STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 16, 2008

U. S. Army Corps of Engineers
3331 Heritage Trace Drive, Suite 105
Wake Forest, NC 27587

ATTN: Mr. John Thomas
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 23, 33, and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 405 over North Potts Creek on SR 1147 in Davidson County, Federal Aid Project No. BRSTP-1147(6); State Project No. 8.2604701; Division 9; TIP No. B-4097
$240.00 debit from WBS 33455.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 405 on SR 1147 over North Potts Creek. There will be 0.05 acres of permanent riparian wetland impacts, 0.06 acres of temporary riparian wetland impacts, 30 feet of temporary surface water impacts, and 75 feet of permanent surface water impacts.

Please see the enclosed copies of the permit drawings, design plans, Pre-Construction Notification (PCN), and Ecosystem Enhancement Program (EEP) acceptance letter for the above-referenced project. The Categorical Exclusion (CE) was completed for this project in April 2007, it was distributed shortly thereafter. Additional copies are available upon request.

The Jurisdictional Determination (JD) for B-4097 has expired on August 20, 2008. This project is currently scheduled for letting on March 17, 2009. The NCDOT requests a reverification of our JD for the above mentioned project and declines a Rapanos review. Jurisdictional resources have not changed from the original JD. A copy of the JD is enclosed.

This project calls for a letting date of March 17, 2009 and a review date of January 27, 2009. This project has a date of availability of April 28, 2009. It is expected that the contractor will begin construction shortly after that date.

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

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 James Pflaum at (919) 715-7217.

Sincerely,

E. L. Lusk

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

w/attachment
- Mr. Brian Wrenn, NCDWQ (5 copies)
- Ms. Marla Chambers, NCWRC
- Ms. Marella Buncick, USFWS

w/o attachment (see permit website for attachments)
- Dr. David Chang, P.E., Hydraulics
- Mr. Mark Staley, Roadside Environmental
- Mr. Victor Barbour, P.E., Project Services Unit
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. S. P. Ivey, P.E., Division Engineer
- Mr. Kent Boyer, DEO
- 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
- Mr. Dennis Pipkin, PDEA
- Ms. Beth Harmon, EEP
- Mr. Todd Jones, NCDOT External Audit Branch

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: 23, 33

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

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

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: North Carolina Department of Transportation
   1598 Mail Service Center, Raleigh, NC 27699

   Telephone Number: 919-733-3141 Fax Number: 919-715-5501
   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: _____
   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.405 over North Potts Creek on SR 1147

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4097

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Davidson Nearest Town: Meadowview
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers/names, landmarks, etc.): SR 1147 (Old Salisbury Road) south west out of Lexington through Meadowview over North Potts Creek

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): _____ °N _____ °W

6. Property size (acres): Project Study Area is approximately 5.0 acres.

7. Name of nearest receiving body of water: Yadkin River, High Rock Lake

8. River Basin: Yadkin (HUC 03040103)
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: rural, residential housing

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

A 180-foot long 33-foot wide cord slab bridge in approximately the same location and roadway elevation as the existing structure. The new bridge will span North Potts Creek, avoiding the need for bents in the creek. An on-site detour will be used to route traffic during construction. The on-site detour bridge will be approximately 70-foot long, 30-foot wide, and 25-foot south of Bridge No. 405. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other equipment necessary for roadway construction.

11. Explain the purpose of the proposed work: Improve safety and efficiency of overall traffic operations.

IV. Prior Project History

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

Jurisdictional Determination 8/20/2003 USACE Action ID # 20031038
Expiration 8/20/2008

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.

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:

Permanent Impacts: There will be 0.05 acres of riparian wetland impacts due to the placement of a 2:1 roadway fill slope at Site 3. There will be 75 feet of surface water impacts due to the placement of fill and bridge piles at Site 1.

Temporary Impacts: There will be 0.06 acres of temporary riparian wetland impacts due to the placement of fill for the on-site detour at Site 3. There will be 30 feet (0.01 acres) of temporary channel impacts to North Potts Creek due to the placement of a temporary rock causeway at Site 1.

Hand Clearing: There will be 0.02 acres of hand clearing in riparian wetlands at Sites 2 and 3.

Utility Impacts: There will be no impacts to surface waters or wetlands from sewer, water, electric or other utilities associated with this bridge replacement project.

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)
Site 3	Permanent Fill	herbaceous	Yes	125 feet	0.05
Site 3	Temporary Fill	herbaceous	Yes	125 feet	0.06
Total Wetland Impact (acres)					0.11

3. List the total acreage (estimated) of all existing wetlands on the property: 0.60 acres

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

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Site 1	North Potts Creek	Temporary Fill	Perennial	20 feet	30	0.01
Site 4	UT to North Potts Creek	Permanent Fill	Perennial	6 feet	75	<0.01
Total Stream Impact (by length and acreage)					105	<0.02

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

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

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

Stream Impact (acres):	<0.02
Wetland Impact (acres):	0.11
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	<0.13
Total Stream Impact (linear feet):	105

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.
No Impacts to isolated waters occur on this project. One isolated wetland is located east of North Potts Creek at the end of detour construction work station 19+58.49.

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.

The new bridge will span North Potts Creek with no bents in the water. NCDOT will implement Best Management Practices for Bridge Demolition and Removal. NCDOT BMP's for the protection of surface waters will be strictly enforced during the construction of this project.

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 (see DWQ website for most current version.).

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 for the 75 feet of permanent stream impacts are proposed at a 1:1 ratio. UT to North Potts Creek is incised, impacted from heavy sedimentation, and trash (tires). No mitigation is proposed for the permanent riparian wetland impacts (0.05 acres) because the impacts are minimal. The wetland at site 3 has been significantly disturbed by livestock grazing and frequent mowing. It is a low quality wetland lacking a canopy and shrub layer with moderate herbaceous coverage.

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://www.nceep.net/pages/inlieureplace.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): 75
   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_____)? Yes ☐ No ☒

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

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

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

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

_____

_____

XI. Stormwater (required by DWQ)

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

_____

_____

XII. Sewage Disposal (required by DWQ)

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).

As of January 31, 2008 the United States Fish and Wildlife Service lists two federally protected species for Davidson County, the Bog turtle and Schweinitz's sunflower. All biological conclusions in the Categorical Exclusion remain valid. No further documentation or concurrence from the USFWS is required.

E. L. Luck 9.24.08

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

Ecosystem Enhancement PROGRAM

September 4, 2008

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4097, Replace Bridge Number 405 over North Potts Creek on SR 1147 (Salisbury Road), Rowan County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the stream mitigation for the subject project. Based on the information supplied by you on August 29, 2008, the impacts are located in CU 03040103 of the Yadkin River Basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Warm Stream: 75 feet

EEP commits to implementing sufficient stream restoration mitigation credits to offset the impacts associated with this project by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, fully executed on March 8, 2007. If the above referenced stream impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
EEP Director

cc: Mr. John Thomas, USACE – Raleigh Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: B-4097

COPY

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: 200321038; TIP B-4097 **County:** Davidson

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Project Proponent:	NCDOT	**Consultant:**	HSMM
Address:	ATTN: Gregory J. Thorpe, Ph.D. Environmental Management Director, PDEA 1548 Mail Service Center Raleigh, NC 27699-1548		ATTN: Ms. Wendee Smith 1305 Navaho Drive, Ste. 303 Raleigh, North Carolina 2760[illegible]
Telephone No.:	(919) 733-7844, x237 (B. Goodwin)		(919) 878-5250

Location of Property (waterbody, Highway name/number, town, etc.): Study area for replacement of Bridge No. 405 (B-4097)on SR 1147 (Old US 29-70) over North Potts Creek, southwest of Lexington, North Carolina.

Basis for Determination: The site contains stream channels of North Potts Creek, a tributary of the Yadkin River, with indicators of ordinary high water marks, and wetlands adjacent to North Potts Creek.

Indicate Which of the Following Apply:

____ There are waters of the U.S., to include wetlands, on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.

____ Because of the size of your property and our present workload, our identification and delineation of your wetlands cannot be accomplished in a timely manner. You may wish to obtain a consultant to obtain a more timely delineation of the wetlands. Once the consultant has flagged a wetland line on the property, Corps staff will review it, and, if it is accurate, we strongly recommend that you have the line surveyed for final approval by the Corps. The Corps will not make a final jurisdictional determination on your property without an approved survey.

__X__ The waters of the U.S., to include wetlands, within the study area limits, have been delineated by your consultant, I have reviewed the delineation in the field on February 11, 2003, and the delineation as shown on the attached drawing has been determined by the Corps to be accurate, with the exception that Wetland WB1, in the northeast quadrant of the study area, is an isolated wetland, with no surface water connection to waters of the U.S. and therefore, is not subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

____ There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

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

Eric Alsmeyer **at telephone number** (919) 876 - 8441 extension 23.

Project Manager Signature [signature]

Date August 20, 2003 **Expiration Date** August 20, 2008

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

CF: Consultant - *

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NCDOT, Division of Highways	File Number: 200321038/B-4097	Date: August 20, 2003
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Eric C. Alsmeyer, Regulatory Project Manager U.S. Army Corps of Engineers, Wilmington District Raleigh Regulatory Field Office 6508 Falls of Neuse Road, Suite 120 Raleigh, North Carolina 27615-6814	If you only have questions regarding the appeal process you may also contact: Mr. Arthur Middleton, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801

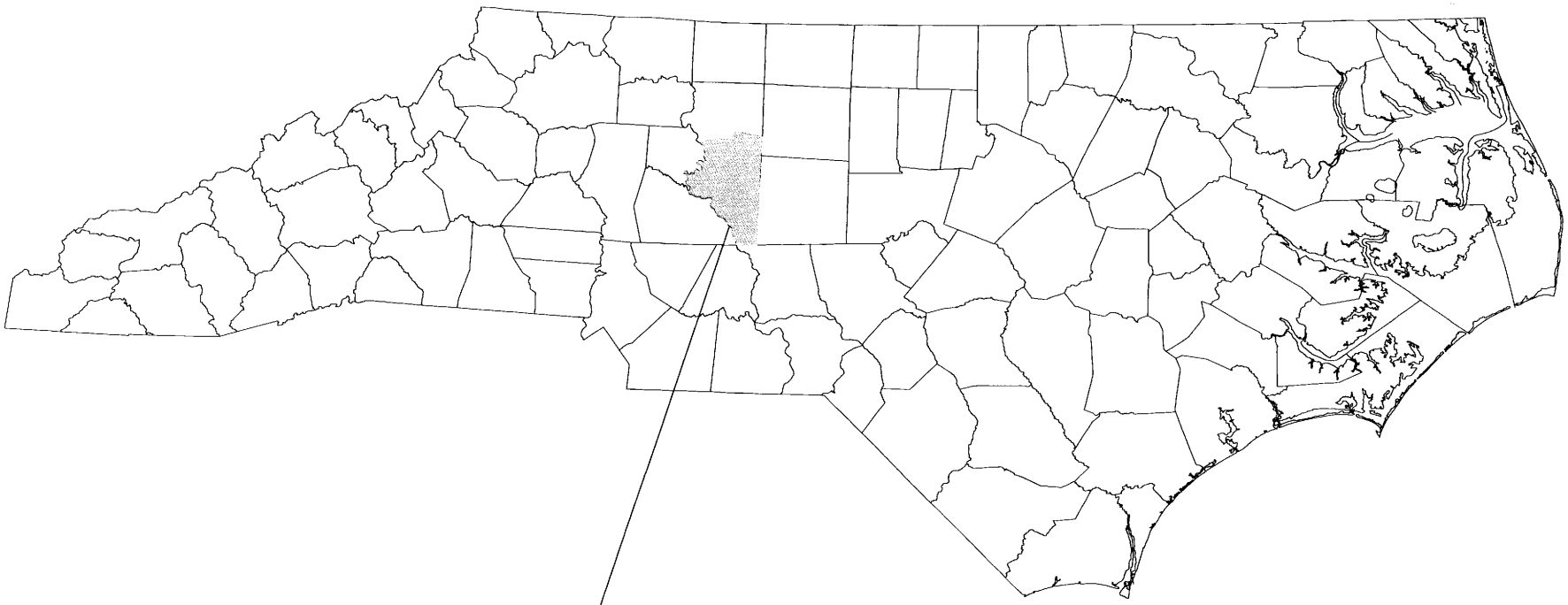
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

DIVISION ENGINEER:
Commander
U.S. Army Engineer Division, South Atlantic
60 Forsyth Street, Room 9M15
Atlanta, Georgia 30303-3490


W1
(UI)
WB1
(UBL)
Area
in question
B-4097
DAVIDSON CO.

COUNTY LOCATION VICINITY MAP



SITE LOCATION
DAVIDSON COUNTY

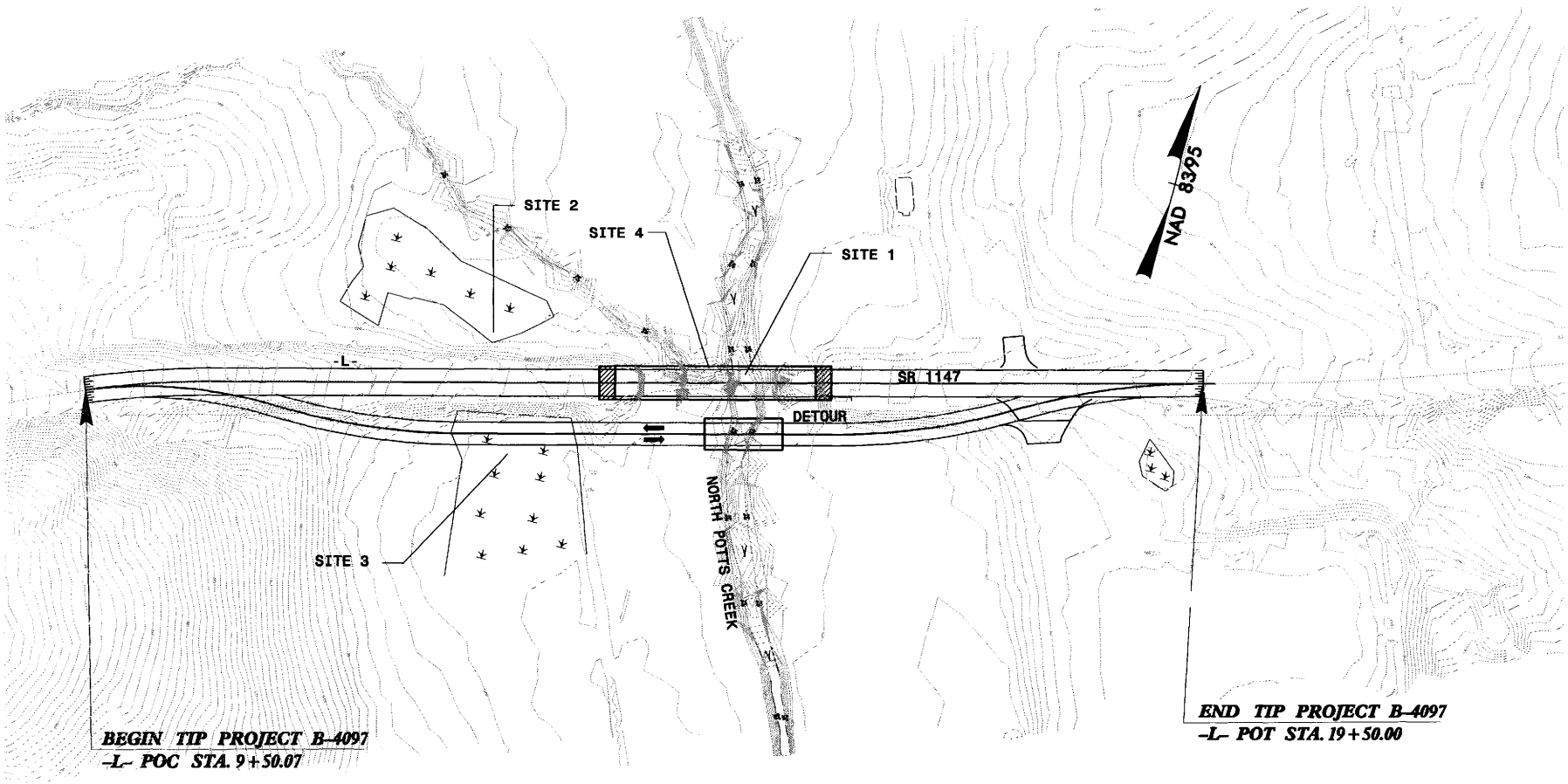
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY

PROJECT: 33455.1.1 (B-4097)

BRIDGE NO. 405 OVER
NORTH POTTS CREEK ON SR 1147

Permit Drawing
Sheet 1 of 11

8 / 01 / 08



SITE LOCATION MAP

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

PROJECT: 33455.1.1 (B-4097)

BRIDGE NO. 405 OVER
NORTH POTTS CREEK ON SR 1147

Permit Drawing
Sheet 2 of 11

8 / 01 / 08

PROPERTY OWNERS

PARCEL	OWNER NAME	ADDRESS
3	FRANK S. STOKES ET ALS	142 MICHAEL ROAD LEXINGTON, NC 27295
2	FRANK S. STOKES AND WIFE RACHEL F. STOKES	142 MICHAEL ROAD LEXINGTON, NC 27295

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

DAVIDSON COUNTY
PROJECT: 33455.1.1 (B-4097)

BRIDGE NO. 405 OVER
NORTH POTTS CREEK ON SR 1147

Permit Drawing
Sheet 3 of 11

8/01/08

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L-15+30 TO 15+40 LT / RT	1 SPAN@40', 2@50', 1 @ 40', 21" CORED SLAB BRIDGE							0.010		30	
2	-L-13+00 TO 13+44 LT	EMBANKMENT					<0.01					
3	-L-12+79 TO 13+85 RT	EMBANKMENT	0.050									
3	-DET- 13+30 TO 14+45 RT	EMBANKMENT		0.060			0.020					
4	-L-14+65 TO 15+25 LT	BRIDGE PILES						<0.01		75		
TOTALS:			0.050	0.060	0.000	0.000	0.020	0.000	0.010	75.000	30.000	0.000

Permit Drawing
Sheet 4 of 11

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT 33455.1.1 (B-4097)
BRIDGE NO. 405 OVER
NORTH POTTS CREEK ON SR 1147
8/1/2008

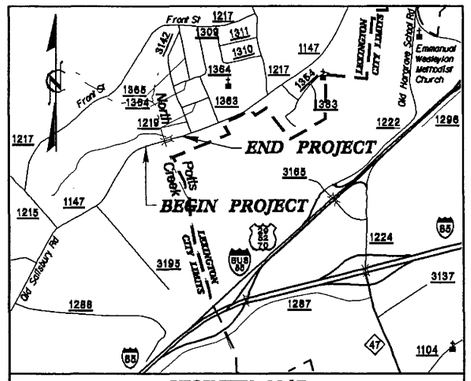
ATN Revised 3/31/05

09/08/99

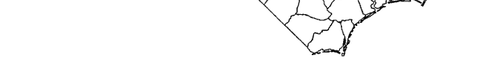
TIP PROJECT: B-4097

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology Sheet



VICINITY MAP



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

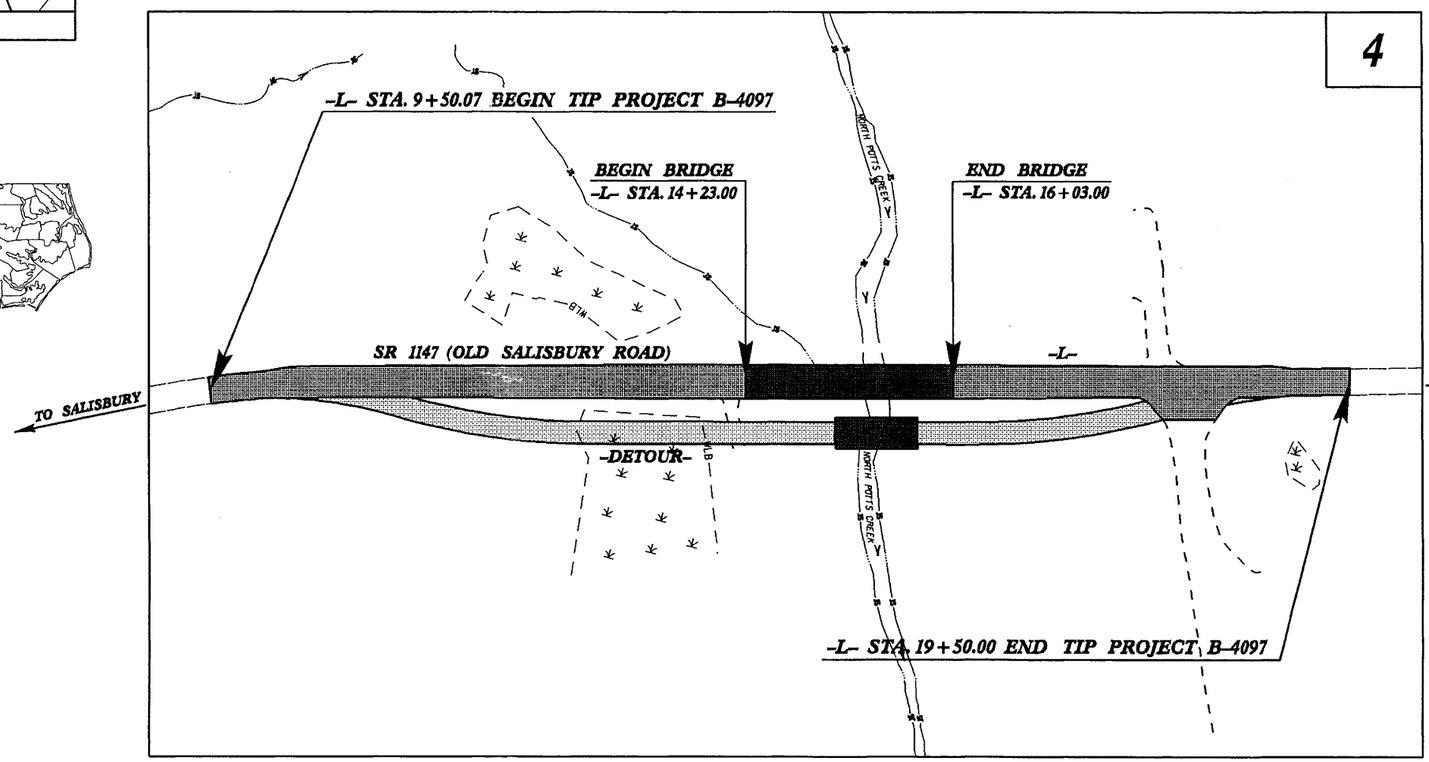
DAVIDSON COUNTY

LOCATION: BRIDGE NO. 405 OVER NORTH POTTS CREEK AND APPROACHES ON SR 1147 (OLD SALISBURY ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4097	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33455.1.1	BRSTP-1147(6)	P.E.	
33455.2.1	BRSTP-1147(6)	R/W & UTIL.	

Permit Drawing
Sheet 5 of 11



NAD 83/95

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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 2009 = 3700 VPD
ADT 2030 = 5400 VPD
DHV = 10 %
D = 60 %
*T = 4 %
V = 50 MPH
* (TTST 1% + DUAL 3%)
FUNC. CLASS. = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4097 = 0.155 MILE
LENGTH STRUCTURE TIP PROJECT B-4097 = 0.034 MILE
TOTAL LENGTH TIP PROJECT B-4097 = 0.189 MILE

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 23, 2008

LETTING DATE: MARCH 17, 2009

GLENN W. MUMFORD, P.E.
PROJECT ENGINEER

JEFFREY L. TEAGUE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

23-JUL-2008 09:03
R:\Roadway\Proj\b4097_rdy_tsh.dgn
$$$$USERNAME$$$$

8/17/99

REVISIONS

$$$$$$SYSTIME$$$$$$

$$$$$$SYSDESCRIPTION$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4097	2-A
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

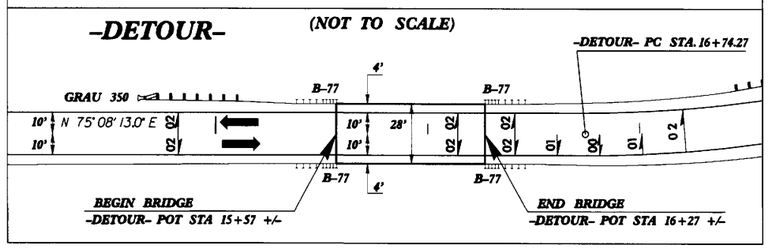
Permit Drawing
Sheet 6 of 11

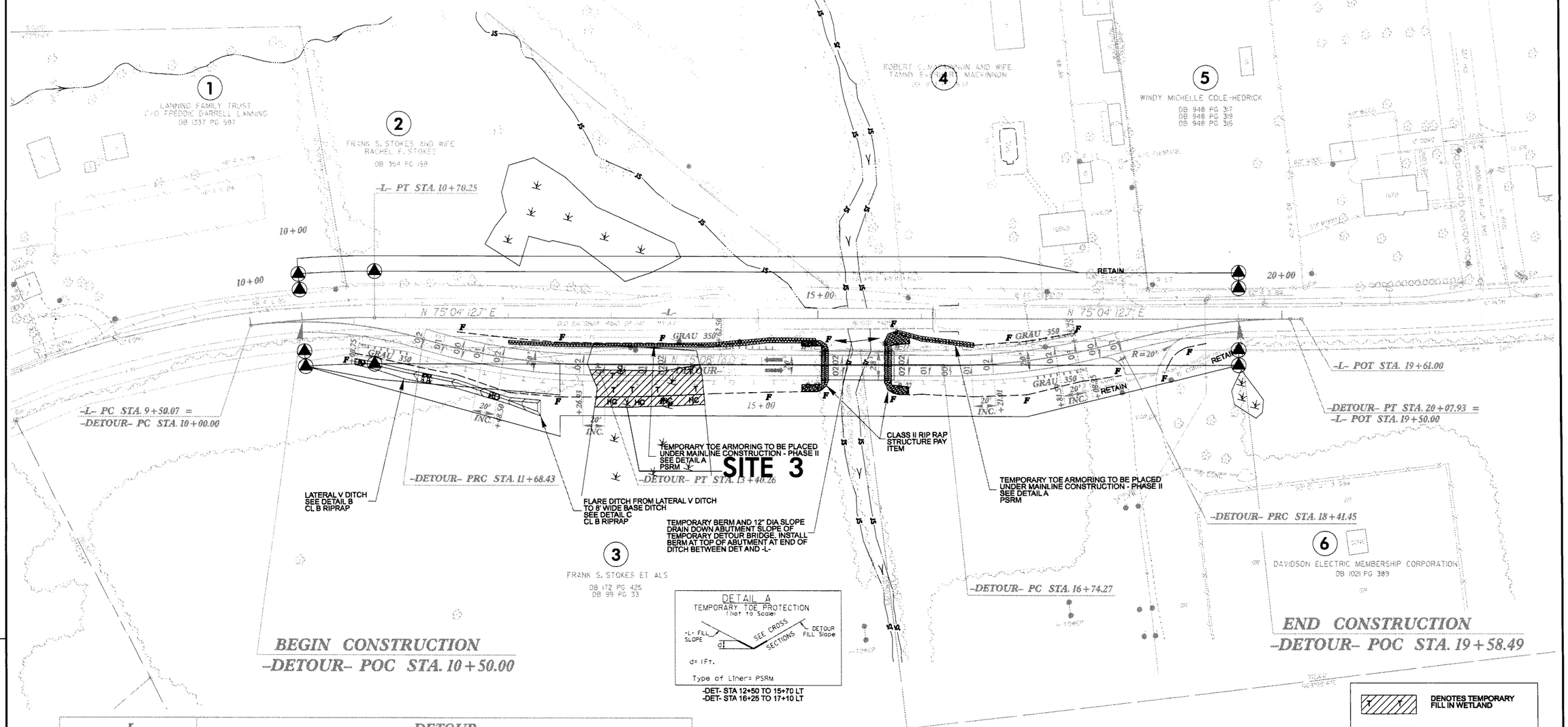
DETOUR

NAD 83/95

SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

-DETOUR- (NOT TO SCALE)



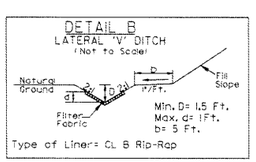


DETAIL A
TEMPORARY TOE PROTECTION
(Not to Scale)

-DET- STA 12+50 TO 15+70 LT
-DET- STA 16+25 TO 17+10 LT

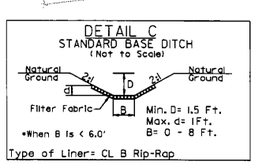
-L-	-DETOUR-			
PI STA.10+10.25	PI STA.10+85.48	PI STA.12+54.94	PI STA.17+58.41	PI STA.19+25.23
N 67° 25' 08.3" E (BACK)	N 67° 25' 08.3" E (BACK)	Δ = 16° 24' 30.0" (LT)	Δ = 15° 57' 52.5" (LT)	N 75° 04' 12.7" E (AHEAD)
Δ = 7° 39' 04.3" (RT)	Δ = 24° 07' 34.8" (RT)	D = 9° 32' 57.5"	D = 9° 32' 57.5"	Δ = 15° 53' 59.2" (RT)
D = 6° 21' 58.3"	D = 14° 19' 26.2"	L = 171.83'	L = 167.18'	D = 9° 32' 57.5"
L = 120.18'	L = 168.43'	T = 86.51'	T = 84.14'	L = 166.48'
T = 60.16'	T = 85.48'	R = 600.00'	R = 600.00'	T = 83.76'
R = 900.00'	R = 400.00'	SE = 0.02	SE = 0.02	R = 600.00'
SE = SEE PLANS	SE = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS			RO = SEE PLANS

DETAIL B
LATERAL "V" DITCH
(Not to Scale)



FROM -DET- STA 11+00 TO STA.12+50 RT

DETAIL C
STANDARD BASE DITCH
(Not to Scale)



FROM -DET- STA.12+50 TO -DET- STA.12+75 RT

DENOTES TEMPORARY FILL IN WETLAND

DENOTES HAND CLEARING IN WETLAND

NOTES:

1.) FOR -L- PLAN VIEW SEE SHEET 4
2.) FOR -L- PROFILE SEE SHEET 5
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

PROJECT REFERENCE NO.	SHEET NO.
B-4097	2-A
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

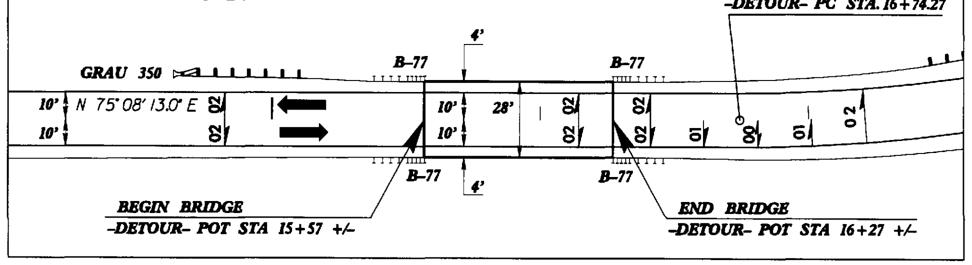
Permit Drawing
Sheet 7 of 11

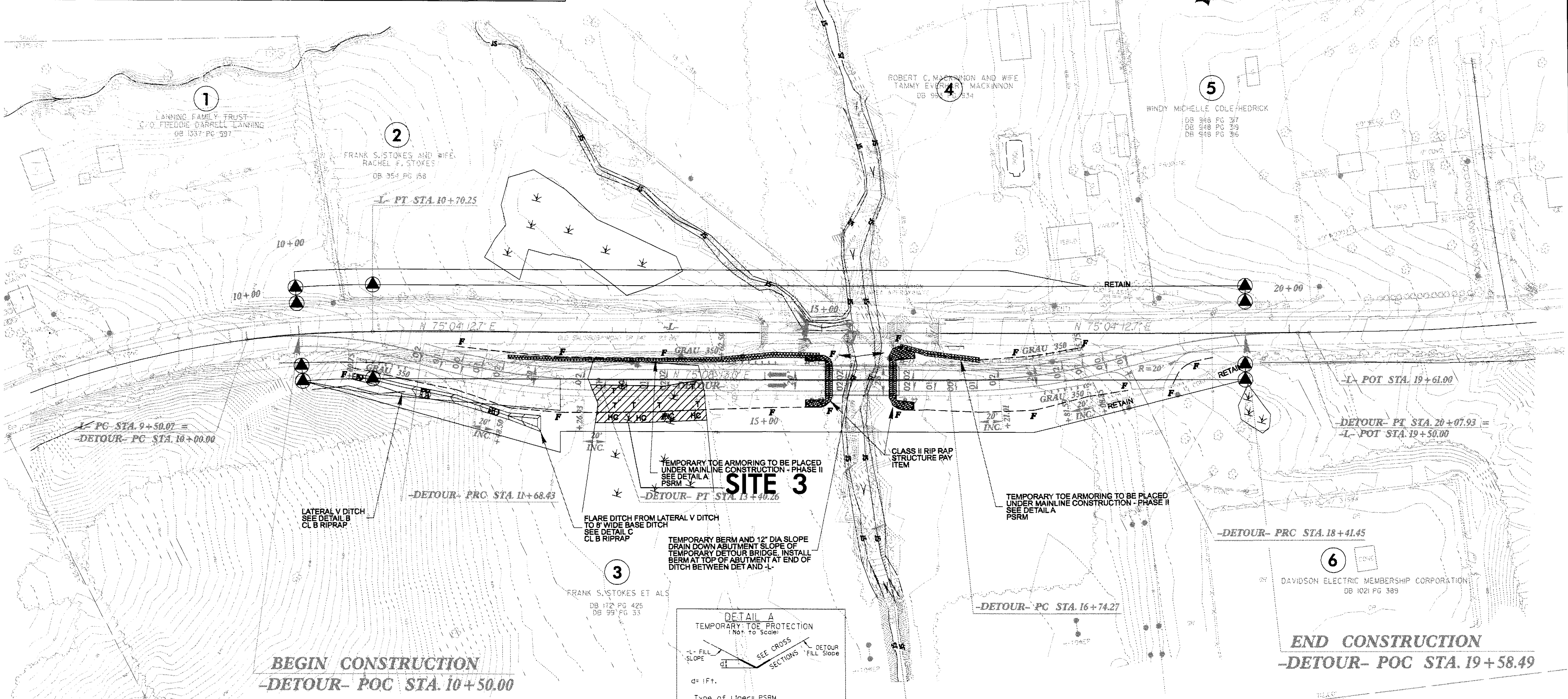
8/17/99

REVISIONS

DETOUR

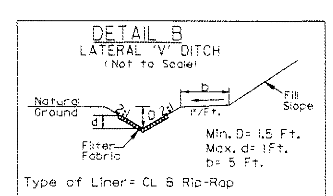
SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP



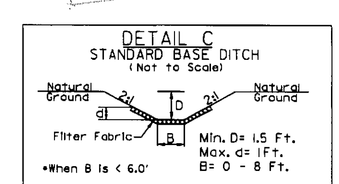


-DET- STA 12+50 TO 15+70 LT
-DET- STA 16+25 TO 17+10 LT

-L-	-DETOUR-			
PI STA.10+10.25	PI STA.10+85.48	PI STA.12+54.94	PI STA.17+58.41	PI STA.19+25.23
N 67° 25' 08.3" E (BACK)	N 67° 25' 08.3" E (BACK)	Δ = 16° 24' 30.1" (LT)	Δ = 15° 57' 52.5" (LT)	N 75° 04' 12.7" E (AHEAD)
Δ = 7° 39' 04.3" (RT)	Δ = 24° 07' 34.8" (RT)	D = 9° 32' 57.5"	D = 9° 32' 57.5"	Δ = 15° 53' 52.2" (RT)
D = 6° 21' 58.3"	D = 14° 19' 26.2"	L = 171.83'	L = 167.18'	D = 9° 32' 57.5"
L = 120.18'	L = 168.43'	T = 86.51'	T = 84.14'	L = 166.48'
T = 60.18'	T = 85.48'	R = 600.00'	R = 600.00'	T = 83.78'
R = 900.00'	R = 400.00'	SE = 0.02	SE = 0.02	R = 600.00'
SE = SEE PLANS	SE = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS			RO = SEE PLANS



FROM -DET- STA 11+00 TO STA.12+50 RT



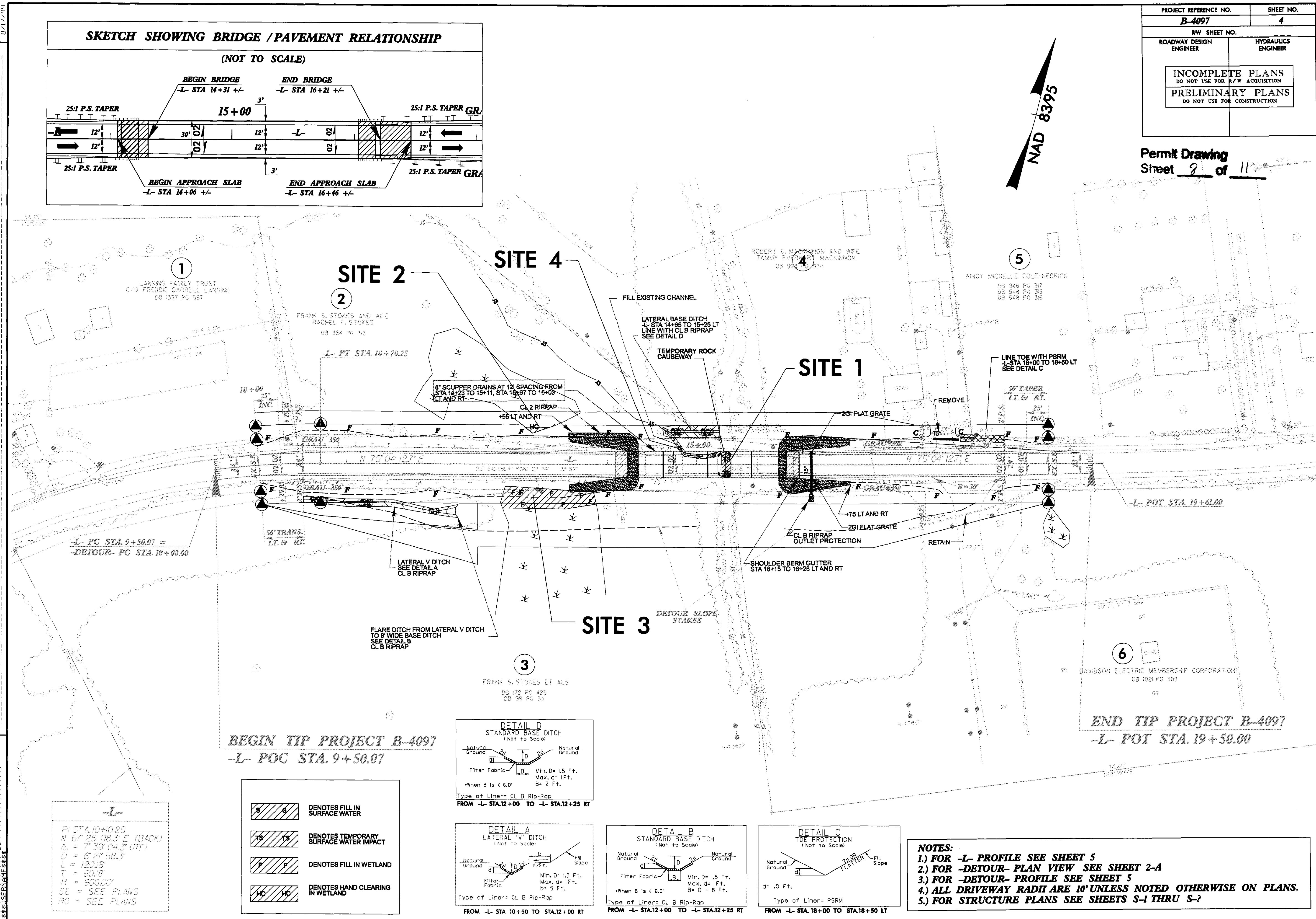
FROM -DET- STA.12+50 TO -DET- STA.12+75 RT

T T	DENOTES TEMPORARY FILL IN WETLAND
HC HC	DENOTES HAND CLEARING IN WETLAND

NOTES:

1.) FOR -L- PLAN VIEW SEE SHEET 4
2.) FOR -L- PROFILE SEE SHEET 5
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$


PROJECT REFERENCE NO. B-4097
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
Permit Drawing
Sheet 8 of 11
8/17/99
REVISIONS
SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP
(NOT TO SCALE)
BEGIN BRIDGE
-L- STA 14+31 +/-
END BRIDGE
-L- STA 16+21 +/-
25:1 P.S. TAPER
15+00
BEGIN APPROACH SLAB
-L- STA 14+06 +/-
END APPROACH SLAB
-L- STA 16+46 +/-
NAD 83/95
SITE 1
SITE 2
SITE 3
SITE 4
LANNING FAMILY TRUST
C/O FREDDIE DARRELL LANNING
DB 1337 PG 597
FRANK S. STOKES AND WIFE
RACHEL F. STOKES
DB 354 PG 158
ROBERT C. MACKINNON AND WIFE
TAMMY EVERHART MACKINNON
WINDY MICHELLE COLE-HEDRICK
DB 948 PG 317
DB 948 PG 319
DB 948 PG 316
FRANK S. STOKES ET ALS
DB 172 PG 425
DB 99 PG 33
DAVIDSON ELECTRIC MEMBERSHIP CORPORATION
DB 1021 PG 389
-L- PT STA. 10+70.25
FILL EXISTING CHANNEL
LATERAL BASE DITCH
-L- STA 14+65 TO 15+25 LT
LINE WITH CL B RIPRAP
SEE DETAIL D
TEMPORARY ROCK CAUSEWAY
6" SCUPPER DRAINS AT 12' SPACING FROM STA 14+23 TO 15+11, STA 15+67 TO 16+03 LT AND RT
CL 2 RIPRAP
+55 LT AND RT
2GI FLAT GRATE
REMOVE
LINE TOE WITH PSRM
-L-STA 18+00 TO 18+50 LT
SEE DETAIL C
50' TAPER LT. & RT.
N 75° 04' 12.7" E
-L- POT STA. 19+61.00
+75 LT AND RT
CL B RIPRAP
OUTLET PROTECTION
RETAIN
SHOULDER BERM GUTTER
STA 16+15 TO 16+28 LT AND RT
-L- PC STA. 9+50.07 =
-DETOUR- PC STA. 10+00.00
50' TRANS. LT. & RT.
LATERAL V DITCH
SEE DETAIL A
CL B RIPRAP
FLARE DITCH FROM LATERAL V DITCH
TO 8' WIDE BASE DITCH
SEE DETAIL B
CL B RIPRAP
DETOUR SLOPE STAKES
BEGIN TIP PROJECT B-4097
-L- POC STA. 9+50.07
END TIP PROJECT B-4097
-L- POT STA. 19+50.00
-L-
PI STA.10+10.25
N 67° 25' 08.3" E (BACK)
Δ = 7° 39' 04.3" (RT)
D = 6° 21' 58.3"
L = 120.18'
T = 60.18'
R = 900.00'
SE = SEE PLANS
RO = SEE PLANS
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY SURFACE WATER IMPACT
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING IN WETLAND
DETAIL D
STANDARD BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1Ft.
B= 2 Ft.
*When B is < 6.0'
Type of Liner= CL B Rip-Rap
FROM -L- STA.12+00 TO -L- STA.12+25 RT
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1Ft.
b= 5 Ft.
Type of Liner= CL B Rip-Rap
FROM -L- STA 10+50 TO STA.12+00 RT
DETAIL B
STANDARD BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1Ft.
B= 0 - 8 Ft.
*When B is < 6.0'
Type of Liner= CL B Rip-Rap
FROM -L- STA.12+00 TO -L- STA.12+25 RT
DETAIL C
TOE PROTECTION
(Not to Scale)
2:1 OR FLATTER
d= 1.0 Ft.
Type of Liner= PSRM
FROM -L- STA. 18+00 TO STA.18+50 LT
NOTES:
1.) FOR -L- PROFILE SEE SHEET 5
2.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

PROJECT REFERENCE NO.	SHEET NO.
B-4097	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

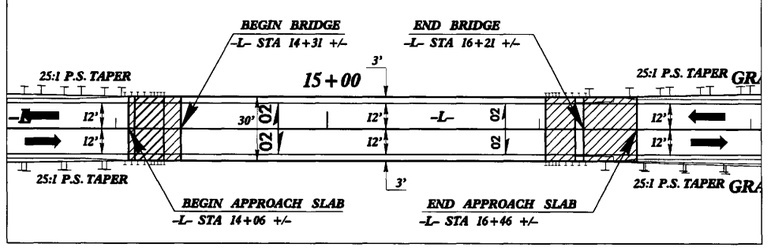
Permit Drawing
Sheet 9 of 11

8/17/99

REVISIONS

SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

(NOT TO SCALE)



NAD 8395

-L-

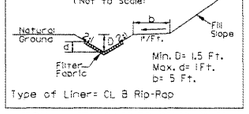
PI STA. 10+10.25
N 67° 25' 08.3" E (BACK)
Δ = 7° 39' 04.3" (RT)
D = 6° 21' 58.3"
L = 120.18'
T = 60.15'
R = 900.00'
SE = SEE PLANS
RO = SEE PLANS

S S	DENOTES FILL IN SURFACE WATER
TS TS	DENOTES TEMPORARY SURFACE WATER IMPACT
F F	DENOTES FILL IN WETLAND
HC HC	DENOTES HAND CLEARING IN WETLAND

DETAIL D
STANDARD BASE DITCH
(Not to Scale)

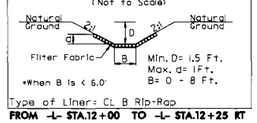
Type of Liner= CL B Rip-Rap
FROM -L- STA.12+00 TO -L- STA.12+25 RT

DETAIL A
LATERAL "V" DITCH
(Not to Scale)



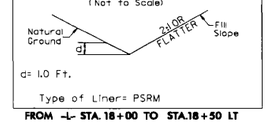
Type of Liner= CL B Rip-Rap
FROM -L- STA 10+50 TO STA.12+00 RT

DETAIL B
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap
FROM -L- STA.12+00 TO -L- STA.12+25 RT

DETAIL C
TOE PROTECTION
(Not to Scale)



Type of Liner= PSRM
FROM -L- STA. 18+00 TO STA.18+50 LT

NOTES:
1.) FOR -L- PROFILE SEE SHEET 5
2.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4097	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing Sheet 10 of 11

DITCH LEGEND

RIGHT DITCH ----------

LEFT DITCH ----------

BM#1 RAILROAD SPIKE IN SOUTHWEST ROOT OF A BLACK GUM
179.60' LT. OF -L- STA. 11+89.44 ELEV. = 661.31' N 742,390 E 1,505,006

BEGIN OVERLAY
-L- STA. 9+50.07

END OVERLAY
BEGIN GRADE
-L- STA. 10+00.00
ELEV. = 675.20'

PI = 12+25.00
EL = 664.54'
VC = 356'
K = 80

-L-

PI = 17+75.00
EL = 662.89'
VC = 245'
K = 86

21" CORED SLAB BRIDGE
1 SPAN @ 40'
2 SPANS @ 50'
1 SPAN @ 40'
℄ -L- STA. 15+13.00
℄ ELEV. = 663.68'
SKEW = 90 DEGREES

BEGIN BRIDGE
-L- STA. 14+23.00

END BRIDGE
-L- STA. 16+03.00

END GRADE
BEGIN OVERLAY
-L- STA. 19+00.00
ELEV. = 666.06'

END OVERLAY
-L- STA. 19+50.00

(-)7.2% (-)3.8% (-)6.0% (-)3.2% (-)14.7374% (-)0.3000% (+)2.5368%

BEGIN DITCH GRADE RT.
-L- STA. 10+50.00
EL = 664.90'

PI = 11+00.000
EL = 663.30'

PI = 11+50.000
EL = 659.40'

PI = 12+00.000
EL = 656.10'

END DITCH GRADE RT.
-L- STA. 12+25.00
EL = 655.30'

END BENT EXCAVATION
(EXCAVATION TO BE USED IN LIEU OF BORROW)
STRUCTURE PAY ITEM

CLASS II RIP RAP
(STRUCTURE PAY ITEM)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1650	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 657.6	FT
BASE DISCHARGE	= 2450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 658.6	FT
OVERTOPPING DISCHARGE	= 7000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 663.3	FT
NORMAL WATER SURFACE ELEVATION	= 649.8	FT
DATE OF SURVEY	= 11/28/2007	
W.S. ELEVATION AT DATE OF SURVEY	= 649.8	FT

NOTES:
1.) FOR -L- PLAN VIEW SEE SHEET 4
2.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

RDY
L
950.000000
620
S
I
NOGAP

-DETOUR-

BEGIN GRADE -DETOUR- STA. 11+28.16
ELEV. = 671.04'

PI = 13+40.00
EL = 659.87'
VC = 420'
K = 65

BEGIN BRIDGE
-DETOUR- STA. 15+57 +/-

END BRIDGE
-DETOUR- STA. 16+27 +/-

END GRADE -DETOUR- STA. 18+87.35
ELEV. = 663.91'

PI = 18+00.00
EL = 662.39'
VC = 75'
K = 77

(-)5.6% (-)2.6% (-)6.6% (-)1.3% (-)15.7465% (+)0.7651% (+)0.7651% (+)1.7441%

BEGIN DITCH GRADE RT.
-DET- STA. 11+00.00
EL = 664.90'

PI = 11+50.000
EL = 662.80'

PI = 12+00.000
EL = 660.80'

PI = 12+50.000
EL = 655.50'

END DITCH GRADE RT.
-DET- STA. 12+75.000
EL = 655.00'

DETOUR BRIDGE HYDRAULIC DATA

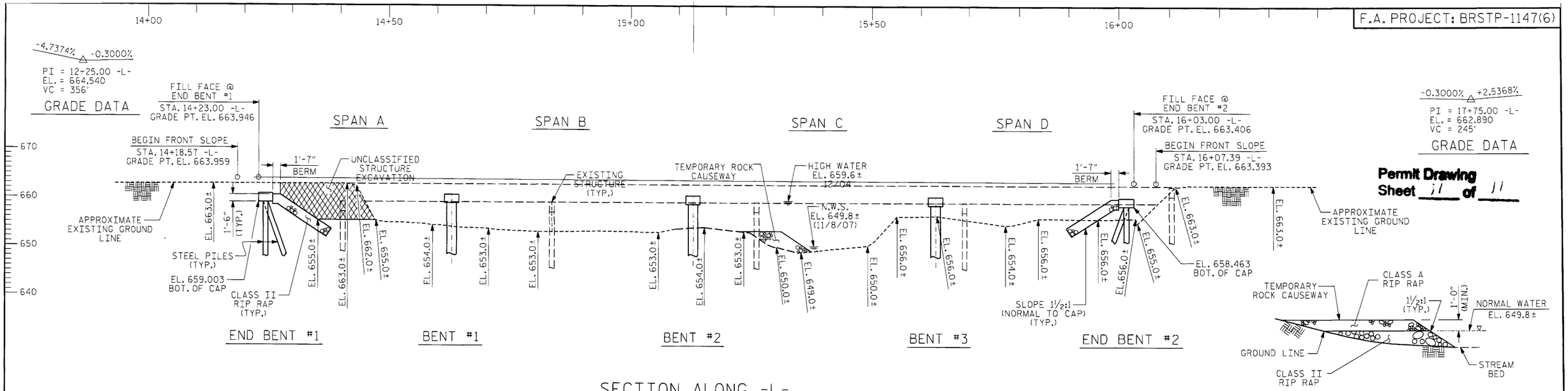
DESIGN DISCHARGE	= 880	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 655.7	FT
BASE DISCHARGE	= 2450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 662.0	FT
OVERTOPPING DISCHARGE	= 2300	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 660.0	FT

NOTES:
1.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A

RDY
DETOUR
950.000000
620

$$$$$$$$$$SYSTIME$$$$$$$$$$
$$$$$$$$$$SYSDUN$$$$$$$$$$
$$$$$$$$$$ENGAGE$$$$$$$$$$

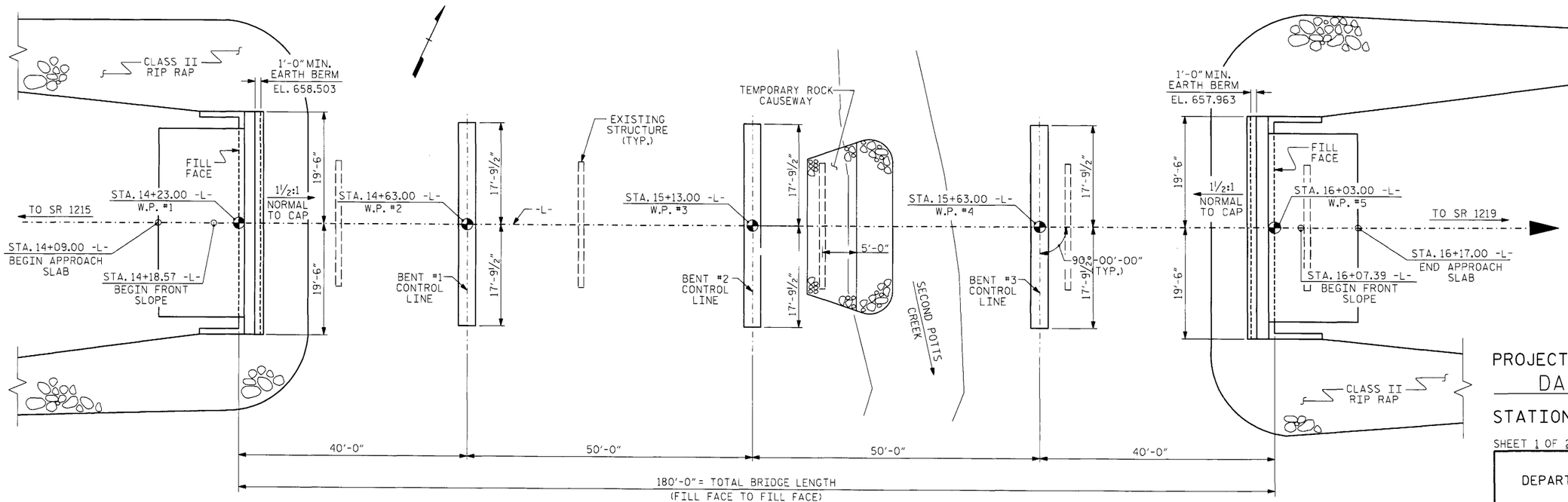
F.A. PROJECT: BRSTP-1147(6)



SECTION ALONG -L-

DETAIL OF TEMPORARY ROCK CAUSEWAY

Permit Drawing Sheet 11 of 11



PLAN

PILES NOT SHOWN IN PLAN VIEW

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

PROJECT NO. B-4097

DAVIDSON COUNTY

STATION: 15+13.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE #405

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING
FOR BRIDGE OVER NORTH POTTS CREEK ON SR 1147 (OLD SALISBURY RD.) BETWEEN SR 1215 & SR 1219

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

DRAWN BY : M.K. BEARD DATE : 1/9/08
CHECKED BY : K.D. LAYNE DATE : 1/22/08

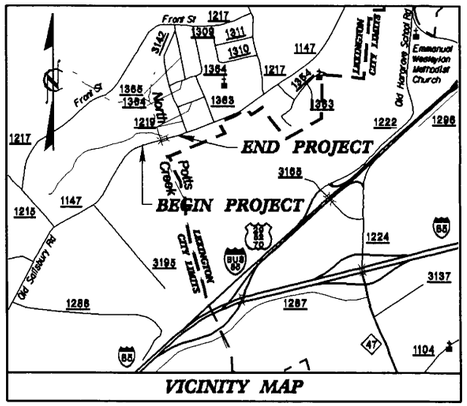
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$

09/08/99

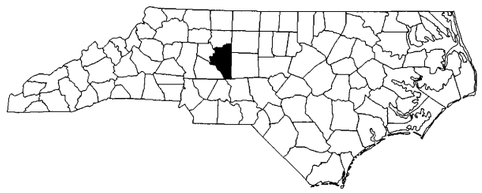
TIP PROJECT: B-4097

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology Sheet



VICINITY MAP



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

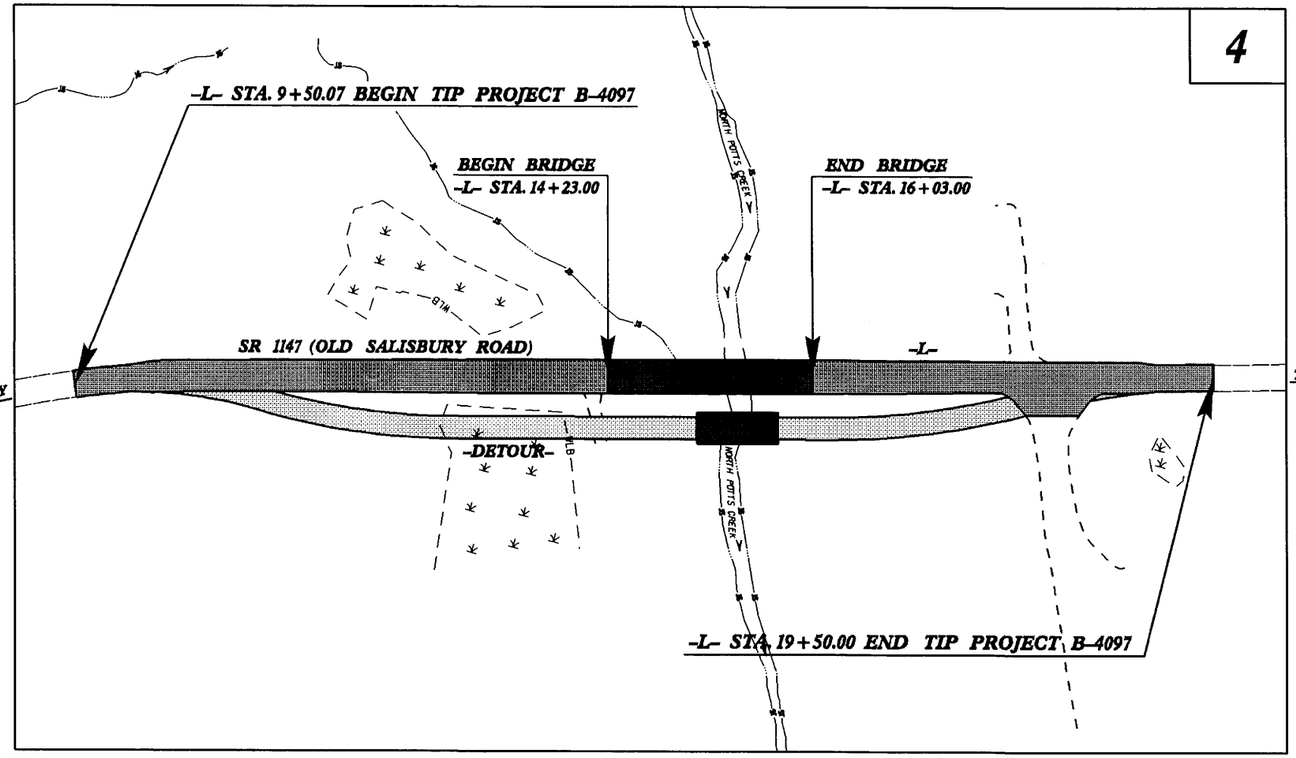
DAVIDSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4097	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33455.1.1	BRSTP-1147(6)	P.E.
33455.2.1	BRSTP-1147(6)	R/W & UTIL.

LOCATION: BRIDGE NO. 405 OVER NORTH POTTS CREEK AND APPROACHES ON SR 1147 (OLD SALISBURY ROAD)

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

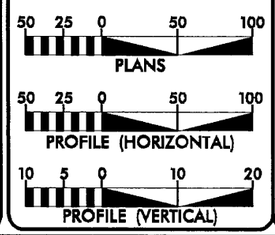


NAD 83 95

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

GRAPHIC SCALES



DESIGN DATA

ADT 2009 = 3700 VPD
ADT 2030 = 5400 VPD
DHV = 10 %
D = 60 %
*T = 4 %
V = 50 MPH
* (TTST 1% + DUAL 3%)
FUNC. CLASS. = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4097	= *0.155*	*MILE*
LENGTH STRUCTURE TIP PROJECT B-4097	= *0.034*	*MILE*
TOTAL LENGTH TIP PROJECT B-4097	= *0.189*	*MILE*

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: *MAY 23, 2008*

LETTING DATE: *MARCH 17, 2009*

GLENN W. MUMFORD, P.E.
PROJECT ENGINEER

JEFFREY L. TEAGUE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

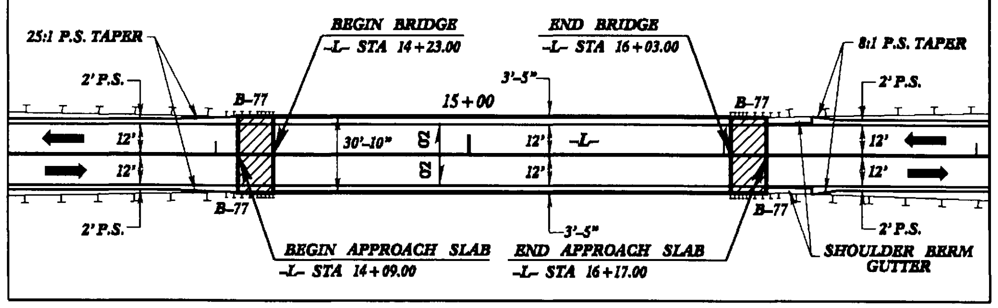
23-JUL-2008 09:03
R:\roadway\projects\b4097_rdy_tsh.dgn
$$$$USERNAME$$$$

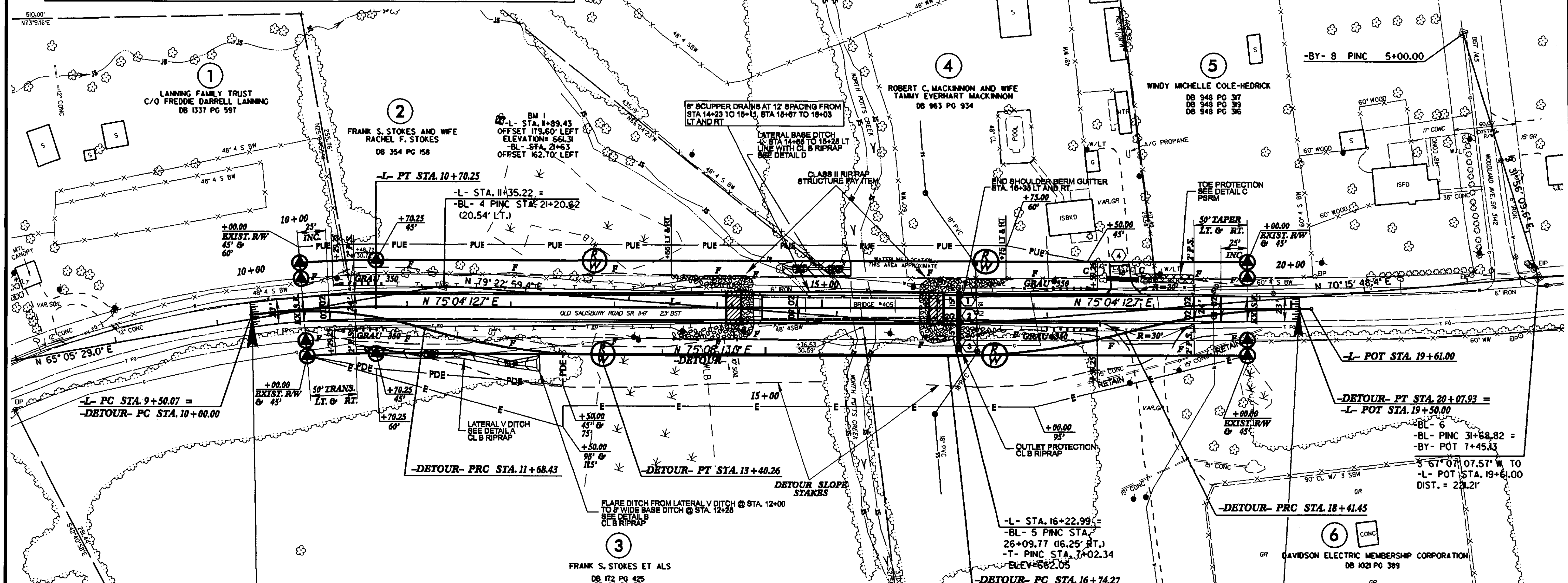
PROJECT REFERENCE NO.	SHEET NO.
B-4097	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

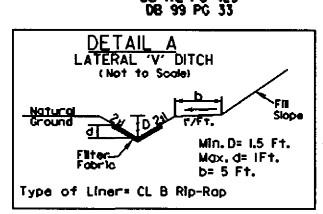
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

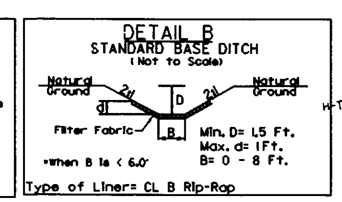
(NOT TO SCALE)





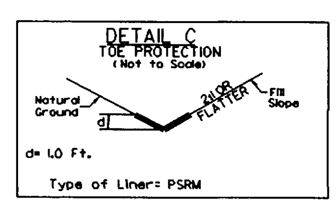


FROM -L- STA 10+50 TO STA.12+00 RT

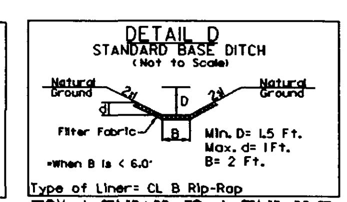


FROM -L- STA.12+00 TO STA.12+25 RT

-L-	-DETOUR-			
PI STA.10+10.25 N 67° 25' 08.3" E (BACK) Δ = 7° 39' 04.3" (RT) D = 6° 21' 58.3" L = 120.18' T = 60.18' R = 900.00' SE = SEE PLANS RO = SEE PLANS	PI STA.10+85.48 N 67° 25' 08.3" E (BACK) Δ = 24° 07' 34.8" (RT) D = 14° 19' 26.2" L = 168.43' T = 85.48' R = 400.00' SE = SEE PLANS RO = SEE PLANS	PI STA.12+54.94 Δ = 16° 24' 30.1" (LT) D = 9° 32' 57.5" L = 171.83' T = 86.51' R = 600.00' SE = 0.02 RO = SEE PLANS	PI STA.17+58.41 Δ = 15° 57' 52.5" (LT) D = 9° 32' 57.5" L = 167.18' T = 84.14' R = 600.00' SE = 0.02 RO = SEE PLANS	PI STA.19+25.23 N 75° 04' 12.7" E (AHEAD) Δ = 15° 53' 52.2" (RT) D = 9° 32' 57.5" L = 166.48' T = 83.78' R = 600.00' SE = SEE PLANS RO = SEE PLANS



FROM -L- STA. 18+00 TO STA.18+50 LT



FROM -L- STA.12+00 TO -L- STA.12+25 RT

NOTES:
1.) FOR -L- PROFILE SEE SHEET 5
2.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

REVISIONS

8/17/99

04-AUG-2008 14:49
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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4097	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 Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- 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 — TCE
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — PH
- 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 — PH
- 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 — PH
- 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/L
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

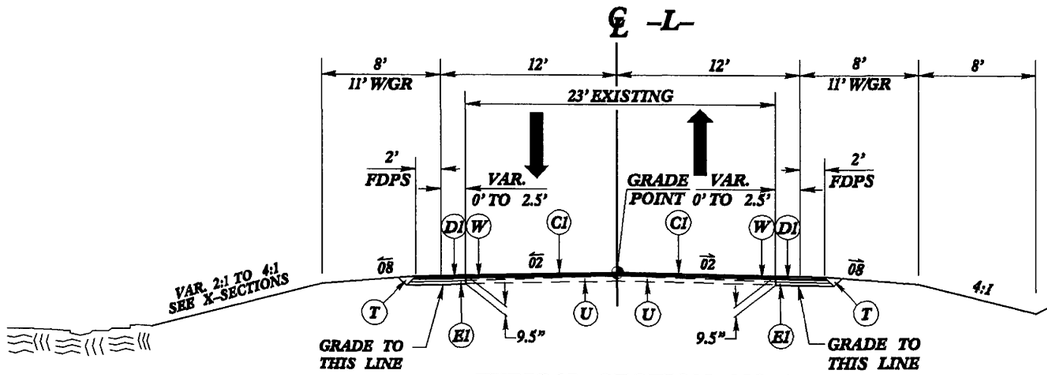
PROJECT REFERENCE NO.	SHEET NO.
B-4097	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAT 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
P1	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YARD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

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



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AT THE FOLLOWING LOCATIONS:

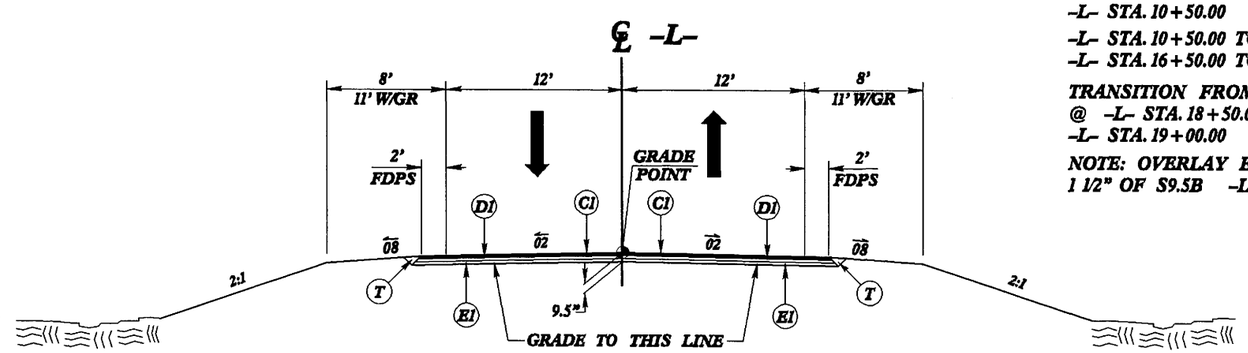
NOTE: OVERLAY EXISTING PAVEMENT WITH 1 1/2" OF S9.5B -L- STA. 9+50.07 TO 10+00.00

TRANSITION FROM EXISTING @ -L- STA. 10+00.00 TO TYPICAL SECTION NO. 1 @ -L- STA. 10+50.00

-L- STA. 10+50.00 TO STA. 11+75.00
-L- STA. 16+50.00 TO STA. 18+50.00

TRANSITION FROM TYPICAL SECTION NO. 1 @ -L- STA. 18+50.00 TO EXISTING @ -L- STA. 19+00.00

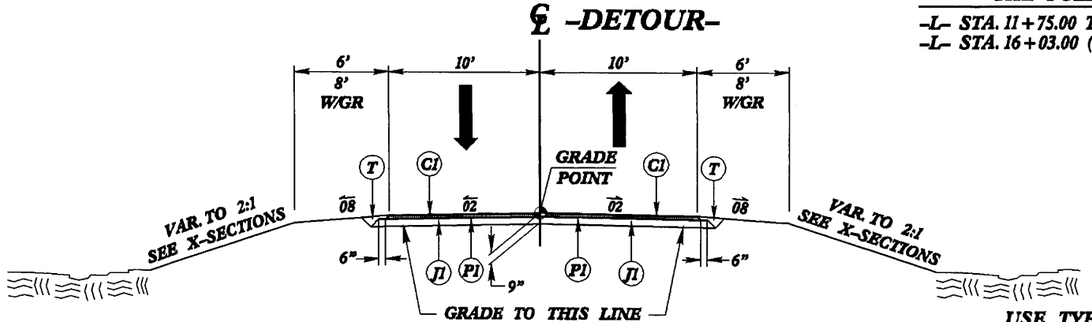
NOTE: OVERLAY EXISTING PAVEMENT WITH 1 1/2" OF S9.5B -L- STA. 19+00.00 TO 19+50.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATIONS:

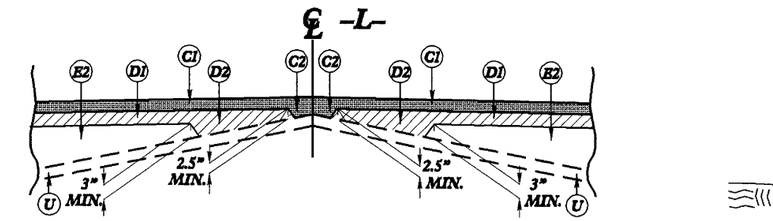
-L- STA. 11+75.00 TO STA. 14+23.00 (BEGIN BRIDGE)
-L- STA. 16+03.00 (END BRIDGE) TO STA. 16+50.00



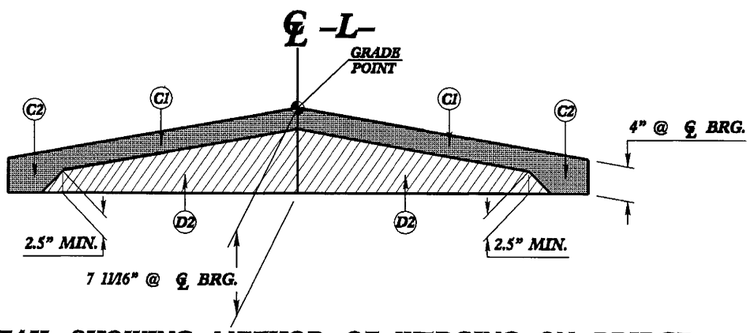
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AT THE FOLLOWING LOCATIONS:

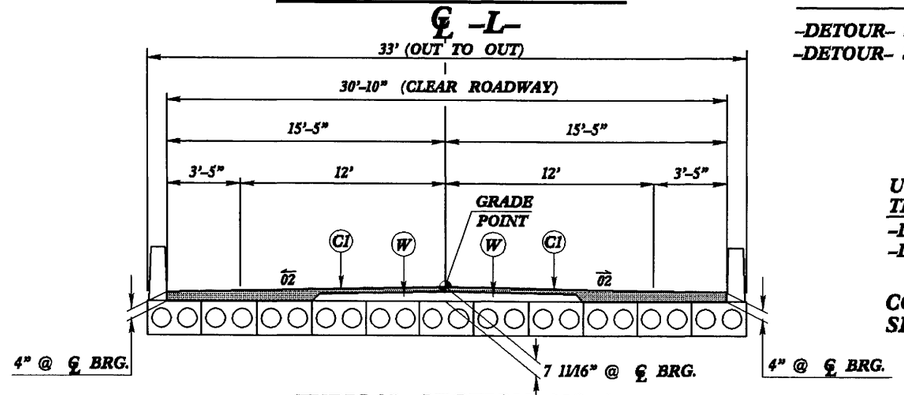
-DETOUR- STA. 11+28.16 TO 15+57.00 +/- (BEGIN BRIDGE)
-DETOUR- STA. 16+27.00 +/- (END BRIDGE) TO 18+87.35



DETAIL SHOWING METHOD OF WEDGING
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1



DETAIL SHOWING METHOD OF WEDGING ON BRIDGE
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 4



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AT THE FOLLOWING LOCATION:

-L- STA. 14+23 (BEGIN BRIDGE) TO
-L- STA. 16+03 (END BRIDGE)

CORED SLAB BRIDGE
SEE STRUCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
B-4097	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETOUR

NAD 83'95

REVISIONS

8/17/2

510.00'
N73°51'16"E

1 LANNING FAMILY TRUST
C/O FREDDIE DARRELL LANNING
DB 1337 PG 597

2 FRANK S. STOKES AND WIFE
RACHEL F. STOKES
DB 354 PG 158

4 ROBERT C. MACKINNON AND WIFE
TAMMY EVERHART MACKINNON
DB 963 PG 934

5 WINDY MICHELLE COLE-HEDRICK
DB 948 PG 347
DB 948 PG 353
DB 948 PG 356

-BY- 8 PINC 5+00.00

BM 1
-L- STA. 11+89.43
OFFSET 173.60' LEFT
ELEVATION= 661.31
-BL- STA. 21+63
OFFSET 162.70' LEFT

-L- PT STA. 10+70.25

-L- STA. 11+35.22 =
-BL- 4 PINC STA. 21+20.62
(20.54' LT.)

-L- STA. 16+22.99 =
-BL- 5 PINC STA.
26+09.77 (16.25' RT.)
-T- PINC STA. 7+02.34
ELEV=682.05

-L- PC STA. 9+50.07 =
-DETOUR- PC STA. 10+00.00

-DETOUR- PRC STA. 11+68.43

-DETOUR- PT STA. 13+40.26

-DETOUR- PC STA. 16+74.27

-DETOUR- PRC STA. 18+41.45

-L- POT STA. 19+61.00

-DETOUR- PT STA. 20+07.93 =
-L- POT STA. 19+50.00

-BL- 6
-BL- PINC 31+68.82 =
-BY- POT 7+45.33

S 67° 07' 07.57" W TO
-L- POT STA. 19+61.00
DIST. = 221.21'

3 FRANK S. STOKES ET ALS
DB 172 PG 425
DB 99 PG 33

6 CONC
DAVIDSON ELECTRIC MEMBERSHIP CORPORATION
DB 1021 PG 389

LATERAL V DITCH
SEE DETAIL B
CL B RIPRAP

TEMPORARY TOE ARMORING TO BE PLACED
DURING MAINLINE CONSTRUCTION
SEE X-SECTIONS
SEE DETAIL A
PSRM

FLARE DITCH FROM LATERAL V DITCH @ STA. 12+50
TO F WIDE BASE DITCH @ STA. 12+78
SEE DETAIL C
CL B RIPRAP

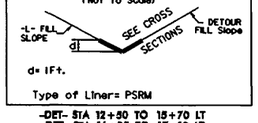
TEMPORARY BERM AND 12" DIA SLOPE
DRAIN DOWN ABUTMENT SLOPE OF
TEMPORARY DETOUR BRIDGE. INSTALL
BERM AT TOP OF ABUTMENT AT END OF
DITCH BETWEEN DET AND -L-

CLASS II RIPRAP
STRUCTURE PAY
ITEM

BEGIN CONSTRUCTION
-DETOUR- POC STA. 10+50.00

END CONSTRUCTION
-DETOUR- POC STA. 19+58.49

DETAIL A
TEMPORARY TOE PROTECTION
(Not To Scale)

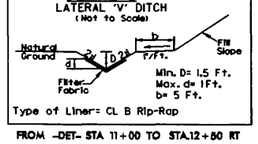


Type of Liner= PSRM

-DET- STA 12+50 TO 15+70 LT
-DET- STA 16+25 TO 17+10 LT

-L-	-DETOUR-			
PI STA.10+10.25	PI STA.10+85.48	PI STA.12+54.94	PI STA.17+58.41	PI STA.19+25.23
N 67° 25' 08.3" E (BACK)	N 67° 25' 08.3" E (BACK)	Δ = 16° 24' 30.1" (LT)	Δ = 15° 57' 52.5" (LT)	N 75° 04' 12.7" E (AHEAD)
Δ = 7° 39' 04.3" (RT)	Δ = 24° 07' 34.8" (RT)	D = 9° 32' 57.5"	D = 9° 32' 57.5"	Δ = 15° 53' 52.2" (RT)
D = 6° 21' 58.3"	D = 14° 19' 26.2"	L = 171.83'	L = 167.18'	D = 9° 32' 57.5"
L = 120.18'	L = 168.43'	T = 86.51'	T = 84.14'	L = 166.48'
T = 60.18'	T = 85.48'	R = 600.00'	R = 600.00'	T = 83.78'
R = 900.00'	R = 400.00'	SE = 0.02	SE = 0.02	R = 600.00'
SE = SEE PLANS	SE = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS			RO = SEE PLANS

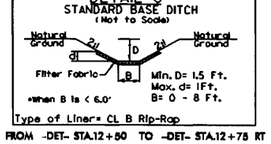
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap

FROM -DET- STA 11+00 TO STA.12+50 RT

DETAIL C
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap

FROM -DET- STA.12+50 TO -DET- STA.12+78 RT

NOTES:
1.) FOR -L- PLAN VIEW SEE SHEET 4
2.) FOR -L- PROFILE SEE SHEET 5
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

23-JUL-2008 09:03
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4097	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

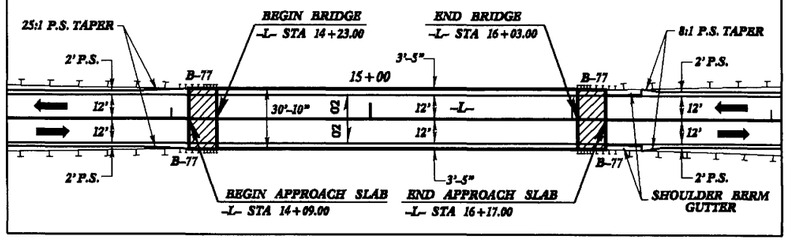
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

(NOT TO SCALE)



NAD 83'95

510.00'
N73°51'16"E

1 LANNING FAMILY TRUST
C/O FREDDIE DARRELL LANNING
DB 1337 PG 597

2 FRANK S. STOKES AND WIFE
RACHEL F. STOKES
DB 354 PG 158

4 ROBERT C. MACKINNON AND WIFE
TAMMY EVERHART MACKINNON
DB 963 PG 934

5 WINDY MICHELLE COLE-HEDRICK
DB 948 PG 347
DB 948 PG 353
DB 948 PG 359
DB 948 PG 36

-BY- 8 PINC 5+00.00

-L- BM 1
-L- STA. 8+89.43
OFFSET 179.60' LEFT
ELEVATION= 661.31
-BL- STA. 21+63
OFFSET 162.70' LEFT

-L- PT STA. 10+70.25

-L- STA. 11+35.22 =
-BL- 4 PINC STA. 21+20.62
(20.54' LT.)

8" SCUPPER DRAINS AT 12' SPACING FROM STA 14+23 TO 15+11, STA 15+87 TO 16+03 LT AND RT

CLASS II RIPRAP STRUCTURE PAY ITEM

END SHOULDER BERM GUTTER STA. 16+35 LT AND RT.

TOE PROTECTION SEE DETAIL C PSRM

50' TAPER LT. & RT.

N 79° 22' 59.4" E

N 75° 04' 12.7" E

N 75° 08' 13.0" E
-DETOUR-

N 70° 15' 48.4" E

N 65° 05' 29.0" E

OLD SALISBURY ROAD SR 1147

BRIDGE #405

-L- PC STA. 9+50.07 =
-DETOUR- PC STA. 10+00.00

-L- POT STA. 19+61.00

-DETOUR- PT STA. 20+07.93 =
-L- POT STA. 19+50.00

BL- 6
-BL- PINC 31+68.82 =
-BY- POT 7+45.43
S 67° 07' 07.57" W TO
-L- POT STA. 19+61.00
DIST. = 221.21'

-DETOUR- PRC STA. 11+68.43

-DETOUR- PT STA. 13+40.26

-DETOUR- PRC STA. 18+41.45

-DETOUR- PC STA. 16+74.27

-L- STA. 16+22.99 =
-BL- 5 PINC STA.
26+09.77 (16.25' RT.)
-T- PINC STA. 7+02.34
EL-EV=662.05

LATERAL V DITCH
SEE DETAIL A
CL B RIPRAP

FLARE DITCH FROM LATERAL V DITCH TO 8' WIDE BASE DITCH @ STA. 12+00
SEE DETAIL B
CL B RIPRAP

DETOUR SLOPE STAKES

OUTLET PROTECTION
CL B RIPRAP

3 FRANK S. STOKES ET ALS
DB 172 PG 425
DB 99 PG 33

6 DAVIDSON ELECTRIC MEMBERSHIP CORPORATION
DB 1021 PG 389

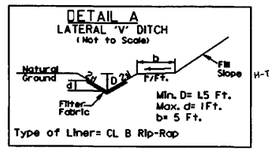
H-TOWER

712.00'
N68°09'41"E

BEGIN TIP PROJECT B-4097
-L- POC STA. 9+50.07

END TIP PROJECT B-4097
-L- POT STA. 19+50.00

DETAIL A
LATERAL "V" DITCH
(Not to Scale)

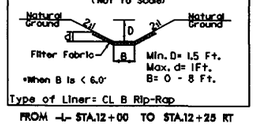


Type of Liner= CL B Rip-Rap

FROM -L- STA 10+50 TO STA.12+00 RT

-L-	-DETOUR-			
PI STA.10+10.25	PI STA.10+85.48	PI STA.12+54.94	PI STA.17+58.41	PI STA.19+25.23
N 67° 25' 08.3" E (BACK)	N 67° 25' 08.3" E (BACK)	Δ = 16° 24' 30.1" (LT)	Δ = 15° 57' 52.5" (LT)	N 75° 04' 12.7" E (AHEAD)
Δ = 7° 39' 04.3" (RT)	Δ = 24° 07' 34.8" (RT)	D = 9° 32' 57.5"	D = 9° 32' 57.5"	Δ = 15° 53' 52.2" (RT)
D = 6° 21' 58.3"	D = 14° 19' 26.2"	L = 171.83'	L = 167.18'	D = 9° 32' 57.5"
L = 120.18'	L = 168.43'	T = 86.51'	T = 84.14'	L = 166.48'
T = 60.18'	T = 85.48'	R = 600.00'	R = 600.00'	T = 83.78'
R = 900.00'	R = 400.00'	SE = 0.02	SE = 0.02	R = 600.00'
SE = SEE PLANS	SE = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS			RO = SEE PLANS

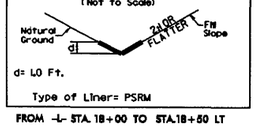
DETAIL B
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap

FROM -L- STA.12+00 TO STA.12+25 RT

DETAIL C
TOE PROTECTION
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 18+00 TO STA.18+50 LT

NOTES:
1.) FOR -L- PROFILE SEE SHEET 5
2.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A
3.) FOR -DETOUR- PROFILE SEE SHEET 5
4.) ALL DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE ON PLANS.
5.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

PROJECT REFERENCE NO.	SHEET NO.
B-4097	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND

RIGHT DITCH - - - - - - -

LEFT DITCH — - - — - -

BM#1 RAILROAD SPIKE IN SOUTHWEST ROOT OF A BLACK GUM
179.60' LT. OF -L- STA. 11+89.44 ELEV. = 661.31' N 742,390 E 1,605,006

BEGIN OVERLAY
-L- STA. 9+56.07

END OVERLAY
BEGIN GRADE
-L- STA. 10+00.00
ELEV. = 675.20'

PI = 12+25.00
EL = 664.54'
VC = 356'
K = 80

-L-

BEGIN BRIDGE
-L- STA. 14+23.00

21" CORED SLAB BRIDGE
1 SPAN @ 40'
2 SPANS @ 50'
1 SPAN @ 40'
℄ -L- STA. 15+13.00
℄ ELEV. = 663.68'
SKEW = 90 DEGREES

PI = 17+75.00
EL = 662.89'
VC = 245'
K = 86

END OVERLAY
-L- STA. 19+50.00

END GRADE
BEGIN OVERLAY
-L- STA. 19+00.00
ELEV. = 666.05'

END BRIDGE
-L- STA. 16+03.00

(-)3.57% (-)3.29% (-)2.89% (-)2.60% (-)3.2% (-)0.3000% (+)2.5568%

BEGIN DITCH GRADE RT.
-L- STA. 10+54.00
EL = 666.90'

PI = 11+00.000
EL = 663.34'

PI = 11+50.000
EL = 659.24'

PI = 12+00.000
EL = 655.10'

END DITCH GRADE RT.
-L- STA. 12+25.00
EL = 654.90'

CLASS H RIP RAP
(STRUCTURE PAY ITEM)

END BENT EXCAVATION
(EXCAVATION TO BE USED IN LIEU OF BORROW)
STRUCTURE PAY ITEM

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1650	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 657.6	FT
BASE DISCHARGE	= 2450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 658.5	FT
OVERTOPPING DISCHARGE	= 7000	CFS
OVERTOPPING FREQUENCY	= 500++	YRS
OVERTOPPING ELEVATION	= 663.3	FT
NORMAL WATER SURFACE ELEVATION	= 649.8	FT
DATE OF SURVEY	= 11/8/2007	
W.S.ELEVATION AT DATE OF SURVEY	= 649.8	FT

NOTES:
1.) FOR -L- PLAN VIEW SEE SHEET 4
2.) FOR STRUCTURE PLANS SEE SHEETS S-1 THRU S-?

-DETOUR-

BEGIN GRADE -DETOUR- STA. 11+28.16
ELEV. = 671.04'

PI = 13+40.00
EL = 658.87'
VC = 420'
K = 65

BEGIN BRIDGE
-DETOUR- STA. 15+37 +/-

END GRADE -DETOUR- STA. 18+87.35
ELEV. = 663.91'

PI = 18+00.00
EL = 662.39'
VC = 75'
K = 77

END BRIDGE
-DETOUR- STA. 16+27 +/-

(-)3.6% (-)3.6% (-)3.6% (-)1.2% (-)15.1905% (+)0.7651% (+)8.7651% (+)11.7441%

BEGIN DITCH GRADE RT.
-DET- STA. 11+00.00
EL = 664.90'

PI = 11+50.000
EL = 662.00'

PI = 12+00.000
EL = 660.80'

PI = 12+50.000
EL = 655.30'

END DITCH GRADE RT.
-DET- STA. 12+75.000
EL = 655.00'

DETOUR BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 880	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 655.7	FT
BASE DISCHARGE	= 2450	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 662.0	FT
OVERTOPPING DISCHARGE	= 2300	CFS
OVERTOPPING FREQUENCY	= 100-	YRS
OVERTOPPING ELEVATION	= 660.0	FT

NOTES:
1.) FOR -DETOUR- PLAN VIEW SEE SHEET 2-A

5/28/91

23-JUL-2008 09:03
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8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-1

-DETOUR-
STA. 10+99.99

0.020 0.020 0.023

2:1 2:1 2:1

672.58

664.9

664.9

10+50.00

0.010 0.020

VAR. VAR.

674.95

10+00.00

BEGIN PROJECT -L- STA. 9+50.07

677.29

9+50.00

-L-

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-2

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

695 690 685 680 675 670 665 660 655

-DETOUR-
STA. 11+50.69

0.020 0.020 0.018

2:1 2:1 2:1

670.19

661.3 662.0

11+00.00

-DETOUR-
STA. 11+20.30

0.020 0.020 0.02

2:1 2:1 2:1

671.63

663.6 663.6

10+70.26

-L-

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-3

-DETOUR-
STA. 12+53.37

BEGIN TEMP. 1.5:1 SLOPE
AT DET STA. 12+50

0.020 0.020 2:1 0.014 0.014 2:1

665.47 664.5 656.1 655.3

12+00.00

-DETOUR-
STA. 12+02.45

0.020 0.020 0.015 0.012 2:1 2:1

667.63 659.4 660.8

11+50.00

-L-

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-4

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

690 685 680 675 670 665 660 655 650 645

-DETOUR-
STA. 13+53.68

TEMP. 1.5:1 SLOPE

0.020 0.020 0.020 0.007

2:1 2:1 2:1 2:1

663.18

659.7

13+00.00

-DETOUR-
STA. 13+03.65

TEMP. 1.5:1 SLOPE

0.020 0.020 0.018 0.016

2:1 2:1 2:1 2:1

663.98

661.5

12+50.00

-L-

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

690 685 680 675 670 665 660 655 650 645

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-5

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

685 680 675 670 665 660 655 650 645 640

-DETOUR-
STA. 14+53.68

TEMP. 1.5:1 SLOPE

0.020 0.020 0.020 0.020

2:1 2:1 1:1 2:1

662.79

658.5

14+00.00

-DETOUR-
STA. 14+03.68

TEMP. 1.5:1 SLOPE

0.020 0.020 0.018

2:1 2:1 2:1

662.81

658.7

13+50.00

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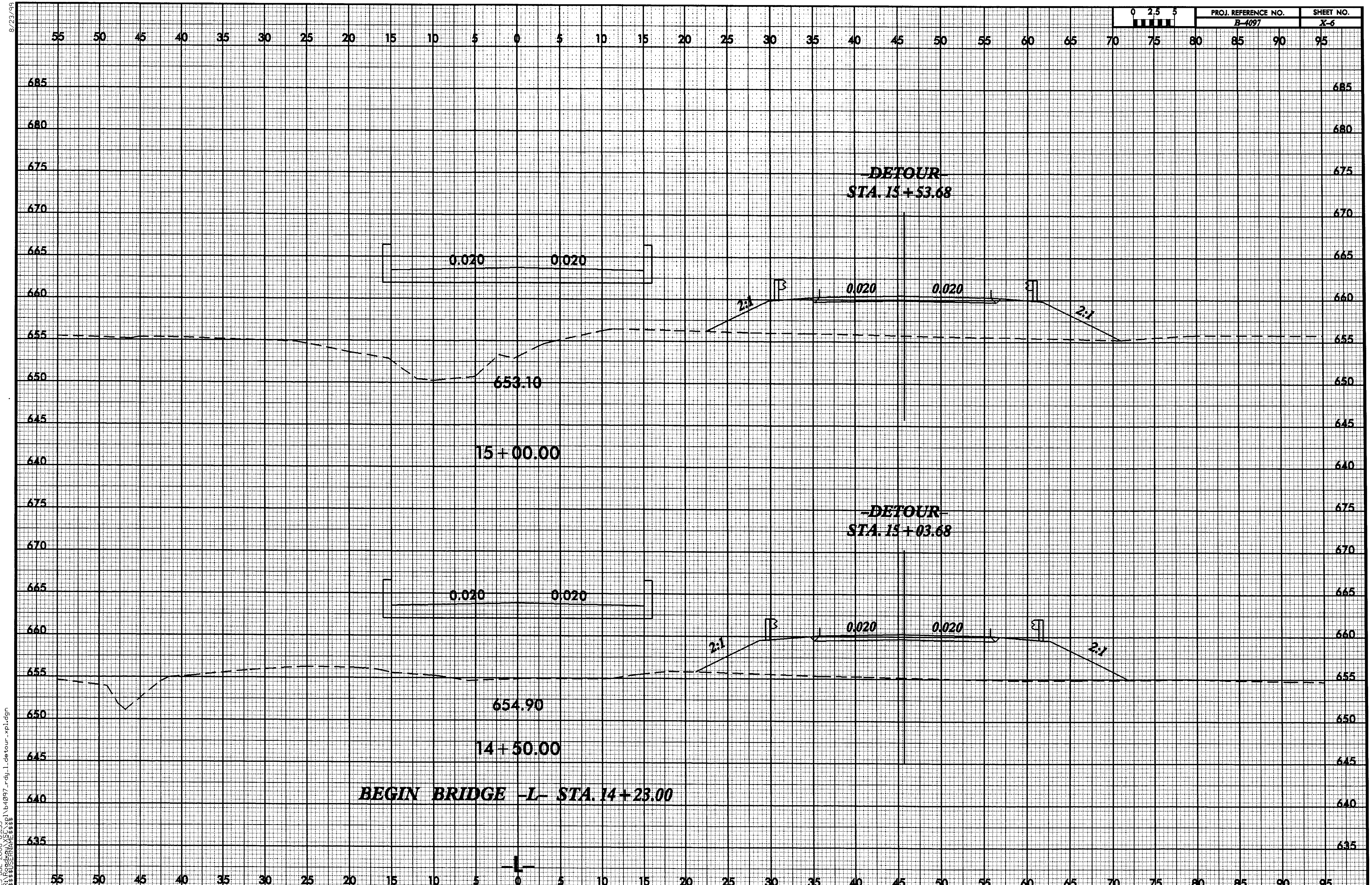
PROJ. REFERENCE NO.	SHEET NO.
B-4097	X-6



8/23/99

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-7

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

685 680 675 670 665 660 655 650 645 640

END BRIDGE –L– STA. 16+03.00

–DETOUR–
STA. 16+53.68

0.020 0.020

655.91

16+00.00

0.020 0.014

2:1 2:1

END DETOUR BRIDGE –DETOUR– STA. 16+27.00 +/–

–DETOUR–
STA. 16+03.68

0.020 0.020

0.020 0.020

650.92

15+50.00

–L–

BEGIN DETOUR BRIDGE –DETOUR– STA. 15+57.00 +/–

23-JUL-2008 09:33
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$$$$USERNAME$$$$

8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-8

-DETOUR-
STA. 17+53.91

0.020 0.020 4:1 2:1 2:1 0.080 0.019 0.019 2:1

662.83

661.2

17+00.00

-DETOUR-
STA. 17+03.69

TEMP. 2:1 SLOPE

TEMP. 0.080 SLOPE

VAR. 0.020 0.020 2:1 0.080 0.020 0.011 2:1

662.78

660.5

16+50.00

-L-

23-JUL-2008 09:33
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$$$$USERNAME$$$$

8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-9

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

685 680 675 670 665 660 655 650 645 640

-DETOUR-
STA. 18+56.33

4:1 4:1 661.32 0.020 0.020 663.53 0.014 0.014 DRIVEWAY TIE 6.2% TEMP. DRIVEWAY TIE 6.0%

18+00.00

-DETOUR-
STA. 18+04.69

4:1 4:1 660.68 0.020 0.020 663.06 4:1 0.004 0.080 0.006 2:1

17+50.00

-L-

23-JUL-2008 09:34
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$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4097	X-10

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

685 680 675 670 665 660 655 650 645 640

4:1 0.030 0.010 4:1

665.61

19+00.00

-DETOUR-
STA. 19+07.47

VAR. 0.020 0.020 0.003 VAR. VAR.

664.31

18+50.00

-L-

55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

685 680 675 670 665 660 655 650 645 640

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Davidson County
Bridge No. 405 on SR 1147 (Old Salisbury Road) over North Potts Creek
Federal Aid Project No. BRSTP-1147(6)
W.B.S. No. 33455.1.1
State Project No. 8.2604701
T.I.P. No. B-4097

CATEGORICAL EXCLUSION

Documentation Prepared in
Project Development and Environmental Analysis Branch By:

4-2-07
DATE

Gregory M. Blakeney
Project Planning Engineer
Bridge Project Development Unit

4/2/07
DATE

Bryan Kluchar, PE
Project Engineer
Bridge Project Development Unit

NORTH CAROLINA PROFESSIONAL SEAL 026857 ENGINEER BRYAN D. KLUCHAR 4/2/07

Davidson County
Bridge No. 405 on SR 1147 (Old Salisbury Road)
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Federal Aid Project No. BRSTP-1147(6)
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INTRODUCTION: Bridge No. 405 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and is eligible for the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Maintenance Unit records indicate Bridge No. 405 has a sufficiency rating of 46.2 out of a possible 100 for a new structure. The bridge is considered functionally obsolete due to deck geometry appraisal of 2 out of 9 according to Federal Highway Administration (FHWA) standards and therefore eligible for FHWA's Bridge Replacement Program.

Bridge No. 405 is a one-lane bridge that carries 3,450 vehicles per day with 5,400 vehicles per day projected for the future. Components of both the concrete superstructure and substructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities. The substandard deck is becoming increasingly unacceptable and replacement of the bridge will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located in the western portion of Davidson County on SR 1147, between SR 1219 and SR 1215. (see Figure 1). Development in the area is residential with some industrial to the north of the project.

SR 1147 is classified as a rural major collector in the Statewide Functional Classification System and it is not a National Highway System Route. This route is not a designated bicycle route and there is no indication that an unusual number of bicyclists use this roadway.

In the vicinity of the bridge, SR 1147 has a 23-foot pavement width with varying grass shoulder widths ranging between 2 and 8 feet (see Figures 3). The roadway is situated approximately 13.0 feet above the creek bed.

Bridge No. 405 is a four-span structure and is constructed of an asphalt-wearing surface on reinforced concrete deck girders. The abutments and bents are constructed of reinforced concrete with pile footings. The abutments are full height reinforced concrete; bents # 1 and

#3 are reinforced concrete posts and beams; and bent # 2 is reinforced concrete square nose post and webb. The existing bridge (see Figure 3) was constructed in 1921. The overall length of the structure is 170 feet. The clear roadway width is 17.0 feet. The posted weight limit on this bridge is 23 tons for single vehicles and 27 tons for TTST's.

There are no utilities attached to the existing structure, but overhead power and telephone lines are throughout the project area. There is also an electrical substation in the southeast quadrant of the project area. Other utilities in the area are as follows: a 6-inch water main and a 4-inch plastic underground gas main along the north side of SR 1147; fiber optic cable along the south side of SR 1147; and aerial powerlines on both sides of the project area. Utility impacts are anticipated to be high.

The current traffic volume of 3,450 vehicles per day (VPD) is expected to increase to 5,400 VPD by the year 2030. The projected volume includes one percent truck-tractor semi-trailer (TTST) and three percent dual-tired vehicles (DT). The posted speed limit is 45 miles per hour (mph) in the project area. Fourteen school buses cross the bridge daily on their morning and afternoon routes.

There were three accidents reported in the vicinity of Bridge No. 405 during a recent three-year period. None of the three accidents was associated with the alignment or geometry of the bridge or its approach roadway.

III. ALTERNATIVES

A. Project Description

The replacement structure will consist of a bridge approximately 190-foot long. The bridge length is based on preliminary design information and is set by hydraulic requirements. The bridge will be of sufficient width to provide for two 12-foot lanes with 3-foot offsets on each side. The roadway grade of the new structure will be approximately the same as the existing grade.

The existing roadway will be widened to a 24-foot pavement width to provide two 12-foot lanes. Eight-foot shoulders will be provided on each side (eleven-foot where guardrail is included); two feet of which will be paved in accordance with the current NCDOT Design Policy. This roadway will be designed as a rural major collector route with a design speed of 50 mph.

B. Reasonable and Feasible Alternatives

Two alternatives for replacing Bridge No. 405 that were studied in detail are described below.

Alternate 1(Preferred)

Alternate 1 involves replacement of the structure along the existing roadway alignment. Improvements to the approach roadways will be required for a distance of approximately 420 feet to the west and 260 feet to the east of the new structure. There are no design exceptions anticipated. Traffic will be maintained onsite on a temporary structure to the south of the existing bridge during the construction period. (see Figure 2A)

Alternate 2

Alternate 2 involves replacement of the structure with a new bridge on new location to the south of the existing structure. Traffic will be maintained on the existing bridge during construction. Improvements to the approach roadways will be required for a distance of approximately 1500 feet to the west and 570 feet to the east of the structure. There are no design exceptions anticipated. (see Figures 2B-1 & 2B-2)

C. Alternatives Eliminated From Further Consideration

The "do-nothing" alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 1147.

"Rehabilitation" of the old bridge is not practical due to its age and deteriorated condition. Bridge No. 405 has up to 11 inches of deterioration and spall on the underside of the bridge as well as exposed rebar in various places.

Staged Construction is not feasible for this bridge because it is currently a one-lane structure thus maintaining traffic on a portion is not possible.

D. Preferred Alternative

Bridge No. 405 will be replaced at the existing location as shown by Alternative 1 in Figure 2A.

NCDOT Division 9 concurs with the selection of Alternative 1 as the preferred alternative.

IV. ESTIMATED COSTS

The estimated costs, based on 2007 prices, are as follows:

	Alternative 1 (Preferred)	Alternative 2
Structure	$ 597,000	$ 597,000
Roadway Approaches	$ 203,200	$ 747,600
Detour Structure and Approaches	$ 427,800	-0-
Structure Removal	$ 34,700	$ 34,700
Misc. & Mob.	$ 262,300	$ 345,700
Eng. & Contingencies	$ 225,000	$ 275,000
Total Construction Cost	$1,750,000	$ 2,000,000
Right-of-way Costs	$ 57,000	$ 113,500
Utilities	$ 280,300	$ 395,800
Total Project Cost	$2,087,300	$2,509,300

V. NATURAL ENVIRONMENT

Physical Characteristics

Water Resources

Water resources located within the project study area lie in Subbasin 03-07-04 of the Yadkin River Drainage Basin. There are three water resources located within the project study area: North Potts Creek, a perennial unnamed tributary (UT) to North Potts Creek, and an intermittent UT to North Potts Creek.

The best usage classification of North Potts Creek (Index Number 12-112) is Class C (NCDENR-DWQ, 2002). No water resources classified as High Quality Waters, Water Supplies (WS-I or WS-II), or Outstanding Resource Waters are located within 1.0 mi. of the project study area. These streams are not included on North Carolina's 303(d) list of impaired water bodies.

Biotic Resources

There are four terrestrial communities located within the project area. Community boundaries within the study area are generally well defined without a significant transition zone between them. The observed communities consist of the (1) Piedmont/Low Mountain Alluvial Forest, (2) Mesic Mixed Hardwood Forest (Piedmont Subtype), (3) successional community, and (4) maintained/disturbed community.

Piedmont/Low Mountain Alluvial Forest

The Piedmont/Low Mountain Alluvial Forest is typically located in the floodplains of rivers and streams (Schafale and Weakley 1990). Canopy species observed in this community include primarily sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), hackberry

(*Celtis laevigata*), persimmon (*Diospyros virginiana*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and ironwood (*Carpinus caroliniana*). The observed shrub/sapling species include ironwood (*Carpinus caroliniana*), silky dogwood (*Cornus amomum*), and box elder. Observed herbaceous and woody vine species include grapefern (*Botrychium dissectum*), wild onion (*Allium canadense*), blackberry (*Rubus* sp.), and honeysuckle (*Lonicera japonica*).

Mesic Mixed Hardwood Forest (Piedmont Subtype)

The Mesic Mixed Hardwood Forest (Piedmont Subtype) is located on lower slopes and steep north-facing slopes in well-drained, somewhat acidic soils (Schafale and Weakley 1990). Canopy species observed in the Mesic Mixed Hardwood Forest include Virginia pine (*Pinus virginiana*), northern red oak (*Quercus rubra*), sweet-gum (*Liquidambar styraciflua*), sycamore, and post oak (*Quercus stellata*). The observed shrub/sapling species include eastern red cedar (*Juniperus virginiana*), American beech (*Fagus grandifolia*), northern red oak, American holly (*Ilex opaca*), black cherry (*Prunus serotina*), tulip poplar (*Liriodendron tulipifera*), flowering dogwood (*Cornus florida*), winged elm (*Ulmus alata*), Chinese privet (*Ligustrum sinense*), and box elder. Observed woody vine and herbaceous species include honeysuckle, greenbrier (*Smilax* sp.), sedge (*Carex* sp.), ebony spleenwort (*Asplenium platyneuron*), Christmas fern (*Polystichum acrostichoides*), wild onion, crane-fly orchid (*Tipularia discolor*), spotted wintergreen (*Chimaphila maculata*).

Successional Community

The successional community is located in utility easement corridors and abandoned lots. Species within this community include sweet-gum, box elder, blackberry, honeysuckle, aster (*Aster* sp.), eastern red cedar, wild onion, broom sedge (*Andropogon virginicus*), and pokeweed (*Phytolacca americana*).

Maintained/Disturbed Community

The maintained/disturbed community includes those areas found along the agriculture pastures, road shoulder, and within the yards of residential properties. These areas are irregularly maintained and include shrubs, saplings, and other plant species typically found in areas of early succession. Shrub/sapling species observed includes American holly, red maple (*Acer rubrum*), eastern red cedar, flowering dogwood, sweet-gum, smooth sumac (*Rhus glabra*), and box elder. Observed woody vine and herbaceous species include honeysuckle, fescue (*Festuca* sp.), clover (*Trifolium* sp.), wild onion, foxtail grass (*Alopecurus* sp.), aster, blackberry, plantain (*Plantago* sp.), thistle (*Carduus* sp.), strawberry (*Fragaria virginiana*), broom sedge, wood sorrel (*Oxalis* sp.), cranesbill (*Geranium carolinianum*), henbit (*Lamium amplexicaule*), and crab grass (*Digitaria* sp.).

Jurisdictional Topics

Surface Waters and Wetlands

North Potts Creek and its UTs are considered jurisdictional surface waters under Section 404 of the Clean Water Act. Based upon the results of the field investigation, the project area also contains jurisdictional wetlands. The wetlands within the project area have been delineated and a total of 0.61 acres of wetlands were located. The preferred alternate will impact less than a tenth of an acre of wetlands. North Potts Creek is proposed to be bridged by a permanent structure. Because of the stream's silt and sand substrate, it is recommended that turbidity curtains be used during bridge demolition.

The project occurs in Davidson County and the following issues do not apply:
* moratoriums (anadromous fish, trout, bass, sunfish)
* essential fish habitat (EFH)
* high quality resources

Permits

As an approved CE or as a public linear transportation crossing in non-tidal waters, impacting less than 0.5 ac of "waters of the United States", the proposed bridge construction could be authorized under the provisions of a USACE Nationwide or General Permit. Applicable permits include the Nationwide Permit 23 (Approved Categorical Exclusions), Nationwide Permit 14 (Linear Transportation Projects), or General Permit Number 198200031 (for NCDOT bridge crossings). Other required 404 permits may include a Nationwide Permit 33. This permit is required for temporary construction activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction or rehabilitation.

In addition to the 404 permit, other required authorizations include the corresponding Section 401 Water Quality Certification from the NC Division of Water Quality. Section 404 of the Clean Water Act requires that the state issue or deny a water quality certification for any federally permitted or licensed activity that may result in a discharge to "waters of the United States". Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land disturbance. A Division of Water Quality Section 401 Water Quality General Certification for an approved CE (General Certification 3361) or minor road crossing (General Certification 3375) is required prior to the issuance of a Section 404 Individual Permit. Other required 401 certifications may include a General Certification 3366 for temporary construction access and dewatering.

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, 2007, the USFWS lists three federally protected species for Davidson County. A brief description of

the characteristics and habitat requirements for this species is provided in the following section.

Federally Threatened and/or Endangered Species for Davidson County.

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Haliaeetus leucocephalus	Bald eagle	Threatened (Proposed for delisting)	No	No Effect
Glyptemys muhlenbergii	Bog turtle	T(S/A)	No	No Surveys Required
Helianthus schweinitzii	Schweinitz's sunflower	Endangered	Yes	No Effect

T(S/A) - Threatened due to similarity of appearance --a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section 7 consultation.

Bald Eagle **Biological Conclusion: No Effect**

Transect surveys throughout the project study area revealed the absence of habitat in the form of the largest living tree in the area, having an open view of the surrounding land, in close proximity to water (within a 0.5 mi) with a clear flight path to the water. Additionally, a March 2007 review of the Natural Heritage Programs (NHP) database of Threatened and Endangered Species revealed no known populations within 1.0 mile of the project area. Therefore, it is anticipated that the proposed project will have "No Effect" on the bald eagle.

Bog turtle **Biological Conclusion: No Surveys Required**

This species is listed as Threatened Due to Similarity of Appearance, and is therefore not protected under Section 7 of the Endangered Species Act. However, in order to control the illegal trade of individuals from the protected northern population, federal regulations are maintained on the commercial trade of all bog turtles. No survey is required for this species.

Schweinitz's sunflower **Biological Conclusion: No Effect**

A survey was conducted on September 20, 2005 by NCDOT biologists. A Schweinitz's sunflower was observed before the site visit to get a fresh visual of the plant. A plant by plant survey was conducted on the project site in suitable habitat areas including disturbed areas next to the road and in the field areas in the southwest quadrant and adjacent to the bridge location. No occurrences of the Schweinitz's sunflower were observed. A March 2007 review of the Natural Heritage Programs (NHP) database of Threatened and Endangered Species revealed no known populations within 1.0 mile of the project area. Due to these findings on this bridge project site, the biological conclusion for the Schweinitz's sunflower is "No Effect".

VI. HUMAN ENVIRONMENT

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

Historic Architecture
The Historic Preservation Office (HPO) reviewed the subject project, and requested an evaluation of Bridge No. 405 to determine its eligibility for the National Register (see letter dated May 8, 2003). Upon evaluation, Bridge No.405 is not eligible for the National Register individually, nor is a contributing element to a historic district (see Concurrence letter dated December 12, 2005).

Archaeology
The Historic Preservation Office (HPO) reviewed the subject project. There are no known archaeological sites within the proposed project area, and no archaeological investigation needed to be conducted (see letter dated May 8, 2003).

Community Impacts
No adverse impact on families or communities is anticipated. Right-of-way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

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

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

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. All construction will take place along existing alignment. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

The project will not have a disproportionately high and adverse human health and environmental effect on any minority or low-income population.

Noise & Air Quality
This project is an air quality neutral project in accordance with 40 CFR 93.126. It is not required to be included in the regional emissions analysis (if applicable) and project level CO

or PM2.5 analyses are not required. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. Therefore, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs. Any burning of vegetation shall be performed in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality compliance with 15 NCAC 2D.0520.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours. The transmission loss characteristics of nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

VII. GENERAL ENVIRONMENTAL EFFECTS

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

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

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

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

Davidson County is a participant in the National Flood Insurance Regular Program, which is administered by the Federal Emergency Management Agency (FEMA). This crossing of North Potts Creek is located within a detailed flood study reach in a flood hazard zone designated as Zone AE, for which 100-year base flood elevations have been determined and a regulated floodway has been established. It is anticipated that approval of a Conditional Letter of Map Revision may be required by FEMA. After the project is constructed, approval of a final Letter of Map Revision will also be required upon project acceptance by NCDOT. NCDOT Hydraulics Unit will coordinate with FEMA and local authorities in the final design stage and after project acceptance to ensure compliance with applicable floodplain management ordinances.

VIII. COORDINATION & AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: U.S. Army Corps of Engineers, U.S. Fish & Wildlife Service, N.C Wildlife Resource Commission, North Carolina State Historic Preservation Office, NC Division of Water Quality, and the Davidson County Planning Department.

The N.C. Wildlife Resource Commission in a standardized letter provided a request that they prefer any replacement structure to be a spanning structure. The project specific comments were that North Potts Creek is Class "C" waters and wetland impacts may be a concern.

In a letter dated September 23, 2003, the N.C. Division of Water Quality stated that North Potts Creek is classified as "C" and they were aware that the stream may have wetlands near it. NC DWQ suggests that impacts be avoided, if practicable, and minimized. NC DWQ also suggests that sediment and erosion control measures should not be placed in the wetlands.

Response: NCDOT will be replacing the bridge with a bridge. The wetlands within the project area have been delineated and a total of 0.61 acres of wetlands were located. The preferred alternate will impact less than a tenth of an acre of wetlands.

The U.S. Fish & Wildlife Service and the Davidson County Planning Department had no special concerns for this project.

IX. PUBLIC INVOLVEMENT

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

X. CONCLUSION

On the basis of the above discussion, it is concluded that no substantial adverse environmental impacts will result from implementation of the project. The project is therefore considered to be a federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.

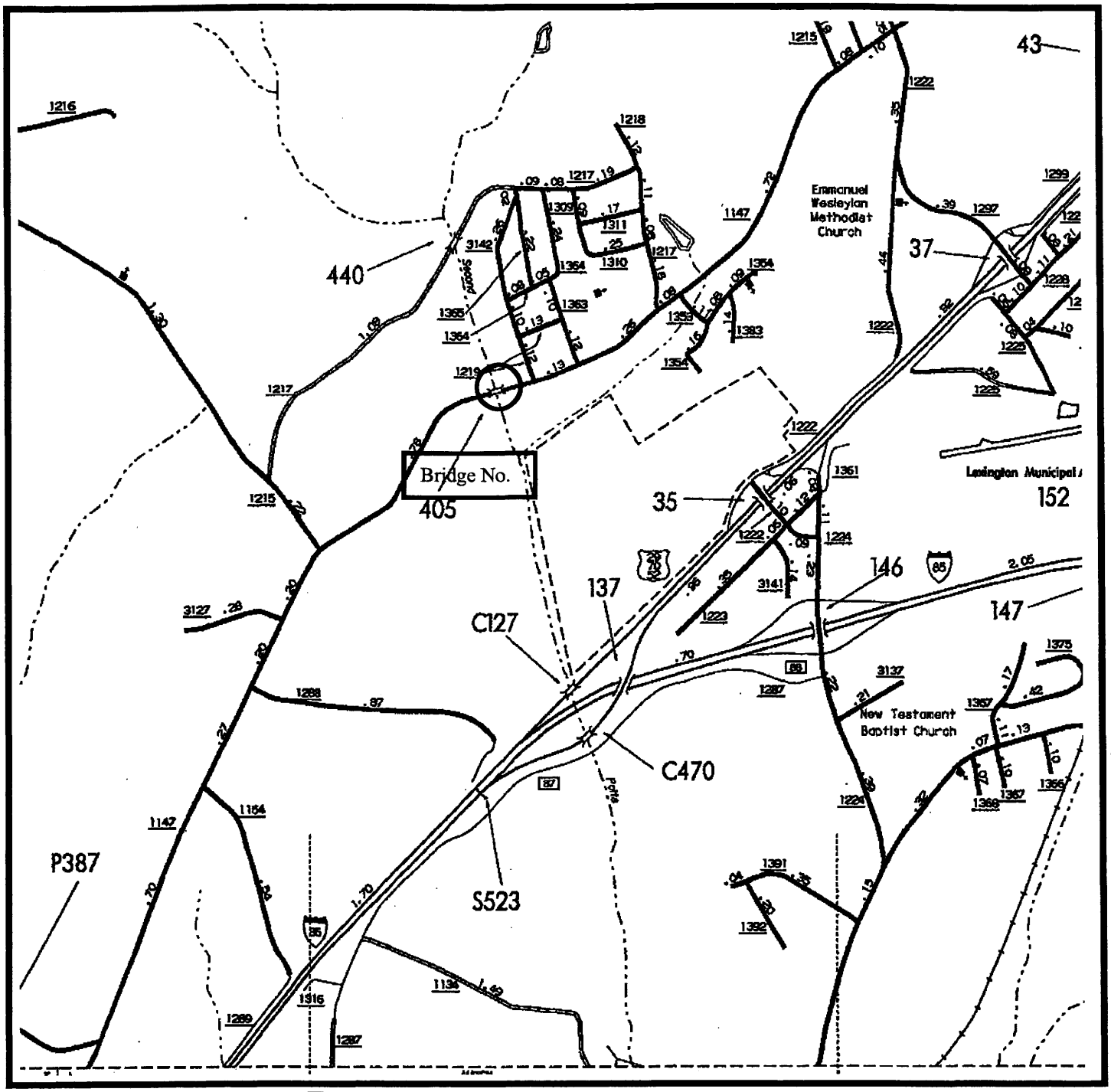
PROJECT COMMITMENTS:

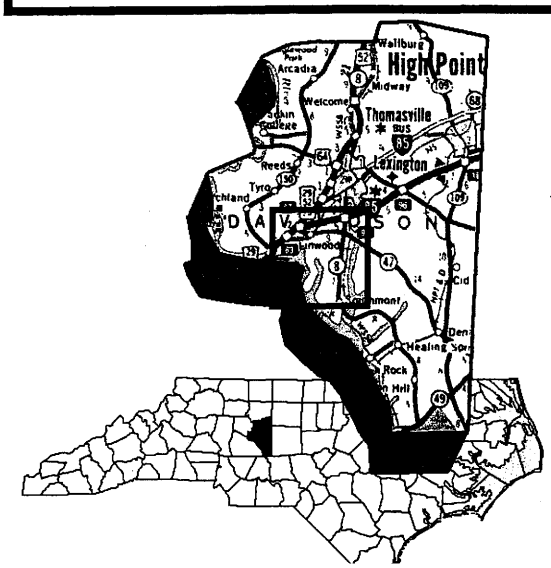
Davidson County
Bridge No. 405 on SR 1147(Old Salisbury Rd.)
Over North Potts Creek
Federal Aid Project No. BRSTP-11147(6)
W.B.S. No. 33455.1.1
State Project No. 8.2604701
T.I.P. No. B-4097

All standard procedures and measures, including NCDOT's Best Management Practices for Protection of Surface Waters, Guidelines for Best Management Practices for Bridge Demolition and Removal, will be implemented, as applicable, to avoid or minimize environmental impacts.

Roadside Environmental Unit and Division 9 Construction

NCDOT Biologists recommend the use of turbidity curtains during bridge demolition, due to the stream's silt and sand substrate.





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

DAVIDSON COUNTY
REPLACE BRIDGE NO. 405 ON SR 1147
OVER POTTS CREEK
B-4097

Figure 1

END PROJECT B-4097

BEGIN PROJECT B-4097

Woodland Ave. (SR 3142)

Unnamed Tributary

Wetlands

Old Salisbury Road (SR 1147)

BRIDGE #405

96.50'

DETOUR

GRAU 350

26.50'

GRAU 350

100.00'

North Potts Creek

Wetlands

Wetlands

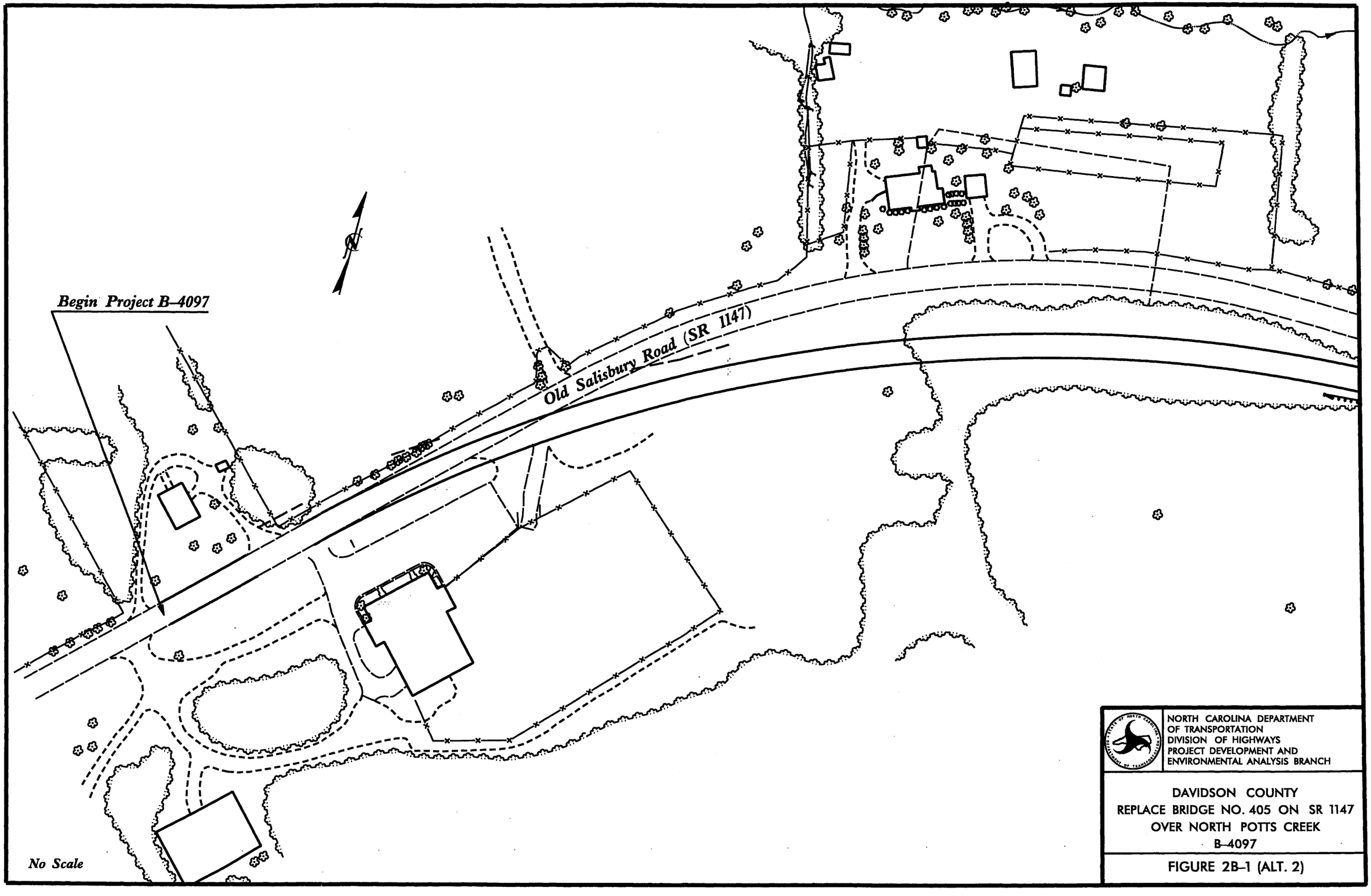
NAD 83

No Scale

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

DAVIDSON COUNTY
REPLACE BRIDGE NO. 405 ON SR 1147
OVER NORTH POTTS CREEK
B-4097

FIGURE 2A (Alt.1)



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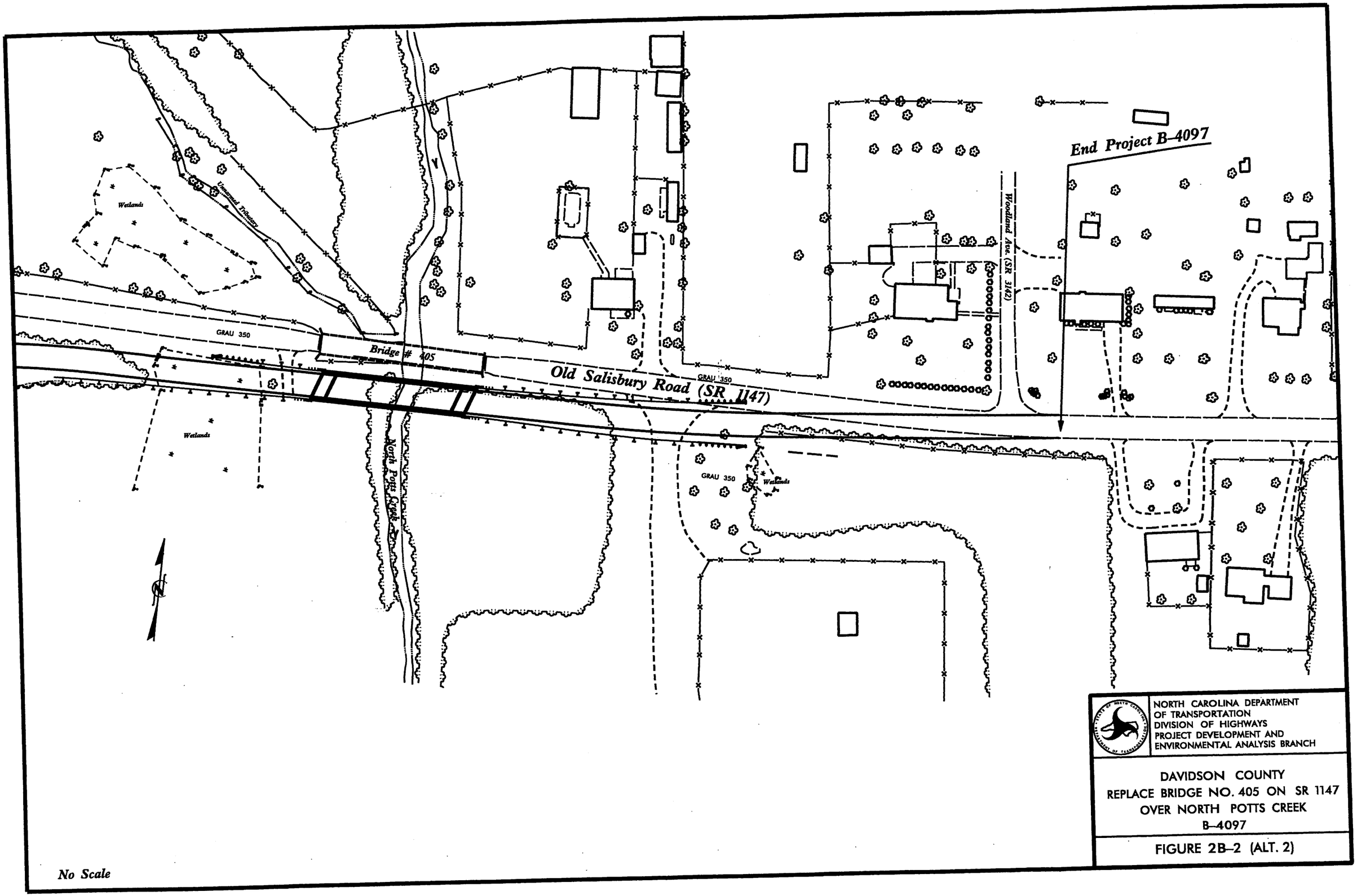
ENVIRONMENTAL ANALYSIS BRANCH

DAVIDSON COUNTY
REPLACE BRIDGE NO. 405 ON SR 1147
OVER NORTH POTTS CREEK
B–4097

FIGURE 2B–1 (ALT. 2)



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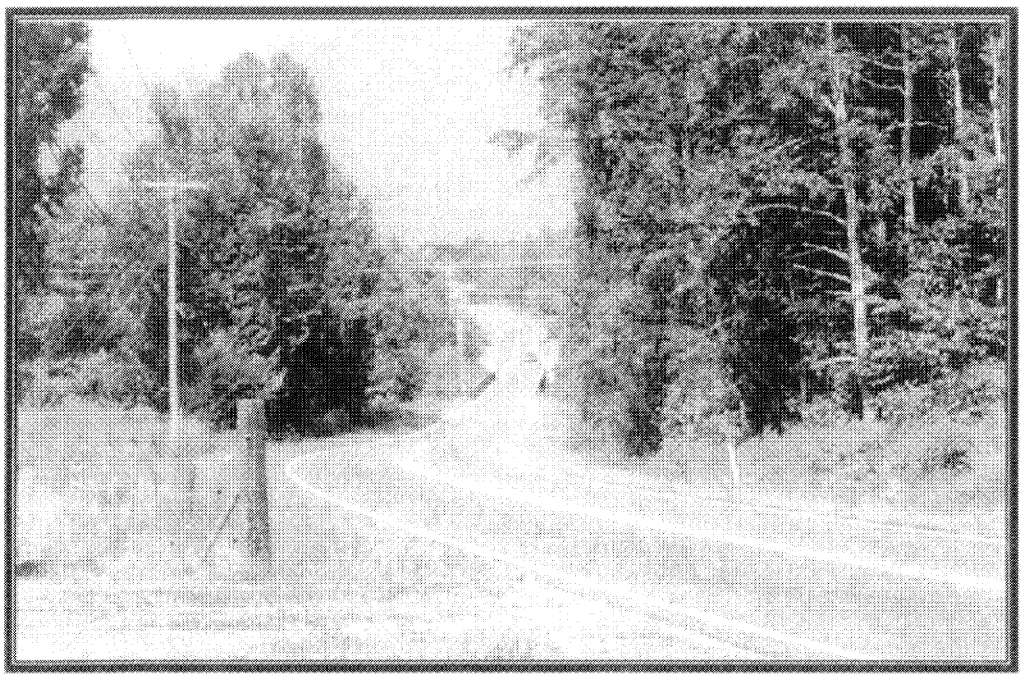
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

DAVIDSON COUNTY
REPLACE BRIDGE NO. 405 ON SR 1147
OVER NORTH POTTS CREEK
B-4097

FIGURE 2B-2 (ALT. 2)

No Scale

Looking east towards Bridge No. 405



Looking west towards Bridge No. 405

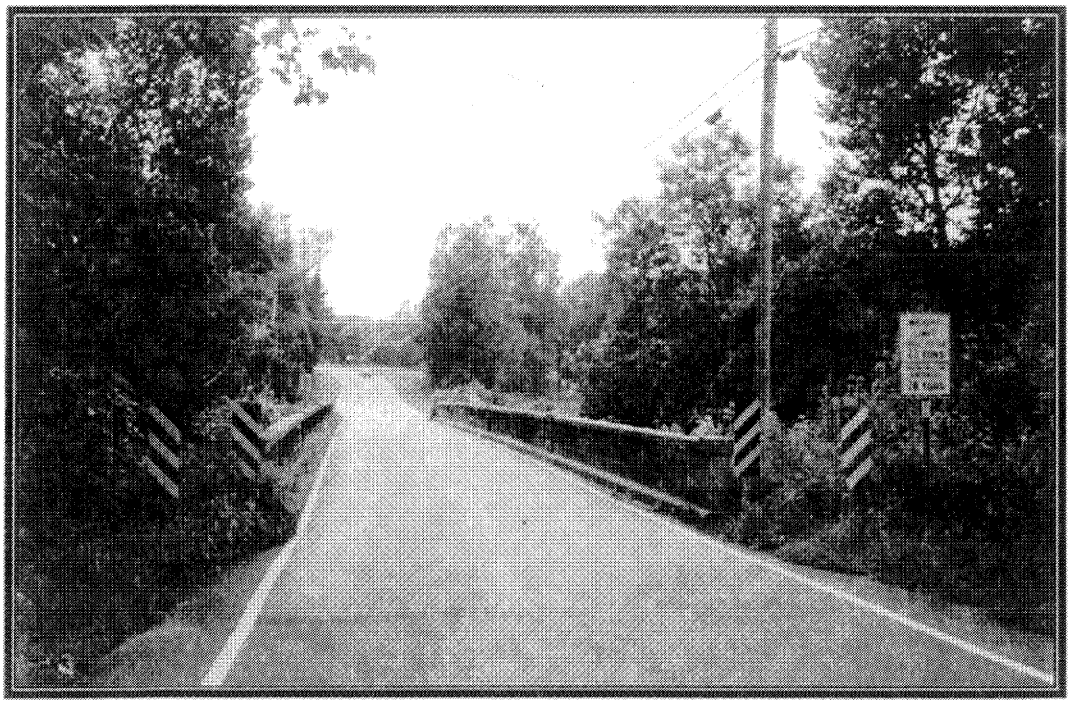
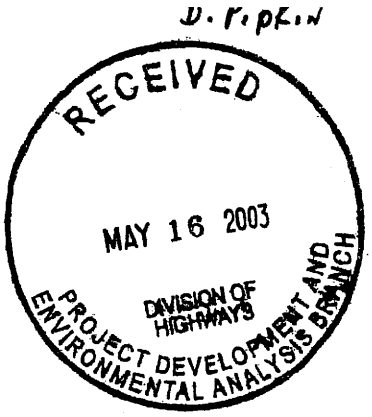


Figure 3

D. Ripkin



North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

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

Division of Historical Resources
David J. Olson, Director

May 8, 2003

MEMORANDUM

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

FROM: David Brook RBG for David Brook

SUBJECT: Replace Bridge No. 405 on SR 1147 over Potts Creek, B-4097, Davidson County, ER03-0930

Thank you for your letter of April 7, 2003, concerning the above project.

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

Bridge No. 405, Potts Creek Bridge

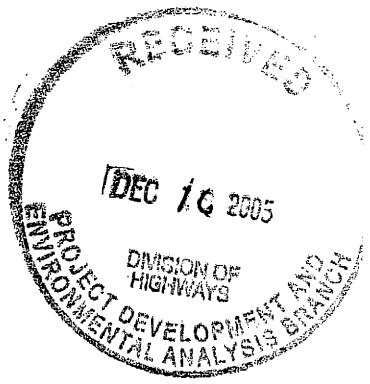
We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty years of age within the project area, and report the findings to us.

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

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

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

cc: Mary Pope Furr



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

December 12, 2005

MEMORANDUM

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

FROM: Peter Sandbeck RSG for Peter Sandbeck

SUBJECT: Historic Structures Evaluation Letter, Replace Bridge No. 405 on SR 1147 over Potts Creek, State Project # 8.2604701, B-4097, Davidson County, ER 03-0930

Thank you for your letter of September 30, 2005, concerning the above project. We apologize for the delay in our response.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is not eligible for the National Register of Historic Places:

Bridge No. 405, on SR 1147 over Potts Creek, is not eligible for individual listing nor as a contributing structure to a historic district because the bridge has experienced a significant loss of integrity and is a standard type with little distinguishing features.

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

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

cc: Mary Pope Furr, NCDOT
Dennis Pipkin, NCDOT

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E., Director
Division of Water Quality
Coleen H. Sullins, Deputy Director
Division of Water Quality

September 23, 2003

MEMORANDUM

TO: William T. Goodwin, Jr, PE, Unit Head
NCDOT Bridge Replacement Planning Unit

FROM: Robert Ridings, Env. Tech., DWQ 401 Unit

THROUGH: John R. Dorney, Supervisor, DWQ 401 Unit

SUBJECT: Scoping Review of NCDOT's proposed bridge replacement projects: B-4128 in Guilford County, B-4745 in Forsyth County, B-4075 in Cleveland County, B-4206 in Montgomery County, B-4097 in Davidson County, B-4006 in Alexander County, and B-4017 in Avery County.

In reply to your correspondence dated June 10, 2003 (received June 13, 2003) in which you requested comments for the referenced projects, the NC Division of Water Quality has the following comments:

I. General Comments Regarding Bridge Replacement Projects

1. If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used to replace the bridge, then DWQ recommends the use of Nationwide Permit No. 14 rather than Nationwide Permit 23.

2. Bridge demolition should be performed using Best Management Practices developed by NCDOT.

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

4. Bridge deck drains should not discharge directly into the stream; stormwater should be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to NCDOT Best Management Practices for the Protection of Surface Waters

5. Live concrete should not be allowed to contact the water in or entering into the stream. Concrete is mostly made up of lime (calcium carbonate) and when in a dry or wet state (not hardened) calcium carbonate is very soluble in water and has a pH of approximately 12. In an unhardened state concrete or cement will change the pH of fresh water to very basic and will cause fish and other macroinvertebrate kills.

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

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

8. A clear bank (rip rap-free) area of at least 10 feet should remain on each side of the steam underneath the bridge.

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

10. Bare soil should be stabilized through vegetation or other means as quickly as feasible to prevent sedimentation of water resources.

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

12. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

II. General Comments if Replacing the Bridge with a Culvert

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

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

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

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

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. Tall fescue should not be used in riparian areas. If the area that is reclaimed was previously

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

III. Project-Specific Comments

B-4128, Bridge 73, Bull Run, Guilford County
Bull Run is classified as WS-IV CA. Since the project is located within the Critical Area of a water supply watershed, hazardous spill catch basins may be required for this project based on traffic count, percent truck traffic or proximity to industries transporting hazardous materials. The project shall incorporate the requirements for WS-IV Waters within the critical area as specified in 15A NCAC 2B .0215 (i.e., stormwater management, sedimentation and erosion control, and buffers).

B-4745, Bridge 322 over 20th Street, Forsyth County
This bridge goes over another street and not a stream. The nearest stream to this location, Peter's Creek, is classified as C. DWQ does not have any special concerns. Please refer to general recommendations listed above.

B-4075, Bridge 129, Grog Creek, Cleveland County
Grog Creek is classified as C. DWQ is aware that there may be mussel populations on this site as well as Federal and State listed species of concern. If so, we recommend a spanning structure and maximizing the use of BMPs to minimize damage to these aquatic resources.

B-4206, Bridge 128, Densons Creek, Montgomery County
Densons Creek is classified as C HQW. As a high quality water resource, DWQ would hope that a spanning structure is planned for this crossing. In addition, we would stress that NCDOT should use the highest possible BMPs for protecting this resource.

B-4097, Bridge 405, Second Potts Creek, Davidson County
Second Potts Creek is classified as C. DWQ is aware this stream may have wetlands near it. Impacts should be avoided, if practicable, and minimized. Sediment and erosion control measures should not be placed in the wetlands.

B-4006, Bridge 8, Rocky Creek, Alexander County
Rocky Creek is classified as C. However, a WS-II HQW designation occurs shortly downstream (South Yadkin River). Sediment and erosion control measures should adhere to the design standards for sensitive watersheads.

B-4017, Bridge 3, North Toe River, Avery County
North Toe River is classified as WS-V Trout and is Designated Mountain Trout Waters and Hatchery Supported waters. A moratorium prohibiting in-stream work and land disturbance within the 25-foot trout buffer is recommended from October 15 to April 15 to protect the egg and fry stages of trout. Also, DWQ is aware there may be Federal and State listed species of concern in the area. DWQ strongly recommends this bridge to be replaced with another bridge and the use of BMPs (particularly for sediment and erosion control) to be maximized to protect these resources. In addition, DWQ is aware this stream may have wetlands near it. Impacts should be avoided, if practicable, and minimized. Sediment and erosion control measures should not be placed in the wetlands.

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact Robert Ridings at (919) 733-9817 or Cynthia Van Der Wiele at (919) 733.5715.

pc: John Hendrix, USACE Asheville Field Office
Chris Militscher, USEPA
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