STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 6, 2007

North Carolina Division of Water Quality
Transportation Permitting Unit
1650 Mail Service Center
Raleigh, NC 27699-1650

ATTENTION: Mr. Rob Ridings
NCDOT Coordinator

Dear Sir:

Subject: **Application for Neuse Riparian Buffer Authorization** for the replacement of Bridge No. 158 over an unnamed tributary to the Eno River on SR 1402 (Rivermont Rd.), Wake County. Federal Aid Project No. BRZ-1402(7), WBS No. 32906.1.1, State Project No. 8.2353701, Division 5, T.I.P. No. B-3169:

Please see the enclosed Programmatic Categorical Exclusion (PCE) document, Natural Resource Technical Report (NRTR), buffer permit drawings, Preconstruction Notification (PCN) form, and half size plan sheets. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 158 over an unnamed tributary (UT) to the Eno River. The project involves replacing the current bridge in its existing location, while using an off-site detour to maintain traffic during construction. The proposed structure will be a 95-foot, single span, precast concrete girder superstructure on concrete end bents and steel piles. The roadway approaches will be widened to include two 9-foot travel lanes with 2-foot grass shoulders (7-foot shoulders where the guardrail is included).

IMPACTS TO WATERS OF THE UNITED STATES

The project is located in the Neuse River Basin (subbasin 03-04-01). This area is part of Hydrologic Cataloging Unit 03020201 of the South Atlantic-Gulf Coast Region. US Army Corp of Engineers (USACE) representative Eric Alsmeyer, during a field meeting held January 29, 2004, determined that there are three jurisdictional streams located in the project area. The proposed bridge will bridge a perennial UT to the Eno River (UT1). UT2 flows into UT1 and is located on the west side of the bridge and will also be bridged by the proposed project. UT3 flows into UT1 and is located on the east side of the bridge outside of the construction limits. UT1, UT2, and UT3 have no separate Best Usage Classification and, therefore, share the Best Usage Classification of their receiving waters, the Eno River [DWQ Index # 21-2-(10)], a Division of Water Quality Class "WS-IV, B, NSW" Waters of the State. There will be no permanent or temporary impacts to jurisdictional waters associated with this project.

No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply (WS-II), waters occur within 1.0 mile of the study corridor. None of the streams

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

TELEPHONE: 919-715-1334 or
919-715-1335

FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD. SUITE 240
RALEIGH NC 27604

within the project area are listed on the Final 2004 List of Impaired Waters [Section 303(d)] for the Neuse River Basin nor do they drain into any 303(d) waters within 1-mile of the project area.

NEUSE BUFFER IMPACTS

UT1, UT2, and UT3 are subject to the Neuse Buffer Rules. The buffers of UT3 are located outside the construction area and will not be impacted by the proposed project. Construction of the new bridge and approaches will result in impacts to the buffers of UT1 and UT2 (Buffer Sheet 2). Impacts to buffers are shown in Table 2 below. The proposed bridge will span both UT1 and UT2. Under the Neuse Buffer Rules, impacts to buffers from the construction of bridges are allowable; impacts associated with construction of the approaches, which impact less than 150 linear feet or one-third of an acre, are also allowable. Mitigation is not proposed for this project.

Table 1. Neuse Riparian Buffer Impacts to UT1 and UT2

	Bridge Construction	Road Crossing Impacts*
Zone 1 Impact (sq. ft)	2255	89
Zone 2 Impact (sq. ft)	549	463
Mitigation requirements (exempt, allowable or allowable with mitigation)	Allowable	Allowable

*60 linear feet of impacts measured parallel to UT1 and UT2.

Utility Impacts

This project will impact aerial power poles located within the project area. The affected poles are located 13+40 -L-(left) and 15+68 -L- (Right) within the project limits. The existing aerial power poles are outside the riparian buffers. The aerial power pole at station 13+40 -L- (left) will be removed and placed back 5' inside the R/W at the same station [13+40 -L- (Left)]. The second pole at 15+68 -L- (Right) will be removed temporarily during the construction of the proposed bridge and relocated back to the same location at sta.15+68 -L- (right) after the completion of the construction. There will be no impacts to riparian buffers resulting from the removal and replacement of the poles.

No Practical Alternatives Analysis

This bridge has been determined to be structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations. Because this bridge needs to be replaced, impacts to the riparian buffers of UT1 and UT2 are unavoidable. Replacing the existing bridge at its existing location provides the least amount of impacts to riparian buffers.

MITIGATION OPTIONS

Avoidance and Minimization

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

- Best Management Practices for Protection of Surface Waters will be implemented.
- Design Standards in Sensitive Watersheds will be implemented.
- All non-maintained riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated with native woody species within 15 working days of completion of the project.
- The proposed project includes complete bridging of UT1 and UT2, without any bents located in the stream, allowing for pre-project stream flows to maintain the current water quality, aquatic habitat, and flow regime.
- The proposed bridge will be replaced in its existing location.
- The roadway grade was kept close to the existing, minimizing fill height and impacts to riparian buffers.
- An off-site detour will be utilized during construction.

Compensatory Mitigation

NCDOT has avoided and minimized impacts to the Neuse Riparian Buffers to the greatest extent possible as described above. Mitigation in not proposed for impacts resulting from the construction of the proposed bridge because all impacts are allowable.

SCHEDULE

At this time the project is scheduled to let January 15, 2008 (review date December 18, 2007) with a date of availability of February 26, 2008. It is expected that the contractor will choose to start construction in February.

REGULATORY APPROVALS

This project has been designed to comply with the Neuse River Basin Riparian Buffer Rules (15A NCAC 2B.0233). NCDOT requests written authorization for a Buffer Authorization from the Division of Water Quality. We are providing five copies of this application to North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR, DWQ) for review and approval. This project has been reviewed for jurisdiction under the Federal Clean Water Act (CWA). There are no impacts to Waters of the US, therefore none of the actions of this project fall under jurisdiction of the CWA. Therefore, no permits pursuant to the CWA are required.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/. If you have any questions or need additional information, please call Erica McLamb at 715-1521.

Sincerely,

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

Cc:
w/attachment

Mr. John Hennessy, NCDWQ (5 Copies)
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Michael Street, NCDMF
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Jon Nance, P.E., Division Engineer
Mr. Chris Murray, DEO
Mr. Victor Barbour, P.E., Project Services Unit

w/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Theresa Ellerby, Project 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: None

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

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

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address:

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

III. Project Information

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

1. Name of project: Replacement of Bridge No.158 over an UT to the Eno River on SR 1402

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3169

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

4. Location
   County: Durham Nearest Town: Durham
   Subdivision name (include phase/lot number):
   Directions to site (include road numbers/names, landmarks, etc.): see map in permit drawings

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): 36.0584 °N 78.9662 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Eno River

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

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The project is located in the Eno River State Park. The project area is forested area with some sections of maintained roadside.

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 158 will be replaced on existing location with an offsite detour. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other various equipment necessary for roadway construction.

11. Explain the purpose of the proposed work: To replace a deteriorating bridge

IV. Prior Project History

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

V. Future Project Plans

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

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

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

1. Provide a written description of the proposed impacts: none

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)
Total Wetland Impact (acres)					0

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

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

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Total Stream Impact (by length and acreage)						0

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

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Total Open Water Impact (acres)				0

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

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

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

_____

_____

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

VII. Impact Justification (Avoidance and Minimization)

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

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): 0
   Amount of buffer mitigation requested (square feet): 0
   Amount of Riparian wetland mitigation requested (acres): 0
   Amount of Non-riparian wetland mitigation requested (acres): 0
   Amount of Coastal wetland mitigation requested (acres): 0

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 Neuse)? 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	2344	3 (2 for Catawba)	0.0
2	1013	1.5	0.0
Total	3357		0.0

* 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. Mitigation is not required for this project.

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. N/A

XII. Sewage Disposal (required by DWQ)

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

XIII. Violations (required by DWQ)

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

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

XIV. Cumulative Impacts (required by DWQ)

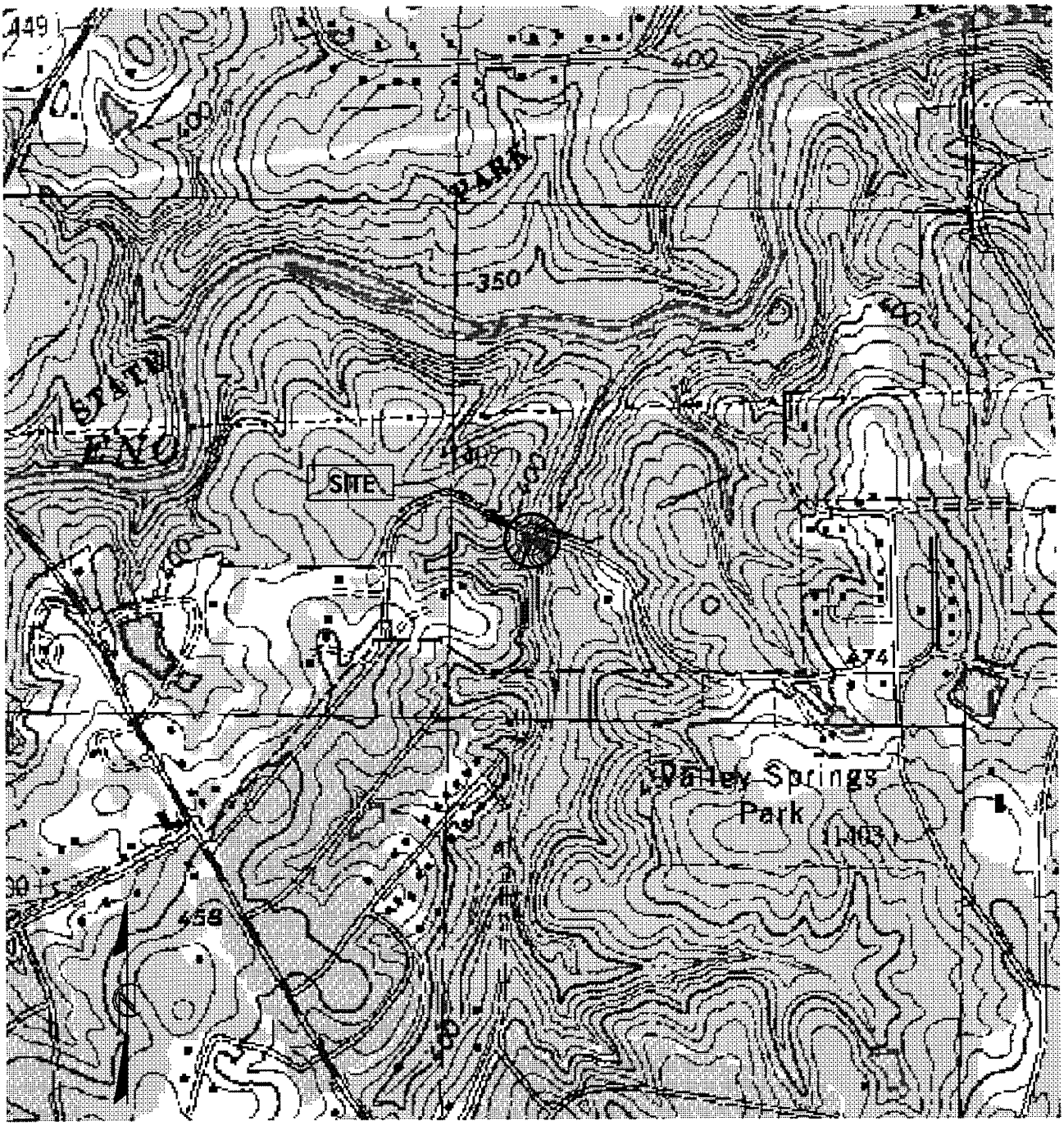
Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina 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).
None

E. L. Lusk — 6·6·07

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



NOT TO SCALE

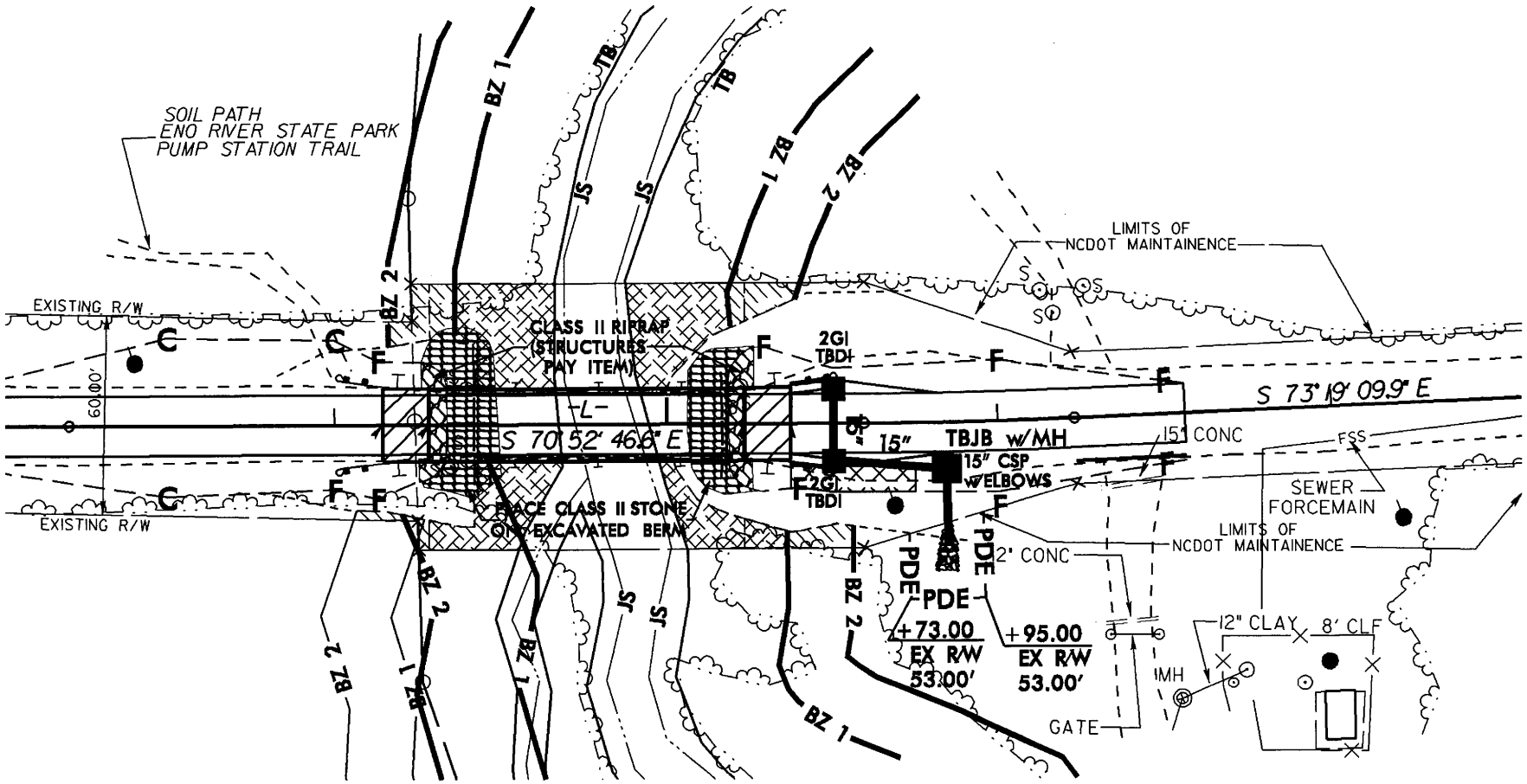
NEUSE RIVER BUFFER
LOCATION MAPS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DURHAM COUNTY

PROJECT: 32906.1.1 (B-3169)

BRIDGE NO. 156 ON SR 1402
OVER UT TO ENO RIVER

Buffer Drawing
Sheet 1 of 6



ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS

DURHAM COUNTY

PROJECT: WBS 32906.1.1 (B-3169)

BRIDGE NO. 158

OVER UT TO ENO RIVER

Buffer Drawing
Sheet 2 of 6

REVISED 05/16/07 **8/1/06**

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	Bridge	14+28.50 / 15+23.50		X		2255	549	2804					
1	Roadway Fill	14+15 to 14+28.5											
	UT #1 to Eno River	15+23.5 to 15+56	X			89	427	516					
1	Roadway Fill												
	UT #2 to Eno River	14+07 to 14+20	X				36	36					
TOTAL:						**2344**	**1013**	**3357**					

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

DURHAM COUNTY
PROJECT: 32906.1.1 (B-3169)
BRIDGE NO. 158 OVER UT TO ENO RIVER

Buffer Drawing Sheet 3 of 10

4/26/2007

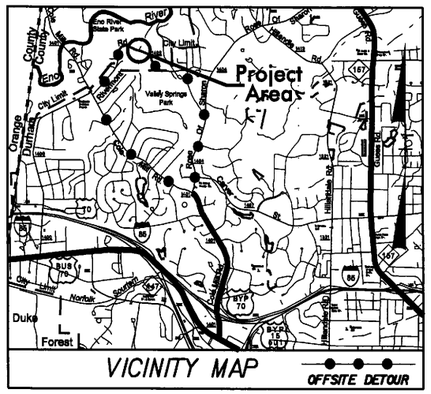
Rev. May 2006

09/08/06

TIP PROJECT: B-3169

CONTRACT: C201788

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

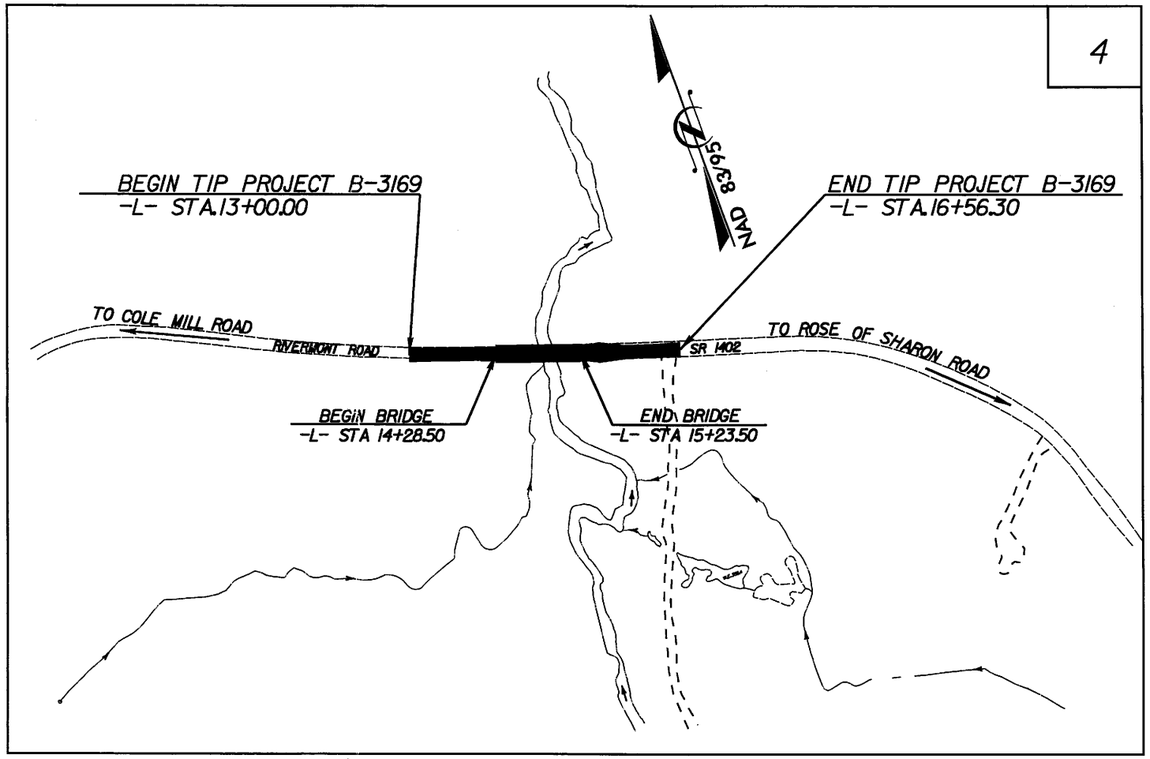
LOCATION: BRIDGE 158 OVER A CREEK ON SR 1402

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3169	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32906.1.1	BRZ-1402(7)	P. E.
32906.3.1	BRZ-1402(7)	R/W, UTIL

Buffer Drawing Sheet 4 of 6



** DESIGNED USING 2001 AASHTO GUIDELINES FOR GEOMETRIC DESIGN OF VERY LOW-VOLUME LOCAL ROADS (ADT <400).

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RECEIVED
APR 23 2007
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

23-APR-2007 08:37
f:\roadway\prj\b3169_rdy_tsh.dgn
khgulledge

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2003 = 100
ADT 2030 = 200
DHV = 22 %
D = 65 %
T = 3 % *
V = 25 MPH**
FUNC. CLASS = LOCAL
* TTST 1 DUAL 2

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3169 = 0.049 mile
LENGTH STRUCTURE TIP PROJECT B-3169 = 0.018 mile
TOTAL LENGTH OF TIP PROJECT B-3169 = 0.067 mile

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 18, 2006

LETTING DATE: JANUARY 15, 2008

JASON MOORE, PE
PROJECT ENGINEER

BRYAN KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER *P.E.*

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

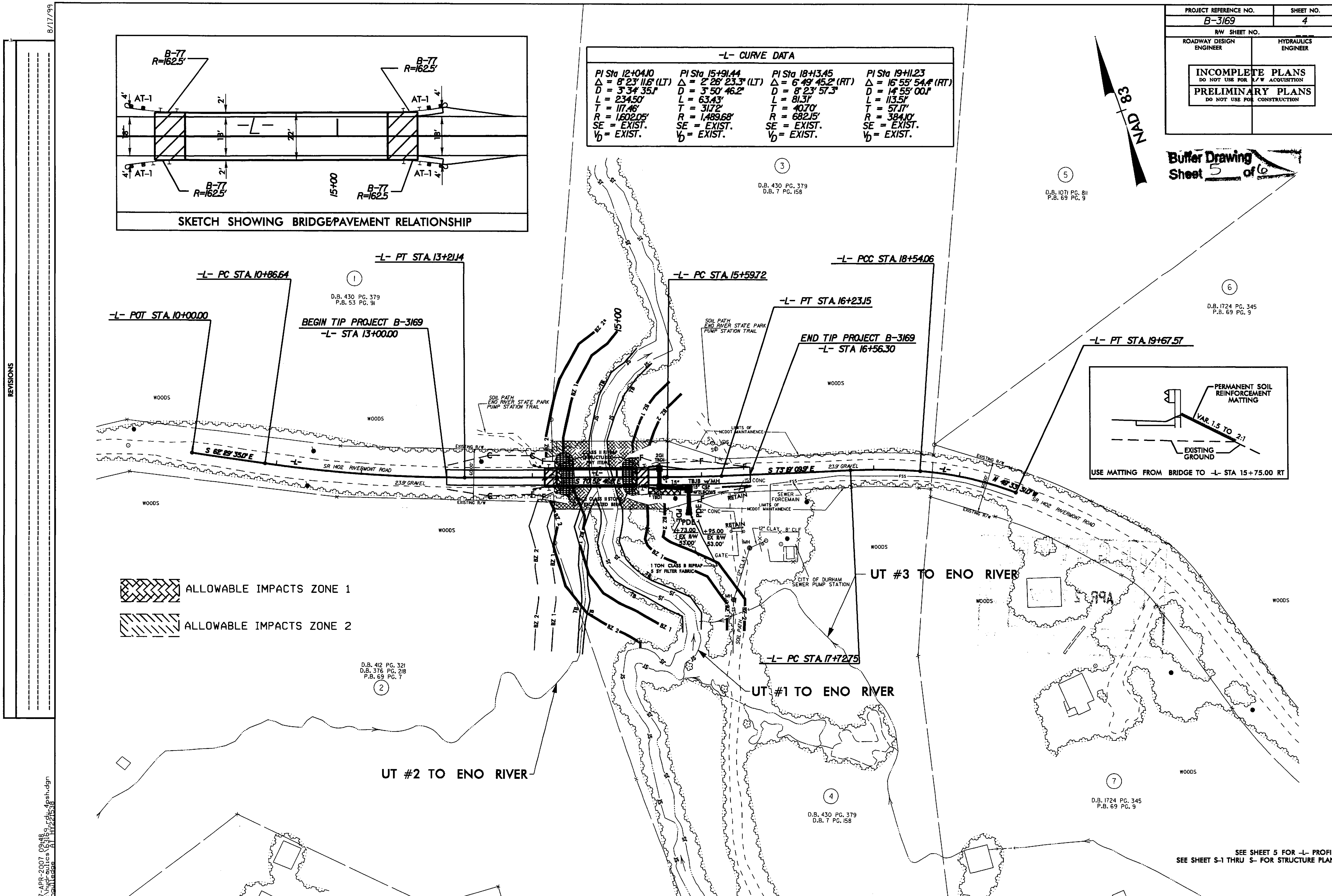
APPROVED DIVISION ADMINISTRATOR *DATE*

PROJECT REFERENCE NO.	SHEET NO.
B-3169	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

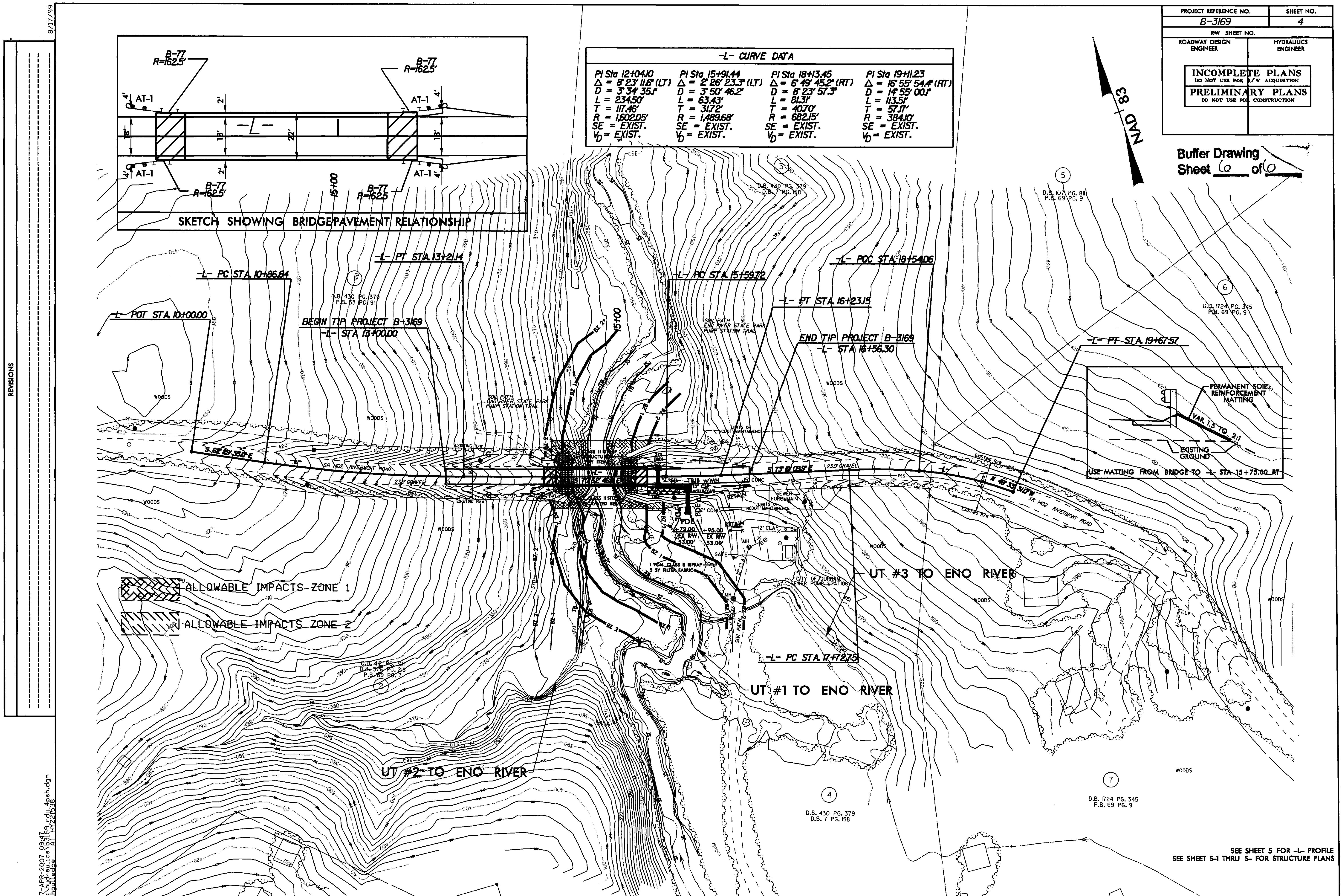
Buffer Drawing Sheet 5 of 6



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
B-77 R=162.5'
AT-1
-L-
15+00
-L- CURVE DATA
PI Sta 12+04.10 Δ = 8° 23' 11.6" (LT) D = 3° 34' 35.1" L = 234.50' T = 117.46' R = 1,602.05' SE = EXIST. VD = EXIST.
PI Sta 15+91.44 Δ = 2° 26' 23.3" (LT) D = 3° 50' 46.2" L = 63.43' T = 31.72' R = 1,489.68' SE = EXIST. VD = EXIST.
PI Sta 18+13.45 Δ = 6° 49' 45.2" (RT) D = 8° 23' 57.3" L = 81.31' T = 40.70' R = 682.15' SE = EXIST. VD = EXIST.
PI Sta 19+11.23 Δ = 16° 55' 54.4" (RT) D = 14° 55' 00.1" L = 113.51' T = 57.17' R = 384.10' SE = EXIST. VD = EXIST.
NAD 83
-L- POT STA 10+00.00
-L- PC STA 10+86.64
-L- PT STA 13+21.14
BEGIN TIP PROJECT B-3169
-L- STA 13+00.00
-L- PC STA 15+59.72
-L- PT STA 16+23.15
END TIP PROJECT B-3169
-L- STA 16+56.30
-L- PCC STA 18+54.06
-L- PT STA 19+67.57
-L- PC STA 17+72.75
D.B. 430 PG. 379 P.B. 53 PG. 91
D.B. 430 PG. 379 D.B. 7 PG. 158
D.B. 1071 PG. 811 P.B. 69 PG. 9
D.B. 1724 PG. 345 P.B. 69 PG. 9
D.B. 412 PG. 321 D.B. 376 PG. 218 P.B. 69 PG. 7
WOODS
SOIL PATH ENO RIVER STATE PARK PUMP STATION TRAIL
SR 1402 RIVERMONT ROAD
23.9' GRAVEL
S 62° 29' 35.0" E
S 73° 18' 09.9" E
N 48° 33' 31.0" W
EXISTING R/W
LIMITS OF NCDOT MAINTAINENCE
SEWER FORCEMAIN
CITY OF DURHAM SEWER PUMP STATION
1 TON CLASS B RIPRAP 5 SY FILTER FABRIC
PERMANENT SOIL REINFORCEMENT MATTING
VAR. 1.5 TO 2:1
EXISTING GROUND
USE MATTING FROM BRIDGE TO -L- STA 15+75.00 RT
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
UT #1 TO ENO RIVER
UT #2 TO ENO RIVER
UT #3 TO ENO RIVER
REVISIONS

SEE SHEET 5 FOR -L- PROFILE
SEE SHEET S-1 THRU S- FOR STRUCTURE PLANS

27-APR-2007 09:48
r:\hydraulics\b3169_rdy_4psh.dgn
8/17/99

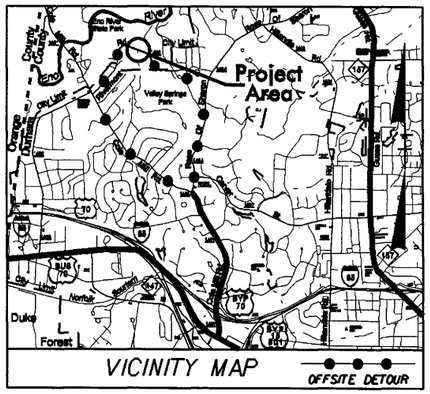

PROJECT REFERENCE NO. B-3169
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Buffer Drawing Sheet 6 of 6
NAD 83
-L- CURVE DATA
PI Sta 12+04.10 Δ = 8° 23' 11.6" (LT) D = 3° 34' 35.1" L = 234.50' T = 117.46' R = 1,602.05' SE = EXIST. VD = EXIST.
PI Sta 15+91.44 Δ = 2° 26' 23.3" (LT) D = 3° 50' 46.2" L = 63.43' T = 31.72' R = 1,489.68' SE = EXIST. VD = EXIST.
PI Sta 18+13.45 Δ = 6° 49' 45.2" (RT) D = 8° 23' 57.3" L = 81.31' T = 40.70' R = 682.15' SE = EXIST. VD = EXIST.
PI Sta 19+11.23 Δ = 16° 55' 54.4" (RT) D = 14° 55' 00.1" L = 113.51' T = 57.17' R = 384.10' SE = EXIST. VD = EXIST.
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
B-77 R=162.5'
AT-1
-L-
15+00
-L- POT STA. 10+00.00
-L- PC STA. 10+86.64
-L- PT STA. 13+21.14
BEGIN TIP PROJECT B-3169
-L- STA. 13+00.00
-L- PC STA. 15+59.72
-L- PT STA. 16+23.15
-L- PCC STA. 18+54.06
END TIP PROJECT B-3169
-L- STA. 16+56.30
-L- PT STA. 19+67.57
-L- PC STA. 17+72.75
SR 1402 RIVERMONT ROAD
SOIL PATH ENO RIVER STATE PARK PUMP STATION TRAIL
CITY OF DURHAM SEWER PUMP STATION
UT #1 TO ENO RIVER
UT #2 TO ENO RIVER
UT #3 TO ENO RIVER
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
PERMANENT SOIL REINFORCEMENT MATTING
VAR. 1.5 TO 2:1
EXISTING GROUND
USE MATTING FROM BRIDGE TO -L- STA 15+75.00 RT
D.B. 430 PG. 379 D.B. 7 PG. 158
D.B. 1071 PG. 811 P.B. 69 PG. 9
D.B. 1724 PG. 345 P.B. 69 PG. 9
D.B. 412 PG. 321 P.B. 69 PG. 7
WOODS
SEE SHEET 5 FOR -L- PROFILE
SEE SHEET S-1 THRU S- FOR STRUCTURE PLANS
REVISIONS
8/17/99
27-APR-2007 09:47

09/08/99

TIP PROJECT: B-3169

CONTRACT:

See Sheet 1-A For Index of Sheets



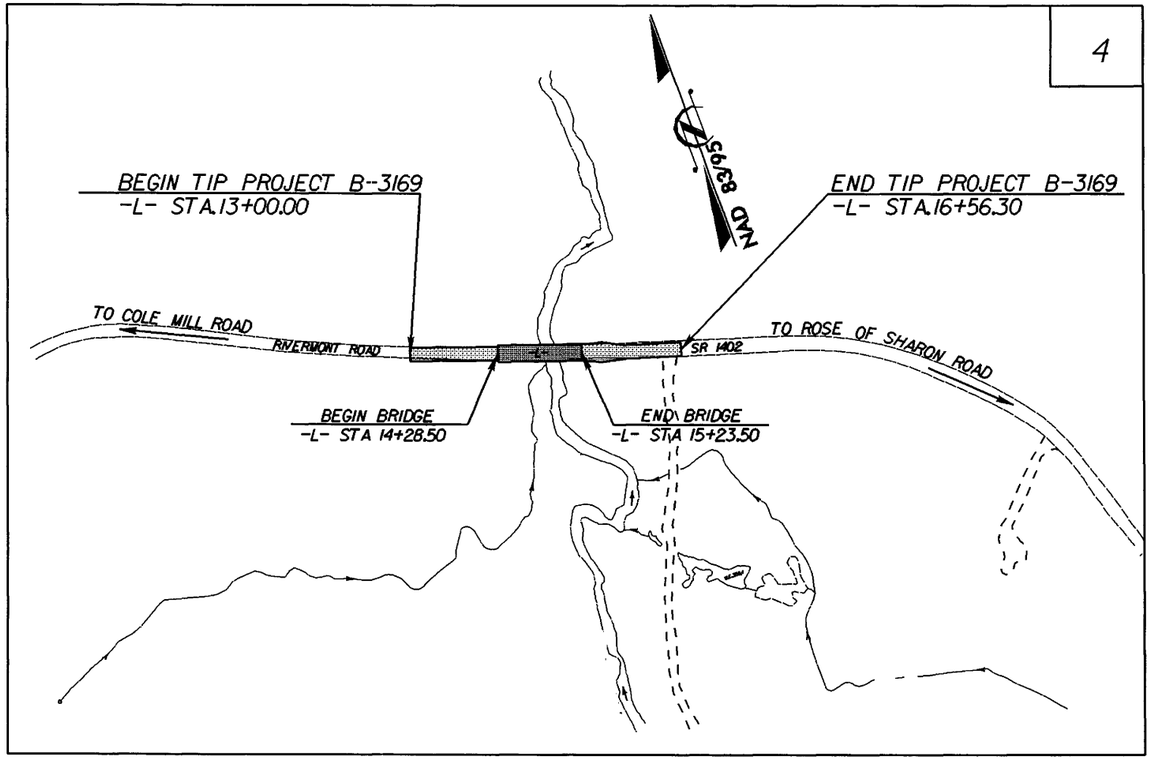
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

LOCATION: BRIDGE 158 OVER A CREEK ON SR 1402

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3169	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
32906.1.1	BRZ-1402(7)	P. E.	
32906.3.1	BRZ-1402(7)	R/W, UTIL	



** DESIGNED USING 2001 AASHTO GUIDELINES FOR GEOMETRIC DESIGN OF VERY LOW-VOLUME LOCAL ROADS (ADT < 400).

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2003 = 100
ADT 2030 = 200
DHV = 22 %
D = 65 %
T = 3 % *
V = 25 MPH**
FUNC. CLASS = LOCAL
* TTST 1 DUAL 2

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3169 = 0.049 mile
LENGTH STRUCTURE TIP PROJECT B-3169 = 0.018 mile
TOTAL LENGTH OF TIP PROJECT B-3169 = 0.067 mile

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 18, 2006

LETTING DATE: JANUARY 15, 2008

JASON MOORE, PE
PROJECT ENGINEER

BRYAN KEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

19-MAR-2007 13:53
r:\roadway\pro\b3169_rdy_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-3169	1-B

Note: Not to Scale

****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 High Quality Wetland Boundary — HQ WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard 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
- 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 — ?U/TL
- 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.

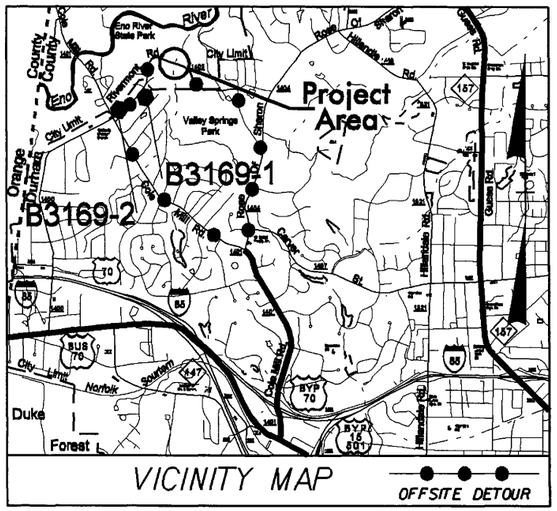
6/2/99

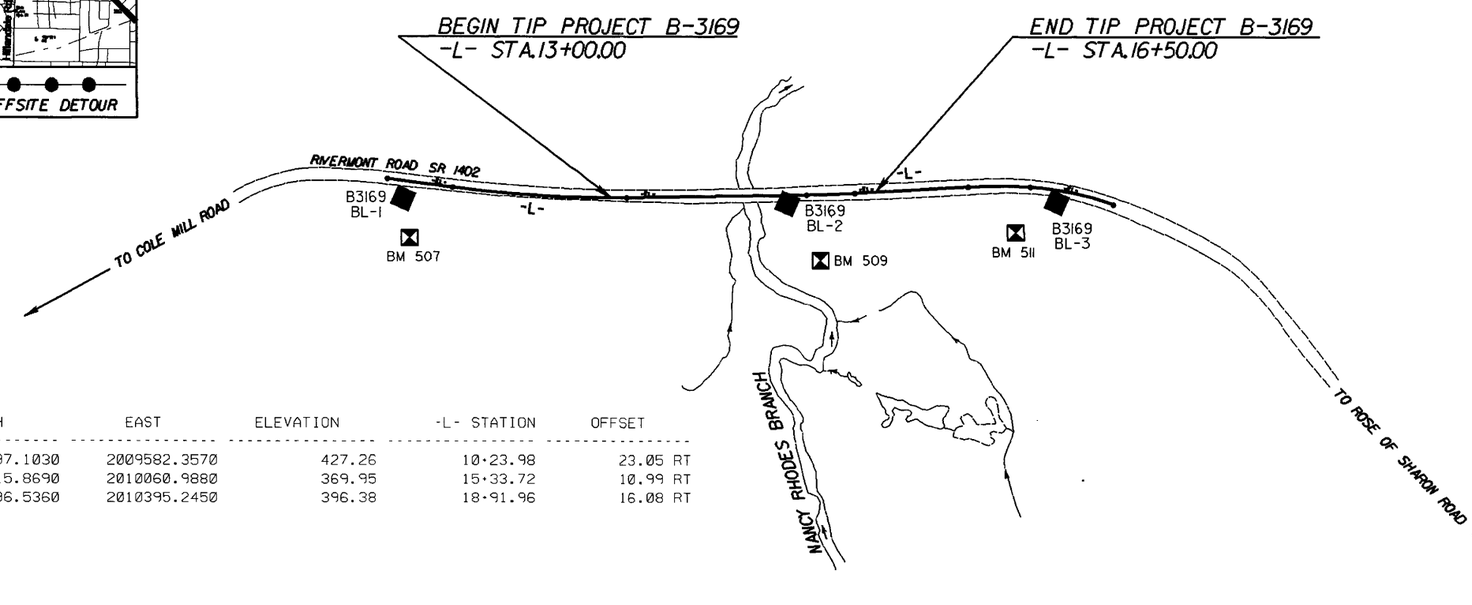
PROJECT REFERENCE NO.	SHEET NO.
B-3169	1-C
Location and Surveys	

SURVEY CONTROL SHEET B-3169

DURHAM COUNTY

LOCATION: BRIDGE 158 OVER A CREEK ON RIVERMONT ROAD (SR 1402)





BL

POINT	DESC.	NORTH	EAST	ELEVATION	-L- STATION	OFFSET
1	BL-1	840397.1030	2009582.3570	427.26	10+23.98	23.05 RT
2	BL-2	840215.8690	2010060.9880	369.95	15+33.72	10.99 RT
3	BL-3	840096.5360	2010395.2450	396.38	18+91.96	16.08 RT

****

BM507 ELEVATION - 424.04
N 840345 E 2009572
-L- STATION 10+39 74 RIGHT

****

****

BM509 ELEVATION - 360.93
N 840129 E 2010076
-L- STATION 15+76 88 RIGHT

****

****

BM511 ELEVATION - 390.50
N 840077 E 2010331
-L- STATION 18+38 62 RIGHT

****

NCDOT GPS STATION B3169-1
LOCALIZED PROJECT COORDINATES

N=839850.5906
E=2009074.7809

NCDOT GPS STATION B3169-2
LOCALIZED PROJECT COORDINATES

N=839376.4839
E=2008881.6513

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3169-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 839850.5906(ft) EASTING: 2009074.7809(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995490 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3169-1" TO -L- STATION 10+00 IS N 40° 41' 11.2" E 762.29'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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:

   B3169_LS_CONTROL_060504.txt

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

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

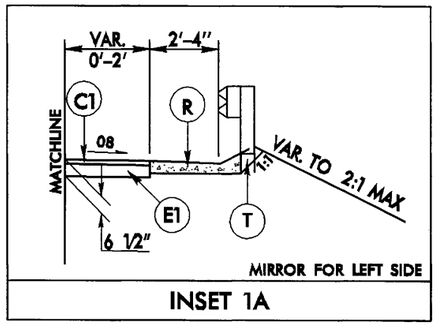
PROJECT REFERENCE NO.	SHEET NO.
B-3169	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

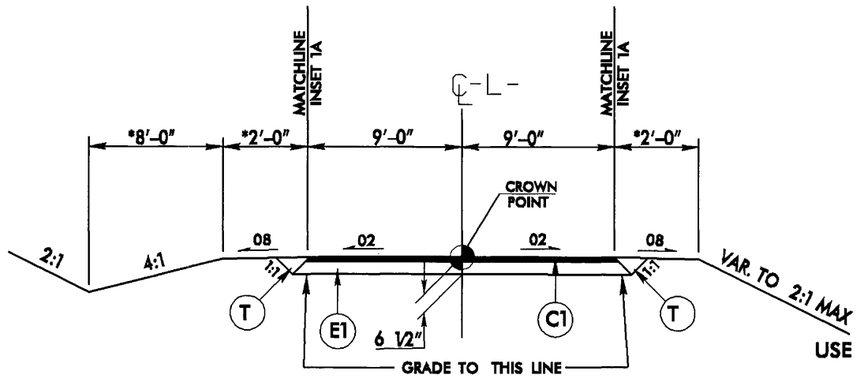
PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF 2 LAYERS	T	EARTH MATERIAL.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R	SHOULDER BERM GUTTER

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



INSET 1A

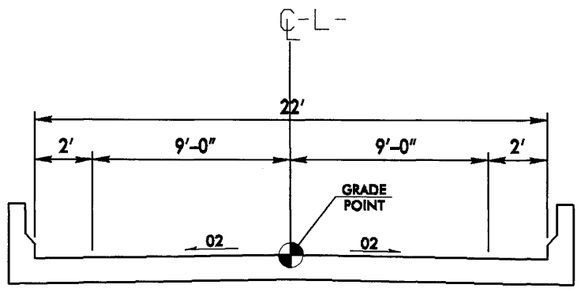


USE TYPICAL SECTION NO.1

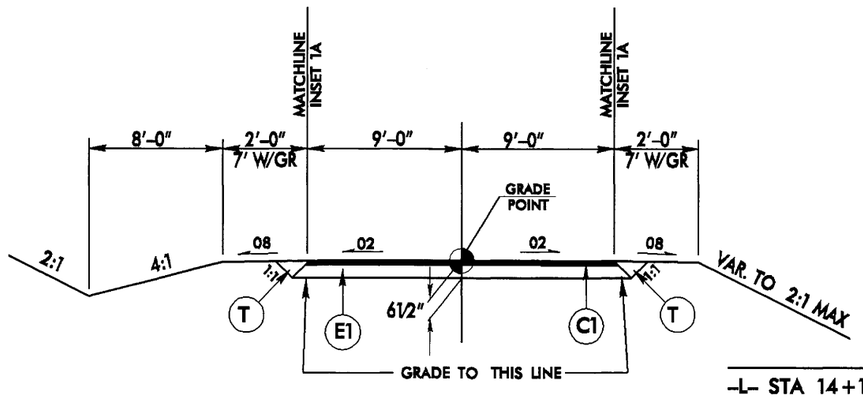
-L- STA 13+00.00 TO -L- STA 14+12.17
-L- STA 15+56.30 TO -L- STA 16+56.30
USE INSET 1A IN SHOULDER BERM GUTTER LOCATIONS

TYPICAL SECTION NO. 1

* TRANSITION TO EXISTING



TYPICAL SECTION ON STRUCTURE



USE TYPICAL SECTION NO.2

-L- STA 14+12.17 TO -L- STA 14+14.50(BEGIN APPROACH SLAB)
-L- STA 15+37.50(END APPROACH SLAB) TO -L- STA 15+56.30
USE INSET 1A IN SHOULDER BERM GUTTER LOCATIONS

TYPICAL SECTION NO. 2

PROJECT REFERENCE NO.	SHEET NO.
B-3169	4

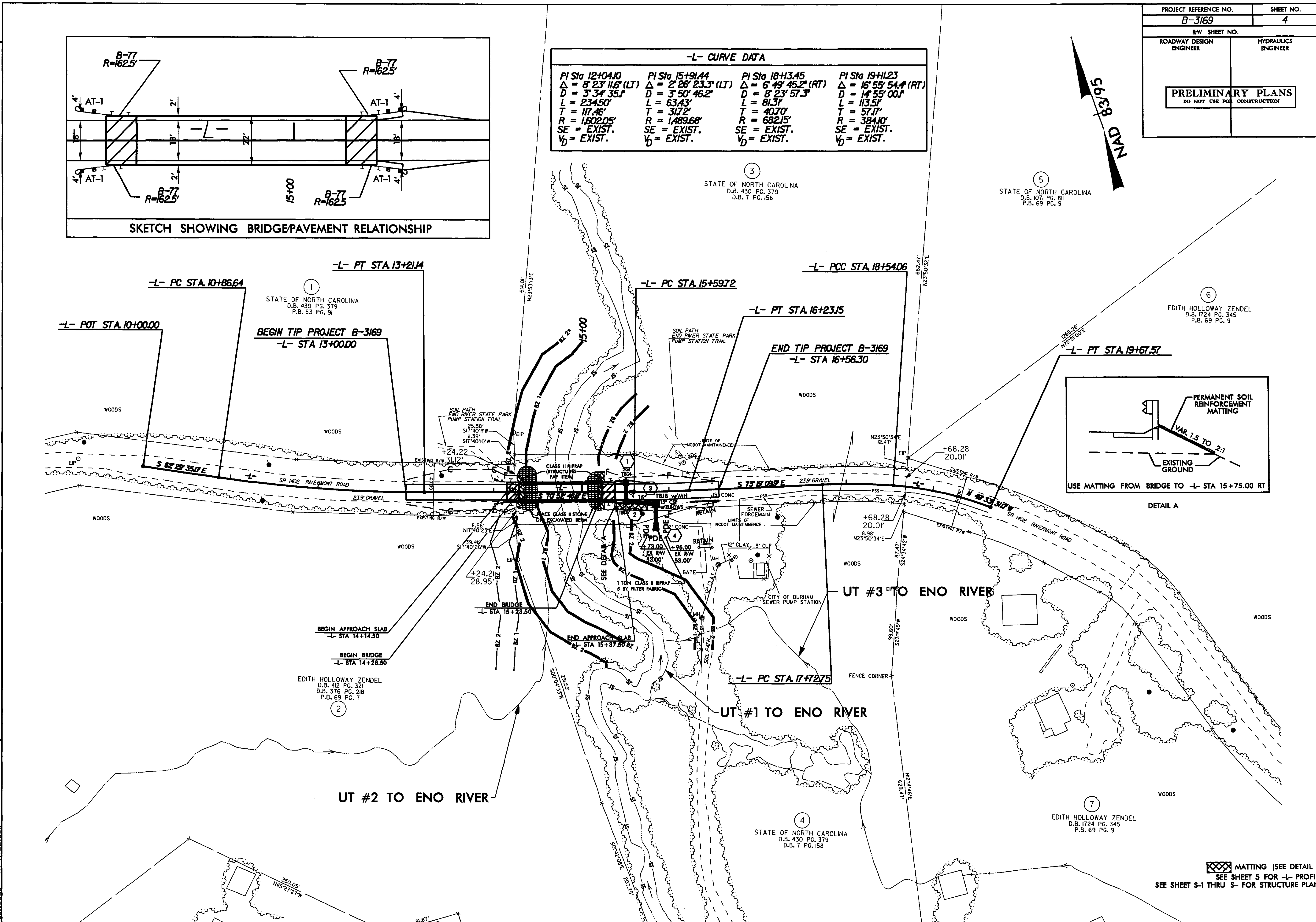
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L- CURVE DATA

PI Sta 12+04.10	PI Sta 15+91.44	PI Sta 18+13.45	PI Sta 19+11.23
Δ = 8° 23' 11.6" (LT)	Δ = 2° 26' 23.3" (LT)	Δ = 6° 49' 45.2" (RT)	Δ = 16° 55' 54.4" (RT)
D = 3° 34' 35.1"	D = 3° 50' 46.2"	D = 8° 23' 57.3"	D = 14° 55' 00.1"
L = 234.50'	L = 63.43'	L = 81.31'	L = 113.51'
T = 117.46'	T = 31.72'	T = 40.70'	T = 57.17'
R = 1,602.05'	R = 1,489.68'	R = 682.15'	R = 384.10'
SE = EXIST.	SE = EXIST.	SE = EXIST.	SE = EXIST.
V_D = EXIST.	V_D = EXIST.	V_D = EXIST.	V_D = EXIST.



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
B-77 R=162.5'
AT-1
-L-
15+00
NAD 83/95
-L- POT STA. 10+00.00
-L- PC STA. 10+86.64
-L- PT STA. 13+21.14
BEGIN TIP PROJECT B-3169 -L- STA 13+00.00
-L- PC STA. 15+59.72
-L- PT STA. 16+23.15
END TIP PROJECT B-3169 -L- STA 16+56.30
-L- PCC STA. 18+54.06
-L- PT STA. 19+67.57
-L- PC STA. 17+72.75
STATE OF NORTH CAROLINA D.B. 430 PG. 379 P.B. 53 PG. 91
STATE OF NORTH CAROLINA D.B. 430 PG. 379 D.B. 7 PG. 158
STATE OF NORTH CAROLINA D.B. 1071 PG. 811 P.B. 69 PG. 9
EDITH HOLLOWAY ZENDEL D.B. 1724 PG. 345 P.B. 69 PG. 9
EDITH HOLLOWAY ZENDEL D.B. 412 PG. 321 D.B. 376 PG. 218 P.B. 69 PG. 7
STATE OF NORTH CAROLINA D.B. 430 PG. 379 D.B. 7 PG. 158
EDITH HOLLOWAY ZENDEL D.B. 1724 PG. 345 P.B. 69 PG. 9
SR 1402 RIVERMONT ROAD
23.9' GRAVEL
S 62° 29' 35.0" E
S 70° 58' 46.8" E
S 73° 18' 09.9" E
SOIL PATH ENO RIVER STATE PARK PUMP STATION TRAIL
CLASS II RIPRAP (STRUCTURES PAY ITEM)
BEGIN APPROACH SLAB -L- STA 14+14.50
BEGIN BRIDGE -L- STA 14+28.50
END BRIDGE -L- STA 15+23.50
END APPROACH SLAB -L- STA 15+37.50
SEE DETAIL A
1 TON CLASS II RIPRAP 5 SY FILTER FABRIC
CITY OF DURHAM SEWER PUMP STATION
SEWER FORCEMAIN
LIMITS OF NCDOT MAINTENANCE
UT #1 TO ENO RIVER
UT #2 TO ENO RIVER
UT #3 TO ENO RIVER
FENCE CORNER
WOODS
PERMANENT SOIL REINFORCEMENT MATTING
VAR. 1.5 TO 2:1
EXISTING GROUND
USE MATTING FROM BRIDGE TO -L- STA 15+75.00 RT
DETAIL A
MATTING (SEE DETAIL A)
SEE SHEET 5 FOR -L- PROFILE
SEE SHEET S-1 THRU S- FOR STRUCTURE PLANS
REVISIONS
8/17/99
27-APR-2007 09:53

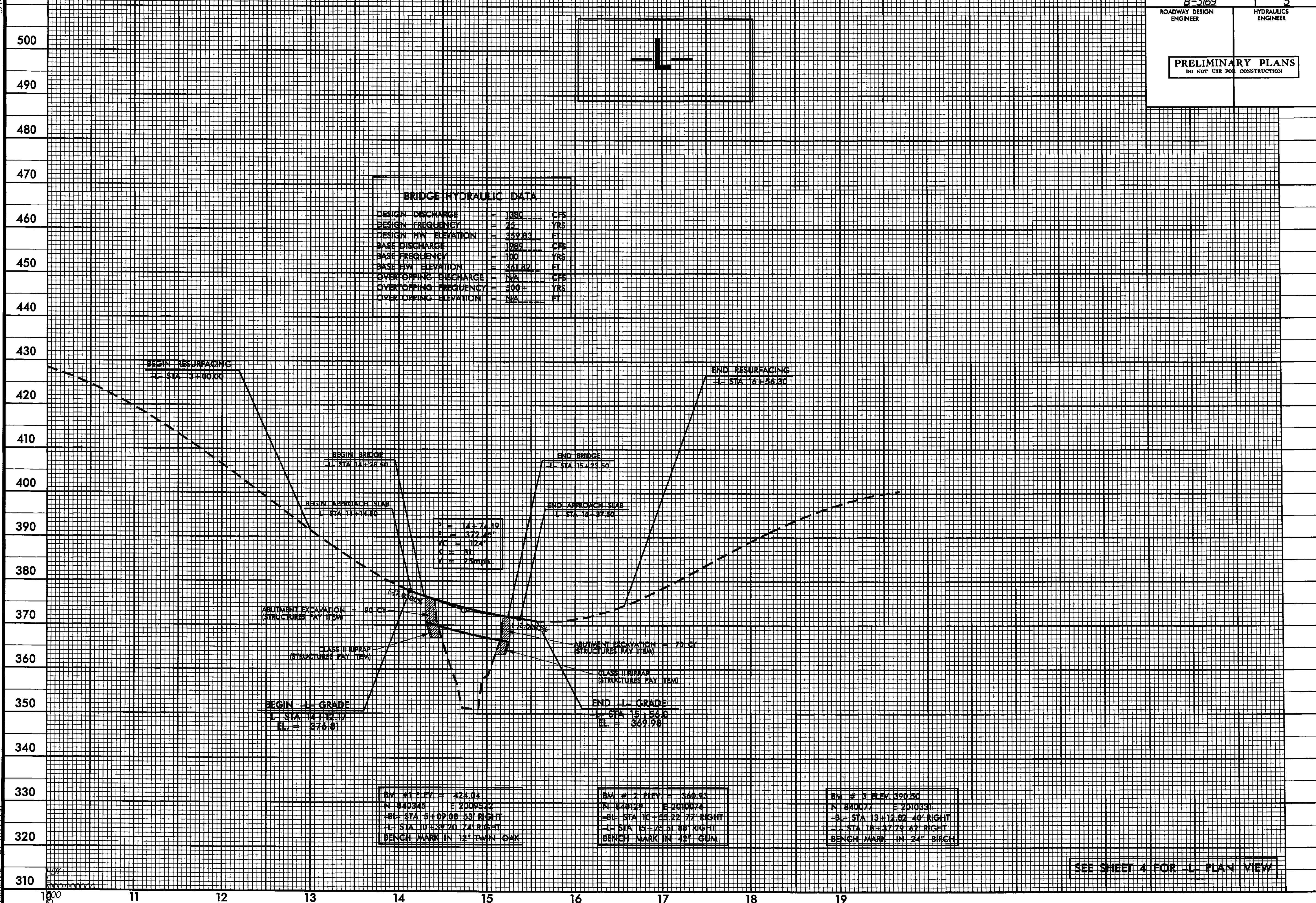
PROJECT REFERENCE NO.	SHEET NO.
B-3169	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1380	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	359.83	FT
BASE DISCHARGE	=	1989	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	361.82	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	N/A	FT

BM #1 ELEV = 424.04
N 840345 E 2009572
-BL- STA 5+09.08 53' RIGHT
-L- STA 10+39.20 74' RIGHT
BENCH MARK IN 12" TWIN OAK

BM # 2 ELEV = 360.93
N 840129 E 2010076
-BL- STA 10+55.22 77' RIGHT
-L- STA 15+75.51 88' RIGHT
BENCH MARK IN 42" GUM

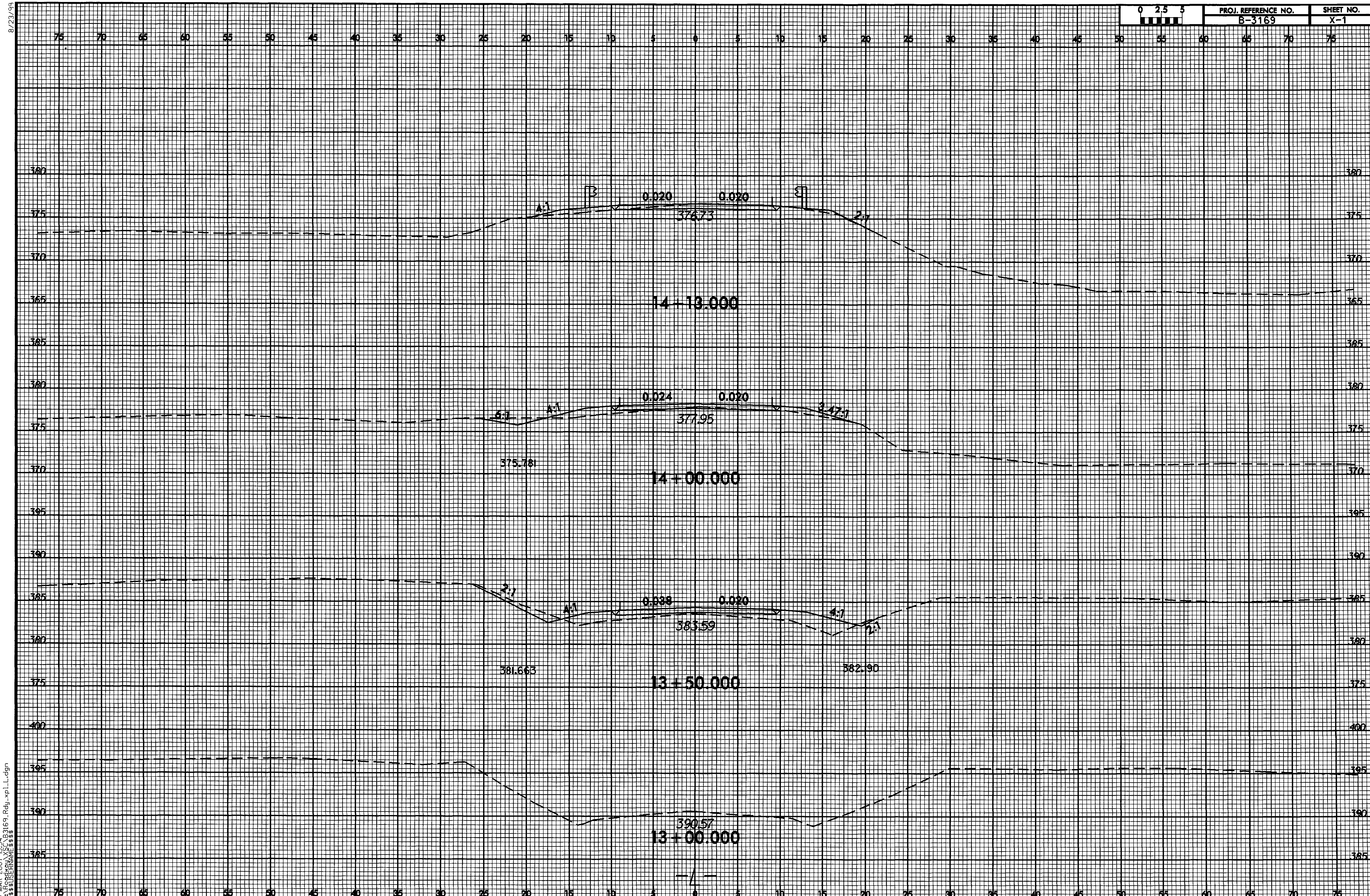
BM # 3 ELEV 390.50
N 840077 E 2010331
-BL- STA 13+12.82 40' RIGHT
-L- STA 18+37.79 62' RIGHT
BENCH MARK IN 24" BIRCH

SEE SHEET 4 FOR -L- PLAN VIEW

5/14/99

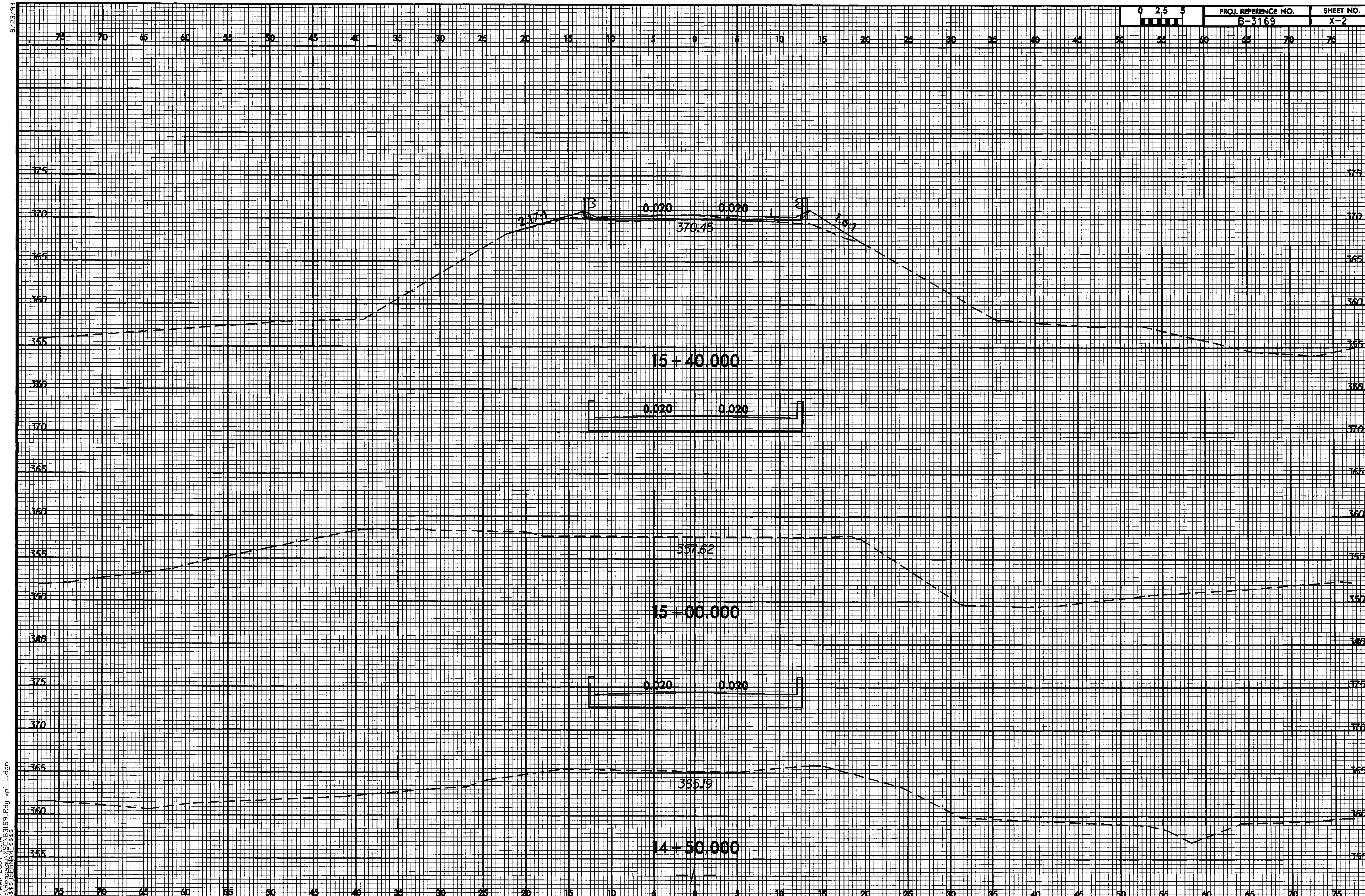
20-MAR-2007 07:49

PROJ. REFERENCE NO.	SHEET NO.
B-3169	X-1



8/23/99
19-MAR-2007 13:54
R:\Roadway\XSC\B3169_Rdy-xpl_L.dgn
$$$$USERNAME$$$$

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3169	X-2



19-MAR-2007 13:54
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3169	X-3

17+00.000

377.47

0.037 0.043 4.21

373.06

16+50.000

3.72(1)

0.036 0.037 2.44(1)

370.45

16+00.000

0.020 0.020 1.72(1)

370.15

15+50.000

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	**B-3169**
State Project No.	**8.2353701**
W.B.S. No.	**32906.1.1**
Federal Project No.	**BRZ-1402(7)**

A. Project Description:

The purpose of this project is to replace Durham County Bridge No. 158 on SR 1402 (Rivermont Rd), which is a gravel road, over unamed tributary to Eno River. Bridge No. 158 is 75 feet long. The replacement structure will be a bridge approximately 95 feet long providing a minimum 23 feet 10 inch clear deck width. The bridge will include two 9-foot lanes and 2-foot offsets. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 35 feet from the west end of the new bridge and 45 feet from the east end of the new bridge. The approaches will be widened to include a 18-foot pavement width providing two 9-foot lanes. 2-foot grass shoulders will be provided on each side (5-foot shoulders where guardrail is included). The roadway will be designed as a Local Route with a 25 mile per hour design speed based on the 2001 AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads.

Traffic will be detoured off-site during construction (see Figure 1).

B. Purpose and Need:

NCDOT Bridge Maintenance Unit records indicate Bridge No. 158 has a sufficiency rating of 39.1 out of a possible 100 for a new structure. The bridge is considered structurally deficient due to structural appraisal of 2 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA's Highway Bridge Replacement and Rehabilitation Program.

Bridge No. 158 is a three-span structure that consists of a timber deck with an asphalt-wearing surface on timber and steel girders. The end bents are vertical timber abutments. Both end bents and interior bents consist of timber caps on timber piles. Bridge No. 158 is approaching the end of its useful life.

Components of both the timber superstructure and substructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities. The posted weight limit on the bridge is down to 9 tons for single vehicles and 15 tons for truck-tractor semi-trailers. The bridge is approaching the end of its useful life. Replacement of the bridge will result in safer traffic operations.

REPLACE BRIDGE NO. 158 ON SR 1402
OVER AN UNNAMED TRIBUTARY TO ENO RIVER
DURHAM COUNTY

TIP NO. B-3169
STATE PROJECT NO. 8.2353701
FEDERAL AID PROJECT NO. BRZ-1402(7)
WBS ELEMENT 32906.1.1

NATURAL RESOURCES TECHNICAL REPORT

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

CHERYL KNEPP, ENVIRONMENTAL SPECIALIST

MARCH 10, 2004

TABLE OF CONTENTS

1.0 INTRODUCTION

The following Natural Resources Technical Report is submitted to assist in the preparation of a Categorical Exclusion (CE) for the proposed project. The purpose of this report is to inventory and describe the natural resources which occur within the proposed right-of-way boundaries and which are likely to be impacted by the proposed action. Assessments of the nature and severity of probable impacts to these natural resources are provided, along with recommendations for measures that will minimize resource impacts.

This report identifies areas of particular environmental concern that may affect the selection of a preferred alignment or may necessitate changes in design criteria. Such environmental concerns should be addressed during the preliminary planning stages of the proposed project in order to maintain environmental quality in the most efficient and effective manner. The analyses contained in this document are relevant only in the context of the existing preliminary project boundaries and design. If design parameters and criteria change, additional field investigations may be necessary.

1.1 Project Description

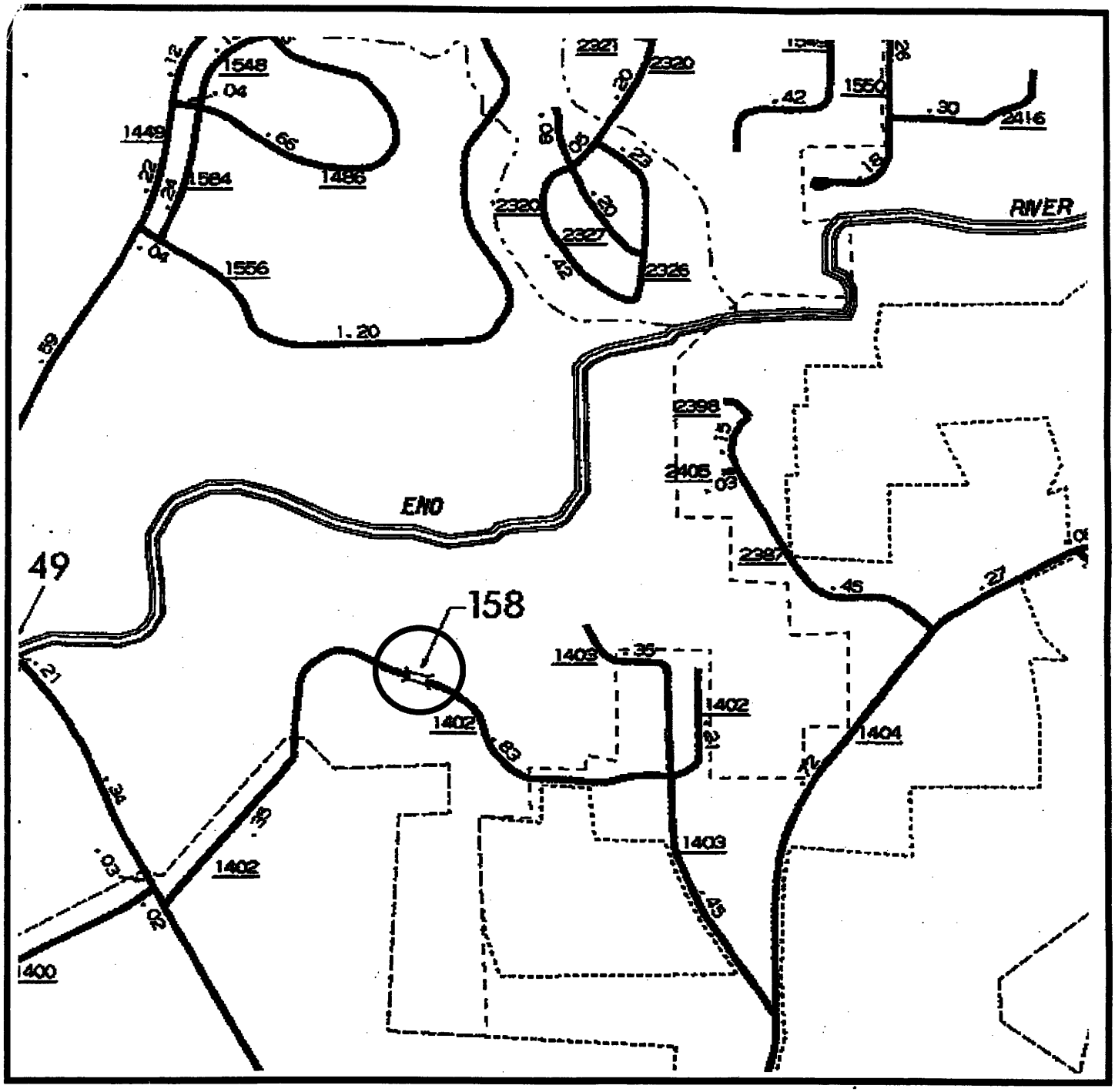
The proposed project, crossing an unnamed tributary (UT) to the Eno River (Figure 1), calls for the replacement of Bridge No. 158 on SR 1402 in Durham County. Project area is 32 acres. The existing three-span bridge over the UT to the Eno River, constructed in 1960 by the Bridge Maintenance Unit, has an overall length of 75 feet and is approximately 23 feet above the creek bed. Proposed improvements will include the replacement of the existing bridge with an 86-foot bridge at the same approximate location and elevation as the existing structure. This alternative would most likely require a spill-through abutment on both sides. To facilitate drainage, it is recommended that a minimum 0.3 percent roadway gradient be used over the new structure. An off-site detour is recommended for this alternative. If an on-site detour is chosen, a 71-foot bridge located just downstream (north) of the existing bridge is recommended.

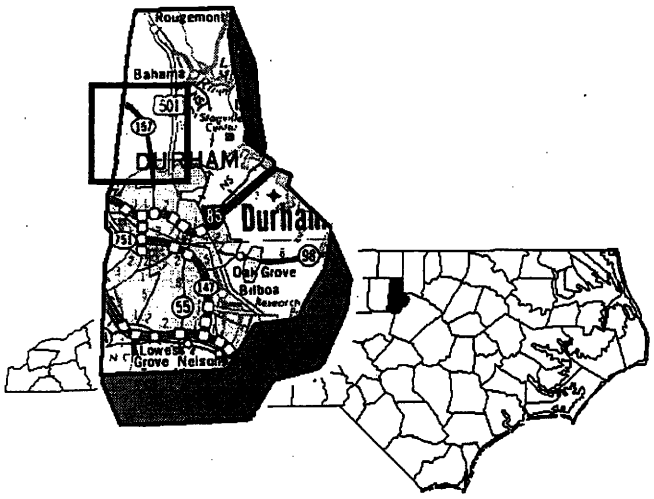
1.2 Methodology

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

- Geological Survey (USGS) quadrangle maps (Northwest Durham).
- NCDOT aerial photographs of the project area (1:100).
- USDA Soil Conservation Service, currently known as Natural Resource Conservation Service, Soil Survey of Durham County, North Carolina (1976).
- NC Center for Geographic Information and Analysis Environmental Sensitivity Base Maps of Durham County (1995).

Water resource information was obtained from publications of the Department of Environment, Health and Natural Resources (DEHNR, 1993). Information concerning the occurrence of federal and state protected species in the study area was obtained from the US Fish and Wildlife Service list of protected and candidate species (January 29, 2003) and from the N.C. Natural Heritage Program





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

DURHAM COUNTY
REPLACE BRIDGE NO. 158 ON SR 1402
OVER A CREEK
B-3169

Figure 1

(NCNHP) database of rare species and unique habitats. NCNHP files were reviewed for documented occurrences of state or federally listed species and locations of significant natural areas.

NCDOT Environmental Specialists Cheryl Knepp, Brett Feulner, Eric Adrignola, and Carla Dagnino conducted general field surveys in the proposed project area on December 11, 2003. Water resources were identified and their physical characteristics were recorded. Plant communities and their 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). Animal taxonomy follows Martof, *et al.* (1980), Menhenick (1991), Potter, *et al.* (1980), and Webster, *et al.* (1985). Vegetative communities were mapped utilizing aerial photography of the project site. Predictions regarding wildlife community composition involved general qualitative habitat assessment based on existing vegetative communities. Wildlife identification involved using a variety of observation techniques: qualitative habitat assessment based on vegetative communities, active searching, identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Cursory surveys of aquatic organisms were conducted and tactile searches for benthic organisms were administered as well. Organisms captured during these searches were identified and then released.

Jurisdictional wetlands, if present, were identified and evaluated based on criteria established in the "Corps of Engineers Wetland Delineation Manual" (Environment 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).

1.3 Terminology and Definitions

For the purposes of this report, the following terminology is used define the limits of the natural resource investigations.

Project study area – denotes the area bound by the "bubble" study area along the full length of the project alignment. No alternatives for the proposed project have been defined; therefore, the project study area is comprised of an area approximately 2,350 feet long and 600 feet wide consisting of nearly 32 acres. Approximately 600 linear feet of Wells Creek is located within the project study area.

Project vicinity – denotes an area extending 0.5 miles on all sides of the project study area.

Project region – is equivalent to an area represented by a 7.5 minute USGS quadrangle map with the project study area occupying the central portion.

1.4 Qualifications of Principal Investigators

Investigator:	Cheryl Knepp
Education:	B.S. Natural Resource Management & Ecology, Colorado State University.
Experience:	Environmental Specialist, NCDOT, Raleigh, NC, December 2003 to present. Field Technician, GeoSonics, Inc., Raleigh, NC, September to December 2003.
Expertise:	Biotic community mapping and assessment, species identification, wetland delineation and technical report writing.

Investigator: Brett M. Feulner
Education: B.S. Forest Management, North Carolina State University, May 2001
Experience: Environmental Biologist, N.C. Dept. of Transportation Feb. 2003-present
Environmental Specialist, Landmark Design Group, Raleigh, NC, June 2001-December 2002 District Forester, Resource Management Service, New Bern, NC, January 1999-December 1999.

2.0 PHYSICAL RESOURCES

Soil and water resources that occur in the project area are discussed below with respect to possible environmental concerns. Soil properties and site topography significantly influence the potential for soil erosion and compaction, along with other possible construction limitations or management concerns. Water resources within the project area present important management limitations due to the need to regulate water movement and the increased potential for water quality degradation. Excessive soil disturbance resulting from construction activities can potentially alter both the flow and quality of water resources, limiting downstream uses. In addition, soil characteristics and the availability of water directly influence the composition and distribution of flora and fauna in biotic communities, thus affecting the characteristics of these resources.

2.1 Regional Characteristics

Durham County lies within the piedmont physiographic region of north central North Carolina. The county is generally rolling with moderately steep slopes along the drainageways. Dominant soils include silt loams. Elevation of the Eno River UT in the project area is approximately 360 feet. The county is drained by tributaries of the Eno River. Most of the land area in the basin is agricultural or forests, while urban development is concentrated around Raleigh, Durham, and Cary in the upper basin.

2.2 Soils

The project vicinity is primarily underlain with soils in Nason-Tatum Association and the Georgeville-Herndon Association. The Nason-Tatum Association is comprised of well-drained soils that a have subsoil of dominantly firm clay. The Georgeville-Herndon Association has gently sloping to strongly sloping, well-drained soils that have a subsoil of dominantly firm silty clay. There are three soil types located in the project area. A brief description of each soil type is provided.

- Cartecay and Chewacla (Cc) is a nearly level, somewhat poorly-drained soil located in long, flat areas parallel to major streams on the floodplains. This mapping unit is about 60 percent Cartecay soil and 30 percent Chewacla soil. In the project area, this soil is found in a narrow band along both sides of the UT to the Eno River. The surface layer is silt loam. Flooding and wetness are the major concerns in management. Infiltration is moderate and runoff is slow. Chewacla soil has hydric inclusions.

- Tatum gravelly silt loam, 15 – 25 percent slopes (TaE) is a well-drained soil on long narrow side slopes on uplands. This loam is found in the southwestern quadrant of the project area surrounding the Chewacla soil band. Typically, the surface layer is silt loam underlain by yellowish-red or red, friable or firm silty clay or silty clay loam. Slope and the erosion resulting from runoff are the major concerns in management. Infiltration is moderate and runoff is slow. This is a non-hydric soil.

- Georgeville silt loam, 2 – 6 percent slopes (GeB) is a well-drained soil located on broad ridges and uplands. In the project area, this soil is found bordering the western side of the Tatum gravelly silt loam in the southwest quadrant. Typically, the surface layer is a silt loam underlain by red, firm silty clay or silty clay loam. Erosion resulting from runoff is the major concern in management. Infiltration is moderate, and runoff is medium. This is a non-hydric soil.

2.3 Water Resources

This section contains information concerning surface water resources likely to be impacted by the proposed project. Water resource assessments include the physical characteristics, best usage standards, and water quality aspects of the water resources, along with their relationship to major regional drainage systems. Probable impacts to surface water resources are also discussed, as are means to minimize impacts.

Water resources within the study area are located in Subbasin 03-04-01, and Hydrologic Unit 03020201 of the Neuse River Drainage Basin. The Neuse River Basin is the third largest river basin in North Carolina and is one of only three basins that is located entirely within the state. The basin covers 6,192 square miles in 19 counties (NCDENR 2001). The Neuse River originates northwest of Durham in Person and Orange counties in the piedmont ecoregion. The upper 22 miles of the river's mainstem are impounded behind Falls of the Neuse Reservoir dam, a large multi-use reservoir located a few miles northeast of Raleigh. Below the dam, the river flows about 185 miles southeasterly past the cities of Raleigh, Smithfield, Goldsboro and Kingston until it reaches tidal waters near Street's Ferry. Below Street's Ferry the river broadens dramatically, changing into a tidal estuary that eventually flows into Pamlico Sound.

There are three jurisdictional streams within the project area. UT 1 is a UT to the Eno River and flows north below SR 1402. UT 2 is on the east side of UT 1 flowing west and located behind a pump station. UT 3 has an easterly flow and is located on the western side of UT 1. UT 2 and UT 3 are both first order intermittent streams. UT 1 is a perennial second order stream. (See figure 2).

2.3.1 Best Usage Classification

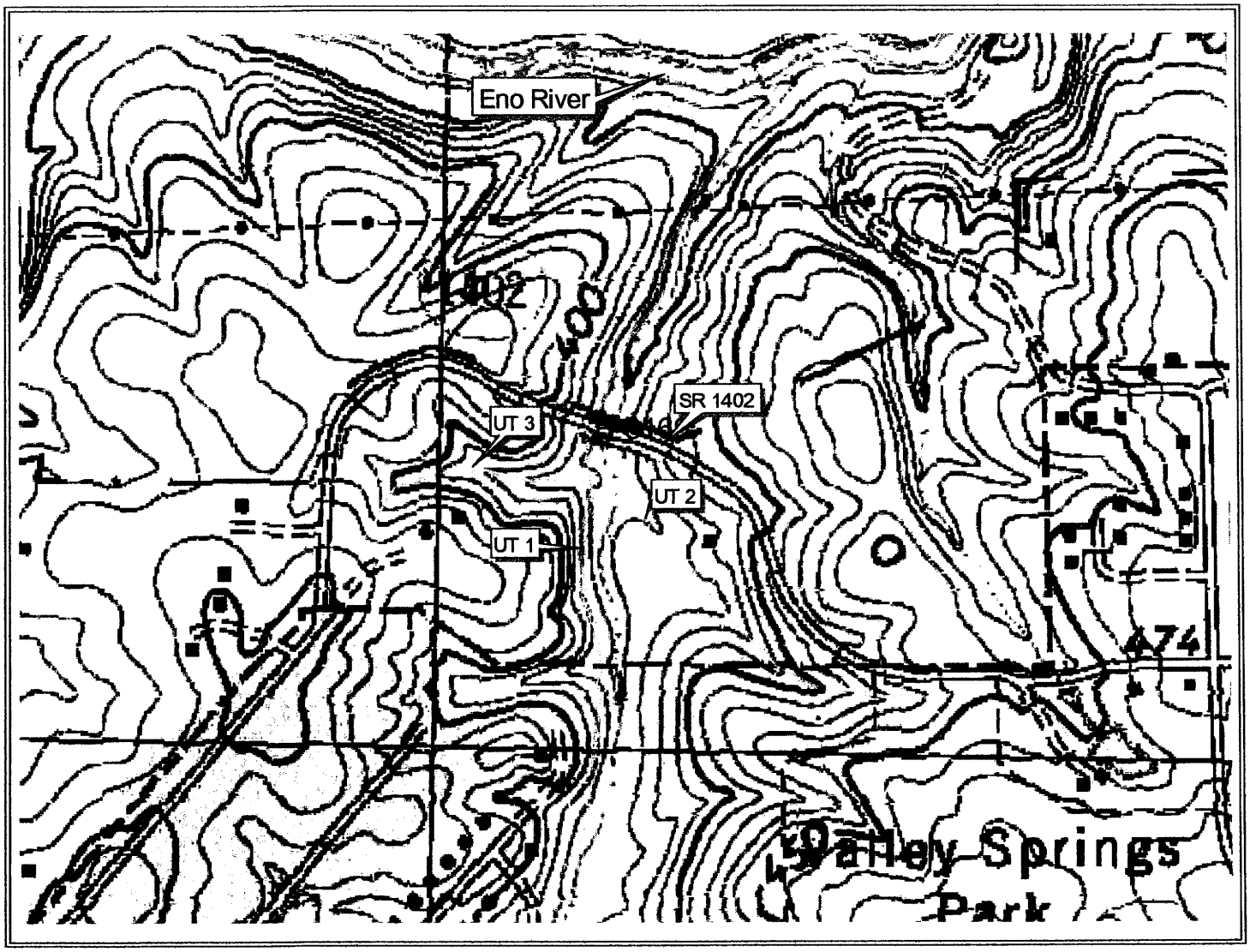
Streams have been assigned a best usage classification by the Division of Water Quality (DWQ), formerly Division of Environmental Management (DEM), which reflects water quality conditions and potential resource usage. Unnamed tributaries receive the same classification as the streams to which they flow. The classification for the Eno River [DEM Index No. 27-2-(10), 4/01/94] is **WS-IV B NSW**. Waters classified as **WS-IV waters** are used as sources of water supply for drinking, culinary, or food processing purposes for those users where a more stringent classification is not feasible. WS-IV waters are generally in moderately to highly developed watersheds or Protected Areas. The **B** designation denotes waters used for primary recreation and other uses suitable for Class C. Primary recreational activities include swimming, skin diving, water skiing, and similar uses involving human body contact with water where such activities take place in an organized manner or on a frequent basis. There are no restrictions on watershed development activities. Discharges must meet treatment reliability requirements such as backup power supplies and dual train design. **NSW waters** are nutrient sensitive waters and receive this supplemental classification because they are in need of additional nutrient management due to

Jursdictional Streams within Project Study Area

Bricdge No. 158 on SR 1402

B-3169

Durham County



N

0.2 0 0.2 0.4 Miles

Figure 2

excessive growth of microscopic or macroscopic vegetation. In general, management strategies for point and nonpoint source pollution control require there be no increase in nutrients over background levels.

No waters classified as High Quality Waters (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occur within 1.0 mile of the project study area.

2.3.2 Physical Characteristics of Surface Waters

UT 1 to the Eno River is approximately 20 to 30 feet wide and ranges in depth from 1 to 3 feet. Streambed substrate consists of silt, gravel, cobble, rip-rap, and boulders. The bed and bank are well defined in this perennial stream. On the day of the site visit, flow was moderate and water clarity was good.

Two first order UT's were identified as well. Department of Water Quality stream classification forms were used to evaluate the streams. This stream evaluation method is intended to distinguish ephemeral channels from intermittent channels. UT 3 scored a 26 and UT 2 scored a 19.5, making them both low-end intermittent streams.

2.3.3 Water Quality

This section describes the quality of the water resources within the project area. Potential sediment loads and toxin concentrations of these waters from both point sources and nonpoint sources are evaluated. Water quality assessments are made based on published resource information and existing general watershed characteristics. These data provide insight into the value of water resources within the project area to meet human needs and to provide habitat for aquatic organisms. There are no registered point source dischargers within the project vicinity.

2.3.3.1 Benthic Macroinvertebrate Ambient Network

The Basinwide Monitoring Program, managed by the 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 macroinvertebrates 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 value (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 influence of chemical pollutants. The major physical pollutant, sediment, is poorly assessed by a taxa richness analysis. Different criteria have been developed for different ecoregions (mountains, piedmont, and coastal plain) within North Carolina. **There are no benthic monitoring stations on UT to the Eno River in or above the project area.**

2.3.3.2 Clean Water Act Section 303(d) Streams

The DWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7; hereafter referred to as the NC 2000 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment. The source of impairment

could be from point sources, nonpoint sources, and atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the Section 303(d) list. Streams are further categorized into one of six parts within the Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, N.C. has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State. **None of the UTs to the Eno River are listed on the 303 (d) nor are there any within 1 mile of the project area.**

2.4 Summary of Anticipated Impacts to Water Resources

Impacts to water resources in the project area are likely to result from activities associated with project construction. Activities likely to result in impacts are clearing and grubbing on streambanks, riparian canopy removal, instream construction, fertilizers and pesticides used in revegetation, and pavement installation. The following impacts to surface water resources are likely to result from the above mentioned construction activities.

- Increased sedimentation and siltation downstream of the crossing and increased erosion in the project area.
- Alteration of stream discharge due to silt loading and changes in surface and groundwater drainage patterns.
- Changes in light incidence and water clarity due to increased sedimentation and vegetation removal.
- Changes in and destabilization of water temperature due to vegetation removal.
- Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction.
- Increased nutrient loading during construction via runoff from exposed areas.
- Increased concentrations of toxic compounds in roadway runoff.
- Increased potential for release of toxic compounds such as fuel and oil from construction equipment and other vehicles.

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. Limiting instream activities and revegetating stream banks immediately following the completion of grading can further reduce impacts.

3.0 BIOTIC RESOURCES

Biotic resources include terrestrial and aquatic communities. This section describes the biotic communities encountered in the project area, as well as the relationships between fauna and flora within these communities. The composition and distribution of biotic communities throughout the project area are reflective of topography, soils, hydrology, and past and present land uses. 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.

3.1 Biotic Communities

Biotic communities include terrestrial and aquatic elements. Much of the flora and fauna described from biotic communities utilize resources from different communities, making boundaries between contiguous communities difficult to define. There are three terrestrial communities located in the project area. These communities are discussed below. Coverage area per community is summarized in Table 1.

3.1.1 Maintained/Early Successional Community

This community type includes the grassed shoulders on both sides of SR 1402 and residential lawns. Because of harvesting, mowing, and the use of herbicides this community is kept in a constant state of early succession. The dominant species in this community are fescue (*Festuca* sp.), thoroughwort (*Eupatorium* sp.) broomsedge (*Andropogon virginicus*) and eastern redcedar (*Juniperus virginiana*).

3.1.2 Floodplain Hardwood Forest

This plant community (Floodplain Hardwood Forest) is adjacent to the Eno River UT and on low-lying areas in the floodplain. There are intermittent streams and standing water in portions of the floodplain hardwood forest. The canopy is dominated primarily by river birch (*Betula nigra),* yellow poplar (*Liriodendron tulipifera),* sycamore (*Platanus occidentalis*) and American beech (*Fagus grandifolia*). Understory species include eastern redcedar (*Juniperus virginiana*), ironwood (*Carpinus caroliniana*) and American holly (*Ilex opaca),* Chinese privett (*Ligustrum* sp.), poison ivy (*Toxicodendron radicans*), blackberry (*Rubus* sp.), and giant cane (*Arundinaria gigantea*).

3.1.3 Mixed Hardwood Forest

This community type (Mixed Hardwood Forest-Piedmont Subtype) is a forested area surrounding the floodplain hardwood forest forming a border with the Eno River State Park. This community is a riparian area composed of a mixture of hardwoods, pines and understory species. A trailhead for a foot-trail into the Eno River State Park occurs within the subject project study area. The canopy is composed of American beech, yellow popular, northern red oak (*Quercus rubra*), eastern sycamore (*Platanus occidentalis*), loblolly pine (*Pinus taeda*), short leaf pine (*Pinus echinata*), and sweetgum (*Liquidambar styraciflua*). Shrub, herbaceous, and vine species found here include Chinese privett (*Ligustrum* sp.), poison ivy, dog fennel (*Eupatorium capillifolium*), and giant cane.

Table 1. Estimated area of coverage of terrestrial communities

Community	Acres	Percentage of Project Study Area
Maintained/Early Successional	1 ac	3%
Floodplain Hardwood Forest	6 ac	18%
Mixed Hardwood Forest	25 ac	79%
Total	**32 ac**	**100%**

3.1.4 Aquatic Community

This community is contained within the perennial Eno River UT and the two intermittent UTs.

Aquatic insects typically found in this type of community include the water strider (*Gerris* sp.), crane fly (*Tipula* sp.), stream mayfly (*Ephemeroptera* sp.), netmaking cattisfly (*Hydropsychae* sp.) and black-winged damselfly (*Calopteryx maculata*). Organisms observed on the day of the site visit include crayfish (*Cambaridae* sp.), mayfly, tadpoles and isopods (*Isopoda* sp.).

3.1.5 Wildlife

The project area consists of a combination of rural countryside and forested natural area. Remaining natural plant communities in the area, particularly the forested area within the Eno River State Park, serve as valuable habitat. The forest bordering the Eno River has all the necessary components (food, water, protective cover) for mammals, birds, reptiles, and amphibians.

Sighting or evidence (tracks, scat, burrows, nests, etc.) were noted for the following species of mammals including white tailed deer (*Odocoileus virginianus*) beaver (*Castor canadensis*), and raccoon (*Procyon lotor*). Other species commonly found in these communities include gray squirrel (*Sciurus carolinensis*) and opossum (*Didelphis marsupialis*).

The following bird species are typical of a rural piedmont setting where a patchwork of habitat types are available. Yellow-throated warbler (*Dendroica dominica*), cardinal (*Cardinalis cardinalis*), mockingbird (*Mimus polyglottos*), sparrow (*Spizella* sp.), chickadee (*Parus carolinensis*), Kentucky warbler (*Oporornis formosa*), and common grackle (*Quiscalus quiscula*).

Reptiles and amphibians typical of these communities include the eastern garter snake (*Thamnophis sirtalis*), pickerel frogs (*Rana palustris*), Carolina anole (*Anolis carolinensis*), eastern box turtle (*Terrapene carolina*), and Fowler's Toad (*Bufo woodhousei*).

3.2 Summary of Anticipated Impacts to Biotic Resources

Construction of the proposed project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies potential impacts to the natural communities within the project area in terms of the area impacted and the organisms affected. Temporary and permanent impacts are considered here as well, along with recommendations to minimize or eliminate impacts.

3.2.1 Terrestrial Impacts

Design alternatives have yet to be identified for this project, therefore, no estimated area of impact to these natural communities has been calculated at this time. Table 1 describes the acreage of plant communities within the project study area. Impacts to plant communities associated with construction activities include the removal of vegetation, soil compaction, damaging and/or exposing root systems, as well as potential impacts associated with petroleum spills.

Due to the minimal disturbance of plant communities anticipated as a result of the bridge replacement, significant impacts to terrestrial wildlife populations are not expected.

Loss of wildlife is an unavoidable aspect of development. Temporary fluctuations in populations of animal species that utilize these communities are anticipated during the course of construction. Slow-moving, burrowing, and/or subterranean organisms will be directly impacted by construction activities, while mobile organisms will be displaced to adjacent communities. Competitive forces in the adapted communities will result in a redefinition of population equilibrium.

3.2.2 Aquatic Impacts

Aquatic organisms are acutely sensitive to changes in their environment and environmental impacts from construction activities may result in long term or irreversible effects. Impacts usually associated with in-stream construction alters the substrate and impacts adjacent streamside vegetation. Such disturbance within the substrate lead to increased siltation, which can clog the gills and/or feeding mechanisms of benthic organisms, fish, and amphibian species. Siltation may also cover benthic macroinvertebrates with excessive amounts of sediment that inhibit their ability to obtain oxygen.

The removal of streamside vegetation and placement of fill material during construction enhances erosion and possible sedimentation. Quick revegetation of these areas helps to reduce the impacts by supporting the underlying soils. Erosion and sedimentation may carry soils, toxic compounds, trash, and other materials into the aquatic communities at the construction site. As a result, bars may form at and downstream of the site. Increased light penetration from the removal of streamside vegetation may increase water temperatures. Warmer water contains less oxygen, thus reducing aquatic life that depends on high oxygen concentrations.

4.0 JURISDICTIONAL TOPICS

This section provides inventories and impact analyses pertinent to two significant regulatory issues: Waters of the United States and rare and protected species. These issues retain particular significance because of federal and state mandates that regulate their protection. This section deals specifically with the impact analyses required to satisfy regulatory authority prior to project construction.

4.1 Waters of the United States

Surface waters and wetlands fall under the broad category of "Waters of the United States" (Waters of the U.S.), as defined in Section 33 of the Code of Federal Register (CRF) 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 (USACE) 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. Potential wetlands were investigated following the 1987 "Corps of Engineers Wetland Delineation Manual." Wetlands are identified based on the presence of hydric soils, hydrophytic vegetation, and saturated or flooded conditions during all or part of the growing season.

4.1.1 Characteristics of Wetlands and Surface Waters

Criteria to delineate jurisdictional wetlands include evidence of hydric soils, hydrophytic vegetation, and hydrology. **There are no wetlands in the project area.**

There are three jurisdictional streams in the project area. UT 1 is a perennial stream; UT 2 and UT 3 are intermittent streams. A January 29, 2004 jurisdictional determination by the Army Corps of Engineers (ACOE) confirmed the intermittent status of UT 2 and UT 3 with no mitigation necessary for these two UTs. Mr. Eric Alsmeyer represented ACOE, Mr. John Hennessy of the Department of Water Quality agreed to defer to the Corps in his absence. E-mail, dated January 14, 2004, confirms this deferment.

4.1.2 Bridge Demolition

Bridge No. 158, constructed in 1960, carries SR 1402 over a UT to the Eno River in Durham County. The bridge is 75 feet long and 30 feet wide. The superstructure consists of a timber floor on I-beams and timber joist. The substructure end bents are composed of timber caps and piles vertical. It consists of a timber deck with an asphalt-wearing surface on timber and steel girders. The end bents are vertical timber abutments. Both end bents and interior bents consist of timber caps on timber piles. The existing deck has a total thickness of 21.5 inches. **Removal of the superstructure and the substructure will not create any temporary fill into Waters of the U.S.** Although removal of the substructure may create some disturbance in the streambed, conditions in the stream will not raise sediment concerns, therefore a turbidity curtain is not recommended.

4.1.3 Permits

Impacts to jurisdictional surface waters may result from the proposed project. As a result, construction activities may require permits and certifications from various regulatory agencies in charge of protecting the water quality of public water resources

A Nationwide Permit 33 CFR 330.5(a) (23) is likely to be applicable for all impacts to Waters of the U.S. resulting from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined, (pursuant to the Council on Environmental Quality regulation for implementing the procedural provisions of the National Environmental Policy Act), that:

(1) The activity, work, or discharge 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 human environment, and;

(2) The office of the Chief of Engineers has been furnished notice of the agency' or department's application for the categorical exclusion and concurs with that determination.

In the event that a temporary causeway is required to construct the new bridge, a Nationwide Permit 33 CFR 330.5(a) (33) may also be required for "temporary construction, access, and dewatering."

Section 401 of the Clean Water Act requires that the state issue or deny a Water Quality Certification (WQC) for any federally permitted or licensed activity that may result in a discharge to Waters of the U.S. Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. If the general conditions of the corresponding WQC will be met, written concurrence from the DWQ will not be required.

As the project is located in the Neuse River Basin, Riparian Area Rules for Nutrient Sensitive Waters apply. The rules state that roads, bridges, stormwater management facilities, ponds and utilities may be allowed where no practical alternative exists. They also state that these structures shall be located, designed, constructed and maintained to have minimal disturbance, to provide maximum erosion protection, to have the least adverse effects on aquatic life and habitat and to protect water quality to the maximum extent practical through the use of best management practices. A Buffer permit will be required if project construction impacts the Neuse Buffer.

4.1.4 Avoidance, Minimization, Mitigation

The USACE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological and physical integrity of Waters of the U.S., specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to Waters of the U.S.. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the USACE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes. Avoidance of impacts results by the implementation of an offsite detour, preventing impacts from a temporary detour.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the U.S. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction to median widths, right-of-way widths, fill slopes and/or road shoulder widths. In order to minimize impacts from the replacement of bridge No. 158, steeper slopes and guardrails will be utilized to lessen the footprint of the project.

Compensatory mitigation in not normally considered until anticipated impacts to Waters of the U.S. have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation and enhancement of Waters of the U.S., specifically wetlands. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site.

Projects authorized under Nationwide Permits that result in the fill or alteration of:

- More than 0.1 acre will require compensatory mitigation,
- At least 150 linear feet of streams will require compensatory mitigation.

No mitigation requirement is anticipated. However, final permit/mitigation decisions rest with the USACE.

4.2 Rare and Protected Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to exist 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 United States Fish and Wildlife Service (USFWS). Other species may receive additional protection under separate state laws.

4.2.1 Federally-Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003 the USFWS lists three federally protected species for Durham County. The following is a brief description of the characteristics and habitat requirements for these species.

Haliaeetus leucocephalus (bald eagle) **Threatened (proposed for delisting)**
Animal Family: Accipitridae
Date Listed: 3/11/67
Distribution in N.C.: Anson, Beaufort, Brunswick, Carteret, Chatham, Chowan, Craven, Dare, Durham, Guilford, Hyde, Montgomery, New Hanover, Northhampton, Periquimans, Richmond, Stanley, Vance, Wake, Washington.

The bald eagle is currently listed as threatened (likely to become endangered in the foreseeable future throughout all or a significant portion of its range). However, this species has been proposed for delisting due to its population increase since the original listing in 1967. Adult bald eagles can be identified by their large white head and short white tail. The body plumage is dark-brown to chocolate-brown in color. In flight bald eagles can be identified by their flat wing soar.

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

BIOLOGICAL CONCLUSION: NO EFFECT

No suitable habitat exists along the bridge replacement alternative. In addition, a December 10, 2003 review of the NCNHP database of rare species and unique habitats revealed no occurrence of federally protected species within one mile of the project study area. It can be concluded that project construction will have no effect on the bald eagle.

Echinacea laevigata (Smooth coneflower) **Endangered**
Family: Asteraceae
Date Listed: 10/8/92
Distribution in N.C.: Durham, Orange, Granville, Rockingham, and Mecklenburg.
Survey window: late May-October

Smooth coneflower is currently known from Virginia, North Carolina, South Carolina, and Georgia. The habitat of smooth coneflower is open woods, cedar barrens, roadsides, clearcuts, dry limestone bluffs, and power line ROW's, usually on magnesium- and calcium-rich soils associated with gabbro in North Carolina. Abundant sunlight and little competition in the herb layer characterize optimal sites. The Smooth Coneflower is a rhizomatous perennial herb that grows up to 5 feet tall from a vertical rootstock. The stems are smooth with few leaves. The rays of the flower a light pink to puplish, usually drooping, and the flower heads are usually solitary. Flowering occurs from May through July.

BIOLOGICAL CONCLUSION: UNRESOLVED

The disturbed roadside margins along the project offers suitable habitat for this species. Initial field surveys were conducted when the window for bloom was not open. The project area will be reevaluated when the window for growth reopens.

Rhus michauxii (Michaux's sumac) **Endangered**
Family: Anacardiacene
Date listed: 9/28/89
Distribution in N.C.: Durham, Davie, Orange, Wake, Franklin, Wilson, Scotland, Richmond, Moore, Hoke, Robeson, and Cumberland.
Survey window: May-October

Michaux's sumac was known historically from the inner coastal plain and lower piedmont of North Carolina, South Carolina, and Georgia. Thirty-five populations have been reported in North Carolina. This plant occurs in rocky or sandy open woods. It is dependent on some sort of disturbance to maintain the openness of its habitat. It grows only in open habitat where it can get full sunlight and it does not compete well with other species such as Japanese honeysuckle.

Michaux's sumac is a densely pubescent rhizomatous shrub that grows 0.2 to 1.0 m in height. The narrowly winged or wingless rachis supports 9 to 13 sessile, oblong to oblong-lanceolate leaflets that are each 4 to 9 cm long, 2 to 5 cm wide, acute and acuminate. It bears small flowers in a terminal, erect, dense, cluster. The flowers are greenish to white in color. Fruits, which develop from August to September on female plants, are a red densely short-pubescent drupe, 5 to 6 mm across.

BIOLOGICAL CONCLUSION: UNRESOLVED

The disturbed roadside margins along the project offers suitable habitat for this species. Initial field surveys were conducted when the window for bloom was not open. The project area will be reevaluated when the window for growth reopens.

Federal Aid # **BRZ-1402(7)** *TIP #* **B-3169** *County:* **Durham**

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).

Rivermont Springs (DE)
No Effect- property is outside the A.P.E.

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

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

Initialed: NCDOT RLS FHWA _____ HPO SDM

C. Proposed Improvements:

Circle one or more of the following Type II improvements which apply to the project:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).

   a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
   b. Widening roadway and shoulders without adding through lanes
   c. Modernizing gore treatments
   d. Constructing lane improvements (merge, auxiliary, and turn lanes)
   e. Adding shoulder drains
   f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
   g. Providing driveway pipes
   h. Performing minor bridge widening (less than one through lane)
   i. Slide Stabilization
   j. Structural BMP's for water quality improvement

2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.

   a. Installing ramp metering devices
   b. Installing lights
   c. Adding or upgrading guardrail
   d. Installing safety barriers including Jersey type barriers and pier protection
   e. Installing or replacing impact attenuators
   f. Upgrading medians including adding or upgrading median barriers
   g. Improving intersections including relocation and/or realignment
   h. Making minor roadway realignment
   i. Channelizing traffic
   j. Performing clear zone safety improvements including removing hazards and flattening slopes
   k. Implementing traffic aid systems, signals, and motorist aid
   l. Installing bridge safety hardware including bridge rail retrofit

3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.

   a. Rehabilitating, reconstructing, or replacing bridge approach slabs
   b. Rehabilitating or replacing bridge decks
   c. Rehabilitating bridges including painting (no red lead paint), scour repair, fender systems, and minor structural improvements
   (d.) Replacing a bridge (structure and/or fill)

4. Transportation corridor fringe parking facilities.

5. Construction of new truck weigh stations or rest areas.

6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.

7. Approvals for changes in access control.

8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.

9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.

10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.

11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.

12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.

13. Acquisition and construction of wetland, stream and endangered species mitigation sites.

14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

Estimated Costs:

Total Construction	$ 350,000
Right of Way	$ 24,000
Total	$ 374,000

Estimated Traffic:

Current	-	100 vpd
Year 2025	-	200 vpd
TTST	-	1%
Dual	-	2%

Accidents: Traffic Engineering has evaluated a recent three year period and found no accidents occurring in the vicinity of the project.

Design Exceptions: There are no anticipated design exceptions for this project.

Bridge Demolition: Bridge No. 158 is constructed entirely of timber and steel. While incidental amounts of dust particles, pavement fragments and splinters of wood might end up in the stream, demolition should result in no appreciable fill for the purposes of a permit.

Alternatives Discussion:

No Build – No build would result in eventually closing the road. Because of the low volume of traffic, removal of the bridge without replacement was discussed with Durham County. The County Manager coordinated with Emergency Services and responded that there is a definite desire to leave the crossing open.

Rehabilitation – The bridge was constructed in 1960 and the timber materials within the bridge are reaching the end of their useful life. Rehabilitation would require replacing the timber components which would constitute effectively replacing the bridge.

Offsite Detour – Bridge No. 158 will be replaced on the existing alignment. Traffic will be detoured offsite (see Figure 1) during construction. NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects considers multiple project variables beginning with the additional time traveled by the average road user resulting from the offsite detour. The offsite detour for this project would include SR 1401, SR 1404, SR 1403, and SR 1402. Although the distance around the detour is 1 mile greater than the normal route, the conditions of the detour are such that there is no difference in time traveled. Based on the guidelines, the delay for the average road user is acceptable.

In addition, maintaining traffic onsite would result in higher project costs and environmental impacts from construction of an onsite detour. Durham County Emergency Services has indicated that an offsite detour is acceptable and that services can be adequately re-routed during construction. The condition of all roads and bridges on the offsite detour are acceptable without improvement. Durham County School Transportation has indicated that rerouting buses around this project will

not be a problem. In view of the lower impacts to environment and property, project cost savings and no major opposition, an offsite detour is recommended. NCDOT Division 5 concurs in these recommendations.

Onsite Detour – An onsite detour was not evaluated due to the presence of an acceptable offsite detour.

New Alignment – Given that the alignment for SR 1402 is acceptable, a new alignment was not considered as an alternative.

Other Agency Comments:

The **N.C. Wildlife Resource Commission** and **U.S. Fish & Wildlife Service** in standardized letters provided a request that they prefer any replacement structure to be a spanning structure.

The **N.C. Division of Water Quality** had no special concerns for this project.

The Army Corps of Engineers indicated that implementation and maintenance of Sedimentation and Control Measured is critical for this project. There is an FSC mussel just downstream from the project.

Public Involvement:

A letter was sent by the Location & Surveys Unit to all property owners affected directly by this project. Property owners were invited to comment. No comments have been received to date.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

ECOLOGICAL		YES	NO
(1)	Will the project have a substantial impact on any unique or important natural resource?		x
(2)	Does the project involve habitat where federally listed endangered or threatened species may occur?	X*	
(3)	Will the project affect anadromous fish?		x
(4)	If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	x	
(5)	Will the project require the use of U. S. Forest Service lands?		x
(6)	Will the quality of adjacent water resources be adversely impacted by proposed construction activities?		x
(7)	Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?		x
(8)	Will the project require fill in waters of the United States in any of the designated mountain trout counties?		x
(9)	Does the project involve any known underground storage tanks (UST's) or hazardous materials sites?		x

PERMITS AND COORDINATION		YES	NO
(10)	If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?		x
(11)	Does the project involve Coastal Barrier Resources Act resources?		x
(12)	Will a U. S. Coast Guard permit be required?		x
(13)	Will the project result in the modification of any existing regulatory floodway?		x

		YES	NO
(14)	Will the project require any stream relocations or channel changes?		x
	SOCIAL, ECONOMIC, AND CULTURAL RESOURCES	**YES**	**NO**
(15)	Will the project induce substantial impacts to planned growth or land use for the area?		x
(16)	Will the project require the relocation of any family or business?		x
(17)	Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?		x
(18)	If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?	x	
(19)	Will the project involve any changes in access control?		x
(20)	Will the project substantially alter the usefulness and/or land use of adjacent property?		x
(21)	Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?		x
(22)	Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)?	x	
(23)	Is the project anticipated to cause an increase in traffic volumes?		x
(24)	Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?	x	
(25)	If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility?	x	
(26)	Is there substantial controversy on social, economic, or environmental grounds concerning the project?		x
(27)	Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?	x	
(28)	Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?		X*

(29)	Will the project affect any archaeological remains which are important to history or pre-history?		X
(30)	Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)?		X
(31)	Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended?		X*
(32)	Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the National System of Wild and Scenic Rivers?		X

F. Additional Documentation Required for Unfavorable Responses in Part E

Response to Question 2: Surveys for Michaux's Sumac and Smooth Coneflower were most recently conducted by NCDOT biologists Cheryl Knepp and Brett Feulner. A Biological Conclusion of "No Effect" was found for the Bald Eagle due to lack of suitable habitat. There is habitat for Michaux's Sumac and Smooth Coneflower, a " May Effect, Not Likely to Adversely Affect" conclusion has been issued. The USFWS has concurred with these findings (See attached letter).

Response to Question 28: There is an eligible house just southeast of the bridge but will not be affected by the project as currently proposed.

Response to Question 31: John Poole of DENR has indicated that 6(f) funds are associated with this park, but as proposed the project will not require land from the park.

G. CE Approval

TIP Project No.	**B-3169**
State Project No.	**8.2353701**
W.B.S. No.	**32906.1.1**
Federal Project No.	**BRZ-1402(7)**

Project Description:

The purpose of this project is to replace Durham County Bridge No. 158 on SR 1402 over unamed tributary to Eno River. Bridge No. 158 is 75 feet long. The replacement structure will be a bridge approximately 95feet long providing a minimum 23 feet 10 inch clear deck width. The bridge will include two 9-foot lanes and 2-foot offsets. The roadway grade of the new structure will be approximately the same as the existing structure.

The approach roadway will extend approximately 35 feet from the west end of the new bridge and 45 feet from the east end of the new bridge. The approaches will be widened to include a 18-foot pavement width providing two 9-foot lanes. 2-foot grass shoulders will be provided on each side (5-foot shoulders where guardrail is included). The roadway will be designed as a Local Route with a 25 mile per hour design speed based on the 2001 AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads.

Traffic will be detoured off-site during construction (see Figure 1).

Categorical Exclusion Action Classification:

____ TYPE II(A)
_x_ TYPE II(B)

Approved:

2/27/06 — Date
Bridge Project Development Unit Head
Project Development & Environmental Analysis Branch

2/27/06 — Date
Bridge Project Development Group Leader
Project Development & Environmental Analysis Branch

2/27/06 — Date
Project Planning Engineer
Project Development & Environmental Analysis Branch

For Type II(B) projects only:

3/2/06 — Date
John F. Sullivan, III, PE, Division Administrator
for Federal Highway Administration

PROJECT COMMITMENTS:

Durham County
Bridge No. 158 on SR 1402
To Eno River
Federal Aid Project No. BRZ-1402(7)
State Project No. 8.2353701
W.B.S. No. 32906.1.1
T.I.P. No. B-3169

NEU-Bridge Demolition

Bridge No. 158 is constructed entirely of timber and steel. While there is potential for some components of the bridge to be dropped in waters of the US , demolition should result in no appreciable fill for the purposes of a permit.

NEU-Endangered Species

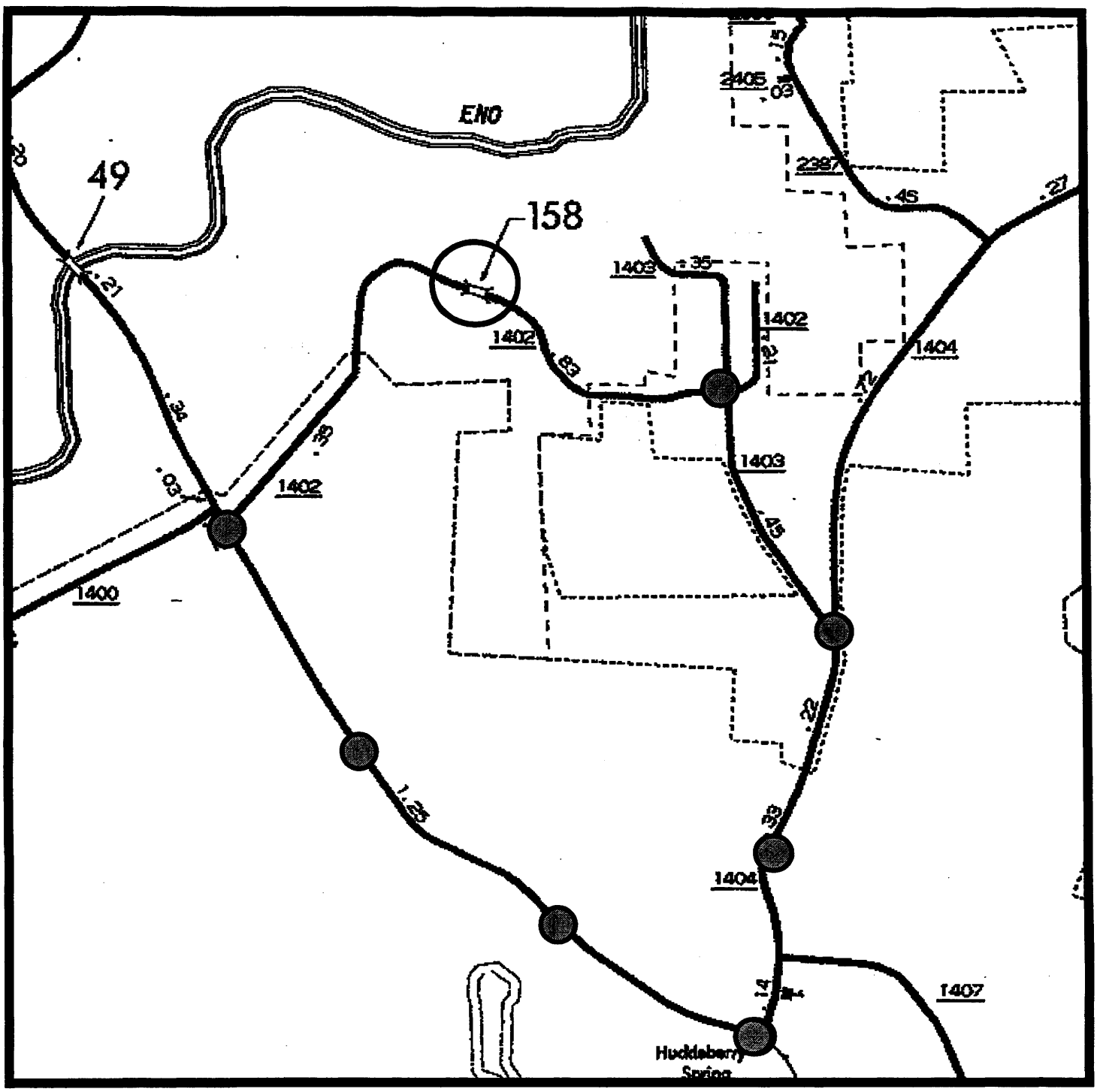
Surveys for Michaux's Sumac and Smooth Coneflower were most recently conducted by NCDOT biologists Cheryl Knepp and Brett Feulner. A Biological Conclusion of "No Effect" was found for the Bald Eagle due to lack of suitable habitat. There is habitat for Michaux's Sumac and Smooth Coneflower, a "No Affect" conclusion has been issued. The USFWS has concurred with these findings. The Natural Environment Unit will evaluate if follow up surveys will be required prior to construction.

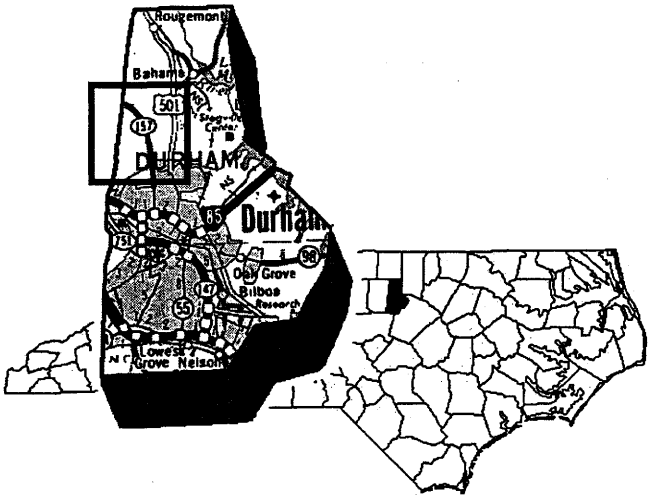
Roadway Design Unit- 6(f)

The project as proposed does not require additional park property. If this changes, coordination with PDEA and DENR Parks and Recreation will be required.

Roadway Design Unit- National Register Eligible Property

There is a National Register eligible property near the project but not affected by the project as currently proposed. If the design changes, coordination with the Human Environment Unit will be required.



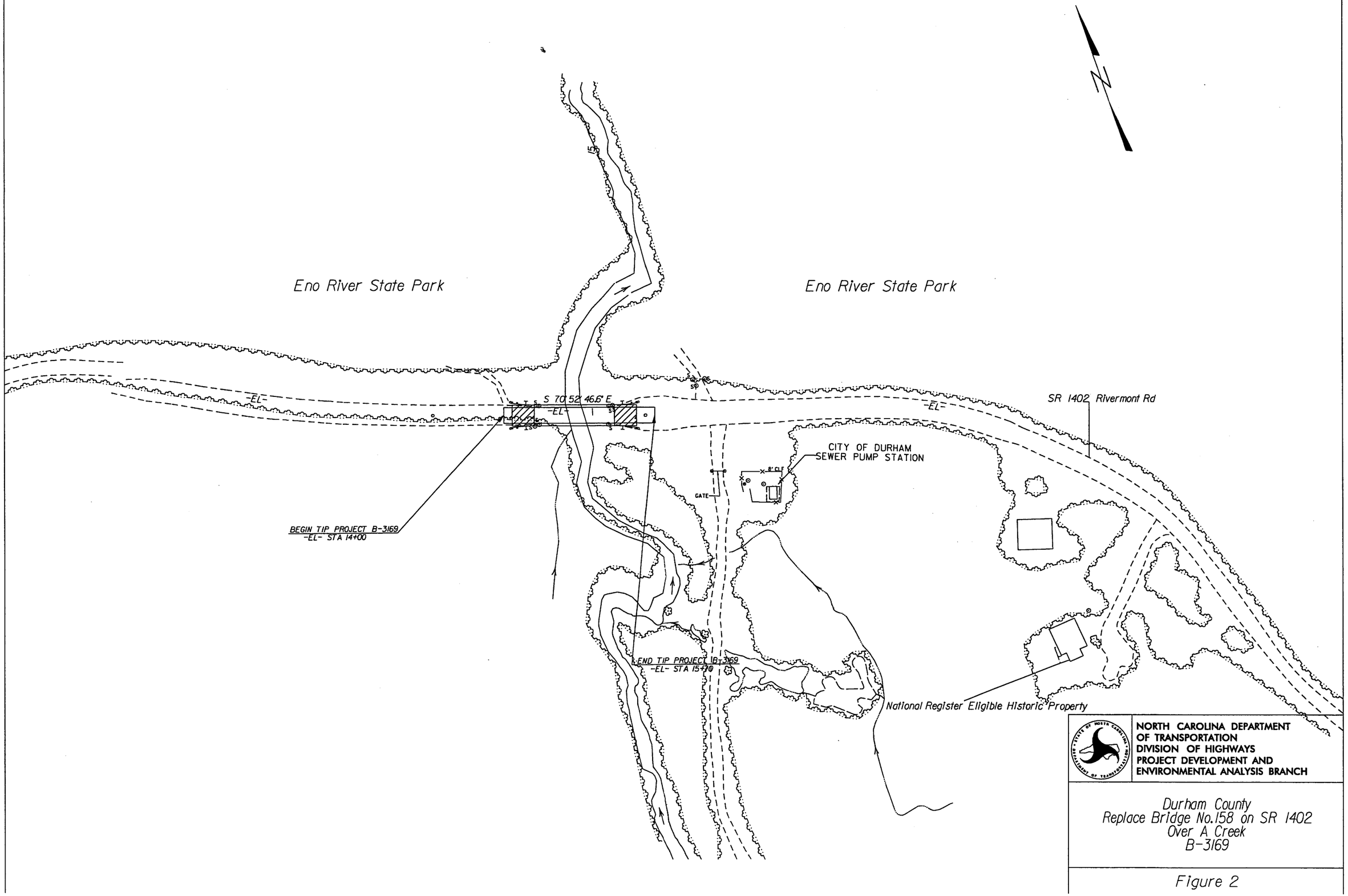


STUDIED DETOUR

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

DURHAM COUNTY
REPLACE BRIDGE NO. 158 ON SR 1402
OVER A CREEK
B-3169

Figure 1



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

Durham County
Replace Bridge No.158 on SR 1402
Over A Creek
B-3169

Figure 2

United States Department of the Interior

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

July 20, 2004

Phil Harris, III
North Carolina Department of Transportation
Project Development and Environmental Analysis
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

This letter is in response to your letter of July 12, 2004 which provided the U.S. Fish and Wildlife Service (Service) with the biological determination of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge No. 158 on SR 1402 over Nancy Rhodes Creek in Durham County (TIP No. B-3169) may affect, but is not likely to adversely affect the federally endangered smooth coneflower (*Echinacea laevigata*) and Michaux's sumac (*Rhus michauxii*). In addition, NCDOT has determined that the project will have no effect on the federally threatened bald eagle (*Haliaeetus leucocephalus*). These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to the information you submitted, a survey was conducted at the project site on June 15, 2004 for smooth coneflower and Michaux's sumac. No specimens of either species were observed. Based on the information provided and other information available, the Service concurs with your determination that the proposed bridge replacement may affect, but is not likely to adversely affect the smooth coneflower and Michaux's sumac. In addition, due to lack of habitat, the Service concurs with your determination that the project will have no effect on the bald eagle. We believe that the requirements of section 7(a)(2) of the ESA have been satisfied. We remind you that obligations under section 7 consultation 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 in this review; (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 determined that may be affected by this identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Pete Benjamin
Ecological Services Supervisor

cc: Eric Alsmeyer, USACE, Raleigh, NC
Nicole Thomson, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

Office of Archives and History
Division of Historical Resources
David Brook, Director

October 19, 2004

MEMORANDUM

TO: Gregory Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter B. Sandbeck Peter Sandbeck

SUBJECT: B-3169, Replace Bridge No. 158 on SR 1402 (Rivermont Road) over Creek, State Project No. 8.2353701, Federal Aid No. BRZ-1402(7), Durham County, ER 04-1293

Thank you for your letter of October 8, 2004 transmitting the survey report by Richard Silverman for the above project.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is eligible for listing in the National Register of Historic Places under the criterion cited:

Rivermont Springs

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

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-4763/733-8653
RESTORATION	515 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6547/715-4801
SURVEY & PLANNING	515 N. Blount Street, Raleigh, NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6545/715-4801

Federal Aid # **BRZ-1402(7)** *TIP #* **B-3169** *County*: **Durham**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: **Replace Bridge No. 158 on SR 1402 (Rivermont Road) Durham Co.**

On **June 14, 2005** representatives of

☒ North Carolina Department of Transportation (NCDOT)
☒ Federal Highway Administration (FHWA)
☒ 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.

☐ 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:

Richard Silverman 06142005
Representative, NCDOT Date

[signature] 6/14/2005
FHWA, for the Division Administrator, or other Federal Agency Date

[signature] 6/14/05
Representative, HPO Date

Renee Gledhill-Earley 6-14-05
State Historic Preservation Officer Date