STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 29, 2004

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

ATTENTION: Mr. Steve Lund
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 and 33 Permit Application** for the Replacement of Bridge No. 233 over Buffalo Creek on SR 1906, Cleveland County, Federal Aid Project No. BRZ-1906(2), State Project No. 8.2801601, TIP B-3828, Division 12.

Please find enclosed three copies of the project planning report for the above referenced project. Replacement of Bridge No. 233 will be in the existing location using a 150' by 28' by 54" prestressed steel girder bridge. The new bridge will have a 28-foot clear roadway width with two 11-foot travel lanes and two 3-foot grass shoulders. The new approaches and bridge will have a design speed of 50 mph.

No jurisdictional wetlands or existing channel will be impacted by the construction of the bridge. There will be a temporary 0.03-acre surface water impact due to a work pad.

During construction, traffic will be maintained by an off-site detour.

Bridge Demolition

Bridge No. 233 is composed of a timber deck with an asphalt wearing surface on steel girders with timber joists and a steel floor beam system. The substructure consists of timber caps and piles and timber bulkheads. The existing structure is 121 feet long with a 15.75-foot clear roadway width. The crown of the bridge is 18 feet above the streambed. Due to the structural components of the bridge, no temporary fill will be dropped into surface waters.

Temporary Workpad

There will be 0.03 acres temporary stream impacts from the construction of temporary rock workpad in Buffalo Creek for the construction of Bridge No. 233. A workpad will be required for the demolition of the existing bridge and in order to provide for construction access. The

workpad will consist of Class II riprap and Class B riprap and is detailed on permit drawing sheets 4 & 5 of 7.

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

Schedule for Construction of Workpad: It is assumed that the contractor will begin construction of the proposed workpad shortly after the date of availability for the project. The Let date is May 17, 2005 with a date of availability of June 20, 2005.

Removal and Disposal: The workpad will be removed within 90 days of the completion of the deck slab for the bridge using excavating equipment. All materials placed in the stream by the contractor will be removed. The Class II riprap that is removed may be used on end slopes where Class II riprap is required at the discretion of the engineer. All other materials removed by the contractor will be disposed of at a non-jurisdictional off-site location.

Federally Protected Species

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

As of January 29, 2003, the USFWS lists only dwarf-flowered heartleaf (*Hexastylis naniflora*) for Cleveland County.

The project site was visited on April 21, 2004 by NCDOT biologists Chris Underwood and David Bailey. A plant by plant survey was conducted totaling three man-hours within the project area for Dwarf-flowered heartleaf and no specimens were found. However, some specimens were found to the north of the project area approximately 75 yards from SR 1906. The sample area was plotted using GPS and sent to the North Carolina Natural Heritage Program (NCNHP) and USFWS. Since suitable habitat exists within the project area and individuals were found to the north of the project area, the biological conclusion is changed from the original NRTR conclusion of "**No Effect**" to "**May Affect, Not Likely To Adversely Affect**".

Regulatory Approvals

Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit but propose to proceed under a Nationwide 23 and 33 as authorized by a Nationwide Permit 23 and 33 (67 FR 2020; January 15, 2002).

NCDOT hereby requests a Nationwide 23 and a Nationwide 33 from the U. S. Army Corps of Engineers.

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B .0200

we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their review.

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

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

Sincerely,

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

cc: W/attachment

Mr. John Hennessy, Division of Water Quality (7 copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. M.L,. Holder, P.E., Division Engineer
Ms. Trish Simon, DEO

W/o attachment

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

Office Use Only: Form Version May 2002

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

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

I. Processing

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

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

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

4. If payment into the North Carolina Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), complete section VIII and check here: ☐

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

II. Applicant Information

1. Owner/Applicant Information
   Name: North Carolina Department of Transportation
   Mailing Address: Project Development and Environmental Analysis Branch
   1548 Mail Service Center
   Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: _____

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

III. Project Information

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

1. Name of project: Replacement of Bridge No. 233 on SR 1906 over Buffalo Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3828

3. Property Identification Number (Tax PIN): _____

4. Location
   County: Cleveland Nearest Town: Waco
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers, landmarks, etc.): From the intersection of I-85 and US 74 Bypass in Kings Mountain, take US 74 to NC 180 and go north ~5 miles to New Prospect Road & turn right. Go ~3 miles to a left on Costner Road then to Bridge No. 233.

5. Site coordinates, if available (UTM or Lat/Long): 35° 22'.46N/81° 28'.90"W
   (Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)

6. Property size (acres): approximately 1.0 acres

7. Nearest body of water (stream/river/sound/ocean/lake): Buffalo Creek

8. River Basin: Broad River Basin, Hydrologic Unit 03040102, DWQ index # 12-108-16-(105)
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The northwest quadrant is mostly pasture and the remaining quadrants are forested. The general land use in the area of the project is mainly agricultural, residential, forested, and fallow fields.

10. Describe the overall project in detail, including the type of equipment to be used: The bridge removal involves the removal of the asphalt wearing surface prior to demolition without dropping components into the water. The guardrails, timber deck, and all steel components will also be removed without dropping any of the components into the water. The replacement structure will consist of a 150-foot long bridge with a width of 28 feet. The approaches will also be 28 feet – two 22-foot travel lanes and two 3-foot grassed shoulders. The equipment needed is standard paving equipment including pavers and rollers, and grading equipment including backhoes and motor graders.

11. Explain the purpose of the proposed work: The purpose of the proposed work is to replace Bridge No. 233 over Buffalo Creek which is considered to be structurally deficient and functionally obsolete. The replacement of the bridge will result in safer traffic operations.

IV. Prior Project History

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

No permits or certifications have been issued for Bridge No. 233 over Buffalo Creek in Cleveland County.

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.

No future permits are anticipated for the replacement of Bridge No. 233.

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: There will be 0.03 acre of temporary impacts to the surface water due to a work pad associated with this project. The wok pad is needed for bridge demolition and construction access.

2. Individually list wetland impacts below:

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

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

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

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

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

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

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
1	Temporary fill (work pads for equipment access for bridge construction)	~50' by 25'	Buffalo Creek	30 feet	Perennial

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.

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

Cumulative impacts (linear distance in feet) to all streams on site: 50 feet

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

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

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

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

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts.
The proposed bridge will span the entire creek and, therefore, there will be no impacts.

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors

including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.

   _____

   _____

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

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

IX. Environmental Documentation (required by DWQ)

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

Yes ☒ No ☐

If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.

Yes [X] No

If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter.

Yes [X] No [ ]

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

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

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

Yes [ ] No [X] If you answered "yes", provide the following information:

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

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

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

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

Buffer mitigation is not required within the Yadkin Pee-Dee River Basin.

XI. Stormwater (required by DWQ)

Describe impervious acreage (both existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property.

Existing impervious area for the project (895 feet of roadway) is approximately 0.32 acres, proposed impervious area is approximately 0.45 acres. On the east side of the creek, there will be one drop inlet connected to a 15" CMP with elbows. On the west side of the creek, there will be two drop inlets connected by a 15" CMP with elbows and empty into the adjacent woodland on either side of the road. There will also be a lateral base ditch on the north side of the road. Stormwater over the asphalt will mainly sheetflow into the drop inlets and then overland before entering the stream.

XII. Sewage Disposal (required by DWQ)

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

No wastewater will be generated from the implementation of the proposed project.

XIII. Violations (required by DWQ)

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

Yes ☐ No ☒

Is this an after-the-fact permit application?

Yes ☐ No ☒

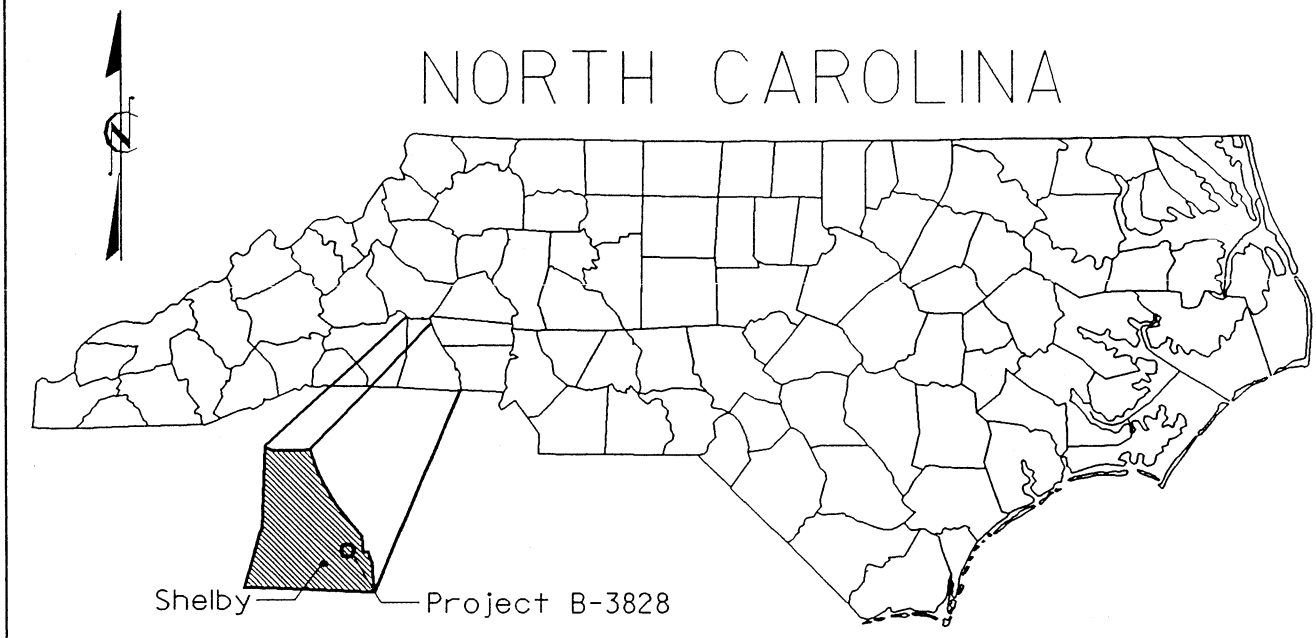
XIV. Other Circumstances (Optional):

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

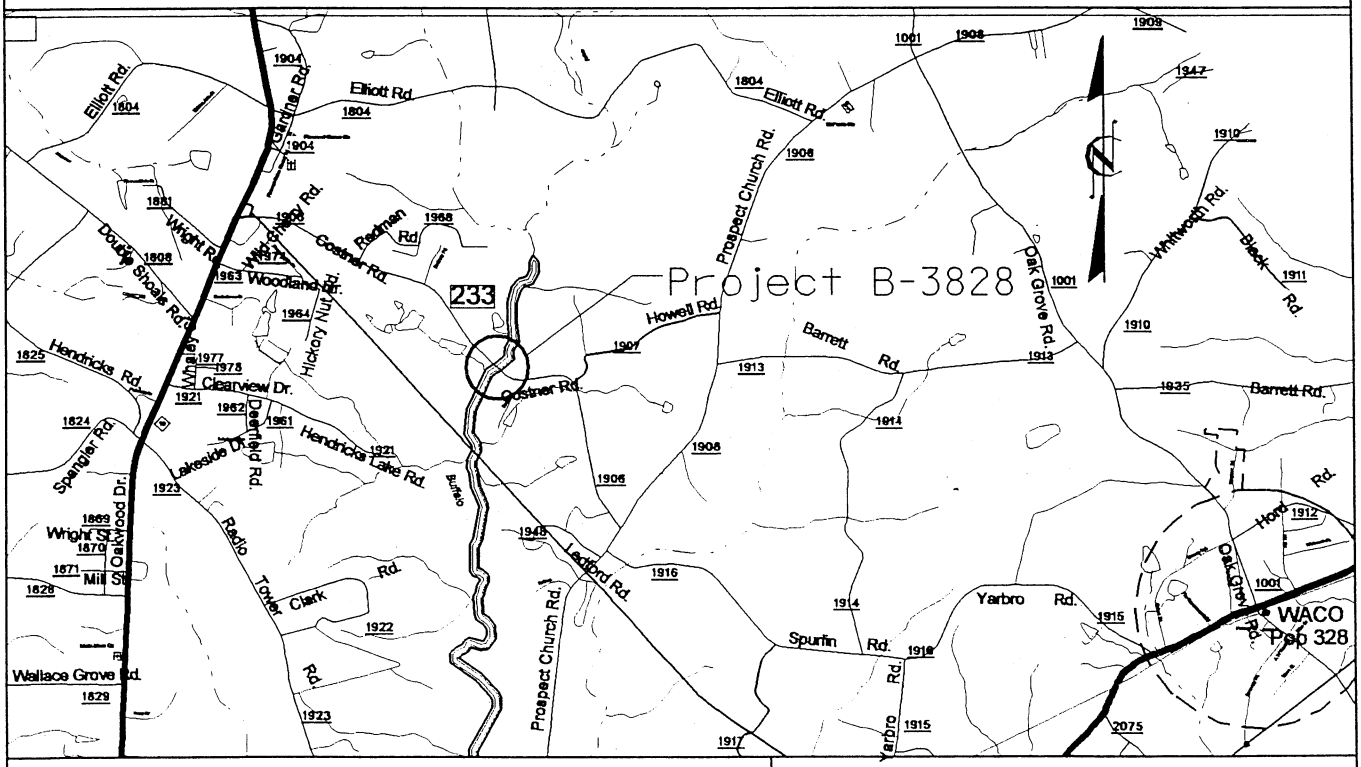
Bruce D. Ellis 7/28/04

Applicant/Agent's Signature **Date**

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



CLEVELAND COUNTY

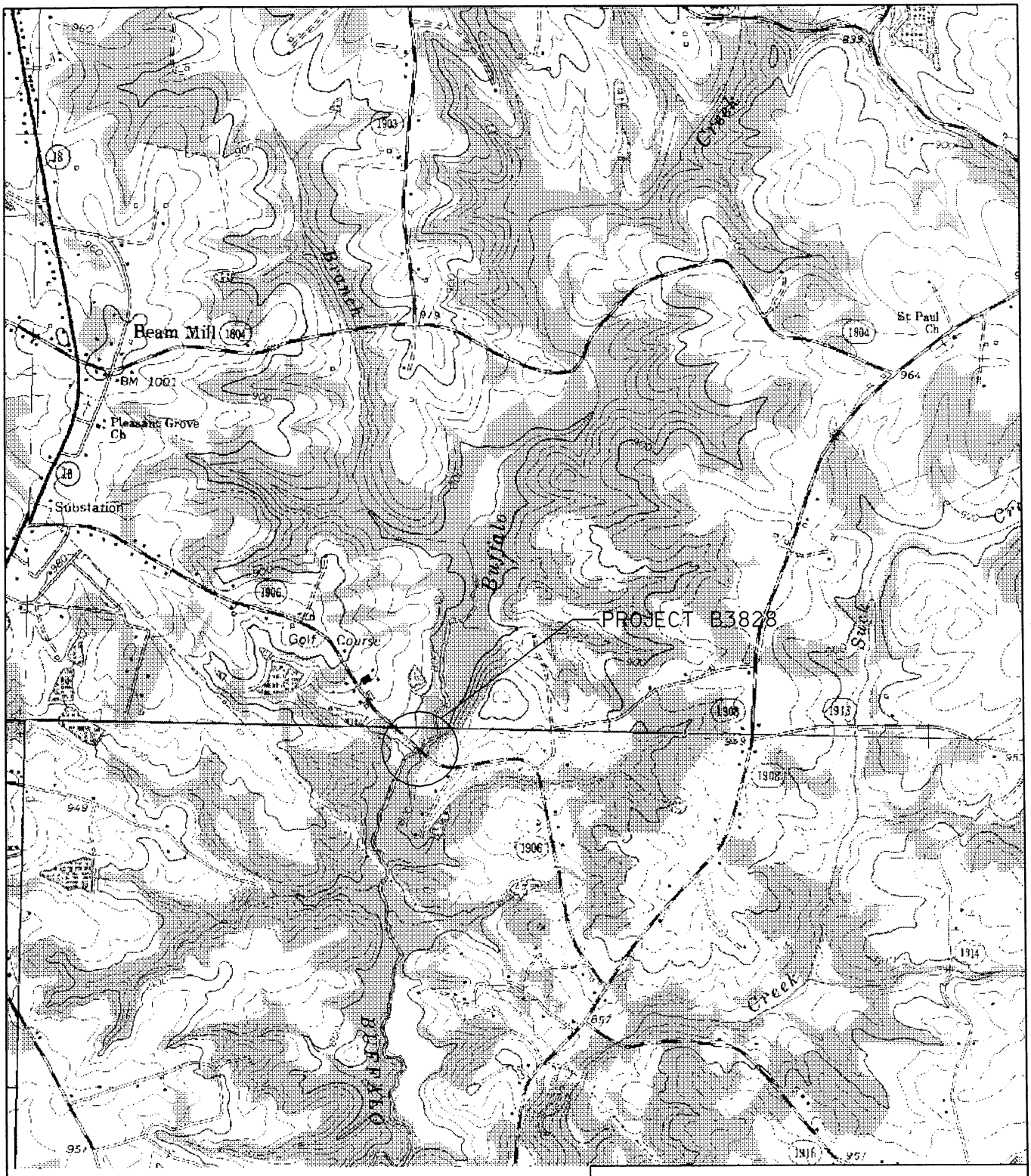


VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
CLEVELAND COUNTY
PROJECT: 8.2801601 (B-3828)
REPLACE BRIDGE # 233 ON SR 1906 (COSTNER ROAD) OVER BUFFALO CREEK

SHEET 1 OF 7 7/13/04



PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS
CLEVELAND COUNTY

PROJECT: 8.2801601 (B-3829)
REPLACE BRIDGE #233 ON
SR 1906 (COSTNER ROAD)
OVER BUFFALO CREEK

SHEET 2 **OF** 7 **7/12/04**

WETLAND LEGEND

WLB — WETLAND BOUNDARY

WLB / WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

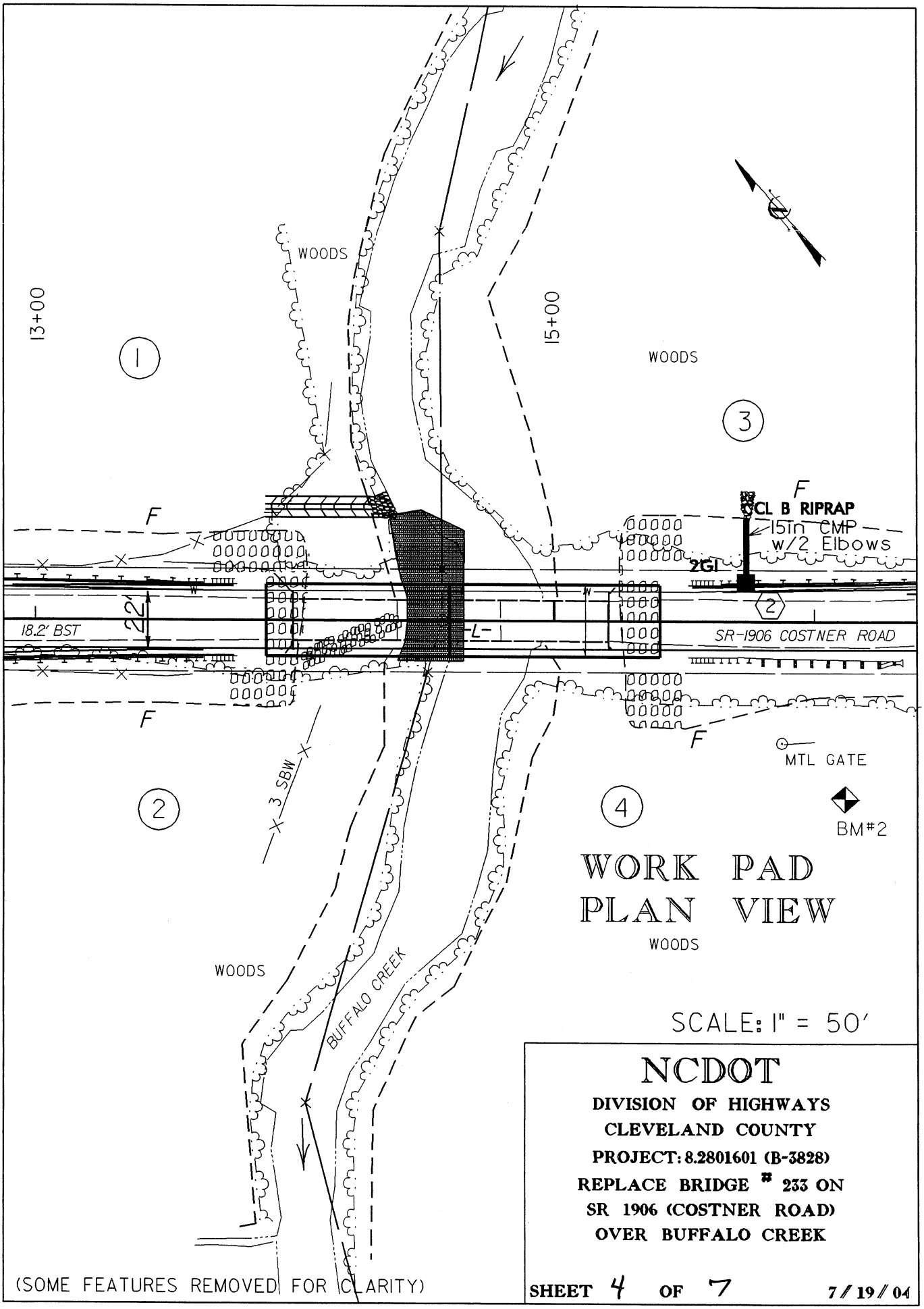
LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

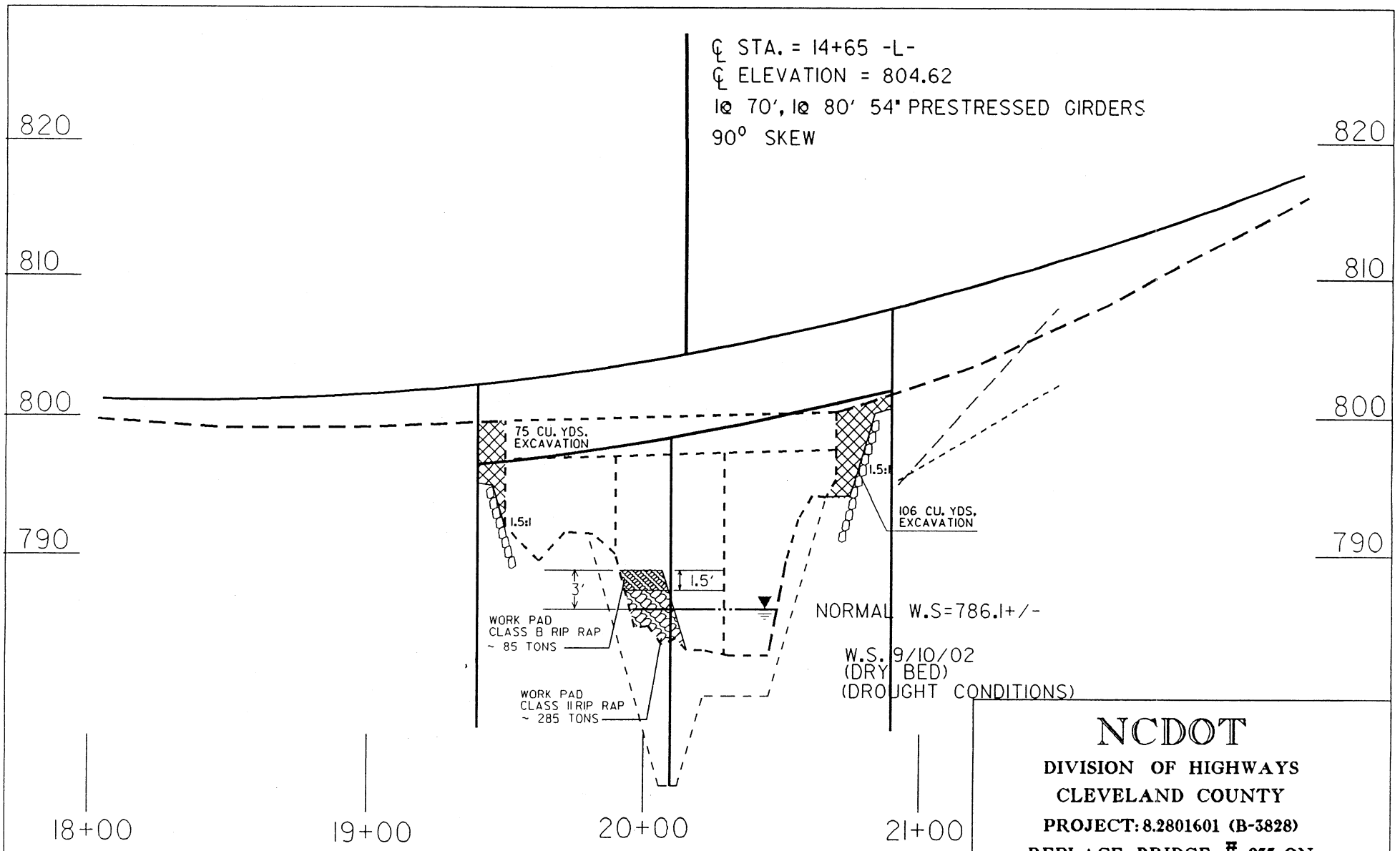
DIVISION OF HIGHWAYS
CLEVELAND COUNTY
PROJECT: 8.2801601 (B-3828)
REPLACE BRIDGE # 233 ON
SR 1906 (COSTNER ROAD)
OVER BUFFALO CREEK

SHEET 3 OF 7 12/20/02



NCDOT

DIVISION OF HIGHWAYS
CLEVELAND COUNTY
PROJECT: 8.2801601 (B-3828)
REPLACE BRIDGE # 233 ON
SR 1906 (COSTNER ROAD)
OVER BUFFALO CREEK



WORK PAD PROFILE VIEW

NCDOT

DIVISION OF HIGHWAYS
CLEVELAND COUNTY
PROJECT: 8.2801601 (B-3828)
REPLACE BRIDGE # 233 ON
SR 1906 (COSTNER ROAD)
OVER BUFFALO CREEK

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	14+37-L- +/-	WORK PAD							0.03		
	14+66-L- +/-										
TOTALS:			0	0	0	0	0	0	0.03	0	0

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CLEVELAND COUNTY
PROJECT: 8.2801601 (B-3828)

7/13/2004

Form Revised 3/22/01

PROPERTY OWNERS

NAMES AND ADDRESSES

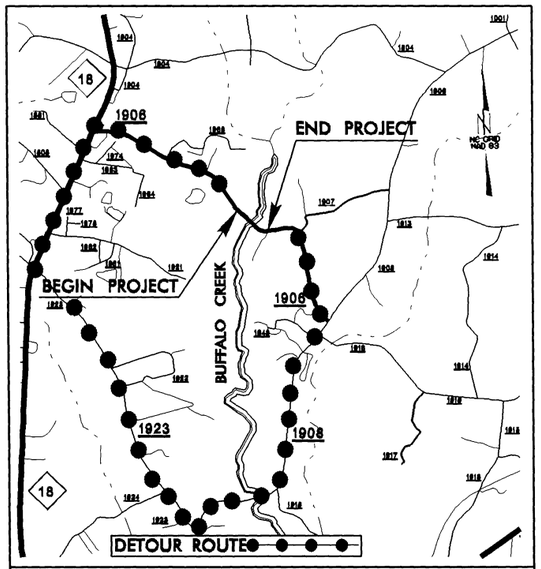
PARCEL NO.	NAMES	ADDRESSES
1	ESTHER C. GREENE	3809 WILDCHERRY ROAD SHELBY, NC 28150-2831
2	ROBERT S. & MOLLIE A. BROWN	932 PAUL REVERE LANE GASTONIA, NC 28056
3	DEAN V. & SHEILA GARDNER	2548 OAK GROVE ROAD SHELBY, NC 28150
4	JUNIOR & MARIE MARTIN	104 RENA DRIVE SHELBY, NC 28150

NCDOT

DIVISION OF HIGHWAYS
CLEVELAND COUNTY
PROJECT: 8.2801601 (B-3828)
REPLACE BRIDGE # 233 ON
SR 1906 (COSTNER ROAD)
OVER BUFFALO CREEK

CONTRACT: TIP PROJECT: B-3828

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



VICINITY MAP SHOWING LOCATION OF PROJECT B-3828

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

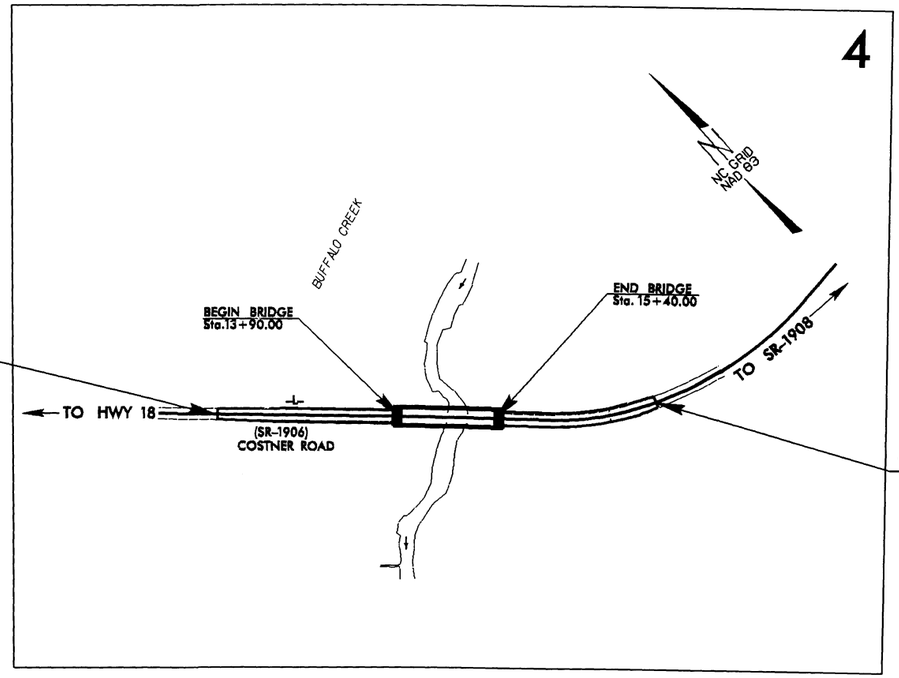
LOCATION: BRIDGE NO. 233 OVER BUFFALO CREEK ON SR 1906 (COSTNER ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3828	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33280.1.1	BRZ-1906(2)	PE
33280.2.2	BRZ-1906(2)	R/W & UTIL

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

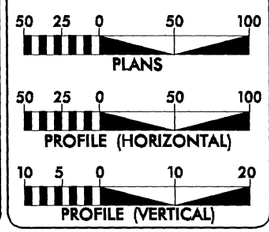


–L– STA. 10+95.00 BEGIN TIP PROJECT B-3828

–L– STA. 18+00.00 END TIP PROJECT B-3828

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
** DESIGN EXCEPTION REQUIRED FOR THE DESIGN SPEED FROM 50 MPH TO 35 MPH .

GRAPHIC SCALES



DESIGN DATA

ADT 2005 = 912
ADT 2025 = 1800
DHV = 10 %
D = 60 %
T = 3 % *
V = 50 MPH
* TTST 1 % DUAL 2 %
FUNC CLASS = LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3828 = 0.106 MILES
LENGTH STRUCTURE TIP PROJECT B-3828 = 0.028 MILES
TOTAL LENGTH OF TIP PROJECT B-3828 = 0.134 MILES

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 21, 2004

LETTING DATE: MAY 17, 2005

TONY HOUSER, PE
PROJECT ENGINEER

LEE ANN MOORE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

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Created At 7/8/2004

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-3828	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

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

RIGHT OF WAY

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

HYDROLOGY

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

STRUCTURES

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

MINOR
Head & End Wall — CONC HW
Pipe Culvert
Footbridge
Drainage Boxes — CB
Paved Ditch Gutter

UTILITIES

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

Recorded Water Line — W — W
Designated Water Line (S.U.E.*) — W — W
Sanitary Sewer — SS — SS
Recorded Sanitary Sewer Force Main — FSS — FSS
Designated Sanitary Sewer Force Main(S.U.E.*) — FSS — FSS
Recorded Gas Line — G — G
Designated Gas Line (S.U.E.*) — G — G
Storm Sewer — S — S
Recorded Power Line — P — P
Designated Power Line (S.U.E.*) — P — P
Recorded Telephone Cable — T — T
Designated Telephone Cable (S.U.E.*) — T — T
Recorded U/G Telephone Conduit — TC — TC
Designated U/G Telephone Conduit (S.U.E.*) — TC — TC
Unknown Utility (S.U.E.*) — ?UTL — ?UTL
Recorded Television Cable — TV — TV
Designated Television Cable (S.U.E.*) — TV — TV
Recorded Fiber Optics Cable — FO — FO
Designated Fiber Optics Cable (S.U.E.*) — FO — FO
Exist. Water Meter — 0
U/G Test Hole (S.U.E.*) — ATTUR
Abandoned According to U/G Record — E.O.I.
End of Information

BOUNDARIES & PROPERTIES

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

BUILDINGS & OTHER CULTURE

Buildings
Foundations
Area Outline
Gate
Gas Pump Vent or U/G Tank Cap
Church
School
Park
Cemetery
Dam
Sign
Well — GS, W
Small Mine
Swimming Pool

TOPOGRAPHY

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

VEGETATION

Single Tree
Single Shrub
Hedge
Woods Line
Orchard
Vineyard — VINEYARD

RAILROADS

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

revised 02/02/00

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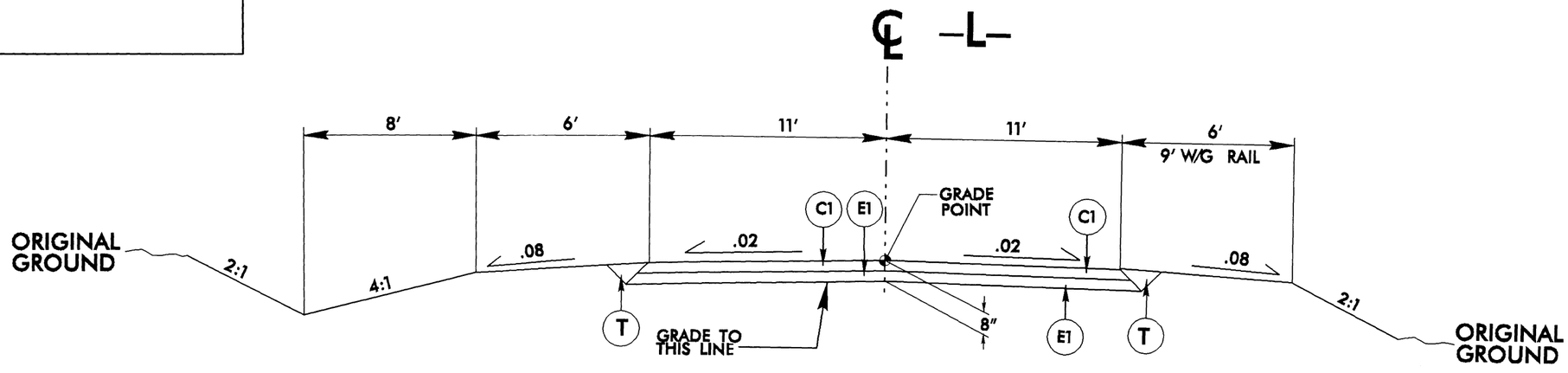
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-3828	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

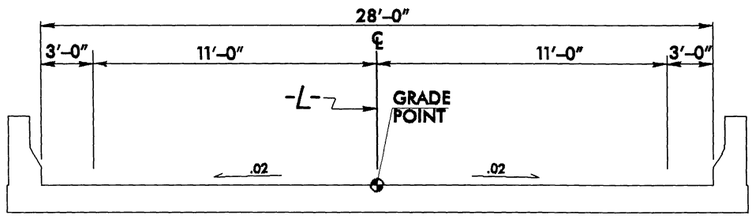
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2½"ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.



TYPICAL SECTION NO. 1

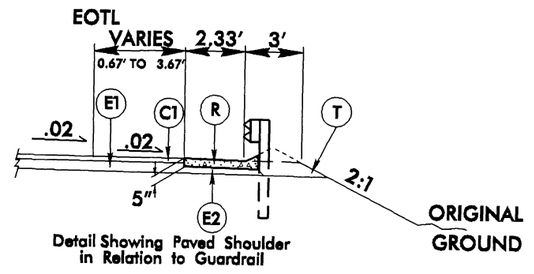
USE TYPICAL SECTION NO. 1 FOR THE FOLLOWING:

–L– STA. 10+95.00 TO 13+90.00 (BEG. BRIDGE)
–L– STA. 15+40.00 (END BRIDGE) TO 18+00.00



TYPICAL SECTION ON STRUCTURE

–L– STA. 13+90.00 TO STA. 15+40.00



Detail Showing Paved Shoulder in Relation to Guardrail

USE SHOULDER BERM GUTTER FOR THE FOLLOWING:

LEFT SHOULDER –L– STA 12+72.75 TO APPROACH SLAB
APPROACH SLAB TO –L– STA 16+57.25

RIGHT SHOULDER –L– STA 12+72.75 TO APPROACH SLAB

4-JUL-2004 14:04
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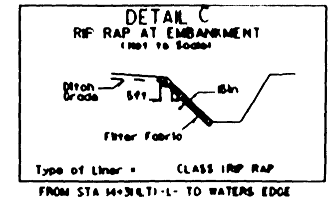
jbsmead AT RD18679

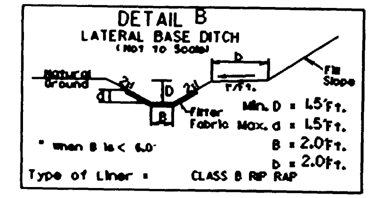
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

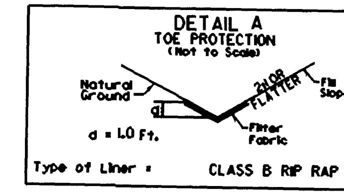
**DESIGN EXCEPTION REQUIRED FOR THE DESIGN SPEED FROM 50 MPH TO 35 MHP.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3828-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 601028.401(ft) EASTING: 1259721.464(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998400 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3828-1" TO -L- STATION 10+95.00 IS S 46° 24' 51.05" E 541.18' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

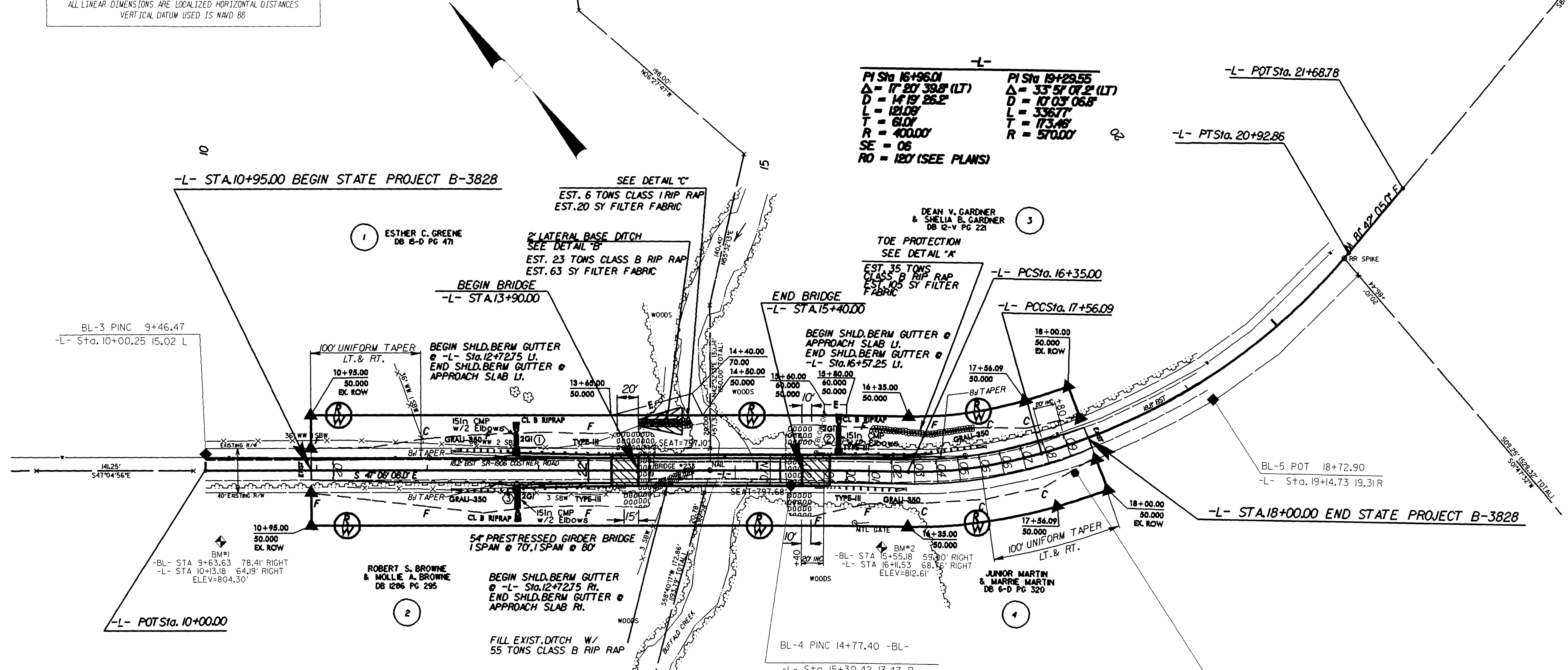


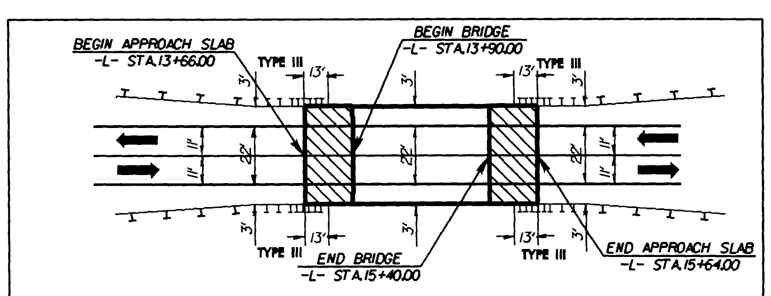




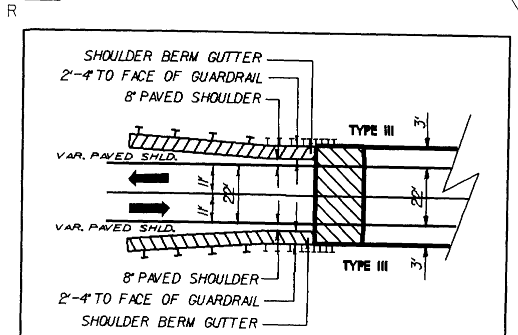
-L-

PI Sta 16+96.01	PI Sta 19+29.55
Δ = 17° 20' 39.8" (LT)	Δ = 33° 51' 07.2" (LT)
D = 14° 19' 26.2"	D = 10° 03' 06.8"
L = 121.09'	L = 336.77'
T = 61.01'	T = 173.46'
R = 400.00'	R = 570.00'
SE = .06	
RO = 120' (SEE PLANS)	





SKETCH SHOWING RELATIONSHIP OF BRIDGE TO PAVEMENT AND SHOULDERS



DETAIL OF PAVED SHOULDER AND SHOULDER BERM GUTTER

NOTES:

1. FOR PROFILE SEE SHEET 5
2. FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-4

5/28/99

**DESIGN EXCEPTION REQUIRED FOR THE DESIGN SPEED FROM 50 MPH TO 35 MPH.

PROJECT REFERENCE NO.	SHEET NO.
B-3828	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR ALIGNMENT SEE SHEET 4

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 5200 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 797.9 FT
BASE DISCHARGE	= 7500 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 800.0 FT
OVERTOPPING DISCHARGE	= 8800 CFS
OVERTOPPING FREQUENCY	= 200 YRS
OVERTOPPING ELEVATION	= 800.9 FT

-L-

PI = 14+24.35
EL = 792.69'
VC = 650'
K=50

BEGIN GRADE STA.10+95.00
ELEV. 804.71

54" PRESTRESSED GIRDERS
1 SPAN @ 70' & 1 SPAN @ 80'

BEGIN BRIDGE STA.13+90.00

END BRIDGE STA.15+40.00

END GRADE STA.18+00.00
ELEV. 828.00

-L- 3.65%

-L- 1.49%

BW#1
-PL- STA.9+63.63 78.41' FT
-L- STA.10+13.18 64.89 RT
ELEV= 804.30'

BW#2
-PL- STA.15+55.18 59.90' FT
-L- STA.15+11.53 68.75 RT
ELEV= 812.61'

BEGIN LATERAL BASE DITCH
PI=13+90.00 LT.
EL = 791.40

PI=14+00.00 LT.
EL= 791.40

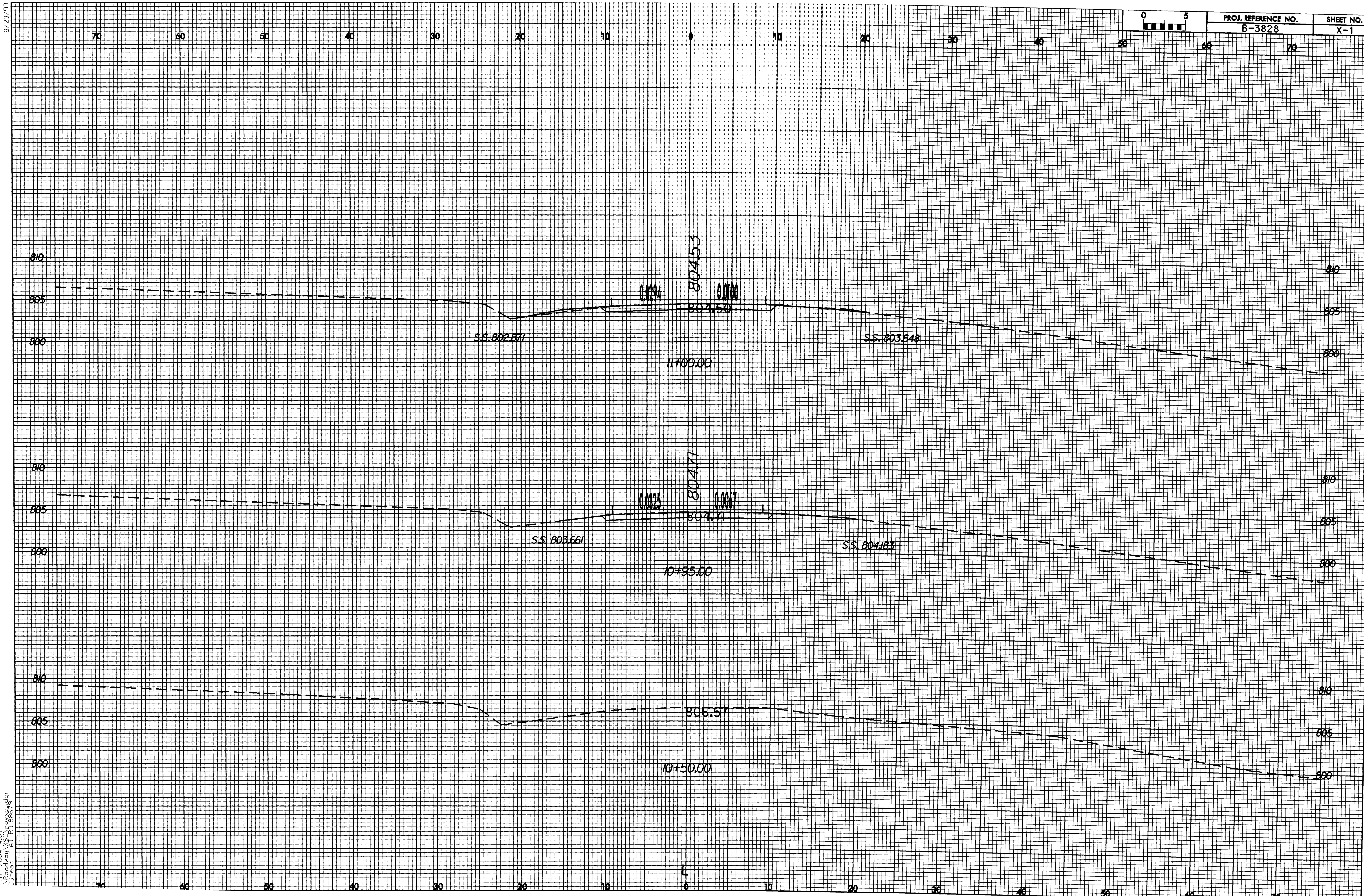
END LATERAL BASE DITCH
PI=14+31.00 LT.
EL = 791.10

10 11 12 13 14 15 16 17 18 19

760 770 780 790 800 810 820 830 840

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-1



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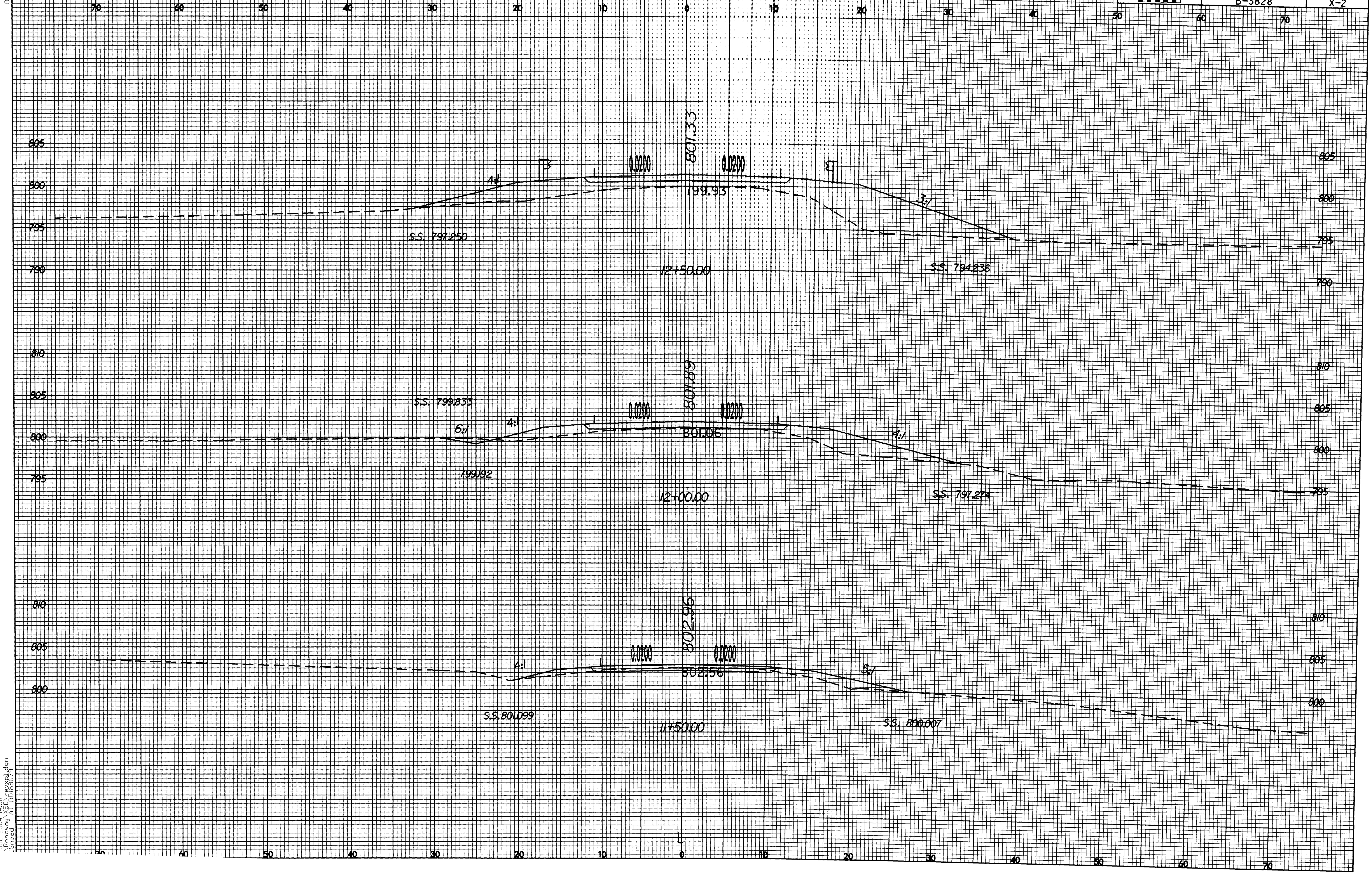
\Roadway\XSC\
Snead AT

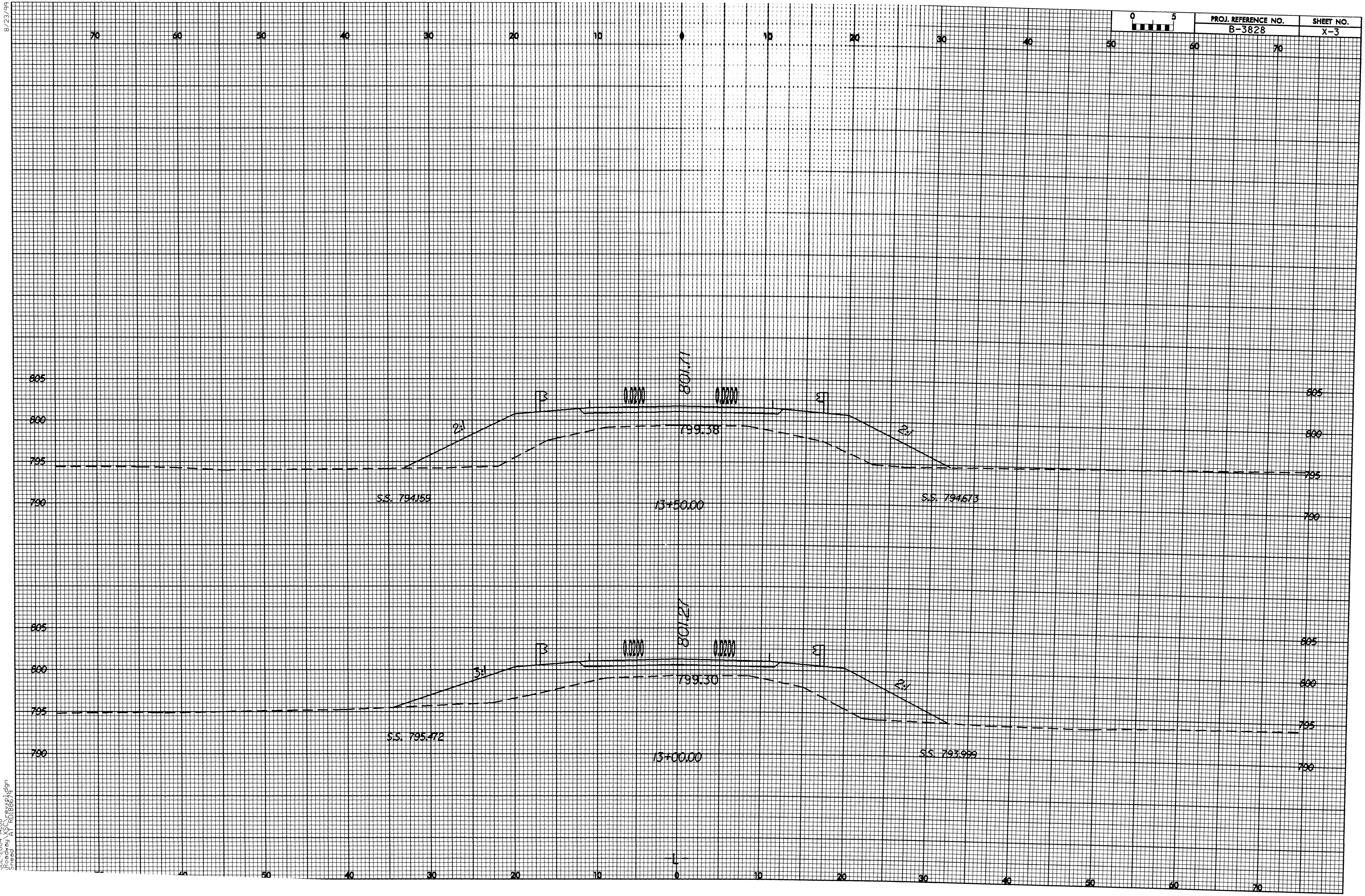
PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-2



8/23/99

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-3



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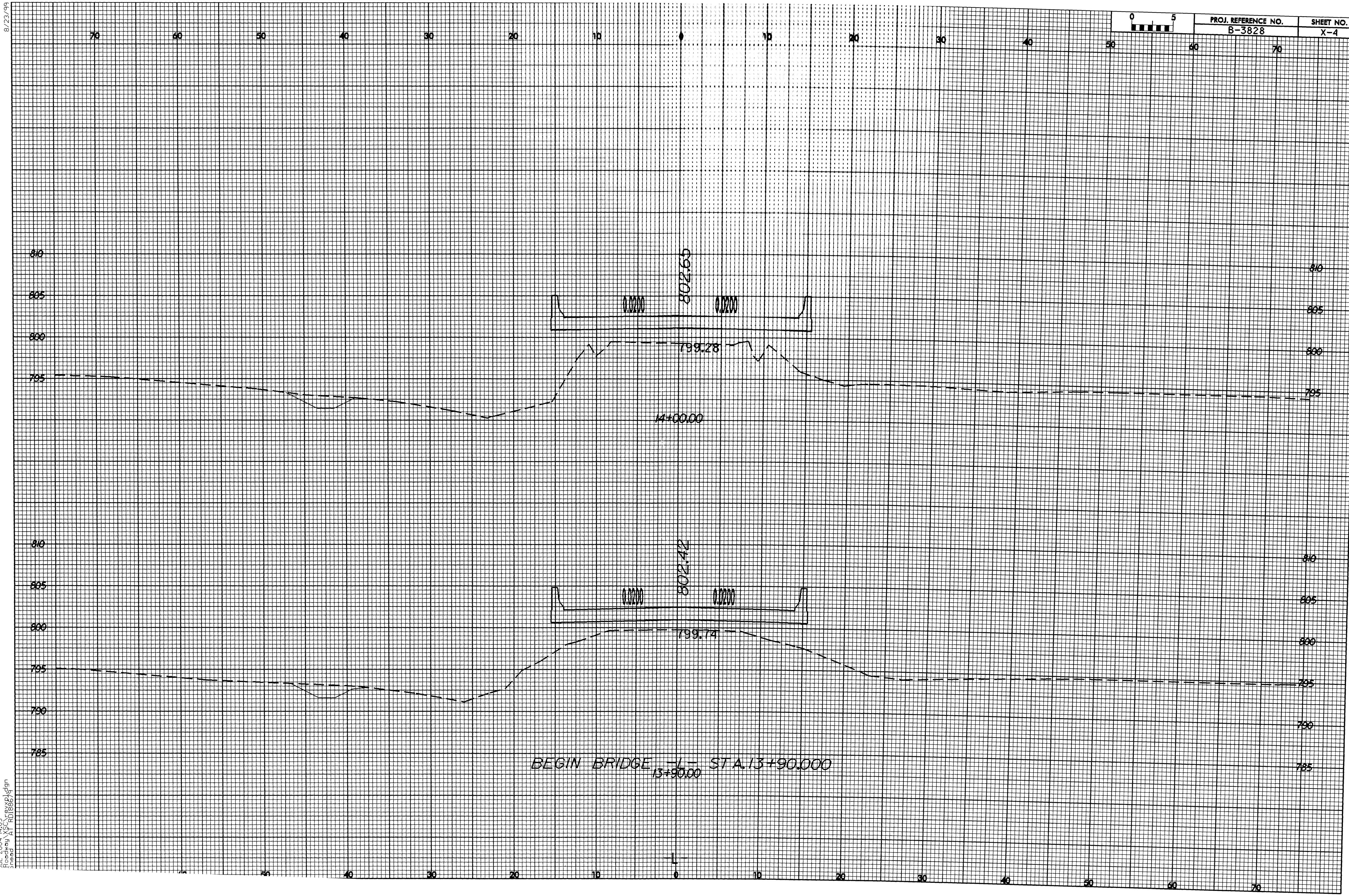
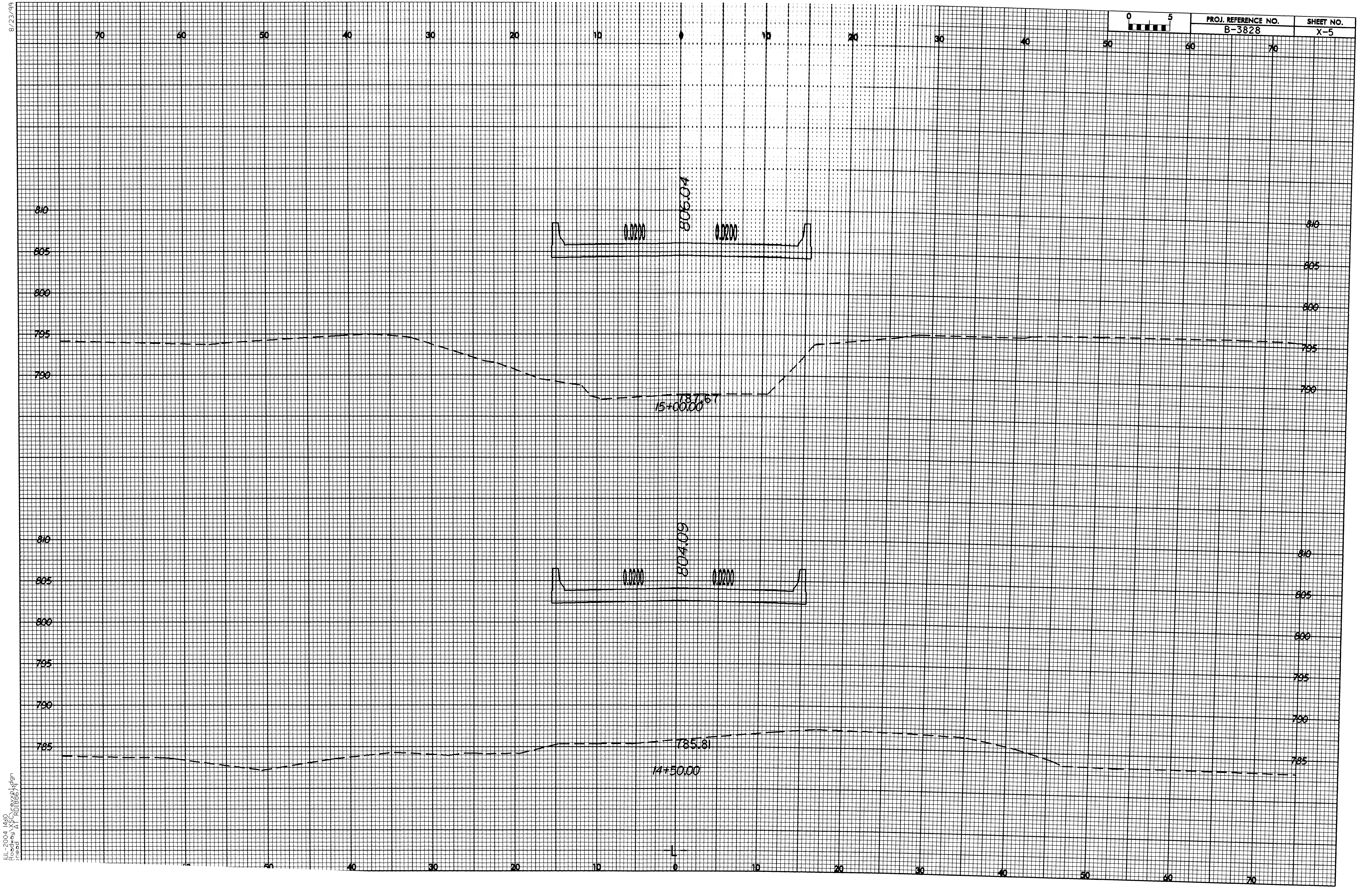
Snead AT RD188679

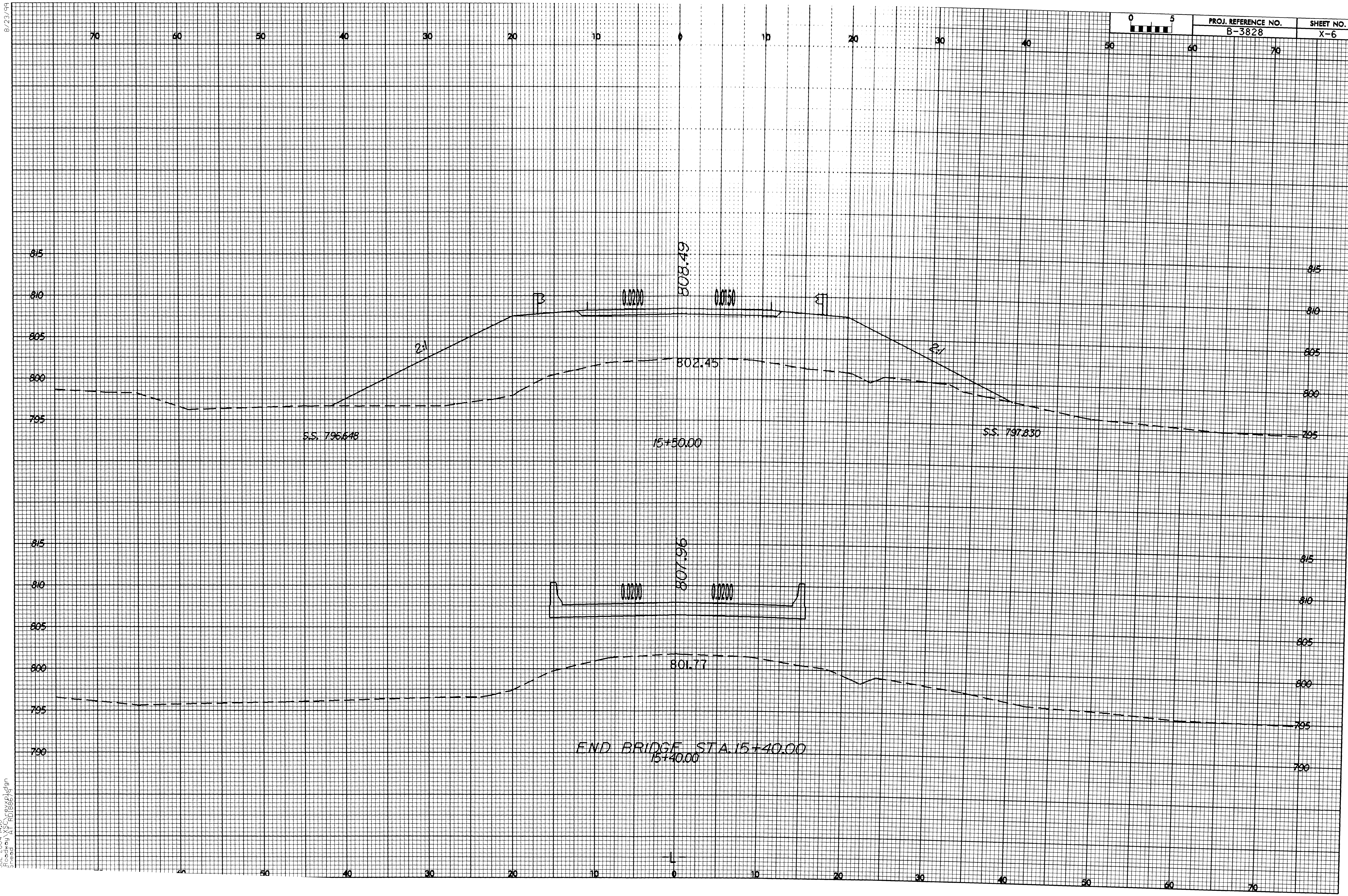
PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-4



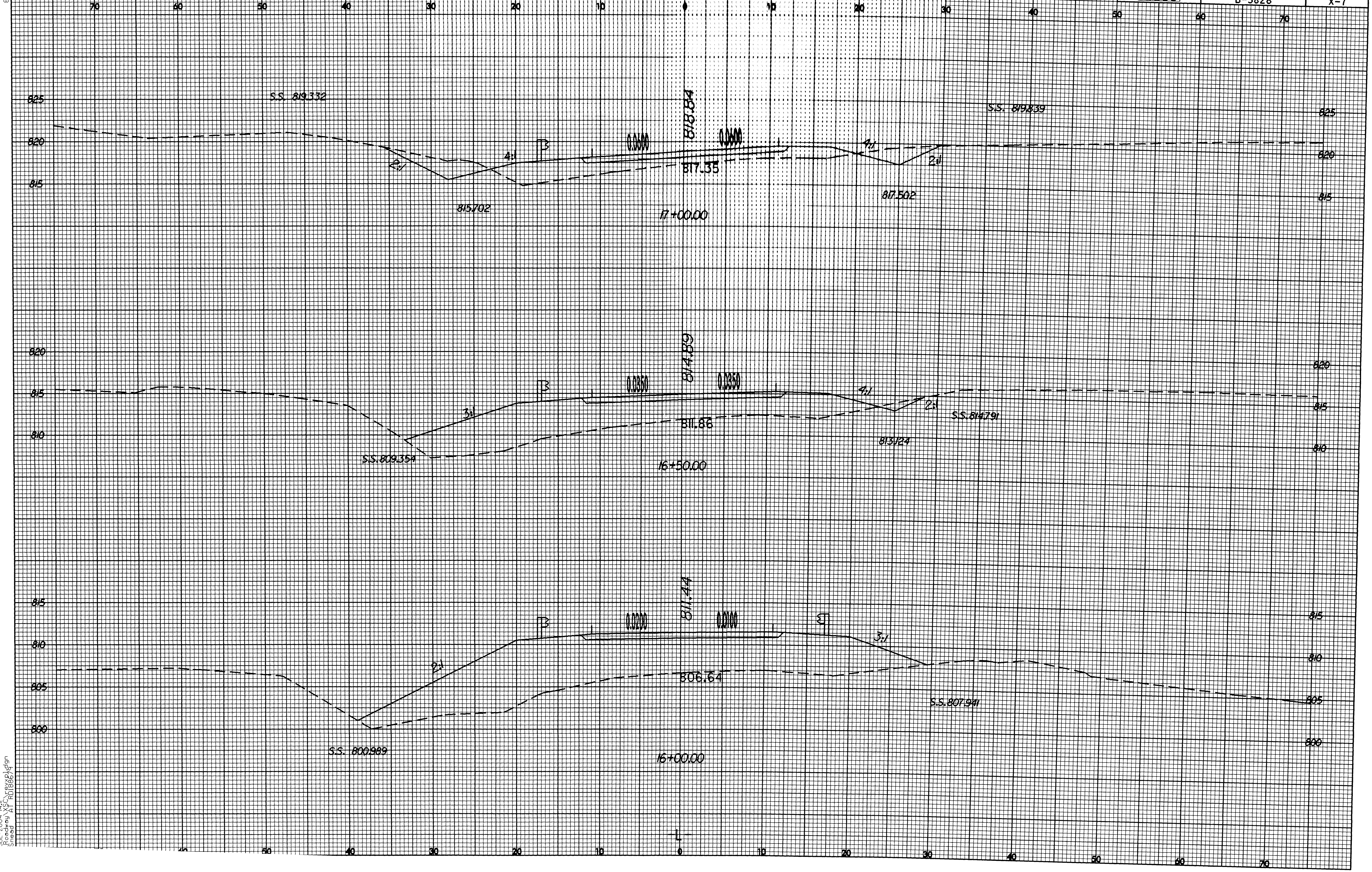


8/23/99
PROJ. REFERENCE NO.
B-3828
SHEET NO.
X-5
0 5
70 60 50 40 30 20 10 10 20 30 40 50 60 70
810
805
800
795
790
806.04
0.0200
0.0200
787.67
15+00.00
810
805
800
795
790
785
804.09
0.0200
0.0200
785.81
14+50.00

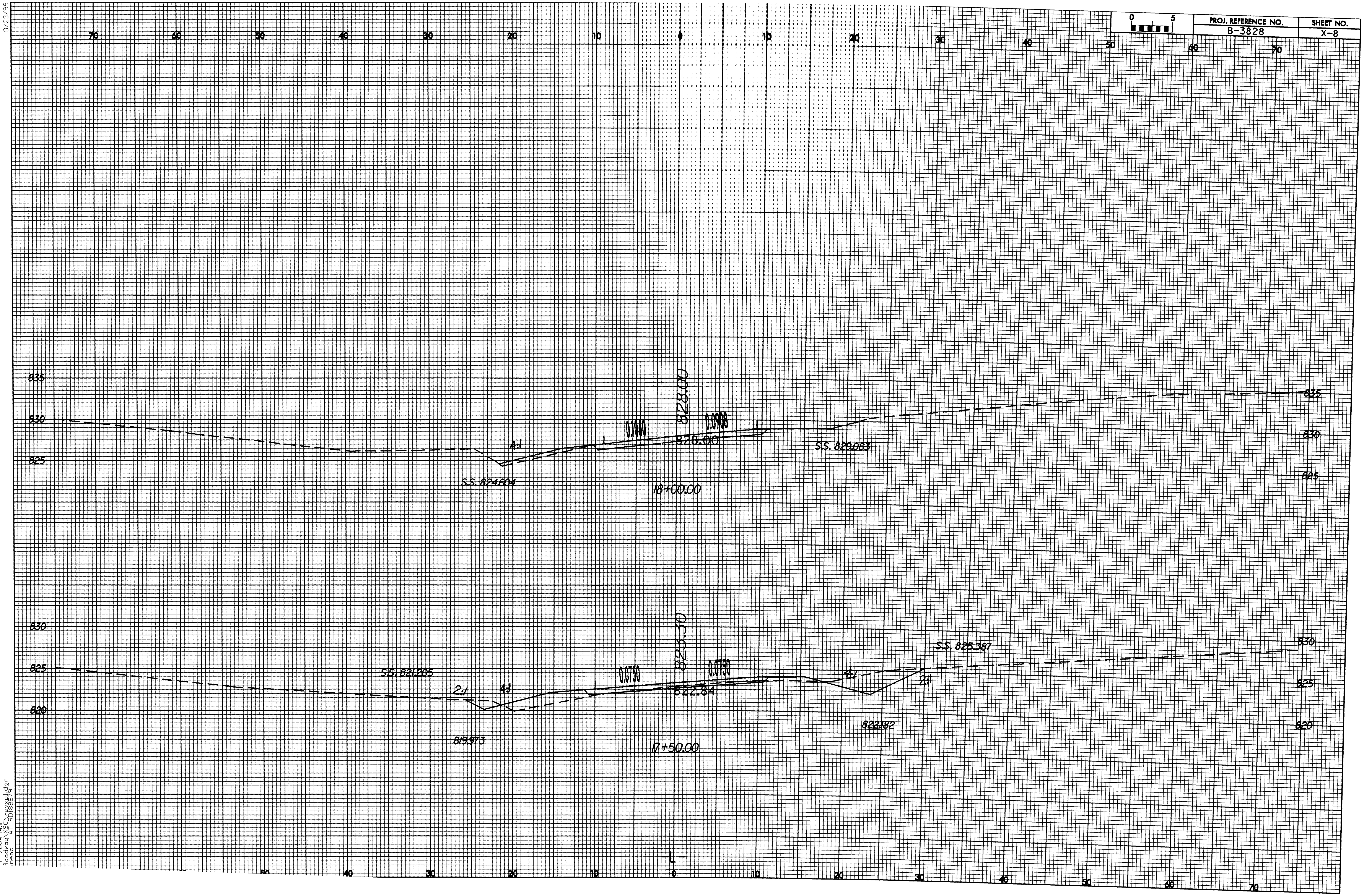
PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-6



PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-7



PROJ. REFERENCE NO.	SHEET NO.
B-3828	X-8



Cleveland County
Bridge No. 233 on SR 1906 (Costner Road)
over Buffalo Creek
Federal Aid Project No. BRZ-1906(2)
State Project No. 8.2801601
T.I.P. No. B-3828

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

APPROVED:

12-12-03
DATE

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

12/12/03
DATE

for John F. Sullivan, III
Division Administrator, FHWA

PROJECT COMMITMENTS

Cleveland County
Bridge No. 233 on SR 1906 (Costner Road)
over Buffalo Creek
Federal Aid Project No. BRZ-1906(2)
State Project No. 8.2801601
T.I.P. No. B-3828

In addition to the standard Nationwide Permit 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Design Standards for Sensitive Wetlands, Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Structure Design

The existing bridge will be removed by sawing and/or non-shattering methods such that debris will not fall in the water. The contractor will submit the plan for the bridge demolition to the NCDOT for review and approval.

Cleveland County
Bridge No. 233 on SR 1906 (Costner Road)
over Buffalo Creek
Federal Aid Project No. BRZ-1906(2)
State Project No. 8.2801601
T.I.P. No. B-3828

CATEGORICAL EXCLUSION

December 2003

Documentation Prepared by:
TGS Engineers

J. Kenneth Burleson, PE
Project Manager

12/9/03
Date

For the North Carolina Department of Transportation

Elmo E. Vance
Project Manager

Cleveland County
Bridge No. 233 on SR 1906 (Costner Road)
over Buffalo Creek
Federal Aid Project No. BRZ-1906(2)
State Project No. 8.2801601
T.I.P. No. B-3828

INTRODUCTION: Cleveland County Bridge No. 233 is included in the 2004-2010 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and in the Federal-Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

NCDOT Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 21.5 out of a possible 100 for a new structure. The bridge is considered functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

The project is located in the eastern part of Cleveland County (see Figure 1). The land use surrounding the existing crossing is primarily residential. This area is zoned as Rural Agriculture (RA).

SR 1906 (Costner Road) is classified as a local route in the Statewide Functional Classification System. This route is not a designated bicycle route nor is it listed in the TIP as needing incidental bicycle accommodations.

SR 1906 has a 18-foot (5.5- meter) pavement width with 5-foot (1.5 meter) grass shoulders (see Figures 3 and 4). The roadway grade is a sag vertical curve through the project area. The existing bridge is on a tangent with a curve to the east of the bridge (see Figure 2). The roadway is situated approximately 18 feet (5.5 meters) above the creek bed.

The 2004 traffic volume of 900 vehicles per day (VPD) is expected to increase to 1900 VPD by the year 2030. The projected volume includes 1 percent truck-tractor semi-trailer (TTST) and 2 percent dual-tired vehicles (DT). The posted speed limit on this section of SR 1906 is 45 miles (72 kilometers) per hour.

Bridge No. 233 is a three-span two-lane structure consisting of a timber deck with an asphalt wearing surface on steel girders with timber joists and a steel floor beam system. The substructure consists of timber caps and piles and timber bulkheads. The existing bridge (see Figure 3) is approximately 121 feet (36.9 meters) long. The clear roadway width is 15.75 feet (4.8 meters). The posted weight limit on this bridge is 12 tons for single vehicles and 15 tons for truck tractor semi-trailers.

There are no utilities attached to the existing structure. The utility impacts are anticipated to be low with this project.

No accidents were reported in the vicinity of Bridge No. 233 during the period from January 1999 through December 2002.

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

III. ALTERNATIVES

A. Project Description

The recommended replacement structure will consist of a new bridge approximately 150 feet (45.7 meters) in length with a 28-foot (8.5 meter) clear roadway width. This structure will provide two, 11-foot (3.3 meter) lanes with 3-foot (0.9 meter) shoulders on each side (see Figure 5).

The recommended bridge length is based on a preliminary hydraulic analysis. The final design of the bridge will be such that the backwater elevation of Buffalo Creek will not encroach beyond the current 100-year floodplain limits. The length of the new structure may be increased or decreased to accommodate peak flows as determined by further hydrologic studies.

The roadway grade of the new structure will be approximately 2 feet (0.6 meters) higher than the existing grade. The existing roadway will be widened to a 22-foot (6.7 meter) pavement width, to provide two 11-foot (3.3 meter) lanes and 6-foot (1.8 meter) grass shoulders on each side. Typical sections of the proposed approach roadway are included as Figure 4.

B. Build Alternatives

The two alternatives for replacing Bridge No. 233 that were evaluated are described as follows:

Alternative 1 involves replacing the bridge on a new alignment to the south of the existing bridge. The new alignment would be approximately 1400 feet (427 meters) long including the new bridge and have a design speed of 50 miles (80 kilometers) per hour. The existing structure and approaches would serve to maintain traffic on-site during construction (see Figure 2).

This alternative provides a better roadway alignment because it would decrease the severity of the curve located to the east of the existing structure. This alternative was not selected because it is more costly than Alternative 2 due to the new alignment.

Alternative 2 (Preferred) involves replacing the bridge along the existing alignment. This alignment is approximately 600 feet (183 meters) long including the new bridge. The proposed design speed for the alignment is 50 miles (80 kilometers) per hour. An off-site detour will be used to maintain traffic during construction. The proposed detour includes NC 18 (Fallston Road), SR 1923 (Sanders Road), and SR 1908 (New Prospect Church Road).

C. Alternatives Eliminated from Further Study

The "Do-Nothing" or No-Build alternative is not considered desirable. Without improvements, this structure will continue to deteriorate to the point where the route would have to be closed which is not acceptable due to the traffic service provided by the route..

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

D. Preferred Alternative

Alternative 2, replacing the bridge at its existing location, was selected as the preferred alternative (Figure 2). This alternative is preferred because it is the least costly, has a minimal impact on adjacent properties, and is less disruptive to the natural environment in the vicinity of the project. An off-site detour using NC 18 (Fallston Road), SR 1923 (Sanders Road), and SR 1908 (New Prospect Church Road) is recommended during construction.

The Division Construction Engineer concurs with the preferred alternative.

IV. ESTIMATED COSTS

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

	Alternative 1	Alternative 2 (Preferred)
Structure	$302,400	$302,400
Roadway Approaches	447,380	270,000
Structure Removal	15,248	15,248
Misc. & Mob.	189,972	127,352
Eng. & Contingencies	145,000	110,000
Total Construction Cost	**$ 1,100,000**	**$ 825,000**
Right-of-Way Costs	$56,500	$24,100
Total Project Cost	**$ 1,156,500**	**$ 849,100**

The estimated cost of the project, shown in the 2004-2010 NCDOT Transportation Improvement Program (TIP), is $870,000, including $700,000 for construction and $170,000 prior years expense.

V. NATURAL RESOURCES

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 (Waco, NC 7.5 minute quadrangle), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping (Waco, NC 7.5 minute quadrangle), and general alternative locations on site aerial photography (scale = 1:1200).

The study corridor is located approximately 1.0 mile (1.6 kilometer) east of the intersection of NC 18 and SR 1906 near Shelby, NC (Figure 1). Bridge No. 233 is located along SR 1906 at Buffalo Creek in Cleveland County. At SR 1906, Buffalo Creek is a perennial stream averaging 40 feet (12.2 meters) in width and flowing in a southerly direction. Buffalo Creek drains into King's Mountain Reservoir approximately 3.6 miles (5.8 kilometers) downstream of the study corridor. The study corridor includes the channel, floodplain, and side slopes adjacent to Buffalo Creek. Land use within and adjacent to the study corridor includes residential lawn, agricultural land, timbered land, forested slope, floodplain, riparian zone, and maintained right-of-way (Figure 2).

A. Methodology

A natural resources field investigation for Bridge No. 233 was conducted on June 20, 2001. The study corridor was walked and visually investigated for significant features. For purposes of the field investigation and to assure proper area coverage of both alternatives (Figure 2), the study corridor was assumed to be approximately 1400 feet (427.0 meters) in length and approximately 300 feet (91.0 meters) in width (200 feet [61.0 meters] south and 100 feet [30.5 meters] north of the SR 1906 centerline. Final impacts will be limited to cut-and-fill boundaries of the constructed alternative. Special concerns evaluated in the field include 1) potential habitat for protected species and 2) wetlands and water quality protection in Buffalo Creek.

Plant community descriptions are based on a classification system utilized by North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968), with adjustments made to reflect more current nomenclature (Kartesz 1998). Jurisdictional areas were evaluated using the three-parameter approach following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Wetland jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Habitat used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Webster *et al.* 1985, Potter *et al.* 1980, Martof *et al.* 1980, Rohde *et al.* 1994, Menhinick 1991, Palmer and Braswell 1995). Fish and wildlife nomenclature follow current standards. Water quality information for area streams and tributaries was derived from available sources (DWQ 1998, 2000). Quantitative sampling was not undertaken to support existing data.

The most current U.S. Fish and Wildlife Service (FWS) listing of federally protected species with ranges which extend into Cleveland County was obtained prior to initiation of the field investigation. In addition, NHP records documenting presence of federally or state listed species were consulted before commencing the field investigation.

B. Physiography and Soils

The study corridor is located in the Biotite Gneiss and Schist geologic formation of the Charlotte and Milton Belts within the Southern Outer Piedmont physiographic province of North Carolina. This formation is characterized by broad, gently sloping uplands, moderately to steeply sloping areas with narrow convex ridges, and steep valley slopes. Soil systems in the Piedmont are determined by the local bedrock type and form in saprolite weathered from bedrock of various composition (Daniels *et al.* 1999). The study corridor is located within the floodplain and adjacent side slopes of Buffalo Creek. Within the study corridor, Buffalo Creek is deeply entrenched, and

a relict floodplain (terrace) exist on both sides of the stream. To the west, the terrace is wide and gradually sloping; to the east, the terrace is narrow and flat. Elevations rise from approximately 795 feet (242 meters) National Geodetic Vertical Datum (NGVD) at streamside to 840 feet (256 meters) NGVD at the western and eastern extremes of the study corridor (USGS Waco, NC quadrangle).

The Natural Resource Conservation Service (unpublished data) indicates the following three soil map units within the study corridor: Pacolet sandy clay loam (*Typic Kanhapludults*), Pacolet-Saw (*Typic Kanhapludults*) complex, and Toccoa sandy loam (*Typic Udifluvents*). These series are considered to be non-hydric in Cleveland County (NRCS 1996).

Pacolet sandy clay loam soils occur on sloping uplands and are formed in residium from falsic rocks. Within the study corridor, this series occurs along the terrace bluff on the east side of Buffalo Creek. Pacolet soils are well drained and have moderate permeability (NRCS unpublished data).

The Pacolet-Saw complex occurs on gently sloping, eroded uplands. Within the study corridor, this series occurs on portions of the terrace bluff on the east side of Buffalo Creek north of SR 1906. Soils of the Pacolet-Saw complex are well-drained and have moderate permeability (NRCS unpublished data).

Toccoa sandy loam soils occur on nearly flat floodplains. Within the study corridor, this series occurs on the relict floodplain terrace on both sides of Buffalo Creek. Toccoa soils are well-drained and have moderate permeability (NRCS unpublished data).

C. Water Resources

1. Waters Impacted

The study corridor is located within subbasin 03-08-05 (Buffalo Creek subbasin) of the Broad River Basin (DWQ 1998). This area is part of USGS accounting unit 03050105 of the South Atlantic-Gulf Coast Region. The section of Buffalo Creek crossed by the subject bridge has been assigned Stream Index Number 9-53-(1) by the N.C. Division of Water Quality (DWQ 2000). The drainage area for this project is 40.5 square miles (105 square kilometers).

2. Stream Characteristics

Within the study corridor, Buffalo Creek is 30 to 50 feet (9.2 to 15.3 meters) wide and deeply entrenched. A well-defined riffle and pool structure is present, and exposed sand/gravel bars occur within the channel. The channel substrate is composed of gravel and sand with some finer sediments present

in pools. Stream width at Bridge No. 233 is approximately 40 feet (12.2 meters). Bank height varies from 8 feet (2.4 meters) at point bars to 15 feet (4.6 meters) opposite point bars. A narrow levee approximately 10 feet (3.1 meters) wide and flat terrace approximately 50 feet (15.3 meters) wide are prominent on the east side of the stream. During the field visit, flow velocity was moderate and water clarity was excellent; bridge height above the water surface was approximately 18 feet (5.5 meters).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. A best usage classification of WS-III has been assigned to Buffalo Creek (DWQ 2000). The designation WS-III denotes waters protected as water supplies. These waters generally occur in low to moderately developed watersheds with permitted, point source discharges of treated wastewater. Local programs are required to control non-point source and stormwater discharge of pollution. WS-III waters are also suitable for Class C uses. Class C denotes waters that are suitable for aquatic life propagation and protection, agriculture, and secondary recreation. Secondary recreation refers to wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis (DWQ 2000). No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 mile (1.6 kilometers) of the study corridor. No watershed Critical Area (CA) occurs within 1.0 mile (1.6 kilometers) of the study area (DWQ 1998).

The Division of Water Quality (DWQ) has initiated a whole-basin approach to water quality management for the 17 river basins within the state. Water quality for the proposed study corridor is summarized in the Broad River basin management plan. Buffalo Creek has been assigned a bioclassification of Good, based on macroinvertebrate samples approximately 2.0 miles (3.2 kilometers) downstream of the study corridor. No fish community or tissue sampling has recently been performed on Buffalo Creek (DWQ 2000).

The Broad River subbasin 03-08-05 has been biologically and chemically monitored and has a use support rating of supporting in 67 percent of its reaches. Twenty-nine percent are rated as support threatened, 3 percent as partially supporting, and 1 percent of its stream miles were not evaluated. The entire length of Buffalo Creek has been classified as Supporting. Subbasin 03-08-05, containing the entire Buffalo Creek catchment from its headwaters to the South Carolina border, supports one major point-source discharger with a permitted discharge of 6 million gallons per day (MGD) (22.7 million liters per day [MLD]) permitted flow. The subbasin includes 10 minor dischargers, with a total permitted flow of 1.8 MGD (6.8 MLD). Sedimentation and erosion are the most widespread sources of non-point

stream pollution in Cleveland County (DWQ 1998).

3. Anticipated Impacts

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

For each of the proposed alternatives, no fill will be placed in the creek and the bridge replacement will allow for continuation of pre-project stream flows in Buffalo Creek, thereby protecting the integrity of this waterway. Long-term impacts resulting from construction are expected to be negligible. In order to minimize impacts to water resources, NCDOT Best Management Practices (BMPs) for the Protection of Surface Waters will be strictly enforced during the entire life of the project.

During removal of the existing bridge, bridge components will be removed without being dropped into waters of the United States. The project is classified as Case 3, where there are no special restrictions beyond those outlined in Best Management Practices for Protection of Surface Waters. NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR) will be applied for the removal of this bridge

D. Biotic Resources

1. Plant Communities

Four distinct plant communities were identified within the study corridor: maintained/disturbed land, riparian hardwood forest, mixed deciduous hardwood forest, and timbered land. These plant communities are described below.

Maintained/Disturbed Land - Maintained/disturbed land is defined as maintained roadside, residential land, agricultural fields, and fallow pasture land occurring within the study corridor. This plant community represents approximately 75 percent of the study corridor area. Dominant species include red clover (*Trifolium pratense*), wingstem (*Verbesina alternifolia*), Japanese honeysuckle (*Lonicera japonica*), trumpet creeper (*Campsis radicans*), Virginia creeper (*Parthenocissus quinquefolia*), common greenbriar (*Smilax rotundifolia*), English plantain (*Plantago lanceolata*), wild grape (*Vitis rotundifolia*), blackberry (*Rubus* sp.), common blue violet (*Viola papilionaceae*), Nepal microstegium (*Microstegium vimineum*), and crab grass (*Digitaria sanguinalis*).

Riparian Hardwood Forest - Riparian hardwood forest occurs along the banks, sand bars, levee, and terrace of Buffalo Creek. This plant community represents approximately 5 percent of the study corridor area. Canopy species include American sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), boxelder (*Acer negundo*), and ironwood (*Carpinus caroliniana*). Shrub and understory species include ironwood, Chinese privet (*Ligustrum sinense*), tag alder (*Alnus serrulata*), and green ash (*Fraxinus pennsylvanica*). Herbaceous vegetation and vines present are giant cane (*Arundinaria gigantea*), common greenbriar, yellowroot (*Xanthorhiza simplicissima*), jewelweed (*Impatiens capensis*), Japanese honeysuckle, rattlesnake fern (*Botrychium virginianum*), Christmas fern (*Polystichum acrostichoides*), and southern lady fern (*Athyrium filix-femina*).

Mixed Deciduous Hardwood Forest - Mixed deciduous hardwood forest occurs along the terrace slope east of Buffalo Creek. The plant community represents approximately 10 percent of the study corridor area. Canopy tree species are white oak (*Quercus alba*), tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), mockernut hickory (*Carya tomentosa*), river birch, and red mulberry (*Morus rubra*). The sub-canopy contains ironwood, sweetgum, American dogwood (*Cornus florida*), allspice (*Calycanthus floridus*), red maple, and red mulberry. Herbaceous vegetation present includes sedges (*Carex* sp.), Virginia creeper, crossvine (*Bignonia capreolata*), common blue violet, bloodroot (*Sanguinaria canadensis*), false Soloman's seal (*Smilacena racemosa*), and poison ivy (*Toxicodendron radicans*).

Timbered Land - Timbered land occurs east of Bridge No. 233 and north of SR 1906. The stand age is approximately 15 years in age and represents approximately 10 percent of the study corridor area. Dominant species include short-leaf pine (*Pinus echinata*), eastern red cedar (*Juniperus virginiana*), sweetgum, persimmon (*Diospyros virginiana*), blackberry, common greenbriar, and Japanese honeysuckle.

2. Plant Community Impacts

Plant community impacts are estimated based on the amount of each plant community present within the alternative corridor (Described in Section V.A). The following table provides the area of each plant community impacted by the proposed alternatives.

No new fragmentation of plant communities will be created for either alternative, as the project will only result in relocation of community boundaries.

Roadside edges typically serve as vectors for invasive species into local natural communities. The establishment of a hardy groundcover on road shoulders as soon as practicable will limit the availability of construction areas to invasive and undesirable plants.

Area in acres (hectares) of Plant Communities impacted by the proposed alternatives.

Plant Community	Alternative 1 Total	Alternative 2 (Preferred) Total
Maintained/Disturbed Land	1.62 (0.66)	0.30 (0.12)
Riparian Hardwood Forest*	– --	0.02 (0.01)
Mixed Deciduous Hardwood Forest*	0.14 (0.06)	0.07 (0.03)
Timbered Land	0.04 (0.02)	– --
Total	1.80 (0.74)	0.39 (0.16)

*Natural plant community

3. Wildlife

No mammals were observed during the field visit. Tracks of raccoon (*Procyon lotor*) were noted within the study corridor. Other mammals expected to frequent similar habitats in the Piedmont include gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), bobcat (*Felis rufus*), long-tailed weasel (*Mustela frenata*), eastern cottontail (*Sylvilagus*

floridanus), eastern gray squirrel (*Sciurus carolinensis*), evening bat (*Nycticeius humeralis*), eastern mole (*Scalopus aquaticus*), and least shrew (*Cryptotis parva*).

Bird species identified during the field visit are northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), white-eyed vireo (*Vireo griseus*), American robin (*Turdus migratorius*), Carolina chickadee (*Poecile carolinensis*), tufted titmouse (*Baeolophus bicolor*), common yellowthroat (*Geothlypis trichas*), eastern phoebe (*Sayornis phoebe*), indigo bunting (*Passerina cyanea*), Yellow-billed cuckoo (*Coccyzus americanus*), red-eyed vireo (*Vireo olivaceus*), Carolina wren (*Thryothorus ludovicianus*), and field sparrow (*Spizella pusilla*). Other avian species expected to occur in the study corridor are chimney swift (*Chaetura pelagica*), belted kingfisher (*Megaceryle alcyon*), common grackle (*Quiscalus quiscula*), blue jay (*Cyanocitta cristata*), gray catbird (*Dumetella carolinensis*), American crow (*Corvus brachyrhynchos*) red-bellied woodpecker (*Melanerpes carolinus*), blue-gray gnatcatcher (*Polioptila caerulea*), white throated sparrow (*Zonotrichia albicollis*), American goldfinch (*Carduelis tristis*), eastern towee (*Pipilo erythrophthalmus*), mourning dove (*Zenaida macroura*), and yellow-rumped warbler (*Dendroica coronata*).

One terrestrial reptile, eastern box turtle (*Terrapene caroliniana*), and one terrestrial amphibian, American toad (*Bufo americanus*), were observed within the study corridor. Other terrestrial herptile species that might be expected in these habitats are five-lined skink (*Eumeces fasciatus*), brown snake (*Storeria dekayi*), eastern garter snake (*Thamnophis sirtalis*), rough green snake (*Opheidrys aestivus*), American toad (*Bufo americanus*), Fowler's toad (*Bufo woodhousei*), gray treefrog (*Hyla versicolor*), and slimy salamander (*Plethodon glutinosis*).

Aquatic larval amphibians (tadpoles), but no aquatic reptiles, were observed during the field visit. Buffalo Creek provides suitable habitat for many aquatic and semi-aquatic reptiles and amphibians including eastern ribbon snake (*Thamnophis sauritus*), northern water snake (*Nerodia sipedon*), snapping turtle (*Chelydra serpentina*), stinkpot (*Sternotherus odoratus*), eastern painted turtle (*Chrysemys picta*), and two-lined salamander (*Eurycea bislineata*). Shell remains of Asian clam (*Corbicula flumenea*) were found inside the stream channel.

No sampling was undertaken in Buffalo Creek to determine fishery potential. Small minnows were seen during visual investigations, but no larger fish were noted. Species which may be present in Buffalo Creek include rosyside dace (*Clinostomus funduloides*), bluehead chub (*Nocomis leptocephalus*),

eastern mosquitofish (*Gambusia holbrooki*), redbreast sunfish (*Lepomis auritus*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), tessellated darter (*Etheostoma olmstedi*), and fantail darter (*Etheostoma flabellare*).

4. Wildlife Impacts

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

E. Special Topics

1. Waters of the United States

Surface waters within the embankments of Buffalo Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR section 328.3). NWI mapping depicts Buffalo Creek as a riverine, lower perennial stream with an excavated, unconsolidated bottom (R2UBHx; Cowardin *et al.* 1979). The field investigation verified this characterization, finding Buffalo Creek to be a perennial stream system with an unconsolidated sand/gravel bottom. Jurisdictional impacts to open waters are avoided by both considered alternatives.

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

2. Jurisdictional Wetlands

Vegetated wetlands are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology at or near the surface for a portion (12.5 percent) of the growing season (DOA 1987). No vegetated wetlands subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (CFR 328.3) occur within either alternative corridor.

3. Permits Required

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

4. Mitigation

Fill or alteration of streams may require compensatory mitigation in accordance with 15 NCAC 2H .0506(h). Compensatory mitigation is not expected to be offered for this project due to the lack of jurisdictional impacts. Utilization of BMPs is recommended in an effort to minimize indirect impacts to Buffalo Creek. A final determination regarding mitigation rests with the COE and DWQ.

F. Protected Species

1. Federal Species

Species with the federal classification of Endangered, Threatened, or officially Proposed for such listing, are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term "Endangered species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range", and the term "Threatened species" is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532). Only one federally protected species is listed for Cleveland County (February 5, 2003 FWS list). The dwarf flowered heartleaf (*Hexastylis naniflora*) is considered to be Threatened by FWS.

Dwarf-flowered Heartleaf - The dwarf-flowered heartleaf is a small, spicy-smelling, rhizomatous perennial herb with long-stalked leaves and flowers.

Leaves are heart-shaped, evergreen, leathery, and dark green above and paler below; the upper leaf surface is often patterned with pale green reticulate mottles. The leaves grow to about 6 cm (2.4 in) long and form a dense, spreading rosette. This species differs from related species by having smaller flowers with calyx tubes that narrow distally rather than broaden (Kral 1983). Flower and fruits appear in April and early May, usually under leaf litter (Cooper *et al.* 1977). Dwarf-flowering heartleaf is found in acidic sandy loam on north-facing wooded slopes of ravines in the Piedmont of North and South Carolina. This species typically occurs in oak-hickory-pine forest where hydrologic conditions range from moist to relatively dry, but also may be present in adjacent pastured woodland. This species typically is found in moist duff at the bases of trees or mountain laurel (*Kalmia latifolia*) (Kral 1983). In North Carolina, dwarf-flowered heartleaf is known from a few southwestern Piedmont counties (Amoroso and Weakley 1995).

Forested areas along the terrace bluff east of Buffalo Creek provide suitable habitat for drawf-flowered heartleaf. These areas are characterized as being mesic to dry forested slopes, face northwest, and occur on Pactolus sandy loam soils. NHP records document a population of this species adjacent to Buffalo Creek approximately 1.5 miles (2.4 kilometers) south of the study corridor. Furthermore, several individuals of heartleaf (*Hexastylis* sp.) were observed adjacent to the study corridor and one individual plant was observed within the Alternative 1 corridor. Although the plants have not been positively identified, NHP records and photographs, flower parts, and flower dimensions collected from several plants suggest that these plants are most likely dwarf-flowered heartleaf.

BIOLOGICAL CONCLUSION -The study corridor contains suitable habitat for dwarf-flowered heartleaf, and NHP records document a population of this species 1.5 miles (2.4 kilometers) from the study corridor. However, no forms of heartleaf were observed within the proposed corridor for Alternative 2. This Alternative will not affect dwarf-flowered heartleaf. **NO EFFECT**

Federal Species of Concern - The February 5, 2003 FWS list also includes a category of species designated as "Federal species of concern" (FSC) in Cleveland County. A species with this designation is one that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing). A list of FSC species occurring in Cleveland County is given in the following table.

The FSC designation provides no federal protection under the ESA for

species listed. NHP files do not document any occurrences of FSC species within 1.0 mile (1.6 kilometers) of the study corridor.

Federal Species of Concern and state status for species federally designated as FSC within Cleveland County.

Common Name	Scientific Name	Potential Habitat	State Status*
Sweet pinesap	*Monotropsis odorata*	Yes	C
Torrey's mountain-mint	*Pycnanthemum torrei*	Yes	SR-T
Carolina saxifrage	*Saxifraga caroliniana*	No	C

* C = Candidate for listing as Endangered, Threatened, or Special Concern SR-T=Significantly Rare - Threatened (Amoroso 2001; LeGrand and Hall 2001).

2. State Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), Special Concern (SC), Candidate (C), Significantly Rare (SR), or Proposed (P) (Amoroso 1999, LeGrand and Hall 1999) receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202 *et seq.*). No species with these designations are documented within 1.0 mile (1.6 kilometers) of the study corridor.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

A field survey of the Area of Potential Effects (APE) was conducted on March 1, 2000. All structures within the APE were photographed, and later reviewed by NCDOT architectural historians and the State Historic Preservation Office (HPO). None of the properties were considered eligible, and in a concurrence form dated

June 1, 2000, the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed in or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

The preferred alternative for this project is to replace the bridge at its existing location. In a memorandum dated February 1, 2001, the SHPO stated, "There are no recorded archaeological sites within the project boundaries." Therefore, no further archeological investigation is required. A copy of the SHPO's memorandum is included in the Appendix.

VII. ENVIRONMENTAL EFFECTS

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

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

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

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

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

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

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

The project does not involve any known Section 4(f) properties. There are no publicly-owned parks, recreational facilities, or wildlife and waterfowl refuges of National, State, or local

significance in the vicinity of the project.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime, unique or important farmland soils for all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). The proposed project has been coordinated with the US Department of Agriculture and no prime, unique or important farmland will be converted as a result of this bridge replacement project. This project is in conformance with the Farmland Protection Policy Act (FPPA).

The project is located in Cleveland County which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Parts 51 and 93 are not applicable because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required.

The traffic volumes will not increase or decrease because of this project; therefore, the project's impact on noise and air quality will not be substantial.

The noise levels will increase during the construction period, but will only be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for 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.

Cleveland County is a participant in the National Flood Insurance Program. This area is not in a FEMA Flood Study, but is in a FEMA Special Flood Hazard Zone A. No base flood elevations have been determined. The approximate 100-year floodplain in the project area is shown in Figure 6. The amount of floodplain area to be affected is not substantial.

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

VIII. PUBLIC INVOLVEMENT

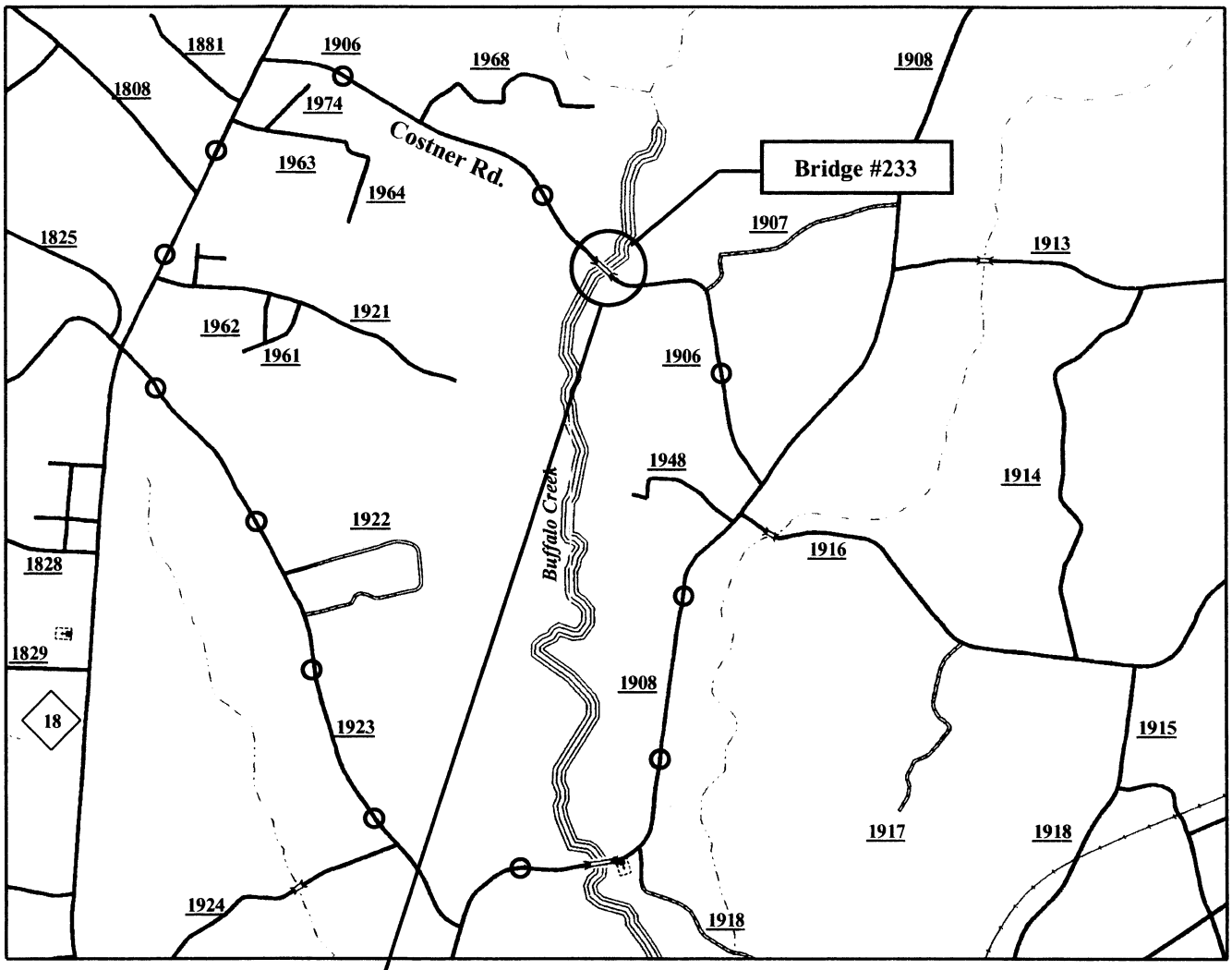
Efforts were undertaken early in the planning process to contact local officials to involve them in the planning development with scoping letters. Scoping letters were also sent to various agencies on November 15, 2000.

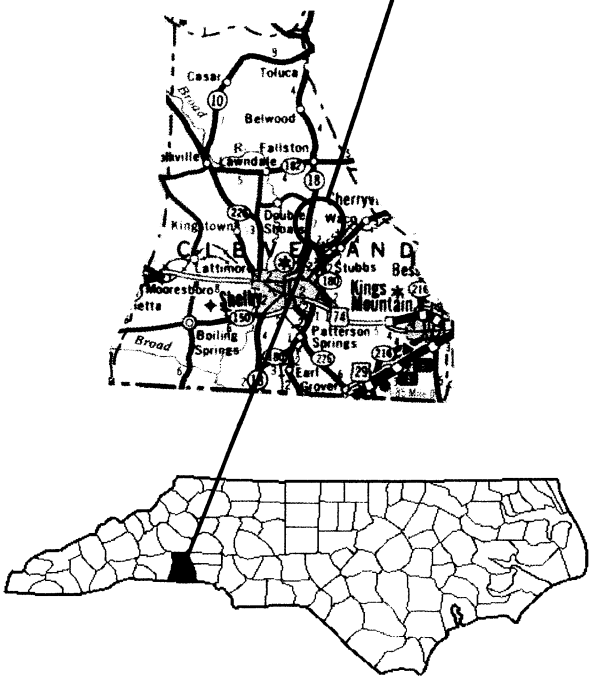
IX. AGENCY COMMENTS

United States Department of the Interior - Fish and Wildlife Service

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

Response: During field investigations by qualified biologists on June 20, 2001, no forms of heartleaf were observed within the preferred Alternative 2 corridor.





0 Meters 800

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APPROXIMATE SCALE

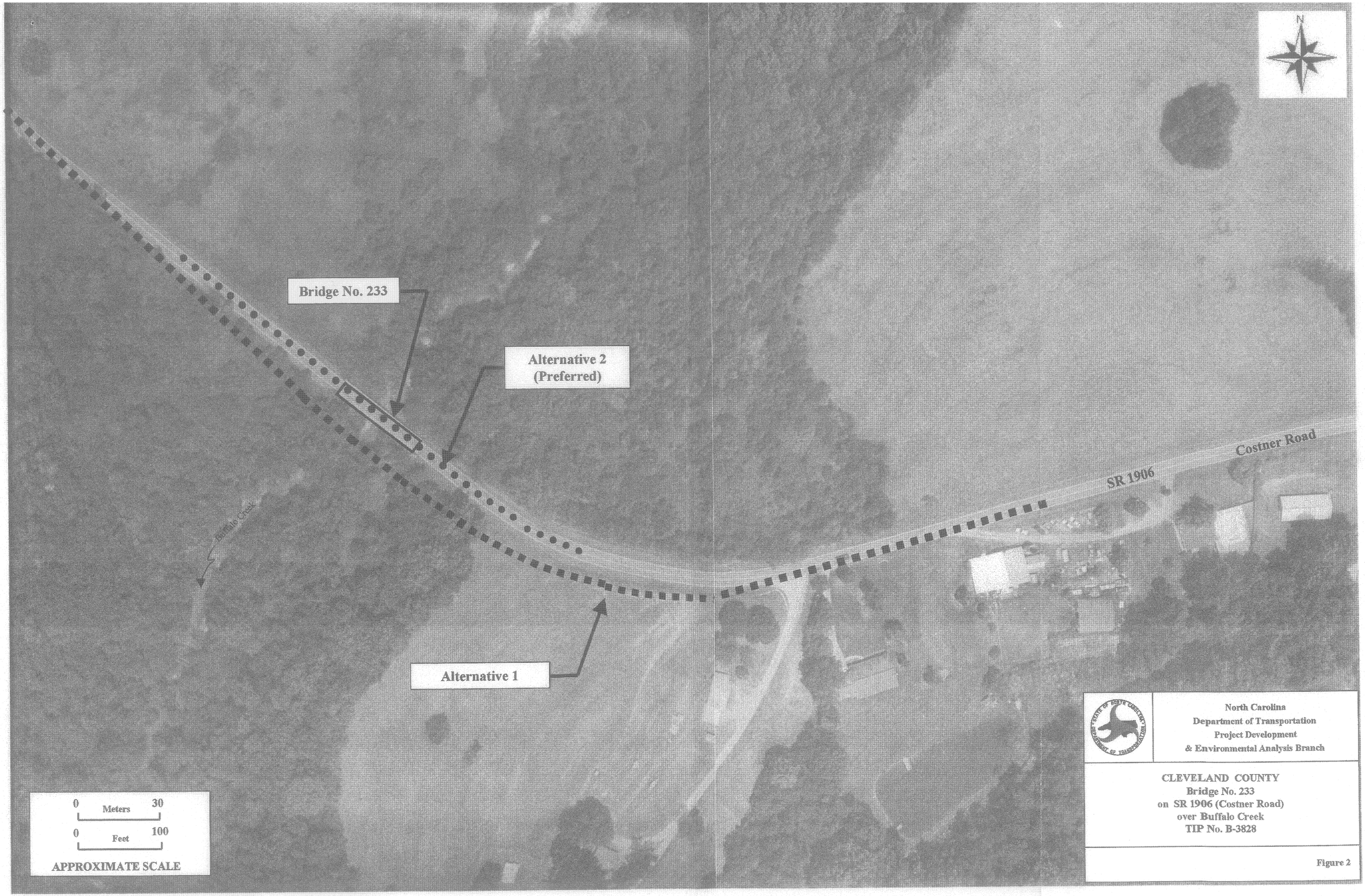
LEGEND

PROPOSED DETOUR ROUTE

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

CLEVELAND COUNTY
Bridge No. 233
on SR 1906 (Costner Road)
over Buffalo Creek
TIP No. B-3828

Figure 1

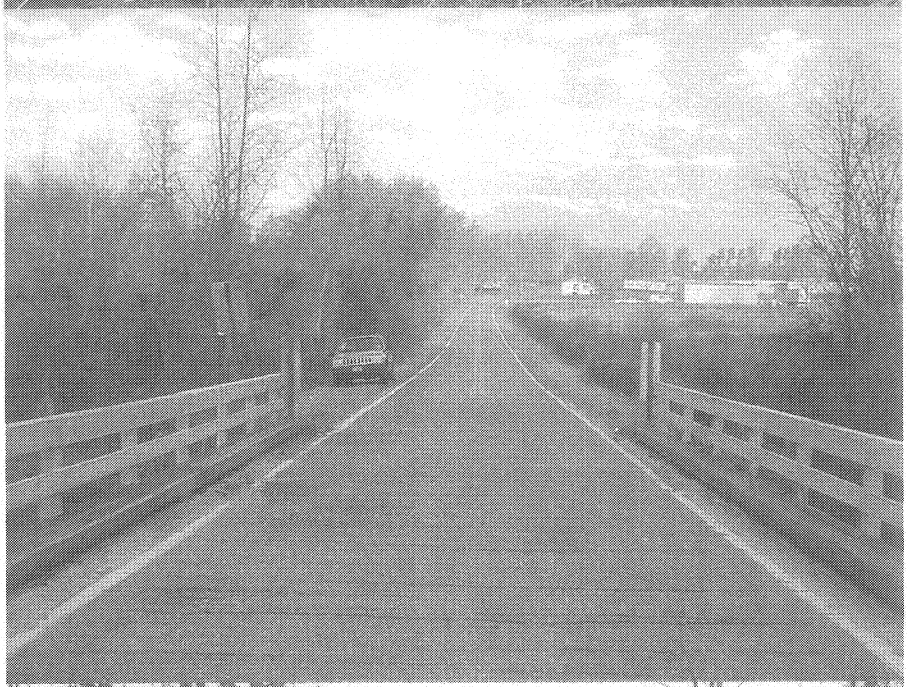


North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

CLEVELAND COUNTY
Bridge No. 233
on SR 1906 (Costner Road)
over Buffalo Creek
TIP No. B-3828

Figure 2

SIDE VIEW
LOOKING NORTH

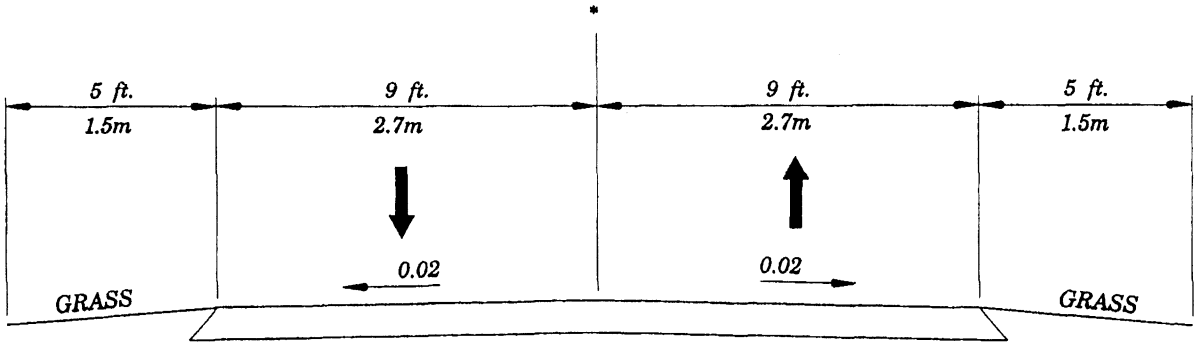


WEST APPROACH
LOOKING WEST

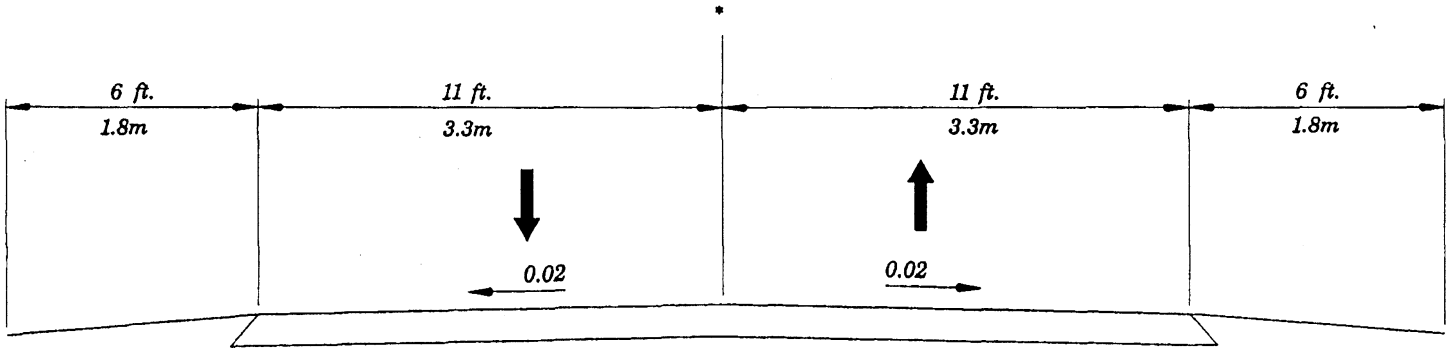
EAST APPROACH
LOOKING EAST

CLEVELAND COUNTY
BRIDGE NO. 233 ON SR 1906 OVER
BUFFALO CREEK
B-3828

FIGURE 3



TYPICAL APPROACH SECTION
(EXISTING)



TYPICAL APPROACH SECTION
(PROPOSED)

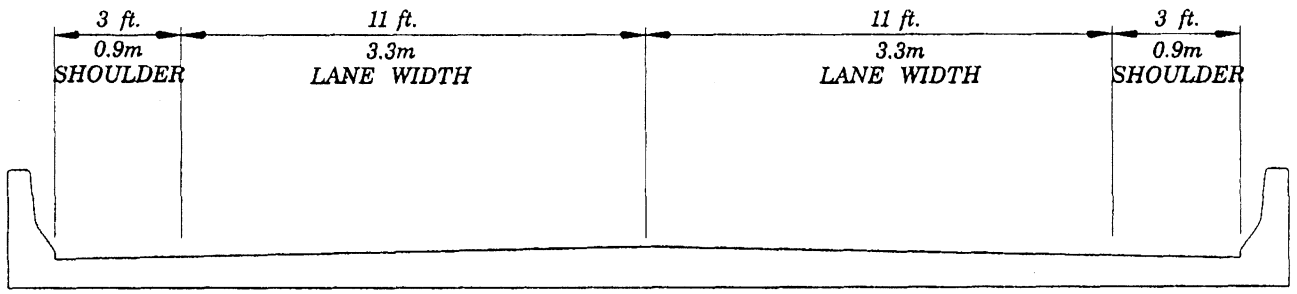
FUNCTIONAL CLASSIFICATION: LOCAL ROUTE

AVERAGE DAILY TRAFFIC		
(EXISTING)	*2003*	*= 900*
(DESIGN YR.)	*2030*	*= 1900*

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

CLEVELAND COUNTY
Bridge No. 233
on SR 1906 over
Buffalo Creek
TIP No. B-3828

Figure 4



TYPICAL BRIDGE SECTION
(PROPOSED)

FUNCTIONAL CLASSIFICATION: LOCAL ROUTE

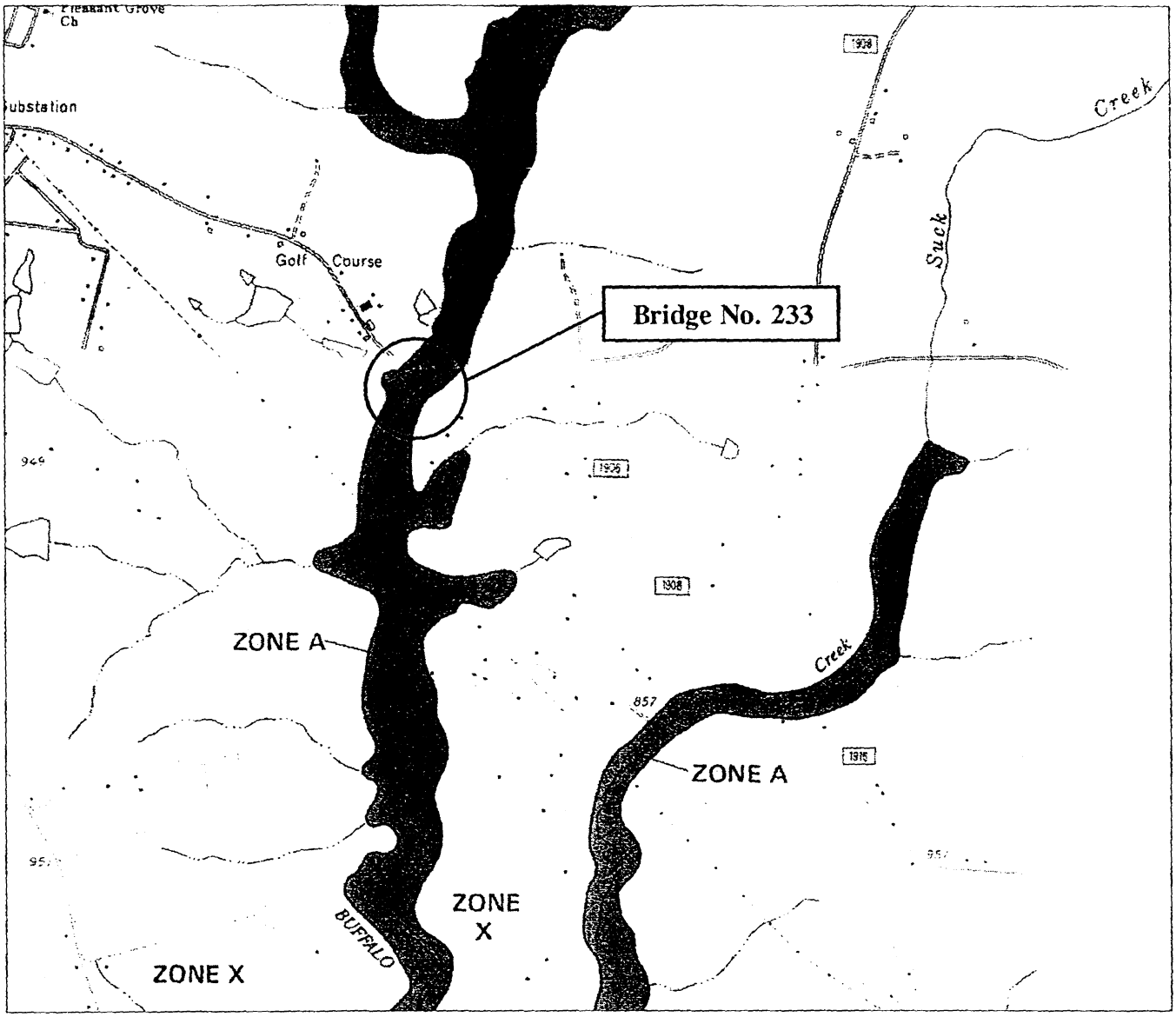
AVERAGE DAILY TRAFFIC

(EXISTING)	*2003*	= *900*
(DESIGN YR.)	*2030*	= *1900*

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

CLEVELAND COUNTY
Bridge No. 233
on SR 1906 over
Buffalo Creek
TIP No. B-3828

Figure 5



FEMA – Floodplain Map of Project Area

N

0 500

FEET

APPROXIMATE SCALE

North Carolina
Department of Transportation
Project Development
& Environmental Analysis Branch

CLEVELAND COUNTY
Bridge No. 233
on SR 1906 (Costner Road)
over Buffalo Creek
TIP No. B-3828

Figure 6

United States Department of the Interior

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

January 25, 2001

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

Dear Mr. Gilmore:

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

We have reviewed these projects and provide comments in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

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

Enclosed are species lists from the nine counties included in this package. These lists provide the names of species that are on the Federal List of Endangered and Threatened Wildlife and Plants, as well as species of federal concern. Species of federal concern are not legally protected under the Act and are not subject to any of its provisions, including Section 7, unless they are formally proposed or listed as endangered or threatened. We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of your projects. Our records indicate the following:

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

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

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

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

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

We are interested in the types of structures that will replace these existing bridges and would recommend spanning structures, preferably bridges, in all cases. We look forward to reviewing the completed categorical exclusion documents.

If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning these projects, please reference our Log Number 4-2-01-252.

Sincerely,

Brian P. Cole

Brian P. Cole
State Supervisor

Enclosure

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

Invertebrates		
Pee Dee crayfish ostracod	*Dactylocythere peedeensis*	FSC*
Carolina heelsplitter	*Lasmigona decorata*	Endangered**
Vascular Plants		
Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Heller's trefoil	*Lotus helleri*	FSC

CATAWBA COUNTY

Invertebrates		
Catawba crayfish ostracod	*Dactyloctythere isabelae*	FSC
Vascular Plants		
Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened
Sweet pinesap	*Monotropsis odorata*	FSC

CLEVELAND COUNTY

Vascular Plants		
Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened
Sweet pinesap	*Monotropsis odorata*	FSC
Carolina saxifrage	*Saxifraga caroliniana*	FSC

DAVIE COUNTY

Vascular Plants		
Heller's trefoil	*Lotus helleri*	FSC*
Michaux's sumac	*Rhus michauxii*	Endangered

FORSYTH COUNTY

Vertebrates		
Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Red-cockaded woodpecker	*Picoides borealis*	Endangered****
Vascular Plants		
Small-anthered bittercress	*Cardamine micranthera*	Endangered

North Carolina Wildlife Resources Commission

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

TO: John Conforti
Project Engineer, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: January 2, 2001

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Project specific comments:

1. B-3404 – Anson County – Bridge No. 314 over South Fork Jones Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Federal Aid =BRZ-1906(2) *TIP* =B-3828 *County*: Cleveland

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

Project Description: Replace Bridge No. 233 on SR 1906 over Buffalo Creek

On June 1, 2000, representatives of the

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

Reviewed the subject project at

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

All parties present agreed

- [ ] there are no properties over fifty years old within the project's area of potential effect.
- [x] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [x] there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Prop A-I Bridge 233 are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

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

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

April Montgomery — 6/1/00
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.

3828

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

Michael F. Easley, Governor

Division of Archives and History
Jeffrey J. Crow, Director

February 1, 2001

MEMORANDUM

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

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

Re: Replace Bridge No. 233 on SR 1906 over Buffalo Creek,
TIP No. R-3828, Cleveland County, ER 01-8181

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

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

Bridge No. 233 was built in 1936.

We recommend that an architectural historian with NCDOT evaluate the above property to determine their eligibility for listing in the National Register of Historic Places and report the findings to us.

There are no known recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources.

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

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

United States Department of the Interior

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

January 25, 2001

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

Dear Mr. Gilmore:

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

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If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning these projects, please reference our Log Number 4-2-01-252.

Sincerely,

Brian P. Cole

Brian P. Cole
State Supervisor

Enclosure

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

Invertebrates

Pee Dee crayfish ostracod	*Dactylocythere peedeensis*	FSC*
Carolina heelsplitter	*Lasmigona decorata*	Endangered**

Vascular Plants

Schweinitz's sunflower	*Helianthus schweinitzii*	Endangered
Heller's trefoil	*Lotus helleri*	FSC

CATAWBA COUNTY

Invertebrates

Catawba crayfish ostracod	*Dactyloctythere isabelae*	FSC

Vascular Plants

Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened
Sweet pinesap	*Monotropsis odorata*	FSC

CLEVELAND COUNTY

Vascular Plants

Dwarf-flowered heartleaf	*Hexastylis naniflora*	Threatened
Sweet pinesap	*Monotropsis odorata*	FSC
Carolina saxifrage	*Saxifraga caroliniana*	FSC

DAVIE COUNTY

Vascular Plants

Heller's trefoil	*Lotus helleri*	FSC*
Michaux's sumac	*Rhus michauxii*	Endangered

FORSYTH COUNTY

Vertebrates

Bog turtle	*Clemmys muhlenbergii*	T(S/A)[1]
Red-cockaded woodpecker	*Picoides borealis*	Endangered****

Vascular Plants

Small-anthered bittercress	*Cardamine micranthera*	Endangered

North Carolina Wildlife Resources Commission

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

TO: John Conforti
Project Engineer, NCDOT

FROM: David Cox, Highway Project Coordinator
Habitat Conservation Program

DATE: January 2, 2001

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Project specific comments:

1. B-3404 – Anson County – Bridge No. 314 over South Fork Jones Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Federal Aid =BRZ-1906(2) *TIP* =B-3828 *County*: Cleveland

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

Project Description: Replace Bridge No. 233 on SR 1906 over Buffalo Creek

On June 1, 2000, representatives of the

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

Reviewed the subject project at

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

All parties present agreed

- [ ] there are no properties over fifty years old within the project's area of potential effect.
- [x] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [x] there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Prop A-I Bridge 233 are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope Furr — 6.1.00
Representative, NCDOT — Date

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

April Montgomery — 6/1/00
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.

3828

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

Michael F. Easley, Governor

Division of Archives and History
Jeffrey J. Crow, Director

February 1, 2001

MEMORANDUM

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

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

Re: Replace Bridge No. 233 on SR 1906 over Buffalo Creek,
TIP No. R-3828, Cleveland County, ER 01-8181

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

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

Bridge No. 233 was built in 1936.

We recommend that an architectural historian with NCDOT evaluate the above property to determine their eligibility for listing in the National Register of Historic Places and report the findings to us.

There are no known recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources.

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

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