STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 2, 2005

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

ATTENTION: Mr. David Timpy
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 and 33 Permit Application** for the Replacement of Bridge No. 21 over Northeast Cape Fear River on NC 210, Pender County. Federal Aid Project No. BRSTP-0210(4), State Project No. 8.1271001, TIP Project No. B-4223 Division 3, WBS # 33567.1.2.

Please find enclosed the Categorical Exclusion (CE) document, a Pre-construction Notification (PCN), permit drawings, onsite mitigation plan, and design plan sheets. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 21 over Northeast Cape Fear River on NC 210 in Pender County. The existing 590 foot long bridge will be replaced with a 920 foot long bridge south of the existing alignment. The proposed bridge replacement will be a box girder bridge constructed in 10 sections. Construction of the new bridge will result in five bents placed in the channel of the Northeast Cape Fear River and four bents placed in the wetlands adjacent to the Northeast Cape Fear River. The proposed bridge will facilitate the removal of a total of 330 feet of the old causeway, resulting in the removal of fill in 0.95 acre of wetland. During construction, traffic will use the existing bridge.

IMPACTS TO WATERS OF THE UNITED STATES

The Northeast Cape Fear River [DWQ Index Nos. 18-74-(29.5) and 18-74-(47.5)] is classified by NCDWQ as Class **C Sw** upstream of the existing bridge and **B Sw** downstream of the existing bridge. Construction of the proposed project will result in permanent fill of 0.52 acre of jurisdictional wetlands and 0.35 acre of hand clearing. Impacts to the Northeast Cape Fear River are composed of 0.014 acre of permanent fill from the construction of bridge bents and 0.008 acre of temporary fill for the construction of a temporary work bridge and bulkhead. Bridge No. 21 will be replaced with a ten span structure constructed from a barge and the temporary work bridge.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-715-1334
FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITOL BOULEVARD
PARKER LINCOLN BUILDING, SUITE 240
RALEIGH NC 27699

AVOIDANCE AND MINIMIZATION

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design and include:

- Best Management Practices for the Protection of Surface Waters and Bridge Demolition and Removal will be followed.
- Top Down Construction will be used.
- Hand Clearing will be used to relocate the overhead power-line.
- Fill slopes will be 3:1 in jurisdictional wetlands (2:1 Fill slopes cannot be stabilized in the sandy soils that are in the project area).
- There will be no in water construction between February 1 and June 30 to protect anadromous fish spawning.
- NCDOT will comply with the Precautions for Construction in Areas which may be used by the West Indian Manatee in North Carolina.

MITIGATION

Removal of the old causeway will result in the restoration of 0.95 acre of coastal plain riverine swamp forest wetlands. The NCDOT will use the onsite wetland restoration to mitigate for the 0.52 acre of impacts. The NCDOT requests that the remaining 0.43 acre of mitigation be available for future NCDOT projects, with the understanding that each future project will require agency approval for the use of this mitigation. Please see the attached restoration plan for additional information.

BRIDGE DEMOLITION

In order to protect water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. Bridge No. 21 has 13 spans totaling approximately 590 feet in length. The deck and railings of the superstructure are composed of reinforced concrete on steel I-beams. The substructure is composed of reinforced concrete abutments and reinforced concrete caps on steel piles. In accordance with NCDOT's Best Management Practices for Bridge Demolition and removal for projects that require a Coastal Area Management Act (CAMA) permit, no components of the bridge will be allowed to drop into the water.

UTILITIES

A water line, telephone line and power line will be relocated due to this project. The aerial power line is currently located to the south of the existing bridge and will be relocated south of the current location. No additional impacts will occur from the relocation of the electricity line. The telephone line and water line will be relocated underground using a directional bore. No additional impacts will occur from the relocation of the telephone line. No other utilities will require relocation.

FEDERALLY-PROTECTED SPECIES

As of January 29, 2003, the United States Fish and Wildlife Service lists eleven federally protected species for Pender County. Of these species, the American alligator (*Alligator mississippiensis*) is listed as threatened due to similarity of appearance and is not subject

to Section 7 consultation. There is potential habitat for the manatee and the shortnose sturgeon at this project location, but it is unlikely that either will be encountered. However, NCDOT will commit to adhering to the U.S. Fish and Wildlife Service Guidelines for Avoiding Impacts to the West Indian Manatee (see attached Guidelines). A biological conclusion of "No Effect" has been rendered for the West Indian manatee. NCDOT also commits to the above mentioned construction moratorium and adherence to best management practices to avoid impacts to the shortnose sturgeon. The Biological Conclusion of "May Affect, Not Likely to Adversely Affect" for the shortnose sturgeon remains valid and was approved by Fritz Rhode March 3, 2004. Biological conclusions of "No Effect" documented in the CE for the remaining species were given based on the absence of habitat within the project area and thus remain valid.

Scientific Name	Common Name	Habitat Present	Status	Biological Conclusion
Carex lutea	Golden sedge	No	E	No Effect
Trichechus manatus	West Indian manatee	Yes	E	No Effect
Schwalbea americana	American chaffseed	No	E	No Effect
Charadrius melodus	Piping plover	No	T	No Effect
Picoides borealis	Red-cockaded woodpecker	No	E	No Effect
Alligator mississippiensis	American alligator	NA	T(S/A)	NA
Caratta carretta	Loggerhead sea turtle	No	T	No Effect
Acipenser brevirostrum	Shortnose sturgeon	Yes	E	MA-NLAA
Thalictrum cooleyi	Cooley's meadowrue	No	E	No Effect
Amaranthus pumilus	Seabeach amaranth	No	T	No Effect
Lysimachia asperulaefolia	Rough leaved loosestrife	No	E	No Effect

"E" denotes Endangered.
"T" denotes Threatened.
"T(S/A)" denotes Threatened- Similar Appearance.

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the construction of the docking station will be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33 authorizing construction of the causeway. All other aspects of this project are 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 a Nationwide 23 as authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0500(a) and 15A NCAC 2B .0200 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.

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

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html

If you have any questions or need additional information, please contact Brett Feulner at (919) 715-1488.

Sincerely,

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

w/ attachment

Mr. John Hennessy, DWQ (2 copies)
Mr. Gary Jordan, USFWS
Mr. Michael Street, NCDMF
Mr. Bill Arrington, NCDCM
Mr. Mark Staley, Roadside Environmental
Mr. Allen Pope, Division 3 Engineer
Mr. Travis Wilson, NCWRC
Mr. Ron Sechler, NMFS
Mr. Steve Sollod, NCDCM
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mason Herndon, Division 3 DEO

w/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Art McMillan, P.E., Highway Design
Mr. Elmo Vance, PDEA
Mr. Majed Alghandour, P.E., Prog. and TIP
Mr. Scott McLendon, USACE-Wilmington

Office Use Only: Form Version March 05

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

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

I. Processing

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

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

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

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: gthorpe@dot.state.nc.us

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

III. Project Information

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

1. Name of project: Replacement of Bridge No. 21 over Northeast Cape Fear River

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4223

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

4. Location
   County: Pender Nearest Town: Rocky Point
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): The site is located on NC 210 over the Northeast Cape Fear River

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 34.4432 °N 77.8339 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Northeast Cape Fear River

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

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Rural and minimally developed with forest cover.

10. Describe the overall project in detail, including the type of equipment to be used: Standard DOT construction equipment.

11. Explain the purpose of the proposed work: The purpose is to replace the old bridge that is functionally obsolete.

IV. Prior Project History

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

V. Future Project Plans

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

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: The project impacts are as follows, 0.52 acre of fill in wetlands, 0.35 acre of hand clearing in wetlands, 0.014 acre of permanent surface water impacts, and 0.008 acre of temporary surface water impacts

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
1	fill	forested	yes	adjacent	0.52
Total Wetland Impact (acres)					0.52

3. List the total acreage (estimated) of all existing wetlands on the property: > 5 acres

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Site 1	NE Cape Fear	Permanent	Perennial	500	N/A	0.014
Site 1	NE Cape Fear	Temporary	Perrenial	500	N/A	0.008
Total Stream Impact (by length and acreage)						.0022

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Total Open Water Impact (acres)				

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.022
Wetland Impact (acres):	0.52
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.542
Total Stream Impact (linear feet):	0

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes ☒ No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):
   Current land use in the vicinity of the pond:
   Size of watershed draining to pond: Expected pond surface area:

VII. Impact Justification (Avoidance and Minimization)

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

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.

   Onsite mitigation will be used, the replacement of the bridge will be longer then the current bridge. The longer bridge will allow the removal of 0.94 acres of fill in wetlands.

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

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

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

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

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

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☐ No ☒

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3 (2 for Catawba)	
2		1.5	
Total			

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. _____

_____

_____

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Approximately the same as current conditions

XII. Sewage Disposal (required by DWQ)

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

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:

XV. Other Circumstances (Optional):

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

3/1/2006

Applicant/Agent's Signature **Date**
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Restoration Plan for Northeast Cape Fear River Wetland
At Bridge No. 21 on NC 210
Pender County
TIP B-4223
Federal Aid Project No. BRSTP-210(4)
WBS No. 33467.1.1
January 11, 2006

The North Carolina Department of Transportation (NCDOT) will perform on-site mitigation for riverine wetland impacts at the NC 210 overpass over the Northeast Cape Fear River. This mitigation site occurs within Transportation Improvement Program (TIP) B-4223. The project begins approximately 1100 feet west of Bridge No. 21 and continues to approximately 1500 feet to the east of the bridge. NCDOT will restore approximately 0.95 acre of riverine wetland by removing existing causeway fill in the northeast and southeast quadrants of the project.

Proposed impacts due to the replacement of Bridge No. 21 are 0.52 acre. Therefore, the surplus 0.43 acre of restoration will be available for future projects in the Cape Fear River Basin (HUC 03030007).

EXISTING CONDITIONS:

The project is located in Pender County approximately 2.0 miles (3.2 km) north of Mooretown and 2.3 miles (3.7 km) east of the intersection of NC 210 and Interstate 40. Surrounding land use is a mixture of residential, agricultural, and silvicultural.

The existing causeway for the NC 210 overpass at Bridge No. 21 is located partially in the floodplain of the Northeast Cape Fear River. The floodplain wetland consists mainly of a mature riverine swamp forest dominated by canopy species of bald cypress (*Taxodium distichum*), swamp blackgum (*Nyssa sylvatica* var. *biflora*), red maple (*Acer rubrum*), and sweet bay (*Magnolia virginiana*). In the northeast quadrant of the project, the swamp wetland is near the toe of slope of the existing causeway. In the southeast quadrant of the project, the swamp wetland grades into a mixed pine/hardwood forest along the existing causeway. Canopy species in this transition zone between the swamp forest and the existing causeway are dominated by loblolly pine (*Pinus taeda*), red maple, sweet bay, and sweetgum (*Liquidambar styraciflua*).

PROPOSED CONDITIONS:

The proposed wetland mitigation will consist of restoring approximately 0.95 acre of riverine swamp wetland. Restoration will involve removing causeway fill and transition area to match the adjacent swamp wetland elevation. The restored area will be planted with species commonly found in riverine swamp communities.

The Categorical Exclusion (CE) for TIP B-4223, dated April 2004, provides further details concerning existing and proposed roadway conditions.

DESIGN/CONSTRUCTION:

WETLAND MITIGATION GRADING

The design of the wetland mitigation area shall consist of removing fill associated with the existing causeway. All excavated areas shall be ripped according to the provision provided below prior to placement of any backfill material and before planting of the site.

The Natural Environment Unit shall be contacted to provide construction oversight to ensure that the wetland mitigation area is constructed appropriately.

VEGETATION PLANTING

The restoration site will be planted following the completion of the site grading. The following riverine swamp tree species will be planted: bald cypress and swamp blackgum.

The hardwood tree species utilized shall be 18"-30" in size and shall be bare root seedlings that are at least one growing season in age. Planting density shall be 680 seedlings per acre, which equates to a plant spacing of 8 feet on-center.

MONITORING:

Upon successful completion of construction, the following monitoring strategy is proposed for the mitigation site. Any remediation necessary during the monitoring period will be coordinated with the appropriate agencies.

HYDROLOGIC MONITORING

No specific hydrological monitoring is proposed for this restoration site. The target elevation will be based on the adjacent wetland and verified during construction. Constructing the site at the adjacent wetland elevation will ensure that the hydrology in the restored area is similar to the hydrology in the reference area.

VEGETATION SUCCESS CRITERIA

NCDOT shall monitor the restoration site by visual observation and photo points for survival of planted seedlings. NCDOT shall monitor the site for a minimum of five years. Monitoring will be initiated upon completion of the site planting.

NC 210
Pender County
Bridge No. 21 on NC 210
Over Northeast Cape Fear River
Federal-Aid Project No. BRSTP-0210(4)
State Project No. 8.1271001
T.I.P. No. B-4223

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

4-30-04
DATE

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

4-30-04
DATE

for John F. Sullivan III, P.E.
Division Administrator
Federal Highway Administration

NC 210
Pender County
Bridge No. 21 on NC 210
Over Northeast Cape Fear River
Federal-Aid Project No. BRSTP-0210(4)
State Project No. 8.1271001
T.I.P. I. D. No. B-4223

CATEGORICAL EXCLUSION

April 2004

Document Prepared by:
Mulkey Engineers and Consultants
Cary, North Carolina 27611

4-29-04
Date

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PROJECT COMMITMENTS

NC 210
Pender County
Bridge No. 21 on NC 210
Over Northeast Cape Fear River
Federal-Aid Project No. BRSTP-0210(4)
State Project No. 8.1271001
T.I.P. I. D. No. B-4223

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Erosion and Sediment Control Guidelines for Contract Construction, 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 Engineer

A moratorium on work within jurisdictional waters from February 1 to June 30 for *Anadromous Fish Passage* will be implemented.

Precautions For Construction In Areas Which May Be Used By The West Indian Manatee In North Carolina (1996 USFWS) will be followed.

NC 210
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Over Northeast Cape Fear River
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INTRODUCTION: The replacement of Bridge No. 21 is included in the North Carolina Department of Transportation (NCDOT) 2004-2010 Transportation Improvement Program (T.I.P.) and in the Federal-Aid Bridge Replacement Program. The location of the bridge is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate that Bridge No. 21 has a sufficiency rating of 16.5 out of a possible 100 for a new structure and is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 21 is located in a rural section of southeastern Pender County. The project area is near the southwestern edge of Holly Shelter Game Land. The project vicinity is rural in nature and surrounding land use includes a mixture of residential, agricultural, and silvicultural use. A camp ground and boat ramp are located in the northwest quadrant.

The 2004 estimated average daily traffic (ADT) volume is 3,700 vehicles per day (vpd). The projected ADT is 8,300 vpd by the design year 2030. The percentages of truck traffic is 6% dual tired vehicles (DUALS) and 4% truck-tractor semi trailer (TTST). The posted speed limit is 55 miles per hour (mph) {90 kilometers per hour (km/h)}. NC 210 is classified as a Rural Major Collector within the project area. NC 210 is designated as a hurricane evacuation route.

Bridge No. 21 was built in 1955 (Figure 4). It is a two-lane facility with 13 spans and is 590 feet (180 meters) in length. The deck and railings of the superstructure are composed of reinforced concrete on steel I-beams. The substructure is composed of reinforced concrete abutments and reinforced concrete caps on steel piles. The bridge deck is approximately 47 feet (14 meters) from crown to streambed. The navigational vertical clearance is approximately 22 feet (6.71 meters). Bridge No. 21 has a posted weight limit of 28 tons (25.4 metric tons) for single vehicle (SV) and 31 tons (28.1 metric tons) for TTST.

NC 210 is tangent through the project area. The approaches provide two 11-foot (3.3-meter) travel lanes and 6-foot (1.8-meter) grass shoulders.

There is an overhead power line located to the south (downstream) of the existing bridge, which crosses over NC 210 west of the bridge. A fiber optic conduit is attached to the upstream face of the bridge.

Approximately 8 school buses cross Bridge No. 21 twice per day, for a total of 16 crossings. In addition, a mechanics truck and a fuel truck from the school system cross the bridge each day to travel to Hampstead for daily inspections and fueling of 16 buses.

One accident was reported in the project area during the period from September 1, 2000 to August 31, 2003. There were no fatalities.

This section of NC 210 in Pender County is not part of a state designated bicycle route and is not listed in the T.I.P. as requiring incidental bicycle accommodations.

III. ALTERNATIVES

A. Project Description

The recommended replacement structure will be approximately 600 feet (183 meters) in length. The replacement bridge will consist of two 12-foot (3.6-meter) lanes, with 3-foot (1.0-meter) shoulders (Figure 3). The recommended bridge length is based on a preliminary hydraulic analysis. The length of the new structure may be increased or decreased as necessary to accommodate peak flows as determined by a detailed hydrologic study during the final design phase. The bridge grade for the proposed structure will maintain the existing navigational clearance.

The approach roadway will be two 12-foot (3.6-meter) lanes with 8-foot (2.4-meter) shoulders including 2 feet (0.6 meter) paved (Figure 3).

B. Build Alternatives

The two build alternatives studied for this project are described below.

Alternative A (Preferred) involves replacing the bridge on new alignment just south (downstream) of the existing bridge. During construction, traffic will be maintained on the existing bridge (Figure 2A).

Alternative B consists of replacing the bridge in place. During construction, traffic will be maintained on an on-site detour south (downstream) of the existing bridge, Figure 2B.

C. Alternatives Eliminated From Further Study

The "do-nothing" alternative will eventually necessitate closure of the bridge. This is not desirable due to the traffic service provided by NC 210.

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

D. Preferred Alternative

Alternative A, replacing the bridge on new alignment south of the existing bridge, was selected as the preferred alternative for the following reasons:

- Minimizes environmental impacts.
- Avoids impacts to the former gas station and boat ramp.
- More economical than Alternative B.
- Less construction time than Alternative B.

The NCDOT Division 3 concurs with Alternative A as the preferred alternative.

IV. ESTIMATED COST

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

	Alternative A (preferred)	**Alternative B**
Structure Removal (Existing)	$ 141,600	$ 141,600
Structure Proposed	1,260,000	1,260,000
Roadway Approaches	671,250	443,250
Temporary Detour Bridge	0	624,000
Detour Approaches	0	137,200
Miscellaneous and Mobilization	512,150	563,950
Engineering Contingencies	415,000	480,000
ROW/Const. Easements/Utilities	109,675	70,000
TOTAL	$3,109,675	$3,720,000

The estimated cost of the project as shown in the 2004-2010 Transportation Improvement Program is $3,390,000 including $90,000 for right-of-way, $3,000,000 for construction and $300,000 prior years.

V. NATURAL RESOURCES

A. Methodology

Materials and research data in support of this investigation have been derived from a number of sources. The Mooretown, NC U.S. Geological Survey (USGS) 7.5-minute orthographic quadrangle was consulted to determine physiographic relief and to assess landscape characteristics. U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping was also consulted to determine what potential wetland types may be encountered in the field. The *Soil Survey of Pender County, North Carolina* (USDA 1990), and recent aerial photography furnished by the NCDOT were also used in the evaluation of the project study area.

The aerial photograph served as the basis for mapping plant communities and wetlands. Plant community patterns were identified from available mapping sources and then field verified. Plant community descriptions are based on a classification system utilized by the North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names typically follow nomenclature found in Radford *et al.* (1968).

Jurisdictional areas were identified using the three parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979).

Water resource information for the NE Cape Fear River was derived from the most recent versions of the *Cape Fear River Basinwide Water Quality Plan* {Division of Water Quality (DWQ) 2000}, *Basinwide Assessment Report-Cape Fear River Basin* (DWQ 1999), and DWQ internet resources. Quantitative sampling was not undertaken to support existing data.

The most current FWS list (reviewed on-line April 27, 2004, last updated February 25, 2003) of federal protected species with ranges extending into Pender County was reviewed prior to initiation of the field investigation. In addition, North Carolina Natural Heritage Program (NHP) records documenting occurrences of federal or state-listed species were consulted before commencing the field investigation. Direct observations of terrestrial and aquatic wildlife was documented, and expected population distributions were determined through observations of available habitat and review of supportive documentation found in Martof *et al.* (1980), Webster *et al.* (1985), Menhinick (1991), Hamel (1992), Rohde *et al.* (1994), and Palmer and Braswell (1995).

The project study area is approximately 2,500 feet (762 meters) in length and width varies from 50 feet (15.2 meters) at the termini to 370 feet (112.7 meters) at the NE Cape Fear River. The project vicinity describes an area extending 0.5 mile (0.8 kilometer) on all sides of the project study area.

B. Physiography and Soils

The project study area is located in the outer coastal plain physiographic province of North Carolina. The topography in the project study area is generally characterized as nearly level. Natural elevations in the project study area range from 5 feet (1.5 meters) to 10 feet (3.0 meters) above sea level (USGS 1983). The project study area consists of existing maintained right-of-way, floodplain forest, powerline right-of-way, maintained/disturbed land, and pine/hardwood forest.

The project vicinity is rural in nature and surrounding land use includes a mixture of residential, agricultural, and silvicultural use. Important products from this area include soybeans, corn, cotton, and timber.

The project study area crosses four soil mapping units. These soils include Dorovan muck (Typic Medisaprists), Murville muck (Typic Haplaquods), Invershiel-Pender complex (Albaquic Hapludalfs), and Alpin fine sand (Typic Quartzipsamments) (USDA 1990). Hydric soils that are mapped as occurring within the project study area include Dorovan muck, which is frequently flooded, and Murville muck, which is very poorly drained. These soils occupy the project study area east of the existing bridge. Nonhydric soils that may contain hydric inclusions mapped as occurring within the project study area, primarily west of the existing bridge, include Invershiel-Pender complex and Alpin fine sand. These two soil mapping units may have hydric inclusions of Meggett loam and Muckalee loam.

From a broader perspective, the project study area is mapped within the Goldsboro-Norfolk-Exum soil association as depicted by the *Soil Survey of Pender County, North Carolina* (USDA 1990). The Goldsboro-Norfolk-Exum association consists of nearly level to gently sloping, moderately well drained and well drained soils on uplands and terraces that have a sandy or loamy surface layer and a loamy subsoil. The General Soil Map in the *Soil Survey of Pender County, North Carolina* appears to have reversed designations for the Goldsboro-Norfolk-Exum association and the Muckalee-Dorovan association. The Muckalee-Dorovan association is believed to be the appropriate association in which the project study area is located. The Muckalee-Dorovan association consists of nearly level, poorly drained and very poorly drained soils on floodplains that have a loamy surface layer underlain by a loamy and sandy material or are sapric material (muck).

C. Water Resources

1. Waters Impacted

The project study area is located within sub-basin 030623 of the Cape Fear River Basin (DWQ 2000) and is part of USGS hydrologic unit 03030007 (USGS 1974). The NE Cape Fear River is the only water resource that will be impacted by the proposed bridge replacement project. The NE Cape Fear River originates near Mt. Olive in southern Wayne and Duplin Counties. Its drainage area is approximately 1,750 square miles (4530 kilometers^2.) The NE Cape Fear River from Rock Fish Creek to NC 210 has been assigned Stream Index Number (SIN) 18-74-(29.5) by

the DWQ (DWQ 2001). From NC 210 to Prince George Creek, which is downstream, it has been assigned SIN 18-74-(47.5) (DWQ 2001).

2. Water Resource Characteristics

The NE Cape Fear River is considered "inland waters" above the NC 210 bridge and "joint waters" below the NC 210 bridge (NCMFC 2001). "Inland Waters" are all inland waters except private ponds; and all waters connecting with or tributary to coastal sounds or the ocean extending inland from the dividing line between coastal fishing waters and inland fishing waters agreed upon by the NC Marine Fisheries Commission (NCMFC) and the North Carolina Wildlife Resources Commission (NCWRC). "Joint Waters" are those coastal fishing waters, hereinafter set out, denominated by agreement of the NCMFC and the NCWRC pursuant to G.S. 113-132(e) as joint fishing waters (NCMFC 2001).

The NE Cape Fear River is a perennial stream with substrate consisting of mud, sand, and silt. Floodplain forest occurs along the edges of the NE Cape Fear River in the project study area. The channel is approximately 450 feet (137 meters) wide in the project study area and depths likely exceed 10 feet (3 meters). Preliminary observations indicate that this particular section of the NE Cape Fear River may represent a "C" channel type pursuant to Rosgen (1996).

A Best Usage Classification is assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. The NE Cape Fear River has been assigned a Best Usage Classification of **CSw** from Rock Fish Creek to NC 210 (DEM 1993, DWQ 2001). The **C** designation indicates waters designated for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The NE Cape Fear River has been assigned a Best Usage Classification of **BSw** from NC 210 to Prince George Creek (DEM 1993, DWQ 2001). The **B** designation indicates waters designated for primary recreation and any other usage specified by the **C** classification. The **Sw** supplemental classification indicates Swamp Waters, which have low velocities and other natural characteristics that are different from adjacent streams.

No Outstanding Resource Waters (**ORW**), High Quality Waters (**HQW**), *WS-I*, or *WS-II* Waters occur within 3.0 miles (4.8 kilometers) upstream or downstream of the project study area. Upstream portions of the NE Cape Fear River above Rock Fish Creek are designated as *HQW* (DEM 1993). This is more than 3.0 miles (4.8 kilometers) upstream from the study area.

One method used by the DWQ to monitor water quality is through long-term monitoring of macroinvertebrates. In 1998, monitoring sites in 19 of the 24 subbasins in the Cape Fear River Basin were sampled to determine overall water quality. Benthic macroinvertebrates from the NE Cape Fear River were sampled in 1998 on US 117 near Castle/Hayne approximately 7 miles (11 kilometers) downstream from the project study area. This site, which is labeled as B9580000, received a bioclassification rating of Good (DWQ 2000). This same site received rating of Good-Fair in a 1993 sampling event.

Another measure of water quality being used by the DWQ is the North Carolina Index of Biotic Integrity (NCIBI), which assesses biological integrity using the structure and health of the fish

communities. No NCIBI monitoring has been documented within 10 miles (16 kilometers) of the project study area. Fish tissue has been sampled at the ambient monitoring station on US 117 in 1998. The mercury limit established by the Environmental Protection Agency (EPA) was exceeded in 3 of 25 samples at this location.

The NE Cape Fear River is rated as "Fully Supporting" from Rock Fish Creek to NC 210. "Fully Supporting" is a rating given to a water body that fully supports its designated uses and generally has good or excellent water quality. A rating of "Fully Supporting" was also given to the NE Cape Fear River from NC 210 to Prince George Creek (DWQ 2000).

3. Essential Fish Habitat Assessment

Essential Fish Habitat (EFH) is defined by the National Marine Fisheries Service (NMFS) as "those waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity" (NMFS 1999). For the purpose of interpreting the definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (NMFS 1999). An EFH Assessment is an analysis of the effects of a proposed action on EFH.

An EFH Assessment was produced for this project in May 2003. The table below notes anadromous and federally managed fish species that are likely to occur in the project area. Potential impacts to EFH follow.

Anadromous and Federally Managed Fish Species Likely to Occur at B-4223 - Bridge No. 21 on NC 210 over Northeast Cape Fear River, Pender County, NC

Common Name	Scientific Name	Life Stages Known to Occur
Shortnose sturgeon[2]	*Acipenser brevirostrum*	J, A
Atlantic sturgeon[2]	*Acipenser oxyrhynchus*	E, L, J, A
Thrasher shark[1]	*Alopias vulpinus*	J, A
Blueback herring[2]	*Alosa aestivalis*	E, L, J, A
Hickory shad[2]	*Alosa mediocris*	E, L, J, A
Alewife[2]	*Alosa pseudoharengus*	E, L, J, A
American shad[2]	*Alosa sapidissima*	E, L, J, A
American eel[2]	*Anguilla rostrata*	E, L, J, A
Big nose shark[1]	*Carcharhinus altimus*	J, A
Silky shark[1]	*Carcharhinus falciformis*	J, A
Black tip shark[1]	*Carcharhinus limbatus*	J, A
Whitetip shark[1]	*Carcharhinus longimanus*	J, A
Dusky shark[1]	*Carcharhinus obscurus*	J, A

Common Name	Scientific Name	Life Stages Known to Occur
Sandbar shark[1]	*Carcharhinus plumbeus*	J, A
Night shark[1]	*Carcharhinus signatus*	J, A
Black sea bass[1]	*Centropristis striata*	L, J, A
Gag grouper (Red grouper)[1]	*Epinephelus morio*	J
Tiger shark[1]	*Galeocerdo cuvier*	J, A
Longfin mako shark[1]	*Isurus paucus*	J, A
Gray snapper[1]	*Lutjanus griseus*	J
Striped bass[2]	*Morone saxatalis*	E, L, J, A
Summer flounder[1]	*Paralichthys dentatus*	L, J, A
Southern flounder[2]	*Paralichthys lethostigma*	E, L, J, A
Brown shrimp[1]	*Penaeus aztecus*	E, L, J, A
Pink shrimp[1]	*Penaeus duorarum*	E, L, J, A
White shrimp[1]	*Penaeus setiferus*	E, L, J, A
Bluefish[1]	*Pomatomus saltatrix*	E, L, J, A
Cobia[1]	*Rachycentron canadum*	E, L, J, A
Atlantic sharpnose shark[1]	*Rhizoprionodon terraenovae*	J, A
Red drum[1]	*Sciaenops ocellatus*	E, L, J, A
King mackerel[1]	*Scomberomorus cavalla*	J, A
Spanish mackerel[1]	*Scomberomorus maculatus*	J, A
Scalloped hammerhead shark[1]	*Sphyrna lewini*	J, A
Spiny dogfish[1]	*Squalus acanthias*	J, A

E = Eggs
L = Larval
J = Juvenile
A = Adult

[1]Per National Marine Fisheries Service List of Essential Fish Habitat Species, dated October 1999 for Northeast Cape Fear River (from mouth northward to US 117 near Wilmington, NC).
[2]Per North Carolina Division of Marine Fisheries list of anadromous fish, dated April 2003.

Alternative A Impacts (Preferred). Since the new bridge for this alternative is approximately the same width and length as the existing structure, no net change in EFH for the species shown in the above table is anticipated. Given the size of the Northeast Cape Fear River, it is expected that any EFH impacts related to bridge construction will be minimal and temporary. This alternative will not create any obstructions to anadromous fish passage in the Northeast Cape Fear River.

Alternative B Impacts. The new bridge will be in the same location as the existing structure, therefore, no net change in EFH for the species listed in the table above is anticipated. Since the on-site detour bridge will be temporary, it is expected that any impacts to EFH will be temporary. Given the size of the Northeast Cape Fear River, it is expected that any EFH impacts

related to bridge construction will be minimal. This alternative will not create any obstructions to anadromous fish passage in the Northeast Cape Fear River.

According to the NMFS, waters of the Northeast Cape Fear River are considered primary nursery coastal waters from the mouth of the river upstream to the bridge at US 117 near Wilmington. The project vicinity is located several miles upstream from this nursery designation. A moratorium on in-stream construction activities is in effect from February 15 to June 15 to protect anadromous fish species.

4. Permitted Dischargers

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as "point "sources." Wastewater point source discharges include municipal (city and county) and industrial wastewater treatment plants and small domestic wastewater treatment systems serving schools, commercial offices, residential subdivisions and individual homes (DWQ 2000). Stormwater point source discharges include stormwater collection systems for municipalities and stormwater discharges associated with certain industrial activities. Point source dischargers in North Carolina must apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit. Discharge permits are issued under the NPDES program, delegated to DWQ by the EPA. Within subbasin 030623 there is only one major NPDES discharger. There are numerous minor non-NPDES dischargers in the subbasin (DENR 2001). The three largest dischargers are listed in Table 1.

Table 1. Largest Permitted NPDES Dischargers Located in Subbasin 030623 of the Cape Fear River Basin (DENR 2001 and DWQ 2000).

Permit	Facility	Water Body	Discharge (mgd)	Distance
NC0003875	Occidental Chemical Corp.	NE Cape Fear River in New Hanover Co.	1.07	>10 mi. (>16 km) downstream
NC0007757	Thorn Apple Valley	Juniper Swamp	0.65	>10 mi. (>16 km) downstream
NC0021113	Burgaw WWTP	Osgood Canal	0.5	9 miles (14 km) upstream

Non-point source dischargers observed in the project study area consist of normal roadway runoff and likely runoff from the fish camp/boat ramp facility. This facility contains limited impervious surface.

5. Anticipated Impacts to Water Resources

a. General Impacts

Short-term impacts to water quality, such as sedimentation and turbidity, may result from construction-related activities. Best Management Practices (BMPs) will minimize impacts during construction, including implementation of stringent erosion and sedimentation control measures, and avoidance of using wetlands as staging areas.

Other impacts to water quality, such as changes in water temperature as a result of increased exposure to sunlight due to the removal of stream-side vegetation or increased shade due to the construction of the bridges, and changes in stormwater flows due to changes in the amount of impervious surface adjacent to the stream channels, can be anticipated as a result of this project if roadway or bridge surface area increases. However, due to the limited amount of overall change anticipated in the surrounding areas, impacts are expected to be temporary in nature.

In-stream construction activities will be scheduled to avoid and minimize impacts to aquatic resources/organisms. Due to the potential for anadromous fish species in the project area, *Stream Crossing Guidelines for Anadromous Fish Passage* will be adhered to.

b. Impacts Related to Bridge Demolition and Removal

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

Bridge No. 21 has 13 spans totaling approximately 590 feet (179.8 meters) in length. The deck and railings of the superstructure are composed of reinforced concrete on steel I-beams. The substructure is composed of reinforced concrete abutments and reinforced concrete caps on steel piles. The rails will be removed without dropping them into waters of the United States. There is potential for components of the deck and substructure to be dropped into waters of the United States.

Dropping any portion of the structure into waters of the United States will be avoided unless there is no other practical method of removal. In the event that no other practical method is feasible, a worst-case scenario is assumed for calculations of fill entering waters of the United States. The maximum potential temporary fill associated with demolition procedures is estimated to be 330 cubic yards (252 cubic meters). Due to potential sedimentation concerns resulting from demolition of the bridge, turbidity curtains will be used where practicable, to

contain and minimize sedimentation in the water. The resident engineer will coordinate with appropriate agencies prior to demolition and removal.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project would fall under Case 2, which states that **no work shall be performed in the water during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas.** This conclusion is based upon the classification of the waters within the project area and vicinity, and agency comments received during scoping.

D. Biotic Resources

1. Plant Communities

Distribution and composition of plant communities throughout the project study area reflect landscape-level variations in topography, soils, hydrology, and past and present land use practices. Logging, farming, selective cutting, and natural succession after fires, farming, hurricanes, and other disturbances have resulted in the present vegetative patterns. When appropriate, the plant community names have been adopted and modified from the NHP classification system (Schafale and Weakley 1990) and the descriptions written to reflect local variations within the project study area.

a. Mixed Pine/Hardwood Forest

Mixed pine/hardwood forest covers approximately 0.7 acre (0.3 hectare) (4 percent) of the project study area. This plant community type is located on the east side of the NE Cape Fear River. Tree species consist of loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), sweetbay (*Magnolia virginiana*), and sweetgum (*Liquidambar styraciflua*). Shrub species consist primarily of wax myrtle (*Myrica cerifera*). Groundcover species consist of cinnamon fern (*Osmunda cinnamomea*), and netted chain-fern (*Woodwardia areolata*). A small portion of this mixed pine/hardwood community is jurisdictional wetland. A portion of the pine/hardwood forest has been timbered and has revegetated as a successional area.

b. Coastal Plain Levee Forest (Blackwater subtype)

Coastal plain levee forest covers approximately 0.2 acre (0.1 hectare) (1 percent) of the project study area. These plant communities are associated with natural levee deposits along channels of large blackwater streams (Schafale and Weakley 1990). Tree species within the coastal plain levee forest associated with NE Cape Fear River include bald cypress (*Taxodium distichum*), laurel oak (*Quercus laurifolia*), American elm (*Ulmus americana*), sweetgum, and red maple. Midstory and shrub species consist of red maple, sweetbay, and sweetgum. Groundcover consists primarily of scattered giant cane (*Arundinaria gigantea*) and netted chain-fern. The edges of the river channel support patches of cattail and alligator weed (*Alternanthera philoxeroides*). This plant community is typically associated with either cypress-gum swamps or bottomland hardwood forest and is distinguished from these other communities by its higher, drier location on a levee.

c. Cypress-Gum Swamp

Cypress-gum swamp covers approximately 2.1 acres (0.9 hectare) (13 percent) of the project study area. These plant communities are associated with backswamps, sloughs, swales, and featureless floodplains of rivers (Schafale and Weakley 1990). Dominant tree species include such species as bald cypress, swamp tupelo (*Nyssa biflora*), red maple, and sweetbay. Shrubby vegetation is sparse with the exception of some small red maple. Groundcover consists primarily of giant cane and netted chain fern. Dominance by cypress and gum species and flooding on a semi-regular basis distinguish cypress-gum swamp from bottomland hardwood forest.

d. Successional/Clear-cut

Successional/clear-cut areas cover approximately 2.8 acres (1.1 hectare) (18 percent) of the project study area. Successional areas are those areas that have been disturbed by man in the past, usually by logging activities, and have become re-established with successional or disturbance-oriented vegetation. Clear-cut areas have had all woody vegetation removed by logging activities and have not yet become re-vegetated. The successional land within the project study area consists of areas that appear to have been timbered approximately five years ago. The wetter area is vegetated with species such as black willow (*Salix nigra*), red maple, woolgrass (*Scirpus cyperinus*), and scattered cattail (*Typha* sp.). This area is located on the east side of the river and on the north side of NC 210. The drier successional area is located on the west side of the river and is vegetated primarily with loblolly pine, red maple, sweetgum, and blackberry (*Rubus* sp.). The clear-cut area is located on the west side of the river and on the north side of NC 210. Logging activities appear to have occurred within the past year and no substantial amount of vegetation has become re-established.

e. Maintained/Disturbed Land

Maintained/disturbed land covers approximately 6.4 acres (2.6 hectare) (40 percent) of the study area. Maintained/disturbed areas can include roadways, roadsides, maintained residential yards, powerline right-of-way corridors, and areas where other human related activities dominate the landscape. Roadsides and powerline rights-of-way are typically maintained by mowing and/or herbicides. A fish camp/boat ramp is located on the west side of the river, north of NC 210. This area is being maintained by the current landowner. Additional maintained/disturbed land is located on the west side of the river, south of NC 210. Previous activities in this area are unknown. A powerline right-of-way crosses the river south of NC 210. This right-of-way appears to receive regular maintenance by mowing and/or herbicide application.

2. Wildlife

The project study area was visually surveyed for signs of terrestrial wildlife. Mammals directly observed or evidenced by tracks or scat include white-tailed deer (*Odocoileus virginianus*) and raccoon (*Procyon lotor*). Other mammals expected to occur in and around the project study area include such species as Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), and gray squirrel (*Sciurus carolinensis*).

No terrestrial reptiles were observed within the project study area during the field investigation. Those species expected in the project study area include such species as green anole (*Anolis carolinensis*), eastern box turtle (*Terrapene carolina*), black racer (*Coluber constrictor*), and rat snake (*Elaphe obsoleta*).

Terrestrial or semi-arboreal amphibians expected to occur in the project study area include such species as Fowler's toad (*Bufo woodhousii*), southern leopard frog (*Rana utricularia*), and spring peeper (*Pseudacris crucifer*).

Avian species directly observed within the project study area include mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), turkey vulture (*Cathartes aura*), blue jay (*Cyanocitta cristata*), great egret (*Ardea alba*), and great blue heron (*Ardea herodias*).

Most of the terrestrial wildlife occurring in the project study area is typically adapted to life in fragmented landscapes, and overall impacts will be minor. Due to the lack of, or limited, infringement on natural communities, the proposed bridge replacement will not result in substantial loss or displacement of known terrestrial animal populations. Wildlife movement corridors are not expected to be substantially impacted by the proposed project.

3. Aquatic Communities

The aquatic habitat located within the project study area includes the NE Cape Fear River and portions of the adjacent floodplain forest where occasional flooding is evident. The littoral fringe along the shoreline is also an important component of the aquatic habitat located within the project study area.

Limited kick-netting, seining, dip-netting, and visual observation of stream banks and channel within the project study area were conducted in the NE Cape Fear River to document the aquatic community. The depth of the channel inhibited the use of the back-mounted electro-shocker.

Fish species documented in the NE Cape Fear River during the field investigation include: bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), eastern mosquitofish (*Gambusia holbrooki*), flathead catfish (*Pylodictis olivaris*), yellow bullhead (*Ictalurus natalis*), blue catfish (*Ictalurus furcatus*), and pirate perch (*Aphredoderus sayanus*). Additional fish that can be expected to occur in the project study area include such species as blue-spotted sunfish (*Enneacanthus gloriosus*), redbreast sunfish (*Lepomis auritus*), bowfin (*Amia calva*), and redfin pickerel (*Esox americanus*).

Coastal Plain streams and rivers are often used by anadromous fish species such as striped bass (*Morone saxatillis*) sturgeon (*Acipenser* spp.), and shad (*Alosa* spp. And *Dorosoma* spp.). Striped bass have been documented by Menhinick (1991) in the NE Cape Fear River drainage. Several species of shad including American shad (*Alosa sapidissima*), blueback herring (*A. aestivalis*), hickory shad (*A. mediocris*), alewife (*A. pseudoharengus*), and gizzard shad (*Dorosoma cepedianum*) have been documented by Menhinick (1991) in the NE Cape Fear River drainage. The Atlantic sturgeon (*Acipenser oxyrhynchus*) and shortnose sturgeon (*A.*

brevirostrum) have been documented in the Cape Fear River and likely utilize the NE Cape Fear River.

The NE Cape Fear River provides riparian and benthic habitat for a variety of amphibians and aquatic reptiles. Although none were observed during the field investigation, the following species are expected to occur in the project study area: green frog (*Rana clamitans*), snapping turtle (*Chelydra serpentina*), banded water snake (*Nerodia fasciata*), and cottonmouth (*Agkistrodon piscivorus*).

Benthic macroinvertebrate sampling was conducted pursuant to DWQ methodologies. Kick-net surveys and limited bottom sampling conducted within along the edge of the NE Cape Fear River produced a small amount aquatic macroinvertebrates. Table 2 provides a list of the benthic organisms collected and identified to Order and Family when possible. Identifications are based on McCafferty (1998).

Table 2. Benthic Macroinvertebrates Collected from NE Cape Fear River Within the Project Study Area.

Order	Family
Coleoptera	Psephenidae
Annelida	Oligochaeta
Decapoda	Palaemonidae

4. Anticipated Impacts to Biotic Communities

a. Terrestrial Communities

The replacement of Bridge No. 21 is expected to involve minor impacts to the terrestrial communities located within the project study area. Plant communities and impacts within the project study area are presented in Table 3. Actual impacts will be limited to the designed right-of-way and permitted construction limits. Due to the anticipated lack of, or limited infringement on natural communities, the proposed bridge replacement will not result in substantial loss or displacement of known terrestrial animal populations. Wildlife movement corridors will not be substantially impacted by the proposed project. Wildlife known to utilize the project study area are commonly found within fragmented landscapes. The bridge replacement will not alter fragmentation within the study area.

Table 3. Anticipated Impacts to Plant Communities

B-4223 Alternatives	Terrestrial Communities (Acres/Hectares)				
	Mixed Pine/ Hardwood Forest	Coastal Plain Levee Forest	Cypress-Gum Swamp	Successional / Clear-Cut	Maintained/Disturbed Land
Alt. A	0.65 (0.263)	0.06 (0.024)	0.30 (0.012)	0.67 (0.271)	3.45 (1.400)
Alt. B	0.62 (0.251)	0.10 (0.040)	0.10 (0.040)	1.00 (0.405)	3.21 (1.300)
Alt. B Temp. Det.	0.06 (0.024)	0.00 (0.000)	0.06 (0.024)	0.09 (0.036)	0.02 (0.008)

Impacts are calculated from 10 feet outside of the proposed slope stake lines. Actual Impacts are anticipated to be less.

b. Aquatic Communities

Potential impacts to downstream aquatic habitat will be avoided by bridging the NE Cape Fear River to maintain regular flow and stream integrity. Support structures will be designed to avoid wetland or open water habitats whenever possible. In addition, temporary impacts to downstream habitat from increased sediment during construction will be reduced by limiting in-stream work to an absolute minimum, except for the removal of the portion of the sub-structure below the water. Waterborne sediment flowing downstream can be minimized by use of a floating silt curtain. Stockpiled material will be kept a minimum of 50 feet (15.2 meters) from this stream channel. Silt fences will also be erected around any stockpiled material in order to minimize the chance of erosion or run-off from affecting the stream channel. Best Management Practices (BMPs) for the protection of surface waters will be strictly enforced to reduce impacts during all construction phases.

Aquatic wildlife may be temporarily displaced during the bridge replacement project. No long-term impacts are expected to result from this project. No impacts are anticipated to anadromous fish or spawning habitat. Anadromous fish species have been documented by Menhinick (1991) as occurring in the NE Cape Fear River drainage. NCDOT's *Stream Crossing Guidelines for Anadromous Fish Passage* will be utilized to ensure that the replacement of the bridge will not impede anadromous fish runs.

The USFWS could not determine by a single survey whether or not the West Indian manatee would occur in the project area. *Precautions For Construction In Areas Which May Be Used By The West Indian Manatee In North Carolina* (1996 USFWS) will be incorporated.

Resident aquatic species may be displaced during construction activities. Anticipated impacts are expected to be minor and temporary and are presented in Table 4.

Table 4. Anticipated Impacts to Aquatic Communities.

Anticipated Impacts to Aquatic Communities		
B-4223 Alternatives	Surface Area of Stream Impacts (Acre/Hectare)	Linear Feet of Stream Impacts (Feet/Meters)
Alternative A	0.30 (0.12)	30 (9.1)
Alternative B	0.30 (0.12)	30 (9.1)
Alt. B Temp. Detour	0.26 (0.11)	26 (7.9)

Impacts were derived by considering the footprint of the new bridge replacement, the establishment of a detour bridge and subsequent removal, and the removal of the original bridge.

E. Special Topics

1. Waters of the United States: Jurisdictional Issues

Wetlands are considered "waters of the United States" and are subject to jurisdictional consideration. Wetlands subject to review under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the soil surface for a portion (12.5 percent) of the growing season (DOA 1987).

Four wetland types occur within the project study area. The surface waters within the channel of the NE Cape Fear River exhibit characteristics of riverine, lower perennial, unconsolidated bottom, permanently flooded waters (R2UBH) pursuant to Cowardin *et al.* (1979). The floodplain of the NE Cape Fear River exhibits characteristics of a palustrine, forested, deciduous, semi-permanently flooded wetland (PFO6F). The NWI map indicates that this wetland is comprised of broad-leaved, deciduous trees (PFO1) and does not take into account the presence of bald cypress co-dominating at this site which results in the PFO6 designation. The third wetland type is a palustrine, shrub-scrub, broad-leaved deciduous, semi-permanently flooded wetland (PSS1F). This wetland is located in the successional area east of the river that was logged approximately five years ago. The fourth wetland type is the palustrine, emergent, persistent wetland (PEM1) located under the powerline right-of-way.

The jurisdictional extent of the wetland areas was delineated based on current COE methodology, and the areas were subsequently mapped with Trimble ™ Global Positioning System (GPS) units. The COE concurred with the delineation in a Notification of Jurisdictional Determination dated January 2, 2002.

Table 5 contains potential wetland impacts within the project study area.

Table 5. Jurisdictional Wetlands and Surface Waters Within the Project Study Area.

	Total Wetland Impacts Acre (Hectare)
Alternative A	0.661 (0.267)
Alternative B	0.745 (0.301)
Alternative B Temporary On-site Detour	0.031 (0.0125)

2. Permits

This project is processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. Nationwide Permit (NWP) #23 [33 CFR 330.5(a)(23)] has been issued by the COE for CEs due to expected minimal impact. DWQ has issued a General 401 Water Quality Certification for NWP #23. However, use of this permit will require written notice to DWQ. In the event that NWP #23 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit 031 issued by the Wilmington COE District. Notification to the Wilmington COE office is required if this general permit is utilized. NWP #33 may be needed if temporary structures, work and discharges, including cofferdams are necessary for this project and if review of the temporary structures are not included in the NEPA document.

Pender County is a coastal county and is therefore under the additional jurisdiction of the CAMA as regulated by the Coastal Resources Commission (CRC) and the NCDCM. Activities that impact certain coastal wetlands under the jurisdiction of CAMA or Areas of Environmental Concern (AEC) require CAMA approval through the NCDCM (NCDCM 2001). The NE Cape Fear River within the project study area is considered an AEC because it is considered public trust waters and it is in an area designated as "inland" and "joint" fishing waters by NCWRC and NCMFC (NCDCM 2001). Replacement of Bridge No. 21 will require CAMA approval.

The United States Coast Guard (USCG) is also responsible for authorizing bridges pursuant to Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946. The purpose of these Acts to preserve the public right of navigation and to prevent interference with interstate and foreign commerce. Bridge construction or replacement over navigable waters may require USCG authorization pursuant to 33 CFR 114-115. According to a letter received from the USCG dated February 2, 2004, the Northeast Cape Fear River meets criteria for advanced approval waterways. An individual permit will not be required.

Anticipated impacts to wetlands and open water areas will be limited to the actual right-of-way width and will be determined by NCDOT during the design phase of this project. Impacts to open water areas of the NE Cape Fear River will be minimized through the use of channel-spanning structures. During bridge removal procedures, NCDOT's BMP's will be utilized, including erosion control measures. Floating turbidity curtains will be used if practicable to minimize the amount of turbid water flowing off-site.

A state storm water permit will be required.

3. Mitigation

Due to the extent of wetlands and surface waters within the project study area, complete avoidance of jurisdictional impacts may not be possible.

Minimization of jurisdictional impacts can be achieved by utilizing as much of the existing bridge corridor as possible. This will result in a minimal amount of new impact depending on the final design of the new bridge. BMPs will be used as an effort to minimize impacts, including avoiding placing staging areas within wetlands. Limiting in-channel structures will also serve to minimize direct impacts to the river channel.

Temporary impacts associated with the construction activities will be mitigated by replanting disturbed areas with native species and removing any temporary fill material within the floodplain upon project completion.

F. Rare and Protected Species

1. Federally Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), or officially proposed (P) for such listing, are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The federal protected species are listed in Table 6 for Pender County (FWS on-line list researched November 5, 2003, last updated February 25, 2003).

Table 6. Federally Protected Species Listed for Pender County, North Carolina.

Common Name	Scientific Name	Status	Biological Conclusion
Shortnose sturgeon	*Acipenser brevirostrum*	E	Not Likely to Adversely Affect
American alligator	*Alligator mississippiensis*	T(S/A)	N/A
Loggerhead sea turtle	*Caretta caretta*	T	No effect
Piping plover	*Charadrius melodus*	T	No effect
Red-cockaded woodpecker	*Picoides borealis*	E	No effect
Manatee	*Trichechus manatus*	E	No effect
Seabeach amaranth	*Amaranthus pumilus*	T	No effect
Golden sedge	*Carex lutea*	E	No effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	No effect
American chaffseed	*Schwalbea americana*	E	No effect
Cooley's meadowrue	*Thalictrum cooleyi*	E	No effect

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

Shortnose sturgeon – The shortnose sturgeon is an anadromous fish whose usual habitat is estuaries and lower sections of larger rivers. It moves into fresh water only to spawn (Gilbert 1989). The shortnose sturgeon rarely reaches 3 feet (0.9 m) in length, is dark above and light below, and has a wide mouth pointed downward beneath a short snout. Menhinick (1991) has documented the shortnose sturgeon in the Cape Fear River. He does not provide any documentation of its occurrence in the NE Cape Fear River.

No Designated Critical Habitat or Proposed Critical Habitat for shortnose sturgeon is currently listed by the NMFS (NMFS 2001).

BIOLOGICAL CONCLUSION: May Affect, Not Likely to Adversely Affect

The project study area does represent potential habitat for shortnose sturgeon based upon descriptions in available literature about the species; however, an accurate determination of its presence or use of the project study area is not possible at this time. NHP does not document any occurrences of this species within the project study area as of December 20, 2001. However, on November 14, 2002, Mr. Fritz Rhode of NC Division of Marine Fisheries stated that anadromous fish, including the shortnose sturgeon, utilize the Northeast Cape Fear River for spawning. The NCDMF is uncertain how far upstream the fish travel. Therefore, there will be an instream moratorium required for the shortnose sturgeon between February 1 and June 30, inclusive.

American alligator – American alligator is listed as threatened based on the similarity in appearance to other federally listed crocodilians; however, there are no other crocodilians native to North Carolina. American alligators can be found in a wide variety of freshwater to estuarine habitats including swamp forests, bottomland hardwood forests, marshes, large streams, canals, ponds and lakes (Palmer and Braswell 1995). This habitat exists within the project study area, and the potential for alligators within the project study area does exist. No individuals or direct evidence of occurrence was observed during the field investigation conducted by ESI biologists. Construction activities may temporarily displace any American alligators in the vicinity; however, no long-term impact to the American alligator is anticipated as a result of this project.

BIOLOGICAL CONCLUSION: Not applicable

No biological conclusion is required for the American alligator since it is listed as T(S/A).

Loggerhead sea turtle – The loggerhead sea turtle is a marine turtle characterized by a large head with blunt jaws. The carapace and flippers are a reddish-brown color and the plastron is yellow. Adults grow to an average weight of about 200 pounds (441kgs). The loggerhead sea turtle may be found hundreds of miles out to sea, as well as in inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers (Palmer and Braswell 1995). Nesting occurs mainly on beaches.

No Designated Critical Habitat or Proposed Critical Habitat for loggerhead sea turtle is currently listed by the NMFS (NMFS 2001).

BIOLOGICAL CONCLUSION: No effect

The study area does not contain suitable habitat for loggerhead sea turtles. No impact to this species is expected as a result of this project.

Piping plover – Piping plovers are small shore birds measuring only 6 to 8 inches (0.2 m) in length. These birds occur along beaches above the high tide line, sand flats, barrier islands, sloping foredunes, behind primary dunes, and washover areas (Dyer *et al.* 1987).

Critical Habitat for the piping plover is being proposed by FWS for coastal portions of Pender County; the project study area is not located within 5.0 miles (8.0 km) of the proposed Critical Habitat.

BIOLOGICAL CONCLUSION: No effect

No habitat for piping plover occurs in the project study area. No impacts to this species will result from this project.

Red-cockaded woodpecker – This small woodpecker (7 to 8.5 inches) (0.2m) 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, longleaf (*Pinus palustris*), slash (*P. elliotii*), and pond (*P. serotina*) pines. Nest cavities are constructed in the heartwood of living pines, generally older than 60 years that have been infected with red-heart disease. Nest cavity trees typically occur in clusters, which are referred to as colonies. Pine flatwoods or pine savannas that are fire maintained serve as ideal nesting and foraging sites for this species. Development of a thick understory within a given area usually deters nesting and foraging. Potential nest sites for RCW's include open pine and pine/mixed hardwood stands greater than 60 years of age. Hardwood/pine stands (<50% pine) greater than 60 years of age may also be considered potential nesting habitat if adjacent to potential foraging habitat (Henry 1989). Foraging habitat is typically comprised of open pine or pine/mixed hardwood stands over 30 years of age (Henry 1989). Pines must comprise at least 60 percent of the canopy in order to provide suitable foraging for RCW's. Somewhat younger pine stands may be utilized if the trees have an average diameter at breast height (DBH) greater than or equal to 10 inches (0.25 m). Foraging stands must be connected to other foraging areas or nesting areas in order to be deemed a viable foraging site. Open spaces or unsuitable habitat wider than approximately 330 ft (101 m) are considered a barrier to RCW foraging.

BIOLOGICAL CONCLUSION: No effect

No habitat that would support nesting or foraging populations of red-cockaded woodpeckers was identified within the project study area or directly adjacent to the

project study area. The mixed pine/hardwood forest within the project study area is dominated by hardwoods (>50%) and is not considered suitable habitat since no adjacent potential foraging habitat is present. No RCW cavity trees were identified within the project study area. NHP does not document any occurrences of this species within 1.0 mile (1.6 km) of the project study area as of December 20, 2001. No impacts to this species will result from this project.

Manatee – The manatee is a large gray or brown aquatic mammal. Adults average about 10 feet (3.0 m) in length and weight up to 1000 pounds (2205 kgs). Manatees inhabit both salt and fresh water of a sufficient depth (5 to 20 feet) (1.5 to 6.1 meters). They may be encountered in canals, rivers, estuarine habitats, saltwater bays, and in nearshore waters. Manatees prefer water temperatures warmer than approximately 34° Farenheit (1° Celcius), however, they have been observed in waters of a lower temperature (Webster *et al.* 1985). They may be encountered in North Carolina waters during the warmer summer months; however, they are much more common in Georgia and Florida waters.

BIOLOGICAL CONCLUSION: No Effect

Although downstream portions the NE Cape Fear River may provide suitable habitat for occasional manatees, it is unlikely that they would occur as far inland is this site is located. It is unlikely that manatees would be impacted by the proposed project due to their scarcity in North Carolina and highly migratory nature. However, it can not be concluded that manatees will not occur in the project study area. NHP does not document any occurrences of this species within 3.0 miles (4.8 km) of the project study area as of December 20, 2001. As a safety measure, *Precautions for Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina* will be followed.

Seabeach amaranth – The seabeach amaranth is an annual plant found on Atlantic coast beaches. The stems are fleshy and pink-red or reddish, with small rounded leaves. It is typically found on barrier island beaches, where its preferred habitat consists of overwash flats and lower foredunes (FWS 1996).

BIOLOGICAL CONCLUSION: No effect

No habitat for seabeach amaranth occurs within the project study area. NHP does not document any occurrences of this species within 3.0 miles (4.8 km) of the project study area as of December 20, 2001. No impacts to this species will result from the proposed project.

Golden sedge – Golden sedge is a perennial member of the sedge family and is known only from North Carolina. The stem may reach 3 feet (0.9 m) in height and the green, grasslike leaves are up to 10 inches (0.25 m) long. This species grows in sandy soils overlying coquina limestone deposits, with unusually high soil pH (Glover 1994). Golden sedge prefers the ecotone between pine savannah and adjacent wet hardwood or hardwood/conifer forest. Most plants occur in

partially shaded savannah/swamp where occasional to frequent fires favor a herbaceous ground layer (LeBlond 1996).

Populations of golden sedge are known from the NE Cape Fear watershed in Pender County. The species appears to be a very rare, narrowly restricted endemic to an area within a 2-mile (3.2 km) radius of the Onslow/Pender County line in southeastern North Carolina (LeBlond 1996). Localities where golden sedge have been found are ecologically highly unusual. The combination of open conditions underlain by calcareous substrate is very rare on the Atlantic coastal plain.

Golden sedge has recently been listed as E by the FWS (FWS 2002). This species was previously listed as PE (proposed for Endangered).

BIOLOGICAL CONCLUSION: No effect

No habitat that would support golden sedge was observed in the project study area. NHP does not document any occurrences of this species within 1.0 mile (4.8 km) of the project study area as of December 20, 2001. No impacts to this species will result from this project.

Rough-leaved loosestrife – The rough-leaved loosestrife is a rhizomatous perennial that flowers from late May to June with seeds forming by August and capsules dehiscing in October. This species can grow up to 2 feet (0.6 m) tall has yellow flowers that typically bloom in late May through June. Rough-leaved loosestrife typically occurs along the ecotone between long-leaf pine savannas and wetter, shrubby areas where lack of canopy vegetation allows abundant sunlight into the herb layer (*i.e.*, pocosins). The loosestrife is endemic to the Coastal Plain and Sandhills region of North Carolina. This species is fire maintained, and suppression of naturally occurring fires has contributed to the loss of habitat in our state. Drainage of habitat may also have adverse effects on the species (FWS 1994a).

BIOLOGICAL CONCLUSION: No effect

No habitat for rough-leaved loosestrife was observed in the study area. NHP does not document any occurrences of this species within 1.0 mile (4.8 km) of the project study area as of December 20, 2001. No impacts to this species will result from this project.

American chaffseed – American chaffseed is a perennial herb that stands 1 to 2 feet (0.3 to 0.6 m) tall. The species has alternate leaves and is erect and simple, or branched only at the base. The fleshy leaves are yellow-green or dull green with red undertones. The leaves become smaller and narrower from the base of the plant to the top (Kral 1983). Flowers are yellowish on the tube and purplish distally. Blooming typically occurs from April to June. This species is fire maintained and typically occurs in grass/sedge assemblages within moist pine flatwoods, pine savannas, bog borders, and open oak woods. Lack of fire will quickly suppress the species preventing blooming. It will then be quickly overgrown by successional herbs and woody plants.

BIOLOGICAL CONCLUSION: No effect

No habitat for American chaffseed was observed within the project study area. NHP does not document any occurrences of this species within 1.0 mile (4.8 km) of the project study area as of December 20, 2001. No impacts to this species will result from this project.

Cooley's meadowrue – Cooley's meadowrue is a rare perennial herb endemic to the Southeastern coastal plain. The species grows in circumneutral soil in moist wet savannas and savanna-like areas kept open by fire or other disturbance. In North Carolina, Cooley's meadowrue has been documented as growing in the following soil series: Foreston, Grifton, Muckalee, Torhunta, and Woodington. Each of these series are sandy loams. Tulip poplar (*Liriodendron tulipifera*) and cypress growing together, bordering a savanna-like area, has been the best indicator of Cooley's meadowrue sites (FWS 1994b).

BIOLOGICAL CONCLUSION: No effect

No habitat consisting of wet savannas or savanna-like areas kept open by fire or disturbance occurs in the project study area. NHP does not document any occurrences of this species within 1.0 mile (4.8 km) of the project study area as of December 20, 2001. No impacts to this species will result from this project.

2. Federal Species of Concern

The "Federal species of concern" (FSC) designation provides no federal protection under the ESA for the species listed. The presence of potential suitable habitat (Amoroso 1999, LeGrand et al. 2001) within the project study area has been evaluated for FSC listed for Pender County (Table 7). Sources reviewed included the FWS on-line list last updated February 25, 2003 (reviewed on-line November 5, 2003), and the North Carolina Natural Heritage Program on-line list last updated January 2003.

Table 7. Federal Species of Concern (FSC) Listed for Pender County, North Carolina.

Common Name	Scientific Name	State Status	Potential Habitat
Bachman's sparrow	*Aimophila aestivals*	SC	Y
Henslow's sparrow	*Ammodramus henslowii*	SR	N
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	T	N
Southern hognose snake	*Heterodon simus*	SC	Y
Southeastern myotis	*Myotis austroriparius*	SC	Y
Carolina gopher frog	*Rana capito capito*	T	N
Buchholz's dart moth	*Acrotis buchholzi*	SR	N
Atlantic pigtoe	*Fusconaia masoni*	E	N
Venus flytrap cutworm moth	*Hemipachnobia subporphyrea subporphyrea*	SR	N
Yellow lampmussel	*Lampsilis cariosa*	E	Y
Croatan crayfish	*Procambarus plumimanus*	NL	Y
Carter's spartiniphaga	*Spartiniphaga carterae*	SR	N
Georgia indigo-bush	*Amorpha georgiana* var. georgiana	E	N
Sandhills milkvetch	*Astragalus michauxii*	T	N
Chapman's sedge	*Carex chapmanii*	NL	Y
Venus flytrap	*Dionea muscipula*	SR-L, SC	N
Carolina bogmint	*Macbridea caroliniana*	T	Y
Carolina grass-of-parnassus	*Parnassia caroliniana*	E	N
Pineland plantain	*Plantago sparsiflora*	E	N
Thorne's beaksedge	*Rhynchospora thornei*	E	N
Carolina goldenrod	*Solidago pulchra*	E	N
Spring-flowering goldenrod	*Solidago verna*	SR-L	N
Carolina asphodel	*Tofieldia glabra*	NL	N
Carolina least trillium	*Trillium pusillum* var. *pusillum*	E	N
Chapman's three-awn	*Aristida simpliciflora*	SR-T	N
Coastal goldenrod	*Solidago villosicarpa*	SR-L	N
Grassleaf arrowhead	*Sagittaria graminea* var. *weatherbiana*	SR-T	Y

E-Endangered, T-Threatened, SC- Special Concern, SR – Significantly Rare, -T-Throughout, -L-Limited, NL-Not Listed by NCNHP

NHP files show southeastern myotis (Myotis *austroriparius)* as occurring less than 1 mile (1.6 kilometers) from the project area, and southern hognose snake (*Heterodon simus*) as occurring approximately 1.7 miles (2.7 kilometers) north of the project area. Species specific surveys for FSC were not conducted.

VI. Cultural Resources

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance Section 106, codified at 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

B. Historic Architecture

A field survey of the Area of Potential Effects (APE) was conducted on May 2, 2002. All structures over 50 years of age within the APE were photographed, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a memorandum dated December 20, 2002 the State Historic Preservation Officer (SHPO) stated "We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty years of age with in the project area, and report the findings to us."

A Historic Architectural Resources Final Identification and Evaluation report for the project area was submitted on July 31, 2003. Bridge No. 21 was built in 1955 and is not eligible under Criteria G.

In a memorandum dated September 10, 2003 the SHPO stated "The following property is determined not eligible for listing in the National Register of Historic Places: Davis-Trask House, NC 210 (Lane's Ferry Road)."

A copy of the memorandums is included in the appendix.

C. Archaeology

The State Historic Preservation Officer, in a memorandum dated December 20, 2002 stated that, "there are no known archaeological sites within the proposed project area....it is unlikely that any archaeological resources that may be eligible for inclusion in the National Register of Historic Places will be affected by the project. 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. Environmental Effects

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

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

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

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

No adverse impact on families or communities is anticipated. Right of way acquisition will be limited. No relocations of residents or businesses are expected with implementation of the proposed alternative.

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

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

The project is located in Pender County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Parts 51 and 93 are not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

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

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

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

A field reconnaissance survey was conducted in the vicinity of the project. One (1) underground storage tank (UST) site was located on the north side of NC 210 and approximately 360 feet (109 meters) west of the bridge. The facility No. is 0-019787 located at Lanes Ferry Grocery, 11010 NC 210, Rocky Point, North Carolina and was assigned an incident number (GWI #21345). It is a former gas station that removed two tanks after extensive flooding from Hurricane Floyd in 1999 and is currently being monitored by eight monitoring wells. A release from the UST system was confirmed during removal. The preferred alternative replaces the bridge on the south side. If any unregulated USTs or any potential source of contamination is discovered during right-of-

way initial contacts with impacted property owners, then an assessment will be conducted to determine the extent of any contamination at that time.

Pender County is currently participating in the National Flood Insurance Regular Program. This crossing of the Northeast Cape Fear River is located in an approximate flood hazard zone. Attached is a Flood Hazard Boundary Map for Pender County (Figure 5). It is not anticipated that the proposed project will have any adverse impacts on the existing floodplain

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

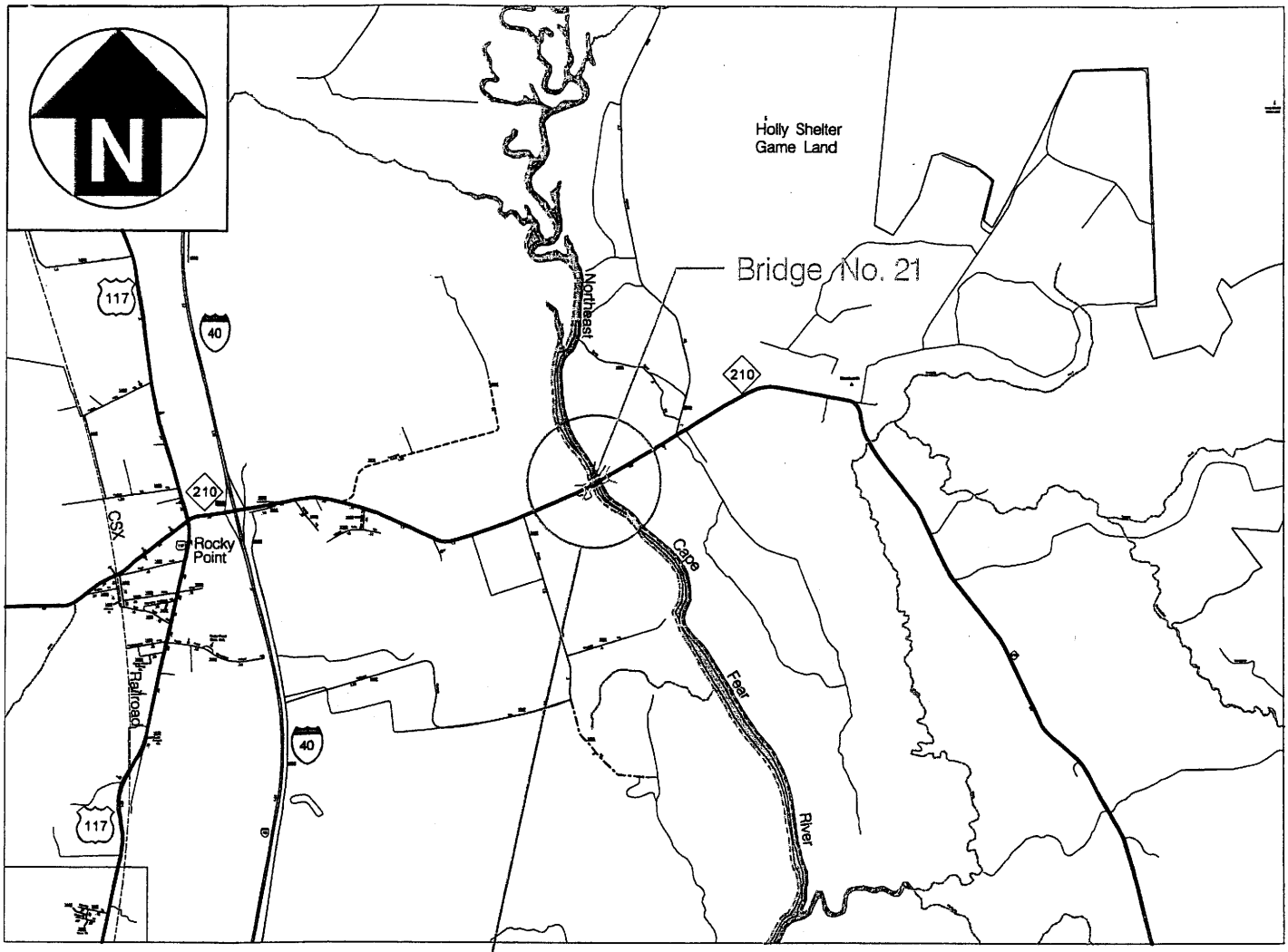
VIII. Public Involvement

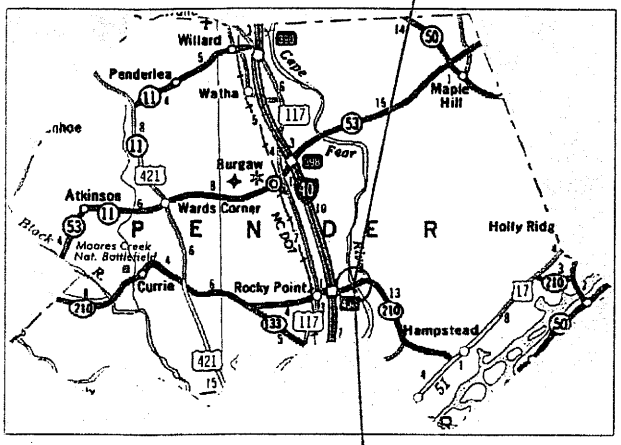
Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with scoping letters.

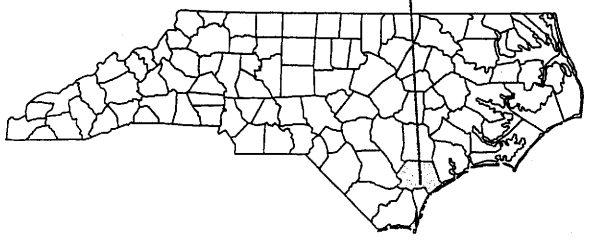
Newsletters were mailed in December 2003 to local residents and officials describing the preferred alternative.

IX. Agency Comments

All comments from local, state, and federal agencies have been addressed elsewhere in this document.







North Carolina Department of Transportation
Project Development & Environmental Analysis

PENDER COUNTY
BRIDGE NO. 21 ON NC 210
OVER THE
NORTHEAST CAPE FEAR RIVER
B-4223

FIGURE 1

North Carolina Department
Of Transportation
Project Development &
Environmental Analysis

ALTERNATIVE B

BEGIN PROJECT
-LB- STA 14+00

END PROJECT
-LB- STA 43+50

NORTHEAST CAPE FEAR

NEW BRIDGE

LANDS. FERRY GROCERY

DAVIS-TRASH HOUSE

POWER LINE

BEGIN BRIDGE
-LB- Sta. 25+04

END BRIDGE
-LB- Sta. 31+04

-LB- PCSta. 15+09.66

-LB- PTSta. 21+48.75

BEGIN BRIDGE
-DET- Sta. 18+59

END BRIDGE
-DET- Sta. 19+59

-LB- POTSta. 34+79.91

-LB- PCSta. 39+42.34

-LB- PTSta. 43+42.37

N 67°18'10"E

WETLAND

POWERLINE

RIPTAPER

0' 200' 400'
SCALE

B-4223

FIGURE 2B

North Carolina Department
Of Transportation
Project Development &
Environmental Analysis

ALTERNATIVE A
(PREFERRED)

BEGIN PROJECT
-LA- STA 14+00

LANDS FERRY GROCERY

BOAT RAMP

NORTHEAST CAPE FEAR

REMOVE EXISTING BRIDGE

WETLAND

TAPER

N 67°18'10.5" E

600'

NEW BRIDGE

DAVIS TRASH HOUSE

-LA- PCSta. 20+64.07

-LA- PTSta. 24+42.16

BEGIN BRIDGE
-LA- Sta. 25+06

END BRIDGE
-LA- Sta. 31+06

-LA- PCSta. 31+59.72

-LA- PRCSta. 35+56.81

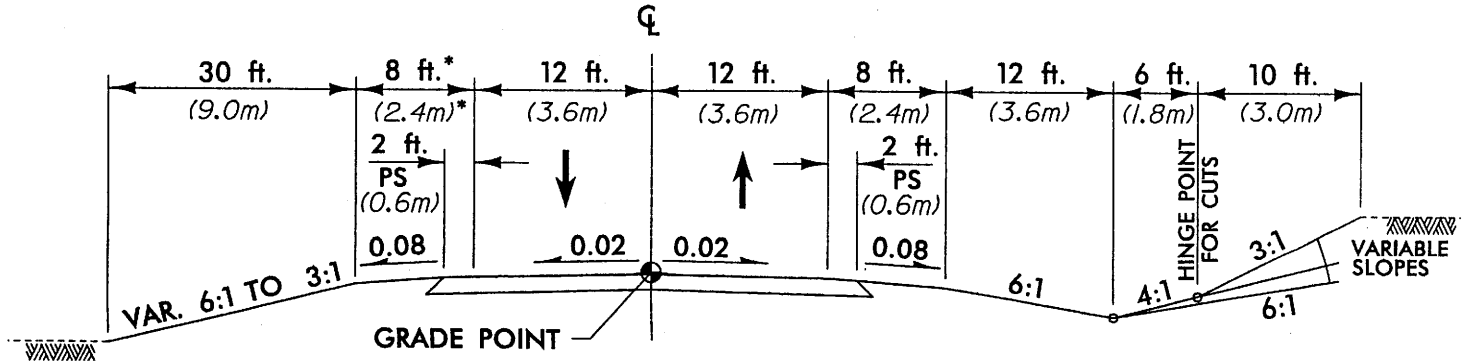
-LA- PTSta. 38+81.19

END PROJECT
-LA- STA 43+50

0' 200' 400'
SCALE

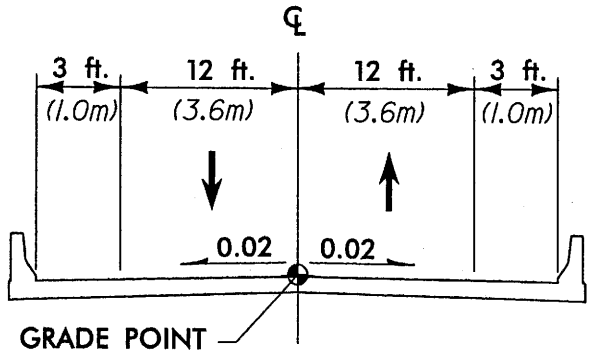
B-4223

FIGURE 2A



TYPICAL APPROACH SECTION
(PROPOSED)

* 11 ft. (3.3m) WHEN GUARDRAIL IS WARRANTED



TYPICAL BRIDGE SECTION
(PROPOSED)

TRAFFIC DATA

(EXISTING YR.) 2004 ADT = 3,700 LOS C
(CONST. YR.) 2005 ADT = 3,900 LOS C
(DESIGN YR.) 2030 ADT = 8,300 LOS D
DUAL 6%
TTST 4%

FUNCTIONAL CLASSIFICATION :
MAJOR COLLECTOR – RURAL

North Carolina Department
Of Transportation
Project Development &
Environmental Analysis

PENDER COUNTY
BRIDGE NO. 21 ON NC 210
OVER NORTH EAST CAPE FEAR RIVER
TIP NO: B-4223

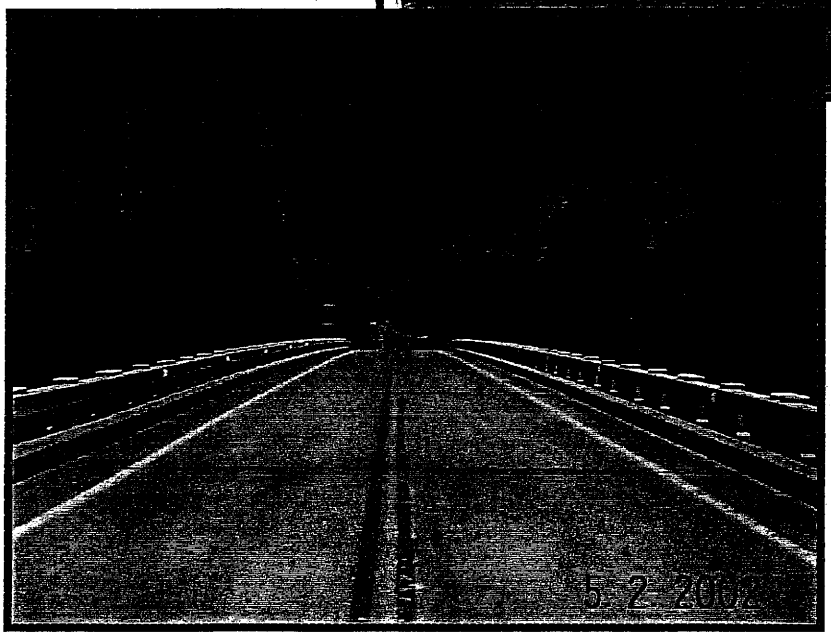
FIGURE 3

101402

T.I.P. No. B-4223, Federal-Aid Project No. BRSTP-0210(4), State Project No. 8.1271001 Pender County, NC 210, Bridge No. 21 over North East Cape Fear River

View of east approach from Bridge No. 21

View of north side of Bridge No. 21



View of west approach from Bridge No. 21

FIGURE 4

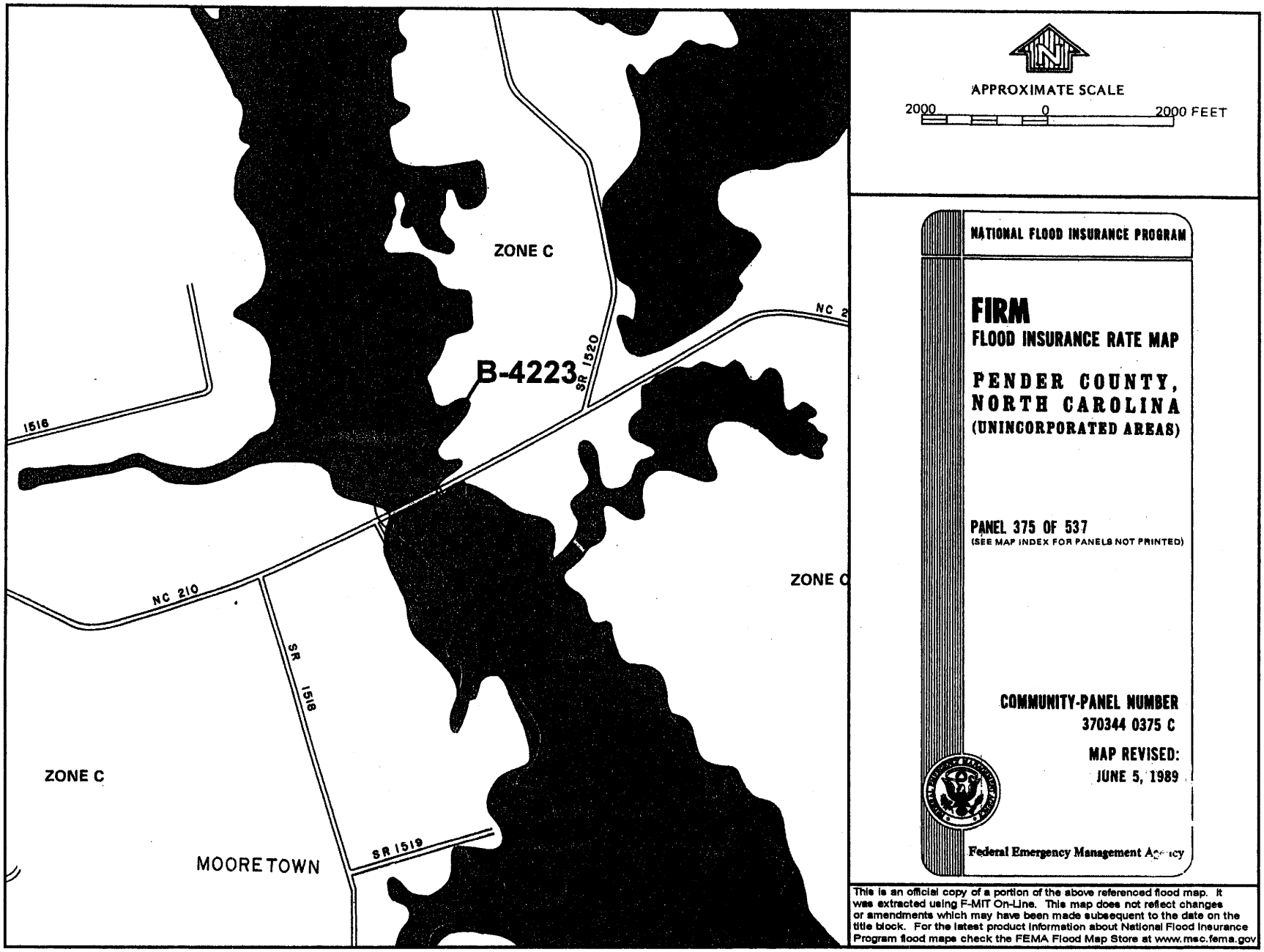

ZONE C
B-4223
SR 1520
NC 2
1516
NC 210
SR 1518
ZONE C
ZONE C
MOORETOWN
SR 1519
APPROXIMATE SCALE
2000 0 2000 FEET
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
PENDER COUNTY, NORTH CAROLINA
(UNINCORPORATED AREAS)
PANEL 375 OF 537
(SEE MAP INDEX FOR PANELS NOT PRINTED)
COMMUNITY-PANEL NUMBER
370344 0375 C
MAP REVISED:
JUNE 5, 1989
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

FIGURE 5

APPENDIX

U.S. Department of Homeland Security

United States Coast Guard

Commander
United States Coast Guard
Fifth Coast Guard District

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Oan-b
Phone: (757) 398-6587
Fax: (757) 398-6334
Email: tknowles@lantd5.uscg.mil

16593
02 Feb 04

Ms. Pamela R. Williams
Mulkey Engineers and Consultants
P. O. Box 33127
Raleigh, North Carolina 27636

Dear Ms. Williams:

This letter supersedes our previous letter of January 21, 2004, in response to your request for Coast Guard review of a project to replace the bridge (#21) over the Northeast Cape Fear River in Pender County, North Carolina.

Since the Northeast Cape Fear River is subject to tidal influence, it is considered legally navigable for Bridge Administration purposes. This portion of the Northeast Cape Fear River also meets the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70 at the proposed bridge site. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given advance approval to the construction of bridges across such waterways. Therefore, an individual permit will not be required for this project.

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

Sincerely,

Waverly G. Gregory, Jr.

WAVERLY GREGORY, JR.
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

U.S. Department of Homeland Security

United States Coast Guard

Commander
United States Coast Guard
Fifth Coast Guard District

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol: Oan-b
Phone: (757) 398-6587
Fax: (757) 398-6334
Email: tknowles@lantd5.uscg.mil

16593
21 Jan 04

Ms. Pamela R. Williams
Mulkey Engineers and Consultants
P. O. Box 33127
Raleigh, North Carolina 27636

Dear Ms. Williams:

This is in response to your request for Coast Guard review of a project to replace the bridge (#21) over the Northeast Cape Fear River in Pender County, North Carolina.

Since this waterway is subject to tidal influence, it is considered legally navigable for Bridge Administration purposes. This waterway also meets the criteria for advanced 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.

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

Sincerely,

Waverly Gregory Jr.

WAVERLY GREGORY, JR.
Chief, Bridge Administration Section
By direction of the Commander
Fifth Coast Guard District

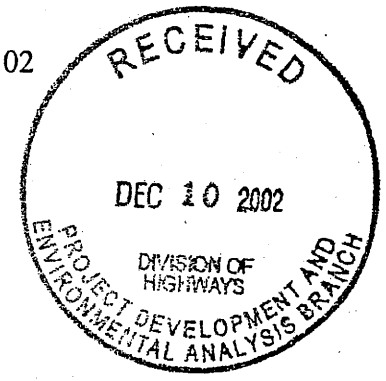
U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Atlantic Area

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

B-4223

16590
03 DEC 02



Mr. Gregory J. Thorpe, Ph. D.
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Thorpe:

This is in response to your letter dated October 24, 2002 requesting the Coast Guard to review the proposed projects to replace the following nine bridges: Black River Over Flow, Black River, Jenny's Branch, Beaver Dam Creek, New River, Stone Creek, NE Cape Fear River, Withrow Creek and Pinch Gut Creek all located throughout North Carolina.

The Coast Guard Authorization Act of 1982 exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used, susceptible to use in their natural condition, or susceptible to use by reasonable improvement as a means to transport interstate commerce. Such conditions for some of these waterways were confirmed in a telephone conversation on November 27, 2002. Due to this, the bridge projects on Beaver Dam, Withrow, and Pinch Gut Creeks and Black River Over Flow are exempt, and will not require Coast Guard Bridge Permits.

Black River, Jenny's Branch, and Stone Creek are subject to tidal influence and thus considered legally navigable for Bridge Administration purposes. But these waterways also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for these projects either.

Further information is required to assess the bridge replacement projects over the New River and the Northeast Cape Fear River. Such information as, is the waterway affected by lunar tides? Is there any commercial navigation? What types and sizes of boats operate on the waterway? Bridge Permits may be required based on the answers to these questions. If a permit is required, a higher level of environmental review will also be required.

The fact that Coast Guard permits are not required for some of these projects does not relieve you of the responsibility for compliance with the requirements of any other Federal, State, or

local agency who may have jurisdiction over any aspect of the project. If you have any questions, please contact Terrance Knowles at the phone number or address show above.

Sincerely,

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

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

December 6, 2002

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

Attention: John Wadsworth, P.E.

Dear Dr. Thorpe

The National Marine Fisheries Service (NOAA Fisheries) has reviewed your October 24, 2002, letter requesting comments on eight bridge replacement projects included in the North Carolina Department of Transportation 2002-2008 Transportation Improvement Plan. We understand that the NCDOT is preparing the planning and environmental studies necessary to process these projects as Categorical Exclusions and offers the following comments for your consideration

The environmental documents for these projects should address measures designed to avoid and minimize loss of open water and wetlands that support fishery resources. In addition, we support findings contained in the May 9, 2002, letter from the Wilmington District, U.S. Army Corps of Engineers, which identified the following issues and concerns as being relevant to the proposed bridge replacement projects:

- Replacing bridges with culverts
- Permanent and temporary wetland losses
- Offsite versus onsite detours
- Time of year restrictions on instream work
- Treatment of wetland restoration areas
- Existing bridge demolition and removal
- Lengthening existing bridges as a wetland restoration measure

Group I - The following projects will have no impact on resources for which NOAA Fisheries has stewardship responsibility; therefore, we have no comments:

Bridge Number	Project Number	County
No. 416	B - 4103	Davidson County
No. 28	B - 4255	Rowan County
No. 54	B - 4282	Stokes County

Group II - These projects have the potential to affect fishery resources and their associated habitat for which NOAA Fisheries has stewardship responsibility:

Bridge Number	Project Number	County
No. 12	B - 1382	Sampson County
No. 26	B - 1382	Sampson County
No. 72	B - 403	Brunswick County
No. 24	B - 4214	Onslow County
No. 21	B - 4223	Pender County

Bridges 12, 26, 21 and 24 are located in the Cape Fear and New River basins and in areas which provide habitat for anadromous fishery resources including American shad and river herring. Bridges 72 and 24 are located in areas with brackish to saline waters that also support estuarine dependent fishery resources such as spot, Atlantic croaker, and blue crab. In addition, these projects may affect **Essential Fish Habitat** for Federally managed species such as red drum and shrimp which are managed by the South Atlantic Fishery Management Council, and summer flounder which is managed by the Mid-Atlantic Fishery Management Council. Accordingly, we recommend that an Essential Fish Habitat Assessment be included in any environmental document for these projects.

Spawning and nursery habitat for anadromous and estuarine fishes may be adversely impacted by these projects unless measures to avoid and minimize impacts to waters and wetlands are included in the project plans. Therefore, NOAA Fisheries may recommend against Department of the Army authorization of these projects under Nationwide Permit 23 unless the following recommendations are incorporated:

1. Following impact avoidance and minimization, unavoidable wetland losses shall be offset through implementation of a compensatory mitigation plan that has been approved by the Corps of Engineers and in consultation with NOAA Fisheries.

2. All construction activities in waters and associated wetlands shall utilize techniques that avoid and minimize adverse impacts to those systems and their associated flora and fauna

3. In order to protect anadromous fishery resources that may utilize the project areas as spawning and/or nursery habitat, work in the waters of the creeks shall be restricted to the period between October 1 and March 1 of any year unless prior approval is granted by the Corps of Engineers following consultation with NOAA Fisheries.

If these projects are processed under Nationwide 23, they will be carefully reviewed for incorporation of the recommendations listed above, and we may elect to provide additional comments and recommendations that are intended to avoid, minimize, and offset impacts to living marine resources. Our recommendations, if any, will be sent to the Wilmington District, U.S. Army Corps of Engineers, and be forwarded to you.

Finally, the shortnose sturgeon, a federally protected species under the purview of NOAA Fisheries is found in the Cape Fear River. These comments do not satisfy federal agency consultation responsibilities under Section 7 of the Endangered Species Act of 1973, as amended. If any activity "may effect" listed species and habitats under NOAA Fisheries purview, consultation should be initiated with our Protected Resources Division at 9721 Executive Center Drive North, St. Petersburg, Florida 33702

We appreciate the opportunity for early participation in the review of these bridge replacement projects. If we can be of further assistance, please contact Ronald Sechler at our Beaufort Field Office at 252-728-5090 or at ron.sechler@noaa gov.

Sincerely,

Ronald Sechler

for Andreas Mager, Jr
Assistant Regional Administrator
Habitat Conservation Division

B-4223

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

June 7, 2002

William T. Goodwin, Jr., PE, Unit Head
Bridge Replacement Unit
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Goodwin:

The National Marine Fisheries Service (NMFS) has reviewed the Natural Systems Technical Reports (NSTR) - Group 2, for 22 bridge replacement projects identified in your March 1, 2002, letter. These projects are scheduled for construction in fiscal year 2005.

By letter dated May 9, 2002 (copy enclosed), the Wilmington District, U.S. Army Corps of Engineers identified the following issues and concerns as being relevant to the proposed bridge replacement projects:

- Replacing bridges with culverts
- Permanent and temporary wetland losses
- Offsite versus onsite detours
- Time of year restrictions on instream work
- Treatment of wetland restoration areas
- Existing bridge demolition and removal
- Lengthening existing bridges as a wetland restoration measure

The NMFS agrees that these issues should be fully addressed with regard to impacts and mitigation. We also agree with the Corps' determination that identifying projects involving these activities as Green Light Projects is misleading and should not be used. Therefore, the following Group 2 projects should be identified as either Yellow or Red Light Projects.

Section I - Yellow Light Projects (YLPs)

The bridge replacement projects listed below are located in areas that do not support NMFS trust fishery resources. Otherwise, they have normal environmental concerns and, therefore, are identified as YLPs.

Bridge Number	Project Number	Location
Bridge No.136	B - 4025	Beaufort County
Bridge No. 108	B - 4154	Hyde County
Bridge No. 118	B - 4235	Pitt County
Bridge No. 191	B - 4272	Sampson County

Section II - Yellow Light Projects (YLPs)

The bridge replacement projects listed below are located in the Roanoke River, Neuse River, Tar River, Chowan River, Trent River, Cape Fear River basins which are likely to support NMFS trust anadromous fishery resources and are, therefore, classified as YLPs.

Bridge Number	Project Number	Location
Bridge No. 45	B - 4026	Bertie County
Bridge No. 29	B - 4314	Washington County
Bridge No. 10	B - 4086	Craven County
Bridge No. 46	B - 4125	Greene County
Bridge No. 49	B - 4126	Greene and Lenoir Counties
Bridge No. 43	B - 4127	Green County
Bridge No. 67	B - 4150	Hertford County
Bridge No. 7	B - 4169	Jones County
Bridge No. 5	B - 4187	Martin County
Bridge No. 21	[redacted]	Pender County
Bridge No. 69	B - 4227	Perquimans County
Bridge No. 98	B - 4234	Pitt County

Spawning and nursery habitat for anadromous fishes may be adversely impacted by these projects unless measures to avoid and minimize impacts to waters and wetlands are included in the project plans. Accordingly, the NMFS may recommend against Department of the Army authorization of these projects under Nationwide Permit 23,unless the following recommendations are incorporated:

1. Following impact avoidance and minimization, unavoidable wetland losses shall be offset through implementation of a compensatory mitigation plan that has been approved by the Corps of Engineers and in consultation with the NMFS.

2. All construction related activities in waters and associated wetlands shall utilize techniques that avoid and minimize adverse impacts to those systems and their associated flora and fauna.

3. In order to protect anadromous fishery resources that may utilize the project areas as spawning or nursery habitat, work in the waters of the creek shall be restricted to the period October 1 and March 1 of any year unless prior approval is granted by the Corps of Engineers following consultation with the NMFS.

Section III - Red Light Projects (RLPs)

Red Light Projects are those that include extraordinary resources or concerns that will require close coordination to complete successfully. These projects involve high quality wetlands, extremely valuable or rare endangered species habitats, or other limited or unusual resources.

The bridge replacement projects listed below may effect estuarine waters, intertidal salt marshes, and tidal freshwater marshes and may be located in areas designated as primary nurseries by the North Carolina Division of Marine Fisheries or the North Carolina Wildlife Resources Commission. In view of the fact that work in these locations could adversely effect NMFS trust fishery resources, they are classified as RLPs. In addition, some of these project areas include Essential Fish Habitat (EFH) for species managed under authority of the Magnuson Stevens Fisheries Conservation and Management Act(P.L. 104-297) and other statutory and regulatory provisions. If these projects are processed under Nationwide 23, they will be carefully reviewed for incorporation of the recommendations listed above and we may elect to provide additional comments and recommendations that are intended to avoid, minimize, and offset impacts to living marine resources. Our recommendations, if any, will be sent to the Wilmington District, U. S. Army Corps of Engineers, and a copy will be forwarded to you.

Bridge Number	**Project Number**	**Location**
Bridge No. 77	B - 3611	Beaufort County
Bridge No. 72	B - 4031	Brunswick County
Bridge No. 19	B - 4215	Onslow County
Bridge No. 24	B - 4214	Onslow County
Bridge No. 65	B - 4219	Pamlico County
Bridge No. 4	B - 4221	Pamlico County

Finally, the shortnose sturgeon, a Federally protected species under the purview of the NMFS is found in the Cape Fear and Roanoke Rivers. These comments do not satisfy Federal agency consultation responsibilities under Section 7 of the Endangered Species Act of 1973, as amended. If any activity "may effect" listed species and habitats under NMFS purview, consultation should be initiated with our Protected Resources Division at 9721 Executive Center Drive North, St. Petersburg, Florida 33702.

We appreciate the opportunity for early participation in the review of these bridge replacement projects. If I can be of further assistance, please contact me at the letterhead address or at 252-728-5090.

Sincerely,

Ron Sechler

Ron Sechler
Fishery Biologist

United States Department of the Interior

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

November 14, 2002

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

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed replacement of several bridges in multiple counties of North Carolina. Please note that the projects listed for Davidson, Rowan and Stokes Counties in your October 24, 2002 letter were forwarded to the Service's Asheville Ecological Services Office for review. The following projects were reviewed by the Raleigh Ecological Services Office:

- B-1382, Sampson County, Replace Bridge No. 26 over the Black River Overflow and Bridge No. 12 over the Black River on NC 41;
- B-4031, Brunswick County, Replace Bridge No. 72 over Jinnys Branch (tributary to Saucepan Creek) on NC 179 (Beach Drive);
- B-4214, Onslow County, Replace Bridge No. 24 over the New River on US 17 (Marine Boulevard);
- B-4215, Onslow County, Replace Bridge No. 19 over Stone Creek on NC 210; and,
- B-4223, Pender County, Replace Bridge No. 21 over the North East Cape Fear River on NC 210.

These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (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).

For bridge replacement projects, the Service recommends the following general conservation measures to avoid or minimize environmental impacts to fish and wildlife resources:

1. Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical;

2. If unavoidable wetland impacts are proposed, every effort should 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 via conservation easements, land trusts or by other means should be explored at the outset;

3. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be entirely removed and the impacted areas be planted with appropriate vegetation, including trees if necessary;

4. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;

5. New bridges should be long enough to allow for sufficient wildlife passage along stream corridors;

6. Best Management Practices (BMP) for Protection of Surface Waters should be implemented;

7. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;

8. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. To the extent possible, piers and bents should be placed outside the bank-full width of the stream;

9. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or floodplain. If spanning the floodplain is not feasible, culverts should be installed in the floodplain portion of the approach to restore some of the hydrological functions of the floodplain and reduce high velocities of floodwaters within the affected area.

Enclosed are lists of species from Sampson, Brunswick, Onslow and Pender Counties that are on the *Federal List of Endangered and Threatened Wildlife and Plants*, as well as federal species of concern. Federal species of concern are not legally protected under the ESA and are not subject to any of its provisions, including section 7, unless they are formally proposed or listed as

endangered or threatened. We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of your project. Information about the habitats in which these endangered and threatened species are often found is provided on our web site, **http://endangered.fws.gov.** If suitable habitat for any of the listed species exists in the project areas, biological surveys for the listed species should be conducted. All survey documentation must include survey methodologies and results.

We reserve the right to review any federal permits that may be required for these projects, at the public notice stage. 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 these projects include the following in sufficient detail to facilitate a thorough review of the action:

1. A clearly defined and detailed purpose and need for the proposed project;

2. A description of the proposed action with an analysis of all alternatives being considered, including the "no action" alternative;

3. A description of the fish and wildlife resources, and their habitats, within the project impact area 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, 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;

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 construction techniques which would be employed to avoid or minimize the fragmentation or direct loss of wildlife habitat and waters of the US;

7. If unavoidable wetland impacts are proposed, project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts.

The Service appreciates the opportunity to comment on these projects. Please continue to advise us during the progression of the planning processes, including your official determination of the impacts of this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

For Garland B. Pardue, Ph.D.
Ecological Services Supervisor

Enclosure

cc: Dave Timpy, USACE, Wilmington, NC
John Hennessy, NCDWQ, Raleigh, NC
David Cox, NCWRC, Northside, NC
Chris Militscher, USEPA, Raleigh, NC

United States Department of the Interior

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

June 12, 2002

Mr. William T. Goodwin, Jr.
North Carolina Department of Transportation
Project Development and Environmental Analysis
Unit Head, Bridge Replacement Planning
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Goodwin:

This responds to your letters of March 1 and March 18, 2002, providing the U. S. Fish and Wildlife Service (Service) with Natural Resources Technical Reports (NRTR) on 26 bridges proposed for replacement in Construction Fiscal Year (CFY) 2005. Your letters requested the Service to review these reports and determine the level of concerns we might have for trust resources under our jurisdiction. This report provides scoping information 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 this project.

The bridges scheduled for replacement are:

1. B-3611, Bridge No. 77 on NC 99 over Pantego Creek, Beaufort County;
2. B-4024, Bridge No. 136 on SR 1626 over Pantego Creek [Canal?], Beaufort County
3. B-4026, Bridge 45 on SR 1110 over Choowatic Creek, Bertie County;
4. B-4028, Bridges Nos. 12 and 18 over the Cape Fear River, Bladen County;
5. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County;
6. B-4077, Bridge No. 25 on NC 130 over Waccamaw River outflow, Columbus County
7. B-4082, Bridge 280 on SR 1843 over Dan's Creek, Columbus County;
8. B-4086, Bridge No. 10 on SR 1111 over Brices Creek, Craven County;
9. B-4090 - Bridge No. 125 on NC 24 over Cross Creek, Cumberland County;
10. B-4125, Bridge No. 46 on SR 1091 over Wheat Swamp Creek, Greene County;
11. B-4126, Bridge No. 49 on SR 1434 over Wheat Swamp Creek, Greene and Lenoir Counties;
12. B-4127, Bridge No. 43 on SR 1438 over Rainbow Creek, Green County;
13. B-4150, Bridge No. 67 on SR 1118 over Ahoskie Creek, Herford County;
14. B-4154, Bridge No. 108 on SR 1340 over Old State Canal, Hyde County;
15. B-4169, Bridge No. 7 on SR 1129 (Free Bridge Road) over Big Chinquapin Branch Jones County;

16. B-4187, Bridge No. 5 on SR 1417 over Conoho Creek, Martin County;
17. B-4214, Bridge No. 24 on US 17 over the New River, Onslow County;
18. B-4215, Bridge No. 19 on NC 210 over Stones Creek, Onslow County;
19. B-4219, Bridge No. 65 on SR 1304 over an unnamed tributary to the Neuse River, Pamlico County;
20. B- 4221 , Bridge No. 4 on SR 1344 over South Prong Bay River, Pamlico County;
21. B- 4223, Bridge No. 21 on NC 210 over the Northeast Cape Fear River, Pender County;
22. B-4227, Bridge No. 69 on SR 1222 over Unnamed tributary to Mill Creek, Perquimans County;
23. B-4234, Bridge No. 98 on SR 1407 over Conetoe Creek, Pitt County;
24. B-4235, Bridge No. 118 on SR 1538 over Grindel Creek, Pitt County;
25. B-4248, Bridge No. 170 on SR 1101 over Shoe Heel Creek (Gaddy Mill Road), Robeson County;
26. B-4272, Bridge No. 191 on SR 1845 over Great Coharie Creek, Sampson County; and,

General Scoping Comments

Some NRTRs contained only maps of the immediate project site and a verbal description of the project location. In reviewing our records of known locations for Federally listed species, it would be beneficial to the Service to have a map showing the location of the project. Each location map should include at least one municipality or sizable community to facilitate locating the project area.

The title page for B-4024 (Beaufort County) states that Bridge No. 136 on SR 1626 is over "Canal." The body of the report states that this bridge crosses Pantego Creek which appears to be the correct designation. Title pages should reflect the correct location of the project.

General Fish and Wildlife Habitat and Wetlands

For each project, we recommend the following conservation measures to avoid or minimize adverse environmental impacts to fish and wildlife resources:

1. Wetland impacts should be avoided and minimized to the maximum extent practical as outlined in Section 404 (b)(1) of the Clean Water Act Amendments of 1977. Areas exhibiting high biodiversity or ecological value important to the watershed and region should be avoided. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons.

2. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along or adjacent to existing, roadways, utility corridors, or previously developed areas in order to minimize habitat fragmentation and encroachment. At the completion of construction, the entire detour area, including any previous detour from past construction

activities, should be entirely removed and the impacted areas should be planted with appropriate, endemic vegetation, including trees if necessary;

3. If unavoidable wetland impacts are proposed, every effort should 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;

4. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning, and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 15;

5. Best Management Practices (BMP) for Protection of Surface Waters should be implemented; and,

6. Activities within designated riparian buffers should be avoided or minimized.

Federal Species of Concern and State Listed Species

Federal Species of Concern (FSC) are those plant and animal species for which the Service remains concerned, but further biological research and field study are needed to resolve the conservation status of these taxa. Although FSCs receive no statutory protection under the ESA, we would encourage the NCDOT to be alert to their potential presence, and to make every reasonable effort to conserve them if found. The North Carolina Natural Heritage Program should be contacted for information on species under state protection.

Federally Protected Species

Several NRTRs make determinations that a project will not affect a particular species, primarily plants based on surveys in the recent past. The Service believes such determinations are premature and that additional surveys will be required prior to construction in approximately 2004-2005. It would be more appropriate to note that the species was not found during preliminary surveys and that results provide early indications that the project is not likely to adversely affect the species.

Effect determinations for plants based on surveys within the project area may require work at a particular time of year for accurate identification. The biological conclusions of the NCDOT for plants should include the time of year that a survey was conducted, the person hours of surveying, and the approximate size of the area surveyed. Surveys should be done within two or three years of actual construction for those species inhabiting stable and/or climax communities. Plant species that utilize disturbed communities, e.g., Michaux sumac (*Rhus michauxii*) and Cooley's meadowrue (*Thalictrum cooleyi*), should be done within two years of actual

construction if vegetation disturbing activities, e.g., regular mowing or timber harvesting, occur at the project site.

The NCDOT should carefully consider potential impacts to the West Indian manatee (*Trichechus manatus*) of bridge replacement projects in coastal counties. Several NRTRs, e.g., B-4235 (Pitt County), state that manatees require at least five feet of water. Manatees are able to use shallow channels that may not seem suited for such a large mammal. O'Shea and Ludlow (1992) wrote that the primary habitat requirements for the species are access to vascular aquatic plants, freshwater source, and proximity to channel 1-2 meters deep (3.3 -6.6 feet). Therefore, the NCDOT should only consider reaching a "no effect" determination for the manatee when water depths at the project site do not rise above one meter. Manatees may become entangled in erosion control and siltation fences placed in shallow water. Measures to prevent these devices from harming manatees are addressed in our 1996 guidelines to NCDOT (USFWS 1996). The biological conclusion of the NCDOT on impacts to manatees cannot be based on negative visual surveys of the project area. These mobile animals may not inhabit a given area for extended periods, and manatees may move into a given project site where the species has never been reported previously. The best procedure for ensuring the safety of these endangered mammals is to follow the Service's precautions if the area is suitable manatee habitat.

Surveys for mussels should extend 100 meters (328 feet) upstream and 300 meters (984 feet) downstream from the project site. Environmental documentation that includes survey methodologies, results, and NCDOT's recommendations based on those results, should be provided to this office for review and comment.

If surveys for a Federally protected species should determine that a given project would adversely affect the species, a biological assessment (BA) may be prepared to fulfill the section 7(a)(2) requirement and in determining whether formal consultation with the Service is necessary. Please notify this office with the results of the surveys for the listed species that may occur in the project area. Please include survey methodologies and an analysis of the effects of the action, including consideration of direct, indirect, and cumulative effects.

Project Specific Comments

In addition to the general comments applicable to all bridge replacement project, we offer the following project-specific comments:

B-3611, Bridge No. 77 on NC 99 over Pantego Creek, Beaufort County - The NRTR states (p. 16) that habitat for the manatee exists in the project area, but that no manatees were seen during natural resources investigations. The report concludes that the project would have "no effect" on the manatee. The Service does not concur with this determination. Manatees are seasonal transients in North Carolina from (primarily June through October). As noted, potential impacts on this species cannot be based on limited field inspections. The Service recommends that future project documentation include

commitments to follow procedures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina" that the Service provided the NCDOT in 1996. A copy is provided with this letter.

Intertidal zones and marsh edges preferred by Federally threatened sensitive jointvetch (*Aeschynomene virginica*) are present in the project area, but the species was not observed during natural resources investigation. The NRTR provided a biological conclusion of "no effect." The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the species.

The NRTR states that "marginal habitat exists for rough-leaved loosestrife [*Lysimachia asperulaefolia*] in the form of shallow organic soils adjacent to a forest community" in the project area. While the NRTR states that no plants were seen, the Service requires greater details of survey methodology before we can concur with the determination that the project will have no effect on rough-leaved loosestrife.

B-4024, Bridge No. 136 on SR 1626 over Pantego Creek, Beaufort County - The NRTR states (p. 3) that the average depth of Pantego Creek is 4.5 feet, but concludes (p. 14) that the necessary water depth for the manatee is not present. The Service disagrees and recommends that project plans should incorporates measures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina" that the Service provided the NCDOT in 1996. Suitable habitat for sensitive jointvetch exists in the project area (p. 17), but the NRTR concludes that the project would have "no effect" on the species based, in part, on the fact that no plant were "found in the project area." The Service cannot concur with this determination. The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the sensitive jointvetch.

B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County - The NRTR states (p. 4) that water depths range from two to six feet, and concludes (p. 21) that "vagrant manatees visiting the lower Lumber river system would not be expected within the project area." The Service does concur with the biological conclusion of "no effect" on the manatee and requests that the project utilize the standard precautions for general construction in areas which may be used by manatees. The NRTR states that the biological conclusions for the bald eagle (*Haliaeetus leucocephalus*) and Federally endangered wood stork (*Mycteria americana*) are "unresolved." Wood storks may undertake post-breeding season dispersals from June through early autumn in search of food in swamps, marshes, and mudflats. The NCDOT should seek to determine whether the project area is used, if even on a temporary basis, by these species. If wood storks do feed in the project area during a limited portion of the year, the Service would recommend that this project be scheduled outside this particular period.

B-4086, Bridge No. 10 on SR 1111 over Brices Creek, Craven County - With an average depth of three feet, Brices Creek is not likely to used by manatees. The Service cannot concur with the determination that the project would have "no effect" on the sensitive jointvetch based the lack of observation during site survey in 2001 and an absence of historical occurrence in the project area. The NRTR notes that suitable habitat for this species is present in the project area. The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the sensitive jointvetch..

B-4154, Bridge No. 108 on SR 1340 over Old State Canal, Hyde County - The NRTR notes that habitat for the sensitive jointvetch is present in the project area, but concludes that the project will have no impacts on the species, based in part, on a failure to find the species during surveys. The Service will require additional surveys closer to the time of actual construction and greater details of survey methodology, including time of year and the intensity of the survey, before we can concur that the project will have no effect on the sensitive jointvetch..

B-4219, Bridge No. 65 on SR 1304 over an unnamed tributary to the Neuse River, Pamlico County - The tributary to be crossed has an average depth of approximately four feet and the NRTR notes (p. 15) that "marginal" habitat for the manatee exists in the project area. The Service does not concur with the biological conclusion of "no effect" for the manatee and recommends that future project documentation include commitments to follow procedures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina."

B- 4221 , Bridge No. 4 on SR 1344 over South Prong Bay River, Pamlico County - The NRTR (p. 3) notes that the average depth of the water to be bridged is approximately 3.5 feet and later concludes (p. 15) that the waterway is not deep enough or contain sufficient vegetation to provide habitat for the manatee. The Service cannot concur with the stated conclusion that "no impact to the West Indian manatee will result from project construction." We recommend that future project documentation include commitments to follow procedures given in "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina."

B- 4223, Bridge No. 21 on NC 210 over the Northeast Cape Fear River, Pender County - The NRTR notes (p. 20) that manatees could occur in the project area and states that impacts to the species are "unresolved." The NRTR also recommends that a "follow-up survey" be conducted. A one time survey will not determine the presence of this species at a particular construction site. The species moves through North Carolina coastal waters on a seasonal basis. If there is any chance that the species could occur at a construction site, the Service's guidelines (USFWS 1996) should be incorporated into project plans.

B-4234, Bridge No. 98 on SR 1407 over Conetoe Creek, Pitt County - As noted in the NRTR, surveys should be conducted for the Tar River spinymussel (*Elliptio steinstansana*). The area surveyed should extend from 100 meters (328 feet) upstream to 300 meters (984 feet) downstream.

B-4235, Bridge No. 118 on SR 1538 over Grindel Creek, Pitt County - Survey for the Tar River spinymussel will be required from 100 meters (328 feet) upstream to 300 meters (984 feet) downstream.

B-4272, Bridge No. 191 on SR 1845 over Great Coharie Creek, Sampson County - The NRTR concludes that the project would have "no effect" on pondberry (*Lindera melissifolia*) due to a lack of habitat in the project area. The two habitats mentioned are shallow ponds with sandy substrate and Carolina bays. This species is associated with wetland habitats such as bottomland and hardwoods in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites. The plants generally grow in shaded areas but may also be found in full sun. Since the project area includes 0.5 acre of coastal plain bottomland hardwood forest, the Service requests that this area be survey for pondberry.

The Service appreciates the opportunity to comment on these project. Please continue to advise us of 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 Howard Hall at 919-856-4520, ext. 27.

Sincerely,

John E. Ellis

for Dr. Garland B. Pardue
Ecological Services Super-visor

Attachment

Literature cited

O'Shea, T. J. and M. E. Ludlow. 1992. Florida manatee. pp. 190-200. In S. R. Humphrey (ed.). Rare and Endangered Biota of Florida, Volume I. Mammals. University of Florida Press. Gainesville. 392 pp.

U. S. Fish and Wildlife Service. 1996. Communication to the North Carolina Department of Transportation. USFWS, Raleigh Field Office. Raleigh, NC. 4 pp.

cc:
Ted Bisterfeld, U. S. Environmental Protection Agency, Atlanta, GA
Ron Sechler, NMFS, Beaufort, NC
Michael Bell. U. S. Army Corps of Engineers, Washington Regulatory Field Office, Washington, NC
Eric Alsmeyer, U. S. Army Corps of Engineers, Raleigh Regulatory Field Office, Raleigh NC
David Timpy, U. S. Army Corps of Engineers, Wilmington Regulatory Field Office, Wilmington NC
John Hennessy, NC Division of Water Quality, Raleigh, NC
David Cox, NC Wildlife Resources Commission, Northside, NC

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: 200101172 **County:** Pender

Notification of Jurisdictional Determination

Property Owner:
Mr. William D. Gilmore, P.E., Manager
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, N.C. 27699-1548

Authorized Agent:
Jeff Harbour, PWS
Environmental Services, INC
524 New Hope Road
Raleigh, North Carolina 27610

Size and Location of Property (waterbody, Highway name/number, town, etc.): TIP Project No. B-4223, Bridge No. 21 on NC 210 over Northeast Cape Fear River, Pender County, North Carolina.

Basis for Determination: Onsite field inspection of selected wetland sites.

Indicate Which of the Following apply:

- ☐ There are wetlands on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.
- ✓ On **October 10, 2001**, the undersigned inspected the Section 404 jurisdictional line as determined by the NCDOT and/or its representatives for the subject NCDOT project. A select number of wetland sites were inspected for the proposed project and all were found to accurately reflect the limits of Corps jurisdiction. The Corps believes that this jurisdictional delineation can be relied on for planning purposes and impact assessment.
- ☐ The wetlands on your lot have been delineated and the limits of the Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ There are no wetlands present on the above described property which are subject to the permit requirements of section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ The project is located in one of the 20 Coastal Counties. You should contact the nearest State Office of Coastal Management to determine their requirements.

Placement of dredged or fill material in wetlands on this property without a Department of the Army permit is in most cases a violation of Section 301 of the Clean Water Act (33 USC 1311). A permit is not required for work on the property restricted entirely to existing high ground. If you have any questions regarding the Corps of Engineers regulatory program, please contact Mr. Dave Timpy at 910-251-4634.

Project Manager Signature Daniel J. Timpy

Date January 2, 2002 **Expiration Date** January 2, 2007

SURVEY PLAT OR FIELD SKETCH OF DESCRIBED PROPERTY AND THE WETLAND DELINEATION FORM MUST BE ATTACHED TO THIS FORM.

May 9, 2002

Regulatory Division

Action ID No. 200101169, 200101170, 200101171, 200101172, 200101174, 200101175, and 200200726.

Mr. William D. Gilmore, P.E., Manager
Project Development & Environmental Analysis
1548 Mail Service Center
Raleigh, N.C. 27699-1548

Dear Mr. Gilmore:

Reference your letters February 18, 2002, March 1, 2002, March 18, 2002, and April 24, 2002 regarding our scoping comments on the following proposed bridge replacement projects:

1. TIP Project No. B-4268, Bridge No. 150 on SR 1006 over Little Coharie Creek, Sampson County, Action ID 200101169.
2. TIP Project No. B-4272, Bridge No. 191 on SR 1845 over Great Coharie Creek, Sampson County, Action ID 200101170.
3. TIP Project No. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County, Action ID 200101171.
4. TIP Project No. B-4223, Bridge No. 21 on NC 210 over NE Cape Fear River, Pender County, Action ID 200101172.
5. TIP Project No. B-4214, Bridge No. 24 on US 17 over New River, Onslow County, Action ID 200101174.
6. TIP Project No. B- 4215, Bridge No. 19 on NC 210 over Stones Creek, Onslow County, Action ID 200101175.
7. TIP Project No. B-1382, Action ID 200200726, no information provided.

Based on the information provided for each project in the referenced letter (except TIP Project No. B-1382) and jurisdictional delineations conducted on October 9, 2001, it appears that each proposed bridge replacement project may impact jurisdictional wetlands. Department of the Army (DA) permit authorization, pursuant to Section 404 of the Clean Water Act of 1977, as amended, will be required for the discharge of excavated or fill material in waters of the United States or any adjacent wetlands in conjunction with these projects, including disposal of construction debris. Specific permit requirements will depend on design of the projects, extent of fill work within the waters of the United States,

including wetlands, construction methods, and other factors.

Although these projects may qualify as a Categorical Exclusion, to qualify for nationwide permit 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. All activities, including temporary construction, access, and dewatering activities, should be included in the project planning report. 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 by the proposed project.

b. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site detour is the recommended action, justification should be provided that demonstrates that alternatives with lower wetland impacts are not practicable. On-site detours, unless constructed on a spanning structure or on a previous detour that was used in a past construction activity, can cause permanent wetland impacts due to sediment consolidation resulting from the on-site detour itself and associated heavy equipment. Substantial sediment consolidation in wetland systems may in turn cause fragmentation of the wetland and impair the ecological and hydrologic functions of the wetland. Thus, on-site detours constructed in wetlands can result in more than minimal wetland impacts. These types of wetland impacts will be considered as permanent wetland impacts. Please note that an onsite detour constructed on a spanning structure can potentially avoid permanent wetland impacts and should be considered whenever an on-site detour is the recommended action. For projects where a spanning structure is not feasible, the NCDOT should investigate the existence of previous onsite detours at the site that were used in previous construction activities. These areas should be utilized for onsite detours whenever possible to minimize wetland impacts.

For proposed projects and associated on-site detours that cause minimal losses of wetlands, an approved wetland restoration and monitoring plan will be required prior to issuance of a DA nationwide or Regional general permit. For proposed projects and associated on-site detours that cause significant wetland losses, an individual DA permit and a compensatory mitigation proposal for the unavoidable wetland impacts may be required.

In view of our concerns related to onsite detours constructed in wetlands, a cursory determination was made on the potential for sediment consolidation due to an onsite

detour at each of the proposed project sites. Based on these inspections, potential for sediment consolidation in wetlands exists at several of the proposed projects. Therefore, it is recommended that geotechnical evaluations be conducted at each project site to estimate the magnitude of sediment consolidation that can occur due to an on-site detour and the amount of undercutting that may be necessary. The results of this evaluation should be provided in the project planning report. Based on our field inspections, we strongly recommend that geotechnical evaluations be conducted at each of referenced proposed project sites. The following projects are considered as "red " projects as described in your letter of February 18, 2002.

1. TIP Project No. B-4268, Bridge No. 150 on SR 1006 over Little Coharie Creek, Sampson County, Action ID 200101169.
2. TIP Project No. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County, Action ID 200101171.

c. Project commitments should include the removal of all temporary fills from waters and wetlands and "time-of-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 on an upland site and later used to restore the site.

d. All restored areas should be planted with endemic vegetation including trees, if appropriate. For projects proposing a temporary onsite detour in wetlands, the entire detour area, including any previous detour from past construction activities, should be removed in its entirety.

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. The work must also not alter the stream hydraulics and create flooding of adjacent properties or result in unstable stream banks. In addition, the report should address the impacts that the culvert would have on recreational navigation.

g. The report should discuss and recommend bridge demolition methods and shall include the impacts of bridge demolition and debris removal in addition to the impacts of constructing the bridge. The report should also incorporate the bridge demolition policy recommendations pursuant to the NCDOT policy entitled "Bridge Demolition and Removal in Waters of the United States" dated September 20, 1999.

h. Lengthening existing bridges can often benefit the ecological and hydrological functions of the associated wetlands and streams. Most bridge approaches are connected to earthen causeways that were built over wetlands and streams. Replacing these causeways with longer bridges would allow previously impacted wetlands to be restored. In an effort to encourage this type of work, mitigation credit for wetland restoration activities can be provided to offset the added costs of lengthening an existing bridge. Of the referenced project sites, TIP Project No. 4031 connects to a 170 foot long causeway through coastal wetlands. It is recommended that this causeway be replaced with a bridge and associated wetland areas be restored.

i. Based on the information provided and the recent field investigations of the referenced project sites, the apparent level of wetland impacts and scope of the following projects warrant coordination pursuant to the integrated NEPA/Section 404-merger agreement:

1. TIP Project No. B-4268, Bridge No. 150 on SR 1006 over Little Coharie Creek, Sampson County, Action ID 200101169.
2. TIP Project No. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County, Action ID 200101171.

j. You have requested that the referenced projects be given a designation of "Red", "Green" or "Yellow" as explained in your letters. Projects designated as "Red" by our office are specified above. The remaining projects will be considered "yellow" projects. We believe that the "green" designation is misleading and should not be used.

Should you have any questions please call Mr. David L. Timpy at the Wilmington Field Office at 910-251-4634.

Sincerely,

E. David Franklin
NCDOT Team Leader ger

Mr. Ron Sechler
National Marine Fisheries Service
Pivers Island

Beaufort, North Carolina 28516

Mr. John Dorney
NCDENR-DWQ
Wetlands Section
1621 Mail Service Center
Raleigh, NC 27699-1621

Mr. Doug Huggett
North Carolina Division of
Coastal Management
1638 Mail Service Center
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Mr. David Cox
Highway Coordinator
North Carolina Wildlife Resources Commission
1141 I-85 Service Road
Creedmoor, North Carolina 27522

Mr. Howard Hall
United States Fish & Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Allen Pope, PE
North Carolina Department of Transportation
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B-4223

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

Michael Easley, Governor
Bill Ross, Secretary
Alan Klimek, Director

NCDENR
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

June 3, 2002

Memorandum To: William T. Goodwin, Jr., PE, Unit Head
Bridge Replacement Planning Unit
Project Development and Environmental Analysis Branch

Through: John Dorney
NC Division of Water Quality, 401 Unit

From: Robert Ridings
NC Division of Water Quality, 401 Unit

Subject: Review of Natural Systems Technical Reports for bridge replacement projects scheduled for construction in CFY 2005: "Yellow Light" Projects: B-4234 and [redacted]

In future reports, an Executive Summary Paragraph would be helpful. This should include brief description of the work intended (i.e., replace bridge with another bridge or with a culvert), the amount of impact to wetlands and streams, and types of possible permits needed.

On all projects, use of proper sediment and erosion control will be needed. Sediment and erosion control measures should not be placed in wetlands. Sediment should be removed from any water pumped from behind a cofferdam before the water is returned to the stream. Sedimentation and Erosion Control Guidelines for Sensitive Watersheds (15A NCAC 4B .0024) must be implemented prior to any ground-disturbing activities to minimize impacts to downstream aquatic resources. Temporary or permanent herbaceous vegetation must be planted on all bare soil *within 10 days* of ground-disturbing activities to provide long term erosion control.

This office would prefer bridges to be replaced with new bridges. However if the bridge must be replaced by a culvert and 150 linear feet or more of stream is impacted, a stream mitigation plan will be needed prior to the issuance of a 401 Water Quality Certification. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.

Any proposed culverts shall be installed in such a manner that the original stream profile is not altered (i.e. the depth of the channel must not be reduced by a widening of the streambed). Existing stream dimensions are to be maintained above and below locations of culvert extensions.

For permitting, any project that falls under the Corps of Engineers' Nationwide Permits 23 or 33 do not require written concurrence by the NC Division of Water Quality. Notification and courtesy copies of materials sent to the Corps, including mitigation plans, are required. For projects that fall under the Corps of Engineers Nationwide Permit 14 or Regional General Bridge Permit 31, the formal 401 application process will be required including appropriate fees and mitigation plans.

Do not use any machinery in the stream channels unless absolutely necessary. Additionally, vegetation should not be removed from the stream bank unless it is absolutely necessary. NCDOT should especially avoid removing large trees and undercut banks. If large, undercut trees must be removed, then the trunks should be cut and the stumps and root systems left in place to minimize damage to stream banks.

Use of rip-rap for bank stabilization must be minimized; rather, native vegetation should be planted when practical. If necessary, rip-rap must be limited to the stream bank below the high water mark, and vegetation must be used for stabilization above high water.

Rules regarding stormwater as described in (15A NCAC 2b.0216 (3) (G)) shall be followed for these projects. These activities shall minimize built-upon surface area, divert runoff away from surface waters and maximize utilization of BMPs. Existing vegetated buffers shall not be mowed in order to allow it to be most effectively utilized for storm water sheet flow.

Special Note on project B-4234: these waters are classified as 303(d) waters. Special measures for sediment control will be needed.

Please note that project B-4234 is in the Tar-Pamlico River Basin. All activity should comply with the Riparian Buffer Rules for that basin.

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost.

B-4223

CAMA

Subject: Bridge Replacement Projects CFY 2005
Date: Tue, 28 May 2002 13:05:27 -0400
From: Bill Arrington <Bill.Arrington@ncmail.net>
Organization: NC DENR DCM
To: "William T. Goodwin" <bgoodwin@dot.state.nc.us>
CC: Cathy Brittingham <Cathy.Brittingham@ncmail.net>

Mr. Goodwin,

I have visited each of the 14 bridge replacement sites included in your March 1, 2002 letter, located in the 20 Coastal counties under the jurisdiction of the Division of Coastal Management.

General comments regarding bridge replacement projects would include:

1. Existing access to coastal waters and land adjacent to coastal waters should be preserved. This would include trails, driveways, roads, boat ramps, clear channels, vertical clearance under bridges, parking spaces, etc.

2. The design of storm water diversion should add treatment prior to discharging. No storm water should be discharged to the waters and wetlands in coastal areas. Deck drains discharging to waters or wetlands should be eliminated from bridge replacements. Storm water collected from bridges and approaches should be disposed of by infiltration as far from the waters and wetlands as possible. The planning and design of these replacements is crucial to protecting the surrounding water quality. Bridges within one half mile of SA waters or ORW waters will need special attention dedicated to storm water collection, treatment and disposal.

3. Without specific proposals including accurate details of the proposed bridge replacement structures and associated impacts, comments included herein are general in nature and give no assurance of the ability to permit any bridge replacement proposal in these locations. Specific comments below are based on the assumption that the bridge replacements would be of the same general width, length and on the current alignment with no on site detour. Bridge replacements that vary from this would usually cause greater environmental impacts and require additional coordination with the resource agencies.

4. Any structure required to be built in wetlands or over the water to facilitate the construction of the bridge replacement or a detour around construction should be a temporary bridge.

Specific comments on the above referenced projects would include:

1. B-3611 in Beaufort County - RED LIGHT PROJECT - AEC's in the project area include CW, CS, PTW, and PTS. The potential for significant environmental impacts exists. Any project in this area will require a high level of coordination with all resource agencies. The existing bridge and causeway impacted the AEC's significantly and the potential for mitigation involving restoration and enhancement credits is great. (including the abandoned roadbed to the west of the existing road)

2. B-4024 in Beaufort County - GREEN LIGHT PROJECT - AEC's in the project area include PTW and PTS. This project has the potential for minimal impacts.

3. B-4026 in Bertie County - DCM has no jurisdiction

4.B-4031 in Brunswick County - RED LIGHT PROJECT - AEC's in the

project area include CW, CS and PTW. Construction of the existing bridge has significantly impacted the AEC's. Restoration and enhancement mitigation potential is as great as the potential to adversely effect the AEC's.

5. B-4086 in Craven County - GREEN LIGHT PROJECT - AEC's in the project area include PTW and PTS. Parking area as in the northwest corner should be maintained.

6. B-4150 in Hertford County - YELLOW LIGHT PROJECT - AEC's in the project area include PTW and PTS. Parking and access to the road along the creek should be preserved.

7. B-4154 in Hyde County - DCM has no jurisdiction.

8. B-4214 in Onslow County - YELLOW LIGHT PROJECT - AEC's in the project area include PTW, PTS, CW, ES, EW. Wetlands surrounding this bridge should be protected as much as possible. Tidal wetlands in the northeast quadrant and wetlands in the Coastal Shoreline Buffer have the greatest significance. There exists a moderate potential for mitigation.

9. B-4215 in Onslow County - GREEN LIGHT PROJECT - AEC's in the project area include PTW and PTS. A moderate potential for mitigation may be possible with the lengthening of the bridge.

10. B-4219 in Pamlico County - RED LIGHT PROJECT - AEC's in project area include CW, CS, PTW, PTS and EW. The existing bridge has impacted the surrounding waters and wetlands. The inlet for this creek has closed in and only has water exchange at high tide. The bridge needs to be extended and the fill causeway removed. Great mitigation potential. Should preserve parking spaces for public access.

11. B-4221 in Pamlico County - GREEN LIGHT PROJECT - AEC's in project area include PTS and PTW. Access to farm roads in NW and SE quadrants should be preserved. A moderate potential for mitigation may exist with lengthening the bridge and removing causeway.

12. B-4223 in Pender County - YELLOW LIGHT PROJECT - AEC's in the project area include PTW and PTS. Any realignment or expansion of fill slopes should move to the south to avoid impacts to the access and business and residence on the north side of the bridge.

13. B-4227 in Perquimans County - GREEN LIGHT PROJECT - AEC's in the project area include PTW and PTS. Access adjacent to the bridge should be maintained.

14. B-4314 in Washington County- GREEN LIGHT PROJECT - AEC's in project area include PTW and PTS.

Thank you for providing DCM with the opportunity to comment on these projects in advance of their planning. Advance notification of environmental concerns should allow the design and permitting process to work more smoothly.

Thank you,

Bill

H: B-4215

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

B-4223

TO: William T. Goodwin, Jr., PE, Unit Head
Bridge Replacement & Environmental Analysis Branch

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: May 22, 2002

SUBJECT: NCDOT Bridge Replacements:
Beaufort County – Bridge No. 77, NC 99, Pantego Creek, B-3611
Beaufort County – Bridge No. 136, SR 1626, Canal, B-4024
Bertie County – Bridge No. 45, SR 1110, Choowatic Creek, B-4026
Brunswick County – Bridge No. 72, NC 179, Jinnys Branch, B-4031
Chatham County – Bridge No. 142, SR 2170, Meadow Creek, B-4065
Craven County – Bridge No. 10, SR 1111, Brices Creek, B-4086
Cumberland County – Bridge No. 85, I-95 Business, Cape Fear River, B-4091
Durham County – Bridge No. 5, SR 1616, Mountain Creek, B-4110
Edgecombe County – Bridge No. 19, SR 1135, Cokey Swamp, B-4111
Franklin County – Bridge No. 15, SR 1106, Little River, B-4113
Granville County – Bridge No. 84, SR 1141, Tar River, B-4124
Greene County – Bridge No. 46, SR 1091, Wheat Swamp Creek, B-4125
Greene/Lenoir Cos. – Bridge No. 49, SR 1434, Wheat Swamp Creek, B-4126
Greene County – Bridge No. 43, SR 1438, Rainbow Creek, B-4127
Halifax County – Bridge No. 11, SR 1001, Jacket Swamp, B-4133
Harnett County – Bridge No. 35, NC 42, Norfolk and Southern Railway, B-4137
Hertford County – Bridge No. 67, SR 1118, Ahoskie Creek, B-4150
Hyde County – Bridge No. 108, SR 1340, Old State Canal, B-4154
Jones County – Bridge No. 7, SR 1129, Big Chinquapin Branch, B-4169
Lee County – Bridge No. 4, SR 1423, Gum Fork, B-4171
Martin County – Bridge No. 5, SR 1417, Conoho Creek, B-4187
Nash County – Bridge No. 56, SR 1544, Tar River, B-4211
Onslow County – Bridge No. 24, US 17, New River, B-4214
Onslow County – Bridge No. 19, NC 210, Stones Creek, B-4215
Pamlico County – Bridge No. 65, SR 1304, UT to Neuse River, B-4219
Pamlico County – Bridge No. 4, SR 1344, South Prong Bay River, B-4221
Perquimans County – Bridge No. 69, SR 1222, Mill Creek, B-4227
Pitt County – Bridge No. 98, SR 1407, Conetoe Creek, B-4234
Pitt County – Bridge No. 118, SR 1538, Grindle Creek, B-4235
Randolph County – Bridge No. 34, SR 1304, Second Creek, B-4242

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 733-3633 ext. 281 • Fax: (919) 715-7643

Randolph County – Bridge No. 257, SR 2824, Vestal Creek, B-4245
Richmond County – Bridge No. 129, SR 1321, Big Mountain Creek, B-4247
Sampson County – Bridge No. 150, SR 1006, Little Coharie Creek, B-4268
Sampson County – Bridge No. 191, SR 1845, Great Coharie Creek, B-4272
Vance County – Bridge No. 3, SR 1107, Ruin Creek, B-4298
Wake County – Bridge No. 189, SR 2333, Little River, B-4305
Washington County – Bridge No. 29, SR 1163, Maul Creek, B-4314
Wilson County – Bridge No. 52, SR 1131, Turkey Creek, B-4327
Wilson County – Bridge No. 3, SR 1634, Great Swamp, B- 4328

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).

Our standard recommendations for bridge replacement projects of this scope 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.

11. Sedimentation and erosion control measures sufficient to protect aquatic resources must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.

12. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.

13. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.

14. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.

15. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

16. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

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

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

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 along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

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

Project specific comments:

1. Beaufort County – Bridge No. 77, NC 99, Pantego Creek, B-3611
YELLOW LIGHT. Biologists indicate that a bridge is preferred. There is potential for wetland impacts at this location due to the width of stream and site elevation. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Strea Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15.

2. Beaufort County – Bridge No. 136, SR 1626, Canal, B-4024
GREEN LIGHT. No concerns indicated by biologists. Standard conditions should be appropriate.

3. Beaufort County – Bridge No. 136, SR 1626, Canal, B-4024
GREEN LIGHT. No concerns indicated by biologists. Standard conditions should be appropriate.

4. Bertie County – Bridge No. 45, SR 1110, Choowatic Creek, B-4026
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15.

5. Brunswick County – Bridge No. 72, NC 179, Jinnys Branch, B-4031
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. There is also the potential for impacts to high quality coastal wetlands at this location. NCDOT should employ all measures necessary to avoid impacts to these resources.

6. Chatham County – Bridge No. 142, SR 2170, Meadow Creek, B-4065
YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to the Cape Fear Shiner, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Standard recommendations apply.

7. Craven County – Bridge No. 10, SR 1111, Brices Creek, B-4086
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. Biologists indicate that a bridge is preferred. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard recommendations apply.

8. Cumberland County – Bridge No. 85, I-95 Business, Cape Fear River, B-4091
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. Other standard recommendations apply.

9. Durham County – Bridge No. 5, SR 1616, Mountain Creek, B-4110
YELLOW LIGHT. Due to the DWQ water quality classification, we recommend High Quality Sedimentation and Erosion Control Measures be used. Other standard recommendations apply.

10. Edgecombe County – Bridge No. 19, SR 1135, Cokey Swamp, B-4111
YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Standard recommendations apply.

11. Franklin County – Bridge No. 15, SR 1106, Little River, B-4113
RED LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. There are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. An on-site meeting should be held with NCWRC and USFWS biologists, prior to the '404' permit application, to discuss bridge design and construction. We request NCDOT incorporate High Quality Sedimentation and Erosion Control Measures into the design of this project. Other standard recommendations apply.

12. Granville County – Bridge No. 84, SR 1141, Tar River, B-4124
RED LIGHT. The Tar River supports a good fishery for sunfish, therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. There are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. An on-site meeting should be held with NCWRC and USFWS biologists, prior to the '404' permit application, to discuss bridge design and construction. We request NCDOT incorporate High Quality Sedimentation and Erosion Control Measures into the design of this project. Other standard recommendations apply.

13. Greene County – Bridge No. 46, SR 1091, Wheat Swamp Creek, B-4125
YELLOW LIGHT. There is the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Standard recommendations apply.

14. Greene/Lenoir Cos. – Bridge No. 49, SR 1434, Wheat Swamp Creek, B-4126
YELLOW LIGHT. There is the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Standard recommendations apply.

15. Greene County – Bridge No. 43, SR 1438, Rainbow Creek, B-4127
YELLOW LIGHT. There is the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Standard recommendations apply.

16. Halifax County – Bridge No. 11, SR 1001, Jacket Swamp, B-4133
YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Standard recommendations apply.

17. Harnett County – Bridge No. 35, NC 42, Norfolk and Southern Railway, B-4137
GREEN LIGHT. No comment.

18. Hertford County – Bridge No. 67, SR 1118, Ahoskie Creek, B-4150
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. Other standard comments apply.

19. Hyde County – Bridge No. 108, SR 1340, Old State Canal, B-4154
GREEN LIGHT. Standard comments apply.

20. Jones County – Bridge No. 7, SR 1129, Big Chinquapin Branch, B-4169
YELLOW LIGHT. Big Chinquapin Branch supports a good fishery for sunfish; therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard recommendations apply.

21. Lee County – Bridge No. 4, SR 1423, Gum Fork, B-4171
GREEN LIGHT. Standard comments apply.

22. Martin County – Bridge No. 5, SR 1417, Conoho Creek, B-4187
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. Biologists indicate that a bridge is preferred. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

23. Nash County – Bridge No. 56, SR 1544, Tar River, B-4211

YELLOW LIGHT. The Tar River supports a good fishery for sunfish; therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Other standard recommendations apply.

24. Onslow County – Bridge No. 24, US 17, New River, B-4214
YELLOW LIGHT. The New River is designated as a Primary Nursery Area on the downstream side of the existing US 17 bridge. Due to the potential for adult and larval stages of anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to September 30. Other standard recommendations apply.

25. Onslow County – Bridge No. 19, NC 210, Stones Creek, [redacted]
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. Biologists indicate that a bridge is preferred. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

26. Pamlico County – Bridge No. 65, SR 1304, UT to Neuse River, B-4219
YELLOW LIGHT. There is the potential for impacts to high quality coastal wetlands at this location. NCDOT should employ all measures necessary to avoid impacts to these resources. Other standard comments apply.

27. Pamlico County – Bridge No. 4, SR 1344, South Prong Bay River, B-4221
YELLOW LIGHT. There is the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

28. Pender County – Bridge No. 21, NC 210, NE Cape Fear River, [redacted]
RED LIGHT. There are records of the federally listed Shortnose sturgeon in the NE Cape Fear in the project area. Due to the potential for anadromous fish and Shortnose sturgeon at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 1 to June 15. Biologists indicate that a bridge is preferred. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

29. Perquimans County – Bridge No. 69, SR 1222, UT to Mill Creek, B-4227
YELLOW LIGHT. Due to the potential for anadromous fish at this location, NCDOT should closely follow the "Stream Crossing Guidelines for Anadromous Fish Passage". This includes a moratorium on work within jurisdictional waters from February 15 to June 15. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

30. Pitt County – Bridge No. 98, SR 1407, Conetoe Creek, B-4234
GREEN LIGHT. Standard comments apply.

31. Pitt County – Bridge No. 118, SR 1538, Grindle Creek, B-4235

YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

32. Randolph County – Bridge No. 34, SR 1304, Second Creek, B-4242
GREEN LIGHT. Standard comments apply.

33. Randolph County – Bridge No. 257, SR 2824, Vestal Creek, B-4245
YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Other standard comments apply.

34. Richmond County – Bridge No. 129, SR 1321, Big Mountain Creek, B-4247
YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Other standard comments apply.

35. Sampson County – Bridge No. 150, SR 1006, Little Coharie Creek, B-4268
YELLOW LIGHT. Little Coharie Creek supports a good fishery for sunfish; therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

36. Sampson County – Bridge No. 191, SR 1845, Great Coharie Creek, B-4272
YELLOW LIGHT. Great Coharie Creek supports a good fishery for sunfish; therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. Biologists indicate that a bridge is preferred. There is also the potential for impacts to high quality wetlands at this site. NCDOT should avoid or minimize impacts to these wetlands. Other standard comments apply.

37. Vance County – Bridge No. 3, SR 1107, Ruin Creek, B-4298
RED LIGHT. There are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. An on-site meeting should be held with NCWRC and USFWS biologists, prior to the '404' permit application, to discuss bridge design and construction. We request NCDOT incorporate High Quality Sedimentation and Erosion Control Measures into the design of this project. Other standard recommendations apply.

38. Wake County – Bridge No. 189, SR 2333, Little River, B-4305
RED LIGHT. The Little River supports a good fishery for sunfish, therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. There are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. An on-site meeting should be held with NCWRC and USFWS biologists, prior to the '404' permit application, to discuss bridge design and construction. We request NCDOT incorporate High Quality Sedimentation and Erosion Control Measures into the design of this project. Other standard recommendations apply.

39. Washington County – Bridge No. 29, SR 1163, Maul Creek, B-4314
GREEN LIGHT. Standard comments apply.

40. Wilson County – Bridge No. 52, SR 1131, Turkey Creek, B-4327
RED LIGHT. Turkey Creek supports a good fishery for sunfish, therefore, we recommend a moratorium on work within jurisdictional waters from April 1 to June 15. There are records of state and federally listed mussels in the project vicinity. Therefore, due to the potential for impacts to listed species we request that NCDOT perform a mussel survey prior to the construction of this bridge. An on-site meeting should be held with NCWRC and USFWS biologists, prior to the '404' permit application, to discuss bridge design and construction. We request NCDOT incorporate High Quality Sedimentation and Erosion Control Measures into the design of this project. Other standard recommendations apply.

41. Wilson County – Bridge No. 3, SR 1634, Great Swamp, B- 4328
YELLOW LIGHT. If aquatic surveys indicate the potential for impacts to listed mussels, NCDOT should contact USFWS and NCWRC biologists for an on-site meeting to discuss special measures to reduce potential adverse effects. Other standard recommendations apply.

NCDOT should routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. Restoring previously disturbed floodplain benches should narrow and deepen streams previously widened and shallowed during initial bridge installation. 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 and reduce habitat fragmentation.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (336) 769-9453. Thank you for the opportunity to review and comment on these projects.

cc: USFWS, Raleigh

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

Division of Historical Resources

September 10, 2003

MEMORANDUM

TO: Mary Pope Furr, Historic Architecture Supervisor
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: David Brook RSG for David Brook

SUBJECT: Historic/Architectural Resources Survey Report, Bridge No. 21 NC 210 over Northeast Cape Fear River, B-4223, Pender County, ER02-8581

Thank you for your letter of July 31, 2003, transmitting the survey report by Vanessa E. Patrick, NCDOT.

The following property is determined not eligible for listing in the National Register of Historic Places:

Davis-Trask House, NC 210 (Lane's Ferry Road)

Davis-Trask House, NC 210 (Lane's Ferry Road), is not eligible for the National Register of Historic Places because it is no longer retains its outbuildings and cannot convey its history as a farm or nursery. The house is not associated with persons significant from our past. Further, the house is not architecturally distinguished in form, construction, or design.

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

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

cc: Greg Thorpe, NCDOT

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources
David J. Olson, Director

December 20, 2002

MEMORANDUM

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

FROM: David Brook for David Brook

SUBJECT: Replacement of Bridge No. 21 over the North East Cape Fear River on NC 210, B-4223
Pender County, ER02-8581

Thank you for your letter of October 24, 2002, concerning the above project.

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

Bridge No. 21

We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty years of age within the project area, and report the findings to us.

There are no known archaeological sites within the proposed project area. Based on our knowledge of the area, it is unlikely that any archaeological resources that may be eligible for conclusion in the National Register of Historic Places will be affected by the project. 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, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

DB:doc
cc: Mary Pope Furr
Matt Wilkerson

B. Hoodwin
PEF

North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary
Office of Archives and History

Division of Historical Resources
David J. Olson, Director

March 22, 2002

MEMORANDUM

TO: William D. Gilmore, Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

MAR 23 2002

FROM: David Brook DB for David Brook

SUBJECT: Replace Bridge No. 21 ~~and SR~~ ON NC 210 over Cape Fear River NE, B-4223, Pender County, ER 02-8581

Thank you for your memorandum of September 25, 2001, concerning the above project.

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

Because the Department of Transportation is in the process of surveying and evaluating the National Register eligibility of all of its concrete bridges, we are unable to comment on the National Register eligibility of the subject bridge. Please contact Mary Pope Furr, in the Architectural History Section, to determine if further study of the bridge is needed.

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 296 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/72929-47629. In all future communication concerning this project, please cite the above-referenced tracking number.

DB:kgc

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St, Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 •733-8653
Restoration	515 N. Blount St, Raleigh , NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 •715-4801
Survey & Planning	515 N. Blount St, Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 •715-4801

Pender County

COUNTY MANAGER'S OFFICE
807 S. WALKER STREET
POST OFFICE BOX 5
BURGAW, NORTH CAROLINA 28425
TELEPHONE (910) 259-1200 FAX (910) 259-1402

May 8, 2003

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

RE: Resolution in Support of Requesting N.C. DOT to Build a Temporary Bridge over the Northeast Cape Fear River on N.C. Hwy 210, or Place the New Bridge beside the Existing One

Dear Mr. Thorpe:

Attached is a copy of the resolution unanimously approved by the Pender County Board of Commissioners on May 5, 2003, with respect to the above-referenced subject.

Please do not hesitate to contact me if I can be of further assistance.

Respectfully,

Glenda Pridgen
Deputy Clerk to the Board

/GP

Attachment

cc: Thurman Casey

INTRODUCED BY: Andy Hedrick, Interim County Manager Date: 5/5/03 ITEM NO: 13.

Resolution in Support of Requesting N.C. DOT to Build a Temporary Bridge over the Northeast Cape Fear River on N.C. Hwy 210, or Place the New Bridge beside the Existing One

SUBJECT AREA: Community Development

ACTION REQUESTED:

To request N.C. DOT to build a temporary bridge over the Northeast Cape Fear River on Hwy 210, or place the new bridge beside the existing one.

HISTORY/BACKGROUND:

N. C. DOT is preparing to replace the bridge over the Northeast Cape Fear River on N.C. Hwy 210 at Lane's Ferry. Pender County Schools is requesting N.C. DOT to consider placing a temporary bridge across the river while they are building a new one, or placing a new bridge beside the existing one.

EVALUATION:

If the existing bridge was taken up and replaced, not only would it be costly for the Schools' vehicles having to detour, it would also put hardship on the students by having to increase their riding time.

MANAGER'S RECOMMENDATION

RECOMMENDS APPROVAL

INITIALS

RESOLUTION: NOW THEREFORE BE IT RESOLVED by the Pender County Board of Commissioners that

N.C. Dot consider placing a new bridge beside the existing one, or place a temporary bridge across the Northeast Cape Fear River while the existing one is being replaced.

AMENDMENTS

MOVED Rivenbark SECONDED Williams

APPROVED X DENIED UNANIMOUS

~~YEA VOTES:~~ ~~Strickland~~ Williams Holland ~~Meadows~~ Rivenbark

Dwight Strickland, Chairman

ATTEST

Glenda Pridgen
Deputy Clerk

5/5/03
Date

B-4223

Pender County

COUNTY MANAGER'S OFFICE
108 S. COWAN STREET
POST OFFICE BOX 5
BURGAW, NORTH CAROLINA 28425
TELEPHONE (910) 259-1200 FAX (910) 259-1402

December 11, 2002

Mr. Don Eggert
Rural Transportation Planner
Cape Fear Council of Governments
1480 Harbour Drive
Wilmington, NC 28401

Dear Mr. Eggert:

As per your suggestion, I am forwarding comments on the planned replacement of Bridge Number 21 (Highway 210) over the Northeast Cape Fear River in Pender County to you for submission with other comments from the region. The Pender County Board of Commissioners supports this planned replacement. Pender County would like the Department of Transportation to consider a couple of items as it proceeds with the project.

The first item is that Pender County wants to advise the Department of Transportation that Pender County has received permission from the Council of State to bore under the Northeast Cape Fear River to locate a water transmission line just south of the current bridge location. Several discussions have been held with Pender County Department of Transportation employees as to the planned location of the new bridge, but no one was able to advise about a preferred placement. The installation of the water transmission main will take place in calendar 2003. It is Pender County's request that the location of the new bridge structure avoid placement where the water line will be located.

The second item for consideration is the potential disruption of traffic during the construction period. Highway 210 is the preferred route for many visitors to Pender County beaches and eastern Pender County from Interstate 40. If prolonged detours become necessary due to the bridge being located where the current one exists, Pender County requests that alternate routes be heavily identified on Interstate 40 and Highway 17 along with notices at state welcome centers in eastern North Carolina concerning a detour to arrive in eastern Pender County. If the bridge is to be constructed in a different location, Pender County requests that the current bridge continue to be used until the new bridge is operational.

Pender County appreciates the opportunity to comment on the project. Pender County looks forward to the completion of this needed transportation improvement.

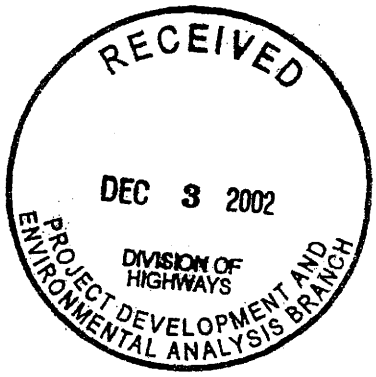
Sincerely,

Andy Hedrick
Assistant County Manager

PENDER COUNTY BUS GARAGE

995 PENDERLEA HWY
BURGAW, N.C. 28425

Phone 910-259-0141
Fax 910-259-0142
email- caseyt.pco@pender.schoollink.net



DATE: November 24, 2002

TO: Gregory J. Thorpe, Ph. D.
Environmental Management Director
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, N.C. 27699-1548

FROM: Thurman Casey
Transportation Director

RE: Comments on B-4223, Pender County, Division 3, Replace Bridge #21

At present, Pender County Schools has 8 bus runs that cross Bridge #21 over the Northeast Cape Fear River on N.C. 210. There are 4 Buses that transport students to Trask High School on N.C. 210 in Rocky Point, 3 buses that transport students to Cape Fear Middle School/Cape Fear Elementary and Rocky Point Primary in Rocky Point and one bus from Topsail High School that travels to Burgaw to Pender Learning Center. A mechanics truck and a fuel truck also travel to Hampstead to do inspections daily on 16 buses and fuel these buses.

If other routes are used for these vehicles, it will add approximately 250 miles @ $1.66 per mile per day or $415.00 per day to an already strained transportation budget. In addition, the ridership time for the students will increase greatly. Pender County is a rural county and these students are already boarding the bus at 6:00 A.M. to arrive at school by 7:30 A.M. Students are currently dismissed at 3:00 P.M. and arrive home at 4:30 P.M., which makes a 10 ½ hour day. Adding additional riding time could affect student performance in the classroom.

In light of all of this information, please consider placing a new bridge beside the existing bridge or place a temporary bridge across the Northeast Cape Fear River.

I would like to thank you for the opportunity to have input concerning the impact that this proposed project would have on the Pender County Schools Transportation Department and the students that ride our buses.

cc: Dr. Marc Sosne
Superintendent
Pender County Schools

Pender County Emergency Management

Carson H. Smith, Jr.	Eddie King	Jan Dawson	P.O. Box 28 - Burgaw, NC 28425
Coordinator	Fire Marshal	Addressing Coordinator	Telephone (910) 259-1210
smithc@pender-county.com	kinge2@pender-county.com	dawsonj@pender-county.com	Fax (910) 259-1409

August 8, 2001

Mr. Davis Moore
State of North Carolina
Department of Transportation
Project Development Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Moore:

Thank you for asking for comment on the replacement of Bridge No. 21 on NC Hwy. 210 at the N.E. Cape Fear River. I am sorry for the delay in getting this letter to you. As you may know, NC Hwy 210 is the only road that connects the western and central areas of Pender County with the eastern areas. This route is vital in emergency response. I understand the bridge in this location is somewhat longer than other bridges in the county that are routinely replaced and a replacement bridge would require more resources but I think that having this road cut off for several months (or even a year) will pose a real problem in the response of emergency vehicles.

The fire district in the area east of the bridge is covered by Rocky Point Fire Department. The fire department right now is about 3 miles from this area. With the NC Hwy 210 bridge out another fire department would have to respond. The closest fire department to the area just east of the bridge would be about 12 miles away and in some areas on Shaw Hwy homes would be 17 miles from the nearest department. As you can see, this would cause a significant increase in response times.

The EMS side is similar to the fire. Most of the time an ambulance is stationed at the Rocky Point Fire Department. That ambulance would handle calls in this area and again would be about 3 miles from the area just east of the bridge to about 9 miles to some of the areas on Shaw Hwy. With NC Hwy 210 closed at the N.E. Cape Fear River the closest ambulance would be out of Hampstead and should the long term mutual aid be worked out that ambulance would be 13 to 18 miles away from this area. I think with the emergency vehicle response problem this would create a temporary bridge would be the way to go.

Other problems I know would occur are those of law enforcement response, bus routes, and hurricane evacuation. I know this because we lost the use of NC Hwy 210 at the bridge during Hurricane Floyd because of heavy flooding. Which leads me into a question: Can the east side of approach to the bridge be elevated so flooding will not cause the closure of NC Hwy 210 at the N.E. Cape Fear River in the future? Two bridges were replaced on Hwy 210 between Rocky Point and Hampstead over the past several years but neither one of them was elevated. As a result, every large flood event causes water to come across in those areas (Merricks Creek and Harrisons Creek) and we loose the use of the North Carolina Highway. It would be prudent I think to raise Hwy 210 near the River several feet so we will not have this problem, in this area again.

Again thank you for requesting input and if you have any questions, please contact me.

Sincerely,

Carson H. Smith Jr.,
Coordinator

CHS

PENDER COUNTY BUS GARAGE

995 PENDERLEA HWY
BURGAW, N.C. 28425

Phone 910-259-0141
Fax 910-259-0142
email- pcbuses@intrstar.net

DATE: July 23, 2001

TO: Davis Moore
Project Development & Environmental Analysis Branch
NC Department Of Transportation
1548 Mail Service Center
Raleigh, N.C. 27699-1548

FROM: Thurman Casey
Transportation Director

RE: Closing of Bridge #21 (NE Cape Fear River - N.C. Hwy 210)
Project # B-4223

At the present time Pender County Schools has 5 regular school buses that cross this bridge twice a day. This number could increase by 2 or 3 buses because of the growth in this area and the building of 3 new schools in Rocky Point. Routing our buses to our schools without passing over this bridge would be very costly and would increase ridership time for students. Our buses would have to be routed into New Hanover County or to N.C. 53 West to accomplish this task. This would put approximately 50 miles per day extra on every bus and an additional 45-60 minute riding time each morning and afternoon for the students. At the present time, it cost approximately $1.60 per mile to run our buses each day. At that rate, it would cost the county an additional $72,000 to route these buses around the closing of this bridge for our 180 day school term. We also have remediation classes after regular school hours which have students that live beyond this bridge. These students would also have to be taken home in the late afternoons.

We also have a fuel truck and service vehicles that pass over this bridge to service the buses at the schools in the Hampstead area. This would also increase the cost of maintenance of our buses, if we have to detour around this bridge.

Yes, this would create an "UNWORKABLE" situation for bus transportation for Pender County Schools.

If you have other questions, please call 910-259-0141.

HB 1-15

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4223
Applicant/Owner: NCDOT
Investigator: ESI

Date: 8/28/01
County: Pender
State: NC

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse)

Community ID: Swamp Forest
Transect ID: HB4
Plot ID: wetland

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Taxodium distichum	T	OBL
2. Nyssa biflora	T	OBL
3. Quercus laurifolia	T	FACW
4. Acer rubrum	T	FAC
5. Woodwardia areolata	H	OBL
6. Arundinaria gigantea	H	FACW
7.		
8.		

Dominant Plant Species	Stratum	Indicator
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 100 %

Remarks: Cypress/gum swamp grades into area that has been logged.

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water: — (in.)
- Depth to Free Water in Pit: — (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12 Inches
- ✓ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 Inches
- ✓ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): Dorovan muck

Drainage Class: V.P. drained

Taxonomy (Subgroup): Typic Medisaprists

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 2/2			Sandy loam
12+		10YR 4/2			Sandy loam

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ✓ Listed on Local Hydric Soils List
- ✓ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

(Circle)
Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

HB 1-15

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-4223
Applicant/Owner: NCDOT
Investigator: ESI

Date: 8/28/01
County: Pender
State: NC

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse)

Community ID: Swamp forest
Transect ID: HB4
Plot ID: upland

VEGETATION

Dominant Plant Species	Stratum	Indicator
1. Acer rubrum	T	FAC
2. Quercus nigra	T	FAC
3. Arundinaria gigantea	H	FACW
4.		
5.		
6.		
7.		
8.		

Dominant Plant Species	Stratum	Indicator
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Upland levee along river.

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake or Tide Gauge
___ Aerial Photographs
___ Other
✓ No Recorded Data Available

Field Observations:
Depth of Surface Water: — (in.)
Depth to Free Water in Pit: — (in.)
Depth to Saturated Soil: >12 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
___ Saturated in Upper 12 Inches
___ Water Marks
___ Drift Lines
___ Sediment Deposits
___ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 Inches
___ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks: No hydrology indicators

SOILS

Map Unit Name (Series and Phase): Mapped as Dorovan muck

Drainage Class: V.P. drained

Taxonomy (Subgroup): Typic medisaprists

Field Observations
Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12+		10YR 4/3			fine sand
					< 70% coated
					sand grains

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: Soil profile non-hydric

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

Is this Sampling Point Within a Wetland? (Circle) Yes (No)

Remarks:

Approved by HQUSACE 2/92

HJL
8/93

Wetland Rating Worksheet

Project name Division 3 - B4223 Nearest road NC 210
County Pender Name of Evaluator ESI Date 8-28-01

Wetland location
- _ on pond or lake
- ✓ on perennial stream
- _ on intermittant stream
- _ within interstream divide
- _ other

Adjacent land use (within 1/2 mile upstream)
- natural vegetation 80 %
- agriculture 10 %
- suburban/urban 10 %

Dominant Vegetation
- (1) Taxodium distichum
- (2) Nyssa biflora
- (3) Quercus laurifolia

Soil Series Dorovan & Murville muck
- ✓ predominantly organic-humus, muck, or peat
- _ predominantly mineral- non-sandy
- _ predominantly sandy

Flooding and Wetness
- ✓ semiperminantly to perminantly flooded or innundated
- _ seasonally flooded or innundated
- _ intermittantly flooded or temporary surface water
- _ no evidence of flooding or surface water

Hydrolic Factors
- _ steep topography
- _ ditched or channelized
- ✓ wetland width >/= 50 feet

Wetland Type (select one)

- _ Bottomland hardwood forest
- _ Headwater forest
- ✓ Swamp forest
- _ Wet flat
- _ Pocosin
- _ Pine savanna
- _ Freshwater marsh
- _ Bog/fen
- _ Ephemeral wetland
- _ Other

*The rating system cannot be applied to salt or brackish marshes

Water storage	5	*	4	=	20	
Bank/Shoreline stabilization	3	*	4	=	12	Total score
Pollutant removal	4	*	5	=	20	78
Wildlife habitat	4	*	2	=	8	
Aquatic life value	4	*	4	=	16	
Recreation/Education	2	*	1	=	2	

Add 1 point if in sensitive watershed and >10% nonpoint disturbance within 1/2 mile upstream

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.

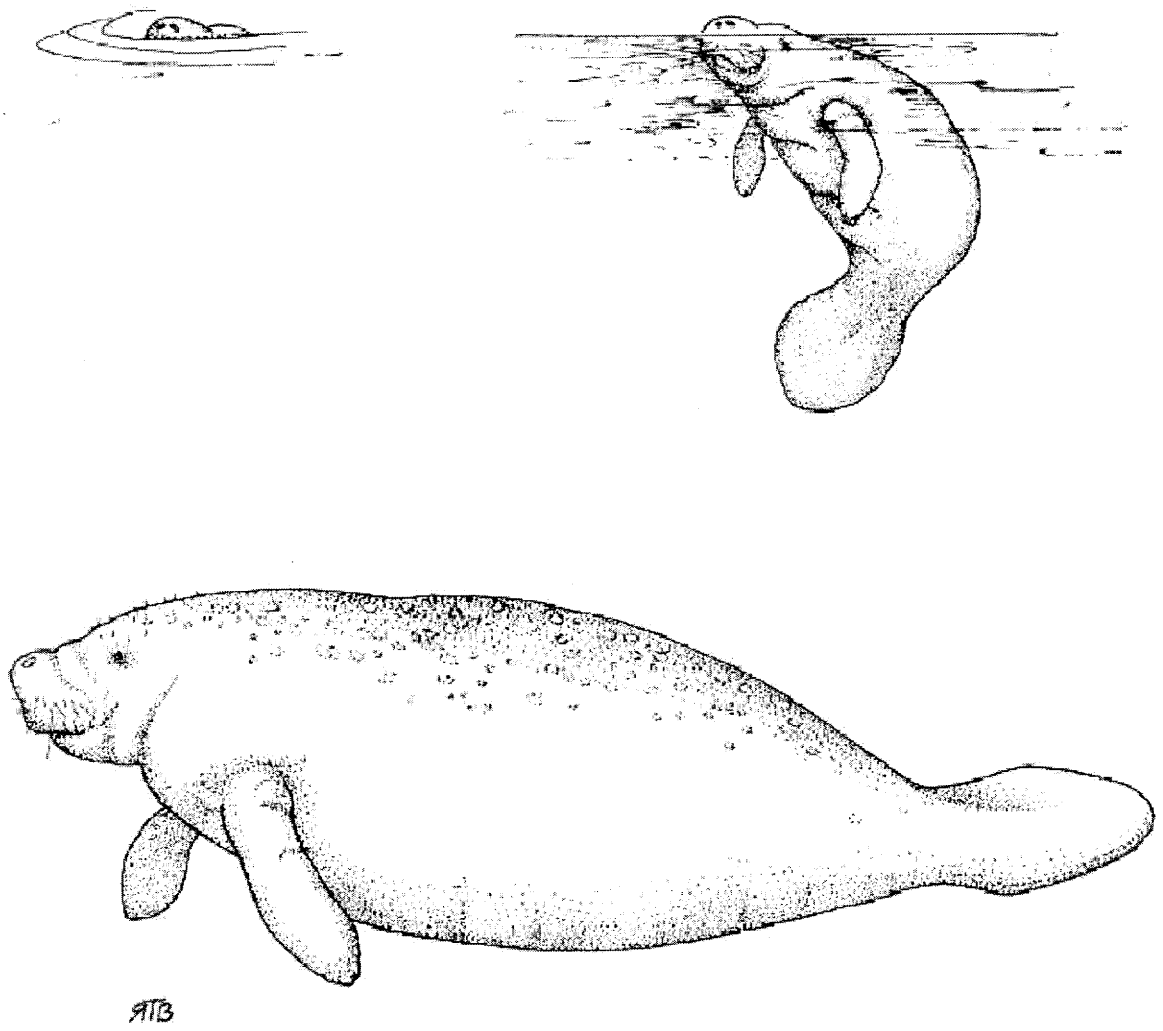
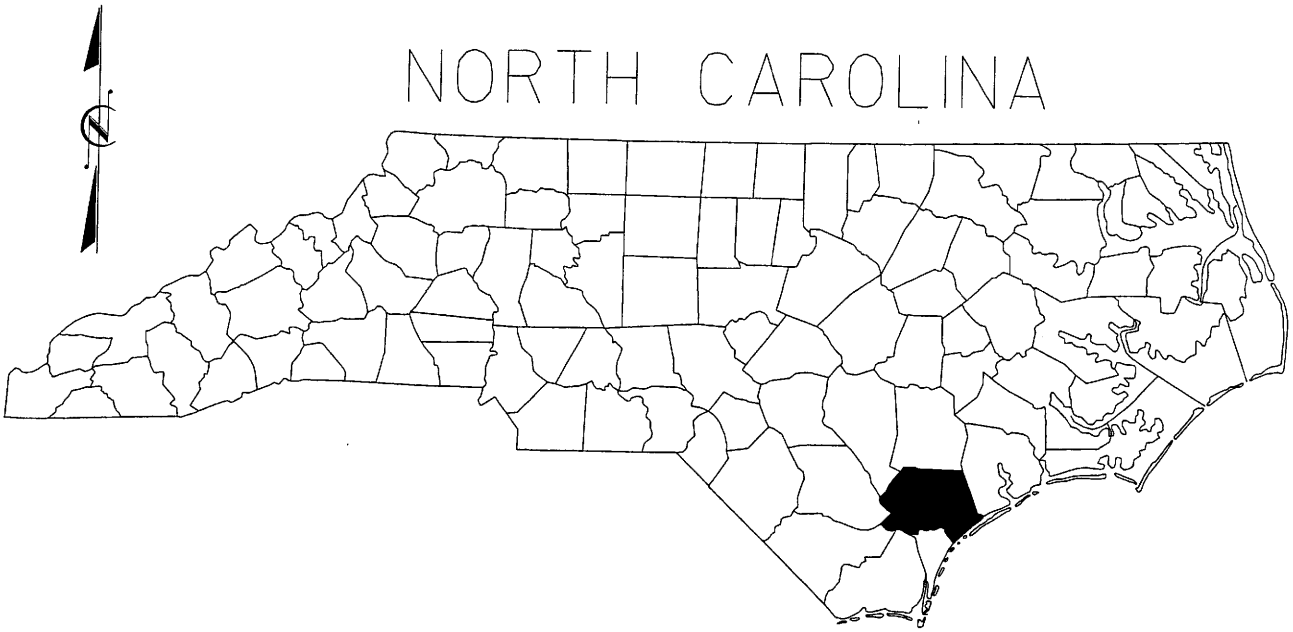
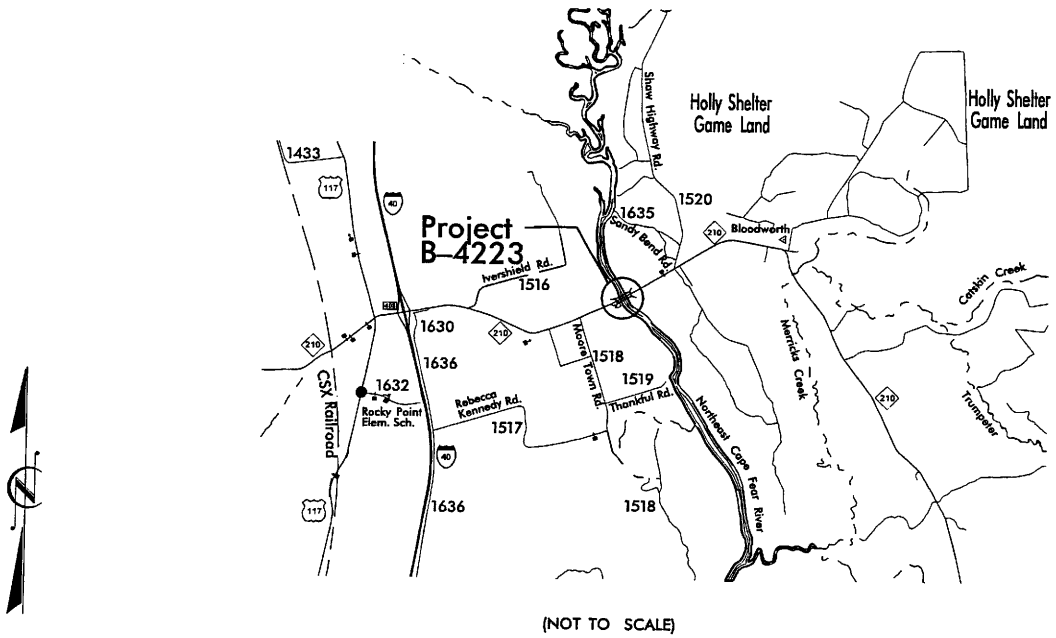


Illustration used with the permission of the North Carolina State Museum of Natural Sciences. Source: Clark, M. K. 1987. Endangered, Threatened, and Rare Fauna of North Carolina: Part I. A re-evaluation of the mammals. Occasional Papers of the North Carolina Biological Survey 1987-3. North Carolina State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





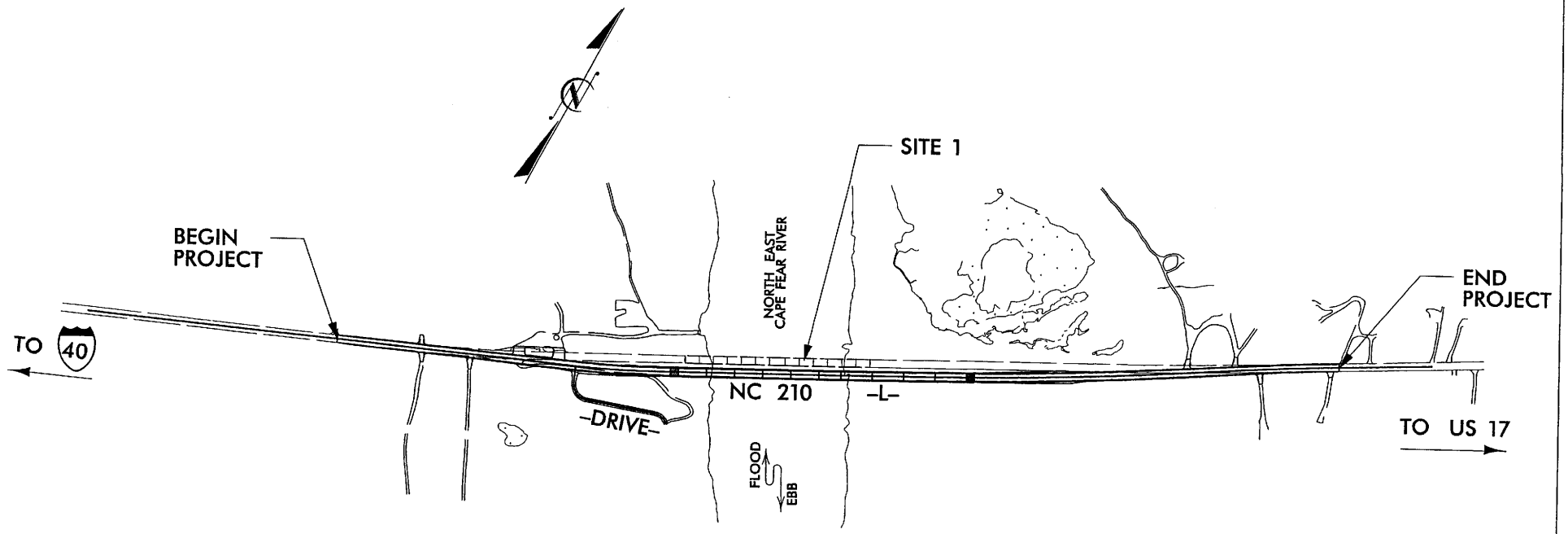
(NOT TO SCALE)

VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
PENDER COUNTY
PROJECT: 33567.1.1 (B-4223)
BRIDGE NO. 21 OVER
NORTHEAST CAPE FEAR RIVER
AND APPROACHES ON NC 210

SHEET 1 OF 23 4/22/05



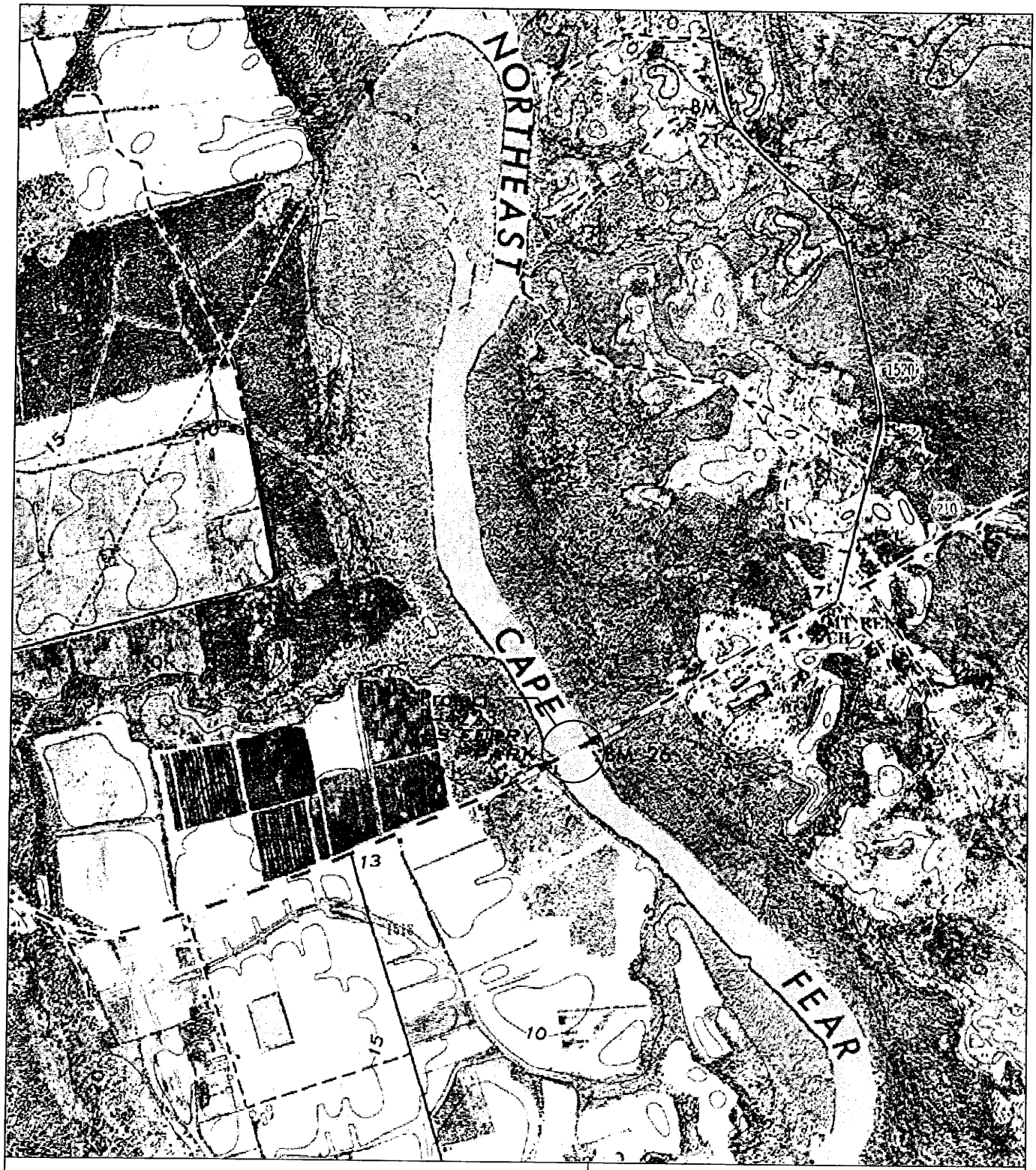
SITE MAP

NOT TO SCALE

NCDOT

DIVISION OF HIGHWAYS
PENDER COUNTY
PROJECT: 33567.1.1 (B-4223)
BRIDGE NO. 21 OVER
NORTHEAST CAPE FEAR RIVER
AND APPROACHES ON NC 210

SHEET 2 OF 23 4/22/05



TOPO MAP

SCALE: 1" : 1500'

NCDOT

DIVISION OF HIGHWAYS
PENDER COUNTY
PROJECT: 33567.1.1 (B-4223)
BRIDGE NO. 21 OVER
NORTHEAST CAPE FEAR RIVER
AND APPROACHES ON NC 210

SHEET 4 **OF** 23 **4 / 22 / 05**

PROPERTY OWNERS

NAMES AND ADDRESSES

REFERENCE NO.	NAMES	ADDRESSES
1	Cason Trask	2511 S. Canterbury Road Wilmington, NC 28403
2	River Rock Farms, LLC	2511 S. Canterbury Road Wilmington, NC 28403
3	E. Allen James	1802 Fawncrest Ct. Vienna, VA 22182
4	Hall Family Properties of Wilmington, LLC	718 Market Street Wilmington, NC 28401
5	Randall M. Bostic	10604 NC Hwy 210 Rocky Point, NC 28457
6	Wesley Williams	8635 Tuttle Road Springfield, VA 22152
7	Hubert Harrell	P.O. Box 93 Burgaw, NC 28425
8	Larry Moore	10567 NC Hwy 210 Rocky Point, NC 28457
9	Lisa Mae Hatch	New York, NY 10026
10	Katrina L. Robinson	P.O. Box 276 Rocky Point, NC 28457

NCDOT

DIVISION OF HIGHWAYS

PENDER COUNTY

PROJECT: 33567.1.1 (B-4223)

BRIDGE NO. 21 OVER

NORTHEAST CAPE FEAR RIVER

AND APPROACHES ON NC 210

SHEET 5 OF 23 4/22/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	33+52 -L- +/-	5@90',1@70',4@100'	0.520	0.000	0.000	0.000	0.350	0.014	0.008	0	0	0
		54" Prestressed Girder										
TOTALS:			0.520	0.000	0.000	0.000	0.350	0.014	0.008	0.0	0.0	0.0

AREA OF WETLAND RESTORATION = 0.956 ACRES

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PENDER COUNTY
WBS - 33567.1.1 (B-4223)

SHEET 6 of 23 9/8/2005

ATN Revised 3/31/05

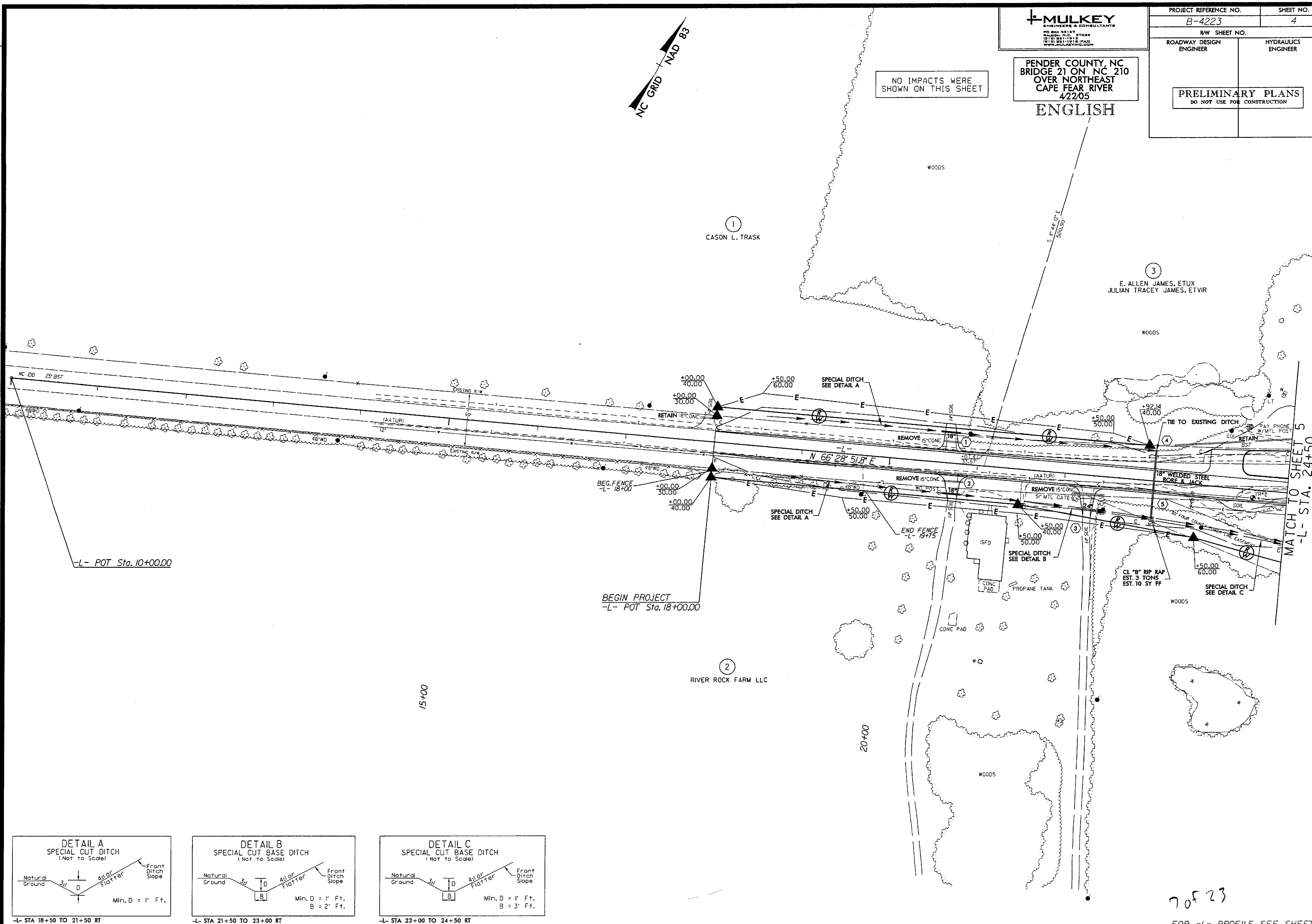
PROJECT REFERENCE NO.	SHEET NO.
B-4223	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MULKEY ENGINEERS & CONSULTANTS

PENDER COUNTY, NC
BRIDGE 21 ON NC 210
OVER NORTHEAST
CAPE FEAR RIVER
4/22/05
ENGLISH

NO IMPACTS WERE SHOWN ON THIS SHEET



REVISIONS

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FOR -L- PROFILE SEE SHEET 7

4/29/2005

PROJECT REFERENCE NO. B-4223 | SHEET NO. 4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

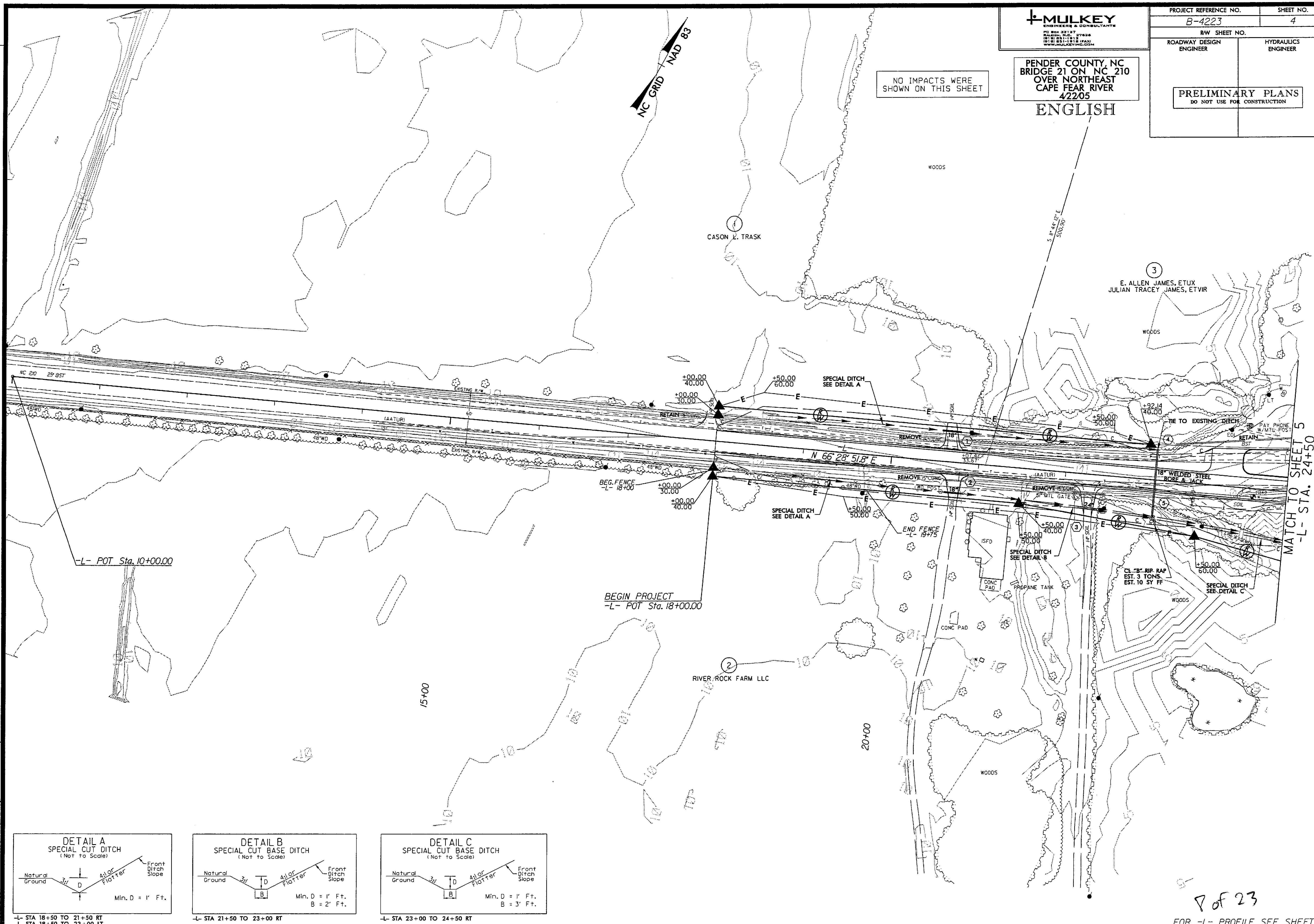
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MULKEY ENGINEERS & CONSULTANTS

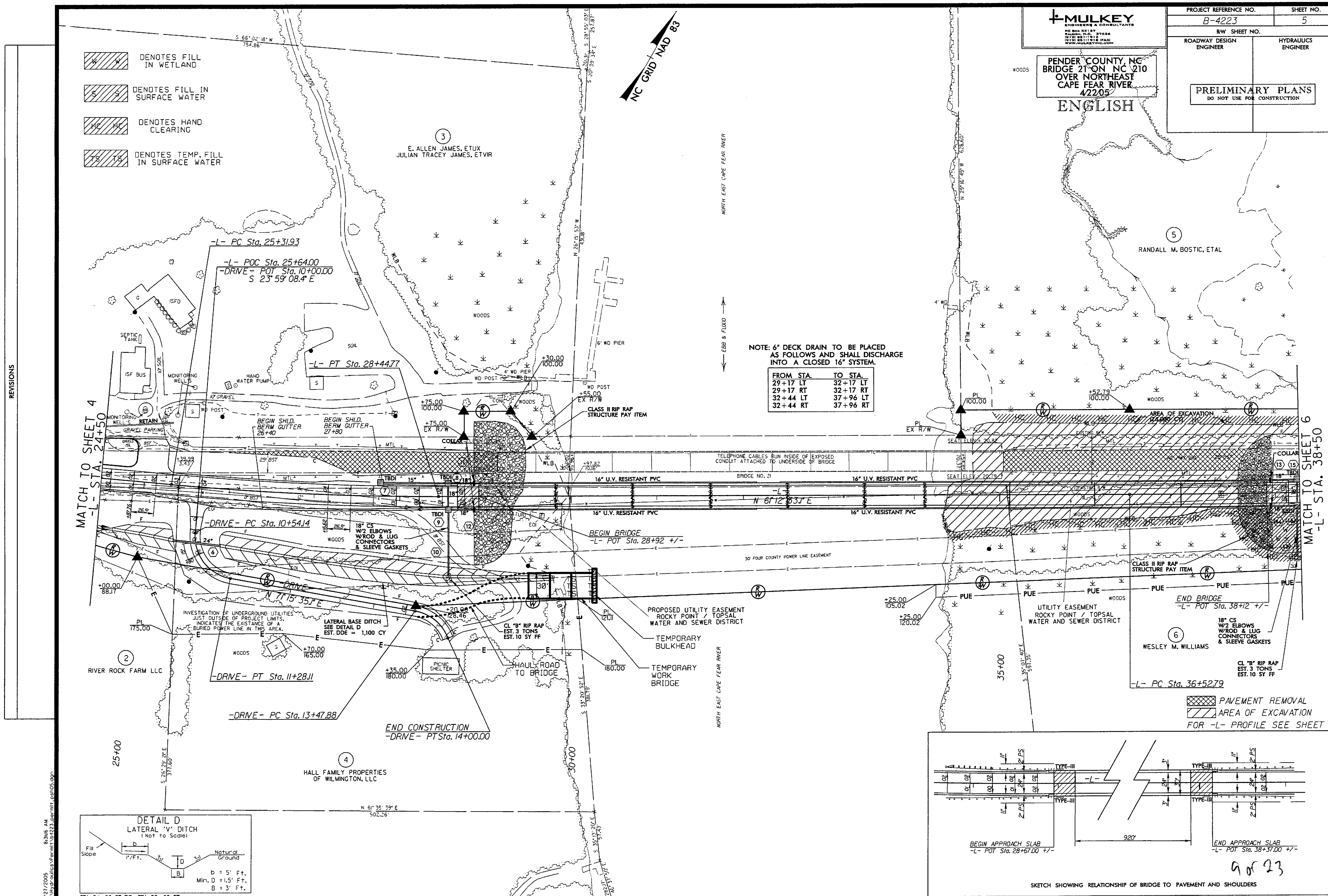
PENDER COUNTY, NC
BRIDGE 21 ON NC 210
OVER NORTHEAST
CAPE FEAR RIVER
4/22/05

ENGLISH

NO IMPACTS WERE SHOWN ON THIS SHEET



P of 23



MULKEY ENGINEERS & CONSULTANTS
PROJECT REFERENCE NO. B-4223
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PENDER COUNTY, NC
BRIDGE 21 ON NC 210
OVER NORTHEAST
CAPE FEAR RIVER
4/22/05
ENGLISH
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES HAND CLEARING
DENOTES TEMP. FILL IN SURFACE WATER
NC GRID NAD 83
E. ALLEN JAMES, ETUX
JULIAN TRACEY JAMES, ETVIR
RANDALL M. BOSTIC, ETAL
RIVER ROCK FARM LLC
HALL FAMILY PROPERTIES OF WILMINGTON, LLC
WESLEY M. WILLIAMS
NORTH EAST CAPE FEAR RIVER
NOTE: 6" DECK DRAIN TO BE PLACED AS FOLLOWS AND SHALL DISCHARGE INTO A CLOSED 16" SYSTEM.
FROM STA. TO STA.
29+17 LT 32+17 LT
29+17 RT 32+17 RT
32+44 LT 37+96 LT
32+44 RT 37+96 RT
-L- PC Sta. 25+31.93
-L- POC Sta. 25+64.00
-DRIVE- POT Sta. 10+00.00
S 23°59' 08.4" E
-L- PT Sta. 28+44.77
-DRIVE- PC Sta. 10+54.14
-DRIVE- PT Sta. 11+28.11
-DRIVE- PC Sta. 13+47.88
END CONSTRUCTION
-DRIVE- PT Sta. 14+00.00
BEGIN BRIDGE
-L- POT Sta. 28+92 +/-
END BRIDGE
-L- POT Sta. 38+12 +/-
-L- PC Sta. 36+52.79
N 61°12' 53.3" E
16" U.V. RESISTANT PVC
TELEPHONE CABLES RUN INSIDE OF EXPOSED CONDUIT ATTACHED TO UNDERSIDE OF BRIDGE
30' FOUR COUNTY POWER LINE EASEMENT
CLASS II RIP RAP STRUCTURE PAY ITEM
18" CS W/2 ELBOWS W/ROD & LUG CONNECTORS & SLEEVE GASKETS
CL "B" RIP RAP EST. 3 TONS EST. 10 SY FF
LATERAL BASE DITCH SEE DETAIL D EST. DDE = 1,100 CY
INVESTIGATION OF UNDERGROUND UTILITIES JUST OUTSIDE OF PROJECT LIMITS, INDICATES THE EXISTANCE OF A BURIED POWER LINE IN THIS AREA.
PROPOSED UTILITY EASEMENT ROCKY POINT / TOPSAIL WATER AND SEWER DISTRICT
UTILITY EASEMENT ROCKY POINT / TOPSAIL WATER AND SEWER DISTRICT
TEMPORARY BULKHEAD
TEMPORARY WORK BRIDGE
HAUL ROAD TO BRIDGE
AREA OF EXCAVATION
MATCH TO SHEET 4 -L- STA. 24+50
MATCH TO SHEET 6 -L- STA. 38+50
PAVEMENT REMOVAL
AREA OF EXCAVATION
FOR -L- PROFILE SEE SHEET 7
DETAIL D
LATERAL 'V' DITCH
(Not to Scale)
b = 5' Ft.
Min. D = 1.5' Ft.
B = 3' Ft.
STA 24+50 RT. TO STA 29+80 RT
BEGIN APPROACH SLAB -L- POT Sta. 28+67.00 +/-
END APPROACH SLAB -L- POT Sta. 38+37.00 +/-
SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS
REVISIONS
6/27/2005
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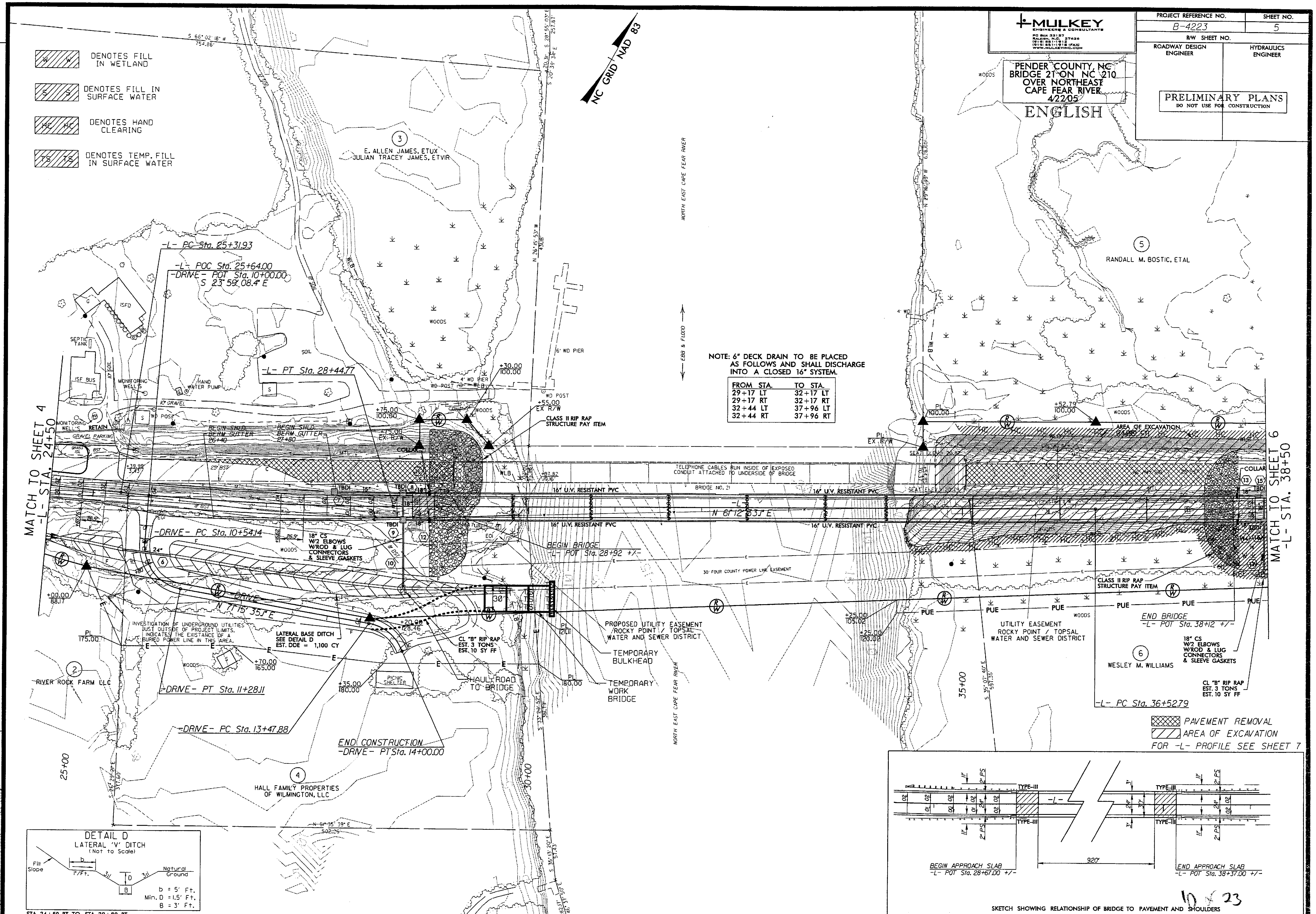


NOTE: 6" DECK DRAIN TO BE PLACED AS FOLLOWS AND SHALL DISCHARGE INTO A CLOSED 16" SYSTEM.

FROM STA.	TO STA.
29+17 LT	32+17 LT
29+17 RT	32+17 RT
32+44 LT	37+96 LT
32+44 RT	37+96 RT

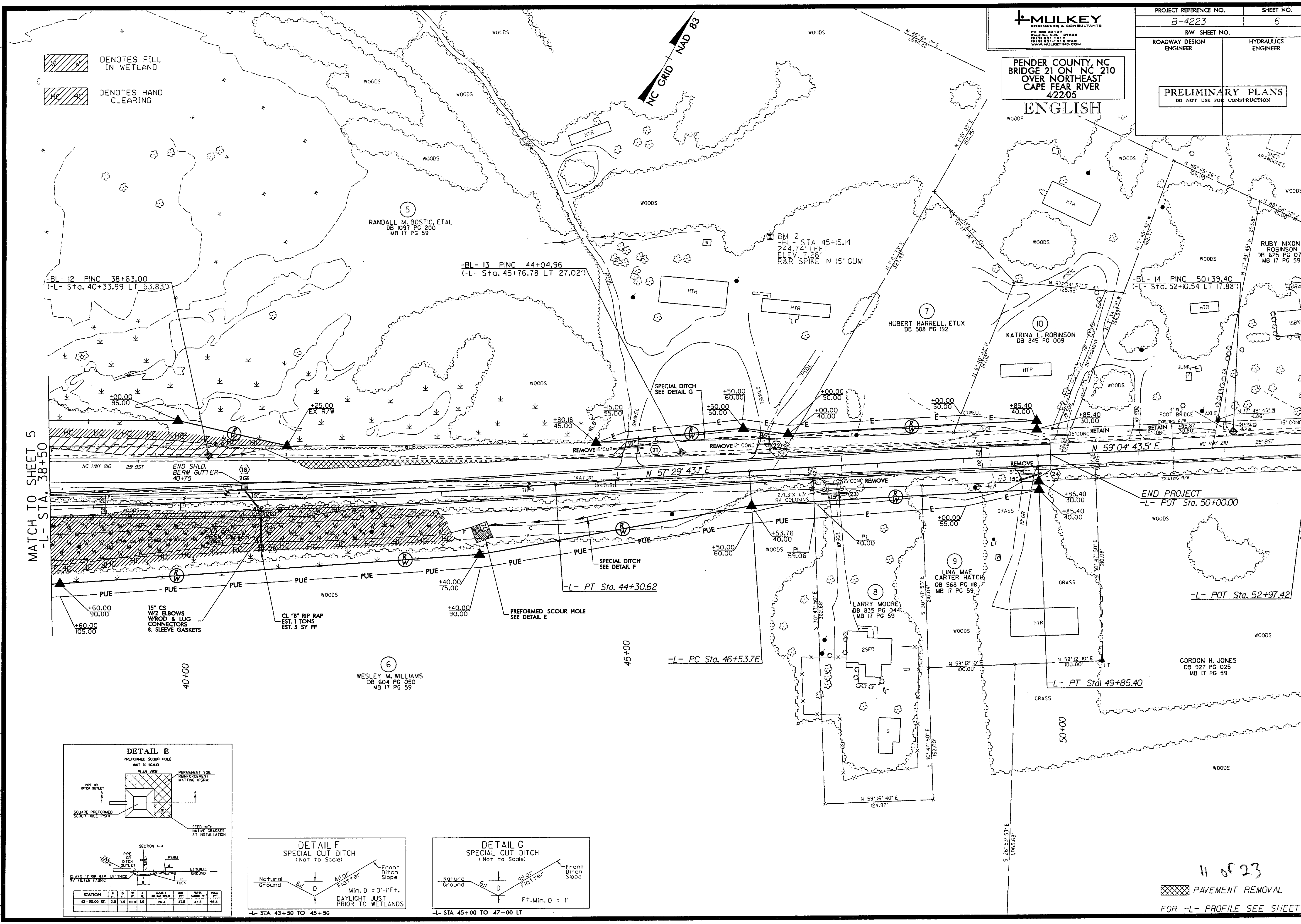
MULKEY ENGINEERS & CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
B-4223	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PENDER COUNTY, NC
BRIDGE 21 ON NC 210
OVER NORTHEAST
CAPE FEAR RIVER
4/22/05

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DETAIL E
PREFORMED SCOUR HOLE
(NOT TO SCALE)

STATION								
43+30.00 RT.	3.0	1.5	10.0	1.0	26.4	41.0	37.6	95.6

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 0'-1' Ft.
DAYLIGHT JUST PRIOR TO WETLANDS
-L- STA 43+50 TO 45+50

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Ft. Min. D = 1'
-L- STA 45+00 TO 47+00 LT

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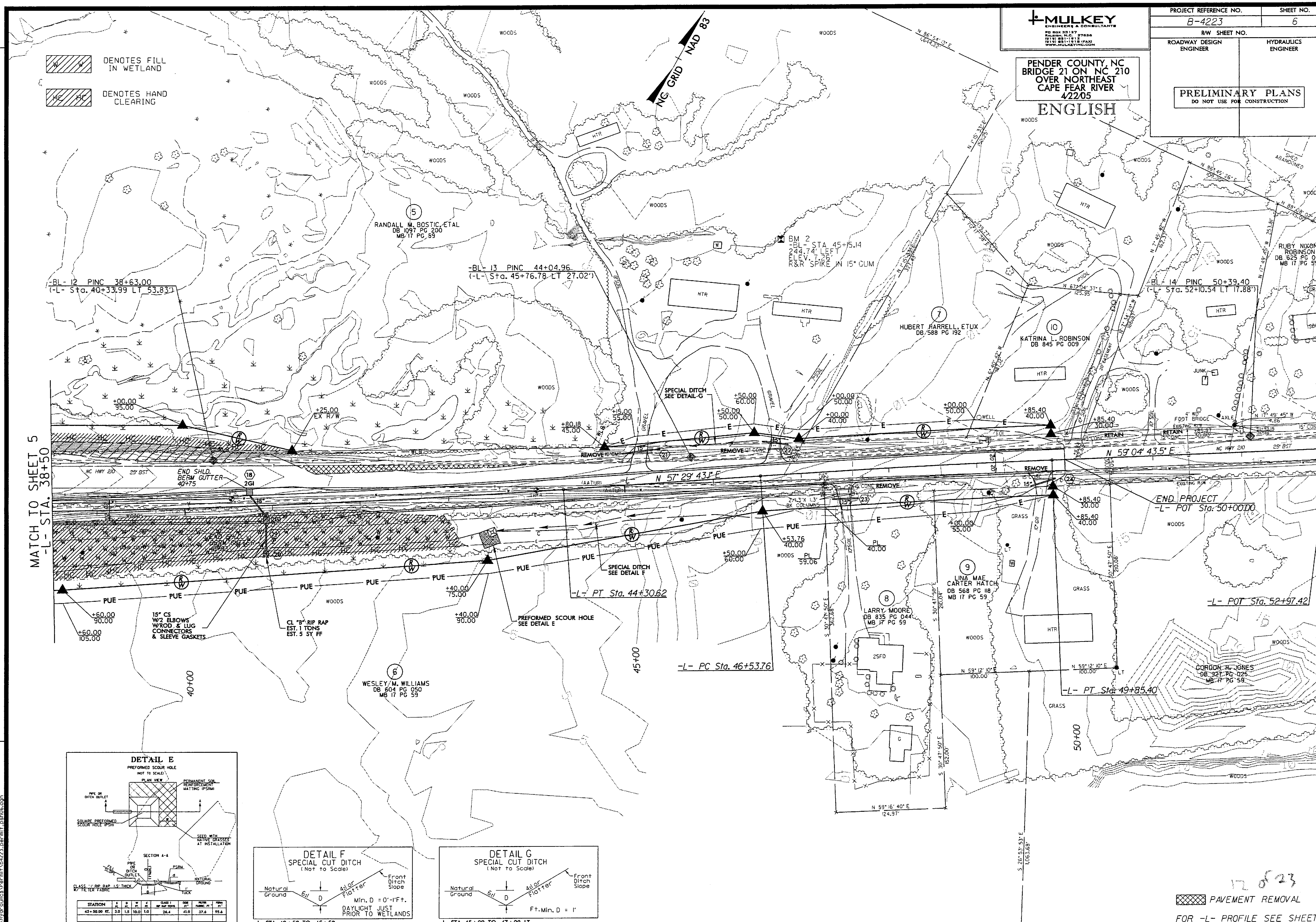
PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHEET 8

6/27/2005

REVISIONS



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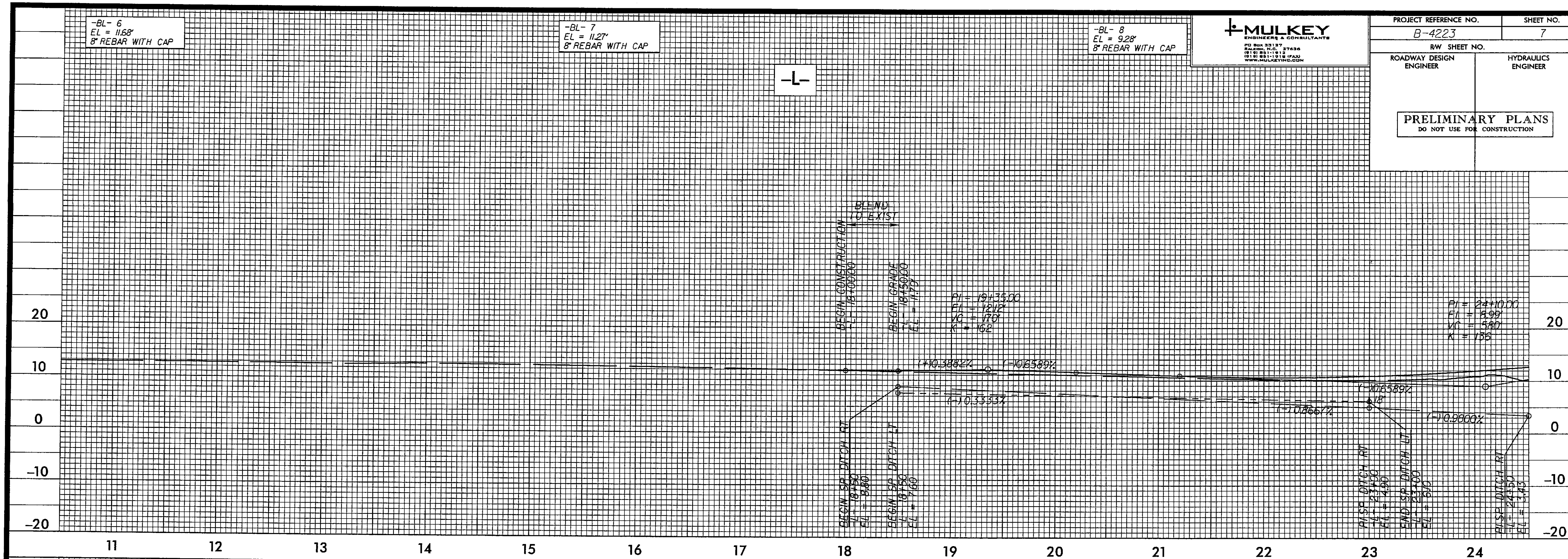
PROJECT REFERENCE NO.	SHEET NO.
B-4223	7

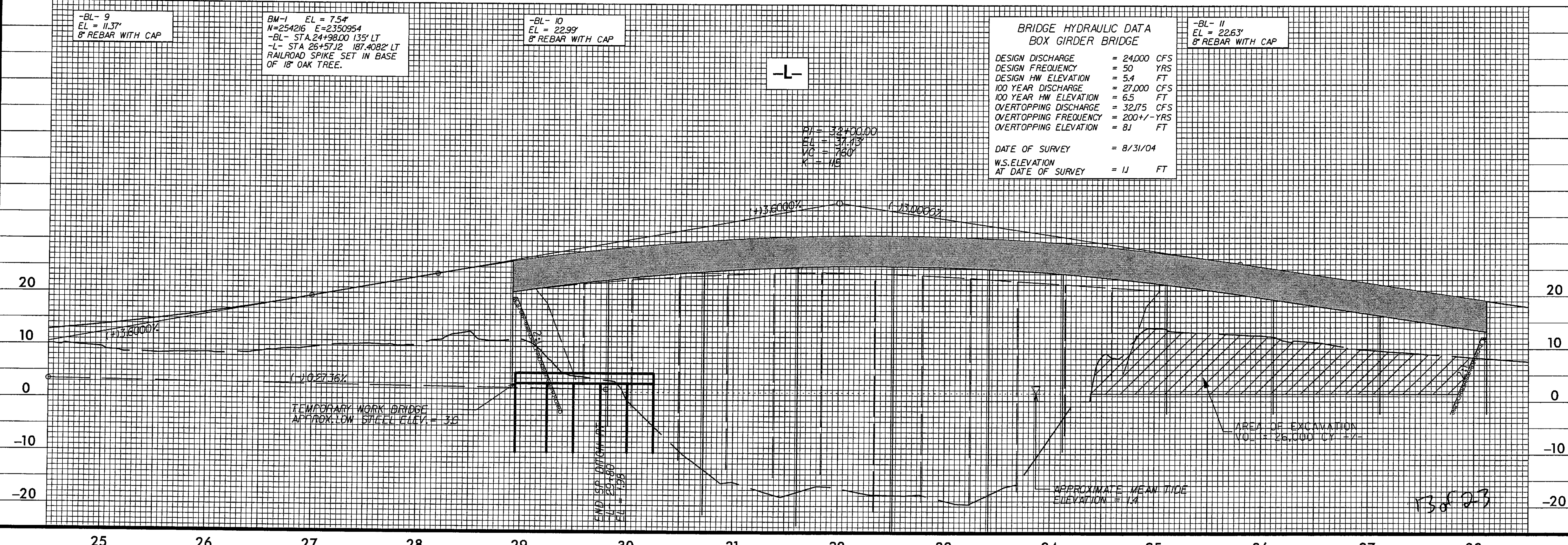
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

MULKEY ENGINEERS & CONSULTANTS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





BRIDGE HYDRAULIC DATA
BOX GIRDER BRIDGE

DESIGN DISCHARGE	=	24,000	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	5.4	FT
100 YEAR DISCHARGE	=	27,000	CFS
100 YEAR HW ELEVATION	=	6.5	FT
OVERTOPPING DISCHARGE	=	32,175	CFS
OVERTOPPING FREQUENCY	=	200+/-	YRS
OVERTOPPING ELEVATION	=	8.1	FT
DATE OF SURVEY	=	8/31/04	
W.S. ELEVATION AT DATE OF SURVEY	=	1.1	FT

5/2/2005 g:\project\2004\13.00 (B-4223 Design)\Hydraulics\Permit\b4223_permit_pfl.dgn

PROJECT REFERENCE NO. B-4223
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
MULKEY ENGINEERS & CONSULTANTS
-BL- 12 EL = 8.24' 8" REBAR WITH CAP
-BL- 13 EL = 6.82' 8" REBAR WITH CAP
BM-2 EL = 7.26' N=255286 E=2352658 -BL- STA.45+15.00 245' LT -L- STA 46+93.71 268.24' LT RAILROAD SPIKE SET IN BASE OF 15" GUM TREE.
-L-
PI = 42+50.00 EL = 5.95' VC = 560' K = 136
(-)3.3000%
(+)1.0114%
(+)0.1300%
(+)1.8000%
(+)3.2000%
(-)0.8400%
(+)4.0200%
(+)1.0142
BEGIN SP. DITCH LT -L- 45+00 EL = 4.84
BLEND TO EXIST
END GRADE -L- 49+50.00 EL = 12.43
END CONSTRUCTION -L- 50+00.00
BEGIN SP. DITCH RT -L- 43+50 EL = 3.87
PI SP. DITCH RT -L- 44+50 EL = 4.00
PI SP. DITCH RT -L- 45+00 EL = 4.90
END SP. DITCH RT -L- 45+50 EL = 6.50
PI SP. DITCH LT -L- 46+50 EL = 6.10
END SP. DITCH LT -L- 47+00 EL = 8.11
39 40 41 42 43 44 45 46 47 48 49 50 51 52
-DRIVE-
BEGIN GRADE -DRIVE- 10+12.00 EL = 15.67
PI = 10+50.00 EL = 15.24' VC = 50'
PI = 11+55.00 EL = 8.94' VC = 55'
PI = 12+75.00 EL = 6.34' VC = 50'
END GRADE -DRIVE- 13+93.74 EL = 6.22
(-)1.1447%
(-)6.0000%
(-)0.5000%
(-)2.0000%
(-)1.1047%
PI = 13+67.00 EL = 6.50 VC = 50'
10 11 12 13 14
20 10 0 -10 -20 -30
14 of 23
4/29/2005 r:\Hydraulics\Permits\b4223_permit_pfl.dgn 11:05:50 AM

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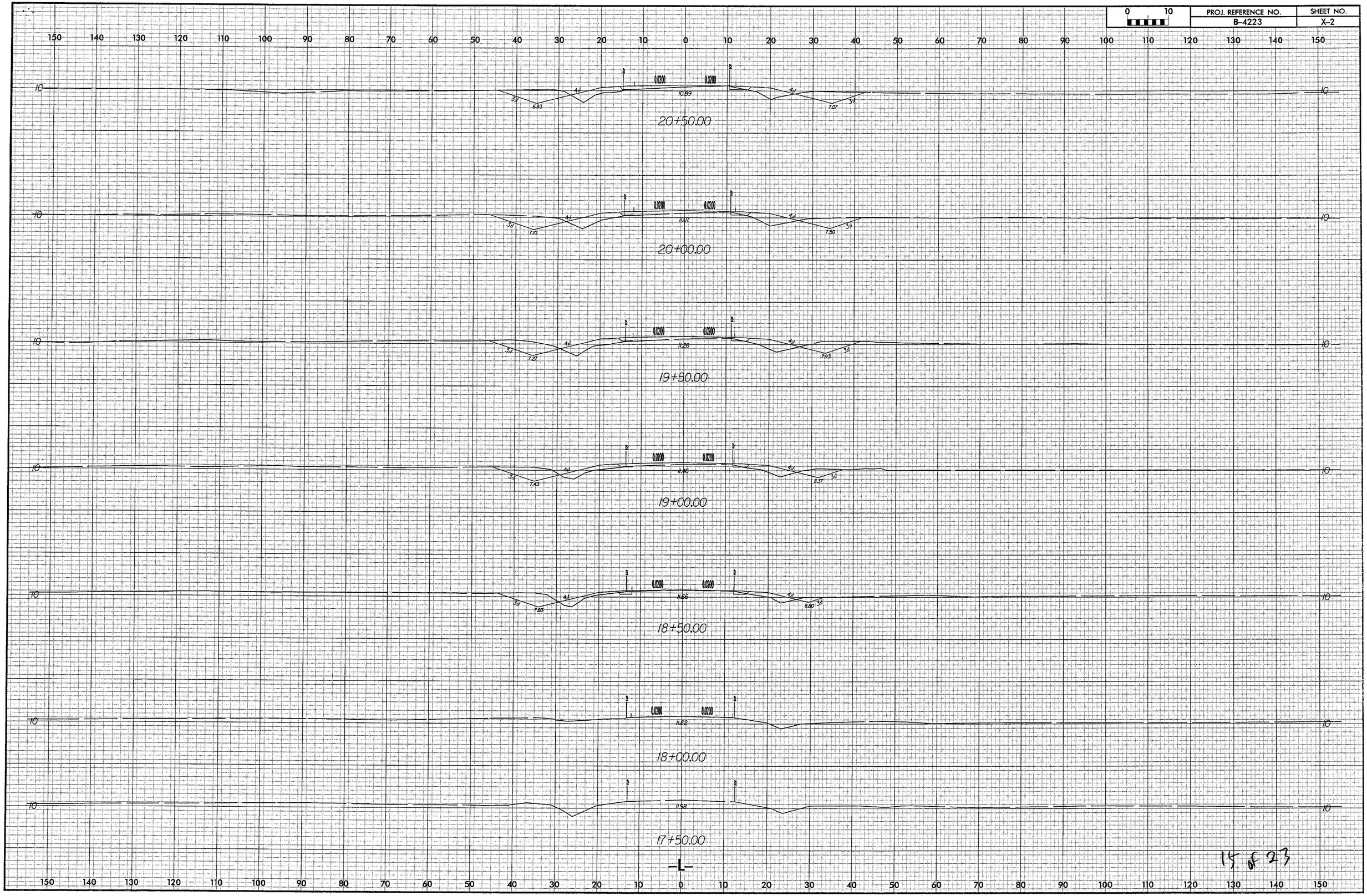
	B-4223	X-2



15 of 23

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	B-4223	X-3

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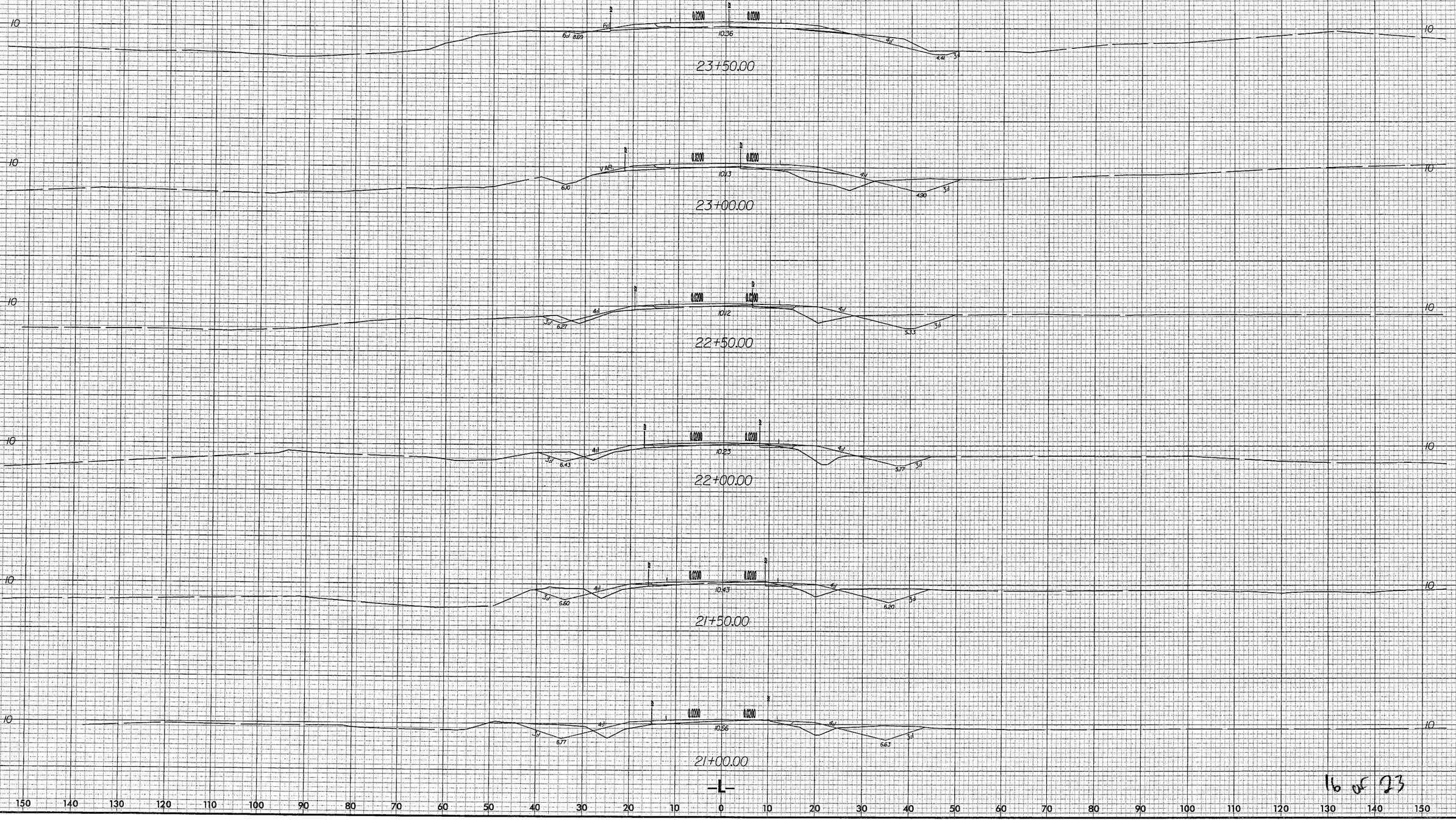

-L-

16 of 23

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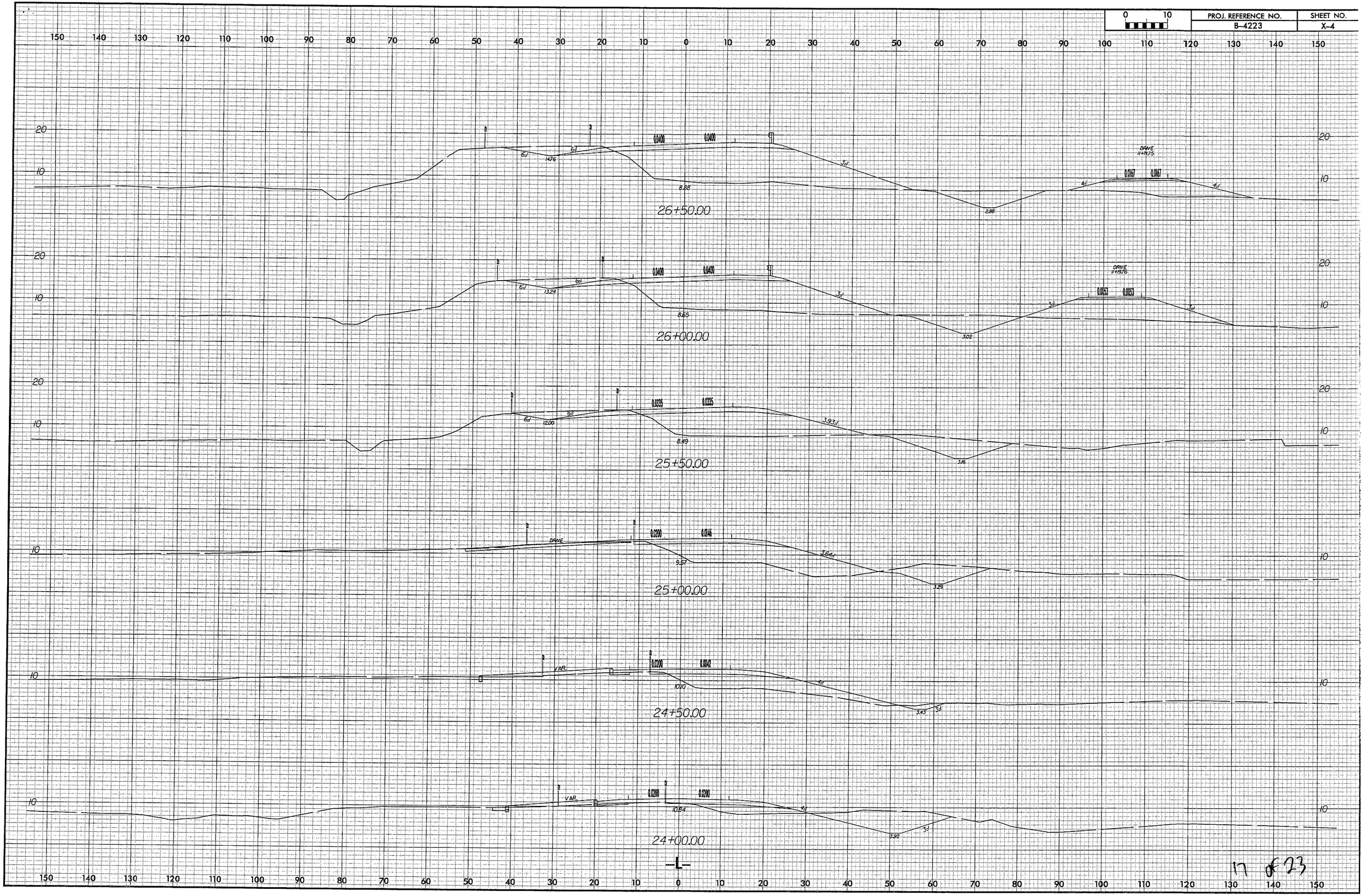
	B-4223	X-4



PROJ. REFERENCE NO.	SHEET NO.
B-4223	X-5

BEGIN BRIDGE -L- STA. 28+92.00

28+50.00

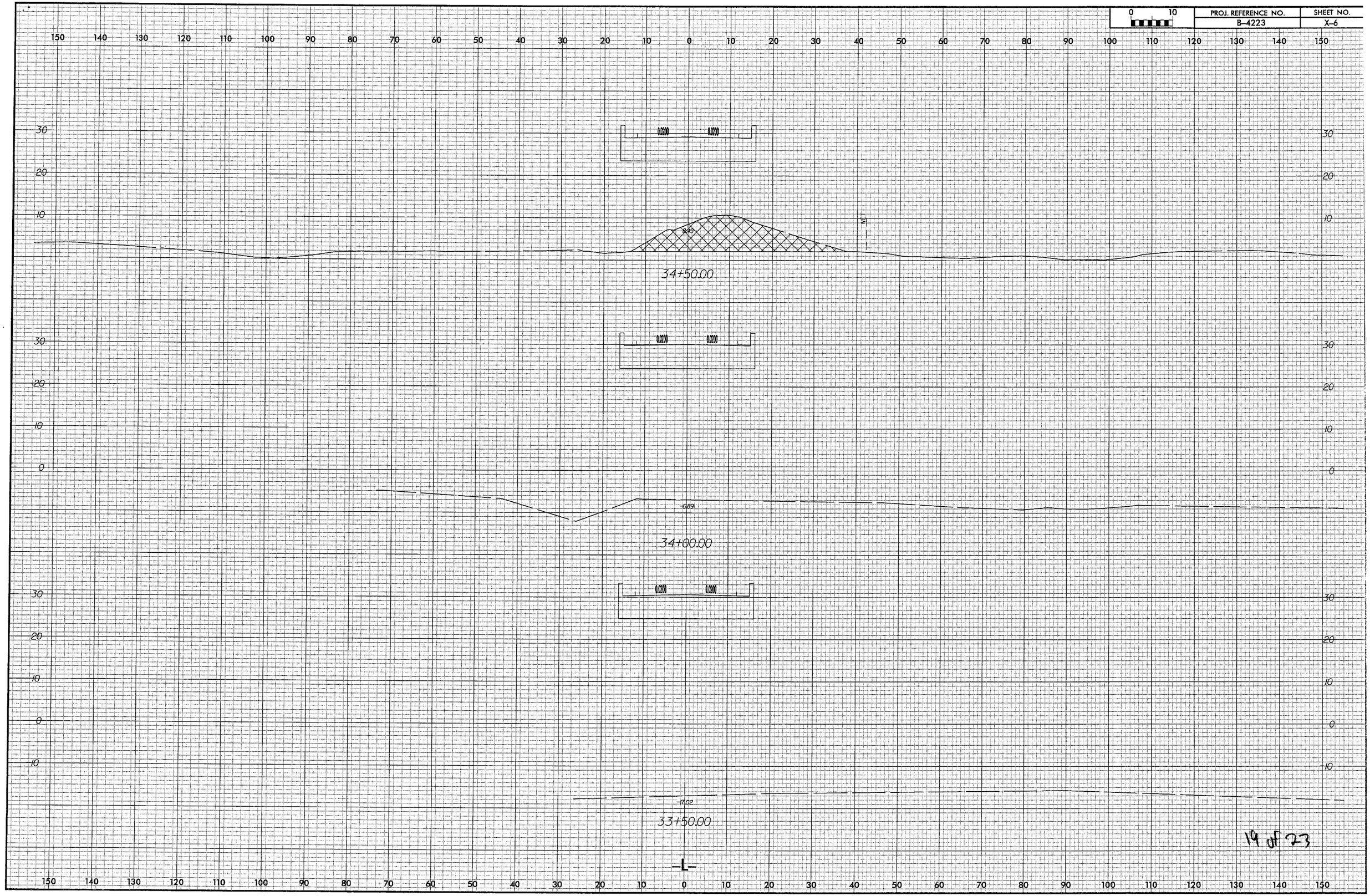
28+00.00

27+50.00

27+00.00

-L-

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4223	X-6



19 of 23

PROJ. REFERENCE NO.	SHEET NO.
B-4223	X-7

0 10

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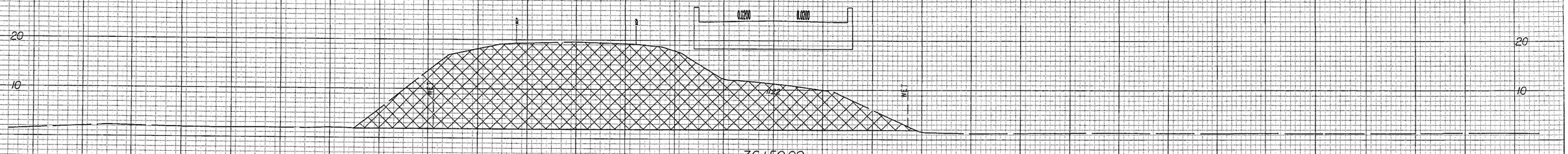
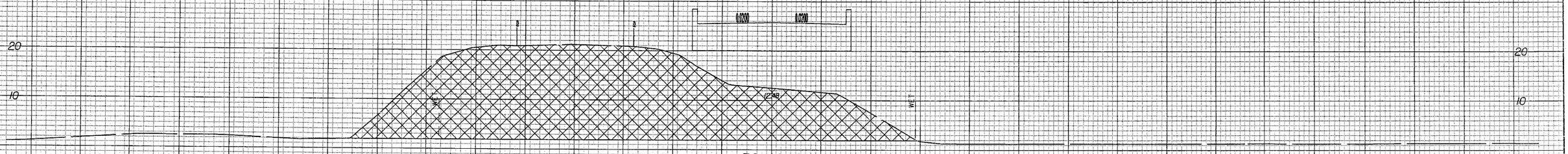
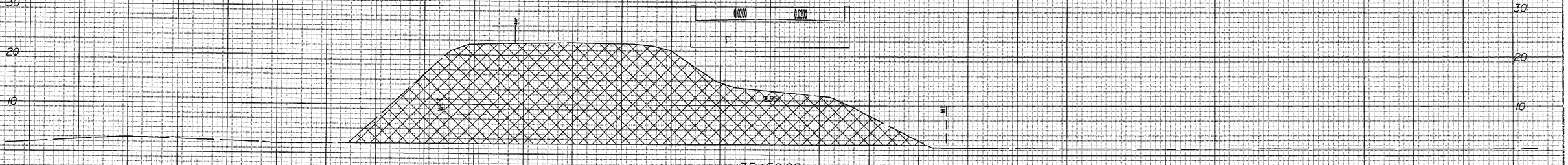
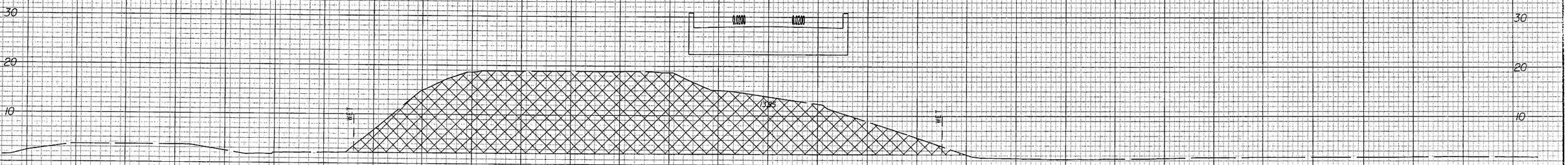






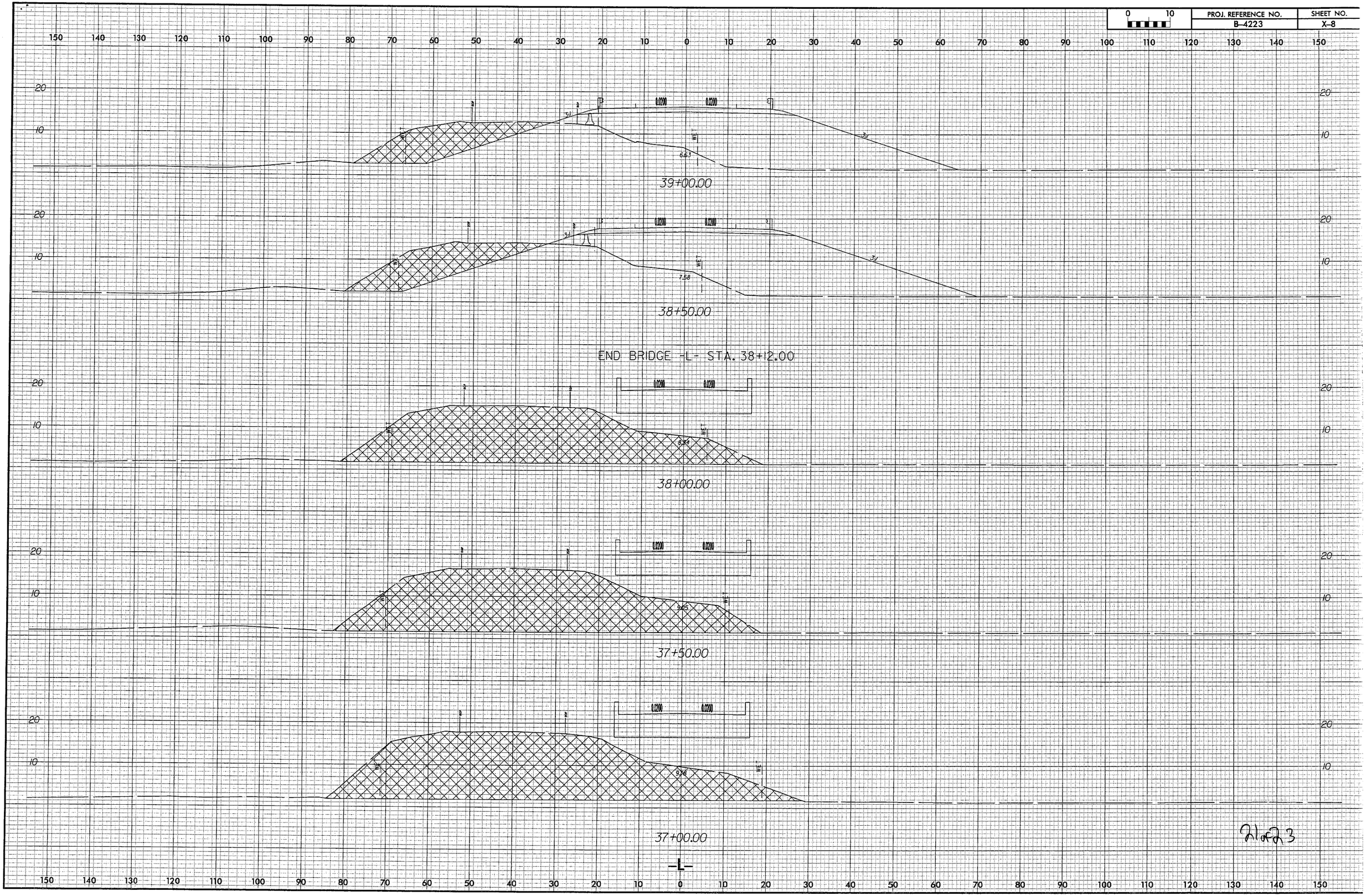


20 of 23

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
B-4223	X-8



0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4223	X-9

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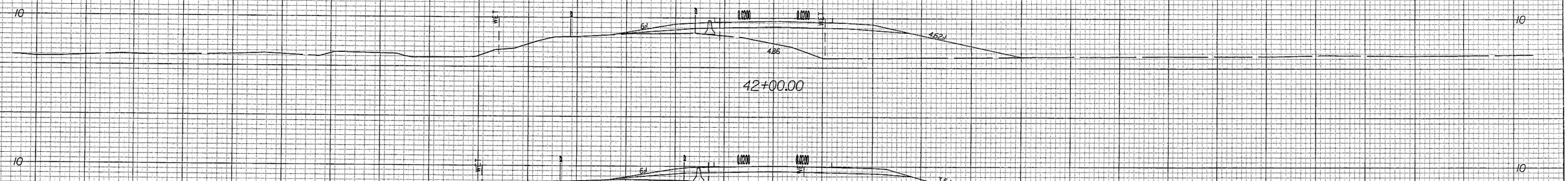

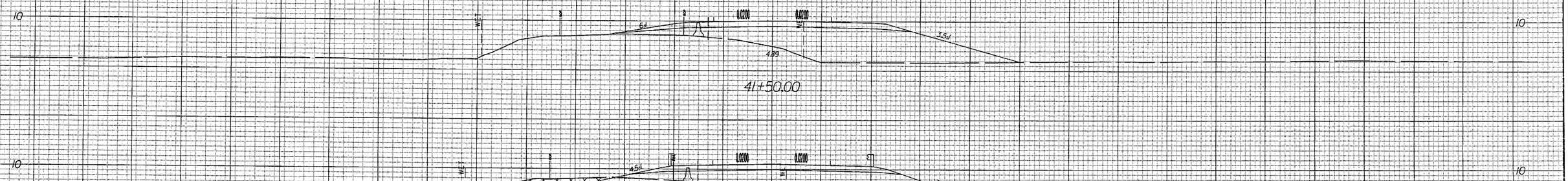

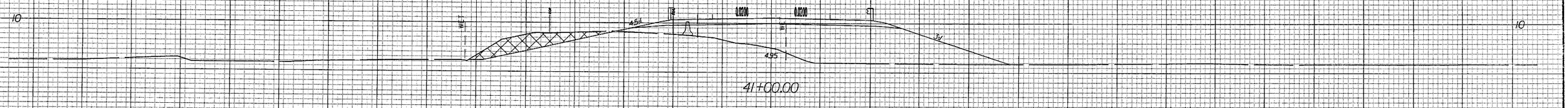

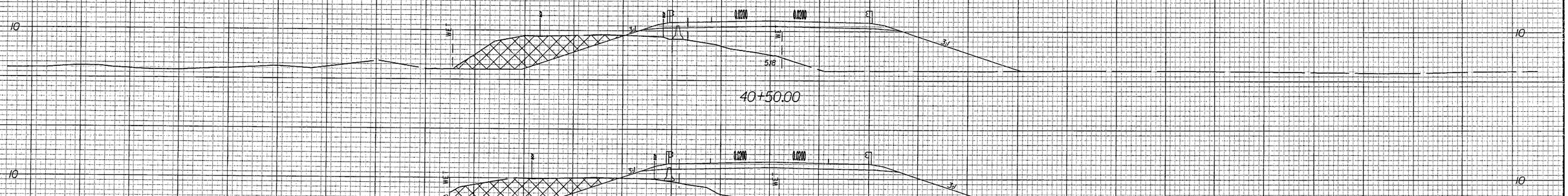

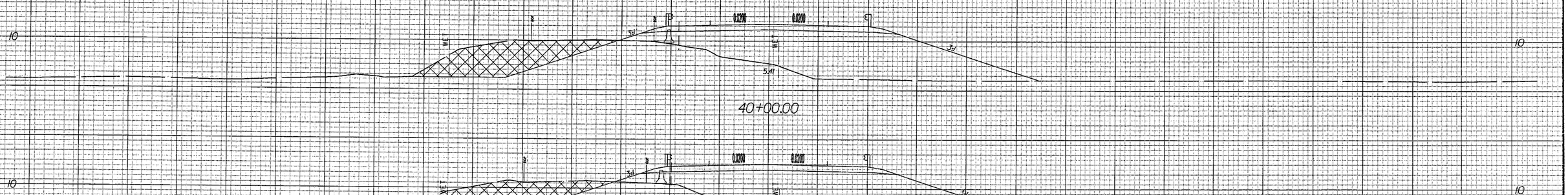

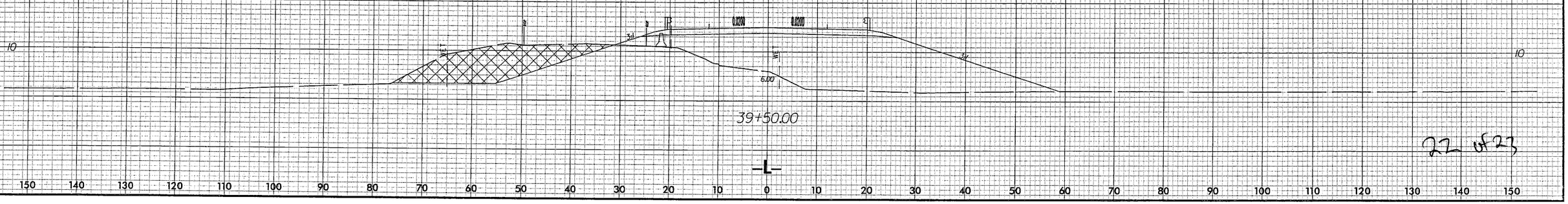

22 of 23

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4223	X-10

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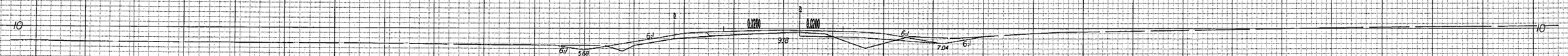
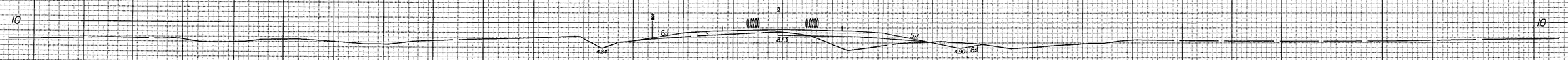


46+00.00

45+50.00



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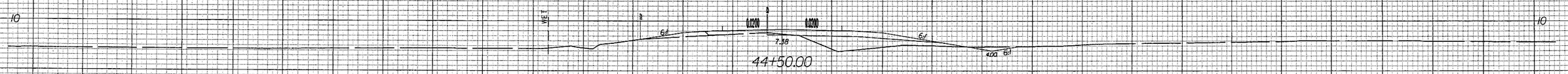
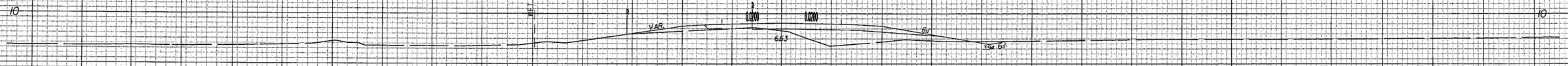
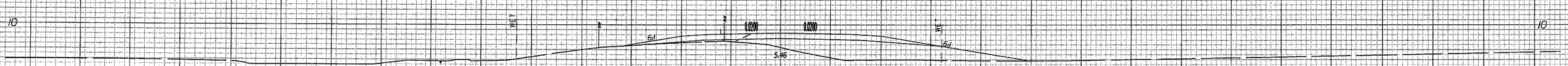


44+50.00



44+00.00

43+50.00



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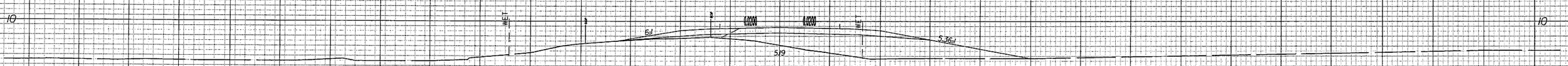


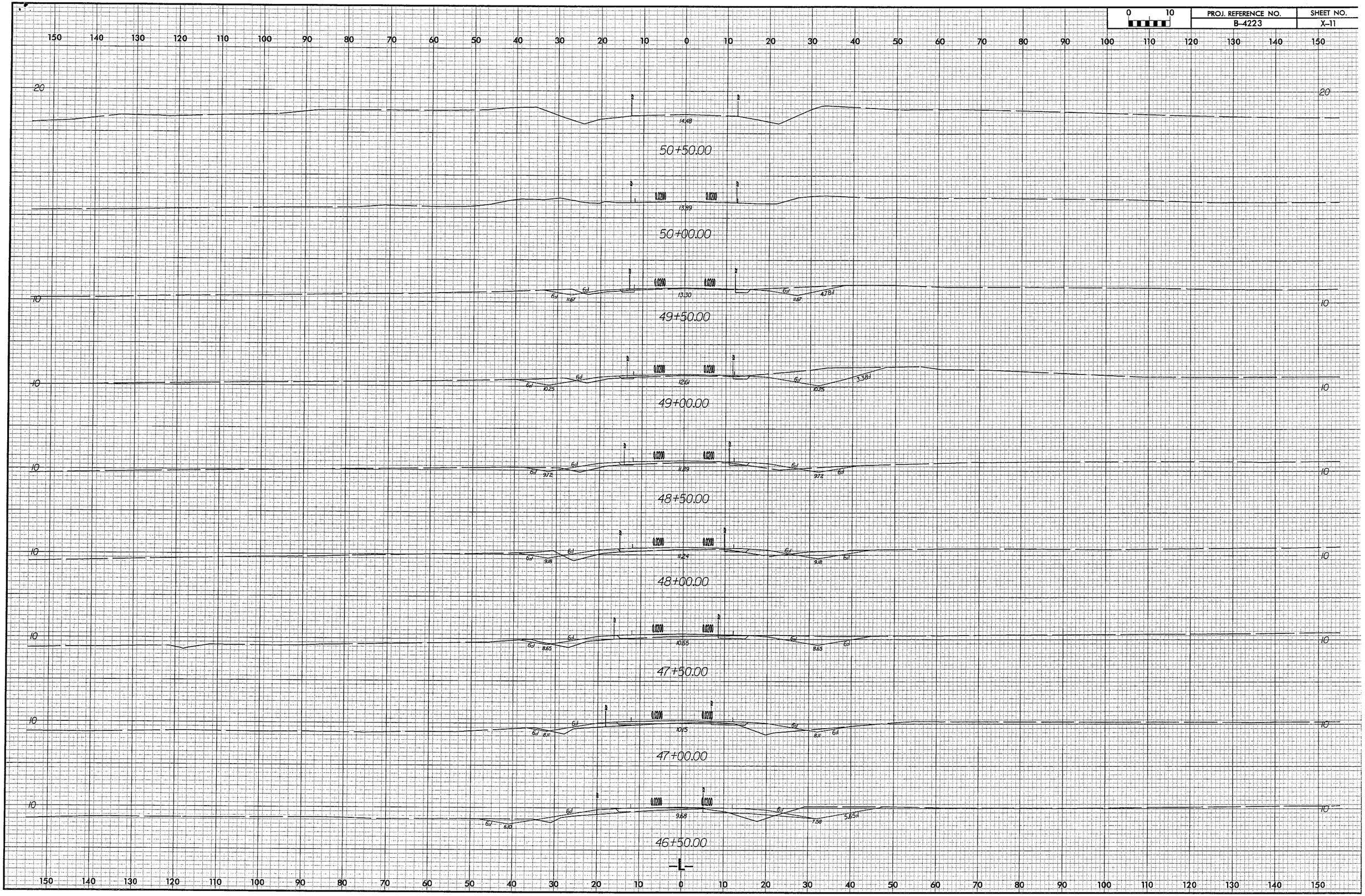
42+50.00

23 of 23

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4223	X-11

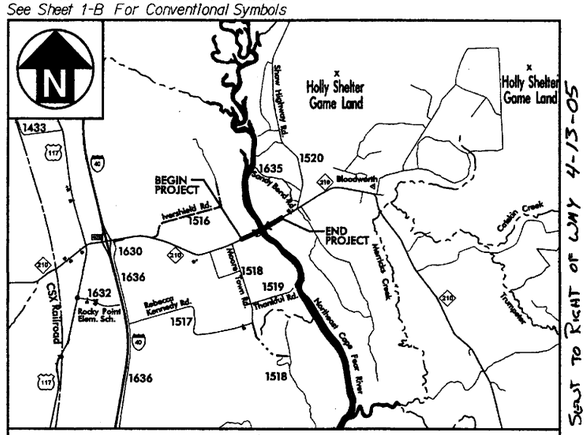


09/08/09

TIP PROJECT: B-4223

CONTRACT:

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



SEAT TO RIGHT OF LWY 4-13-05

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PENDER COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4223	1	

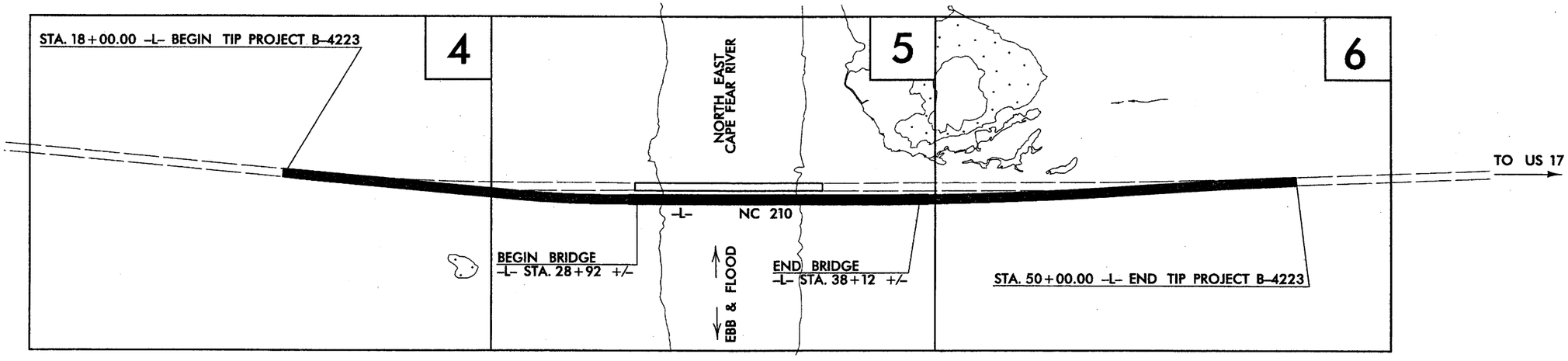
WBS NO.	F. A. PROJ. NO.	DESCRIPTION
33567.1.1	BRSTP-0210(4)	P.E.
33567.2.1	BRSTP-0210(4)	R.O.W., UTIL.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: BRIDGE NO. 21 ON NC 210 OVER NORTHEAST CAPE FEAR RIVER

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

NC GRID NAD 83



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 PREFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2006 = 4,100
ADT 2026 = 7,600
DHV = 14 %
D = 65 %
T = 10 % *
V = 60 MPH
* TTST 4% DUAL 6%
FUNC CLASS = MAJOR RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4223	=	0.432 MILES
LENGTH STRUCTURE TIP PROJECT B-4223	=	0.174 MILES
TOTAL LENGTH STATE TIP PROJECT B-4223	=	0.606 MILES

Prepared In the Office of:
MULKEY ENGINEERS & CONSULTANTS
FOR THE NORTH CAROLINA DEPT. OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 15, 2005

LETTING DATE: APRIL 18, 2006

TIM JORDAN, PE
MULKEY E & C
PROJECT MANAGER

RICK MOORE, PE
MULKEY E & C
HYDRAULICS ENGINEER

NCDOT CONTACT: CATHY HOUSER, PE

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

04/05/2005 03:00:20 PM
n:\Roadway\Proj\b4223_sy_tabular

MULKEY
ENGINEERS & CONSULTANTS
PO Box 68127
Raleigh, NC 27694
(919) 881-1100
(919) 881-1916 (FAX)
www.mulkeyinc.com

PROJECT REFERENCE NO.	SHEET NO.
B-4223	1-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing High Quality Wetland Boundary (HQ WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

- Standard Guage (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Wheel Chair Ramp (WCR)
- Curb Cut for Future Wheel Chair Ramp (CCFR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equaility Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole (HH)
- H-Frame Pole
- Recorded U/G Power Line (P)
- Designated U/G Power Line (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Booth
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- Recorded U/G Telephone Cable (T)
- Designated U/G Telephone Cable (S.U.E.*) (T)
- Recorded U/G Telephone Conduit (TC)
- Designated U/G Telephone Conduit (S.U.E.*) (TC)
- Recorded U/G Fiber Optics Cable (T FO)
- Designated U/G Fiber Optics Cable (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line (W)
- Designated U/G Water Line (S.U.E.*) (W)
- Above Ground Water Line (A/G Water)

TV:

- TV Satellite Dish
- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- Recorded U/G TV Cable (TV)
- Designated U/G TV Cable (S.U.E.*) (TV)
- Recorded U/G Fiber Optic Cable (TV FO)
- Designated U/G Fiber Optic Cable (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line (G)
- Designated U/G Gas Line (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4223	1-C
Location and Surveys	

SURVEY CONTROL SHEET

NCDOT GPS STATION "B4223-4"
LOCALIZED PROJECT COORDINATES
N = 255,780.022
E = 2,354,029.385

NCDOT GPS STATION "B4223-5"
LOCALIZED PROJECT COORDINATES
N = 256,349.022
E = 2,354,980.547

NCDOT BASELINE STATION "BL-6"
LOCALIZED PROJECT COORDINATES
N = 253,448.755
E = 2,349,619.885

NCDOT GPS STATION "B4223-3"
LOCALIZED PROJECT COORDINATES
N = 253,268.146
E = 2,349,202.084

NCDOT BASELINE STATION "BL-7"
LOCALIZED PROJECT COORDINATES
N = 253,629.133
E = 2,350,036.125

NCDOT BASELINE STATION "BL-8"
LOCALIZED PROJECT COORDINATES
N = 253,830.485
E = 2,350,497.009

NCDOT BASELINE STATION "BL-9"
LOCALIZED PROJECT COORDINATES
N = 254,004.636
E = 2,350,846.599

NCDOT BASELINE STATION "BL-10"
LOCALIZED PROJECT COORDINATES
N = 254,209.414
E = 2,351,223.934

NCDOT BASELINE STATION "BL-11"
LOCALIZED PROJECT COORDINATES
N = 254,514.976
E = 2,351,778.219

NCDOT BASELINE STATION "BL-12"
LOCALIZED PROJECT COORDINATES
N = 254,757.220
E = 2,352,213.813

NCDOT BASELINE STATION "BL-13"
LOCALIZED PROJECT COORDINATES
N = 255,019.790
E = 2,352,687.924

NCDOT BASELINE STATION "BL-14"
LOCALIZED PROJECT COORDINATES
N = 255,343.729
E = 2,353,233.435

NCDOT BASELINE STATION "BL-15"
LOCALIZED PROJECT COORDINATES
N = 255,606.501
E = 2,353,673.903

BM 1

BM 2

NORTH EAST CAPE FEAR RIVER

BRIDGE NO. 21

EBB & FLOOD

N 66° 28' 51.8" E

N 61° 12' 33.1" E

N 57° 29' 43.1" E

N 59° 04' 43.5" E

-L- POT STA. 10+00.00
LOCALIZED PROJECT COORDINATES
N = 253,383.7032
E = 2,349,516.6025

-L- POT STA. 18+00.00
BEGIN STATE PROJECT 33567.1.1
LOCALIZED PROJECT COORDINATES
N = 253,702.9449
E = 2,350,250.1451

-L- PC STA. 25+31.93
LOCALIZED PROJECT COORDINATES
N = 253,995.0218
E = 2,350,921.2694

-L- PT STA. 28+44.77
LOCALIZED PROJECT COORDINATES
N = 254,132.8723
E = 2,351,201.9767

-L- PC STA. 36+52.79
LOCALIZED PROJECT COORDINATES
N = 254,522.0262
E = 2,351,910.1141

-L- PT STA. 44+30.62
LOCALIZED PROJECT COORDINATES
N = 254,918.4658
E = 2,352,579.1835

-L- PC STA. 46+53.76
LOCALIZED PROJECT COORDINATES
N = 255,038.3716
E = 2,352,767.3639

-L- PT STA. 49+85.40
LOCALIZED PROJECT COORDINATES
N = 255,212.6951
E = 2,353,049.4747

-L- POT STA. 50+00.00
END STATE PROJECT 33567.1.1
LOCALIZED PROJECT COORDINATES
N = 255,220.1999
E = 2,353,062.0037

-L- POT STA. 52+97.42
LOCALIZED PROJECT COORDINATES
N = 255,373.0310
E = 2,353,317.1510

CONTROL DATA

-BL-

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	GPS B4223-3	253268.1460	2349202.0840	11.37	OUTSIDE PROJECT LIMITS	
6	BL-6	253448.7350	2349619.8850	11.68	11+20.65	18.41 LT
7	BL-7	253629.1330	2350036.1250	11.27	15+74.30	17.72 LT
8	BL-8	253830.4850	2350497.0090	9.28	20+77.25	18.43 LT
9	BL-9	254004.6360	2350846.5990	11.37	24+67.30	38.61 LT
10	BL-10	254209.4140	2351223.9340	22.99	29+00.87	56.50 LT
11	BL-11	254514.9760	2351778.2190	22.63	35+33.80	57.34 LT
12	BL-12	254757.2200	2352213.8130	8.24	40+33.99	53.83 LT
13	BL-13	255019.7900	2352687.9240	6.82	45+76.78	27.02 LT
14	BL-14	255343.7290	2353233.4350	14.33	52+10.54	17.88 LT
15	BL-15	255606.5010	2353673.9030	12.68	OUTSIDE PROJECT LIMITS	

NCDOT GPS STATION "B4223-2"
LOCALIZED PROJECT COORDINATES
N = 252,133.472
E = 2,349,565.347

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-4223-3" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 253268.1461(ft) EASTING: 2349202.084(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999973219
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-4223-3" TO -L- STATION 18+00.00 IS N 67°28'06" E 1.13457 ft.
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BM1 ELEVATION = 7.54
N 254216 E 2350954
L STATION 26+57 187 LEFT
RAILROAD SPIKE SET IN 18" OAK

BM2 ELEVATION = 7.26
N 255286 E 2352658
L STATION 46+94 268 LEFT
RAILROAD SPIKE SET IN 15" GUM

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

FILE NAME: b4223_ls_control_050114.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬢ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTS NAD 8395 BY THE NCDOT LOCATION AND SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

6/2/9

04/06/2005 02:21:37 PM
n:\location\surveys\b4223_ls_ic_050114.dgn

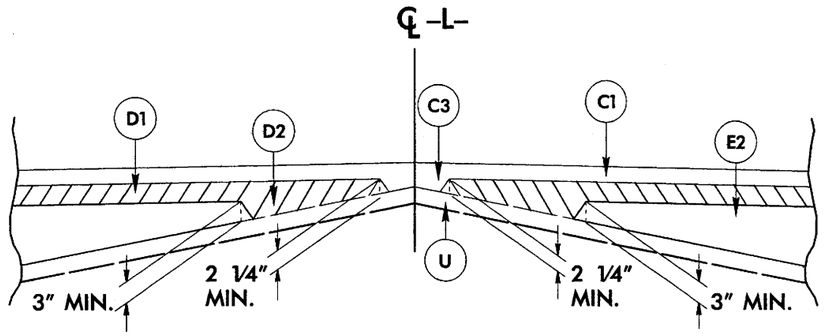
PROJECT REFERENCE NO.	SHEET NO.
B-4223	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

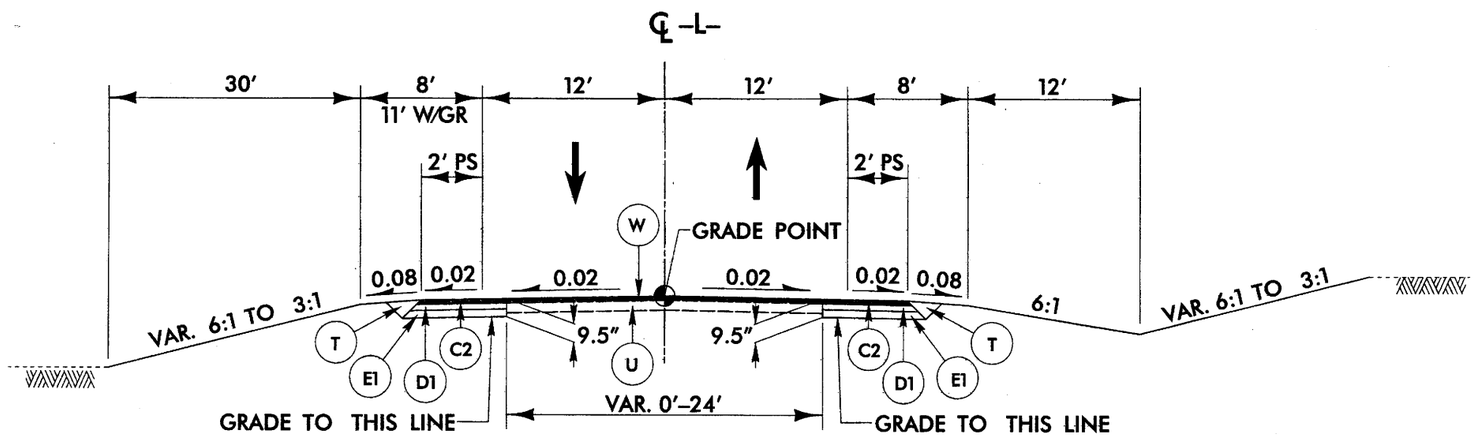
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.
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.
J1	6" AGGREGATE BASE COURSE
J2	8" AGGREGATE BASE COURSE
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE WEDGING DETAIL)

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



DETAIL SHOWING METHOD OF WEDGING

USE IN CONJUCTION WITH TYPICAL SECTION NO. 1



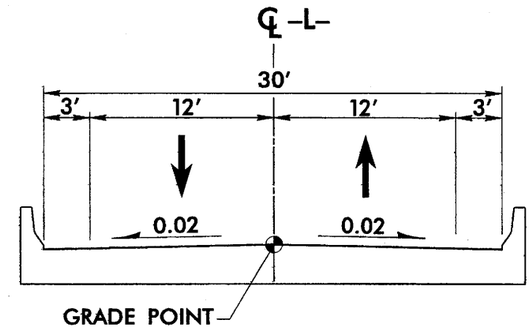
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
AT THE FOLLOWING LOCATIONS

TRANSITION FROM EXISTING TO T.S. NO. 1 FROM
–L– STA. 18+00.00 TO STA. 18+50.00

–L– STA. 18+50.00 TO STA. 22+75.00
–L– STA. 46+75.00 TO STA. 49+50.00

TRANSITION FROM T.S. NO. 1 TO EXISTING FROM
–L– STA. 49+50.00 TO STA. 50+00.00



DETAIL OF BRIDGE

–L– STA 28+92 +/– TO STA 38+12 +/–

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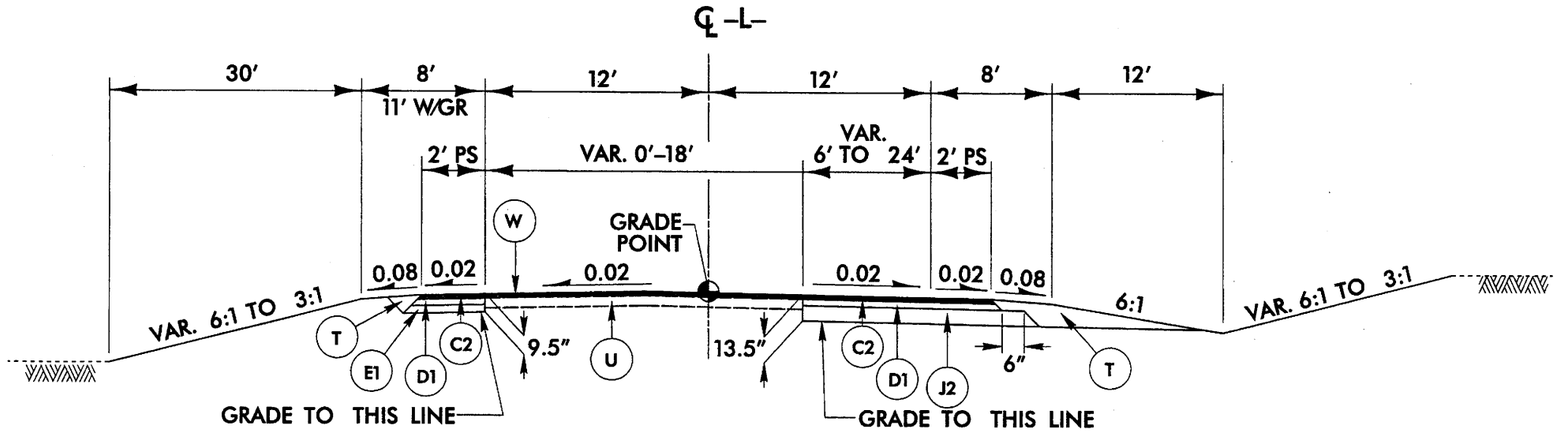
MULKEY
ENGINEERS & CONSULTANTS
P.O. Box 52127
Raleigh, NC 27612
(919) 851-1212
(919) 851-1212 (FAX)
WWW.MULKEYENG.COM

PROJECT REFERENCE NO.	SHEET NO.
B-4223	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

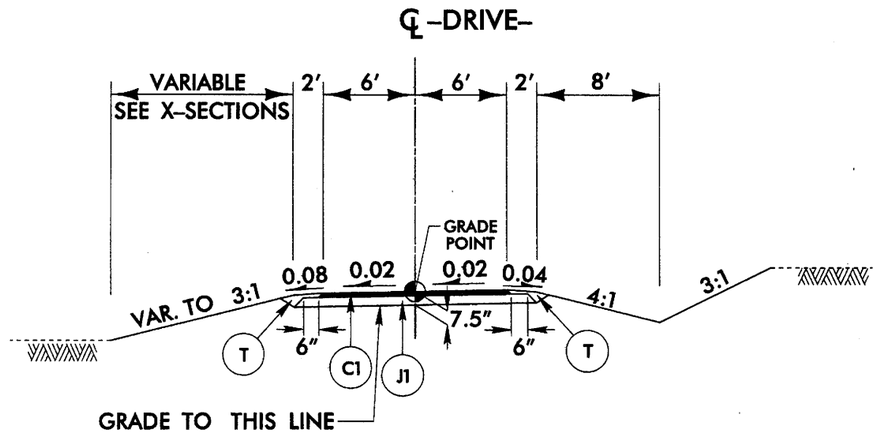
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
AT THE FOLLOWING LOCATIONS

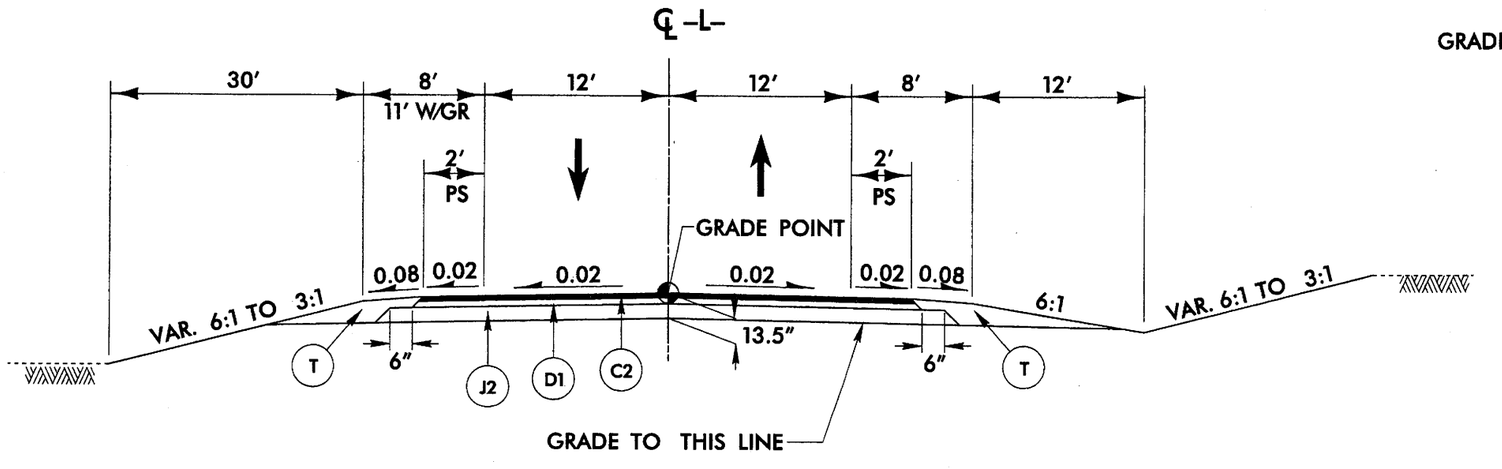
-L- STA. 22+75.00 TO STA. 25+25.00
-L- STA. 43+25.00 TO STA. 46+75.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS

-DRIVE- STA. 10+12.00 TO STA. 12+00.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS

-L- STA. 25+25.00 TO STA. 28+92.00 +/- (BEGIN BRIDGE)
-L- STA. 38+12.00 +/- (END BRIDGE) TO STA. 43+25.00

PAVEMENT SCHEDULE

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5B
C2	3 " ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5B
D1	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
E1	4 " ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
J1	6" AGGREATE BASE COURSE
J2	8" AGGREATE BASE COURSE
T	EARTH MATERIAL

NOTE: ALL PAVEMENT EDGE SLOPES ARE W UNLESS OTHERWISE SHOWN.

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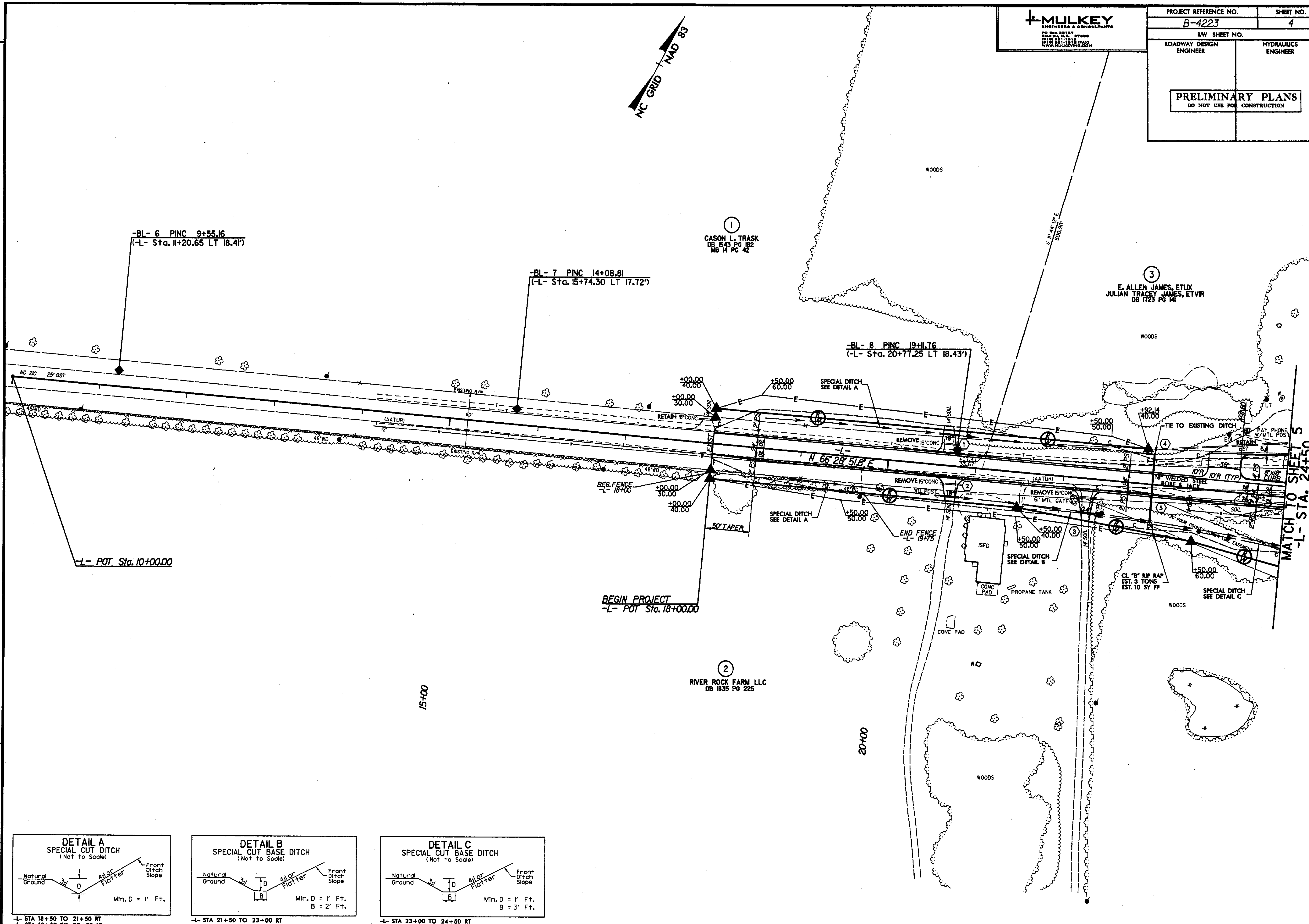
PROJECT REFERENCE NO.	SHEET NO.
B-4223	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

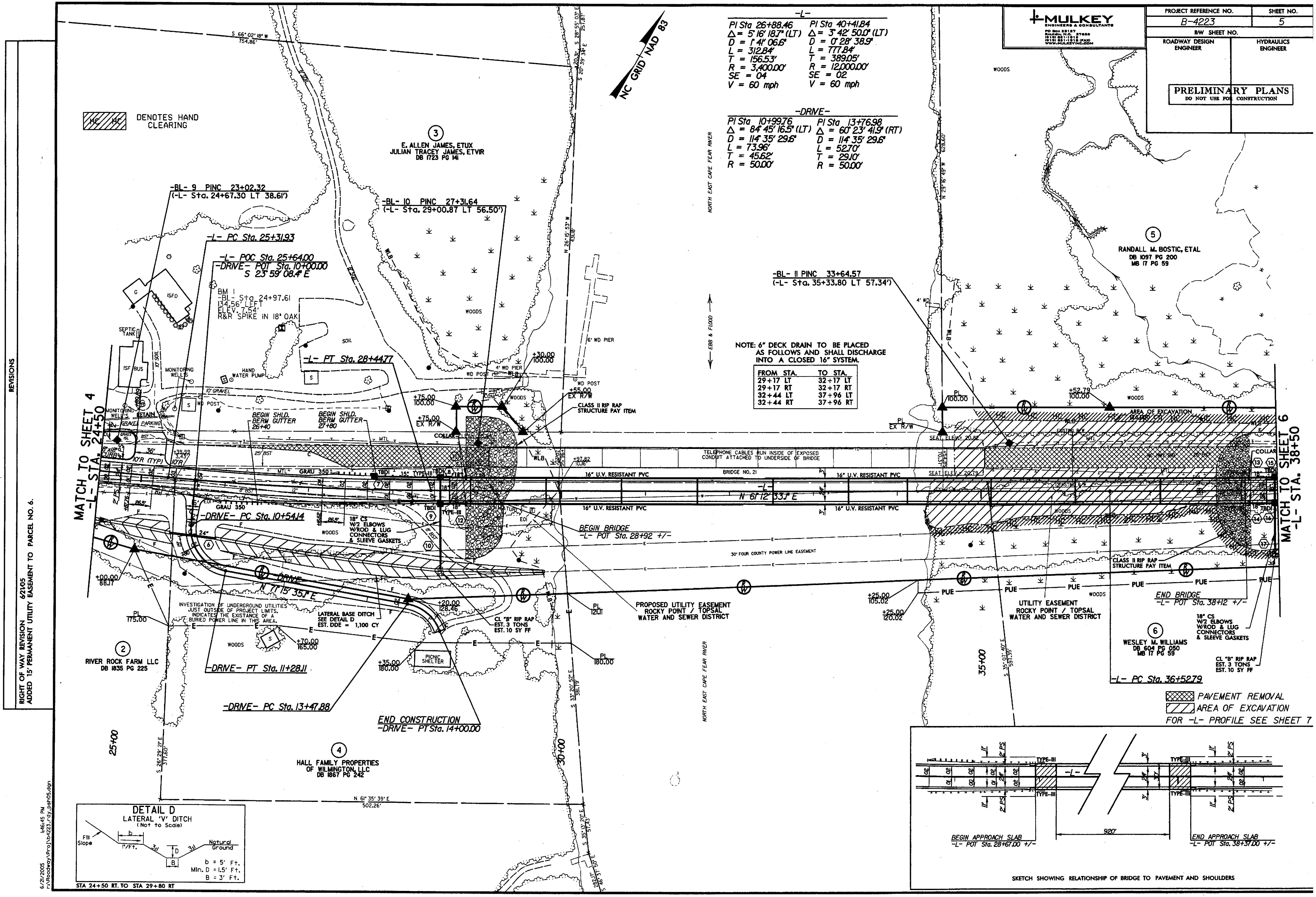
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MULKEY ENGINEERS & CONSULTANTS

REVISIONS



FOR -L- PROFILE SEE SHEET 7


PROJECT REFERENCE NO. B-4223
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
MULKEY ENGINEERS & CONSULTANTS
NC GRID NAD 83
-L-
PI Sta 26+88.46
Δ = 5° 16' 18.7" (LT)
D = 1° 41' 06.6"
L = 312.84'
T = 156.53'
R = 3,400.00'
SE = .04
V = 60 mph
PI Sta 40+41.84
Δ = 3° 42' 50.0" (LT)
D = 0° 28' 38.9"
L = 777.84'
T = 389.05'
R = 12,000.00'
SE = .02
V = 60 mph
-DRIVE-
PI Sta 10+99.76
Δ = 84° 45' 16.5" (LT)
D = 114° 35' 29.6"
L = 73.96'
T = 45.62'
R = 50.00'
PI Sta 13+76.98
Δ = 60° 23' 41.9" (RT)
D = 114° 35' 29.6"
L = 52.70'
T = 29.10'
R = 50.00'
DENOTES HAND CLEARING
NOTE: 6" DECK DRAIN TO BE PLACED AS FOLLOWS AND SHALL DISCHARGE INTO A CLOSED 16" SYSTEM.
FROM STA. | TO STA.
29+17 LT | 32+17 LT
29+17 RT | 32+17 RT
32+44 LT | 37+96 LT
32+44 RT | 37+96 RT
E. ALLEN JAMES, ETUX
JULIAN TRACEY JAMES, ETVIR
DB 1723 PG 141
RANDALL M. BOSTIC, ETAL
DB 1097 PG 200
MB 17 PG 59
RIVER ROCK FARM LLC
DB 1835 PG 225
HALL FAMILY PROPERTIES OF WILMINGTON, LLC
DB 1867 PG 242
WESLEY M. WILLIAMS
DB 604 PG 050
MB 17 PG 59
-BL- 9 PINC 23+02.32
(-L- Sta. 24+67.30 LT 38.61')
-BL- 10 PINC 27+31.64
(-L- Sta. 29+00.87 LT 56.50')
-BL- 11 PINC 33+64.57
(-L- Sta. 35+33.80 LT 57.34')
-L- PC Sta. 25+31.93
-L- POC Sta. 25+64.00
-DRIVE- POT Sta. 10+00.00
S 23° 59' 08.4" E
BM 1
-BL- Sta 24+97.61
134.56' LEFT
ELEV. 7.54'
R&R SPIKE IN 18" OAK
-L- PT Sta. 28+44.77
MATCH TO SHEET 4
-L- STA. 24+50
MATCH TO SHEET 6
-L- STA. 38+50
NORTH EAST CAPE FEAR RIVER
EBB & FLOOD
BRIDGE NO. 21
N 61° 12' 33.1" E
TELEPHONE CABLES RUN INSIDE OF EXPOSED CONDUIT ATTACHED TO UNDERSIDE OF BRIDGE
16" U.V. RESISTANT PVC
BEGIN BRIDGE
-L- POT Sta. 28+92 +/-
END BRIDGE
-L- POT Sta. 38+12 +/-
-DRIVE- PC Sta. 10+54.14
-DRIVE- PT Sta. 11+28.11
-DRIVE- PC Sta. 13+47.88
END CONSTRUCTION
-DRIVE- PT Sta. 14+00.00
N 77° 15' 35.1" E
30' FOUR COUNTY POWER LINE EASEMENT
PROPOSED UTILITY EASEMENT
ROCKY POINT / TOPSAL WATER AND SEWER DISTRICT
UTILITY EASEMENT
ROCKY POINT / TOPSAL WATER AND SEWER DISTRICT
CLASS II RIP RAP STRUCTURE PAY ITEM
CL "B" RIP RAP
EST. 3 TONS
EST. 10 SY FF
18" CS W/2 ELBOWS W/ROD & LUG CONNECTORS & SLEEVE GASKETS
LATERAL BASE DITCH
SEE DETAIL D
EST. DDE = 1,100 CY
INVESTIGATION OF UNDERGROUND UTILITIES JUST OUTSIDE OF PROJECT LIMITS, INDICATES THE EXISTANCE OF A BURIED POWER LINE IN THIS AREA.
BEGIN SHLD. BERM GUTTER 26+40
BEGIN SHLD. BERM GUTTER 27+80
-L- PC Sta. 36+52.79
PAVEMENT REMOVAL
AREA OF EXCAVATION
FOR -L- PROFILE SEE SHEET 7
DETAIL D
LATERAL 'V' DITCH
(Not to Scale)
b = 5' Ft.
Min. D = 1.5' Ft.
B = 3' Ft.
STA 24+50 RT. TO STA 29+80 RT
BEGIN APPROACH SLAB
-L- POT Sta. 28+67.00 +/-
END APPROACH SLAB
-L- POT Sta. 38+37.00 +/-
SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS
REVISIONS
RIGHT OF WAY REVISION 6/21/05
ADDED 15' PERMANENT UTILITY EASEMENT TO PARCEL NO. 6.
6/21/2005

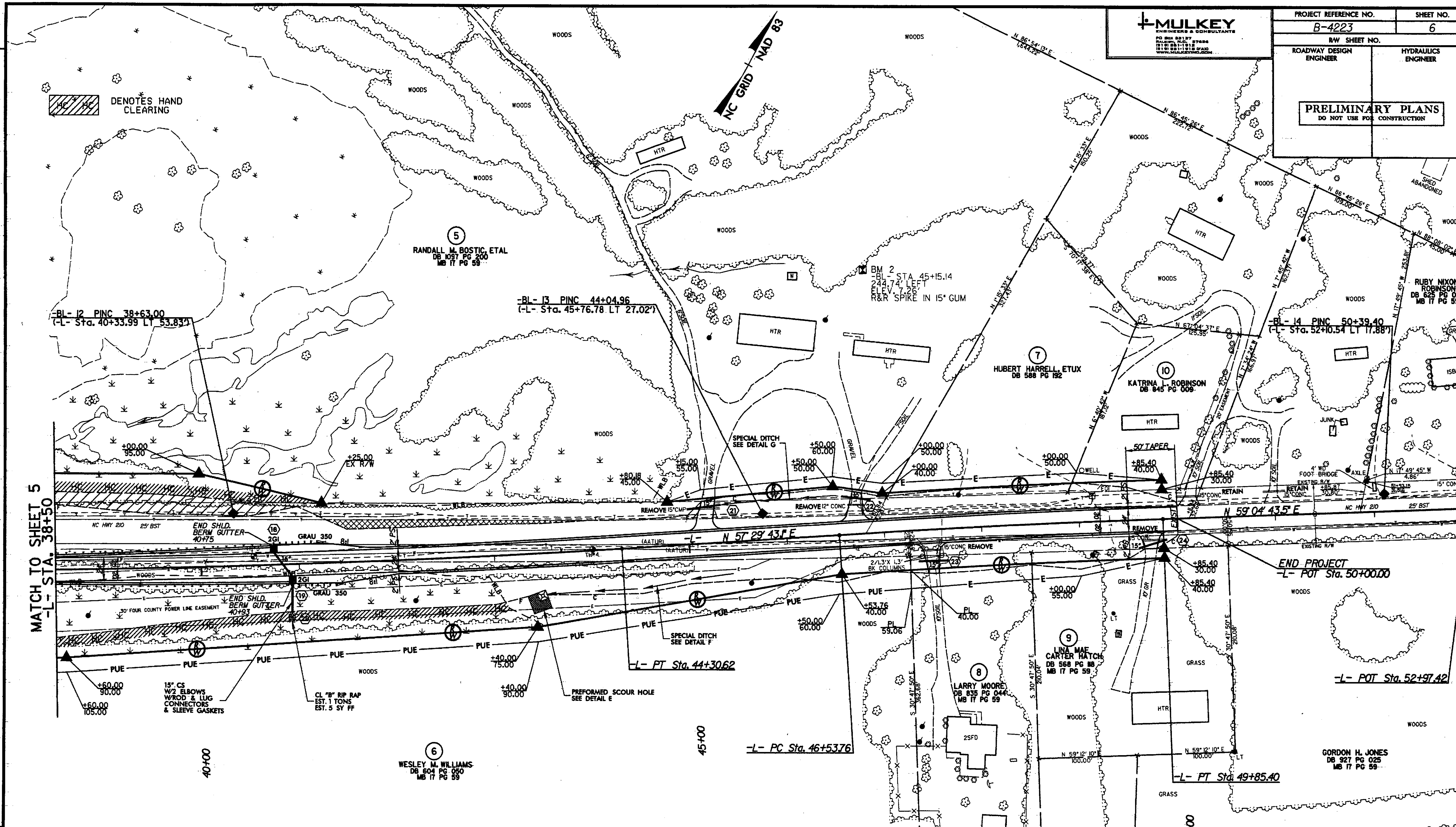
MULKEY ENGINEERS & CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
B-4223	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

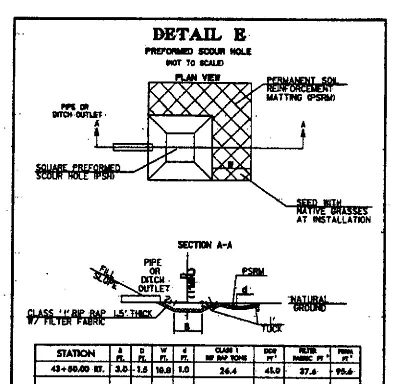
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

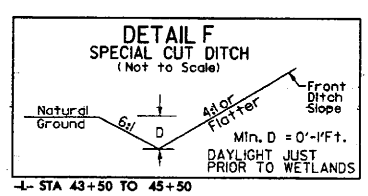
REVISIONS

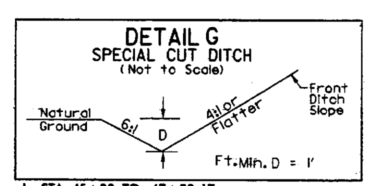
RIGHT OF WAY REVISION 6/21/05
ADDED 15' PERMANENT UTILITY EASEMENT TO PARCEL NO. 6.



DENOTES HAND CLEARING
NC GRID NAD 83
MATCH TO SHEET 5
-L- STA. 38+50
RANDALL M. BOSTIC, ETAL
DB 1097 PG 200
MB 17 PG 59
-BL- 12 PINC 38+63.00
(-L- Sta. 40+33.99 LT 53.83')
-BL- 13 PINC 44+04.96
(-L- Sta. 45+76.78 LT 27.02')
BM 2
-BL- STA 45+15.14
244.74' LEFT
ELEV. 7.26'
R&R SPIKE IN 15" GUM
HUBERT HARRELL, ETUX
DB 588 PG 192
KATRINA L. ROBINSON
DB 845 PG 009
-BL- 14 PINC 50+39.40
(-L- Sta. 52+10.54 LT 17.88')
RUBY NIXON ROBINSON
DB 625 PG 075
MB 17 PG 59
SPECIAL DITCH SEE DETAIL G
N 57° 29' 43.1" E
N 59° 04' 43.5" E
END PROJECT
-L- POT Sta. 50+00.00
NC HWY 210
WESLEY M. WILLIAMS
DB 604 PG 050
MB 17 PG 59
-L- PT Sta. 44+30.62
-L- PC Sta. 46+53.76
SPECIAL DITCH SEE DETAIL F
PREFORMED SCOUR HOLE SEE DETAIL E
CL "B" RIP RAP
EST. 1 TONS
EST. 5 SY FF
15" CS W/2 ELBOWS W/ROD & LUG CONNECTORS & SLEEVE GASKETS
LARRY MOORE
DB 835 PG 044
MB 17 PG 59
LINA MAE CARTER HATCH
DB 568 PG 88
MB 17 PG 59
-L- PT Sta. 49+85.40
-L- POT Sta. 52+97.42
GORDON H. JONES
DB 927 PG 025
MB 17 PG 59
WOODS
GRASS







-L-

PI Sta 40+41.84	PI Sta 48+19.59
Δ = 3° 42' 50.0" (LT)	Δ = 1° 35' 00.4" (RT)
D = 0° 28' 38.9"	D = 0° 28' 38.9"
L = 777.84'	L = 331.64'
T = 389.05'	T = 165.83'
R = 12,000.00'	R = 12,000.00'
SE = .02	SE = .02
V = 60 mph	V = 60 mph

PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHEET 8

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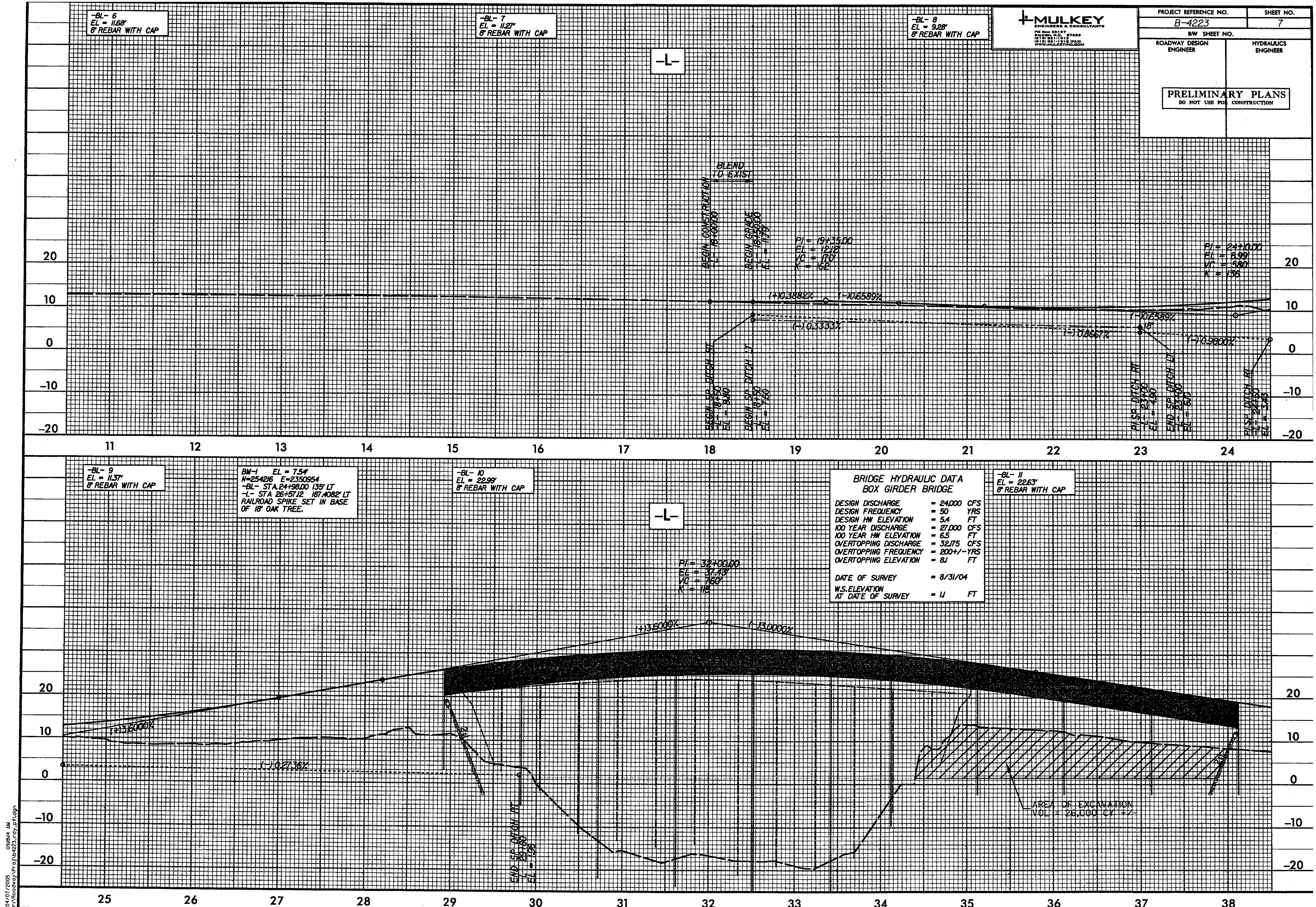

PROJECT REFERENCE NO.
B-4223
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
MULKEY
ENGINEERS & CONSULTANTS
-BL- 6
EL = 11.68'
8" REBAR WITH CAP
-BL- 7
EL = 11.27'
8" REBAR WITH CAP
-BL- 8
EL = 9.28'
8" REBAR WITH CAP
-L-
BLEND TO EXIST.
BEGIN CONSTRUCTION -L- 18+00.00
BEGIN GRADE -L- 18+50.00 EL = 11.29
PI = 19+35.00
EL = 12.12
VC = 170'
K = 162
PI = 24+10.00
EL = 8.99
VC = 580'
K = 136
(+)0.3882%
(-)0.6589%
(-)0.3333%
(-)0.8667%
(-)0.6589%
(-)0.9800%
BEGIN SP. DITCH RT
BEGIN SP. DITCH LT
END SP. DITCH LT
PI SP. DITCH RT
11
12
13
14
15
16
17
18
19
20
21
22
23
24
-BL- 9
EL = 11.37'
8" REBAR WITH CAP
BM-1 EL = 7.54'
N=254216 E=2350954
-BL- STA 24+98.00 135' LT
-L- STA 26+57.12 187.4082' LT
RAILROAD SPIKE SET IN BASE OF 18" OAK TREE.
-BL- 10
EL = 22.99'
8" REBAR WITH CAP
BRIDGE HYDRAULIC DATA
BOX GIRDER BRIDGE
DESIGN DISCHARGE = 24,000 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 5.4 FT
100 YEAR DISCHARGE = 27,000 CFS
100 YEAR HW ELEVATION = 6.5 FT
OVERTOPPING DISCHARGE = 32,175 CFS
OVERTOPPING FREQUENCY = 200+/-YRS
OVERTOPPING ELEVATION = 8.1 FT
DATE OF SURVEY = 8/31/04
W.S.ELEVATION AT DATE OF SURVEY = 1.1 FT
-BL- 11
EL = 22.63'
8" REBAR WITH CAP
PI = 32+00.00
EL = 37.43'
VC = 760'
K = 115
(+)3.6000%
(-)3.0000%
(+)3.6000%
(-)0.2736%
END SP. DITCH RT
AREA OF EXCAVATION
VOL. = 28,000 CY +/-
25
26
27
28
29
30
31
32
33
34
35
36
37
38
20
10
0
-10
-20
04/07/2005
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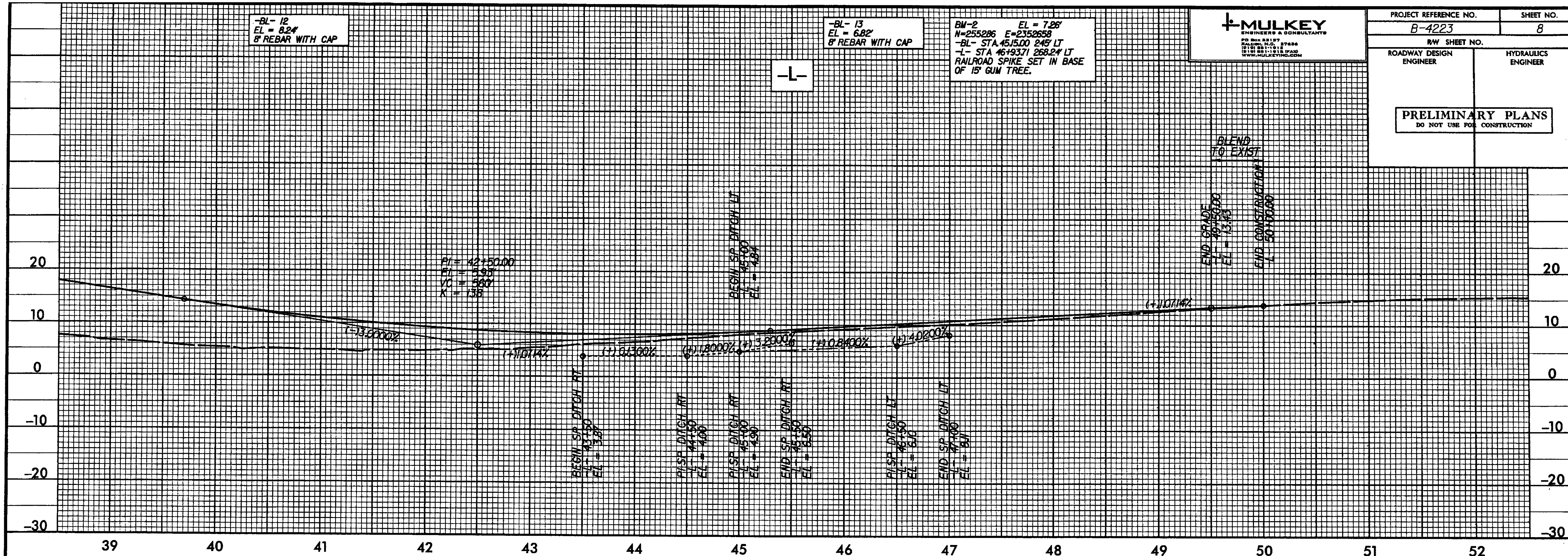
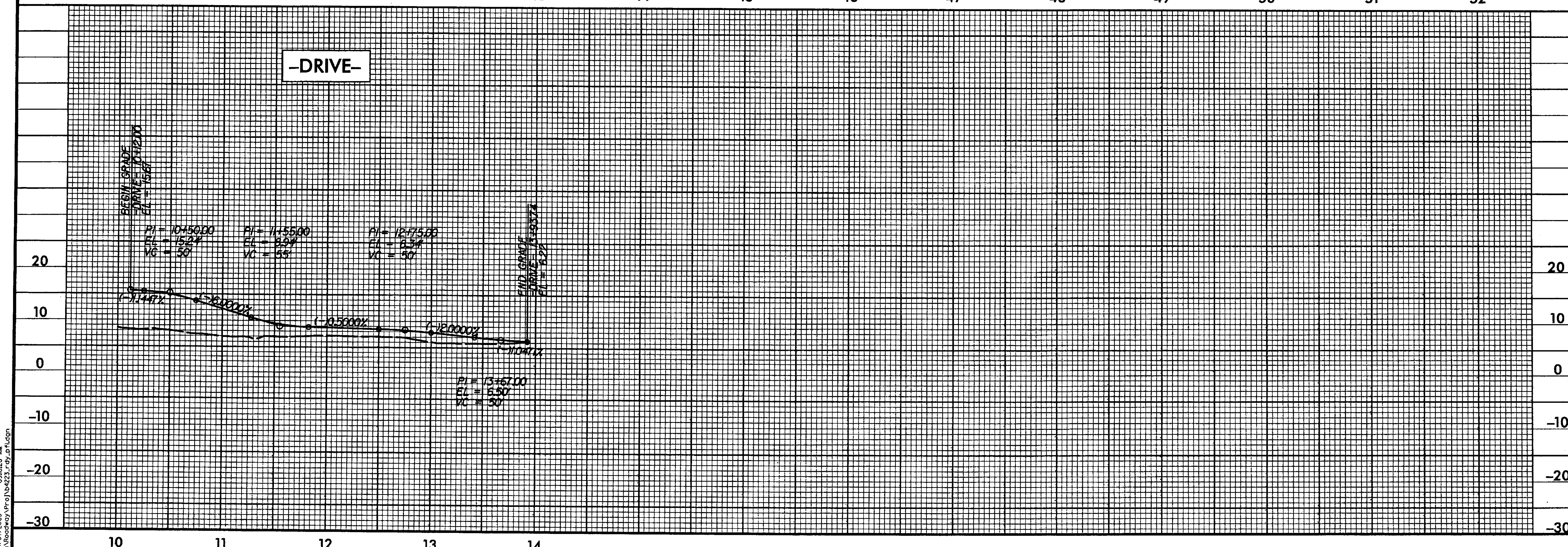
PROJECT REFERENCE NO.	SHEET NO.
B-4223	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

MULKEY ENGINEERS & CONSULTANTS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





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8/23/9

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	B-4223	X-2

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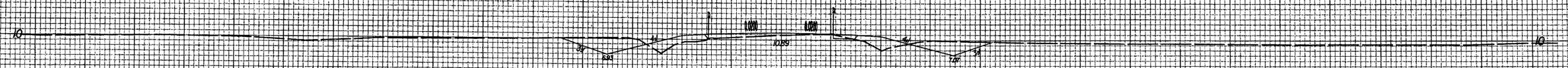
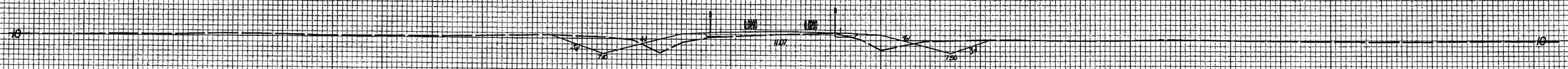


20+50.00



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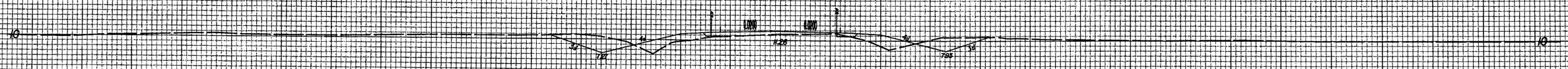
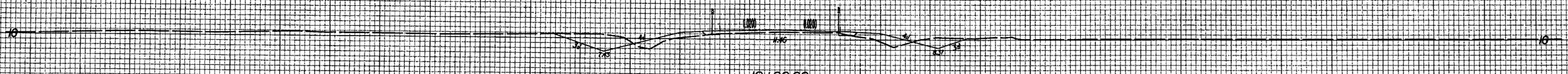
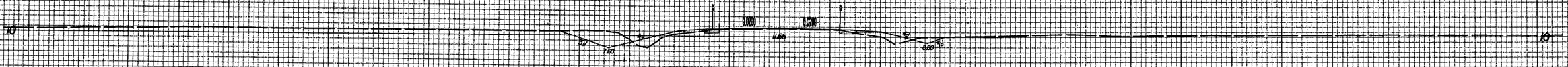


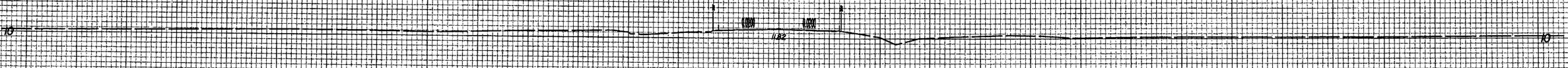
19+50.00



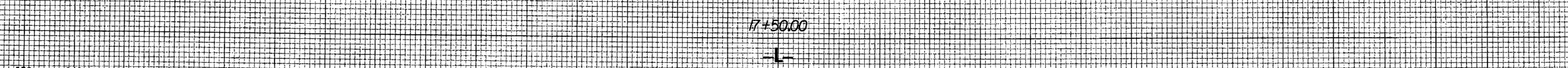
19+00.00



18+50.00



18+00.00



17+50.00

—L—

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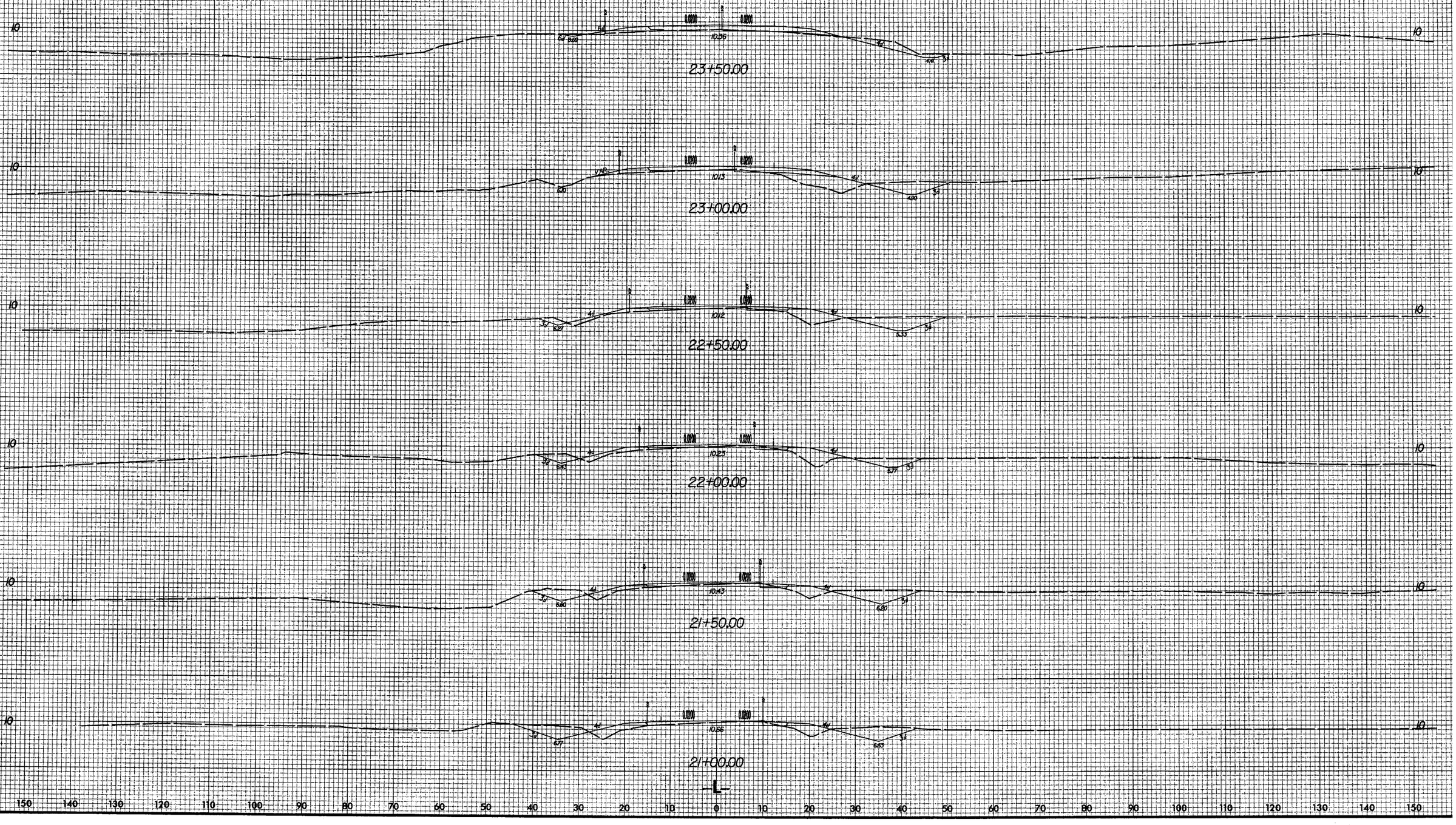

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8/23/99

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	B-4223	X-4

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20
10

26+50.00

26+00.00

25+50.00

25+00.00

24+50.00

24+00.00

-L-

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DGN02 PW

8/23/99

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4223	X-5

BEGIN BRIDGE -L- STA. 28+92.00

28+50.00

28+00.00

27+50.00

27+00.00

-L-

4/7/2005
B4342 JM
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8/23/99

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4223	X-6

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30
20
10

LANE LANE

RT

34+50.00

30
20
10

0

-6.89

34+00.00

30
20
10
0
10

-7.02

33+50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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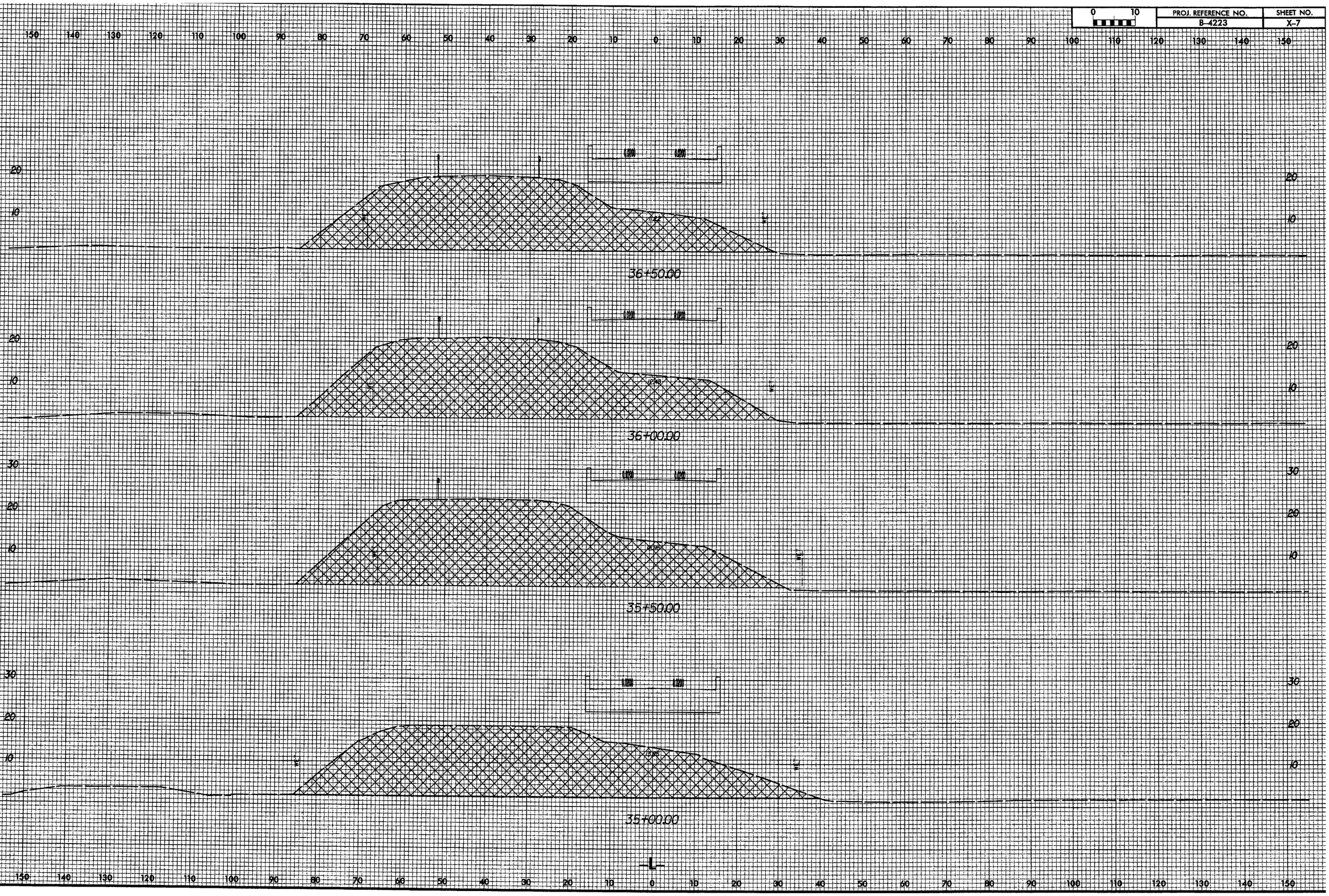
	B-4223	X-7



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8/23/95

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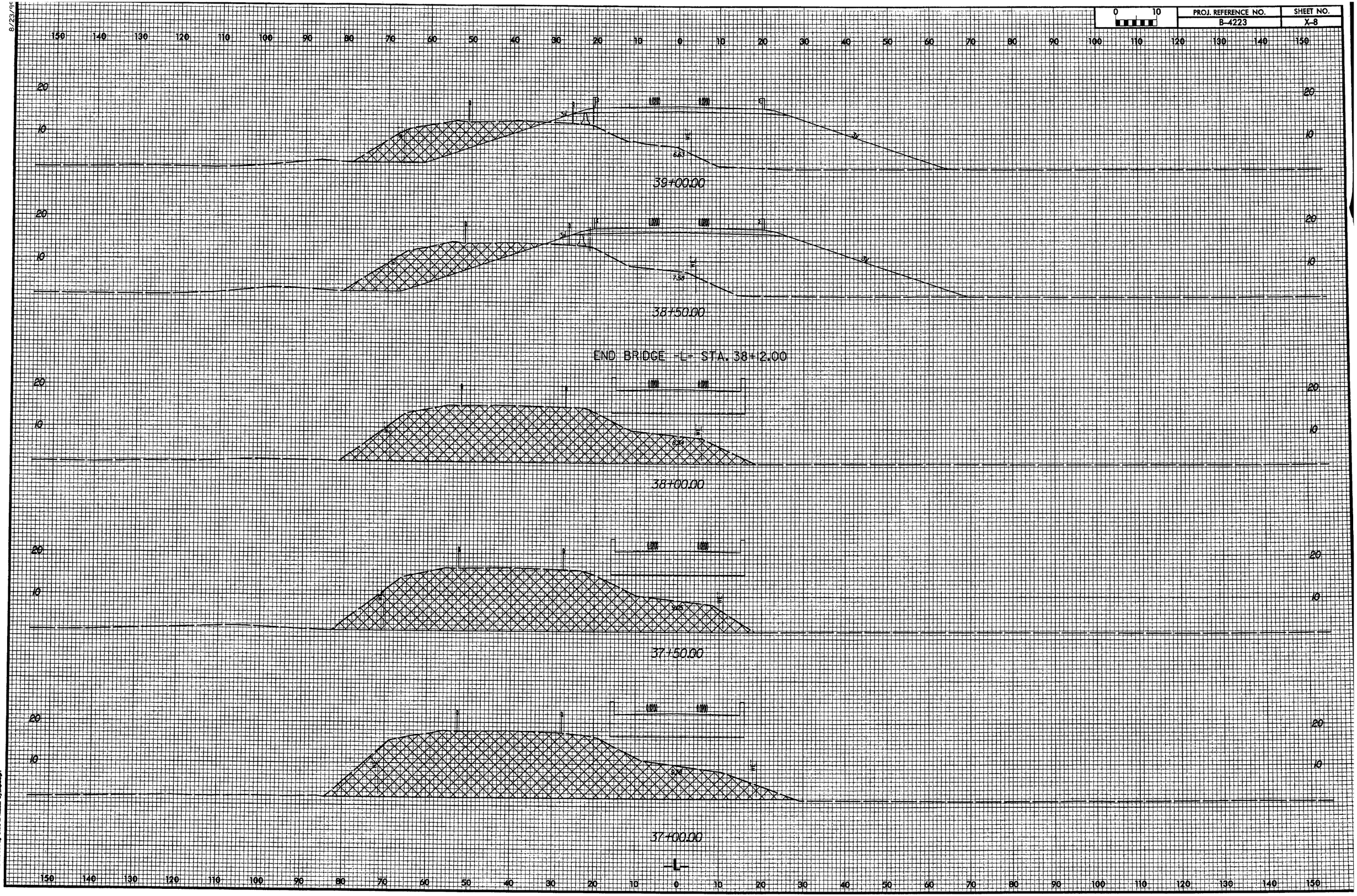
	B-4223	X-8



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	B-4223	X-9

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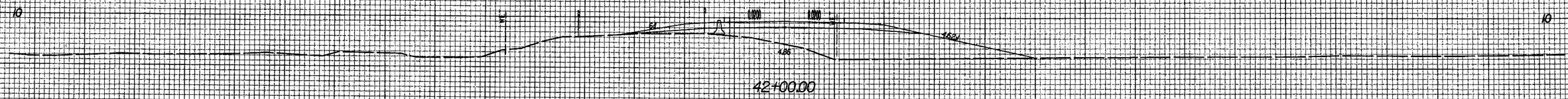

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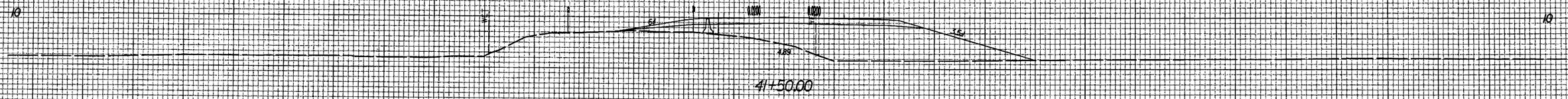

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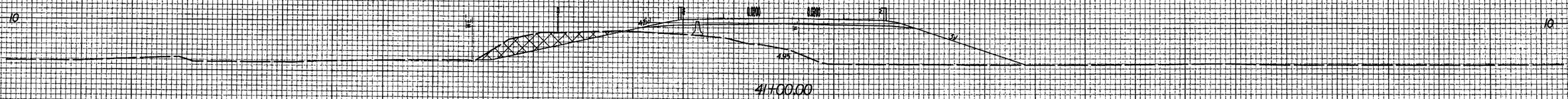

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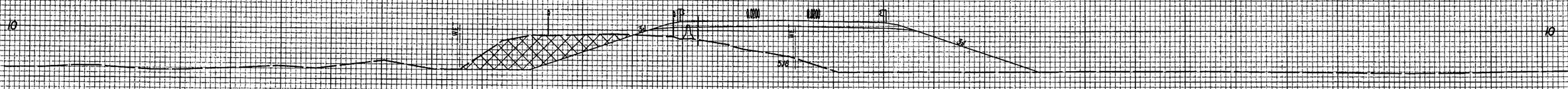

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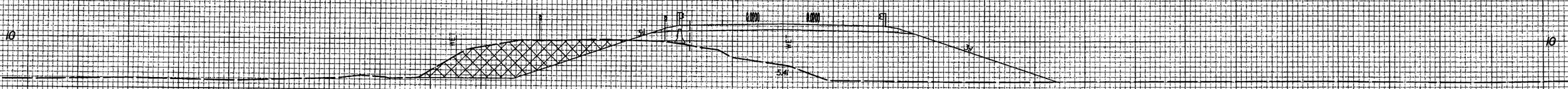

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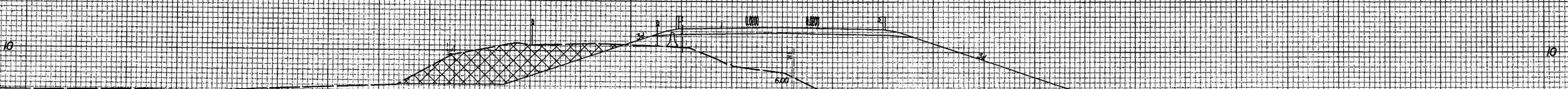

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44+50.00

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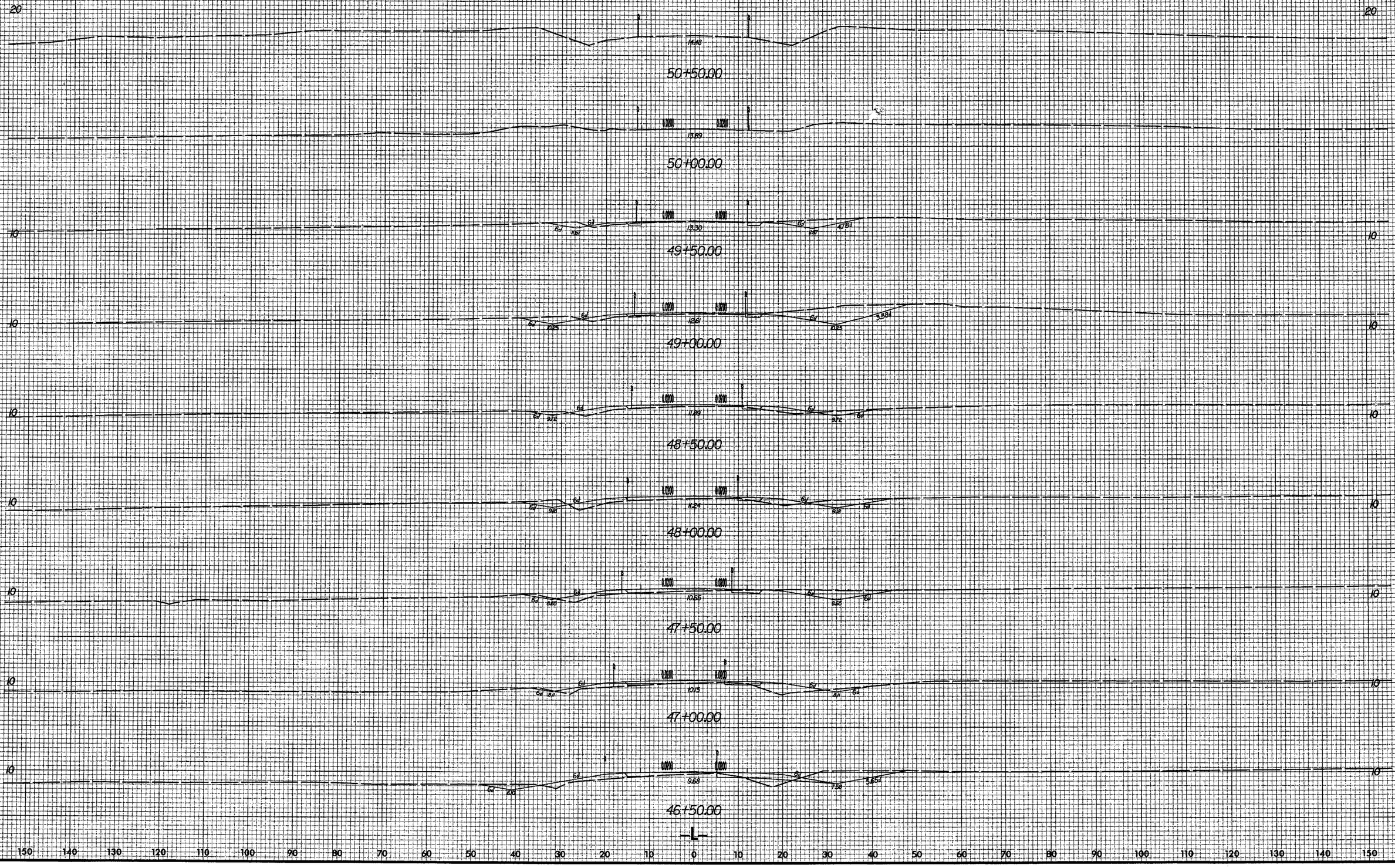

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