STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

April 27, 2007

U. S. Army Corps of Engineers
Regulatory Field Office
6508 Falls of the Neuse Road
Suite 120
Raleigh, NC 27615

ATTN: Mr. John Thomas
NCDOT Coordinator

Subject: **Nationwide Permit 23 and 33 Application** for the proposed replacement of Bridge No. 416 over Beaverdam Creek on SR 2550 in Davidson County, Federal Aid Project No. BRSTP-2550(1), State Project No. 8.2604601, WBS Element: 33459.1.1.1, Division 9, TIP B-4103

Dear Sir:

Please find enclosed the Categorical Exclusion (CE) Document, pre-construction notification, permit drawings, and design plan sheets for the proposed project. The project involves replacing Bridge No. 416 (a 72-feet long structure) with a 33-inch box girder bridge at the same location. The new bridge will be 205-foot long and 39-feet wide with 33-inch long box girders. The new bridge will span Beaverdam Creek. The proposed bridge will consist of two 11-foot travel lanes and 7-foot shoulders. During construction, a one-lane two-way on-site temporary detour located south of the existing bridge will be utilized to maintain traffic. The detour will be 200-feet in length and will be 18-feet wide. The detour bridge will provide a 10-foot travel lane with 4-foot shoulders. The approach roadway will consist of one 10-foot lane with 4-foot shoulders.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Yadkin-Pee Dee River Basin, subbasin 03-07-08 with a Hydrologic Unit Code of 03040103. Beaverdam Creek has a Division of Water Quality (DWQ) stream index number of 12-134-(2) and is a large tributary to Badin Lake. A best usage classification of WS-IV CA has been assigned to Beaverdam Creek. There are wetlands in the project area. A Jurisdictional Determination (Action ID. 200620356) from the U.S. Army Corps of Engineers was given for the wetlands on January 23, 2006.

Permanent Impacts: Construction of the new bridge will require the use of two bents. One of the two bents will be constructed in the stream resulting in less than 0.01 acre of permanent stream impacts. The bent will be approximately 3.5 feet in width. No causeways or workbridges are needed to construct the proposed bents. Floating access to construct the bents is possible.

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501
WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
SUITE 240
RALEIGH NC 27604

Temporary Impacts: There will be less than 0.01 acre of temporary fill in Beaverdam Creek due to the construction of a temporary detour bridge. The proposed detour bridge is to be built on the south side of the existing structure. Construction of the temporary detour bridge will require the use of three bents. The bents will be approximately 1.0 feet in width. No causeways or workbridges are needed to construct the proposed bents.

Utility Impacts: There will be no sewer, water, electric or other utility impacts due to this bridge replacement project.

Bridge Demolition: Bridge No. 416 is pony truss bridge with one span at 72 feet in length and no guardrail protection on either end. The superstructure consists of a timber deck on a low pony truss. The substructure of the east concrete abutment has timber risers. The bridge will be removed without dropping any components into waters of the United States. NCDOT's Best Management Practices for Bridge Demolition and Removal will be followed.

Restoration Plan: Following construction of the bridge, all material used in the construction of the structure will be removed. The impact area associated with the bridge is expected to recover naturally, since the natural streambed and plant material will not be effected. NCDOT does not propose any additional planting in this area. Class I riprap and filter fabric will be used for bank stabilization. Pre-project elevations will be restored. NCDOT will restore the stream to its pre-project contours. Additionally, after the detour's purpose has been served the material used for installation of the temporary detour bridge will be removed and the areas will be restored to original contours.

Removal and Disposal Plan: The contractor will be required to submit a reclamation plan for the removal of and disposal of all material off-site at an upland location. The contractor will use excavation equipment for removal of any earthen material. Heavy–duty trucks, dozers, cranes and various other pieces of mechanical equipment necessary for construction of roadways and culverts will be used on site. All material placed in the stream will be removed from the stream at that time. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project. After the erosion control devices are no longer needed, all temporary materials will become the property of the contractor.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of March 28, 2007, the United States Fish and Wildlife Service (USFWS) lists three federally protected species for Davidson County. Table 1 lists the species, their status and biological conclusion.

Table 1. Federally-Protected Species for Davidson County, NC

Common Name	Scientific Name	Federal Status	Habitat Present	Biological Conclusion
Bald eagle	*Haleaeetus leucephalus*	T	Yes	May Affect, Not Likely to Adversely Affect
Schweinitz's sunflower	*Helianthus schweinitzii*	E	No	No Effect
Bog turtle	*Clemmys muhlenbergii*	T (S/E)	N/A	Not Required

A Biological Conclusion of "No Effect" was given in the CE for Schweinitz's sunflower. A field survey for Schweinitz's sunflower was conducted in May 2004 and again by NCDOT Biologists in

August 2006. No plants were observed during the 2004 and 2006 surveys. With the above information it is the conclusion of NCDOT that the original call of "No Effect" is still valid for the Schweinitz's sunflower.

Biological Conclusions are not required for the Bog turtle since T (S/A) species are not afforded full protection under the ESA. No potential habitat occurs within the project area. No populations of this species have been reported in the project area. Therefore, the proposed project is not anticipated to result in an adverse impact to this species.

A commitment was placed on the green sheet of the CE for NCDOT to query researchers at the Center of Conservation Biology at the College of William and Mary to determine if any additional nesting activity has been observed in the vicinity of the project. Also, per this commitment, NCDOT was to inform the USFWS of the information obtained during the pre-construction interval. All new information regarding bald eagle nesting was given to the USFWS via email on April 3, 2007.

A pre-construction bald eagle survey was conducted by NCDOT Biologists on March 27, 2007. The survey was conducted within a 1-mile radius of the project site. During the survey it was noted that the area around Badin Lake was more highly developed than at the time of the 2003 survey. It was also, noted that the area within a 1-mile radius of the project has been fairly recently "cut-over" in several spots. The habitat observed on foot and from the boat was marginal at best for the support of bald eagle nesting. No bald eagles or bald eagle nests were observed during the survey.

Also, Mr. Bryan Watts of William and Mary was contacted on March 21, 2007 regarding nesting activity in the project vicinity. Mr. Watts informed NCDOT that he has been flying the Badin Lake area since the year 2000 and has never found eagle nests in the area of the project (Pine Haven area). Also, Mr. Watts flew over the Badin Lake area on March 27, 2007. Mr. Watts indicated to NCDOT that no new eagle nests were observed in the project area at the time of the fly over.

Also, Ms. Marla Chambers of the North Carolina Wildlife Resource Commission (NCWRC) was contacted regarding bald eagle nests on Badin Lake in the area of the project. Ms. Chambers indicated to the NCDOT that there were no records of eagle nests in project area portion of Badin Lake.

With the above information it is concluded that the original biological conclusion of "May Affect, Not Likely to Adversely Affect" is still valid for the bald eagle.

MITIGATION OPTIONS

Avoidance and Minimization and Compensatory Mitigation: 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.

According to the Clean Water Act (CWA) §404(b)(1)guidelines, NCDOT must avoid, minimize, and mitigate, in sequential order, impacts to waters of the US. The following is a list of the project's jurisdictional stream avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/Minimization:

- The proposed bridge will be replaced on its existing location.
- In-stream activity will be limited.
- Use of 2:1 fill slopes in jurisdictional area.

- No staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.
- The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures).
- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control methods and use of Best Management Practices (BMPs).

Compensatory Mitigation:

Due to the minimal amount of impacts, no compensatory mitigation is proposed.

SCHEDULE

The project calls for a letting of November 20, 2007 with a date of availability of January 1, 2007. Permits are needed by the review date of October 2, 2007. It is expected that the contractor will choose to start construction as soon as possible.

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the temporary impacts will be authorized under Section 404 Nationwide Permit 33. We are therefore requesting the issuance of a Nationwide Permit 33. The remaining aspects of the project are project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate General Certification numbers 3403 and 3366 will apply to this project. All general conditions of the Water quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their notification.

Thank you for your time and assistance with this project. Please contact Sara Easterly at (919) 715-5499 if you have any questions or need any additional information.

Sincerely,

E. L. Luck

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

w/attachment
Mr. John Hennessy, NCDWQ (2 copies)
Ms. Marla Chambers, NCWRC
Mr. Mark Staley, Roadside Environmental
Mr. Victor Barbour, P.E., Project Services Unit
Ms. Diane Hampton, P.E., DEO
Ms. Marella Buncick, NCFWS
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E, Structure Design
Mr. S. P. Ivey, P.E., Division Engineer

w/o attachment
Mr. Scott McLendon, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P.E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. John Conforti, PDEA Planning Engineer

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 & NW 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: North Carolina Department of Transportation (NCDOT)
   Project Development and Environmental Analysis
   1598 Mail Service Center
   Raleigh, NC 27699-1598

   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. 416 on SR 2550 (Badin Lake Road) Over Beaverdam Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4103

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Davidson Nearest Town: Jackson Hill
   Subdivision name (include phase/lot number): NA
   Directions to site (include road numbers/names, landmarks, etc.): Highway 64 West to Junction with NC 49 South to Badin Lake Lanes to Pond Street to Badin Lake Road

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): 35° 30' 42" °N 80° 06' 03" °W

6. Property size (acres): Total project length is 0.205 miles

7. Name of nearest receiving body of water: Beaverdam Creek

8. River Basin: Yadkin
   (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: Project area is located in a mostly rural community with recreational homes surrounding Badin Lake.

10. Describe the overall project in detail, including the type of equipment to be used: See cover letter
11. Explain the purpose of the proposed work: Bridge No. 416 has a sufficiency rating of 18.0 out of a possible 100 for a new structure. The bridge is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer more efficient traffic operations.

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. There is no prior history of jurisdictional determinations for this project.

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.
There are no future permit requests anticipated for this project.

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: See cover letter

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)
None	None	None	NA	NA	None
Total Wetland Impact (acres)					0.00

3. List the total acreage (estimated) of all existing wetlands on the property: None

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 and 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)
1	Beaverdam Creek	Bridge Bent	Perennial	75 feet	36	< 0.01
1	Beaverdam Creek	Detour Bridge	Perennial	75 feet	36	< 0.01
Total Stream Impact (by length and acreage)						<0.01

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)
NA	NA	NA	NA	0.00
Total Open Water Impact (acres)				NA

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

Stream Impact (acres):	0.004
Wetland Impact (acres):	
Open Water Impact (acres):	
Total Impact to Waters of the U.S. (acres)	0.004
Total Stream Impact (linear feet):	

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. See cover letter.

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.
   No mitigation is proposed for the minimal amount of stream impact.

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			
2			
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._____

_____

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.

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:

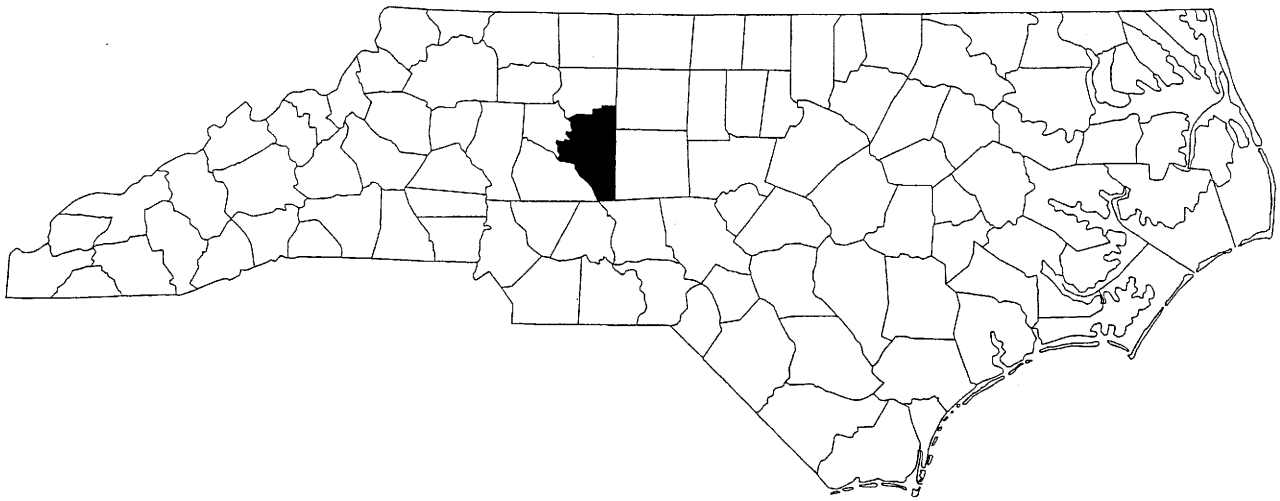
XV. Other Circumstances (Optional):

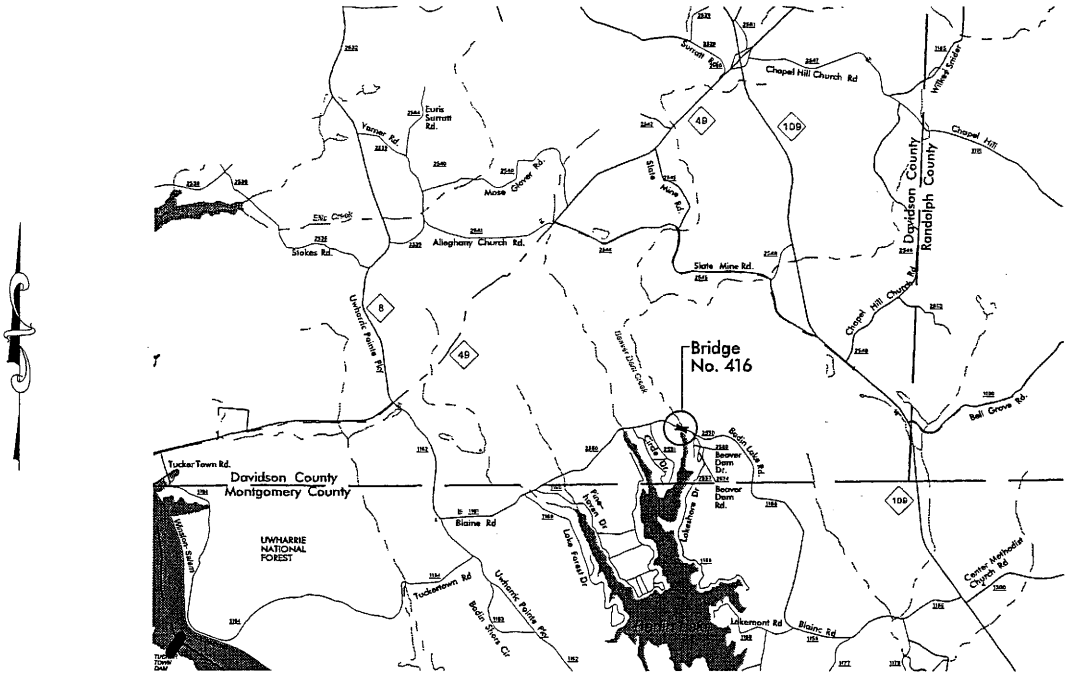
It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g.,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

E.F. Lusk 4.27.07

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

NORTH CAROLINA





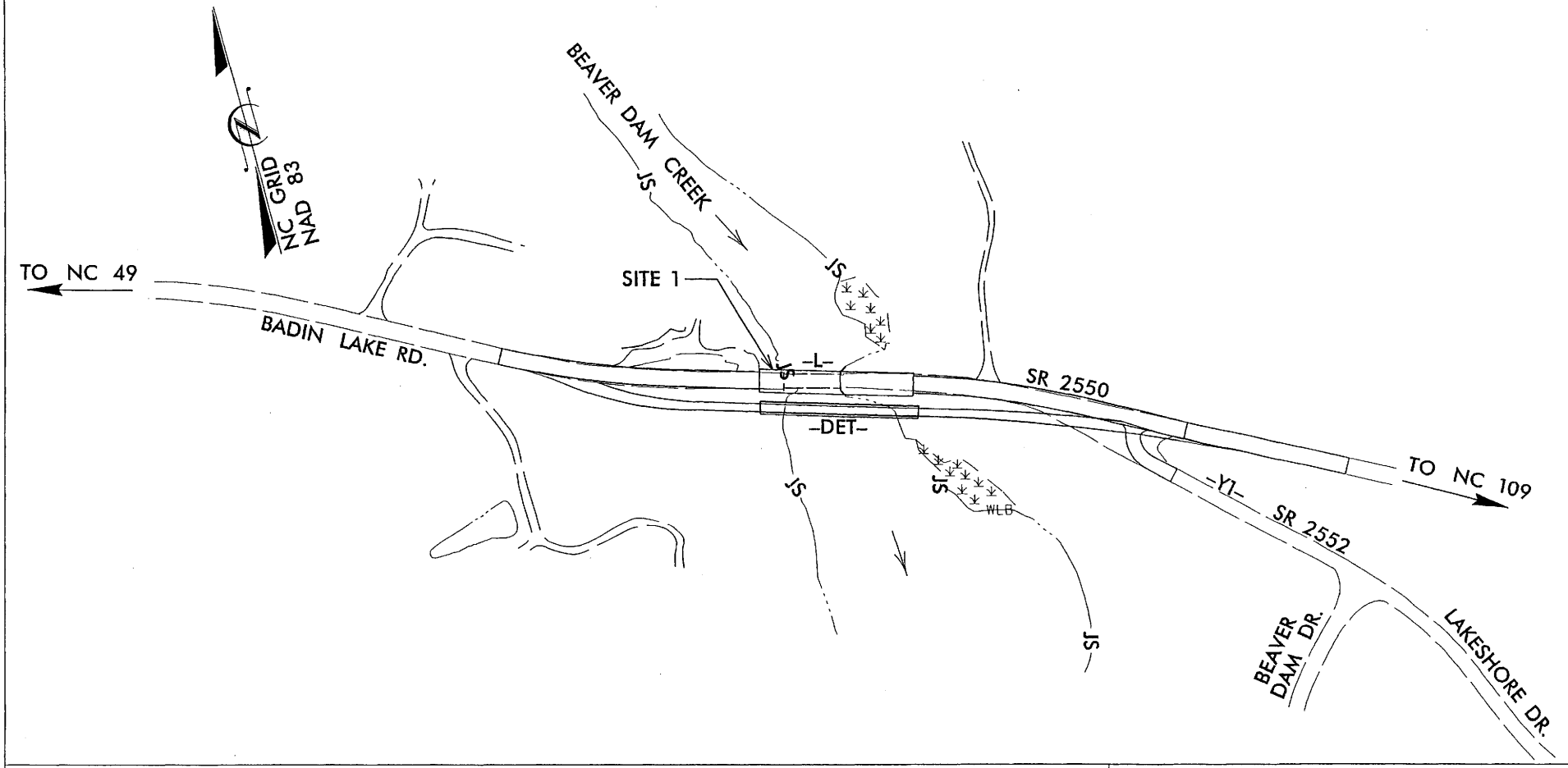
(NOT TO SCALE)

VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: (B-4103)
BRIDGE NO. 416 OVER
BEAVER DAM CREEK
ON SR 2250 (BADIN LAKE ROAD)

SHEET 1 OF 9 02/06/2006



SITE MAP

NOT TO SCALE

NCDOT

DIVISION OF HIGHWAYS

DAVIDSON COUNTY

PROJECT: (B-4103)

BRIDGE NO. 416 OVER

BEAVER DAM CREEK

ON SR 2250 (BADIN LAKE ROAD)

SHEET 2 OF 9

02/06/2006

PROPERTY OWNERS

NAMES AND ADDRESSES

	NAMES	ADDRESSES
1	Blainwood, Inc.	P.O. Box 1740 Denton, NC 27239

NCDOT

DIVISION OF HIGHWAYS

DAVIDSON COUNTY

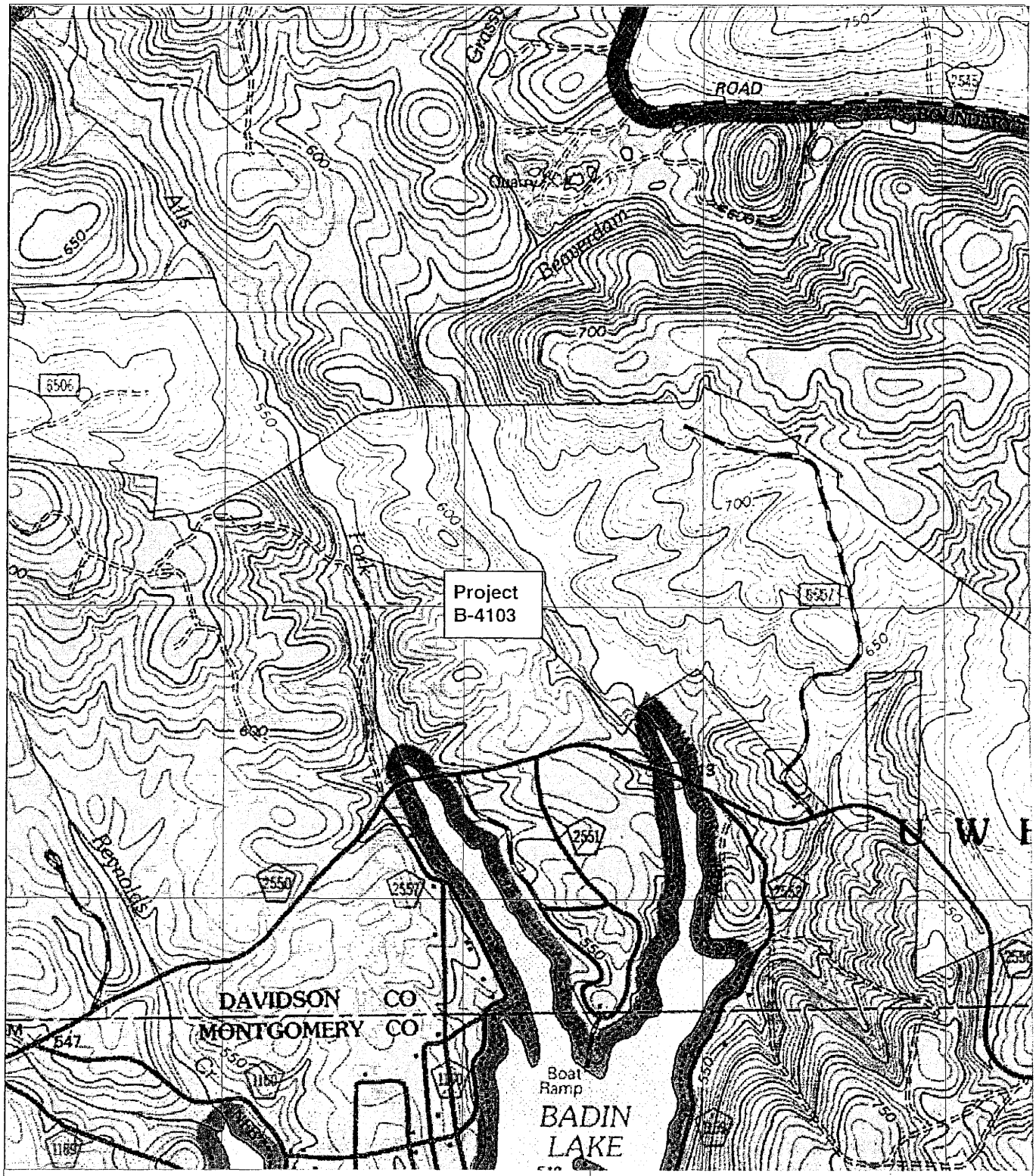
PROJECT: (B-4103)

BRIDGE NO. 416 OVER

BEAVER DAM CREEK

ON SR 2250 (BADIN LAKE ROAD)

01/10/2006



TOPO MAP

SCALE: 1" : 1500'

NCDOT

DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: (B-4103)
BRIDGE NO. 416 OVER
BEAVER DAM CREEK
ON SR 2250 (BADIN LAKE ROAD)

SHEET 4 OF 9 01/10/2006

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
	MAIN STRUCTURE[1]											
1	17+45 -L- To 17+51 -L-	205 Ft. - 33" Box Girder						< 0.01				
	DETOUR STRUCTURE[2]											
1	17+00 -DET- To 19+00 -DET-	200 Ft. Detour Bridge							<0.01			
TOTALS:								< 0.01	<0.01			

1. For the main structure, there will be 1 bent with permanent surface water impacts. The pier will be 3.5 feet wide. The width of the bridge is 39 feet including the barrier rail.
2. For the detour structure, it is assumed that there will be 3 bents. At Each Bent, the piers will be one foot wide. The width of the bridge is 18 feet.

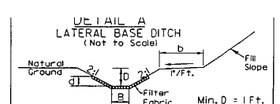
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

DAVIDSON COUNTY
WBS - 33459.1.1 (B-4103)

SHEET 5 of 9 4/20/2007

ATN Revised 3/31/05

DETAIL A
LATERAL BASE DITCH
(Not to Scale)

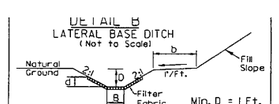


Min. D = 1 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = 5 Ft.

Type of Liner= Class 'B' Rip-Rap

-DET- STA. 13+50 TO STA. 15+30 RT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1 Ft.
Max. d = 1 Ft.
B = 3 Ft.
b = 5 Ft.

Type of Liner= Class 'B' Rip-Rap

-DET- STA. 15+30 TO STA. 17+07.78 RT

B-4103	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -DET- PROFILE SEE SHEET 5

ENGLISH

DAVIDSON COUNTY, NC
BRIDGE No. 416 OVER
BEAVER DAM CREEK
01/11/07

NOTE: NO IMPACTS ARE SHOWN ON THIS SHEET BECAUSE THE LOCATION OF THE PROPOSED DETOUR BRIDGE PIERS ARE UNKNOWN. THIS WILL BE DECIDED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. SEE THE IMPACT SUMMARY SHEET FOR IMPACT ASSUMPTIONS.

NC GRID NAD 83/95

PROPERTY LINE ON LAKE = 541.1' CONTOUR LINE AS PER YADKIN INC. DATUM. PROJECT VERTICAL DATUM IS NAD 83 HARN

1 JERRY DESMOND STREATER, ETAL

2 BLAINEWOOD INC.

3 WATER DOCS, LLC

4 HARRY A. AND ELIZABETH D. SAUNDERS

5 DIXIELAND, LLC

ALCOA POWER GENERATING, INC.

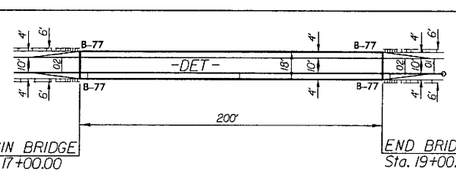
HARRY L. AND MARY C. GRIFFIN

-L- PT Sta. 15+68.47
-DET- PT Sta. 16+12.69
-DET- PRC Sta. 14+38.07
-DET- PC Sta. 19+35.82
-L- PC Sta. 18+77.21
-L- PT Sta. 20+89.75
-L- POT Sta. 21+60.00
-Y1- POT Sta. 10+00.00
END GRADE
BEGIN OVERLAY
-L- POT Sta. 22+25.00
-L- PC Sta. 24+48.31
END PROJECT B-4103
-L- POT Sta. 24+34.21=
-DET- PT Sta. 24+37.05
-L- PC Sta. 10+00.05
-L- PT Sta. 11+20.64
BEGIN PROJECT B-4103
-L- PC Sta. 13+50.00 =
-DET- PC Sta. 13+50.00
-Y1- PC Sta. 10+12.54
-Y1- PT Sta. 10+64.53
END CONSTRUCTION
-Y1- POT Sta. 11+75.00
-Y1- POT Sta. 13+25.53

RETAIN
REMOVE
REMOVE EXISTING BRIDGE STRUCTURE PAY ITEM
LATERAL BASE DITCH SEE DETAIL A EST. DDE 505 CY EST. 85 TONS RIP RAP EST. 230 SY FF
LATERAL BASE DITCH SEE DETAIL B EST. DDE 690 CY EST. 90 TONS RIP RAP EST. 250 SY FF
CL "B" RIP RAP EST. 3 TONS EST. 10 SY FF
CL "I" RIP RAP STRUCTURE PAY ITEM
GRAU 350
S 61° 42' 03.0" E
S 73° 27' 14.4" E
-DET- S 73°30'25.9"E
S 62° 01' 11.9" E
S 27° 58' 48.1" W
S 45° 29' 11.8" E
15+00
20+00
WOODS
GARAGE
BEAVER DAM CREEK

PROPERTY LINE ON LAKE = 541.1' CONTOUR LINE AS PER YADKIN INC. DATUM. PROJECT VERTICAL DATUM IS NAD 83 HARN

PROPERTY LINE ON LAKE = 541.1' CONTOUR LINE AS PER YADKIN INC. DATUM. PROJECT VERTICAL DATUM IS NAD 83 HARN



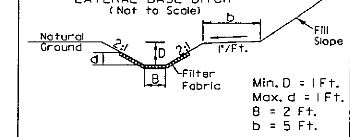
SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

Permit Drawing
Sheet 6 of 9

B-4103	2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

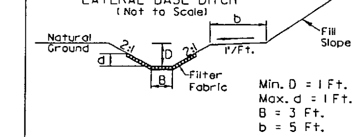
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL A
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap
-DET- STA. 13+50 TO STA. 15+30 RT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



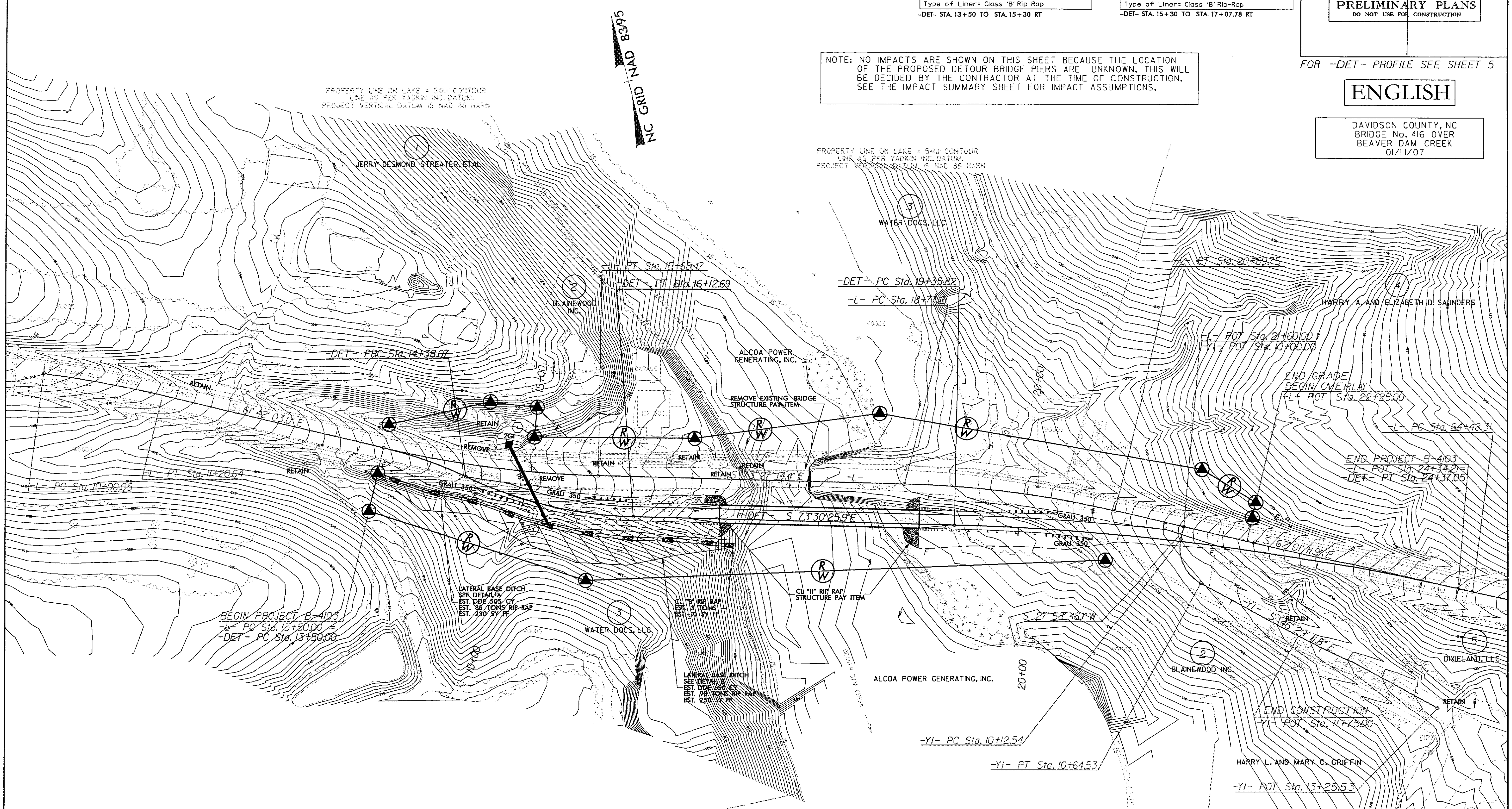
Type of Liner= Class 'B' Rip-Rap
-DET- STA. 15+30 TO STA. 17+07.78 RT

NOTE: NO IMPACTS ARE SHOWN ON THIS SHEET BECAUSE THE LOCATION OF THE PROPOSED DETOUR BRIDGE PIERS ARE UNKNOWN. THIS WILL BE DECIDED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. SEE THE IMPACT SUMMARY SHEET FOR IMPACT ASSUMPTIONS.

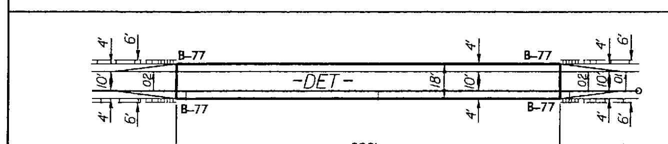
FOR -DET- PROFILE SEE SHEET 5

ENGLISH

DAVIDSON COUNTY, NC
BRIDGE No. 416 OVER
BEAVER DAM CREEK
01/11/07



NC GRID NAD 83/95
PROPERTY LINE ON LAKE = 541.1' CONTOUR LINE AS PER YADKIN INC. DATUM. PROJECT VERTICAL DATUM IS NAD 88 HARN
JERRY DESMOND STREATER, ETAL
BLAINEWOOD INC.
ALCOA POWER GENERATING, INC.
WATER DOCS, LLC
HARRY A. AND ELIZABETH D. SAUNDERS
DIXIELAND, LLC
HARRY L. AND MARY C. GRIFFIN
-L- PT Sta. 16+68.47
-DET- PT Sta. 16+12.69
-DET- PC Sta. 19+35.82
-L- PC Sta. 18+77.01
-L- PT Sta. 20+89.75
-L- POT Sta. 21+60.00 = -Y1- POT Sta. 10+00.00
END GRADE BEGIN OVERLAY -L- POT Sta. 22+25.00
-L- PC Sta. 24+48.31
END PROJECT B-4103 -L- POT Sta. 24+34.21 = -DET- PT Sta. 24+37.05
-DET- PRC Sta. 14+38.07
-L- PT Sta. 11+20.64
-L- PC Sta. 10+00.05
BEGIN PROJECT B-4103 -L- PC Sta. 13+50.00 = -DET- PC Sta. 13+50.00
REMOVE EXISTING BRIDGE STRUCTURE PAY ITEM
LATERAL BASE DITCH SEE DETAIL A EST. DDE 505 CY EST. 85 TONS RIP RAP EST. 230 SY FF
CL "B" RIP RAP EST. 3 TONS EST. 10 SY FF
CL "II" RIP RAP STRUCTURE PAY ITEM
LATERAL BASE DITCH SEE DETAIL B EST. DDE 690 CY EST. 90 TONS RIP RAP EST. 250 SY FF
S 27°58'48.1" W
S 73°30'25.9" E
END CONSTRUCTION -Y1- POT Sta. 11+75.00
-Y1- PC Sta. 10+12.54
-Y1- PT Sta. 10+64.53
-Y1- POT Sta. 13+25.53
RETAIN
REMOVE
GRAU 350
WOODS



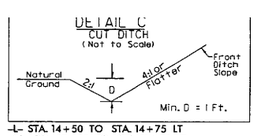
BEGIN BRIDGE
Sta. 17+00.00

END BRIDGE
Sta. 19+00.00

SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

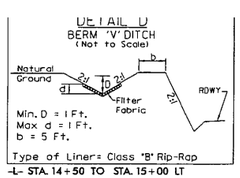
Permit Drawing
Sheet 7 of 9

DETAIL C
CUT DITCH
(Not to Scale)



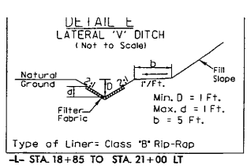
-L- STA. 14+50 TO STA. 14+75 LT
-Y1- STA. 10+25 TO STA. 11+50 LT

DETAIL D
BERM 'V' DITCH
(Not to Scale)



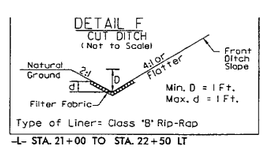
Type of Liner= Class "B" Rip-Rap
-L- STA. 14+50 TO STA. 15+00 LT

DETAIL E
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class "B" Rip-Rap
-L- STA. 18+85 TO STA. 21+00 LT

DETAIL F
CUT DITCH
(Not to Scale)



Type of Liner= Class "B" Rip-Rap
-L- STA. 21+00 TO STA. 22+50 LT

PROJECT REFERENCE NO.	SHEET NO.
B-4103	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PROFILE SEE SHEET 5
FOR -Y1- PROFILE SEE SHEET 5

ENGLISH

DENOTES FILL IN SURFACE WATER
DENOTES AREA TO BE EXCAVATED

DAVIDSON COUNTY, NC
BRIDGE No. 416 OVER
BEAVER DAM CREEK
01/11/07

TRAFFIC DIAGRAM
(IN HUNDREDS)

SR 2550			- L -
700 / 1,050	125 / 225	100 / 100	600 / 950
ADT 2007 / ADT 2027	SR 2552 -Y1-	225 / 325	

NC GRID NAD 8395

PROPERTY LINE ON LAKE = 541.1' CONTOUR
LINE AS PER YADKIN INC. DATUM.
PROJECT VERTICAL DATUM IS NAD 88 HARN

1 JERRY DESMOND STREATER, ETAL
D.B. 1656 PG. 396

2 BLAINEWOOD INC.
D.B. 1436 PG. 517

3 WATER DOCS, LLC
D.B. 1647 PG. 555

4 HARRY A. AND ELIZABETH D. SAUNDERS
D.B. 1626 PG. 638

5 DIXIELAND, LLC
D.B. 1651 PG. 674

ALCOA POWER GENERATING, INC.

HARRY L. AND MARY C. GRIFFIN
D.B. 1646 PG. 809

15" CS W/2 ELBOWS USE ROD AND LUG CONNECTORS AND SLEEVE GASKETS

SPECIAL BERM DITCH SEE DETAIL D
EST. 20 TONS RIP RAP
EST. 55 SY FF

SPECIAL CUT DITCH SEE DETAIL C

CL "I" RIP RAP
EST. 2 TONS
EST. 6 SY FF

CLASS "B" RIP RAP
EST. 3 TONS
EST. 10 SY FF

LATERAL 'V' DITCH SEE DETAIL E
DDE 65 CY
EST. 75 TONS RIP RAP
EST. 225 SY FF

CL "II" RIP RAP
STRUCTURE PAY ITEM

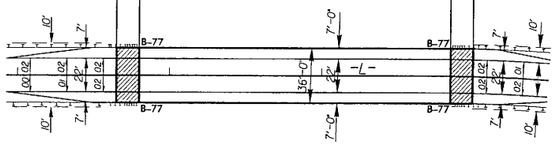
SPECIAL CUT DITCH SEE DETAIL F
EST. 55 TONS RIP RAP
EST. 160 SY FF

RETAIN DITCH CONSTRUCTED DURING DETOUR PHASE

-L- PT Sta. 15+68.47
-L- PC Sta. 18+77.21
-L- PT Sta. 20+89.75
-L- POT Sta. 21+60.00
-Y1- POT Sta. 10+00.00
END GRADE
BEGIN OVERLAY
-L- POT Sta. 22+25.00
-L- PC Sta. 24+48.31
END PROJECT B-4103
-L- POT Sta. 24+34.21=
-L- PC Sta. 10+00.05
-L- PT Sta. 11+20.64
BEGIN PROJECT B-4103
-L- PC Sta. 13+50.00 =
-Y1- PC Sta. 10+12.54
-Y1- PT Sta. 10+64.53
END CONSTRUCTION
-Y1- POT Sta. 11+75.00
-Y1- POT Sta. 13+25.53

S 61° 42' 03.0" E
S 73° 27' 44.4" E
S 27° 58' 48.1" W
S 62° 01' 11.9" E
-Y1- S 46° 29' 11.8" E

BEGIN BRIDGE
-L- 16+78.92
END BRIDGE
-L- 18+86.08
BEGIN APPROACH SLAB
-L- 16+64.92
END APPROACH SLAB
-L- 19+00.08
207'-2"



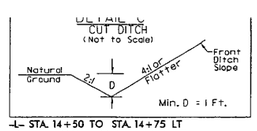
SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

PROPERTY LINE ON LAKE = 541.1' CONTOUR
LINE AS PER YADKIN INC. DATUM.
PROJECT VERTICAL DATUM IS NAD 88 HARN

PROPERTY LINE ON LAKE = 541.1' CONTOUR
LINE AS PER YADKIN INC. DATUM.
PROJECT VERTICAL DATUM IS NAD 88 HARN

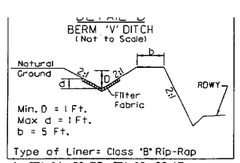
Permit Drawing
Sheet 9 of 84

DETAIL C
CUT DITCH
(Not to Scale)



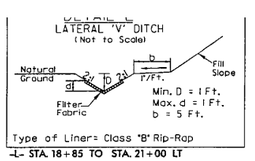
-L- STA. 14+50 TO STA. 14+75 LT
-Y1- STA. 10+25 TO STA. 11+50 LT

DETAIL D
BERM 'V' DITCH
(Not to Scale)



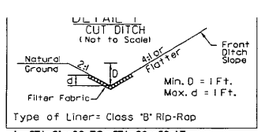
Type of Liner= Class 'B' Rip-Rap
-L- STA. 14+50 TO STA. 15+00 LT

DETAIL E
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap
-L- STA. 18+85 TO STA. 21+00 LT

DETAIL F
CUT DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap
-L- STA. 21+00 TO STA. 22+50 LT

B-4103	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PROFILE SEE SHEET 5
FOR -Y1- PROFILE SEE SHEET 5

NC GRID NAD 83/95

ENGLISH

DENOTES FILL IN SURFACE WATER

DENOTES AREA TO BE EXCAVATED

DAVIDSON COUNTY, NC
BRIDGE No. 416 OVER
BEAVER DAM CREEK
01/11/07

TRAFFIC DIAGRAM
(IN HUNDREDS)

SR 2550 — -L-

700 / 1,050 — 125 / 225 — 100 / 100 — 600 / 950

ADT 2007	SR 2552 -Y1-	225
ADT 2027		325

PROPERTY LINE ON LAKE = 541.0' CONTOUR
LINE AS PER YADKIN INC. DATUM.
PROJECT VERTICAL DATUM IS NAD 88 HARN

JERRY DESMOND STREATER, ET AL
D.B. 1656 PG. 396

15" CS W/2 ELBOWS USE ROD AND LUG CONNECTORS AND SLEEVE GASKETS

SPECIAL BERM DITCH SEE DETAIL D EST. 20 TONS RIP RAP EST. 55 SY FF

BLAINEWOOD INC. D.B. 1436 PG. 517

SPECIAL CUT DITCH SEE DETAIL C

RETAIN

S 61° 42' 03.0" E

-L- PT Sta. 11+20.64

-L- PC Sta. 10+00.05

BEGIN PROJECT B-4103
-L- PC Sta. 13+50.00

RETAIN DITCH CONSTRUCTED DURING DETOUR PHASE

-L- PT Sta. 15+68.47

ALCOA POWER GENERATING, INC.

CL "1" RIP RAP EST. 2 TONS EST. 6 SY FF

CL "H" RIP RAP STRUCTURE PAY ITEM

S 43° 27' 24.4" E

-L-

WATER DOCS, LLC
D.B. 1647 PG. 555

WATER DOCS, LLC
D.B. 1647 PG. 558

-L- PC Sta. 18+77.61

LATERAL 'V' DITCH SEE DETAIL E DDE 65 CY. EST. 75 TONS RIP RAP EST. 235 SY FF

CLASS "B" RIP RAP EST. 3 TONS EST. 10 SY FF

15" CS W/2 ELBOWS USE ROD AND LUG CONNECTORS AND SLEEVE GASKETS

-L- PT Sta. 20+89.75

HARRY A. AND ELIZABETH D. SAUNDERS
D.B. 1628 PG. 638

-L- POT Sta. 21+60.00
-Y1- POT Sta. 10+00.00

END GRADE
BEGIN OVERLAY
-L- POT Sta. 22+25.00

-L- PC Sta. 24+48.31

END PROJECT B-4103
-L- POT Sta. 24+34.21

SPECIAL CUT DITCH SEE DETAIL F EST. 55 TONS RIP RAP EST. 160 SY FF

S 62° 01' 11.0" E

-Y1- S 46° 29' 11.8" E

SPECIAL CUT DITCH SEE DETAIL C

S 27° 58' 48.1" W

BLAINEWOOD INC. D.B. 1436 PG. 517

DIXIELAND, LLC
D.B. 1651 PG. 674

END CONSTRUCTION
-Y1- POT Sta. 11+75.00

-Y1- PC Sta. 10+12.54

-Y1- PT Sta. 10+64.53

HARRY L. AND MARY C. GRIFFIN
D.B. 1646 PG. 809

-Y1- POT Sta. 13+25.53

PROPERTY LINE ON LAKE = 541.0' CONTOUR
LINE AS PER YADKIN INC. DATUM.
PROJECT VERTICAL DATUM IS NAD 88 HARN

PROPERTY LINE ON LAKE = 541.0' CONTOUR
LINE AS PER YADKIN INC. DATUM.
PROJECT VERTICAL DATUM IS NAD 88 HARN

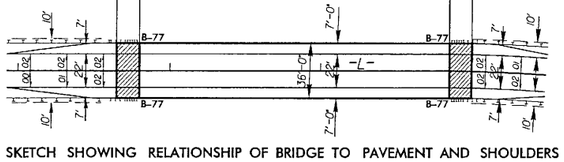
BEGIN BRIDGE
-L- 16+78.92

BEGIN APPROACH SLAB
-L- 16+64.92

207'-2"

END BRIDGE
-L- 18+86.08

END APPROACH SLAB
-L- 19+00.08



SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

Permit Drawing
Sheet 9 of 9

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4103	1	

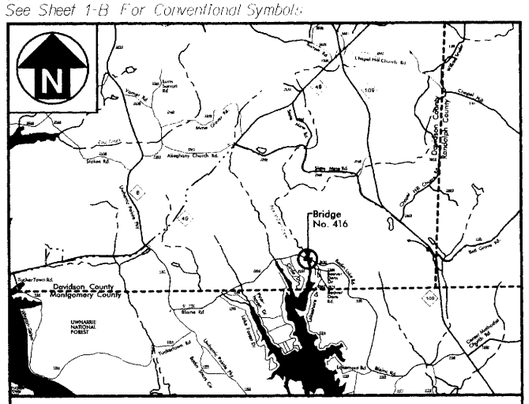
W.B.S. ELEMENT	F.A. PROJ. NO.	DESCRIPTION
33459.1.1	BRZ-2550(1)	P.E.
33459.2.1	BRZ-2550(1)	R/W & UTL.
33459.3.1	BRZ-2550(1)	CONST.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TIP PROJECT: B-4103

CONTRACT:

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



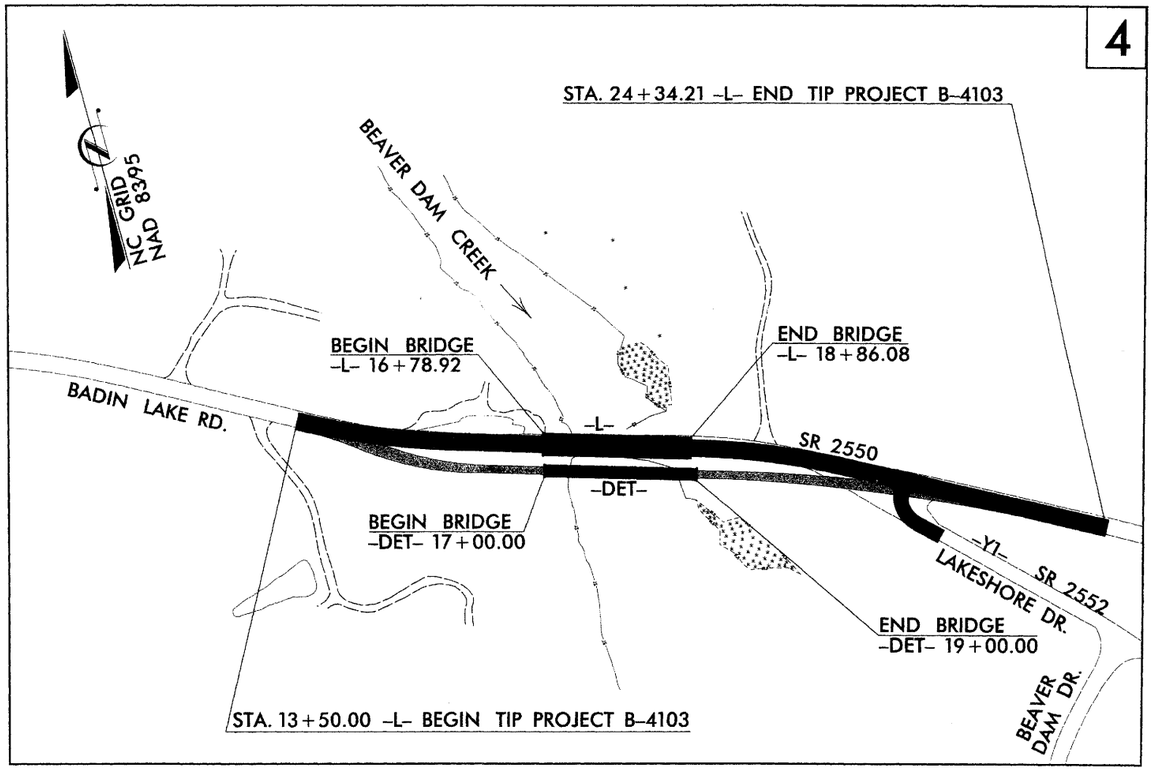
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

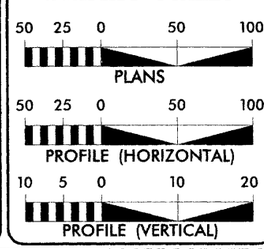
LOCATION: BRIDGE NO. 416 OVER BEAVER DAM CREEK ON SR 2550 (BADIN LAKE ROAD)

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



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

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 700
ADT 2027 = 1,050
DHV = 12 %
D = 55 %
T = 4 %*
V = 60 MPH

* TTST 1% DUAL 3%

** DESIGN EXCEPTION for SAG VERT. CURVE K SUPERELEVATION

FUNC. CLASSIFICATION: RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4103	=	0.166 MILES
LENGTH STRUCTURE TIP PROJECT B-4103	=	0.039 MILES
TOTAL LENGTH TIP PROJECT B-4103	=	0.205 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 16, 2006

LETTING DATE: NOVEMBER 20, 2007

TIM JORDAN, PE
ROADWAY PROJECT ENGINEER

KEVIN ALFORD, PE
HYDRAULIC PROJECT ENGINEER

CATHY S. HOUSER, PE
NCDOT ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER *P.E.*

10/11/2006
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2:24:45 PM

8/17/

B-4103	1-A

ROADWAY DESIGN
ENGINEER

10/19/2006
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*S.U.E. = *Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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 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
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — 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
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality 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.

SURVEY CONTROL SHEET B-4103

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5	BL-5	643415.6669	1671659.9575	552.64	OUTSIDE PROJECT LIMITS	
4	BL-4	643195.3641	1672043.2426	532.41	13+31.39	17.30 RT
1	B4103-1	643109.3280	1672389.7560	514.93	16+86.45	25.40 LT
3	BL-3	642956.1593	1672779.2873	521.08	21+02.47	13.43 LT
2	B4103-2	642638.7251	1673398.2646	560.89	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
13	BL-3	642956.1593	1672779.2873	521.08	OUTSIDE PROJECT LIMITS	
6	BY1-6	642668.8788	1673046.3911	531.30	OUTSIDE PROJECT LIMITS	

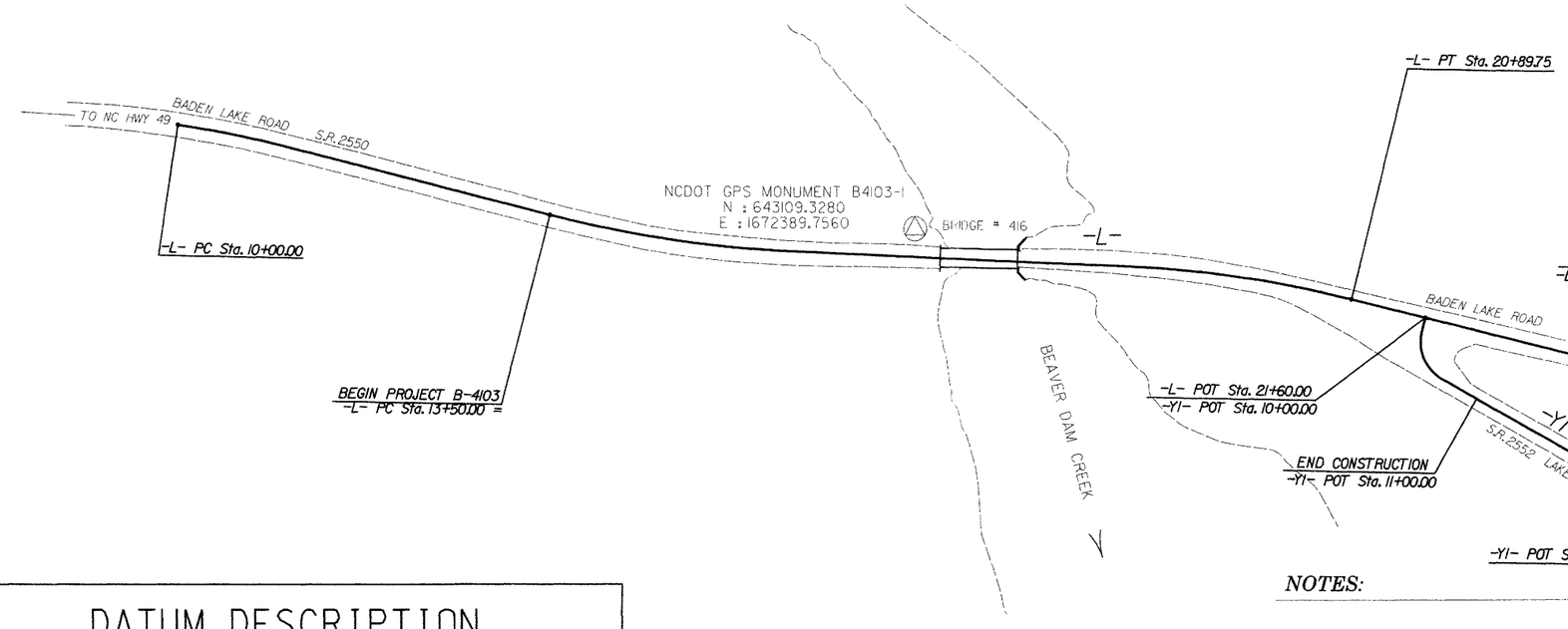
BM 1 ELEVATION = 559.24
N 643451 E 1671683
L STATION 10+00
N 40° 00' 19.1" W DIST 115.36

R/R SPIKE SET IN BASE OF 24" OAK, 48' NORTH OF EDGE OF BADEN LAKE RD.

BM 2 ELEVATION = 544.83
N 642667 E 1673046
L STATION 24+54
S 18° 11' 40.9" W DIST 118.52

R/R SPIKE SET IN BASE OF 24" OAK, 34' NORTH OF EDGE OF LAKESHORE DR.

NC GRID
NAD 83/95



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4103-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 643109.3280(ft) EASTING: 1672389.7560(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999863040
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4103-1" TO -L- STATION 10+00.00 IS
N 68°10'39.25" W 681.43'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *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/

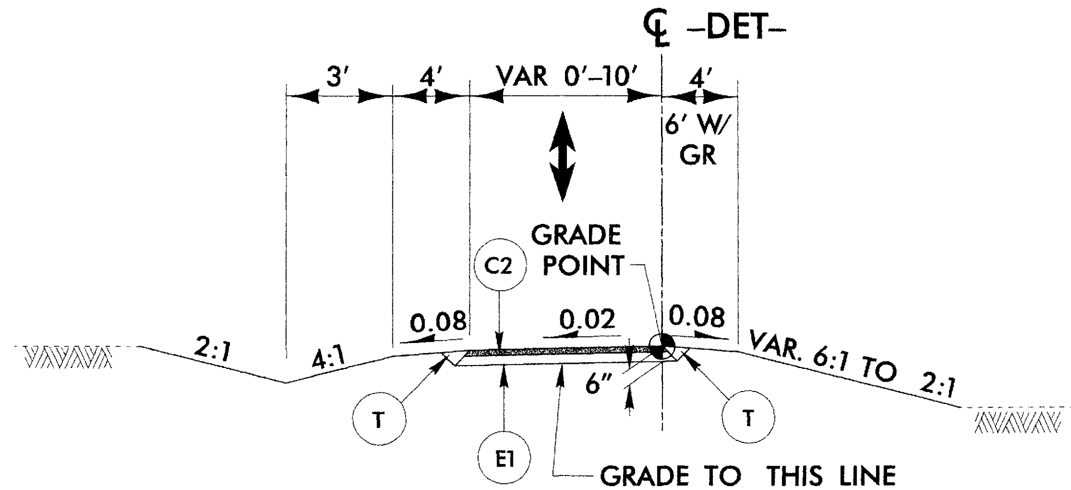
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   TIP####_LS_CONTROL_DATE.HTML

   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 NGS ONLINE POSITIONING SERVICE (OPUS)
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

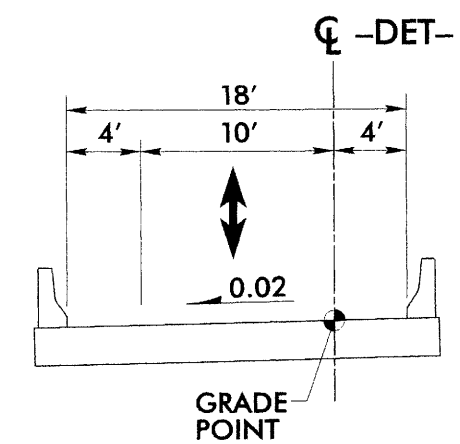
PAVEMENT SCHEDULE *(FINAL PAVEMENT DESIGN)*	
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 220 LBS. PER SQ. YD.
C3	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 2" 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. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E3	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 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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



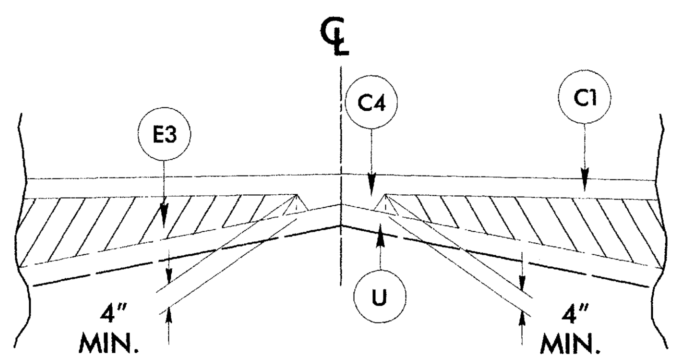
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
AT THE FOLLOWING LOCATIONS
-DET- STA. 14+38.07 TO STA. 17+00.00 (BEGIN BRIDGE)
-DET- STA. 19+00.00 (END BRIDGE) TO STA. 21+87.71



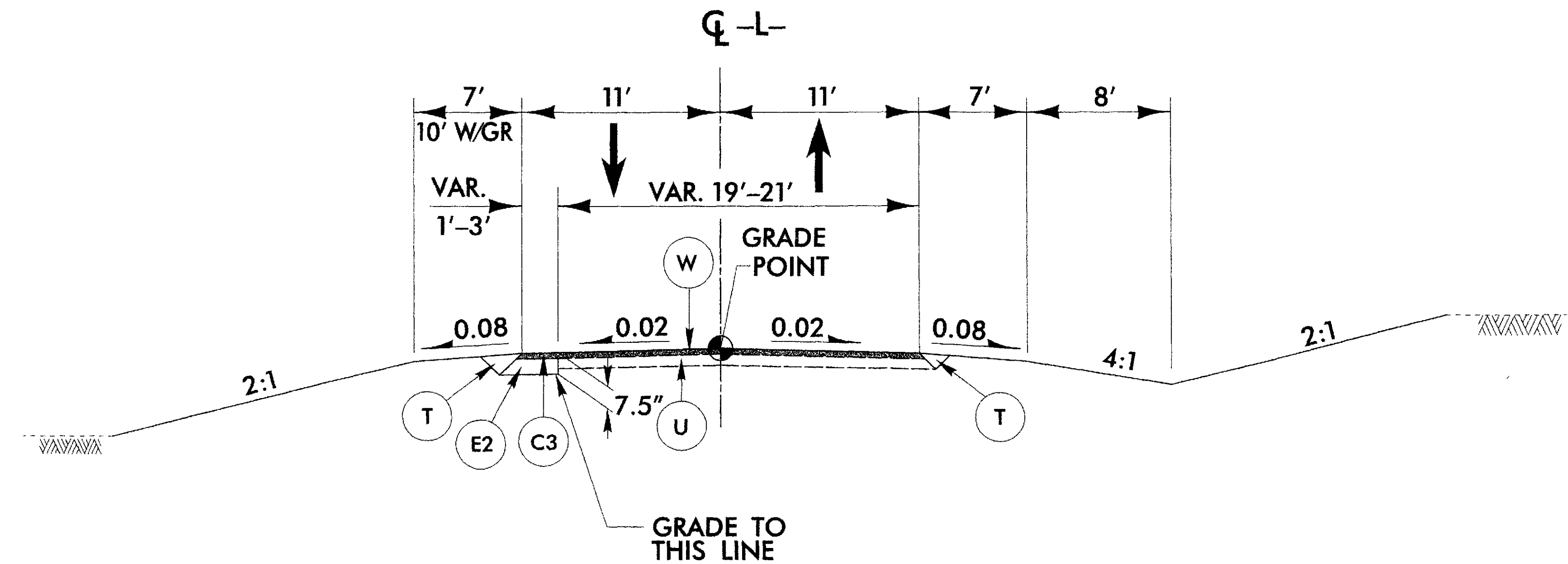
DETAIL OF DETOUR BRIDGE

-DET- STA 17+00.00 TO STA 19+00.00



DETAIL SHOWING METHOD OF WEDGING

USE IN CONJUCTION WITH TYPICAL SECTION NO. 2 AND NO. 4



NOTE: OVERLAY EXISTING PAVEMENT WITH (C1) FROM:
-L- STA. 22+25.00 TO STA. 24+34.21

TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
AT THE FOLLOWING LOCATIONS

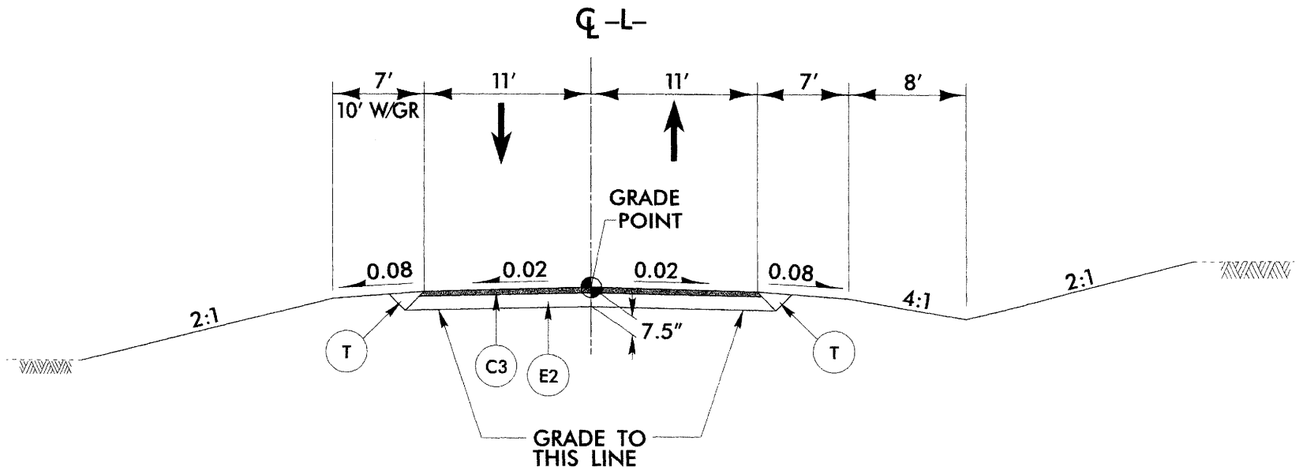
TRANSITION FROM EXISTING TO T.S. NO. 2 FROM
-L- STA. 13+50.00 TO STA. 14+00.00

-L- STA. 14+00.00 TO STA. 15+25.00
-L- STA. 20+75.00 TO STA. 21+75.00

TRANSITION FROM T.S. NO. 2 TO EXISTING
-L- STA. 21+75.00 TO STA. 22+25.00

R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

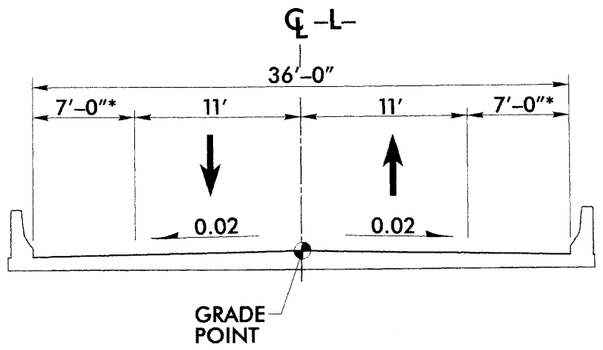
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
AT THE FOLLOWING LOCATIONS

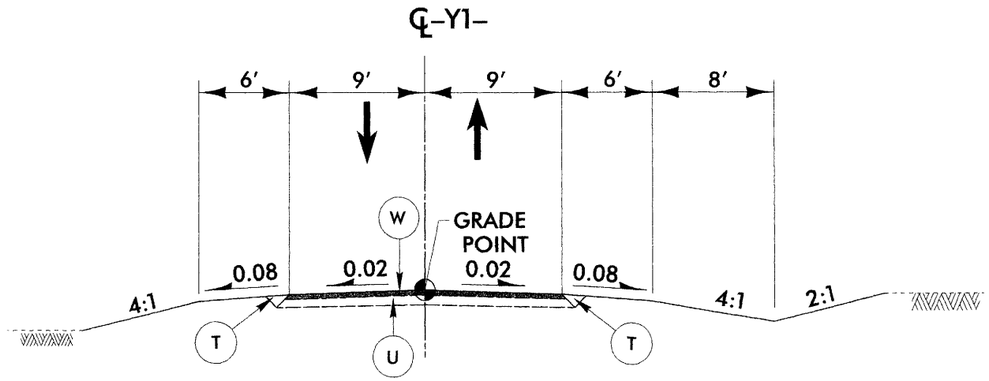
–L– STA. 15+25.00 TO STA. 16+78.92 (BEGIN BRIDGE)
–L– STA. 18+86.08 (END BRIDGE) TO STA. 20+75.00



DETAIL OF BRIDGE

–L– STA 16+78.92 TO STA 18+86.08

* WIDENED FOR HYDRAULIC SPREAD ON STRUCTURE



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
AT THE FOLLOWING LOCATIONS

–Y1– STA. 10+11.00 TO STA. 11+00.00

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C3	2½″ SF9.5A
E2	5″ B25.0B
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

10/11/2006
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			PI Sta 24+11.48	PI Sta 13+94.20	PI Sta 15+26.66	PI Sta 21+87.28
△ = 6° 01' 12.2" (RT)	△ = 11° 45' 11.4" (LT)	△ = 11° 26' 02.6" (RT)	△ = 0° 12' 09.6" (LT)	△ = 12° 00' 52.1" (RT)	△ = 23° 49' 14.9" (LT)	△ = 11° 29' 14.0" (RT)
D = 4° 59' 32.0"	D = 5° 22' 47.6"	D = 5° 22' 47.6"	D = 0° 26' 14.4"	D = 13° 38' 30.7"	D = 13° 38' 30.7"	D = 2° 17' 30.6"
L = 120.59'	L = 218.47'	L = 212.53'	L = 46.34'	L = 88.07'	L = 174.62'	L = 501.22'
T = 60.35'	T = 109.62'	T = 106.62'	T = 23.17'	T = 44.20'	T = 88.59'	T = 251.46'
R = 1,147.70'	R = 1,065.00'	R = 1,065.00'	R = 13,100.80'	R = 420.00'	R = 420.00'	R = 2,500.00'
	**SE = 04	**SE = 03		SE = 04	SE = 04	SE = 04
	DS = 50 mph	DS = 50 mph		DS = 35 mph	DS = 35 mph	DS = 35 mph

-DR1-

PI Sta 12+28.22	PI Sta 11+58.93	PI Sta 10+36.42
△ = 77° 58' 36.2" (RT)	△ = 5° 57' 29.5" (LT)	△ = 90° 00' 00.0" (LT)
D = 381° 58' 18.7"	D = 5° 12' 31.3"	D = 381° 58' 18.7"
L = 20.41'	L = 114.39'	L = 23.56'
T = 12.14'	T = 57.25'	T = 15.00'
R = 15.00'	R = 1,100.00'	R = 15.00'

-Y1-

PI Sta 10+42.94
△ = 74° 27' 59.9" (LT)
D = 143° 14' 22.0"
L = 51.99'
T = 30.40'
R = 40.00'

LATERAL BASE DITCH (Not to Scale)

Natural Ground; Fill Slope; Filter Fabric; Min. D = 1 Ft.; Max. d = 1 Ft.; B = 2 Ft.; b = 5 Ft.

Type of Liner= Class 'B' Rip-Rap

-DET- STA. 13+50 TO STA. 15+30 RT

LATERAL BASE DITCH (Not to Scale)

Natural Ground; Fill Slope; Filter Fabric; Min. D = 1 Ft.; Max. d = 1 Ft.; B = 3 Ft.; b = 5 Ft.

Type of Liner= Class 'B' Rip-Rap

-DET- STA. 15+30 TO STA. 17+07.78 RT

B-4103 | 2-B

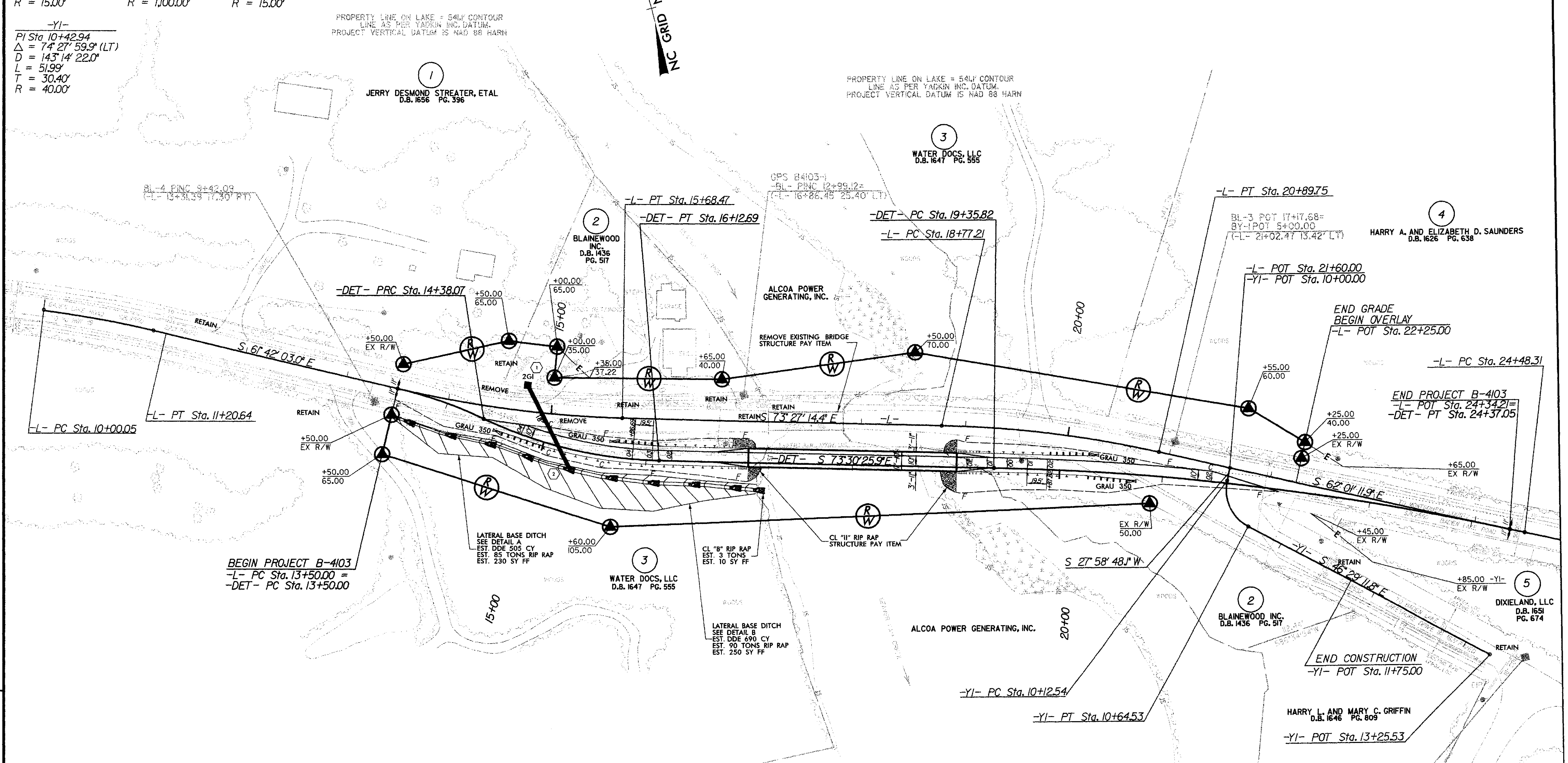
R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

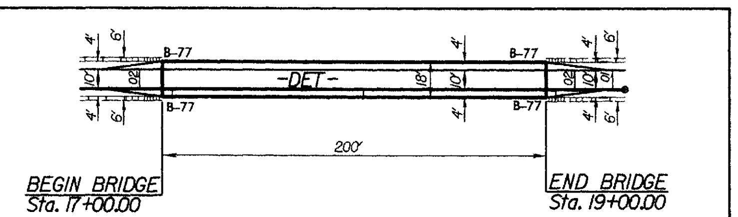
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -DET- PROFILE SEE SHEET 5

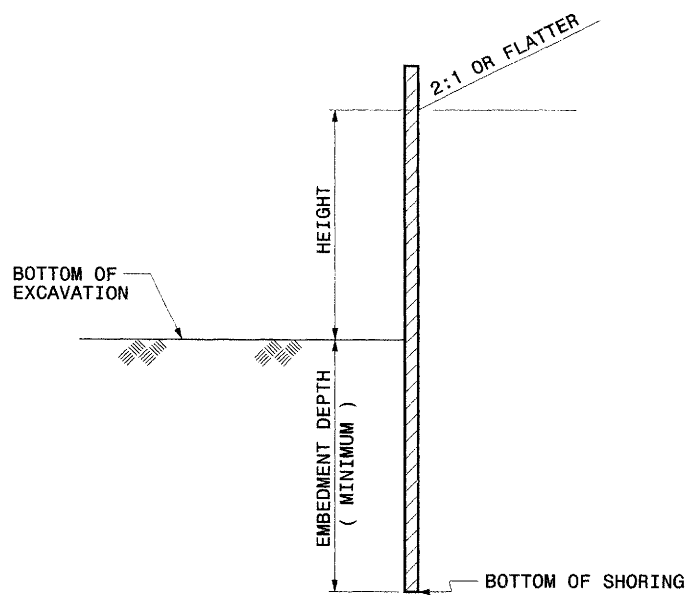
REVISIONS



NC GRID NAD 83/95
PROPERTY LINE ON LAKE = 541.1' CONTOUR LINE AS PER YADKIN INC. DATUM. PROJECT VERTICAL DATUM IS NAD 88 HARN
1 JERRY DESMOND STREATER, ETAL D.B. 1656 PG. 396
2 BLAINEWOOD INC. D.B. 1436 PG. 517
3 WATER DOCS, LLC D.B. 1647 PG. 555
4 HARRY A. AND ELIZABETH D. SAUNDERS D.B. 1626 PG. 638
5 DIXIELAND, LLC D.B. 1651 PG. 674
ALCOA POWER GENERATING, INC.
HARRY L. AND MARY C. GRIFFIN D.B. 1646 PG. 809
-L- PC Sta. 10+00.05
-L- PT Sta. 11+20.64
S 61° 42' 03.0" E
-DET- PRC Sta. 14+38.07
-L- PT Sta. 15+68.47
-DET- PT Sta. 16+12.69
-DET- PC Sta. 19+35.82
-L- PC Sta. 18+77.21
-L- PT Sta. 20+89.75
-L- POT Sta. 21+60.00
-Y1- POT Sta. 10+00.00
END GRADE BEGIN OVERLAY -L- POT Sta. 22+25.00
-L- PC Sta. 24+48.31
END PROJECT B-4103 -L- POT Sta. 24+34.21= -DET- PT Sta. 24+37.05
S 73° 27' 14.4" E
-DET- S 73° 30' 25.9" E
S 62° 01' 11.9" E
S 27° 58' 48.1" W
-Y1- S 46° 29' 11.8" E
BEGIN PROJECT B-4103 -L- PC Sta. 13+50.00 = -DET- PC Sta. 13+50.00
REMOVE EXISTING BRIDGE STRUCTURE PAY ITEM
CL "II" RIP RAP STRUCTURE PAY ITEM
LATERAL BASE DITCH SEE DETAIL A EST. DDE 505 CY EST. 85 TONS RIP RAP EST. 230 SY FF
CL "B" RIP RAP EST. 3 TONS EST. 10 SY FF
LATERAL BASE DITCH SEE DETAIL B EST. DDE 690 CY EST. 90 TONS RIP RAP EST. 250 SY FF
END CONSTRUCTION -Y1- POT Sta. 11+75.00
-Y1- PC Sta. 10+12.54
-Y1- PT Sta. 10+64.53
-Y1- POT Sta. 13+25.53
BY-6 POT 8+93.74

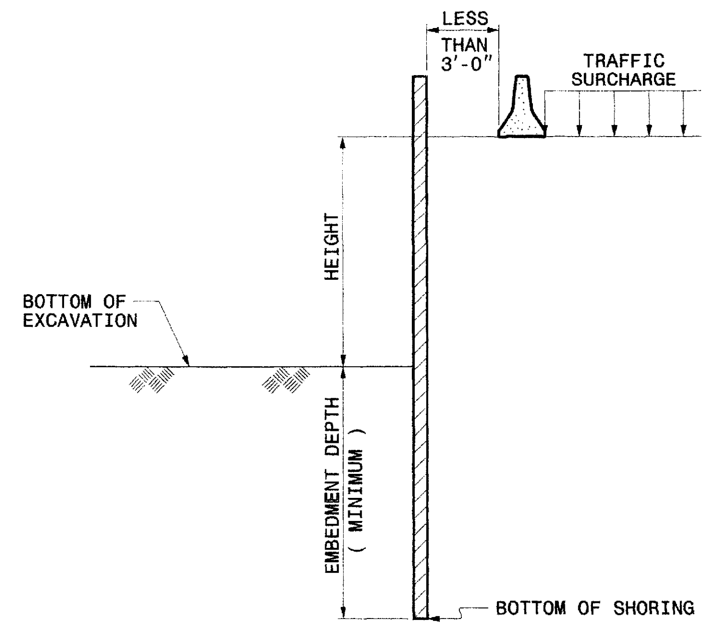


SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS



TEMPORARY SHORING

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



TEMPORARY SHORING - BARRIER SUPPORTED

(LEVEL WITH TRAFFIC SURCHARGE, WITH BARRIER IMPACT)

NOTES

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

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

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

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

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

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

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

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

GROUNDWATER TABLE CONDITIONS

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

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

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

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

STANDARD TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC

nbritt 04-29-04

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh N.C. 27636
(919) 851-1913
(919) 851-1915 (FAX)
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PROJECT REFERENCE NO.	SHEET NO.
B-4103	3

PRELIMINARY PLANS
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PRELIMINARY PLANS
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	CLASS III R.C. PIPE OR C.S. PIPE OR TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"
SIZE / THICKNESS OR GAUGE																.064	.064	.064	.064	.079	.079	.109	.109								
14+75 -L-	LT	1		521.6	518.6																										
14+90 -L-	CL	1	2		518.6	518.2				92																					
14+75 -L-	LT	3			529.0																										
14+75 -L-	LT	3	4		529.0	518.6											28														
16+30 -L-	LT	5		517.0	515.1																										
16+55 -L-	LT	5	6		515.1	512.9																			36						
16+75 -L-	LT	6		514.9	512.9																										
16+90 -L-	LT	6	7		512.9	508.5																			20						
19+05 -L-	RT	8		518.6	515.5																										
19+05 -L-	CL	8	9		515.5	515.3			28																						
19+05 -L-	LT	9		518.6	515.3																										
19+05 -L-	LT	9	10		515.3	511.4											24														
21+60 -L-	LT	11																													
TOTAL									28	92							52								56						

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	TRAFFIC BEARING DROP INLET STD. 840.35	M.D.I. ANGLED VANE FRAME WITH GRATE STD. 840.33	BERM DRAINAGE OUTLET STD. 850.10	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
14+75 -L-	1							1										1			1										24	
14+90 -L-	1	2																													48	
14+75 -L-	3																										1					
14+75 -L-	3	4																										2@15"			24	ROD & LUG CONNECTORS AND SLEEVE GASKETS
16+30 -L-	5							1							1	1															44	REMOVE DI
16+55 -L-	5	6																													40	REMOVE DI
16+75 -L-	6							1							1	1																
16+90 -L-	6	7																													28	REMOVE DI
19+05 -L-	8							1															1		1							
19+05 -L-	8	9																														
19+05 -L-	9							1															1		1							
19+05 -L-	9	10																										2@15"				ROD & LUG CONNECTORS AND SLEEVE GASKETS
21+60 -L-	11		28																													
TOTAL			28					5							2	2		1			1		2		2			4@15"			208	

ABBREVIATIONS

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

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PRELIMINARY PLANS
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350			REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	B-77	AT-1	EA	G	NG	
-L-	15+41.42	16+78.92	LT	137.50'				16+78.92	7'	10'					1	1					
-L-	13+91.42	16+78.92	RT	287.50'			16+78.92		7'	10'					1	1					
-L-	18+86.08	21+36.08	LT	237.50'			18+86.08		7'	10'					1	1					
-L-	18+86.08	20+23.58	RT	137.50'				18+86.08	7'	10'					1	1					BREAK FOR DRIVE
		LESS ANCHOR DEDUCTIONS																			
		GRAU-350 4 @ 50' =		-200.00'																	
		B-77 4 @ 18.75' =		-75.00'																	
			TOTAL	525.00'											4	4					
			SAY	525.00'			(5 ADDITIONAL GUARDRAIL POSTS)														

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

TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS			IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	B-77	AT-1	EA	G	NG				
-DET-	15+62.50	17+00.00	LT	137.50'			17+00.00		4'	6'					1	1								
-DET-	14+50.00	17+00.00	RT	250.00'			15+25.00	17+00.00	4'	6'					1	1								
-DET-	19+00.00	20+37.50	LT	137.50'			19+00.00		4'	6'					1	1								
-DET-	19+00.00	20+75.00	RT	175.00'			19+00.00	20+50.00	4'	6'					1	1								BREAK FOR EXISTING ROAD (-Y1-)
		LESS ANCHOR DEDUCTIONS																						
		GRAU-350 4 @ 50' =		-200.00'																				
		B-77 4 @ 18.75' =		-75.00'																				
			TOTAL	425.00'											4	4								
			SAY	425.00'																				

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-DET- 13+50 TO 17+00	8		941	933	
-DET- 19+00 TO 24+37.05	2		1591	1589	
SUBTOTAL	10		2532	2522	
-L- 13+50 TO 16+80	85		840	755	
-L- 18+85 TO 22+25	262		1174	912	
-Y1- 10+11 TO 11+00	92		30		62
SUBTOTAL	439		2044	1667	62
-L- 13+50 TO 17+00 (DETOUR REMOVAL)	61		50		11
-L- 18+90 TO 24+37.05 (DETOUR REMOVAL)	78		31		47
SUBTOTAL	139		81		58
TOTAL	588		4657	4189	120
LOSS TO CLEARING & GRUBBING	-85			85	
WASTE TO REPLACE BORROW				-62	-62
PROJECT TOTAL	503		4657	4212	58
5% TO REPLACE BORROW				211	
GRAND TOTAL	503		4657	4423	58
SAY	600			4500	

EST. DDE = 1,260 CY
EST. UNDERCUT = 400 CY (CONTINGENCY FROM GEOTECHNICAL & DIVISION)
EST. SELECT GRANULAR MATERIAL = 1,000 CY (CLASS II AND/OR CLASS III)
EST. FABRIC FOR SOIL STABILIZATION = 1,000 SY

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS

LOCATION	ASPHALT REMOVAL	ASPHALT BREAK UP	CONCRETE REMOVAL	CONCRETE BREAK UP
-L- 15+25 TO 15+67	107.64			
-L- 15+67 TO 17+10.40		342.01		
-L- 17+82.23 TO 20+75		671.05		
-Y1- 10+11 TO 10+64.50	293.44			
-Y1- 10+11 TO 10+88.30	88.22			
-DET- 14+38.07 TO 17+00	305.26			
-DET- 19+00 TO 21+87.71	333.90			
TOTAL	1,128.46	1,013.06		
SAY	1,150	1,025		

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

NOTE: Approximate quantities only.
Unclassified excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement and Removal of Existing Pavement will be paid for at the contract Lump Sum price for "Grading".

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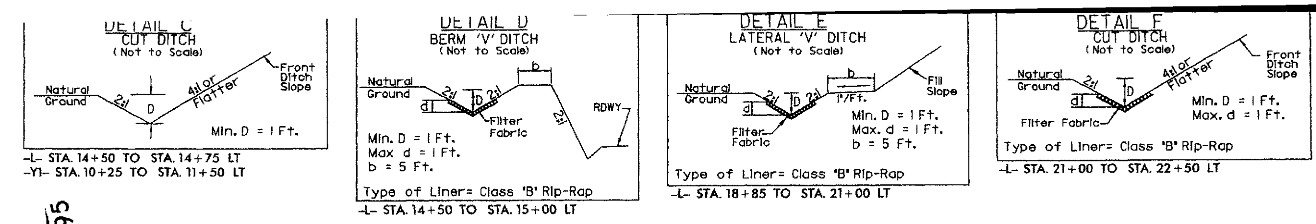
PI Sta 10+60.40	PI Sta 14+59.62	PI Sta 19+83.83	PI Sta 24+71.48
Δ = 6° 01' 12.2" (RT)	Δ = 11° 45' 11.4" (LT)	Δ = 11° 26' 02.6" (RT)	Δ = 0° 12' 09.6" (LT)
D = 4° 59' 32.0"	D = 5° 22' 47.6"	D = 5° 22' 47.6"	D = 0° 26' 14.4"
L = 120.59'	L = 218.47'	L = 212.53'	L = 46.34'
T = 60.35'	T = 109.62'	T = 106.62'	T = 23.17'
R = 1,147.70'	R = 1,065.00'	R = 1,065.00'	R = 13,100.80'
	**SE = .04	**SE = .03	
	DS = 50 mph	DS = 50 mph	

-DRI-

PI Sta 12+28.22	PI Sta 11+58.93	PI Sta 10+36.42
Δ = 77° 58' 36.2" (RT)	Δ = 5° 57' 29.5" (LT)	Δ = 90° 00' 00.0" (LT)
D = 381° 58' 18.7"	D = 5° 12' 31.3"	D = 381° 58' 18.7"
L = 20.41'	L = 114.39'	L = 23.56'
T = 12.14'	T = 57.25'	T = 15.00'
R = 15.00'	R = 1,100.00'	R = 15.00'

-Y1-

PI Sta 10+42.94
Δ = 74° 27' 59.9" (LT)
D = 143° 14' 22.0"
L = 51.99'
T = 30.40'
R = 40.00'

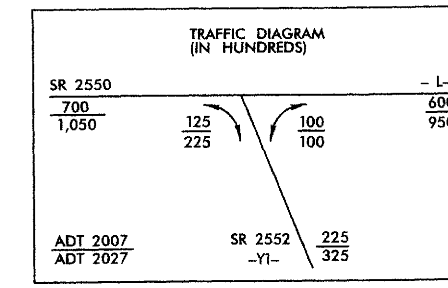


DETAIL C
CUT DITCH
(Not to Scale)
-L- STA. 14+50 TO STA. 14+75 LT
-Y1- STA. 10+25 TO STA. 11+50 LT
DETAIL D
BERM 'V' DITCH
(Not to Scale)
Type of Liner= Class 'B' Rip-Rap
-L- STA. 14+50 TO STA. 15+00 LT
DETAIL E
LATERAL 'V' DITCH
(Not to Scale)
Type of Liner= Class 'B' Rip-Rap
-L- STA. 18+85 TO STA. 21+00 LT
DETAIL F
CUT DITCH
(Not to Scale)
Type of Liner= Class 'B' Rip-Rap
-L- STA. 21+00 TO STA. 22+50 LT

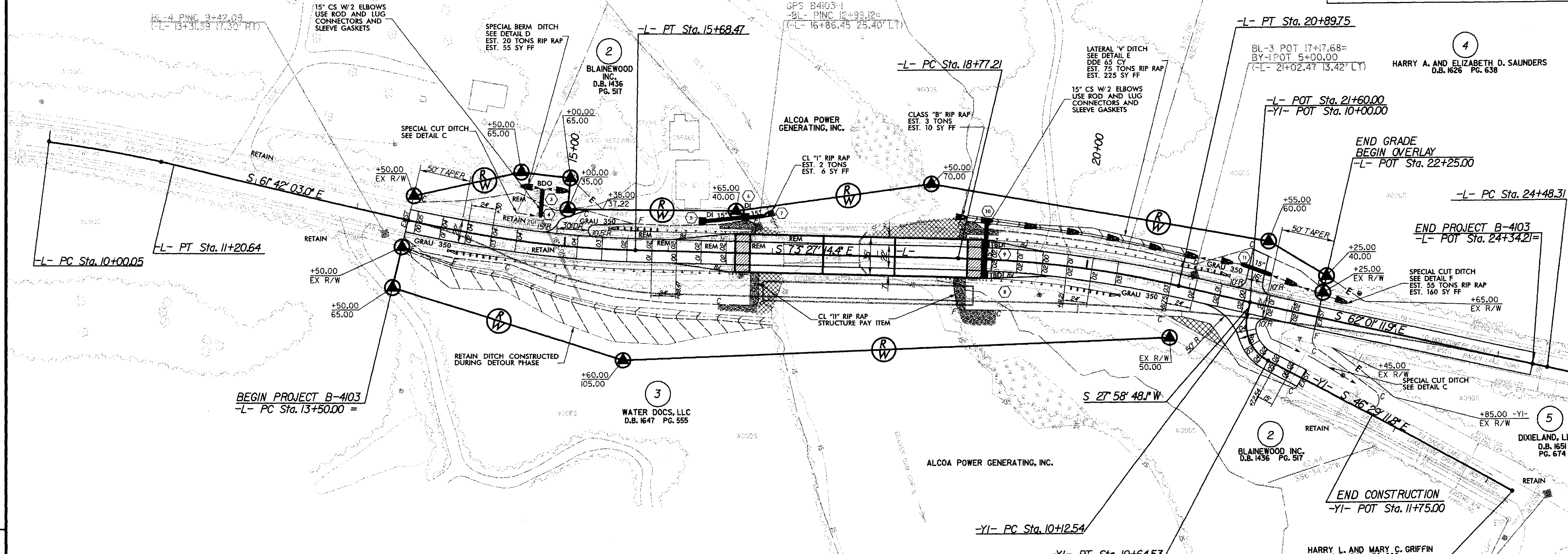
PROJECT REFERENCE NO.	SHEET NO.
B-4103	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

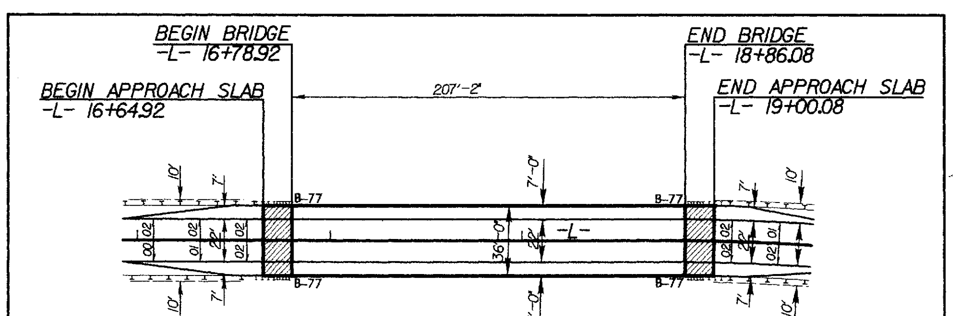
FOR -L- PROFILE SEE SHEET 5
FOR -Y1- PROFILE SEE SHEET 5



REVISIONS



NC GRID NAD 83/95
PROPERTY LINE ON LAKE = 541.1' CONTOUR LINE AS PER YADKIN INC. DATUM. PROJECT VERTICAL DATUM IS NAD 88 HARN
JERRY DESMOND STREATER, ETAL D.B. 1656 PG. 396
WATER DOCS, LLC D.B. 1647 PG. 555
BLAINEWOOD INC. D.B. 1436 PG. 517
HARRY A. AND ELIZABETH D. SAUNDERS D.B. 1626 PG. 638
ALCOA POWER GENERATING, INC.
DIXIELAND, LLC D.B. 1651 PG. 674
HARRY L. AND MARY C. GRIFFIN D.B. 1646 PG. 809
-L- PC Sta. 10+00.05
-L- PT Sta. 11+20.64
-L- PT Sta. 15+68.47
-L- PC Sta. 18+77.21
-L- PT Sta. 20+89.75
-L- POT Sta. 21+60.00
-Y1- POT Sta. 10+00.00
END GRADE
BEGIN OVERLAY
-L- POT Sta. 22+25.00
-L- PC Sta. 24+48.31
END PROJECT B-4103
-L- POT Sta. 24+34.21=
BEGIN PROJECT B-4103
-L- PC Sta. 13+50.00 =
END CONSTRUCTION
-Y1- POT Sta. 11+75.00
-Y1- PC Sta. 10+12.54
-Y1- PT Sta. 10+64.53
-Y1- POT Sta. 13+25.53
BY-6 POT 8+93.74
BL-4 PINC 9+42.09
GPS B4103-1
BL-3 POT 17+17.68=
BY-1 POT 5+00.00
S 6° 42' 03.0" E
S 73° 27' 14.4" E
S 62° 01' 11.9" E
S 27° 58' 48.1" W
S 46° 29' 11.8" E
15" CS W/2 ELBOWS USE ROD AND LUG CONNECTORS AND SLEEVE GASKETS
SPECIAL BERM DITCH SEE DETAIL D EST. 20 TONS RIP RAP EST. 55 SY FF
SPECIAL CUT DITCH SEE DETAIL C
CL "I" RIP RAP EST. 2 TONS EST. 6 SY FF
CLASS "B" RIP RAP EST. 3 TONS EST. 10 SY FF
LATERAL 'V' DITCH SEE DETAIL E DDE 65 CY EST. 75 TONS RIP RAP EST. 225 SY FF
SPECIAL CUT DITCH SEE DETAIL F EST. 55 TONS RIP RAP EST. 160 SY FF
CL "II" RIP RAP STRUCTURE PAY ITEM
RETAIN DITCH CONSTRUCTED DURING DETOUR PHASE
RETAIN
15+00
20+00



SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS

10/26/2006

B-4103	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BL-4
EL = 532.41'

B4103-1 GPS
EL = 514.93'

BL-3
EL = 521.08'

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2,000 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	509.4 FT
BASE DISCHARGE	=	2,400 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	510.1 FT
OVERTOPPING DISCHARGE	=	18,000 CFS
OVERTOPPING FREQUENCY	=	500++YRS
OVERTOPPING ELEVATION	=	518.87 FT
DATE OF SURVEY	=	5/17/05
W.S.ELEVATION AT DATE OF SURVEY	=	507.2 FT

-L-

FOR -L- PLAN VIEW SEE SHEET 4

BLEND TO EXIST

BEGIN CONSTRUCTION -L- 13+50.00

BEGIN GRADE -L- 14+00.00 EL = 528.82'

PI = 15+55.00
EL = 520.29'
VC = 250'
**K = 49

(-) 6.8000% (-) 5.5032% (-) 0.3700%

BEGIN BRIDGE -L- 16+78.92

END BRIDGE -L- 18+96.08

LOW POINT -L- 19+02.94

PI = 20+55.00
EL = 518.44'
VC = 340'
**K = 49

(-) 0.3700% (+) 5.0000% (+) 2.5000% (+) 5.0000% (+) 1.9600% (+) 6.6412% (+) 8.7800% (+) 9.3600%

END GRADE BEGIN OVERLAY -L- 22+25.00 EL = 529.73'

OVERLAY PAVEMENT

END OVERLAY -L- 23+84.21 EL = 539.71'

END CONSTRUCTION -L- 24+34.21

BLEND TO EXIST

BEGIN SP DITCH LT -L- 14+50.00 EL = 523.08

END SP DITCH LT -L- 14+75.00 EL = 521.63

EXCAVATE TO ELEVATION 10.0 (SLOPE TO DRAIN LT. & RT. OF -L-)

NWS. ELEV. = 507.2 (5-17-05)

BADIN LAKE FULL POOL = 509.0

BEGIN SP DITCH LT -L- 18+85.00 EL = 510.50

PI SP DITCH LT -L- 19+50.00 EL = 513.75

PI SP DITCH LT -L- 20+00.00 EL = 515.00

PI SP DITCH LT -L- 21+00.00 EL = 520.00

PI SP DITCH LT -L- 21+50.00 EL = 520.98

PI SP DITCH LT -L- 22+00.00 EL = 525.37

END SP DITCH LT -L- 22+50.00 EL = 530.02

BM-#2
RAILROAD SPIKE IN 24" OAK TREE
-BL- STA 20+97 109' RIGHT
EL = 544.83'

-Y1-

BY-6
EL = 531.30'

FOR -Y1- PLAN VIEW SEE SHEET 4

PI = 10+60.00
EL = 524.06'
VC = 80'
K = 15

BEGIN GRADE -Y1- 10+11.00 EL = 525.61'

END GRADE -Y1- 11+00.00 EL = 524.89'

(-) 3.1578% (-) 3.0000% (+) 12.0683% (-) 7.1067%

BEGIN SP DITCH LT -Y1- 10+25.00 EL = 524.50

PI SP DITCH LT -Y1- 10+75.00 EL = 523.00

END SP DITCH LT -Y1- 11+50.00 EL = 522.20

-DET-

FOR -DET- PLAN VIEW SEE SHEET 2-B

BEGIN GRADE -DET- 14+38.07 EL = 526.93'

PI = 15+70.00
EL = 519.72'
VC = 250'
K = 49

(-) 9.0656% (-) 5.2627% (-) 3.8846% (-) 2.0000% (-) 6.0000%

BEGIN BRIDGE -DET- 17+00.00

END BRIDGE -DET- 19+00.00

LOW POINT

PI = 20+35.00
EL = 517.93'
VC = 300'
K = 49

(-) 10.3849% (+) 15.7560%

END GRADE -DET- 21+87.71 EL = 526.72'

BEGIN SP DITCH RT -DET- 13+50.00 EL = 529.06

PI SP DITCH RT -DET- 14+00.30 EL = 524.50

PI SP DITCH RT -DET- 15+04.81 EL = 519.00

PI SP DITCH RT -DET- 16+07.78 EL = 515.00

PI SP DITCH RT -DET- 16+57.78 EL = 514.00

END SP DITCH RT -DET- 17+07.78 EL = 511.00

EXCAVATION

NWS. ELEV. = 507.2 (5-17-05)

BADIN LAKE FULL POOL = 509.0

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1100	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 508.4	FT
BASE DISCHARGE	=	CFS
BASE FREQUENCY	=	YRS
BASE HW ELEVATION	=	FT
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING FREQUENCY	=	YRS
OVERTOPPING ELEVATION	=	FT
	=	FT
DATE OF SURVEY	= 5/17/05	
W.S.ELEVATION AT DATE OF SURVEY	= 507.2	FT

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550
540
530
520

DET
13+50.00

534.42

529.06

13+50.00

550
540
530

534.37

13+00.00

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B-4103 | X-2

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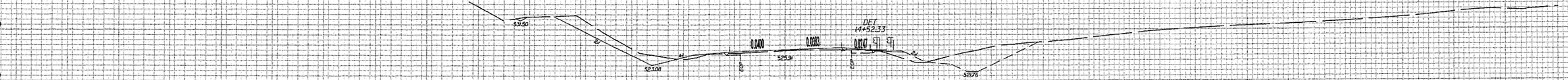
15+00.00

540 530 520



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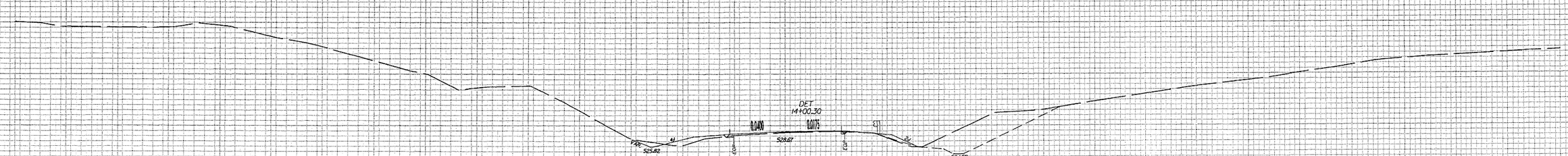

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—L—

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BEGIN BRIDGE -L- STA.16+78.92

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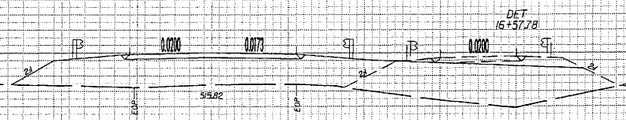

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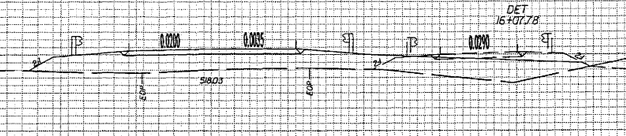

16+00.00

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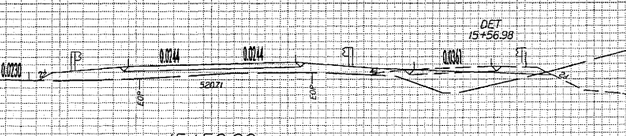

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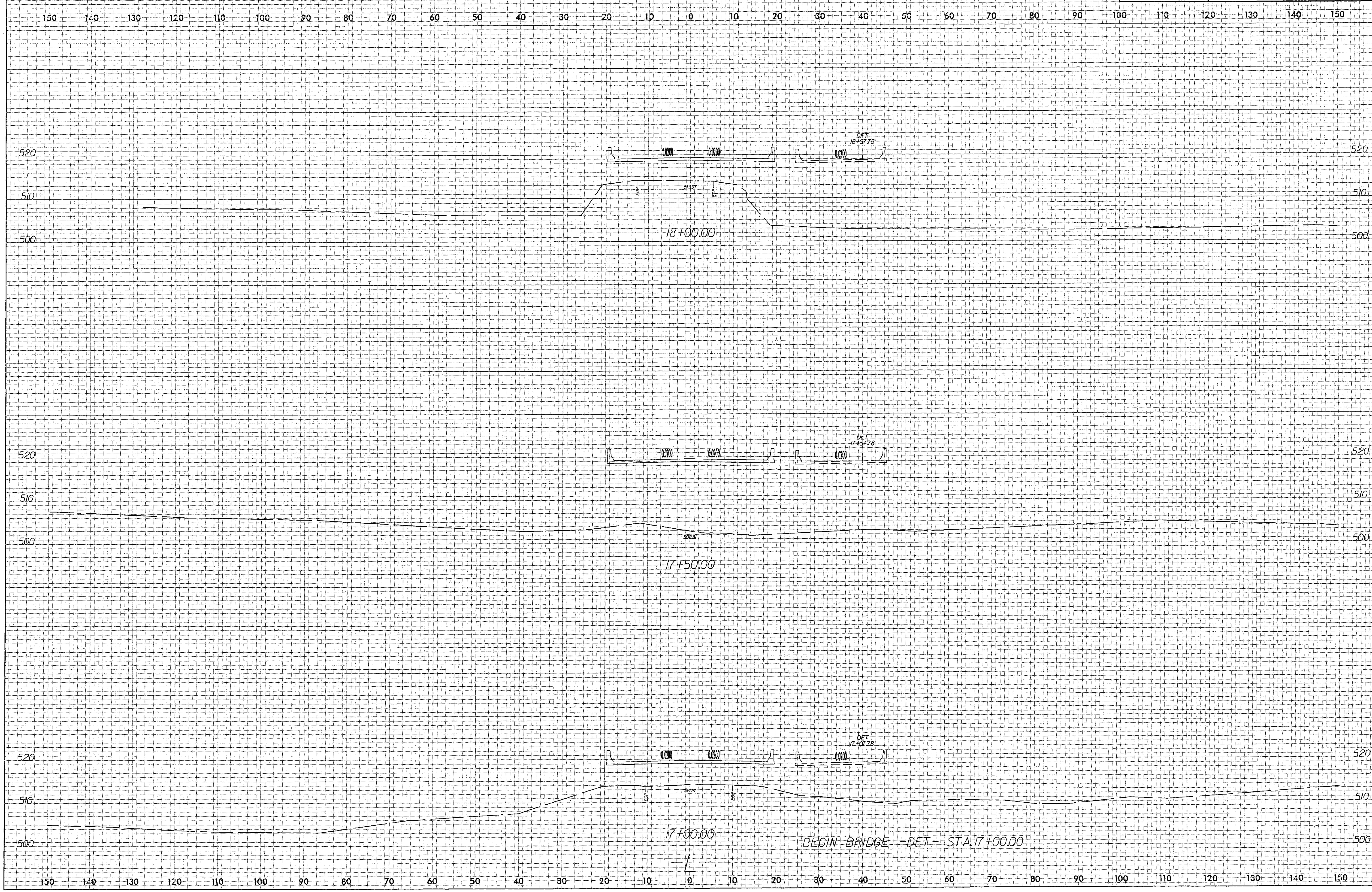
B-4103 X-4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0.0200
18+00.00
DET 17+57.78
17+50.00
DET 17+07.78
17+00.00
BEGIN BRIDGE -DET- STA.17+00.00
-L-
520
510
500
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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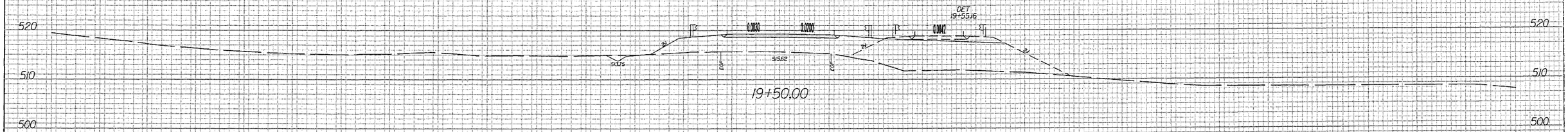

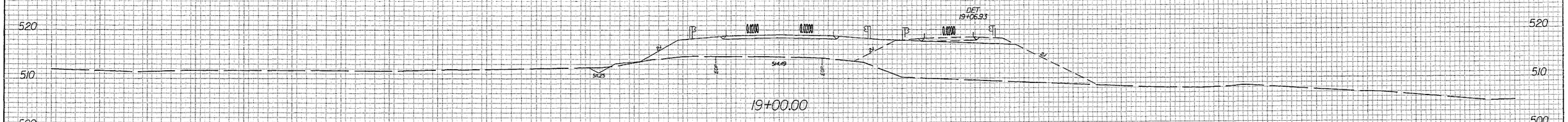

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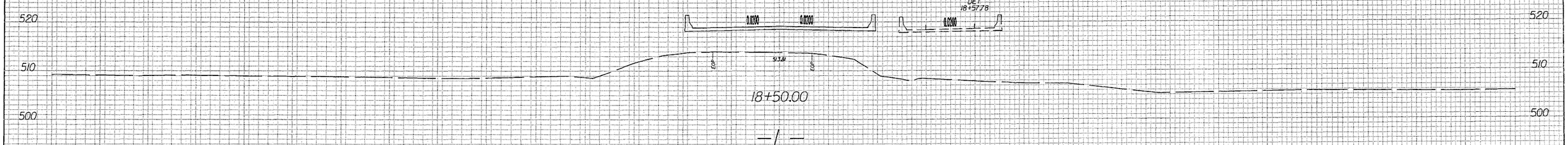
END BRIDGE -L- STA.18+86.08



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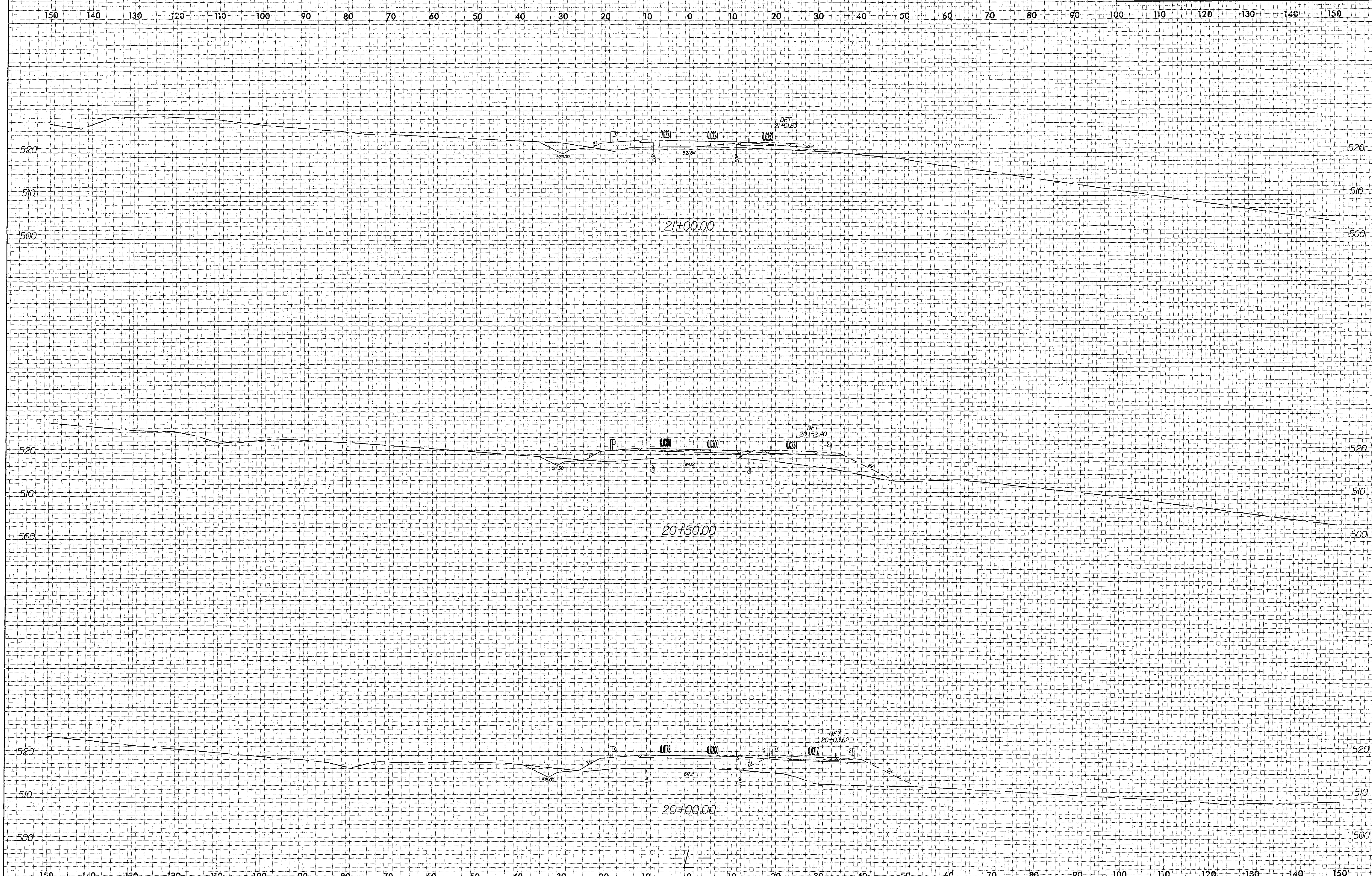

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520
510
500
DET
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0.0224
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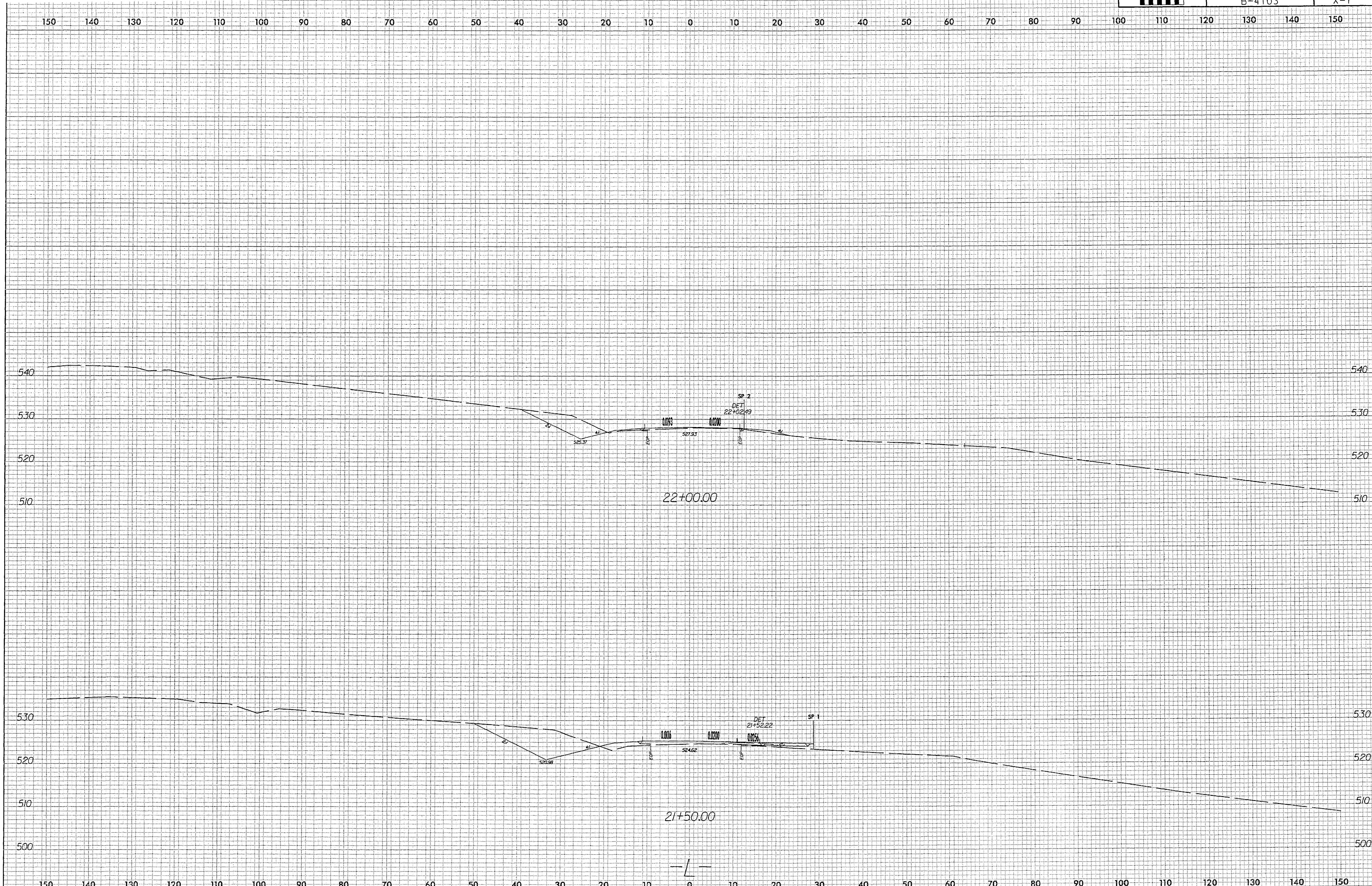
0.0252
21+00.00
DET
20+52.40
0.0300
0.0300
0.0224
20+50.00
DET
20+03.62
0.0078
0.0200
0.0212
20+00.00
-L-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DET 22+02.49
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0.0200
527.93
525.37
EOP
22+00.00
DET 21+52.22
SP 1
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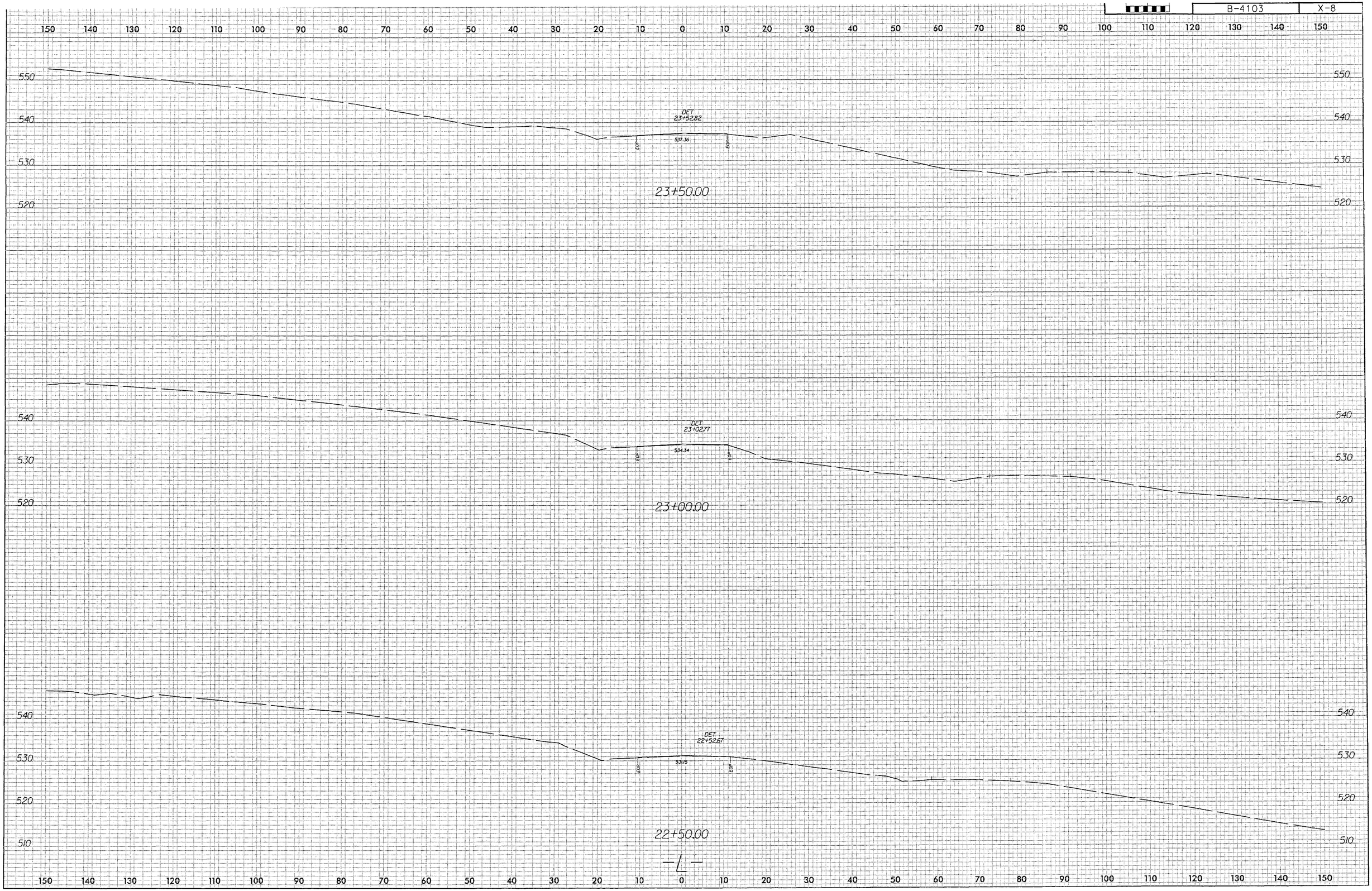
0.0200
524.62
520.98
21+50.00
-L-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EOP
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520
DET
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EOP
534.34
EOP
23+00.00
540
530
520
510
DET
22+52.67
EOP
533.15
EOP
22+50.00
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B-4103 X-9

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550 540 530 520

EOP 542.91 EOP

24+50.00

550 540 530 520

EOP 540.21 EOP

24+00.00

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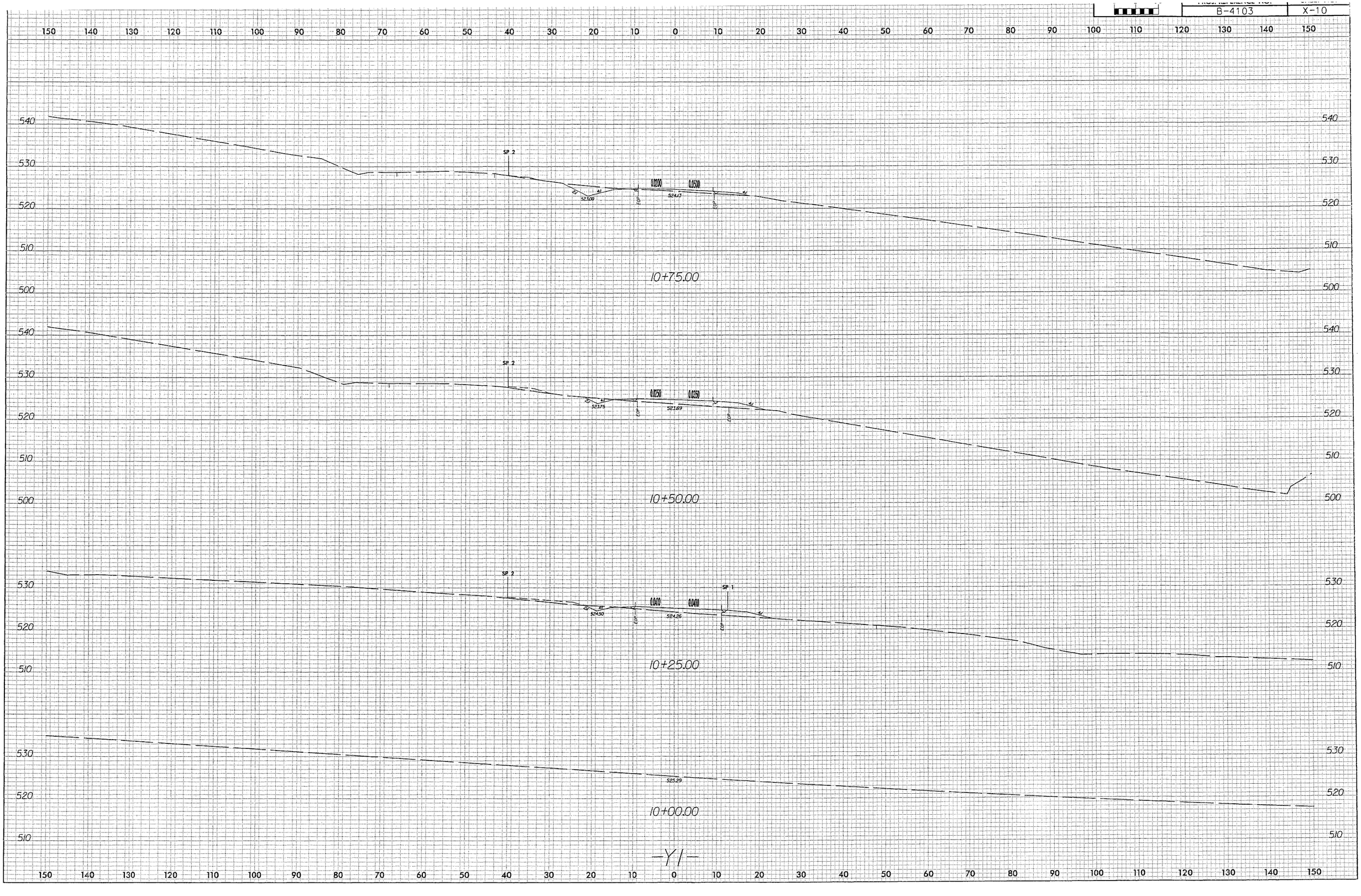
PROJ. REFERENCE NO.	SHEET NO.
B-4103	X-10



PROJ. REFERENCE NO. B-4103

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520
510
500

522.20
525.95
EOP
EOP
11+50.00

540
530
520
510
500

522.47
525.33
EOP
EOP
11+25.00

540
530
520
510
500

522.73
524.74
EOP
EOP
11+00.00

-Y1-

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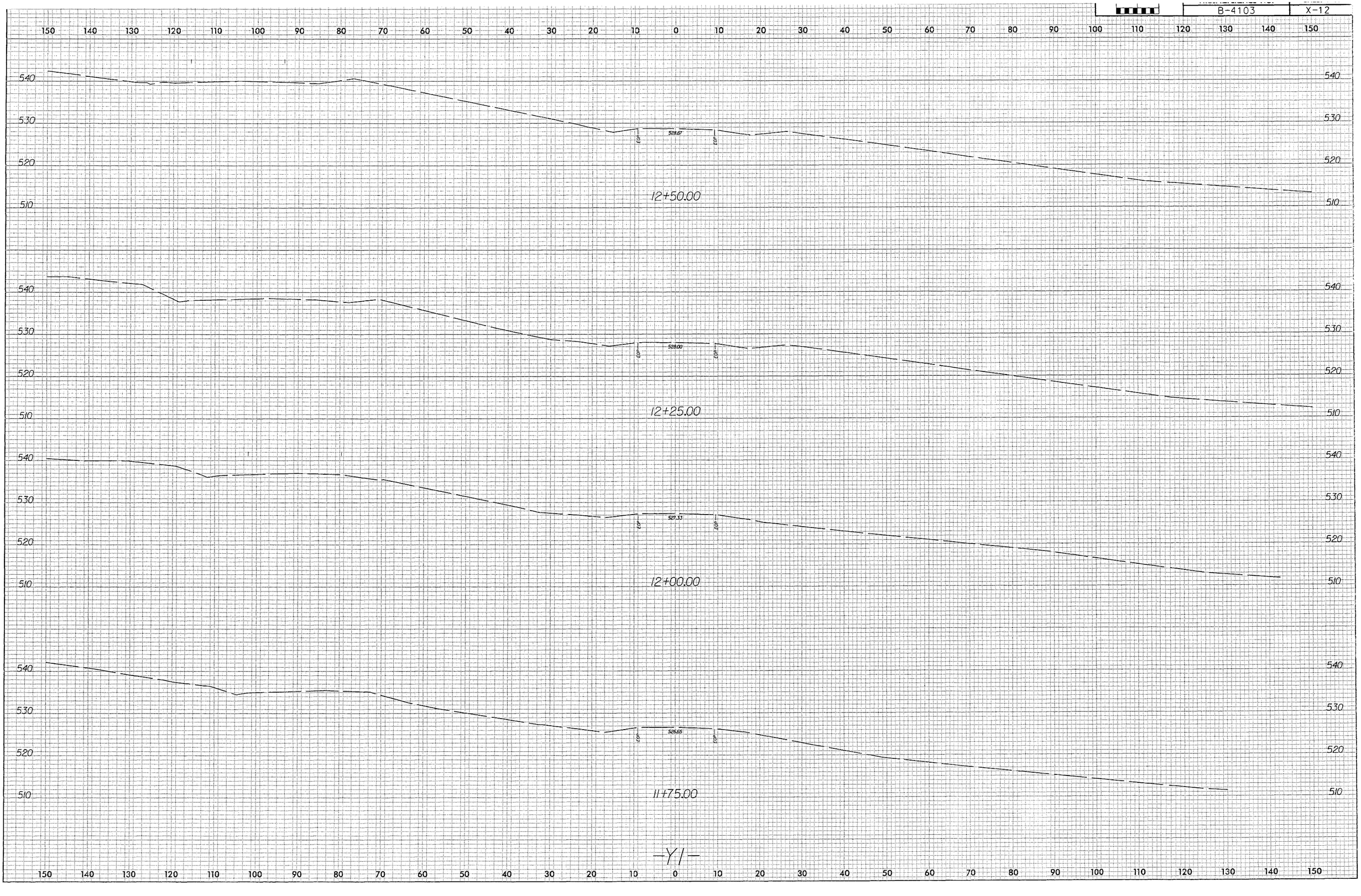
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520
510
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EOP
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528.00
12+25.00
528.33
12+00.00
528.65
11+75.00
-Y1-

Rev. 3/6/01

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4103	X-1A

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement and Removal of Existing Pavement will be paid for at the contract Special Provision price for "Grading".

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBANKMENT
-DET-		
13+50	0	0
14+00	0	0
14+50	2	9
15+00	4	19
15+50	2	45
16+00	0	95
16+50	0	202
17+00	0	414
19+00	0	178
19+50	0	466
20+00	0	347
20+50	0	224
21+00	0	92
21+50	1	17
22+00	1	2
22+50	0	0
23+00	0	0
23+50	0	0
24+00	0	0
24+37.05	0	0

LOCATION	UNCLASSIFIED EXCAVATION	EMBANKMENT
-L-		
13+50	0	0
14+00	3	7
14+50	37	10
15+00	39	3
15+50	6	40
16+00	0	132
16+50	0	240
16+80	0	268
18+85	0	100
19+00	0	99
19+50	0	289
20+00	0	215
20+50	0	152
21+00	0	81
21+50	97	29
22+00	142	12
22+25	23	1
-Y1-		
10+11	0	0
10+25	2	6
10+50	4	11
10+75	10	7
11+00	22	1
11+25	32	0
11+50	22	0

LOCATION	UNCLASSIFIED EXCAVATION	EMBANKMENT
-L- W/-DET- REMOVAL		
13+50	0	0
14+00	1	4
14+50	2	7
15+00	3	14
15+50	7	13
16+00	14	3
16+50	20	1
16+80	14	0
18+85	0	0
19+00	6	1
19+50	23	0
20+00	22	0
20+50	15	1
21+00	7	4
21+50	3	9
22+00	1	9
22+25	1	2

$TIME$
$DATE$
$FILE$

SR 2550 (Badin Lake Road)
Bridge No. 416 Over Beaverdam Creek
Davidson County
Federal-Aid Project No. BRSTP-2550(1)
State Project No. 8.2604601
WBS No. 33459.1.1
T.I.P. No. B-4103

CATEGORICAL EXCLUSION

AND

PROGRAMMATIC SECTION 4(f) EVALUATION AND APPROVAL

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

APPROVED:

12-22-05
DATE

for

Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation

12-22-05
DATE

for

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

SR 2550 (Badin Lake Road)
Bridge No. 416 Over Beaverdam Creek
Davidson County
Federal-Aid Project No. BRSTP-2550(1)
State Project No. 8.2604601
WBS No. 33459.1.1
T.I.P. No. B-4103

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

December 2005

Document Prepared by:
Mulkey Engineers and Consultants

12/21/05
Date

J. A. Bissett, Jr., PE
Vice President

12/20/05
Date

Pamela R. Williams
Project Manager

Document Prepared for:
North Carolina Department of Transportation

12/22/05
Date

John Conforti, REM
Project Planning Engineer

PROJECT COMMITMENTS

SR 2550 (Badin Lake Road)
Bridge No. 416 Over Beaverdam Creek
Davidson County
Federal-Aid Project No. BRSTP-2550(1)
State Project No. 8.2604601
WBS No. 33459.1.1
T.I.P. No. B-4103

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, Design Standards for Sensitive Watersheds, Sedimentation and Erosion Control Guidelines for Sensitive Watersheds, Erosion and Sediment Control Guidelines for Contract Construction, Best Management Practices for Construction and Maintenance Activities, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Project Development and Environmental Analysis Branch

Prior to project advertising a query will be made of the researchers (Center for Conservation Biology at the College of William and Mary in cooperation with Alcoa Power Generating, Inc) to determine if any additional nesting activity has been observed in the vicinity of the project. Information obtained during this pre-construction interval must be communicated to the USFWS in Asheville to ensure that the department has met its obligations under Section 7. If additional nesting activity is reported at that time, it will be necessary to continue consultation with the USFWS and the NCWRC.

NCDOT will develop a plan for the bridge relocation that will include the potential recipient (City of Albemarle) and Alcoa representatives.

Roadway Design/Division

A meeting with Alcoa will be scheduled at right-of-way stage for a walk-through with Mr. Robert Smet (704) 422-5678.

Two copies of right-of-way plans will be provided to:

Mr. Robert Smet
Yadkin Power and Property Coordinator
Alcoa Power Generating Inc.
Yadkin Division
Post Office Box 576
Badin, North Carolina 28009-0576

Hydraulic Design

Deck drains will not discharge directly into Badin Lake/Beaverdam Creek.

SR 2550 (Badin Lake Road)
Bridge No. 416 Over Beaverdam Creek
Davidson County
Federal-Aid Project No. BRSTP-2550(1)
State Project No. 8.2604601
WBS No. 33459.1.1
T.I.P. No. B-4103

INTRODUCTION: The replacement of Bridge No. 416 is included in the North Carolina Department of Transportation (NCDOT) 2006-2012 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

NCDOT Bridge Maintenance Unit records indicate that Bridge No. 416 has a sufficiency rating of 18.0 out of a possible 100 for a new structure. The bridge 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. 416 is located on SR 2550 (Badin Lake Road) about 30 miles south of Lexington, the county seat. SR 2550 is classified as "rural local" by the statewide functional classification system. It connects NC 8 to NC 109 around the northern finger of Badin Lake, and is within the Uwharrie National Forest proclamation boundary. The Uwharrie National Forest land is located 600 to 700 feet north of this project (Figure 2). SR 2550 is a rural two-lane roadway that serves recreational travel to Badin Lake and provides access to Uwharrie Game Land.

Bridge No. 416 crosses Beaverdam Creek at the headwaters of an arm of Badin Lake (Narrows Reservoir). Narrows Reservoir is one of the developments of Project No. 2197, a hydroelectric project which Alcoa Power Generating Incorporated (APGI) is licensed to operate by the Federal Energy Regulatory Commission (FERC). The Yadkin Division of APGI is responsible for operating Project No. 2197. The Beaverdam Creek/Grassy Fork Creek Significant Natural Heritage Area is upstream of the project area.

Land use near the project site is rural, with recreational homes surrounding Badin Lake. There has been no substantial residential development in the past 11 years; however, there is a landowner who owns 100 to 200 acres near the bridge, and plans to develop it with a golf course and some residences. Some commercial growth is also expected near the intersection of SR 2550 and NC 49. There are no current plans to upgrade this roadway at or in the vicinity of the project.

The 2005 estimated average daily traffic (ADT) volume is 670 vehicles per day (vpd). The projected ADT is 1100 vpd by the design year 2030. The percentages of truck traffic are 3% dual tired vehicles (DUALS) and 1% truck-tractor semi trailer (TTST). The speed limit in the vicinity of the bridge is not posted; therefore, a statutory speed limit of 55 miles per hour (mph) applies.

Bridge No. 416 was built in 1920 and is eligible for listing on the National Register of Historic Places. It is a one-lane facility with a clear roadway width of 15 feet (Figure 3). The pony truss bridge has one span at 72 feet in length and no guardrail protection on either end. The superstructure consists of a timber deck on a

low steel pony truss. The substructure west end bent has timber caps, posts, and sills. The substructure of the east concrete abutment has timber risers. The bridge deck is approximately 13 feet from crown to streambed. The posted weight limit is 9 tons for single vehicle and 14 tons for TTST.

The approach roadway consists of two 11-foot lanes with 5-foot grass shoulders, which tapers to one 13-foot lane at the bridge with 5-foot turf shoulders. The sag vertical curve at the bridge has a design speed of 35 mph. There are two curves adjacent to the ends of Bridge No. 416. The curve radius east of the bridge is approximately 1,250 feet and west of the bridge is approximately 1,300 feet. The existing right of way is approximately 50 feet with no control access.

There is a water line, stormwater collection system, and an overhead power line located north of SR 2550, on the upstream side of Bridge No. 416. Overhead telephone and fiber optic lines are located south of Badin Lake Road, on the downstream side of the bridge. Utility impacts are anticipated to be low.

No Davidson County school buses cross Bridge No. 416; however, there are a total of four bus crossings daily from Montgomery County schools.

No accidents were reported in the project area during the period from June 1, 2002 to June 31, 2005.

This section of SR 2550 in Davidson County is not part of a designated bicycle route nor is it listed in the T.I.P. as needing incidental bicycle accommodations.

III. ALTERNATIVES

A. Project Description

The recommended replacement structure is a bridge providing two 11-foot travel lanes and 7-foot shoulders (Figure 4A). A minimum 0.3 percent grade is recommended to facilitate bridge deck drainage. The length and width of the new structure may be increased or decreased as necessary to accommodate peak flows and contain deck drainage as determined by more detailed hydrologic studies during the final design phase.

The proposed approach roadway will consist of two 11-foot travel lanes with 7-foot turf shoulders (Figure 4A).

B. Build Alternatives

Two build alternatives were studied for this project. They are described below.

Alternative B (preferred) will replace the bridge in-place (Figure 5A). The proposed bridge will be approximately 200 feet in length. During construction, a one-lane two-way on-site temporary detour located south (downstream) of the existing bridge will be utilized to maintain traffic.

The detour bridge will provide a 10-foot travel lane with 4-foot shoulders (Figure 4B). The approach roadway will consist of one 10-foot lane with 4-foot shoulders. The detour will be signal controlled.

Alternative D replaces the bridge on new alignment north (upstream) of the existing structure (Figure 5B). The proposed bridge will be approximately 200 feet in length. Traffic will be maintained on the existing structure during construction.

C. Alternatives Eliminated From Further Study

Alternative A would replace the bridge in-place. The proposed bridge would be approximately 200 feet in length. During construction, traffic will be routed off-site along the following detour: SR 2550 (Badin Lake Road), NC 49, and NC 109. The detour is approximately 15 miles in length. This alternative was eliminated due to the unacceptable delay and the high road user cost associated with this detour that is approximately $1,283,000 annually.

Alternative C replaces the bridge on new alignment south (downstream) of the existing structure. The proposed bridge will be approximately 205 feet in length. Traffic would be maintained on the existing structure during construction of the new bridge. Alternative C was eliminated because Alternative B impacts less wetland and forest.

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

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

D. Preferred Alternative

Alternative B was selected as the preferred alternative because it minimizes wetland impacts and will not take the residential house in the northwest quadrant.

The Division Engineer concurs with Alternative B as the preferred.

E. Design Exception

A design exception for the vertical curve in the project area maybe required. The speed limit in the vicinity of the bridge is not posted; therefore, a statutory speed limit of 55 miles per hour (mph) applies. The existing sag vertical alignment has a design speed of approximately 35 mph. If a design exception is applicable, then advisory signing will be evaluated during the final design phase.

IV. ESTIMATED COST

Table 1 shows the estimated costs of the proposed project based on current prices.

Table 1. Estimated Cost

	Alternative B (preferred)	Alternative D
Structure Removal (Existing)	$ 15,100	$ 15,100
Proposed Structure	627,300	627,300
Temporary Detour Bridge and Approaches	312,100	0
Roadway Approaches	185,000	426,300
Miscellaneous & Mobilization	290,500	321,300
Engineering Contingencies	220,000	210,000
ROW/Const. Easements/Utilities	91,000	91,000
TOTAL	$1,741,000	$1,691,000

The estimated cost of the project as shown in the 2006-2012 Transportation Improvement Program is $1,075,000, including $75,000 for right-of-way, $900,000 for construction and $100,000 in prior years.

V. NATURAL RESOURCES

A. Methodology

Research was conducted prior to field investigation. Published resource information pertaining to the project area was gathered and reviewed. Resources utilized in this preliminary investigation of the project area included:

- U.S. Geological Survey (USGS) quadrangle maps (Handy)
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) quadrangle map (Handy)
- NCDOT aerial photograph of project area
- Natural Resources Conservation Service (NRCS), formerly known as Soil Conservation Service, Soil Survey of Rowan County, North Carolina (1995)

Water resource information was obtained from publications posted on the World Wide Web by North Carolina Department of Environment and Natural Resources, Division of Water Quality (DWQ). Information concerning the occurrence of federal protected species in the study area was obtained from the USFWS list of protected and candidate species (on-line list researched 2/11/05, last updated 2/11/03), and from the NC Natural Heritage Program (NCNHP) database of rare species and unique habitats (on-line list researched December 2, 2005, last updated January 2004). NCNHP maps were reviewed on April 25, 2005 for documented occurrences of state or federal listed species and locations of significant natural areas.

General natural resource surveys and federal protected species surveys were conducted along the proposed alignment on August 1, 2001, September 11, 2001, and May 18, 2004. Water resources were identified and their physical characteristics recorded. Plant communities and associated wildlife were also identified and described. Terrestrial community classifications generally follow Schafale and Weakley (1990) where

possible, and plant taxonomy follows Radford *et al.* (1968). Vertebrate taxonomy follows Martof *et al.* (1980), Potter *et al.* (1980), and Webster *et al.* (1985). Predictions of wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities. Wildlife identification involved using a variety of observation techniques. Techniques included active searching and identification of characteristic wildlife signs (sounds, scat, tracks, and burrows).

Jurisdictional wetlands, if present, were delineated and evaluated based on criteria established in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and *Guidance for Rating the Values of Wetlands in North Carolina* (Division of Environmental Management, 1995). Wetlands were classified based on the classification scheme of Cowardin *et al.* (1979).

For the purposes of this document, the following terms are used concerning the limits of natural resources investigations. **"Project area"** denotes the area bounded by the proposed right-of-way limits along the full length of the project alignment. **"Project vicinity"** is defined as an area extending one mile on all sides of the project area, and **"Project region"** denotes an area equivalent in size to the area represented by a 7.5 minute USGS quadrangle map, i.e. (61.8 sq. mi.). **"Study area"** denotes the area that was covered during the natural resource surveys.

B. Physiography and Soils

Davidson County is in the center of the Piedmont physiographic region of North Carolina. Most of the county is characterized by gently rolling to hilly landscapes. County elevations range from 510 feet above mean sea level (msl) at Badin Lake to 1,180 feet in the Uwharrie Mountains. Project elevations average 525 feet above msl. The county is drained by the Yadkin River and its tributaries, which flow south or southwestward.

There is one soil type located in the project area. A brief description of the soil type is provided below.

- Oakboro silt loam, frequently flooded (Ok) is a nearly level, moderately well to somewhat poorly drained soil found on floodplains along streams and drainageways throughout Davidson County. Permeability is moderate and the depth to the seasonal high water table is between 12 and 24 inches. The surface layer is typically a brown silt loam extending about 6 inches below the surface. The subsoil is moderately shallow, with bedrock reached at about 43 inches below the surface, and has a low shrink-swell potential. The main limitations with this soil are wetness and the Capability Unit, which is IVw. Although this soil is wet and frequently flooded, it is not on the North Carolina Hydric Soils List (NRCS, 1995).

C. Water Resources

1. Waters Impacted

The project is located in the Yadkin River Drainage Basin. There is one water resource in the project study area: Beaverdam Creek. SR 2550 crosses Beaverdam Creek, which is a tributary that forms a major arm of Badin Lake.

2. Water Resource Characteristics

Beaverdam Creek at SR 2550 is approximately 75 to 100 feet wide and is lacustrine (upper section of Badin Lake). The substrate is composed primarily of silt.

Streams have been assigned a best usage classification by the DWQ, which reflects water quality conditions and potential resource usage. The classification for Beaverdam Creek (DWQ Index No. 12-134-(2), 8/3/92) is **WS-IV CA**. Class **WS-IV** (Water Supply IV) refers to those waters protected as water supplies which are generally in moderately to highly developed watersheds, and are suitable for all class C uses (aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture). The **CA** (Critical Area) subclassification is a supplemental classification that is defined as land within 0.5 mile upstream and draining to a river intake or within 0.5 mile and draining to the normal pool elevation of water supply reservoirs. No waters classified as High Quality Water (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occurs within one mile of the project study area.

The Basinwide Monitoring Program, managed by DWQ, is part of an ongoing ambient water quality monitoring program that addresses long-term trends in water quality. The program monitors ambient water quality by sampling at fixed sites for selected benthic macroinvertebrate organisms, which are sensitive to water quality conditions. Samples are evaluated on the number of taxa present of intolerant groups [Ephemeroptera, Plecoptera, Trichoptera (EPT)] and a taxa richness (EPT S) is calculated. A biotic index value is also calculated for the sample that summarizes tolerance data for all species in each collection. The two rankings are given equal weight in final site classification. The biotic index and taxa richness values primarily reflect the effects of chemical pollution and are a poor measure of the effects of such physical pollutants as sediment. There are no benthic macroinvertebrate sampling stations in the project vicinity (NCDENR, 1998).

Point source discharge is defined as "a discharge that enters surface waters through a pipe, ditch or any other well-defined point of discharge. The term applies to wastewater and stormwater discharges from a variety of sources" (DWQ, 1998). Point source dischargers located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. Any dischargers are required to register for a permit. No registered point source dischargers are located in or directly upstream from the project study area.

Non-point source discharge refers to runoff that enters surface waters through stormwater, snowmelt, or atmospheric deposition (DWQ, 1998). Many types of land-use activities serve as sources of non-point source pollution. These include land development, construction, crop production, animal feeding lots, failing septic systems, landfills, roads, and parking lots. Sediment and nutrients are major pollution-causing substances associated with non-point source pollution. Other sources of pollution include fecal coliform bacteria, heavy metals, oil and grease, and any other substance that may be washed off the ground or removed from the atmosphere and carried into surface waters. Excluding road runoff, there were no identifiable non-point sources observed during the site visit.

3. Anticipated Impacts to Water Resources

a. General Impacts

Impacts to water resources in the project area are likely to result from activities associated with project construction, such as clearing and grubbing on streambanks, riparian canopy removal, instream construction, fertilizers and pesticides in revegetation, and pavement installation.

In order to minimize potential impacts to water resources in the project area, NCDOT's *Best Management Practices for the Protection of Surface Waters* will be strictly enforced during the construction phase of the project. Impacts can be further reduced by limiting instream activities and revegetating stream banks immediately following the completion of grading.

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 should follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in NCDOT's document *Best Management Practices for Construction and Maintenance Activities* (2003).

Bridge No. 416 is composed completely of timber and steel; therefore, it will be removed without dropping any components into waters of the United States.

D. Biotic Resources

1. Plant Communities

Descriptions of the terrestrial systems are presented in the context of plant community classifications. These classifications follow Schafale and Weakley (1990) where possible. Representative animal species that are likely to occur in these habitats (based on published range distributions) are also cited.

Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Subsequent references to the same organism refer to the common name only.

Much of the flora and fauna described within biotic communities utilize resources from adjacent communities, making boundaries between contiguous communities difficult to define. There are four terrestrial communities located in the project area: disturbed/maintained, upland forest, lake fringe/floodplain forest, and wetland.

a. Disturbed/Maintained Community

This community is located on the north and south side of the bridge and encompasses two types of habitat: maintained road shoulder and less maintained disturbed community. The maintained road shoulder community consists mostly of grasses, herbs, and vines including fescue (*Festuca* spp.), goldenrod (*Solidago* spp.), Japanese honeysuckle (*Lonicera japonica*), poison ivy (*Toxicodendron radicans*), cinquefoil (*Potentilla canadensis*), pokeweed (*Phytolacca americana*), wild grape (*Vitis* spp.), Virginia creeper (*Parthenocissus quinquefolia*), and cross-vine (*Bignonia capreolata*).

The less maintained disturbed community is located on the north side of SR 2550 and along the powerline clearing. It is comprised of shrubs and trees including sweet gum (*Liquidambar styraciflua*), short-leaf pine (*Pinus echinata*), white oak (*Quercus alba*), willow oak (*Quercus phellos*), northern red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*), red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), black gum (*Nyssa sylvatica*), hornbeam (*Carpinus caroliniana*), blackberry (*Rubus* spp.) and winged sumac (*Rhus copallina*). Herbs, grasses, and vines are similar to the road shoulder community and also include foxtail grass (*Setaria* spp.), broomsedge (*Andropogon* spp.), coneflower (*Rudbeckia* spp.), sunflowers

(*Helianthus* spp.), wild lettuce (*Lactuca* spp.), ragweed (*Ambrosia artemissifolia*), rabbit tobacco (*Gnaphalium obtusifolium*), butterfly pea (*Centrosema virginianum*), and green-brier (*Smilax* spp.).

b. Lake Fringe/Floodplain Forest

Dominant emergent species within the permanently to seasonally flooded areas primarily along the east bank include water willow (*Justicia americana*) and spikerush (*Eleocharis* spp.). Species within the seasonally flooded to saturated areas include buttonbush (*Cephalanthus occidentalis*), black willow (*Salix nigra*), rose mallow (*Hibiscus moscheutos*), arrowhead (*Sagittaria latifolia*), golden club (*Orontium aquaticum*), sedges, cardinal flower (*Lobelia cardinalis*), river oats (*Chasmanthium latifolium*), silky dogwood (*Cornus amomum*), tag alder (*Alnus serrulata*), hornbeam, overcup oak (*Quercus lyrata*), sweetgum, green ash (*Fraxinus pennsylvanica*), and willow oak. Species along the steeper banks (primarily west bank) consist of sycamore (*Platanus occidentalis*), American elm (*Ulmus americana*), tag alder, silky dogwood, microstegium (*Microstegium vimineum*), and sedges. The vine community is similar to the Disturbed/Maintained community.

c. Upland Forest

The upland forest community is located upslope of the lake fringe/floodplain forest community. This community includes species found in the disturbed communities mentioned above such as white oak, hickories, northern red oak, red maple, southern sugar maple (*Acer barbatum*), short-leaf pine, tulip poplar, black gum, and red cedar (*Juniperus virginiana*). Understory and shrub species include hornbeam, American holly (*Ilex opaca*), flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), sassafras (*Sassafras albidum*), witch hazel (*Hamamelis virginiana*), and blueberry (*Vaccinium* spp.). Herbaceous and vine species consist of heartleaf (*Hexastylis* spp.), pipsissiwa (*Chimaphila maculata*), tick-trefoils (*Desmodium* spp.), poison ivy, trumpet creeper, Virginia creeper, green-brier, wild grape, honeysuckle, and cross-vine. The upland forest community corresponds to the Dry-Mesic Oak-Hickory Forest as described in Schafale and Weakley (1990).

d. Wetland Community

Wetlands are located within the Lake Fringe/Floodplain Forest community along the east bank of Beaverdam Creek. The wetland vegetation is described in the community description for Lake Fringe/Floodplain Forest.

2. Wildlife

Maintained/disturbed communities adjacent to forested tracts provide rich ecotones for foraging, while the forests provide forage and cover. Common mammals and birds associated with ecotones and upland forests are least shrew (*Cryptotis parva*), southern short-tailed shrew (*Blarina carolinensis*), hispid cottonrat (*Sigmodon hispidus*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), Virginia opossum (*Didelphis virginiana*), Northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalis cardinalis*), European starling (*Sturnus vulgaris*), Carolina chickadee (*Poecile carolinensis*), tufted titmouse (*Baeolophus bicolor*), and common grackle (*Quiscalus quiscula*).

3. Aquatic Communities

This community consists of Beaverdam Creek, a major arm of Badin Lake. The community is lacustrine, supporting a variety of insects including water striders (*Gerris* spp.), whirligigs (*Dineutus* spp.), caddisflies, mayflies, midges, dragonflies, and damselflies. Mussels (*Elliptio* spp.) and clams (*Corbicula fluminea*) were also observed. This community supports a variety of reptiles including snakes and turtles, amphibians such as frogs and salamanders, and fish. Birds associated with this community include belted kingfisher (*Megaceryle alcyon*), great blue heron (*Ardea herodias*), and a variety of ducks. Plants found in this community are mentioned in the Lake Fringe/Floodplain Forest community description.

4. Anticipated Impacts to Biotic Communities

a. Terrestrial Communities

Impacts to terrestrial communities will result from project construction due to the clearing and paving of portions of the project area, and thus the loss of community area. Table 2 depicts impacts to terrestrial biotic communities that have been estimated based on the approximate construction limits of the two alternatives.

Table 2. Anticipated Terrestrial Impacts

Vegetative Community	**Alternative B (preferred)** Permanent Temporary	**Alternative D** Permanent Temporary
Upland Forest	0.00acre 0.20 acre	1.20 acres 0.00 acre
Disturbed/Maintained	0.68 acre 0.00 acre	0.88 acre 0.00 acre
Lake Fringe/Floodplain Forest	0.04 acre 0.03 acre	0.12 acre 0.00 acre

b. Aquatic Communities

Impacts to the aquatic community of Beaverdam Creek will result from the replacement of Bridge No. 416. Impacts are likely to result from the physical disturbance of aquatic habitats (i.e. substrate and water quality). Disturbance of aquatic habitats has a detrimental effect on aquatic community composition by reducing species diversity and the overall quality of aquatic habitats. Impacts to aquatic communities will be minimized by strict adherence to BMPs.

c. Wetland Communities

Impacts to wetlands will take place depending on the final design of the bridge replacement. Table 3 depicts the estimated impacts to Waters of the U.S. for the proposed alternatives. Permanent wetland impacts are a result of the widening of the approach roadway to the proposed new permanent bridge. Temporary wetland impacts are a result of the temporary road leading to the temporary bridge.

Table 3. Potential Impacts to Waters of the U.S. (acre)

Proposed Alternatives	Wetland (permanent)	Wetland (temporary)	Total Impact
Alternative B (preferred)	0.029 acre	0.017 acre	0.046 acre
Alternative D	0.086 acre	0.000 acre	0.086 acre

E. Special Topics

1. Waters of the United States

Surface waters and wetlands fall under the broad category of waters of the United States, as defined in Section 33 of the Code of Federal Register (CFR) Part 328.3. Any action that proposes to dredge or place fill material into surface waters or wetlands falls under the jurisdiction of the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act (33 U.S.C. 1344). Surface waters include all standing or flowing waters which have commercial or recreational value to the public.

Criteria to delineate jurisdictional wetlands include evidence of hydric soils, hydrophytic vegetation and hydrology. There are wetlands in the project area in the form of a lake emergent community and bottomland hardwood community along the east bank. According to Cowardin's classification the lake emergent community is part of the L1UBHh (Lacustrine, limnetic, unconsolidated bottom, permanently flooded, impounded) community. The bottomland hardwood community shoreward of the emergent community is a PF01C wetland type (palustrine, forested, broad-leaved deciduous, seasonally flooded) (Cowardin et al, 1979). Estimated wetland impact for Alternative B (preferred) is 0.046 acre and for Alternative D is 0.086 acre.

Impacts to jurisdictional surface waters are calculated based on the linear feet of the stream located within the proposed right-of-way. An anticipated combined length of 75 feet of Beaverdam Creek and 54 feet of streambed may be permanently or temporarily impacted by the proposed bridge replacement.

2. Permits

Section 404 of the Clean Water Act – In accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344), a permit is required from the USACE for projects of this type for the discharge of dredged or fill material into "Waters of the United States." The USACE issues two types of permits for these activities. A general permit may be issued on a nationwide or regional basis for a category or categories of activities when: those activities are substantially similar in nature and cause only a minimal individual or cumulative environmental impacts, or when the general permit would result in avoiding unnecessary duplication or regulatory control exercised by another Federal, state or local agency provided that the environmental consequences of the action are individually and cumulatively minimal. If a general permit is not appropriate for a particular activity, then an individual permit must be utilized. Individual permits are authorized on a case-by-case evaluation of a specific project involving the proposed discharges.

It is anticipated that this project will fall under Nationwide Permit 23, which is a type of general permit. Nationwide Permit 23 is relevant to approved Categorical Exclusions. This permit authorizes any activities, work and discharges undertaken, assisted, authorized, regulated, funded or financed, in whole

or in part, by another federal agency and that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit. However, final permit decisions are left to the discretionary authority of the USACE.

Section 401 General Water Quality Certification (WQC) – A Section 401 General Water Quality Certification is necessary for projects that require Section 404 permits. The state has General Certifications which will match the permit type authorized by the USACE. The NCDWQ must issue the 401 Certification before the USACE will issue the 404 Permit.

Bridge Demolition and Removal - Bridge No. 416 is composed completely of timber and steel; therefore, it will be removed without dropping any components into waters of the United States. Bridge No. 416 is eligible for listing on the National Register of Historic Places and will be disassembled and moved to a storage area as designated by NCDOT.

Yadkin's Subdivision Access Approval, Multi-Use Facility Permitting, and Industrial Approval Procedures (Procedures) govern activities within a project, such as the proposed bridge replacement. Bridge No. 416 is not located within a conservation zone or in an area of sensitive habitat. For bridge replacements not impacting a conservation zone, Yadkin's permitting process requires the completion of Yadkin's Agency Consultation (AC) process before Yadkin can issue a Construction Permit for the proposed improvements.

3. Mitigation

Mitigation of wetland impacts has been defined by the Council on Environmental Quality to include avoidance, minimization, and compensation. These activities must be considered in sequential order.

Avoidance examines all appropriate and practicable possibilities of averting impacts to Waters of the U.S. Bridge No. 96 is structurally deficient and obsolete; avoiding replacement of the bridge is not a feasible option.

Minimization includes the examination of appropriate and practicable steps to reduce adverse impacts to Waters of the U.S. Alternative B (preferred) minimizes impacts because it replaces the bridge in place and uses one lane on-site detour during construction.

Compensatory mitigation is required for those projects authorized under Nationwide Permits that result in the fill or alteration of:

- More than 1.0 acres of wetlands.
- And/or more than 150 feet of streams.

It is the decision of the USACE and the NCDWQ to require mitigation for impacts associated with project construction. The USACE and the NCDWQ has the discretion to require compensatory mitigation for any impacts to Waters of the United States.

F. Rare and Protected Species

1. Federal Protected Species

Some populations of fauna and flora are in the process of decline either due to natural forces or their inability to coexist with human development. Federal law (under the provisions of the Endangered Species Act of 1973, as amended) requires that any action, likely to adversely affect a species classified as federally protected, be subject to review by the USFWS. Other species may receive additional protection under separate state laws. This project occurs wholly in Davidson County, but since Montgomery County is a short distance from the project and presents similar physiography to that of Davidson County, listed species for Montgomery County were also investigated.

Plants and animals with a federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The USFWS lists six federally protected species for Davidson and Montgomery Counties (list last updated February 2003, checked via internet 12/2/05). These species are listed in Table 4. Brief descriptions of the characteristics and habitat requirements follow.

Table 4. Federally Protected Species Potentially Occurring in Davidson and Montgomery Counties, NC

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Clemmys muhlenbergii	Bog turtle[1]	Threatened (S/A)	N/A	Not Required
Haliaeetus leucocephalus	Bald eagle[1,2]	Threatened-PD	Yes	May Affect – Not Likely to Adversely Affect
Helianthus schweinitzii	Schweinitz's sunflower[1,2]	Endangered	No	No Effect
Felis concolor	Eastern cougar[2]	Endangered	No	No Effect
Picoides borealis	Red-cockaded woodpecker[2]	Endangered	No	No Effect
Echinacea laevigata	Smooth coneflower[2]	Endangered	No	No Effect

Note:
- "Endangered" denotes a species in danger of extinction throughout all or a significant portion of its range.
- "Threatened" denotes a species likely to become endangered in the foreseeable future throughout all or a significant portion of its range.
- "PD" denotes a species that is proposed for delisting.
- "T(S/A)" denotes a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section 7 consultation.

[1]Listed for Davidson County
[2]Listed for Montgomery County

A review of the NCNHP maps on April 25, 2005 indicated that no protected species are known to occur within one mile of the project study area.

Haliaeetus leucocephalus (Bald eagle)
Animal Family: Accipitridae
Federal Listed: March 11, 1967

The bald eagle is a large raptor. The characteristic adult plumage consists of a white head and tail with a dark brown body. Juvenile eagles are completely dark brown and do not fully develop the majestic white head and tail until the fifth or sixth year. Fish are the primary food source but bald eagles will also take a variety of birds, mammals, and turtles (both live and as carrion) when fish are not readily available. Adults average about three feet from head to tail, weigh approximately 10 to 12 pounds and have a wingspread that can reach seven feet. Generally, female bald eagles are somewhat larger than males.

Breeding pairs of bald eagles unite for life or until the death of their mate. The breeding season varies throughout the U.S., but typically begins in the winter for the southern populations and progressively shifts toward spring the farther north the populations occur. The typical nest is constructed of large sticks and lined with soft materials such as pine needles and grasses. The nests are very large, measuring up to six feet across and weighing hundreds of pounds. Many nests are believed to be used by the same pair of eagles year after year. Female eagles lay an average of two eggs; however, the clutch size may vary from one to three eggs. The eggs are incubated about 35 days. The young fledge 9 to 14 weeks after hatching and at approximately four months are on their own.

The bald eagle has repopulated much of North Carolina over the past twenty years. In 1982, there were no bald eagle nests in North Carolina; in 1998, there were 17 nests; and in 2000, there were 34 nests. The recovery is due in part to habitat protection and management actions initiated under the Endangered Species Act and to the reduction in levels of persistent organochlorine pesticides, such as DDT, occurring in the environment. The bald eagle's recovery has led to a proposal for delisting the bald eagle from the Federal Endangered/Threatened Species List.

The knowledge of bald eagle nesting activity in the vicinity of Badin Lake is summarized in a report prepared by the Center for Conservation Biology at the College of William and Mary in cooperation with Alcoa Power Generating, Inc. In addition, the USFWS published a guideline for managing bald eagle habitat which defines the critical distances from disturbances that could constitute "take" as defined in Section 9 of the Endangered Species Act.

BIOLOGICAL CONCLUSION: May Affect, Not Likely to Adversely Affect

The site of this bridge replacement project lies at the upper reaches of what could be considered the Beaverdam Creek arm of Badin Lake. Although there are numerous residential home sites in very close proximity to the bridge, there is ample habitat within one mile of the site that could attract nesting eagles. The potential for nesting eagles in this area cannot be ruled out; however, the most recent data from the multi-year eagle nest census conducted by researchers from William and Mary reveals that the closest eagle nest is at least 4 miles from the bridge site (personal communication with Dana Bradshaw, project scientist).

Dr. Bryan D. Watts, Director of the Center for Conservation Biology at the College of William and Mary, confirmed on April 4, 2005, that no eagle nesting activity has occurred near the project site as of their spring 2005 reconnaissance. NCDOT will query the researchers prior to project advertising. Information obtained during this pre-construction interval must be communicated to the USFWS in Asheville to ensure that the department has met its obligations under Section 7. Should additional nesting activity be reported at that time, it will be necessary to continue consultation with the USFWS. Any discussions should also include the NCWRC.

Based upon these recommended safeguards, the USFWS has concurred with the May Affect, Not Likely to Adversely Affect conclusion. USFWS and NCWRC were advised of the NCDOT's intention to proceed in this manner. USFWS and NCWRC emailed their concurrence with this approach (January 5, 2004, Appendix B).

Clemmys muhlenbergii (Bog turtle)
Animal Family: Emydidae
Federal Listed: November 4, 1997

Bog turtles are small (3 to 4.5 inches) turtles with a weakly keeled carapace (upper shell) that ranges from light brown to ebony in color. The species is readily distinguished from other turtles by a large, conspicuous bright orange to yellow blotch on each side of its head. Bog turtles are semi-aquatic and are only infrequently active above their muddy habitats during specific times of year and temperature ranges. They can be found during the mating season from June to July and at other times from April to October when the humidity is high, such as after a rain event, and temperatures are in the seventies. Bog turtle habitat consists of bogs, swamps, marshy meadows, and other wet environments, specifically those that have soft muddy bottoms. The southern populations of bog turtles (in Virginia, Tennessee, North and South Carolina, and Georgia) are listed as threatened due to similar appearance (T S/A) to northern bog turtles that are listed as threatened.

A Biological Conclusion is not required since T (S/A) species are not afforded full protection under the ESA. However, the protected species classification of the southern populations could be upgraded in the future. No potential habitat occurs within the area of potential impact. The NCNHP's maps of rare species and unique habitats was checked on April 25, 2005. No populations of this species have been reported in the project area. Therefore, the proposed project is not anticipated to result in an adverse impact to this species.

Helianthus schweinitzii (Schweinitz's sunflower)
Plant Family: Asteraceae
Federal Listed: May 7, 1991

Schweinitz's sunflower, usually 3 to 6 feet tall, is a perennial herb with one to several fuzzy purple stems growing from a cluster of carrot-like tuberous roots. Leaves are 2 to 7 inches long, 0.4 to 0.8 inch wide, lance-shaped, and usually opposite, with upper leaves alternate. Leaves feel like felt on the underside and are rough like sandpaper on the upper surface. The edges of the leaves tend to curl under. Flowers are yellow composites, and generally smaller than other sunflowers in North America. Flowering and fruiting occur mid-September to frost. This plant grows in clearings and along the edges of upland woods, thickets and pastures. It is also found along roadsides, powerline clearings, old pastures, and woodland openings. It prefers full sunlight or partial shade, but is intolerant of full shade.

BIOLOGICAL CONCLUSION: NO EFFECT

Potential habitat for Schweinitz's sunflower occurs along roadsides, power line rights-of-way, and field edges throughout the project area. The project study area was evaluated for potential Schweinitz's sunflower habitat and extensive field surveys were performed in September 2001. No populations were found within the area of potential impact. The NCNHP's maps of rare species and unique habitats were checked on April 25, 2005. No populations of this species have been reported in the project area. Therefore, the proposed project is not anticipated to result in an adverse impact to this species. Additional surveys were conducted in May 2004 by M. Randall Turner; this field work confirmed that no representatives of the genus *Helianthus* occur in the project study area. The investigator is very familiar with the vegetative morphology of the genus and is comfortable that the plant was not present in any of the potentially suitable habitat areas.

Felis concolor cougar (Eastern cougar)
Animal Family: Felidae
Federal Listed: June 4, 1973

The eastern cougar is a large, unspotted, long-tailed cat. Its body and legs are a uniform fulvous or tawny hue. Its belly is pale reddish or reddish white. No preference for specific habitat types has been noted. The primary need is apparently for a large wilderness area with an adequate food supply. Male cougars of other subspecies have been observed to occupy a range of 25 or more square miles, and females from 5 to 20 square miles. The eastern cougar is considered by many to be extirpated from North Carolina.

BIOLOGICAL CONCLUSION: **NO EFFECT**

As noted on the potential distribution map, the species is not believed to inhabit the geographic area that includes Davidson and Montgomery Counties. If the species occurs at all in North Carolina, it is more likely to be found in the extreme western and southeastern portions of the state. The principal reason for this is the species' need for large, unbroken expanses of habitat. Encroaching development throughout much of the state would preclude its survival primarily due to the ever-increasing likelihood of its encounters with man. An April 25, 2005 review of NHP maps indicated that no protected species are known to occur within a one-mile radius of the project site. This project will have "No Effect" on the eastern cougar.

Picoides borealis (Red-cockaded woodpecker)
Animal Family: Picidae
Federal Listed: October 13, 1970

The red-cockaded woodpecker is 7 to 8 inches long with a wing span of 14 to 15 inches. There are black and white horizontal stripes on its back, and its cheeks and underparts are white. Its flanks are black streaked. The cap and stripe on the side of the neck and the throat are black. The male has a small red spot on each side of the black cap. After the first post fledgling molt, fledgling males have a red crown patch. Most often, the parent birds and some of their male offspring from previous years form a family unit called a group. A group may include one breeding pair and as many as seven other birds. Commonly, these groups are comprised of three to five birds. This bird's range is closely tied to the distribution of southern pines.

Open stands of pine containing trees 60 years old and older are used for nesting/roosting habitat. Red-cockaded woodpeckers need live, large older pines in which to excavate their cavities. Longleaf pines (*Pinus palustris*) are most commonly used, but other species of southern pine are also acceptable. Dense stands (stands that are primarily hardwoods, or that have a dense hardwood understory) are avoided. Foraging habitat is provided in pine and pine hardwood stands 30 years old or older with foraging preference for pine trees 10 inches or larger in diameter. Roosting cavities are excavated in living pines, and usually in those that are infected with a fungus producing what is known as red-heart disease. Completed cavities in active use have numerous, small resin wells which exude sap. The territory for a group averages about 200 acres, but observers have reported territories running from a low of around 60 acres to an upper extreme of more than 600 acres.

BIOLOGICAL CONCLUSION: **NO EFFECT**

A thorough examination of the project study area was conducted on May 18, 2004. No pine dominated forest stand will be impacted by construction activities related to the bridge replacement. The project does not support habitat that is suitable for the red-cockaded woodpecker. On April 25, 2005 review of NHP maps indicated that no protected species are known to occur within a one-mile radius of the project site. Consequently, the project will have "No Effect" on the red-cockaded woodpecker.

Echinacea laevigata (Smooth coneflower)
Plant Family: Asteraceae
Federal Listed: October 8, 1992

Smooth coneflower is a rhizomatous perennial herb that grows up to 5 feet tall from a vertical root stock. The stems are smooth, with few leaves. The largest leaves are the basal leaves, which reach 8.0 inches in length and 3 inches in width, have long stems, and are elliptical to broadly lanceolate, tapering to the base, and smooth to slightly rough. Mid-stem leaves have shorter stems or no stems and are smaller in size than the basal leaves. The rays of the flowers (petal-like structures) are light pink to purplish, usually drooping, and 2 to 3 inches long. Flower heads are usually solitary. Flowering occurs from May through July.

The habitat of smooth coneflower is open woods, cedar barrens, roadsides, clearcuts, dry limestone bluffs, and power line rights-of-way, usually on magnesium- and calcium-rich soils associated with gabbro and diabase parent rock. Areas subject to periodic disturbances to reduce the shade and competition of woody plants provide optimal habitat since these plants thrive in abundant sunlight with little competition in the herbaceous layer.

BIOLOGICAL CONCLUSION: **NO EFFECT**

An April 25, 2005 review of NHP maps indicated that no protected species are known to occur within a one-mile radius of the project site. A walking survey was conducted on May 18, 2004, by M. Randall Turner, which is outside the optimum survey window of June to late July. The search focused on identification of the vegetative portions of the plant since its flowers may not emerge until later in June. The principal field investigator has visited populations of this plant in Orange and Durham Counties over the years and is very familiar with its habit and appearance. While open roadsides may in some cases provide potentially suitable habitat, roadside areas in the project study area are heavily infested with thick ground covers or grasses and other herbs and are not appropriate habitat. Most of these areas are under intense mowing regimes, a condition often inimical to this species. The Natural Resources Conservation Service (NRCS) soil survey mapping indicates undisturbed areas surrounding the roadway fill material are mapped as the Oakboro silt loam (frequently flooded) soil unit, which does not provide appropriate habitat. No evidence of smooth coneflower exists at the project study area and the NHP has no record of known populations within a one-mile radius of the bridge site. Therefore, this project will have "No Effect" on smooth coneflower.

2. Federal Species of Concern

There are thirteen federal species of concern listed by the USFWS for Davidson and Montgomery Counties (Table 4). Federal species of concern (FSC) are not afforded federal protection under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. However, the status of these species is subject to change, and so should be included for consideration. Federal Species of Concern are defined as species that are under consideration for listing for which there is insufficient information to support listing. In addition, organisms

which are listed as Endangered (E), Threatened (T), or Special Concern (SC) by the North Carolina Natural Heritage Program (NCNHP) list of Rare Plant and Animal Species are afforded state protection under the NC State Endangered Species Act and the NC Plant Protection and Conservation Act of 1979.

Table 4 lists the FSC, the state status of these species (NCNHP list reviewed December 2, 2005, last updated January 2004), and the potential for suitable habitat in the project area for each species. This species list is provided for information purposes as the status of these species may be upgraded in the future.

Table 4. Federal Species of Concern for Davidson and Montgomery Counties

Common Name	Scientific Name	NC Status	Habitat Present
Carolina darter	*Etheostoma collis collis*	SC	Yes
Northern pine snake	*Pituophis melanoleucus melanoleucus*	SC	No
Sandhills chub	*Semotilus lumbee*	SC	Yes
Atlantic pigtoe	*Fusconaia masoni*	E	Yes
Brook floater	*Alasmidonta varicosa*	E	Yes
Carolina creekshell	*Villosa vaughaniana*	E	No
Sandhills clubtail dragonfly	*Gomphus parvidens carolinus*	SC	Yes
Savannah lilliput	*Toxolasma pullus*	E	Yes
Bog spicebush	*Lindera subcoriacea*	T	No
Ravine sedge	*Carex impresinervia*	ST-T	Yes
Yadkin River goldenrod	*Solidago plumosa*	E	No
Georgia aster (C1)	*Aster georgianus**	T	Yes
Heller's trefoil	*Lotus helleri*	SR-T	No

Notes:

* This is a Federal listed C1 taxon, a taxon under consideration for official listing for which there is sufficient information to support listing.

SC A Special Concern species is one which requires monitoring but may be taken or collected and sold under regulations adopted under the provisions of Article 25 of Chapter 113 of the General Statutes (animals) and the Plant Protection and Conservation Act (plants). Only propagated material may be sold of Special Concern plants that are also listed as Threatened or Endangered.

T A Threatened species is any native or once native species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act.

SR A Significantly Rare species is not listed as "E," "T," or "SC," but exists in the state in small numbers and has been determined to need monitoring.

-T Throughout – The species is rare throughout its range.

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 (federal 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 17, 2002. All structures over 50 years of age within the APE were identified and recorded, and later reviewed by the North Carolina State Historic Preservation Office (HPO). In a memo dated May 6, 2002 the State Historic Preservation Officer (SHPO) requested that Bridge No. 416 be evaluated. The bridge was evaluated by a qualified historian and found to be eligible for listing on the National Register because it is among the oldest and most complete structures of its type and design surviving in the state. A copy of the survey is included in Appendix A.

In accordance with Section 106 of the National Preservation Act, since the alternatives will have an adverse effect on Bridge No. 416 by removing it, the HPO, NCDOT, and FHWA entered into a Memorandum of Agreement (MOA) (Appendix A).

C. Archaeology

The SHPO, in a memorandum dated December 20, 2002 stated, "There are no known archaeological sites within the proposed project 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." A copy of the SHPO memorandum is included in the Appendix.

VII. SECTION 4(F) RESOURCES

Bridge No. 416 was determined eligible for listing on the National Register under Criterion C for engineering technology as one of only four Warren thru trusses functioning as swing-spans in North Carolina. The bridge demonstrates the innovation associated with NCDOT's truss bridge reuse in the early 1950s.

Bridge No. 416 was built in 1920 and is eligible for listing on the National Register of Historic Places. It is a one-lane facility with a clear roadway width of 15 feet (Figure 3). The pony truss bridge has one span at 72 feet in length. The superstructure consists of a timber deck on a low steel pony truss. The substructure west end bent has timber caps, posts, and sills. The substructure of the east concrete abutment has timber risers.

Since this project necessitates the use of a historic bridge and meets the criteria set forth in the Federal Register (July 5, 1983), a programmatic Section 4(f) evaluation satisfies the requirements of Section 4(f).

The following alternatives, which avoid use of the historic bridge, have been fully evaluated: (1) do nothing; (2) build a new structure at a different location without affecting the historic integrity of the structure, as determined by procedures implementing the National Historic Preservation Act; and (3) rehabilitate the historic bridge without affecting the historic integrity of the structure, as determined by procedures implementing the National Historic Preservation Act. These alternatives were not found to be feasible and prudent.

All possible planning to minimize harm to the historic bridge have been incorporated into this project. Measures to minimize harm include:

1. Photo documentation
2. Reuse in new location
3. Advertisement

This project has been coordinated with the SHPO whose correspondence is included in Appendix A. Section 106 has been resolved and documented in the form of a MOA between FHWA, NCDOT, and HPO. The SHPO concurs with the proposed mitigation.

Approval of the Programmatic Section 4(f) Evaluation by the Federal Highway Division Administrator is included in Section XI of this document.

VIII. 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 substantial 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 substantial 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.

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) a review was conducted to determine whether minority or low-income populations were receiving disproportionately high and adverse human health or environmental impacts as a result of this project. The investigation determined the project would not disproportionately impact any minority or low-income populations.

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 Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service. The proposed bridge will be replaced at the existing location. No impacts to prime or locally important farmland are anticipated.

The project is located in Davidson 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. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan for air quality in compliance with 15 NCAC 2D.0520.

This project is an air quality "neutral" project, so it is not required to be included in the regional emission analysis (if applicable) and a project level CO analysis is not required. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. Noise levels could increase during construction but will be temporary.

The project's impact on noise and air quality will not be substantial. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and air quality (1990 CAAA and NEPA) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section and the North Carolina Division of Solid Waste Management revealed no hazardous waste sites in the project area. A field reconnaissance survey was conducted in the vicinity of the project. Based on the field reconnaissance survey there are no anticipated impacts to Underground Storage Tanks (USTs). 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.

Davidson County is currently participating in the National Flood Insurance Program. This crossing of Beaverdam Creek is located in an approximate flood hazard zone. This project is not anticipated to have any adverse impacts on the existing floodplain. The Flood Insurance Rate Map (Figure 6) shows the approximate limits of the 100-year flood plain in the vicinity of the project.

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

IX. PUBLIC INVOLVEMENT

Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with scoping letters. Letters were also sent to various agencies. A newsletter was mailed in November 2003 to state and local officials, and local residents notifying them of the selection of the preferred alternative. No comments were received.

X. AGENCY COMMENTS

All agency comments have been addressed within the document. Letters from the commenting agencies are included in Appendix B.

XI. PROGRAMMATIC SECTION 4(F) EVALUATION

NORTH CAROLINA DIVISION
FINAL NATIONWIDE SECTION 4(f) EVALUATION AND APPROVAL
FOR FEDERALLY-AIDED HIGHWAY PROJECTS
THAT NECESSITATE THE USE OF HISTORIC BRIDGES

F. A. Project BRZ-2550(1)

State Project 8.2604601 WBS No. 33459.1.1

T. I. P. No . B-4103

Description:

Bridge No. 416 over Beaverdam Creek on SR 1550 (Badin Lake Road) is eligible for listing in the National Register of Historic Places.

		Yes	No
1.	Is the bridge to be replaced or rehabilitated with Federal Funds?	X	☐
2.	Does the project require the use of a historic bridge structure which is on or eligible for listing on the National Register of Historic Places?	X	☐
3.	Is the bridge a National Historic Landmark ?	☐	X
4.	Has agreement been reached among the FHWA, the State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) through procedures pursuant to Section 106 of the National Historic Preservation Act (NHPA)?	X	☐

ALTERNATIVES CONSIDERED AND FOUND NOT TO BE FEASIBLE AND PRUDENT

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

		Yes	No
1.	Do nothing		
	Does the "do nothing" alternative:		
	a. correct the problem situation that caused the bridge to be considered deficient?	☐	X
	b. pose serious and unacceptable safety hazards?	X	☐

		Yes	No
2.	Build a new structure at a different location without affecting the historic integrity of the structure.	X	☐

a. The following reasons were reviewed:
(circle, as appropriate)

(i) The present bridge has already been located at the only feasible and prudent site

and/or (ii) Adverse social, environmental, or economic impacts were noted

and/or (iii) Cost and engineering difficulties reach extraordinary magnitude

and/or (iv) The existing bridge cannot be preserved due to the extent of rehabilitation, because no responsible party will maintain and preserve the historic bridge, or the permitting authority requires removal or demolition.

		Yes	No
3.	Rehabilitate the historic bridge without affecting the historic integrity of the structure.	X	☐

a. The following reasons were reviewed:
(circle, as appropriate)

(i) The bridge is so structurally deficient that it cannot be rehabilitated to meet the acceptable load requirements and meet National Register criteria

and/or (ii) The bridge is seriously deficient geometrically and cannot be widened to meet the required capacity and meet National Register criteria

MINIMIZATION OF HARM

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

2. Measures to minimize harm include the following:
(circle, as appropriate)

a. For bridges that are to be rehabilitated, the historic integrity of the bridge is preserved to the greatest extent possible, consistent with unavoidable transportation needs, safety, and load requirements.

b. For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to

be removed or demolished, the FHWA ensures that, in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means developed through consultation, fully adequate records are made of the bridge.

c. For bridges that are to be replaced, the existing bridge is made available for an alternative use, provided a responsible party agrees to maintain and preserve the bridge.

d. For bridges that are adversely affected, agreement among the SHPO, ACHP, and FHWA is reached through the Section 106 process of the NHPA on measures to minimize harm and those measures are incorporated into the project.

1. Specific measures to minimize harm are discussed below:

   a. Prior to removal, NCDOT will record the bridge in accordance with the Memorandum of Agreement Historic Structures and Landscape Recordation Plan (Appendix A).

   b. A proposed recipient is the City of Albemarle. The City has T-21 Enhancement funds and plans to use the bridge as part of the second phase of a greenway project to span a creek. No other groups have expressed an interest in the bridge, there fore the City has a priority. A plan for relocation will be developed by all parties on the contact list which will be subject to review and approval by NCDOT.

   Contact List:

   Potential Recipient: City of Albemarle
   Lindsey Dunevant
   Director, Albemarle Parks and Recreation Department
   P.O. Box 190
   Albemarle, NC 28002
   TEL: (704) 984-9562
   FAX: (704) 982-0179
   ldunevant@ci.albemarle.nc.us

   Richard Silverman
   NCDOT Historic Architecture
   1583 Mail Service Center
   Raleigh, NC 27699-1583
   TEL: (919) 715-1618
   FAX: (919) 715-1501
   rlsilverman@dot.state.nc.us

George L. Teague
Division 9 Bridge Superintendent
515 Camp Road
Salisbury, NC 28147
TEL: (704) 639-7555
FAX: (704) 639-7582
gteague@dot.state.nc.us

John Conforti
NCDOT Consultant Engineer
1548 Mail Service Center
Raleigh, NC 27699-1548
TEL: (919) 733-7844 x263
FAX: (919)733-9794
jconforti@dot.state.nc.us

Pam Williams
Consultant Engineer
Mulkey Engineers & Consultants
P.O. Box 33127
Raleigh, NC 27636
TEL: (919) 851-1912
FAX: (919) 851-1918
pwilliams@mulkeyinc.com

Bob Smet
Natural Resources Specialist, Alcoa
P.O. Box 576
Badin, NC 28009-0576
TEL: (704) 422-5644
FAX: (704) 422-5776
robert.smet@alcoa.com

c. If the City of Albemarle does not accept the bridge then the following will be implemented:
    i. The existing pony truss bridge will be disassembled and moved to a storage area as designated by NCDOT. The bridge will be stored for up to 2 years. If a new recipient is not found, the bridge will be destroyed.

    ii. The bridge will be advertise on the NCDOT Bridge Reuse website for a least two years or until a new owner is identified and accepts the bridge in accordance with NCDOT's Historic Bridge Relocation and Reuse Program.

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

COORDINATION

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

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

SUMMARY AND APPROVAL

The project meets all criteria included in the programmatic 4(f) evaluation approved on July 5, 1983.

All required alternatives have been evaluated and the findings made are clearly applicable to this project.

There are no feasible and prudent alternatives to the replacement of the historic bridge. The project includes all possible planning to minimize harm, and there are assurances that the measures to minimize harm will be incorporated in the project.

All appropriate coordination has been successfully completed.

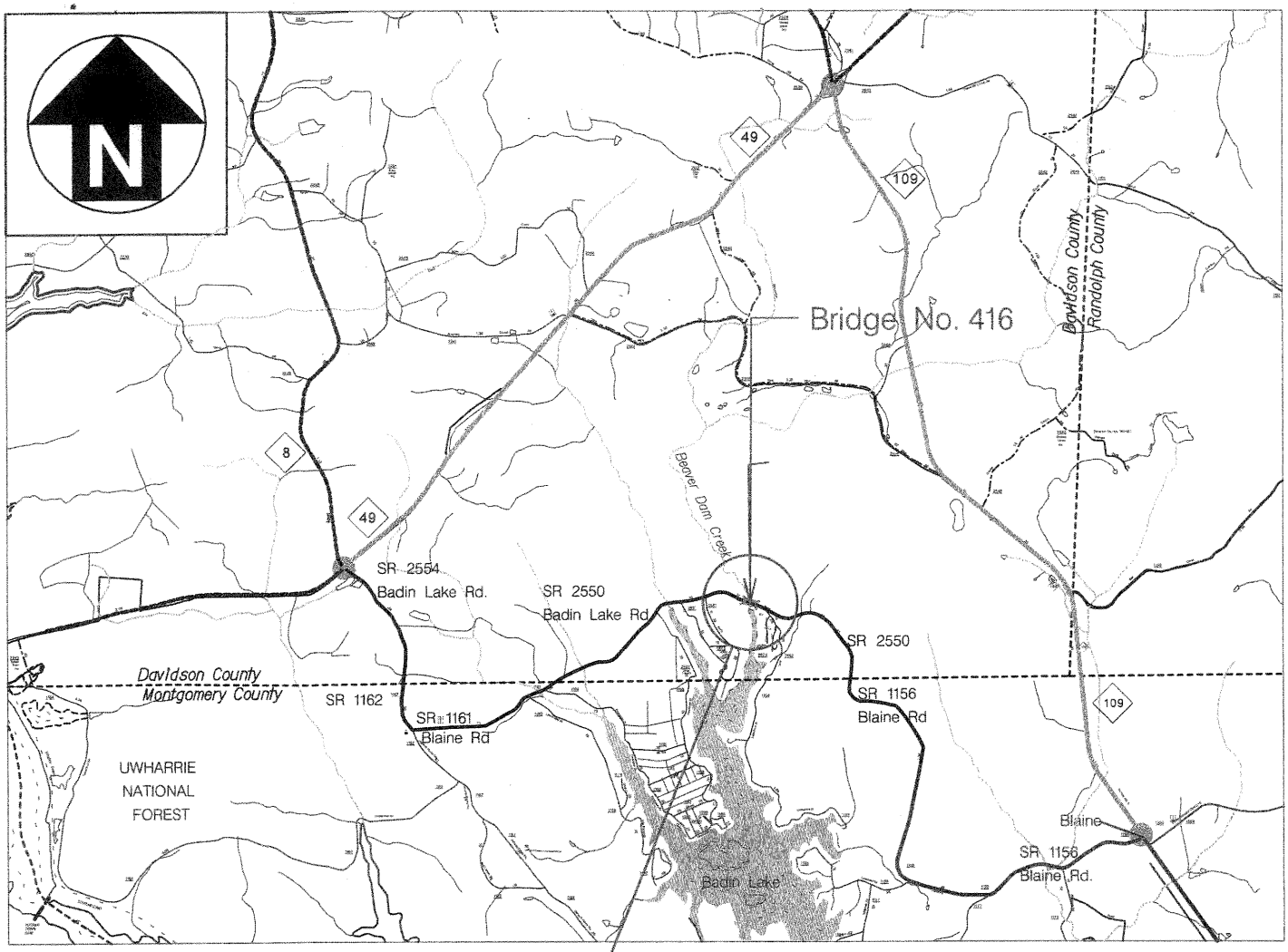
Approved:

12-22-05
Date

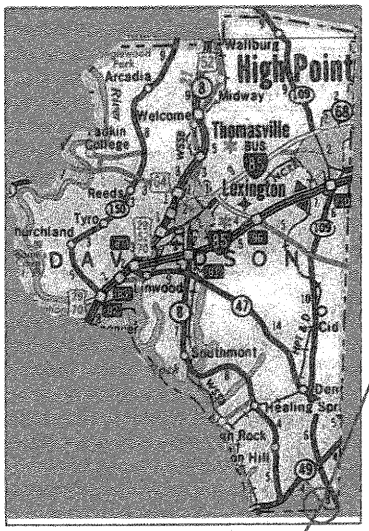
Environmental Management Director,
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation

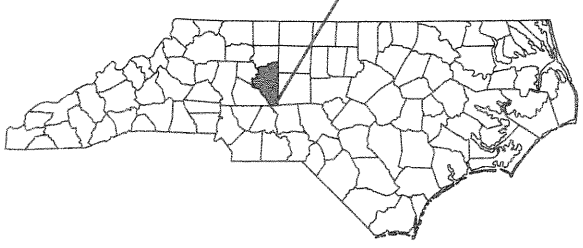
12-22-05
Date

for Division Administrator
Federal Highway Administrator



PROPOSED DETOUR ROUTE

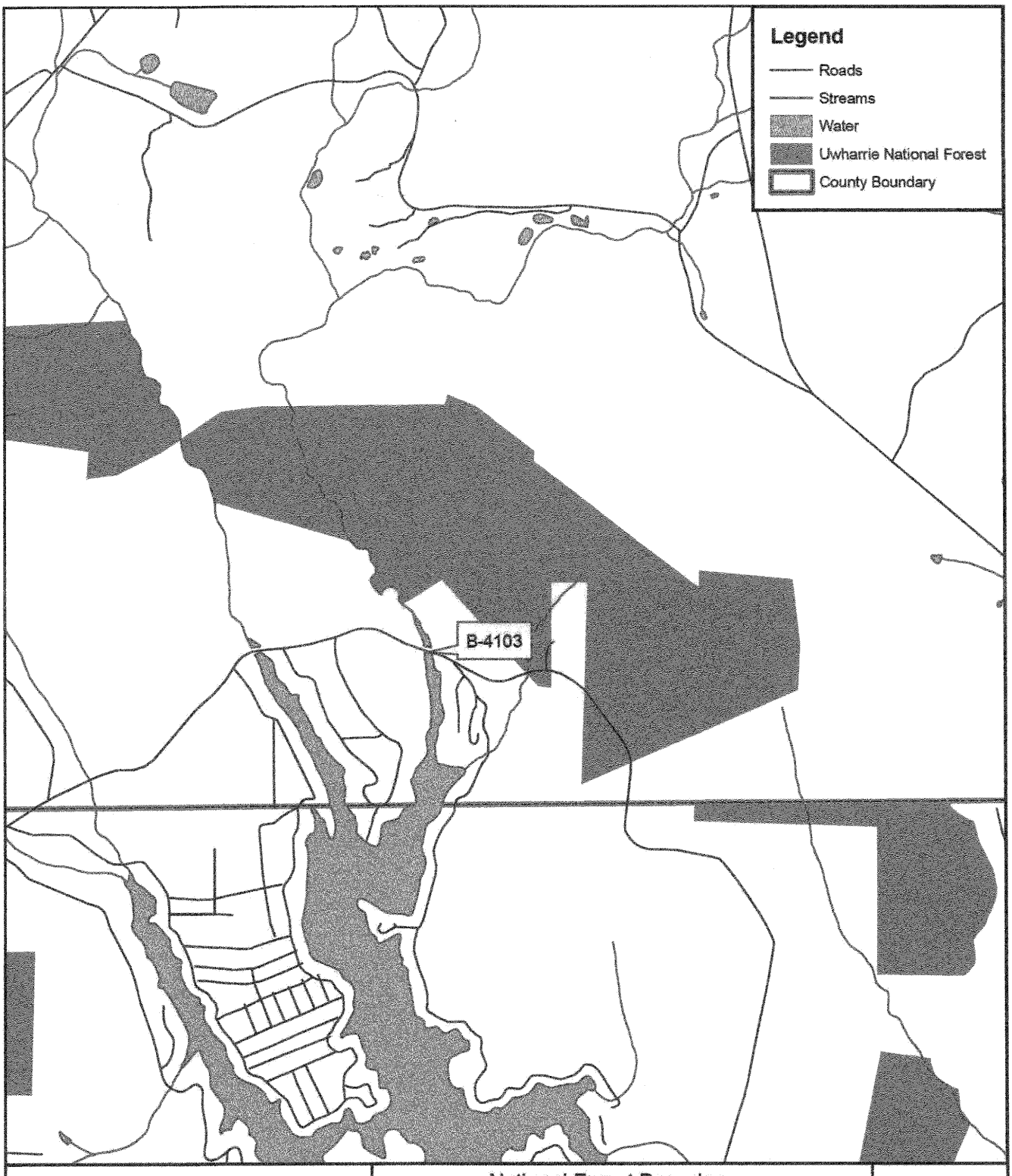




North Carolina Department of Transportation
Project Development & Environmental Analysis

DAVIDSON COUNTY
BRIDGE NO. 416
ON SR 2550 (BADIN LAKE ROAD)
OVER BEAVERDAM CREEK
B-4103

FIGURE 1



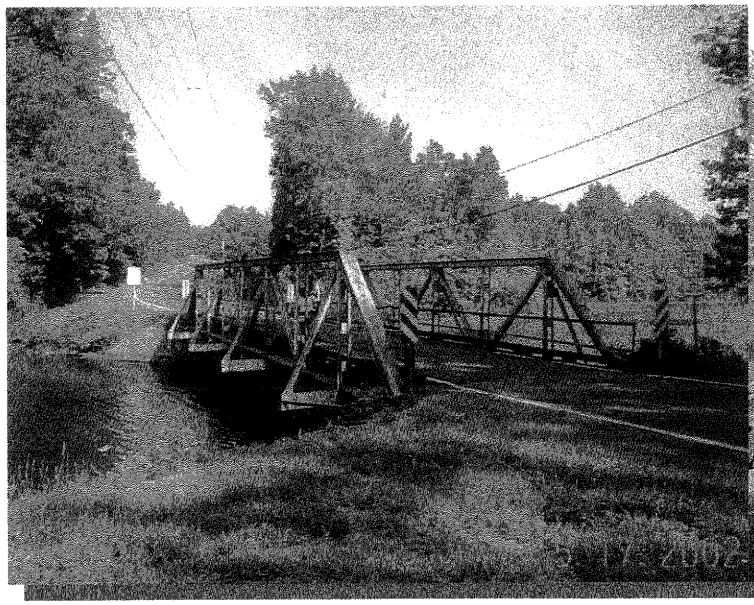
National Forest Boundary
B-4103
Bridge No. 416 On Badin Lake Road Over Beaver Dam Creek
Davidson County, North Carolina

Figure No.
2

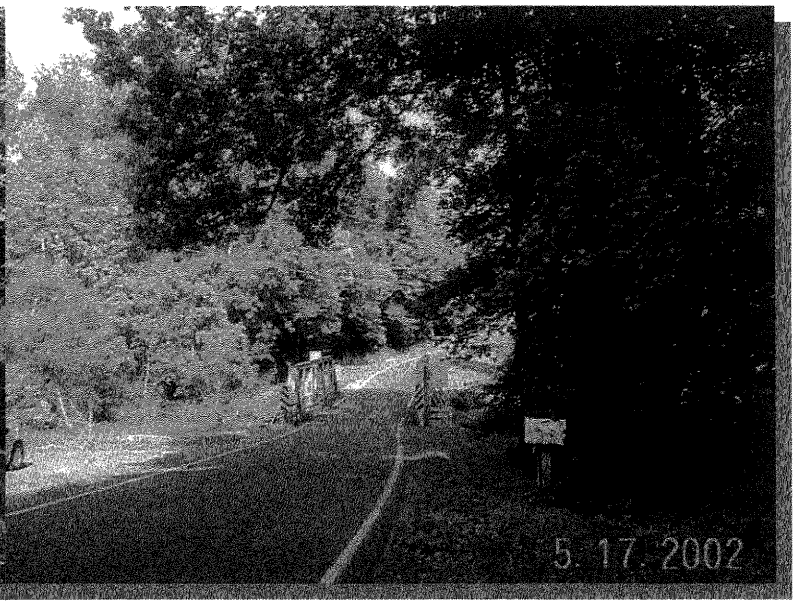
Prepared For:

1:24,000
0 750 1,500 3,000 4,500 6,000 Feet

T.I.P. No. B-4103, Federal-Aid Project No. BRSTP-2550(1), State Project No. 8.2604601
Davidson County, SR 2550 (Badin Lake Road), Bridge No. 416 Over Beaver Dam Creek



Side view of Bridge No. 416



View looking across Bridge No. 616

Above: View of east approach from bridge.

Below: View of west appoach from bridge.

FIGURE 3

North Carolina Department of Transportation
Project Development & Environmental Analysis

DAVIDSON COUNTY
BRIDGE NO. 416
OVER BEAVERDAM CREEK
ON SR 2550 (BADIN LAKE ROAD)
B-4103

ALTERNATIVE B
(PREFERRED)

FIGURE 5A

North Carolina Department Of Transportation Project Development & Environmental Analysis

DAVIDSON COUNTY
BRIDGE NO. 416
OVER BEAVERDAM CREEK
ON SR 2550 (BADIN LAKE ROAD)
B-4103

ALTERNATIVE D

FIGURE 5B

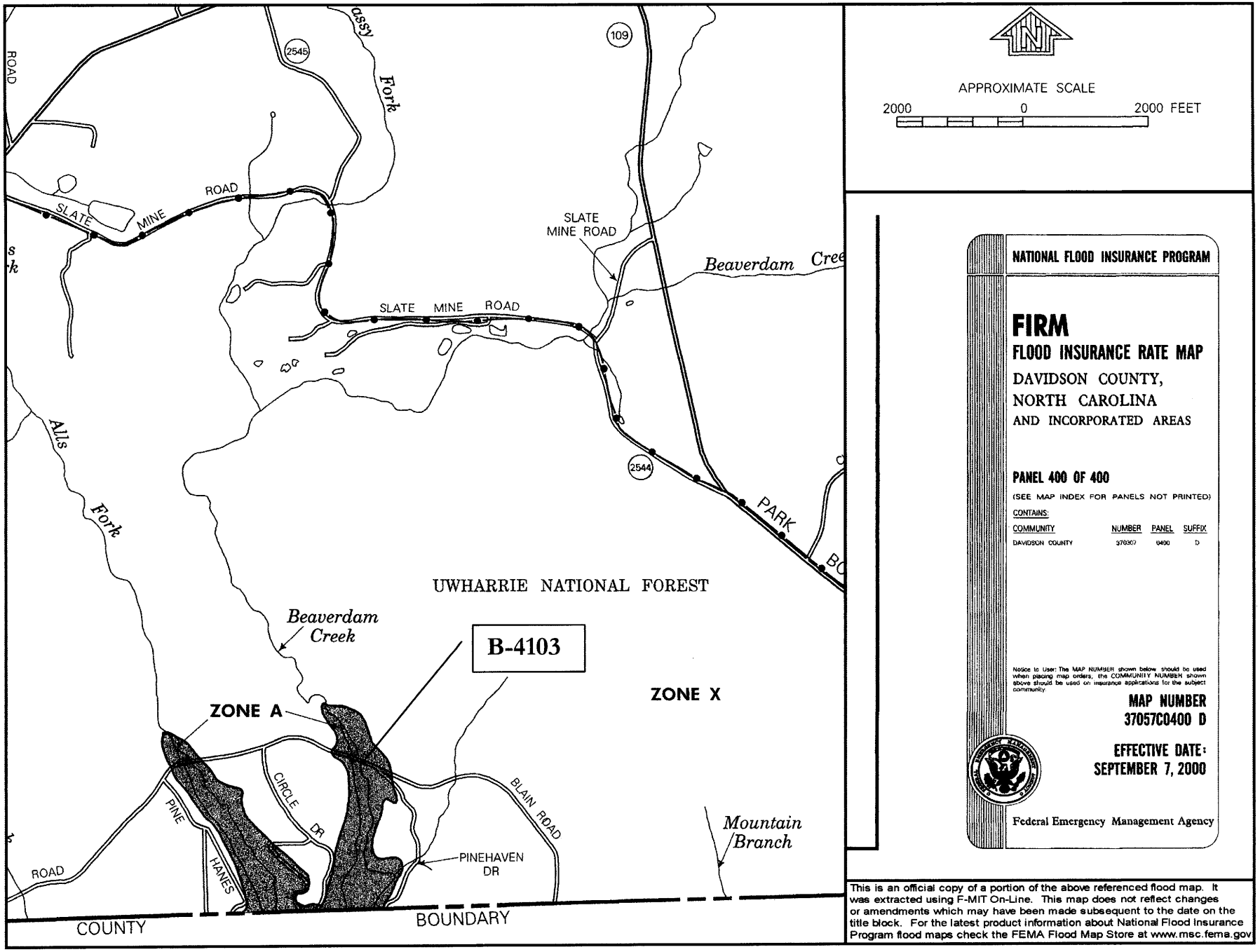

APPROXIMATE SCALE
2000 0 2000 FEET
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
DAVIDSON COUNTY,
NORTH CAROLINA
AND INCORPORATED AREAS
PANEL 400 OF 400
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
DAVIDSON COUNTY 370307 0400 D
Notice to User: The MAP NUMBER shown below should be used when placing map orders; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.
MAP NUMBER
37057C0400 D
EFFECTIVE DATE:
SEPTEMBER 7, 2000
Federal Emergency Management Agency
ROAD
SLATE MINE ROAD
SLATE MINE ROAD
Beaverdam Creek
Fork
Allis Fork
UWHARRIE NATIONAL FOREST
Beaverdam Creek
B-4103
ZONE A
ZONE X
CIRCLE DR
PINE
HANES
ROAD
BLAIN ROAD
PINEHAVEN DR
Mountain Branch
PARK
2545
109
2544
COUNTY BOUNDARY
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 6

APPENDIX A

MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT
AMONG
THE FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER
FOR
TIP No. B-4103
REPLACE BRIDGE NO. 416 OVER BEAVER DAM CREEK
DAVIDSON COUNTY, NC

WHEREAS, the Federal Highway Administration (FHWA) has determined that the replacement of Bridge No. 416 over Beaver Dam Creek on SR 2550 (Badin Lake Road) in Davidson County, North Carolina (the undertaking) will have an effect upon Bridge No. 416, a property determined eligible for listing in the National Register of Historic Places, and has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT) and Alcoa Power Generating, Inc. participated in the consultation and have been invited to concur in this Memorandum of Agreement;

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

STIPULATIONS

FHWA will ensure that the following measures are carried out:

I. Bridge No. 416

A. Recordation: Prior to the removal and relocation of Bridge No. 416, NCDOT shall record the existing condition of the bridge and its surroundings in accordance with the attached Historic Structures and Landscape Recordation Plan [Appendix A].

B. Relocation and Reuse: Bridge No. 416 will not be demolished. Instead, the bridge will be relocated through the NCDOT Bridge Relocation and Reuse Program. NCDOT's 1988 agreement with the North Carolina Historic Preservation Office (HPO) and the Federal Highway Administration (FHWA) affords the opportunity for the relocation and reuse of historic truss bridges. Bridge No. 416 has been identified as an excellent candidate for this program.

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

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

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

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

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Advisory Council on Historic Preservation, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the Replacement of Bridge No. 416 over Beaver Dam Creek, Davidson County, North Carolina and its effects on Bridge No. 416, and that FHWA has taken into account the effects of the undertaking on the historic bridge.

AGREE:

FEDERAL HIGHWAY ADMINISTRATION — DATE 10/19/04

NORTH CAROLINA STATE HISTORIC PRESERVATION OFFICER — DATE 10/11/04

CONCUR:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION — DATE 9/13/04

ALCOA POWER GENERATING, INC. — DATE 9/20/04

FILED BY:

ADVISORY COUNCIL ON HISTORIC PRESERVATION — DATE

APPENDIX A

Historic Structures and Landscape Recordation Plan
For Bridge No. 416 over Beaver Dam Creek
Davidson County, North Carolina
TIP No. B-4103, WBS# 33459.1.1
State Project No. 8.2604601
Federal Aid No. BRZ-2550(1)

Photographic Requirements

- Overall views of the project area, showing the relationship of the bridge to setting
- Overall views of the bridge (elevations and oblique views)
- Selected photographic views of the bridge, including details of the connections and bridge plate (if present)
- Views under the bridge – as accessible

Photographic Format

- Color slides (all views)
- 35 mm or larger black and white negatives (all views)
- Two (2) sets of black and white contact sheets (all views)
- All processing to be done to archival standards
- All photographs and negatives to be labeled according to Division of Archives and History standards

Copies and Curation

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

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, NC 27601

October 19, 2004

IN REPLY REFER TO:
HDA-NC

Mr. Don Klima, Director
Office of Planning and Review
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Ave., N.W. No. 809
Washington, D.C. 20004

Subject: Memorandum of Agreement, for the replacement of Bridge No. 416 on SR 2250 (Badin Lake Road) over Beaver Dam Creek, Davidson County, North Carolina, Federal-aid Project No. BRZ-2550(1), TIP No. B-4103, State Project No. 8.2604601.

Dear Mr. Klima:

As required by 36 CFR 800.6(b)(iv) and previous correspondence between our offices, we are filing the Memorandum of Agreement (MOA) that was developed in consultation with the North Carolina State Historic Preservation Officer for the subject project. It is our understanding that the filing of this MOA with the Council completes our compliance responsibilities under Section 106 of the National Historic Preservation Act. Questions concerning this submittal may be directed to Felix Davila of this office at (919) 856-4350, extension 106.

Sincerely yours,

Filip Dale

For John F. Sullivan, III, P.E.
Division Administrator

Enclosure

cc: Stacey Harris, NCDOT, PDEA
Renee Gledhill-Earley, NCSHPO
Mary Pope Furr, NCDOT

APPENDIX B

CORRESPONDENCE

United States Department of Agriculture
Forest Service
National Forests in North Carolina
Supervisor's Office
160A Zillicoa Street
P.O. Box 2750
Asheville, NC 28802
828-257-4200

File Code: 2730-2
Date: May 8, 2003

Mr. Randall Turner
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Turner:

We have reviewed the information you submitted on April 28 for the Forest Service to prepare a cost proposal for completing a Biological Evaluation on replacing Bridge No. 416 on SR 2550 over Beaverdam Creek in Davidson County (TIP No. B-4103). This bridge and proposed detour routes, on the plans you submitted, are all located on private land. However if the detour routes change and are proposed for north of the existing bridge, National Forest system lands could possibly be impacted and we would need to be involved in the project. If you have any questions please call Ray Johns at 828-259-4859.

Sincerely,

Mary A. Noel

MARY A. NOEL
Recreation, Lands and SYVP Staff Officer

cc: Tom Horner, Uwharrie Ranger District

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

July 11, 2003

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

Dear Mr. Thorpe:

Subject: Endangered Species Concurrence for Three Bridge Replacements in North Carolina--B-4103, Bridge No. 416 on SR 2550 over Beaver Dam Creek, Davidson County; B-4255, Bridge No. 28 on NC 801 over Withrow Creek, Rowan County; and B-4282, Bridge No. 54 on NC 66 over Pinch Gut Creek, Stokes County

As requested by Mulkey Inc., engineers and consultants for the North Carolina Department of Transportation, we have reviewed the natural resources information and biological conclusions for federally protected species for the subject projects. We provide the following comments in accordance with the provisions of section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e).

B-4103 (Log Number 4-2-03-332)

According to the information provided, three federally listed species in Davidson County were considered. These include the endangered Schweinitz's sunflower (*Helianthus schweinitzii*), the threatened bald eagle (*Haliaeetus leucocephalus)*, and the threatened (due to similarity of appearance) bog turtle (*Clemmys muhlenbergii*). The report considered these species and concluded that there would be "no effect" on the bald eagle, Schweinitz's sunflower, or bog turtle. Given the results of the field survey, we concur with the conclusion of "no effect" for the Schweinitz's sunflower and bog turtle. In view of this, we believe the requirements under section 7(c) of the Act are fulfilled regarding this species. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this

action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

Regarding impacts to the bald eagle, this project is located very near Badin Lake, which provides suitable habitat for eagles. Surveys for bald eagles in the vicinity of this project were last conducted in 2001. Because it has been two years since these surveys and because there has been an increase in eagle activity in this part of the Yadkin River basin, we believe it would be prudent to resurvey for eagles prior to beginning work on this project. Therefore, at this time we cannot concur with a conclusion of "no effect" for this species. We recommend resurveying for the bald eagle, coordinating with the North Carolina Wildlife Resources Commission and Alcoa Power Company with regard to the latest monitoring data they have collected for eagle nests and foraging areas.

B-4255 (Log Number 4-2-03-333)

Rowan

According to the information provided, two federally listed species in Davidson County were considered. These include the endangered Schweinitz's sunflower (*Helianthus schweinitzii*) and the threatened bald eagle (*Haliaeetus leucocephalus)*. The report considered these species and concluded that implementation of the subject project would be "not likely to adversely affect" the bald eagle or Schweinitz's sunflower. Given the results of the field survey and the habitat conditions in the action area, we concur with the conclusion of "not likely to adversely affect" for the Schweinitz's sunflower and bald eagle. In view of this, we believe the requirements under section 7(c) of the Act are fulfilled regarding this species. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

B-4282 (Log Number 4-2-03-334)

According to the information provided, three federally listed species in Stokes County were considered. These include the endangered Schweinitz's sunflower (*Helianthus schweinitzii*), James spinymussel (*Pleurobema collina*), and small-anthered bittercress (*Cardamine micranthera*). The report considered these species and concluded that this project would have "no effect" on them. Given the results of field surveys, we concur with the conclusion of "no effect" for the Schweinitz's sunflower. In view of this, we believe the requirements under section 7(c) of the Act are fulfilled regarding this species. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

According to information provided, mussel surveys were conducted in Pinch Gut Creek from 250 feet above to 500 feet below the project location. Pinch Gut Creek flows into Big Creek approximately one-quarter of a mile downstream of the project area. Although the James

spinymussel has been found only in the main stem of the Dan River, other native freshwater mussels have been found in Big Creek. Given the difficulty of surveying for the James spinymussel and the relative lack of surveys in Big Creek, we strongly recommend an additional mussel survey from the end of the previous survey downstream to Big Creek prior to project construction. Similarly, the small-anthered bittercress, while not located in surveys conducted in 2002, could have relocated to the project site from an upstream location during recent high flows. We also strongly recommend that a preconstruction survey (at the appropriate time of year) be conducted for this species. At this time we cannot concur with a conclusion of "no effect" for the James spinymussel or small-anthered bittercress and recommend further surveys as described above.

If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning these projects, please reference the log numbers assigned with our comments about each of the three projects.

Sincerely,

Brian P. Cole
State Supervisor

cc:
Mr. Eric Alsmeyer, U.S. Army Corps of Engineers, Raleigh Regulatory Field Office, 6508 Falls of the Neuse Road, Suite 120, Raleigh, NC 27615
Ms. Marla J. Chambers, Highway Projects Coordinator, North Carolina Wildlife Resources Commission, 12275 Swift Road, Oakboro, NC 28129
Ms. Cynthia Van Der Wiele, North Carolina Department of Environment and Natural Resources Division of Water Quality, Wetlands Section, 1621 Mail Service Center, Raleigh, NC 27699-1621

From: Marella_Buncick@fws.gov
Sent: Monday, January 05, 2004 1:07 PM
To: Randy Turner
Cc: chambersm@mail.wildlife.state.nc.us; Pam Williams
Subject: Re: B-4103 (Montgomery/Davidson Counties) Re: bald eagle

Hi Randy,

Even though I'm not entirely sure where this is, I am comfortable with the Alcoa survey and report data as a basis for eagle activity assessment in the High Rock, Tillery, etc. chain. I still would suggest a look be given prior to actual construction to make sure nobody has moved in to the neighborhood in the meantime.

marella

marella buncick
USFWS
160 Zillicoa St.
Asheville, NC 28801
828-258-3939 ext 237

From: "Randy Turner" <rturner@mulkeyinc.com
To: <Marella_Buncick@fws.gov>, <chambersm@mail.wildlife.state.nc.us>
cc: "Pam Williams" <PWilliams@mulkeyinc.com>
Subject: B-4103 (Montgomery/Davidson Counties) Re: bald eagle
Date: 01/02/04 02:08 PM

Marla, I took your suggestion to heart and contacted Yadkin, Inc. They sent me their 2002 annual report. This report provides specific locations for the nest sites on color maps and also color photography. They have also completed a 2003 survey and verbally stated that only 1 additional nest site was found, but it was further from the subject bridge than the other nest sites.

I just completed a map mosaic, which depicts the known nest sites in relation to the bridge location. The closest nest site is over 2 miles from the bridge on SR 2550 (Beaverdam Creek).

Marella, If these data are acceptable to you, I plan on building a "May Affect, Not Likely to Adversely Affect" conclusion based upon the findings of the referenced report issued by Alcoa Power Generating, Inc/Center for Conservation Biology, College of William and Mary. I don't want to reinvent the wheet. This report appears to be comprehensive and the data based on good science. I will of course provide a copy of the report and will exerpt germane information from the report in my biological conclusion.

M. Randall Turner
Manager, Natural Resources Group
Mulkey Engineers & Consultants
6750 Tryon Road
Cary , NC 27511
919-858-1795 ? direct
919-851-1918 ? fax
www.mulkeyinc.com

"Marking 10 Years of Engineering Success."

Bill Goodwin

B-4103

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

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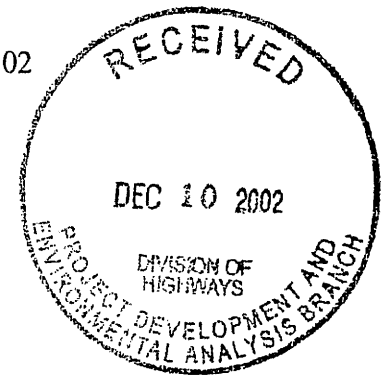


Mr. Gregory J. Thorpe, Ph. D.
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

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, N.E. 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 North East 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 1 - 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 - 4031	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

Although the stated purpose of the project is to improve timber production, no information is provided regarding any ongoing silviculture operation. Furthermore, there is no indication of existence of a forest management plan for the site which might indicate that the existing excavation and filling of wetlands is in compliance with the Clean Water Act (CWA), Section 404 (f)(1)(A) exemptions for silviculture

NOAA Fisheries concludes that the loss of wetlands at this site is highly detrimental to commercially, recreationally, and ecologically important fishery resources that utilize the Newport River Therefore, we recommend that Department of the Army authorization not be granted in this case. We further recommend that if authorization is denied, the applicant should be required to restore pre-project elevations and contours and restore, through planting and other measures, all impacted wetlands.

Thank you for the opportunity to provide these comments. Related questions or comments should be directed to the attention of Mr. Ronald S Sechler at our Beaufort Office, 101 Pivers Island Road, Beaufort, North Carolina, or at (252) 728-5090.

Sincerely,

Ron Sechler

for Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: JohnWadsworth, P.E., Project Planning Engineer
Project Development and Environmental Analysis Branch, NCDOT

FROM: Marla Chambers, Highway Projects Coordinator
Habitat Conservation Program, NCWRC

DATE: December 17, 2002

SUBJECT: North Carolina Department of Transportation (NCDOT) request for comments on Bridge Replacement Projects B-4103 (Davidson County), B-4255 (Rowan County) and B-4282 (Stokes County).

North Carolina Department of Transportation (NCDOT) is requesting comments from the North Carolina Wildlife Resources Commission (NCWRC) on three bridge replacement projects. Staff biologists have reviewed the information provided and have the following preliminary comments. Our comments are provided in accordance with certain 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).

NCWRC has previously submitted scoping comments on these three bridge replacement projects. The comments, dated May 8, 2002, are attached and remain appropriate; however, we offer the following additional comments on the B-4103 project.

Bridge No. 416 on SR 2550 (Badin Lake Road) in Davidson County crosses over Beaverdam Creek, at the headwaters of an arm of Badin Lake which is managed by Yadkin, Inc. under a Federal Energy Regulatory Commission (FERC) permit. NCDOT should coordinate with Yadkin, Inc. to ensure compliance with their Shoreline Management Plan and Bald Eagle Management Plan. Bald eagles (*Haliaeetus leucocephalus*) (Federal and State Threatened), are found along Badin Lake and other lakes on the Yadkin/Pee Dee River system, both upstream and downstream of the project area. The Beaverdam Creek/Grassy Fork Creek Significant Natural Heritage Area is upstream of the project area, where a number of heartleaf plantain observations

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

have been made. Several other listed plant species, including the Schweinitz's sunflower (*Helianthus schweinitzii*) (Federal and State Endangered) have been found in the area. Surveys should be conducted for all federal and state listed species. Also, the bridge clearance above the water should be sufficient to allow small boat or canoe passage underneath.

Thank you for the opportunity to review and comment on this project. If you have any questions regarding these comments, please contact me at (704) 485-2384.

cc: Cynthia Van Der Wiele, DWQ
Marella Buncick, USFWS

North Carolina Wildlife Resources Commission

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

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

FROM: Ron Linville, Habitat Conservation Coordinator
Habitat Conservation Program

DATE: May 8, 2002

SUBJECT: NCDOT Bridge Replacements:
Davidson County – Bridge No. 416, SR2550, Beaverdam Creek, B-4103
Rowan County – Bridge No. 28, NC801, Withrow Creek, B-4255
Stokes County – Bridge No. 54, NC66, Pinchgut Creek, B-4282

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. Davidson County – Bridge No. 416, SR2550, Beaverdam Creek, B-4103 YELLOW/RED LIGHT. Biologists indicate that a bridge is preferred. Potential for wetland and stream impacts at this location due to width of stream.

2. Rowan County – Bridge No. 28, NC801, Withrow Creek, B-4255
GREEN LIGHT. No concerns indicated by biologists. Standard conditions should be appropriate.

3. Stokes County – Bridge No. 54, NC66, Pinchgut Creek, B-4282
RED LIGHT. Class C-trout stream. Small mouth bass fishery will require moratorium from May 1 – July 15 for instream activities. Listed species will need thorough review (James River Spiny mussel, Hog Sucker, and Riverweed Darter, etc.). Dan River is a WRC Priority Aquatic Conservation Area.

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: David Cox, WRC

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

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

December 4, 2002

MEMORANDUM

TO: Gregory J. Thorpe, Ph.D.
NCDOT, Project Development & Environmental Analysis

FROM: Cynthia F. Van Der Wiele, NCDOT Coordinator cvdw

SUBJECT: Scoping Comments for Bridge Replacement Projects: B-4103 Davidson Co., B-4255 Rowan Co., and B-4282 Stokes Co.

This letter is in response to your request for comments on the above-referenced projects.

The NC Division of Water Quality staff has the following recommendations:

1. B-4103 Bridge No. 416 over Beaver Dam Creek on SR 2550 in Davidson County
- The bridge should be replaced with a bridge structure and designed as a single span with *no piers* in the stream.
- Storm water management should be designed as a closed system. Storm water shall be designed to be carried across the bridge (no deck drains over the stream) and diverted through grass-lined ditches, vegetated buffers or directed to a storm water collection device prior to entering North Fork New River.
- Use *Sedimentation and Erosion Control Guidelines for Sensitive Watersheds* [15A NCAC 4B .0124; see http://ncrules.state.nc.us/ncadministrativ_/title15aenviron_/chapter04sedime_/default.htm] prior to any ground-disturbing activities to minimize impacts to downstream aquatic resources.
- NCDOT must comply with water supply watershed buffer requirements.
- Use BMPs for bridge demolition and removal, Case 1 (9-20-99 NCDOT policy; see http://www.ncdot.org/planning/pe/bmp.pdf).

2. B-4255 Bridge No. 28 over Withrow Creek on NC 801 in Rowan County
- DWQ prefers that the bridge be replaced with a bridge, particularly if a Categorical Exclusion document is being used (otherwise it should be processed as a FONSI under NEPA requirements).
- Storm water should be directed to grass-lined ditches, vegetated buffers or other pre-treatment method before entering the stream.

3. B-4282 Bridge No. 54 over Pinch Gut Creek on NC 66 in Stokes County
- The bridge should be replaced with a bridge structure and designed as a single span with *no piers* in the stream.
- Storm water management should be designed as a closed system. Storm water shall be designed to be carried across the bridge (no deck drains over the stream) and diverted through grass-lined ditches, vegetated buffers or directed to a storm water collection device prior to entering North Fork New River.
- Use BMPs for bridge demolition and removal, Case 1 (9-20-99 NCDOT policy; see http://www.ncdot.org/planning/pe/bmp.pdf).

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. If you have any questions or require additional information, please contact Cynthia Van Der Wiele at (919) 733.5715.

pc: Chris Militscher, USEPA
Marla Chambers, NCWRC
File Copy

SECTION .0400 - WATER SUPPLY DESIGN CRITERIA

Rules .0401 - .0408 of Title 15A Subchapter 18C of the North Carolina Administrative Code (T15A.18C .0401 - .0408); has been transferred and recodified from Rules .1001 - .1008 Title 10 Subchapter 10D of the North Carolina Administrative Code (T10.10D .1001 - .1008), effective April 4, 1990.

.0401 MINIMUM REQUIREMENTS

The design criteria given in this Section are the minimum requirements for approval of plans and specifications by the Division of Environmental Health, Department of Environment, Health, and Natural Resources. The Department provides supplemental criteria for design of water systems in .0500 - .1000.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977.
Amended Eff. July 1, 1994; September 1, 1979.

.0402 WATER SUPPLY WELLS

(a) Well Construction. The construction of water supply wells shall conform to well construction regulations and standards of the Division of Environmental Management, N.C. Department of Environment, Health, and Natural Resources, codified in 15A NCAC 2C which are hereby incorporated by reference including any subsequent amendments and editions. Copies of this material are available for inspection and may be obtained from the Department of Environment, Health, and Natural Resources, Division of Environmental Health, Public Water Supply Section, P.O. Box 29536, Raleigh, North Carolina 27626-0536 at no charge *[NOTE: The new mailing address is 1634 Mail Service Center, Raleigh, NC 27699-1634].*

(b) Upper Terminal of Well. The well casing shall neither terminate below ground nor in a pit. The pump pedestal for above ground pumps of every water supply well shall project not less than six inches above the concrete floor of the well house, or the concrete slab surrounding the well. The well casing shall project at least one inch above the pump pedestal. For submersible pumps the casing shall project at least six inches above the concrete floor or slab surrounding the well head.

(c) Sanitary Seal. The upper terminal of the well casing shall be sealed watertight with the exception of a vent pipe or vent tube having a downward-directed, screened opening.

(d) Concrete Slab or Well House Floor. Every water supply well shall have a continuous bond concrete slab or well house concrete floor extending at least three feet horizontally around the outside of the well casing. Minimum thickness for the concrete slab or floor shall be four inches.

(e) Sample Tap and Waste Discharge Pipe. Faucets or spigots shall be provided for sampling both raw water prior to treatment and treated water prior to delivery to the first customer. Sample spigots shall not be threaded for hose connection. Threaded hose bibs shall be equipped with anti-siphon devices. A water sample tap and piping arrangement for discharge of water to waste shall be provided.

(f) Physical Security and Well Protection. A water supply well shall be secured against unauthorized access and protected from the weather. One of the following structures shall be provided:

(1) Well house. A well house shall be constructed as follows:
  (A) Structures shall comply with applicable provisions of state and local building codes;
  (B) Drainage shall be provided by floor drain, wall drain, or slope to door;
  (C) Access into the structure shall be a doorway with minimum dimensions of 36 inches wide and 80 inches high; and
  (D) The structure shall have adequate space for the use and maintenance of the piping and appurtenances. If treatment is provided at the well, the provisions of Rule .0404(a) of this Section shall apply.
  (E) The structure shall be secured with lock and key.

(2) Prefabricated structures. A prefabricated structure shall be constructed as follows:
  (A) A well-head cover shall be hinged and constructed so that it can be lifted by one person;
  (B) A locking mechanism shall be provided; and
  (C) Permanent fastening to the slab (such as with bolts) shall not be permitted.

(3) Fencing and temperature protection. Fencing and temperature protection shall be constructed as follows:
  (A) The fence height shall be a minimum of six feet;
  (B) The fence shall be constructed of chain link with locked access;
  (C) The fence shall enclose the well; hydropneumatic tank, and associated equipment;
  (D) Access shall be provided for maintenance and operation; and

(E) The well, piping, treatment equipment, and electrical controls shall be protected against freezing. Wrapping with insulation is acceptable for appurtenances such as the air vent, meter, valves, and sample taps provided they are visible and accessible. Insulation shall be jacketed.

(g) Yield:

(1) Wells shall be tested for yield and drawdown. A report or log of at least a 24-hour drawdown test to determine yield shall be submitted to the Division of Environmental Health for each well.

(2) Wells shall be located so that the drawdown of any well will not interfere with the required yield of another well.

(3) The combined yield of all wells of a water system shall provide in 12 hours pumping time the average daily demand as determined in Rule .0409 of this Section.

(4) The capacity of the permanent pump to be installed in each well shall not exceed the yield of the well as determined by the drawdown test.

(5) A residential community water system using well water as its source of supply and designed to serve 50 or more connections shall provide at least two wells. A travel trailer park or campground designed to serve 100 or more connections shall provide at least two wells. In lieu of a second well, another approved water supply source may be accepted.

(6) A totalizing meter shall be installed in the piping system from each well.

(h) Initial Disinfection of Water Supply Well. All new wells, and wells that have been repaired or reconditioned shall be cleaned of foreign substances such as soil, grease, and oil, and then shall be disinfected. A representative sample or samples of the water (free of chlorine) shall be collected and submitted to a certified laboratory for bacteriological analyses. After disinfection the water supply shall not be placed into service until bacteriological test results of representative water samples analyzed in a certified laboratory are found to be free of bacteriological contamination.

(i) Initial Chemical Analyses. A representative sample of water from every new water supply well shall be collected and submitted for chemical analyses to the Division of Laboratory Services or to a certified laboratory. The results of the analysis shall demonstrate the water is treatable to meet water quality standards in Section .1500 of this Subchapter and needed treatment shall be provided before the well is placed into service.

(j) Continuous Disinfection. Continuous application of chlorine or hypochlorite solution or some other approved and equally efficient disinfectant shall be provided for all well water supplies introduced on or after January 1, 1972. Equipment for determining residual chlorine concentration in the water shall be included in the plans and specifications.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Amended Eff. July 1, 1994; September 1, 1990; January 1, 1986; March 31, 1980.

.0403 SURFACE WATER FACILITIES

(a) Unimpounded Stream. Both the minimum daily flow of record of the stream and the estimated minimum flow calculated from rainfall and run-off shall exceed the maximum daily draft for which the water treatment plant is designed with due consideration given to requirements for future expansion of the treatment plant. The Department may approve a water plant capacity greater than the minimum daily flow of record of the stream when rules of other government agencies will not be violated. The maximum allowable system expansion shall be based on the minimum daily flow of record of the stream.

(b) Pre-settling Reservoirs. Construction of a pre-settling or pre-treatment reservoir shall be required where wide and rapid variations in turbidity, bacterial concentrations or chemical qualities occur or where the following raw water quality standards are not met: turbidity - 150 NTU, coliform bacteria - 3000/100 ml, fecal coliform bacteria - 300/100 ml, color - 75 CU.

(c) Impoundments. Raw water storage capacity shall be sufficient to reasonably satisfy the designed water supply demand during periods of drought.

(d) Clearing of Land for Impoundment. The area in and around the proposed impoundment of class I and class II reservoirs shall be cleared as follows:

(1) The area from normal full level to five feet below the normal pool elevation of the impoundment shall be cleared and grubbed of all vegetation and shall be kept cleared until the reservoir is filled. Secondary growth shall be removed prior to flooding.

(2) The entire area below the five foot water depth shall be cleared and shall be kept cleared of all growth of less than six inches in diameter until the reservoir is filled. Stumps greater than six inches in diameter may be cut off at ground level.

(3) All brush, trees, and stumps shall be burned or removed from the proposed reservoir.

(e) Existing Impoundments. Existing impoundments may be approved as raw water sources as follows:

(1) The requirements of Paragraph (c) of this Rule, and Section .0200 of this Subchapter shall be met;

(2) A class I or class II reservoir shall meet the requirements of Section .1200 of this Subchapter; and

(3) The supplier of water shall have an engineer along with other qualified consultants as needed conduct a study of the impoundment and provide the Department information to determine whether the requirements of this Subchapter are met. The study shall include as follows:

(A) Plans and specifications of the impounding structure;

(B) Information concerning clearing of the land for impoundment as provided in Paragraph (d) of this Rule;

(C) Information concerning sources of pollution on the watershed;

(D) Documentation of control by the supplier of water of the impoundment and 50 foot margin around the impoundment measured from the normal pool elevation;

(E) Information concerning the quality of the water and sediments which could cause water quality fluctuations such as lake stratification, turnover and algae bloom; and

(F) Other information necessary to show the proposed source will meet the requirements of this Subchapter.

(f) A margin of at least 50 feet around a class I and class II reservoir measured from the normal pool elevation shall be owned or controlled by the water supplier.

(g) Intakes, Pumps, Treatment Units, and Equipment. Raw water intakes, pumps, treatment units and equipment shall be designed to provide water of potable quality meeting the water quality requirements stated in Section .1500 of this Subchapter.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Amended Eff. July 1, 1994; July 1, 1992; September 1, 1990.

.0404 WATER TREATMENT FACILITIES

(a) Physical Security and Facility Protection. Treatment equipment and chemicals shall be secured against unauthorized access and shall be protected against the weather as follows:

(1) Structures shall comply with provisions of state and local building codes;

(2) Drainage shall be provided by floor drain, wall drain, or slope to door;

(3) Access to the structure shall be a doorway with minimum dimensions of 36 inches wide and 80 inches high or larger. The doorway shall be large enough to accommodate installation or removal of equipment; and

(4) The structure shall have space to facilitate operation and maintenance of treatment equipment, storage of chemicals, required piping and appurtenances, electrical controls, and laboratory testing.

(b) Mixing and Dispersion of Chemicals. Provisions shall be made for mixing and dispersion of chlorine and other chemicals applied to the water. All facilities treating surface water or ground water influenced by surface water shall comply with the disinfection requirements in Rule .2002 of this Subchapter.

(c) Chemical Feed Machines

(1) Durable chemical feed machines designed for adjustable accurate control of feed rates shall be installed for application of all chemicals necessary for appropriate treatment of the water. Sufficient stand-by units to assure uninterrupted operation of the treatment processes shall be provided. Continuous chemical application must be protected from electrical circuit interruption which could result in overfeed, underfeed or interrupt the feed of chemicals.

(2) Chemical feed lines from the feeders to the points of application shall be of material sized for the design flow rate, corrosion resistant, easily accessible for cleaning and protected against freezing. Length and the number of bends shall be reduced to a minimum.

(3) Piping and appurtenances shall be constructed of suitable material for the chemical being added and the specific application.

(4) A separate feeder shall be used for each chemical applied.

(d) Disinfection Equipment:

(1) Equipment designed for application of chlorine, or some other approved, equally efficient disinfectant shall be provided. Stand-by units shall be provided. The plans and specifications shall describe the equipment in detail.

(2) Chlorinators shall be installed in tightly constructed, above ground rooms with mechanical ventilation to the outside air. The capacity of exhaust fans shall be sufficient to discharge all air in the rooms every 30 seconds to 1 minute. The fans or their suction ducts shall be located not more than eight inches above floor level. Provisions for entrance of fresh air shall be made. The point of discharge shall be so located as not to contaminate the air in any building or inhabited areas. Electrical switches for operation of fans shall be located outside the chlorinator rooms. Rooms used for storage of chlorine cylinders shall be designed as described above.

B-4103

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

Michael Easley, Governor
Bill Ross, Secretary
Gregory Thorpe, Director

February 20, 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" (Streams classified as Water Supply) Projects: B-4264, B-4265, B-4266, B-4103, and B-4247.

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.

Wetlands/401 Unit 2321 Crabtree Blvd. Suite 250 Raleigh, North Carolina 27604
Telephone 919-733-1786 FAX # 733-6893

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.

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.

Federal Aid # **BRZ-2550(1)** *TIP #* **B-4103** *County*: **Davidson**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No.416 on SR 2550 over Beaverdam Creek

On 9/16/2003, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [x] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project and agreed

- [ ] There are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.
- [ ] There are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.
- [ ] There is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.
- [x] There is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Mary Pope Furr — 9-16-2003
Representative, NCDOT — Date

Michael C. Dawson — 9/16/03
FHWA, for the Division Administrator, or other Federal Agency — Date

Renee Gledhill-Earley — 9/16/03
Representative, HPO — Date

David Brook — 9/16/03
State Historic Preservation Officer — Date

Federal Aid # **BRZ-2550(1)** *TIP #* **B-4103** *County*: **Davidson**

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

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

Bridge # 416 - (DE) - adverse effect

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

Initialed: NCDOT MPH FHWA MCP HPO PSG

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

August 14, 2003

MEMORANDUM

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

FROM: David Brook RSH for David Brook

SUBJECT: Replace Bridge No. 416 on SR 2550 over Beaverdam Creek, B-4103, Davidson County, ER02-8597

Thank you for your letter of July 17, 2003, concerning the above project.

We appreciate the additional research undertaken by the bridge survey architectural historians in order to evaluate Bridge No. 416.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that Davidson County Bridge No. 416 is eligible of the National Register. The bridge is significant as an example of the once-common Pony truss bridges of the early twentieth century and is one of the few examples with a documented fabricator.

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: Mary Pope Furr, 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
Office of Archives and History

Division of Historical Resources
David J. Olson, Director

May 6, 2002

MEMORANDUM

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

FROM: David Brook Dsfo David Brook

SUBJECT: Replace Bridge 416 on SR 2550 over Beaverdam Creek, B-4103, Davidson County, ER 02-8507

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

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area. However, since a comprehensive historical architectural inventory of has never been conducted, there may be structures of which we are unaware located within the planning area.

The bridge appears to be a metal truss which may need to be evaluated. The aerial photograph also shows a house at the northwest corner of the bridge that will need to be evaluated, if it is more than fifty years old.

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.

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:kgc

cc: Mary Pope Furr, NCDOT

Administration
Restoration

Location
507 N. Blount St. Raleigh, NC
515 N. Blount St. Raleigh, NC

Mailing Address
4617 Mail Service Center, Raleigh 27699-4617
4613 Mail Service Center, Raleigh 27699-4613

Telephone/Fax
(919) 733-4763 •733-8653
(919) 733-6547 •715-4801
(919) 733-4763 •715-4801

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

SUBJECT: Replacement of Bridge No. 416 over Beaver Dam Creek, SR 2550, Badin Lake Road, B-4103, Davidson County, ER02-8597

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 importance within the general area of this project:

Bridge 416

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

Federal Aid # BRZ-2550(1) *TIP #* B-4103 *County*: Davidson

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

Project Description: Replace Bridge No. 416 on SR 2550 over Beaverdam Creek

On 10/01/2002, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [x] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project at

- [ ] Scoping meeting
- [x] Historic architectural resources photograph review session/consultation
- [ ] Other

All parties present agreed

- [ ] There are no properties over fifty years old within the project's area of potential effects.
- [x] There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- [x] There are properties over fifty years old within the project's Area of Potential Effects (APE), but based on the historical information available and the photographs of each property, the property identified as Property #1 is considered not eligible for the National Register and no further evaluation of it is necessary.
- [x] There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- [ ] All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- [ ] There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Mary Pope Furr — 10·01·2002
Representative, NCDOT — Date

[signature] — 10/1/02
FHWA, for the Division Administrator, or other Federal Agency — Date

[signature] — 10-01-2002
Representative, HPO — Date

David Brook — 10/1/02
State Historic Preservation Officer BTS — Date

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 11, 2001

Dear School Transportation Director:

Subject: Bridge No. 416 on Highway SR 2550, over Beaverdam Creek, Davidson County TIP Project No. B-4103

The N.C. Department of Transportation has begun the planning process to replace the above bridge, which is nearing the end of its useful life. Construction is planned for year 2005.

Alternative methods of replacing the bridge will be studied. Some alternatives may require road closure at the bridge site. In that case, all traffic would be detoured onto other local roads.

The type of bridge or structure that we select will determine how long the road would have to remain closed. However, the time of closure would not be longer than 8-12 months.

We would like to know the specific number of bus crossings per day and if road closure could be handled by re-routing or other changes, or if it would create an unworkable situation for your school bus operations.

We ask that you let us know your opinion in writing by using the enclosed addressed envelope. We need to have your reply by July 31 2001.

Thank you in advance for your cooperation. Your answers will help us plan more effectively for this necessary bridge replacement to serve our citizens better.

If you have any questions concerning the projects, please contact me at 919-733-7844, ext. 258 .

Sincerely,

Davis Moore

Davis Moore
Project Development & Environmental Analysis Branch

Attachment

Mr. Moore,

Currently, no buses from Dav. Co. cross this bridge. We can adjust our bus routes to not cross the bridge even if need arose. If you have any questions, please give me a call.

Thanks,

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

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

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

SUBJECT: Replacement of bridge No. 416 on SR 2550 over Beaver Dam Creek, Davidson County, Federal Aid Project No. BRZ-2550(1), State Project No. 8.2604601, TIP No. B-4103.

20 November 01

Mr. Moore,

The replacement of this bridge and the possible re-routing of traffic will not have a noticeable effect on the response of Davidson County Emergency Services.

Thank You,

Del Welch, Emergency Services Director

Montgomery County Schools

441 Page Street • P.O. Box 427 • Troy, North Carolina 27371-0427

(910) 576-6511 FAX (910) 576-2044

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

SUBJECT: Request for comments on Bridge Replacement Projects B-4103

Dear Mr. Thorpe

In reply to your letter dated November 14, 2002, I would like to submit our concerns on the replacement of the subject bridge.

If our buses are detoured while the new bridge is being built, it will cause a fifteen mile detour for buses that are already twenty miles from school. The students on these buses spend one hour and forty-five minutes every morning and afternoon traveling to school as it is. The detour would add ride time for the students who already ride one of the longest routes we have. We would hope that the old bridge could stay in place while the new bridge is being built.

Thank you for allowing us to voice our concern in this project.

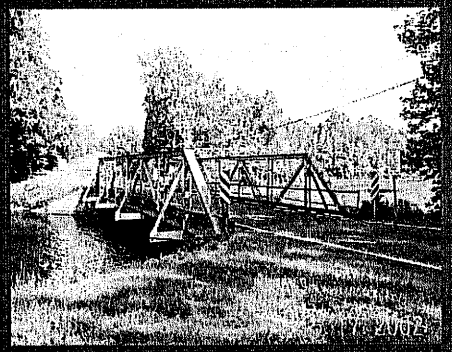
Sincerely,

Greg Johnson
Montgomery County Schools
Director of Transportation
PO Box 427
Troy, NC 27371

3/11/03
2 buses twice daily,

Informational Newsletter

Bridge Replacement on SR 2550 (Badin Lake Rd.) Over Beaver Dam Creek Davidson County TIP No. B-4103



North Carolina Department of Transportation

Issue No. 1
November 2003

Mr. Elmo Vance
North Carolina Department of Transportation
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

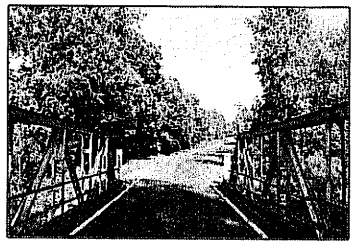
Contact Information

Elmo Vance
NCDOT-PDEA
1548 Mail Service Center
Raleigh, NC 27699-1548
919-733-7844 ext. 263
eevance@dot.state.nc.us

Pam Williams
Mulkey Engineers & Consultants
PO Box 33127
Raleigh, NC 27636-3127
919-858-1908
pwilliams@mulkeyinc.com

Project Introduction

The North Carolina Department of Transportation (NCDOT) plans to replace the bridge on SR 2550 (Badin Lake Road) over the Beaver Dam Creek. The bridge is being replaced to provide safer, more efficient traffic operations.



The NCDOT realizes that citizens and business owners in the vicinity of the bridge want to be informed of the potential effects of this project. This newsletter is part of the public involvement process to inform concerned citizens and solicit comments.

Proposed Replacement Structure

The recommended replacement structure is a bridge providing two 11-foot travel lanes with 3-foot shoulders. The proposed approach roadway will consist of two 11-foot travel lanes with 5-foot turf shoulders.

Preferred Alternative

Data has been collected on the existing human and natural environments, alternatives have been developed, and the impacts of each alternative have been analyzed. Two build alternatives were studied for this project.

Alternative B (preferred) will replace the bridge in-place. The proposed bridge will be approximately 92 feet in length. During construction a one-lane, two-way on-site temporary detour south (downstream) of the existing bridge will be utilized to maintain traffic. The detour will be signal controlled at one end.

Alternative D replaces the bridge on new alignment north (upstream) of the existing structure. The proposed bridge will be approximately 185 feet in length. Traffic will be maintained on the existing structure during construction.

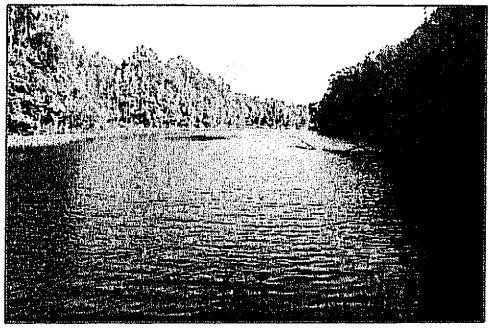
Alternative B was selected as the preferred alternative due to the following reasons:

- Minimizes impacts to the National Forest
- More economical than Alternative D

Additional Information

Public involvement is an important part of the planning process. The NCDOT encourages citizen involvement on transportation projects, and will consider your suggestions and address all concerns. Please send your comments to one of the contacts listed on this newsletter. Your opinions are important to us!

If you have transportation questions on other projects, call our Customer Service Center toll-free 1-877-DOT-4YOU, or visit the NCDOT website at www.ncdot.org.



Project Development Process

Step 1

Data Collection

Step 2

Alternative Development

Step 3

Environmental Analysis

Step 4

Selection of Preferred Alternative

Step 5 ← **We are here.**

Citizens Informational Newsletter

Step 6

Complete Environmental Document

Construction & Right-of-Way Cost

Preliminary Cost Estimate

$800,000

Schedule

Right-of-Way in 2005

Construction in 2006

We're on the Web!

www.ncdot.org

Alcoa Primary Metals

Alcoa Power Generating Inc.
Yadkin Division
293 NC 740 Hwy
PO Box 576
Badin, NC 28009-0576 USA

November 18, 2002

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

Dr. Thorpe:

I am writing in response to the request for comments on B-4103, Davidson County, Division 9, replace Bridge No. 416 over Beaver Dam creek on SR 2550.

As background, under the Federal Power Act, Alcoa Power Generating Inc. (APGI) is licensed by the Federal Energy Regulatory Commission (FERC) to operate hydroelectric Project No. 2197. Yadkin is the division of APGI responsible for operating the Project. Narrows Reservoir is one of the developments of the Project. Under its license, Yadkin may only exercise certain authority "if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project." In order to ensure that these values are maintained, Yadkin has adopted a Shoreline Management Plan, which was approved by FERC on November 9, 2000. Additionally, APGI owns the land under the normal full pool (541' contour, all contour references are Yadkin datum) of Narrows Reservoir.

Bridge No. 416 crosses the Beaver Dam Creek arm of Narrows Reservoir and accordingly is within the Project. Yadkin's Subdivision Access Approval, Multi-Use Facility Permitting, and Industrial Approval Procedures (Procedures) govern activities within the Project, such as the proposed bridge replacement. Bridge No. 416 is not located within a conservation zone or in an area of sensitive habitat. For bridge replacements not impacting a conservation zone Yadkin's permitting process requires the completion of Yadkin's Agency Consultation (AC) process before Yadkin can issue a Construction Permit for the proposed improvements. A copy of the Procedures, which detail Yadkin's AC process, has been included for your convenience.

In order to begin discussions regarding a lease or right of way easement across APGI property Yadkin asks that (1) the NCDOT provide two copies of their survey and/or design drawings for the improvement project and (2) that the appropriate right of way agent contact Pat Shaver, Yadkin's Power and Property Coordinator at (704) 422-5678, to arrange a meeting to explain Yadkin's procedures for obtaining an easement (3) requested right of way easement be flagged for APGI's Phase I walkover. Please be aware that Yadkin cannot issue a lease or easement to NCDOT and NCDOT may not commence construction activity within the Project or on APGI property until satisfactory completion of Yadkin's AC process.

If you need additional information please do not hesitate to contact me at (704) 422-5644.

Robert Smet
Natural Resources Specialist

SUBDIVISION ACCESS APPROVAL, MULTI-USE FACILITY PERMITTING, AND INDUSTRIAL APPROVAL PROCEDURES YADKIN PROJECT, FERC NO. 2197

July 1, 1999 (Revision Date: July 1, 2002)

I. OVERVIEW

A. General

The Yadkin Project (Project) includes four reservoirs: High Rock, Tuckertown, Narrows (Badin Lake), and Falls. The Project is licensed by the Federal Energy Regulatory Commission (FERC) as project number 2197. As a FERC licensee, Alcoa Power Generating Inc. (APGI), through its Yadkin Division (Yadkin), operates and manages the Project reservoirs in accordance with the terms of its license and the applicable rules and regulations of FERC. These responsibilities include providing adequate public access and public recreation facilities and protecting important natural, environmental, cultural, and scenic resources.

These Procedures apply to subdivisions adjoining the FERC-licensed Project boundary (Project Boundary) or the Yadkin-Managed Buffer (defined below) and multi-use facilities and industrial uses/facilities within the Project Boundary, on the Yadkin-Managed Buffer, or on Yadkin-Managed Lands (defined below). Generally, the Project Boundary follows the normal full-pool elevation of the four reservoirs. Any land or waters lying within the Project Boundary are regulated by FERC through the terms of the Project license and are covered under these Procedures. Property owned by APGI, or its parent company, Alcoa Inc. (Alcoa), includes the land below the waters of the reservoirs and the generating facilities.

In addition, along many areas of the reservoir shorelines, Yadkin manages property that is owned by APGI or Alcoa. In some cases, this ownership is a narrow strip of shoreline property. Often, ownership of these shoreline parcels is to a specific elevation contour and, therefore, the width of these parcels can vary considerably depending on the shoreline topography. On Narrows Reservoir, APGI/Alcoa owns a narrow strip of shoreline property around nearly the entire reservoir, generally to an elevation of 545.0 feet (Yadkin datum), approximately 4 vertical feet above the normal full-pool elevation of the reservoir. APGI/Alcoa also owns some narrow strips of shoreline property around portions of High Rock Reservoir. Most of the High Rock shoreline strips are also owned to a specified elevation. Collectively, these strips of shoreline property, up to 100 feet from the Project Boundary, are considered "Yadkin-Managed Buffer."

In other areas, APGI/Alcoa owns shoreline property that extends back from the water a considerable distance. In these areas, the first 100 feet of shoreline property from the normal full-pool elevation of the reservoirs is also considered "Yadkin-Managed Buffer." All other APGI/Alcoa lands more than 100 feet from the Project Boundary are referred to as "Yadkin-Managed Lands."

Yadkin allows public access to Project lands and waters, so far as consistent with the proper operation of the Project, and also to portions of the Yadkin-Managed Buffer for purposes of navigation and recreation, including fishing and hunting. All other uses of the Project lands and waters, or the Yadkin-Managed Buffer, including the development of private access, subdivision access, multi-use recreation facilities (marinas, boat docks, fishing piers, boat launches, etc.), and industrial uses/facilities, require Yadkin's written permission. Private access across or other use of Yadkin-Managed Lands is generally not granted. These Procedures outline the steps that must be taken by developers seeking Yadkin's permission to use or occupy Project lands and waters or the Yadkin-Managed Buffer or to develop a subdivision where private access requests are anticipated.

In addition, Yadkin has adopted a Shoreline Stewardship Policy (Stewardship Policy), which summarizes Yadkin's policies, procedures, and requirements regarding use of the Project lands and waters and the Yadkin-Managed Buffer. Developers are encouraged to obtain a copy of the Stewardship Policy and familiarize themselves with the Policy and the procedures and requirements that developers and owners of adjoining property and others must comply with in order to maintain eligibility to construct, maintain, and/or operate facilities within the Project Boundary or the Yadkin-Managed Buffer.

Under its FERC license, AGPI, through its Yadkin Division has the authority to grant permission for certain types of use and occupancy of Project lands and waters and to convey certain interests in Project lands and waters. However, this can be done only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project. Therefore, Yadkin has the continuing responsibility to supervise and control the uses and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with, the covenants of the instrument of conveyance for any interests that it has conveyed under its FERC license. If a permitted use or occupancy violates any condition of Yadkin's FERC license or any other condition imposed by Yadkin for the protection and enhancement of the Project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of its FERC license is violated, Yadkin will take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, (i) canceling permission to use and occupy Project lands or waters, (ii) requiring the removal, at the permittee's sole expense, of any non-complying structures and facilities, and (iii) appropriate restoration and/or mitigation, up to and including restoring Project lands and waters and the Yadkin-Managed Buffer to their original condition. Yadkin also has the right to take similar actions for violations regarding the Yadkin-Managed Buffer and other Yadkin-Managed Lands. Enforcement of these Procedures is discussed in more detail in Section VII, below.

B. Subdivisions

Reservoir access for lots in new subdivisions adjoining the Project Boundary or the Yadkin-Managed Buffer will not be granted unless the proposed subdivision access is first reviewed and approved by Yadkin. Only after Yadkin has approved the subdivision access will any lots be eligible to apply for either a construction permit or a private recreation facility (individual or shared pier) permit. In the case of subdivisions for which the developer is proposing multi-use facilities (as defined below), prior notice to or prior approval by FERC may also be required.

The subdivision access approval process is a procedure under which Yadkin, or in certain cases, FERC, determines whether the requirements of Yadkin's FERC license are met as they relate to the effect of the reservoir access anticipated for the subdivision on the reservoir and adjoining shoreline. Included in this determination is a final decision, with respect to lot width, water depth and cove width only, as to whether certain lots adjacent to the reservoir shoreline are eligible for a private pier. For lots that are deemed eligible for a private pier as part of this subdivision approval process, the procedures and requirements set forth in the Stewardship Policy or Specifications for Private Recreation Facilities at High Rock and Narrows Reservoirs (Specifications) must also be complied with before Yadkin will issue a construction permit to any lot owner.

The subdivision approval process requires that the subdivision developer prepare an Environmental Assessment (EA) for some proposed subdivisions. A full EA, as described in Section V below, is required for the following types of subdivisions:

1. Any subdivision with lots adjacent to a Project reservoir shoreline that is located wholly or partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D)

2. Any subdivision with more than 5 lots adjacent to a Project reservoir shoreline (even if the subdivision is not located in the shoreline Conservation Zone)

3. Any subdivision adjacent to the Project reservoir shoreline with proposed multi-use facilities that, considered in the aggregate, can accommodate more than 10 watercraft

Developers of all other types of subdivisions are not required to prepare a full EA, but must complete the Agency Consultation Process described in Section VI below.

Subdivision developers seeking to include multi-use facilities as part of the subdivision, including piers serving more than two lots, boat launches, community swimming areas, marinas, or other community/group facilities, need only complete a single EA for the proposed subdivision. In these cases, the EA must include information required for both the private access needs of the subdivision and multi-use facility aspects of the proposed subdivision, and will be used by Yadkin to review and approve the private access needs of the subdivision and any proposed multi-use facilities.

C. Multi-Use Facilities

Yadkin must review and approve the construction, modification (reconstruction, additions, or expansion), and operation of any multi-use recreation or access facility (as defined in Section III) occupying lands or waters within the Project Boundary or the Yadkin-Managed Buffer. Repairs to an existing multi-use facility that require a building permit from the applicable County also require a written construction permit from Yadkin. Additional guidance may be obtained by Yadkin upon request. Depending upon the type of facility being proposed, prior notice to or the prior approval of FERC may also be required.

Consistent with its FERC license, Yadkin may authorize certain multi-use recreation and access facilities occupying Project lands and waters only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project. The multi-use facility permitting process is a procedure whereby Yadkin, or in some cases FERC, determines whether the requirements of Yadkin's license are met as they relate to the effect of the construction and operation of proposed multi-use facilities on the reservoir and adjoining shoreline.

To be eligible for a multi-use facility construction or operating permit, the applicant must be an owner of property adjoining either the reservoirs or the Yadkin-Managed Buffer (adjoining property owner).

The multi-use facility permit process requires the developer to prepare an EA for some types of proposed facilities. A full EA, as described in Section V below, is required for any proposed new construction or modification of the following types of multi-use facilities:

1. Any multi-use facility that is located wholly or partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D);

2. Any multi-use facility(ies)[1] that is designed to accommodate more than 10 watercraft; or

[1] For subdivisions and commercial enterprises, Yadkin will aggregate all proposed multi-use facilities, except for planned individual and shared piers, to determine the total number of watercraft that the facilities can accommodate. If, considered in the aggregate, the proposed multi-use facilities can accommodate more than 10 watercraft, then collectively the multi-use facilities will require prior FERC approval. If, considered in the aggregate, the facilities can accommodate 10 or fewer watercraft, then the multi-use facilities will be permitted on an individual basis as shown above.

3. Any commercial multi-use facility that accommodates watercraft and is located within 1/2 mile of an existing marina.

Developers of all other types of multi-use facilities are not required to prepare a full EA, but must complete the Agency Consultation Process described in Section VI below.

Upon completion of the multi-use facility permitting process and any required prior FERC notice or approval, Yadkin will issue a construction permit for the proposed multi-use facility. Following construction and after a final inspection of the new facility, Yadkin will issue a multi-use facility operating permit. Multi-Use facility operating permits must be renewed every 5 years, and may be terminated by Yadkin in accordance with the terms of the multi-use operating permit, or for failure to abide by the Stewardship Policy and other applicable Yadkin procedures and requirements.

D. Industrial Uses/Facilities

Uses or facilities other than those related to recreation and adjoining property owner access to the Project are generally considered industrial uses. All industrial uses/facilities of, or on, Project lands and waters, the Yadkin-Managed Buffer, or Yadkin-Managed Lands require Yadkin's written permission. Depending upon the proposed use/facility, Yadkin may be required to obtain prior approval from FERC or to provide FERC with prior notice before approving the proposed industrial facility/use, as described in Section IV below.

Yadkin requires developers of all proposed industrial uses/facilities that require prior FERC approval to prepare and submit an EA, as outlined in Section V below, as part of their request to Yadkin for permission to use/occupy Project lands and waters, the Yadkin-Managed Buffer, or Yadkin-Managed Lands. For all other proposed industrial uses/facilities, the developer must conduct an Agency Consultation Process, as described in Section VI below.

E. Contact Yadkin Early

Entities considering the development of subdivisions adjoining the Project Boundary or the Yadkin-Managed Buffer, the construction of new multi-use or industrial uses/facilities or the modification of existing facilities should contact Yadkin as early as possible in the planning process to discuss the specific permitting/approval requirements that apply to the proposed activity and to obtain copies of the appropriate application materials and instructions. Yadkin can be contacted at the address and phone numbers below:

Alcoa Power Generating Inc.
Yadkin Division
Box 576
Badin, NC 28009
1-888-886-1063
704-422-5678

II. SUBDIVISION ACCESS APPROVAL PROCESS

A three-part process is utilized for the review and approval of access for planned subdivisions adjoining the Project Boundary or the Yadkin-Managed Buffer. The three parts are: 1) pre-application meeting; 2) application development; and 3) subdivision access approval notification. Each is described below.

A. Pre-Application Meeting

1. A subdivision developer must meet with Yadkin prior to submitting an application for subdivision access approval. This initial meeting should be held as early as possible in the planning process to avoid confusion and delay in preparing information required for the application.

2. Prior to the meeting, the developer must complete a Pre-Application Meeting Worksheet that identifies the information that the developer is expected to bring to the meeting, including:

   a. Maps or sketches showing the location of the proposed subdivision with respect to the reservoir shoreline and existing property boundaries;

   b. General information on the proposed subdivision, including:

      i) the number of subdivision lots and the number, size, and type of other facilities involved;
      ii) the anticipated need for access to Project lands or waters;
      iii) the anticipated need for use of or access across the Yadkin-Managed Buffer or other Yadkin-Managed Lands;

   c. A proposed schedule for submitting the application and constructing the proposed subdivision;

   d. The name, address, and phone number of a Professional Engineer that the developer proposes to certify any planned multi-use facilities;

   e. The name, address, and phone number of the environmental professional(s) that the developer proposes to conduct the required EA.

3. At the pre-application meeting, Yadkin will review the information on the proposed subdivision access for consistency with the Stewardship Policy and other applicable requirements, review the requirements for completing the subdivision approval process including the EA, and provide a list of reviewing agencies.

B. Application Development

1. A developer seeking subdivision access approval must file a completed EA or complete the Agency Consultation Process for the proposed subdivision. The Agency Consultation Process is detailed in Section VI of these Procedures. Specifications for conducting an EA are detailed in Section V of this document.

2. An EA is required for any of the following types of subdivisions:

   a. Any subdivision with lots adjacent to a Project reservoir shoreline that is located wholly or partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D)
   b. Any subdivision with more than 5 lots adjacent to a Project reservoir shoreline (even if the subdivision is not located in the shoreline Conservation Zone)

   c. Any subdivision adjacent to the Project reservoir shoreline with proposed multi-use facilities that, considered in the aggregate, can accommodate more than 10 watercraft

3. EAs are not required for other types of subdivisions, but the developer must complete the Agency Consultation Process described in Section VI of this document.

4. The EA must be prepared by a qualified environmental professional or consulting firm.

5. The subdivision developer must submit the EA to Yadkin as part of the Subdivision Access Approval Application. A complete application must include:

   a. An Application Checklist.

   b. A completed EA or Agency Consultation Process package. Note that for proposed subdivisions, the completed EA must contain the information in Section V.A.1.a–e.

   c. A copy of the final subdivision covenants that establish the required 100-foot forested setback requirement consistent with the Stewardship Policy.

   d. Copies of all correspondence from resource agencies regarding the EA, including all comment letters, minutes of meetings with agencies, and any other information relevant to the review of the EA.

   e. Two copies of the subdivision plat map that will be recorded and approved by the county in which the subdivision is to be located.

   f. A non-refundable subdivision access approval application fee in accordance with Yadkin's current fee schedule for subdivision applications.

6. Yadkin will review the application for completeness. If Yadkin finds the application to be incomplete, it may request additional information from the applicant.

7. Upon finding that an application is complete, Yadkin will determine the applicable FERC notice or approval requirements. For any aspect of the subdivision that requires prior FERC notice or approval, Yadkin will provide notice to or file a request with FERC for the proposed subdivision. The decision on whether any aspect of the proposed subdivision requires FERC approval will be made solely by Yadkin on a case-by-case basis. If prior FERC approval is required, the applicant should anticipate at least a 90-day review period by FERC.

C. Subdivision Access Approval

1. Yadkin will determine whether to issue approval of the proposed subdivision access based on its review of the application package and, where applicable, FERC's response. Yadkin's determination will be based, in part, on the following criteria:

   a. The proposed subdivision access and the applicable subdivision covenants are consistent with Yadkin's requirements for shoreline development and will satisfy the 100-foot forested setback requirement outlined in the Stewardship Policy.

   b. The proposed subdivision access will not adversely impact the reservoir and shoreline environment, or the developer has proposed measures to adequately mitigate any adverse environmental impacts.

c. The proposed subdivision access will not adversely impact any significant cultural resources located in the reservoirs or along its shoreline, or the developer has proposed measures to adequately mitigate any adverse impacts to cultural resources.

d. The proposed subdivision adequately addresses safety impacts and will not unduly impede or restrict public use of, or access to, the Project reservoirs.

e. Lots in the subdivision for which the developer anticipates private or shared piers will meet Yadkin's minimum requirements for lot width, water depth, and cove width.

f. The proposed subdivision access EA has been reviewed by federal and State resource agencies and the reviewing agencies have indicated that they have no concerns or that their concerns have been adequately addressed by the developer.

g. In the case of proposed subdivisions with any aspect that requires prior FERC notice or approval, Yadkin finds acceptable any requirements or conditions imposed by FERC.

2. Yadkin reserves the right to make case-by-case determinations in situations that are not explicitly covered by these Procedures.

3. As stated in Section I.B. above, the subdivision access approval process is a procedure whereby Yadkin, or in certain cases, FERC, determines whether the requirements of Yadkin's FERC license are met as they relate to the effect of the reservoir access anticipated for the subdivision on the reservoir and adjoining shoreline. Included in this determination is a final decision, with respect to lot width, water depth and cove width only, as to whether certain lots adjacent to the reservoir shoreline are eligible for a private pier. Although the determination is subject to being revoked for failure to conform to the Stewardship Policy or other permitting requirements existing at the time the private access approval is granted, or by supervening regulatory authorities that are not within Yadkin's control, it is unaffected by changes in ownership of the individual lots.

4. If Yadkin decides to approve the proposed subdivision access, Yadkin will issue the developer a written approval. This approval will contain a list of lots within the subdivision that Yadkin has determined meet Yadkin's current requirements for minimum lot width, water depth, and cove width. Aside from this subdivision access approval (constituting a current statement of eligibility for a private pier from an environmental and recreational perspective), Yadkin can offer no assurances regarding future changes in environmental and recreational requirements or the effect of such changes on private pier eligibility, including Yadkin's or FERC's discretion under the Federal Power Act to continue to permit such facilities.

5. After Yadkin has approved the proposed subdivision access, Yadkin will begin processing private pier applications. Individual lot owners must apply for a construction permit and then a private recreation facility permit, and must comply with the Stewardship Policy and the Specifications.

6. The primary sanctions for failure by the lot owner to comply with any of the Stewardship Policy requirements, including the 100-foot forested setback requirement, include the loss of eligibility for a private recreation facility permit and use of, or private access across, the Yadkin-Managed Buffer. Yadkin will also require corrective action including but not limited to restoration and/or mitigation. For enforcement details, see Section VII, below.

7. In the subdivision access approval letter, Yadkin will also provide a list of lots that are not considered eligible for private or shared piers, along with an explanation of why these lots are not eligible.

8. The subdivision developer is responsible for laying-out the proposed subdivision such that all lots can meet the 100-foot forested setback requirement. Yadkin will only grant setback variances where compliance with the 100-foot forested setback requirement would render a particular lot unbuildable[2]. If any individual lot is denied pier eligibility because the lot is not sufficiently sized to meet the required 100-foot forested setback, a developer may apply to Yadkin for a setback variance for that lot. In those instances, Yadkin expects the number of variances granted within a given subdivision will not exceed 5% of the total number of lots. Yadkin will grant no variances for failure to satisfy minimum water depth, lot width, and cove width requirements.

9. If Yadkin denies the subdivision access application, a written statement will be mailed to the applicant stating the reasons for denial. An applicant may reapply for subdivision access approval at any time. An applicant can also request a meeting with Yadkin to discuss the reasons for application denial and steps, if any, that the applicant may take to improve the application.

III. MULTI-USE FACILITY PERMITTING PROCESS

A. General

1. Multi-Use facilities are any public or private facilities, other than private individual or shared piers (two adjoining lot owners), for recreation or for purposes of accessing Project lands or waters.

2. A multi-use facility construction permit from Yadkin is required before construction of any new multi-use facilities or modification of any existing multi-use facilities that occupy Project lands or waters or that are wholly or partly located on the Yadkin-Managed Buffer. Repairs to an existing multi-use facility that require a building permit from the applicable County also require a written construction permit from Yadkin. Additional guidance may be obtained by Yadkin upon request.

3. Following construction, operation of these facilities requires a multi-use facility operating permit from Yadkin.

4. Under its FERC license, Yadkin may authorize certain types of multi-use facilities on Project lands or waters without prior FERC notice or approval. Other facilities require prior FERC notice or approval. Table 1 summarizes the types of multi-use facilities that Yadkin may approve without prior FERC notice, those that require a 45-day prior notice to FERC, and those that require prior FERC approval. Table 1 also indicates EA and Agency Consultation Process requirements for various types of multi-use facilities. In the case of a new subdivision for which more than one multi-use facility is proposed, Yadkin will aggregate the proposed multi-use facilities and consider the combined number of watercraft that could be accommodated by the facilities in determining the applicable FERC notice or approval requirements.

[2] An unbuildable lot is defined as a lot which cannot otherwise accommodate a three-bedroom house of 1,800 square feet. A developer is responsible for platting the subdivision so as to minimize the number of unbuildable lots.

Table 1
Summary of Multi-Use Facility Types and Required Prior FERC Notice/Approval

Facility Description	Facility Type	FERC 45-Day Notice Required	Prior FERC Approval Required	EA or Agency Consultation (AC) Required[1]	Type of Yadkin Permit Required
Facility(ies) accommodates more than 10 watercraft and is operated as part of a commercial enterprise.[2]	Marina (commercial)	No	Yes	EA	Multi-Use
Facility(ies) accommodates more than 10 watercraft and is not operated as part of a commercial enterprise.[2]	Marina (non-commercial)	No	Yes	EA	Multi-Use
Facility(ies) accommodates 1–10 watercraft and is operated as part of a commercial enterprise.	Marina (commercial)	Yes	No	AC	Multi-Use
Facility(ies) accommodates watercraft, is operated as part of a commercial enterprise, and is located within 1/2 mile of an existing marina.	Marina (commercial)	No	Yes	EA	Multi-Use
Facility(ies) accommodates 1–10 watercraft, is not operated as part of a commercial enterprise, and is not a private (individual or shared) pier.	Boat Dock	No	No	AC	Multi-Use
Facility(ies) is a boat launch ramp operated as part of a commercial enterprise or provides other services.	Boat Launch Ramp (commercial)	Yes	No	AC	Multi-Use
Facility(ies) is a boat launch ramp not operated as part of a commercial enterprise and provides no other services.	Boat Launch Ramp (non-commercial)	No	No	AC	Multi-Use
Facility(ies) is a pier with no accommodation for watercraft and is operated as part of a commercial enterprise (examples include commercial fishing piers).	Multi-Use Pier (commercial)	Yes	No	AC	Multi-Use
Facility(ies) is a pier with no accommodation for watercraft, but which is available for use by more than two adjoining lot owners (examples include fishing piers, homeowner association piers, private club piers, etc.).	Multi-Use Pier (non-commercial)	No	No	AC	Multi-Use

[1] An EA is required for all proposed multi-use facilities, regardless of category, that are located wholly or partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D).

[2] For subdivisions and commercial enterprises, Yadkin will aggregate all proposed multi-use facilities, except for planned individual and shared piers, to determine the total number of watercraft that the facilities can accommodate. If, considered in the aggregate, the proposed multi-use facilities can accommodate more than 10 watercraft, then collectively the multi-use facilities will require prior FERC approval. If, considered in the aggregate, the facilities can accommodate 10 or fewer watercraft, then the multi-use facilities will be permitted on an individual basis as shown above.

5. A multi-use facility permittee planning any modification of an existing multi-use facility must first notify Yadkin, and Yadkin will determine prior FERC notice or approval requirements and EA or Agency Consultation Process requirements, and whether an amendment to the existing multi-use permit is required.

6. Multi-Use facility construction and operating permits will be issued only to the adjoining property owner who will benefit from or be serviced by the proposed multi-use facilities. However, the adjoining property owner may designate a "contact agent" who has authority to act on behalf of the owner in any discussions with Yadkin.

7. In any instance in which a governmental body operates a facility with any other entity (except Yadkin), a multi-use permit will be issued jointly to the governmental body and all such entities acting in conjunction with the governmental body. The governmental body and all such entities will be jointly and severally responsible for compliance with all terms and conditions of the permit.

8. The multi-use facility permittee(s) is solely responsible for operating and maintaining the permitted facilities in compliance with all terms and conditions of the permit, the Shoreline Stewardship Policy, all applicable Yadkin procedures and requirements, and all applicable local, State, and federal laws. The permittee(s) will indemnify and hold harmless Yadkin, Alcoa, and their successors and assigns from any personal injury, property damage, losses of or damage to natural resources or the environment, or other liability resulting from the permittee's operation of the facilities or the permittee's failure to comply with any applicable local, State, or federal laws, as is set forth in more detail in the multi-use permit.

9. A four-part process is utilized for the issuance of a permit for new multi-use facility construction and the amendment of a multi-use permit. The four parts are: 1) pre-application meeting; 2) application development; 3) construction permit; and 4) multi-use facility operating permit. Each is described below.

B. Pre-Application Meeting

1. Anyone seeking a multi-use facility construction permit must meet with Yadkin prior to submitting an application for a multi-use facility permit. This initial meeting should be held as early as possible in the planning process to avoid confusion and delay in preparing information required for the application.

2. Prior to the meeting, the applicant must complete a Pre-Application Meeting Worksheet that identifies the information that the applicant is expected to bring to the meeting including:

   a. Maps or sketches showing the location of the proposed facilities with respect to the reservoir shoreline and existing property boundaries;

   b. General information on the proposed facilities including:

      i) the number, type and size of facilities involved, including as estimate of the number of watercraft the facilities can accommodate;
      ii) the anticipated need for access to Project lands or waters;
      iii) the anticipated need for use of or access across the Yadkin-Managed Buffer or other Yadkin-Managed Lands;

   c. A proposed schedule for submitting the application and constructing the proposed facilities;

d. The name, address, and phone number of a Professional Engineer that the applicant proposes to certify the proposed multi-use facilities;

e. The name, address, and phone number of the environmental professional(s) that the applicant proposes to conduct the required EA.

3. At the pre-application meeting, Yadkin will review the information on the proposed multi-use facilities for consistency with the Stewardship Policy and other applicable requirements, review the requirements for completing the multi-use facility permitting process including the EA, **provide notice of its insurance requirements** and provide a list of reviewing agencies.

C. Construction Permit Process

1. An applicant seeking a multi-use facility construction permit must prepare a multi-use facility construction permit application and receive a construction permit from Yadkin prior to beginning construction of new facilities or modification of existing multi-use facilities.

2. As part of the application, the applicant must prepare and submit an EA or an Agency Consultation Process package for the proposed facilities.

   a. An EA must be prepared and filed with Yadkin for construction of any new multi-use facility, and may be required for modification of an existing multi-use facility, that is designed to accommodate more than 10 watercraft or that is located wholly or partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D).

   b. In the case of new subdivisions and commercial enterprises, Yadkin will aggregate all proposed multi-use facilities to determine the total number of watercraft that the proposed facilities can accommodate. If, considered in the aggregate, the facilities can accommodate more than 10 watercraft, then an EA will be required for that subdivision, regardless of the number of lots involved, or for the commercial enterprise, as the case may be.

3. Applicants for all other types of multi-use facilities are required to complete the Agency Consultation Process described in Section VI of this document.

4. The EA must be prepared by a qualified environmental professional or consulting firm.

5. A complete application for a multi-use facility construction permit must include:

   a. An Application Checklist;

   b. A map of the proposed development site showing all existing and proposed facilities. The map must also clearly indicate the location of the Yadkin Managed-Buffer or other Yadkin-Managed Lands located along the shoreline or adjoining the proposed facilities. (Such a map should be included in the EA);

   c. Construction plans or detailed drawings of the proposed facilities, at a scale of 1:2,400 (1 inch = 200 feet) or larger;

   d. Certification by an approved registered Professional Engineer that the proposed facilities and any changes to existing facilities are safe and structurally sound;

e. A complete Environmental Assessment (EA) or completed Agency Consultation Process package;

f. Copies of all necessary county, State and federal permits required for the proposed facility;

g. A non-refundable construction permit application fee in accordance with the Yadkin's current multi-use facility application fee schedule.

6. Yadkin will review the application for completeness. If Yadkin finds the application to be incomplete, it may request additional information from the applicant.

7. Upon finding that an application is complete, Yadkin will determine the applicable FERC notice or approval requirements. For all new multi-use facilities that require prior FERC notice or approval, Yadkin will provide notice to or file a request with FERC for approval of the proposed facility. The decision on whether proposed new facilities or modification of existing permitted facilities require prior FERC notice or approval will be made solely by Yadkin on a case-by-case basis. If prior FERC approval is required, the applicant should anticipate at least a 90-day review period by FERC.

D. Construction Permit Approval Criteria and Provisions

1. Yadkin will determine whether to issue a multi-use facility construction permit based on its review of the application package and, where applicable, FERC's response to the prior notice or Yadkin's request for prior approval. Yadkin's determination will be based, in part, on the following criteria:

   a. Proposed facilities meet the following specifications:

      i) Proposed facilities will generally not encroach or extend into Project waters more than 1/4 of the distance to the opposite shoreline or more than 120 feet into Project waters, whichever is less; and in no case will proposed facilities extend further into the water than is necessary to achieve the intended use;
      ii) Proposed facilities will meet Yadkin's minimum water depth requirements (8-foot minimum water depth at normal full-pool elevation) such that the minimum water depth is available to all proposed slips or along all portions of the facilities intended for docking watercraft;

   b. Piers, boat docks, and marinas incorporate the use of floating sections such that the facilities will remain functional under normal fluctuations in reservoir water levels that occur during the recreation season;

   c. Proposed facilities are otherwise consistent with Yadkin's policies for shoreline development and will adequately meet their intended purpose;

   d. The proposed multi-use facilities will not adversely impact the reservoir and shoreline environment, or the developer has proposed measures to adequately mitigate any adverse environmental impacts;

   e. The proposed multi-use facilities will not adversely impact any significant cultural resources located in the reservoirs or along its shoreline, or the developer has proposed measures to adequately mitigate any adverse impacts to cultural resources;

   f. The proposed facilities adequately address safety impacts and will not unduly impede or restrict public use of, or access to, the Project reservoirs;

g. Proposed facilities have been reviewed by federal and State resource agencies and the reviewing agencies have indicated that they have no concerns, or that their concerns have been adequately addressed by the applicant;

h. Proposed facilities providing for the sale of petroleum products will, at a minimum, comply with all applicable federal, State, and local regulations and will be installed to ensure that adverse environmental and safety impacts are avoided;

i. In the case of proposed facilities that require prior FERC notice or approval, Yadkin finds acceptable any requirements or conditions imposed by FERC.

j. **The developer has provided Yadkin with a certificate of insurance evidencing that it carries insurance in the amount and form required by Yadkin.**

2. Yadkin reserves the right to make case-by-case determinations in situations that are not explicitly covered by these Procedures.

3. When issued, the multi-use facility construction permit will be mailed to the applicant. If the application is denied, a written statement will be mailed to the applicant stating the reasons for denial. An applicant may reapply for a multi-use facility construction permit at any time. An applicant can also request a meeting with Yadkin to discuss the reasons for application denial and steps, if any, that the applicant may take to improve the application.

4. Upon receipt of the construction permit, the applicant must secure a county building permit. Construction may not begin until Yadkin has received from the applicant a copy of the approved county building permit.

5. Approved new construction, or modification of existing multi-use facilities, must be completed within 18 months from the issuance of the construction permit or within such other time frame as may be stated in the construction permit.

6. An extension of time, not to exceed 1 year, may be granted at Yadkin's discretion in response to a written request from the permittee, including justification for the requested extension.

7. Yadkin reserves the right to modify a construction permit to include additional or modified standards and requirements at the time of the permit extension, if the applicable standards and requirements have been modified since the issuance of the original construction permit.

8. The permittee must notify Yadkin when construction is completed.

E. Multi-Use Facility Operating Permit

1. Yadkin will enter into a multi-use facility operating permit with the applicant for new or modified facilities when the following requirements have been met:

a. Final inspection — Upon completion of construction, Yadkin will schedule and conduct a final inspection to ensure that the facilities are constructed in conformance with the construction permit.

b. Permit fee — Payment of applicable annual operating permit fees, which vary based on the type and number of facilities, use of the facilities, and ownership (a current fee schedule can be obtained from Yadkin).

c. Proof of insurance
   i) All multi-use facilities must carry comprehensive general liability insurance for personal injury and property damage **and other insurance required by Yadkin in an amount and** with terms satisfactory to Yadkin. Such insurance must be primary and must name Yadkin and Alcoa as additional insureds. A multi-use facilities' owner or operator must provide to Yadkin, on an annual basis, a certificate evidencing the insurance **required by Yadkin** and proof that all premiums on the policy are paid and up to date.
   ii) Any governmental body desiring to construct, maintain, and otherwise operate a multi-use facility must obtain and maintain for the facility comprehensive general liability insurance for personal injury and property damage **and other insurance required by Yadkin in an amount and** with terms satisfactory to Yadkin. Such insurance must be primary and must name Yadkin and Alcoa as additional insureds, and must insure Yadkin and Alcoa against any acts and omissions of any governmental employee, agent, or contract employee (collectively "employees"). The governmental multi-use facility must also provide, on an annual basis, a certificate evidencing the insurance **required by Yadkin** and proof that all premiums on the policy are paid and up to date. In instances in which a governmental body operates a multi-use facility in conjunction with another governmental body or any other entity as co-permittee(s) (except Yadkin), this insurance may be obtained by any of the co-permittees and must conform to the conditions described above.

2. All of the requirements for the issuance of a multi-use operating permit must be met within 90 days of completion of construction, and no operating permit will be issued absent written proof of the requirements specified in this Section III.E.1.c.

3. If a multi-use facility operating permit is not renewed, lapses, or is terminated, closure of the multi-use facility is required at the permittee's sole expense, and the permittee, at its sole expense, must remove any and all structures, equipment, appurtenances, and any other materials associated with the facilities, and restore the Project lands and water or the Yadkin-Managed Buffer to their original condition. Yadkin may also undertake other enforcement as detailed in Section VII, below.

F. Annual Fees

Multi-Use operating permit fees will be paid to Yadkin annually in accordance with Yadkin's current fee schedule.

G. Permit Renewal or Termination

1. A multi-use operating permit must be renewed every 5 years. Yadkin will notify the permittee of the upcoming permit expiration date.

2. In order to renew a multi-use facility operating permit, (i) the permittee must have complied with the permit, (ii) all fee payments must be up to date, **(iii) the permittee must provide a certificate of insurance evidencing that the permittee carries insurance in the amount and form required by Yadkin** and (iv) the permittee must provide Yadkin with certification from a registered Professional Engineer that all permitted facilities are in good repair, structurally sound, and in compliance with all applicable county, State, and federal requirements.

3. A multi-use operating permit may be terminated by Yadkin in accordance with its terms and as provided in Section VII below.

H. Multi-Use Permit Transfers

1. Multi-Use facility operating permits are not automatically transferable.

2. Prior to the sale or transfer of multi-use facilities, the current property owner (seller) or seller's agent must contact Yadkin to request a permit transfer. Upon request, Yadkin will arrange a site visit. If Yadkin finds (i) the seller has complied with the permit, the Stewardship Policy, and all other applicable Yadkin procedures and requirements, (ii) all fee payments are up to date, and (iii) a registered Professional Engineer has determined that all permitted facilities are in good repair, structurally sound, and in compliance with all applicable county, State, and federal requirements, Yadkin will provide the seller or the seller's agent with a form to request transfer of the permit.

3. The buyer must pay a transfer fee, in accordance with Yadkin's current fee schedule, and provide Yadkin with proof of insurance for the multi-use facilities, as described in Section III.E.1.c of these Procedures, at which time Yadkin will provide to the buyer a new multi-use facility permit that must be completed and signed by the buyer at the time of closing.

4. If facilities are deemed not transferable at the time of inspection, Yadkin will provide the seller or the seller's agent with a written description of repairs [up to and including replacement of the existing structure(s)], and other actions that must be undertaken before the facilities will be transferable. **A written construction permit must be obtained from Yadkin prior to undertaking such repairs.**

I. Existing Multi-Use Facilities

1. Yadkin may at times be aware of existing multi-use facilities that have not previously been issued a multi-use facility operating permit. Yadkin will provide written notice to the owner of the unpermitted facilities of the need to submit an application for a multi-use facility operating permit in accordance with these Procedures. In general, the owner will be responsible for submitting items b, c, d, f, and g as described in Section III.C.5. Generally, an EA will not be required for facilities existing prior to July 1, 1999. However, existing facilities will be reviewed by Yadkin to ensure their general compliance with the Stewardship Policy, and consultation with State and federal resource agencies may be required.

2. Yadkin will inspect the facilities, determine the adequacy of the information provided, and determine the applicability of any FERC notice or approval. Upon receipt of any required FERC approval, payment of the annual permitting fee, if applicable, and satisfaction of the insurance requirements listed in Section III.E.1.c, above, Yadkin will issue a multi-use facility operating permit for the facilities.

3. Modification of existing multi-use facilities must be approved pursuant to the standard four-part permitting process described in Section III.B–E, above.

IV. INDUSTRIAL USES/FACILITIES

Uses or facilities other than those related to recreation and adjoining property owner access to the Project are generally considered industrial uses. All industrial uses/facilities of or on Project lands and waters, the Yadkin-Managed Buffer, or Yadkin-Managed Lands require Yadkin's prior written permission. Depending upon the proposed use/facility, under its FERC license Yadkin is required to seek prior approval from FERC or provide FERC with 45 days notice before approving the proposed industrial use/facility. In some cases, Yadkin can authorize a proposed industrial use/facility without prior FERC notice or approval but must report such authorizations to FERC annually. Table 2 summarizes the types of industrial

uses/facilities that Yadkin may approve without prior FERC notice, those that require a 45-day prior notice to FERC, and those that require prior FERC approval. Table 2 also indicates EA and Agency Consultation Process requirements for various types of industrial uses/facilities.

Table 2
Prior FERC Notice Requirements for Proposed Industrial Uses/Facilities

	Yadkin Written Permission Required	FERC Annual Report	FERC 45-Day Prior Notice	Prior FERC Approval	Yadkin EA Required[1]	Yadkin Agency Consultation Process Required
Replacement, maintenance, or expansion of existing bridges and roads	✔	✔				✔
New bridges or roads	✔		✔			✔
Minor access roads	✔	✔				✔
Storm drains and water mains	✔	✔				✔
Sewers that do NOT discharge to Project waters	✔	✔				✔
Sewer or effluent lines that DO discharge directly into Project waters	✔		✔			✔
Other pipelines that cross project lands or waters but do NOT discharge to Project waters	✔		✔			✔
Non-project transmission lines/cables with NO support structure in Project Boundary	✔	✔				✔
Non-project overhead transmission lines/cable WITH support structure in Project Boundary	✔		✔			✔
Major distribution cables (submarine, underground or overhead)	✔	✔				✔
Water intake or pumping facilities ≤1 mgd	✔	✔				✔
Water intakes >1 mgd (including irrigation systems)	✔			✔	✔	

[1] An EA is required for all proposed industrial uses/facilities, regardless of category, that are located wholly or partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D).

Yadkin requires developers of all proposed industrial uses/facilities that require prior FERC approval to prepare and submit an EA as part of its request to Yadkin for permission to use/occupy Project lands and waters or the Yadkin-Managed Buffer. In addition, an EA is required for all proposed industrial uses/facilities located wholly are partly within the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D). Developers of all other proposed industrial uses/facilities must conduct an Agency Consultation Process. Both the EA and Agency Consultation Process are outlined below. In addition, there may be other process/approval requirements from State agencies and local governments.

V. ENVIRONMENTAL ASSESSMENT SPECIFICATIONS

The Environmental Assessment (EA) must examine resources and potential impacts to Project waters and lands along the shoreline within 100 feet of the normal full-pool elevation of the reservoir.

Specific information requirements of the EA are outlined below. Most EA requirements apply to subdivision access, multi-use facilities, and industrial uses/facilities, although some EA requirements are specific to one type or another and are so identified. Developers of subdivisions that also include one or more proposed multi-use facilities must provide all information required for both proposed subdivision access and multi-use facilities. In the case of modification of existing facilities, the EA must address the impact of the proposed modification.

A. Proposal

1. General Description — a detailed description of the proposed subdivision, multi-use facilities, or industrial uses/facilities, including maps illustrating boundaries of the subdivision property or facilities, proposed lot lines, and the placement of structures in relation to existing property boundaries and the reservoir shoreline. Maps must clearly indicate the location of any Yadkin-Managed Buffer or other Yadkin-Managed Lands adjoining the site of the proposed subdivision or facility. In the case of subdivisions, the EA must also contain the following specific information:

    a. A map of the subdivision showing all proposed private lots, as well as any lots to be used as common areas. Each lot should be clearly identified with an individual lot number, and the map must clearly indicate any Yadkin-Managed Buffer or adjacent Yadkin-Managed Lands.

    b. A list or map showing lots that are proposed for private, shared (for two adjoining lots), or multi-use facilities (group piers, launches, etc.), or other facilities that require a permit from Yadkin.

    c. The shoreline width of each lot adjacent to the Project reservoir as measured at normal full-pool elevation of the reservoir (655-foot contour at High Rock, 541.1-foot contour at Narrows)[3]. Lot width in areas where there is Yadkin-Managed Buffer should be measured by extending the side lot lines to the normal full-pool elevation of the reservoir.

    d. The water depth at normal full-pool elevation near the center of each lot adjacent to the reservoir at a distance of 75 feet from the shoreline.

    e. A reasonable site plan for each lot adjacent to the reservoir shoreline illustrating how Yadkin's requirement for a 100-foot forested setback will be achieved (see the Stewardship Policy).

2. Purpose — a description of the purpose and need for the proposed subdivision or facilities or modification of existing facilities.

3. Shoreline Impact — a description of the amount and type of impact on the reservoir and the shoreline within 100 feet of the normal full-pool elevation of the reservoir.

4. Required Permits — a listing of all federal, State, and local permits/approvals that will be required.

[3] All contour elevations are Yadkin datum.

5. Shoreline Development Restrictions — a description of any State or local development restrictions that apply to the proposed subdivision or facilities, including any county ordinances, watershed protection, buffer zone, or setback requirements.

6. Building Setback — a description of how the developer proposes to meet or exceed Yadkin's 100-foot forested setback requirement. In order for lots in a subdivision to be eligible for a private pier or to be granted other access or activity permits, Yadkin requires a 100-foot forested setback from the reservoir for all new structures (including but not limited to buildings, houses, driveways, roof overhangs, decks, porches, patios, cantilevered decks, stairs, posts, columns, fences, retaining walls, landscaping walls, and gazebos). (See the Stewardship Policy.) For subdivisions, the EA must indicate how setback and forested area requirements for property owners will be enforced (e.g., restrictive covenants, deed restrictions, etc.).

B. Existing Environment

1. Existing Shoreline Characteristics — a description of the shoreline and adjoining land area within 100 feet of the normal full-pool reservoir elevation, including a general description of existing land use and condition, shoreline topography, shoreline vegetation, and other notable features.

2. Existing Reservoir Characteristics — a description of the reservoir area adjacent to the proposed subdivision or facilities, including a detailed map of water depths within 75 feet of the shoreline, the slope of the reservoir bottom, a description of the reservoir substrate, and a description of any reservoir features including the presence of any aquatic vegetation and lap trees.

3. Existing Reservoir Access/Facilities — a description of any existing access to the reservoir such as pathways, piers, or boat launches on the property proposed for the subdivision or facilities.

4. Designation as Conservation Zone — an estimate of the portion of the proposed subdivision or facilities that would fall within the Conservation Zone as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D).

C. Environmental Impacts and Proposed Mitigation

1. Environmental Impacts — a detailed assessment of the potential impact on the reservoir and the land area along the shoreline within 100 feet of the normal full-pool reservoir elevation. This section must at a minimum consider the following effects:

    a. Change in shoreline land use.

    b. Impact of completed subdivision or facilities on the reservoir shoreline.

    c. Impact on shoreline vegetation and plant communities.

    d. Impact on shoreline wildlife and wildlife habitat.

    e. Impact on the reservoir as habitat for fish and other aquatic life.

    f. Impact on wetlands and areas of aquatic vegetation.

    g. Impact on reservoir water quality, including the potential for increased sedimentation and nonpoint source pollution from runoff.

2. Recreation Use Impacts — an assessment of the increase in recreation use of the reservoir and reservoir shoreline resulting from the proposed subdivision or facilities, or modification, and the effects of increased use on the reservoir and shoreline. This section must consider the following:

   a. An estimate of resulting increased boating and/or other water-related recreation use.

   b. An assessment of the effects that the increased recreation use will have on the reservoir and the reservoir shoreline.

3. Mitigation Proposals — a description of any measures proposed by the developer to avoid, reduce, or mitigate impacts to the reservoir and reservoir shoreline that are expected to occur as a result of the proposed or modified/expanded subdivision or facilities. This section should also include a discussion of any measures proposed to address concerns raised by federal or State resource agencies. For a subdivision or facilities wholly or partly within the shoreline Conservation Zone (as delineated in Yadkin's SMP, Appendix D), the EA should emphasize mitigation of adverse effects on the important natural resources found in the Conservation Zone.

D. Cultural Resource Evaluation

1. For proposed facilities or subdivisions located wholly or partly within High or Medium cultural resource probability zones, as delineated in Yadkin's Shoreline Management Plan, (SMP, Appendix C), a cultural resource evaluation will also be required as part of the EA.

2. The cultural resource evaluation requires an assessment of potential impacts to cultural resources located along the shoreline within 100 feet of the normal full-pool reservoir elevation.

3. In cases where a cultural resource survey must be conducted, applicants must submit the following information to the agencies as part of their information submittal:

   a. The results of a survey conducted by a professional archaeologist indicating the location of any significant historic/prehistoric cultural sites in the area that are along the shoreline within 100 feet of the normal full-pool reservoir elevation.

   b. A description of potential impacts to cultural resources resulting from the proposed subdivision or facilities.

   c. The developer's proposal for avoiding or mitigating anticipated impacts to cultural resources.

E. Agency Consultation

The EA must include a record demonstrating that the developer has consulted with federal, State, and county resource agencies and has received agency comments indicating their satisfaction with the proposal. **Yadkin will provide the applicant with a list of reviewing agencies.** At a minimum, this section must include the following:

1. A list of all resource agencies consulted.

2. Copies of any correspondence between the consulted agencies and the developer.

3. Copies of letters from consulted resource agencies indicating that they have reviewed the proposed subdivision or facilities or modification and that they have no concerns, or that their concerns have been adequately addressed by the developer.

F. Applicant Information

1. Name, address, and phone number(s) of the applicant, along with a brief description of the background and qualifications of the applicant in terms of type of business experience, and where registered or licensed.

2. A brief description of the background and qualifications of any/all firms that assisted in the preparation of the EA.

VI. AGENCY CONSULTATION PROCESS

A. General

Certain types of smaller subdivisions, multi-use facilities, and industrial uses/facilities that are not located in the shoreline Conservation Zone, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix D), are not required to complete an EA but are required to conduct the Agency Consultation Process described below.

The applicant must prepare a package of information for submission to State and federal resource agencies for their review and comment. **Yadkin will provide the applicant with a list of the reviewing agencies.** The information package must include the following basic information. In the case of modification of existing facilities, the information package must focus on the proposed modification.

B. Information Package

1. Cover Letter — a cover letter similar to the attached, providing the agency with basic information regarding the proposed subdivision access or facilities.

2. Description — a brief description of the proposed subdivision or facilities or modification, including maps illustrating boundaries of the subdivision property or facilities, proposed lot lines, and the placement of structures in relation to property boundaries and the reservoir shoreline. Maps should clearly indicate the location of any Yadkin-Managed Buffer or adjacent Yadkin-Managed Lands. In the case of subdivisions, the developer should also include (i) a copy of the subdivision plat that will be filed with the county, (ii) a description of the anticipated desires of individual property owners for reservoir access and individual access facilities (piers), and (iii) a description of provisions for joint or common access to the reservoir, including any multi-use facilities proposed.

3. Shoreline Impact — a brief description of the anticipated impact on the reservoir and the shoreline within 100 feet of the normal full-pool elevation of the reservoir.

4. Required Permits — a list of all federal, State, and local permits/approvals that will be required.

5. Shoreline Development Restrictions — a description of any State or local development restrictions that apply to the proposed subdivision or facilities, such as any watershed protection, buffer zone or setback requirements and including any provisions of Yadkin's Shoreline Management Plan such as the 100-foot forested setback from the reservoir shoreline that apply to the proposed subdivision or facilities.

6. Applicant Information — Name, address, and phone number of the applicant, and a brief description of the background of the applicant.

C. Cultural Resource Evaluation

1. For proposed subdivisions or facilities located wholly or partly within High or Medium cultural resource probability zones, as delineated in Yadkin's Shoreline Management Plan (SMP, Appendix C), a cultural resource evaluation will also be required as part of the Agency Consultation Process.

2. The cultural resource evaluation requires an assessment of potential impacts to cultural resources located along the shoreline within 100 feet of the normal full-pool reservoir elevation.

3. In cases where a cultural resource survey must be conducted, applicants must submit the following information to the agencies as part of their information package described in VI.B, above:

   a. The results of a survey conducted by a professional archaeologist indicating the location of any significant historic/prehistoric cultural sites in the proposed development area that are along the shoreline within 100 feet of the normal full-pool reservoir elevation.

   b. A description of potential impacts to cultural resources resulting from the proposed subdivision or facilities.

   c. The applicant's proposal for avoiding or mitigating anticipated impacts to cultural resources.

D. Submission of Information to Agencies

1. The complete information package must be sent to the following agencies for their review and comment before being submitted to Yadkin. A sample cover letter for use in submitting the information package to the agencies is attached.

   a. U. S. Fish and Wildlife Service

   b. U. S. Army Corps of Engineers

   c. North Carolina State Clearinghouse

   d. North Carolina Wildlife Resources Commission

   e. North Carolina Department of Cultural Resources

   f. North Carolina Division of Water Quality

   g. North Carolina Division of Water Resources

   h. North Carolina Division of Parks and Recreation

VII. ENFORCEMENT

A. One of the underlying goals of these Procedures is to protect and enhance the natural, environmental, cultural and scenic resources within the Project Boundary and on the adjoining lands. Yadkin's highest

priority is to preserve the natural character of the shoreline as it exists today, and this is reflected in the procedures and requirements of these Procedures as well as the Stewardship Policy. Yadkin believes that most adjoining property owners and developers appreciate the beauty and importance of a natural shoreline and will comply with these Procedures. In those instances where violations of these Procedures occur, however, Yadkin will consider those violations as serious matters. Violations of these Procedures include: (i) any failure to comply with the provisions of these Procedures, the Stewardship Policy, or other applicable Yadkin procedures or requirements; and (ii) failure to obtain or to comply with written permission from Yadkin, where required, before undertaking construction or other activities.

B. The primary sanctions for violations of these Procedures are loss of eligibility for: (i) a multi-use facility permit within the Project Boundary (i.e. on a reservoir) or subdivision reservoir access approval or industrial use/facility approval; and (ii) use of, or access to the Project lands and waters across, the Yadkin-Managed Buffer. Yadkin will also require corrective action including but not limited to restoration and/or mitigation. Eligibility may be reinstated only where adequate restoration and/or mitigation is undertaken and Yadkin determines that reinstatement of eligibility is otherwise consistent with the underlying goals reflected in these Procedures, the Stewardship Policy, and Yadkin's Shoreline Management Plan. Yadkin, as it deems appropriate, will consult with federal and State regulatory agencies in determining adequate restoration and/or mitigation measures.

C. In addition, in the event of a violation of these Procedures, Yadkin, at its sole option, has the right to: (i) terminate any existing multi-use facility, industrial or other permits, requiring closure of the facility at the adjoining property owner's (or developer's) sole expense, revoke any subdivision reservoir access approval previously given to the developer if the developer is responsible for the violation, and terminate any industrial approval or rights granted; and (ii) erect a barrier along the Project Boundary or across the Yadkin-Managed Buffer to restrict access to the Project lands and waters; and (iii) require, at the adjoining property owner's (or the developer's) sole expense, (a) removal of any multi-use facilities and any pathways or other facilities and structures located within the Project Boundary or on the Yadkin-Managed Buffer, and (b) restoration and/or mitigation, up to and including restoring Project lands and waters and the Yadkin-Managed Buffer to their original condition. In addition, if the adjoining property owner (or the developer) fails to take the required action after notice from Yadkin, Yadkin will consider any facilities or structures remaining within the Project Boundary or the Yadkin-Managed Buffer as a trespass upon its property, and reserves the right to, at the adjoining property owner's or the developer's sole expense, remove the facilities or structures, treat them as its own property without any liability to the adjoining property owner or the developer for payment, and perform the required restoration and/or mitigation. Yadkin also may pursue any other rights or remedies, including damages, it may have in any permit, or at law or in equity.

VIII. ATTACHMENTS

1. Sample Agency Consultation Letter

ATTACHMENT 1

Sample Cover Letter for Agency Consultation Package

Date

Agency Address
Agency Address
Agency Address

Dear _____,

Enclosed is package of information outlining a proposed development located along the shoreline of the (Narrows or High Rock) Reservoir which is operated by the Yadkin Division of Alcoa Power Generating Inc., as part of the Yadkin Hydropower Project (FERC No. 2197). Yadkin requires that developers of smaller projects consult with federal and state resource agencies regarding their proposed development.

Enclosed is some basic information about the project being proposed. Please provide to me any written comments on this proposal within thirty (30) days. Agency comments will be forwarded to Yadkin as part of our application for approval of the proposed development. Yadkin will consider agency comments in evaluating and approving the proposal.

Thank you for your review.

Sincerely,