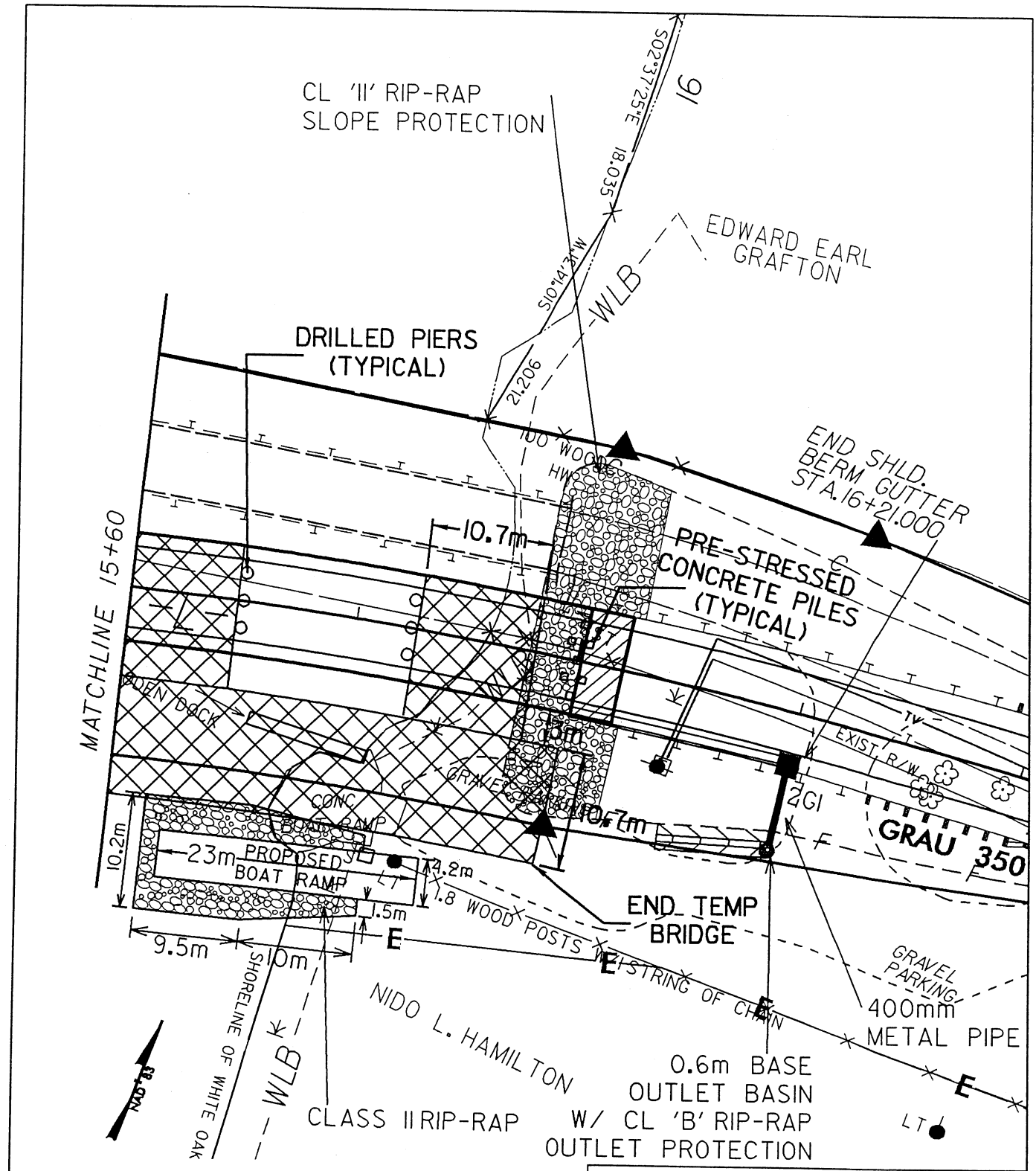
SHEET 9A OF 22



PLAN VIEW

TEMP WORK BRIDGE

5m 0 10m

SCALE

N.C.D.O.T.

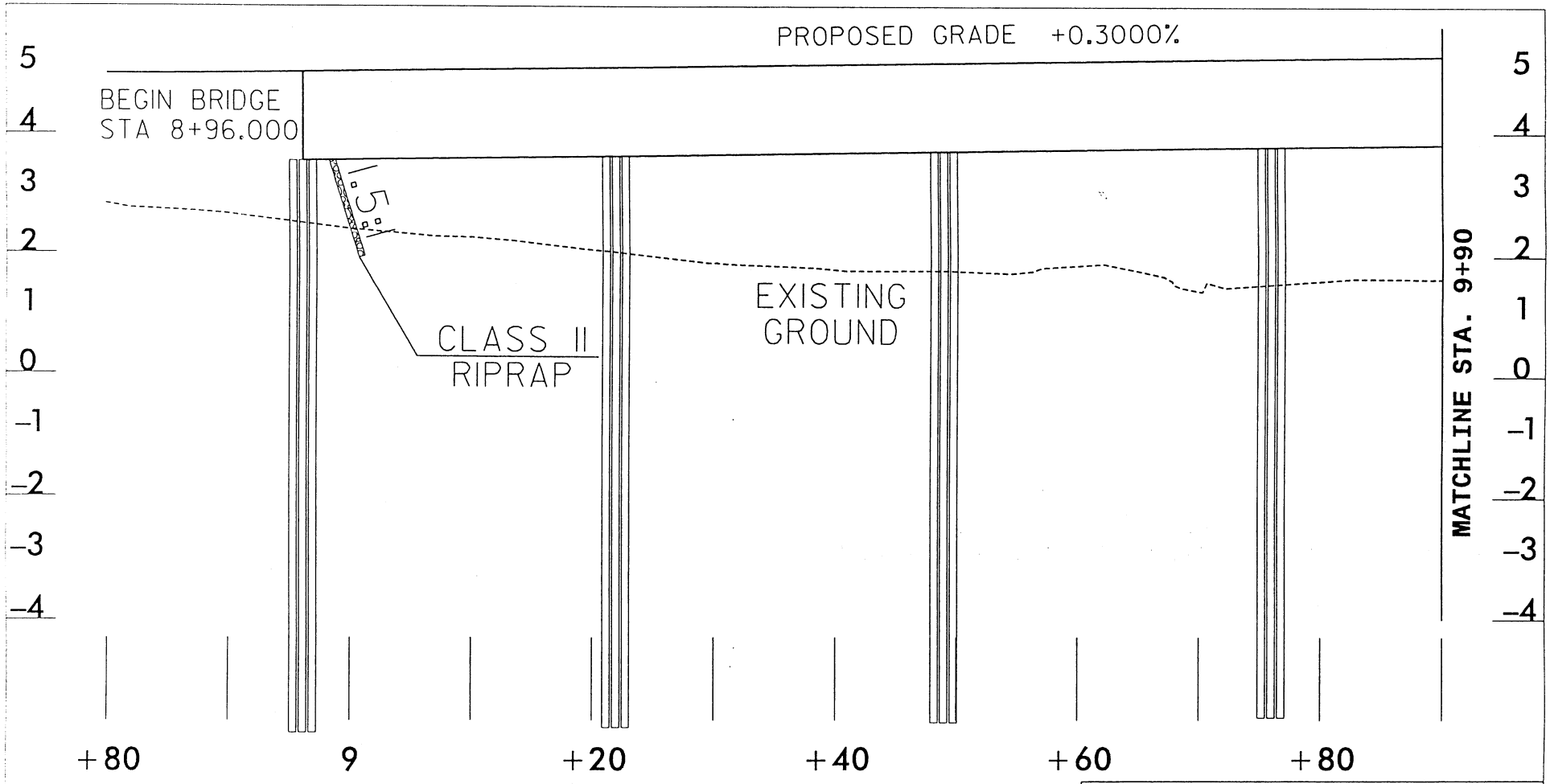
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 10 OF 22

05/31/01
REVISED 2/20/03



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

N.C.D.O.T.

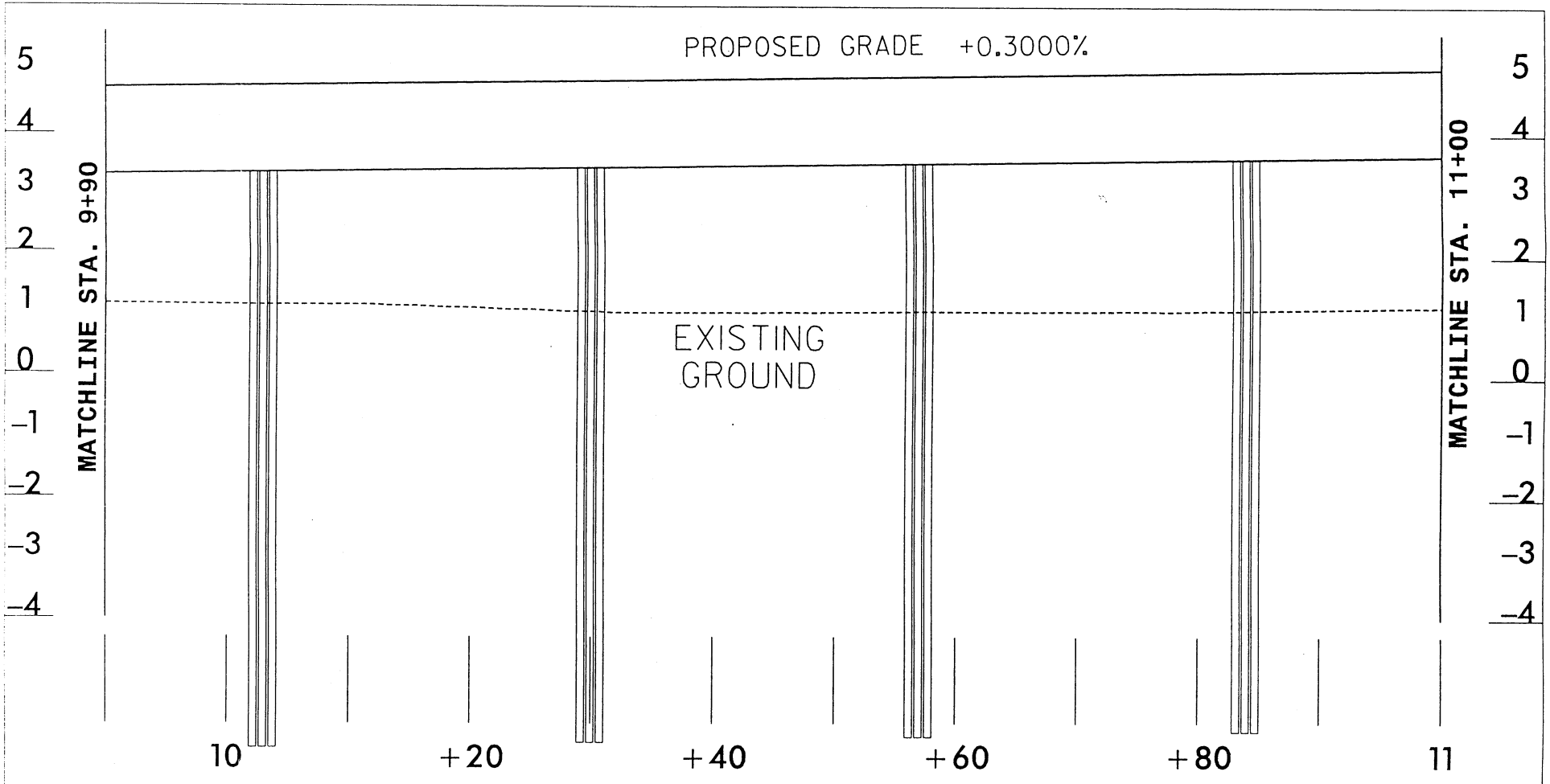
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 11 OF 22

05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

N.C.D.O.T.

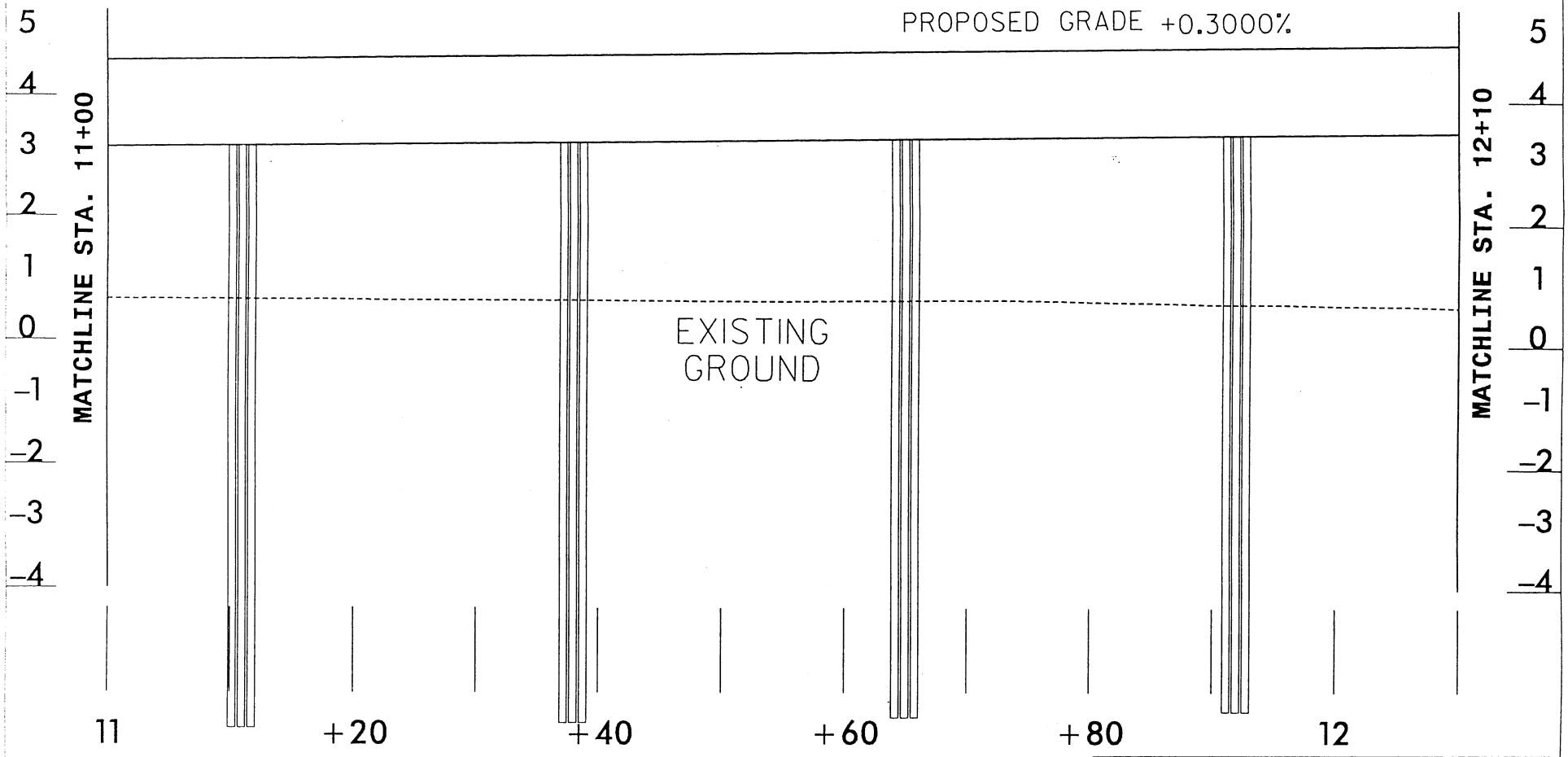
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 12 OF 22

05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

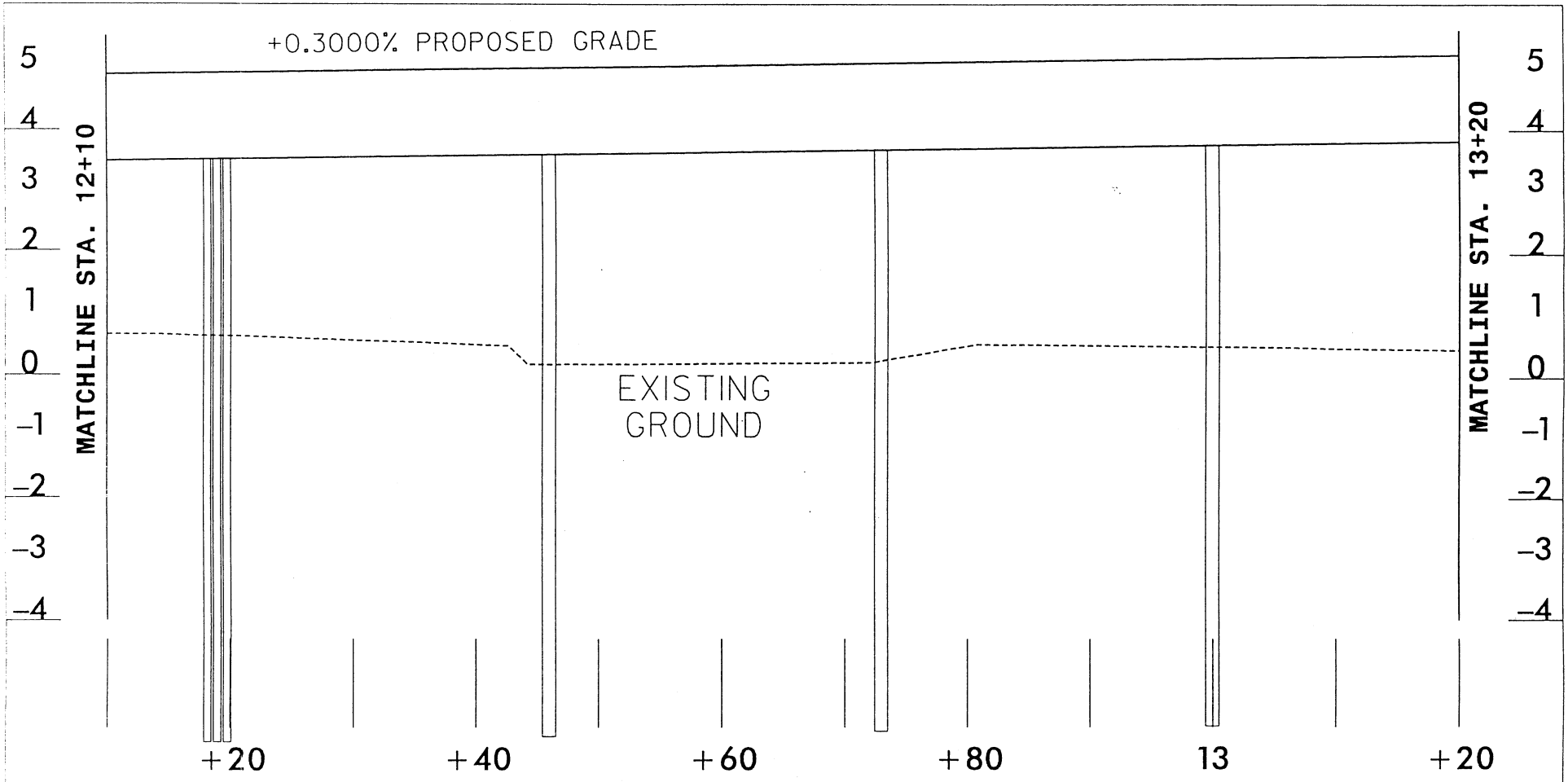
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 13 OF 22 05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

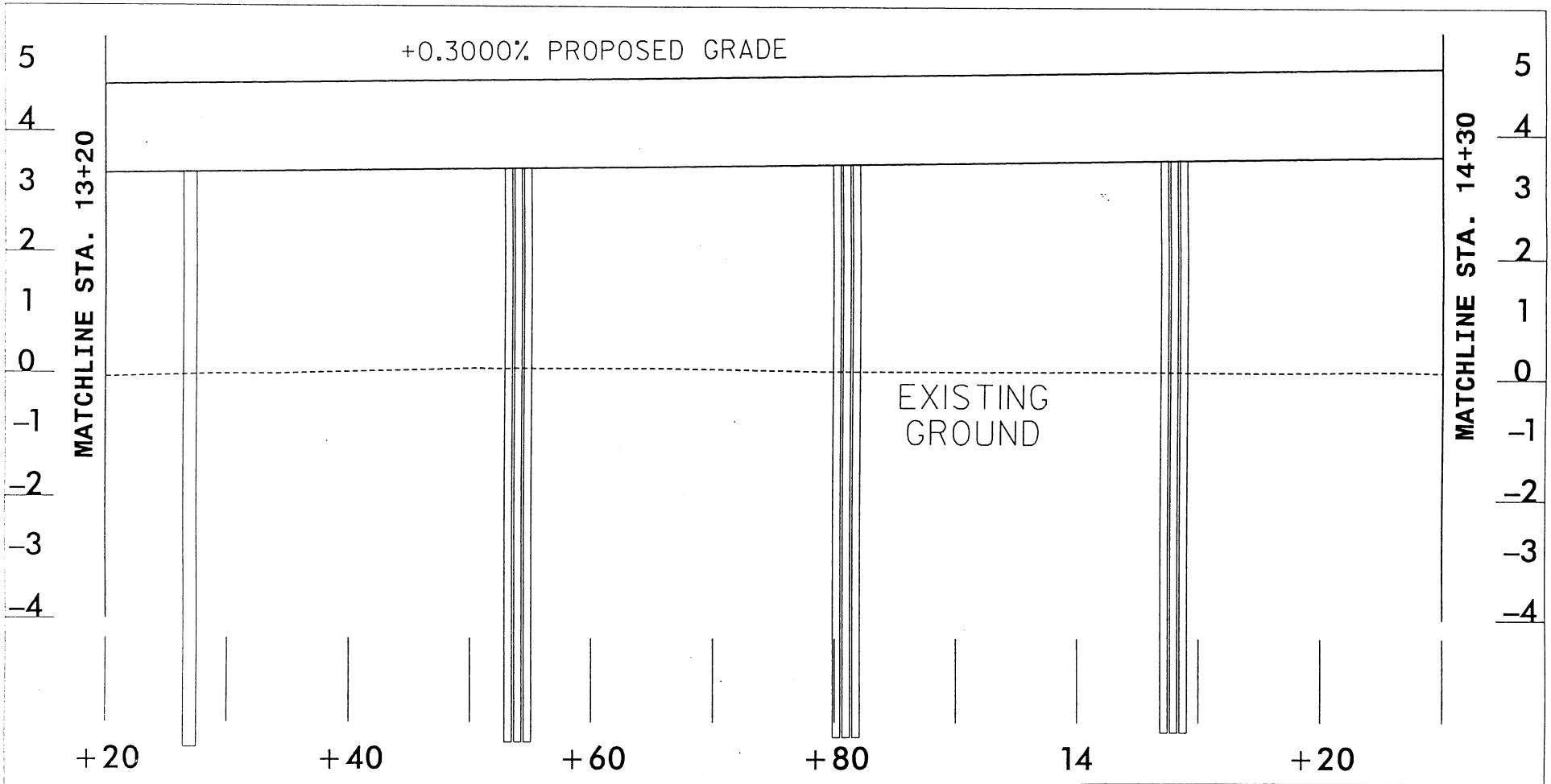
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 14 OF 22 05/31/01



5m 0 10m HORIZONTAL SCALE

1m 0 2m VERTICAL SCALE

PROFILE

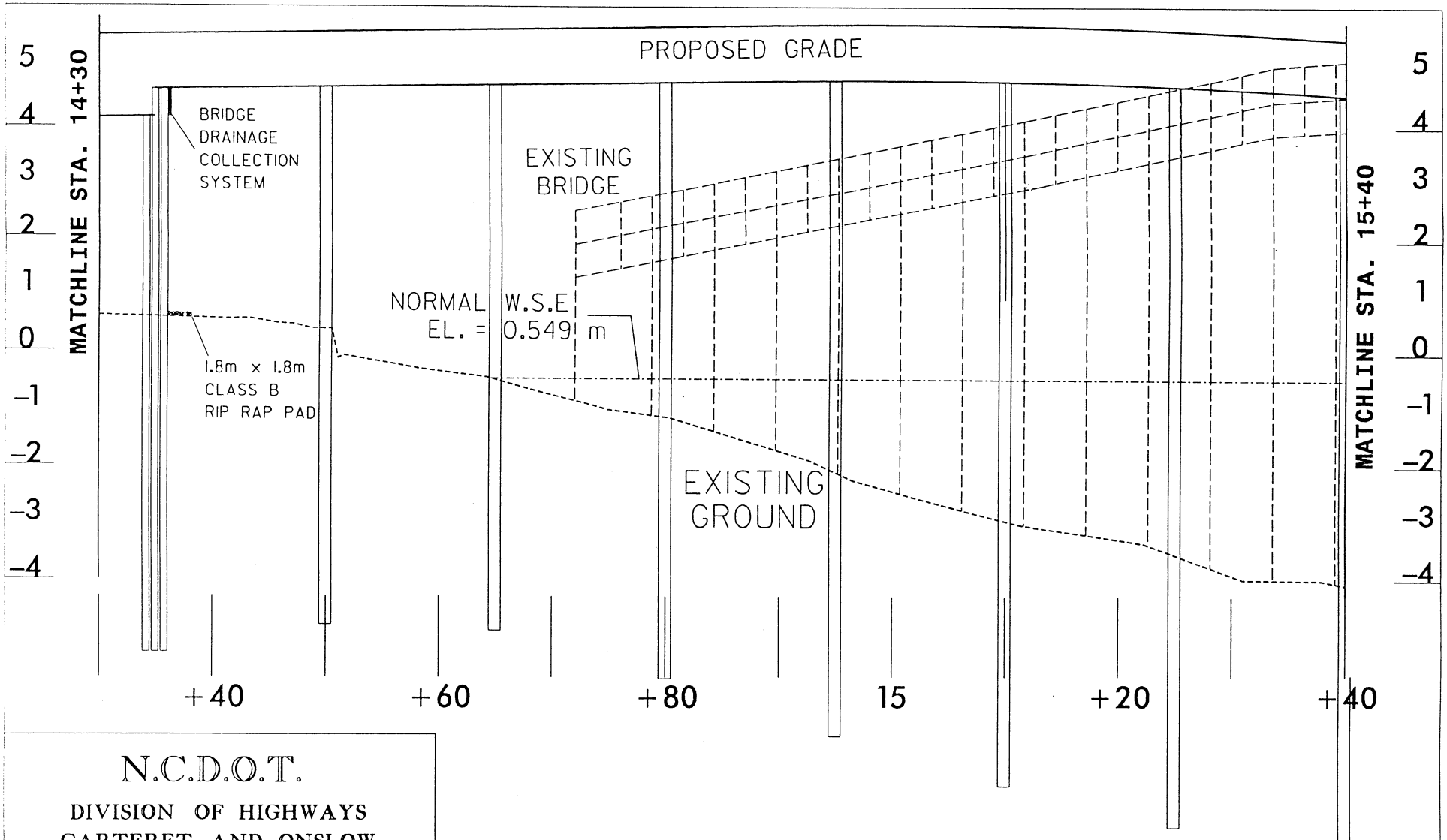
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 15 OF 22 05/31/01



N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

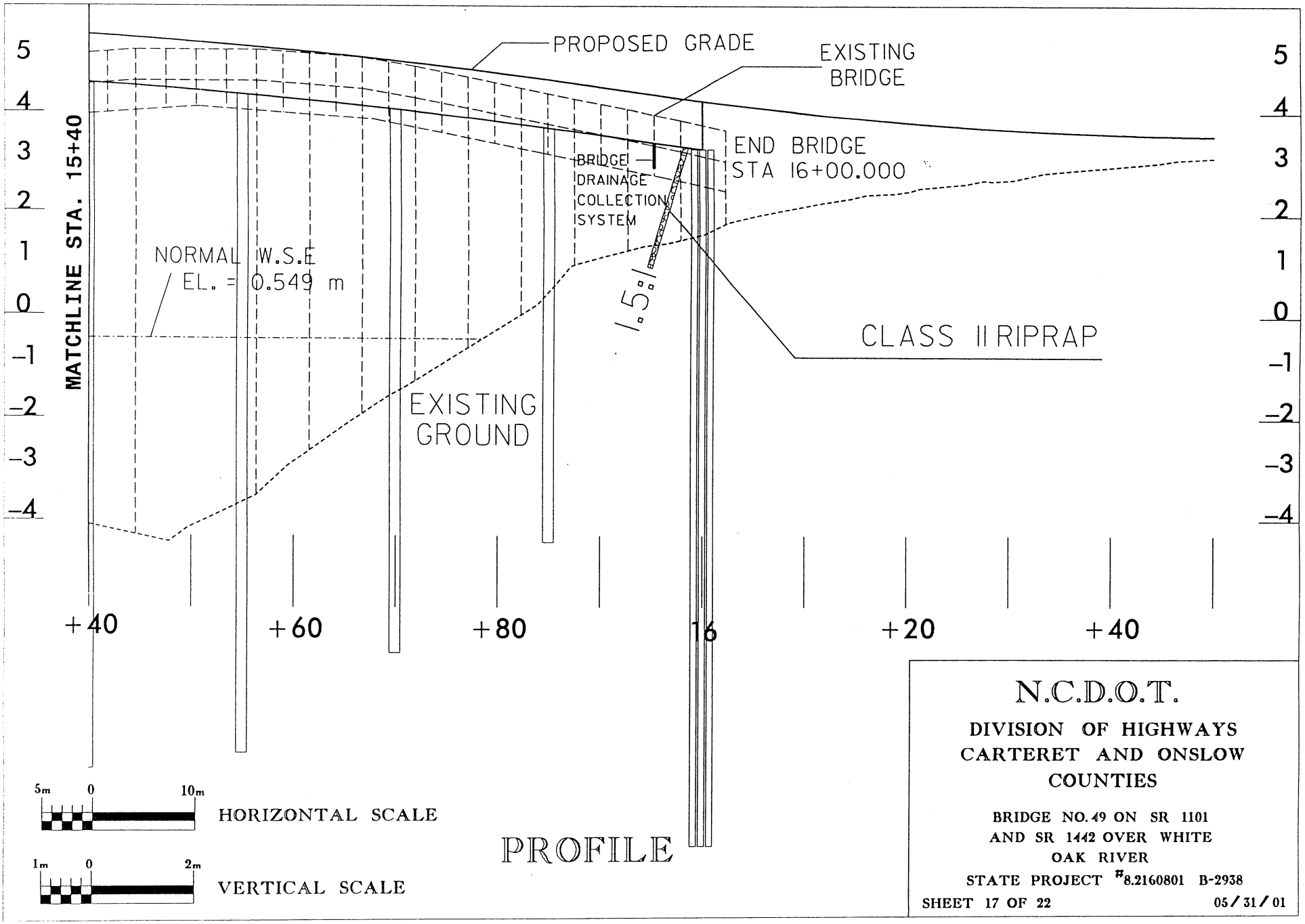
STATE PROJECT #8.2160801 B-2938

SHEET 16 OF 22 05/31/01

PROFILE

5m 0 10m HORIZONTAL SCALE

1m 0 2m VERTICAL SCALE



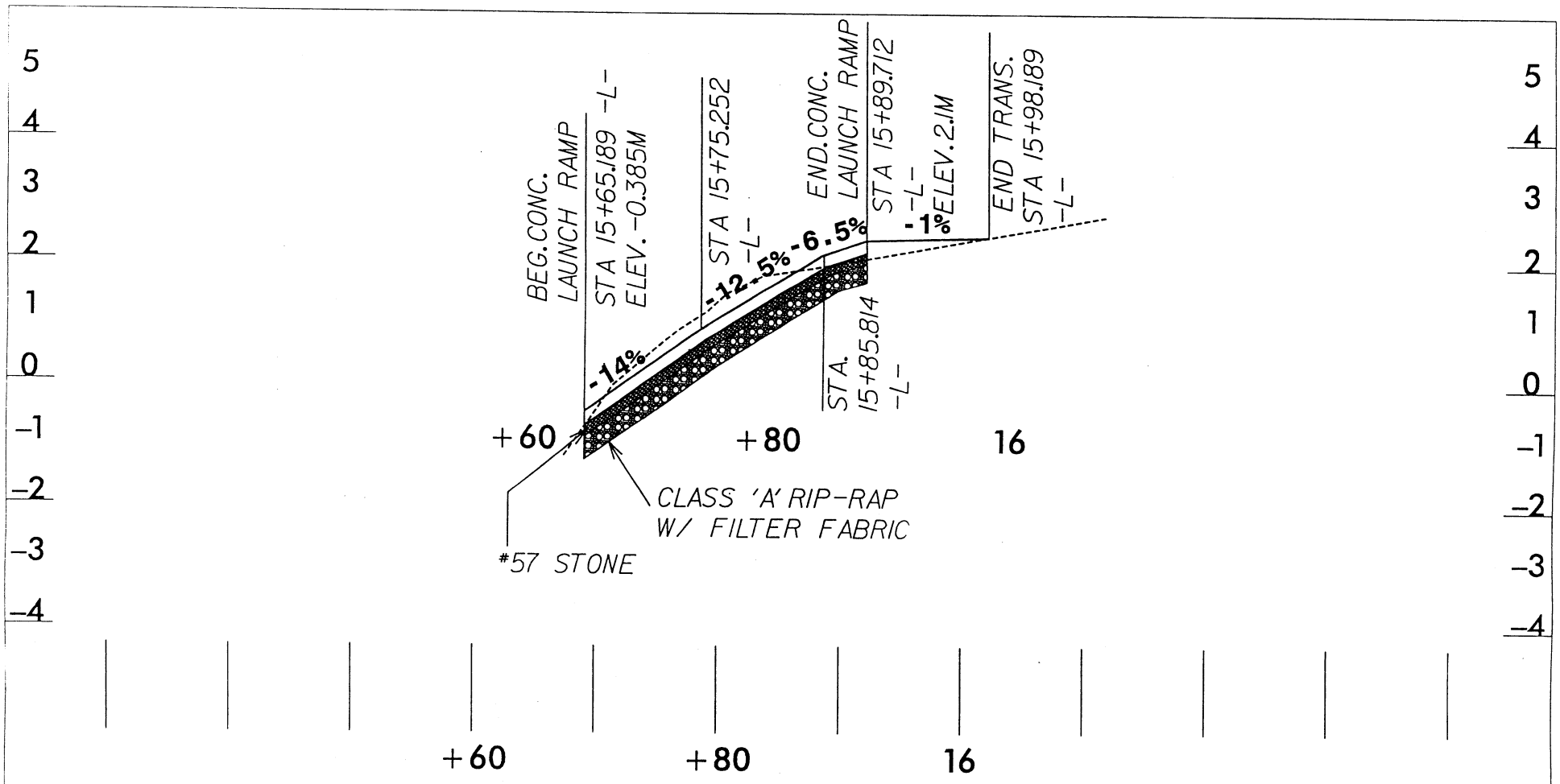
PROFILE

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER
STATE PROJECT #8.2160801 B-2938

SHEET 17 OF 22 05/31/01



CONCRETE BOAT RAMP PROFILE

5m 0 10m — HORIZONTAL SCALE

1m 0 2m — VERTICAL SCALE

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

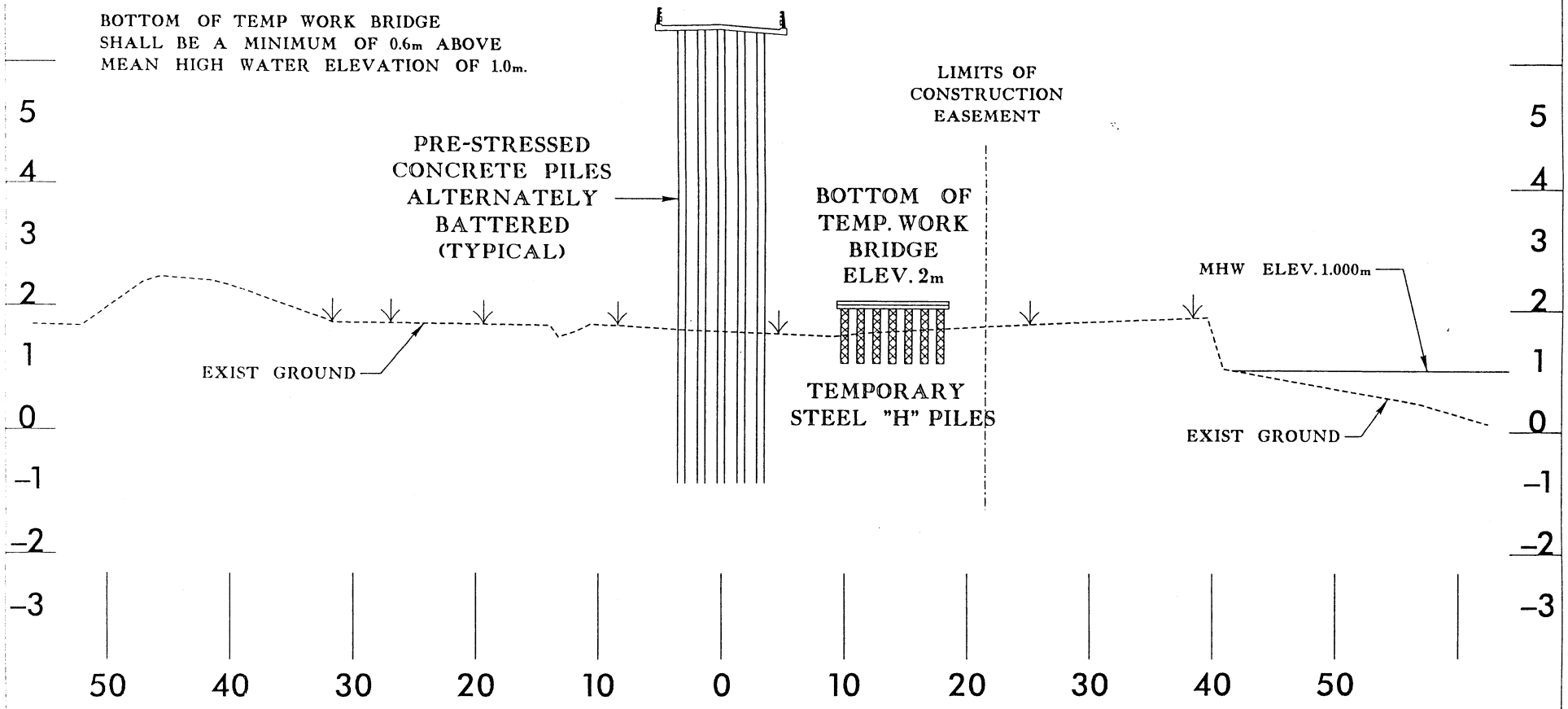
STATE PROJECT #8.2160801 B-2938

SHEET 18 OF 22

05/31/01
REV. 2/20/03

NOTE:

BOTTOM OF TEMP WORK BRIDGE SHALL BE A MINIMUM OF 0.6m ABOVE MEAN HIGH WATER ELEVATION OF 1.0m.



-L- STA. 14+35

5m 0 10m HORIZONTAL SCALE

WETLANDS

1m 0 2m VERTICAL SCALE

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

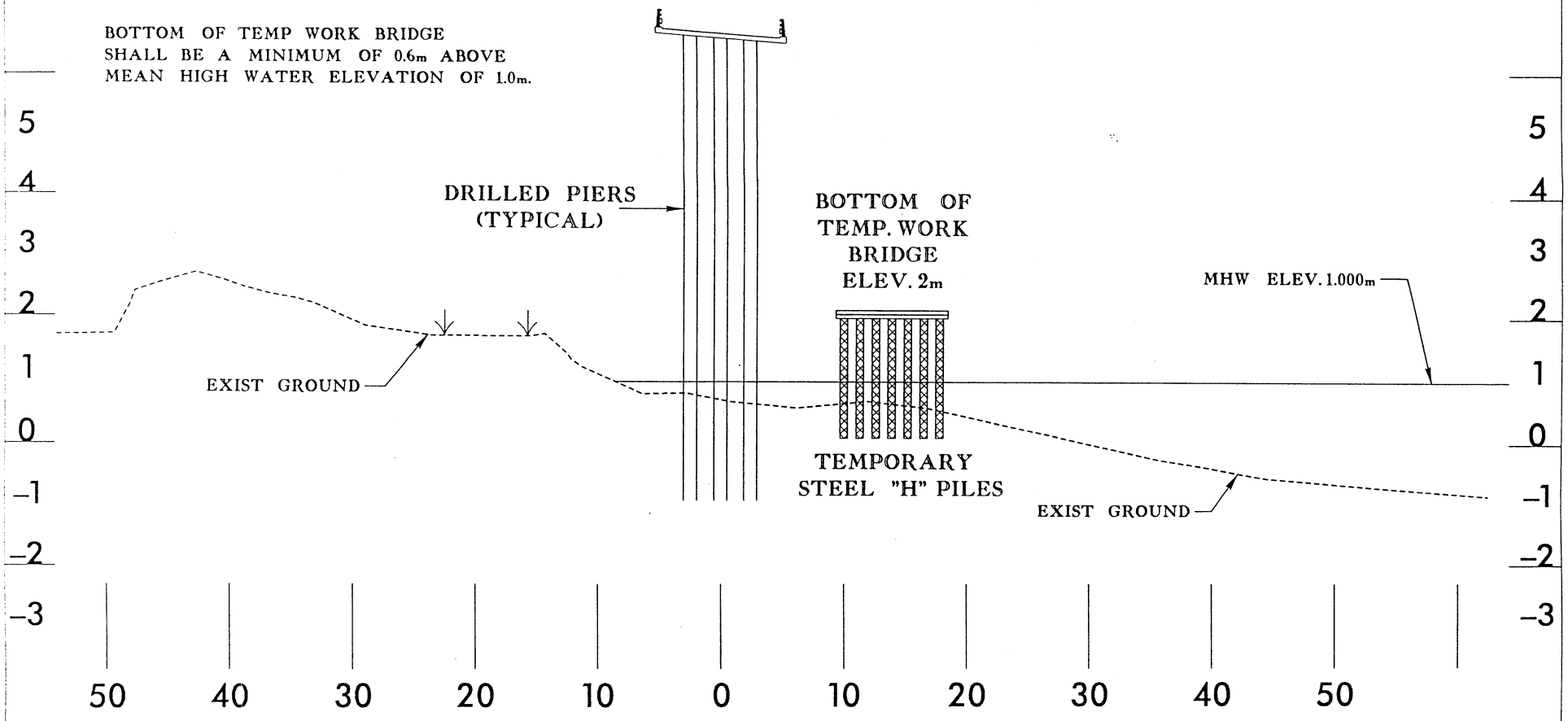
STATE PROJECT #8.2160801 B-2938

SHEET 19 OF 22

05/31/01

NOTE:

BOTTOM OF TEMP WORK BRIDGE SHALL BE A MINIMUM OF 0.6m ABOVE MEAN HIGH WATER ELEVATION OF 1.0m.



-L- STA. 14+65

5m 0 10m HORIZONTAL SCALE

1m 0 2m VERTICAL SCALE

↓ WETLANDS

N.C.D.O.T.

DIVISION OF HIGHWAYS CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 20 OF 22 05/31/01

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	CHARLES W. HERMANSON, JR.	355 STELLA RD. STELLA, NC 28582
2	ETHLYN SANDERS HURST	145 DOCTOR CORBETT RD. SWANSBORO, NC 28584
3	KENNETH W. METTS	2117 RIVER DR. STELLA, NC 28582
4	MIDWAY UNITED METHODIST CHURCH	139 WETHERINGTON LANDING RD. STELLA, NC 28582
5	~~JEANETTE SMITH MORTON~~	~~4405 HOLLY LN. VALDOSTA, GA 31602~~
6	ETHLYN SANDERS HURST	145 DOCTOR CORBETT RD. SWANSBORO, NC 28584
7	NIDO L. HAMILTON	110 WETHERINGTON LANDING RD. STELLA, NC 28582
8	HARRY BARKER	4604 PINE NEEDLE LN. WILSON, NC 27896
5	GROVER C. CADDELL, III.	3201 RIVER ROAD STELLA, NC 28582

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	TYPE OF STRUCTURE	# of Rows	# of Structures per Row	# of Fingers or Bents	tot. # of Structures	tot. Area (ha)	WETLAND IMPACTS				SURFACE WATER IMPACTS				
								Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Relocated Channel (m)
1	**MAIN TEMP. WORK BRIDGE**															
	8+96 to 14+50	H-piles	1	7	37	259	0.00963		0.00963							
	14+50 to 15+40	H-piles	1	7	6	42	0.00156							0.00156	10.7	
	15+55 to 15+90	H-piles	1	7	3	21	0.00078							0.00078		
2	**FINGERS ON TEMP. WORK BRIDGE**															
	8+96 to 14+50	H-piles	2	7	19	266	0.00990		0.00990							
		H-piles	2	10	1	20	0.00045		0.00045							
	14+50 to 15+90	H-piles	2	10	4	80	0.00298							0.00298	13.2	
		H-piles	2	7	1	14	0.00052							0.00052		
	15+90 to 16+00	none														
3	**PROPOSED BRIDGE**															
	8+96 to 14+50	Conc. Piles	1	7	21	147	0.00547	0.00547								
	14+50 to 15+90	Drilled Shafts	1	3	10	30	0.00068					0.00068			9.6	
	15+90 16+00	Conc. Piles	1	7	1	7	0.00026	0.00026								
4	**RIPRAP**															
	14+37 & 15+96					1	0.00032	0.00032								
5	**PROPOSED BOAT RAMP**															
	15+70 to 15+90							0.00314				0.01324				
TOTALS:								0.0091928	0.01998	0	0	0.013915	0	0.0058	33.5	0

Wetland restoration = 0.69 hectares (see drawings)

Assumed Dimensions (m^2):

H-piles are (2' x 2') = 0.372
Drilled shafts are (3.5' diam.) = 0.225
Prestressed Concrete Piles (2'x2') = 0.372
Riprap Pads are (1.8mx1.8m) = 3.24
Proposed Boat Ramp is (4.2mx23m) = 96.6

Assumptions:

Surface Waters span from 14+50 to 15+90

N.C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTIES

T.I.P. B-2938
Form Revised 6/1/01 and 2/20/03
SHEET 22 OF 22

B-2938

PROJECT: 8.2160803

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET/ONSLOW COUNTIES

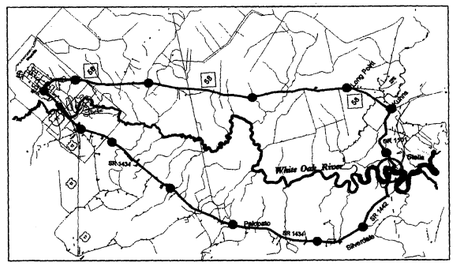
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2938	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
8.2160801	BRZ-1101(5)	P.E.
8.2160802	BRZ-1101(9)	R/W
8.2160803	BRZ-1101(5)	CONST.

VICINITY MAP



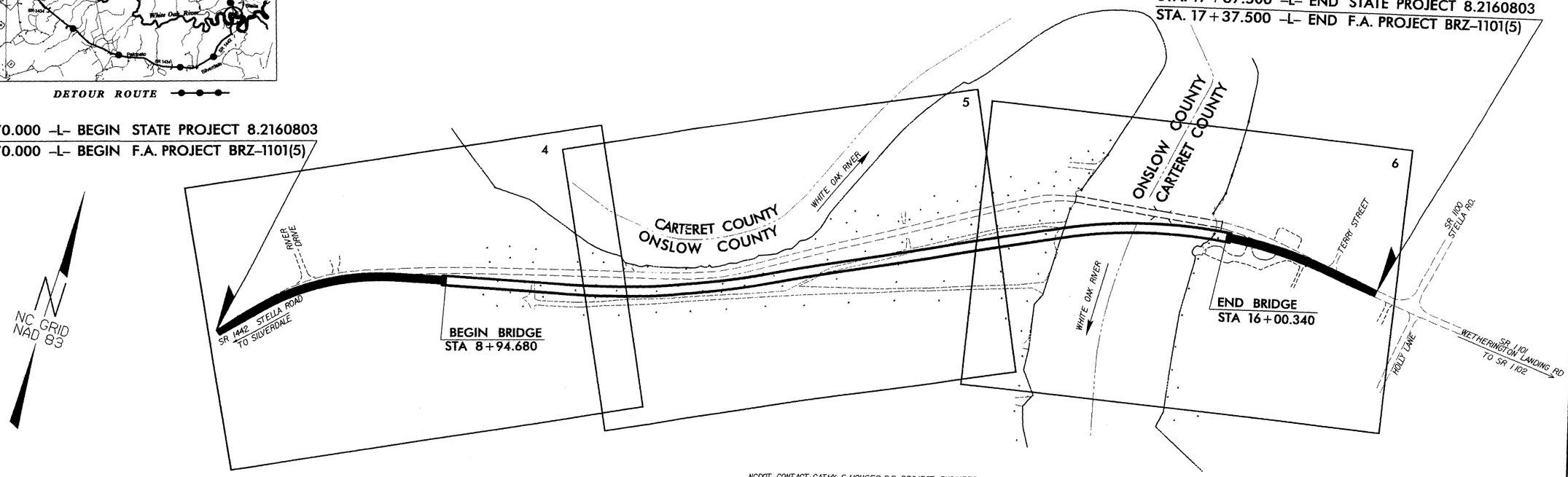
DETOUR ROUTE

LOCATION: REPLACE BRIDGE NO. 49 OVER WHITE OAK RIVER AND APPROACHES ON SR 1101 AND SR 1442

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING AND STRUCTURE.

STA. 6+70.000 –L– BEGIN STATE PROJECT 8.2160803
STA. 6+70.000 –L– BEGIN F.A. PROJECT BRZ-1101(5)

STA. 17+37.500 –L– END STATE PROJECT 8.2160803
STA. 17+37.500 –L– END F.A. PROJECT BRZ-1101(5)



NCDOT CONTACT: CATHY S. HOUSER, P.E., PROJECT ENGINEER - DESIGN SERVICES

GRAPHIC SCALE

5m 0 10m
PLANS

5m 0 10m
PROFILE (HORIZONTAL)

1m 0 2m
PROFILE (VERTICAL)

DESIGN DATA

ADT 2002 = 1600
ADT 2025 = 2500
DHV = 10 %
D = 60 %
T = 3 % *
* TTST 1% DUAL 2%
V = 70 km/h**
**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT BRZ-1101(5) = 0.362 km
LENGTH STRUCTURE F.A. PROJECT BRZ-1101(5) = 0.706 km
TOTAL LENGTH STATE PROJECT 8.2160803 = 1.068 km

Prepared In the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 18, 2002
LETTING DATE: JUNE 17, 2003

GREG S. PURVIS, P.E.
PROJECT ENGINEER

SCOTT KENNEDY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG P.E.
SIGNATURE: 2/18/03

ROADWAY DESIGN

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS P.E.
SIGNATURE: 2/18/03

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

Feb 14, 2003 15:18:09

COMPUTED BY: ________ DATE: ________
CHECKED BY: ________ DATE: ________

10/26/

METRIC

PROJECT REFERENCE NO.	SHEET NO.
B-2938	1- A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

ojects\b2938\plans\b2938 tsh Feb. 18, 2003 09:03:10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut — C
- Prop. Slope Stakes Fill — F
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp — WCR
- Exist. Guardrail
- Prop. Guardrail
- 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 — CA
- Prop. Control of Access Line — CA
- Exist. Easement Line — E
- Prop. Temp. Construction Easement Line — E
- Prop. Temp. Drainage Easement Line — TDE
- Prop. Perm. Drainage Easement Line — PDE

HYDROLOGY

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

STRUCTURES

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

MINOR
- Head & End Wall
- Pipe Culvert
- Footbridge
- Drainage Boxes — CB
- 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 — T
- Cable TV Pedestal — C
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole — P
- Telephone Booth
- Water Manhole — W
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole — T
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole — S
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box — S
- Fiber Optic Splice Box — F
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS

- Recorded Water Line — W
- Designated Water Line (S.U.E.*) — W
- Sanitary Sewer — SS
- Recorded Sanitary Sewer Force Main — FSS
- Designated Sanitary Sewer Force Main(S.U.E.*) — FSS
- Recorded Gas Line — G
- Designated Gas Line (S.U.E.*) — G
- Storm Sewer — S
- Recorded Power Line — P
- Designated Power Line (S.U.E.*) — P
- Recorded Telephone Cable — T
- Designated Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Unknown Utility (S.U.E.*) — ?UTL
- Recorded Television Cable — TV
- Designated Television Cable (S.U.E.*) — TV
- Recorded Fiber Optics Cable — FO
- Designated Fiber Optics Cable (S.U.E.*) — FO
- 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 — PL
- 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 — S
- Well — W
- 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

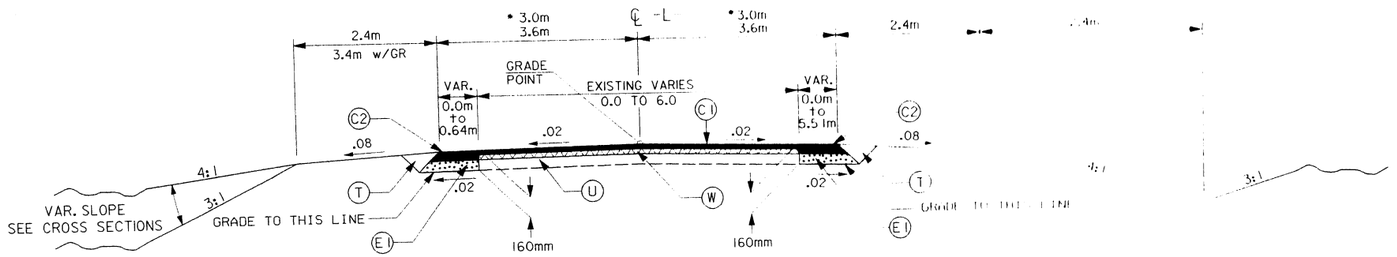
revised 2/25/97

METRIC

PROJECT REFERENCE NO.	SHEET NO.
B-2938	2

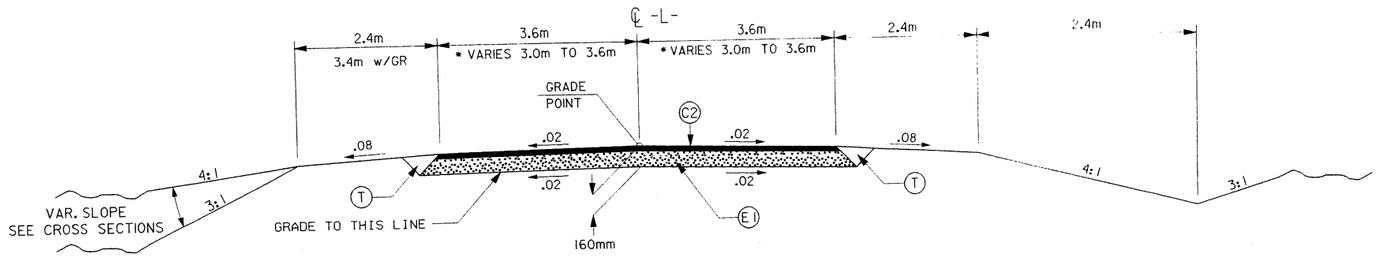
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS	

WANG ENGINEERING CO., INC
15200 WESTON PARKWAY
CARY, NC 27513



TYPICAL SECTION NO. 1

-L- STA. 6+70.000 TO STA. 7+80.000
• -L- STA. 16+60.000 TO STA. 17+37.500

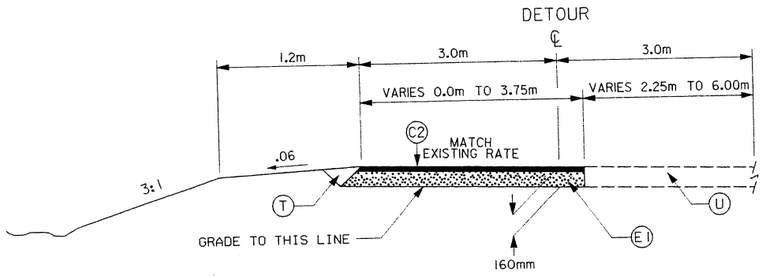


TYPICAL SECTION NO.2

-L- STA. 7+80.000 TO STA. 8+94.680 (BEGIN BRIDGE)
-L- STA. 16+00.340 (END BRIDGE) TO STA. 16+20.000
• -L- STA. 16+20.000 TO STA. 16+60.000

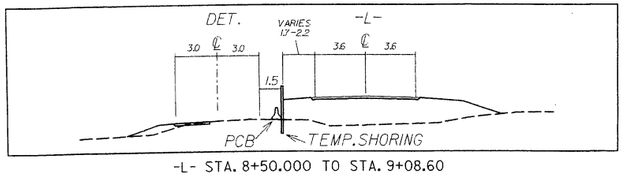
CODE	PAVEMENT SCHEDULE
C1	PROP. APPROX. 30mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 72 kg PER SQ. METER.
C2	PROP. APPROX. 60mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 72 kg PER SQ. METER IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 30 mm OR GREATER THAN 40 mm IN DEPTH.
E1	PROP. APPROX. 100mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER.
E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B .AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 140mm IN DEPTH OR LESS THAN 75mm IN DEPTH.
R	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED

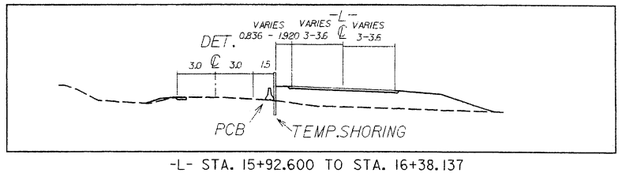


TYPICAL SECTION NO.3

DET. STA. 7+61.364 TO STA. 9+42.464
DET. STA. 15+94.862 TO STA. 16+45.481

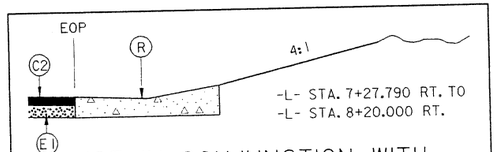


-L- STA. 8+50.000 TO STA. 9+08.60



-L- STA. 15+92.600 TO STA. 16+38.137

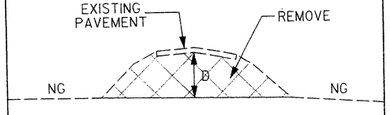
DETAIL OF PORTABLE CONCRETE BARRIER/ TEMPORARY SHORING FOR DETOUR



-L- STA. 7+27.790 RT. TO
-L- STA. 8+20.000 RT.

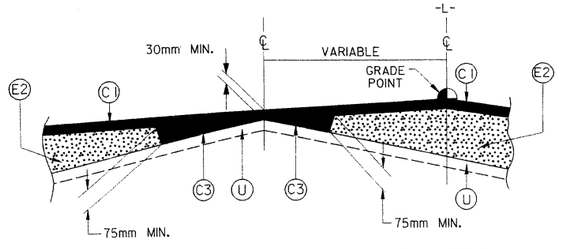
USE IN CONJUNCTION WITH TYPICAL SECTION No. 1 AND No. 2

DETAIL SHOWING EXISTING ROADBED REMOVAL



D = VARIABLE
SEE CROSS SECTIONS

STA. 9+00.000 TO STA. 14+72.000

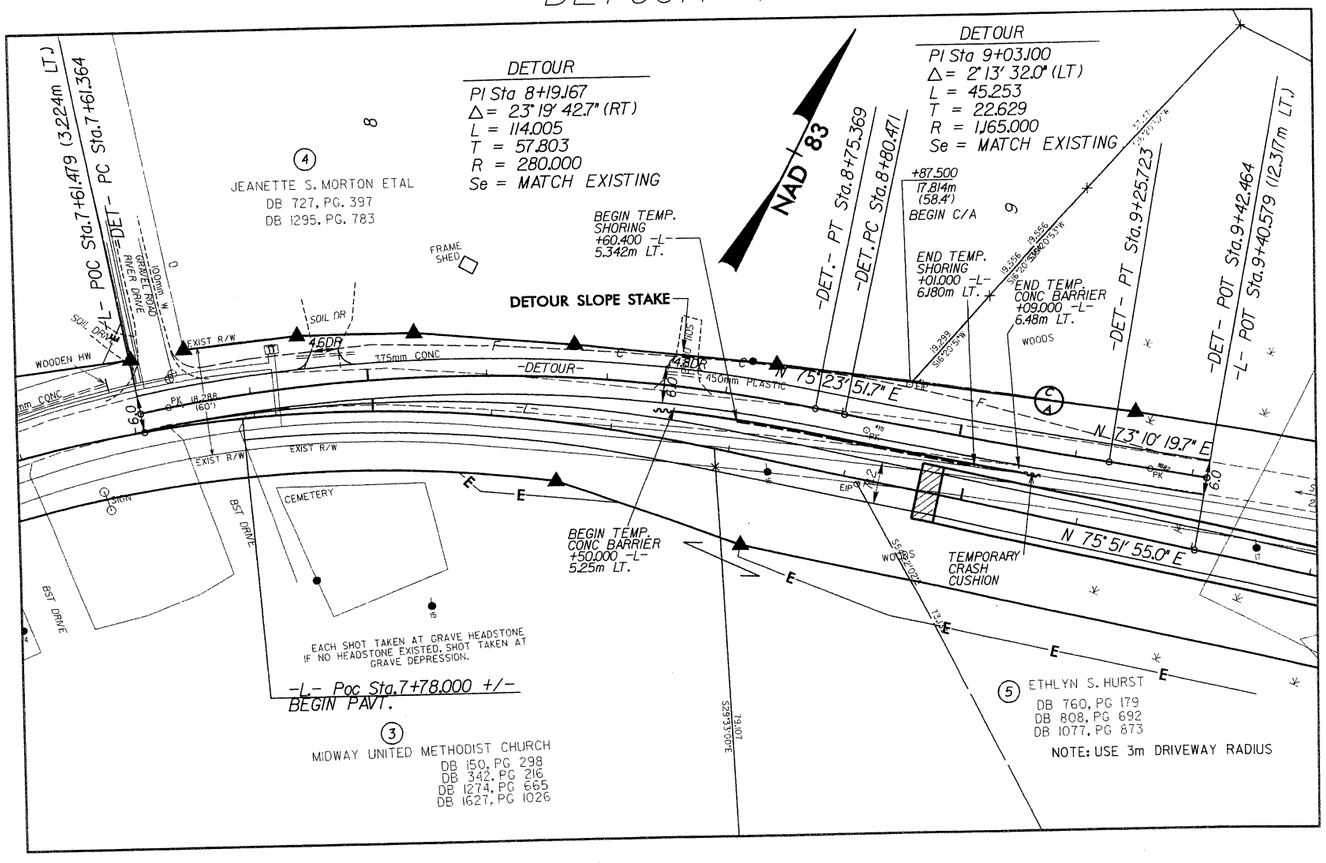


DETAIL SHOWING METHOD OF WEDGING

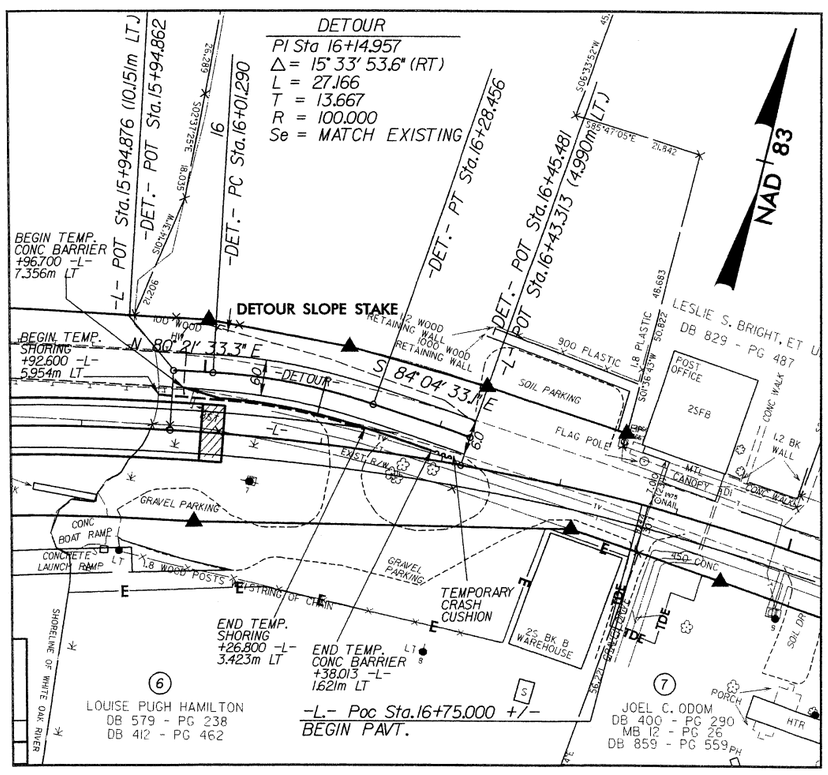
METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	B-2938	2A
	R /W SHEET NO.	
CONST.REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R /W REV.	NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS	NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

DETOUR #1

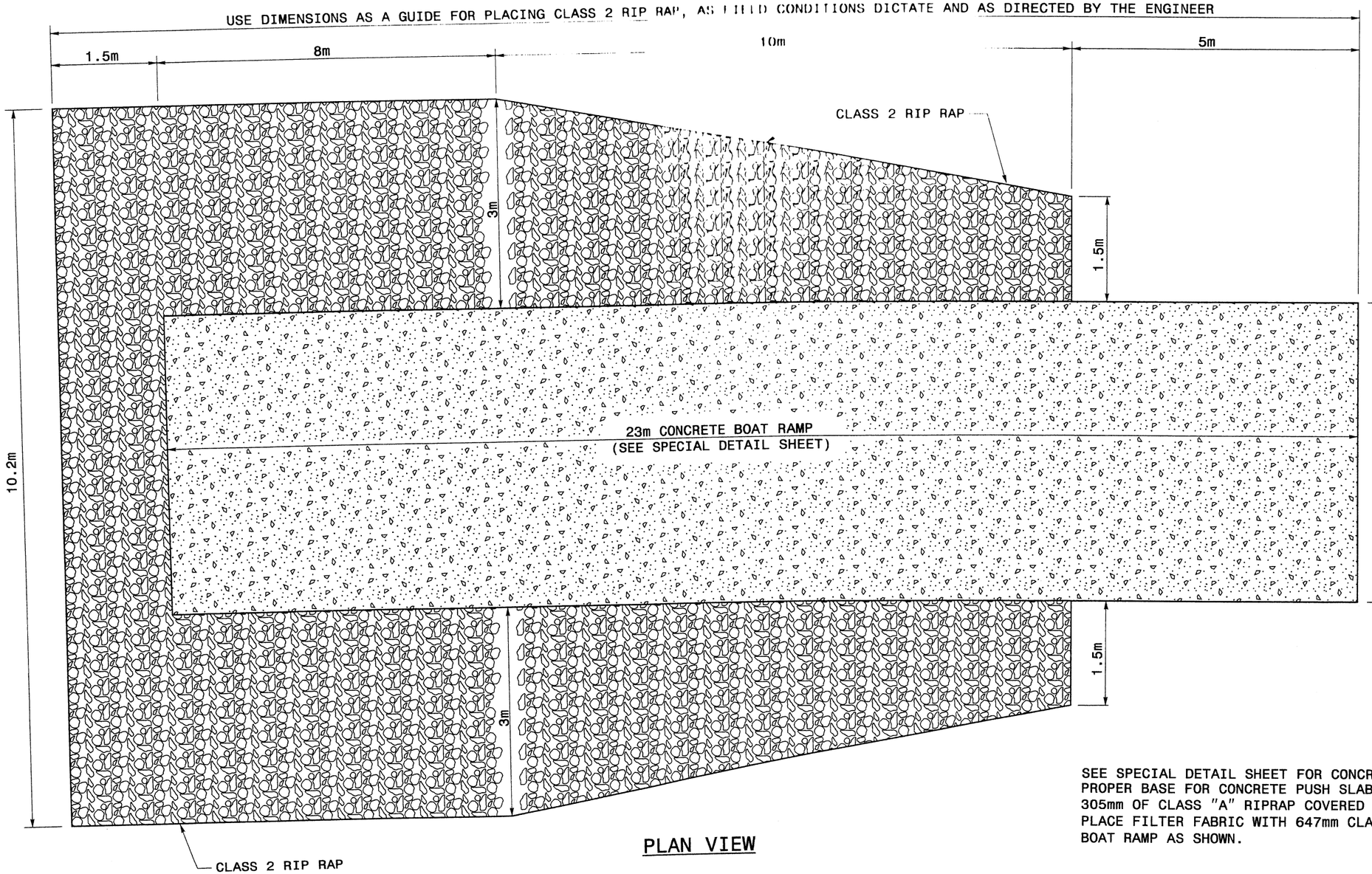


DETOUR #2



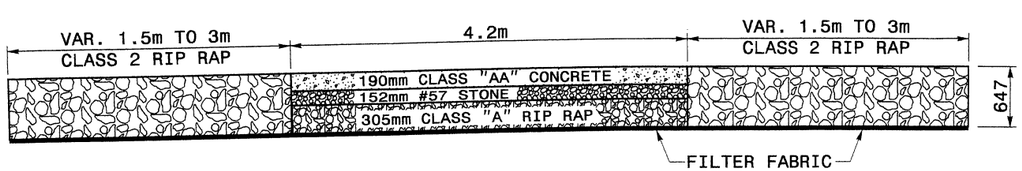
PROJECT REFERENCE NO.	SHEET NO.
B-2938	2-B

EROSION CONTROL FOR BOAT RAMP



PLAN VIEW

SEE SPECIAL DETAIL SHEET FOR CONCRETE PUSH SLAB.
PROPER BASE FOR CONCRETE PUSH SLAB IS FILTER FABRIC WITH 305mm OF CLASS "A" RIPRAP COVERED BY 152mm OF #57 STONE. PLACE FILTER FABRIC WITH 647mm CLASS 2 RIP RAP AROUND BOAT RAMP AS SHOWN.



END VIEW

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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

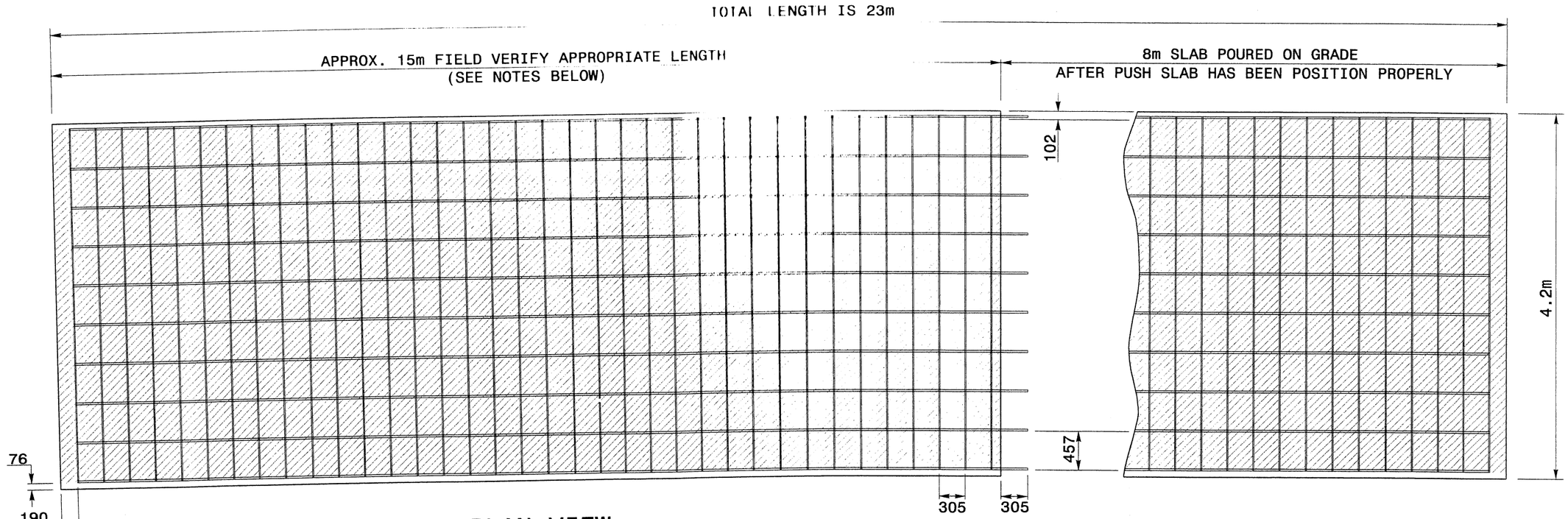
EROSION CONTROL FOR BOAT RAMP ACCESS

ORIGINAL BY: NCWRC DATE:
MODIFIED BY: E.E. WARD DATE: 2-3-03
CHECKED BY: D.E. Mebane DATE: 2-03
FILE SPEC.: /usr/details/metric/stand/boatramp.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-2938	2-C

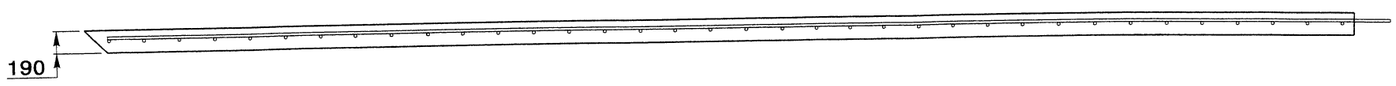
5/14/99

190mm CONCRETE PUSH SLAB

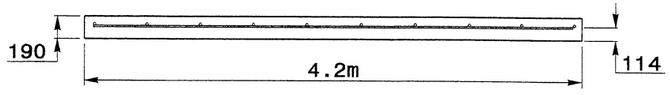


PLAN VIEW

USE CLASS "AA" CONCRETE THROUGHOUT
LONGITUDINAL BARS ARE #22's
TRANSVERSE BARS ARE #13's
USE 114mm CHAIRS UNDER THE #22's



SIDE VIEW



END VIEW

USE A GROOVING TOOL TO PLACE 50mm GROOVES AT A 45 DEGREE ANGLE DOWN THE LENGTH OF THE RAMP.
USE AN EDGE TOOL TO REDUCE CHIPPING AND SPALLING.
EXTEND #22 REBAR PAST THE FORM 305mm IN ORDER TO GIVE THE "POURED ON GRADE" SLAB A POSITIVE ATTACHEMENT.
POUR SLAB ON LAND PARALLEL AND IN LINE WITH THE PROPOSED LOCATION. AFTER LETTING THE CONCRETE CURE FOR 21 DAYS, PUSH IN WITH A DOZER, CAT D6 OR EQUIVALENT.
IN PLACE LOCATION SHOULD LEAVE ENOUGH OUT OF THE WATER TO POUR THE NEXT SECTION WITHOUT WET CONCRETE TOUCHING THE WATER.
PROPER BASE FOR SLAB IS FILTER FABRIC WITH 305mm OF CLASS "A" RIPRAP COVERED BY 152mm OF #57 STONE.
PROPER SLOPE IS 14% WITH A 4.5m TO 6.0m VERTICAL CURVE AT THE HEAD OF THE RAMP.

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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

190mm CONCRETE PUSH SLAB FOR BOAT RAMP ACCESS

ORIGINAL BY: NCWRC DATE:
MODIFIED BY: E.R. WARD DATE: 2-3-03
CHECKED BY: DATE: 2-03
FILE SPEC.: /usr/details/metric/stand/boatramp.dgn

06-FEB-2003 08:45
w:\special details and standard details\metric\stand\boatramp.dgn
default

PROJECT REFERENCE NO.	SHEET NO.
B-2938	3

COMPUTED BY: DATE:
CHECKED BY: DATE:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

COMPUTED BY: WT	DATE: 11/9/01
CHECKED BY: SLK	DATE: 11/13/01

METRIC

PROJECT NO.	SHEET NO.
B-2938	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav. m^3	Embank. + % m^3	Borrow m^3	Waste m^3
BEFORE BRIDGE - LEFT						
-L- DETOUR	7+80.000	8+94.368	24	113	113	24
-L-	6+70.000	8+94.368	268	880	746	134
SUBTOTAL BEFORE BRIDGE - LEFT			**292**	**993**	**859**	**158**
AFTER BRIDGE - LEFT						
-L- DETOUR	16+00.000	16+40.000	4	26	24	2
-L-	16+00.340	17+37.50	145	380	185	25
SUBTOTAL AFTER BRIDGE - LEFT			**149**	**406**	**209**	**27**
TOTAL LEFT			**441**	**1399**	**1068**	**185**
BEFORE BRIDGE - RIGHT						
-L-	6+70.000	8+94.368	303	1517	1366	152
SUBTOTAL BEFORE BRIDGE - RIGHT			**303**	**1517**	**1366**	**152**
AFTER BRIDGE - RIGHT						
-L-	16+00.340	17+37.50		1414	1414	
SUBTOTAL AFTER BRIDGE - RIGHT				**1414**	**1414**	
TOTAL RIGHT			**303**	**2931**	**2780**	**152**
EXISTING ROADWAY REMOVAL						
-L-	9+00.000	14+60.000	2868			2868
SUBTOTAL ROADWAY REMOVAL			**2868**			**2868**
PROJECT SUBTOTALS:			**3612**	**4330**	**3848**	**3205**
Loss due to C&G			-75		75	
SUBTOTAL:			**3537**	**4330**	**3923**	**3205**
Estimate 5% for topsoil repl.					196	
GRAND TOTALS:			**3537**	**4330**	**4119**	**3205**
SAY:			**3540**	**4350**	**4120**	
DRAINAGE DITCH EXCAVATION			**10**			

RIGHT OF WAY AREA DATA

PARCEL No.	PROPERTY OWNERS NAME	TOTAL ACREAGE		AREA TAKEN		RIGHT OR LEFT OF -L- REV CENTER	AREA REMAINING RIGHT		AREA REMAINING LEFT		CONST. EASEMENT		PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	
1	CHARLES W. HERMANSON, JR.	4279.727	sm	147.930	sm	LT			4131.797	sm					
		1.06	ac	1592.30	sf				1.02	ac					
2	KENNETH MARTIN METTS	4473.095	sm	282.988	sm	LT			4190.107	sm	15.998	sm			
		1.11	ac	3046.06	sf				1.04	ac	172.09	sf			
3	MIDWAY UNITED METHODIST CHURCH	1.724	ha	0.117	ha	RT	1.607	ha			305.549	sm			
		4.26	ac	0.29	ac		3.97	ac			3289.01	sf			
4	JEANETTE S. MORTON ETAL	1.708	ha	NO CLAIM											
		4.22	ac												
5	ETHLYN S. HURST	48.119	ha	1.376	ha	RT	46.738	ha			3601.584	sm			
		118.90	ac	3.41	ac		115.49	ac			38768.00	sf			
6	LOUISE PUGH HAMILTON	7082.250	sm	777.229	sm	RT	6305.021	sm			1075.066	sm		11.813	sm
		1.75	ac	8366.02	sf		1.56	ac			11571.90	sf		127.15	sf
7	JOEL C. ODOM	4174.174	sm			RT								119.781	sm
		1.03	ac											1289.31	sf
8	WILLIAM M. SANDERS ESTATE	4174.174	sm			LT			4174.174	sm					
		6.71	ac						6.71	ac					

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION TO STATION		LOC LT/RT/CL	M^2
-L-	7+23.000	7+60.000	LT	46
-L-	7+70.000	8+40.000	LT	245
-L-	8+40.000	10+30.000	LT	1064
-L-	10+30.000	14+73.000	LT	1999
-L-	13+90.000	14+73.000	LT	465
-L-	15+96.000	16+60.000	LT	390
DETOUR	7+61.364	16+45.481	LT	362
			TOTAL:	4571
			SAY:	4600

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

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPR. END	WARRANT POINT: TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH: APPR. END	FLARE LENGTH: TRAIL. END	W: APPR. END	W: TRAIL. END	ANCHORS: XI MOD	ANCHORS: TYPE III	ANCHORS: GRAU 350	ANCHORS: M-350	ANCHORS: XII	ANCHORS: CAT-1	ANCHORS: VI MOD	IMP. ATTEN. TYPE 350: EA	IMP. ATTEN. TYPE 350: G	IMP. ATTEN. TYPE 350: NG	REMOVE EXISTING GRDRAIL	REMARKS
-L-	8+42.660	8+94.368	RT.	52.020				BRIDGE	2.4	3.4	15.24		0.3			1	1									
-L-	8+42.660	8+94.368	LT.	52.020			BRIDGE		2.4	3.4		15.24		0.3		1	1									
-L-	16+00.340	16+41.900	RT.	41.570			BRIDGE		2.4	3.4		15.24		0.3		1	1									
-L-	16+00.340	16+53.340	LT.	53.000				BRIDGE	2.4	3.4	15.24		0.3			1	1									
		SUBTOTAL		198.610												4	4									
ANCHOR DEDUCTS GRAU350 4 @ 15.24M				-60.960																						
	TYPE III 4 @ 5.72M			-22.880																						
	TOTAL			114.770																						
	SAY			**118.110**																						
ADDITIONAL GUARDRAIL POSTS				10																						

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT IN ELEVATION	INVERT OUT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300	375	450	600	750	900	1050	1200
7+08.000	LT	1			5.303	5.321									
7+22.940	LT	2				5.501				6.000					
7+23.470	RT	3			6.087					3.600					
8+49.570	LT	3A													
8+78.500	LT	4	5	4.876	4.101	3.430			15.600						
16+20.000	RT	5	OUTLET	4.645	3.895	2.780									
16+85.530	RT	6			3.464	3.440				3.600					
							TOTAL:	0	15.600	13.200	0	0	0	0	0

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	900 (2.01)	1000 (2.01)	1200 (2.01)	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.
7+08.000										8.4			
7+22.940													
7+23.470													
8+49.570													
8+78.500													
		7.200											
16+20.000													
16+85.530													
TOTAL:	0	7.200	0	0	0	0 0	0 0	0 0	0	8.4	0	0	0

STATION	QUANITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0 THRU 1.50)	METERS A 1.5 THRU 3.00	METERS B 3.00 AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.20	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. FRAME WITH GRATE STD. 840.29	J.B. STD. 840.31 OR 840.32	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" M^3 STD. 840.72	CONC. & BRICK PIPE PLUG, M^3 STD. 840.71	PIPE REMOVAL (METERS)	REMARKS
7+08.000																						7.562	
7+22.940																				0.33			EXTEND EXISTING PIPE
7+23.470																				0.33			EXTEND EXISTING PIPE
8+49.570																						6.154	
8+78.500	1								1					1									2GI
16+20.000	1								1					1					2 @400mm				2GI
16+85.530																				0.33			EXTEND EXISTING PIPE
TOTAL:	2	0	0	0	0 0 0	0	0	0	2	0	0	0	0	2	0	0	0	0 0	2	1	0	13.72	

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

PROJECT REFERENCE NO.	SHEET NO.
B-2938	4
R/W SHEET NO.	

METRIC

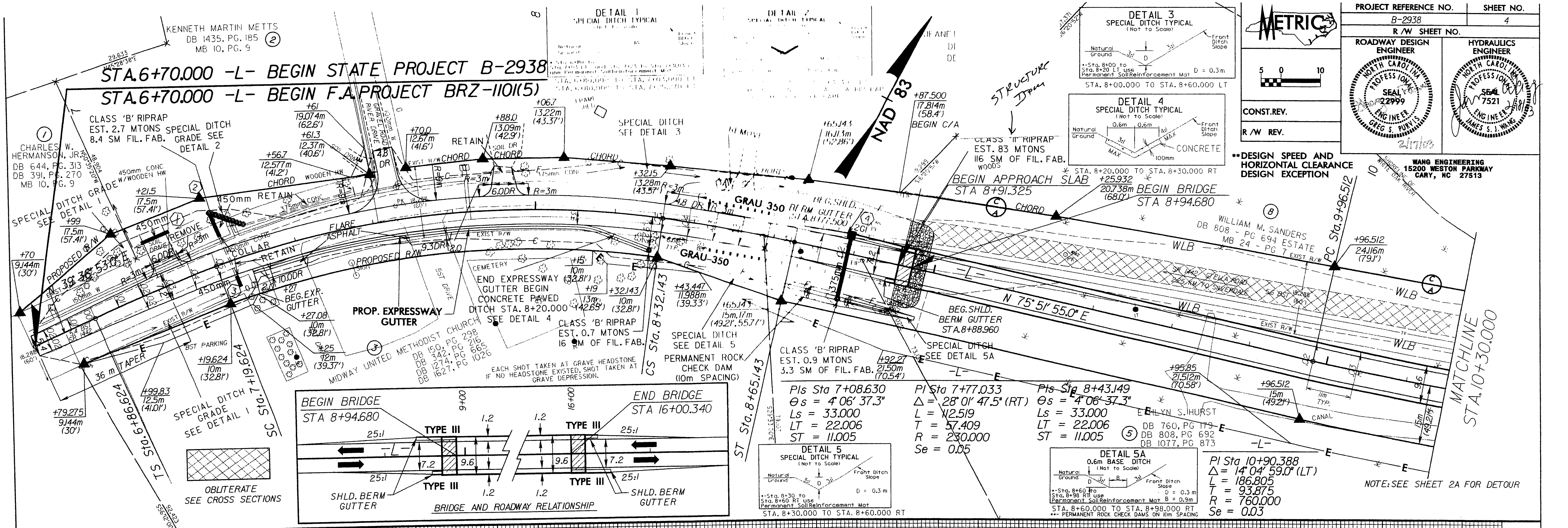
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22999 GREG S. PURVIS

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7521 JAMES S. J. WANG

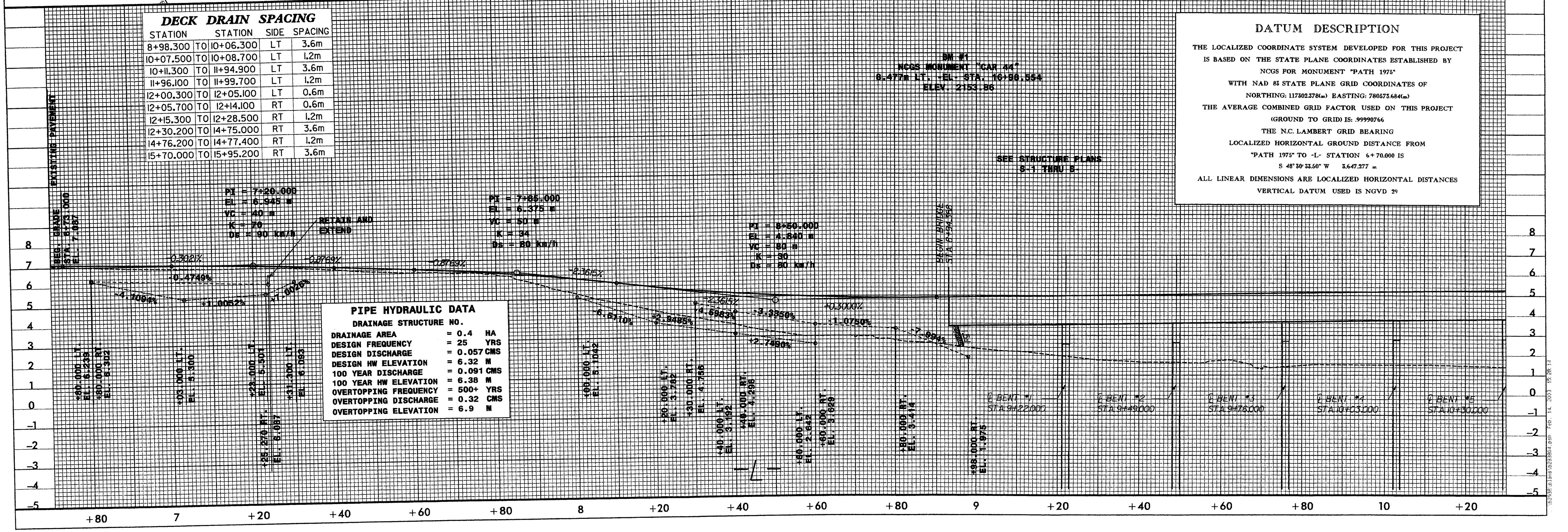
WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

CONST.REV.

R/W REV.



STA.6+70.000 -L- BEGIN STATE PROJECT B-2938
STA.6+70.000 -L- BEGIN F.A.PROJECT BRZ-1101(5)
KENNETH MARTIN METTS DB 1435, PG. 185 MB 10, PG. 9
CHARLES W. HERMANSON, JR. DB 644, PG. 313 DB 391, PG. 270 MB 10, PG. 9
CLASS 'B' RIPRAP EST. 2.7 MTONS 8.4 SM FIL. FAB.
SPECIAL DITCH GRADE SEE DETAIL 2
SPECIAL DITCH GRADE SEE DETAIL 1
PROP. EXPRESSWAY GUTTER
MIDWAY UNITED METHODIST CHURCH DB 150, PG 298 DB 342, PG 216 DB 1274, PG 665 DB 1627, PG 1026
EACH SHOT TAKEN AT GRAVE HEADSTONE IF NO HEADSTONE EXISTED, SHOT TAKEN AT GRAVE DEPRESSION.
END EXPRESSWAY GUTTER BEGIN CONCRETE PAVED DITCH STA. 8+20.000 SEE DETAIL 4
CLASS 'B' RIPRAP EST. 0.7 MTONS 16 SM OF FIL. FAB.
SPECIAL DITCH SEE DETAIL 5
PERMANENT ROCK CHECK DAM (10m SPACING)
CLASS 'B' RIPRAP EST. 0.9 MTONS 3.3 SM OF FIL. FAB.
CLASS 'II' RIPRAP EST. 83 MTONS 116 SM OF FIL. FAB.
BEGIN APPROACH SLAB STA 8+91.325
BEGIN BRIDGE STA 8+94.680
BEG. SHLD. BERM GUTTER STA 8+88.960
SPECIAL DITCH SEE DETAIL 5A
WILLIAM M. SANDERS ESTATE DB 608 - PG 694 MB 24 - PG 7
EVELYN S. HURST DB 760, PG 179 DB 808, PG 692 DB 1077, PG 873
N 75° 51' 55.0" E
NAD 83
MATCHLINE STA. 10+30.000
**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION
DETAIL 1 SPECIAL DITCH TYPICAL
DETAIL 2 SPECIAL DITCH TYPICAL
DETAIL 3 SPECIAL DITCH TYPICAL (Not to Scale) STA. 8+00.000 TO STA. 8+60.000 LT
DETAIL 4 SPECIAL DITCH TYPICAL (Not to Scale) STA. 8+20.000 TO STA. 8+30.000 RT
DETAIL 5 SPECIAL DITCH TYPICAL (Not to Scale) STA. 8+30.000 TO STA. 8+60.000 RT
DETAIL 5A 0.6m BASE DITCH (Not to Scale) STA. 8+60.000 TO STA. 8+98.000 RT
PI Sta 7+08.630 Θs = 4° 06' 37.3" Ls = 33.000 LT = 22.006 ST = 11.005
PI Sta 7+77.033 Δ = 28° 01' 47.5" (RT) L = 112.519 T = 57.409 R = 230.000 Se = 0.05
PI Sta 8+43.149 Θs = 4° 06' 37.3" Ls = 33.000 LT = 22.006 ST = 11.005
PI Sta 10+90.388 Δ = 14° 04' 59.0" (LT) L = 186.805 T = 93.875 R = 760.000 Se = 0.03
BEGIN BRIDGE STA 8+94.680
END BRIDGE STA 16+00.340
BRIDGE AND ROADWAY RELATIONSHIP
OBLITERATE SEE CROSS SECTIONS
NOTE: SEE SHEET 2A FOR DETOUR



DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.4	HA
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.057	CMS
DESIGN HW ELEVATION	= 6.32	M
100 YEAR DISCHARGE	= 0.091	CMS
100 YEAR HW ELEVATION	= 6.38	M
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 0.32	CMS
OVERTOPPING ELEVATION	= 6.9	M

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PATH 1975" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 117302.378(m) EASTING: 780573.684(m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99990766

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PATH 1975" TO -L- STATION 6+70.000 IS S 48° 30' 33.50" W 3,647.277 m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 29

PROJECT REFERENCE NO.	SHEET NO.
B-2938	5
R/W SHEET NO.	

METRIC

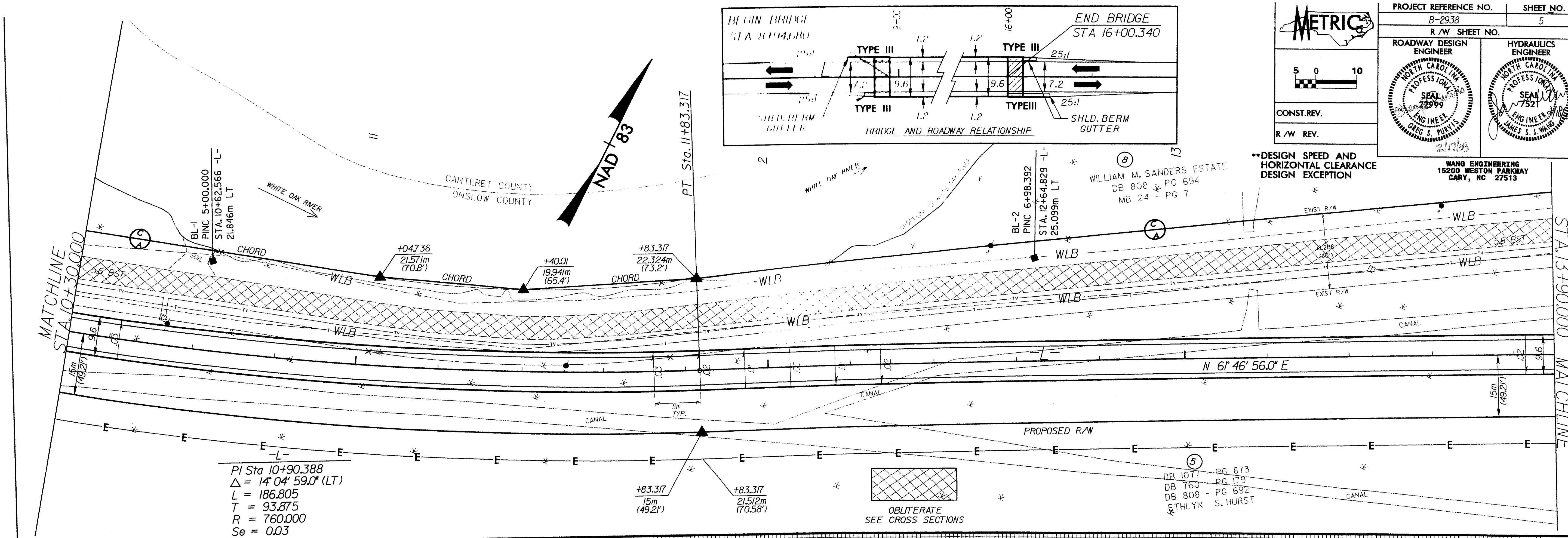
ROADWAY DESIGN ENGINEER — SEAL 22999 — GREG S. PURVIS

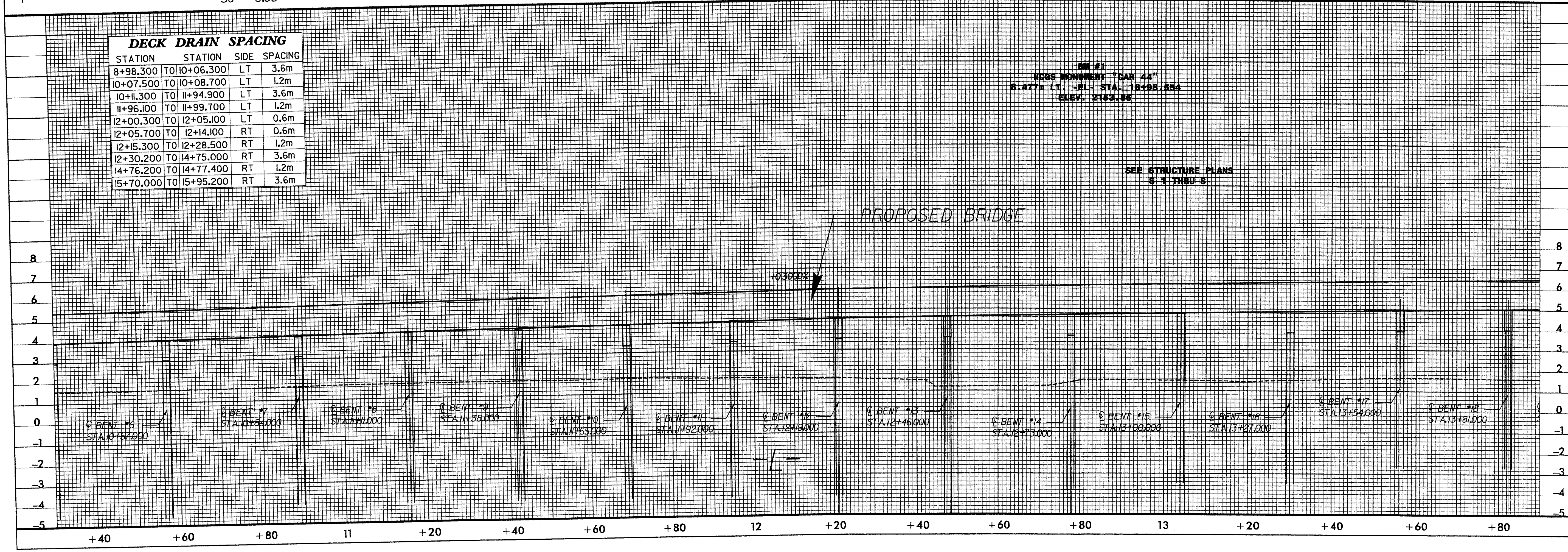
HYDRAULICS ENGINEER — SEAL 7521 — JAMES S. J. WANG

CONST. REV.

R/W REV.

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513





DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

PROJECT REFERENCE NO.	SHEET NO.
B-2938	6
R/W SHEET NO.	

METRIC

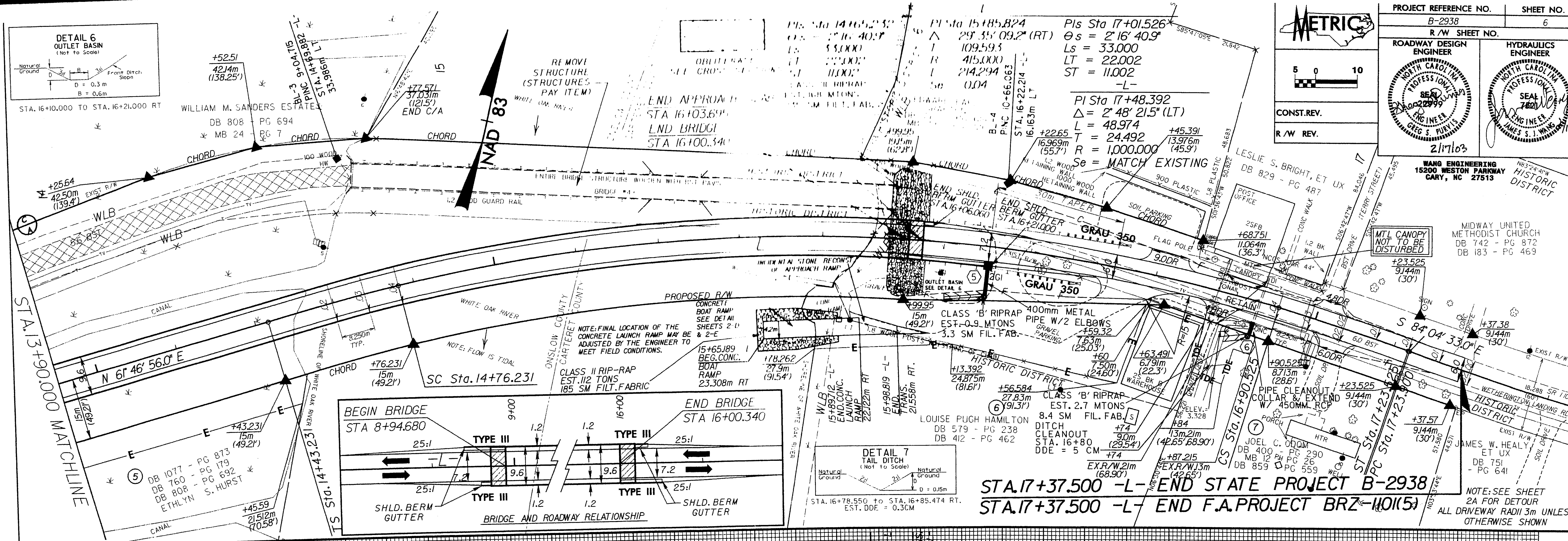
CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22999 GREG S. PURVIS — 2/17/03

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7621 JAMES S. J. WANG — 2/18/03

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513



DETAIL 6
OUTLET BASIN
(Not to Scale)
STA. 16+10.000 TO STA. 16+21.000 RT
WILLIAM M. SANDERS ESTATE
DB 808 - PG 694
MB 24 - PG 7
NAD 83
REMOVE STRUCTURE (STRUCTURES PAY ITEM)
END APPROACH
STA 16+03.695
END BRIDGE
STA 16+00.340
PI Sta 17+01.526
Θs = 2° 16' 40.9"
Ls = 33.000
LT = 22.002
ST = 11.002
-L-
PI Sta 17+48.392
Δ = 2° 48' 21.5" (LT)
L = 48.974
T = 24.492
R = 1,000.000
Se = MATCH EXISTING
LESLIE S. BRIGHT, ET UX
DB 829 - PG 487
HISTORIC DISTRICT
MIDWAY UNITED METHODIST CHURCH
DB 742 - PG 872
DB 183 - PG 469
MTL CANOPY NOT TO BE DISTURBED
STA.13+90.000 MATCHLINE
N 6° 46' 56.0" E
SC Sta.14+76.231
TS Sta.14+43.231
CLASS II RIP-RAP
EST.112 TONS
185 SM FILT.FABRIC
NOTE: FINAL LOCATION OF THE CONCRETE LAUNCH RAMP MAY BE ADJUSTED BY THE ENGINEER TO MEET FIELD CONDITIONS.
NOTE: FLOW IS TIDAL
WHITE OAK RIVER
ONSLOW COUNTY
CARTERET COUNTY
PROPOSED R/W
15+65.189 BEG.CONC. BOAT RAMP 23.308m RT
CLASS 'B' RIPRAP
EST. 0.9 MTONS
3.3 SM FIL.FAB.
400mm METAL PIPE W/2 ELBOWS
CLASS 'B' RIPRAP
EST. 2.7 MTONS
8.4 SM FIL. FAB.
DITCH CLEANOUT
STA. 16+80
DDE = 5 CM
PIPE CLEANOUT, COLLAR & EXTEND W/ 450MM. RCP
LOUISE PUGH HAMILTON
DB 579 - PG 238
DB 412 - PG 462
JOEL C. ODOM
DB 400 - PG 290
MB 12 - PG 26
DB 859 - PG 559
JAMES W. HEALY, ET UX
DB 751 - PG 641
DB 1077 - PG 873
DB 760 - PG 179
DB 808 - PG 692
ETHLYN S. HURST
S 84° 04' 33.0" E
CS Sta.16+90.525
ST Sta.17+23.525
PC Sta.17+23.525
BEGIN BRIDGE
STA 8+94.680
END BRIDGE
STA 16+00.340
TYPE III
SHLD. BERM GUTTER
BRIDGE AND ROADWAY RELATIONSHIP
DETAIL 7
TAIL DITCH
(Not to Scale)
STA. 16+78.550 to STA. 16+85.474 RT.
EST. DDE = 0.3CM
STA.17+37.500 -L- END STATE PROJECT B-2938
STA.17+37.500 -L- END F.A.PROJECT BRZ-1101(5)
NOTE: SEE SHEET 2A FOR DETOUR
ALL DRIVEWAY RADII 3m UNLESS OTHERWISE SHOWN

DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

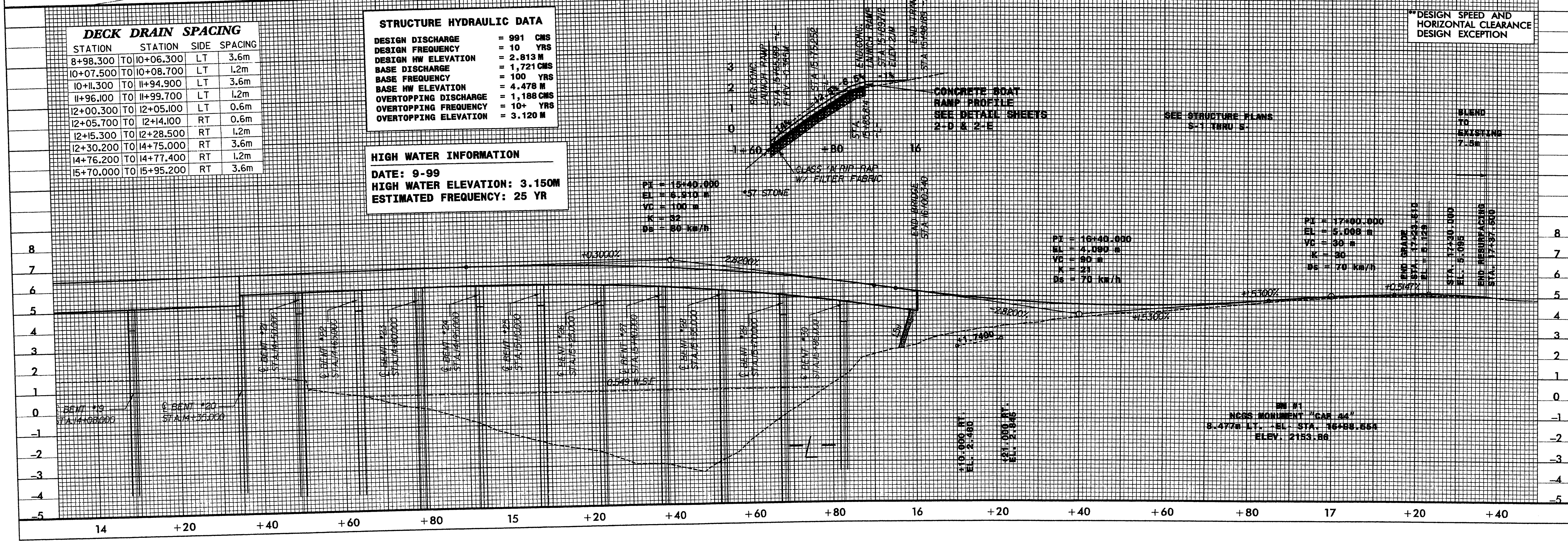
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 991 CMS
DESIGN FREQUENCY	= 10 YRS
DESIGN HW ELEVATION	= 2.813 M
BASE DISCHARGE	= 1,721 CMS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 4.478 M
OVERTOPPING DISCHARGE	= 1,188 CMS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3.120 M

HIGH WATER INFORMATION

DATE: 9-99
HIGH WATER ELEVATION: 3.150M
ESTIMATED FREQUENCY: 25 YR

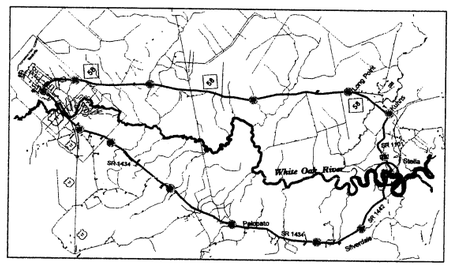
**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION



CONCRETE BOAT RAMP PROFILE
SEE DETAIL SHEETS 2-D & 2-E
SEE STRUCTURE PLANS S-1 THRU S-
BLEND TO EXISTING 7.5m
CLASS 'A' RIP-RAP W/ FILTER FABRIC
#57 STONE
PI = 15+40.000
EL = 6.910 m
VC = 100 m
K = 32
Ds = 80 km/h
PI = 16+40.000
EL = 4.090 m
VC = 80 m
K = 21
Ds = 70 km/h
PI = 17+00.000
EL = 5.008 m
VC = 30 m
K = 30
Ds = 70 km/h
+0.3000%
-2.8200%
+1.5300%
+0.5147%
END BRIDGE STA 16+00.340
BM #1
NCGS MONUMENT "CAR 44"
8.477m LT. -EL- STA. 16+98.554
ELEV. 2153.86
-L-
14
+20
+40
+60
+80
15
+20
+40
+60
+80
16
+20
+40
+60
+80
17
+20
+40

TIP: B-2938

VICINITY MAP



DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
CARTERET/ONSLOW COUNTY

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

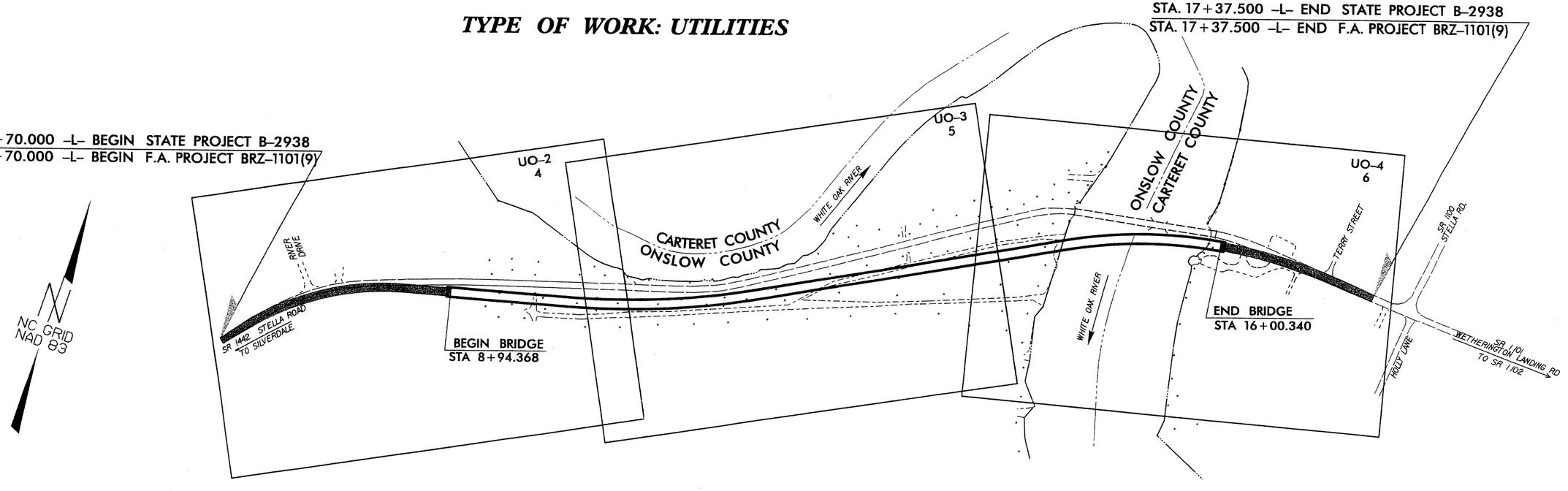
T.I.P. NO.	SHEET NO.
B-2938	UO-1

LOCATION: *REPLACE BRIDGE NO. 49 OVER WHITE OAK RIVER AND APPROACHES ON SR 1101 AND SR 1442*

TYPE OF WORK: UTILITIES

STA. 6+70.000 –L– BEGIN STATE PROJECT B-2938
STA. 6+70.000 –L– BEGIN F.A. PROJECT BRZ-1101(9)

STA. 17+37.500 –L– END STATE PROJECT B-2938
STA. 17+37.500 –L– END F.A. PROJECT BRZ-1101(9)



INDEX OF SHEETS

SHEET NO.	*DESCRIPTION*
UO-1	*TITLE SHEET*
UO-2 THRU UO-4	*UTILITIES BY OTHERS PLAN SHEETS*

UTILITY OWNERS ON PROJECT

(1) CARTERET/CRAVEN EMC
(2) SPRINT TELEPHONE
(3) TIME WARNER

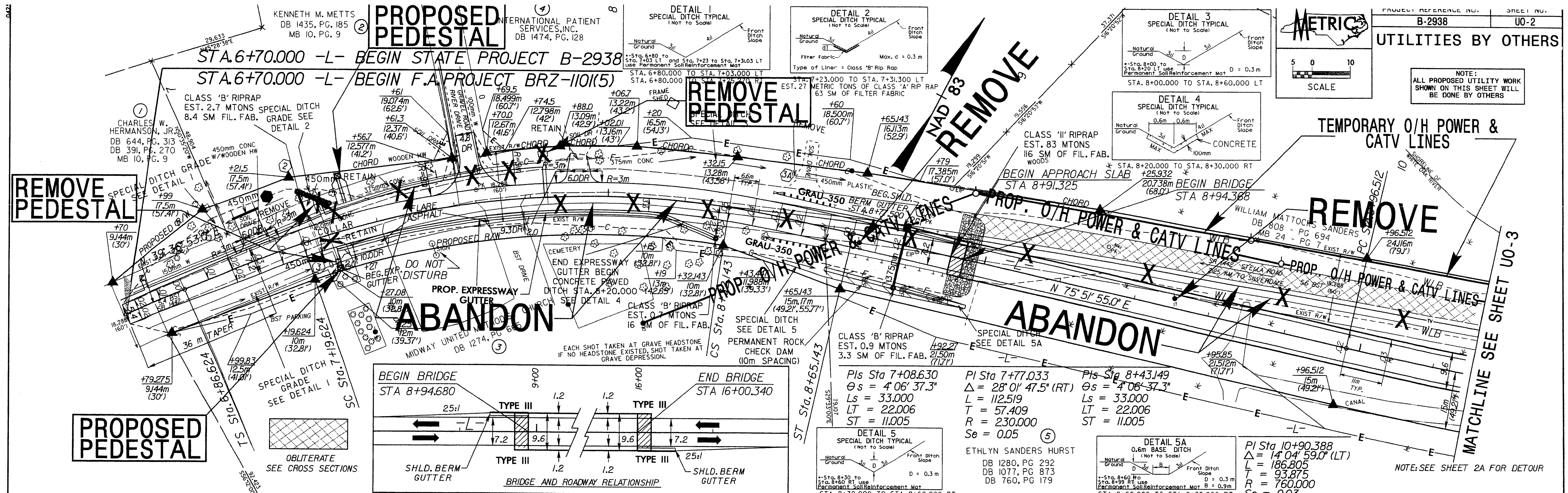
PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
DESIGN SERVICES
UTILITY SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

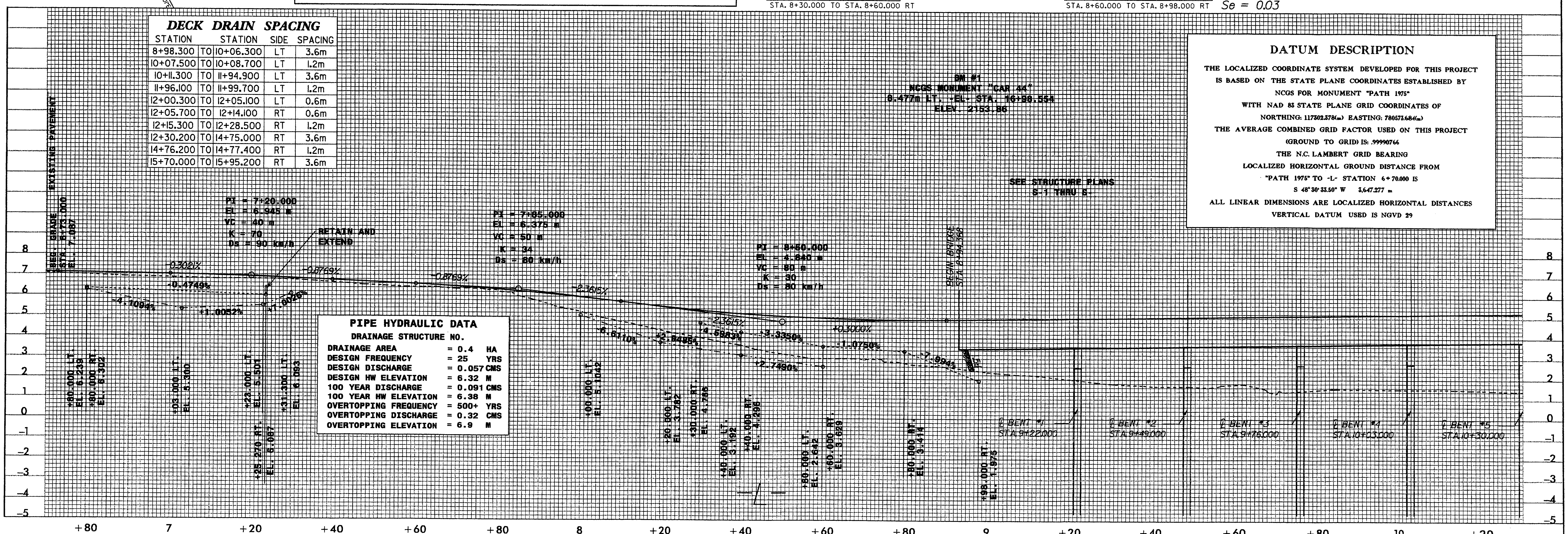
Roger Worthington, P.E. — *UTILITIES SECTION ENGINEER*
Steve Mckee, P.E. — *UTILITIES SQUAD LEADER PROJECT ENGINEER*
Alonza Yancey — *UTILITIES PROJECT DESIGNER*

UTILITIES BY OTHERS

METRIC

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





DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.4	HA
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.057	CMS
DESIGN HW ELEVATION	= 6.32	M
100 YEAR DISCHARGE	= 0.091	CMS
100 YEAR HW ELEVATION	= 6.38	M
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 0.32	CMS
OVERTOPPING ELEVATION	= 6.9	M

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PATH 1975" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 117302.378(m) EASTING: 780573.684(m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99990766

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PATH 1975" TO -L- STATION 6+70.000 IS S 48° 30' 33.50" W 3,647.277 m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 29

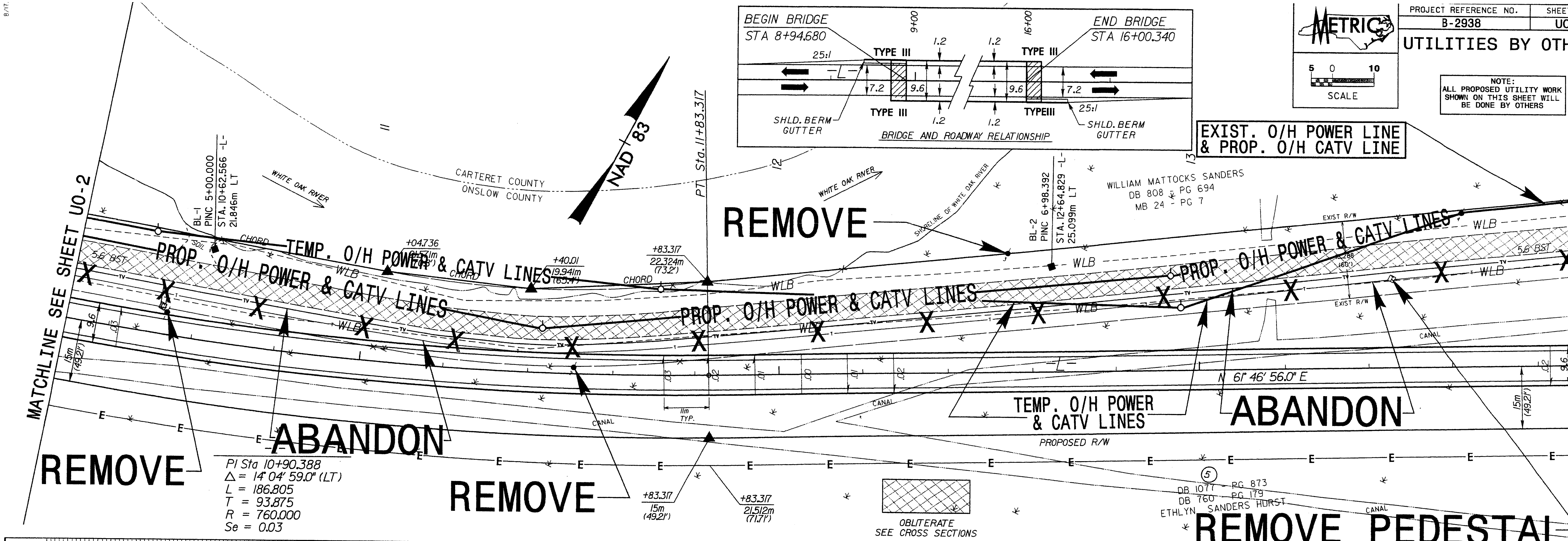
PROJECT REFERENCE NO.	SHEET NO.
B-2938	UO-3

METRIC

UTILITIES BY OTHERS

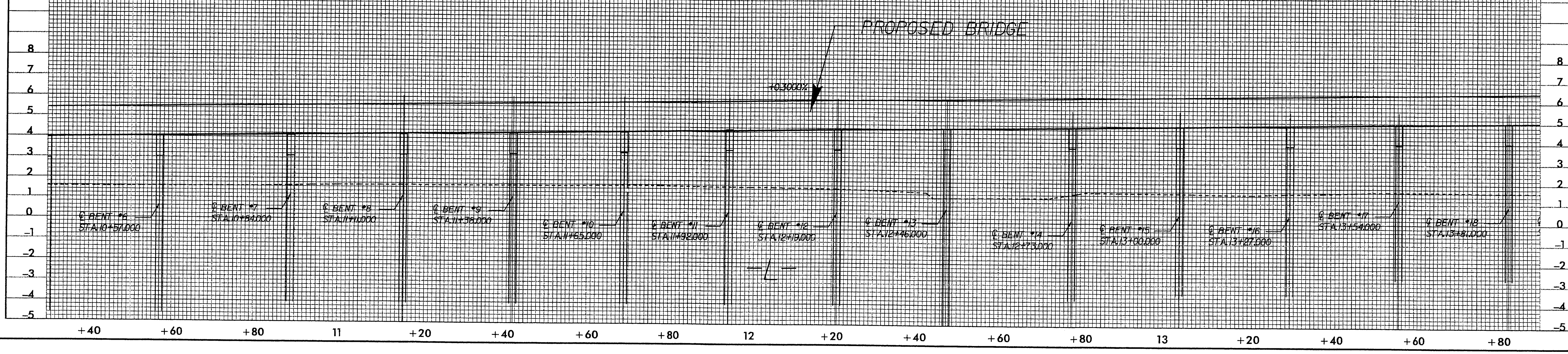
SCALE 5 0 10

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



BEGIN BRIDGE
STA 8+94.680
END BRIDGE
STA 16+00.340
TYPE III
TYPEIII
SHLD. BERM GUTTER
BRIDGE AND ROADWAY RELATIONSHIP
EXIST. O/H POWER LINE
& PROP. O/H CATV LINE
NAD 83
CARTERET COUNTY
ONSLOW COUNTY
WHITE OAK RIVER
BL-1
PINC 5+00.000
STA. 10+62.566 -L-
21.846m LT
PT Sta. 11+83.317
BL-2
PINC 6+98.392
STA. 12+64.829 -L-
25.099m LT
WILLIAM MATTOCKS SANDERS
DB 808 - PG 694
MB 24 - PG 7
REMOVE
TEMP. O/H POWER & CATV LINES
PROP. O/H POWER & CATV LINES
ABANDON
REMOVE PEDESTAL
TEMP. O/H POWER
& CATV LINES
N 61° 46' 56.0" E
PROPOSED R/W
EXIST R/W
CANAL
MATCHLINE SEE SHEET UO-2
MATCHLINE SEE SHEET UO-4
PI Sta 10+90.388
△ = 14° 04' 59.0" (LT)
L = 186.805
T = 93.875
R = 760.000
Se = 0.03
OBLITERATE
SEE CROSS SECTIONS
DB 1077 - PG 873
DB 760 - PG 179
ETHLYN SANDERS HURST

DECK DRAIN SPACING				
STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m



S187161 Thursday February 20 2003 b2938_U03.m

PROJECT REFERENCE NO.	SHEET NO.
B-2938	U0-4

UTILITIES BY OTHERS

METRIC

5 0 10

SCALE

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

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

EXIST. O/H POWER LINE & PROP. O/H CATV LINE

ABANDON

REMOVE

MATCHLINE SEE SHEET U0-3

WILLIAM MATTOCKS SANDERS
DB 808 - PG 694
MB 24 - PG

+52.51
42.14m
(138.8')

BL-3
PINC 9+04.315
STA. 14+69.882
33.986m LT

+77.57L
37.03m
(121.5')

CHORD

100' WOODED

HW

ENTIRE BRIDGE STRUCTURE WOODEN WITH BST PAVING

BRIDGE #49

1.2 WOOD GUARD RAIL

+25.64
42.50m
(139.4')

WLB

86.85'

CANAL

N 61° 46' 56.0" E

+43.23L
15m
(49.2')

DB 1077 - PG 873
DB 760 - PG 179
ETHLYN SANDERS HURST

+45.59
21.512m
(71.3')

SHORELINE OF WHITE OAK RIVER

8.25m TYP.

+76.23L
15m
(49.2')

SC Sta.14+76.231

TS Sta.14+43.231

REMOVE STRUCTURE (STRUCTURES PAY ITEM)

WHITE OAK RIVER

NAD 83

ONSLOW COUNTY
CARTERET COUNTY

OBLITERATE SEE CROSS SECTIONS

END APPROACH SLAB
STA 16+03.695
END BRIDGE
STA 16+00.340

Pls Sta 14+65.232
Θs = 2° 16' 40.9"
Ls = 33.000
LT = 22.002
ST = 11.002
CLASS 'II' RIPRAP
EST. 168 MTONS
235 SM FIL. FAB.

HISTORIC DISTRICT

INCIDENTAL STONE RECONST. OF APPROACH RAMP

WOODEN DOCK

PROPOSED R/W

NOTE: FINAL LOCATION OF THE CONCRETE LAUNCH RAMP MAY BE ADJUSTED BY THE ENGINEER TO MEET FIELD CONDITIONS.

CONC. BOAT RAMP

CONCRETE LAUNCH RAMP

REMOVE PEDESTAL

15+65.189 -L-
BIG CONC. LAUNCH RAMP
1.308m RT

+78.262
27.9m
(93')

SHORELINE OF WHITE OAK RIVER

BEGIN BRIDGE
STA 8+94.680

END BRIDGE
STA 16+00.340

25:1

TYPE III

1.2

7.2

9.6

SHLD. BERM GUTTER

BRIDGE AND ROADWAY RELATIONSHIP

Pls Sta 15+85.824
Δ = 29° 35' 09.2" (RT)
T = 109.593
R = 415.000
L = 214.294
Se = 0.04

EDWARD EARL GRAFTON
DB 770 - PG 680
MB 29 - PG 220

PINC 10+66.063
BL-4
STA. 16+22.214 -L-
16.163m LT

ABANDON

Pls Sta 17+01.526
Θs = 2° 16' 40.9"
Ls = 33.000
LT = 22.002
ST = 11.002
CLASS 'II' RIPRAP
EST. 168 MTONS
235 SM FIL. FAB.

Pl Sta 17+48.392
Δ = 2° 48' 21.5" (LT)
L = 48.974
T = 24.492
R = 1,000.000
Se = MATCH EXISTING

+22.65
16.969m
(55.7')

+45.39L
13.976m
(45.9')

RETAINING WOOD WALL

30m TAPER

END SHLD. BERM STA. 16+42.000

GRAU 350

PROPOSED PEDESTAL

LESLIE S. BRIGHT, ET UX
DB 829 - PG 487

MIDWAY UNITED METHODIST CHURCH
DB 742 - PG 872
DB 183 - PG 469

HISTORIC DISTRICT

MTL CANOPY NOT TO BE DISTURBED

REMOVE PEDESTAL

+68.75L
11.064m
(36.3')

+23.525
9.144m
(30')

ABANDON

PROP. U/G TEL. CABLES

EXIST. U/G TEL. CABLES

+37.38
9.144m
(30')

+90.52L
8.713m
(28.6')

PIPE CLEANOUT, COLLAR & EXTEND W/ 450MM. RCP

+23.525
9.144m
(30')

+37.57
9.144m
(30')

EXIST R/W

JAMES W. HEALY, ET UX
DB 751 - PG 641

WETHERINGTON LANDING RD

SR 1101

HISTORIC DISTRICT

ABANDON

REMOVE

CONCRETE LAUNCH RAMP

15+85.812 -L-
CONC. LAUNCH RAMP
5.122m RT

15+98.819 -L-
END TRANS.
21.558m RT

CLASS 'B' RIPRAP
EST. 0.9 MTONS
3.3 SM FIL. FAB.

400mm METAL PIPE W/2 ELBOWS

DETAIL 7
TAIL DITCH
(Not to Scale)

Natural Ground
2H
2H
D
Natural Ground

D = 0.5m

STA. 16+78.550 to STA. 16+85.474 RT.
EST. DDE = 0.3CM

+13.392
24.375m
(82.92')

+56.584
27.83m
(92.7')

CLASS 'B' RIPRAP
EST. 2.7 MTONS
8.4 SM FIL. FAB.

DITCH CLEANOUT
STA. 16+80
DDE = 5 CM

+84
13m 21m
(42.65' 68.90')

EX. R/W 21m
(68.90')

+87.21S
13m
(42.65')

NIDO L. HAMILTON
DB 579 - PG 238
DB 412 - PG 462

HARRY BARKER
DB 400 - PG 290
MB 12 - PG 26

CS Sta.16+90.825

PC Sta.17+23.525

ST Sta.17+23.525

STA.17+37.500 -L- END STATE PROJECT B-2938

STA.17+37.500 -L- END F.A.PROJECT BRZ-101(5)

NOTE: SEE SHEET 2A FOR DETOUR

ALL DRIVEWAY RADII 3m UNLESS OTHERWISE SHOWN

DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 991 CMS
DESIGN FREQUENCY	= 10 YRS
DESIGN HW ELEVATION	= 2.813 M
BASE DISCHARGE	= 1,721 CMS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 4.478 M
OVERTOPPING DISCHARGE	= 1,188 CMS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3.120 M

HIGH WATER INFORMATION

DATE: 9-99
HIGH WATER ELEVATION: 3.150M
ESTIMATED FREQUENCY: 25 YR

CONCRETE LAUNCH RAMP PROFILE

BEG. CONC. LAUNCH RAMP STA. 15+65.189 ELEV. 2.364M

STA. 15+85.812 LAUNCH RAMP ENDING ELEV. 2.144

END TRANS. STA. 15+98.819

+6%

-6%

+60

+80

16

**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION

SEE STRUCTURE PLANS S-1 THRU S-

BLEND TO EXISTING 7.5m

PI = 15+40.000
EL = 6.910 m
VC = 100 m
K = 32
Ds = 80 km/h

PI = 16+40.000
EL = 4.090 m
VC = 90 m
K = 21
Ds = 70 km/h

PI = 17+00.000
EL = 5.098 m
VC = 30 m
K = 30
Ds = 70 km/h

END BRIDGE STA. 16+00.340

END REINFACING STA. 17+37.600

STA. 17+00.000
EL. 5.098

+0.300%

-2.800%

+1.530%

-2.800%

+0.514%

+1.740%

0.549 W.SE

© BENT #19 STA.14+08.000

© BENT #20 STA.14+35.000

© BENT #21 STA.14+50.000

© BENT #22 STA.14+65.000

© BENT #23 STA.14+80.000

© BENT #24 STA.14+95.000

© BENT #25 STA.15+10.000

© BENT #26 STA.15+25.000

© BENT #27 STA.15+40.000

© BENT #28 STA.15+55.000

© BENT #29 STA.15+70.000

© BENT #30 STA.15+85.000

+9.000 RT
EL. 2.480

+21.000 RT
EL. 2.815

BM #1
NCGS MONUMENT "CAR 44"
8.477m LT. -EL- STA. 16+98.854
ELEV. 2153.86

14 +20 +40 +60 +80 15 +20 +40 +60 +80 16 +20 +40 +60 +80 17 +20 +40

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DS187161 Thursday February 20 2003 b2938_U04.m

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

T.I.P. No. B-2938

CATEGORICAL EXCLUSION
AND
PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

10·8·01
DATE

for William D. Gilmore, P.E., Manager
Project Development and Environmental
Analysis Branch, NCDOT

10-9-01
DATE

for Nicholas L. Graf, P.E.
Division Administrator, FHWA

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

T.I.P. No. B-2938

CATEGORICAL EXCLUSION

AND

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

October 2001

Document Prepared by:
Wang Engineering Company, Inc.

Pamela R. Williams
Project Manager
Barbara H. Mulkey Engineering

10-5-01

James Wang, Ph.D., P.E.
Principal-In-Charge
Wang Engineering Company, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG

For the North Carolina Department of Transportation

Stacy B. Harris, P.E.
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, North Carolina Department of Transportation's (NCDOT) Guidelines for Best Management Practices for Bridge Demolition and Removal, Guidelines for Best Management Practices for Protection of Water Surfaces, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed by NCDOT:

Project Development & Environmental Analysis Branch, Structure Design, Design Branch
The following measures will be carried out for the replacement of Bridge No. 49 per the approved Memorandum of Agreement:

1. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the Bridge and its surroundings as well as the General Store/Post Office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan (Appendix A). The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/ State Historic Preservation Office (HPO) to be made part of the permanent statewide survey and iconographic collection.

2. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to right of way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

3. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina State Historic Preservation Officer (SHPO). To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

4. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, Federal Highway Administration (FHWA) shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

    a. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

b. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

Division Engineer

An in-stream construction moratorium will be in effect from February 15 to September 30. This moratorium is required due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only not to the marsh areas.

The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented, as applicable.

Access for emergency services will be maintained to the existing boat dock during construction.

All existing piers will be removed down to the streambed.

Hydraulic Design

Bridge deck drains will not discharge directly into the White Oak River.

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

INTRODUCTION: The replacement of Bridge No. 49 is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1 (Appendix B). No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 31.5 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of an inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1101 and SR 1442 are classified as rural minor collectors and are, together, designated as a bike route, *Jacksonville: City to the Sea*. Land use in the project area is predominantly residential and High Quality Marsh (Brackish Marsh). The small riverside community of Stella is on the east approach and is eligible for the National Register of Historic Places as an historic district (see Figure 6). Bridge No. 49 is a contributing element to the district. There is a privately owned boat ramp on the southeast quadrant that is the only deep-water ramp in the area usable for water rescue vehicles.

Bridge No. 49 (Figure 3) was constructed in 1950 and reconstructed in 1975 with an overall length of 131.7 meters (432 feet). The clear roadway width is 5.7 meters (19 feet). The superstructure consists of twenty-three timber spans and one steel girder main span. The posted weight limit is 12.7 metric tons (14 tons) for single vehicles and 18.1 metric tons (20 tons) for truck-tractors, semi-trailers.

The approach at the west end of the bridge is on a 13.5-degree (136.5 meter radius) curve. The approach at the east end of the bridge is on a 25-degree (70 meter radius) curve. The approach roadway provides two 2.7-meter (nine foot) travel lanes with 1.8-meter (six foot) grass shoulders. The bed to crown height is nine meters (30 feet), and the normal water depth is approximately 4.2 meters (14 feet). The speed limit is not posted and the statutory speed limit is 90 kilometers per hour (km/h) (55 miles per hour (mph)). Advisory posted speed limit is 30 km/h (20 mph) on the approaches to the bridge.

The 2001 estimated average daily traffic volume is 1,600 vehicles per day (vpd). The projected traffic volume is expected to increase to 2,500 vpd by the design year 2025. The volumes include one percent truck-tractor semi-trailer (TTST) and two percent dual-tired vehicles (DT).

There is a private boat ramp in the southeast quadrant of the project site and a parking lot on the northeast side. Telephone, cable television and power lines cross the stream parallel to the roadway on the south side of the structure. Utility impacts are anticipated to be low.

Three accidents were reported near the bridge during the period from September 1, 1993 to August 31, 1996.

No school busses cross Bridge No. 49.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide two 3.6-meter (12-foot) travel lanes with 1.2-meter (four foot) shoulders for a total clear roadway width of 9.6 meters (32 feet). Bicycle safe rails will be provided (two-bar metal bridge rails at 1372 mm (54-inches) in height) (Figure 4, Appendix B). The proposed approach roadway will consist of two 3.6-meter (12-foot) travel lanes with 2.4-meter (eight foot) shoulders. The design speed will be 70 kilometers per hour (km/h) [45 miles per hour (mph)]. A design exception has been approved for the design speed of 70 km/h (45 mph) and the horizontal sight distance, and is attached in Appendix D.

The new structure will be approximately 704 meters (2347 feet) in length and will span the White Oak River and the high quality marshland. The existing navigational clearance will be maintained.

B. Reasonable and Feasible Alternatives

One (1) "reasonable and feasible" constructible alternative studied for replacing the existing bridge is described below.

Alternate D (Preferred) replaces the bridge downstream of the existing bridge and spans the White Oak River and the marshland on the Onslow County approach. The new structure is recommended to have a length of approximately 704 meters (2347 feet). During construction, traffic will be maintained on the existing structure and roadway.

C. Alternatives Eliminated From Further Study

Alternates A, B^1, B^2, C and E were eliminated due to the poor soil conditions on the bridge approach on the Onslow County side. It was determined that the soil could not be stabilized and differential settlement would occur if the roadway was raised for the end bent approach embankment.

Alternate A replaces the bridge at the existing location. During construction, traffic would be maintained by a two lane temporary detour structure, approximately 170 meters (567 feet) in length, located downstream of the existing bridge. The proposed bridge would be approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve. The approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet) and includes placement of rock fill at the ox bow and guardrail from west of the ox bow to the bridge. The project length is 853 meters (2843 feet).

Alternate B^1 replaces the bridge downstream of the existing bridge. During construction, traffic would be maintained on the existing bridge. The proposed bridge would be approximately 214 meters (713 feet) in length on a two degree (875 meter radius) curve with a five degree (350 meter radius) east approach curve. Onslow County approach work includes a minimum resurfacing grade beginning west of the ox bow and placement of rock fill at the ox bow and guardrail from west the ox bow to the bridge. The project length is 704 meters (2347 feet).

Alternate B^2 alignment is identical to Alternate B^1, but the approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet). The project length is 845 meters (2817 feet).

Alternate C replaces the bridge at the existing location. During construction, one lane of traffic would be maintained on the existing bridge. The proposed bridge would be approximately 143 meters (477 feet) in length on a seven degree (250 meter radius) curve. Traffic would be routed off-site during the construction of the temporary approaches for the one lane detour structure. Alternate C was eliminated at the early phase of the study because it provided a one-lane detour bridge to maintain traffic during the anticipated two-year project duration and would require a road closure to construct the detour approaches.

Alternate E involves replacing the bridge with a new bridge approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve and minimum approach work. During construction, traffic would be maintained with an on-site detour. Alternate E includes additional rock fill in the ox bow to avoid further erosion. The project length is 378 meters (1260 feet).

The "Do-Nothing" Alternative would eventually necessitate removal of the bridge, effectively removing this section of SR 1101/SR 1442 from traffic service. This is not desirable due to the traffic service provided by SR 1101/SR 1442 and the estimated 22-kilometer (13.8 miles) detour route.

Investigation of the existing structure by the Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternate

Alternate D, replacing the bridge downstream of the existing bridge and raising the grade on the Onslow County approach, was selected as the preferred alternate because it minimizes wetland impacts, minimizes impacts to Stella's Historic District, and restores high quality wetlands. In addition, Alternate D was the only alternate considered to be constructible. The proposed bridge will be constructed utilizing a temporary work bridge located south of the existing structure. The length of approach work will be approximately 342.4 meters (1141 feet).

The NEPA/404 Merger Team concurred with Alternate D as the preferred alternative and as the least environmentally damaging, practical alternative (Appendix C).

For avoidance and minimization of adverse impacts, the following measures will be accomplished:

1. Anticipated impacts to wetlands minimized to approximately 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 132-meter (440-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

IV. ESTIMATED COST

The estimated costs, based on current 2001 prices, are as follows:

	Alternate D (Preferred)
Structure Removal (existing)	$ 65,500
New Structure (with Temp. Work Bridge)	6,082,600
Roadway Approaches	339,800
Miscellaneous and Mobilization	699,100
Engineering and Contingencies	1,113,000
ROW/Const. Easements/Utilities:	69,000
TOTAL	**$8,369,000**

The estimated cost of the project, as shown in the 2002-2008 Transportation Improvement Program, is $7,174,000 including $74,000 for right-of-way and $7,100,000 for construction.

V. NATURAL RESOURCES

A. Methodology

Informational sources used to prepare this report include: USGS Stella, NC 7.5 minute series topographic map (1988); Soil Conservation Service (SCS) Soil Survey of Onslow County, NC (July, 1992) and Soil Survey of Carteret County, NC (September, 1987); United States Fish and Wildlife Service (USFWS) National Wetlands Inventory map (Stella, NC, 1995); USFWS Endangered, Threatened, and Candidate Species and Federal Species of Concern in North Carolina (March 22, 2001); North Carolina Natural Heritage Program (NCNHP) computer database of rare species and unique habitats (January 2001); and NCDOT aerial photography of the study area.

A general field survey was conducted along the proposed project corridor on March 19, 1998 and October 7, 1998. Plant communities and their associated wildlife were identified

using a variety of observation techniques including active searching, and identifying characteristic signs of wildlife such as sounds, tracks, scats, and burrows.

Impact calculations were based on the construction limits for each individual alternate, the width of the replacement structure, the width of the river, and the length of the project approaches.

B. Physiography And Soils

The proposed project lies within the Coastal Plain Physiographic Province, which includes all parts of North Carolina east of the Fall Line. This province typically consists of unconsolidated sands, silts, clays, and peats. The topography of the project vicinity can be characterized as nearly level to gently rolling, with elevations ranging from approximately <1.5 meters to 7.5 meters (< five feet to 25.0 feet) above mean sea level (msl). The elevation in the project area ranges from approximately <1.5 meters to 4.5 meters (< five feet to 15.0 feet) above msl. Current land use in the project vicinity includes agricultural and rural residential, with much of the undeveloped areas being jurisdictional wetlands.

According to the soil surveys for Carteret and Onslow Counties, three different soil associations are located within the project area. The Muckalee-Dorovan association is located north and south of the approach west of the White Oak River and consists of nearly level, poorly and very poorly drained soils. The Lafitte-Hobucken-Carteret and Baymeade-Onslow-Lynchburg soil associations are located in the project area on the east side of the river. The Lafitte-Hobucken-Carteret association consists of very poorly drained, mucky and sandy soils found in marshes flooded frequently with salt water. The Baymeade-Onslow-Lynchburg association is located in areas that parallel drainageways, and includes well drained to somewhat poorly drained sandy and loamy soils. Field conditions generally conform to soil survey mapping.

Seabrook fine sand occurs directly adjacent to the bridge east of the river, and also south of SR 1101 east of the river in the project area (USDA-SCS, 1987). This soil is moderately well drained, with rapid permeability. The seasonal high water table is 0.6 to 1.2 meters (two to four feet) below the surface and flooding occurs rarely in low-lying areas. A small irregularly shaped wet area occurs directly adjacent to the bridge on the east side of the river. This area is more sandy than mucky and is probably Leon sand, which occasionally occurs as an inclusion in the Seabrook fine sand. Leon sand is poorly drained and is listed as hydric (USDA-SCS, 1991).

Norfolk loamy fine sand, two to six percent slopes, is located on the north side of SR 1101 west of the river. The seasonal high water table is 1.2 to 1.8 meters (four to six feet) below the surface. This soil is well drained, permeability is moderate, and erosion is a moderate hazard in areas not protected by vegetation. This soil is not listed as hydric.

Lafitte muck is found on both sides of the roadway approach west of the White Oak River (USDA-SCS, 1992). This soil is typically found <1.5 meters (< five feet) above msl and is flooded daily with brackish water. Infiltration and permeability are moderate and the water table is at or near the surface most of the time. Lafitte muck is listed as hydric (USDA-SCS, 1991).

C. Water Resources

1. Surface Waters

The proposed project falls within the White Oak River Basin, with a subbasin designation of WOK1 (03-05-01) and a federal hydrologic unit designation of White Oak-03020106.

2. Water Resource Characteristics

The White Oak River is a low flowing, coastal river which discharges into Bogue Sound approximately 8.1 kilometers (five miles) southeast of the project study area. Within the project study area of Bridge No. 49, the White Oak River flows south to southeast and is approximately 119 meters (390 feet) wide with a drainage area of 373 square kilometers (233 square miles). The White Oak River and SR 1101 cross at this location perpendicular to each other but there is a sharp curve on the western end of the bridge. On the day of the field investigation the river had a deep, tannin tea color and a low flow. The depth of the river along the riverbanks ranged from approximately 0.6 to 1.2 meters (two to four feet). The riverbank substrate consisted of fine silts and sands. The White Oak River is tidal but also has some wind driven tidal influence as well and is considered brackish. The river's salinity on the day of the site visit was three parts per thousand. The White Oak River has a Class SA rating from the North Carolina Department of Environment and Natural Resources (NCDENR). The Class SA indicates the White Oak River is designated as tidal salt waters protected for shellfishing for market purposes, primary recreation, aquatic life propagation and survival, fishing, wildlife and secondary recreation. The Classification Date and Index for this portion of the river are 6/1/56, 20-(18). Approximately 1.6 kilometers (one mile) upstream from the bridge crossing, the White Oak River is classified as C HQW. The C indicates that the river is suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. HQW indicates High Quality Waters, which are rated as excellent based on biological and physical/chemical characteristics through monitoring or special studies.

Point-source discharges located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. A search within the project vicinity [0.8 kilometers (0.5 miles)] was conducted for NPDES permitted discharges and none were revealed.

Non-point source refers to runoff that enters surface waters through storm water flow or no defined point of discharge. In the project study area, storm water runoff from SR 1101 may cause water quality degradation as well as surface runoff from the boat ramp area in the southeast quadrant of the project study area.

The North Carolina Division of Water Quality (NCDWQ) includes the North Carolina Index of Biotic Integrity (NCIBI), as another method to determine general water quality in the basinwide sampling. The NCIBI is a modification of the Index of Biotic Integrity (IBI) initially proposed by Karr (1981) and Karr, et. al. (1986). The IBI method was developed for assessing a stream's biological integrity by examining the structure and health of its fish community. The Index incorporates information about species richness and composition, trophic composition, fish abundance, and fish condition. The NCIBI summarizes the effects of all classes of factors influencing aquatic faunal communities (water quality, energy source, habitat quality, flow regime, and biotic interactions).

According to NCDWQ, the Division has a sampling station located on SR 1101 at Bridge No. 49 on the White Oak River. This station was last sampled in April of 1995, and includes a fish community (IBI) sample. The NCDWQ sampling identification number is 95-22. The NCIBI rating of the White Oak River at this location was determined to be Good.

3. Anticipated Impacts

a) General Impacts

Other than the one water resource mentioned in the previous section, neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watershed, or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within 1.6 km (one mile) of project study area. Impacts to water resources will result due to the placement of support structures (bents) in the river. In the short term, construction of the bridge and approach work will increase sediment loads. The NCDOT, in cooperation with the NCDENR, has developed a sedimentation control program for highway projects that adopts formal Best Management Practices for the Protection of Surface Waters. The following are methods to reduce sedimentation and water quality impacts:

- strict adherence to BMPs for the protection of surface waters in sensitive water sheds during the life of the project
- reduction and elimination of direct and non-point discharge into the water bodies and minimization of activities conducted in streams
- placement of temporary ground cover or re-seeding of disturbed sites to reduce runoff and decrease sediment loadings
- reduction of clearing and grubbing along the river.

b) Impacts Related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", and "Best Management Practices for Bridge Demolition and Removal" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for Best Management Practices for the Protection of Surface Waters.

Dropping any portion of the structure into waters of the United States will be avoided unless there is no other practical method of removal. The superstructure of Bridge No. 49 consists of timber flooring on steel I-Beams, with an asphalt-wearing surface. The substructure consists of timber caps on timber piles. The end bents are timber abutment design. Since Bridge No. 49 is composed of timber and steel, the bridge can be removed without dropping any components into waters of the United States. If removal of the substructure will create disturbance in the streambed, a turbidity curtain can be used to address sediment concerns.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project would fall under Case 2, which states that no work shall be performed in the water during moratorium periods (February 15 to September 30) associated with fish migration, spawning, and larval recruitment into nursery areas. This conclusion is based upon the classification of the waters within the project area and vicinity, the Stream Crossing Guidelines for Anadromous Fish Passage, and comments received from the North Carolina Wildlife Resources Commission (NCWRC).

D. Biotic Resources

1. Plant Communities

Living systems described in the following sections include communities of associated plants and animals in the project area. These descriptions refer to the dominant flora and fauna in each community and the relationship of these biotic components. Classification of natural plant communities is based on the system used by the NCNHP (Schafale and Weakley 1990). Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species include the common name only. Vascular plant names follow nomenclature found in Radford et al. (1968) unless more current information is available. Terrestrial and aquatic wildlife were determined through field observations, evaluation of habitat, and review of field guides and other documentation.

a) Man-Dominated Community

The Man-Dominated Community found at this site includes the road shoulders, parking lots, and residential and commercial properties within the project area. Dominant vegetation includes dandelion (*Taraxacum officinale*), plantain (*Plantago sp.*), white clover (*Trifolium repens*), and planted grass. Parking lots and some parts of the road shoulders consist of exposed soil. Most areas of the Man-Dominated community appear to be regularly maintained.

b) Brackish Marsh

This wetland community is located west of the river, north and south of the roadway approach, and in a small patch that extends under the bridge east of the river. Dominant vegetation includes black needlerush (*Juncus roemerianus*), cord grass (*Spartina patens*), Olney threesquare (*Scirpus olneyi*), and common reed (*Phragmites australis*). Wax myrtle (*Myrica cerifera*), yaupon holley (*Ilex vomitoria*), and eastern redcedar (*Juniperus virginiana*) are widely scattered throughout. The depth of surface water in this community on the day of the initial site investigation ranged from approximately zero to 30 centimeters (zero to 12 inches) and salinity was three parts per thousand.

2. Wildlife

Plant diversity is low in the Man-Dominated community and there are no areas of vines or brush that might provide shelter for wildlife. Limited habitat may be available for such species as American robin (*Turdus migratorium*), starling (*Sturnus vulgaris*), and house mouse (*Mus musculus*).

The Brackish Marsh community provides important habitat for a variety of wildlife and serves as nursery grounds for many aquatic species. Wildlife seen or heard in this community on the day of the visit included double-crested cormorant (*Phalacrocorax auritus*), ring-billed gull (*Larus delawarensis*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), and common crow (*Corvus brachyrhynchos*).

Other species of ducks and gulls may find food sources in the marsh. King rail (Rallus elegans) and short-billed marsh wren (Cistothorus platensis) could find suitable winter habitat in this community and other birds such as least bittern (*Ixobrychus exilis*) may find good nesting habitat here. Mammals such as muskrat (*Ondatra zibethicus*) and marsh rice rat (*Oryzomys palustris*) may be found nesting in this community as well. Diamondback terrapin (*Malaclemys terrapin*) may be seen here feeding on crabs, small mollusks, and dead fish, and marsh fiddler crab (*Uca pugnax*) could reside here, feeding on organic matter and burying into the substrate. Many other species of wildlife not listed here may be found in this very productive community.

3. Aquatic Communities

The aquatic community in the project study area exists within the White Oak River. A cursory search of the shoreline was conducted for evidence of mussel and clam species. Hard clam shells (*Mercenaria mercenaria*) and eastern oyster shells (*Crassostrea virginica*) were found along the riverbanks but no other signs of mollusks or bi-valves were revealed. Signs were posted along both sides of the White Oak River by the North Carolina Division of Marine Fisheries (NCDMF) closing the shellfish beds and warning of serious illness if shellfish from this area were consumed. Dip-netting along the riverbank yielded only juvenile brown shrimp (*Penaeus aztecus*).

According to the North Carolina Wildlife Resources Commission (NCWRC), the following freshwater fish species are found within the White Oak River; redbreast sunfish (*Lepomis auritus*), chain pickerel (*Esox niger*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), and largemouth bass (*Micropterus salmoides*). NCWRC stated the following saltwater species were also found in the White Oak River at this location: herring (*Alosa spp.*), hickory shad (*Alosa mediocris*), and striped bass (*Morone saxatilis*). NCWRC recommended no instream work from April 1 to June 15, as these are critical spawning periods for most sunfish and bass (*Centrarchidae* family) and additionally NCWRC recommended no instream activity from February 15 to May 30 due to anadromous fish migrations. NCWRC also made other bridge replacement recommendations such as placing the new structure as close as possible to the existing structure, deck drains should not discharge directly into the river, live concrete should not be allowed to contact the water and a clear bank (riprap free) area of at least three meters (ten feet) should remain on each side of the river underneath the bridge.

NCWRC stated in response to a scoping letter that the bridge should be replaced, in place, with a spanning structure and with off-site detour. No in-water work should occur from February 15 to September 30, and that the marsh adjacent to the bridge should be avoided.

The North Carolina Division of Marine Fisheries (NCDMF) stated that they have a longstanding sampling station at Stella, below Bridge No. 49. From 1978 through 1996

for the months of May and June these are the most frequently sampled species found at this location in descending order of abundance; brown shrimp (*Penaeus aztecus*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), American eel (*Anguilla rostrata*), bay anchovie (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), grass shrimp (*Palaemonetes spp.*), hog choker (*Triunectes maculatus*), blue crab (*Callinectes sapidus*), weakfish (*Cynoscion regalis*), pinfish (*Lagondon rhomboides*), and southern flounder (*Paralichthys lethostigma*). NCDMF stated that this is a primary marine nursery area that has a variable salinity rate depending on rainfall and wind tides. NCDMF stated the waters are navigable, primarily for recreation purposes, but some commercial gill netting also occurs here. NCDMF recommended a dredge moratorium from April 1 to September 30 and advised that the NCDOT needs to practice strict best management practices (BMPs) when work does begin to replace the bridge due to it being a primary nursery area.

4. Anticipated Impacts to Biotic Communities

Biotic community impacts expected to result from project construction are addressed separately as terrestrial impacts and aquatic impacts. However, impacts to terrestrial communities, particularly in wetland areas and in locations exhibiting slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. It is important to note that construction impacts may not be restricted to the communities in which the construction activity occurs. Efforts will be made to ensure that no sediment leaves the construction site.

a) Plant Communities

Plant communities provide nesting, foraging, and shelter habitat for fauna. The loss of these habitats will result in the displacement and mortality of faunal species in residence. Individual mortalities may occur to terrestrial animals from construction machinery used during clearing activities.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present in the study area. Project construction will result in clearing and degradation of portions of these communities. Alternate D will result in the least amount of permanent impacts and will restore a portion of the existing road back to Brackish Marsh. Table 1 details the anticipated impacts to terrestrial and aquatic communities by habitat type.

TABLE 1
ANTICIPATED IMPACTS TO
TERRESTRAIL AND AQUATIC COMMUNTIES

ALTERNATE	*PROJECT LENGTH METERS (FEET)*	*BRIDGE LENGTH METERS (FEET)*	*SURFACE WATER IMPACTS LINEAR METERS (FEET)*	*BRACKISH MARSH IMPACTS HA (ACRE)*	*WETLAND RESTORATION HA (ACRES)*	*AQUATIC COMMUNITY HA (ACRES)*
D (Preferred)	1077.525 (3,534)	704 (2,310)	9.6 (32)	0.008 (0.021)	0.68 (1.70)	0.16 (0.40)

NOTES:
- Calculations for impacts are based on the construction limits.
- Aquatic community impacts are based upon the entire width and length of the bridge over water.

b) Aquatic Communities

The aquatic community in the study area exists within the White Oak River. The new replacement structure construction and approach work will likely increase sediment loads in the river in the short term. Construction related sedimentation is harmful to local populations of invertebrates that are an important part of the aquatic food chain. Construction activities also increase the possibility of potentially toxic substances, such as engine fluids and particulate rubber, entering the waterway and harming aquatic organisms.

The BMPs for the protection of surface waters will be strictly enforced to minimize potential adverse impacts due to this project. Since White Oak River is potentially anadromous fish spawning habitat, the NCDOT's Stream Crossing Guidelines for Anadromous Fish Passage will be adhered to for this project. The purpose of these guidelines is to provide guidance to the NCDOT to ensure that replacement of existing and new highway stream crossing structures will not impede the movement of anadromous fish.

E. Special Topics

1. Waters of the United States

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). "Waters of the United States" are regulated by the United States Army Corps of Engineers (USACE).

Investigation into wetland occurrence in the project study area was conducted during the initial site visit using methods of the 1987 Corps of Engineers Wetlands Delineation Manual. Wetland areas consisting of Brackish Marsh were found within the western quadrants of the project study area and in a small patch east of the river.

On October 7, 1998, the wetlands were delineated and surveyed. On December 1, 1998, the USACE and the Division of Coastal Management met on-site and gave their agreement of the delineation.

Project construction cannot be accomplished without infringing on jurisdictional surface waters. Anticipated surface water impacts fall under the jurisdiction of the USACE.

2. Permits

In accordance with provisions of Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), a permit would be required from the USACE for the discharge of dredged or fill material into "Waters of the United States". Since no significant impacts are expected from this project, a Categorical Exclusion level study will be initiated. Categorical Exclusions are subject to the provisions of Nationwide Permit 23. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency. It states that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. The Categorical Exclusion report is submitted to the USACE to

document that the terms and conditions of the Nationwide Permit 23 are met. However, final permit decisions are left to the discretionary authority of the USACE.

If filling from a proposed project will impact wetlands or waters, a Section 401 Water Quality Certification may be required from the North Carolina Division of Water Quality. North Carolina has developed General Certifications (GC) that will satisfy Section 401 of the CWA and correspond to the USACE's Nationwide Permits. An application must be made if there are any impacts to "Waters of the United States".

If no practical alternative exists to remove the current bridge other than to drop it into the water, prior to removal of debris off-site, fill related to demolition procedures will need to be considered during the permitting process. A worst-case scenario should be assumed with the understanding that if there is any other practical method available, the bridge will not be dropped into the water. Permitting should be coordinated such that any permit needed for bridge construction should also address issues related to bridge demolition. Since this bridge is of timber and steel construction, removal should be possible without dropping portions of the bridge into the water.

The White Oak River is subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes by the U.S. Coast Guard. This waterway meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70, stating that advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given advance approval of the construction of the bridge over the White Oak River. Therefore, a Coast Guard permit will not be required for this project.

3. Division of Coastal Management Consultation

The Division of Coastal Management must be consulted regarding application of the Coastal Area Management Act (CAMA) to this project. Section .2300 of the CAMA discusses general permits for the replacement of existing bridges. The water at this site is brackish and the marsh is considered estuarine and will not meet the CAMA general permit condition of the bridge replacement spanning no more than 75 meters (250 feet) of estuarine water. A CAMA major permit will be required.

General permit conditions include but are not limited to; single bridge and culvert projects that do not require temporary fill causeways or temporary bridges associated with replacements; bridge replacements spanning no more than 75 meters (250 feet) of estuarine water, public trust area, and coastal wetland Areas of Environmental Concern; bridge projects which do not increase the vertical clearance to more than 1.5 meters (five feet) above normal water level or normal high water, or by vertical clearance to more than 25 percent over the existing clearance, whichever is greater; projects in which the total area of public trust area, estuarine waters, and wetlands to be excavated or filled do not exceed 232 square meters (2500 square feet) except that the wetland component shall not exceed 46.5 square meters (500 square feet); and projects which DENR determines that the proposed activity would not adversely affect areas which possess historic, cultural, scenic, conservation, fisheries, water quality, or recreational values.

4. Mitigation

The USACE usually requires compensatory mitigation for activities authorized under Section 404 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.04 hectares (0.1 acre) of wetlands or 45.0 linear meters (150 linear feet) of perennial and intermittent streams.

The DWQ may require compensatory mitigation for activities authorized under Section 401 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.40 hectares (one acre) of wetlands and/or 45.0 linear meters (150 linear feet) of perennial streams. A final determination regarding mitigation requirements rests with DCM, with input from the COE and DWQ.

F. Protected Species

Some populations of plants and animals are in the process of decline due either to natural forces or their inability to coexist with humans. Rare and protected species listed for Carteret and Onslow Counties, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

1. Federally Protected Species

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The USFWS lists fourteen federally protected species for Carteret County (Table 2) and for Onslow County (Table 2A). Information pertinent to each species and the possibility of impact due to the proposed project is listed on the following table.

TABLE 2
FEDERALLY PROTECTED SPECIES
FOR CARTERET COUNTY
(MARCH 22, 2001)

Common Name	*Scientific Name*	Status
Shortnose sturgeon	*Acipnser brevirostrum*	E
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Hawksbill turtle	*Eretmochelys imbricata*	E
Eastern cougar	*Felis concolor couguar*	E** #

TABLE 2 FEDERALLY PROTECTED SPECIES FOR CARTERET COUNTY (MARCH 22, 2001)		
Common Name	*Scientific Name*	Status
Kemp's (Atlantic) ridley sea turtle	*Lepidochelys kempii*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Roseate tern	*Sterna dougallii*	E
Manatee	*Trichechus manatus*	E

NOTES:

Denotes Federally Protected Species for both Carteret and Onslow Counties

* Denotes obscure record, date this species was last observed in the county is unknown

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 endangered within the foreseeable future throughout all or a significant portion of its range)

T(S/A) Denotes Threatened due to similarity of appearance (species which are threatened due to similarity of appearance with other rare species and are listed to protect these species)

** Historic record at NCNHP. Last observed in the county more than 20 years ago.

\# Historic record at USFWS. Last observed in the county more than 50 years ago.

TABLE 2A FEDERALLY PROTECTED SPECIES FOR ONSLOW COUNTY (MARCH 22,2001)		
Common Name	*Scientific Name*	Status
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Golden Sedge	*Carex Lutea*	PE
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Eastern cougar	*Felis concolor couguar*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Cooley's meadowrue	*Thalictrum cooleyi*	E

NOTES:

Denotes Federally Protected Species for both Carteret and Onslow Counties

* Denotes obscure record, date this species was last observed in the county is unknown

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 endangered within the foreseeable future throughout all or a significant portion of its range)

T(S/A) Denotes Threatened due to similarity of appearance (species that are threatened due to similarity of appearance with other rare species and are listed to protect these species)

PE Proposed Endangered

Species: *Acipnser brevirostrum* (shortnose sturgeon)
Family: Acipenseridae
Date Listed: 3/11/67

The shortnose sturgeon is a small (usually less than three ft [0.9 meters] in length) species of fish that occurs in the lower sections of large rivers and in coastal marine habitats from the St. John River, Canada to the Indian River, Florida. It can be differentiated from the Atlantic sturgeon because of its shorter snout, wider mouth, and the pattern of its preanal shields (the shortnose having one row and the Atlantic having two).

The shortnose sturgeon prefers deep channels with a salinity less than sea water. It feeds on benthic invertebrates and plant material and is most active at night. It is an anadromous species that spawns upstream in the spring and spends most of its life within close proximity of the rivers mouth. The sturgeon inhabits the lower sections of larger rivers and coastal waters along the Atlantic coast. It may spend most of the year in brackish or salt water and move into fresh water only to spawn. At least two entirely freshwater populations have been recorded, in South Carolina and Massachusetts.

BIOLOGICAL CONCLUSION: NO EFFECT

The White Oak River may provide suitable habitat for the shortnose sturgeon. Through written communication on August 16, 2001 with Fritz Rohde of the N.C. Division of Marine Fisheries, it was determined that there are no records of this species occurring in the White Oak River and it is unlikely that the shortnose sturgeon would be present. However, best management practices will insure this project will not affect this species. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of the shortnose sturgeon within one mile (1.6 kilometers) of the project area.

Species: *Alligator mississippiensis* (American alligator)
Family : *Crocodylidae*
Date Listed: 6/4/87

The **American alligator** is a large (1.8 to 3.7 meters / six to 12 feet long) rough-backed reptile with a broad, rounded snout. Its fourth tooth on the lower jaw fits into a notch in the upper jaw. This distinguishes the American alligator from the American crocodile which has its fourth tooth exposed when the jaw is closed.

American alligators are sexually mature at about six or seven years of age. Nesting occurs in late spring or early summer when females produce approximately 35 to 40 eggs. American alligators inhabit fresh to slightly brackish river systems, canals, lakes, ponds, swamps, bayous, and coastal marshes. The American alligator is not biologically endangered or threatened and is not subject to Section 7 consultation.

BIOLOGICAL CONCLUSION: NO EFFECT

This species is listed as threatened due to similarity of appearance to the American crocodile (*Crocodylus acutus*). Habitat is present for the alligator in the project area, but not for the crocodile. The range of the American crocodile currently includes southern portions of the Everglades National Park as well as areas south of there. The American alligator will not be affected by this project.

Species: *Amaranthus pumilus* (seabeach amaranth)
Family : *Amaranthaceae*
Date Listed: 4/7/93

Seabeach amaranth is an annual plant that grows on Atlantic Ocean beaches. The stems are fleshy and pink-red or reddish, with small rounded leaves. The leaves are clustered toward the tip of the stem and have a small notch at the rounded tip. Flowering occurs in July and continues until the death of the plant in late fall.

Seabeach amaranth is found on the upper beach and lower foredune of coastal barrier islands. The species is an effective sand binder, building dunes where it grows.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable beach habitat does not exist in the project area for this species. The NCNHP database shows no recorded occurrences of the seabeach amaranth in the vicinity of the project. The seabeach amaranth will not be affected by this project.

Species: *Caretta caretta* (Loggerhead sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **Loggerhead sea turtle** is characterized by a large head with blunt jaws. The carapace and flippers are a reddish-brown color and the plastron is yellow. Adults grow to an average weight of about 91 kilograms (200 pounds), although some specimens may occasionally reach 1000 pounds. The species feeds on mollusks, crustaceans, fish and other marine animals. The loggerhead is typically found at sea but may enter bays and lagoons. It nests on beaches in late spring and early summer.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat does not exist for this species however it could occasionally be found feeding in the vicinity of the project. If the loggerhead is observed in the project area during construction, activities will cease until the turtle leaves. The Loggerhead sea turtle will not be affected by this project.

Species: *Carex Lutea (Golden Sedge)* **Proposed Endangered**
Family: *Cyperaceae*
Date Listed: 8/16/99

The golden sedge has yellowish green, grass-like leaves and produces stems that may reach three feet (0.9 meter) or more with many flowers. This perennial plant is native to the coastal plain of North Carolina, where it is associated with wet partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps on sites underlain with calcareous (chalky) deposits. Historically, its open habitat was maintained by periodic wildfires.

The golden sedge currently is known only from eight populations in Pender and Onslow counties. Most of the populations are small, and seven are on privately owned lands vulnerable to draining, development, mining, fire suppression, and a variety of other changes in habitat management.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for golden sedge in the form of partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps does not exist within the project area. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of golden sedge within one mile (1.6 kilometers) of the project area. Therefore, this project will not affect this species.

Species: *Charadrius melodus* (piping plover)
Family: *Charadriidae*
Date Listed: 12/11/85

The **piping plover** is a small, stocky shorebird resembling a sandpiper. The plover is pale brownish above and white below. A black band across the forehead over the eye, and a black ring around the base of the neck are distinguishing marks in adults during the summer, but are obscure during the winter.

The piping plover nests on sand beaches, preferring sparsely vegetated areas that are slightly raised in elevation. The species is primarily coastal during the winter, choosing areas with expansive sand or mudflats for feeding that lie in close proximity to a sandy beach for roosting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist in the project area for this species since no tidal flats or sandy beaches are in the area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The piping plover will not be affected by this project.

Species: *Chelonia mydas* (Green sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **green sea turtle** grows to a maximum size of about four feet and a weight of 200 kilograms (440 pounds). It has a heart-shaped shell, small head, and single-clawed flippers. The adult carapace is smooth, keelless, and light to dark brown with dark mottling. The plastron is whitish to light yellow and the head is light brown with yellow markings. Adult green turtles feed mainly on marine algae and grasses in shallow water areas.

Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. Open beaches with a sloping platform and minimal disturbance are required for nesting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist for this species since no beaches are within the project area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Green sea turtle will not be affected by this project.

Species: *Dermochelys coriacea* (leatherback sea turtle)
Family: *Dermochelyidae*

Date Listed: 6/2/70

The **leatherback sea turtle** is the largest of all sea turtles and is easily distinguished by its leathery skin. Adults generally weigh from 290 and 590 kilograms (640 to 1300 pounds). The neck and limbs are thick and feebly retractable. The triangular shaped carapace is covered with a layer of rubbery skin rather than horny shields. The head and neck are black or dark brown with a few white or yellow blotches.

The leatherback sea turtle is typically found at sea. It requires sandy-nesting beaches backed with vegetation and sloped sufficiently so that the crawl to dry sand is not too far. The preferred beaches are in close proximity to deep water and generally rough seas.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no sandy beaches in the project vicinity for nesting and this species is typically found at sea. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The leatherback sea turtle will not be affected by this project.

Species: *Eretmochelys imbricata* (hawksbill turtle)
Family: *Cheloniidae*
Date Listed: 6/2/70

The **hawksbill turtle** weighs between 43 and 75 kilograms (95 and 165 pounds) and measures approximately 76 to 89 centimeters (30 to 35 inches) in length. The shell is oval and usually brown with scattered areas of yellow, orange, or reddish-brown. The flippers have two claws and barnacles are often attached to the carapace and plastron.

The hawksbill turtle inhabits shallow coastal waters and feeds on mollusks, sea urchins, barnacles, fish, sponges, and algae. It usually nests on islands in tropical and subtropical seas. Continental United States nesting is limited to Florida, however this species can be found along the coastline from Massachusetts southward.

BIOLOGICAL CONCLUSION: NO EFFECT

The project vicinity does not provide nesting habitat for this species and it is unlikely that it would be found feeding there. In the event that a sea turtle is spotted during construction, activities will be halted until it is out of the project area. The hawksbill turtle will not be affected by this project.

Species: *Felis concolor couguar* (Eastern cougar)
Family : *Felidae*
Date Listed: 6/4/73

Cougars are tawny colored with the exception of the muzzle, the backs of the ears, and the tip of the tail, which are black. In North Carolina, the cougar is thought to occur in only a few scattered areas, possibly including coastal swamps and the southern Appalachian Mountains. The eastern cougar is found in large remote wilderness areas where there is an abundance of their primary food source, whitetail deer. A cougar will usually occupy a range of 40 kilometers (25 miles), and is usually most active at night.

BIOLOGICAL CONCLUSION: NO EFFECT

The project is not adjacent to an undisturbed area that could provide food and shelter for the cougar. The NCNHP database reports no recorded occurrences of this species within the vicinity of the project. The Eastern cougar will not be affected by this project.

Species: *Lepidochelys kempii* (Kemp's (Atlantic) ridley)
Family: *Cheloniidae*
Date Listed: 12/2/70

The **Kemp's ridley sea turtle** has a triangular-shaped head and a hooked beak with crushing surfaces. The shell is heart-shaped and gray to olive green. This species ranges in length from about 56 to 71 centimeters (22 to 28 inches) and weighs between 35 and 42 kilograms (77 and 93 pounds).

Adult turtles are restricted to the Gulf of Mexico, however immatures have been seen along the Atlantic coast as far north as Massachusetts. The Kemp's ridley feeds primarily on crabs, but also eats shrimp, snails, sea urchins and fish.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat for this species does not exist in the vicinity of the project. In the event that immatures wander into the project area, construction activities will be halted until they have left. The NCNHP reports no sitings of this species within the project vicinity. The Kemp's ridley will not be affected by this project.

Species: *Lysimachia asperulaefolia* (rough-leaved loosestrife)
Family : *Primulaceae*
Date Listed: 6/12/87

The **rough-leaved loosestrife** is a rhizomatous perennial herb with whorls of three to four leaves encircling a slender stem. This plant reaches 0.3 to 0.6 meters (one to two feet) in height. Showy yellow flowers are produced from mid-May through June and fruits are present from July through October.

The rough-leaved loosestrife is endemic to the coastal plain and sandhills of North Carolina and South Carolina. It occurs in open ecotones between longleaf pine uplands and pond pine pocosin, on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found on deep peat in the low shrub community of large Carolina bays.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no areas of longleaf pines or adjacent pond pine pocosins. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The rough-leaved loosestrife will not be affected by this project.

Species: *Picoides borealis* (red-cockaded woodpecker)
Family : *Picidae*
Date Listed: 10/13/70

The **red-cockaded woodpecker** is a small 18 to 20 centimeters (seven to eight inches) long bird with black and white horizontal stripes on its back, a black cap and a large white cheek patch. The male has a small red spot or "cockade" behind the eye.

The preferred nesting habitat of the red-cockaded woodpecker is open stands of pine with a minimum age of 60 to 120 years. Longleaf pine (Pinus palustris) is preferred for nesting; however other mature pines such as loblolly (Pinus taeda) may be utilized. Typical nesting areas, or territories, are pine stands of approximately 81 hectares (200 acres), however nesting has been reported in stands as small as 24 hectares (60 acres). Preferred foraging habitat is pine and pine-hardwood stands of 80 to 125 acres with a minimum age of 30 years and a minimum diameter of 25 centimeters (ten inches). The red-cockaded woodpecker utilizes these areas to forage for food sources such as ants, beetles, wood-boring insects, caterpillars, and seasonal wild fruit.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no pine stands in the project area to support nesting or foraging activities for this species. The NCNHP database reports no recorded occurrences of the woodpecker in the vicinity of the project. The red-cockaded woodpecker will not be affected by this project.

Species: *Sterna dougallii* (roseate tern)
Family: *Laridae*
Date Listed: 11/2/87

The **roseate tern** is approximately 40 centimeters (16 inches) in length, with light gray wings and a black cap. The back is gray and the rest of the body is white, with a rosy blush on the chest and belly during the breeding season. The tail is deeply forked and the bill is black.

This species breeds from Florida through the West Indies and islands off Central America and northern South America. Habitat includes small offshore islands, rocks, and cays. These birds are often seen nesting on open beaches or near the shoreline on rocks.

BIOLOGICAL CONCLUSION: NO EFFECT

Although a breeding pair was noted in Carteret County in the 1970's, this species is mainly a rare coastal transient. Breeding habitat is not located within the project area and the NCNHP reports no recorded occurrences of the tern within the project vicinity. The roseate tern will not be affected by this project.

Species: *Thalictrum cooleyi* (Cooley's meadowrue)
Family : *Ranunculaceae*
Date Listed: 2/7/89

Cooley's meadowrue is a perennial herb that grows from an underground rhizome. Under ideal conditions, in full sun, the stems are erect, however in the shade they are lax and may trail along the ground. The leaflets are green and the leaves are usually in groups of three. Cooley's meadowrue flowers in mid- to late June.

Cooley's meadowrue is found in moist to wet bogs and savannahs. It grows along fireplow lines, roadside ditches, woodland clearings, and power line right-of-ways, requiring some type of disturbance to maintain its open habitat.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no wet bogs or wet pine savannahs and a search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Cooley's meadowrue will not be affected by this project.

Species: *Trichechus manatus* (manatee)
Family: *Trichechidae*
Date Listed: 6/2/70

The **West Indian manatee** is a large aquatic mammal that reaches a length of approximately three meters (ten feet) and a weight of about 454 kilograms (1,000 pounds). The forelimbs are paddlelike and the tail is oval and horizontally flattened. The body is gray to brown and hair is mostly absent except for stiff whiskers on the upper lip.

This species inhabits coastal waters, estuaries, and freshwater streams bordering tropical and subtropical seas, but may enter waters near North Carolina in summer months. The manatee is herbivorous and feeds on aquatic vegetation, preferring grasses.

BIOLOGICAL CONCLUSION: NO EFFECT

Although it is possible that this species could migrate into the project area during summer months, occurrences would be rare. The NCNHP database reports no recorded occurrence of the manatee in the vicinity of the project, however if one is sighted, construction activities will be halted until it has left the area. The manatee will not be affected by this project.

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 of Endangered. Species designated as FSC are defined as taxa that may or may not be listed in the future. These species were formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing. Some of these species are listed 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. Table 3 provides the Federal Species of Concern in Carteret County and their state classifications, and Table 3A provides the same information for Onslow County.

TABLE 3
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN CARTERET COUNTY
(March 22, 2001)

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Argos skipper	*Atrytone argos argos*	SR	No
Bogue Banks endemic skipper	*Atrytonopsis spl*	SR	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Savanna campylopus	*Campylopus carolinae*	C	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus**	SR	No
Venus flytrap cutworm moth	*Hemipachnobia subporphyrea subporphyrea*	SR	No
Black rail	*Laterallus jamaicensis*	SR	Yes
Pondspice	*Litsea aestivalis*	C	No
Northern diamondback terrapin	*Malaclemys terrapin terrapin* ♦	SC	Yes
Loose watermilfoil	*Myriophyllum laxum*	T	No
Mimic glass lizard	*Ophisaurus mimicus*	SC	No
Savanna cowbane	*Oxypolis ternata* ♦	NL	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*♦	SR	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna* ■	T	No
Carter's noctuid moth	*Spartiniphaga carterae*	SR	No
Carolina asphodel	*Tofieldia glabra*	C	No
Dune bluecurls	*Trichostema sp. 1*	C	No

NOTES: Denotes FSCs for both Carteret and Onslow Counties
* Indicates species was last observed in the county more than 20 years ago.
♦ Listed by USFWS but not by NCNHP.
■ Listed by NCNHP but not by USFWS.
E Denotes Endangered (species which are afforded protection by state laws).
T Denotes Threatened (species which are afforded protection by state laws).
SC Denotes Special Concern (species which are afforded protection by state laws).
PT Denotes Proposed Threatened (species which are proposed for official listing as threatened).
C Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL Not listed.

TABLE 3A
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN ONSLOW COUNTY

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Carolina spleenwort	*Asplenium heteroresiliens*	E	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Hirst's panic grass	*Dichanthelium sp. 1 (= hirstii)*	E	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus*	SR	No
black rail	*Laterallus jamaicensis*	SR	Yes
pondspice	*Litsea aestivalis*	C	No
Boykin's lobelia	*Lobelia boykinii*	C	No
loose watermilfoil	*Myriophyllum laxum*	T	No
mimic glass lizard	*Ophisaurus mimicus*	SC	No
savanna cowbane	*Oxypolis ternata* ♦	NL	No
Carolina grass-of-parnassus	*Parnassia caroliniana*	E	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*	NL	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
awned meadow beauty	*Rhexia aristosa*	T	No
Thorne's beaksedge	*Rhynchospora thornei*	E	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna*	T	No
Carolina asphodel	*Tofieldia glabra*	C	No

NOTES:

♦	Listed by USFWS but not by NCNHP.
E	Denotes Endangered (species which are afforded protection by state laws).
T	Denotes Threatened (species which are afforded protection by state laws).
SC	Denotes Special Concern (species which are afforded protection by state laws).
C	Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR	Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL	Not listed.

A search of the NCNHP database showed no recorded occurrences of any FSC within the project vicinity.

3. Summary of Anticipated Impacts

Habitat is present in the project area for the American alligator; however, this species is listed as threatened by similarity of appearance to a rare species. It is not biologically threatened and it is not subject to a Section 7 consultation. No individuals were observed at the time of the site visit. No habitat is present for any other federally protected species.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historical 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 properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

B. Historic Architecture

A preliminary field survey of the Area of Potential Effects (APE) was conducted on February 18, 1998. All structures within the APE were photographed, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a memorandum dated June 18, 1998, the Deputy State Historic Preservation Officer (SHPO) recommended a survey of the project's APE. A copy of the memorandum is included in the Appendix A.

In a letter dated April 23, 1999, the SHPO concurred with the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the HPO letter is included in the Appendix A.

In a concurrence form dated August 5, 1999, the SHPO concurred with the Federal Highway Administration (FHWA) that the replacement of Bridge No. 49 over the White Oak River will have an adverse effect on the Stella Historic District since the existing bridge will be demolished. The Advisory Council on Historic Preservation filed a Memorandum of Agreement (MOA) between the Federal Highway Administration and the SHPO for mitigating the adverse effects of the bridge replacement project on the historic district. A copy of the MOA is included in the Appendix A.

C. Archaeology

The SHPO, in a memorandum dated June 18, 1998, recommended, "no archeological investigation be conducted in connection with this project". A copy of the SHPO memorandum is included in the Appendix A.

VII. ENVIRONMENTAL EFFECTS

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

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

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

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

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

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

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

No geodetic survey markers will be impacted.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

This project is located in Carteret and Onslow Counties, which have been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be significant.

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, Health and Natural Resources, Division of Environmental Management, Groundwater Section and the North

Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area. There are no underground storage tanks located in the project area.

Onslow County and Carteret County are participants in the National Flood Insurance Program. This site on White Oak River is included in an approximate Federal Emergency Management study. Attached is a copy of the Flood Insurance Rate Map, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project (Figure 5, Appendix B).

Adverse impacts to the historic district are anticipated, but will be compensated through mitigation (see Appendix A).

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

VIII. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials and residents to involve them in the project development. Two Local Officials Meetings and two Citizens Informational Workshops were held at the Midway United Methodist Church in Stella on December 14, 1998, and September 14, 1999, where preliminary alternatives were reviewed and discussed with local officials and concerned citizens.

Alternate D was not presented at the first local officials meeting and citizens workshop but was discussed. The local official preferred Alternate D. Alternate D was presented (required removing the warehouse) at the second local officials meeting and workshop. Approximately 30 people attended the second Citizen's Informational Workshop and 11 comment sheets were received at the workshop, most of which are in favor of replacing the bridge. (Alternate A-3, Alternate B-0, Alternate D-5, Undecided-3)

Citizens and local officials concerns included the necessity to maintain traffic onsite, maintaining the existing boat ramp, improving safety for bridge approaches and minimizing affects to the post office.

Alternate D was revised so the proposed design would not remove the warehouse or post office in response to the comments received at the workshop. The proposed new bridge will be constructed as close to the existing bridge as practicable to avoid and minimize impacts to the proposed historic district. The proposed design speed of 70 km/h (45 mph) will minimize impacts to the post office and warehouse, and also allows for the existing clearance over the White Oak River to be maintained. For approach roadway tie-ins, traffic will be temporarily detoured off site.

IX. AGENCY COORDINATION

March 18, 1999 a meeting was held with USACE and NCWRC to review Alternatives A, B, C and D. As a result it was determined a detailed Bridge Survey Report should be prepared to eliminate concerns that Alternate A, B and C provided adequate flood protection and to present alternates at an interagency review meeting.

On October 28, 1999, an interagency review meeting was held at NCDOT's Transportation Building Room 467. Agencies in attendance were DCM, USFWS, NCDWQ, FHWA, NCWRC,

USACE, and NCDMF. Results of the Bridge Survey Report recommended raising the grade 2.5 feet to reduce flooding of the roadway for Alternate A and B. It was also decided that the ox bow area along the approach would require stabilization for Alternates A and B. FHWA suggested realigning Alternate D to avoid impacting the warehouse.

On February 20, 2000, a Merger Team Meeting was held on site. Representatives from USFWS, FHWA, NCWRC, USACE, NMF, DCM and NCDOT were present. As a result of the field meeting the following was concluded:

- Based on the roadway history and visual observation of the site it is not anticipated that the river will migrate at the ox bow within the life of the proposed new bridge.
- NCDOT-Geotechnical Unit does not recommend Alternate A or Alternate B due to differential settling where the grade will be raised on the Onslow County approach.
- It was recommended that an alternate with minimum approach work be designed (Alternate E).
- Alternates needed updated cost with barge construction over the river and top-down construction over the marshland.

On June 9, 2000 a Merger Team Meeting was held at NCDOT's Century Center. As a result of this meeting, forms for Concurrence Point No. 1, 2, and 3 were signed. It was the consensus of all the agencies present that Alternate D is the preferred alternate with top down construction (Appendix C).

On May 17, 2001 a Merger Team Meeting was held at NCDOT's Transportation Building Board of Transportation Conference Room to revise Concurrence Point 3 to show Alternate D as preferred and to present Concurrence Point 4-Avoidance and Minimization.

Alternate D revision included a temporary work bridge for the construction of the proposed bridge. This was recommended by NCDOT since the bridge will be built with prestressed girders due to the vertical and horizontal alignment. Building with temporary bridges will minimize wetland impacts and lessen construction duration.

Concurrence Point 4 – Avoidance and Minimization was discussed. For avoidance and minimization, the following measures will be accomplished:

1. Anticipated impacts to wetlands 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 131.7-meter (432-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office and to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

All team members present except DCM signed Concurrence Points 3 and 4 at the meeting. SHPO, DCM and NMF concurred and signed after the meeting (Appendix C).

X. SECTION 4(F) EVALUATION

Part 23 CFR 771.135 Section 4(f) (49 U.S.C. 303) states that "The Administrator may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

(i) There is no feasible and prudent alternative to the use of land from the property; and
(ii) The action includes all possible planning to minimize harm to the property resulting from such use."

In accordance with the criteria set forth in the Federal Register December 23, 1986, the following Programmatic Section 4(f) for Minor Involvements with Historic Sites evaluation was prepared:

Stella retains a significant collection of buildings dating from the late nineteenth and early twentieth centuries, including a general store/post office, warehouse, and several dwellings and outbuildings. Bridge No. 49 on SR 1101 and SR 1442 over the White Oak River was built in 1950. The approximate 131.7-meter (432-foot) long, multiple-span structure contains twenty-three timber spans and one steel-deck girder main span.

In a letter dated April 23, 1999, the State Historic Preservation Officer concurred with FHWA the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District (see Figure 2A and Figure 6) is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the SHPO letter is included in the Appendix A.

Since this project necessitates the use of a minor amount of land from a historic site, which is adjacent to the existing roadway, and since the project meets the criteria set forth in the Federal Register (December 23, 1986), a programmatic Section 4(f) evaluation satisfies the requirements of Section 4(f).

The following alternatives, which avoid use of the historic site, have been fully evaluated: (1) do nothing; (2) improve the highway without using the adjacent historic site; (3) build the replacement structure on new location without using the historic site.

No Build Alternative: The No Build or "Do-Nothing" alternative is not considered feasible and prudent because the bridge will eventually deteriorate beyond repair and necessitate closure of the bridge. This is not prudent due to the traffic service provided by SR 1101 and SR 1442.

Rehabilitation of the Existing Bridge: This alternative is not considered to be feasible and prudent due to the age and deteriorated condition of the existing bridge. In addition, the existing bridge deck is only 7.2 meters (24 feet) wide and is functionally obsolete. The NCDOT Bridge Policy requires a minimum clear roadway width of 8.6 meters (28 feet) based on the traffic volumes and design speed.

Replacement of Bridge No. 49 on New Location (Figure 2A): Moving the bridge location to a point either upstream or downstream of the current location to avoid impacts to the proposed historic district would negatively impact the district by disrupting a major element of the setting for the district and will result in substantial disruption to the environment and local businesses. An alternative on new location will not provide the same transportation access and service as the current location. Therefore, this alternative is not considered feasible or prudent.

These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the historic site has been performed as an integral part of this project. The following mitigation measures will be carried out for the replacement of Bridge No. 49:

1. A design exception to reduce the design speed to 70 km/h (45 mph) from 90 km/h (55 mph) to minimize impacts to the 4(f) property will be processed.
2. The proposed bridge will be within 3 meters (10 feet) of the existing bridge and a temporary shoring will be required during construction to maintain traffic and to minimize impacts to the 4(f) property.
3. The approved Memorandum of Agreement (MOA):

    a. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

    b. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right of Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

    c. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

    d. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

i. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or
ii. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO), whose correspondence is included in Appendix A. The SHPO has concurred that this project, as proposed, has an adverse effect, because the bridge will be replaced with regard to the historic district. Approval of the Programmatic Section 4(f) evaluation by the FHWA Division of Administrator is included in this document.

The owners of the general store/post office and warehouse have concurred with Alternate D as the preferred alternative and all possible planning and coordination to minimize impact to the Historic District were incorporated into this project. The approved Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvement with Historic Sites is included in Appendix A.

APPENDIX A

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

AND

MEMORANDUM OF APPROVAL

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4(f) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS WITH MINOR INVOLVEMENTS WITH HISTORIC SITES

F. A. Project **BRZ-1101(5)**

State Project **8.2160801**

T. I. P. No. **B-2938**

DESCRIPTION:

Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River in Carteret/Onslow Counties in North Carolina. The Proposed Bridge will span the White Oak River and brackish marsh in Onslow County. The bridge, as well as several buildings located on the east approach, comprise the Stella Historic District. See Figure 2A and 6 in Appendix B.

		YES	NO
1.	Is the proposed project designed to improve the operational characteristics, safety, and/or physical condition of the existing highway facility on essentially the same alignment?	X	☐
2.	Is the project on new location?	☐	X
3.	Is the historic site adjacent to the existing highway?	X	☐
4.	Does the project require the removal or alteration of historic buildings, structures, or objects?	☒	___
5.	Does the project disturb or remove archaeological resources which are important to preserve in place rather than to recover for archaeological research?	☐	X
6.	a. Is the impact on the Section 4(f) site considered minor (i.e. no effect, no adverse effect)?	___	☒
	b. If the project is determined to have "no adverse effect" on the historic site, does the Advisory Council on Historic Preservation object to the determination of "no adverse effect"?	☐	X
7.	Has the SHPO agreed, in writing, with the assessment of impacts and the proposed mitigation?	X	☐

☐

8. Does the project require the preparation of an EIS? X

ALTERNATIVES CONSIDERED AND FOUND NOT TO BE FEASIBLE AND PRUDENT

The following alternatives were evaluated and found not to be feasible and prudent:

		YES	NO
1.	Do nothing		
	Does the "do nothing" alternative:		
	(a) correct capacity deficiencies?	☐	X
or	(b) correct existing safety hazards?	☐	X
or	(c) correct deteriorated conditions?	☐	X
and	(d) create a cost or impact of extraordinary measure	☐	X
2.	Improve the highway without using the adjacent historic site.		
	(a) Have minor alignment shifts, changes in standards, use of retaining walls, etc., or traffic management measures been evaluated?	X	☐

(b) The items in 2(a) would result in:
(circle, as appropriate)

	(i)	substantial adverse environmental impacts
or	(ii)	substantial increased costs
or	(iii)	unique engineering, transportation, maintenance, or safety problems
or	(iv)	substantial social, environmental, or economic impacts
or	(v)	a project which does not meet the need
or	(vi)	impacts, costs, or problems which are of extraordinary magnitude

		Yes	No
3.	Build an improved facility on new location without using the historic site.	X	☐

(a) An alternate on new location would result in: (circle, as appropriate)

(i) a project which does not solve the existing problems

or (ii) substantial social, environmental, or economic impacts

or (iii) a substantial increase in project cost or engineering difficulties

and (iv) such impacts, costs, or difficulties of truly unusual or unique or extraordinary magnitude

MINIMIZATION OF HARM

		Yes	No
1.	The project includes all possible planning to minimize harm necessary to preserve the historic integrity of the site.	X	☐
2.	Measures to minimize harm have been agreed to, in accordance with 36 CFR Part 800, by the FHWA, the SHPO, and as appropriate, the ACHP.	X	☐

3. Specific measures to minimize harm are described as follows:

- The "Two-bar metal rail with concrete parapet" will be utilized on the proposed structure as mitigation for impacts.
- Design exception has been approved to reduce the design speed to 70 km/h (45 mph) to minimize impacts to the post office/ general store and warehouse.
- A Design Exception for the horizontal clearance has been approved to maintain the existing canopy attached to the post office and to minimize impacts to the proposed historic district.
- Reduced spans and girder depth in the structure design will be incorporated to maintain clearance over the White Oak River and minimize impacts to the historic district.
- A Memorandum of Agreement was approved and attached to the Categorical Exclusion.

Note: Any response in a box requires additional information prior to approval. Consult Nationwide 4(f) evaluation.

COORDINATION

The proposed project has been coordinated with the following (attach correspondence):

a. State Historic Preservation Officer	X
b. Advisory Council on Historic Preservation	X
c. Property owner	X
d. Local/State/Federal Agencies	X
e. US Coast Guard (for bridges requiring bridge permits)	X

SUMMARY AND APPROVAL

The project meets all criteria included in the programmatic 4(f) evaluation approved on December 23, 1986.

All required alternatives have been evaluated and the findings made are clearly applicable to this project. There are no feasible and prudent alternatives to the use of the historic site.

The project includes all possible planning to minimize harm, and the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed with local and state agencies.

Approved:

10/8/2001 _____
Date for Manager, Project Development and Environmental Analysis Branch, NCDOT

10/15/2001 _____
Date for Division Administrator, FHWA

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA HISTORIC PRESERVATION OFFICER
FOR
THE REPLACEMENT OF BRIDGE NO. 49
ON SR 1101 OVER WHITE OAK RIVER,
CARTERET/ONSLOW COUNTIES, NORTH CAROLINA

WHEREAS, the Federal Highway Administration (FHWA) has determined that the replacement of Bridge No. 49 on SR 1101 over the White Oak River, Carteret/Onslow Counties, North Carolina (the undertaking) will have an effect upon the Stella Historic District, a community determined eligible for listing in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT), Nido L. Hamilton, and Edward E. and Judith M. Grafton participated in the consultation and have been invited to concur in this Memorandum of Agreement:

NOW, THEREFORE, FHWA and the North Carolina SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take in to account the effect of the undertaking on the historic properties.

STIPULATIONS

FHWA will ensure that the following measures are carried out:

I. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with a Historic Structures and Landscape Recordation Plan {Appendix A}. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

II. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right-of-Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

III. Future Widening of Shoulders or Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by division and district engineers.

IV. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

A. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

B. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this agreement that are not the subject of the dispute will remain unchanged.

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Advisory Council on Historic Preservation, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the replacement of Bridge No. 49 on SR 1101 over the White Oak River and its effects on the Stella Historic District, and that FHWA has taken into account the effects of the undertaking on the historic property.

AGREE:

John C. Wadsworth 2/20/01
FEDERAL HIGHWAY ADMINISTRATION DATE

Jeffrey Crow 4/2/01
NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER DATE

CONCUR:

[illegible] 1/29/01
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DATE

Louise P Hamilton 02/20/01
Louise P. Hamilton (Owner of warehouse) DATE

Edward E. Grafton Judith K Grafton 2-20-01
Edward E. & Judith M. Grafton (Owners of general store/post office) DATE

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION DATE

APPENDIX A

Historic Structures and Landscape Recordation Plan
For the Replacement of Bridge No. 49 on SR 1101
Over the White Oak River
Carteret and Onslow Counties, North Carolina
TIP No. B-2938, State Project No. 8.2160801
Federal Aid No. BRZ-1101(5)

Landscape

Site plan sketch of the existing conditions of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse in Stella.

Photographic Requirements:

Selected photographic views of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse as a whole, and views of the structures and their settings, including:

- Overall views of the structures (elevations and oblique views)
- Overall views of the project area, showing the relationship of the structures to their settings

Photographic Format

- Color slides (all views)
- 35 mm or larger black and white negatives (all views)
- Black and white contact sheet (all views)
- All processing to be done to archival standards
- All photographs and negatives to be labeled according to Division of Archives and History standards

Copies and Curation

One (1) set of all photographic documentation will be deposited with the North Carolina Division of Archives and History/State Historic Preservation Office to be made a permanent part of the statewide survey and iconographic collection.

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No.49 on SR 1101 over White Oak River

On August 5, 1999, representatives of the

☒ North Carolina Department of Transportation (NCDOT)
☐ Federal Highway Administration (FHWA)
☒ North Carolina State Historic Preservation Office (SHPO)

reviewed the subject project and agreed

☐ there are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.

☐ there are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.

☐ there is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.

☒ there is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Mary Pope Furr — Aug. 5, 1999
Representative, NCDOT — Date

Mary C Shelton — 8/10/99
FHWA, for the Division Administrator, or other Federal Agency — Date

FOR

Lepaul Allen — Aug. 5 1999
Representative, SHPO — Date

David Brook / Deputy — 8/17/99
State Historic Preservation Officer — Date

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Stella Historic District (DE) - adverse effect

Reason(s) why the effect is not adverse (if applicable).

Initialed: NCDOT MPt FHWA KCS SHPO DVB

North Carolina Department of Cultural Resources

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

Division of Archives and Histo
Jeffrey J. Crow, Direct

April 23, 1999

Roy C. Shelton
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Replacement of Bridge 49 over White Oak River, Carteret-Onslow Counties, Federal-Aid Project BRZ-1101(5), State No. 8.2160801, B-2938, ER 99-8587

Dear Mr. Shelton:

Thank you for your letter of March 24, 1999, transmitting the historic architectural resources report by Mattson, Alexander & Associates, Inc., concerning the above project.

We concur that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture.

Further, we concur with the district's boundaries, except for the western edge that we believe should encompass Bridge 49 as a contributing element to the district. While Bridge 49 lacks one year of being fifty years old, it appears to be compatible with the rural character of the district as a whole and to reinforce the district's relationship to the White Oak River. Bridge 49 also appears to be rather unique in design and length for a timber bridge.

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.

Sincerely,

David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: William D. Gilmore
Barbara Church
Mattson, Alexander & Associates

North Carolina Department of Cultural Resources

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

Division of Archives and History
Jeffrey J. Crow, Director

June 18, 1998

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 XVII, Bridge 49 on SR 1101/1442 over White Oak River, Carteret and Onslow Counties, B-2938, ER 98-9258

Thank you for your memorandum of June 5, 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. However, since a comprehensive survey of Carteret County has never been conducted, there may be structures of which we are unaware within the planning area. Therefore, we recommend that an architectural historian with the North Carolina Department of Transportation survey the project's area of potential effect and report the findings to us.

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
T. Padgett

Harris

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601
August 7, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

As required by 36 CFR 800.6(a)(1) of the 1999 revisions to 36 CFR Part 800, this is to provide notice to the Advisory Council that Bridge No. 49 will be removed and replaced by the subject Federal-aid bridge replacement project. After consultation with the North Carolina State Historic Preservation Officer, it was determined the subject project will have an adverse effect on the Stella Historic District, a community eligible for listing in the National Register of Historic Places. Enclosed is one copy of the documentation specified in Section 800.11(e) and the North Carolina Department of Transportation's transmittal letter dated July 24, 2000. Your review pursuant to 36 CFR Part 800.6(a)(1) is requested.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

Kaye Shelton

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

September 18, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

Your letter, dated August 22, 2000, on the subject project advised that the background information submitted with the notification of adverse effect did not meet the requirements of 36 CFR 800.11(e) and requested copies or summaries of any views provided by the public. Enclosed is a copy of all public comments received on this project as a part of our public involvement process.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

John C. Wadsworth

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

Advisory Council On Historic Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

OCT 25 2000

Mr. Nicholas L. Graf, P.E.
Division Administrator
Federal Highway Administration
310 New Bern Avenue
Raleigh, NC 27601

BRZ-1101(5)

REF: Proposed Replacement of Bridge No. 49 on SR 1101 over White Oak River
Carteret and Onslow Counties, North Carolina

Dear Mr. Graf:

The Council recently received the additional information in support of your notification regarding the adverse effects of the proposed undertaking on properties listed on and eligible for listing on the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases,* of our regulations, "Protection of Historic Properties" (36 CFR Part 800) does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed.

Pursuant to 36 CFR 800.6(b)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the North Carolina State Historic Preservation Officer (SHPO), and related documentation at the conclusion of the consultation process. The filing of this MOA with the Council is required in order for the Federal Highway Administration to complete its compliance responsibilities under Section 106 of the National Historic Preservation Act.

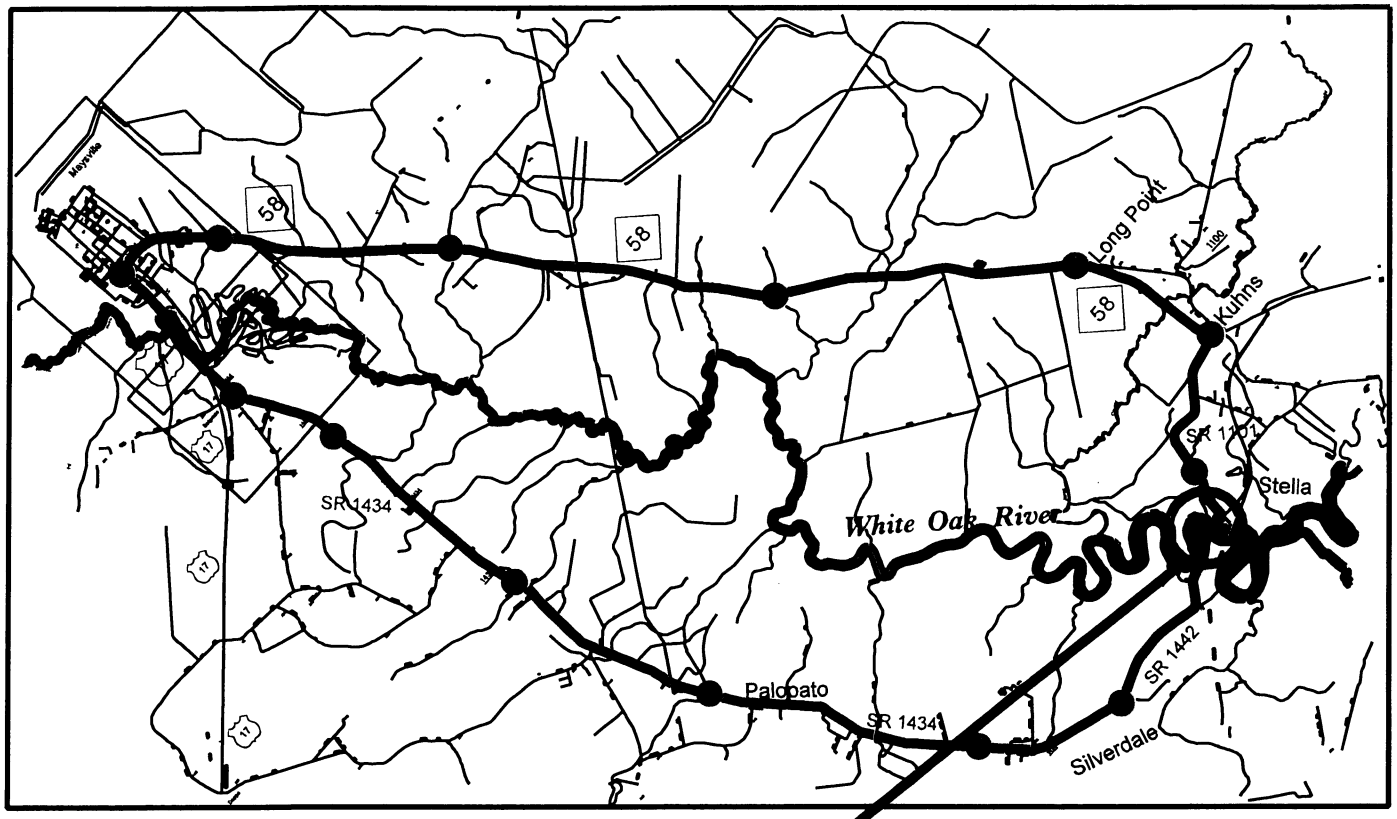
Should you have any questions or require further assistance, please contact us at 202-606-8505.

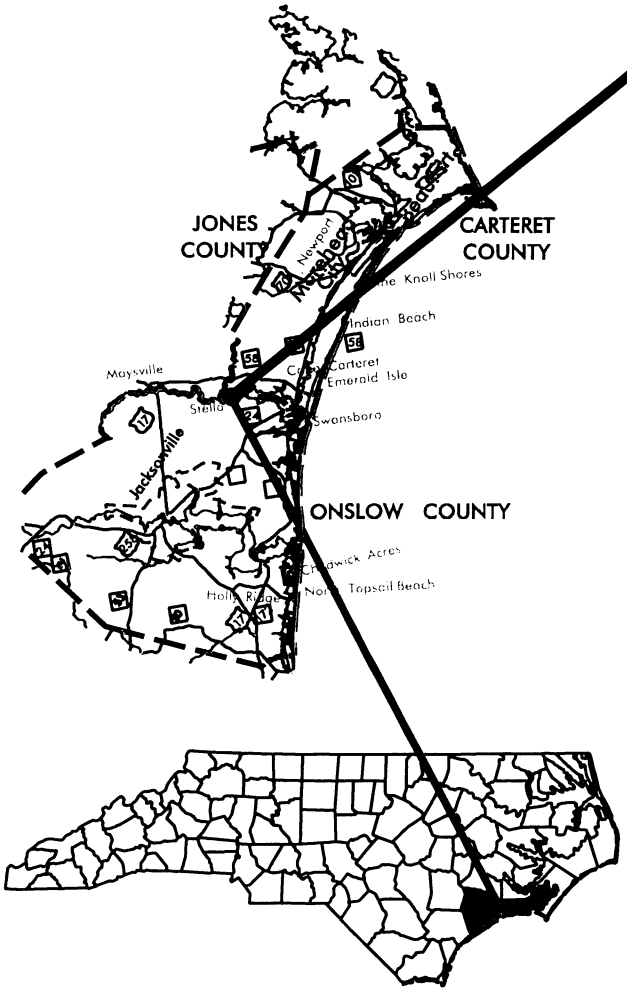
Sincerely,

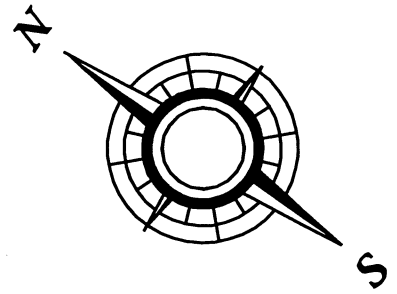
Don L. Klima
Director
Office of Planning and Review

APPENDIX B

FIGURES

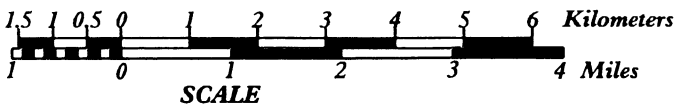






LEGEND

Studied Detour Route



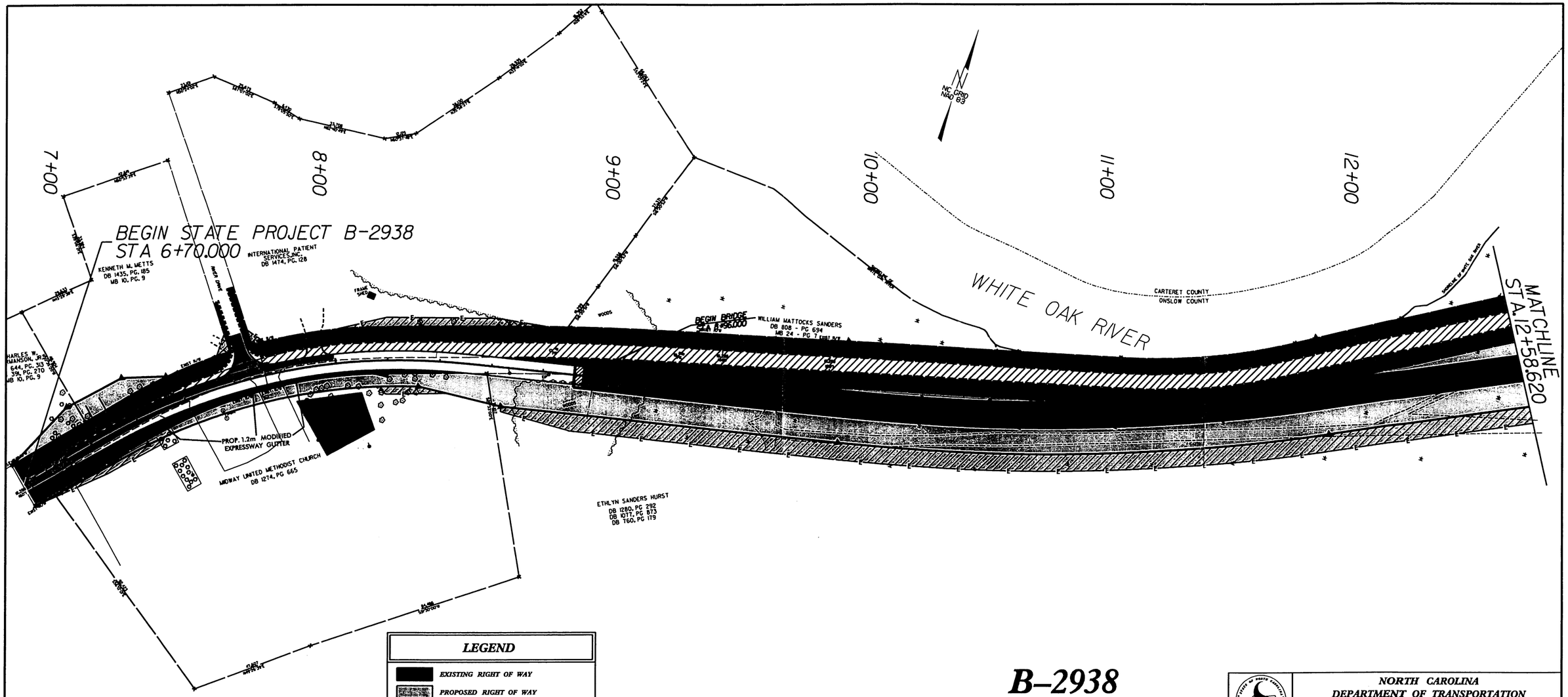
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP No. B-2938

FIGURE 1



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B–2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

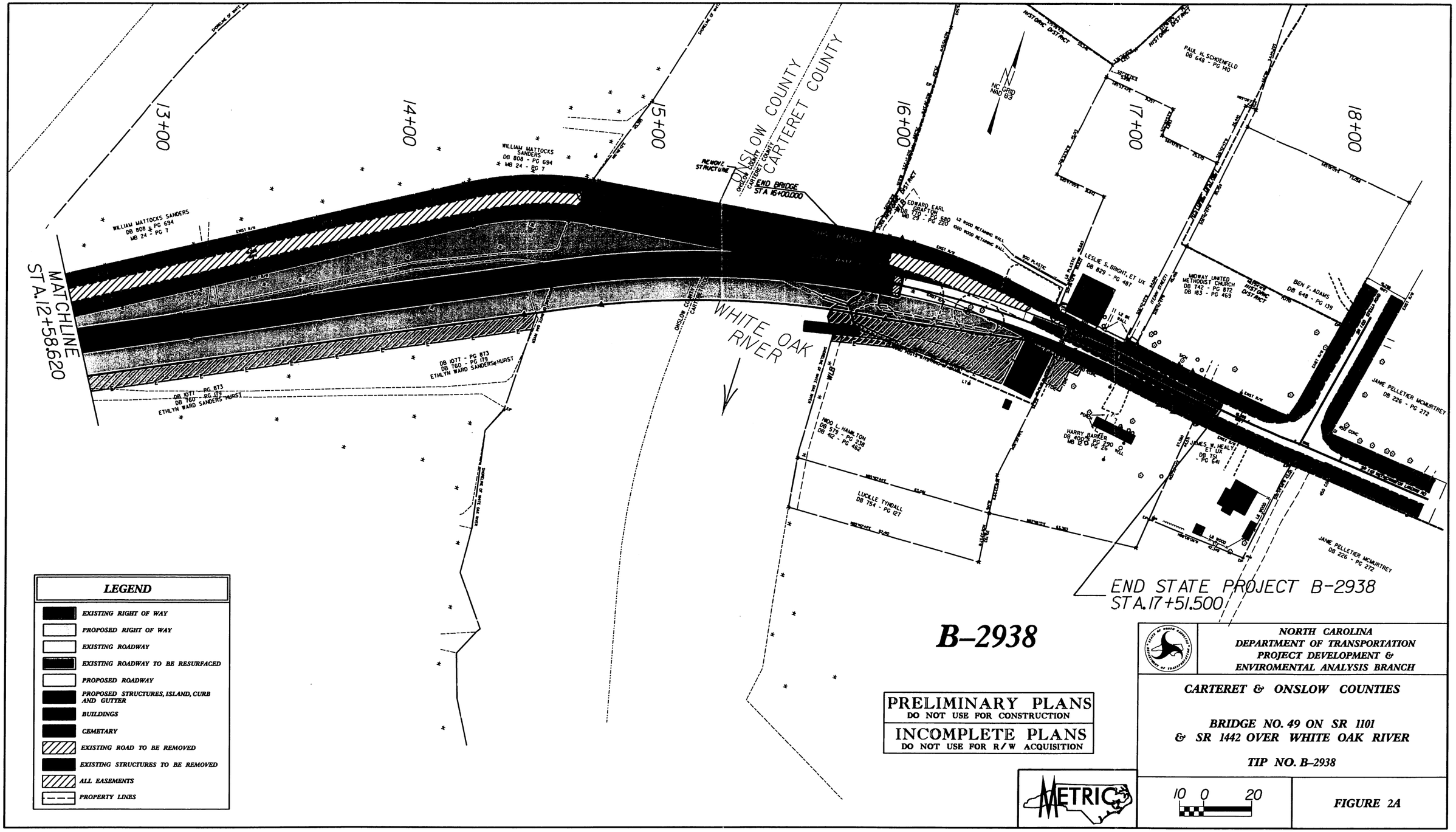
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B–2938

10 0 20

FIGURE 2



B–2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

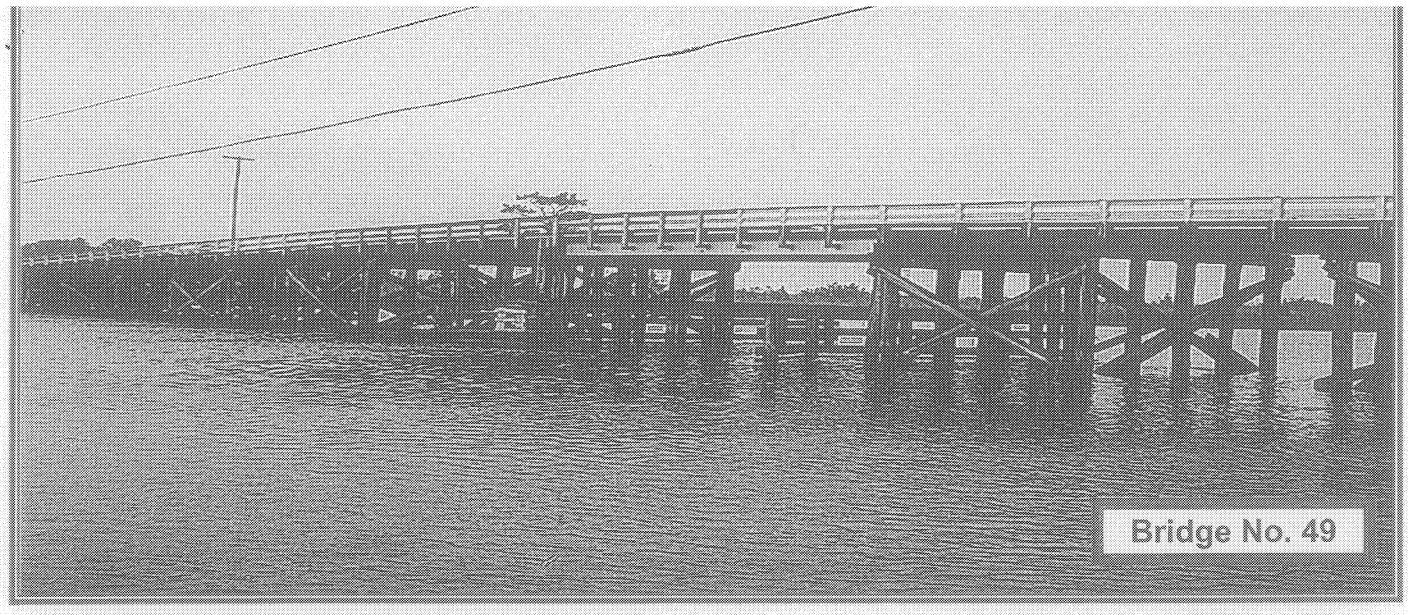
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

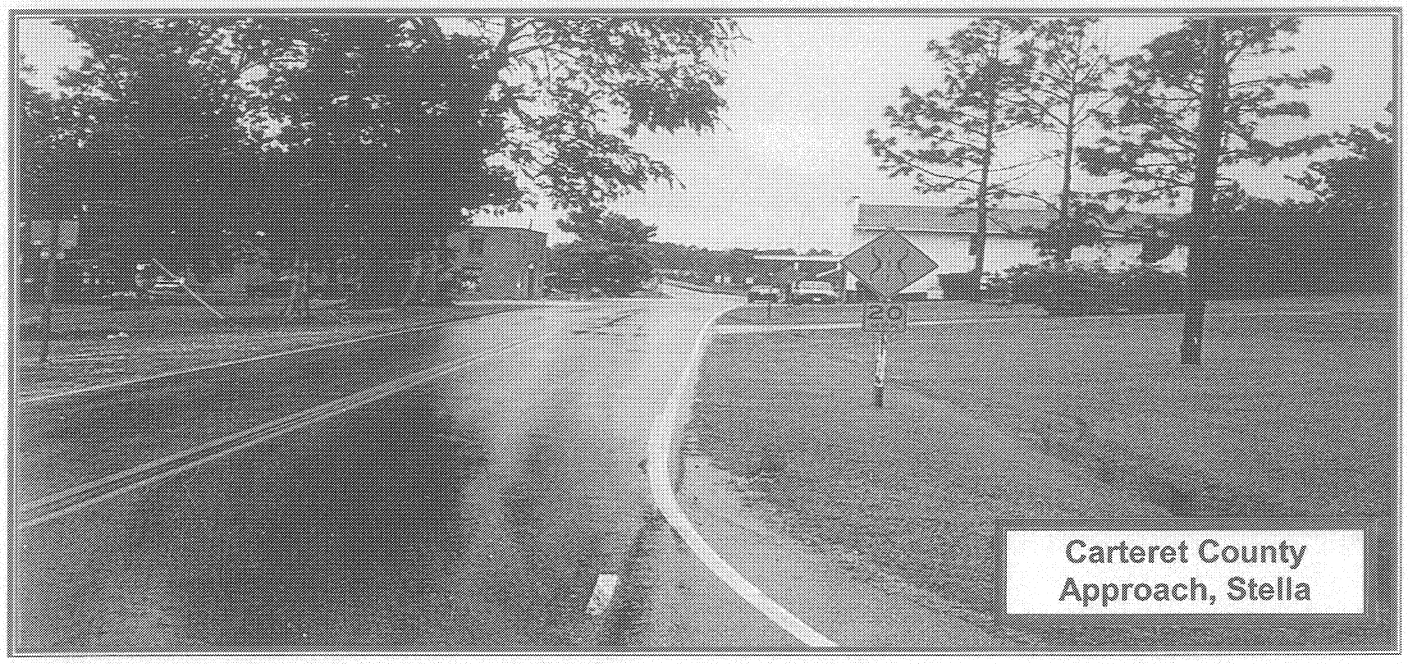
TIP NO. B–2938

10 0 20

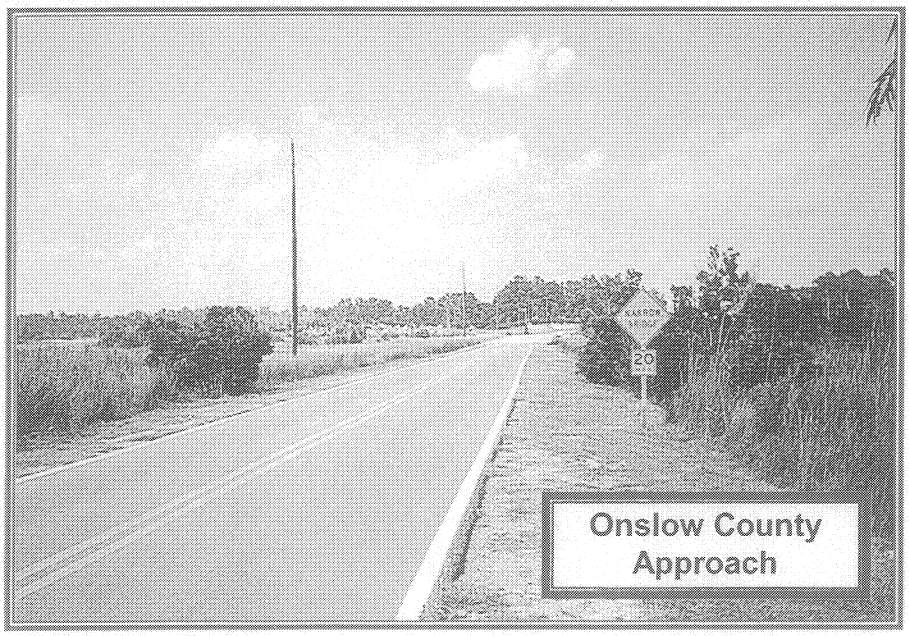
FIGURE 2A



Bridge No. 49



Carteret County
Approach, Stella

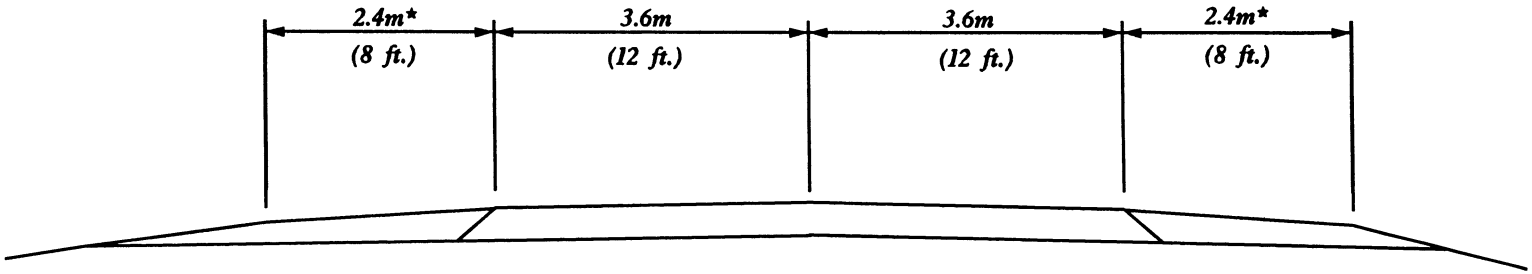


Onslow County
Approach

B-2938
Replacement of Bridge No. 49 on SR 1422 Over White Oak River Carteret and Onslow Counties

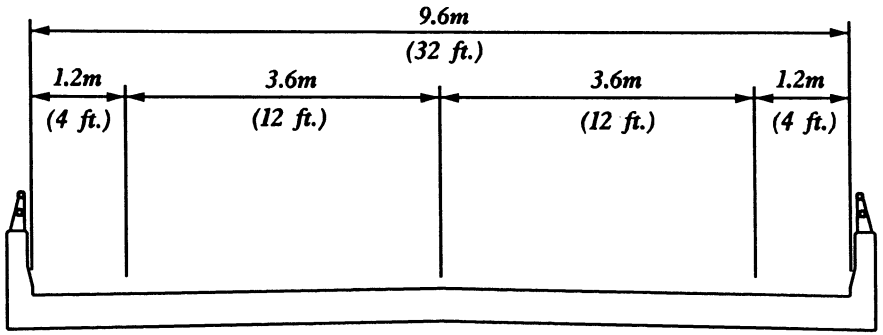
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Figure 3



TYPICAL ROADWAY APPROACH SECTION
(PROPOSED)

* ADD 1.0m (3 ft.) WHERE GUARDRAIL IS WARRANTED



TYPICAL SECTION ON STRUCTURE
(PROPOSED)

TRAFFIC DATA

ADT 2001	1,600
ADT 2002	1,600
ADT 2025	2,500
DUAL	2%
TTST	1%

FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR

DESIGNATED BICYCLE ROUTE: JACKSONVILLE: CITY TO THE SEA

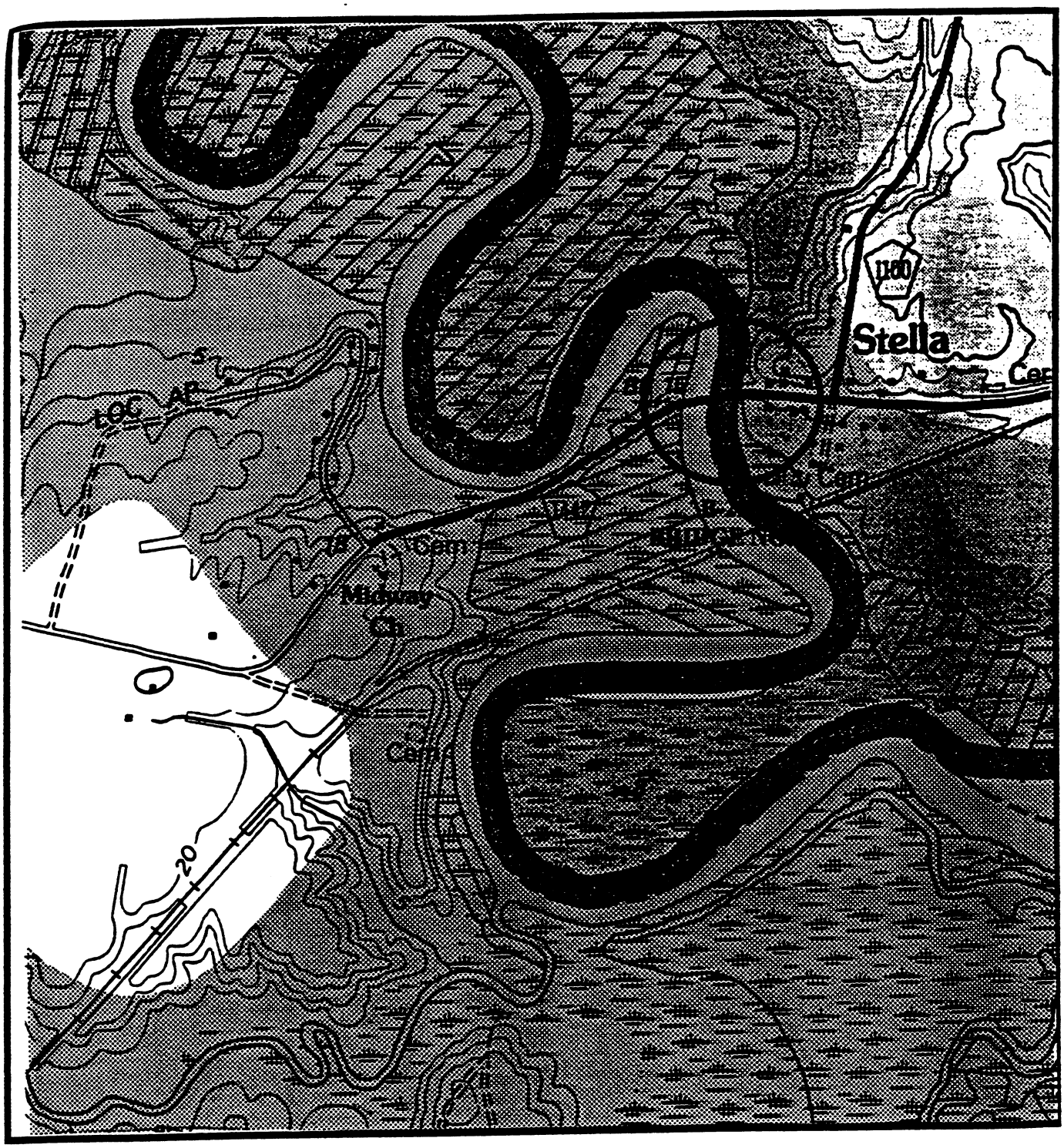
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP B-2938

FIGURE 4



APPROXIMATE FEMA FLOOD STUDY
100 YEAR FLOOD PLAIN
SCALE 1" = 1000 FEET

0 1000 2000 FEET

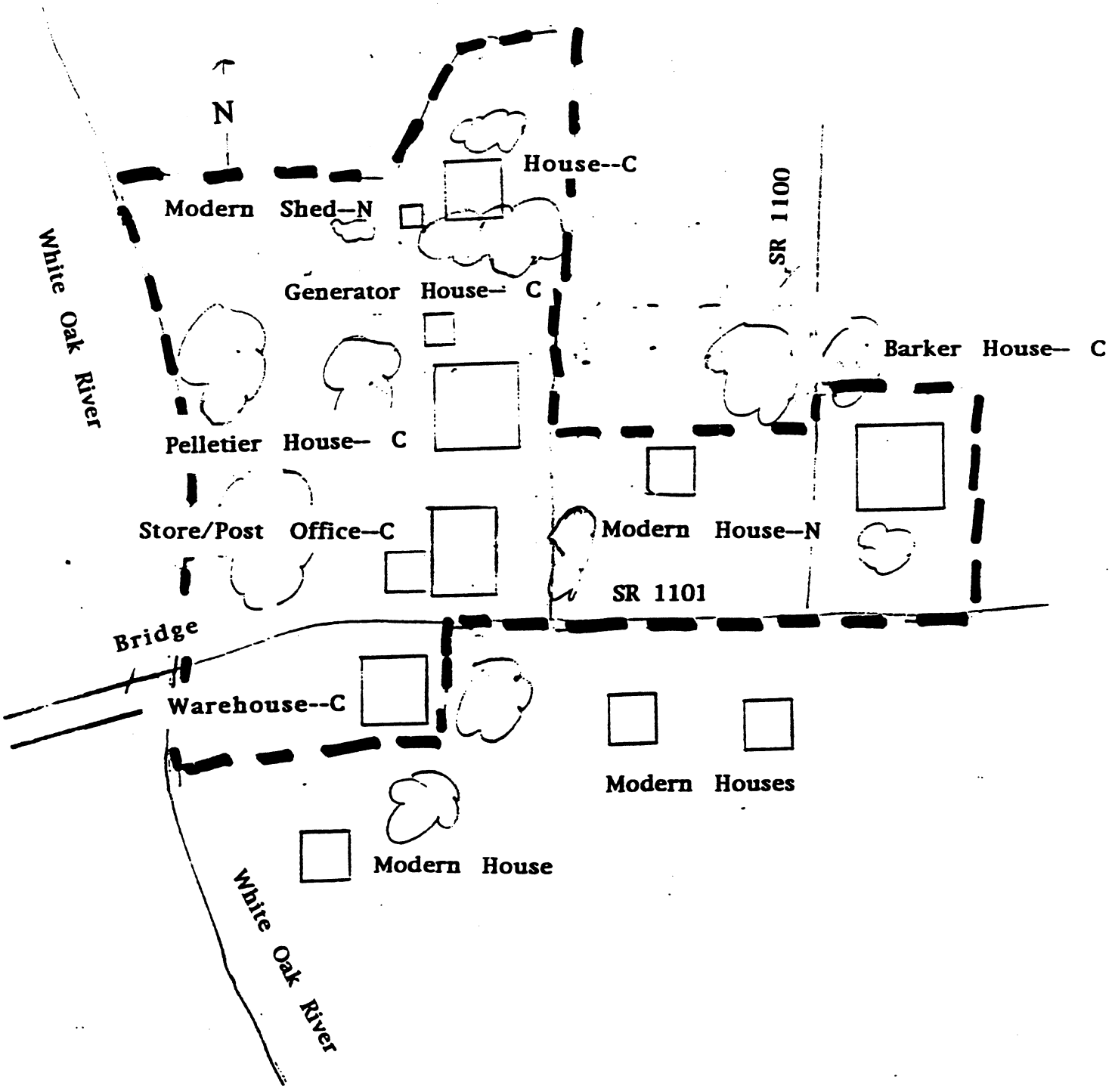
FIGURE 5

FIGURE 6

Stella Historic District
Site Plan

(not to scale)

C--Contributing Resource
N--Non-Contributing Resource



APPENDIX C

NEPA/404 MERGER TEAM CONCURRENCE POINTS 1, 2, 3, AND 4

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 1 – Purpose and Need

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Purpose and Need of the Proposed Project:

To replace a functionally obsolete and structurally deficient structure with a safer and improved structure and approaches. To do-nothing will eventually necessitate removal of the bridge and this is not desirable due to the traffic service provided by SR 1101/SR 1442.

The Project Team has concurred on this date of June 8, 2000 with the purpose and need for the proposed project as stated above.

USACE _____

USEPA _____

NMFS _____

DCM _____

NCWRC _____

NCDMF _____

SHPO _____

NCDOT _____

USFWS _____

NPS _____

NCDWQ _____

NCDCR _____

FHWA _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 2 – Reasonable and Feasible Alternatives Studied

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternatives studied in detail:

1. No build/routine maintenance continue
2. Alternate A - Maintain traffic with on-site detour and raise grade on Onslow County approach.
3. Alternate B1 - Maintain traffic on existing bridge and minimum work on Onslow County approach.
4. Alternate B2 - Maintain traffic on existing bridge and raise grade on Onslow County approach.
5. Alternate C – Maintain traffic on one lane bridge and raise grade on Onslow County approach: eliminated because of maintaining traffic on one lane bridge was not desirable and amount of roadclosure required to build the one lane bridge approaches.
6. Alternate D - Maintain traffic on existing bridge and bridge the marshland.
7. Alternate E -Maintain traffic with on-site detour and minimum approach work on Onslow County approach.

The Project Team has concurred on this date of June 8, 2000 with the "alternatives to be studied in detail in the NEPA document" as stated above.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

SHPO _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 3 – Alternative Selection

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternative recommended:

Alternate D

Replace the bridge downstream of the existing bridge and spanning the wetland (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge.

The Project Team has concurred on this date of May 17, 2001 with the "alternative to be recommended in the NEPA document" as stated above.

USACE		NCDOT	
USEPA		USFWS	
NMFS		NPS	
DCM		NCDWQ	
NCWRC		NCDCR	
NCDMF		FHWA	

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 4 – Avoidance and Minimization of Impacts

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties
TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternate D

Replace the bridge downstream of the existing bridge and spanning the wetlands (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge. For avoidance and minimization, the following measures will be accomplish:

1. Anticipated impacts to wetlands 0.021 acres.
2. ~~Restoration~~ of wetlands of approximately 1.70 acres. and enhancement (undetermined amount).
3. Replacing 432-foot bridge with a 2,310-foot bridge.
4. Design exception to reduce the design speed from 55 mph to a design speed of 45 mph to minimize impacts in the historic district and eliminate impacts ~~to~~ the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and impacts to historic district.

The Project Team has concurred on the avoidance and minimization as stated above for the subject project on this date of May 17, 2001.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

APPENDIX D

DESIGN EXCEPTION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

P.O. BOX 25201, RALEIGH, NC 27611-5201

December 21, 2000

MEMO TO: D. M. Barbour, PE
State Design Engineer

FROM: J. V. Barbour, PE
State Design Services Engineer

SUBJECT: State Project: 8.2160801 (B-2938) Carteret & Onslow County
F. A. Project: BRZ-1101(5)
Replace Bridge No. 49 over White Oak River and approaches on SR 1101 & SR 1442

Request for Design Exception

This is a request for a design exception for the design speed and horizontal clearance to minimize impacts to the cemetery and the historic district. SR 1101/SR 1442 is currently not posted and has a statutory speed of 90 km/h (55 mph) with advisory signs at the bridge of 30 km/h (20 mph). The horizontal clearance from the edge of the roadway to the post office and warehouse in the historical district is currently less than the recommended clearance by AASHTO. The design elements that require exceptions are as follows.

Proposed Design Speed: The statutory speed limit for SR 1101/SR 1442 in the project vicinity is 90 km/h (55 mph). The proposed design speed is 70 km/h (45 mph). In order to minimize the impacts to the cemetery in the western part of the project and the historic district in the eastern part of the project we are requesting an exception for the proposed design speed. The crest or sag vertical curves on the eastern end of the project cannot be increased without major impacts to the historic district. Also, the horizontal curve at the western end of the project cannot be flattened without major impacts to the cemetery.

Horizontal Clearance: The standard horizontal clearance for this type of facility is 6.0 to 8.0 meters per AASHTO *Roadside Design Guide,* 1996, and 3 meters per AASHTO *Green Book*, 1974, page 425. Currently the historic post office has a canopy that is less than 1.0 meter from the edge of pavement, which is less than the horizontal clearance recommended by AASHTO. The post office and warehouse are less than 5.4 meters from the roadway, which is greater than the 3m minimum desirable horizontal clearance given in the AASHTO *Green Book*, but less than AASHTO's clear zone distance of 6.0 to 8.0 meters (AASHTO *Roadside Design Guide,* 1996). Since the historic district is on both sides of the roadway, appropriate horizontal clearances cannot be obtained without major impacts to the post office and warehouse. This exception for horizontal clearance would minimize any impacts to the historic post office and warehouse.

NCDOT DESIGN EXCEPTION REQUEST
(Project does not require FHWA design approval)

F.A. Project No.: BRZ-1101(5) State Project No.: 8.2160801

TIP No.: B-2938 County: Carteret & Onslow County

Design Exception Requested for: design speed and horizontal clearance.

Location of Design Feature in Question: -L- (SR 1101/SR 1442) entire project.

PROJECT DATA

Current ADT (2002): 1,630 Design ADT (2022): 2,380

% Trucks: 3 Proposed Design Speed: 70 km/hr (45 mph)

Posted Speed: Current: Not posted. Statutory 90 km/h (55 mph). Advisory-posted 30 km/h (20 mph) on the east approach.
Proposed: Posted 45 mph (70 km/h) with advisory posting for 30 km/h (20 mph) on the east approach.

Functional Classification: Rural Minor Collector

Minimum AASHTO Dimensions:
Horizontal Clearance= 3 m minimum
Horizontal Sight Distance=94.1 m

Dimensions Proposed:
Horizontal Clearance=0.4616 m
Horizontal Sight Distance=100 m

Total Estimated Cost of Project: $7,169,000

Additional Cost to Meet Minimum AASHTO Requirements: N/A

BASIS FOR EXCEPTION

1. There have only been three reported accidents in the project vicinity, and there appears to be no relation between the proposed design exception and the accident history. See current 3-year accident history, attached (number, type, rates, severity, cause, comparison to statewide average, etc.).

2. There are no future plans for upgrading this roadway either at or in the vicinity of this project.

3. SR 1101 and SR 1442 are classified as rural minor collectors and are designated as part of the bike route *Jacksonville: City to the Sea*. The existing roadway provides two 2.7-meter (9-foot) travel lanes with 1.8-meter (6-foot) grass shoulders. The existing approach at the west end of the bridge is on a 13.5-degree curve. The existing approach at the east end of the bridge is on a 25-degree curve.

Rev. 3/25/96

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 12/14/00

Project Engineer: Cathy Houser, PE

TIP No: B-2938

Functional Classification: Rural Minor Collector

Posted Speed 90 km/h (55 mph)

Terrain Level – Coastal

Items requiring formal approval	Prop Design	AASHTO Std(1)	Exception Req'd
Design Speed(2)	70 km/h	Minimum Green Book - 100 km/h Proposed 70 km/h	Yes
Lane Width	3.6 m	3.6 m	
Shoulder Width	2.4 m	2.4 m	
Bridge Width (bicycle route)	9.6 m	9.6 m	
Structural Capacity(3)			
Maximum Grade	2.82%	7%	
Min. Horizontal Curve Radius	230m	195m	
Sag Vertical Curve K	21	20-25	
Crest Vertical Curve K	30	22-31	
Horizontal SSD	100m	94.1m	
Vertical SSD	115m	94.1m	
Pavement Cross Slope	0.02	0.02	
Superelevation	0.05	0.06	
Vertical Clearance	Match existing	N/A	
Horizontal Clearance	• 0.4616m to edge of canopy of historic post office • 5.3407m to post office building • 4.549m to historic warehouse	• 3m, min. desirable, per AASHTO-*Green Book*, 1994, page 425 • 6.0m – 8.0m per AASHTO-*Roadside Design Guide* (1996)	Yes

Listed below are the known non-complying items not requiring an approved design exception.

(1) The AASHTO STD. as it relates to the design speed should be equal to the higher of either the posted speed or the minimum "Greenbook" value for design speeds.

(2) If design speed is less than the posted or statutory speed, a design exception is required.

(3) Structure Design's responsibility - be sure they have checked for need of design exception.

APPENDIX E

CORRESPONDENCE

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

REPLY TO
ATTENTION OF

Planning Services Section

September 29, 1998

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 June 5, 1998, subject: "Request for Comments for Group XVII Bridge Replacement Projects." The bridge replacement projects are located in various Eastern and Piedmont North Carolina counties.

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

Sincerely,

C. Alex Morrison, Jr., P.E.
Chief, Technical Services Division

Enclosure

United States Department of Agriculture

Natural Resources Conservation Service

412 West Queen St.
Edenton, NC
27932

SUBJECT: Farmland Conversion Impact Rating form AD1006

DATE:06/06/99

TO: Pamela Williams
Wang Engineering Company, Inc.

The following information is in response to your request asking for information on farmlands in the (3 bridge replacement projects). Projects B-2938, B-2950, B-2965.

Prime farmland does not include land already in or committed to urban development or water storage. When funds have already been commited for utilities, water lines, and road or bridge replacement and widening, the land is committed to development and is be exempt from having to make a determination. Other prime farmland "already in" urban development includes all land that has been designated for commercial or industrial use or residential use that is not intended at the same time to protect farmland in a

1. Zoning code or ordinance adopted by the state or local unit of government or,

2. A comprehensive land use plan which has expressly been either adopted or reviewed in its entirety by the unit of local government in whose jurisdiction it is operative within 10 years preceding the implementation of the project.

If the area in question meets the above criteria, you will not need to complete a Farmland Conversion Impact Rating form (AD1006). Otherwise please proceed to submit a Farmland Conversion Impact Rating form AD1006. The AD1006 should be generated by the corresponding federal agency who will provide the permits and/or funds. If you have any questions please feel free to call me at:252-482-7437.

Thank You,

John Gagnon
Resource Soil Scientist

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

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

All of the bridges are within counties and communities which participate in the National Flood Insurance Program. From the various Flood Insurance Rate Maps (FIRMs), it appears that both approximate study and detail study streams are involved. (Detail study streams are those with 100-year flood elevations determined and, if controlled by riverine flooding, normally have floodways defined. Of these bridge crossings, only the Tar River in Edgecombe County has a floodway defined.) Based on a review of the FIRM's and pertinent United States Geological Survey topo maps, none of the bridges over railroads appear to be in identified flood hazard areas. A summary of flood plain information pertaining to the other bridges is contained in the following table. The FIRMs are from the county or countywide flood insurance study unless otherwise noted.

Bridge No.	Route No.	County	Study Stream	Type	Date Of Firm
B2938 49	SR 1101	Carteret	White Oak River	Approx	8/85
"	SR 1442	Onslow	"	"	7/87
B2950 4	SR 1222	Currituck	Tull Creek	Detail	11/84
B2965 24	US 64 Bus	Edgecombe	Tar River	Detail	2/88 *
"	"	"	"	"	4/80 **
B3045 17	NC 89	Stokes	Dan River	Approx	9/88
B3230 64	US 220 Bus	Rockingham	Mayo River	Approx	5/91

* Map is Town of Tarboro FIRM.
** Map is Town of Princeville FIRM.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

1. **FLOOD PLAINS: (Continued)**

For the Tar River crossing, we refer you to the Federal Emergency Management Agency's "Procedures for 'No Rise' Certification for Proposed Developments in Regulatory Floodways", copies of which have been furnished previously to your office. In addition, we suggest coordination with the respective counties or communities for compliance with their flood plain ordinances and any changes, if required, to their flood insurance maps and reports.

2. **WATERS AND WETLANDS: POC - Raleigh, Washington, and Wilmington Field Offices, Regulatory Division (Individual POC's are listed following the comments.)**

Based upon a review of Projects B-3013 and B-3231 (bridge replacements over railroads), it appears that the proposed work is not likely to impact any jurisdictional waters subject to Department of the Army (DA) permit authority. In addition, from a review of submitted information and all available maps for the bridge-over-railroad Project B-3214, it was determined that no jurisdictional wetlands will be impacted by this proposed project. Accordingly, no DA authorization will be required in this case.

All work restricted to existing high ground will not require prior Federal permit authorization. However, DA 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. Also, please be reminded that Stokes County is one of the twenty-five mountain counties of North Carolina that contain trout waters. Review and comments are required from the North Carolina Wildlife Resources Commission prior to any action being taken on DA permit authorization for identified trout water counties.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. **WATERS AND WETLANDS: (Continued)**

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. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site 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.

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.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. **WATERS AND WETLANDS: (Continued)**

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.

For additional information, please contact the following individuals:

Raleigh Field Office -

- Jean Manuele at (919) 876-8441, Extension 24, for Edgecombe and Northampton Counties (Regulatory Division Action ID Nos. 199820969 & 199820970)
- John Thomas at (919) 876-8441, Extension 25, for Person, Stokes, and Rockingham Counties (Action ID's 1998-20821, 20822, 20823, and 20824)
- Todd Tugwell at (919) 876-8441, Extension 26, for Wake County (ID 199820971)

Washington Field Office -

- Mike Bell at (252) 975-1616, Extension 26, for Currituck County (TIP B-2950)

Wilmington Field Office -

- Dave Timpy at (910) 251-4634 for Richmond and Carteret/Onslow Counties (Action ID Nos. 199801809 and 199801810)

3. **U.S. ARMY CORPS OF ENGINEERS PROJECTS: POC - Howard Varnam, Navigation Section at (910) 251-4411**

Bridge No. 24 on US 64 Business over the Tar River at Tarboro appears to cross a U.S. Army Corps of Engineers navigation project. This project provides for a channel 20 inches deep and 60 feet wide to Tarboro. There should be no problem from the provision of the proposed improvements if navigational clearances and channel setbacks for the existing project are maintained.

If you have questions or need further information related to the Federal project, please contact Mr. Varnam.

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Aowb
Phone: (757)398-6587

16590
July 7, 1998

Mr. Richard Davis, P.E.
Planning and Environmental Branch
N.C. Division of Highways
P.O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Davis:

This is in response to your letter dated June 5, 1998 requesting the Coast Guard to review the proposed projects to replace ten bridges of which five are over waterways. The following are the five bridge numbers and their locations: #49 White Oak River; #4 Tull Creek; #24 Tar River; #17 Dan River; and #64 Mayo River. B2938 B2950 B2965 B3045 B3230

The Coast Guard Authorization Act of 1982 exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used, susceptible to use in their natural condition, or susceptible to use by reasonable improvement as a means to transport interstate commerce. Ms. Pam Williams confirmed such conditions in a telephone conversation on June 30, 1998. Due to this, the bridge projects on the Dan and Mayo Rivers are exempt, and will not require Coast Guard Bridge Permits.

Tull Creek, and the White Oak and Tar Rivers are subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes. However, these waterways also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for these three projects.

The fact that Coast Guard permits are not required does not relieve you of the responsibility for compliance with the requirements of any other Federal, State, or local agency who may have jurisdiction over any aspect of the project.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

Grines/Baldwin

United States Department of the Interior

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

June 17, 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

Dear Mr. Gilmore:

Thank you for your letter of June 5, 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-2938, Carteret/Onslow Counties, Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River;

2. B-2950, Currituck County, Replace Bridge No. 4 on SR 1222 over Tull Creek;

3. B-2965, Edgecombe County, Replace Bridge No. 24 on US 64 Business over the Tar River;

4. B-3013, Person County, Replace Bridge No. 48 on US 501 over the Norfolk Southern Railway;

5. B-3045, Stokes County, Replace Bridge No. 17 on NC 89 over the Dan River;

6. B-3214, Northampton County, Replace Bridge No. 64 on US 301 over the CSX Railway;

7. B-3230, Rockingham County, Replace Bridge No. 64 on US 220 Business over the Mayo River;

8. B-3231, Rockingham County, Replace Bridge No. 243 on SR 1378 over the North/Western Railway;

9. B-3256, Wake County, Replace Bridge No. 337 on SR 1108 over the Norfolk Southern Railway; and,

10. B-3380, Richmond County, Replace Bridge No. 43 on Rice Street over the CSX Railway in Hamlet.

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 following is applicable to all the projects listed above except Item #5, B-3045. Stokes County is in an area of the state under the jurisdiction of the Services' Asheville Office. They should be contacted for resource information pertinent to this project.

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. Listed species have been known to occur in the vicinity of two of the bridge replacement sites.

The red-cockaded woodpecker (RCW) (*Picoides borealis*) is known from the vicinity of project B-2938, Carteret/Onslow Counties. In addition to the recommendations listed below, if the proposed project will be removing pines 9" DBH or greater, or 30 years of age in pine or pine/hardwood habitat, surveys should be conducted for active RCW cavity trees in appropriate habitat within a 0.5 mile radius of project boundaries. If the RCW is observed within the project area or active cavity trees are found, the project has the potential to affect the RCW, and you should contact this office for further information.

The Tar spinymussel (*Elliptio steinstansana*) has been recorded upstream of project B-2965, Edgecombe County. A mussel survey should be conducted at the proposed bridge replacement site, covering 100 meters upstream, and 400 meters downstream of the crossing. In addition, the applicant must implement the following measures to insure protection for all aquatic resources occurring downstream:

1. Installation of instream silt curtain weighted at the bottom, and stringent bank erosion control. If tree removal is required, stumps and roots should remain intact for bank stabilization;

2. Instream construction activities should be initiated only during low flow conditions that permit the effective deployment of the silt curtain; and,

3. Before stream crossings are to begin, the contractor should notify the Service within one week of the construction initiation date. The Service would like the opportunity to inspect the installation of the silt curtain and check any possible changes in stream flow conditions when scheduling allows.

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 this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding these comments, please contact Tom McCartney at 919-856-4520, ext. 32.

Sincerely,

John M. Hefner
Field Supervisor

Enclosures

cc:
COE, Mike Bell, Washington, NC
COE, Eric Alsmeyer, Raleigh, NC
COE, Scott McLendon, Wilmington, NC
NCDWQ, John Dorney, Raleigh, NC
FHWA, Nicholas Graf, Raleigh, NC
EPA, Ted Bisterfield, Atlanta, GA

FWS/R4:TMcCartney:TM:06/16/98:919/856-4520 extension 32:\10-brdge.rpl

Threatened and Endangered Species

Birds

- Bald Eagle
- Peregrine Falcon
- Piping Plover
- Red-cockaded Woodpecker
- Roseate Tern
- Wood Stork

Fish

- Cape Fear Shiner
- Waccamaw Silverside

Mussels

- Dwarf-wedge Mussel
- Tar Spinymussel

Mammals

- Eastern Cougar
- Red Wolf

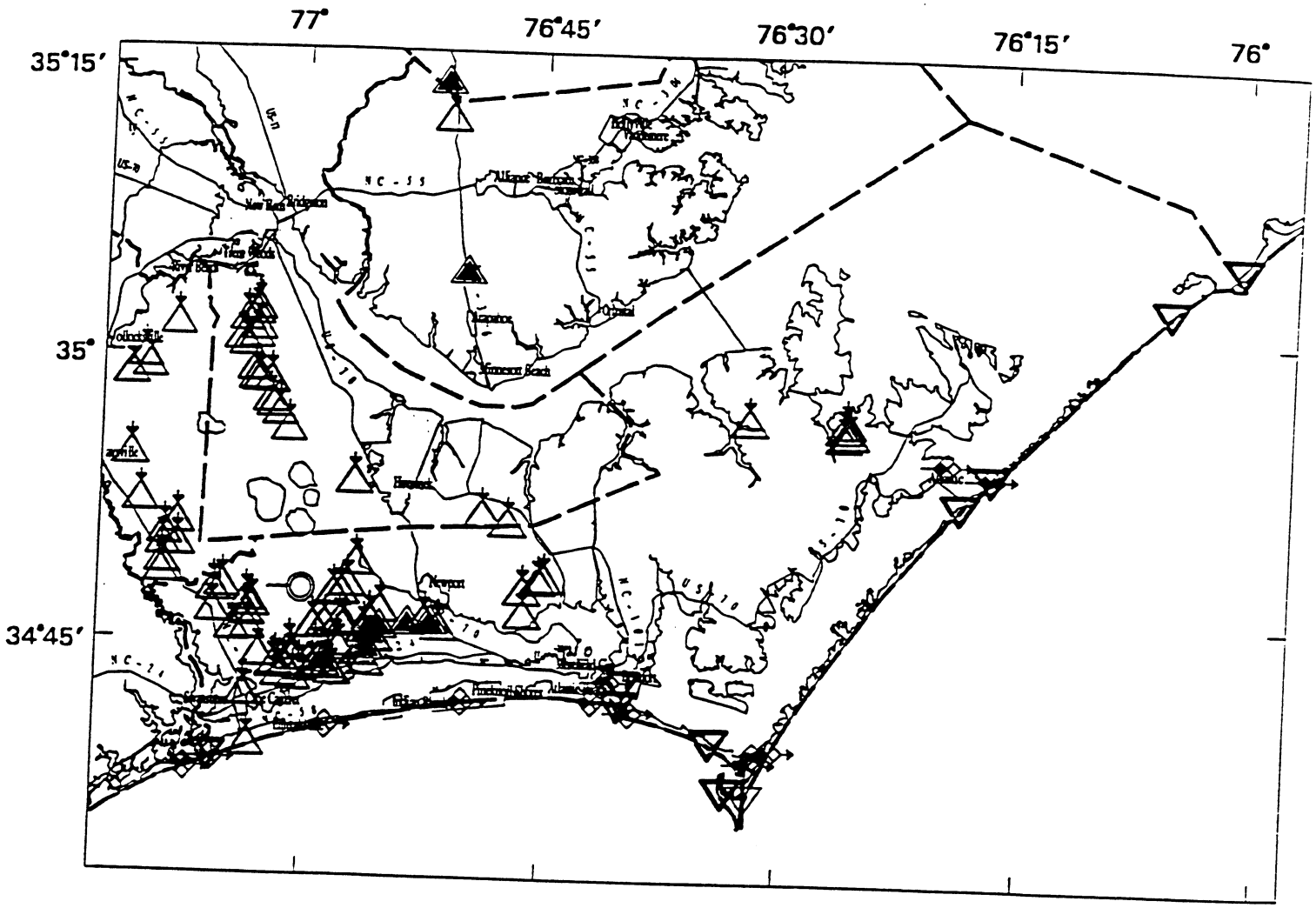
Plants

- American Chaffseed
- Harperella
- Michaux's Sumac
- Pondberry
- Rough-leaved Loosestrife
- Schweinitz's Sunflower
- Seabeach Amaranth
- Sensitive Joint-vetch
- Small Whorled Pogonia
- Smooth Coneflower

Seaturtles are seasonally ubiquitous along coastal regions, and therefore, are not labeled. Shortnosed Sturgeon and Manatees are seasonally ubiquitous in estuarine areas and are also not labeled.

Accounts of Selected Federally Listed Species In CARTERET County

Data represented on these maps are not based on comprehensive inventories of this county. Lack of data must not be construed to mean that listed species are not present.



Prepared by U.S. Fish and Wildlife Service
based on data provided by NC Natural Heritage Program
D. Newcomb, K. Tripp 1/15/98

0 1 2 3 4 5 MILES
012345 KILOMETERS

expires 1/31/99

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 Harris, PE, Project Manager
Project Development and Environmental Analysis Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: July 28, 1999

SUBJECT: North Carolina Department of Transportation (NCDOT) Bridge Demolition Projects B-2938, B-2950, B-2965, B-3045, and B-3230.

We have reviewed the information provided by you regarding the subject bridge demolition projects. These projects were reviewed during the scoping process and we preformed site visits as needed.

After reviewing the new information we do not object to the projects as proposed, provided that the new Bridge Demolition and Removal Best Management Practices are followed. If we can be of any further assistance please call me at (919) 528-9886.

cc: David Franklin, Special Projects Manager, USACOE, Wilmington

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: July 27, 1998

SUBJECT: NCDOT Group XVII Bridge Replacements

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-2938 - The bridge should be replaced with a spanning structure, in place with an off-site detour. This area of the White Oak River is a primary nursery area and is closed to shellfishing. There is a fringe of salt marsh adjacent to the bridge on the North/West side which should be avoided. The White Oak River supports anadromous runs of striped bass, river herring, and American shad. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation.

2. B-2950 - This bridge should be replaced with a spanning structure, in place with an off-site detour. Tulls Creek is designated as a primary nursery area. This creek is known to support anadromous runs of striped bass as well as quality runs of largemouth bass, sunfish and other gamefish. Our agency collects brood fish for largemouth bass restocking efforts from this section of Tulls Creek. Turbidity resulting from in-water work could damage critical freshwater spawning habitat not only in Tulls Creek but also in Tulls Bay. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation. There are also several Bald eagle nests along Tulls Creek. If any trees are to be removed eagle nest surveys should be performed.

3. B-2965 - This bridge should be replaced in place with an off-site detour if possible. The Tar river supports important runs of anadromous striped bass, hickory shad, American shad and river herring. The standard anadromous fish moratorium, February 15 to June 15, will be required. Also the federally listed, endangered, Tar spineymussel occurs in the Tar River in the vicinity of the bridge. A survey for this species should be performed 100 meters above the bridge to 400 meters downstream of the bridge. Based on the results of this survey additional conservation measures may be required. (Contact NCDOT Biologist, Tim Savidge.)

4. B-3013 - No specific concerns.

5. B-3045 - No specific concerns.

6. B-3214 - No specific concerns.

7. B-3230 - Nice riffles which provide excellent fish habitat are located 20-30 meters upstream of Bridge No. 64. This area should be avoided during the bridge replacement.

8. B-3231 - No specific concerns.

9. B-3256 - No specific concerns.

10. B-3380 - No specific concerns.

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.

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

June 19, 1998

MEMORANDUM

To: Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch

From: Cyndi Bell

Subject: Request for Comments for Group XVII Bridge Replacement Projects

Reference is made to your memorandum of June 5, 1998, in which you requested early scoping comments for ten bridge replacement projects. Of the ten bridges on your list, only five involve streams, while the other five are railroad bridges. Please see the attached Water Quality Checklist for Bridge Replacement Projects for general recommendations. Based upon our records, Standard Sediment and Erosion Control measures will be acceptable for these fiver projects. I do ask that you investigate whether riparian wetlands are located at any of these crossings. The potential for occurrence of riparian wetlands is higher at B-2938, B-2950, and B-2965. Please note that we prefer bridging of riparian wetlands, especially if you are considering replacement of an existing bridge with a culvert.

Thank you for your inquiry. If you have any questions, please contact me at (919) 733-1786 or Cyndi_Bell@dem.ehnr.state.nc.us.

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

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director

DEHNR

February 26, 1997

MEMORANDUM

To: Mr. H. Franklin Vick, P.E., Manager, NCDOT, Planning & Environmental Branch

From: Cyndi Bell, NC Division of Water Quality CLB

Subject: Water Quality Checklist for Bridge Replacement Projects

Reference your correspondence dated January 21, 1997, in which you requested scoping comments for five bridge replacement projects. As I will be unable to attend the scoping meeting for these projects on March 11, 1997, I am forwarding these comments to you and the appropriate project engineers in writing. The Division of Water Quality requests that NCDOT consider the following generic environmental commitments for design and construction of bridge replacements:

A. DWQ requests that DOT strictly adhere to North Carolina regulations entitled "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0024) throughout design and construction for this project in the area that drains to streams having WS (Water Supply), ORW (Outstanding Resource Water), HQW (High Quality Water), B (Body Contact), SA (Shellfish Water) or Tr (Trout Water) classifications to protect existing uses.

B. DWQ requests that bridges be replaced on existing location with road closure, when practical. If an on-site detour is necessary, remediation measures in accordance with DWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.

C. DWQ requests that hazardous spill catch basins be installed at any bridge crossing a stream classified as HQW or WS (Water Supply). The number of catch basins installed should be determined by the design of the bridge, so that runoff would enter said basin(s) rather than directly flowing into the stream.

D. To the maximum extent practicable, DOT should not install the bridge bents in the creek.

E. Wetland impacts should be avoided (including sediment and erosion control structures/measures) to the maximum extent practical. If this is not possible, alternatives that minimize wetland impacts should be chosen. Mitigation for unavoidable impacts will be required by DWQ if impacts exceed one acre. Smaller impacts may require mitigation by the U.S. Army Corps of Engineers.

F. Borrow/waste areas should not be located in wetlands. It is likely that compensatory mitigation will be required if wetlands are impacted by waste or borrow.

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-9960 FAX # 733-9919

G. DWQ prefers replacement of bridges with bridges. If the new structure is to be a culvert, it should be countersunk to allow unimpeded fish passage through the crossing.

H. If foundation test borings will be required, this should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No. 6 for Survey Activities. Written concurrence from the North Carolina Wildlife Resources Commission and U.S. Army Corps of Engineers is required in designated mountain trout counties.

I. If this project is processed as a Categorical Exclusion, NCDOT is reminded that mitigation will be required if wetland impacts exceed one acre, in accordance with DWQ Wetland Rules (15A NCAC 2H.0506 (h)(2)).

The attached table has been prepared by DWQ for your assistance in studying the systems involved in these bridge replacements. This information includes the DWQ Index Number, DWQ Stream Classification, river basin, and preliminary comments for each crossing. Please note that National Wetland Inventory (NWI) map references are not to be replaced by onsite wetland determinations by qualified biologists.

Thank you for your request for DWQ input. DOT is reminded that issuance of a 401 Water Quality Certification requires satisfaction of water quality concerns, to ensure that water quality standards are met and designated uses are not lost or degraded. Questions regarding the 401 Certification or other water quality issues should be directed to Cyndi Bell at (919) 733-1786 in DWQ's Water Quality Environmental Sciences Branch.

cc: Michelle Suverkrubbe
Melba McGee
Jeff Ingham
Bill Goodwin
John Williams

B1443.DOC

Carteret County Transportation Committee

Post Office Box 825 • Morehead City, North Carolina 28557
Phone: (252) 726-7822 • Fax: (252) 726-7822 • Email: carteret.edc@gtp.net

July 24, 1998

Ms. Stacy Baldwin, P.E.
Planning and Environmental Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Ms. Baldwin:

The Carteret County Transportation Committee met last night and discussed the above-captioned project. The Committee unanimously adopted alternative 3 identified on the June 5, 1998 letter from Richard B. Davis to Carteret County Manager Robert Murphy. If traffic is closed on the Stella Bridge during the construction of the new bridge, it will result in a severe inconvenience and dislocation for those individuals who utilize the bridge on a daily basis. The nearest detour across the White Oak River would require approximately 20 miles of additional travel. Many area farmers farm property on both sides of the White Oak River, and a closure of the bridge would be both inconvenient and expensive for them.

It was also brought to the attention of the Committee that there is significant flooding of the roadway on the Onslow County side of the bridge during full moon/high tide events. The Committee requests that the Department of Transportation try to address the flooding problem as part of the bridge project. If you have any questions regarding the exact location of the flooding, please feel free to contact Mr. John Jones, who is a member of the Transportation Committee. Mr. Jones' telephone number is 252.393.2093.Mr. Jones regularly utilizes the Stella Bridge, and he is very familiar with the flooding problem.

Thank you very much for your consideration and assistance. Please do not hesitate to contact me or Mr. Donald Kirkman, who provides staff support to the Carteret County Transportation Committee. I can be reached at 252.728.2141, and Mr. Kirkman can be reached at 252.726.7822.

Sincerely,

Hunter Chadwick, Chairman

HC:cy
cc: Mr. John Jones
Mr. Donald A. Kirkman

CARTERET COUNTY
ECONOMIC DEVELOPMENT COUNCIL

Carteret County is a member of the Global TransPark Development Commission and North Carolina East

P. O. Box 825
Morehead City NC
28557
919.726.7822
800.462.4252
FAX 919.726.4215
carteret.edc@gtp.net

June 29, 1998

Mr. Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch
N.C. Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Mr. Davis:

I am responding to your June 5 correspondence to Carteret County Manager Robert Murphy regarding the above-captioned bridge project. Mr. Murphy forwarded your letter to me because I provide staff support to the Carteret County Transportation Committee, as well as being the Executive Director of the Carteret County Economic Development Council.

Unfortunately, neither the Transportation Committee nor the Economic Development Council Board of Directors has met since June 5th, and therefore they have not had an opportunity to review your correspondence or provide input. Both Carteret County and the Carteret County Transportation Committee feel that the replacement of the Stella Bridge is a very high priority, and both have previously corresponded with representatives of the Department of Transportation regarding the importance of replacing the bridge.

Consequently, I am confidant that the "No-Build" alternative is inconsistent with the preferences of the Carteret County Commissioners and the Carteret County Transportation Committee. Based on informal discussions with residents of the region near the bridge, including Transportation Committee representatives from the communities most affected, there is a consensus that a new bridge should be built in the vicinity of the existing bridge, while maintaining traffic on the existing bridge during construction. This is reflected as alternate 3 in your June 5 correspondence.

Please also be advised that there is a Carteret County Thoroughfare Plan currently in progress, as well as a thoroughfare plan for the region which includes the Highway 58 and Highway 24 corridors. Those plans are being coordinated by Travis Marshall and

James Upchurch, respectively, in your Statewide Planning Branch. Because the Stella Bridge is the only road connection between Carteret and Onslow Counties other than N.C. 24, it is likely to play an increasingly important role in the county's future transportation plans. Therefore, I urge you and/or Wang Engineering to speak with Messrs. Marshall and Upchurch regarding the location and design of the bridge.

It is likely that the Transportation Committee will meet in late July, at which time they would be in a position formally to comment on your alternates. Even though their meeting will be past your June 30 comment deadline, I will let you know their recommendation.

Thank you very much for your consideration. Please contact me if you have any questions.

Sincerely,

Donald A. Kirkman
Executive Director

cc: Robert Murphy, Carteret County Manager
Hunter Chadwick, Carteret County Transportation Committee Chair
John Jones, Carteret County Transportation Committee
Travis Marshall, P.E.
James Upchurch, P.E.

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B	of	4	Alternate	
I.D. NO.:	B-2938	F.A. PROJECT	N/A						
DESCRIPTION OF PROJECT:	Replace on existing alignment								

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

orm 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE-

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate A of 4 Alternate	
I.D. NO.:	B-2938	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	Replace Bridge #49 on SR 1101/SR 1442 over White Oak River				
	Replace on existing location with a on-site Detour on South Side.				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

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Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B	of	4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A					
DESCRIPTION OF PROJECT:	Replace on existing alignment							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

D. R. Vick — Approved by — 10-27-98 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	D C of	4 Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A			
DESCRIPTION OF PROJECT:	Replace on existing alignment, maintain traffic on one lane of existing bridge					

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

n 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	8.2160801	COUNTY	CARTERET/ONSLOW	Alternate D of	Alternate
I.D. NO.:	B-2938	F.A. PROJECT			
		REPLACEMENT BRIDGE NO. 49 ON SR 1101/SR 1442 OVER WHITE OAK RIVER			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential			0	
Businesses			0	
Farms			0	
Non-Profit			0	

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
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		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

NOTE: The only structure involved on this project is an old abandoned brick building. Therefore, there is no relocation involved.

MANAGER OF
RIGHT OF WAY BRANCH

MAR 30 1999

N.C. DEPT. OF TRANSPORTATION

R. B. CHADWICK — Relocation Agent — 03-26-99 — Date

Approved by — 3-30-99 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

PROPOSED IMPACTS

Bridge Demolition:
Best Management Practices for Bridge Demolition and Removal will be followed. Bridge No. 49 will be removed without dropping any portion of the structure into waters of the United States (as indicated on Pages 9-10, Section 3.b. of the CE document).

Utility Relocation:
No wetland or surface water impacts will result from the relocation of utility lines (Carteret/Craven EMC, Sprint Telephone, and Time Warner). All areas associated with utility relocation will be within the existing causeway. The excavation for the proposed onsite restoration (see attached plan dated May 2003) will take place around the relocated poles by grading the remaining area to the elevation of the adjacent wetland.

Permanent Wetland Impacts:
Construction of the proposed project will result in 0.0227 acre of permanent fill in wetlands. There will be 0.0141 acre of impact due to concrete piles for the proposed bridge at Site 3, 0.00079 acre due to rip rap slope protection for the proposed bridge at Site 4, and 0.0078 acre due to rip rap fill for the proposed boat ramp at Site 5.

Temporary Wetland Impacts:
A temporary work bridge (depicted on the attached drawings) will also be necessary for construction. The resulting temporary impacts to wetlands will be 0.0494 acre. There will be 0.0238 acre of impact due to H-piles for the temporary work bridge at Site 1 and 0.0256 acre due to H-piles for fingers on the work bridge at Site 2.

Permanent Surface Water Impacts:
White Oak River [DWQ Index No. 20-(18)] Class C HQW will be impacted by the proposed project. Construction of the proposed project will result in 0.0344 acre of permanent surface water fill. There will be 0.0017 acre of fill due to the installation of the drilled shafts for the proposed bridge at Site 4 and 0.0327 acre of fill due to the rip rap fill for the proposed boat ramp at Site 5.

Temporary Surface Water Impacts:
The temporary surface water fill due to the construction of the temporary work bridge will be 0.0143 acre. There will be 0.0057 acre of surface water fill for the temporary bridge H-piles at Site 1 and 0.00858 acre of surface water fill for the H-piles on the fingers on the work bridge at Site 2.

Restoration Plan: The temporary fill will consist of H-piles in the river. Following construction of the temporary work bridge, the construction of permanent bridge will be completed. Once the temporary work bridge is no longer needed, all material used in the construction of the temporary work bridge will be removed. The temporary impact area associated with the work bridge is expected to recover naturally.

Schedule: The project schedule calls for a let date of June 15, 2004 with an estimated date of availability of approximately 41 days later. It is expected that the contractor will choose to start construction of the portion of the temporary work bridge in the river shortly after the end of the moratorium of February 15 – September 30. The only bents in the water are bents 21 through 30. It will take approximately 2 ½ to 3 months to drive the piles for the footings, and form and pour the footings for these bents. After that, all work can be done

from barges in the water and the temporary work bridge for the approach spans. Removal of the existing bridge at the end of construction is expected to take approximately 1 month. The temporary surface water fill resulting from the construction will probably be in place for approximately twelve (12) months.

Removal and Disposal Plan: After the temporary work bridge is no longer needed, all temporary work bridge material will become the property of the contractor. The contractor will be required to submit a reclamation plan for the removal of and disposal of all materials off-site at an upland location.

AVOIDANCE and MINIMIZATION

For avoidance and minimization, the following measures will be implemented:

1) replace 432- foot bridge with approximately 2,310-foot bridge.
2) use a work bridge instead of a temporary causeway.
3) reduced spans and girder depth to maintain clearance over the White Oak River.
4) old causeway removal for onsite wetland restoration of approximately 1.7 acre.
5) an instream construction moratorium will be in effect from Feb 15 to Sept 30.
6) all existing piers will be removed down to streambed.
7) bridge deck drains will not discharge directly into the White Oak River.

MITIGATION

Proposed impacts to jurisdictional wetlands due to the replacement of Bridge No. 49 are below the threshold for compensatory mitigation. Therefore, the entire 1.7 acre of brackish marsh restoration will be available for future projects in the White Oak River Basin, 03030001 Cataloging Unit. See attached for the B-2938 Mitigation Plan, dated May 2003 for details.

PROTECTED SPECIES

As of January 29, 2003, the United States Fish and Wildlife Service lists a combined total of seventeen federally protected species for Carteret and Onslow Counties. This list includes sixteen originally listed species for which biological conclusions of "No Effect" were rendered. Since the completion of the referenced CE, the bald eagle has been added to this list. A habitat determination and survey for the bald eagle was conducted by a consultant firm on January 28, 2003 and rendered a biological conclusion of May Affect-Not Likely to Adversely Affect. Concurrence from the United States Fish and Wildlife Service, dated December 2, 2003, has been requested. A copy of letter is attached. See attached Protected Species Update Report, dated February 2003 for bald eagle survey information and biological conclusion. The Natural Heritage Program database (last updated on October 16, 2003) revealed no occurrences of federally listed species within 1.0 mile (1.6 km) of the project study area. Therefore, the biological conclusions for each of these species remain valid. An in-stream construction moratorium will be in effect from February 15 to September 30. This moratorium is required due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only not to the marsh areas.

REGULATORY APPROVALS

NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Development Permit. We have provided a method of debiting $475 to be submitted to the DCM for processing the CAMA permit, as noted in the subject line of this application. With a separate application, we are also requesting issuance of a United States Army Corps of Engineers Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002). We anticipate a 401 General Certification number 3371 will apply to this project. In compliance with Condition 1 of GC 3371 we hereby request written concurrence from the North Carolina Department of Environment and Natural Resources, Division of Water Quality.

Thank you for your assistance with this project. If you have any questions or need additional information please call Ms. Deanna Riffey at (919) 715-1409.

Sincerely,

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

GJT/hwm

cc:
Ms. Cathy Brittingham, NCDCM
Mr. Dave Timpy, USACE, Wilmington
Mr. John Dorney, DWQ, Raleigh
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Mr. Mike Street, NCDMF
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Ms. Debbie Barbour, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Neil Lassiter, P.E., Division 2 Engineer
Mr. Jay Johnson, DIV 2 DEO

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

T.I.P. No. B-2938

CATEGORICAL EXCLUSION
AND
PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

10·8·01
DATE

for William D. Gilmore, P.E., Manager
Project Development and Environmental
Analysis Branch, NCDOT

10-9-01
DATE

for Nicholas L. Graf, P.E.
Division Administrator, FHWA

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

T.I.P. No. B-2938

CATEGORICAL EXCLUSION

AND

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

October 2001

Document Prepared by:
Wang Engineering Company, Inc.

Pamela R. Williams
Project Manager
Barbara H. Mulkey Engineering

10-5-01

James Wang, Ph.D., P.E.
Principal-In-Charge
Wang Engineering Company, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG

For the North Carolina Department of Transportation

Stacy B. Harris, P.E.
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, North Carolina Department of Transportation's (NCDOT) Guidelines for Best Management Practices for Bridge Demolition and Removal, Guidelines for Best Management Practices for Protection of Water Surfaces, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed by NCDOT:

Project Development & Environmental Analysis Branch, Structure Design, Design Branch
The following measures will be carried out for the replacement of Bridge No. 49 per the approved Memorandum of Agreement:

1. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the Bridge and its surroundings as well as the General Store/Post Office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan (Appendix A). The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/ State Historic Preservation Office (HPO) to be made part of the permanent statewide survey and iconographic collection.

2. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to right of way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

3. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina State Historic Preservation Officer (SHPO). To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

4. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, Federal Highway Administration (FHWA) shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

    a. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

b. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

Division Engineer

An in-stream construction moratorium will be in effect from February 15 to September 30. This moratorium is required due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only not to the marsh areas.

The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented, as applicable.

Access for emergency services will be maintained to the existing boat dock during construction.

All existing piers will be removed down to the streambed.

Hydraulic Design

Bridge deck drains will not discharge directly into the White Oak River.

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

INTRODUCTION: The replacement of Bridge No. 49 is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1 (Appendix B). No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 31.5 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of an inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1101 and SR 1442 are classified as rural minor collectors and are, together, designated as a bike route, *Jacksonville: City to the Sea*. Land use in the project area is predominantly residential and High Quality Marsh (Brackish Marsh). The small riverside community of Stella is on the east approach and is eligible for the National Register of Historic Places as an historic district (see Figure 6). Bridge No. 49 is a contributing element to the district. There is a privately owned boat ramp on the southeast quadrant that is the only deep-water ramp in the area usable for water rescue vehicles.

Bridge No. 49 (Figure 3) was constructed in 1950 and reconstructed in 1975 with an overall length of 131.7 meters (432 feet). The clear roadway width is 5.7 meters (19 feet). The superstructure consists of twenty-three timber spans and one steel girder main span. The posted weight limit is 12.7 metric tons (14 tons) for single vehicles and 18.1 metric tons (20 tons) for truck-tractors, semi-trailers.

The approach at the west end of the bridge is on a 13.5-degree (136.5 meter radius) curve. The approach at the east end of the bridge is on a 25-degree (70 meter radius) curve. The approach roadway provides two 2.7-meter (nine foot) travel lanes with 1.8-meter (six foot) grass shoulders. The bed to crown height is nine meters (30 feet), and the normal water depth is approximately 4.2 meters (14 feet). The speed limit is not posted and the statutory speed limit is 90 kilometers per hour (km/h) (55 miles per hour (mph)). Advisory posted speed limit is 30 km/h (20 mph) on the approaches to the bridge.

The 2001 estimated average daily traffic volume is 1,600 vehicles per day (vpd). The projected traffic volume is expected to increase to 2,500 vpd by the design year 2025. The volumes include one percent truck-tractor semi-trailer (TTST) and two percent dual-tired vehicles (DT).

There is a private boat ramp in the southeast quadrant of the project site and a parking lot on the northeast side. Telephone, cable television and power lines cross the stream parallel to the roadway on the south side of the structure. Utility impacts are anticipated to be low.

Three accidents were reported near the bridge during the period from September 1, 1993 to August 31, 1996.

No school busses cross Bridge No. 49.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide two 3.6-meter (12-foot) travel lanes with 1.2-meter (four foot) shoulders for a total clear roadway width of 9.6 meters (32 feet). Bicycle safe rails will be provided (two-bar metal bridge rails at 1372 mm (54-inches) in height) (Figure 4, Appendix B). The proposed approach roadway will consist of two 3.6-meter (12-foot) travel lanes with 2.4-meter (eight foot) shoulders. The design speed will be 70 kilometers per hour (km/h) [45 miles per hour (mph)]. A design exception has been approved for the design speed of 70 km/h (45 mph) and the horizontal sight distance, and is attached in Appendix D.

The new structure will be approximately 704 meters (2347 feet) in length and will span the White Oak River and the high quality marshland. The existing navigational clearance will be maintained.

B. Reasonable and Feasible Alternatives

One (1) "reasonable and feasible" constructible alternative studied for replacing the existing bridge is described below.

Alternate D (Preferred) replaces the bridge downstream of the existing bridge and spans the White Oak River and the marshland on the Onslow County approach. The new structure is recommended to have a length of approximately 704 meters (2347 feet). During construction, traffic will be maintained on the existing structure and roadway.

C. Alternatives Eliminated From Further Study

Alternates A, B^1, B^2, C and E were eliminated due to the poor soil conditions on the bridge approach on the Onslow County side. It was determined that the soil could not be stabilized and differential settlement would occur if the roadway was raised for the end bent approach embankment.

Alternate A replaces the bridge at the existing location. During construction, traffic would be maintained by a two lane temporary detour structure, approximately 170 meters (567 feet) in length, located downstream of the existing bridge. The proposed bridge would be approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve. The approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet) and includes placement of rock fill at the ox bow and guardrail from west of the ox bow to the bridge. The project length is 853 meters (2843 feet).

Alternate B^1 replaces the bridge downstream of the existing bridge. During construction, traffic would be maintained on the existing bridge. The proposed bridge would be approximately 214 meters (713 feet) in length on a two degree (875 meter radius) curve with a five degree (350 meter radius) east approach curve. Onslow County approach work includes a minimum resurfacing grade beginning west of the ox bow and placement of rock fill at the ox bow and guardrail from west the ox bow to the bridge. The project length is 704 meters (2347 feet).

Alternate B^2 alignment is identical to Alternate B^1, but the approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet). The project length is 845 meters (2817 feet).

Alternate C replaces the bridge at the existing location. During construction, one lane of traffic would be maintained on the existing bridge. The proposed bridge would be approximately 143 meters (477 feet) in length on a seven degree (250 meter radius) curve. Traffic would be routed off-site during the construction of the temporary approaches for the one lane detour structure. Alternate C was eliminated at the early phase of the study because it provided a one-lane detour bridge to maintain traffic during the anticipated two-year project duration and would require a road closure to construct the detour approaches.

Alternate E involves replacing the bridge with a new bridge approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve and minimum approach work. During construction, traffic would be maintained with an on-site detour. Alternate E includes additional rock fill in the ox bow to avoid further erosion. The project length is 378 meters (1260 feet).

The "Do-Nothing" Alternative would eventually necessitate removal of the bridge, effectively removing this section of SR 1101/SR 1442 from traffic service. This is not desirable due to the traffic service provided by SR 1101/SR 1442 and the estimated 22-kilometer (13.8 miles) detour route.

Investigation of the existing structure by the Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternate

Alternate D, replacing the bridge downstream of the existing bridge and raising the grade on the Onslow County approach, was selected as the preferred alternate because it minimizes wetland impacts, minimizes impacts to Stella's Historic District, and restores high quality wetlands. In addition, Alternate D was the only alternate considered to be constructible. The proposed bridge will be constructed utilizing a temporary work bridge located south of the existing structure. The length of approach work will be approximately 342.4 meters (1141 feet).

The NEPA/404 Merger Team concurred with Alternate D as the preferred alternative and as the least environmentally damaging, practical alternative (Appendix C).

For avoidance and minimization of adverse impacts, the following measures will be accomplished:

1. Anticipated impacts to wetlands minimized to approximately 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 132-meter (440-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

IV. ESTIMATED COST

The estimated costs, based on current 2001 prices, are as follows:

	Alternate D (Preferred)
Structure Removal (existing)	$ 65,500
New Structure (with Temp. Work Bridge)	6,082,600
Roadway Approaches	339,800
Miscellaneous and Mobilization	699,100
Engineering and Contingencies	1,113,000
ROW/Const. Easements/Utilities:	69,000
TOTAL	**$8,369,000**

The estimated cost of the project, as shown in the 2002-2008 Transportation Improvement Program, is $7,174,000 including $74,000 for right-of-way and $7,100,000 for construction.

V. NATURAL RESOURCES

A. Methodology

Informational sources used to prepare this report include: USGS Stella, NC 7.5 minute series topographic map (1988); Soil Conservation Service (SCS) Soil Survey of Onslow County, NC (July, 1992) and Soil Survey of Carteret County, NC (September, 1987); United States Fish and Wildlife Service (USFWS) National Wetlands Inventory map (Stella, NC, 1995); USFWS Endangered, Threatened, and Candidate Species and Federal Species of Concern in North Carolina (March 22, 2001); North Carolina Natural Heritage Program (NCNHP) computer database of rare species and unique habitats (January 2001); and NCDOT aerial photography of the study area.

A general field survey was conducted along the proposed project corridor on March 19, 1998 and October 7, 1998. Plant communities and their associated wildlife were identified

using a variety of observation techniques including active searching, and identifying characteristic signs of wildlife such as sounds, tracks, scats, and burrows.

Impact calculations were based on the construction limits for each individual alternate, the width of the replacement structure, the width of the river, and the length of the project approaches.

B. Physiography And Soils

The proposed project lies within the Coastal Plain Physiographic Province, which includes all parts of North Carolina east of the Fall Line. This province typically consists of unconsolidated sands, silts, clays, and peats. The topography of the project vicinity can be characterized as nearly level to gently rolling, with elevations ranging from approximately <1.5 meters to 7.5 meters (< five feet to 25.0 feet) above mean sea level (msl). The elevation in the project area ranges from approximately <1.5 meters to 4.5 meters (< five feet to 15.0 feet) above msl. Current land use in the project vicinity includes agricultural and rural residential, with much of the undeveloped areas being jurisdictional wetlands.

According to the soil surveys for Carteret and Onslow Counties, three different soil associations are located within the project area. The Muckalee-Dorovan association is located north and south of the approach west of the White Oak River and consists of nearly level, poorly and very poorly drained soils. The Lafitte-Hobucken-Carteret and Baymeade-Onslow-Lynchburg soil associations are located in the project area on the east side of the river. The Lafitte-Hobucken-Carteret association consists of very poorly drained, mucky and sandy soils found in marshes flooded frequently with salt water. The Baymeade-Onslow-Lynchburg association is located in areas that parallel drainageways, and includes well drained to somewhat poorly drained sandy and loamy soils. Field conditions generally conform to soil survey mapping.

Seabrook fine sand occurs directly adjacent to the bridge east of the river, and also south of SR 1101 east of the river in the project area (USDA-SCS, 1987). This soil is moderately well drained, with rapid permeability. The seasonal high water table is 0.6 to 1.2 meters (two to four feet) below the surface and flooding occurs rarely in low-lying areas. A small irregularly shaped wet area occurs directly adjacent to the bridge on the east side of the river. This area is more sandy than mucky and is probably Leon sand, which occasionally occurs as an inclusion in the Seabrook fine sand. Leon sand is poorly drained and is listed as hydric (USDA-SCS, 1991).

Norfolk loamy fine sand, two to six percent slopes, is located on the north side of SR 1101 west of the river. The seasonal high water table is 1.2 to 1.8 meters (four to six feet) below the surface. This soil is well drained, permeability is moderate, and erosion is a moderate hazard in areas not protected by vegetation. This soil is not listed as hydric.

Lafitte muck is found on both sides of the roadway approach west of the White Oak River (USDA-SCS, 1992). This soil is typically found <1.5 meters (< five feet) above msl and is flooded daily with brackish water. Infiltration and permeability are moderate and the water table is at or near the surface most of the time. Lafitte muck is listed as hydric (USDA-SCS, 1991).

C. Water Resources

1. Surface Waters

The proposed project falls within the White Oak River Basin, with a subbasin designation of WOK1 (03-05-01) and a federal hydrologic unit designation of White Oak-03020106.

2. Water Resource Characteristics

The White Oak River is a low flowing, coastal river which discharges into Bogue Sound approximately 8.1 kilometers (five miles) southeast of the project study area. Within the project study area of Bridge No. 49, the White Oak River flows south to southeast and is approximately 119 meters (390 feet) wide with a drainage area of 373 square kilometers (233 square miles). The White Oak River and SR 1101 cross at this location perpendicular to each other but there is a sharp curve on the western end of the bridge. On the day of the field investigation the river had a deep, tannin tea color and a low flow. The depth of the river along the riverbanks ranged from approximately 0.6 to 1.2 meters (two to four feet). The riverbank substrate consisted of fine silts and sands. The White Oak River is tidal but also has some wind driven tidal influence as well and is considered brackish. The river's salinity on the day of the site visit was three parts per thousand. The White Oak River has a Class SA rating from the North Carolina Department of Environment and Natural Resources (NCDENR). The Class SA indicates the White Oak River is designated as tidal salt waters protected for shellfishing for market purposes, primary recreation, aquatic life propagation and survival, fishing, wildlife and secondary recreation. The Classification Date and Index for this portion of the river are 6/1/56, 20-(18). Approximately 1.6 kilometers (one mile) upstream from the bridge crossing, the White Oak River is classified as C HQW. The C indicates that the river is suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. HQW indicates High Quality Waters, which are rated as excellent based on biological and physical/chemical characteristics through monitoring or special studies.

Point-source discharges located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. A search within the project vicinity [0.8 kilometers (0.5 miles)] was conducted for NPDES permitted discharges and none were revealed.

Non-point source refers to runoff that enters surface waters through storm water flow or no defined point of discharge. In the project study area, storm water runoff from SR 1101 may cause water quality degradation as well as surface runoff from the boat ramp area in the southeast quadrant of the project study area.

The North Carolina Division of Water Quality (NCDWQ) includes the North Carolina Index of Biotic Integrity (NCIBI), as another method to determine general water quality in the basinwide sampling. The NCIBI is a modification of the Index of Biotic Integrity (IBI) initially proposed by Karr (1981) and Karr, et. al. (1986). The IBI method was developed for assessing a stream's biological integrity by examining the structure and health of its fish community. The Index incorporates information about species richness and composition, trophic composition, fish abundance, and fish condition. The NCIBI summarizes the effects of all classes of factors influencing aquatic faunal communities (water quality, energy source, habitat quality, flow regime, and biotic interactions).

According to NCDWQ, the Division has a sampling station located on SR 1101 at Bridge No. 49 on the White Oak River. This station was last sampled in April of 1995, and includes a fish community (IBI) sample. The NCDWQ sampling identification number is 95-22. The NCIBI rating of the White Oak River at this location was determined to be Good.

3. Anticipated Impacts

a) General Impacts

Other than the one water resource mentioned in the previous section, neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watershed, or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within 1.6 km (one mile) of project study area. Impacts to water resources will result due to the placement of support structures (bents) in the river. In the short term, construction of the bridge and approach work will increase sediment loads. The NCDOT, in cooperation with the NCDENR, has developed a sedimentation control program for highway projects that adopts formal Best Management Practices for the Protection of Surface Waters. The following are methods to reduce sedimentation and water quality impacts:

- strict adherence to BMPs for the protection of surface waters in sensitive water sheds during the life of the project
- reduction and elimination of direct and non-point discharge into the water bodies and minimization of activities conducted in streams
- placement of temporary ground cover or re-seeding of disturbed sites to reduce runoff and decrease sediment loadings
- reduction of clearing and grubbing along the river.

b) Impacts Related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", and "Best Management Practices for Bridge Demolition and Removal" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for Best Management Practices for the Protection of Surface Waters.

Dropping any portion of the structure into waters of the United States will be avoided unless there is no other practical method of removal. The superstructure of Bridge No. 49 consists of timber flooring on steel I-Beams, with an asphalt-wearing surface. The substructure consists of timber caps on timber piles. The end bents are timber abutment design. Since Bridge No. 49 is composed of timber and steel, the bridge can be removed without dropping any components into waters of the United States. If removal of the substructure will create disturbance in the streambed, a turbidity curtain can be used to address sediment concerns.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project would fall under Case 2, which states that no work shall be performed in the water during moratorium periods (February 15 to September 30) associated with fish migration, spawning, and larval recruitment into nursery areas. This conclusion is based upon the classification of the waters within the project area and vicinity, the Stream Crossing Guidelines for Anadromous Fish Passage, and comments received from the North Carolina Wildlife Resources Commission (NCWRC).

D. Biotic Resources

1. Plant Communities

Living systems described in the following sections include communities of associated plants and animals in the project area. These descriptions refer to the dominant flora and fauna in each community and the relationship of these biotic components. Classification of natural plant communities is based on the system used by the NCNHP (Schafale and Weakley 1990). Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species include the common name only. Vascular plant names follow nomenclature found in Radford et al. (1968) unless more current information is available. Terrestrial and aquatic wildlife were determined through field observations, evaluation of habitat, and review of field guides and other documentation.

a) Man-Dominated Community

The Man-Dominated Community found at this site includes the road shoulders, parking lots, and residential and commercial properties within the project area. Dominant vegetation includes dandelion (*Taraxacum officinale*), plantain (*Plantago sp.*), white clover (*Trifolium repens*), and planted grass. Parking lots and some parts of the road shoulders consist of exposed soil. Most areas of the Man-Dominated community appear to be regularly maintained.

b) Brackish Marsh

This wetland community is located west of the river, north and south of the roadway approach, and in a small patch that extends under the bridge east of the river. Dominant vegetation includes black needlerush (*Juncus roemerianus*), cord grass (*Spartina patens*), Olney threesquare (*Scirpus olneyi*), and common reed (*Phragmites australis*). Wax myrtle (*Myrica cerifera*), yaupon holley (*Ilex vomitoria*), and eastern redcedar (*Juniperus virginiana*) are widely scattered throughout. The depth of surface water in this community on the day of the initial site investigation ranged from approximately zero to 30 centimeters (zero to 12 inches) and salinity was three parts per thousand.

2. Wildlife

Plant diversity is low in the Man-Dominated community and there are no areas of vines or brush that might provide shelter for wildlife. Limited habitat may be available for such species as American robin (*Turdus migratorium*), starling (*Sturnus vulgaris*), and house mouse (*Mus musculus*).

The Brackish Marsh community provides important habitat for a variety of wildlife and serves as nursery grounds for many aquatic species. Wildlife seen or heard in this community on the day of the visit included double-crested cormorant (*Phalacrocorax auritus*), ring-billed gull (*Larus delawarensis*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), and common crow (*Corvus brachyrhynchos*).

Other species of ducks and gulls may find food sources in the marsh. King rail (Rallus elegans) and short-billed marsh wren (Cistothorus platensis) could find suitable winter habitat in this community and other birds such as least bittern (*Ixobrychus exilis*) may find good nesting habitat here. Mammals such as muskrat (*Ondatra zibethicus*) and marsh rice rat (*Oryzomys palustris*) may be found nesting in this community as well. Diamondback terrapin (*Malaclemys terrapin*) may be seen here feeding on crabs, small mollusks, and dead fish, and marsh fiddler crab (*Uca pugnax*) could reside here, feeding on organic matter and burying into the substrate. Many other species of wildlife not listed here may be found in this very productive community.

3. Aquatic Communities

The aquatic community in the project study area exists within the White Oak River. A cursory search of the shoreline was conducted for evidence of mussel and clam species. Hard clam shells (*Mercenaria mercenaria*) and eastern oyster shells (*Crassostrea virginica*) were found along the riverbanks but no other signs of mollusks or bi-valves were revealed. Signs were posted along both sides of the White Oak River by the North Carolina Division of Marine Fisheries (NCDMF) closing the shellfish beds and warning of serious illness if shellfish from this area were consumed. Dip-netting along the riverbank yielded only juvenile brown shrimp (*Penaeus aztecus*).

According to the North Carolina Wildlife Resources Commission (NCWRC), the following freshwater fish species are found within the White Oak River; redbreast sunfish (*Lepomis auritus*), chain pickerel (*Esox niger*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), and largemouth bass (*Micropterus salmoides*). NCWRC stated the following saltwater species were also found in the White Oak River at this location: herring (*Alosa spp.*), hickory shad (*Alosa mediocris*), and striped bass (*Morone saxatilis*). NCWRC recommended no instream work from April 1 to June 15, as these are critical spawning periods for most sunfish and bass (*Centrarchidae* family) and additionally NCWRC recommended no instream activity from February 15 to May 30 due to anadromous fish migrations. NCWRC also made other bridge replacement recommendations such as placing the new structure as close as possible to the existing structure, deck drains should not discharge directly into the river, live concrete should not be allowed to contact the water and a clear bank (riprap free) area of at least three meters (ten feet) should remain on each side of the river underneath the bridge.

NCWRC stated in response to a scoping letter that the bridge should be replaced, in place, with a spanning structure and with off-site detour. No in-water work should occur from February 15 to September 30, and that the marsh adjacent to the bridge should be avoided.

The North Carolina Division of Marine Fisheries (NCDMF) stated that they have a longstanding sampling station at Stella, below Bridge No. 49. From 1978 through 1996

for the months of May and June these are the most frequently sampled species found at this location in descending order of abundance; brown shrimp (*Penaeus aztecus*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), American eel (*Anguilla rostrata*), bay anchovie (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), grass shrimp (*Palaemonetes spp.*), hog choker (*Triunectes maculatus*), blue crab (*Callinectes sapidus*), weakfish (*Cynoscion regalis*), pinfish (*Lagondon rhomboides*), and southern flounder (*Paralichthys lethostigma*). NCDMF stated that this is a primary marine nursery area that has a variable salinity rate depending on rainfall and wind tides. NCDMF stated the waters are navigable, primarily for recreation purposes, but some commercial gill netting also occurs here. NCDMF recommended a dredge moratorium from April 1 to September 30 and advised that the NCDOT needs to practice strict best management practices (BMPs) when work does begin to replace the bridge due to it being a primary nursery area.

4. Anticipated Impacts to Biotic Communities

Biotic community impacts expected to result from project construction are addressed separately as terrestrial impacts and aquatic impacts. However, impacts to terrestrial communities, particularly in wetland areas and in locations exhibiting slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. It is important to note that construction impacts may not be restricted to the communities in which the construction activity occurs. Efforts will be made to ensure that no sediment leaves the construction site.

a) Plant Communities

Plant communities provide nesting, foraging, and shelter habitat for fauna. The loss of these habitats will result in the displacement and mortality of faunal species in residence. Individual mortalities may occur to terrestrial animals from construction machinery used during clearing activities.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present in the study area. Project construction will result in clearing and degradation of portions of these communities. Alternate D will result in the least amount of permanent impacts and will restore a portion of the existing road back to Brackish Marsh. Table 1 details the anticipated impacts to terrestrial and aquatic communities by habitat type.

TABLE 1
ANTICIPATED IMPACTS TO TERRESTRAIL AND AQUATIC COMMUNTIES

ALTERNATE	*PROJECT LENGTH METERS (FEET)*	*BRIDGE LENGTH METERS (FEET)*	*SURFACE WATER IMPACTS LINEAR METERS (FEET)*	*BRACKISH MARSH IMPACTS HA (ACRE)*	*WETLAND RESTORATION HA (ACRES)*	*AQUATIC COMMUNITY HA (ACRES)*
D (Preferred)	1077.525 (3,534)	704 (2,310)	9.6 (32)	0.008 (0.021)	0.68 (1.70)	0.16 (0.40)

NOTES:
- Calculations for impacts are based on the construction limits.
- Aquatic community impacts are based upon the entire width and length of the bridge over water.

b) Aquatic Communities

The aquatic community in the study area exists within the White Oak River. The new replacement structure construction and approach work will likely increase sediment loads in the river in the short term. Construction related sedimentation is harmful to local populations of invertebrates that are an important part of the aquatic food chain. Construction activities also increase the possibility of potentially toxic substances, such as engine fluids and particulate rubber, entering the waterway and harming aquatic organisms.

The BMPs for the protection of surface waters will be strictly enforced to minimize potential adverse impacts due to this project. Since White Oak River is potentially anadromous fish spawning habitat, the NCDOT's Stream Crossing Guidelines for Anadromous Fish Passage will be adhered to for this project. The purpose of these guidelines is to provide guidance to the NCDOT to ensure that replacement of existing and new highway stream crossing structures will not impede the movement of anadromous fish.

E. Special Topics

1. Waters of the United States

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). "Waters of the United States" are regulated by the United States Army Corps of Engineers (USACE).

Investigation into wetland occurrence in the project study area was conducted during the initial site visit using methods of the 1987 Corps of Engineers Wetlands Delineation Manual. Wetland areas consisting of Brackish Marsh were found within the western quadrants of the project study area and in a small patch east of the river.

On October 7, 1998, the wetlands were delineated and surveyed. On December 1, 1998, the USACE and the Division of Coastal Management met on-site and gave their agreement of the delineation.

Project construction cannot be accomplished without infringing on jurisdictional surface waters. Anticipated surface water impacts fall under the jurisdiction of the USACE.

2. Permits

In accordance with provisions of Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), a permit would be required from the USACE for the discharge of dredged or fill material into "Waters of the United States". Since no significant impacts are expected from this project, a Categorical Exclusion level study will be initiated. Categorical Exclusions are subject to the provisions of Nationwide Permit 23. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency. It states that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. The Categorical Exclusion report is submitted to the USACE to

document that the terms and conditions of the Nationwide Permit 23 are met. However, final permit decisions are left to the discretionary authority of the USACE.

If filling from a proposed project will impact wetlands or waters, a Section 401 Water Quality Certification may be required from the North Carolina Division of Water Quality. North Carolina has developed General Certifications (GC) that will satisfy Section 401 of the CWA and correspond to the USACE's Nationwide Permits. An application must be made if there are any impacts to "Waters of the United States".

If no practical alternative exists to remove the current bridge other than to drop it into the water, prior to removal of debris off-site, fill related to demolition procedures will need to be considered during the permitting process. A worst-case scenario should be assumed with the understanding that if there is any other practical method available, the bridge will not be dropped into the water. Permitting should be coordinated such that any permit needed for bridge construction should also address issues related to bridge demolition. Since this bridge is of timber and steel construction, removal should be possible without dropping portions of the bridge into the water.

The White Oak River is subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes by the U.S. Coast Guard. This waterway meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70, stating that advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given advance approval of the construction of the bridge over the White Oak River. Therefore, a Coast Guard permit will not be required for this project.

3. Division of Coastal Management Consultation

The Division of Coastal Management must be consulted regarding application of the Coastal Area Management Act (CAMA) to this project. Section .2300 of the CAMA discusses general permits for the replacement of existing bridges. The water at this site is brackish and the marsh is considered estuarine and will not meet the CAMA general permit condition of the bridge replacement spanning no more than 75 meters (250 feet) of estuarine water. A CAMA major permit will be required.

General permit conditions include but are not limited to; single bridge and culvert projects that do not require temporary fill causeways or temporary bridges associated with replacements; bridge replacements spanning no more than 75 meters (250 feet) of estuarine water, public trust area, and coastal wetland Areas of Environmental Concern; bridge projects which do not increase the vertical clearance to more than 1.5 meters (five feet) above normal water level or normal high water, or by vertical clearance to more than 25 percent over the existing clearance, whichever is greater; projects in which the total area of public trust area, estuarine waters, and wetlands to be excavated or filled do not exceed 232 square meters (2500 square feet) except that the wetland component shall not exceed 46.5 square meters (500 square feet); and projects which DENR determines that the proposed activity would not adversely affect areas which possess historic, cultural, scenic, conservation, fisheries, water quality, or recreational values.

4. Mitigation

The USACE usually requires compensatory mitigation for activities authorized under Section 404 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.04 hectares (0.1 acre) of wetlands or 45.0 linear meters (150 linear feet) of perennial and intermittent streams.

The DWQ may require compensatory mitigation for activities authorized under Section 401 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.40 hectares (one acre) of wetlands and/or 45.0 linear meters (150 linear feet) of perennial streams. A final determination regarding mitigation requirements rests with DCM, with input from the COE and DWQ.

F. Protected Species

Some populations of plants and animals are in the process of decline due either to natural forces or their inability to coexist with humans. Rare and protected species listed for Carteret and Onslow Counties, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

1. Federally Protected Species

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The USFWS lists fourteen federally protected species for Carteret County (Table 2) and for Onslow County (Table 2A). Information pertinent to each species and the possibility of impact due to the proposed project is listed on the following table.

TABLE 2
FEDERALLY PROTECTED SPECIES
FOR CARTERET COUNTY
(MARCH 22, 2001)

Common Name	*Scientific Name*	Status
Shortnose sturgeon	*Acipnser brevirostrum*	E
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Hawksbill turtle	*Eretmochelys imbricata*	E
Eastern cougar	*Felis concolor couguar*	E** #

TABLE 2 FEDERALLY PROTECTED SPECIES FOR CARTERET COUNTY (MARCH 22, 2001)		
Common Name	*Scientific Name*	Status
Kemp's (Atlantic) ridley sea turtle	*Lepidochelys kempii*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Roseate tern	*Sterna dougallii*	E
Manatee	*Trichechus manatus*	E

NOTES:

	Denotes Federally Protected Species for both Carteret and Onslow Counties
*	Denotes obscure record, date this species was last observed in the county is unknown
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 endangered within the foreseeable future throughout all or a significant portion of its range)
T(S/A)	Denotes Threatened due to similarity of appearance (species which are threatened due to similarity of appearance with other rare species and are listed to protect these species)
**	Historic record at NCNHP. Last observed in the county more than 20 years ago.
#	Historic record at USFWS. Last observed in the county more than 50 years ago.

TABLE 2A FEDERALLY PROTECTED SPECIES FOR ONSLOW COUNTY (MARCH 22,2001)		
Common Name	*Scientific Name*	Status
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Golden Sedge	*Carex Lutea*	PE
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Eastern cougar	*Felis concolor couguar*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Cooley's meadowrue	*Thalictrum cooleyi*	E

NOTES:

	Denotes Federally Protected Species for both Carteret and Onslow Counties
*	Denotes obscure record, date this species was last observed in the county is unknown
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 endangered within the foreseeable future throughout all or a significant portion of its range)
T(S/A)	Denotes Threatened due to similarity of appearance (species that are threatened due to similarity of appearance with other rare species and are listed to protect these species)
PE	Proposed Endangered

Species: *Acipnser brevirostrum* (shortnose sturgeon)
Family: Acipenseridae
Date Listed: 3/11/67

The shortnose sturgeon is a small (usually less than three ft [0.9 meters] in length) species of fish that occurs in the lower sections of large rivers and in coastal marine habitats from the St. John River, Canada to the Indian River, Florida. It can be differentiated from the Atlantic sturgeon because of its shorter snout, wider mouth, and the pattern of its preanal shields (the shortnose having one row and the Atlantic having two).

The shortnose sturgeon prefers deep channels with a salinity less than sea water. It feeds on benthic invertebrates and plant material and is most active at night. It is an anadromous species that spawns upstream in the spring and spends most of its life within close proximity of the rivers mouth. The sturgeon inhabits the lower sections of larger rivers and coastal waters along the Atlantic coast. It may spend most of the year in brackish or salt water and move into fresh water only to spawn. At least two entirely freshwater populations have been recorded, in South Carolina and Massachusetts.

BIOLOGICAL CONCLUSION: NO EFFECT

The White Oak River may provide suitable habitat for the shortnose sturgeon. Through written communication on August 16, 2001 with Fritz Rohde of the N.C. Division of Marine Fisheries, it was determined that there are no records of this species occurring in the White Oak River and it is unlikely that the shortnose sturgeon would be present. However, best management practices will insure this project will not affect this species. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of the shortnose sturgeon within one mile (1.6 kilometers) of the project area.

Species: *Alligator mississippiensis* (American alligator)
Family : *Crocodylidae*
Date Listed: 6/4/87

The **American alligator** is a large (1.8 to 3.7 meters / six to 12 feet long) rough-backed reptile with a broad, rounded snout. Its fourth tooth on the lower jaw fits into a notch in the upper jaw. This distinguishes the American alligator from the American crocodile which has its fourth tooth exposed when the jaw is closed.

American alligators are sexually mature at about six or seven years of age. Nesting occurs in late spring or early summer when females produce approximately 35 to 40 eggs. American alligators inhabit fresh to slightly brackish river systems, canals, lakes, ponds, swamps, bayous, and coastal marshes. The American alligator is not biologically endangered or threatened and is not subject to Section 7 consultation.

BIOLOGICAL CONCLUSION: NO EFFECT

This species is listed as threatened due to similarity of appearance to the American crocodile (*Crocodylus acutus*). Habitat is present for the alligator in the project area, but not for the crocodile. The range of the American crocodile currently includes southern portions of the Everglades National Park as well as areas south of there. The American alligator will not be affected by this project.

Species: *Amaranthus pumilus* (seabeach amaranth)
Family : *Amaranthaceae*
Date Listed: 4/7/93

Seabeach amaranth is an annual plant that grows on Atlantic Ocean beaches. The stems are fleshy and pink-red or reddish, with small rounded leaves. The leaves are clustered toward the tip of the stem and have a small notch at the rounded tip. Flowering occurs in July and continues until the death of the plant in late fall.

Seabeach amaranth is found on the upper beach and lower foredune of coastal barrier islands. The species is an effective sand binder, building dunes where it grows.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable beach habitat does not exist in the project area for this species. The NCNHP database shows no recorded occurrences of the seabeach amaranth in the vicinity of the project. The seabeach amaranth will not be affected by this project.

Species: *Caretta caretta* (Loggerhead sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **Loggerhead sea turtle** is characterized by a large head with blunt jaws. The carapace and flippers are a reddish-brown color and the plastron is yellow. Adults grow to an average weight of about 91 kilograms (200 pounds), although some specimens may occasionally reach 1000 pounds. The species feeds on mollusks, crustaceans, fish and other marine animals. The loggerhead is typically found at sea but may enter bays and lagoons. It nests on beaches in late spring and early summer.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat does not exist for this species however it could occasionally be found feeding in the vicinity of the project. If the loggerhead is observed in the project area during construction, activities will cease until the turtle leaves. The Loggerhead sea turtle will not be affected by this project.

Species: *Carex Lutea (Golden Sedge)* **Proposed Endangered**
Family: *Cyperaceae*
Date Listed: 8/16/99

The golden sedge has yellowish green, grass-like leaves and produces stems that may reach three feet (0.9 meter) or more with many flowers. This perennial plant is native to the coastal plain of North Carolina, where it is associated with wet partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps on sites underlain with calcareous (chalky) deposits. Historically, its open habitat was maintained by periodic wildfires.

The golden sedge currently is known only from eight populations in Pender and Onslow counties. Most of the populations are small, and seven are on privately owned lands vulnerable to draining, development, mining, fire suppression, and a variety of other changes in habitat management.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for golden sedge in the form of partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps does not exist within the project area. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of golden sedge within one mile (1.6 kilometers) of the project area. Therefore, this project will not affect this species.

Species: *Charadrius melodus* (piping plover)
Family: *Charadriidae*
Date Listed: 12/11/85

The **piping plover** is a small, stocky shorebird resembling a sandpiper. The plover is pale brownish above and white below. A black band across the forehead over the eye, and a black ring around the base of the neck are distinguishing marks in adults during the summer, but are obscure during the winter.

The piping plover nests on sand beaches, preferring sparsely vegetated areas that are slightly raised in elevation. The species is primarily coastal during the winter, choosing areas with expansive sand or mudflats for feeding that lie in close proximity to a sandy beach for roosting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist in the project area for this species since no tidal flats or sandy beaches are in the area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The piping plover will not be affected by this project.

Species: *Chelonia mydas* (Green sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **green sea turtle** grows to a maximum size of about four feet and a weight of 200 kilograms (440 pounds). It has a heart-shaped shell, small head, and single-clawed flippers. The adult carapace is smooth, keelless, and light to dark brown with dark mottling. The plastron is whitish to light yellow and the head is light brown with yellow markings. Adult green turtles feed mainly on marine algae and grasses in shallow water areas.

Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. Open beaches with a sloping platform and minimal disturbance are required for nesting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist for this species since no beaches are within the project area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Green sea turtle will not be affected by this project.

Species: *Dermochelys coriacea* (leatherback sea turtle)
Family: *Dermochelyidae*

Date Listed: 6/2/70

The **leatherback sea turtle** is the largest of all sea turtles and is easily distinguished by its leathery skin. Adults generally weigh from 290 and 590 kilograms (640 to 1300 pounds). The neck and limbs are thick and feebly retractable. The triangular shaped carapace is covered with a layer of rubbery skin rather than horny shields. The head and neck are black or dark brown with a few white or yellow blotches.

The leatherback sea turtle is typically found at sea. It requires sandy-nesting beaches backed with vegetation and sloped sufficiently so that the crawl to dry sand is not too far. The preferred beaches are in close proximity to deep water and generally rough seas.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no sandy beaches in the project vicinity for nesting and this species is typically found at sea. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The leatherback sea turtle will not be affected by this project.

Species: *Eretmochelys imbricata* (hawksbill turtle)
Family: *Cheloniidae*
Date Listed: 6/2/70

The **hawksbill turtle** weighs between 43 and 75 kilograms (95 and 165 pounds) and measures approximately 76 to 89 centimeters (30 to 35 inches) in length. The shell is oval and usually brown with scattered areas of yellow, orange, or reddish-brown. The flippers have two claws and barnacles are often attached to the carapace and plastron.

The hawksbill turtle inhabits shallow coastal waters and feeds on mollusks, sea urchins, barnacles, fish, sponges, and algae. It usually nests on islands in tropical and subtropical seas. Continental United States nesting is limited to Florida, however this species can be found along the coastline from Massachusetts southward.

BIOLOGICAL CONCLUSION: NO EFFECT

The project vicinity does not provide nesting habitat for this species and it is unlikely that it would be found feeding there. In the event that a sea turtle is spotted during construction, activities will be halted until it is out of the project area. The hawksbill turtle will not be affected by this project.

Species: *Felis concolor couguar* (Eastern cougar)
Family : *Felidae*
Date Listed: 6/4/73

Cougars are tawny colored with the exception of the muzzle, the backs of the ears, and the tip of the tail, which are black. In North Carolina, the cougar is thought to occur in only a few scattered areas, possibly including coastal swamps and the southern Appalachian Mountains. The eastern cougar is found in large remote wilderness areas where there is an abundance of their primary food source, whitetail deer. A cougar will usually occupy a range of 40 kilometers (25 miles), and is usually most active at night.

BIOLOGICAL CONCLUSION: NO EFFECT

The project is not adjacent to an undisturbed area that could provide food and shelter for the cougar. The NCNHP database reports no recorded occurrences of this species within the vicinity of the project. The Eastern cougar will not be affected by this project.

Species: *Lepidochelys kempii* (Kemp's (Atlantic) ridley)
Family: *Cheloniidae*
Date Listed: 12/2/70

The **Kemp's ridley sea turtle** has a triangular-shaped head and a hooked beak with crushing surfaces. The shell is heart-shaped and gray to olive green. This species ranges in length from about 56 to 71 centimeters (22 to 28 inches) and weighs between 35 and 42 kilograms (77 and 93 pounds).

Adult turtles are restricted to the Gulf of Mexico, however immatures have been seen along the Atlantic coast as far north as Massachusetts. The Kemp's ridley feeds primarily on crabs, but also eats shrimp, snails, sea urchins and fish.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat for this species does not exist in the vicinity of the project. In the event that immatures wander into the project area, construction activities will be halted until they have left. The NCNHP reports no sitings of this species within the project vicinity. The Kemp's ridley will not be affected by this project.

Species: *Lysimachia asperulaefolia* (rough-leaved loosestrife)
Family : *Primulaceae*
Date Listed: 6/12/87

The **rough-leaved loosestrife** is a rhizomatous perennial herb with whorls of three to four leaves encircling a slender stem. This plant reaches 0.3 to 0.6 meters (one to two feet) in height. Showy yellow flowers are produced from mid-May through June and fruits are present from July through October.

The rough-leaved loosestrife is endemic to the coastal plain and sandhills of North Carolina and South Carolina. It occurs in open ecotones between longleaf pine uplands and pond pine pocosin, on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found on deep peat in the low shrub community of large Carolina bays.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no areas of longleaf pines or adjacent pond pine pocosins. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The rough-leaved loosestrife will not be affected by this project.

Species: *Picoides borealis* (red-cockaded woodpecker)
Family : *Picidae*
Date Listed: 10/13/70

The **red-cockaded woodpecker** is a small 18 to 20 centimeters (seven to eight inches) long bird with black and white horizontal stripes on its back, a black cap and a large white cheek patch. The male has a small red spot or "cockade" behind the eye.

The preferred nesting habitat of the red-cockaded woodpecker is open stands of pine with a minimum age of 60 to 120 years. Longleaf pine (Pinus palustris) is preferred for nesting; however other mature pines such as loblolly (Pinus taeda) may be utilized. Typical nesting areas, or territories, are pine stands of approximately 81 hectares (200 acres), however nesting has been reported in stands as small as 24 hectares (60 acres). Preferred foraging habitat is pine and pine-hardwood stands of 80 to 125 acres with a minimum age of 30 years and a minimum diameter of 25 centimeters (ten inches). The red-cockaded woodpecker utilizes these areas to forage for food sources such as ants, beetles, wood-boring insects, caterpillars, and seasonal wild fruit.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no pine stands in the project area to support nesting or foraging activities for this species. The NCNHP database reports no recorded occurrences of the woodpecker in the vicinity of the project. The red-cockaded woodpecker will not be affected by this project.

Species: *Sterna dougallii* (roseate tern)
Family: *Laridae*
Date Listed: 11/2/87

The **roseate tern** is approximately 40 centimeters (16 inches) in length, with light gray wings and a black cap. The back is gray and the rest of the body is white, with a rosy blush on the chest and belly during the breeding season. The tail is deeply forked and the bill is black.

This species breeds from Florida through the West Indies and islands off Central America and northern South America. Habitat includes small offshore islands, rocks, and cays. These birds are often seen nesting on open beaches or near the shoreline on rocks.

BIOLOGICAL CONCLUSION: NO EFFECT

Although a breeding pair was noted in Carteret County in the 1970's, this species is mainly a rare coastal transient. Breeding habitat is not located within the project area and the NCNHP reports no recorded occurrences of the tern within the project vicinity. The roseate tern will not be affected by this project.

Species: *Thalictrum cooleyi* (Cooley's meadowrue)
Family : *Ranunculaceae*
Date Listed: 2/7/89

Cooley's meadowrue is a perennial herb that grows from an underground rhizome. Under ideal conditions, in full sun, the stems are erect, however in the shade they are lax and may trail along the ground. The leaflets are green and the leaves are usually in groups of three. Cooley's meadowrue flowers in mid- to late June.

Cooley's meadowrue is found in moist to wet bogs and savannahs. It grows along fireplow lines, roadside ditches, woodland clearings, and power line right-of-ways, requiring some type of disturbance to maintain its open habitat.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no wet bogs or wet pine savannahs and a search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Cooley's meadowrue will not be affected by this project.

Species: *Trichechus manatus* (manatee)
Family: *Trichechidae*
Date Listed: 6/2/70

The **West Indian manatee** is a large aquatic mammal that reaches a length of approximately three meters (ten feet) and a weight of about 454 kilograms (1,000 pounds). The forelimbs are paddlelike and the tail is oval and horizontally flattened. The body is gray to brown and hair is mostly absent except for stiff whiskers on the upper lip.

This species inhabits coastal waters, estuaries, and freshwater streams bordering tropical and subtropical seas, but may enter waters near North Carolina in summer months. The manatee is herbivorous and feeds on aquatic vegetation, preferring grasses.

BIOLOGICAL CONCLUSION: NO EFFECT

Although it is possible that this species could migrate into the project area during summer months, occurrences would be rare. The NCNHP database reports no recorded occurrence of the manatee in the vicinity of the project, however if one is sighted, construction activities will be halted until it has left the area. The manatee will not be affected by this project.

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 of Endangered. Species designated as FSC are defined as taxa that may or may not be listed in the future. These species were formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing. Some of these species are listed 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. Table 3 provides the Federal Species of Concern in Carteret County and their state classifications, and Table 3A provides the same information for Onslow County.

TABLE 3
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN CARTERET COUNTY
(March 22, 2001)

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Argos skipper	*Atrytone argos argos*	SR	No
Bogue Banks endemic skipper	*Atrytonopsis spl*	SR	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Savanna campylopus	*Campylopus carolinae*	C	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus**	SR	No
Venus flytrap cutworm moth	*Hemipachnobia subporphyrea subporphyrea*	SR	No
Black rail	*Laterallus jamaicensis*	SR	Yes
Pondspice	*Litsea aestivalis*	C	No
Northern diamondback terrapin	*Malaclemys terrapin terrapin* ♦	SC	Yes
Loose watermilfoil	*Myriophyllum laxum*	T	No
Mimic glass lizard	*Ophisaurus mimicus*	SC	No
Savanna cowbane	*Oxypolis ternata* ♦	NL	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*♦	SR	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna* ■	T	No
Carter's noctuid moth	*Spartiniphaga carterae*	SR	No
Carolina asphodel	*Tofieldia glabra*	C	No
Dune bluecurls	*Trichostema sp. 1*	C	No

NOTES: Denotes FSCs for both Carteret and Onslow Counties
- * Indicates species was last observed in the county more than 20 years ago.
- ♦ Listed by USFWS but not by NCNHP.
- ■ Listed by NCNHP but not by USFWS.
- E Denotes Endangered (species which are afforded protection by state laws).
- T Denotes Threatened (species which are afforded protection by state laws).
- SC Denotes Special Concern (species which are afforded protection by state laws).
- PT Denotes Proposed Threatened (species which are proposed for official listing as threatened).
- C Denotes Candidate (species for which population monitoring and conservation action is recommended).
- SR Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
- NL Not listed.

TABLE 3A
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN ONSLOW COUNTY

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Carolina spleenwort	*Asplenium heteroresiliens*	E	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Hirst's panic grass	*Dichanthelium sp. 1 (= hirstii)*	E	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus*	SR	No
black rail	*Laterallus jamaicensis*	SR	Yes
pondspice	*Litsea aestivalis*	C	No
Boykin's lobelia	*Lobelia boykinii*	C	No
loose watermilfoil	*Myriophyllum laxum*	T	No
mimic glass lizard	*Ophisaurus mimicus*	SC	No
savanna cowbane	*Oxypolis ternata* ♦	NL	No
Carolina grass-of-parnassus	*Parnassia caroliniana*	E	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*	NL	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
awned meadow beauty	*Rhexia aristosa*	T	No
Thorne's beaksedge	*Rhynchospora thornei*	E	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna*	T	No
Carolina asphodel	*Tofieldia glabra*	C	No

NOTES:

♦	Listed by USFWS but not by NCNHP.
E	Denotes Endangered (species which are afforded protection by state laws).
T	Denotes Threatened (species which are afforded protection by state laws).
SC	Denotes Special Concern (species which are afforded protection by state laws).
C	Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR	Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL	Not listed.

A search of the NCNHP database showed no recorded occurrences of any FSC within the project vicinity.

3. Summary of Anticipated Impacts

Habitat is present in the project area for the American alligator; however, this species is listed as threatened by similarity of appearance to a rare species. It is not biologically threatened and it is not subject to a Section 7 consultation. No individuals were observed at the time of the site visit. No habitat is present for any other federally protected species.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historical 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 properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

B. Historic Architecture

A preliminary field survey of the Area of Potential Effects (APE) was conducted on February 18, 1998. All structures within the APE were photographed, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a memorandum dated June 18, 1998, the Deputy State Historic Preservation Officer (SHPO) recommended a survey of the project's APE. A copy of the memorandum is included in the Appendix A.

In a letter dated April 23, 1999, the SHPO concurred with the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the HPO letter is included in the Appendix A.

In a concurrence form dated August 5, 1999, the SHPO concurred with the Federal Highway Administration (FHWA) that the replacement of Bridge No. 49 over the White Oak River will have an adverse effect on the Stella Historic District since the existing bridge will be demolished. The Advisory Council on Historic Preservation filed a Memorandum of Agreement (MOA) between the Federal Highway Administration and the SHPO for mitigating the adverse effects of the bridge replacement project on the historic district. A copy of the MOA is included in the Appendix A.

C. Archaeology

The SHPO, in a memorandum dated June 18, 1998, recommended, "no archeological investigation be conducted in connection with this project". A copy of the SHPO memorandum is included in the Appendix A.

VII. ENVIRONMENTAL EFFECTS

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

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

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

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

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

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

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

No geodetic survey markers will be impacted.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

This project is located in Carteret and Onslow Counties, which have been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be significant.

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, Health and Natural Resources, Division of Environmental Management, Groundwater Section and the North

Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area. There are no underground storage tanks located in the project area.

Onslow County and Carteret County are participants in the National Flood Insurance Program. This site on White Oak River is included in an approximate Federal Emergency Management study. Attached is a copy of the Flood Insurance Rate Map, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project (Figure 5, Appendix B).

Adverse impacts to the historic district are anticipated, but will be compensated through mitigation (see Appendix A).

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

VIII. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials and residents to involve them in the project development. Two Local Officials Meetings and two Citizens Informational Workshops were held at the Midway United Methodist Church in Stella on December 14, 1998, and September 14, 1999, where preliminary alternatives were reviewed and discussed with local officials and concerned citizens.

Alternate D was not presented at the first local officials meeting and citizens workshop but was discussed. The local official preferred Alternate D. Alternate D was presented (required removing the warehouse) at the second local officials meeting and workshop. Approximately 30 people attended the second Citizen's Informational Workshop and 11 comment sheets were received at the workshop, most of which are in favor of replacing the bridge. (Alternate A-3, Alternate B-0, Alternate D-5, Undecided-3)

Citizens and local officials concerns included the necessity to maintain traffic onsite, maintaining the existing boat ramp, improving safety for bridge approaches and minimizing affects to the post office.

Alternate D was revised so the proposed design would not remove the warehouse or post office in response to the comments received at the workshop. The proposed new bridge will be constructed as close to the existing bridge as practicable to avoid and minimize impacts to the proposed historic district. The proposed design speed of 70 km/h (45 mph) will minimize impacts to the post office and warehouse, and also allows for the existing clearance over the White Oak River to be maintained. For approach roadway tie-ins, traffic will be temporarily detoured off site.

IX. AGENCY COORDINATION

March 18, 1999 a meeting was held with USACE and NCWRC to review Alternatives A, B, C and D. As a result it was determined a detailed Bridge Survey Report should be prepared to eliminate concerns that Alternate A, B and C provided adequate flood protection and to present alternates at an interagency review meeting.

On October 28, 1999, an interagency review meeting was held at NCDOT's Transportation Building Room 467. Agencies in attendance were DCM, USFWS, NCDWQ, FHWA, NCWRC,

USACE, and NCDMF. Results of the Bridge Survey Report recommended raising the grade 2.5 feet to reduce flooding of the roadway for Alternate A and B. It was also decided that the ox bow area along the approach would require stabilization for Alternates A and B. FHWA suggested realigning Alternate D to avoid impacting the warehouse.

On February 20, 2000, a Merger Team Meeting was held on site. Representatives from USFWS, FHWA, NCWRC, USACE, NMF, DCM and NCDOT were present. As a result of the field meeting the following was concluded:

- Based on the roadway history and visual observation of the site it is not anticipated that the river will migrate at the ox bow within the life of the proposed new bridge.
- NCDOT-Geotechnical Unit does not recommend Alternate A or Alternate B due to differential settling where the grade will be raised on the Onslow County approach.
- It was recommended that an alternate with minimum approach work be designed (Alternate E).
- Alternates needed updated cost with barge construction over the river and top-down construction over the marshland.

On June 9, 2000 a Merger Team Meeting was held at NCDOT's Century Center. As a result of this meeting, forms for Concurrence Point No. 1, 2, and 3 were signed. It was the consensus of all the agencies present that Alternate D is the preferred alternate with top down construction (Appendix C).

On May 17, 2001 a Merger Team Meeting was held at NCDOT's Transportation Building Board of Transportation Conference Room to revise Concurrence Point 3 to show Alternate D as preferred and to present Concurrence Point 4-Avoidance and Minimization.

Alternate D revision included a temporary work bridge for the construction of the proposed bridge. This was recommended by NCDOT since the bridge will be built with prestressed girders due to the vertical and horizontal alignment. Building with temporary bridges will minimize wetland impacts and lessen construction duration.

Concurrence Point 4 – Avoidance and Minimization was discussed. For avoidance and minimization, the following measures will be accomplished:

1. Anticipated impacts to wetlands 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 131.7-meter (432-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office and to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

All team members present except DCM signed Concurrence Points 3 and 4 at the meeting. SHPO, DCM and NMF concurred and signed after the meeting (Appendix C).

X. SECTION 4(F) EVALUATION

Part 23 CFR 771.135 Section 4(f) (49 U.S.C. 303) states that "The Administrator may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

(i) There is no feasible and prudent alternative to the use of land from the property; and
(ii) The action includes all possible planning to minimize harm to the property resulting from such use."

In accordance with the criteria set forth in the Federal Register December 23, 1986, the following Programmatic Section 4(f) for Minor Involvements with Historic Sites evaluation was prepared:

Stella retains a significant collection of buildings dating from the late nineteenth and early twentieth centuries, including a general store/post office, warehouse, and several dwellings and outbuildings. Bridge No. 49 on SR 1101 and SR 1442 over the White Oak River was built in 1950. The approximate 131.7-meter (432-foot) long, multiple-span structure contains twenty-three timber spans and one steel-deck girder main span.

In a letter dated April 23, 1999, the State Historic Preservation Officer concurred with FHWA the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District (see Figure 2A and Figure 6) is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the SHPO letter is included in the Appendix A.

Since this project necessitates the use of a minor amount of land from a historic site, which is adjacent to the existing roadway, and since the project meets the criteria set forth in the Federal Register (December 23, 1986), a programmatic Section 4(f) evaluation satisfies the requirements of Section 4(f).

The following alternatives, which avoid use of the historic site, have been fully evaluated: (1) do nothing; (2) improve the highway without using the adjacent historic site; (3) build the replacement structure on new location without using the historic site.

No Build Alternative: The No Build or "Do-Nothing" alternative is not considered feasible and prudent because the bridge will eventually deteriorate beyond repair and necessitate closure of the bridge. This is not prudent due to the traffic service provided by SR 1101 and SR 1442.

Rehabilitation of the Existing Bridge: This alternative is not considered to be feasible and prudent due to the age and deteriorated condition of the existing bridge. In addition, the existing bridge deck is only 7.2 meters (24 feet) wide and is functionally obsolete. The NCDOT Bridge Policy requires a minimum clear roadway width of 8.6 meters (28 feet) based on the traffic volumes and design speed.

Replacement of Bridge No. 49 on New Location (Figure 2A): Moving the bridge location to a point either upstream or downstream of the current location to avoid impacts to the proposed historic district would negatively impact the district by disrupting a major element of the setting for the district and will result in substantial disruption to the environment and local businesses. An alternative on new location will not provide the same transportation access and service as the current location. Therefore, this alternative is not considered feasible or prudent.

These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the historic site has been performed as an integral part of this project. The following mitigation measures will be carried out for the replacement of Bridge No. 49:

1. A design exception to reduce the design speed to 70 km/h (45 mph) from 90 km/h (55 mph) to minimize impacts to the 4(f) property will be processed.
2. The proposed bridge will be within 3 meters (10 feet) of the existing bridge and a temporary shoring will be required during construction to maintain traffic and to minimize impacts to the 4(f) property.
3. The approved Memorandum of Agreement (MOA):

    a. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

    b. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right of Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

    c. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

    d. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

i. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or
ii. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO), whose correspondence is included in Appendix A. The SHPO has concurred that this project, as proposed, has an adverse effect, because the bridge will be replaced with regard to the historic district. Approval of the Programmatic Section 4(f) evaluation by the FHWA Division of Administrator is included in this document.

The owners of the general store/post office and warehouse have concurred with Alternate D as the preferred alternative and all possible planning and coordination to minimize impact to the Historic District were incorporated into this project. The approved Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvement with Historic Sites is included in Appendix A.

APPENDIX A

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

AND

MEMORANDUM OF APPROVAL

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4(f) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS WITH MINOR INVOLVEMENTS WITH HISTORIC SITES

F. A. Project **BRZ-1101(5)**

State Project **8.2160801**

T. I. P. No. **B-2938**

DESCRIPTION:

Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River in Carteret/Onslow Counties in North Carolina. The Proposed Bridge will span the White Oak River and brackish marsh in Onslow County. The bridge, as well as several buildings located on the east approach, comprise the Stella Historic District. See Figure 2A and 6 in Appendix B.

		YES	NO
1.	Is the proposed project designed to improve the operational characteristics, safety, and/or physical condition of the existing highway facility on essentially the same alignment?	X	☐
2.	Is the project on new location?	☐	X
3.	Is the historic site adjacent to the existing highway?	X	☐
4.	Does the project require the removal or alteration of historic buildings, structures, or objects?	☒	___
5.	Does the project disturb or remove archaeological resources which are important to preserve in place rather than to recover for archaeological research?	☐	X
6.	a. Is the impact on the Section 4(f) site considered minor (i.e. no effect, no adverse effect)?	___	☒
	b. If the project is determined to have "no adverse effect" on the historic site, does the Advisory Council on Historic Preservation object to the determination of "no adverse effect"?	☐	X
7.	Has the SHPO agreed, in writing, with the assessment of impacts and the proposed mitigation?	X	☐

☐

8. Does the project require the preparation of an EIS? X

ALTERNATIVES CONSIDERED AND FOUND NOT TO BE FEASIBLE AND PRUDENT

The following alternatives were evaluated and found not to be feasible and prudent:

		YES	NO
1.	Do nothing		
	Does the "do nothing" alternative:		
	(a) correct capacity deficiencies?	☐	X
or	(b) correct existing safety hazards?	☐	X
or	(c) correct deteriorated conditions?	☐	X
and	(d) create a cost or impact of extraordinary measure	☐	X
2.	Improve the highway without using the adjacent historic site.		
	(a) Have minor alignment shifts, changes in standards, use of retaining walls, etc., or traffic management measures been evaluated?	X	☐

(b) The items in 2(a) would result in:
(circle, as appropriate)

	(i)	substantial adverse environmental impacts
or	(ii)	substantial increased costs
or	(iii)	unique engineering, transportation, maintenance, or safety problems
or	(iv)	substantial social, environmental, or economic impacts
or	(v)	a project which does not meet the need
or	(vi)	impacts, costs, or problems which are of extraordinary magnitude

		Yes	No
3.	Build an improved facility on new location without using the historic site.	X	☐

(a) An alternate on new location would result in: (circle, as appropriate)

(i) a project which does not solve the existing problems

or (ii) substantial social, environmental, or economic impacts

or (iii) a substantial increase in project cost or engineering difficulties

and (iv) such impacts, costs, or difficulties of truly unusual or unique or extraordinary magnitude

MINIMIZATION OF HARM

		Yes	No
1.	The project includes all possible planning to minimize harm necessary to preserve the historic integrity of the site.	X	☐
2.	Measures to minimize harm have been agreed to, in accordance with 36 CFR Part 800, by the FHWA, the SHPO, and as appropriate, the ACHP.	X	☐

3. Specific measures to minimize harm are described as follows:

- The "Two-bar metal rail with concrete parapet" will be utilized on the proposed structure as mitigation for impacts.
- Design exception has been approved to reduce the design speed to 70 km/h (45 mph) to minimize impacts to the post office/ general store and warehouse.
- A Design Exception for the horizontal clearance has been approved to maintain the existing canopy attached to the post office and to minimize impacts to the proposed historic district.
- Reduced spans and girder depth in the structure design will be incorporated to maintain clearance over the White Oak River and minimize impacts to the historic district.
- A Memorandum of Agreement was approved and attached to the Categorical Exclusion.

Note: Any response in a box requires additional information prior to approval. Consult Nationwide 4(f) evaluation.

COORDINATION

The proposed project has been coordinated with the following (attach correspondence):

a. State Historic Preservation Officer	X
b. Advisory Council on Historic Preservation	X
c. Property owner	X
d. Local/State/Federal Agencies	X
e. US Coast Guard (for bridges requiring bridge permits)	X

SUMMARY AND APPROVAL

The project meets all criteria included in the programmatic 4(f) evaluation approved on December 23, 1986.

All required alternatives have been evaluated and the findings made are clearly applicable to this project. There are no feasible and prudent alternatives to the use of the historic site.

The project includes all possible planning to minimize harm, and the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed with local and state agencies.

Approved:

10/8/2001 _____
Date for Manager, Project Development and Environmental Analysis Branch, NCDOT

10/15/2001 _____
Date for Division Administrator, FHWA

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA HISTORIC PRESERVATION OFFICER
FOR
THE REPLACEMENT OF BRIDGE NO. 49
ON SR 1101 OVER WHITE OAK RIVER,
CARTERET/ONSLOW COUNTIES, NORTH CAROLINA

WHEREAS, the Federal Highway Administration (FHWA) has determined that the replacement of Bridge No. 49 on SR 1101 over the White Oak River, Carteret/Onslow Counties, North Carolina (the undertaking) will have an effect upon the Stella Historic District, a community determined eligible for listing in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT), Nido L. Hamilton, and Edward E. and Judith M. Grafton participated in the consultation and have been invited to concur in this Memorandum of Agreement:

NOW, THEREFORE, FHWA and the North Carolina SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take in to account the effect of the undertaking on the historic properties.

STIPULATIONS

FHWA will ensure that the following measures are carried out:

I. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with a Historic Structures and Landscape Recordation Plan {Appendix A}. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

II. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right-of-Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

III. Future Widening of Shoulders or Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by division and district engineers.

IV. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

A. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

B. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this agreement that are not the subject of the dispute will remain unchanged.

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Advisory Council on Historic Preservation, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the replacement of Bridge No. 49 on SR 1101 over the White Oak River and its effects on the Stella Historic District, and that FHWA has taken into account the effects of the undertaking on the historic property.

AGREE:

John C. Wadsworth 2/20/01
FEDERAL HIGHWAY ADMINISTRATION DATE

Jeffrey Crow 4/2/01
NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER DATE

CONCUR:

Gail Grimmer 1/29/01
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DATE

Louise P Hamilton 02/20/01
Louise P. Hamilton (Owner of warehouse) DATE

Edward E. Grafton Judith K Grafton 2-26-01
Edward E. & Judith M. Grafton (Owners of general store/post office) DATE

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION DATE

APPENDIX A

Historic Structures and Landscape Recordation Plan
For the Replacement of Bridge No. 49 on SR 1101
Over the White Oak River
Carteret and Onslow Counties, North Carolina
TIP No. B-2938, State Project No. 8.2160801
Federal Aid No. BRZ-1101(5)

Landscape

Site plan sketch of the existing conditions of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse in Stella.

Photographic Requirements:

Selected photographic views of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse as a whole, and views of the structures and their settings, including:

- Overall views of the structures (elevations and oblique views)
- Overall views of the project area, showing the relationship of the structures to their settings

Photographic Format

- Color slides (all views)
- 35 mm or larger black and white negatives (all views)
- Black and white contact sheet (all views)
- All processing to be done to archival standards
- All photographs and negatives to be labeled according to Division of Archives and History standards

Copies and Curation

One (1) set of all photographic documentation will be deposited with the North Carolina Division of Archives and History/State Historic Preservation Office to be made a permanent part of the statewide survey and iconographic collection.

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No.49 on SR 1101 over White Oak River

On August 5, 1999, representatives of the

☒ North Carolina Department of Transportation (NCDOT)
☐ Federal Highway Administration (FHWA)
☒ North Carolina State Historic Preservation Office (SHPO)

reviewed the subject project and agreed

☐ there are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.

☐ there are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.

☐ there is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.

☒ there is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Mary Pope Furr — Aug. 5, 1999
Representative, NCDOT — Date

Mary C. Shelton — 8/10/99
FHWA, for the Division Administrator, or other Federal Agency — Date

FOR

Lepaul Allen — Aug. 5 1999
Representative, SHPO — Date

David Brook Deputy — 8/17/99
State Historic Preservation Officer — Date

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Stella Historic District (DE) - adverse effect

Reason(s) why the effect is not adverse (if applicable).

Initialed: NCDOT MPt FHWA RCS SHPO DVB

North Carolina Department of Cultural Resources

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

Division of Archives and Histo
Jeffrey J. Crow, Direct

April 23, 1999

Roy C. Shelton
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Replacement of Bridge 49 over White Oak River, Carteret-Onslow Counties, Federal-Aid Project BRZ-1101(5), State No. 8.2160801, B-2938, ER 99-8587

Dear Mr. Shelton:

Thank you for your letter of March 24, 1999, transmitting the historic architectural resources report by Mattson, Alexander & Associates, Inc., concerning the above project.

We concur that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture.

Further, we concur with the district's boundaries, except for the western edge that we believe should encompass Bridge 49 as a contributing element to the district. While Bridge 49 lacks one year of being fifty years old, it appears to be compatible with the rural character of the district as a whole and to reinforce the district's relationship to the White Oak River. Bridge 49 also appears to be rather unique in design and length for a timber bridge.

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.

Sincerely,

David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: William D. Gilmore
Barbara Church
Mattson, Alexander & Associates

North Carolina Department of Cultural Resources

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

Division of Archives and History
Jeffrey J. Crow, Director

June 18, 1998

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 XVII, Bridge 49 on SR 1101/1442 over White Oak River, Carteret and Onslow Counties, B-2938, ER 98-9258

Thank you for your memorandum of June 5, 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. However, since a comprehensive survey of Carteret County has never been conducted, there may be structures of which we are unaware within the planning area. Therefore, we recommend that an architectural historian with the North Carolina Department of Transportation survey the project's area of potential effect and report the findings to us.

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
T. Padgett

Hagl'1

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

August 7, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

As required by 36 CFR 800.6(a)(1) of the 1999 revisions to 36 CFR Part 800, this is to provide notice to the Advisory Council that Bridge No. 49 will be removed and replaced by the subject Federal-aid bridge replacement project. After consultation with the North Carolina State Historic Preservation Officer, it was determined the subject project will have an adverse effect on the Stella Historic District, a community eligible for listing in the National Register of Historic Places. Enclosed is one copy of the documentation specified in Section 800.11(e) and the North Carolina Department of Transportation's transmittal letter dated July 24, 2000. Your review pursuant to 36 CFR Part 800.6(a)(1) is requested.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

Kaye Shelton

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

September 18, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

Your letter, dated August 22, 2000, on the subject project advised that the background information submitted with the notification of adverse effect did not meet the requirements of 36 CFR 800.11(e) and requested copies or summaries of any views provided by the public. Enclosed is a copy of all public comments received on this project as a part of our public involvement process.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

John C. Wadsworth

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

OCT 25 2000

Mr. Nicholas L. Graf, P.E.
Division Administrator
Federal Highway Administration
310 New Bern Avenue
Raleigh, NC 27601

BRZ-1101(5)

REF: Proposed Replacement of Bridge No. 49 on SR 1101 over White Oak River
Carteret and Onslow Counties, North Carolina

Dear Mr. Graf:

The Council recently received the additional information in support of your notification regarding the adverse effects of the proposed undertaking on properties listed on and eligible for listing on the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800) does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed.

Pursuant to 36 CFR 800.6(b)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the North Carolina State Historic Preservation Officer (SHPO), and related documentation at the conclusion of the consultation process. The filing of this MOA with the Council is required in order for the Federal Highway Administration to complete its compliance responsibilities under Section 106 of the National Historic Preservation Act.

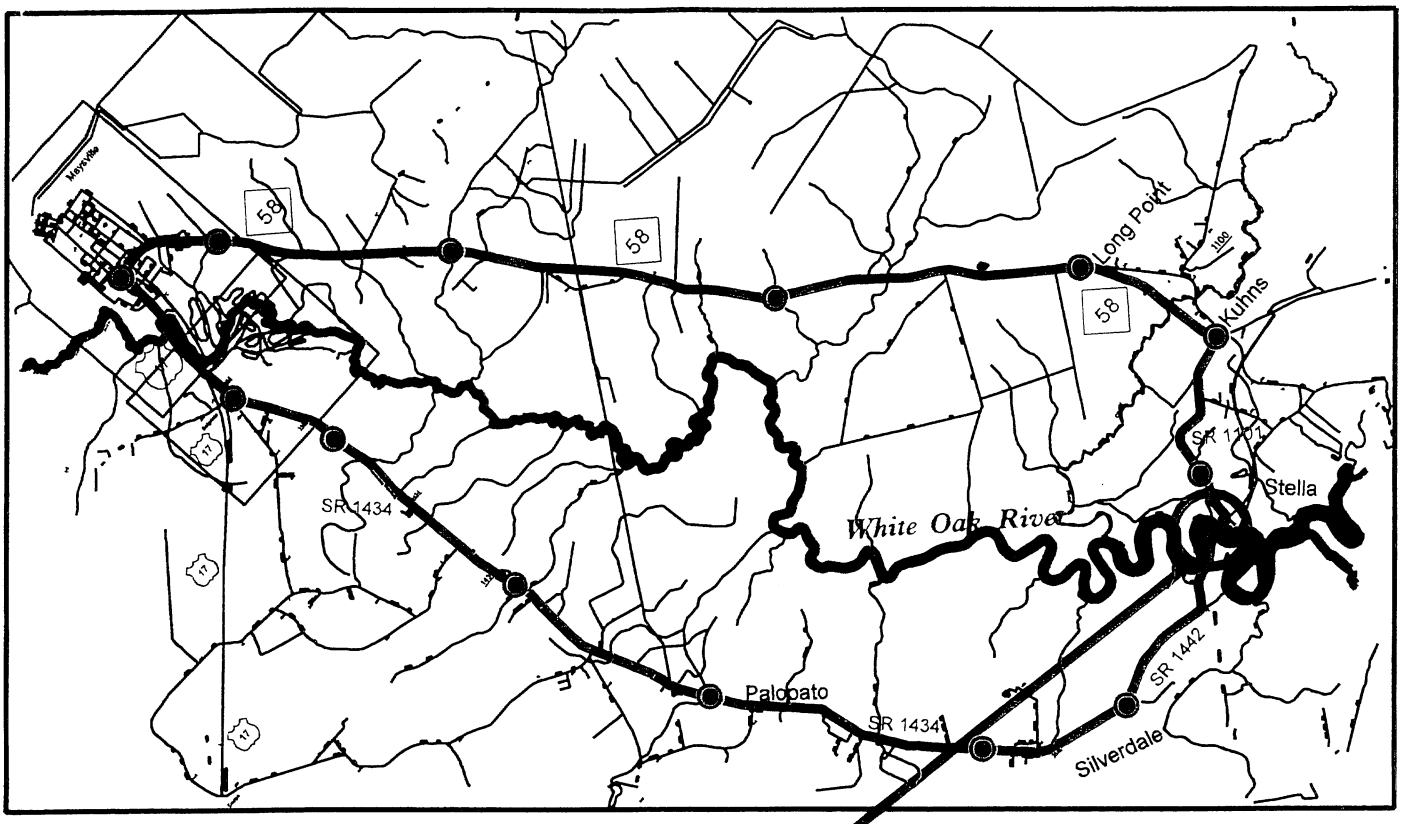
Should you have any questions or require further assistance, please contact us at 202-606-8505.

Sincerely,

Don L. Klima
Director
Office of Planning and Review

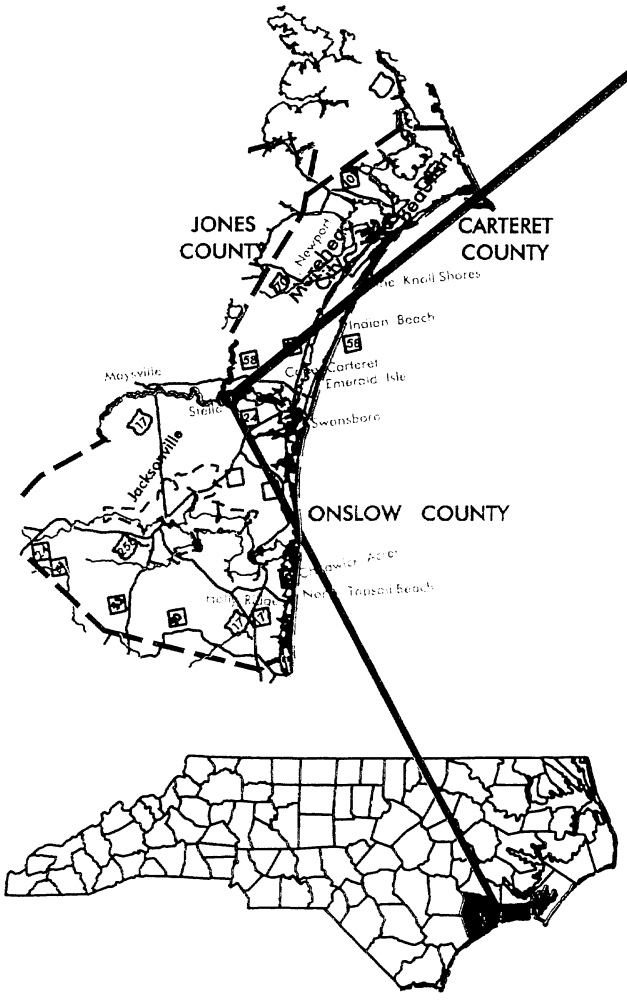
APPENDIX B

FIGURES



N

S



LEGEND

Studied Detour Route

1.5 1 0.5 0 1 2 3 4 5 6 Kilometers

1 0 1 2 3 4 Miles

SCALE

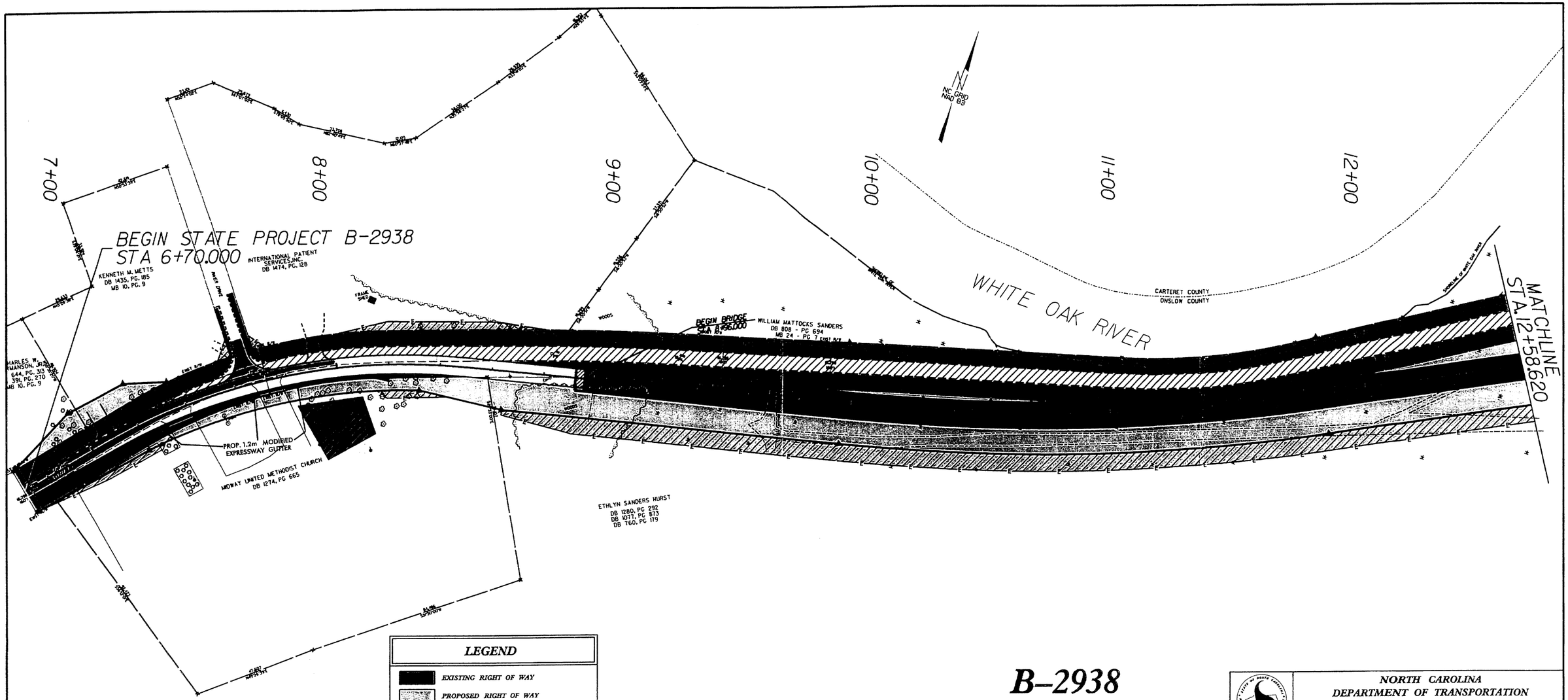
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP No. B-2938

FIGURE 1



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B–2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

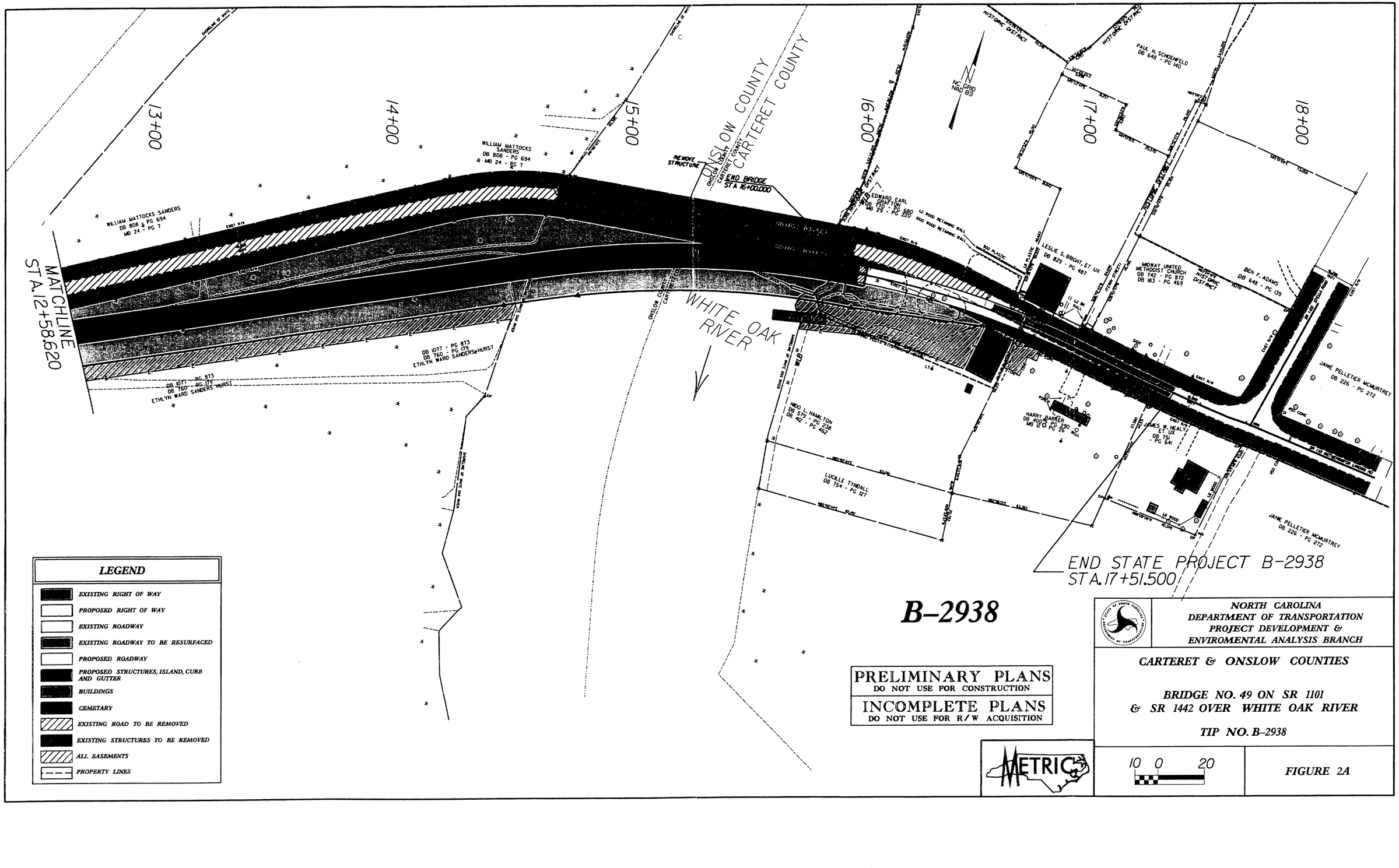
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B–2938

10 0 20

FIGURE 2



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B-2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

CARTERET & ONSLOW COUNTIES

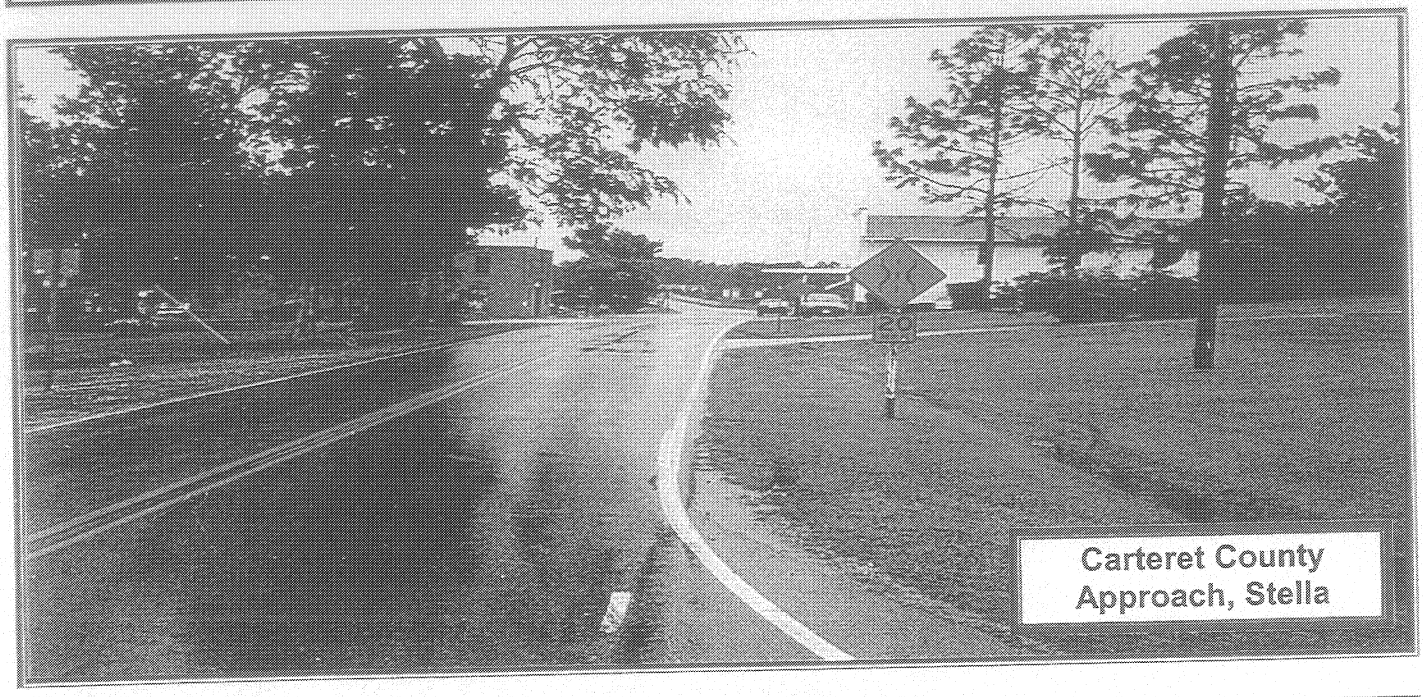
BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B-2938

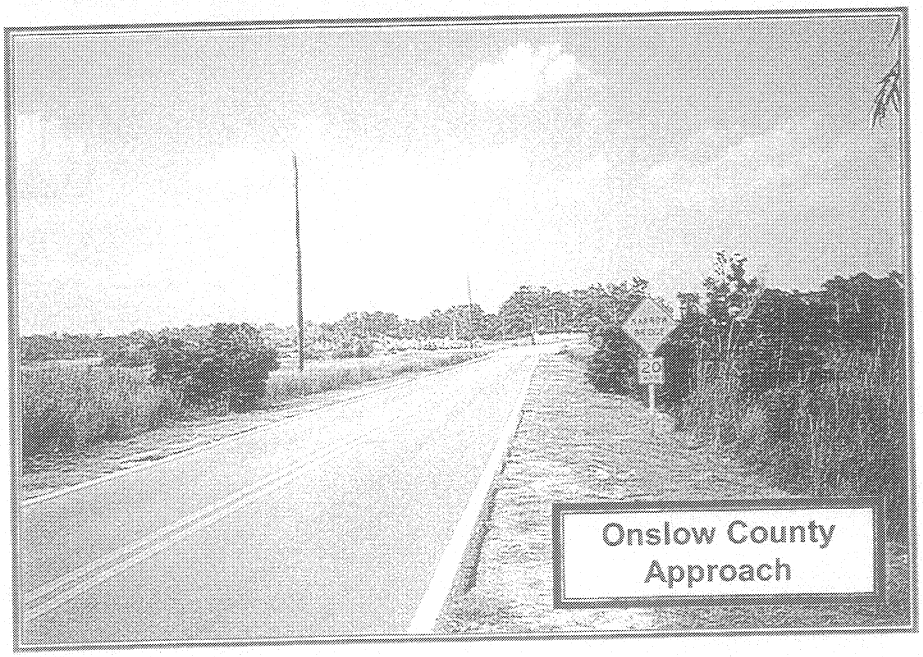
10 0 20

FIGURE 2A

Bridge No. 49



Carteret County
Approach, Stella

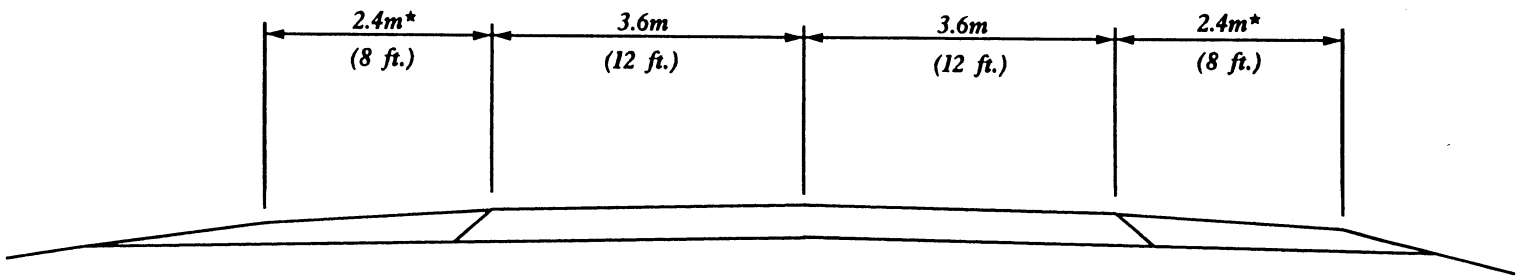


Onslow County
Approach

B-2938
Replacement of Bridge No. 49 on SR 1422 Over White Oak River Carteret and Onslow Counties

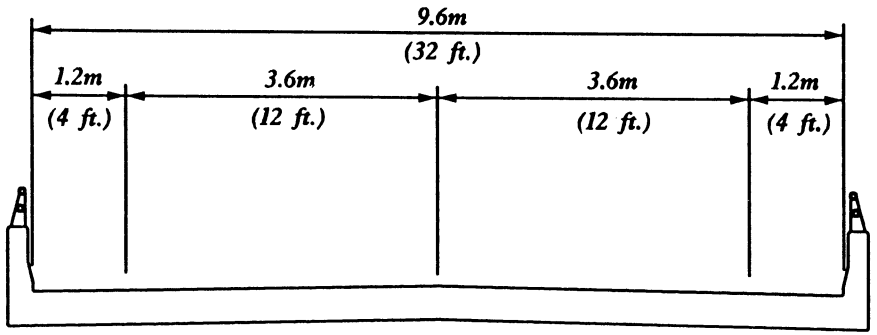
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Figure 3



TYPICAL ROADWAY APPROACH SECTION
(PROPOSED)

* ADD 1.0m (3 ft.) WHERE GUARDRAIL IS WARRANTED



TYPICAL SECTION ON STRUCTURE
(PROPOSED)

TRAFFIC DATA

ADT 2001	1,600
ADT 2002	1,600
ADT 2025	2,500
DUAL	2%
TTST	1%

FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR

DESIGNATED BICYCLE ROUTE: JACKSONVILLE: CITY TO THE SEA

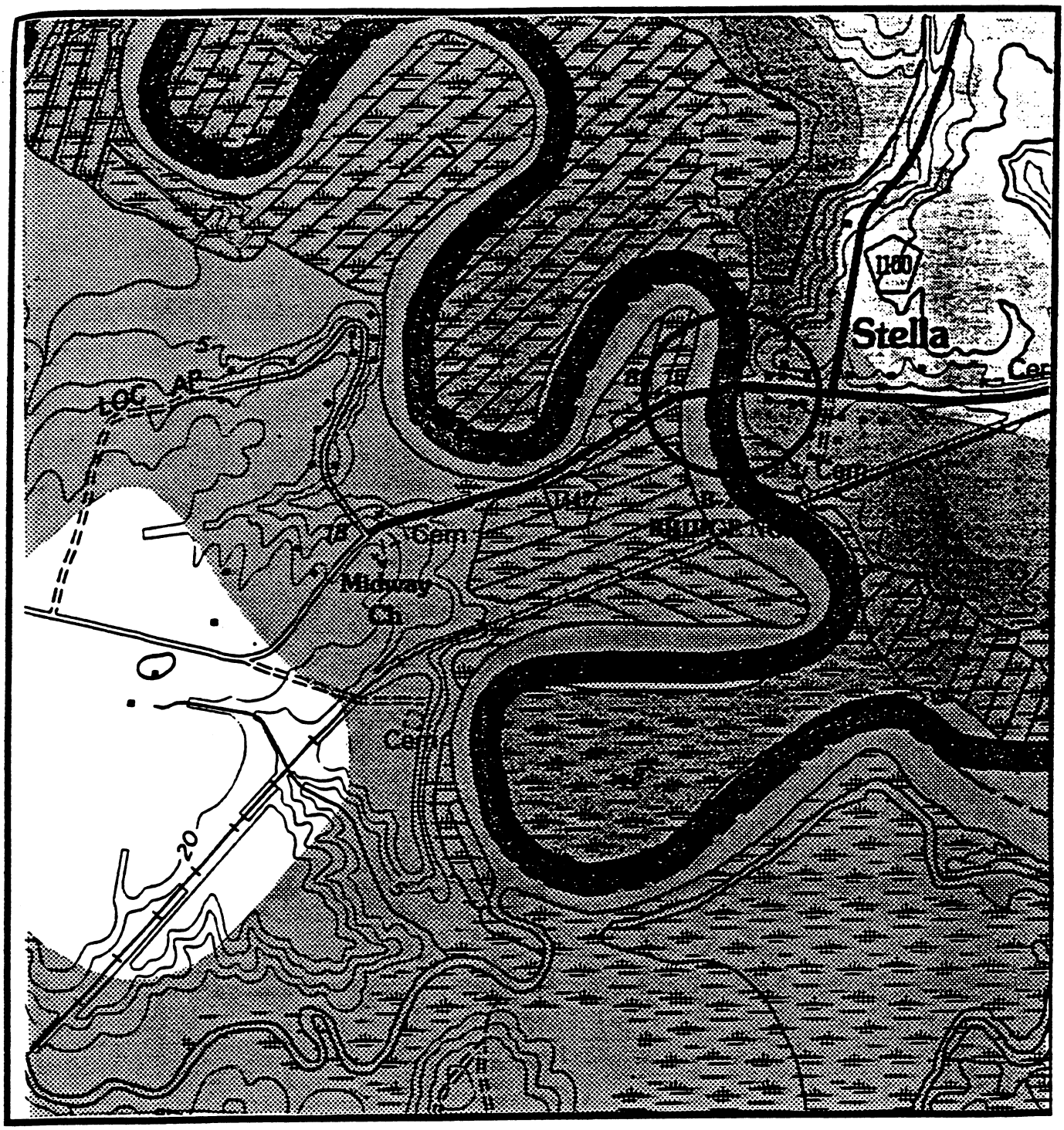
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP B-2938

FIGURE 4



APPROXIMATE FEMA FLOOD STUDY
100 YEAR FLOOD PLAIN
SCALE 1" = 1000 FEET

0 1000 2000 FEET

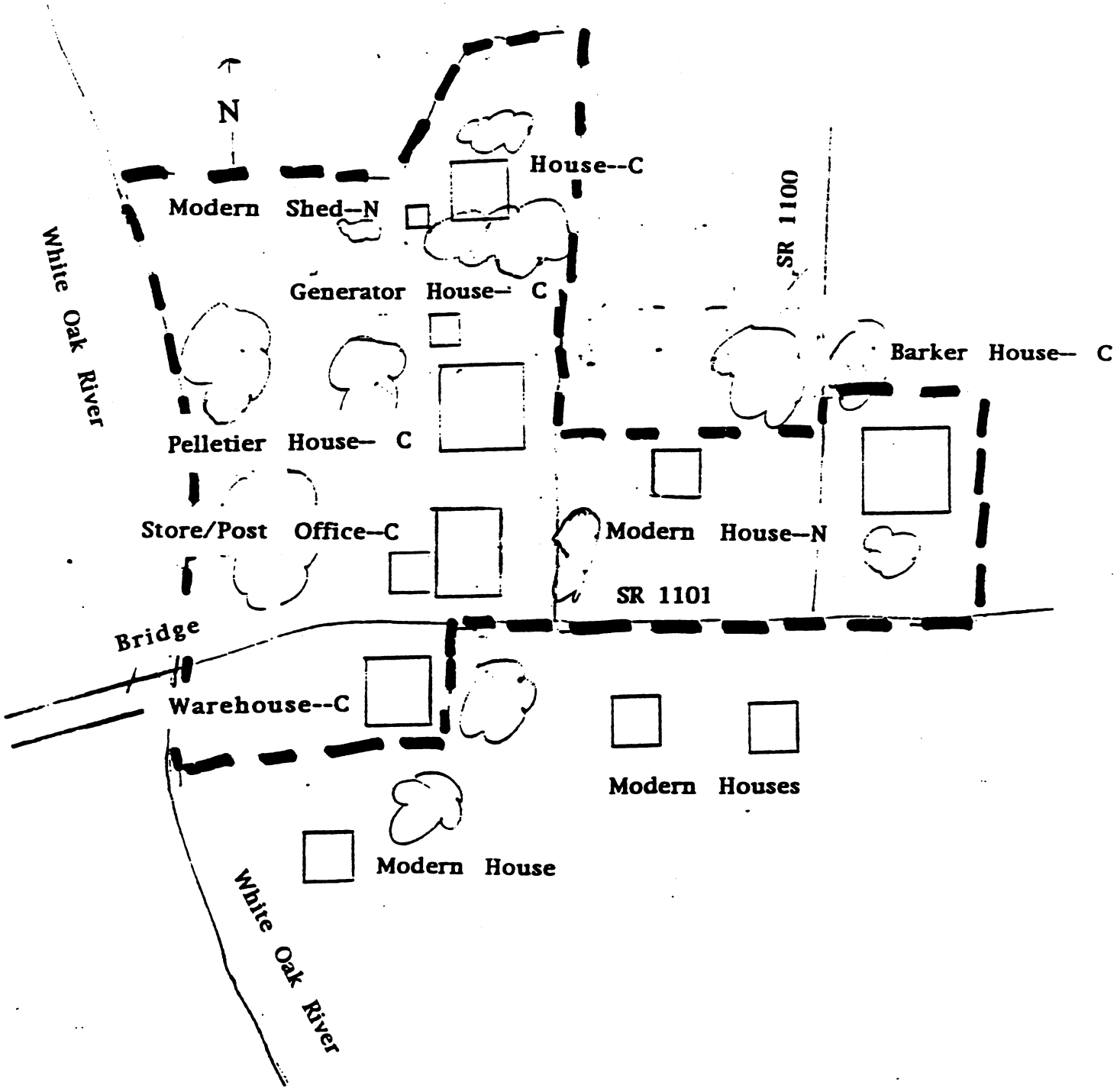
FIGURE 5

FIGURE 6

Stella Historic District
Site Plan

(not to scale)

C--Contributing Resource
N--Non-Contributing Resource



APPENDIX C

NEPA/404 MERGER TEAM CONCURRENCE POINTS 1, 2, 3, AND 4

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 1 – Purpose and Need

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Purpose and Need of the Proposed Project:

To replace a functionally obsolete and structurally deficient structure with a safer and improved structure and approaches. To do-nothing will eventually necessitate removal of the bridge and this is not desirable due to the traffic service provided by SR 1101/SR 1442.

The Project Team has concurred on this date of June 8, 2000 with the purpose and need for the proposed project as stated above.

USACE		NCDOT	
USEPA		USFWS	
NMFS		NPS	
DCM		NCDWQ	
NCWRC		NCDCR	
NCDMF		FHWA	
SHPO			

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 2 – Reasonable and Feasible Alternatives Studied

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternatives studied in detail:

1. No build/routine maintenance continue
2. Alternate A - Maintain traffic with on-site detour and raise grade on Onslow County approach.
3. Alternate B1 - Maintain traffic on existing bridge and minimum work on Onslow County approach.
4. Alternate B2 - Maintain traffic on existing bridge and raise grade on Onslow County approach.
5. Alternate C – Maintain traffic on one lane bridge and raise grade on Onslow County approach: eliminated because of maintaining traffic on one lane bridge was not desirable and amount of roadclosure required to build the one lane bridge approaches.
6. Alternate D - Maintain traffic on existing bridge and bridge the marshland.
7. Alternate E -Maintain traffic with on-site detour and minimum approach work on Onslow County approach.

The Project Team has concurred on this date of June 8, 2000 with the "alternatives to be studied in detail in the NEPA document" as stated above.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

SHPO _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 3 – Alternative Selection

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternative recommended:

Alternate D
Replace the bridge downstream of the existing bridge and spanning the wetland (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge.

The Project Team has concurred on this date of May 17, 2001 with the "alternative to be recommended in the NEPA document" as stated above.

USACE _____

USEPA _____

NMFS _____

DCM _____

NCWRC _____

NCDMF _____

NCDOT _____

USFWS _____

NPS _____

NCDWQ _____

NCDCR _____

FHWA _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 4 – Avoidance and Minimization of Impacts

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties
TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternate D

Replace the bridge downstream of the existing bridge and spanning the wetlands (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge. For avoidance and minimization, the following measures will be accomplish:

1. Anticipated impacts to wetlands 0.021 acres.
2. ~~Restoration~~ of wetlands of approximately 1.70 acres. and enhancement (undetermined amount).
3. Replacing 432-foot bridge with a 2,310-foot bridge.
4. Design exception to reduce the design speed from 55 mph to a design speed of 45 mph to minimize impacts in the historic district and eliminate impacts ~~to~~ the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and impacts to historic district.

The Project Team has concurred on the avoidance and minimization as stated above for the subject project on this date of May 17, 2001.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

APPENDIX D

DESIGN EXCEPTION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

P.O. BOX 25201, RALEIGH, NC 27611-5201

December 21, 2000

MEMO TO: D. M. Barbour, PE
State Design Engineer

FROM: J. V. Barbour, PE
State Design Services Engineer

SUBJECT: State Project: 8.2160801 (B-2938) Carteret & Onslow County
F. A. Project: BRZ-1101(5)
Replace Bridge No. 49 over White Oak River and approaches on SR 1101 & SR 1442

Request for Design Exception

This is a request for a design exception for the design speed and horizontal clearance to minimize impacts to the cemetery and the historic district. SR 1101/SR 1442 is currently not posted and has a statutory speed of 90 km/h (55 mph) with advisory signs at the bridge of 30 km/h (20 mph). The horizontal clearance from the edge of the roadway to the post office and warehouse in the historical district is currently less than the recommended clearance by AASHTO. The design elements that require exceptions are as follows.

Proposed Design Speed: The statutory speed limit for SR 1101/SR 1442 in the project vicinity is 90 km/h (55 mph). The proposed design speed is 70 km/h (45 mph). In order to minimize the impacts to the cemetery in the western part of the project and the historic district in the eastern part of the project we are requesting an exception for the proposed design speed. The crest or sag vertical curves on the eastern end of the project cannot be increased without major impacts to the historic district. Also, the horizontal curve at the western end of the project cannot be flattened without major impacts to the cemetery.

Horizontal Clearance: The standard horizontal clearance for this type of facility is 6.0 to 8.0 meters per AASHTO *Roadside Design Guide,* 1996, and 3 meters per AASHTO *Green Book*, 1974, page 425. Currently the historic post office has a canopy that is less than 1.0 meter from the edge of pavement, which is less than the horizontal clearance recommended by AASHTO. The post office and warehouse are less than 5.4 meters from the roadway, which is greater than the 3m minimum desirable horizontal clearance given in the AASHTO *Green Book*, but less than AASHTO's clear zone distance of 6.0 to 8.0 meters (AASHTO *Roadside Design Guide,* 1996). Since the historic district is on both sides of the roadway, appropriate horizontal clearances cannot be obtained without major impacts to the post office and warehouse. This exception for horizontal clearance would minimize any impacts to the historic post office and warehouse.

NCDOT DESIGN EXCEPTION REQUEST
(Project does not require FHWA design approval)

F.A. Project No.: BRZ-1101(5) State Project No.: 8.2160801

TIP No.: B-2938 County: Carteret & Onslow County

Design Exception Requested for: design speed and horizontal clearance.

Location of Design Feature in Question: -L- (SR 1101/SR 1442) entire project.

PROJECT DATA

Current ADT (2002): 1,630 Design ADT (2022): 2,380

% Trucks: 3 Proposed Design Speed: 70 km/hr (45 mph)

Posted Speed: Current: Not posted. Statutory 90 km/h (55 mph). Advisory-posted 30 km/h (20 mph) on the east approach.
Proposed: Posted 45 mph (70 km/h) with advisory posting for 30 km/h (20 mph) on the east approach.

Functional Classification: Rural Minor Collector

Minimum AASHTO Dimensions:
Horizontal Clearance= 3 m minimum
Horizontal Sight Distance=94.1 m

Dimensions Proposed:
Horizontal Clearance=0.4616 m
Horizontal Sight Distance=100 m

Total Estimated Cost of Project: $7,169,000

Additional Cost to Meet Minimum AASHTO Requirements: N/A

BASIS FOR EXCEPTION

1. There have only been three reported accidents in the project vicinity, and there appears to be no relation between the proposed design exception and the accident history. See current 3-year accident history, attached (number, type, rates, severity, cause, comparison to statewide average, etc.).

2. There are no future plans for upgrading this roadway either at or in the vicinity of this project.

3. SR 1101 and SR 1442 are classified as rural minor collectors and are designated as part of the bike route *Jacksonville: City to the Sea*. The existing roadway provides two 2.7-meter (9-foot) travel lanes with 1.8-meter (6-foot) grass shoulders. The existing approach at the west end of the bridge is on a 13.5-degree curve. The existing approach at the east end of the bridge is on a 25-degree curve.

Rev. 3/25/96

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 12/14/00

Project Engineer: Cathy Houser, PE

TIP No: B-2938

Functional Classification: Rural Minor Collector

Posted Speed 90 km/h (55 mph)

Terrain Level – Coastal

Items requiring formal approval	Prop Design	AASHTO Std(1)	Exception Req'd
Design Speed(2)	70 km/h	Minimum Green Book - 100 km/h Proposed 70 km/h	Yes
Lane Width	3.6 m	3.6 m	
Shoulder Width	2.4 m	2.4 m	
Bridge Width (bicycle route)	9.6 m	9.6 m	
Structural Capacity(3)			
Maximum Grade	2.82%	7%	
Min. Horizontal Curve Radius	230m	195m	
Sag Vertical Curve K	21	20-25	
Crest Vertical Curve K	30	22-31	
Horizontal SSD	100m	94.1m	
Vertical SSD	115m	94.1m	
Pavement Cross Slope	0.02	0.02	
Superelevation	0.05	0.06	
Vertical Clearance	Match existing	N/A	
Horizontal Clearance	• 0.4616m to edge of canopy of historic post office • 5.3407m to post office building • 4.549m to historic warehouse	• 3m, min. desirable, per AASHTO-*Green Book*, 1994, page 425 • 6.0m – 8.0m per AASHTO-*Roadside Design Guide* (1996)	Yes

Listed below are the known non-complying items not requiring an approved design exception.

(1) The AASHTO STD. as it relates to the design speed should be equal to the higher of either the posted speed or the minimum "Greenbook" value for design speeds.

(2) If design speed is less than the posted or statutory speed, a design exception is required.

(3) Structure Design's responsibility - be sure they have checked for need of design exception.

APPENDIX E

CORRESPONDENCE

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

REPLY TO
ATTENTION OF

Planning Services Section

September 29, 1998

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 June 5, 1998, subject: "Request for Comments for Group XVII Bridge Replacement Projects." The bridge replacement projects are located in various Eastern and Piedmont North Carolina counties.

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

Sincerely,

C. Alex Morrison, Jr., P.E.
Chief, Technical Services Division

Enclosure

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

412 West Queen St.
Edenton, NC
27932

SUBJECT: Farmland Conversion Impact Rating form AD1006

DATE: 06/06/99

TO: Pamela Williams
Wang Engineering Company, Inc.

The following information is in response to your request asking for information on farmlands in the (3 bridge replacement projects). Projects B-2938, B-2950, B-2965.

Prime farmland does not include land already in or committed to urban development or water storage. When funds have already been commited for utilities, water lines, and road or bridge replacement and widening, the land is committed to development and is be exempt from having to make a determination. Other prime farmland "already in" urban development includes all land that has been designated for commercial or industrial use or residential use that is not intended at the same time to protect farmland in a

1. Zoning code or ordinance adopted by the state or local unit of government or,

2. A comprehensive land use plan which has expressly been either adopted or reviewed in its entirety by the unit of local government in whose jurisdiction it is operative within 10 years preceding the implementation of the project.

If the area in question meets the above criteria, you will not need to complete a Farmland Conversion Impact Rating form (AD1006). Otherwise please proceed to submit a Farmland Conversion Impact Rating form AD1006. The AD1006 should be generated by the corresponding federal agency who will provide the permits and/or funds. If you have any questions please feel free to call me at:252-482-7437.

Thank You,

John Gagnon

John Gagnon
Resource Soil Scientist

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

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

All of the bridges are within counties and communities which participate in the National Flood Insurance Program. From the various Flood Insurance Rate Maps (FIRMs), it appears that both approximate study and detail study streams are involved. (Detail study streams are those with 100-year flood elevations determined and, if controlled by riverine flooding, normally have floodways defined. Of these bridge crossings, only the Tar River in Edgecombe County has a floodway defined.) Based on a review of the FIRM's and pertinent United States Geological Survey topo maps, none of the bridges over railroads appear to be in identified flood hazard areas. A summary of flood plain information pertaining to the other bridges is contained in the following table. The FIRMs are from the county or countywide flood insurance study unless otherwise noted.

Bridge No.	Route No.	County	Study Stream	Type	Date Of Firm
B2938 49	SR 1101	Carteret	White Oak River	Approx	8/85
"	SR 1442	Onslow	"	"	7/87
B2950 4	SR 1222	Currituck	Tull Creek	Detail	11/84
B2965 24	US 64 Bus	Edgecombe	Tar River	Detail	2/88 *
"	"	"	"	"	4/80 **
B3045 17	NC 89	Stokes	Dan River	Approx	9/88
B3230 64	US 220 Bus	Rockingham	Mayo River	Approx	5/91

* Map is Town of Tarboro FIRM.
** Map is Town of Princeville FIRM.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

1. **FLOOD PLAINS: (Continued)**

For the Tar River crossing, we refer you to the Federal Emergency Management Agency's "Procedures for 'No Rise' Certification for Proposed Developments in Regulatory Floodways", copies of which have been furnished previously to your office. In addition, we suggest coordination with the respective counties or communities for compliance with their flood plain ordinances and any changes, if required, to their flood insurance maps and reports.

2. **WATERS AND WETLANDS: POC - Raleigh, Washington, and Wilmington Field Offices, Regulatory Division (Individual POC's are listed following the comments.)**

Based upon a review of Projects B-3013 and B-3231 (bridge replacements over railroads), it appears that the proposed work is not likely to impact any jurisdictional waters subject to Department of the Army (DA) permit authority. In addition, from a review of submitted information and all available maps for the bridge-over-railroad Project B-3214, it was determined that no jurisdictional wetlands will be impacted by this proposed project. Accordingly, no DA authorization will be required in this case.

All work restricted to existing high ground will not require prior Federal permit authorization. However, DA 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. Also, please be reminded that Stokes County is one of the twenty-five mountain counties of North Carolina that contain trout waters. Review and comments are required from the North Carolina Wildlife Resources Commission prior to any action being taken on DA permit authorization for identified trout water counties.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. **WATERS AND WETLANDS: (Continued)**

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. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site 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.

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.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. **WATERS AND WETLANDS: (Continued)**

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.

For additional information, please contact the following individuals:

Raleigh Field Office -

- Jean Manuele at (919) 876-8441, Extension 24, for Edgecombe and Northampton Counties (Regulatory Division Action ID Nos. 199820969 & 199820970)
- John Thomas at (919) 876-8441, Extension 25, for Person, Stokes, and Rockingham Counties (Action ID's 1998-20821, 20822, 20823, and 20824)
- Todd Tugwell at (919) 876-8441, Extension 26, for Wake County (ID 199820971)

Washington Field Office -

- Mike Bell at (252) 975-1616, Extension 26, for Currituck County (TIP B-2950)

Wilmington Field Office -

- Dave Timpy at (910) 251-4634 for Richmond and Carteret/Onslow Counties (Action ID Nos. 199801809 and 199801810)

3. **U.S. ARMY CORPS OF ENGINEERS PROJECTS: POC - Howard Varnam, Navigation Section at (910) 251-4411**

Bridge No. 24 on US 64 Business over the Tar River at Tarboro appears to cross a U.S. Army Corps of Engineers navigation project. This project provides for a channel 20 inches deep and 60 feet wide to Tarboro. There should be no problem from the provision of the proposed improvements if navigational clearances and channel setbacks for the existing project are maintained.

If you have questions or need further information related to the Federal project, please contact Mr. Varnam.

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth. Va. 23704-5004
Staff Symbol: Aowb
Phone: (757)398-6587

16590
July 7. 1998

Mr. Richard Davis. P.E.
Planning and Environmental Branch
N.C. Division of Highways
P.O. Box 25201
Raleigh. North Carolina 27611

Dear Mr. Davis:

This is in response to your letter dated June 5, 1998 requesting the Coast Guard to review the proposed projects to replace ten bridges of which five are over waterways. The following are the five bridge numbers and their locations: #49 White Oak River; #4 Tull Creek; #24 Tar River; #17 Dan River; and #64 Mayo River. B3045 B3230 B2938 B2950 B2965

The Coast Guard Authorization Act of 1982 exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used, susceptible to use in their natural condition. or susceptible to use by reasonable improvement as a means to transport interstate commerce. Ms. Pam Williams confirmed such conditions in a telephone conversation on June 30, 1998. Due to this, the bridge projects on the Dan and Mayo Rivers are exempt, and will not require Coast Guard Bridge Permits.

Tull Creek, and the White Oak and Tar Rivers are subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes. However, these waterways also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for these three projects.

The fact that Coast Guard permits are not required does not relieve you of the responsibility for compliance with the requirements of any other Federal, State. or local agency who may have jurisdiction over any aspect of the project.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

Grines / Baldwin

United States Department of the Interior

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

June 17, 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

Dear Mr. Gilmore:

Thank you for your letter of June 5, 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-2938, Carteret/Onslow Counties, Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River;

2. B-2950, Currituck County, Replace Bridge No. 4 on SR 1222 over Tull Creek;

3. B-2965, Edgecombe County, Replace Bridge No. 24 on US 64 Business over the Tar River;

4. B-3013, Person County, Replace Bridge No. 48 on US 501 over the Norfolk Southern Railway;

5. B-3045, Stokes County, Replace Bridge No. 17 on NC 89 over the Dan River;

6. B-3214, Northampton County, Replace Bridge No. 64 on US 301 over the CSX Railway;

7. B-3230, Rockingham County, Replace Bridge No. 64 on US 220 Business over the Mayo River;

8. B-3231, Rockingham County, Replace Bridge No. 243 on SR 1378 over the North/Western Railway;

9. B-3256, Wake County, Replace Bridge No. 337 on SR 1108 over the Norfolk Southern Railway; and,

10. B-3380, Richmond County, Replace Bridge No. 43 on Rice Street over the CSX Railway in Hamlet.

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 following is applicable to all the projects listed above except Item #5, B-3045. Stokes County is in an area of the state under the jurisdiction of the Services' Asheville Office. They should be contacted for resource information pertinent to this project.

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. Listed species have been known to occur in the vicinity of two of the bridge replacement sites.

The red-cockaded woodpecker (RCW) (*Picoides borealis*) is known from the vicinity of project B-2938, Carteret/Onslow Counties. In addition to the recommendations listed below, if the proposed project will be removing pines 9" DBH or greater, or 30 years of age in pine or pine/hardwood habitat, surveys should be conducted for active RCW cavity trees in appropriate habitat within a 0.5 mile radius of project boundaries. If the RCW is observed within the project area or active cavity trees are found, the project has the potential to affect the RCW, and you should contact this office for further information.

The Tar spinymussel (*Elliptio steinstansana*) has been recorded upstream of project B-2965, Edgecombe County. A mussel survey should be conducted at the proposed bridge replacement site, covering 100 meters upstream, and 400 meters downstream of the crossing. In addition, the applicant must implement the following measures to insure protection for all aquatic resources occurring downstream:

1. Installation of instream silt curtain weighted at the bottom, and stringent bank erosion control. If tree removal is required, stumps and roots should remain intact for bank stabilization;

2. Instream construction activities should be initiated only during low flow conditions that permit the effective deployment of the silt curtain; and,

3. Before stream crossings are to begin, the contractor should notify the Service within one week of the construction initiation date. The Service would like the opportunity to inspect the installation of the silt curtain and check any possible changes in stream flow conditions when scheduling allows.

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 this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding these comments, please contact Tom McCartney at 919-856-4520, ext. 32.

Sincerely,

John M. Hefner
Field Supervisor

Enclosures

cc:
COE, Mike Bell, Washington, NC
COE, Eric Alsmeyer, Raleigh, NC
COE, Scott McLendon, Wilmington, NC
NCDWQ, John Dorney, Raleigh, NC
FHWA, Nicholas Graf, Raleigh, NC
EPA, Ted Bisterfield, Atlanta, GA

FWS/R4:TMcCartney:TM:06/16/98:919/856-4520 extension 32:\10-brdge.rpl

Mapping Symbols for Threatened and Endangered Species

Birds


Bald Eagle


Peregrine Falcon


Piping Plover


Red-cockaded Woodpecker


Roseate Tern


Wood Stork

Fish


Cape Fear Shiner


Waccamaw Silverside

Mussels


Dwarf-wedge Mussel


Tar Spinymussel

Mammals


Eastern Cougar


Red Wolf

Plants


American Chaffseed


Harperella


Michaux's Sumac


Pondberry


Rough-leaved Loosestrife


Schweinitz's Sunflower


Seabeach Amaranth


Sensitive Joint-vetch

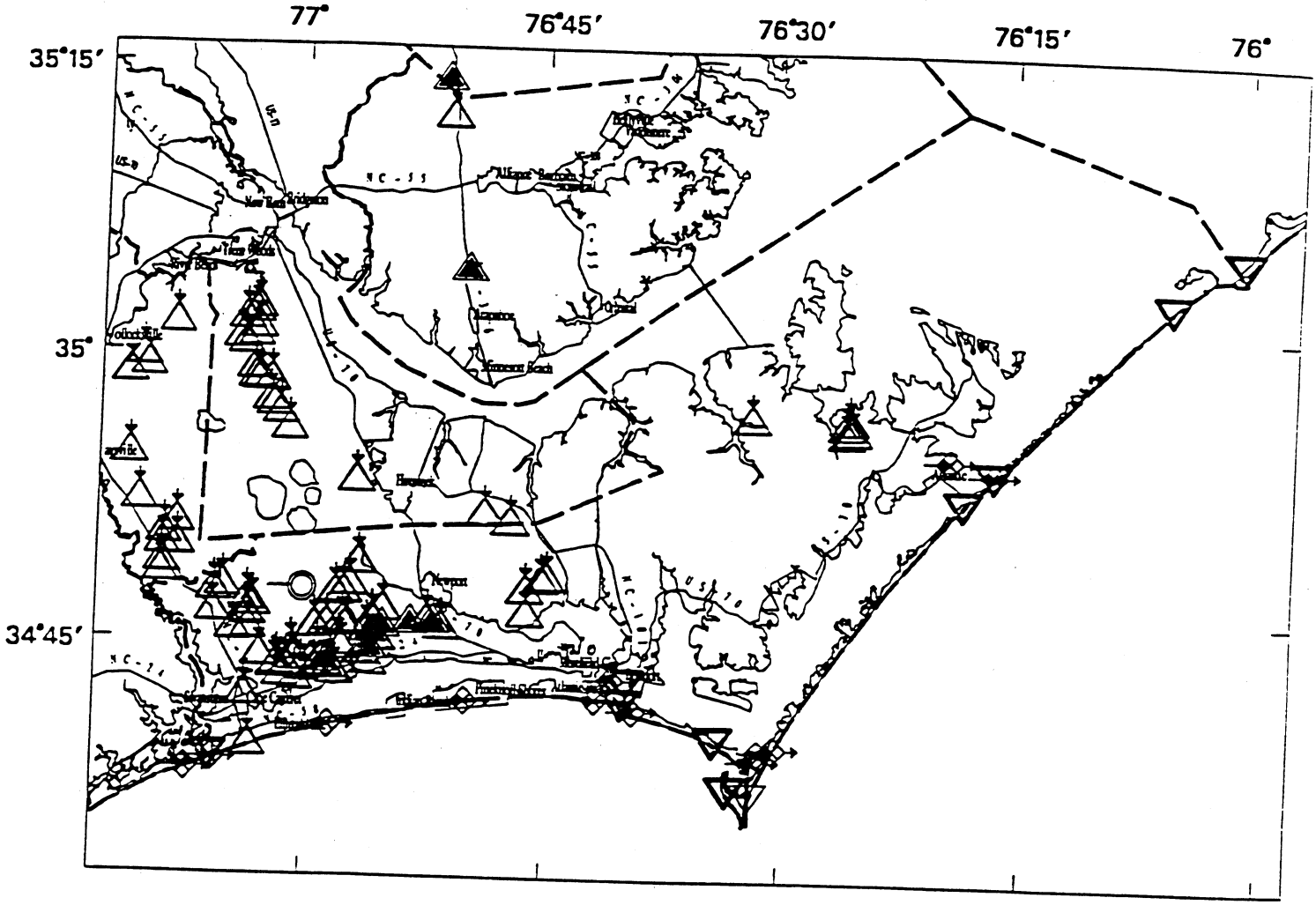

Small Whorled Pogonia


Smooth Coneflower

Seaturtles are seasonally ubiquitous along coastal regions, and therefore, are not labeled. Shortnosed Sturgeon and Manatees are seasonally ubiquitous in estuarine areas and are also not labeled.

Accounts of Selected Federally Listed Species In CARTERET County

Data represented on these maps are not based on comprehensive inventories of this county. Lack of data must not be construed to mean that listed species are not present.



Prepared by U.S. Fish and Wildlife Service
based on data provided by NC Natural Heritage Program
D. Newcomb, K. Tripp 1/15/98

0 1 2 3 4 5 MILES
012345 KILOMETERS

expires 1/31/99

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 Harris, PE, Project Manager
Project Development and Environmental Analysis Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: July 28, 1999

SUBJECT: North Carolina Department of Transportation (NCDOT) Bridge Demolition Projects B-2938, B-2950, B-2965, B-3045, and B-3230.

We have reviewed the information provided by you regarding the subject bridge demolition projects. These projects were reviewed during the scoping process and we preformed site visits as needed.

After reviewing the new information we do not object to the projects as proposed, provided that the new Bridge Demolition and Removal Best Management Practices are followed. If we can be of any further assistance please call me at (919) 528-9886.

cc: David Franklin, Special Projects Manager, USACOE, Wilmington

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: July 27, 1998

SUBJECT: NCDOT Group XVII Bridge Replacements

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-2938 - The bridge should be replaced with a spanning structure, in place with an off-site detour. This area of the White Oak River is a primary nursery area and is closed to shellfishing. There is a fringe of salt marsh adjacent to the bridge on the North/West side which should be avoided. The White Oak River supports anadromous runs of striped bass, river herring, and American shad. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation.

2. B-2950 - This bridge should be replaced with a spanning structure, in place with an off-site detour. Tulls Creek is designated as a primary nursery area. This creek is known to support anadromous runs of striped bass as well as quality runs of largemouth bass, sunfish and other gamefish. Our agency collects brood fish for largemouth bass restocking efforts from this section of Tulls Creek. Turbidity resulting from in-water work could damage critical freshwater spawning habitat not only in Tulls Creek but also in Tulls Bay. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation. There are also several Bald eagle nests along Tulls Creek. If any trees are to be removed eagle nest surveys should be performed.

3. B-2965 - This bridge should be replaced in place with an off-site detour if possible. The Tar river supports important runs of anadromous striped bass, hickory shad, American shad and river herring. The standard anadromous fish moratorium, February 15 to June 15, will be required. Also the federally listed, endangered, Tar spineymussel occurs in the Tar River in the vicinity of the bridge. A survey for this species should be performed 100 meters above the bridge to 400 meters downstream of the bridge. Based on the results of this survey additional conservation measures may be required. (Contact NCDOT Biologist, Tim Savidge.)

4. B-3013 - No specific concerns.

5. B-3045 - No specific concerns.

6. B-3214 - No specific concerns.

7. B-3230 - Nice riffles which provide excellent fish habitat are located 20-30 meters upstream of Bridge No. 64. This area should be avoided during the bridge replacement.

8. B-3231 - No specific concerns.

9. B-3256 - No specific concerns.

10. B-3380 - No specific concerns.

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.

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

June 19, 1998

MEMORANDUM

To: Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch

From: Cyndi Bell

Subject: Request for Comments for Group XVII Bridge Replacement Projects

Reference is made to your memorandum of June 5, 1998, in which you requested early scoping comments for ten bridge replacement projects. Of the ten bridges on your list, only five involve streams, while the other five are railroad bridges. Please see the attached Water Quality Checklist for Bridge Replacement Projects for general recommendations. Based upon our records, Standard Sediment and Erosion Control measures will be acceptable for these fiver projects. I do ask that you investigate whether riparian wetlands are located at any of these crossings. The potential for occurrence of riparian wetlands is higher at B-2938, B-2950, and B-2965. Please note that we prefer bridging of riparian wetlands, especially if you are considering replacement of an existing bridge with a culvert.

Thank you for your inquiry. If you have any questions, please contact me at (919) 733-1786 or Cyndi_Bell@dem.ehnr.state.nc.us.

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-5083 FAX 919-733-9919

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

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director

DEHNR

February 26, 1997

MEMORANDUM

To: Mr. H. Franklin Vick, P.E., Manager, NCDOT, Planning & Environmental Branch

From: Cyndi Bell, NC Division of Water Quality CLB

Subject: Water Quality Checklist for Bridge Replacement Projects

Reference your correspondence dated January 21, 1997, in which you requested scoping comments for five bridge replacement projects. As I will be unable to attend the scoping meeting for these projects on March 11, 1997, I am forwarding these comments to you and the appropriate project engineers in writing. The Division of Water Quality requests that NCDOT consider the following generic environmental commitments for design and construction of bridge replacements:

A. DWQ requests that DOT strictly adhere to North Carolina regulations entitled "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0024) throughout design and construction for this project in the area that drains to streams having WS (Water Supply), ORW (Outstanding Resource Water), HQW (High Quality Water), B (Body Contact), SA (Shellfish Water) or Tr (Trout Water) classifications to protect existing uses.

B. DWQ requests that bridges be replaced on existing location with road closure, when practical. If an on-site detour is necessary, remediation measures in accordance with DWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.

C. DWQ requests that hazardous spill catch basins be installed at any bridge crossing a stream classified as HQW or WS (Water Supply). The number of catch basins installed should be determined by the design of the bridge, so that runoff would enter said basin(s) rather than directly flowing into the stream.

D. To the maximum extent practicable, DOT should not install the bridge bents in the creek.

E. Wetland impacts should be avoided (including sediment and erosion control structures/measures) to the maximum extent practical. If this is not possible, alternatives that minimize wetland impacts should be chosen. Mitigation for unavoidable impacts will be required by DWQ if impacts exceed one acre. Smaller impacts may require mitigation by the U.S. Army Corps of Engineers.

F. Borrow/waste areas should not be located in wetlands. It is likely that compensatory mitigation will be required if wetlands are impacted by waste or borrow.

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-9960 FAX # 733-9919

G. DWQ prefers replacement of bridges with bridges. If the new structure is to be a culvert, it should be countersunk to allow unimpeded fish passage through the crossing.

H. If foundation test borings will be required, this should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No. 6 for Survey Activities. Written concurrence from the North Carolina Wildlife Resources Commission and U.S. Army Corps of Engineers is required in designated mountain trout counties.

I. If this project is processed as a Categorical Exclusion, NCDOT is reminded that mitigation will be required if wetland impacts exceed one acre, in accordance with DWQ Wetland Rules (15A NCAC 2H.0506 (h)(2)).

The attached table has been prepared by DWQ for your assistance in studying the systems involved in these bridge replacements. This information includes the DWQ Index Number, DWQ Stream Classification, river basin, and preliminary comments for each crossing. Please note that National Wetland Inventory (NWI) map references are not to be replaced by onsite wetland determinations by qualified biologists.

Thank you for your request for DWQ input. DOT is reminded that issuance of a 401 Water Quality Certification requires satisfaction of water quality concerns, to ensure that water quality standards are met and designated uses are not lost or degraded. Questions regarding the 401 Certification or other water quality issues should be directed to Cyndi Bell at (919) 733-1786 in DWQ's Water Quality Environmental Sciences Branch.

cc: Michelle Suverkrubbe
Melba McGee
Jeff Ingham
Bill Goodwin
John Williams

B1443.DOC

Carteret County Transportation Committee

Post Office Box 825 • Morehead City, North Carolina 28557
Phone: (252) 726-7822 • Fax: (252) 726-7822 • Email: carteret.edc@gtp.net

July 24, 1998

Ms. Stacy Baldwin, P.E.
Planning and Environmental Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Ms. Baldwin:

The Carteret County Transportation Committee met last night and discussed the above-captioned project. The Committee unanimously adopted alternative 3 identified on the June 5, 1998 letter from Richard B. Davis to Carteret County Manager Robert Murphy. If traffic is closed on the Stella Bridge during the construction of the new bridge, it will result in a severe inconvenience and dislocation for those individuals who utilize the bridge on a daily basis. The nearest detour across the White Oak River would require approximately 20 miles of additional travel. Many area farmers farm property on both sides of the White Oak River, and a closure of the bridge would be both inconvenient and expensive for them.

It was also brought to the attention of the Committee that there is significant flooding of the roadway on the Onslow County side of the bridge during full moon/high tide events. The Committee requests that the Department of Transportation try to address the flooding problem as part of the bridge project. If you have any questions regarding the exact location of the flooding, please feel free to contact Mr. John Jones, who is a member of the Transportation Committee. Mr. Jones' telephone number is 252.393.2093.Mr. Jones regularly utilizes the Stella Bridge, and he is very familiar with the flooding problem.

Thank you very much for your consideration and assistance. Please do not hesitate to contact me or Mr. Donald Kirkman, who provides staff support to the Carteret County Transportation Committee. I can be reached at 252.728.2141, and Mr. Kirkman can be reached at 252.726.7822.

Sincerely,

Hunter Chadwick, Chairman

HC:cy
cc: Mr. John Jones
Mr. Donald A. Kirkman

CARTERET COUNTY
ECONOMIC DEVELOPMENT COUNCIL

Carteret County is a member of the Global TransPark Development Commission and North Carolina East

P. O. Box 825
Morehead City NC 28557
919.726.7822
800.462.4252
FAX 919.726.4215
carteret.edc@gtp.net

June 29, 1998

Mr. Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch
N.C. Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Mr. Davis:

I am responding to your June 5 correspondence to Carteret County Manager Robert Murphy regarding the above-captioned bridge project. Mr. Murphy forwarded your letter to me because I provide staff support to the Carteret County Transportation Committee, as well as being the Executive Director of the Carteret County Economic Development Council.

Unfortunately, neither the Transportation Committee nor the Economic Development Council Board of Directors has met since June 5th, and therefore they have not had an opportunity to review your correspondence or provide input. Both Carteret County and the Carteret County Transportation Committee feel that the replacement of the Stella Bridge is a very high priority, and both have previously corresponded with representatives of the Department of Transportation regarding the importance of replacing the bridge.

Consequently, I am confidant that the "No-Build" alternative is inconsistent with the preferences of the Carteret County Commissioners and the Carteret County Transportation Committee. Based on informal discussions with residents of the region near the bridge, including Transportation Committee representatives from the communities most affected, there is a consensus that a new bridge should be built in the vicinity of the existing bridge, while maintaining traffic on the existing bridge during construction. This is reflected as alternate 3 in your June 5 correspondence.

Please also be advised that there is a Carteret County Thoroughfare Plan currently in progress, as well as a thoroughfare plan for the region which includes the Highway 58 and Highway 24 corridors. Those plans are being coordinated by Travis Marshall and

James Upchurch, respectively, in your Statewide Planning Branch. Because the Stella Bridge is the only road connection between Carteret and Onslow Counties other than N.C. 24, it is likely to play an increasingly important role in the county's future transportation plans. Therefore, I urge you and/or Wang Engineering to speak with Messrs. Marshall and Upchurch regarding the location and design of the bridge.

It is likely that the Transportation Committee will meet in late July, at which time they would be in a position formally to comment on your alternates. Even though their meeting will be past your June 30 comment deadline, I will let you know their recommendation.

Thank you very much for your consideration. Please contact me if you have any questions.

Sincerely,

Donald A. Kirkman
Executive Director

cc: Robert Murphy, Carteret County Manager
Hunter Chadwick, Carteret County Transportation Committee Chair
John Jones, Carteret County Transportation Committee
Travis Marshall, P.E.
James Upchurch, P.E.

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate B of 4 Alternate	
I.D. NO.:	B-2938	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	Replace on existing alignment				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

n 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE-

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	A of 4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A			
DESCRIPTION OF PROJECT:	Replace Bridge #49 on SR 1101/SR 1442 over White Oak River					
	Replace on existing location with a on-site Detour on South Side.					

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING		DSS DWELLING AVAILABLE	
Owners	Tenants	For Sale	For Rent
0-20M	$ 0-150	0-20M	$ 0-150
20-40M	150-250	20-40M	150-250
40-70M	250-400	40-70M	250-400
70-100M	400-600	70-100M	400-600
100 UP	600 UP	100 UP	600 UP
TOTAL			

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT

James M. Latham — Relocation Agent — 10/19/98 — Date

D.R. Vick — Approved by — 10-27-98 — Date

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2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B	of	4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A					
DESCRIPTION OF PROJECT:	Replace on existing alignment							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent
10/19/98 — Date

Approved by
10-27-98 — Date

orm 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation,
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	D C of 4 Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	Replace on existing alignment, maintain traffic on one lane of existing bridge				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
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		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

D. R. Vick — Approved by — 10-27-98 — Date

m 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	8.2160801	COUNTY	CARTERET/ONSLOW	Alternate D of	Alternate
I.D. NO.:	B-2938	F.A. PROJECT			
		REPLACEMENT BRIDGE NO. 49 ON SR 1101/SR 1442 OVER WHITE OAK RIVER			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential			0	
Businesses			0	
Farms			0	
Non-Profit			0	

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

NOTE: The only structure involved on this project is an old abandoned brick building. Therefore, there is no relocation involved.

MANAGER OF
RIGHT OF WAY BRANCH

MAR 3 0 1999

N.C. DEPT. OF TRANSPORTATION

R. B. CHADWICK — Relocation Agent
03-26-99 — Date

Approved by
3-30-99 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy: Area Relocation Office

Protected Species Update Report

Bridge No. 49 Over the White Oak River
SR 1101 and SR 1442
Carteret and Onslow Counties
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. Project No. B-2938

North Carolina Department of Transportation
Project Development and Environmental Analysis Branch

February 2003

At the request of the North Carolina Department of Transportation (NCDOT), Buck Engineering prepared a protected species update report for the replacement of Bridge No. 49 over the White Oak River in Carteret and Onslow Counties, T.I.P. No. B-2938. This report supplements the Categorical Exclusion (CE) for this project. Since the completion of the CE in October 2001, the bald eagle (*Haliaeetus leucocephalus*) was added to the United States Fish and Wildlife Service (USFWS) federally threatened and endangered species list for Onslow County as of January 29, 2003.

This study involved conducting a survey for bald eagle habitat and individuals within the area of bridge replacement. This included an evaluation of potential habitat within an approximately 1-mile (1.6-kilometer) radius of the bridge. Buck Engineering biologists, Greg Price and Jessica Rohrbach, conducted the field survey on January 28, 2003. Approximately one hour was spent conducting the survey, which involved walking in potential habitat areas and scanning the area with binoculars for nests and individuals. While the bald eagle is listed only for Onslow County and not Carteret County, potential habitat on the Carteret County side of the bridge was scanned as well. Included in the protected species update report below are descriptions of the bald eagle along with the project's Biological Conclusion explanations for this species.

Haliaeetus leucocephalus (Bald eagle) **Threatened-Proposed for Delisting**

Animal Family: Accipitridae
Federally Listed: March 11, 1967

Adult bald eagles can be identified by their large white head and short white tail. The body plumage is dark-brown to chocolate-brown in color. In flight bald eagles can be identified by their flat wing soar.

Eagle nests are found in close proximity to water [within 0.5 mile (0.8 kilometer)] with a clear flight path to the water, in the largest living tree in an area, and having an open view of the surrounding land. Human disturbance can cause an eagle to abandon otherwise suitable habitat. The breeding season for the bald eagle begins in December or January. Fish are the major food source for bald eagles. Other sources include coots, herons, and wounded ducks. Food may be live or carrion.

Biological Conclusion: **May Affect-Not Likely to Adversely Affect**

The closest potential habitat observed for the bald eagle on the Onslow County side exists approximately 1,800 feet (549 meters) west of the existing bridge. Bridge construction therefore would occur outside the potential primary zone, as described by the USFWS. The primary zone is the critical area that encompasses an area extending from 750 to 1500 feet (229 to 457 meters) outward from the nest tree. The secondary zone encompasses an area extending outward from the boundary of the primary zone, a distance of 750 feet to 1 mile (457 meters to 1.6 kilometers) (USFWS, 1987). No bald eagles or bald eagle nests were observed in the potential habitat area.

Two potential habitat areas along the Carteret County side of the bridge were also scanned. One area begins approximately 400 feet (122 meters) north of the bridge and the other area begins approximately 1200 feet (366 meters) southeast of the bridge. While these areas may be within potential primary zone range from the bridge construction, the bald eagle is currently not listed for Carteret County. Also these areas, located adjacent to the Stella community, may be too disturbed for bald eagle nesting and roosting. No bald eagle individuals or nests were observed in these areas.

The North Carolina Natural Heritage Program (NHP) database of rare species and unique habitats, checked on January 22, 2003, indicates no records of occurrences in the study area. While no bald eagle nests or individuals were observed or recorded in the study area, potential habitat does exist within the potential secondary zone (Onslow County), as described by the USFWS. Therefore, a Biological Conclusion of **May Affect-Not Likely to Adversely Affect** may result from the proposed bridge construction.

References

FWS. January 1987. Habitat Management Guidelines for the Bald Eagle in the Southeast Region.

NCDOT. October 2001. Carteret and Onslow Counties, SR 1101 and SR 1442, Bridge No. 49 over the White Oak River Categorical Exclusion.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 2, 2003

Gary Jordan
US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636-3726

Dear Mr. Jordan:

This letter is in reference to NCDOT's proposed replacement of Bridge #49 on SR #1101 and SR 1442 over White Oak River in Carteret and Onslow County (TIP project B-2938). This purpose of this letter is to summarize federally protected species surveys to date and to request concurrence from the U.S. Fish and Wildlife Service (Service) pursuant to Section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*) (ESA).

The CE (Categorical Exclusion) for this project was completed in October 2001. Biological Conclusions of No Effect were found for all species listed at the time of the CE. Since the completion on the CE, the bald eagle has been added to those species protected in Onslow County. The current USFWS listing of protected species (January 29, 2003) and current Biological Conclusions are listed in the following table.

Common Name	Scientific Name	Federal Status	Biological Conclusion
Shortnose sturgeon	*Acipnser brevirostrum*	Endangered	No Effect
American alligator	*Alligator mississippiensis*	T(S/A)	Not Required
Bald eagle	*Haliaeetus leucocephalus*	Threatened (proposed for delisting)	May Affect-Not Likely to Adversely Affect
Seabeach amaranth	*Amaranthus pumilus*	Threatened	No Effect
Loggerhead sea turtle	*Caretta caretta*	Threatened	No Effect
Golden Sedge	*Carex lutea*	Proposed Endangered	No Effect
Piping plover	*Charadrius melodus*	Threatened	No Effect
Green sea turtle	*Chelonia mydas*	Threatened	No Effect

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

Common Name	Scientific Name	Federal Status	Biological Conclusion
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	No Effect
Hawksbill turtle	*Eretmochelys imbricata*	Endangered	No Effect
Eastern cougar	*Puma concolor couguar*	Endangered	No Effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered	No Effect
Red-cockaded woodpecker	*Picoides borealis*	Endangered	No Effect
Cooley's meadowrue	*Thalictrum cooleyi*	Endangered	No Effect

The American alligator is protected due to similarity of appearance and does not require a Biological Conclusion.

According to written communication on August 16, 2001 with Mr. Fritz Rhode of the U.S. Marine Fisheries, there are no records of shortnose sturgeon occurring in the White Oak River and it is unlikely that the shortnose sturgeon would be present. Therefore, a Biological Conclusion of "No Effect" has been found for this species.

Potential habitat for the bald eagle is found within the project area. However, Buck Engineering, biologists did not observe any bald eagles or their nests in the potential habitat area. Therefore, a biological conclusion of "May Effect, Not Likely to Adversely Affect" has been found. Survey methodology and qualifications of the investigators are listed below.

Biological conclusions of "No Effect" have been found for the remaining species due to lack of habitat.

SURVEY METHODOLOGY

A survey was conducted within the area of bridge replacement for bald eagles and habitat. The survey area included evaluation of potential habitat within approximately 1-mile radius of bridge. The field survey was conducted on January 28, 2003 by Biologists Greg Price and Jessica Rohrbach of Buck Engineering. Approximately one hour was spent walking the potential habitat areas and scanning the area with binoculars for nests and individuals. While the bald eagle is listed on for Onslow County and not Carteret County, potential habitat on the Carteret County side of the bridge was scanned as well. The closest potential habitat observed on the Onslow Count side exists approximately 1,800 feet west of the existing bridge. Bridge construction will occur outside the potential primary zone. Potential primary zone, as defined by U.S. Fish and Wildlife Service, is the critical area that encompasses an area extending from 750 to 1500 feet outward from the nest tree. No bald eagles or nests were observed in the potential habitat area of Onslow County. Two potential habitat areas along the Carteret County side of the bridge were also scanned. One area begins approximately 400 feet north of the bridge and the other begins approximately 1200 feet southeast of the bridge. These areas are within the potential primary zone range from the bridge construction, however the bald eagle is not currently listed for Carteret County. No bald eagles or

nests were observed in the potential habitat areas of Carteret County. These areas are also adjacent to the Stella community, which may be too disturbed for bald eagle nesting and roosting.

QUALIFICATIONS OF PRINCIPAL INVESTIGATORS

Investigator:	Gregory W. Price, PWS
Education:	MS, Biology, Appalachian State University, 1989 BA, Biology, Appalachian State University, 1985
Experience:	Senior Biologist, Buck Engineering, 2000 to present. Senior Engineering Technician, City of Durham Storm Water Services, 1997-2000. Biology Instructor, Wake Technical Community College, 1993-1997. Environmental Biologist, NC Division of Water Quality, 1991-1997. Environmental Technician III, NC Division of Environmental Management, 1990-1991. Biology Laboratory Instructor/Research Assistant, Appalachian State University, 1985-1989. Summer Naturalist, Duke Power State Park, 1985.
Expertise:	NEPA investigations; Section 7 field investigations; wetland and stream delineation and mitigation; water quality/biological monitoring of streams and lakes, environmental education.

Investigator:	Jessica M. Rohrbach, Biologist
Education:	BS, Horticulture, North Carolina State University, 1999
Experience:	Biologist, Buck Engineering, 2001 to present. Grounds Worker, NC Zoological Park, 2000-2001. Research Technician, NCSU, 1999-2000. Summer Intern, Southern Garden, Inc., 1998.
Expertise:	NEPA investigations; Section 7 field investigations; stream survey for Rosgen classification; native and tropical plant horticulture.

Based on our surveys, it appears that the project area does not contain any federally listed species known to occur in Carteret and Onslow Counties. The NCDOT concludes that the proposed project will have "No Effect" on shortnose sturgeon, seabeach amaranth, loggerhead sea turtle, golden sedge, piping plover, green sea turtle, leatherback sea turtle, hawksbill turtle, eastern cougar, Kemp's Ridley sea turtle, rough-leaved loosestrife, red-cockaded woodpecker, roseate tern, manatee, and Cooley's meadowrue and "May Effect, Not Likely to Adversely Affect" on the bald eagle. We believe that the requirements of Section 7(a)(2) of the ESA have been satisfied and hereby request your concurrence.

Sincerely,

for Phillip S. Harris, III, PE.
Manager, Office of Natural Environment

cc: Stacey Harris, P.E., Project Engineer, PDEA
File: B-2938

Stella Bridge Mitigation Plan
Bridge No.49 over the White Oak River on SR 1101 in Carteret County
and SR 1442 in Onslow County.

TIP B-2938
Federal Aid Project No.BRZ-1101(5)
State Project No. 8.2160801

North Carolina Department of Transportation
Division of Highways
Project Development and Environmental Analysis Branch
Office of Natural Environment

May 2003

1.0 Introduction

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No.49 over the White Oak River on SR 1101 in Carteret County and SR 1442 in Onslow County (see Figure 1). As a component of the project, the existing causeway will be removed and the area will be graded to the elevation of the adjacent wetland.

1.1 Wetland Resources

Within the project area, a brackish marsh lies along the southern and western banks of the White Oak River. Existing marsh vegetation primarily consists of big cordrass (*Spartina cynosuroides*), black needle rush (*Juncus roemerianus*), saltmeadow cordgrass (*Spartina patens*), and common reed (*Phragmites australis*) along the edges of the causeway. An occasional Eastern red cedar (*Juniperus virginiana*), wax myrtle (*Myrica cerifera*), and yaupon holly (*Ilex vomitoria*) exists throughout the marsh.

1.2 Summary of Mitigation

Wetland restoration associated with TIP B-2938 will be accomplished by removal of 1.7 ac of the existing causeway and vegetating with species matching the target wetland community (see Figure 2). Proposed impacts to jurisdictional wetlands due to the replacement of Bridge No. 49 are below the threshold for compensatory mitigation. Therefore, the entire 1.7 ac of restoration will be available for future projects in the White Oak River Basin (03030001 CU).

2.0 B-2938 Onsite Mitigation

The purpose of this report is to document the existing site conditions at the location of the proposed replacement of Bridge No. 49, to describe the wetland restoration, and to establish the monitoring for the onsite restoration site. This plan includes on-site wetland restoration associated with the planned removal of the bridge causeway.

2.1 Site Descriptions

The total project area for the bridge replacement is approximately 9.8 ac in size. The change in elevation across the site is from 0.5 feet above mean sea level (msl) to 5.0 feet above msl.

The soils in this area are mapped by the Soil Survey of Onslow County (SCS, 1992) as the Muckalee-Dorovan association. However, Lafitte muck is the dominant soil type in the study area and is found on both sides of the roadway approach west of the White Oak River. This soil is typically found less than 5ft above msl and is flooded daily with brackish water. Infiltration and permeability are moderate and the water table is at or near the surface most of the time.

2.2 Methodology

The goal of the mitigation plan is to establish a wetland community classified as Brackish Marsh. The proposed replacement of Bridge No. 49 will provide 1.7 ac of on-site wetland restoration by the removal of the existing bridge causeway to the elevation of the adjacent marsh.

Fill material will be graded down approximately 2.5 ft. to the elevation of the adjacent jurisdictional wetlands. Exact elevations will be determined during construction by matching grades at cross sections of the marsh. If the depth of excavation of the existing roadway surface layers falls below the adjacent wetland elevation and excess waste soil is not available onsite, clean sand will be added to bring the restored area to the correct elevation. The area will be disked as necessary to reduce compaction. Soil amendments may be added if needed. Marsh vegetation (See Figure 3) consisting of the species mix in the table below will be planted on 3 x 3 feet centers (4,840 plants per acre).

TABLE 1. Species mix for B-2938 marsh restoration

Species	Proportion
Big cordgrass (*Spartina cynosurroides*)	40%
Black needle rush (*Juncus romerianus*)	30%
Saltmeadow cordgrass (*Spartina patens*)	30%

2.3 Monitoring

Hydrologic monitoring will occur throughout the growing season in the restoration area by using surface water gauges. Two surface water gauges will be placed in the restored Brackish Marsh area. Two surface water gauges will be placed in the reference adjacent Brackish Marsh area located within the project area. Hydrologic success criteria will be based on the establishment of hydrologic conditions comparable in hydrologic frequency and duration to those of the existing reference wetlands adjacent to the areas being restored. Hydrographs from gauges in the reference marsh will be compared to those in the restored marsh as a component of the annual monitoring report.

Vegetation monitoring will consist of thirty 1m X 1m random plots in the Brackish Marsh community. The vegetative marsh success of the wetland site will be determined in accordance with National Marine Fisheries Service Guidelines. The vegetation component of the wetland site will be deemed successful if the following criteria are met.

1. At year five, the average of all plots should have a scale value of 5 (75% vegetative cover) consisting of wetland herbaceous species, not including any invasive species.

2. A minimum of 70% of the plots shall contain the target (planted) species. Visual observation of plant establishment will be recorded using photo reference points.

2.4 Mitigation Credit Ratios

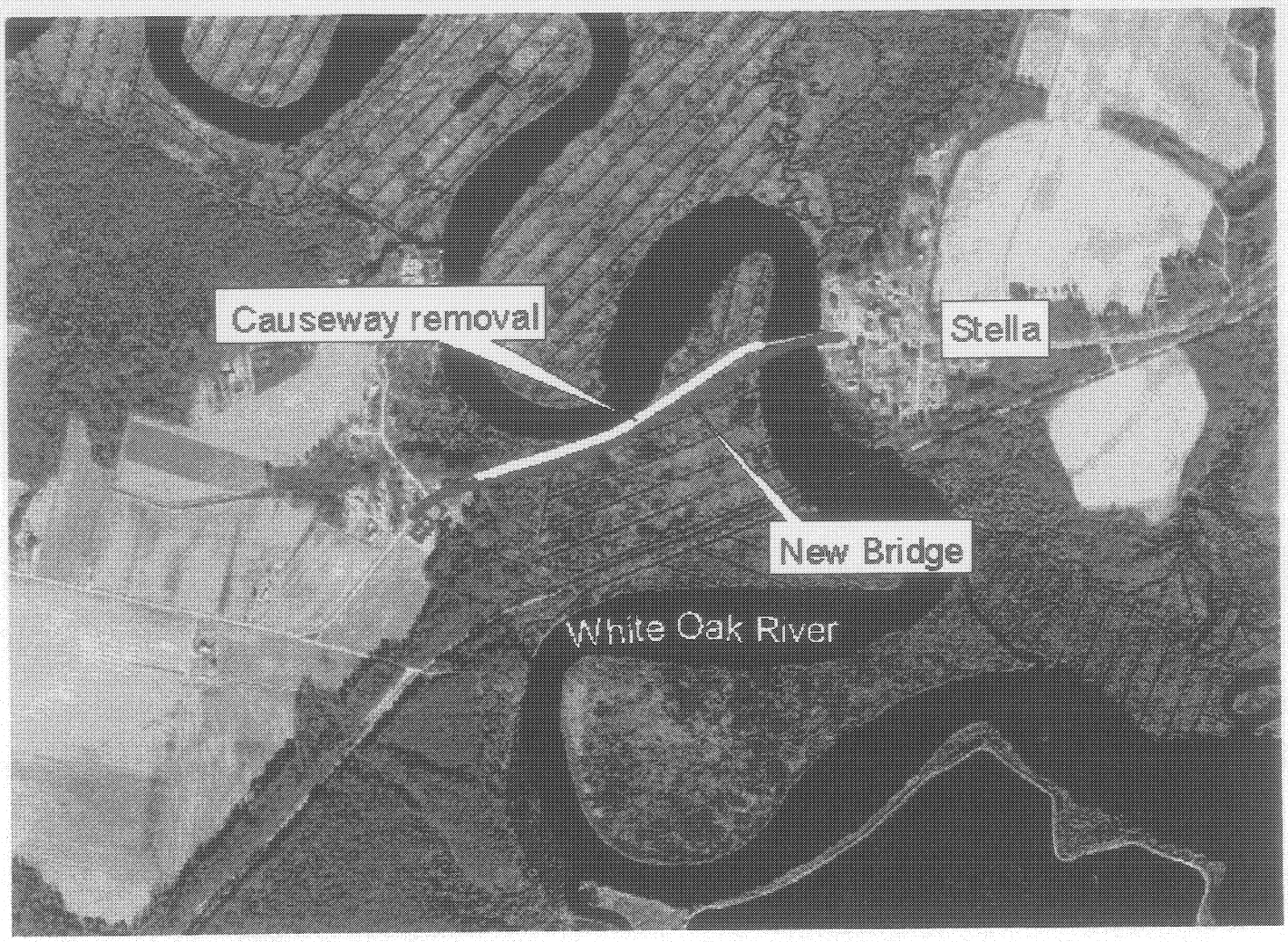
The following table outlines the onsite mitigation from the proposed replacement of Bridge No. 49. NCDOT proposes to use this surplus mitigation for impacts from projects in the White Oak River Basin (03030001 CU).

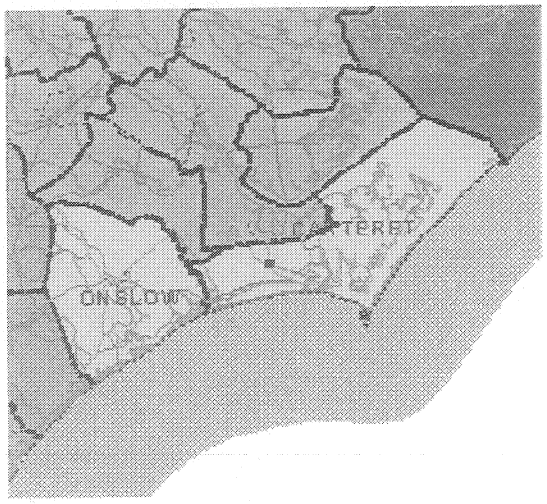
TABLE 2. B-2938 Onsite Mitigation Debit Ledger

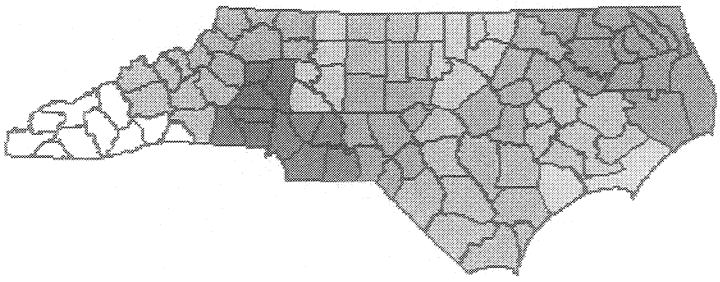
Community Type	Wetland Mitigation Remaining
Brackish Marsh Restoration	1.7 ac

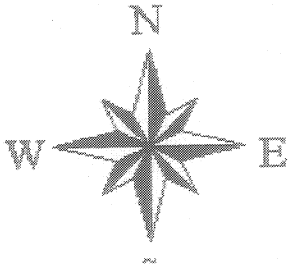
2.5 Final Dispensation of Property

NCDOT will retain ownership of the mitigation site until all monitoring requirements are fullfilled and an appropriate recipient is identified. If and when the deed is transferred, restrictions will be placed on the property to ensure protection in perpetuity.



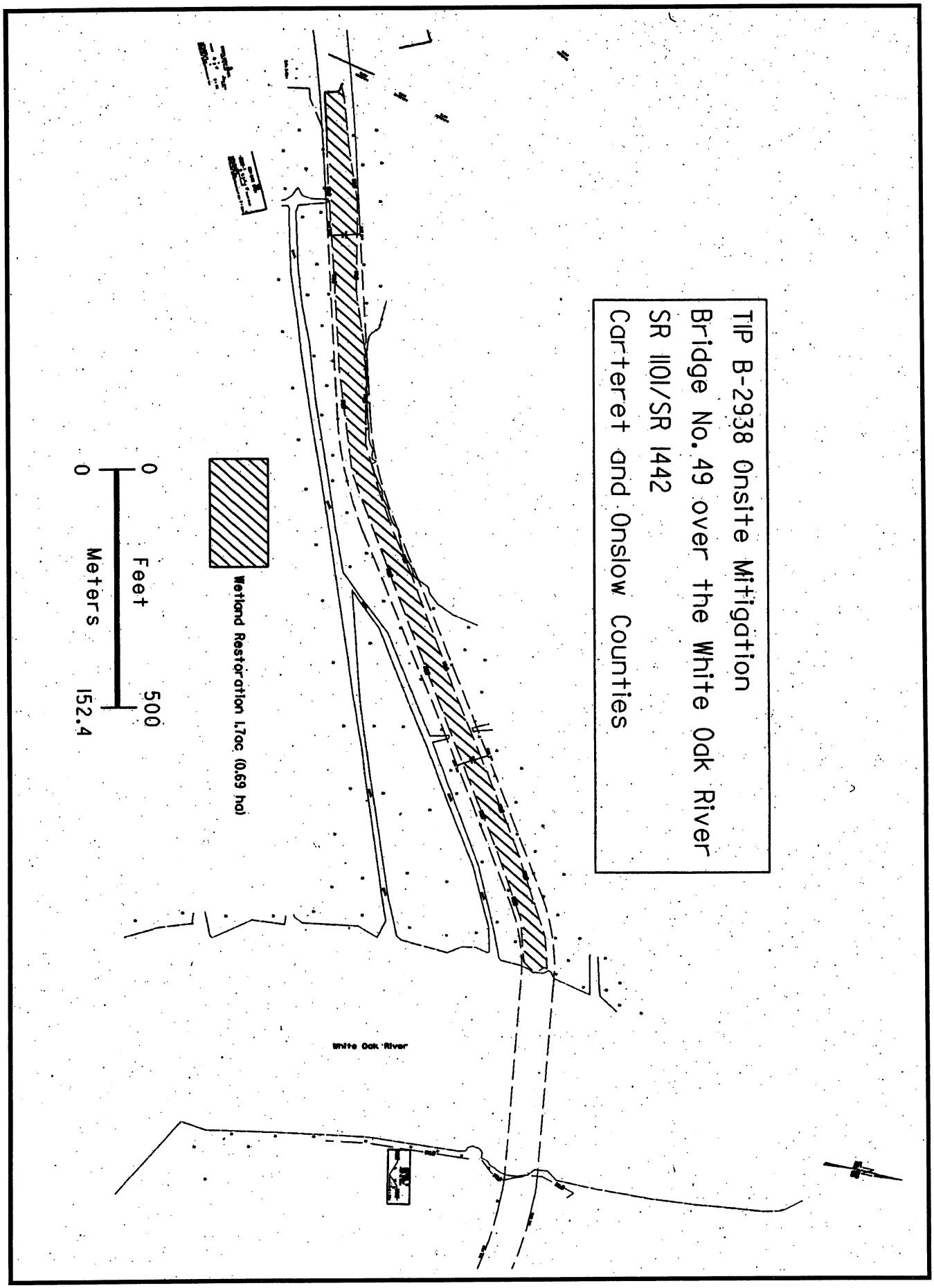






TIP B-2938 Onsite Mitigation
Bridge No. 49 on SR 1442/ SR1101
Carteret and Onslow Counties

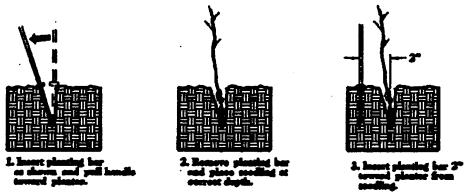
Figure 2. Plan view of marsh restoration area



PLANTING DETAILS

MARSH GRASS PLANTING DETAIL

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



PLANTING NOTES:

PLANTING BAG
Bundled seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a subsoiler point, and shall be 22" long, 4" wide and ½" thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches (10") below the root collar.

N.C.	B-2938	RP-1	

WETLAND GRASS PLANTING

WETLAND GRASS SPECIES SHALL BE PLANTED 0.6m TO 1.2m ON CENTER, RANDOM SPACING, AVERAGING 0.9m ON CENTER, APPROXIMATELY 11955 PLANTS PER HECTARE.

WETLAND GRASS PLANTING

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

40% SPARTINA CYNOSUROIDES	BIG CORDGRASS	50 mm PEAT POT
30% JUNCUS ROMERIANUS	BLACK NEEDLE RUSH	50 mm PEAT POT
30% SPARTINA PATENS	SALTMEADOW CORDGRASS	50 mm PEAT POT

WETLAND GRASS PLANTING DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

Figure 3. Planting plan detail

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** Day Phone **(919) 733-3141**

Fax **(919) 733-9794**

b. Authorized Agent:

Name N/A

Address _____

City _____ State _____
Zip _____ Day Phone _____
Fax _____

c. Project name (if any) **B-2938**

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

2. LOCATION OF PROPOSED PROJECT

a. County **Carteret/ Onslow**

b. City, town, community or landmark
Stella, NC

c. Street address or secondary road number
SR 1101/SR 1442

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) **White Oak River**

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.
Bridge Construction- New location over White Oak River

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

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

d. 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. **New bridge over White Oak River is proposed to be built off of temporary work bridge within construction easement.**

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 **5'-15' (1.5m-4.5m above WSE)**

d. Soil type(s) and texture(s) of tract **-Muckalee-Dorovan, Lafitte-Hobucken-Carteret, and Baymeade-Onslow-Lynchburg association -fine sand, loamy fine sand, and muck texture**

e. Vegetation on tract **Man dominated and brackish marsh communities**

f. Man-made features now on tract **Privately owned boat ramp, parking lot**

g. What is the CAMA Land Use Plan land classification of the site? *(Consult the local land use plan.)*
X Conservation ____ Transitional
____ Developed ____ Community
____ 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? **SHPO**

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

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

m. Describe existing wastewater treatment facilities.

None

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.
Wells

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 permit drawings, page 21 of 22 for a 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 $250** 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 27 day of December, 2003.

Print Name Philip S. Harris III

Signature _____
Landowner or Authorized Agent

Please indicate attachments pertaining to your proposed project.

X	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-2

EXCAVATION AND FILL

(Except 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.

Describe below the purpose of proposed excavation or fill activities. **All values to be given in feet.**

	Length	Width	Average Existing Depth	Final Project Depth
Access channel (MLW) or (NWL)				
Canal				
Boat basin				
Boat ramp				
Rock groin				
Rock breakwater				
Other (Excluding shoreline stabilization)	*2850 **63	16 23	1	1

*Fill in existing ditch

**Excavation in existing ditch

1. EXCAVATION

a. Amount of material to be excavated from below MHW or NWL in cubic yards **None**

b. Type of material to be excavated **Local Material**

c. Does the area to be excavated include coastal wetlands (marsh), submerged aquatic vegetation (SAVs) or other wetlands? ___ Yes **X** No

d. High ground excavation in cubic yds **4435 yd^3 const., 74.052 ft^2 for onsite restoration**

2. DISPOSAL OF EXCAVATED MATERIAL

a. Location of disposal area **Upland area**

b. Dimensions of disposal area **Not known until construction**

c. Do you claim title to disposal area?
___ Yes **X** No
If no, attach a letter granting permission from the owner.

d. Will a disposal area be available for future maintenance? **X** Yes ___ No
If yes, where? **Not known until construction**

e. Does the disposal area include any coastal wetlands (marsh), SAVs or other wetlands?
____ Yes __X__ No

f. Does the disposal include any area in the water?
____ Yes __X__ No

3. SHORELINE STABILIZATION N/A

a. Type of shoreline stabilization
_____ Bulkhead _____ Riprap

b. Length _____

c. Average distance waterward of MHW or NWL
_____

d. Maximum distance waterward of MHW or NWL
_____

e. Shoreline erosion during preceding 12 months
_____
(Source of information) _____

f. Type of bulkhead or riprap material _____
_____

g. Amount of fill in cubic yards to be placed below water level
(1) Riprap _____
(2) Bulkhead backfill _____

h. Type of fill material _____
_____

i. Source of fill material _____
_____

4. OTHER FILL ACTIVITIES
(Excluding Shoreline Stabilization)

a. Will fill material be brought to site?
____ Yes __X__ No

If yes,

(1) Amount of material to be placed in the water
_____

(2) Dimensions of fill area _____
_____

(3) Purpose of fill _____
_____

b. Will fill material be placed in coastal wetlands (marsh), SAVs or other wetlands?
____ Yes __X__ No
If yes,
(1) Dimensions of fill area _____
_____
(2) Purpose of fill _____
_____

5. GENERAL

a. How will excavated or fill material be kept on site and erosion controlled? **Silt fence, NCDOT Type B Silt Basins, diversion ditches, inlet protection**
_____
_____

b. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?
Barge, bulldozer, backhoe, crane, and temporary work bridge

c. Will wetlands be crossed in transporting equipment to project site? __X__ Yes ____ No
If yes, explain steps that will be taken to lessen environmental impacts. Temporary work bridge, erosion control measures, work berm fill
_____
_____

_____
Applicant or Project Name

_____
Signature

12/27/03
Date

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)
Concrete girders and deck with steel 4-pile and drilled pier bents

c. Water body to be crossed by bridge
White Oak River

d. Water depth at the proposed crossing at MLW or NWL **1.83 ft or 0.549 m WSE**

e. Will proposed bridge replace an existing bridge?
__X__ Yes ____ No
If yes,
(1) Length of existing bridge **432'**
(2) Width of existing bridge **19'**
(3) Navigation clearance underneath existing bridge **11' (measured onsite with DCM0**
(4) Will all, or a part of, the existing bridge be removed? (Explain) **all of the existing bridge will be removed**

f. Will proposed bridge replace an existing culvert(s)?
____ Yes __X__ 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) **N/A**

g. Length of proposed bridge **2,310'**

h. Width of proposed bridge **32'**

i. Height of proposed bridge above wetlands
3.5-12'

j. Will the proposed bridge affect existing water flow?
__X__ Yes ____ No
If yes, explain
This project enhances water movement by removal of existing causeway.

k. Navigation clearance underneath proposed bridge
11' (maintain existing) measured with DCM

l. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? ____ Yes __X__ No
If yes, explain _____

m. Will the proposed bridge cross wetlands containing no navigable waters? __X__ Yes ____ No
If yes, explain **New Structures will span the marsh lands to the south of the river**

n. Have you contacted the U.S. Coast Guard concerning their approval?
__X__ Yes _____ 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?
____ Yes __X__ No
If yes,
(1) Length of area to be excavated _____
(2) Width of area to be excavated _____
(3) Depth of area to be excavated _____
(4) Amount of material to be excavated in cubic yards _____

b. Will the placement of the proposed bridge or culvert require any excavation within: NO
__ Coastal Wetlands __ SAVs __ Other Wetlands
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 _____

c. Will the placement of the proposed bridge or culvert require any highground excavation?
__X__ Yes ____ 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 **3390 m^3 =4435 yd^3 for construction**
74.052 ft^2 for onsite restoration

d. If the placement of the bridge or culvert involves any excavation, please complete the following:
(1) Location of the spoil disposal area
Unknown until construction
_____
(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, **See Permit drawings**
(1) Length of area to be filled _____
(2) Width of area to be filled _____
(3) Purpose of fill **Piles driven for temporary work bridge**

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 _____
(2) Width of area to be filled _____
(3) Purpose of fill **piles, rip rap, and boat ramp (see drawings)**

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? __X__ Yes ____ No
If yes,
(1) Length of area to be filled **327'**
(2) Width of area to be filled **55'**
(3) Purpose of fill **Roadway embankment**

4. GENERAL

a. Will the proposed project involve any mitigation?
__X__ Yes ____ No
If yes, explain in detail **See onsite mitigation plan**

b. Will the proposed project require the relocation of any existing utility lines? __X__ Yes ____ No
If yes, explain in detail **Telephone cable, power lines cross on south side of structure**

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?
____ Yes __X__ No
If yes, complete Form DCM-MP-2

e. How will excavated or fill material be kept on site and erosion controlled? **Silt fence, diversion ditches, NCDOT Type B Basin**

f. What type of construction equipment will be used (for example, dragline, backhoe or hydraulic dredge)? **Backhoe, bulldozer, crane, temporary work bridge**

g. Will wetlands be crossed in transporting equipment to project site? __X__ Yes ____ No
If yes, explain steps that will be taken to lessen environmental impacts. **Work within construction easments and temporary work bridge**

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

12/27/03
Date

UNITED STATES POSTAL SERVICE

U.S. Postal Service
CERTIFIED MAIN RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2938

Sent To Harry Barker
Street, Apt. No.; or PO Box No. 4604 Pine Needle Lane
City, State, ZIP+4 Wilson NC 27896

PS Form 3800, May 2000 See Reverse for Instructions

7000 1670 0003 2581 7852

UNITED STATES POSTAL SERVICE

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2938

Sent To Midway United Methodist Church
Street, Apt. No.; or PO Box No. 139 Wetherington Landing Rd.
City, State, ZIP+4 Stella NC 28582

PS Form 3800, May 2000 See Reverse for Instructions

7000 1670 0003 2581 7845

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2938

Sent To Nido L. Hamilton
Street, Apt. No.; or PO Box No. 110 Wetherington Landing Rd.
City, State, ZIP+4 Stella, NC 28582

PS Form 3800, May 2000 See Reverse for Instructions

7000 1670 0003 2581 7634

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2938

Sent To Charles W. Hermanson, Jr.
Street, Apt. No.; or PO Box No. 355 Stella Rd
City, State, ZIP+4 Stella NC 28582

PS Form 3800, May 2000 See Reverse for Instructions

7000 1670 0003 2581 7610

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Nido L. Hamilton
110 Wetherington Landing Road
Stella, NC 28582

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*: Louise P Hamilton — B. Date of Delivery: 4-14-03

C. Signature: X Louise P Hamilton — ☐ Agent ☒ Addressee

D. Is delivery address different from item 1? ☒ Yes ☐ No
If YES, enter delivery address below:
PO Box 34
Stella NC 28582

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 2581 7634

PS Form 3811, July 1999 — Domestic Return Receipt — 102595-00-M-0952

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Harry Barker
4604 Pine Needle Lane
Wilson, NC 27896

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* — B. Date of Delive: 4/11/03

C. Signature: X Harry Barker — ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes ☐ No
If YES, enter delivery address below:

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandi
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 2581

PS Form 3811, July 1999 — Domestic Return Receipt — 102595-00-M-095

B2938

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Charles W. Hermanson, Jr.
355 Stella Road
Stella, NC 28582

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* — B. Date of Delivery: 4-12-03

C. Signature: X Charles W. Hermanson Jr. — ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes ☐ No
If YES, enter delivery address below:

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 2581 76d0

PS Form 3811, July 1999 — Domestic Return Receipt — 102595-00-M-0952

B2938

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Midway United Methodist Church
139 Wetherington Landing Road
Stella, NC 28582

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*: Rosa Morris — B. Date of Delive: 4-11-03

C. Signature: X Rosa Morris — ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☒ Yes ☐ No
If YES, enter delivery address below:
PO Box 48
Stella NC 28582

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandi
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 25

PS Form 3811, July 1999 — Domestic Return Receipt — 102595-00-M-09

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2938

7000 1670 0003 2581 7597

Sent To: Ethlyn Sanders Hurst
Street, Apt. No.; or PO Box No.: 145 Doctor Corbett Rd.
City, State, ZIP+4: Swansboro, NC 28584

PS Form 3800, May 2000 — See Reverse for Instructions

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2983

7000 1670 0003 2581 7580

Sent To: Kenneth W. Metts
Street, Apt. No.; or PO Box No.: 217 River Drive
City, State, ZIP+4: Stella, NC 28582

PS Form 3800, May 2000 — See Reverse for Instructions

UNITED STATES POSTAL SERVICE

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ZIP+4 in this box •

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here
B2938

7000 1670 0003 2581 7573

Sent To: Jeanette Smith Morton
Street, Apt. No.; or PO Box No.: 4405 Holly Lane
City, State, ZIP+4: Valdosta, GA 31602

PS Form 3800, May 2000 — See Reverse for Instructions

B2938

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Ethlyn Sanders Hurst
145 Doctor Corbett Road
Swansboro, NC 28584

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*: Ethlyn S Hurst — B. Date of Delivery: 4-14-03

C. Signature: x Ethlyn S. Hurst — ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 2581 7594

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

B2938

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Kenneth W. Metts
2117 River Drive
Stella, NC 28582

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*: Kenneth W Metts — B. Date of Delivery: 4/16/03

C. Signature: x Kenneth Metts — ☐ Agent ☒ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ~~☐ No~~

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 2581 7587

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

B2938

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Ms. Jeanette Smith Morton
4405 Holly Lane
Valdosta, GA 30602

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*: Jeanette Morton — B. Date of Delivery: 4/12/3

C. Signature: X Jeanette Morton — ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* [redacted] 7000 1670 0003 2581 75

PS Form 3811, July 1999 Domestic Return Receipt 102595-00-M-0952

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

B2938

Sent To Grover C. Caddell, III
Street, Apt. No.; or PO Box No. 3201 River Rd
City, State, ZIP+4 Stella NC 28582

PS Form 3800, May 2000 See Reverse for Instructions

7000 1670 0003 2580 8779

• Sender: Please

UNITED STATES POSTAL SE

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Grover C. Caddell, III
International Patient Services, Inc.
3201 River Road
Stella, NC 28582

#2938 (ppl. & research)

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery 14 May 03

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
(Transfer from service label) 7000 1670 0003 2580 8779

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

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

Wilmington Regional Office

June 27, 2002

Mr. William D. Gilmore, P.E., Manager
NCDOT PD&E Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Subject: Permit No. SW8 020321
Bridge #49 (White Oak River)
TIP Project B-2938
State Project No. 8.2160801
General Stormwater Permit
Linear Public Road / Bridge Project
Onslow County

Dear Mr. Gilmore:

The Wilmington Regional Office received a complete Stormwater Management Permit Application for Bridge #49 (White Oak River), TIP Project B-2938, State Project No. 8.2160801, on June 4, 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. SW8 020321 dated June 27, 2002, for the construction of Bridge #49 (White Oak River).

This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein.

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 either me or Linda Lewis at (910) 395-3900.

Sincerely,

Rick Shiver

Rick Shiver
Water Quality Regional Supervisor

RSS/arl: S:\WQS\STORMWAT\PERMIT\020321.JUN
cc: Jay Twisdale, P.E.
Division of Coastal Management
Linda Lewis
Wilmington Regional Office
Central Files

State Stormwater Management Systems
Permit No. SW8 020321

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

NCDOT PD&E Analysis Branch

Bridge #49 (White Oak River), TIP Project B-2938, State Project No. 8.2160801

Onslow County

FOR THE

replacement of an existing bridge over the White Oak River 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 Bridge #49 (White Oak River), TIP Project B-2938, State Project No. 8.2160801.

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. The runoff from the impervious surfaces has been directed away from surface waters as much as possible. Two closed systems will collect runoff over the main channel and direct it into the surrounding marsh.

2. The amount of built-upon area has been minimized as much as possible.

3. Best Management Practices are employed which minimize water quality impacts.

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

5. Vegetated roadside ditches are 3:1 slopes or flatter.

6. The existing causeway will be removed and 1.7 acres of wetlands will be restored.

II. SCHEDULE OF COMPLIANCE

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

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

3. The permittee shall submit to the Director and shall have received approval for revised plans, specifications, and calculations prior to construction for the following items:

   a. Major revisions to the approved plans, such as road realignment, deletion of any proposed BMP, etc.
   b. Project name change.
   c. Redesign of, addition to or deletion of the approved amount of built-upon area, regardless of size.
   d. Alteration of the proposed drainage.

4. The Director may determine that other revisions to the project should require a modification to the permit.

5. 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.

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 issued shall continue in force and effect until revoked or terminated.

3. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination does not stay any permit condition.

4. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the 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.

5. 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.

6. 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.

7. The permittee shall notify the Divisions of any name, ownership or mailing address changes within 30 days.

Permit issued this the 27th day of June, 2002

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Dick Klimek

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

Permit Number SW8 020321

OFFICE USE ONLY		
Date Received	Fee Paid	Permit Number
3/25/02	420.00	SW8 020321

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

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
LINEAR ROADWAY PROJECT
This form may be photocopied for use as an original.

DWQ Stormwater Management Plan Review:
A complete stormwater management plan submittal includes this application form, a supplement form for each BMP proposed (see Section V), design calculations, and plans and specifications showing all road and BMP details.

I. PROJECT INFORMATION

NCDOT Project Number: 8.2160801 County: Carteret/Onslow
Project Name: B-2938 Replacement of Bridge #49
Project Location: SR 1101/SR 1442
Contact Person: Jay Twisdale Phone: 919-250-4100 Fax: 919-250-4108
Receiving Stream Name: White Oak River River Basin: White Oak Class: SA
Proposed linear feet of project: 3500 feet
Proposed Structural BMP and Road Station *(attach a list of station and BMP type if more room is needed)*:
See attached list of BMPs.

Type of proposed project: *(check all that apply)*:

☐ New ☐Widening ☐2 lane* ☐4 lane* ☐Curb and Gutter ☑Bridge Replacement
☐Other *(Describe)*

**2 lane and 4 lane imply that roadside ditches are used unless Curb and Gutter is also checked.*

II. REQUIRED ITEMS CHECKLIST

Initial in the space provided below to indicate the following design requirements have been met and supporting documentation is attached. Supporting documentation shall, at a minimum, consist of a brief narrative description including (1) the scope of the project, (2) how the items below are met, (3) how the proposed best management practices minimize water quality impacts, and (4) any significant constraints and/or justification for not meeting a, b, c and d to the maximum extent practicable.

Designer's Initials

JWT a. The amount of impervious surface has been minimized as much as possible.
JWT b. The runoff from the impervious areas has been diverted away from surface waters as much as possible.
JWT c. Best Management Practices are employed which minimize water quality impacts.
JWT d. Vegetated roadside ditches are 3:1 slope or flatter.

III. OPERATION AND MAINTENANCE AGREEMENT

I acknowledge and agree by my initials below that the North Carolina Department of Transportation is responsible for the implementation of the four maintenance items listed. I agree to notify DWQ of any operational problems with the BMP's that would impact water quality or prior to making any changes to the system or responsible party.

Maintenance Engineer's Initials

DLT a. BMP's shall be inspected and maintained in good working order.

DLT b. Eroded areas shall be repaired and reseeded as needed.

DLT c. Stormwater collection systems, including piping, inlets, and outlets, shall be maintained to insure proper functioning.

Maintenance Engineer's Name: DAVID L. THOMAS, SR. P.E.

Title: DIVISION MAINTENANCE ENGINEER

IV. APPLICATION CERTIFICATION

I, *(print or type name)* _____ of _____ Branch, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans and that the proposed project complies with the requirements of 15A NCAC 2H .1000.

Title: _____

Address: _____

Signature: _____ Date: _____

V. SUPPLEMENT FORMS

The applicable state stormwater management permit supplement form(s) listed below must be submitted for each BMP specified for this project. Contact the Stormwater and General Permits Unit at (919) 733-5083 for the status and availability of these forms.

Form SWU-102	Wet Detention Basin Supplement
Form SWU-103	Infiltration Basin Supplement
Form SWU-104	Low Density Supplement
Form SWU-105	Curb Outlet System Supplement
Form SWU-106	Off-Site System Supplement
Form SWU-107	Underground Infiltration Trench Supplement
Form SWU-108	Neuse River Basin Supplement
Form SWU-109	Innovative Best Management Practice Supplement
Form SWU-110	Extended Dry Detention Basin Supplement

NCDOT Project No. 8.2160801 (B-2938)
Carteret / Onslow Counties

Project Scope

This project involves the removal and replacement of Bridge # 49 over the White Oak River on SR 1101/ SR 1442 (Wetherington Landing Road). This reach of the White Oak River is designated as SA/HQW waters. The proposed bridge will be located immediately down stream (South) of the existing bridge. The proposed bridge will be 2310 feet in length compared to the 432 feet of existing bridge. Increasing the length of the bridge and restoring wetlands in the area of the existing embankments will serve as mitigation for this project. All of the resource agencies agreed that this is the most preferred alternate. The existing causeways will be removed to an elevation to allow wetlands to be restored within the footprint of the existing embankment. This will result in 1.70 acres of wetland restoration, which will be planted with native non-invasive wetland species. The existing bridge has a clear roadway width of nineteen feet. The proposed bridge will have a clear roadway width of 32 feet that will provide 24 feet of travel way with 4 foot shoulders. The existing approaches consist of two nine foot travel lanes with six foot grassed shoulders. The proposed approaches will consist of two twelve foot travel lanes with eight grassed shoulders. A temporary work bridge located just South of the proposed bridge will be utilized to construct the proposed bridge to allow traffic to maintained on the existing crossing and to minimize impacts to the existing marsh, wetlands and river.

NCDOT Project No. 8.2160801 (B-2938)
Carteret/Onslow Counties

Best Management Practices

1. The proposed deck drains over the water surface of the White Oak River will be contained in two separate closed systems since the proposed crest of the roadway grade will be at 14+99.615 –L-. The closed system on the West side of the river will outlet at station 14+37.235 –L- which will be approximately 85 feet from the water surface of the river. Flow from this outlet will be dispersed by a proposed 6.5 x 6.5 foot rip rap pad located directly under this outlet in the marsh. The closed system on the East side of the river will outlet at station 15+95.965 –L- onto the proposed rip rap end bent slope protection. This outlet will be approximately 55 feet from the water surface of the river. All other deck drains will discharge directly into the existing marsh/wetlands.

2. The proposed roadway section will consist of grassed shoulders, fill slopes, and ditches with side slopes of 3:1 or flatter.

3. Replacement of 432 feet of existing bridge with 2310 feet of proposed bridge. Increasing the length of the bridge and restoring wetlands in the area of the existing embankments will serve as mitigation for this project. All of the resource agencies agreed that this is the most preferred alternate.

4. The existing causeways will be removed to an elevation to allow wetlands to be restored within the footprint of the existing embankment. This will result in 1.70 acres of wetland restoration, which will be planted with native non-invasive wetland species.

5. The proposed drainage design will require a short run of shoulder berm gutter and a single inlet just off each end of the proposed bridge. Class B rip rap will be placed at the outlet of each of these inlets to attenuate flow. The water from the inlet on the West End of the bridge will outlet and travel in a 0.9 meter (3 foot base) grassed swale with permanent rock check dams every 10 meters (32 feet) for 19.5 meters (64 feet) before entering a large area of wetlands. The permanent rock check dams and a grassed swale wider than minimum requirements are additional efforts to attenuate flow and provide treatment before entering wetlands adjacent to the river. On the East End of the bridge, a 0.6 meter (2.0 foot) base outlet basin will be constructed for filtration purposes. This outlet basin will be one foot in depth and have a length of 11 meters (36 feet).

6. The proposed bridge will be built from a temporary work bridge, which will reduce impacts to the wetlands/marsh and surface waters of the White Oak River.

7. An in stream construction moratorium will be in effect from February 15 to September 30. This moratorium is due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only not to the marsh areas.

B-2938

PROJECT: 8.2160802

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET/ONSLOW COUNTIES

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

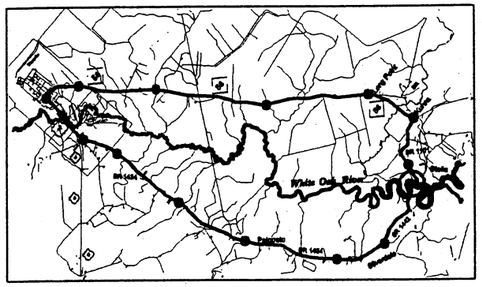
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2938	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
8.2160801	BRZ-1101(5)	P.E.
8.2160802	BRZ-1101(9)	R/W
		CONST.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RECEIVED
MAR 25 2002
DWQ
PROJ # SW8020321

VICINITY MAP



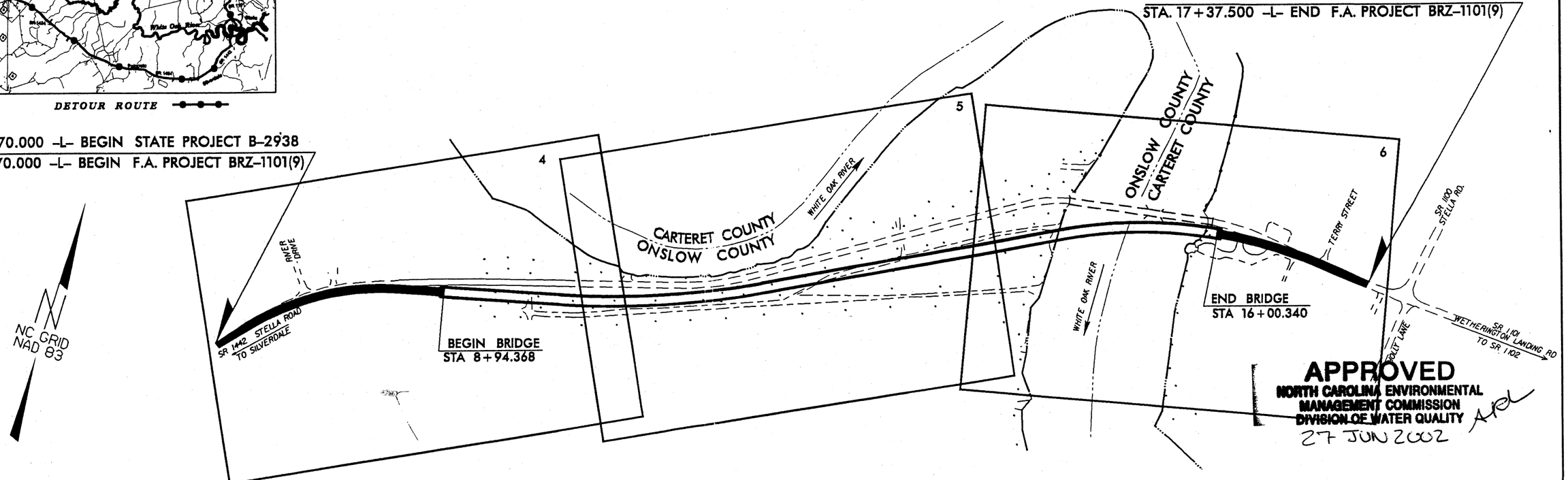
DETOUR ROUTE

LOCATION: REPLACE BRIDGE NO. 49 OVER WHITE OAK RIVER AND APPROACHES ON SR 1101 AND SR 1442

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING AND STRUCTURE.

STA. 6+70.000 –L– BEGIN STATE PROJECT B-2938
STA. 6+70.000 –L– BEGIN F.A. PROJECT BRZ-1101(9)

STA. 17+37.500 –L– END STATE PROJECT B-2938
STA. 17+37.500 –L– END F.A. PROJECT BRZ-1101(9)



APPROVED
NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION
DIVISION OF WATER QUALITY
27 JUN 2002

NCDOT CONTACT: CATHY HOUSER, P.E. - PROJECT ENGINEER - DESIGN SERVICES

GRAPHIC SCALE

5m 0 10m
PLANS
5m 0 10m
PROFILE (HORIZONTAL)
1m 0 2m
PROFILE (VERTICAL)

DESIGN DATA

ADT 2002 = 1600
ADT 2025 = 2500
DHV = 10 %
D = 60 %
T = 3 % *
* TTST 1% DUAL 2%
V = 70 km/h**
**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT BRZ-1101(5) = 0.361 km
LENGTH STRUCTURE F.A. PROJECT BRZ-1101(5) = 0.706 km
TOTAL LENGTH STATE PROJECT 8.2160801 = 1.067 km

Prepared in the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 18, 2002
LETTING DATE: JANUARY 21, 2003

GREG S. PURVIS, P.E. — PROJECT ENGINEER
WILLIAM TILLITT — PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN
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

PROJECT REFERENCE NO.	SHEET NO.
B-2938	4
R/W SHEET NO.	

METRIC

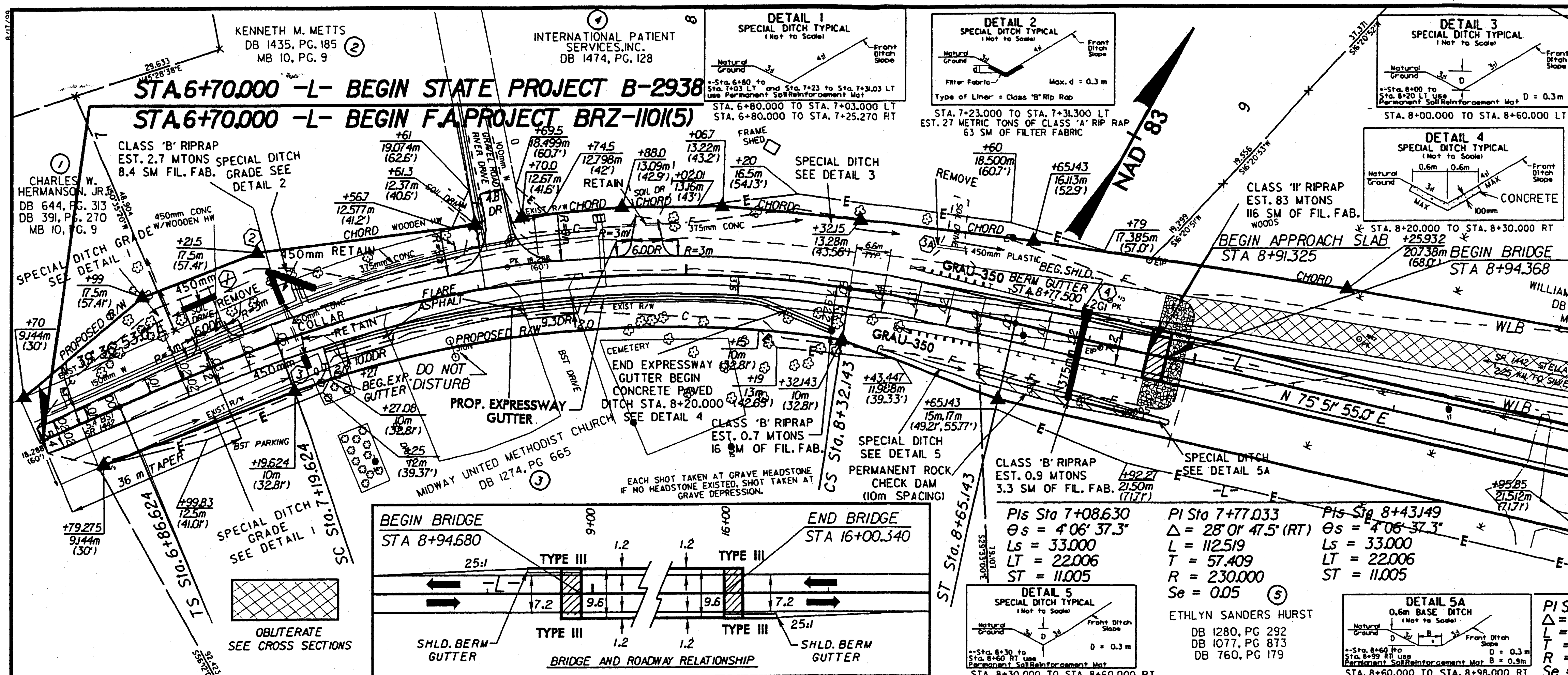
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

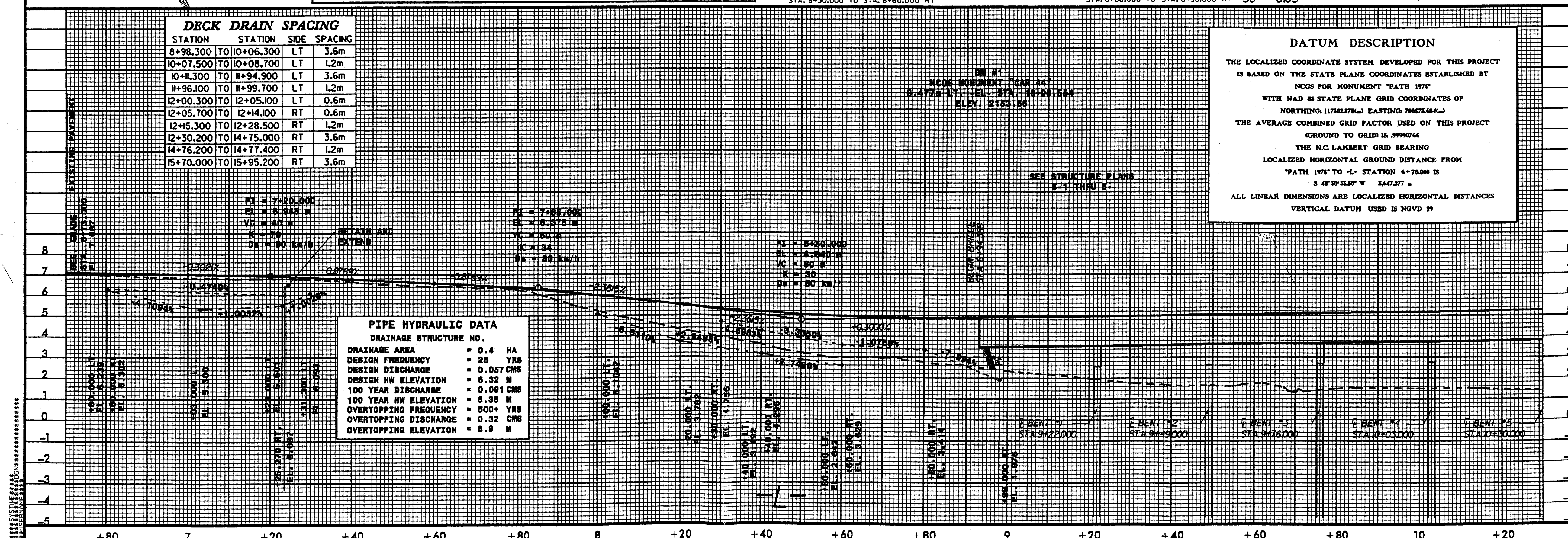
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513


STA.6+70.000 -L- BEGIN STATE PROJECT B-2938
STA.6+70.000 -L- BEGIN F.A.PROJECT BRZ-1101(5)
KENNETH M. METTS
DB 1435, PG. 185
MB 10, PG. 9
INTERNATIONAL PATIENT SERVICES,INC.
DB 1474, PG. 128
DETAIL 1
SPECIAL DITCH TYPICAL
DETAIL 2
SPECIAL DITCH TYPICAL
DETAIL 3
SPECIAL DITCH TYPICAL
DETAIL 4
SPECIAL DITCH TYPICAL
DETAIL 5
SPECIAL DITCH TYPICAL
DETAIL 5A
0.6m BASE DITCH
NAD 83
CHARLES W. HERMANSON, JR.
DB 644, PG. 313
DB 391, PG. 270
MB 10, PG. 9
CLASS 'B' RIPRAP
EST. 2.7 MTONS
8.4 SM FIL. FAB.
CLASS 'II' RIPRAP
EST. 83 MTONS
116 SM OF FIL. FAB.
BEGIN APPROACH SLAB
STA 8+91.325
BEGIN BRIDGE
STA 8+94.368
WILLIAM MATTOCKS SANDERS
DB 808 - PG 694
MB 24 - PG 7
**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION
SHORELINE OF WHITE OAK RIVER
N 75° 51' 55.0" E
MIDWAY UNITED METHODIST CHURCH
DB 1274, PG 665
PROP. EXPRESSWAY GUTTER
DO NOT DISTURB
END EXPRESSWAY GUTTER BEGIN CONCRETE PAVED DITCH STA. 8+20.000 SEE DETAIL 4
EACH SHOT TAKEN AT GRAVE HEADSTONE. IF NO HEADSTONE EXISTED, SHOT TAKEN AT GRAVE DEPRESSION.
PERMANENT ROCK CHECK DAM (10m SPACING)
OBLITERATE
SEE CROSS SECTIONS
BEGIN BRIDGE
STA 8+94.680
END BRIDGE
STA 16+00.340
TYPE III
SHLD. BERM GUTTER
BRIDGE AND ROADWAY RELATIONSHIP
PI Sta 7+08.630
θs = 4° 06' 37.3"
Ls = 33.000
LT = 22.006
ST = 11.005
PI Sta 7+77.033
Δ = 28° 01' 47.5" (RT)
L = 112.519
T = 57.409
R = 230.000
Se = 0.05
PIs Sta 8+43.149
θs = 4° 06' 37.3"
Ls = 33.000
LT = 22.006
ST = 11.005
ETHLYN SANDERS HURST
DB 1280, PG 292
DB 1077, PG 873
DB 760, PG 179
PI Sta 10+90.388
Δ = 14° 04' 59.0" (LT)
L = 186.805
T = 93.875
R = 760.000
Se = 0.03
MATCHLINE STA.10+30.000
NOTE: SEE SHEET 2A FOR DETOUR



DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	=	0.4	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.057	CMS
DESIGN HW ELEVATION	=	6.32	M
100 YEAR DISCHARGE	=	0.091	CMS
100 YEAR HW ELEVATION	=	6.38	M
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	0.32	CMS
OVERTOPPING ELEVATION	=	6.9	M

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PATH 1975" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 117302.378(m) EASTING: 780573.684(m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS .99990766

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PATH 1975" TO -L- STATION 6+70.000 IS S 48° 30' 33.50" W 3,647.377 m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 29

PROJECT REFERENCE NO.	SHEET NO.
B-2938	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

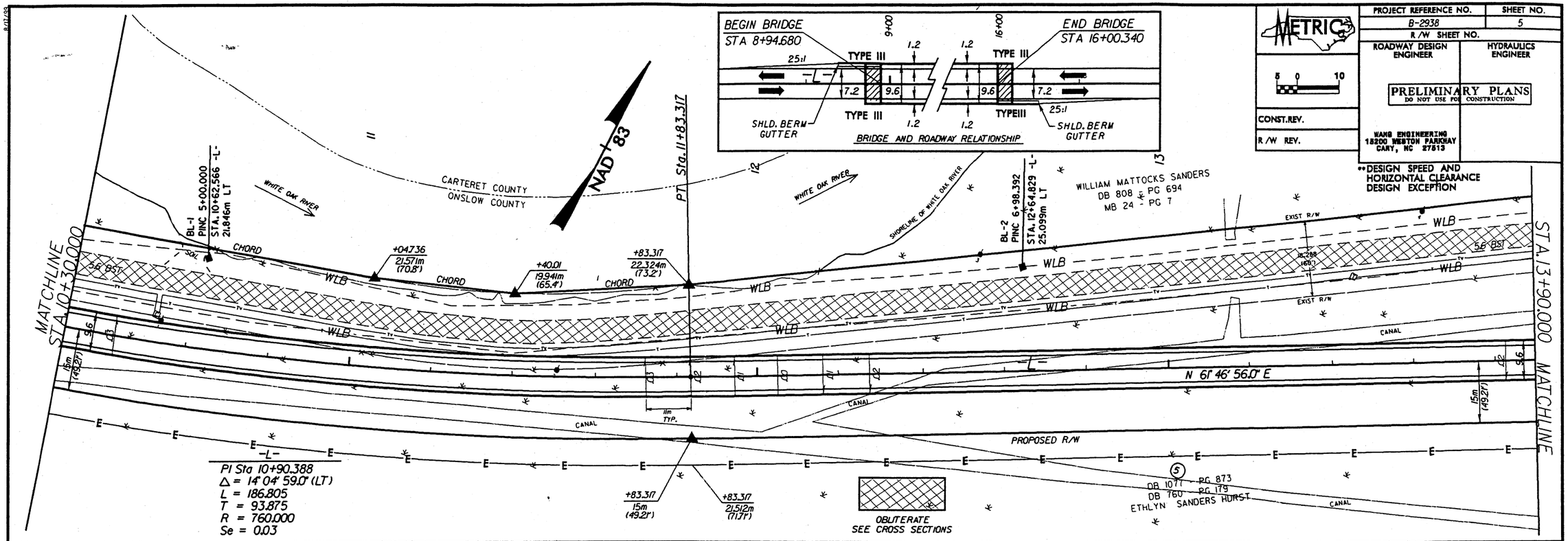
CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

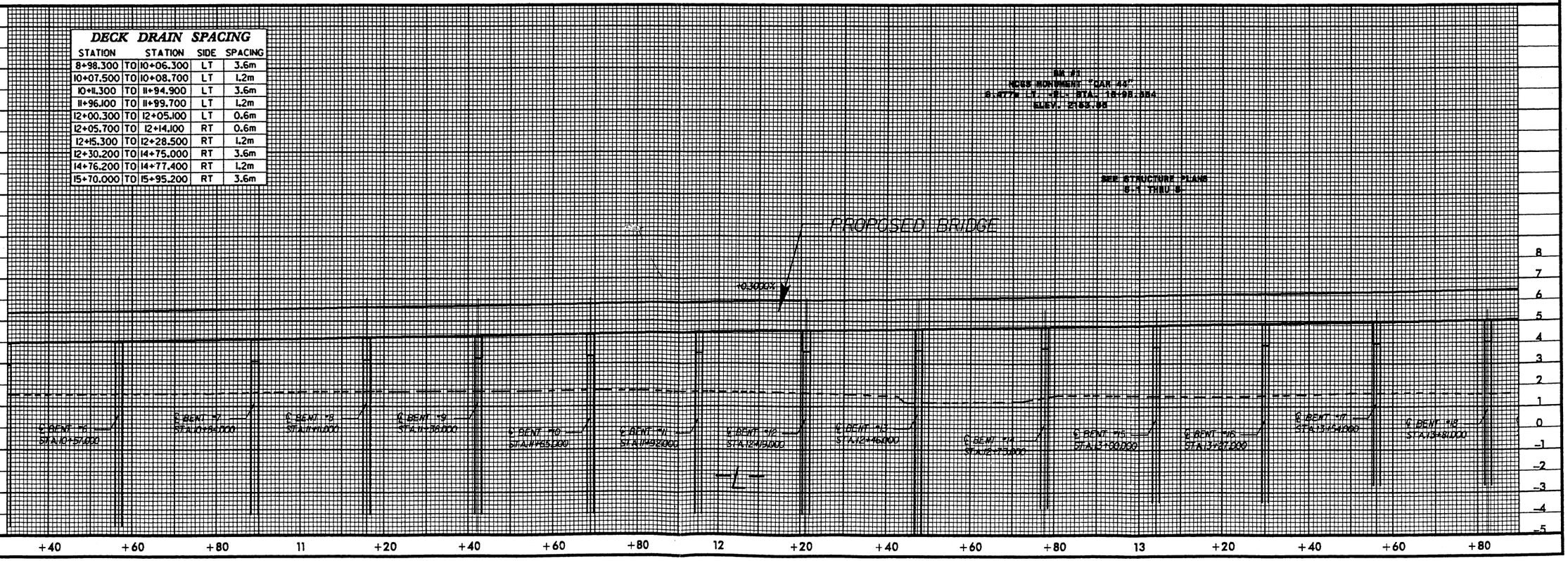
WANG ENGINEERING
18200 WESTON PARKWAY
CARY, NC 27513

**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION



DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m



PROJECT REFERENCE NO.	SHEET NO.
B-2938	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

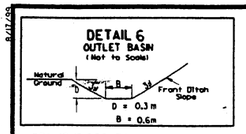
CONST.REV.

R/W REV.

METRIC

5 0 10

DETAIL 6
OUTLET BASIN
(Not to Scale)



STA. 16+10.000 TO STA. 16+21.000 RT

WILLIAM MATTOCKS SANDERS
DB 808 - PG 694
MB 24 - PG 7

EDWARD EARL GRAFTON
DB 770 - PG 680
MB 29 - PG 220

LESLIE S. BRIGHT, ET UX
DB 829 - PG 487

MIDWAY UNITED METHODIST CHURCH
DB 742 - PG 872
DB 183 - PG 469

DB 1077 - PG 873
DB 760 - PG 179
ETHLYN SANDERS HURST

NIDO L. HAMILTON
DB 579 - PG 238
DB 412 - PG 462

HARRY BARKER
DB 400 - PG 290
MB 12 - PG 26

JAMES W. HEALY, ET UX
DB 751 - PG 641

Pls Sta 14+65.232
θs = 2°16' 40.9"
Ls = 33.000
LT = 22.002
ST = 11.002
CLASS 'II' RIPRAP
EST. 168 MTONS
235 SM FILT. FAB.

Pl Sta 15+85.824
Δ = 29° 35' 09.2" (RT)
T = 109.593
R = 415.000
L = 214.294
Se = 0.04

Pls Sta 17+01.526
θs = 2°16' 40.9"
Ls = 33.000
LT = 22.002
ST = 11.002

Pl Sta 17+48.392
Δ = 2°48' 21.5" (LT)
L = 48.974
T = 24.492
R = 1,000.000
Se = MATCH EXISTING

OBLITERATE SEE CROSS SECTIONS

REMOVE STRUCTURE (STRUCTURES PAY ITEM)

END APPROACH SLAB
STA 16+03.695
END BRIDGE
STA 16+00.340

BEGIN BRIDGE
STA 8+94.680

ENTIRE BRIDGE STRUCTURE WOODEN WITH BST PAVING
BRIDGE #49

PROPOSED R/W

NOTE: FINAL LOCATION OF THE CONCRETE LAUNCH RAMP MAY BE ADJUSTED BY THE ENGINEER TO MEET FIELD CONDITIONS.

INCIDENTAL STONE RECONST. OF APPROACH RAMP

WOODEN DOCK

CONC BOAT RAMP

CONCRETE LAUNCH RAMP

GRAVEL PARKING

OUTLET BASIN SEE DETAIL 6

END SOLID BERM GUTTER STA 16+21.000

GRAU 350

GRAU 360

CLASS 'B' RIPRAP
EST. 0.9 MTONS
3.3 SM FIL. FAB.

400mm METAL PIPE W/2 ELBOWS

CLASS 'B' RIPRAP
EST. 2.7 MTONS
8.4 SM FIL. FAB.

DITCH CLEANOUT
STA. 16+80
DDE = 5 CM

PIPE CLEANOUT/ COLLAR & EXTEND W/ 450MM RCP

MTL CANOPY NOT TO BE DISTURBED

RETAIN

WHITE OAK RIVER

ONSLOW COUNTY
CARTERET COUNTY

HISTORIC DISTRICT

WLB

CANAL

SHORELINE OF WHITE OAK RIVER

STA. 13+90.000 MATCHLINE

N 61° 46' 56.0" E

SC Sta. 14+76.231

CS Sta. 14+43.231

ST Sta. 17+23.250

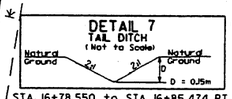
PC Sta. 17+23.250

STA 17+37.500 -L- END STATE PROJECT B-2938

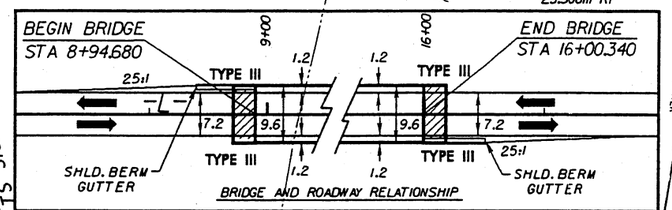
STA 17+37.500 -L- END F.A. PROJECT BRZ-1001(5)

NOTE: SEE SHEET 2A FOR DETOUR
ALL DRIVEWAY RADII 3m UNLESS OTHERWISE SHOWN

DETAIL 7
TAIL DITCH
(Not to Scale)



STA. 16+78.550 TO STA. 16+85.474 RT.
EST. DDE = 0.3CM



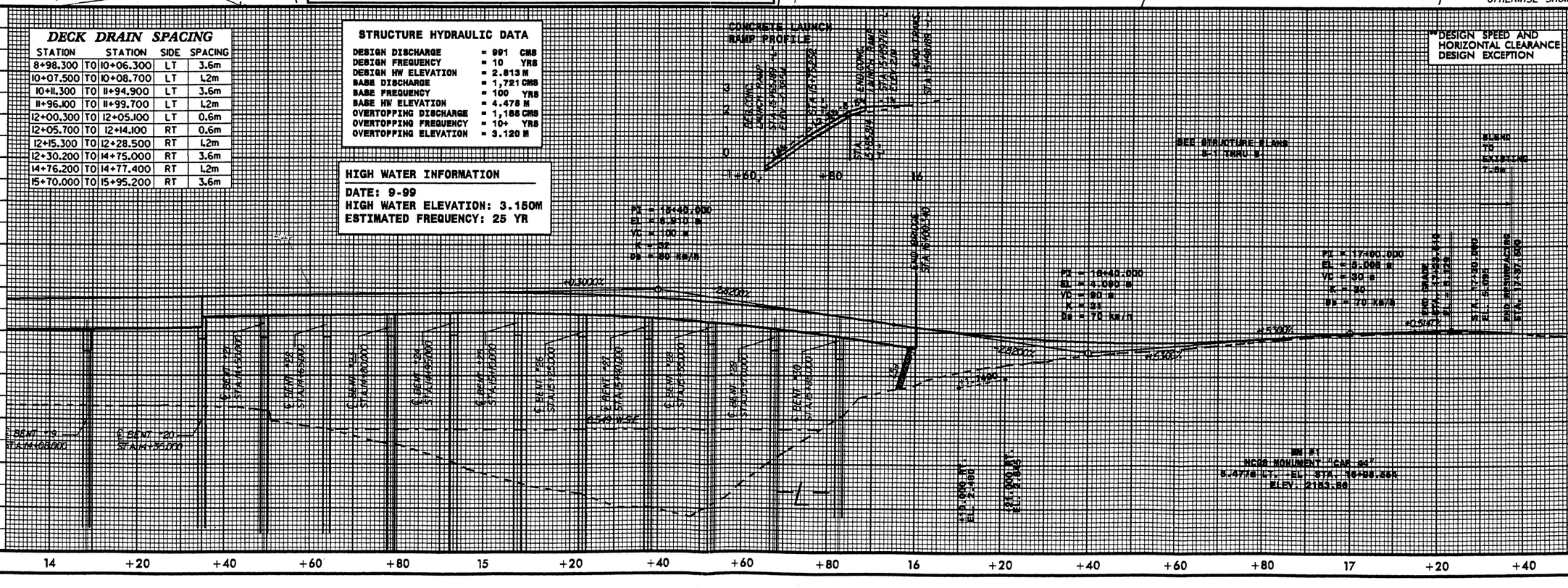
DECK DRAIN SPACING				
STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

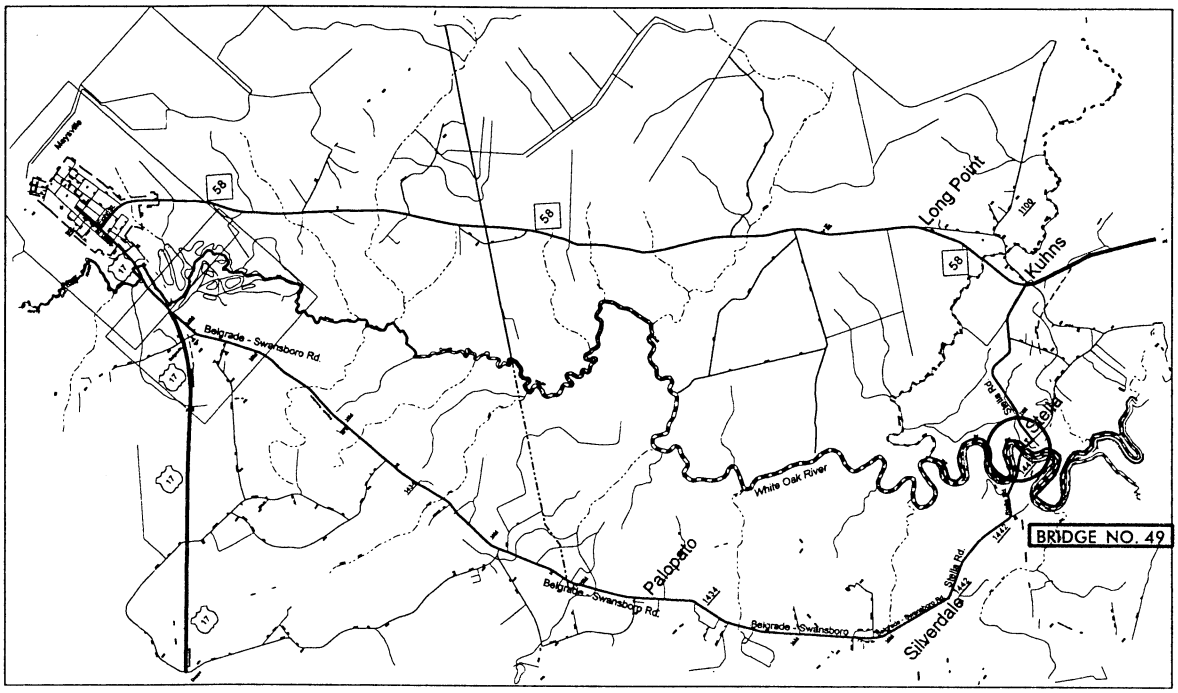
STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 991 CMS
DESIGN FREQUENCY	= 10 YRS
DESIGN HW ELEVATION	= 2.813 M
BASE DISCHARGE	= 1,721 CMS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 4.478 M
OVERTOPPING DISCHARGE	= 1,188 CMS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3.120 M

HIGH WATER INFORMATION
DATE: 9-99
HIGH WATER ELEVATION: 3.150M
ESTIMATED FREQUENCY: 25 YR

CONCRETE LAUNCH RAMP PROFILE





VICINITY MAP

N.C.D.O.T.

DIVISION OF HIGHWAYS

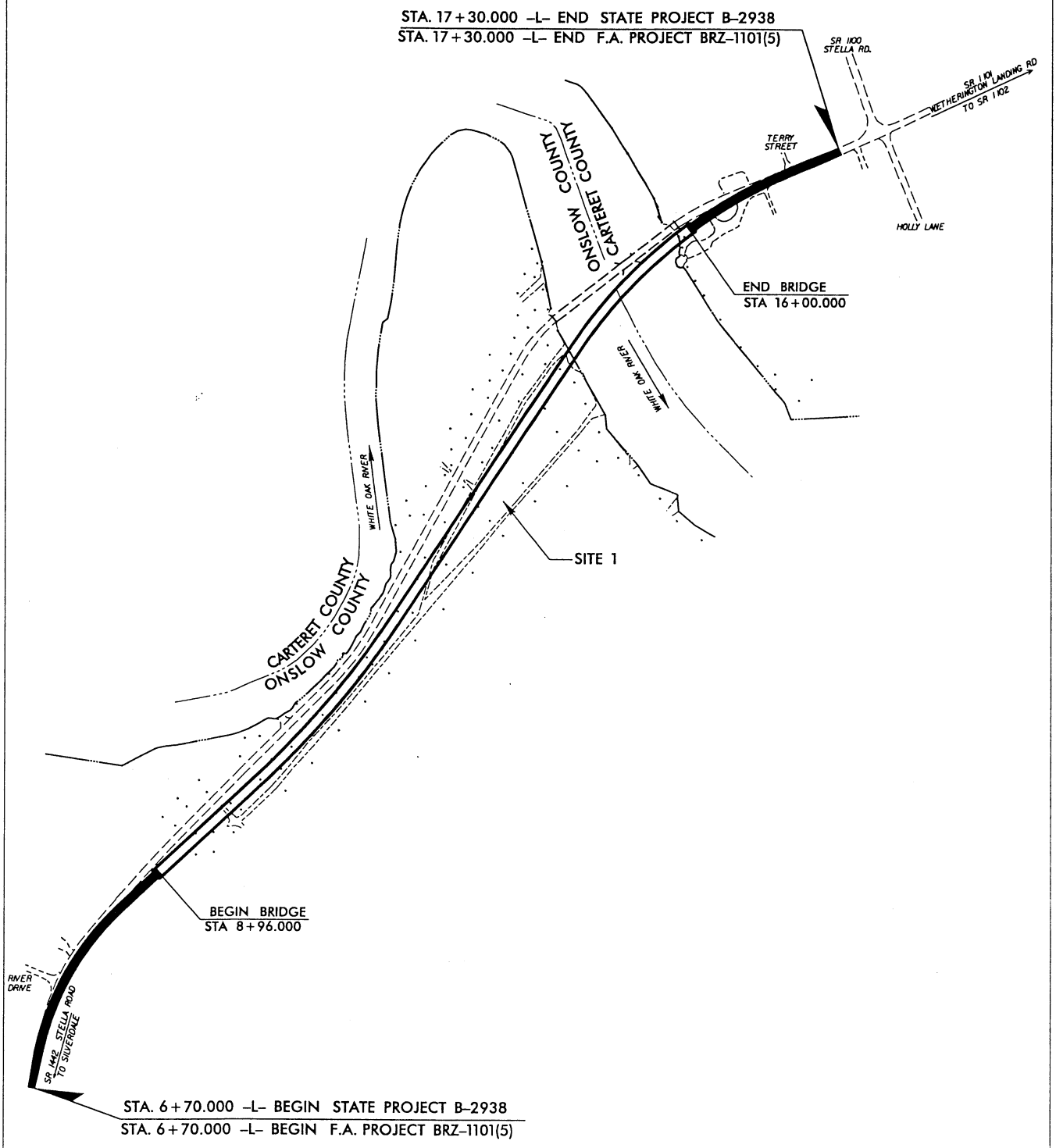
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 1 OF 22

05 / 31 / 01



VICINITY MAP

N.C.D.O.T.

DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 2 OF 22

05 / 31 / 01

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 TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

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 TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

12"-48" PIPES

54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

BZ1 BUFFER ZONE 1

BZ2 BUFFER ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

PROJECT: 8.2160801 (B-2938)
BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

SHEET 3 OF 22 05/31/01

METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
B-2938	2A
R/W SHEET NO.	

CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER

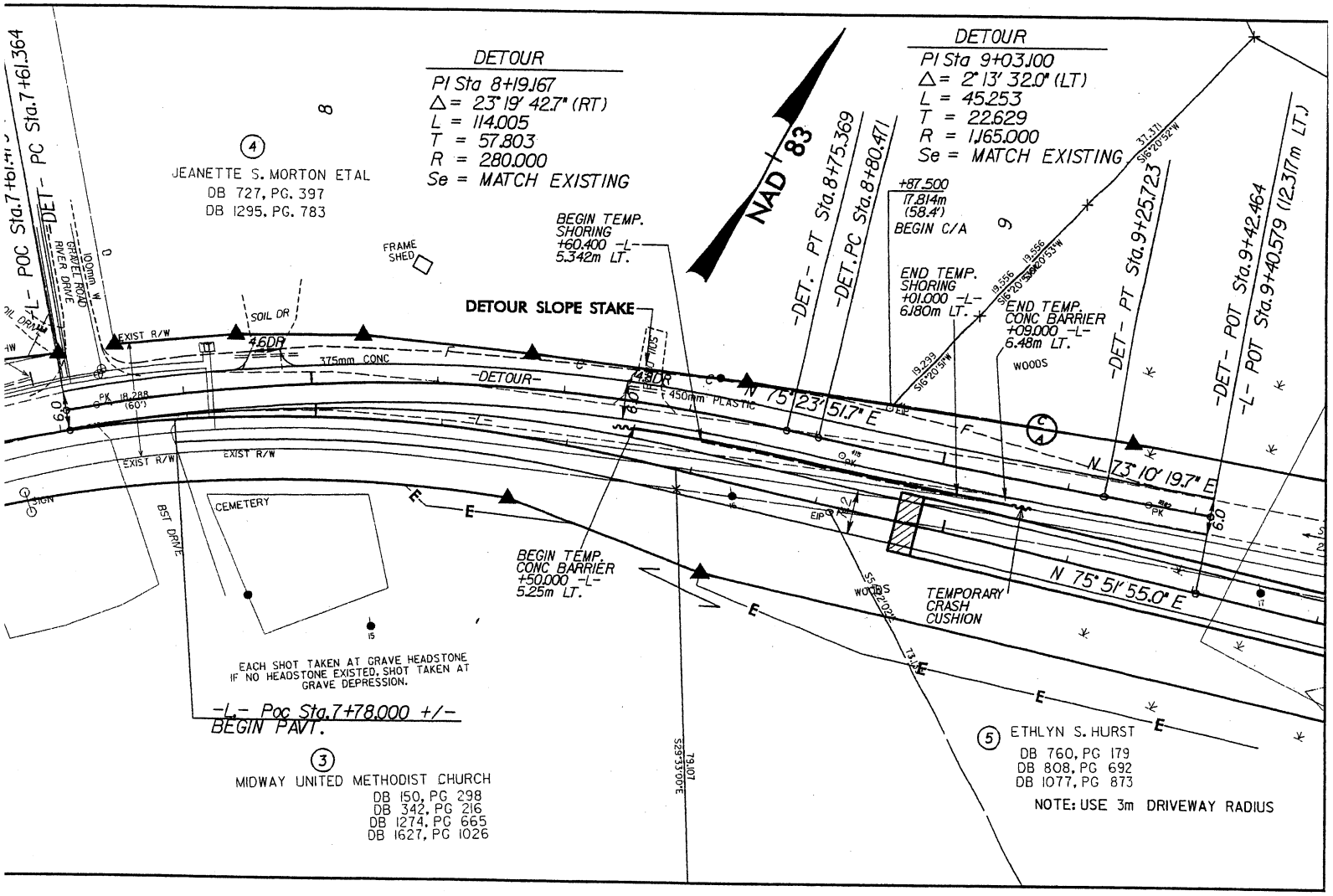
NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS 2/17/03

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG 2/18/03

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

DETOUR #1



N.C.D.O.T.

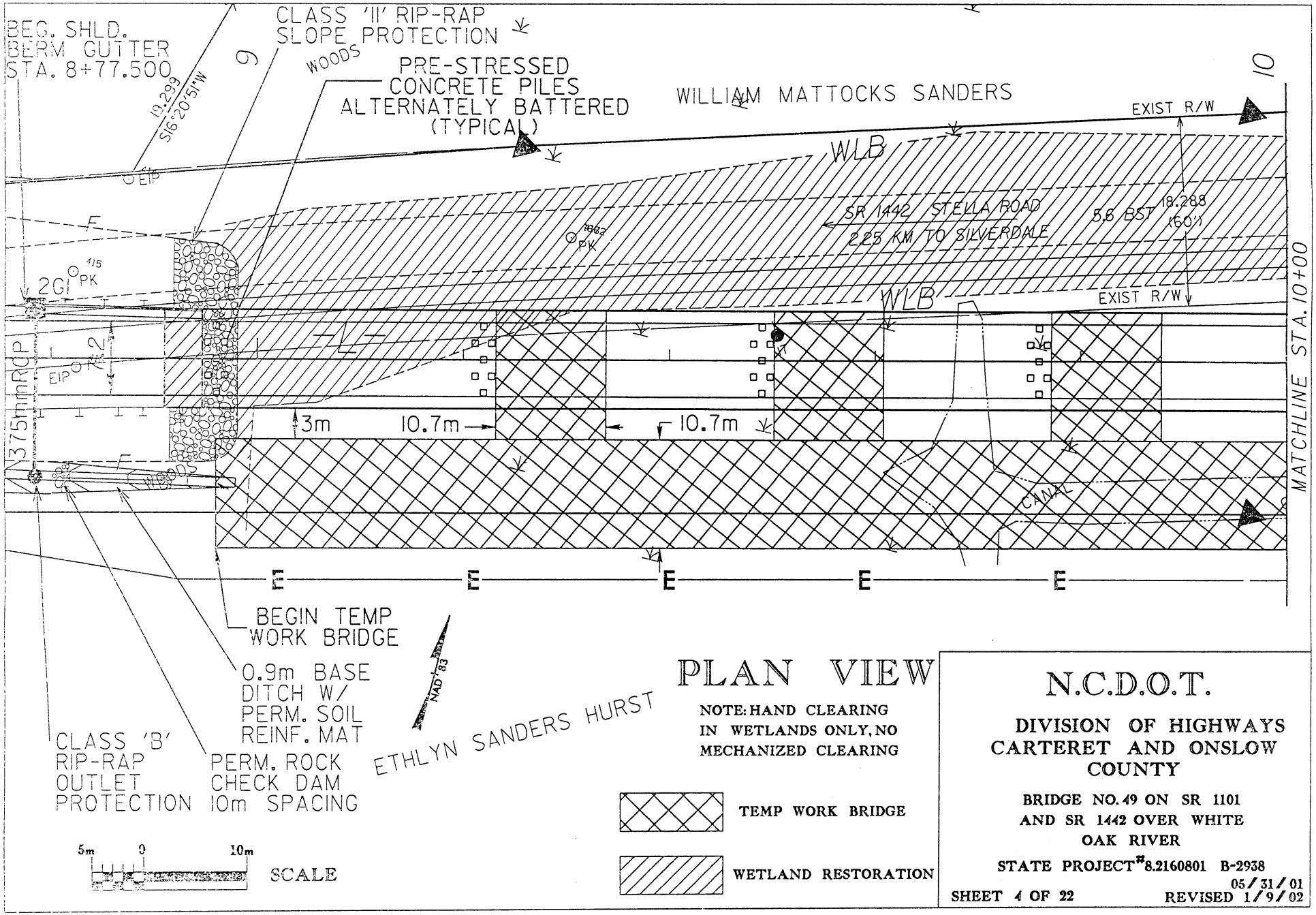
DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 3A OF 22



PLAN VIEW

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

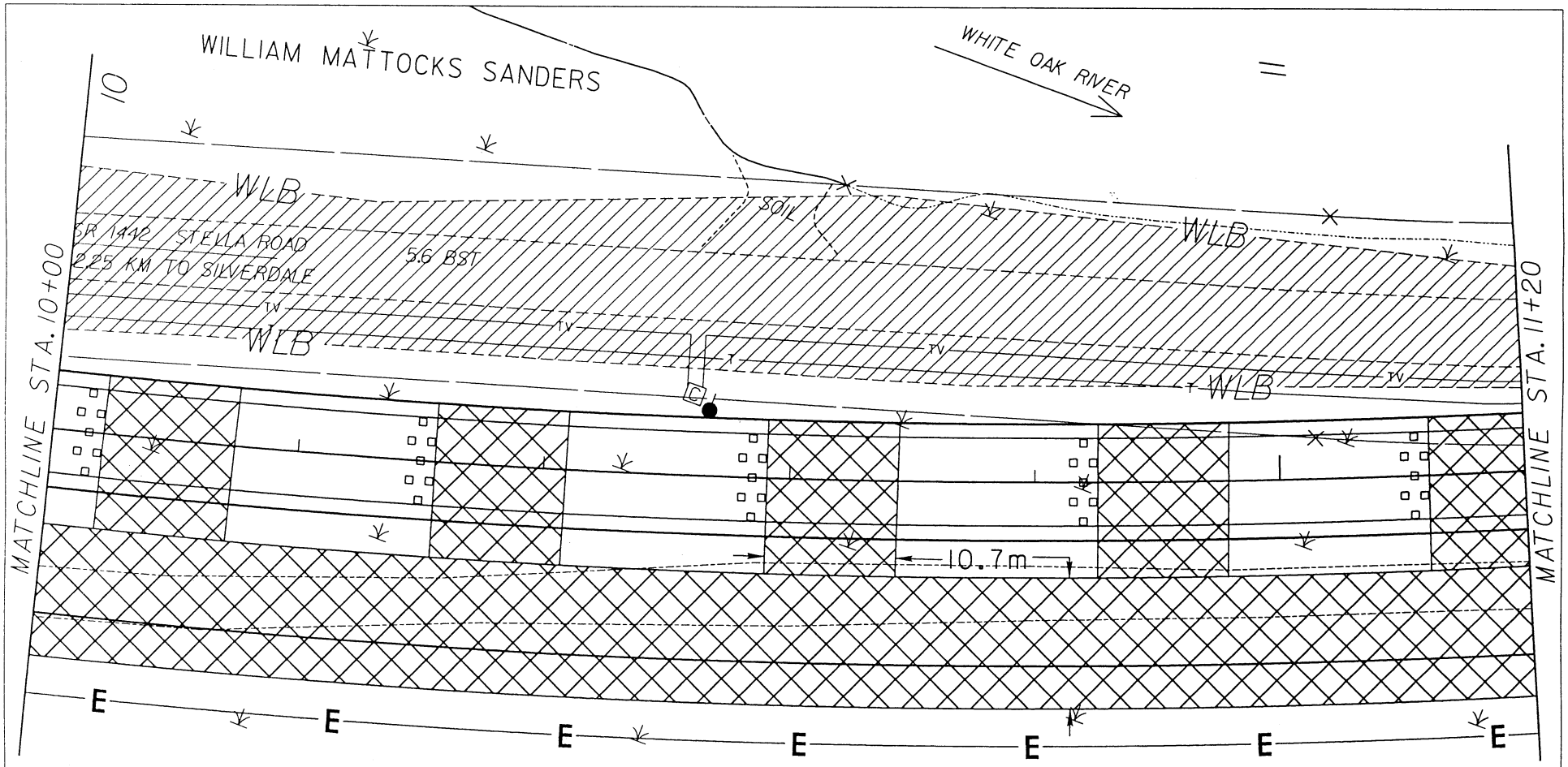
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 4 OF 22

05/31/01
REVISED 1/9/02



ETHLYN SANDERS HURST

PLAN VIEW

NAD 83

5m 0 10m

SCALE

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

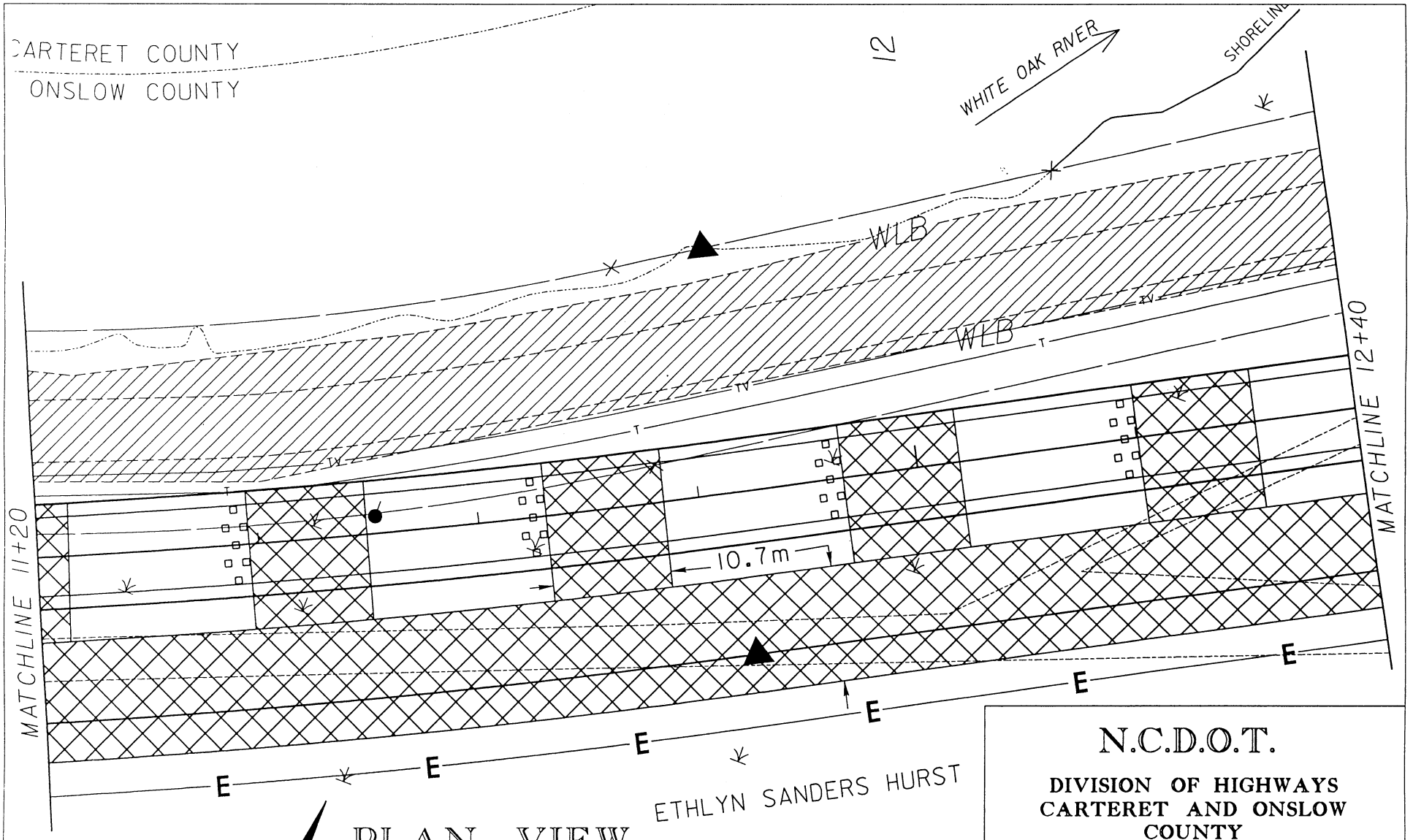
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT# 8.2160801 B-2938

SHEET 5 OF 22

05 / 31 / 01



PLAN VIEW

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

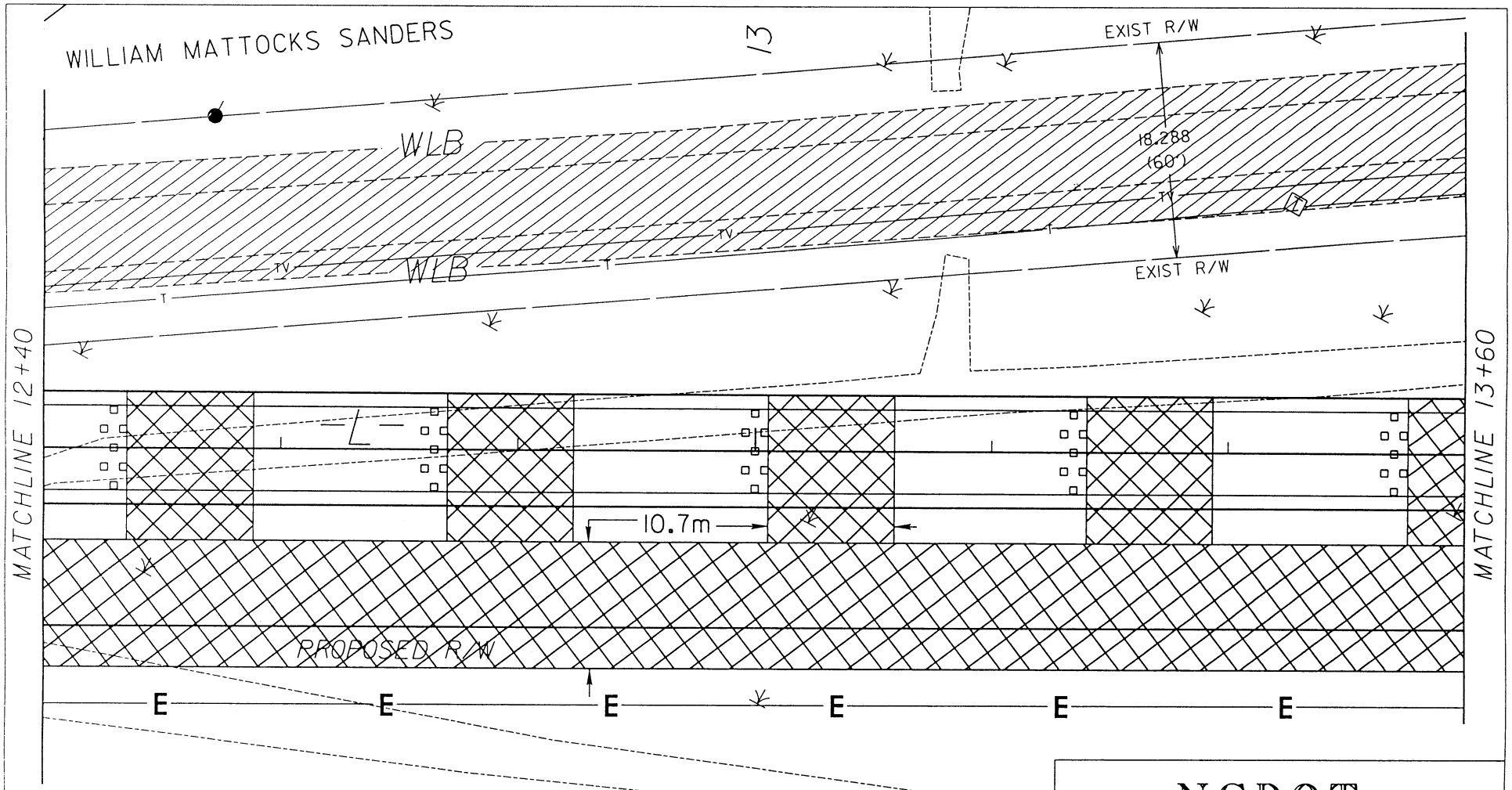
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 6 OF 22

05/31/01



PLAN VIEW

NOTE: HAND CLEARING IN WETLANDS ONLY, NO MECHANIZED CLEARING

TEMP WORK BRIDGE

WETLAND RESTORATION

N.C.D.O.T.

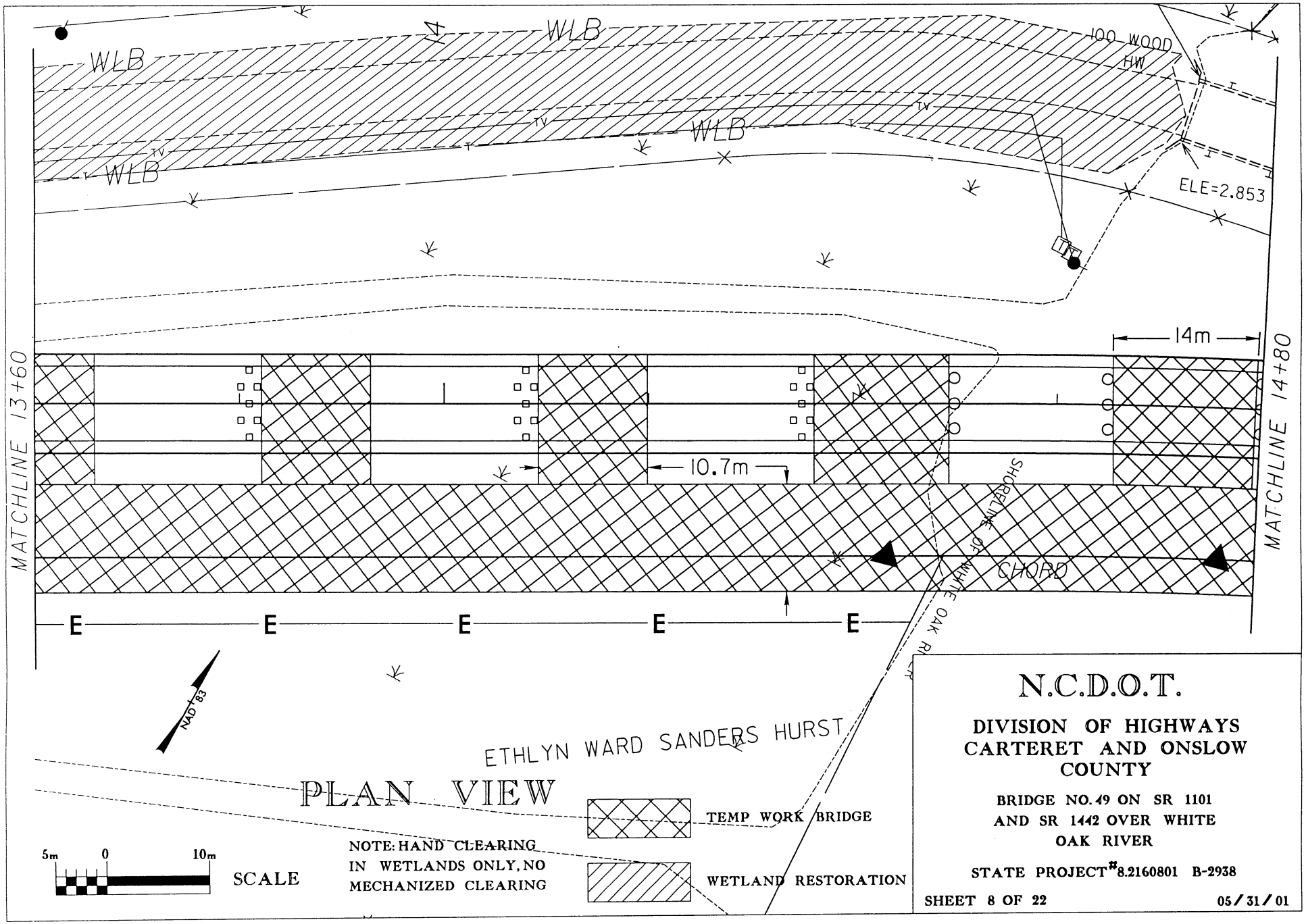
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 7 OF 22

05/31/01



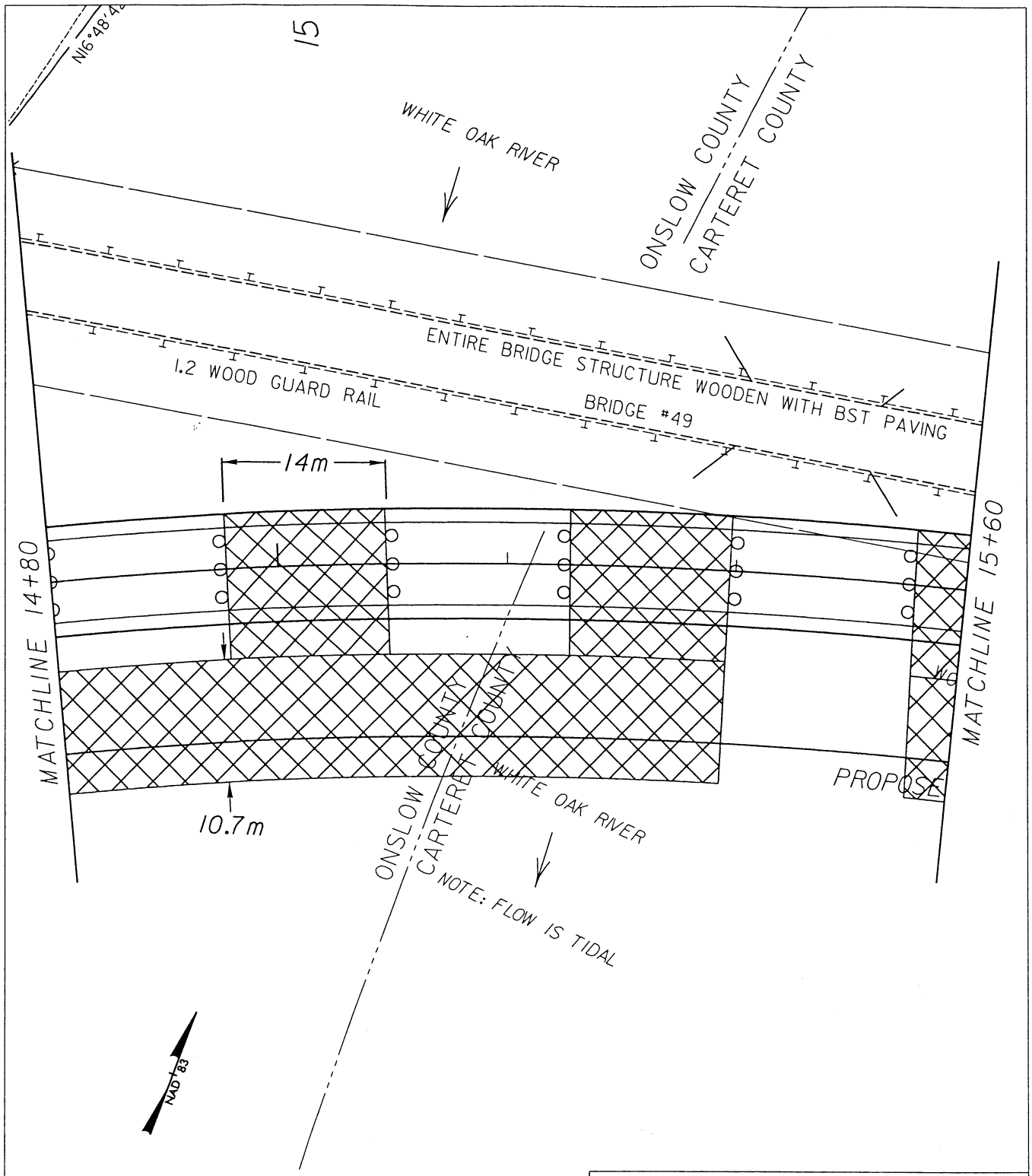
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 8 OF 22 **05/31/01**



PLAN VIEW

TEMP WORK BRIDGE

5m 0 10m SCALE

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT# 8.2160801 B-2938

SHEET 9 OF 22 **05/31/01**

METRIC

5 0 10

CONST.REV.

R /W REV.

B-2938	2A
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS

2/17/03

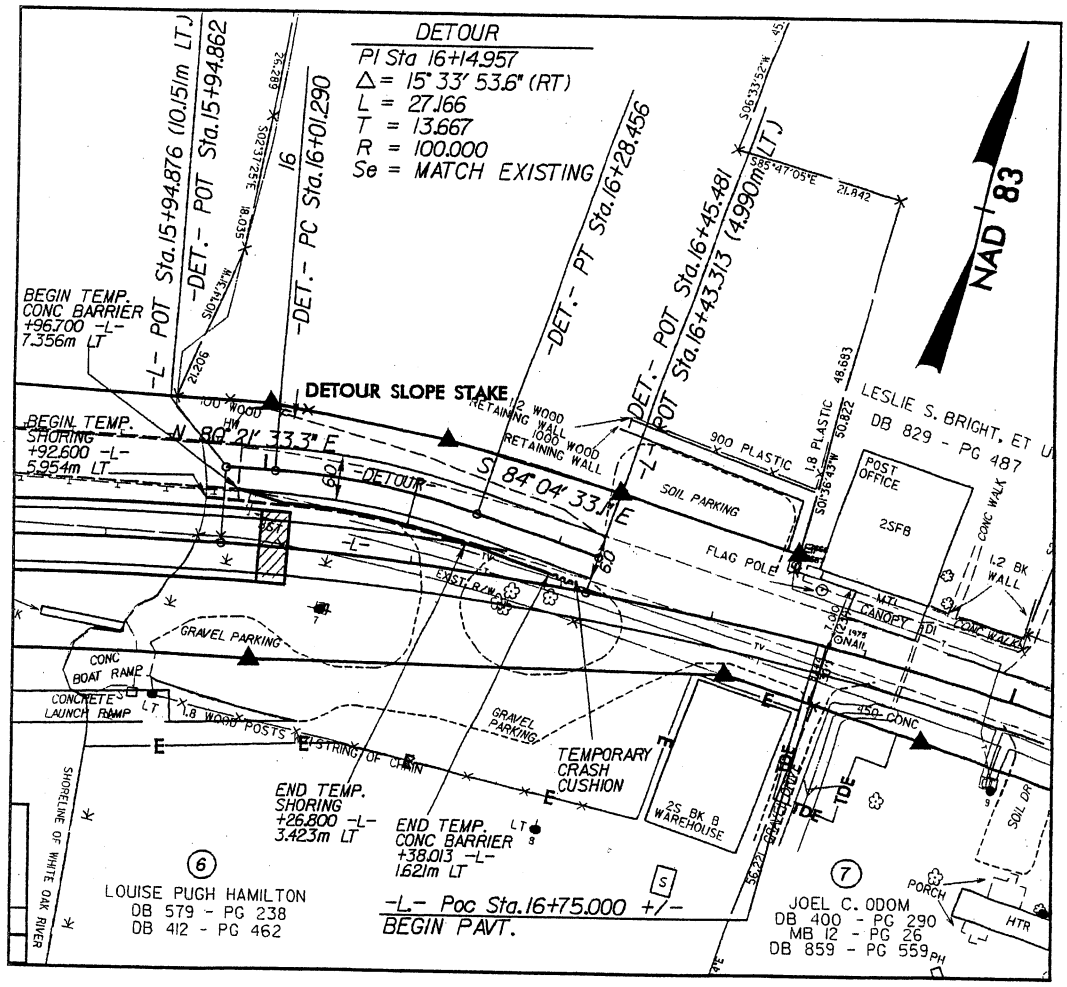
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG

2/17/03

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

DETOUR #2



N.C.D.O.T.

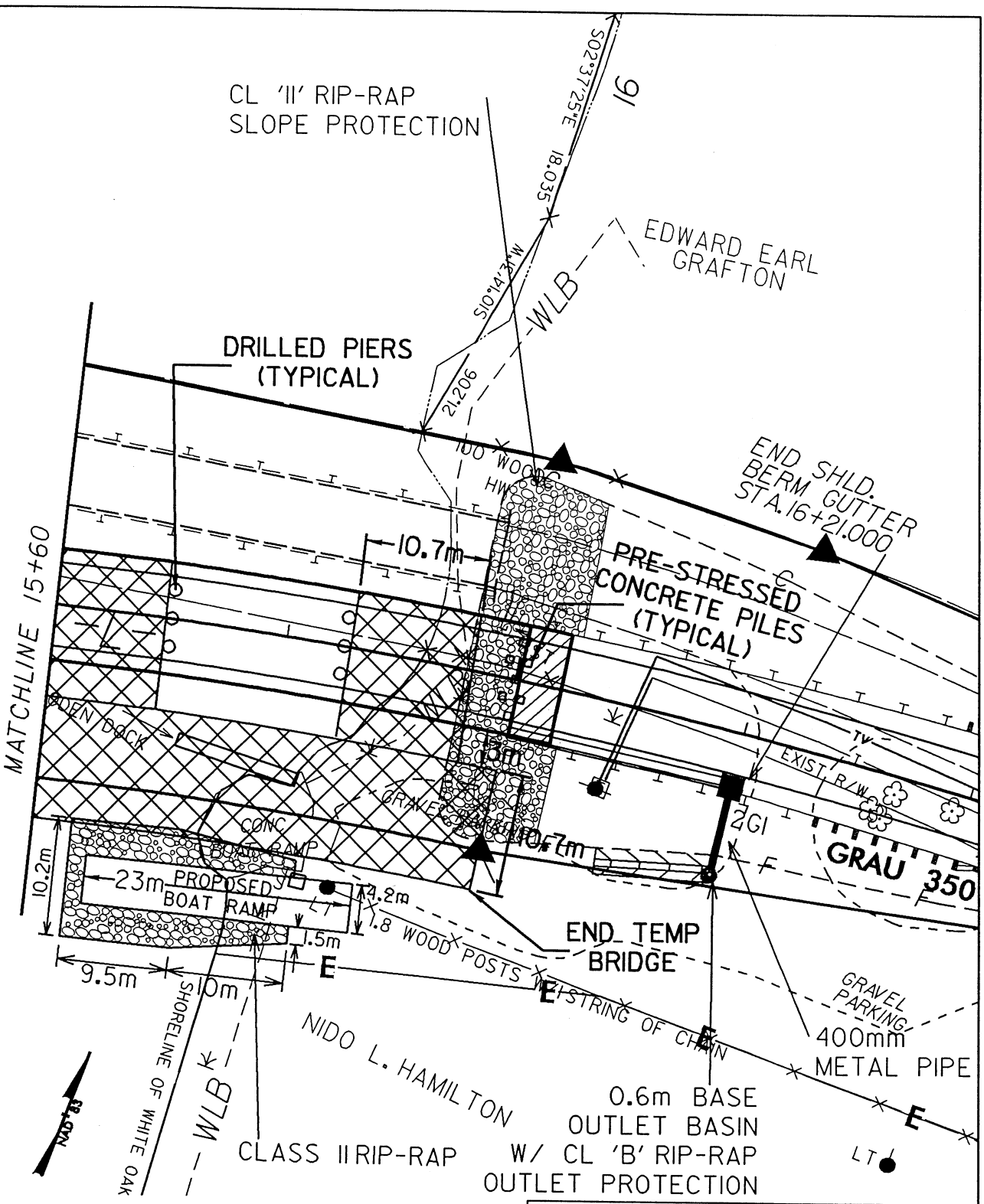
DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 9A OF 22



PLAN VIEW

TEMP WORK BRIDGE

5m 0 10m

SCALE

N.C.D.O.T.

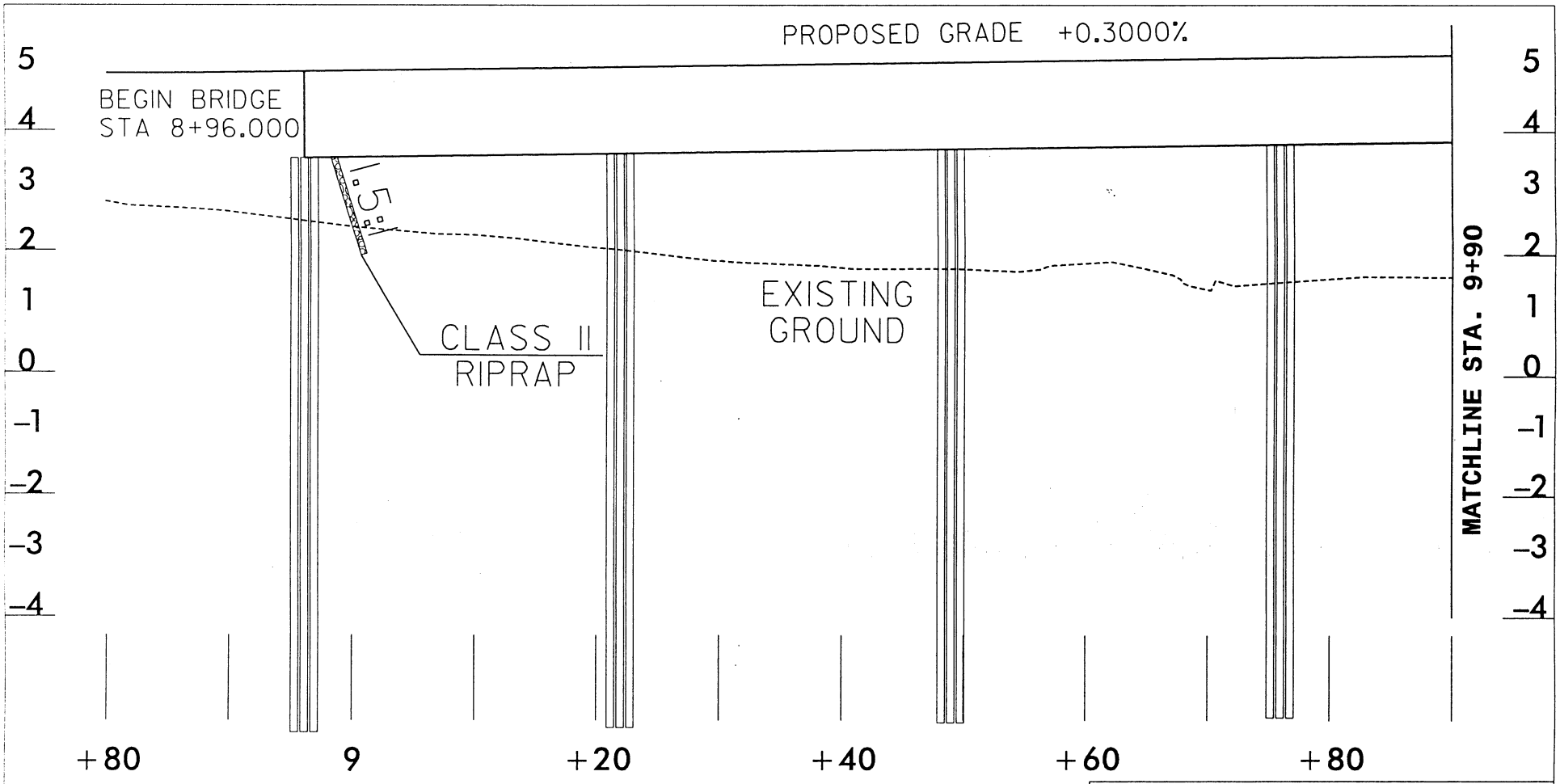
DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTY

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT # 8.2160801 B-2938

SHEET 10 OF 22

05/31/01
REVISED 2/20/03



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

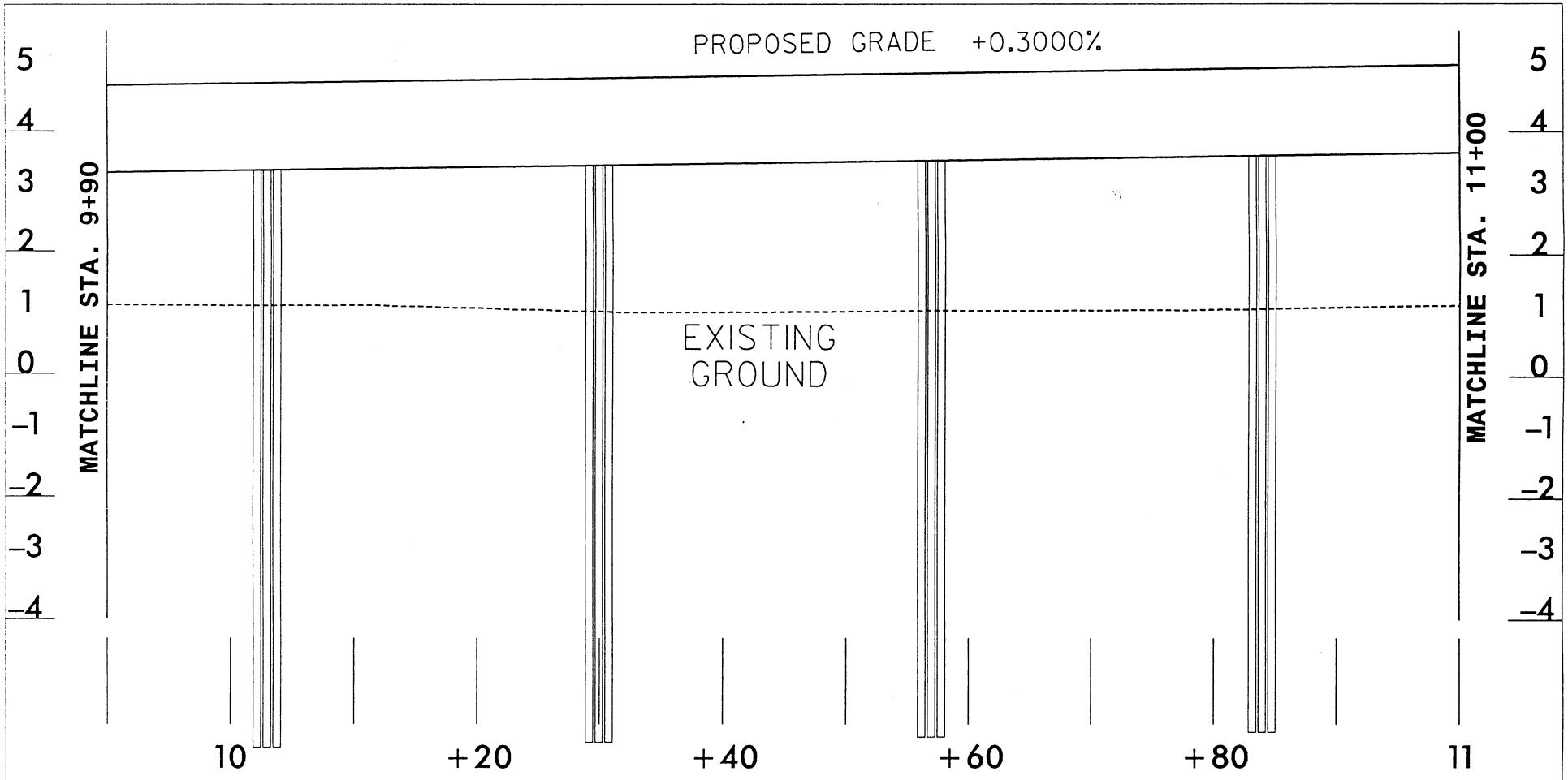
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 11 OF 22 05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

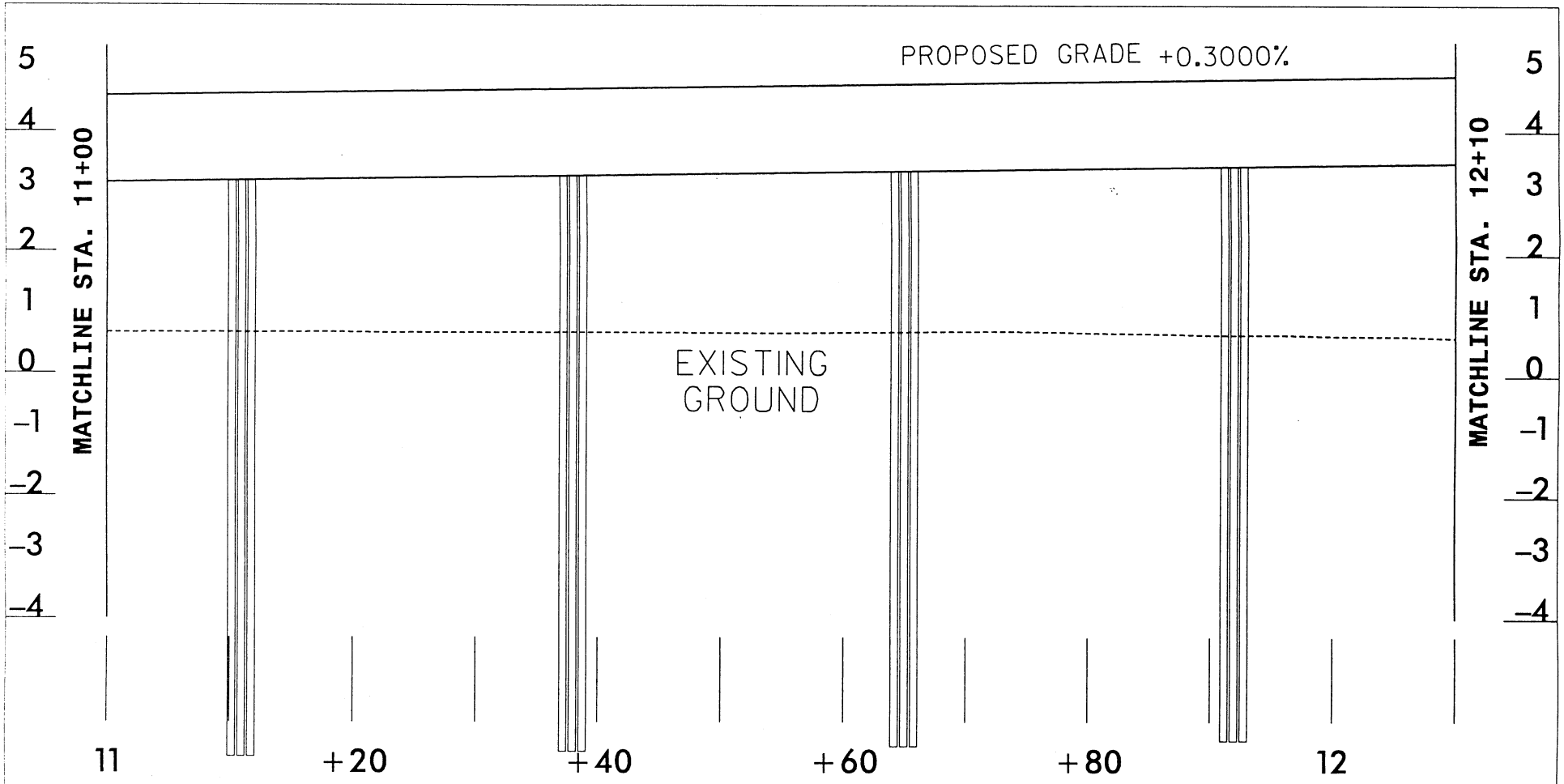
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 12 OF 22 05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

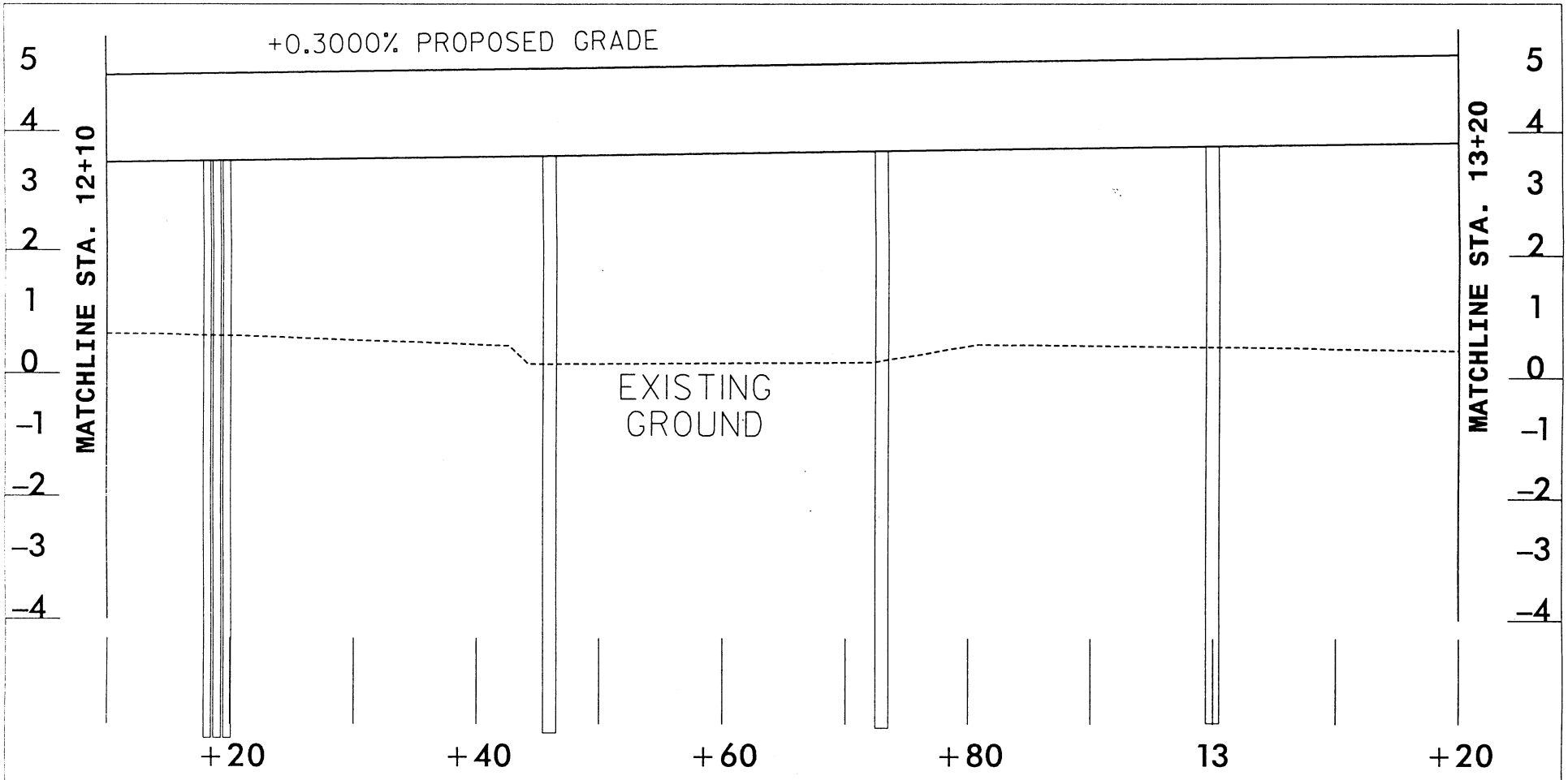
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 13 OF 22 05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

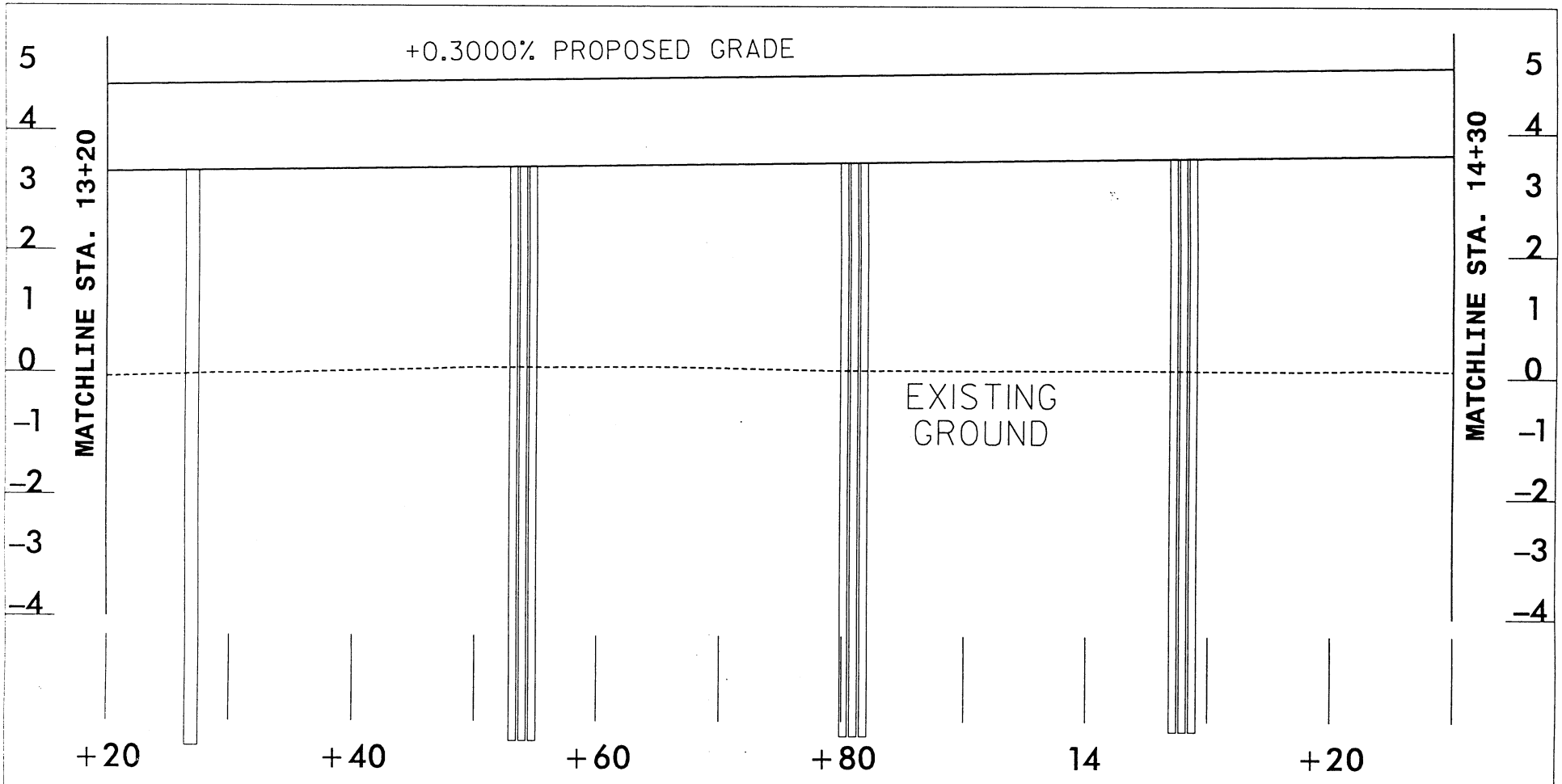
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 14 OF 22 05/31/01



5m 0 10m

HORIZONTAL SCALE

1m 0 2m

VERTICAL SCALE

PROFILE

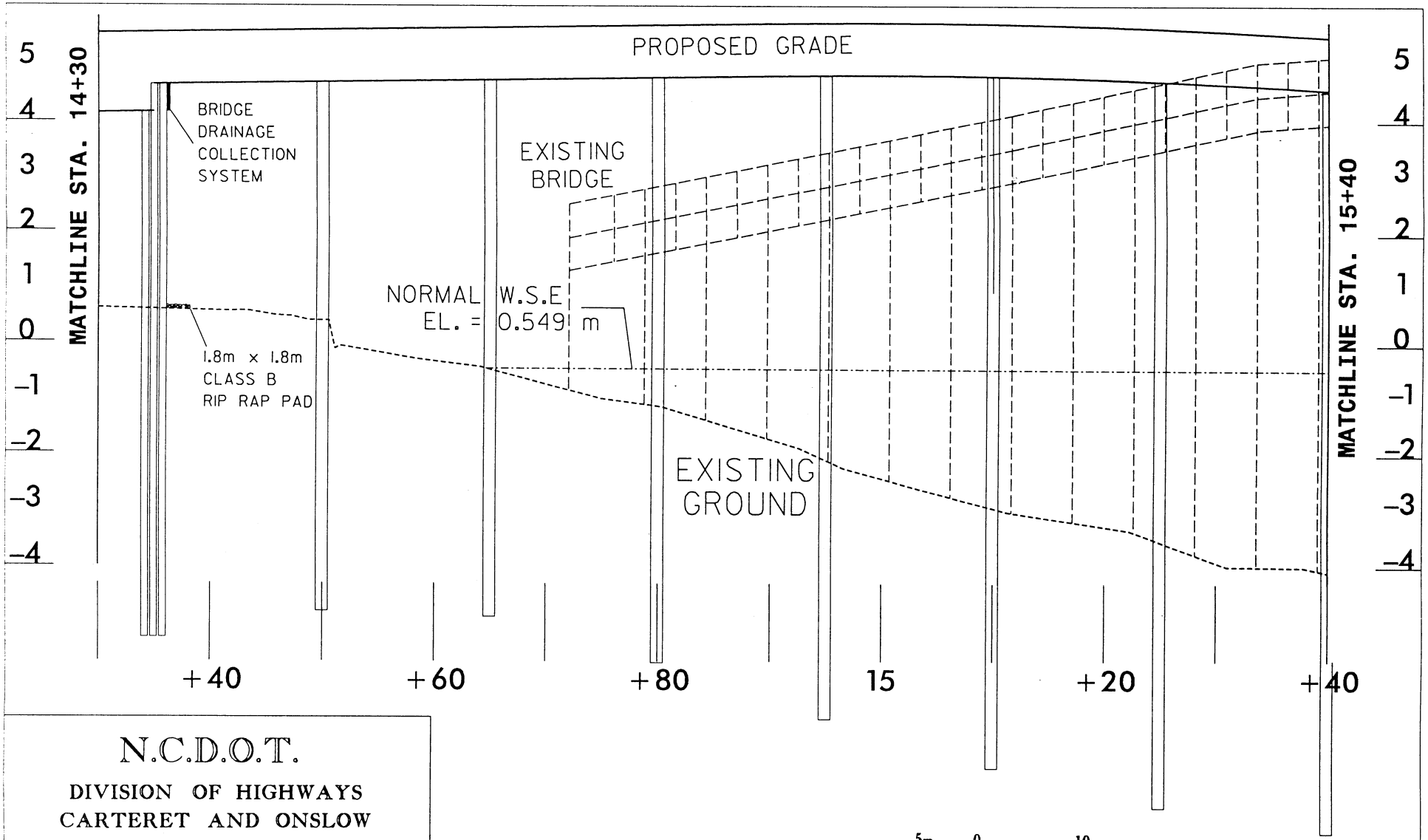
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 15 OF 22 05/31/01



N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

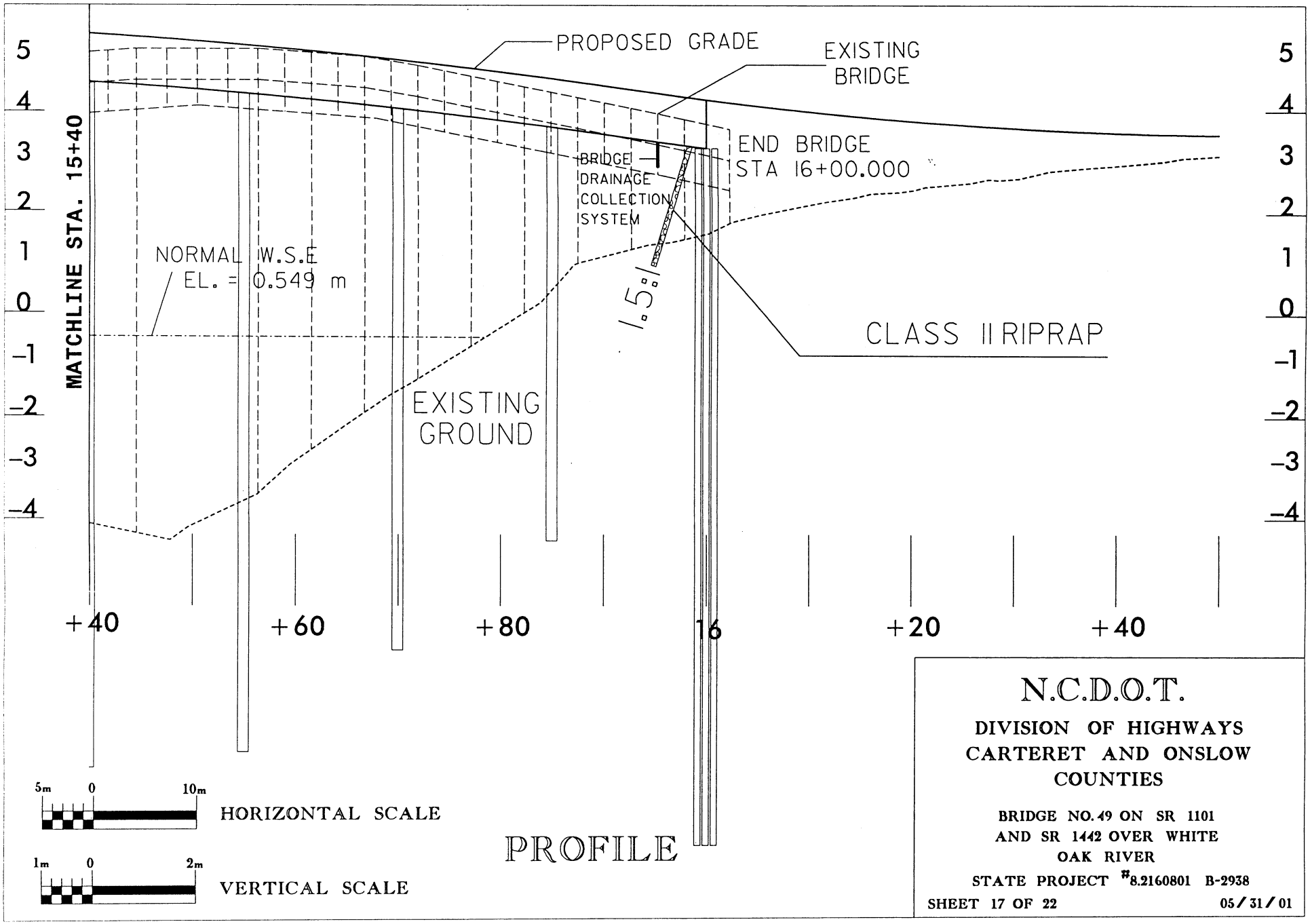
STATE PROJECT #8.2160801 B-2938

SHEET 16 OF 22 05/31/01

PROFILE

5m 0 10m HORIZONTAL SCALE

1m 0 2m VERTICAL SCALE



PROFILE

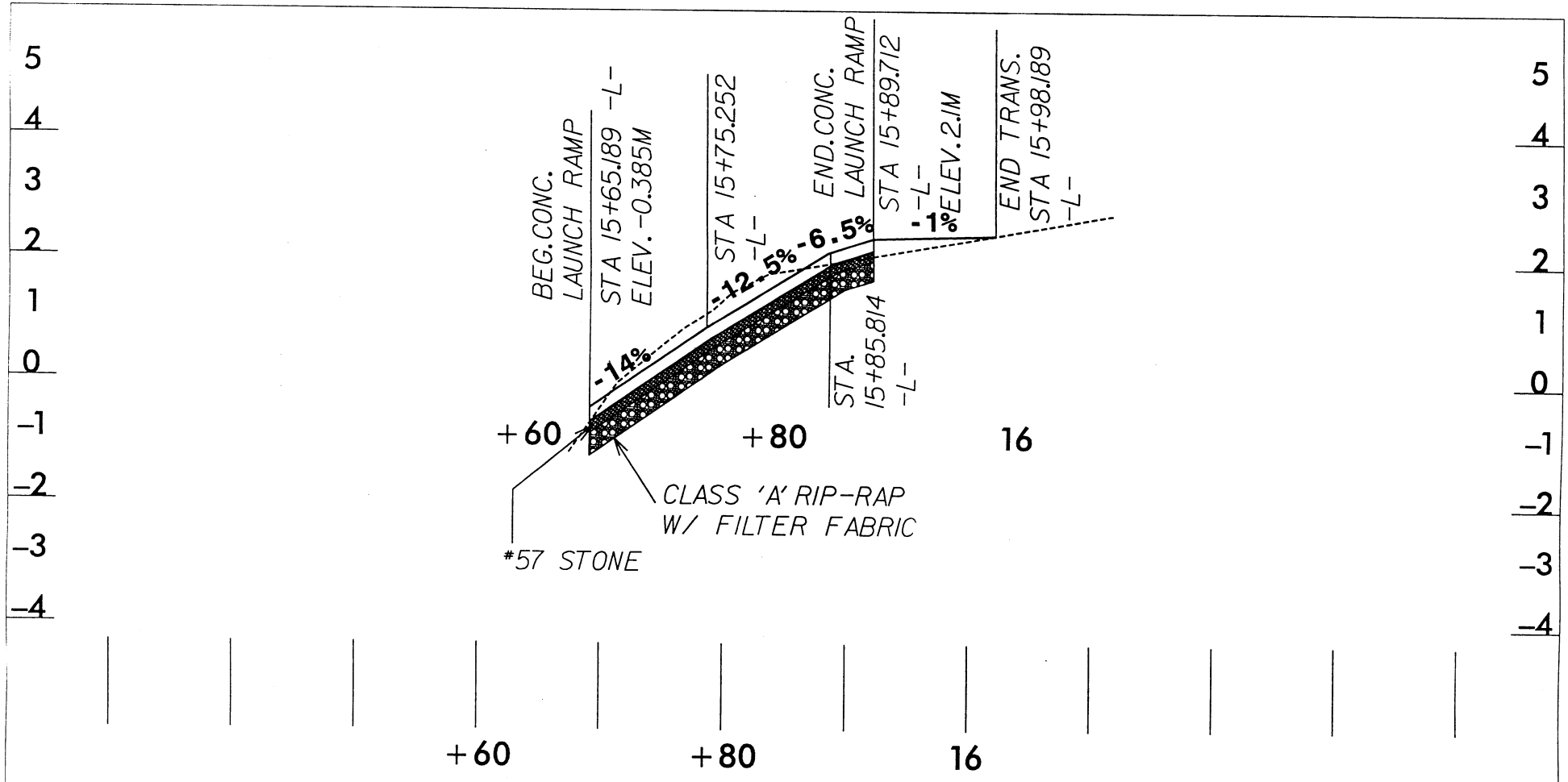
N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 17 OF 22 **05/31/01**



CONCRETE BOAT RAMP PROFILE

5m 0 10m
HORIZONTAL SCALE

1m 0 2m
VERTICAL SCALE

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

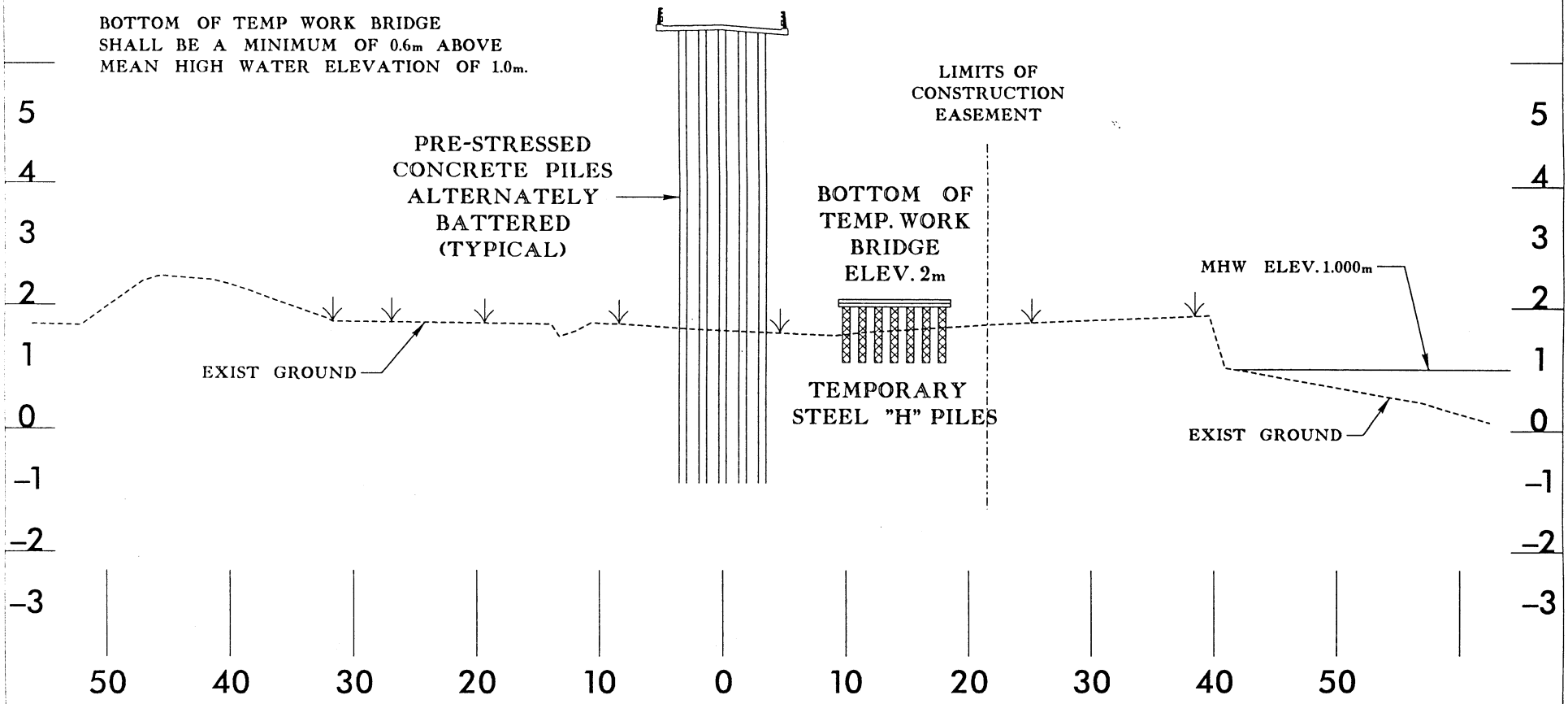
STATE PROJECT #8.2160801 B-2938

SHEET 18 OF 22

05/31/01
REV. 2/20/03

NOTE:

BOTTOM OF TEMP WORK BRIDGE SHALL BE A MINIMUM OF 0.6m ABOVE MEAN HIGH WATER ELEVATION OF 1.0m.



-L- STA. 14 + 35

5m 0 10m HORIZONTAL SCALE

1m 0 2m VERTICAL SCALE

WETLANDS

N.C.D.O.T.

DIVISION OF HIGHWAYS CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

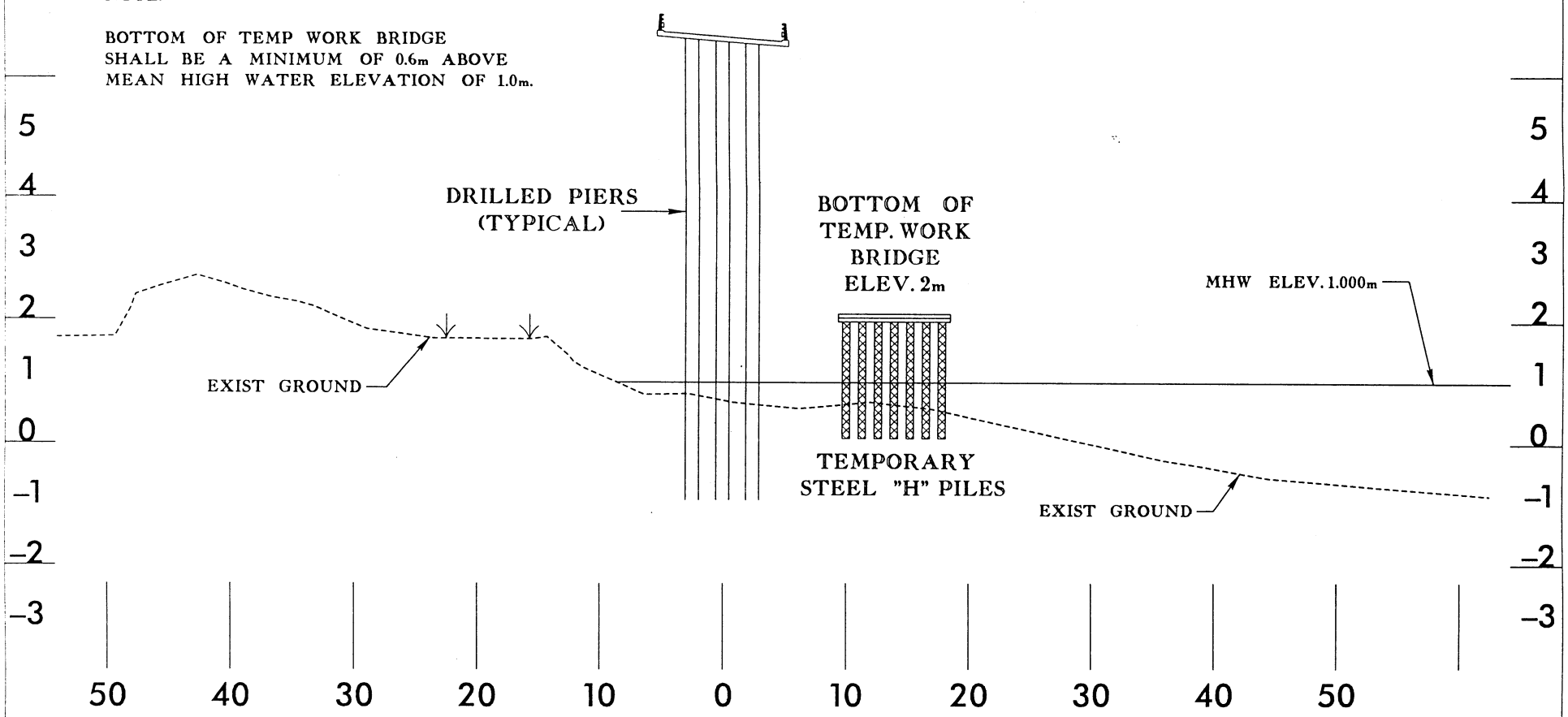
STATE PROJECT #8.2160801 B-2938

SHEET 19 OF 22

05/31/01

NOTE:

BOTTOM OF TEMP WORK BRIDGE SHALL BE A MINIMUM OF 0.6m ABOVE MEAN HIGH WATER ELEVATION OF 1.0m.



-L- STA. 14+65

5m 0 10m HORIZONTAL SCALE

1m 0 2m VERTICAL SCALE

WETLANDS

N.C.D.O.T.

DIVISION OF HIGHWAYS CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 AND SR 1442 OVER WHITE OAK RIVER

STATE PROJECT #8.2160801 B-2938

SHEET 20 OF 22 05/31/01

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	CHARLES W. HERMANSON, JR.	355 STELLA RD. STELLA, NC 28582
2	ETHLYN SANDERS HURST	145 DOCTOR CORBETT RD. SWANSBORO, NC 28584
3	KENNETH W. METTS	2117 RIVER DR. STELLA, NC 28582
4	MIDWAY UNITED METHODIST CHURCH	139 WETHERINGTON LANDING RD. STELLA, NC 28582
5	~~JEANETTE SMITH MORTON~~	~~4405 HOLLY LN. VALDOSTA, GA 31602~~
6	ETHLYN SANDERS HURST	145 DOCTOR CORBETT RD. SWANSBORO, NC 28584
7	NIDO L. HAMILTON	110 WETHERINGTON LANDING RD. STELLA, NC 28582
8	HARRY BARKER	4604 PINE NEEDLE LN. WILSON, NC 27896
5	GROVER C. CADDELL, III.	3201 RIVER ROAD STELLA, NC 28582

N.C.D.O.T.

DIVISION OF HIGHWAYS
CARTERET AND ONSLOW
COUNTY

BRIDGE NO. 49 ON SR 1101
AND SR 1442 OVER WHITE
OAK RIVER

STATE PROJECT #8.2160801 B-2938

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	TYPE OF STRUCTURE	# of Rows	# of Structures per Row	# of Fingers or Bents	tot. # of Structures	tot. Area (ha)	WETLAND IMPACTS				SURFACE WATER IMPACTS				
								Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation In Wetlands (ha)	Mechanized Clearing (Method III) (ha)	Fill In SW (Natural) (ha)	Fill In SW (Pond) (ha)	Temp. Fill In SW (ha)	Existing Channel Impacted (m)	Relocated Channel (m)
1	**MAIN TEMP. WORK BRIDGE**															
	8+96 to 14+50	H-piles	1	7	37	259	0.00963		0.00963							
	14+50 to 15+40	H-piles	1	7	6	42	0.00156							0.00156	10.7	
	15+55 to 15+90	H-piles	1	7	3	21	0.00078							0.00078		
2	**FINGERS ON TEMP. WORK BRIDGE**															
	8+96 to 14+50	H-piles	2	7	19	266	0.00990		0.00990							
		H-piles	2	10	1	20	0.00045		0.00045							
	14+50 to 15+90	H-piles	2	10	4	80	0.00298							0.00298	13.2	
		H-piles	2	7	1	14	0.00052							0.00052		
	15+90 to 16+00	none														
3	**PROPOSED BRIDGE**															
	8+96 to 14+50	Conc. Piles	1	7	21	147	0.00547	0.00547								
	14+50 to 15+90	Drilled Shafts	1	3	10	30	0.00068					0.00068			9.6	
	15+90 16+00	Conc. Piles	1	7	1	7	0.00026	0.00026								
4	**RIPRAP**															
	14+37 & 15+96					1	0.00032	0.00032								
5	**PROPOSED BOAT RAMP**															
	15+70 to 15+90							0.00314				0.01324				
TOTALS:								0.0091928	0.01998	0	0	0.013915	0	0.0058	33.5	0

Wetland restoration = 0.69 hectares (see drawings)

Assumed Dimensions (m^2):

H-piles are (2' x 2') = 0.372
Drilled shafts are (3.5' diam.) = 0.225
Prestressed Concrete Piles (2'x2') = 0.372
Riprap Pads are (1.8mx1.8m) = 3.24
Proposed Boat Ramp is (4.2mx23m) = 96.6

Assumptions:

Surface Waters span from 14+50 to 15+90

N.C. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS

CARTERET AND ONSLOW COUNTIES

T.I.P. B-2938
Form Revised 6/1/01 and 2/20/03

B-2938

PROJECT: 8.2160803

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET/ONSLOW COUNTIES

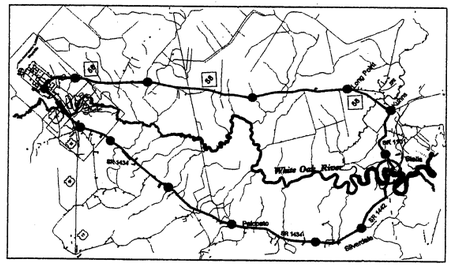
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2938	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
8.2160801	BRZ-1101(5)	P.E.
8.2160802	BRZ-1101(9)	R/W
8.2160803	BRZ-1101(5)	CONST.

VICINITY MAP



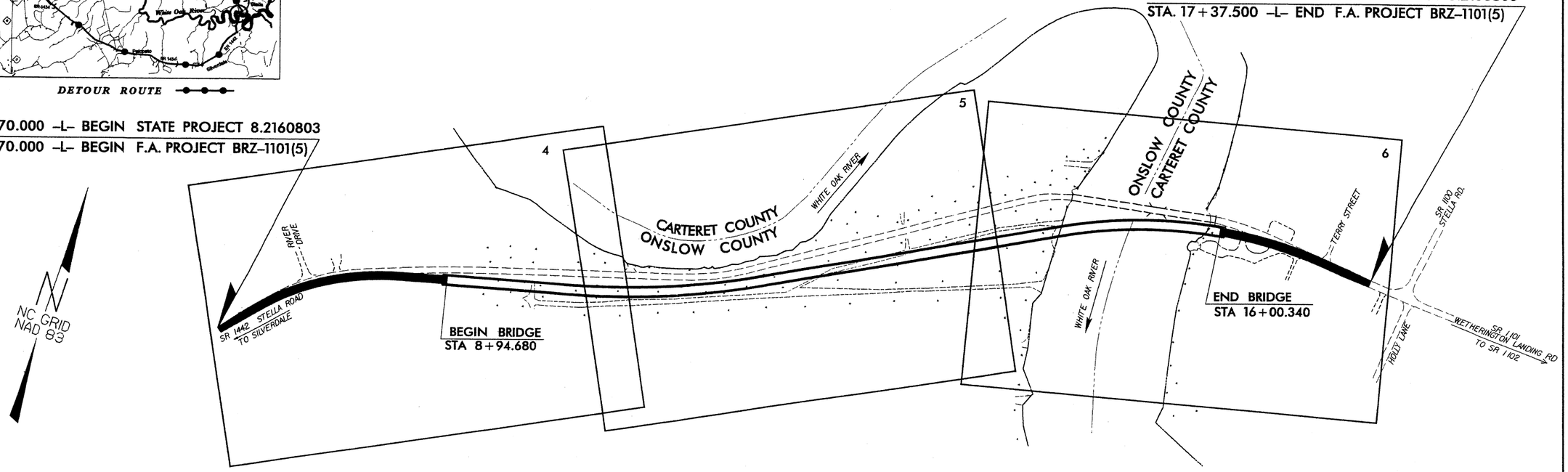
DETOUR ROUTE

LOCATION: REPLACE BRIDGE NO. 49 OVER WHITE OAK RIVER AND APPROACHES ON SR 1101 AND SR 1442

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING AND STRUCTURE.

STA. 6+70.000 –L– BEGIN STATE PROJECT 8.2160803
STA. 6+70.000 –L– BEGIN F.A. PROJECT BRZ-1101(5)

STA. 17+37.500 –L– END STATE PROJECT 8.2160803
STA. 17+37.500 –L– END F.A. PROJECT BRZ-1101(5)



NCDOT CONTACT: CATHY S. HOUSER, P.E. - PROJECT ENGINEER - DESIGN SERVICES

GRAPHIC SCALE

5m 0 10m
PLANS

5m 0 10m
PROFILE (HORIZONTAL)

1m 0 2m
PROFILE (VERTICAL)

DESIGN DATA

ADT 2002 = 1600
ADT 2025 = 2500
DHV = 10 %
D = 60 %
T = 3 % *
* TTST 1% DUAL 2%
V = 70 km/h**
**DESIGN SPEED AND HORIZONTAL CLEARANCE DESIGN EXCEPTION

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT BRZ-1101(5) = 0.362 km
LENGTH STRUCTURE F.A. PROJECT BRZ-1101(5) = 0.706 km
TOTAL LENGTH STATE PROJECT 8.2160803 = 1.068 km

Prepared In the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 18, 2002

LETTING DATE: JUNE 17, 2003

GREG S. PURVIS, P.E.
PROJECT ENGINEER

SCOTT KENNEDY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. WANG P.E.

SIGNATURE: 2/18/03

ROADWAY DESIGN

NORTH CAROLINA PROFESSIONAL SEAL 22999 ENGINEER GREG S. PURVIS P.E.

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

METRIC

B-2938	1 - A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

B-2938 | 1 - B

*S.U.E = SUBSURFACE UTILITY ENGINEER

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

Edge of Pavement
Curb
Prop. Slope Stakes Cut (C)
Prop. Slope Stakes Fill (F)
Prop. Woven Wire Fence
Prop. Chain Link Fence
Prop. Barbed Wire Fence
Prop. Wheelchair Ramp (WCR)
Exist. Guardrail
Prop. Guardrail
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 (CA)
Prop. Control of Access Line (CA)
Exist. Easement Line (E)
Prop. Temp. Construction Easement Line (E)
Prop. Temp. Drainage Easement Line (TDE)
Prop. Perm. Drainage Easement Line (PDE)

HYDROLOGY

Stream or Body of Water
Flow Arrow
Disappearing Stream
Spring
Swamp Marsh
Shoreline
Falls, Rapids
Prop Lateral, Tail, Head Ditches (FLOW)

STRUCTURES

MAJOR
Bridge, Tunnel, or Box Culvert (CONC)
Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR
Head & End Wall (CONC HW)
Pipe Culvert
Footbridge
Drainage Boxes (CB)
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 (T)
Cable TV Pedestal (C)
Hydrant
Satellite Dish
Exist. Water Valve
Sewer Clean Out
Power Manhole (P)
Telephone Booth
Water Manhole (W)
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 (S)
Tank; Water, Gas, Oil
Water Tank With Legs
Traffic Signal Junction Box
Fiber Optic Splice Box (F)
Television or Radio Tower
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement (TS)

Recorded Water Line (W)
Designated Water Line (S.U.E.*) (W)
Sanitary Sewer (SS)
Recorded Sanitary Sewer Force Main (FSS)
Designated Sanitary Sewer Force Main(S.U.E.*) (FSS)
Recorded Gas Line (G)
Designated Gas Line (S.U.E.*) (G)
Storm Sewer (S)
Recorded Power Line (P)
Designated Power Line (S.U.E.*) (P)
Recorded Telephone Cable (T)
Designated Telephone Cable (S.U.E.*) (T)
Recorded U/G Telephone Conduit (TC)
Designated U/G Telephone Conduit (S.U.E.*) (TC)
Unknown Utility (S.U.E.*) (?UTL)
Recorded Television Cable (TV)
Designated Television Cable (S.U.E.*) (TV)
Recorded Fiber Optics Cable (FO)
Designated Fiber Optics Cable (S.U.E.*) (FO)
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 (PL)
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 (S)
Well (W)
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
RR Signal Milepost (CSX TRANSPORTATION, MILEPOST 35)
Switch (SWITCH)

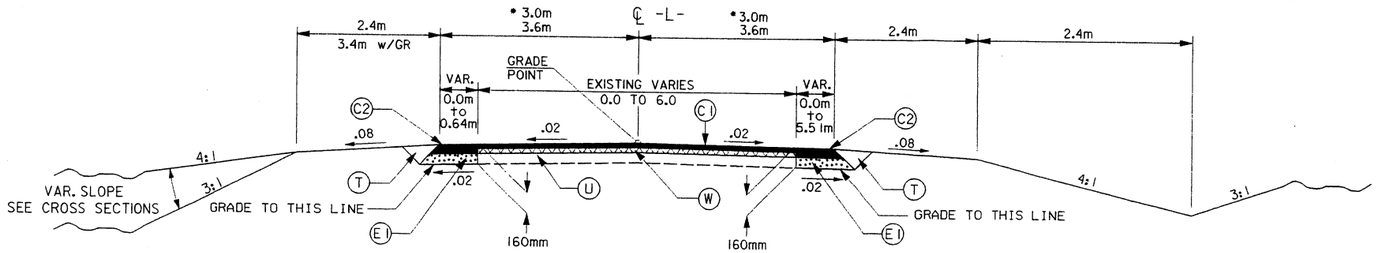
revised 2/25/97

METRIC

B-2938	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

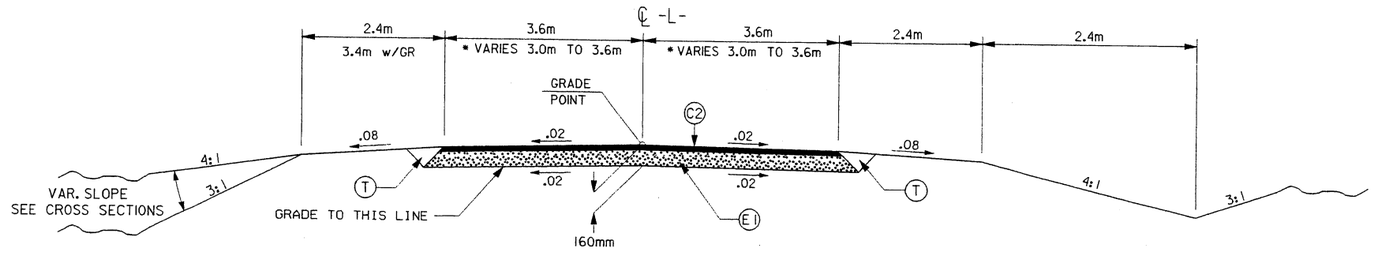
NORTH CAROLINA PROFESSIONAL SEAL 23999 ENGINEER GREG T. HURVIS

WANG ENGINEERING CO., INC
15200 WESTON PARKWAY
CARY, NC 27513



TYPICAL SECTION NO. 1

-L- STA. 6+70.000 TO STA. 7+80.000
• -L- STA. 16+60.000 TO STA. 17+37.500

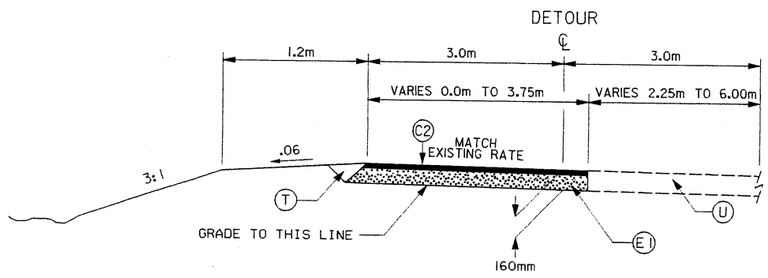


TYPICAL SECTION NO.2

-L- STA. 7+80.000 TO STA. 8+94.680 (BEGIN BRIDGE)
-L- STA. 16+00.340 (END BRIDGE) TO STA. 16+20.000
• -L- STA. 16+20.000 TO STA. 16+60.000

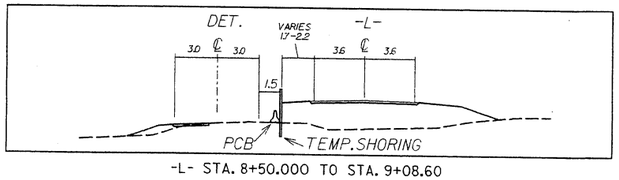
CODE	PAVEMENT SCHEDULE
C1	PROP. APPROX. 30mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 72 kg PER SQ. METER.
C2	PROP. APPROX. 60mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 72 kg PER SQ. METER IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 30 mm OR GREATER THAN 40 mm IN DEPTH.
E1	PROP. APPROX. 100mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER.
E2	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B ,AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 140mm IN DEPTH OR LESS THAN 75mm IN DEPTH.
R	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED

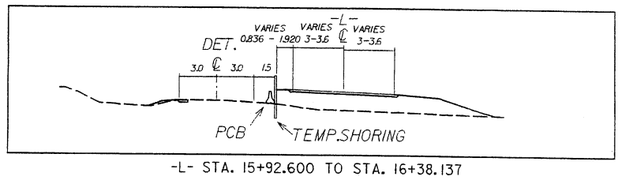


TYPICAL SECTION NO.3

DET. STA. 7+61.364 TO STA. 9+42.464
DET. STA. 15+94.862 TO STA. 16+45.481

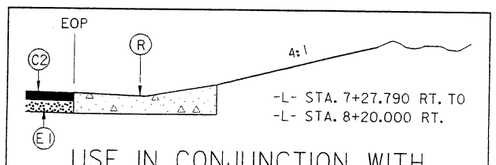


-L- STA. 8+50.000 TO STA. 9+08.60



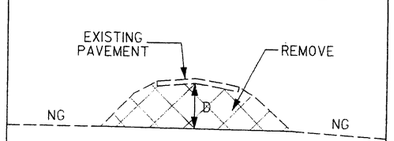
-L- STA. 15+92.600 TO STA. 16+38.137

DETAIL OF PORTABLE CONCRETE BARRIER/ TEMPORARY SHORING FOR DETOUR



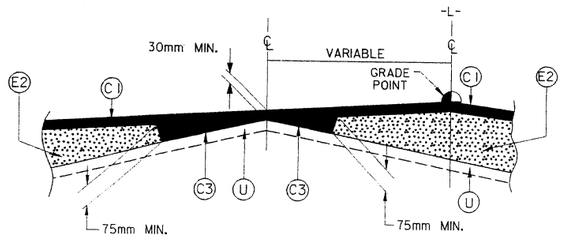
USE IN CONJUNCTION WITH TYPICAL SECTION No. 1 AND No. 2

DETAIL SHOWING EXISTING ROADBED REMOVAL



D = VARIABLE
SEE CROSS SECTIONS

STA. 9+00.000 TO STA. 14+72.000

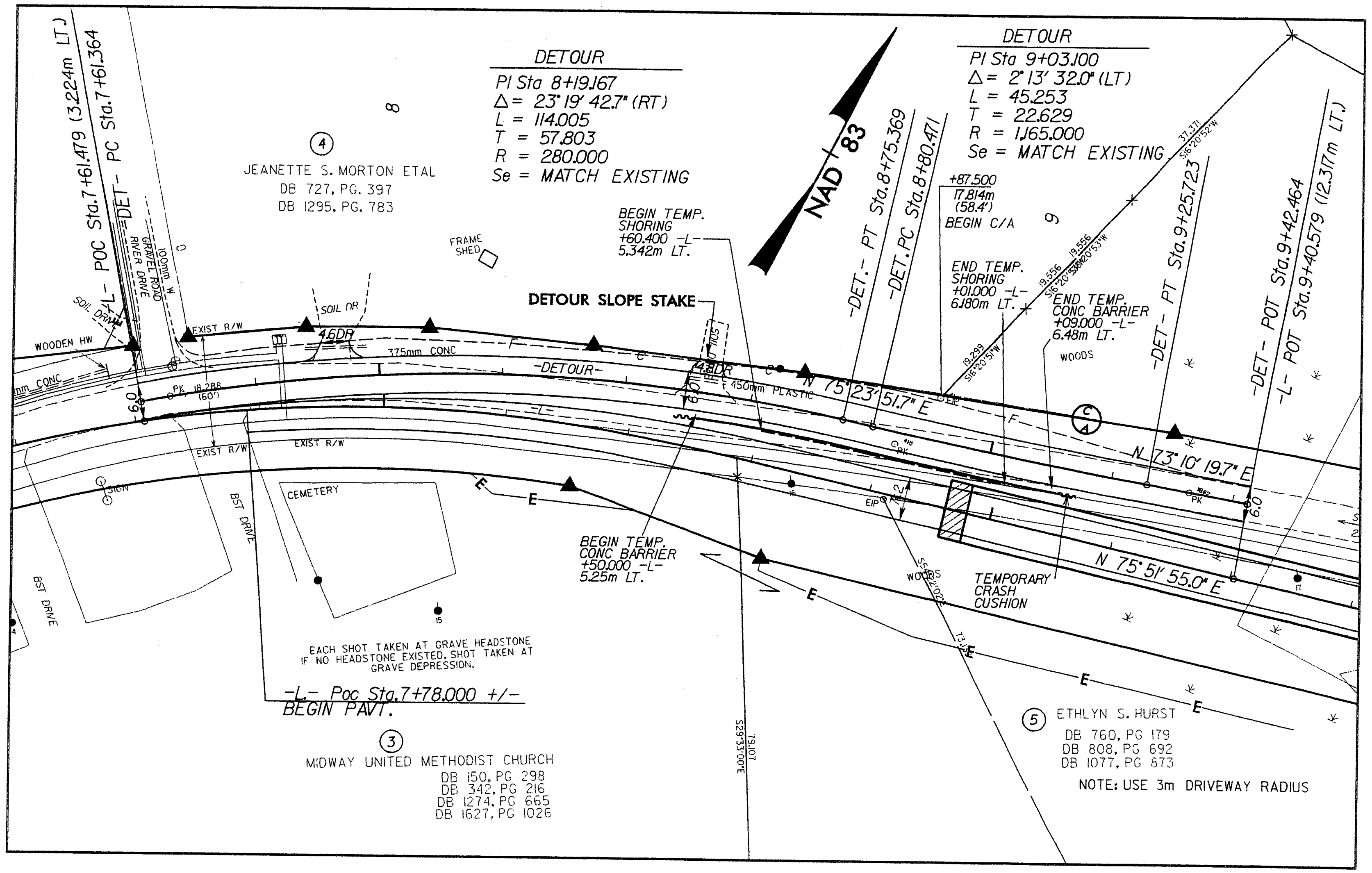


DETAIL SHOWING METHOD OF WEDGING

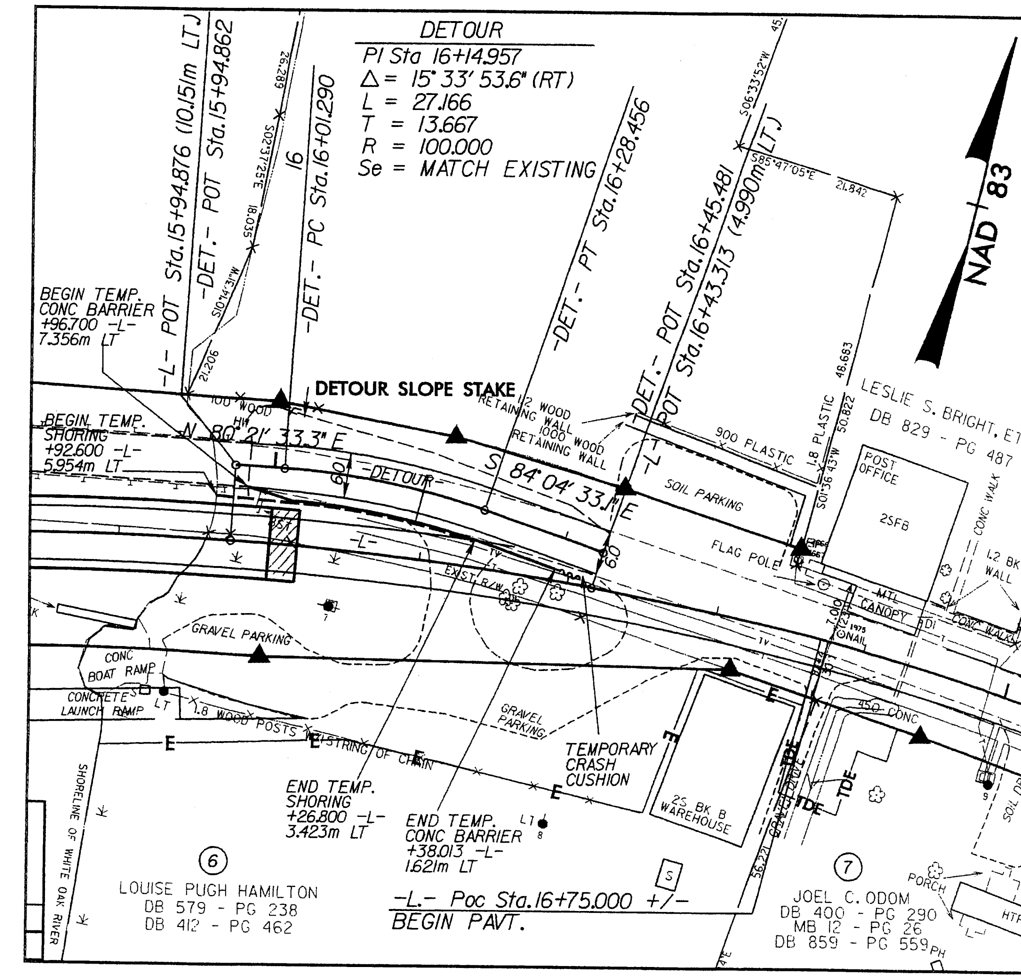
METRIC	PROJECT REFERENCE NO.	SHEET NO.
	B-2938	2A
	R/W SHEET NO.	
CONST. REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.	SEAL 22999 GREG S. PURVIS	SEAL 7521 JAMES S. J. WANG

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

DETOUR #1

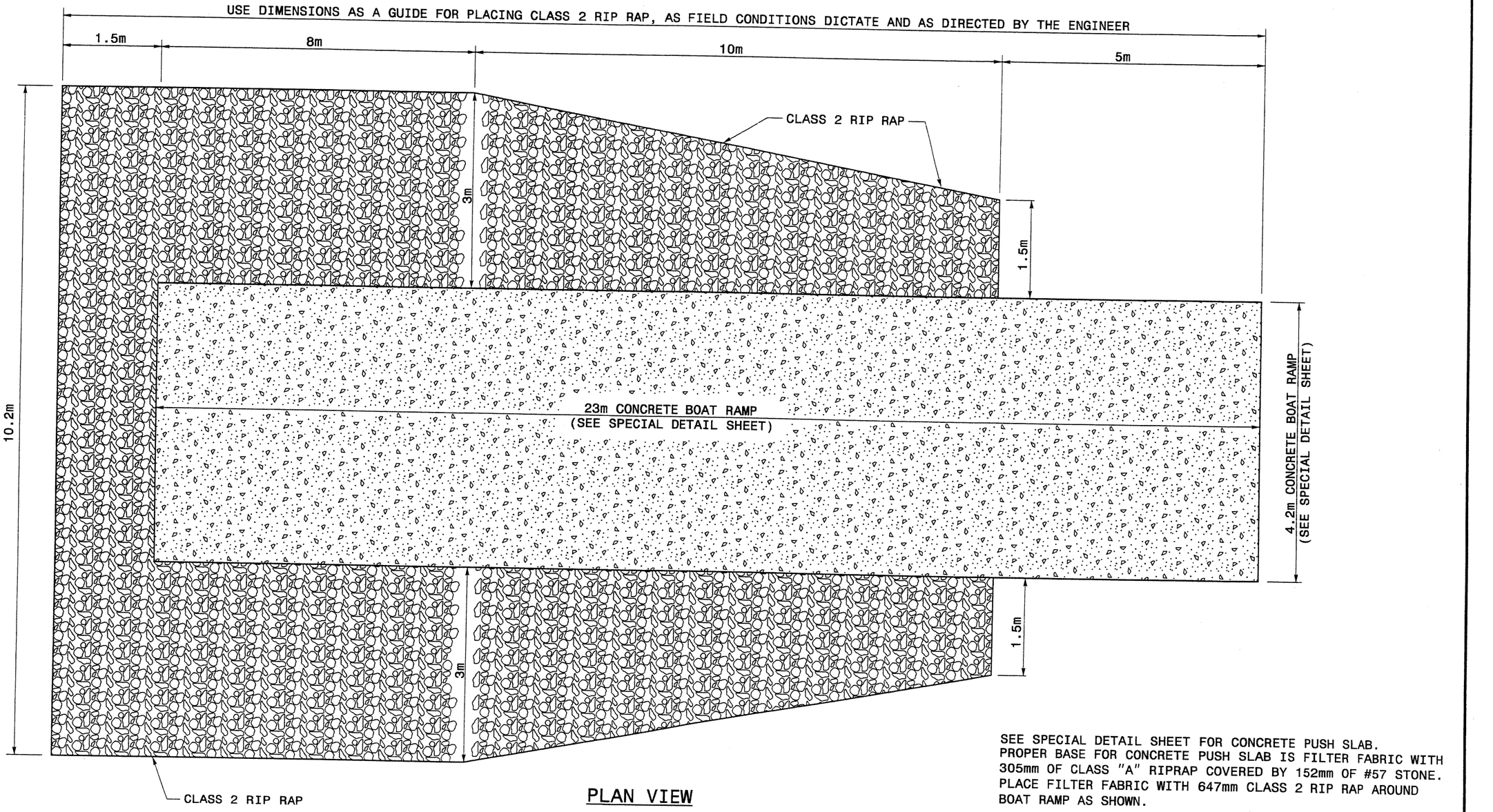


DETOUR #2



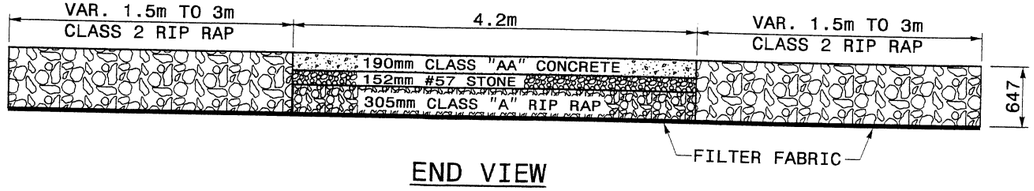
PROJECT REFERENCE NO.	SHEET NO.
B-2938	2-B

EROSION CONTROL FOR BOAT RAMP



PLAN VIEW

SEE SPECIAL DETAIL SHEET FOR CONCRETE PUSH SLAB.
PROPER BASE FOR CONCRETE PUSH SLAB IS FILTER FABRIC WITH 305mm OF CLASS "A" RIPRAP COVERED BY 152mm OF #57 STONE. PLACE FILTER FABRIC WITH 647mm CLASS 2 RIP RAP AROUND BOAT RAMP AS SHOWN.



END VIEW

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

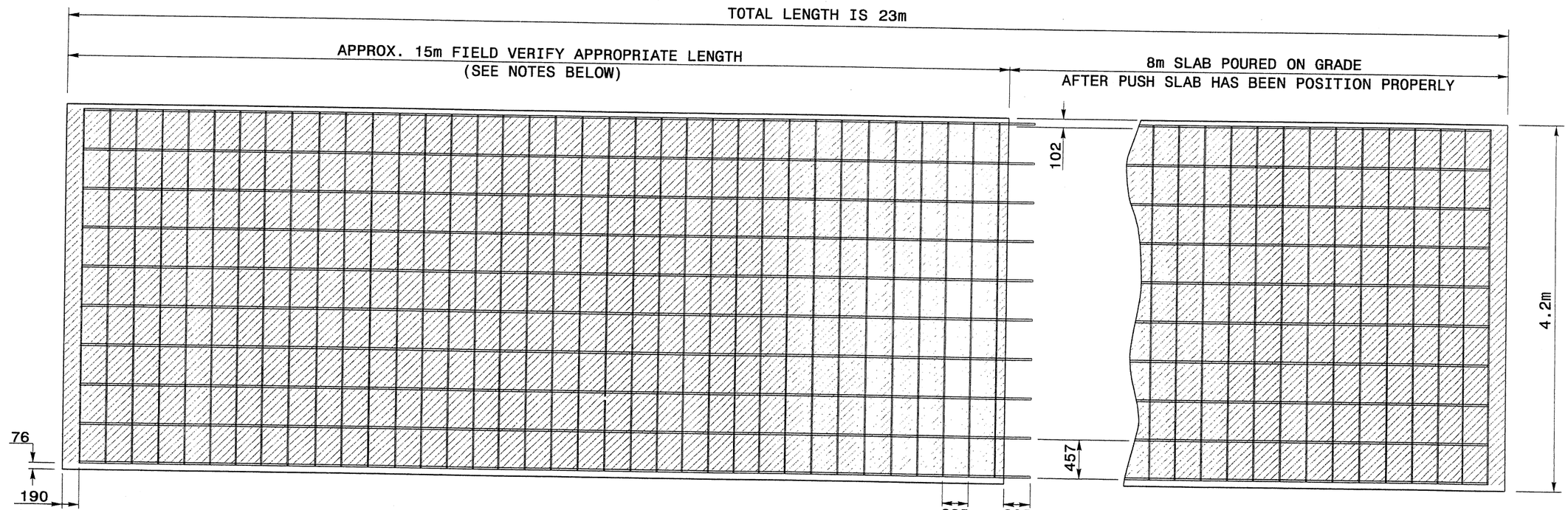
DESIGN SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

EROSION CONTROL FOR BOAT RAMP ACCESS

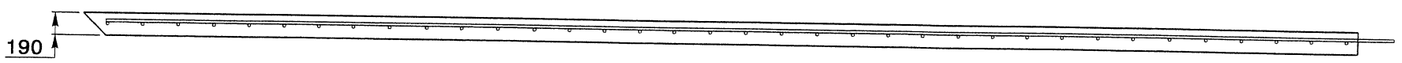
ORIGINAL BY: NCWRC DATE:
MODIFIED BY: E.E. WARD DATE: 2-3-03
CHECKED BY: D.C. Turnage DATE: 2-03
FILE SPEC.: /usr/details/metric/stand/boatramp.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-2938	2-C

190mm CONCRETE PUSH SLAB

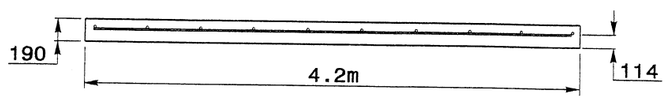


PLAN VIEW



SIDE VIEW

USE CLASS "AA" CONCRETE THROUGHOUT
LONGITUDINAL BARS ARE #22's
TRANSVERSE BARS ARE #13's
USE 114mm CHAIRS UNDER THE #22's



END VIEW

USE A GROOVING TOOL TO PLACE 50mm GROOVES AT A 45 DEGREE ANGLE DOWN THE LENGTH OF THE RAMP.
USE AN EDGE TOOL TO REDUCE CHIPPING AND SPALLING.
EXTEND #22 REBAR PAST THE FORM 305mm IN ORDER TO GIVE THE "POURED ON GRADE" SLAB A POSITIVE ATTACHEMENT.
POUR SLAB ON LAND PARALLEL AND IN LINE WITH THE PROPOSED LOCATION. AFTER LETTING THE CONCRETE CURE FOR 21 DAYS, PUSH IN WITH A DOZER, CAT D6 OR EQUIVALENT.
IN PLACE LOCATION SHOULD LEAVE ENOUGH OUT OF THE WATER TO POUR THE NEXT SECTION WITHOUT WET CONCRETE TOUCHING THE WATER.
PROPER BASE FOR SLAB IS FILTER FABRIC WITH 305mm OF CLASS "A" RIPRAP COVERED BY 152mm OF #57 STONE.
PROPER SLOPE IS 14% WITH A 4.5m TO 6.0m VERTICAL CURVE AT THE HEAD OF THE RAMP.

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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

190mm CONCRETE PUSH SLAB FOR BOAT RAMP ACCESS

ORIGINAL BY: NCWRC DATE:
MODIFIED BY: E.B. WARD DATE: 2-3-03
CHECKED BY: DATE: 2-03
FILE SPEC.: /usr/details/metric/stand/boatramp.dgn

COMPUTED BY: ____________ DATE: ____________
CHECKED BY: ____________ DATE: ____________

PROJECT REFERENCE NO.	SHEET NO.
B-2938	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

...oject\b2938\plans\b2938_tsh Feb. 19, 2003 09:16:23

COMPUTED BY: WT DATE: 11/9/01
CHECKED BY: SLK DATE: 11/13/01

METRIC

PROJECT NO.	SHEET NO.
B-2938	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav. m^3	Embank. + % m^3	Borrow m^3	Waste m^3
BEFORE BRIDGE - LEFT						
-L- DETOUR	7+80.000	8+94.368	24	113	113	24
-L-	6+70.000	8+94.368	268	880	746	134
SUBTOTAL BEFORE BRIDGE - LEFT			292	993	859	158
AFTER BRIDGE - LEFT						
-L- DETOUR	16+00.000	16+40.000	4	26	24	2
-L-	16+00.340	17+37.50	145	380	185	25
SUBTOTAL AFTER BRIDGE - LEFT			149	406	209	27
TOTAL LEFT			441	1399	1068	185
BEFORE BRIDGE - RIGHT						
-L-	6+70.000	8+94.368	303	1517	1366	152
SUBTOTAL BEFORE BRIDGE - RIGHT			303	1517	1366	152
AFTER BRIDGE - RIGHT						
-L-	16+00.340	17+37.50		1414	1414	
SUBTOTAL AFTER BRIDGE - RIGHT				1414	1414	
TOTAL RIGHT			303	2931	2780	152
EXISTING ROADWAY REMOVAL						
-L-	9+00.000	14+60.000	2868			2868
SUBTOTAL ROADWAY REMOVAL			2868			2868
PROJECT SUBTOTALS:			3612	4330	3848	3205
Loss due to C&G			-75		75	
SUBTOTAL:			3537	4330	3923	3205
Estimate 5% for topsoil repl.					196	
GRAND TOTALS:			3537	4330	4119	3205
SAY:			3640	4350	4120	
DRAINAGE DITCH EXCAVATION			10			

RIGHT OF WAY AREA DATA

PARCEL No.	PROPERTY OWNERS NAME	TOTAL ACREAGE		AREA TAKEN		RIGHT OR LEFT OF -L- REV CENTER	AREA REMAINING RIGHT		AREA REMAINING LEFT		CONST. EASEMENT		PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	
1	CHARLES W. HERMANSON, JR.	4279.727	sm	147.930	sm	LT			4131.797	sm					
		1.06	ac	1592.30	sf				1.02	ac					
2	KENNETH MARTIN METTS	4473.095	sm	282.988	sm	LT			4190.107	sm	15.998	sm			
		1.11	ac	3046.06	sf				1.04	ac	172.09	sf			
3	MIDWAY UNITED METHODIST CHURCH	1.724	ha	0.117	ha	RT	1.607	ha			305.549	sm			
		4.26	ac	0.29	ac		3.97	ac			3289.01	sf			
4	JEANETTE S. MORTON ETAL	1.708	ha	NO CLAIM											
		4.22	ac												
5	ETHLYN S. HURST	48.119	ha	1.376	ha	RT	46.738	ha			3601.584	sm			
		118.90	ac	3.41	ac		115.49	ac			38768.00	sf			
6	LOUISE PUGH HAMILTON	7082.250	sm	777.229	sm	RT	6305.021	sm			1075.066	sm		11.813	sm
		1.75	ac	8366.02	sf		1.56	ac			11571.90	sf		127.15	sf
7	JOEL C. ODOM	4174.174	sm			RT								119.781	sm
		1.03	ac											1289.31	sf
8	WILLIAM M. SANDERS ESTATE	4174.174	sm			LT			4174.174	sm					
		6.71	ac						6.71	ac					

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION TO STATION		LOC LT/RT/CL	M^2
-L-	7+23.000	7+60.000	LT	46
-L-	7+70.000	8+40.000	LT	245
-L-	8+40.000	10+30.000	LT	1064
-L-	10+30.000	14+73.000	LT	1999
-L-	13+90.000	14+73.000	LT	465
-L-	15+96.000	16+60.000	LT	390
DETOUR	7+61.364	16+45.481	LT	362
			TOTAL:	4571
			SAY:	4600

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

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS XI MOD	ANCHORS TYPE III	ANCHORS GRAU 350	ANCHORS M-350	ANCHORS XII	ANCHORS CAT-1	ANCHORS VI MOD	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL	REMARKS
-L-	8+42.660	8+94.368	RT.	52.020				BRIDGE	2.4	3.4	15.24		0.3			1	1									
-L-	8+42.660	8+94.368	LT.	52.020			BRIDGE		2.4	3.4		15.24		0.3		1	1									
-L-	16+00.340	16+41.900	RT.	41.570			BRIDGE		2.4	3.4		15.24		0.3		1	1									
-L-	16+00.340	16+53.340	LT.	53.000				BRIDGE	2.4	3.4	15.24		0.3			1	1									
		SUBTOTAL		198.610												4	4									
ANCHOR DEDUCTS GRAU350 4 @ 15.24M				-60.960																						
TYPE III 4 @ 5.72M				-22.880																						
	TOTAL			114.770																						
	SAY			118.110																						
ADDITIONAL GUARDRAIL POSTS				10																						

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200mm & UNDER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT IN ELEVATION	INVERT OUT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 300	375	450	600	750	900	1050	1200	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	900 (2.01)	1000 (2.01)	1200 (2.01)
7+08.000	LT	1			5.303	5.321																	
7+22.940	LT	2				5.501				6.000													
7+23.470	RT	3			6.087					3.600													
8+49.570	LT	3A																					
8+78.500	LT	4	5	4.876	4.101	3.430			15.600														
16+20.000	RT	5	OUTLET	4.645	3.895	2.780											7.200						
16+85.530	RT	6			3.464	3.440				3.600													
						TOTAL:		0	15.600	13.200	0	0	0	0	0	0	7.200	0	0	0	0	0	0

STATION	375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. METERS R.C.P.	C.S.P.	QUANITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0 THRU 1.50)	METERS A 1.5 THRU 3.00	METERS B 3.00 AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.20	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. FRAME WITH GRATE STD. 840.29	J.B. STD. 840.31 OR 840.32	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" M^3 STD. 840.72	CONC. & BRICK PIPE PLUG, M^3 STD. 840.71	PIPE REMOVAL (METERS)	REMARKS
7+08.000		8.4																									7.562	
7+22.940																									0.33			EXTEND EXISTING PIPE
7+23.470																									0.33			EXTEND EXISTING PIPE
8+49.570																											6.154	
8+78.500						1								1					1									2GI
16+20.000						1								1					1					2 @400mm				2GI
16+85.530																									0.33			EXTEND EXISTING PIPE
TOTAL:	0	8.4	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	2	1	0	13.72	

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

PROJECT REFERENCE NO.	SHEET NO.
B-2938	4
R/W SHEET NO.	

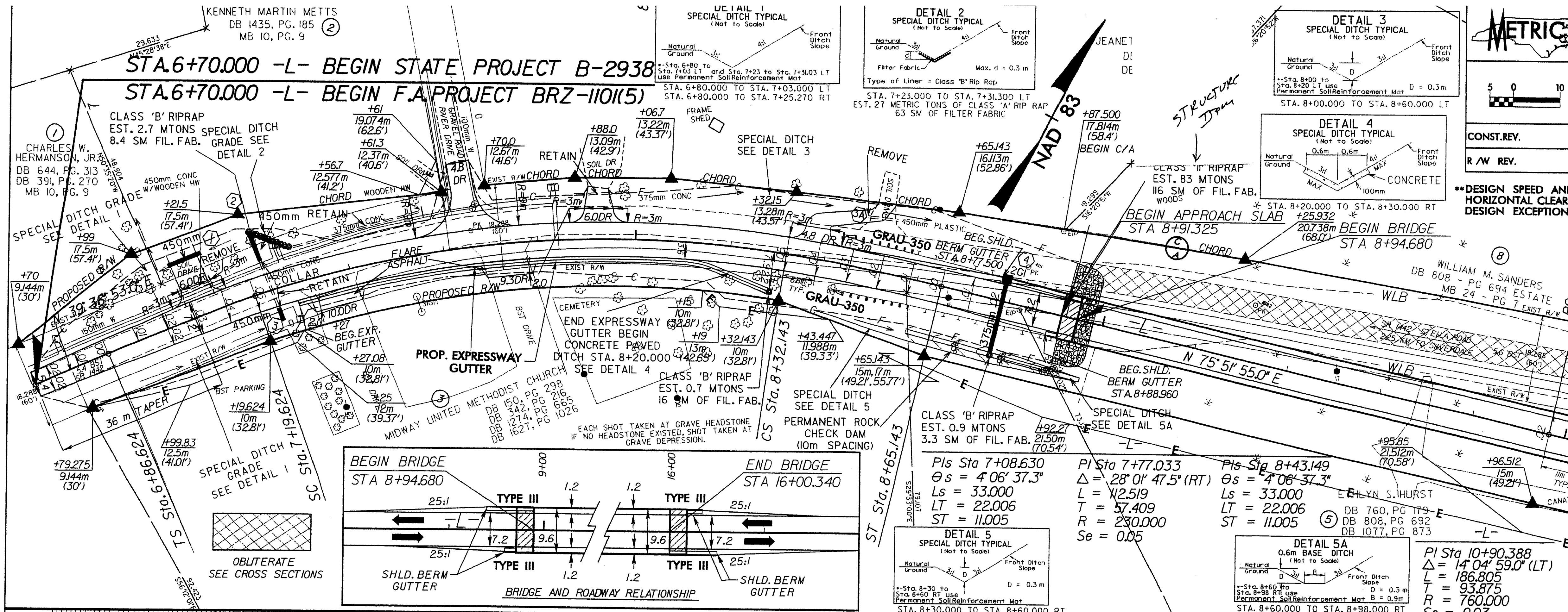
ROADWAY DESIGN ENGINEER

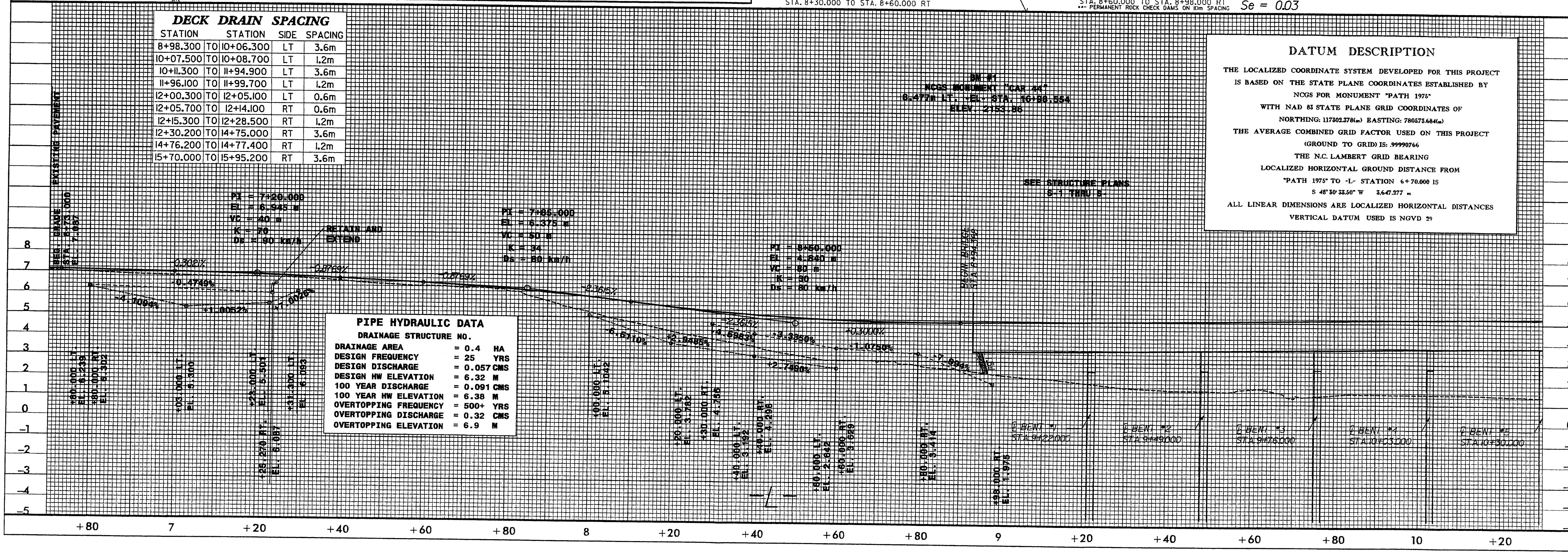
HYDRAULICS ENGINEER

CONST. REV.

R/W REV.

WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513





DECK DRAIN SPACING

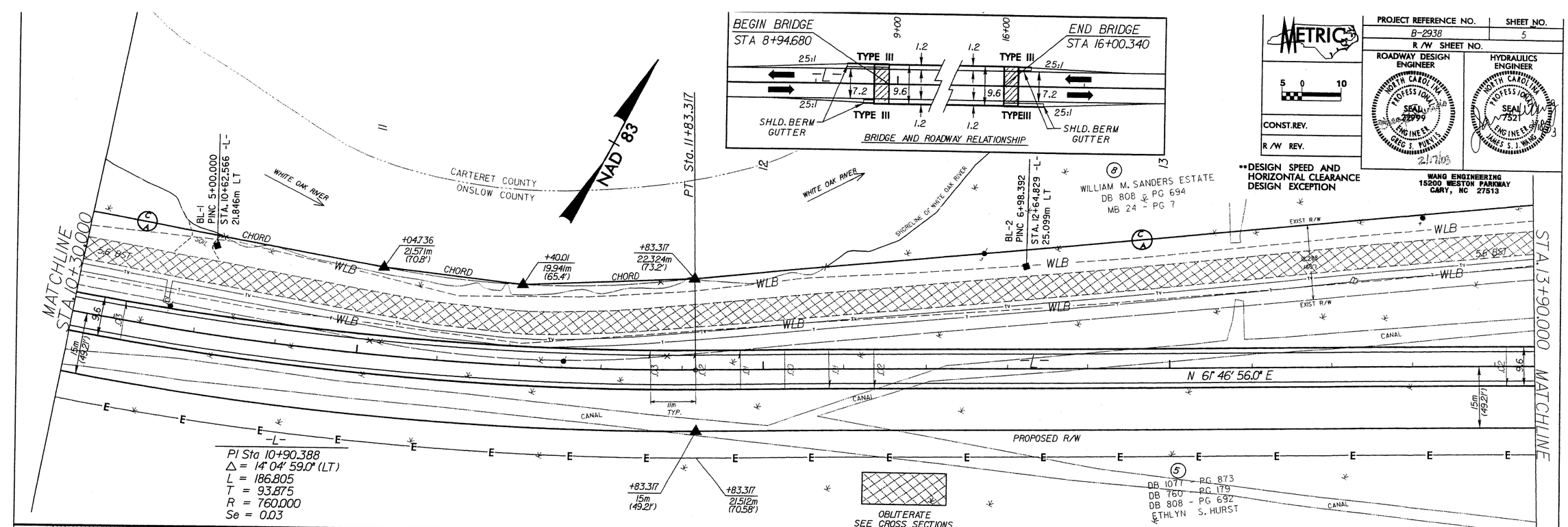
STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 0.4	HA
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.057	CMS
DESIGN HW ELEVATION	= 6.32	M
100 YEAR DISCHARGE	= 0.091	CMS
100 YEAR HW ELEVATION	= 6.38	M
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 0.32	CMS
OVERTOPPING ELEVATION	= 6.9	M

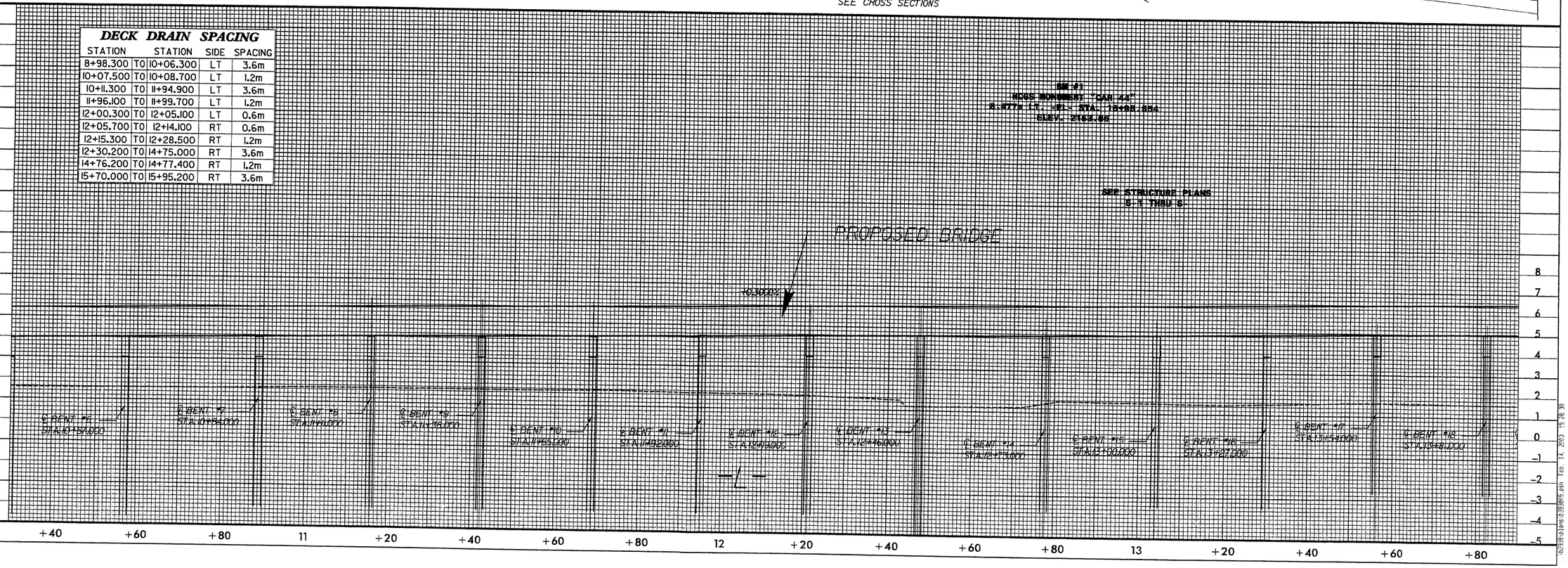
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PATH 1975" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 117302.378(m) EASTING: 780573.684(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99990766
THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PATH 1975" TO -L- STATION 6+70.000 IS S 48° 30' 33.50" W 3,647.277 m
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29



DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m



PROJECT REFERENCE NO.	SHEET NO.
B-2938	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22999 GREG S. PURVIS — 2/17/03

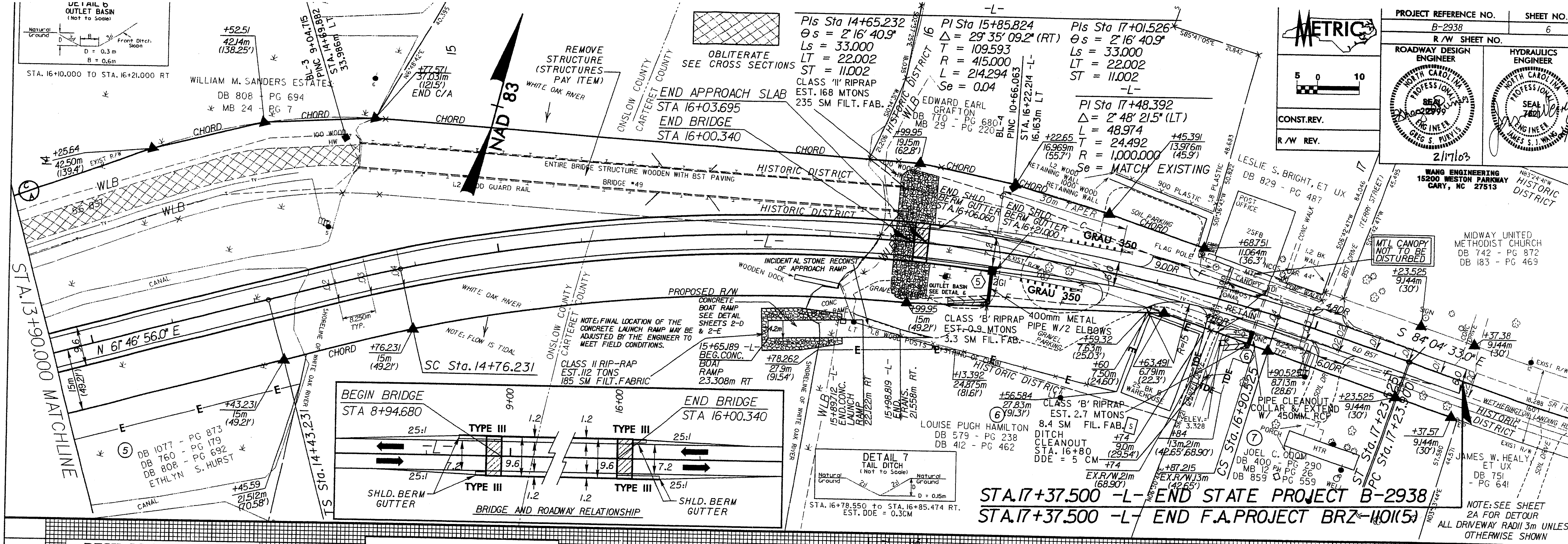
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7621 JAMES S. J. WANG — 2/18/03

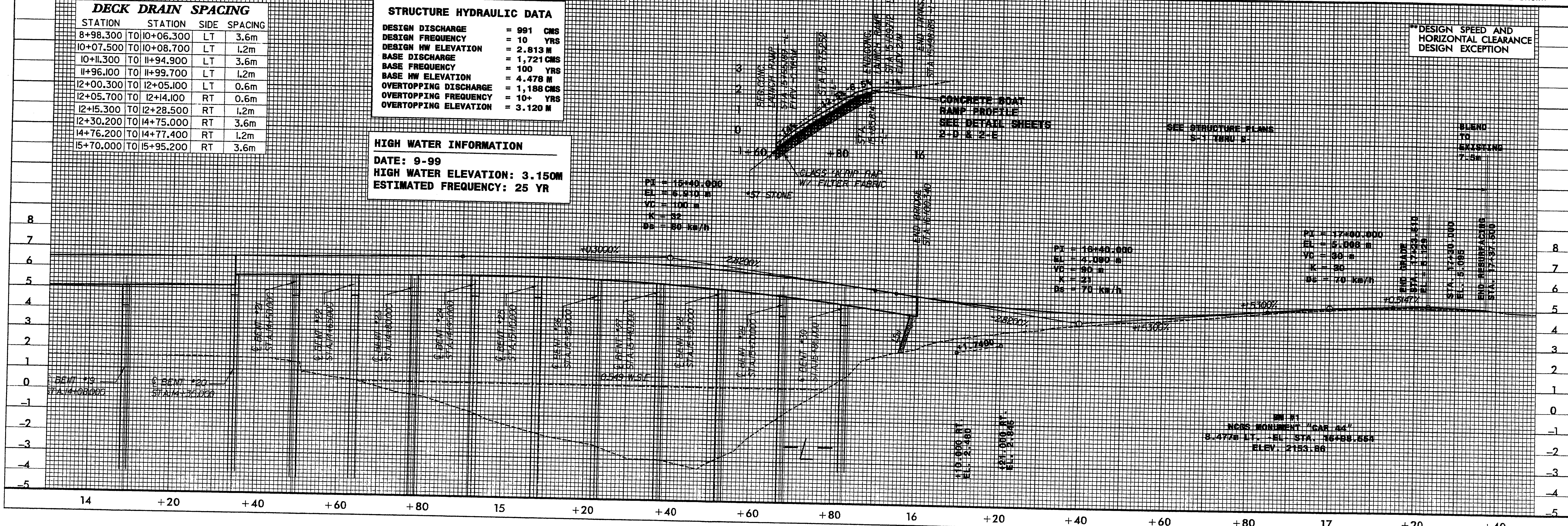
WANG ENGINEERING
15200 WESTON PARKWAY
CARY, NC 27513

METRIC

CONST. REV.

R/W REV.





DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 991 CMS
DESIGN FREQUENCY	= 10 YRS
DESIGN HW ELEVATION	= 2.813 M
BASE DISCHARGE	= 1,721 CMS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 4.478 M
OVERTOPPING DISCHARGE	= 1,188 CMS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3.120 M

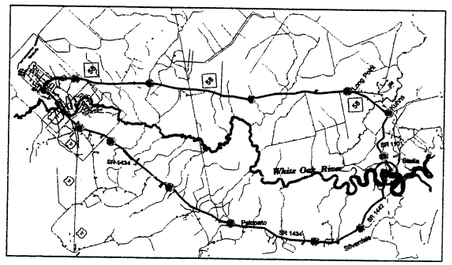
HIGH WATER INFORMATION

DATE: 9-99
HIGH WATER ELEVATION: 3.150M
ESTIMATED FREQUENCY: 25 YR

B-2938

TIP: B-2938

VICINITY MAP



DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
CARTERET/ONSLOW COUNTY

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

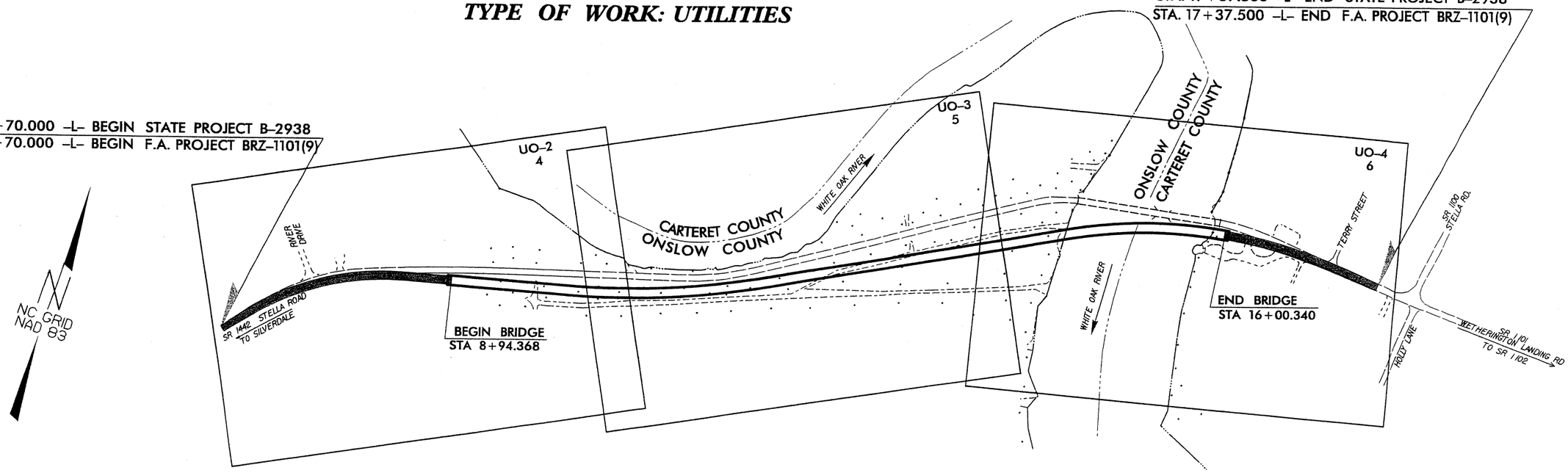
T.I.P. NO.	SHEET NO.
B-2938	UO-1

LOCATION: REPLACE BRIDGE NO. 49 OVER WHITE OAK RIVER AND APPROACHES ON SR 1101 AND SR 1442

TYPE OF WORK: UTILITIES

STA. 6+70.000 –L– BEGIN STATE PROJECT B-2938
STA. 6+70.000 –L– BEGIN F.A. PROJECT BRZ-1101(9)

STA. 17+37.500 –L– END STATE PROJECT B-2938
STA. 17+37.500 –L– END F.A. PROJECT BRZ-1101(9)



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2 THRU UO-4	UTILITIES BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(1) CARTERET/CRAVEN EMC
(2) SPRINT TELEPHONE
(3) TIME WARNER

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
DESIGN SERVICES
UTILITY SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Steve Mckee, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Alonza Yancey — UTILITIES PROJECT DESIGNER

PROJECT REFERENCE NO. B-2938 | SHEET NO. U0-2

UTILITIES BY OTHERS

METRIC

SCALE 5 0 10

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

KENNETH M. METTS DB 1435, PG. 185 MB 10, PG. 9 (2)

INTERNATIONAL PATIENT SERVICES, INC. DB 1474, PG. 128 (3)

CHARLES W. HERMANSON, JR. DB 644, PG. 313 DB 391, PG. 270 MB 10, PG. 9 (1)

CLASS 'B' RIPRAP EST. 2.7 MTONS 8.4 SM FIL. FAB. GRADE SEE DETAIL 2

CLASS 'II' RIPRAP EST. 83 MTONS 116 SM OF FIL. FAB.

CLASS 'B' RIPRAP EST. 0.7 MTONS 16 SM OF FIL. FAB.

CLASS 'B' RIPRAP EST. 0.9 MTONS 3.3 SM OF FIL. FAB.

EST. 27 METRIC TONS OF CLASS 'A' RIP RAP 63 SM OF FILTER FABRIC

EST. 2.7 MTONS SPECIAL DITCH 8.4 SM FIL. FAB. GRADE SEE DETAIL 2

ETHLYN SANDERS HURST DB 1280, PG 292 DB 1077, PG 873 DB 760, PG 179 (5)

WILLIAM MATTOCKS SANDERS DB 808 - PG 694 MB 24 - PG 7

DETAIL 1 SPECIAL DITCH TYPICAL (Not to Scale)

DETAIL 2 SPECIAL DITCH TYPICAL (Not to Scale)

DETAIL 3 SPECIAL DITCH TYPICAL (Not to Scale)

DETAIL 4 SPECIAL DITCH TYPICAL (Not to Scale)

DETAIL 5 SPECIAL DITCH TYPICAL (Not to Scale)

DETAIL 5A 0.6m BASE DITCH (Not to Scale)

REMOVE PEDESTAL

PROPOSED PEDESTAL

STA.6+70.000 -L- BEGIN STATE PROJECT B-2938

STA.6+70.000 -L- BEGIN F.A.PROJECT BRZ-1101(5)

REMOVE PEDESTAL

ABANDON

REMOVE

ABANDON

PROPOSED PEDESTAL

OBLITERATE SEE CROSS SECTIONS

TEMPORARY O/H POWER & CATV LINES

PROP. O/H POWER & CATV LINES

PROP. O/H POWER & CATV LINES

PROP. EXPRESSWAY GUTTER

END EXPRESSWAY GUTTER BEGIN CONCRETE PAVED DITCH STA. 8+20.000 SEE DETAIL 4

SPECIAL DITCH SEE DETAIL 5

SPECIAL DITCH SEE DETAIL 5A

BEGIN APPROACH SLAB STA 8+91.325

BEGIN BRIDGE STA 8+94.388

BEGIN BRIDGE STA 8+94.680

END BRIDGE STA 16+00.340

BRIDGE AND ROADWAY RELATIONSHIP

EACH SHOT TAKEN AT GRAVE HEADSTONE IF NO HEADSTONE EXISTED, SHOT TAKEN AT GRAVE DEPRESSION.

MATCHLINE SEE SHEET U0-3

NOTE: SEE SHEET 2A FOR DETOUR

PI Sta 7+08.630
Θs = 4° 06' 37.3"
Ls = 33.000
LT = 22.006
ST = 11.005

PI Sta 7+77.033
Δ = 28° 01' 47.5" (RT)
L = 112.519
T = 57.409
R = 230.000
Se = 0.05

PI Sta 8+43.149
Θs = 4° 06' 37.3"
Ls = 33.000
LT = 22.006
ST = 11.005

PI Sta 10+90.388
Δ = 14° 04' 59.0" (LT)
L = 186.805
T = 93.875
R = 760.000
Se = 0.03

STA. 8+00.000 TO STA. 8+60.000 LT

STA. 8+20.000 TO STA. 8+30.000 RT

STA. 8+30.000 TO STA. 8+60.000 RT

STA. 8+60.000 TO STA. 8+98.000 RT

DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.4	HA
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.057	CMS
DESIGN HW ELEVATION	= 6.32	M
100 YEAR DISCHARGE	= 0.091	CMS
100 YEAR HW ELEVATION	= 6.38	M
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 0.32	CMS
OVERTOPPING ELEVATION	= 6.9	M

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PATH 1975" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 117302.378(m) EASTING: 780571.684(m)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99990766

THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PATH 1975" TO -L- STATION 6+70.000 IS S 48° 30' 53.50" W 3,647.277 m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NGVD 29

BM #1 NCGS MONUMENT "CAR 44" 8.477m LT. -EL- STA. 16+88.554 ELEV. 2153.86

SEE STRUCTURE PLANS S-1 THRU S-

C BENT #1 STA 9+22.000

C BENT #2 STA 9+49.000

C BENT #3 STA 9+76.000

C BENT #4 STA 10+03.000

C BENT #5 STA 10+30.000

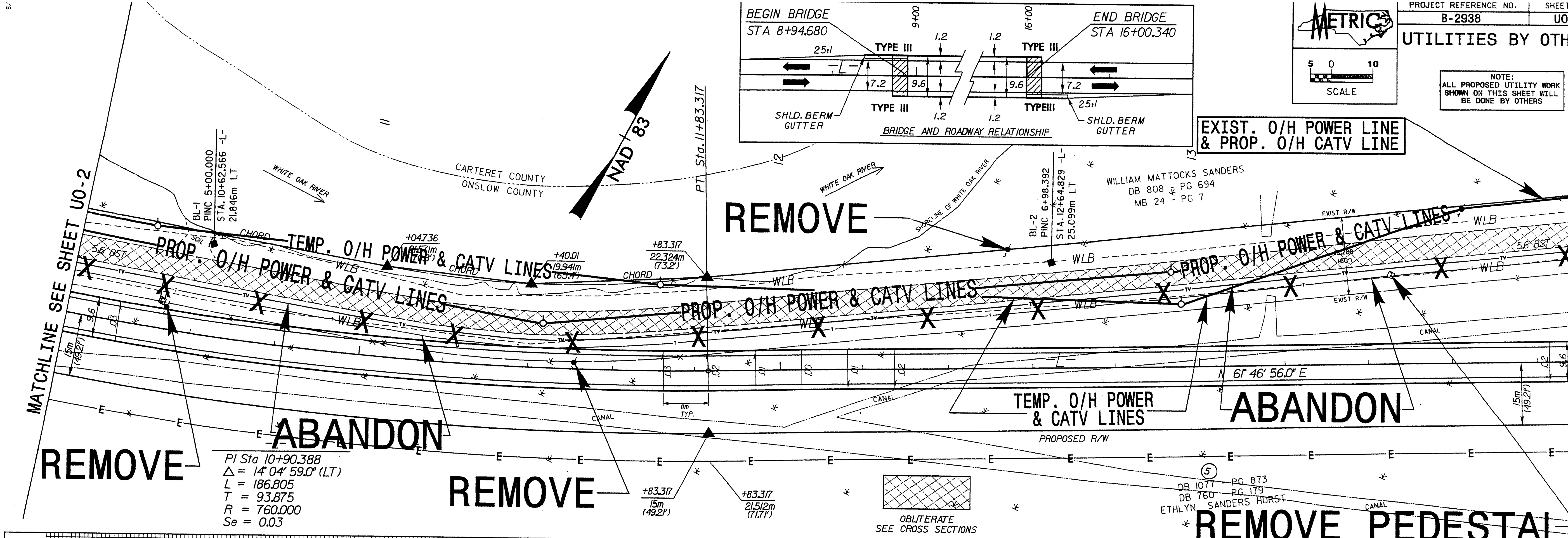
PROJECT REFERENCE NO.	SHEET NO.
B-2938	UO-3

UTILITIES BY OTHERS

METRIC

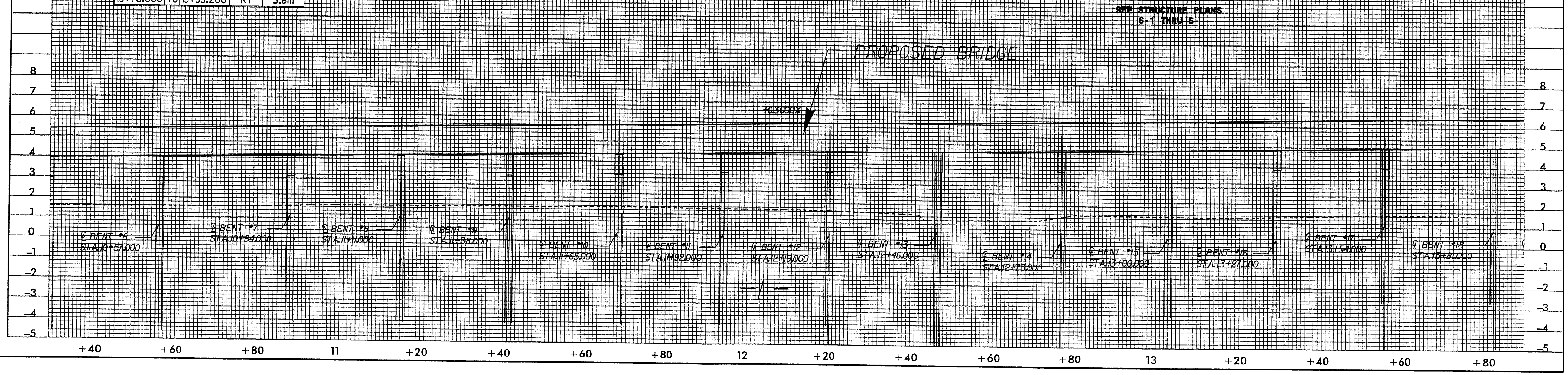
SCALE 5 0 10

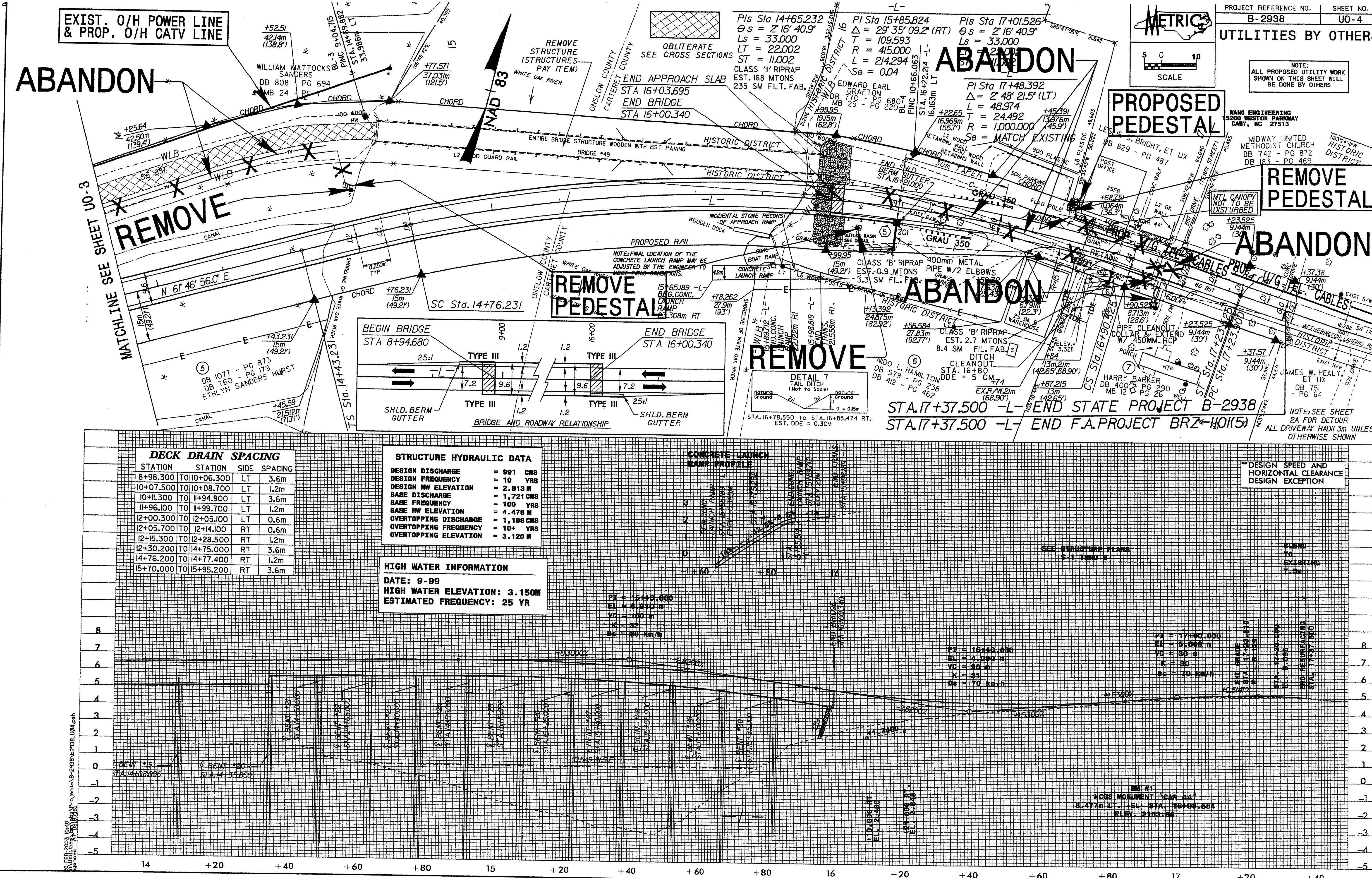
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m





DECK DRAIN SPACING

STATION		STATION	SIDE	SPACING
8+98.300	TO	10+06.300	LT	3.6m
10+07.500	TO	10+08.700	LT	1.2m
10+11.300	TO	11+94.900	LT	3.6m
11+96.100	TO	11+99.700	LT	1.2m
12+00.300	TO	12+05.100	LT	0.6m
12+05.700	TO	12+14.100	RT	0.6m
12+15.300	TO	12+28.500	RT	1.2m
12+30.200	TO	14+75.000	RT	3.6m
14+76.200	TO	14+77.400	RT	1.2m
15+70.000	TO	15+95.200	RT	3.6m

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 991 CMS
DESIGN FREQUENCY	= 10 YRS
DESIGN HW ELEVATION	= 2.813 M
BASE DISCHARGE	= 1,721 CMS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 4.478 M
OVERTOPPING DISCHARGE	= 1,188 CMS
OVERTOPPING FREQUENCY	= 10+ YRS
OVERTOPPING ELEVATION	= 3.120 M

HIGH WATER INFORMATION

DATE: 9-99
HIGH WATER ELEVATION: 3.150M
ESTIMATED FREQUENCY: 25 YR

20-FEB-2003 10:40 W:\Utilities\Jsmaby\Projects\B-2938\b2938_U04.psh ayancey AT DS187161

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

T.I.P. No. B-2938

CATEGORICAL EXCLUSION
AND
PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

10·8·01
DATE

for William D. Gilmore, P.E., Manager
Project Development and Environmental
Analysis Branch, NCDOT

10-9-01
DATE

for Nicholas L. Graf, P.E.
Division Administrator, FHWA

Carteret and Onslow Counties

SR 1101 and SR 1442

Bridge No. 49 over the White Oak River

Federal-Aid Project No. BRZ-1101(5)

State Project No. 8.2160801

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CATEGORICAL EXCLUSION

AND

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

October 2001

Document Prepared by:
Wang Engineering Company, Inc.

Pamela R. Williams
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Barbara H. Mulkey Engineering

10-5-01

James Wang, Ph.D., P.E.
Principal-In-Charge
Wang Engineering Company, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 7521 ENGINEER JAMES S. J. WANG

For the North Carolina Department of Transportation

Stacy B. Harris, P.E.
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, North Carolina Department of Transportation's (NCDOT) Guidelines for Best Management Practices for Bridge Demolition and Removal, Guidelines for Best Management Practices for Protection of Water Surfaces, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed by NCDOT:

Project Development & Environmental Analysis Branch, Structure Design, Design Branch
The following measures will be carried out for the replacement of Bridge No. 49 per the approved Memorandum of Agreement:

1. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the Bridge and its surroundings as well as the General Store/Post Office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan (Appendix A). The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/ State Historic Preservation Office (HPO) to be made part of the permanent statewide survey and iconographic collection.

2. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to right of way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

3. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina State Historic Preservation Officer (SHPO). To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

4. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, Federal Highway Administration (FHWA) shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

    a. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

b. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

Division Engineer

An in-stream construction moratorium will be in effect from February 15 to September 30. This moratorium is required due to the standard anadromous fish moratorium and the site being designated as a primary nursery area. This moratorium applies to the White Oak River only not to the marsh areas.

The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented, as applicable.

Access for emergency services will be maintained to the existing boat dock during construction.

All existing piers will be removed down to the streambed.

Hydraulic Design

Bridge deck drains will not discharge directly into the White Oak River.

Carteret and Onslow Counties
SR 1101 and SR 1442
Bridge No. 49 Over the White Oak River
Federal-Aid Project No. BRZ-1101(5)
State Project No. 8.2160801
T.I.P. No. B-2938

INTRODUCTION: The replacement of Bridge No. 49 is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1 (Appendix B). No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 31.5 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of an inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1101 and SR 1442 are classified as rural minor collectors and are, together, designated as a bike route, *Jacksonville: City to the Sea.* Land use in the project area is predominantly residential and High Quality Marsh (Brackish Marsh). The small riverside community of Stella is on the east approach and is eligible for the National Register of Historic Places as an historic district (see Figure 6). Bridge No. 49 is a contributing element to the district. There is a privately owned boat ramp on the southeast quadrant that is the only deep-water ramp in the area usable for water rescue vehicles.

Bridge No. 49 (Figure 3) was constructed in 1950 and reconstructed in 1975 with an overall length of 131.7 meters (432 feet). The clear roadway width is 5.7 meters (19 feet). The superstructure consists of twenty-three timber spans and one steel girder main span. The posted weight limit is 12.7 metric tons (14 tons) for single vehicles and 18.1 metric tons (20 tons) for truck-tractors, semi-trailers.

The approach at the west end of the bridge is on a 13.5-degree (136.5 meter radius) curve. The approach at the east end of the bridge is on a 25-degree (70 meter radius) curve. The approach roadway provides two 2.7-meter (nine foot) travel lanes with 1.8-meter (six foot) grass shoulders. The bed to crown height is nine meters (30 feet), and the normal water depth is approximately 4.2 meters (14 feet). The speed limit is not posted and the statutory speed limit is 90 kilometers per hour (km/h) (55 miles per hour (mph)). Advisory posted speed limit is 30 km/h (20 mph) on the approaches to the bridge.

The 2001 estimated average daily traffic volume is 1,600 vehicles per day (vpd). The projected traffic volume is expected to increase to 2,500 vpd by the design year 2025. The volumes include one percent truck-tractor semi-trailer (TTST) and two percent dual-tired vehicles (DT).

There is a private boat ramp in the southeast quadrant of the project site and a parking lot on the northeast side. Telephone, cable television and power lines cross the stream parallel to the roadway on the south side of the structure. Utility impacts are anticipated to be low.

Three accidents were reported near the bridge during the period from September 1, 1993 to August 31, 1996.

No school busses cross Bridge No. 49.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide two 3.6-meter (12-foot) travel lanes with 1.2-meter (four foot) shoulders for a total clear roadway width of 9.6 meters (32 feet). Bicycle safe rails will be provided (two-bar metal bridge rails at 1372 mm (54-inches) in height) (Figure 4, Appendix B). The proposed approach roadway will consist of two 3.6-meter (12-foot) travel lanes with 2.4-meter (eight foot) shoulders. The design speed will be 70 kilometers per hour (km/h) [45 miles per hour (mph)]. A design exception has been approved for the design speed of 70 km/h (45 mph) and the horizontal sight distance, and is attached in Appendix D.

The new structure will be approximately 704 meters (2347 feet) in length and will span the White Oak River and the high quality marshland. The existing navigational clearance will be maintained.

B. Reasonable and Feasible Alternatives

One (1) "reasonable and feasible" constructible alternative studied for replacing the existing bridge is described below.

Alternate D (Preferred) replaces the bridge downstream of the existing bridge and spans the White Oak River and the marshland on the Onslow County approach. The new structure is recommended to have a length of approximately 704 meters (2347 feet). During construction, traffic will be maintained on the existing structure and roadway.

C. Alternatives Eliminated From Further Study

Alternates A, B^1, B^2, C and E were eliminated due to the poor soil conditions on the bridge approach on the Onslow County side. It was determined that the soil could not be stabilized and differential settlement would occur if the roadway was raised for the end bent approach embankment.

Alternate A replaces the bridge at the existing location. During construction, traffic would be maintained by a two lane temporary detour structure, approximately 170 meters (567 feet) in length, located downstream of the existing bridge. The proposed bridge would be approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve. The approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet) and includes placement of rock fill at the ox bow and guardrail from west of the ox bow to the bridge. The project length is 853 meters (2843 feet).

Alternate B^1 replaces the bridge downstream of the existing bridge. During construction, traffic would be maintained on the existing bridge. The proposed bridge would be approximately 214 meters (713 feet) in length on a two degree (875 meter radius) curve with a five degree (350 meter radius) east approach curve. Onslow County approach work includes a minimum resurfacing grade beginning west of the ox bow and placement of rock fill at the ox bow and guardrail from west the ox bow to the bridge. The project length is 704 meters (2347 feet).

Alternate B^2 alignment is identical to Alternate B^1, but the approach roadway in Onslow County would be raised approximately 0.76-meter (2.5 feet). The project length is 845 meters (2817 feet).

Alternate C replaces the bridge at the existing location. During construction, one lane of traffic would be maintained on the existing bridge. The proposed bridge would be approximately 143 meters (477 feet) in length on a seven degree (250 meter radius) curve. Traffic would be routed off-site during the construction of the temporary approaches for the one lane detour structure. Alternate C was eliminated at the early phase of the study because it provided a one-lane detour bridge to maintain traffic during the anticipated two-year project duration and would require a road closure to construct the detour approaches.

Alternate E involves replacing the bridge with a new bridge approximately 165 meters (550 feet) in length on a five degree (350 meter radius) curve and minimum approach work. During construction, traffic would be maintained with an on-site detour. Alternate E includes additional rock fill in the ox bow to avoid further erosion. The project length is 378 meters (1260 feet).

The "Do-Nothing" Alternative would eventually necessitate removal of the bridge, effectively removing this section of SR 1101/SR 1442 from traffic service. This is not desirable due to the traffic service provided by SR 1101/SR 1442 and the estimated 22-kilometer (13.8 miles) detour route.

Investigation of the existing structure by the Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternate

Alternate D, replacing the bridge downstream of the existing bridge and raising the grade on the Onslow County approach, was selected as the preferred alternate because it minimizes wetland impacts, minimizes impacts to Stella's Historic District, and restores high quality wetlands. In addition, Alternate D was the only alternate considered to be constructible. The proposed bridge will be constructed utilizing a temporary work bridge located south of the existing structure. The length of approach work will be approximately 342.4 meters (1141 feet).

The NEPA/404 Merger Team concurred with Alternate D as the preferred alternative and as the least environmentally damaging, practical alternative (Appendix C).

For avoidance and minimization of adverse impacts, the following measures will be accomplished:

1. Anticipated impacts to wetlands minimized to approximately 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 132-meter (440-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

IV. ESTIMATED COST

The estimated costs, based on current 2001 prices, are as follows:

	Alternate D (Preferred)
Structure Removal (existing)	$ 65,500
New Structure (with Temp. Work Bridge)	6,082,600
Roadway Approaches	339,800
Miscellaneous and Mobilization	699,100
Engineering and Contingencies	1,113,000
ROW/Const. Easements/Utilities:	69,000
TOTAL	**$8,369,000**

The estimated cost of the project, as shown in the 2002-2008 Transportation Improvement Program, is $7,174,000 including $74,000 for right-of-way and $7,100,000 for construction.

V. NATURAL RESOURCES

A. Methodology

Informational sources used to prepare this report include: USGS Stella, NC 7.5 minute series topographic map (1988); Soil Conservation Service (SCS) Soil Survey of Onslow County, NC (July, 1992) and Soil Survey of Carteret County, NC (September, 1987); United States Fish and Wildlife Service (USFWS) National Wetlands Inventory map (Stella, NC, 1995); USFWS Endangered, Threatened, and Candidate Species and Federal Species of Concern in North Carolina (March 22, 2001); North Carolina Natural Heritage Program (NCNHP) computer database of rare species and unique habitats (January 2001); and NCDOT aerial photography of the study area.

A general field survey was conducted along the proposed project corridor on March 19, 1998 and October 7, 1998. Plant communities and their associated wildlife were identified

using a variety of observation techniques including active searching, and identifying characteristic signs of wildlife such as sounds, tracks, scats, and burrows.

Impact calculations were based on the construction limits for each individual alternate, the width of the replacement structure, the width of the river, and the length of the project approaches.

B. Physiography And Soils

The proposed project lies within the Coastal Plain Physiographic Province, which includes all parts of North Carolina east of the Fall Line. This province typically consists of unconsolidated sands, silts, clays, and peats. The topography of the project vicinity can be characterized as nearly level to gently rolling, with elevations ranging from approximately <1.5 meters to 7.5 meters (< five feet to 25.0 feet) above mean sea level (msl). The elevation in the project area ranges from approximately <1.5 meters to 4.5 meters (< five feet to 15.0 feet) above msl. Current land use in the project vicinity includes agricultural and rural residential, with much of the undeveloped areas being jurisdictional wetlands.

According to the soil surveys for Carteret and Onslow Counties, three different soil associations are located within the project area. The Muckalee-Dorovan association is located north and south of the approach west of the White Oak River and consists of nearly level, poorly and very poorly drained soils. The Lafitte-Hobucken-Carteret and Baymeade-Onslow-Lynchburg soil associations are located in the project area on the east side of the river. The Lafitte-Hobucken-Carteret association consists of very poorly drained, mucky and sandy soils found in marshes flooded frequently with salt water. The Baymeade-Onslow-Lynchburg association is located in areas that parallel drainageways, and includes well drained to somewhat poorly drained sandy and loamy soils. Field conditions generally conform to soil survey mapping.

Seabrook fine sand occurs directly adjacent to the bridge east of the river, and also south of SR 1101 east of the river in the project area (USDA-SCS, 1987). This soil is moderately well drained, with rapid permeability. The seasonal high water table is 0.6 to 1.2 meters (two to four feet) below the surface and flooding occurs rarely in low-lying areas. A small irregularly shaped wet area occurs directly adjacent to the bridge on the east side of the river. This area is more sandy than mucky and is probably Leon sand, which occasionally occurs as an inclusion in the Seabrook fine sand. Leon sand is poorly drained and is listed as hydric (USDA-SCS, 1991).

Norfolk loamy fine sand, two to six percent slopes, is located on the north side of SR 1101 west of the river. The seasonal high water table is 1.2 to 1.8 meters (four to six feet) below the surface. This soil is well drained, permeability is moderate, and erosion is a moderate hazard in areas not protected by vegetation. This soil is not listed as hydric.

Lafitte muck is found on both sides of the roadway approach west of the White Oak River (USDA-SCS, 1992). This soil is typically found <1.5 meters (< five feet) above msl and is flooded daily with brackish water. Infiltration and permeability are moderate and the water table is at or near the surface most of the time. Lafitte muck is listed as hydric (USDA-SCS, 1991).

C. Water Resources

1. Surface Waters

The proposed project falls within the White Oak River Basin, with a subbasin designation of WOK1 (03-05-01) and a federal hydrologic unit designation of White Oak-03020106.

2. Water Resource Characteristics

The White Oak River is a low flowing, coastal river which discharges into Bogue Sound approximately 8.1 kilometers (five miles) southeast of the project study area. Within the project study area of Bridge No. 49, the White Oak River flows south to southeast and is approximately 119 meters (390 feet) wide with a drainage area of 373 square kilometers (233 square miles). The White Oak River and SR 1101 cross at this location perpendicular to each other but there is a sharp curve on the western end of the bridge. On the day of the field investigation the river had a deep, tannin tea color and a low flow. The depth of the river along the riverbanks ranged from approximately 0.6 to 1.2 meters (two to four feet). The riverbank substrate consisted of fine silts and sands. The White Oak River is tidal but also has some wind driven tidal influence as well and is considered brackish. The river's salinity on the day of the site visit was three parts per thousand. The White Oak River has a Class SA rating from the North Carolina Department of Environment and Natural Resources (NCDENR). The Class SA indicates the White Oak River is designated as tidal salt waters protected for shellfishing for market purposes, primary recreation, aquatic life propagation and survival, fishing, wildlife and secondary recreation. The Classification Date and Index for this portion of the river are 6/1/56, 20-(18). Approximately 1.6 kilometers (one mile) upstream from the bridge crossing, the White Oak River is classified as C HQW. The C indicates that the river is suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. HQW indicates High Quality Waters, which are rated as excellent based on biological and physical/chemical characteristics through monitoring or special studies.

Point-source discharges located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. A search within the project vicinity [0.8 kilometers (0.5 miles)] was conducted for NPDES permitted discharges and none were revealed.

Non-point source refers to runoff that enters surface waters through storm water flow or no defined point of discharge. In the project study area, storm water runoff from SR 1101 may cause water quality degradation as well as surface runoff from the boat ramp area in the southeast quadrant of the project study area.

The North Carolina Division of Water Quality (NCDWQ) includes the North Carolina Index of Biotic Integrity (NCIBI), as another method to determine general water quality in the basinwide sampling. The NCIBI is a modification of the Index of Biotic Integrity (IBI) initially proposed by Karr (1981) and Karr, et. al. (1986). The IBI method was developed for assessing a stream's biological integrity by examining the structure and health of its fish community. The Index incorporates information about species richness and composition, trophic composition, fish abundance, and fish condition. The NCIBI summarizes the effects of all classes of factors influencing aquatic faunal communities (water quality, energy source, habitat quality, flow regime, and biotic interactions).

According to NCDWQ, the Division has a sampling station located on SR 1101 at Bridge No. 49 on the White Oak River. This station was last sampled in April of 1995, and includes a fish community (IBI) sample. The NCDWQ sampling identification number is 95-22. The NCIBI rating of the White Oak River at this location was determined to be Good.

3. Anticipated Impacts

a) General Impacts

Other than the one water resource mentioned in the previous section, neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watershed, or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within 1.6 km (one mile) of project study area. Impacts to water resources will result due to the placement of support structures (bents) in the river. In the short term, construction of the bridge and approach work will increase sediment loads. The NCDOT, in cooperation with the NCDENR, has developed a sedimentation control program for highway projects that adopts formal Best Management Practices for the Protection of Surface Waters. The following are methods to reduce sedimentation and water quality impacts:

- strict adherence to BMPs for the protection of surface waters in sensitive water sheds during the life of the project
- reduction and elimination of direct and non-point discharge into the water bodies and minimization of activities conducted in streams
- placement of temporary ground cover or re-seeding of disturbed sites to reduce runoff and decrease sediment loadings
- reduction of clearing and grubbing along the river.

b) Impacts Related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", and "Best Management Practices for Bridge Demolition and Removal" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for Best Management Practices for the Protection of Surface Waters.

Dropping any portion of the structure into waters of the United States will be avoided unless there is no other practical method of removal. The superstructure of Bridge No. 49 consists of timber flooring on steel I-Beams, with an asphalt-wearing surface. The substructure consists of timber caps on timber piles. The end bents are timber abutment design. Since Bridge No. 49 is composed of timber and steel, the bridge can be removed without dropping any components into waters of the United States. If removal of the substructure will create disturbance in the streambed, a turbidity curtain can be used to address sediment concerns.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project would fall under Case 2, which states that no work shall be performed in the water during moratorium periods (February 15 to September 30) associated with fish migration, spawning, and larval recruitment into nursery areas. This conclusion is based upon the classification of the waters within the project area and vicinity, the Stream Crossing Guidelines for Anadromous Fish Passage, and comments received from the North Carolina Wildlife Resources Commission (NCWRC).

D. Biotic Resources

1. Plant Communities

Living systems described in the following sections include communities of associated plants and animals in the project area. These descriptions refer to the dominant flora and fauna in each community and the relationship of these biotic components. Classification of natural plant communities is based on the system used by the NCNHP (Schafale and Weakley 1990). Scientific nomenclature and common names (when applicable) are used for the plant and animal species described. Subsequent references to the same species include the common name only. Vascular plant names follow nomenclature found in Radford et al. (1968) unless more current information is available. Terrestrial and aquatic wildlife were determined through field observations, evaluation of habitat, and review of field guides and other documentation.

a) Man-Dominated Community

The Man-Dominated Community found at this site includes the road shoulders, parking lots, and residential and commercial properties within the project area. Dominant vegetation includes dandelion (*Taraxacum officinale*), plantain (*Plantago sp.*), white clover (*Trifolium repens*), and planted grass. Parking lots and some parts of the road shoulders consist of exposed soil. Most areas of the Man-Dominated community appear to be regularly maintained.

b) Brackish Marsh

This wetland community is located west of the river, north and south of the roadway approach, and in a small patch that extends under the bridge east of the river. Dominant vegetation includes black needlerush (*Juncus roemerianus*), cord grass (*Spartina patens*), Olney threesquare (*Scirpus olneyi*), and common reed (*Phragmites australis*). Wax myrtle (*Myrica cerifera*), yaupon holley (*Ilex vomitoria*), and eastern redcedar (*Juniperus virginiana*) are widely scattered throughout. The depth of surface water in this community on the day of the initial site investigation ranged from approximately zero to 30 centimeters (zero to 12 inches) and salinity was three parts per thousand.

2. Wildlife

Plant diversity is low in the Man-Dominated community and there are no areas of vines or brush that might provide shelter for wildlife. Limited habitat may be available for such species as American robin (*Turdus migratorium*), starling (*Sturnus vulgaris*), and house mouse (*Mus musculus*).

The Brackish Marsh community provides important habitat for a variety of wildlife and serves as nursery grounds for many aquatic species. Wildlife seen or heard in this community on the day of the visit included double-crested cormorant (*Phalacrocorax auritus*), ring-billed gull (*Larus delawarensis*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), and common crow (*Corvus brachyrhynchos*).

Other species of ducks and gulls may find food sources in the marsh. King rail (Rallus elegans) and short-billed marsh wren (Cistothorus platensis) could find suitable winter habitat in this community and other birds such as least bittern (*Ixobrychus exilis*) may find good nesting habitat here. Mammals such as muskrat (*Ondatra zibethicus*) and marsh rice rat (*Oryzomys palustris*) may be found nesting in this community as well. Diamondback terrapin (*Malaclemys terrapin*) may be seen here feeding on crabs, small mollusks, and dead fish, and marsh fiddler crab (*Uca pugnax*) could reside here, feeding on organic matter and burying into the substrate. Many other species of wildlife not listed here may be found in this very productive community.

3. Aquatic Communities

The aquatic community in the project study area exists within the White Oak River. A cursory search of the shoreline was conducted for evidence of mussel and clam species. Hard clam shells (*Mercenaria mercenaria*) and eastern oyster shells (*Crassostrea virginica*) were found along the riverbanks but no other signs of mollusks or bi-valves were revealed. Signs were posted along both sides of the White Oak River by the North Carolina Division of Marine Fisheries (NCDMF) closing the shellfish beds and warning of serious illness if shellfish from this area were consumed. Dip-netting along the riverbank yielded only juvenile brown shrimp (*Penaeus aztecus*).

According to the North Carolina Wildlife Resources Commission (NCWRC), the following freshwater fish species are found within the White Oak River; redbreast sunfish (*Lepomis auritus*), chain pickerel (*Esox niger*), bluegill (*Lepomis macrochirus*), pumpkinseed (*Lepomis gibbosus*), and largemouth bass (*Micropterus salmoides*). NCWRC stated the following saltwater species were also found in the White Oak River at this location: herring (*Alosa spp.*), hickory shad (*Alosa mediocris*), and striped bass (*Morone saxatilis*). NCWRC recommended no instream work from April 1 to June 15, as these are critical spawning periods for most sunfish and bass (*Centrarchidae* family) and additionally NCWRC recommended no instream activity from February 15 to May 30 due to anadromous fish migrations. NCWRC also made other bridge replacement recommendations such as placing the new structure as close as possible to the existing structure, deck drains should not discharge directly into the river, live concrete should not be allowed to contact the water and a clear bank (riprap free) area of at least three meters (ten feet) should remain on each side of the river underneath the bridge.

NCWRC stated in response to a scoping letter that the bridge should be replaced, in place, with a spanning structure and with off-site detour. No in-water work should occur from February 15 to September 30, and that the marsh adjacent to the bridge should be avoided.

The North Carolina Division of Marine Fisheries (NCDMF) stated that they have a longstanding sampling station at Stella, below Bridge No. 49. From 1978 through 1996

for the months of May and June these are the most frequently sampled species found at this location in descending order of abundance; brown shrimp (*Penaeus aztecus*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), American eel (*Anguilla rostrata*), bay anchovie (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), grass shrimp (*Palaemonetes spp.*), hog choker (*Triunectes maculatus*), blue crab (*Callinectes sapidus*), weakfish (*Cynoscion regalis*), pinfish (*Lagondon rhomboides*), and southern flounder (*Paralichthys lethostigma*). NCDMF stated that this is a primary marine nursery area that has a variable salinity rate depending on rainfall and wind tides. NCDMF stated the waters are navigable, primarily for recreation purposes, but some commercial gill netting also occurs here. NCDMF recommended a dredge moratorium from April 1 to September 30 and advised that the NCDOT needs to practice strict best management practices (BMPs) when work does begin to replace the bridge due to it being a primary nursery area.

4. Anticipated Impacts to Biotic Communities

Biotic community impacts expected to result from project construction are addressed separately as terrestrial impacts and aquatic impacts. However, impacts to terrestrial communities, particularly in wetland areas and in locations exhibiting slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. It is important to note that construction impacts may not be restricted to the communities in which the construction activity occurs. Efforts will be made to ensure that no sediment leaves the construction site.

a) Plant Communities

Plant communities provide nesting, foraging, and shelter habitat for fauna. The loss of these habitats will result in the displacement and mortality of faunal species in residence. Individual mortalities may occur to terrestrial animals from construction machinery used during clearing activities.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present in the study area. Project construction will result in clearing and degradation of portions of these communities. Alternate D will result in the least amount of permanent impacts and will restore a portion of the existing road back to Brackish Marsh. Table 1 details the anticipated impacts to terrestrial and aquatic communities by habitat type.

TABLE 1
ANTICIPATED IMPACTS TO
TERRESTRAIL AND AQUATIC COMMUNTIES

ALTERNATE	*PROJECT LENGTH METERS (FEET)*	*BRIDGE LENGTH METERS (FEET)*	*SURFACE WATER IMPACTS LINEAR METERS (FEET)*	*BRACKISH MARSH IMPACTS HA (ACRE)*	*WETLAND RESTORATION HA (ACRES)*	*AQUATIC COMMUNITY HA (ACRES)*
D (Preferred)	1077.525 (3,534)	704 (2,310)	9.6 (32)	0.008 (0.021)	0.68 (1.70)	0.16 (0.40)

NOTES:
- Calculations for impacts are based on the construction limits.
- Aquatic community impacts are based upon the entire width and length of the bridge over water.

b) Aquatic Communities

The aquatic community in the study area exists within the White Oak River. The new replacement structure construction and approach work will likely increase sediment loads in the river in the short term. Construction related sedimentation is harmful to local populations of invertebrates that are an important part of the aquatic food chain. Construction activities also increase the possibility of potentially toxic substances, such as engine fluids and particulate rubber, entering the waterway and harming aquatic organisms.

The BMPs for the protection of surface waters will be strictly enforced to minimize potential adverse impacts due to this project. Since White Oak River is potentially anadromous fish spawning habitat, the NCDOT's Stream Crossing Guidelines for Anadromous Fish Passage will be adhered to for this project. The purpose of these guidelines is to provide guidance to the NCDOT to ensure that replacement of existing and new highway stream crossing structures will not impede the movement of anadromous fish.

E. Special Topics

1. Waters of the United States

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). "Waters of the United States" are regulated by the United States Army Corps of Engineers (USACE).

Investigation into wetland occurrence in the project study area was conducted during the initial site visit using methods of the 1987 Corps of Engineers Wetlands Delineation Manual. Wetland areas consisting of Brackish Marsh were found within the western quadrants of the project study area and in a small patch east of the river.

On October 7, 1998, the wetlands were delineated and surveyed. On December 1, 1998, the USACE and the Division of Coastal Management met on-site and gave their agreement of the delineation.

Project construction cannot be accomplished without infringing on jurisdictional surface waters. Anticipated surface water impacts fall under the jurisdiction of the USACE.

2. Permits

In accordance with provisions of Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), a permit would be required from the USACE for the discharge of dredged or fill material into "Waters of the United States". Since no significant impacts are expected from this project, a Categorical Exclusion level study will be initiated. Categorical Exclusions are subject to the provisions of Nationwide Permit 23. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole or in part, by another federal agency. It states that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. The Categorical Exclusion report is submitted to the USACE to

document that the terms and conditions of the Nationwide Permit 23 are met. However, final permit decisions are left to the discretionary authority of the USACE.

If filling from a proposed project will impact wetlands or waters, a Section 401 Water Quality Certification may be required from the North Carolina Division of Water Quality. North Carolina has developed General Certifications (GC) that will satisfy Section 401 of the CWA and correspond to the USACE's Nationwide Permits. An application must be made if there are any impacts to "Waters of the United States".

If no practical alternative exists to remove the current bridge other than to drop it into the water, prior to removal of debris off-site, fill related to demolition procedures will need to be considered during the permitting process. A worst-case scenario should be assumed with the understanding that if there is any other practical method available, the bridge will not be dropped into the water. Permitting should be coordinated such that any permit needed for bridge construction should also address issues related to bridge demolition. Since this bridge is of timber and steel construction, removal should be possible without dropping portions of the bridge into the water.

The White Oak River is subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes by the U.S. Coast Guard. This waterway meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70, stating that advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given advance approval of the construction of the bridge over the White Oak River. Therefore, a Coast Guard permit will not be required for this project.

3. Division of Coastal Management Consultation

The Division of Coastal Management must be consulted regarding application of the Coastal Area Management Act (CAMA) to this project. Section .2300 of the CAMA discusses general permits for the replacement of existing bridges. The water at this site is brackish and the marsh is considered estuarine and will not meet the CAMA general permit condition of the bridge replacement spanning no more than 75 meters (250 feet) of estuarine water. A CAMA major permit will be required.

General permit conditions include but are not limited to; single bridge and culvert projects that do not require temporary fill causeways or temporary bridges associated with replacements; bridge replacements spanning no more than 75 meters (250 feet) of estuarine water, public trust area, and coastal wetland Areas of Environmental Concern; bridge projects which do not increase the vertical clearance to more than 1.5 meters (five feet) above normal water level or normal high water, or by vertical clearance to more than 25 percent over the existing clearance, whichever is greater; projects in which the total area of public trust area, estuarine waters, and wetlands to be excavated or filled do not exceed 232 square meters (2500 square feet) except that the wetland component shall not exceed 46.5 square meters (500 square feet); and projects which DENR determines that the proposed activity would not adversely affect areas which possess historic, cultural, scenic, conservation, fisheries, water quality, or recreational values.

4. Mitigation

The USACE usually requires compensatory mitigation for activities authorized under Section 404 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.04 hectares (0.1 acre) of wetlands or 45.0 linear meters (150 linear feet) of perennial and intermittent streams.

The DWQ may require compensatory mitigation for activities authorized under Section 401 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.40 hectares (one acre) of wetlands and/or 45.0 linear meters (150 linear feet) of perennial streams. A final determination regarding mitigation requirements rests with DCM, with input from the COE and DWQ.

F. Protected Species

Some populations of plants and animals are in the process of decline due either to natural forces or their inability to coexist with humans. Rare and protected species listed for Carteret and Onslow Counties, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

1. Federally Protected Species

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The USFWS lists fourteen federally protected species for Carteret County (Table 2) and for Onslow County (Table 2A). Information pertinent to each species and the possibility of impact due to the proposed project is listed on the following table.

TABLE 2
FEDERALLY PROTECTED SPECIES
FOR CARTERET COUNTY
(MARCH 22, 2001)

Common Name	*Scientific Name*	Status
Shortnose sturgeon	*Acipnser brevirostrum*	E
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Hawksbill turtle	*Eretmochelys imbricata*	E
Eastern cougar	*Felis concolor couguar*	E** #

TABLE 2 FEDERALLY PROTECTED SPECIES FOR CARTERET COUNTY (MARCH 22, 2001)		
Common Name	*Scientific Name*	Status
Kemp's (Atlantic) ridley sea turtle	*Lepidochelys kempii*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Roseate tern	*Sterna dougallii*	E
Manatee	*Trichechus manatus*	E

NOTES:

Denotes Federally Protected Species for both Carteret and Onslow Counties

* Denotes obscure record, date this species was last observed in the county is unknown

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 endangered within the foreseeable future throughout all or a significant portion of its range)

T(S/A) Denotes Threatened due to similarity of appearance (species which are threatened due to similarity of appearance with other rare species and are listed to protect these species)

** Historic record at NCNHP. Last observed in the county more than 20 years ago.

\# Historic record at USFWS. Last observed in the county more than 50 years ago.

TABLE 2A FEDERALLY PROTECTED SPECIES FOR ONSLOW COUNTY (MARCH 22,2001)		
Common Name	*Scientific Name*	Status
American alligator	*Alligator mississippiensis*	T(S/A)
Seabeach amaranth	*Amaranthus pumilus*	T
Loggerhead sea turtle	*Caretta caretta*	T
Golden Sedge	*Carex Lutea*	PE
Piping plover	*Charadrius melodus*	T
Green sea turtle	*Chelonia mydas*	T
Leatherback sea turtle	*Dermochelys coriacea*	E
Eastern cougar	*Felis concolor couguar*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Cooley's meadowrue	*Thalictrum cooleyi*	E

NOTES:

Denotes Federally Protected Species for both Carteret and Onslow Counties

* Denotes obscure record, date this species was last observed in the county is unknown

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 endangered within the foreseeable future throughout all or a significant portion of its range)

T(S/A) Denotes Threatened due to similarity of appearance (species that are threatened due to similarity of appearance with other rare species and are listed to protect these species)

PE Proposed Endangered

Species: *Acipnser brevirostrum* (shortnose sturgeon)
Family: Acipenseridae
Date Listed: 3/11/67

The shortnose sturgeon is a small (usually less than three ft [0.9 meters] in length) species of fish that occurs in the lower sections of large rivers and in coastal marine habitats from the St. John River, Canada to the Indian River, Florida. It can be differentiated from the Atlantic sturgeon because of its shorter snout, wider mouth, and the pattern of its preanal shields (the shortnose having one row and the Atlantic having two).

The shortnose sturgeon prefers deep channels with a salinity less than sea water. It feeds on benthic invertebrates and plant material and is most active at night. It is an anadromous species that spawns upstream in the spring and spends most of its life within close proximity of the rivers mouth. The sturgeon inhabits the lower sections of larger rivers and coastal waters along the Atlantic coast. It may spend most of the year in brackish or salt water and move into fresh water only to spawn. At least two entirely freshwater populations have been recorded, in South Carolina and Massachusetts.

BIOLOGICAL CONCLUSION: NO EFFECT

The White Oak River may provide suitable habitat for the shortnose sturgeon. Through written communication on August 16, 2001 with Fritz Rohde of the N.C. Division of Marine Fisheries, it was determined that there are no records of this species occurring in the White Oak River and it is unlikely that the shortnose sturgeon would be present. However, best management practices will insure this project will not affect this species. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of the shortnose sturgeon within one mile (1.6 kilometers) of the project area.

Species: *Alligator mississippiensis* (American alligator)
Family : *Crocodylidae*
Date Listed: 6/4/87

The **American alligator** is a large (1.8 to 3.7 meters / six to 12 feet long) rough-backed reptile with a broad, rounded snout. Its fourth tooth on the lower jaw fits into a notch in the upper jaw. This distinguishes the American alligator from the American crocodile which has its fourth tooth exposed when the jaw is closed.

American alligators are sexually mature at about six or seven years of age. Nesting occurs in late spring or early summer when females produce approximately 35 to 40 eggs. American alligators inhabit fresh to slightly brackish river systems, canals, lakes, ponds, swamps, bayous, and coastal marshes. The American alligator is not biologically endangered or threatened and is not subject to Section 7 consultation.

BIOLOGICAL CONCLUSION: NO EFFECT

This species is listed as threatened due to similarity of appearance to the American crocodile (*Crocodylus acutus*). Habitat is present for the alligator in the project area, but not for the crocodile. The range of the American crocodile currently includes southern portions of the Everglades National Park as well as areas south of there. The American alligator will not be affected by this project.

Species: *Amaranthus pumilus* (seabeach amaranth)
Family : *Amaranthaceae*
Date Listed: 4/7/93

Seabeach amaranth is an annual plant that grows on Atlantic Ocean beaches. The stems are fleshy and pink-red or reddish, with small rounded leaves. The leaves are clustered toward the tip of the stem and have a small notch at the rounded tip. Flowering occurs in July and continues until the death of the plant in late fall.

Seabeach amaranth is found on the upper beach and lower foredune of coastal barrier islands. The species is an effective sand binder, building dunes where it grows.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable beach habitat does not exist in the project area for this species. The NCNHP database shows no recorded occurrences of the seabeach amaranth in the vicinity of the project. The seabeach amaranth will not be affected by this project.

Species: *Caretta caretta* (Loggerhead sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **Loggerhead sea turtle** is characterized by a large head with blunt jaws. The carapace and flippers are a reddish-brown color and the plastron is yellow. Adults grow to an average weight of about 91 kilograms (200 pounds), although some specimens may occasionally reach 1000 pounds. The species feeds on mollusks, crustaceans, fish and other marine animals. The loggerhead is typically found at sea but may enter bays and lagoons. It nests on beaches in late spring and early summer.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat does not exist for this species however it could occasionally be found feeding in the vicinity of the project. If the loggerhead is observed in the project area during construction, activities will cease until the turtle leaves. The Loggerhead sea turtle will not be affected by this project.

Species: *Carex Lutea (Golden Sedge)* **Proposed Endangered**
Family: *Cyperaceae*
Date Listed: 8/16/99

The golden sedge has yellowish green, grass-like leaves and produces stems that may reach three feet (0.9 meter) or more with many flowers. This perennial plant is native to the coastal plain of North Carolina, where it is associated with wet partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps on sites underlain with calcareous (chalky) deposits. Historically, its open habitat was maintained by periodic wildfires.

The golden sedge currently is known only from eight populations in Pender and Onslow counties. Most of the populations are small, and seven are on privately owned lands vulnerable to draining, development, mining, fire suppression, and a variety of other changes in habitat management.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for golden sedge in the form of partially wooded ecotones between longleaf pine savannas and non-riverine tree swamps does not exist within the project area. In addition, a review of the North Carolina Natural Heritage Program (NCNHP) database on August 28, 2001 indicated that there is no known occurrence of golden sedge within one mile (1.6 kilometers) of the project area. Therefore, this project will not affect this species.

Species: *Charadrius melodus* (piping plover)
Family: *Charadriidae*
Date Listed: 12/11/85

The **piping plover** is a small, stocky shorebird resembling a sandpiper. The plover is pale brownish above and white below. A black band across the forehead over the eye, and a black ring around the base of the neck are distinguishing marks in adults during the summer, but are obscure during the winter.

The piping plover nests on sand beaches, preferring sparsely vegetated areas that are slightly raised in elevation. The species is primarily coastal during the winter, choosing areas with expansive sand or mudflats for feeding that lie in close proximity to a sandy beach for roosting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist in the project area for this species since no tidal flats or sandy beaches are in the area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The piping plover will not be affected by this project.

Species: *Chelonia mydas* (Green sea turtle)
Family: *Cheloniidae*
Date Listed: 7/28/78

The **green sea turtle** grows to a maximum size of about four feet and a weight of 200 kilograms (440 pounds). It has a heart-shaped shell, small head, and single-clawed flippers. The adult carapace is smooth, keelless, and light to dark brown with dark mottling. The plastron is whitish to light yellow and the head is light brown with yellow markings. Adult green turtles feed mainly on marine algae and grasses in shallow water areas.

Green turtles are generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. Open beaches with a sloping platform and minimal disturbance are required for nesting.

BIOLOGICAL CONCLUSION: NO EFFECT

Habitat does not exist for this species since no beaches are within the project area. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Green sea turtle will not be affected by this project.

Species: *Dermochelys coriacea* (leatherback sea turtle)
Family: *Dermochelyidae*

Date Listed: 6/2/70

The **leatherback sea turtle** is the largest of all sea turtles and is easily distinguished by its leathery skin. Adults generally weigh from 290 and 590 kilograms (640 to 1300 pounds). The neck and limbs are thick and feebly retractable. The triangular shaped carapace is covered with a layer of rubbery skin rather than horny shields. The head and neck are black or dark brown with a few white or yellow blotches.

The leatherback sea turtle is typically found at sea. It requires sandy-nesting beaches backed with vegetation and sloped sufficiently so that the crawl to dry sand is not too far. The preferred beaches are in close proximity to deep water and generally rough seas.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no sandy beaches in the project vicinity for nesting and this species is typically found at sea. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The leatherback sea turtle will not be affected by this project.

Species: *Eretmochelys imbricata* (hawksbill turtle)
Family: *Cheloniidae*
Date Listed: 6/2/70

The **hawksbill turtle** weighs between 43 and 75 kilograms (95 and 165 pounds) and measures approximately 76 to 89 centimeters (30 to 35 inches) in length. The shell is oval and usually brown with scattered areas of yellow, orange, or reddish-brown. The flippers have two claws and barnacles are often attached to the carapace and plastron.

The hawksbill turtle inhabits shallow coastal waters and feeds on mollusks, sea urchins, barnacles, fish, sponges, and algae. It usually nests on islands in tropical and subtropical seas. Continental United States nesting is limited to Florida, however this species can be found along the coastline from Massachusetts southward.

BIOLOGICAL CONCLUSION: NO EFFECT

The project vicinity does not provide nesting habitat for this species and it is unlikely that it would be found feeding there. In the event that a sea turtle is spotted during construction, activities will be halted until it is out of the project area. The hawksbill turtle will not be affected by this project.

Species: *Felis concolor couguar* (Eastern cougar)
Family : *Felidae*
Date Listed: 6/4/73

Cougars are tawny colored with the exception of the muzzle, the backs of the ears, and the tip of the tail, which are black. In North Carolina, the cougar is thought to occur in only a few scattered areas, possibly including coastal swamps and the southern Appalachian Mountains. The eastern cougar is found in large remote wilderness areas where there is an abundance of their primary food source, whitetail deer. A cougar will usually occupy a range of 40 kilometers (25 miles), and is usually most active at night.

BIOLOGICAL CONCLUSION: NO EFFECT

The project is not adjacent to an undisturbed area that could provide food and shelter for the cougar. The NCNHP database reports no recorded occurrences of this species within the vicinity of the project. The Eastern cougar will not be affected by this project.

Species: *Lepidochelys kempii* (Kemp's (Atlantic) ridley)
Family: *Cheloniidae*
Date Listed: 12/2/70

The **Kemp's ridley sea turtle** has a triangular-shaped head and a hooked beak with crushing surfaces. The shell is heart-shaped and gray to olive green. This species ranges in length from about 56 to 71 centimeters (22 to 28 inches) and weighs between 35 and 42 kilograms (77 and 93 pounds).

Adult turtles are restricted to the Gulf of Mexico, however immatures have been seen along the Atlantic coast as far north as Massachusetts. The Kemp's ridley feeds primarily on crabs, but also eats shrimp, snails, sea urchins and fish.

BIOLOGICAL CONCLUSION: NO EFFECT

Nesting habitat for this species does not exist in the vicinity of the project. In the event that immatures wander into the project area, construction activities will be halted until they have left. The NCNHP reports no sitings of this species within the project vicinity. The Kemp's ridley will not be affected by this project.

Species: *Lysimachia asperulaefolia* (rough-leaved loosestrife)
Family : *Primulaceae*
Date Listed: 6/12/87

The **rough-leaved loosestrife** is a rhizomatous perennial herb with whorls of three to four leaves encircling a slender stem. This plant reaches 0.3 to 0.6 meters (one to two feet) in height. Showy yellow flowers are produced from mid-May through June and fruits are present from July through October.

The rough-leaved loosestrife is endemic to the coastal plain and sandhills of North Carolina and South Carolina. It occurs in open ecotones between longleaf pine uplands and pond pine pocosin, on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found on deep peat in the low shrub community of large Carolina bays.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no areas of longleaf pines or adjacent pond pine pocosins. A search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The rough-leaved loosestrife will not be affected by this project.

Species: *Picoides borealis* (red-cockaded woodpecker)
Family : *Picidae*
Date Listed: 10/13/70

The **red-cockaded woodpecker** is a small 18 to 20 centimeters (seven to eight inches) long bird with black and white horizontal stripes on its back, a black cap and a large white cheek patch. The male has a small red spot or "cockade" behind the eye.

The preferred nesting habitat of the red-cockaded woodpecker is open stands of pine with a minimum age of 60 to 120 years. Longleaf pine (Pinus palustris) is preferred for nesting; however other mature pines such as loblolly (Pinus taeda) may be utilized. Typical nesting areas, or territories, are pine stands of approximately 81 hectares (200 acres), however nesting has been reported in stands as small as 24 hectares (60 acres). Preferred foraging habitat is pine and pine-hardwood stands of 80 to 125 acres with a minimum age of 30 years and a minimum diameter of 25 centimeters (ten inches). The red-cockaded woodpecker utilizes these areas to forage for food sources such as ants, beetles, wood-boring insects, caterpillars, and seasonal wild fruit.

BIOLOGICAL CONCLUSION: NO EFFECT

There are no pine stands in the project area to support nesting or foraging activities for this species. The NCNHP database reports no recorded occurrences of the woodpecker in the vicinity of the project. The red-cockaded woodpecker will not be affected by this project.

Species: *Sterna dougallii* (roseate tern)
Family: *Laridae*
Date Listed: 11/2/87

The **roseate tern** is approximately 40 centimeters (16 inches) in length, with light gray wings and a black cap. The back is gray and the rest of the body is white, with a rosy blush on the chest and belly during the breeding season. The tail is deeply forked and the bill is black.

This species breeds from Florida through the West Indies and islands off Central America and northern South America. Habitat includes small offshore islands, rocks, and cays. These birds are often seen nesting on open beaches or near the shoreline on rocks.

BIOLOGICAL CONCLUSION: NO EFFECT

Although a breeding pair was noted in Carteret County in the 1970's, this species is mainly a rare coastal transient. Breeding habitat is not located within the project area and the NCNHP reports no recorded occurrences of the tern within the project vicinity. The roseate tern will not be affected by this project.

Species: *Thalictrum cooleyi* (Cooley's meadowrue)
Family : *Ranunculaceae*
Date Listed: 2/7/89

Cooley's meadowrue is a perennial herb that grows from an underground rhizome. Under ideal conditions, in full sun, the stems are erect, however in the shade they are lax and may trail along the ground. The leaflets are green and the leaves are usually in groups of three. Cooley's meadowrue flowers in mid- to late June.

Cooley's meadowrue is found in moist to wet bogs and savannahs. It grows along fireplow lines, roadside ditches, woodland clearings, and power line right-of-ways, requiring some type of disturbance to maintain its open habitat.

BIOLOGICAL CONCLUSION: NO EFFECT

This habitat type does not exist in the project area. There are no wet bogs or wet pine savannahs and a search of the NCNHP database showed no recorded occurrences of this species within the project vicinity. The Cooley's meadowrue will not be affected by this project.

Species: *Trichechus manatus* (manatee)
Family: *Trichechidae*
Date Listed: 6/2/70

The **West Indian manatee** is a large aquatic mammal that reaches a length of approximately three meters (ten feet) and a weight of about 454 kilograms (1,000 pounds). The forelimbs are paddlelike and the tail is oval and horizontally flattened. The body is gray to brown and hair is mostly absent except for stiff whiskers on the upper lip.

This species inhabits coastal waters, estuaries, and freshwater streams bordering tropical and subtropical seas, but may enter waters near North Carolina in summer months. The manatee is herbivorous and feeds on aquatic vegetation, preferring grasses.

BIOLOGICAL CONCLUSION: NO EFFECT

Although it is possible that this species could migrate into the project area during summer months, occurrences would be rare. The NCNHP database reports no recorded occurrence of the manatee in the vicinity of the project, however if one is sighted, construction activities will be halted until it has left the area. The manatee will not be affected by this project.

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 of Endangered. Species designated as FSC are defined as taxa that may or may not be listed in the future. These species were formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing. Some of these species are listed 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. Table 3 provides the Federal Species of Concern in Carteret County and their state classifications, and Table 3A provides the same information for Onslow County.

TABLE 3
NORTH CAROLINA STATUS OF FEDERAL SPECIES
OF CONCERN IN CARTERET COUNTY
(March 22, 2001)

Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Argos skipper	*Atrytone argos argos*	SR	No
Bogue Banks endemic skipper	*Atrytonopsis spl*	SR	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Savanna campylopus	*Campylopus carolinae*	C	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus**	SR	No
Venus flytrap cutworm moth	*Hemipachnobia subporphyrea subporphyrea*	SR	No
Black rail	*Laterallus jamaicensis*	SR	Yes
Pondspice	*Litsea aestivalis*	C	No
Northern diamondback terrapin	*Malaclemys terrapin terrapin* ♦	SC	Yes
Loose watermilfoil	*Myriophyllum laxum*	T	No
Mimic glass lizard	*Ophisaurus mimicus*	SC	No
Savanna cowbane	*Oxypolis ternata* ♦	NL	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*♦	SR	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna* ■	T	No
Carter's noctuid moth	*Spartiniphaga carterae*	SR	No
Carolina asphodel	*Tofieldia glabra*	C	No
Dune bluecurls	*Trichostema sp. 1*	C	No

NOTES: Denotes FSCs for both Carteret and Onslow Counties
* Indicates species was last observed in the county more than 20 years ago.
♦ Listed by USFWS but not by NCNHP.
■ Listed by NCNHP but not by USFWS.
E Denotes Endangered (species which are afforded protection by state laws).
T Denotes Threatened (species which are afforded protection by state laws).
SC Denotes Special Concern (species which are afforded protection by state laws).
PT Denotes Proposed Threatened (species which are proposed for official listing as threatened).
C Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL Not listed.

TABLE 3A NORTH CAROLINA STATUS OF FEDERAL SPECIES OF CONCERN IN ONSLOW COUNTY			
Common Name	*Scientific Name*	North Carolina Status	Habitat Present
Bachman's sparrow	*Aimophila aestivalis*	SC	No
Henslow's sparrow	*Ammodramus henslowii*	SR	No
Carolina spleenwort	*Asplenium heteroresiliens*	E	No
Chapman's sedge	*Carex chapmanii* ♦	NL	No
Hirst's panic grass	*Dichanthelium sp. 1 (= hirstii)*	E	No
Venus flytrap	*Dionea muscipula*	C-SC	No
Southern hognose snake	*Heterodon simus*	SR	No
black rail	*Laterallus jamaicensis*	SR	Yes
pondspice	*Litsea aestivalis*	C	No
Boykin's lobelia	*Lobelia boykinii*	C	No
loose watermilfoil	*Myriophyllum laxum*	T	No
mimic glass lizard	*Ophisaurus mimicus*	SC	No
savanna cowbane	*Oxypolis ternata* ♦	NL	No
Carolina grass-of-parnassus	*Parnassia caroliniana*	E	No
Eastern painted bunting	*Passerina ciris ciris*	SR	No
Croatan crayfish	*Procambarus plumimanus*	NL	Yes
Carolina gopher frog	*Rana capito capito*	SC	No
awned meadow beauty	*Rhexia aristosa*	T	No
Thorne's beaksedge	*Rhynchospora thornei*	E	No
Carolina goldenrod	*Solidago pulchra*	E	No
Spring-flowering goldenrod	*Solidago verna*	T	No
Carolina asphodel	*Tofieldia glabra*	C	No

NOTES:

♦	Listed by USFWS but not by NCNHP.
E	Denotes Endangered (species which are afforded protection by state laws).
T	Denotes Threatened (species which are afforded protection by state laws).
SC	Denotes Special Concern (species which are afforded protection by state laws).
C	Denotes Candidate (species for which population monitoring and conservation action is recommended).
SR	Denotes Significantly Rare (species for which population monitoring and conservation action is recommended).
NL	Not listed.

A search of the NCNHP database showed no recorded occurrences of any FSC within the project vicinity.

3. Summary of Anticipated Impacts

Habitat is present in the project area for the American alligator; however, this species is listed as threatened by similarity of appearance to a rare species. It is not biologically threatened and it is not subject to a Section 7 consultation. No individuals were observed at the time of the site visit. No habitat is present for any other federally protected species.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historical 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 properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

B. Historic Architecture

A preliminary field survey of the Area of Potential Effects (APE) was conducted on February 18, 1998. All structures within the APE were photographed, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a memorandum dated June 18, 1998, the Deputy State Historic Preservation Officer (SHPO) recommended a survey of the project's APE. A copy of the memorandum is included in the Appendix A.

In a letter dated April 23, 1999, the SHPO concurred with the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the HPO letter is included in the Appendix A.

In a concurrence form dated August 5, 1999, the SHPO concurred with the Federal Highway Administration (FHWA) that the replacement of Bridge No. 49 over the White Oak River will have an adverse effect on the Stella Historic District since the existing bridge will be demolished. The Advisory Council on Historic Preservation filed a Memorandum of Agreement (MOA) between the Federal Highway Administration and the SHPO for mitigating the adverse effects of the bridge replacement project on the historic district. A copy of the MOA is included in the Appendix A.

C. Archaeology

The SHPO, in a memorandum dated June 18, 1998, recommended, "no archeological investigation be conducted in connection with this project". A copy of the SHPO memorandum is included in the Appendix A.

VII. ENVIRONMENTAL EFFECTS

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

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

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

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

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

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

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

No geodetic survey markers will be impacted.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

This project is located in Carteret and Onslow Counties, which have been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be significant.

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, Health and Natural Resources, Division of Environmental Management, Groundwater Section and the North

Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area. There are no underground storage tanks located in the project area.

Onslow County and Carteret County are participants in the National Flood Insurance Program. This site on White Oak River is included in an approximate Federal Emergency Management study. Attached is a copy of the Flood Insurance Rate Map, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project (Figure 5, Appendix B).

Adverse impacts to the historic district are anticipated, but will be compensated through mitigation (see Appendix A).

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

VIII. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials and residents to involve them in the project development. Two Local Officials Meetings and two Citizens Informational Workshops were held at the Midway United Methodist Church in Stella on December 14, 1998, and September 14, 1999, where preliminary alternatives were reviewed and discussed with local officials and concerned citizens.

Alternate D was not presented at the first local officials meeting and citizens workshop but was discussed. The local official preferred Alternate D. Alternate D was presented (required removing the warehouse) at the second local officials meeting and workshop. Approximately 30 people attended the second Citizen's Informational Workshop and 11 comment sheets were received at the workshop, most of which are in favor of replacing the bridge. (Alternate A-3, Alternate B-0, Alternate D-5, Undecided-3)

Citizens and local officials concerns included the necessity to maintain traffic onsite, maintaining the existing boat ramp, improving safety for bridge approaches and minimizing affects to the post office.

Alternate D was revised so the proposed design would not remove the warehouse or post office in response to the comments received at the workshop. The proposed new bridge will be constructed as close to the existing bridge as practicable to avoid and minimize impacts to the proposed historic district. The proposed design speed of 70 km/h (45 mph) will minimize impacts to the post office and warehouse, and also allows for the existing clearance over the White Oak River to be maintained. For approach roadway tie-ins, traffic will be temporarily detoured off site.

IX. AGENCY COORDINATION

March 18, 1999 a meeting was held with USACE and NCWRC to review Alternatives A, B, C and D. As a result it was determined a detailed Bridge Survey Report should be prepared to eliminate concerns that Alternate A, B and C provided adequate flood protection and to present alternates at an interagency review meeting.

On October 28, 1999, an interagency review meeting was held at NCDOT's Transportation Building Room 467. Agencies in attendance were DCM, USFWS, NCDWQ, FHWA, NCWRC,

USACE, and NCDMF. Results of the Bridge Survey Report recommended raising the grade 2.5 feet to reduce flooding of the roadway for Alternate A and B. It was also decided that the ox bow area along the approach would require stabilization for Alternates A and B. FHWA suggested realigning Alternate D to avoid impacting the warehouse.

On February 20, 2000, a Merger Team Meeting was held on site. Representatives from USFWS, FHWA, NCWRC, USACE, NMF, DCM and NCDOT were present. As a result of the field meeting the following was concluded:

- Based on the roadway history and visual observation of the site it is not anticipated that the river will migrate at the ox bow within the life of the proposed new bridge.
- NCDOT-Geotechnical Unit does not recommend Alternate A or Alternate B due to differential settling where the grade will be raised on the Onslow County approach.
- It was recommended that an alternate with minimum approach work be designed (Alternate E).
- Alternates needed updated cost with barge construction over the river and top-down construction over the marshland.

On June 9, 2000 a Merger Team Meeting was held at NCDOT's Century Center. As a result of this meeting, forms for Concurrence Point No. 1, 2, and 3 were signed. It was the consensus of all the agencies present that Alternate D is the preferred alternate with top down construction (Appendix C).

On May 17, 2001 a Merger Team Meeting was held at NCDOT's Transportation Building Board of Transportation Conference Room to revise Concurrence Point 3 to show Alternate D as preferred and to present Concurrence Point 4-Avoidance and Minimization.

Alternate D revision included a temporary work bridge for the construction of the proposed bridge. This was recommended by NCDOT since the bridge will be built with prestressed girders due to the vertical and horizontal alignment. Building with temporary bridges will minimize wetland impacts and lessen construction duration.

Concurrence Point 4 – Avoidance and Minimization was discussed. For avoidance and minimization, the following measures will be accomplished:

1. Anticipated impacts to wetlands 0.008 hectare (0.021 acre).
2. Restoration of wetlands of approximately 0.69 hectare (1.70 acres).
3. Replacing 131.7-meter (432-foot) bridge with a 704-meter (2,347-foot) bridge.
4. Design exception to reduce the design speed from 90 km/h (55 mph) to a design speed of 70 km/h (45 mph) to minimize impacts in the historic district and eliminate impacts to the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office and to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and minimize impacts to the historic district.

All team members present except DCM signed Concurrence Points 3 and 4 at the meeting. SHPO, DCM and NMF concurred and signed after the meeting (Appendix C).

X. SECTION 4(F) EVALUATION

Part 23 CFR 771.135 Section 4(f) (49 U.S.C. 303) states that "The Administrator may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:

(i) There is no feasible and prudent alternative to the use of land from the property; and

(ii) The action includes all possible planning to minimize harm to the property resulting from such use."

In accordance with the criteria set forth in the Federal Register December 23, 1986, the following Programmatic Section 4(f) for Minor Involvements with Historic Sites evaluation was prepared:

Stella retains a significant collection of buildings dating from the late nineteenth and early twentieth centuries, including a general store/post office, warehouse, and several dwellings and outbuildings. Bridge No. 49 on SR 1101 and SR 1442 over the White Oak River was built in 1950. The approximate 131.7-meter (432-foot) long, multiple-span structure contains twenty-three timber spans and one steel-deck girder main span.

In a letter dated April 23, 1999, the State Historic Preservation Officer concurred with FHWA the findings of the Historic Architecture Survey Report that concluded that the Stella Historic District (see Figure 2A and Figure 6) is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture. Further, they concurred with the district's boundaries, except for the western edge that should encompass Bridge No. 49 as a contributing element to the district. A copy of the SHPO letter is included in the Appendix A.

Since this project necessitates the use of a minor amount of land from a historic site, which is adjacent to the existing roadway, and since the project meets the criteria set forth in the Federal Register (December 23, 1986), a programmatic Section 4(f) evaluation satisfies the requirements of Section 4(f).

The following alternatives, which avoid use of the historic site, have been fully evaluated: (1) do nothing; (2) improve the highway without using the adjacent historic site; (3) build the replacement structure on new location without using the historic site.

No Build Alternative: The No Build or "Do-Nothing" alternative is not considered feasible and prudent because the bridge will eventually deteriorate beyond repair and necessitate closure of the bridge. This is not prudent due to the traffic service provided by SR 1101 and SR 1442.

Rehabilitation of the Existing Bridge: This alternative is not considered to be feasible and prudent due to the age and deteriorated condition of the existing bridge. In addition, the existing bridge deck is only 7.2 meters (24 feet) wide and is functionally obsolete. The NCDOT Bridge Policy requires a minimum clear roadway width of 8.6 meters (28 feet) based on the traffic volumes and design speed.

Replacement of Bridge No. 49 on New Location (Figure 2A): Moving the bridge location to a point either upstream or downstream of the current location to avoid impacts to the proposed historic district would negatively impact the district by disrupting a major element of the setting for the district and will result in substantial disruption to the environment and local businesses. An alternative on new location will not provide the same transportation access and service as the current location. Therefore, this alternative is not considered feasible or prudent.

These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the historic site has been performed as an integral part of this project. The following mitigation measures will be carried out for the replacement of Bridge No. 49:

1. A design exception to reduce the design speed to 70 km/h (45 mph) from 90 km/h (55 mph) to minimize impacts to the 4(f) property will be processed.
2. The proposed bridge will be within 3 meters (10 feet) of the existing bridge and a temporary shoring will be required during construction to maintain traffic and to minimize impacts to the 4(f) property.
3. The approved Memorandum of Agreement (MOA):

    a. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with the Historic Structures and Landscape Recordation Plan. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

    b. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right of Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

    c. Future Widening of Shoulders and Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by the division and district engineers.

    d. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

i. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or
ii. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this that are not the subject of the dispute will remain unchanged.

This project has been coordinated with the North Carolina State Historic Preservation Officer (SHPO), whose correspondence is included in Appendix A. The SHPO has concurred that this project, as proposed, has an adverse effect, because the bridge will be replaced with regard to the historic district. Approval of the Programmatic Section 4(f) evaluation by the FHWA Division of Administrator is included in this document.

The owners of the general store/post office and warehouse have concurred with Alternate D as the preferred alternative and all possible planning and coordination to minimize impact to the Historic District were incorporated into this project. The approved Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvement with Historic Sites is included in Appendix A.

APPENDIX A

PROGRAMMATIC SECTION 4(F) EVALUATION AND APPROVAL

AND

MEMORANDUM OF APPROVAL

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4(f) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS WITH MINOR INVOLVEMENTS WITH HISTORIC SITES

F. A. Project **BRZ-1101(5)**

State Project **8.2160801**

T. I. P. No. **B-2938**

DESCRIPTION:

Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River in Carteret/Onslow Counties in North Carolina. The Proposed Bridge will span the White Oak River and brackish marsh in Onslow County. The bridge, as well as several buildings located on the east approach, comprise the Stella Historic District. See Figure 2A and 6 in Appendix B.

		YES	NO
1.	Is the proposed project designed to improve the operational characteristics, safety, and/or physical condition of the existing highway facility on essentially the same alignment?	X	☐
2.	Is the project on new location?	☐	X
3.	Is the historic site adjacent to the existing highway?	X	☐
4.	Does the project require the removal or alteration of historic buildings, structures, or objects?	X	
5.	Does the project disturb or remove archaeological resources which are important to preserve in place rather than to recover for archaeological research?	☐	X
6.	a. Is the impact on the Section 4(f) site considered minor (i.e. no effect, no adverse effect)?		X
	b. If the project is determined to have "no adverse effect" on the historic site, does the Advisory Council on Historic Preservation object to the determination of "no adverse effect"?	☐	X
7.	Has the SHPO agreed, in writing, with the assessment of impacts and the proposed mitigation?	X	☐

☐

8. Does the project require the preparation of an EIS? X

ALTERNATIVES CONSIDERED AND FOUND NOT TO BE FEASIBLE AND PRUDENT

The following alternatives were evaluated and found not to be feasible and prudent:

		YES	NO
1.	Do nothing		
	Does the "do nothing" alternative:		
	(a) correct capacity deficiencies?	☐	X
or	(b) correct existing safety hazards?	☐	X
or	(c) correct deteriorated conditions?	☐	X
and	(d) create a cost or impact of extraordinary measure	☐	X
2.	Improve the highway without using the adjacent historic site.		
	(a) Have minor alignment shifts, changes in standards, use of retaining walls, etc., or traffic management measures been evaluated?	X	☐

(b) The items in 2(a) would result in:
(circle, as appropriate)

	(i)	substantial adverse environmental impacts
or	(ii)	substantial increased costs
or	(iii)	unique engineering, transportation, maintenance, or safety problems
or	(iv)	substantial social, environmental, or economic impacts
or	(v)	a project which does not meet the need
or	(vi)	impacts, costs, or problems which are of extraordinary magnitude

		Yes	No
3.	Build an improved facility on new location without using the historic site.	X	☐

(a) An alternate on new location would result in: (circle, as appropriate)

(i) a project which does not solve the existing problems

or (ii) substantial social, environmental, or economic impacts

or (iii) a substantial increase in project cost or engineering difficulties

and (iv) such impacts, costs, or difficulties of truly unusual or unique or extraordinary magnitude

MINIMIZATION OF HARM

		Yes	No
1.	The project includes all possible planning to minimize harm necessary to preserve the historic integrity of the site.	X	☐
2.	Measures to minimize harm have been agreed to, in accordance with 36 CFR Part 800, by the FHWA, the SHPO, and as appropriate, the ACHP.	X	☐

3. Specific measures to minimize harm are described as follows:

- The "Two-bar metal rail with concrete parapet" will be utilized on the proposed structure as mitigation for impacts.
- Design exception has been approved to reduce the design speed to 70 km/h (45 mph) to minimize impacts to the post office/ general store and warehouse.
- A Design Exception for the horizontal clearance has been approved to maintain the existing canopy attached to the post office and to minimize impacts to the proposed historic district.
- Reduced spans and girder depth in the structure design will be incorporated to maintain clearance over the White Oak River and minimize impacts to the historic district.
- A Memorandum of Agreement was approved and attached to the Categorical Exclusion.

Note: Any response in a box requires additional information prior to approval. Consult Nationwide 4(f) evaluation.

COORDINATION

The proposed project has been coordinated with the following (attach correspondence):

a. State Historic Preservation Officer	X
b. Advisory Council on Historic Preservation	X
c. Property owner	X
d. Local/State/Federal Agencies	X
e. US Coast Guard (for bridges requiring bridge permits)	X

SUMMARY AND APPROVAL

The project meets all criteria included in the programmatic 4(f) evaluation approved on December 23, 1986.

All required alternatives have been evaluated and the findings made are clearly applicable to this project. There are no feasible and prudent alternatives to the use of the historic site.

The project includes all possible planning to minimize harm, and the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed with local and state agencies.

Approved:

10/8/2001 Gregory Thorpe
Date for Manager, Project Development and Environmental Analysis Branch, NCDOT

10/15/2001
Date for Division Administrator, FHWA

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA HISTORIC PRESERVATION OFFICER
FOR
THE REPLACEMENT OF BRIDGE NO. 49
ON SR 1101 OVER WHITE OAK RIVER,
CARTERET/ONSLOW COUNTIES, NORTH CAROLINA

WHEREAS, the Federal Highway Administration (FHWA) has determined that the replacement of Bridge No. 49 on SR 1101 over the White Oak River, Carteret/Onslow Counties, North Carolina (the undertaking) will have an effect upon the Stella Historic District, a community determined eligible for listing in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT), Nido L. Hamilton, and Edward E. and Judith M. Grafton participated in the consultation and have been invited to concur in this Memorandum of Agreement:

NOW, THEREFORE, FHWA and the North Carolina SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take in to account the effect of the undertaking on the historic properties.

STIPULATIONS

FHWA will ensure that the following measures are carried out:

I. Recordation: Prior to the demolition of Bridge No. 49, NCDOT shall record the existing conditions of the bridge and its surroundings as well as the general store/post office and 2-story, brick warehouse within the historic district in accordance with a Historic Structures and Landscape Recordation Plan {Appendix A}. The written and photographic documentation will be deposited with the North Carolina Division of Archives and History/SHPO to be made part of the permanent statewide survey and iconographic collection.

II. Replacement Bridge Design: NCDOT will use a two-bar metal rail on the replacement bridge. Prior to Right-of-Way acquisition, NCDOT will provide the North Carolina SHPO final design plans for the replacement bridge for their comments.

III. Future Widening of Shoulders or Approaches: NCDOT will notify the division and district engineers that no widening of the shoulders on the approaches can be undertaken in the future without first consulting with the North Carolina SHPO. To ensure this, maps of the Stella Historic District will be integrated into the highways maps regularly reviewed by division and district engineers.

IV. Dispute Resolution: Should the North Carolina SHPO object within thirty (30) days to any plans or documentation provided for review pursuant to this agreement, FHWA shall consult with the North Carolina SHPO to resolve the objection. If FHWA or the North Carolina SHPO determines that the objection cannot be resolved, FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

A. Provide FHWA with recommendations which FHWA will take into account in reaching a final decision regarding the dispute, or

B. Notify FHWA that it will comment pursuant to 36 CFR Section 800.7(c)) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by FHWA in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all the actions under this agreement that are not the subject of the dispute will remain unchanged.

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Advisory Council on Historic Preservation, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the replacement of Bridge No. 49 on SR 1101 over the White Oak River and its effects on the Stella Historic District, and that FHWA has taken into account the effects of the undertaking on the historic property.

AGREE:

John C. Wadsworth 2/20/01
FEDERAL HIGHWAY ADMINISTRATION DATE

Jeffrey J. Crow 4/2/01
NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER DATE

CONCUR:

H. Paul Aumiller 1/29/01
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DATE

Louise P Hamilton 02/20/01
Louise P. Hamilton (Owner of warehouse) DATE

Edward E Grafton Judith K Grafton 2-26-01
Edward E. & Judith M. Grafton (Owners of general store/post office) DATE

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION DATE

APPENDIX A

Historic Structures and Landscape Recordation Plan
For the Replacement of Bridge No. 49 on SR 1101
Over the White Oak River
Carteret and Onslow Counties, North Carolina
TIP No. B-2938, State Project No. 8.2160801
Federal Aid No. BRZ-1101(5)

Landscape

Site plan sketch of the existing conditions of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse in Stella.

Photographic Requirements

Selected photographic views of Bridge No. 49, the general store/post office, and the 2-story, brick warehouse as a whole, and views of the structures and their settings, including:

- Overall views of the structures (elevations and oblique views)
- Overall views of the project area, showing the relationship of the structures to their settings

Photographic Format

- Color slides (all views)
- 35 mm or larger black and white negatives (all views)
- Black and white contact sheet (all views)
- All processing to be done to archival standards
- All photographs and negatives to be labeled according to Division of Archives and History standards

Copies and Curation

One (1) set of all photographic documentation will be deposited with the North Carolina Division of Archives and History/State Historic Preservation Office to be made a permanent part of the statewide survey and iconographic collection.

Federal Aid #BRZ-1101(5) *TIP* #B-2938 *County*: Carteret/Onslow

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No.49 on SR 1101 over White Oak River

On August 5, 1999, representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☐ Federal Highway Administration (FHWA)
- ☒ North Carolina State Historic Preservation Office (SHPO)

reviewed the subject project and agreed

☐ there are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.

☐ there are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.

☐ there is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.

☒ there is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Mary Pope Furr — Aug. 5, 1999
Representative, NCDOT — Date

for Mary C. Shelton — 8/10/99
FHWA, for the Division Administrator, or other Federal Agency — Date

Lepaul Allen — Aug. 5 1999
Representative, SHPO — Date

David Brook Deputy — 8/17/99
State Historic Preservation Officer — Date

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Stella Historic District (DE) - adverse effect

Reason(s) why the effect is not adverse (if applicable).

Initialed: NCDOT MPt FHWA RCS SHPO DVB

North Carolina Department of Cultural Resources

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

Division of Archives and Histor
Jeffrey J. Crow, Directo

April 23, 1999

Roy C. Shelton
Federal Highway Administration
Department of Transportation
310 New Bern Avenue
Raleigh, N.C. 27601-1442

Re: Replacement of Bridge 49 over White Oak River, Carteret-Onslow Counties, Federal-Aid Project BRZ-1101(5), State No. 8.2160801, B-2938, ER 99-8587

Dear Mr. Shelton:

Thank you for your letter of March 24, 1999, transmitting the historic architectural resources report by Mattson, Alexander & Associates, Inc., concerning the above project.

We concur that the Stella Historic District is eligible for the National Register of Historic Places under Criterion A for community development, and Criterion C for architecture.

Further, we concur with the district's boundaries, except for the western edge that we believe should encompass Bridge 49 as a contributing element to the district. While Bridge 49 lacks one year of being fifty years old, it appears to be compatible with the rural character of the district as a whole and to reinforce the district's relationship to the White Oak River. Bridge 49 also appears to be rather unique in design and length for a timber bridge.

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.

Sincerely,

David Brook
Deputy State Historic Preservation Officer

DB:slw

cc: William D. Gilmore
Barbara Church
Mattson, Alexander & Associates

North Carolina Department of Cultural Resources

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

Division of Archives and History
Jeffrey J. Crow, Director

June 18, 1998

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 XVII, Bridge 49 on SR 1101/1442 over White Oak River, Carteret and Onslow Counties, B-2938, ER 98-9258

Thank you for your memorandum of June 5, 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. However, since a comprehensive survey of Carteret County has never been conducted, there may be structures of which we are unaware within the planning area. Therefore, we recommend that an architectural historian with the North Carolina Department of Transportation survey the project's area of potential effect and report the findings to us.

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
T. Padgett

Harris

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

August 7, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

As required by 36 CFR 800.6(a)(1) of the 1999 revisions to 36 CFR Part 800, this is to provide notice to the Advisory Council that Bridge No. 49 will be removed and replaced by the subject Federal-aid bridge replacement project. After consultation with the North Carolina State Historic Preservation Officer, it was determined the subject project will have an adverse effect on the Stella Historic District, a community eligible for listing in the National Register of Historic Places. Enclosed is one copy of the documentation specified in Section 800.11(e) and the North Carolina Department of Transportation's transmittal letter dated July 24, 2000. Your review pursuant to 36 CFR Part 800.6(a)(1) is requested.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

Nayce Shelton

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

September 18, 2000

IN REPLY REFER TO
HO-NC

Mr. Don Klima
Eastern Office of Project Review
Advisory Council on Historic Preservation
Old Post Office Building
100 Pennsylvania Ave., NW, #809
Washington, D.C. 20004

Subject: Notification of Adverse Effect, North Carolina Federal-aid Project BRZ-1101(5), B-2938, Carteret-Onslow Counties - Replacement of Bridge No. 49 on SR-1101 over the White Oak River near Swansboro, North Carolina

Dear Mr. Klima:

Your letter, dated August 22, 2000, on the subject project advised that the background information submitted with the notification of adverse effect did not meet the requirements of 36 CFR 800.11(e) and requested copies or summaries of any views provided by the public. Enclosed is a copy of all public comments received on this project as a part of our public involvement process.

Questions concerning this submittal may be directed to John Wadsworth of this office at (919) 856-4350, extension 108.

Sincerely yours,

John C. Wadsworth

For Nicholas L. Graf, P.E.
Division Administrator

Enclosures

cc: Mr. William D. Gilmore, PE, NCDOH

Advisory
Council On
Historic
Preservation

The Old Post Office Building
1100 Pennsylvania Avenue, NW, #809
Washington, DC 20004

OCT 25 2000

Mr. Nicholas L. Graf, P.E.
Division Administrator
Federal Highway Administration
310 New Bern Avenue
Raleigh, NC 27601

BRZ-1101(5)

REF: Proposed Replacement of Bridge No. 49 on SR 1101 over White Oak River
Carteret and Onslow Counties, North Carolina

Dear Mr. Graf:

The Council recently received the additional information in support of your notification regarding the adverse effects of the proposed undertaking on properties listed on and eligible for listing on the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases,* of our regulations, "Protection of Historic Properties" (36 CFR Part 800) does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed.

Pursuant to 36 CFR 800.6(b)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the North Carolina State Historic Preservation Officer (SHPO), and related documentation at the conclusion of the consultation process. The filing of this MOA with the Council is required in order for the Federal Highway Administration to complete its compliance responsibilities under Section 106 of the National Historic Preservation Act.

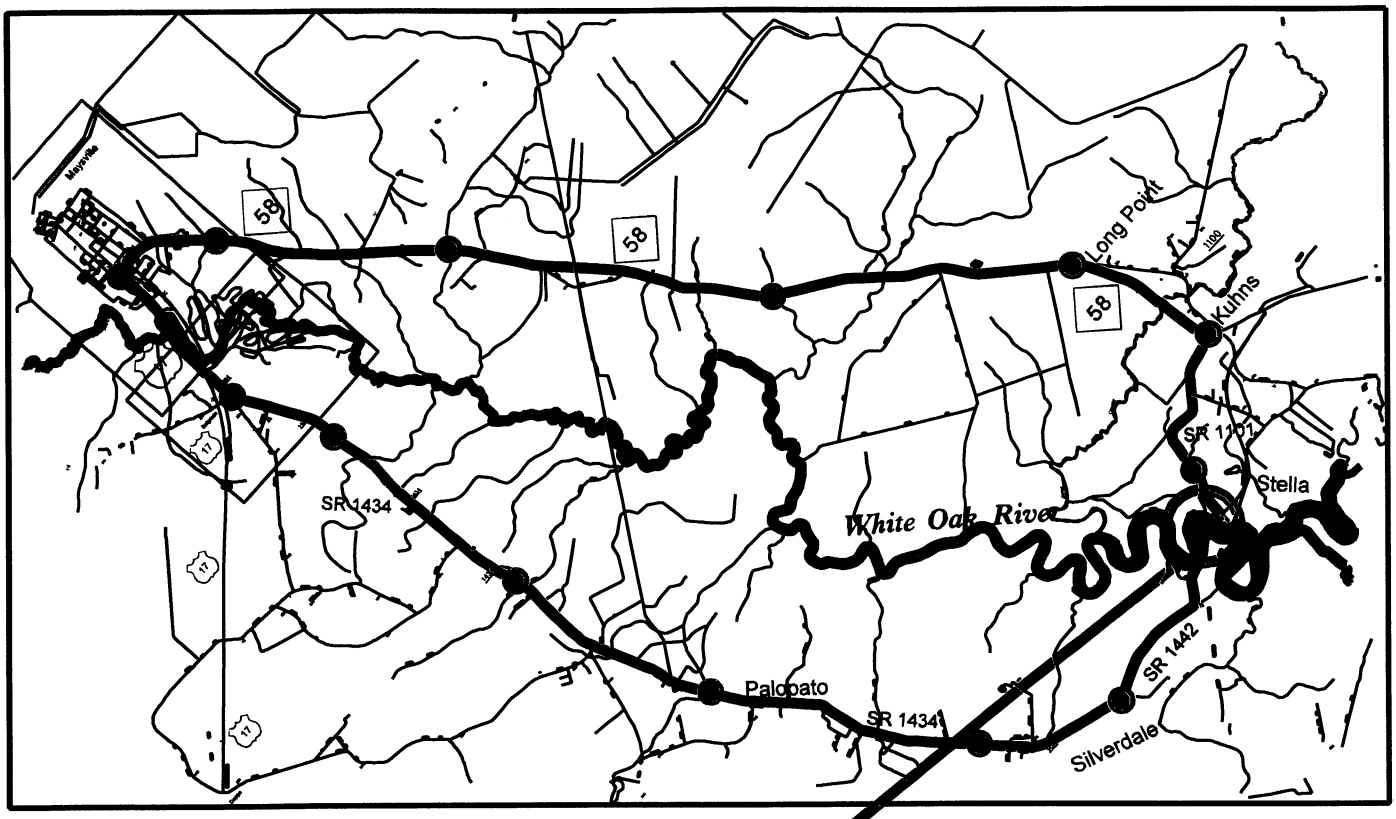
Should you have any questions or require further assistance, please contact us at 202-606-8505.

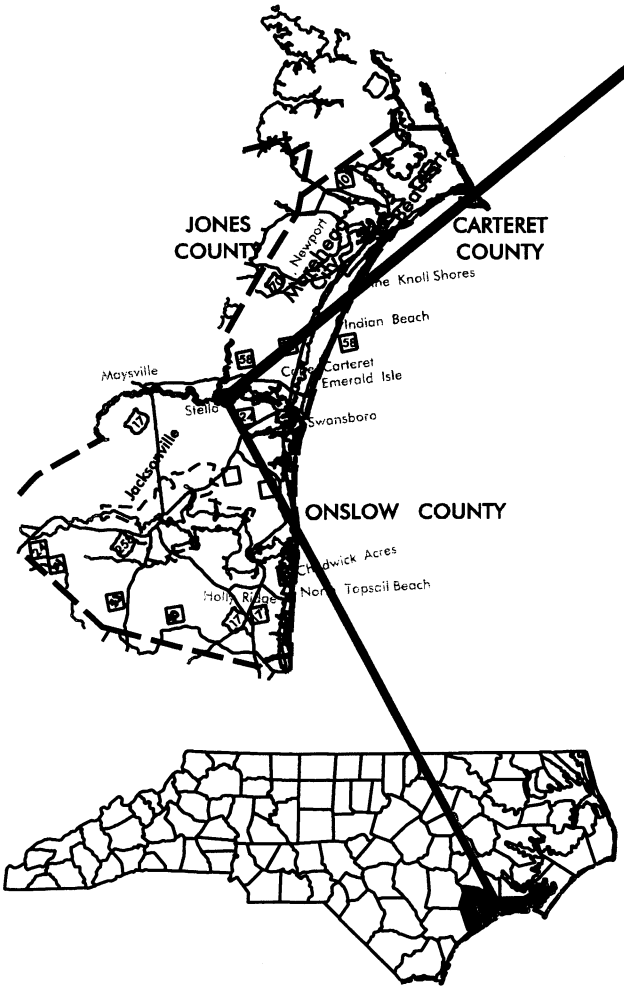
Sincerely,

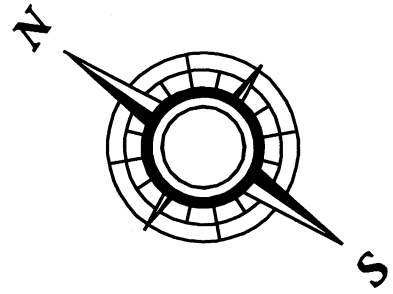
John A. Klima
Director
Office of Planning and Review

APPENDIX B

FIGURES







LEGEND

Studied Detour Route

1.5 1 0.5 0 1 2 3 4 5 6 *Kilometers*

1 0 1 2 3 4 *Miles*

SCALE

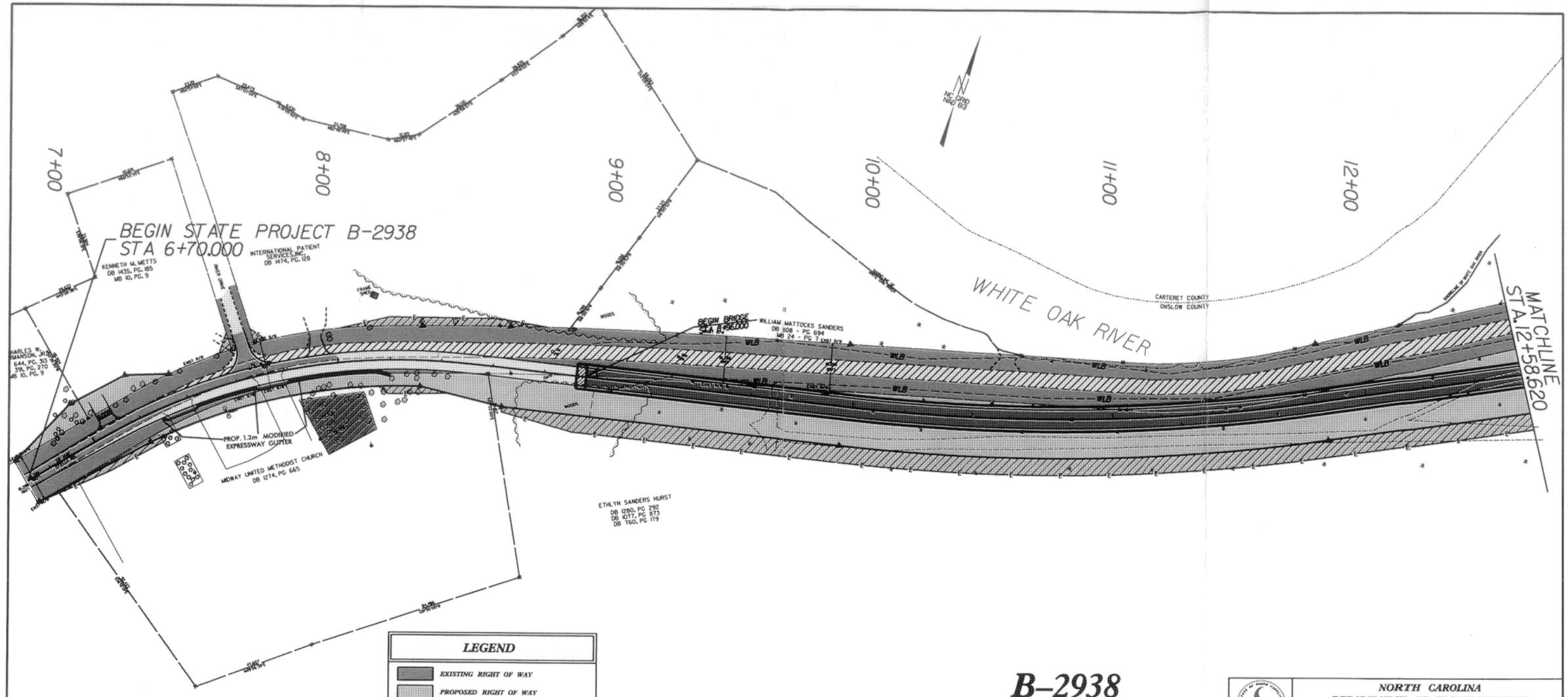
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442 OVER WHITE OAK RIVER

TIP No. B-2938

FIGURE 1



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B–2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

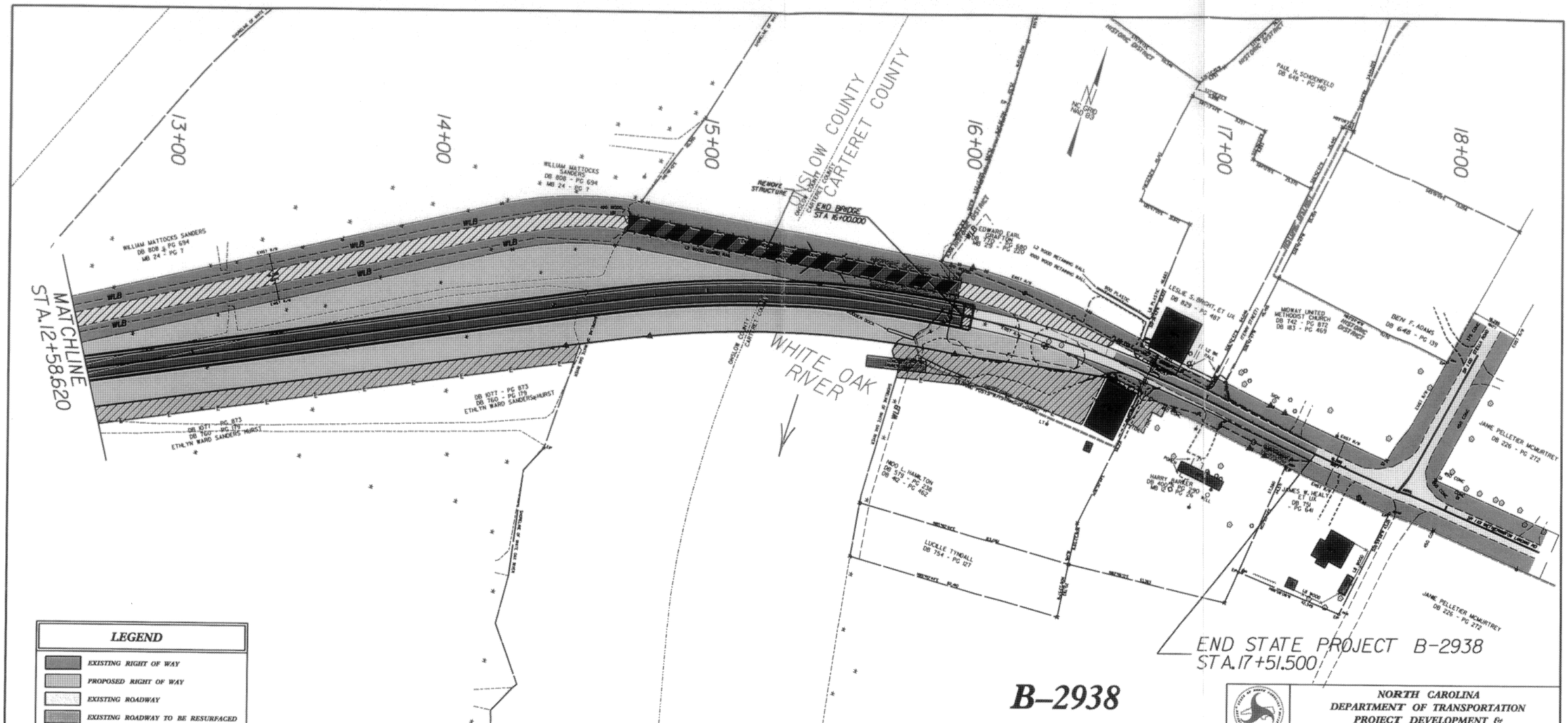
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B–2938

10 0 20

FIGURE 2



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED STRUCTURES, ISLAND, CURB AND GUTTER
- BUILDINGS
- CEMETARY
- EXISTING ROAD TO BE REMOVED
- EXISTING STRUCTURES TO BE REMOVED
- ALL EASEMENTS
- PROPERTY LINES

B–2938

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIROMENTAL ANALYSIS BRANCH

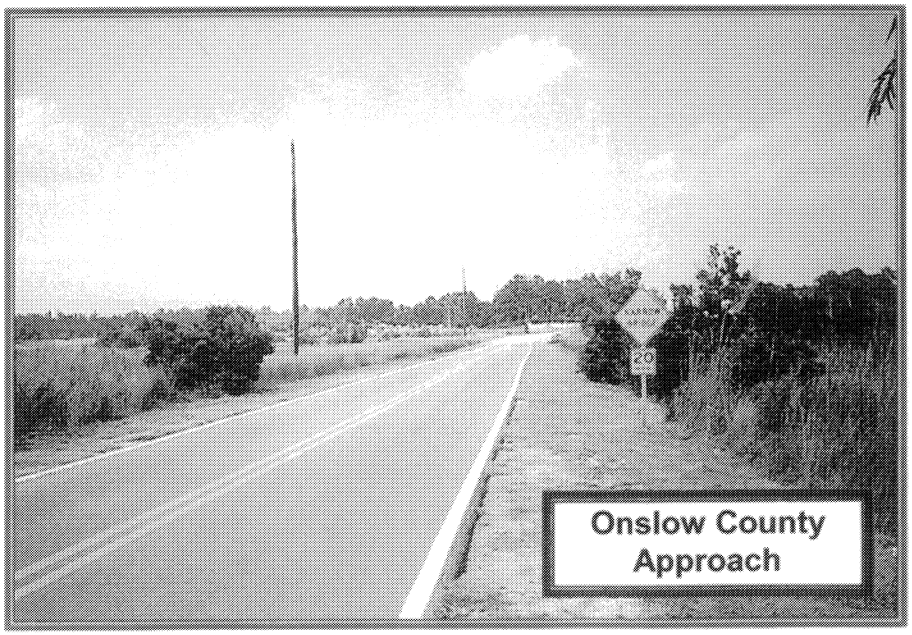
CARTERET & ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101
& SR 1442 OVER WHITE OAK RIVER

TIP NO. B–2938

10 0 20

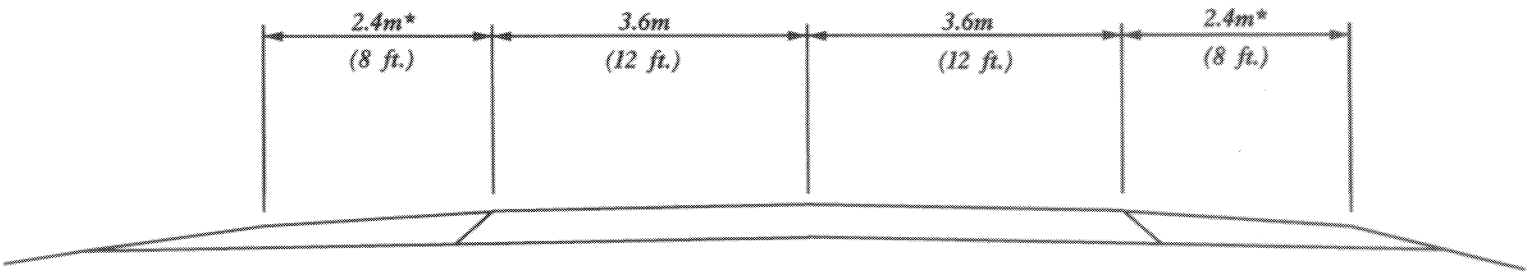
FIGURE 2A



B-2938
Replacement of Bridge No. 49 on SR 1422 Over White Oak River Carteret and Onslow Counties

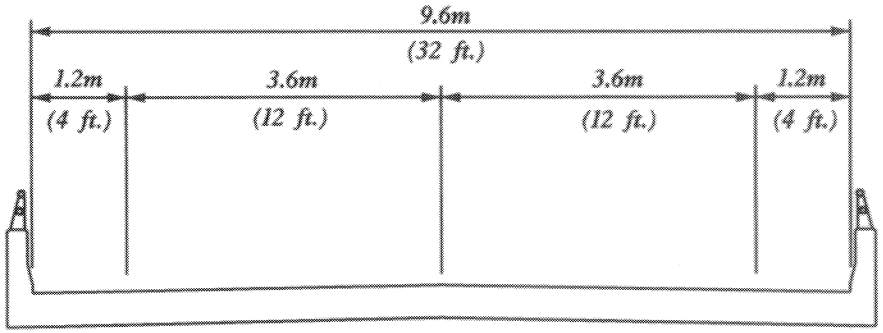
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Figure 3



TYPICAL ROADWAY APPROACH SECTION
(PROPOSED)

* ADD 1.0m (3 ft.) WHERE GUARDRAIL IS WARRANTED



TYPICAL SECTION ON STRUCTURE
(PROPOSED)

TRAFFIC DATA

ADT 2001	1,600
ADT 2002	1,600
ADT 2025	2,500
DUAL	2%
TTST	1%

FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR

DESIGNATED BICYCLE ROUTE: JACKSONVILLE: CITY TO THE SEA

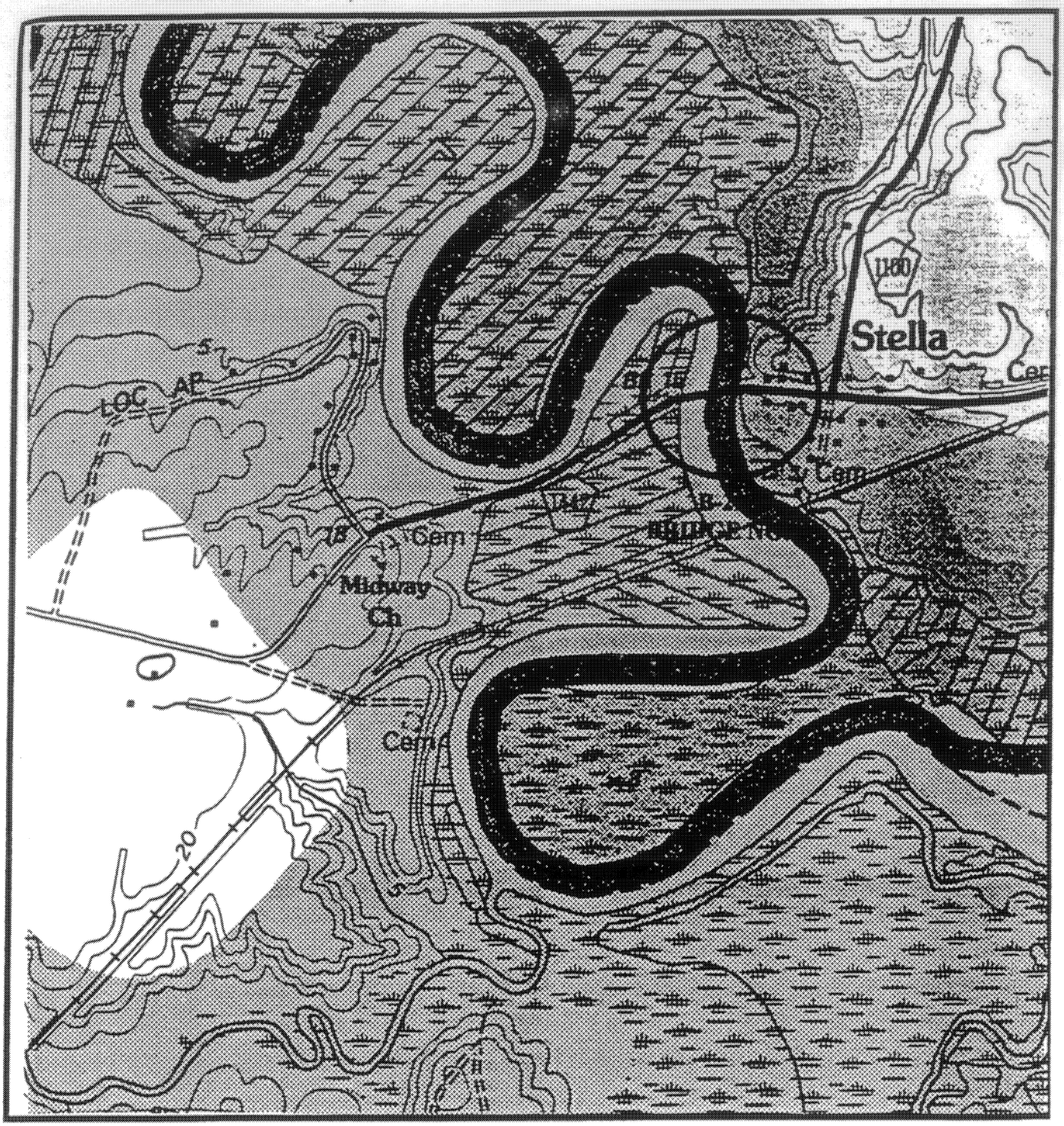
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

CARTERET AND ONSLOW COUNTIES

BRIDGE NO. 49 ON SR 1101 & SR 1442
OVER WHITE OAK RIVER

TIP B-2938

FIGURE 4



APPROXIMATE FEMA FLOOD STUDY
100 YEAR FLOOD PLAIN
SCALE 1" = 1000 FEET

0 1000 2000 FEET

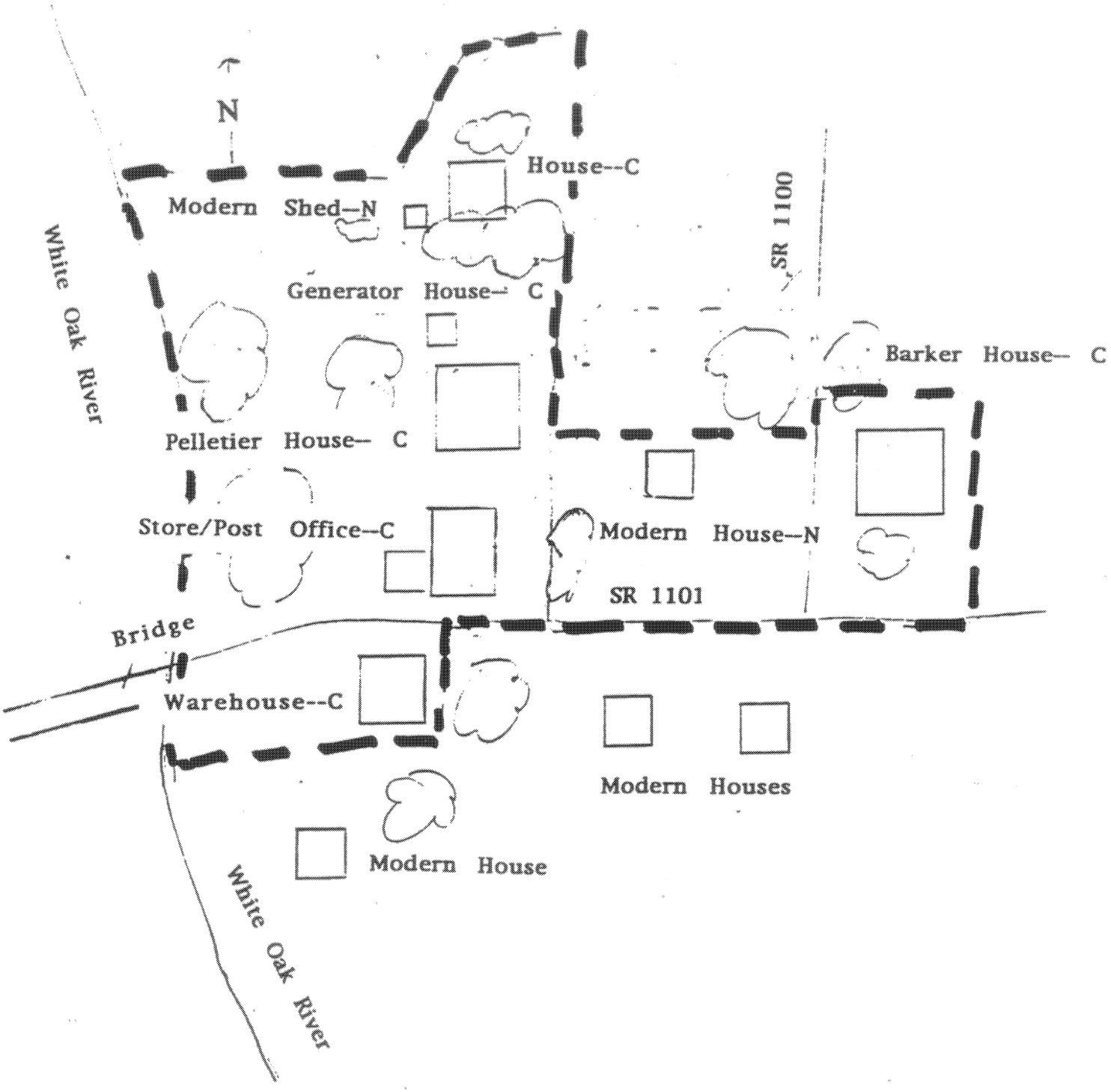
FIGURE 5

FIGURE 6

Stella Historic District
Site Plan

(not to scale)

C--Contributing Resource
N--Non-Contributing Resource



APPENDIX C

NEPA/404 MERGER TEAM CONCURRENCE POINTS 1, 2, 3, AND 4

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 1 – Purpose and Need

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Purpose and Need of the Proposed Project:

To replace a functionally obsolete and structurally deficient structure with a safer and improved structure and approaches. To do-nothing will eventually necessitate removal of the bridge and this is not desirable due to the traffic service provided by SR 1101/SR 1442.

The Project Team has concurred on this date of June 8, 2000 with the purpose and need for the proposed project as stated above.

USACE		NCDOT	
USEPA		USFWS	
NMFS		NPS	
DCM		NCDWQ	
NCWRC		NCDCR	
NCDMF		FHWA	
SHPO			

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 2 – Reasonable and Feasible Alternatives Studied

Project Name/Description:

Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternatives studied in detail:

1. No build/routine maintenance continue
2. Alternate A - Maintain traffic with on-site detour and raise grade on Onslow County approach.
3. Alternate B1 - Maintain traffic on existing bridge and minimum work on Onslow County approach.
4. Alternate B2 - Maintain traffic on existing bridge and raise grade on Onslow County approach.
5. Alternate C – Maintain traffic on one lane bridge and raise grade on Onslow County approach: eliminated because of maintaining traffic on one lane bridge was not desirable and amount of roadclosure required to build the one lane bridge approaches.
6. Alternate D - Maintain traffic on existing bridge and bridge the marshland.
7. Alternate E -Maintain traffic with on-site detour and minimum approach work on Onslow County approach.

The Project Team has concurred on this date of June 8, 2000 with the "alternatives to be studied in detail in the NEPA document" as stated above.

USACE		NCDOT	
USEPA		USFWS	
NMFS		NPS	
DCM		NCDWQ	
NCWRC		NCDCR	
NCDMF		FHWA	
SHPO			

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 3 – Alternative Selection

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties, TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternative recommended:

Alternate D
Replace the bridge downstream of the existing bridge and spanning the wetland (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge.

The Project Team has concurred on this date of May 17, 2001 with the "alternative to be recommended in the NEPA document" as stated above.

USACE _____

USEPA _____

NMFS _____

DCM _____

NCWRC _____

NCDMF _____

NCDOT _____

USFWS _____

NPS _____

NCDWQ _____

NCDCR _____

FHWA _____

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 4 – Avoidance and Minimization of Impacts

Project Name/Description:
Replace Bridge No. 49 on SR 1101/1442 over White Oak River in Carteret/Onslow Counties
TIP Project No. B-2938
Federal Aid Project No. BRZ-1101(5)
State Project No. 8.2160801

Alternate D

Replace the bridge downstream of the existing bridge and spanning the wetlands (brackish marsh) in Onslow County. The bridge will be approximately 2310 feet in length. During construction, traffic will be maintained on the existing bridge and roadway. The construction cost estimate includes building the bridge with a temporary work bridge. For avoidance and minimization, the following measures will be accomplish:

1. Anticipated impacts to wetlands 0.021 acres.
2. ~~Restoration~~ of wetlands of approximately 1.70 acres. and enhancement (undetermined amount).
3. Replacing 432-foot bridge with a 2,310-foot bridge.
4. Design exception to reduce the design speed from 55 mph to a design speed of 45 mph to minimize impacts in the historic district and eliminate impacts ~~to~~ the cemetery.
5. Design exception for the horizontal clearance to maintain the existing canopy attached to the post office to minimize impacts in the historic district.
6. Reduced spans and girder depth to maintain clearance over the White Oak River and impacts to historic district.

The Project Team has concurred on the avoidance and minimization as stated above for the subject project on this date of May 17, 2001.

USACE _____ NCDOT _____

USEPA _____ USFWS _____

NMFS _____ NPS _____

DCM _____ NCDWQ _____

NCWRC _____ NCDCR _____

NCDMF _____ FHWA _____

APPENDIX D

DESIGN EXCEPTION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

P.O. BOX 25201, RALEIGH, NC 27611-5201

December 21, 2000

MEMO TO: D. M. Barbour, PE
State Design Engineer

FROM: J. V. Barbour, PE
State Design Services Engineer

SUBJECT: State Project: 8.2160801 (B-2938) Carteret & Onslow County
F. A. Project: BRZ-1101(5)
Replace Bridge No. 49 over White Oak River and approaches on SR 1101 & SR 1442

Request for Design Exception

This is a request for a design exception for the design speed and horizontal clearance to minimize impacts to the cemetery and the historic district. SR 1101/SR 1442 is currently not posted and has a statutory speed of 90 km/h (55 mph) with advisory signs at the bridge of 30 km/h (20 mph). The horizontal clearance from the edge of the roadway to the post office and warehouse in the historical district is currently less than the recommended clearance by AASHTO. The design elements that require exceptions are as follows.

Proposed Design Speed: The statutory speed limit for SR 1101/SR 1442 in the project vicinity is 90 km/h (55 mph). The proposed design speed is 70 km/h (45 mph). In order to minimize the impacts to the cemetery in the western part of the project and the historic district in the eastern part of the project we are requesting an exception for the proposed design speed. The crest or sag vertical curves on the eastern end of the project cannot be increased without major impacts to the historic district. Also, the horizontal curve at the western end of the project cannot be flattened without major impacts to the cemetery.

Horizontal Clearance: The standard horizontal clearance for this type of facility is 6.0 to 8.0 meters per AASHTO *Roadside Design Guide*, 1996, and 3 meters per AASHTO *Green Book*, 1974, page 425. Currently the historic post office has a canopy that is less than 1.0 meter from the edge of pavement, which is less than the horizontal clearance recommended by AASHTO. The post office and warehouse are less than 5.4 meters from the roadway, which is greater than the 3m minimum desirable horizontal clearance given in the AASHTO *Green Book*, but less than AASHTO's clear zone distance of 6.0 to 8.0 meters (AASHTO *Roadside Design Guide*, 1996). Since the historic district is on both sides of the roadway, appropriate horizontal clearances cannot be obtained without major impacts to the post office and warehouse. This exception for horizontal clearance would minimize any impacts to the historic post office and warehouse.

We recommend that this design exception be approved.

If you need additional information concerning this project, please contact Mr. Dave Scheffel, Project Design Engineer at 250-4128.

JVB/CSH/rjs

Attachment

cc: C.H. Casey, PE

Recommended for approval by:

Cathy Houser, PE

C. H. Casey, PE

APPROVED: K. M. Barbour

DATE: 12-22-00

cc: C. H. Casey, PE

NCDOT DESIGN EXCEPTION REQUEST
(Project does not require FHWA design approval)

F.A. Project No.: BRZ-1101(5)

State Project No.: 8.2160801

TIP No.: B-2938

County: Carteret & Onslow County

Design Exception Requested for: design speed and horizontal clearance.

Location of Design Feature in Question: -L- (SR 1101/SR 1442) entire project.

PROJECT DATA

Current ADT (2002): 1,630

Design ADT (2022): 2,380

% Trucks: 3

Proposed Design Speed: 70 km/hr (45 mph)

Posted Speed: Current: Not posted. Statutory 90 km/h (55 mph). Advisory-posted 30 km/h (20 mph) on the east approach.
Proposed: Posted 45 mph (70 km/h) with advisory posting for 30 km/h (20 mph) on the east approach.

Functional Classification: Rural Minor Collector

Minimum AASHTO Dimensions:
Horizontal Clearance= 3 m minimum
Horizontal Sight Distance=94.1 m

Dimensions Proposed:
Horizontal Clearance=0.4616 m
Horizontal Sight Distance=100 m

Total Estimated Cost of Project: $7,169,000

Additional Cost to Meet Minimum AASHTO Requirements: N/A

BASIS FOR EXCEPTION

1. There have only been three reported accidents in the project vicinity, and there appears to be no relation between the proposed design exception and the accident history. See current 3-year accident history, attached (number, type, rates, severity, cause, comparison to statewide average, etc.).

2. There are no future plans for upgrading this roadway either at or in the vicinity of this project.

3. SR 1101 and SR 1442 are classified as rural minor collectors and are designated as part of the bike route *Jacksonville: City to the Sea*. The existing roadway provides two 2.7-meter (9-foot) travel lanes with 1.8-meter (6-foot) grass shoulders. The existing approach at the west end of the bridge is on a 13.5-degree curve. The existing approach at the east end of the bridge is on a 25-degree curve.

4. It is not feasible to propose a 90 km/h (55 mph) speed limit because it would have a detrimental effect on the cemetery at the west end of the project and on the historic district at the east end of the project. With the lower design speed of 70 km/h (45 mph) it is possible to design a road that will not affect either and be within the character of the existing roadway. It is not feasible to propose 6.0 to 8.0 meters of clear horizontal clearance because it would require the relocation of the post office and warehouse, both in the historic district.

5. It is proposed to post the speed at 70 km/h (45 mph). Also, it is proposed that there be an advisory speed limit of 30 km/h (20 mph) for the east approach into Stella. The advisory speed limit will keep the speed low near the post office and warehouse that are within the clear zone distance of this roadway.

Rev. 3/25/96

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 12/14/00

Project Engineer: Cathy Houser, PE

TIP No: B-2938

Functional Classification: Rural Minor Collector

Posted Speed 90 km/h (55 mph)

Terrain Level – Coastal

Items requiring formal approval	Prop Design	AASHTO Std(1)	Exception Req'd
Design Speed(2)	70 km/h	Minimum Green Book - 100 km/h Proposed 70 km/h	Yes
Lane Width	3.6 m	3.6 m	
Shoulder Width	2.4 m	2.4 m	
Bridge Width (bicycle route)	9.6 m	9.6 m	
Structural Capacity(3)			
Maximum Grade	2.82%	7%	
Min. Horizontal Curve Radius	230m	195m	
Sag Vertical Curve K	21	20-25	
Crest Vertical Curve K	30	22-31	
Horizontal SSD	100m	94.1m	
Vertical SSD	115m	94.1m	
Pavement Cross Slope	0.02	0.02	
Superelevation	0.05	0.06	
Vertical Clearance	Match existing	N/A	
Horizontal Clearance	• 0.4616m to edge of canopy of historic post office • 5.3407m to post office building • 4.549m to historic warehouse	• 3m, min. desirable, per AASHTO-*Green Book*, 1994, page 425 • 6.0m – 8.0m per AASHTO-*Roadside Design Guide* (1996)	Yes

Listed below are the known non-complying items not requiring an approved design exception.

(1) The AASHTO STD. as it relates to the design speed should be equal to the higher of either the posted speed or the minimum "Greenbook" value for design speeds.

(2) If design speed is less than the posted or statutory speed, a design exception is required.

(3) Structure Design's responsibility - be sure they have checked for need of design exception.

APPENDIX E

CORRESPONDENCE

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

REPLY TO
ATTENTION OF

Planning Services Section

September 29, 1998

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 June 5, 1998, subject: "Request for Comments for Group XVII Bridge Replacement Projects." The bridge replacement projects are located in various Eastern and Piedmont North Carolina counties.

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

Sincerely,

C. Alex Morrison, Jr., P.E.
Chief, Technical Services Division

Enclosure

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

412 West Queen St.
Edenton, NC
27932

SUBJECT: Farmland Conversion Impact Rating form AD1006

DATE: 06/06/99

TO: Pamela Williams
Wang Engineering Company, Inc.

The following information is in response to your request asking for information on farmlands in the (3 bridge replacement projects). Projects B-2938, B-2950, B-2965.

Prime farmland does not include land already in or committed to urban development or water storage. When funds have already been commited for utilities, water lines, and road or bridge replacement and widening, the land is committed to development and is be exempt from having to make a determination. Other prime farmland "already in" urban development includes all land that has been designated for commercial or industrial use or residential use that is not intended at the same time to protect farmland in a

1. Zoning code or ordinance adopted by the state or local unit of government or,

2. A comprehensive land use plan which has expressly been either adopted or reviewed in its entirety by the unit of local government in whose jurisdiction it is operative within 10 years preceding the implementation of the project.

If the area in question meets the above criteria, you will not need to complete a Farmland Conversion Impact Rating form (AD1006). Otherwise please proceed to submit a Farmland Conversion Impact Rating form AD1006. The AD1006 should be generated by the corresponding federal agency who will provide the permits and/or funds. If you have any questions please feel free to call me at:252-482-7437.

Thank You,

John Gagnon
Resource Soil Scientist

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

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

All of the bridges are within counties and communities which participate in the National Flood Insurance Program. From the various Flood Insurance Rate Maps (FIRMs), it appears that both approximate study and detail study streams are involved. (Detail study streams are those with 100-year flood elevations determined and, if controlled by riverine flooding, normally have floodways defined. Of these bridge crossings, only the Tar River in Edgecombe County has a floodway defined.) Based on a review of the FIRM's and pertinent United States Geological Survey topo maps, none of the bridges over railroads appear to be in identified flood hazard areas. A summary of flood plain information pertaining to the other bridges is contained in the following table. The FIRMs are from the county or countywide flood insurance study unless otherwise noted.

Bridge No.	Route No.	County	Study Stream	Type	Date Of Firm
B2938 49	SR 1101	Carteret	White Oak River	Approx	8/85
"	SR 1442	Onslow	"	"	7/87
B2950 4	SR 1222	Currituck	Tull Creek	Detail	11/84
B2965 24	US 64 Bus	Edgecombe	Tar River	Detail	2/88 *
"	"	"	"	"	4/80 **
B3045 17	NC 89	Stokes	Dan River	Approx	9/88
B3230 64	US 220 Bus	Rockingham	Mayo River	Approx	5/91

* Map is Town of Tarboro FIRM.
** Map is Town of Princeville FIRM.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

1. FLOOD PLAINS: (Continued)

For the Tar River crossing, we refer you to the Federal Emergency Management Agency's "Procedures for 'No Rise' Certification for Proposed Developments in Regulatory Floodways", copies of which have been furnished previously to your office. In addition, we suggest coordination with the respective counties or communities for compliance with their flood plain ordinances and any changes, if required, to their flood insurance maps and reports.

2. **WATERS AND WETLANDS: POC - Raleigh, Washington, and Wilmington Field Offices, Regulatory Division (Individual POC's are listed following the comments.)**

Based upon a review of Projects B-3013 and B-3231 (bridge replacements over railroads), it appears that the proposed work is not likely to impact any jurisdictional waters subject to Department of the Army (DA) permit authority. In addition, from a review of submitted information and all available maps for the bridge-over-railroad Project B-3214, it was determined that no jurisdictional wetlands will be impacted by this proposed project. Accordingly, no DA authorization will be required in this case.

All work restricted to existing high ground will not require prior Federal permit authorization. However, DA 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. Also, please be reminded that Stokes County is one of the twenty-five mountain counties of North Carolina that contain trout waters. Review and comments are required from the North Carolina Wildlife Resources Commission prior to any action being taken on DA permit authorization for identified trout water counties.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. WATERS AND WETLANDS: (Continued)

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. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site 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.

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.

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

"Request for Comments for Group XVII Bridge Replacement Projects" in various Eastern and Piedmont North Carolina counties

2. WATERS AND WETLANDS: (Continued)

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.

For additional information, please contact the following individuals:

Raleigh Field Office -

- Jean Manuele at (919) 876-8441, Extension 24, for Edgecombe and Northampton Counties (Regulatory Division Action ID Nos. 199820969 & 199820970)
- John Thomas at (919) 876-8441, Extension 25, for Person, Stokes, and Rockingham Counties (Action ID's 1998-20821, 20822, 20823, and 20824)
- Todd Tugwell at (919) 876-8441, Extension 26, for Wake County (ID 199820971)

Washington Field Office -

- Mike Bell at (252) 975-1616, Extension 26, for Currituck County (TIP B-2950)

Wilmington Field Office -

- Dave Timpy at (910) 251-4634 for Richmond and Carteret/Onslow Counties (Action ID Nos. 199801809 and 199801810)

3. U.S. ARMY CORPS OF ENGINEERS PROJECTS: POC - Howard Varnam, Navigation Section at (910) 251-4411

Bridge No. 24 on US 64 Business over the Tar River at Tarboro appears to cross a U.S. Army Corps of Engineers navigation project. This project provides for a channel 20 inches deep and 60 feet wide to Tarboro. There should be no problem from the provision of the proposed improvements if navigational clearances and channel setbacks for the existing project are maintained.

If you have questions or need further information related to the Federal project, please contact Mr. Varnam.

U.S. Department
of Transportation
United States
Coast Guard

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Aowb
Phone: (757)398-6587

16590
July 7, 1998

Mr. Richard Davis, P.E.
Planning and Environmental Branch
N.C. Division of Highways
P.O. Box 25201
Raleigh, North Carolina 27611

Dear Mr. Davis:

This is in response to your letter dated June 5, 1998 requesting the Coast Guard to review the proposed projects to replace ten bridges of which five are over waterways. The following are the five bridge numbers and their locations: #49 White Oak River; #4 Tull Creek; #24 Tar River; #17 Dan River; and #64 Mayo River. B0938 B2950 B2965 B3045 B3230

The Coast Guard Authorization Act of 1982 exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used, susceptible to use in their natural condition, or susceptible to use by reasonable improvement as a means to transport interstate commerce. Ms. Pam Williams confirmed such conditions in a telephone conversation on June 30, 1998. Due to this, the bridge projects on the Dan and Mayo Rivers are exempt, and will not require Coast Guard Bridge Permits.

Tull Creek, and the White Oak and Tar Rivers are subject to tidal influence and thus considered legally navigable for Bridge Administration Purposes. However, these waterways also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for these three projects.

The fact that Coast Guard permits are not required does not relieve you of the responsibility for compliance with the requirements of any other Federal, State, or local agency who may have jurisdiction over any aspect of the project.

Sincerely,

ANN B. DEATON
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

United States Department of the Interior

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

June 17, 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

Dear Mr. Gilmore:

Thank you for your letter of June 5, 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-2938, Carteret/Onslow Counties, Replace Bridge No. 49 on SR 1101/SR 1442 over the White Oak River;

2. B-2950, Currituck County, Replace Bridge No. 4 on SR 1222 over Tull Creek;

3. B-2965, Edgecombe County, Replace Bridge No. 24 on US 64 Business over the Tar River;

4. B-3013, Person County, Replace Bridge No. 48 on US 501 over the Norfolk Southern Railway;

5. B-3045, Stokes County, Replace Bridge No. 17 on NC 89 over the Dan River;

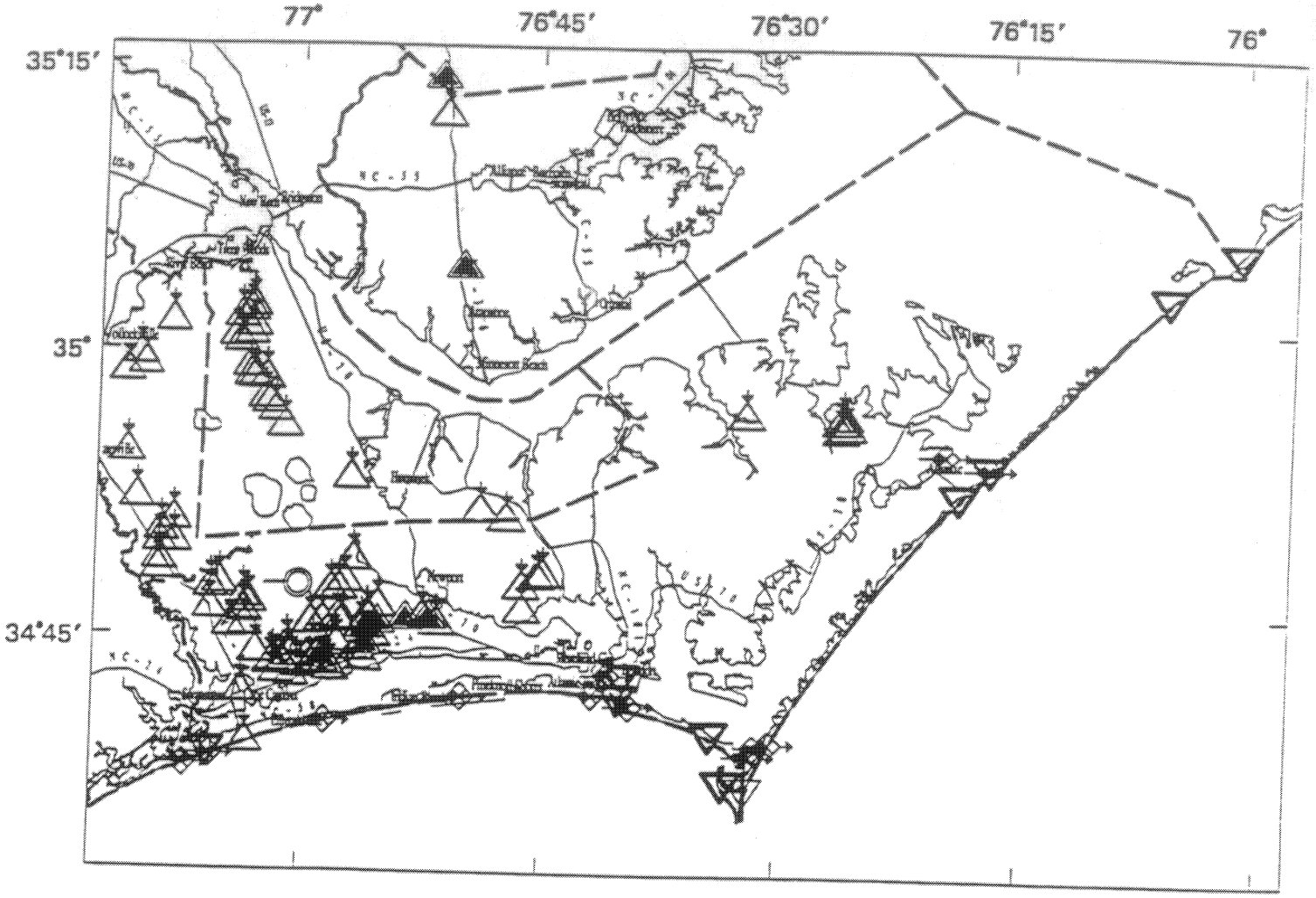
6. B-3214, Northampton County, Replace Bridge No. 64 on US 301 over the CSX Railway;

7. B-3230, Rockingham County, Replace Bridge No. 64 on US 220 Business over the Mayo River;

8. B-3231, Rockingham County, Replace Bridge No. 243 on SR 1378 over the North/Western Railway;

Accounts of Selected Federally Listed Species In CARTERET County

Data represented on these maps are not based on comprehensive inventories of this county. Lack of data must not be construed to mean that listed species are not present.



Prepared by U.S. Fish and Wildlife Service
based on data provided by NC Natural Heritage Program
D. Newcomb, K. Tripp 1/15/98

0 1 2 3 4 5 MILES
0 1 2 3 4 5 KILOMETERS

expires 1/31/99

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 Harris, PE, Project Manager
Project Development and Environmental Analysis Branch, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: July 28, 1999

SUBJECT: North Carolina Department of Transportation (NCDOT) Bridge Demolition Projects B-2938, B-2950, B-2965, B-3045, and B-3230.

We have reviewed the information provided by you regarding the subject bridge demolition projects. These projects were reviewed during the scoping process and we preformed site visits as needed.

After reviewing the new information we do not object to the projects as proposed, provided that the new Bridge Demolition and Removal Best Management Practices are followed. If we can be of any further assistance please call me at (919) 528-9886.

cc: David Franklin, Special Projects Manager, USACOE, Wilmington

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: July 27, 1998

SUBJECT: NCDOT Group XVII Bridge Replacements

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-2938 - The bridge should be replaced with a spanning structure, in place with an off-site detour. This area of the White Oak River is a primary nursery area and is closed to shellfishing. There is a fringe of salt marsh adjacent to the bridge on the North/West side which should be avoided. The White Oak River supports anadromous runs of striped bass, river herring, and American shad. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation.

2. B-2950 - This bridge should be replaced with a spanning structure, in place with an off-site detour. Tulls Creek is designated as a primary nursery area. This creek is known to support anadromous runs of striped bass as well as quality runs of largemouth bass, sunfish and other gamefish. Our agency collects brood fish for largemouth bass restocking efforts from this section of Tulls Creek. Turbidity resulting from in-water work could damage critical freshwater spawning habitat not only in Tulls Creek but also in Tulls Bay. No in-water work should occur from February 15 to September 30. This moratorium is longer than the standard anadromous fish moratorium due to the primary nursery area designation. There are also several Bald eagle nests along Tulls Creek. If any trees are to be removed eagle nest surveys should be performed.

3. B-2965 - This bridge should be replaced in place with an off-site detour if possible. The Tar river supports important runs of anadromous striped bass, hickory shad, American shad and river herring. The standard anadromous fish moratorium, February 15 to June 15, will be required. Also the federally listed, endangered, Tar spineymussel occurs in the Tar River in the vicinity of the bridge. A survey for this species should be performed 100 meters above the bridge to 400 meters downstream of the bridge. Based on the results of this survey additional conservation measures may be required. (Contact NCDOT Biologist, Tim Savidge.)

4. B-3013 - No specific concerns.

5. B-3045 - No specific concerns.

6. B-3214 - No specific concerns.

7. B-3230 - Nice riffles which provide excellent fish habitat are located 20-30 meters upstream of Bridge No. 64. This area should be avoided during the bridge replacement.

8. B-3231 - No specific concerns.

9. B-3256 - No specific concerns.

10. B-3380 - No specific concerns.

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.

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

June 19, 1998

MEMORANDUM

To: Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch

From: Cyndi Bell

Subject: Request for Comments for Group XVII Bridge Replacement Projects

Reference is made to your memorandum of June 5, 1998, in which you requested early scoping comments for ten bridge replacement projects. Of the ten bridges on your list, only five involve streams, while the other five are railroad bridges. Please see the attached Water Quality Checklist for Bridge Replacement Projects for general recommendations. Based upon our records, Standard Sediment and Erosion Control measures will be acceptable for these fiver projects. I do ask that you investigate whether riparian wetlands are located at any of these crossings. The potential for occurrence of riparian wetlands is higher at B-2938, B-2950, and B-2965. Please note that we prefer bridging of riparian wetlands, especially if you are considering replacement of an existing bridge with a culvert.

Thank you for your inquiry. If you have any questions, please contact me at (919) 733-1786 or Cyndi_Bell@dem.ehnr.state.nc.us.

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

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director

DEHNR

February 26, 1997

MEMORANDUM

To: Mr. H. Franklin Vick, P.E., Manager, NCDOT, Planning & Environmental Branch

From: Cyndi Bell, NC Division of Water Quality CLB

Subject: Water Quality Checklist for Bridge Replacement Projects

Reference your correspondence dated January 21, 1997, in which you requested scoping comments for five bridge replacement projects. As I will be unable to attend the scoping meeting for these projects on March 11, 1997, I am forwarding these comments to you and the appropriate project engineers in writing. The Division of Water Quality requests that NCDOT consider the following generic environmental commitments for design and construction of bridge replacements:

A. DWQ requests that DOT strictly adhere to North Carolina regulations entitled "Design Standards in Sensitive Watersheds" (15A NCAC 04B .0024) throughout design and construction for this project in the area that drains to streams having WS (Water Supply), ORW (Outstanding Resource Water), HQW (High Quality Water), B (Body Contact), SA (Shellfish Water) or Tr (Trout Water) classifications to protect existing uses.

B. DWQ requests that bridges be replaced on existing location with road closure, when practical. If an on-site detour is necessary, remediation measures in accordance with DWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.

C. DWQ requests that hazardous spill catch basins be installed at any bridge crossing a stream classified as HQW or WS (Water Supply). The number of catch basins installed should be determined by the design of the bridge, so that runoff would enter said basin(s) rather than directly flowing into the stream.

D. To the maximum extent practicable, DOT should not install the bridge bents in the creek.

E. Wetland impacts should be avoided (including sediment and erosion control structures/measures) to the maximum extent practical. If this is not possible, alternatives that minimize wetland impacts should be chosen. Mitigation for unavoidable impacts will be required by DWQ if impacts exceed one acre. Smaller impacts may require mitigation by the U.S. Army Corps of Engineers.

F. Borrow/waste areas should not be located in wetlands. It is likely that compensatory mitigation will be required if wetlands are impacted by waste or borrow.

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-9960 FAX # 733-9919

G. DWQ prefers replacement of bridges with bridges. If the new structure is to be a culvert, it should be countersunk to allow unimpeded fish passage through the crossing.

H. If foundation test borings will be required, this should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No. 6 for Survey Activities. Written concurrence from the North Carolina Wildlife Resources Commission and U.S. Army Corps of Engineers is required in designated mountain trout counties.

I. If this project is processed as a Categorical Exclusion, NCDOT is reminded that mitigation will be required if wetland impacts exceed one acre, in accordance with DWQ Wetland Rules (15A NCAC 2H.0506 (h)(2)).

The attached table has been prepared by DWQ for your assistance in studying the systems involved in these bridge replacements. This information includes the DWQ Index Number, DWQ Stream Classification, river basin, and preliminary comments for each crossing. Please note that National Wetland Inventory (NWI) map references are not to be replaced by onsite wetland determinations by qualified biologists.

Thank you for your request for DWQ input. DOT is reminded that issuance of a 401 Water Quality Certification requires satisfaction of water quality concerns, to ensure that water quality standards are met and designated uses are not lost or degraded. Questions regarding the 401 Certification or other water quality issues should be directed to Cyndi Bell at (919) 733-1786 in DWQ's Water Quality Environmental Sciences Branch.

cc: Michelle Suverkrubbe
Melba McGee
Jeff Ingham
Bill Goodwin
John Williams

B1443.DOC

Carteret County Transportation Committee
Post Office Box 825 • Morehead City, North Carolina 28557
Phone: (252) 726-7822 • Fax: (252) 726-7822 • Email: carteret.edc@gtp.net

July 24, 1998

Ms. Stacy Baldwin, P.E.
Planning and Environmental Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Ms. Baldwin:

The Carteret County Transportation Committee met last night and discussed the above-captioned project. The Committee unanimously adopted alternative 3 identified on the June 5, 1998 letter from Richard B. Davis to Carteret County Manager Robert Murphy. If traffic is closed on the Stella Bridge during the construction of the new bridge, it will result in a severe inconvenience and dislocation for those individuals who utilize the bridge on a daily basis. The nearest detour across the White Oak River would require approximately 20 miles of additional travel. Many area farmers farm property on both sides of the White Oak River, and a closure of the bridge would be both inconvenient and expensive for them.

It was also brought to the attention of the Committee that there is significant flooding of the roadway on the Onslow County side of the bridge during full moon/high tide events. The Committee requests that the Department of Transportation try to address the flooding problem as part of the bridge project. If you have any questions regarding the exact location of the flooding, please feel free to contact Mr. John Jones, who is a member of the Transportation Committee. Mr. Jones' telephone number is 252.393.2093.Mr. Jones regularly utilizes the Stella Bridge, and he is very familiar with the flooding problem.

Thank you very much for your consideration and assistance. Please do not hesitate to contact me or Mr. Donald Kirkman, who provides staff support to the Carteret County Transportation Committee. I can be reached at 252.728.2141, and Mr. Kirkman can be reached at 252.726.7822.

Sincerely,

Hunter Chadwick, Chairman

HC:cy
cc: Mr. John Jones
Mr. Donald A. Kirkman

CARTERET COUNTY
ECONOMIC DEVELOPMENT COUNCIL

Carteret County is a member of the Global TransPark Development Commission and North Carolina East

P. O. Box 823
Morehead City NC
28557
919.726.7522
800.462.4252
FAX 919.726.4215
carteret.edc@gtp.net

June 29, 1998

Mr. Richard B. Davis, P.E., Assistant Manager
Planning and Environmental Branch
N.C. Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

RE: Replacement Bridge No. 49 on SR 1101/SR1442

Dear Mr. Davis:

I am responding to your June 5 correspondence to Carteret County Manager Robert Murphy regarding the above-captioned bridge project. Mr. Murphy forwarded your letter to me because I provide staff support to the Carteret County Transportation Committee, as well as being the Executive Director of the Carteret County Economic Development Council.

Unfortunately, neither the Transportation Committee nor the Economic Development Council Board of Directors has met since June 5th, and therefore they have not had an opportunity to review your correspondence or provide input. Both Carteret County and the Carteret County Transportation Committee feel that the replacement of the Stella Bridge is a very high priority, and both have previously corresponded with representatives of the Department of Transportation regarding the importance of replacing the bridge.

Consequently, I am confidant that the "No-Build" alternative is inconsistent with the preferences of the Carteret County Commissioners and the Carteret County Transportation Committee. Based on informal discussions with residents of the region near the bridge, including Transportation Committee representatives from the communities most affected, there is a consensus that a new bridge should be built in the vicinity of the existing bridge, while maintaining traffic on the existing bridge during construction. This is reflected as alternate 3 in your June 5 correspondence.

Please also be advised that there is a Carteret County Thoroughfare Plan currently in progress, as well as a thoroughfare plan for the region which includes the Highway 58 and Highway 24 corridors. Those plans are being coordinated by Travis Marshall and

James Upchurch, respectively, in your Statewide Planning Branch. Because the Stella Bridge is the only road connection between Carteret and Onslow Counties other than N.C. 24, it is likely to play an increasingly important role in the county's future transportation plans. Therefore, I urge you and/or Wang Engineering to speak with Messrs. Marshall and Upchurch regarding the location and design of the bridge.

It is likely that the Transportation Committee will meet in late July, at which time they would be in a position formally to comment on your alternates. Even though their meeting will be past your June 30 comment deadline, I will let you know their recommendation.

Thank you very much for your consideration. Please contact me if you have any questions.

Sincerely,

Donald A. Kirkman
Executive Director

cc: Robert Murphy, Carteret County Manager
Hunter Chadwick, Carteret County Transportation Committee Chair
John Jones, Carteret County Transportation Committee
Travis Marshall, P.E.
James Upchurch, P.E.

RELOCATION REPORT

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B	of	4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A					
DESCRIPTION OF PROJECT:	Replace on existing alignment							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING			DSS DWELLING AVAILABLE		
Owners		Tenants	For Sale	For Rent	
0-20M		$ 0-150	0-20M	$ 0-150	
20-40M		150-250	20-40M	150-250	
40-70M		250-400	40-70M	250-400	
70-100M		400-600	70-100M	400-600	
100 UP		600 UP	100 UP	600 UP	
TOTAL					

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy: Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate A of 4 Alternate	
I.D. NO.:	B-2938	F.A. PROJECT	N/A		
DESCRIPTION OF PROJECT:	Replace Bridge #49 on SR 1101/SR 1442 over White Oak River				
	Replace on existing location with a on-site Detour on South Side.				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B	of	4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A					
DESCRIPTION OF PROJECT:	Replace on existing alignment							

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-27-98 — Date

Form 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	UNKNOWN	COUNTY	Carteret/Onslow	Alternate	B C of 4	Alternate
I.D. NO.:	B-2938	F.A. PROJECT	N/A			
DESCRIPTION OF PROJECT:	Replace on existing alignment, maintain traffic on one lane of existing bridge					

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential				
Businesses				
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

All residential displacees are counted as families.

THIS IS A NEGATIVE REPORT.

James M. Latham — Relocation Agent — 10/19/98 — Date

Approved by — 10-22-98 — Date

orm 15.4 Revised 02/95 d

Original & 1 Copy: State Relocation Agent
2 Copy Area Relocation Office

North Carolina Department of Transportation
AREA RELOCATION OFFICE

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	8.2160801	COUNTY	CARTERET/ONSLOW	Alternate D of Alternate
I.D. NO.:	B-2938	F.A. PROJECT		
		REPLACEMENT BRIDGE NO. 49 ON SR 1101/SR 1442 OVER WHITE OAK RIVER		

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential			0	
Businesses			0	
Farms			0	
Non-Profit			0	

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by displacement?
		3. Will business services still be available after project?
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		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing housing available during relocation period?
		13. Will there be a problem of housing within financial means?
		14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

NOTE: The only structure involved on this project is an old abandoned brick building. Therefore, there is no relocation involved.

MANAGER OF
RIGHT OF WAY BRANCH

MAR 30 1999

N.C. DEPT. OF TRANSPORTATION

R. B. CHADWICK — Relocation Agent — 03-26-99 — Date

Approved by — 3-30-99 — Date

Form 15.4 Revised 02/95 d

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