STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

February 13, 2009

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

ATTENTION: Mr. Richard Spencer
NCDOT Coordinator

SUBJECT: **Nationwide Permit 13 Notice of Use** for the proposed Replacement of Bridge No. 59 on SR 1117 Over Jumping Run Creek in Harnett County, State Project No. 8.2451101, Federal Aid Project No. BRZ-1117(3), TIP B-3655

Dear Mr. Spencer:

Please find the enclosed permit drawings and half size design plans for the above referenced project. A Categorical Exclusion and Construction Consultation were completed for the project in May, 2007 and January, 2009, respectively and distributed shortly thereafter. Additional copies are available upon request. The North Carolina Department of Transportation (NCDOT) proposes to replace the existing 35-foot long bridge with a new 36-foot wide and 105-foot long bridge. There will be 20 linear feet of permanent impacts and 40 linear feet of temporary impacts to surface waters. Traffic will be using a temporary on-site detour during construction.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Cape Fear River Basin (HUC 03030004) and will impact the Jumping Run Creek. Jumping Run (Index # 18-23-29)) is assigned a best usage classification of C, by the N.C. Division of Water Quality (DWQ). Jumping Run Creek is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River, nor is it listed on the 2006 Final 303(d) list. The project does not drain to a 303(d) stream within one mile of the project limits. No designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 mile of the project. No wetlands will be impacted on the project.

Permanent Impacts: Permanent stream impacts will total 20 linear from the placement of riprap on the banks of Jumping Run Creek under the proposed bridge for bank stabilization. No riprap will be placed in the stream bed.

Temporary Impacts: There will be 40 linear feet temporary impacts from the placement of riprap on the banks of Jumping Run Creek under the temporary detour and at the outlet of the lateral base ditches for bank stabilization.

Utilities: There are no impacts to jurisdictional resources due to utilities for this project.

Bridge Demolition: Bridge No. 59 has a reinforced concrete deck on timber joints supported by a timber substructure. During removal of the existing bridge, bridge components will be removed without dropping them into waters of the United States. NCDOT's Best Management Practices for Bridge Demolition and Removal will be followed during the removal of this bridge.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), Proposed Threatened (PT), are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 31, 2008, the United States Fish and Wildlife Service list a total of three federally protected species for Harnett County (Table 1). A biological conclusion of "no effect" remains valid for each species due to lack of suitable habitat in the project area.

Table 1. Federally protected species of Harnett County.

Common Name	ntific Name	Federal Status	Habitat	Biological Conclusion
Cape Fear Shiner	*Notropis mekistocholas*	Endangered	No	No Effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered	No	No Effect
Red-cockaded woodpecker	*Picoides borealis*	Endangered	No	No Effect

The bald eagle was delisted as of August 8, 2007 and is no longer protected by the Endangered Species Act. It is, however, protected under the Bald and Golden Eagle Protection Act. Surveys were conducted in September 2007 and no nests or individuals were observed within 660 feet of the project area.

AVOIDANCE AND MINIMIZATION

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

- Utilizing a temporary on-site detour while minimizing the roadway footprint and environmental impacts.
- Best Management Practices for Bridge Demolition and Removal will be followed.
- Best Management Practices for the protection of Surface Waters will be enforced during the construction of the project.
- The new bridge will be longer then the existing structure.
- Bents will be located outside of creek channel.
- Preformed scour holes.

COMPENSATORY MITIGATION
Mitigation is not proposed because there is no 'Loss of Waters of the U.S.'. Additionally, no high quality resources or special aquatic habitat will be impacted by the proposed project.

PROJECT SCHEDULE
The project is scheduled to let April 21, 2009 and has a review date of March 3, 2009.

REGULATORY APPROVALS
Section 404 Permit: It is anticipated that bank stabilization installation along Jumping Run is authorized under Section 404 Nationwide Permit 13. Impacts of 60 linear feet of bank stabilization do not constitute a 'Loss of Waters of the U.S.'; therefore, this letter serves as a Notice of Use by NCDOT and written concurrence is not requested.

Section 401 Certification: We anticipate 401 General Certification number 3689 will apply to this project. The NCDOT will adhere to all Water Quality Certification general conditions. Therefore, we are not requesting written concurrence. We are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their records.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact John Merritt at jsmerritt@ncdot.gov or (919) 431-6749.

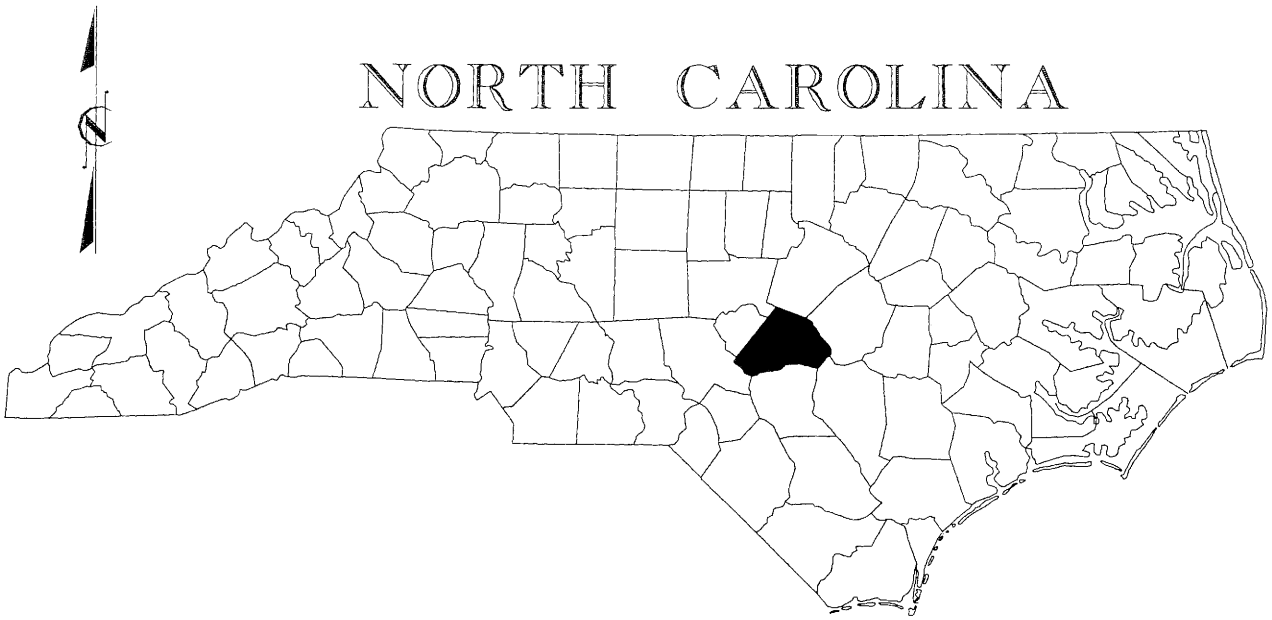
A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html.

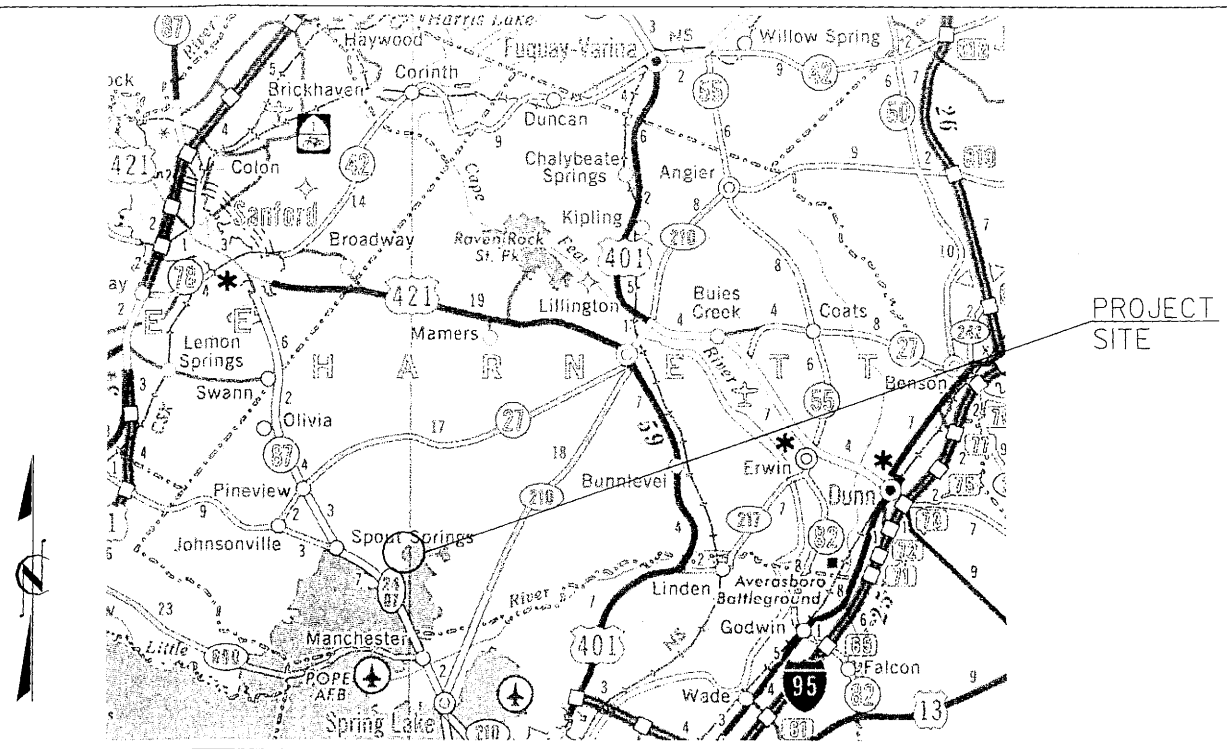
Sincerely,

E. R. Fluck

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

cc: w/attachment
Mr. Brian Wrenn, NCDWQ (2 Copies)
w/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Mark Staley, Roadside Environmental
Mr. Terry Gibson, P.E, Division 6 Engineer
Mr. Jim Rerko, Division 6 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Ahmad Al-Sharawneh, PDEA Project Engineer





VICINITY MAP

Permit Drawing
Sheet ___ of 13

NCDOT

DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE NO. 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 1 OF 7 7 / 29 / 08

7/29/2008
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SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(1)	UNITED STATES OF AMERICA C/O DEPT. OF THE ARMY CORPS OF ENGINEERS	100 WEST OGLETHORP STREET SAVANNAH, GA 31401	1, 2, 3

Permit Drawing
Sheet 2 of 13

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE NO. 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 2 OF 7 7/29/08

7/29/2008
11:30:02 AM
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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	-DET- 13+98 to 14+24	BANK STABILIZATION	---	---	---	---	---	---	0.01	---	40	---
2	-DET- 13+80 to 14+11	BANK STABILIZATION [1, 2]	---	---	---	---	---	< 0.01	---	20	---	---
TOTALS:								< 0.01	0.01	20	40	

NOTES:

1. AREA OF IMPACT FOR THE PROPOSED INTERIOR PILE BENTS IS 2 SQ FT.
2. SITE 2 INCLUDES THE PERMANENT IMPACTS (152 SQ FT) FROM THE RIPRAP BASE DITCH TIE-IN AT -L- STA 17+60 RT.

Permit Drawing Sheet 3 of 13

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

HARNETT COUNTY
WBS - 33201.1.1 (B-3655)

SHEET OF 7/29/2008

SHT 3 OF 7

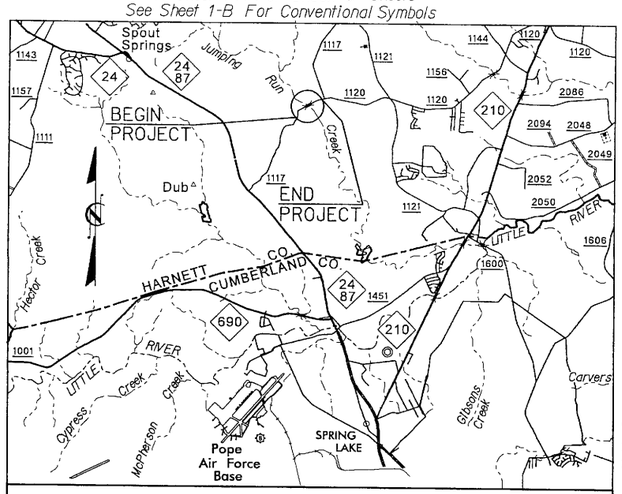
ATN Revised 3/31/05

09/08/99

TIP PROJECT: B-3655

CONTRACT:

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



VICINITY MAP

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARY

RW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HARNETT COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3655	1	

WBS PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33201.1.1	BRZ-1117(3)	P.E.
33201.2.1	BRZ-1117(3)	R /W & UTIL.

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE NO. 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 4 OF 7 7/29/08

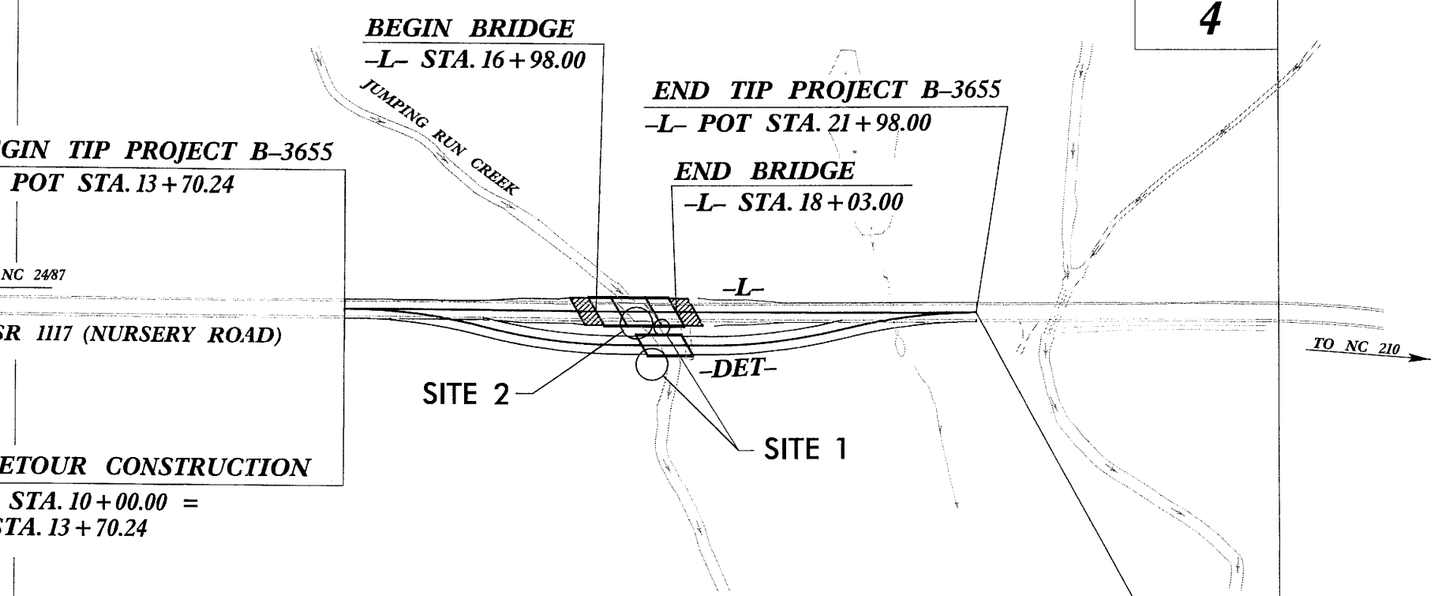
LOCATION: ***BRIDGE NO. 59 OVER JUMPING RUN CREEK ON SR 1117 (NURSERY ROAD)***

Permit Drawing
Sheet 4 of 13

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

B-3655: WETLAND /SURFACE WATER SITE MAP

4



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

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

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

DESIGN DATA

ADT 2009 = 5800
ADT 2029 = 9800
DHV = 9 %
D = 65 %
T = 4 % *
V = 60 MPH
* TTST 1% DUAL 3%
FUNC. CLASS = RURAL MINOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3655	=	*0.137 MI.*
LENGTH STRUCTURE TIP PROJECT B-3655	=	*0.020 MI.*
TOTAL LENGTH OF TIP PROJECT B-3655	=	*0.157 MI.*

Prepared In the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
5121 Kingdom Way, Suite 100 Raleigh NC 27606
(919) 851-6066

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 16, 2007

LETTING DATE: APRIL 21, 2009

MICHAEL A. YOUNG, PE
PROJECT ENGINEER

DAVID C. WALLER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER *P.E.*

7/29/2008
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KO & Associates, P.C.

5/14/99

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

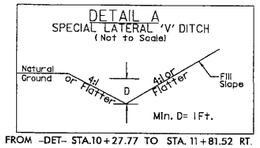
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TEMPORARY DETOUR

-DET-

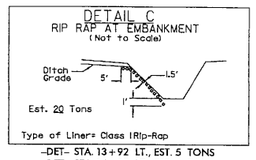
PI Sta 10+91.64	PI Sta 12+71.70	PI Sta 15+68.36	PI Sta 17+47.27
Δ = 14° 24' 29.5" (RT)	Δ = 14° 03' 24.5" (LT)	Δ = 14° 19' 59.1" (LT)	Δ = 13° 57' 00.4" (RT)
D = 7° 54' 10.3"	D = 7° 54' 10.3"	D = 7° 54' 10.3"	D = 7° 54' 10.3"
L = 182.32'	L = 177.87'	L = 181.37'	L = 176.52'
T = 91.64'	T = 89.38'	T = 91.16'	T = 88.70'
R = 725.00'	R = 725.00'	R = 725.00'	R = 725.00'

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



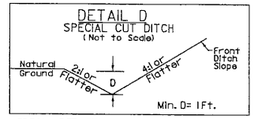
FROM -DET- STA.10+27.77 TO STA. 11+81.52 RT.

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)



-DET- STA. 13+92 LT., EST. 5 TONS
-DET- STA. 14+27 LT., EST. 4 TONS
-DET- STA. 14+14 RT., EST 7 TONS

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)



FROM -DET- STA. 11+82.52 TO STA. 14+23 RT.
FROM -DET- STA. 14+40 TO STA. 15+50 LT.

NC GRID
NAD 83/95

Permit Drawing
Sheet 5 of 13

(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS

SITE 2

TEMP. 12" CSP

USACE MITIGATION SITE

SPECIAL CUT DITCH SEE DETAIL D

SCRUB

WOODS

EXISTING R/W

NC HWY 24/87

SR 1117 NURSERY ROAD

60.00'

25' BST

WLB

BRIDGE 59

INV = 181.26

INV=179.86'

INV=179.89' EXISTING R/W

36" RCP

SR 1117 NURSERY ROAD

24.8' BST

40.00'

INV = 181.13

INV=179.35'
INV=179.65'

TEMP 36" CSP COLLAR AND EXTEND 36" RCP, 12 LF

SPECIAL LATERAL V DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL D

RIP RAP AT EMBANKMENT SEE DETAIL C

SITE 1

-DET- PRC 11+82.32

-DET- PC 14+77.20

-DET- PRC 16+58.57

-DET- PT 13+60.19

BEGIN DETOUR
-DET- PC 10+00.00 =
-L- POT 13+70.24

END DETOUR
-DET- PT 18+35.09 =
-L- POT 21+98.00

PLAN VIEW
SITES 1 & 2

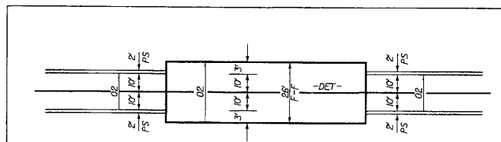
(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
SCALE: 1" = 100' HORZ.



PAVEMENT - BRIDGE RELATIONSHIP SKETCH

REMOVE TEMPORARY DETOUR AND RESTORE AREA TO EXISTING GROUND LINE

ENGLISH

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 5 OF 7 7/29/08

7/29/2008
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KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TEMPORARY DETOUR

Permit Drawing
Sheet 12 of 13

-DET-

PI Sta 10+91.64	PI Sta 12+71.70	PI Sta 15+68.36	PI Sta 17+47.27
Δ = 14° 24' 29.5" (RT)	Δ = 14° 03' 24.5" (LT)	Δ = 14° 19' 59.1" (LT)	Δ = 13° 57' 00.4" (RT)
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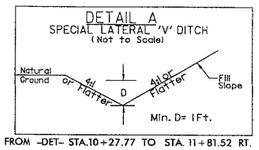
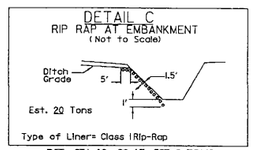
R = 725.00'	R = 725.00'	R = 725.00'	R = 725.00'

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



FROM -DET- STA.10+27.77 TO STA. 11+81.52 RT.

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)



-DET- STA. 13+92 LT., EST. 5 TONS
-DET- STA. 14+27 LT., EST. 4 TONS
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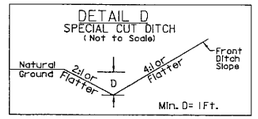
DETAIL D
SPECIAL CUT DITCH
(Not to Scale)



FROM -DET- STA. 11+82.52 TO STA. 14+23 RT.
FROM -DET- STA. 14+40 TO STA. 15+50 LT.

NC GRID
NAD 83/95

1
UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS

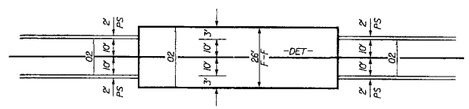
SITE 2
TEMP. 12" CSP
USACE MITIGATION SITE
SPECIAL CUT DITCH SEE DETAIL D
SCRUB
WOODS
EXISTING R/W
NC HWY 24/87
SR 1117 NURSERY ROAD
60.00'
25' BST
24' BST
TO NC 210
BRIDGE 59
-DET-
-FDE-
-DET- PRC 11+82.32
SPECIAL LATERAL V DITCH SEE DETAIL A
SPECIAL CUT DITCH SEE DETAIL D
RIP RAP AT EMBANKMENT SEE DETAIL C
-DET- PT 13+60.19
SITE 1
-DET- PC 14+77.20
-DET- PRC 16+58.57
TEMP 36" CSP COLLAR AND EXTEND 36" RCP, 12 LF
INV= 181.13
INV=179.86'
INV=179.89'
INV=179.35'
INV=179.65'
SEWER
WATER
BEGIN DETOUR
-DET- PC 10+00.00 =
-L- POT 13+70.24
END DETOUR
-DET- PT 18+35.09 =
-L- POT 21+98.00

PLAN VIEW
SITES 1 & 2

LEGEND

IS IS	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
SCALE: 1" = 100' HORZ.



PAVEMENT - BRIDGE RELATIONSHIP SKETCH

REMOVE TEMPORARY DETOUR AND RESTORE AREA TO EXISTING GROUND LINE

ENGLISH

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 5 OF 7 7/29/08

7/29/2008
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Designer

5/14/99

15

TEMPORARY DETOUR

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2-B
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 7 of 13

NC GRID
NAD 83/95

SITE 2

TEMP. 12" CSP

TEMP. 12" CSP

USACE MITIGATION SITE

SCRUB

SCRUB

SCRUB

SCRUB

SPECIAL CUT DITCH
SEE DETAIL D

SPECIAL CUT DITCH
SEE DETAIL D

WOODS

SCRUB

INV = 181.20

36" RCP

36" CONC. PIPE

BRIDGE #59

DET

PDE

WOODS

SCRUB

INV = 181.13

WOODS

SPECIAL LATERAL V DITCH
SEE DETAIL A

SPECIAL CUT DITCH
SEE DETAIL D

RIP RAP AT EMBANKMENT
SEE DETAIL C

SITE 1

ENGLISH

LEGEND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50'
SCALE: 1" = 50' HORZ.

PLAN VIEW – ENLARGEMENT
SITES 1 & 2

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 5 OF 7 7/29/08

7/29/2008
c:\dgn\permits\B3655_hyd_prm_det_psh_enlarge.dgn
KO & Associates, P.C.

5/14/99

TEMPORARY DETOUR

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6866

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 8 of 13

NC GRID
NAD 83/95

SITE 2

TEMP. 12" CSP

TEMP. 12" CSP

USACE MITIGATION SITE

SCRUB

SCRUB

SCRUB

SCRUB

SPECIAL CUT DITCH
SEE DETAIL D

SPECIAL CUT DITCH
SEE DETAIL D

WOODS

WOODS

WOODS

SCRUB

INV = 181.29

INV = 181.13

36" RCP

BRIDGE 59

PDE

SPECIAL LATERAL V DITCH
SEE DETAIL A

SPECIAL CUT DITCH
SEE DETAIL D

RIP RAP AT EMBANKMENT
SEE DETAIL C

SITE 1

ENGLISH

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50'
SCALE: 1" = 50' HORZ.

PLAN VIEW – ENLARGEMENT
SITES 1 & 2

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 5 OF 7 7/29/08

7/29/2008
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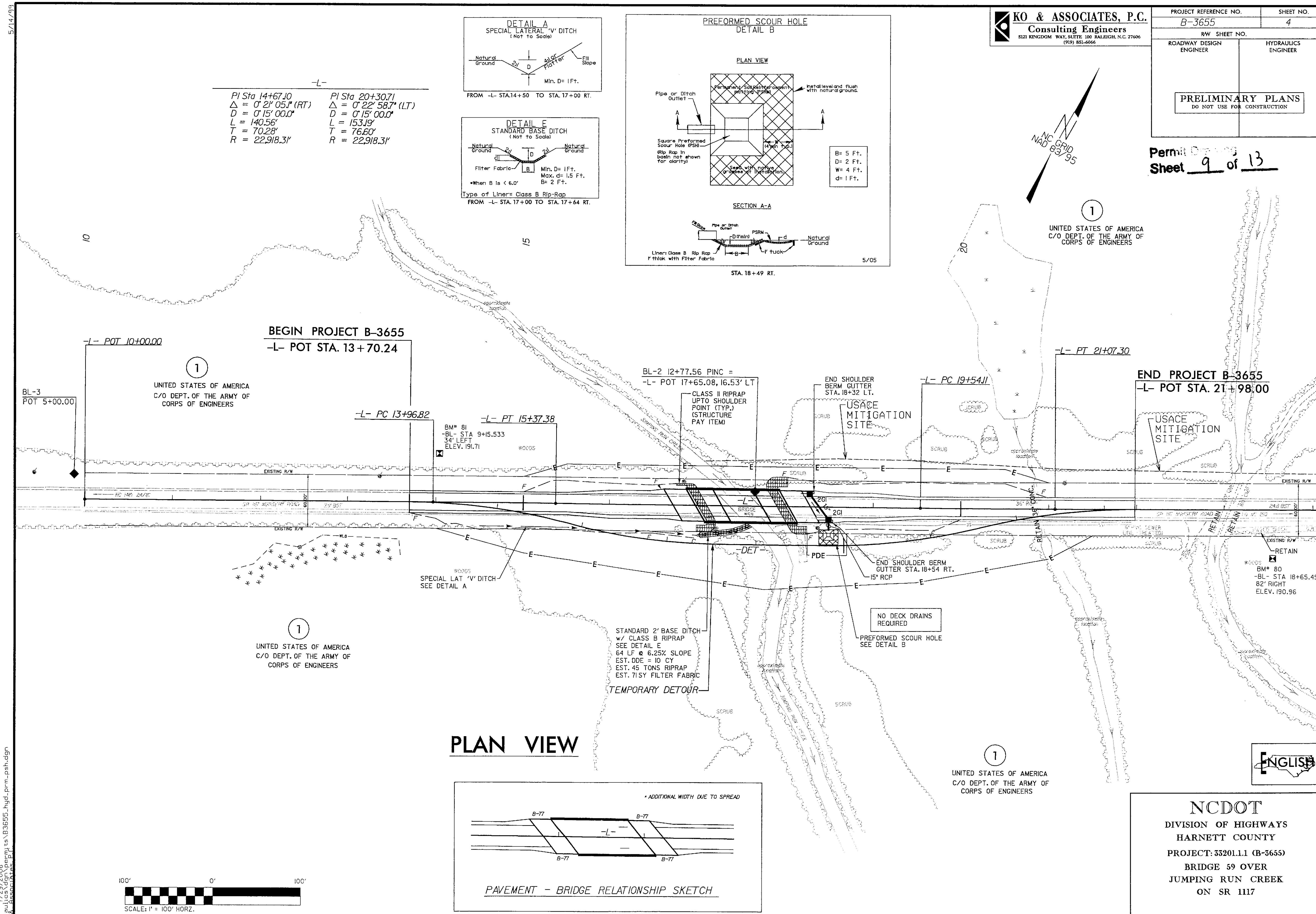

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066
PROJECT REFERENCE NO. B-3655
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Permit Drawing Sheet 9 of 13
NC GRID NAD 83/95
-L-
PI Sta 14+67.10
Δ = 0° 21' 05.1" (RT)
D = 0° 15' 00.0"
L = 140.56'
T = 70.28'
R = 22,918.31'
PI Sta 20+30.71
Δ = 0° 22' 58.7" (LT)
D = 0° 15' 00.0"
L = 153.19'
T = 76.60'
R = 22,918.31'
DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1 Ft.
FROM -L- STA.14+50 TO STA. 17+00 RT.
DETAIL E
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Min. D= 1 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM -L- STA. 17+00 TO STA. 17+64 RT.
PREFORMED SCOUR HOLE
DETAIL B
PLAN VIEW
Pipe or Ditch Outlet
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Install level and flush with natural ground.
B= 5 Ft.
D= 2 Ft.
W= 4 Ft.
d= 1 Ft.
SECTION A-A
Liner: Class B Rip Rap 1' thick with Filter Fabric
Natural Ground
5/05
STA. 18+49 RT.
BEGIN PROJECT B-3655
-L- POT STA. 13+70.24
-L- POT 10+00.00
BL-3
POT 5+00.00
UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS
-L- PC 13+96.82
-L- PT 15+37.38
BM# 81
-BL- STA 9+15.533
34' LEFT
ELEV. 191.71
BL-2 12+77.56 PINC =
-L- POT 17+65.08, 16.53' LT
CLASS II RIPRAP
UPTO SHOULDER
POINT (TYP.)
(STRUCTURE PAY ITEM)
END SHOULDER BERM GUTTER
STA. 18+32 LT.
USACE MITIGATION SITE
-L- PC 19+54.11
-L- PT 21+07.30
END PROJECT B-3655
-L- POT STA. 21+98.00
EXISTING R/W
SPECIAL LAT 'V' DITCH
SEE DETAIL A
-DET-
PDE
2GI
END SHOULDER BERM
GUTTER STA. 18+54 RT.
15" RCP
RETAIN
BM# 80
-BL- STA 18+65.457
82' RIGHT
ELEV. 190.96
NO DECK DRAINS REQUIRED
PREFORMED SCOUR HOLE
SEE DETAIL B
STANDARD 2' BASE DITCH
w/ CLASS B RIPRAP
SEE DETAIL E
64 LF @ 6.25% SLOPE
EST. DDE = 10 CY
EST. 45 TONS RIPRAP
EST. 71 SY FILTER FABRIC
TEMPORARY DETOUR
SCRUB
PLAN VIEW
* ADDITIONAL WIDTH DUE TO SPREAD
B-77
PAVEMENT - BRIDGE RELATIONSHIP SKETCH
100' 0' 100'
SCALE: 1" = 100' HORZ.
ENGLISH
NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117
SHEET 6 OF 7
7/29/08

5/14/99

KO & ASSOCIATES, P.C.
Consulting Engineers
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(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 10 of 13

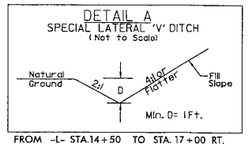
NC GRID
NAD 83/95

-L-

PI Sta 14+67.10
Δ = 0° 21' 05.1" (RT)
D = 0° 15' 00.0"
L = 140.56'
T = 70.28'
R = 22,918.31'

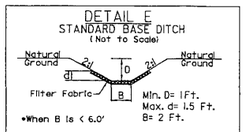
PI Sta 20+30.71
Δ = 0° 22' 58.7" (LT)
D = 0° 15' 00.0"
L = 153.19'
T = 76.60'
R = 22,918.31'

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



FROM -L- STA.14+50 TO STA. 17+00 RT.

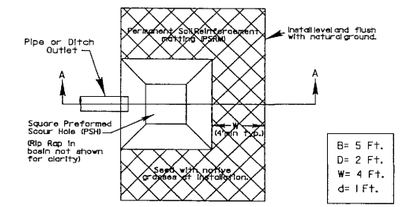
DETAIL E
STANDARD BASE DITCH
(Not to Scale)



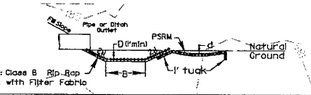
FROM -L- STA. 17+00 TO STA. 17+64 RT.

PREFORMED SCOUR HOLE
DETAIL B

PLAN VIEW



SECTION A-A



5/05

STA. 18+49 RT.

BEGIN PROJECT B-3655
-L- POT STA. 13+70.24

-L- POT 10+00.00

BL-3
POT 5+00.00

-L- PC 13+96.82

-L- PT 15+37.38

BM# 81
-BL- STA. 9+15.533
34' LEFT
ELEV. 191.71

BL-2 12+77.56 PINC =
-L- POT 17+65.08, 16.53' LT

CLASS II RIPRAP UPTO SHOULDER POINT (TYP.) (STRUCTURE PAY ITEM)

END SHOULDER BERM GUTTER STA. 18+32 LT.

USACE MITIGATION SITE

-L- PC 19+54.11

-L- PT 21+07.30

END PROJECT B-3655
-L- POT STA. 21+98.00

USACE MITIGATION SITE

BM# 80
-BL- STA. 18+65.457
82' RIGHT
ELEV. 190.96

SPECIAL LAT 'V' DITCH
SEE DETAIL A

STANDARD 2' BASE DITCH
w/ CLASS B RIPRAP
SEE DETAIL E
64 LF @ 6.25% SLOPE
EST. DDE = 10 CY
EST. 45 TONS RIPRAP
EST. 71SY FILTER FABRIC

TEMPORARY DETOUR

END SHOULDER BERM GUTTER STA. 18+54 RT.
15" RCP

PREFORMED SCOUR HOLE
SEE DETAIL B

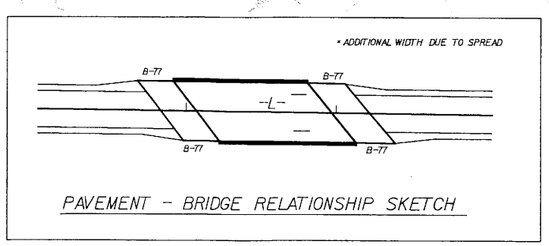
NO DECK DRAINS REQUIRED

(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS

(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS

(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS

PLAN VIEW



PAVEMENT - BRIDGE RELATIONSHIP SKETCH

100' 0' 100'
SCALE: 1" = 100' HORZ.

ENGLISH

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 6 OF 7 7/29/08

7/29/2008
ydraulics\dgn\permits\B3655_hyd_prm_psh.dgn
K. Bennett

5/14/99

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 11 of 13

-L- PT

BL-2 12+77.56 PINC =
-L- POT 17+65.08, 16.53' LT

CLASS II RIPRAP UPTO SHOULDER POINT (TYP.) (STRUCTURE PAY ITEM)

END SHOULDER BERM GUTTER STA. 18+32 LT.

-L- PC 19+54.11

-L- PT 15+37.38

BM# 81
-BL- STA 9+15.533
34' LEFT
ELEV. 191.71

USACE MITIGATION SITE

approximate location

JUMPING RUN CREEK

WOODS

SCRUB

BRIDGE #59

2GI

15" RCP

36" RCP

36" CMC

RETAIN

-DET-

PDE

END SHOULDER BERM GUTTER STA. 18+54 RT.

15" RCP

NO DECK DRAINS REQUIRED

PREFORMED SCOUR HOLE SEE DETAIL B

AL LAT 'V' DITCH
DETAIL A

STANDARD 2' BASE DITCH
w/ CLASS B RIPRAP
SEE DETAIL E
64 LF @ 6.25% SLOPE
EST. DDE = 10 CY
EST. 45 TONS RIPRAP
EST. 71 SY FILTER FABRIC

TEMPORARY DETOUR

50' 0' 50'
SCALE: 1" = 50' HORZ.

ENGLISH

PLAN VIEW - ENLARGEMENT

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 6 OF 7 7/29/08

7/29/2008
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5/14/99

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 12 of 13

-L- PT

-L- PC 19+54.11

BL-2 12+77.56 PINC =
-L- POT 17+65.08, 16.53' LT

CLASS II RIPRAP
UPTO SHOULDER
POINT (TYP.)
(STRUCTURE
PAY ITEM)

END SHOULDER
BERM GUTTER
STA. 18+32 LT.

USACE
MITIGATION
SITE

-L- PT 15+37.38

BM# 81
-BL- STA 9+15.533
34' LEFT
ELEV. 191.71

WOODS

SCRUB

approximate location

2GI

15" RCP

-L-
BRIDGE #59

-DET-

PDE

END SHOULDER BERM
GUTTER STA. 18+54 RT.

15" RCP

36" RCP

RETAIN 36" CONC. PIPE

AL LAT 'V' DITCH
DETAIL A

STANDARD 2' BASE DITCH
w/ CLASS B RIPRAP
SEE DETAIL E
64 LF @ 6.25% SLOPE
EST. DDE = 10 CY
EST. 45 TONS RIPRAP
EST. 71 SY FILTER FABRIC

TEMPORARY DETOUR

NO DECK DRAINS
REQUIRED

PREFORMED SCOUR HOLE
SEE DETAIL B

ENGLISH

50' 0' 50'
SCALE: 1" = 50' HORZ.

PLAN VIEW - ENLARGEMENT

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 6 OF 7 7/29/08

7/29/2008
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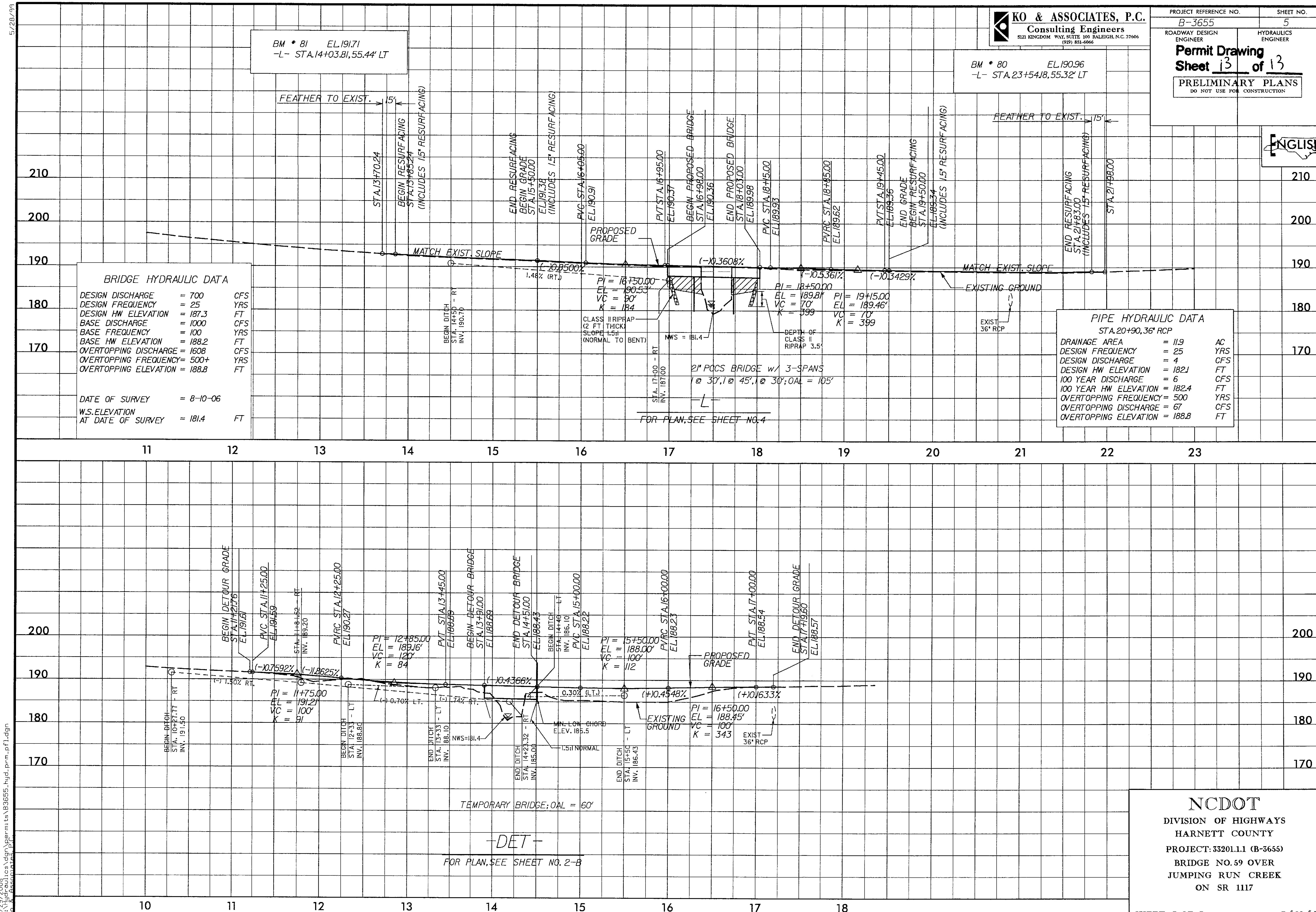
PROJECT REFERENCE NO.	SHEET NO.
B-3655	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

Permit Drawing Sheet 13 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 700	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 187.3	FT
BASE DISCHARGE	= 1000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 188.2	FT
OVERTOPPING DISCHARGE	= 1608	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 188.8	FT
DATE OF SURVEY	= 8-10-06	
W.S. ELEVATION AT DATE OF SURVEY	= 181.4	FT

PIPE HYDRAULIC DATA

STA.20+90, 36" RCP

DRAINAGE AREA	= 11.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4	CFS
DESIGN HW ELEVATION	= 182.1	FT
100 YEAR DISCHARGE	= 6	CFS
100 YEAR HW ELEVATION	= 182.4	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 67	CFS
OVERTOPPING ELEVATION	= 188.8	FT

NCDOT
DIVISION OF HIGHWAYS
HARNETT COUNTY
PROJECT: 33201.1.1 (B-3655)
BRIDGE NO. 59 OVER
JUMPING RUN CREEK
ON SR 1117

SHEET 7 OF 7 7/29/08

5/28/99
7/29/2008
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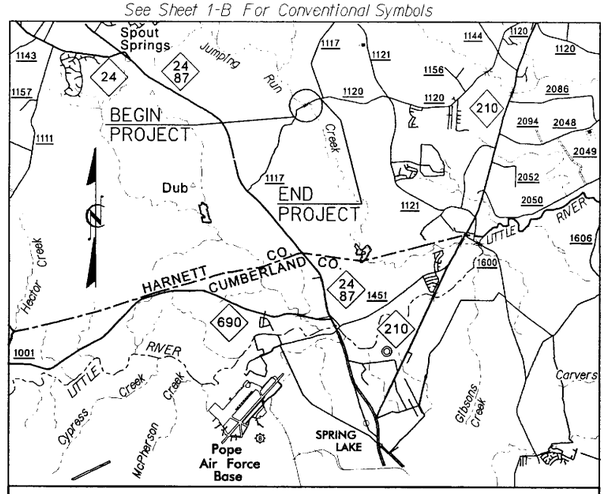
Ko & Associates, P.C.

TIP PROJECT: B-3655

CONTRACT:

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



VICINITY MAP

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARY

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HARNETT COUNTY

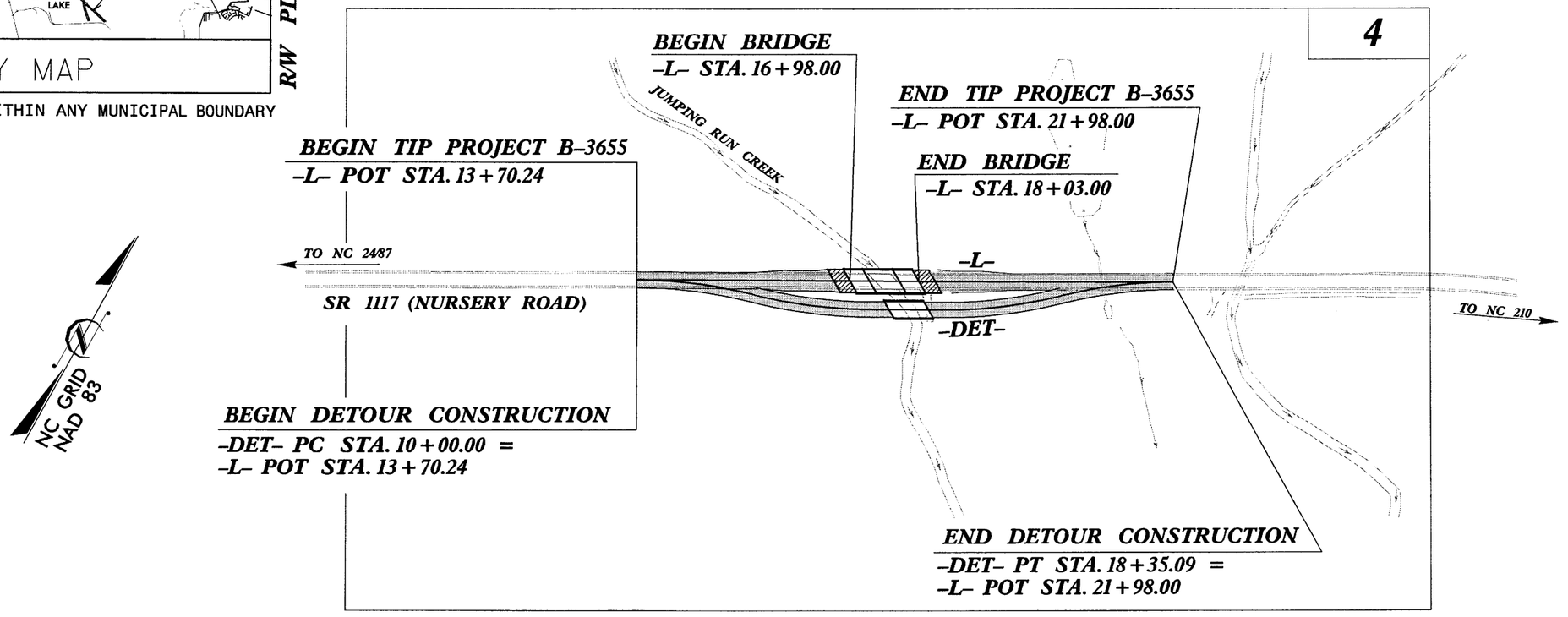
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3655	1	

WBS PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33201.1.1	BRZ-1117(3)	P.E.
33201.2.1	BRZ-1117(3)	R /W & UTIL.

LOCATION: ***BRIDGE NO. 59 OVER JUMPING RUN CREEK ON SR 1117 (NURSERY ROAD)***

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

4



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

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009 = 5800
ADT 2029 = 9800
DHV = 9 %
D = 65 %
T = 4 % *
V = 60 MPH

* TTST 1% DUAL 3%
FUNC. CLASS = RURAL MINOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3655	=	*0.137 MI.*
LENGTH STRUCTURE TIP PROJECT B-3655	=	*0.020 MI.*
TOTAL LENGTH OF TIP PROJECT B-3655	=	*0.157 MI.*

Prepared In the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
5121 Kingdom Way, Suite 100 Raleigh, NC 27606
(919) 851-6066

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 16, 2007

LETTING DATE: APRIL 21, 2009

MICHAEL A. YOUNG, PE
PROJECT ENGINEER

DAVID C. WALLER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER *P.E.*

5/27/2008
P:\Roadway\Proj\B3655_Rdy_tsh.dgn
KO & Associates, P.C.

PROJECT REFERENCE NO.	SHEET NO.
B-3655	1-B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

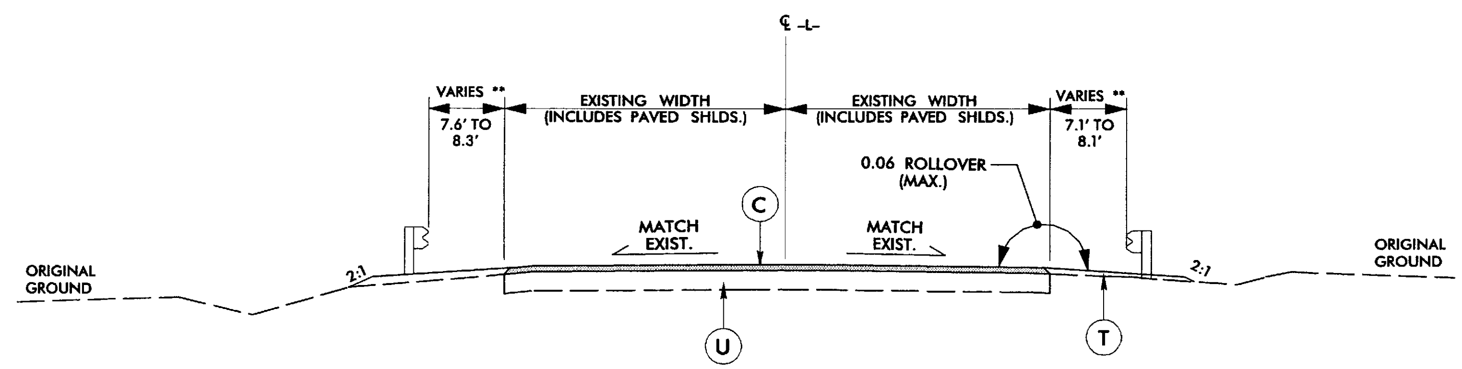
A	PROP. PORTLAND CEMENT CONCRETE PAVEMENT	J	PROP. 6" AGGREGATE BASE COURSE.
C	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. (RESURFACING)	T	EARTH MATERIAL.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	U	EXISTING PAVEMENT.
E	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT

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

TRANSITION FROM EXISTING TO T.S. NO. 1
-L- STA. 13+70.24 TO 13+85.24

USE TYPICAL SECTION NO. 1
-L- STA. 13+85.24 TO 15+50.00
-L- STA. 19+50.00 TO 21+83.00

TRANSITION FROM T.S. NO. 1 TO EXISTING
-L- STA. 21+83.00 TO 21+98.00



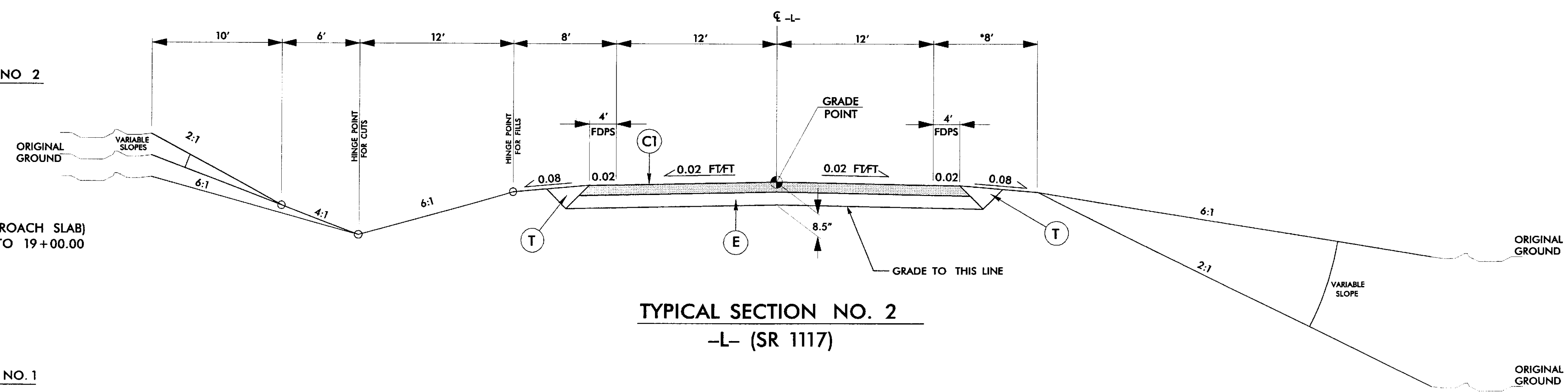
** SHOULDER IMPROVEMENTS REQUIRED, AS SHOWN, ONLY WHEN PLACING GUARDRAIL.

TYPICAL SECTION NO. 1
-L- (SR 1117)

* ADD 3' WITH GUARDRAIL

TRANSITION FROM T.S. NO. 1 TO T.S NO 2
-L- STA. 15+50.00 TO 16+00.00

USE TYPICAL SECTION NO. 2
-L- STA. 16+00.00 TO 16+74.15 (APPROACH SLAB)
-L- STA. 18+26.85 (APPROACH SLAB) TO 19+00.00



TYPICAL SECTION NO. 2
-L- (SR 1117)

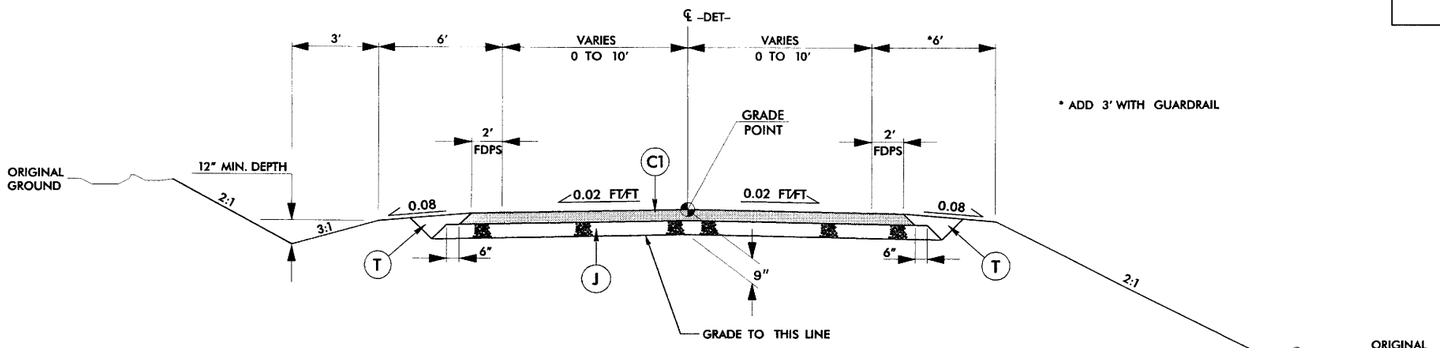
TRANSITION FROM T.S. NO. 2 TO T.S. NO. 1
-L- STA. 19+00.00 TO 19+50.00

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

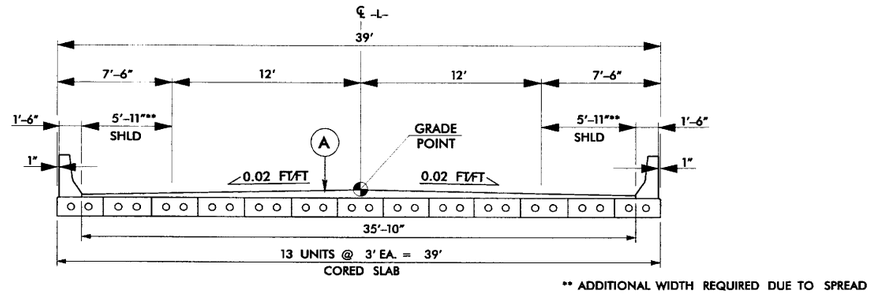
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

USE TYPICAL SECTION NO. 3
–DET– STA. 10+00.00 TO 13+91.00 (BRIDGE)
–DET– STA. 14+51.00 (BRIDGE) TO 18+35.09



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

USE TYPICAL SECTION NO. 4
–L– STA. 16+98.00 TO 18+03.00



** ADDITIONAL WIDTH REQUIRED DUE TO SPREAD

TYPICAL SECTION NO. 4
–L– (SR 1117)

5/14/99

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-3655	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

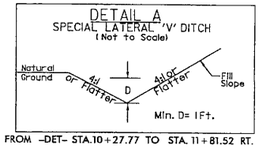
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TEMPORARY DETOUR

-DET-

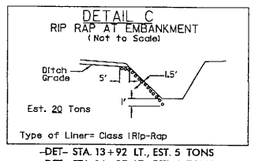
PI Sta 10+91.64	PI Sta 12+71.70	PI Sta 15+68.36	PI Sta 17+47.27
Δ = 14° 24' 29.5" (RT)	Δ = 14° 03' 24.5" (LT)	Δ = 14° 19' 59.1" (LT)	Δ = 13° 57' 00.4" (RT)
D = 7° 54' 10.3"	D = 7° 54' 10.3"	D = 7° 54' 10.3"	D = 7° 54' 10.3"
L = 182.32'	L = 177.87'	L = 181.37'	L = 176.52'
T = 91.64'	T = 89.38'	T = 91.16'	T = 88.70'
R = 725.00'	R = 725.00'	R = 725.00'	R = 725.00'

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



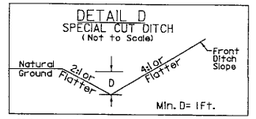
FROM -DET- STA.10+27.77 TO STA. 11+81.52 RT.

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)



-DET- STA. 13+92 LT., EST. 5 TONS
-DET- STA. 14+27 LT., EST. 4 TONS
-DET- STA. 14+14 RT., EST 7 TONS

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)



FROM -DET- STA. 11+82.52 TO STA. 14+23 RT.
FROM -DET- STA. 14+40 TO STA. 15+50 LT.

NC GRID
NAD 83/95

(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS
DEED 143 PG 70289
DEED 118 PG 40403

BEGIN PROJECT B-3655
-L- POT STA. 13+70.24

-L- POT 10+00.00

BL-3
POT 5+00.00

-L- PC 13+96.82

-L- PT 15+37.38

BM= 81
-BL- STA 9+15.533
34' LEFT
ELEV. 191.71

END DETOUR BRIDGE
-DET- POT STA.14+51.00

BL-2 12+77.56 PINC =
-L- POT 17+65.08, 16.53' LT

-L- PC 19+54.11

-L- PT 21+07.30

END PROJECT B-3655
-L- POT STA. 21+98.00

USACE MITIGATION SITE

TEMP. 12' CSP

SPECIAL CUT DITCH SEE DETAIL D

PROPOSED TEMP. GUARDRAIL

N 61° 59' 04.7" E

N 60° 06' 57.4" E

-L-

-DET-

N 61° 18' 07.2" E

SPECIAL LATERAL V DITCH SEE DETAIL A

RIP RAP AT EMBANKMENT SEE DETAIL C

PROPOSED TEMPORARY GUARDRAIL

END PAVED SHOULDER TRANSITION

BEGIN PAVED SHOULDER TRANSITION

TEMP 36" CSP COLLAR AND EXTEND 36" RCP, 12 LF

BM= 80
-BL- STA 18+65.457
82' RIGHT
ELEV. 190.96

-DET- PRC 11+82.32

-DET- PT 13+60.19

-DET- PC 14+77.20

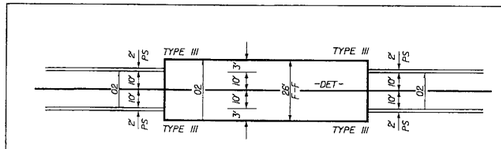
-DET- PRC 16+58.57

BEGIN DETOUR
-DET- PC 10+00.00 =
-L- POT 13+70.24

BEGIN DETOUR BRIDGE
-DET- POT STA.13+91.00

END DETOUR
-DET- PT 18+35.09 =
-L- POT 21+98.00

(1) UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS
DEED 143 PG 70289
DEED 118 PG 40403



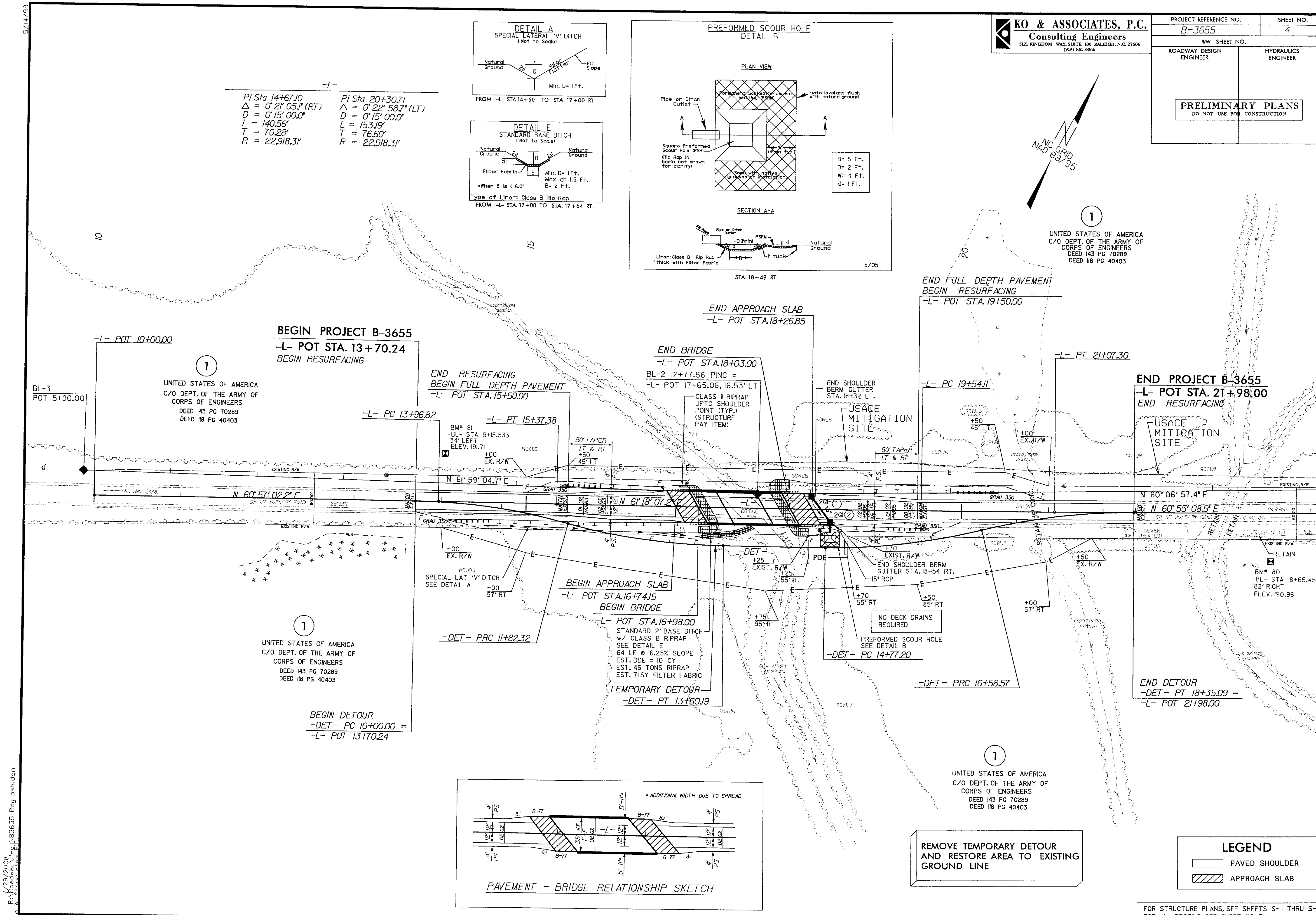
PAVEMENT - BRIDGE RELATIONSHIP SKETCH

REMOVE TEMPORARY DETOUR AND RESTORE AREA TO EXISTING GROUND LINE

LEGEND
PAVED SHOULDER

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-
FOR -DET- PROFILE, SEE SHEET NO. 5

7/29/2008
R:\Roadway\Proj\B3655_Rdy_dtl_det.dgn



KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066
PROJECT REFERENCE NO. B-3655
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NC GRID NAD 83/95
-L-
PI Sta 14+67.10
Δ = 0° 21' 05.1" (RT)
D = 0° 15' 00.0"
L = 140.56'
T = 70.28'
R = 22,918.31'
PI Sta 20+30.71
Δ = 0° 22' 58.7" (LT)
D = 0° 15' 00.0"
L = 153.19'
T = 76.60'
R = 22,918.31'
DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1 Ft.
FROM -L- STA.14+50 TO STA. 17+00 RT.
DETAIL E
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Min. D= 1 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM -L- STA. 17+00 TO STA. 17+64 RT.
PREFORMED SCOUR HOLE
DETAIL B
PLAN VIEW
SECTION A-A
B= 5 Ft.
D= 2 Ft.
W= 4 Ft.
d= 1 Ft.
Liner: Class B Rip Rap 1' thick with Filter Fabric
5/05
STA. 18+49 RT.
BEGIN PROJECT B-3655
-L- POT STA. 13+70.24
BEGIN RESURFACING
-L- POT 10+00.00
BL-3
POT 5+00.00
UNITED STATES OF AMERICA
C/O DEPT. OF THE ARMY OF
CORPS OF ENGINEERS
DEED 143 PG 70289
DEED 118 PG 40403
END RESURFACING
BEGIN FULL DEPTH PAVEMENT
-L- POT STA. 15+50.00
-L- PC 13+96.82
-L- PT 15+37.38
BM# 81
-BL- STA 9+15.533
34' LEFT
ELEV. 191.71
50' TAPER LT & RT
N 61° 59' 04.7" E
N 60° 57' 02.2" E
N 61° 18' 07.2" E
END BRIDGE
-L- POT STA.18+03.00
BL-2 12+77.56 PINC =
-L- POT 17+65.08, 16.53' LT
END APPROACH SLAB
-L- POT STA.18+26.85
CLASS II RIPRAP UPTO SHOULDER POINT (TYP.) (STRUCTURE PAY ITEM)
END SHOULDER BERM GUTTER STA. 18+32 LT.
USACE MITIGATION SITE
END FULL DEPTH PAVEMENT
BEGIN RESURFACING
-L- POT STA. 19+50.00
-L- PC 19+54.11
-L- PT 21+07.30
END PROJECT B-3655
-L- POT STA. 21+98.00
END RESURFACING
N 60° 06' 57.4" E
N 60° 55' 08.5" E
BM# 80
-BL- STA 18+65.457
82' RIGHT
ELEV. 190.96
SPECIAL LAT 'V' DITCH
SEE DETAIL A
BEGIN APPROACH SLAB
-L- POT STA.16+74.15
BEGIN BRIDGE
-L- POT STA.16+98.00
STANDARD 2' BASE DITCH
w/ CLASS B RIPRAP
SEE DETAIL E
64 LF @ 6.25% SLOPE
EST. DDE = 10 CY
EST. 45 TONS RIPRAP
EST. 71SY FILTER FABRIC
TEMPORARY DETOUR
-DET- PT 13+60.19
-DET- PRC 11+82.32
BEGIN DETOUR
-DET- PC 10+00.00 =
-L- POT 13+70.24
END SHOULDER BERM GUTTER STA. 18+54 RT.
15' RCP
NO DECK DRAINS REQUIRED
PREFORMED SCOUR HOLE
SEE DETAIL B
-DET- PC 14+77.20
-DET- PRC 16+58.57
END DETOUR
-DET- PT 18+35.09 =
-L- POT 21+98.00
PAVEMENT - BRIDGE RELATIONSHIP SKETCH
* ADDITIONAL WIDTH DUE TO SPREAD
REMOVE TEMPORARY DETOUR AND RESTORE AREA TO EXISTING GROUND LINE
LEGEND
PAVED SHOULDER
APPROACH SLAB
FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-
FOR -L- PROFILE, SEE SHEET NO. 5
5/14/99
7/29/2008

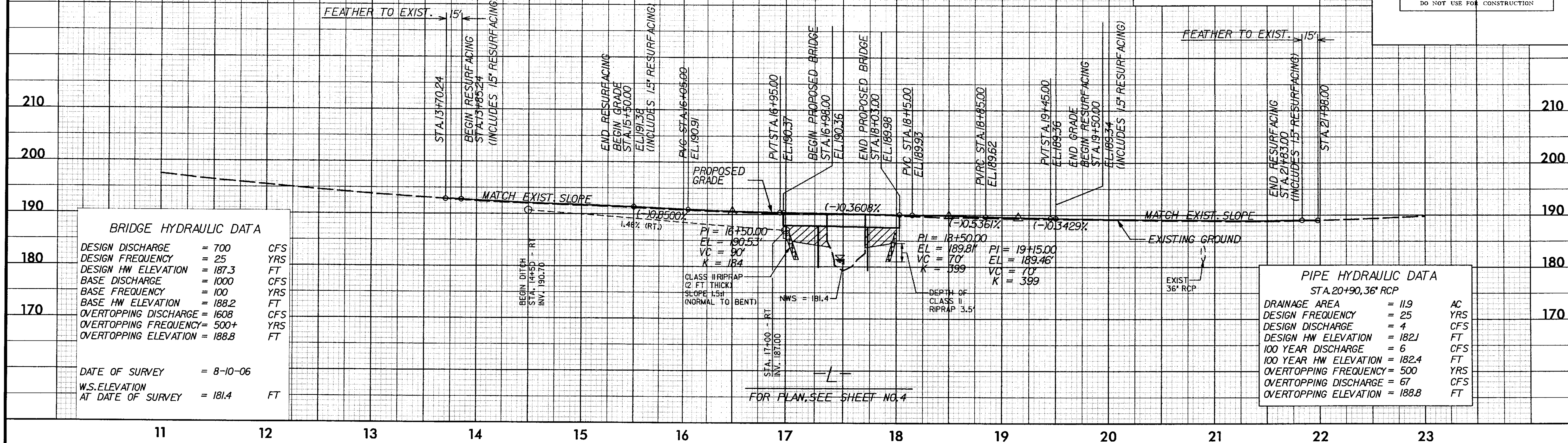
PROJECT REFERENCE NO.	SHEET NO.
B-3655	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

KO & ASSOCIATES, P.C.
Consulting Engineers
5121 KINGDOM WAY, SUITE 100 RALEIGH, N.C. 27606
(919) 851-6066

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM * 81 EL.191.71
-L- STA.14+03.81, 55.44' LT

BM * 80 EL.190.96
-L- STA.23+54.18, 55.32' LT



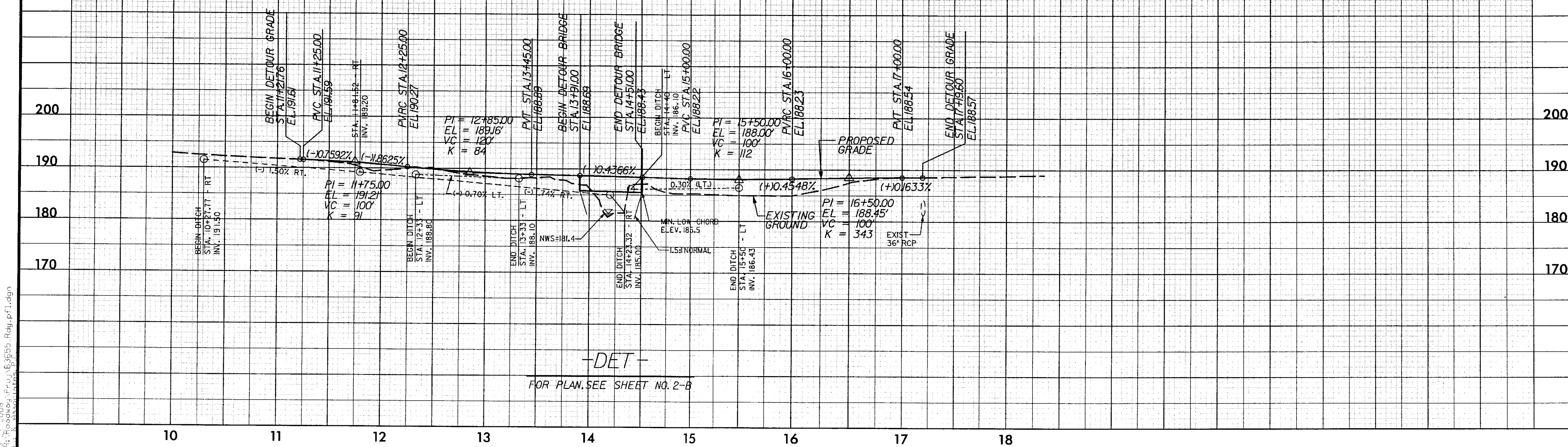
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 700	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 187.3	FT
BASE DISCHARGE	= 1000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 188.2	FT
OVERTOPPING DISCHARGE	= 1608	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 188.8	FT
DATE OF SURVEY	= 8-10-06	
W.S. ELEVATION AT DATE OF SURVEY	= 181.4	FT

PIPE HYDRAULIC DATA

STA.20+90, 36" RCP

DRAINAGE AREA	= 11.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4	CFS
DESIGN HW ELEVATION	= 182.1	FT
100 YEAR DISCHARGE	= 6	CFS
100 YEAR HW ELEVATION	= 182.4	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 67	CFS
OVERTOPPING ELEVATION	= 188.8	FT



PROJ. REFERENCE NO.	SHEET NO.
B-3655	X-1

0 5 10

STA. 15+50.00
EL. 191.26

G.P. = 191.38
G.F. = 190.98
0.0092
0.0231
0.0031
0.0131
-DET- 11+81.52
189.22 -L-
189.20 -DET-

STA. 15+00.00
EL. 191.61

G.P. = 191.54
0.0081
0.0045
6+
4+
189.96 -L-
189.94 -DET-
-DET- 11+30.41

STA. 14+50.00
EL. 192.00

0.0071
0.0116
6+
4+
90.7
-DET- 10+79.91

STA. 14+00.00
EL. 192.45

0.0012
0.0063
-DET- 10+29.77

REMOVE TEMPORARY DETOUR AND RESTORE AREA TO EXISTING GROUND LINE

BEGIN CONSTRUCTION -L- STA. 13+70.24

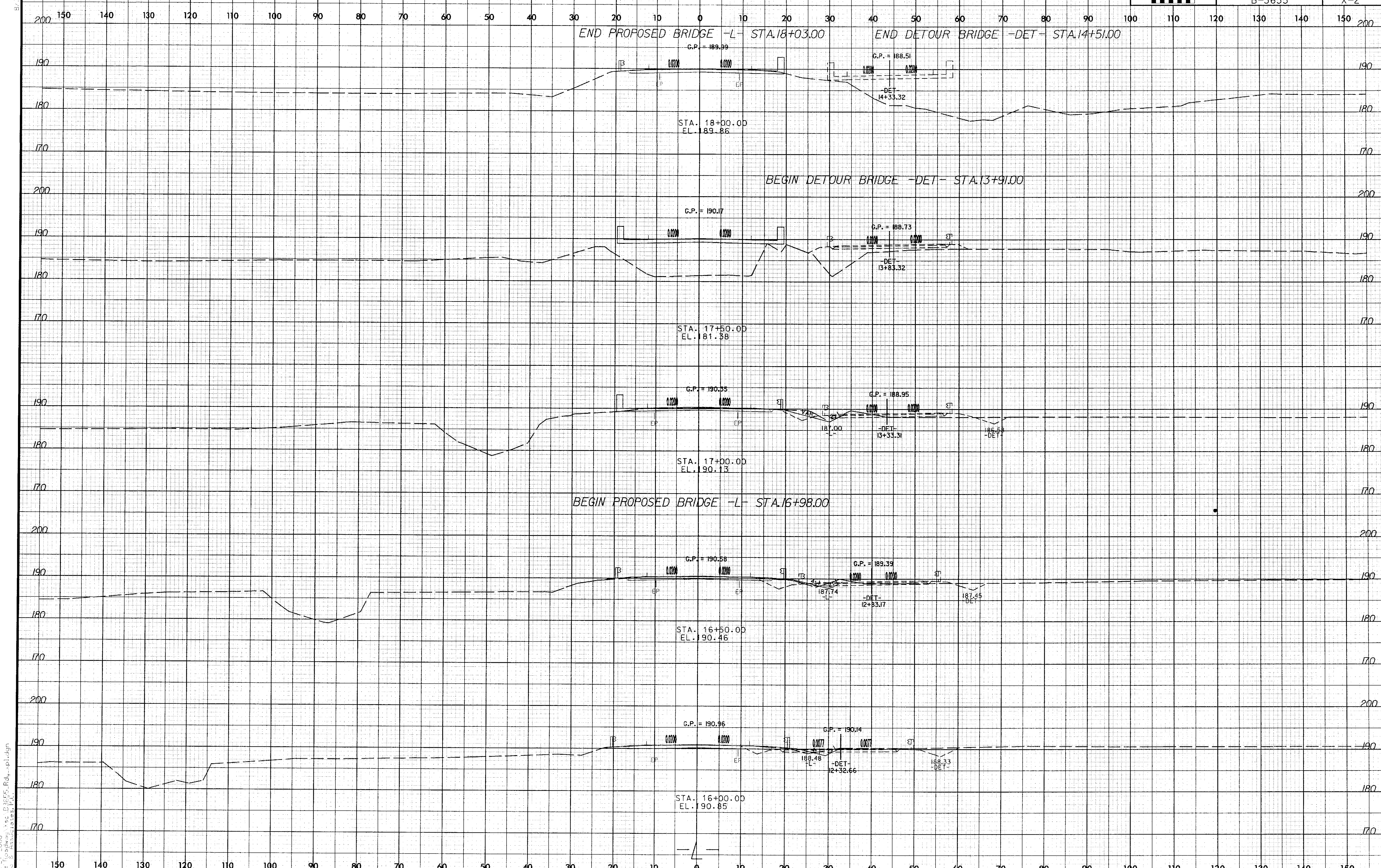
STA. 13+50.00
EL. 193.11

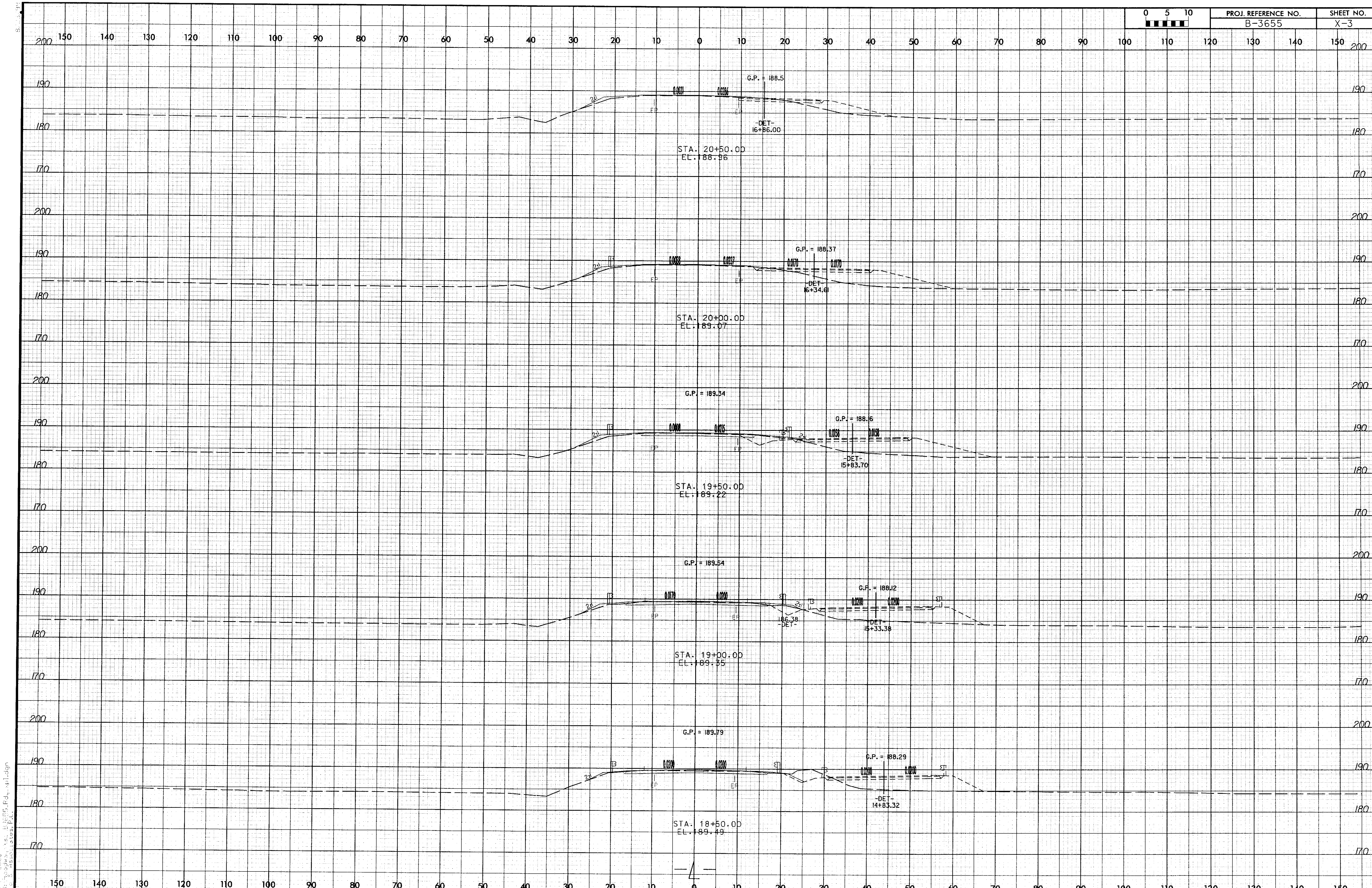
STA. 13+00.00
EL. 193.79

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

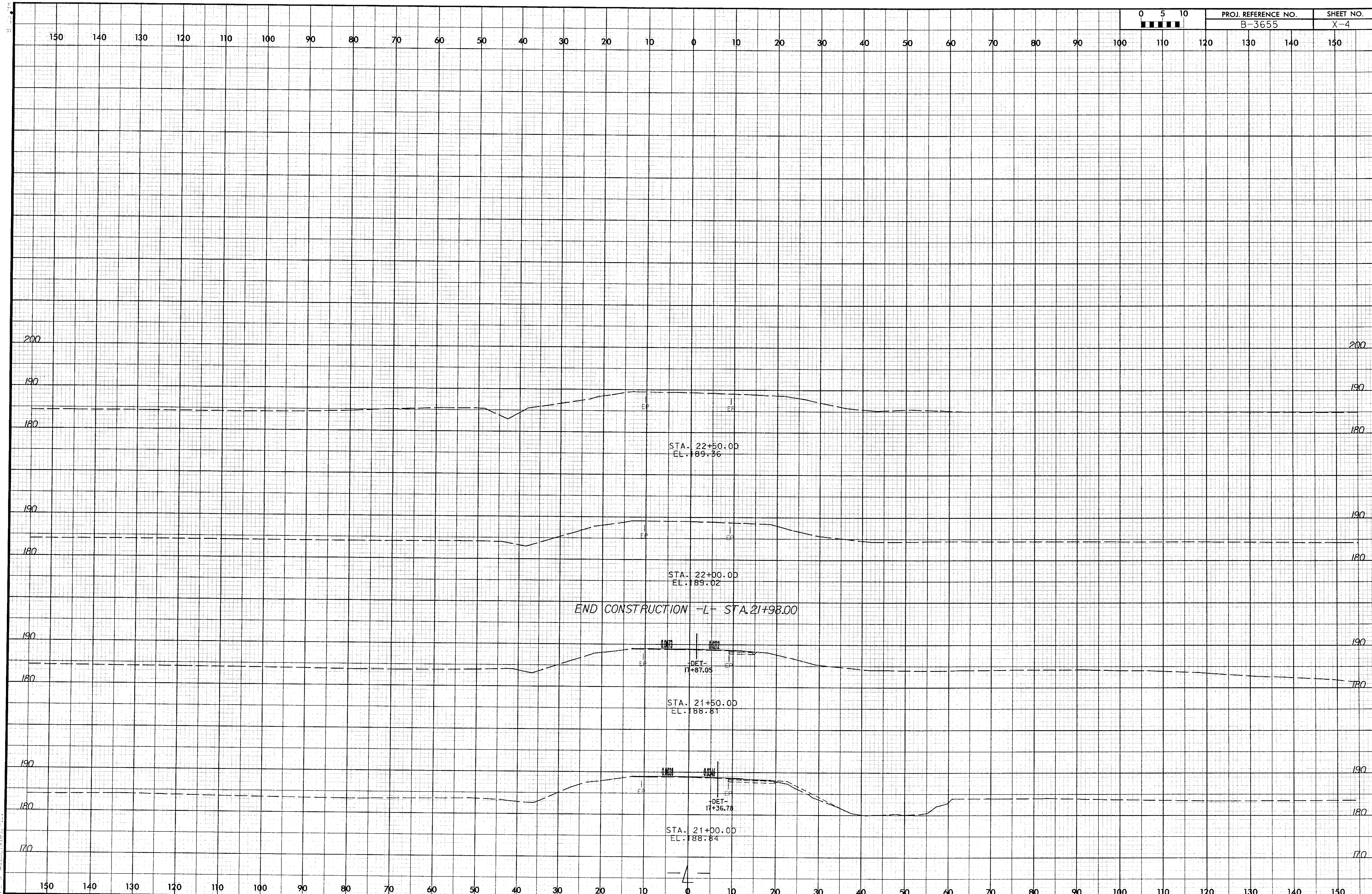
NOTE: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, and Clearing and Grubbing will be paid for at the contract lump sum price for "Grading."

PROJ. REFERENCE NO.	SHEET NO.
B-3655	X-2




PROJ. REFERENCE NO.
B-3655
SHEET NO.
X-3
0 5 10
G.P. = 188.5
-DET-
16+86.00
STA. 20+50.00
EL. 188.96
G.P. = 188.37
-DET-
16+34.61
STA. 20+00.00
EL. 189.07
G.P. = 189.34
G.P. = 188.6
-DET-
15+83.70
STA. 19+50.00
EL. 189.22
G.P. = 189.54
G.P. = 188.12
186.38
-DET-
-DET-
15+33.38
STA. 19+00.00
EL. 189.35
G.P. = 189.79
G.P. = 188.29
-DET-
14+83.32
STA. 18+50.00
EL. 189.49

PROJ. REFERENCE NO. B-3655 | SHEET NO. X-4



Harnett County
SR 1117 (Nursery Road)
Bridge No 59 over Jumping Run Creek
Federal-Aid Project No. BRZ-1117(3)
State Project No. 8.2451101
WBS No. 33201.1.1
T.I.P. No. B-3655

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION

APPROVED:

5/31/07
Date

ER **Gregory J. Thorpe, Ph.D., Branch Manager**
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation

5/31/07
Date

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

Harnett County
SR 1117 (Nursery Road)
Bridge No 59 over Jumping Run Creek
Federal-Aid Project No. BRZ-1117(3)
State Project No. 8.2451101
WBS No. 33201.1.1
T.I.P. No. B-3655

CATEGORICAL EXCLUSION

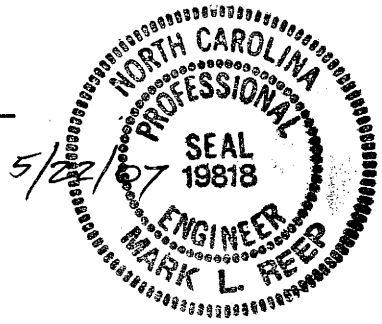
May 2007

Documentation Prepared By Ko and Associates, P.C.

Mark L. Reep

Mark L. Reep, P.E.
Project Manager

5/22/07



For the North Carolina Department of Transportation

Jennifer M. Fuller

Jennifer M. Fuller, P.E.
Project Development Engineer

PROJECT COMMITMENTS

Harnett County
SR 1117 (Nursery Road)
Bridge No 59 over Jumping Run Creek
Federal-Aid Project No. BRZ-1117(3)
State Project No. 8.2451101
WBS No. 33201.1.1
T.I.P. No. B-3655

In addition to the standard Nationwide Permit #33 and #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Construction and Maintenance Activities, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

No Special Commitments Are Required

Harnett County
SR 1117 (Nursery Road)
Bridge No 59 over Jumping Run Creek
Federal-Aid Project No. BRZ-1117(3)
State Project No. 8.2451101
WBS No. 33201.1.1
T.I.P. No. B-3655

INTRODUCTION: Bridge No. 59 is located in Harnett County on SR 1117 (Nursery Road) where it crosses Jumping Run Creek. Bridge No. 59 is included in the North Carolina Department of Transportation (NCDOT) 2006-2012 Transportation Improvement Program and is part of the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated; therefore, the project is classified as a Federal "Categorical Exclusion" and requires neither an environmental assessment nor an environmental impact statement.

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 16.8 out of a possible 100 for a new structure. The bridge is considered functionally obsolete and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

SR 1117 (Nursery Road) crosses over Jumping Run Creek approximately 8 miles north of Spring Lake in Harnett County. Bridge No. 59 is on an undeveloped portion of Federal property (Fort Bragg). SR 1117 (Nursery Road) is classified as a Rural Minor Collector in the Statewide Functional Classification System. It serves to provide access to NC 24/ 87 from the residential areas north of Fort Bragg.

Bridge No. 59, as shown in Figures 2A and 2B, has an overall length of 35 feet (two spans at 17 feet, 6 inches) and a clear roadway width of 24 feet. The existing two-lane bridge has a reinforced concrete deck on timber joists supported by a creosote timber substructure. SR 1117 (Nursery Road) has a current pavement width of 20 feet with 10-foot shoulders (2 feet paved) in the area of the bridge. The roadway approaches are a tangent section with a flat vertical alignment in the proximity of the existing structure. There is a slight right curve leaving the bridge continuing east. The curve will not be affected by any replacement alternative. Sight distance is good both to the west and to the east.

The structure was constructed in 1956. It is currently posted at 19 tons for a single unit and 23 tons for truck-tractor semi-trailer. Bridge No. 59 has a bed-to-crown distance of approximately 10 feet. The traffic volumes on SR 1117 (Nursery Road) at Jumping Run Creek are 5,200 vehicles per day (vpd) in 2006 and are projected to be 10,400 vpd for the design year 2030. The volumes include an estimated 1 % truck-tractor semi-trailer (TTST) and 3 % dual-tired (DT) vehicles. The posted speed limit is 55 mph in the vicinity of the bridge.

There are no utilities attached to the existing bridge. Overhead power lines parallel SR 1117 (Nursery Road) along the north side, and underground/overhead telephone lines parallel SR 1117 (Nursery Road) along the south side. Harnett County is planning to install a forced main sewer line along the south side of SR 1117 (Nursery Road) to service Fort Bragg housing developments west of NC 24/ 87. Scheduled for construction by early 2007, this sewer line is to be located between the proposed bridge and the existing right of way so that it will not be disturbed during the bridge construction period. Utility conflicts are considered moderate.

The Ecosystem Enhancement Program and the Department of Defense (Fort Bragg and Pope Air Force Base) jointly developed the Overhills stream and wetland restoration project on the north side of Bridge No.59. This project restored approximately 4,500 feet of Jumping Run Creek and 70 acres of adjacent riparian wetlands on the military base property (see Figure 9 for restoration plan). Substantial land use changes have occurred within the watershed as population increases have occurred in recent years due to the military base expansions. This restoration site is intended to improve water quality in Jumping Run Creek.

Development in the area beyond Fort Bragg is a mixture of residential and undeveloped land. Western Harnett County is experiencing heavy residential growth, especially in the area between NC 24/ 87, NC 27 and NC 210. Known development in this area includes 800 to 1,000 homes and two schools.

Five accidents were reported on SR 1117 (Nursery Road) in the vicinity of Bridge No. 59 during the five year period between 2000 and 2005. Another accident occurred in early 2006 as a vehicle struck the north bridge rail, cutting the rail in half.

Public school buses cross the present bridge 26 times per day

III. ALTERNATIVES

A. Project Description

NCDOT proposes to replace Bridge No. 59 with a new bridge that is 39 feet wide by 105 feet long with an approximate clear roadway width of 36 feet. The bridge will be replaced at the existing location. The grade of the roadway over the new structure will be approximately the grade of the existing bridge. The approaches to the new bridge will have a pavement width of 32 feet including four-foot paved shoulders. An additional 4 feet of grassed shoulder will also be provided on each side.

B. Build Alternatives

The studied alternatives were:

(1) Replace the structure on the existing location with a temporary detour on the north side;
(2) Replace the structure on the existing location with a temporary detour on the south side;
(3) Replace the structure on the existing location and utilize an off-site detour; and

(4) Replace the structure on the existing location with a temporary detour on the south side, minimizing the detour footprint.

Alternates 1, 2, 3, and 4 are shown in Figures 3 - 6. The posted speed limit is 55 mph and the corresponding design speed is 60 mph. A minimum design speed of 45 mph is proposed for the on-site detour. No design exceptions are required. Alternates 1 and 2 were not considered to be desirable because of the environmental impacts associated with a wider temporary detour footprint and the placement of a temporary arch culvert in the stream. Alternate 3 was not considered a desirable alternative because it would substantially delay emergency responders by using an off-site detour during construction. Alternates 1, 2, and 3 were developed using a 90-foot long bridge with a 42-foot clear roadway width and 9-foot shoulders across the bridge. The wider shoulders were proposed to meet NCDOT's design standards for bridges less than 100 feet in length.

Alternate 4 was developed to include a temporary on-site detour while minimizing the roadway footprint and environmental impacts. Alternate 4 includes a 105-foot long bridge with 36 feet of clear roadway width and 6-foot shoulders. A longer bridge is proposed with this alternative to convey more water under the bridge. NCDOT's design standards allow narrower shoulders on bridges greater than 100 feet in length. Alternate 4 also provides a temporary bridge that spans the recently restored Jumping Run Creek. The recommended typical sections are shown on Figures 8A and 8B.

Alternate 1 replaces the structure with a bridge on the existing location and provides a temporary detour on the north side. An arch culvert is proposed for the temporary detour. It is a 75-foot long, two-barrel 95-inch x 67-inch corrugated steel pipe arch. The estimated cost of this alternate is $988,000.

Alternate 2 replaces the structure with a bridge on the existing location and provides a temporary detour on the south side. An arch culvert is proposed for the temporary detour. It is a 75-foot long, two-barrel 95-inch x 67-inch corrugated steel pipe arch. The estimated cost of this alternate is $987,200.

Alternate 3 replaces the bridge on the existing location, closes SR 1117 (Nursery Road) to through traffic during construction, and utilizes an off-site detour. The estimated cost of this alternate is $704,700. The proposed detour route uses SR 1112 (Overhills Road), SR 1121 (Ray Road), NC 210, SR 1451 (Manchester Road), and NC 24/ 87. The proposed detour route is shown in Figure 7. The excess travel as compared to using SR 1117 (Nursery Road) is estimated to range from 3.0 to 10.5 miles, depending on the origin and destination.

In accordance with the NCDOT Guidelines for Evaluation of Off-site Detours for Bridge Replacement Projects (April 2004), the average delay per motorist using the off-site detour for Alternate 3 is estimated to range from three to 12 minutes for a construction period of 12 months, which falls under the Evaluation (E) range of the Guidelines. The Evaluation (E) range suggests that an onsite detour is justifiable from a traffic operations standpoint but must be weighed with other project factors to determine if it is appropriate. Harnett County emergency services and law enforcement agencies expressed opposition to an off-site detour using existing roads.

SR 1117 (Nursery Road) is an important connecting route between NC 210 and NC 24/ 87, and road closure would substantially delay response times to fire, ambulance, rescue, and law enforcement personnel. For this reason, NCDOT does not consider a temporary off-site detour to be acceptable.

Alternate 4 replaces the structure on the existing location and includes a temporary detour on the south side. A temporary detour bridge approximately 26 feet wide by 70 feet long is proposed. The estimated cost of this alternate is $1,037,200.

C. Alternatives Eliminated from Further Study

The No-Build or "do-nothing" alternate was also considered, but this choice would eventually necessitate closure of the bridge. This is not a desirable alternative due to the traffic service provided by SR 1117 (Nursery Road).

Investigation of the existing structure by the NCDOT Bridge Maintenance Unit indicates that rehabilitation of the old bridge is not feasible due to its age and deteriorated condition. The existing bridge is classified as structurally deficient.

D. Preferred Alternative

Alternate 4 is the preferred alternate. It replaces the bridge on its existing location and uses a temporary on-site detour on the south side of the bridge. This alternate was selected because it does not require temporary road closure that would delay emergency responders, and the temporary detour minimizes environmental impacts. The temporary detour on the south side avoids impacts to the recently restored stream and wetlands north of the bridge. Alternate 4 includes a temporary bridge instead of a culvert to avoid impacts to Jumping Run Creek during construction. Also, the temporary detour alignment has been located more closely to the existing road to reduce the impact to red-cockaded woodpecker habitat under management by Fort Bragg.

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

The Division Office concurs with the recommended improvements.

IV. ESTIMATED COSTS

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

	Alternate 1 With On-site Detour North	**Alternate 2** With On-site Detour South	**Alternate 3** With Off-site Detour	**Alternate 4** With On-site Detour South **(Preferred)**
Structure Removal	$ 16,800	$ 16,800	$ 16,800	$ 16,800
Structure	$ 378,000	$ 378,000	$ 378,000	$ 409,500
Roadway Approaches	$ 194,250	$ 199,050	$ 84,050	$ 194,950
Mobilization & Miscellaneous	$ 178,125	$ 171,125	$ 101,150	$ 187,475
Engineering & Contingencies	$ 125,000	$ 125,000	$ 95,000	$ 130,000
Temporary Detour	$ 57,825	$ 60,025	$ 0	$ 61,275
SUBTOTAL	$ 950,000	$ 950,000	$ 675,000	$ 1,000,000
Right-of-Way / Const. Ease. / Utilities	$ 38,000	$ 37,200	$ 29,700	$ 37,200
TOTAL	$ 988,000	$ 987,200	$ 704,700	$ 1,037,200

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

The current estimated cost for the recommended alternate is $1,037,200. The estimated cost of the project, as shown in the NCDOT 2006-2012 Transportation Improvement Program, is $35,000 for right-of-way and $900,000 for construction.

V. NATURAL RESOURCES

A. 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) topographic mapping (Anderson Creek, NC [1981] 7.5-minute quadrangle map), U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (Anderson Creek, NC [1981] 7.5-minute quadrangle map), Natural Resources Conservation Service (NRCS) (formerly the Soils Conservation Service [SCS]) soils mapping (USDA 1994), and recent aerial photography.

The site was visited on August 31, 2000 and again the week of January 10, 2005. The project study area was walked and visually surveyed for significant features. Special concerns evaluated in the field include 1) potential habitat for protected species and 2) wetlands and water quality protection in Jumping Run Creek.

Plant community descriptions are based on a classification system utilized by N.C. Natural Heritage Program (NCNHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names generally follow nomenclature found in Radford et al. (1968) with exceptions for updated nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (USACE) delineation guidelines (Environmental Laboratory 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin et al. (1979). Aquatic and terrestrial requirements and distributions were determined by supportive literature (Martof et al. 1980, Potter et al. 1980, Webster et al. 1985, Menhinick 1991, Hamel 1992, Palmer and Braswell 1995, and Rohde et al. 1994). Water quality information for area streams and tributaries was derived from available sources (NCDWQ 2000, NCDWQ 2004a, and NCDWQ 2004b). Quantitative sampling was not undertaken to support existing data.

At the times of the initial field investigation, the most current USFWS listing of federally protected species with ranges extending into Harnett County was dated June 16, 2000. The June 16, 2000 list was consulted prior to the 2000 field investigations. The USFWS listing of federally protected species with ranges extending into Harnett County was updated on December 11, 2006 (USFWS 2006). The most recent list has been reviewed to ensure that all federally protected species are accounted for within the project study area. In addition, NCNHP records documenting presence of federally or state listed species were consulted in 2000 and again in December 2004.

Definitions for descriptions used in this report are as follows: Project Study Area denotes the area bounded by proposed construction limits, and has been determined to be approximately 1,000 feet in length and 300 feet in width. Project Vicinity describes an area extending 0.5 mile on all sides of the project study area; and Project Region is equivalent to an area represented by a 7.5-minute USGS topographic quadrangle map with project study area occupying the central position.

B. Physiography and Soils

The project study area is underlain by the Cape Fear geologic formation within the Sandhills physiographic province of North Carolina. Topography is characterized as gently undulating with wide floodplains. The project study area is located in the floodplain of Jumping Run Creek. The land surface is mostly level to gently sloping. Elevations in the project study area range from approximately 200 feet National Geodetic Vertical Datum (NGVD) on the interstream flats on the outer edges of the project study area to approximately 190 feet NGVD in the stream channel (Anderson Creek, NC [1981] 7.5-minute quadrangle map).

The dominant soil mapping unit underlying the stream corridor at the existing facility is Wehadkee loam (*Typic Hapludults*). Soils mapped adjacent to Jumping Run Creek include Roanoke loam (*Typic Endoaquults*) adjacent to the east and west banks of Jumping Run Creek and Altavista fine sandy loam (*Aquic Hapludults*) adjacent to the west bank south of SR 1117 (Nursery Road).

The Wehadkee series is characterized by nearly level, poorly-drained soils located on flood plains with loamy and sandy underlying layers throughout. These soils commonly occur in broad floodplains and along major drainageways (USDA 1994).

The Roanoke and Altavista series are typically found on nearly level to strongly sloping stream terraces, and are well-drained to poorly drained soils with loamy or clayey subsoil (USDA 1994). Within Harnett County, both Wehadkee and Roanoke series are considered to be hydric soils, while the Altavista series is considered to be a non-hydric soil (USDA 1996).

C. Water Resources

1. Waters Impacted

The project study area is located within sub-basin 03-06-14 of the Cape Fear River Basin and is part of USGS Hydrologic Unit 03030004 of the South Atlantic/Gulf Coast Region (NCDWQ 2000). The structure targeted for replacement spans Jumping Run Creek with no direct involvement of additional streams or tributaries. The section of Jumping Run Creek within the project study area has been assigned Stream Index Number 18-23-29 by the N.C. Division of Water Quality (NCDWQ) (NCDWQ 2004a).

2. Water Resources Characteristics

Jumping Run Creek is a well-defined, deeply incised, Coastal Plain river with high flow over a sandy substrate. NWI mapping indicates that Jumping Run Creek has been previously excavated to its present-day depth. Jumping Run Creek, at the existing bridge, is approximately 15 feet in width and 6 feet from top of banks to stream bed. Water clarity was moderate on the day of the site visit, a result of tannin and lignin staining. During field investigations, Jumping Run Creek had approximately 2 feet of water depth with high flow velocities. The deeply incised channel appears to support temporary, high-volume flows. No species of submerged aquatic vegetation were identified in the stream channel within the project study area. Stream banks and the adjacent floodplain support pine forest and shrub assemblage vegetation. Local disturbances within the project study area consist of a power line parallel to and north of the existing bridge, a pipe outfall parallel to and in the southeastern quadrant with water flow entering Jumping Run Creek, and previous forest harvesting activities to the north and south of the bridge.

The NCDWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7, hereafter referred to as the draft N.C. 2004 Section 303(d) list. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation requirements defined in 40 CFR 131. The standards violation may be due to an individual pollutant, multiple pollutants, or an unknown cause of impairment. The impairment could be from point sources, non-point sources, and/or atmospheric deposition. Some sources of impairment exist across state lines. North Carolina's methodology is strongly based on the aquatic life use support guidelines available in the Section 305(b) guidelines (EPA-841-B-97-002A and -002B). Those streams attaining only Partially Supporting (PS) or Not Supporting (NS) status are listed on the draft NC 2004 Section 303(d)

list. Streams are further categorized into one of six parts within the draft N.C. 2004 Section 303(d) list, according to source of impairment and degree of rehabilitation required for the stream to adequately support aquatic life. Within Parts 1, 4, 5, and 6 of the list, North Carolina has developed a priority ranking scheme (low, medium, high) that reflects the relative value and benefits those waterbodies provide to the State. Jumping Run Creek is not listed on the draft N.C. 2004 Section 303(d) list (NCDWQ 2004b).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A best usage classification of **C** has been assigned to Jumping Run Creek (NCDWQ 2004a). The designation **C** denotes that appropriate uses include 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. No designated High Quality Waters (**HQW**), Outstanding Resource Waters (**ORW**), Water Supply I (**WS-I**), or Water Supply II (**WS-II**) waters occur within 1.0 mile of the project study area.

The NCDWQ (previously known as the Division of Environmental Management, Water Quality Section [DEM]) has initiated a whole basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed project study area is summarized in the *Cape Fear River Basinwide Water Quality Management Plan* (NCDWQ 2000). Jumping Run Creek was given a bioclassification rating of Excellent in 1998 (NCDWQ 2000). Waters classified as **C** are rated as **Supporting** their designated uses (NCDWQ 2000). In terms of stream mitigation, Jumping Run Creek is classified as a **Warmwater** stream (USACE et al. 2003).

The sub-basin (03-06-14) supports two major point-source dischargers and nine minor dischargers. Total permitted flow is 2.72 million gallons per day (MGD) for major dischargers and 1.50 MGD for minor dischargers (NCDWQ 2000). Non-point source discharges include construction, wastewater disposal, and solid waste disposal. Sedimentation and nutrient inputs are major problems associated with non-point source discharges and often result in high concentrations of fecal coliform, heavy metals, oil from roads and parking lots, and increased nutrient levels in surface waters.

3. Summary of Anticipated Impacts to Water Resources

a) General Impacts

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

- Increased sedimentation and siltation downstream of the crossing and increased erosion in the project study area.

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

The proposed bridge replacement will allow for continuation of pre-project stream flows in Jumping Run Creek, thereby protecting the integrity of these waterways. Long-term impacts resulting from construction are expected to be negligible.

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

b) Impacts Related to Bridge Demolition and Removal

The bridge structure is built entirely of timber. Therefore, there is little potential for components of the bridge to be dropped into "waters of the United States." No temporary fill is expected to result from removal of the existing bridge. NCDOT's Best Management Practices for Construction and Maintenance Activities must be applied for the removal of this bridge.

D. BIOTIC RESOURCES

1. Plant Communities

Three distinct plant communities were identified within the project study area: pine forest, disturbed/maintained land, and shrub assemblage. Descriptions of plant communities are provided below.

a) Disturbed/Maintained Land

Disturbed/maintained land includes roadside margins and areas regularly maintained for utility lines. Invasive weeds present in roadside margins and utility right-of-ways include crabgrass

(*Digitaria sanguinalis*) and dandelion (*Taraxacum officinale*). Common herb species include broom panicgrass (*Dichanthelium scoparium*), dog fennel (*Eupatorium capillifolium*), goldenrods (*Solidago* spp.), giant plume grass (*Erianthus giganteus*), white sage (*Artemisia* sp.), clover (*Lespedeza virginica*), elderberry (*Sambucus canadensis*), partridge pea (*Cassia fasciculata*), Japanese honeysuckle (*Lonicera japonica*), greenbrier (*Smilax* sp.), dayflower (*Commelina communis*), and poison ivy.

b) Pine Forest

Pine forests in the northwest quadrant of the project study area are characterized by a closed canopy and support a canopy dominated by (over 70 percent coverage) loblolly pine (*Pinus taeda*). This community appears to be approximately 40-50 years old and contains a well-developed hardwood subcanopy and a dense shrub assemblage. Other canopy species include live oak (*Quercus virginiana*), sweetgum (*Liquidambar styraciflua*), and tulip popular (*Liriodendron tulipifera*). The understory is primarily canopy species, along with mockernut hickory (*Carya tomentosa*), dogwood (*Cornus florida*), white oak (*Quercus alba*), blackjack oak (*Quercus velutina*), willow oak (*Quercus phellos*), post oak (*Quercus stellata*), and American holly (*Ilex opaca*). The forest floor supports a dense growth of shrubs, vines, and herbs such as bitter gallberry (*Ilex glabra*), wax myrtle (*Myrica cerifera*), highbush blueberry (*Vaccinium corymbosum*), American holly, muscadine grape (*Vitis rotundifolia*), cat greenbriar (*Smilax glauca*), poison ivy (*Toxicodendron radicans*), giant cane (*Arundinaria gigantea*), and bracken fern (*Pteridium aquilinum*). The pine forest that exists in the southwestern quadrant of the project study area also consists of 40-50 year old trees dominated by loblolly pines. Similar hardwood species occur here as in the northwest quadrant. The pine forest in the southwestern quadrant appears to have undergone recent fire activity which has cleared the forest floor of most shrub and herbaceous vegetation.

c) Shrub Assemblage

Within the project study area, shrub assemblages are areas which previously supported pine forest communities and have experienced logging activities. These areas are presently dominated by shrubs and opportunistic tree species. Shrub assemblage vegetation is characterized by shrubs and herbs such as silverberry (*Elaeagnus umbellata*), Chinese privet (*Ligustrum sinense*), winged sumac (*Rhus copallinum*), dog fennel, goldenrods, clover, and opportunistic tree species such as loblolly pine, sweetgum, and red maple.

2. Wildlife

During the field visit, mammal signs (tracks, scat, remains, etc.) were noted within the project study area for only one species: white-tailed deer (*Odocoileus virginianus*). Several species not in evidence but also expected to occur in project study area woodlands and fringe areas are muskrat (*Ondatra zibethicus*), gray fox (*Urocyon cinereoargenteus*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginianus*), raccoon (*Procyon lotor*), mink (*Mustela vison*), meadow jumping mouse (*Zapus hudsonius*), and house mouse (*Mus musculus*).

Birds observed within or adjacent to the project study area include Carolina wren (*Thryothorus ludovicianus*), eastern bluebird (*Sialia sialis*), northern cardinal (*Cardinalis cardinalis*), red-eyed vireo (*Vireo olivaceus*), pileated woodpecker (*Dryocopus pileatus*), Carolina chickadee (*Poecile carolinensis*), white-eyed vireo (*Vireo griseus*), common yellowthroat (*Geothlypis trichas*), red-tailed hawk (*Buteo jamaicensis*), and northern mockingbird (*Mimus polyglottos*). Other species, such as American crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), mourning dove (*Zenaida macroura*), eastern screech owl (*Otus asio*), and American robin (*Turdus migratorius*) were not observed but are expected to occur within the project study area.

Several terrestrial reptiles and amphibian species were documented within the project study area including Carolina anole (*Anolis carolinensis*) and several toads (*Bufo* sp.). Terrestrial reptiles and amphibians not observed but likely occurring within the project study area include eastern box turtle (*Terrapene carolina*), eastern fence lizard (*Sceloporus undulatus*), broadhead skink (*Eumeces laticeps*), five-lined skink (*Eumeces fasciatus*), rat snake (*Elaphe obsoleta*), eastern kingsnake (*Lampropeltis getulus*), eastern garter snake (*Thamnophis sirtalis*), black racer (*Coluber constrictor*), copperhead (*Agkistrodon contortrix*), marbled salamander (*Ambystoma opacum*), and dwarf salamander (*Eurycea quadridigitata*).

3. Aquatic Communities

Limited investigations resulted in no aquatic reptiles or amphibians identified in the project study area. Aquatic or semi-aquatic reptiles and amphibians which may occur within the project study area include snapping turtle (*Chelydra serpentina*), yellowbelly slider (*Trachemys scripta*), river cooter (*Pseudemys concinna*), mud turtle (*Kinosternon subrubrum*), brown water snake (*Nerodia taxispilota*), redbelly water snake (*Nerodia erythrogaster*), cottonmouth (*Agkistrodon piscivorus*), eastern newt (*Notophthalmus viridescens*), southern dusky salamander (*Desmognathus auriculatus*), mud salamander (*Pseudotriton montanus*), green frog (*Rana clamitans*), southern cricket frog (*Acris gryllus*), and pickerel frog (*Rana palustris*) (Martof et al. 1980).

Visual surveys of Jumping Run Creek did not reveal the presence of molluscan fauna, fish, or any other aquatic life. Detailed sampling was not undertaken in Jumping Run Creek to determine fishery potential; however, fish species representative of streams within the county include dusky shiner (*Notropis cummingsae*), pirate perch (*Aphredoderus sayanus*), eastern mosquitofish (*Gambusia holbrooki*), tessellated darter (*Etheostoma olmstedi*), margined madtom (*Noturus insignis*), American eel (*Anguilla rostrata*), coastal shiner (*Notropis petersoni*), and creek chub (*Semotilus atromaculatus*). Potential game fish which may be present within the project study area include redbreast sunfish (*Lepomis auritus*) and largemouth bass (*Micropterus salmoides*) (Menhinick 1991, Rohde et al. 1994).

The N.C. Wildlife Resources Commission (NCWRC) (1998) has developed a Significant Aquatic Endangered Species Habitat database to enhance planning and impact analysis in areas proposed by NCWRC as being critical due to the presence of Endangered or Threatened aquatic species. No Significant Aquatic Endangered Species Habitat occurs within or near the project study area (NCWRC 1998). The nearest Significant Aquatic Endangered Species Habitat occurs on Pocket Creek, approximately 17 miles northwest of the project study area (NCWRC 1998).

This project is in the Sandhills and includes the crossing of a stream delineated on the most recent USGS 7.5-minute topographic quadrangle. Since, Jumping Run Creek is a tributary to the Cape Fear River, anadromous fish passage was considered in the planning of this bridge replacement. The project area is upstream of the Cape Fear lock and dam and a pond. For this reason, the portion of Jumping Run Creek in the project area does not support habitat for short nose sturgeon (*Acipenser brevirostrum*) or other anadromous species, and the National Marine Fisheries Service concurs with this determination. No special provisions for anadromous fish passage are required for this project.

4. Summary of Anticipated Impacts

Proposed alternatives include both permanent and temporary impacts. Permanent impacts are considered to be those impacts that occur within proposed cut-fill limits. Temporary impacts are considered to be those impacts that occur within the cut-fill footprint associated with the temporary detours of Alternates 1, 2, and 4. Temporary impact areas will be restored to pre-project conditions once construction is complete. Plant communities within the project study area were delineated to determine the approximate area and location of each. A summary of potential impacts to plant communities is presented in Table 1.

Alternates 1, 2, 3, and 4 have identical total permanent impacts (0.08 acre). Total temporary impacts for Alternate 1 (0.70 acre) are similar to those for Alternate 2 (0.63 acre) and Alternate 4 (0.54 acre). Alternate 1, however, temporarily impacts greater amounts of forest vegetation, while Alternates 2 and 4 temporarily impact greater amounts of disturbed shrub vegetation. Alternate 3 impacts are mostly limited to disturbed/maintained land. Upon completion of roadway improvements, temporary detours will be removed and natural communities will be restored.

Table 1. Area of Plant Communities within Cut-Fill Limits

Plant Community	Alternate 1			Alternate 2		
	Permanent	**Temporary**	**Total**	**Permanent**	**Temporary**	**Total**
Pine Forest	<0.01	0.32	0.32	<0.01	0.17	0.17
Disturbed/Maintained	0.05	0.08	0.13	0.05	0.08	0.13
Shrub Assemblage	0.03	0.30	0.33	0.03	0.38	0.41
Total	**0.08**	**0.70**	**0.78**	**0.08**	**0.63**	**0.71**
	Alternate 3			**Alternate 4**		
Pine Forest	<0.01	0.00	<0.01	<0.01	<0.01	0.01
Disturbed/Maintained	0.05	0.00	0.05	0.05	0.15	0.20
Shrub Assemblage	0.03	0.00	0.03	0.03	0.38	0.41
Total	**0.08**	**0.00**	**0.08**	**0.08**	**0.54**	**0.62**

Areas are given in acres.

Due to the limited extent of infringement on natural communities, the proposed bridge replacement will not result in significant loss or displacement of known terrestrial animal populations. No significant habitat fragmentation is expected since most improvements will be restricted to existing roadside margins. Construction noise and associated disturbances will have

short-term impacts on avifauna and migratory wildlife movement patterns. However, long-term impacts are expected to be negligible.

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

E. SPECIAL TOPICS

1. Waters of the United States

Surface waters within the embankments of Jumping Run Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR section 328.3). NWI mapping (Anderson Creek, NC [1981] 7.5-minute quadrangle map) indicates (and field investigations confirm) that Jumping Run Creek is a bank-to-bank system (with no immediately adjacent wetlands) that exhibits characteristics of a riverine intermittent streambed that is seasonally flooded and previously excavated (R4SBCx) (Cowardin et al. 1979).

Wetlands are subject to jurisdictional consideration under Section 404 of the Clean Water Act as waters of the United States (33 CFR Section 328.3). These areas are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (Environmental Laboratory 1987). Field investigations indicate that there is one wetland within the project study area. This wetland exhibits characteristics of a palustrine, forested, seasonally flooded system consisting of a mixture of broad-leaved deciduous and needle-leaved vegetation (PF01/2C; Cowardin et al. 1979) This wetland satisfies the three-parameter approach outlined by the USACE (Environmental Laboratory 1987). Vegetation within the wetland consists of a canopy of loblolly pine, sweetgum, and red maple, and an understory dominated by giant cane. Vegetation is growing in Roanoke soils which exhibit values, chromas, and mottles characteristics of hydric soils. Evidence of wetland hydrology included oxidized root channels and water stained leaves. In terms of mitigation, the NCDWQ would consider these wetlands to be "riverine."

All four alternatives avoid impacts to wetland areas; however, Alternates 1 and 2 are expected to result in temporary impacts to Jumping Run Creek. Temporary impacts to Jumping Run Creek associated with Alternate 1 total approximately 81 linear feet. Temporary impacts to Jumping Run Creek associated with Alternate 2 total approximately 53 linear feet. Proposed impacts to jurisdictional areas are shown in Table 2.

Table 2. Projected Impacts to Jurisdictional Areas

Jurisdictional Areas	Alternate 1			Alternate 2		
	Permanent	**Temporary**	**Total**	**Permanent**	**Temporary**	**Total**
Wetland*	0	0	**0**	0	0	**0**
Jumping Run Creek**	0	81	**81**	0	53	**53**
	Alternate 3			**Alternate 4**		
Wetland*	0	0	**0**	0	0	**0**
Jumping Run Creek**	0	0	**0**	0	0	**0**

*Areas of impacts to the wetland are given in acres.
**Linear distances for impacts to Jumping Run Creek are given in feet.

There is little potential that components of the existing bridge may be dropped into "waters of the United States" during construction. Therefore, no temporary fill is expected to result from bridge removal. NCDOT will coordinate with the various resource agencies during project planning to ensure that all concerns regarding bridge demolition are resolved. In addition, NCDOT's "Guidelines for Best Management Practices for Construction and Maintenance Activities" will be applied for the removal of this bridge.

2. Permits

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

This project may be processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. The USACE has made available Nationwide Permit (NWP) No. 23 (67 FR 2020, 2082; January 15, 2002) for CEs due to expected minimal impact. NCDWQ has made available a General 401 Water Quality Certification for NWP No. 23 (GC 3403). If temporary structures are necessary for construction activities, access fills, or dewatering of the site, then a NWP No. 33 (67 FR 2020, 2087; January 15, 2002) permit and associated General 401 Water Quality Certification (GC 3366) will be required. In the event that NWP No. 23 or 33 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit No. 031 and its associated General 401 Water Quality Certification (GC 3404). Notification to the USACE Wilmington District office is required if this general permit is utilized. The USACE may exert discretionary authority and require an Individual Permit if avoidance and minimization have not been adequately addressed, or if mitigation is inadequate (assuming mitigation may be required).

No designated **HQW**, **ORW**, **WS-I**, **WS-II** waters, or watershed **CAs** occur within 1.0 mile of the project study area. Permits likely to be required for this project study area include Section

404 NWP 23, 33, and 3, in addition to the corresponding Section 401 Water Quality Certifications.

3. Mitigation

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

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

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

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. In accordance with 15A NCAC 2H .0506(h), NCDWQ may require compensatory mitigation for projects with greater than or equal to 1 acre of impacts to jurisdictional wetlands or greater than or equal to 150 linear feet of total perennial stream impacts. Furthermore, in accordance with 67 FR 2020, 2092; January 15, 2002, the USACE requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of the proposed project impact and the function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, preservation and enhancement, and creation of waters of the United States. Such actions should be undertaken first in areas adjacent to or contiguous to the discharge site.

Mitigation for Section 404 jurisdictional areas may not need to be proposed for this project due to the potentially limited nature of the project impacts. However, utilization of BMPs is

recommended in an effort to minimize impacts. Temporary impacts to floodplains associated with construction activities could be mitigated by replanting disturbed areas with native riparian species and removal of temporary fill material upon project completion. A final determination regarding mitigation rests with the USACE and NCDWQ.

F. Rare and Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), officially proposed (P) for such listing, or Threatened due to Similarity of Appearance (T[S/A]) are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term "Endangered species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range" and the term "Threatened species" is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532). The term "Threatened due to Similarity of Appearance" is defined as a species which is not "Endangered" or "Threatened", but "closely resembles an Endangered or Threatened species" (16 U.S.C. 1532).

As of the signing of this document, the USFWS lists four species as being federally protected in Harnett County (FWS 2006). These species are listed in Table 3, along with their federal status.

Table 3. Federally Protected Species Listed for Harnett County.

Common Name	Scientific Name	Status
Bald eagle	*Haliaeetus leucocephalus*	T
Red-cockaded woodpecker	*Picoides borealis*	E
Cape Fear shiner	*Notropis mekistocholas*	E
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E

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

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

from a nest tree, construction and land-clearing activities should be restricted to the non-nesting period. The FWS also recommends avoiding alteration of natural shorelines where bald eagles forage, and avoiding significant land-clearing activities within 1500 feet of known roosting sites.

BIOLOGICAL CONCLUSION: **NO EFFECT**

No suitable habitat for the bald eagle exists in or near the project study area, which consists of pine and pine/hardwood forests. The nearest large body of open water is Buffalo Lakes, approximately 2.8 miles northwest of the project study area. The project will have no effect on the bald eagle.

Picoides borealis **(Red-cockaded woodpecker)**
Endangered
Family: Picidae
Date Listed: October 13, 1970

This small woodpecker (7 to 8.5 inches long) has a black head, prominent white cheek patches, and a black-and-white barred back. Males often have red markings (cockades) behind the eye, but the cockades may be absent or difficult to see (Potter et al. 1980). Primary habitat consists of mature to over-mature southern pine forests dominated by loblolly, long-leaf (*Pinus palustris*), slash (*P. elliotii*), and pond (*P. serotina*) pines (Thompson and Baker 1971). Nest cavities are constructed in the heartwood of living pines, generally older than 70 years that have been infected with red-heart disease. Nest cavity trees tend to occur in clusters, which are referred to as colonies (USFWS 1985) or colony sites (Henry 1989). The red-cockaded woodpecker (RCW) excavates holes into the bark around the cavity entrance, resulting in a shiny, resinous buildup around the entrance that allows for easy detection of active nest trees. Pine flatwoods or pine-dominated savannas, which have been maintained by frequent natural fires, serve as ideal nesting and foraging sites for this woodpecker. Development of a thick understory may result in abandonment of cavity trees.

Site plant communities include pine forest, disturbed/maintained land, and shrub assemblage vegetation. Within the project study area only the pine forest community provides suitable habitat for RCW. Two distinct tracts of suitable habitat for RCWs occur within the project study area: one in the northwest quadrant (Tract 1) and one in the southwest quadrant (Tract 2) (Figure 10). Tract 1 is estimated to be 40 to 50 years of age, and suppression of fire has allowed hardwood species to grow into the sub-canopy and encroach on the canopy, thus reducing its suitability for this species. Tract 2 is also estimated to be 40 to 50 years of age, and fire activity has left the forest floor relatively free of vegetation.

BIOLOGICAL CONCLUSION:

ALTERNATE 1	**MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT**
ALTERNATE 2	**MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT**
ALTERNATE 3	**NO EFFECT**
ALTERNATE 4	**NO EFFECT**

Active colonies are not present within the project study area; however, since the project study area does contain suitable RCW foraging habitat, ESC biologists Heather Saunders and Elizabeth Scherrer conducted a nesting habitat survey within 0.5 mile of the bridge the week of January 10, 2005. As a result of this survey, two colonies (Colony 1 and Colony 2) were located. Colony 1 contains completed cavities, while Colony 2 contains only start holes. The center of Colony 1 is located approximately 2625 feet north of the subject bridge, and the center of Colony 2 is located approximately 1250 feet west of the subject bridge.

The project study area contains no suitable foraging habitat within 0.5 mile of the center of Colony 1; therefore, the proposed project will not affect Colony 1. However, the project study area occurs at the edge of suitable foraging habitat within 0.5 mile of the center of Colony 2. The land west of the project study area is owned by the federal government (part of Fort Bragg) and is currently actively managed for RCW.

Implementation of Alternate 1 would result in the loss of 0.32 acre of suitable foraging habitat in Tract 1. Tract 1 is situated on the outer edge of the area of suitable foraging habitat for Colony 2. Tract 1 is fragmented: narrow (maximum width of 150 feet) and bounded to the south by a highway and to the north and east by recently timbered land. Based on the landscape position of Tract 1, the availability of extensive suitable foraging habitat managed for RCW west of Colony 2, and best professional judgment, implementation of Alternate 1 "may affect, but will not adversely effect" RCW.

Implementation of Alternate 2 would result in the loss of 0.17 acre of suitable foraging habitat in Tract 2. Tract 2 is situated on the outer edge of the area of suitable foraging habitat for Colony 2 (Figure 10). Tract 2 is bounded to the north by a highway and to the east by active agricultural fields. Based on the landscape position of Tract 2, the availability of extensive suitable foraging habitat managed for RCW west of Colony 2, and best professional judgment, implementation of Alternate 2 "may affect, but will not adversely effect" RCW.

Implementation of Alternate 3 will result in a loss of less than 0.01 acre of suitable foraging habitat for RCW which will have "no effect" on RCW.

Implementation of Alternate 4 (the preferred alternative) would result in the loss of less than 0.01 acre of suitable foraging habitat for RCW which will have "no effect" on RCW. Fort Bragg and USFWS staff biologists concur with this conclusion.

***Notropis mekistocholas* (Cape Fear Shiner)**
Endangered
Family: Cyprinidae
Date Listed: September 25, 1987

The Cape Fear shiner is a small (to 2 inches), moderately stocky minnow. It is pale silvery yellow with a black band along the sides, and the moderate-sized eyes are located on the sides of the head (USFWS 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 (USFWS 1988). Habitat of the Cape Fear shiner is generally slow pools, riffles, and runs over gravel, cobble, and boulders (USFWS 1988). Little is known about the Cape Fear shiner's life history. Present distribution (November 1988) includes portions of Randolph, Chatham, Lee, Moore, and Harnett Counties (USFWS 1988). As of December 10, 1993, the NCWRC 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), approximately 20 miles north of the project study area.

Excavation activities to Jumping Run Creek within the project study area have altered channel morphology and instream habitat. Suitable Cape Fear shiner habitat such as slow pools and riffles and runs over gravel and cobble were not found within the project study area. Instead, Jumping Run Creek is deeply incised, has an approximately 2-foot water depth, and contains high water flow over a sandy substrate bottom. NCNHP records show no occurrences of Cape Fear shiner within 2.0 miles of the project study area.

BIOLOGICAL CONCLUSION: **NO EFFECT**

As a result of channel alteration from excavation activities, the project study area does not contain suitable stream habitat for Cape Fear shiner. Construction activities should not impact possible Cape Fear shiner fish populations located outside the project study area. Based on NCNHP record searches and lack of appropriate stream characteristics, this project will have no effect on the Cape Fear shiner, and the proposed bridge replacement will have no direct impacts to suitable in-stream habitat.

***Lysimachia asperulaefolia* (Rough-leaved loosestrife)**
Endangered
Family: Primulaceae
Date Listed: June 12, 1987
Rough-leaved loosestrife is a rhizomatous, perennial herb that often reaches the height of 2 feet. Plants are dormant in winter, with the first leaves appearing in late March or early April. The triangular leaves typically occur in whorls of three or four. Leaves are typically sessile, entire, 0.3 - 0.4 inch wide, broadest at the base, and have three prominent principal veins (Godfrey and Wooten 1981). These leaf characteristics help differentiate this species from Loomis' loosestrife (*L. loomisii*), which may occur in the same areas as rough-leaved loosestrife (Kral 1983). Individuals of rough-leaved loosestrife, especially young plants, have been observed to have paired, opposite leaves rather than whorls of three or four; this pattern has also been observed on new growth re-sprouting from the upper leaf axils in individuals that have been browsed or mowed. Five-lobed yellow flowers, approximately 0.6 inch across, are produced on a loose terminal raceme 1 - 4 inches long (Godfrey and Wooten 1981). Rough-leaved loosestrife is reported to flower from late May to June (USFWS 1994); however, ESC biologists have observed scattered individuals flowering through mid-July in New Hanover County. Seeds are formed by August, but the small, rounded capsules do not dehisce until October. Populations also reproduce asexually from rhizomes, with rhizomes producing several shoots.

Rough-leaved loosestrife is endemic to Coastal Plain and Sandhills regions of the Carolinas. Typical habitat for rough-leaved loosestrife consists of wet ecotones between long-leaf pine savannas and wet, shrubby areas, where lack of canopy vegetation allows abundant sunlight into the herb layer. This species is fire maintained; suppression of naturally-occurring fires has contributed to the loss of habitat in our state. In the absence of fire, rough-leaved loosestrife may persist for several years in an area with dense shrub encroachment; however, reproduction is reported to be suppressed under these conditions, leading to eventual local extirpation (USFWS 1994). Kral (1983) indicates that rough-leaved loosestrife is typically found growing in black, sandy peats or sands with a high organic content. Because rough-leaved loosestrife is an obligate wetland species (Reed 1988), drainage of habitat also has an adverse effect on the plant.

BIOLOGICAL CONCLUSION: **NO EFFECT**

NCNHP records have documented this species within 2.0 miles of the project study area and plant communities within the project study area may provide suitable habitat for rough-leaved loosestrife. A survey for Rough-leaf Loosestrife was conducted within the project study corridor on June 23, 2005. Suitable habitat for this species exists within the project study corridor along roadside edges and the edges of pasture and other open areas. No specimens of Rough-leaf Loosestrife were located, and the presence of this species within the project study area can be discounted. The project will have no effect on this species.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

A field survey of the Area of Potential Effects (APE) was conducted on February 29, 2000. All structures within the APE were photographed, and on April 28, 2000, an NCDOT staff architectural historian reviewed these photos. There were no structures within the APE over fifty years of age. The photographs were shown to the State Historic Preservation Office (HPO) in a meeting on June 1, 2000. At that meeting HPO staff concurred that there are no National Register-listed or National Register-eligible properties within the APE for this project and a form was signed to this effect. Copies of all correspondence are included in the Appendix.

C. Archaeology

In their October 18, 2000, letter (see Appendix), the HPO stated "We have reviewed the subject project and note that there are a number of archaeological sites recorded in the vicinity of the project. While consultation will be necessary in any event, sites 31HT239 and 31HT269 have been recommended for additional testing, which will be required, should they be affected. Other sites, depending on the exact location may require testing also."

A survey was conducted by NCDOT Archaeologists. The results of the survey concluded that no significant intact cultural resources were discovered within the APE. The previously recorded site 31HT239, adjacent to the APE, does not possess the level of preservation to yield significant information and demonstrates a lack of research potential. The proposed project will not impact any archaeological sites that are on or are eligible for inclusion on the NRHP. The survey report was reviewed by the HPO. In a letter dated March 14, 2006, the SHPO concurred that no further archaeological investigations will be necessary. A copy of this letter is in the Appendix.

VII. ENVIRONMENTAL EFFECTS

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

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

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

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

No adverse impact on families or communities is anticipated.

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

The proposed project has been coordinated with the US Department of Agriculture. The determination has been made that no prime, unique, or important farmland will be converted as a result of this project in accordance with the Farmland Protection Policy Act (FPPA).

There are no publicly owned parks, recreational facilities, or wildlife and waterfowl refuges of National, state, or local significance in the vicinity of the project. Therefore, the proposed project will not require right of way acquisition or easement from land protected under Section 4(f) of the Department of Transportation Act of 1966.

Harnett County is a current participant in the National Flood Insurance Regular Program. This crossing of Jumping Run Creek is located in a designated flood hazard zone and is included in a limited detailed flood study. The approximate limits of the 100-year floodplain are delineated on the Flood Insurance Rate Map in the appendix. The existing floodplain is rural, wooded or agricultural, and there are no buildings in the project vicinity with floor elevation below the 100-year level. The proposed bridge replacement will provide equivalent or improved conveyance compared to that of the existing bridge; therefore, the project will not have any significant adverse impact on the existing floodplain or on the associated flood hazard to the adjacent properties and buildings.

The project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs. EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. FHWA predicts MSATs will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in vehicle miles traveled (VMT). Therefore, both the background level of MSATs and the possibility of even minor MSAT emissions from this project will be reduced.

The noise levels will increase during the construction period, but will only be temporary. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulations (CFR), Part 772 and for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act) and no additional reports are required.

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

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

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

VIII. PUBLIC INVOLVEMENT

A Citizens Informational Workshop was held on May 26, 2005 at the Overhills Middle School to provide information, answer questions, and accept written comments on the replacement of Bridge No. 59 on SR 1117 (Nursery Road) over Jumping Run Creek in Harnett County. Seventeen people attended the workshop, including representatives from Fort Bragg, Anderson Creek Fire Department, and the public.

Residents and Business Owners voiced no objections to using an off-site detour during construction. People using the Anderson Creek golf course, along Ray Road, may be inconvenienced in accessing the course from NC 24/ 87. Directions for the course are given using SR 1117 (Nursery Road) from NC 24/ 87. A developer of a new subdivision near Ray Road and NC 210 agreed with the idea of an off-site detour using Ray Road.

Fort Bragg officials commented that military base housing and a school (west of NC 24/ 87) near SR 1117 (Nursery Road) will be constructed by 2008. To service this area, Harnett County may need to extend water and sewer lines along the SR 1117 (Nursery Road) right of way in the area of the bridge. First responder emergency service will be requested from Anderson Creek or Spout Springs Fire Departments. Military Wildlife Enforcement officers may need access across Jumping Run Creek. If the road is closed during construction, this could be done from an unpaved road southwest of the bridge, connecting to a utility easement, and joining SR 1117 (Nursery Road) east of the bridge. They noted the project area is included within Fort Bragg's red cockaded woodpecker management plan.

Anderson Creek Fire Department is located on Ray Road near the Overhills Middle School. As part of a mutual agreement, this department travels along SR 1117 (Nursery Road) to NC 24/ 87 to provide first response in case of emergencies. The department would prefer traffic to be maintained on site during construction. If an off-site detour is used, the department would need to coordinate with adjoining departments in Spring Lake, Spout Springs, or areas north.

A meeting was held on June 23, 2005 with representatives from Harnett County emergencies services agencies. The purpose of the meeting was to discuss on site traffic maintenance options for emergency vehicles during the project construction period. Representatives from fire, rescue, ambulance, and law enforcement agencies agreed that delays approaching 15 minutes would be problematic in responding to emergencies (see Appendix for specific comments). NCDOT representatives agreed to investigate on site detours that would balance costs and minimize environmental impacts. Alternate 4 was developed in response to these comments.

IX. AGENCY COORDINATION

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

*US Department of the Army
*US Army Corps of Engineers- Wilmington District
*US Fish and Wildlife Service
*US Department of Agriculture, Natural Resources Conservation Service
State Clearinghouse
*NC Department of Cultural Resources
NC Department of Public Instruction
*NC Department of Environment and Natural Resources
NC Wildlife Commission
NC Division of Water Quality
NC Natural Heritage Program
*County Manager, Harnett County
Chairman, Harnett County Commissioners
*Office of the Sheriff, Harnett County
*Emergency Services Department, Harnett County
*Anderson Creek Emergency Services, Inc.
Superintendent, Harnett County Public Schools

Asterisks (*) indicates agencies from which written comments were received. The comments are included in the appendix of this report.

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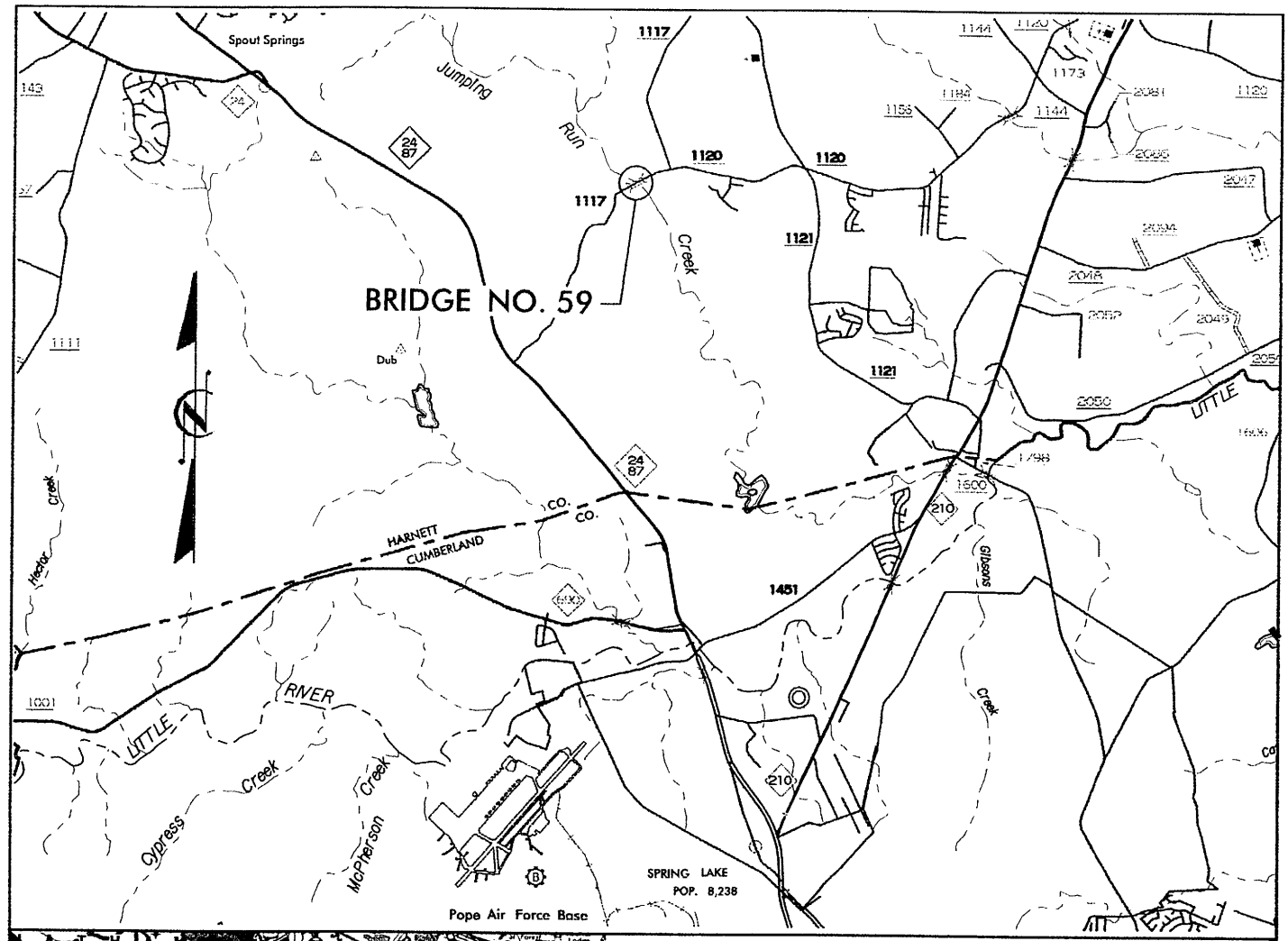
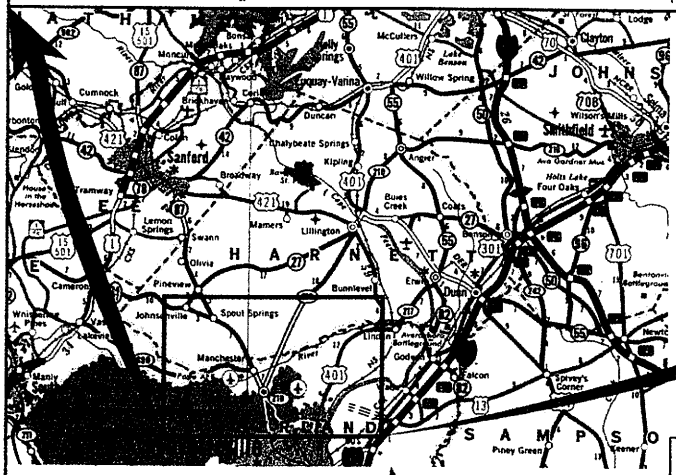
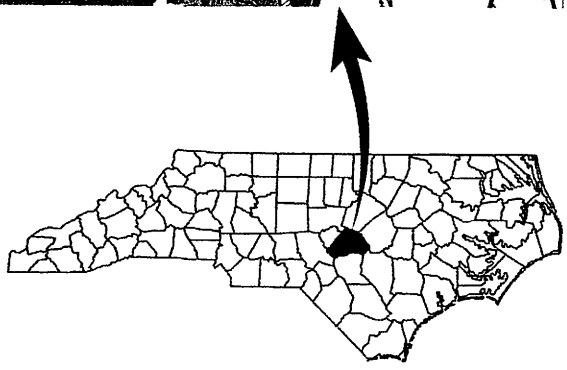
FIGURES







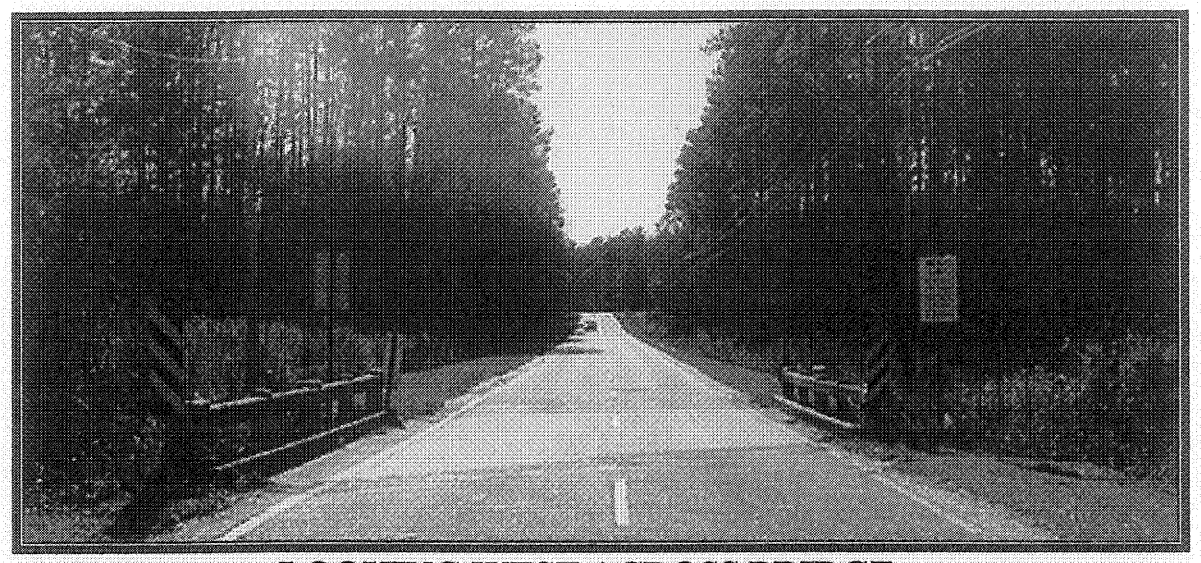
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIROMENTAL ANALYSIS BRANCH

BRIDGE NO. 59
SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

VICINITY MAP

0 1 2 3
GRAPHIC SCALE (MILES)

FIGURE 1



LOOKING WEST ACROSS BRIDGE

LOOKING EAST ACROSS BRIDGE

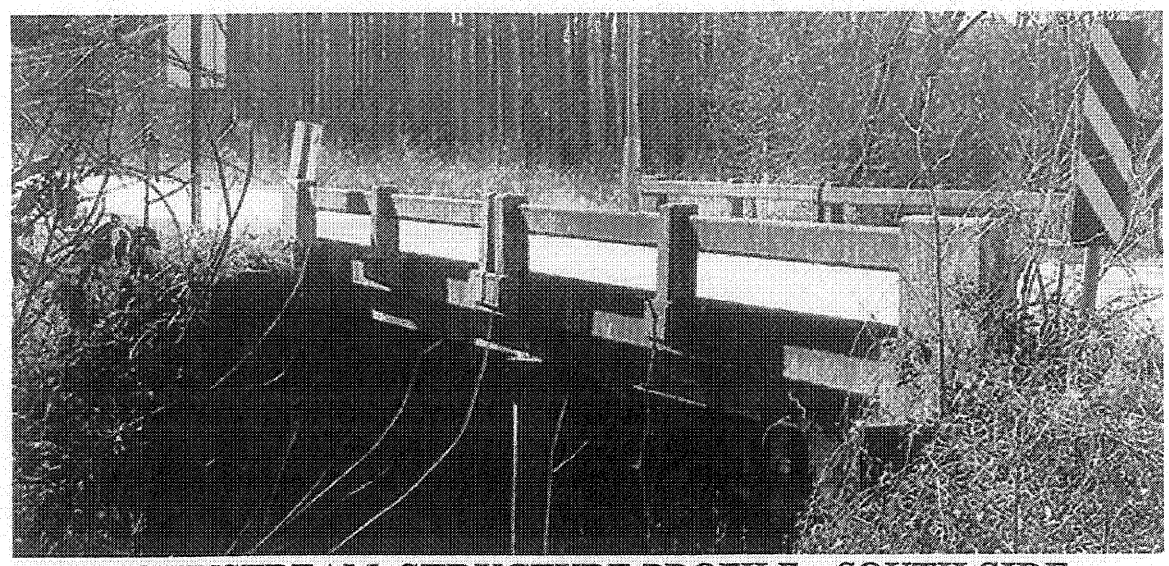
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

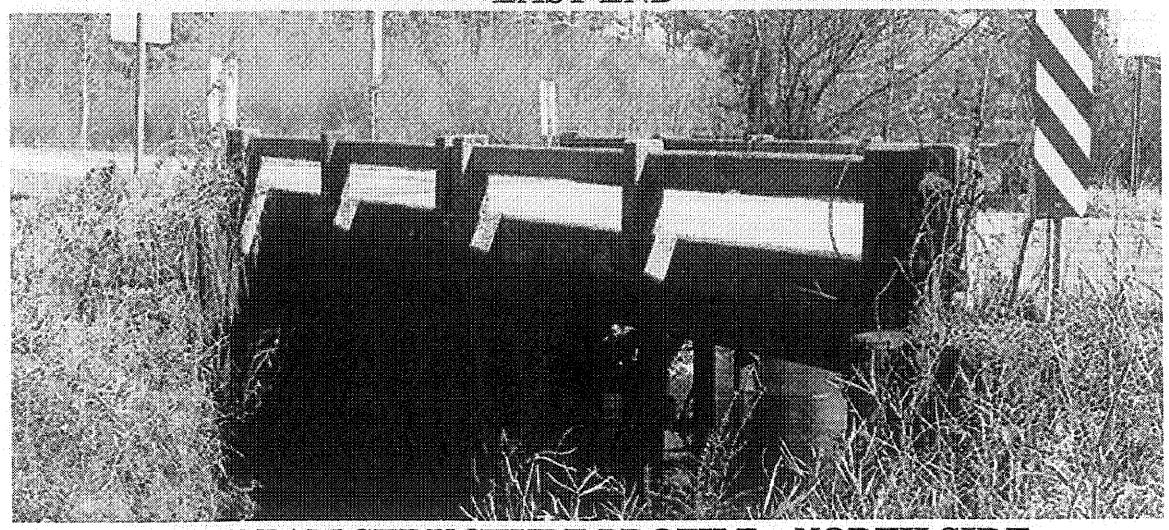
BRIDGE NO. 59

ON SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

FIGURE 2A



DOWNSTREAM STRUCTURE PROFILE – SOUTH SIDE
EAST END



UPSTREAM STRUCTURE PROFILE – NORTH SIDE
WEST END

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

BRIDGE NO. 59

ON SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

FIGURE 2B

TEMPORARY DETOUR
FLOW
10+00
15+00
TO NC 24
OVERHILL
TO NC 210
ANDERSON CREEK
SR 1117
SR 1117
WLB
BEGIN DETOUR
STA. 10+00.00
BEGIN ALTERNATE '1'
STA. 12+00.00
END ALTERNATE '1'
STA. 14+50.00
END DETOUR
STA. 19+56.46
PROPOSED 42' x 90' SINGLE SPAN
BOX BEAM BRIDGE
EXISTING BRIDGE
NO. 59
ALTERNATE '1'
EXISTING RIGHT-OF-WAY
—E———E— TEMPORARY EASEMENT
PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:
KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION
0 50 100 150
(FEET)
BRIDGE NO. 59
SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655
FIGURE 3
SHEET 1 OF 1

10+00

15+00

EXISTING BRIDGE
NO. 59

BEGIN ALTERNATE '2'
STA. 12+00.00

END ALTERNATE '2'
STA. 14+50.00

FLOW

TO NC 24
OVERHILL

TO NC 210
ANDERSON CREEK

SR 1117

SR 1117

BEGIN DETOUR
STA. 10+00.00

END DETOUR
STA. 19+63.54

TEMPORARY
DETOUR

PROPOSED 42' x 90' SINGLE SPAN
BOX BEAM BRIDGE

EXISTING RIGHT-OF-WAY

—E———E— TEMPORARY EASEMENT

ALTERNATE '2'

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

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

0 50 100 150
(FEET)

BRIDGE NO. 59
SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

FIGURE 4 SHEET 1 OF 1

@:\planning\graphics\B-3655\dgn\3655_2.psh
6/15/2007

PLANS PREPARED FOR N.C.D.O.T. IN THE OFFICE OF:

KO & ASSOCIATES, P.C.
CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

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

0 50 100 150
(FEET)

BRIDGE NO. 59
SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

FIGURE 5 SHEET 1 OF 1

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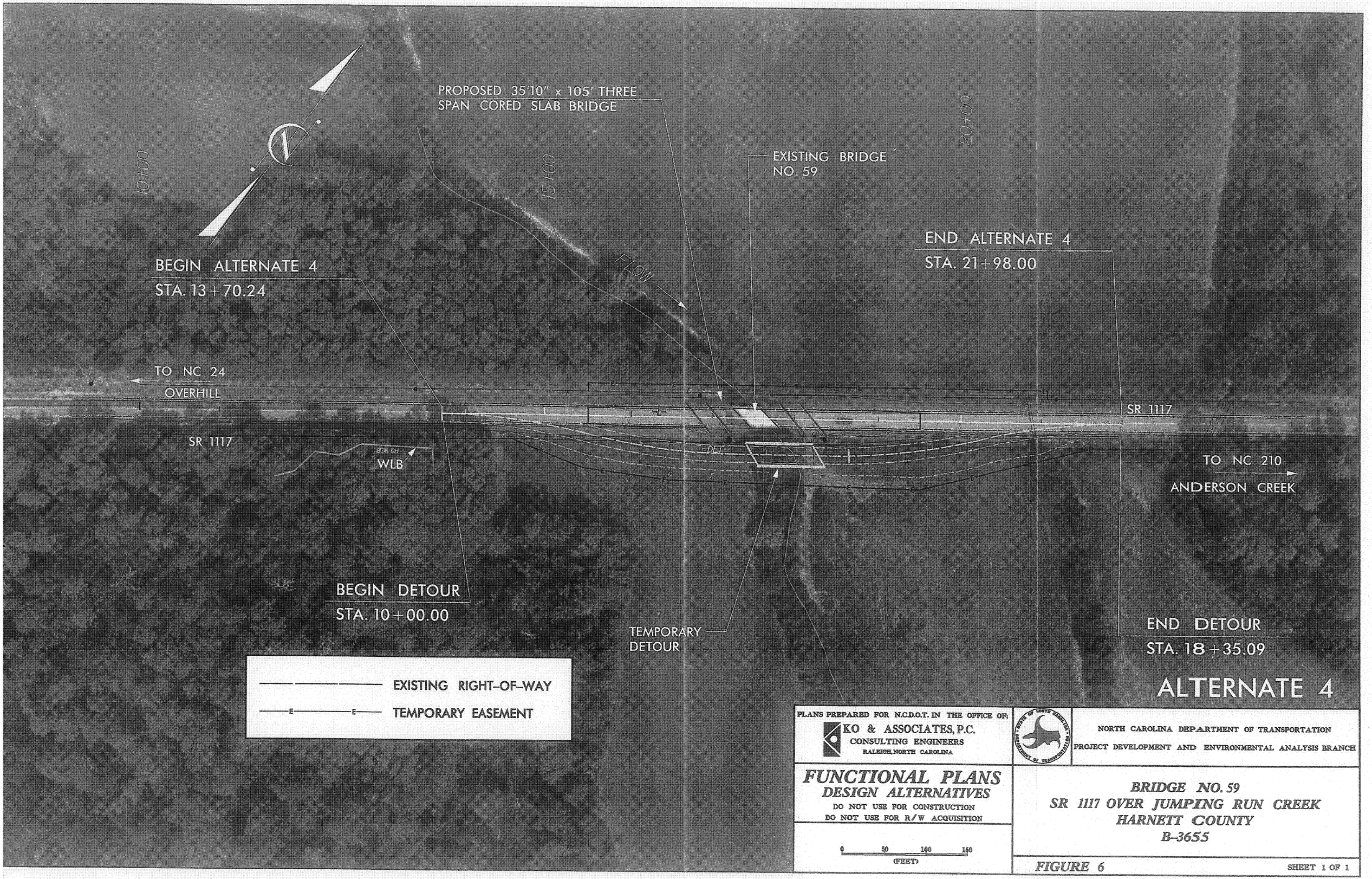
6/5/2007



ALTERNATE 4

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

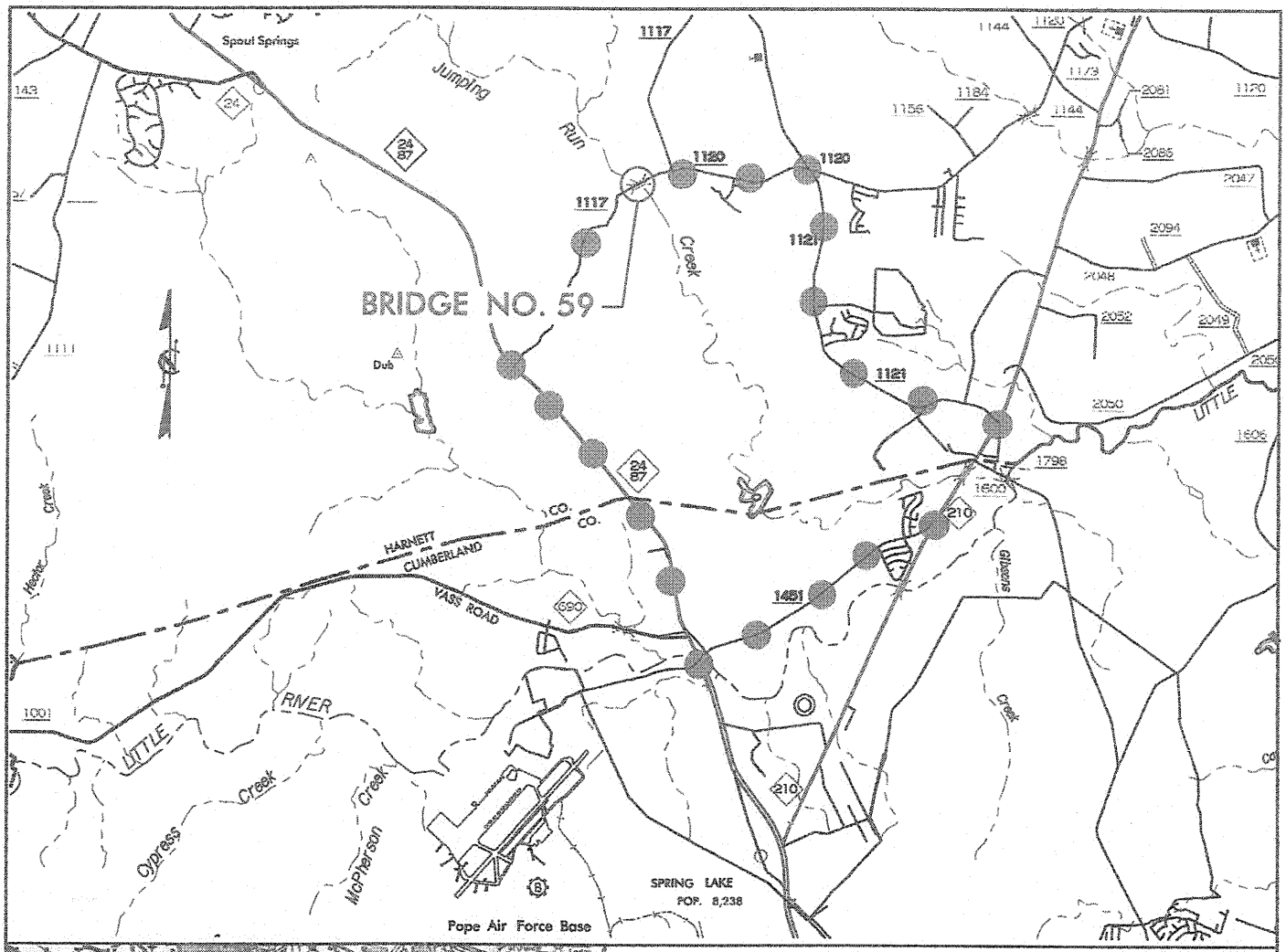
FUNCTIONAL PLANS
DESIGN ALTERNATIVES
DO NOT USE FOR CONSTRUCTION
DO NOT USE FOR R/W ACQUISITION

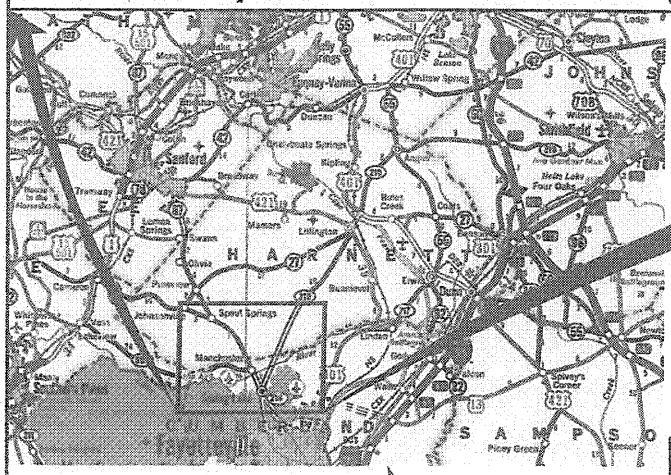
0 50 100 150
(FEET)

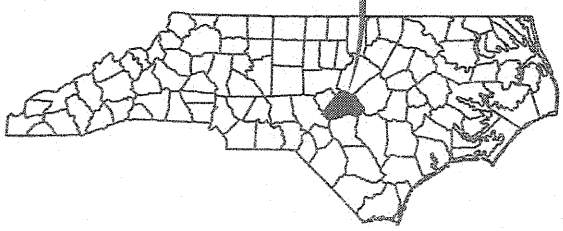
BRIDGE NO. 59
SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

FIGURE 6

SHEET 1 OF 1







STUDIED DETOUR ROUTE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

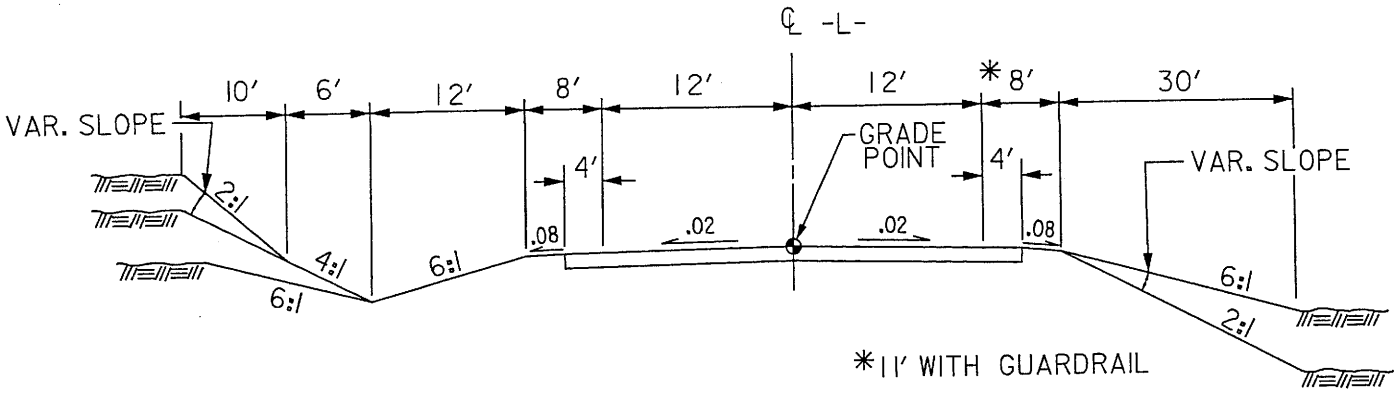
PROJECT DEVELOPMENT AND ENVIROMENTAL ANALYSIS BRANCH

BRIDGE NO. 59
SR 1117 OVER JUMPING RUN CREEK
HARNETT COUNTY
B-3655

STUDIED DETOUR ROUTE

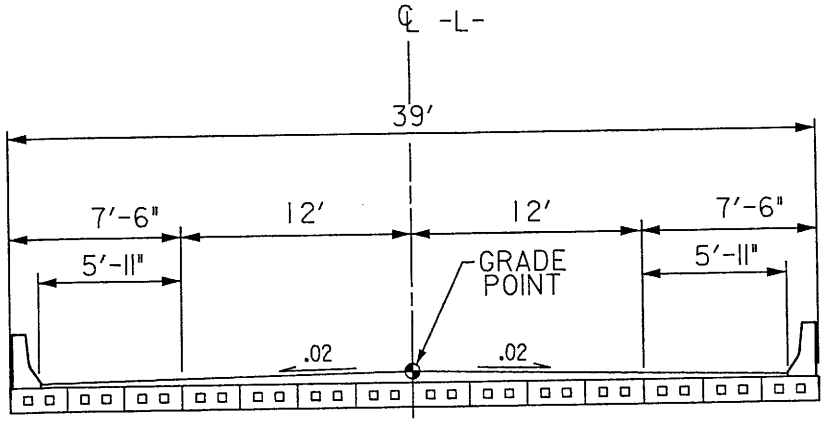
0 1 2 3
GRAPHIC SCALE (MILES)

FIGURE 7



TYPICAL SECTION NO. 1

SR 1117

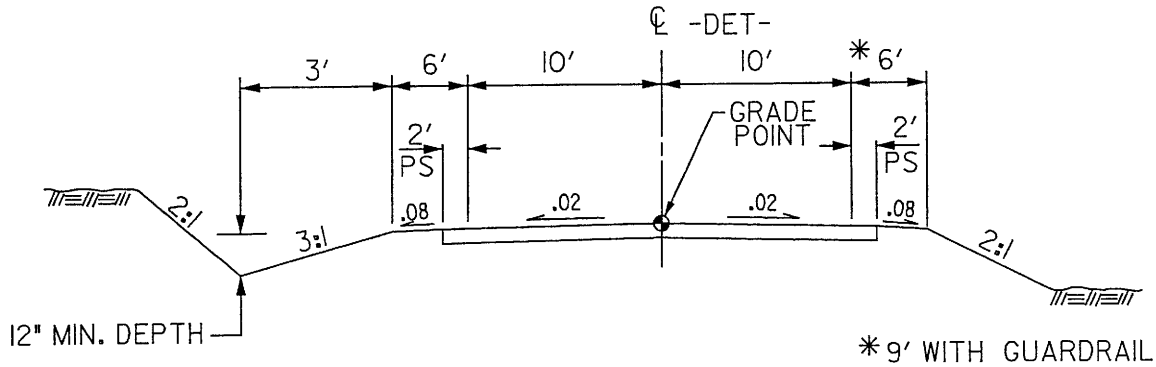


TYPICAL SECTION NO. 2

SR 1117 BRIDGE

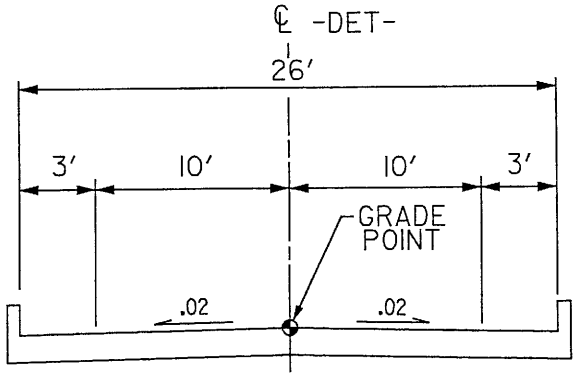
PROPOSED TYPICAL SECTIONS

FIGURE 8A



TYPICAL SECTION NO. 3

TEMPORARY DETOUR



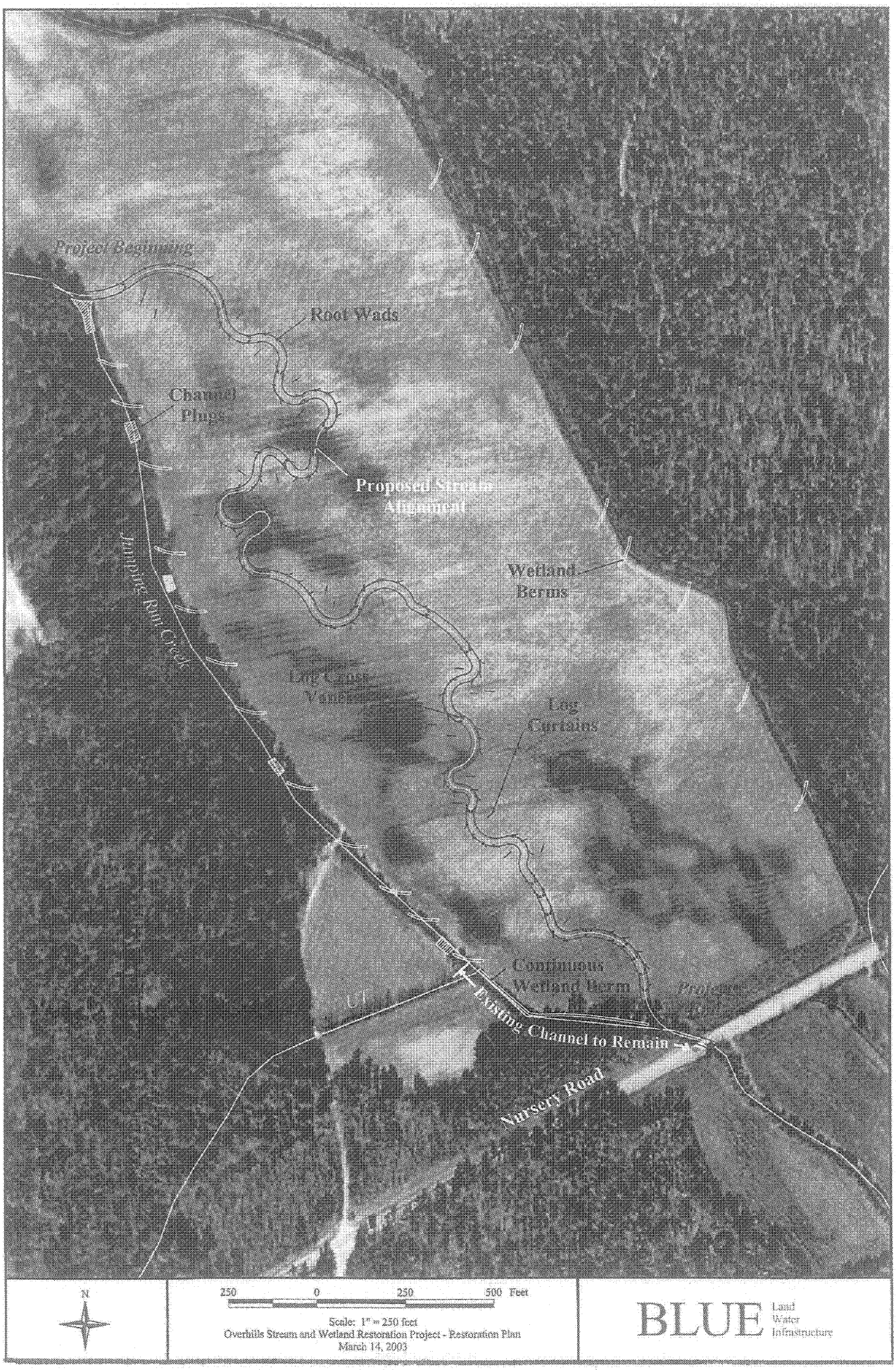
TYPICAL SECTION NO. 4

TEMPORARY DETOUR BRIDGE

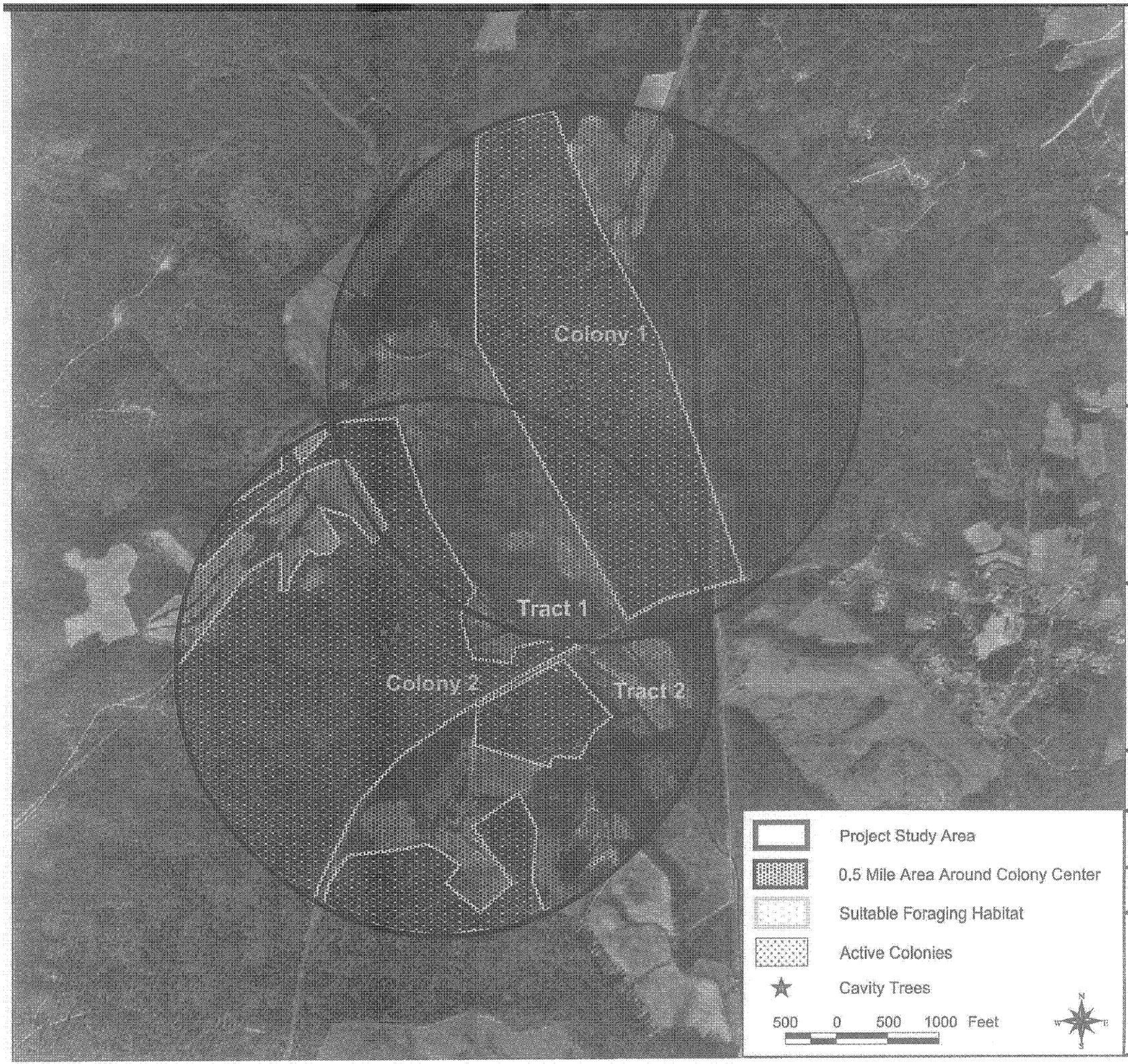
PROPOSED TYPICAL SECTIONS

FIGURE 8B

Proposed Stream Alignment and Structures



Overhills Stream and Wetland Restoration Plan Figure 9



EcoScience
1101 Haynes Street, Suite 101
Raleigh, North Carolina 27604

Ph: 919 828 3433
Fax: 919 828 3518

Client:

North Carolina
Department of Transportation
and
Ko & Associates

Project:

Replacment of
Bridge No. 59
over Jumping Run Creek

Title:

RCW Colony Sites
and
Suitable Foraging Habitat within
0.5 mile of Colony Sites

Dwn By:	Date:
HJS	Feb 2005
Ckd By:	Scale:
APS	As Shown

ESC Project No: 04-216

Figure

10

APPENDIX

DEPARTMENT OF THE ARMY
HEADQUARTERS, XVIII AIRBORNE CORPS AND FORT BRAGG
FORT BRAGG, NORTH CAROLINA 28310

REPLY TO
ATTENTION OF:

September 22, 2000

Public Works Business Center

North Carolina Department of Transportation
Project Development and Environmental Analysis
ATTN: Mr. Drew Joyner
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Joyner:

This is in response to your letter dated August 15, 2000. We have reviewed the proposals for the bridge replacement and have the following comments:

a. Bridges 29 and 53 over NC 55 are not on Fort Bragg land and would not be used in a deployment. We have no input for the proposal for these bridges.

b. Fort Bragg Military Police respond to non-emergency calls only in the area accessed by Bridge No. 59 over Jumping Run Creek. The North Carolina State Patrol is responsible for responding to emergency calls in the vicinity. Fort Bragg Military Police do not foresee a problem in responding to non-emergency calls in the case of any of the proposed project alternatives.

c. Fort Bragg Fire Department does not respond to calls in the area due to the distance. Anderson Creek Fire Department, per agreement with Fort Bragg, is responsible for emergency calls. Spout Springs Fire Department also responds to calls in the nearby area. A detour should be as close as possible to the current bridge site to minimize response time. Please coordinate with all agencies during design and construction.

d. Fort Bragg does not anticipate problems with access to the training areas in the case of any of the proposed detours. The design loading for standard state roads will suffice for Fort Bragg's anticipated traffic.

e. Fort Bragg Wildlife personnel who patrol the area are concerned about an off-site detour which would seriously hamper their ability to patrol the area.

f. Please be advised that we have entered into a multiple-agency project to develop a mitigation wetland both immediately north and immediately south of this bridge and the raised road section leading up to it from the east. There will likely be a very strong interest

in altering the main stream course back to its historical place. The current bridge location has been identified as an obstacle to that effort. We request that you delay your decision about the bridge for 9 to 12 months because some investigation is required to determine the optimal configuration of the wetland drainage and water courses.

Regardless of the alternative chosen, any significant alterations to the terrain, creek, or bridge should be cleared through Fort Bragg. Point of contact for further information is Ms. Kathryn Haught, Real Property Planning Team, (910) 396-5300/6761.

Sincerely,

Roderick Chisholm

Robert L. Shirron
Colonel, U.S. Army
Director of Public Works
Business Center

Joyner

NCDENR

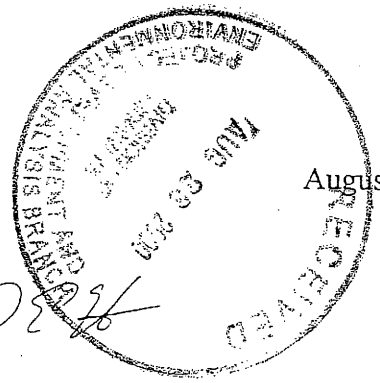
JAMES B. HUNT JR.
GOVERNOR

BILL HOLMAN
SECRETARY

DAVID S. VOGEL
DIRECTOR

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF SOIL AND WATER CONSERVATION



MEMORANDUM: August 21, 2000

TO: Melba McGee

FROM: David Harrison

SUBJECT: NCDOT Bridge Replacement Projects B-3500 (Person County); B-3654 and B-3655 (Harnett County); and B-3706 and B-3707 (Warren County).

If additional land is needed beyond the existing right-of-way, the environmental assessment should include information on adverse impacts to Prime or Statewide Important Farmland.

The definition of Prime or Statewide Important Farmland is based on the soil series and not on its current land use. Areas that are developed or are within municipal boundaries are exempt from consideration as Prime or Important Farmland.

For additional information, contact the soils specialists with the Natural Resources Conservation Service, USDA, Raleigh, NC at (919) 873-2141.

Cc: William D. Gilmore

1614 MAIL SERVICE CENTER, RALEIGH, NORTH CAROLINA 27699-1614
PHONE 919-733-2302

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

February 14, 2001

Regulatory Division

Action ID No. 200100213, 200100214, 200100215, 200100216, 200100227, 200100229, 200100347, 200100348, 200100349, 200100350, 200100351, 200100352, 200100353.

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

Dear Mr. Gilmore:

Reference your letters July 28, 2000, August 15, 2000, October 20, 2000, and November 15, 2000 regarding our scoping comments on the following proposed bridge replacement projects:

Drew 1. TIP Project B-3698, Bridge No. 15 on NC 50 over Youngs Swamp, Sampson County, Action ID 200100347.

Drew 2. TIP Project B-3699, Bridge No. 67 on NC 903 over Coharie Creek, Sampson County, Action ID 200100348.

Drew 3. TIP Project B-3514, Bridge No. 100 on SR 1246 (Butler Island Bridge Road) over South River, Sampson County, Action ID 200100349.

Drew 4. TIP Project B-3654, Bridge Nos. 29 and 53 on NC 55 over Mingo Swamp, Harnett County, Action ID 200100213.

Drew 5. TIP Project B-3655, Bridge No. 59 on SR 1111 over Jumping Run Creek, Harnett County, Action ID 200100214.

Drew 6. TIP Project B-3692, Bridge Nos. 62 and 82 on NC 72 over Richland Swamp, Robeson County, Action ID 200100229.

Drew 7. TIP Project B-3693, Bridge No. 211 on SR 1527 over Raft Swamp, Robeson County, Action ID 200100350.

Drew 8. TIP Project B-3507, Bridge Nos. 155 and 157 on SR 1303 over Lumber River, Robeson County, Action ID 200100351.

Karen 9. TIP Project B-3881, Bridge No. 26 on US 117 and NC 133 over CSX Transportation, New Hanover County, Action ID 200100227.

Karen 10. TIP Project B-3896, Bridge No. 24 on NC 20 over CSX Transportation, Robeson County, Action ID 200100352.

Johnson 11. TIP Project B-4139, Bridge No. 106 on SR 1780 over Black River, Harnett County, Action ID 200100215.

Johnson 12. TIP Project B-3875, Bridge No. 78 on SR 1456 over Grassy Creek, Moore County, Action ID 200100216.

Carforti TIP Project B-3404, Bridge No. 314 on SR 1127 over South Fork Jones Creek, Anson County, Action ID 200100353.

Based on the information provided in the referenced letters, it appears that each proposed bridge replacement project may impact jurisdictional wetlands. Department of the Army (DA) permit authorization, pursuant to Section 404 of the Clean Water Act of 1977, as amended, will be required for the discharge of excavated or fill material in waters of the United States or any adjacent wetlands in conjunction with these projects, including disposal of construction debris. Specific permit requirements will depend on design of the projects, extent of fill work within the waters of the United States, including wetlands, construction methods, and other factors.

Although these projects may qualify as a Categorical Exclusion, to qualify for nationwide permit authorization under Nationwide Permit #23, the project planning report should contain sufficient information to document that the proposed activity does not have more than a minimal individual or cumulative impact on the aquatic environment. Our experience has shown that replacing bridges with culverts often results in sufficient adverse impacts to consider the work as having more than minimal impacts on the aquatic environment. Accordingly, the following items need to be addressed in the project planning report:

a. The report should contain the amount of permanent and temporary impacts to waters and wetlands as well as a description of the type of habitat that will be affected.

b. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site detour is the recommended action, justification should be provided. On-site detours, unless constructed on a spanning structure, can cause permanent wetland impacts due to sediment consolidation resulting from the on-site detour itself and associated heavy equipment. Substantial sediment consolidation in wetland systems may in turn cause fragmentation of the wetland and impair the ecological and hydrologic functions of the wetland. Thus, on-site detours constructed in wetlands can result in more than minimal wetland impacts. These types of wetland impacts will be considered as permanent wetland impacts. Please note that an onsite detour constructed on a spanning structure can potentially avoid permanent wetland impacts and should be considered whenever an on-site detour is the recommended action.

For proposed projects and associated on-site detours that cause minimal losses of wetlands, an approved wetland restoration plan will be required prior to issuance of a DA nationwide or general permit. For proposed projects and associated on-site detours that cause significant wetland losses, an individual DA permit and a mitigation proposal for the unavoidable wetland impacts may be required.

In view of our concerns related to onsite detours constructed in wetlands, recent field inspections were conducted at each of the proposed project sites, except for TIP Project B-3875, and a cursory determination was made on the potential for sediment consolidation due to an onsite detour. Based on these inspections, potential for sediment consolidation in wetlands exists at several of the proposed projects. Therefore, it is recommended that geotechnical evaluations be conducted at <u>each</u> project site to estimate the magnitude of sediment consolidation that can occur due to an on-site detour and the results be provided in the project planning report. Based on our field inspections, we strongly recommend that geotechnical evaluations be conducted at the following proposed project sites:

1. TIP Project B-3698, Bridge No. 15 on NC 50 over Youngs Swamp, Sampson County, Action ID 200100347.
2. TIP Project B-3514, Bridge No. 100 on SR 1246 (Butler Island Bridge Road) over the South River, Sampson County, Action ID 200100349.
3. TIP Project B-3654, Bridge Nos. 29 and 53 on NC 55 over Mingo Swamp, Harnett County, Action ID 200100213.
4. TIP Project B-3692, Bridge Nos. 62 and 82 on NC 72 over Richland Swamp, Robeson County, Action ID 200100229.
5. TIP Project B-3693, Bridge No. 211 on SR 1527 over Raft Swamp, Robeson County, Action ID 200100350.
6. TIP Project B-3507, Bridge Nos. 155 and 157 on SR 1303 over Lumber River, Robeson County, Action ID 200100351.

c. Project commitments should include the removal of all temporary fills from waters and wetlands and "time-of-year" restrictions on in-stream work if recommended by the NC Wildlife Resources Commission. In addition, if undercutting is necessary for temporary detours, the undercut material should be stockpiled to be used to restore the site.

d. All restored areas should be planted with endemic vegetation including trees, if appropriate.

e. The report should provide an estimate of the linear feet of new impacts to streams resulting from construction of the project.

f. If a bridge is proposed to be replaced with a culvert, NCDOT must demonstrate that the work will not result in more than minimal impacts on the aquatic environment, specifically addressing the passage of aquatic life including anadromous fish. In addition, the report should address the impacts that the culvert would have on recreational navigation.

g. The report should discuss and recommend bridge demolition methods and shall include the impacts of bridge demolition and debris removal in addition to the impacts of constructing the bridge. The report should also incorporate the bridge demolition policy recommendations pursuant to the NCDOT policy entitled "Bridge Demolition and Removal in Waters of the United States" dated September 20, 1999.

h. Based on the recent field investigations of the referenced project sites, the apparent level of wetland impacts and scope of the referenced projects do not warrant coordination pursuant to the integrated NEPA/Section 404-merger agreement.

Should you have any questions, please call Mr. David L. Timpy at the Wilmington Field Office at 910-251-4634.

Sincerely,

E. David Franklin

E. David Franklin
NCDOT Team Leader
Regulatory Division

United States Department of the Interior

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

September 28, 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 August 15, 2000 request for information from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of proposed bridge replacements in Harnett County, 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-3654 Bridge Nos. 29 & 53 on NC 55 over Mingo Swamp, and

2. B-3655 Bridge No. 59 on SR 1111 over Jumping Run Creek.

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 Anderson Creek and Dunn 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 (Corps).

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 list identifies the federally-listed endangered and threatened species, and Federal Species of Concern (FSC) that are known to occur in Harnett County. 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 would 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,

For Tom Augspurger

Dr. Garland B. Pardue
Ecological Services Supervisor

Enclosures

cc:
COE, Wilmington, NC (David Timpy)
NCDWQ, Raleigh, NC (John Hennessy)
NCDNR, Northside, NC (David Cox)

FWS/R4:TMcCartney:TM:09/28/00:919/856-4520 extension 32:\2brdghar.net

COMMON NAME	SCIENTIFIC NAME	STATUS
HARNETT COUNTY		
Vertebrates		
Bachman's sparrow	*Aimophila aestivalis*	FSC
Cape Fear shiner	*Notropis mekistocholas*	Endangered
Red-cockaded woodpecker	*Picoides borealis*	Endangered
Northern pine snake	*Pituophis melanoleucus melanoleucus*	FSC*
Invertebrates		
Atlantic pigtoe	*Fusconaia masoni*	FSC
Yellow lampmussel	*Lampsilis cariosa*	FSC
Vascular Plants		
Georgia indigo-bush	*Amorpha georgiana* var. *georgiana*	FSC
Sandhills milkvetch	*Astragalus michauxii*	FSC
Resinous boneset	*Eupatorium resinosum*	FSC
Small-whorled pogonia	*Isotria medeoloides*	Threatened*
Sandhills bog lily	*Lilium iridolae*	FSC
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered
Savanna cowbane	*Oxypolis ternata*	FSC
Carolina grass-of-parnassus	*Parnassia caroliniana*	FSC
Wavyleaf wild quinine	*Parthenium radfordii*	FSC
Sandhills pyxie-moss	*Pyxidanthera barbulata* var. *brevifolia*	FSC
Sun-facing coneflower	*Rudbeckia heliopsidis*	FSC
Spring-flowering goldenrod	*Solidago verna*	FSC
Pickering's dawnflower	*Stylisma pickeringii* var. *pickeringii*	FSC
Carolina aspholdel	*Tofieldia glabra*	FSC
Roughleaf yellow-eyed grass	*Xyris scabrifolia*	FSC
HAYWOOD COUNTY		
Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Olive-sided flycatcher	*Contopus borealis*	FSC
Hellbender	*Cryptobranchus alleganiensis*	FSC
Cerulean warbler	*Dendroica cerulea*	FSC
Eastern cougar	*Felis concolor couguar*	Endangered
Carolina northern flying squirrel	*Glaucomys sabrinus coloratus*	Endangered
Bald eagle	*Haliaeetus leucocephalus*	Threatened
Southern rock vole	*Microtus chrotorrhinus carolinensis*	FSC
Southern Appalachian woodrat	*Neotoma floridana haematoreia*	FSC
Alleghany woodrat	*Neotoma magister*	FSC
Southern water shrew	*Sorex palustris punctulatus*	FSC
Appalachian cottontail	*Sylvilagus obscurus*	FSC
Appalachian Bewick's wren	*Thryomanes bewickii altus*	FSC

* U.S. GOVERNMENT PRINTING OFFICE: 1984-451-159/1324

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 10-25-00
Name Of Project B-3655	Federal Agency Involved Federal Highway Admin.
Proposed Land Use Bridge Replacement	County And State Harnett Co. NC
PART II *(To be completed by SCS)*	Date Request Received By SCS 10/30/00 WEW

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply — do not complete additional parts of this form)*	Yes ☐ No ☑	Acres Irrigated NONE	Average Farm Size 139
Major Crop(s) Corn	Farmable Land In Govt. Jurisdiction Acres: 309,069 % 80.3	Amount Of Farmland As Defined in FPPA Acres: 289,583 % 75.2	
Name Of Land Evaluation System Used Harnett LE	Name Of Local Site Assessment System NONE	Date Land Evaluation Returned By SCS 11/1/00 WEW	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A 1	Site B 2	Site C 3	Site D
A. Total Acres To Be Converted Directly	0.57	0.57	0.57	
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	0.57	0.57	0.57	
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0	0	0	
B. Total Acres Statewide And Local Important Farmland	0	0	0	
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0	0	0	
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	100	100	100	
ART V *(To be completed by SCS)* Land Evaluation Criterion - Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0	0	0	

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use	15	15	15	15	
2. Perimeter In Nonurban Use	10	10	10	10	
3. Percent Of Site Being Farmed	20	*	*	*	
4. Protection Provided By State And Local Government	20	*	*	*	
5. Distance From Urban Builtup Area	15	15	15	15	
6. Distance To Urban Support Services	15	*	*	*	
7. Size Of Present Farm Unit Compared To Average	10	2	2	2	
8. Creation Of Nonfarmable Farmland	10	0	0	0	
9. Availability Of Farm Support Services	5	5	5	5	
10. On-Farm Investments	20	0	0	0	
11. Effects Of Conversion On Farm Support Services	10	0	0	0	
12. Compatibility With Existing Agricultural Use	10	0	0	0	
TOTAL SITE ASSESSMENT POINTS	160	47	47	47	
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160	47	47	47	
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

* There are fallow fields adjacent to this bridge replacement site. However the area is a part of the Fort Bragg Military reservation No active farming practices

WBS 33207.1.1

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

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

March 14, 2006

MEMORANDUM

To: Matt Wilkerson, Archaeology Supervisor
NCDOT - Office of Human Environment

FROM: Peter Sandbeck Peter Sandbeck

SUBJECT: Archaeological Survey, Replacement of Bridge No. 59 on SR 1117 (Nursery Road) Over Jumping Run Creek, B-3655, Harnett County, ER 01-7360

Thank you for your letter of February 20, 2006, transmitting the archaeological survey report for the above project.

The report author noted that no significant intact cultural resources were discovered within the Area of Potential Effect (APE) during the archaeological survey and that no further archaeological investigations are necessary and/or warranted. The author further states that previously recorded archaeological site 31HT239 located adjacent to the proposed APE does not possess the level of preservation to yield significant information and therefore demonstrates a lack of research potential. We concur with this recommendation.

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 considerations. If you have any questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919.733.4763. In all future communication concerning this project, please cite the above referenced tracking number.

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

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

October 18, 2000

MEMORANDUM

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

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

Re: Bridge #59 on SR 1111 over Jumping Run Creek, B-3655, Harnett County, ER 01-7360

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.

We have reviewed the subject project and note that there are a number of archaeological sites recorded in the vicinity of the project. While consultation will be necessary in any event, sites 31HT239 and 31HT269 have been recommended for additional testing, which will be required should they be affected. Other sites, depending on the exact location may require testing also.

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.

DB:kgc

cc: Mary Pope Furr, NCDOT
Tom Padgett, NCDOT
Roy Shelton, FHwA

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-865
ARCHAEOLOGY	421 N. Blount St., Raleigh NC	4619 Mail Service Center, Raleigh NC 27699-4619	(919) 733-7342 • 715-267

Federal Aid #BRZ-1117(3) *TIP* #B-3655 *County*: Harnett

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

Project Description: Replace Bridge No. 59 on SR 1117 over McLeod Creek

On June 1, 2000, representatives of the

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

Reviewed the subject project at

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

All parties present agreed

- [x] there are no properties over fifty years old within the project's area of potential effect.
- [x] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [ ] 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 _____ are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope Furr — 6-1-2000
Representative, NCDOT — Date

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

April Montgomery
Representative, SHPO — Date

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

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

Ecosystem Enhancement PROGRAM

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

November 19, 2004

Mr. Michael Penney
NCDOT- PDEA
1548 Mail Center Service
Raleigh, NC 27699-1548

RE: B-3655 No. 59 on SR 1117 over Jumping Run Creek,
Harnett Co
Jumping Run/Overhills Stream Restoration Project

Dear Mr. Penney,

This letter is to serve as a follow up to the November 9, 2004 meeting regarding the replacement of the above referenced bridge over Jumping Run Creek. The Ecosystem Enhancement Program (EEP) currently has a stream restoration project in the construction phase adjacent to, and upstream of, the existing bridge. EEP is amenable to the replacement of this bridge provided the new bridge would not involve the installation of a culvert or impact the current channel's dimension or profile. As the newly constructed channel was designed based on tying in to the existing channel immediately upstream of the bridge maintaining the existing channel conditions is imperative to ensuring a stable restoration project. Thank you very much for the opportunity to comment on the future bridge replacement, your coordination is greatly appreciated.

If you have any further question please feel free to contact me at 919-303-7821.

Sincerely,

Melonie Allen

Melonie Allen
NCDENR - EEP
Environmental Specialist

NC DENR Ecosystem Enhancement Program
1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219 \ Internet: h2o.enr.state.nc.us/wrp/

B-3659 & B-3655

Drew

COUNTY OF HARNETT
P.O. BOX 759 • LILLINGTON, N.C. 27546
(910) 893-7555 • FAX (910) 814-2662

October 19, 2000

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

Dear Mr. Gilmore:

The purpose of this letter is to respond to request for comment regarding three bridges in Harnett County. In your letter dated August 15, you note several options regarding Bridge Nos. 29, 53, and 59. We have reviewed each of these and would request that each bridge be replaced. In addition, we have reviewed the impact of replacement projects on our emergency services and have determined that the provision of services would not be interrupted by these projects. Thank you for the opportunity to provide input regarding these projects.

Sincerely,

Neil Emory
County Manager

NE:sw

F:\USERS\SHIRLEY\DOT\Gilmore.doc

Office of the Sheriff of Harnett County

Sheriff Larry Rollins

www.harnettsheriff.com

PO Box 399
1005 Edwards Drive
Lillington, NC 27546

ph: 910-893-9111
fax: 910-893-6450

July 19, 2005

Mr. Michael Penny
Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh, N.C. 27699-1548

RE: Replacement of Bridge No.59

Dear Mr.Penny:

As Uniform Patrol Supervisor for the Harnett County Sheriff's Office, we request that you not detour the emergency services vehicles as a result of the closing of Bridge No.59, located on SR 1117 (Nursery Road) over Jumping Run Creek. That bridge is necessary for us to provide timely emergency services to our county's residents and is also an important link to Highway 24/87. If this bridge is closed and our emergency service vehicles have to detour, it would take them approximately fifteen minutes to respond to a call on the other side of this bridge. This is entirely too long and could result in a life hazard situation. We definitely to do not want this to happen at any cost! If there is any way possible to allow our emergency vehicles to maintain access of this area while Bridge No. 59 is being replaced, we would certainly appreciate it.

If you have any questions, please give me a call.

Sincerely,

Eddie Holder
Captain of Patrol

Harnett
COUNTY
NORTH CAROLINA

Emergency Services Department

www.harnett.org

PO Box 370
Lillington, NC 27546

ph: 910-893-7580
fax: 910-893-5025

July 11, 2005

Mr. Michael Penny
Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

RE: Replacement of Bridge No. 59

Dear Mr. Penny:

As Director of Harnett County Emergency Services we request that you not detour the emergency services vehicles as a result of the closing of Bridge No. 59 located on SR 1117 (Nursery Road) over Jumping Run Creek. That bridge is necessary for us to provide timely emergency services to our county's residents and is also an important link to Highway 24/87. If this bridge is closed and our emergency service vehicles have to detour, it would take them approximately fifteen minutes to respond to a call on the other side of this bridge. This is entirely too long and could result in a life hazard situation. We definitely to do not want this to happen at any cost! If there is any way possible to allow our emergency vehicles to maintain access of this area while Bridge No. 59 is being replaced, we would certainly appreciate it.

If you have any questions, please give me a call.

Sincerely,

Gary Pope

Gary Pope
Director

GP:bw

ANDERSON CREEK
EMERGENCY SERVICES, INC.
2980 RAY RD
SPRING LAKE, NC 28390
PHONE (910) 497-0395/1157 FAX (910) 497-3891

Michael Penney,

06/28/2005

This letter is in reference to our concern about the bridge replacement construction project proposed for SR 1117 (Nursery Road) in Harnett County. SR 1117 is the most direct route for our emergency services department to access Highway 87. Fire and EMS vehicles use this route to provide emergency response on a daily basis. This includes vehicles from our agency responding to calls in our district, mutual aid calls in neighboring districts, and EMS transports to area hospitals. In addition, we depend on other agencies using that route to provide us with emergency assistance. Closing SR 1117 would lengthen response times to such a degree that our district and the districts we provide mutual aid to would be put at increased risk. The extended transport times would also be detrimental to patients being taken to hospitals.

It is in the best interests of Anderson Creek Emergency Services and the citizens who depend on our services that SR 1117 remain passable. The risk of compromising the safety of surrounding communities would be greatly reduced by providing at a minimum a single lane temporary detour for emergency vehicles. Such an alternative would need to be able to accommodate vehicles up to ten feet wide and weighing as much as 39,000 pounds. Thank you for your kind consideration of our need to provide and receive emergency services. We will cooperate fully and assist in this matter in any way possible.

Sincerely,

Robert J. Wilson
Chief, Anderson Creek Emergency Services