



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

December 29, 2005

N.C. Division of Coastal Management  
2877 Highway 70  
Beaufort, NC 28516

ATTENTION: Mr. Bill Arrington  
NCDOT Coordinator

Dear Sir:

Subject: **CAMA General Development Permit Application** for the Replacement of Bridge No. 19 over Stones Creek on NC 210, Onslow County. Federal Aid Project No. BRSTP-0210(3), State Project No. 8.1262101, TIP Project No. B-4215.

Please find enclosed the CAMA General permit application, permit drawings, utility drawing, landowner receipts, and a copy of the State Stormwater Permit (Permit No. SW8 050917) for the above-mentioned project. Work Order 8.1262101 will be debited \$100.00 for the application of the subject project. Bridge No. 19 over Stones Creek on NC 210 in Onslow County will be replaced in the existing location utilizing an off-site detour. The proposed replacement structure is a bridge 130 feet in length, with two 12-foot travel lanes, and one 8-foot, 10-inch shoulder and one 12-foot shoulder. The approach roadway will consist of two 12-foot travel lanes with 8-foot shoulders, of which 4 feet of the shoulders will be paved.

Proposed impacts include 0.003 acre of permanent impact (fill) to 404 wetlands, 0.043 acre of hand-clearing impact to 404 wetlands, 0.003 acre of permanent surface water impact from the placement of a single bridge bent, and 1.82 square feet of permanent surface water impact from the installation of two piers for an aerial sewer line.

#### Water Resources

Stones Creek is located in the 0303001 CU of the White Oak River Basin. The Division of Water Quality (DWQ) has assigned Stones Creek a Stream Index Number of 19-30-3. DWQ has assigned a best usage classification of **SA HQW**.

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

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

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

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

## **Bridge Demolition**

Bridge No. 19 is a two-lane structure, 90 feet in length with a 26-foot clear roadway width. The deck and railings of the superstructure are composed of reinforced concrete slab. The substructure is composed of reinforced concrete abutments and reinforced concrete caps on timber piles. The railings will be removed without dropping them in to Waters of the U.S. As stated in the Categorical Exclusion (CE), dropping any portion of the structure in to Waters of the U.S. will be avoided unless there is no other practical method of removal. Best Management Practices for Bridge Demolition and Removal will be implemented.

The CE included a project commitment for an in-water construction moratorium due to the potential for anadromous fish to occur in the project area. A commitment for the implementation of *Stream Crossing Guidelines for Anadromous Fish Passage* was also included in the CE. The North Carolina Wildlife Resource Commission (NCWRC) requested both of these commitments. It was later determined that the project is not located within the jurisdiction of the NCWRC, but rather, within the jurisdiction of the North Carolina Division of Marine Fisheries (NCDMF). These commitments and the proper jurisdiction issue were discussed with Travis Wilson of the NCWRC, and Mr. Wilson subsequently rescinded the request for the in-water construction moratorium and the request for the implementation of the *Stream Crossing Guidelines for Anadromous Fish Passage*. As the proper jurisdictional agency, NCDMF was contacted. Fritz Rhode with NCDMF informed NCDOT that based on his personal knowledge and the NCDMF's sampling of Stones Creek, there will be no anadromous fish using the creek, nor will any shortnose sturgeon be present. NCDMF did not request any moratoria for this project or any other project conditions.

## **Essential Fish Habitat**

During the preparation of the Categorical Exclusion document for this project, it was determined that an Essential Fish Habitat (EFH) assessment was not warranted for this project. Ron Sechler with the National Marine Fisheries Service (NMFS) was contacted prior to submittal of this application regarding EFH. Mr. Sechler stated that due to the project's design for avoidance/minimization of impacts (e.g. replacing bridge on same location, reducing the number of bents in the water, using an off-site detour, etc.), NMFS does not require an EFH assessment.

## **Avoidance and Minimization**

Due to the location of this project and that of the adjacent wetlands and surface waters, total avoidance of impacts during the construction of this project is not feasible. NCDOT has taken the following steps to avoid/minimize impacts to the resources:

- NCDOT will be replacing Bridge No. 19 in its existing location, and an off-site detour will be utilized for re-routing traffic during construction.
- The existing 90-foot long bridge will be replaced with a 130-foot long bridge, increasing the floodplain under the bridge.
- The existing bridge has two (2) bents in the water. The proposed bridge will have a single bent in the water.
- Minimum widths for the approaches and structure have been utilized. In order to allow for the capture of water on the bridge to prevent direct discharge to Stones Creek, the bridge needs to be wide enough to alleviate hydraulic concerns for safety regarding the spread of water on the

bridge. As such, the proposed bridge has a 12-foot wide shoulder on the south side, and an 8-foot, 10- inch wide shoulder on the north side.

- Fill slopes in the wetlands will be 2:1, utilizing rock plating (riprap) to avoid major erosion and slope failure due to the loose alluvial sandy soils of coastal areas.
- Two (2) preformed scour holes, located on the north side of the bridge on either side of Stones Creek, will be constructed to filter stormwater runoff.
- *Design Standards for Sensitive Watersheds* will be implemented throughout project construction.

## Mitigation

As the project qualifies for the CAMA General Permit, mitigation is not required, nor proposed.

## Federally Protected Species

As of January 29, 2003, the US Fish and Wildlife Service (USFWS) lists 12 federally protected species for Onslow County, as listed in Table 1. The biological conclusions of No Effect contained in the CE remain valid.

**Table 1. Federally Protected Species for Onslow County.**

Common Name	Scientific Name	Status	Habitat Present	Biological Conclusion
American alligator	Alligator mississippiensis	T(S/A) <sup>1</sup>	Yes	Not Applicable
Loggerhead sea turtle	<i>Caretta caretta</i>	T	No	No Effect
Piping plover	<i>Charadrius melodus</i>	T	No	No Effect
Green sea turtle	<i>Chelonia mydas</i>	T	No	No Effect
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	No	No Effect
Eastern cougar	<i>Felis concolor cougar</i>	E	No	No Effect
Bald eagle	<i>Haliaeetus leucocephalus</i>	T <sup>1</sup>	No	No Effect
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	No	No Effect
Seabeach amaranth	<i>Amaranthus pumilus</i>	T	No	No Effect
Golden sedge	<i>Carex lutea</i>	E	No	No Effect
Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	E	No	No Effect
Cooley's meadowrue	<i>Thalictrum colleyi</i>	E	No	No Effect

T(S/A) = Threatened due to similar appearance

<sup>1</sup> Proposed for delisting

T = Threatened

E = Endangered

## Utilities

The following utilities are located at the project site: Onslow County Water Department, North Topsail Utilities, Inc., U.S. Marines, Jones Onslow EMC, and Sprint. Each of the utilities is described below.

Onslow County Water Department: Two (2) existing 12-inch ductile iron water mains, one on top of the other, supported on wooden piers are in conflict with the bridge construction and will need to be removed. The water mains will be replaced with HDPE pipe using the directional bore method, eliminating any impacts to environmentally sensitive/wetland boundary areas.

North Topsail Utilities, Inc.: An existing 10-inch ductile iron force main sewer line that is supported on wooden piers, located on the north side of Bridge No. 19, is in conflict with the bridge construction and will need to be removed. The original approach for relocating the sewer line using directional drill is not feasible for the utility owner. In the sewer system, two schools and two small businesses use the sewer line for their sewage disposal. During summer months when school is out, a very low flow of waste is present in the system. Because of the low flow, the utility has experienced problems with solids settling in their existing system, especially in low spots along the sewer line. A directional bore with HDPE pipe under Stones Creek would increase the likelihood of problems with the settling of solids in the pipe. To maintain the same level of operation of the existing sewer system and not increase the likelihood of problems, the proposed pipe needs to remain at the same elevation as the existing line, eliminating the low spot that the installation of the HDPE by directional bore would introduce into the system. To achieve this, piers supporting the proposed sewer line is the only feasible means to relocate the sewer line with no adverse impact to the environment. The bridge design does not allow any pipes to be attached to the bridge itself. A pier support system with 40-foot centers will have minimal impact to Stones Creek. Two piers of the support system will be located at both edges of the creek, reducing the likelihood of debris entrapment from a pier located in the center of the creek. The piers will be installed by pile driving method, and the equipment to drive the piers will not enter the creek or any wetland areas. Small areas of temporary impacts to the adjacent CAMA buffer area will occur from equipment staging for the pier installations (see Utility Drawing - Sheet 1 of 1).

U.S. Marine Corp.: A utility line located outside of the existing right of way is not in conflict with bridge construction.

Jones Onslow EMC: Existing power lines run on the north side of the bridge, outside of the existing right of way. These power lines are of sufficient height and location to not be in conflict with bridge construction.

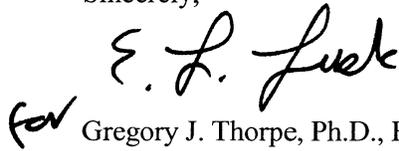
Sprint Telephone: Sprint will be replacing aerial telephone poles/lines and fiber optic cable with underground lines, installed by directional bore, and will run from a point before the start of the proposed guardrail at the beginning of the project, on the north side, to a point beyond the proposed guardrail, on the north side, towards the end of the project. These lines will be within the existing right of way (approximately 5' inside of the existing right of way) and should not impact wetland areas.

### **Regulatory Approvals**

NCDOT requests that the proposed work be authorized under a Coastal Area Management Act General Development Permit. The landowner receipts are attached. NCDOT is applying for a United States Army Corps of Engineers (USACE) Section 404 permit and a North Carolina Division of Water Quality (NCDWQ) Section 401 Water Quality Certification under a separate cover. A copy of this permit application will be posted on the NCDOT website at: <http://www.ncdot.org/doh/preconstruct/pe/>

If you have any questions or need additional information, please contact Bill Barrett at (919) 715-1624.

Sincerely,

The image shows a handwritten signature in black ink that reads "G. J. Thorpe". The signature is written in a cursive style with a large initial "G".

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

w/attachment

Mr. John Hennessy, NCDWQ (2 Copies)  
Mr. Travis Wilson, NCWRC  
Mr. Gary Jordan, USFWS  
Mr. Ron Sechler, NMFS  
Mr. Michael Street, NCDMF  
Mr. Steve Sollod, NCDCM  
Dr. David Chang, P.E., Hydraulics  
Mr. Mark Staley, Roadside Environmental  
Mr. Greg Perfetti, P.E., Structure Design  
Mr. H. Allen Pope, P.E., Division Engineer  
Mr. Mason Herndon, Division Environmental Officer

w/out attachment

Mr. Jay Bennett, P.E., Roadway Design  
Mr. Majed Alghandour, P. E., Programming and TIP  
Mr. Art McMillan, P.E., Highway Design  
Mr. Dave Timpy, USACE, Wilmington  
Mr. Elmo Vance, PDEA  
Ms. Beth Harmon, EEP  
Mr. Todd Jones, NCDOT External Audit Branch

# APPLICATION

(To be completed by all applicants)

## 1. APPLICANT

a. Landowner:

Name N. C. Department of Transportation

Address 1548 Mail Service Center

City Raleigh State NC

Zip 27699-1548 Day Phone 919-733-3141

Fax 919-733-9794

b. Authorized Agent:

Name Phil Harris, PE

Address Same as above

City \_\_\_\_\_ State \_\_\_\_\_

Zip \_\_\_\_\_ Day Phone \_\_\_\_\_

Fax \_\_\_\_\_

c. Project name (if any) B-4215

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

## 2. LOCATION OF PROPOSED PROJECT

a. County: Onslow \_\_\_\_\_

b. City, town, community or landmark

Dixon

c. Street address or secondary road number

NC 210

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

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

## 3. DESCRIPTION AND PLANNED USE OF PROPOSED PROJECT

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

Bridge and associated excavation and fill

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

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

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. Bridge No. 19 needs to be replaced due to deterioration of the existing structure (25.5/100 sufficiency rating). Offsite detour to be used. Typical roadway construction methods will be implemented.

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#### 4. LAND AND WATER CHARACTERISTICS

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- a. Size of entire tract N/A PROJECT LIMITS X R/W
- b. Size of individual lot(s) N/A
- c. Approximate elevation of tract above MHW or NWL  
0 - 10 feet NWL
- d. Soil type(s) and texture(s) of tract  
Muckalee loam and Marvyn loamy fine sand
- e. Vegetation on tract Coastal Plain Bottomland  
Hardwood species: laurel oak, red maple, sweetgum,  
ironwood, swamp tupelo, sycamore, American elm,  
and green ash.
- f. Man-made features now on tract \_\_\_\_\_  
Bridge No. 19 and associated approaches.
- g. What is the CAMA Land Use Plan land classification of the site? *(Consult the local land use plan.)*
- |  |                                       |
|--|---------------------------------------|
| <input checked="" type="checkbox"/> Conservation | <input type="checkbox"/> Transitional |
| <input type="checkbox"/> Developed               | <input type="checkbox"/> Community    |
| <input type="checkbox"/> Rural                   | <input type="checkbox"/> Other        |
- h. How is the tract zoned by local government?  
N/A
- i. Is the proposed project consistent with the applicable zoning?  Yes  No  
*(Attach zoning compliance certificate, if applicable)*
- j. Has a professional archaeological assessment been done for the tract?  Yes  No  
If yes, by whom? NCDOT
- k. Is the project located in a National Registered Historic District or does it involve a National Register listed or eligible property?  
 Yes  No
- l. Are there wetlands on the site?  Yes  No  
Coastal (marsh)  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

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#### 5. ADDITIONAL INFORMATION

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

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

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

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

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

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

Name See attached list  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_

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

\_\_\_\_\_

- A **check for \$400** made payable to the Department of Environment, Health, and Natural Resources (DEHNR) to cover the costs of processing the application.
- A **signed AEC hazard notice** for projects in oceanfront and inlet areas.
- A **statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A - 1 to 10)**  
 If the project involves the expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

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 29 day of Dec, 2005.

Print Name E. L. Lusk

Signature E. L. Lusk  
*Landowner or Authorized Agent*

Please indicate attachments pertaining to your proposed project.

- DCM MP-2 Excavation and Fill Information
- DCM MP-3 Upland Development
- DCM MP-4 Structures Information
- 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.

\_\_\_\_\_

**6. CERTIFICATION AND PERMISSION TO ENTER ON LAND**

# 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  Private \_\_\_\_\_
- b. Type of bridge (construction material)  
concrete box girder \_\_\_\_\_
- c. Water body to be crossed by bridge  
Stones Creek \_\_\_\_\_
- d. Water depth at the proposed crossing at MLW or 3.5 ft. NWL \_\_\_\_\_
- e. Will proposed bridge replace an existing bridge?  
 Yes  No  
If yes,
  - (1) Length of existing bridge 90 feet \_\_\_\_\_
  - (2) Width of existing bridge 25.6 feet \_\_\_\_\_
  - (3) Navigation clearance underneath existing bridge 15.5 feet \_\_\_\_\_
  - (4) Will all, or a part of, the existing bridge be removed? (Explain) \_\_\_\_\_  
all \_\_\_\_\_
- f. Will proposed bridge replace an existing culvert(s)?  
 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) \_\_\_\_\_

- g. Length of proposed bridge 130 feet \_\_\_\_\_
- h. Width of proposed bridge 45 feet \_\_\_\_\_
- i. Height of proposed bridge above wetlands  
11.5 feet \_\_\_\_\_
- j. Will the proposed bridge affect existing water flow?  
 Yes  No  
If yes, explain \_\_\_\_\_
- k. Navigation clearance underneath proposed bridge  
17.2 feet \_\_\_\_\_
- l. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening?  Yes  No  
If yes, explain the proposed bridge will increase the navigable opening by having one bent in the water, instead of the existing three. \_\_\_\_\_
- m. Will the proposed bridge cross wetlands containing no navigable waters?  Yes  No  
If yes, explain \_\_\_\_\_
- n. Have you contacted the U.S. Coast Guard concerning their approval?  
 Yes  No  
If yes, please provide record of their action.

**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: NO  
\_\_\_\_ Coastal Wetlands \_\_\_\_ SAVs \_\_\_\_ Other Wetlands  
If yes,  
(1) Length of area to be excavated \_\_\_\_\_  
(2) Width of area to be excavated \_\_\_\_\_  
(3) Amount of material to be excavated in cubic yards \_\_\_\_\_
- c. Will the placement of the proposed bridge or culvert require any highground excavation?  X  Yes \_\_\_\_\_ No  
If yes,  
(1) Length of area to be excavated  172 ft (total)   
(2) Width of area to be excavated  18 feet   
(3) Amount of material to be excavated in cubic yards  3,096 square feet
- d. If the placement of the bridge or culvert involves any excavation, please complete the following:  
(1) Location of the spoil disposal area  An upland area to be determined by the contractor and approved by NCDOT   
(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  X  No  
(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. \_\_\_\_\_  
(6) Does the disposal area include any area below the MHW or NWL? \_\_\_\_\_ Yes  X  No

**Form DCM-MP-5**

If yes, give dimension if different from No. 2 above. \_\_\_\_\_

e. Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d. above) to be placed below MHW or NWL? \_\_\_\_ Yes  X  No

If yes,

- (1) Length of area to be filled \_\_\_\_\_
- (2) Width of area to be filled \_\_\_\_\_
- (3) Purpose of fill \_\_\_\_\_

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:

\_\_\_\_ Coastal Wetlands \_\_\_\_ SAVs  X  Other

Wetlands If yes,

- (1) Length of area to be filled  30 feet
- (2) Width of area to be filled  5 feet
- (3) Purpose of fill  roadway fill / riprap

g. Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d. above) to be placed on highground?  X  Yes \_\_\_\_ No

If yes,

- (1) Length of area to be filled \_\_\_\_\_
- (2) Width of area to be filled \_\_\_\_\_
- (3) Purpose of fill  fill in roadway and shoulder

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?  NCDOT High Quality Waters Erosion Control Methods will be used

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

g. Will wetlands be crossed in transporting equipment to project site? \_\_\_\_ Yes  X  No

If yes, explain steps that will be taken to lessen environmental impacts. \_\_\_\_\_

h. Will the placement of the proposed bridge or culvert require any shoreline stabilization?

X  Yes \_\_\_\_ No

If yes, explain in detail  as shown on plans

Applicant or Project Name

E. L. Fuest

Signature

12.29.05

Date

**4. GENERAL**

a. Will the proposed project involve any mitigation?

\_\_\_\_ Yes  X  No

If yes, explain in detail \_\_\_\_\_

b. Will the proposed project require the relocation of any existing utility lines?  X  Yes \_\_\_\_ No

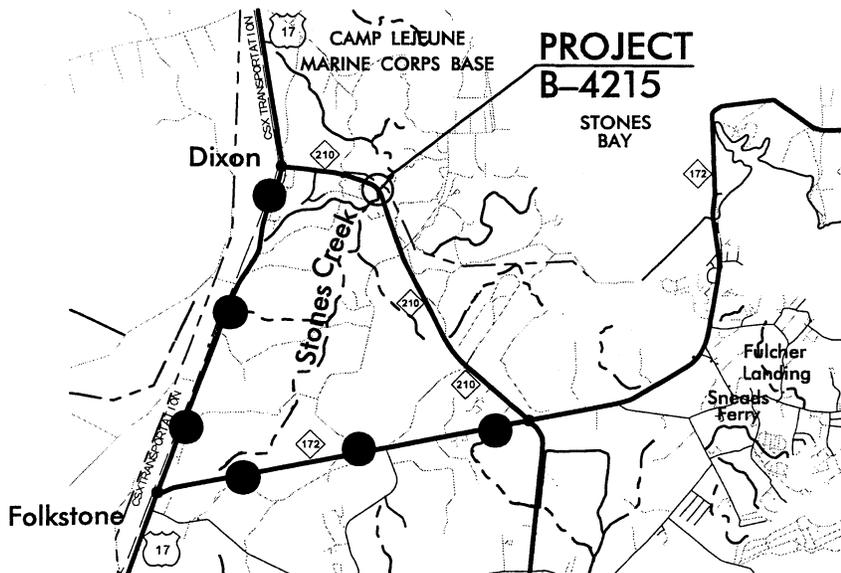
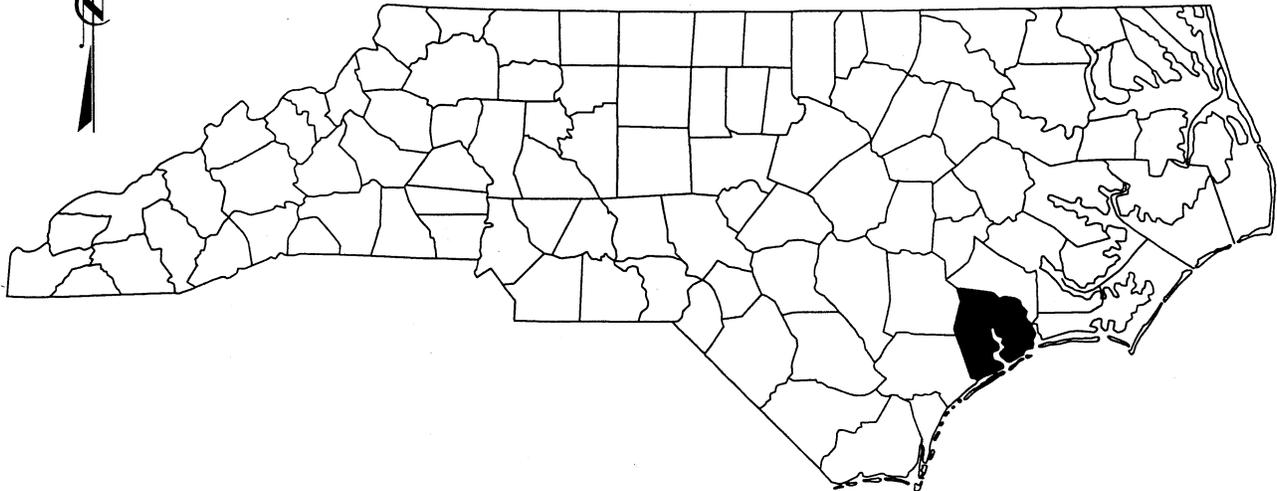
If yes, explain in detail  forcemain and telephone lines  to be relocated

c. Will the proposed project require the construction of any temporary detour structures?

\_\_\_\_ Yes  X  No

If yes, explain in detail \_\_\_\_\_

# NORTH CAROLINA



(NOT TO SCALE)



## VICINITY MAPS

### NCDOT

DIVISION OF HIGHWAYS  
ONLSOW COUNTY

PROJECT: 3356L1.1 (B-4215)

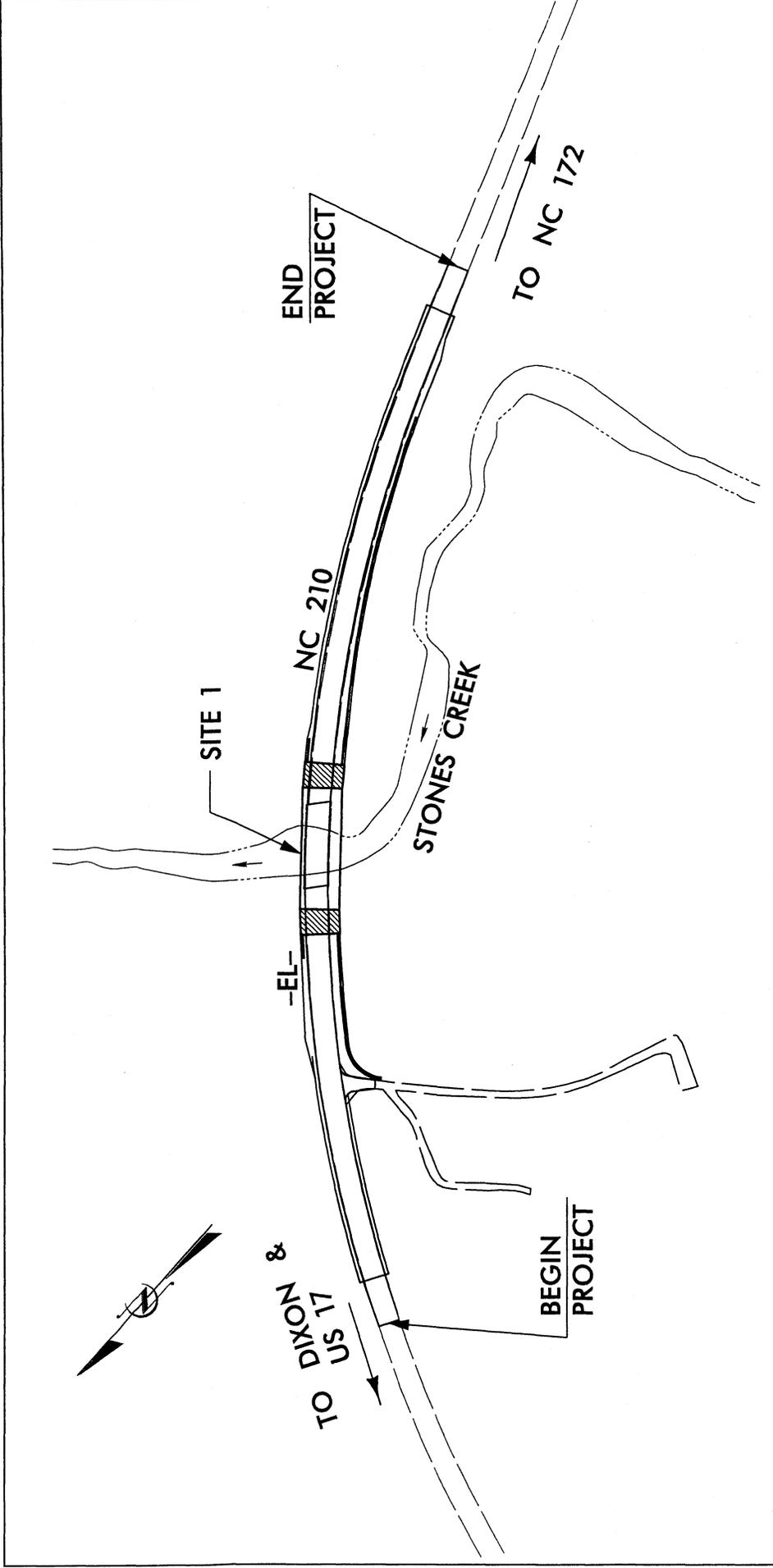
BRIDGE NO. 19 OVER  
STONES CREEK

AND APPROACHES ON NC 210

CAMA PERMIT DRAWING

SHEET 1 OF 10

1/7/05



SITE MAP  
 NOT TO SCALE

CAMA

**NC****DOT**

DIVISION OF HIGHWAYS  
 ONLSOW COUNTY

PROJECT: 33561.1.1 (B-4215)  
 BRIDGE NO. 19 OVER

STONES CREEK

AND APPROACHES ON NC 210

PERMIT DRAWING

SHEET 2 OF 10

1/7/05



TOPO MAP

SCALE: 1" : 2000'

NCDOT

DIVISION OF HIGHWAYS

ONLSOW COUNTY

PROJECT: 33561.1.1 (B-4215)

BRIDGE NO. 19 OVER

STONES CREEK

AND APPROACHES ON NC 210

CAMA PERMIT DRAWING

SHEET 3 OF 10

1/7/05

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

REFERENCE NO.	NAMES	ADDRESSES
1	United States Marine Corps Military Reservation	PSC Box 20004 Camp Lejeune, NC 28542-0004
2	Edward J. Collins	312 NC Highway 210 Holly Ridge, NC 28445
3	George V. Yopp	1120 Old Folkstone Road Sneads Ferry, NC 28460

**NCDOT**

DIVISION OF HIGHWAYS

ONLSOW COUNTY

PROJECT: 3356L1.1 (B-4215)

BRIDGE NO. 19 OVER

STONES CREEK

AND APPROACHES ON NC 210

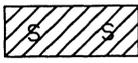
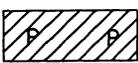
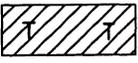
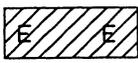
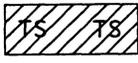
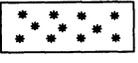
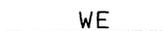
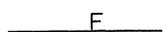
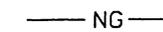
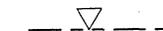
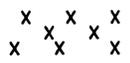
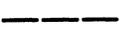
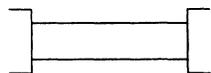
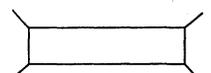
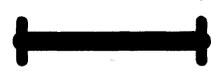
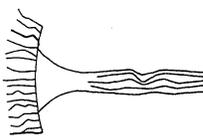
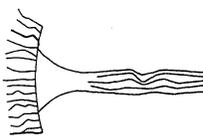
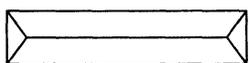
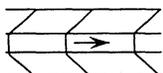
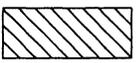
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*PERMIT DRAWING*

*SHEET 4 OF 10*

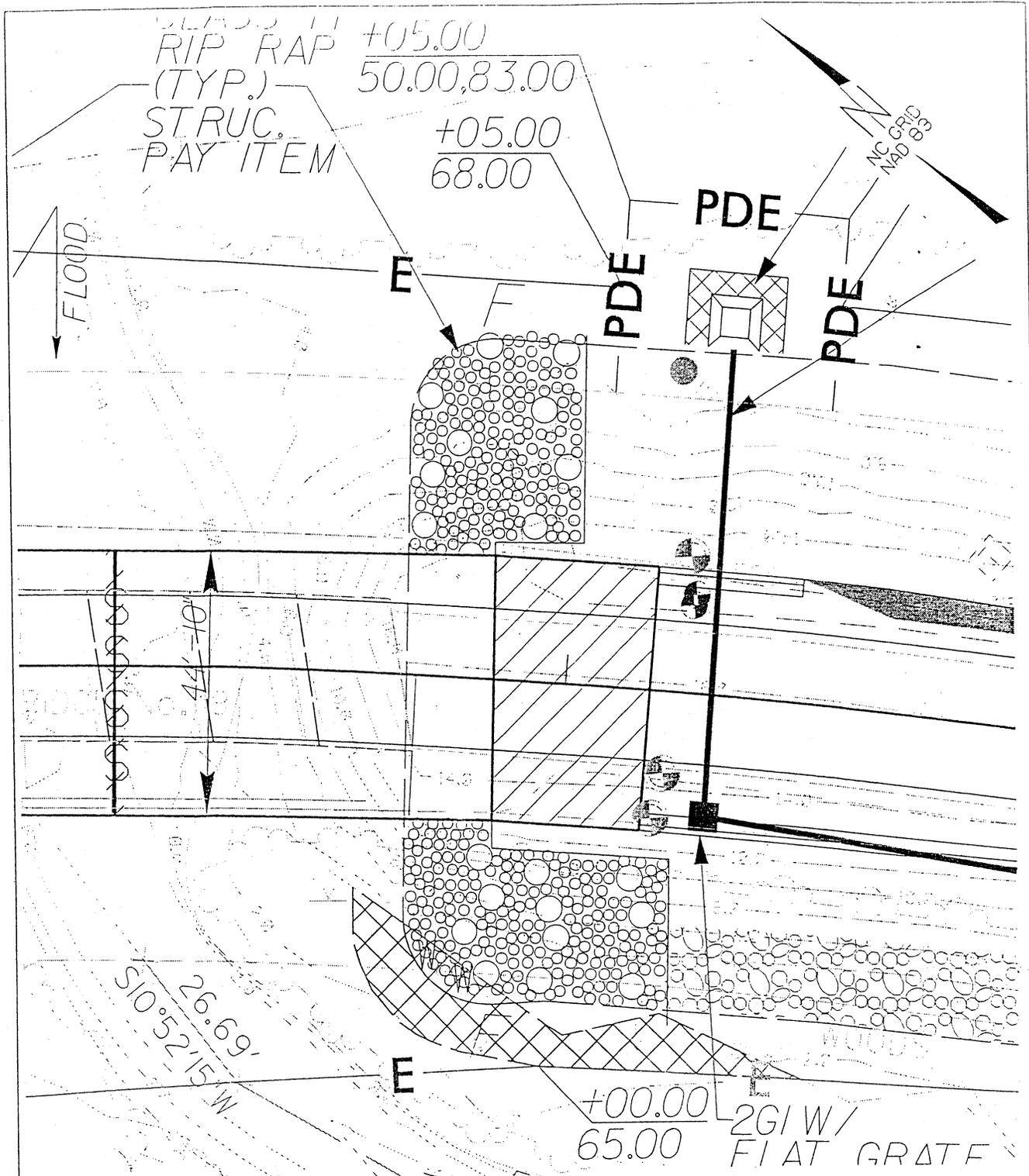
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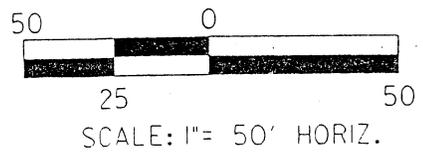
-  WLB WETLAND BOUNDARY
-  WLB WETLAND
-  DENOTES FILL IN WETLAND
-  DENOTES FILL IN SURFACE WATER
-  DENOTES FILL IN SURFACE WATER (POND)
-  DENOTES TEMPORARY FILL IN WETLAND
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES TEMPORARY FILL IN SURFACE WATER
-  DENOTES MECHANIZED CLEARING
-  FLOW DIRECTION
-  TB TOP OF BANK
-  WE EDGE OF WATER
-  C PROP. LIMIT OF CUT
-  F PROP. LIMIT OF FILL
-  PROP. RIGHT OF WAY
-  NG NATURAL GROUND
-  PL PROPERTY LINE
-  TDE TEMP. DRAINAGE EASEMENT
-  PDE PERMANENT DRAINAGE EASEMENT
-  EAB EXIST. ENDANGERED ANIMAL BOUNDARY
-  EPB EXIST. ENDANGERED PLANT BOUNDARY
-  WATER SURFACE
-  LIVE STAKES
-  BOULDER
-  CORE FIBER ROLLS
-  DENOTES AREA TO BE EXCAVATED
-  PROPOSED BRIDGE
-  PROPOSED BOX CULVERT
-  PROPOSED PIPE CULVERT  
12"-48" PIPES  
54" PIPES & ABOVE  
(DASHED LINES DENOTE EXISTING STRUCTURES)
-  SINGLE TREE
-  WOODS LINE
-  DRAINAGE INLET
-  ROOTWAD
-  RIP RAP
-  5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE
-  PREFORMED SCOUR HOLE
-  LEVEL SPREADER (LS)
-  DITCH / GRASS SWALE
-  DENOTES IMPACTS TO BUFFER ZONE 1
-  DENOTES IMPACTS TO BUFFER ZONE 2

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**ONLSOW COUNTY**  
**PROJECT: 33561.11 (B-4215)**  
**BRIDGE NO. 19 OVER**  
**STONES CREEK**  
**AND APPROACHES ON NC 210**  
*CAMA PERMIT DRAWING*  
**SHEET 5 OF 10**

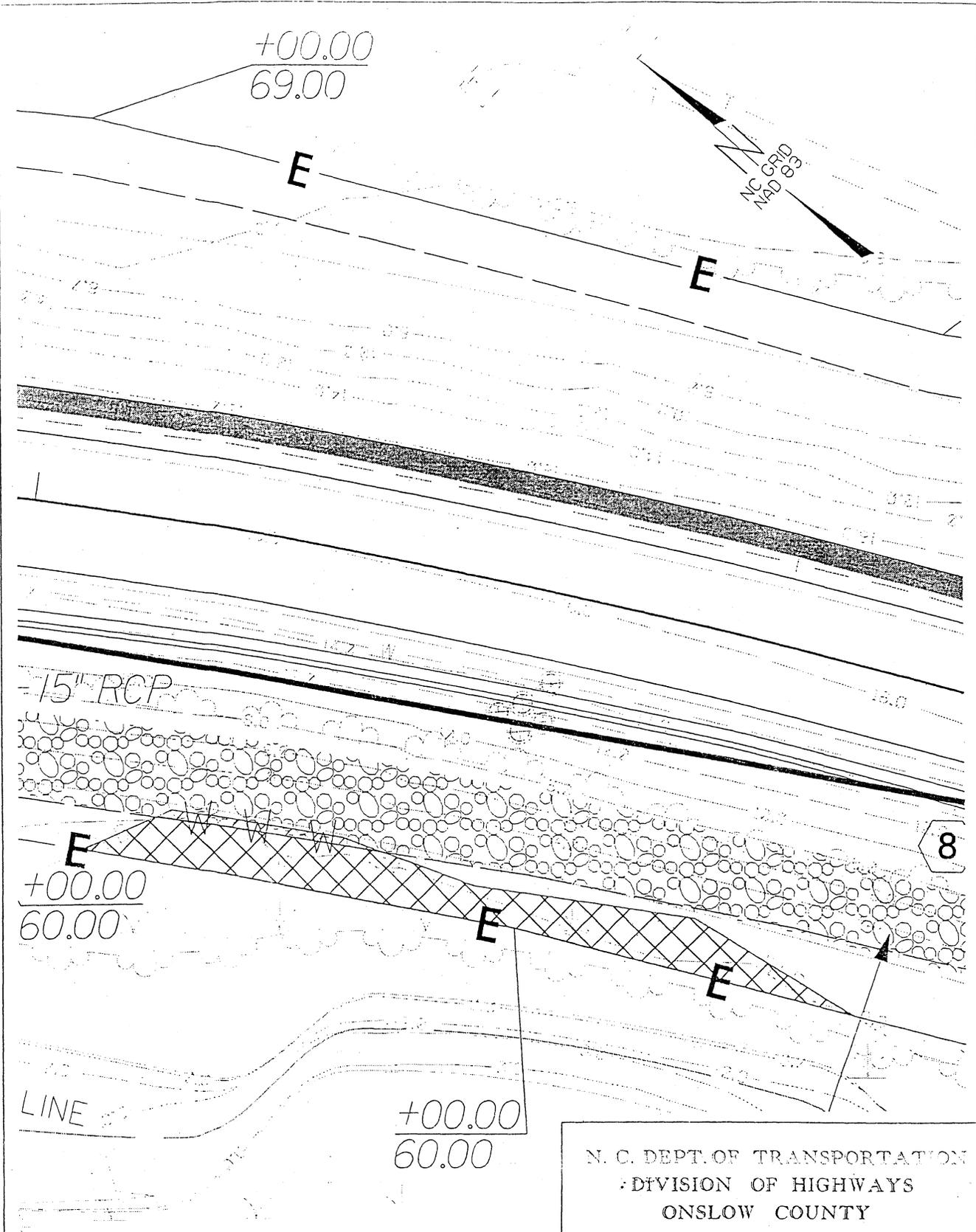




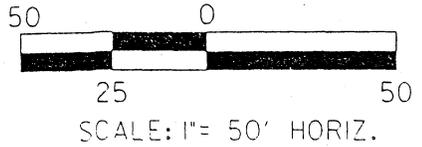
BLOW UP OF ROADWAY FILL AREA



N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ONSLOW COUNTY  
 PROJECT: 8.1262101 (33561.1.1)  
 B-4215  
 REPLACE BRIDGE 19 OVER  
 STONES CREEK ON NC 210  
**CAMA PERMIT DRAWING**  
 SHEET 7 OF 10



BLOW UP OF ROADWAY FILL AREA



N. C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 ONSLOW COUNTY  
 PROJECT: 8.1262101 (33561.1.1)

B-4215

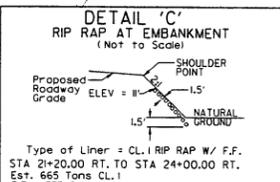
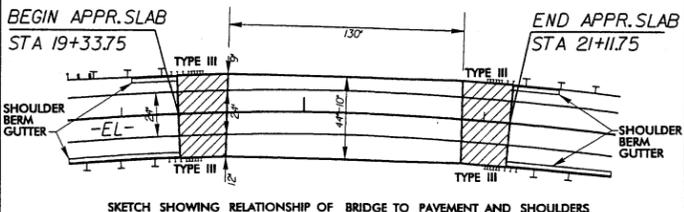
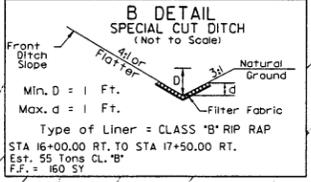
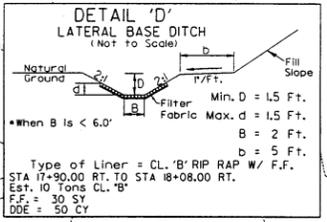
REPLACE BRIDGE 19 OVER  
 STONES CREEK ON NC 210

**CAMA PERMIT DRAWING**  
 SHEET 8 OF 10



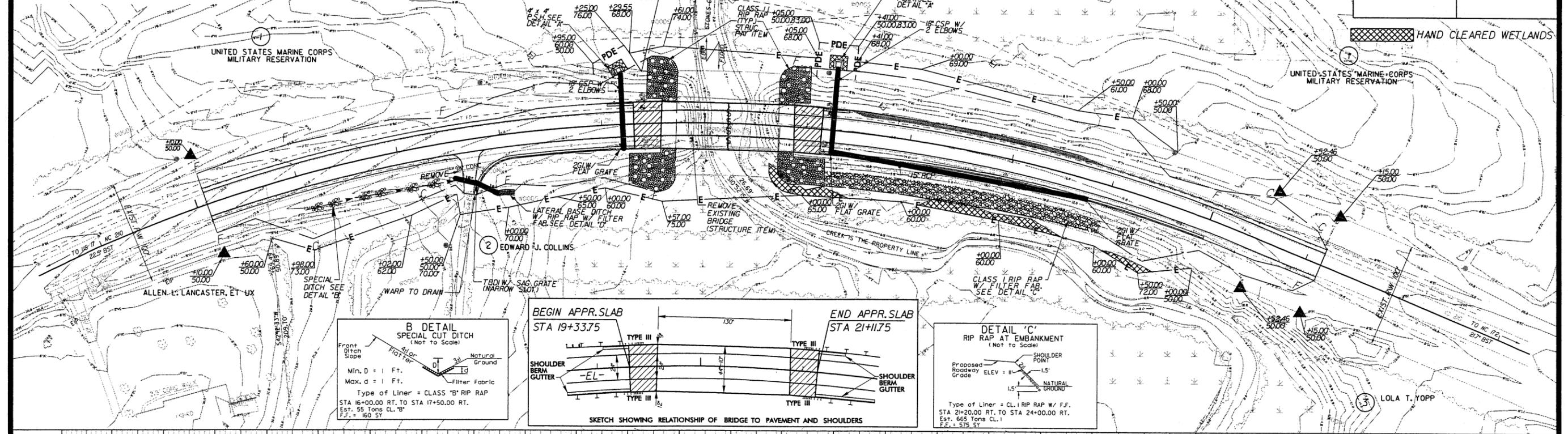
8/17/99

 DENOTES FILL IN WETLAND  
 DENOTES FILL IN SURFACE WATER



**MULKEY**  
 ENGINEERS & CONSULTANTS  
 101 BOX 22137  
 RAYLEIGH, NC 27638  
 (919) 831-1912 (FAX)  
 WWW.MULKEYINC.COM

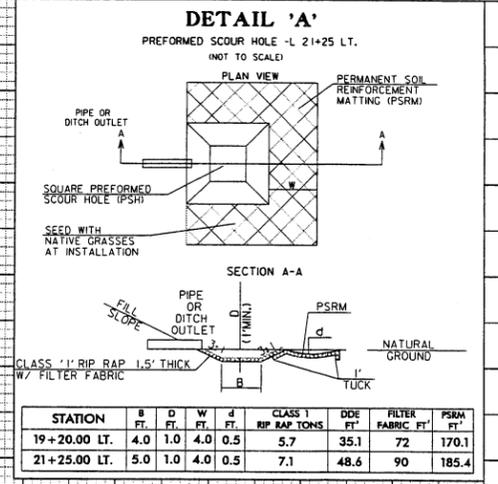
PROJECT REFERENCE NO. B-4215 SHEET NO. 4  
 RW SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER  
**ONSLOW COUNTY, NC BRIDGE 19 ON NC 210 OVER STONES CREEK 32805**  
**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION



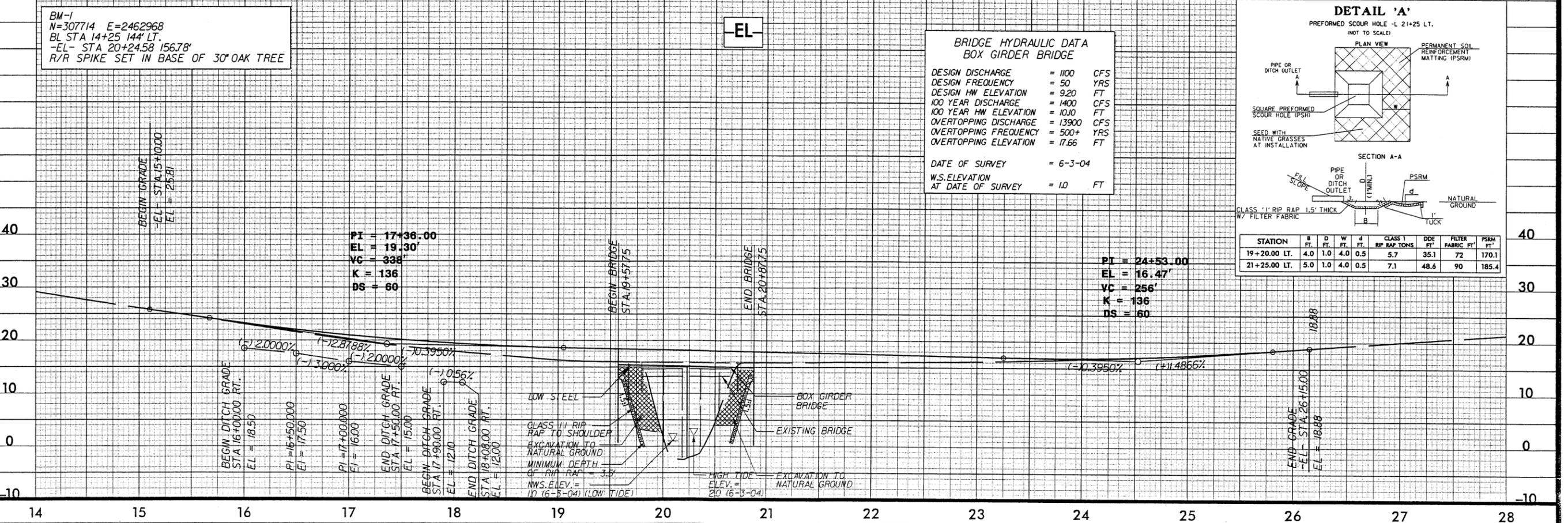
BM-1  
 N=307714 E=2462968  
 BL STA 14+25 144' LT.  
 -EL- STA 20+24.58 156.78'  
 R/R SPIKE SET IN BASE OF 30' OAK TREE

**BRIDGE HYDRAULIC DATA BOX GIRDER BRIDGE**

DESIGN DISCHARGE	= 1100	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 9.20	FT
100 YEAR DISCHARGE	= 1400	CFS
100 YEAR HW ELEVATION	= 10.10	FT
OVERTOPPING DISCHARGE	= 13900	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 17.66	FT
DATE OF SURVEY	= 6-3-04	
W.S. ELEVATION AT DATE OF SURVEY	= 10	FT



STATION	B FT.	D FT.	W FT.	d FT.	CLASS 1 RIP RAP TONS	DDE FT.	FILTER FABRIC FT.	PSRM FT.
19+20.00 LT.	4.0	1.0	4.0	0.5	5.7	35.1	72	170.1
21+25.00 LT.	5.0	1.0	4.0	0.5	7.1	48.6	90	185.4



4/19/2005  
 C:\pwworking\mulkeyinc.com\Projects\050313\B-4215.dwg  
 8/17/99



TEMPORARY IMPACT TO CREEK BANK



PIERS BY PILE DRIVING



DENOTES FILL IN WETLAND



DENOTES FILL IN SURFACE WATER



DENOTES HANDED CLEARED

NTS

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

**IMPACTED AREAS**  
 (THESE AREAS ARE NOT ALREADY IMPACTED BY CUT OR FILL FOR BRIDGE AND/OR ROAD CONSTRUCTION) GALVANIZED PIERS AT EDGE OF STONES CREEK. AREA TEMPORARILY IMPACTED BY PILE DRIVING EQUIPMENT NEAR EDGE OF CREEK

AREA #1 475.1 SQ. FT.  
 AREA #2 751.0 SQ. FT.  
 TOTAL 1226.9 SQ. FT.

**PERMANENT SURFACE WATER IMPACTS**  
 (4) W8X35 I BEAM PIERS BEING DRIVEN INTO GROUND IN CREEK (2 I BEAMS PER LOCATION)  
 4 X 0.68' X 0.67' = 1.82 SQ. FT.

N. C. DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS

ON SLOW COUNTY

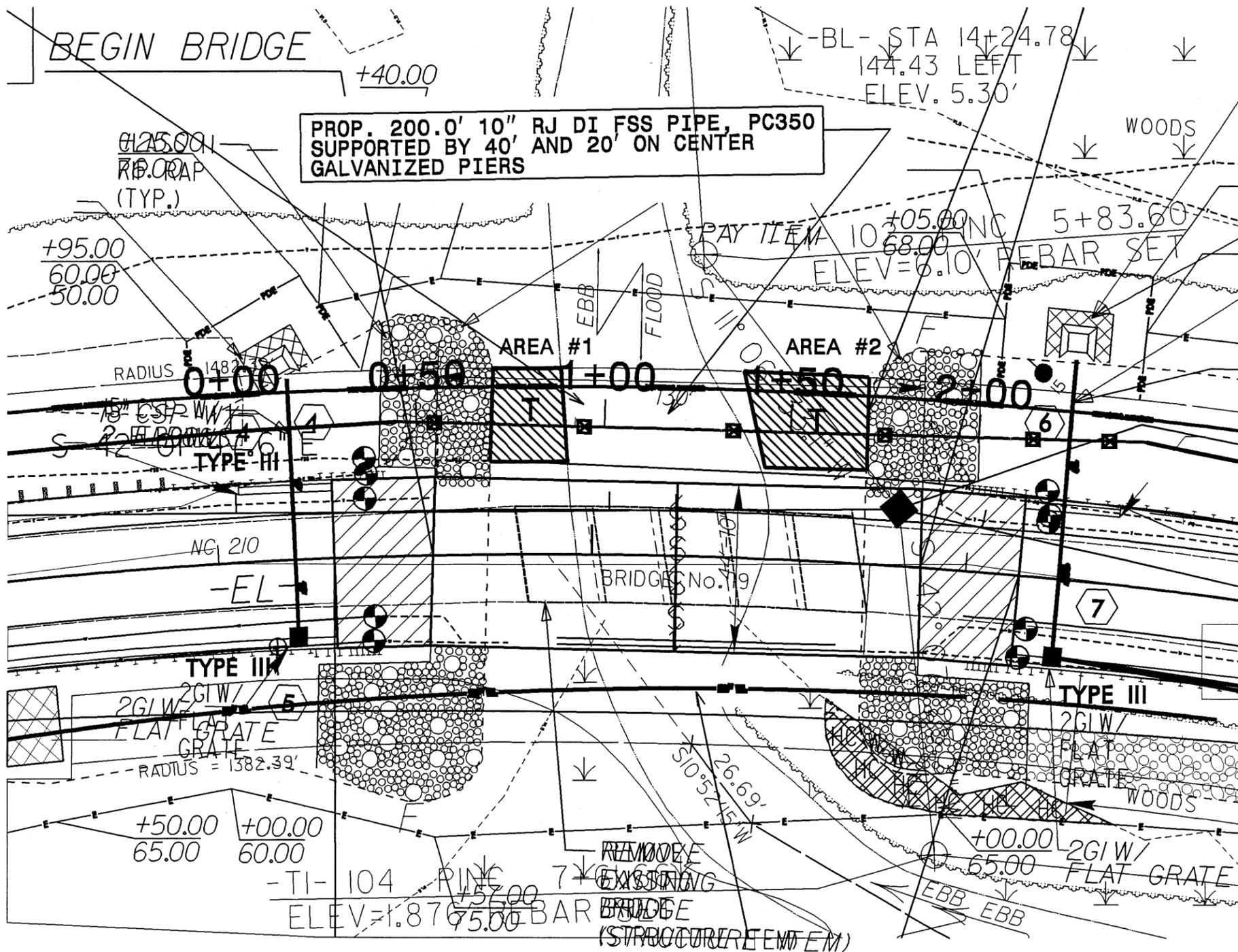
PROJECT: 8.1262101 (33561.1.1)

B-4215

REPLACE BRIDGE 19 OVER  
STONES CREEK ON NC 210

CAMA UTILITIES DRAWING

SHEET 1 OF 1





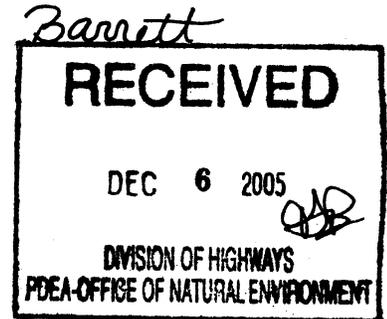
Michael F. Easley, Governor

William G. Ross, Jr., Secretary  
North Carolina Department of Environment and Natural Resources

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

December 1, 2005

Mr. Philip S. Harris, Unit Head  
NCDOT Project Development & Environmental Analysis Branch  
1598 Mail Service Center  
RAaleigh, NC 27699-1598



**Subject: Permit No. SW8 050917  
8.1262101 B-4215 Replace Bridge #19 and approaches  
Other Stormwater Permit  
Linear Public Road / Bridge Project  
Onslow County**

Dear Mr. Harris:

The Wilmington Regional Office received a complete Stormwater Management Permit Application for 8.1262101 B-4215 Replace Bridge #19 and approaches on September 19, 2005. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H .1000. We are forwarding Permit No. SW8 050917 dated December 1, 2005, for the construction of the subject project.

This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein.

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

If you have any questions, or need additional information concerning this matter, please contact either me or Rhonda Hall at (910) 796-7215.

Sincerely,

Ed Beck  
Regional Supervisor  
Surface Water Protection Section

ENB/rbh: S:\WQS\STORMWAT\PERMIT\050917.dec05  
cc: Onslow County Building Inspections  
Rhonda Hall  
Wilmington Regional Office  
Central Files

**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**  
**DIVISION OF WATER QUALITY**  
**STATE STORMWATER MANAGEMENT PERMIT**  
**OTHER PERMIT**

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

PERMISSION IS HEREBY GRANTED TO  
*NCDOT Project Development & Environmental Analysis Branch*  
*8.1262101 B-4215 Replace Bridge #19 and approaches*  
*Onslow County*  
FOR THE

construction of a public road / bridge 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.

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

**I. DESIGN STANDARDS**

1. The runoff from the impervious surfaces has been directed away from surface waters as much as possible.
2. The amount of built-upon area has been minimized as much as possible.
3. Best Management Practices are employed which minimize water quality impacts.
4. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.
5. Vegetated roadside ditches are 3:1 slopes or flatter.

**II. SCHEDULE OF COMPLIANCE**

1. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.
2. The 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.
3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

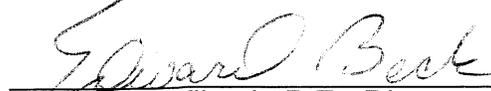
4. The permittee shall submit to the Director and shall have received approval for revised plans, specifications, and calculations prior to construction for the following items:
  - a. Major revisions to the approved plans, such as road realignment, deletion of any proposed BMP, changes to the drainage area or scope of the project, etc.
  - b. Project name change.
  - c. Redesign of, addition to, or deletion of the approved amount of built-upon area, regardless of size.
  - d. Alteration of the proposed drainage.
5. The Director may determine that other revisions to the project should require a modification to the permit.

### III. GENERAL CONDITIONS

1. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the Division of Water Quality, in accordance with North Carolina General Statutes 143-215.6A to 143-215.6C.
2. The permit issued shall continue in force and effect until revoked or terminated.
3. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination does not stay any permit condition.
4. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et. al.
5. The permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved. The permittee is responsible for compliance with the terms and conditions of this permit until such time as the Director approves the transfer.
6. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.
7. The permittee shall notify the Division of any name, ownership or mailing address changes within 30 days.

Permit issued this, the 1<sup>st</sup> day of December, 2005

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



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

By Authority of the Environmental Management Commission

### III. OPERATION AND MAINTENANCE AGREEMENT

I acknowledge and agree by my initials below that the North Carolina Department of Transportation is responsible for the implementation of the four maintenance items listed. I agree to notify DWQ of any operational problems with the BMP's that would impact water quality or prior to making any changes to the system or responsible party.

Maintenance Engineer's Initials

- DT a. BMP's shall be inspected and maintained in good working order.
- DT b. Eroded areas shall be repaired and reseeded as needed.
- DT c. Stormwater collection systems, including piping, inlets, and outlets, shall be maintained to insure proper functioning.

Maintenance Engineer's Name: DAVID L. THOMAS, P.E.  
Title: DIVISION MAINTENANCE ENGINEER

### IV. APPLICATION CERTIFICATION

I, (print or type name) Philip S. Harris III of PDEA Branch, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans and that the proposed project complies with the requirements of 15A NCAC 2H .1000.

Title: PDEA - NATURAL ENVIRONMENT UNIT HEAD  
Address: RALEIGH  
Signature: Philip S. Harris III Date: 9/13/05

### V. SUPPLEMENT FORMS

The applicable state stormwater management permit supplement form(s) listed below must be submitted for each BMP specified for this project. Contact the Stormwater and General Permits Unit at (919) 733-5083 for the status and availability of these forms.

- Form SWU-102 Wet Detention Basin Supplement
- Form SWU-103 Infiltration Basin Supplement
- Form SWU-104 Low Density Supplement
- Form SWU-105 Curb Outlet System Supplement
- Form SWU-106 Off-Site System Supplement
- Form SWU-107 Underground Infiltration Trench Supplement
- Form SWU-108 Neuse River Basin Supplement
- Form SWU-109 Innovative Best Management Practice Supplement
- Form SWU-110 Extended Dry Detention Basin Supplement

OFFICE USE ONLY		
Date Received	Fee Paid	Permit Number
9-19-2005	\$420 <sup>00</sup> (ETransfer)	JWB8050917

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

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
LINEAR ROADWAY PROJECT**

*This form may be photocopied for use as an original.*

DWQ Stormwater Management Plan Review:

A complete stormwater management plan submittal includes this application form, a supplement form for each BMP proposed (see Section V), design calculations, and plans and specifications showing all road and BMP details.

**I. PROJECT INFORMATION**

NCDOT Project Number: 33561.1.1 (B-4215) County: Onslow

Project Name: Replace Bridge #19 and approaches

Project Location: On NC 210 over Stones Creek

Contact Person: Marshall W. Clawson, PE Phone: 919-250-4100 Fax: 919-250-4108

Receiving Stream Name: Stones Creek River Basin: White Oak Class: SA; HQW

Proposed linear feet of project: 1104 ft.

Proposed Structural BMP and Road Station *(attach a list of station and BMP type if more room is needed)*:

Preformed Scour Hole located at -L- Sta. 19+20.00 Lt. & -L- Sta. 21+25.00 Lt.

Type of proposed project: *(check all that apply)*:

New     Widening     2 lane\*     4 lane\*     Curb and Gutter     Bridge Replacement

Other *(Describe)* \_\_\_\_\_

*\*2 lane and 4 lane imply that roadside ditches are used unless Curb and Gutter is also checked.*

**II. REQUIRED ITEMS CHECKLIST**

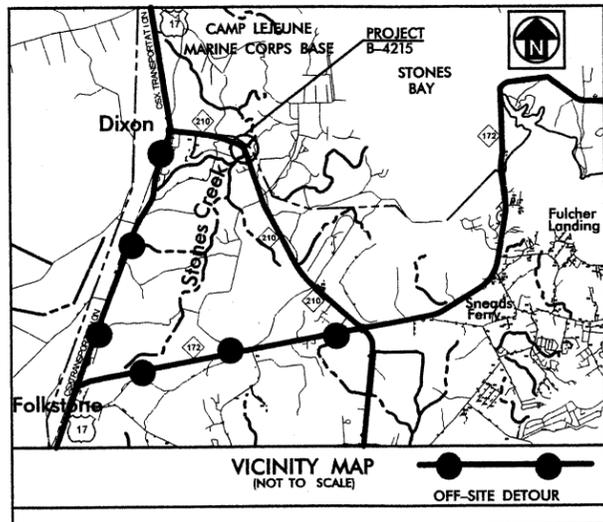
Initial in the space provided below to indicate the following design requirements have been met and supporting documentation is attached. Supporting documentation shall, at a minimum, consist of a brief narrative description including (1) the scope of the project, (2) how the items below are met, (3) how the proposed best management practices minimize water quality impacts, and (4) any significant constraints and/or justification for not meeting a, b, c and d to the maximum extent practicable.

*Designer's Initials*

- JKS a. The amount of impervious surface has been minimized as much as possible.
- JKS b. The runoff from the impervious areas has been diverted away from surface waters as much as possible.
- JKS c. Best Management Practices are employed which minimize water quality impacts.
- n/a d. Vegetated roadside ditches are 3:1 slope or flatter.

**CONTRACT: TIP PROJECT: B-4215**

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



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**ONSLOW COUNTY**

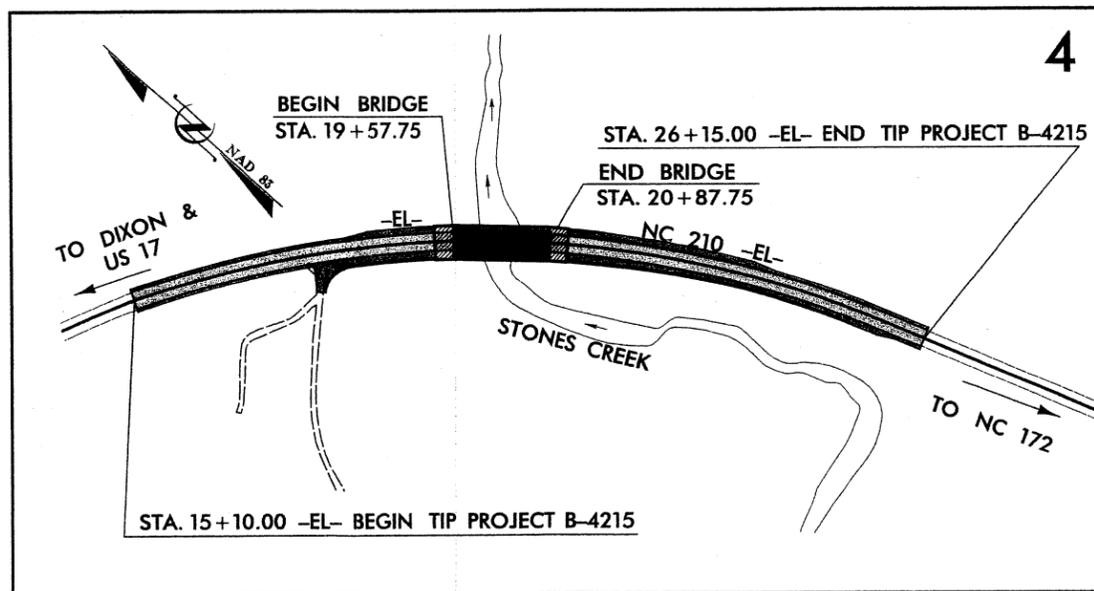
LOCATION: BRIDGE NO. 19 OVER STONES CREEK AND APPROACHES ON NC 210

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4215	1	
WBS NO.	P.A. PROJ. NO.	DESCRIPTION	
33561.1.1	BRSTP-0210(3)	P.E.	
33561.2.1	BRSTP-0210(3)	R /W,UTL	

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

**RECEIVED**  
SEP 19 2005  
BY: \_\_\_\_\_



**APPROVED**  
NORTH CAROLINA ENVIRONMENTAL  
MANAGEMENT COMMISSION  
DIVISION OF WATER QUALITY

RBY  
12-1-05  
SWP 050917

**MULKEY**  
ENGINEERS & CONSULTANTS  
PO Box 33127  
RALEIGH, N.C. 27636  
(919) 851-1912  
(919) 851-1918 (FAX)  
WWW.MULKEYINC.COM

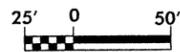
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

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

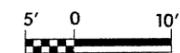
**GRAPHIC SCALE**



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

**DESIGN DATA**

ADT 2006 = 9400  
ADT 2026 = 17,300  
DHV = 10%  
D = 60%  
\* T = 7%  
\*\* V = 55 mph

Func Class = Maj Coll - Rural  
\* (Duals = 4% + TTST = 3%)  
\*\* Design Exception -  
Sight Distance

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4215 = 0.184 MILE  
LENGTH STRUCTURE TIP PROJECT B-4215 = 0.025 MILE  
TOTAL LENGTH TIP PROJECT B-4215 = 0.209 MILE

Prepared In the Office of:  
**Mulkey Engineers & Consultants**  
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS  
**RIGHT OF WAY DATE:**  
FEBRUARY 18, 2005

**LETTING DATE:**  
FEBRUARY 21, 2006

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

**PAM WILLIAMS**  
MULKEY E & C  
PROJECT MANAGER

**JONATHAN SCARCE, PE**  
MULKEY E & C  
HYDRAULICS ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_  
ROADWAY DESIGN

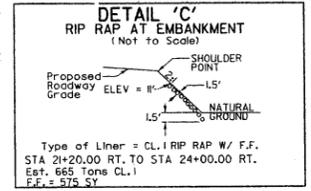
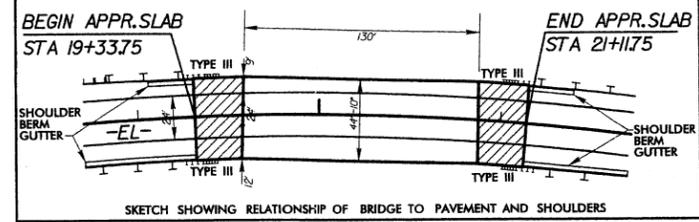
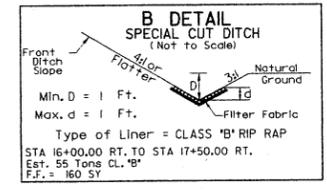
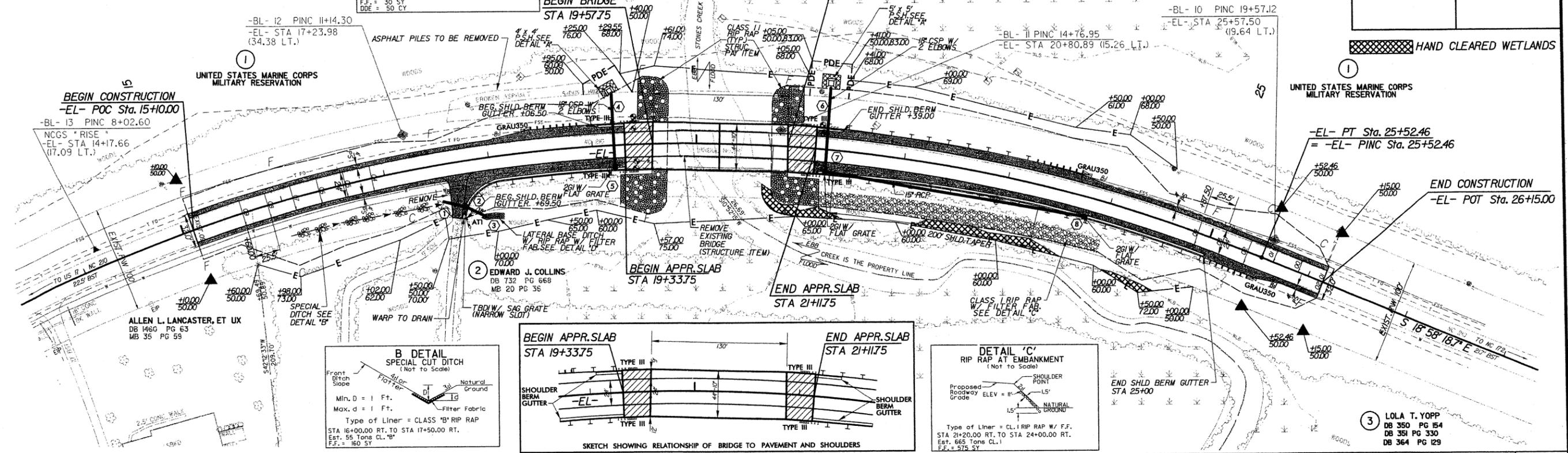
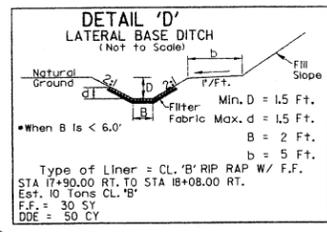
SIGNATURE: \_\_\_\_\_  
PE

**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

STATE HIGHWAY ENGINEER - DESIGN  
**DEPARTMENT OF TRANSPORTATION**  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR  
DIVISION ADMINISTRATOR  
DATE

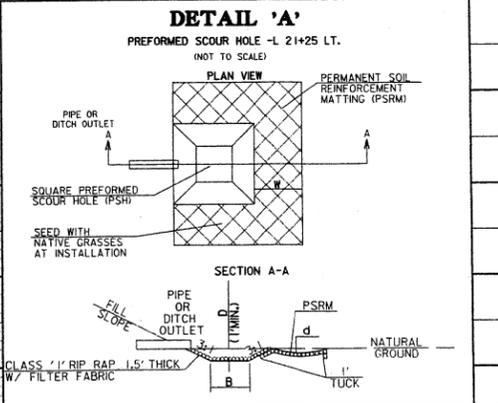
-EL-  
PI Sta 19+46.03  
Δ = 52' 3" 58.6' (RT)  
D = 4' 00' 00"  
L = 1,313.32'  
T = 706.89'  
R = 1,432.39'  
SE = 04  
DS = 55



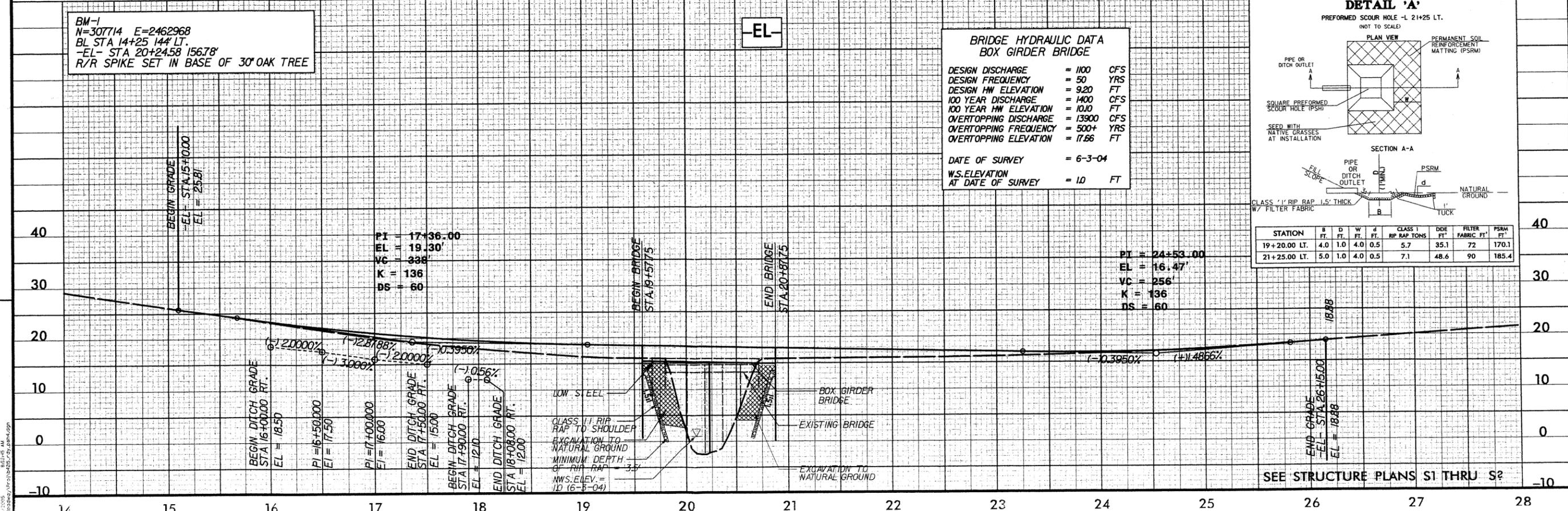
BM-1  
N=307714 E=2462968  
BL STA 14+25 144' LT.  
-EL- STA 20+24.58 156.78'  
R/R SPIKE SET IN BASE OF 30' OAK TREE

**BRIDGE HYDRAULIC DATA**  
BOX GIRDER BRIDGE

DESIGN DISCHARGE	= 1100 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 9.20 FT
100 YEAR DISCHARGE	= 1400 CFS
100 YEAR HW ELEVATION	= 10.10 FT
OVERTOPPING DISCHARGE	= 13900 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 17.66 FT
DATE OF SURVEY	= 6-3-04
W.S. ELEVATION AT DATE OF SURVEY	= 1.0 FT



STATION	B FT.	D FT.	W FT.	D FT.	CLASS I RIP RAP TONS	DDE FT.	FILTER FABRIC FT.	PSRM FT.
19+20.00 LT.	4.0	1.0	4.0	0.5	5.7	35.1	72	170.1
21+25.00 LT.	5.0	1.0	4.0	0.5	7.1	48.6	90	185.4



Right of Way Revision - 4/21/05 - Revised Pipe Nos. 4 and 6 From 15" CSP to 18" CSP

REVISIONS