STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

June 13, 2007

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

ATTENTION: Mr. Monte Matthews
NCDOT Coordinator

Subject: **Nationwide 23 Permit Application** for the replacement of Bridge No. 3 over Lost Cove Creek on NC 90, Caldwell County. Federal Aid Project No. BRZ-90(1), State Project No. 8.1731601, Division 11, TIP Project No. B-3818, WBS Element 33271.1.1.

Dear Mr. Matthews:
Please find enclosed a copy of the Categorical Exclusion (CE), and ½ size plans for the above referenced project. Bridge No. 3 over Lost Cove Creek will be replaced with a new 125-foot long, 28-foot wide structure approximately 27 feet to the west of the existing structure. Realignment of the bridge will require new approach roadway work of approximately 335 feet to the south and 245 feet to the north of the bridge. Traffic will use the existing structure during construction. No permanent impacts to jurisdictional resources will occur. Proposed temporary impacts to Lost Cove Creek consist of up to 209 yd^3 of temporary fill due to the demolition of the old bridge. After demolition is completed, the temporary fill will be removed. There are no wetlands in the project area.

IMPACTS TO WATERS OF THE UNITED STATES
General Description: The project is located in the Catawba River basin (HUC 03050101) and will cross Lost Cove Creek. Lost Cove Creek has been assigned a best usage classification of **C Tr, ORW** by the N.C. Division of Water Quality. Lost Cove Creek is also classified by NC Wildlife Resources Commission (WRC) as a trout water. Lost Cove Creek is not listed on the 2004 Final 303(d) list of impaired waters and does not drain to any 303(d) streams within one mile of the project limits. Lost Cove Creek is not designated as a State or National Natural, Wild or Scenic River, however Lost Cove Creek is a tributary to Wilson Creek, a designated national Wild and Scenic River. Since Lost Cove Creek is classified as an Outstanding Resource Water and a trout water, NCDOT will implement Design Standards in Sensitive Watersheds.

Temporary Impacts: Proposed temporary impacts to Lost Cove Creek will total up to 209 yd^3 of temporary fill.

Permanent Impacts: No permanent impacts will occur to Lost Cove Creek. No wetlands occur in the project area.

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

TELEPHONE: 919-715-1334
FAX: 919-715-5501
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
2728 CAPITOL BOULEVARD
PARKER LINCOLN BUILDING, SUITE 240
RALEIGH NC 27699

Utility Impacts: No jurisdictional impacts will occur due to utility relocations.

Project Schedule: The project currently has a let date of January 15, 2008 and a review date of December 4, 2007.

BRIDGE DEMOLITION:
Bridge No. 3 is composed entirely of concrete, there is no practical way to remove the bridge without dropping components into the Lost Cove Creek. After demolition, the components of the bridge will be picked up and disposed of at an offsite location. Best Management Practice's for Bridge Demolition and Removal will be followed in addition to Best Management Practices for the Protection of Surface Waters. Bridge demolition, or other in-water work, will not occur during the trout moratorium between October 15 to April 15.

FEDERALLY-PROTECTED SPECIES
Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 27, 2007 the US Fish and Wildlife Service (FWS) lists five federally protected species for Caldwell County (Table 1). A habitat analysis assessment was conducted for the Virginia big-ear bat on April 19, 2006. The project contains foraging habitat for the Virginia big-ear bat, however no roosting habitat is available. Therefore, the biological conclusion for the Virginia big-ear bat is "No Effect." The bog turtle is listed as threatened due to similarity of appearance and therefore does not require a biological conclusion. A biological conclusion of "No Effect" has been reached for all other federally protected species in the attached CE. All biological conclusions in the CE remain valid.

Table 1. Federally-Protected Species for Caldwell County

Common Name	Scientific Name	Federal Status	Habitat Analysis	Biological Conclusion
Virginia big-eared bat	*Corynorhinus townsendii virginianus*	E	Foraging	No Effect
Bog Turtle	*Clemmys muhlenbergii*	T(S/A)	No	Not Required
Spruce-fir moss spider	*Microhexura montivaga*	T	No	No Effect
Dwarf-flowered heartleaf	*Hexastylis naniflora*	T	No	No Effect
Heller's blazing star	*Liatris helleri*	T	No	No Effect

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

- Best Management Practices for the Protection of Surface Waters and Best Management Practices for Bridge Demolition and Removal will be followed.
- The new structure will completely span Lost Cove Creek and no bents will be placed in the water.

- The Project will adhere to Design Standards in Sensitive Watersheds.
- An in stream work and land disturbance moratorium within the 25-foot wide buffer zone are prohibited during the brown, brook, and rainbow trout spawning season of October 15 through April 15, to protect the egg and fry stages of trout from off-site sedimentation during construction.
- The US Forest Service was provided a copy of the field inspection plans on March 28, 2005 to ensure that Wilson Creek will not be impacted by the proposed project.

MITIGATION
Proposed project impacts are temporary, therefore no mitigation is proposed.

REGULATORY APPROVALS
Section 404 Permit: This project has been processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests issuance of a Nationwide Permit 23 to authorize the impacts described above and in the CE from bridge demolition.

Section 401 Permit: We anticipate 401 General Certification number 3403 will apply to this project. All general conditions of the Water Quality Certifications will be met. No written concurrence is required. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC 2B.0200 we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their notification.

This project is located in a trout county, therefore comments from WRC will be requested prior to authorization by the Army Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests WRC review and that WRC forward their comments to the Corps of Engineers and NCDOT within 30 calendar days of receipt of this application.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Brett Feulner at bmfeulner@dot.state.nc.us or (919) 715-1488.

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

Sincerely,

E. R. Lusk

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

w/attachment
Mr. John Hennessy, NCDWQ 2 Copies
Ms. Marella Buncick, USFWS
Mr. Victor Barbour, Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Heath Slaughter, Div. 11 Environmental Officer
Ms. Marla Chambers, NCWRC
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Michael A. Pettyjohn, P.E. Div. 11 Engineer

w/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Stacy Oberhausen, P.E., PDEA
Mr. Scott McLendon, USACE, Wilmington

NC 90

Bridge No. 3 over Lost Cove Creek

Caldwell County

Federal-Aid Project No. BRZ-90(1)

State Project No. 8.1731601

WBS No. 33271.1.1

TIP No. B-3818

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

APPROVED:

12/20/04
DATE

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

12/20/04
DATE

for John F. Sullivan, III, PE
Division Administrator, FHWA

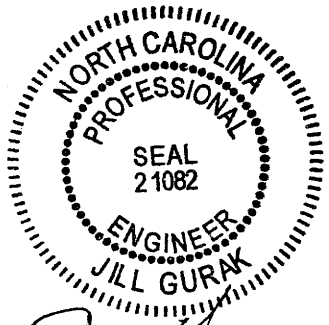
NC 90
Bridge No. 3 over Lost Cove Creek
Caldwell County
Federal-Aid Project No. BRZ-90(1)
State Project No. 8.1731601
WBS No. 33271.1.1
TIP No. B-3818

CATEGORICAL EXCLUSION

DECEMBER 2004

Documentation Prepared by:

PBS&J



Date: 12/15/04

Jill S. Gurak, PE, AICP
Project Manager - NEPA

Date: 12/15/04

Steve A. Drum, PE
Project Manager – Roadway Design

For the North Carolina Department of Transportation

Khaled AlAKHDAR 12/20/04

Khaled Al-Akhdar
Project Manager
Consultant Engineering Unit

PROJECT COMMITMENTS

NC 90
Bridge No. 3 over Lost Cove Creek
Caldwell County
Federal-Aid Project No. BRZ-90(1)
State Project No. 8.1731601
WBS No. 33271.1.1
TIP No. B-3818

In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Design Standards for Sensitive Watersheds, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Division Construction:

1. *Instream work and land disturbance within the 25-foot wide buffer zone are prohibited during the brown, brook, and rainbow trout spawning season of October 15 through April 15 to protect the egg and fry stages of trout from off-site sedimentation during construction.*

2. *"Guidelines for Construction of Highway Improvements Adjacent to or Crossing Trout Waters in North Carolina" (October 27, 1992) will be adhered to throughout the life of this project*

Roadway Design:

The US Forest Service will be sent combined field inspection plans for recommendations to ensure Wilson Creek, a designated national Wild and Scenic River in the vicinity of the project, is not impacted.

NC 90
Bridge No. 3 over Lost Cove Creek
Caldwell County
Federal-Aid Project No. BRZ-90(1)
State Project No. 8.1731601
WBS No. 33271.1.1
TIP No. B-3818

INTRODUCTION: The replacement of Bridge No. 3 is included in the North Carolina Department of Transportation *2004-2010 Transportation Improvement Program* (TIP) and in the Federal-Aid Bridge Replacement Program. The bridge 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 FOR PROJECT

NCDOT Bridge Maintenance Unit records indicate Bridge No. 3, two-way traffic on a one lane bridge over Lost Cove Creek, has a sufficiency rating of 50.6 out of a possible 100 for a new structure. The bridge is considered functionally unsatisfactory and structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Project Setting. **Figure 1** shows the project location in relation to the county and state. The project is located in the mountainous areas of the northwestern part of the state.

NC 90 is an unpaved gravel road and classified as a rural major collector (see **Photograph 1**). It is the only major road in the area. Land use in the project area is predominantly residential and National Forest land.

Photograph 1: Bridge No. 3, looking North.

Lost Cove Creek forms a confluence with Wilson Creek approximately 125 feet downstream (east) of Bridge No. 3 as shown in **Photograph 2** on page 2.

Wilson Creek has been designated a Wild and Scenic River.

An overhead power line runs along the east side of the bridge and another one crosses the road just south of the bridge. The utility conflicts for this bridge are considered low.

Existing Bridge Data. The existing one-lane bridge was constructed in 1936 (see **Photograph 3**). Its superstructure is made of reinforced concrete with an arched deck. The substructure is made of reinforced concrete end bents, reinforced concrete solid piers and timber piles. The bents are not in the creek bed.

Photograph 2: The confluence of Lost Cove Creek with Wilson Creek just downstream of Bridge No. 3.

The approach roadway is a gravel road with an uneven shoulder approximately 17-18 feet wide. Across the bridge, the roadway width is 11.7 feet, and the total deck width is 14.3 feet. The height of the bridge (from crown to bed) is approximately 16 feet. The current bridge is 115 feet long.

The bridge carries NC 90, a gravel road at this location. The posted weight limits for the bridge are 25 tons for single vehicles and 29 tons for tractor-trailer semi-trucks. The drainage area for Lost Cove Creek is 19.2 square miles.

Photograph 3: Bridge No. 3, looking upstream (West).

Traffic Information. Estimated traffic volumes at the bridge are 100 vehicles per day (vpd) for the year 2003 and 223 vpd for the design year 2030. The projections estimate two (2) percent truck-tractor semi-trailer (TTST) and one (1) percent dual-tired (DT) vehicles. The posted speed limit is 25 miles per hour (mph).

No accidents were reported in the vicinity of the bridge during the period from January 1, 2001 to April 30, 2003.

One Caldwell County school bus crosses Bridge No. 3 twice each day.

There are currently no provisions for pedestrians, and no evidence of heavy use by pedestrians, such as worn footpaths, on this section of NC 90. This section of NC 90 is not part of a designated bicycle route nor is it listed in the TIP as needing incidental

bicycle accommodations. There is no indication there are an unusual number of bicyclists using this roadway.

III. ALTERNATIVES

A. Project Description

Bridge No. 3 will be replaced with a new bridge. The typical section for this structure is shown in **Figure 2**. The new structure is a three-span bridge approximately 140 feet in length. None of the bents will be in the creek bed. The proposed bridge will be at approximately the same elevation as the existing bridge. The proposed bridge will consist of two 10-foot travel lanes and 2-foot shoulders. The length and opening of the new bridge structure may increase or decrease as necessary to accommodate peak flows, which will be determined from detailed hydraulic analysis during final design.

B. Build Alternatives

Three alternatives were evaluated for the replacement of Bridge No. 3. The approach roadway for the permanent replacement structure will consist of two 10-foot travel lanes and 4-foot grass shoulders. The design speed for the roadway is 30 miles per hour.

Alternative 1 – Temporary Realignment Upstream (One-Lane Detour)

This alternative will involve building a temporary detour structure upstream (west) and constructing the replacement bridge at the existing location. The detour bridge will be approximately 115 feet in length and 16 feet wide. The approach roadway will extend approximately 163 feet north and approximately 172 feet south of the bridge. The detour bridge will be offset approximately 26 feet west of the existing bridge. A design exception will be required for the one-lane detour. The temporary detour bridge and approaches will be removed after construction. Alternative 1 was not selected as the Preferred Alternative because compared to the Preferred Alternative it is more expensive and has a longer duration of disturbance to Lost Cove Creek, an Outstanding Resource Water.

Alternative 2 – Temporary Realignment Downstream (One-Lane Detour)

This alternative will involve building a temporary detour structure downstream (east) and constructing the replacement bridge at the existing location. The detour bridge will be

approximately 115 feet in length and 16 feet wide. The approach roadway will extend approximately 168 feet north and approximately 159 feet south of the bridge. The detour bridge will be offset approximately 27 feet east of the existing bridge. A design exception will be required for the one-lane detour. Upon completion of the new bridge, the temporary bridge and approaches will be removed. Alternative 2 was not selected as the Preferred Alternative because compared to the Preferred Alterative it is more expensive and has a longer duration of disturbance to Lost Cove Creek, an Outstanding Resource Water.

Alternative 3 – Realignment Upstream (Preferred)

This alternative will replace Bridge No. 3 on a new alignment upstream (west) of the existing bridge. The approach roadway will extend approximately 335 feet to the south and 245 feet to the north of the bridge. The new bridge will be offset approximately 27 feet west of the existing bridge. During construction, traffic will be maintained on the existing bridge. Upon completion of the new bridge, the existing bridge and approaches will be removed.

C. Alternatives Eliminated from Further Study

The "do-nothing" alternative will eventually necessitate removal of the existing structure and closure of NC 90. This is not desirable due to the service provided by NC 90.

Rehabilitation of the existing structure is not feasible due to its age and deteriorated condition.

A road closure alternative is not feasible due to the lack of alternative routes in the project vicinity.

D. Preferred Alternative

Alternative 3 is the Preferred Alternative. Alternative 3 will permanently realign the bridge upstream from the existing structure. Alternative 3 was selected as the Preferred Alternative because it is the least expensive alternative, it has the shortest construction time (minimizing duration of disturbance around the creek), and it moves the bridge away from Wilson Creek, which is designated a Wild and Scenic River.

The Division 11 Engineer concurs with the selection of Alternative 3 as the Preferred Alternative.

IV. ESTIMATED COSTS

The estimated costs, based on current prices, are shown in **Table 1**.

Table 1
Estimated Costs

Cost Item	Alternative 1	Alternative 2	Alternative 3 (Preferred)
Structure Removal (existing)	$12,900	$12,900	$12,900
Structure (proposed)	$216,000	$216,000	$216,000
Detour Structure and Approaches	$84,900	$84,900	N/A
Roadway Approaches	$148,600	$150,500	$167,600
Miscellaneous and Mobilization	$117,600	$116,300	$109,500
Engineering and Contingencies	$95,000	$100,000	$94,000
ROW / Construction Easements/Utilities	$36,000	$36,000	$28,500
Total	**$711,000**	**$716,600**	**$628,500**

The estimated cost of the project as shown in the *2004-2010 Transportation Improvement Program* is $930,000; including $40,000 for right-of-way and $650,000 for construction. Right-of-way acquisition is scheduled for 2005, with construction to follow 2006.

V. NATURAL RESOURCES

Definitions for area descriptions used in this report are as follows: **Project Study Area** denotes the area bounded by proposed construction limits; and **Project Vicinity** describes an area extending 0.5 mile on all sides of the Project Study Area.

A. Methodology

Background research on soils, water resources, wetlands, protected species and other area features was conducted prior to field investigations. Information sources used in this pre-field investigation of the study area included:

- US Geological Survey (USGS) quadrangle map (Grandfather Mountain and Chestnut Mountain)

- US Fish and Wildlife Service (USFWS) National Wetland Inventory Map (Grandfather Mountain and Chestnut Mountain)
- Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) soil maps
- NCDOT aerial photographs of project area (scale 1" = 100').

Water resource information was obtained from the following source:

- Department of Environment and Natural Resources, Division of Water Quality (NCDWQ).

Information concerning the occurrence of federal and state protected species in the study area was gathered from the following sources:

- US Fish and Wildlife Service (USFWS) website list of Caldwell County Endangered Species, Threatened Species, and Federal Species of Concern
- NC Natural Heritage Program (NCNHP) database of rare species and unique habitats.

General field surveys were conducted along the proposed alignment on May 22 and November 9, 2001. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved one or more of the following observation techniques: active searching and capture, visual observations and identifying characteristic signs of wildlife (sounds, scat, tracks and burrows).

Jurisdictional wetland determinations were performed using delineation criteria prescribed in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987).

Estimated impacts are derived using the construction limits shown on the functional designs for each alternative. The estimated construction limits on the functional designs were developed based on site visits, aerial photography, and USGS topographic mapping.

B. Physiography and Soils

The Project Study Area lies within the Mountain Physiographic Region. Steep, deeply dissected slopes of the Blue Ridge Mountains characterize the topography in this section of Caldwell County. However, topography within the Project Study Area is relatively

flat, with slight terraces created by past flooding. The existing bridge is at an elevation of approximately 1,600 feet above mean sea level (msl).

One soil phase occurs within the Project Study Area: Potomac series, less than 4% slopes. Potomac soils tend to be cobbly loamy sand, frequently flooded. They are not listed as hydric soils.

The forest potential for Potomac soils is not listed, but the land capability is listed as Vw. This indicates that the soils are not likely to erode, but they have other limitations that are impractical to remove. Wetness can be a limiting factor for plant growth. (US Department of Agriculture, 1976).

C. Water Resources

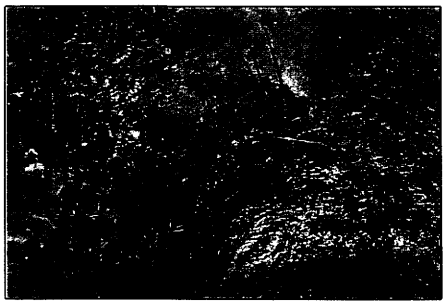
1. Waters Impacted

Lost Cove Creek is located in sub-basin 31 of the Catawba River Basin (03-08). The replacement structure will be a three-span bridge with no bents in the creek. Therefore, Lost Cove Creek and Wilson Creek will not be directly impacted by the proposed project. With strict adherence to Best Management Practices (BMP), construction should not impact Wilson Creek, which forms a confluence with Lost Cove Creek approximately 125 feet downstream of Bridge No. 3. **Figure 4** shows Lost Cove Creek and Wilson Creek in the Project Vicinity.

2. Water Resource Characteristics

Lost Cove Creek at Bridge No. 3 is approximately 45 feet wide, has an average depth of one foot and is well-defined. The creek has a C3 Rosgen classification (meandering, riffle/pool channel, with a cobble substrate). The drainage area for Lost Cove Creek is 19.2 square miles.

Directly beneath the bridge, there is a large (approximately 18 feet) concrete object with protruding metal rods. **Photograph 4** shows this object. There are also several railroad ties embedded in the stream. Just downstream of the bridge, there are several planks embedded in the stream.



Photograph 4: The object directly below Bridge No. 3

Lost Cove Creek forms a confluence with Wilson Creek approximately 125 feet downstream (east) of Bridge No. 3 (see **Figure 4**).

In 2000, Wilson Creek was designated a Wild and Scenic River from the headwaters below Calloway Peak to the confluence with Johns River, which includes the area where Lost Cove Creek forms its confluence with Wilson Creek. The design and implementation of the proposed project will be coordinated with the United States Forest Service (USFS) to ensure the qualities for which Wilson Creek was designated are maintained.

The Wild and Scenic River classification is designed to protect "free flowing rivers or segments with outstanding scenic, recreational, geologic, fish and wildlife, historic, archaeological or other values" (NCDWQ). The designation does not stop development and use of a river, but the USFS, which has jurisdiction over Wilson Creek, is charged with creating a management plan to provide for the river's protection.

3. Best Usage Classification and Water Quality

Best Usage Classification. Streams are assigned a best usage classification by the NCDWQ. The classification of Lost Cove Creek [Index No. 11-38-34-11] is C-Tr, Outstanding Resource Waters (ORW). Class C uses include aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The Tr supplemental listing indicates that trout are present and care should be taken to protect waters for trout propagation. ORW waters have been rated as outstanding by the NCDWQ and have an outstanding resource value.

Creeks with an Outstanding Resource Water (ORW) listing have one or more of the following resource values:

- Outstanding fish habitat or fisheries,
- Unusually high level of waterbased recreation,
- Some special designation such as State or National Wild/Scenic/Natural/Recreational River, National Wildlife Refuge, etc.,
- Important component of state or national park or forest, or
- Special ecological or scientific significance (rare or endangered species habitat, research or educational areas).

Lost Cove Creek's listing as a trout water, location in the Pisgah National Forest, and proximity to Wilson Creek (a National Wild and Scenic River), all contribute to its ORW listing.

Water Quality Monitoring. The Benthic Macroinvertebrate Ambient Network (BMAN) is managed by NCDWQ and is part of an ongoing ambient water quality monitoring program that addresses long term trends in water quality. The program assesses water quality by sampling for selected benthic macroinvertebrate organisms at fixed monitoring sites. Some macroinvertebrates are sensitive to very subtle changes in water quality; thus, the species richness and overall biomass of these organisms are reflections of water quality. The nearest BMAN station to Bridge No. 3 is Wilson Creek, into which Lost Cove Creek flows. The sampling location is approximately 300 feet north-east of Bridge No. 3. Wilson Creek was sampled in 1991, and received a rating of Excellent.

Because Lost Cove Creek has not been tested, it carries the same Use Support Rating as Wilson Creek. The overall use support rating for Wilson Creek is Fully Supporting (FS). This rating indicates the creek is capable of supporting activities indicated by its best usage classification (class C-Tr, ORW).

NPDES Permitted Dischargers. There are four major NPDES permitted dischargers and eleven NPDES minor dischargers in the subbasin. The project will not impact any of these facilities.

Non-Point Source Dischargers. Non-point source dischargers also contribute to water quality degradation in sub-basin 31. The major sources in the Catawba basin include; agriculture (particularly cattle and swine), industrial runoff, and stormwater runoff.

4. Anticipated Impacts to Water Resources

Impacts to water resources can occur during construction. NCDOT, in cooperation with NCDWQ, has developed a sedimentation control program for highway projects, which adopts formal best management practices (BMPs) for the protection of surface waters.

The USFS will be sent final field inspection plans for any additional recommendations to ensure that Wilson Creek, a Wild and Scenic River, is not impacted.

5. Impacts Related to Bridge Demolition and Removal

Since the substructure and superstructure of the existing bridge are made of concrete, there is a potential for some of this material to be dropped into Waters of the United States during removal. The existing bridge is made up of 209 cubic yards of concrete including both the superstructure and substructure. Therefore, a maximum of 209 cubic yards of temporary fill could potentially be dropped into the water during removal. Measures to minimize this potential are described below.

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in two NCDOT documents entitled *Pre-Construction Guidelines for Bridge Demolition and Removal* and *Policy: Bridge Demolition and Removal in Waters of the United States* (both documents dated 9/20/99). Guidelines for demolition and removal are in addition to those implemented for *Best Management Practices for the Protection of Surface Waters.*

D. Biotic Resources

Biotic resources include aquatic and terrestrial ecosystems. This section describes those ecosystems encountered in the Project Study Area, as well as the relationships between fauna and flora within these ecosystems.

Descriptions of the terrestrial systems are discussed in the context of plant community classifications and follow descriptions presented by Schafale and Weakley (1990) where possible. Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Plant taxonomy generally follows Radford, et al. (1968). Animal taxonomy follows Martof, et al. (1980); Menhenick (1991); Potter, et al. (1980); and Webster, et al. (1985). Subsequent references to the same organism include the common name only. Fauna, or evidence of a particular faunal species, observed during the site visit are denoted with an asterisk (*). Published range distributions and habitat analysis were used in estimating fauna expected to be present within the Project Study Area.

1. Terrestrial Communities

As shown in **Figure 4**, four distinct terrestrial communities occur in the Project Study Area: Piedmont/Low Mountain Alluvial Forest, Maintained/Disturbed, Residential, and Tree Plantation. Community boundaries within the Project Study Area are generally well defined, without a notable transition zone between them.

Piedmont/Low Mountain Alluvial Forest. There is extensive Piedmont/Low Mountain Alluvial Forest surrounding the Project Study Area. This forest type tends to have a highly variable flooding regime. Intermittent flooding during high flow periods drives the hydrology of the alluvial forest. Periodic flooding provides nutrient input through sediment deposition, making the system very productive. However, periodic flooding can also be a destructive factor during large storm events by undercutting banks and eroding soils. The area northwest of FR 981 is quite steep and is unlikely to experience flooding. However, the species composition is the same as those in the Piedmont/Low Mountain Alluvial Forest, so this area is included.

The canopy of the Piedmont/Low Mountain Alluvial Forest is composed of tag alder (*Alnus serrulata*), sycamore (*Platanus occidentalis*), horse chestnut (*Aesculus hippocastanum*), black walnut (*Juglans nigra*), white pine (*Pinus strobus*), tulip poplar (*Liriodendron tulipifera*), cherry (*Prunus* sp.), ironwood (*Carpinus caroliniana*), sugar maple (*Acer saccharum*), and river birch (*Betula nigra*).

The shrub layer consists of saplings of the canopy species, eastern hemlock (*Tsuga canadensis*), flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), blackberry (*Rubus* sp.), and devil's-walking stick (*Aralia spinosa*).

Herbs in the area include common mullein (*Verbascum thapsus*), mint (*Mentha* sp.), onion (*Allium* sp.), Jack-in-the-pulpit (*Arisaema triphyllum*), false nettle (*Boehmeria cylindrical)*, wingstem (*Verbesina occidentalis*), Japanese knotweed (*Polygonum cuspidatum*), goldenrod (*Solidago* sp.), asters (*Aster* sp.), Christmas fern (*Polystichum acrostichoides*), and common rush (*Juncus effusus*).

The vine layer consists of poison ivy (*Toxicodendron radicans*), grape (*Vitis* sp), Japanese honeysuckle (*Lonicera japonica*), and Virginia creeper (*Parthenocissus quinquefolia*).

Wildlife associated with this community type include: white-tailed deer* (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), opossum (*Didelphis virginiana*) and

raccoon (*Procyon lotor*). Amphibians and reptiles likely to inhabit this habitat type include the spring peeper (*Hyla crucifer*), and snake species such as the northern copperhead (*Agkistrodon contortrix mokasen*), and the black rat snake (*Elaphe obsoleta obsoleta*).

Avian species using the alluvial forest include the Carolina chickadee* (*Parus carolinensis*), white throated sparrow* (*Zonotrichia albicollis*), pine siskin (*Carduelis pinus*), belted kingfisher (*Megaceryle alcyon*), northern parula (*Parula americana*), wild turkey (*Meleagris gallopavo*), ruffed grouse (*Bonasa umbellus*), tufted titmouse (*Parus bicolor*), red-eyed vireo (*Vireo olivaceus*), common flicker (*Colaptes auratus)*, and Carolina wren (*Thryomanes bewickii).*

Maintained/Disturbed. The Maintained/Disturbed community is mowed for utility lines. The area appears to be mowed annually, and the area is dominated by grasses. The shrub layer is very poorly developed. It consists of very small white pine saplings, multiflora rose (*Rosa multiflora*), American holly, and privet (*Ligustrum* sp.). The herb layer consists of goldenrod, asters, common mullein, galax (*Galax urceolata*), aloe (*Aloe* sp.) and Indian strawberry (*Duchesnea indica*).

Wildlife associated with the other community types will use the Maintained/Disturbed community. Species include: gray squirrel, white-tailed deer, opossum, Eastern cottontail (*Sylvilagus floridanus*), and raccoon. Amphibians and reptiles likely to inhabit this habitat type include the spring peeper and snake species such as the northern copperhead and the black rat snake.

Avian species that use the Maintained/Disturbed area include the American crow* (*Corvus brachyrhynchos*), chipping sparrow* (*Spizella passerina*), American robin* (*Turdus migratorius*), pine siskin*, wild turkey, ruffed grouse, common bobwhite, white throated sparrow, and Carolina wren.

Residential. The residential area is primarily vegetated with turf grasses. There are numerous Eastern hemlock trees in the area.

Wildlife associated with the other community types will also use the residential area. Species include: gray squirrel, white-tailed deer, opossum, and raccoon. Amphibians and reptiles likely to inhabit this habitat type include the spring peeper, and snake species such as the northern copperhead, and the black rat snake.

Avian species that use the Residential area include the American crow, blue jay (*Cyanocitta cristata*), chipping sparrow, American robin, pine siskin, white throated sparrow, and Carolina wren.

Tree Plantation. Tree Plantation is not a community type identified in Schafale and Weakley (1990). However, due to its unique characteristics, this area has been categorized separately from the Maintained/Disturbed or Residential communities. This area has turf grasses, American holly, and numerous flowering dogwoods planted in rows.

Wildlife associated with the other community types will also use the Tree Plantation area. Species include: gray squirrel, white-tailed deer, opossum, and raccoon. Amphibians and reptiles likely to inhabit this habitat type include the spring peeper, and snake species such as the northern copperhead, and the black rat snake.

Numerous avian species eat the berries of flowering dogwood, so a number of species may be expected to use the area. These include: white crowned sparrow* (*Zonotrichia leucophrys*), American crow, blue jay, chipping sparrow, American robin, pine siskin, white throated sparrow, Carolina chickadee, tufted titmouse and Carolina wren.

2. Aquatic Communities

Lost Cove Creek. Physical characteristics of the water body and condition of the water resource influence faunal composition of aquatic communities. Terrestrial communities adjacent to a water resource also greatly influence aquatic communities.

Fauna associated with the Lost Cove Creek aquatic community include various invertebrate and vertebrate species. The creek is known to support populations of brown trout (*Salmo trutta*) and rainbow trout (*Salmo gairdneri*) (Haggard, Pers. Comm.). Additional species include: central stoneroller (*Campostoma anomalum*), warpaint shiner (*Luxilus coccogenis*), and fantail darter (*Etheostoma flabellare*) (Tracy, Pers. Comm.). Invertebrates that will be present include crayfish (Family Cambaridae) and nymphal stages of dragonflies and damselflies (Order Odonata). The bullfrog (*Rana catesbeiana*), pickerel frog (*R. palustris*), snapping turtle (*Chelydra serpentina*), and northern water snake (*Nerodia sipedon*) are common permanent residents in this community.

Depressional Pond. On the northeast side of the creek there is an old streambed. Within this streambed, there is a small depressional pond of approximately 0.03 acres (20 feet by 60 feet). This pond will not be impacted by the project.

Fauna likely to inhabit this pond include various invertebrate species such as crayfish and nymphal stages of dragonflies and damselflies. The bullfrog, pickerel frog, snapping turtle, and northern water snake may also use this area.

3. Anticipated Impacts to Biotic Communities

a. Terrestrial Communities

Calculated impacts to biotic resources reflect the relative abundance of each community present within the study area. Project construction will result in clearing and degradation of portions of these communities. **Table 2** summarizes potential quantitative losses to these biotic communities resulting from Alternative 1 (temporary bridge upstream and replace in place), Alternative 2 (temporary bridge downstream and replace in place), and Alternative 3 (realignment upstream). Impacts were derived using the estimated construction limits shown on the functional design for each alternative.

Table 2
Anticipated Impacts to Biotic Communities

Community		Alternative 1	Alternative 2	Alternative 3 (Preferred)
Piedmont/Low Mountain Alluvial Forest (acres)		0.27	0.27	0.40
Maintained/Disturbed Community (acres)		0.09	0.08	0.06
Residential (acres)		0	0	0.02
Lost Cove Creek (linear feet)		0	0	0
Wilson Creek (linear feet)		0	0	0
Total	**acres**	**0.36**	**0.35**	**0.48**
	linear feet	**0**	**0**	**0**

Note: The impacts associated with replacing the bridge at its current location are included in Alternative 1 and 2 impacts.

As indicated in **Table 2**, the total area of impact for Alternatives 1 and 2 will be roughly equal, while the impacts from Alternative 3 (Preferred Alternative) will be slightly greater. The habitat impacted most will be the Piedmont/Low Mountain Alluvial Forest. The impacts from Alternatives 1 and 2 will be temporary since the detour bridge will be removed after the bridge is constructed and the area around the detour bridge will be restored. Impacts from Alternative 3 will be permanent. Areas modified by construction, but not paved, will become road shoulders and early successional or maintained/disturbed habitat.

Plant communities found within the proposed project area serve as nesting and sheltering habitat for various wildlife species. Due to the minimal size and scope of this project, it is anticipated that impacts to fauna will be minimal.

b. Aquatic Communities

Aquatic communities are sensitive to even small changes in their environment. Stream channelization, scouring, siltation, sedimentation and erosion from construction- related work will temporarily affect water quality and biological constituents.

Impacts often associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the stream substrate and may remove streamside vegetation at the site.

The removal of streamside vegetation and placement of fill material at the construction site alters the terrain. Alterations of the streambank increase the likelihood of erosion and sedimentation. Erosion and sedimentation carry soils, toxic compounds and other materials into aquatic communities at the construction site. Revegetation stabilizes and holds the soil, thus mitigating these processes. Revegetation will be completed as soon as practicable after disturbance.

Implementation of guidelines and Best Management Practices for surface waters, trout waters, waters classified as ORW, and bridge demolition and removal will result in no notable losses to aquatic species or habitats.

E. Special Topics

1. Waters of the United States

Surface waters and wetlands fall under the broad category of "Waters of the United States" as defined in Section 33 of the Code of Federal Regulations (CFR) Part 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters of the United States are regulated by the US Army Corps of Engineers (USACE).

Potential wetland communities were investigated pursuant to the 1987 *Corps of Engineers Wetland Delineation Manual* (USCE, 1987). According to the three-parameter approach outlined in the manual, hydric soils, hydrophytic vegetation and prescribed hydrologic characteristics all must be present for an area to be considered a wetland. No jurisdictional wetlands are present within the Project Study Area.

There is a small depressional pond approximately 60 feet by 20 feet northeast of the project area. Soils within the pond are of a sandy consistency. There was no vegetation growing in the pond. This area will not be impacted by construction activities.

Lost Cove Creek is a Jurisdictional Surface Water under Section 404 of the Clean Water Act (33 USC 1344). Discussion of the biological, physical and water quality aspects of Lost Cove Creek were presented in the Water Resources Section (under the Natural Resources portion) of this report. Lost Cove Creek will not be directly impacted by the proposed project.

2. Permits

a. Section 404 of the Clean Water Act

It is anticipated that this project will fall under Nationwide Permit 23 (33 CFR 330.5(a)), which is a type of general permit. Nationwide Permit 23 is relevant to approved Categorical Exclusions. This permit authorizes activities, work, and discharges undertaken, assisted, authorized, regulated, funded or financed in whole, or in part, by another Federal agency and that the activity is "categorically excluded" from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit.

b. Section 401 Water Quality Certification

A Section 401 Water Quality Certification from the North Carolina Division of Water Quality (NCDWQ) is necessary for projects that require Section 404 Permits. Written concurrence/notification is not always required by the State, and varies depending upon the General Certification. If this project qualifies under Nationwide Permit 23, the NCDWQ must be notified, however written concurrence from the NCDWQ is not required.

c. Bridge Demolition and Removal

Since the substructure and superstructure of the existing bridge are made of concrete, there is potential for some of this material to be dropped into Waters of the United States during removal. Permitting will be coordinated such that any permit needed for bridge construction will address issues related to bridge demolition. If the bridge is to be removed in a fashion such that there is a practical alternative to dropping bridge components into the water, that alternative shall be followed.

3. Buffer Rules

The Catawba River basin has buffer rules in effect. However, these rules only apply to the mainstem of the Catawba River below Lake James and to mainstem lakes in the Catawba River Basin, excluding wetlands. Therefore, Lost Cove Creek does not fall under the jurisdiction of the Catawba River Basin Buffer Rules.

4. Avoidance

Bridge No. 3 will be replaced with a three-span bridge with no bents in Lost Cove Creek. Therefore, impacts to Lost Cove Creek and Wilson Creek are avoided.

5. Minimization

The Preferred Alternative (Alternative 3) minimizes the duration of construction near Waters of the United States by replacing Bridge No. 3 just upstream of the existing alignment without constructing a detour bridge. Utilization of BMPs will be used to minimize impacts. No jurisdictional wetlands are present within the Project Study Area.

6. Mitigation

The USACE has adopted, through the CEQ, a wetland mitigation policy which embraces the concepts of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological and physical integrity of Waters of the United States, including wetlands. Mitigation of wetland impacts has been defined by the CEQ to include avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization and compensatory mitigation) must be considered sequentially. There are no wetland impacts associated with this project. Mitigation is not expected for any alternative.

The USACE usually requires compensatory mitigation for activities authorized under Section 404 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.10 acre of wetlands or 500 linear feet of perennial and intermittent streams.

The NCDWQ may require compensatory mitigation for activities authorized under Section 401 of the Clean Water Act if unavoidable impacts to waters of the United States total more than 0.10 acre of wetlands and/or 150 linear feet of perennial streams.

A final determination regarding mitigation requirements rests with the USACE and NCDWQ.

F. 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 coexist with human activities.

1. Federally-Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. **Table 3** includes the federally protected species listed by the USFWS for Caldwell County as of September 1, 2004. A brief description of each species' characteristics and habitat follows.

Table 3
Federally-Protected Species for Caldwell County

Common Name	Scientific Name	Status	Habitat in Project Study Area
Invertebrates			
Spruce-fir moss spider	*Microhexura montivaga*	Endangered	No
Vascular Plants			
Dwarf flowered heartleaf	*Hexastylis naniflora*	Threatened	No
Heller's blazing star	*Liatris helleri*	Threatened	No

Endangered species are in danger of becoming extinct throughout all or a significant portion of their range.
Threatened species are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Spruce-fir moss spider - (*Microhexura montivaga*) - **Endangered**
Family: Dipluridae
Date Listed: February 6, 1995
BIOLOGICAL CONCLUSION **NO EFFECT**

The Spruce-fir moss spider is 0.10 to 0.15 inches in diameter. It ranges from light brown to yellow-brown to darker-reddish brown with no markings on its abdomen. The spider can be most easily recognized by the chelicerae (mouthparts) that project beyond the anterior edge of the carapace, a pair of long posterior spinnerets, and the presence of a second pair of book lungs, appearing as light patches posterior to the genital furrow.

Preferred habitat for the spruce-fir moss spider is high mountain peaks at or above 5,400 feet msl. The spider has only been found in Fraser fir and red spruce forest communities, in damp but well drained moss mats on well-shaded rock outcrops and boulders. The most likely prey for the spiders is springtails (Class: collembolans) that also live in the moss mats, but this has not been verified (USFWS North Carolina Ecological Services website, http://nc-es.fws.gov/es/es.html).

The primary threat to the spruce-fir moss spider is thought to be the decline of the spruce-fir forest communities. This forest community is being affected by the exotic balsam wooly adelgid (*Adelges piceae*), which kills most Fraser firs where it is present. The trees that survive are susceptible to wind throw. Atmospheric pollution is also thought to kill the firs. Without the forest, the mats on which the spiders live dry out and die, as do the spiders.

The habitat for the spruce-fir moss spider is not found in the Project Study Area. The project elevation of 1,600 feet msl is well below the 5,400 feet elevation at which the spiders are found. Additionally, the forest community is Piedmont/Low Mountain Alluvial Forest, not the Fraser fir and red spruce communities common at higher elevations. There are no moss covered boulders in the area. Project construction will not affect the spruce-fir moss spider

Dwarf-flowered heartleaf - (*Hexastylis naniflora*) - **Threatened**
Family: Birthwort
Date Listed: April 14, 1989
BIOLOGICAL CONCLUSION **NO EFFECT**

Dwarf-flowered heartleaf has the smallest flowers of any North American *Hexastylis*, with most flowers less than 0.4 inches long. The sepal tubes are very narrow, never more than 0.28 inches wide. The flowers are jug shaped and are most often beige to dark brown, although they can be greenish or purplish. They bloom from mid March to early June. The leaves are heart shaped, evergreen and leathery. Plant stalks originate from an underground root.

The habitat for the dwarf-flowered heartleaf is not found within the Project Study Area. A review of the NC Natural Heritage Program database of rare species and unique habitats revealed no records of the plant within the Project Study Area. Additionally, the soil type in the Project Vicinity is Potomac, which is not listed as one of the soil types in which dwarf-flowered heartleaf grows best. No *Hexastylis* plants were observed in a search of the area during the site visit on May 22, 2001, when the plant would have been in bloom, nor on November 9, 2001. Project construction will not affect the dwarf-flowered heartleaf.

Heller's blazing star - (*Liatris helleri*) - **Threatened**
Family: Aster
Date Listed: November 19, 1987
BIOLOGICAL CONCLUSION **NO EFFECT**

Heller's blazing star is a perennial herb with a showy spike of lavender flowers. The flowers are 2.8 to 7.9 inches long, arising from a tuft of pale green basal leaves 0.4 to 0.6 inches wide. The plant can be differentiated from other *Liatris* species by a shorter pappus (generally half the length of the corolla tube or less), ciliate petioles, internally

pilose corolla tubes and a lower, stockier habit. Heller's blazing star flowers from July through August, with fruits present from September through October.

The habitat for the Heller's blazing star is not found in the Project Study Area. Heller's blazing star is restricted to elevations between 3,500 and 6,000 feet (Virginia Tech Fish and Wildlife Information Exchange website, http://fwie.fw.vt.edu/WWW/esis/lists/e704049.htm), well above the project elevation of 1,600 feet. Additionally, Heller's blazing star is a pioneer species unlikely to live in dense forest conditions as is present in the project vicinity. No plants were found during site visits on May 22 or November 9, 2001. Project construction will not affect the Heller's blazing star.

2. Federal Species of Concern

There are sixteen Federal Species of Concern (FSC) listed for Caldwell County. Federal Species of Concern are not afforded federal protection under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Federal Species of Concern are defined as those species that may or may not be listed in the future. These species were formally candidate species, or species under consideration for listing for which there was insufficient information to support a listing of Endangered, Threatened, Proposed Endangered or Proposed Threatened.

Table 4 lists Federal Candidate, the species state status and the existence of suitable habitat for each species in the Project Study Area. This species list is provided for information purposes, as the status of these species may be upgraded in the future.

Table 4
Federal Species of Concern (FSC) for Caldwell County

Common Name	Scientific Name	State Status	Habitat
Vertebrates			
Alleghany woodrat[+]	*Neotoma magister*	SC	Yes
Southern Appalachian black-capped chickadee	*Parus atricapillus practicus*	SC	No
Southern Appalachian red crossbill	*Loxia curvirostra*	SR	No
Southern Appalachian saw-whet owl	*Aegolius acadicus*	SC	Yes
Southern Appalachian yellow-bellied sapsucker	*Sphyrapicus varius appalaciensis*	NL	-
Invertebrates			
Diana fritillary butterfly	*Speyeria diana*	SR	Yes
Edmund's snaketail dragonfly	*Ophiogomphus edmundo*	SR	Yes
Margarita River skimmer[+]	*Macromia margarita*	SR	Yes
Vascular Plants			
Fraser Fir	*Abies fraseri*	NL	-
Mountain bittercress	*Cardamine clematitis*	C	Yes
Bent avens	*Geum geniculatum*	T	Yes
Butternut	*Juglans cinerea*	NL	-
Gray's lily	*Lilium grayi*	T-SC	No
Sweet pinesap	*Monotropsis odorata*	C	Yes
Riparian vervain	*Verbena riparia*	C	NK
A liverwort	*Plagiochila sullivantii* var. *sullivantii*	C	No

C = Candidate species are very rare in North Carolina and/or throughout their range. These are species whose fate depends largely on their conservation in North Carolina. If present land trends continue, candidate species are likely to be listed as Endangered or Threatened.
NK = Habitat not known
NL = Not Listed
SC = Significant Concern species are "Any species of plant in North Carolina which requires monitoring but which may be collected and sold under regulations adopted under the provisions of [the Plant Protection and Conservation Act]" (GS 19B 106:202.12).
SR = Significantly Rare species are very rare in North Carolina. They are generally more common in other parts of their range.
T = Threatened species that are likely to become endangered through all or a portion of its range.
[+] No specimen found in Caldwell County in 50 years.

Directed surveys for these species were not conducted during the site visit, nor were any of these species observed.

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 as 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

All structures within the Project Study Area and surroundings were photographed, and later reviewed by the NCDOT architectural historians with the State Historic Preservation Office (HPO). In a concurrence form dated May 17, 2001 the State Historic Preservation Officer (SHPO) concurred there are no historic architectural resources either listed or eligible for listing in the National Register of Historic Places within the Area of Potential Effects. A copy of the concurrence form is included in the **Appendix**.

C. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated June 7, 2001, stated "There are no recorded archaeological sites within the proposed project area. If the replacement is to be located along the existing alignment, it is unlikely that significant archaeological resources would be affected and no investigations would be recommended. If, however, the replacement is to be in a new location, please forward a map to this office indicating the location of the new alignment so we may evaluate the potential effects of the replacement upon archaeological resources." A map of the Preferred Alternative was forwarded to the SHPO. A copy of the SHPO memorandum is included in the **Appendix**.

An archaeological survey was conducted in the Project Study Area in September 2004. As a result of the survey, one archaeological site was found but recommended as not eligible for the National Register of Historic Places. In the survey report, no further archaeological work is recommended for any of the alternatives proposed for this project. In a memorandum dated December 8, 2004, the SHPO concurred with the

recommendation in the survey report "since the project will not involve significant archaeological resources." A copy of the SHPO memorandum is included in the **Appendix**.

VII. OTHER ENVIRONMENTAL EFFECTS

Summary. The project is a Federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences. The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations. The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the implementation of current NCDOT standards and specifications. On the basis of information included in this document, it is concluded that no substantial adverse environmental effects will result from implementation of the project.

Land Use Planning. 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 construction of the project.

Community Services and Facilities. No adverse effects on public facilities or services are anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area. None of the alternatives require an offsite detour; therefore, school bus or emergency vehicle service should not be disrupted.

Relocations. Right of way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative, nor are adverse impacts on families or communities anticipated.

Utilities. Existing utilities within the immediate project study area include an overhead electrical line crossing NC 90 at the south end of the bridge and an overhead telephone line immediately downstream and parallel to the bridge. All utility providers will be contacted and coordinated with to ensure that the proposed design and construction of the project will not disrupt service.

Section 4(f) Resources. 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. This project does not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

Air Quality. This project is an air quality "neutral" project. Therefore, it is not required to be included in the regional emission analysis and a project level CO analysis is not required.

The project is located in Caldwell County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520.

This evaluation completes the assessment requirements for air quality (1990 CAAA and NEPA) and no additional reports are required.

Noise. Because traffic volumes will not increase or decrease because of this project and there are no noise sensitive receptors located in the immediate area of this project, no noise impacts attributable to this project are expected.

Noise levels could increase during construction, but this increase will be temporary. Heavy construction equipment and blasting operations (if required) will generate noise and vibration. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers, and portable generators can reach noise levels of 67 dBA to 98 dBA at a distance of 50 feet.

NCDOT specifications require the contractor to limit noise levels to 80 dBA Leq in noise sensitive areas adjacent to the project. The NCDOT may also monitor construction noise and require abatement where limits are exceeded. The NCDOT also can limit work that produces objectionable noise during normal sleeping hours.

This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and no additional reports are required.

Hazardous Materials. A field reconnaissance survey was conducted in the vicinity of the existing bridge. A file search at the North Carolina Department of Environmental and Natural Resources, Division of Environmental Management, Groundwater Section and the NC Dept of Human Resources, Solid Waste Management Section was conducted to identify any known problem sites along the proposed project alignment. No underground

storage tank facilities or hazardous waste sites are known to be present in the Project Study Area.

Prime and Important Farmland. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Prime and important farmland soils are defined by the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS). An assessment was completed using Form AD 1006 to determine if the project's impact on Prime and Important Farmland will require consideration of mitigation. This project was not submitted to NRCS for land evaluation due to the low site assessment criteria score. The completed form is included in the **Appendix.**

Floodplains. Caldwell County is a participant in the National Flood Insurance Regular Program. The project site on Lost Cove Creek is located in a designated flood hazard zone. The proposed replacement is not anticipated to increase the extent of upstream flood hazard. There are no practical alternatives to crossing the floodplain. All reasonable measures will be taken to minimize harm to the floodplain. A copy of the Flood Insurance Rate Map (see **Figure 5**) shows the approximate limits of the 100-year floodplain in the vicinity of the project.

Geodetic Survey Markers. No geodetic survey markers will be impacted.

Environmental Justice. 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 would receive disproportionately high and adverse human health or environmental impacts as a result of this project. The investigation determined the project will not disproportionately impact any minority or low-income populations.

VIII. AGENCY COORDINATION

Local, state, and federal agencies were contacted to provide technical assistance in identifying the key issues and potential impacts associated with the proposed project with scoping letters mailed on June 1, 2001.

Agency Comments

Agency comments are summarized below. Letters from the commenting agencies are included in the **Appendix**.

Caldwell County Office of Emergency Services
Comments:

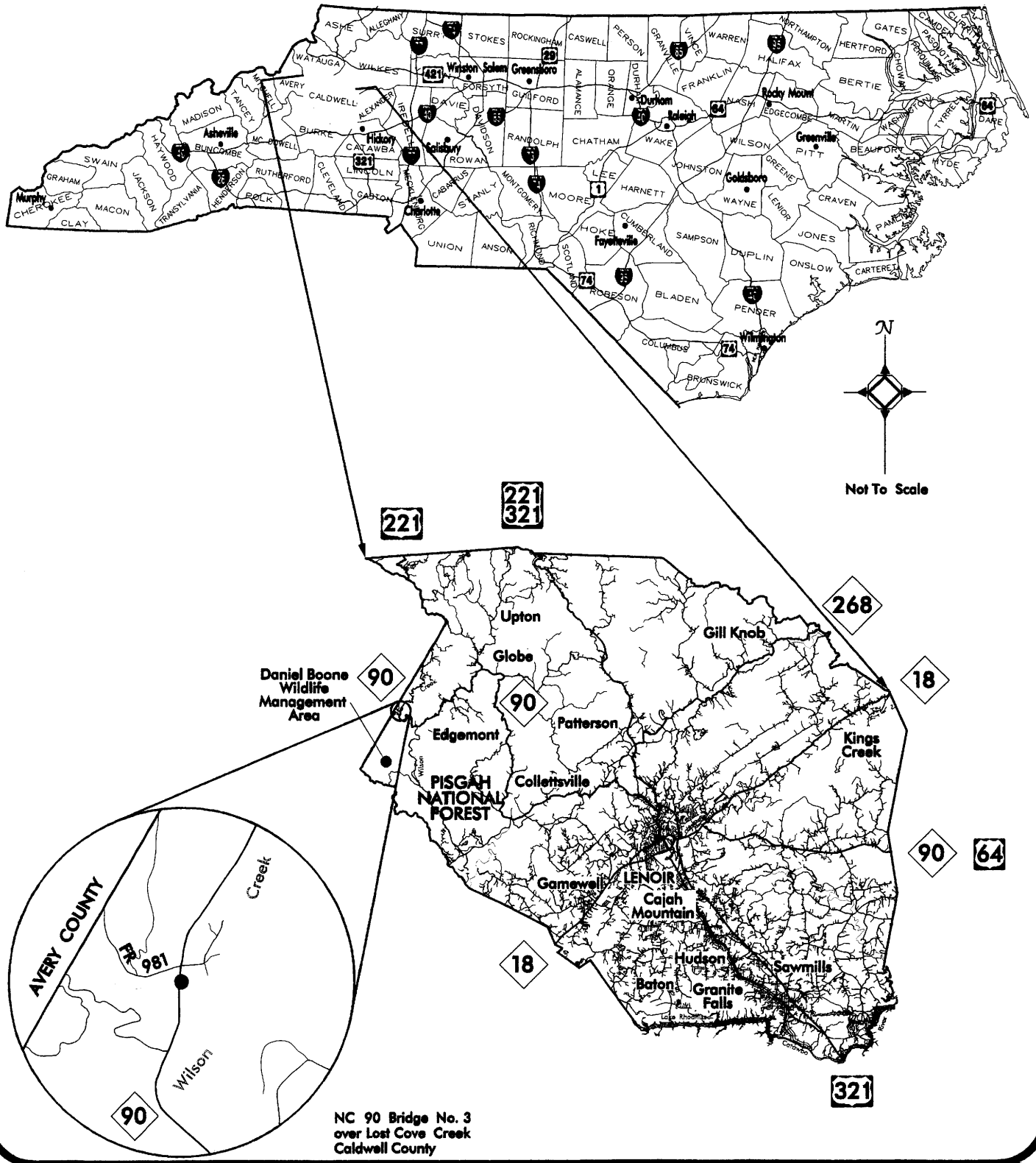
> *"Caldwell County EMS recommends temporary on-site detour at project. Residents who live north west beyond the bridge will be isolated to normal emergency responses."*

Response: The Preferred Alternative will allow traffic to remain on the existing bridge until the new bridge is constructed.

North Carolina Wildlife Resources Commission
Comment:

> *"First class trout waters with wild populations of brown and rainbow trout present in both Lost Cove Creek and downstream in Wilson Creek. The area is designated Public Mountain Trout Water. We will require a trout moratorium from Oct. 15th – April 15th. We request that High Quality Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of ORW (Outstanding Resource Waters)."*

Response: See Green Sheet for commitments.



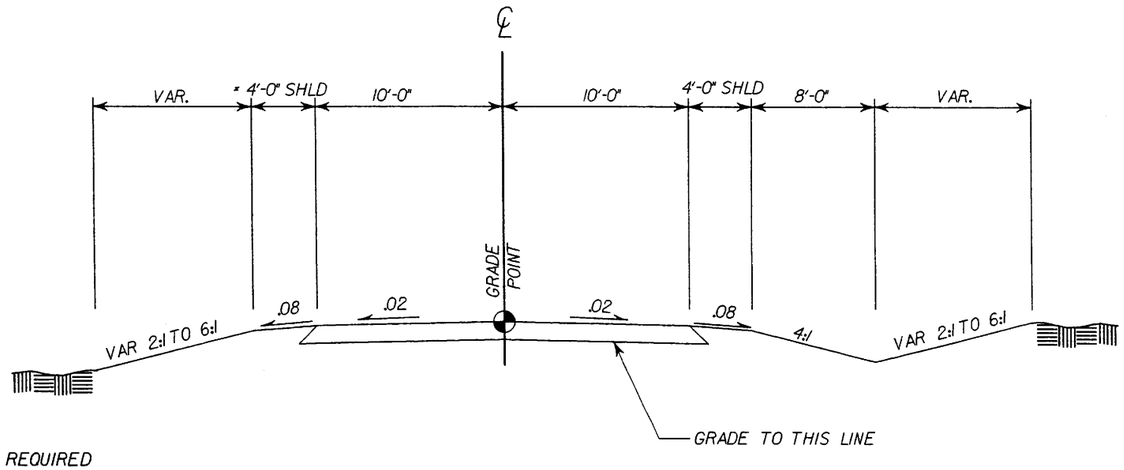
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP NO. B-3818

NC 90 BRIDGE NO.3 OVER LOST COVE CREEK CALDWELL COUNTY

PROJECT LOCATION MAP

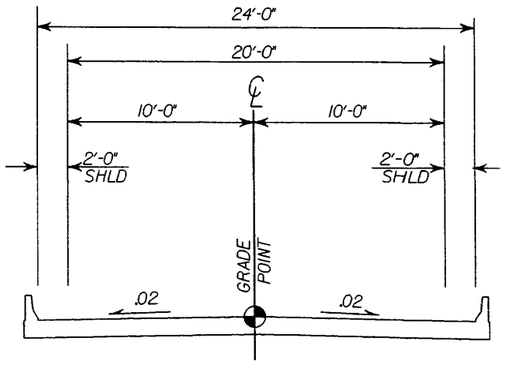
FIGURE 1



* 7' WHERE GUARDRAIL REQUIRED

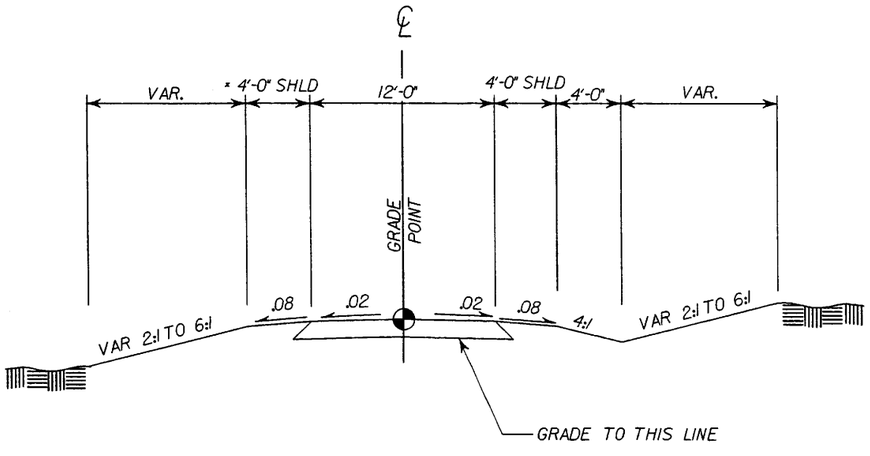
ROADWAY TYPICAL SECTION NO. 1

-L- NC 90



BRIDGE TYPICAL SECTION NO. 3

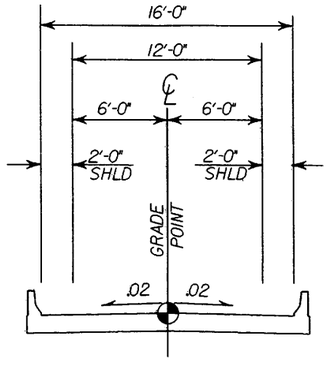
-L- NC 90



* 6' WHERE GUARDRAIL REQUIRED

ROADWAY TYPICAL SECTION NO. 2

DETOUR NC 90



BRIDGE TYPICAL SECTION NO. 4

DETOUR NC 90

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

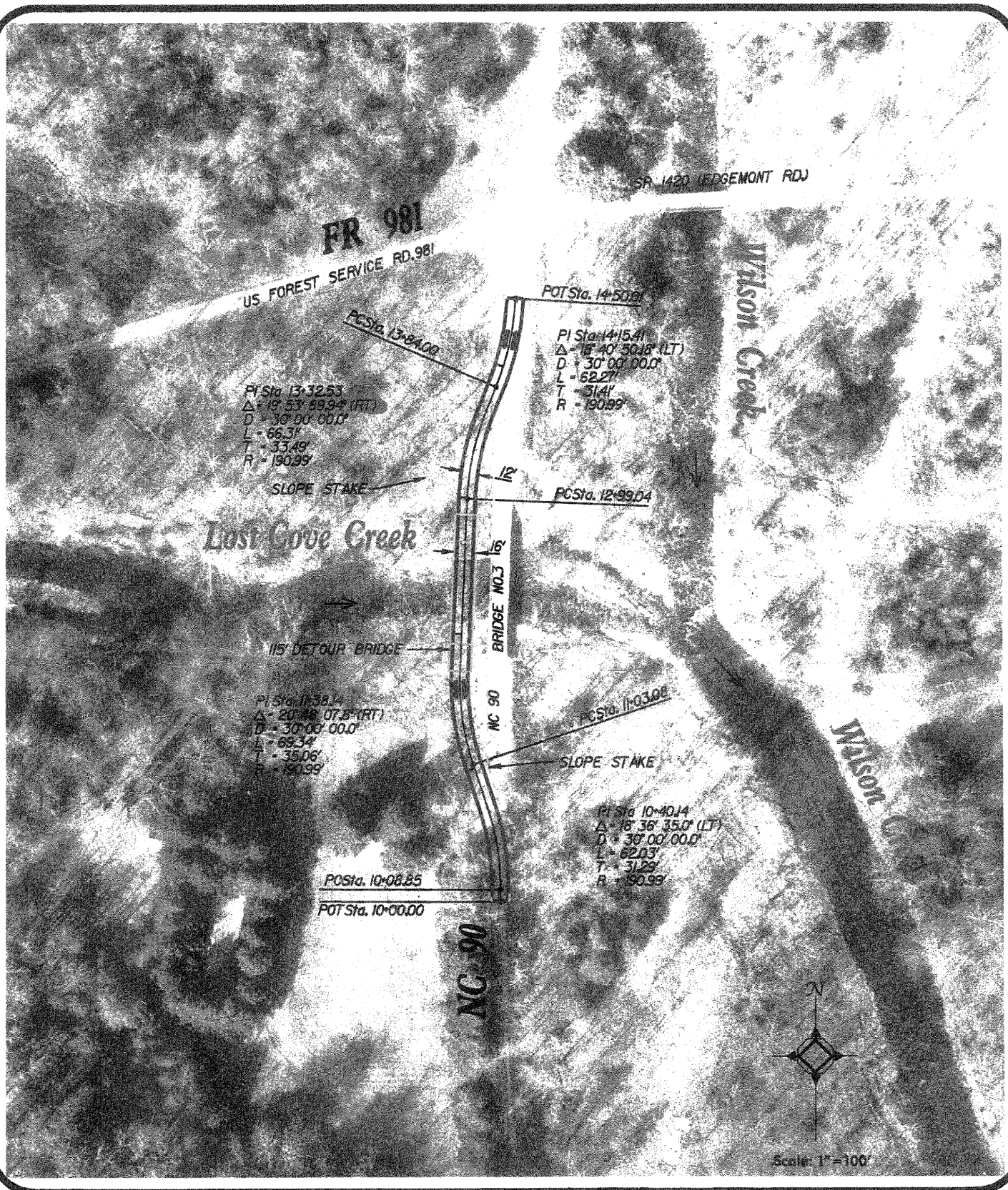
TIP NO. B-3818

NC 90 BRIDGE NO. 3
OVER LOST COVE CREEK
CALDWELL COUNTY

TYPICAL SECTIONS

FIGURE 2

3818TYP.DGN



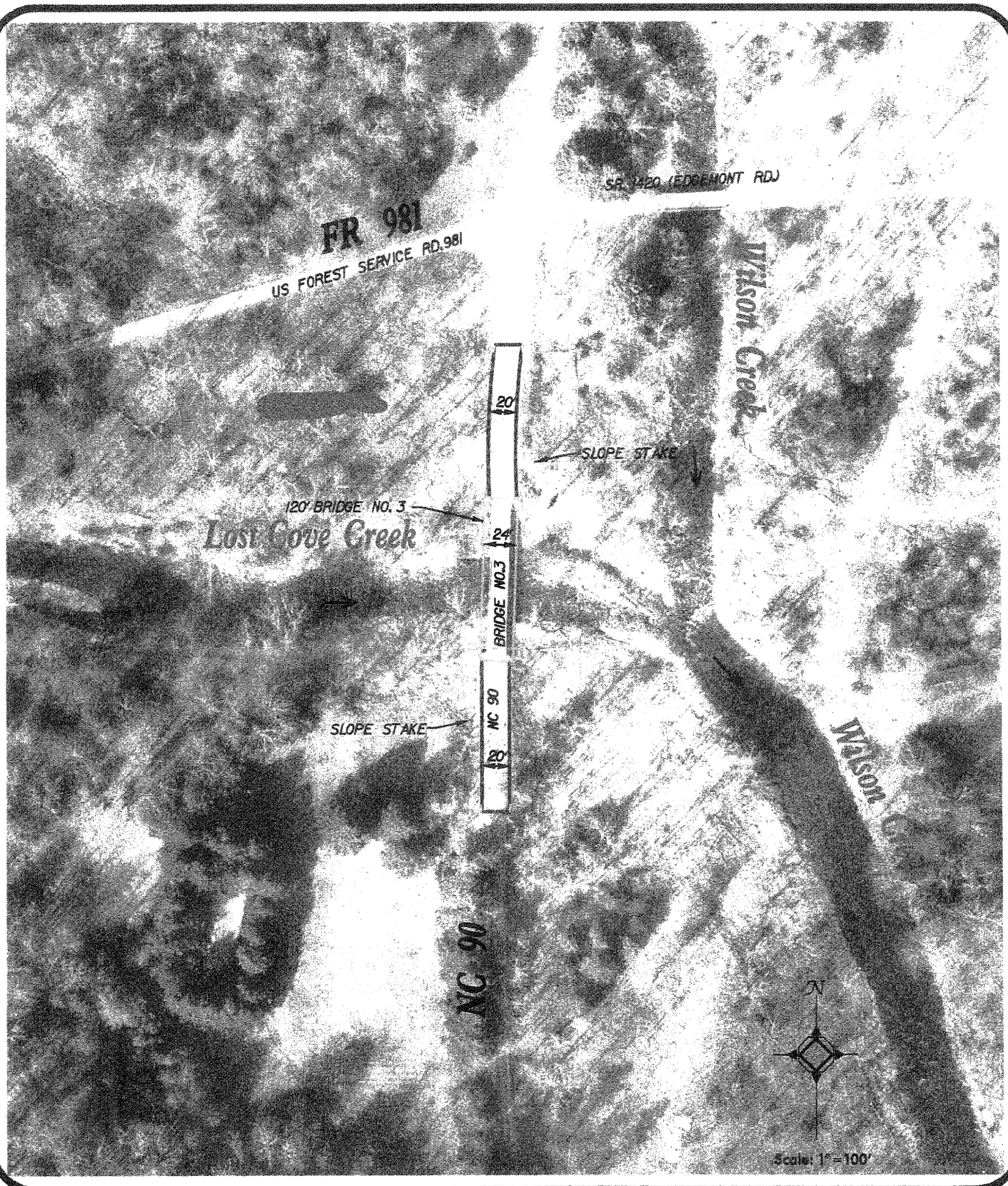
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP NO. B-3818

NC 90 BRIDGE NO. 3 OVER LOST COVE CREEK CALDWELL COUNTY

ALTERNATIVE 1 TEMPORARY REALIGNMENT UPSTREAM ONE LANE DETOUR (PHASE 1)

FIGURE 3a



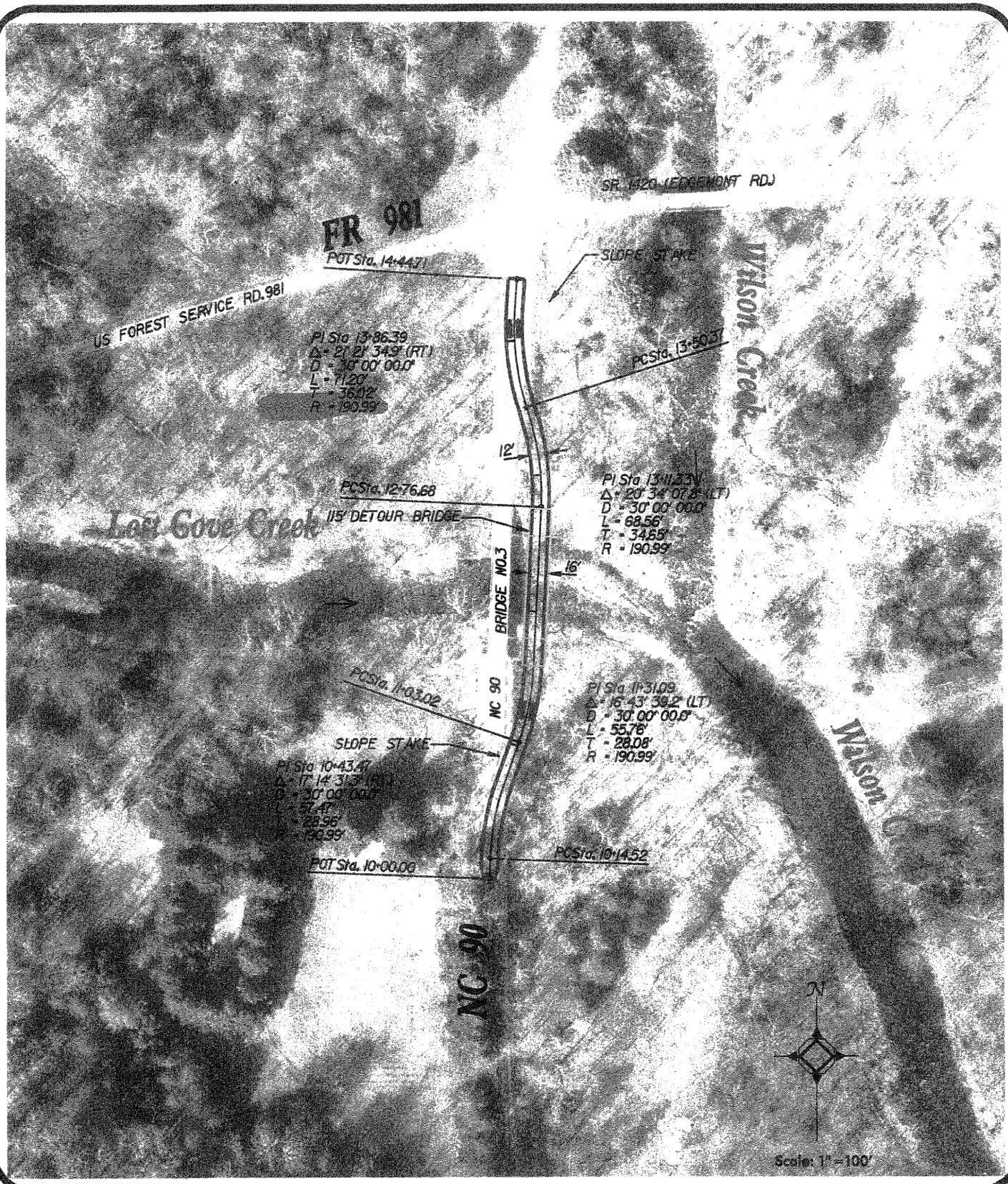
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP NO. B-3818

NC 90 BRIDGE NO. 3 OVER LOST COVE CREEK CALDWELL COUNTY

ALTERNATIVE 1 & ALTERNATIVE 2 PERMANENT REPLACEMENT (PHASE 2)

FIGURE 3b



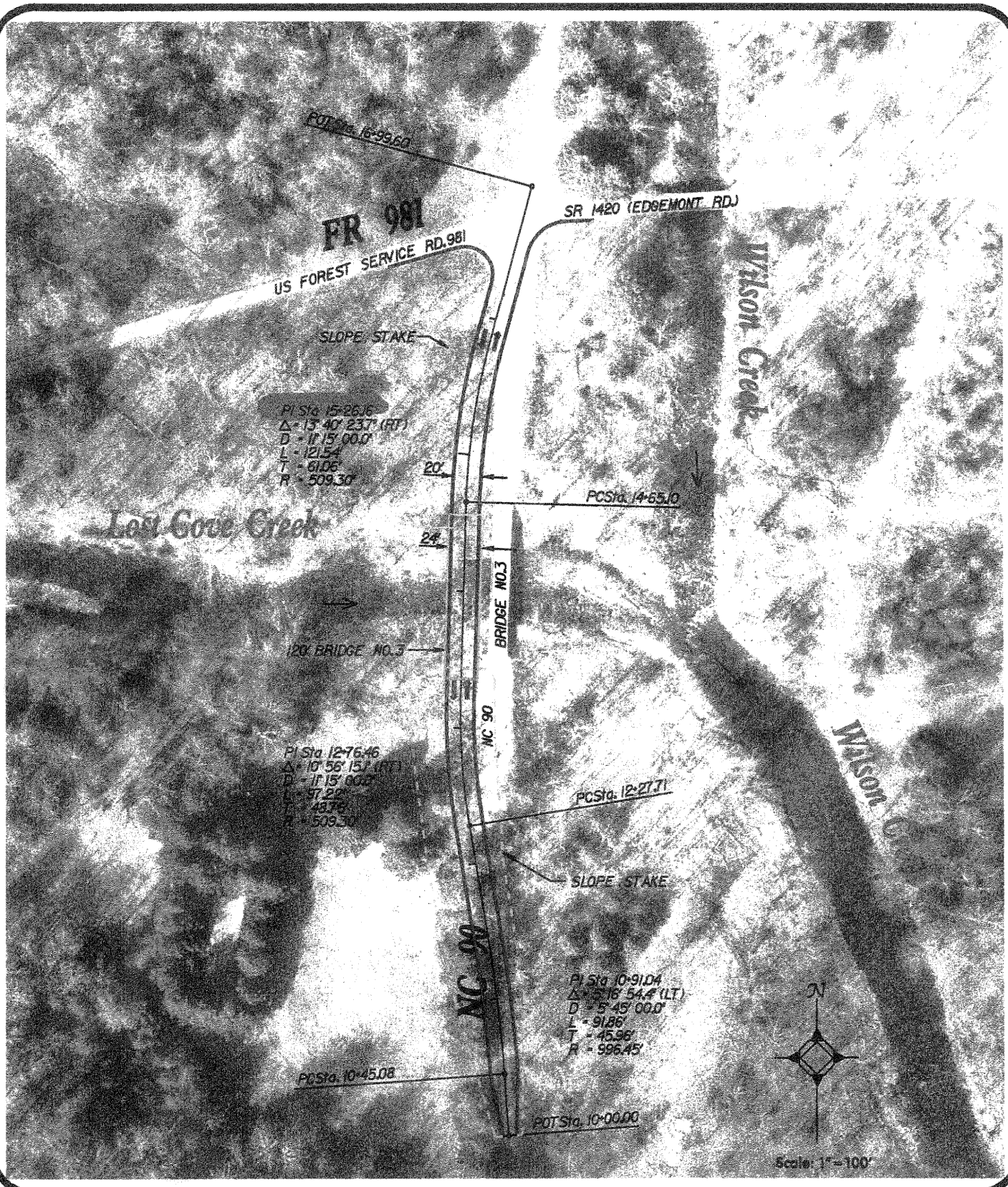
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP NO. B-3818

NC 90 BRIDGE NO. 3 OVER LOST COVE CREEK CALDWELL COUNTY

ALTERNATIVE 2 TEMPORARY REALIGNMENT DOWNSTREAM ONE LANE DETOUR (PHASE 1)

FIGURE 3c



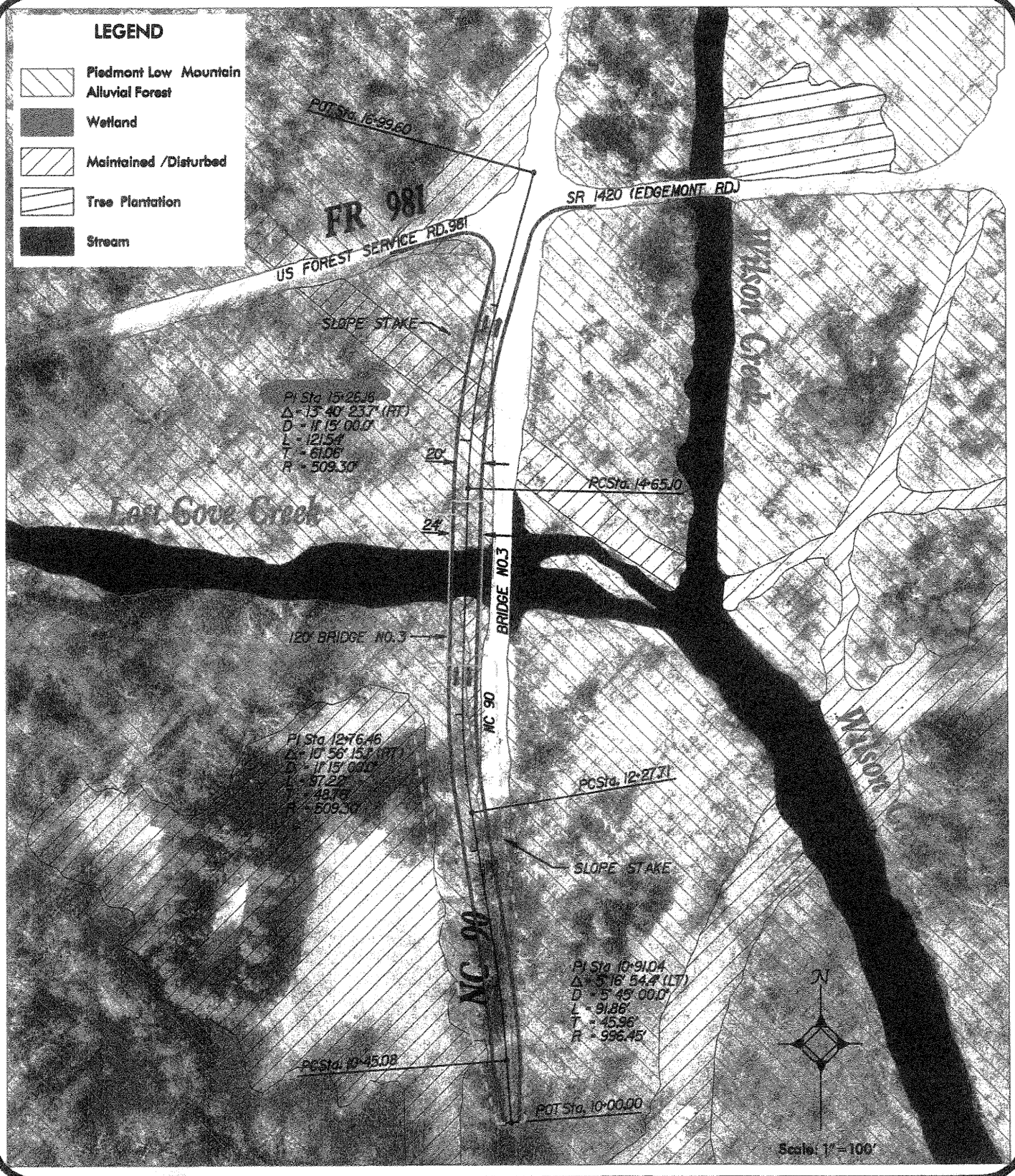
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP NO. B-3818

NC 90 BRIDGE NO. 3 OVER LOST COVE CREEK CALDWELL COUNTY

ALTERNATIVE 3 (PREFERRED ALTERNATIVE) PERMANENT REALIGNMENT UPSTREAM

FIGURE 3d



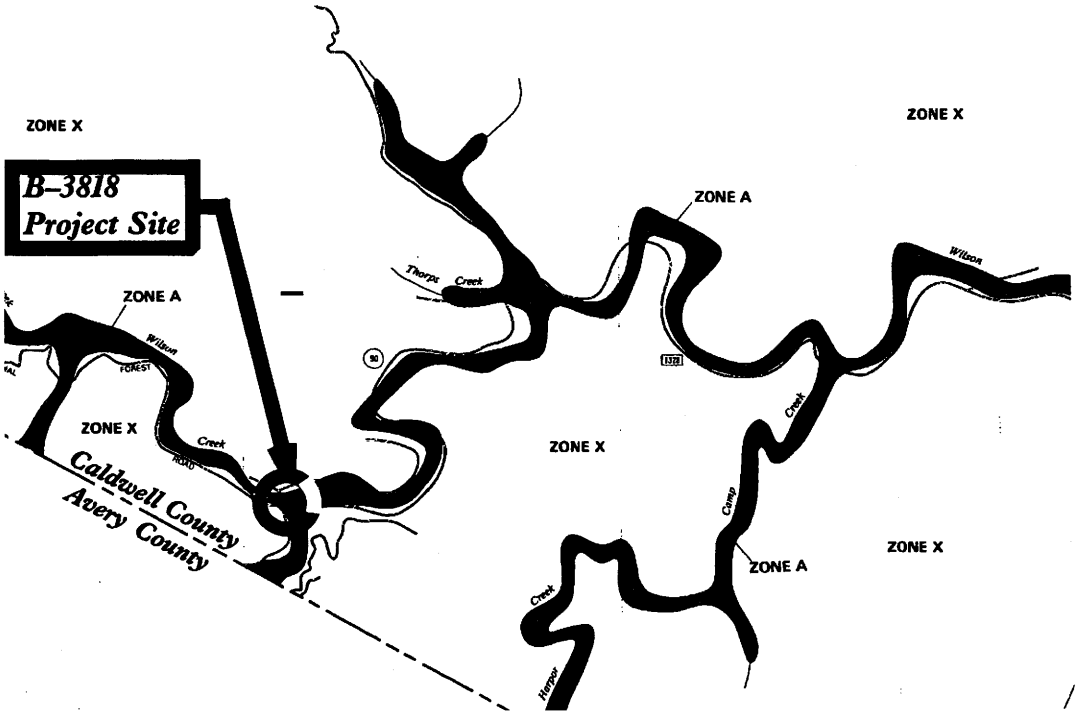
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

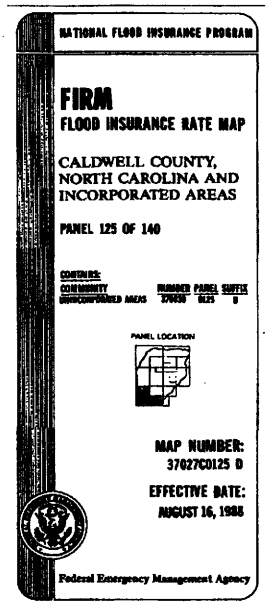
TIP NO. B-3818

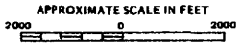
BIOTIC COMMUNITIES AND ALTERNATIVE 3 (PREFERRED ALTERNATIVE)

NC 90 BRIDGE NO. 3 OVER LOST COVE CREEK CALDWELL COUNTY

FIGURE 4







NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP NO. B–3818

NC 90 BRIDGE NO. 3 OVER LOST COVE CREEK CALDWELL COUNTY

FEMA FLOOD MAP

FIGURE 5

3-3818APHOTOS.DGN

APPENDIX

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

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

Division of Archives and History
Jeffrey J. Crow, Director

June 7, 2001

Suzanna Spence
PBS&J
3214 Spring Forest Road
Raleigh, NC 27616

Re: Bridge replacement, TIP No. B-3818, Caldwell County, ER 01-9494

Dear Ms. Spence:

We have received information about the above project.

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

- Edgemont Baptist Church, east side of NC 90 at junction with SR 1328
- Edgemont Hotel, east side of NC 90 at junction with SR 1328

We recommend that an architectural historian evaluate this site to determine if it is eligible for listing in the National Register of Historic Places.

There are no recorded archaeological sites within the proposed project area. If the replacement is to be located along the existing alignment,. It is unlikely that significant archaeological resources would be affected and no investigations would be recommended. If, however, the replacement is to be in a new location, please forward a map to this office indicating the location of the new alignment so we may evaluate the potential effects of the replacement upon archaeological resources.

The above comments are made pursuant to Section 106 of National Historic Preservation Act and 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 comments, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-733-4763.

Sincerely,

Renee Gledhill-Earley

David Brook
Deputy State Historic Preservation Officer

cc: Mary Pope Furr, NCDOT
John Wadsworth, FHwA

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

Federal Aid # **BRZ-(90)1** *TIP #* **B-3818** *County*: **Caldwell**

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

Project Description: Replace Bridge No. 3, Edgemont

On 5/17/01, representatives of the

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

Reviewed the subject project at

- [ ] Scoping meeting
- [x] Historic architectural resources photograph review session/consultation
- [ ] Other

All parties present agreed

- [ ] There are no properties over fifty years old within the project's area of potential effects.
- [x] There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- [x] There are properties over fifty years old within the project's Area of Potential Effects (APE), but based on the historical information available and the photographs of each property, the properties identified as _____ **Property No. 1 and Bridge No. 3** _____ are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- [x] All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- [x] There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Heather Fowler — 5/17/01
Representative, NCDOT — Date

Mary C Dawn — 6/4/01
FHWA, for the Division Administrator, or other Federal Agency — Date

Ann Swallow — 5/17/01
Representative, HPO — Date

David Brook per — 5/17/01
State Historic Preservation Officer — Date

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

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

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

December 8, 2004

MEMORANDUM

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

FROM: Peter B. Sandbeck pbs for Peter Sandbeck

SUBJECT: Bridge 3 on NC 90 Replacement, B-3818, Caldwell County, ER 01-9494

Thank you for your letter of October 1, 2004 transmitting the archaeological survey report by URS Corporation for the above project.

During the course of the survey one site was located within the project area. The report authors have recommended that no further archaeological investigation be conducted in connection with this project. We concur with this recommendation since the project will not involve significant 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.The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

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

cc: Matt Wilkerson, NCDOT
Daniel Cassedy, URS Corporation

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request	4. Sheet 1 of 1
1. Name of Project **B-3818**	5. Federal Agency Involved **Federal Highway Administration**	
2. Type of Project **Bridge Replacement**	6. County and State **Caldwell, North Carolina**	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form) YES ☐ NO ☑		4. Acres Irrigated / Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor	0	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*				
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))* — Maximum Points				
1. Area in Nonurban Use — 15	15	15	15	
2. Perimeter in Nonurban Use — 10	10	10	10	
3. Percent Of Corridor Being Farmed — 20	0	0	0	
4. Protection Provided By State And Local Government — 20	0	0	0	
5. Size of Present Farm Unit Compared To Average — 10	0	0	0	
6. Creation Of Nonfarmable Farmland — 25	0	0	0	
7. Availability Of Farm Support Services — 5	5	5	5	
8. On-Farm Investments — 20	0	0	0	
9. Effects Of Conversion On Farm Support Services — 25	0	0	0	
10. Compatibility With Existing Agricultural Use — 10	0	0	0	
TOTAL CORRIDOR ASSESSMENT POINTS — 160	30	30	30	0
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland (From Part V) — 100				
Total Corridor Assessment (From Part VI above or a local site assessment) — 160	30	30	30	0
TOTAL POINTS *(Total of above 2 lines)* — 260	30	30	30	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

TO: Ron Elmore
Project Engineer, NCDOT

FROM: Maryellen Haggard, Highway Project Coordinator
Habitat Conservation Program

DATE: June 27, 2001

SUBJECT: NCDOT Bridge Replacements in Buncombe, Burke, Caldwell, Cherokee, Davidson, Haywood, Jackson, and Madison counties of North Carolina. TIP Nos. B-4033, B-3814, B-3818, B-3826, B-3834, B-4095, B-3854, B-3859, B-3860, and B-4184

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. Wet concrete should not be allowed to contact stream water. This will lessen the chance of altering the stream's water chemistry and causing a fish kill.

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

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

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

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

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

8. In streams that contain threatened or endangered species, 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. All mechanized equipment operated near surface waters should be regularly inspected and maintained to prevent contamination of stream waters from 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. The culvert or pipe invert should be buried at least 1 foot below the natural streambed. The installation of the culvert or pipe should insure that all waters flow without freefalling or damming on either end during low flow conditions. 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. When two pipes are installed, only the lower pipe should be buried 12" into the substrate so that all base flows continue uninterrupted in the lower pipe during normal and low flow conditions to maintain aquatic life passage. The bottom of the second pipe should be placed at grade or at bankfull elevation. The second pipe should remain dry during normal flows to allow for wildlife passage. Where disrupted, natural floodplain benching should be restored upstream and downstream of the second, "dry", pipe.

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 streambed.

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-4033 – Buncombe County – Bridge No. 85 over Hominy Creek. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

2. B-3814 – Burke County – Bridge No. 56 over Canoe Creek. Canoe Creek at the bridge replacement is in a designated water supply watershed. NCDOT should adhere to strict erosion control measures.

3. B-3818 – Caldwell County – Bridge No. 3 over Lost Cove Creek. First class trout waters with wild populations of brown and rainbow trout present in both Lost Cove Creek and downstream in Wilson Creek. The area is designated Public Mountain Trout Water. We will require a trout moratorium from Oct. 15th - April 15th. We request that High Quality

Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of ORW (Outstanding Resource Waters).

4. B-3826 – Cherokee County – Bridge No. 166 over Bates Creek. The upper portion of Bates Creek is on gamelands and is designated wild trout. Trout are also likely below the bridge replacement. We will require a trout moratorium from Oct. 15th - April 15th. NCDOT should adhere to strict erosion control measures.

5. B-3834 – Davidson County – Bridge No. 156 over Hanks Creek. No comment.

6. B-4095 – Davidson County – Bridge No. 130 over Abbotts Creek. This Creek flows into High Rock Lake. Abbott Creek supports a diverse fishery including Largemouth bass, redbreast sunfish, bluegill, channel catfish, and crappie. White Bass make a seasonal spring run up the creek to spawn. We request that High Quality Sedimentation and Erosion Control Measures be used due to the DWQ water quality classification of WS-III CA.

7. B-3854 – Haywood County – Bridge No. 329 over Jonathon Creek. Jonathon Creek is designated hatchery supported water. Therefore, Brook, Brown and Rainbow Trout will be present. We will require a trout moratorium from Oct. 15th - April 15th. NCDOT should adhere to strict erosion control measures.

8. B-3859 – Jackson County – Bridge No.138 over Pressley Creek. The upper section of a tributary to Pressley Creek is on game lands and supports wild trout. The lower end of Presley also supports wild trout. Hatchery supported water begins at the confluence with Cullowhee Creek. It looks like this bridge is actually over Tilley Creek. Tilley Creek is considered trout waters. We will require a trout moratorium from Oct. 15th - April 15th. NCDOT should adhere to strict erosion control measures.

9. B-3860 – Jackson County – Bridge No. 33 over Buff Creek. Upper sections of the creek support wild trout. The lower section is designated Hatchery Supported. We will require a trout moratorium from Oct. 15th - April 15th. NCDOT should adhere to strict erosion control measures.

10. B-4184 – Madison County – Bridge No. 4 over Ivy River. We have no specific comments. We are not aware of any threatened of endangered species in the project vicinity.

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 (336) 527-1549. Thank you for the opportunity to review and comment on these projects.

CALDWELL COUNTY
Office of Emergency Services
616 West Ave., NW/PO Box 2200
Lenoir, NC 28645-2200

Dale Bradshaw
Emergency Medical Services
Director
(828)-757-1278

JUN 14 2001

June 8, 2001

Mr. William Gilmore
Project Development and Environmental Analysis
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, N.C. 27699-1548

B-3818

Dear Mr. Gilmore:

SUBJECT: Replacement of Bridge #3 located on NC 90

I appreciate the opportunity to provide input regarding local impact of bridge closure. Caldwell County EMS recommends temporary on-site detour at project. Residents who live north west beyond the bridge will be isolated to normal emergency responses. All vehicles will have to travel a considerable distance to gain access to the area. Our agency will request mutual aid response from Avery County Emergency Services during road closure. Also the project completion schedule of (2) years further supports the need for on-site detour. Your assistance is greatly appreciated. If I can be of further assistance please contact me at 828-757-1278.

Sincerely,

Dale Bradshaw

Dale Bradshaw
EMS Director

TIP: B-3818

PROJECT: 33271.1.1

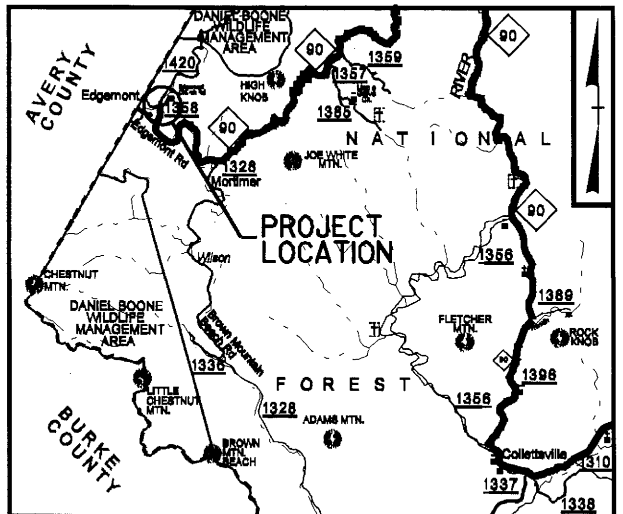
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3818	1	

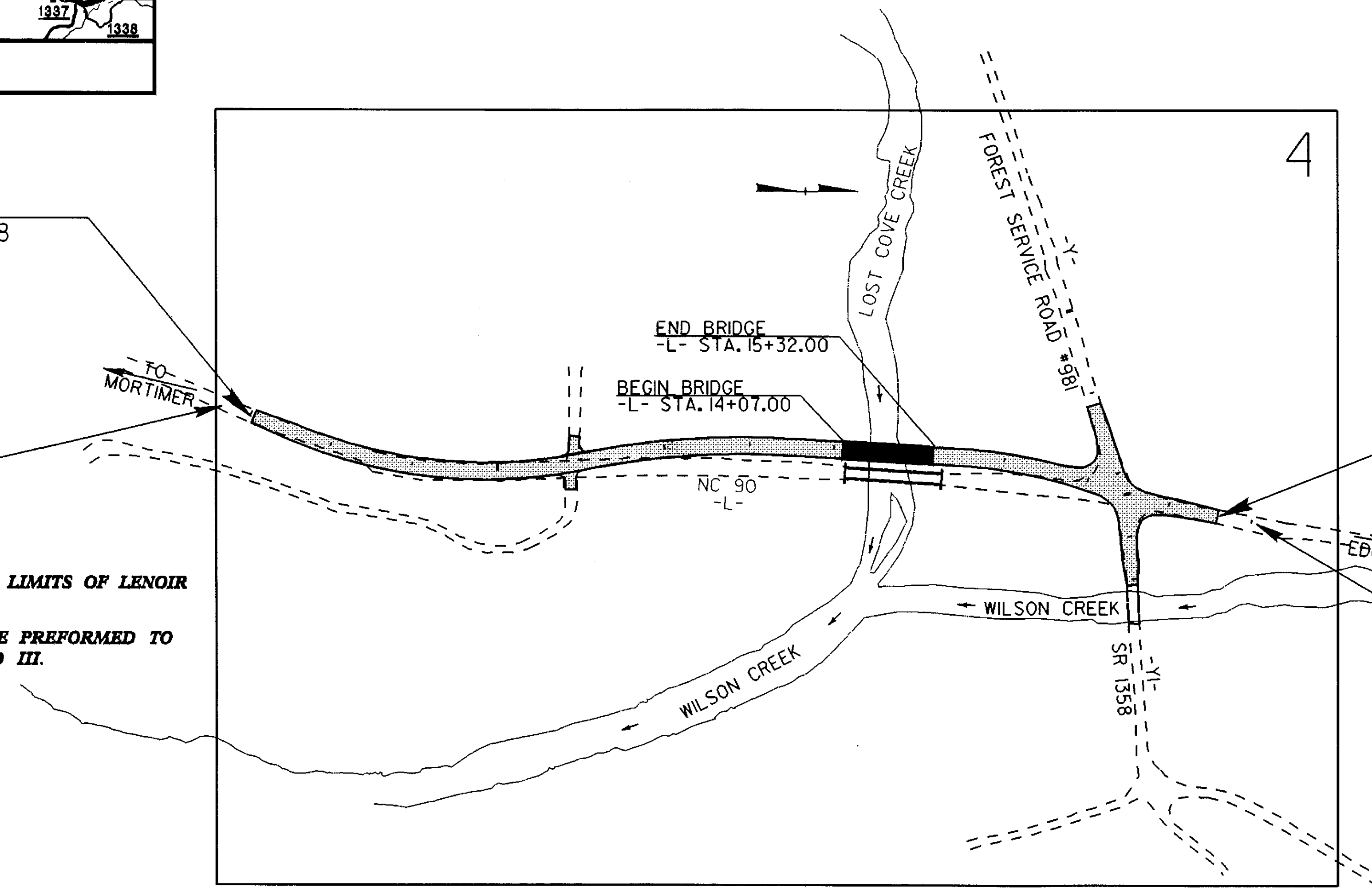
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33271.1.1	BRZ-90(1)	PE



VICINITY MAP

LOCATION: BRIDGE NO. 3 OVER LOST COVE CREEK ON NC 90

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



THIS PROJECT IS NOT WITHIN THE CITY LIMITS OF LENOIR

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

NCDOT CONTACT: CATHY S. HOUSER, PE
PROJECT ENGINEER
ROADWAY DESIGN

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2004 = 100
ADT 2025 = 200
DHV = 20 %
D = 60 %
T = 3 % *
V = 30 MPH

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3818 = 0.195 MILES
LENGTH STRUCTURES TIP PROJECT B-3818 = 0.024 MILES
TOTAL LENGTH TIP PROJECT B-3818 = 0.219 MILES

Prepared In the Office of:
PBSJ
1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
PHONE: (919) 876-6888

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
November 18, 2005

LETTING DATE:
March 20, 2007

Steve A. Drum, PE
PROJECT ENGINEER

David W. Bass, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

09/08/99
15-MAR-2007 09:28

PROJECT REFERENCE NO.	SHEET NO.
B-3818	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- River Basin Buffer — RBB
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — Flow
- False Sump

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

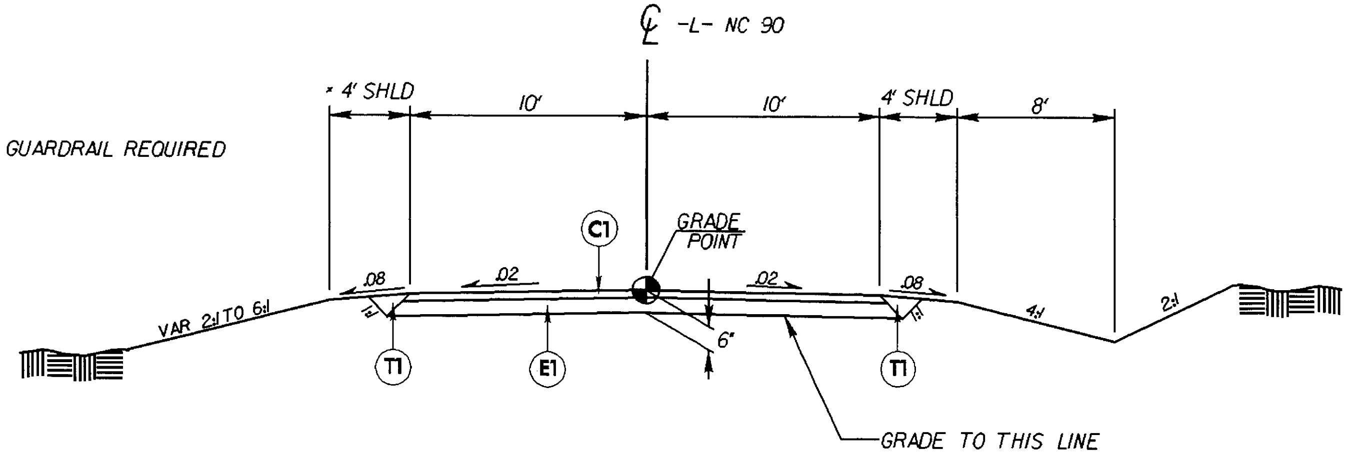
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-3818	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PBSJ 1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
PHONE: (919) 876-6888

* 7' WHERE GUARDRAIL REQUIRED

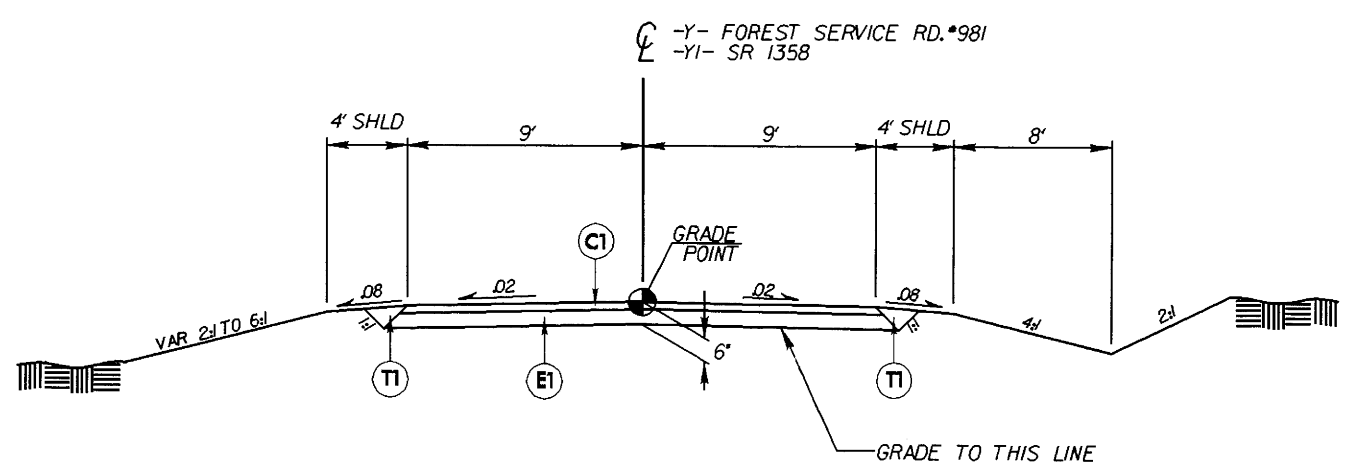


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO.1 AS FOLLOWS:
TRANSITION FROM EXISTING TO T.S.#1
-L- STA.6+54.17 TO STA.7+04.17
-L- STA.7+04.17 TO STA.14+07.00 (BEGIN BRIDGE)
-L- STA.15+32.00 (END BRIDGE) TO STA.18+58.13
TRANSITION FROM T.S.#1 TO EXISTING
-L- STA.18+58.13 TO STA.19+08.13

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5A, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 3½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
T1	EARTH MATERIAL.

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



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO.2 AS FOLLOWS:
TRANSITION FROM EXISTING TO T.S.#2
-Y- STA.10+65.00 TO STA.11+15.00
-Y- STA.11+15.00 TO STA.12+13.24
-Y1- STA.10+10.89 TO STA.11+07.31

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PROJECT REFERENCE NO.	SHEET NO.
B-3818	2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

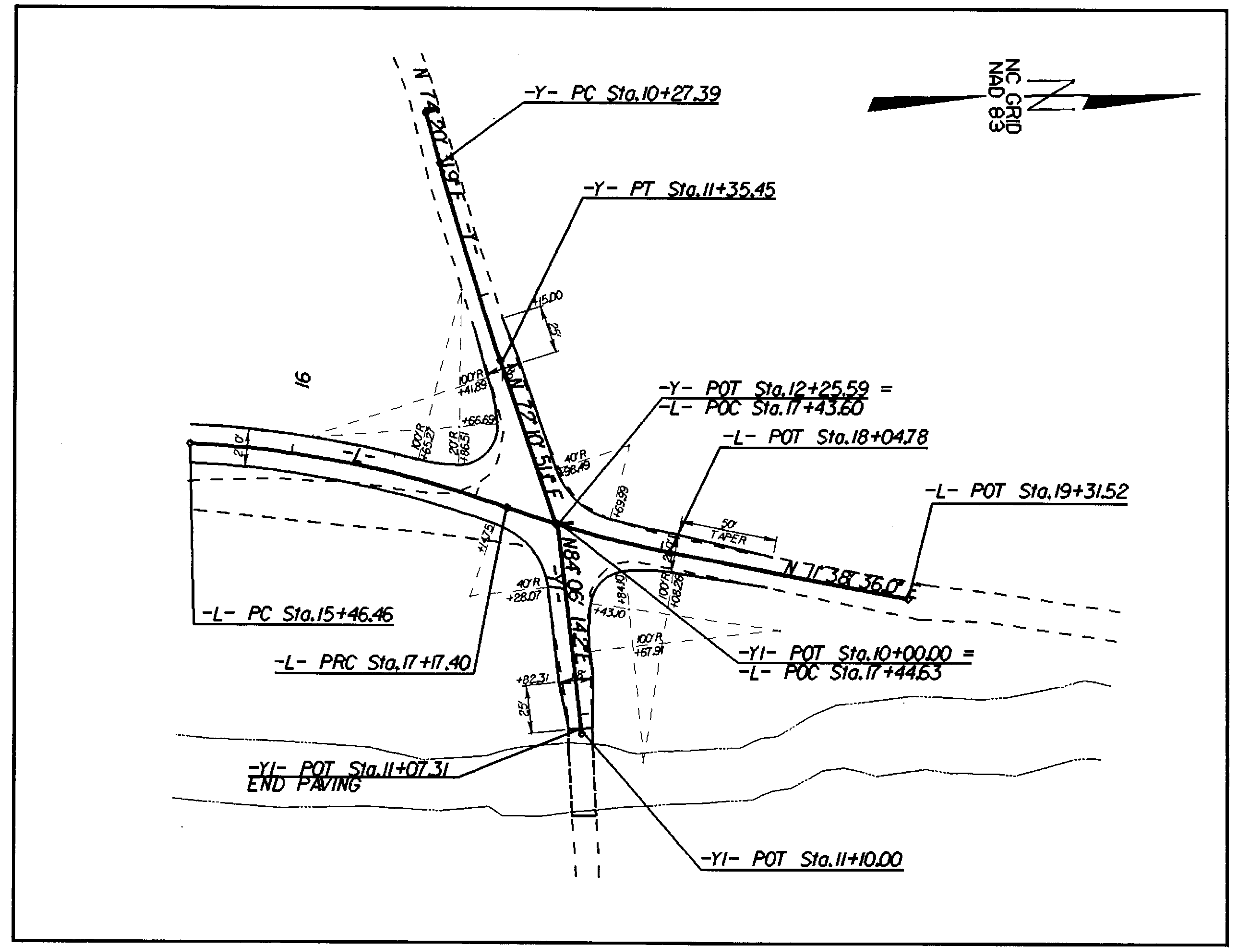
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PBSJ 1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
PHONE: (919) 876-6888

REVISIONS

8/17/99

INTERSECTION DETAIL SHEET



SEE SHEET 4 FOR PLAN VIEW

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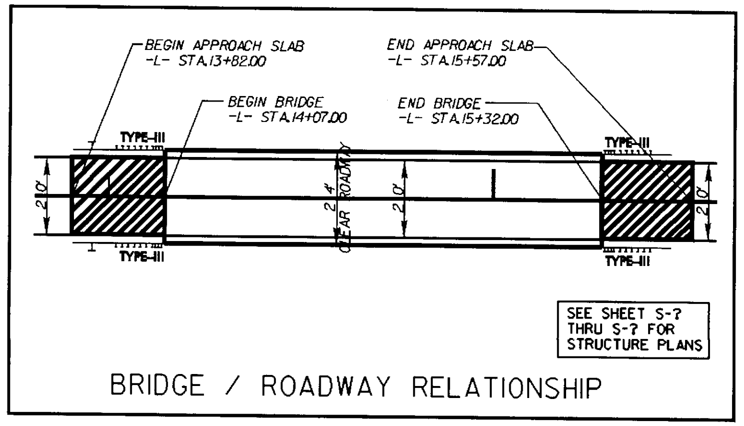
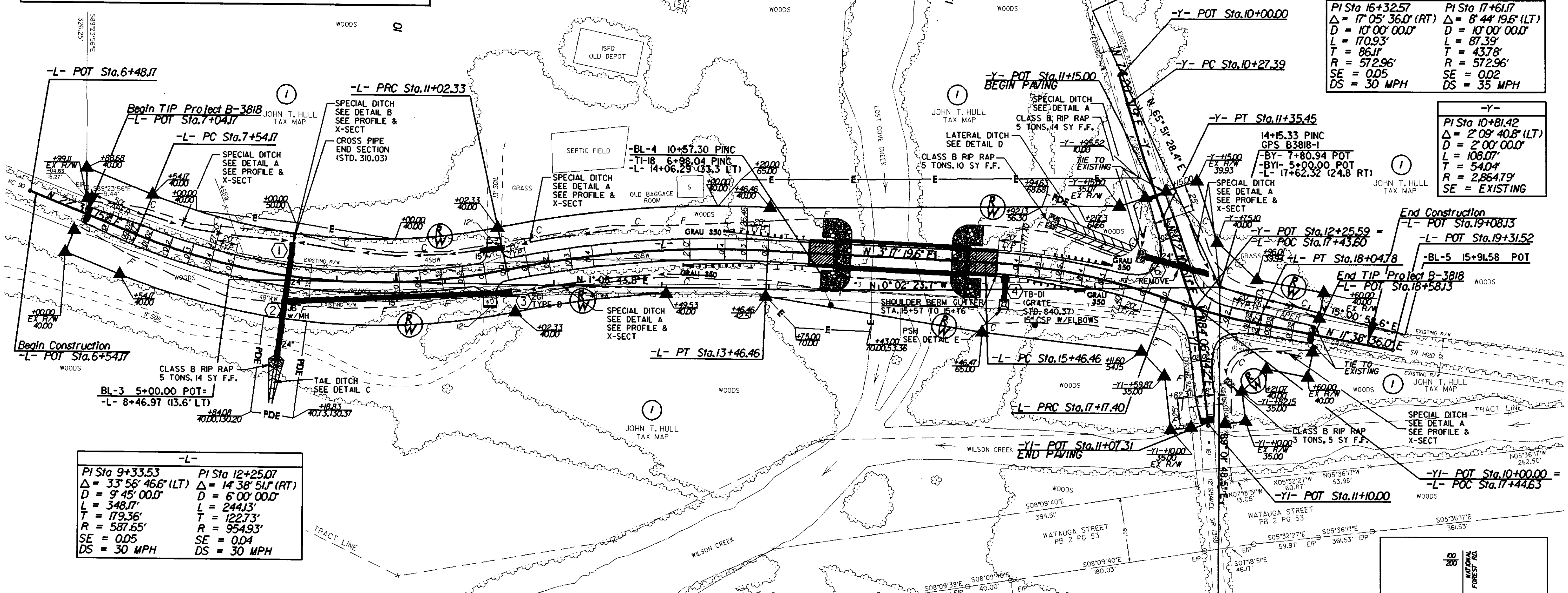
PROJECT REFERENCE NO.	SHEET NO.
B-3818	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PBSJ 1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
PHONE: (919) 876-6888



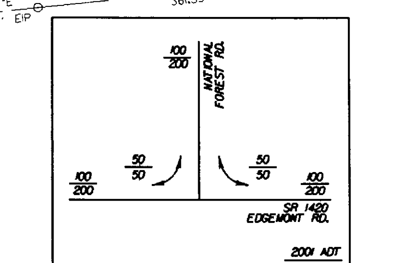
BRIDGE / ROADWAY RELATIONSHIP



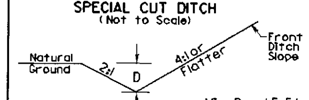
-L-	
PI Sta 16+32.57	PI Sta 17+61.17
△ = 17° 05' 36.0" (RT)	△ = 8° 44' 19.6" (LT)
D = 10° 00' 00.0"	D = 10° 00' 00.0"
L = 170.93'	L = 87.39'
T = 86.11'	T = 43.78'
R = 572.96'	R = 572.96'
SE = 0.05	SE = 0.02
DS = 30 MPH	DS = 35 MPH

-Y-
PI Sta 10+81.42
△ = 2° 09' 40.8" (LT)
D = 2° 00' 00.0"
L = 108.07'
T = 54.04'
R = 2,864.79'
SE = EXISTING

-L-	
PI Sta 9+33.53	PI Sta 12+25.07
△ = 33° 56' 46.6" (LT)	△ = 14° 38' 51.1" (RT)
D = 9° 45' 00.0"	D = 6° 00' 00.0"
L = 348.17'	L = 244.13'
T = 179.36'	T = 122.73'
R = 587.65'	R = 954.93'
SE = 0.05	SE = 0.04
DS = 30 MPH	DS = 30 MPH

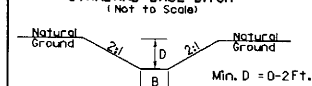


DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



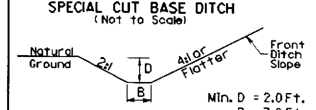
FROM -L- STA. 7+50 TO 8+80 LT
FROM -L STA. 9+20 TO 12+00 LT
FROM -L- STA. 11+00 TO 12+50 RT.
FROM -Y- STA. 11+50 TO 12+00 LT.
FROM -Y- STA. 11+40 TO 11+65 RT.
FROM -L- STA. 17+50 TO 18+50 LT.
FROM -L- STA. 17+85 TO 18+50 RT.
FROM -YI- STA. 10+22 TO 10+50 RT.
FROM -YI- STA. 10+42 TO 10+70 LT.

DETAIL C
STANDARD BASE DITCH
(Not to Scale)



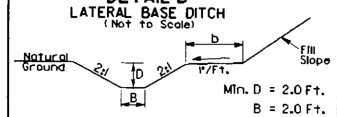
-L- STA. 9+00 RT

DETAIL B
SPECIAL CUT BASE DITCH
(Not to Scale)



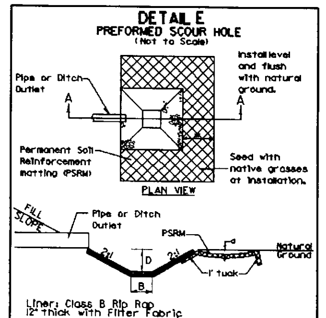
FROM -L- STA. 8+80 TO 9+20 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

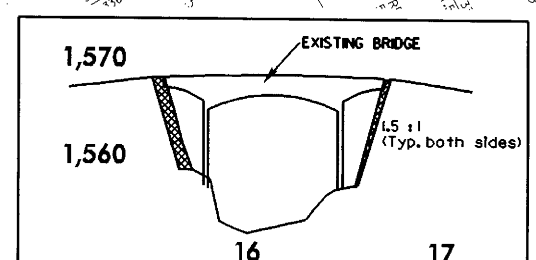


FROM -L- STA. 16+00 TO 16+85 LT

DETAIL E
PREFORMED SCOUR HOLE
(Not to Scale)



STATION	B	D	d	W	STONE	FF
15+60 RT	3.75'	1.25'	0.5'	4.0'	3.5 TONS	8 SY



DENOTES MATERIAL TO BE EXCAVATED (200 CY +/-)

NOTE: GRADING OF EXISTING ROAD MAY BE NECESSARY TO PROPERLY TIE TO PAVEMENT.

SEE SHEET 5 FOR -L-,-Y-,& -YI- PROFILE

REVISIONS
1/30/06 COMBINED PARCELS 002,003,004 INTO PARCEL 001. (ONE PROPERTY OWNER) WAS

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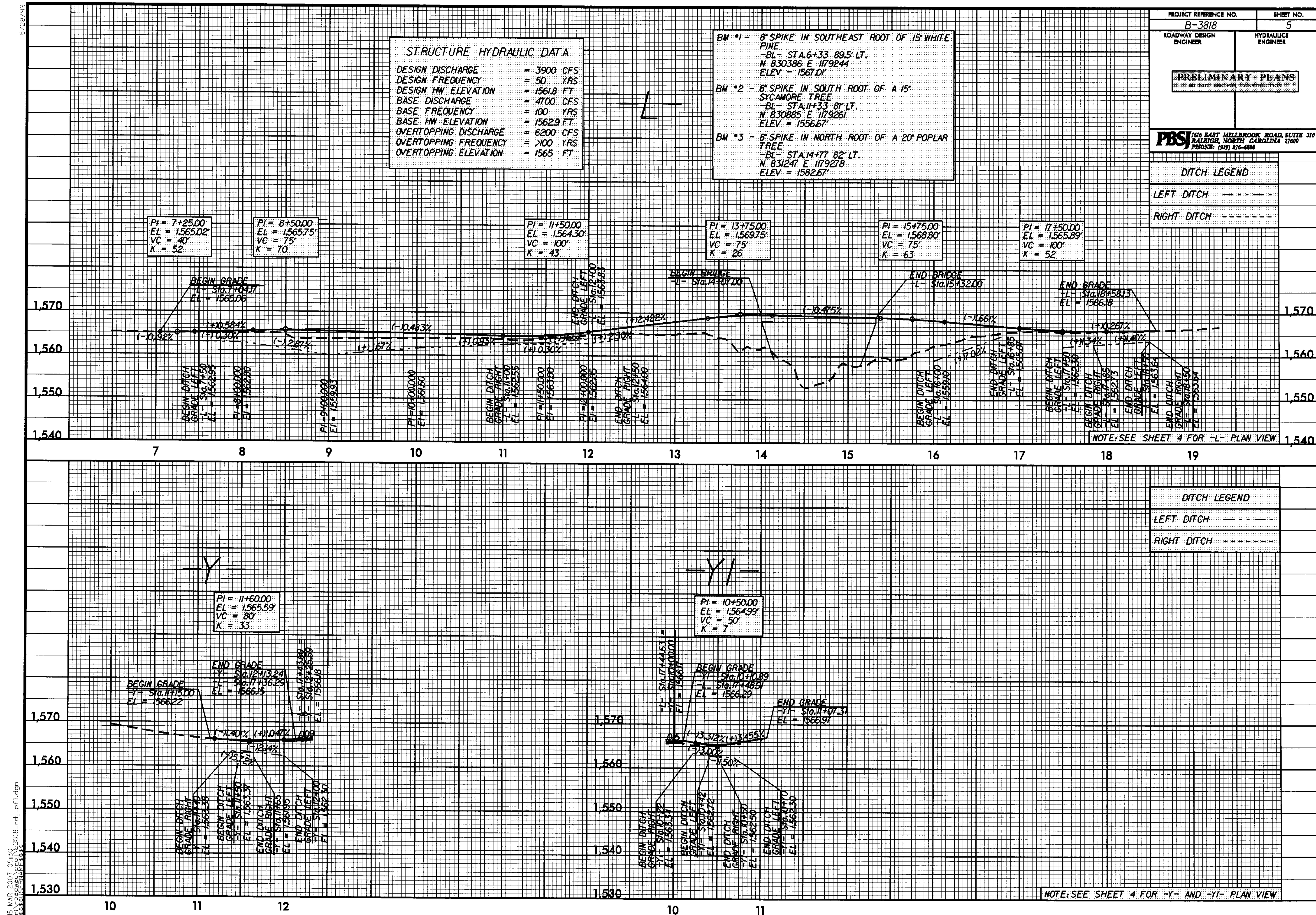
8/17/99


PROJECT REFERENCE NO.
B-3818
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PBSJ 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 PHONE: (919) 876-6888
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 3900 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 1561.8 FT
BASE DISCHARGE = 4700 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 1562.9 FT
OVERTOPPING DISCHARGE = 6200 CFS
OVERTOPPING FREQUENCY = >100 YRS
OVERTOPPING ELEVATION = 1565 FT
-L-
BM #1 - 8" SPIKE IN SOUTHEAST ROOT OF 15" WHITE PINE -BL- STA.6+33 89.5' LT. N 830386 E 1179244 ELEV = 1567.01'
BM #2 - 8" SPIKE IN SOUTH ROOT OF A 15" SYCAMORE TREE -BL- STA.11+33 81' LT. N 830885 E 1179261 ELEV = 1556.67'
BM #3 - 8" SPIKE IN NORTH ROOT OF A 20" POPLAR TREE -BL- STA.14+77 82' LT. N 831247 E 1179278 ELEV = 1582.67'
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
PI = 7+25.00 EL = 1,565.02' VC = 40' K = 52
PI = 8+50.00 EL = 1,565.75' VC = 75' K = 70
PI = 11+50.00 EL = 1,564.30' VC = 100' K = 43
PI = 13+75.00 EL = 1,569.75' VC = 75' K = 26
PI = 15+75.00 EL = 1,568.80' VC = 75' K = 63
PI = 17+50.00 EL = 1,565.89' VC = 100' K = 52
BEGIN GRADE -L- Sta.7+04.17 EL = 1565.06
BEGIN BRIDGE -L- Sta.14+07.00
END BRIDGE -L- Sta.15+32.00
END GRADE -L- Sta.18+58.13 EL = 1566.18
(-)0.92% (+)0.584% (-)0.30% (-)2.87% (-)0.483% (+)1.67% (+)2.422% (-)0.475% (-)1.661% (+)0.267% (+)1.34% (-)1.40% (+)0.30% (+)2.30% (+)1.02%
1,570 1,560 1,550 1,540
7 8 9 10 11 12 13 14 15 16 17 18 19
NOTE: SEE SHEET 4 FOR -L- PLAN VIEW
-Y-
PI = 11+60.00 EL = 1,565.59' VC = 80' K = 33
BEGIN GRADE -Y- Sta.11+15.00 EL = 1566.22
END GRADE -Y- Sta.12+13.24 -L- Sta.17+36.29 EL = 1566.15
(-)1.40% (+)1.047% (-)5.72% (-)2.24%
-Y1-
PI = 10+50.00 EL = 1,564.99' VC = 50' K = 7
BEGIN GRADE -Y1- Sta.10+10.89 -L- Sta.11+48.91 EL = 1566.29
END GRADE -Y1- Sta.11+07.31 EL = 1566.97
(-)3.312% (+)3.455% (-)3.00% (-)1.50%
1,570 1,560 1,550 1,540 1,530
10 11 12
10 11
NOTE: SEE SHEET 4 FOR -Y- AND -Y1- PLAN VIEW
15-MAR-2007 09:30

Rev 3/6/01

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3818	X-1

8+50.00

8+00.00

7+50.00

7+00.00

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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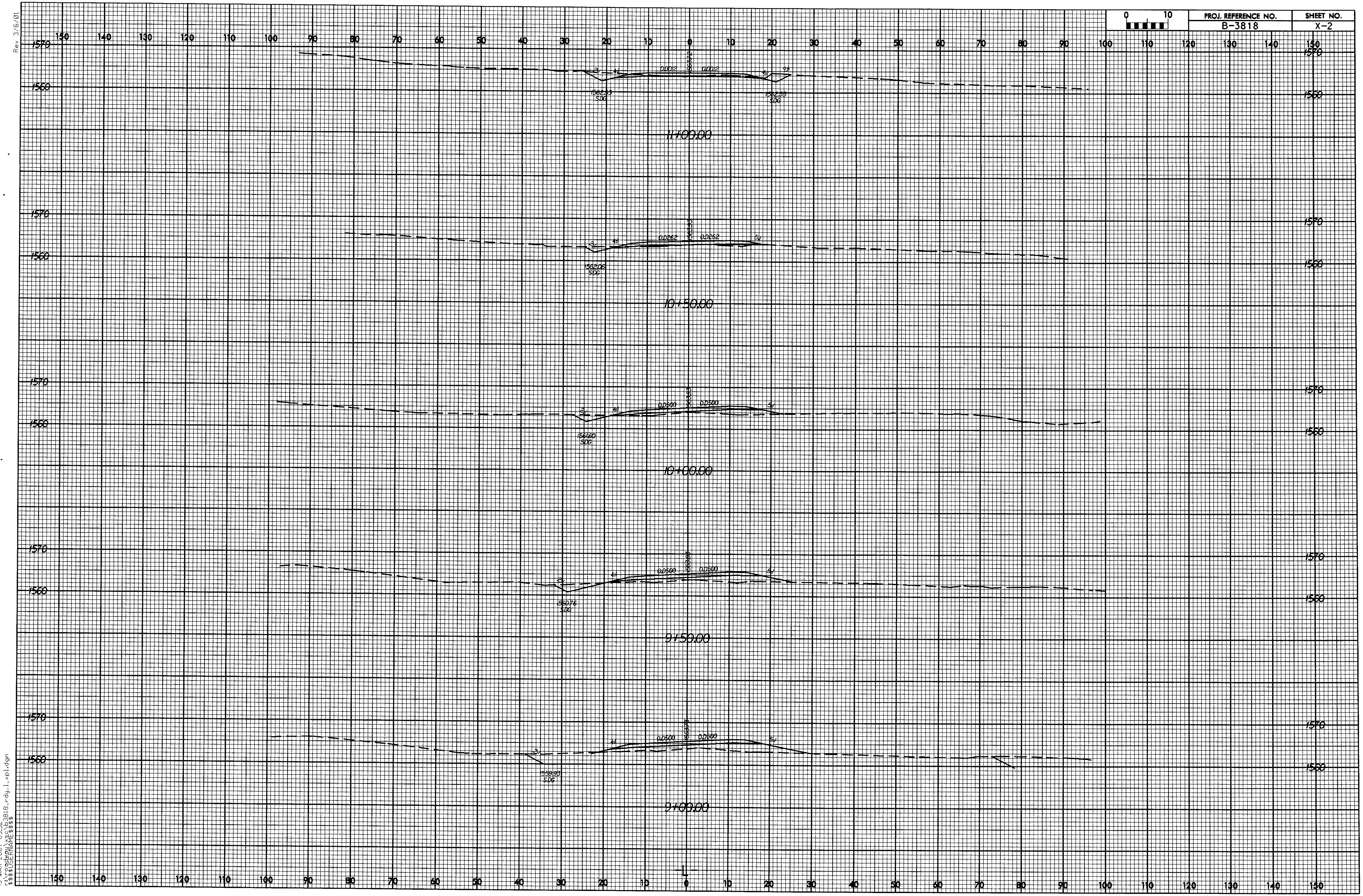
B-3818	X-2

Rev 3/6/01



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Rev 3/6/01

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3818	X-3

13+150.00

13+100.00

12+150.00

12+100.00

11+50.00

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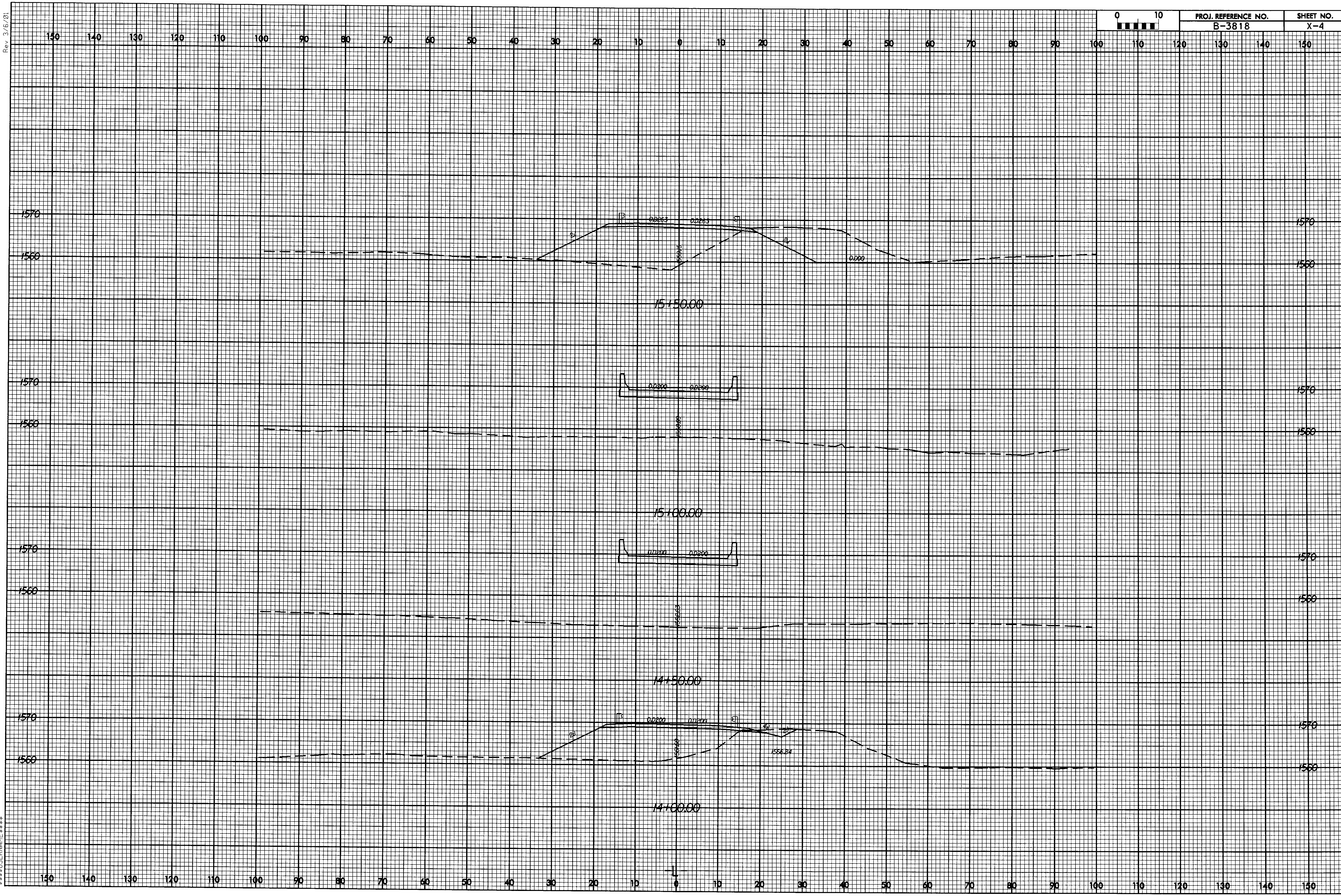
PROJ. REFERENCE NO.	SHEET NO.
B-3818	X-4



Rev 3/6/01

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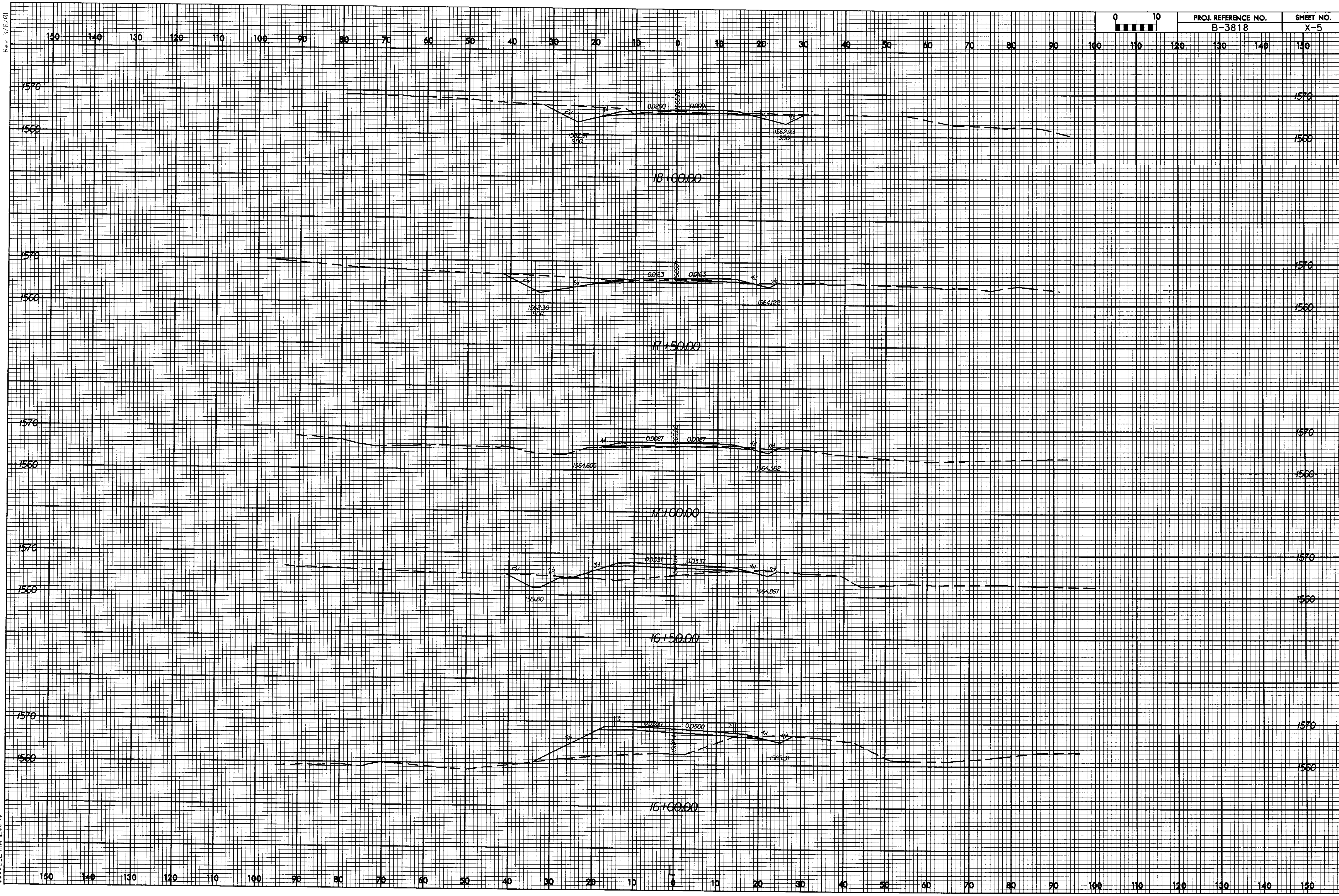
B-3818	X-5



Rev 3/6/01

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Rev 3/6/01

0 10	PROJ. REFERENCE NO.	SHEET NO.
	B-3818	X-6

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

1600
1590
1580
1570
1560

19+00.00

1570
1560

19+50.00

1600
1590
1580
1570
1560

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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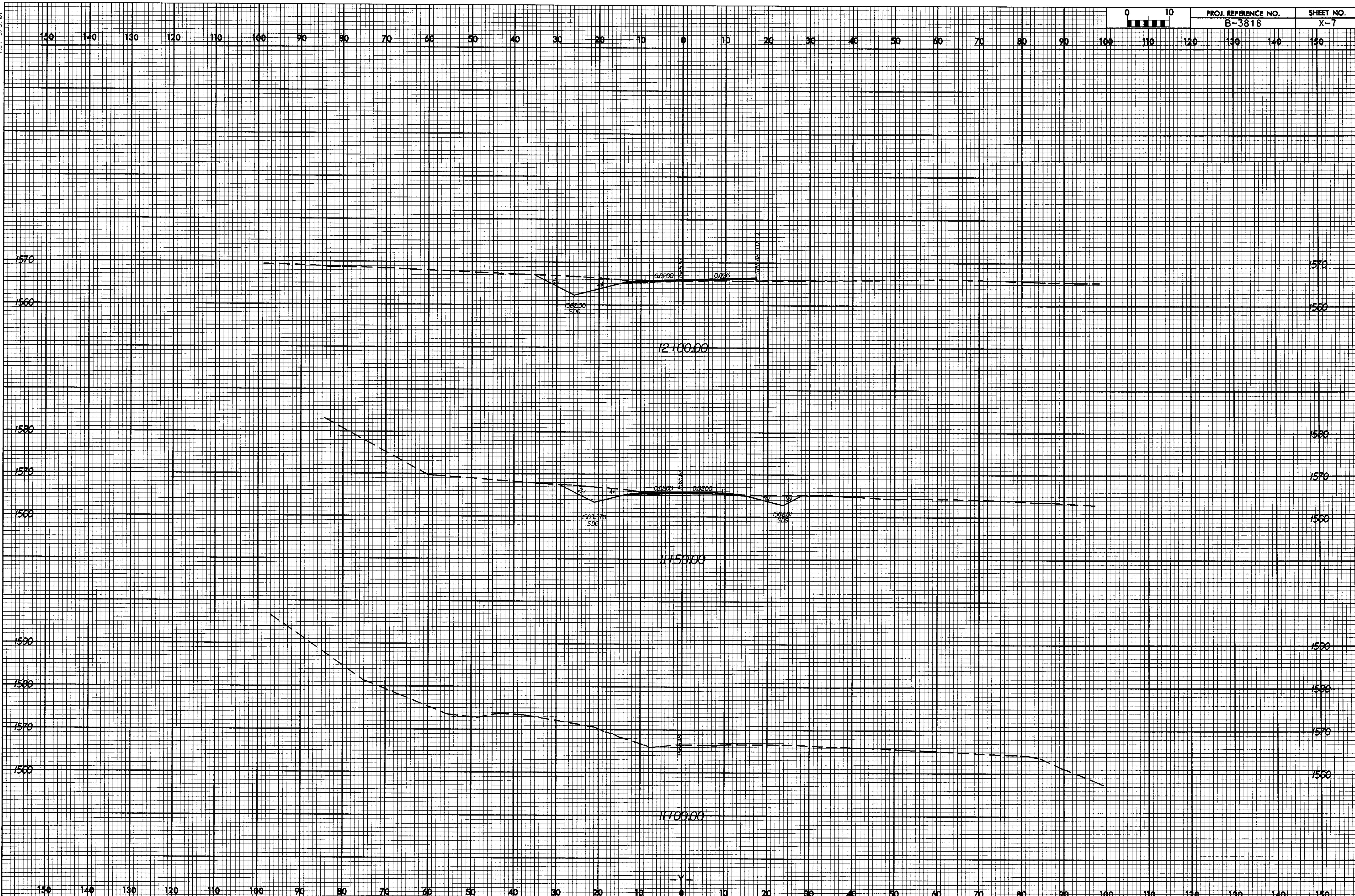
PROJ. REFERENCE NO.	SHEET NO.
B-3818	X-7

Rev 3/6/01



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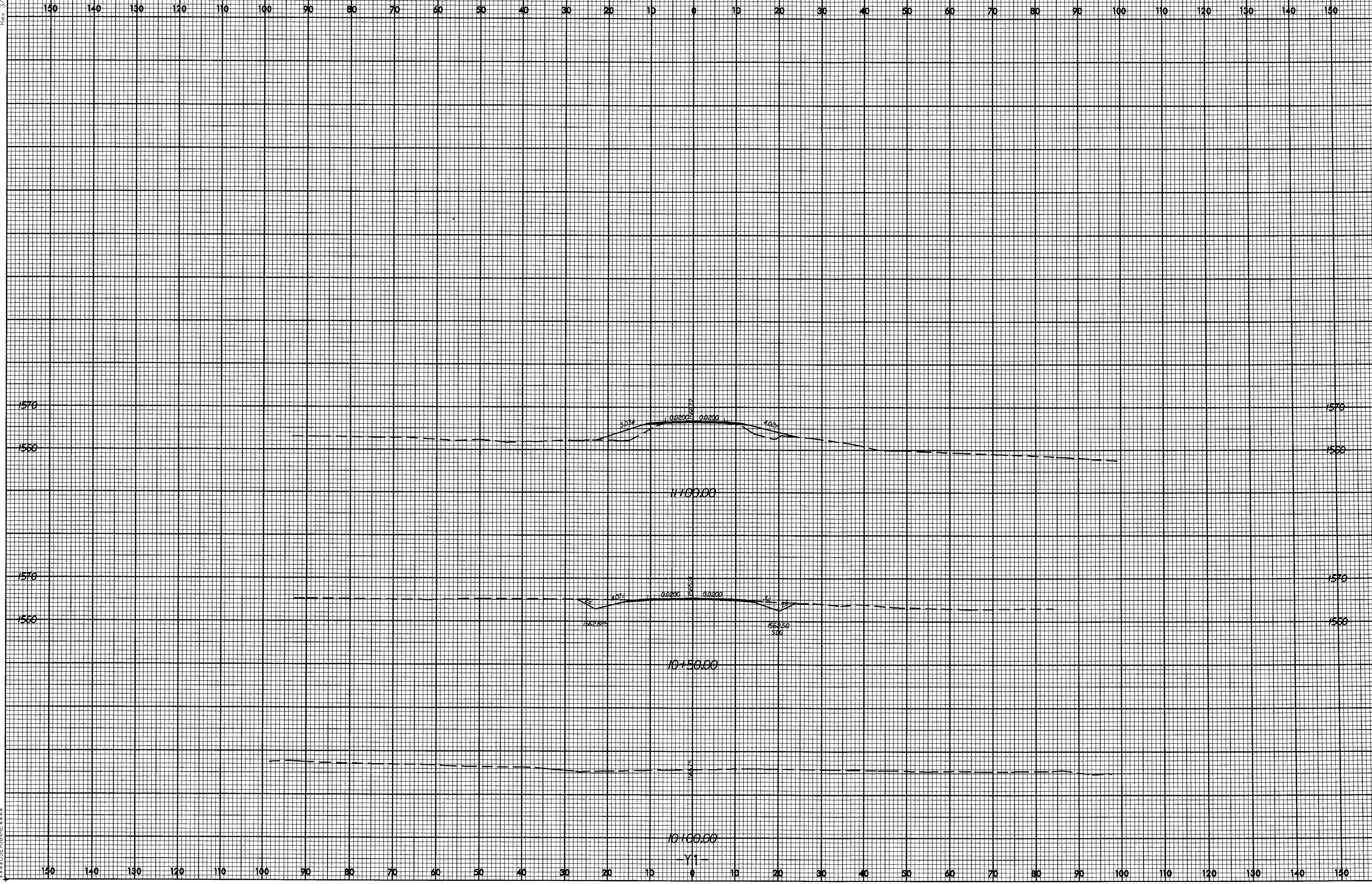

Rev. 3/6/01

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