STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 28, 2004

U.S. Army Corps of Engineers
Regulatory Branch
Post Office Box 1890
Wilmington, North Carolina 28402-1890

ATTENTION: Mr. Richard Spencer, NCDOT Coordinator

Dear Sir:

SUBJECT: **Nationwide 23 Permit Application** for the replacement of Bridge No. 363 over Caraway Creek on SR 1331 (Ridges Mountain Road) in Randolph County, Federal Project No. BRZ-1331 (4), State Project No. 82572301, WBS Element 33118.1.1, Division 8, T.I.P. No. B-3504.

Please find enclosed three copies of the Categorical Exclusion (CE) Document, permit drawings, and design plan sheets. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 363 over Caraway Creek approximately 15 feet south of the existing alignment, realign SR 1331 (Ridges Mountain Road), and realign the existing intersection of Ridges Mountain Road and SR 1318 (Moore Road) 120 feet south. Also, an unnamed tributary channel to the north of existing bridge will be relocated due to the position of the fill slopes for the new bridge. The project involves replacing the existing 75-foot bridge with a 105-foot long bridge. The new bridge will consist of three spans and will be 33 feet wide. Bridge No. 363 will be built using drilled piers for the interior bents and steel piles for the end bents. Traffic will be detoured offsite along surrounding roads during construction.

IMPACTS TO WATERS OF THE UNITED STATES

The project is located within the Yadkin-PeeDee River Basin (03-07-09 sub-basin). Two surface water sources occur in the project area: Caraway Creek and an unnamed tributary (UT) to Caraway Creek. Caraway Creek is a perennial swift flowing stream that has a width of approximately 34 feet and a depth of 1 to 5 feet. The substrate is comprised primarily of silt, sand, and bedrock. Caraway Creek has been assigned DWQ Index No. 13-2-3 by the North Carolina Division of Water Quality and a best usage classification of C.

The confluence of the UT and Caraway Creek is located approximately 35 feet upstream and northeast of the existing bridge. The UT is an intermittent stream that has a width of 4 feet. The substrate is comprised of sand and gravel. It has not been assigned a separate best usage classification, so it shares the classification of its receiving water, Caraway Creek.

All jurisdictional impacts will occur from the relocation of the UT channel. The relocation will result in 130 feet of permanent fill to the channel of the UT. Relocation was necessary due to the position of the

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

TELEPHONE: 919-733-3141
FAX: 919-733-9794
WEBSITE: www.NCDOT.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC 27699

fill slopes for the new bridge. Best Management Practices for Protection of Surface Waters will be implemented as applicable. There are no wetlands in the project area.

Sedimentation and turbidity may result from construction related activities. HQW Sedimentation and Erosion Control Measures will be implemented to minimize impacts to potential freshwater mussels at the project site. No mussels were found at project site, however the likelihood of their existence in the project area is high based on historical evidence.

Utility Impacts
No utility impacts are expected.

Bridge Demolition
Bridge No. 363 was built in 1959 and is 75 feet long. The superstructure consists of a timber deck with steel I-beams. The substructure is composed of two rubble/masonry interior bents with concrete caps and two end bents consisting of timber caps, posts, and sills. Although it is expected that components of the superstructure and substructure will be removed without dropping them into Caraway Creek, there is the potential for the interior rubble/masonry bents of the substructure to be dropped into Caraway Creek during demolition and removal. The resulting potential temporary fill is approximately 22 cubic yards. Best Management Practices for Bridge Demolition and Removal will be implemented during the demolition and construction of Bridge No. 363.

Restoration Plan
Removal and Disposal Plan: The contractor will be required to submit a reclamation plan for the removal of and disposal of all material off-site at an upland location. Heavy–duty trucks, dozers, cranes and various other pieces of mechanical equipment necessary for construction of roadways and bridges will be used on site. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project.

Following construction of the bridge, all material used in the construction of the structure will be removed. The existing approach fill will be removed to natural grade and the area will be revegetated according to NCDOT guidelines. Class I riprap and filter fabric will be used for bank stabilization. Pre-project elevations will be restored. NCDOT will restore the stream to its pre-project contours.

Schedule: The project calls for a letting of August 17, 2004 with a date of availability of September 28, 2004. It is expected that the contractor will choose to start construction in September.

MITIGATION OPTIONS

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

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

Avoidance/Minimization:
The new bridge will not have bents located in the stream.
Limited instream activity.
Use of High Quality Sedimentation and Erosion Control Measures to minimize impacts of turbidity and sedimentation.
An offsite detour will be used.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in jurisdictional waters of the US and that the proposed action includes all practicable methods to avoid and/or minimize jurisdictional stream impacts that may result from such use. The impacts from this project do not meet the minimum mitigation threshold of 150 linear feet of stream. Therefore, no mitigation is proposed.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003 the United States Fish and Wildlife Service (USFWS) lists two federally protected species for Randolph County, the Schweinitz's sunflower (Helianthus schweinitzii) and the Cape Fear shiner (Notropis mekistocholas). A survey was conducted in June of 2000 for the Cape Fear shiner. A biological conclusion of "No Effect" due to lack of suitable habitat was given for the Cape Fear shiner. The project site was surveyed in September of 2000 and in May of 2004 for Schweinitz's sunflower. Habitat was found on both occasions, but no species were located. A biological conclusion of May Affect, Not Likely to Adversely Affect was given. Additionally, a review of the Natural Heritage Program database (last updated on April 7, 2004) revealed no occurrences of sunflower within 1.0 mile of the project area. A letter requesting concurrence from the USFW was sent on May 21, 2004 (see attached letter).

As requested by the North Carolina Wildlife Resource Commission, NCDOT will observe a moratorium on in-water work between April 1 and June 15 to protect sunfish spawning.

REGULATORY APPROVALS

Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (67 FR 2020; January 15, 2002.

Section 401 Permit: We anticipate 401 General Water Quality Certification (WQC) 3403 will apply to this project. The NCDOT will adhere to all general conditions of this WQC. Therefore, written concurrence from the NCDWQ is not required. In accordance with 15A NCAC 2H 0.0501(a) and 15A NCAC 2B 0.200 we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, as notification.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html. If you have any questions or need additional information please call Ms. Deanna Riffey at (919) 715-1409.

Sincerely,

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

Cc:
w/attachment
Mr. John Hennessy, DWQ (2 copies)
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Greg Perfetti, P.E., Structure Design

w/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. T. Johnson, P.E., Div. 8 Engineer
Mr. Art King, Div. 8 Environmental. Officer
Ms. Missy Dickens, PDEA
Mr. David Franklin, USACE, Wilmington

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 21, 2004

Gary Jordan
US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636-3726

Subject: Biological Concurrence Request for the proposed replacement of Bridge No. 363 over Caraway Creek on SR 1331, Randolph County, Federal Aid Project No. BRZ-1331 (4), State Project No. 82572301, WBS Element 33118.1.1.1, Division 8, TIP No. B-3504

Dear Mr. Jordan:

The purpose of this letter is to summarize federally protected species surveys to date and to request concurrence from the U.S. Fish and Wildlife Service (Service) pursuant to Section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*) (ESA).

The Categorical Exclusion (CE) for this project was completed in October 2002 and the Natural Resources System Report (NRTR) in November 2000. As of January 29, 2003, the United States Fish and Wildlife Service (USFWS) list of endangered and threatened species for Randolph County consists of the Schweinitz's sunflower *(Helianthus schweinitzii)* and the Caper Fear shiner *(Notropis mekistocholas)*. Field surveys were conducted in June 200 and September 2000. Biological conclusions of "No Effect" were found for both species. The conclusion was based on the fact that no species were found for both and no suitable habitat was found for the Cape Fear shiner.

The biological conclusion for the Cape Fear shiner of "No Effect" remains valid. However, due to the suitable habitat found in September of 2000 and a change in biological conclusion terminology the conclusion for Schweinitz's sunflower has been changed from "No Effect" to "May Affect, Not Likely to Adversely Affect". The site was revisited on May 20, 2004 to re-survey for the Schweinitz's sunflower. The project area does have suitable habitat for the sunflower. However, no species were found during the site visit. The biological conclusion of "May Affect, Not Likely to Adversely Affect" remains valid the Schweinitz's sunflower.

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

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

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

The USFWS listing of protected species and current Biological Conclusions are listed in the following table.

Federally Protected Species for Randolph County

Common Name	Scientific Name	Status	Habitat	Biological Conclusion
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered	YES	May Affect, Not Likely to Adversely Affect
Cape Fear shiner	*Notropis mekistocholas*	Endangered	No	No Effect

SURVEY METHODOLOGY

The most recent survey for this project was conducted on May 20, 2004. Prior to the site visit, a known population of Schweinitz's sunflowers was visited to get a visual evaluation of the plant at this time. A plant by plant survey for the sunflower consisted of searching for the 12" to 36" tall plant with leaves that were both alternate and opposite, rough on the top side and fuzzy on the bottom and a purplish to green fuzzy stem. The plant survey was conducted along the disturbed roadside areas where suitable habitat exists. In all areas along the project alignment containing habitat for the plant species, no specimens were found. Total person hours spent looking for the plant species was 1.5 hours. In addition, a review of the Natural Heritage Program database (updated on April 7, 2004) revealed no known occurrences within 1.0 mile of the project study area.

QUALIFICATIONS OF PRINCIPAL INVESTIGATORS

Investigator: Deanna Riffey
Education: BS Biology, University of Tennessee, 1991
MS Environmental Health Science, East Tennessee State University, 1996
Experience: Environmental Scientist, NCDOT, Raleigh, NC, October 2003 to Present.
Environmental & Safety Compliance Officer, City of Bristol, VA, September 1996 to October 2003.
Expertise: Technical reporting writing and wetland delineation.

Investigator: Carla Dagnino, Environmental Scientist
Education: BA, Environmental Studies, UNC-Wilmington
Experience: NCDOT – Office of Natural Environment, October 2003 to present
NCDWQ – Water Quality Modeling, April 1985 to January 1998
Expertise: Section 7 Field Surveys, Wetland Delineation, Water Quality analysis

Based on our surveys, the project area does not contain any federally listed species known to occur in Randolph County. The NCDOT concludes that the project will have biological conclusions of "May Affect, Not Likely to Adversely Affect" for the Schweinitz's sunflower and a "No Effect" for the Cape Fear shiner. NCDOT believes that the requirements of Section 7 (a)(2) of the ESA have been satisfied and hereby request your concurrence.

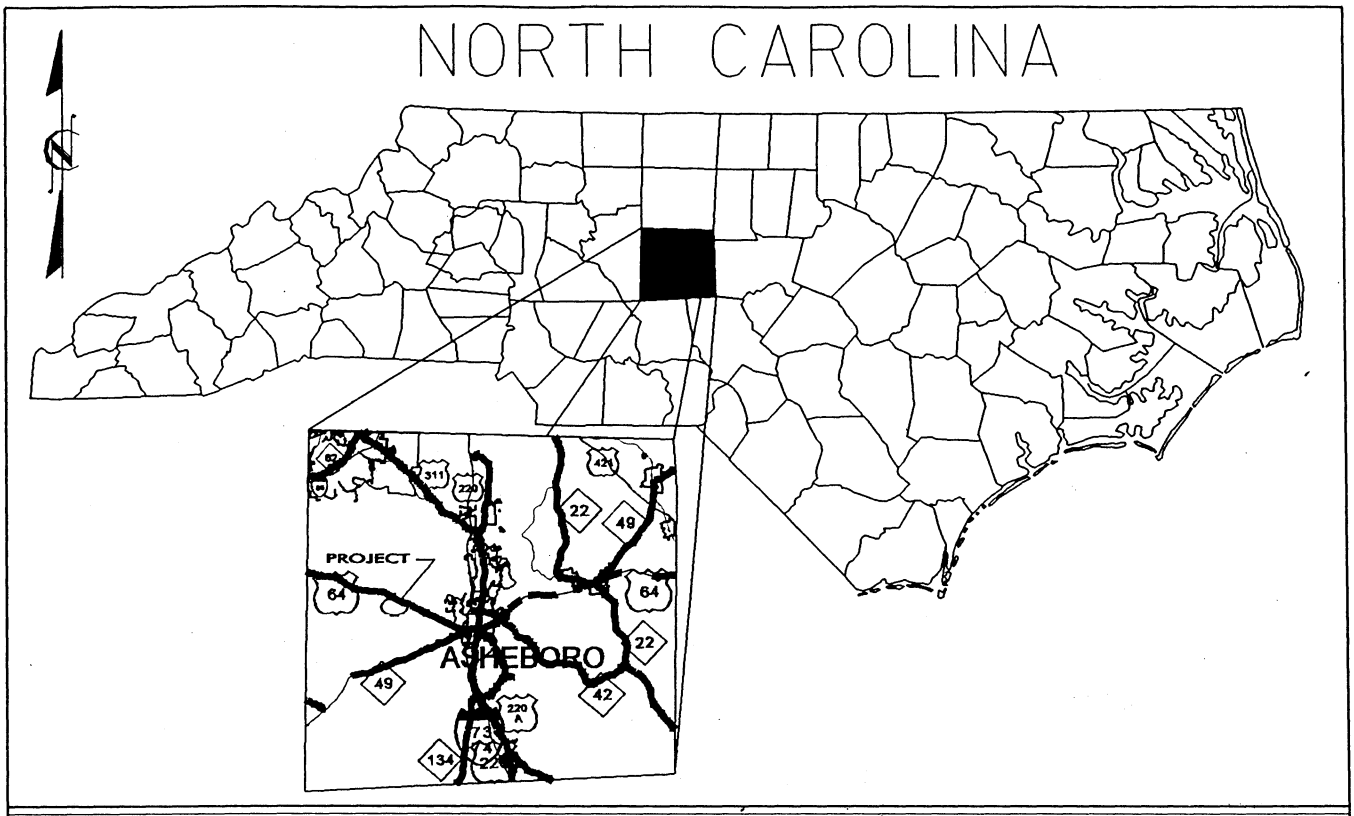
Thank you for your time. Please contact Deanna Riffey at (919) 715-1409 if you have any questions concerning this request.

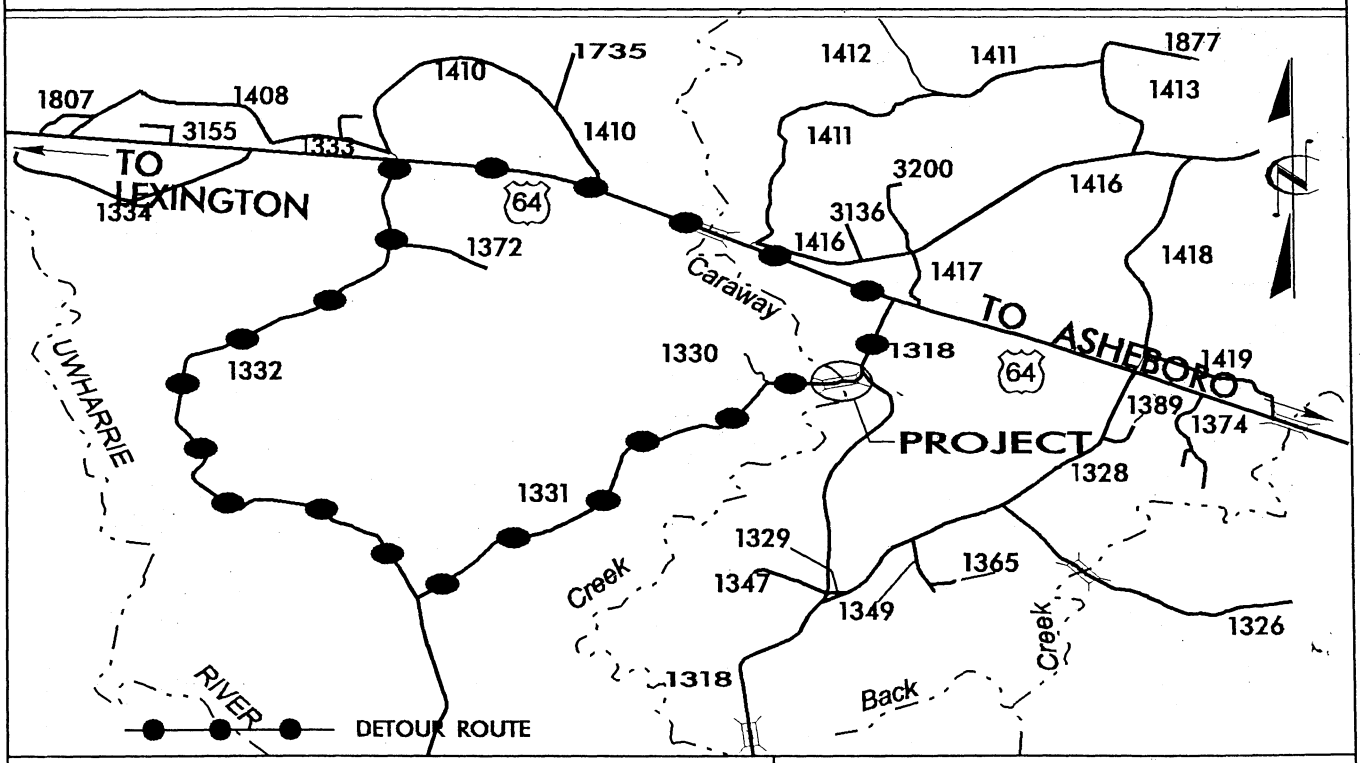
Sincerely,

E. S. Luck

Phillip S. Harris, III, PE.
Manager, Office of Natural Environment

cc: Missy Dickens, Project Engineer, PDEA
File: B-3504



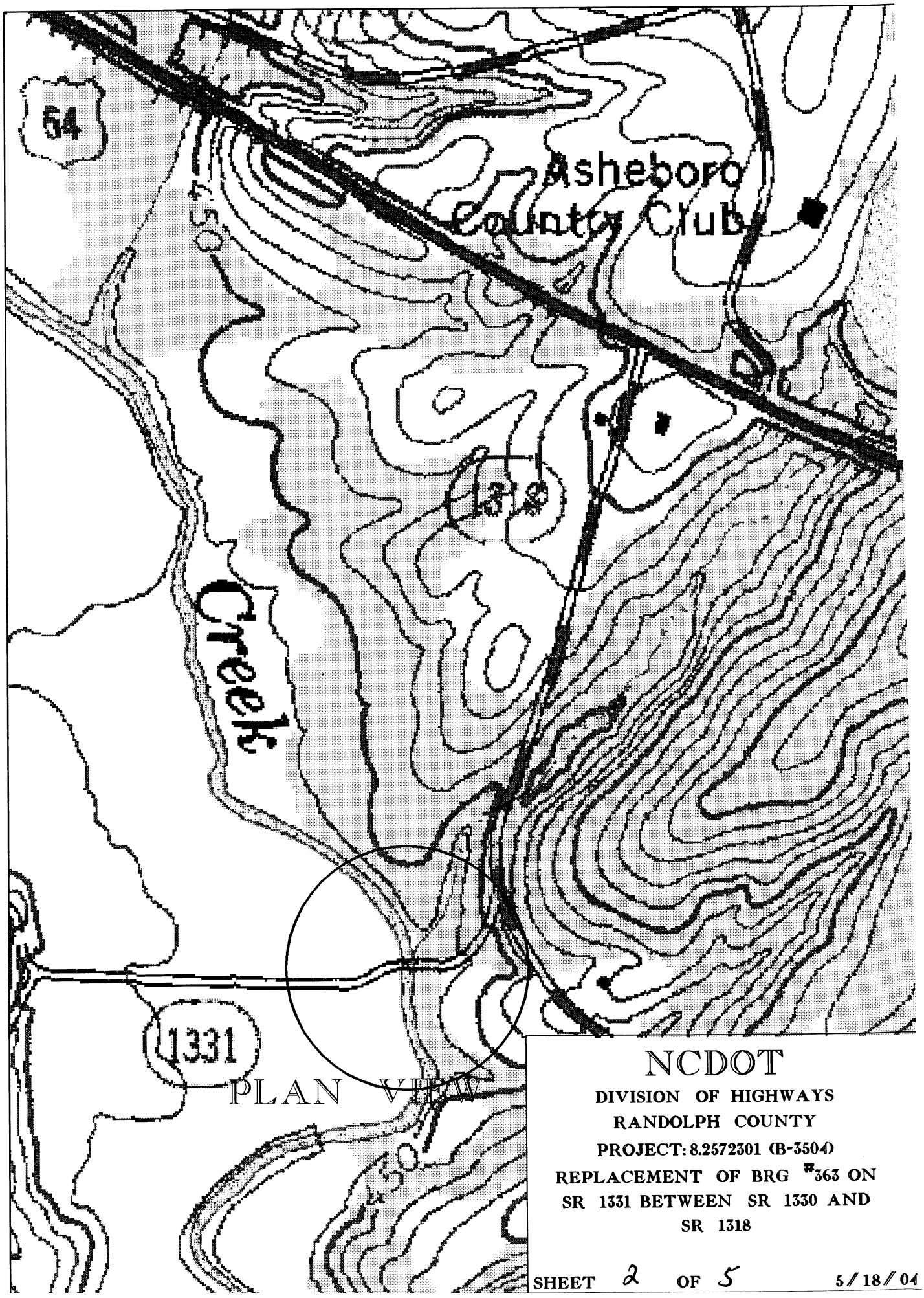


VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT: 8.2572301 (B-3504)
REPLACMENT OF BRG. #363 ON SR 1331, BETWEEN SR 1330 AND SR 1318

8/27/03



PLAN VIEW

NCDOT

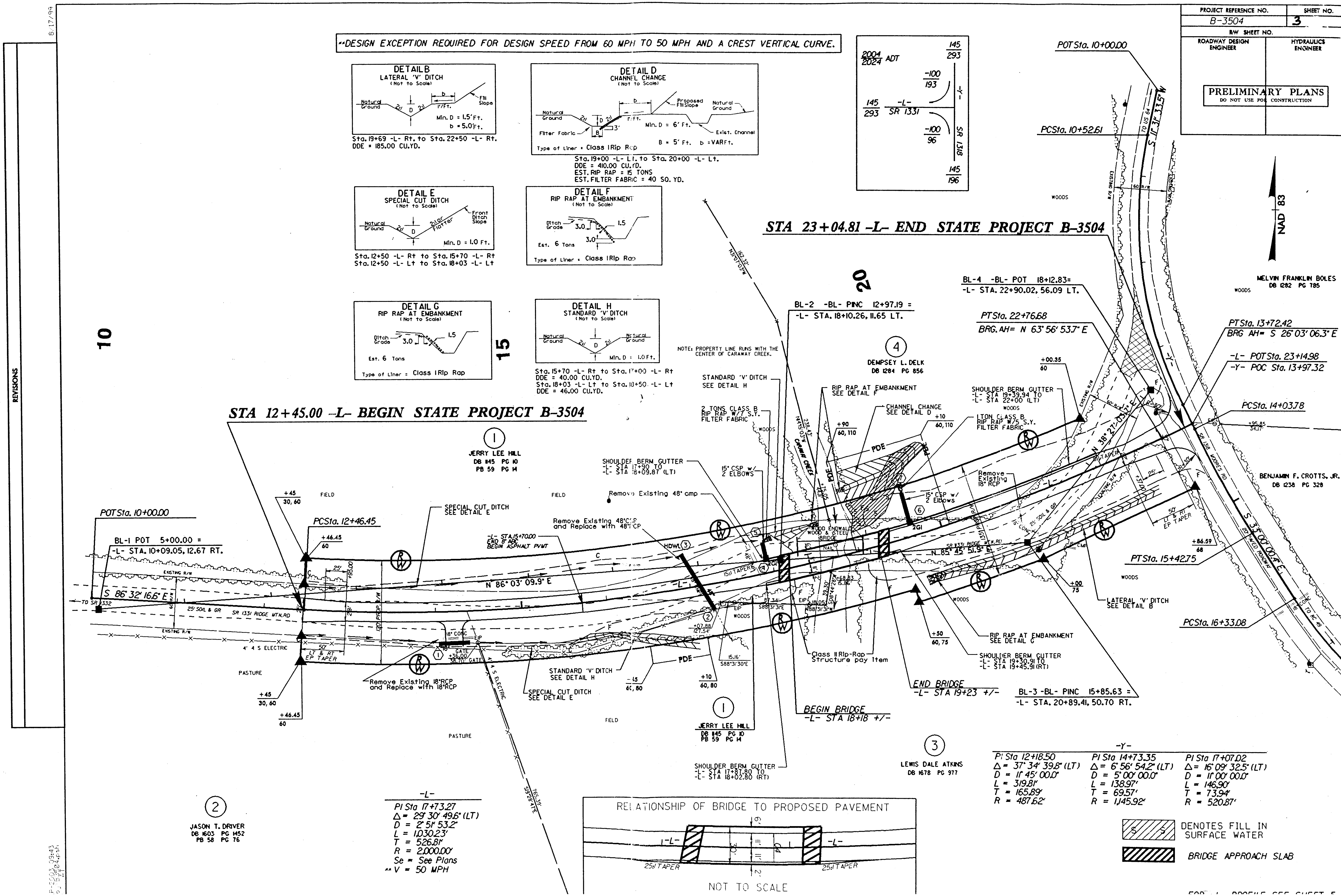
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.2572301 (B-3504)

REPLACEMENT OF BRG #363 ON SR 1331 BETWEEN SR 1330 AND SR 1318

SHEET 2 OF 5 5/18/04


PROJECT REFERENCE NO. B-3504
SHEET NO. 3
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
**DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED FROM 60 MPH TO 50 MPH AND A CREST VERTICAL CURVE.
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1.5' Ft.
b = 5.0' Ft.
Sta. 19+69 -L- Rt. to Sta. 22+50 -L- Rt.
DDE = 185.00 CU.YD.
DETAIL D
CHANNEL CHANGE
(Not to Scale)
Min. D = 6' Ft.
B = 5' Ft. b = VAR Ft.
Type of Liner = Class I Rip Rap
Sta. 19+00 -L- Lt. to Sta. 20+00 -L- Lt.
DDE = 410.00 CU.YD.
EST. RIP RAP = 15 TONS
EST. FILTER FABRIC = 40 SQ. YD.
DETAIL E
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.0 Ft.
Sta. 12+50 -L- Rt to Sta. 15+70 -L- Rt
Sta. 12+50 -L- Lt to Sta. 18+03 -L- Lt
DETAIL F
RIP RAP AT EMBANKMENT
(Not to Scale)
Est. 6 Tons
Type of Liner = Class I Rip Rap
DETAIL G
RIP RAP AT EMBANKMENT
(Not to Scale)
Est. 6 Tons
Type of Liner = Class I Rip Rap
DETAIL H
STANDARD 'V' DITCH
(Not to Scale)
Min. D = 1.0 Ft.
Sta. 15+70 -L- Rt to Sta. 17+00 -L- Rt
DDE = 40.00 CU.YD.
Sta. 18+03 -L- Lt to Sta. 19+50 -L- Lt
DDE = 46.00 CU.YD.
2004 ADT 2024
-L- SR 1331
-Y- SR 1318
STA 23+04.81 -L- END STATE PROJECT B-3504
STA 12+45.00 -L- BEGIN STATE PROJECT B-3504
NAD 83
NOTE: PROPERTY LINE RUNS WITH THE CENTER OF CARAWAY CREEK.
POT Sta. 10+00.00
PC Sta. 10+52.61
BL-1 POT 5+00.00 = -L- STA. 10+09.05, 12.67 RT.
BL-2 -BL- PINC 12+97.19 = -L- STA. 18+10.26, 11.65 LT.
BL-3 -BL- PINC 15+85.63 = -L- STA. 20+89.41, 50.70 RT.
BL-4 -BL- POT 18+12.83 = -L- STA. 22+90.02, 56.09 LT.
PT Sta. 22+76.68
BRG. AH = N 63° 56' 53.7" E
PT Sta. 13+72.42
BRG AH = S 26° 03' 06.3" E
-L- POT Sta. 23+14.98
-Y- POC Sta. 13+97.32
PC Sta. 14+03.78
PT Sta. 15+42.75
PC Sta. 16+33.08
PC Sta. 12+46.45
S 86° 32' 16.6" E
N 86° 03' 09.9" E
N 85° 45' 51.9" E
N 38° 27' 05.1" E
S 11° 31' 33.5" W
S 35° 00' 06.4" E
1 JERRY LEE HILL DB 1145 PG 10 PB 59 PG 14
2 JASON T. DRIVER DB 1603 PG 1452 PB 58 PG 76
3 LEWIS DALE ATKINS DB 1678 PG 977
4 DEMPSEY L. DELK DB 1284 PG 856
MELVIN FRANKLIN BOLES DB 1282 PG 785
BENJAMIN F. CROTTS, JR. DB 1238 PG 328
SHOULDER BERM GUTTER -L- STA 17+90 TO -L- STA 18+09.87 (LT)
SHOULDER BERM GUTTER -L- STA 19+59.94 TO -L- STA 22+00 (LT)
SHOULDER BERM GUTTER -L- STA 19+30.91 TO -L- STA 19+45.91 (RT)
SHOULDER BERM GUTTER -L- STA 17+87.80 TO -L- STA 18+02.80 (RT)
STANDARD 'V' DITCH SEE DETAIL H
SPECIAL CUT DITCH SEE DETAIL E
LATERAL 'V' DITCH SEE DETAIL B
RIP RAP AT EMBANKMENT SEE DETAIL F
RIP RAP AT EMBANKMENT SEE DETAIL G
CHANNEL CHANGE SEE DETAIL D
2 TONS CLASS B RIP RAP W/7 S.Y. FILTER FABRIC
1 TON CLASS B RIP RAP W/5 S.Y. FILTER FABRIC
Remove Existing 48" cmp
Remove Existing 48" CP and Replace with 48" CP
Remove Existing 18" RCP and Replace with 18" RCP
Remove Existing 18" RCP
15" CSP w/ 2 ELBOWS
Class II Rip-Rap Structure pay Item
BEGIN BRIDGE -L- STA 18+18 +/-
END BRIDGE -L- STA 19+23 +/-
CARAWAY CREEK
FIELD
WOODS
PASTURE
TO SR 1332
SR 1331 RIDGE MTN. RD
SR 1318 MOORES RD
PDE
-L- PI Sta 17+73.27
Δ = 29° 30' 49.6" (LT)
D = 2° 51' 53.2"
L = 1,030.23'
T = 526.81'
R = 2,000.00'
Se = See Plans
**V = 50 MPH
-Y-
PI Sta 12+18.50
Δ = 37° 34' 39.8" (LT)
D = 11° 45' 00.0"
L = 319.81'
T = 165.89'
R = 487.62'
PI Sta 14+73.35
Δ = 6° 56' 54.2" (LT)
D = 5° 00' 00.0"
L = 138.97'
T = 69.57'
R = 1,145.92'
PI Sta 17+07.02
Δ = 16° 09' 32.5" (LT)
D = 11° 00' 00.0"
L = 146.90'
T = 73.94'
R = 520.87'
RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT
25:1 TAPER
NOT TO SCALE
DENOTES FILL IN SURFACE WATER
BRIDGE APPROACH SLAB
REVISIONS

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
472206	DEMPSEY L. DELK	127 MOORE RD. ASHEBORO, N.C. 27205-2873

NCDOT

DIVISION OF HIGHWAYS

RANDOLPH COUNTY

PROJECT: 8.2572301 (B-3504)

REPLACMENT OF BRG. #363 ON

SR 1331 OVER CARAWAY CREEK

BETWEEN SR 1330 AND SR 1318

8/27/03

WETLAND PERMIT IMPACT SUMMARY

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	18+96 -L- LT.	105' BRIDGE					0.07			130	
	TO 20+10 -L- LT										
TOTALS:			0	0	0	0	0.07	0	0	130	0

NCDOT

DIVISION OF HIGHWAYS
RANDOLPH COUNTY
PROJECT 8.2572301 (B-3504)
BRIDGE#363 ON SR1331
OVER CARAWAY CREEK FROM
SR 1330 TO SR 1318

SHEET 5 OF 5 8/27/2003

Form Revised 3/22/01

RANDOLPH COUNTY
SR 1331
BRIDGE NO. 363 OVER CARAWAY CREEK

FEDERAL-AID PROJECT NO. BRZ-1331 (4)
STATE PROJECT NO. 8.2572301
T.I.P. NO. B-3504

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
N.C. DEPARTMENT OF TRANSPORTATION

APPROVED:

10/29/02
DATE

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

10/29/02
DATE

for Nicholas L. Graf, P.E., Division Administrator
Federal Highway Administration

RANDOLPH COUNTY
SR 1331
BRIDGE NO. 363 OVER CARAWAY CREEK

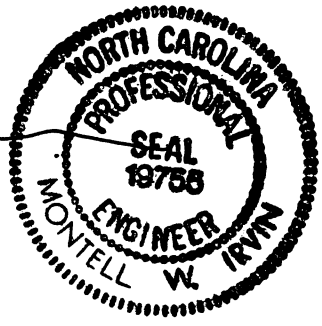
FEDERAL-AID PROJECT NO. BRZ-1331 (4)
STATE PROJECT NO. 8.2572301
T.I.P. NO. B-3504

CATEGORICAL EXCLUSION

OCTOBER 2002

Document Prepared by Ramey Kemp & Associates, Inc.
4928-A Windy Hill Dr.
Raleigh, NC 27609

Montell W. Irvin, P.E., PTOE Project Manager
Ramey Kemp & Associates, Inc.



10/28/02
Date

For the North Carolina Department of Transportation

Mary Alice Dickens, P.E., Project Development Engineer
Project Development and Environmental Analysis Branch

Teresa Hart, P.E., CPM, Unit Head
Project Development and Environmental Analysis Branch

RANDOLPH COUNTY
BRIDGE REPLACEMENT
SR 1331
BRIDGE NO. 363 OVER CARAWAY CREEK

FEDERAL-AID PROJECT NO. BRZ-1331 (4)
STATE PROJECT NO. 8.2572301
T.I.P. NO. B-3504

SPECIAL PROJECT COMMITMENTS

NCDOT Division 8 and Structure Design

1.) Bridge demolition and removal will be completed following the latest NCDOT *Best Management Practices for Bridge Demolition and Removal* guidelines. There is potential for concrete components of bridge to be dropped into Caraway Creek during demolition and removal. The maximum temporary fill associated with the removal is approximately 22 cubic yards (17 m^3). Other components of the structure are expected to be removed in a manner which will avoid dropping them into the creek, however, removal of the interior masonry/rubble bents will likely raise sediment concerns and therefore a turbidity curtain (silt screen) is recommended.

NCDOT Division 8 and Roadway Design

1.) The NCDOT will observe a moratorium on in-water work between April 1 and June 15 to protect sunfish spawning, as requested by the North Carolina Wildlife Resources Commission.

2.) HQW Sedimentation and Erosion Control Measures will be implemented to minimize impacts to freshwater mussels at the site. Even though project team members did not find any mussels at this site, the likelihood of their existence in the project area is high based on historical evidence and therefore HQW erosion control measures are warranted.

3.) This project will be designed to avoid excavation within the boundaries of archaeological site 31RD555/555**. If it becomes necessary to excavate within the site's boundaries during construction, the NCDOT PDEA Branch will be notified immediately in order to re-open the Section 106 process prior to proceeding with construction activities.

4.) NCDOT will transmit final roadway design plans to the SHPO for their concurrence with the no effect determination to complete compliance with Section 106 with the National Historic Preservation Act as amended.

RANDOLPH COUNTY
BRIDGE REPLACEMENT
SR 1331
BRIDGE NO. 363 OVER CARAWAY CREEK

FEDERAL-AID PROJECT NO. BRZ-1331 (4)
STATE PROJECT NO. 8.2572301
T.I.P. NO. B-3504

Bridge No. 363, located west of the City of Asheboro in Randolph County, is listed in the Draft 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) as B-3504 and is included in the Federal-Aid Bridge Replacement Program (BRZ-1331(4)). Refer to Figure 1 for location of the project.

Based on the assessment of the existing human and natural environment, it is concluded no substantial impacts will result from the replacement of Bridge No. 363. Therefore, this project is being processed as a Federal Categorical Exclusion.

SUMMARY OF RECOMMENDATIONS

The preferred alternate (Alternate A) consists of replacing Bridge No. 363 in-place with an off-site detour. Realignment of SR 1331 within the project area and a new intersection with SR 1318, approximately 120 ft (37 m) south of the existing intersection of SR 1331 and SR 1318, is proposed with this alternate. The recommended alternate will provide a new multi-span bridge approximately 76 ft (23 m) in length. The new structure will provide a 26 ft (7.8 m) clear roadway width that will include two 11 ft (3.3 m) travel lanes with 2 ft (0.6 m) of lateral clearance on each side of the bridge. The roadway approaches will provide two 11 ft (3.3 m) travel lanes with 6 ft (1.8 m) grassed shoulders. The roadway approach and bridge grades will approximately match existing bridge and roadway elevations. A minimum grade of 0.3% and minimum cross-slope of 2.0% on the proposed structure and roadway approaches will be maintained to facilitate deck and roadway drainage. The design speed of Alternate A will be 60 mph (100 km/h).

SR 1331 will be closed for approximately 12 to 18 months while the bridge and roadway work is being completed. Traffic will be detoured via SR 1332, US 64, and SR 1318 (see Figure 9). The maximum detour length is estimated to be 7.9 miles (12.7 km).

The estimated cost of this project, based on current prices, is $627,250. This amount includes $27,250 for right-of-way acquisition and $600,000 for construction. The estimated cost of the project, as shown in the Draft 2002-2008 TIP, is $455,000 ($420,000 for construction and $35,000 for right-of-way).

I. PURPOSE AND NEED

Bridge Maintenance Unit records indicate Bridge No. 363 has a sufficiency rating of 38.3 out of a possible 100. The bridge is considered functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 363 is located on SR 1331 (Ridges Mountain Road) west of the City of Asheboro, approximately 0.1 mile (0.2 km) south of the intersection of SR 1331 and SR 1318 (Moores Road). Refer to Figure 1 for the project location and Figures 2 through 4 for photos of the existing project area.

BRIDGE INFORMATION

According to the 2001 NCDOT Bridge Inspection Report, Bridge No. 363 has a sufficiency rating of 38.3. It was built in 1959 and is in poor condition. The bridge is currently posted for a weight limit of 17 tons (15,455 kg) for single vehicles and 21 tons (19,091 kg) for truck-tractor semi-trailers (TTST).

The overall length of the three-span bridge is 75 ft (23 m). The structure consists of a timber deck on steel I-Beams supported by two rubble/masonry interior bents with concrete caps and two end bents consisting of timber caps, posts, and sills. The bridge has a clear roadway width of 11.1 ft (3.4 m) and has no railings.

There is no evidence of significant scour or debris accumulation at the bridge; however, there are several trees both up and downstream of the bridge that appear ready to fall into the creek due to bank erosion.

Although there are no records of the bridge ever being overtopped, according to local NCDOT maintenance staff, high water levels rise to within approximately 0.5 ft (0.2 m) of the low beam of the bridge during normal storms. These storms occur approximately every two or three years.

ROADWAY INFORMATION

SR 1331 is classified as a local road in the Statewide Functional Classification System. The 2000 average daily traffic volume on SR 1331 over Bridge No. 363 is estimated to be 115 vehicles per day (vpd), which includes 1 percent TTST vehicles and 2 percent dual-tired vehicles. The 2025 design year average daily traffic volume over the bridge is expected to be 300 vpd.

SR 1331 is currently unpaved and measures approximately 12 to 20 ft (3.6 to 6.0 m) in width and has 4 to 10 ft (1.2 to 3.0 m) grassed shoulders on each side of the roadway. The horizontal alignment of SR 1331 is poor throughout the project area. The speed limit on SR 1331 is unposted. Bridge No. 363 is in a horizontal tangent that extends about 100 ft (31 m) and there are sharp horizontal curves immediately east and west of the existing bridge. The vertical alignment is relatively flat within the project area.

There is an 18 inch (450 mm) reinforced concrete pipe crossing under SR 1331 approximately 100 ft (31 m) east of the existing bridge and two 48 inch (1200 mm) corrugated metal overflow pipes, one located 60 ft (18.2 m) and the other 120 ft (37 m) west of the bridge.

There is a "ROAD SUBJECT TO FLOODING" sign located on SR 1331 east of the existing bridge.

SR 1331 intersects SR 1318 (Moores Road) at a sharp skew approximately 450 ft (137 m) east of the existing bridge. SR 1318 is a two-lane paved roadway with poor horizontal alignment in the vicinity of the intersection. There is a 10 to 15 ft (3.0 to 4.4 m) grade differential between the existing grade of SR 1318 and SR 1331. This grade difference is illustrated in Figure 4.

SR 1331 is not part of a designated bicycle route nor is it listed in the Transportation Improvement Program as needing incidental bicycle accommodations.

UTILITIES

Overhead power lines are located on the south side of and adjacent to SR 1331 east of the bridge. The power lines cross over SR 1331 approximately 150 ft (46 m) east of the existing bridge and run through an open field on the west side of the bridge.

An underground cable box, owned by Sprint, was identified near a power pole approximately 200 ft (61 m) east of the existing bridge.

There are no utilities located on the existing bridge.

GENERAL INFORMATION

Land use within the project area is either wooded or farm land. There is some sporadic residential development located along SR 1318 in the vicinity of the project and some very scattered residential development located well west of the project area.

According to Randolph County school officials, no school buses cross Bridge No. 363; however, they indicate that replacement of the bridge and improvements to the roadway may allow them to utilize the route in the future.

There have been no accidents reported on SR 1331 within the project area between January 1, 1995 and December 31, 1997.

A partnership is forming between the Piedmont Land Conservancy, the Woodfield Scout Camp (a nearby 800-acre Boy Scout camp), the North Carolina Zoological Society, and local community groups to buy and preserve Ridges Mountain and surrounding lands for tourism, research, and recreational purposes. Based on discussions with the Piedmont Land Conservancy located in Greensboro, North Carolina, the area is currently being utilized for recreational purposes. A local landowner (Mr. Ben Crotts) has indicated that numerous out-of-state vehicles are parked on his land, which adjoins the future park, on a routine basis (see letter in Appendix).

According to publications received from the Piedmont Land Conservancy, Ridges Mountain is located between the Uwharrie River and Caraway Creek, south of US 64, approximately 1.2 miles (1.9 km) west of the project site. The mountain is approximately 136 acres (55 ha) in area and has a 20-acre (8.1 ha) wide summit elevation of 840 ft (256 m). Land surrounding the mountain and the Caraway Creek floodplain area were used by the Keyauwee Indian tribe, who were part of the Siouan nation, during the 1600's, until the area was settled by trappers, traders, and travelers in the 1700's. The mountain was named for Godfrey Ridge who is thought to be one of the first permanent settlers in the area. Mr. Ridge established a trading post (Ridges Trading Post) between the base of Ridges Mountain and Caraway Creek by 1740. The Keyauwee tribe is thought to have perished due to outbreaks of measles and small pox after the settling of the area. The surviving tribe is believed to have moved to South Carolina to join another tribe.

III. ALTERNATIVES

A "Do-Nothing" alternate was considered for this project; however, this alternative would eventually necessitate closure of the bridge due to its poor condition. The "Do-Nothing" alternate was eliminated from further consideration.

"Rehabilitation" of the existing bridge was considered as a study alternate. Due to the deteriorated condition of the bridge, the "Rehabilitation" alternate was eliminated from further consideration.

Four construction alternatives were studied (see Figures 5 through 8). Each alternate consists of replacing Bridge No. 363 with a new multi-span bridge approximately 76 ft (23 m) in length. The new structure would provide a 26 ft (7.8 m) clear roadway width that would include two 11 ft (3.3 m) travel lanes with 2 ft (0.6 m) of lateral clearance on each side of the bridge. The roadway approaches would provide two 11 ft (3.3 m) travel lanes with 6 ft (1.8 m) grassed shoulders. The roadway approach and bridge grades would approximately match existing bridge and roadway elevations. A minimum grade of 0.3% and minimum cross-slope of 2.0% on the proposed structure and roadway approaches would be maintained to facilitate deck and roadway drainage.

Alternate A (Recommended)
This alternate consists of replacing the bridge in-place with an off-site detour. Realignment of SR 1331 within the project area and a new intersection with SR 1318, approximately 120 ft (37 m) south of the existing intersection of SR 1331 and SR 1318, is proposed with this alternate. Refer to Figure 5 for illustration of Alternate A.

SR 1331 would be closed for approximately 12 to 18 months while the bridge and roadway work is being completed. Traffic would be detoured via SR 1332, US 64, and SR 1318. The maximum detour length is estimated to be 7.9 miles (12.7 km). Refer to Figure 9 for illustration of the recommended temporary off-site detour route.

The total length of the roadway approach work for this alternate is approximately 900 ft (274 m).

Alternate B
Alternate B involves replacing the bridge on new location approximately 45 ft (13.7 m) south (downstream) of the existing bridge. Traffic would be maintained on the existing bridge during construction. A new intersection with SR 1318, approximately 200 ft (61 m) south of the existing intersection of SR 1331 and SR 1318, is proposed with this alternate. Refer to Figure 6 for illustration of Alternate B.

The total length of the roadway approach work for this alternate is approximately 924 ft (282 m).

Alternate C
This alternate involves replacing the bridge on new location approximately 35 ft (10.7 m) south (downstream) of the existing bridge. Traffic would be maintained on the existing bridge during construction. The eastern construction limits of this project would end approximately 100 ft (31 m) west of the existing intersection of SR 1331 and SR 1318. Refer to Figure 7 for illustration of Alternate C.

The total length of the roadway approach work for this alternate is approximately 782 ft (238 m).

Alternate D

Alternate D involves replacing the bridge in-place with an off-site detour. Slight realignment of SR 1331 is proposed with this alternate. The eastern construction limits of this project would end approximately 100 ft (31 m) west of the existing intersection of SR 1331 and SR 1318. Refer to Figure 8 for illustration of Alternate D.

SR 1331 would be closed for approximately 12 to 18 months while the bridge and roadway work is being completed. Existing traffic would be detoured via SR 1332, US 64, and SR 1318 (see Figure 9). The maximum detour length is estimated to be 7.9 miles (12.7 km).

The total length of the roadway approach work for this alternate is approximately 758 ft (231 m).

IV. ESTIMATED COSTS

The estimated costs of each alternate, based on current dollars, are shown below:

TABLE 1
ESTIMATED PROJECT COSTS

	Alternate A Off-Site Detour New Intersection **(Recommended)**	**Alternate B** New Location New Intersection	**Alternate C** New Location	**Alternate D** Off-Site Detour
Structure	$128,500	$128,500	$128,500	$128,500
Roadway Approaches	$211,600	$225,300	$178,500	$178,700
Structure Removal	$9,000	$9,000	$9,000	$9,000
Miscellaneous and Mobilization	$157,900	$163,200	$143,000	$142,800
Engineering and Contingencies	$93,000	$99,000	$91,000	$91,000
Total Construction Cost	**$600,000**	**$625,00**	**$550,000**	**$550,000**
Right-of-Way/Easement/Utilities	$27,250	$28,125	$27,500	$27,250
Total Project Cost	**$627,250**	**$653,125**	**$577,500**	**$577,250**

The estimated cost of the project, as shown in the Draft 2002-2008 TIP, is $455,000 ($420,000 for construction and $35,000 for right-of-way).

RECOMMENDED IMPROVEMENTS

The preferred alternate (Alternate A) consists of replacing the bridge in-place with an off-site detour. Realignment of SR 1331 within the project area and a new intersection with SR 1318, approximately 120 ft (37 m) south of the existing intersection of SR 1331 and SR 1318, is proposed with this alternate. Refer to Figure 5 for illustration of Alternate A.

SR 1331 will be closed for approximately 12 to 18 months while the bridge and roadway work is being completed. Existing traffic will be detoured via SR 1332, US 64, and SR 1318. The maximum detour

length is estimated to be 7.9 miles (12.7 km). Refer to Figure 10 for illustration of the recommended temporary off-site detour route.

The recommended alternate will provide a new multi-span bridge approximately 76 ft (23 m) in length. The new structure would provide a 26 ft (7.8 m) clear roadway width that would include two 11 ft (3.3 m) travel lanes with 2 ft (0.6 m) of lateral clearance on each side of the bridge. The roadway approaches would provide two 11 ft (3.3 m) travel lanes with 6 ft (1.8 m) grassed shoulders. The roadway approach and bridge grades would approximately match existing bridge and roadway elevations. A minimum grade of 0.3% and minimum cross-slope of 2.0% on the proposed structure and roadway approaches would be maintained to facilitate deck and roadway drainage. The design speed of Alternate A will be 60 mph (100 km/h).

Alternate A is the recommended alternate because it will utilize a significant amount of existing NCDOT right-of-way and will improve the existing alignment of SR 1331 within the project area. Alternate A will also improve the intersection of SR 1331 with SR 1318. Refer to Figure 5 for the preferred alternate and Figure 10 for the proposed roadway and structure typical sections and design criteria.

The Division Engineer concurs with the preferred alternate and the recommended off-site detour because the proposed construction will be safer and quicker without having to maintain traffic on the existing bridge.

VI. ANTICIPATED DESIGN EXCEPTION

For the preferred alternate, a design exception will be required for SR 1331 east of the bridge due to the proposed horizontal alignment. The curvature of the roadway just east of the proposed bridge was decreased to allow the bridge to remain in a tangent section. The current (statutory) speed limit of SR 1331 is 55 mph (90 km/h).

VII. NATURAL RESOURCES

Natural resources within the project study area were evaluated to provide: 1) an assessment of natural resource features within the project study area including descriptions of vegetation, wildlife, protected species, streams, wetlands, and water quality; 2) an evaluation of probable impacts resulting from construction; and 3) a preliminary determination of permit needs.

METHODOLOGY

Materials and research data in support of this investigation have been derived from a number of sources including applicable U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic mapping (Farmer, NC), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory mapping, Natural Resources Conservation Service (NRCS) draft soil mapping (USDA unpublished), and recent aerial photography (scale 1:1200) furnished by NCDOT.

The project study area was walked and visually surveyed for significant features on June 01, 2000. The project study area evaluated is approximately 600 ft (183 m) in width and 1200 ft (366 m) in length.

Special concerns evaluated in the field include potential habitat for protected species, streams, wetlands, and water quality protection.

Plant community descriptions are based on a classification system utilized by the 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). Jurisdictional areas were identified using the three parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (USACE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). 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 (Martof *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Hamel 1992, Rohde *et al.* 1994, Palmer and Braswell 1995). Water quality information for area streams and tributaries was derived from available sources (DEM 1989, DWQ 1997, DENR 1999). Quantitative sampling was not undertaken to support existing data.

The most current FWS listing of federal protected species with ranges which extend into Randolph County was obtained prior to initiation of the field investigation. In addition, NHP records documenting presence of federal or state listed species were consulted before commencing the field investigation.

PHYSIOGRAPHY AND SOILS

The project study area is located in the Piedmont physiographic province. Topography is characterized by strongly sloping to very steep uplands with narrow floodplains along drainages. Elevations in the project study area range from approximately 430 ft (131 m) above mean sea level (MSL) at Caraway Creek to approximately 470 ft (143 m) above MSL along SR 1318 east of Caraway Creek (USGS Farmer, NC quadrangle).

The project study area crosses three soil mapping units. All three soil mapping units are classified as nonhydric soils, but two of these mapping units have inclusions of hydric. The mapping units that contain inclusions of hydric soils are Chewacla loam, 0-2% slopes (*Fluvaquentic Dystrochrepts*) and Riverview loam, 0-2% slopes (*Fluventic Drystrochrepts*). The hydric soil inclusion within these mapping units is Wehadkee loam which is typically found on the outer limits of the mapping unit. These soils are all classified as frequently flooded. The remaining non-hydric mapping unit is Badin-Tatum complex, 8-15% slopes (*Typic Hapludults*). This soil is classified as eroded (USDA unpublished).

WATER RESOURCES

WATERS IMPACTED

The project study area is located within sub-basin 030709 of the Yadkin/Pee Dee River Basin (DEM 1994). This area is part of the USGS hydrologic unit 03040103 (USGS 1974). Caraway Creek originates in northwestern Randolph County and flows in a southerly direction through the study area to its confluence with the Uwharrie River in southwestern Randolph County. Caraway Creek, from its source to its confluence with the Uwharrie River, has been assigned Stream Index Number (SIN) 13-2-3 by the North Carolina Division of Water Quality (DWQ). A small, unnamed intermittent tributary to Caraway Creek is

located approximately 150 ft (46 m) upstream of the existing structure, in the northeastern portion of the preliminary study area. This unnamed tributary lies outside of the proposed right-of-way and serves as a confluence for runoff from Asheboro Country Club Lake. No separate SIN has been assigned to this unnamed tributary.

STREAM CHARACTERISTICS

Caraway Creek is a perennial stream with swift flow over substrate consisting of silt, sand, and bedrock. This creek is a single channel stream with a bankfull width of approximately 34 ft (10 m) at the existing bridge. Pool depths at bankfull stage within the main channel range from 5 ft (1.4 m) upstream of the existing bridge to 1 to 2 ft (0.3 to 0.6 m) downstream of the bridge. Unstable instream bars were noted upstream of the existing structure. No rooted aquatic vegetation was apparent in the channel, but some organic debris (*i.e.*, branches, leaves) was apparent. A geomorphic characterization of the stream indicates the segment of Caraway Creek within the project study area is an "F" channel (Rosgen 1996). This designation indicates a stream with an entrenched, meandering channel, deeply incised in gently sloping terrain. The "F" stream type exhibits riffle/pool bed features, and has high width/depth ratios.

The unnamed, intermittent tributary channel to Caraway Creek is not depicted on the USGS quadrangle, but is depicted on the NRCS soil map. This channel is small, with a bankfull width of approximately 4 ft (1.2 m) with a sand and gravel substrate. A geomorphic characterization of the stretch of channel within the project study area indicates this tributary is a "G" channel. This tributary is an entrenched gully system with typically unstable step/pool morphology. No rooted aquatic vegetation was apparent in the channel.

BEST USAGE CLASSIFICATIONS AND WATER QUALITY

A Best Usage Classification is assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or stream segments in the basin. Caraway Creek, from its source to confluence with the Uwharrie, has a best usage classification of **C** (DWQ 1997, DENR 1999). The designation **C** denotes appropriate uses including aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation refers to human body contact with waters on an infrequent or incidental basis. The unnamed tributary to Caraway Creek has not been assigned a separate best usage classification, so it shares the classification of its receiving water, Caraway Creek.

No Outstanding Resource Waters **(ORW), WS I, or WS-II** Waters occur within 3.0 miles (4.8 km) of the project study area. Caraway Creek is not designated as a North Carolina Natural and Scenic River, nor as a national Wild and Scenic River.

There are no permitted point source dischargers on Caraway Creek or any tributaries to Caraway Creek (DEM 1989, DEM 1994). No significant non-point discharges were noted in the project study area.

The Benthic Macroinvertebrate Ambient Network (BMAN) addresses long-term trends in water quality at monitoring sites by sampling for selected benthic macroinvertebrates (DEM 1989). This program has been replaced by the benthic macroinvertebrate monitoring program associated with the basinwide assessment for the Yadkin River Basin (DWQ 1997). Species richness and overall biomass are considered to be reflections of water quality. One BMAN sampling station is located on Caraway Creek. This station is located at Bridge No. 363 in the project study area. In 1996, this sampling station received a bioclassification of Good-Fair (DWQ 1997).

Another measure of water quality being used by DWQ is the North Carolina Index of Biotic Integrity (NCIBI), which assesses biological integrity using the structure and health of the fish community; however, no fish community structure sampling has been reported for the Caraway Creek or streams to which it is tributary (DWQ 1997).

ANTICIPATED IMPACTS TO WATER RESOURCES

Section 402-2 of NCDOT's Standard Specifications for Roads and Structures is labeled Removal of Existing Structure. This section outlines restrictions and Best Management Practices for Bridge Demolition and Removal (BMP-BDR), as well as guidelines for calculating maximum potential fill in the creek resulting from demolition.

The superstructure of the bridge consists of a timber deck with steel I-Beams in the approach spans and a girder floor beam system in the main span. The substructure consists of rubble masonry interior bents with concrete caps, and end bents with timber posts, sills, and caps.

Although it is expected that components of the superstructure and substructure will be removed without dropping them into Caraway Creek, there is the potential for the interior rubble/masonry bents of the substructure to be dropped into Caraway Creek during demolition and removal. The maximum resulting temporary fill associated with the removal is approximately 22.0 cubic yards (16.8 m^3). After construction activities are completed, abandoned existing approaches associated with the existing structure will be removed and revegetated in accordance with NCDOT guidelines. Bridge demolition activities associated with this project will strictly follow NCDOT's Best Management Practices for Bridge Demolition and Removal. This proposed project falls under Case 3 of the BMP-BDRs.

Short-term impacts to water quality, such as sedimentation and turbidity, may result from construction-related activities. Best Management Practices of Surface Waters (BMPs) can minimize impacts during construction, including implementation of stringent erosion and sedimentation control measures, and avoidance of using wetlands as staging areas.

Other impacts to water quality, such as changes in water temperature as a result of increased exposure to sunlight due to the removal of stream-side vegetation or increased shade due to the construction of the bridges, and changes in stormwater flows due to changes in the amount of impervious surface adjacent to the stream channels, can be anticipated as a result of this project. However, due to the limited amount of overall change in the surrounding areas, impacts are expected to be temporary in nature.

No adverse long-term impacts to water resources are expected to result from any of the alternatives being considered. All alternatives call for spanning structures across Caraway Creek, which will allow for continuation of present stream flow within the existing channel, thereby protecting stream integrity.

BIOTIC RESOURCES

PLANT COMMUNITIES

Three distinct plant communities were identified within the project study area: Piedmont Alluvial Forest, Successional Pine/Hardwood Forest, and Maintained/Disturbed areas. These plant communities are described below.

Piedmont Alluvial Forest

In the study area, this community dominates the active and historic floodplain of Caraway Creek and its unnamed tributary. Evidence was observed during the field visit suggesting that much of the current mature forest has regenerated after a period of intensive utilization of this community for agriculture. The current canopy in this community is dominated American sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), black gum (*Nyssa sylvatica*), and green ash (*Fraxinus pennsylvanica*). A few widely scattered loblolly pines (*Pinus taeda*) were also observed. This community also contains a well established understory that is dominated by species found in the canopy, but also includes tulip poplar (*Liriodendron tulipifera*) and American holly (*Ilex opaca*). Dense stands of shrubs found in this community were composed almost entirely of the invasive Chinese privet (*Ligustrum sinense*). Herbaceous vegetation was dominated by a mixture of Japanese grass (*Microstegium vimineum*), poison ivy (*Toxicodendron radicans*), false nettle (*Boehmeria cylindrica*), Virginia creeper (*Parthenocissus quinquefolia*), and Japanese honeysuckle (*Lonicera japonica*). Areas not densely vegetated by the aforementioned species contained rattlesnake fern (*Botrychium virginianum*) and river oats (*Chasmanthium latifolium*).

Successional Pine/Hardwood Forest

In the study area this community encompasses all of the forested areas along the slopes and hilltops along Caraway Creek and its tributary in the study area. Hilltops and other successional areas in the study area have a canopy composed almost entirely of Virginia pine (*Pinus virginiana*) and loblolly pine. These stands typically have a dense subcanopy of pine but also includes hardwood species such as blackjack oak (*Quercus marilandica*), flowering dogwood (*Cornus florida*), eastern red cedar (*Juniperus virginiana*), winged elm (*Ulmus alata*), American beech (*Fagus grandifolia*), and water oak (*Quercus nigra*). The Caraway Creek floodplain is bordered by well-drained mesic slopes. These slopes are characterized by a hardwood dominated canopy with few scattered pines. Hardwood species observed in the canopy include willow oak (*Quercus phellos*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), persimmon (*Diospyros virginiana*), American beech, and mockernut hickory (*Carya tomentosa*). The understory and shrub layer includes many younger individuals of canopy species, as well as flowering dogwood and American holly. A limited amount of groundcover was observed in this community. The groundcover present was dominated by fast growing vines such as poison ivy, trumpet creeper (*Campsis radicans*), and grape (*Vitis* sp.).

Maintained/Disturbed Areas

This community includes roadside shoulders, pastures, and agricultural fields that occur in the study area. Also included in this community are several small stands of trees that are effectively isolated from the surrounding forested communities. These tree stands most closely resemble the community structure of the Alluvial Forest Community. Pasture land found in the study area is actively grazed by horses. These areas support a limited diversity of species such as fescue (*Festuca sp.*), broomsedge (*Andropogon virginica*), horsenettle (*Solanum carolinense*), wild carrot (*Daucus carota*), and purple clover (*Trifolium*

pratense). Other areas that are grazed less frequently provide habitat for a higher diversity of opportunistic plant species such as wild cherry (*Prunus serotina*), blackberry (*Rubus argutus*), smooth sumac (*Rhus glabra*), eastern red cedar, and sour-grass (*Rumex crispus*). Agricultural fields are currently under cultivation in feed corn. Species composition of roadside shoulders is similar to that of other disturbed areas in the project study area but also include herbs such as horseweed (*Erigeron canadensis*), lespedeza (*Lespedeza* sp.), and an assortment of composites (family Asteraceae).

ANTICIPATED IMPACTS TO PLANT COMMUNITIES

Anticipated impacts to plant communities are estimated based on the acreage of each community within the proposed 80 ft (24 m) right-of-way. Alternate C contains potential temporary impacts outside the proposed right-of-way. A summary of potential impacts is presented in Table 2.

TABLE 2
ANTICIPATED IMPACTS TO PLANT COMMUNITIES

PLANT COMMUNITY	ESTIMATED IMPACTS				
	ALT A **(Recommended)**	ALT B	ALT C		ALT D
	Impacts	Impacts	Impacts	Temp. Impacts	Impacts
Piedmont Alluvial Forest	0.38 ac (0.15 ha)	0.48 ac (0.19 ha)	0.29 ac (0.11 ha)	0.17 ac (0.07 ha)	0.14 ac (0.6 ha)
Maintained/ Disturbed Areas	1.06 ac (0.43 ha)	1.00 ac (0.40 ha)	0.84 ac (0.34 ha)	0.21 ac (0.08 ha)	0.76 ac (0.31 ha)
Agriculture	0.21 ac (0.08 ha)	0.05 ac (0.02 ha)	0.00 ac (0.00 ha)	0.07 ac (0.03 ha)	0.08 ac (0.03 ha)
Successional Pine/Hardwood Forest	0.09 ac (0.03 ha)	0.25 ac (0.10 ha)	0.00 ac (0.00 ha)	0.06 ac (0.02 ha)	0.00 ac (0.00 ha)
Total:	1.74 ac (0.70 ha)	1.78 ac (0.72 ha)	1.13 ac (0.46 ha)	0.51 ac (0.21 ha)	0.98 ac (0.40 ha)
Total for ALT.:	1.74 ac (0.70 ha)	1.78 ac (0.72 ha)	1.64 ac (0.66 ha)		0.98 ac (0.40 ha)

*Note: Temporary impacts are based on the portion of the construction easement not included in the construction limits.

Permanent impacts to plant communities as a result of bridge replacement are generally limited to narrow strips adjacent at the existing bridge structure and roadway approach segments. All alternatives limit fragmentation of natural plant communities with alternative placement either in or in close proximity to the existing facility and by concentrating impacts within the Maintained/Disturbed community.

Permanent community impacts range from 0.98 ac (0.40 ha) in Alternate D to 1.78 ac (0.72 ha) in Alternate B. The largest relative area of potential impact is located within the Maintained/Disturbed Areas.

WILDLIFE

The project study area was visually surveyed for signs of terrestrial and aquatic wildlife. Although little evidence of wildlife was observed during the field effort, expected wildlife species are those adapted to the ecotonal gradient between the maintained roadsides and the adjacent natural forest.

TERRESTRIAL

Bird species observed in the maintained/disturbed communities within or adjacent to the project study area include indigo bunting (*Passerina cyanea*), American crow (*Corvus brachyrhynchos*), eastern bluebird (*Sialia sialis*), mourning dove (*Zenaida macroura*), northern cardinal (*Cardinalis cardinalis*), turkey vulture (*Cathartes aura*), and Carolina chickadee (*Poecile carolinensis*). Forested habitats in the project study area provide a wider range of microhabitats. Bird species observed in forested habitats include common yellowthroat (*Geothlypis trichas*), pileated woodpecker (*Dryocopus pileatus*), bluegray gnatcatcher (*Polioptila caerulea*), and northern parula (*Parula americana*).

Mammal sign (tracks, scat, *etc.*) observed within the project study area included white-tail deer (*Odocoileus virginianus*) and raccoon (*Procyon lotor*). Other species expected include Virginia opossum (*Didelphis virginiana*), gray fox (*Urocyon cinereoargenteus*), eastern mole (*Scalopus aquaticus*), red bat (*Lasiurus borealis*), hispid cotton rat (*Sigmodon hispidus*), and eastern cottontail (*Sylvilagus floridanus*).

No terrestrial herptiles were observed during the course of the field visit. It is expected that maintained/disturbed habitats in the study would provide suitable habitat for highly adaptable species, such as black rat snake (*Elaphe obsoleta*), eastern garter snake (*Thamnophis sirtalis*), American toad (*Bufo americanus*), and Fowler's toad (*Bufo woodhousei*). Forested communities offer access to a wider variety of resources and increased protection from predators for herptiles in the project study area. Species expected to utilize forested habitats in the project study area include slimy salamander (*Plethodon glutinosus*), eastern box turtle (*Terrapene carolina*), spring peeper (*Hyla crucifer*), northern cricket frog (*Acris crepitans*), copperhead (*Agkistrodon contortrix*), and eastern hognose snake (*Heterodon platyrhinos*).

AQUATIC

Limited kick-netting, dip-netting, seining, and visual observation of the stream banks and channel within the project study area were conducted. Fish species documented within the project study area include redlip shiner (*Notropis chiliticus*), whitemouth shiner (*N. alborus*), bluehead chub (*Nocomis leptocephalus*), green sunfish (*Lepomis cyanellus*), bluegill (*L. macrochirus*), and fantail darter (*Etheostoma flabellare*). There are no anadromous fish within this system.

Limited streambank surveys did not reveal any evidence of freshwater mussels or middens. Kick-net surveys and limited bottom sampling were conducted within the channel. Organisms collected were identified to Order and were limited to snails (*Gastropoda*) and crayfish (*Decapoda*). Surveys conducted by DWQ in 1996 at the benthic monitoring station within the project study area at Bridge No. 363 on Caraway Creek provide a more complete list of species and their abundance (DENR 1999).

Limited surveys did not result in documentation of any herptiles in Caraway Creek. Species expected within the project study area include aquatic and semi-aquatic reptiles and amphibians such as northern water snake (*Nerodia sipedon*), snapping turtle (*Chelydra serpentina*), and eastern musk turtle (*Sternotherus odoratus*).

ANTICIPATED IMPACTS TO WILDLIFE

Due to the limited extent of infringement on natural communities, completion of this project should not result in significant loss or displacement of known terrestrial animal populations. Wildlife movement corridors are currently limited within the project study area and are not expected to be significantly

impacted by the proposed project. Potential down-stream impacts to aquatic habitat will be avoided by bridging the system to maintain regular flow and stream integrity. In addition, temporary impacts to downstream habitat from increased sediment during construction are expected to be reduced by limiting in-stream work to an absolute minimum, except for the removal of the interior bents. BMP-BDRs will be followed to minimize impacts associated with anticipated bridge demolition activities.

SPECIAL TOPICS

WATERS OF THE UNITED STATES

Surface waters within the embankments of Caraway Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "Waters of the United States" (33 CFR 328.3). The waters in Caraway Creek within the project study area exhibit characteristics of riverine, upper perennial, streambed, cobble-gravel, permanently flooded waters (R3SB3H) (Cowardin *et al.* 1979). The unnamed, intermittent tributary exhibits characteristics of riverine, intermittent, streambed, cobble-gravel, permanently flooded waters (R4SB3H). No palustrine or emergent wetlands were identified in the project study area.

All alternatives for this project are expected to bridge the open waters of Caraway Creek, negating the need for direct encroachment into riverine waters.

Anticipated impacts to open water areas are estimated based on the area of each jurisdictional area within the proposed right-of-way. No impacts to open water areas associated with Caraway Creek are expected due to the use of channel-spanning structures. A summary of potential jurisdictional impacts is presented in Table 3.

During bridge removal, NCDOT's BMP-BDRs will be utilized, including erosion control measures; therefore, it is anticipated that removing the existing bridge will result in no permanent fill into surrounding surface waters. Potential temporary impacts associated with bridge demolition are not expected to exceed 22 cubic yards (16.8 m^3).

TABLE 3
ANTICIPATED IMPACTS TO JURISDICTIONAL SURFACE WATERS

JURISDICTIONAL AREAS	ESTIMATED IMPACTS				
	ALT A **Recommended**	ALT B	ALT C		ALT D
	Impacts	Impacts	Impacts	Temp. Impacts	Impacts
R3SB3H (acres)	0.08 ac (0.03 ha)	0.07 ac (0.02 ha)	0.06 ac (0.02 ha)	0.01 ac (0.004 ha)	0.06 ac (0.02 ha)
TOTALS FOR ALTS:	0.08 ac (0.03 ha)	0.07 ac (0.02 ha)	0.07 ac (0.02 ha)		0.08 ac (0.03 ha)
Stream Channel Impacts (linear ft)	80 lin. ft (24 m)	80 lin. ft (24 m)	80 lin. ft (24 m)		80 lin. ft (24 m)
TOTAL FOR ALTS:	80 lin. ft (24 m)	80 lin. ft (24 m)	80 lin. ft (24 m)		80 lin. ft (24 m)

Note: Temporary impacts are based on the portion of the construction easement not included in the construction limits.

All of the alternatives have approximately 0.07 to 0.08 acre (0.02 to 0.03 ha) of open water (R3SB3H) within the respective construction limits. Alternate C may have an additional 0.01 acre (0.004 ha) of temporary impacts associated with the construction easement. The existing structure has caused the stream to widen substantially at and above the existing crossing. All alternates cross approximately 80 linear feet (24 m) of Caraway Creek. The unnamed, intermittent tributary to Caraway Creek is outside the right-of-way area for all proposed alternatives and is not expected to be impacted by construction activities.

Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) 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). Based on the three parameter approach no jurisdictional wetlands are present within the project study.

PERMITS

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. Nationwide Permit (NWP) #23 [33 CFR 330.5(a)(23)] has been issued by the USACE for CEs due to expected minimal impact. DWQ has issued a General 401 Water Quality Certification for NWP #23. However, use of this permit will require written notice to DWQ. In the event that NWP #23 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit 031 issued by the Wilmington USACE District. Notification to the Wilmington USACE office is required if this general permit is utilized.

MITIGATION EVALUATION

Avoidance – Due to the extent of surface waters within the project study area, avoidance of impacts is not possible. Each alternative contains open water areas which will be subject to impact. Wetland and stream impacts for each alternative are previously discussed.

Minimization – The alternative corridors presented were developed in part to demonstrate minimization of wetland and stream impacts. Preliminary jurisdictional determinations within these corridors will be used to further minimize stream impacts during the design phase of this project.

Mitigation - Compensatory mitigation is not proposed for this project due to the limited nature of project impacts. However, utilization of BMPs is recommended in an effort to minimize impacts, including avoiding placing staging areas within wetlands. Temporary impacts associated with the construction activities could be mitigated by replanting disturbed areas with native species and removal of temporary fill material upon project completion.

PROTECTED SPECIES

FEDERAL PROTECTED SPECIES

Species with the federal classification of Endangered (E) or Threatened (T), or officially proposed (P) for such listing, are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The following federal protected species are listed for Randolph County (current list dated May 31, 2002):

TABLE 4
FEDERALLY PROTECTED SPECIES

Common Name	Scientific Name	Status
Cape Fear shiner	*Notropis mekistocholas*	E
Schweinitz's sunflower	*Helianthus schweinitzii*	E

Cape Fear shiner - The Cape Fear shiner is a small, moderately stocky minnow that is pale silvery yellow with a black band along the sides and the moderate-sized eyes are located on the sides of the head (FWS 1988). This species is distinguished from all other *Notropis* by having a coiled alimentary tract that is visible through the wall of the belly (Rohde *et al.* 1994). Food items probably include bottom detritus, diatoms, and other periphytes (FWS 1988). Habitat of the Cape Fear shiner is generally slow pools, riffles, and runs over gravel, cobble, and boulders (FWS 1988). Little is known about the Cape Fear shiner's life history. Present distribution (November 1988) is limited to the Cape Fear River Basin including portions of Randolph, Chatham, Lee, Moore, and Harnett Counties (FWS 1988). As of December 10, 1993, the N.C. Wildlife Resources Commission has designated Critical Habitat for this species in the Deep River, from its confluence with the Haw River (on the Chatham/Lee County line) to the NC Route 42 bridge (also on the Chatham/Lee County line).

BIOLOGICAL CONCLUSION: NO EFFECT

The Cape Fear Shiner is endemic to the Cape Fear River Basin which includes parts of eastern Randolph County. Caraway Creek is located in the Yadkin/Pee-Dee River Basin in western Randolph County. Streams located outside of the Cape Fear River Basin are outside of the native range for this endemic shiner. In addition, the reach of Caraway Creek present in the project study area is heavily entrenched and contains a high sediment load from the surrounding agricultural areas. Substrates present contain a high percentage of silt, sand, and clay mixed in with the gravel and cobble. Rivers and streams that exist under these degraded conditions do not provide suitable habitat for the Cape Fear shiner. NHP records do not indicate any occurrences of this species within this subbasin of the Yadkin/Pee-Dee River Basin. Therefore, construction of the proposed project will not affect the Cape Fear Shiner.

Schweinitz's sunflower - Schweinitz's sunflower is an erect, unbranched, rhizomatous, perennial herb that grows to approximately 6 ft (1.8 m) in height. The stem may be purple, usually pubescent, but sometimes nearly smooth. Leaves are sessile, opposite on the lower stem but alternate above; in shape they are lanceolate and average 5 to 10 times as long as wide. The leaves are rather thick and stiff, with a few small serrations. The upper leaf surface is rough and the lower surface is usually pubescent with soft white hairs. Schweinitz's sunflower blooms from late August to frost; the yellow flower heads are about

0.6 inch in diameter. The current range of this species is within 60 miles (10 km) 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).

BIOLOGICAL CONCLUSION: NO EFFECT

The roadside borders to the east of SR 1318 and the open disturbed areas adjacent to the intersection of SR 1318 and SR 1331 provide potentially suitable habitat for Schweinitz's sunflower. These areas occur on dry, rocky soils similar to those on which this species is known to occur. In addition, these habitats show evidence of infrequent mowing that maintains the open nature of the habitat.

Potential habitat identified for Schweinitz's sunflower within the project study area was surveyed for the presence of this species on September 20, 2000. A reference population located approximately 2.8 miles (4.5 km) north of the project study area was visited immediately prior to conducting the survey to verify the flowering status of this species. The survey of the project study area consisted of a systematic search of all potential habitat and identification of all yellow-rayed flowers encountered belonging to the family Asteraceae. No individuals of Schweinitz's sunflower were encountered within the project study area. Individuals of one other species of sunflower, Jerusalem artichoke (*Helianthus tuberosus*), were documented along with such other yellow-rayed flowers as beggar ticks (*Bidens frondosa* and *Bidens aristosa*) and verbesina (*Verbesina alternifolia* and *Verbesina occidentalis*); however, none of these species are federally listed or protected. Based on the apparent absence of Schweinitz's sunflower in the project study area indicated by the systematic survey of potentially suitable habitat present, the proposed project will not affect Schweinitz's sunflower.

FEDERAL SPECIES OF CONCERN

The February 27, 2001 FWS list also includes a category of species designated as "Federal species of concern" (FSC). The FSC designation provides no federal protection under the ESA for the species listed. The presence of potential suitable habitat (Amoroso 1999, LeGrand and Hall 1999) within the project study area has been evaluated for the following FSC species listed for Randolph County (see Table 5):

TABLE 5
FEDERAL SPECIES OF CONCERN

Common Name	Scientific Name	State Status	Potential Habitat
Carolina darter	*Etheostoma collis collis*	SC	Y
Carolina redhorse	*Moxostoma sp. 2*	SR	N
Brook floater	*Alasmidonta varicosa*	T (PE)	Y
Pee Dee crayfish ostracod*	*Dactlocythere peedeensis*	--	N
Atlantic pigtoe	*Fusconaia masoni*	T (PE)	Y
Carolina creekshell	*Villosa vaughaniana*	T	Y

NOTE: T-Threatened; SC-Special Concern; SR-Significantly Rare; PE-Proposed Endangered.

* This species does not have a state status assigned for it.

NHP files do not document any FSC occurrences within the project study area. NHP files do document the occurrence of the brook floater, Atlantic pigtoe and Carolina creekshell approximately 3 miles (4.8 km) upstream of the project study area in Caraway Creek at SR 1412. Three additional state listed mussel species were also documented at this location: squawfoot (*Strophitus undulatus*), notched rainbow (*Villosa constricta*), and eastern creekshell (*Villosa delumbis*). No additional FSC occurrences have been documented within 3.0 miles (4.8 km) of the project study area. No individuals of these species were found during in-stream aquatic fauna sampling and streambank surveys. The reach of Caraway Creek present in the project study area is heavily entrenched and contains a high sediment load from the surrounding agricultural areas; these mussel species area not expected to occur within the proposed project right of way.

STATE PROTECTED SPECIES

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), or Special Concern (SC) 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.*).

NHP records do not document the occurrence of any state-listed species within the project study area. Records from the project vicinity include only the previously discussed mussel species found in Caraway Creek at SR 1412. No other state-listed aquatic or terrestrial species with the designations E, T, or SC have been documented within 3.0 miles (4.8 km) of the study project area.

The North Carolina Wildlife Resource Commission requests that no in-water work be performed between April 1 and June 15 to protect sunfish egg and fry stages (see letter in Appendix). The NCDOT will observe this moratorium. The NCDOT will also be replacing the existing bridge in-place, with traffic being maintained off-site during construction, which should also help to minimize potential impact to the sunfish population.

VIII. CULTURAL RESOURCES

COMPLIANCE GUIDELINES

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

HISTORIC ARCHITECTURE

A field survey of the area of potential effect (APE) was conducted by Montell Irvin and Lisa Warlick of Ramey Kemp & Associates, Inc. on May 17, 2000. Photographs of all structures within the APE were submitted to Ms. Mary Pope Furr of the NCDOT in a meeting on May 25, 2000. In-house NCDOT Architectural Historian staff surveyed and evaluated one structure within the APE, a wood frame house located on the east side of SR 1318 approximately 450 ft (137 m) south of SR 1331, that appeared to be greater than 50 years old. All of the photographs as well as the information pertaining to the old structure were reviewed by the NCDOT, FHWA, and State Historic Preservation Office (SHPO) on

November 16, 2000 and it was determined that there are no structures within the APE that are in or qualify for listing in the National Register of Historic Places. A copy of the SHPO concurrence form is provided in the Appendix of this report.

ARCHAEOLOGY

Based on comments received in a Memorandum dated July 20, 2000 (see Appendix of this report), the SHPO noted that a previously recorded Early Archaic and Woodland period archaeological site (31RD550) is located in the floodplain west of Caraway Creek and south of SR 1331 and further expressed concern that it may be affected by this project. The SHPO recommended that this site be relocated and tested to determine its National Register eligibility prior to any construction activities. The SHPO further recommended that the archaeological investigations include deep testing due to the likelihood of buried cultural deposits.

An Archaeological Survey Report was completed by the NCDOT and submitted to the SHPO in February 2002. The archaeological investigations detailed in that report did not identify any portion of the above mentioned archaeological site (31RD550) within the project's Area of Potential Effect (APE). However, during the archaeological investigations, another archaeological site (31RD555/555**) was identified. The recommendations of the report state:

"Through the application of 36 CFR 60.4 criteria {a-d}, the historical component to site 31RD555/555** is not recommended as eligible for inclusion in the National Register of Historic Places as outlined above. No further work is recommended. Through the application of 36 CFR 60.4 criteria {d}, the pre-Columbian component to site 31RD555/555** is recommended as eligible for inclusion in the NRHP for its potential to yield information important in our understanding of the pre-Columbian history of North Carolina, as outlined above.

After application of the criteria of adverse effect per 36 CFR 800.5, it is proposed here that the bridge improvement project, as currently designed, will not adversely impact the pre-Columbian component of 31RD555/555**, and a finding of no adverse effect to this cultural resource is thus considered appropriate. No further archaeological work is recommended. Should the design of the proposed bridge improvement project be changed, altered, or modified, additional consultation with the North Carolina Office of State Archaeology should be initiated."

In a Memorandum dated July 16, 2002 (see Appendix of this report) the SHPO stated that it concurred with the finding of eligibility for site 31RD555/555**. However, the SHPO further stated that they will not concur with a finding of no adverse effect to the site until they are able to review the project's final design plans.

NCDOT will transmit final roadway design plans to the SHPO for their concurrence with the no effect determination to complete compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Should the SHPO fail to concur with a finding of no adverse effect after reviewing the project's final design plans, additional consultation with the SHPO will be initiated prior to any construction activities associated with the project.

IX. ENVIRONMENTAL EFFECTS

Replacement of Bridge No. 363 will not have an adverse effect on the quality of the human or natural environment. The project should have an overall positive impact due to the improvement of existing poor bridge conditions.

This project will not have an adverse effect on any prime, important or unique farmlands; therefore it is exempt from the Farmland Protection Policy Act.

No publicly owned parks or recreational facilities, wildlife and waterfowl refuges, or historic sites of national, state or local significance in the immediate vicinity of the project will be impacted.

No adverse effects to air quality are expected to result from this project. This project 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. Since the project is located in an attainment area, 40 CFR Part 51 is not applicable. If vegetation or wood debris is disposed of by open burning, it shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for air quality, and no additional reports are required.

Ambient noise levels may increase during the construction of this project; however this increase will be only temporary and usually confined to daylight hours. There should be no notable change in traffic volumes after this project is complete. Therefore, this project will have no adverse effect on existing noise levels. Noise receptors in the project area will not be impacted by this project. This evaluation completes the assessment requirements for highway noise set forth in 23 CFR Part 772. No additional reports are required.

No adverse effect on the overall public is expected. There will be some inconvenience to local travel due to the closure of SR 1331. The Randolph County Emergency Services Department was contacted and indicated that this project will not significantly impact their response time.

Randolph County is a participant in the National Flood Insurance Regular Program. The project is not located in a Detailed Study Area, but is located within a Zone A floodplain. There are currently no insurable structures upstream of the project that are being flooded. Since the proposed replacement structure is an in-kind replacement, it is anticipated that this project will not have any adverse effect or impact on the existing floodplain or adjacent properties in the area.

This project should have no impact to any existing underground storage tanks or hazardous waste sites.

Based on the assessment of the existing human and natural environment, it is concluded that no adverse environmental effect will result from the replacement of Bridge No. 363.

X. REFERENCES

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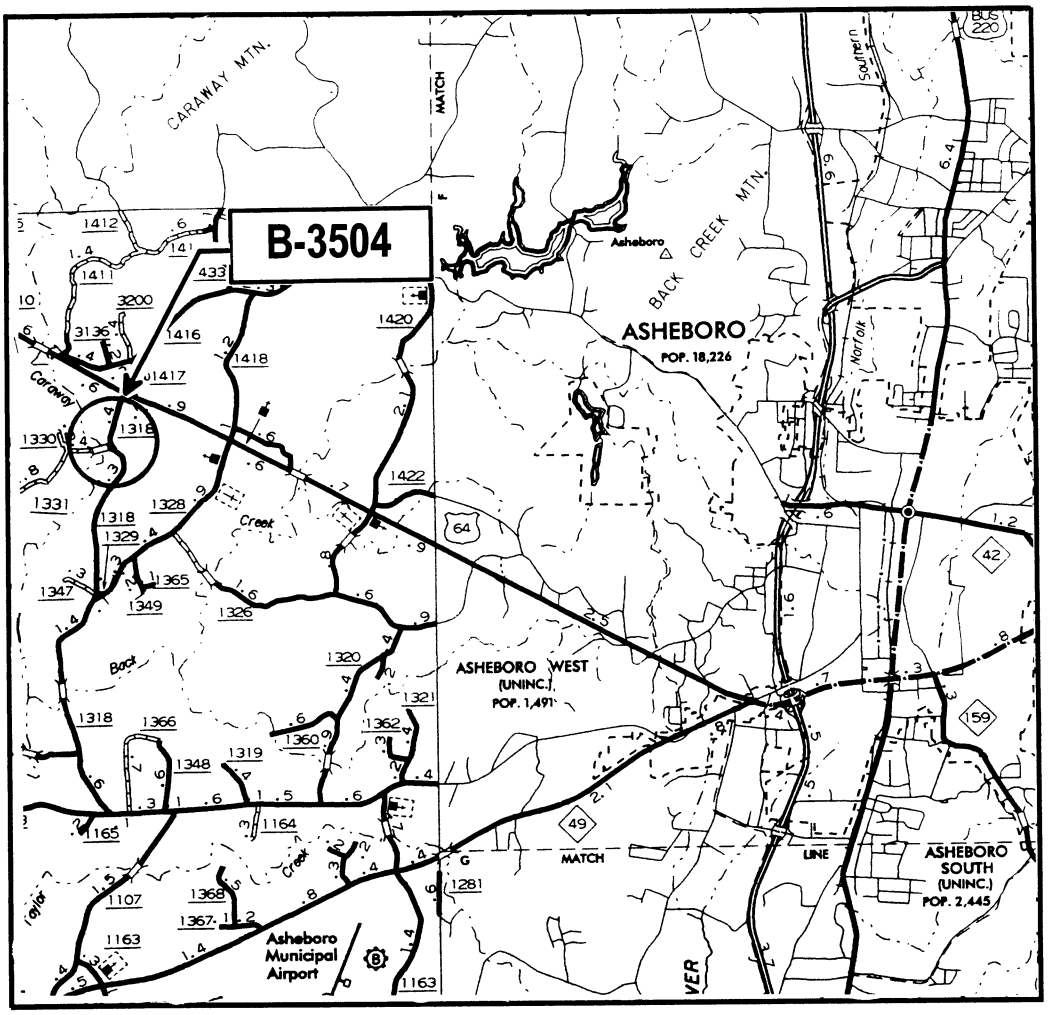
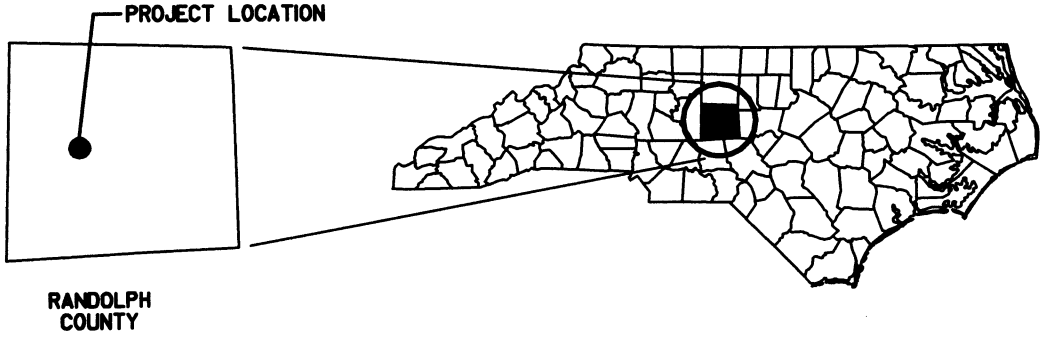
FIGURES



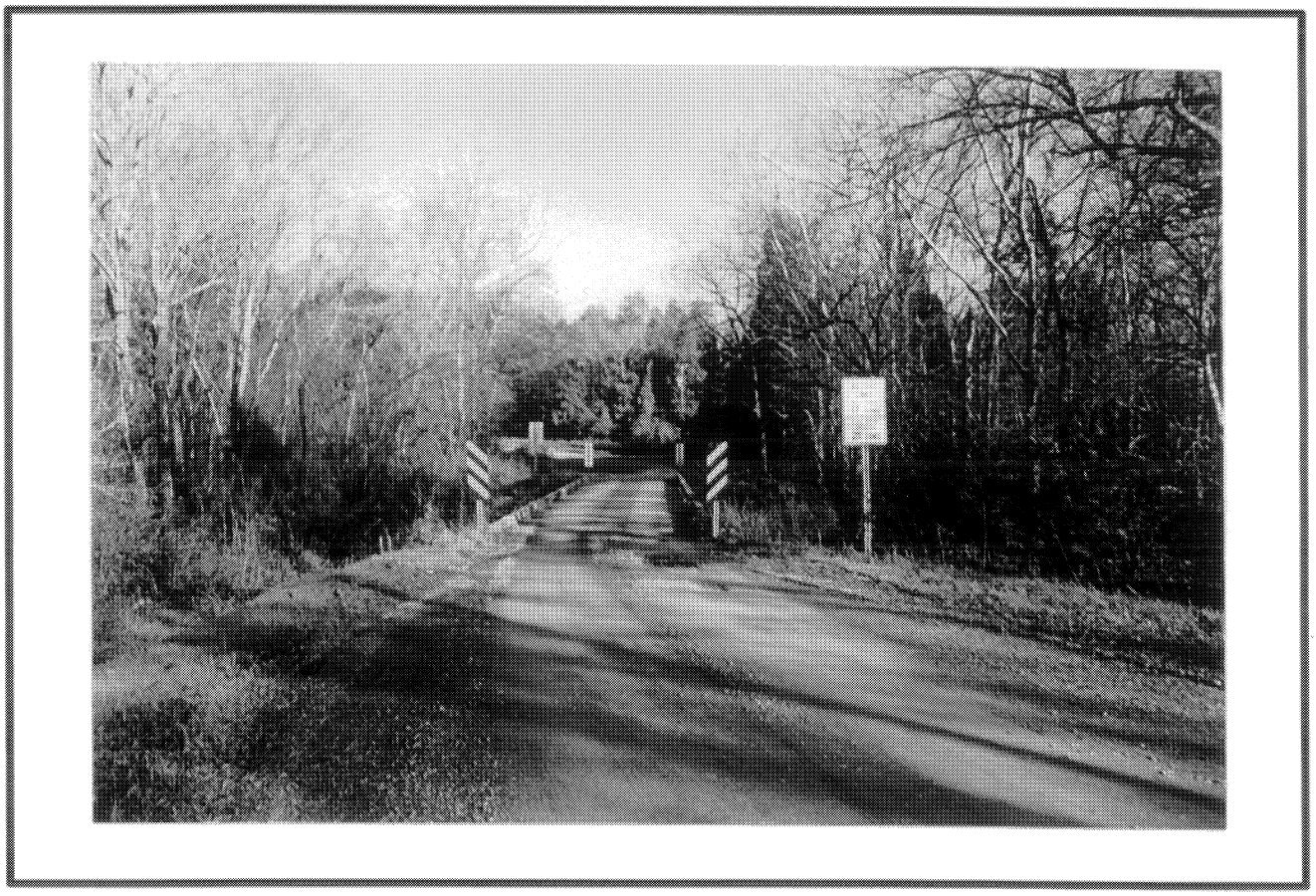


NOT TO SCALE

North Carolina Department of Transportation

Project Development & Environmental Analysis Branch

FIGURE 1
AREA LOCATION MAP
BRIDGE NO. 363
ON SR 1331
OVER CARAWAY CREEK
RANDOLPH COUNTY, NORTH CAROLINA
TIP PROJECT B-3504



SR 1331 LOOKING EAST AT BRIDGE #363

SR 1331 LOOKING WEST AT BRIDGE #363

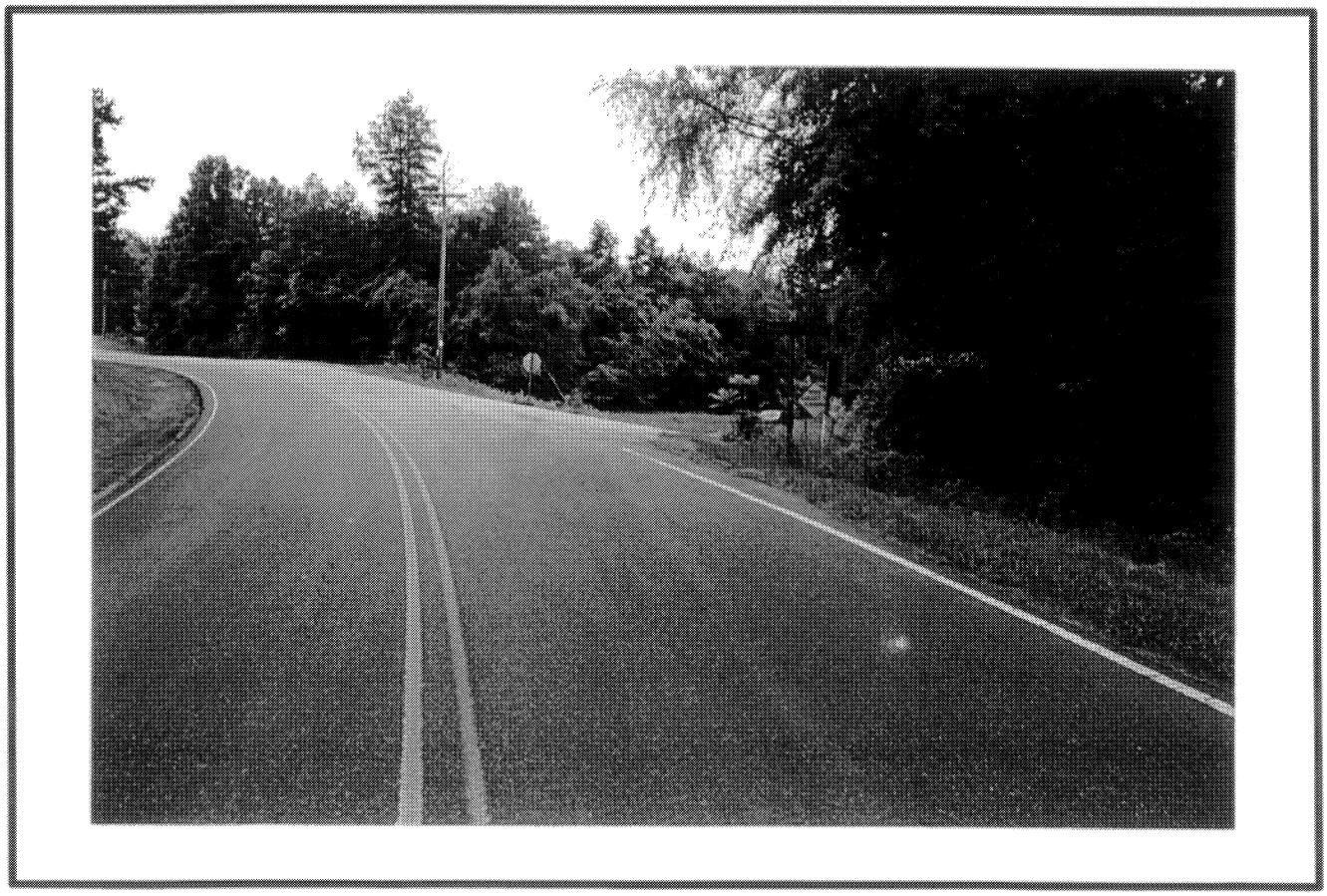
FIGURE 2

BRIDGE #363 VIEWED FROM SOUTH (DOWNSTREAM) SIDE LOOKING WEST

BRIDGE #363 VIEWED FROM SOUTH (DOWNSTREAM) SIDE LOOKING EAST

FIGURE 3

ON SR 1318 LOOKING SOUTHWEST AT SR 1331 TOWARD BRIDGE #363



ON SR 1318 LOOKING SOUTH AT INTERSECTION OF SR 1331

FIGURE 4

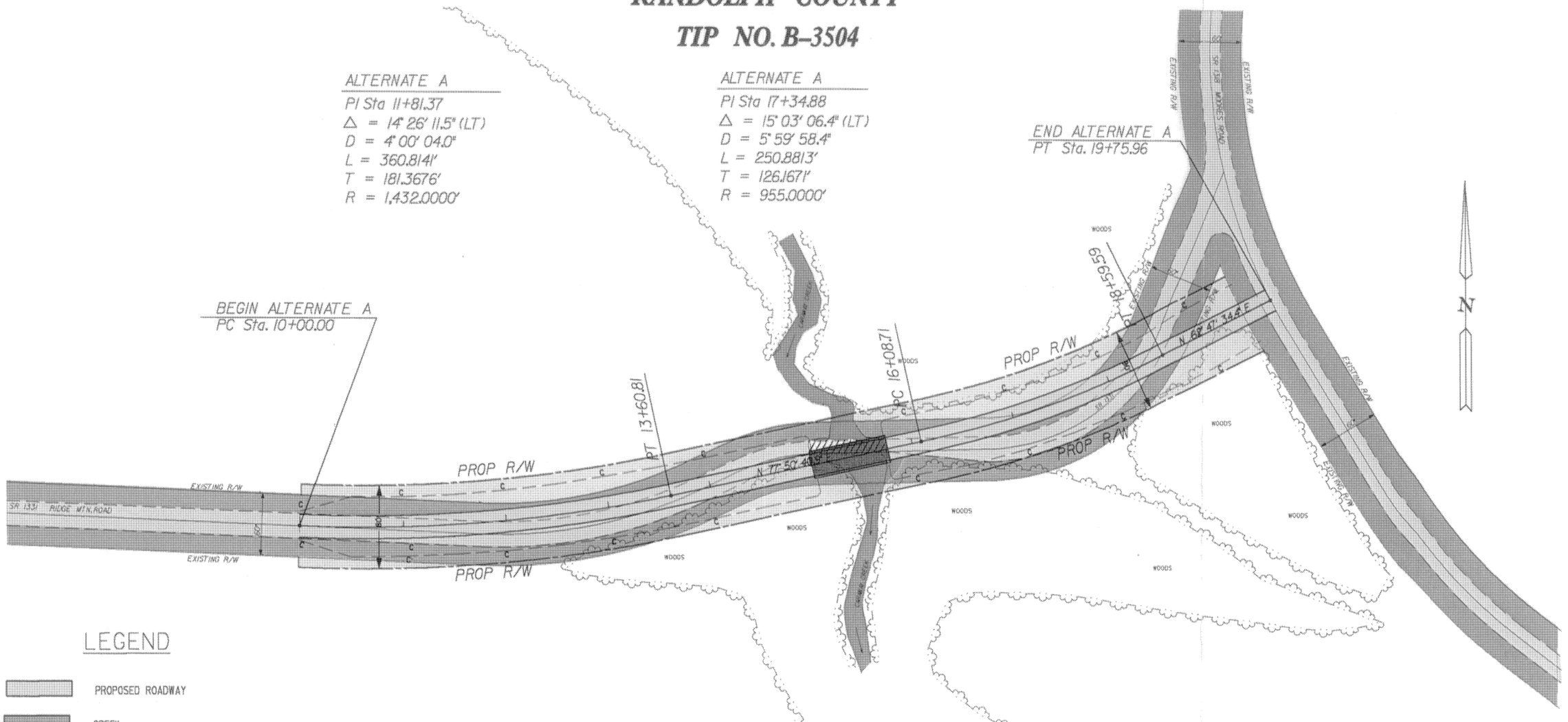
PROJECT ALTERNATIVE A
REPLACEMENT OF BRIDGE NUMBER 363
ON SR 1331 OVER CARAWAY CREEK
RANDOLPH COUNTY
TIP NO. B-3504

ALTERNATE A
PI Sta 11+81.37
Δ = 14° 26' 11.5" (LT)
D = 4° 00' 04.0"
L = 360.8141'
T = 181.3676'
R = 1,432.0000'

ALTERNATE A
PI Sta 17+34.88
Δ = 15° 03' 06.4" (LT)
D = 5° 59' 58.4"
L = 250.8813'
T = 126.1671'
R = 955.0000'

END ALTERNATE A
PT Sta. 19+75.96

BEGIN ALTERNATE A
PC Sta. 10+00.00



LEGEND

- PROPOSED ROADWAY
- CREEK
- EXISTING ROADWAY
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY

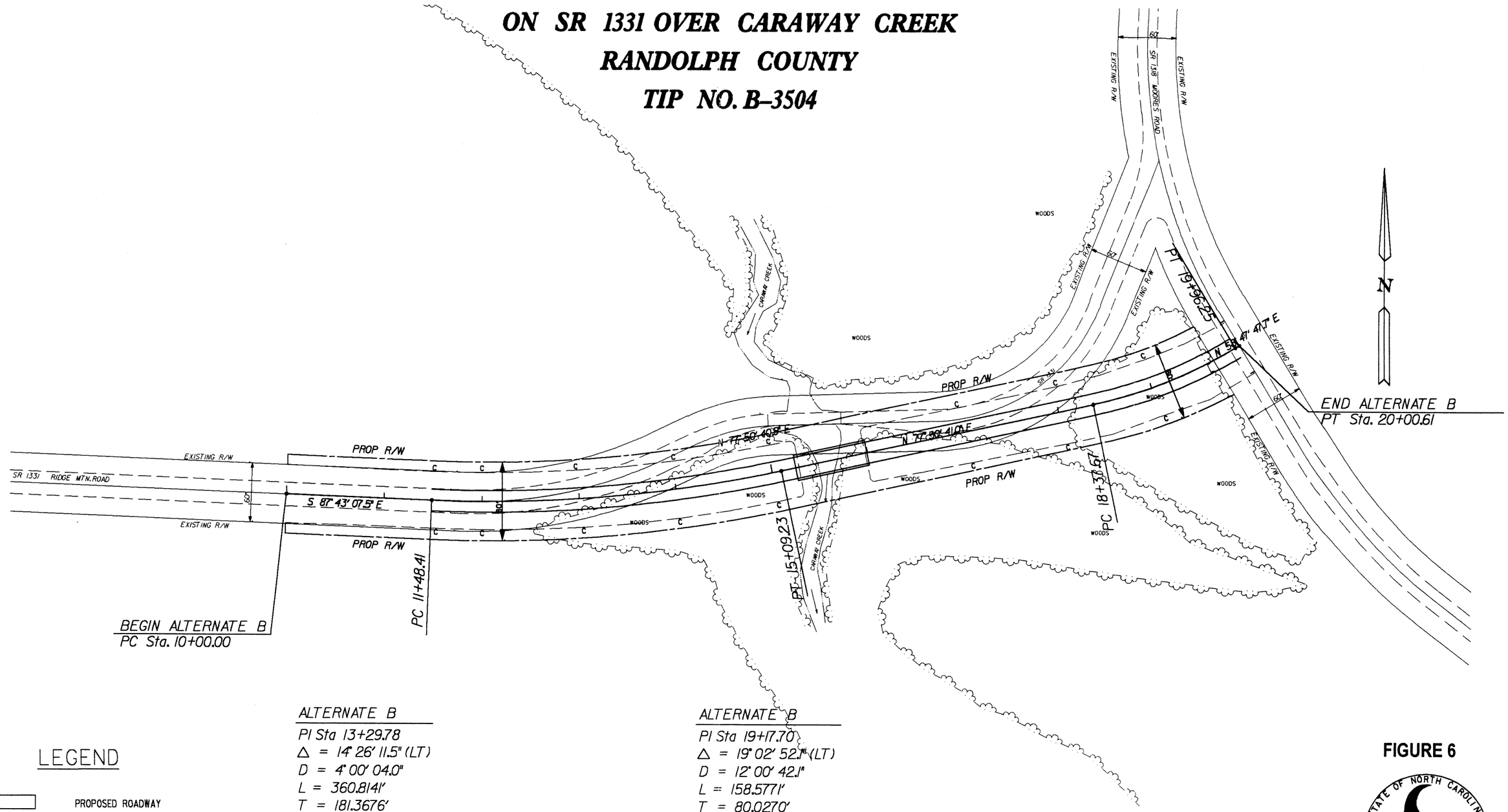
100 0 FEET 100 200
30.5 0 METERS 30.5 61
SCALE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FIGURE 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROJECT ALTERNATIVE B
REPLACEMENT OF BRIDGE NUMBER 363
ON SR 1331 OVER CARAWAY CREEK
RANDOLPH COUNTY
TIP NO. B-3504



ALTERNATE B
PI Sta 13+29.78
△ = 14° 26' 11.5" (LT)
D = 4° 00' 04.0"
L = 360.8141'
T = 181.3676'
R = 1,432.0000'

ALTERNATE B
PI Sta 19+17.70
△ = 19° 02' 52.1" (LT)
D = 12° 00' 42.1"
L = 158.5771'
T = 80.0270'
R = 477.0000'

LEGEND

- PROPOSED ROADWAY
- PROPOSED RIGHT OF WAY
- CONSTRUCTION LIMITS

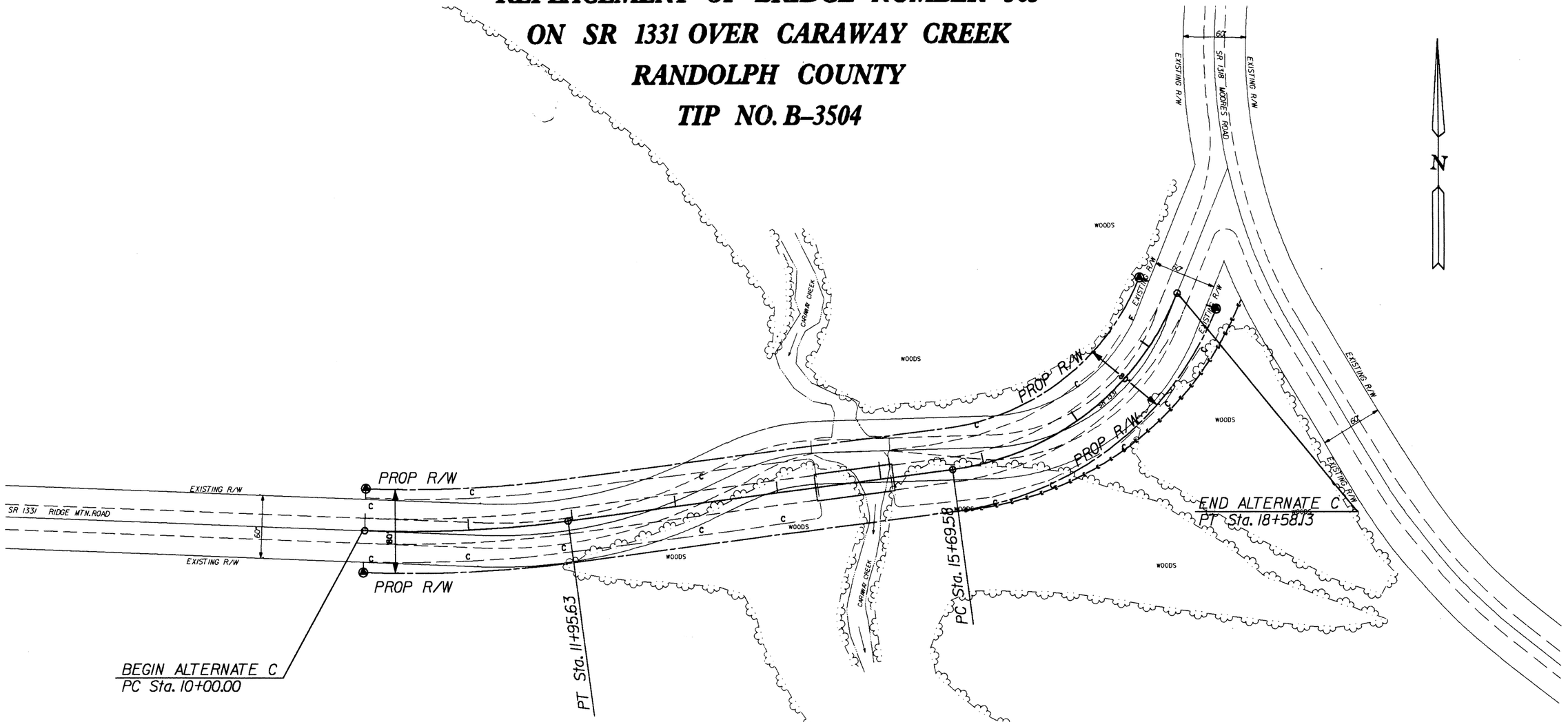
100 0 FEET 100 200
30.5 0 METERS 30.5 61
SCALE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FIGURE 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROJECT ALTERNATIVE C
REPLACEMENT OF BRIDGE NUMBER 363
ON SR 1331 OVER CARAWAY CREEK
RANDOLPH COUNTY
TIP NO. B-3504



LEGEND

- PROPOSED ROADWAY
- PROPOSED RIGHT OF WAY
- CONSTRUCTION LIMITS

ALTERNATE C

PI Sta 10+98.05
Δ = 9° 46' 50.6" (LT)
D = 4° 59' 58.7"
L = 195.6290'
T = 98.0527'
R = 1,146.0000'

ALTERNATE C

PI Sta 17+28.98
Δ = 60° 33' 35.5" (LT)
D = 20° 59' 14.9"
L = 288.5526'
T = 159.4001'
R = 273.0000'

SCALE
100 0 FEET 100 200
30.5 0 METERS 30.5 61

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FIGURE 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PROJECT ALTERNATIVE D
REPLACEMENT OF BRIDGE NUMBER 363
ON SR 1331 OVER CARAWAY CREEK
RANDOLPH COUNTY
TIP NO. B-3504

ALTERNATE D
PI Sta 11+13.30
Δ = 28° 48' 59.6" (LT)
D = 12° 59' 32.1"
L = 221.7981'
T = 113.2974'
R = 441.0000'

ALTERNATE D
PI Sta 12+84.64
Δ = 24° 47' 03.9" (RT)
D = 20° 02' 00.6"
L = 123.7149'
T = 62.8404'
R = 286.0000'

ALTERNATE D
PI Sta 16+61.94
Δ = 66° 18' 30.8" (LT)
D = 30° 09' 20.4"
L = 219.8875'
T = 124.1161'
R = 190.0000'

END ALTERNATE D
PT Sta. 17+57.71

BEGIN ALTERNATE D
PC Sta. 10+00.00

PRC Sta. 12+21.80

PT Sta. 13+45.51

PC Sta. 15+37.82

EXISTING R/W
SR 1331 RIDGE MTN. ROAD
55'
EXISTING R/W

PROP R/W
PROP R/W
PROP R/W
PROP R/W

EXISTING R/W
SR 1318 MOORES ROAD
EXISTING R/W
60'
EXISTING R/W
EXISTING R/W
60'
EXISTING R/W

WOODS
WOODS
WOODS
WOODS
WOODS
WOODS

CARAWAY CREEK
CARAWAY CREEK

N

LEGEND

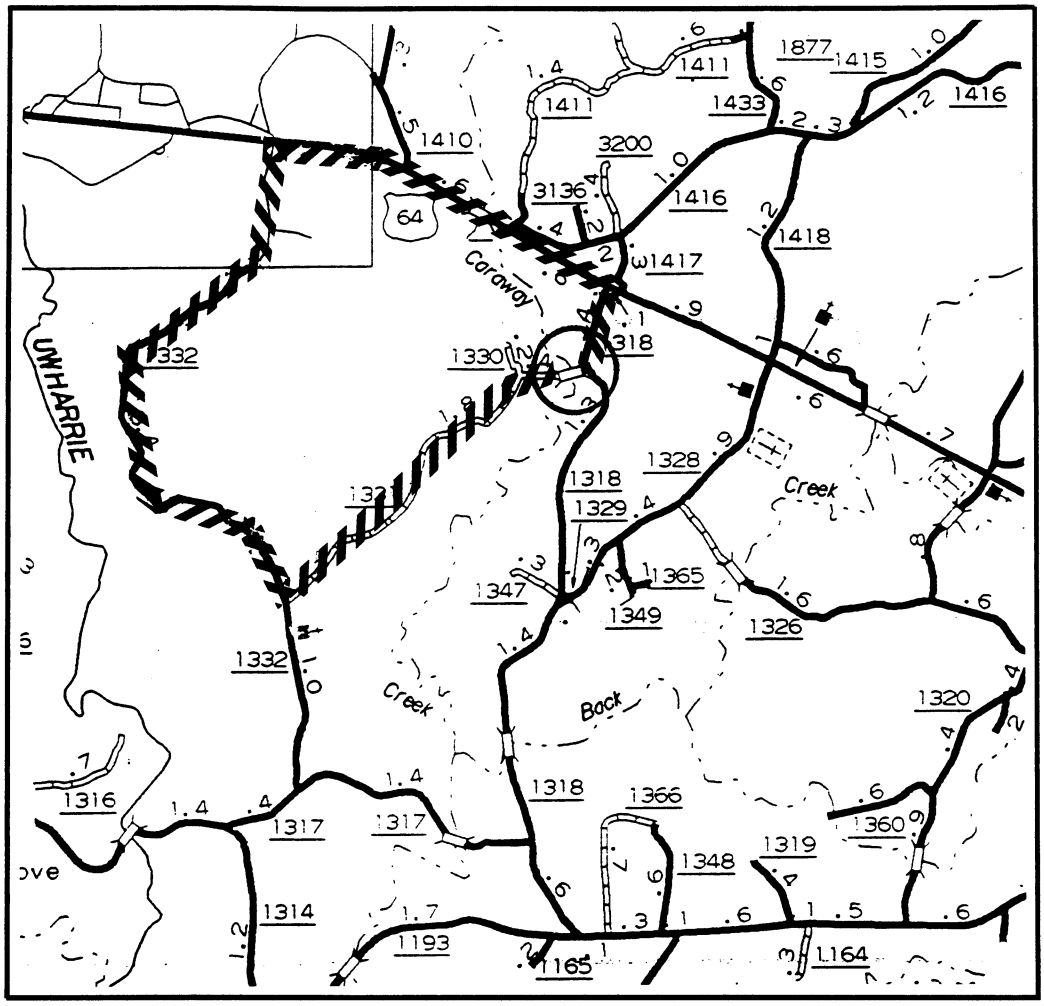
PROPOSED ROADWAY
PROPOSED RIGHT OF WAY
CONSTRUCTION LIMITS

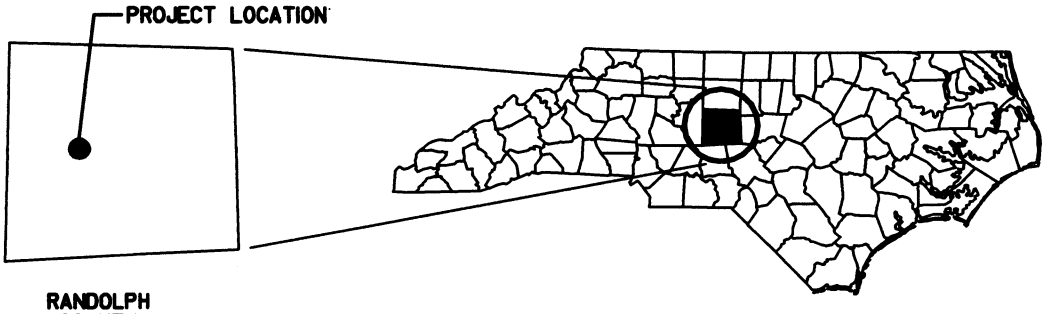
100 0 FEET 100 200
30.5 0 METERS 30.5 61
SCALE

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FIGURE 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION





RANDOLPH COUNTY

SCALE IN MILES

1 0 1

North Carolina Department of Transportation

Project Development & Environmental Analysis Branch

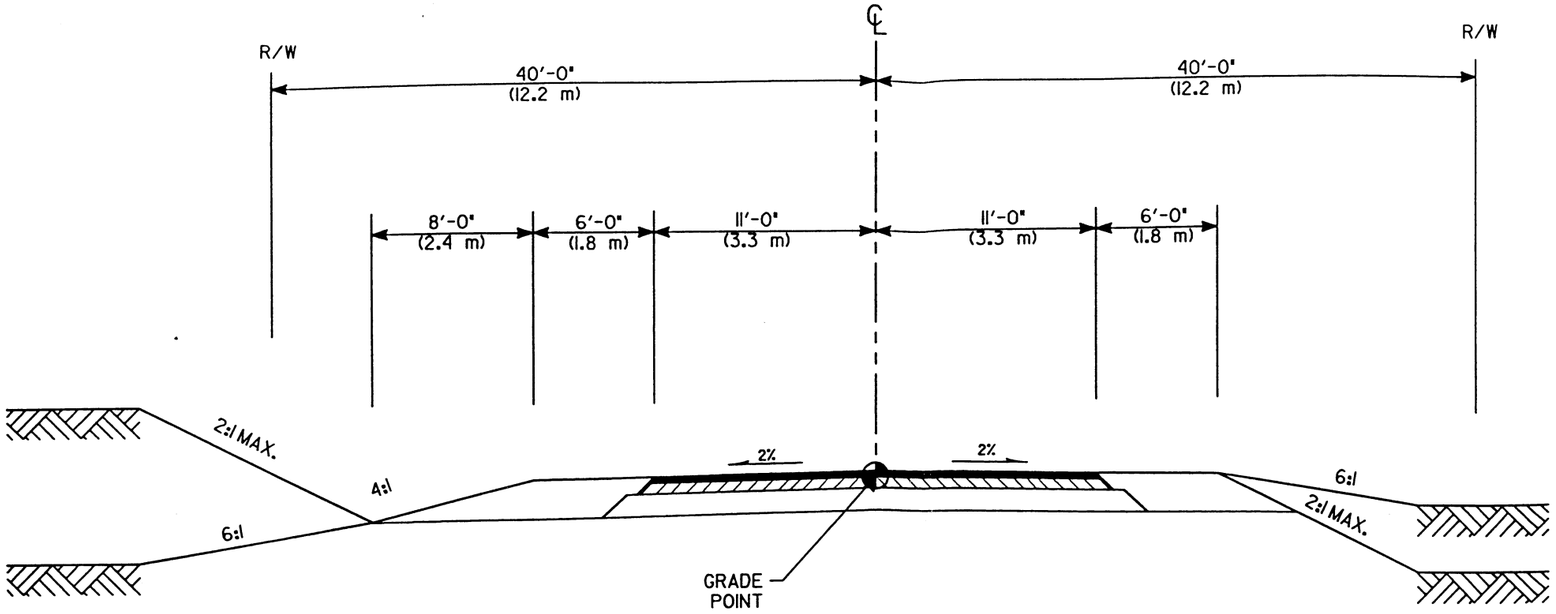
OFF-SITE DETOUR ROUTE

FIGURE 9

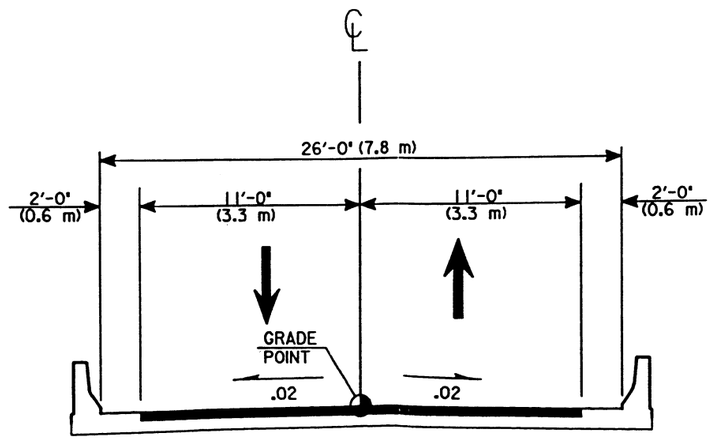
PROJ. REFERENCE NO.	SHEET NO.
B-3504	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



TYPICAL ROADWAY CROSS SECTION



TYPICAL BRIDGE CROSS SECTION

FIGURE 10

APPENDIX

Michael F. Easley
Governor

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

Kerr T. Stevens
Division of Water Quality

February 26, 2001

MEMORANDUM

To: William D. Gilmore, P.E., Manager
NCDOT, Project Development & Environmental Analysis

Through: John Dorney, NC Division of Water Quality

From: Cynthia P. Van Der Wiele, NCDOT Coordinator

Subject: Scoping comments on the proposed replacement of Bridge No. 363 on SR 1331over Caraway Creek, Randolph County, Federal Aid Project No. BRZ-1331(4), State Project No. 8.2572301, TIP Project No. B-3504.

Scoping comments on the proposed replacement of Bridge No. 162 on SR 2832 over North Buffalo Creek in Guilford County, Federal Aid Project No. BRSTP – 2832(1), State Project No. 8.2494301, TIP Project B-3464.

This memo is in reference to your correspondence dated February 20, 2001, in which you requested scoping comments for the above project.

TIP Project B-3504 over Caraway Creek, stream index number 13-2-3, is located in the Yadkin-Pee Dee River Basin (hydrologic unit 030709); the stream is classified as C waters.

TIP Project B-3464 over North Buffalo Creek, stream number 16-11-14-1, is located in the Cape Fear River Basin (hydrologic unit 030602); the stream is classified as C Nutrient Sensitive Waters.

The NC Division of Water Quality prefers that both bridge projects be replaced in-place with an off-site detour. We agree that both projects qualify for the Categorical Exclusion. NCDWQ requests that NCDOT consider the following environmental issues for the proposed projects:

A. DWQ prefers replacement of bridges with bridges. However, if the new structure is to be a culvert, it should be countersunk to allow unimpeded fish and other aquatic organisms passage through the crossing. Please be aware that floodplain culverts are required under Nationwide 14.

B. The document should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping.

C. There should be a discussion on mitigation plans for unavoidable impacts. If mitigation is required, it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.

North Carolina Division of Water Quality, 401 Wetlands Certification Unit,
1650 Mail Service Center, Raleigh, NC 27699-1650 (Mailing Address)
2321 Crabtree Blvd., Raleigh, NC 27604-2260 (Location)
919-733-1786 (phone), 919-733-6893 (fax), http://h2o.enr.state.nc.us/ncwetlands/

D. If a detour proves necessary, remediation measures in accordance with the NCDWQ requirements for General 401 Certification 2726/Nationwide Permit No. 33 (Temporary Construction, Access and Dewatering) must be followed.

E. If applicable, DOT should not install the bridge bents in the creek, to the maximum extent practicable.

F. Wetland and stream impacts should be avoided (including sediment and erosion control structures/measures) to the maximum extent practical. If this is not possible, alternatives that minimize wetland impacts should be chosen. Mitigation for unavoidable impacts will be required by DWQ for impacts to wetlands in excess of one acre and/or to streams in excess of 150 linear feet.

G. Borrow/waste areas should not be located in wetlands. It is likely that compensatory mitigation will be required if wetlands are impacted by waste or borrow.

H. If foundation test borings are necessary, it should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No. 6 for Survey Activities.

I. In accordance with the NCDWQ Wetlands Rules {15A NCAC 2H.0506(b)(6)}, mitigation will be required for impacts of greater than 150 linear feet to any single perennial stream. In the event that mitigation becomes required, the mitigation plan should be designed to replace appropriate lost functions and values. In accordance with the NCDWQ Wetlands Rules {15A NCAC 2H.0506 (h)(3)}, the Wetland Restoration Program may be available for use as stream mitigation.

J. Sediment and erosion control measures should not be placed in wetlands.

K. The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management. More specifically, stormwater should not be permitted to discharge directly into the creek. Instead, stormwater should be designed to drain to a properly designed stormwater detention facility/apparatus.

L. While the use of National Wetland Inventory (NWI) maps and soil surveys is a useful office tool, their inherent inaccuracies require that qualified personnel perform onsite wetland delineations prior to permit approval.

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

Pc: Eric Alsmeyer, USACE Raleigh Field Office
Tom McCartney, USFWS Raleigh Field Office
David Cox, NCWRC
File Copy
Central Files

TIP # B-3504 Federal Aid # BRZ-1331(4) County Randolph

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

Brief Project Description Bridge Replacement over Caraway Creek on SR-1331 (Ridges Mt. Road)

On 16 Nov 2000 representatives of the

- ✓ North Carolina Department of Transportation (NCDOT)
- ✓ Federal Highway Administration (FHwA)
- ✓ North Carolina State Historic Preservation Office (SHPO)
- ____ Other ____

reviewed the subject project at:

- ____ A scoping meeting
- ✓ Historic architectural resources photograph review session/consultation
- ____ Other ____

All parties present agreed

- ____ there are no properties over fifty years old within the project's area of potential effect.
- ✓ 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.
- ✓ 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 #1 are considered not eligible for the National Register and no further evaluation of them is necessary.
- 1 there are no National Register-listed properties within the project's area of potential effect.

Signed:

Representative, NCDOT — Date 11/16/00

FHwA, for the Division Administrator, or other Federal Agency — Date 11/16/00

Representative, SHPO — Date 11/16/00

for State Historic Preservation Officer — Date 11/16/00

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

Dickens

September 14, 2000

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

Dear Mr. Gilmore:

Subject: Replacement of Bridge No. 363 on S.R. 1331 over Caraway Creek, Randolph County; Federal Aid Project BRZ-1331(4), State Project No. 8.2572301, TIP Project B-3504

This is to inform you that the North Carolina State Conservancy Department and Piedmont Land Conservancy are in the process of buying up the land on Ridges Mountain that is located approximately one mile west of the above-referenced Bridge No. 363.

The land on Ridges Mountain is to be used as a park. Therefore, you may want to consider the latest developments referenced above effecting Bridge No. 363 and S.R. 1331 before you finalize your plans as outlined in your letter dated August 28, 2000.

Your proposed plan to replace Bridge No. 363 on a new location adjacent to, south (or north) of the existing location, is the best proposal. Also, this proposal should include finishing paving S.R. 1331 because of the recent sharp increase in traffic because of the increase of public interest in Ridges Mountain. **The mountain has been advertised on two TV channels: CNBC (business) and CBS (news) over the past year.** It is not unusual for me to visit my place on the southern end of Ridges Mountain and find 10-12 cars parked on my land (uninvited) with out-of-state license tags on them.

If I can be of any help to you in land right-of-way acquisitions, etc., please do not hesitate to write me at 2223 Canterbury Drive, Burlington, North Carolina 27215 or call me at (336) 584-9650.

Sincerely,

Ben F. Crotts

Ben F. Crotts

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

TO: Missy Dickens, PE
Project Engineer, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: August 8, 2000

SUBJECT: NCDOT Bridge Replacements in Guilford, Randolph, and Scotland counties of North Carolina. TIP Nos. B-3464, B-3504, B-3515 and B-3516.

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 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

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

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 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-3515 – Scotland County – Bridge No. 46 over Big Shoe Heel Creek. Big Shoe Heel Creek is fairly small at this crossing and likely does not support anadromous fish. There is a good fishery for sunfish. We request that no in-water work be performed between April 1 and June 15 to protect sunfish spawning. We request that bridge No. 46 be replaced with a bridge at its existing location with road closure. If any additional widening is necessary, it should be done on the North or upstream side of the existing bridge. We are not aware of any threatened of endangered species in the project vicinity.

2. B-3516 – Scotland County – Bridge No. 59 over Gum Swamp Creek. Gum Swamp Creek is small at this crossing and likely does not support anadromous fish. However, we do request that no in-water work be performed between April 1 and June 15 to protect sunfish spawning. We request that bridge No. 59 be replaced with a bridge at its existing location wirh road closure. If additional widening is necessary, it should be done to the Southeast or downstream side of the existing bridge. We are not aware of any threatened of endangered species in the project vicinity.

3. B-3504 – Randolph County – Bridge No. 363 over Caraway Creek. Caraway Creek is a medium sized Piedmont stream with good water quality and good aquatic species diversity. We request that no in-water work be performed between April 1 and June 15 to protect sunfish egg and fry stages from sedimentation. We also request that High Quality Water Sedimentation and Erosion Control Measures be used to protect freshwater mussels in the

project area. At this site, we have found the following state listed mussels, Atlantic pigtoe, Carolina creekshell, Brook floater, and creeper.

4. B-3464 – Guilford County – Bridge No. 162 over North Buffalo Creek. We have no specific concerns at this site.

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

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

United States Department of the Interior

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

August 4, 2000

Mr. William D. Gilmore, P.E., Manager
NCDOT
Project Development and Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Gilmore:

Thank you for your June 28, 2000 request for information from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of proposed bridge replacements in Scotland, Randolph and Guilford Counties, North Carolina. This report provides scoping information and is provided in accordance with provisions of the Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667d) and Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). This report also serves as initial scoping comments to federal and state resource agencies for use in their permitting and/or certification processes for this project.

The North Carolina Department of Transportation (NCDOT) proposes to replace the following bridge structures:

1. B-3515 Bridge No. 46 on SR 1612 over Big Shoe Heel Creek, Scotland County;

2. B-3516 Bridge No. 59 on SR 1614 over Gum Swamp Creek, Scotland County;

3. B-3504 Bridge No. 363 on SR 1331 over Caraway Creek, Randolph County; and,

4. B-3464 Bridge No. 162 on SR 2832 over North Buffalo Creek, Guilford County.

The following recommendations are provided to assist you in your planning process and to facilitate a thorough and timely review of the project.

Generally, the Service recommends that wetland impacts be avoided and minimized to the maximum extent practical as outlined in Section 404 (b)(1) of the Clean Water Act Amendments of 1977. In regard to avoidance and minimization of impacts, we recommend that proposed highway projects be aligned along or adjacent to existing roadways, utility corridors, or previously developed areas in order to minimize habitat fragmentation and encroachment. Areas

exhibiting high biodiversity or ecological value important to the watershed and region should be avoided. Crossings of streams and associated wetland systems should use existing crossings and/or occur on a structure wherever feasible. Where bridging is not feasible, culvert structures that maintain natural water flows and hydraulic regimes without scouring, or impeding fish and wildlife passage, should be employed. Highway shoulder and median widths should be reduced through wetland areas. Roadway embankments and fill areas should be stabilized by using appropriate erosion control devices and techniques. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons.

The National Wetlands Inventory (NWI) maps of the Johns, McColl, Farmer, and Greensboro 7.5 Minute Quadrangles show wetland resources in the specific work areas. However, while the NWI maps are useful for providing an overview of a given area, they should not be relied upon in lieu of a detailed wetland delineation by trained personnel using an acceptable wetland classification methodology. Therefore, in addition to the above guidance, we recommend that the environmental documentation for this project include the following in sufficient detail to facilitate a thorough review of the action.

1. The extent and acreage of waters of the U.S., including wetlands, that are to be impacted by filling, dredging, clearing, ditching, or draining. Acres of wetland impact should be differentiated by habitat type based on the wetland classification scheme of the National Wetlands Inventory. Wetland boundaries should be determined by using the 1987 Corps of Engineers Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers.

2. If unavoidable wetland impacts are proposed, we recommend that every effort be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity, preferably via conservation easement, should be explored at the outset.

The document presents a number of scenarios for replacing each bridge, ranging from in-place to relocation, with on-site and off-site detours. The Service recommends that each bridge be replaced on the existing alignment with an off-site detour.

The enclosed lists identify the federally-listed endangered and threatened species, and Federal Species of Concern (FSC) that are known to occur in Scotland, Randolph, and Guilford Counties. The Service recommends that habitat requirements for the listed species be compared with the available habitats at the respective project sites. If suitable habitat is present within the action area of the project, biological surveys for the listed species should be performed. Environmental documentation that includes survey methodologies, results, and NCDOT's recommendations based on those results, should be provided to this office for review and comment.

FSC's are those plant and animal species for which the Service remains concerned, but further biological research and field study are needed to resolve the conservation status of these taxa. Although FSC's receive no statutory protection under the ESA, we encourage the NCDOT to be alert to their potential presence, and to make every reasonable effort to conserve them if found.

The North Carolina Natural Heritage Program should be contacted for information on species under state protection.

The Service appreciates the opportunity to comment on this project. Please continue to advise us during the progression of the planning process, including your official determination of the impacts of this project. If you have any questions regarding these comments, please contact Tom McCartney at 919-856-4520, ext. 32.

Sincerely,

Dr. Garland B. Pardue
Ecological Services Supervisor

Enclosures

cc:
COE, Raleigh, NC (Eric Alsmeyer)
COE, Wilmington, NC (David Timpy)
NCDWQ, Raleigh, NC (John Hennessey)
NCDNR, Northside, NC (David Cox)
FHWA, Raleigh, NC (Nicholas Graf)
EPA, Atlanta, GA (Ted Bisterfield)

FWS/R4:TMcCartney:TM:07/31/00:919/856-4520 extension 32:\4brdgssc.otl

COMMON NAME	SCIENTIFIC NAME	STATUS

PITT COUNTY

Vertebrates

Henslow's sparrow	*Ammodramus henslowii*	FSC
Bald eagle	*Haliaeetus leucocephalus*	Threatened
Southern hognose snake	*Heterodon simus*	FSC*
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Manatee	*Trichechus manatus*	Endangered

Invertebrates

Tar spinymussel	*Elliptio steinstansana*	Endangered
Atlantic pigtoe	*Fusconaia masoni*	FSC
Yellow lampmussel	*Lampsilis cariosa*	FSC
Tar River crayfish	*Procambarus medialis*	FSC*

Vascular Plants

Savanna cowbane	*Oxypolis ternata*	FSC
Carolina asphodel	*Tofieldia glabra*	FSC

POLK COUNTY

Vertebrates

Cerulean warbler	*Dendroica cerulea*	FSC
Southern Appalachian woodrat	*Neotoma floridana haematoreia*	FSC

Invertebrates

Wyandot (=grizzled) skipper	*Pyrgus wyandot*	FSC*
Diana fritillary butterfly	*Speyeria diana*	FSC

Vascular Plants

Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened
French Broad heartleaf	*Hexastylis rhombiformis*	FSC
Butternut	*Juglans cinerea*	FSC
Large-flowered Barbara's buttons	*Marshallia grandiflora*	FSC*
Sweet pinesap	*Monotropsis odorata*	FSC*
Bigleaf scurfpea	*Orbexilum macrophyllum*	FSC*
Divided-leaf ragwort	*Senecio millefolium*	FSC
White irisette	*Sisyrinchium dichotomum*	Endangered

RANDOLPH COUNTY

Critical Habitat Designation:

Cape Fear shiner, *Netropis mekistocholas* - Approximately 1.5 miles of Fork Creek, from a point 0.1 river mile upstream of Randolph County Road 2873 Bridge downstream to the Deep River then downstream approximately 4.1 river miles of the Deep River in Randolph and Moore Counties, North Carolina, to a point 2.5 river miles below Moore County Road 1456 Bridge. Constituent elements include clean streams with gravel, cobble, and boulder

substrates with pools, riffles, shallow runs and slackwater areas with large rock outcrops and side channels and pools with water of good quality with relatively low silt loads.

Vertebrates		
Cape Fear shiner	*Notropis mekistocholas*	Endangered
Invertebrates		
Brook floater	*Alasmidonta varicosa*	FSC
Pee Dee crayfish ostracod	*Dactylocythere peedeensis*	FSC*
Atlantic pigtoe	*Fusconaia masoni*	FSC
Carolina creekshell	*Villosa vaughaniana*	FSC
Vascular Plants		
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered

RICHMOND COUNTY

Vertebrates		
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered
Bachman's sparrow	*Aimophila aestivalis*	FSC
Rafinesque's big-eared bat	*Corynorhinus (=Plecotus) rafinesquii*	FSC**
Southern hognose snake	*Heterodon simus*	FSC*
Robust redhorse	*Moxostroma robustum*	FSC
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Northern pine snake	*Pituophis melanoleucus melanoleucus*	FSC
Invertebrates		
Arogos skipper	*Atrytone arogos arogos*	FSC**
Vascular Plants		
Georgia indigo-bush	*Amorpha georgiana* var. *georgiana*	FSC*
Sandhills milkvetch	*Astragalus michauxii*	FSC
White wicky	*Kalmia cuneata*	FSC
Sandhills bog lily	*Lilium iridollae*	FSC*
Bog spicebush	*Lindera subcoriacea*	FSC
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered
Conferva pondweed	*Potamogeton confervoides*	FSC
Michaux's sumac	*Rhus michauxii*	Endangered
Pickering's dawnflower	*Stylisma pickeringii* var. *pickeringii*	FSC
Carolina asphodel	*Tofieldia glabra*	FSC
Roughleaf yellow-eyed grass	*Xyris scabrifolia*	FSC

ROBESON COUNTY

Vertebrates		
Bachman's sparrow	*Aimophila aestivalis*	FSC
American alligator	*Alligator mississippiensis*	T(S/A)
Rafinesque's big-eared bat	*Corynorhinus (=Plecotus) rafinesquii*	FSC

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

July 20, 2000

MEMORANDUM

TO: William D. Gilmore, PE, Manager
Project Development & Environmental Analysis Branch
NC Department of Transportation

FROM: David Brook
Deputy State Historic Preservation Officer

RE: Replace bridge No. 363 on SR 1331 over Caraway Creek, Randolph County, Federal-Aid Project No. BRZ-1331(4), State Project No. 8.2572301, TIP Project B-3504, ER 01-7006

Thank you for your memorandum of June 28, 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.

Early Archaic and Woodland period archaeological site 31RD550 is located in the floodplain west of Caraway Creek and south of SR 1331 and may be affected by the proposed bridge replacement. We recommend that this site be relocated and tested to determine its National Register eligibility prior to project implementation. The archaeological investigation should include deep testing due to the likelihood of buried cultural deposits.

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, Environmental Review Coordinator, at 919/733-4763.

cc: Thomas Padgett, NCDOT

bc: Clagett/Hall
County
RF

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-2671
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

July 20, 2000

MEMORANDUM

TO: William D. Gilmore, PE, Manager
Project Development & Environmental Analysis Branch
NC Department of Transportation

FROM: David Brook
Deputy State Historic Preservation Officer

RE: Replace bridge No. 363 on SR 1331 over Caraway Creek, Randolph County, Federal-Aid Project No. BRZ-1331(4), State Project No. 8.2572301, TIP Project B-3504, ER 01-7006

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cc: Thomas Padgett, NCDOT

bc: Liggett/Hall
County
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North Carolina Department of Cultural Resources
State Historic Preservation Office
David L. S. Brook, Administrator

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

Division of Historical Resources
David J. Olson, Director

July 16, 2002

MEMORANDUM

TO: Matthew T. Wilkerson
Project Development and Environmental Analysis Branch
Department of Transportation, Division of Highways

FROM: David Brook for David Brook
Deputy State Historic Preservation Officer

SUBJECT: Archaeological Survey Report, Replacement of Bridge No. 363 on State Road 1331 over Caraway Creek, Federal Aid No. BRZ-1331(4), State Project No. 8.2572301, TIP B-3504, Randolph County, ER 01-7006 and 02-9203

Thank you for your letter of March 4, 2002, transmitting the archaeological survey report by Jesse Zinn, Shane Petersen and Caleb Smith for the above project. We apologize for the delay in our response.

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

31RD555&555**

The prehistoric component of the site contains intact subsurface artifacts and features dating from the Woodland period that are likely to yield information important to lithic technology and ceramic traditions in the North Carolina piedmont. The historic component of the site consists of the remains of a gristmill, but does not contain important information.

Since the final alternative for the bridge replacement has not been selected, it is premature to conclude that the prehistoric component of 31RD555&555** will not be affected by the project. We request that final plans for the bridge, indicating the boundaries of the site, be forwarded when they are available, so we can address the issue of effect. Since it appears from the map included in the report that the site is located within the right-of-way for the bridge project, the North Carolina Department of Transportation needs to develop plans to insure preservation of the site. We would like to review those plans when available.

The report meets our office's guidelines and those of the Secretary of the Interior. Specific concerns

and/or corrections, which need to be addressed in the preparation of a final report, are attached for the author's use.

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

Enclosure

cc: FHwA
Jesse Zinn, NCDOT

Specific Comments, Archaeological Survey and Testing Report
Bridge #363 on SR 1331 over Caraway Creek, B-3504
ER 01-7006 and 02-9203

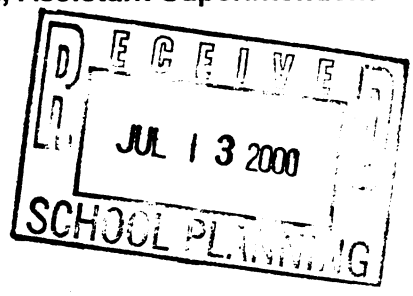
1. Page 35, paragraph 2, line 4: 31RD55** should be 31RD555**.
2. The updated site form listed the research potential of the site as none, although the site has been determined eligible for the National Register of Historic Places. We have corrected this omission.
3. The recommendations section of the site form should be made in terms of the significance of the site itself as well as how the site may be affected by the current project. Consequently, we have re-coded the form to indicate that preservation by avoidance of the site is recommended and no further work is necessary for this project.

RANDOLPH COUNTY BOARD OF EDUCATION
2222-C South Fayetteville Street
Asheboro, North Carolina 27203
Telephone: (336) 318-6143
FAX: (336) 318-6155 or 318-6019
E-mail: jshackelford@randolph.k12.nc.us

WORTH HATLEY
Superintendent

Auxiliary Services

Jerry W. Shackelford, Assistant Superintendent



Gerald H Knott, AIA
Section Chief, School Planning
Department of Public Instruction
301 N Wilmington St.
Raleigh, NC 27601-2825

Monday, July 10, 2000

Dear Mr. Knott,

I am writing to you in response to your letter of July 5, 2000 regarding Bridge 363, located on Ridges Mt Rd in Randolph County.

This is a dirt roadway and buses do not cross the Caraway Creek on this roadway.

Replacement of the Bridge 363 on SR 1331 (Ridges Mt Rd) would not have an immediate impact on our bus transportation program, but would be viewed as a positive future step.

Please contact me if further information is needed.

Sincerely,

Jerry Shackelford

CONTRACT: C200907 TIP PROJECT: B-3504

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1-C & 1-D For Survey Control

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

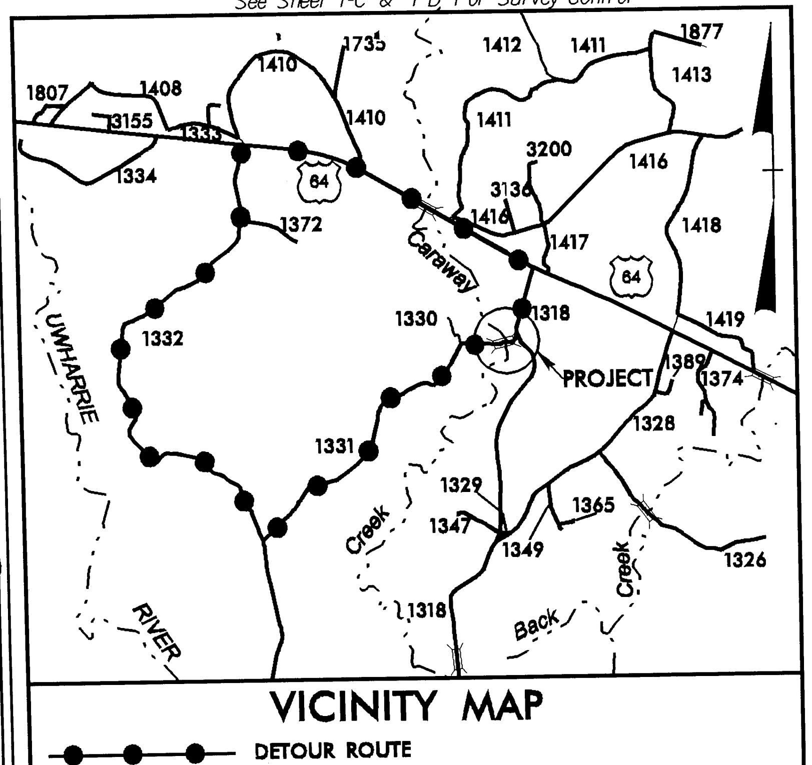
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3504	1	

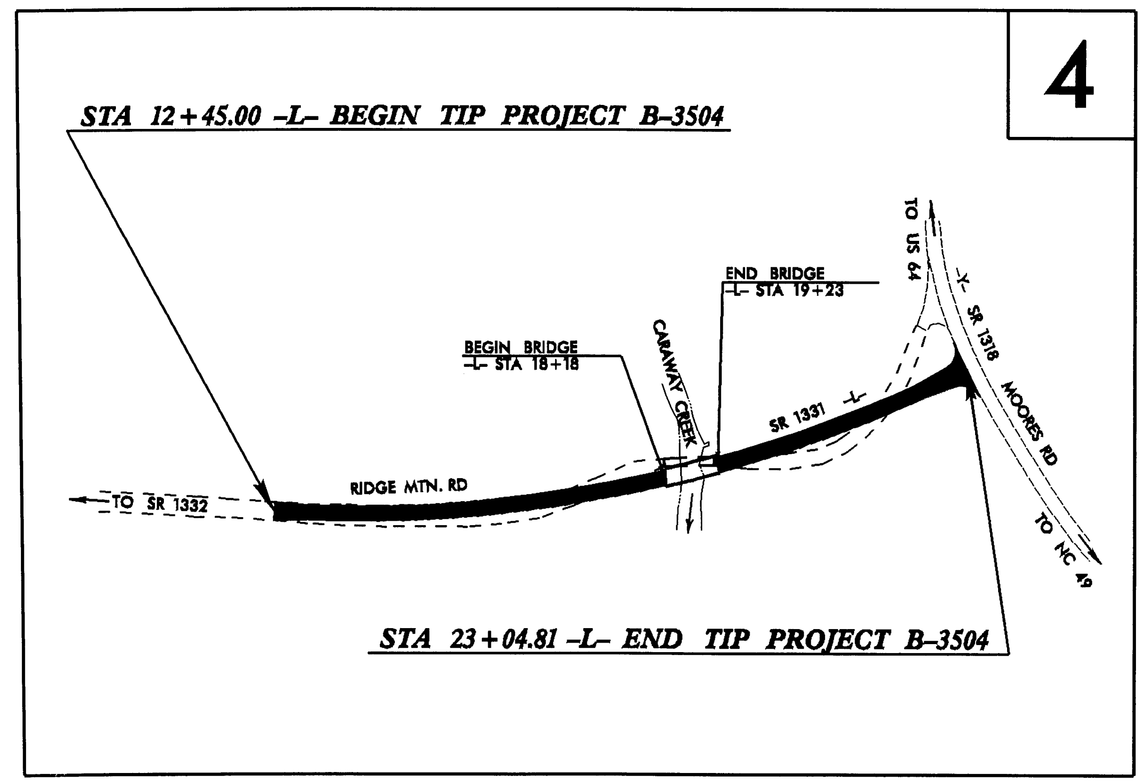
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33118.1.1	BRZ-1331(4)	PE,
33118.2.1	BRZ-1331(4)	R/W, UTIL.
33118.3.1	BRZ-1331(11)	CONST

LOCATION: BRIDGE NO. 363 OVER CARAWAY CREEK ON SR 1331

TYPE OF WORK: DRAINAGE, GRADING, PAVING, 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 II .

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 2004 = 145
ADT 2024 = 293
DHV = 10 %
D = 60 %
T = 3 % *
V = 60 MPH**
* TTST 1 % DUAL 2 %
** DESIGN EXCEPTION REQUIRED FOR A SAG VERTICAL CURVE AND HORIZONTAL STOPPING SIGHT DISTANCE.

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-3504	= 0.181 MI
LENGTH OF STRUCTURE TIP PROJECT B-3504	= 0.020 MI
TOTAL LENGTH OF TIP PROJECT B-3504	= 0.201 MI

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 29, 2003

LETTING DATE:
AUGUST 17, 2004

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

09/08/99

23-APR-2004 07:00
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AHFisher AT

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

PROJECT REFERENCE NO.	SHEET NO.
B-3504	1-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

23-APR-2004 07:00
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AHFisher AT

PROJECT REFERENCE NO.	SHEET NO.
B-3504	1-B

5/28/99

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

- Edge of Pavement
- Curb
- Prop. Slope Stakes Cut (C)
- Prop. Slope Stakes Fill (F)
- Prop. Woven Wire Fence
- Prop. Chain Link Fence
- Prop. Barbed Wire Fence
- Prop. Wheelchair Ramp (WCR)
- Curb Cut for Future Wheelchair Ramp (CCFR)
- Exist. Guardrail
- Prop. Guardrail
- Equality Symbol
- Pavement Removal

RIGHT OF WAY

- Baseline Control Point
- Existing Right of Way Marker
- Exist. Right of Way Line w/Marker
- Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
- Exist. Control of Access Line (CA)
- Prop. Control of Access Line (CA)
- Exist. Easement Line (E)
- Prop. Temp. Construction Easement Line (E)
- Prop. Temp. Drainage Easement Line (TDE)
- Prop. Perm. Drainage Easement Line (PDE)

HYDROLOGY

- Stream or Body of Water
- River Basin Buffer (RBB)
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Shoreline
- Falls, Rapids
- Prop Lateral, Tail, Head Ditches (FLOW)

STRUCTURES

MAJOR

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

MINOR

- Head & End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Boxes (CB)
- Paved Ditch Gutter

UTILITIES

- Exist. Pole
- Exist. Power Pole
- Prop. Power Pole
- Exist. Telephone Pole
- Prop. Telephone Pole
- Exist. Joint Use Pole
- Prop. Joint Use Pole
- Telephone Pedestal (T)
- U/G Telephone Cable Hand Hold (HH)
- Cable TV Pedestal (C)
- U/G TV Cable Hand Hold (HH)
- U/G Power Cable Hand Hold (HH)
- Hydrant
- Satellite Dish
- Exist. Water Valve
- Sewer Clean Out
- Power Manhole (P)
- Telephone Booth
- Cellular Telephone Tower
- Water Manhole (W)
- Light Pole
- H-Frame Pole
- Power Line Tower
- Pole with Base
- Gas Valve
- Gas Meter
- Telephone Manhole (T)
- Power Transformer
- Sanitary Sewer Manhole
- Storm Sewer Manhole (S)
- Tank; Water, Gas, Oil
- Water Tank With Legs
- Traffic Signal Junction Box (S)
- Fiber Optic Splice Box (F)
- Television or Radio Tower
- Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement (TS)

- Recorded Water Line (W)
- Designated Water Line (S.U.E.*) (W)
- Sanitary Sewer (SS)
- Recorded Sanitary Sewer Force Main (FSS)
- Designated Sanitary Sewer Force Main(S.U.E.*) (FSS)
- Recorded Gas Line (G)
- Designated Gas Line (S.U.E.*) (G)
- Storm Sewer (S)
- Recorded Power Line (P)
- Designated Power Line (S.U.E.*) (P)
- Recorded Telephone Cable (T)
- Designated Telephone Cable (S.U.E.*) (T)
- Recorded U/G Telephone Conduit (TC)
- Designated U/G Telephone Conduit (S.U.E.*) (TC)
- Unknown Utility (S.U.E.*) (?UTL)
- Recorded Television Cable (TV)
- Designated Television Cable (S.U.E.*) (TV)
- Recorded Fiber Optics Cable (FO)
- Designated Fiber Optics Cable (S.U.E.*) (FO)
- Exist. Water Meter
- U/G Test Hole (S.U.E.*)
- Abandoned According to U/G Record (ATTUR)
- End of Information (E.O.I.)

BOUNDARIES & PROPERTIES

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Property Line Symbol (PL)
- Exist. Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Property Number (123)
- Parcel Number (6)
- Fence Line (WW & ISBW)
- Existing Wetland Boundaries (WLB)
- High Quality Wetland Boundary (HQ WLB)
- Medium Quality Wetland Boundaries (MQ WLB)
- Low Quality Wetland Boundaries (LQ WLB)
- Proposed Wetland Boundaries (WLB)
- Existing Endangered Animal Boundaries (EAB)
- Existing Endangered Plant Boundaries (EPB)

BUILDINGS & OTHER CULTURE

- Buildings
- Foundations
- Area Outline
- Gate
- Gas Pump Vent or U/G Tank Cap
- Church
- School
- Park
- Cemetery
- Dam
- Sign (S)
- Well (W)
- Small Mine
- Swimming Pool

TOPOGRAPHY

- Loose Surface
- Hard Surface
- Change in Road Surface
- Curb
- Right of Way Symbol (R/W)
- Guard Post (GP)
- Paved Walk
- Bridge
- Box Culvert or Tunnel
- Ferry
- Culvert
- Footbridge
- Trail, Footpath
- Light House

VEGETATION

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (VINEYARD)

RAILROADS

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)

revised 02/02/00

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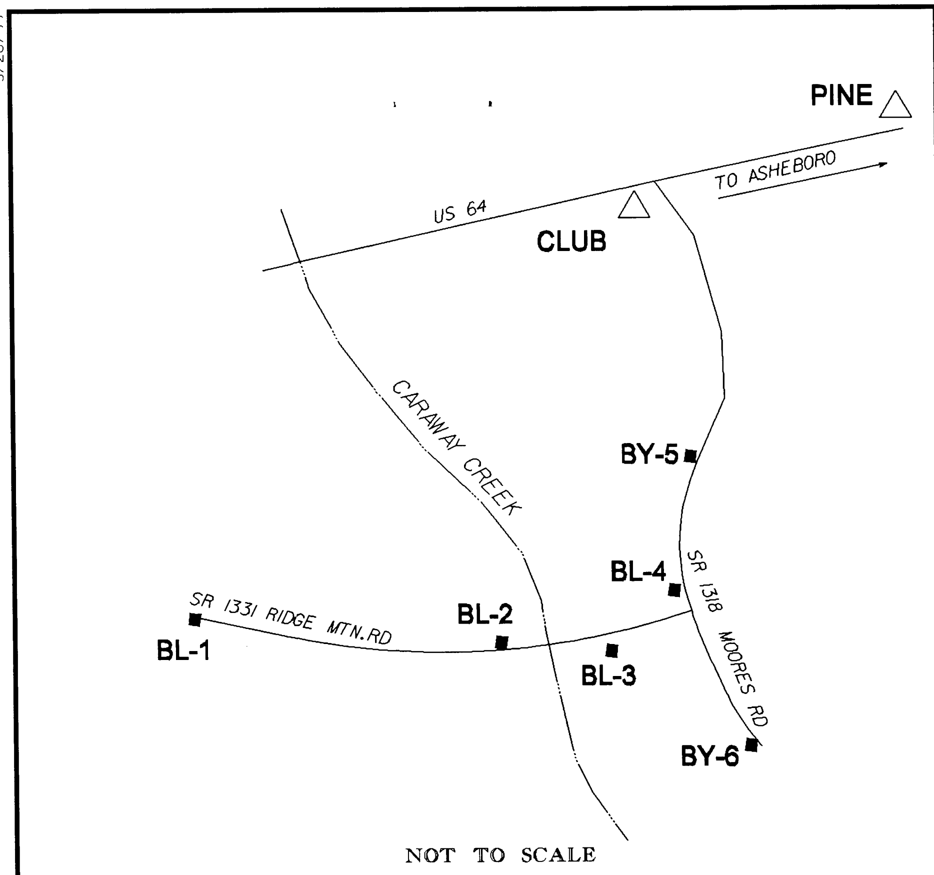
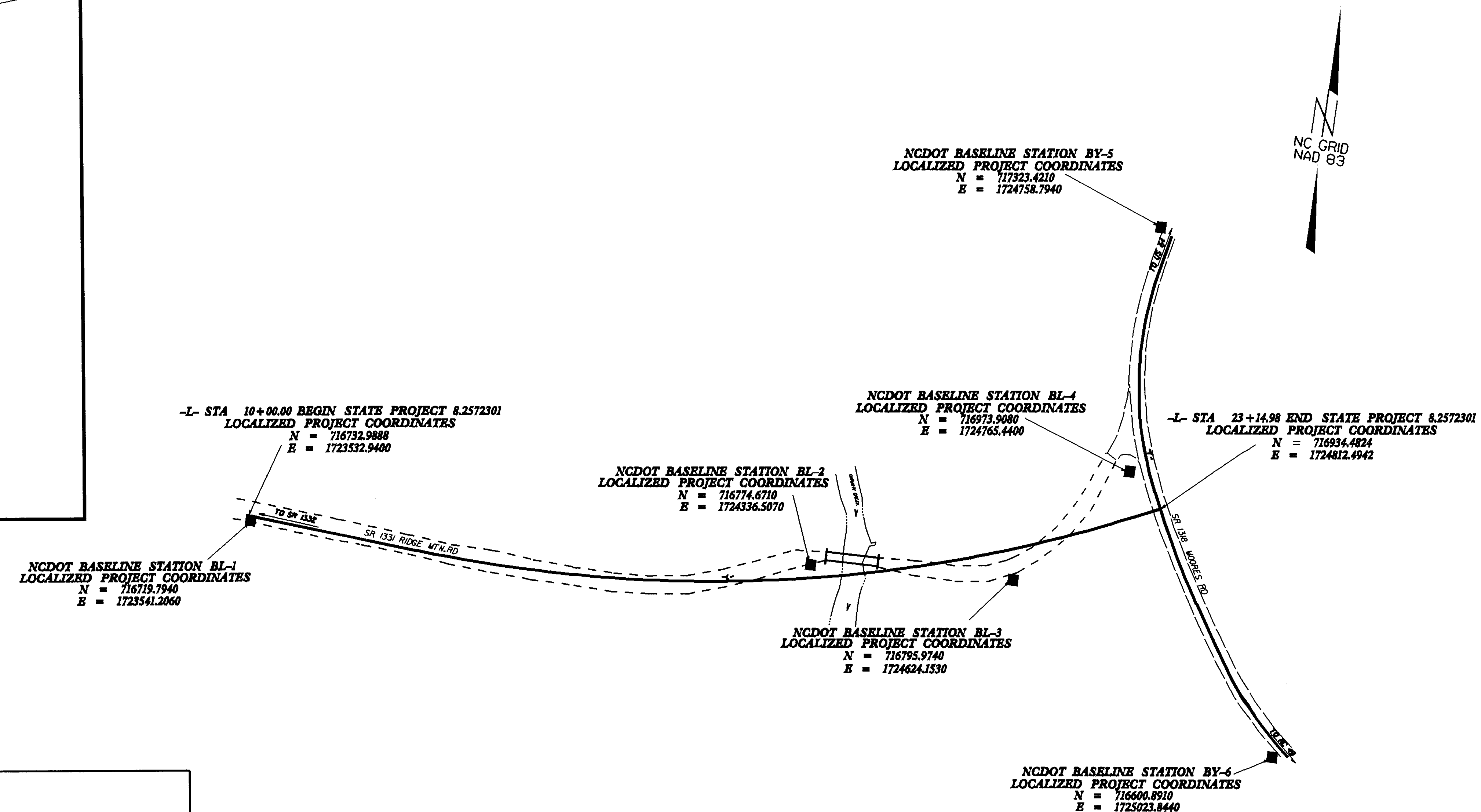
PROJECT REFERENCE NO.	SHEET NO.
B-3504	1 C
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET B-3504





NOTES

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING "PROJECT CONTROL DATA" AT:
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
B3504_LS_CONTROL_030326.TXT

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

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CLUB"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 719157.6726(ft) EASTING: 1725280.2141(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998851
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CLUB" TO -L- STATION 10+00.00 IS
S 35°46'38.1" W 2988.6549
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

◆ ***INDICATES CONTROL MONUMENTS SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.***

PROJECT CONTROL ESTABLISHED USING EXISTING NCGS MONUMENTS.

THIS SURVEY WAS DONE CONVENTIONALLY WITHOUT USING GLOBAL POSITIONING SYSTEMS

NOTE: DRAWING NOT TO SCALE

5/28/99

23-APR-2004 07:01
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AHFisher AT

SURVEY CONTROL SHEET B-3504

CONTROL DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	-L- STATION	OFFSET
1	BL-1	716,719.7940	1,723,541.2060	438.66	10+09.05	12.67 RT
2	BL-2	716,774.6710	1,724,336.5070	440.75	18+10.26	11.65 LT
3	BL-3	716,795.9740	1,724,624.1530	440.97	20+89.41	50.70 RT
4	BL-4	716,973.9080	1,724,765.4400	455.41	22+90.02	56.09 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	-Y- STATION	OFFSET
5	BY-5	717,323.4210	1,724,758.7940	449.27	OUTSIDE PROJECT LIMITS	
4	BL-4	716,973.9080	1,724,765.4400	455.41	13+42.79	25.91 RT
6	BY-6	716,600.8910	1,725,023.8440	469.34	17+89.55	19.24 RT

BM •1 ELEV•433.53'
N • 716665 E • 1724369
-L- STA 18+17.80 102' RIGHT
RR-SPIKE SET IN BASE OF 12" ELM TREE.

BM •2 ELEV•472.23'
N • 717012 E • 1724857
-Y- STA 13+42.63 74' LEFT
RR-SPIKE IN BASE OF TRIPLE PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "CLUB" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 719157.6726(ft) EASTING: 1725280.2141(ft)
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VERTICAL DATUM USED IS NGVD 29

NOTES

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HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
B3504_LS_CONTROL_030326.TXT

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

5/14/99

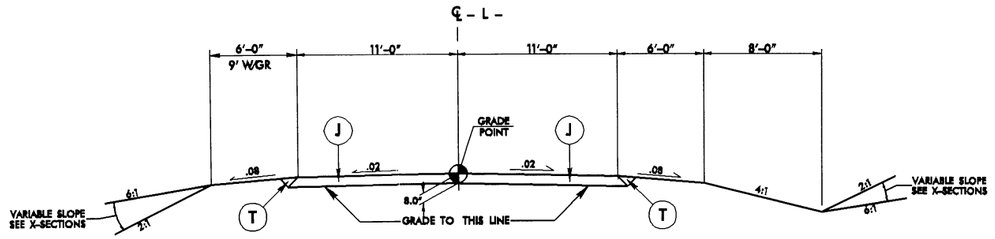
PROJECT REFERENCE NO.	SHEET NO.
B-3504	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FINAL PAVEMENT DESIGN SCHEDULE

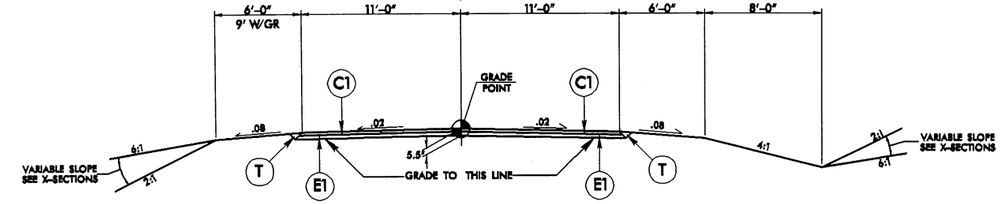
C1	PROP. APPROX. 2.5" DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 3.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
J	PROP. 8.0" AGGREGATE BASE COURSE.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.

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



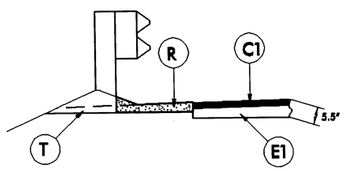
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 12+45.00 TO –L– STA. 15+70.00



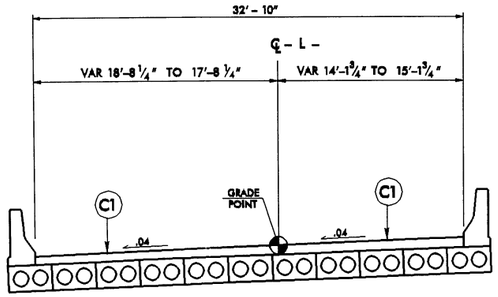
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 15+70.00 TO –L– STA. 18+18.00 (BEGIN BRIDGE)
–L– STA. 19+23.00 (END BRIDGE) TO –L– STA. 23+04.81



SHOULDER BERM GUTTER DETAIL

USE SHOULDER BERM GUTTER
–L– STA. 17+71.33 TO –L– STA. 17+90.08 (LT.)
–L– STA. 17+71.33 TO –L– STA. 17+90.08 (RT.)
–L– STA. 19+52.52 TO –L– STA. 19+71.27 (RT.)
–L– STA. 19+52.52 TO –L– STA. 21+77.00 (LT.)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 18.+18.00 (BEGIN BRIDGE) TO –L– STA. 19+23.00 (END BRIDGE)

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PROJECT REFERENCE NO.	SHEET NO.
B-3504	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

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6/21/00

COMPUTED BY: GB	DATE: 6-04-03
CHECKED BY: RVP	DATE: 3-15-04

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3504	3-A

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
14+26	RT	1																					
17+11.56	CL	2	3		433.9	433.8									76								
17+80	LT																						
17+93.85	LT	4		443.1	440.3																		
17+93.85	LT	4	5		440.3	433.7											16						
19+65.58	LT	6		448.8	446.0																		
19+65.58	LT	6	7		446.0	435.0											32						
20+95	RT																						
15+00	RT	1A																					
PROJECT TOTAL															76		48						

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	M.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.35	PIPE CLEAN OUT	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
14+26		36																											36	REMOVE EXISTING 18" CORE PIPE
17+11.56				6.0																										REMOVE EXISTING 48" CSP & REPLACE W/48" RCP
17+80																													40	REMOVE EXISTING 48" C.M. PIPE
17+93.85						1													1					1						
17+93.85																										2@15				
19+65.58						1													1					1						
19+65.58																										2@15				
20+95																													34	REMOVE EXISTING 18" CONC. PIPE
15+00		36																												
PROJECT TOTAL		72		6.0		2													2					2		4@15			110	

ABBREVIATIONS

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

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL 'A' + (1.3 X COL 'B')

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

GUARDRAIL SUMMARY

	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END	ANCHORS TYPE 350	III	CAT-1	AT-1	M-350	XI	IMPACT ATTENUATOR TYPE 350 EA	G	NG	REMARKS
-L-	15+89.62	18+02.12	RT	212.5			18+02.12		2	9	195.75		3.875		1	1								
-L-	17+22.36	18+09.86	LT	87.5				18+09.86	6	9		50		1	1	1								
-L-	19+31.00	22-74.75	RT	343.75				22+75 (F)	6	9		50		1	1	1								
-L-	19+40.87	22+78.37	LT	337.5			22+75 (F)		6	9	50		1		1	1								
	SUB-TOTAL			981.25											4	4								
	LESS ANCHORS			-275.00																				
	TOTAL			706.25																				
	SAY			712.5																				
	ADDITIONAL GUARDRAIL POSTS			5 EA.																				

ANCHOR DEDUCTIONS

TYPE III 4@18.75' = 75.00'
GRAU-350 4@50' = 200.00'
TOTAL = 275.00'

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-3504	3-B

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBT+%	BORROW	WASTE
-L- 12+45 - 18+18 (BEGIN BRIDGE)	1094	1511	417	
-L- 19+23 (END BRIDGE)- 23+04.81	7	13168	13161	
PROJECT TOTALS	1101	14679	13578	
EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS			679	
GRAND TOTAL	1101		14257	
SAY	1110		14300	

UNDERCUT = 350 CU. YDS.
DRAINAGE DITCH EXCAVATION = 700 CU. YDS.

NOTE:
APROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

SUMMARY OF SHOULDER BERM GUTTER

LINE	STATION TO STATION	LOCATION	LENGTH (FT)
-L-	17+83.33 TO 17+90.08	RT.	6.75
-L-	19+52.52 TO 21+77.00	LT.	224.48
		TOTAL	231.23
		SAY	235

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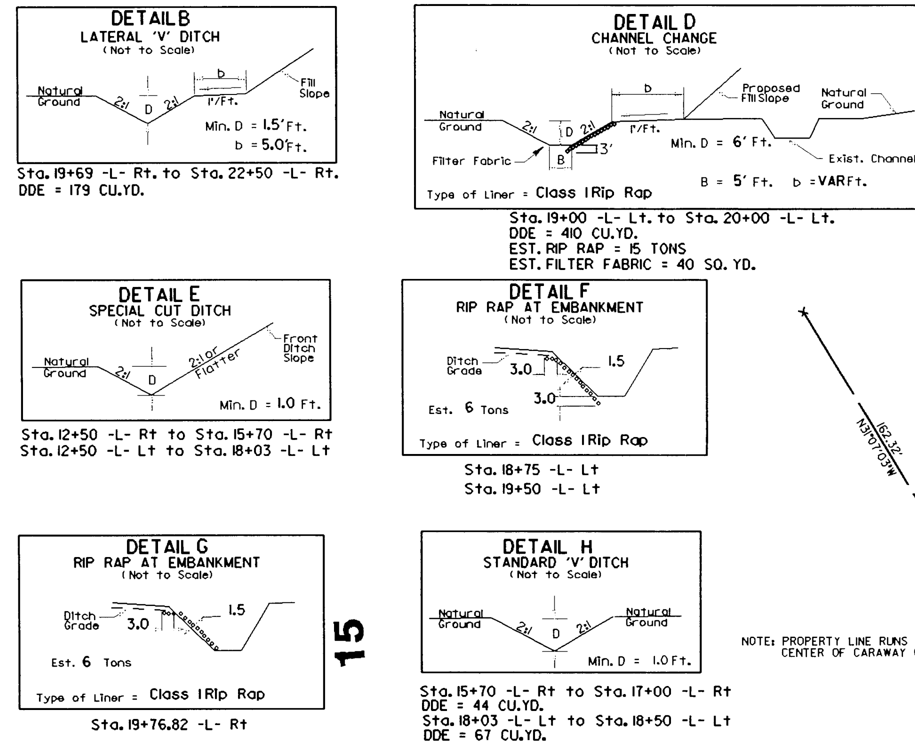
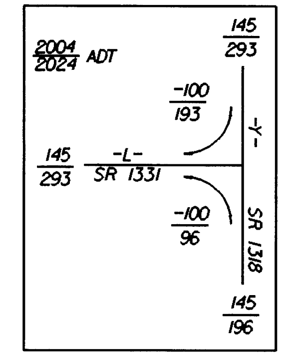
PROJECT REFERENCE NO.	SHEET NO.
B-3504	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

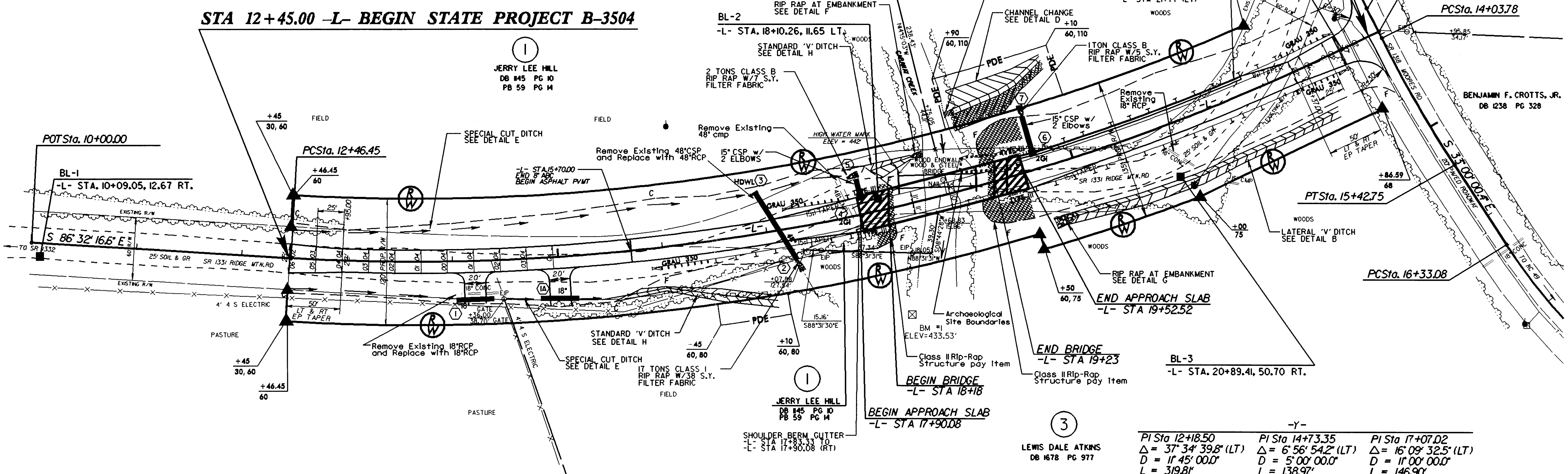
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

**DESIGN EXCEPTION REQUIRED FOR HORIZONTAL STOPPING SIGHT DISTANCE (50 MPH).



DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1.5' Ft.
b = 5.0' Ft.
Sta. 19+69 -L- Rt. to Sta. 22+50 -L- Rt.
DDE = 179 CU.YD.
DETAIL D
CHANNEL CHANGE
(Not to Scale)
Type of Liner = Class I Rip Rap
Min. D = 6' Ft.
B = 5' Ft. b = VAR Ft.
Sta. 19+00 -L- Lt. to Sta. 20+00 -L- Lt.
DDE = 410 CU.YD.
EST. RIP RAP = 15 TONS
EST. FILTER FABRIC = 40 SQ. YD.
DETAIL E
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.0 Ft.
Sta. 12+50 -L- Rt to Sta. 15+70 -L- Rt
Sta. 12+50 -L- Lt to Sta. 18+03 -L- Lt
DETAIL F
RIP RAP AT EMBANKMENT
(Not to Scale)
Est. 6 Tons
Type of Liner = Class I Rip Rap
Sta. 18+75 -L- Lt
Sta. 19+50 -L- Lt
DETAIL G
RIP RAP AT EMBANKMENT
(Not to Scale)
Est. 6 Tons
Type of Liner = Class I Rip Rap
Sta. 19+76.82 -L- Rt
DETAIL H
STANDARD 'V' DITCH
(Not to Scale)
Min. D = 1.0 Ft.
Sta. 15+70 -L- Rt to Sta. 17+00 -L- Rt
DDE = 44 CU.YD.
Sta. 18+03 -L- Lt to Sta. 18+50 -L- Lt
DDE = 67 CU.YD.





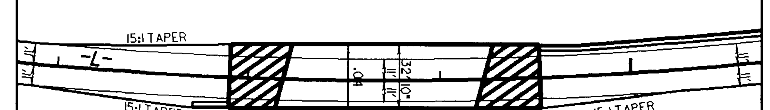
STA 12+45.00 -L- BEGIN STATE PROJECT B-3504
STA 23+04.81 -L- END STATE PROJECT B-3504
POT Sta. 10+00.00
BL-1
-L- STA. 10+09.05, 12.67 RT.
PC Sta. 12+46.45
BL-2
-L- STA. 18+10.26, 11.65 LT.
BL-3
-L- STA. 20+89.41, 50.70 RT.
BL-4
-L- STA. 22+90.02, 56.09 LT.
PT Sta. 22+76.68
BRG. AH= N 63° 56' 53.7" E
PT Sta. 13+72.42
BRG AH= S 26° 03' 06.3" E
-L- POT Sta. 23+14.98
-Y- POC Sta. 13+97.32
PC Sta. 14+03.78
PT Sta. 15+42.75
PC Sta. 16+33.08
POT Sta. 10+00.00
BY-5
PC Sta. 10+52.61
JERRY LEE HILL
DB 1145 PG 10
PB 59 PG 14
JASON T. DRIVER
DB 1603 PG 1452
PB 58 PG 76
LEWIS DALE ATKINS
DB 1678 PG 977
DEMPSEY L. DELK
DB 1284 PG 856
BENJAMIN F. CROTTS, JR.
DB 1238 PG 328
MELVIN FRANKLIN BOLES
DB 1282 PG 785
NOTE: PROPERTY LINE RUNS WITH THE CENTER OF CARAWAY CREEK.
BEGIN BRIDGE
-L- STA 18+18
END BRIDGE
-L- STA 19+23
BEGIN APPROACH SLAB
-L- STA 17+90.08
END APPROACH SLAB
-L- STA 19+52.52
Remove Existing 48"CSP and Replace with 48"RCP
Remove Existing 18"RCP and Replace with 18"RCP
Remove Existing 48" cmp
2 TONS CLASS B RIP RAP W/7 S.Y. FILTER FABRIC
17 TONS CLASS I RIP RAP W/38 S.Y. FILTER FABRIC
1 TON CLASS B RIP RAP W/5 S.Y. FILTER FABRIC
SHOULDER BERM GUTTER
-L- STA 17+83.33 TO
-L- STA 17+90.08 (RT)
SHOULDER BERM GUTTER
-L- STA 19+52.52 TO
-L- STA 21+77 (LT)
Class II Rip-Rap Structure pay item
Archaeological Site Boundaries
BM #1
ELEV=433.53'
HIGH WATER MARK
ELEV = 442'
SR 1331 RIDGE MTN. RD
SR 1318 MOORES RD
NAD 83

-L-
PI Sta 17+73.27
Δ = 29° 30' 49.6" (LT)
D = 2° 51' 53.2"
L = 1,030.23'
T = 526.81'
R = 2,000.00'
Se = See Plans
**V = 50 MPH

-Y-

PI Sta 12+18.50	PI Sta 14+73.35	PI Sta 17+07.02
Δ = 37° 34' 39.8" (LT)	Δ = 6° 56' 54.2" (LT)	Δ = 16° 09' 32.5" (LT)
D = 11° 45' 00.0"	D = 5° 00' 00.0"	D = 11° 00' 00.0"
L = 319.81'	L = 138.97'	L = 146.90'
T = 165.89'	T = 69.57'	T = 73.94'
R = 487.62'	R = 1,145.92'	R = 520.87'

RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT



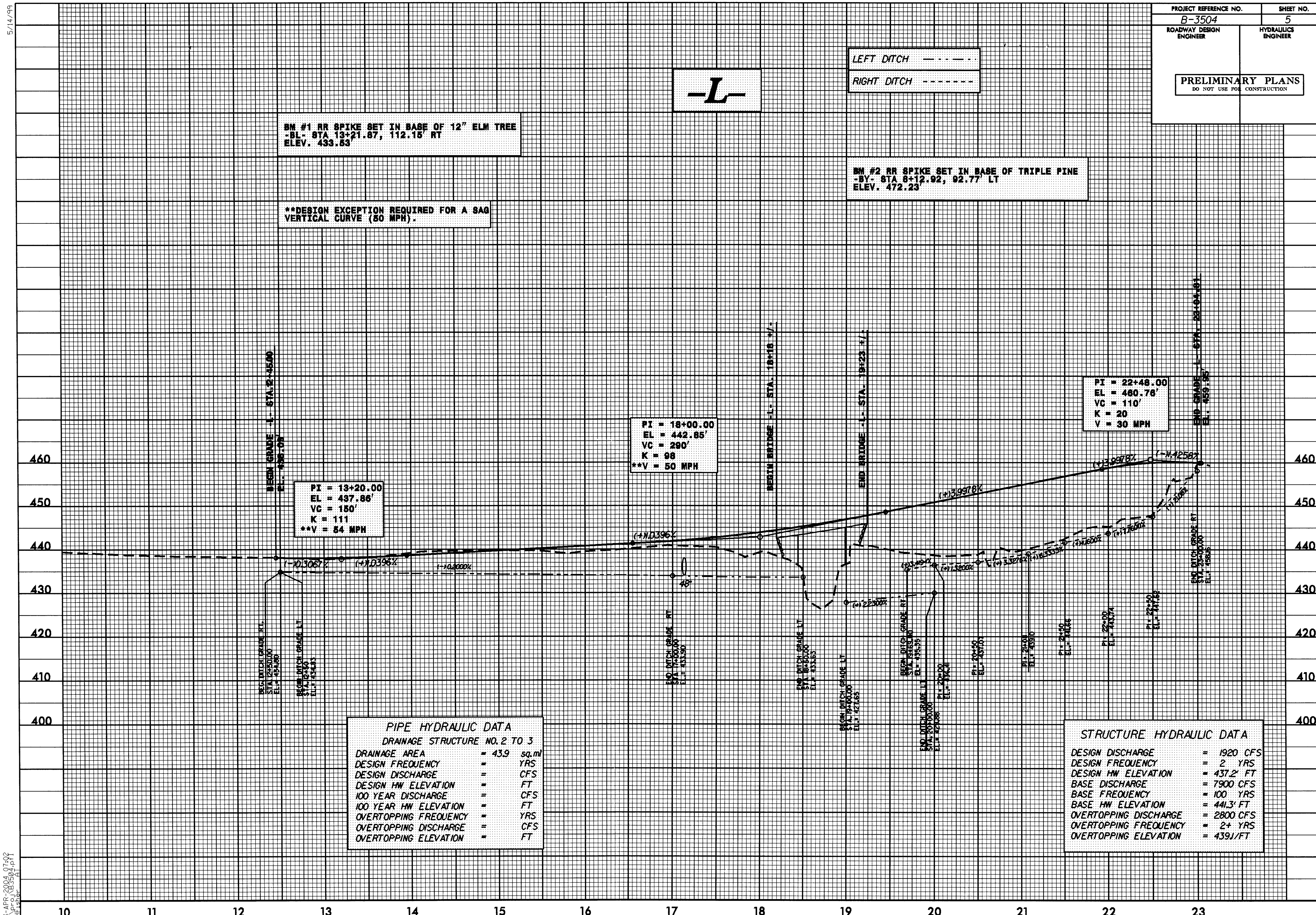
NOT TO SCALE

 BRIDGE APPROACH SLAB

FOR -L- PROFILE SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
B-3504	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-
LEFT DITCH
RIGHT DITCH
BM #1 RR SPIKE SET IN BASE OF 12" ELM TREE
-BL- STA 13+21.87, 112.15' RT
ELEV. 433.53'
BM #2 RR SPIKE SET IN BASE OF TRIPLE PINE
-BY- STA 8+12.92, 92.77' LT
ELEV. 472.23'
**DESIGN EXCEPTION REQUIRED FOR A SAG VERTICAL CURVE (50 MPH).
BEGIN GRADE -L- STA. 12+45.00
EL. 436.08
PI = 13+20.00
EL = 437.86'
VC = 150'
K = 111
**V = 54 MPH
PI = 18+00.00
EL = 442.85'
VC = 290'
K = 98
**V = 50 MPH
BEGIN BRIDGE -L- STA. 18+18 +/-
END BRIDGE -L- STA. 19+23 +/-
PI = 22+48.00
EL = 460.76'
VC = 110'
K = 20
V = 30 MPH
END GRADE -L- STA. 23+04.81
EL. 459.95'
(-)0.3067%
(+)1.0396%
(+)1.0396%
(+)3.9978%
(+)3.9978%
(-)1.4258%
(-)0.2000%
(+)2.2300%
(+)1.3200%
48"
460
450
440
430
420
410
400
10
11
12
13
14
15
16
17
18
19
20
21
22
23

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 2 TO 3

DRAINAGE AREA	=	43.9 sq.mi
DESIGN FREQUENCY	=	YRS
DESIGN DISCHARGE	=	CFS
DESIGN HW ELEVATION	=	FT
100 YEAR DISCHARGE	=	CFS
100 YEAR HW ELEVATION	=	FT
OVERTOPPING FREQUENCY	=	YRS
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING ELEVATION	=	FT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	1920 CFS
DESIGN FREQUENCY	=	2 YRS
DESIGN HW ELEVATION	=	437.2' FT
BASE DISCHARGE	=	7900 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	441.3' FT
OVERTOPPING DISCHARGE	=	2800 CFS
OVERTOPPING FREQUENCY	=	2+ YRS
OVERTOPPING ELEVATION	=	439.1/FT

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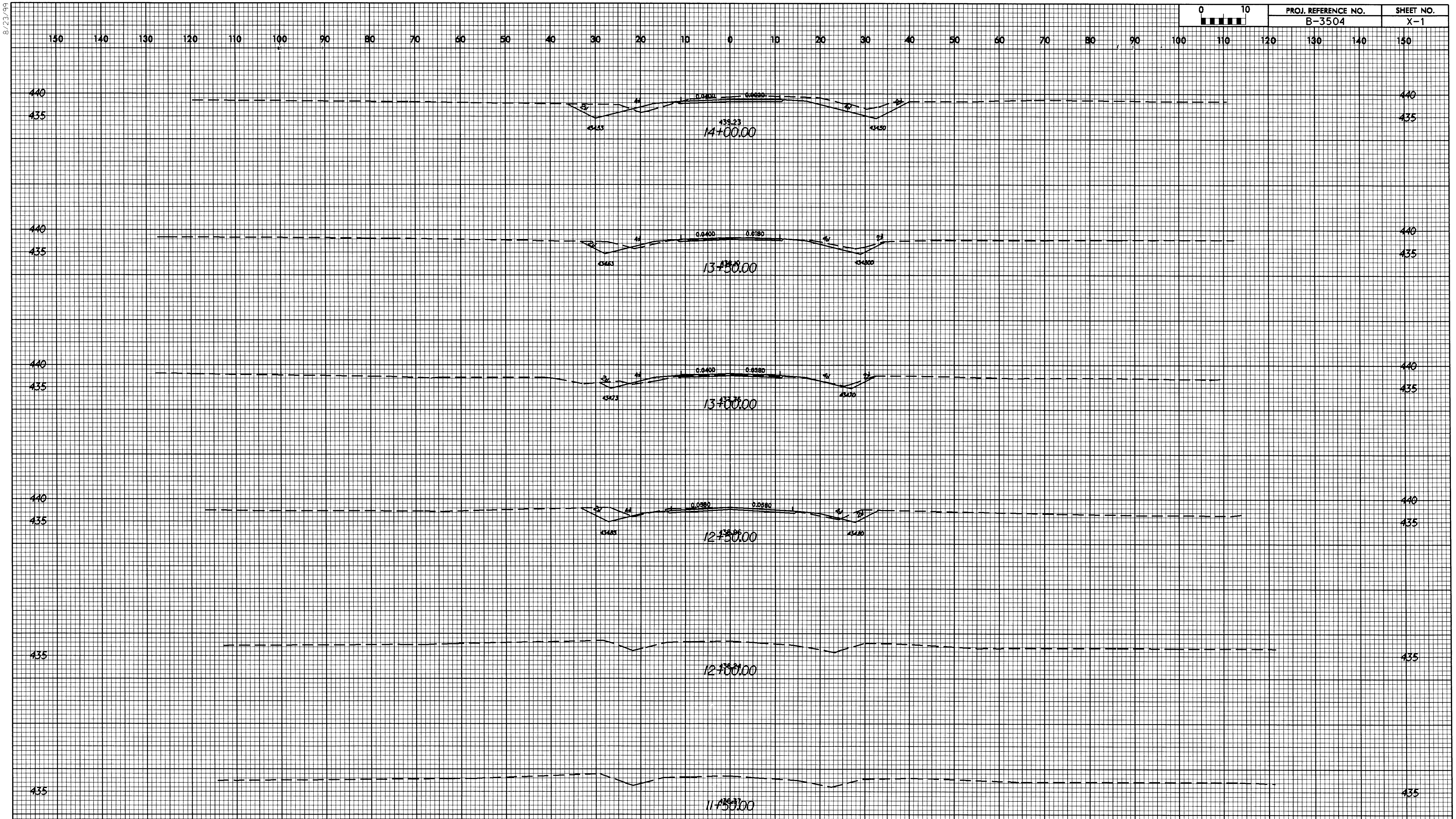

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the contract lump sum price for "Grading".

-L-

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3504	X-2

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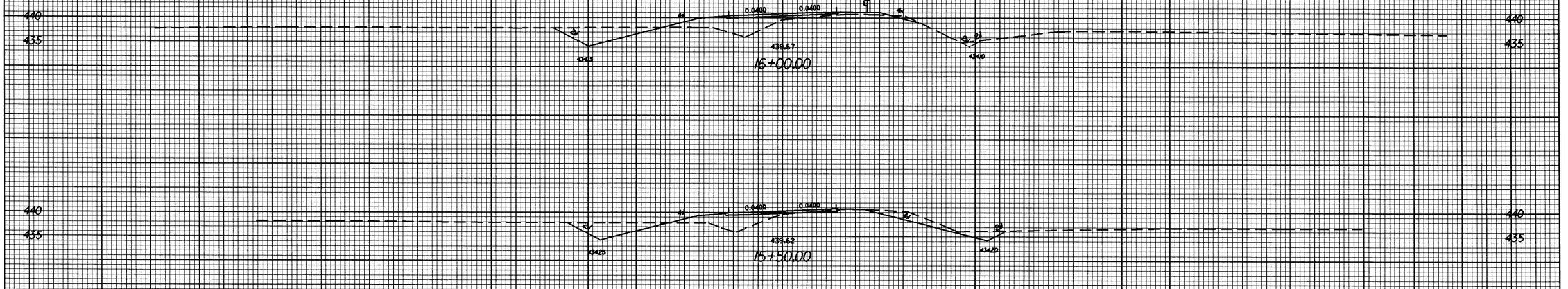

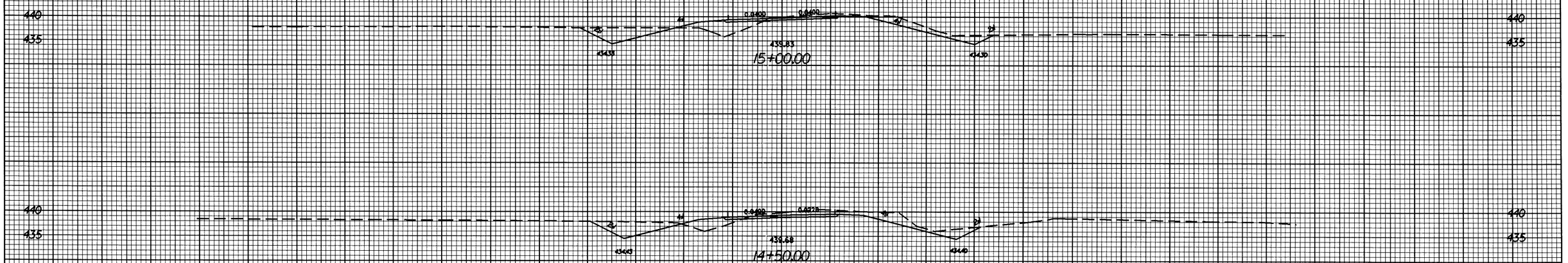

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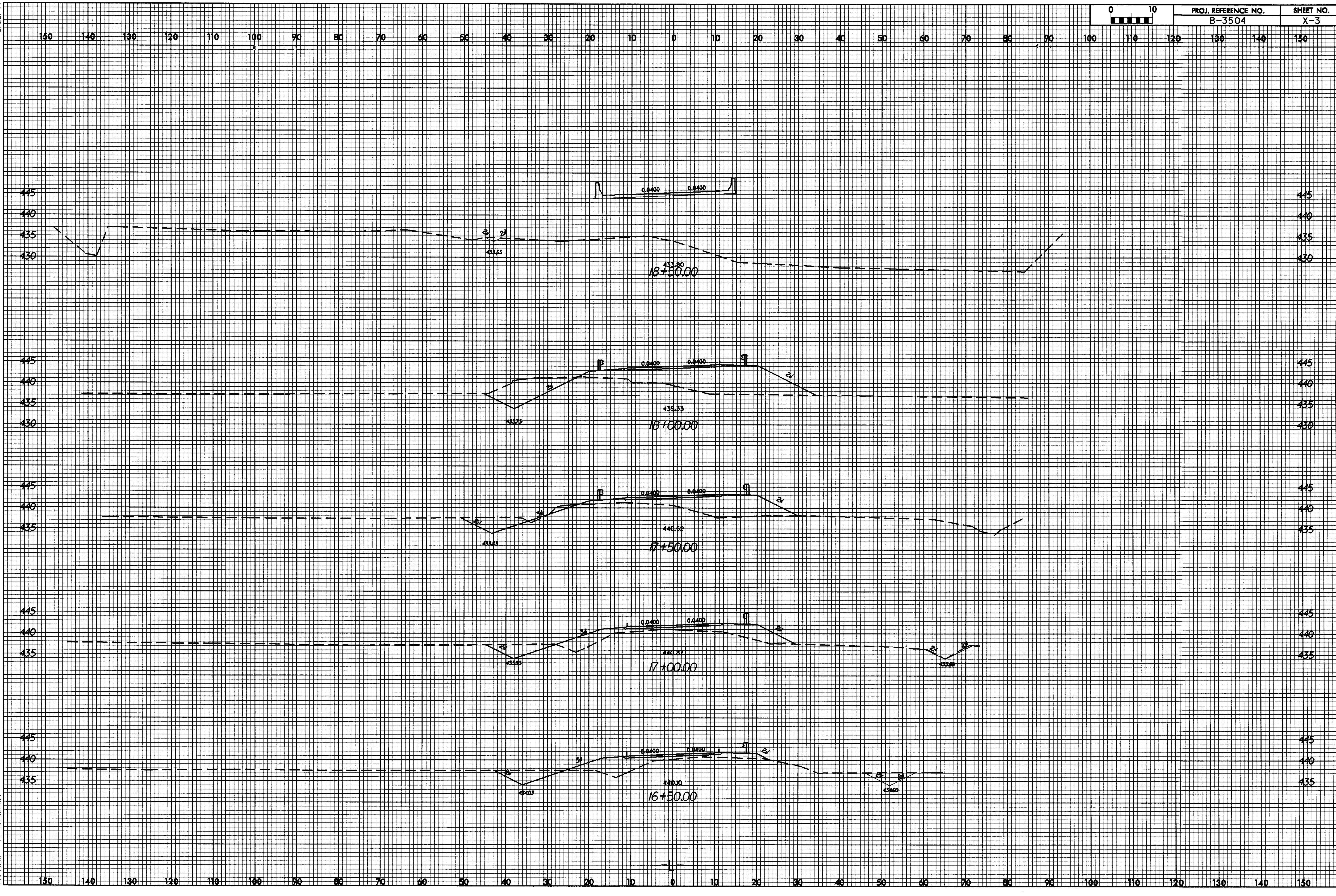
PROJ. REFERENCE NO.	SHEET NO.
B-3504	X-3



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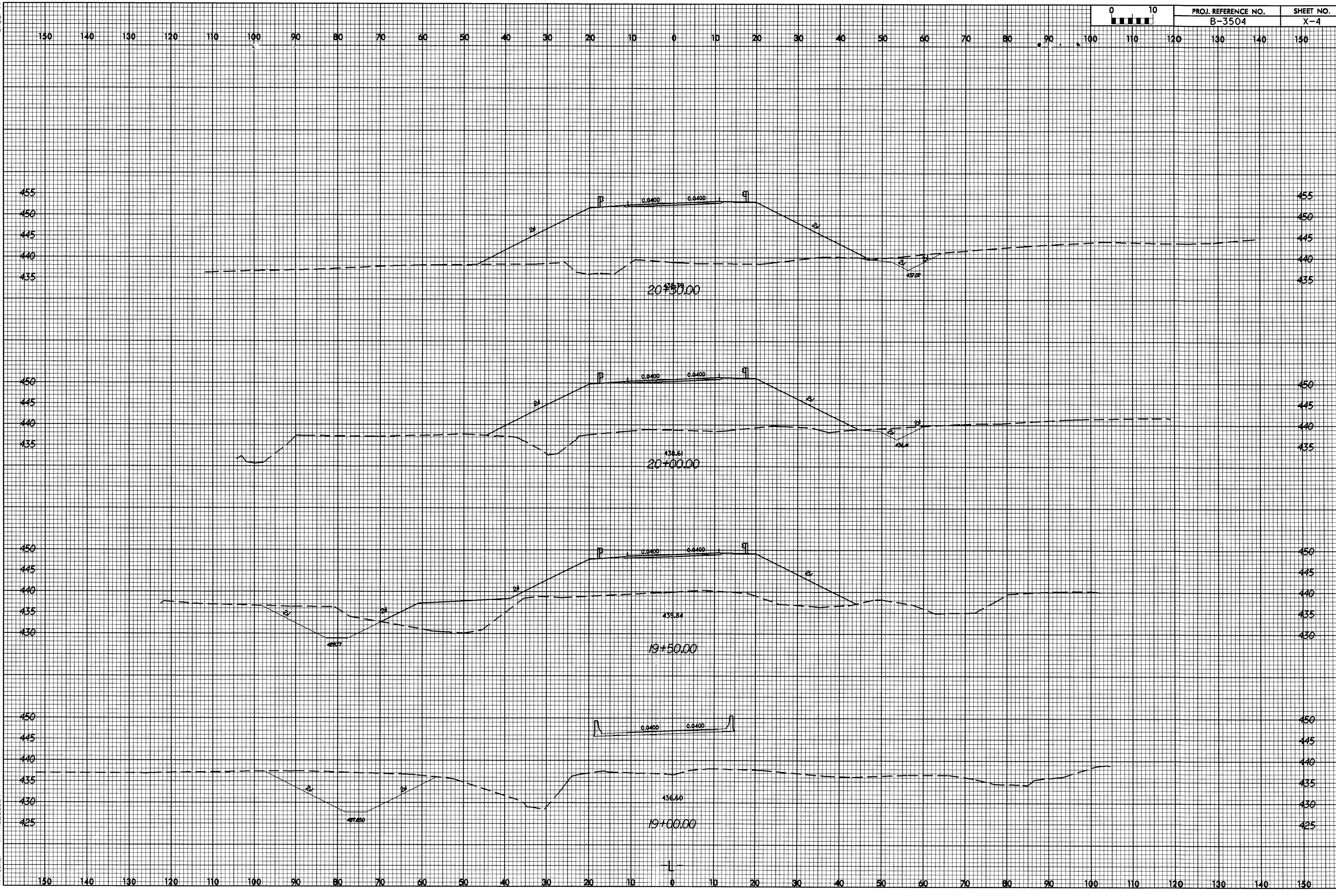
AHFisher AT RD203054

PROJ. REFERENCE NO.	SHEET NO.
B-3504	X-4



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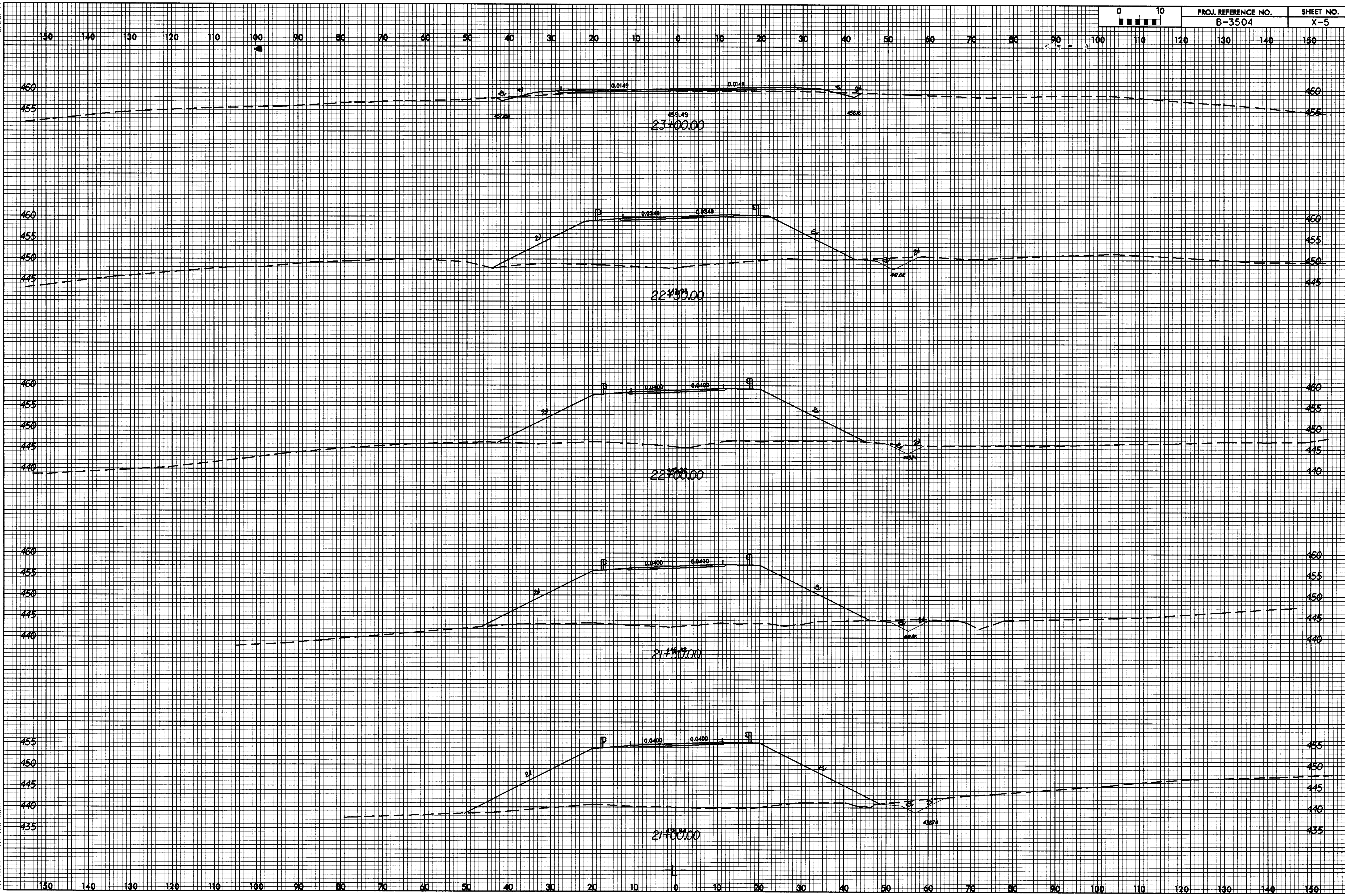

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