STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 22, 2007

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

ATTN: Mr. John Thomas
NCDOT Coordinator

Subject: **Nationwide Permit 23 Application** for the proposed replacement of Bridge No. 141 over Spurgeon Creek on SR 1741 in Davidson County, Federal Aid Project No. BRSTP-1741(3), State Project No. 8.2604901, WBS Element: 33457.1.1, Division 9, TIP B-4101

Dear Sir:

Please find enclosed the Categorical Exclusion (CE) Document, pre-construction notification, permit drawings, and design plan sheets for the proposed project. The project involves replacing Bridge No. 141 over Spurgeon Creek on SR 1741. The existing Bridge No. 141 is 75 feet in length with a clear deck width of 26-feet. The existing two lane bridge has a reinforced concrete deck on I-beams supported by reinforced concrete caps and timber piles at approximately 35-foot centers. It is proposed that the current bridge be replaced with a single span box beam bridge. The new bridge will be 85-feet in length and will be constructed on the same location as the existing bridge. The new bridge will span Spurgeon Creek. During construction, a two-lane, two-way on-site temporary detour bridge will be constructed northeast of the existing bridge to maintain traffic. The temporary detour bridge will span both Spurgeon Creek and UT1 to Spurgeon Creek. No bents will be located in Spurgeon Creek or UT1 for the temporary detour bridge and the stream banks are not to be disturbed. The detour will be 877-feet in length and will be 12-feet wide.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Yadkin-Pee Dee River Basin, subbasin 03-07-08 with a Hydrologic Unit Code of 03040103. Spurgeon Creek has a Division of Water Quality (DWQ) stream index number of 12-119-3 and is a large tributary to Abbott's Creek. A best usage classification of WS-III has been assigned to Spurgeon Creek. There is one UT located on the southeast side of Spurgeon Creek. This UT has the same DWQ stream index and classification as Spurgeon Creek. There are no designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), or 303(d) streams occur within 1.0-miles of the project area. There are wetlands in

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

TELEPHONE: 919-715-1334
FAX: 919-715-5501
WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
SUITE 240
RALEIGH NC 27604

the project area. A Jurisdictional Determination (Action ID. 200420755) from the U.S. Army Corps of Engineers was given for the wetlands on April 17, 2006.

Permanent Impacts: Construction of the new bridge will require filling in a portion of the wetlands located on both the north and south sides of the new bridge. Construction of the new bridge will result in a total of 0.02 acre of permanent riverine wetland impacts.

Temporary Impacts: There will be 0.16 acre of temporary fill in the riverine wetland associated with Spurgeon Creek due to the construction of a temporary detour bridge. The proposed detour bridge is to be built on the northeast side of the existing structure. The detour bridge will span both UT 1 and Spurgeon Creek.

Utility Impacts: There will be no jurisdictional impacts from utility relocations due to this bridge replacement project.

Bridge Demolition: Bridge No. 141 has a reinforced concrete deck on I-beams supported by reinforced concrete caps and timber piles at approximately 35-foot centers. The bridge has an overall length of 75-feet and is 26-feet wide. The bridge will be removed without dropping any components into waters of the United States. NCDOT's Best Management Practices for Bridge Demolition and Removal will be followed.

RESTORATION PLAN

Following construction, all material used in the construction of the new bridge as well as the detour bridge will be removed. The impacted areas associated with the bridge are expected to recover naturally, since the natural streambed and plant material will not be effected. NCDOT does not propose any additional planting in this area. Class I riprap and filter fabric will be used for bank stabilization. Pre-project elevations will be restored. NCDOT will restore the wetlands to their pre-project contours. After the detour's purpose has been served the material used for installation of the temporary detour bridge will be removed and the areas will be restored to original contours.

REMOVAL AND DISPOSAL PLAN

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

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2007, the United States Fish and Wildlife Service (USFWS) lists three federally protected species for Davidson County. Table 1 lists the species, their status and biological conclusion.

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

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

A Biological Conclusion of "No Effect" was given in the CE for the bald eagle and Schweinitz's sunflower. A field survey for Schweinitz's sunflower was conducted in October 6, 2006 by NCDOT Biologists. No plants were observed during the 2006 survey. With the above information it is the conclusion of NCDOT that the original call of "No Effect" is still valid for the Schweinitz's sunflower.

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

MITIGATION OPTIONS

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

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

Avoidance/Minimization:

- The proposed bridge will be replaced on its existing location.
- In-stream activity will be limited.
- Use of 2:1 fill slopes in jurisdictional area.
- No staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.
- The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled "Control of Erosion, Siltation, and Pollution" (NCDOT, Specifications for Roads and Structures).
- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control methods and use of Best Management Practices (BMPs).
- The onsite detour will serve two bridge replacement projects, B-4100 and B-4101.

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

SCHEDULE

The project calls for a letting of January 15, 2008 with a date of availability of February 26, 2008. Permits are needed by the review date of November 27, 2007. It is expected that the contractor will choose to start construction as soon as possible after the date of availability.

REGULATORY APPROVALS

Section 404 Permit: The project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate General Certification number 3632 will apply to this project. All general conditions of the Water quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their notification.

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

Sincerely,

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

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

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

Office Use Only: Form Version March 05

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

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

I. Processing

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

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

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

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

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: North Carolina Department of Transportation (NCDOT)
   Project Development and Environmental Analysis
   1598 Mail Service Center
   Raleigh, NC 27699-1598
   Telephone Number: 919-733-3141 Fax Number: 919-733-9794
   E-mail Address: gthorpe@dot.state.nc.us

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

III. Project Information

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

1. Name of project: Replacement of Bridge No. 141 on SR 1741 (Walburg-High Point Road) over Spurgeon Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4101

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Davidson Nearest Town: Wallburg
   Subdivision name (include phase/lot number): NA
   Directions to site (include road numbers/names, landmarks, etc.): Highway 40 West to Highway 85 (going south) to junction with NC 109 (going north) to Walburg-Highpoint Road.

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 35° 59' 48" °N 80° 07' 09" °W

6. Property size (acres): Total project length is 0.180 miles

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

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

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Project area is located in a rural community with the surrounding area being comprised mainly of agricultural land.

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 141 will be replaced on existing location with a offsite detour. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other various equipment necessary for roadway construction.

11. Explain the purpose of the proposed work: Bridge No. 141 has a sufficiency rating of 36.2 out of a possible 100 for a new structure. The bridge is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer more efficient traffic operations.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. A Jurisdictional Determination (Action ID. 200420755) from the U.S. Army Corps of Engineers was given for the wetlands on April 17, 2006.

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
There are no future permit requests anticipated for this project.

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

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

1. Provide a written description of the proposed impacts: See cover letter

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

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
Site 1	Temporary Fill in Wetland	Herbaceous	NA	40	0.16
Site 2	Permanent Fill in Wetland	Herbaceous	NA	30	0.01
Site 2	Mechanized Clearing	Herbaceous	NA	30	0.01
Total Wetland Impact (acres)					0.18

3. List the total acreage (estimated) of all existing wetlands on the property: 0.52

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

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

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

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

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

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

Stream Impact (acres):	0.00
Wetland Impact (acres):	0.18
Open Water Impact (acres):	0.00
Total Impact to Waters of the U.S. (acres)	0.18
Total Stream Impact (linear feet):	0.00

7. Isolated Waters

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

8. Pond Creation

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

VII. Impact Justification (Avoidance and Minimization)

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

VIII. Mitigation

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

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

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

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   No mitigation is proposed for the minimal amount of wetland impacts.

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

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

IX. Environmental Documentation (required by DWQ)

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

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

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

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

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

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

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

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1			
2			
Total			

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

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

_____

_____

XI. Stormwater (required by DWQ)

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

XII. Sewage Disposal (required by DWQ)

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

XIII. Violations (required by DWQ)

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

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

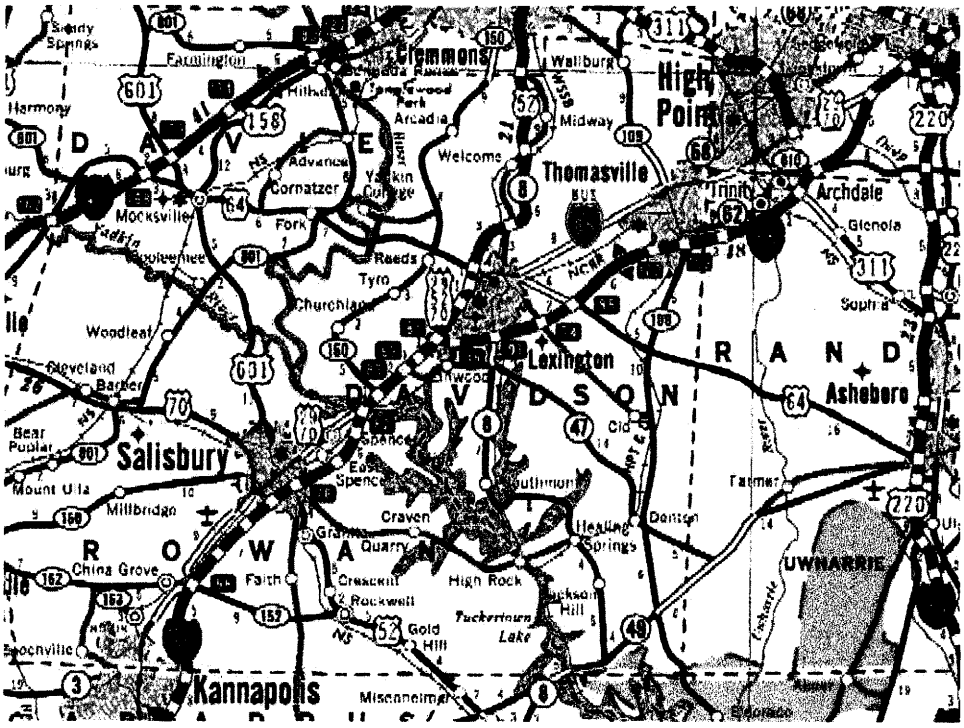
XIV. Cumulative Impacts (required by DWQ)

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

XV. Other Circumstances (Optional):

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

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



VICINITY MAP

NCDOT

DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
BRIDGE NO. 141 OVER
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

SHEET | OF || 2/2/06

2/27/2007
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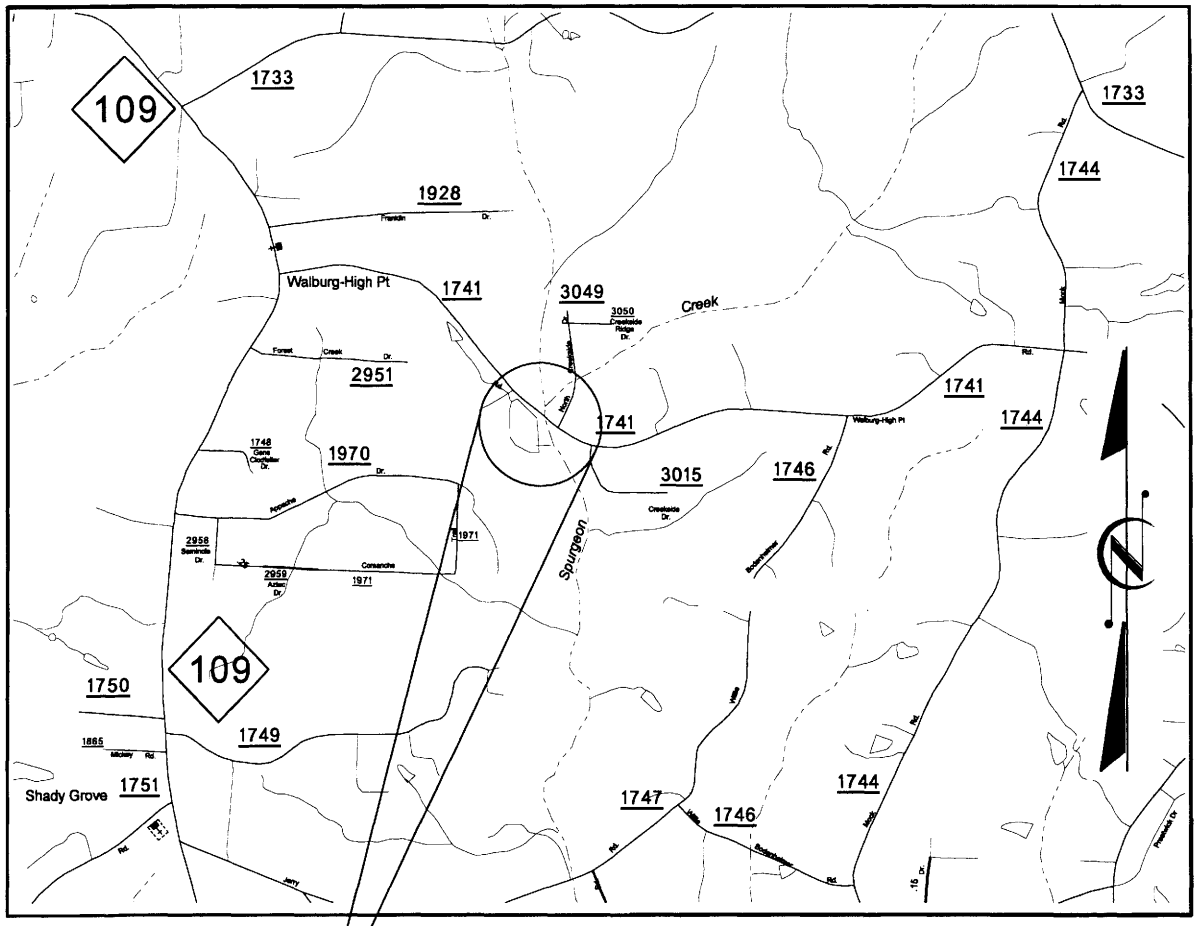
SITE MAP



SITE

NCDOT

DIVISION OF HIGHWAYS

DAVIDSON COUNTY

PROJECT: 33457.1.1 (B-4101)

BRIDGE NO. 141 OVER SPURGEON CREEK ON SR 1741 IN THOMASVILLE

SHEET 2 OF 11 2/2/06

ENGLISH

2/27/2007
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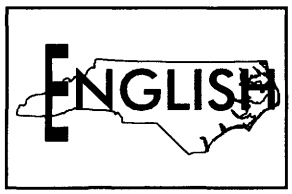
SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(1)	CLEMONS LAFAYETTE MCGEE	541 WALLBURG-HIGH POINT ROAD HIGH POINT, NC 27265	1
(3)	MAXINE HAYWORTH TEW	1650 N OLD GREENSBORO ROAD HIGH POING, NC 27265	2



NCDOT

DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
BRIDGE NO. 141 OVER
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

2/2/06

2/27/2007
11:40:21 AM
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WETLAND LEGEND

WLB WETLAND BOUNDARY

WETLAND

DENOTES FILL IN WETLAND

DENOTES FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

12"-48" PIPES

54" PIPES & ABOVE

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

DAVIDSON COUNTY

PROJECT: 33457.1.1 (B-4101)

BRIDGE NO. 141 OVER SPURGEON CREEK ON SR 1741 IN THOMASVILLE

SHEET 4 **OF** 11 **2/2/06**

2/27/2007
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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	-DET- 12+00 to 14+00 LT		0.00	0.16	<.01							
2	-L- 21+00 to 22+00 RT		0.01			0.01						
TOTALS:			0.01	0.16	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

DAVIDSON COUNTY
WBS - 33457.1.1 (B-4101)

SHEET 5 of 11 5/15/2007

ATN Revised 3/31/05

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4101	2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

ENGLISH

NC GRID
NAD 83/95

SITE 1

SITE 2

BEGIN DETOUR
-DET- PC STA.10+00.00 =
-L- POC STA.17+23.58

-DET- PT 11+74.30

-DET- PC 12+85.30

-DET- PT 13+66.10

-DET- PC 15+12.78

-L- PT 21+26.38

-DET- PT 16+39.27

-DET- PC 17+50.27

END DETOUR
-DET- PT STA.18+76.75 =
-L- POC STA.25+96.44

-L- PC 25+99.47

-L- PT 29+52.29

NO BENTS ARE TO BE LOCATED IN THE CREEKS FOR THE TEMPORARY BRIDGE AND THE BANKS ARE NOT TO BE DISTURBED

INSTALL PERMANENT PIPE AND RETAIN AFTER REMOVAL OF THE DETOUR

CLASS 'B' RIP RAP EST. 3 TONS EST. 80 SY FF

DO NOT DISTURB POND

WATER ELEV=779.75

1 CLEMONS LAFAYETTE MCGEE

2 OTIS B HOUGH JR

3 MAXINE HAYWORTH TEW

4 SAMUEL M & LUCY J HASELL

5 DAVID L & SYLVIA C JENKINS

DONNA DWYER

DENNIS R & PATRICIA A SEAMANK

CHARLES H & PATRICIA M HALL

TERRI PRESNELL ANTHONY

MAXINE HAYWORTH TEW

TO HWY 109

WALLBURG-HIGH POINT RD (SR 1741)

TO HIGH POINT

BRICK COLUMN LANDSCAPED

BRICK COLUMN REMOVE

RETAIN

BLK SHED RUINS

BRUC #142

SPURGEON CREEK

NORTH CREEKSIDE DR

20' DRAINAGE EASEMENT

SIGHT TRIANGLE

15 -L-

10 -DET-

20 -L-

15 -DET-

25 -L-

LEGEND

—WLB— WETLAND

DENOTES TEMPORARY FILL IN WETLAND

100 0 50 100
SCALE: 1"= 100' HORIZ.

PLAN VIEW
SITE 1 & SITE 2

NCDOT
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

SHEET 6 OF 11 5/15/07

5/15/2007
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KO & Associates, P.C.

8/17/99

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4101	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

ENGLISH

NC GRID
NAD 83/95

SITE 1

SITE 2

-DET- PC 15+12.78

-DET- PC 12+85.30

-DET- PT 13+66.10

-DET- PT 11+74.30

BEGIN DETOUR
-DET- PC STA 10+00.00
-L- POC STA 17+23.58

-DET- PT 16+39.27

-DET- PC 17+50.27

END DETOUR
-DET- PT STA 18+76.75 =
-L- POC STA 25+96.44

-L- PT 29+12.29

-L- PT 21+26.38

-L- PC 25+99.47

NO BENTS ARE TO BE LOCATED IN THE CREEKS FOR THE TEMPORARY BRIDGE AND THE BANKS ARE NOT TO BE DISTURBED

CLASS 'B' RIP RAP
EST. 13 TONS
EST. 80 SY FF

INSTALL PERMANENT PIPE AND RETAIN AFTER REMOVAL OF THE DETOUR

DO NOT DISTURB POND

WATER ELEV=779.75

1 CLEMONS LAFAYETTE MCGEE

2 OTIS B HOUGH JR

3 MAXINE HAYWORTH TEW

4 SAMUEL M & LUCY HASELL

5 DAVID L & SYLVIA C JENKINS

DONNA DWYER

DENNIS R & PATRICIA A SEAMANK

CHARLES H & PATRICIA M HALL

TERRI PRESNELL ANTHONY

MAXINE HAYWORTH TEW

TO HWY 109

TO HIGH POINT

WALLBURG-HIGH POINT RD (SR 1741)

NORTH CREEKSIDE DR

SPURGEON CREEK

BLK SHED RUINS

BRICK COLUMN

REMOVE

RETAIN

LEGEND

—WLB— WETLAND

DENOTES TEMPORARY FILL IN WETLAND

PLAN VIEW
SITE 1 & SITE 2

100 0 50 100
SCALE: 1"= 100' HORIZ.

NCDOT
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

SHEET 7 OF 11 5/15/07

5/15/2007
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KO & Associates, P.C.

Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

ENGLISH

NC GRID
NAD 83/95

SITE 1

SITE 2

-L- PT 29+57.29

-L- PT 21+26.38

-L- PC 25+99.47

FILL IN WETLAND

EXCAVATION IN WETLAND

FILL IN WETLAND
MECHANIZED CLEARING

CLASS 'B' RIP RAP
EST. 3 TONS
EST. 80 SY FF

DO NOT DISTURB POND

WATER ELEV=779.75

1 CLEMONS LAFAYETTE MCGEE

2 OTIS B HOUGH JR

3 MAXINE HAYWORTH TEW

4 SAMUEL M & LUCY J HASELL

5 DAVID L & SYLVIA C JENKINS

DONNA DWYER

DENNIS R & PATRICIA A SEAMANIK

CHARLES H & PATRICIA M HALL

TERRI PRESNELL ANTHONY

MAXINE HAYWORTH TEW

TO HNWY 109

TO HIGH POINT

WALLBURG-HIGH POINT RD (SR 1741)

NORTH CREEKSIDE DR

SPURGEON CREEK

BRDG #M12

-REMOVE

BLK SHED RUINS

BRICK COLUMN LANDSCAPED

20' DRAINAGE EASEMENT

LEGEND

—WLB— WETLAND

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

100 0 50 100
SCALE: 1"= 100' HORIZ.

PLAN VIEW
SITE 1 & SITE 2

NCDOT
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

SHEET 8 OF 11 2/27/

5/17/2007
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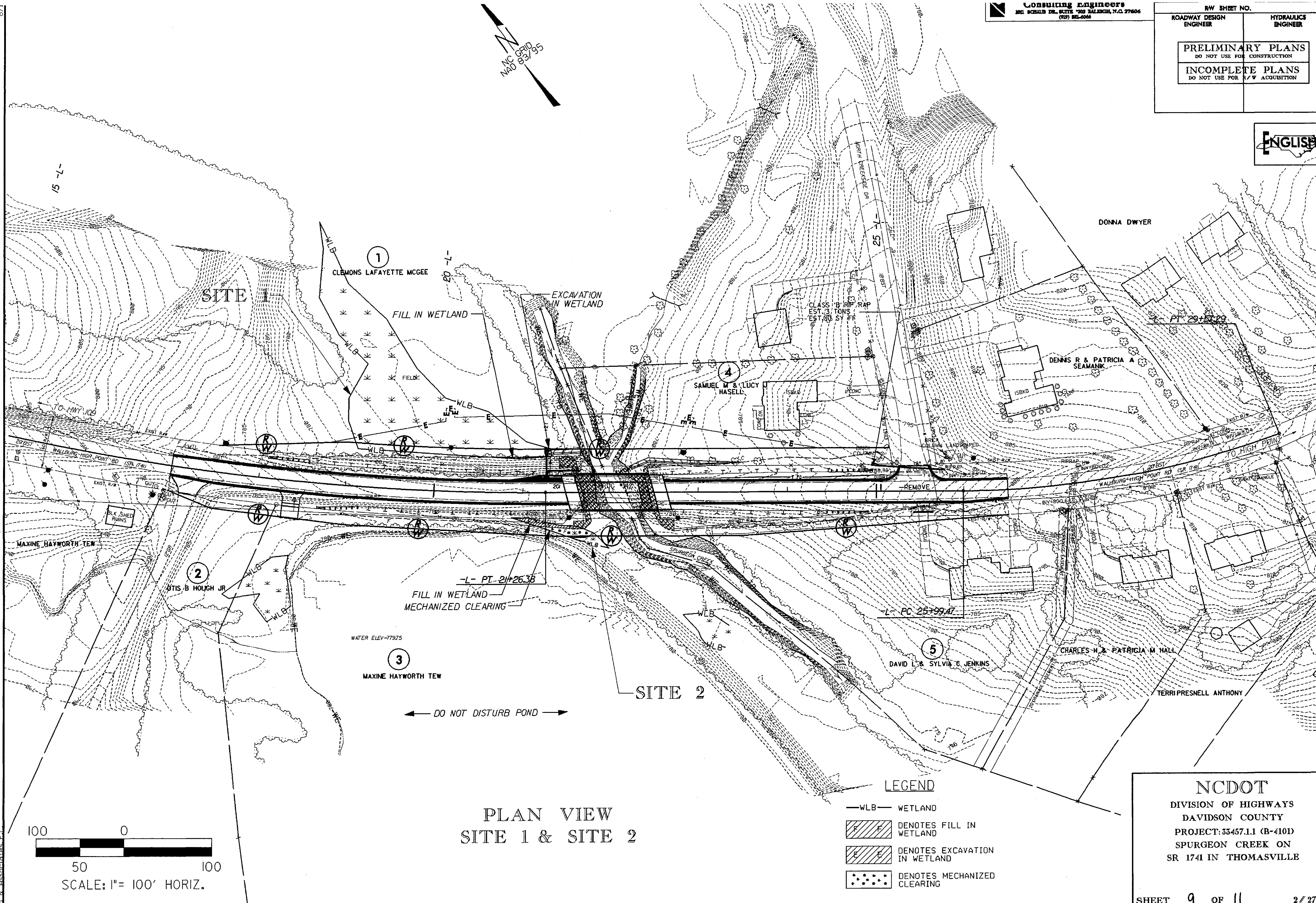
KS & Associates, P.C.



Consulting Engineers
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
ENGLISH
NC GRID NAD 83/95
SITE 1
CLEMONS LAFAYETTE MCGEE
FILL IN WETLAND
EXCAVATION IN WETLAND
CLASS 'B' RIP RAP
SAMUEL M & LUCY HASELL
DONNA DWYER
DENNIS R & PATRICIA A SEAMANIK
-L- PT 29+51.29
TO HWY 109
WALLBURG-HIGH POINT RD (SR 1741)
TO HIGH POINT
REMOVE
MAXINE HAYWORTH TEW
OTIS B HOUGH JR
-L- PT 21+26.38
FILL IN WETLAND
MECHANIZED CLEARING
SPURGEON CREEK
-L- PC 25+99.47
WATER ELEV=779.75
MAXINE HAYWORTH TEW
DAVID L & SYLVIA C JENKINS
CHARLES H & PATRICIA M HALL
TERRI PRESNELL ANTHONY
SITE 2
DO NOT DISTURB POND
100 0 50 100
SCALE: 1"= 100' HORIZ.

PLAN VIEW
SITE 1 & SITE 2

LEGEND

- —WLB— WETLAND
- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING

NCDOT
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

SHEET 9 OF 11 2/27/0

BM • 2 EL.777.54
RR SPIKE SET IN 16" SWEET GUM
-L- STA.21+49.17, 174.84' LT.

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2125 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	780.0 FT
BASE DISCHARGE	=	2600 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	780.7 FT
OVERTOPPING DISCHARGE	=	5750 CFS
OVERTOPPING FREQUENCY	=	500+ YR
OVERTOPPING ELEVATION	=	784.9 FT
DATE OF SURVEY	=	4-22-04
W.S. ELEVATION AT DATE OF SURVEY	=	768.5 FT

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4101	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

ENGLISH

-L- (SR 1741)

FOR PLAN, SEE SHEET NO. 4

SITE 2

BEGIN GRADE
PVC STA.17+00.00
EL.791.05 (INCLUDES 1/4" RESURFACING)

-3.7931%

PI = 17+87.00
EL = 787.75'
VC = 174'
K = 104
** DS = 50 MPH

PVCC STA.18+74.00
EL.785.91

-2.1138%

PI = 19+10.00
EL = 785.15'
VC = 72'
K = 51
** DS = 35 MPH

** DESIGN EXCEPTION REQUIRED

PVCC STA.19+46.00
EL.784.90

-0.6885%

PVT STA.20+48.00
EL.784.70

PI = 19+97.00
EL = 784.55'
VC = 102'
K = 103
** DS = 50 MPH

WETLAND

WETLAND

+0.3000%

PVC STA.22+60.00
EL.785.34

PVCC STA.24+54.00
EL.788.92

+3.3912%

PI = 23+57.00
EL = 785.63'
VC = 194'
K = 63
** DS = 35 MPH

PVCC STA.25+56.00
EL.793.81

+6.2000%

PVT STA.26+04.00
EL.793.81

+1.0714%

END GRADE
STA.26+50.00
EL.800.25 (INCLUDES 1/4" RESURFACING)

PI = 25+80.00
EL = 795.30'
VC = 48'
K = 55
** DS = 35 MPH

PI = 25+05.00
EL = 790.65'
VC = 102'
K = 36
** DS = 25 MPH

TEMP. DETOUR

FOR PLAN, SEE SHEET NO. 2-B

SITE 1

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	900 CFS
DESIGN FREQUENCY	=	5 YR
DESIGN HW ELEVATION	=	777.7 FT
BASE DISCHARGE	=	N/A CFS
BASE FREQUENCY	=	N/A YR
BASE HW ELEVATION	=	N/A FT
OVERTOPPING DISCHARGE	=	N/A CFS
OVERTOPPING FREQUENCY	=	N/A YR
OVERTOPPING ELEVATION	=	N/A FT
DATE OF SURVEY	=	4-22-04
W.S. ELEVATION AT DATE OF SURVEY	=	769.3 FT

BEGIN DETOUR GRADE
PVC STA.11+35.00
EL.785.50

-5.2086%

WETLAND

PVT STA.12+85.00
EL.783.48

PI = 12+10.00
EL = 783.10'
VC = 150'
K = 41
DS = 30 MPH

WETLAND

+0.5000%

PVC STA.15+90.00
EL.785.00

+4.4529%

END DETOUR GRADE
PVT STA.17+60.00
EL.789.21

PI = 16+75.00
EL = 785.42'
VC = 170'
K = 43
DS = 30 MPH

LEGEND

DENOTES FILL IN WETLAND

DENOTES TEMPORARY FILL IN WETLAND

NCDOT
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE

SHEET 10 OF 11 2/2/06

2/27/2007
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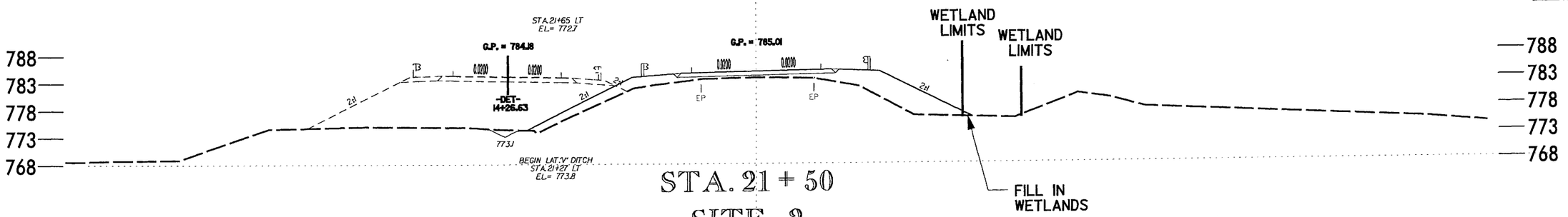
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4101	XPL
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

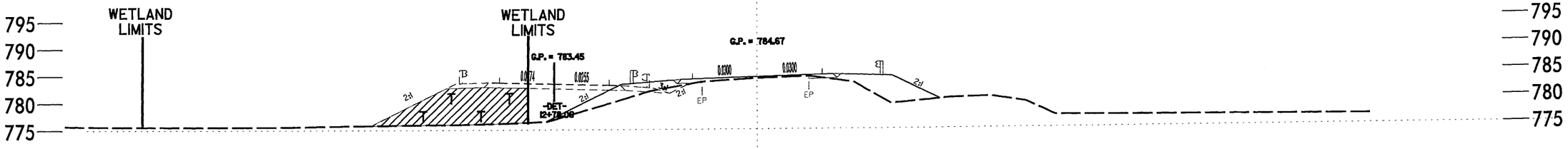
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

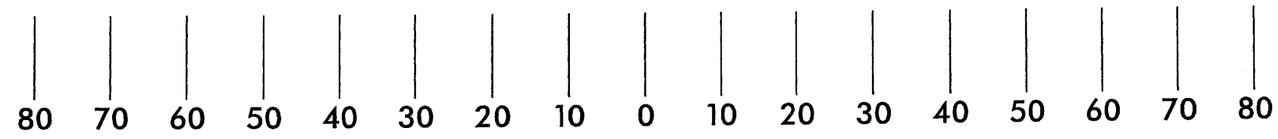
ENGLISH



STA. 21 + 50
SITE 2



STA. 20 + 00
SITE 1



TYPICAL X-SECTIONS

LEGEND
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND

NCDOT
DIVISION OF HIGHWAYS
DAVIDSON COUNTY
PROJECT: 33457.1.1 (B-4101)
SPURGEON CREEK ON
SR 1741 IN THOMASVILLE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 20'
SHEET 11 OF 11 2/2/06

2/14/2006
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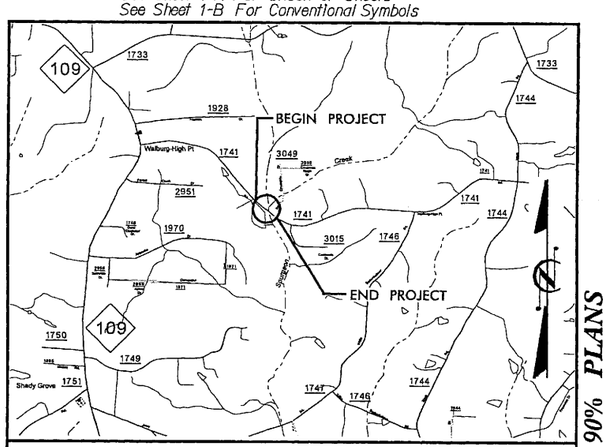
KO & Associates, P.C.

03/08/99

TIP PROJECT: B-4101

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



VICINITY MAP

90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4101	1	

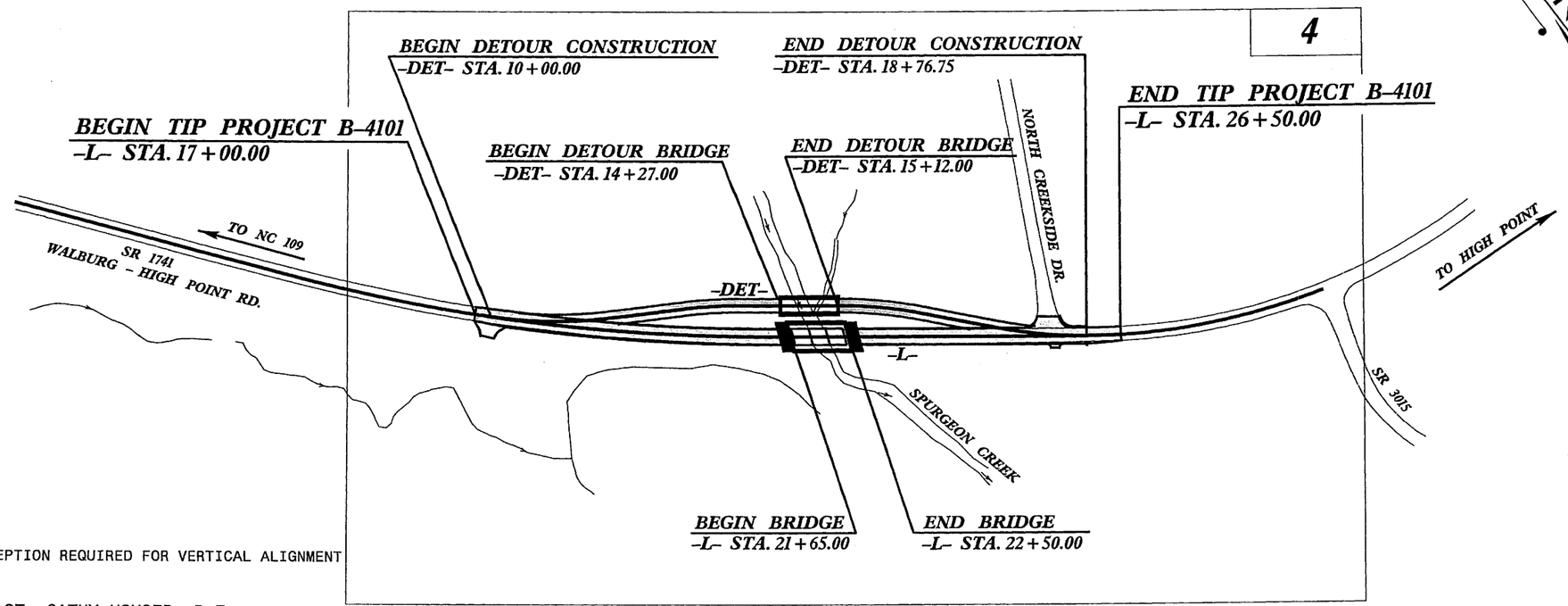
WBS NO.	F.A. PROJ. NO.	DESCRIPTION
33457.1.1	BRSTP-1741(3)	P.E.
33457.2.1	BRSTP-1741(3)	R/W, CONST

LOCATION: *BRIDGE NO. 141 OVER SPURGEON CREEK ON SR 1741 (WALBURG-HIGH POINT RD.) IN THOMASVILLE*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING & STRUCTURES*

NC GRID
NAD 83/95

4



** DESIGN EXCEPTION REQUIRED FOR VERTICAL ALIGNMENT

NCDOT CONTACT: CATHY HOUSER, P.E.
ROADWAY DESIGN - ENGINEERING COORDINATION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES

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

DESIGN DATA

ADT 2007 = 2,580
ADT 2027 = 4,380
DHV = 10 %
D = 55 %
T = 4 % *
** V = 60 MPH

* TTST 1% DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4101	=	*0.164 MI.*
LENGTH STRUCTURES TIP PROJECT B-4101	=	*0.016 MI.*
TOTAL LENGTH OF TIP PROJECT B-4101	=	*0.180 MI.*

Prepared In the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 Schaub Dr. Suite 208 Raleigh NC 27606
(919) 851-6096

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 18, 2006

LETTING DATE: JANUARY 15, 2008

DAVID C. WALLER, PE
PROJECT ENGINEER

STEPHEN R. WHITLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

2/26/2007
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Ko & Associates, P.C.

PROJECT REFERENCE NO.	SHEET NO.
B-4101	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
- 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 — CA
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

6/2/99

PAVEMENT SCHEDULE

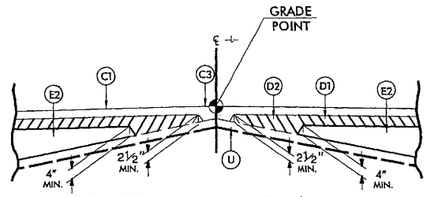
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J	PROP. 8" AGGREGATE BASE COURSE.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		

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

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4101	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

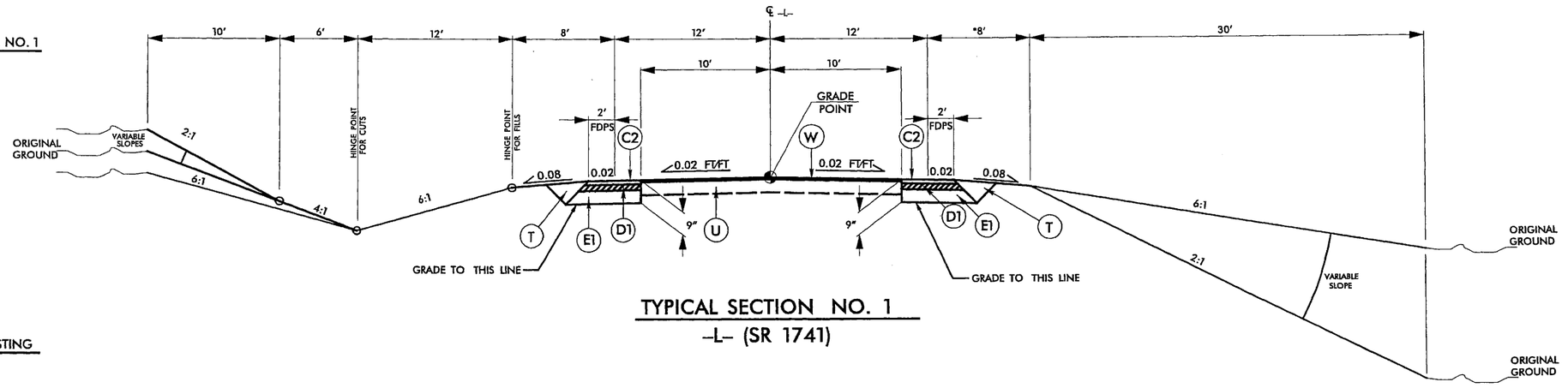


Detail Showing Method of Wedging

* ADD 5' WITH GUARDRAIL

TRANSITION FROM EXISTING TO T.S. NO. 1
-L- STA. 17+00.00 TO 17+50.00

USE TYPICAL SECTION NO. 1
-L- STA. 17+50.00 TO 20+90.00
-L- STA. 24+00.00 TO 26+00.00

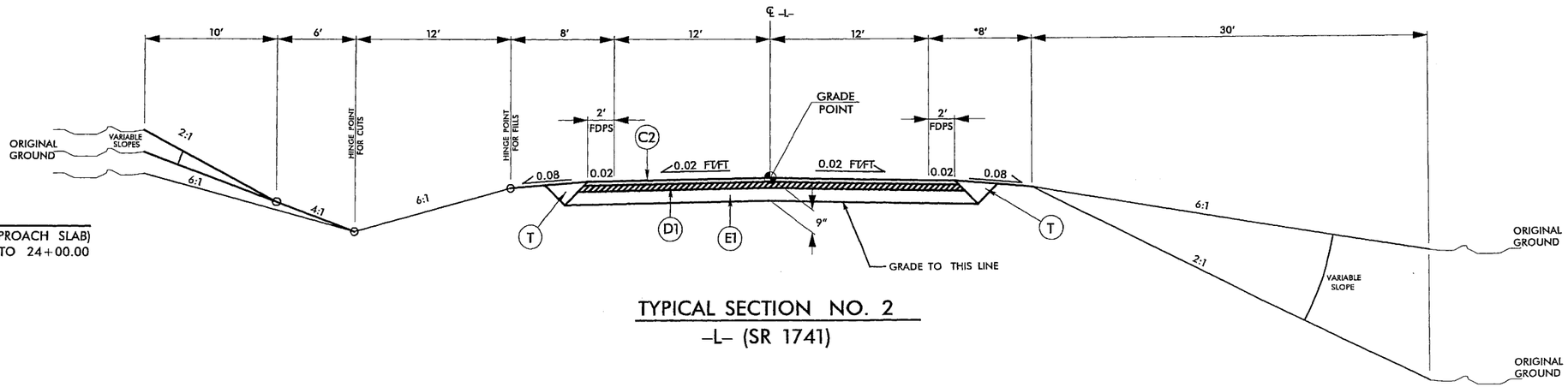


TYPICAL SECTION NO. 1
-L- (SR 1741)

TRANSITION FROM T.S. NO. 1 TO EXISTING
-L- STA. 26+00.00 TO 26+50.00

* ADD 5' WITH GUARDRAIL

USE TYPICAL SECTION NO. 2
-L- STA. 20+90.00 TO 21+50.00 (APPROACH SLAB)
-L- STA. 22+65.00 (APPROACH SLAB) TO 24+00.00



TYPICAL SECTION NO. 2
-L- (SR 1741)

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ko & associates, p.a.

6/2/95

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 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 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J	PROP. 8" AGGREGATE BASE COURSE.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		

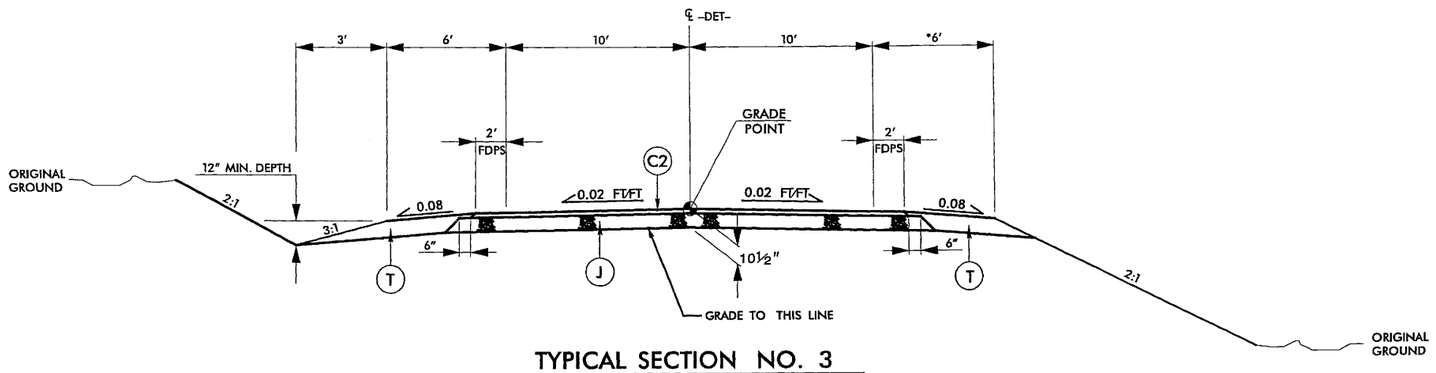
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4101	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

* ADD 2' WITH GUARDRAIL



TYPICAL SECTION NO. 3
-DET- (TEMP. DETOUR)

USE TYPICAL SECTION NO. 3
-DET- STA. 11+35.00 TO 14+27.00 (BRIDGE)
-DET- STA. 15+12.00 (BRIDGE) TO 17+60.00

2/26/2007
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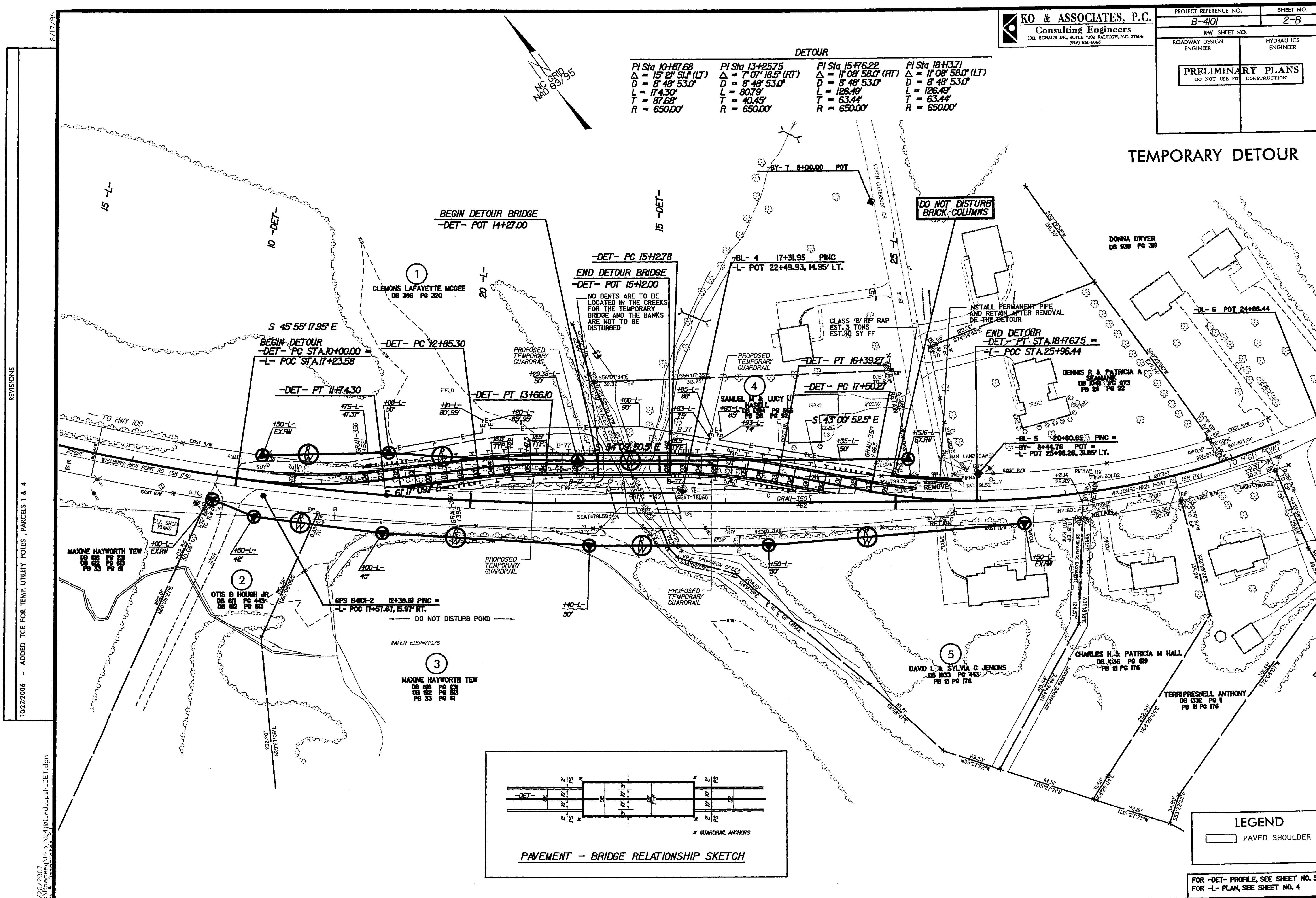
KO & Associates, P.



KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE *202 RALEIGH, N.C. 27606
(919) 851-6066
PROJECT REFERENCE NO. B-4101
SHEET NO. 2-B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
TEMPORARY DETOUR
DETOUR
PI Sta 10+87.68
Δ = 15° 21' 51.1" (LT)
D = 8° 48' 53.0"
L = 174.30'
T = 87.68'
R = 650.00'
PI Sta 13+25.75
Δ = 7° 07' 18.5" (RT)
D = 8° 48' 53.0"
L = 80.79'
T = 40.45'
R = 650.00'
PI Sta 15+76.22
Δ = 11° 08' 58.0" (RT)
D = 8° 48' 53.0"
L = 126.49'
T = 63.44'
R = 650.00'
PI Sta 18+13.71
Δ = 11° 08' 58.0" (LT)
D = 8° 48' 53.0"
L = 126.49'
T = 63.44'
R = 650.00'
NC GRID NAD 83/95
BEGIN DETOUR BRIDGE
-DET- POT 14+27.00
END DETOUR BRIDGE
-DET- POT 15+12.00
-DET- PC 15+12.78
NO BENTS ARE TO BE LOCATED IN THE CREEKS FOR THE TEMPORARY BRIDGE AND THE BANKS ARE NOT TO BE DISTURBED
BEGIN DETOUR
-DET- PC STA.10+00.00 =
-L- POC STA.17+23.58
S 45° 55' 17.95" E
-DET- PC 12+85.30
-DET- PT 11+74.30
-DET- PT 13+66.10
-DET- PT 16+39.27
-DET- PC 17+50.27
-BY- 7 5+00.00 POT
-BL- 4 17+31.95 PINC
-L- POT 22+49.93, 14.95' LT.
DO NOT DISTURB BRICK COLUMNS
INSTALL PERMANENT PIPE AND RETAIN AFTER REMOVAL OF THE DETOUR
CLASS 'B' RIP RAP EST. 3 TONS EST. 10 SY FF
END DETOUR
-DET- PT STA.18+76.75 =
-L- POC STA.25+96.44
-BL- 6 POT 24+88.44
-BL- 5 20+80.69 PINC =
-BY- 8+44.76 POT =
-L- POT 25+98.26, 31.85' LT.
S 43° 00' 52.5" E
S 54° 09' 50.5" E
PROPOSED TEMPORARY GUARDRAIL
TO HWY 109
TO HIGH POINT
WALLBURG-HIGH POINT RD (SR 1741)
GPS B4101-2 12+38.61 PINC =
-L- POC 17+57.67, 15.97' RT.
DO NOT DISTURB POND
WATER ELEV=779.75
SPURGEON CREEK
1 CLEMONS LAFAYETTE MCGEE DB 386 PG 320
2 OTIS B HOUGH JR. DB 617 PG 443 DB 612 PG 613
3 MAXINE HAYWORTH TEW DB 696 PG 231 DB 612 PG 613 PB 33 PG 61
MAXINE HAYWORTH TEW DB 696 PG 231 DB 612 PG 613 PB 33 PG 61
4 SAMUEL M & LUCY D HASELL DB 1384 PG 886 PB 26 PG 92
5 DAVID L & SYLVIA C JENKINS DB 1833 PG 443 PB 21 PG 176
DONNA DWYER DB 938 PG 319
DENNIS R & PATRICIA A SEAMARK DB 1043 PG 973 PB 26 PG 92
CHARLES H & PATRICIA M HALL DB 1036 PG 619 PB 21 PG 176
TERRI PRESNELL ANTHONY DB 1332 PG 11 PB 21 PG 176
REMOVE
RETAIN
PAVEMENT - BRIDGE RELATIONSHIP SKETCH
GUARDRAIL ANCHORS
LEGEND
PAVED SHOULDER
FOR -DET- PROFILE, SEE SHEET NO. 5
FOR -L- PLAN, SEE SHEET NO. 4
REVISIONS
10/27/2006 - ADDED TCE FOR TEMP. UTILITY POLES, PARCELS 1 & 4
8/17/99
2/26/2007

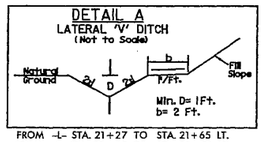
KO & ASSOCIATES, P.C. Consulting Engineers 1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606 (919) 851-6066	PROJECT REFERENCE NO. B-4101 / SHEET NO. 4
	R/W SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99 10/27/2006 - ADDED TCE FOR TEMP. UTILITY POLES , PARCELS 1 & 4

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



FROM -L- STA. 21+27 TO STA. 21+65 LT.
FROM -L- STA. 22+25 TO STA. 23+50 LT.

NC GRID NAD 83/95

* LEAVE GAPS IN PROPOSED GUARDRAIL AS REQUIRED BY TRAFFIC CONTROL PLANS IN ORDER TO REMOVE DETOUR EMBANKMENT. SEE TRAFFIC CONTROL PLANS.

BEGIN PROJECT B-4101
-L- POC STA. 17+00.00
S 39° 31' 00.5" E

CLEMONS LAFAYETTE MCGEE
DB 386 PG 320

MAXINE HAYWORTH TEW
DB 686 PG 231
DB 692 PG 663
PB 33 PG 61

OTIS B HOUGH JR.
DB 617 PG 443
DB 692 PG 663

SAMUEL M & LUCY J HASELL
DB 1584 PG 566
PB 26 PG 92

DONNA DWYER
DB 938 PG 389

DENNIS R & PATRICIA A SEAMANS
DB 1048 PG 873
PB 26 PG 92

CHARLES H. JR. & PATRICIA M HALL
DB 1236 PG 629
PB 21 PG 176

DAVID L. & SYLVIA C JENKINS
DB 1833 PG 443
PB 21 PG 176

TERRI PRESNELL ANTHONY
DB 1332 PG 8
PB 21 PG 176

TO HWY 109

WALLBURG-HIGH POINT RD (SR 1740)

TO HIGH POINT

NORTH CREEKSIDE DR

SPURGEON CREEK

RIP RAP AT EMBANKMENT SEE DETAIL B

LAT 'V' DITCH EST 3.7 GY DDE SEE DETAIL A

CLASS 'B' RIP RAP EST. 2 TONS EST. 7 SY FF

TIE TO EXISTING OUTFALL

DECK DRAINS ARE NOT REQUIRED

LAT 'V' DITCH EST 16.9 GY DDE SEE DETAIL A

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

CLASS II RIP RAP UP TO ELEV. 781.0 (TYP.)

-BL- 4 17+31.95 PINC
-L- POT 22+49.93, 14.95' LT.

-BY- 7 5+00.00 POT

DO NOT DISTURB BRICK COLUMNS

-BL- 6 POT 24+88.44
-L- PT 29+57.29

-BL- 5 20+80.68 PINC =
-BY- 8+44.76 POT =
-L- POT 25+98.26, 31.85' LT.

PROPOSED GUARDRAIL

15" CSP W/ELBS, ROD & LUG CONN. W/SLEEVES

BEGIN SBG STA. 21+22

INSTALL TEMPORARY 15" CSP w/ ELBOWS UNTIL DETOUR FILL IS REMOVED

-L- PT 21+26.38

GPS B4101-2 12+38.61 PINC =
-L- POC 17+57.67, 15.97' RT.

DO NOT DISTURB POND
WATER ELEV=771975

CLASS II RIP RAP UNDERNEATH THE PROPOSED BRIDGE EST. 120 TONS W/ 125 SYFF

BEGIN APPROACH SLAB
-L- STA. 21+50.00

BEGIN BRIDGE
-L- STA. 21+65.00

END APPROACH SLAB
-L- STA. 22+65.00

END BRIDGE
-L- STA. 22+50.00

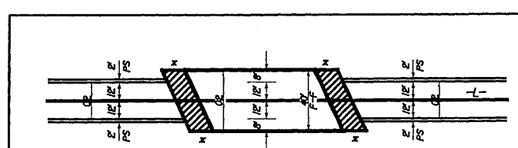
-L- PC 25+99.47

REMOVE & RESET FENCE ALONG RIGHT-OF-WAY

END PROJECT B-4101
-L- POC STA. 26+50.00

-L-
PI Sta 17+70.44
Δ = 14° 38' 50.1" (LT)
D = 2° 02' 46.6"
L = 715.80'
T = 359.86'
R = 2,800.00'
SE = 0.030
RO = 8%

PI Sta 27+80.37
Δ = 20° 48' 50.3" (LT)
D = 5° 49' 00.6"
L = 357.82'
T = 180.91'
R = 985.00'
SE = EXIST



PAVEMENT - BRIDGE RELATIONSHIP SKETCH

LEGEND
PAVED SHOULDER
APPROACH SLAB

FOR -L- PROFILE, SEE SHEET NO. 5
FOR DETOUR, SEE SHEET NO. 2-B

2/26/2007
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KO & Associates, P.

PROJECT REFERENCE NO.	SHEET NO.
B-4101	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

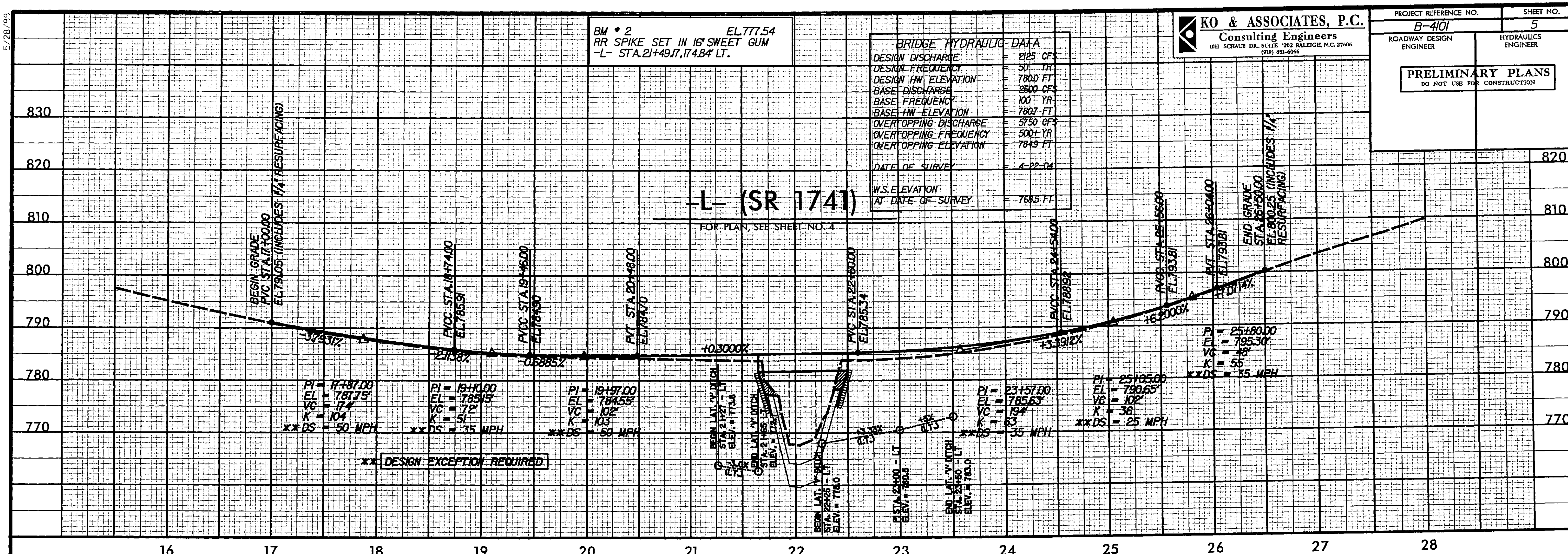
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM * 2 EL.777.54
RR SPIKE SET IN 16" SWEET GUM
-L- STA.21+49.17,174.84' LT.

-L- (SR 1741)

FOR PLAN, SEE SHEET NO. 4

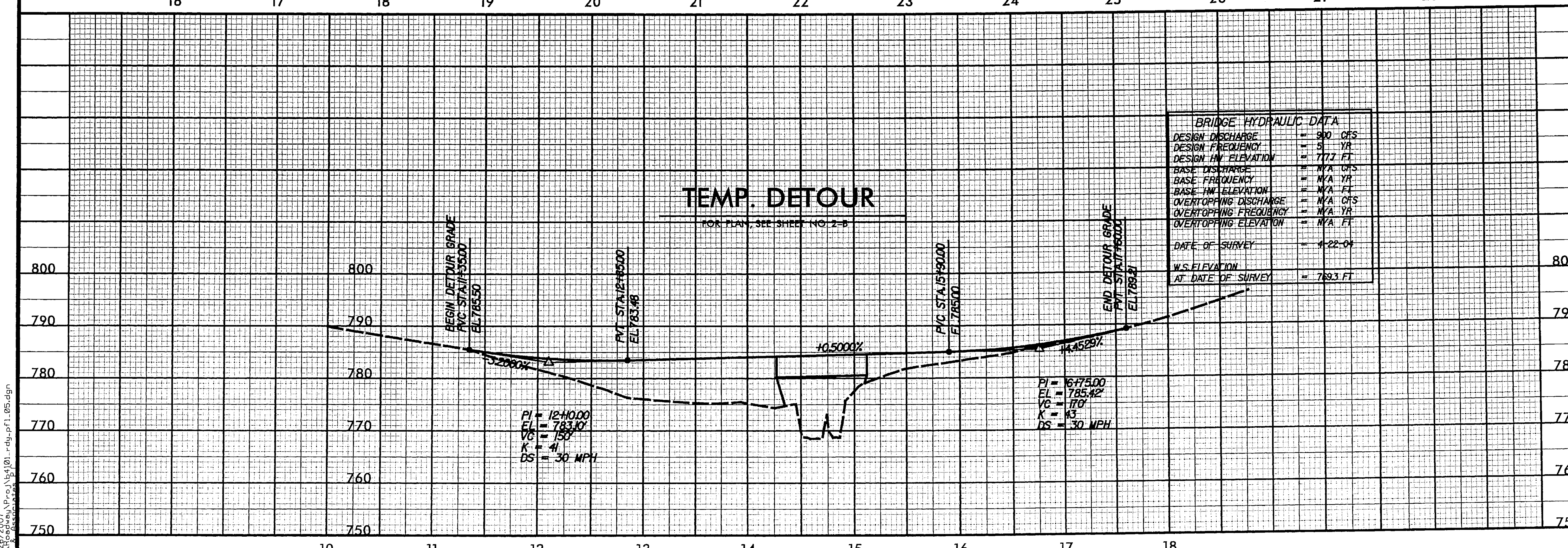
BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	=	2125 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	780.0 FT
BASE DISCHARGE	=	2600 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	780.7 FT
OVERTOPPING DISCHARGE	=	5750 CFS
OVERTOPPING FREQUENCY	=	500+ YR
OVERTOPPING ELEVATION	=	784.9 FT
DATE OF SURVEY	=	4-22-04
W.S. ELEVATION AT DATE OF SURVEY	=	768.5 FT


830
820
810
800
790
780
770
BEGIN GRADE
PVC STA.17+00.00
EL.791.05 (INCLUDES 1/4" RESURFACING)
PVCC STA.18+74.00
EL.785.91
PVCC STA.19+46.00
EL.784.30
PVT STA.20+48.00
EL.784.70
PVC STA.22+60.00
EL.785.34
PVCC STA.24+54.00
EL.788.92
PVCC STA.25+55.00
EL.793.81
PVT STA.26+04.00
EL.793.81
END GRADE
STA.26+50.00
EL.800.25 (INCLUDES 1/4" RESURFACING)
-3.7931%
-2.1138%
-0.6885%
+0.3000%
+3.3912%
+6.2000%
+7.0714%
PI = 17+87.00
EL = 787.75'
VC = 174'
K = 104
** DS = 50 MPH
PI = 19+10.00
EL = 785.15'
VC = 72'
K = 51
** DS = 35 MPH
PI = 19+97.00
EL = 784.55'
VC = 102'
K = 103
** DS = 50 MPH
PI = 23+57.00
EL = 785.63'
VC = 194'
K = 63
** DS = 35 MPH
PI = 25+05.00
EL = 790.65'
VC = 102'
K = 36
** DS = 25 MPH
PI = 25+80.00
EL = 795.30'
VC = 48'
K = 55
** DS = 35 MPH
** DESIGN EXCEPTION REQUIRED
BEGIN LAT. "V" DITCH
STA. 21+21 - LT
ELEV. = 773.6
END LAT. "V" DITCH
STA. 21+65 - LT
BEGIN LAT. "V" DITCH
STA. 22+25 - LT
ELEV. = 776.0
PI STA. 23+00 - LT
ELEV. = 780.5
END LAT. "V" DITCH
STA. 23+50 - LT
ELEV. = 783.0
16
17
18
19
20
21
22
23
24
25
26
27
28

TEMP. DETOUR

FOR PLAN, SEE SHEET NO. 2-B

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	=	900 CFS
DESIGN FREQUENCY	=	5 YR
DESIGN HW ELEVATION	=	777.7 FT
BASE DISCHARGE	=	N/A CFS
BASE FREQUENCY	=	N/A YR
BASE HW ELEVATION	=	N/A FT
OVERTOPPING DISCHARGE	=	N/A CFS
OVERTOPPING FREQUENCY	=	N/A YR
OVERTOPPING ELEVATION	=	N/A FT
DATE OF SURVEY	=	4-22-04
W.S. ELEVATION AT DATE OF SURVEY	=	769.3 FT


800
790
780
770
760
750
BEGIN DETOUR GRADE
PVC STA.11+35.00
EL.785.50
PVT STA.12+85.00
EL.783.48
P/C STA.15+90.00
EL.785.00
END DETOUR GRADE
PVT STA.17+60.00
EL.789.21
-3.2080%
+0.5000%
+4.4529%
PI = 12+10.00
EL = 783.10'
VC = 150'
K = 41
DS = 30 MPH
PI = 16+75.00
EL = 785.42'
VC = 170'
K = 43
DS = 30 MPH
10
11
12
13
14
15
16
17
18

Davidson County
SR 1741
Bridge No. 141 over Spurgeon Creek
Federal-Aid Project No. BRSTP-1741(3)
State Project No. WBS 33457.1.1
T.I.P. No. B-4101

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION

APPROVED:

4.20.05
DATE

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

4/20/05
DATE

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

Davidson County
SR 1741
Bridge No. 141 over Spurgeon Creek
Federal-Aid Project No. BRSTP-1741(3)
State Project No. WBS 33457.1.1
T.I.P. No. B-4101

CATEGORICAL EXCLUSION

April 2005

Documentation Prepared By Ko and Associates, P.C.

L. J. Ward, P.E.
Project Manager

For North Carolina Department of Transportation

Karen B. Taylor, P.E.
Project Development Engineer

PROJECT COMMITMENTS

Davidson County
SR 1741
Bridge No. 141 over Spurgeon Creek
Federal-Aid Project No. BRSTP-1741(3)
State Project No. WBS 33457.1.1
T.I.P. No. B-4101

In addition to the standard Nationwide Permit #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Bridge Construction and Maintenance Activities, General Certifications, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Division 9 Construction Office:

Bridge replacement project B-4100 is located on SR 1741 in the general vicinity of B-4101. The Division 9 staff has suggested B-4100 and B-4101 be grouped together (i.e. same contractor) so that the same temporary detour structure may be used for both projects.

Davidson County
SR 1741
Bridge No. 141 over Spurgeon Creek
Federal-Aid Project No. BRSTP-1741(3)
State Project No. WBS 33457.1.1
T.I.P. No. B-4101

INTRODUCTION: The replacement of Bridge No. 141 is included in the North Carolina Department of Transportation 2004-2010 Transportation Improvement Program and the Federal-Aid Bridge Replacement Program. The USGS map indicates Bridge No. 141 is over Spurgeon Creek, not Abbotts Creek as shown in the TIP. Local officials also confirmed this bridge is over Spurgeon Creek. 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

Bridge Maintenance Unit records indicated the bridge has a sufficiency rating of 36.2 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1741 (Wallburg-High Point Road) crosses over Spurgeon Creek at the northeast corner of Davidson County approximately 0.6 mile west of its junction with SR 1746 (Willie Bodenheimer Road) and approximately 0.8 mile east of its junction with NC 109. Development along the western approach of the bridge is agricultural and residential. A large pond is located in the immediate area of the bridge in the southwest quadrant. A cultivated field is located in the northwest quadrant. The western approach is on a slight horizontal curve that ends just before the bridge. The eastern approach is on a tangent with a horizontal curve beginning about 400 feet from the bridge. Development along the eastern approach is residential. Creek Side North Subdivision is located in the northeast quadrant and the Creek Side Subdivision is located in the southeast quadrant. SR 1741 is classified as an Urban Minor Arterial in the Statewide Functional Classification System.

SR 1741 has a current pavement width of 20 feet with 6-foot grass shoulders in the area of the bridge. The roadway approaches are tangents on downgrades toward the bridge. The vertical sag occurs at the bridge; however, the bridge structure itself is flat.

The 2005 estimated traffic volumes on SR 1741 at Spurgeon Creek are 2400 vehicles per day (vpd) and for the design year 2025 the estimated traffic volumes are 4200 vpd. The speed limit is 55 mph in the vicinity of the bridge.

Bridge No. 141, as shown in Figures 2A and 2B, has an overall length of 75 feet and a clear deck width of 26 feet. The existing two-lane bridge has a reinforced concrete deck on I-beams supported by reinforced concrete caps and timber piles at approximate 35-foot centers. The structure was constructed in 1948. The current posted weight limit is 23 tons for single unit vehicles and 29 tons for truck-tractor semi-trailer (TTST) vehicles. The bridge has a sufficiency rating of 36.2 compared to a rating of 100 for a new structure. Bridge No. 141 has a bed-to-crown distance of approximately 16 feet. During the field visit, severe erosion around the piles was observed, as well as debris on the bridge as a result of heavy rain.

Two accidents were reported in the vicinity of the bridge during the period from April 1, 1999 to March 31, 2002. The accident rate is 304.41 accidents per 100 million vehicle miles (MVM). The statewide average accident rate for rural secondary routes (two lanes undivided) for the three-year period 2000–2002 is 347.58 accidents per 100 MVM.

There are overhead power lines along the north and south sides of SR 1741 crossing over the creek and SR 3049. There are no utilities attached to the bridge.

Public school buses cross the present bridge 14 times per day. The School Transportation Director indicated that re-routing the school bus route would be difficult and that an acceptable turn around is preferred.

III. ALTERNATIVES

A. Project Description

NCDOT proposes to replace Bridge No. 141 with a new bridge approximately 85 feet long with a clear roadway width of 40 feet. The final length of the bridge will be determined in final design. New approaches to the bridge will provide 12-foot travel lanes in each direction with 8-foot shoulders [2-foot paved]. The proposed cross sections are shown in Figure 3. The design speed will be 60 mph.

B. Detailed Study Alternatives

The studied alternatives were: (1) to replace Bridge No. 141 with a new bridge in the existing location, closing SR 1741 and utilizing an off-site detour; and (2) to replace Bridge No. 141 at its

existing location maintaining traffic with a temporary detour structure on the north side. The alternates are shown in Figures 4 and 5. Replacing Bridge No. 141 at its existing location while maintaining traffic with a temporary detour structure on the south side was considered, but a temporary detour on the south side would impact the pond; therefore, this alternate was removed from consideration. The posted speed limit is 55 mph and the corresponding design speed is 60 mph. The existing grade at the crossing will be raised 2-3 feet.

Alternate 1, replaces Bridge No. 141 with a new bridge in the existing location, closing SR 1741 and utilizing an off-site detour. The possible off-site detour route suggested by the Division includes utilizing SR 1746 (Willie Bodenheimer Road), SR 1747 (Jerry Clodfelter Road) and NC 109. SR 1746 and SR 1747 are narrow bituminous surface treated roads. The posted speed limit for the detour route is 45 mph. The detour is approximately 5.8 miles in length.

Alternate 2, replaces Bridge No. 141 at its existing location and maintains traffic with a temporary detour structure on the north side. The estimated cost of the temporary detour structure is $ 375,000.

Bridge No. 141 is located approximately 0.8 mile southwest of the junction of SR 1741 and NC 109. NC 109 runs the entire length of the County, and connects to I-85 Business and I-85, which provides east/west access.

C. Alternatives Eliminated from Further Study

The No-Build or "do-nothing" alternative was also considered but this alternative would eventually necessitate closure of the bridge. This is not a desirable alternative due to the traffic service provided by SR 1741.

Investigation of the existing structure by the NCDOT Bridge Maintenance Unit indicates rehabilitation of Bridge No. 141 is not feasible due to its age and deteriorated condition. The existing bridge is classified as structurally deficient.

D. Preferred Alternative

Alternate 2, replacing Bridge No. 141 at its existing location and maintaining traffic with a temporary detour structure on the north side is the preferred alternative. Alternate 2 was selected because it is the only feasible alternate available after further study.

In accordance with the NCDOT Guidelines for Evaluation of Offsite Detours for Bridge Replacement Projects (April 2004), the average delay per motorist using the proposed detour for

Alternate 1 is estimated to range from 7-8 minutes for a construction period of 12 months, which falls under the Evaluation (E) range of the Guidelines. The Evaluation (E) range suggests an on-site detour is justifiable from a traffic operations standpoint but must be weighed with other project factors to determine if it is appropriate. Coordination with TIMS director and Emergency Services indicate the off-site detour would be difficult for school buses and emergency response routing. The proposed detour route is shown in Figure 6. The condition of the detour route is not as good as the route being closed because some parts of the route, i.e. SR 1746 and SR 1747, are narrow bituminous surface treated roads. The off-site detour may not be capable of handling the additional traffic volumes. Public feedback indicates the off-site detour would be inconvenient for residents of the subdivisions located near the bridge. Due to these factors, the off-site detour is considered unacceptable under the requirements of the NCDOT guidelines and Alternate 1 was not selected.

The new structure will be 85 feet long with a clear roadway width of 40 feet. New approaches to the bridge will provide 12-foot travel lanes with 8-foot shoulders including 2-foot paved shoulders. Approximately 1,400 feet of new roadway approaches will be required.

The design speed for the replacement bridge will be 60 mph; however, design exceptions for both the horizontal and vertical alignments will be necessary. A design exception for the horizontal alignment with a 52 mph design speed will be necessary because the proposed alignment will be tying into an existing horizontal curve. The design exception for the vertical curve with a design speed of 45 mph is required because maintaining a 60 mph design speed will necessitate a longer vertical curve and raising the grade considerably. A longer vertical curve and grade change will impact an adjacent residence and will increase the estimated cost of this alternate.

The design speed of the temporary detour will be 45 mph, but a design exception with a design speed of 30 mph will be required for the horizontal alignment. The design exception is necessary because a horizontal curve that will maintain a 45 mph design speed would lengthen the project – thus requiring additional right of way and increasing the cost of the project. Extra traffic control will be required to slow the traffic speed to concur with the 30 mph design speed of the temporary detour.

The estimated cost for the recommended alternate is $1,218,750. The current estimated cost of the project, as shown in the NCDOT 2004-2010 Transportation Improvement Program, is $60,000 for right-of-way and $600,000 for construction.

The Division Office concurs with Alternative 2 as the recommended alternate.

IV. ESTIMATED COST

The estimated costs of the alternatives studied, based on 2004 prices, are shown in the following table:

TABLE 1. Estimated Costs

	Alternate 1 Off-site Detour	Alternate 2 On-site Detour
Structure Removal	$ 15,600.00	$ 15,600.00
Structure	$ 263,160.00	$ 263,160.00
Roadway Approaches	$ 130,630.00	$ 130,630.00
Mobilization and Miscellaneous	$ 100,610.00	$ 100,610.00
Engineering and Contingencies	$ 90,000.00	$ 90,000.00
Temporary Detour	N/A	$ 375,000.00
SUBTOTAL	$ 600,000.00	$ 975,000.00
Right-of-Way/Const. Ease./Util.	$ 203,750.00	$ 243,750.00
TOTAL	$ 803,750.00	$ 1,218,750.00

The above estimates are based on functional design plans; therefore, 45 percent is included for miscellaneous items and contractor mobilization, and 15 percent for engineering and contingencies.

V. NATURAL RESOURCES

A. Methodology

Materials and literature supporting this investigation have been derived from a number of sources including U.S. Geological Survey (USGS) topographic mapping (High Point West, NC 7.5-minute quadrangle), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping (High Point West, NC 7.5-minute quadrangle), Natural Resources Conservation Service (NRCS; formerly the Soils Conservation Service) soils mapping (SCS 1994), N.C. Wildlife Resources Commission (NCWRC) proposed Significant Aquatic Endangered Species Habitats, and recent aerial photography.

Plant community descriptions are based on a classification system utilized by the N.C. Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names generally follow nomenclature found in Radford *et al.* (1968) with adjustments for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach

following U.S. Army Corps of Engineers (USACE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979) and/or the N.C. Division of Environmental Management (DEM) *Field Guide to North Carolina Wetlands* (1996). Aquatic and terrestrial wildlife habitat requirements and distributions were determined by supportive literature (Martof *et al.* 1980, Potter *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Palmer and Braswell 1995, and Rohde *et al.* 1994). Water quality information for area streams and tributaries was derived from available sources (DWQ 2000, DWQ 2002, DWQ 2004a-b). Quantitative sampling was not undertaken to support existing data.

The most current FWS listing of federally protected species with ranges extending into Davidson County (February 11, 2003 FWS list) is considered in this report. In addition, NHP records documenting the presence of federally or state listed species were consulted before commencing field investigations. In addition, Significant Aquatic Endangered Species Habitats proposed by the NCWRC (December 11, 1998 listing) were consulted to determine the presence of Proposed Critical Habitats for aquatic species.

The project area (Figure 7) was walked and visually surveyed for significant features. The project area is approximately 300 feet in width (centered on the existing roadway) and about 1950 feet in length, encompassing approximately 13.5 acres. Potential construction impacts will be limited to cut-fill boundaries for each alternative. Special concerns evaluated in the field include: 1) potential protected species habitat, and 2) wetlands and water quality protection of Spurgeon Creek.

B. Physiography and Soils

The project area is located within the Southern Outer Piedmont ecoregion of North Carolina. This ecoregion is characterized by rolling foothills, gently rounded to steep slopes containing moderate gradient streams with cobble, gravel, sand, and silt substrates. The project area is located within a sloping floodplain valley. Elevations within the project area range from a high of approximately 836 feet National Geodetic Vertical Datum (NGVD) to a low of approximately 777 feet NGVD within the stream channel. Land uses within and adjacent to the project area consist of woodlands, residential, agriculture, and roadside shoulders.

Based on soil mapping for Davidson County (SCS 1994), the project area is underlain by two soil series: Chewacla loam (*Fluvaquentic Dystrochrepts*) and Pacolet sandy loams (*Typic Kanhapludults*). Chewacla loam occurs adjacent to the stream, and the Pacolet sandy loams are found on the slopes and ridges. Chewacla loam is considered non-hydric with hydric inclusions in Davidson County (NRCS 1997).

The Chewacla series (0 to 2 percent slopes) consists of poorly drained soil in floodplains that were formed in recent alluvium. This soil tends to be flooded frequently. Permeability is moderate, depth to bedrock is greater than 5 feet, and the seasonal high water table occurs between 0.5 and 1.5 feet. Chewacla underlies approximately 5.0 acres, or 37 percent of the project study area primarily in the broad floodplain of Spurgeon Creek.

The Pacolet series with 2 to 25 percent slopes consists of well-drained sandy loams on upland ridges and side slopes. Permeability is moderate and erosion is a moderate hazard when the soil surface is bare and unprotected. Depth to bedrock is greater than 60 inches. Pacolet underlies approximately 7.5 acres, or 54 percent of the project study area on the uplands beyond the floodplain.

C. Water Resources

1. Waters Impacted

The project area is located within sub-basin 03-07-07 of the Yadkin River Basin (DWQ 2000). This area is part of USGS Hydrologic Unit 03040103 of the South Atlantic/Gulf Region. The proposed bridge replacement spans Spurgeon Creek. The portion of Spurgeon Creek that lies within the project area has been assigned Stream Index Number 12-119-3 by DWQ (DWQ 2004b).

2. Water Resources Characteristics

The project area contains three streams: Spurgeon Creek and two unnamed tributaries to Spurgeon Creek (Figure 7). Spurgeon Creek generally flows southward through the middle of the project area. The larger of the two unnamed tributaries (UT1) is located in the northeastern quadrant formed by the intersection of Walburg-High Point Road and Spurgeon Creek. UT1 flows from northeast to southwest to a confluence with Spurgeon Creek approximately 40 feet north of the existing bridge. The smaller of the two unnamed tributaries (UT2) is located in the southwestern quadrant formed by the intersection of Walburg-High Point Road and Spurgeon Creek. UT2 flows eastward to a confluence with Spurgeon Creek outside the project area.

Spurgeon Creek enters the project area as a well-defined, third-order, perennial stream with moderate flow over a sand, silt and clay substrate (containing some boulders). At Bridge No. 141, Spurgeon Creek is approximately 20 feet wide. The banks of Spurgeon Creek are about 15 feet high and steeply sloping. During field investigations, the water level appeared low and about 1-foot deep. Water clarity was good, with visibility to the substrate, and flow-velocity was

moderate. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within Spurgeon Creek include overhanging trees, undercut banks, fallen logs, and leaf packs.

A pond occupies a large portion of the southwest quadrant of the project area. The pond is fed by UT2 and empties into Spurgeon Creek outside the project area.

UT1 enters the project area as a well-defined, second-order, perennial stream with moderate flow over a fine sand and silt substrate. The banks of UT1 are about 8 feet high and steeply sloping. During field investigations, the water level appeared low and was about 1-foot in depth. Water clarity was good, with visibility to the substrate, and flow-velocity was moderate. No persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within UT1 include overhanging trees, undercut banks, and leaf packs.

UT2 enters the project area as a well-defined, first order, perennial stream with low flow over a fine sand and silt substrate. The banks of UT2 ranged from 1 to 2 feet. During field investigations, the water level appeared low and was about 6 inches deep. Water clarity was good, with visibility to the substrate, and flow-velocity was low. Persistent emergent aquatic vegetation was observed within the stream. Opportunities for habitat within UT2 include overhanging trees, undercut banks, fallen logs, and leaf packs.

The DWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7, hereafter referred to as the N.C. 2004 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, pollution, or an unknown cause of impairment. The impairment could be from point sources, nonpoint sources, and/or atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the N.C. 2004 Section 303(d) list. Streams are further categorized into one of six parts within the N.C. 2004 Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, North Carolina has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State. Spurgeon Creek, UT1, and UT2 are not listed on any section of the N.C. 2004 Section 303(d) list (DWQ 2002).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A Best Usage Classification of WS-III has been assigned to this reach of Spurgeon Creek and its unnamed tributaries. Class WS-III waters are protected as water supplies which are generally in low to moderately developed watersheds, and are suitable for all class C uses. Class C waters are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation includes wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis. No designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), Water Supply I (WS-I), Water Supply II (WS-II) waters, or watershed Critical Areas (CA) occur within 1.0 mile of the project area (DWQ 2002).

Pursuant to the NCDWQ Red Book (15 A NCAC 02B.0100 and .0200, August 1, 2004), vegetative buffers are required for all new development along all WS-III and WS-IV perennial waters indicated on the most recent versions of USGS 7.5-minute topographic mapping. The buffer width is determined by the development density option chosen by local governments. A minimum 100-foot vegetative buffer is required for non-residential development activities that exceed the low-density option; otherwise, a 30-foot buffer is required and stormwater runoff must be transported by vegetated conveyances to the maximum extent practicable. Public road projects may be allowed within the buffer where no practicable alternative exists, as long as built-upon area is minimized, runoff is directed away from surface waters, and the use of Best Management Practices (BMPs) is maximized.

The Division of Water Quality (DWQ) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project area is summarized in the Yadkin River Basinwide Water Quality Plan (DWQ 2000). Spurgeon Creek is currently listed by DWQ as **Supporting** its designated uses. No benthic macroinvertebrate monitoring stations occur within one mile of the project area (DWQ 2000).

Sub-basin 03-07-07 of the Yadkin River Basin supports 13 permitted, point source discharges with a total discharge of over 15.8 million gallons per day. Three of the permitted discharges are classified as major dischargers, discharging 15.7 million gallons per day. The 10 remaining permitted dischargers are minor, with one having no limits set on discharges (DWQ 2004a). Major non-point sources of pollution within the Yadkin Basin include runoff from construction activities, agriculture, timber harvesting, hydrologic modification, failing septic systems, roads, parking lots, and roof tops. Sedimentation and nutrient inputs are major problems associated with non-point source discharges (DWQ 2000).

The North Carolina Wildlife Resources Commission (NCWRC) has developed a Significant Aquatic Endangered Species Habitat database to enhance planning and impact analysis in areas

proposed by the NCWRC as being critical due to the presence of Endangered or Threatened aquatic species. No Significant Aquatic Endangered Species Habitat occurs within the project study area. The nearest Significant Aquatic Endangered Species Habitat within the Yadkin River Basin occurs approximately 7.6 miles to the southeast in the Uwharrie River (NCWRC 1998) in sub-basin 03-07-09 (DWQ 2000).

3. Anticipated Impacts to Water Resources

a) General Impacts

Impacts to water resources in the project area may result from activities associated with project construction. Activities that would result in impacts are clearing and grubbing on streambanks, riparian canopy removal, in-stream construction, fertilizers and pesticides used in revegetation, and pavement/culvert installation. The following impacts to surface water resources could result from the construction activities mentioned above.

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

The proposed bridge replacement will allow for continuation of pre-project stream flows in Spurgeon Creek, thereby protecting the integrity of this waterway. Long-term impacts resulting from construction are expected to be negligible. In order to minimize impacts to water resources, NCDOT Best Management Practices for the Protection of Surface Waters will be strictly enforced during the entire life of the project.

Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of a stringent erosion-control schedule and the use of Best Management

Practices (BMPs). The contractor will follow contract specifications pertaining to erosion control measures as outlined in 23 CFR 650 Subpart B and Article 107-13 entitled Control of Erosion, Siltation, and Pollution (NCDOT, Specifications for Roads and Structures). These measures include the use of dikes, berms, silt basins, and other containment measures to control runoff; elimination of construction staging areas in floodplains and adjacent to waterways; re-seeding of herbaceous cover on disturbed sites; management of chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoidance of direct discharges into streams by catch basins and roadside vegetation.

b) Impacts Related to Bridge Demolition and Removal

The existing bridge has a reinforced concrete deck on steel I-beams supported by reinforced concrete cap on timber piles. The existing bridge is expected to be removed without dropping components into Spurgeon Creek. No Outstanding Resource Waters (ORW); Threatened, Endangered, or anadromous species are anticipated to be impacted by this project.

D. BIOTIC RESOURCES

1. Plant Communities

Three distinct plant communities were identified within the project study area: disturbed/maintained land, Dry-Mesic Oak-Hickory Forest, and riparian hardwood forest. Plant communities were delineated to determine the approximate area and location of each (Figure 7). These communities are described below in order of their dominance within the project study area. Wildlife directly observed in a plant community or determined to be present through evidence (tracks, scat, burrows, etc.) during field investigations are indicated with an asterisk (*). In addition, approximately 1.2 acres (9 percent) of the project study area is covered by open water: Spurgeon Creek, its tributaries, and a farm pond (Figure 7).

a) Disturbed/maintained land

Approximately 10 acres (74 percent) of the project study area is composed of disturbed/maintained land. This community includes roadside shoulders, agricultural fields, a utility line corridor, and residential lots located throughout most of the project study area outside the floodplain of Spurgeon Creek. Along roadside shoulders and agricultural land margins, grasses and herbs dominate the vegetation. Representative species include Carolina cranesbill (*Geranium carolinianum*), rafinesque violet (*Viola rafinesquii*), clover (*Trifolium sp.*), wild onion (*Allium canadense*), buttercups (*Ranunculus spp.*), and fescue (*Festuca sp.*). Residential areas are dominated by a few relic hardwood species and cultivated species. Trees include red

maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), flowering dogwood (*Cornus florida*), and Bradford pear (*Pyrus calleryana*). Crapemyrtle (*Lagerstroemia sp.*), azalea (*Rhododendron sp.*), and fescue are included in the shrub and herb layers.

Along woodland edges and the utility line corridor, the shrub layer is sparse and consists of scattered individuals of sweet gum (*Liquidambar styraciflua*), sycamore (*Platanus oxidentalis*), northern red oak (*Quercus rubra*), southern red oak (*Quercus falcata*), pignut hickory (*Carya glabra*), and red maple (*Acer rubrum*). Vines are limited to Japanese honeysuckle (*Lonicera japonica*). The herb layer is scattered through this area, the majority of which is maintained by mowing. Shrubs present include blackberry (*Rubus argutus*), multiflora rose (*Rosa multiflora*), Chinese privet (*Ligustrum sinense*), and smooth sumac (*Rhus glabra*), grasses include fescue, and representative herbs consist of dandelion (*Taraxacum officinale*), common periwinkle (*Vinca minor*), and Carolina cranesbill.

A wet area dominated by grasses and herbs is located just north of Walburg-High Point Road approximately 600 feet west of Spurgeon Creek (Figure 7, Wetland 1). This low, moist area supports hydrophytic species such as soft rush (*Juncus effusus*), arrow arum (*Peltandra virginica*), lizard's tail (*Saururus cernuus*), and seedbox (*Ludwigia* sp.). Four smaller wet areas lie south of Walburg-High Point Road. The smallest, easternmost wet area (Figure 7, Wetland 2) contains jewelweed (*Impatiens capensis*), arrow arum, and seedbox. The larger, centrally located wet area (Figure 7, Wetland 3) is mowed more often. It contains needle spikerush (*Eleocharis acicularis*), soft rush, clover, and fescue. Just north and west is another wet area dominated by herbs, inside the power line corridor (Figure 7, Wetland 4). It supports elderberry (*Sambucus canadensis*), jewelweed, and soft rush.

b) Dry-Mesic Oak-Hickory Forest

Approximately 2.0 acres (15 percent) of the project study area is composed of Dry-Mesic Oak Hickory Forest. This plant community is described by Schafale and Weakley (1990) as occurring on mid-slopes, low ridges, upland flats, and other dry-mesic upland areas on acidic soils throughout the Piedmont and Coastal Plain. This community occurs on slopes and uplands in northwest quadrant of the project study area. This community consists of a mature forest characterized by a closed canopy with a relatively open understory. One wet area was found within this community.

On upland slopes beyond the floodplain, the canopy of this forest is dominated by white oak (*Quercus alba*), black oak (*Quercus velutina*), tulip poplar (*Liriodendron tulipifera*), sweet gum, northern red oak, and mockernut hickory (*Carya tomentosa*). Sapling and shrub layers include saplings of canopy species as well as flowering dogwood, sourwood (*Oxydendrum arboreum*),

red maple, red cedar (*Junipers virginiana*), American beech (*Fagus grandifolia*), ironwood (*Carpinus carolinina*), pignut hickory, black cherry (*Prunus serotina*), black gum (*Nyssa sylvatica*), multiflora rose, and American strawberry-bush (*Euonymous americanus*). Vines within this community are dominated by common greenbrier (*Smilax rotundifolia*), Japanese honeysuckle, and poison ivy (*Toxicodendron radicans*). Herbs present include toadshade (*Trillium sessile*), Solomon's seal (*Polygonatum biflorum*), and Virginia creeper (*Parthenocissus quinquefolia).*

A headwater, forested wet area encompassing the northwest corner of the project area (Figure 7, Wetland 5) is formed from leakage from an upstream pond. It is dominated by subcanopy, shrub, and herb species. Red maple is in the subcanopy. Shrubs include southern arrow-wood (*Viburnum dentatum*), ironwood, and tag alder (*Alnus serulata*). The herb layer includes jewelweed.

c) Riparian Hardwood Forest

Approximately 0.4 acre (3 percent) of the project area along the floodplain of Spurgeon Creek is made up of a riparian hardwood community. This community consists of secondary growth characterized by numerous saplings, shrubs and a few canopy trees. The canopy is dominated by sycamore but also contains red maple and black walnut (*Juglans nigra*). Sapling species include box elder (*Acer negundo*), black cherry, red maple, river birch (*Betula nigra*), black willow (*Salix nigra*), sweet gum, and American elm (*Ulmus americana*). Shrub and herb species consist of spicebush (*Lindera benzoin*), Chinese privet (*Ligustrum sinese*), multiflora rose, bedstraw (*Galium* sp.), Virginia creeper, and jewelweed, while vines present consist of muscadine grape (*Vitus rotundifolia*), common greenbrier, and Japanese honeysuckle.

2. Wildlife

Disturbed/maintained land

The ecotones provide both food and cover for eastern cottontail (Sylvilagus floridanus) and white-tailed deer (Odocoileus virginianus). Birds commonly found in shrubby areas and along forest/grassland ecotones include the omnivorous northern mockingbird (Mimus polyglottos), brown thrasher (Toxostoma rufum), and brown-headed cowbird (Molothrus ater), and the seed-eating indigo bunting* (Passerina cyanea). Insectivorous species such as eastern fence lizard (Sceloporus undulatus) and gray treefrog (Hyla chrysoscelis); and predators including black racer (Coluber constrictor) utilize this habitat. Herptiles expected in marshy areas such as these include spring peeper (Pseudacris crucifer), northern cricket frog (Acris crepitans), and northern water snake (Nerodia sipedon).

Dry-Mesic Oak-Hickory Forest

The complexity and size of this community allow for a diverse assemblage of wildlife including forest interior species. This community should support predators such as belted kingfisher* (Megaceryle alcyon), barred owl (Strix varia), southern ringneck snake (Diadophis punctatus), and copperhead (Agkistrodon contortrix); herbivores and seed-eaters including northern cardinal* (Cardinalis cardinalis), gray squirrel (Sciurus carolinensis), and white-tailed deer; insectivores such as red bat (Lasiurus borealis), blue-gray gnatcatcher* (Polioptila caerulia), red-eyed vireo* (Vireo olivaceus), tufted titmouse* (Baeolophus bicolor), Carolina wren* (Thryothorus ludovicianus), Carolina chickadee (Poecile carolinensis), eastern phoebe (Sayornis phoebe), pine warbler (Dendroica pinus), wood thrush (Hylocichla mustelina), golden-crowned kinglet (Regulus satrapa), eastern fence lizard (Sceloporus undulatus), five-lined skink (Eumeces fasciatus), gray treefrog, spring peeper (Pseudacris crucifer), American toad (Bufo americanus), and slimy salamander (Plethodon glutinosus); and omnivores such as blue jay* (Cyanocitta cristata), eastern box turtle, raccoon (Procyon lotor), and dog (Canis sp.). Herptiles expected in marshy areas such as this include spring peeper, northern cricket frog, and northern water snake.

Riparian Hardwood Forest

Wildlife expected to be found within the shrub assemblage include those listed for the oak-hickory forest as well as species favoring a more disturbed, edge habitat. These include omnivores such as the eastern towee (Pipilio erythrophthalmus), gray catbird, northern mockingbird, and eastern box turtle; herbivores and seed-eaters including eastern chipmunk (Tamias striatus), golden mouse (Ochrotomys nuttali), and eastern cottontail; insectivores such as red bat, southeastern shrew (Sorex longirostris), southeastern five-lined skink, eastern fence lizard, spring peeper, American toad, and northern cricket frog; and predators of small mammals and herptiles such as southern ringneck snake and eastern garter snake.

3. Aquatic Communities

Limited investigations resulted in no observations of aquatic reptiles. Aquatic or semi-aquatic reptiles and amphibians expected to occur within the project area vicinity include green frog (*Rana clamitans*), eastern musk turtle (*Sternotherus odoratus*), and two-lined salamander (*Eurycea bislineata*).

No sampling was undertaken in Spurgeon Creek to determine fishery potential and no fish species were observed during the field survey. Fish species that may be present in this reach of Spurgeon Creek include smaller fish species such as margined madtom (*Noturus insignis*), rosyside dace (*Clinostomus funduloides*), and spottail shiner (*Notropis hudsonius*).

4. Summary of Anticipated Impacts

Permanent and temporary impacts are anticipated with this project. Permanent impacts are considered to be those impacts that occur within proposed cut-fill limits. Temporary impacts are considered to be those impacts which occur within the cut-fill footprint associated with the temporary detour of Alternative 2. Plant communities within the project area were delineated to determine the approximate area and location of each. A summary of plant community areas and the potential impacts to each is presented in Table 2.

Table 2. Plant Communities Within Cut/Fill lines of Respective Alternatives

	Alternate 1	Alternate 2		
Plant Community	**Permanent**	**Permanent**	**Temporary**	**Total**
Disturbed/Maintained Land	1.18	1.18	0.66	1.84
Dry-Mesic Oak-Hickory Forest	0.0	0.0	0.02	0.02
Riparian Hardwood Forest	0.01	0.01	0.04	0.05
Total	1.19	1.19	0.72	1.91

Areas are given in acres.

Alternative 1 includes the same permanent impacts as Alternative 2 but fewer overall impacts. However, most impacts for both alternatives are to disturbed communities. Alternative 2 includes more impacts to communities that are less disturbed.

Projected permanent impacts to natural plant communities resulting from bridge replacements are generally restricted to narrow strips adjacent to the existing bridge and roadway approach segments. Permanent impacts are the same for both alternatives and represent the bulk of impacts associated with this project. Temporary impacts associated with Alternate 2 are relatively small, and although these impacts are considered to be short-term, re-growth of this community to pre-project stand age and ecological function will require several decades.

No significant habitat fragmentation is expected as a result of project activities since potential improvements will be restricted to adjoining roadside margins. Construction noise and associated disturbances are anticipated to have short-term impacts on avifauna and migratory wildlife movement patterns.

No Significant Aquatic Endangered Species Habitat exists within or near the project area. Impacts associated with turbidity and suspended sediments resulting from the bridge replacement will be minimized through stringent erosion control measures.

Potential downstream impacts to aquatic habitat are anticipated to be avoided by bridging the stream system to maintain regular flow and stream integrity. Short-term impacts associated with turbidity and suspended sediments may affect benthic populations. Temporary impacts to downstream habitat from increased sediment during construction will be minimized by the implementation of stringent erosion control measures.

E. SPECIAL TOPICS

1. Waters of the United States

Surface waters within the project area are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR Section 328.3). The National Wetlands Inventory (NWI) system for classification of wetlands and deepwater habitats was used to determine the type of each wetland present (Cowardin *et al.* 1979). Section 404 jurisdictional areas are depicted by Figure 7.

Spurgeon Creek exhibits characteristics of a well-defined, third-order, perennial stream with moderate flow over a sand, silt, and clay substrate. Spurgeon Creek can be classified as riverine, lower perennial with an unconsolidated bottom composed primarily of gravel and sand (R2UB2) (Figure 7). UT1 can be classified as a well-defined, second-order, riverine, lower perennial stream with an unconsolidated bottom composed primarily of sand and silt (R2UB3) (Figure 7, UT1). UT2 can be classified as a well-defined, first-order, riverine, lower perennial stream, with low flow over a fine silt substrate (R2UB3) (Figure 7, UT2).

A pond is located in the southwest quadrant of the project area. It can be classified as palustrine, open water, and permanently flooded (POWH) (Figure 7, Pond). The pond is fed by UT2 and empties into Spurgeon Creek outside the project area.

Vegetated wetlands are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (DOA 1987). The project area contains five vegetated wetland areas (Figure 7, Wetlands 1 through 5).

A forested wetland associated with the headwaters of UT2 occurs in the southwest quadrant of the project study area (Figure 7, Wetland 5). This area appears to collect runoff from a leak in the dam of the upstream pond and may be defined as a palustrine, forested, broad-leaved deciduous permanently flooded, wetland (PFO1H). Soils exhibit hydric chromas, while

hydrology indicators are inundation, surface flow, and oxidized rhizospheres. Based on the location of this wetland beside an associated stream, this area would be considered "riverine" by DWQ in terms of mitigation for impact.

A low, wet area lies within the power line corridor in the southwest quadrant of the project study area (Figure 7, Wetland 4). It can be characterized as palustrine, scrub-shrub, broad-leaved deciduous, and seasonally flooded (PSS1C). Soils exhibit hydric chromas while indicators of hydrology are surface flow and oxidized rhizospheres. Based on the location of this wetland beside an associated stream, this area would be considered "riverine" by DWQ in terms of mitigation for impact.

A grass and herb dominated wet depression is located in the southwest quadrant of the project study area, adjacent to UT2 and above a farm pond (Figure 7, Wetland 3). It can be characterized as palustrine, scrub-shrub, broad-leaved deciduous, and seasonally flooded (PSS1C) kept in a state of arrested succession by repeated mowing. Soils exhibit hydric chromas with hydrology indicators of surface flow and oxidized rhizospheres. Based on the location of this wetland beside an associated stream, this area would be considered "riverine" by DWQ in terms of mitigation for impact.

A low, wet area lies just south of Walburg–High Point Road in the southwest quadrant of the project study area (Figure 7, Wetland 2). It can be characterized as palustrine, scrub-shrub, broad-leaved deciduous, and seasonally flooded (PSS1C) by Spurgeon Creek. Water is also contributed by storm runoff from the road and perhaps seepage from the pond. Soils exhibit hydric chromas with signs of inundation. Based on the location of this wetland within the Spurgeon Creek floodplain, this area would be considered "riverine" by DWQ in terms of mitigation for impact.

A grass and herb dominated wet depression is located in the northwest quadrant of the project study area. It can be characterized as palustrine, scrub-shrub, broad-leaved deciduous, and seasonally flooded (PSS1C) (Figure 7, Wetland 1) kept in a state of arrested succession by repeated mowing. Soils exhibit hydric chromas with hydrology indicators of inundation and oxidized rhizospheres. Based on the location of this wetland within the Spurgeon Creek floodplain, this area would be considered "riverine" by DWQ in terms of mitigation for impact.

Both alternatives contain an identical replacement in-place component, while Alternate 2 also contains a temporary on-site detour component. Permanent impacts associated with both alternatives will occur to the disturbed/maintained wetland in the northwest quadrant (Figure 7, Wetland 1), and the smallest disturbed/maintained wetland in the southwest quadrant (Figure 7,

Wetland 2). The Alternate 2 temporary detour includes slightly more temporary impacts to the disturbed/maintained wetland in the northwest quadrant (Figure 7, Wetland 1). Alternate 2 also includes more impacts to the less disturbed riparian hardwood forest community.

Information pertaining to jurisdictional area impacts within the project study area is summarized in Table 3.

Table 3. Projected Impacts to Jurisdictional Areas (Site numbers are depicted on Figure 7.)

Jurisdictional Area	Cowardin Classification	Alternate 1 Permanent	Permanent	Alternate 2 Temporary	Total
Wetland 1	PSS1C	<0.01	<0.01	0.10	0.10
Wetland 2	PSS1C	<0.01	<0.01	<0.01	<0.01
Wetland 3	PSS1C	--	--	--	--
Wetland 4	PSS1C	--	--	--	--
Wetland 5	PFO1H	--	--	--	--
Pond	POWH	--	--	--	--
Spurgeon Creek	R2UB2	--	--	--	--
UT1	R2UB3	--	--	--	--
UT2	R2UB3	--	--	--	--
Total		<0.01	<0.01	0.10	0.10

Area is expressed in acres, linear distance is expressed in feet.

Since the existing bridge consists of concrete deck on I-beams supported by concrete caps on timber piles, the existing bridge is expected to be removed without dropping components into Spurgeon Creek.

2. Permits

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

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The USACE has made available Nationwide Permit (NWP) 23 (67 FR 2020, 2082; January 15, 2002) for CEs due to minimal impacts to waters of the U.S. expected with bridge construction. DWQ has made available a General 401 Water Quality Certification for NWP 23 (GC 3403). If temporary structures are necessary for construction activities, access fills, or dewatering of the site, then a NWP 33 (67 FR 2020, 2087; January 15, 2002) permit and the associated General 401 Water Quality Certification (GC 3366) will be

required. Impacts to vegetated wetlands may be authorized under NWP 3 (67 FR 2020, 2078) and the associated General 401 Water Quality Certification (GC 3376). In the event that NWPs 23, 33, and 3 will not suffice, impacts attributed to bridge replacement and associated approach improvements may qualify under General Bridge Permit (GP) 031 issued by the Wilmington USACE District. DWQ has made available a General 401 Water Quality Certification for GP 031 (GC 3404). Notification to the Wilmington USACE District office is required if this general permit is utilized.

3. Mitigation

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

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the USACE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction to median widths, right-of-way widths, fill slopes, and/or road shoulder widths. All efforts will be made to decrease impacts to surface waters.

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. In accordance with 15A NCAC 2H .0506(h), DWQ may require compensatory mitigation for projects with greater to or equal than 1.0 acre of impacts to jurisdictional wetlands or greater than or equal to 150 linear feet of total perennial stream

impacts. Furthermore, in accordance with 67 FR 2020, 2092; January 15, 2002, the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of the proposed project impact and the function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been achieved. Compensatory actions often include restoration, preservation and enhancement, and creation of waters of the United States. Such actions should be undertaken first in areas adjacent to or contiguous to the discharge site.

Mitigation for Section 404 jurisdictional areas may not need to be proposed for this project due to the potentially limited nature of the impacts. However, utilization of BMPs is recommended in an effort to minimize impacts. Temporary impacts to floodplains associated with construction activities could be mitigated by replanting disturbed areas with native riparian species and removal of temporary fill material upon project completion. A final determination regarding mitigation rests with the USACE and DWQ.

F. Rare and Protected Species

1. Federal-Protected Species

Species with the federal classification of Endangered, Threatened, or officially Proposed for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term "Endangered Species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range," and the term "Threatened Species" is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532).

Three federally protected species are listed for Davidson County (February 11, 2003 FWS list): Bald eagle (*Haliaeetus leucocephalus*), bog turtle (*Clemmys muhlenbergii*), and Schweinitz's sunflower (*Helianthus schweinitzii*). The bald eagle is Threatened (Proposed for Delisting), the bog turtle is Threatened due to Similarity of Appearance (T/SA), and Schweinitz's sunflower is Endangered.

***Haliaeetus leucocephalus* (Bald Eagle)**
Threatened (Proposed for Delisting)
Family: Accipitridae
Date Listed: March 11, 1967

The bald eagle is a large raptor with a wingspan greater than 6 feet. Adult bald eagles are dark brown with a white head and tail. Immature eagles are brown with whitish mottling on the tail, belly, and wing linings. Bald eagles typically feed on fish but may also take birds and small mammals. In the Carolinas, nesting season extends from December through May (Potter *et al.* 1980). Bald eagles typically nest in tall, living trees in a conspicuous location near open water. Eagles forage over large bodies of water and utilize adjacent trees for perching (Hamel 1992). Disturbance activities within a primary zone extending 750 to 1500 feet from a nest tree are considered to result in unacceptable conditions for eagles (FWS 1987). The FWS recommends avoiding disturbance activities, including construction and tree-cutting within this primary zone. Within a secondary zone, extending from the primary zone boundary out to a distance of 1.0 mile from a nest tree, construction and land-clearing activities should be restricted to the non-nesting period. The FWS also recommends avoiding alteration of natural shorelines where bald eagles forage, and avoiding significant land-clearing activities within 1500 feet of known roosting sites.

BIOLOGICAL CONCLUSION: NO EFFECT

The project area contains open water but not enough to provide foraging habitat and no tall trees near it for suitable nesting. According to NHP records, no bald eagle has been documented within 1.0 mile of the project area. Based on NHP records, field observations, and professional judgment, this project will have no effect on the bald eagle.

***Clemmys muhlenbergii* (Bog turtle)**
Threatened due to similarity of appearance
Family: Emydidae
Date Listed: May 1, 1997

The bog turtle is a small turtle reaching an adult size of approximately 3.0 to 4.0 inches. This otherwise darkly-colored species is readily identifiable by the presence of a bright orange or yellow blotch on the sides of the head and neck (Martof *et al.* 1980). The bog turtle has declined drastically within the northern portion of its range due to over-collection and habitat alteration. As a result, the FWS officially proposed in the January 29, 1997 Federal Register (62 FR 4229) to list bog turtle as threatened within the northern portion of its range, and within the southern portion of its range, which includes North Carolina. The bog turtle was proposed for listing as threatened due to similarity of appearance (T S/A) to the northern population. The listing would allow incidental take of bog turtles in the southern population resulting from otherwise lawful activity. The bog turtle is typically found in bogs, marshes, and wet pastures, usually in association with aquatic or semi-aquatic vegetation and small, shallow streams over soft bottoms (Palmer and Braswell 1995). In North Carolina, bog turtles have a discontinuous distribution in the Mountains and western Piedmont.

The project area contains wet pastures which might provide suitable habitat, but no NHP records for the bog turtle are listed for Davidson County. The bog turtle is listed as T(S/A) due to its similarity of appearance to another rare species listed for protection. T (S/A) species are not subject to Section 7 consultation and **a biological conclusion for this species is not required**.

***Helianthus schweinitzii* (Schweinitz's sunflower)**
Endangered
Family: Asteraceae
Date Listed: May 7, 1991

Schweinitz's sunflower is an erect, unbranched, rhizomatous, perennial herb that grows to approximately 6 feet in height. The stem may be purple, usually pubescent, but sometimes nearly smooth. Leaves are sessile, opposite on the lower stem but alternate above; in shape they are lanceolate and average 5 to 10 times as long as wide. The leaves are rather thick and stiff, with a few small serrations. The upper leaf surface is rough and the lower surface is usually pubescent with soft white hairs. Schweinitz's sunflower blooms from September to frost; the yellow flower heads are about 0.6 inch in diameter. The current range of this species is within approximately 60 miles of Charlotte, North Carolina, occurring on upland interstream flats or gentle slopes, in soils that are thin or clay in texture. The species needs open areas protected from shade or excessive competition, reminiscent of Piedmont prairies. Disturbances such as fire maintenance or regular mowing help sustain preferred habitat (FWS 1994).

BIOLOGICAL CONCLUSION: NO EFFECT

The project study area does contain suitable habitat for Schweinitz's sunflower within disturbed/maintained land, specifically roadside shoulders, a utility line corridor, and forest edges. However, NHP files reviewed on April 17, 2004 list no documentation of this species within 2.0 miles of the project study area. In addition, detailed surveys for Schweinitz's sunflower conducted on August 19, 2004 revealed no individuals within the project study area.

2. Federal Species of Concern and Candidate Species

The February 11, 2003 FWS list includes a category of species designated as "Federal Species of Concern" (FSC). A species with this designation is one that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing). The FSC designation provides no federal protection under the ESA for the species listed. The February 11, 2003 FWS list also includes a category of

species designated as "Candidate" (C1). A species with this designation is one that is a species under consideration for official listing for which there is sufficient information to support listing. NHP files list no documentation for FSC or C1 species within 2.0 miles of the project area.

3. State-Protected Species

Two FSC species are listed for Davidson County: the Carolina Darter (*Etheostoma collis collis*) , state listed as a Species of Concern, and Heller's trefoil (*Lotus helleri*), state listed as Significantly Rare - Threatened. One C1 species is listed for Davidson County: Georgia aster (*Aster georgianus*) listed by the state as Threatened. Carolina Darter habitat is sluggish to calm, clear to slightly turbid creeks and small rivers over a bed of mud, sand, and rock. The reach of Spurgeon Creek within the project area does provide suitable habitat for Carolina darter. Heller's trefoil is typically found along roadsides and other disturbed areas such as fields and utility right-of-ways. Georgia aster populations typically prefer roadsides, woodland borders, dry rocky woods, and disturbed areas such as fields and utility right-of-ways. Suitable habitat exists for this species within the project area (Amorosio 2002, LeGrand and Hall 2001).

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires that for federally funded, licensed, or permitted projects having an effect on properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

B. Historic Architecture

In a memorandum dated: March 10, 2004, the North Carolina State Historic Preservation Office (HPO) determined that the project would not affect any historic resources. Accordingly, NCDOT architectural historians did not initiate a survey of the project area. A copy of this memorandum is included in the Appendix.

C. Archaeology

In a memorandum dated: March 10, 2004, the North Carolina State Historic Preservation Office (HPO) determined that the project would not affect any historic resources. Accordingly,

NCDOT archaeologist did not initiate a survey of the project area. A copy of this memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact by replacing a potentially unsafe bridge.

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

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

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

The studied route does not contain any bicycle accommodations, nor is it a designated bicycle route; therefore, no bicycle accommodations have been included as part of this project.

No residential or business relocatees are anticipated as a result of the proposed project.

No adverse impacts on families or communities are anticipated.

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

The proposed project is excluded from the Farmland Protection Policy Act (FPPA) since the project is located within the Metropolitan Planning Organization (MPO) urban planning area of High Point. (7 CFR Part 658)

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

The project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. 40 CFR Part 51 is not applicable because the proposed project is located in an attainment area. If vegetation or wood debris is disposed of by burning, it shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance

with 15 NCAC 2D.0520 and 1990 Clean Air Act Amendments and the National Environmental Policy Act. Replacement of the existing bridge will not increase or decrease traffic volumes. The noise levels will increase during the construction period, but will only be temporary. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulations (CFR), Part 772 and for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act) and no additional reports are required.

The results from a pre-scoping geotechnical and geoenvironmental investigation performed by the NCDOT Geotechnical Engineering Unit showed that no underground storage tank sites or hazardous waste sites or apparent landfills were identified within the project limits. The geotechnical pre-scoping report is included in the Appendix.

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

VIII. PUBLIC INVOLVEMENT

A "start of study" letter was distributed to local officials and agencies requesting information and concerns relative to the proposed study alternates. Their responses are included in the Appendix.

A newsletter was sent to property owners in the proximity of Bridge No. 141, soliciting comments and concerns regarding the bridge replacement project. Several comments were received from local residents who opposed an off-site detour and preferred for an on-site detour. See the Appendix for a copy of the newsletter.

IX. AGENCY COORDINATION

Letters requesting comments and environmental input were sent to the following agencies:

US Army Corps of Engineers - Wilmington District
US Fish and Wildlife Service*
US Department of Agriculture, Natural Resources Conservation Service
State Clearinghouse
NC Department of Cultural Resources*
NC Division of Water Quality, NC Wildlife Resources Commission*
Planning Director, Davidson County Planning & Zoning Department
Chairman, Davidson County Commissioners
Superintendent, Davidson County Public Schools*
Davidson County Emergency Management Services
Sheriff, Davidson County

Asterisks (*) indicate agencies from which written/oral comments were received. Scoping comments and corresponding responses are given below. Copies of the comments received are in the Appendix.

1. United States Department of Interior – Fish and Wildlife Service

Comment: "...we recommend conducting habitat assessments and surveying any suitable habitat in the project areas for these species [listed on the *Federal List of Endangered and Threatened Wildlife and Plants* or Federal Species of Concern] prior to any further planning or on-the-ground activities to ensure that no adverse impacts occur".

Response: A survey of the project area concluded this project will not adversely affect any threatened or endangered species or any federal species of concern.

Comment: "[Fish and Wildlife Service – Asheville Field Office officials] recommend spanning structures, preferably bridges, in all cases".

Response: Bridge No. 141 will be replaced with a new bridge approximately 85 feet long with a clear roadway width of 40 feet. The number of spans will be determined during final design.

Comment: "...off-site detours, which would reduce stream-bank disturbance, are preferable to temporary on-site crossings".

Response: Alternate 2, replacing Bridge No. 141 at its existing location and maintaining traffic with a temporary detour structure on the north side is the preferred alternative. Alternate 1, which would utilize an off-site detour, was not chosen due to the condition of the detour route and the response from the public, local school officials, and emergency services.

2. North Carolina Wildlife Resources Commission

Comment: "...Spurgeon [Creek is] classified WS-III waters. Sediment and erosion control measures should adhere to the design standards for sensitive watersheds to protect the water supply".

Response: NCDOT, BMP's for the Protection of Surface Waters will be strictly enforced during the entire life of the project. The necessary sedimentation and erosion control measures will be determined during the final design and permitting process.

Comment: "Impacts to aquatic and terrestrial resources should be minimized. Standard requirements and BMP's should apply".

Response: In order to minimize impacts to water resources, NCDOT BMP's for the Protection of Surface Waters will be strictly enforced during the entire life of the project.

3. North Carolina Division of Water Quality

Comment: "There are 30-foot vegetated buffer requirements in WS waters in addition to the requirements to minimize storm water runoff and maximize use of BMPs".

Response: Public road projects may be allowed within the buffer where no practicable alternative exists, as long as built-upon area is minimized, runoff is directed away from surface waters, and the use of Best Management Practices (BMPs) is maximized. In order to minimize impacts to water resources, NCDOT BMP's for the Protection of Surface Waters will be strictly enforced during the entire life of the project.

4. Davidson County Schools – School Transportation Director

Comment: There are 14 school bus crossings on Bridge No. 141 per day. Re-routing bus traffic would be difficult. Acceptable turn around areas would be preferred.

Response: The preferred alternate will maintain traffic with an on-site temporary detour. School buses will not need to be re-routed, and turn around areas will not be necessary.

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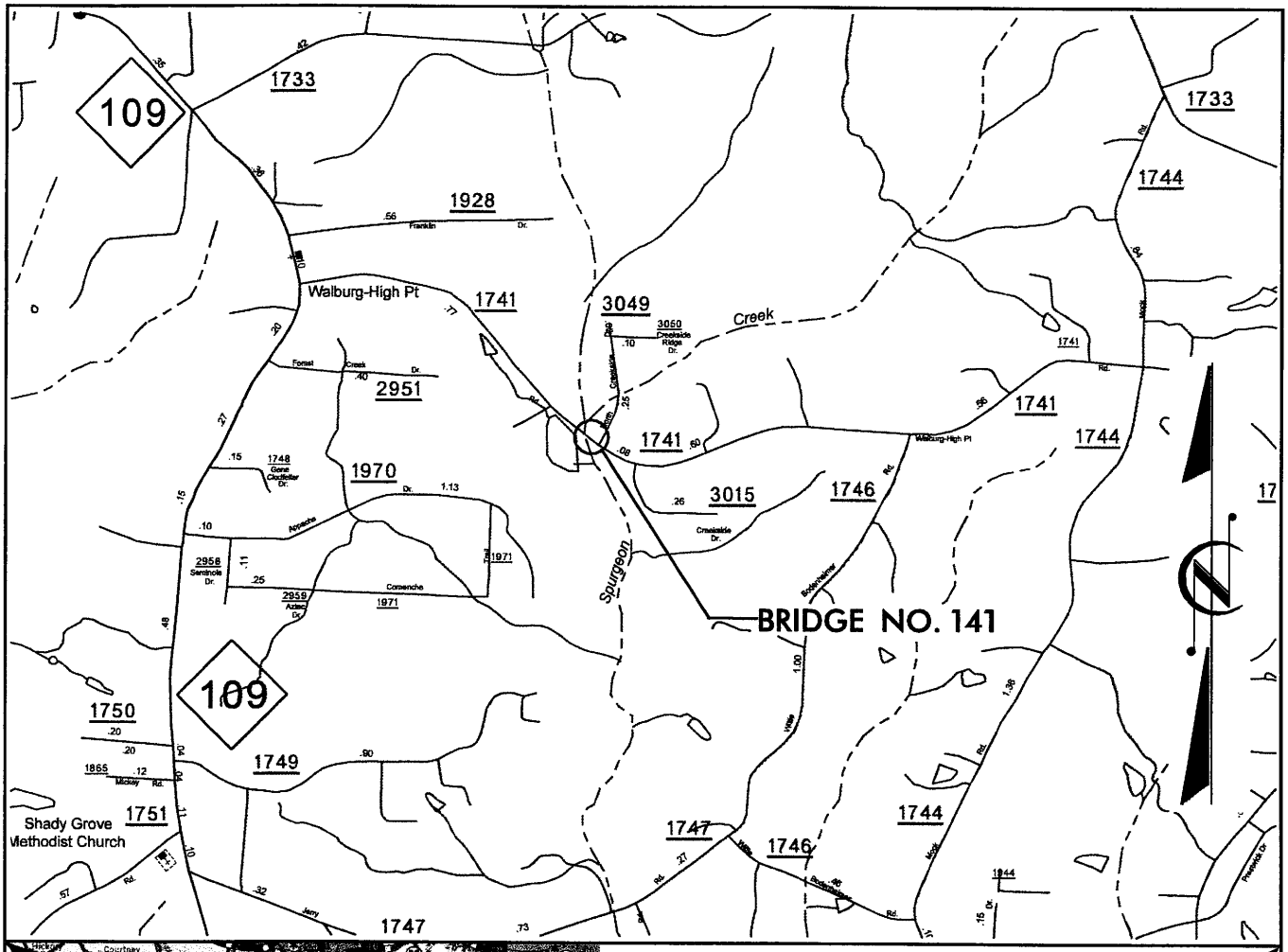
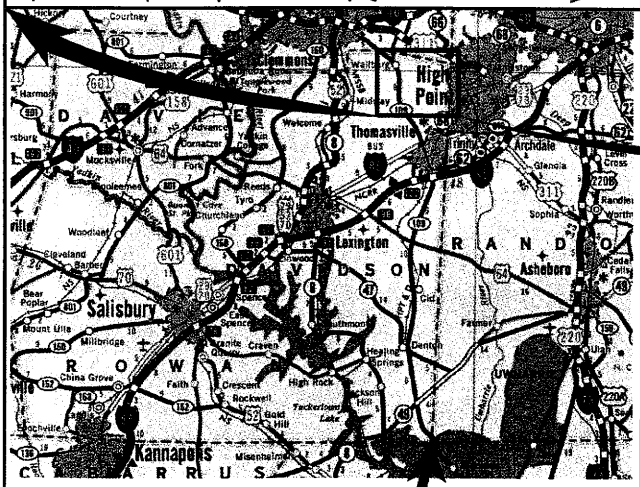
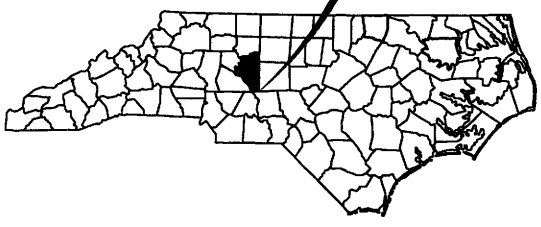
Wildlife Resources Commission (NCWRC). 1998. Significant Aquatic Endangered Species Habitats. North Carolina Department of Environment and Natural Resources, Raleigh.

FIGURES







0 0.5 1

GRAPHIC SCALE (MILES)

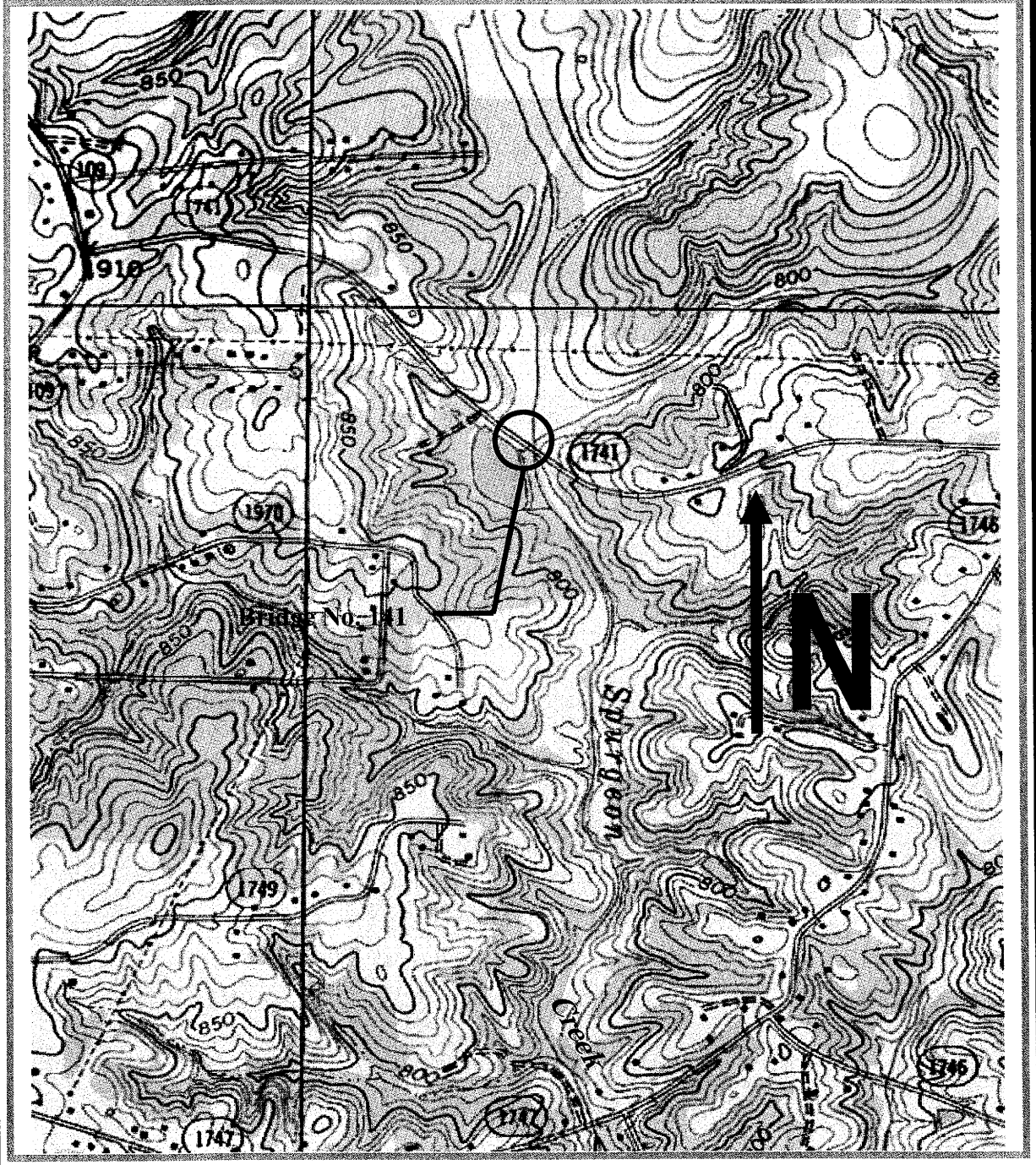
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Project Development and Environmental Analysis Branch

BRIDGE NO. 141
SR 1741 OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

VICINITY MAP

FIGURE 1A

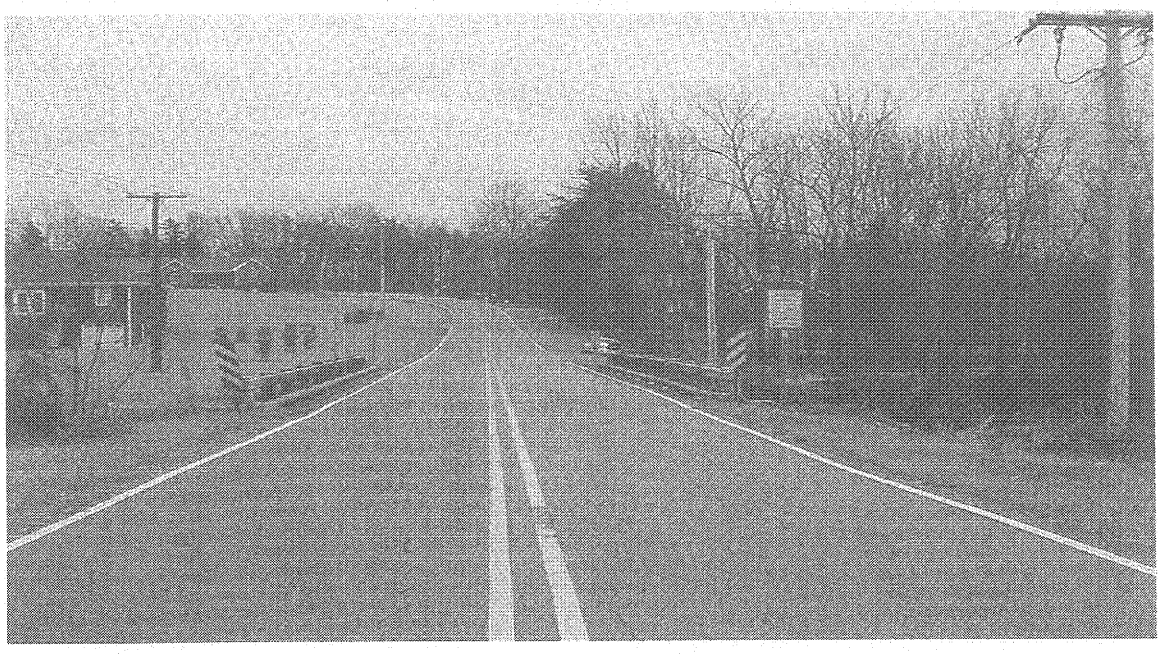


North Carolina Department of Transportation
Project Development and Environmental Analysis Branch

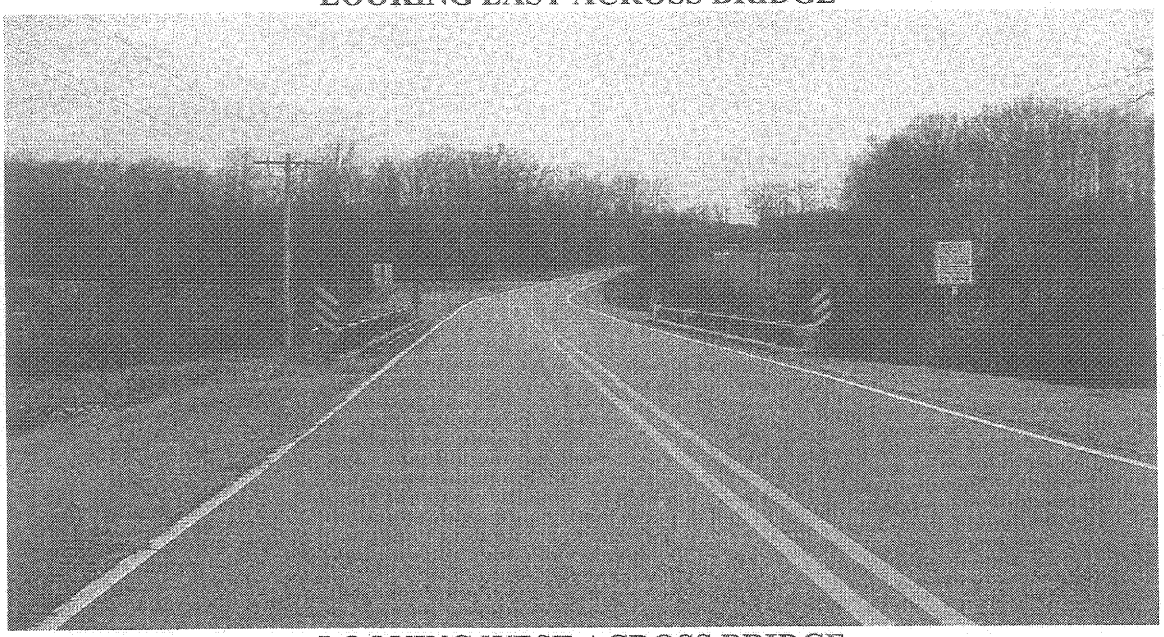
T.I.P. B-4101
Bridge No. 141 Over Spurgeon Creek
On SR 1741—Davidson County

Quad. Map: High Point West

FIGURE 1B



LOOKING EAST ACROSS BRIDGE



LOOKING WEST ACROSS BRIDGE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

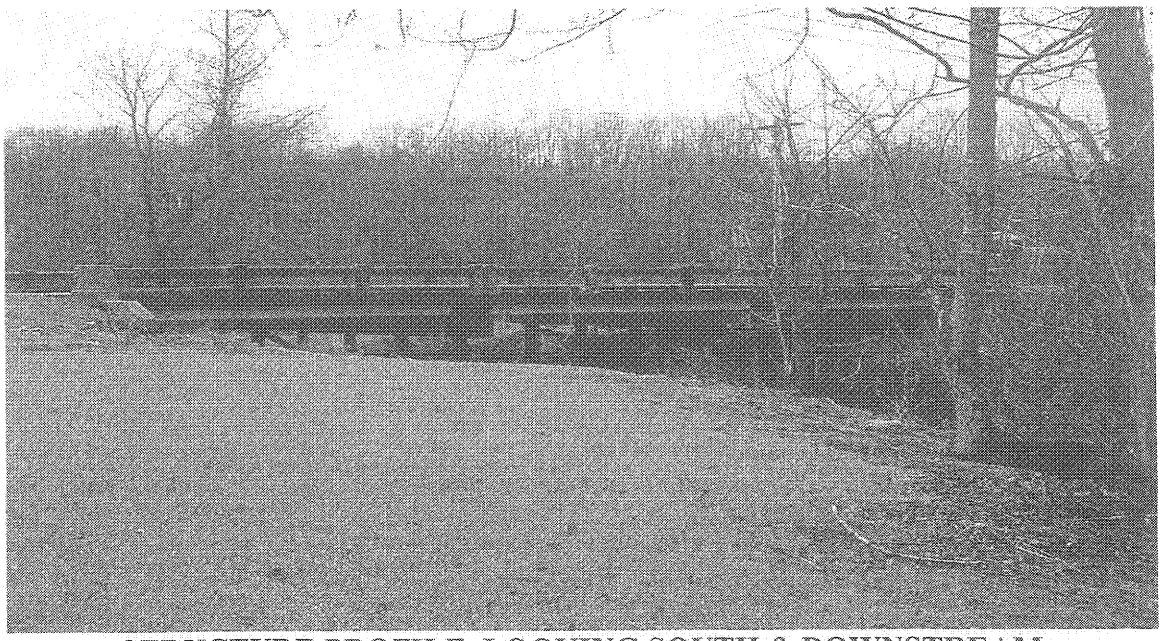
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 141

ON SR 1741 OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

FIGURE 2A

STRUCTURE PROFILE, LOOKING NORTH & UPSTREAM



STRUCTURE PROFILE, LOOKING SOUTH & DOWNSTREAM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 141

ON SR 1741 OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

FIGURE 2B

PROPOSED DESIGN CRITERIA

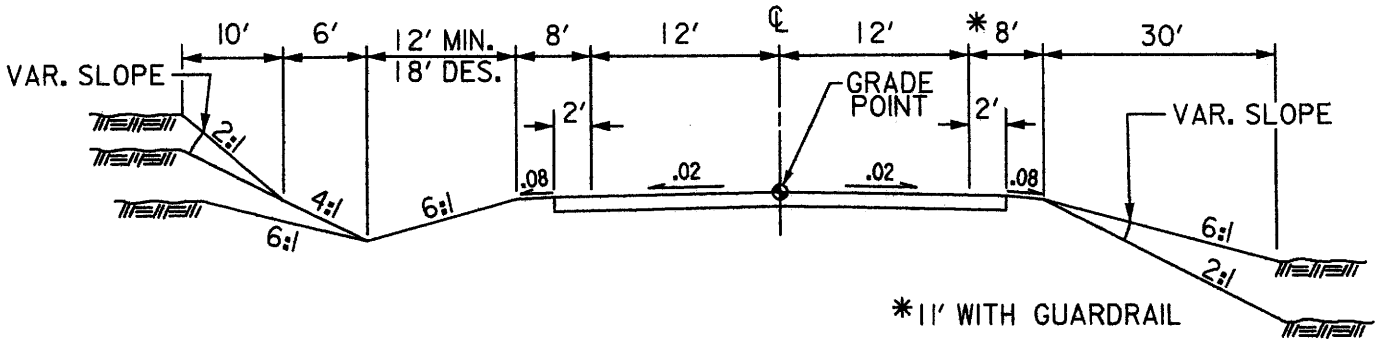
FIGURE 3A

REPLACE BRIDGE NO. 141 ON SR 1741
OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

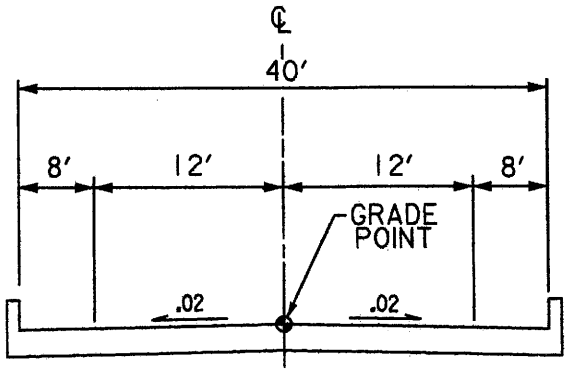
FUNCTIONAL CLASSIFICATION: URBAN MINOR ARTERIAL
POSTED SPEED: 55 MPH
ESTIMATED ADT:

2005 ADT	=	2,400
2025 ADT	=	4,200
TTST	=	1%
DUAL	=	3%
DHV	=	10%
DIR	=	55%

DESIGN SPEED: 60 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.06 ft/ft
* NOTE: RATE OF SUPERELEVATION GREATER THAN 0.06 MAY BE NEEDED TO TIE TO EXISTING PAVEMENT
MAXIMUM DEGREE OF CURVE: 4°15'
MAXIMUM GRADE: 6%
MINIMUM DESIRABLE K FACTORS: Ksag = 136 Kcrest = 151
SHOULDER WIDTH & TYPE : 2.0 ft FDPS 8.0 ft TOTAL (11.0ft WITH GUARDRAIL)
LANE WIDTHS: 12.0 ft
BRIDGE DECK WIDTH: 40.0ft CLEAR
BRIDGE LENGTH: 85.0 ft



APPROACH ROADWAY TYPICAL SECTION



BRIDGE TYPICAL SECTION

NOTE:
HORIZONTAL & VERTICAL DESIGN EXCEPTIONS MAY BE REQUIRED.

PREPARED BY: KO & ASSOC. DATE: 02-04-04
REVISED BY: KO & ASSOC. DATE: 02-24-04
APPROVED BY: _____ DATE: _____

FIGURE 3B

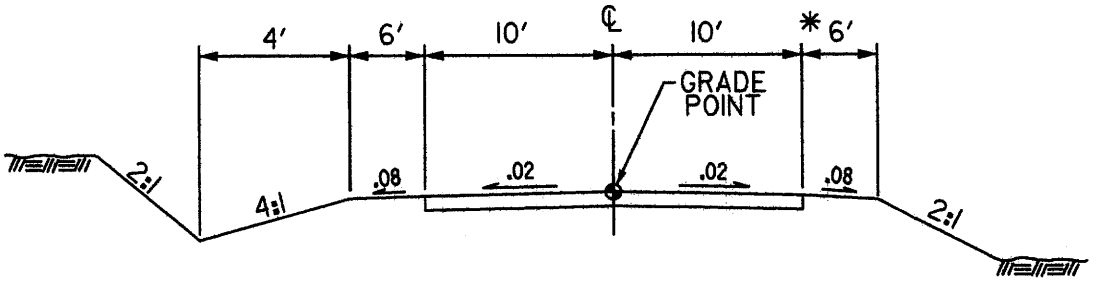
PROPOSED DETOUR CRITERIA

REPLACE BRIDGE NO. 141 ON SR 1741
OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

FUNCTIONAL CLASSIFICATION: URBAN MINOR ARTERIAL
POSTED SPEED: 55 MPH (ASSUMED)
ESTIMATED ADT:

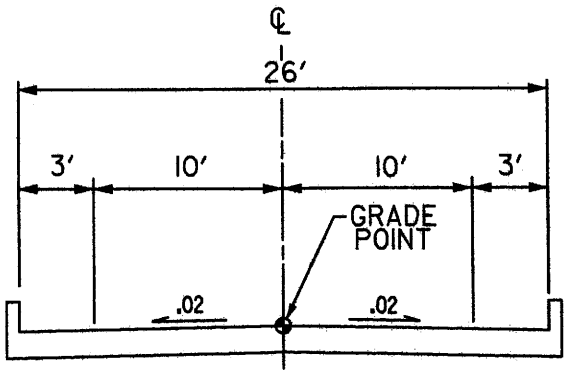
2005 ADT	=	2,400
2025 ADT	=	4,200
TTST	=	1%
DUAL	=	3%
DHV	=	10%
DIR	=	55%

DESIGN SPEED: 45 MPH
MAXIMUM RATE OF SUPERELEVATION: 0.06 ft/ft
MAXIMUM DEGREE OF CURVE: 8°50'
MAXIMUM GRADE: 9%
MINIMUM DESIRABLE K FACTORS: Ksag = 79 Kcrest = 61
SHOULDER WIDTH & TYPE : 6.0 ft TOTAL (9.0ft WITH GUARDRAIL)
LANE WIDTHS: 10.0 ft
BRIDGE DECK WIDTH: 26.0ft CLEAR
BRIDGE LENGTH: 85.0 ft



*9' WITH GUARDRAIL

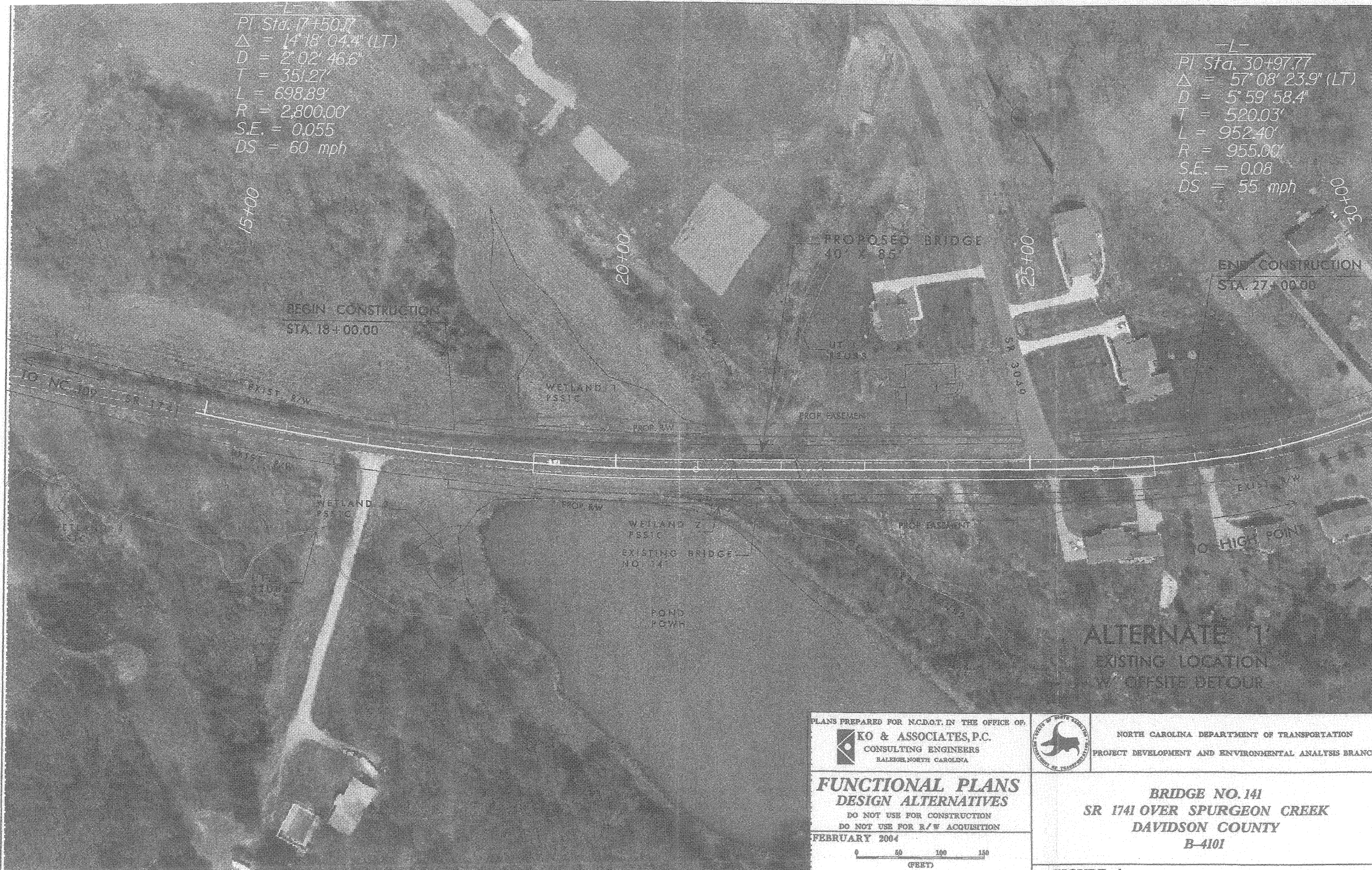
DETOUR APPROACH ROADWAY TYPICAL SECTION



DETOUR BRIDGE TYPICAL SECTION

NOTE:
A HORIZONTAL DESIGN EXCEPTION MAY BE REQUIRED.

PREPARED BY: KO & ASSOC. DATE: 02-04-04
REVISED BY: KO & ASSOC. DATE: 02-24-04
APPROVED BY: _____ DATE: _____



PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

FEBRUARY 2004

0 50 100 150
(FEET)

BRIDGE NO. 141
SR 1741 OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

FIGURE 4 SHEET 1 OF 1

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

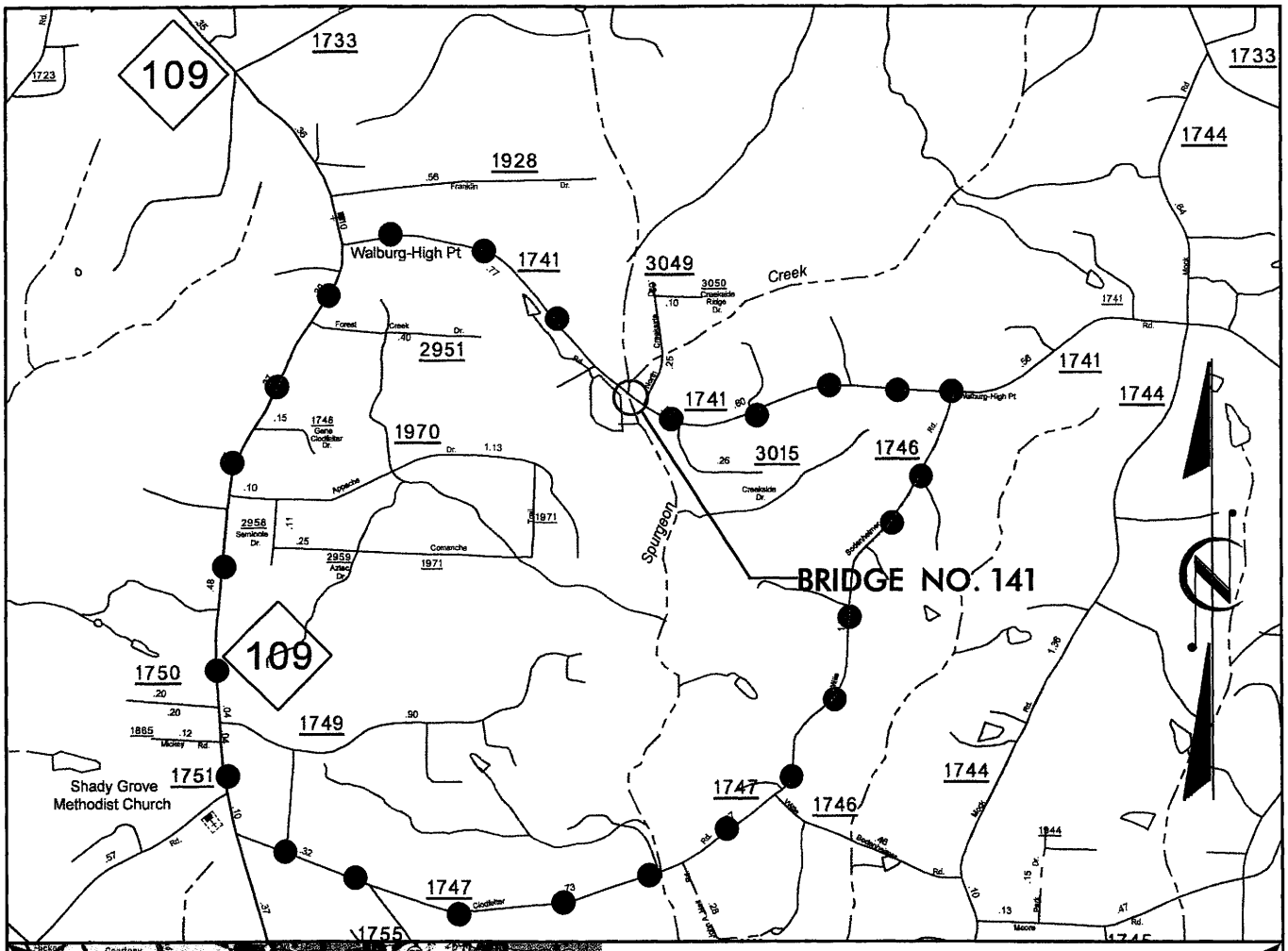
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
FEBRUARY 2004

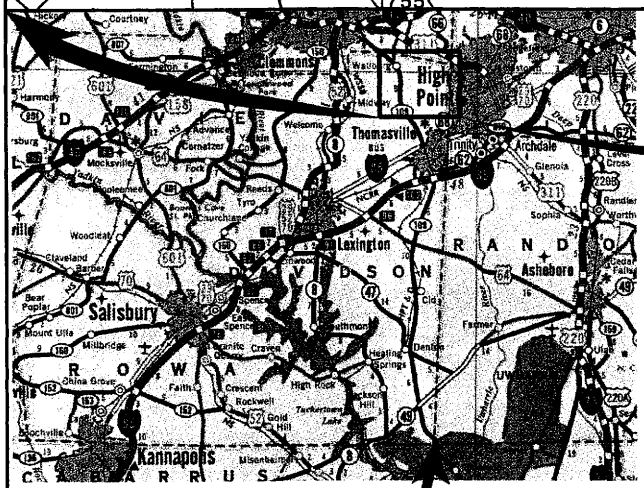
0 50 100 150 (FEET)

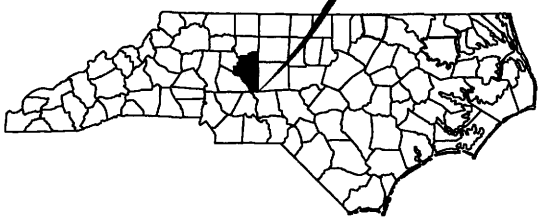
BRIDGE NO. 141
SR 1741 OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

FIGURE 5

SHEET 1 OF 1







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GRAPHIC SCALE (MILES)

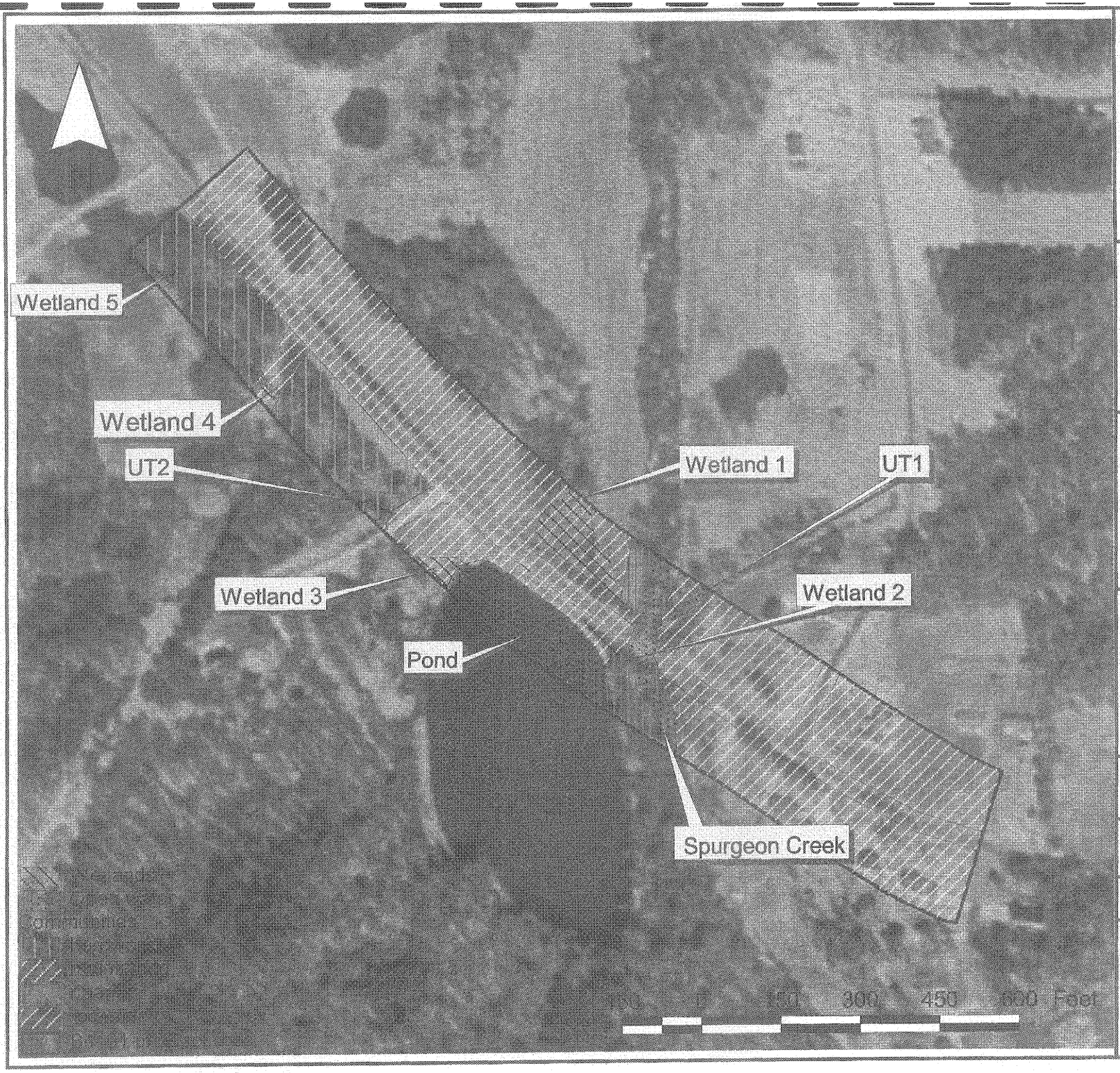
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Project Development and Environmental Analysis Branch

BRIDGE NO. 141
SR 1741 OVER SPURGEON CREEK
DAVIDSON COUNTY
B-4101

DETOUR MAP

FIGURE 6



EcoScience Corporation
1101 Haynes Street, Suite 101
Raleigh, North Carolina 27604
Ph: 919 828 3433
Fax: 919 828 3518

Client:
North Carolina Department of Transportation

Project:
Bridge No. 141 Replacement
B-4101
Davidson County, NC

Title:
Plant Communities and Jurisdictional Areas

Dwn By:	Date:
DKO	May 2004
Ckd By:	Scale:
APS	As Shown

ESC Project No: 04-185

FIGURE
7

Appendix

United States Department of the Interior

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

March 9, 2004

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

Dear Mr. Thorpe:

Subject: Scoping Comments for Five Bridge Replacement Proposals, Stokes, Davidson, Forsyth, and Davie Counties, North Carolina

We have reviewed the subject bridge replacement proposals and provide the following comments in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act). Given the early stages of development for these projects, our comments are limited primarily to the known locations of listed species and federal species of concern. When the categorical exclusions are prepared and more information is available regarding environmental effects, we can offer more substantive comments.

Enclosed is a species list for the four counties included in this package. This list provides the names of species on the *Federal List of Endangered and Threatened Wildlife and Plants* as well as federal species of concern. Federal species of concern are not legally protected under the Act and are not subject to any of its provisions, including section 7, unless they are formally proposed or listed as endangered or threatened. We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of your projects. Our records indicate the following:

Stokes County – B-4281, Bridge No. 60 on NC 8 and 89 over the Dan River (our Log No. 4-2-04-122) - Our records for Stokes County indicate known locations of the federally endangered James spinymussel (*Pleurobema collina*) in the project area. It is likely that James spinymussel individuals would be affected by this project; if that is the case, formal consultation will be required. In addition, there are occurrences of the federally endangered small-anthered bittercress (*Cardamine micrantherea*) near the project area.

Davidson County - B-4100, Bridge No. 142 on SR 1741, and B-4101, Bridge No.141 over Abbotts Creek (our Log Nos. 4-2-04-123, 4-2-04-124).

Forsyth County - B-4112, Bridge No. 30 on SR 1631 over Muddy Creek (our Log No. 4-2-04-125).

Davie County - B-4104, Bridge No. 21 on NC 801 over Carter Creek (our Log No. 4-2-04-128).

Our records for these counties and project areas indicate no known locations of listed species in the project areas. However, we recommend conducting habitat assessments and surveying any suitable habitat in the project areas for these species prior to any further planning or on-the-ground activities to ensure that no adverse impacts occur.

We are interested in the types of structures that will replace the existing bridges and would recommend spanning structures, preferably bridges, in all cases. In addition, off-site detours, which would reduce stream-bank disturbance, are preferable to temporary on-site crossings. We look forward to reviewing the completed categorical exclusion documents.

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

Sincerely,

Brian P. Cole
Field Supervisor

Enclosure

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

ENDANGERED, THREATENED, AND CANDIDATE SPECIES AND FEDERAL SPECIES OF CONCERN, DAVIDSON, DAVIE, FORSYTH, AND STOKES COUNTIES, NORTH CAROLINA

This list was adapted from the North Carolina Natural Heritage Program's County Species List. It is a listing, for Davidson, Davie, Forsyth, and Stokes Counties, of North Carolina's federally listed and proposed endangered, threatened, and candidate species and Federal species of concern (for a complete list of rare species in the state, please contact the North Carolina Natural Heritage Program). The information in this list is compiled from a variety of sources, including field surveys, museums and herbaria, literature, and personal communications. The North Carolina Natural Heritage Program's database is dynamic, with new records being added and old records being revised as new information is received. Please note that this list cannot be considered a definitive record of listed species and Federal species of concern, and it should not be considered a substitute for field surveys.

Critical habitat: Critical habitat is noted, with a description, for the counties where it is designated or proposed.

Aquatic species: Fishes and aquatic invertebrates are noted for counties where they are known to occur. However, projects may have effects on downstream aquatic systems in adjacent counties.

COMMON NAME	SCIENTIFIC NAME	STATUS
DAVIDSON COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Carolina darter	*Etheostoma collis collis*	FSC
Bald eagle	*Haliaeetus leucocephalus*	Threatened (proposed for delisting)
Vascular Plants		
Georgia aster	*Aster georgianus*	C1
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Heller's trefoil	*Lotus helleri*	FSC
DAVIE COUNTY		
Vertebrates		
Robust redhorse	*Moxostoma robustum*	FSC
Vascular Plants		
Creamy tick-trefoil	*Desmodium ochroleucum*	FSC*
Heller's trefoil	*Lotus helleri*	FSC*
Michaux's sumac	*Rhus michauxii*	Endangered
FORSYTH COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Red-cockaded woodpecker	*Picoides borealis*	Endangered****

COMMON NAME	SCIENTIFIC NAME	STATUS
Invertebrates		
Brook floater	*Alasmidonta varicosa*	FSC
Vascular Plants		
Small-anthered bittercress	*Cardamine micranthera*	Endangered

STOKES COUNTY

Vertebrates		
Orangefin madtom	*Noturus gilberti*	FSC
Rustyside sucker	*Thoburnia hamiltoni*	FSC
Invertebrates		
Green floater	*Lasmigona subviridis*	FSC
James spinymussel	*Pleurobema collina*	Endangered
Diana fritillary butterfly	*Speyeria diana*	FSC*
Vascular Plants		
Small-anthered bittercress	*Cardamine micranthera*	Endangered
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Butternut	*Juglans cinerea*	FSC
Sweet pinesap	*Monotropsis odorata*	FSC

KEY:

Status	Definition
Endangered	A taxon "in danger of extinction throughout all or a significant portion of its range."
Threatened	A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."
C1	A taxon under consideration for official listing for which there is sufficient information to support listing.
FSC	A Federal species of concern--a species that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing).
T(S/A)	Threatened due to similarity of appearance (e.g., American alligator)--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.

Species with 1, 2, 3, or 4 asterisks behind them indicate historic, obscure, or incidental records.

*Historic record - the species was last observed in the county more than 50 years ago.

**Obscure record - the date and/or location of observation is uncertain.

***Incidental/migrant record - the species was observed outside of its normal range or habitat.

****Historic record - obscure and incidental record.

[1]In the November 4, 1997, *Federal Register* (55822-55825), the northern population of the bog turtle (from New York south to Maryland) was listed as T (threatened), and the southern population (from Virginia south to Georgia) was listed as T(S/A) (threatened due to similarity of appearance). The T(S/A) designation bans the collection and interstate and international commercial trade of bog turtles from the southern population. The T(S/A) designation has no effect on land-management activities by private landowners in North Carolina, part of the southern population of the species. In addition to its official status as T(S/A), the U.S. Fish and Wildlife Service considers the southern population of the bog turtle as a Federal species of concern due to habitat loss.

B-4101

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

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

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

DATE: August 12, 2004

SUBJECT: Scoping review of NCDOT's proposed replacement of Bridge No. 142 on SR 1741 over Abbotts Creek and Bridge No. 141 on SR 1741 over Sprugeon Creek, Davidson County. TIP Nos. B-4100 and B-4101.

North Carolina Department of Transportation (NCDOT) is requesting comments from the North Carolina Wildlife Resources Commission (NCWRC) regarding impacts to fish and wildlife resources resulting from the subject project. Staff biologists have reviewed the information provided and have the following preliminary comments. These comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Our standard recommendations for bridge replacement projects of this scope are as follows:

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

2. Bridge deck drains should not discharge directly into the stream.

3. Live concrete should not be allowed to contact the water in or entering into the stream.

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

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721

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

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the stream underneath the bridge.

7. In trout waters, the N.C. Wildlife Resources Commission reviews all U.S. Army Corps of Engineers nationwide and general '404' permits. We have the option of requesting additional measures to protect trout and trout habitat and we can recommend that the project require an individual '404' permit.

8. In streams that contain threatened or endangered species, Mr. Logan Williams with the NCDOT - ONE should be notified. Special measures to protect these sensitive species may be required. NCDOT should also contact the U.S. Fish and Wildlife Service for information on requirements of the Endangered Species Act as it relates to the project.

9. In streams that are used by anadromous fish, the NCDOT official policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage (May 12, 1997)" should be followed.

10. In areas with significant fisheries for sunfish, seasonal exclusions may also be recommended.

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

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

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

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

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

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

17. If culvert installation is being considered, conduct subsurface investigations prior to structure design to determine design options and constraints and to ensure that wildlife passage issues are addressed.

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

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream 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.

Project specific comments:

1. B-4100 and B-4101, Davidson Co., Bridge No. 142 on SR 1741 over Abbotts Creek and Bridge No. 141 on SR 1741 over Sprugeon Creek. Both Abbotts and Sprugeon Creeks are classified WS-III waters. Sediment and erosion control measures should adhere to the design standards for sensitive watersheds to protect the water supply. No other special concerns are indicated at this time. Impacts to aquatic and terrestrial resources should be minimized. Standard requirements and BMP's should apply.

We request that NCDOT routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. The NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks, reducing habitat fragmentation and vehicle related mortality at highway crossings.

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (704) 485-2384. Thank you for the opportunity to review and comment on this project.

cc: Marella Buncick, USFWS
Brian Wrenn, NCDWQ

North Carolina Department of Cultural Resources
State Historic Preservation Office

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

Division of Historical Resources
David L. S. Brook, Director

March 10, 2004

MEMORANDUM

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

FROM: David Brook for David Brook

SUBJECT: Bridge No. 142 on SR 1741 over Abbotts Creek, B-4100; Bridge No. 141 on SR 1741 over Abbotts Creek, B-4101; Davidson County, ER04-0474 and ER04-0475

Thank you for your letter of February 10, 2004, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

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
Matt Wilkerson

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 10, 2004

Dr. Jeffrey J. Crow
Division of Archives & History
N.C. Department of Cultural Resources
4610 Mail Service Center
Raleigh, North Carolina 27699-4610

Dear :Dr. Crow:

Subject: Davidson County
B-4100, Bridge No. 142 on SR 1741 over Abbotts Creek
B-4101, Bridge No. 141 on SR 1741 over Abbotts Creek

The Project Development and Environmental Analysis Branch of the North Carolina Department of Transportation (NCDOT) has begun studying proposed improvements to the subject bridge replacement projects. The projects are included in the NCDOT's 2004-2010 Transportation Improvement Program and are scheduled for right-of-way in fiscal year 2005 and construction in fiscal year 2007.

B-4100, Bridge No. 142 on SR 1741 over Abbotts Creek

The existing two-lane structure, constructed in 1949, crosses over Abbotts Creek and is 106 feet long and 24 feet wide.

The following alternatives will be studied for this bridge project:

- Do-Nothing
- Rehabilitate the Existing Structure
- Replace on the north side maintaining traffic on the existing structure as an on-site detour.
- Replace at existing location maintaining traffic with a temporary structure and detour on north side.

B-4101, Bridge No. 141 on SR 1741 over Abbotts Creek

The existing two-lane structure, constructed in 1948, crosses over Abbotts Creek and is 75 feet long and 24 feet wide.

The following alternatives will be studied for this bridge project:

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

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

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

- Do-Nothing
- Rehabilitate the Existing Structure
- Replace at existing location by closing the existing roadway and maintaining traffic with an off-site detour.
- Replace at existing location maintaining traffic with a temporary structure and detour on north side (note: this alternative will not be pursued if preliminary investigation indicates that the temporary detour will require a taking of the house adjacent to the roadway and creek in the northeast quadrant).
- Replace at existing location maintaining traffic with a temporary structure and detour on south side.

If the structure is replaced at its existing location utilizing an off-site detour route, SR 1741 will be closed to through traffic during the construction of the replacement structure. If you feel this would create undue travel hardships to the community please advise. Any comments regarding potential impacts to School Bus Routings and Emergency Response Units (fire, rescue, police, etc.) would be especially helpful.

We would appreciate any information you have that would be helpful in evaluating potential community and environmental impacts of the above projects. If applicable, please identify any permits and/or approvals required by your agency.

Please note that there will be no formal interagency scoping meeting for these projects. This letter constitutes solicitation for scoping comments related to the projects. It is desirable that you respond by March 31, 2004, so that your comments can be used in the preparation of a proposed Categorical Exclusion for the above projects. You may have previously been contacted concerning these bridge replacement projects, please note that the alternatives may have changed or additional alternatives may have been added.

If you have any questions concerning the projects, please contact Karen Taylor, P.E., Project Development Engineer, of this Branch at (919) 733-7844, extension 223.

Sincerely,

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

Attachments
KT/jw

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 21, 2002

MEMORANDUM

TO: Jay Temple
School Transportation Director
Davidson County Schools
PO Box 2057
Lexington, NC 27293

FROM: William T. Goodwin, Jr. PE
Project Development & Environmental Analysis Branch

SUBJECT: Replacement of Bridge No. 141 on SR 1741 over Abbotts Creek, Davidson County, Federal Aid Project No. BRSTP-1741(3), State Project No. 8.2604901, TIP No. B-4101

The N. C. Department of Transportation has begun the planning process to replace the above bridge, which is nearing the end of its useful life. Construction is planned for year 2006.

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

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

NOT

We would like to know the specific number of bus crossings per day and if road closure could be handled by re-routing or other changes, or if it would create an unworkable situation for your school bus operations. Of course, closure is not a realistic option for dead end roads. In such cases traffic will be maintained. 14 Crossings per day. Re-routing difficult. An acceptable turnaround would be preferred.

We ask that you let us know your opinion in writing by using the enclosed addressed envelope. We need your reply by December 2, 2002.

If you have any questions concerning the project, please contact Davis Moore at (919) 733-7844, ext. 258.

Attachment

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

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

WEBSITE: WWW.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael F. Easley
GOVERNOR

Lyndo Tippett
SECRETARY

September 8, 2004

MEMORANDUM TO: Mr. Gregory J. Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch

ATTENTION: Karen B. Taylor, PE
Project Development Engineer

FROM: Njoroge W. Wainaina, PE
State Geotechnical Engineer

TIP NO.	B-4101
WBS	33457.1.1
FEDERAL PROJECT:	BRSTP-1741 (3)
COUNTY:	Davidson
DESCRIPTION:	Bridge 141 over Abbotts Creek on SR 1741 in Thomasville

SUBJECT: Geotechnical Pre-Scoping Report

The Geotechnical Engineering Unit performed a limited pre-scoping investigation of the above reference project to provide an early identification of any Geotechnical and GeoEnvironmental issues that might impact the project's planning, design or construction. The following information summarizes our findings.

GEOENVIRONMENTAL ISSUES

Purpose

This report presents the results of a GeoEnvironmental Impact Evaluation conducted along the above referenced project. The main purpose of this investigation is to identify properties within

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088
FAX: 919-250-4237
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

the project study area that are or may be contaminated and therefore result in increased project costs and future liability if acquired by the Department. GeoEnvironmental impacts may include, but are not limited to, active and abandoned underground storage tank (UST) sites, hazardous waste sites, regulated landfills and unregulated dumpsites.

Techniques/Methodologies Used

The Geographical Information System (GIS) was consulted to identify known environmentally impacting sites in relation to the project corridor. GeoEnvironmental Section personnel conducted a field reconnaissance survey along the project corridor on April 26, 2004.

Findings

Underground Storage Tank (UST) Facilities

Based on our study, there are no UST sites identified within the project limits.

Hazardous Waste Sites

No Hazardous Waste Sites were identified within the project limits.

Land Fills

No apparent landfills were identified within the project limits.

Other GeoEnvironmental Concerns

No additional sites were encountered within the project limits.

Anticipated Impacts

We anticipate no monetary or scheduling impacts resulting from contaminated properties within the project limits.

The GeoEnvironmental Section observed no additional contaminated properties during the field reconnaissance and regulatory agencies' records search. Please note that discovery of additional sites not recorded by regulatory agencies and not reasonably discernable during the project reconnaissance may occur. The GeoEnvironmental Section should be notified immediately after discovery of such sites so their potential impact(s) may be assessed.

If there are any questions regarding these or other GeoEnvironmental issues on the project, please contact Cyrus Parker, LG at (919)-250-4088.

GEOTECHNICAL ISSUES

Techniques and Methodologies

The geotechnical investigation consisted of a reconnaissance conducted on May 26, 2004 and one Standard Penetration Test conducted on May 27, 2004. The boring was conducted in the shoulder of the existing roadway in the northwest quadrant. The collar elevation is about 15 feet above the streambed.

Findings

The test boring encountered approximately 8 feet of existing roadway fill resting on floodplain soils. The alluvial deposit is about 12 feet thick and consists of very soft silty clay. Weathered rock was encountered immediately below the sediments. Split spoon samples of the weathered rock are consistent with the mapped rock unit PPg, Granitic Rock of the Charlotte Belt.

It appears that the stream has recently been above bankful as evidenced by sand deposits on the floodplain and debris piles high on the existing bridge piers. There is a pond in the southwest (downstream right) quadrant; any construction in that direction will need to consider impacts to the pond.

Anticipated Impacts

Consolidation of the alluvial clay is likely. This may require a waiting period between placement of the new fill and pile driving. Based on limited preliminary data, interior spread footings are possible, but a drilled shaft foundation seems most likely.

If there are any questions regarding these Geotechnical comments, please contact Clinton B. Little, L.G. or John L. Pilipchuk, L.G., P.E.. at (704)-455-8902

NWW/CFP/CBL/dbm

Replacement of Bridge No. 141
On Wallburg-High Point Road (S.R. 1741) Over Abbott's Creek
In Davidson County
TIP Project No. B-4101

May 2004 **NEWSLETTER** Number 1

NCDOT to Conduct Studies

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 141 on Wallburg-High Point Road (S.R. 1741) over Abbott's Creek in Davidson County (see map, page 2). The bridge replacement is necessary to maintain the safety of those traveling this route as the existing structure is nearing the end of its useful life.

For approximately the next six months, the NCDOT will be conducting engineering and environmental studies to determine the most economical and environmentally sound alternative for replacing the existing bridge. Three alternates are under consideration. These are:

(1) Replace the bridge at its existing location by closing the roadway and detouring traffic to other roads in the area;
(2) Replace the bridge at its existing location, while maintaining traffic with a temporary structure on the north side;
(3) Replace the bridge at the existing location, while maintaining traffic with a temporary structure on the south side.

The estimated construction period is approximately one year. The schedule in the NCDOT's 2004-2010 Transportation Improvement Program is for-right-of way acquisition to begin in 2005, with construction beginning in 2006. (This schedule is subject to change.)

If you have any comments or concerns regarding the bridge replacement, please contact Jack Ward or Karen Taylor.

The NCDOT has engaged the private engineering firm of Ko and Associates, P.C., to conduct the environmental study. The results of the study will be used by NCDOT to select a preferred alternate for this project that minimizes impacts to both man-made and natural resources, while meeting the public's transportation needs at a reasonable cost.

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If you have questions concerning other transportation projects, please call our Customer Service Office toll-free at 1-877-DOT-4YOU or check our website for more information at www.dot.state.nc.us

BRIDGE NO. 141 PROFILE LOOKING NORTH

LOOKING EAST ACROSS BRIDGE NO. 141

Send to:
Mr. L. Jack Ward, P. E.
Project Manager
Ko & Associates, P. C.
1011 Schaub Drive, Suite 202
Raleigh, NC 27606
Telephone: 919-851-6066 extension 107
E-mail: jward@koassociates.com

Ms. Karen B. Taylor, P. E.
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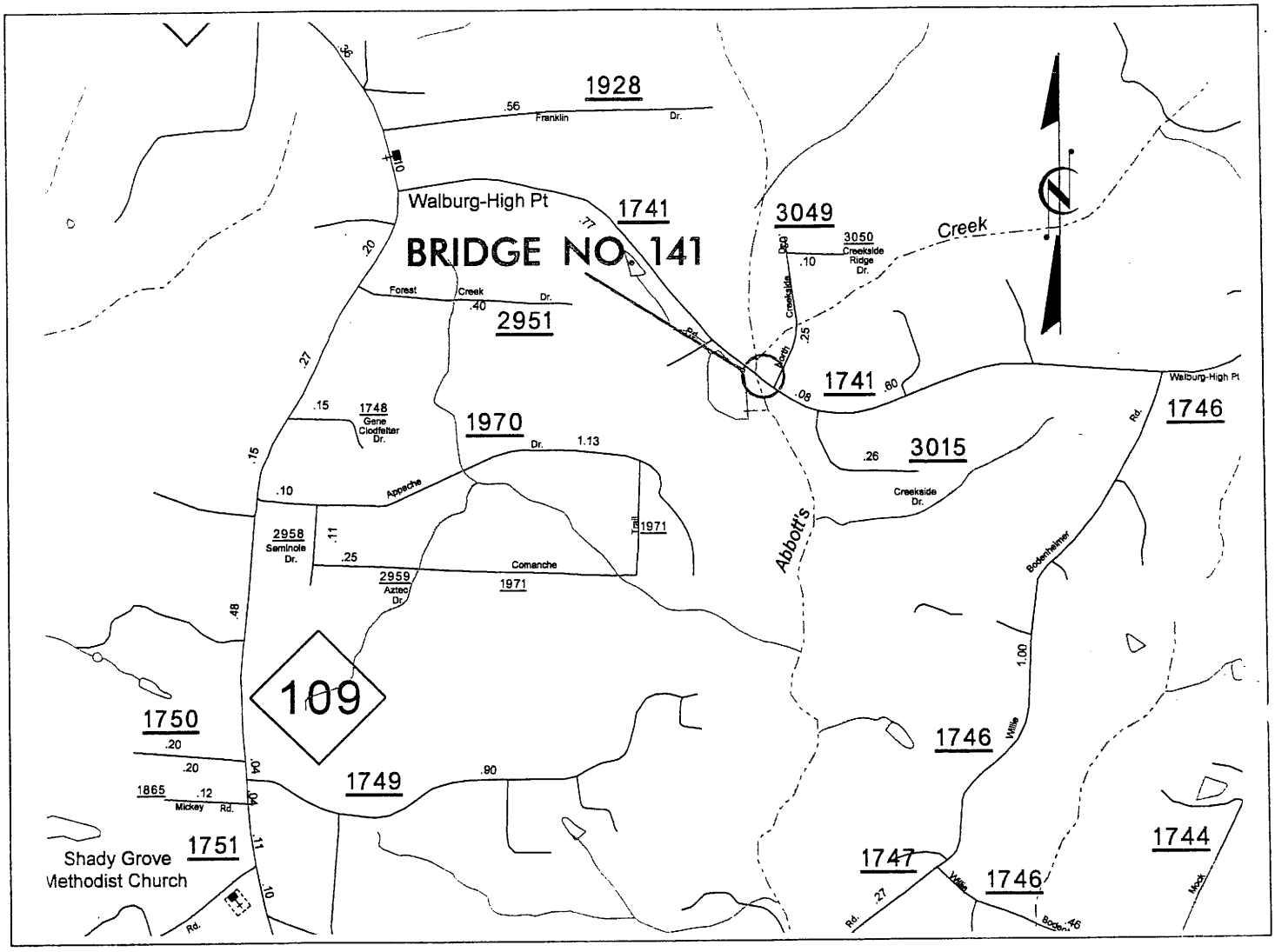
Vicinity Map



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