STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 11, 2004

N.C. Department of Environment and Natural Resources
Division of Coastal Management
1367 US 17 South
Elizabeth City, NC 27909

Attention: Ms. Lynn Mathis
District Manager

Dear Madam:

Subject: **Application for CAMA Major Development Permit** for the proposed replacement of Bridge No. 7 on NC 615 over Corey's Ditch in Currituck County, NCDOT Division 1. Federal Project No. BRZ-615(1), State Project No. 8.1040601, WBS Element: 33065.1.1, TIP No. B-3445

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 7 over Corey's Ditch on NC 615. Bridge No. 7 will be replaced on the existing alignment with a new bridge approximately 170 feet in length and a cleared roadway width of 36 feet. The approaches will include two 12 foot lanes with 8 foot shoulders. Permanent impacts to coastal wetlands associated with this project include 0.11 acre of permanent fill. Permanent impacts to non coastal wetlands associated with this project include 0.07 acre of permanent fill. The bridge will be replaced in stages. A portion of the existing bridge will be demolished while maintaining, one-lane, two-way traffic on the remaining portion. This will allow the new structure to be partially constructed. Once the new structure is sufficient to allow one-lane, two-way traffic, the remainder of the existing structure will be removed and the remainder of the new structure constructed. NCDOT will adhere to a moratorium allowing no work in water during the period of March 31 through September 30 to protect anadromous fish.

At the request of the U.S. Fish and Wildlife Service, equalizer pipes will be placed under NC 615 at six locations and existing pipes at two other locations are being replaced with larger pipes. The proposed aluminum pipes will be 36 in. in size. These pipes will be buried one foot. Permit drawing sheet 1 of 9 and plan sheet 5 shows the pipe locations.

Please find enclosed copies of the Coastal Area Management Act (CAMA) permit application (MP1, MP2, and MP5), Categorical Exclusion (CE), permit drawings, half size plans, North Carolina Division of Water Quality Stormwater Permit, Guidelines for

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

Avoiding Impacts to the West Indian Manatee, an EEP Request Letter, green cards from the Adjacent Riparian Land Owners, and a method of debiting $400 to be submitted to the DCM for processing the CAMA permit.

According to Bridge Maintenance records, the sufficiency rating of the bridge is 31.5 out of a possible 100. The new bridge will provide wider road shoulders on either side of the structure which will increase the safety rating for the bridge.

Corey's Ditch is located in the Pasquotank River Basin (Hydrological Cataloguing Unit 03010205) and classified by the Division of Water Quality as SC. Class SC refers to all tidal salt waters protected for secondary recreation such as fishing, boating and other activities involving minimal skin contact, aquatic life propagation and survival, and wildlife.

Area of Environmental Concern (AEC): Affected AEC's include estuarine shorelines, estuarine waters, public trust areas, and coastal wetlands.

An on-site field meeting was held on October 16, 2001. Attendees of this meeting include: Bill Arrington (NC Division of Coastal Management (DCM)), Ed Harrell (DCM), David Cox (NC Wildlife Resources Commission), Tom McCartney (US Fish and Wildlife Service (FWS)), Garland Pardue (FWS), and Kendall Smith (FWS, Mackay Island National Wildlife Refuge). This meeting addressed the following issues:

- Description of the proposed bridge replacement as compared to the existing bridge and discussion of the proposed parking areas.
- Construction techniques for the bridge replacement including placement of piles and how they are constructed, and what type of bridge will be constructed.
- Concerns with wider vehicles crossing the bridge during the staged construction.
- Removal of the existing causeway and loose material (rip rap and broken concrete).
- March 31 through September 30 moratorium.
- Discussion of mitigation.

PROPOSED IMPACTS TO WATERS OF THE UNITED STATES

Bridge Demolition: Bridge No. 7 is 95 feet long and 25.2 feet wide. It has a reinforced concrete deck on steel I-beams with timber caps and piles. Best Management Practices for Bridge Demolition and Removal, which dictates that all existing structures over water be removed by non-shattering methods, will be followed during demolition and construction. Dropping any component of the bridge into the water is not acceptable unless it is proven that there is no feasible alternative. If components of the bridge are dropped into the water, coordination and approval with DCM will be required.

Permanent Impacts: The permit drawings report wetland impacts of 0.18 acre of permanent fill. The permanent fill is due to the approach roadway fill for the proposed structure. There will be 0.11 acre of coastal wetlands impacted. In addition, there will be 0.13 acre of fill in surface water from the approach roadway fill for the proposed bridge structure.

PROTECTED SPECIES

Threatened and Endangered Species: Plants and animals with federal classification of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003, the U.S. Fish and Wildlife Service (USFWS) lists 7 federally protected species for Currituck County. Habitat exists only for the threatened bald eagle (*Haliaeetus leucocephalus*). In a letter dated June 10, 2003, the USFWS concurred with the conclusion that this project is not likely to adversely affect the bald eagle. A copy of this letter is attached. Biological conclusions of "No Effect" for each of the remaining species are valid and are presented in the attached CE.

- **West Indian Manatee**: The U.S. Fish and Wildlife Service has developed a list of "Precautions for the general construction in areas which may be used by the West Indian manatee in North Carolina." These precautions will be considered in all aspects of project construction (see attached precaution instructions).

Essential Fish Habitat: The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSFCMA) set forth a new mandate for the National Marine Fisheries Service (NMFS), regional fishery management councils (FMC) and other Federal agencies to identify and protect important marine and anadromous fish habitat. The FMCs, with the assistance from NMFS, have delineated "essential fish habitat" (EFH) for managed species. In the South Atlantic region, waterbodies in Currituck County are listed in which EFHs are found. Corey's Ditch is not a listed waterbody for EFHs. Therefore, the rules of the MSFCMA will not apply for this project. Ron Sechler of the National Marine Fisheries Service was contacted on April 29, 2004, and recommended that an EFH assessment not be done for this project.

MITIGATION OPTIONS

AVOIDANCE AND MINIMIZATION: Specific avoidance and minimization measures for this project include using a maximum slope of 3:1, replacing the existing bridge in its current location, installing equalizer pipes, and constructing the bridge in stages, which will allow for maintaining traffic on the existing bridge.

COMPENSATION: This project will permanently impact a total of 0.18 acre of non-coastal and coastal wetlands. Despite the minimization strategies employed for the proposed project, the resulting wetland impacts will be greater than 0.1 acre and will require mitigation.

Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District (MOA)", it is understood that the North Carolina Department of Environment and Natural Resources

Ecological Enhancement Program (EEP), will assume responsibility for satisfying the Section 404 compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the Ecological Enhancement Program (EEP) transition period which ends on July 1, 2005.

Since the subject project is listed in *Exhibit 1*, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP (see attached letter to EEP). The offsetting mitigation will derive from an inventory of assets already in existence within the same Ecoregion and the same 8-digit cataloguing unit. We have avoided and minimized the impacts to jurisdictional resources to the greatest extent possible as described above. The remaining, unavoidable impacts to 0.18 acre of jurisdictional wetlands will be offset by compensatory mitigation provided by the EEP program.

REGULATORY APPROVALS

NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Development Permit. NCDOT will also be applying for issuance of a United States Army Corps of Engineers NWP 23 and a section 401 Water Quality Certification from the North Carolina Division of Water Quality under a separate cover. A copy of this letter is attached.

Thank you for your assistance with this project. If you have any questions or need additional information please call Matt Haney at (919) 715-1428.

Sincerely

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

cc:
Ms. Cathy Brittingham, NCDCM
Mr. Bill Biddlecomb, USACE, Washington
Mr. Travis Wilson, NCWRC
Mr. Ron Sechler, NMFS
Mr. Mike Street, NCDMF
Mr. Omar Sultan, Programming and TIP
Mr. Greg Perfetti, P.E., Structure Design
Mr. D.R. Conner, PE; Division 1 Engineer
Mr. John Hennessy, DWQ, Raleigh
Mr. Gary Jordan, USFWS
Mr. Art McMillan, P.E., Highway Design
Mr. Jay Bennett, P.E., Roadway Design
Mr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Clay Willis, DIV 1 DEO

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LYNDO TIPPETT
SECRETARY

May 11, 2004

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

Attention: Mr. William J. Biddlecome
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 application.** Currituck County, Replacement of Bridge No. 7 on NC 615 over Corey's Ditch, Federal Project No. BRZ-615(1), State Project No. 8.1040601, TIP No. B-3445.

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 7 over Corey's Ditch on NC 615. Bridge No. 7 will be replaced on the existing alignment with a new bridge approximately 170 feet in length and a cleared roadway width of 36 feet. The approaches will include two 12 foot lanes with 8 foot shoulders. Permanent impacts to wetlands associated with this project total 0.18 acres, comprised of 0.11 acre of coastal wetlands and 0.07 acre of non-coastal wetlands. The bridge will be replaced in stages. A portion of the existing bridge will be demolished while maintaining, one-lane, two-way traffic on the remaining portion. This will allow the new structure to be partially constructed. Once the new structure is sufficient to allow one-lane, two-way traffic, the remainder of the existing structure will be removed and the remainder of the new structure constructed.

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Please find enclosed copies of the Categorical Exclusion (CE), permit drawings, half size plans, North Carolina Division of Water Quality Stormwater Permit, Guidelines for Avoiding Impacts to the West Indian Manatee, and an EEP Request Letter.

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Permanent Impacts: The permit drawings report wetland impacts of 0.18 acre of permanent fill. The permanent fill is due to the approach roadway fill for the proposed structure. There will be 0.11 acre of coastal wetlands impacted. There will be 0.13 acre of fill in surface water from the approach roadway fill for the proposed bridge structure.

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Threatened and Endangered Species: Plants and animals with federal classification of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected

under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003, the U.S. Fish and Wildlife Service (USFWS) lists 7 federally protected species for Currituck County. Habitat exists only for the threatened bald eagle (*Haliaeetus leucocephalus*). In a letter dated June 10, 2003, the USFWS concurred with the conclusion that this project is not likely to adversely affect the bald eagle. A copy of this letter is attached. Biological conclusions of "No Effect" for each of the remaining species are valid and are presented in the attached CE.

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Essential Fish Habitat: The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSFCMA) set forth a new mandate for the National Marine Fisheries Service (NMFS), regional fishery management councils (FMC) and other Federal agencies to identify and protect important marine and anadromous fish habitat. The FMCs, with the assistance from NMFS, have delineated "essential fish habitat" (EFH) for managed species. In the South Atlantic region, waterbodies in Currituck County are listed in which EFHs are found. Corey's Ditch is not a listed waterbody for EFHs. Therefore, the rules of the MSFCMA will not apply for this project. Ron Sechler of the National Marine Fisheries Service was contacted on April 29, 2004, and recommended that an EFH assessment not be done for this project.

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Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District (MOA)", it is understood that the North Carolina Department of Environment and Natural Resources Ecological Enhancement Program (EEP), will assume responsibility for satisfying the Section 404 compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the Ecological Enhancement Program (EEP) transition period which ends on July 1, 2005.

Since the subject project is listed in *Exhibit 1*, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP (see attached letter to EEP). The offsetting mitigation will derive from an inventory of assets already in existence within the same Ecoregion and the same 8-digit cataloguing unit. We have avoided and minimized the impacts to jurisdictional resources to the greatest extent possible as described above. The remaining, unavoidable impacts to 0.18 acre of jurisdictional wetlands will be offset by compensatory mitigation provided by the EEP program.

REGULATORY APPROVALS

Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit, but propose to proceed under Nationwide 23 as authorized by Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification number 3361 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.

NCDOT will also be applying for issuance of Coastal Area Management Act Major Development Permit from the North Carolina Division of Coastal Management under a separate cover. A copy of this letter is attached.

Thank you for your assistance with this project. If you have any questions or need additional information please call Matt Haney at (919) 715-1428.

Sincerely

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

cc: Mr. John Hennessy, Division of Water Quality
Mr. Travis Wilson, NCWRC
Ms. Cathy Brittingham, NCDCM
Ms. Lynn Mathis, NCDCM
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Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Don Conner, P.E., Division 1 Engineer
Mr. Clay Willis, Division 1 Environmental Officer
Mr. David Franklin, USACE, Wilmington

FORM DCM-MP-1

APPLICATION

(To be completed by all applicants)

1. APPLICANT

a. Landowner:

Name N.C Dept. of Transportation

Address 1548 Mail Service Center

City Raleigh State NC

Zip 27699-1548 Day Phone (919)733-3141

Fax (919) 733-9794

b. Authorized Agent:

Name _____

Address _____

City _____ State _____

Zip _____ Day Phone _____

Fax _____

c. Project name (if any) TIP. No. B-3445

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

2. LOCATION OF PROPOSED PROJECT

a. County Currituck

b. City, town, community or landmark
Knotts Island, NC

c. Street address or secondary road number
NC 615

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) Back Bay , Corey's Ditch

3. DESCRIPTION & 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: Existing location over Corey's Ditch

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

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. Purpose: to replace degrading Bridge No. 7 over Corey's Ditch at the existing location to provide safer and more efficient traffic operations.
Methods of construction: Staged construction

4. LAND AND WATER CHARACTERISTICS

a. Size of entire tract 2.3 ac

b. Size of individual lot(s) n/a

c. Approximate elevation of tract above MHW or NWL 5.0

d. Soil type(s) and texture(s) of tract
see pg. 5 of the CE

e. Vegetation on tract
Marsh grass (see pg 8&9 of the CE)

f.. Man-made features now on tract Parking along roadway, wood foot bridges on both sides of the bridge

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?
Agriculture

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?
___ Yes X No

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

m. Describe existing wastewater treatment facilities
n/a

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

o. Describe existing drinking water supply source.
n/a

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) number, 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 sheet 9 of 9 of permit drawings
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 11 day of May, ~~19~~ 2004.

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.*

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)				

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 _ _____

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 yards None

2. DISPOSAL OF EXCAVATED MATERIAL

a. Location of disposal area upland area

b. Dimensions of disposal area The contractor will be responsible for the disposal area.

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? ___ Yes ___ No
If yes, where? N/A

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 _X_ Riprap

b. Length 715 ft

c. Average distance waterward of MHW or NWL
7 ft

d. Maximum distance waterward of MHW or NWL
14 ft

e. Shoreline erosion during preceding 12 months
N/A
(Source of information)

f. Type of bulkhead or riprap material Rock Plating

g. Amount of fill in cubic yards to be placed below water level
(1) Riprap 390 CY
(2) Bulkhead backfill N/A

h. Type of fill material Rock Plating

i. Source of fill material Contractor will supply if needed.

4. OTHER FILL ACTIVITIES
(Excluding Shoreline Stabilization)

a. Will fill material be brought to site?
_X_ Yes ____ No

If yes,
(1) Amount of material to be placed in the water
(2) Dimensions of fill area 0.127 ac
(3) Purpose of fill to fill with proper materials for road construction

b. Will fill material be placed in coastal wetlands (marsh), SAVs or other wetlands?
_X_ Yes ____ No
If yes,
(1) Dimensions of fill area 0.182 ac
(2) Purpose of fill to fill with proper materials for road construction

5. GENERAL

a. How will excavated or fill material be kept on site and erosion controlled? silt fence, sheet piling, inlet protection

b. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?
backhoe, bulldozer, crane

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

NCDOT – TIP No. B-3445
Applicant or Project Name

Signature

5/11/04
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 deck slab bridge with steel piles and post and beam bents

c. Water body to be crossed by bridge
Corey's Ditch

d. Water depth at the proposed crossing at MLW or NWL 17 ft at mean tide level

e. Will proposed bridge replace an existing bridge?
__X__ Yes ____ No
If yes,
(1) Length of existing bridge 96 ft
(2) Width of existing bridge 22 ft
(3) Navigation clearance underneath existing bridge n/a
(4) Will all, or a part of, the existing bridge be removed? (Explain) all

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) _____

g. Length of proposed bridge 180 ft

h. Width of proposed bridge 40 ft

i. Height of proposed bridge above wetlands
2.7 ft to 6.7 ft

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

k. Navigation clearance underneath proposed bridge
Low chord raised 2.3 ft from existing bridge clearance will vary due to tidal influence

l. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? __X__ Yes ____ No
If yes, explain will increase opening allowing small boat passage.

m. Will the proposed bridge cross wetlands containing no navigable waters? __X__ Yes ____ No
If yes, explain proposed structure will cross existing wetlands south of the existing location

n. Have you contacted the U. S. Coast Guard concerning their approval?
__X__ Yes ____ No
If yes, please provide record of their action.
see Appendix of the CE

2. CULVERTS

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:
___ 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 of culvert require any highground excavation?
___ Yes __X__ No
If yes,
(1) Length of area to be excavated _____
(2) Width of area to be excavated _____
(3) Amount of material to be excavated in cubic yards _____

d. If the placement of the bridge or culvert involves any excavation, please complete the following:
(1) Location of the spoil disposal area
(to be determined by contractor)
(2) Dimensions of spoil disposal area
(to be determined by contractor)
(3) Do you claim title to the disposal area?
_____ Yes __X__ No
If no, attach a letter granting permission from the owner.

(4) Will the disposal area be available for future maintenance?___ Yes ___ No N/A

(5) Does the disposal area include any coastal wetlands (marsh), SAVs, or other wetlands?
_____ Yes __X__ No
If yes, give dimensions if different from (2) above. n/a

(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. n/a

e. Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d. above) to be placed below MHW or NWL? __X__ Yes _____ No
If yes,
(1) Length of area to be filled 525 Ft
(2) Width of area to be filled 15 Ft
(3) Purpose of fill to fill with proper materials for road construction

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 675 Ft
(2) Width of area to be filled 15 ft
(3) Purpose of fill to fill with proper materials for road construction

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

4. GENERAL

a. Will the proposed project involve any mitigation?
__X__ Yes _____ No
If yes, explain in detail _____
See attached permit application for details.

b. Will the proposed project require the relocation of any existing utility lines? __X__ Yes ___ No
If yes, explain in detail telephone, power lines and fiberoptic lines

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

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

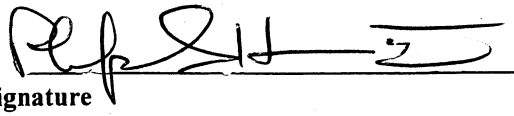
e. How will excavated or fill material be kept on site and erosion controlled? Sheet Piling, silt fence; NCDOT Sedimentation and Erosion Control Guidelines will be followed.

f. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)? backhoes, bulldozer, crane, and other necessary equipment to replace bridge

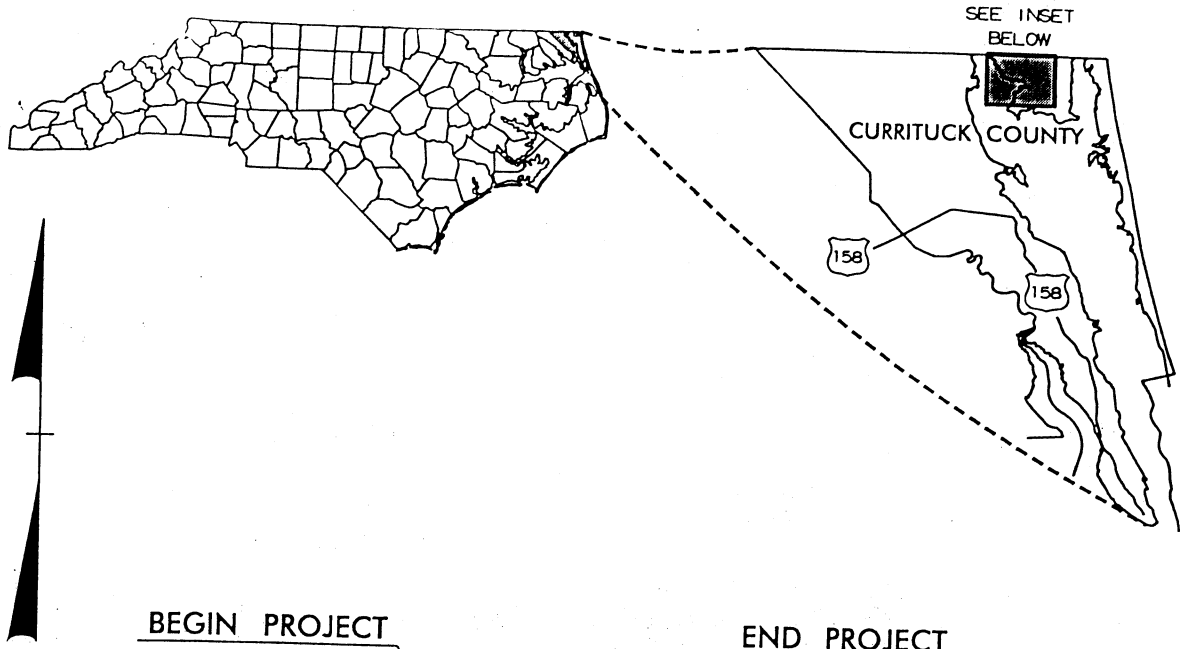
g. Will wetlands be crossed in transporting equipment to project site? _____ Yes __X__ No
If yes, explain steps that will be taken to lessen environmental impacts. _____

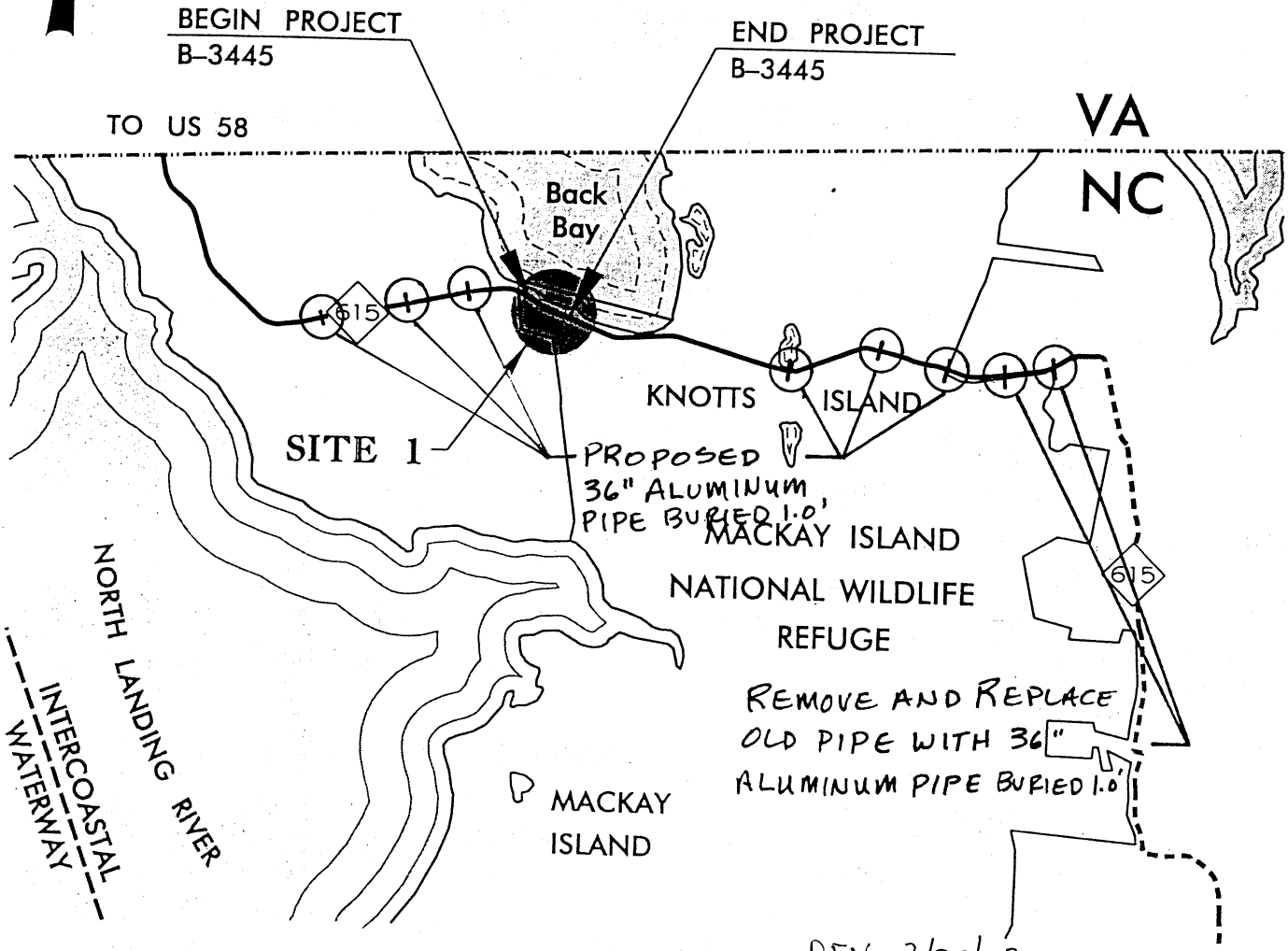
h. Will the placement of the proposed bridge or culvert require any shoreline stabilization?
__X__ Yes ____ No
If yes, explain in detail _____
Rock plate for stabilization

NCDOT – TIP No. B-3445
Applicant or Project Name


Signature

5/11/04
Date





REV. 3/27/03

SCALE
.5 0 1 Mile

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF
BRIDGE NO. 7 OVER COREYS DITCH

SHEET 1 OF 9

8/28/01

LEGEND

---WLB---- WETLAND BOUNDARY

WLB / WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

ES ES — DENOTES EXCAVATION IN SURFACE WATER

TS TS — 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

COIR FIBER ROLLS

/ — ADJACENT PROPERTY OWNER OR PARCEL NUMBER

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

VANE

RIP RAP

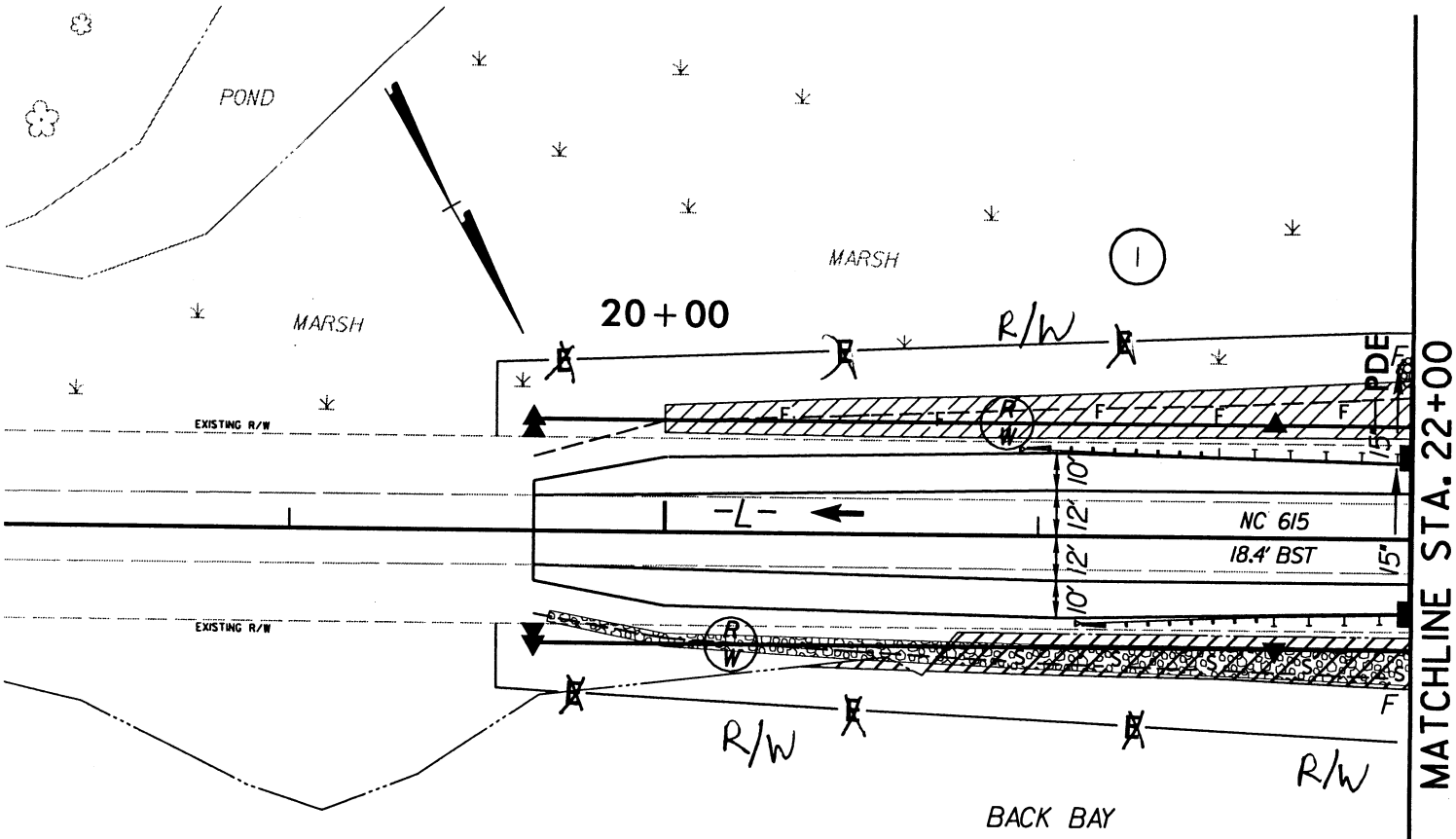
RIP RAP ENERGY DISSIPATOR BASIN

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF BRIDGE NO. 7 OVER COREYS DITCH

SHEET 2 OF 9 **8/28/01**



PLAN VIEW
SITE 1

REV 3/27/03

25 0 50

DENOTES FILL IN WETLANDS

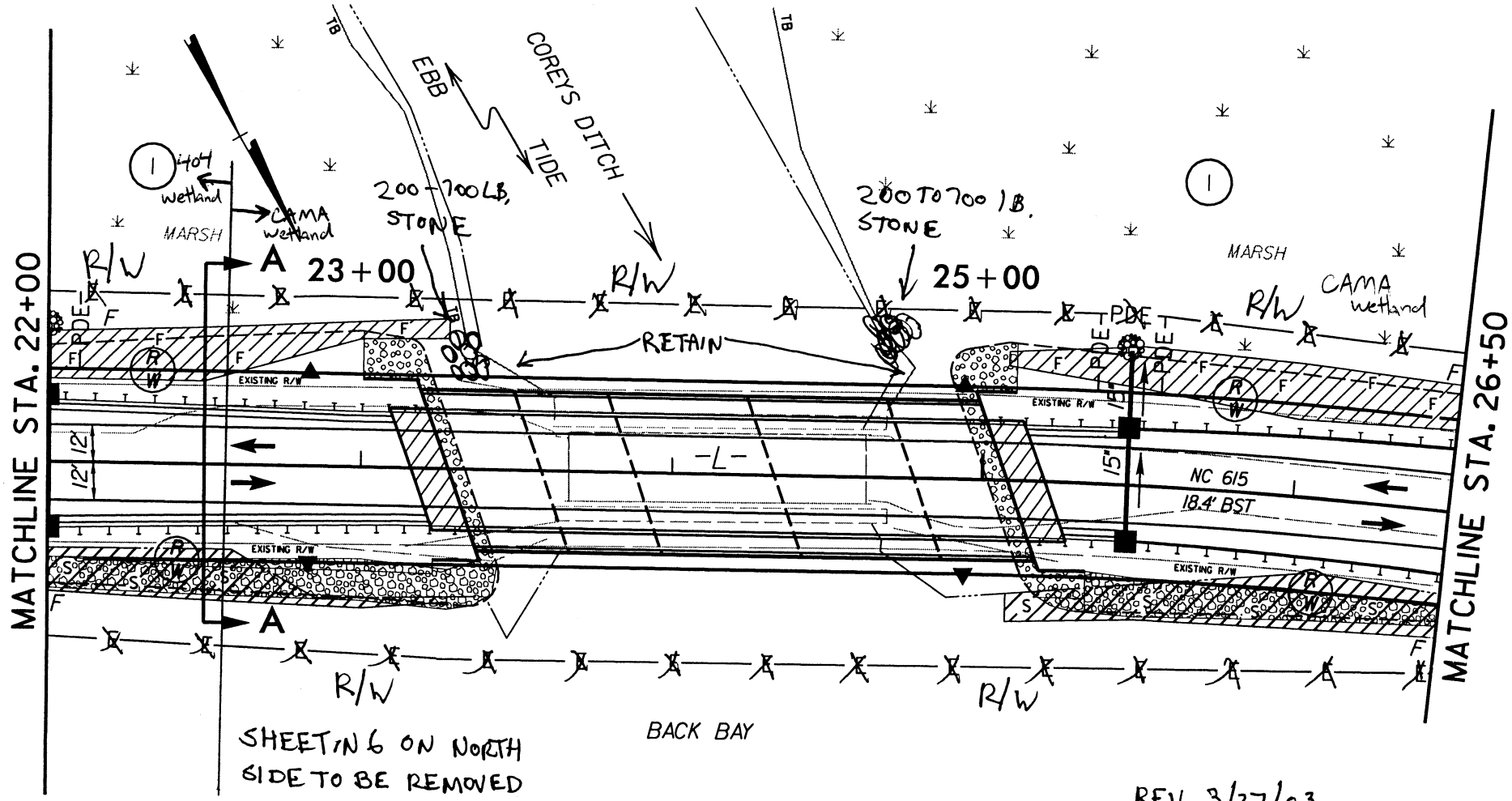
DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF BRIDGE NO. 7 OVER COREYS DITCH

SHEET 3 OF 9 **1/18/02**



SHEETING ON NORTH SIDE TO BE REMOVED

SHEETING ON SOUTH SIDE TO BE RETAINED AS MUCH AS POSSIBLE

PLAN VIEW
SITE 1

25 0 50

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

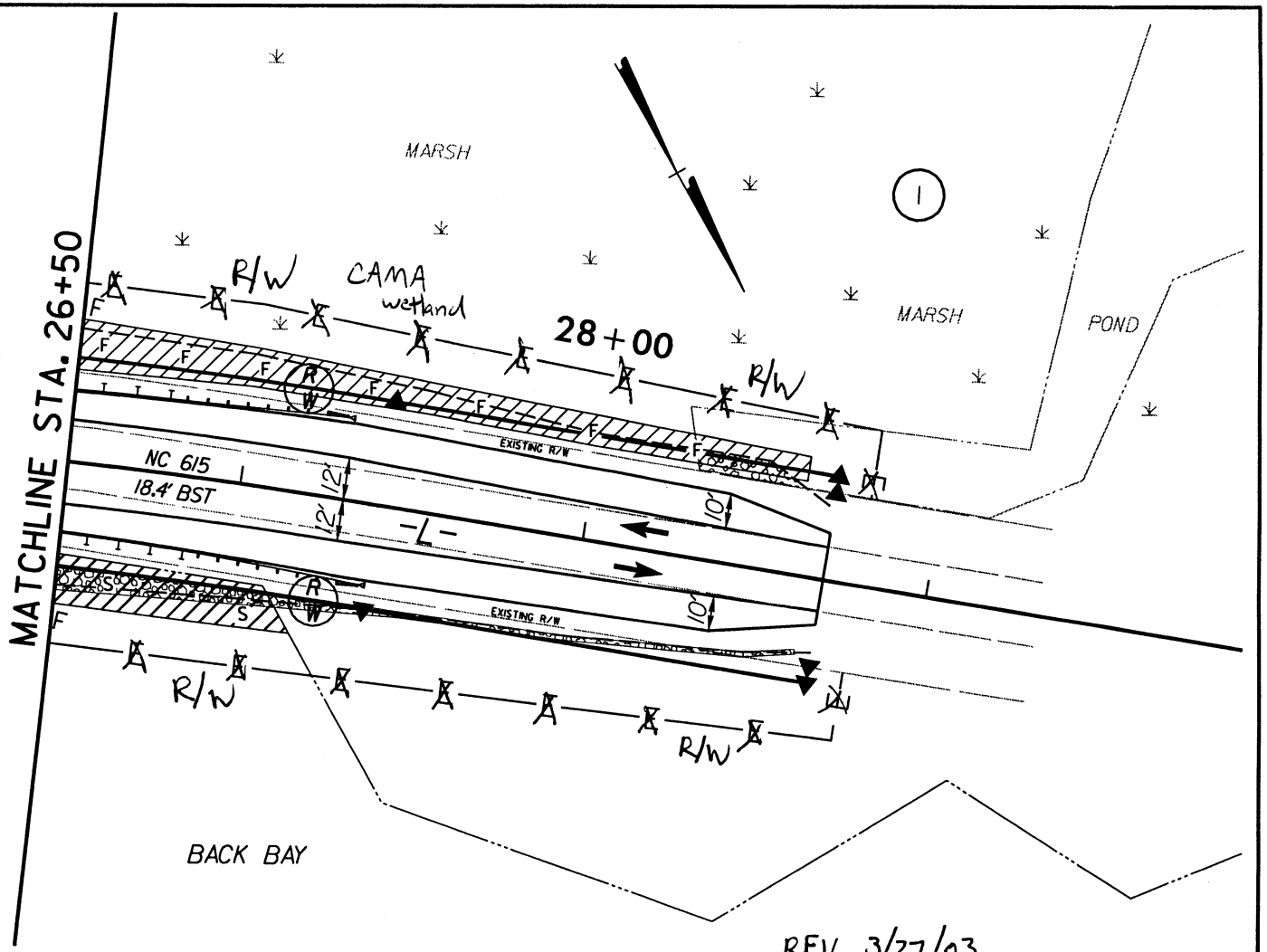
REV. 3/27/03

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF BRIDGE NO.7 OVER COREYS DITCH

SHEET 4 OF 9 1/18/02



REV. 3/27/03

PLAN VIEW
SITE 1

25 0 50

DENOTES FILL IN WETLANDS

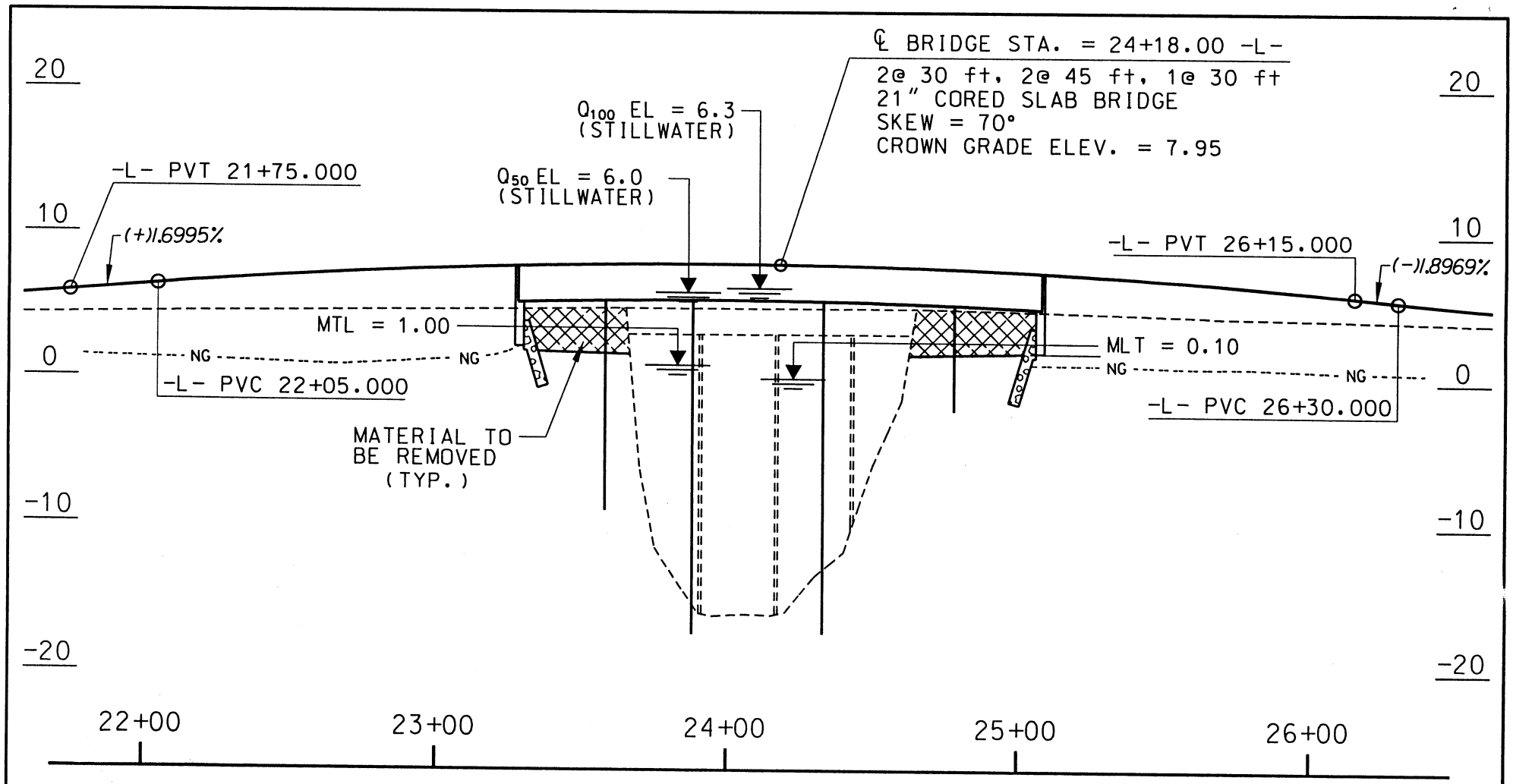
DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF BRIDGE NO.7 OVER COREYS DITCH

SHEET 5 OF 9 **1/18/02**



PROFILE
SITE 1

25 0 50 HORIZONTAL SCALE

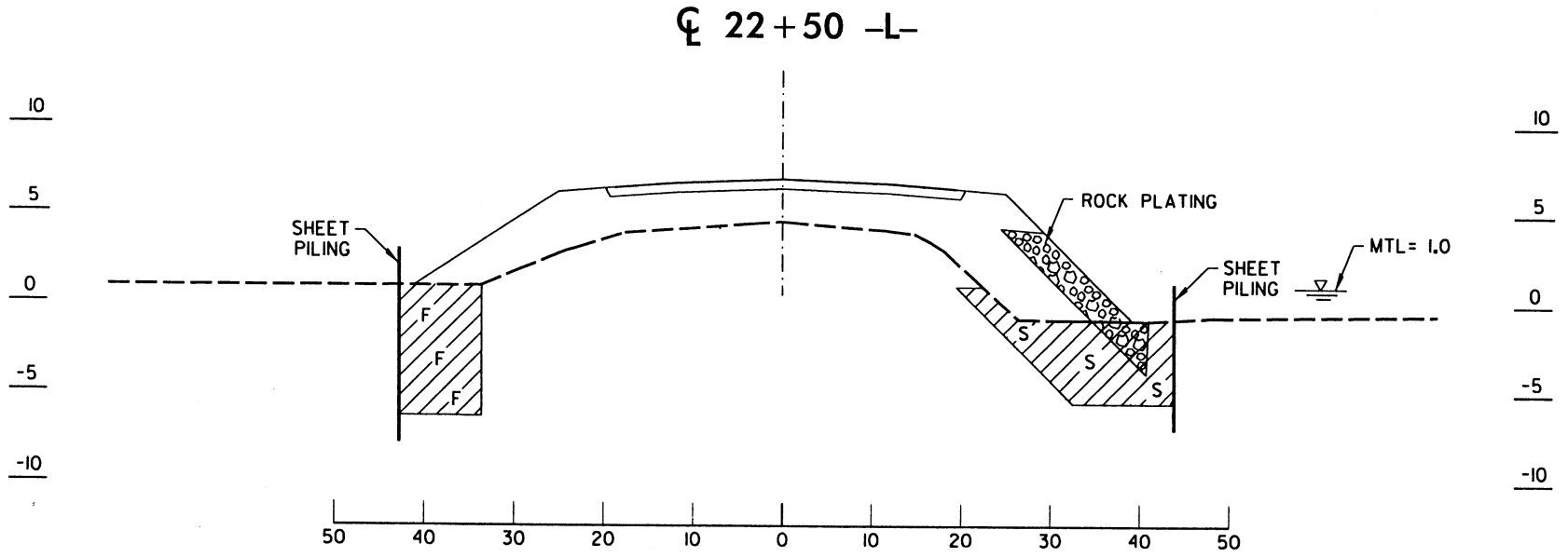
5 0 10 VERTICAL SCALE

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF
BRIDGE NO.7 OVER COREYS DITCH

SHEET 6 OF 9 **1/18/02**



SECTION A-A
SITE 1

10 0 20 HORIZONTAL SCALE

5 0 10 VERTICAL SCALE

DENOTES FILL IN WETLANDS

DENOTES FILL IN SURFACE WATERS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF BRIDGE NO.7 OVER COREYS DITCH

SHEET 7 OF 9 1/18/02

IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS						
Site No.	Station (From/To)	Structure Size	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Bay) (ac)	Temp. Fill In SW (ac)	Excavation In SW (ac)	Existing Channel Impacted (ft)	Relocated Channel (ft)	Enclosed Channel (ft)
1	-L- 20+50 Lt	BRIDGE	0.089 △										
	to 23+28												
1	-L- 25+08 Lt	BRIDGE	0.093 *										
	to 28+50												
1	-L- 20+50 Rt	BRIDGE						0.064					
	to 23+28												
1	-L- 25+08 Rt	BRIDGE						0.063					
	to 28+50												
	TOTALS:		0.182	0	0	0	0	0.127	0	0	0	0	0

△ 0.067 acres 404 Wetlands
0.022 acres CAMA Wetlands

* CAMA wetlands

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF
BRIDGE NO.7 OVER COREYS DITCH

SHEET 8 OF 9 1/18/02

Project No. 8.1040601 (B-3445)

Property Owner List

Site NO.	Parcel NO.	Name DB and Pg	Address
1	(1)	United States Department of the Interior Fish and Wildlife	P.O. BOX 39 Knotts Island, NC 27950

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CURRITUCK COUNTY

PROJECT: 8.1040601 (B-3445)
PROPOSED REPLACEMENT OF
BRIDGE NO.7 OVER COREYS DITCH

 8/24/01

NC 615
Currituck County
Bridge No. 7 over Corey's Ditch
Federal-Aid Project No. BRZ-615(1)
State Project 8.1040601
T.I.P. No. B-3445

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

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

7/17/00
Date

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

7/19/2000
Date

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

NC 615
Currituck County
Bridge No. 7 over Corey's Ditch
Federal-Aid Project No. BRZ-615(1)
State Project 8.1040601
T.I.P. No. B-3445

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

July 2000

Documentation Prepared by Carter & Burgess, Inc.

Wesley O. Stafford, P.E.
Senior Transportation Engineer

Thomas K. Goodwin, P.E.
Transportation Unit Manager

For the North Carolina Department of Transportation

Stacy B. Harris, P.E.
Project Manger
Consulting Engineering Unit

PROJECT COMMITMENTS

NC 615
Currituck County
Bridge No. 7 over Corey's Ditch
Federal-Aid Project No. BRZ-615(1)
State Project 8.1040601
T.I.P. No. B-3445

In addition to the standard Nationwide Permit #33 and #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Division

- In order to avoid negative impacts to spawning populations of fish species at this project site, no in-water work will be conducted between March 31 and September 30.
- NCDOT will implement Best Management Practices for Bridge Demolition and Removal.
- NCDOT will utilize the USFWS construction guidelines regarding manatee habitat.

NC 615
Currituck County
Bridge No. 7 over Corey's Ditch
Federal-Aid Project No. BRZ-615(1)
State Project 8.1040601
T.I.P. No. B-3445

INTRODUCTION: Bridge No. 7 is included in the 2000-2006 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 31.5 out of a possible 100 for a new structure. The bridge has an estimated remaining life of five (5) years. The bridge is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

NC 615 is classified as a Rural Minor Collector on the Statewide Functional Classification System. This section of NC 615 is a designated bicycle route, NC Bicycling Highway-North Line Trace, Map G-10. The speed limit along NC 615 is posted at 45 miles (72.5 kilometers) per hour.

Bridge No. 7 is located on NC 615 approximately 2.3 miles (3.7 kilometers) north of the junction of NC 615 with SR 1255. NC 615 provides the only roadway access between the state of Virginia and Knotts Island, a small community located on the southern end of the peninsula. Mackay Island Natural Wildlife Refuge borders the bridge to the south and Back Bay borders the bridge to the north.

Bridge No. 7 is a two-lane structure, built in 1936 (Figures 3 and 4), with timber caps and piles supporting a reinforced concrete slab on continuous I-beams. The bridge consists of four spans totaling 95 feet (29 meters) in length. The deck width is 25.2 feet (7.7 meters) with a clear roadway width of 22 feet (6.7 meters). A raised curb width of five inches (0.1 meters) is located at the edge of the 11-foot (3.4-meter) lane on both sides of the bridge. A concrete bridge rail runs along both sides of the bridge. The current posted weight limit is 15 tons (13.6 metric tons) for single vehicles and 22 tons (20 metric tons) for truck-tractors and semi-trailers.

In 1980, timber sidewalks, four feet (1.2 meters) wide with timber railings, were constructed outside the concrete bridge rail. The public uses the walkways primarily for fishing from the bridge. A fishing notice (for fishing in the Mackay Island National Wildlife Refuge), warning of the need for a permit, allowable limits and maximum fine, is posted at the northeast approach.

Near the bridge, NC 615 is a two-lane facility with 19 feet (5.7 meters) of pavement. The shoulders of the roadway, on the east and west sides of the bridge, are paved to accommodate parked vehicles near the bridge. Existing right of way is 50 feet (15 meters) wide with no control of access.

The bridge inspection report indicates a serious problem with erosion on the northern bank, which runs along an expanse of open water. Corey's Ditch, which flows under the bridge is tidal and is currently not navigational with a clearance of 0.5 feet (0.15 meters) under the bridge at high tide.

The eastbound approach to the bridge has a mild reverse curve. The westbound approach is tangent. The roadway grade on NC 615 is relatively flat on both sides of the bridge. The height of the bridge above the canal bed measured from the top of the rail is 16 feet (4.9 meters) with a canal depth of nine feet (2.7 meters).

The 1999 traffic volume was approximately 1,400 vehicles per day (vpd) on NC 615. The traffic volumes are expected to increase to 2,100 vpd by the year 2025. The projected volume includes one-percent truck-tractor semi-trailer (TTST) and two-percent dual-tired vehicles (Duals).

Multiple utility lines, both aerial and underground, parallel NC 615 along both sides of the bridge. Aerial cables include telephone and electrical power lines. A buried phone cable with conduit is attached to the structure on the north side.

During the period of January 1, 1995 to December 31, 1997, there were no accidents in the project area.

Four (4) school buses cross Bridge No. 7 four times daily, for a total of 16 school bus trips per day. Bridge No. 7 is also used for school-related activity trips and serves as the evacuation route for residents of Knotts Island and students at the elementary school.

III. ALTERNATIVES

A. Project Description

The proposed structure will provide a 24-foot (7.2-meter) travel way with six-foot (1.8 meter) shoulders for a clear roadway width of 36 feet (11 meters) (see Figure 2). A 7.5-foot (2.2-meter) wide walkway with a 54-inch (1.4-meter) high outside rail will be provided on each side of the bridge. A jersey type barrier, with a 22-inch (0.6 meter) two-bar metal rail mounted on top will separate the roadway and walkways. The total height of the inside railing will be 54-inches (1.4 meters) also to increase safety for pedestrians and accommodate bicycle traffic. The proposed roadway approaches consist of two, 12-foot (3.6-meter) lanes with eight-foot (2.4-meter) shoulders, including four feet (1.2 meters) full depth paved. The shoulders of the roadway, on the east and west sides of the bridge, beyond the guardrail, will be paved for 100 feet (30.5 meters) to accommodate vehicles parking near the bridge. Required right-of-way is 60 feet (18.2 meters) with additional temporary construction easements as required.

Based on a preliminary hydraulic analysis, the new structure is recommended to have a length of approximately 170 feet (51.8 meters). The elevation of the new structure will be approximately two feet (0.6 meters) higher than the existing structure. The length and opening size of the proposed bridge may be increased or decreased as necessary to accommodate peak flows as determined from a more detailed analysis during the final design phase of the project.

B. Reasonable and Feasible Alternatives

One (1) reasonable and feasible alternative was studied for this project (Figure 5).

Alternative A - consists of replacing the bridge at the existing location in stages. A portion of the existing bridge will be demolished while maintaining, one-lane, two-way traffic on the remaining portion. This will allow the new structure to be partially constructed. Once the new structure is sufficient to allow one-lane, two-way traffic, the remainder of the existing structure will be removed and the remainder of the new structure constructed. Temporary traffic control signals will be required on both approaches to the bridge during construction to control the one-lane, two-way traffic.

C. Alternatives Eliminated From Further Study

A "do-nothing" alternate would eventually necessitate closure of the bridge due to its poor condition. The "do-nothing" alternate is not prudent due to the essential traffic service provided by NC 615 to Knotts Island.

Alternative N - consists of replacing the bridge at the existing location with an on-site detour to the north. During construction, traffic would be maintained on a two-lane temporary detour just north of the existing bridge. The temporary detour would be approximately 700 feet (213.4 meters) in length and include a 24-foot (7.2-meter) wide, 95-foot (29-meter) long bridge. Embankment would be required in the waters of Back Bay. Once the new bridge and approaches are completed and opened to traffic, the detour would be removed and the area returned to its natural conditions. This alternative was eliminated from further consideration because of the high cost of embankment and bridge required for the detour of traffic.

Alternative S – consists of replacing the bridge at the existing location with an on-site detour to the south. During construction, traffic would be maintained on a two-lane temporary detour just south of the existing bridge. The temporary detour would be approximately 700 feet (213.4 meters) in length and include a 24-foot (7.2-meter) wide, 95-foot (29-meter) long bridge. Embankment would be required in the marsh area, which falls within the boundaries of the Mackay Island Wildlife Refuge. Once the new bridge and approaches are completed and opened to traffic, the detour would be removed and the area returned to its natural conditions. This alternative was eliminated from further consideration because of increased environmental impacts to the marsh area.

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

An off-site roadway detour is not available. The only other available access to Knotts Island is by ferry, which operates across the Currituck Sound between a dock at the south end of the island and the Town of Currituck.

D. Preferred Alternate

Bridge No. 7 will be replaced at its current location (Figure 5). Alternate A is recommended because it minimizes impacts to the environment. The Division 1 Engineer concurs with the selection of Alternative A as the Preferred Alternative. The North Carolina Department of Environment and Natural Resources (NCDENR), Division of Coastal Management, and the United States Department on the Interior, Fish and Wild Life Service, MacKay Island National Wildlife Refuge, concur with the selection of Alternative A as the Preferred also.

IV. ESTIMATED COST

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

	Alternate A (Preferred)
New Bridge Structure	$ 563,550.00
Bridge Removal	21,802.00
Roadway & Approaches	87,611.20
Mobilization &Miscellaneous	241,000.00
Engineering & Contingencies	136,036.80
Total Construction	$1,050,000.00
Right of Way	18,150.00
Total Costs	$1,068,150.00

The estimated cost of the project, shown in the 2000-2006 NCDOT Transportation Improvement Program (TIP) is $584,000. This cost was based on an estimated right of way cost of $44,000 and a construction cost of $540,000. The project is scheduled for right-of-way acquisition in federal fiscal year (FFY) 2001 and construction in FFY 2002. No relocations are anticipated as a result of this project.

V. NATURAL RESOURCES

A. Methodology

The site was visited on December 29, 1998. The study corridor was walked and visually surveyed for important features. For purposes of this evaluation, the study corridor was assumed to measure approximately 1,110 feet (338 meters) in length and 200 feet (61 meters) in width. Impact calculations for each alignment are based on a corridor width of 80 feet (24 meters) for each alternative. Special concerns evaluated in the field include potential habitat for protected species, wetlands, and water quality protection in Cory's Ditch and Back Bay.

Currituck County participates in the National Flood Insurance Program (NFIP). The bridge is located in a detailed study area and the base (100 year) flood elevation is 6 feet (1.8 meters). Since Bridge No. 7 crosses a canal with 100-year flood elevations that

are determined from coastal storm surge, no floodways are defined. Since the proposed bridge is an in-kind replacement, it is anticipated that this project will not have any adverse effect or impact on the existing floodplain or the adjacent properties and existing structures.

Materials and research data referenced in support of this investigation have been derived from a number of sources including: applicable U.S. Geological Survey (USGS) topographic mapping (Knott's Island, NC/VA and Creeds, NC), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping (7.5 minute quadrangles), Natural Resources Conservation Service (NRCS) soils mapping (USDA 1982), and recent aerial photography.

Plant community descriptions are based on a classification system utilized by North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in *Radford et al.* (1968). Jurisdictional areas were evaluated using the three-parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (COE) wetland delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Habitat used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Martof *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Hamel 1992, Rohde *et al.* 1994, Potter *et al.* 1980, Palmer and Braswell 1995, Hamel 1992, Robins *et al.* 1986, Parnell *et al.* 1991, Fussell 1994, Wiegert and Freeman 1990, Linzey 1998, Gosner 1978, and Odum *et al.* 1984). Water quality information for area streams and tributaries was derived from available sources (DWQ 1997, DWQ 1998). Quantitative sampling was not undertaken to support existing data.

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

B. Physiology and Soils

The study corridor is located in the Outer Coastal Plain or Tidewater physiographic province of North Carolina. Regional topography is generally flat, and consists primarily of emergent shrub/marsh grass complex and scattered mixed forest transected by natural streams and man-made canals. The landscape elevation does not exceed 5 feet (1.5 meters) National Geodetic Vertical Datum (NGVD) within 1 mile (1.6 kilometers) of the study corridor. The highest elevation within the study corridor is approximately 3 feet (0.9 meters) NGVD at the road facility surface (Knott's Island, NC/VA 7.5-minute quadrangle).

The entire study corridor is mapped as Currituck mucky peat (*Terric Medisaprists*). This soil series is listed as hydric within Currituck County (NRCS 1996). Currituck mucky peat is characterized as a very poorly drained soil with moderate to moderately rapid permeability. Currituck soils are frequently flooded for very long periods and typically occur on broad, flat marshes along margins of the Currituck and Albemarle Sounds.

C. Water Resources

1. Stream Crossing

The study corridor is located within sub-basin 03-01-54 of the Pasquotank River Basin (DEM 1997). This area is part of USGS accounting unit 03010205 of the South Atlantic-Gulf Region. Corey's Ditch has not been assigned a Stream Index Number by the N.C. Division of Water Quality (DWQ); however, Corey's Ditch is an extension of North Landing River, which has a Stream Index Number of 30-1-2 (DWQ 1998). The bridge proposed for replacement crosses Corey's Ditch at its confluence with Back Bay approximately 1.1 miles (1.8 kilometers) north of its confluence with North Landing River. The hydrological source of water within Corey's Ditch and the adjacent marshes is a combination of 1) wind-blown tides moving between Back Bay and North Landing River; 2) inland runoff; and 3) direct precipitation. A result of the unpredictability of these hydrological forces is that project corridor marshes are characterized by irregular flooding.

2. Stream Characteristics

Corey's Ditch is a linear, man-made canal that connects the waters of Back Bay and North Landing River. The canal is approximately 105 feet (32 meters) wide and 4 feet (1.2 meters) deep. The canal is typically characterized by low-velocity flow over an unconsolidated substrate. Little or no rooted aquatic vegetation is apparent, nor is there evidence of accumulation of organic debris (wrack) in the canal. The banks of the canal and Back Bay support a complex of emergent brackish marsh grasses and scattered shrub vegetation. Corey's Ditch is approached by the highway causeway at right angles (on a northwest/southeast axis) and makes a perpendicular bridge crossing. During the field survey, water in Corey's Ditch was flowing at a moderate velocity from north to south. Water-column turbidity was high during the visit, possibly due to runoff from an extended rainfall event that had been in progress for several days prior to the visit.

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams within a basin. As a channeled extension of North Landing River, Corey's Ditch is assumed to have a best usage classification of **SC**, the same classification as North Landing River (DWQ 1998). The designation **SC** denotes tidal salt waters suitable for uses such as aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation refers to any activity in which bodily contact with water occurs on an infrequent or incidental basis (DWQ 1998).

No waters designated High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), or Water Supply II (**WS-II**) occur within one mile (1.6 kilometers) of the study corridor. No North Carolina Natural and Scenic Rivers or national Wild and Scenic Rivers are located within the vicinity of the project area.

The Division of Water Quality (DWQ) (previously known as the Division of Environmental Management [DEM], Water Quality Section) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project area is summarized in *Pasquotank River Basinwide*

Water Quality Management Plan (DWQ 1997). The proposed project area is located in Subbasin 54 of the Pasquotank River Basin. No major dischargers reside in this subbasin. Non-point source discharges in the vicinity of the project can be characterized as primarily agricultural runoff. Sediments and nutrients are a major problem associated with non-point source discharges and often result in fecal coliform, heavy metals, oil from roads, and increased nutrient levels in surface waters. Benthos samples collected within the basin have provided inconclusive water quality results because "saline conditions and natural swamp conditions (low flow and low dissolved oxygen) make an interpretation of benthic macro-invertebrate results difficult" (DWQ 1997). As a result of the difficulties inherent to the region in describing water quality through interpretation of benthos sampling, DWQ (1997) states that "water chemistry data in low flow-low dissolved oxygen conditions have been used to determine water quality." User-support information concerning water quality indicates that Corey's Ditch is **Support-Threatened** for its intended uses.

3. Anticipated Impacts

a. General Impacts

Alternate A will not result in the loss of open water habitat; however, short-term impacts to water quality, such as sedimentation and turbidity, can be anticipated from construction-related activities. The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures). These measures include: the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in the marsh and adjacent waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into the canal or bay by catch basins and roadside vegetation, as applicable.

The proposed bridge replacement will allow for continuation of present canal flows, thereby protecting system integrity. Long-term impacts to the canal and adjacent waters are expected to be negligible. In order to minimize impacts to water resources, the NCDOT Best Management Practices for Protection of Surface Waters (BMPs) will be strictly enforced during the entire life of the project.

b. Impacts Related to Bridge Demolition and Removal

Bridge No. 7 is located on NC 615 over a canal (Corey's Ditch) in Currituck County. The substructure consists of timber caps on timber piles. Bridge demolition calculations were completed for the project. It was determined that 56.8 cubic yards (43.4 cubic meters) of concrete fill material could potentially be dropped in the water during the removal of the existing structure. Corey's Ditch is classified as High Quality Water, this project fall into the Case 2 category as identified in NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR), where there is no work at all in the water during moratorium periods associated with fish migration, spawning, and where larval recruitment into nursery areas occurs (see project commitments).

D. Biotic Resources

1. Plant Communities

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

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

Species diversity is low in this community, and species are generally distributed in homogeneous bands or zones within the marsh. No single species dominates the marsh in the project corridor. Common grasses and herbs include black needlerush (*Juncus roemerianus*), salt grass (*Distichlis spicata*), giant cordgrass (*Spartina cynosuroides*), saltmarsh cordgrass (*S. patens*), narrow-leaved cat-tail (*Typha angustifolia*), giant plume grass (*Erianthus gigantea*), and common reed (*Phragmites communis*). Scattered shrubs include red maple (*Acer rubrum*), red mulberry (*Morus rubra*), wax myrtle (*Myrica cerifera*), and marsh mallow (*Hibiscus moscheutos*).

One species of seagrass was noted within Corey's Ditch, Eurasian water milfoil (*Myriophyllum heterophyllum*). Eurasian water milfoil is a common submersed rooted vascular (SRV) plant of this region that fluctuates annually in abundance and may form dense beds. The Back Bay shoreline appeared to be barren of SRVs, possibly due to periodic high-energy wave action. The abrasive action of sands and silts and water column turbidity resulting from erosion of the marsh face likely reduces habitat suitability for seagrasses within the project corridor.

Roadside/Disturbed Land - Roadside/disturbed land consists of paved highway and associated road shoulders. This community has established on fill material placed in the marsh to build a road causeway. The road shoulders support low herbs and grasses, which are maintained by regular mowing. Some stunted trees and shrubs have also established near the high tide line.

Invasive grasses and herbs dominate roadside/disturbed land. Common species include vasy grass (*Paspalum urvillei*), dandelion (*Taraxacum officinale*), foxtail grass (*Setaria geniculata*), spiny-leaved sow-thistle (*Sonchus asper*), seaside goldenrod (*Solidago sempervirens*), henbit (*Lamium amplexicaule*), Carolina cranesbill (*Geranium carolinianum*), clover (*Trifolium repens*), and vetch (*Vicia angustifolia*). Stunted trees and shrubs on road shoulder margins include: elderberry (*Sambucus canadensis*),

blackberry (*Rubus* sp.), swamp willow (*Salix caroliniana*), silverling (*Baccharis halimifolia*), and sweetgum (*Liquidambar styraciflula*).

The following table indicates the amount of each plant community present within an 80-foot (24-meter) corridor centered on the existing road facility.

Project Corridor Plant Community

Plant Community	Estimated Area Acres (hectares) Alternate A
Brackish Marsh Complex	0.75 (0.30)
Roadside/Disturbed Land	1.04 (0.42)
Total	1.79 (0.72)

From an ecological perspective, the impacts of bridge replacement in place are minimal relative to construction on new alignment. Similarly, impacts of replacement utilizing staged construction while maintaining traffic during construction are substantially less than replacement utilizing a detour.

Implementation of Alternate A will result in no new fragmentation of plant communities. Permanent impacts to plant communities as a result of reconstruction without a detour are restricted to narrow strips or roadside/disturbed land adjacent to the existing bridge and causeway approach segments. Approximately 58 percent of Alternate A community coverage is disturbed and maintained as such (roadside/disturbed land), while 42 percent of community coverage is in a natural state (brackish marsh complex and maritime forest).

2. Wildlife

Within the brackish marsh complex, only species utilizing the upper levels of marsh vegetation and air space over the marsh are considered primarily terrestrial. The road causeway provides a travel corridor for terrestrial mammals and reptiles to access marsh resources. Mammal signs (tracks, scat, road-kill, etc) were noted for several primarily-terrestrial species during this investigation. Evidence was found within the project corridor indicating presence of white tailed deer (*Odocoileus virginianus*), Virginia opossum (*Didelphis virginiana*), and raccoon (*Procyon lotor*). Other opportunistic and characteristic species expected to frequent project corridor habitats include southeastern shrew (*Sorex longirostris*), least shrew *(Cryptotis parva*), southern bog lemming (*Synaptomys cooperi*), marsh rabbit (*Sylvilagus palustris*), marsh rice rat *(Oryzomys palustris*), white footed mouse *(Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), and bobcat (*Felis rufus*).

Primarily terrestrial birds observed within or adjacent to the project corridor include: northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), marsh wren (*Cistothorus palustris*), cedar waxwing (*Bombycilla cedrorum*), yellow-rumped warbler (*D. coronata*), common yellowthroat (*Geothlypis trichas*), fish crow (*Corvus ossifragus*), red-winged blackbird (*Agelaius phoeniceus*), European starling (*Sternus vulgaris*), white-throated sparrow (*Zonothrichia leucophrys*), and savannah sparrow (*Passerculus sandwichensis*). Other species expected within

these habitats include: short-eared owl (*Asio flammeus*), gray catbird (*Dumetella carolinensis*), eastern kingbird (*Tyrannus tyrannus*), tree swallow (*Tachycineta bicolor*), barn swallow (*Hirundo rustica*), palm warbler (*Dendroica palmarum*), boat-tailed grackle (*Quiscalus major*), song sparrow (*Melospiza melodia*), and seaside sparrow (*Ammosdrammus maritimus*).

Due to the season in which the field work was conducted, no terrestrial reptile or amphibian species were observed within the study corridor; however, reptiles expected to occur within the project corridor include: yellow rat snake (Elaphe obsoleta quadrivittata) and rough green snake (Opheodrys aestivus). Most reptiles expected within the project corridor are aquatic oriented.

One primarily aquatic mammal was observed during field surveys, a road-kill muskrat (*Ondatra zibethicus*). Other mammals expected to utilize the brackish marshes and open water creeks and canals include: nutria (*Myocastor coypus*), mink *(Mustela vison*), and river otter *(Lutra canadensis*).

Aquatic-oriented birds observed during field surveys include: pied-billed grebe (*Podilymbus podiceps*), great blue heron (*Ardea herodias*), great egret (*Casmerodius albus*), glossy ibis (*Plegadis falcinellus*), Canada goose (*Branta canadensis*), wood duck (*Aix sponsa*), American black duck (*Anas rubripes*), mallard (*A. platyrhynchos*), gadwall (*A. strepera*), clapper rail (*Rallus longirostris*), common snipe (*Gallinago gallinago*), great black-backed gull (*Larus marinus*), ring-billed gull (*L. delawarensis*), Boneparte's gull (*L. philadelphia*), Forster's tern (*Sterna fosteri*), and belted kingfisher (*Ceryle alcyon*). The project corridor is located in an important component of the Atlantic Flyway, a traditional corridor used by migratory birds. During the spring, and especially during the fall, large numbers of migratory waterfowl, shorebirds, and passerines utilize this region as resting and feeding areas. The local marshes are also utilized by waterfowl as wintering areas. A short list of other species expected to utilize the local aquatic habitats include: double-crested cormorant (*Phalacrocorax auritus*), osprey (*Pandion haliaetus*), little blue heron (*Egretta caerulea*), snowy egret (*E. thula*), tricolor heron (*E. tricolor*), cattle egret (*Bubulcus ibis*), black-crowned night-heron (*Nycticorax nycticorax*), least bittern (*Ixobrychus exilis*), American coot (*Fulica americana*), laughing gull (*Larus atricilla*), and herring gull (*L. argentatus*).

Aquatic reptiles expected within the project corridor include: snapping turtle (*Chelydra serpentina*), diamondback terrapin (*Malaclemys terrapin*), eastern mud turtle (*Kinosternon subrubrum*), eastern mud snake (*Farancia abacura*), rainbow snake (*Farancia erytogramma*), red bellied water snake (*Nerodia erythrogaster*), brown water snake (*Nerodia taxispilota*), and eastern cottonmouth (*Agkistrodon piscivorus*).

Irregularly flooded, oligohaline waters and marshes are characterized by periodic fluctuations in water level, water chemistry (salinity, dissolved oxygen), and temperature. For this reason, aquatic species that occur in estuaries either migrate with the fluctuations or are adapted to the dynamic environment. Fishes expected in, and adjacent, to the project corridor include permanent resident estuarine or brackish species, migratory (anadromous, semi-anadromous, and catadromous) species, and larval forms of marine species, which utilize estuarine and brackish marshes as nurseries. No sampling was conducted in Corey's Ditch or adjacent waters. Fishes expected include: largemouth bass (*Micropterus salmoides*), bowfin (*Amia calva*),

American eel *(Anguilla rostrata)*, American shad *(Alosa sapidissima)*, blueback herring (*Alosa aestivalis*), Alewife (*Alosa pseudoharengus*), bay anchovy (*Anchoa mitchilli*), chain pickerel (*Esox niger*), banded killifish (*Fundulus diaphanus*), white perch (*Morone americana*), bluegill *(Lepoms machrochirus)*, black crappie (*Poxomis nigromaculatus*), tessellated darter *(Etheostoma olmstedi)*, and swamp darter (*Etheostoma forme*).

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

Due to the limited extent of infringement on natural communities, the proposed bridge replacement will not result in substantial loss or displacement of known terrestrial animal populations. No substantial habitat fragmentation is expected since most improvements will be restricted to roadside margins. Construction noise and associated disturbances will have short-term impacts on avifauna and migratory wildlife movement patterns; however, long-term impacts are expected to be negligible. Potential impacts to aquatic habitat will be avoided by bridging Corey's Ditch to maintain regular flow through the canal. In addition, temporary impacts to adjacent waters from increased sediment during construction will be minimized by the implementation of the NCDOT Best Management Practices for Protection of Surface Waters.

E. Special Topics

1. Waters of the United States

Surface waters within Corey's Ditch and adjacent Back Bay are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR 328.3). The waters of both the Bay and the canal exhibit characteristics of estuarine, sub-tidal, open-water systems that are permanently flooded, with unknown bottom compositions (E1OWL) (Cowardin *et al.* 1979).

Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) are defined by the presence of three criteria: hydric soils, hydrophytic vegetation, and wetland hydrology (DOA 1987). According to these criteria, the brackish marsh complex is subject to jurisdictional review. The brackish marsh complex exhibits characteristics of estuarine, intertidal, emergent persistent vegetation that is subject to irregular flooding (E2EMP) (Cowardin *et al.* 1979). Vegetative composition of this community was characterized in Section 3.1.

Jurisdictional totals for Alternate A were calculated from an 80-foot (24-meter) corridor centered on the existing road facility only. The area (in acres [hectares]) of vegetated wetlands (brackish marsh complex) and open waters and the linear distance (in feet [meters]) of open waters (Corey's Ditch) that occur within the 80-foot (24 meter) wide corridor are depicted in the following table:

Section 404 Jurisdictional Areas and Total Area in the Right-of-Way

Type of Jurisdictional Area In acres (hectares)	Jurisdictional Totals within Right-of-Way Alternate A
Brackish marsh complex	0.75 (0.30)
Open Water	0.40 (0.16)
Linear distance in ft (m)	81 (25)

Alternate A is expected to have no substantial impact on jurisdictional areas.

Both surface waters and wetlands are considered to be high quality habitat and have been designated as Areas of Environmental Concern (AECs) by the N.C. Coastal Resources Commission.

2. Permits

The proposed project will require a Coastal Area Management Act (CAMA) permit from the N.C. Division of Coastal Management (DCM) as a result of probable impacts to AECs. Preliminary comments in a letter from DCM to NCDOT dated November 29, 1999 stated that the bridge would qualify for a CAMA General Permit. However, the elevation of the bridge was revised and submitted for additional review by DCM. In a letter dated May 1, 2000 DCM states:

"The revised proposal to elevate the bridge structure an additional two feet will likely result in the proposed project no longer qualifying for CAMA General Permit 7H.2300 due to the following specific condition of this General permit: "Bridge replacement projects shall not increase the vertical clearance to more than five feet above normal water lever (NWL) or normal high water (NWH), or by vertical clearance to more than 25 percent of the existing clearance, whichever is greater. If the proposed project no longer qualifies for a CAMA General Permit, the DOT will be required to apply for a CAMA Major Permit." A copy of both DCM memorandums is included in the Appendix.

Areas of Environmental Concern anticipated to be impacted by this project include coastal wetlands, estuarine waters, public trust areas, and estuarine shorelines. The proposed project will also require notification to the U.S. Army Corps of Engineers (COE) concerning Section 404 permitting and consultation with the Division of Water Quality (DWQ) concerning Section 401 Water Quality Certification.

A Special Use Permit will be required from the Mackay Island National Wildlife Refuge for any work conducted outside the existing disturbed areas of the right of way (See USFWS letter of January 31, 2000).

There is potential that components of the bridge deck may be dropped into Waters of the United States during construction. Corey's Ditch is classified as High Quality Water, this project fall into the Case 2 category as identified in the BMP-BDR, where there is no work at all in the water during moratorium periods associated with fish migration,

spawning, and where larval recruitment into nursery areas occurs (see project commitments). NCDOT has coordinated with the various resources agencies during project development to ensure that concerns regarding bridge demolition have been addressed.

3. Mitigation

Compensatory mitigation is not anticipated to be required for this project due to the limited nature of jurisdictional impacts. However, a final determination regarding mitigation for impacts to waters of the U.S. rests with the Division of Coastal Management, with input from U.S. Army Corps of Engineers and Division of Water Quality.

F. Protected Species

1. Federal Protected Species

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

Federally Protected Species
For Currituck County

Common Name	Scientific Name	Status
Leatherback sea turtle	*Dermochelys coriacea*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Manatee	*Trichechus manatus*	E***
Loggerhead sea turtle	*Caretta caretta*	T
Piping plover	*Charadrius melodus*	T
Dismal Swamp southeastern shrew	*Sorex longirostris fisheri*	T
Seabeach amaranth	*Amaranthus pumilus*	T

North Carolina Status of Federal Species
Of Concern in Currituck County

Common Name	Scientific Name	Status
Virginia least trillium	*Trillium pusillum* var. *virginianum*	FSC
Black rail	*Laterallus jamaicensis*	FSC

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

T Denotes Threatened (a species that is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range)

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

*** Denotes Incidental/Migrant record – Species was observed outside of its normal range or habitat.

Leatherback sea turtle - The leatherback turtle is distinguished by its large size (46- to 70-inch [1.2 to 1.8 meter]) carapace, 650 to 1,500 pounds (294.8 to 680.4 kilograms) and a shell of soft, leathery skin. This species is primarily tropical in nature, but the range may extend to Nova Scotia and Newfoundland (Martof *et al.* 1980). The leatherback is a powerful swimmer, often seen far from land; however, it has been known to move into shallow bays, estuaries, and even river mouths. Most living specimens of leatherback sea turtle in North Carolina were observed off shore of ocean beaches. Very few individuals have been documented in sounds and estuaries. Preferred food of the leatherback is jellyfish, although the diet includes other sea animals and seaweed. The leatherback generally nests on sandy, tropical beaches.

BIOLOGICAL CONCLUSION: NO EFFECT

The leatherback is primarily an oceanic species. The project corridor is located approximately 58 miles (93.4 kilometers) from the nearest ocean inlet (Oregon Inlet) and up a convoluted series of sounds, bays, and canals, so there is a low probability of the leatherback traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor. Based on available information, this project will not result in an adverse impact to leatherback sea turtle.

Red-cockaded woodpecker - This small woodpecker (7 to 8.5 inches [18 to 22 cm] long) has a black head, prominent white cheek patch, and black-and-white barred back. Males often have red markings (cockades) behind the eye, but the cockades may be absent or difficult to see (Potter *et al.* 1980). Primary habitat consists of mature to over-mature southern pine forests dominated by loblolly (*Pinus taeda*), long-leaf (*P. palustris*), slash (*P. elliottii*), and pond (*P. serotina*) pines (Thompson and Baker 1971). Nest cavities are constructed in the heartwood of living pines (generally older than 70 years) that have been infected with red-heart disease. Nest cavity trees tend to occur in clusters, which are referred to as colonies (FWS 1985). The woodpecker drills holes into the bark around the cavity entrance, resulting in a shiny, resinous buildup around the entrance, which allows for easy detection of active nest trees. Pine flatwoods or pine-dominated savannas that have been maintained by frequent natural fires serve as ideal nesting and foraging sites for this woodpecker. Development of a thick understory may result in abandonment of cavity trees.

BIOLOGICAL CONCLUSION: NO EFFECT

The red-cockaded woodpecker requires pine forest for foraging and reproduction, and the project corridor contains no pine forest. NHP records have no documentation of red-cockaded woodpecker within 2.0 miles (3.2 kilometers) of

the project corridor. Based on available information, this project will not result in an adverse impact to red-cockaded woodpecker.

Manatee - The manatee is a large, gray or brown aquatic mammal that averages 10 to 13 feet (3 to 4 meters) in length and weighs up to 1,000 lbs (453.6 kilograms). This species occurs from Brazil to the West Indies to the east coast of the United States. During summer months manatees migrate from their Florida wintering areas as far north as coastal Virginia. These mammals inhabit warm waters, both fresh and salt, where their diet consists mostly of aquatic vegetation (Linzey 1998, Clark 1987, and Webster *et al.* 1985).

BIOLOGICAL CONCLUSION: NO EFFECT

The manatee rarely occurs in North Carolina inland waters; although there have been recent sightings in the Cape Fear and Neuse Rivers. NHP records have no documentation of manatee within 2.0 miles (3.2 Kilometers) of the project corridor. Based on available information, this project will not result in an adverse impact to the manatee. However, NCDOT will utilize the USFWS construction guidelines regarding manatee habitat.

Loggerhead sea turtle - The loggerhead sea turtle is the most common sea turtle on the coast of the Carolinas; this species occurs along the coast of North America from Texas to Nova Scotia. This species averages 31 to 47 inches (0.8 to 1.2 meters) in length and weighs from 170 to 500 lbs. (77.1 to 226.8 kilograms) (Martof *et al.* 1980). The loggerhead is basically temperate or subtropical in nature, and is primarily oceanic, but may also be found in estuarine bays, sounds, and large coastal rivers. This species occurs along the coast of North Carolina from late April to October. Preferred nesting habitat is ocean beaches, generally south of Cape Lookout. Traditionally, the largest concentration of loggerhead nests each year occurs on Smith Island located at the mouth of the Cape Fear River (Palmer and Braswell 1995).

BIOLOGICAL CONCLUSION: NO EFFECT

The loggerhead primarily occurs south of Cape Lookout in North Carolina; however, it may also wander into estuarine waters of coastal sounds such as the Pamlico. The project corridor is located approximately 58 miles (93.4 kilometers) from the nearest ocean inlet (Oregon Inlet) and up a convoluted series of sounds, bays, and canals so there is a low probability of the loggerhead traveling to the project corridor. NHP records have no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor. Based on available information, this project will not result in an adverse impact to loggerhead sea turtle.

Piping plover - Piping plovers are the smallest of the plovers found in the Carolinas, measuring only 6 to 8 inches (15 to 20 cm) in length (Golder and Parnell 1987). This species is characterized by a white head and back and white breast and belly, yellow legs, narrow black neck band, a narrow band above the eyes, and a black bill in the winter and yellow and black bill in the summer (Potter *et al.* 1980). These small Nearctic birds occur along beaches above the high tide line, sand flats at the ends of sand spits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, and

washover areas cut into or between dunes (Dyer *et al.* 1987). Nests most often occur on open, wide, sandy stretches of beach similar to those associated with inlets and capes.

BIOLOGICAL CONCLUSION: NO EFFECT

The piping plover occurs along beaches, sand flats, sand spits, and among dunes. No plover habitat exists within the project corridor. NHP records have no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor, and no piping plovers were observed during recent field surveys. Based on available information, this project will not result in an adverse impact to piping plover.

Dismal Swamp southeastern shrew - The southeastern shrew (*Sorex longirostris*) is a small, long-tailed shrew varying from 3.0 to 3.9 inches (7.6 to 9.9 centimeters) in length. This shrew has a brown back, pale underparts, buff-colored feet, and a shorter, blunter nose than many shrews. The species occurs throughout all portions of North and South Carolina. It has been accepted that two subspecies exist: the southeastern shrew (*S. l. longirostris*) and the Dismal Swamp southeastern shrew (*S. l. fisheri*). The literature describes the Dismal Swamp southeastern shrew as larger (3.7 to 3.9 inches [9.4 to 9.9 centimeters] in total length) than the southeastern shrew (3.0 to 3.1 inches [7.6 to 7.9 centimeters] in total length), and lists the range of the Dismal Swamp subspecies as confined to the Dismal Swamp region of northeastern North Carolina and southeastern Virginia (Fed. Reg. 7/16/85, Webster *et al.* 1985). Recent small-mammal surveys conducted south of the Albemarle Sound and Pamlico River in the Coastal Plain of North Carolina have provided specimens whose measurements have generated doubt as to the existence of separate subspecies. DNA analyses and further fieldwork are presently being conducted to clarify the classification status. Both subspecies prefer similar habitats, ranging in structure from old field to mature pine and hardwood forests. The Dismal Swamp subspecies is expected to be most abundant in moist successional habitats such as cane stands, regenerating clear cuts, and young forests (Fed. Reg. 7/16/85).

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for the Dismal Swamp southeastern shrew includes areas dominated by grasses and sedges near wet areas. This habitat occurs within the project corridor as a result of the presence of bridge access causeways. However, due to the routine maintenance of causeway shoulders and irregular water level fluctuations associated with the adjacent brackish marsh and open waters, it is highly unlikely that this shrew will occur within the project corridor. NHP records have no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor, and this species was not observed during surveys. Based on available information, this project will not result in an adverse impact to Dismal Swamp southeastern shrew.

Seabeach amaranth - Seabeach amaranth is a low-growing, fleshy, annual herb. The spatula-shaped leaves are pink and range from 0.5 to 1.0 inch (1.3 to 2.5 centimeters) in diameter. The leaves are clustered near the end of the stem and are notched apically. Flowers and fruits are inconspicuous and occur along the stem. This plant is primarily

found on foredunes and sand spits of Atlantic coast barrier beaches and inlets in areas where periodic overwash eliminates vegetative competition. Some of the largest remaining populations of this species occur in North Carolina (FWS 1993). This species has been documented on sand spits and ocean-fronting beaches of the Outer Banks.

BIOLOGICAL CONCLUSION: NO EFFECT

Seabeach amaranth prefers the open sand of foredunes, overwash fans, and inlet spits associated with ocean-fronting barrier islands. Potential habitat for seabeach amaranth does not exist within the project corridor. NHP records indicate no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor, and this species was not observed during field surveys. Based on available information, the proposed project will not result in an adverse impact to seabeach amaranth.

2. Federal Species of Concern

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Species designated as FSC are defined as taxa, which may or may not be listed in the future. These species were formally Candidate 2 (C2) species or species under consideration for listing as Endangered, Threatened, or Special Concern by the NCNHP database of rare plant and animal species and are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979. The following are listed as Federal Species of Concern in Currituck County.

Virginia least trillium - Virginia least trillium is a low, rhizomatous perennial with erect stems topped by three leaves and a solitary flower which grows 4 to 12 inches (10.2 to 30.5 centimeters) high. This variety of least trillium occurs in low, alluvial woodlands of tidewater Virginia (Kral 1983) and possibly northeastern North Carolina. The project corridor does not support appropriate habitat for this species. NHP records have no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor, and the species was not observed during site surveys. Based on available information, the proposed project will not adversely affect Virginia least trillium.

Black rail - The black rail is a rare, permanent resident of coastal North Carolina. This species requires dense, herbaceous cover characteristic of marshes and wet meadows where it nests and feeds on small invertebrates, seeds, and vegetation (Hamel 1992). The project corridor supports appropriate habitat for this species; however, NHP records have no documentation of this species within 2.0 miles (3.2 kilometers) of the project corridor. Due to the mobility of this species, and the extensive marshes in the project vicinity, the proposed project will not result in an adverse impact to black rail.

3. Rare and Unique Natural Areas

The proposed project is located along the northern margin of the Mackay Island National Wildlife Refuge, which comprises approximately 8,646 acres (3,499 hectares) in northeastern North Carolina and southeastern Virginia. This National Wildlife Refuge includes areas that are important to migratory waterfowl and sport fisheries resources.

The brackish marsh area in the vicinity of the bridge crossing has been designated a State Listed Identified Priority Area (IPA) by the NHP. This IPA is known as Great Marsh. An IPA receives no formal protection, but is recognized as a unique area and may come under protection in the future. Potential impacts due to the proposed project will be short-lived and localized to the immediate vicinity of the bridge, and are therefore not expected to adversely affect the Mackay Island National Wildlife Refuge or the Great Marsh IPA.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National 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

In a memorandum dated January 13, 1999, the State Historic Preservation Office (SHPO) recommended further review of Bridge No. 7 by NCDOT. All structures within the Area of Potential Effect (APE), including Bridge No. 7, were photographed. In a meeting between NCDOT and SHPO on August 6, 1999 all parties agreed that there are no historic architectural properties, including Bridge No. 7, that are listed in or eligible for listing in the National Register of Historic Places in the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated January 13, 1999 stated that "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." A copy of the SHPO memorandum is included in the Appendix.

VII. SECTION 4(f)

This project consists of the replacement of Bridge No. 7 over Corey's Ditch along NC 615 in Currituck County. Bridge No. 7 is located within the Mackay Island National Wildlife Refuge. This refuge was established on Knotts Island in 1960 as a winter haven for migratory birds. In the winter, the refuge focuses on marsh and water management to provide food for thousand of swans, ducks, and geese inhabitants. In the spring, the refuge opens its trail systems for visitors to view the huge variety of waterbirds and songbirds.

Since this project has minor involvement with a wildlife and waterfowl refuge and 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 wildlife and waterfowl refuge, have been fully evaluated: (a) do nothing; (2) improve the highway without using the adjacent wildlife and water refuge; and (3) build an improved facility on new location without using the wildlife and waterfowl refuge. These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the wildlife and waterfowl refuge has been incorporated into this project. The officials having jurisdiction over the Section 4(f) property have agreed, in writing, with the assessment of impacts resulting from the use of the Section 4(f) property and with the minimization measures to be provided.

Measures to minimize impacts include the following:

1. Replacement of fishing walks on each side of the bridge.
2. Replacement of the bridge in place with staged construction, maintaining traffic during construction within the existing right-of-way.
3. Bridge will be elevated and additional two feet from its existing elevation to allow for small boats to travel between Back Bay and Currituck Sound.

A programmatic Section 4(f) Evaluation for the impacts of the proposed project on the MacKay Island National Wildlife Refuge is presented in Section XI of this Categorical Exclusion.

VIII. ENVIRONMENTAL EFFECTS

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

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

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

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

The proposed project will require right of way acquisition and construction easements from the MacKay Island National Wildlife Refuge, which is protected under Section 4(f) of the Department of Transportation Act of 1966.

The project has been coordinated with the United States Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land

acquisition and construction projects. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

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

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning will be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and for air quality (1990 CAAA and NEPA) and no additional reports are required.

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

Currituck County participates in the National Flood Insurance Program (NFIP). The bridge is located in a detailed study area and the base (100 year) flood elevation is 6 feet (1.8 meters) (see Figure 6).

There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in a crossing of about the same magnitude. No embankment fills will be placed within the regulatory floodway. No floodway modifications are anticipated.

The project is not anticipated to increase the level or extent of upstream flood hazard.

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

IX. PUBLIC INVOLVEMENT

Throughout the project development process, citizen and agency participation was encouraged. A scoping letter was mailed in December 1998, to the Chair of the Currituck County Commission, the Currituck County Manager, the Superintendent of Currituck County schools, and to state and Federal environmental regulatory and resource agencies to request input into the project development process. A copy of the responses are included in the Appendix. No interagency meetings were held as part of this project.

A newsletter describing the history of the project, the project team and the progress of the study, as well as upcoming events was distributed in June 1999.

A Citizen's Informational Workshop was held on July 13, 1999 from 4:30 PM to 7:30 PM at the Knott's Island Elementary School, located at 413 Woodleigh Road in Knott's Island, N. C. Approximately 14 citizens attended this meeting. Several citizens requested that the bridge be raised 1.5 to 2 feet (0.5 to 0.6 meters) in order to allow small boats to pass under the structure. Another major area of concern raised by the

citizens present was pedestrian safety associated with the fishing currently allowed from the bridge. Comments received at the workshop requested consideration is given to eliminating fishing or including safety features in the design to protect pedestrians.

X. AGENCY COMMENTS

The following comments were received:

1. NC Department of Environment and Natural Resources – Division of Water Quality

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

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

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

   Reply –See Environmental Effects section (page 19) of this report.

2. County of Currituck County, County Manager –

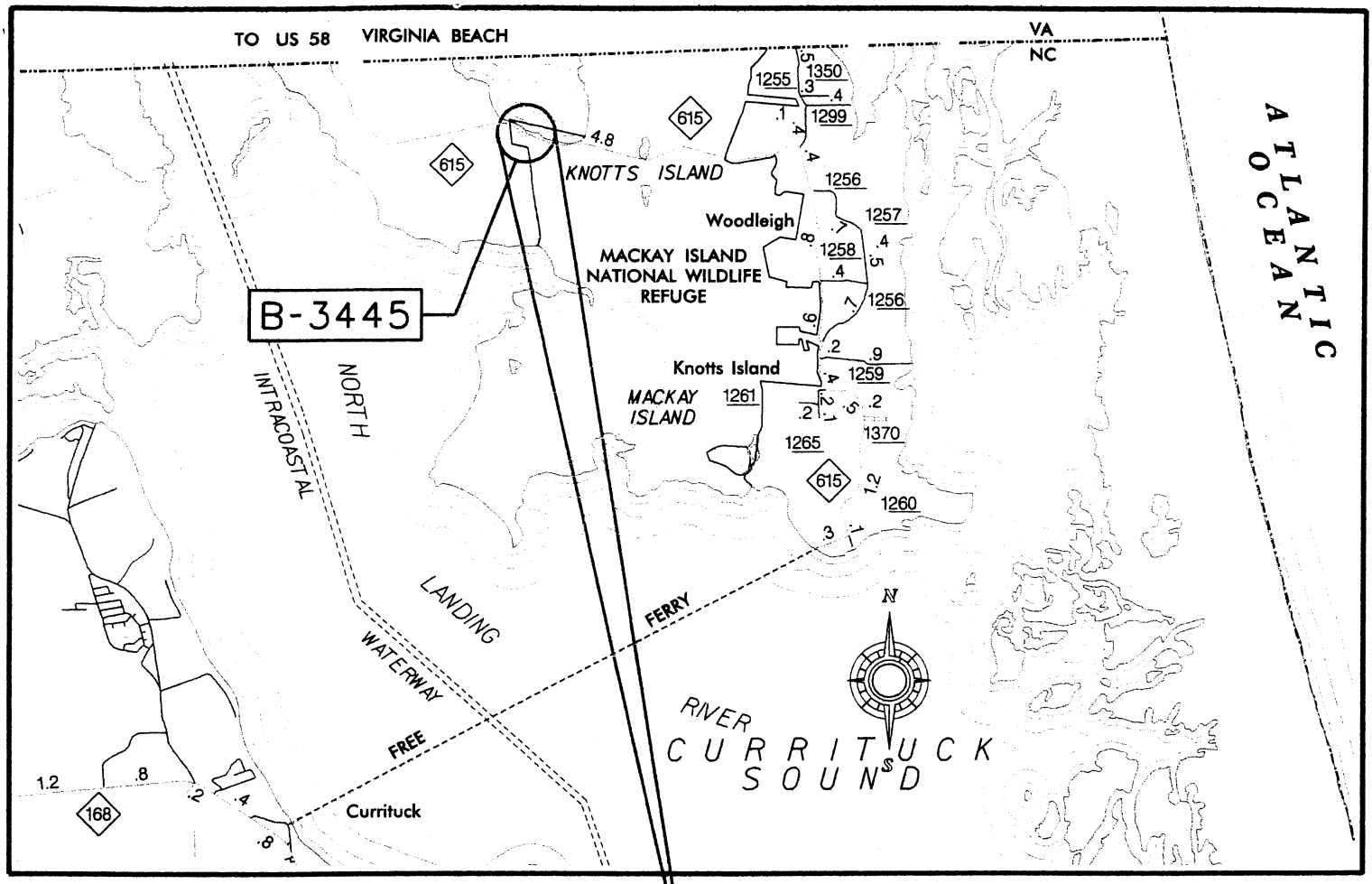
   Comment – "...comments from Knotts Island residents concerning a need to have the above bridge elevated when replaced to allow for small boats to travel between Back Bay and Currituck Sound.... assistance in elevating this bridge to meet the need of our citizens..."

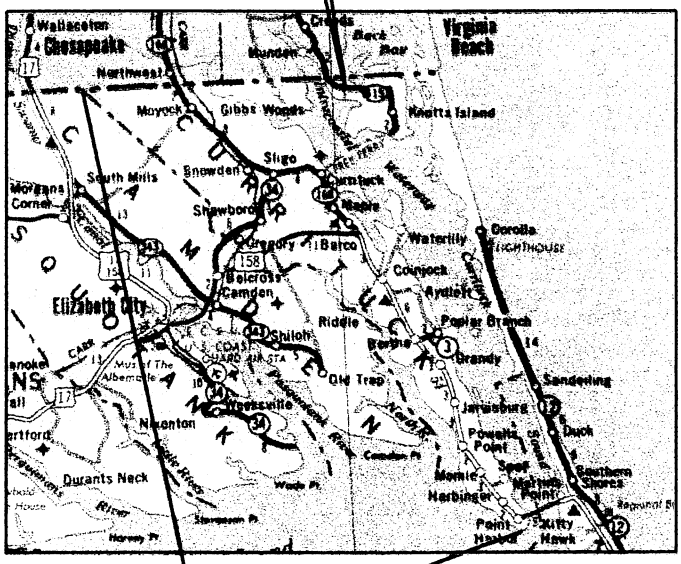
   Reply – *The Bridge will be elevated two (2) feet.*

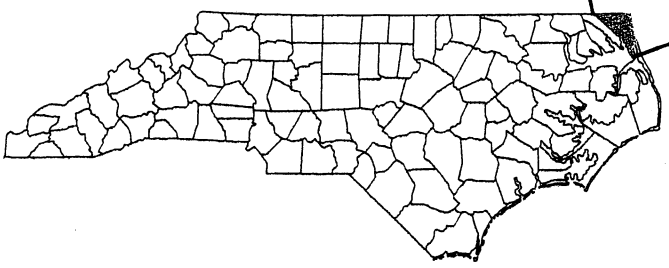
3. North Carolina Wildlife Resources Commission –

   Comment – "Bridge deck drains should not discharge directly into the stream."

   Reply – If possible, bridge deck drains will not discharge directly into the canal. This will be determined during the final design phase of the project.







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

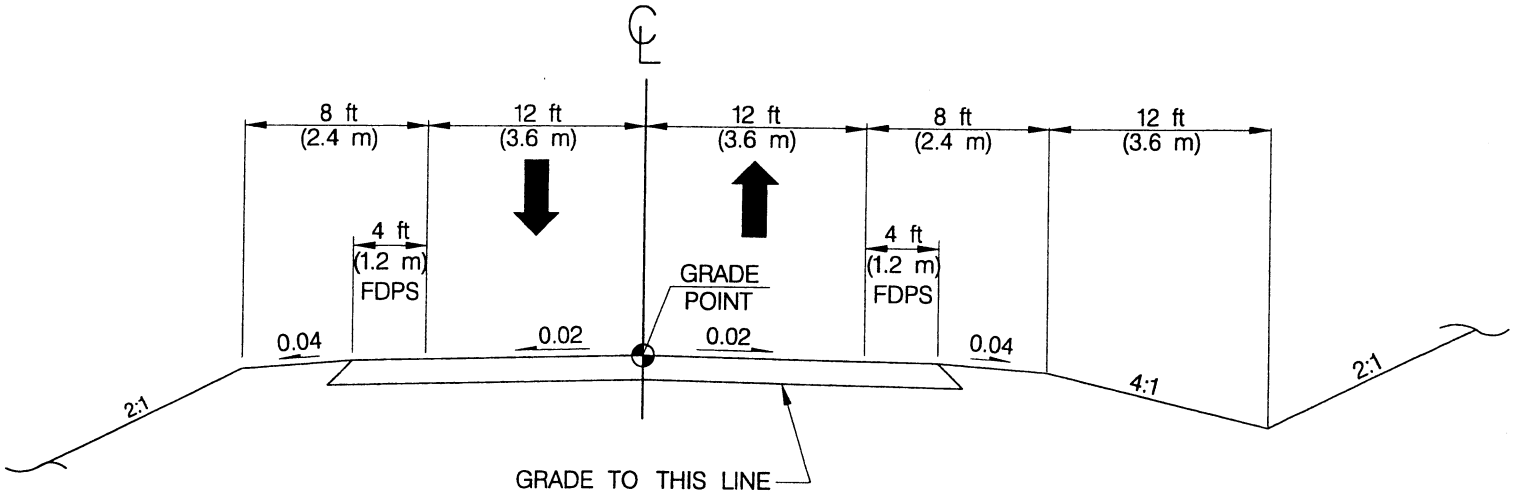
CURRITUCK COUNTY
BRIDGE NUMBER 7 ON NC 615
OVER NORTHERN CANAL BETWEEN
BACK BAY AND CURRITUCK SOUND
B-3445

FIGURE 1

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

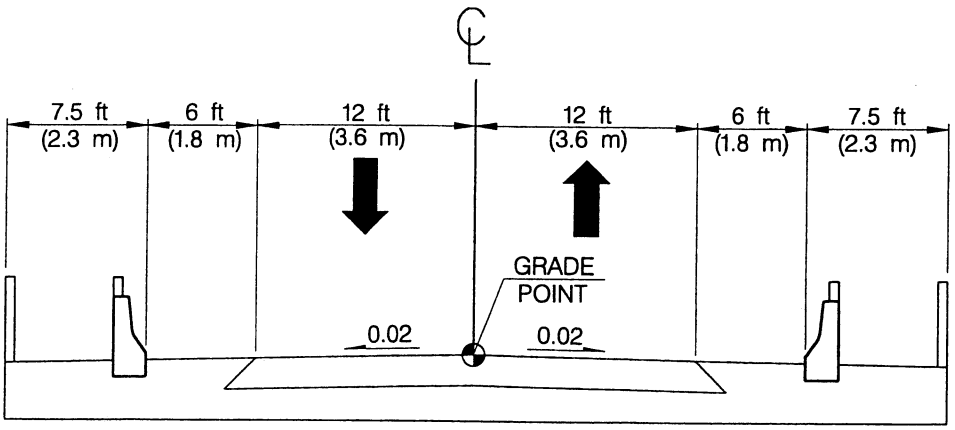
BRIDGE REPLACEMENT GROUP XIX

B–3445 (CURRITUCK COUNTY)
NC 615 OVER CREEK



TYPICAL SECTION FOR ROADWAY APPROACH

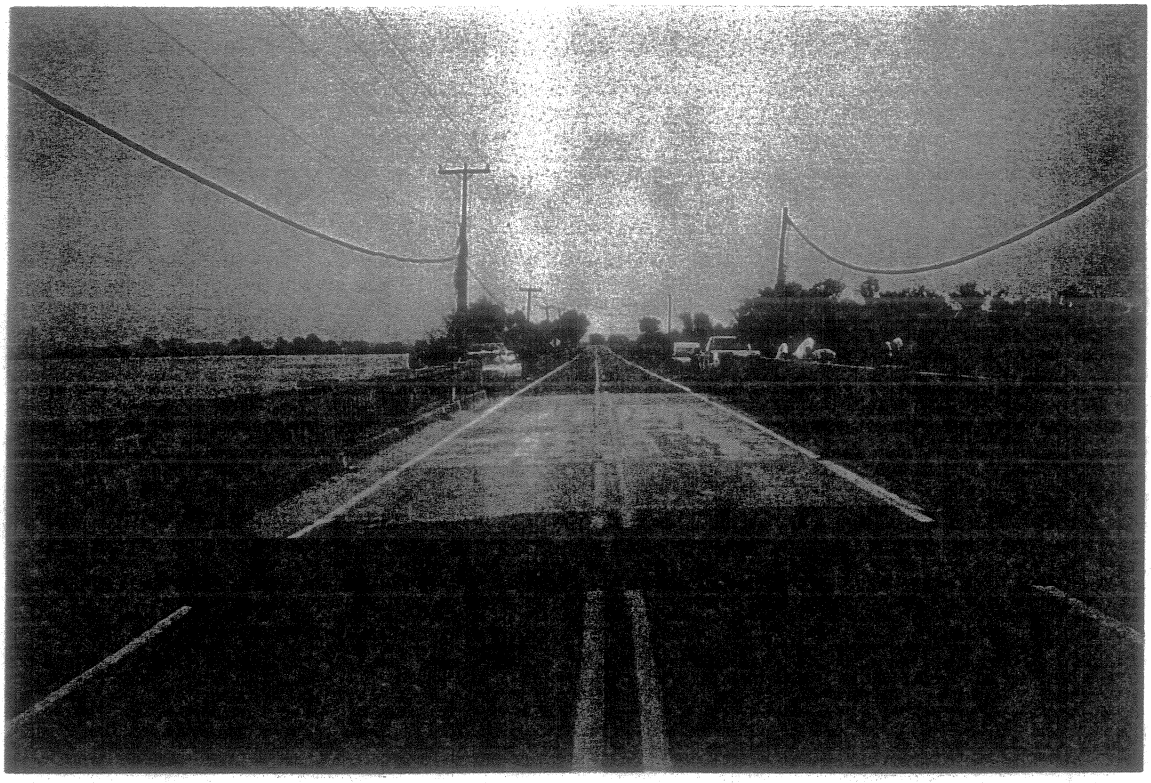
1999 ADT – 1,400 vpd (LOS B)
2002 ADT – 1,500 vpd (LOS B)
2025 ADT – 2,100 vpd (LOS B)



TYPICAL SECTION FOR PROPOSED STRUCTURE

FIGURE 2

B-3445
Looking East at West Approach



B-3445
Looking West at East Approach

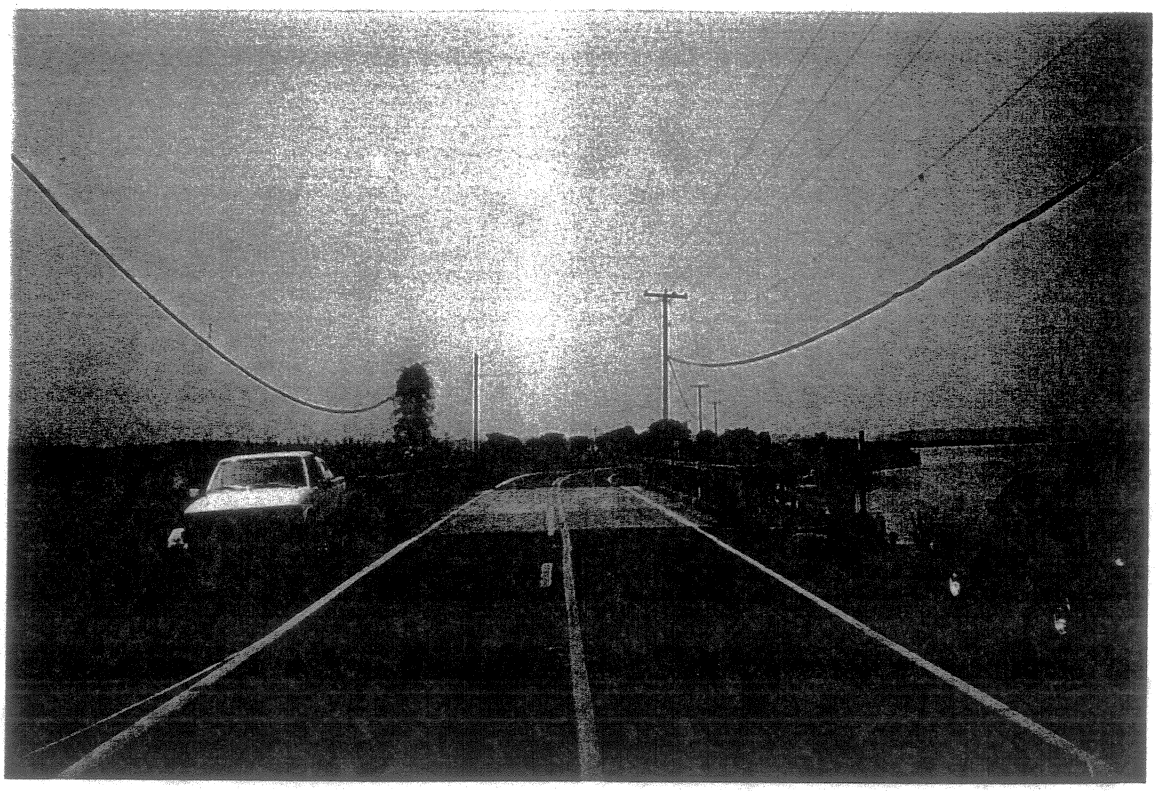
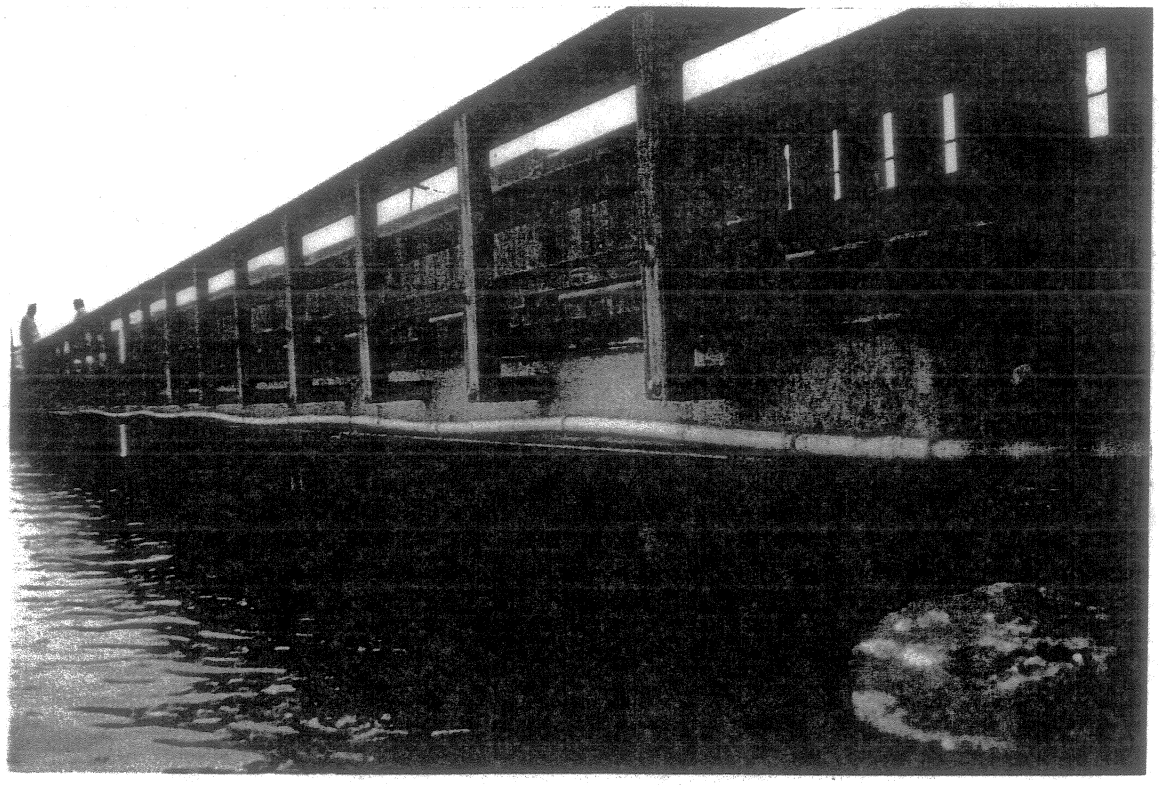


Figure 3

B-3445
Looking Southeast from Northwest Corner



B-3445
Looking Southwest from Northeast Corner

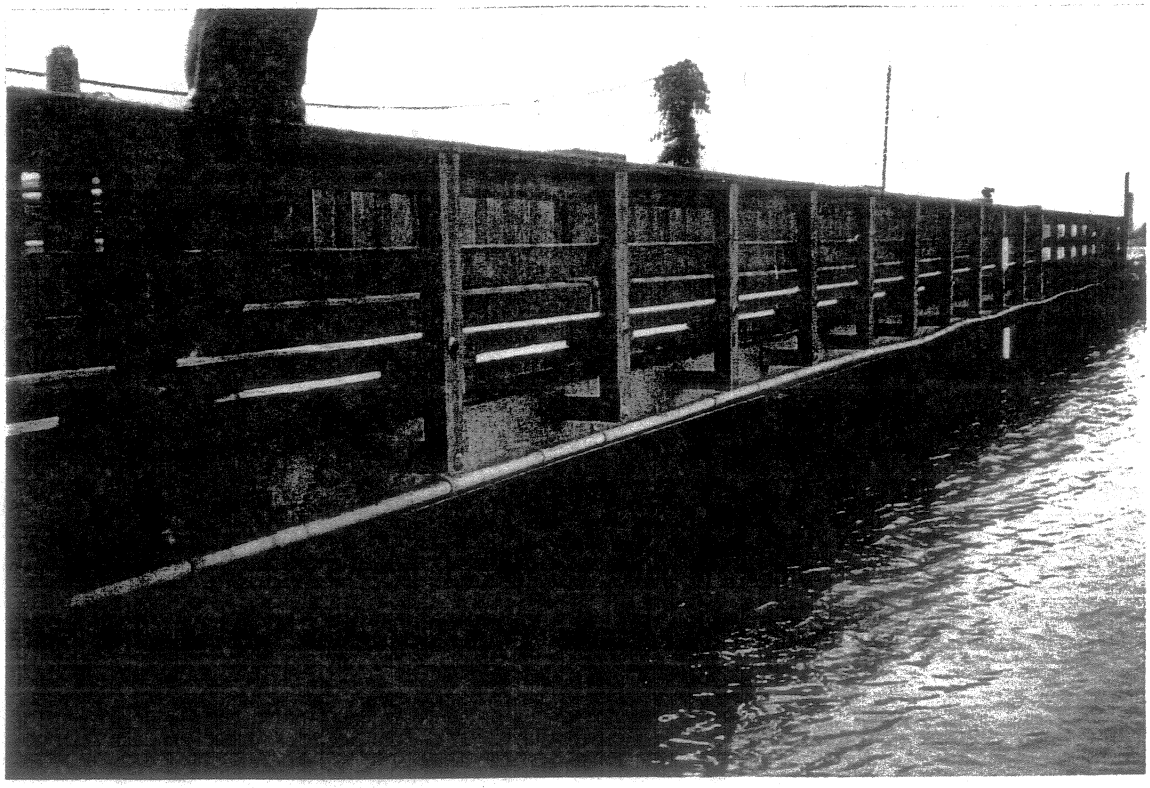


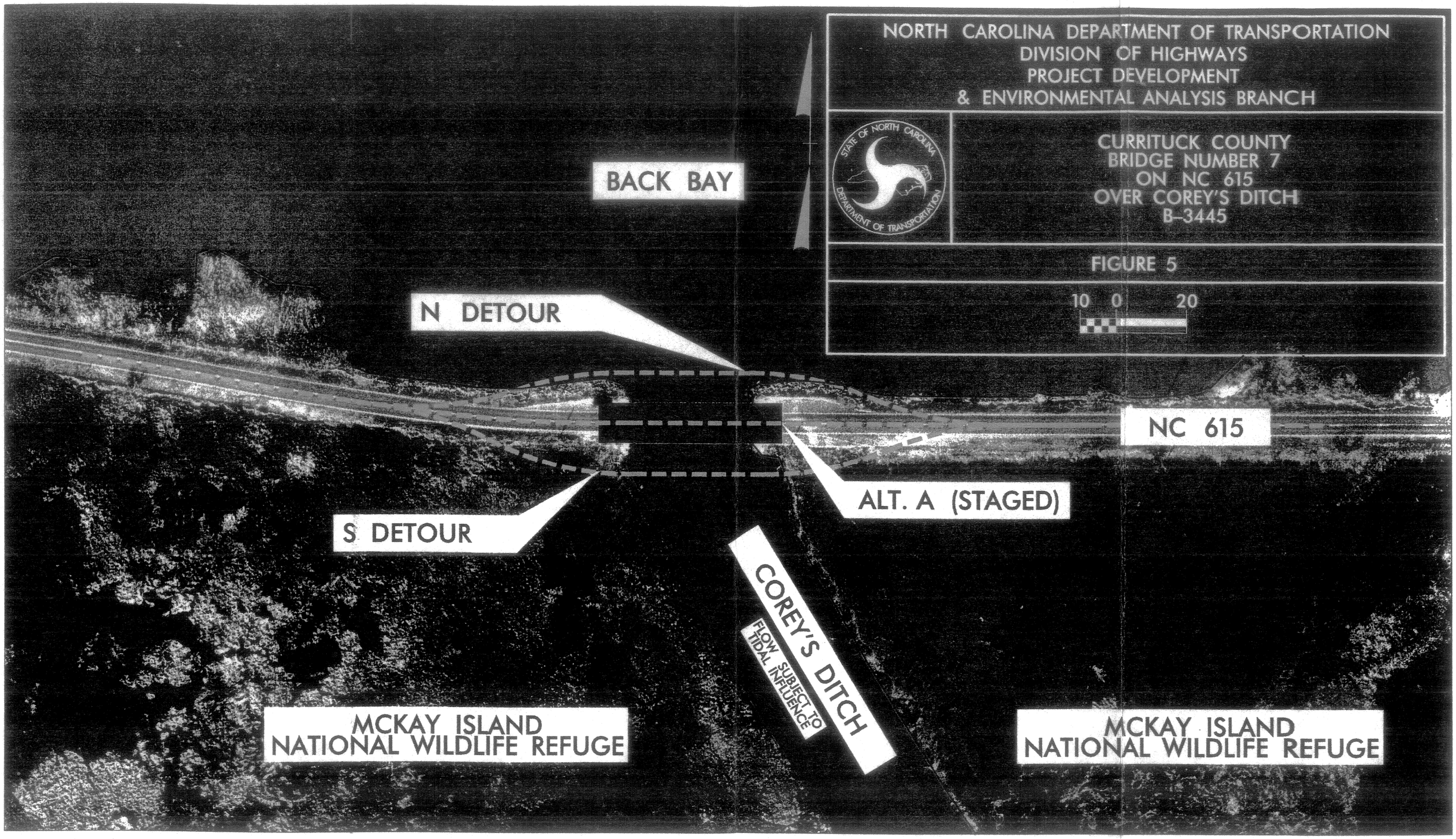
Figure 4

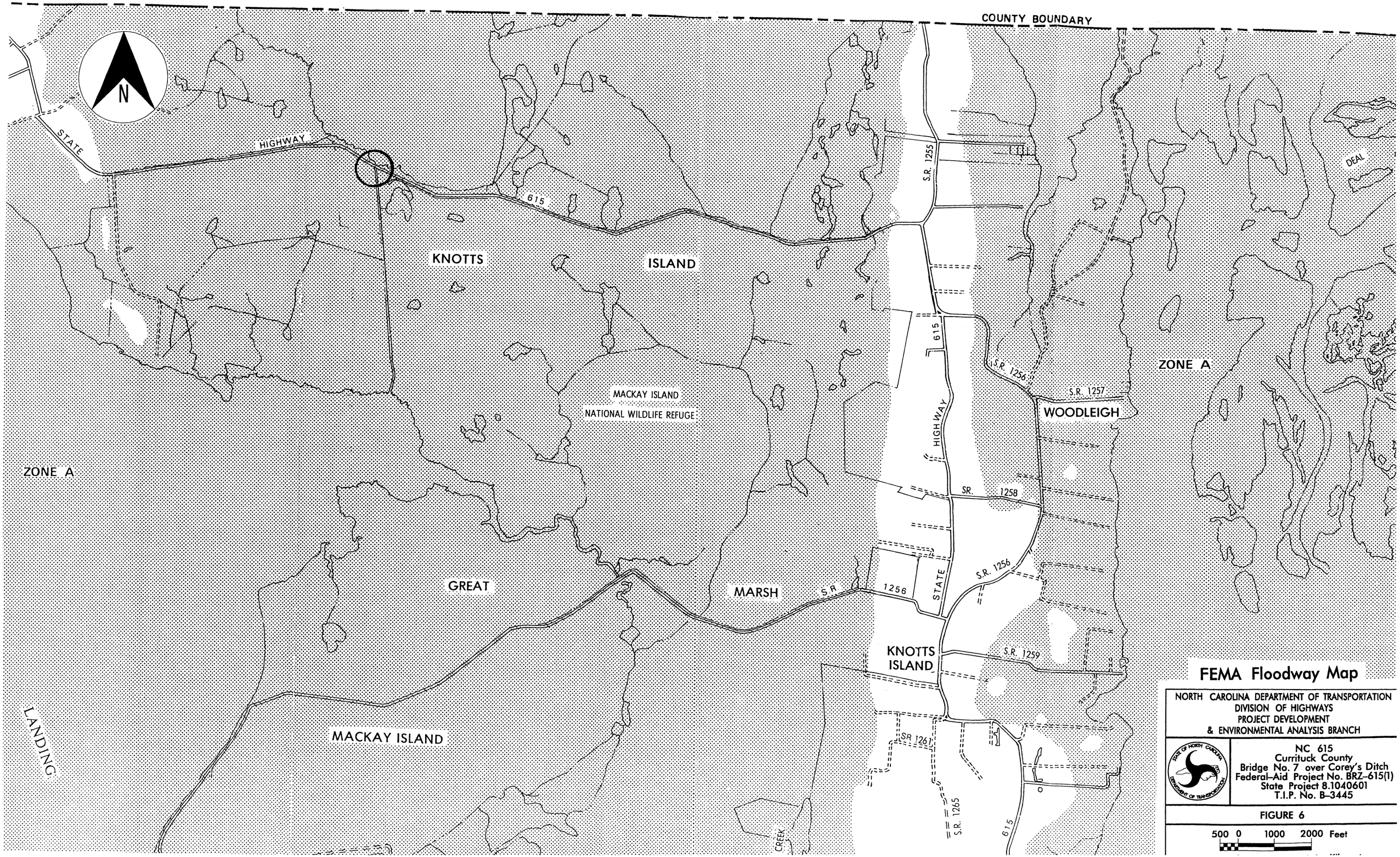
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT
& ENVIRONMENTAL ANALYSIS BRANCH

CURRITUCK COUNTY
BRIDGE NUMBER 7
ON NC 615
OVER COREY'S DITCH
B-3445

FIGURE 5

10 0 20





FEMA Floodway Map

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

NC 615
Currituck County
Bridge No. 7 over Corey's Ditch
Federal-Aid Project No. BRZ-615(1)
State Project 8.1040601
T.I.P. No. B-3445

FIGURE 6

500 0 1000 2000 Feet

XI. SECTION 4(f)

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4 (F) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS WITH MINOR INVOLVEMENT WITH
PUBLIC PARKS, RECREATION LANDS, AND WILDLIFE AND WATERFOWL REFUGES

F. A. Project BRZ-615(1)

State Project 8.1040601

T. I. P. No. B-3445

Description: NC 615, Replacement of Bridge No. 7 over Canal (CorysDitch) – Currituck County.

	Yes	No
1. Is the proposed project designed to improve the operational characteristics, safety and/or physical condition of existing highway facilities on essentially the same location?	X	
2. Is the project on new location?		X
3. Is the Section 4(f) land a publicly owned public park, recreation land, or wildlife and waterfowl refuge located adjacent to the existing highway?	X	
4. Does the amount and location of the land to be used impair the use of the remaining Section 4(f) land, in whole or in part, for its intended purpose? (See chart below)		X

Total size of section 4(f) site	*Maximum to be acquired*
Less than 10 acres	10 percent of site
10 acres-100 acres	1 acre
greater than 100 acres	1 percent of site

5. Do the proximity impacts of the project (e.g., noise, air and water pollution, wildlife and habitat effects, aesthetic values) on the remaining Section 4(f) land impair the use of such land for its intended purpose?		X
6. Do the officials having jurisdiction over the Section 4(f) land agree, in writing, with the assessment of the impacts of the proposed project on, and the proposed mitigation for, the Section 4(f) lands?	X	

	Yes	No
7. Does the project use land from a site purchased or improved with funds under the Land and Water Conservation Act (Section 6(f)), the Federal Aid in Fish Restoration Act (Dingell-Johnson Act), the Federal Aid in Wildlife Act (Pittman-Robertson Act), or similar laws, or are the lands otherwise encumbered with a Federal Interest (e.g., former Federal surplus property)?	X	
8. If the project involves lands described in Item 7 above, does the appropriate Federal Agency object to the land conversion or transfer?		X
9. Does the project require 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:

1. Do-nothing.	X	
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 costs, unusual problems, or impacts of extraordinary measure?	X	
2. Improvement of the highway without using the adjacent public park, recreational land, or wildlife waterfowl refuge?	X	
(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 community impact

or (ii) substantial increased costs (Alternative N)

or (iii) unique engineering, transportation, maintenance, or safety problems

or (iv) substantial social, environmental, or economic impacts (Alternative N)

or (v) a project which does not meet the need

	Yes	No
3. Build an improved facility on new location without using the public park, recreational land, or wildlife and waterfowl refuge. (This would be a localized "run around".)	X	☐

(a) An alternative 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 (Alternative N)

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

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

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

MINIMIZATION OF HARM

	Yes	No
1. The project includes all possible planning to minimize harm.	X	

2. Measures to minimize harm include the following: (Circle those which are appropriate)

   a. Replacement of lands used with lands of reasonably equivalent usefulness and location and of at least comparable value.

   b. Replacement of facilities impacted by the project including sidewalks, paths, benches, lights, tress and other facilities.

   c. Restoration and landscaping of disturbed areas.

   d. Incorporation of design features and habitat features, where necessary, to reduce or minimize impacts to the Section 4(f) property.

   e. Payment of the fair market value of the land and improvements taken or improvements to the remaining Section 4(f) site equal to the fair market value of the land and improvements taken.

   f. Additional or alternative mitigation measures as determined necessary based on consultation with the officials having jurisdiction over the parkland, recreation area, or wildlife on waterfowl refuge.

3. A discussion of specific mitigation measures is provided as follows:

The preferred alternative (Alternate A) replaces the bridge in its existing location using staged construction, which minimizes impacts to the environment.

COORDINATION

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

a.	Officials having jurisdiction over the Section 4(f) Land	Yes
b.	Local/State/Federal Agencies	Yes
c.	US Coast Guard (for bridges requiring permits)	Yes
d.	DOI, if Section 6(f) lands are involved	Yes

SUMMARY AND APPROVAL

The project meets all criterial 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 or prudent alternatives which avoid use of the Section 4(f) land.

The project included all possible planning to minimize harm, and there are assurances that the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed.

Approved:

7/17/00
Date

for L. Gail Grimes
Manager, Project Development and Environmental Analysis Branch
NCDOT

7/19/00
Date

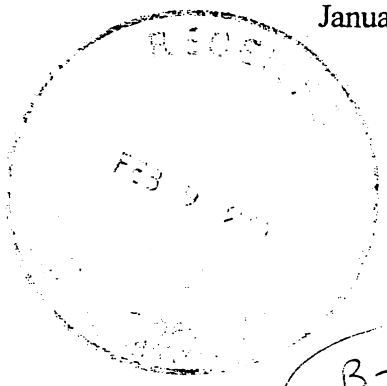
for John C. Wadsworth
Division Administration, FHWA

Harr.-

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mackay Island National Wildlife Refuge
P. O. Box 39
Knotts Island, NC 27950
(252) 429-3100

January 31, 2000



Mr. William D. Gilmore, PE, Manager
Project Development & Environmental Analysis Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

B-3445

Dear Mr. Gilmore:

This is a response to your request for comments on the replacement of bridge number 7 on NC 615 over Corey's Ditch in Currituck County. We are sorry it has taken us past your due date to respond. Internal coordination was necessary to insure an appropriate response. In addition, the bad weather postponed things for a few days.

This response is divided into two sections, one with comments directly related to the proposed bridge replacement and another with comments indirectly related to this specific project. As noted below, recommended measures in the second section are to be considered necessary mitigation measures if an alternative other than "A" is selected.

A. Comments Directly Related to the Proposed Project.

The refuge definitely prefers Alternative A, which would **not** require construction of any temporary on-site detours. Although it is not specified in the documentation sent to this office, it is my understanding that the new bridge will include railings for fishing access, parallel parking areas adjacent to the bridge in the shoulders, and that the bridge will be raised two feet. The refuge supports these actions and would object if the first two items were not included in the replacement project.

Should one of the alternatives other than A (i.e., Alternatives N or S) be selected, then those comments provided in the section below (i.e., B.) would apply directly to this proposed project. That is, the culverts we are recommending would be part of the mitigation measures needed for the project.

The following comments apply if either Alternative N or S is selected:

1. We need a better description of the disturbances required in Barleys Bay and the Great Marsh. For example, how much and what type of temporary fill is needed and what type of

"managed re-vegetation" is envisioned? Coordination with our Fisheries personnel may be necessary to ensure these disturbances do not have significant negative impacts on aquatic resources.

2. We would need assurance that any changes in habitats created by the alternatives will be mitigated. For example, what specific measures will be taken to ensure common reed does not become established in the impacted area(s)? What type of monitoring plan will be followed to guarantee the area(s) revert to a natural state after construction? What additional steps (e.g., common reed control) will be taken to assure this natural state is achieved if initial procedures fail?

3. Is an Environmental Assessment needed if either Alternative N or S is selected due to projected wetland and other impacts?

B. Comments Indirectly Related to the Proposed Project

Prior to the construction of the Marsh Causeway (i.e., NC 615 across the marsh from the mainland to Knotts Island), wind driven tides created a sheet flow of water across the Great Marsh. When the road was constructed, it restricted this surface flow of water. Since the construction of Corey's Ditch, the water is forced through this one opening in the roadway (i.e., where the bridge is located). This water flushes rapidly through this opening during northeasterlies and hurricanes. All this (including normal, wind driven tides) is widening Corey's Ditch and eroding away the support for the bridge. For example, during Hurricane Bonnie in 1998 a sink hole formed at the northeastern edge of the bridge. The water rushing through Corey's Ditch eroded the soil around the bridge foundation and the road fell into the hole. The ultimate results of this restriction of water flow to Corey's Ditch are the bridge needs constant repair and periodic replacement, the ditch is widening and fragmenting the Great Marsh and the hydrology of the marsh has changed and continues to change. Our suggestion for mitigating these effects is to place a series of culverts at strategic locations along the Marsh Causeway. This will allow water to flow under the road in several places relieving the pressure of the water being forced under the bridge and through Corey's Ditch. Erosion around the bridge and Corey's Ditch will lessen, reducing bridge maintenance and replacement costs and the rate in which Corey's Ditch is widening and fragmenting the marsh. It will also help restore marsh hydrology to a more natural state. Perhaps North Carolina Department of Transportation (NCDOT) experts have other suggestions for alleviating the hydrological and related problems noted above.

The same effect has occurred at another road on the refuge. Mackay Island Road restricts the sheet flow of water to a portion of the Great Marsh. The refuge has a project planned for the immediate future to place several culverts under this road to restore the hydrology to a more natural state.

If Alternative A is chosen, we recommend the NCDOT consider our recommendation as a separate project. If Alternative N or S is chosen, then this needs to be considered a mitigation

project for the disturbance which will occur to wetlands on the refuge. The refuge is willing to work with NCDOT in this effort.

In answer to your question about the source of funding to purchase the refuge, the majority was acquired via moneys made available by the Migratory Bird Treaty Act.

Please keep us up-to-date regarding decisions about the choice among alternatives and how and when the project will proceed. NCDOT will need to contact the refuge for a Special Use Permit a month or two before construction if any type of work is to be conducted outside the existing disturbed areas of the right-of-way (i.e., beyond the pavement and grassy road shoulders). Please contact Assistant Refuge Manager Bill Gates at (252) 439-3100 if you have any questions, need a Special Use permit and/or would like to discuss restoration of more natural water flow under NC 615 and other related improvements.

Sincerely,

Suzanne C. Baird
Refuge Manager

cc: T. McCartney

XII. APPENDIX

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

4405 Bland Rd.
Suite 205
Raleigh, NC 27609

(919) 873-2134

December 18, 1998

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

Dear Mr. Gilmore:

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

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

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

Sincerely,

Mary T. Kollstedt

Mary T. Kollstedt
State Conservationist

United States Department of the Interior

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

December 29, 1998

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

Attention: Ms. Stacy Baldwin, P.E.

Dear Mr. Gilmore:

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

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

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

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

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

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

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

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

This report provides scoping information and is provided in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). This report also serves as initial scoping comments to federal and state resource agencies for use in their permitting and/or certification processes for these projects.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Sincerely,

John M. Hefner
Ecological Services Supervisor

Enclosures

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

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

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

IN REPLY REFER TO

February 24, 1999

Planning Services Section

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

Dear Mr. Gilmore:

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

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

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

Sincerely,

W. Coleman Long
Chief, Technical Services Division

Enclosure

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2. WATERS AND WETLANDS: (Continued)

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

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

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

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

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

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

Harris

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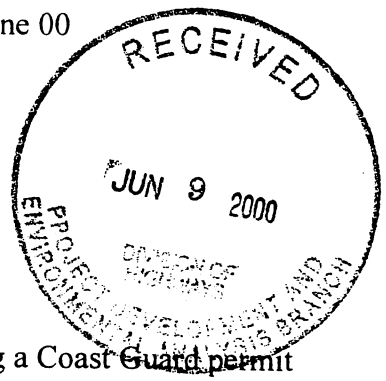


Mr. William D. Gilmore, P.E.
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611-5201

Dear Mr. Gilmore:

This is in response to your application letter dated June 3, 1999, requesting a Coast Guard permit for a project to replace the bridge (B-3445) over Corey's Ditch Canal between the Back Bay and Currituck Sound in Currituck County, North Carolina.

Since this stream is subject to tidal influence, it is considered legally navigable for Bridge Administration purposes. This stream at the crossing site also meets 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 this project as long as our office is notified when construction begins.

If you have any questions regarding this matter, please contact Mr. Terrance Knowles, at the phone number or address shown above.

Sincerely,

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

Copy: NOAA

Department of Environment
and Natural Resources
Division of Water Quality

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

NCDENR

January 15, 1999

MEMORANDUM

TO: William D. Gilmore Manager
Planning and Environmental Branch

FROM: Gloria Putnam, DWQ SEPA Coordinator

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

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

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

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

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

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

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

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

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

G. Wetland Impacts

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

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

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

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

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

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

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

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

mek:\12307; NCDOT Scoping

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

North Carolina Wildlife Resources Commission

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

MEMORANDUM

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

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: January 25, 1999

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

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

On bridge replacement projects of this scope our standard recommendations are as follows:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to

avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area that is reclaimed was previously wetlands, NCDOT should restore the area to wetlands. If successful, the site may be used as wetland mitigation for the subject project or other projects in the watershed.

Project specific comments:

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

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

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

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

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

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

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

We request that NCDOT routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. The NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks, reducing habitat fragmentation and vehicle related mortality at highway crossings.

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

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF COASTAL MANAGEMENT

JAMES B. HUNT JR.
GOVERNOR

WAYNE MCDEVITT
SECRETARY

DONNA D. MOFFITT
DIRECTOR

November 29, 1999

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

Dear Ms. Baldwin:

SUBJECT: Request for Comments on NC DOT Bridge Replacement Project B-3445, Replace Bridge No. 7 on NC 615 over the Corey's Ditch Canal between Back Bay and Currituck Sound

Regulatory staff at the Division of Coastal Management (DCM) have reviewed the Department of Transportation's request for comments on the project referenced above. We have considered the potential impact of the proposed project's alternatives upon Areas of Environmental Concern (AEC's) near the project, and we concur with the recommended Alternate A. Alternate A replaces the bridge with a two-lane structure in its approximate existing location using staged construction. Affected AEC's would be Estuarine Shorelines, Estuarine Waters, Public Trust Areas and possibly Coastal Wetlands.

Based on the NCDOT's current proposal to narrow their study to a single alternate, Alternate A, DCM staff agree that this project can proceed as a Categorical Exclusion. However, the letter DCM received on June 3, 1999 notes that DOT may consider an additional alternate based on a request from the County Manager for an alternate which would elevate the bridge to allow small boats to travel between Back Bay and Currituck Sound. If the DOT modifies its study to include alternates other than Alternate A, DCM will need to reconsider the potential impact of the proposed project's alternatives upon Areas of Environmental Concern near the project.

In accordance with the Coastal Area Management Act, this project will require a permit from the Division of Coastal Management prior to construction. A complete assessment of the permit requirements will be made when a CAMA permit application is received from the NC DOT. It is possible that the proposed bridge replacement project will qualify for a CAMA General Permit for replacement of existing bridges and culverts in estuarine waters, estuarine shorelines, public trust areas and coastal wetlands (7H .2300). This will be dependent upon the project meeting all of the conditions outlined in the General Permit. Some of the relevant conditions are as follows:

1638 MAIL SERVICE CENTER, RALEIGH, NC 27699-1638
2728 CAPITAL BLVD., RALEIGH, NC 27604
PHONE 919-733-2293 FAX 919-733-1495

- The total area of public trust area, estuarine waters, and wetlands to be excavated or filled shall not exceed 2,500 square feet except that the wetland component shall not exceed 500 square feet.
- The general permit shall not be applicable to proposed construction where DENR determines, after any necessary investigations, that the proposed activity would adversely affect areas which possess historic, cultural, scenic, conservation, fisheries, water quality or recreational values. DCM believes it is possible that Bridge No. 7 might be a historic structure. Review and approval from the NC Division of Archives & History will be required before any CAMA permit is issued. Review and approval for adverse affects to fisheries values will also be required from the NC Division of Marine Fisheries.
- Confirmation must be provided that the adjacent riparian property owners have been notified by certified mail of the proposed work.

During the permitting process, we may have additional comments on the project's environmental impacts, and may place conditions on the permit to minimize any environmental impacts. The concurrence in this letter shall not preclude us from requesting additional information throughout the permitting process, and following normal permitting procedures.

Please contact me at (919) 733-2293 x 238 or via e-mail at Cathy.Brittingham@ncmail.net if you have any questions or concerns.

Sincerely,

Cathy Brittingham

Cathy Brittingham
Transportation Project Coordinator

cc: Nancy Horne, Carter & Burgess, Inc.
Ed Harrell, NC Division of Coastal Management

NCDENR

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

JAMES B. HUNT JR.
GOVERNOR

BILL HOLMAN
SECRETARY

DONNA D. MOFFITT
DIRECTOR

May 1, 2000

Ms. Stacy Harris, P.E.
Project Development and Environmental Analysis Branch
State of North Carolina Department of Transportation
P.O. Box 25201
Raleigh, NC 27611-5201

Dear Ms. Harris:

SUBJECT: NC DOT proposal to replace Bridge No. 7 on NC 615 over the Corey's Ditch Canal between Back Bay and Currituck Sound, Currituck county. TIP No. B-3445.

Regulatory staff at the Division of Coastal Management (DCM) have reviewed the Department of Transportation's (DOT's) request for comments on the project referenced above in a letter dated 4/18/00.

DOT has revised Alternate A to elevate the bridge structure an additional two feet to allow small boats to travel between Back Bay and Currituck Sound. The alignment of the bridge will remain the same with slight increases to approach fill lengths and widths.

In accordance with the Coastal Area Management Act, this project will require a CAMA permit from DCM prior to construction. A complete assessment of the permit requirements will be made when a CAMA permit application is received from the NC DOT. During the permitting process, we may have additional comments on the project's environmental impacts, and may place conditions on the permit to minimize any environmental impacts.

Preliminary comments in a letter from DCM to DOT dated 11/29/99 stated that it is possible that the proposed bridge replacement project will qualify for a CAMA General Permit for replacement of existing bridges and culverts in estuarine waters, estuarine shorelines, public trust areas and coastal wetlands (7H .2300). However, the revised proposal to elevate the bridge structure an additional two feet will likely result in the proposed project no longer qualifying for CAMA General Permit 7H .2300 due to the following specific condition of this General Permit:

" Bridge replacement projects shall not increase the vertical clearance to more than five feet above normal water level (NWL) or normal high water (NHW), or by vertical clearance to more than 25 percent over the existing clearance, whichever is greater."

MAILING: 1638 MAIL SERVICE CENTER, RALEIGH, NORTH CAROLINA 27699-1638
PHYSICAL: 2728 CAPITAL BLVD., RALEIGH, NC 27604
PHONE: 919-733-2293 FAX: 919-733-1495

If the proposed project no longer qualifies for a CAMA General Permit, then DOT will be required to apply for a CAMA Major Permit. Please be aware that the processing time for a CAMA Major Permit is approximately 75 days, but can take longer depending on the complexity of the project, magnitude of environmental impacts, and other factors.

Please contact me at (919) 733-2293 x 238 or via e-mail at Cathy.Brittingham@ncmail.net if you have any questions or concerns.

Sincerely,

Cathy Brittingham
Transportation Project Coordinator

cc: Wes Stafford, Carter & Burgess, Inc.
Ed Harrell, NC Division of Coastal Management

Base

North Carolina Department of Cultural Resources

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

Division of Archives and History
Jeffrey J. Crow, Director

January 13, 1999

MEMORANDUM

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

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: Bridge Group XIX, Bridge 7 on NC 615 over canal, Currituck County, B-3445, ER 99-7924

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

We have conducted a search of our maps and files and have located the following structure of historical or architectural importance within the general area of the project:

Bridge #7. This bridge was built in 1936.

We look forward to meeting with an architectural historian from the North Carolina Department of Transportation to review the aerial and photographs of the project area so we can make our survey recommendation.

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

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763.

DB:slw

cc: N. Graf
B. Church
L. Novick

TIP # B-3445 Federal Aid # BRZ-615(1) County Currituck

CONCURRENCE FORM
FOR
PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

Brief Project Description
Replace Bridge #7 on NC 615 over Northern Canal between Back Bay & Currituck Sound

On Aug. 6, 1999, representatives of the

- ✓ North Carolina Department of Transportation (NCDOT)
- ✓ Federal Highway Administration (FHwA)
- ✓ North Carolina State Historic Preservation Office (SHPO)
- ____ Other: ____

reviewed the subject project at

- ____ A scoping meeting
- ✓ Historic architectural resources photograph review session/consultation
- ____ Other ____

All parties present agreed

- ____ there are no properties over fifty years old within the project's area of potential effect.
- ✓ there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- ✓ there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Bridge #7 are considered not eligible for the National Register and no further evaluation of them is necessary
- ✓ there are no National Register-listed properties within the project's area of potential effect.

Signed:

Mary Pope Furr — Representative, NCDOT — Aug 6 1999 — Date

Roy C. Shelton — FHwA, for the Division Administrator, or other Federal Agency — 8/11/99 — Date

[signature] — Representative, SHPO — August 6, 1999 — Date

W. Ray Brook, Deputy — State Historic Preservation Officer — 8/17/99 — Date

If a survey report is prepared, a final copy of this form and the attached list will be included.

COUNTY OF CURRITUCK

Post Office Box 39
Currituck, North Carolina 27929-0039
Telephone (252) 232-2075 / FAX (252) 232-3551
State Courier # 10-69-17

May 10, 1999

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

Re: Replacement of Bridge No. 7 on NC 615 over northern canal between Back Bay and Currituck Sound, Currituck County, TIP No. B-3445

Dear Mr. Gilmore:

The County has recently received several comments from Knotts Island residents concerning a need to have the above bridge elevated when replaced to allow for small boats to travel between Back Bay and Currituck Sound. Presently, the bridge is a barrier to small boats utilizing this waterway.

Any assistance you can provide in elevating this bridge to meet the needs of our citizens would be greatly appreciated. If I or the County staff can provide any assistance, please don't hesitate to contact me. Until then, I remain

Sincerely,

William S. Richardson
County Manager

WSR/mg
cc: Board of Commissioners
Charles H. Ward, Member, Board of Transportation
Don Conner, Division Engineer
Jerry Jennings, District Engineer

(CM:Ltr99:Gilmore/KI Bridge:DOT)

State of North Carolina
Department of Environment
and Natural Resources
Division of Marine Fisheries

James B. Hunt, Jr., Governor
Wayne McDevitt, Secretary
Preston P. Pate, Jr., Director

NCDENR
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

MEMORANDUM:

TO: William D. Gilmore, NCDOT Project Development and Environmental Analysis Branch

FROM: Sara E. Winslow, Biologist Supervisor SEW

SUBJECT: NCDOT Bridge Replacement - B-3345 Currituck County, Replace Bridge No. 7 on NC 615 over Corey's Creek

DATE: May 22, 2000

The North Carolina Division of Marine Fisheries reviewed the information provided relative to the Bridge No. 7 replacement . This agency approves of project as proposed, as long as BMP measures are enacted during demolition and construction.

P. O. Box 769, Morehead City, North Carolina 28557-0769 Telephone 252-726-7021 FAX 252-726-0254

CONTRACT: C200858 TIP PROJECT: B-3445

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3445	1	

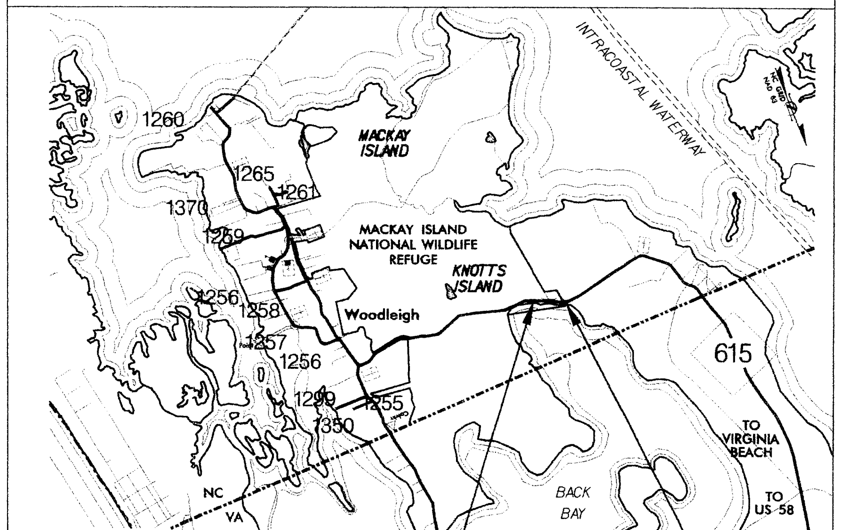
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33065.1.1	BRZ-615(1)	P.E., UTIL.
33065.2.3	BRZ-615(1)	R/W
33065.3.2	BRZ-615(1)	CONST.

CURRITUCK COUNTY

LOCATION: NC 615 - BRIDGE NO. 7 OVER COREYS DITCH
2.3 MILES NORTH OF SR 1255

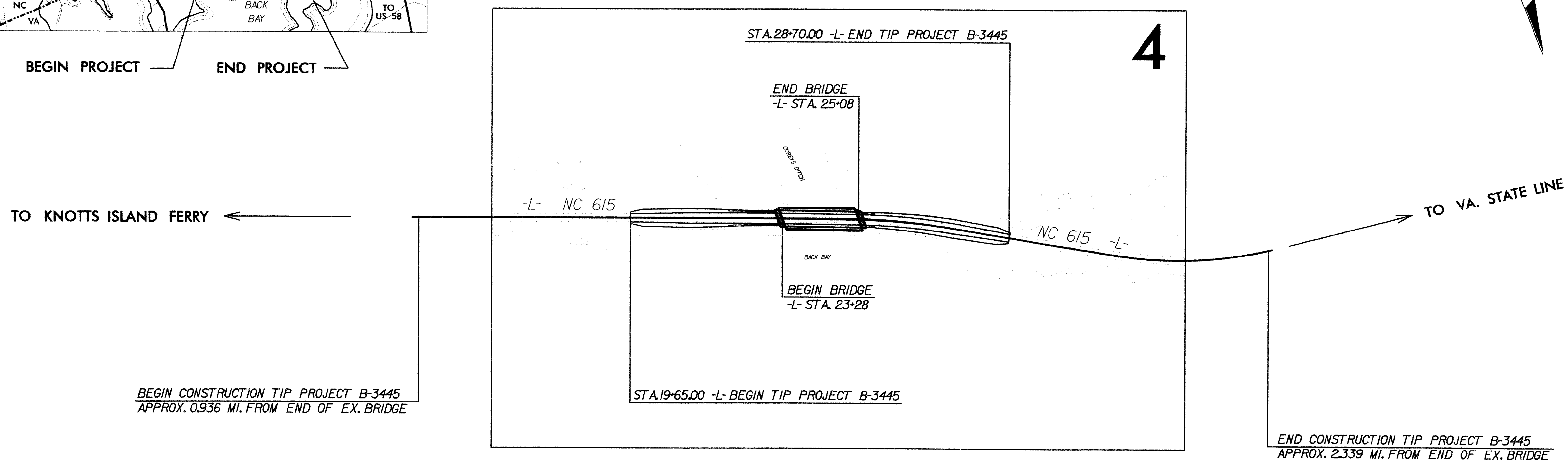
TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE, AND TEMPORARY SIGNALS

VICINITY MAP



BEGIN PROJECT — END PROJECT —

NC GRID NAD 83



NCDOT CONTACT: CATHY S. HOUSER, PE
PROJECT ENGINEER
DESIGN SERVICES

GRAPHIC SCALES

50 0 100
PLANS

50 0 100
PROFILE (HORIZONTAL)

10 0 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2002 = 1,500 VPD
ADT 2022 = 2,000 VPD
DHV = 10 %
D = 65 %
T = 3 % *
V = 50 MPH

* TTST 1 % DUAL 2 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3445 = 0.137 Mi.
LENGTH STRUCTURE TIP PROJECT B-3445 = 0.034 Mi.

TOTAL LENGTH OF TIP PROJECT B-3445 = 0.171 Mi.

PLANS PREPARED FOR NCDOT BY: Carter::Burgess
Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 31, 2001

LETTING DATE:
JUNE 15, 2004

C. WAYNE HYATT, JR., PE, PLS
PROJECT ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER, JR.
4-26-04 PE
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029352 ENGINEER C. WAYNE HYATT, JR.
04/06/04 PE
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER PE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

B-3445	1-A

Carter::Burgess
Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

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 — 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 — S
- Fiber Optic Splice Box — F
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS TS

- Recorded Water Line — W W
- Designated Water Line (S.U.E.*) — W W
- Sanitary Sewer — SS SS
- Recorded Sanitary Sewer Force Main — FSS FSS
- Designated Sanitary Sewer Force Main(S.U.E.*) — FSS FSS
- Recorded Gas Line — G G
- Designated Gas Line (S.U.E.*) — G G
- Storm Sewer — S S
- Recorded Power Line — P P
- Designated Power Line (S.U.E.*) — P P
- Recorded Telephone Cable — T T
- Designated Telephone Cable (S.U.E.*) — T T
- Recorded U/G Telephone Conduit — TC TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC TC
- Unknown Utility (S.U.E.*) — ?UTL ?UTL
- Recorded Television Cable — TV TV
- Designated Television Cable (S.U.E.*) — TV TV
- Recorded Fiber Optics Cable — FO FO
- Designated Fiber Optics Cable (S.U.E.*) — FO 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 02/25/97

PROJECT REFERENCE NO.	SHEET NO.
B-3445	2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

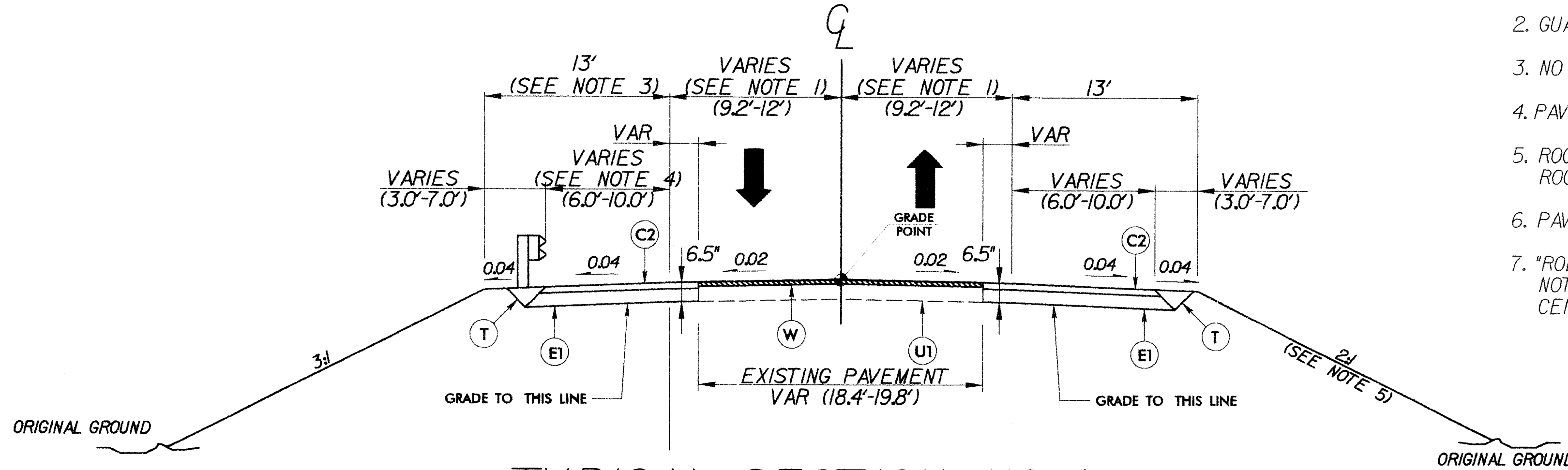
NORTH CAROLINA PROFESSIONAL SEAL 029352 ENGINEER C. WAYNE HYATT, JR. 04/12/04

Carter::Burgess

Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

NOTES:

1. TRAVEL LANES ARE 12 FT FROM STA 21+05.00 TO STA 27+35.00
2. GUARDRAIL TO BE PLACED AS SHOWN IN PLAN VIEW
3. NO ADDITIONAL WIDENING REQUIRED FOR GUARDRAIL
4. PAVE TO FACE OF GUARDRAIL
5. ROCK PLATING TO BE PLACED AS SHOWN IN PLAN VIEW (SEE ROCK PLATING DETAIL SHEET 2A).
6. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
7. "ROLL-OVER" ALGEBRAIC DIFFERENCE IN RATES OF CROSS SLOPE NOT TO EXCEED 0.06. IF SUPERELEVATION IS REVOLVED ABOUT CENTERLINE OF PAVEMENT, SAME APPLIES.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:

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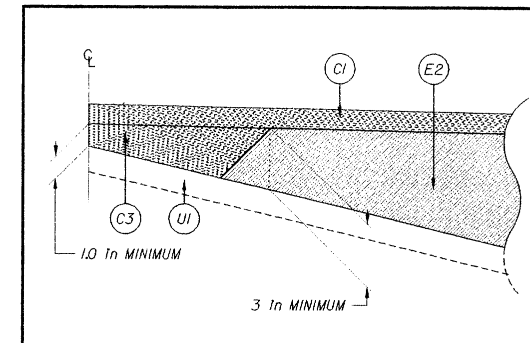
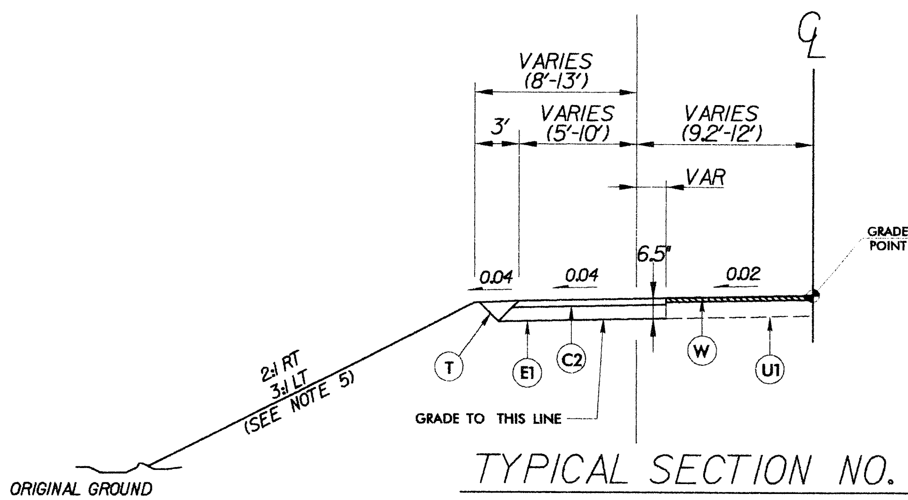
-L- STA 26+99.50 TO -L- STA 28+70.00



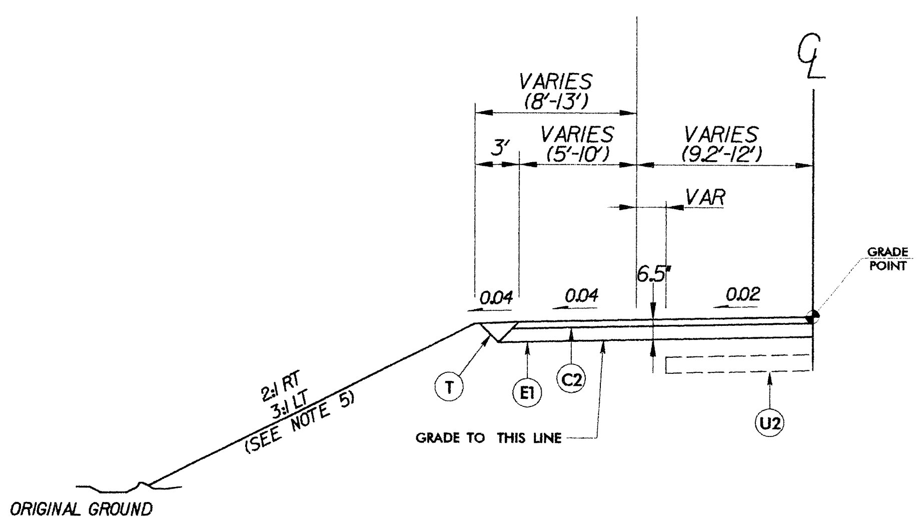
DETAIL "A" WEDGING DETAIL



TYPICAL SECTION NO. 1A

USE TYPICAL SECTION NO. 1A IN CONJUNCTION WITH TYPICAL SECTION NO. 1 AS FOLLOWS:

-L- STA 19+65.00 TO -L- STA 20+95.00 LT
-L- STA 19+65.00 TO -L- STA 21+04.00 RT
-L- STA 27+30.00 TO -L- STA 28+70.00 LT
-L- STA 27+40.00 TO -L- STA 28+70.00 RT



TYPICAL SECTION NO. 2A

USE TYPICAL SECTION NO. 2A IN CONJUNCTION WITH TYPICAL SECTION NO. 2 AS FOLLOWS:

-L- STA 21+04.00 TO -L- STA 22+00.00 LT
-L- STA 21+04.00 TO -L- STA 22+00.00 RT
-L- STA 25+46.00 TO -L- STA 26+99.50 LT
-L- STA 25+46.00 TO -L- STA 26+99.50 RT

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH BE PLACED IN LAYERS NOT LESS THAN 1¼" IN DEPTH OR GREATER THAN 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U1	EXISTING PAVEMENT.
U2	EXISTING PAVEMENT - SCARIFIED.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL "A" - WEDGING DETAIL - THIS SHEET)

PROJECT REFERENCE NO.	SHEET NO.
B-3445	2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

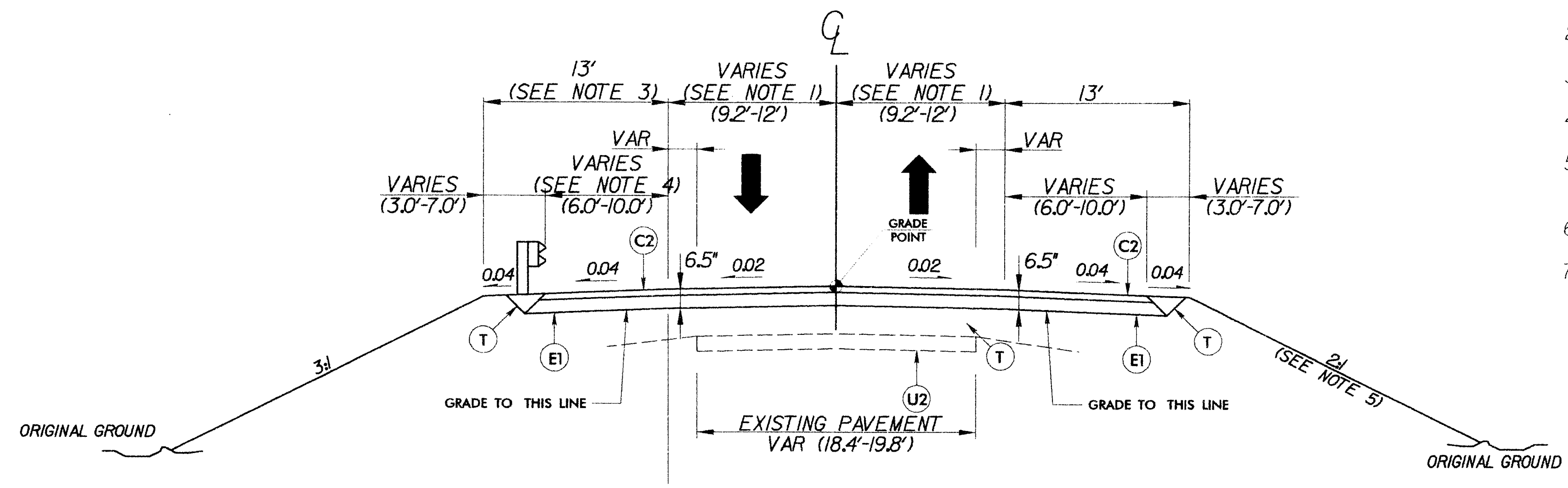
NORTH CAROLINA PROFESSIONAL SEAL 029352 ENGINEER WAYNE HYATT, JR. 04/12/04

Carter::Burgess

Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

NOTES:

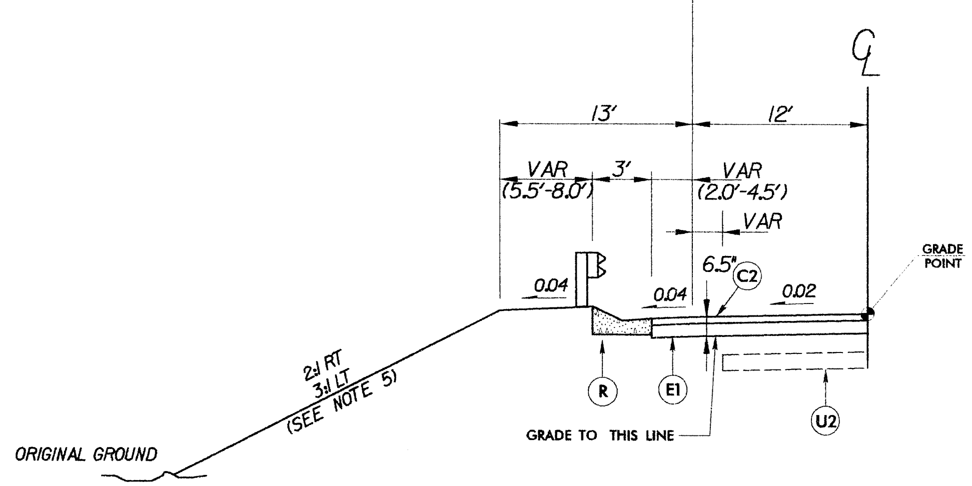
1. TRAVEL LANES ARE 12 FT FROM STA 21+05.00 TO STA 27+35.00
2. GUARDRAIL TO BE PLACED AS SHOWN IN PLAN VIEW
3. NO ADDITIONAL WIDENING REQUIRED FOR GUARDRAIL
4. PAVE TO FACE OF GUARDRAIL
5. ROCK PLATING TO BE PLACED AS SHOWN IN PLAN VIEW (SEE ROCK PLATING DETAIL SHEET 2A).
6. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
7. "ROLL-OVER" ALGEBRAIC DIFFERENCE IN RATES OF CROSS SLOPE NOT TO EXCEED 0.06. IF SUPERELEVATION IS REVOLVED ABOUT CENTERLINE OF PAVEMENT, SAME APPLIES.



USE TYPICAL SECTION NO. 2:

-L- STA 21+04.00 TO -L- STA 23+28.00 (BEGIN BRIDGE)
-L- STA 25+08.00 (END BRIDGE) TO -L- STA 26+99.50

TYPICAL SECTION NO. 2



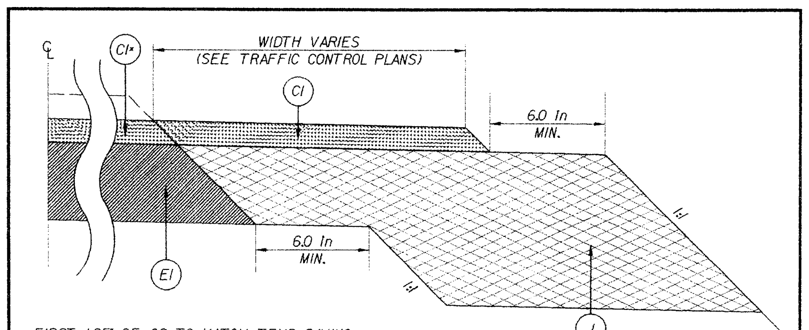
USE TYPICAL SECTION NO. 2A IN CONJUNCTION WITH TYPICAL SECTION NO. 2 AS FOLLOWS:

-L- STA 22+00.00 LT TO -L- STA 23+09.00 LT
-L- STA 22+00.00 RT TO -L- STA 23+23.00 RT
-L- STA 25+13.00 LT TO -L- STA 25+46.00 LT
-L- STA 25+27.00 RT TO -L- STA 25+46.00 RT

TYPICAL SECTION NO. 2B

USE TYPICAL SECTION NO. 1A IN CONJUNCTION WITH TYPICAL SECTION NO. 2 AS FOLLOWS:

-L- STA 21+04.00 TO -L- STA 21+10.00 RT



* FIRST 1.25" OF C2 TO MATCH TEMP. PAVING

DETAIL "B" TEMPORARY PAVEMENT

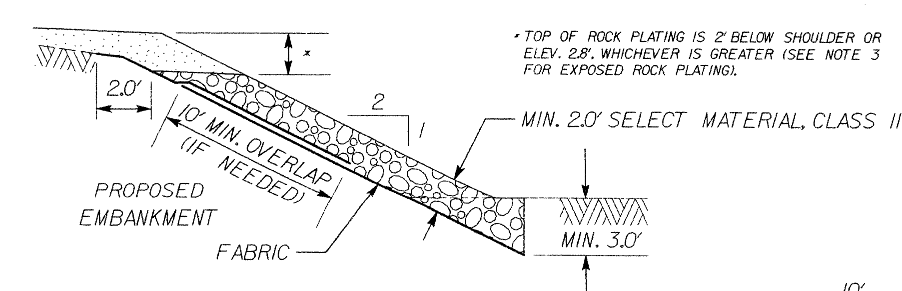
PAVEMENT SCHEDULE

C1	1¼" S9.5A	R	SHOULDER BERM GUTTER
C2	2½" S9.5A	T	EARTH MATERIAL
C3	VAR. DEPTH S9.5A	U1	EXISTING PAVEMENT
E1	4" B25.0B	U2	EXISTING PAVEMENT (SCARIFIED)
E2	VAR. DEPTH B25.0B	W	WEDGING - SEE DETAIL ON SHEET 2
J	8" ABC		

ROCK PLATING DETAIL

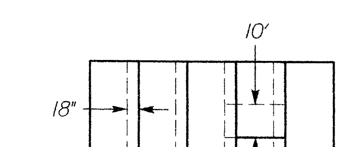
(Not to Scale)

-L- 19+70 to 23+28 RT
-L- 25+08 to 28+65 RT



NOTES:

1. USE THIS ROCK PLATING FOR PHASE 3 WIDENING OF EMBANKMENT FOR -L- RIGHT SIDE. REINFORCEMENT OF THE BRIDGE SLOPES WILL BE DETAILED IN THE INDIVIDUAL BRIDGE FOUNDATION REPORT.
2. SEE THE SPECIAL PROVISION FOR ROCK PLATING FOR DETAILED CONSTRUCTION AND MATERIAL REQUIREMENTS.
3. FOR ROCK PLATING EXPOSED IN SHOULDER BERM, TWO FEET OF FABRIC OVERLAP SHALL BE KEYED-IN TO EXISTING FILL/EMBANKMENT.



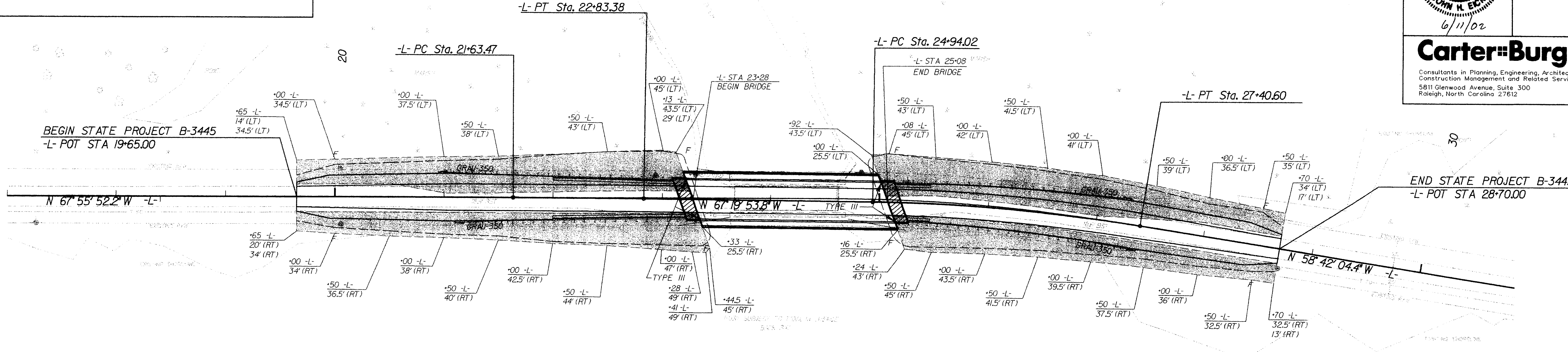
FABRIC OVERLAP DETAIL

B-3445	2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 020835 JOHN H. EICK 6/11/02

Carter::Burgess

Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

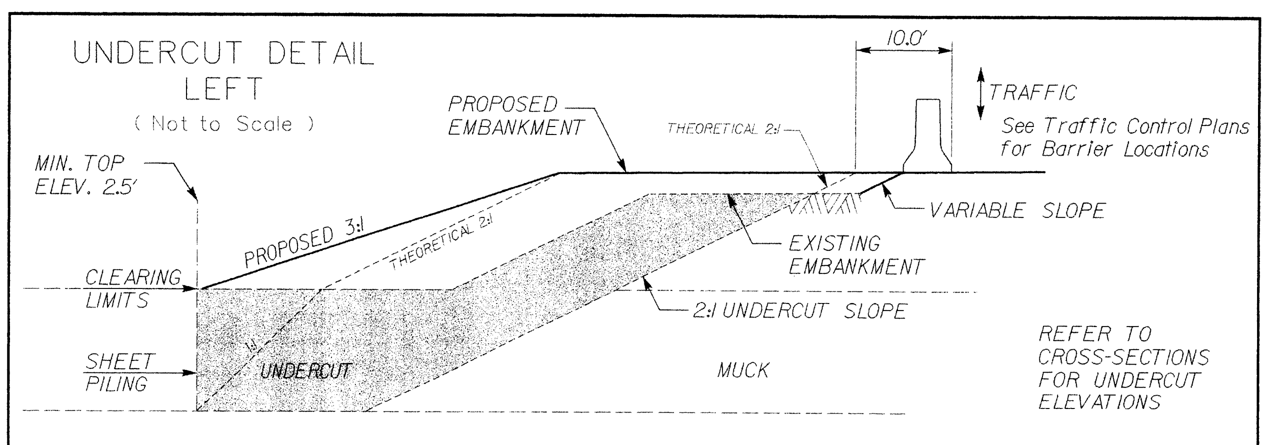


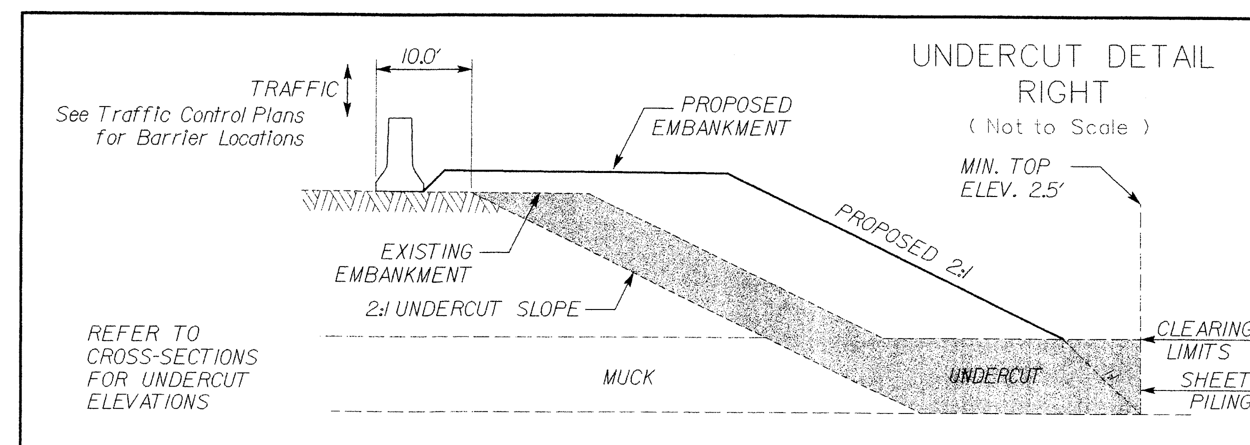
UNDERCUT - PLAN VIEW

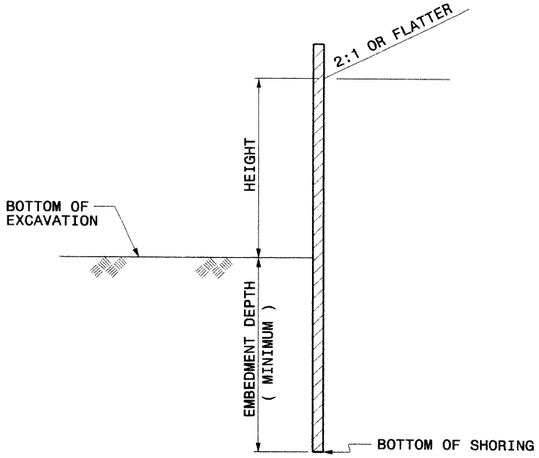
LIMITS OF UNDERCUT

Scale: 1" = 50'

NOTE:
UNDERCUT LIMITS SHALL NOT EXTEND OUTSIDE OF THE LIMITS SHOWN BY STATION AND OFFSET.

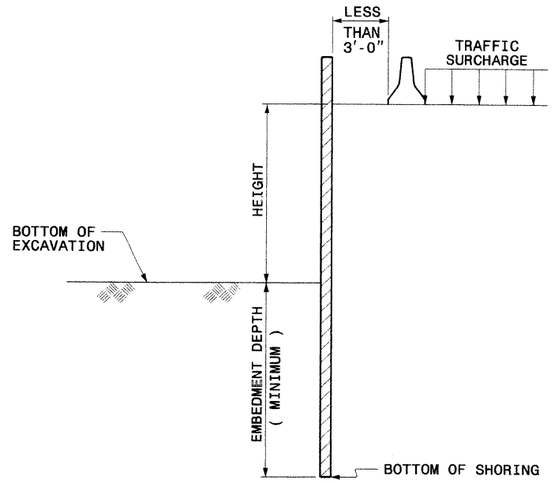






TEMPORARY SHORING

(SLOPING OR LEVEL WITH TRAFFIC SURCHARGE, NO BARRIER IMPACT)



TEMPORARY SHORING - BARRIER SUPPORTED

(LEVEL WITH TRAFFIC SURCHARGE, WITH BARRIER IMPACT)

NOTES

FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE SPECIAL PROVISIONS.

SELECT THE APPROPRIATE STANDARD SHORING DESIGN FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC IN LIEU OF SUBMITTING CONTRACTOR SHORING DESIGN. USE STANDARD SHORING DESIGN ONLY WHEN ALL OF THE FOLLOWING CRITERIA ARE MET:

- MAXIMUM HEIGHT OF SHORING EXCAVATION IS 11 FEET
- GROUNDWATER TABLE IS NOT ABOVE BOTTOM OF THE EXCAVATION
- BACKFILL SLOPE IS 2:1 OR FLATTER
- TRAFFIC SURCHARGE EQUAL TO 240 PSF
- SOLDIER PILE SPACING OF 6 FEET
- TIMBER LAGGING SHALL HAVE A MINIMUM THICKNESS OF 3 INCHES

SUBMIT "STANDARD SHORING SELECTION" FORM TO ENGINEER PRIOR TO CONSTRUCTION OF SHORING.

DO NOT USE THE STANDARD SHORING DESIGNS WHEN VERY SOFT SOIL OR MUCK IS PRESENT WITHIN THE SHORING EMBEDMENT ZONE.

CONTRACTOR MUST VERIFY LOCATION OF GROUNDWATER TABLE PRIOR TO CONSTRUCTION OF SHORING.

THE CONTRACTOR HAS THE OPTION OF USING SOLDIER PILES SET IN DRILLED HOLES WITH A SHORTENED LENGTH EQUAL TO 75% OF THE EMBEDMENT DEPTHS SHOWN IN THE TABLE. FOR DRILLING REQUIREMENTS, SEE TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC SPECIAL PROVISION.

IF DESIGN EMBEDMENT DEPTH IS NOT ACHIEVED, THEN NOTIFY THE ENGINEER IMMEDIATELY.

GROUNDWATER TABLE CONDITIONS

1) WHEN WATER TABLE IS ABOVE THE BOTTOM OF EXCAVATION, SUBMIT CONTRACTOR SHORING DESIGN TO THE ENGINEER FOR APPROVAL.

2) WHEN WATER TABLE IS BELOW THE BOTTOM OF EXCAVATION AND ABOVE THE BOTTOM OF SHORING, USE "WATER TABLE" CASE.

3) WHEN WATER TABLE IS BELOW BOTTOM OF SHORING, USE "NO WATER TABLE" CASE.

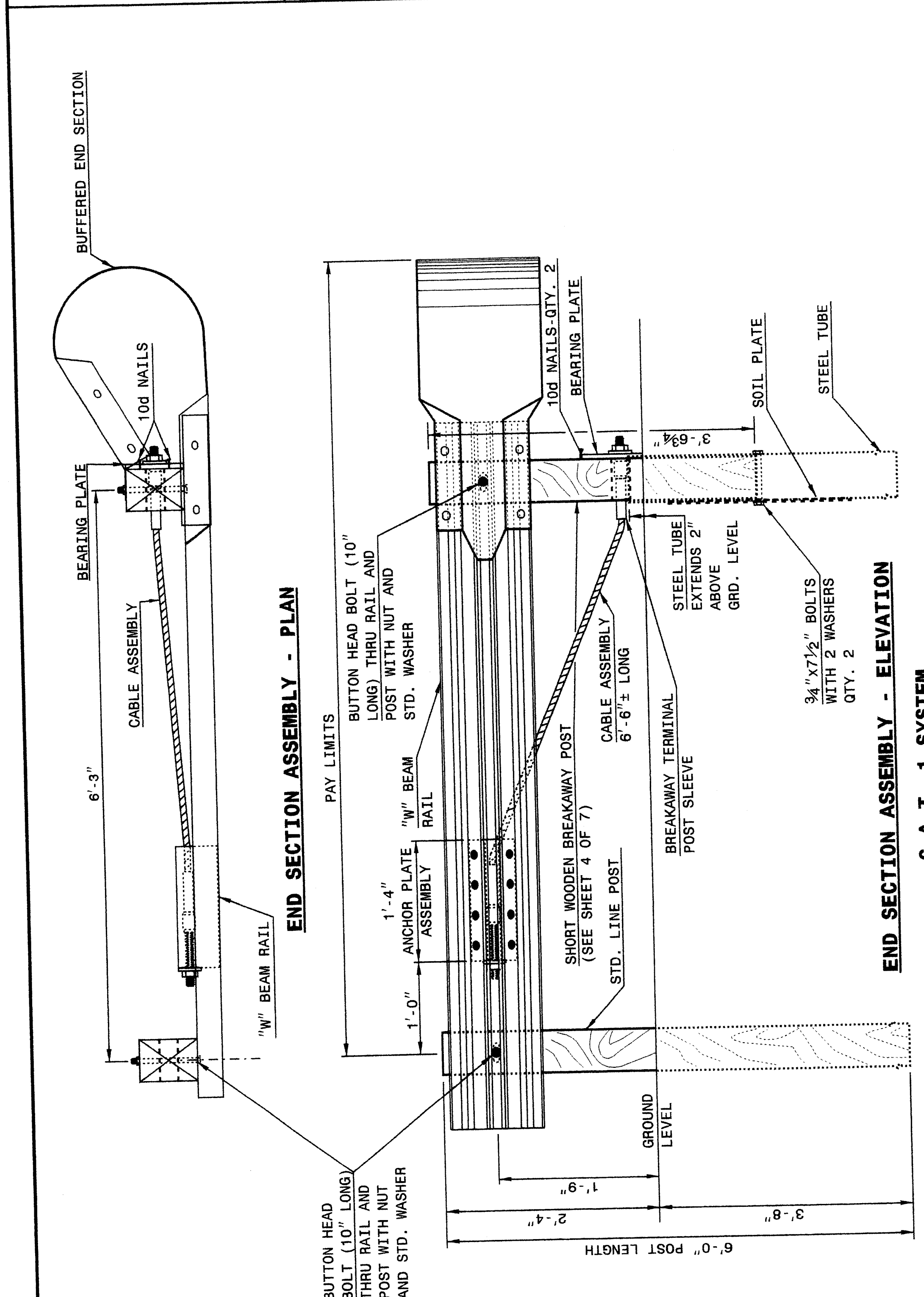
		TEMPORARY SHORING					TEMPORARY SHORING - BARRIER SUPPORTED				
		CANTILEVER SHEETING		DRIVEN SOLDIER PILE			CANTILEVER SHEETING		DRIVEN SOLDIER PILE		
CASE	HEIGHT (FT)	MINIMUM EMBEDMENT DEPTH (FT)	MINIMUM SECTION MODULUS (IN^3 / FT OF WALL)	MINIMUM EMBEDMENT DEPTH (FT)			MINIMUM EMBEDMENT DEPTH (FT)	MINIMUM SECTION MODULUS (IN^3 / FT OF WALL)	MINIMUM EMBEDMENT DEPTH (FT)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
"NO WATER TABLE"	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
"WATER TABLE"	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0

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

STANDARD TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC

ORIGINAL BY: SOILS & FOUNDATIONS DATE: 10-2001
MODIFIED BY: DATE:
CHECKED BY: DATE: 10-01
FILE SPEC.: ericward:/usr/details/stand/shoring detail.dgn

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION
SHEET 1 OF 7
862D02



STATE OF
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ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 1 OF 7
862D02

STATE OF
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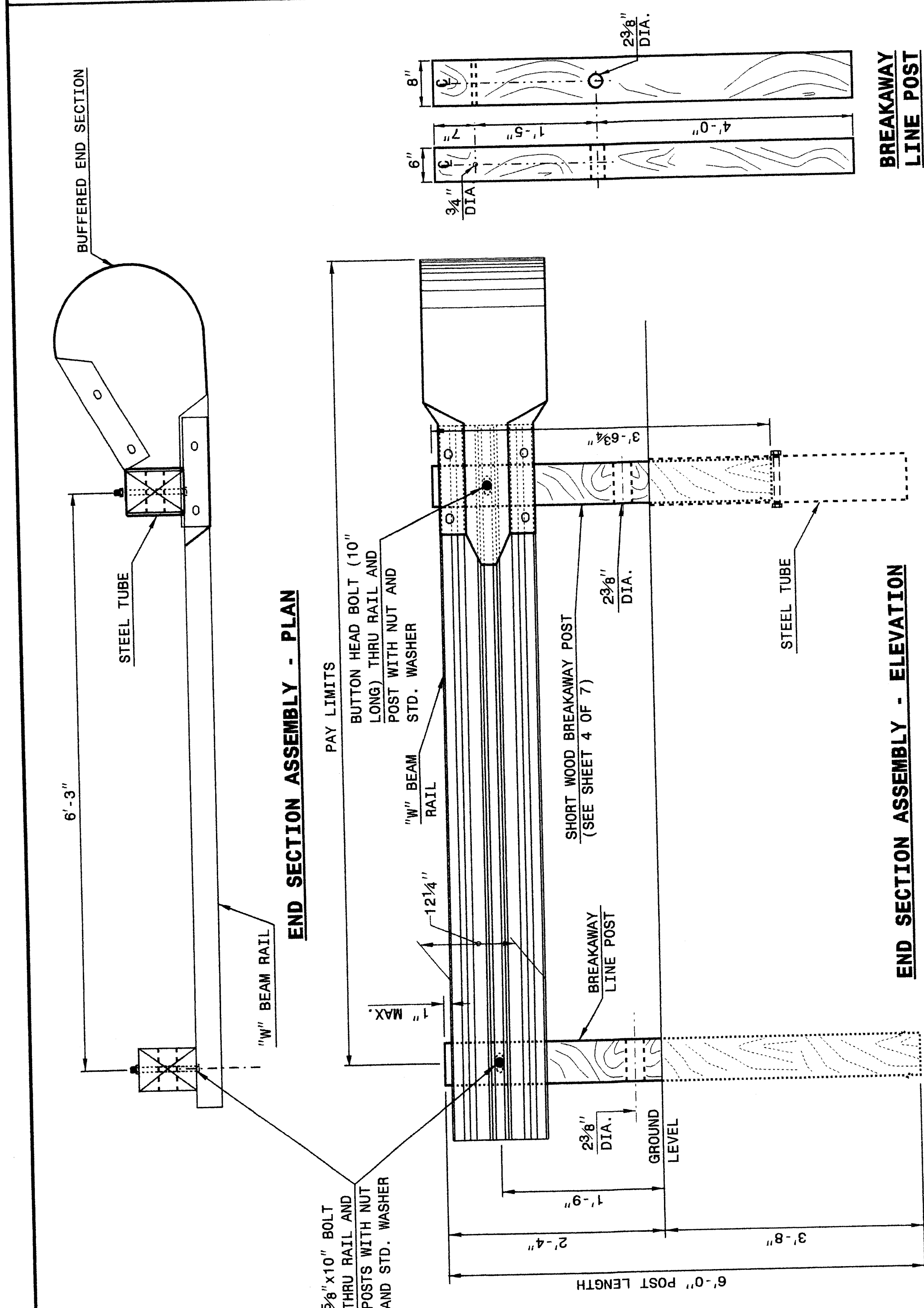
RALEIGH, N.C.
ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION
SHEET 2 OF 7
862D02



STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 2 OF 7
862D02

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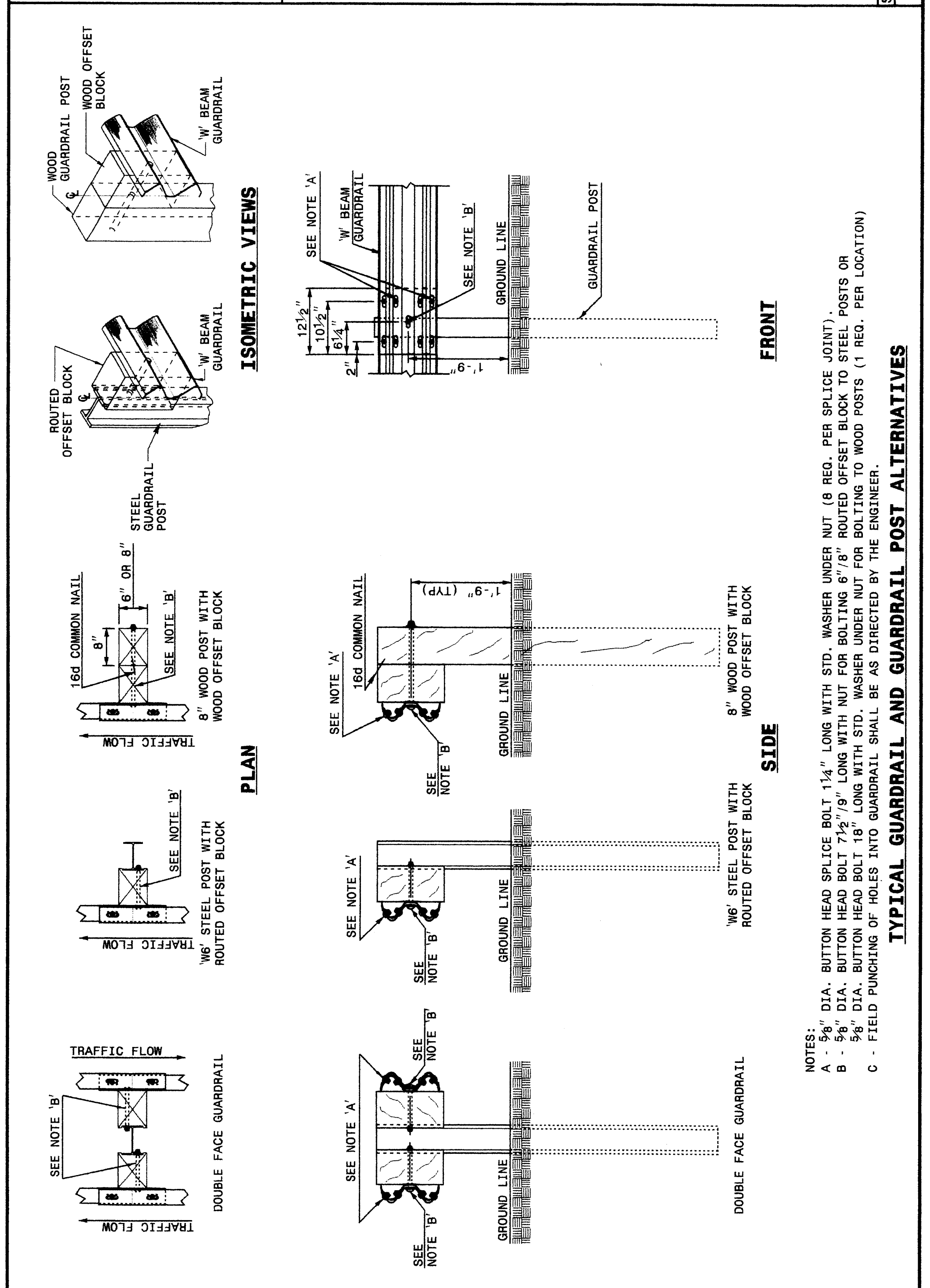
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E. E. WARD DATE: 02-09-03
CHECKED BY: [signature] DATE: 5-03
FILE SPEC.: /usr/stds/02todetail/english/86202/862D02.dgn

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. ENGLISH DETAIL DRAWING FOR GUARDRAIL INSTALLATION SHEET 3 OF 7 862D02



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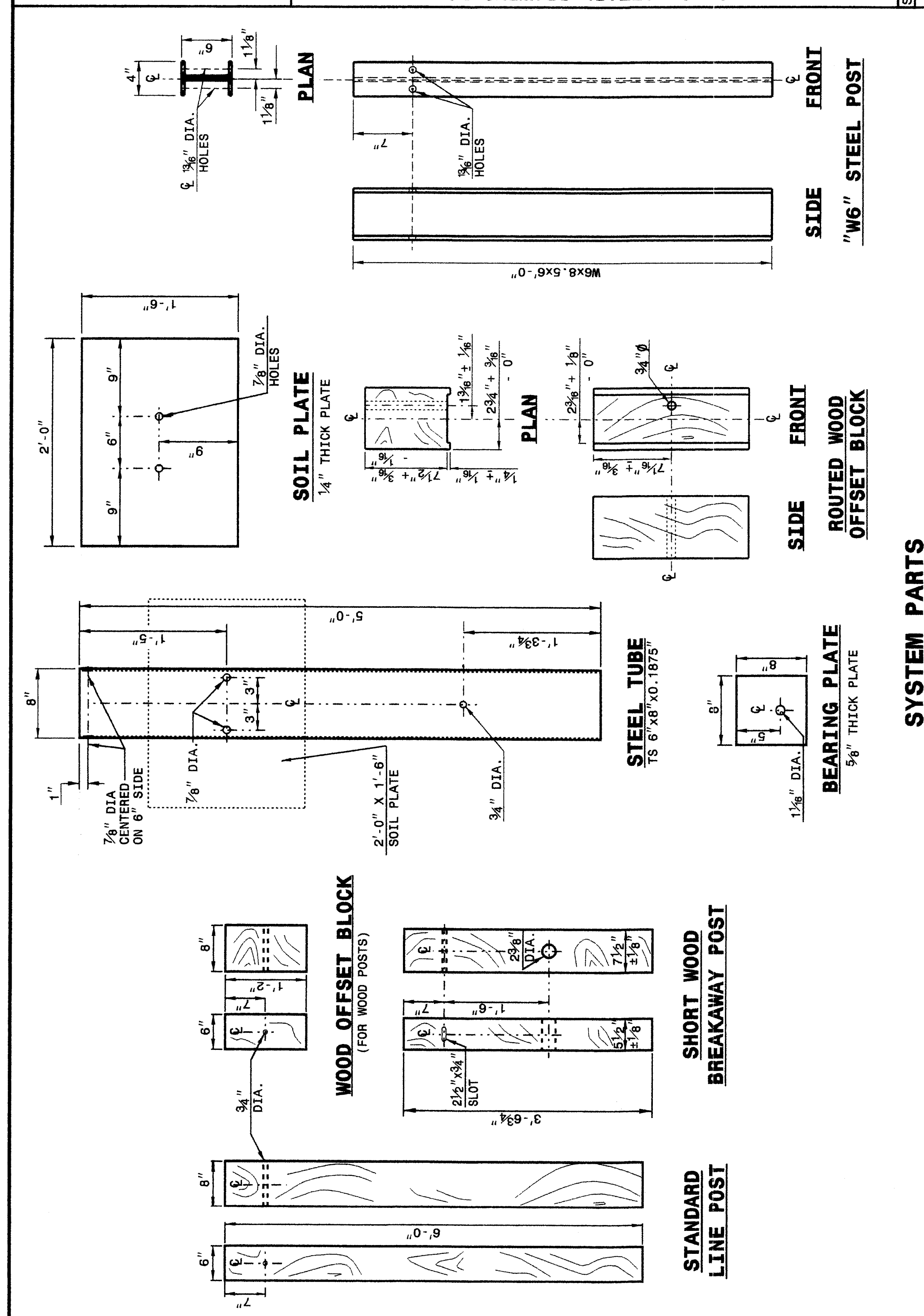
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 3 OF 7
862D02

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. ENGLISH DETAIL DRAWING FOR GUARDRAIL INSTALLATION SHEET 4 OF 7 862D02



STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 4 OF 7
862D02

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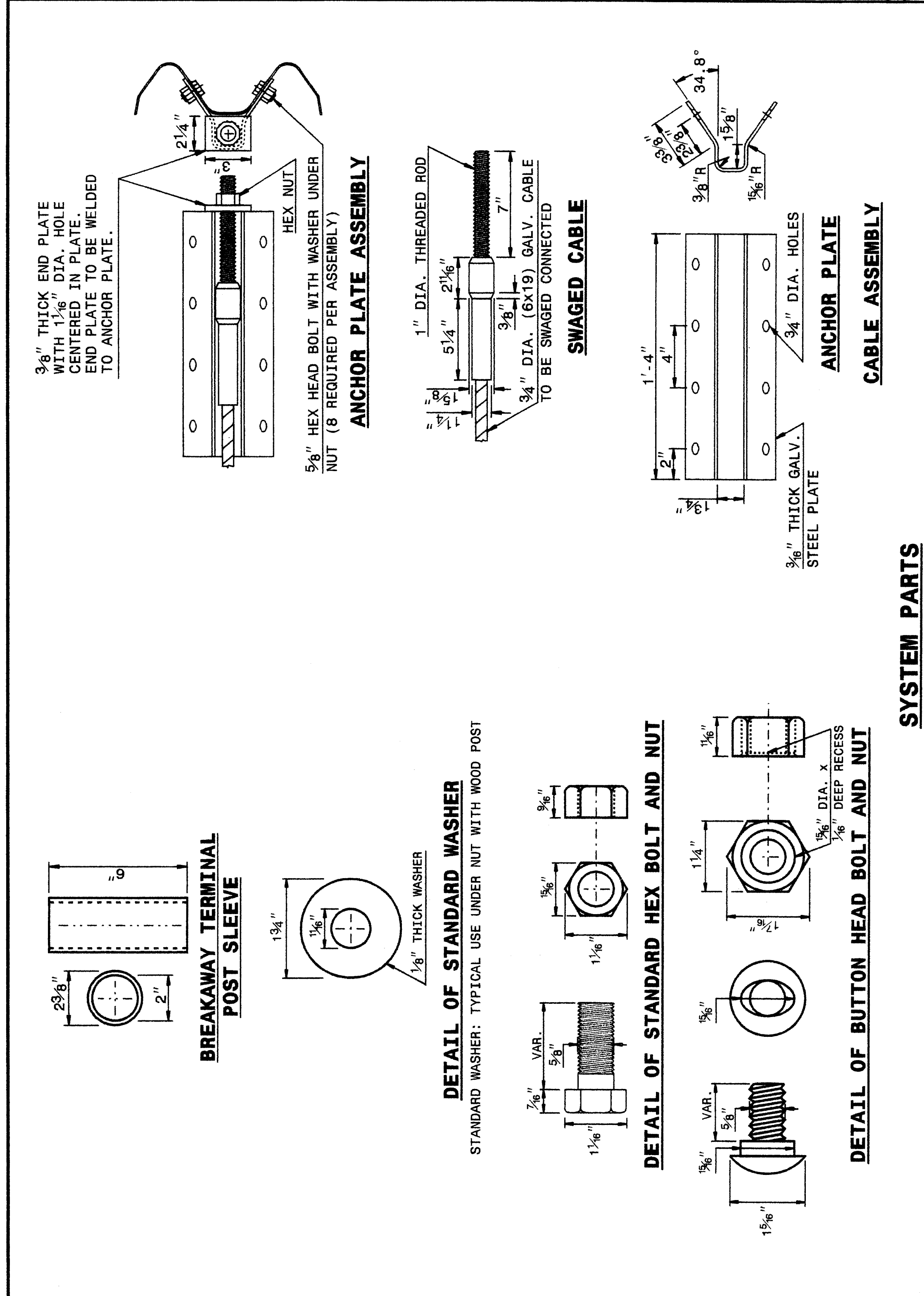
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: [signature] DATE: 3-03
FILE SPEC.: /usr/stds/02todetail/english/86202/862d02.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3445	2-F

ENGLISH DETAIL DRAWING FOR GUARDRAIL INSTALLATION
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
SHEET 5 OF 7 862D02



STATE OF
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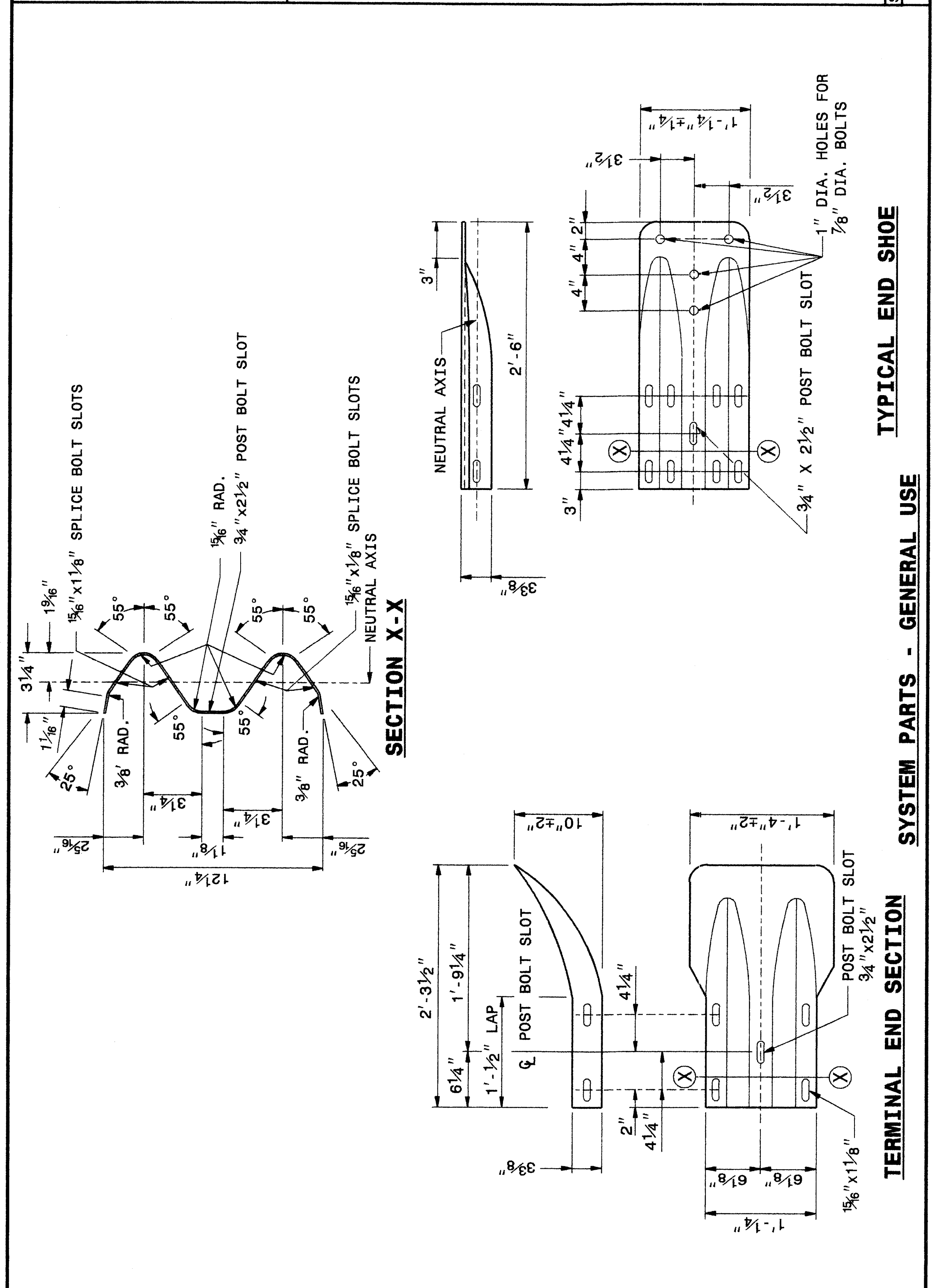
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 7 **862D02**

ENGLISH DETAIL DRAWING FOR GUARDRAIL INSTALLATION
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
SHEET 6 OF 7 862D02



STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 7 **862D02**

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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: [signature] DATE: 5-03
FILE SPEC.: /usr/stds/02todetail/english/86202/862d02.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-3445	2-G

STATE OF
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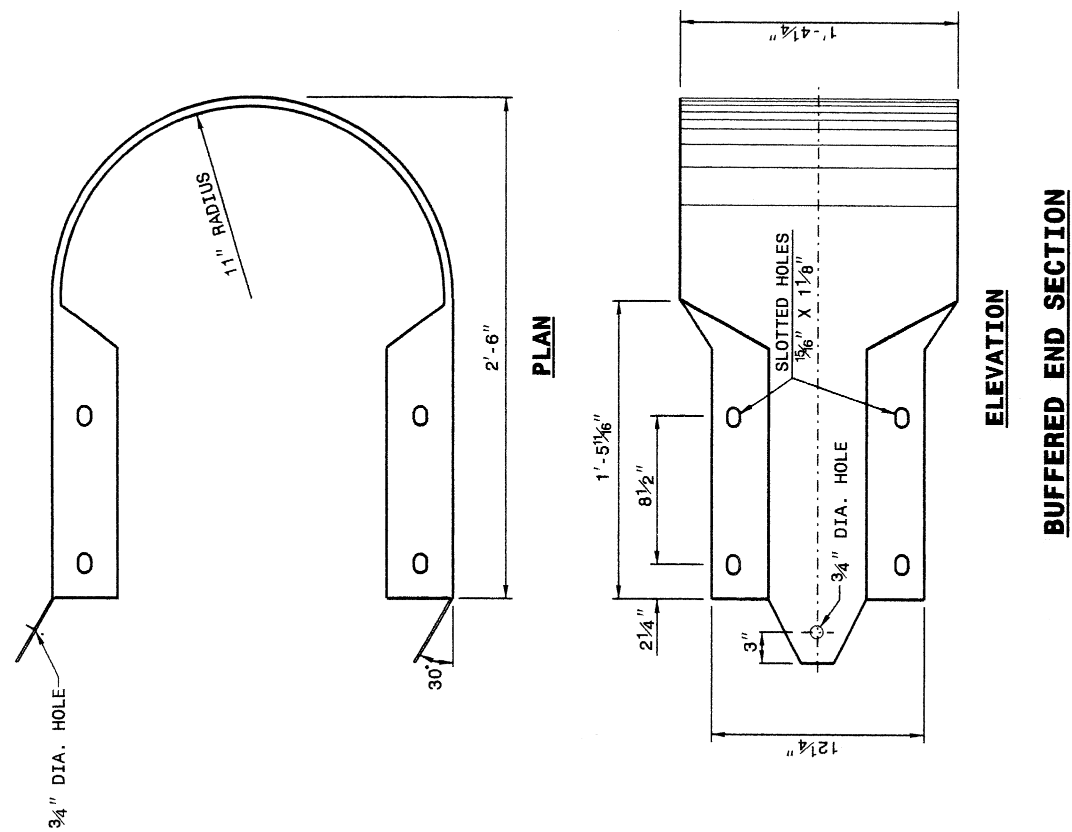
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02



STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 7
862D02

DESIGN SERVICES UNIT
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Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD.862.02 DATE:
MODIFIED BY: E.E. WARD DATE: 02-09-03
CHECKED BY: DATE: 5-03
FILE SPEC.: /usr/stds/02todetail/english/86202/862d02.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

Carter::Burgess
Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

COMPUTED BY: CWH	DATE: 7/10/02
CHECKED BY: JHE	DATE: 7/10/02

PROJECT NO.	SHEET NO.
B-3445	3A

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

EARTHWORK SUMMARIES

PHASE I (RIGHT)

STATION	STATION	TOTAL EXCAV. (UNCL.)	UNDERCUT EXCAV.	EARTH EMB.	BORROW	TOTAL WASTE
-L-						
19+65.00 (LT) TO	23+28.00 (LT)	4	1,080	1,830	2,375	1,080
25+08.00 (LT) TO	28+70.00 (LT)	3	1,275	1,934	2,511	1,275
SUBTOTALS		**7**	**2,355**	**3,764**	**4,886**	**2,355**
Undercut from Geotechnical			500		650	500
Select Granular Material in lieu of Borrow					-1,500	
SUBTOTALS		**7**	**2,855**	**3,764**	**4,036**	**2,855**
5% to Replace Topsoil in Borrow Pit					202	
GRAND TOTAL		**7**	**2,855**	**3,764**	**4,237**	**2,855**

PHASE II (LEFT)

STATION	STATION	TOTAL EXCAV. (UNCL.)	UNDERCUT EXCAV.	EARTH EMB.	BORROW	TOTAL WASTE
-L-						
19+65 (RT) TO	23+28.00 (RT)	1	2,091	2,846	3,699	2,091
25+08.00 (RT) TO	28+70.00 (RT)		2,125	2,965	3,855	2,125
SUBTOTALS		**1**	**4,216**	**5,811**	**7,554**	**4,216**
Estimated Shoulder Construction				2,277	2,960	
SUBTOTALS		**1**	**4,216**	**8,088**	**10,514**	**4,216**
5% to Replace Topsoil in Borrow Pit					578	
GRAND TOTAL		**1**	**4,216**	**8,088**	**11,092**	**4,216**

PHASE III (RIGHT)

STATION	STATION	TOTAL EXCAV. (UNCL.)	UNDERCUT EXCAV.	EARTH EMB.	BORROW	TOTAL WASTE
-L-						
19+65.00 (LT) TO	23+28.00 (LT)	307		6		299
25+08.00 (LT) TO	28+70.00 (LT)	179				179
SUBTOTALS		**486**		**6**		**478**
Estimated Shoulder Construction				100	130	
SUBTOTALS		**486**		**106**	**130**	**478**
5% to Replace Topsoil in Borrow Pit					7	
GRAND TOTAL		**486**		**106**	**137**	**478**

GRAND TOTAL - ALL PHASES

GRAND TOTAL	**494**	**7,071**	**11,958**	**15,466**	**7,549**
SAY	**500**	**7,100**	**12,000**	**15,600**	**7,600**

COMPUTED BY: C. W. HYATT, JR.	DATE: 04/12/04
CHECKED BY: R. D. HURLBUT	DATE: 04/12/04

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Carter::Burgess
Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
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PROJECT REFERENCE NO.	SHEET NO.
B-3445	3B

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAME	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT
1	US DEPT OF INTERIOR	NA	53,593 SF	NA	NA	NA	NA	NA

PAVEMENT REMOVAL SUMMARY

SUMMARY

STATION	STATION	LOCATION	QUANTITY	DESCRIPTION
20+04	23+67	CL	726 SF	SHORING
22+27	23+67	LT	1125 SF	OUTSIDE OF EX.TRAVEL LANES, BETWEEN EX. & PROP. BRIDGES, & AT UNDERCUT
20+67	23+67	RT	2570 SF	OUTSIDE OF EX.TRAVEL LANES, BETWEEN EX. & PROP. BRIDGES, & AT UNDERCUT
24+61	27+00	CL	478 SF	SHORING
24+61	25+70	LT	895 SF	OUTSIDE OF EX.TRAVEL LANES, BETWEEN EX. & PROP. BRIDGES, & AT UNDERCUT
24+61	27+62	RT	1755 SF	OUTSIDE OF EX.TRAVEL LANES, BETWEEN EX. & PROP. BRIDGES, & AT UNDERCUT
8 MISCL.	LOC.'S	CL	1480 SF	36" CAA PIPE LOCATIONS
			9029 SF	TOTAL PAVEMENT REMOVAL
			x 1/9	SQUARE YARDS PER SQUARE FEET
			1003 SY	TOTAL PAVEMENT REMOVAL
		SAY	1100 SY	OF PAVEMENT REMOVAL

SIDE DRAIN PIPES (FOR PIPES 24" & UNDER)

STATION	LOCATION	PLAIN CONCRETE PIPE CULVERTS			CORRUGATED STEEL PIPE CULVERTS THICKNESS 0.064			PARALLEL PIPE RC END SECT.		PARALLEL PIPE PREFAB. STEEL END SECT.		PIPE REMOVAL (LIN. FT.)
SIZE		15"	18"	24"	15"	18"	24"	NO.	SIZE	NO.	SIZE	

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

STATION / SIZE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" CAA .079	36" CAA .06	42" .109	42"	48" .109	48"	SHOP ELONGATED	ENDWALLS STD. 838.01 (UNLESS NOTED OTHERWISE) CU. YDS. USING CONC. R.C.P.	C.S.P.	ENDWALLS STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS. USING BRICK R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	TYPE OF CONSTRUCTION PERMITTED BRICK	BLOCK	CONCRETE	PRECAST	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	PIPE REMOVAL	REMARKS
-L- 22+00	RT	1																												1	-	-									7.12	4.62			1	1			2 GI M.D.I.(N.S.)
		1	2		36																																					4.62	4.22						
-L- 22+00	LT	2																												1	-	-									7.12	4.02			1	1			2 GI M.D.I.(N.S.)
		2	3		20																																					4.02	3.00						
-L- 25+46	RT	4																												1	-	-									6.79	4.19				1	1		2 GI T.B.D.I.
		4	5		36																																					4.19	3.89						
-L- 25+46	LT	5																												1	-	-									6.69	3.69				1	1		2 GI T.B.D.I.
		5	6		20																																					3.69	3.00						
3 W.LOC'S																				120																													0.936 MI., 0.605 MI., 0.292 MI.
1.081 MI.																				40																													
1.548 MI.																				40																													
1.863 MI.																				40																													
2.122 MI.																				40																												40	
2.339 MI.																				40																												40	
TOTAL					112															320										4	-	-													2	4	2	80	

ABBREVIATIONS

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

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	III	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	IMPACT ATTENUATOR TYPE 350	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	21+09.55	23+34.55	RT	225			23+34.55		6.0	9.0	225		4.0			1	1											
-L-	20+96.45	23+21.45	LT	225				23+21.45	6.0	9.0		225		4.0		1	1											
-L-	25+01.35	27+26.35	RT	225			25+01.35		6.0	9.0	225		4.0			1	1											
-L-	25+14.75	27+39.75	LT	225				25+14.75	6.0	9.0		225		4.0		1	1											
SUBTOTAL				900												4	4											
LESS ANCHORS				275																								
	TYPE III @	18.75	4 EACH	75																								
	GRAU 350 @	50	4 EACH	200																								
PROJECT TOTAL				625	(NOTE: 5 ADDITIONAL GUARDRAIL POSTS.)											4	4											

REVISIONS

NOTE:
1. NCDOT HAS AGREED TO THE SPECIAL COMMITMENT THAT NO IN-WATER WORK WILL BE CONDUCTED BETWEEN MARCH 31 AND SEPTEMBER 30 IN ORDER TO AVOID NEGATIVE IMPACTS TO SPAWNING POPULATIONS OF FISH SPECIES AT THIS PROJECT SITE.
2. SEE SHEET 2 FOR ROCK PLATING DETAIL.
3. SEE SHEET 2B FOR UNDERCUT LIMITS AND DETAIL.
4. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.
5. UNDERCUT LIMITS SHOULD NOT EXTEND BEYOND THE PROJECT TEMPORARY CONSTRUCTOIN EASEMENT LIMITS.

SEE SHEETS S-1 THRU S-43 FOR STRUCTURE PLANS

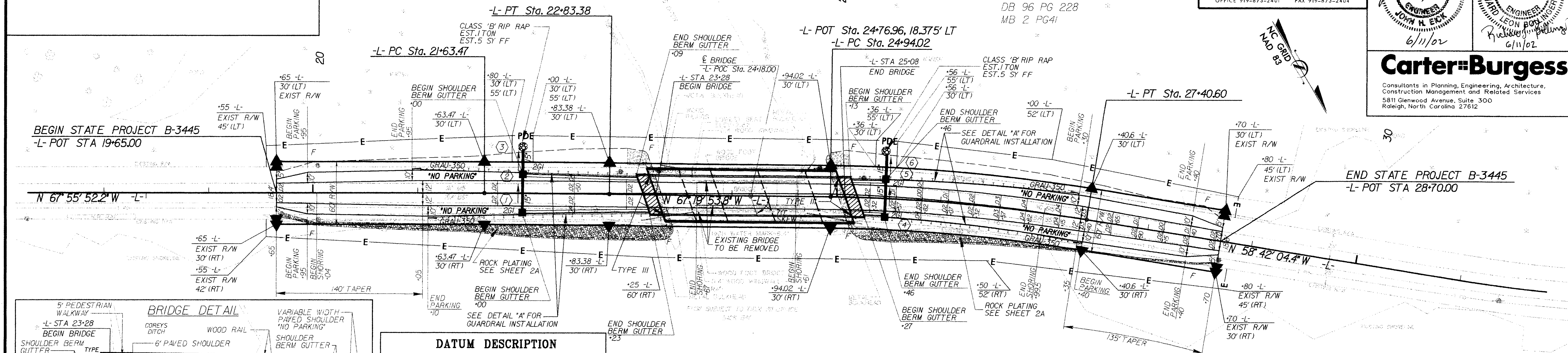
PROJECT REFERENCE NO.	SHEET NO.
B-3445	4
R/W SHEET NO.	

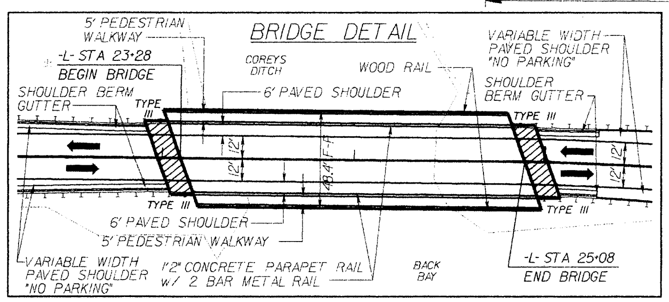
TRANSITE CONSULTING
ENGINEERS, INCORPORATED
ENGINEERS • PLANNERS • CEI
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609
OFFICE 919-873-2401 FAX 919-873-2404

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020866 ENGINEER JOHN H. EICK
6/11/02

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER, JR.
6/11/02

Carter::Burgess
Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612



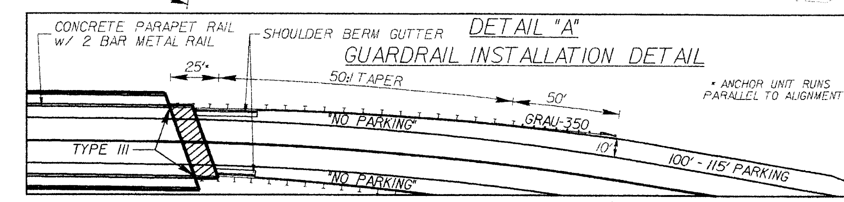


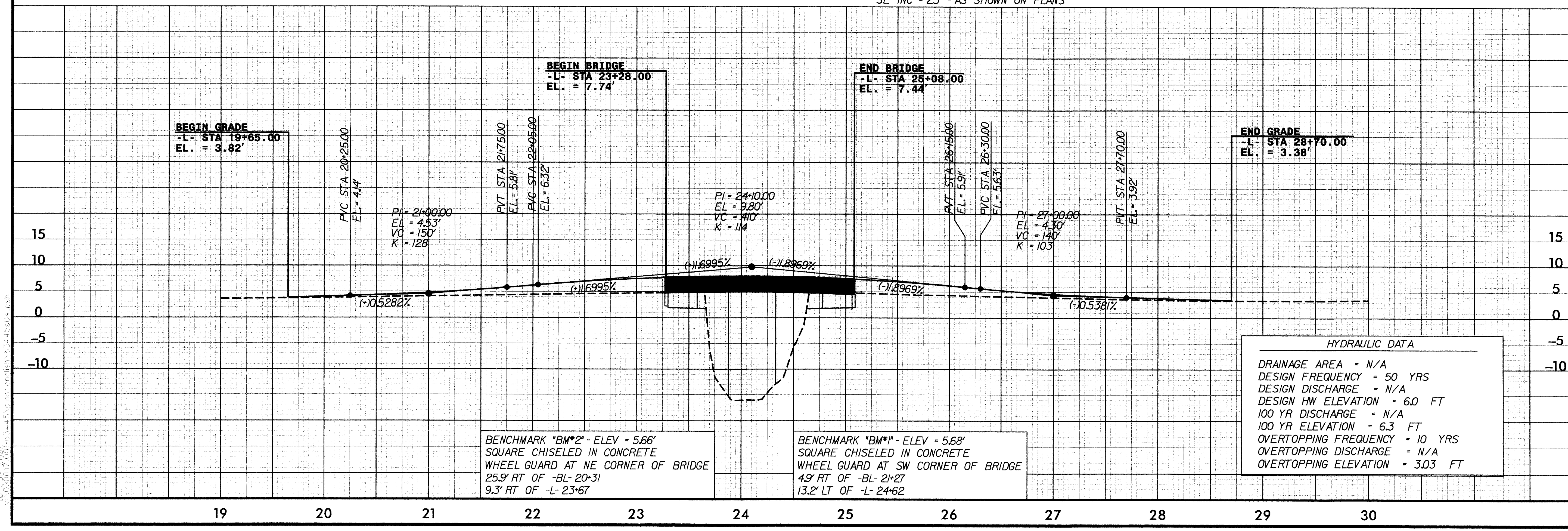
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3445-2"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 1028532.748(ft) EASTING: 2890894.25(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000130780
THE N.C. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3445-2" TO -L- STATION 19+65.00 IS N 67° 37' 56.9" W 1,129.592 ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

-L-
PI Sta 22+23.43
Δ = 0° 35' 58.4" (RT)
D = 0° 30' 00.0"
L = 119.91'
T = 59.96'
R = 11,459.16'
SE = NC

-L-
PI Sta 26+17.55
Δ = 8° 37' 49.4" (RT)
D = 3° 30' 00.0"
L = 246.58'
T = 123.53'
R = 1,637.02'
SE = 0.04
SE INC = 25' - AS SHOWN ON PLANS





BENCHMARK "BM#2" - ELEV = 5.66'
SQUARE CHISELED IN CONCRETE
WHEEL GUARD AT NE CORNER OF BRIDGE
25.9' RT OF -BL- 20+31
9.3' RT OF -L- 23+67

BENCHMARK "BM#1" - ELEV = 5.68'
SQUARE CHISELED IN CONCRETE
WHEEL GUARD AT SW CORNER OF BRIDGE
4.9' RT OF -BL- 21+27
13.2' LT OF -L- 24+62

HYDRAULIC DATA

DRAINAGE AREA = N/A
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = N/A
DESIGN HW ELEVATION = 6.0 FT
100 YR DISCHARGE = N/A
100 YR ELEVATION = 6.3 FT
OVERTOPPING FREQUENCY = 10 YRS
OVERTOPPING DISCHARGE = N/A
OVERTOPPING ELEVATION = 3.03 FT

SEE SHEETS S-1 THRU S-43 FOR STRUCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
B-3445	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029352 ENGINEER C. WAYNE HYATT, JR. 04/12/04

Carter::Burgess

Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

NOTE:

1. NCDOT HAS AGREED TO THE SPECIAL COMMITMENT THAT NO IN-WATER WORK WILL BE CONDUCTED BETWEEN MARCH 31 AND SEPTEMBER 30 IN ORDER TO AVOID NEGATIVE IMPACTS TO SPAWNING POPULATIONS OF FISH SPECIES AT THIS PROJECT SITE.
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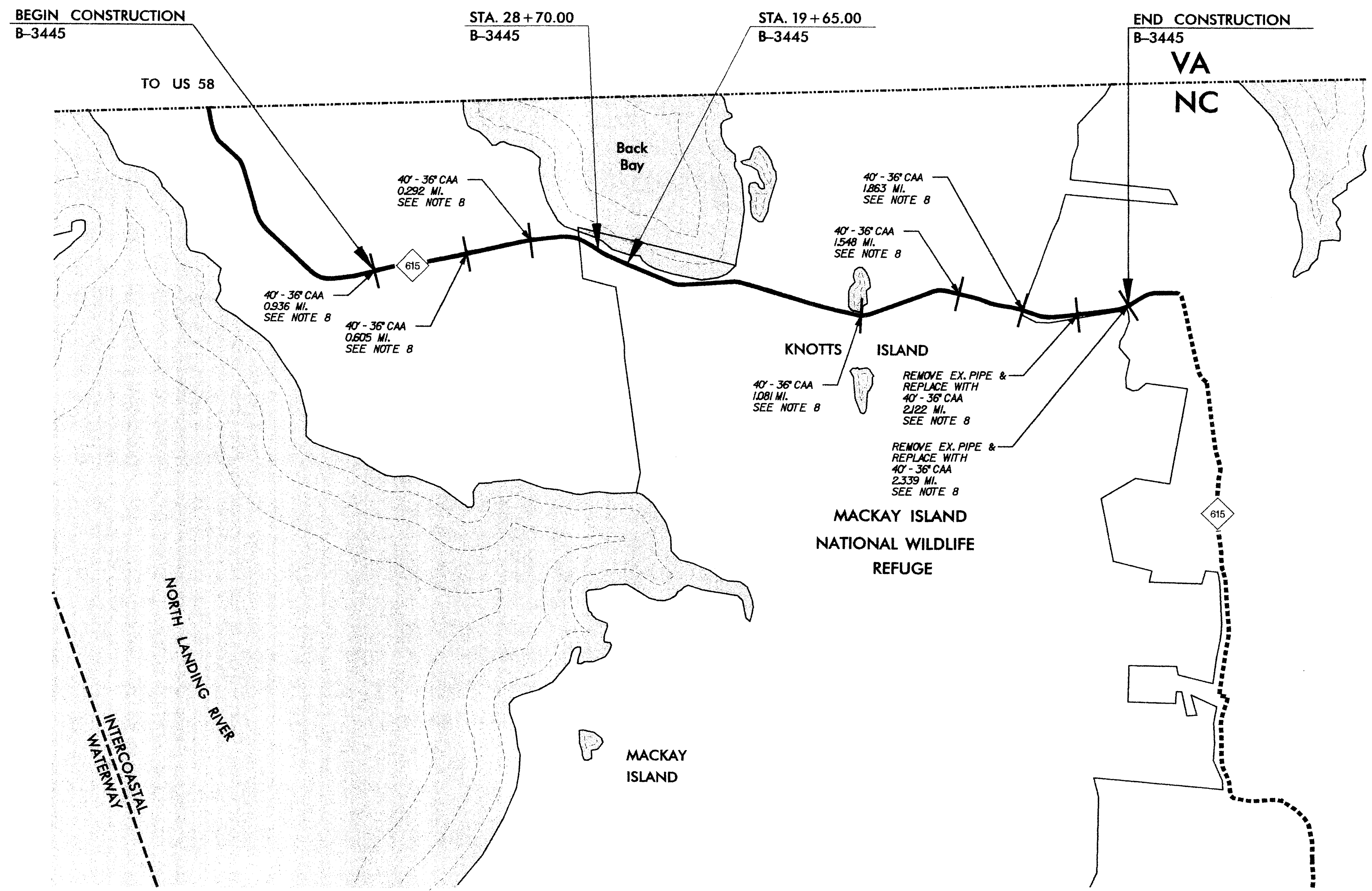
3. SEE SHEET 2B FOR UNDERCUT LIMITS AND DETAIL.
4. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.
5. UNDERCUT LIMITS SHOULD NOT EXTEND BEYOND THE PROJECT TEMPORARY CONSTRUCTOION EASEMENT LIMITS.
6. SHEETING ON NORTH (BAY) SIDE OF BRIDGE SHALL BE REMOVED AFTER INSTALLATION OF ROCK PLATING.
7. SHEETING ON SOUTH (MARSH) SIDE OF BRIDGE SHALL BE RETAINED AFTER COMPLETION OF CONSTRUCTION.
8. LENGTH OF PIPE IS NOT TO SCALE AS SHOWN. MILEAGE IS APPROXIMATE FROM NEAREST END OF EXISTING BRIDGE. PIPE SHALL HAVE 1.0' MIN. COVER BENEATH SUBGRADE, NOT BE ALUMINIZED, AND NOT HAVE END TREATMENTS (RIP-RAP, HEADWALLS, ETC.)



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

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

PROJ. REFERENCE NO.	SHEET NO.
B-3445	X-0

CROSS-SECTION SUMMARY

PHASE I
UNSUITABLE UNDERCUT

Station L (RT)	Unsuitable Uncl. Exc. (cu. yd.)	Unsuitable Embt (cu. yd.)
20+00.00	0	0
20+50.00	124	0
21+00.00	116	0
21+50.00	116	0
22+00.00	143	0
22+50.00	162	0
23+00.00	239	0
23+28.00	180	0

PHASE I
SUITABLE EMBANKMENT

Station L (RT)	Suitable Uncl. Exc. (cu. yd.)	Suitable Embt (cu. yd.)
20+00.00	0	0
20+50.00	3	28
21+00.00	1	55
21+50.00	0	92
22+00.00	0	136
22+50.00	0	183
23+00.00	0	175
23+28.00	0	81

BRIDGE

PHASE I
UNSUITABLE UNDERCUT

Station L (RT)	Unsuitable Uncl. Exc. (cu. yd.)	Unsuitable Embt (cu. yd.)
25+08.00	0	0
25+50.00	187	0
26+00.00	207	0
26+50.00	195	0
27+00.00	187	0
27+50.00	181	0
28+00.00	178	0
28+50.00	140	0

PHASE I
SUITABLE EMBANKMENT

Station L (RT)	Suitable Uncl. Exc. (cu. yd.)	Suitable Embt (cu. yd.)
25+08.00	0	0
25+50.00	0	129
26+00.00	0	202
26+50.00	0	156
27+00.00	0	91
27+50.00	0	45
28+00.00	1	22
28+50.00	2	14

PHASE II
UNSUITABLE UNDERCUT

Station L (LT)	Unsuitable Uncl. Exc. (cu. yd.)	Unsuitable Embt (cu. yd.)
20+00.00	0	0
20+50.00	172	0
21+00.00	252	0
21+50.00	327	0
22+00.00	341	0
22+50.00	372	0
23+00.00	402	0
23+28.00	225	0

PHASE II
SUITABLE EMBANKMENT

Station L (LT)	Suitable Uncl. Exc. (cu. yd.)	Suitable Embt (cu. yd.)
20+00.00	0	0
20+50.00	1	29
21+00.00	0	41
21+50.00	0	65
22+00.00	0	115
22+50.00	0	178
23+00.00	0	224
23+28.00	0	103

BRIDGE

PHASE II
UNSUITABLE UNDERCUT

Station L (LT)	Unsuitable Uncl. Exc. (cu. yd.)	Unsuitable Embt (cu. yd.)
25+08.00	0	0
25+50.00	301	0
26+00.00	347	0
26+50.00	369	0
27+00.00	381	0
27+50.00	332	0
28+00.00	230	0
28+50.00	165	0

PHASE II
SUITABLE EMBANKMENT

Station L (LT)	Suitable Uncl. Exc. (cu. yd.)	Suitable Embt (cu. yd.)
25+08.00	0	0
25+50.00	0	176
26+00.00	0	189
26+50.00	0	155
27+00.00	0	129
27+50.00	0	97
28+00.00	0	59
28+50.00	1	35

PHASE III
SUITABLE EMBANKMENT

Station L (RT)	Suitable Uncl. Exc. (cu. yd.)	Suitable Embt (cu. yd.)
20+00.00	0	0
20+50.00	45	0
21+00.00	49	0
21+50.00	54	0
22+00.00	54	0
22+50.00	53	0
23+00.00	39	0
23+28.00	13	6

BRIDGE

PHASE III
SUITABLE EMBANKMENT

Station L (RT)	Suitable Uncl. Exc. (cu. yd.)	Suitable Embt (cu. yd.)
25+08.00	0	53
25+50.00	0	114
26+00.00	41	105
26+50.00	34	64
27+00.00	30	35
27+50.00	27	14
28+00.00	22	10
28+50.00	25	5

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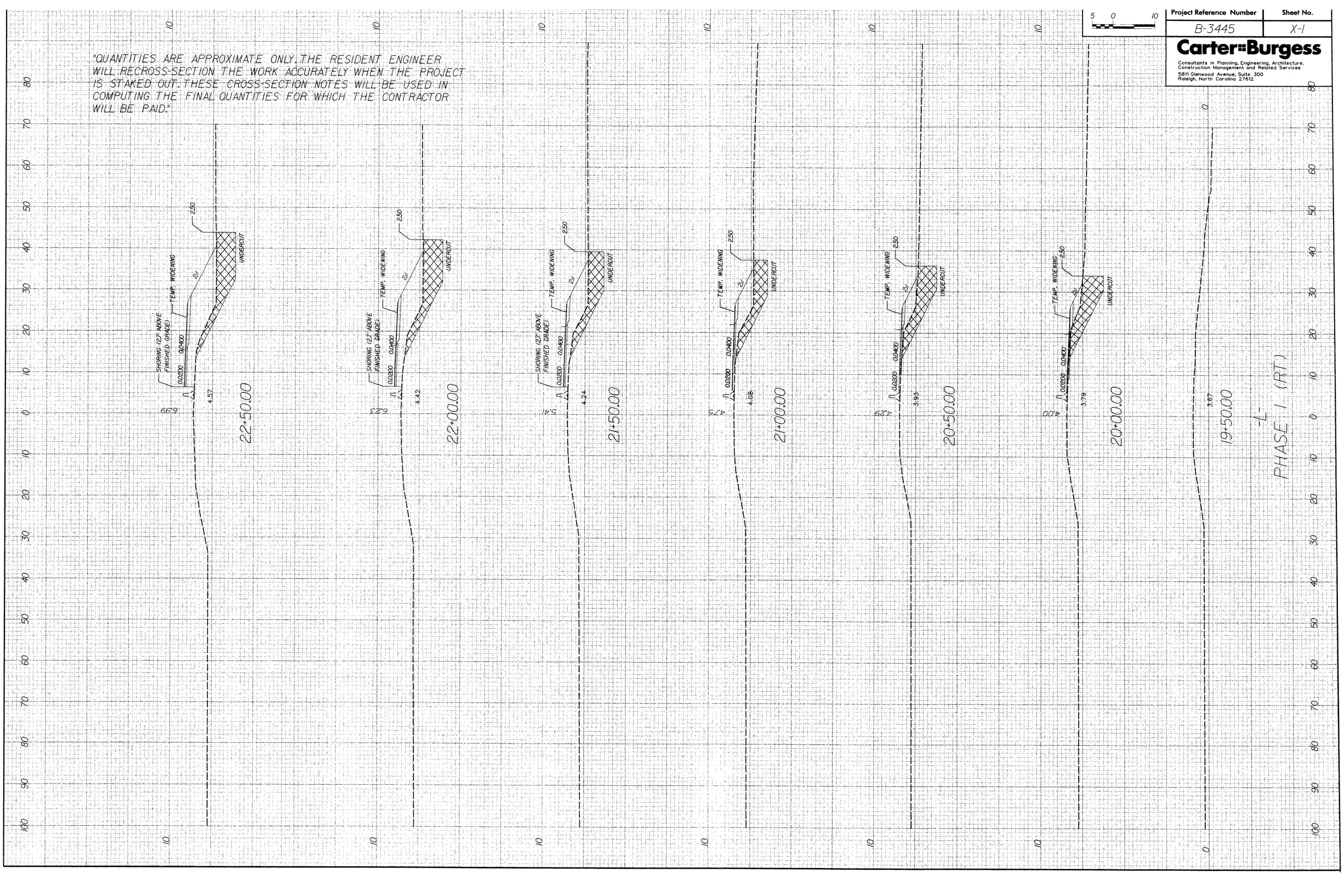


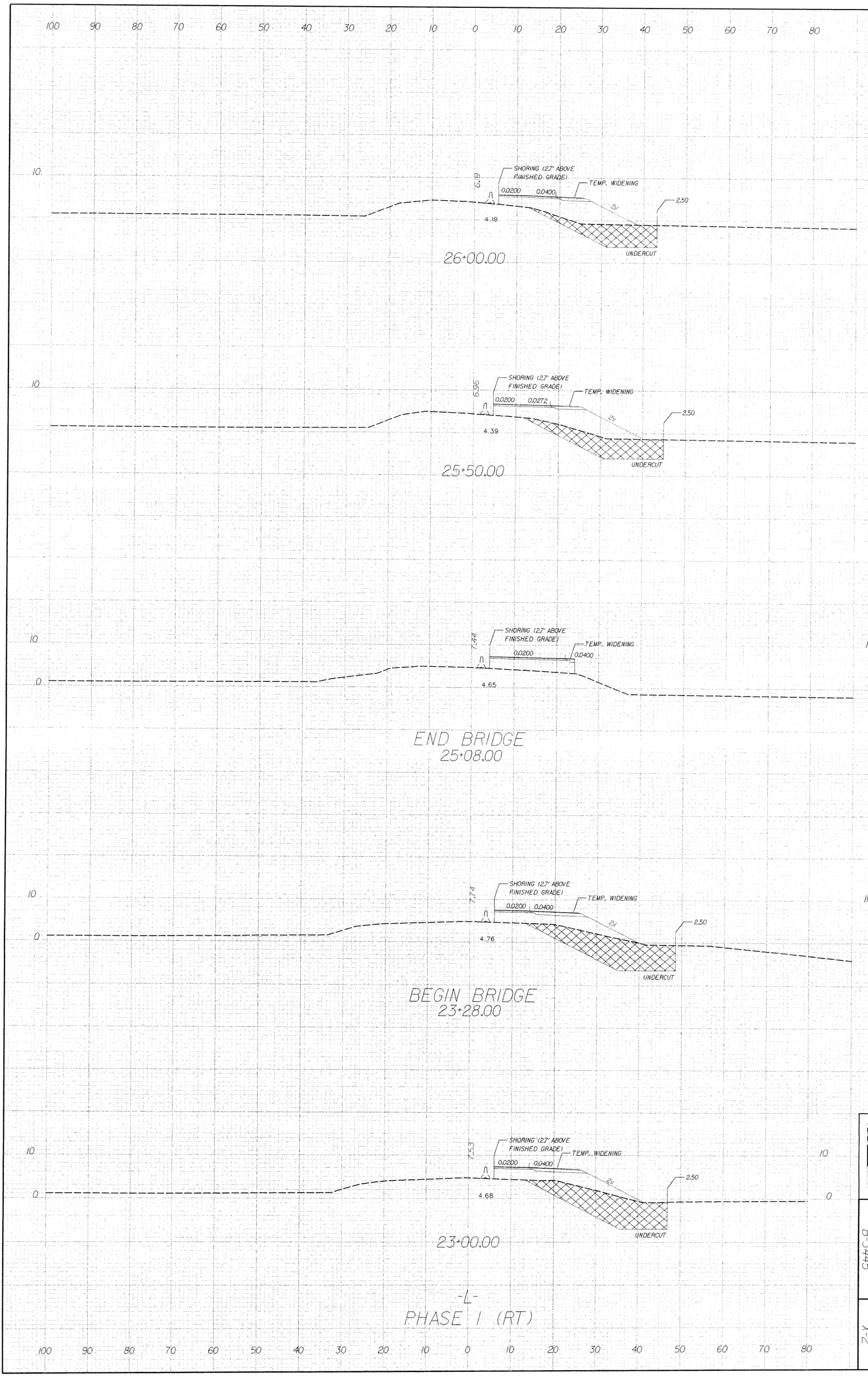
5 0 10

Project Reference Number	Sheet No.
B-3445	X-1

Carter:Burgess

Consultants in Planning, Engineering, Architecture, Construction Management and Related Services

5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612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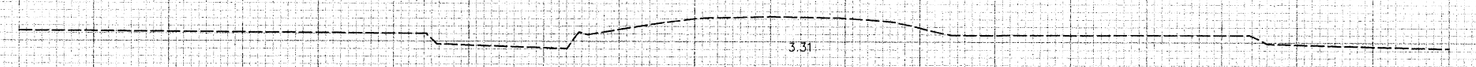
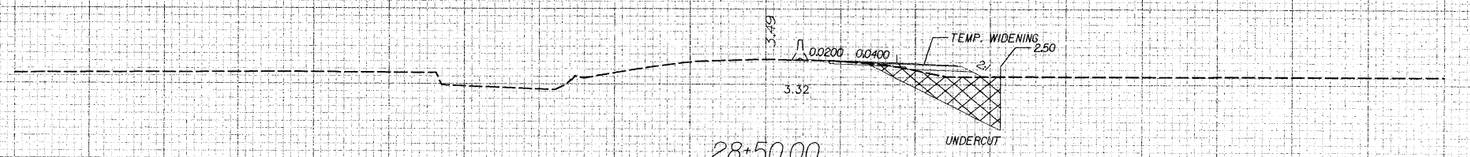
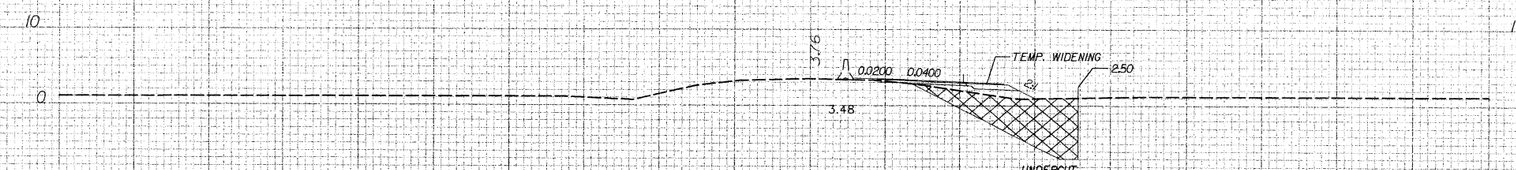
10
SHORING (2.7' ABOVE FINISHED GRADE)
6.8
0.0200
0.0400
TEMP. WIDENING
2:1
2.50
4.19
UNDERCUT
26+00.00
10
SHORING (2.7' ABOVE FINISHED GRADE)
6.56
0.0200
0.0272
TEMP. WIDENING
2:1
2.50
4.39
UNDERCUT
25+50.00
10
0
SHORING (2.7' ABOVE FINISHED GRADE)
7.44
0.0200
TEMP. WIDENING
0.0400
4.65
END BRIDGE
25+08.00
10
0
SHORING (2.7' ABOVE FINISHED GRADE)
7.74
0.0200
0.0400
TEMP. WIDENING
2:1
2.50
4.76
UNDERCUT
BEGIN BRIDGE
23+28.00
10
0
SHORING (2.7' ABOVE FINISHED GRADE)
7.53
0.0200
0.0400
TEMP. WIDENING
2:1
2.50
4.68
UNDERCUT
23+00.00
-L-
PHASE 1 (RT)
100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80
5 0 10
Project Reference Number
B-3445
Sheet No.
X-2



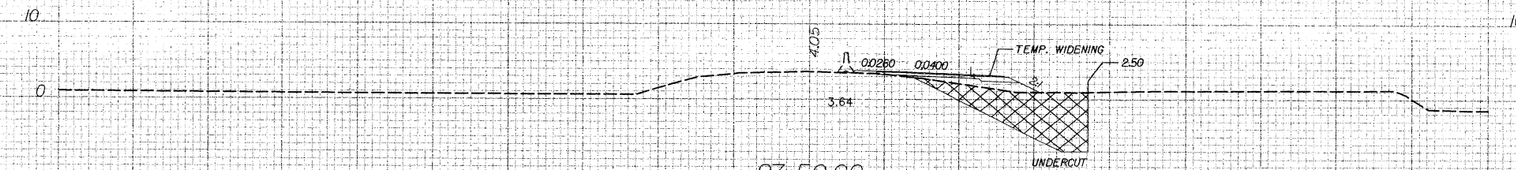
29+00.00



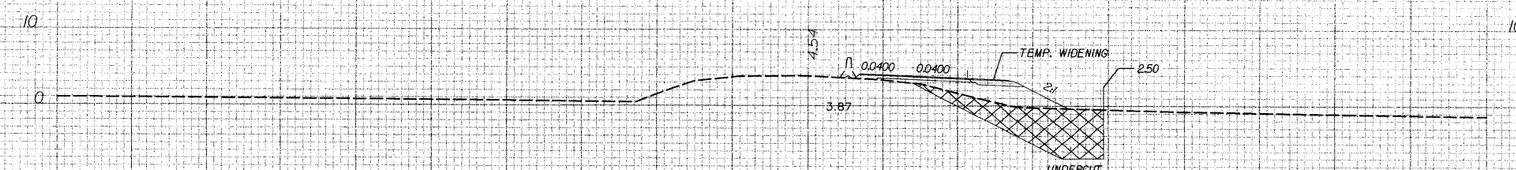
28+50.00



28+00.00



27+50.00



27+00.00

26+50.00

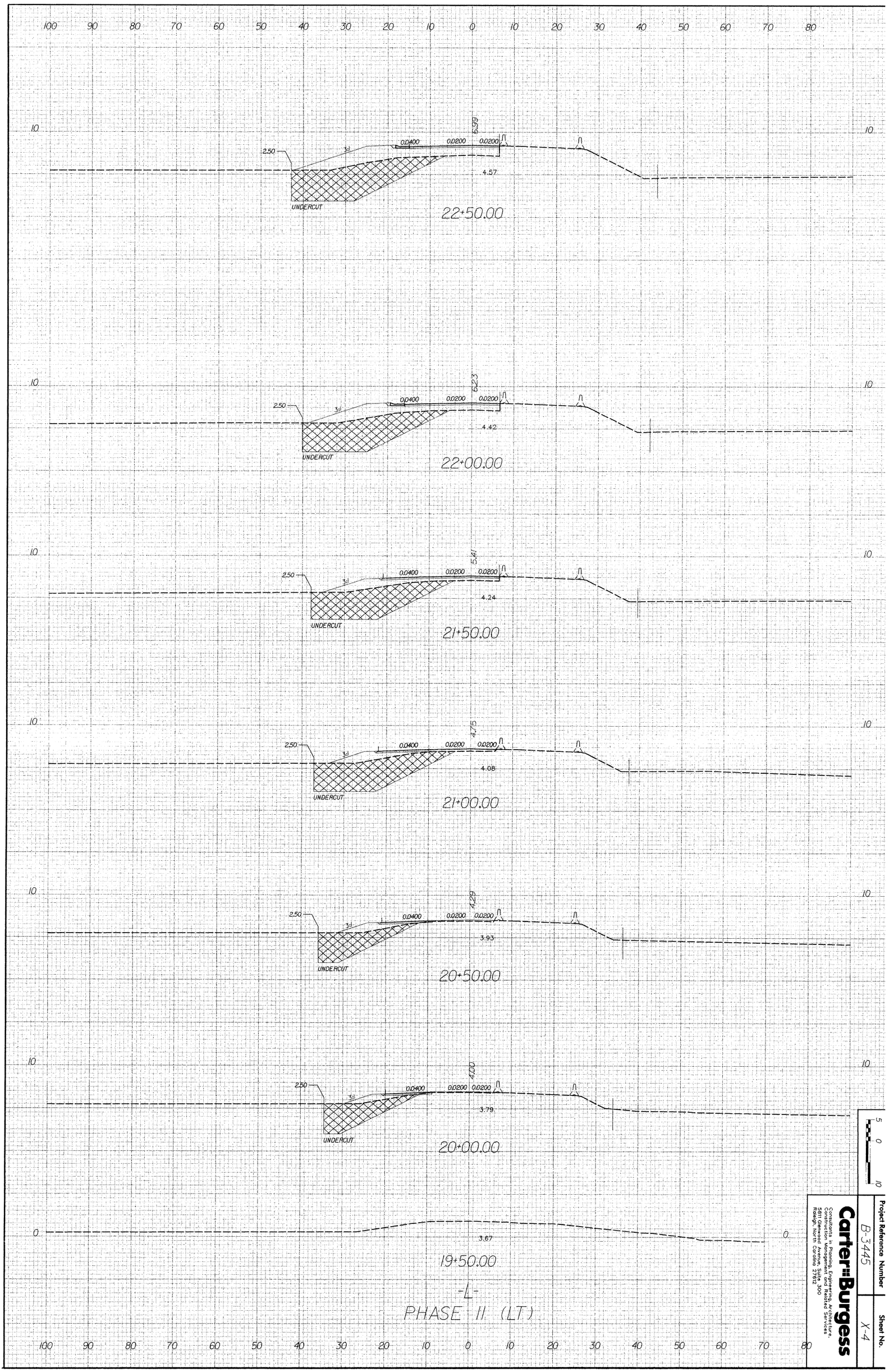
-L-

PHASE 1 (RT.)

5 0 10

Project Reference Number: B-3445

Sheet No.: X-3



Carter-Burgess

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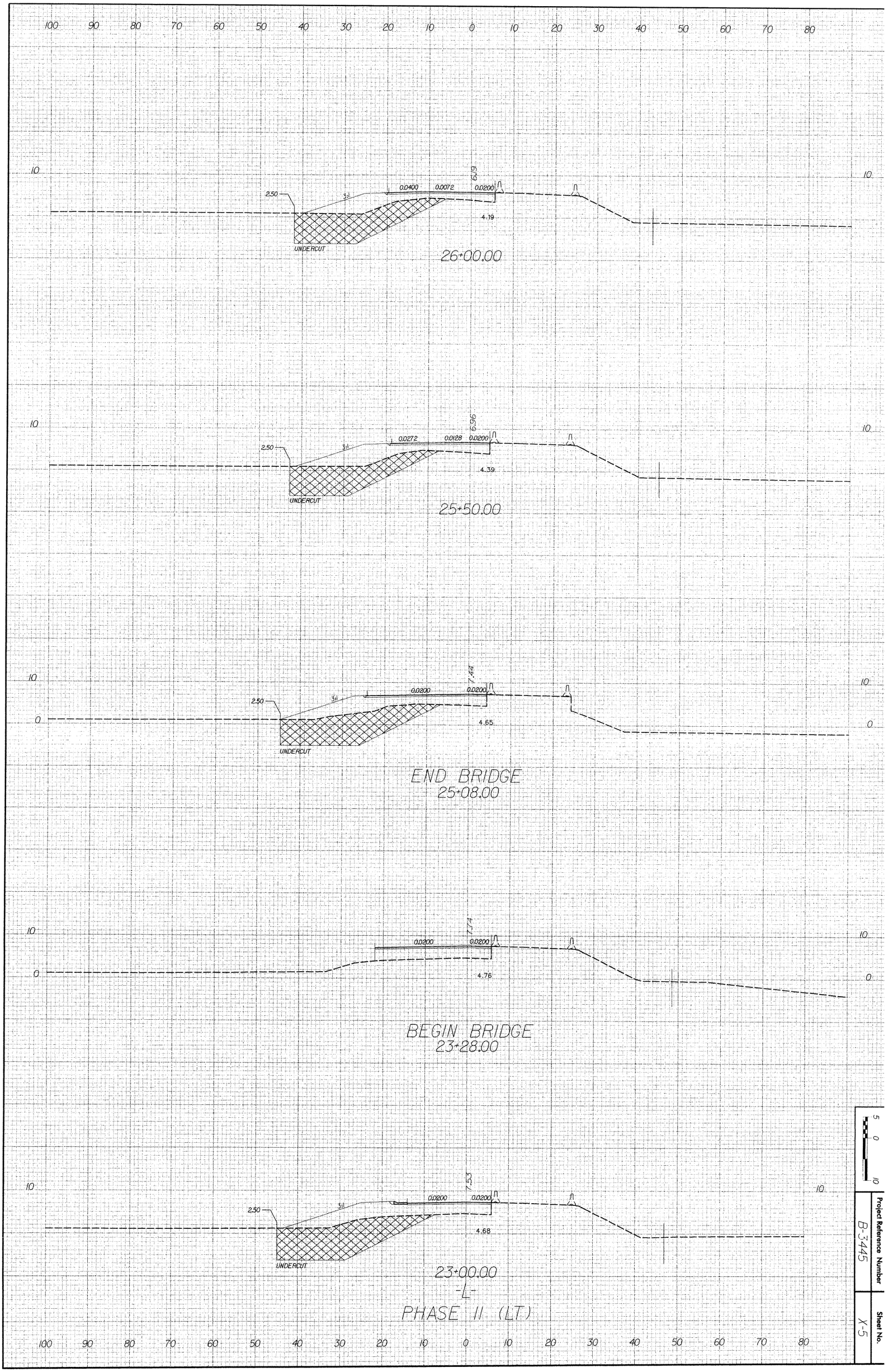
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

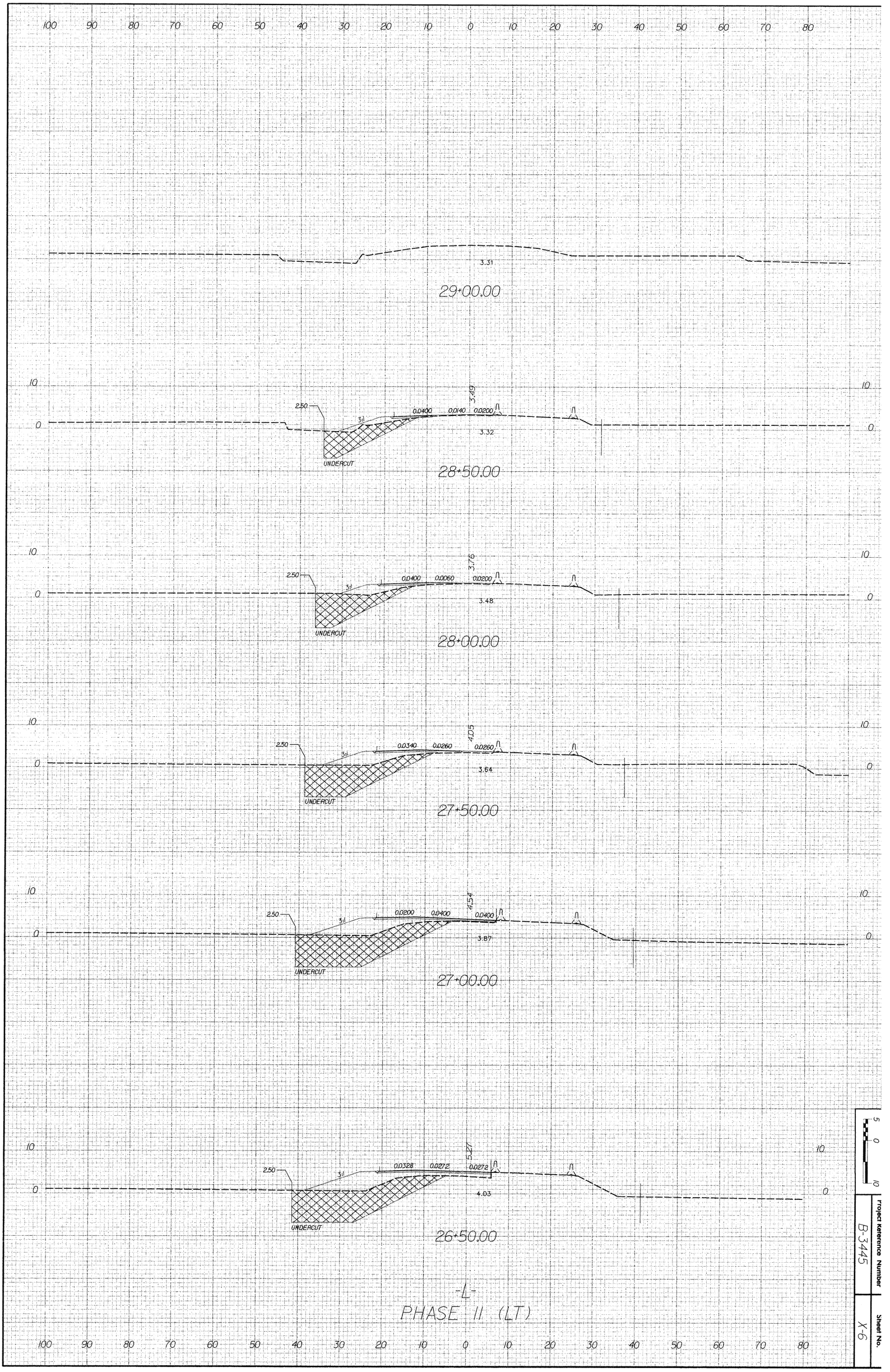
Project Reference Number	Sheet No.
B-3445	X-4



5 0 10

Project Reference Number
B-3445

Sheet No.
X-5


100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80
3.31
29+00.00
10
0
2.50
3:1
0.0400
0.0140
0.0200
3.49
3.32
UNDERCUT
28+50.00
0.0400
0.0060
0.0200
3.76
3.48
28+00.00
0.0340
0.0260
0.0260
4.05
3.64
27+50.00
0.0200
0.0400
0.0400
4.54
3.87
27+00.00
0.0328
0.0272
0.0272
5.27
4.03
26+50.00
-L-
PHASE II (LT)
5 0 10
Project Reference Number
B-3445
Sheet No.
X-6

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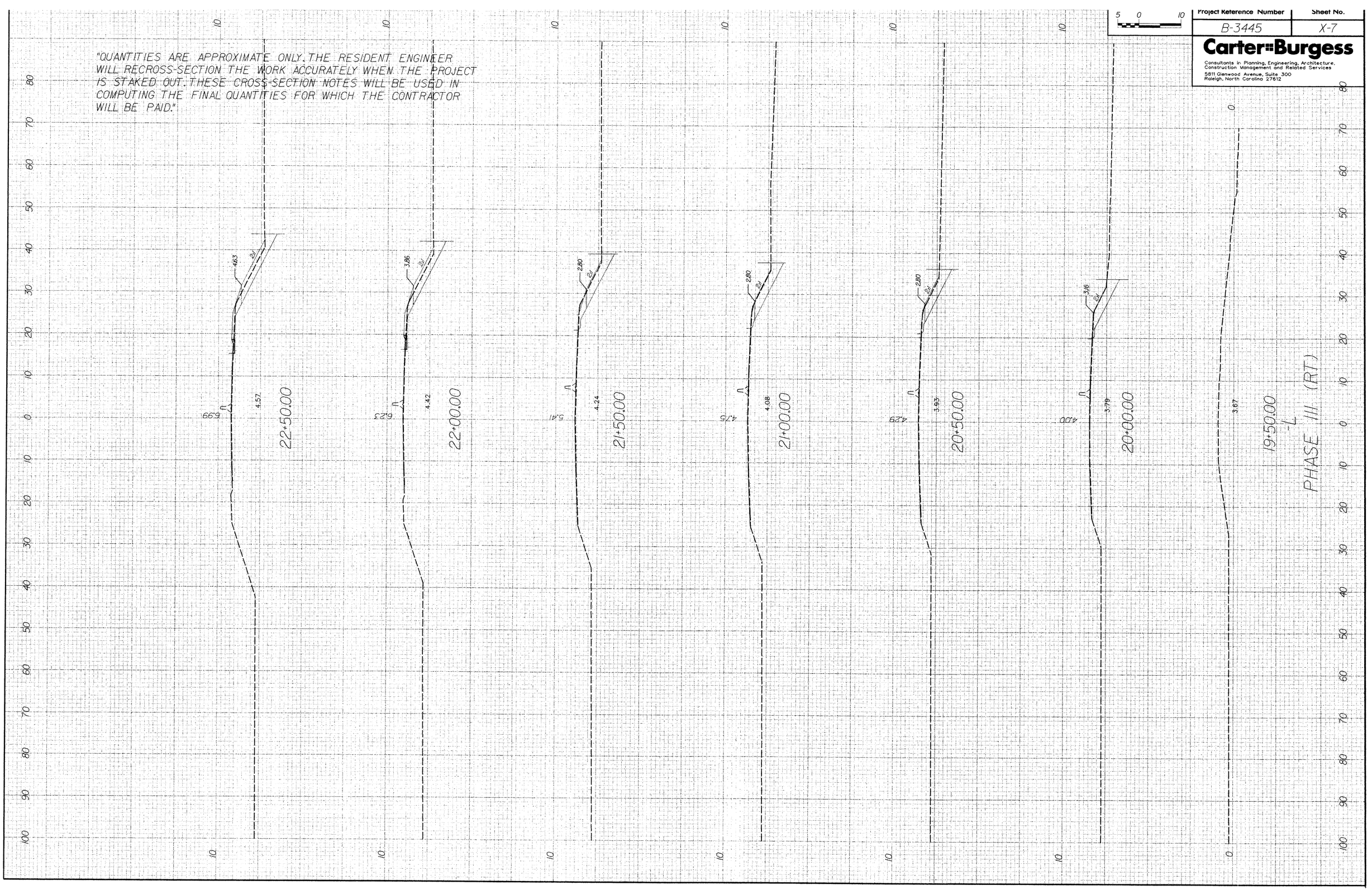
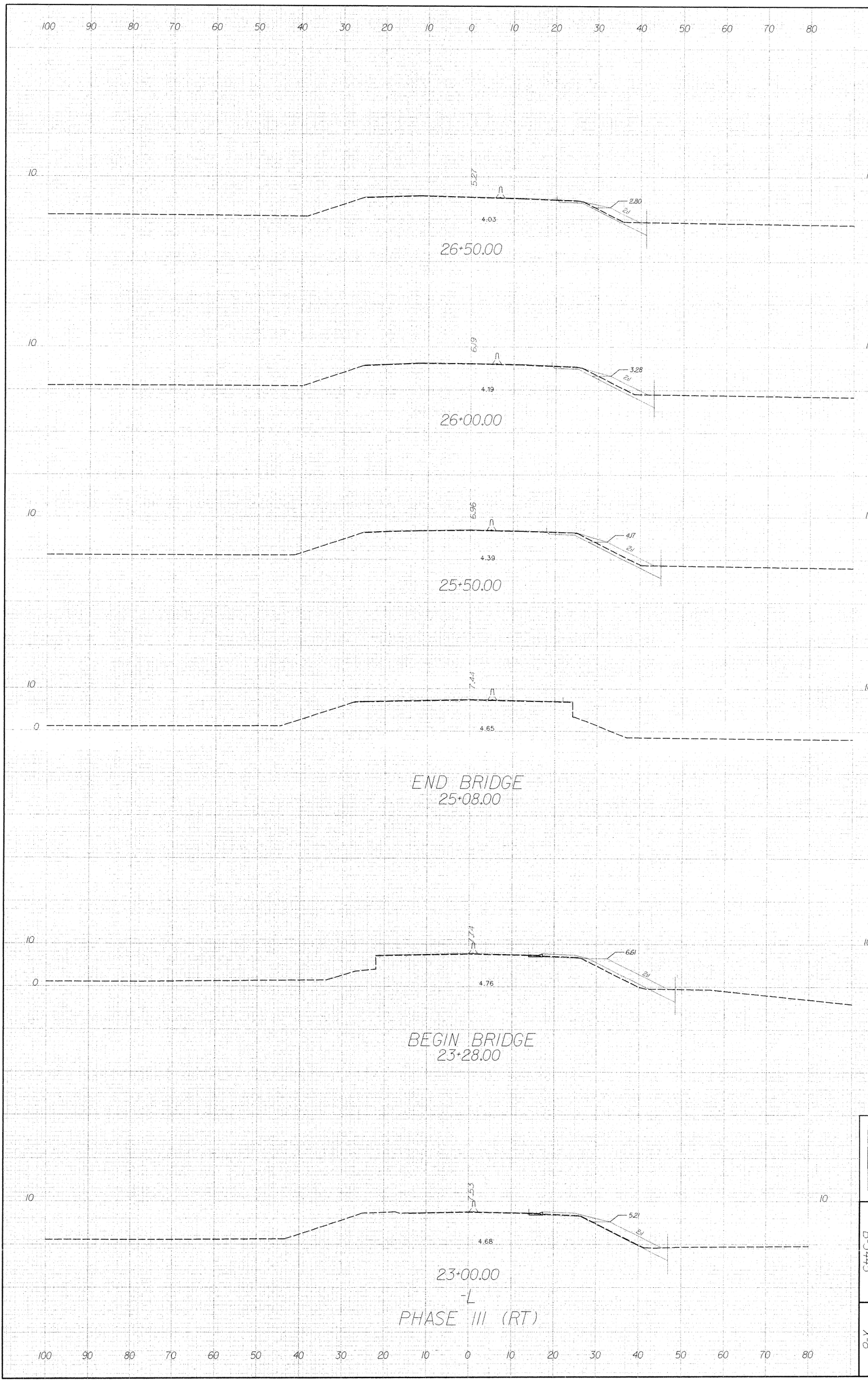


Project Reference Number	Sheet No.
B-3445	X-7

Carter:Burgess
Consultants in Planning, Engineering, Architecture, Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612


100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80
10
0
5.27
2.80
2:1
4.03
26+50.00
6.19
3.28
4.19
26+00.00
6.96
4.17
4.39
25+50.00
7.44
4.65
END BRIDGE
25+08.00
7.74
6.61
4.76
BEGIN BRIDGE
23+28.00
7.53
5.21
4.68
23+00.00
-L
PHASE III (RT)
5 0 10
B-3445
X-8


100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80
3.31
29+00.00
10
3.49
2.81
2:1
3.32
28+50.00
3.76
2.75
3.48
28+00.00
4.05
2.97
3.64
27+50.00
4.54
2.80
3.87
27+00.00
-L-
PHASE III (RT)
5 0 10
B-3445
X-9

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

DIVISION OF WATER QUALITY
July 25, 2002

NC Dept of Transportation
Attn: Mr. Marshall Clawson
1548 Mail Service Center
Raleigh, NC 27699

Subject: Stormwater Permit No. SW7020604
Bridge Replacement for
Bridge No. 7, Hwy 615
General Stormwater Permit
Currituck County

Dear Mr. Clawson:

The Washington Regional Office received the completed Stormwater Application and supporting information on June 13, 2002. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7020604 dated July 25, 2002 to the NC Department of Transportation.

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

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

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

Sincerely,

Jim Mulligan
Water Quality Regional Supervisor
Washington Regional Office

cc: Washington Regional Office
Central Files

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

STATE STORMWATER MANAGEMENT PERMIT

GENERAL PERMIT

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

PERMISSION IS HEREBY GRANTED TO

NC Department of Transportation
Currituck County

FOR THE

construction, operation and maintenance of stormwater management systems in compliance with the provisions of 15A NCAC 2H.1000 (hereafter referred to as the *"stormwater rules"*) and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit for Best Management Practices to serve Bridge No. 7 replacement project located near Knotts Island, NC.

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

I. DESIGN STANDARDS

1. This project involves replacement of Bridge No. 7 on NC Hwy 615 near Knotts Island, NC. BMP's include avoiding deck drains, and use of grassed shoulders.

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

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

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

II. SCHEDULE OF COMPLIANCE

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

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

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

III. GENERAL CONDITIONS

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

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

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

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

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

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

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

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

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

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

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

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

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

Permit Number SW7020604

United States Department of the Interior

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

GUIDELINES FOR AVOIDING IMPACTS TO THE WEST INDIAN MANATEE
Precautionary Measures for Construction Activities in North Carolina Waters

The West Indian manatee (*Trichechus manatus*), also known as the Florida manatee, is a Federally-listed endangered aquatic mammal protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) and the Marine Mammal Protection Act of 1972, as amended (16 U.S.C 1461 *et seq.*). The manatee is also listed as endangered under the North Carolina Endangered Species Act of 1987 (Article 25 of Chapter 113 of the General Statutes). The U.S. Fish and Wildlife Service (Service) is the lead Federal agency responsible for the protection and recovery of the West Indian manatee under the provisions of the Endangered Species Act.

Adult manatees average 10 feet long and weigh about 2,200 pounds, although some individuals have been recorded at lengths greater than 13 feet and weighing as much as 3,500 pounds. Manatees are commonly found in fresh, brackish, or marine water habitats, including shallow coastal bays, lagoons, estuaries, and inland rivers of varying salinity extremes. Manatees spend much of their time underwater or partly submerged, making them difficult to detect even in shallow water. While the manatee's principal stronghold in the United States is Florida, the species is considered a seasonal inhabitant of North Carolina with most occurrences reported from June through October.

To protect manatees in North Carolina, the Service's Raleigh Field Office has prepared precautionary measures for general construction activities in waters used by the species. Implementation of these measure will allow in-water projects which do not require blasting to proceed without adverse impacts to manatees. In addition, inclusion of these guidelines as conservation measures in a Biological Assessment or Biological Evaluation, or as part of the determination of impacts on the manatee in an environmental document prepared pursuant to the National Environmental Policy Act, will expedite the Service's review of the document for the fulfillment of requirements under Section 7 of the Endangered Species Act. These measures include:

1. The project manager and/or contractor will inform all personnel associated with the project that manatees may be present in the project area, and the need to avoid any harm to these endangered mammals. The project manager will ensure that all construction personnel know the general appearance of the species and their habit of moving about completely or partially submerged in shallow water. All construction personnel will be informed that they are responsible for observing water-related activities for the presence of manatees.

2. The project manager and/or the contractor will advise all construction personnel that

there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act and the Endangered Species Act.

3. If a manatee is seen within 100 yards of the active construction and/or dredging operation or vessel movement, all appropriate precautions will be implemented to ensure protection of the manatee. These precautions will include the immediate shutdown of moving equipment if a manatee comes within 50 feet of the operational area of the equipment. Activities will not resume until the manatee has departed the project area on its own volition (i.e., it may not be herded or harassed from the area).

4. Any collision with and/or injury to a manatee will be reported immediately. The report must be made to the U.S. Fish and Wildlife Service (ph. 919.856.4520 ext. 16), the National Marine Fisheries Service (ph. 252.728.8762), and the North Carolina Wildlife Resources Commission (ph. 252.448.1546).

5. A sign will be posted in all vessels associated with the project where it is clearly visible to the vessel operator. The sign should state:

> CAUTION: The endangered manatee may occur in these waters during the warmer months, primarily from June through October. Idle speed is required if operating this vessel in shallow water during these months. All equipment must be shut down if a manatee comes within 50 feet of the vessel or operating equipment. A collision with and/or injury to the manatee must be reported immediately to the U.S. Fish and Wildlife Service (919-856-4520 ext. 16), the National Marine Fisheries Service (252.728.8762), and the North Carolina Wildlife Resources Commission (252.448.1546).

6. The contractor will maintain a log detailing sightings, collisions, and/or injuries to manatees during project activities. Upon completion of the action, the project manager will prepare a report which summarizes all information on manatees encountered and submit the report to the Service's Raleigh Field Office.

7. All vessels associated with the construction project will operate at "no wake/idle" speeds at all times while in water where the draft of the vessel provides less than a four foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

8. If siltation barriers must be placed in shallow water, these barriers will be: (a) made of material in which manatees cannot become entangled; (b) secured in a manner that they cannot break free and entangle manatees; and, (c) regularly monitored to ensure that manatees have not become entangled. Barriers will be placed in a manner to allow manatees entry to or exit from essential habitat.

Prepared by (rev. 06/2003):
U.S. Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726
919/856-4520

Figure 1. The whole body of the West Indian manatee may be visible in clear water; but in the dark and muddy waters of coastal North Carolina, one normally sees only a small part of the head when the manatee raises its nose to breathe.

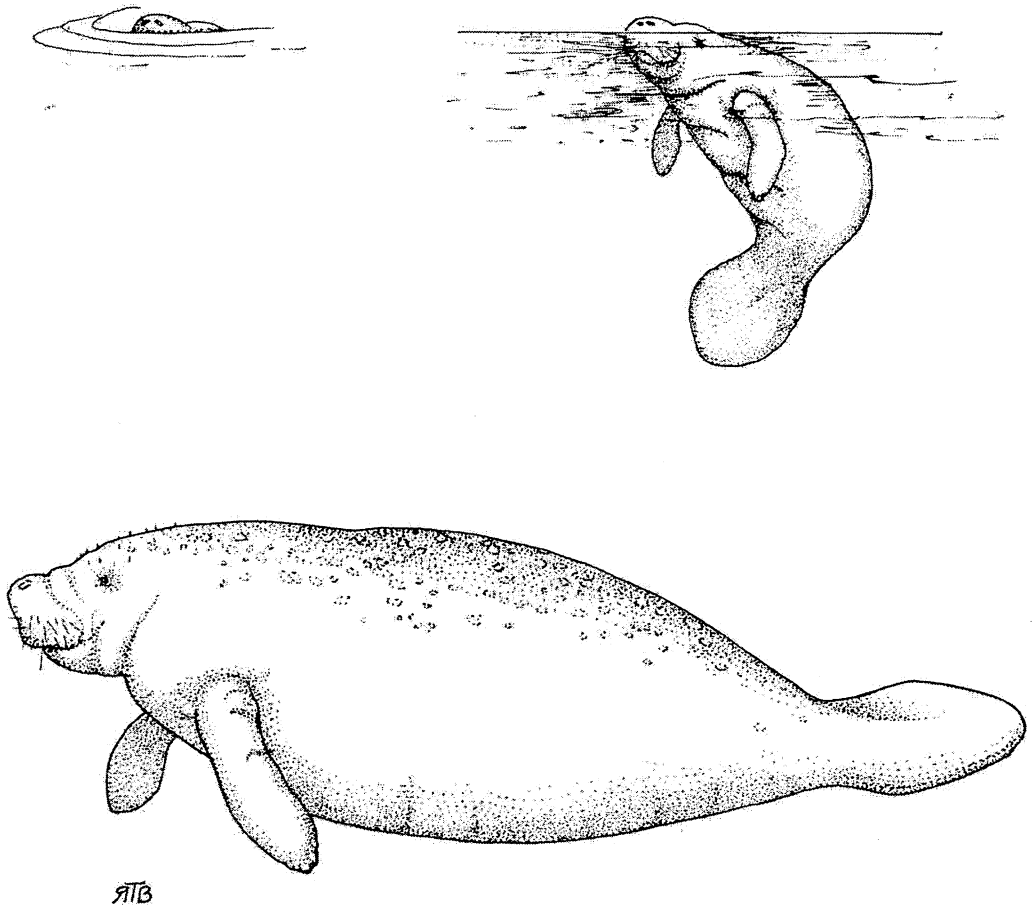


Illustration used with the permission of the North Carolina State Museum of Natural Sciences. Source: Clark, M. K. 1987. Endangered, Threatened, and Rare Fauna of North Carolina: Part I. A re-evaluation of the mammals. Occasional Papers of the North Carolina Biological Survey 1987-3. North Carolina State Museum of Natural Sciences. Raleigh, NC. pp. 52.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

April 22, 2004

Mr. William D. Gilmore, P.E.
EEP Transition Manager
Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

Dear Sir:

Subject: Currituck County. Replacement of Bridge No. 7 over Corey's Ditch on NC 615. State Project No 8.1040601. TIP No. B-3445.

The purpose of this letter is to request that the North Carolina Ecosystem Enhancement Program (EEP) provide confirmation that you are willing to provide compensatory mitigation for the project in accordance with the Memorandum of Agreement (MOA) signed July 22, 2003 by the USACE, the NCDENR and the NCDOT.

The North Carolina Department of Transportation proposes to replace Bridge No. 7 over Corey's Ditch on NC 615 in Currituck County. The existing bridge will be replaced with a new bridge at the existing location. The proposed right-of-way (ROW) width for the project is 120 ft.

RESOURCES UNDER THE JURISDICTION OF SECTION 404 AND 401 OF THE CLEAN WATER ACT.

We have avoided and minimized the impacts to jurisdictional resources to the greatest extent possible as described in the permit application. A copy of the permit application can be found at http://www.ncdot.org/planning/pe/naturalunit/Applications.html. The remaining impacts to jurisdictional resources will be compensated for by mitigation provided by the EEP program. We estimate that 0.18 acre of wetlands will be impacted.

The project is located in the Coastal Plain Physiographic Province in Currituck County in the Pasquotank River basin in Hydrological Cataloguing Unit 03010205.

- The wetland impacts total 0.18 acre of estuarine wetlands. We propose to provide compensatory mitigation for the wetland impacts by using the EEP for the 0.18 acre of impacts.

Please send the letter of confirmation to Bill Biddlecome (USACE Coordinator) at U. S. Army Corps of Engineers Washington Regulatory Field Office (P.O. Box 1000 Washington, NC 27889-1000). Mr. Biddlecome's FAX number is (252) 975-1399. The current let date for the project is September 21, 2004 for which the let review date is August 3, 2004.

In order to satisfy regulatory assurances that mitigation will be performed; the NCDWQ requires a formal letter from EEP indicating their willingness and ability to provide the mitigation work requested by NCDOT. The NCDOT requests such a letter of confirmation be addressed to Mr. John Hennessy of NCDWQ, with copies submitted to NCDOT.

If you have any questions or need additional information please call Matt Haney at (919) 715-1428

Sincerely,

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

cc: Mr. John Hennessy, Division of Water Quality
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Ron Sechler, NMFS
Mr. Michael Street, NCDMF
Ms. Cathy Brittingham, NCDCM
Ms. Lynn Mathis, NCDCM
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Don Conner, P.E., Division 1 Engineer
Mr. Clay Willis, Division 1 DEO
Mr. David Franklin, USACE, Wilmington
Mr. William D. Gilmore, P.E., EEP, Raleigh
Ms. Becky Fox, USEPA
Mr. John F. Sullivan, III, FHWA

B345

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- 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:

United State Fish & Wildlife Service
Mackay Island National Wildlife Refuge
P. O. Box 39
Knotts Island, NC 27950
Attn: Ms. Suzanne Baird, Manager

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*: DONALD SAVEDGE — B. Date of Delivery: 11.29.01

C. Signature: X [signature] ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
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☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* P 459 519 965

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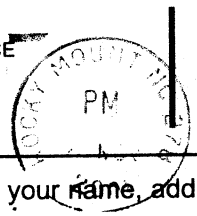

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PD & EA Branch
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Raleigh, NC 27699-1548
Attn: Ms. Beth Harmon

01

PS Form **3800**, April 1995

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