STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 22, 2004

US Army Corps of Engineers
Regulatory Field Office
151 Patton Ave.
Room 208
Asheville, NC 28801-5006

ATTENTION: Mr. Steve Lund
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 & 33 Permit Application** for the Replacement of Bridge No. 187 over Long Creek on SR 1214, Stanly County, Federal Aid Project No. BRZ-1214(3), State Project No. 8.2681401, TIP B-3700, Division 10.

Please find enclosed three copies of the project planning report for the above referenced project. Bridge No. 187 will be replaced in the existing location using a 110' single span prestressed steel girder bridge. The new bridge will have a 30-foot clear roadway width with two 12-foot travel lanes and two 3-foot grass shoulders. The new approaches and bridge will have a design speed of 50 mph.

No jurisdictional wetlands or existing channel will be permanently impacted by the construction of the bridge. There will be a temporary 0.0018-acre surface water impact due to a work pad.

During construction, traffic will be maintained by an off-site detour that is approximately 7.6 miles long. The detour consists of Pennington Road (SR 1401), Mann Road (SR 1409), and Old Salisbury Road (SR 1400).

Bridge Demolition

Bridge No. 187 is composed of a timber deck with an asphalt wearing surface on steel girders, stringers, and a continuous steel floor beam system. The substructure consists of timber posts and sills. The existing structure is 81 feet long with a 19.1-foot clear roadway width. The crown of the bridge is 18 feet above the streambed. Due to the structural components of the bridge, no temporary fill will be dropped into surface waters.

Water Resources

Long Creek is located in sub-basin 03-07-13 (Lower Rocky River) of the Yadkin-Pee Dee River Basin which is located within the United States Geological Survey Hydrologic Unit 03040105 of

the South Atlantic/Gulf Region. The DWQ best usage classification (Index No. 13-17-31c) is C. *Class* C water resources are defined as suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Wastewater discharge and stormwater management requirements apply to these waters.

Temporary Workpad

A temporary rock workpad will be required for the demolition of the existing bridge and in order to provide for construction access. A total of 0.0018 acre of temporary stream impacts will occur as a result.

Restoration Plan: No permanent fill will result from the subject activity. The materials used as temporary fill in the construction of the workpad will be removed. The temporary fill areas will be graded back to the original contours. Elevations and contours in the vicinity of the proposed workpad are available from the field survey notes.

Schedule for Construction of Workpad: It is assumed that the contractor will begin construction of the proposed workpad shortly after the date of availability for the project. The Let date is October 18, 2005 with a date of availability of November 15, 2005.

Removal and Disposal: The workpad will be removed, within 90 days of the completion of the deck slab for the bridge, using excavating equipment. All materials placed in the stream by the contractor will be removed. Any usable material that is removed may be used at the discretion of the engineer. All other materials removed by the contractor will be disposed of at a non-jurisdictional off-site location.

Avoidance & Minimization

The construction of this project has minimized the extent of the built-upon area by using the existing alignment for the bridge replacement. Traffic will be maintained using an off-site detour. Best management practices (BMP's) will be utilized to minimize water quality impacts. In compliance with 15A NCAC 02B.0104(m) we have incorporated the use of BMP's in the design of the project.

Federally Protected Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to co-exist with human activities. Federal law (under the provisions of the Endangered Species Act (ESA) of 1973, as amended) requires that any action likely to adversely affect a species classified as federally protected be subject to review by the United States Fish and Wildlife Service (USFWS). Other species may receive additional protection under separate state laws. Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of ESA §§7 and 9, as amended.

As of January 29, 2003, the USFWS lists bald eagle (*Haliaeetus leucocephalus*) and Schweinitz's sunflower (*Helianthus schweinitzii*) for Stanly County. The biological conclusion for each species is "No Effect".

Regulatory Approvals

Section 404 Permit: It is anticipated that the temporary dewatering of tributary to Catawba River be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33 authorizing the temporary dewatering of Long Creek. All other aspects of this project are being processed by

the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR § 771.115(b). 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 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their records.

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html.

If you have any questions or need additional information, please contact Mr. Chris Underwood at (919) 715-1451.

Sincerely,

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

cc: W/attachment

Mr. John Hennessy, Division of Water Quality (7 copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. B. G. Payne, P.E., Division Engineer
Mr. Larry Thompson, DEO

W/o attachment

Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington (Cover Letter only)
Mr. Elmo Vance, Planning Engineer

Office Use Only: Form Version May 2002

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:
   - X Section 404 Permit
   - ☐ Section 10 Permit
   - 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ

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

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

4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), 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: **NCDOT/Project Development & Environmental Analysis Branch/ Greg Thorpe**
   Mailing Address: **1548 Mail Service Center, Raleigh, NC 27699-1548**
   _____
   _____
   _____
   Telephone Number: **919-733-3141** Fax Number: **919-733-9794**
   E-mail Address: _____

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   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. 187 over Long Creek on SR 1214, Stanly County

2. T.I.P. Project Number or State Project Number (NCDOT Only): **B-3700**

3. Property Identification Number (Tax PIN): _____

4. Location
   County: **Stanly** Nearest Town: **Barnardsville**
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers, landmarks, etc.): **I-40 W from Raleigh to I-85 to Concord to NC73 to SR 1214 (Austin Road) crossing**

5. Site coordinates, if available (UTM or Lat/Long): **35°23.89'N, 80°15.19'W**
   (Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)

6. Property size (acres): _____

7. Nearest body of water (stream/river/sound/ocean/lake): **Long Creek (Class C)**

8. River Basin: **Yadkin-PeeDee**
   (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: **State route corridor with roadway shoulders**

10. Describe the overall project in detail, including the type of equipment to be used:
Replace Bridge No. 187 with a bridge in the existing location. Heavy duty excavation equipment such as trucks, dozers, cranes, and other equipment necessary for roadway construction.

11. Explain the purpose of the proposed work: **Public Transportation**

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.

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.
No

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. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must 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:
Wetland impacts will consist of fill, excavation in wetland, and mechanized clearing.

2. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***

* List each impact separately and identify temporary impacts. 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.

** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at http://www.fema.gov.

*** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: **0**
Total area of wetland impact proposed: **0**

3. Individually list all intermittent and perennial stream impacts below:

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
At bridge	**Temporary (work pad)**	**0.0018 acre**	**Long Creek**	**30'**	**perennial**

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, 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.

** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site: 0

4. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.) below:

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

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: fill, excavation, dredging, flooding, drainage, bulkheads, etc.

5. 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.): **N/A**

Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):

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.

Standard NCDOT Construction Practices

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 March 9, 2000, 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 NCWRP 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.

   N/A

2. Mitigation may also be made by payment into the North Carolina Wetlands Restoration Program (NCWRP). Please note it is the applicant's responsibility to contact the NCWRP at (919) 733-5208 to determine availability and to request written approval of mitigation prior to submittal of a PCN. For additional information regarding the application process for the NCWRP, check the NCWRP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCWRP is proposed, please check the appropriate box on page three and provide the following information:

   Amount of stream mitigation requested (linear feet): **N/A**
   Amount of buffer mitigation requested (square feet): **N/A**
   Amount of Riparian wetland mitigation requested (acres): **N/A**
   Amount of Non-riparian wetland mitigation requested (acres): **N/A**
   Amount of Coastal wetland mitigation requested (acres): **N/A**

IX. Environmental Documentation (required by DWQ)

Does the project involve an expenditure of public (federal/state) funds or the use of public (federal/state) land?

Yes ☒ No ☐

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 ☐

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.

Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)?

Yes ☐ No ☒ If you answered "yes", provide the following information:

Identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

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

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

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

N/A

XI. Stormwater (required by DWQ)

Describe impervious acreage (both 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.

N/A

XII. Sewage Disposal (required by DWQ)

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

N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?

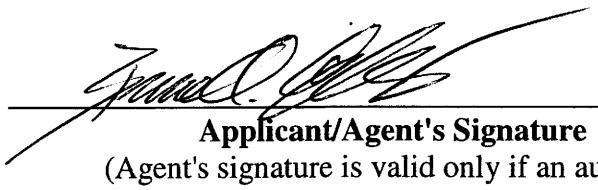
Yes ☐ No ☒

Is this an after-the-fact permit application?

Yes NoX

XIV. 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).



12/28/04

Applicant/Agent's Signature **Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Stanly County
Bridge No. 187 on SR 1214 (Austin Road)
over Long Creek
Federal Aid Project No. BRZ-1214(3)
State Project No. 8.2681401
T.I.P. No. B-3700

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

12-16-03
DATE

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

12/16/03
DATE

for John F. Sullivan, III
Division Administrator, FHWA

Stanly County
Bridge No. 187 on SR 1214 (Austin Road)
over Long Creek
Federal Aid Project No. BRZ-1214(3)
State Project No. 8.2681401
T.I.P. No. B-3700

CATEGORICAL EXCLUSION

December 2003

Document Prepared by:
TGS Engineers

J. Kenneth Burleson, PE

12/10/03
Date

For the North Carolina Department of Transportation

Elmo E. Vance
Project Development Engineer
Consultant Engineering Unit

PROJECT COMMITMENTS

Stanly County
Bridge No. 187 on SR 1214 (Austin Road)
over Long Creek
Federal Aid Project No. BRZ-1214(3)
State Project No. 8.2681401
T.I.P. No. B-3700

NCDOT has agreed to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Design Standard for Sensitive Watersheds, Best Management Practices for Bridge Demolition and Removal (BMPs-BDR), General Certification Conditions, and Section 401 Conditions of Certification.

Division 10:

1. NCDOT will let the project early in the year to allow construction to be completed in one season reducing the time needed for the recommended off-site detour.

2. High Quality Sedimentation and Control Measures will be used to minimize project impacts to the state listed Carolina darter.

Stanly County
Bridge No. 187 on SR 1214 (Austin Road)
over Long Creek
Federal Aid Project No. BRZ-1214(3)
State Project No. 8.2681401
T.I.P. No. B-3700

INTRODUCTION: Stanly County Bridge No. 187 is included in the 2004-2010 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 23.5 out of a possible 100 for a new structure. The bridge is considered functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

The project is located in the western part of Stanly County. This area of Stanly County is very rural and contains many unpaved roadways. SR 1214 (Austin Road) serves approximately nine single-family dwelling units. The existing land use surrounding Bridge No. 187 is primarily residential and agricultural with the presence of large open fields. Presently there are no plans for development. The zoning within the study area is regulated by Stanly County Zoning Ordinance. The area adjacent to the project is zoned as Residential Agriculture (RA).

SR 1214 is classified as a rural minor collector in the Statewide Functional Classification System. This section of SR 1214 is not part of a designated bicycle route nor is it listed in the TIP as needing incidental bicycle accommodation. There is no indication an unusual number of bicyclists use this roadway.

In the vicinity of the bridge, SR 1214 has an 18-foot (5.5-meter) pavement width with 6-foot (1.8-meter) to 10-foot (3.0-meter) grass shoulders (see Figures 3 and 4). The existing bridge is on a tangent with curves to the north and south. The roadway is a sag vertical curve through the project area. The roadway is situated approximately 14 feet (4.3 meters) above the stream bed of Long Creek.

The 2003 traffic volume of 1800 vehicles per day (VPD) is expected to increase to 2700 VPD by the year 2030. The projected volume includes 1 percent truck-tractor semi-trailers and 3 percent dual-tired vehicles. The posted speed limit on this section of SR 1214 is 45

miles (72 kilometers) per hour.
Bridge No. 187 is a four-span structure that consists of a timber deck on steel girders, stringers, and a continuous floor beam system. The substructure consists of timber posts and sills. End Bent 2 consists of a timber post and concrete sill crutch. The existing bridge (see Figure 3) was constructed in 1952 and heavy maintenance was performed in 1999. The decaying timber deck and rails were removed, the steel painted, and helper bents added. The deck was refloored with new CCA treated timbers, and timber rail posts. The overall length of the structure is approximately 81 feet (24.7 meters). The clear roadway width is 19.1 feet (5.8 meters). No sidewalks are present on this structure. The posted weight limit on this bridge is 18 tons for single vehicles and 24 tons for TTST's.

There are no utilities attached to the existing structure, but telephone lines exist overhead along the north side of SR 1214. Utility impacts are anticipated to be low.

One accident was reported in the vicinity of the bridge during the period from June 2000 through May 2003.

Four school buses cross the bridge daily on their morning and afternoon routes.

III. ALTERNATIVES

A. Project Description

The replacement structure consists of a bridge, 120 feet (36.6 meters) long with a 30-foot (9.1-meter) clear roadway width. This recommended bridge length is based on a preliminary hydraulic analysis. The replacement structure will require spill-through abutments on each end. This structure will provide two 12-foot (3.6 meter) lanes with 3-foot (0.9-meter) shoulders on each side (see Figure 5).

The crossing of Long Creek is in a FEMA detailed Flood Study Area. Also according to the Study, the drainage area is approximately 20.9 square miles (54.1 square kilometers). The 10-year storm does not clear the existing bridge low chord. As the design storm frequency for the bridge is the 25-year event, the bridge deck must be raised approximately 2.7 feet (0.8 meters).

The approach roadway will be widened to provide two 12-foot (3.6 meter) lanes with 8-foot (2.4 meters) shoulders on each side. Typical sections of the existing and proposed approaches are included as Figure 4.

B. Build Alternatives

The three alternatives evaluated for this project are described below and shown in Figure 2.

Alternative 1 involves replacing the bridge at the existing location with a temporary detour to the northwest. The new alignment is approximately 600 feet (183 meters) long and will have a design speed of 50 miles (80 kilometers) per hour to reflect the characteristics of the remaining route. The existing bridge will maintain traffic during the construction of an on-site detour. Five, 96-inch (2440 millimeter) corrugated metal pipes are recommended for the on-site temporary detour. Traffic will be maintained on the on-site detour during replacement of the structure in the existing location.

Alternative 2 involves replacing the bridge on a new alignment to the northwest of the existing structure. The new alignment is approximately 1600 feet (488 meters) long and will have a design speed of 50 miles (80 kilometers) per hour. The existing structure and approaches will serve to maintain traffic on-site during the construction period.

Alternative 3 (Preferred) involves replacing the bridge in its existing location. The new alignment is approximately 600 feet (183 meters) long and will have a design speed of 50 miles (80 kilometers) per hour. Traffic service will be maintained along an off-site detour during construction. The recommended detour route is along Pennington Road (SR 1401), Mann Road (SR1409) and Old Salisbury Road (SR 1400) (see Figure 1). The total length of this detour is approximately 7.6 miles (12.2 kilometers).

C. Alternatives Eliminated from Further Study

The "do-nothing" or no-build alternative will eventually necessitate closure of the bridge. This alternative is not desirable due to the traffic service provided by the route.

"Rehabilitation" of the old bridge is not desirable due to its age and deteriorated condition.

D. Preferred Alternative

The preferred alternative (Alternative 3) is to replace the structure in its existing location. This alternative will use an off-site detour along existing routes to maintain traffic during construction (Figure 1). This alternative is preferred because it is the most cost efficient.

The Division Engineer concurs with the preferred alternative. The proposed detour route has been reviewed by local EMS and school bus transportation officials who offered no objections to this detour.

IV. ESTIMATED COSTS

The estimated costs for the three alternatives, based on current prices, are as follows:

	Alternative 1	Alternative 2	Alternative 3 (Preferred)
Structure	$252,000	$252,000	$252,000
Roadway Approaches	133,551	455,480	133,551
Detour Structure	203,189	N/A	N/A
Structure Removal	12,360	12,360	12,360
Misc. & Mob.	163,900	245,160	102,089
Eng. & Contingencies	110,000	135,000	75,000
Total Construction Cost	**$ 875,000**	**$ 1,100,000**	**$ 575,000**
Right-of-Way Costs	62,400	65,900	35,000
Total Project Cost	**$ 937,400**	**$ 1,165,900**	**$ 610,000**

The estimated cost of the project, shown in the 2004-2010 NCDOT Transportation Improvement Program (TIP), is $530,000, including $70,000 for right-of-way, $375,000 for construction and $85,000 prior years expense.

V. NATURAL RESOURCES

A review of the project area has been undertaken to evaluate natural resource features likely to be affected by the project. Materials and research data in support of this investigation have been derived from a number of sources including applicable U.S. Geological Survey (USGS) topographic mapping (Richfield, NC 7.5 minute quadrangle, 1993), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping, and general alternative locations on site aerial photography (scale: 1 inch [2.5 centimeters] = 100 feet [30.5 meters]).

The study corridor is located approximately 1.0 mile (1.6 kilometers) southwest of the intersection of SR 1400 and SR 1214 (Austin Road) northwest of Albemarle, NC (Figure 1). Bridge No. 187 is located along SR 1214 at Long Creek in Stanly County. The study corridor includes the channel and floodplain adjacent to Long Creek. Long Creek flows from the northwest to the south downstream of Bridge

No. 187. It joins the Rocky River approximately 13.2 miles (21.1 kilometers) to the south.

Land use within the study corridor includes forest and agricultural fields. Long Creek retains a riparian buffer of approximately 20 feet (6.1 meters) of natural vegetation upstream of the bridge and a buffer of approximately 75 feet (22.9 meters) downstream of the bridge (Figure 2).

A. Methodology

A natural resources field investigation for Bridge No. 187 was conducted on May 17, 2001. The study corridor was walked and visually investigated for substantial features. For purposes of the field investigation, and to assure proper area coverage of the alternatives, the study corridor was assumed to be approximately 1600 feet (488 meters) in length, with a width extending approximately 100 feet (30.5 meters) northwest and southeast of the SR 1214 centerline, for a combined corridor width of 200 feet (61.0 meters). Plant community impact calculations provided in this report are based on individual corridors centered on each of the alternatives. Final impacts will be limited to cut-and-fill boundaries of the constructed alternative. Special concerns evaluated in the field include; 1) potential habitat for protected species and 2) wetlands and water quality protection in Long Creek.

Plant community descriptions are based on a classification system utilized by North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968), with adjustments made to reflect more current nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Wetland jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Habitat used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Webster *et al.* 1985, Potter *et al.* 1980, Martof *et al.* 1980, Rohde *et al.* 1994, Menhinick 1991, Palmer and Braswell 1995). Fish and wildlife nomenclature follow current standards. Water quality information for area streams and tributaries was derived from available sources (DWQ 1997, 1999). Quantitative sampling was not undertaken to support existing data.

The U.S. Fish and Wildlife Service (FWS) listing of federally protected species with ranges which extend into Stanly County (April 12, 2001) was obtained prior to initiation of the field investigation. In addition, NHP records documenting

presence of federally or state listed species were consulted before commencing the field investigation.

B. Physiography and Soils

The study corridor is located in the Yadkin geologic formation within the Carolina Slate Belt of the Upper Piedmont physiographic province of North Carolina. This system is characterized by broad, gently sloping uplands, moderately to steeply sloping areas with narrow convex ridges, and steep valley slopes. Soil systems in the Piedmont are determined by the local bedrock type and form in saprolite weathered from bedrock of various composition (Daniels *et al.* 1999). The study corridor is located within the floodplain of Long Creek and adjacent uplands. Within the study corridor, the floodplain is wide and gently sloping. Elevations rise from approximately 480 feet (146.4 meters) National Geodetic Vertical Datum (NGVD) at streamside to 510 feet (155.5 meters) NGVD at the northwestern and southeastern extreme of the study corridor (USGS Richfield, NC quadrangle).

The Natural Resource Conservation Service indicates the following soils within the study corridor: Chewacla silt loam (fine-loamy, mixed, thermic *Fluvaquentic Dystrochrepts*), including the streambed and associated floodplain; Tatum channery silt loam, 2 to 8 percent slopes, (clayey, mixed, thermic *Typic Hapludults*) at the extreme southeast of the study corridor; and Goldston very channery silt loam, 15 to 45 percent slopes, (loamy-skeletal, siliceous, thermic, shallow *Typic Dystrochrepts*) in the southeast and northwest sides of the study corridor.

The Chewacla series consists of frequently flooded, somewhat poorly drained, moderately permeable soils on nearly level floodplains adjacent to streams. This Chewacla soil has a silt loam surface layer about 6 inches (15.2 centimeters) thick. The subsoil extends to a depth of 60 inches (152 centimeters). The underlying material to a depth of 80 inches (203.2 centimeters) is stratified sand and gravel. This soil is subject to frequent flooding for brief periods in winter and spring.

The Tatum series consists of well drained, moderately permeable soils on gently sloping uplands. Slope ranges from 2 to 8 percent. This Tatum soil has a brown channery silt loam surface layer 7 inches (18 centimeters) thick. The subsoil extends to a depth of 44 inches (112 centimeters). Weathered bedrock is at a depth of 44 inches (112 centimeters), which is underlain by hard sandstone bedrock at a depth of 60 inches (152 centimeters).

The Goldston series consists of well drained, moderately permeable soil found on hilly to steep, highly dissected side slopes adjacent to major drainageways throughout the slate belt. Slopes range from 15 to 45 percent. Typically this soil has a brown very channery silt loam surface layer 7 inches (18 centimeters) thick.

The subsoil is channery silt loam underlain by highly fractured slate, with hard fractured slate found at a depth of 36 inches (91 centimeters).

Of the predominant soil map units in the study corridor, the Natural Resources Conservation Service lists only the Chewacla series as having hydric inclusions occurring in adjoining upland sideslopes and in depressions (USDA 1996).

C. Water Resources

1. Waters Impacted

The study corridor is located within subbasin 03-07-13 (Lower Rocky River watershed) of the Yadkin-Pee Dee River Basin (DWQ 1997). This area is part of USGS accounting unit 03040105 of the South Atlantic-Gulf Coast Region. The section of Long Creek crossed by the subject bridge has been assigned Stream Index Number 13-17-31c by the N.C. Division of Water Quality (DWQ 1999).

2. Stream Characteristics

Long Creek is a third-order stream in the Lower Rocky River watershed subbasin. The Long Creek watershed is characterized by upland and mesic hardwood forests, agricultural land use, and minimal residential development. Within the study corridor, Long Creek is moderately entrenched, exhibited moderate flow, and is characterized by long meandering sinuosity and moderate riffle and pool development. Width of the stream is approximately 35 feet (10.7 meters) at the point of bridge crossing, and the bridge height above the stream bed is approximately 14 feet (4.3 meters).

During the field visit, water depths along the study corridor varied from 6 inches (15.2 centimeters) to 24 inches (61.0 centimeters). The water level was low, with about 6 inches (15.2 centimeters) of unvegetated riverbank above the water surface. Bank height varied from 7 to 10 feet (2.1 to 3.1 meters). Persistent aquatic vegetation was not observed within the stream channel with the exception of concentrations of algal growth in slower reaches. The channel substrate is composed of a gravel and sand mixture with some finer sediments present in slower flowing reaches. Evidence of much higher flow rates was observed as various amounts of woody and leaf debris were found about 5 feet (1.5 meters) above the present water level. Riparian vegetation consists of large trees (Piedmont/Low Mountain Alluvial Forest) with a well-established canopy shading most of the water surface.

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 C has been assigned to Long Creek. The designation C denotes waters that are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation refers to wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis (DWQ 1997). No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 mile (1.6 kilometers) of the study corridor. No watershed Critical Area (CA) occurs within 1.0 mile (1.6 kilometers) of the study corridor.

The Division of Water Quality has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed study corridor is summarized in the Yadkin-Pee Dee River basin management plan. The most recent water quality samples in Long Creek indicated Good-Fair water based on benthic macroinvertebrate samples taken in 1996 (DWQ 1997).

The Yadkin-Pee Dee River subbasin 03-07-13 (Lower Rocky River Watershed) has been biologically and chemically monitored and has a use support rating of fully supporting in 37 percent of its reaches. Forty-seven percent is rated as support threatened, 7 percent as partially supporting, none as not supporting, and 8 percent of its stream miles were not evaluated. Long Creek has been rated as Support Threatened. Subbasin 03-07-13, containing the entire Long Creek catchment from its headwaters to its confluence with Rocky River, supports one major point-source discharger with a permitted discharge of 16 million gallons per day (MGD) (60.6 million liters per day [MLD]) permitted flow. The subbasin includes eight minor discharges, with a total permitted flow of 1.27 MGD (4.81 MLD). Nonpoint source pollution is also a major consideration in the Yadkin-Pee Dee River drainage, with sedimentation and erosion the most widespread problem throughout Stanly County (DWQ 1997).

3. Anticipated Impacts

The project alternatives will bridge Long Creek to maintain the current water quality, aquatic habitat, and flow regime.

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. 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 using dikes, berms, silt basins, and other containment measures to control runoff; eliminating construction staging areas in floodplains and adjacent to waterways; re-seeding herbaceous cover on disturbed sites; managing chemicals (herbicides, pesticides, de-icing compounds) with potential negative impacts on water quality; and avoiding direct discharges into streams by catch basins and roadside vegetation.

The proposed bridge replacement will allow for continuation of pre-project stream flows in Long 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's Best Management Practices (BMPs) for the Protection of Surface Waters will be strictly enforced during the entire life of the project.

During removal of the existing bridge, bridge components will be removed without dropping them into waters of the United States. NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR) must be applied for the removal of this bridge.

D. Biotic Resources

1. Plant Communities

Four distinct plant communities were identified within the study corridor: Dry Oak-Hickory Forest, Piedmont/Low Mountain Alluvial Forest, roadside/disturbed land, and pasture/agricultural land. These plant communities are described below.

Dry Oak-Hickory Forest - Dry Oak-Hickory Forest occurs in the southwest quadrant of the study corridor and is bisected by SR 1214. It is bordered by roadside/disturbed land along SR 1214 and by agricultural fields to the east and west. This community is described by Schafale and Weakley (1990) as occurring on dry upland slopes of the Piedmont. The Dry Oak-Hickory Forest is a mature forest, with a closed canopy, well-developed sub-canopy, and sparse shrub and groundcover strata. The canopy contains white oak (*Quercus alba*), southern red oak (*Q. falcata*), loblolly pine (*Pinus taeda*), shortleaf pine (*P. echinata*), mockernut hickory (*Carya alba*), post oak (*Quercus stellata*), tulip poplar (*Liriodendron tulipifera*), and sweetgum (*Liquidambar styraciflua*). The sub-canopy and shrub layer is composed of red maple (*Acer rubrum*), sassafras (*Sassafras albidum*), blackgum (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), willow oak (*Quercus phellos*), eastern red cedar

(*Juniperus virginiana*), American beech (*Fagus grandifolia*), and saplings of dominant canopy species. The herbaceous layer includes Christmas fern (*Polystichum acrostichoides*), bedstraw (*Galium* sp.), poison ivy (*Toxicodendron radicans*), greenbrier (*Smilax rotundifolia*), wild grape (*Vitis rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), ebony spleenwort (*Asplenium platyneuron*), and Japanese honeysuckle (*Lonicera japonica*).

Piedmont/Low Mountain Alluvial Forest - Piedmont/Low Mountain Alluvial Forest occurs on the floodplain levee deposits adjacent to Long Creek. This land type is bisected by SR 1214 and Bridge No. 187 over Long Creek. To the west and east, it is bordered by pasture and agricultural fields classified as pasture/agricultural land. The forest comprises the riparian zone of the stream and averages 20 feet (6.1 meters) wide on each side of the channel upstream of the bridge, and 75 feet (22.9 meters) wide on each side of the channel downstream of the bridge. This community is described by Schafale and Weakley (1990) as occurring on natural levees of Piedmont rivers and streams. At the Long Creek study corridor, the canopy is well established and predominant species are river birch (*Betula nigra*), American elm (*Ulmus americana*), green ash (*Fraxinus pensylvanica*), red maple, tulip poplar, sweetgum, black walnut (*Juglans nigra*), bitternut hickory (*Carya cordiformis*), hackberry (*Celtis laevigata*), red mulberry (*Morus rubra*), and cherrybark oak (*Quercus pagoda*). The mid-story and shrub layer are well-developed and include ironwood (*Carpinus caroliniana*), red maple, Chinese privet (*Ligustrum sinense*), giant cane (*Arundinaria gigantea*), and elderberry (*Sambucus americana*). Vines and herbaceous species are common and include poison ivy, Japanese honeysuckle, Christmas fern, Virginia creeper, violet (*Viola* sp.), bedstraw, jewel-weed (*Impatiens* capensis), and climbing hempweed (*Mikania scandens*).

Roadside/Disturbed Land - Roadside/disturbed land occurs along the right-of-way of SR 1214. Land use is roadside mowing management. The roadside margins along SR 1214 are approximately 10 feet (3.1 meters) wide. The roadside margin is periodically mowed and supports herbaceous and woody species. These species include fescue (*Festuca* sp.), chickweed (*Stellaria* sp.), red maple, sweetgum, smooth sumac (*Rhus glabra*), multiflora rose (*Rosa multiflora*), clover (*Trifolium* sp.), vetch (*Vicia* sp.), blackberry (*Rubus argutus*), goldenrod (*Solidago* sp.), buttercup (*Ranunculus* sp.), Japanese honeysuckle, poison ivy, wild strawberry (*Duchesnea indica*), cranesbill (*Geranium* sp.), and pokeberry (*Phytolacca americana*).

Pasture/Agricultural Land - Pasture/agricultural land occurs in the floodplain and adjacent slopes surrounding the Piedmont/Low Mountain

Alluvial Forest. This community supports mainly herbaceous species with some interspersed trees and shrubs. These species include Queen Anne's lace (*Daucus carota*), English plantain (*Plantago lanceolata*), broom-straw (*Andropogon* sp.), spiny-leaved sow-thistle (*Sonchus asper*), wild onion (*Allium* sp.), cranesbill, dog-fennel (*Eupatorium capillifolium*), chickweed, goldenrod, trumpet vine (*Campsis radicans*), Johnson grass (*Sorghum halepense*), Japanese honeysuckle, clover, eastern red cedar, Chinese privet, blackberry, multiflora rose, and persimmon (*Diospyros virginiana*).

2. Plant Community Impacts

Plant community impacts are estimated based on the amount of each plant community present within alternative corridors. A summary of plant community impacts resulting from each alternative is presented in the following table.

Plant Community Impacts within the Alternative Corridors.
Areas are given in acres (hectares).

	Alt.1	Alt.1	Alt.1	Alt. 2	Alt.3 (Preferred)
Plant Community	Permanent	Temporary	Total	Permanent	Permanent
Dry Oak-Hickory Forest	0.00	0.00	0.00	0.17 (0.07)	0.00
Piedmont/Low Mountain Alluvial Forest	0.10 (0.04)	0.09(0.04)	0.19 (0.08)	0.04 (0.02)	0.10 (0.04)
Roadside/ Disturbed Land	0.21 (0.08)	0.00	0.21 (0.08)	0.63 (0.25)	0.21 (0.08)
Pasture/ Agricultural Land	0.19 (0.08)	0.23 (0.09)	0.42 (0.17)	0.79 (0.32)	0.19 (0.08)
TOTAL:	0.50 (0.20)	0.32 (0.13)	0.82 (0.33)	1.63 (0.66)	0.50(0.20)

From an ecological perspective, impacts of upgrading existing road facilities are minimal for Alternatives 1 and the preferred Alternative 3. All alternatives contain minimal amounts of natural plant community (Piedmont/Low Mountain Alluvial Forest and Dry Oak-Hickory Forest) and would only claim narrow strips of adjacent vegetation. No new fragmentation of plant communities will be created for any alternative as the project will result only in relocation of community boundaries.

Roadside-forest ecotones typically serve as vectors for invasive species into local natural communities. An example of an undesirable invasive species utilizing roadsides is kudzu (*Pueria montana*). The establishment of a hardy groundcover on road shoulders as soon as practicable will limit the availability of construction areas to invasive and undesirable plants.

3. Wildlife

The only mammal observed during the field visit was gray squirrel (*Sciurus carolinensis*). Tracks of raccoon (*Procyon lotor*) were noted in addition to scat of an unknown predatory mammal within the study corridor. Other characteristic mammals expected to frequent similar habitats in the Piedmont include opossum (*Didelphis virginiana*), beaver (*Castor canadensis*), evening bat (*Nycticeius humeralis*), red fox (*Vulpes fulva*), southern flying squirrel (*Glaucomys volans*), white-tailed deer (*Odocoileus virginianus*), meadow vole (*Microtus pennsylvanicus*), spotted skunk (*Spilogale putorius*), least shrew (*Cryptotis parva*), and eastern mole (*Scalopus aquaticus*).

Bird species identified during the field visit are Carolina chickadee (*Poecile carolinensis*), northern cardinal (*Cardinalis cardinalis*), black-and-white warbler (*Mniotilta varia*), yellow-breasted chat (*Icteria virens*), northern mockingbird (*Mimus polyglottos*), gray catbird (*Dumetella carolinensis*), tufted titmouse (*Baeolophus bicolor*), eastern meadowlark (*Sturnella magna*), dickcissel (*Spiza americana*), red-winged blackbird (*Agelaius phoeniceus*), field sparrow (*Spizella pusilla*), American crow (*Corvus brachyrhynchos*), common yellowthroat (*Geothlypis trichas*), chipping sparrow (*Spizella passerina*), pine warbler (*Dendroica pinus*), downy woodpecker (*Picoides pubescens*), common grackle (*Quiscalus quiscalus*), indigo bunting (*Passerina cyanea*), blue-gray gnatcatcher (*Polioptila caerulea*), eastern towee (*Pipilo erythrophthalmus*), and mourning dove (*Zenaida macroura*). Streamside and disturbed habitat might be expected to also support wood duck (*Aix sponsa*), white-eyed vireo (*Vireo griseus*), white throated sparrow (*Zonotrichia albicollis*), yellow-bellied sapsucker (*Sphyrapicus varius*), red-bellied woodpecker (*Melanerpes carolinus*), summer tanager (*Piranga rubra*), American goldfinch (*Carduelis tristis*), American robin (*Turdus migratorius*), belted kingfisher (*Megaceryle alcyon*), white-breasted nuthatch (*Sitta carolinensis*), and yellow-rumped warbler (*Dendroica coronata*).

No terrestrial reptile or amphibian species were observed within the study corridor. Species that might be expected in this habitat are five-lined skink (*Eumeces fasciatus*), eastern fence lizard (*Sceloporus undulatus*), Carolina anole (*Anolis carolinenisis*), rough green snake (*Opheidrys aestivus*), eastern box turtle (*Terrapene carolina*), marbled salamander

(*Ambystoma opacum*), slimy salamander (*Plethodon glutinosus*), American toad (*Bufo americanus*), Fowler's toad (*Bufo woodhousei*), and rat snake (*Elaphe obsoleta*).

No aquatic amphibian or reptile was observed during the field visit. Long Creek provides suitable habitat for aquatic and semi-aquatic reptiles including snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), queen snake (*Regina septemvittata*), eastern ribbon snake (*Thamnophis sauritus*), and northern water snake (*Nerodia sipedon*). Typical amphibian species for this habitat type include northern dusky salamander (*Desmognathus fuscus*), three-lined salamander (*Eurycea guttolineata*), pickerel frog (*Rana palustris*), and eastern newt (*Notophthalmus viridescens*). Several mussel shells belonging to the invasive Asian clam (*Corbicula flumenea*) were found inside the stream channel. No other evidence of mollusks was found.

No sampling was undertaken in Long Creek to determine fishery potential. Small minnows were seen during visual investigations, but no larger fish were noted. Species which may be present in Long Creek include chain pickerel (*Esox niger*), satinfish shiner (*Notropis analostanus*), brown bullhead (*Ictalurus nebulosus*), margined madtom (*Notorus insignis*), rosyside dace (*Clinostomus funduloides*), bluehead chub (*Nocomis leptocephalus*), Carolina darter (*Etheostoma colis*), bluegill (*Lepomis marochirus*), pumpkinseed (*Lepomis gibbosus*), redbreast sunfish (*Lepomis auritus*), bluegill (*Lepomis macrochirus*), and fantail darter (*Etheostoma flabellare*).

4. Wildlife Impacts

Due to the limited extent of infringement on natural communities, the proposed bridge replacement will not result in substantial loss or displacement of known terrestrial animal populations. No substantial habitat fragmentation is expected since most permanent improvements will be restricted to or adjoining existing roadside margins. Construction noise and associated disturbances will have short-term impacts on avifauna and migratory wildlife movement patterns. Long-term impacts are expected to be minimal for each of the alternatives. For each of the alternatives, potential impacts to down-stream aquatic habitats will be avoided by bridging the systems to maintain regular flow and stream integrity. Short-term impacts associated with turbidity and suspended sediments will affect benthic populations. Temporary impacts to downstream habitats from increased sediment during construction will be minimized by the implementation of stringent erosion control measures.

E. Jurisdictional Issues

1. Waters of the United States

Surface waters within the embankments of Long Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR section 328.3). NWI mapping depicts Long Creek as a palustrine-forested, broad-leaved, deciduous, temporarily flooded wetland (PFO1A; Cowardin *et al.* 1979). The field investigation indicates that Long Creek can be characterized as a perennial stream with an unconsolidated bottom consisting of a gravel and sand mixture with some finer sediments present in slower flowing reaches.

During removal of the existing bridge and project construction, no components of the bridge will be dropped into waters of the United States. In consideration of surface water impacts, this project can be classified as Case 3, where there are no special restrictions beyond those outlined in Best Management Practices for Protection of Surface Waters.

2. Jurisdictional Wetlands

Vegetated wetlands are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR section 328.3). These areas 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). No vegetated wetlands subject to jurisdictional consideration occur within the study corridor. Jurisdictional impacts are avoided by all considered alternatives. The only expected effect of bridge construction will be continued shading of the area of Long Creek under the replaced bridge.

3. Permits Required

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The COE has made available Nationwide Permit (NWP) #23 (61 FR 65874, 65916; December 13, 1996) for CEs due to expected minimal impact. DWQ has made available a General 401 Water Quality Certification for NWP #23.

4. Mitigation

Fill or alteration of streams may require compensatory mitigation in accordance with 15 NCAC 2H .0506(h). Compensatory mitigation is not expected to be offered for this project due to avoidance of jurisdictional

impacts. Utilization of BMPs is recommended in an effort to minimize indirect impacts to Long Creek. A final determination regarding mitigation rests with the COE and DWQ.

F. Protected Species

1. Federal 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). Federally protected species listed for Stanly County (February 25, 2003 FWS list) are provided in the following table.

Federally Protected Species. Species name and status for federally-protected species in Stanly County (February 25, 2003 FWS list).

Common Name	Scientific Name	Federal Status
Bald eagle	*Haliaeetus leucocephalus*	Threatened (Proposed for delisting)
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered

Bald Eagle - The bald eagle is a large raptor with a wingspan greater than 6.0 feet (1.8 meters). 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 (229 to 458 meters) 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 (1.6 kilometers) 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 (458 meters) of known roosting sites.

The study corridor contains no large bodies of open water that might serve as bald eagle habitat. The nearest lake (Long Lake) is approximately 3.0 miles (4.8 kilometers) to the south; however, it is most likely not of sufficient size to support bald eagles. Tall, old trees which might serve as perching sites do grow near Long Creek, but lack of access to open water is probably a key limiting factor at the study corridor. NHP records document no occurrences of bald eagle within 5.0 miles (8.0 kilometers) of the study corridor, and no eagles were observed during the site visit.

BIOLOGICAL CONCLUSION: The Long Creek study corridor contains no suitable open water habitat for bald eagles. No occurrences have been documented by the NHP, and no eagles were seen during the site visit. Based on these factors and professional judgement, the proposed project will have **NO EFFECT** on bald eagle.

Schweinitz's Sunflower - Schweinitz's sunflower is an erect, unbranched, rhizomatous, perennial herb that grows to approximately 6 feet (1.8 meters) in height. The stem may be purple, usually pubescent, but sometimes nearly smooth. Leaves are sessile, opposite on the lower stem but alternate above. Leaf shape is lanceolate and averages 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 (1.5 centimeters) in diameter. The current range of this species is within 60 miles (96 kilometers) of Charlotte, North Carolina, occurring on upland interstream flats or gentle slopes, in soils that are thin or clayey 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).

Within the study corridor, suitable habitat occurs for Schweinitz's sunflower along road shoulders and within the fallow agricultural fields adjacent to the road. The original site visit occurred outside of the blooming season (September to frost) for Schweinitz's sunflower. The site was revisited on September 19, 2001, and again on September 8, 2003 by NCDOT biologists. Plant by plant surveys were conducted within the project area for Schweinitz's sunflower (Helianthus schweinitzii) and no specimens were found. A review of NHP records on September 8, 2003

revealed no documentation of this sunflower within 1.0 miles (1.6 kilometers) of the study corridor.

BIOLOGICAL CONCLUSION: Surveys for Schweinitz's sunflower were conducted during the blooming season (September to frost) on September 19, 2001 and September 4, 2003. No individuals of Schweinitz's sunflower were identified within the study corridor. In a letter dated September 23, 2003 (Appendix A), the USFWS agreed that there will be no effect for the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*). The biological conclusion is **No Effect** on the Schweinitz's sunflower

Federal Species of Concern - The February 25, 2003 FWS list also includes a category of species designated as "Federal species of concern" (FSC) in Stanly County. 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). FSC species occurring in Stanly County are provided in the following table.

The FSC designation provides no federal protection under the ESA for species listed. NHP files do not document any occurrences of FSC species within 1.0 mile (1.6 kilometers) of the study corridor.

Federal Species of Concern.

Common Name	Scientific Name	Potential Habitat	State Status**
Carolina darter	*Etheostoma collis collis*	yes	SR
Brook floater	*Alasmidonta varicosa*	yes	N/A
Carolina creekshell	*Villosa vaughaniana*	yes	SC
Georgia aster	*Aster georgianus*	yes	T
Butternut	*Juglans cinerea*	yes	N/A
Heller's trefoil	*Lotus helleri*	yes	C
Yadkin River goldenrod	*Solidago plumosa*	yes	E
Riverbank vervain	*Verbena riparia*	yes	C

** E = Endangered; T = threatened; SC = Special concern; SR = Significantly Rare; C = Candidate; P = Species has been formally proposed for listing as Endangered, Threatened, or Special Concern; W5 = NC Plant Watch List: rare because of severe decline (Amoroso 1999; LeGrand and Hall1999).

2. State Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), Special Concern (SC), Candidate (C), Significantly Rare (SR), or Proposed (P) (Amoroso 1999, LeGrand and Hall 1999) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202 *et seq.*). No species with these designations are documented within 1.0 mile (1.6 kilometers) of the study corridor. However, NHP documents the occurrence of smooth sunflower (*Helianthus laevigata*), a Significantly Rare species, about 5.3 miles (15.9 kilometers) northwest of the study corridor near the headwaters of Long Creek.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

A field survey of the Area of Potential Effect (APE) was conducted on March 1, 2000. All structures within the APE were photographed, and later reviewed by NCDOT architectural historians and the State Historic Preservation Office (HPO). None of the properties were considered eligible, and in a concurrence form dated June 1, 2000, the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed in or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

As stated in a memorandum dated February 1, 2001 (see Appendix), the State Historic Preservation Officer (SHPO) concluded that if the bridge is replaced on the existing alignment, no archeological survey is recommended. However, they requested an archeological survey if the bridge is replaced on new location. Although the recommended alternative replaces the crossing at the existing

location, an archaeological survey was completed. This survey found one site that was determined not eligible for listing in the National register of Historic Places and recommended no further archaeological survey work. In a memorandum dated August 19, 2002, the SHPO concurred with these conclusions (see Appendix).

VII. ENVIRONMENTAL EFFECTS

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

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

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

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

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

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

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

The project does not involve any known Section 4(f) properties. 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.

A GeoEnvironmental Impact Evaluation was conducted along the project. An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Waste Management revealed no leaking underground storage tanks or hazardous waste sites in the project area. Based on the field reconnaissance survey and a review of the Geographical Information Service (GIS) map, there were no anticipated Underground Storage Tank (UST) impacts, no Superfund sites, no regulated or unregulated landfills or dumpsites located within the project limits.

The project is located in Stanley County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area. This bridge replacement is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis (if applicable) and a project level CO analysis is not required.

If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the NEPA process and no additional reports are necessary.

Since the project is located along the existing alignment and will not substantially increase traffic volumes, the impact on noise levels will not be substantial due to the undeveloped nature of the project area. Noise levels will increase during construction, but the increase will only be temporary. Also, construction activities are usually conducted only during daylight hours along projects of this nature. Therefore, traffic noise reports are considered unnecessary. This noise assessment completes the requirements for evaluating highway traffic noise in Title 23 of the Code of Federal Regulations, Part 772.

Stanly County is a participant in the National Flood Insurance Program. Bridge No. 187 is located in a 100-year Federal Emergency Management Agency (FEMA) floodplain. It is included as part of the detailed FEMA Flood Insurance Study for Long Creek in Stanly County. The study gives the 100-year floodway elevation at the downstream side of the bridge as 489.7 feet (149.3 meters). As this crossing is in a detailed FEMA Flood Study, an increase in the backwater is not permitted. The approximate 100-year floodplain in the project area is shown in Figure 6. The amount of floodplain area to be affected is not substantial. The final design of the bridge will be such that the backwater elevation will not encroach beyond the current 100-year floodplain limits. The length of the new structure may be increased or decreased as necessary to accommodate peak flows as determined by further hydrologic studies. The proposed replacement will not adversely affect the existing floodplain, or modify flood characteristics, and will have minimal impacts on the floodplain due to roadway encroachment. The existing drainage pattern will not be affected.

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

VIII. PUBLIC INVOLVEMENT

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

IX. AGENCY COMMENTS

United States Department of the Interior - Fish and Wildlife Service

Comments: Our records for Stanley County indicate known locations for the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*) in the vicinity of this project. If this species occurs in the project area, additional consultation will be required.

Response: On September 19, 2001, qualified personnel conducted a survey for this species and no individuals were identified in the project area. In a letter dated September 23 , 3003 (Appendix A), the USFWS agreed that there will be no effect for the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*).

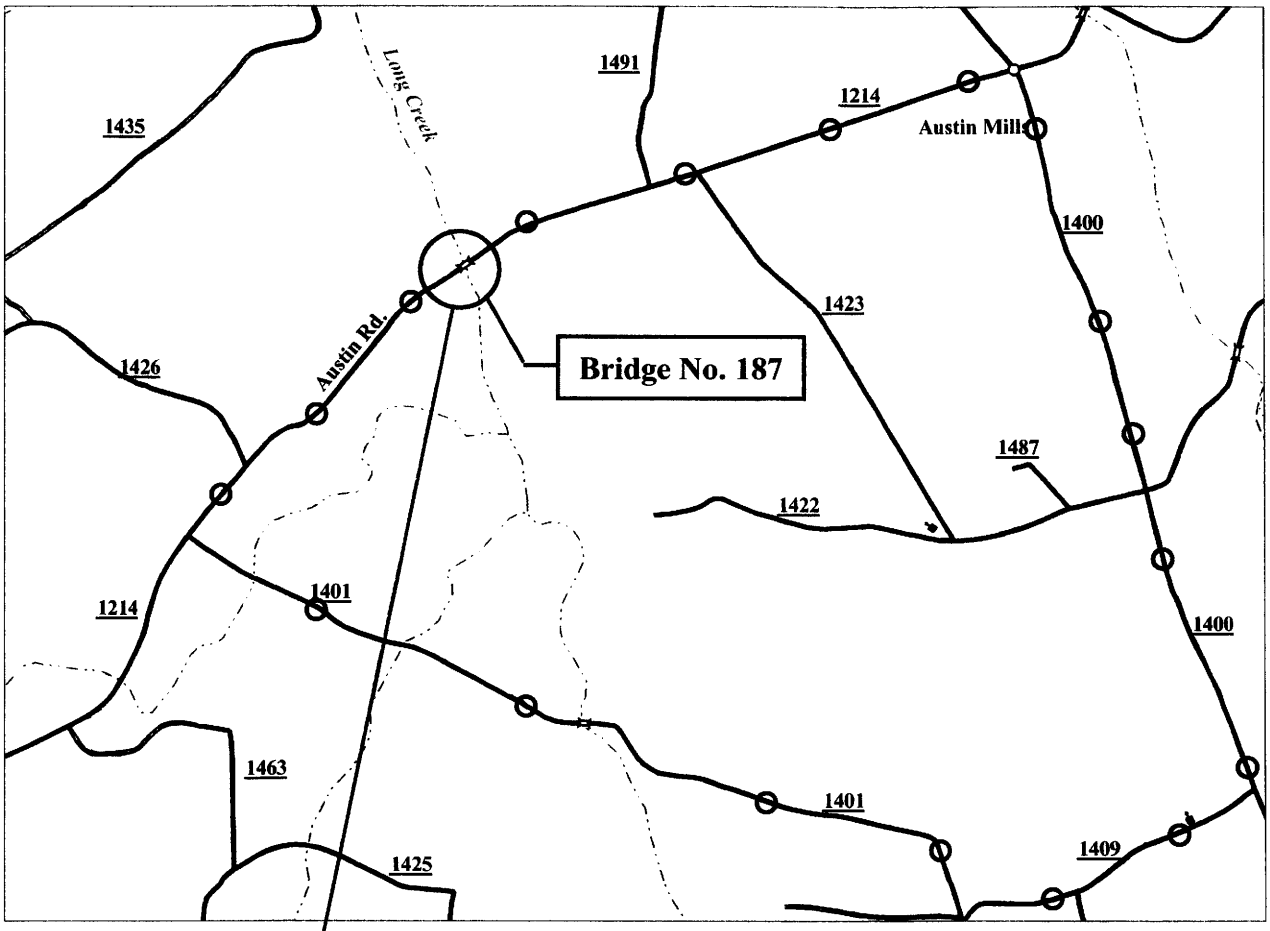
North Carolina Wildlife Resources Commission

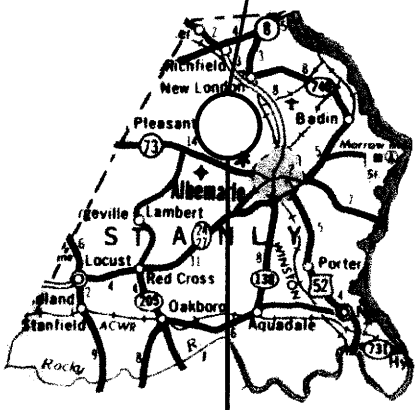
Comment:

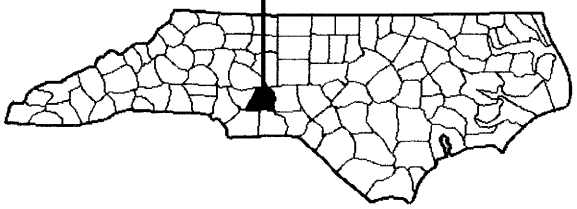
This segment of Long Creek may support the state listed Carolina darter. Therefore, we request that High Quality Sedimentation and Control Measures be used to minimize project impacts to this species.

Response:

High Quality Sedimentation and Control Measures will be implemented during the construction of this project.







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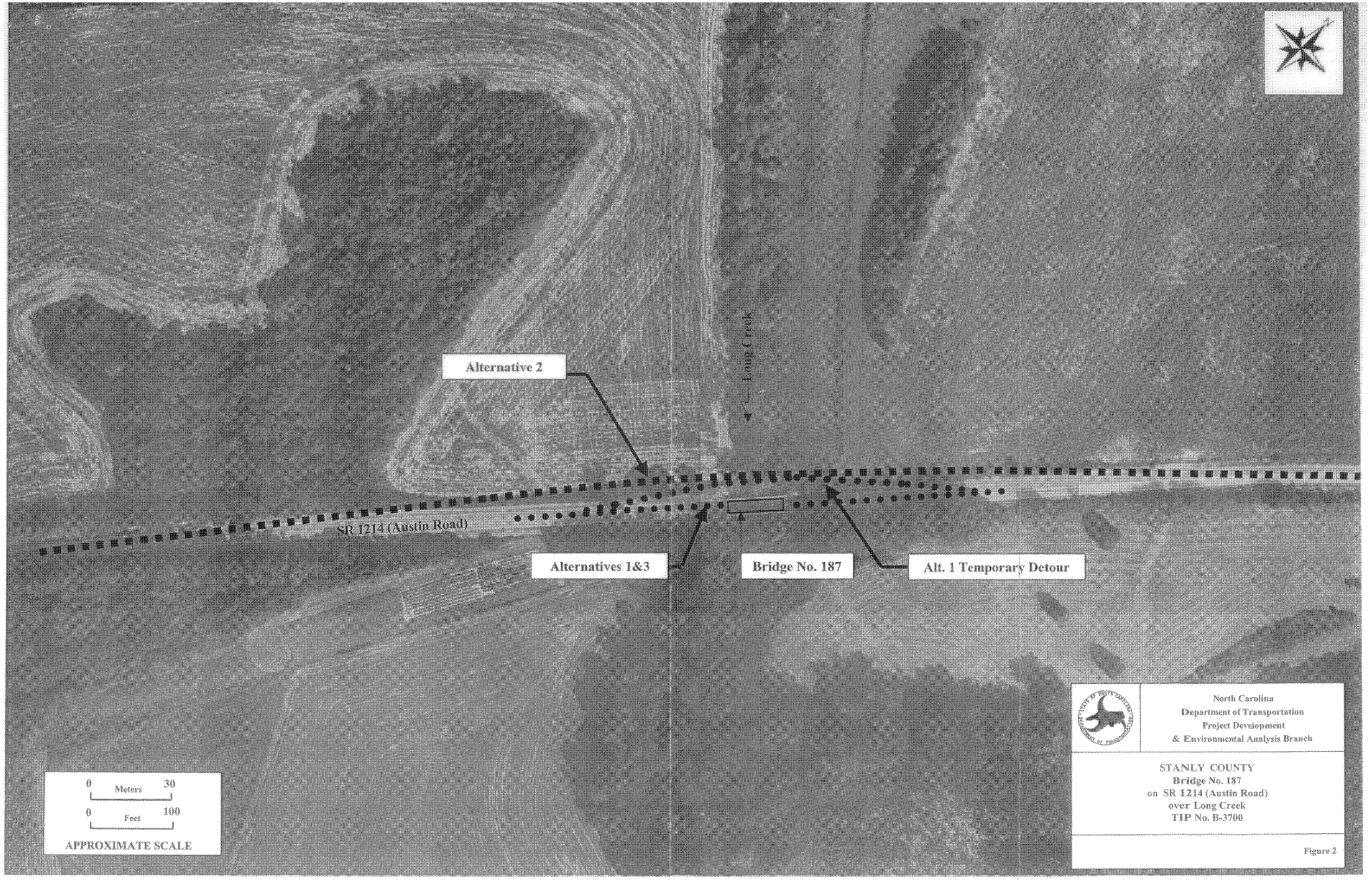
APPROXIMATE SCALE

PROPOSED DETOUR ROUTE

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

STANLY COUNTY
Bridge No. 187
on SR 1214 (Austin Road)
over Long Creek
TIP No. B-3700

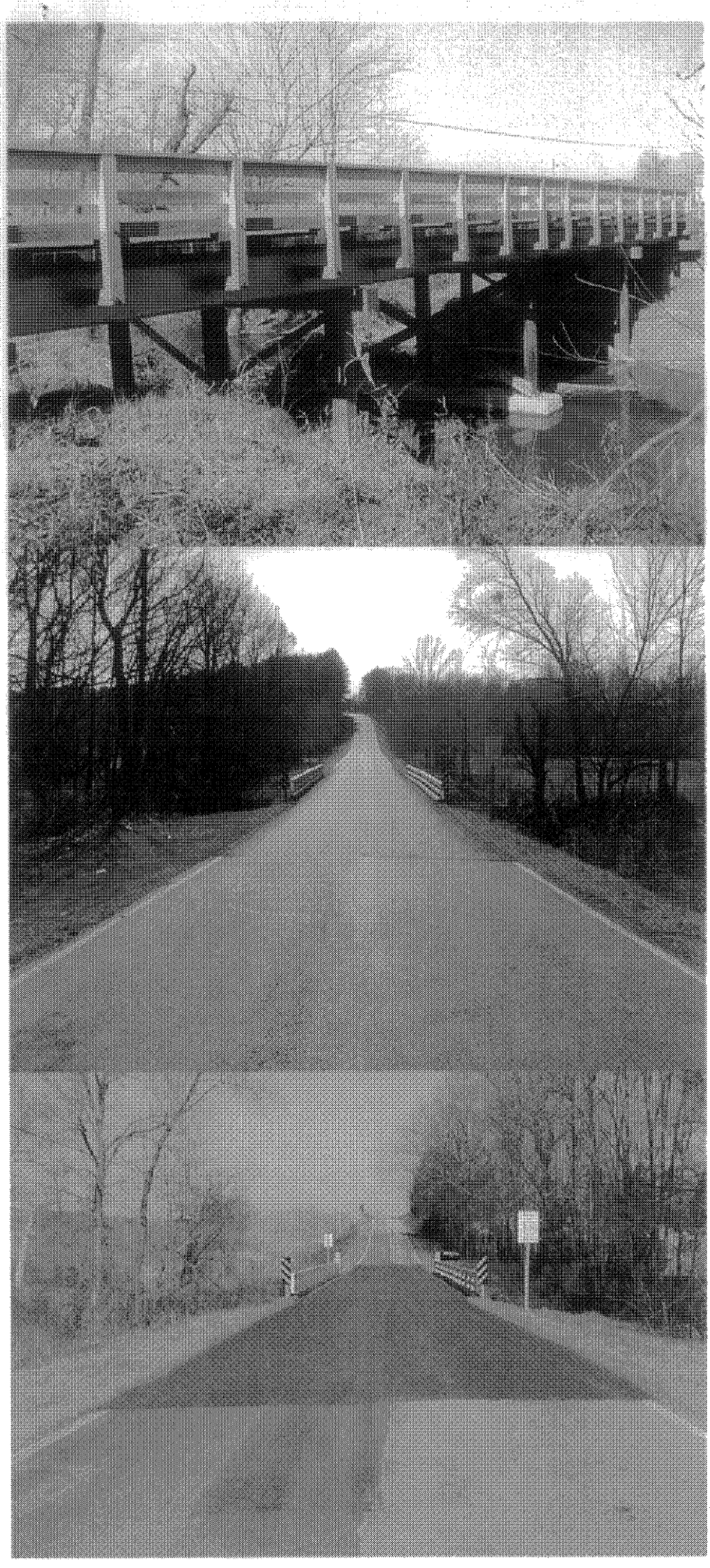
Figure 1



North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

STANLY COUNTY
Bridge No. 187
on SR 1214 (Austin Road)
over Long Creek
TIP No. B-3700

Figure 2



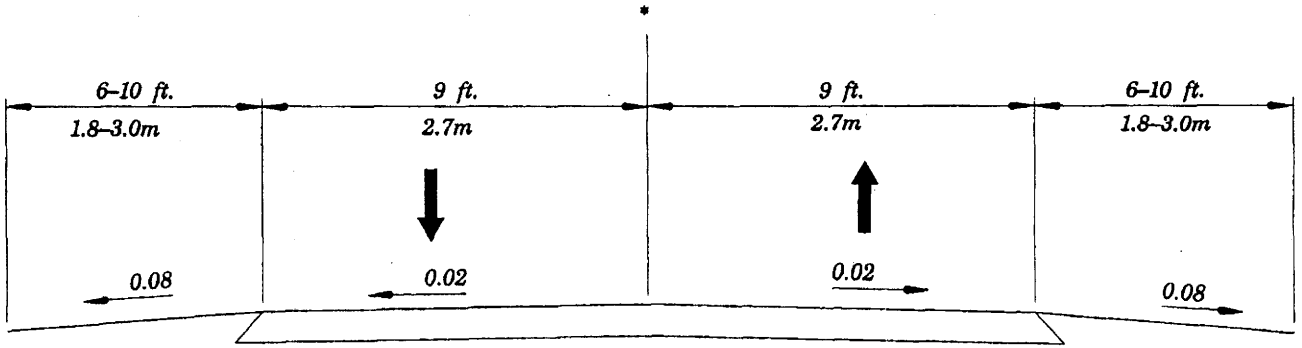
STANLY COUNTY
BRIDGE NO. 187 ON SR 1214
OVER LONG CREEK
B-3700

SIDE VIEW
LOOKING SOUTH

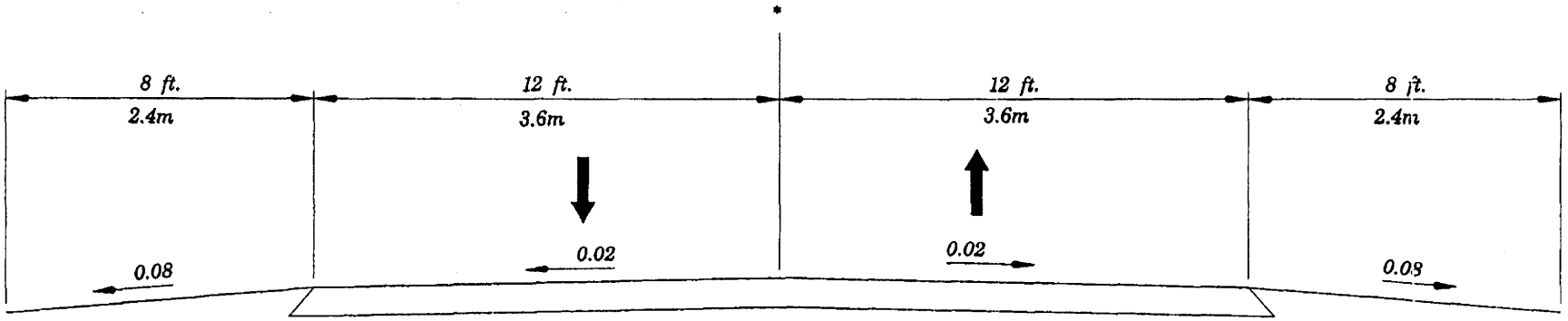
EAST APPROACH
LOOKING WEST

WEST APPROACH
LOOKING EAST

FIGURE 3



TYPICAL APPROACH SECTION
(EXISTING)



TYPICAL APPROACH SECTION
(PROPOSED)

FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR

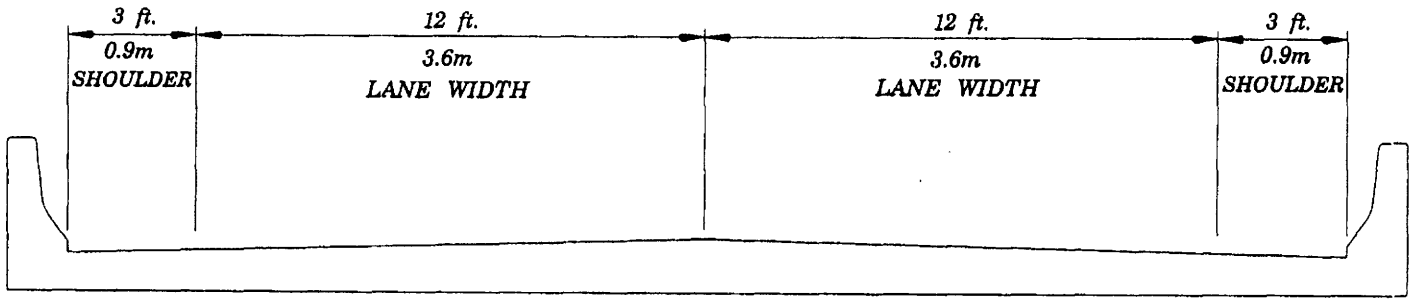
AVERAGE DAILY TRAFFIC

(EXISTING)	*2003*	= *1800*
(DESIGN YR.)	*2030*	= *2700*

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

STANLY COUNTY
Bridge No. 187
on SR 1214
over Long Creek
TIP No. B-3700

Figure 4



PROPOSED TYPICAL BRIDGE SECTION

FUNCTIONAL CLASSIFICATION: RURAL MINOR COLLECTOR

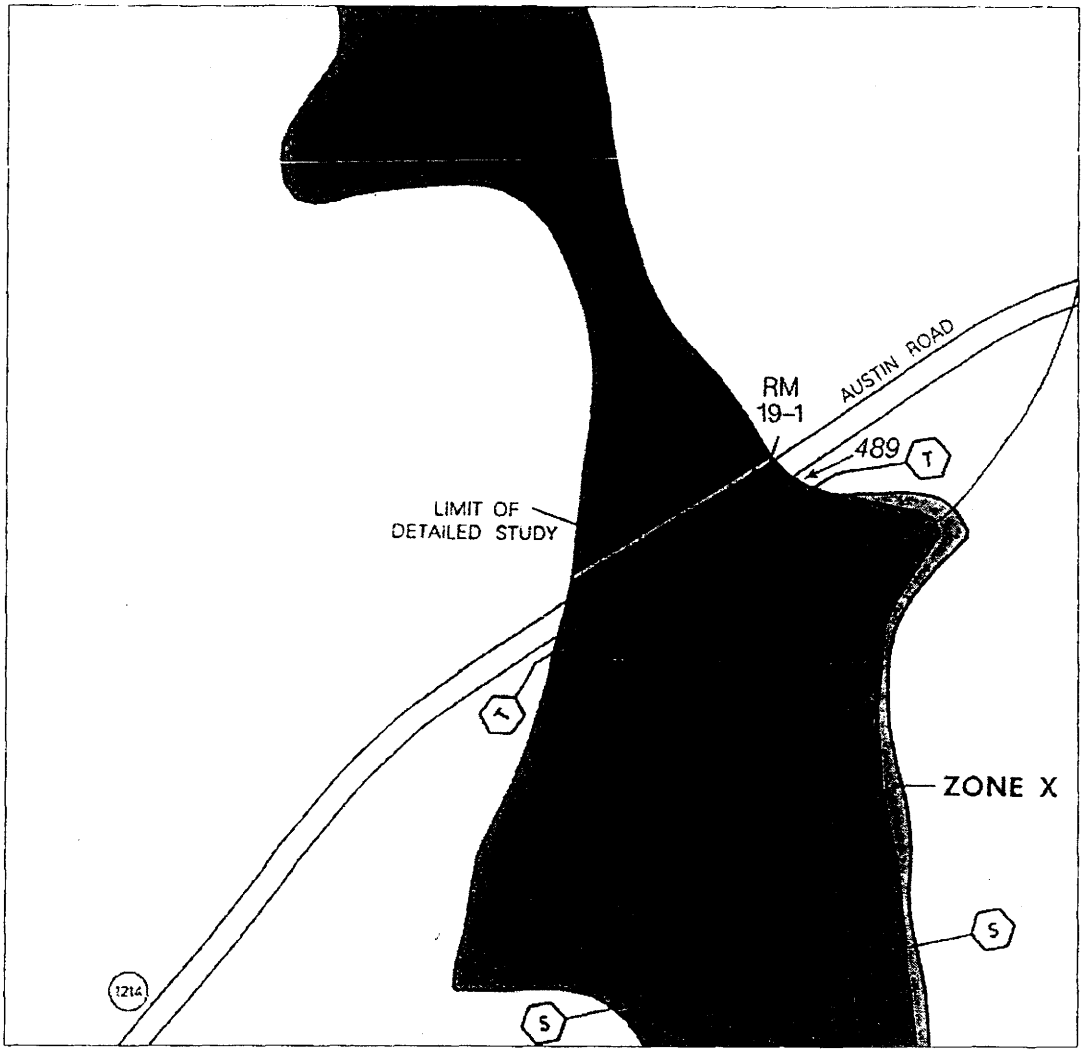
AVERAGE DAILY TRAFFIC

(EXISTING)	*2003*	= *1800*
(DESIGN YR.)	*2030*	= *2700*

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

STANLY COUNTY
Bridge No. 187
on SR 1214
over Long Creek
TIP No. B-3700

Figure 5



FEMA – Floodplain Map of Project Area

N

0 500

FEET

APPROXIMATE SCALE

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

STANLY COUNTY
Bridge No. 187
on SR 1214 (Austin Road)
over Long Creek
TIP No. B-3700

Figure 6

APPENDIX

Federal Aid =BRZ-1214(3) *TIP* =B-3700 *County*: Stanly

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

Project Description: Replace Bridge No. 187 on SR 1214 over Long Creek

On June 1, 2000, representatives of the

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

Reviewed the subject project at

- [ ] a scoping meeting
- [x] photograph review session/consultation
- [ ] other

All parties present agreed

- [ ] there are no properties over fifty years old within the project's area of potential effect.
- [x] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [x] there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Prop A, B, C are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope Furr — 6-1-00
Representative, NCDOT — Date

Richard D. Dawson — 6/1/00
FHWA, for the Division Administrator, or other Federal Agency — Date

April Montgomery — 6/1/00
Representative, SHPO — Date

David Brook, for Deputy — 6/9/00
State Historic Preservation Officer — Date

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

Carter tr

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

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

February 1, 2001

MEMORANDUM

To: William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch

From: David Brook DB for David Brook
Deputy State Historic Preservation Officer

Re: Bridge No. 187 on SR 1214 over Long Creek, B-3700, Stanly County, ER 01-8191

Thank you for your letter of November 15, 2000, concerning the above project.

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area. However, since a survey has not been conducted in over a decade, there may be structures of which we are unaware located within the planning area.

If the bridge is replaced on the existing alignment, no archeological survey is recommended. However, we do recommend an archeological survey if the bridge is replaced on new location.

The above comments are made pursuant to Section 106 of 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.

DB:kgc

cc: John Wadsworth, FHwA

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

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

lichael F. Easley, Governor
isbeth C. Evans, Secretary
effrey J. Crow, Deputy Secretary

Division of Historical Resources
David J. Olson, Director

August 19, 2002

MEMORANDUM

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

FROM: David Brook RBG for David Brook

SUBJECT: Bridge No. 187 on SR 1214 over Long Creek, B-3700, Stanly County, ER 01-8191 and 02-9330

Thank you for your letter July 24, 2002, of transmitting the archaeological survey report by Nick Bon-Harper for the above project.

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

* 31ST183/183**

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

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

DB:kgc

cc: FHWA

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

If you need further assistance or information on NCWRC concerns regarding bridge replacements, please contact me at (919) 528-9886. Thank you for the opportunity to review and comment on these projects.

entirely. The old fill causeways should then be removed and graded to natural ground level. We are not aware of any threatened of endangered species in the project vicinity.

7. B-3454 – Forsyth County – Bridge No. 260 over Muddy Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

8. B-3839 – Forsyth County – Bridge No.139 over Fishers Branch. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

9. B-3840 – Gaston County – Bridge No. 52 over South Crowders Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

10. B-3337 – Guilford County – Bridge No. 527 over North Buffalo Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

11. B-3652 – Guilford County – Bridge No. 20 over the Deep River. SR 4121 crosses the Deep River just below the dam of High Point City Lake. This area supports good numbers of sunfish and may support a tailrace fishery. Therefore, we request that no in-water work be preformed from April 1 to May 31. We request that High Quality Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of WS-IV. We are not aware of any threatened of endangered species in the project vicinity.

12. B-3851 – Guilford County – Bridge No. 21 over US 29/70. No comment.

13. B-3677 – Mecklenburg County – Bridge No. 36 over Greasy Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

14. B-3506 – Randolph County – Bridge No. 226 over Richland Creek. Richland Creek is a medium sized stream that supports good populations of sunfish. Therefore, we request that no in-water work be preformed from April 1 to May 31. We are not aware of any threatened of endangered species in the project vicinity.

15. B-3694 – Rockingham County – Bridge No. 55 over the Belews Lake Spillway. This bridge appears to be just downstream of the Belews Lake dam. This area supports good numbers of sunfish and may support a tailrace fishery. Therefore, we request that no in-water work be preformed from April 1 to May 31. We request that High Quality Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of WS-IV. We are not aware of any threatened of endangered species in the project vicinity.

16. B-3700 – Stanly County – Bridge No. 187 over Long Creek. This segment of Long Creek may support the state listed Carolina darter. Therefore, we request that High Quality Sedimentation and Erosion Control Measures be used to minimize project impacts to this species.

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.

multiple cells are required the second and/or third cells should be placed so that their bottoms are at stream bankful stage (similar to Lyonsfield design). This could be accomplished by constructing a low sill on the upstream end of the other cells that will divert low flows to another cell. This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate fish movements. If culverts are long, notched baffles should be placed in reinforced concrete box culverts at 15 foot intervals to allow for the collection of sediments in the culvert, to reduce flow velocities, and to provide resting places for fish and other aquatic organisms moving through the structure.

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 so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance.

4. Riprap should not be placed on the stream bed.

In most cases, we prefer the replacement of the existing structure at the same location with road closure. If road closure is not feasible, a temporary detour should be designed and located to avoid wetland impacts, minimize the need for clearing and to avoid destabilizing stream banks. If the structure will be on a new alignment, the old structure should be removed and the approach fills removed from the 100-year floodplain. Approach fills should be removed down to the natural ground elevation. The area should be stabilized with grass and planted with native tree species. If the area 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-3404 – Anson County – Bridge No. 314 over South Fork Jones Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

2. B-3421 – Cabarrus County – Bridge No. 266 over Norfolk and Southern Railway. No comment.

3. B-3822 – Catawba County – Bridge No. 8 over unnamed tributary to the Catawba River. We request that High Quality Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of WS-IV. We are not aware of any threatened of endangered species in the project vicinity.

4. B-3828 – Cleveland County – Bridge No. 233 over Buffalo Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

5. B-3637 – Davie County – Bridge No. 37 over I-40. No comment.

6. B-3835 – Davie-Forsyth counties – Bridge No. 35 over the Yadkin River. We request that High Quality Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of WS-IV. We request that the new bridge span the adjacent wetlands

be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

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

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

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

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

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

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

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

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

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

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

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

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

1. The culvert must be designed to allow for fish passage. Generally, this means that the culvert or pipe invert is buried at least 1 foot below the natural stream bed. If

North Carolina Wildlife Resources Commission

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

TO: John Conforti
Project Engineer, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: January 2, 2001

SUBJECT: NCDOT Bridge Replacements in Anson, Cabarrus, Catawba, Cleveland, Davie, Forsythe, Gaston, Guilford, Mecklenburg, Randolph, Rockingham, and Stanly counties of North Carolina. TIP Nos. B-3404, B-3421, B-3822, B-3828, B-3637, B-3835, B-3454, B-3839, B-3840, B-3337, B-3652, B-3851, B-3677, B-3506, B-3694, and B-3700.

Biologists with the N. C. Wildlife Resources Commission (NCWRC) have reviewed the information provided and have the following preliminary comments on the subject project. Our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

On bridge replacement projects of this scope our standard recommendations are as follows:

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

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

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

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

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should

GASTON COUNTY

Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Bald eagle	*Haliaeetus leucocephalus*	Threatened (proposed for delisting)
Vascular Plants		
Georgia aster	*Aster georgianus*	C1
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered

MECKLENBURG COUNTY

Vertebrates		
Carolina darter	*Etheostoma collis collis*	FSC
Bald eagle	*Haliaeetus leucocephalus*	Threatened (proposed for delisting)
Invertebrates		
Carolina heelsplitter	*Lasmigona decorata*	Endangered
Carolina creekshell	*Villosa vaughaniana*	FSC
Vascular Plants		
Georgia aster	*Aster georgianus*	C1
Tall larkspur	*Delphinium exaltatum*	FSC*
Smooth coneflower	*Echinacea laevigata*	Endangered*
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Virginia quillwort	*Isoetes virginica*	FSC
Heller's trefoil	*Lotus helleri*	FSC
Michaux's sumac	*Rhus michauxii*	Endangered*

STANLY COUNTY

Vertebrates		
Carolina darter	*Etheostoma collis collis*	FSC
Bald eagle	*Haliaeetus leucocephalus*	Threatened (proposed for delisting)
Invertebrates		
Brook floater	*Alasmidonta varicosa*	FSC
Carolina creekshell	*Villosa vaughaniana*	FSC
Vascular Plants		
Georgia aster	*Aster georgianus*	C1
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Butternut	*Juglans cinerea*	FSC
Heller's trefoil	*Lotus helleri*	FSC

species prior to any further planning or on-the-ground activities to ensure no adverse impacts occur.

2. B-3677, Mecklenburg County; B-3700, Stanly County; B-3404, Anson County. Our records for these counties indicate known locations for the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*) in the vicinity of these projects. If this species occurs in the project areas, additional consultation will be required.

3. B-3828, Cleveland County. Our records for Cleveland County indicate there is a known location of the federally threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) near the project. If this species occurs in the project area, additional consultation will be required.

4. B-3835, Davie-Forsyth Counties. Our records indicate there is a known location of the federally endangered Michaux's sumac (*Rhus michauxii*) near the project. If this species occurs in the project area, additional consultation will be required.

We are interested in the types of structures that will replace these existing bridges and would recommend spanning structures, preferably bridges, in all cases. 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 our Log Number 4-2-01-252.

Sincerely,

Brian P. Cole

Brian P. Cole
State Supervisor

Enclosure

cc:
John Conforti, Project Development and Environmental Analysis Branch, North Carolina Department of Transportation, 1548 Mail Service Center, Raleigh, North Carolina 27699-1548
Mr. Ron Linville, Western Piedmont Region Coordinator, North Carolina Wildlife Resources Commission, 3855 Idlewild Road, Kernersville, North Carolina 27284-9180
Ms. Cynthia Van Der Wiele, North Carolina Department of Environment and Natural Resources, Division of Water Quality, Wetlands Section, 1621 Mail Service Center, Raleigh, North Carolina 27699-1621

United States Department of the Interior

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

January 25, 2001

Mr. William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Gilmore:

Subject: Bridge Replacements: B-3677, Mecklenburg County; B-3822, Catawba County; B-3840, Gaston County; B-3700, Stanly County; B-3828, Cleveland County; B-3839, B-3454, Forsyth County; B-3421, Cabarrus County; B-3637, Davie County; B-3835, Davie-Forsyth Counties; B-3404, Anson County; DOT contractor TGS Engineers

We have reviewed these projects and provide 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).

The information we received for these 11 projects does not include descriptions of the structures that will replace the existing bridges, nor does it include any environmental information regarding the streams or whether or not habitat assessments or surveys for rare species have been conducted for any of these projects. Therefore, our comments are primarily limited to the known locations of listed species and species of federal concern. When the Categorical Exclusions are prepared and more information is available regarding environmental effects we can offer more substantive comments.

Enclosed are species lists from the nine counties included in this package. These lists provide the names of species that are on the Federal List of Endangered and Threatened Wildlife and Plants, as well as species of federal concern. Species of federal 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:

1. B-3822, Catawba County; B- 3840, Gaston County; B-3839, B-3454, Forsyth County; B-3421, Cabarrus County; B-3637, Davie County. There are no known locations of species of concern near these projects. However, we recommend surveying each of the project areas for

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 8, 2003

Memorandum To: Stacy Baldwin, P.E., Unit Head
Consultant Engineering Unit, NCDOT

Attention: Elmo Vance, Project Engineer
Consultant Engineering Unit, NCDOT

From: Chris Underwood, Environmental Biologist CSU
Natural Environment Project Management Unit

Subject: Protected Species Update for Replacement of Bridge No. 187 on SR 1214 Over Long Creek in Stanly County, NC (TIP No. B-3700, State Project No. 8.2681401, Federal Aid Project No. BRSTP-1214(3)).

References: Natural Resources Technical Report (NRTR), (NCDOT; May 2001).

The following memorandum provides information that updates the May 2001 NRTR. The memo addresses federally protected species.

The project site was visited on September 4, 2003 by NCDOT biologists Chris Underwood, Michael Turchy, and Tyler Stanton. A plant by plant survey was conducted within the project area for Schweinitz's sunflower (*Helianthus schweinitzii*) and no specimens were found. Additionally, a September 8, 2003 review of North Carolina Natural Heritage records no Schweinitz's sunflower occurring within 1.0 mi. (1.6 km) of B-3700. Since suitable habitat exists within the project area and no individual was found, the biological conclusion is changed to "**May Affect, Not Likely To Adversely Affect**".

If you have any questions, please contact Mr. Chris Underwood at (919) 715-1541.

cc: B-3700 project file, PDEA Branch, NCDOT

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: HTTP://WWW.NCDOT.ORG/

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

the information provided, we agree that there will be no effect to federally listed species for this project.

We believe the requirements under section 7(c) of the Act are fulfilled regarding listed species for the subject projects. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

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 our log numbers (shown above for each project).

Sincerely,

Brian P. Cole
State Supervisor

United States Department of the Interior

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

September 23, 2003

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

Dear Mr. Underwood:

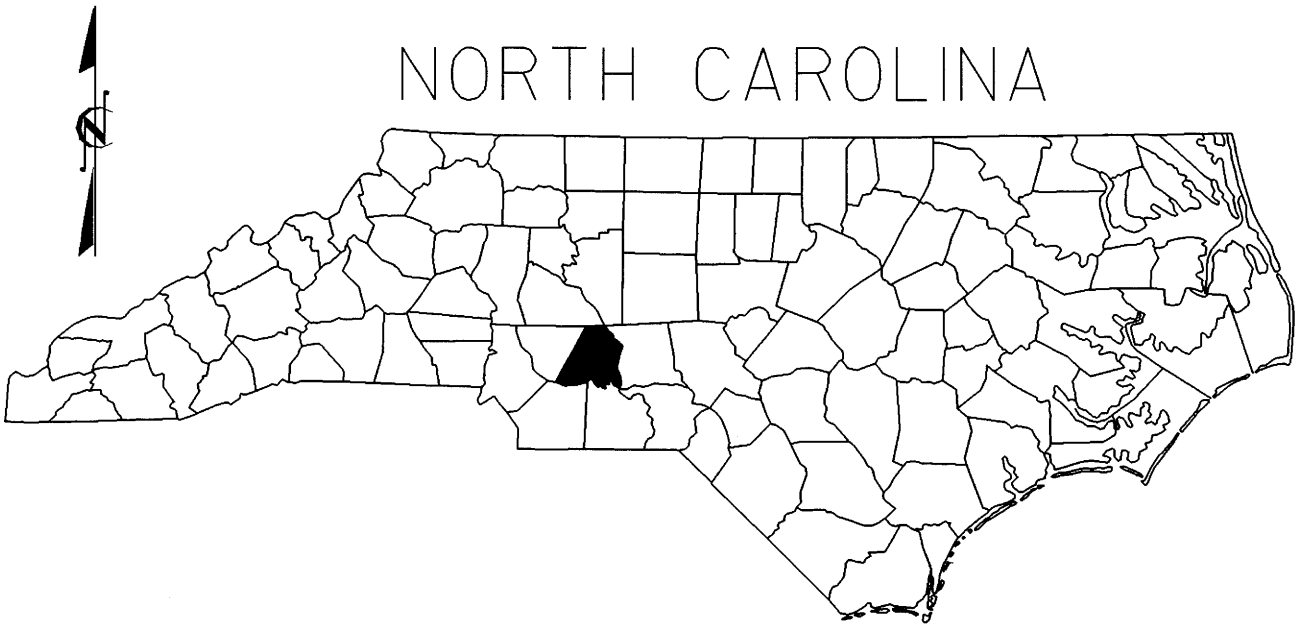
Subject: Endangered Species Concurrence for Three Bridge Replacements--B-3485, Bridge No. 16 on SR 1470 over Cartoogechaye Creek, Macon County; B-3415, Bridge No. 181 on NC 151 over South Hominy Creek, Buncombe County; and B-3700, Bridge No. 187 on SR 1214 over Long Creek, Stanly County, North Carolina

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

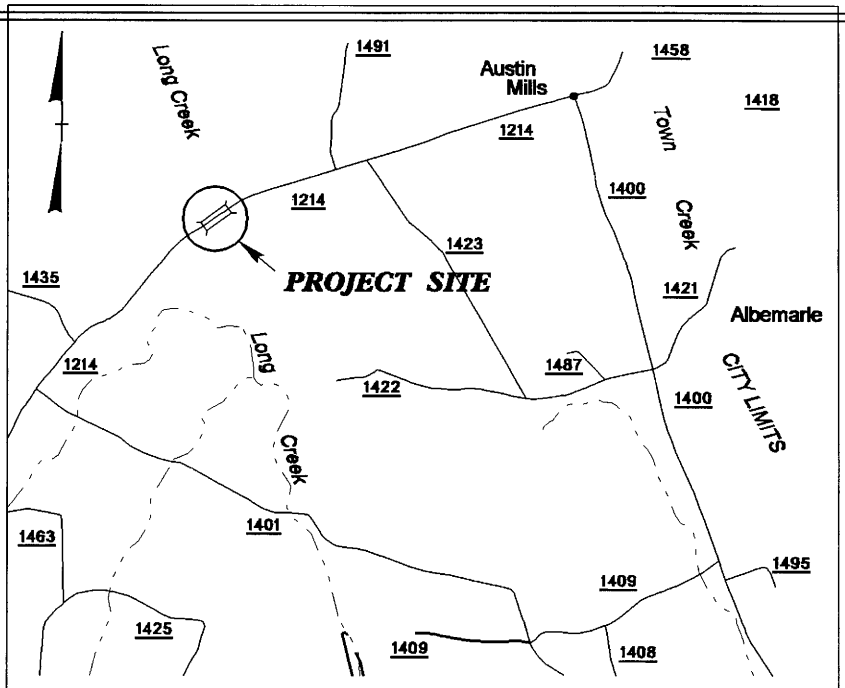
B-3485 (our Log No. 4-2-03-414) - We have reviewed the updated survey information provided for impacts to the federally threatened spotfin chub (*Cyprinella monacha*) and Virginia spiraea (*Spiraea virginiana)* and the federally endangered Appalachian elktoe (*Alasmidonta raveniliana)* and littlewing pearlymussel (*Pegias fabula*). Given the information provided, we agree that there will be no effect to federally listed species for this project.

B-3415 (our Log No. 4-2-03-416) - We have reviewed the updated survey information provided for impacts to the federally threatened Virginia spiraea (*Spiraea virginiana)* and the federally endangered Appalachian elktoe (*Alasmidonta raveniliana)* and mountain sweet pitcher plant (*Sarracenia jonesii*). Given the information provided, we agree that there will be no effect to federally listed species for this project.

B-3700 (our Log No. 4-2-03-417) - We have reviewed the updated survey information provided for impacts to the federally endangered Schweinitz's sunflower (*Helianthus schweinitzii*). Given



SURFACE WATER IMPACTS



VICINITY MAP

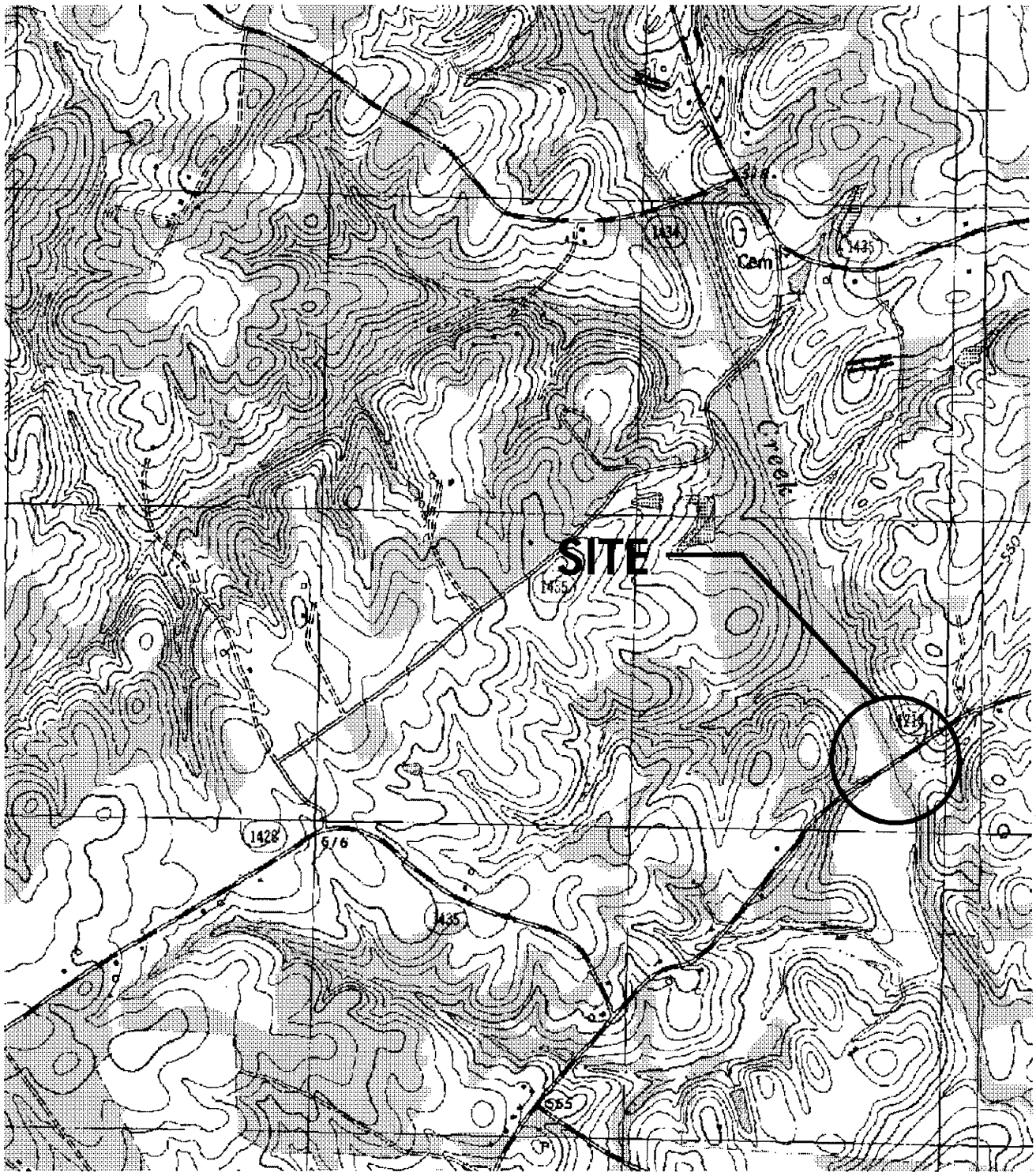
VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
STANLY COUNTY
PROJECT: 33240.1.1 (B-3700)

BRIDGE NO. 187 OVER
LONG CREEK ON SR 1214

SHEET **OF** **11 / 17 / 04**



SITE MAP

NCDOT

DIVISION OF HIGHWAYS

CABARRUS COUNTY

PROJECT: 8.2661601 (R-2246C)

CONCORD-KANNAPOLIS

WESTSIDE BYP EXT FROM

SR 1431 TO SR 1555

SHEET **OF** **10 / 17 / 01**

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	JAMES R. MAUNEY, JR.	PO BOX 40 NEW LONDON, NC 28127

NCDOT

DIVISION OF HIGHWAYS

STANLY COUNTY

PROJECT: 33240.1.1 (B-3700)

BRIDGE NO. 187 OVER

LONG CREEK ON SR 1214

SHEET OF 11/17/04

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	16+85 -L-	110' SINGLE SPAN							0.0018		
		MODIFIED BULB TEE									
		PRESTRESSED GIRDER									
TOTALS:			0	0	0	0	0	0	0.0018	0	0

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STANLY COUNTY
PROJECT 33240.1.1 B3700

SHEET OF 11/17/2004

Form Revised 3/22/01

PROJECT REFERENCE NO.	SHEET NO.
B-3700	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

REVISIONS

8/17/99

STA. 13+05 -L- BEGIN STATE PROJECT B-3700

10 15 20

POT Sta. 10+00.00

POT Sta. 22+16.80

PCS Sta. 19+01.45

PTS Sta. 20+28.53

+28.53 T5.00

+65.00 EXIST. R/W & 35.00

① JAMES RITCHIE MAUNEY, JR. DB 339 PG 530

② JOAN A. MILLER DB 94 PG 281

③ JERRY WAYNE ALMOND ANITA M. ALMOND DB 571 PG 423

④ STANLEY A. BOWERS DONNA S. BOWERS DB 833 PG 882

WOODS

12' EDGE

EXISTING R/W

55'

50'

SR 1214 AUSTIN ROAD 21' BST

N 55°19'39.8" E

BEGIN TRANSITION 3:1 to 2:1 CLASS I RIP RAP

CL B RIPRAP

18" CSP W/ELBOWS

CLASS I RIP RAP

CLASS II RIP RAP

ABANDONED STONE BENT

EIP

4 - WIRE

BE BURIED AT BOTH ENDS SIZE AND TYPE UNKNOWN

15" COND

LONG CREEK

TEMPORARY ROCK CAUSEWAY

TEMPORARY FILL IN SURFACE WATERS

DENOTES TEMPORARY FILL IN SURFACE WATER

100 0 50 100

SCALE: 1"= 100' HORIZ.

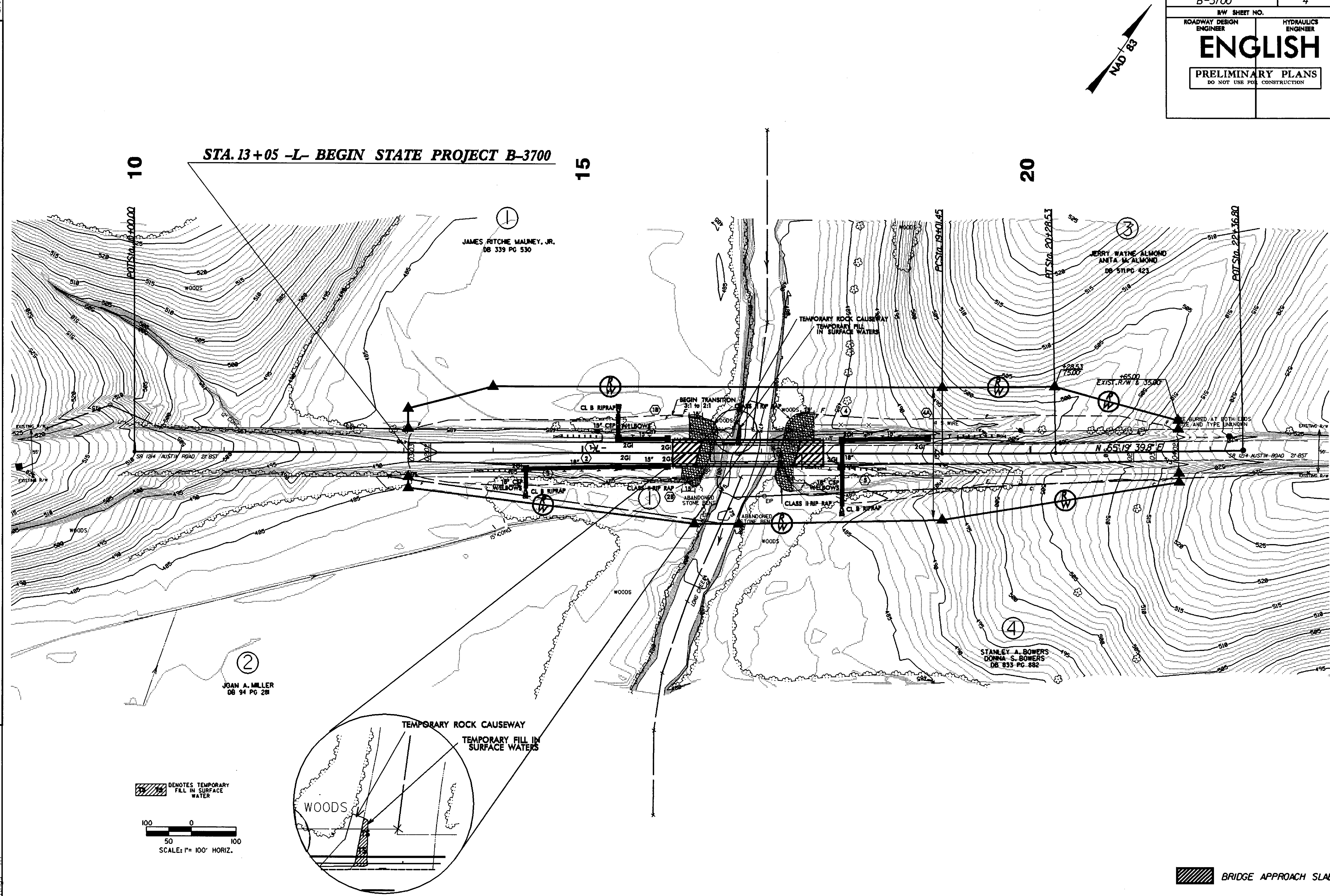
BRIDGE APPROACH SLAB

17-NOV-2004 15:46
R:\Hydraulics\permits\B3700_hyd_PERMIT PLANdrwg.dgn
Applications

PROJECT REFERENCE NO.	SHEET NO.
B-3700	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99

17-NOV-2004 15:47
R:\Hydraulics\permit\B3700_hyd_PERMIT PLAN.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3700	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PLAN VIEW SEE SHEET 4

-L-

BM #2 RR SPIKE IN BASE OF TREE
-L- STA 16+65.29, 138.40' RT
ELEV = 484.85'

BEGIN GRADE -L- STA. 13+05.00
EL. 490.61'

BEGIN BRIDGE -L- STA 16+30+/-

END BRIDGE -L- STA 17+40+/-

END GRADE -L- STA 21+95.00
EL. 536.59'

PI = 17+15.00
EL = 485.10'
VC = 820'
K = 98
V = 50 mph

EXISTING ROAD

NATURAL GROUND

CLASS II RIP RAP ROCK CHUTE LINING

NORMAL WS EL 475.9

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4160 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 488.21 FT
BASE DISCHARGE	= 4765 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 488.76 FT
OVERTOPPING DISCHARGE	= 6735 CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 489.72 FT

530 520 510 500 490 480 470 460 450 440

10 11 12 13 14 15 16 17 18 19 20 21 22

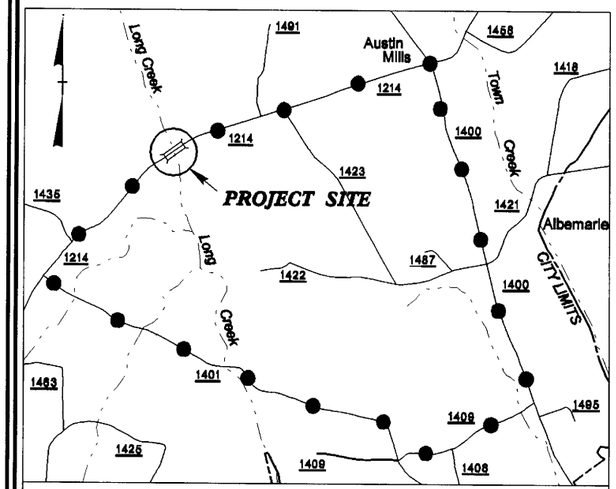
17-NOV-2004 15:55
R:\Highways\perm\t\B3700.pfl
ddbishop

09/08/99

TIP PROJECT: B-3700

CONTRACT: C201324

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



VICINITY MAP

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANLY COUNTY

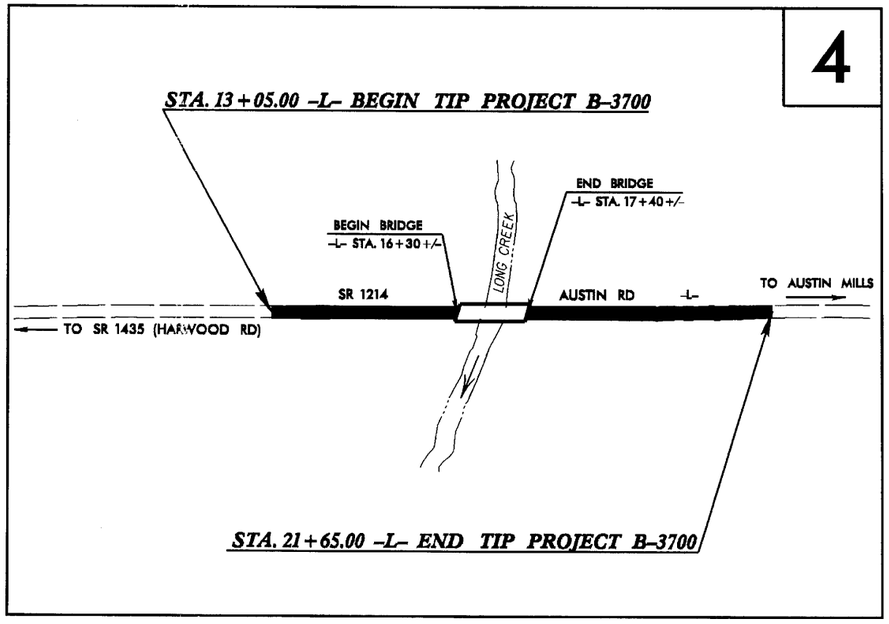
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3700	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33240.1.1	BRZ-1214(3)	PE
33240.2.2	BRZ-1214(3)	UTIL, R/W
33240.3.1	BRZ-1214(3)	CONST.

LOCATION: BRIDGE NO. 187 OVER LONG CREEK ON SR 1214 (AUSTIN RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

NAD 83



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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 2170
ADT 2025 = 3400
DHV = 11 %
D = 60 %
T = 4 % *
V = 50 MPH
* TTST 1 % + DUAL 3 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3700 = 0.142 MI
LENGTH STRUCTURE TIP PROJECT B-3700 = 0.021 MI
TOTAL LENGTH TIP PROJECT B-3700 = 0.163 MI

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 15, 2004

LETTING DATE: OCTOBER 18, 2005

BRENDA MOORE, PE
PROJECT ENGINEER

REKHA PATEL, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

18-NOV-2004 08:26
R:\Roadway\Proj\B3700.tsh
TMWalters AT

6/2/99

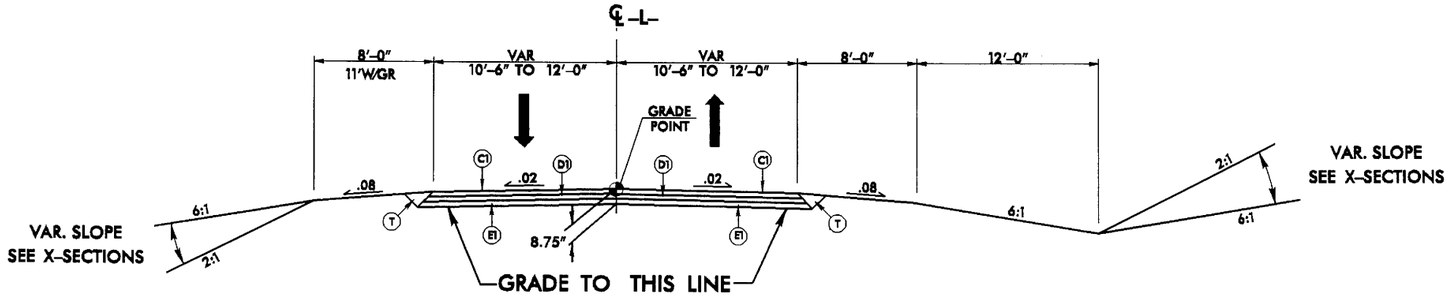
PROJECT REFERENCE NO.	SHEET NO.
B-3700	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FINAL PAVEMENT DESIGN SCHEDULE

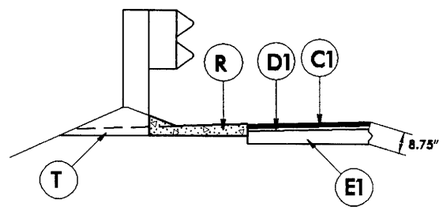
C1	PROP. APPROX. 2.50" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2.25" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 256.5 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

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



TYPICAL SECTION NO. 1

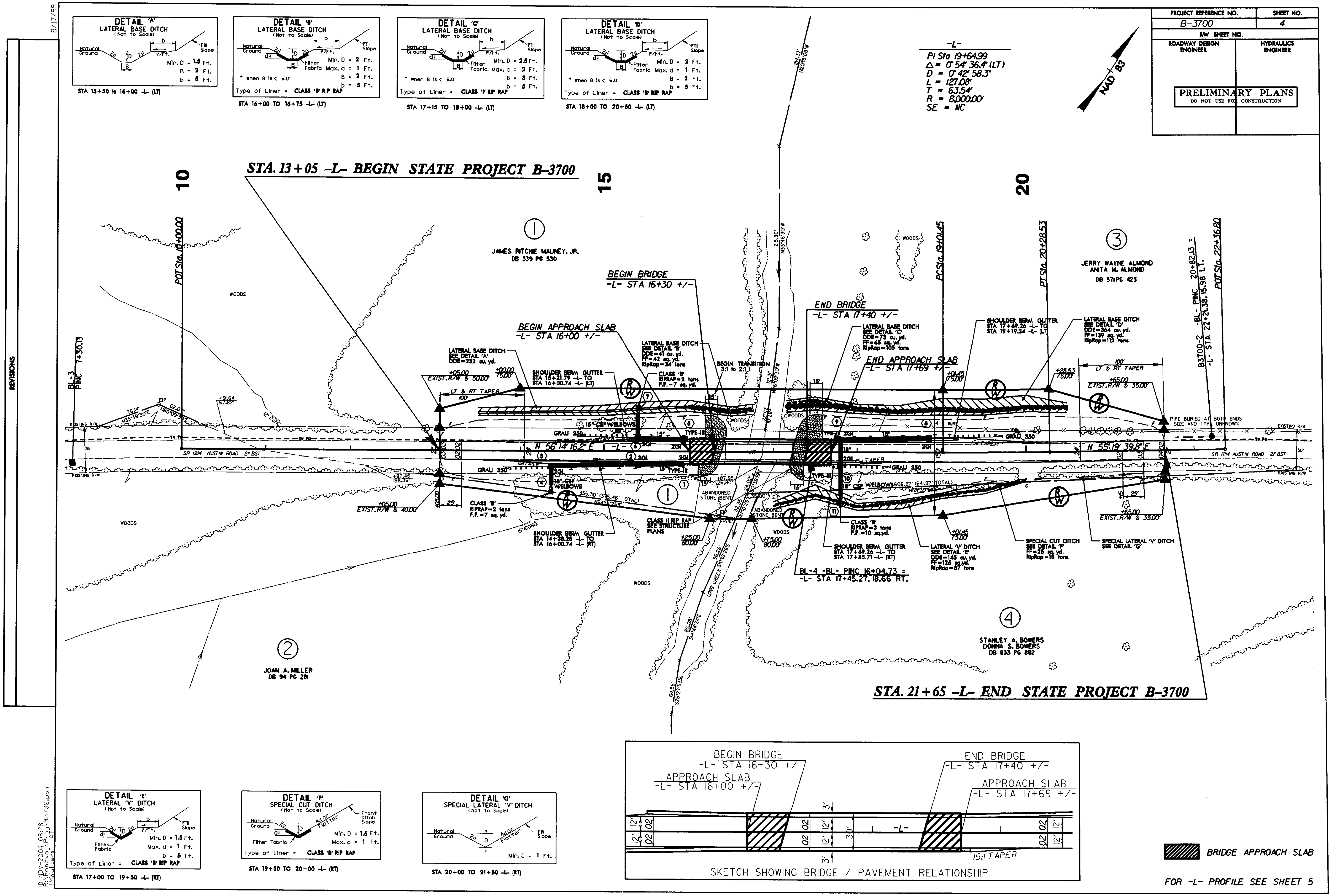
USE TYPICAL SECTION NO. 1
–L– STA. 13+05.00 TO –L– STA. 16+30+/– (BEGIN BRIDGE)
–L– STA. 17+40+/– (END BRIDGE) TO –L– STA. 21+65.00



SHOULDER BERM GUTTER DETAIL

USE SHOULDER BERM GUTTER
–L– STA. 14+38.28 TO –L– STA. 16+00.74 (RT.)
–L– STA. 17+69.26 TO –L– STA. 17+85.71 (RT.)
–L– STA. 15+21.79 TO –L– STA. 16+00.74 (LT.)
–L– STA. 17+69.26 TO –L– STA. 19+19.24 (LT.)

18-NOV-2004 08:27
R:\Roadway\Proj\B3700.typ
TMWalters A1


PROJECT REFERENCE NO. B-3700
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
8/17/99
REVISIONS
NAD 83
-L-
PI Sta 19+64.99
Δ = 0° 54' 36.4" (LT)
D = 0° 42' 58.3"
L = 127.06'
T = 63.54'
R = 8,000.00'
SE = NC
DETAIL 'A' LATERAL BASE DITCH (Not to Scale)
Min. D = 1.5 Ft.
B = 2 Ft.
b = 5 Ft.
STA 13+50 to 16+00 -L- (LT)
DETAIL 'B' LATERAL BASE DITCH (Not to Scale)
Min. D = 2 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = 5 Ft.
Type of Liner = CLASS 'B' RIP RAP
STA 16+00 TO 16+75 -L- (LT)
DETAIL 'C' LATERAL BASE DITCH (Not to Scale)
Min. D = 2.5 Ft.
Max. d = 2 Ft.
B = 3 Ft.
b = 5 Ft.
Type of Liner = CLASS 'I' RIP RAP
STA 17+15 TO 18+00 -L- (LT)
DETAIL 'D' LATERAL BASE DITCH (Not to Scale)
Min. D = 2 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = 5 Ft.
Type of Liner = CLASS 'B' RIP RAP
STA 18+00 TO 20+50 -L- (LT)
STA. 13+05 -L- BEGIN STATE PROJECT B-3700
10
15
20
JAMES RITCHIE MAUNEY, JR.
DB 339 PG 530
JERRY WAYNE ALMOND
ANITA M. ALMOND
DB 571 PG 423
BEGIN BRIDGE
-L- STA 16+30 +/-
END BRIDGE
-L- STA 17+40 +/-
BEGIN APPROACH SLAB
-L- STA 16+00 +/-
END APPROACH SLAB
-L- STA 17+69 +/-
POT Sta. 10+00.00
PC Sta. 19+01.45
PT Sta. 20+28.53
POT Sta. 22+36.80
BL-3 PINC 7+30.13
B3700-2 -BL- PINC 20+82.13 = -L- STA 22+21.38, 15.98 LT.
SR 1214 AUSTIN ROAD
N 56°14' 16.2" E
N 55°19' 39.8" E
WOODS
SHOULDER BERM GUTTER
STA 15+21.79 -L- TO STA 16+00.74 -L- (LT)
SHOULDER BERM GUTTER
STA 14+38.38 -L- TO STA 16+00.74 -L- (RT)
SHOULDER BERM GUTTER
STA 17+69.26 -L- TO STA 19+19.24 -L- (LT)
SHOULDER BERM GUTTER
STA 17+69.26 -L- TO STA 17+85.71 -L- (RT)
LATERAL BASE DITCH SEE DETAIL 'A' DDE=232 cu. yd.
LATERAL BASE DITCH SEE DETAIL 'B' DDE=41 cu. yd. FF=42 sq. yd. RipRap=34 tons
LATERAL BASE DITCH SEE DETAIL 'C' DDE=75 cu. yd. FF=65 sq. yd. RipRap=105 tons
LATERAL BASE DITCH SEE DETAIL 'D' DDE=364 cu. yd. FF=139 sq. yd. RipRap=112 tons
LATERAL 'V' DITCH SEE DETAIL 'E' DDE=145 cu. yd. FF=125 sq. yd. RipRap=87 tons
SPECIAL CUT DITCH SEE DETAIL 'F' FF=25 sq. yd. RipRap=18 tons
SPECIAL LATERAL 'V' DITCH SEE DETAIL 'G'
BEGIN TRANSITION 3:1 to 2:1
CLASS II RIP RAP SEE STRUCTURE PLANS
ABANDONED STONE BENT
PIPE BURIED AT BOTH ENDS SIZE AND TYPE UNKNOWN
LT & RT TAPER
EXIST. R/W
LONG CREEK
BL-4 -BL- PINC 16+04.73 = -L- STA 17+45.27, 18.66 RT.
STANLEY A. BOWERS
DONNA S. BOWERS
DB 833 PG 882
JOAN A. MILLER
DB 94 PG 281
STA. 21+65 -L- END STATE PROJECT B-3700
DETAIL 'E' LATERAL 'V' DITCH (Not to Scale)
Min. D = 1.5 Ft.
Max. d = 1 Ft.
b = 5 Ft.
Type of Liner = CLASS 'B' RIP RAP
STA 17+00 TO 19+50 -L- (RT)
DETAIL 'F' SPECIAL CUT DITCH (Not to Scale)
Min. D = 1.5 Ft.
Max. d = 1 Ft.
Type of Liner = CLASS 'B' RIP RAP
STA 19+50 TO 20+00 -L- (RT)
DETAIL 'G' SPECIAL LATERAL 'V' DITCH (Not to Scale)
Min. D = 1 Ft.
STA 20+00 TO 21+50 -L- (RT)
SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP
15:1 TAPER
BRIDGE APPROACH SLAB
FOR -L- PROFILE SEE SHEET 5
18-NOV-2004 08:28
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3700	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

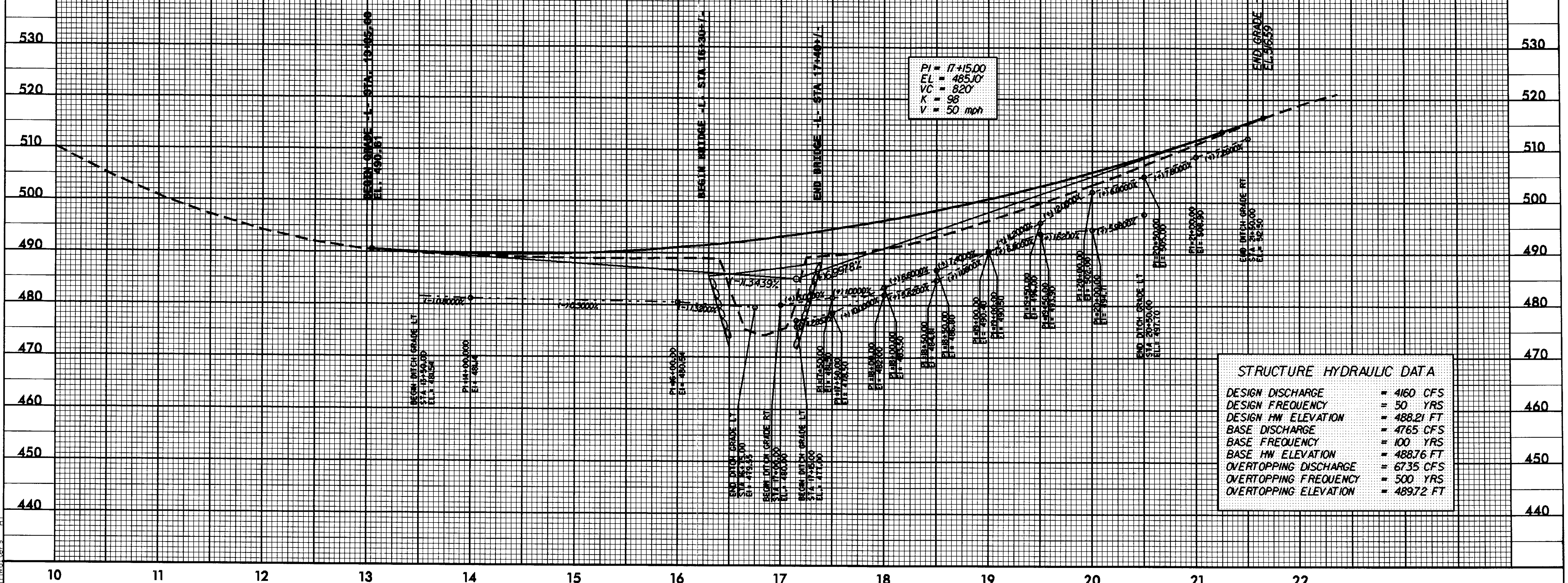
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PLAN VIEW SEE SHEET 4

-L-

BM *2 RR SPIKE IN BASE OF TREE
-L- STA 16+65.29, 138.40' RT
ELEV = 484.85'

DITCH LEGEND	
RIGHT DITCH	- - - - - - -
LEFT DITCH	— · — · —



STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 4160 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 488.21 FT
BASE DISCHARGE	= 4765 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 488.76 FT
OVERTOPPING DISCHARGE	= 6735 CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 489.72 FT

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