



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

November 8, 2007

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue- Room 208
Asheville, NC 28801

ATTN: Mr. David Baker
NCDOT Coordinator

SUBJECT: **Nationwide 23 and 33 Permit Application** for the proposed replacement of Bridge No. 73 over Dales Creek on SR 1552. McDowell County, Federal Aid Project No. BRZ-1552(9), Division 13, T.I.P. No. B-4197, Debit \$570 from WBS Element 33544.1.1.

Dear Mr. Baker:

Please find enclosed the Preconstruction Notification, Ecosystem Enhancement Program (EEP) acceptance letter, permit drawings, and half-size design plans for the above-mentioned project. A Categorical Exclusion (CE) and a Right-of-Way Consultation were completed for this project in April 2005 and August 2007 respectively, and distributed shortly thereafter. Additional copies of the CE and Consultation are available upon request. The North Carolina Department of Transportation (NCDOT) plans to replace the existing 65-foot long bridge, No. 73 with a new 95-foot long, 36-foot wide structure on the existing alignment. Traffic will use an onsite detour during construction, as no reasonable offsite detour exists. Project impacts total 167 feet of permanent fill in an Unnamed Tributary (UT) to Dales Creek and 0.02 acre of temporary fill in Dales Creek.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Catawba River Basin (HUC 03050101) and will impact Dales Creek and an UT to Dales Creek. Dales Creek (Index # 11-27) and the UT are assigned a best usage classification of C, by the N.C. Division of Water Quality (DWQ). Dales Creek is not designated as a North Carolina Natural or Scenic River, or as a National Wild and Scenic River, nor is it listed on the 2006 Final 303(d) list. The project does not drain to a 303(d) stream within one mile of the project limits. No designated Outstanding Resource Waters (ORW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 1.0 mile of the project. Dales Creek is not

classified as a trout river by the NC Wildlife Resources Commission (WRC) according to the letter in the CE dated July 12, 2002. No wetlands occur on the project.

Permanent Impacts: Permanent stream impacts will occur, and total 167 feet. Impacts occur from the relocation of and the placement of a pipe in the UT to Dales Creek to the north of SR 1552 due to the construction of the temporary onsite detour structure. A portion of the UT to Dales Creek will remain in the culvert after the removal of the temporary detour structure since the channel slope would be very steep and would likely erode.

Temporary Impacts: Temporary impacts of 0.02 acre of fill are expected from the placement of three 84-inch corrugated metal pipes in Dales Creek for the temporary detour structure.

Utility Impacts: No impacts will occur due to utility relocations. Duke Energy (power) will install a temporary pole line on the left side of the project, inside the proposed right of way, after the contractor has built the detour. The temporary poles will be set in uplands, approximately at Stations 22+70, 23+80 and 24+80. Verizon (telephone) will also attach, temporarily, to these poles and abandon its underground facilities inside the project limits.

After the highway construction is complete, Duke Energy plans to remove the temporary facilities and install permanent facilities at the same location they are presently occupying. Verizon will install its permanent facilities on the same pole line.

There are no water, sewer or gas facilities on this project.

Bridge Demolition: Bridge No. 73 consists of timber decks on I-beams. The substructure is composed of reinforced concrete abutments and pier with timber crutch bents. Neither the superstructure nor the substructure will create any temporary fill in the creek. Best Management Practices for Bridge Demolition and Removal will be implemented.

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. The U.S. Fish and Wildlife Service (FWS) lists 4 federally protected species in McDowell County (Table 1).

The Carolina northern flying squirrel has been added to the list of federally protected species known to occur within McDowell County since the completion of the CE document. No Habitat is available in the project area for the Carolina northern flying squirrel.

In the CE, the small whorled pogonia was given a biological conclusion of “May affect, not likely to adversely affect,” however the biological conclusion had been changed to “No Effect.” The biological conclusion has been changed because no specimens were found during the last surveys on June 11, 2003 and September 17, 2007 and a search of the NHP database on June 1, 2007 found no occurrences within 1 mile of the project.

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

Table 1: Federally Protected Species of McDowell County

Scientific Name	Common Name	Federal Status	Biological Conclusion	Habitat Present
<i>Haliaeetus leucocephalus</i>	Bald eagle	Delisted	NA	No
<i>Clemmys muhlenbergii</i>	Southern bog turtle	T (S/A)	Not Required	No
<i>Glaucomys sabrinus coloratus</i>	Carolina northern flying squirrel	E	No Effect	No
<i>Hudsonia montana</i>	Mountain golden heather	T	No Effect	No
<i>Isotria medeoloides</i>	Small whorled pogonia	T	No Effect	Yes

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:

- The new bridge will completely span the channel.
- The new bridge will be longer than the current bridge.
- Best Management Practices for Bridge Demolition and Removal will be followed.
- Selection of Alternative C, as detailed in the CE, because it has the least amount of impacts to Dales Creek.
- The temporary onsite detour will be one lane and signalized in order to reduce the footprint.

MITIGATION

Mitigation for 167 feet of impacts to Dales Creek will be provided by the EEP.

PROJECT SCHEDULE

The project is scheduled to let March 18, 2008 and has a review date of February 5, 2008.

REGULATORY APPROVALS

Section 404 Permit: This project has been processed by the Federal Highway Administration as a “Categorical Exclusion.” NCDOT is hereby applying for a Clean Water Act Section 404 Nationwide Permit. It is anticipated that the construction will be authorized under Section-404 Nationwide Permits 23 and 33.

Section 401 Permit: We anticipate 401 General Certification number 3701 and 3688 will apply to this project. All general conditions of the Water Quality Certifications will be adhered to however permanent stream impacts total 167 feet, therefore requiring a major certification and written concurrence. In accordance with 15A NCAC 2H, Section .0500(a), we are providing five copies of this application to the DWQ for their records and \$570 to act as payment for processing the permit application (See subject line).

This project is located in a trout county, therefore comments from the WRC will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests WRC Review. NCDOT requests that WRC forward their comments to the Corps of Engineers and the 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,



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

cc: w/attachment

Mr. John Hennessy, NCDWQ (5 Copies)

Ms. Marla Chambers, NCWRC

Ms. Marella Buncick, USFWS

Mr. Victor Barbour, P.E. Project Services

Mr. JJ Swain, P.E. Division 13 Engineer

Dr. David Chang, P.E., Hydraulics

Mr. Mark Staley, Roadside Environmental

Mr. Greg Perfetti, P.E., Structure Design

Mr. Roger Bryan, Div 13 DEO

w/o attachment

Mr. Art McMillan, P.E., Highway Design

Mr. Majed Alghandour, P.E., Prog. and TIP

Mr. Vince Rhea, PDEA

Mr. Todd Jones, NCDOT External Audit Branch

Mr. Jay Bennett, P.E., Roadway Design

Mr. Scott McLendon, USACE, Wilmington

Ms. Beth Harmon, EEP

Office Use Only:

Form Version March 05

USACE Action ID No. _____ DWQ No. _____

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

I. Processing

1. Check all of the approval(s) requested for this project:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Section 404 Permit | <input type="checkbox"/> Riparian or Watershed Buffer Rules |
| <input type="checkbox"/> Section 10 Permit | <input type="checkbox"/> Isolated Wetland Permit from DWQ |
| <input type="checkbox"/> 401 Water Quality Certification | <input type="checkbox"/> Express 401 Water Quality Certification |

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

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

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here:

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

II. Applicant Information

1. Owner/Applicant Information

Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
Mailing Address: 1598 Mail Service Center
Raleigh, NC 27699

Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794

E-mail Address: gthorpe@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)

Name: _____

Company Affiliation: _____

Mailing Address: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

III. Project Information

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

1. Name of project: Replacement of Bridge No. 73 over Dales Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4197

3. Property Identification Number (Tax PIN): N/A

4. Location
County: McDowell Nearest Town: Nebo
Subdivision name (include phase/lot number): N/A
Directions to site (include road numbers/names, landmarks, etc.): The site is located at the crossing of SR 1552 over Dales Creek

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
Decimal Degrees (6 digits minimum): 35.7609°N, 81.9507°W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Dales Creek

8. River Basin: Catawba River
(Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at <http://h2o.enr.state.nc.us/admin/maps/>.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Forestland

10. Describe the overall project in detail, including the type of equipment to be used: _____
Standard DOT construction equipment.

11. Explain the purpose of the proposed work: The purpose is to replace the old bridge that is functionally obsolete and structurally deficient.

IV. Prior Project History

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

V. Future Project Plans

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

No

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: The project impacts are as follows, 167 feet of permanent stream impacts, 0.02 acre of temporary stream impacts

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
Total Wetland Impact (acres)					

3. List the total acreage (estimated) of all existing wetlands on the property: 0

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
Site 1	Dales Creek	Temporary	Perennial	15		0.02
Site 1	UT to Dales Creek	Permanent	Perennial	5	167	
Total Stream Impact (by length and acreage)					167	0.02

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

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

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.02
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.02
Total Stream Impact (linear feet):	167

7. Isolated Waters

Do any isolated waters exist on the property? Yes No

Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

8. Pond Creation

If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.

Pond to be created in (check all that apply): uplands stream wetlands

Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): _____

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

Current land use in the vicinity of the pond: _____

Size of watershed draining to pond: _____ Expected pond surface area: _____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. Best Management Practices for the Protection of Surface Waters and BMP's for Bridge Demolition and Removal,

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include,

but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

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

Mitigation will be provided by EEP.

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at <http://h2o.enr.state.nc.us/wrp/index.htm>. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

Amount of stream mitigation requested (linear feet): 167

Amount of buffer mitigation requested (square feet): _____

Amount of Riparian wetland mitigation requested (acres): _____

Amount of Non-riparian wetland mitigation requested (acres): _____

Amount of Coastal wetland mitigation requested (acres): _____

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes No
2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)?
Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.
Yes No

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes No

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

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

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify _____)? Yes No
2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

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

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. _____

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Approximately the same as current conditions, no water will directly discharge into Dales Creek.

XII. Sewage Disposal (required by DWQ)

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

N/A

XIII. Violations (required by DWQ)

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

Yes No

Is this an after-the-fact permit application? Yes No

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes No

If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at <http://h2o.enr.state.nc.us/ncwetlands>. If no, please provide a short narrative description: _____

Replace an existing structure

XV. Other Circumstances (Optional):

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

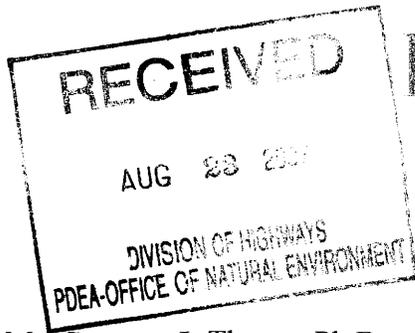
E. L. Luer

11.7.07

Applicant/Agent's Signature

Date

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



August 21, 2007

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4197, Replace Bridge Number 73 on SR 1552 (Lake James Road) over Dales Creek, McDowell County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on August 1, 2007, the impacts are located in CU 03050101 of the Catawba River Basin in the Northern Mountains (NM) Eco-Region, and are as follows:

Cool Stream: 167 feet

During the review of this request, it was noted that this project did not include any wetland or stream impacts in the 2007 Impact Projection Database; however, EEP will provide the requested stream mitigation. Depending on the availability and projected need of stream mitigation in this cataloging unit, additional stream mitigation may be required that was not included in the biennial budget submitted to NCDOT on April 2, 2007 (revised April 16, 2007).

EEP commits to implementing sufficient compensatory stream mitigation to offset the impacts associated with this project by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, fully executed on March 8, 2007. If the above referenced impact

Restoring... Enhancing... Protecting Our State



amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

A handwritten signature in black ink that reads "James B. Stanfill for". The signature is written in a cursive style.

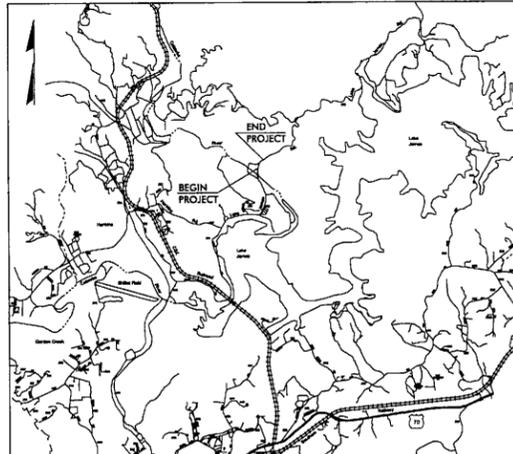
William D. Gilmore, P.E.
EEP Director

cc: Mr. David Baker, USACE – Asheville
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-4197

09/08/09

CONTRACT: TIP PROJECT: B-4197

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



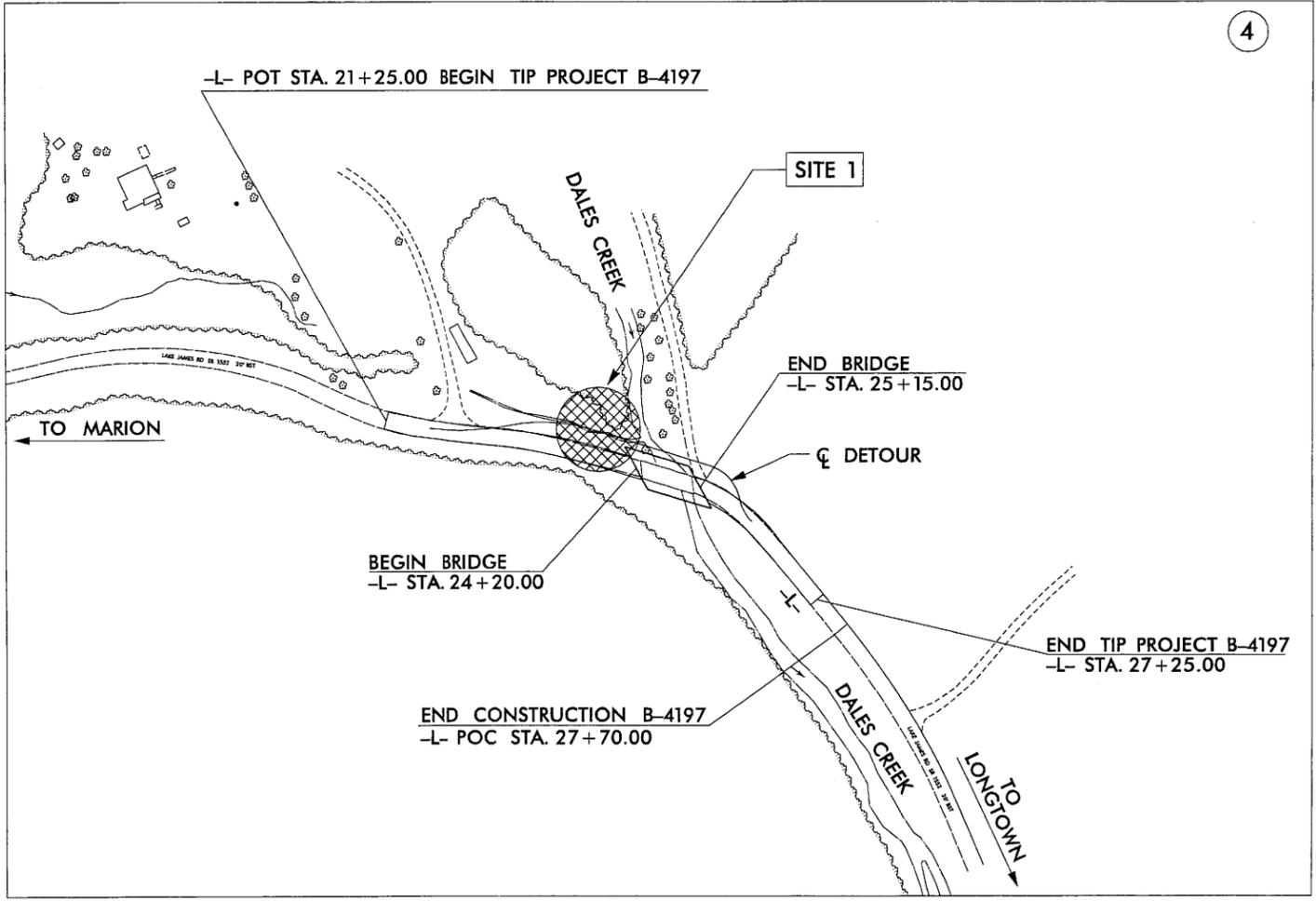
VICINITY MAP

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS **McDOWELL COUNTY**

LOCATION: BRIDGE NO. 73 OVER DALES CREEK ON SR 1552 (LAKE JAMES RD.)
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4197	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33544.1.1	BRZ-1552(9)	P.E.	
33544.2.2	BRZ-1552(9)	R/W & UTIL.	
33544.3.1	BRZ-1552(9)	CONST.	

NAD 83 - NC GRID



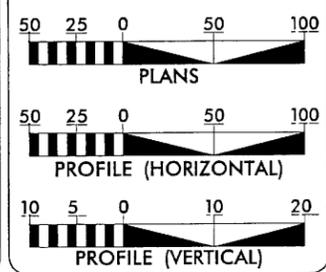
4

Permit Drawing
Sheet 1 of 1

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27603
TEL: 919-885-2100 FAX: 919-885-1228

** DESIGN EXCEPTION FOR DESIGN SPEED

GRAPHIC SCALES



DESIGN DATA

ADT 2008 = 258
ADT 2028 = 425
DHV = 10%
D = 60%
T = 3% *
** V = 60 MPH
* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4197 = 0.096 mi
LENGTH STRUCTURE TIP PROJECT B-4197 = 0.018 mi
TOTAL LENGTH TIP PROJECT B-4197 = 0.114 mi

Plans prepared in the office of:

RAMEY KEMP ASSOCIATES, INC.

for the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 20, 2006
LETTING DATE: MARCH 18, 2008

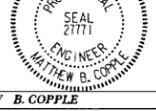
N.C.D.O.T. CONTACT:
CATHY S. HOUSER, PE
PROJECT ENGINEER
ROADWAY DESIGN

HYDRAULICS ENGINEER



W. HENRY WELLS, JR. P.E.

ROADWAY DESIGN ENGINEER



MATTHEW B. COPPLE P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER
DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

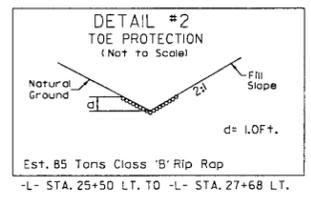
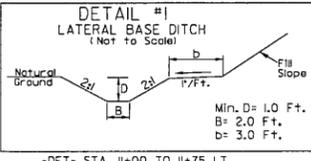
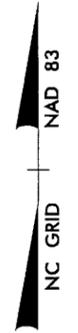
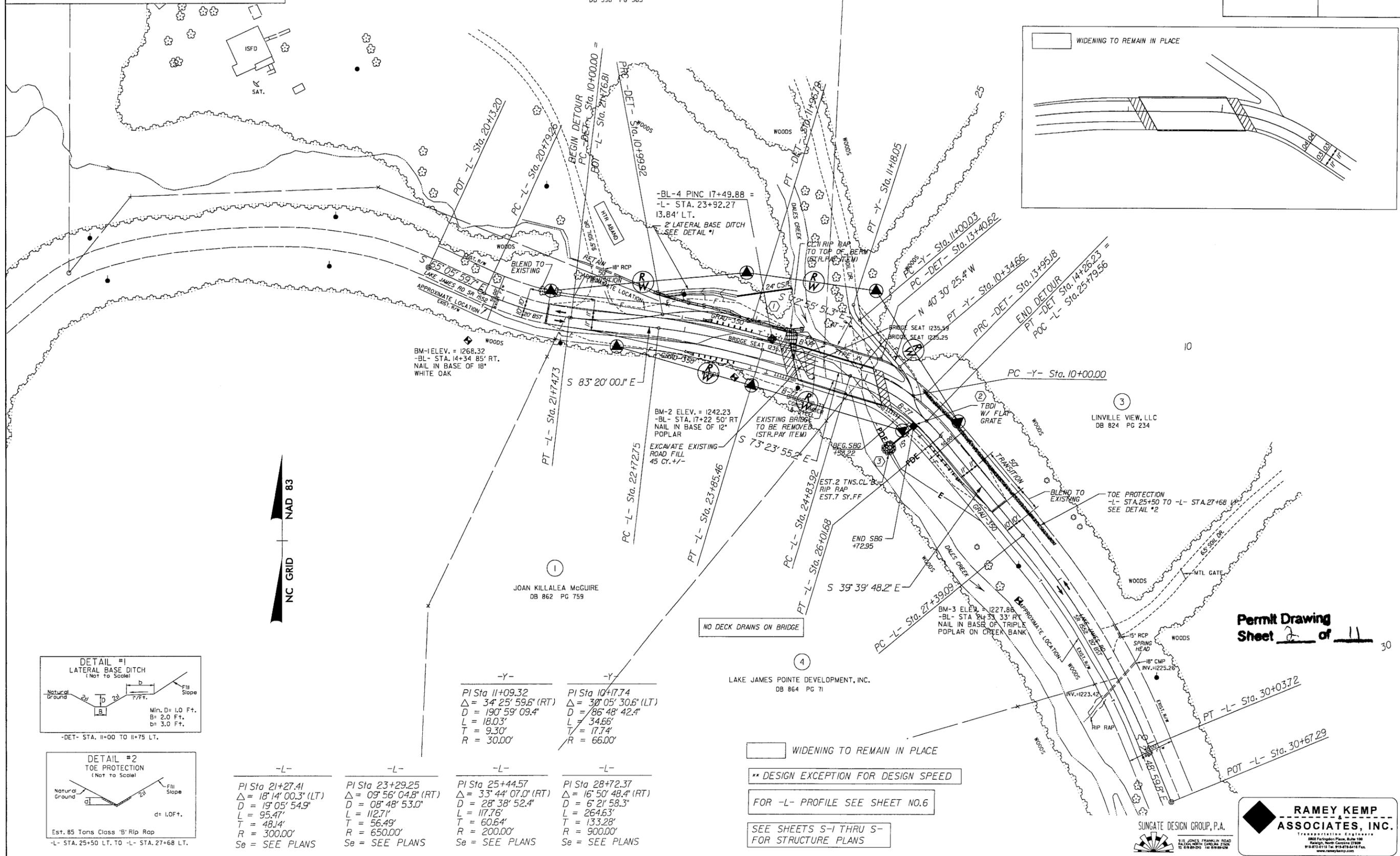
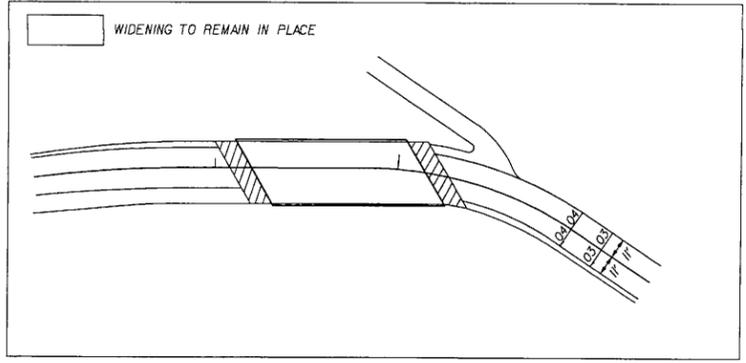
APPROVED DIVISION ADMINISTRATOR DATE

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4197	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SHADING DENOTES PERMANENT SURFACE WATER IMPACTS

2
MARY TEAGUE ADAMS
STEVEN RAY ADAMS
DB 391 PG 583
DB 762 PG 169
DB 598 PG 365



-Y-	-Y-
PI Sta 11+09.32 Δ = 34' 25" 59.6" (RT) D = 190' 59" 09.4" L = 18.03' T = 9.30' R = 30.00'	PI Sta 10+17.74 Δ = 30' 05" 30.6" (LT) D = 86' 48" 42.4" L = 34.66' T = 17.74' R = 66.00'

-L-	-L-	-L-	-L-
PI Sta 21+27.41 Δ = 18' 14" 00.3" (LT) D = 19' 05" 54.9" L = 95.47' T = 48.14' R = 300.00' Se = SEE PLANS	PI Sta 23+29.25 Δ = 09' 56" 04.8" (RT) D = 08' 48" 53.0" L = 112.71' T = 56.49' R = 650.00' Se = SEE PLANS	PI Sta 25+44.57 Δ = 33' 44" 07.0" (RT) D = 28' 38" 52.4" L = 117.76' T = 60.64' R = 200.00' Se = SEE PLANS	PI Sta 28+72.37 Δ = 16' 50" 48.4" (RT) D = 6' 21" 58.3" L = 264.63' T = 133.28' R = 900.00' Se = SEE PLANS

NO DECK DRAINS ON BRIDGE

- WIDENING TO REMAIN IN PLACE
- DESIGN EXCEPTION FOR DESIGN SPEED
- FOR -L- PROFILE SEE SHEET NO.6
- SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

Permit Drawing Sheet 2 of 11

SUNGATE DESIGN GROUP, P.A.

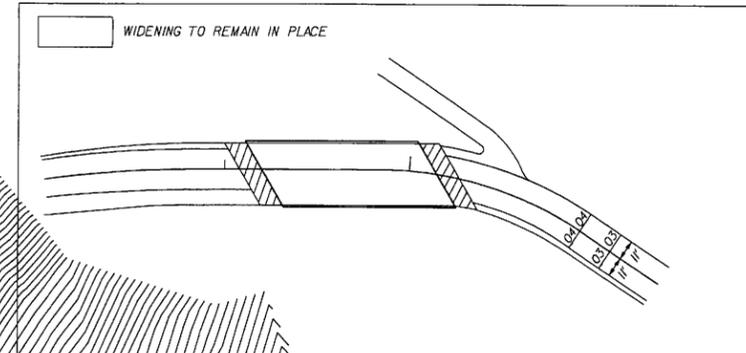
RAMEY KEMP ASSOCIATES, INC.
Transportation Engineers
8908 Partington Place, Suite 100
Raleigh, North Carolina 27609
919-871-8110 Tel. 919-879-6416 Fax
www.rameykemp.com

REVISIONS

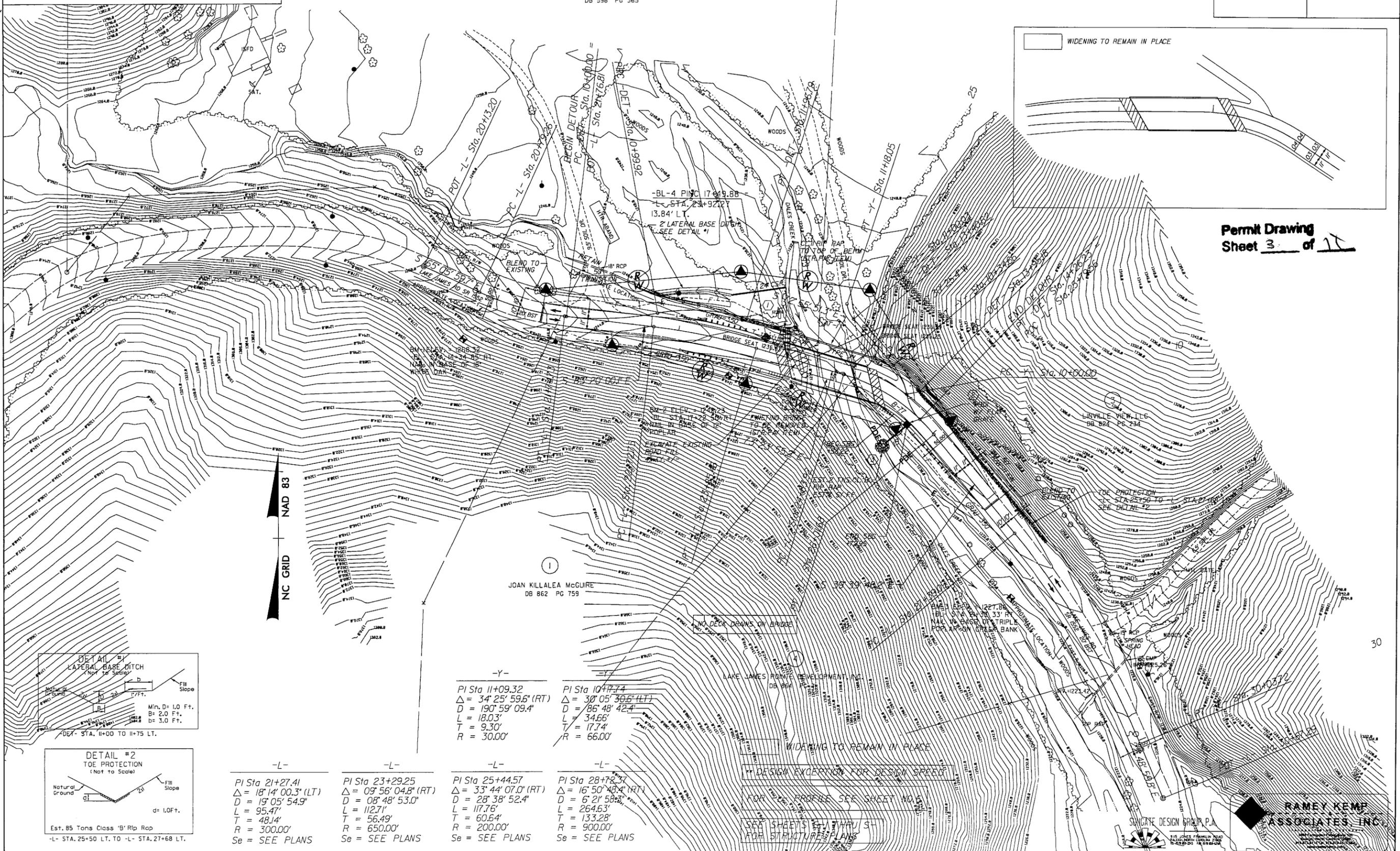
PROJECT REFERENCE NO. B-4197	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DENOTES PERMANENT SURFACE WATER IMPACTS

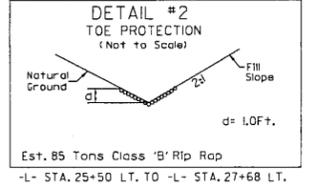
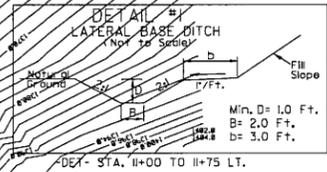
2
MARY TEAGUE ADAMS
STEVEN RAY ADAMS
DB 391 PG 583
DB 762 PG 169
DB 598 PG 365



Permit Drawing
Sheet 3 of 11



NAD 83
NC GRID



-L-	-L-	-L-	-L-
PI Sta 21+27.41 Δ = 18' 14" 00.3" (LT) D = 19' 05' 54.9" L = 95.47' T = 48.14' R = 300.00' Se = SEE PLANS	PI Sta 23+29.25 Δ = 09' 56' 04.8" (RT) D = 08' 48' 53.0" L = 112.71' T = 56.49' R = 650.00' Se = SEE PLANS	PI Sta 25+44.57 Δ = 33' 44' 07.0" (RT) D = 28' 38' 52.4" L = 117.76' T = 60.64' R = 200.00' Se = SEE PLANS	PI Sta 28+72.31 Δ = 16' 50' 48.4" (RT) D = 6' 21' 58.3" L = 264.63' T = 133.28' R = 900.00' Se = SEE PLANS

-Y-	-Y-
PI Sta 11+09.32 Δ = 34' 25' 59.6" (RT) D = 190' 59' 09.4" L = 18.03' T = 9.30' R = 30.00'	PI Sta 10+17.74 Δ = 30' 05' 30.6" (LT) D = 86' 48' 42.4" L = 34.66' T = 17.74' R = 66.00'

WIDENING TO REMAIN IN PLACE

DESIGN EXCEPTION FOR DESIGN SPEED

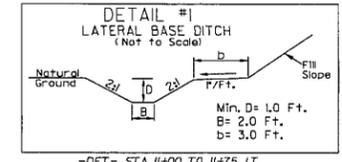
FOR THE PROJECT SEE SHEET NO. 1

SEE SHEETS 1-11 FOR STRUCTURE PLANS

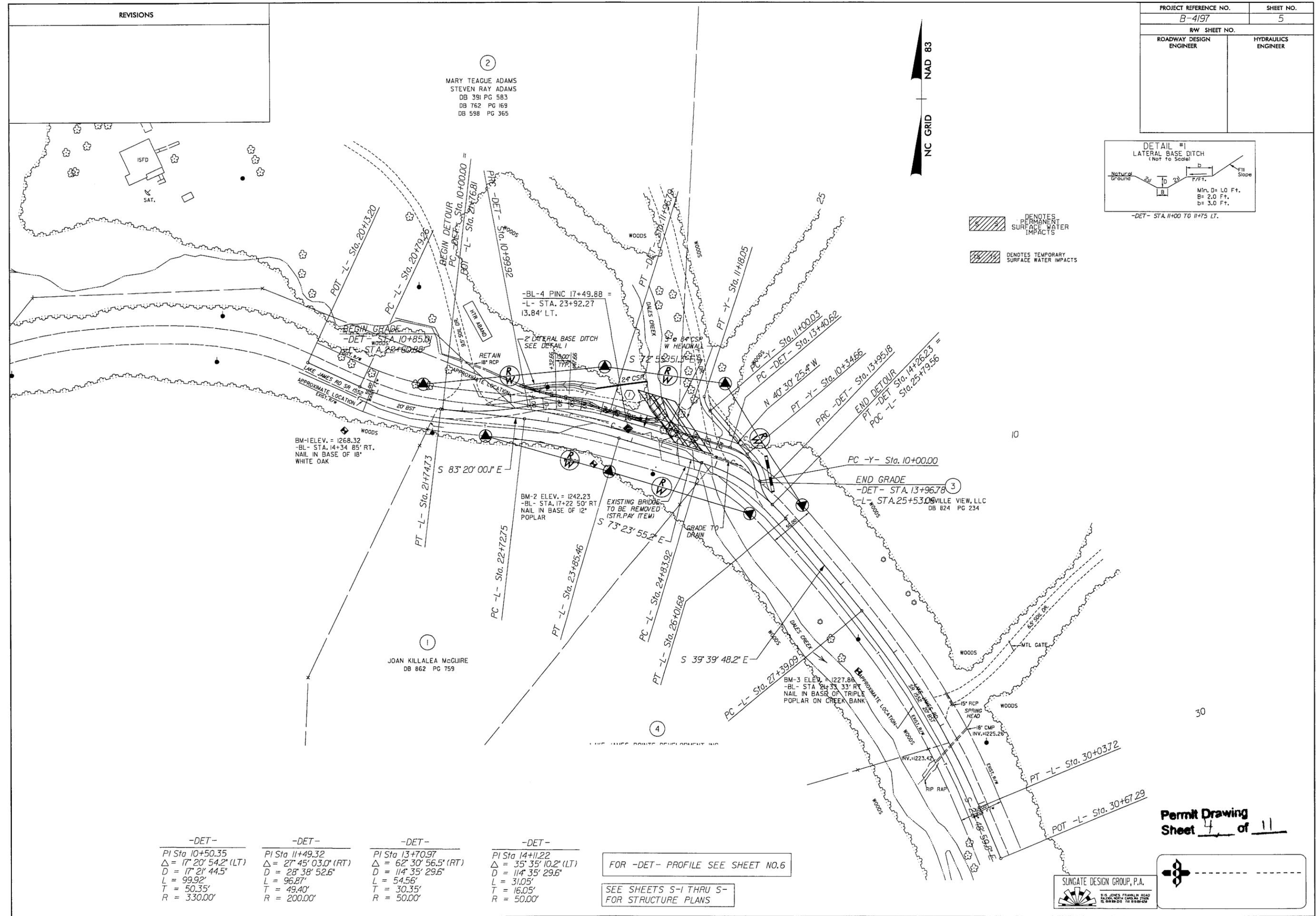
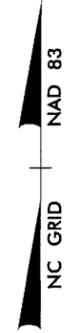
SUNGATE DESIGN GROUP P.A.
RAMEY KEMP ASSOCIATES INC.

REVISIONS

PROJECT REFERENCE NO. B-4197	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



DENOTES PERMANENT SURFACE WATER IMPACTS
 DENOTES TEMPORARY SURFACE WATER IMPACTS



2
 MARY TEAGUE ADAMS
 STEVEN RAY ADAMS
 DB 391 PG 583
 DB 762 PG 169
 DB 598 PG 365

BM-1 ELEV. = 1268.32
 -BL- STA. 14+34.85' RT.
 NAIL IN BASE OF 18'
 WHITE OAK

BM-2 ELEV. = 1242.23
 -BL- STA. 17+22.50' RT.
 NAIL IN BASE OF 12'
 POPLAR

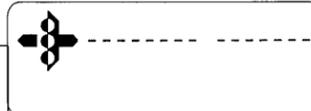
BM-3 ELEV. = 1227.88
 -BL- STA. 24+33.33' RY
 NAIL IN BASE OF TRIPLE
 POPLAR ON CREEK BANK

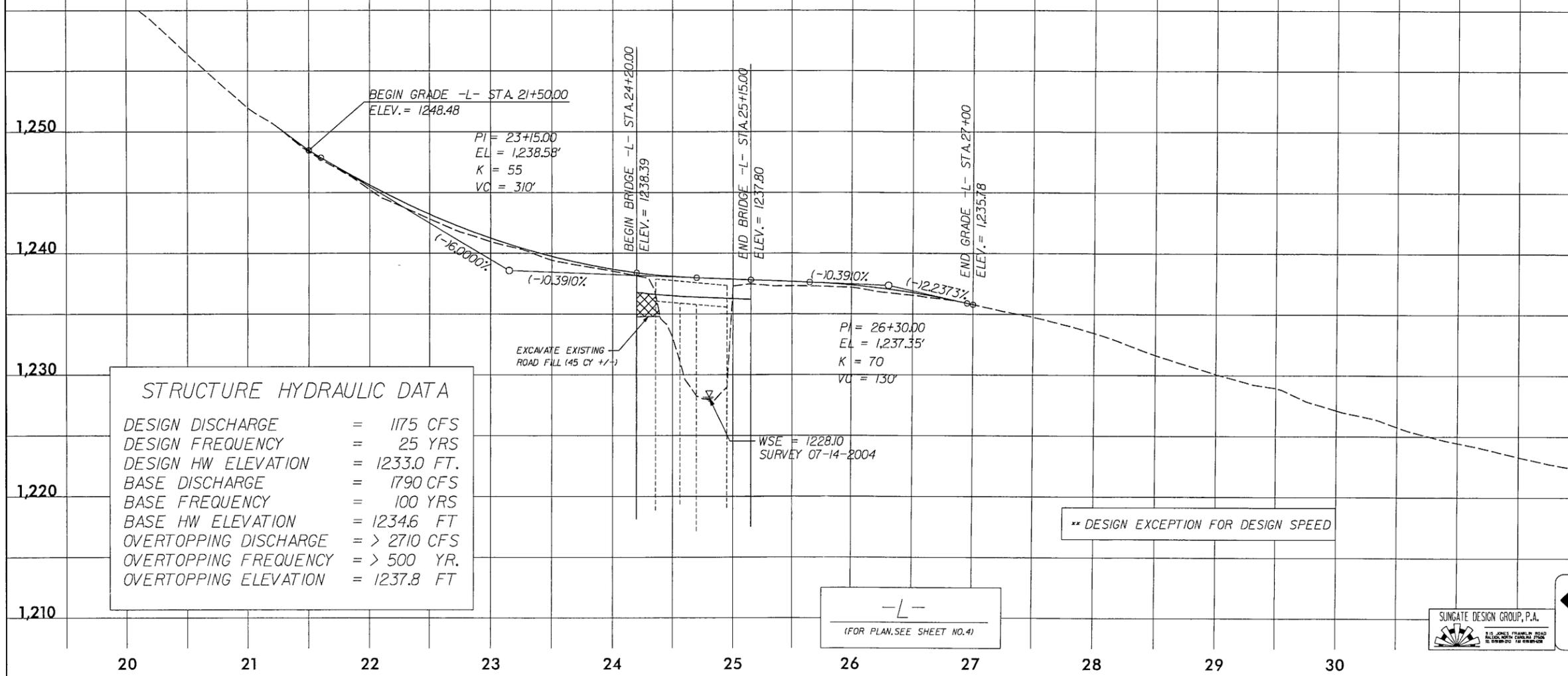
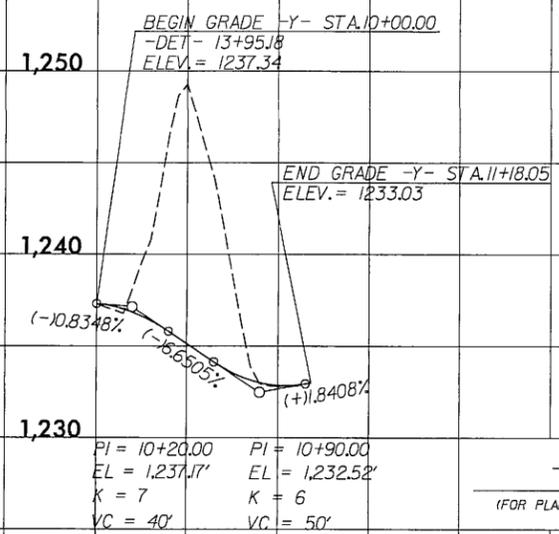
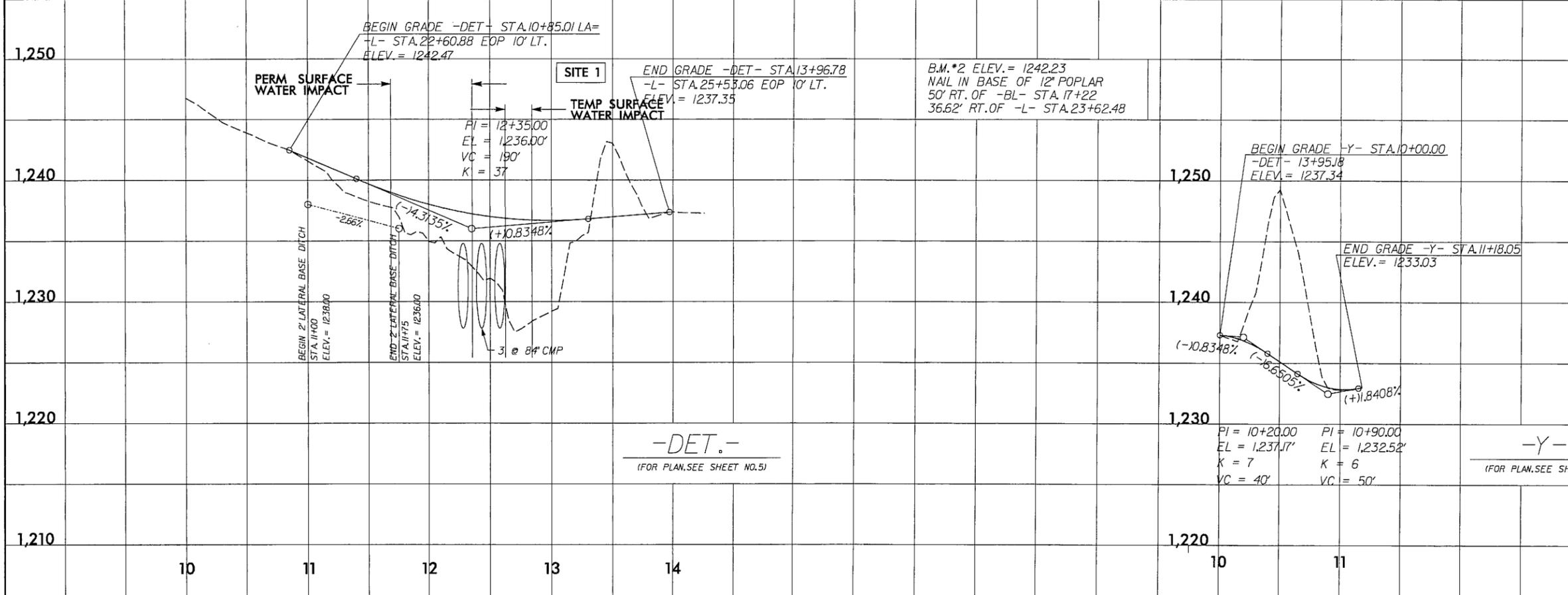
-DET-	-DET-	-DET-	-DET-
PI Sta 10+50.35	PI Sta 11+49.32	PI Sta 13+70.97	PI Sta 14+11.22
Δ = 17° 20' 54.2" (LT)	Δ = 27° 45' 03.0" (RT)	Δ = 62° 30' 56.5" (RT)	Δ = 35° 35' 10.2" (LT)
D = 17° 21' 44.5"	D = 28° 38' 52.6"	D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 99.92'	L = 96.87'	L = 54.56'	L = 31.05'
T = 50.35'	T = 49.40'	T = 30.35'	T = 16.05'
R = 330.00'	R = 200.00'	R = 50.00'	R = 50.00'

FOR -DET- PROFILE SEE SHEET NO. 6

SEE SHEETS S-1 THRU S- FOR STRUCTURE PLANS

Permit Drawing
Sheet 4 of 11





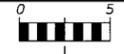
STRUCTURE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1175 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 1233.0 FT.
BASE DISCHARGE	= 1790 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 1234.6 FT
OVERTOPPING DISCHARGE	= > 2710 CFS
OVERTOPPING FREQUENCY	= > 500 YR.
OVERTOPPING ELEVATION	= 1237.8 FT

** DESIGN EXCEPTION FOR DESIGN SPEED

Permit Drawing
Sheet 6 of 11

-L-
(FOR PLAN, SEE SHEET NO.4)





SITE 1

G.P. = 1243.21

CL DETOUR
10+73.80

1250

1250

1240

1240

2:1

2:1

EP

0.015

0.015

4:1

STA. 22+50
EL. 1242.87

G.P. = 1245.62

1250

1250

1240

1240

3:1

EP

0.00

0.016

16:1

STA. 22+00
EL. 1245.26

G.P. = 1248.48

1250

1250

1240

1240

EP

4.16 % match
4.36 % extst

STA. 21+50
EL. 1248.38

BEGIN PROJECT -L- STA. 21+25.00

Permit Drawing
Sheet 7 of 11

CL -L-

70

60

50

40

30

20

10

CL -L-

10

20

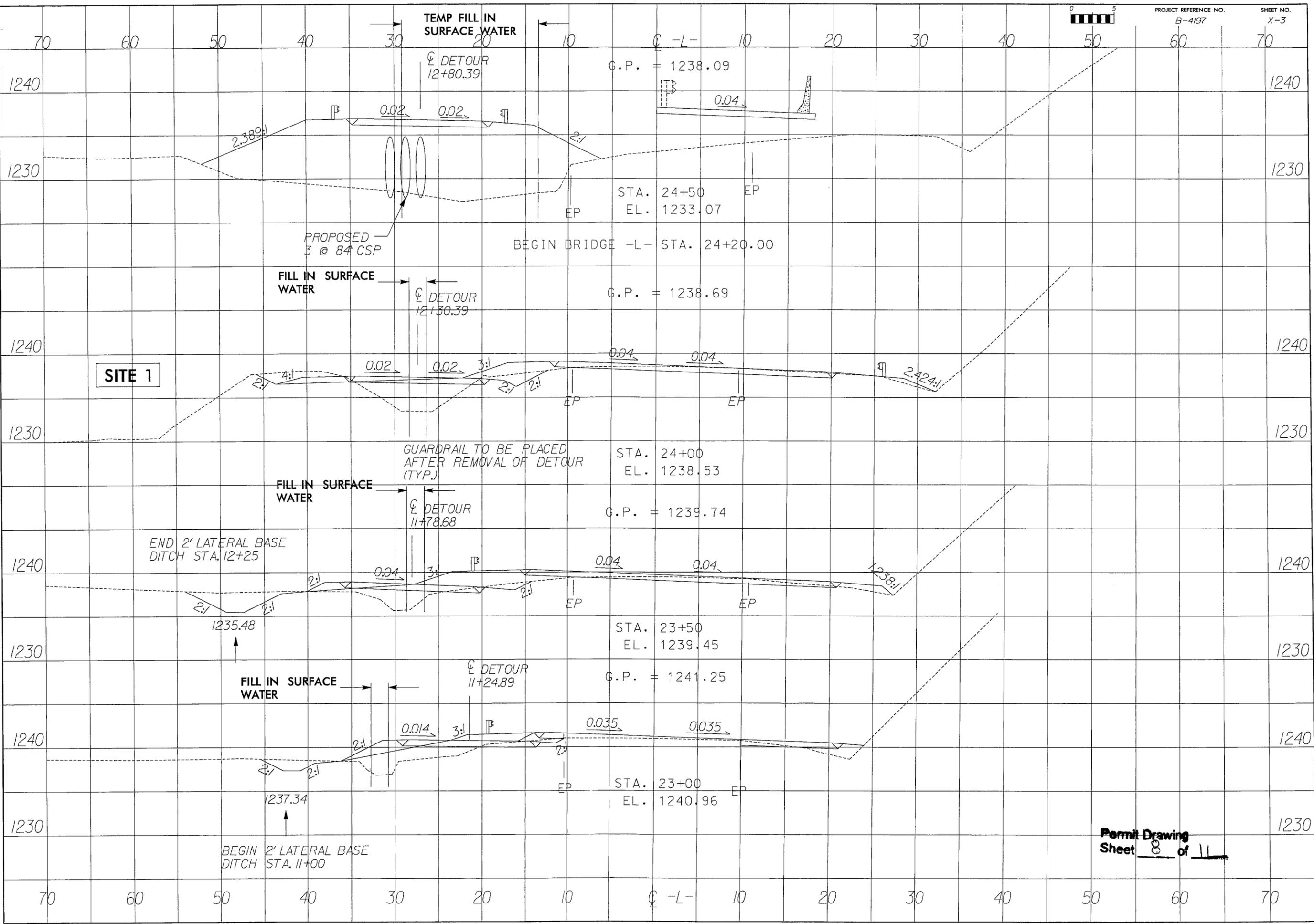
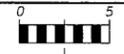
30

40

50

60

70



SITE 1

TEMP FILL IN SURFACE WATER

CL DETOUR 12+80.39

G.P. = 1238.09

STA. 24+50
EL. 1233.07

BEGIN BRIDGE -L- STA. 24+20.00

FILL IN SURFACE WATER

CL DETOUR 12+30.39

G.P. = 1238.69

STA. 24+00
EL. 1238.53

GUARDRAIL TO BE PLACED AFTER REMOVAL OF DETOUR (TYP.)

FILL IN SURFACE WATER

CL DETOUR 11+78.68

G.P. = 1239.74

END 2' LATERAL BASE DITCH STA. 12+25

STA. 23+50
EL. 1239.45

FILL IN SURFACE WATER

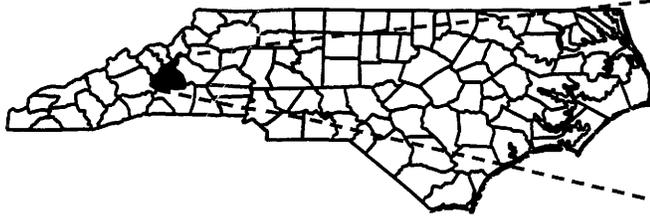
CL DETOUR 11+24.89

G.P. = 1241.25

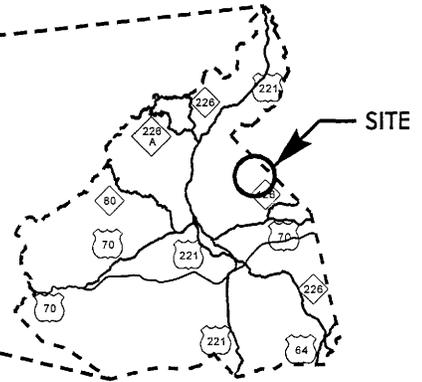
STA. 23+00
EL. 1240.96

BEGIN 2' LATERAL BASE DITCH STA. 11+00

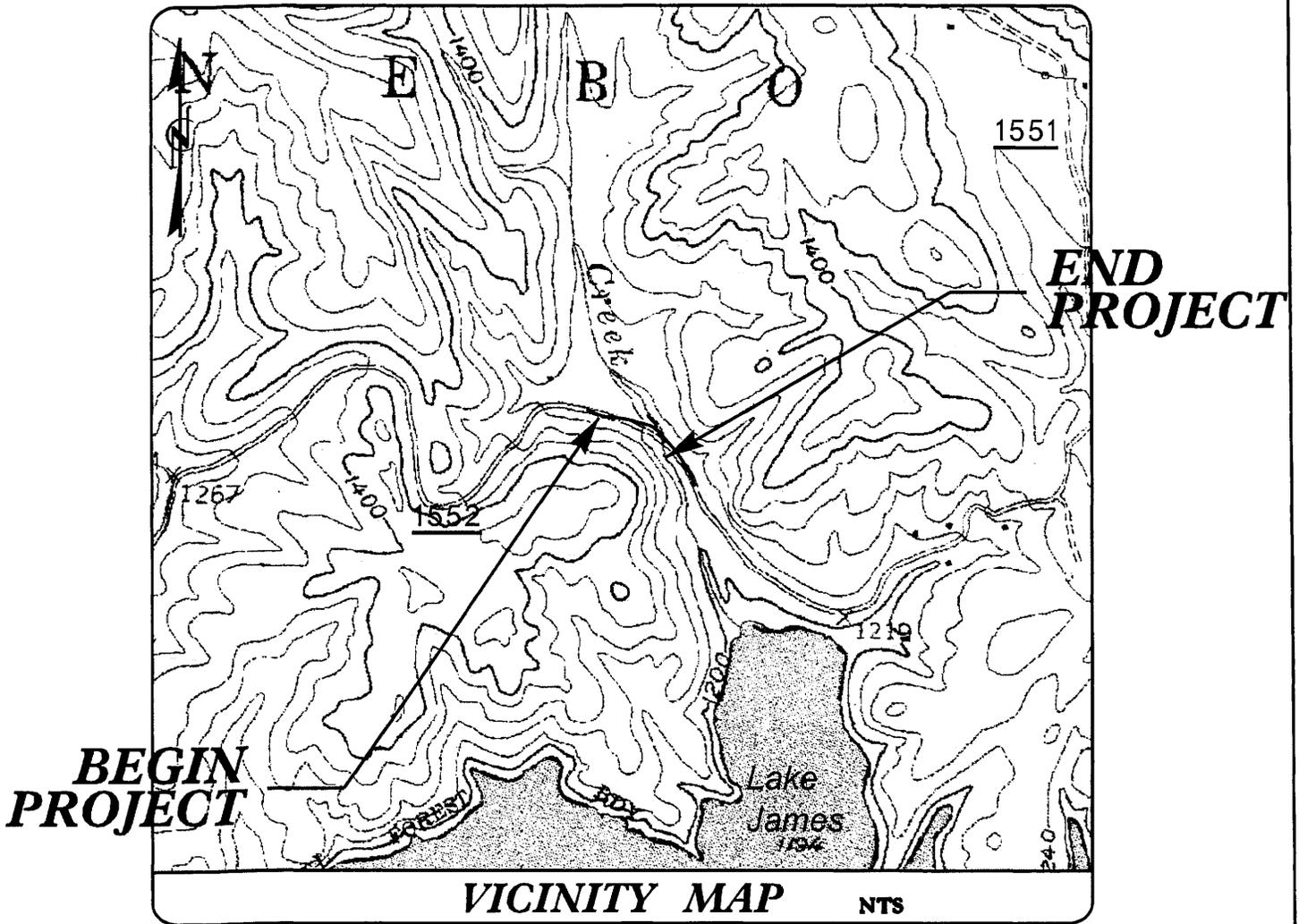
Permit Drawing Sheet 8 of 11



SEE INSET BELOW



McDOWELL COUNTY



WETLAND IMPACT

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

McDOWELL COUNTY
 PROJECT: 33544.1.1 (B-4197)
 BRIDGE NO. 73 OVER DALES
 CREEK ON SR 1522 (LAKE JAMES RD)

SHEET 9 OF 11

5/15/07

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	Mary Teague Adams / Steven Ray Adams	P.O. Box 545 Glen Alpine, NC 28628
2	Linville View, LLC	

NCDOT

DIVISION OF HIGHWAYS

**McDOWELL COUNTY
PROJECT: 33544.1.1 (B-4197)
BRIDGE NO. 73 OVER DALES
CREEK ON SR 1522 (LAKE JAMES RD)**

09/08/09

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

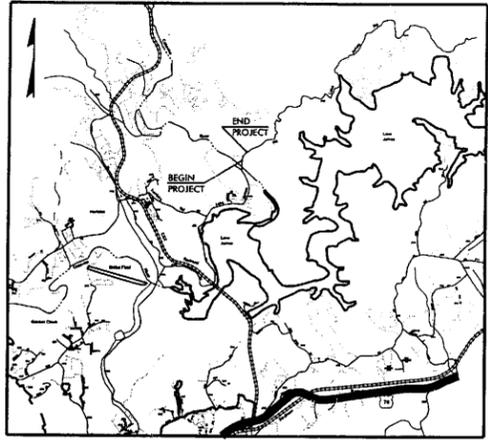
McDOWELL COUNTY

LOCATION: BRIDGE NO. 73 OVER DALES CREEK ON SR 1552 (LAKE JAMES RD.)

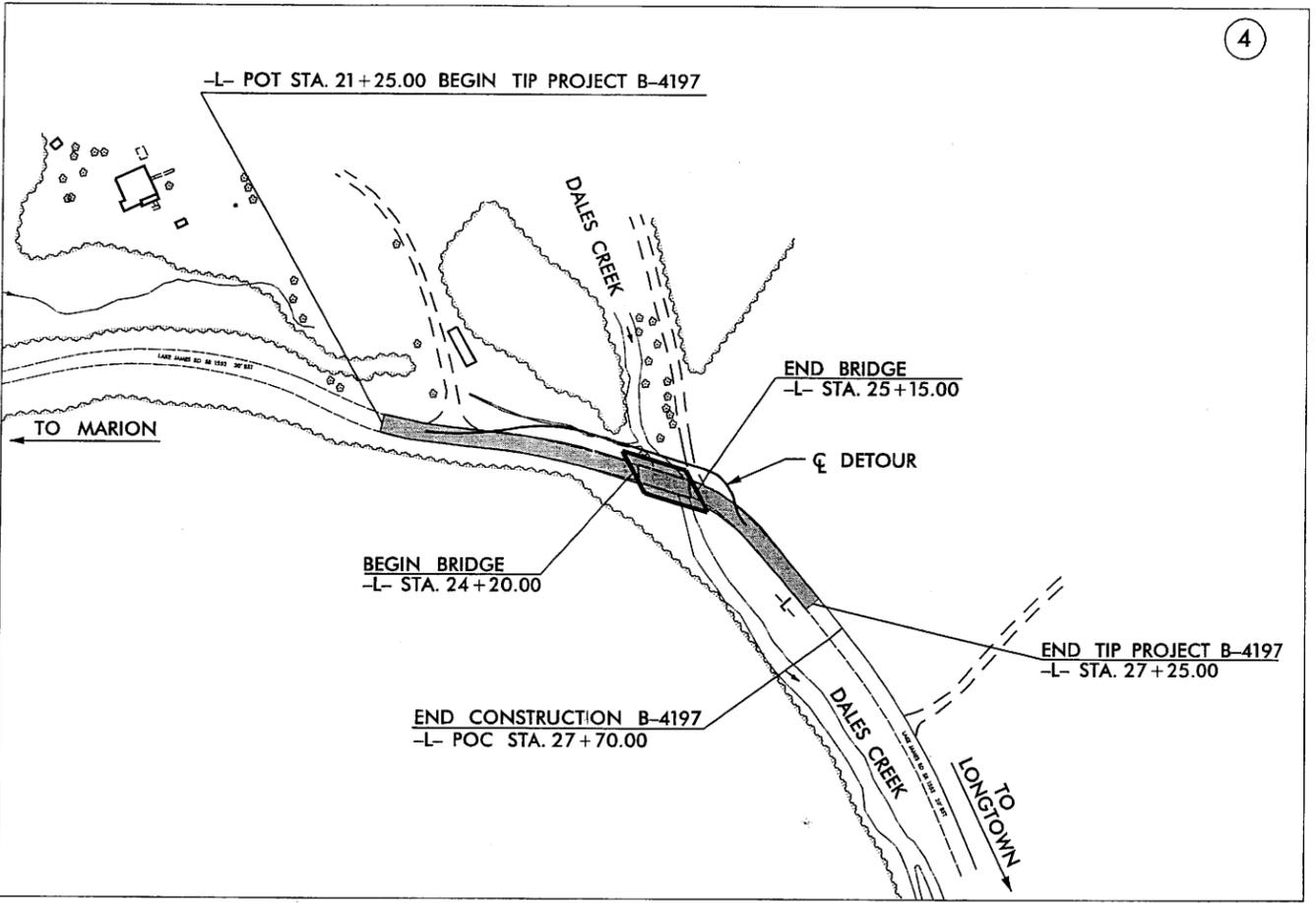
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	OF
N.C.	B-4197	1	1
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33544.1.1	BRZ-1552(9)	P.E.	
33544.2.2	BRZ-1552(9)	R/W & UTIL	
33544.3.1	BRZ-1552(9)	CONST.	

CONTRACT: TIP PROJECT: B-4197



VICINITY MAP



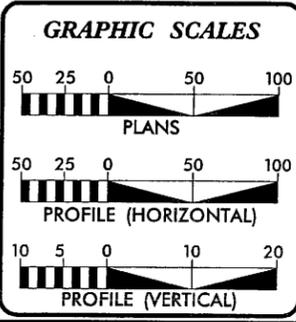
** DESIGN EXCEPTION FOR DESIGN SPEED



RECEIVED

JUL 17 2007

DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT



DESIGN DATA

ADT 2008 =	258
ADT 2028 =	425
DHV =	10%
D =	60%
T =	3% *
** V =	60 MPH
* TTST 1%	DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4197	=	0.096mi
LENGTH STRUCTURE TIP PROJECT B-4197	=	0.018 mi
TOTAL LENGTH TIP PROJECT B-4197	=	0.114 mi

Plans prepared in the office of:

RAMEY KEMP ASSOCIATES, INC.

Professional Engineer
Matthew B. Copple
Matthew B. Copple, P.E.
Matthew B. Copple, P.E.

for the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 20, 2006

LETTING DATE: MARCH 18, 2008

N.C.D.O.T. CONTACT:
CATHY S. HOUSER, PE
PROJECT ENGINEER
ROADWAY DESIGN

HYDRAULICS ENGINEER

W. HENRY WELLS, JR.
P.E.

ROADWAY DESIGN ENGINEER

MATTHEW B. COPPLE
P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR

5/28/06



ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO. TITLE

DIVISION 2 - EARTHWORK

- 200.02 Method of Clearing - Method II
- 225.02 Guide for Grading Subgrade - Secondary and Local
- 225.04 Method of Obtaining Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS

- 300.01 Method of Pipe Installation - Method 'A'

DIVISION 4 - MAJOR STRUCTURES

- 422.10 Reinforced Bridge Approach Fills

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

- 560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I

DIVISION 8 - INCIDENTALS

- 806.01 Concrete Right-of-Way Marker
- 806.02 Granite Right-of-Way Marker
- 840.29 Frames and Narrow Slot Flat Grates
- 840.36 Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
- 862.01 Guardrail Placement
- 862.02 Guardrail Installation
- 862.03 Structure Anchor Units
- 876.04 Drainage Ditches with Class 'B' Rip Rap

INDEX OF SHEETS

<u>SHEET NUMBER</u>	<u>SHEET</u>
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THRU 2-A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND STRUCTURE DETAIL
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES, GUARDRAIL, PAVEMENT REMOVAL, AND EARTHWORK
4	PLAN SHEET
5	DETOUR PLAN SHEET
6	PROFILE SHEET
TCP-1 THRU TCP-?	TRAFFIC CONTROL PLANS
EC-1 THRU EC-?	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-?	SIGNING PLANS
X-1	CROSS-SECTION SUMMARY
X-2 THRU X-7	CROSS-SECTIONS
S-1 THRU S-?	STRUCTURE PLANS

GENERAL NOTES: 2006 SPECIFICATIONS
EFFECTIVE: 7-18-06

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE: DUKE POWER AND BELL SOUTH. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.



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	○
Property Corner	→
Property Monument	□
Parcel/Sequence Number	②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	WLS
Proposed Wetland Boundary	WLS
Existing Endangered Animal Boundary	EAB
Existing Endangered Plant Boundary	EPB

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	←
Disappearing Stream	→
Spring	○
Swamp Marsh	⌵
Proposed Lateral, Tail, Head Ditch	-----
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
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	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	○
Proposed Right of Way Line with Concrete or Granite Marker	○
Existing Control of Access	○
Proposed Control of Access	○
Existing Easement Line	E
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Utility Easement	PUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----
Orchard	○
Vineyard	□

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC HW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	⊕
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	⊕
Telephone Booth	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
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	FO
Designated U/G Fiber Optics Cable (S.U.E.*)	FO

WATER:

Water Manhole	⊕
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 Tower	⊗
U/G TV Cable Hand Hole	⊕
Recorded U/G TV Cable	TV
Designated U/G TV Cable (S.U.E.*)	TV
Recorded U/G Fiber Optic Cable	FO
Designated U/G Fiber Optic Cable (S.U.E.*)	FO

GAS:

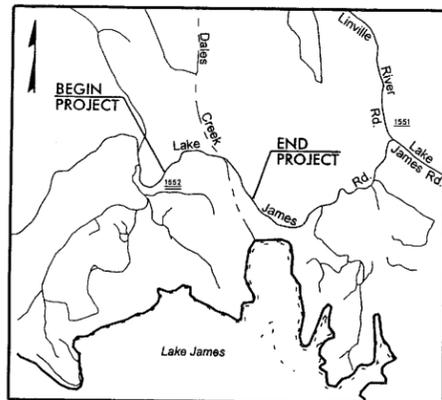
Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	G
Designated U/G Gas Line (S.U.E.*)	G
Above Ground Gas Line	A/G Gas

SANITARY SEWER:

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

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊕
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line	U/L
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.



VICINITY MAP

SURVEY CONTROL SHEET B-4197

PROJECT REFERENCE NO.	SHEET NO.
B-4197	1-C
Location and Surveys	

DATUM DESCRIPTION

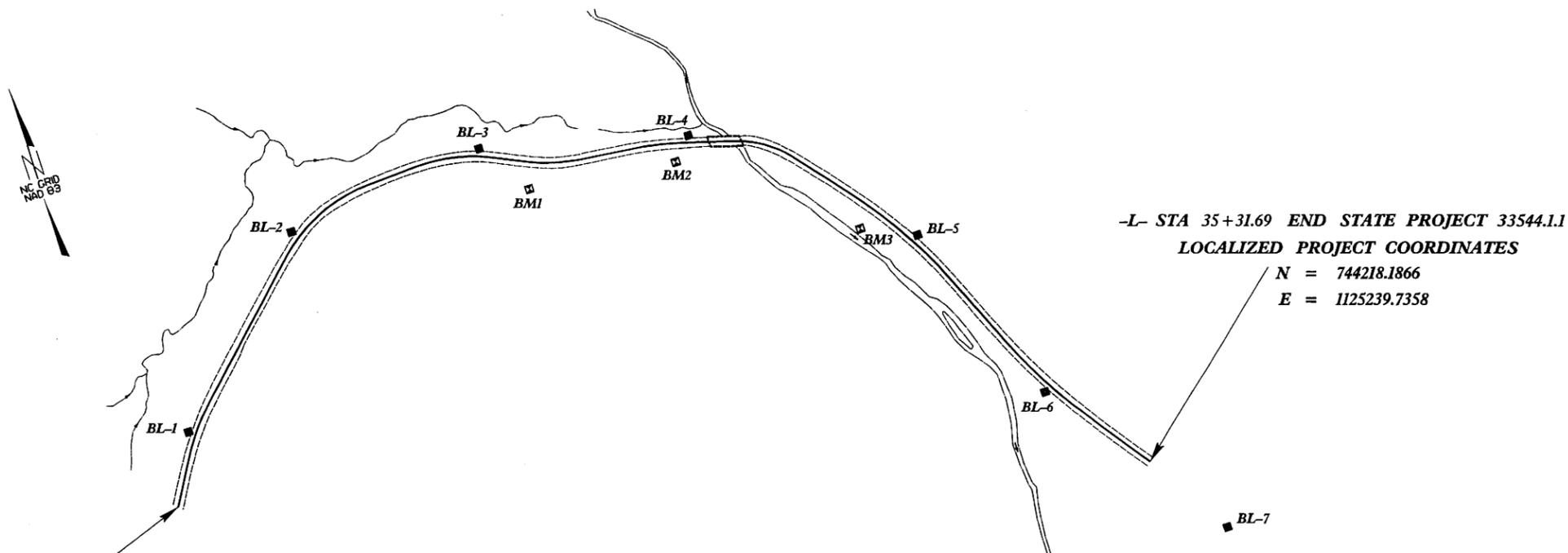
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3001-BL-2" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 7455189950(1) EASTING: 11280627930(1) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984783 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3001-BL-2" TO L STATION 10+00.00 IS S 80°24'35.5" W 472479 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS MVD 88

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	744865.2103	1123468.7950	1332.31	11+46.23	14.54 LT
2	BL-2	745174.6990	1123780.0595	1296.68	15+80.68	17.67 LT
3	BL-3	745214.6945	1124178.3203	1262.94	19+77.58	15.23 LT
4	BL-4	745110.4810	1124575.5538	1237.91	23+92.27	13.84 LT
5	BL-5	744784.4980	1124943.3200	1230.44	28+90.56	15.12 LT
6	BL-6	744413.4807	1125085.4220	1220.05	32+84.35	15.66 RT
7	BL-7	744049.9513	1125341.2335	1218.54	OUTSIDE PROJECT LIMITS	

.....
 BM1 ELEVATION = 1268.32
 N 745109 E 1124248
 L STATION 20+83 53 RIGHT
 NAIL IN BASE OF 18" WHITE OAK

.....
 BM2 ELEVATION = 1242.23
 N 745069 E 1124536
 L STATION 23+64 37 RIGHT
 NAIL IN BASE OF 12" POPLAR

.....
 BM3 ELEVATION = 1227.86
 N 744832 E 1124840
 L STATION 27+93 46 RIGHT
 NAIL IN BASE OF TRIPLE POPLAR ON CREEK BANK



-L- STA 10+00.00 BEGIN STATE PROJECT 33544.1.1
 LOCALIZED PROJECT COORDINATES
 N = 744731.8494
 E = 1123404.0284

-L- STA 35+31.69 END STATE PROJECT 33544.1.1
 LOCALIZED PROJECT COORDINATES
 N = 744218.1866
 E = 1125239.7358

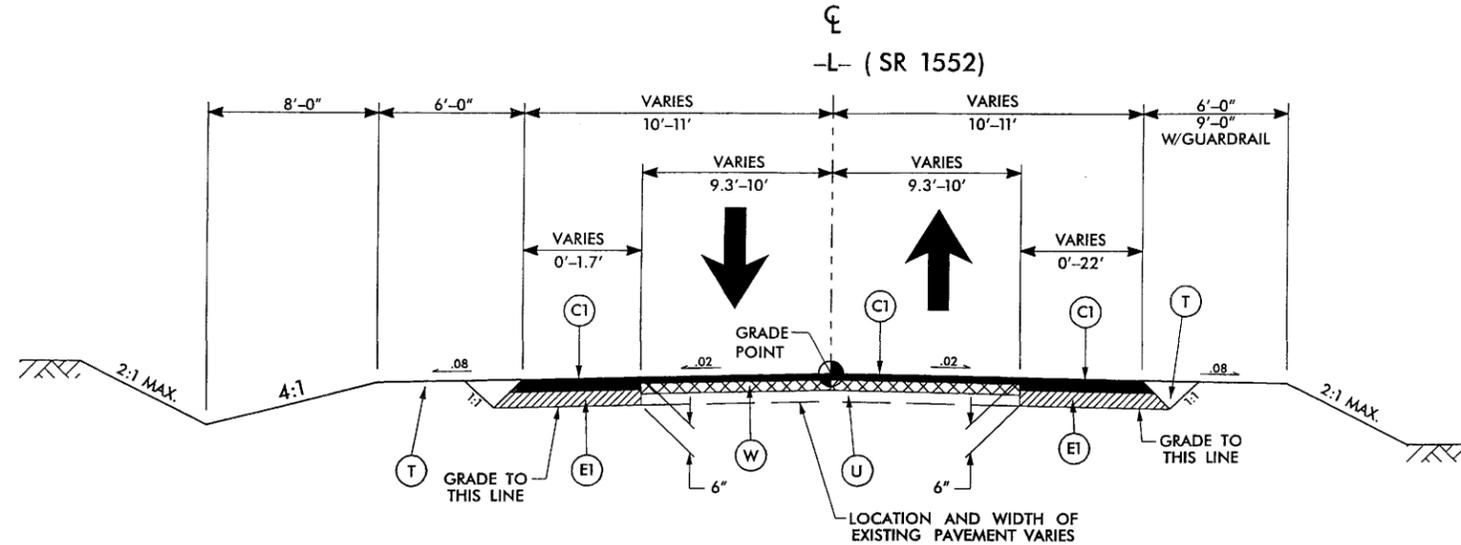
NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project)

B4197_LS_CONTROL_050304.TXT

■ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.
 IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE



TRANSITION FROM EXISTING PAVEMENT TO TYPICAL SECTION NO. 1 FROM:
 -L- STA. 21+25.00 TO STA. 21+50.00

USE TYPICAL SECTION NO. 1

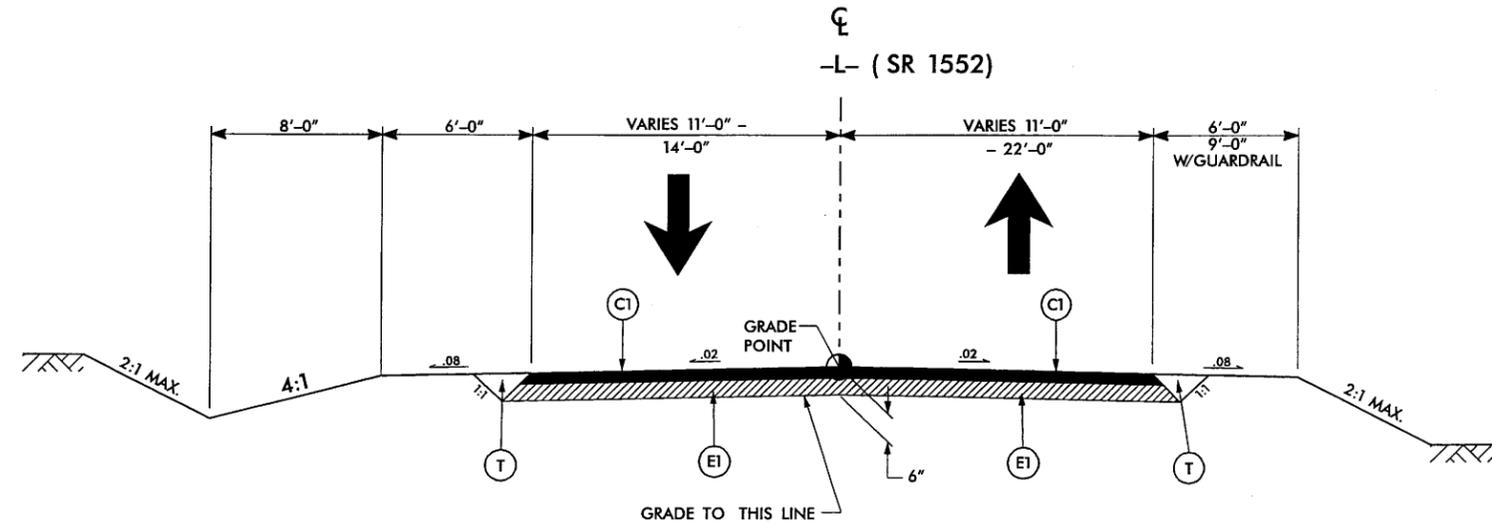
-L- STA. 21+50.00 TO STA. 23+50.00
 -L- STA. 26+00.00 TO STA. 27+00.00

TYPICAL SECTION NO. 1

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING PAVEMENT FROM:
 -L- STA. 27+00.00 TO STA. 27+25.00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 5" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

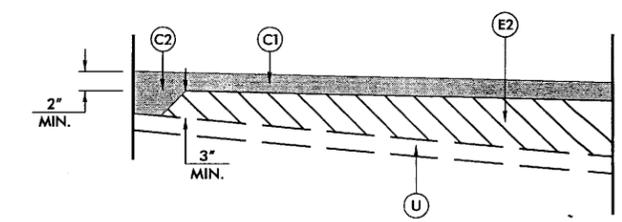
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



USE TYPICAL SECTION NO. 2

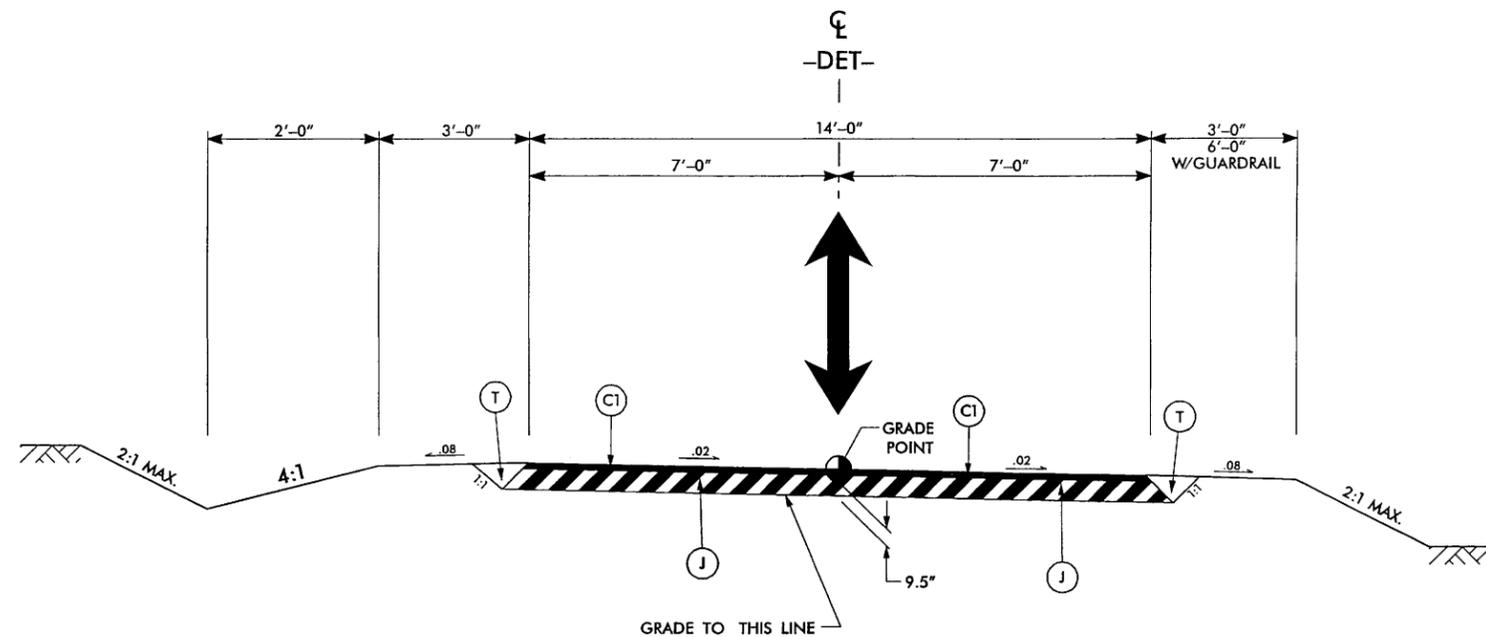
-L- STA. 23+50.00 TO STA. 24+20.00 (BEGIN BRIDGE)
 -L- STA. 25+15.00 (END BRIDGE) TO STA. 26+00.00

TYPICAL SECTION NO. 2



Detail Showing Method of Wedging

PROJECT REFERENCE NO. B-4197	SHEET 2-
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
	

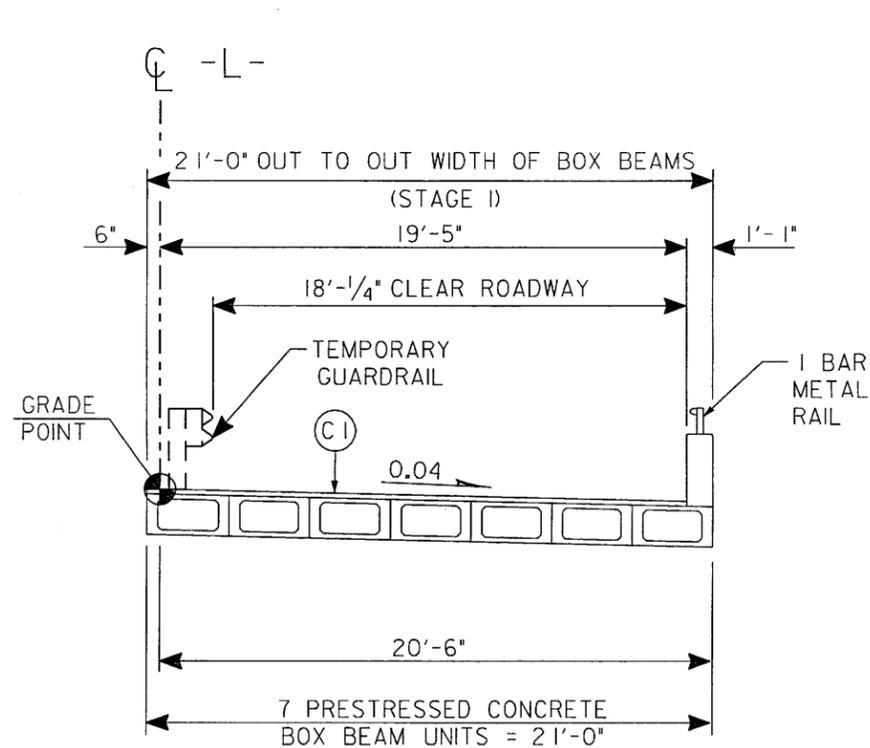


PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 82.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
J	PROPOSED 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.

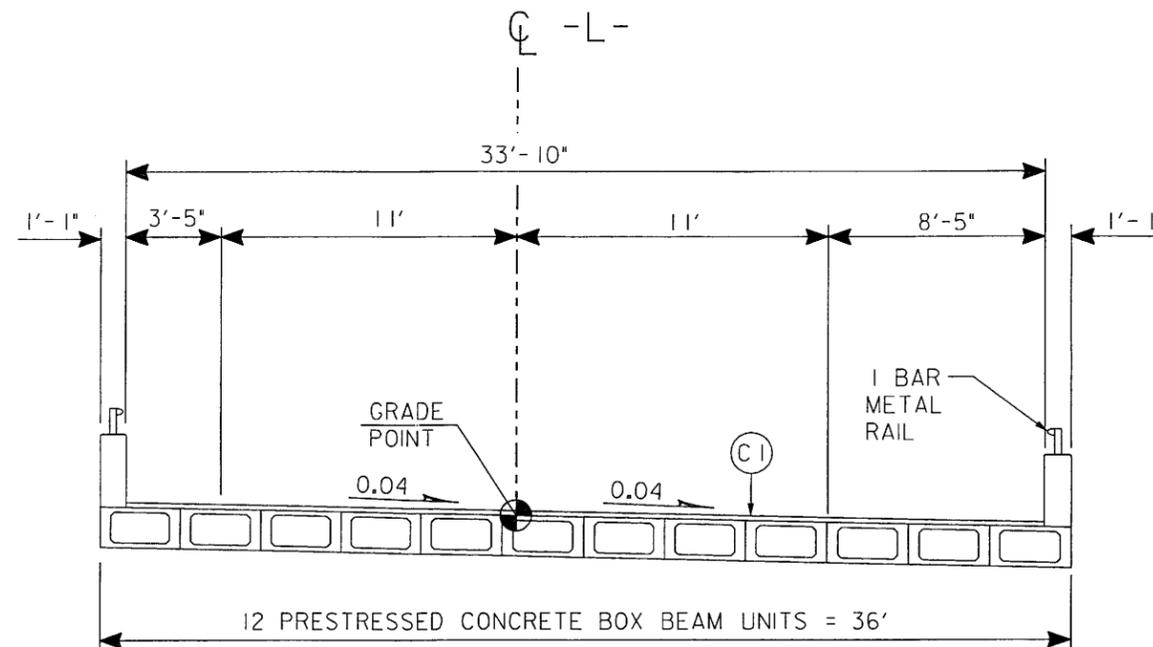
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

USE TYPICAL SECTION NO. 3
-DET- STA. 10+85.01 TO STA. 13+96.78

TYPICAL SECTION NO. 3



STAGED CONSTRUCTION



BOXED BEAM DETAIL

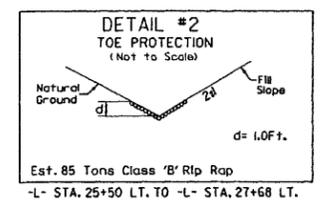
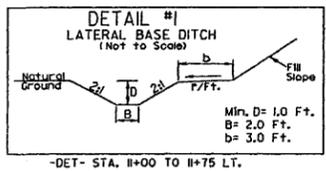
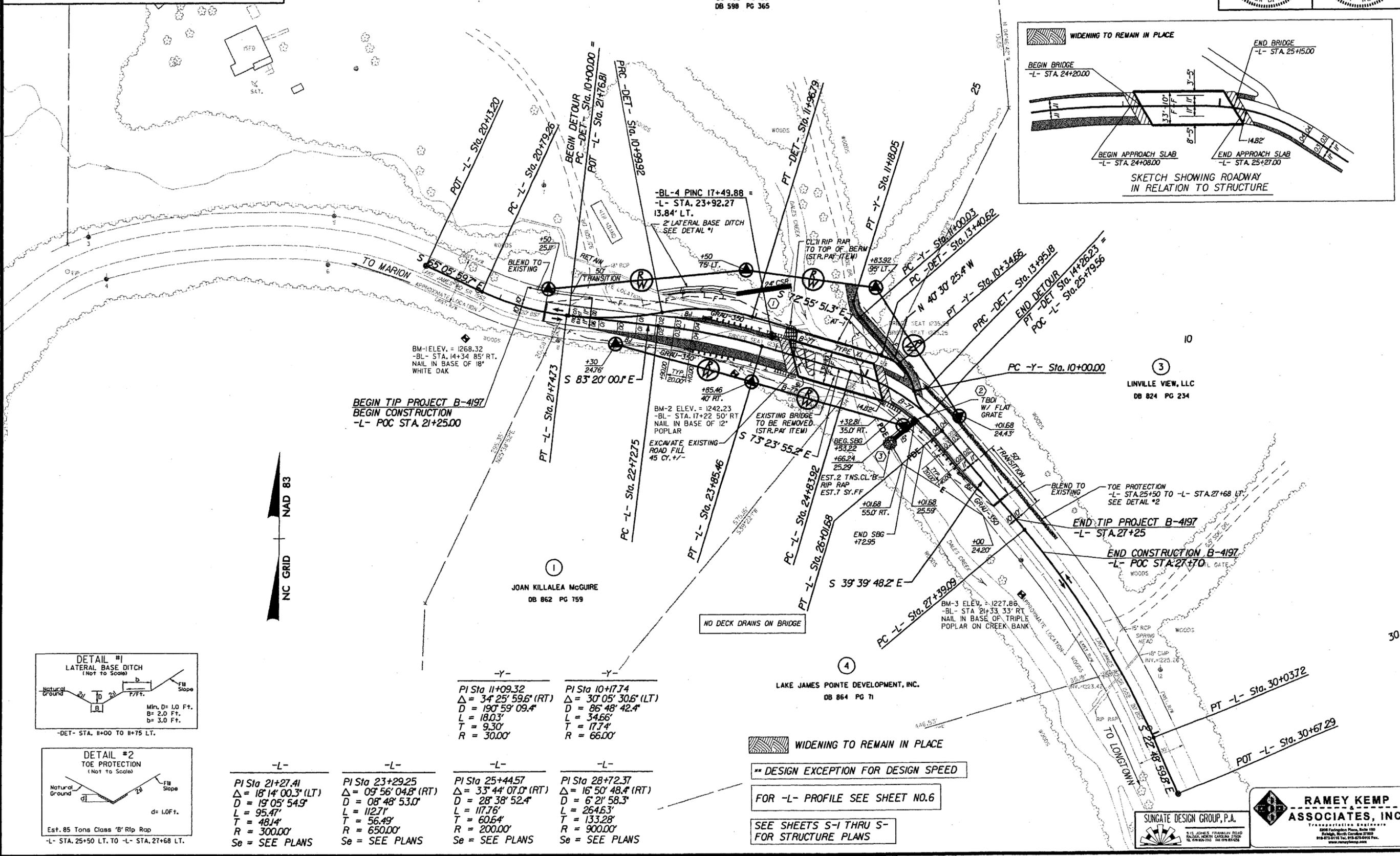
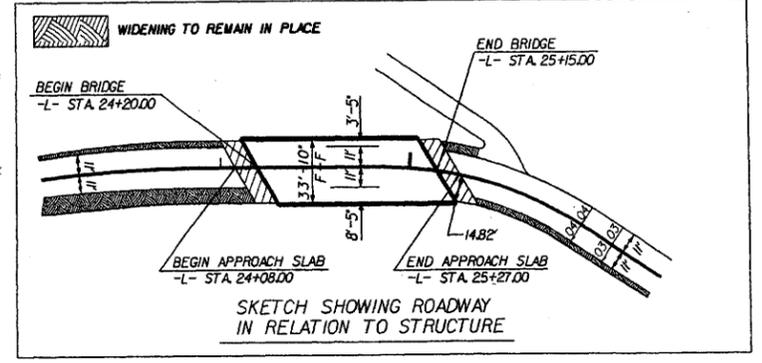
SUMMARY OF QUANTITIES

5/28/99

REVISIONS

PROJECT REFERENCE NO. B-4197	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 27171 MATTHEW B. COPPLE	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 9334 HENRY WELLS, JR.

②
MARY TEAGUE ADAMS
STEVEN RAY ADAMS
DB 391 PG 583
DB 762 PG 169
DB 598 PG 365



-L-	-L-	-L-	-L-
PI Sta 21+27.41 Δ = 18° 14' 00.3" (LT) D = 19° 05' 54.9" L = 95.47' T = 48.14' R = 300.00' Se = SEE PLANS	PI Sta 23+29.25 Δ = 09° 56' 04.8" (RT) D = 08° 48' 53.0" L = 112.71' T = 56.49' R = 650.00' Se = SEE PLANS	PI Sta 25+44.57 Δ = 33° 44' 07.0" (RT) D = 28° 38' 52.4" L = 117.76' T = 60.64' R = 200.00' Se = SEE PLANS	PI Sta 28+72.37 Δ = 16° 50' 48.4" (RT) D = 6° 21' 58.3" L = 264.63' T = 133.28' R = 900.00' Se = SEE PLANS

-Y-	-Y-
PI Sta 11+09.32 Δ = 34° 25' 59.6" (RT) D = 190° 59' 09.4" L = 18.03' T = 9.30' R = 30.00'	PI Sta 10+17.74 Δ = 30° 05' 30.6" (LT) D = 86° 48' 42.4" L = 34.66' T = 17.74' R = 66.00'

WIDENING TO REMAIN IN PLACE
** DESIGN EXCEPTION FOR DESIGN SPEED
FOR -L- PROFILE SEE SHEET NO.6
SEE SHEETS S-1 THRU S-4 FOR STRUCTURE PLANS

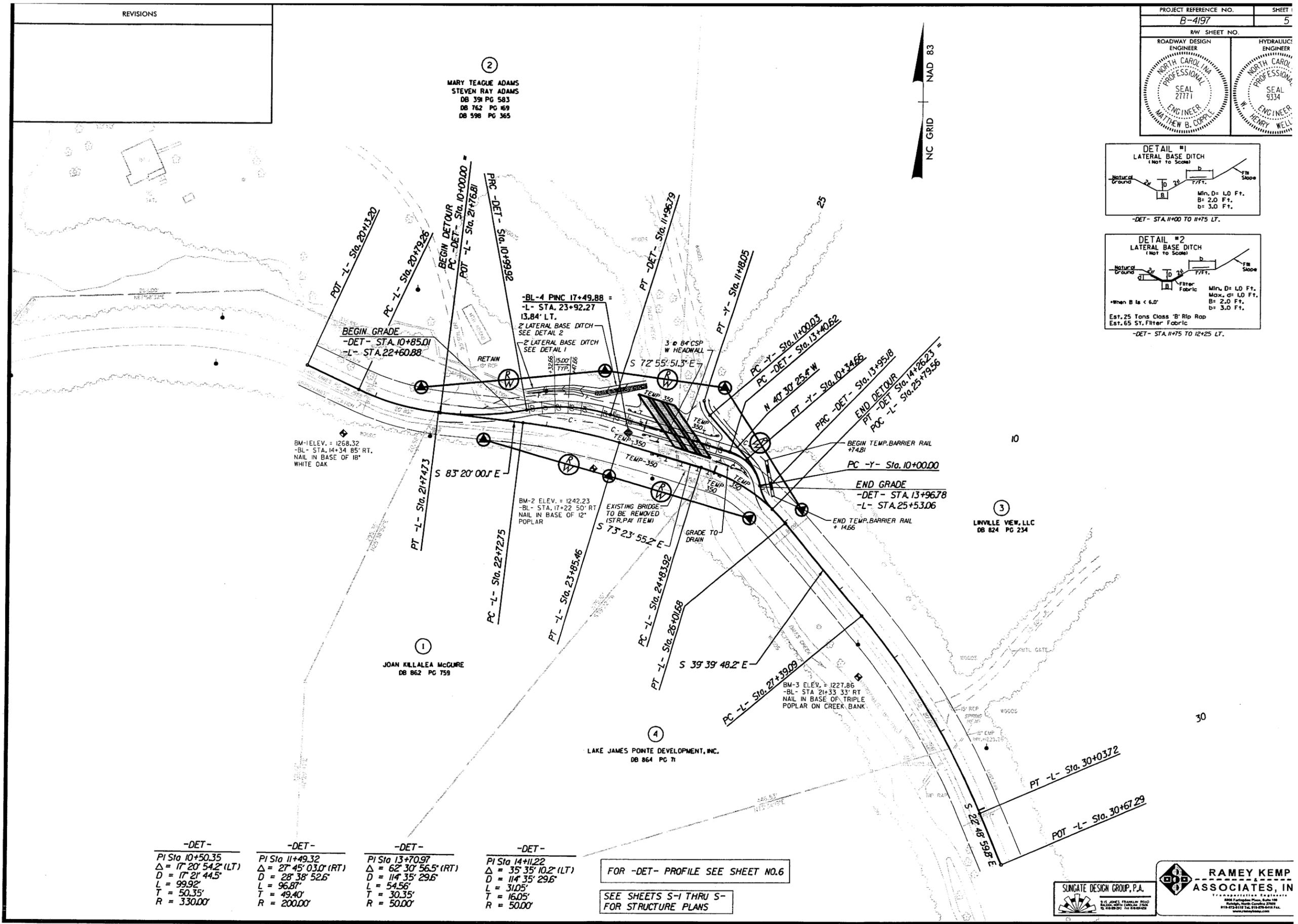
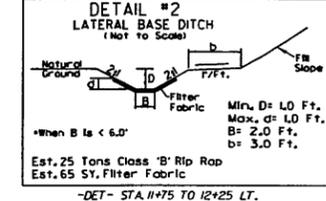
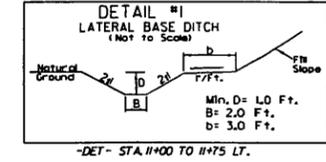
SUNGATE DESIGN GROUP, P.A.
RAMEY KEMP ASSOCIATES, INC.
8204 Furlong Place, Suite 100
Charlotte, North Carolina 28217
919-875-2116 FAX 919-875-6116
www.rameykemp.com

REVISIONS

PROJECT REFERENCE NO. B-4197	SHEET 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 27171 MATTHEW B. COPPLE	HYDRAULIC ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 9334 HENRY WELLS

②
MARY TEAGUE ADAMS
STEVEN RAY ADAMS
DB 391 PG 583
DB 762 PG 169
DB 598 PG 365

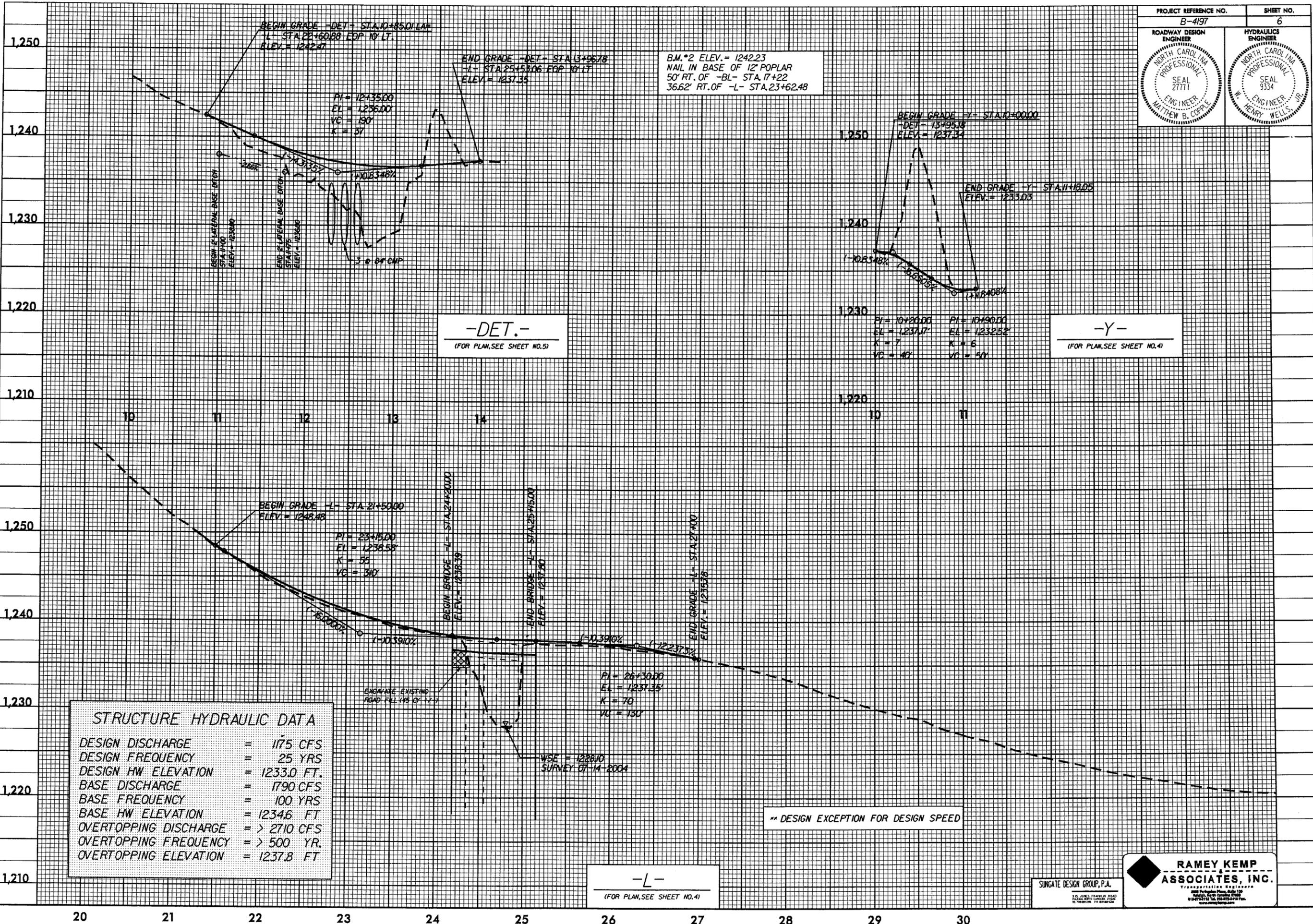
NAD 83
NC GRID



-DET- PI Sta 10+50.35 Δ = 17° 20' 54.2" (LT) D = 17' 21' 44.5" L = 99.92' T = 50.35' R = 330.00'	-DET- PI Sta 11+49.32 Δ = 27° 45' 03.0" (RT) D = 28' 38' 52.6" L = 96.87' T = 49.40' R = 200.00'	-DET- PI Sta 13+70.97 Δ = 62° 30' 56.5" (RT) D = 114' 35' 29.6" L = 54.56' T = 30.35' R = 50.00'	-DET- PI Sta 14+11.22 Δ = 35° 35' 10.2" (LT) D = 114' 35' 29.6" L = 31.05' T = 16.05' R = 50.00'
--	--	--	--

FOR -DET- PROFILE SEE SHEET NO.6
SEE SHEETS S-1 THRU S-7 FOR STRUCTURE PLANS





STRUCTURE HYDRAULIC DATA

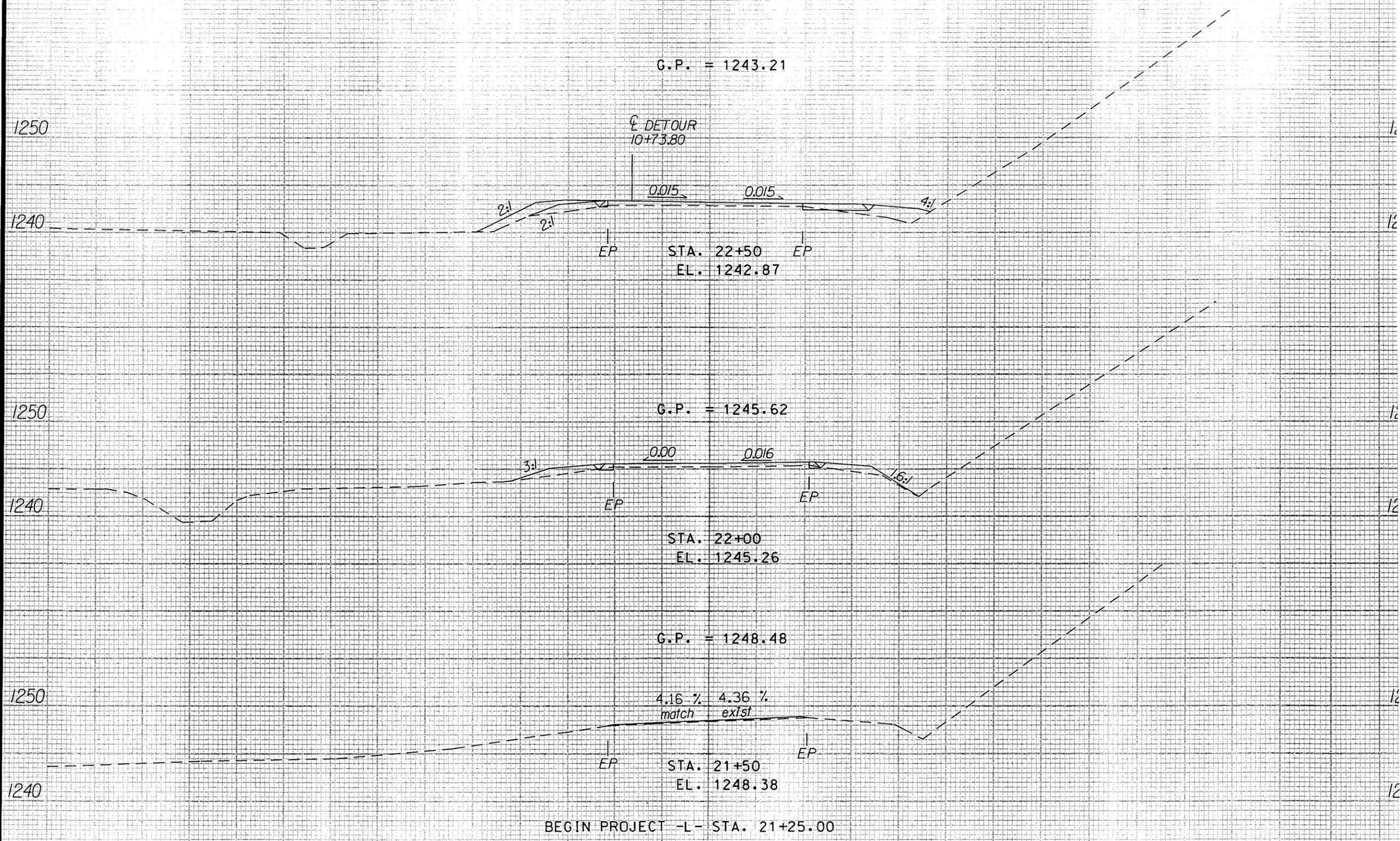
DESIGN DISCHARGE	=	1175 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	1233.0 FT.
BASE DISCHARGE	=	1790 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	1234.6 FT.
OVERTOPPING DISCHARGE	=	> 2710 CFS
OVERTOPPING FREQUENCY	=	> 500 YR.
OVERTOPPING ELEVATION	=	1237.8 FT.

-L-
(FOR PLAN, SEE SHEET NO. 4)

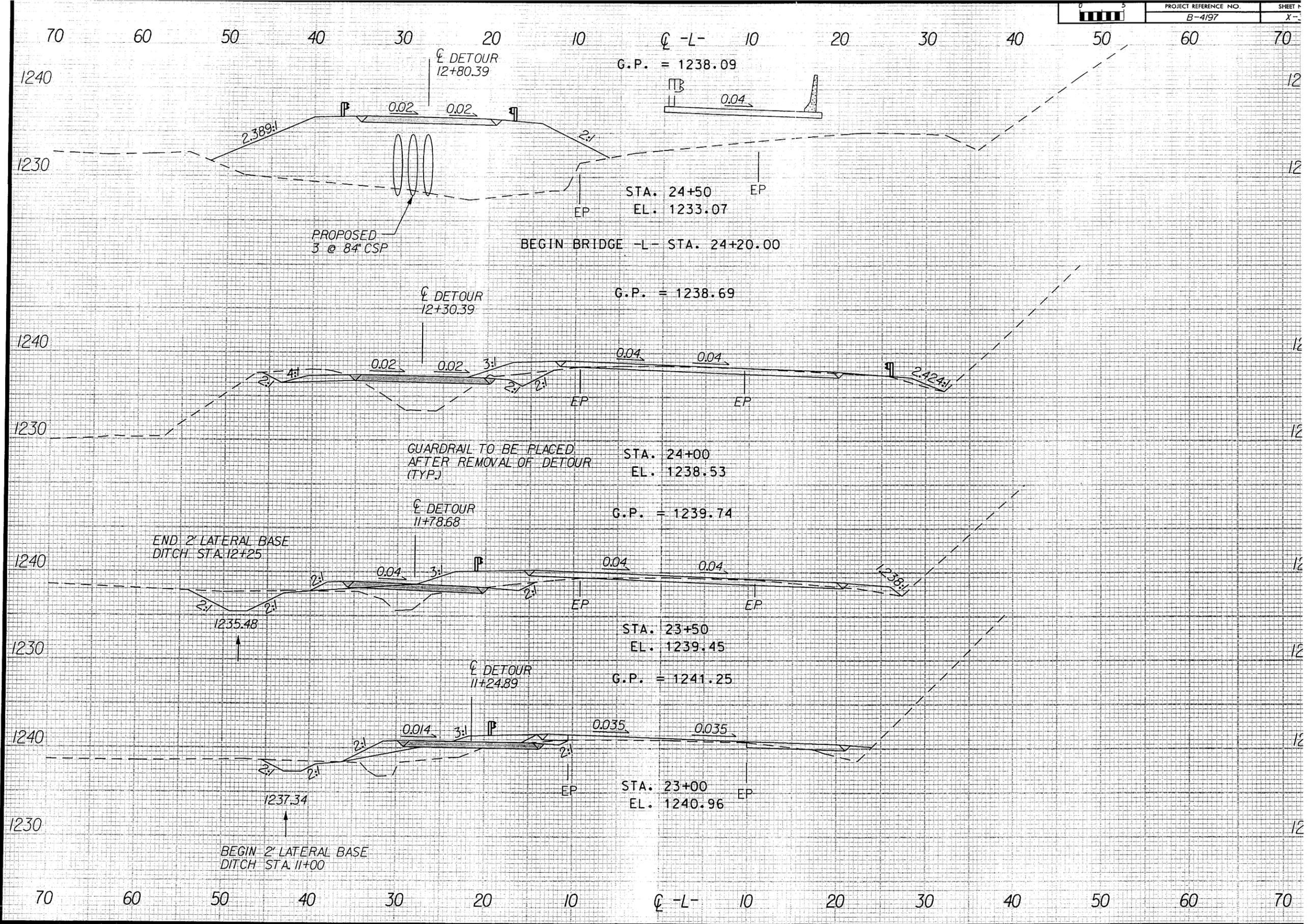
SUNGATE DESIGN GROUP, P.A.
215 JONES FARMWAY ROAD
RICHMOND, NORTH CAROLINA 27340
TEL: 919.748.1100 FAX: 919.748.1101
WWW.SUNGATEDESIGN.COM



70 60 50 40 30 20 10 0 -L- 10 20 30 40 50 60 70



70 60 50 40 30 20 10 0 -L- 10 20 30 40 50 60 70



70 60 50 40 30 20 10 \bar{C} -L- 10 20 30 40 50 60 70

1240 1230 1240 1230 1240 1230 1240 1230 1240 1230

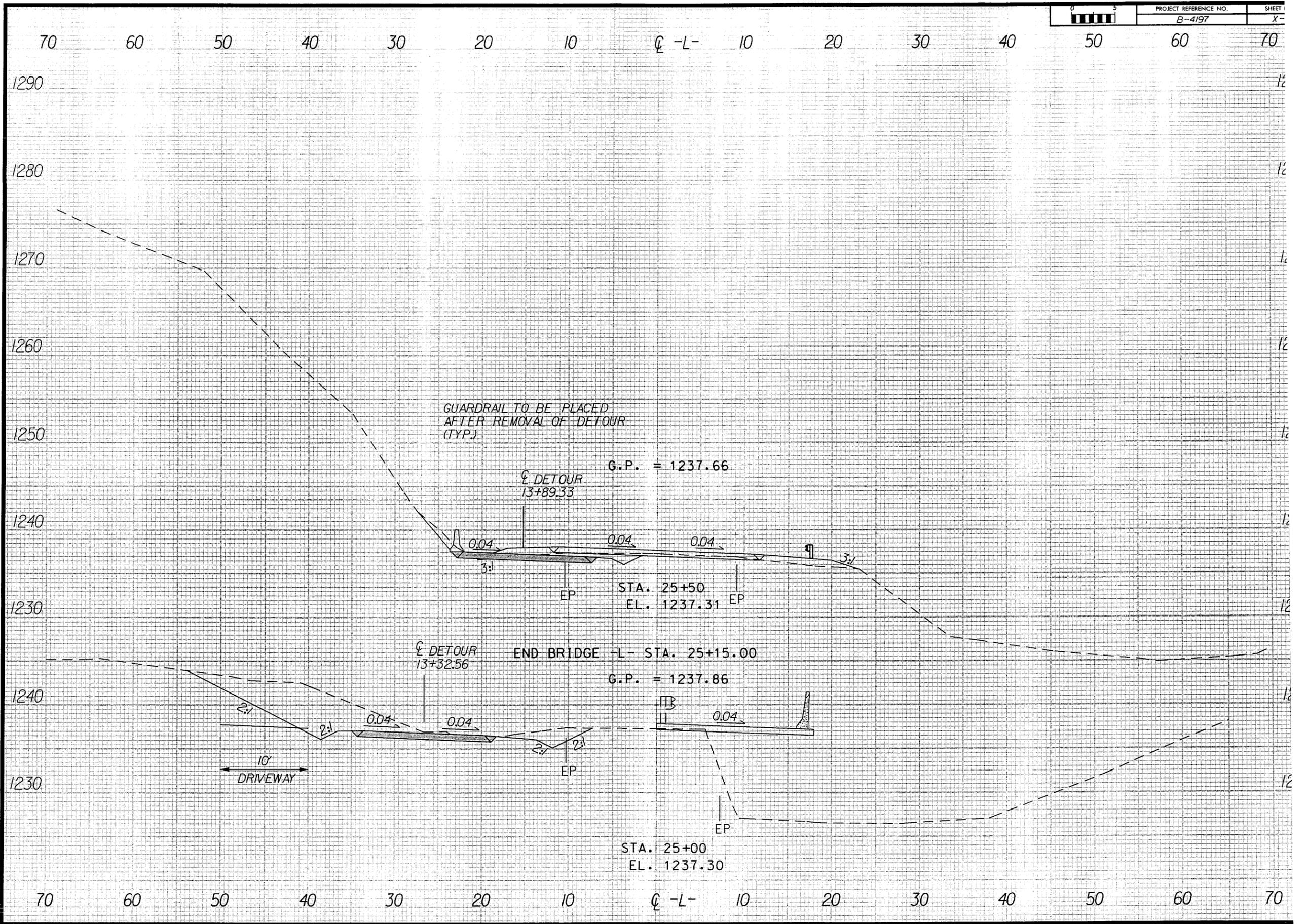
\bar{C} DETOUR 12+80.39
 G.P. = 1238.09
 STA. 24+50
 EL. 1233.07
 BEGIN BRIDGE -L- STA. 24+20.00
 PROPOSED 3 @ 84" CSP

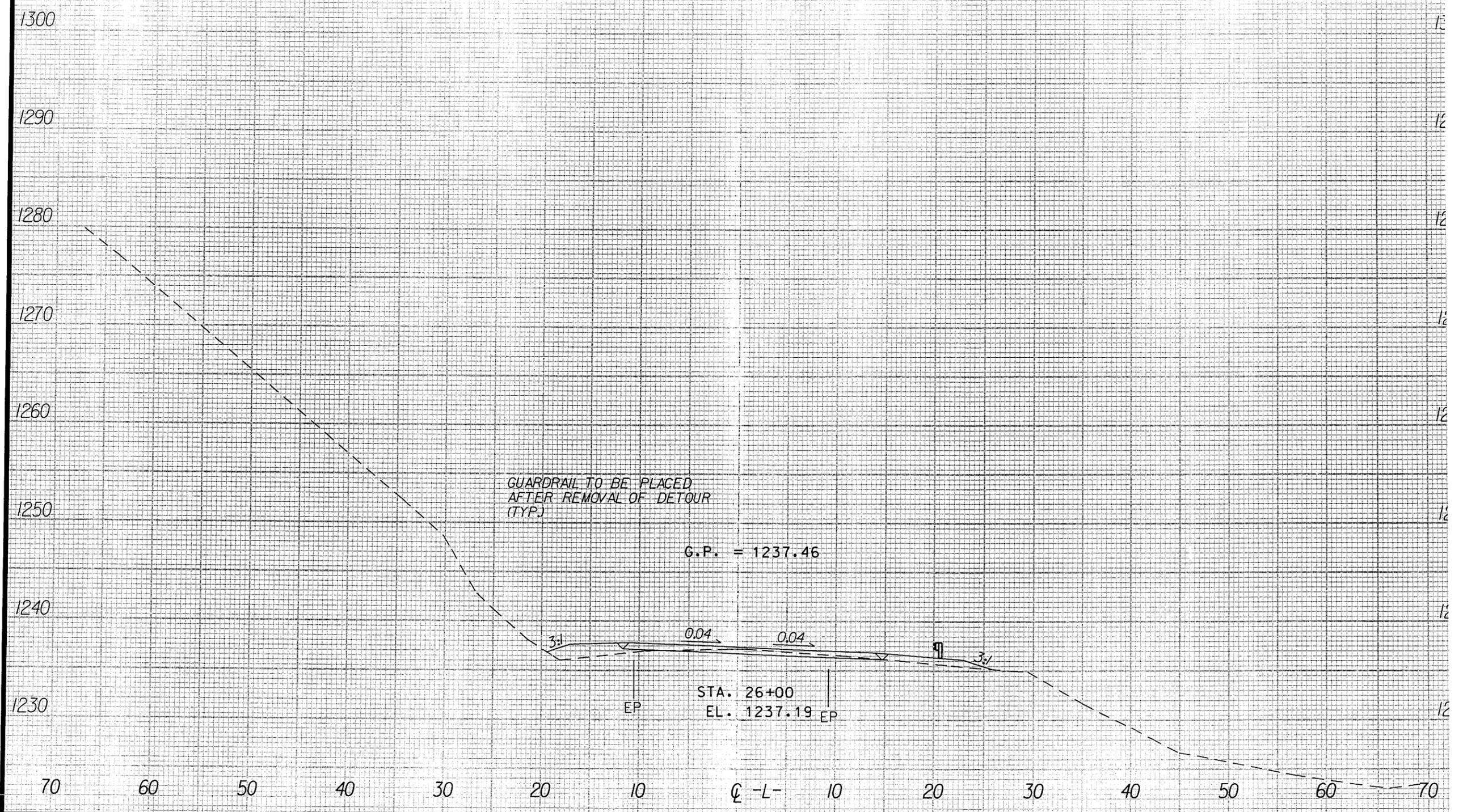
\bar{C} DETOUR 12+30.39
 G.P. = 1238.69
 STA. 24+00
 EL. 1238.53
 GUARDRAIL TO BE PLACED AFTER REMOVAL OF DETOUR (TYP.)

END 2' LATERAL BASE DITCH STA. 12+25
 \bar{C} DETOUR 11+78.68
 G.P. = 1239.74
 STA. 23+50
 EL. 1239.45

\bar{C} DETOUR 11+24.89
 G.P. = 1241.25
 STA. 23+00
 EL. 1240.96
 BEGIN 2' LATERAL BASE DITCH STA. 11+00

70 60 50 40 30 20 10 \bar{C} -L- 10 20 30 40 50 60 70





1300
1290
1280
1270
1260
1250
1240
1230

70 60 50 40 30 20 10 0 -L- 10 20 30 40 50 60 70

1300
1290
1280
1270
1260
1250
1240
1230

GUARDRAIL TO BE PLACED
AFTER REMOVAL OF DETOUR
(TYP.)

G.P. = 1237.05

STA. 26+50
EL. 1236.22

3:1

0.02

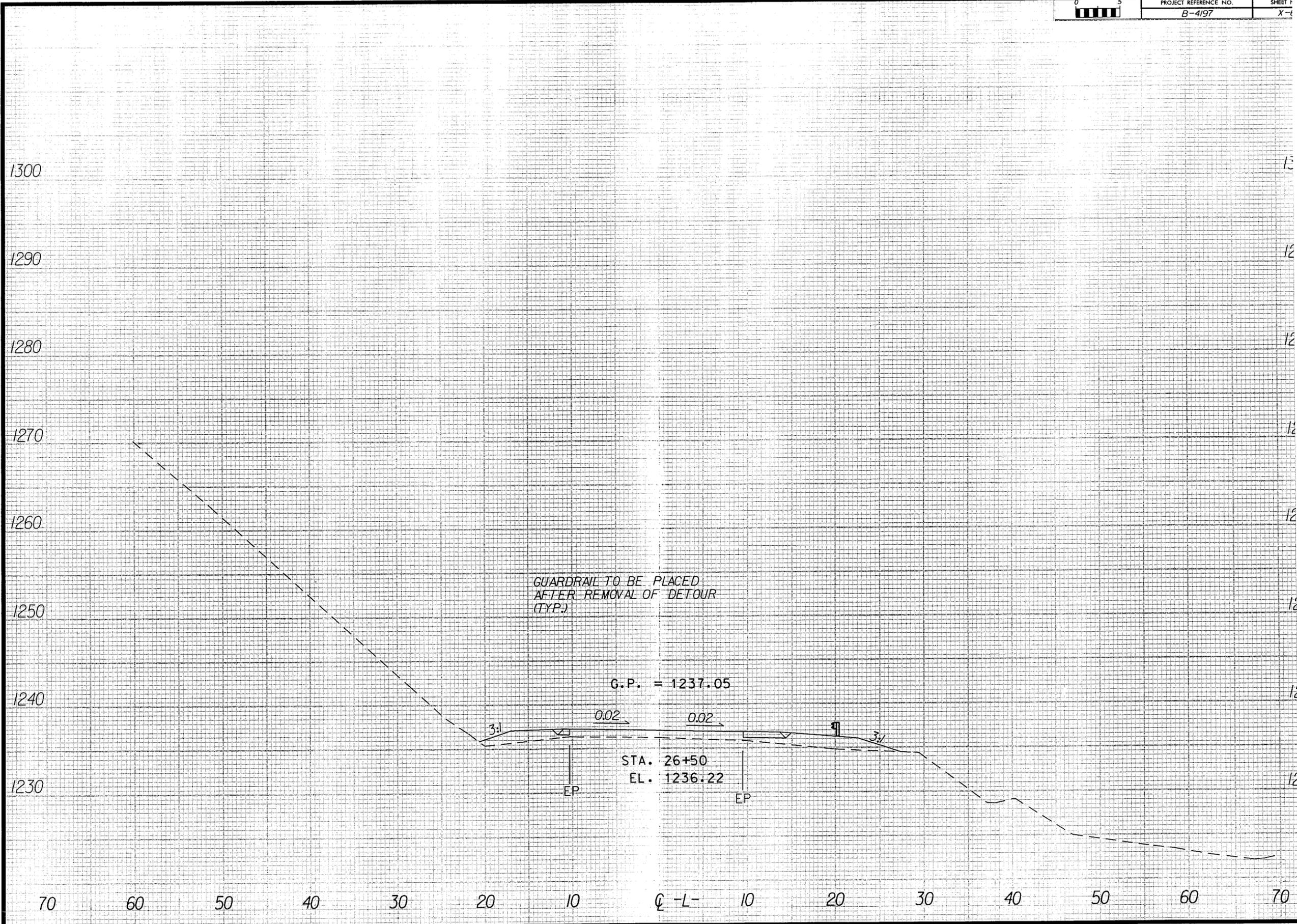
0.02

9'

3:1

EP

EP



1300

1290

1280

1270

1260

1250

1240

1230

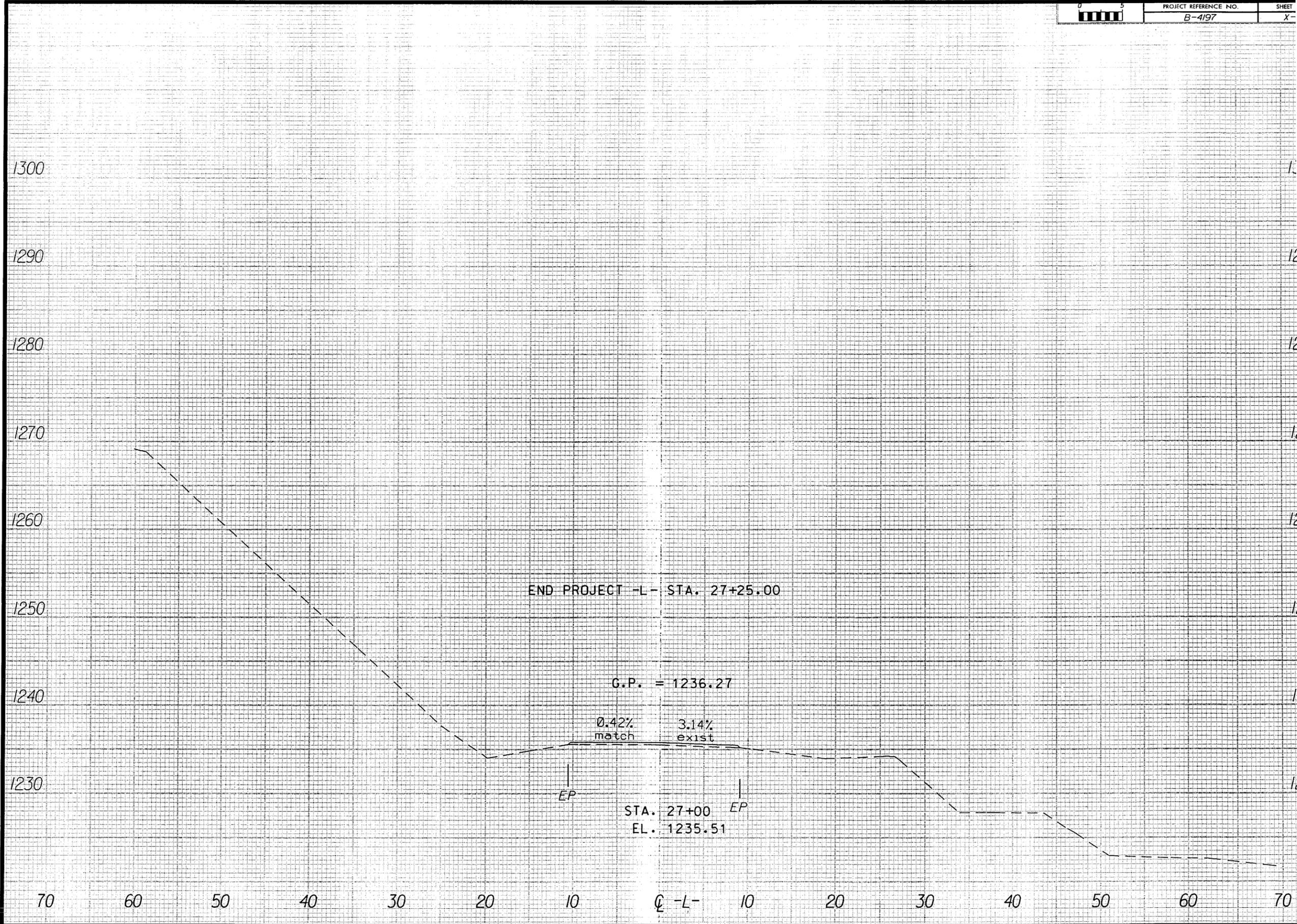
END PROJECT -L- STA. 27+25.00

G.P. = 1236.27

0.42% match 3.14% exist

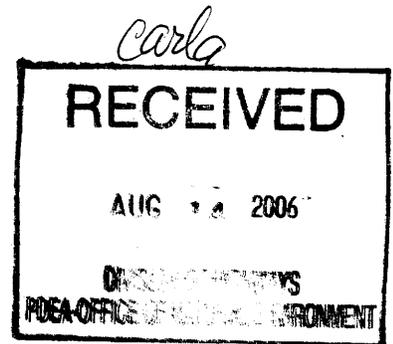
STA. 27+00 EP
EL. 1235.51

70 60 50 40 30 20 10 0 -L- 10 20 30 40 50 60 70



MCDOWELL COUNTY
BRIDGE NO. 73 ON SR 1552 (LAKE JAMES ROAD)
OVER DALES CREEK

FEDERAL-AID PROJECT NO. BRZ-1552(9)
STATE PROJECT NO. 8.2872501
TIP NO. B-4197



CATEGORICAL EXCLUSION

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

APPROVED:

4/11/05
DATE

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

4/13/05
DATE

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

MCDOWELL COUNTY
BRIDGE NO. 73 ON SR 1552 (LAKE JAMES ROAD)
OVER DALES CREEK

FEDERAL-AID PROJECT NO. BRZ-1552(9)
STATE PROJECT NO. 8.2872501
TIP NO. B-4197

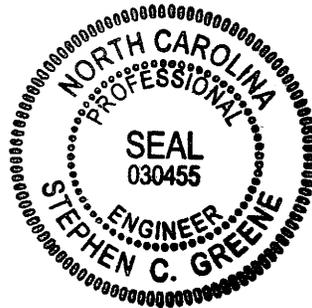
CATEGORICAL EXCLUSION

April 2005

Document Prepared by
Ramey Kemp & Associates, Inc.
4928-A Windy Hill Drive
Raleigh, North Carolina 27609



Stephen C. Greene, P.E.
Ramey Kemp & Associates, Inc.



4/5/05
Date

For the North Carolina Department of Transportation



Vincent J. Rhea, P.E., Project Development Engineer
Project Development and Environmental Analysis Branch

PROJECT COMMITMENTS

MCDOWELL COUNTY
BRIDGE NO. 73 ON SR 1552 (LAKE JAMES ROAD)
OVER DALES CREEK

FEDERAL-AID PROJECT NO. BRZ-1552(9)
STATE PROJECT NO. 8.2872501
TIP NO. B-4197

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

A mussel survey will need to be performed if requested by USFWS prior to the start of construction.

MCDOWELL COUNTY
BRIDGE NO. 73 ON SR 1552 (LAKE JAMES ROAD)
OVER DALES CREEK

FEDERAL-AID PROJECT NO. BRZ-1552(9)
STATE PROJECT NO. 8.2872501
T.I.P. NO. B-4197

INTRODUCTION

The replacement of Bridge No. 73 located on SR 1552 (Lake James Road) over Dales Creek is included in the North Carolina Department of Transportation (NCDOT) 2004-2010 Transportation Improvement Program (TIP) as B-4197 and in the Federal-Aid Bridge Replacement Program (BRZ-1552(9)). The location is shown in Figure 1.

No substantial impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED

The NCDOT Bridge Maintenance Unit records indicate Bridge No. 73 has a sufficiency rating of 68.0 out of a possible 100 for a new structure. In 1998, the bridge had a sufficiency rating of 38 and was considered structurally deficient. In 2001, a temporary crutch bent was added to the structure to increase its sufficiency rating and to make it adequate for continued use until replacement of the structure. The bridge is considered structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

Bridge No. 73 is located on SR 1552 (Lake James Road) in rural McDowell County. Refer to Figure 1 for the project location and Figures 2 and 3 for photos of the existing project area.

Bridge No. 73 was constructed in 1917 and rehabilitated in 1963. The bridge is not currently posted to restrict weight limits.

The overall length of the 4-span structure is 65 ft. It has a clear roadway width of 18.3 ft that includes two travel lanes over the bridge. The superstructure consists of a timber deck on I-beams. The substructure consists of reinforced concrete abutments and pier with timber crutch bents. The height from crown to streambed is 11 ft.

SR 1552 is classified as a rural local in the Statewide Functional Classification System. The 2001 average daily traffic volume (ADT) is estimated to be 200 vehicles per day (vpd). The percentages of truck traffic are 1 percent TTST vehicles and 2 percent dual-tired vehicles. The projected 2025 ADT is 400 vpd.

The two-lane facility measures approximately 18 ft in width and has varying width grassed shoulders on each side of the roadway in the vicinity of the bridge. The horizontal alignment of SR 1552 is poor with numerous curves on both sides of the existing bridge. There is a dirt driveway adjacent to the eastern end of the existing bridge. The

vertical alignment is generally good within the project area. There is no posted speed limit in the immediate vicinity of the bridge. Therefore, the statutory speed limit is 55 miles per hour (mph). Existing right-of-way is approximately 60 ft in width.

There are overhead power and underground telephone lines in the vicinity of the bridge. There are no other apparent utilities. Utility impacts are expected to be minimal.

This section of SR 1552 is not part of a designated bicycle route nor is it listed in the Transportation Improvement Program as needing incidental bicycle accommodations. There is no indication that an unusual number of bicyclists use this roadway.

Land use within the project study area is rural, consisting of forest land and a few scattered residences.

One school bus crosses Bridge No.73 two times per day, for a total of two bus trips per day.

Crash records maintained by the NCDOT indicate there have been no crashes reported in the vicinity of Bridge No. 73 during a recent three year period.

III. ALTERNATIVES

A. Project Description

Based upon the preliminary hydraulic report, the proposed replacement structure for Bridge No. 73 will consist of an 85 ft bridge. The structure will provide two 11 ft travel lanes with 4 ft of lateral clearance on each side of the bridge.

The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined by a more detailed hydraulic analysis to be performed during the final design phase of the bridge.

The roadway approaches will provide two 11 ft travel lanes 5 ft grassed shoulders. The grade will be approximately the same as the existing roadway. The design speed varies for each alternative.

B. Build Alternatives

Three (3) build alternatives for replacing the Bridge No. 73 are described below:

Alternative A

Alternative A consists of replacing the bridge in-place with a new bridge. During construction, traffic will be maintained by an on-site one-lane signalized detour south of SR 1552. The total length of roadway approach work for this alternative is approximately 1045 ft. This alternative will meet a 25 mph design speed due to the horizontal alignment of the current roadway. Refer to Figures 4 and 5 for illustration of this alternative.

The on-site detour will be located approximately 10 ft south of the proposed bridge. The temporary structure will consist of two 84 inch CMP's. The detour roadway approaches will provide one 14 ft travel lane and 3 ft wide shoulders on each side. The length of the temporary detour will be approximately 700 ft.

Alternative B

Alternative B consists of replacing the bridge with a new bridge on new alignment south of SR 1552. During construction, the existing bridge will be used to maintain traffic. The total length of roadway approach work for this alternative is approximately 702 ft. This alternative will meet a 45 mph design speed due to the existing horizontal curvature of the roadway. Refer to Figure 6 for illustration of this alternative.

Alternative B was not selected as the preferred because of the longitudinal impacts of the alignment to Dales Creek.

Alternative C (Preferred)

Alternative C consists of replacing the bridge in-place with a new bridge. During construction, traffic will be maintained by an on-site one-lane signalized detour north of SR 1552. The total length of roadway approach work for this alternative is approximately 1045 ft. This alternative will meet a 25 mph design speed due to the horizontal alignment of the current roadway. Refer to Figures 4 and 7 for illustration of this alternative.

The on-site detour will be located approximately 10 ft north of the proposed bridge. The temporary structure will consist of two 84 inch CMP's. The detour roadway approaches will provide one 14 ft travel lane and 3 ft wide shoulders on each side. The length of the temporary detour will be approximately 700 ft.

C. Alternates Eliminated From Further Consideration

The "Do-Nothing" alternative will eventually necessitate closure of the bridge due to its poor condition. This is not desirable due to the traffic service provided by SR 1552.

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

D. Preferred Alternative (Alternative C)

Alternative C was selected as the preferred because it has the least impact to Dales Creek and maintains traffic on-site during construction.

The Division Engineer concurs with Alternative C as the Preferred Alternative.

E. Anticipated Design Exception

The speed limit is not posted on SR 1552; therefore, a statutory speed limit of 55 mph applies. Due to the existing road conditions a design exception will be required for the horizontal alignment for all alternatives.

IV. ESTIMATED COSTS

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

Table 1
Estimated Project Costs

	Alternative A	Alternative B	Alternative C (Preferred)
Structure Removal (Existing)	\$12,550	\$12,550	\$12,550
Structure Proposed	\$216,750	\$202,300	\$216,750
Detour Structure and Approaches	\$150,718	\$0	\$184,219
Roadway Approaches	\$60,888	\$127,648	\$60,888
Miscellaneous and Mobilization	\$130,094	\$90,502	\$144,593
Engineering and Contingencies	\$129,000	\$67,000	\$131,000
Right-of-Way/Easement and Utilities	\$60,000	73,600	Don't have yet
Total Project Cost	\$760,000	\$573,600	\$750,000??

The estimated cost of the project, as shown in the 2004-2010 NCDOT Transportation Improvement Program is \$760,000 including \$100,000 spent in prior years, \$60,000 for right-of-way and \$600,000 for construction.

V. NATURAL RESOURCES

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

A. Methodology

Research was conducted prior to the field investigations. Published resource information pertaining to the project area was collected and reviewed. Resources utilized in this preliminary investigation of the project area include:

- U.S. Geological Survey (USGS) Ashford and Marion East 7.5 – minute topographic quadrangle maps (1994).
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) map for Ashford and Marion East 7.5 – minute quadrangles (1995).
- North Carolina Department of Transportation (NCDOT) aerial photographs of the project area (1:1,200 scale). U.S. Department of Agriculture, Natural Resource Conservation Service – Soil Survey of McDowell County, North Carolina (1995).
- U.S. Environmental Protection Agency Water Discharges and RCRA Map accessed via EPA's EnviroMapper Program (September 2001).

Water research information was obtained from publications of the North Carolina Department of Environment, and Natural Resources (NCDENR, 1999, 2000, 2001). Information concerning the occurrence of federal and state protected species in the project area was obtained from the U.S. Fish and Wildlife Service list of protected and candidate species (March 3, 2001) and from the North Carolina Natural Heritage Program (NCNHP)

database of rare species and unique habitats (NCNHP, 2001). NCNHP files were reviewed for documented occurrences of state and federally listed species. USFWS Recovery Plans for federal listed species were reviewed, where applicable.

A field investigation of natural resources within the project area was conducted on July 25, 2001. Water resources were identified and categorized, and their physical characteristics were documented while in the field. Plant communities and their associated wildlife were also identified and documented. The *Classification of Natural Communities of North Carolina, Third Approximation* (Schafale and Weakley, 1990) was used to classify plant communities, where possible. Plant taxonomy was based primarily upon the *Manual of the Vascular Flora of the Carolinas* (Radford, et al., 1968). Animal taxonomy was based primarily upon *Amphibians and Reptiles of the Carolinas and Virginia* (Martof, et al., 1980), *Freshwater Fishes of the Carolinas, Virginia, Maryland, and Delaware* (Rohde, et al., 1994), *Birds of the Carolinas* (Potter, et al., 1980), and *Mammals of the Carolinas, Virginia, and Maryland* (Webster, et al., 1985).

Approximate boundaries of major vegetation communities were mapped while in the field utilizing aerial photography of the project site. Wildlife identification involved active searching of known or suspected species, incidental visual observations, incidental auditory indicators (such as birdsong and other sounds), and secondary indicators of species presence or site utilization (such as scat, tracks, and burrows). Predictions regarding wildlife community composition were supplemented utilizing a general qualitative habitat assessment based on existing vegetation communities and aquatic habitat.

Wetlands subject to regulation by the Corps of Engineers under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 were identified and delineated according to methods prescribed in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1) and the Corps' March 6, 1992 guidance document titled *Clarification and Interpretation of the 1987 Manual*. Values of wetlands delineated were assessed utilizing the *Guidance for Rating the Values of Wetlands in North Carolina* (NCDEHNR, 1995). Wetland types were classified based on the U.S. Fish and Wildlife Service *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al., 1979). Wetland boundaries were surveyed and recorded in the field using Global Positioning Satellite (GPS) survey methods.

B. Physiography and Soils

Most of McDowell County lies in the Blue Ridge (Southern Appalachian Mountains) Physiographic Province of western North Carolina, with the exception of the southeastern portion of the county, which lies within the Southern Piedmont Physiographic Province (USDA, 1995). The county encompasses 437 square miles and is primarily rural. The county ranges in elevation from approximately 980 ft mean sea level (msl) along Cane Creek on the Rutherford County line to 5,665 ft msl on Pinnacle Mountain where Buncombe and Yancey Counties abut McDowell County. Elevations within the project area range from approximately 1,220 to 1,260 ft msl, with the stream bed near the bridge lying at approximately 1,220 ft msl.

The portion of McDowell County within the project area (NRCS map panel 4 of 10) has been mapped by NRCS under the most recently published soil survey of McDowell County (USDA, 1995). A brief description of mapped and observed soil units is as follows:

- Fluvaquents-Udfluvents complex along the stream bed (unmapped but observed).

- Chestnut-Ashe complex, 25 to 80 percent slopes, stony (CaF). This unit consists mainly of a moderately deep, well-drained Chestnut soil and a moderately deep, somewhat excessively drained Ashe soil. These soils are found on mountain ridgetops and side slopes. The surface layer of the Chestnut soil is brown gravelly sandy loam up to 5.0 inches thick, and the surface layer of the Ashe soil is gravelly loam that is dark brown in the upper 3.0 inches and yellowish brown in the lower 4.0 inches. Permeability is moderately rapid and surface runoff is rapid in bare or unprotected areas. Depth to soft bedrock is 20 to 40 inches in the Chestnut soil and the seasonal high water table is below a depth of 6.0 ft in the Ashe soil. Chestnut-Ashe complex soil occurs upon moderate to steep slopes west of Dales Creek in the southwestern most portion of the project area. These soils are classified as non-hydric (USDA, 1996).
- Evard-Cowee complex, 25 to 60 percent slopes (EwE). This unit consists mainly of very deep, well-drained, steep Evard soil and a moderately deep, well-drained, steep Cowee soil. These soils are found on mountain side slopes. The surface layer of the Evard and Cowee soils is brown loam up to 5.0 inches thick. Permeability is moderate and surface runoff is rapid in bare or unprotected areas for both soils. The seasonal high water table is below a depth of 6.0 ft. Evard-Cowee complex soil occurs upon moderate slopes south of SR 1552 in the northwestern portion of the project area. These soils are classified as non-hydric (USDA, 1996).
- Lonon-Northcove complex, 6 to 15 percent slopes (LnC). This unit consists mainly of very deep, well-drained, strongly sloping Lonon and Northcove soils on foot slopes and colluvial fans. The surface layer of this complex is up to 3.0 inches thick. Lonon soil is a dark brown fine sandy loam and Northcove soil is a dark grayish brown very cobbly sandy loam. Permeability is moderate in the Lonon soils and moderately rapid in the Northcove soil. Surface runoff is medium or rapid in bare or unprotected areas of Lonon soil and rapid in bare or unprotected areas of Northcove soil. The seasonal high water table is below a depth of 6.0 ft. In the project area, soils of the Lonon-Northcove complex occur along floodplain terraces and stream banks bordering Dales Creek. These soils are classified as non-hydric (USDA, 1996).

C. Water Resources

C.1. Waters Impacted

Dales Creek comprises the single water resource within the project area. Dales Creek is located within the Catawba River drainage basin. The Catawba River basin is the eighth largest river basin in North Carolina, encompassing 3,279 square miles. Dales Creek ranges in width from approximately 10 ft to 15 ft within the project area. The average stream depth observed at the time of the field investigation was 0.5 ft in well-defined riffles to 2.0 ft in pools. The field investigation was performed during a rainfall event. Surface waters were clear and water levels appeared to be slightly above the ordinarily high water level.

C.2. Water Resource Characteristics

The substrate of Dales Creek in the project area is comprised of sediments ranging in size from fine sand to cobbles. Scattered bedrock outcrops occur along the stream bed and stream banks of Dales Creek. The survey area consists of a series of frequent, well-defined riffles and runs that are as wide as the stream and are at least twice as long as the width of the stream. Pools are infrequent (comprising less than 30 percent of the total aquatic habitat) and are present in a variety of sizes. No sand bars or major channel meanders are present.

The stream banks (both upstream and downstream of the bridge) are well vegetated with woody vegetation and appear stable throughout the northern quadrants and the southwest quadrant of the site. The banks in the southeast quadrant of the site are vegetated with few trees and shrubs that appear to be generally healthy and, as a result, the southeast bank exhibits indicators of moderate erosion at the southern boundary of the site. The width of the riparian vegetation zone is greater than 60 ft in the northern and southwest quadrants, but is less than 20 ft in the southeast quadrant of the project area. An ephemeral tributary exists on a side terrace in the northwest quadrant of the project area and an intermittent tributary enters the site directly north of the bridge. Riprap armoring is restricted to the area immediately adjacent to the bridge.

Under the federal system for cataloging drainage basins, the drainage basin containing the project area is designated as USGS Hydrologic Unit 03050101 (the Upper Catawba drainage basin). Under the North Carolina DWQ system for cataloging drainage basins, the drainage basin containing the project area is designated as Subbasin 03-08-30, the Catawba River Headwaters. Dales Creek has been assigned Stream Index Number (SIN) 11-27.

Dales Creek has been assigned a best usage classification of **C**. The **C** designation indicates waters that are protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture, and other uses found suitable for Class **C** waters. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development or types of discharges in Class **C** waters.

No surface waters classified as High Quality Water (**HQW**), Water Supplies (**WS-I** or **WS-II**), or Outstanding Resource Waters (**ORW**) occur within 0.6 mile of the project area.

One method used by DWQ to monitor water quality is through long-term monitoring of macroinvertebrates. No previously monitored or presently monitored benthic monitoring stations exist within the Dales Creek watershed.

Discharges that enter surface waters through a pipe, ditch or other well-defined point of discharge are broadly referred to as "point sources." No registered point source discharges are located within the Dales Creek watershed or the project study area (EPA, 2001).

C.3. Anticipated Impacts to Water Resources

Impacts to water resources in the project area are likely to result from activities associated with project construction. Activities likely to result in impacts consist of clearing and grubbing along stream banks, removal of riparian canopy, instream construction, use of fertilizers and pesticides as part of revegetation operations, and installation of pavement. The following impacts to surface water resources are likely to result from the aforementioned construction activities:

- Short-term increases in sedimentation and siltation downstream of the crossing associated with increased erosion potential in the project area during and immediately following construction.
- Short-term changes in incident light levels and turbidity due to increased sedimentation rates and vegetation removal.
- Short-term alteration of water levels and flows due to interruptions and/or additions of surface water and groundwater during construction.

- Short-term increases in nutrient loading during construction via runoff from temporarily exposed land surfaces.
- A short-term increase in the potential for the release of toxic compounds (such as petroleum products) from construction equipment and other vehicles.
- Changes in and possible destabilization of water temperature regimes due to removal of vegetation within or overhanging the watercourse.
- Increased concentrations of pollutants typically associated within roadway runoff.

To minimize potential impacts to water resources in and downstream of the project area, NCDOT's *Best Management Practices for the Protection of Surface Waters* (NCDOT, 1997) will be strictly enforced during the construction phase of the project. Impacts will be minimized to the fullest degree practicable by limiting instream activities and by revegetating stream banks immediately following the completion of grading.

C.4. Impacts Related to Bridge Demolition and Removal

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled: *Pre-Construction Guidelines for Bridge Demolition and Removal*, *Policy: Bridge Demolition and Removal in Water of the United States*, and *Best Management Practices for Bridge Demolition and Removal*.

The superstructure for Bridge No. 73 consists of a timber deck on I-beams. The substructure is composed of reinforced concrete abutments and pier with timber crutch bents. Neither the superstructure nor the substructure will create any temporary fill in the creek. However, the removal of the substructure may create some disturbance of the streambed. If removal of the substructure will create disturbance in the streambed, a turbidity curtain will be used due to sediment concerns.

Because no moratoriums apply and Dales Creek is a Class C water, this project falls under Case 3 (no special restrictions) of the *Best Management Practices for Bridge Demolition and Removal*.

D. Biotic Resources

Living systems described in the following sections include communities of associated plants and animals observed within the project area. These descriptions refer to the flora and fauna in each community and the relationship of these biotic components. Biotic resources assessed as part of this investigation include discernable terrestrial and aquatic communities. The composition and distribution of biotic communities within the study area are a function of topography, soils, hydrology, and past and present land uses.

Terrestrial systems are discussed primarily from the perspective of dominant plant communities and are classified in accordance with the *Classification of Natural Communities of North Carolina: Third Approximation* (Schafale and Weakley, 1990) where applicable. Representative animal species likely to inhabit or utilize biotic communities of the project area (based on published range distributions) are also discussed. Species observed during field investigation are listed.

D.1. Plant Communities

Boundaries between contiguous biotic communities are gradational in certain portions of the project area, making boundaries sometimes difficult to delineate. Four visually discernable terrestrial communities are located within

the project area. Two of these communities have been altered to the extent that they cannot be classified as a natural vegetation community under the *Classification of Natural Communities of North Carolina*. These altered communities consist of (1) altered right-of-way communities and (2) landscaped areas. Two communities within the project area retain enough of their natural characteristics to be classifiable under the *Classification of Natural Communities of North Carolina*. These natural communities consist of (1) Piedmont/Mountain Bottomland Forest and (2) Mesic Mixed Hardwood Forest (Piedmont Subtype). In addition to the aforementioned terrestrial components, the aquatic community associated with Dales Creek was assessed within the project area.

Altered Right-of-Way Communities -- These communities are located along the right-of-way bordering on SR 1552. Vegetation within these areas has been maintained in an early succession through mechanical and possibly chemical vegetation management practices. Well-drained Evard-Cowee and Lonon-Northcove complex soils underlie this community.

No mature woody plant species were observed within the altered rights-of-way communities of the project area. Dominant herbaceous species observed at the time of site investigation include wood sorrel (*Oxalis* sp.), English plantain (*Plantago lanceolata*), common milkweed (*Asclepias syriaca*), red-stemmed plantain (*Plantago rugelli*), oxeye daisy (*Chrysanthemum leucanthemum*), orange jewelweed (*Impatiens capensis*), pokeweed (*Phytolacca americana*), goldenrod (*Solidago* sp.), crown vetch (*Coronilla varia*), asters (*Aster* spp.), barnyard grass (*Echinochloa crusgalli*), tick-trefoil (*Desmodium nudiflorum*), Queen Anne's lace (*Daucus carota*), bush clover (*Lespedeza* sp.), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), partridge pea (*Cassia fasciculata*), woolly mullein (*Verbascum thapsus*), and Joe-pye-weed (*Eupatorium fistulosum*).

Landscaped Areas – This community consists of cleared, landscaped, and vegetatively managed areas around a residential dwelling located in the northwest quadrant of the project area. Well-drained Lonon and Northcove soils underlie this community.

Dominant plant species observed at the time of site investigation includes assorted cultivars, crab grass (*Digitaria sanguinalis*), unidentified grasses (*Poaceae*), common chickweed (*Stellaria media*), dandelion (*Taraxacum officinale*), common plantain (*Plantago major*), common ragweed (*Ambrosia artemisiifolia*), and Japanese honeysuckle (*Lonicera japonica*).

Piedmont/Mountain Bottomland Forest – These communities occur as narrow remnants (less than 20 ft wide) along the banks and floodplain of Dales Creek in all quadrants of the project area. The Piedmont/Mountain Bottomland Forest occurs upon a narrow, gently sloping floodplain terrace perched approximately 3.5 to 4.5 ft above the stream bed. Well-drained Lonon-Northcove complex soils underlie this community.

Dominant tree species observed within the Piedmont/Mountain Bottomland Forest at the time of site investigation include sweetgum (*Liquidambar styraciflua*), tulip tree (*Liriodendron tulipifera*), eastern hemlock (*Tsuga canadensis*), and black walnut (*Juglans nigra*). Dominant sapling and shrub species observed at the time of site investigation include American holly (*Ilex opaca*), spicebush (*Lindera benzoin*), black willow (*Salix nigra*), black locust (*Robina pseudo-acacia*), pale rhododendron (*Rhododendron maximum*), tag alder (*Alnus serrulata*), flowering dogwood (*Cornus florida*), witch-hazel (*Hamamelis virginiana*), and ironwood (*Carpinus caroliniana*). Dominant herbaceous species observed at the time of site investigation include pokeweed (*Phytolacca americana*), goldenrod (*Solidago*, sp.), jack-in-the-pulpit (*Arisaema triphyllum*), and aster (*Aster*, sp.). Dominant

vine species observed at the time of site investigation include poison ivy (*Toxicodendron radicans*), common greenbrier (*Smilax rotundifolia*), and riverside grape (*Vitis riparia*).

Mesic Mixed Hardwood Forest (Piedmont Subtype) – A Mesic Mixed Hardwood Forest occurs on moderate slopes south of SR 1552 in the southwest quadrant of the project area. As mapped by NRCS, this community is underlain by well-drained Evard and Cowee soils. Soils observed within this community are relatively thin and scattered rock outcrops are present.

Dominant tree species observed within the Mesic Mixed Hardwood Forests (Piedmont Subtype) at the time of site investigation include tulip tree (*Liriodendron tulipifera*), black oak (*Quercus velutina*), rock chestnut oak (*Quercus prinus*), eastern hemlock (*Tsuga canadensis*), black walnut (*Juglans nigra*), and white oak (*Quercus alba*). Dominant sapling and shrub species observed at the time of site investigation include American holly (*Ilex opaca*), sassafras (*Sassafras albidum*), hickory saplings and seedlings (*Carya* spp.), black locust (*Robinia pseudo-acacia*), pale rhododendron (*Rhododendrum maximum*), and witch-hazel (*Hamamelis virginiana*). The dominant vine species observed at the time of the site investigation was poison ivy (*Toxicodendron radicans*).

D.2. Wildlife

The communities within the project vicinity have been altered or affected by man's activities to varying degrees. Due to forest tract fragmentation common to the project region, species that require large contiguous tracts of forests are not likely to utilize the site on a normal basis. Certain opportunistic wildlife species, such as white-tailed deer (*Odocoileus virginianus*), woodchuck (*Marmota monax*) and eastern cottontail rabbit (*Sylvilagus floridanus*), can be expected to utilize edge habitat present within the project area. Due to the relatively small size of the project area and the fact that many wildlife species are capable of moving between and/or utilizing adjoining communities, no distinct terrestrial wildlife habitat can be assigned to any one terrestrial plant community within the project area.

No mammals were observed in the project vicinity at the time of field investigation. Tracks and scat of raccoon (*Procyon lotor*) and white-tailed deer (*Odocoileus virginianus*) were observed along stream banks. Other mammals common to the project region which can be expected to periodically utilize habitat of the project area include the Virginia opossum (*Didelphis virginiana*), shrews and moles (*Insectivora*), gray squirrel (*Sciurus carolinensis*), beaver (*Castor canadensis*), eastern harvest mouse (*Reithrodontomys humulis*), white-footed mouse (*Peromyscus leucopus*), golden mouse (*Ochrotomys nuttalli*), hispid cotton rat (*Sigmodon hispidus*), eastern woodrat (*Neotoma floridana*), meadow vole (*Microtus pennsylvanicus*), woodland vole (*Microtus pinetorum*), muskrat (*Ondatra zibethicus*), black rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), house mouse (*Mus musculus*), meadow jumping mouse (*Zapus hudsonius*), woodland jumping mouse (*Napaeozapus insignis*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), eastern spotted skunk (*Spilogale putorius*), and striped skunk (*Mephitis mephitis*).

The forest tracts of the project area provide suitable habitat and forage areas for a wide variety of birds common to the region. These resident and migratory songbirds can be expected to periodically utilize habitat present in the project vicinity. The open areas and edge habitat within the project vicinity provide probable hunting grounds for birds of prey such as hawks and owls.

No reptiles were observed in the project area at the time of field investigation. Adult green frogs (*Rana clamitans*) were observed in ephemeral areas along Dales Creek, and treefrogs (*Hyla* sp.) were observed in adjacent

forests. Additionally, a variety of reptile and amphibian species may use the communities located in the project area. These animals include the rat snake (*Elaphe obsoleta*), eastern box turtle (*Terrapene carolina*), five-lined skink (*Eumeces fasciatus*), two-lined salamander (*Eurycea bislineata*), pickerel frog (*Rana palustris*), and American toad (*Bufo americanus*). Fish species are discussed in following sections.

D.3. Aquatic Communities

The aquatic community consists of Dales Creek below the ordinary high water line. The dominant aquatic habitats within this section of Dales Creek consist of cobble/boulder substrate, snags, and root mats. The aquatic habitat within the project area is characterized by a series of frequent, well-defined, riffles and runs that are as wide as the stream and are at least as long as twice the width of the stream. Cobble and boulder substrate was less than 20 percent embedded on the day of the field investigation. Pools are infrequent (comprising less than 30 percent of the total aquatic habitat) and are present in a variety of sizes. Pools forming on the sides of the channel adjacent to roots, snags, and boulders function as good fish habitat.

No aquatic vegetation was observed below the ordinary high water line of Dales Creek at the time of field investigation. A narrow fringe (generally less than 3.0 ft wide) of hydrophilic vegetation occurs along portions of the stream banks.

Aquatic vertebrates observed at the time of field investigation consists of unidentified minnows (Cyprinidae), green frog (*Rana clamitans*), and an unidentified species of tree frog (*Hyla* sp.). Aquatic invertebrates observed within the project area at the time of field investigation include crayfish (Cambaridae), snail (Pleuroceridae), caddisfly larvae (*Neophylax* sp.), net-spinning caddisfly larvae (Hydropsychidae), caddisfly larvae (Trichoptera), beetle larvae (Psephenidae), alderfly (*Sialis* sp.), and water striders (Gerridae).

D.4. Anticipated Impacts to Biotic Communities

D.4.a. Terrestrial Communities Impacts

Potential impacts to plant communities are estimated based on the approximate area of each plant community present within both the proposed right-of-way and the temporary construction limits of any on-site detour or easement that falls outside the estimated permanent right-of-way limit. A summary of potential plant community impacts is presented in Table 2. All plant community impacts are based on aerial photograph base mapping. A portion of the permanent plant community impact amount will consist of proposed right-of-way for the road after the bridge replacement is complete. Impervious surface and open water areas are not included in this analysis.

**Table 2
Potential Impacts to Plant Communities**

PLANT COMMUNITY	POTENTIAL IMPACTS				
	Acres				
	ALT A		ALT B	ALT C (Preferred)	
	Impacts	Temp. Impacts*	Impacts	Impacts	Temp. Impacts*
Altered Right-of-Way Communities	0.00	0.00	0.00	0.00	0.15
Landscaped Areas	0.00	0.00	0.00	0.00	0.00
Piedmont/Mountain Bottomland Forest	0.17	0.18	0.18	0.17	0.08
Mesic Mixed Hardwood Forest	0.10	0.11	0.11	0.10	0.12
Total (acre)	0.27	0.29	0.57	0.27	0.35
TOTAL FOR ALT (acre)	0.56		0.57	0.62	

* Note: Temporary construction impacts are based on the portion of the impacts that fall outside the estimated right-of-way limit or impacts of temporary on-site detours.

Permanent community impacts for Alternative A represent the least amount of the three alternatives when the potential temporary impacts are included. The highest amount of permanent plant community impacts result from Alternative B, which calls for bridge replacement on new location. The plant communities with the largest amount of potential permanent and temporary impacts for all proposed alternatives are the piedmont/mountain bottomland forest and mesic mixed hardwood forest communities.

D.4.b. Aquatic Communities Impacts

The replacement of the Bridge No. 73 on SR 1552 over Dales Creek will result in certain unavoidable impacts to the aquatic community. Probable impacts will be associated with the physical disturbance of the benthic habitat and water column disturbances resulting from changes in water quantity and quality. Significant disturbance of stream segments can have an adverse effect on aquatic community composition by reducing species diversity and the overall quality of aquatic habitats. Physical alterations to aquatic habitats can result in the following impacts to aquatic communities:

- Inhibition of plant growth.
- Resuspension of organic detritus and removal of aquatic vegetation that can lead to increased nutrient loading. Nutrient loading can, in turn, lead to algal blooms and ensuing depletion of dissolved oxygen levels.
- Increases in suspended and settleable solids that can, in turn, lead to clogging of feeding structures of filter-feeding organisms and the gills of fish.
- Loss of benthic macroinvertebrates through increased scouring and sediment loading.
- Loss of fish shelter through removal of overhanging stream banks and snags.
- Increases in seasonal water temperatures resulting from removal of riparian canopy.
- Burial of benthic organisms and associated habitat.

Unavoidable impacts to aquatic communities within and immediately downstream of the project area will be minimized to the fullest degree practicable through strict adherence to NCDOT's *Best Management Practices for*

the *Protection of Surface Waters* (NCDOT, 1997) and other applicable guidelines pertaining to best management practices. Means to minimize impacts will include (1) utilizing construction methods that will limit instream activities as much as practicable, (2) restoring the stream bed as needed, and (3) revegetating stream banks immediately following the completion of grading.

E. Special Topics

E.1. “Waters of the United States”: Jurisdictional Issues

Surface waters within the embankments of Dales Creek are subject to jurisdictional consideration under Section 404 of the Clean Water Act as “Waters of the United States” (33 CFR 328.3). Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology within 12 inches of the soil surface for a portion (12.5 percent) of the growing season (DOA 1987). No wetlands have been mapped within the project area under the National Wetland Inventory (NWI) program.

The surface waters within Dales Creek exhibit characteristics of a permanently flooded, upper perennial, riverine habitat with an unconsolidated bottom (R3UBH). Dales Creek is a jurisdictional surface water

E.2. Anticipated Impacts to Waters of the United States

Temporary and permanent impacts to surface waters and wetlands are estimated based on the amount of each jurisdictional area within the project limits. Temporary impacts include those impacts that will result from temporary construction activities outside of permanent right-of-way and/or those associated with temporary on-site detours. Temporary impact areas will be restored to their original condition after the project has been completed. Permanent impacts are those areas that will be in the construction limits and/or the proposed right-of-way of the new structure and approaches. Portions of those areas that are considered temporary impact areas often end up being within the final right-of-way. Potential surface water impacts are included in Table 3.

**Table 3
Anticipated Impacts to Surface Waters**

JURISDICTIONAL AREAS	ALT A		ALT B	ALT C (Preferred)	
	Impacts	Temp. Impacts*	Impacts	Impacts	Temp. Impacts*
Perennial Stream Channel Impacts ft	0.0	100	0.0	0.0	70
TOTAL FOR ALT ft	100		0.0	70	

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

No jurisdictional wetlands were found within the project study area. None of the studied alternative will have any permanent stream channel impacts because each alternative calls for the existing bridge to be replaced with a new bridge. The on-site detour for Alternative A will impact 100 feet of stream channel temporarily. Alternative C (Preferred) will have 70 feet of temporary stream channel impacts.

E.3. Permits

Section 404 of the Clean Water Act - In accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344), a permit is required from the United States Army Corp of Engineers (USACE) for projects of this type for the discharge of dredge or fill material in "Waters of the United States." The USACE issues two types of permits for these activities. A general permit may be issued on a nationwide or regional basis for a category, or categories, of activities when: those activities are substantially similar in nature and cause only minimal individual or cumulative environmental impacts, or when the general permit would result in avoiding unnecessary duplication of regulatory control exercised by another Federal, state, or local agency provided that the environmental consequences of the action are individually and cumulatively minimal. If a general permit is not appropriate for a particular activity, then an individual permit must be utilized. Individual permits are authorized on a case-by-case evaluation of a specific project involving the proposed discharges.

It is anticipated that this project will fall under Nationwide Permit 23, which is a type of general permit. Nationwide Permit 23 is relevant to approved Categorical Exclusions. This permit authorizes any 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 environment. Activities authorized under nationwide permits must satisfy all terms and conditions of the particular permit. However, final permit decisions are left to the discretionary authority of the USACE. Since the proposed project is located in a designated "Trout" county, the authorization of a nationwide permit by the USACE is conditioned upon the concurrence of the NCWRC.

Section 401 Water Quality Certification - A 401 Water Quality Certification, administered through the DWQ, will also be required. This certification is issued for any activity which may result in a discharge into waters for which a federal permit is required. According to the DWQ, one condition of the permit is that the appropriate sediment and erosion control practices must be utilized to prevent exceedences of the appropriate turbidity water quality standard.

E.4. Mitigation

The USACE has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy which embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the waters of the United States, specifically 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.

Avoidance – Mitigation by avoidance examines appropriate and practicable measures for averting impact to Waters of the United States. A 1990 Memorandum of Agreement between the Environmental Protection Agency (EPA) and the USACE, states that in determining appropriate and practicable measures to offset unavoidable impacts; such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes.

The project purpose necessitates traversing Dales Creek; therefore totally avoiding surface water impacts is impossible.

Minimization – Minimization of adverse impact to Waters of the United States includes examination of appropriate and practicable measures to reduce such impacts. Implementation of these steps will be required through project modifications and permit conditions. Adverse impacts are typically minimized by decreasing the proposed project footprint through reduction of median widths, right-of-way widths, and/or fill slopes.

Other practical mechanisms to minimize impacts to waters of the United States include strict enforcement of sedimentation control BMPs for protection of surface waters during the entire life of the project; reduction of clearing and grubbing activity; reduction/elimination of direct discharge into streams; reduction of runoff velocity; reestablishment of vegetation on exposed areas, with judicious pesticide and herbicide management; minimization of instream activity; and litter/debris control.

No measures are proposed for this project because there are no jurisdictional wetlands within the project study area.

Compensatory Mitigation – Compensatory mitigation, including restoration, creation and enhancement of waters of the United States, is typically not considered unless anticipated impacts to Waters of the United States have been avoided and minimized to the maximum extent practicable. Further, it is recognized that “no net loss of wetlands” may not be achievable in every permit action. Therefore, compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization measures have been required.

Compensatory mitigation is not expected to be required for this project. A final determination regarding mitigation requirements rest with the USACE.

F. Protected Species

F.1. Federally Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Table 4 lists the federal protected species for McDowell County (USFWS list dated February 24, 2003):

**Table 4
Federally Protected Species Listed for McDowell County**

Common Name	Scientific Name	Status	Biological Conclusion
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	No Effect
Bog Turtle	<i>Clemmys muhlenbergii</i>	T(S/A)	N/A
Mountain Golden Heather	<i>Hudsonia Montana</i>	T	No Effect
Small-Whorled Pogonia	<i>Isotria medeoloides</i>	T	May Effect, Not Likely to Adversely Effect

Threatened - any native or once-native species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Threatened (S/A) – a species carrying the threatened status due to having a similar appearance to another listed species.

Bald Eagle - The bald eagle is a large raptor. The characteristic adult plumage consists of a white head and tail with a dark brown body. Juvenile eagles are completely dark brown and do not fully develop the white head and tail until the fifth or sixth year. Fish are the primary food source, but bald eagles will also take a variety of birds, mammals, and turtles (both live and as carrion) when fish are not readily available. Adults average about 3.0 ft from head to tail, weigh approximately 10 to 12 pounds and have a wingspan that can reach 7.0 ft. Generally, female bald eagles are somewhat larger than the males.

Habitat includes quiet coastal areas, rivers or lakeshores with large, tall trees. Man-made reservoirs have also provided habitat.

The North Carolina Natural Heritage Program's database of rare species and unique habitats was reviewed in September of 2001. No populations of the species have been recorded in the project vicinity. The project area was investigated on July 25, 2001. No individual organisms, populations, or suitable habitat were observed within the project area.

BIOLOGICAL CONCLUSION: NO EFFECT

Bog Turtle - The bog turtle is a small freshwater turtle that has a carapace length of 4.5 inches or less. The surface of the carapace is rough with growth annuli, (worn smooth on adults) and a dark brown, black or mahogany color. The plastron is hingeless and black with irregular shaped yellow to cream blotches along the midline. Fleshy parts are brown to pink-brown and may have some red mottles on limbs. A large conspicuous orange, yellow or reddish blotch lies behind both eyes, but is degenerated in old adults. A low medial keel is present in juveniles. They are found in freshwater wetlands characterized by open fields, meadows, marshes, slow moving streams, ditches, or boggy areas. In July and August they aestivate in the soft mud.

It is found in freshwater wetlands characterized by open fields, meadows, marshes with slow moving streams, ditches, and boggy areas. In July and August, the turtle aestivates in soft mud. During winter they hibernate below the frost zone in holes, muskrat borrows, clumps of sedges, or the mud of waterways.

The southern population of the bog turtle is listed as a Threatened (S/A) due to similarity of appearance with the northern population of the bog turtle (which is federally listed as threatened but which does not occur in North Carolina). Species identified as "Threatened (S/A)" are not subject to Section 7 Consultation.

BIOLOGICAL CONCLUSION: NO SURVEY REQUIRED

Mountain Golden Heather - Mountain golden heather is a low, needle-leaved shrub with yellow flowers and long-stalked fruit capsules. It usually grows in clumps of 4 to 8 inches across and about 6 inches high, and sometimes is seen in larger patches of 1.0 to 2.0 ft across. The plants have the general aspect of a big moss or a low juniper, but their branching is more open; their leaves are about 0.25 inch long; and the plant is often somewhat yellow-green in color, especially in shade. The leaves from previous years appear scale-like and persist on the older branches. The flowers appear in early or mid-June, and are yellow, nearly 1.0 inch across, with five blunt-tipped petals and 20 to 30 stamens. The fruit capsules are on 0.5 inch stalks, and are roundish with three projecting points at the tips. These fruits often persist after opening; and may be seen at any time of the year.

Mountain golden heather grows on exposed quartzite ledges in an ecotone between bare rock and *Leiophyllum* dominated heath balds that merge into pine/oak forest. The plant persists for some time in the partial shade of pines, but it appears less healthy than in open areas.

The North Carolina Natural Heritage Program's database of rare species and unique habitats was reviewed in September of 2001. No populations of the species have been recorded in the project vicinity. The project area was investigated on July 25, 2001 and no suitable habitat was observed within the project area. Elevations within the project area range from approximately 1,220 to 1,260 ft. These elevations are below the required elevations of 2,800 to 4,000 ft.

BIOLOGICAL CONCLUSION: NO EFFECT

Small-Whorled Pogonia – The small-whorled pogonia is a terrestrial orchid growing to about 10.0 inches high. Five or six drooping, pale, dusty green, widely rounded leaves with pointed tips are arranged in a whorl at the apex of the green or purple, hollow stem. Typically a single, yellowish-green, nearly stalkless flower is produced just above the leaves; a second flower rarely may be present. Flowers consist of three petals, which may reach lengths of 0.7 inch, surrounded by three narrow sepals up to 1.0 inch in length. Flower production, which occurs from May to July, is followed by the formulation of an erect ellipsoidal capsule 0.7 to 1.2 inches in length (Massey *et al.* 1983). This species may remain dormant for periods up to 10 years between blooming periods (Newcomb 1977).

The small-whorled pogonia is widespread, occurring from southern Maine to northern Georgia, but is very local in distribution. In North Carolina, this species is found scattered locations in the Mountains, Piedmont and Sandhills (Amoroso 2002). Small-whorled pogonia is found in open, dry deciduous or mixed pine-deciduous forest, or along stream banks. Examples of areas providing suitable conditions (open canopy and shrub layer with a sparse herb layer) where small-whorled pogonia has been found include old fields, pastures, windthrow areas, cutover forests, old orchards, and semi-permanent canopy breaks along roads, streams, lakes, and cliffs (Massey *et al.* 1983). In the Mountains and Piedmont of North Carolina, this species is usually found in association with white pine (*Pinus strobus*) (Weakley 1993).

Suitable habitat for small-whorled pogonia was found in more open, wooded sections of the project study corridor near SR 1552. A systematic survey of the suitable habitat yielded no individuals of small-whorled pogonia. NHP records document no occurrences of small-whorled pogonia within 2.0 miles of the study corridor.

BIOLOGICAL CONCLUSION: MAY EFFECT, NOT LIKELY TO ADVERSELY EFFECT

F.2. Federal Species of Concern

Federal Species of Concern (FSC) are not afforded federal protection under the Endangered Species Act and are not subject to any of the provisions included in Section 7 until they are formally proposed or listed as Threatened or Endangered. In addition to the federal program, organisms that are listed as Endangered (E), Threatened (T), or Special Concern (SC) by the North Carolina Natural Heritage Program (NCNHP) on its list of Rare Plant and Animal Species are afforded state protection under the N.C. State Endangered Species Act and the N.C. Plant Protection and Conservation Act of 1979. Table 5 lists the Federal Species of Concern for McDowell County, the state status of these species, and the potential for suitable habitat in the project area. The NCNHP database shows no occurrences of FSC within 1 mile of the project area as of July 2001.

**Table 5
Federal Species of Concern (FSC) listed for McDowell County**

Common Name	Scientific Name	Potential Habitat	State Status
Southern Appalachian Woodrat	<i>Neotoma floridana haematoreia</i>	Yes	SC
Allegheny Woodrat	<i>Neotoma magister</i>	Yes	SC
Olive-sided Flycatcher	<i>Contopus borealis</i>	No	SC
Cerulean Warbler	<i>Dendroica cerulea</i>	Yes	SR
Bennett's Mill Cave Water Slater	<i>Caecidotea carolinensis</i>	No	SR
Diana Fritillary Butterfly	<i>Speyeria diana</i>	Yes	SR
Roan Sedge	<i>Carex roanensis</i>	Yes	C
Tall Larkspur	<i>Delphinium exaltatum</i>	No	E
Rocky Shoal Spider Lily	<i>Hymenocallis coronaria</i>	Yes	---
Butternut	<i>Juglans cinerea</i>	Yes	---
Cuthbert's turtlehead	<i>Chelone cuthbertii</i>	No	SR
Gray's Lily	<i>Lilium grayi</i>	No	T
Sweet Pinesap	<i>Monotropsis odorata</i>	Yes	C
Northern Oconee-bells	<i>Shortia galacifolia var. brevistyla</i>	No	E

Endangered (E) – any native or once-native species in danger of extinction throughout all or a significant portion of its range.

Threatened (T) - any native or once-native species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Special Concern (SC) – any species which requires monitoring but which may be collected and sold under specific regulations.

Candidate(C) – a species for which USUSFWS has enough information on file to support proposals for listing as endangered or threatened.

Significantly Rare(SR) – species which are very rare, generally with 1-20 populations in the state, and generally reduced in numbers by habitat destruction.

F.3. Summary of Anticipated Impacts

The proposed project is not anticipated to impact any threatened or endangered species.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

A field survey of the Area of Potential Effects (APE) for Bridge No. 73 was conducted on November 12, 2002. All structures within the APE were photographed, and later reviewed by the State Historic Preservation Office (HPO). In a concurrence form dated June 20, 2003 the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

C. Archaeology

The SHPO, in a memorandum dated January 29, 2002, stated "Because of the location and topography of the project area, it is unlikely that any archeological site which may be eligible for listing in the National Register of Historic Places will be affected by the proposed construction. We, therefore, recommend that no archeological investigation be conducted in connection with this project". A copy of the SHPO memorandum is included in the Appendix.

VIII. ENVIRONMENTAL EFFECTS

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

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

Replacement of Bridge No. 73 will not have an adverse effect on the quality of the human or natural environment.

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

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

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

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) the project would not disproportionately impact any minority or low-income populations.

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

This project has been coordinated with the United States Department of Agriculture, Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland for all land acquisition and construction projects. The proposed

project involves replacing the bridge in its existing location; therefore, no impacts to prime or locally important farmland are anticipated.

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

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

No adverse effects to air quality are anticipated from this project. This project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. Since the project is located in an attainment area, 40 CFR Part 51 is not applicable. If vegetation or wood debris is disposed of by open burning, it shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520 and 1990 Clean Air Act Amendments and the National Environmental Policy Act. This evaluation completes the assessment requirements for air quality, and no additional reports are required.

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

The NCDOT Geotechnical Unit determined that no underground storage tanks or areas of other contamination were present at or near the project study area.

McDowell County is a participant in the Federal Flood Insurance Regular Program. The bridge is within an Approximate Study Area. The replacement structure is proposed as an in-kind replacement and in the absence of historical problems, increased flood impacts associated with this bridge replacement are not anticipated. The approximate 100-year floodplain in the project area is shown in Figure 7.

Geotechnical borings for the bridge foundation will be necessary.

Based on the above discussion, it is concluded that no substantial adverse environmental impacts will result from the replacement of Bridge No. 73.

IX. PUBLIC INVOLVEMENT

Due to the isolated nature of this bridge replacement project, no formal public involvement program was initiated. Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with a scoping letter.

XI. AGENCY COMMENTS

Agencies have commented on the proposed bridge replacement (see letters in the Appendix). These comments were noted and considered during the environmental and design processes.

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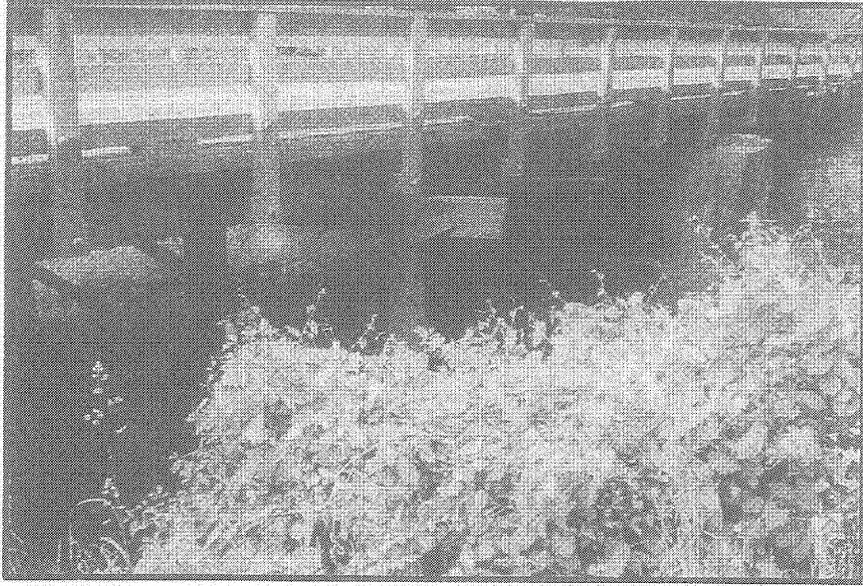
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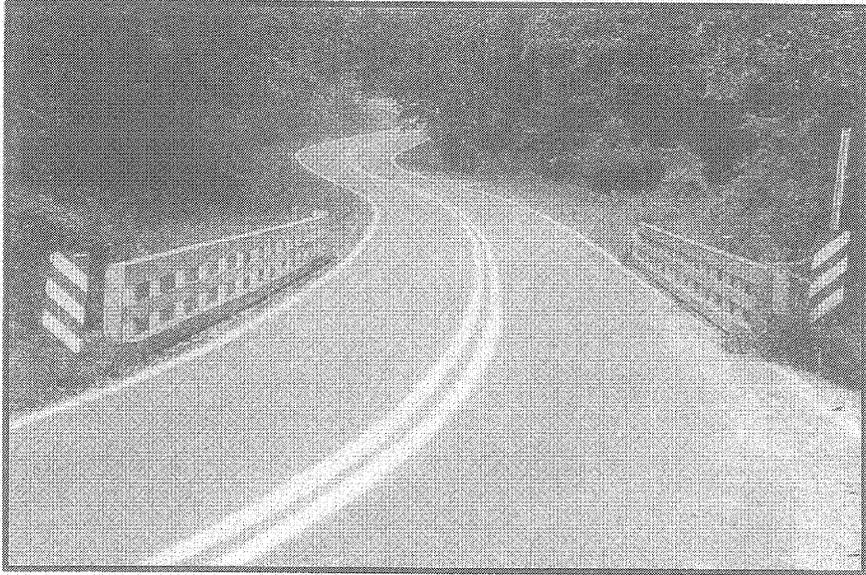
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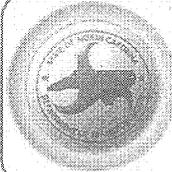
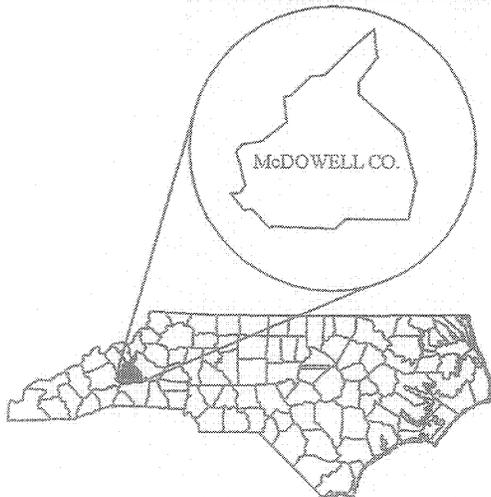
FIGURES



Looking West at Bridge No. 73



Looking West across Bridge No. 73

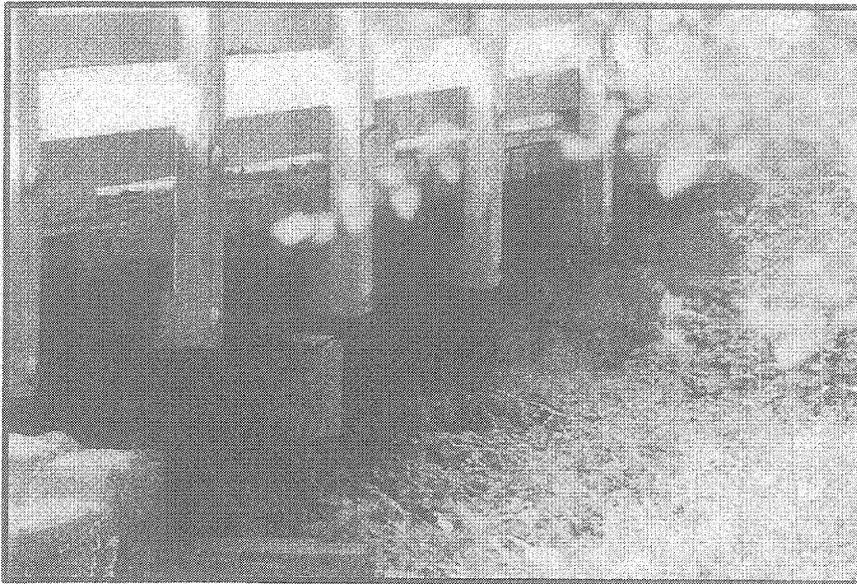


**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

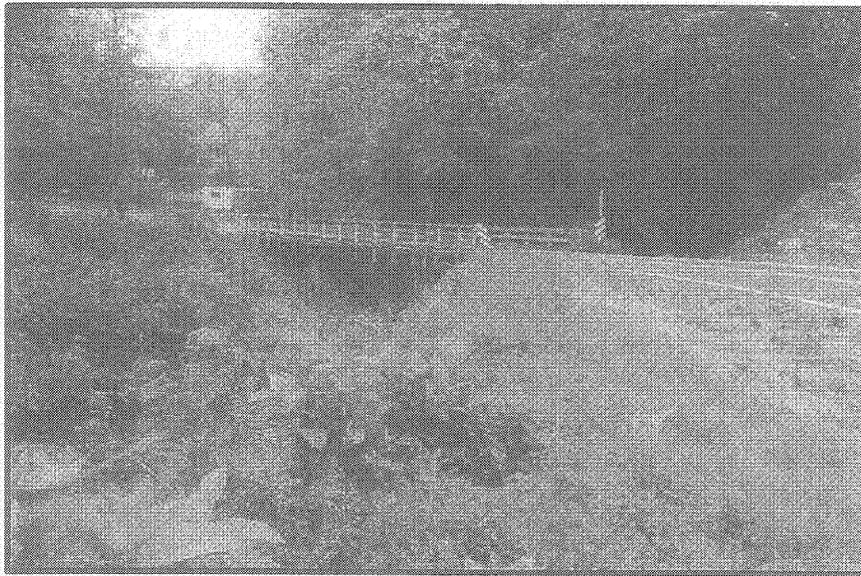
**SR 1552
Replace Bridge No. 73 over
Dales Creek
McDowell County, North Carolina**

Not to Scale

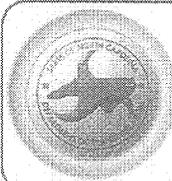
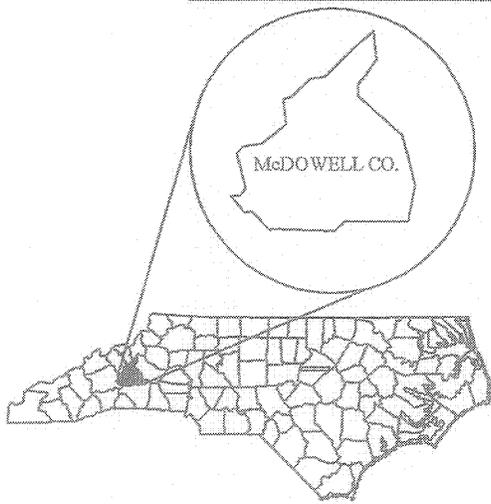
FIGURE 2



Looking South at Bridge No. 73



Looking North at Bridge No. 73



**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**SR 1552
Replace Bridge No. 73 over
Dales Creek
McDowell County, North Carolina**

Not to Scale

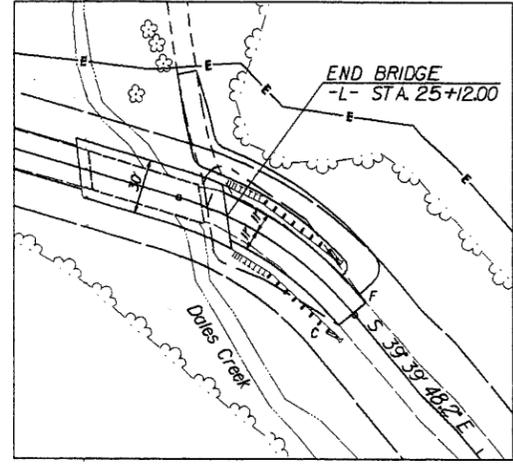
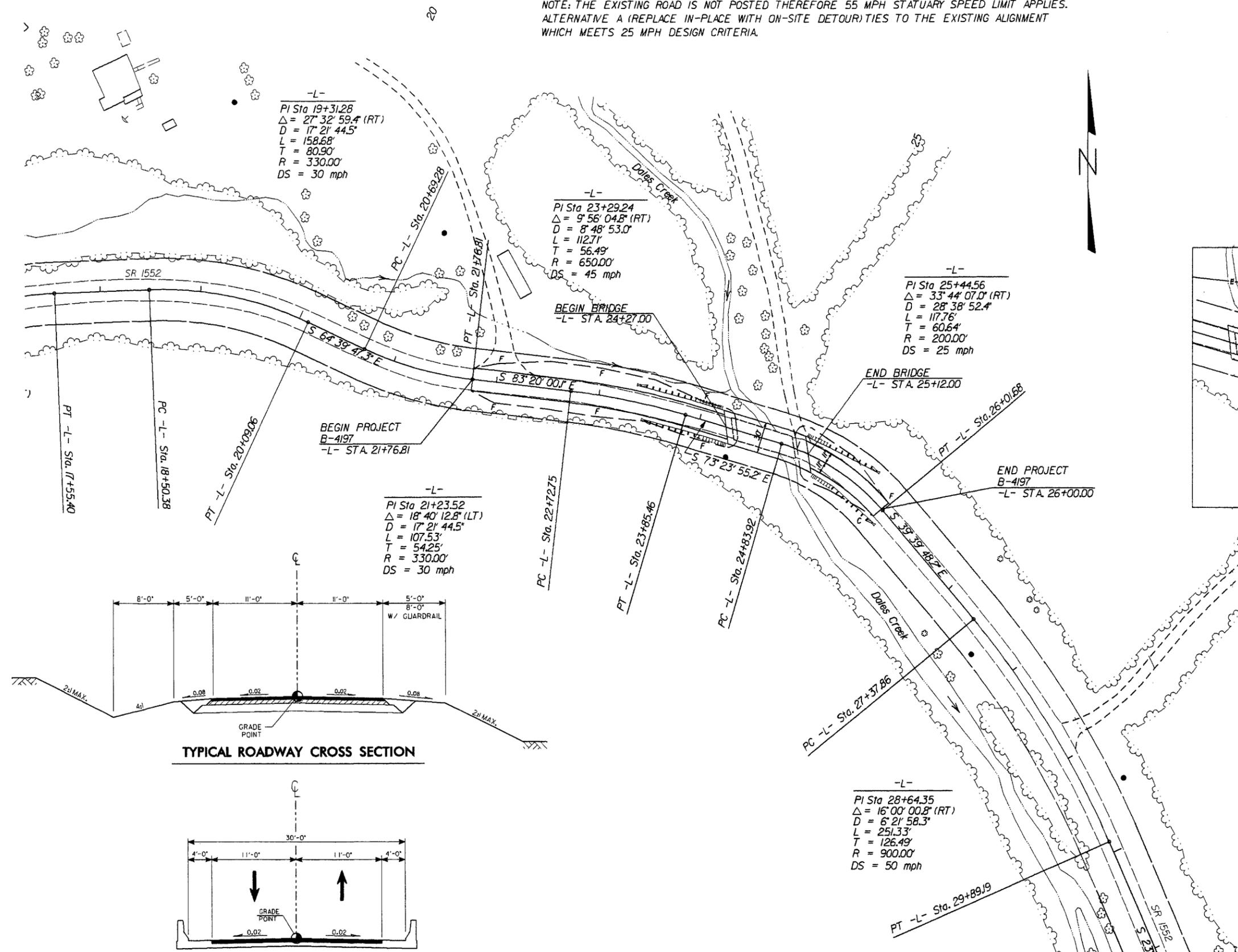
FIGURE 3

ALTERNATIVE A (REPLACE IN-PLACE WITH DOWNSTREAM DETOUR)

NOTE: THE EXISTING ROAD IS NOT POSTED THEREFORE 55 MPH STATUARY SPEED LIMIT APPLIES.
ALTERNATIVE A (REPLACE IN-PLACE WITH ON-SITE DETOUR) TIES TO THE EXISTING ALIGNMENT
WHICH MEETS 25 MPH DESIGN CRITERIA.

PROJECT REFERENCE NO. B-4197	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	
INCOMPLETE PLANS <small>DO NOT USE FOR R/W ACQUISITION</small>	

DESIGN DATA	
DESIGN SPEED	60 mph *
POSTED SPEED	55 mph
CURRENT YEAR ADT (2001)	200 vpd
DESIGN YEAR ADT (2025)	400 vpd
% TTST, % DUALS	1%, 2%
FUNCTIONAL CLASSIFICATION	Rural Local
TERRAIN	Mountainous
MAX RADIUS	1205 ft
MAXIMUM GRADE	10%
SUPERELEVATION RATE	Se = 0.08
* DESIGN EXCEPTION REQUIRED	



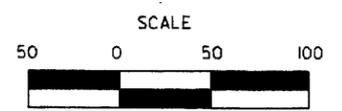
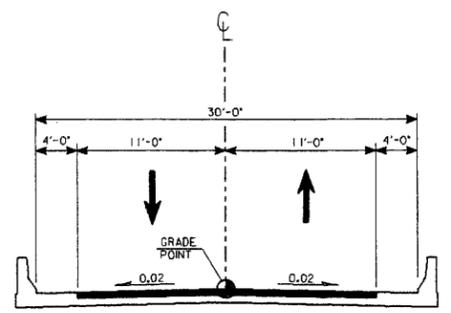
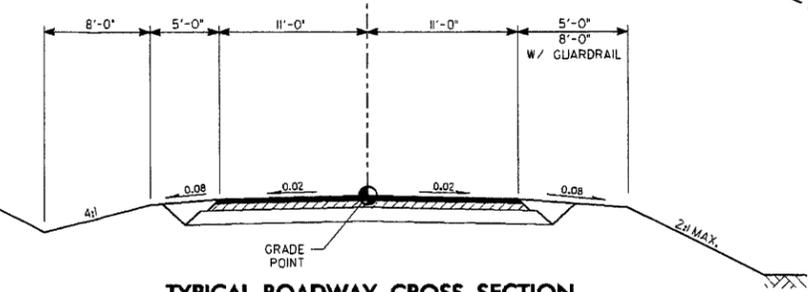
-L-
PI Sta 19+31.28
 $\Delta = 27^\circ 32' 59.4''$ (RT)
D = 17' 21' 44.5"
L = 158.68'
T = 80.90'
R = 330.00'
DS = 30 mph

-L-
PI Sta 23+29.24
 $\Delta = 9^\circ 56' 04.8''$ (RT)
D = 8' 48' 53.0"
L = 112.71'
T = 56.49'
R = 650.00'
DS = 45 mph

-L-
PI Sta 25+44.56
 $\Delta = 33^\circ 44' 07.0''$ (RT)
D = 28' 38' 52.4"
L = 117.76'
T = 60.64'
R = 200.00'
DS = 25 mph

-L-
PI Sta 21+23.52
 $\Delta = 18^\circ 40' 12.8''$ (LT)
D = 17' 21' 44.5"
L = 107.53'
T = 54.25'
R = 330.00'
DS = 30 mph

-L-
PI Sta 28+64.35
 $\Delta = 16^\circ 00' 00.8''$ (RT)
D = 6' 21' 58.3"
L = 251.33'
T = 126.49'
R = 900.00'
DS = 50 mph



30

FIGURE 4

ALTERNATIVE A (DOWNSTREAM DETOUR DESIGN)

PROJECT REFERENCE NO. B-4197	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DETOUR DESIGN DATA	
DESIGN SPEED	45 mph
MIN. RADIUS	660 ft.
MAXIMUM GRADE	8%
SUPERELEVATION RATE	Se = 0.06

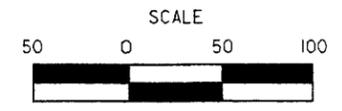
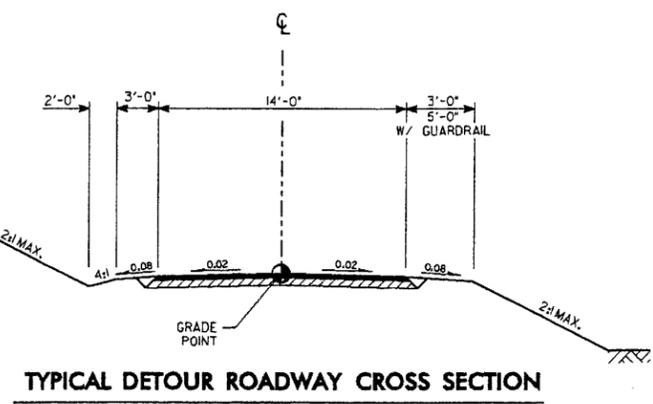
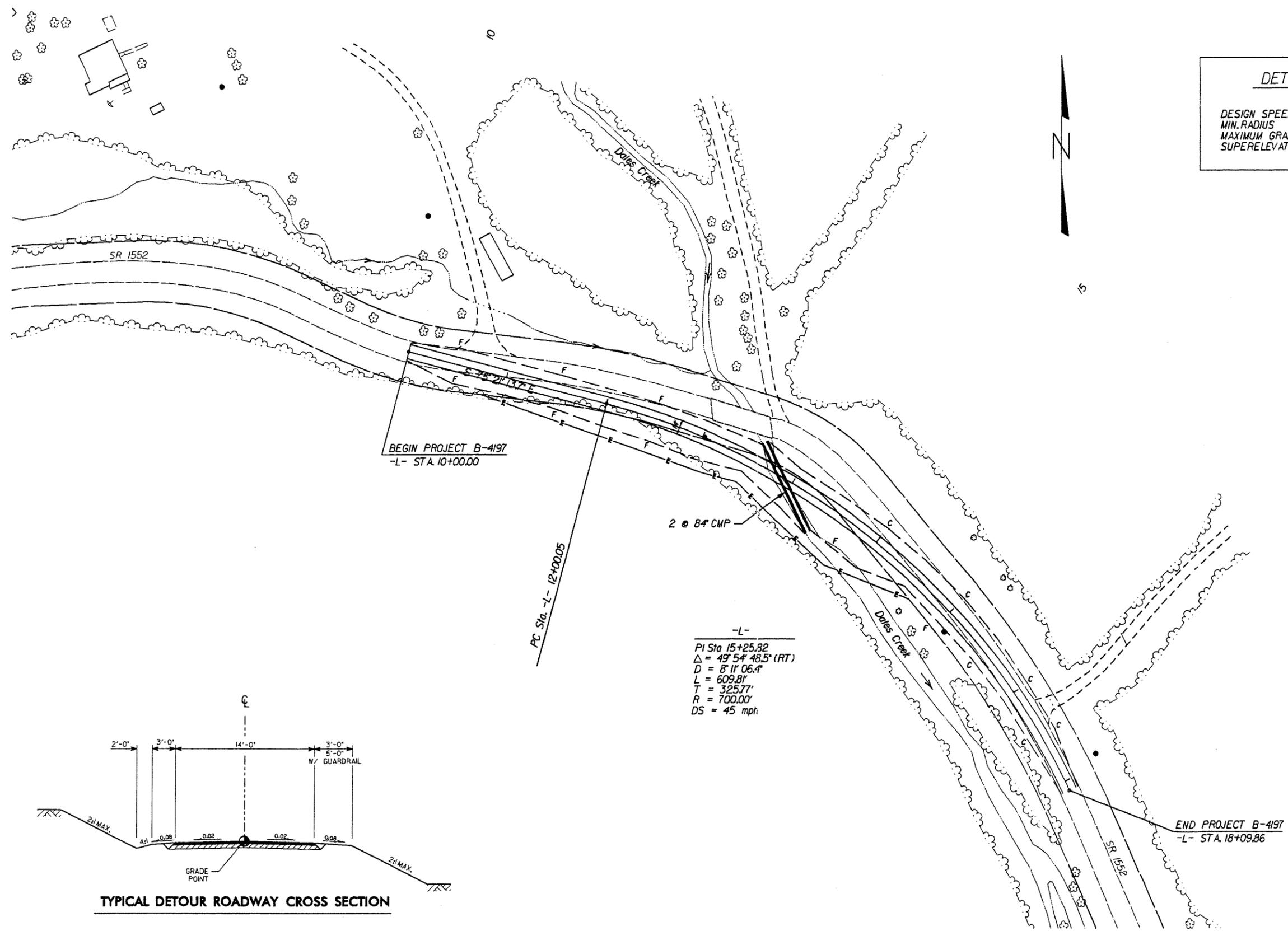


FIGURE 5

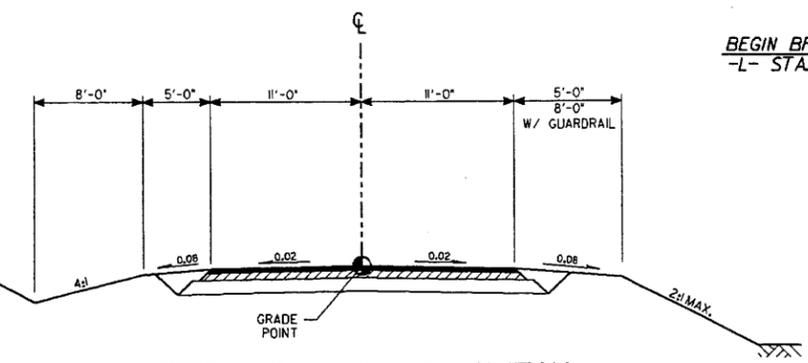
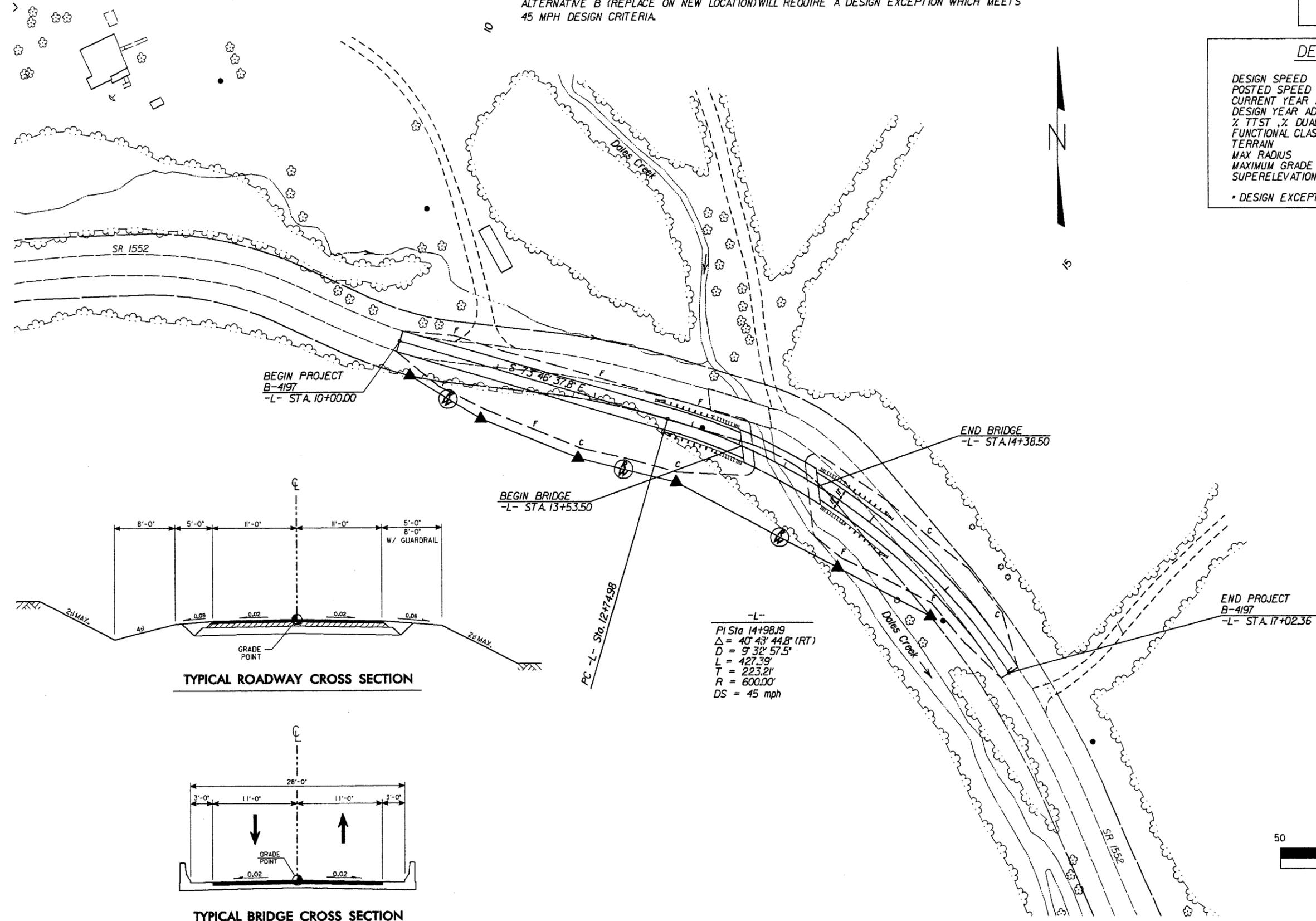
PROJECT REFERENCE NO. B-4197	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

ALTERNATIVE B (REPLACE ON NEW LOCATION - SOUTH OF EXISTING)

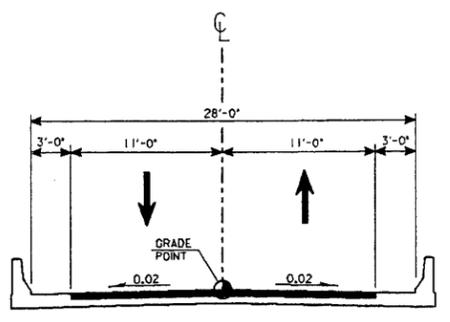
NOTE: THE EXISTING ROAD IS NOT POSTED THEREFORE 55 MPH STATUARY SPEED LIMIT APPLIES.
ALTERNATIVE B (REPLACE ON NEW LOCATION) WILL REQUIRE A DESIGN EXCEPTION WHICH MEETS 45 MPH DESIGN CRITERIA.

DESIGN DATA	
DESIGN SPEED	45 mph *
POSTED SPEED	40 mph
CURRENT YEAR ADT (2001)	200 vpd
DESIGN YEAR ADT (2025)	400 vpd
% TTST, % DUALS	1%, 2%
FUNCTIONAL CLASSIFICATION	Rural Local
TERRAIN	Mountainous
MAX RADIUS	600 ft
MAXIMUM GRADE	10%
SUPERELEVATION RATE	Se = 0.08

* DESIGN EXCEPTION REQUIRED



TYPICAL ROADWAY CROSS SECTION



TYPICAL BRIDGE CROSS SECTION

-L-
 PI Sta 14+98.19
 $\Delta = 40^\circ 43' 44.8''$ (RT)
 $D = 9^\circ 32' 57.5''$
 $L = 427.39'$
 $T = 223.21'$
 $R = 600.00'$
 $DS = 45$ mph



FIGURE 6

ALTERNATIVE C (REPLACE IN-PLACE WITH UPSTREAM DETOUR) PREFERRED ALTERNATE

PROJECT REFERENCE NO. B-4197	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DETOUR DESIGN DATA	
DESIGN SPEED	25 mph
MIN. RADIUS	200 ft.
MAXIMUM GRADE	8%
SUPERELEVATION RATE	Se = 0.06

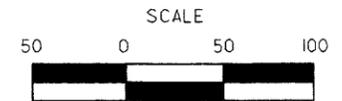
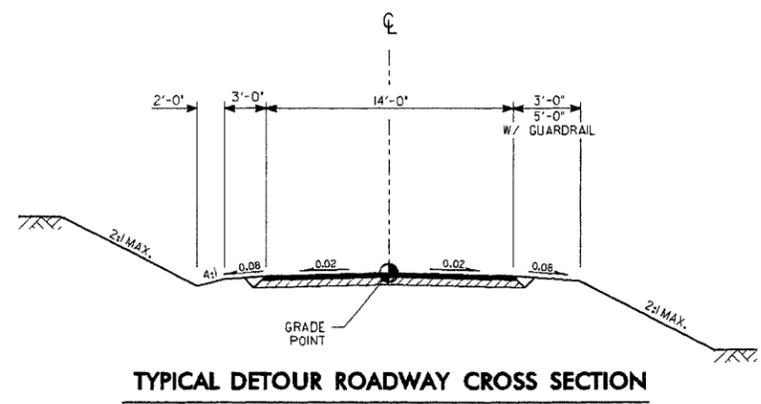
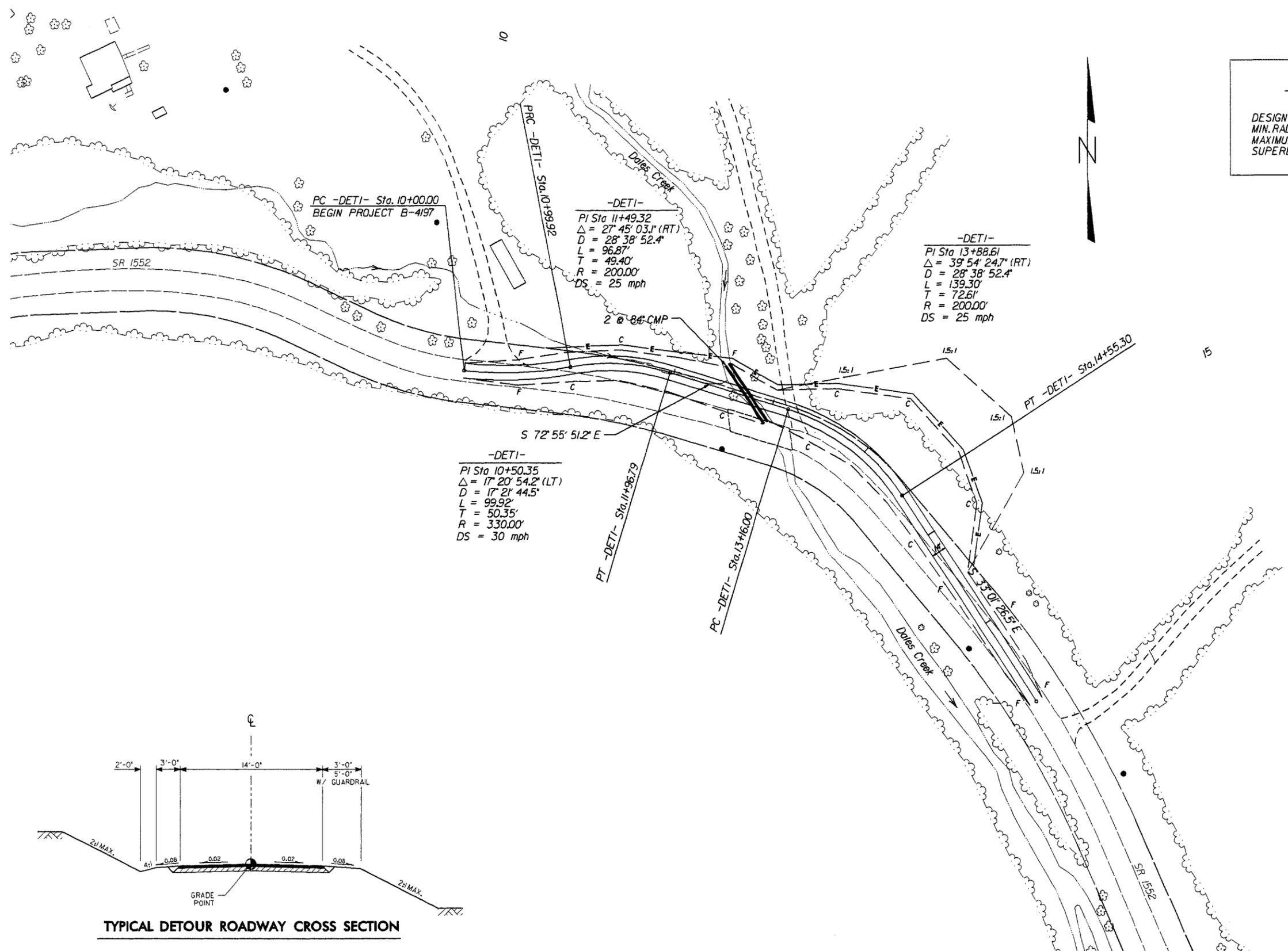
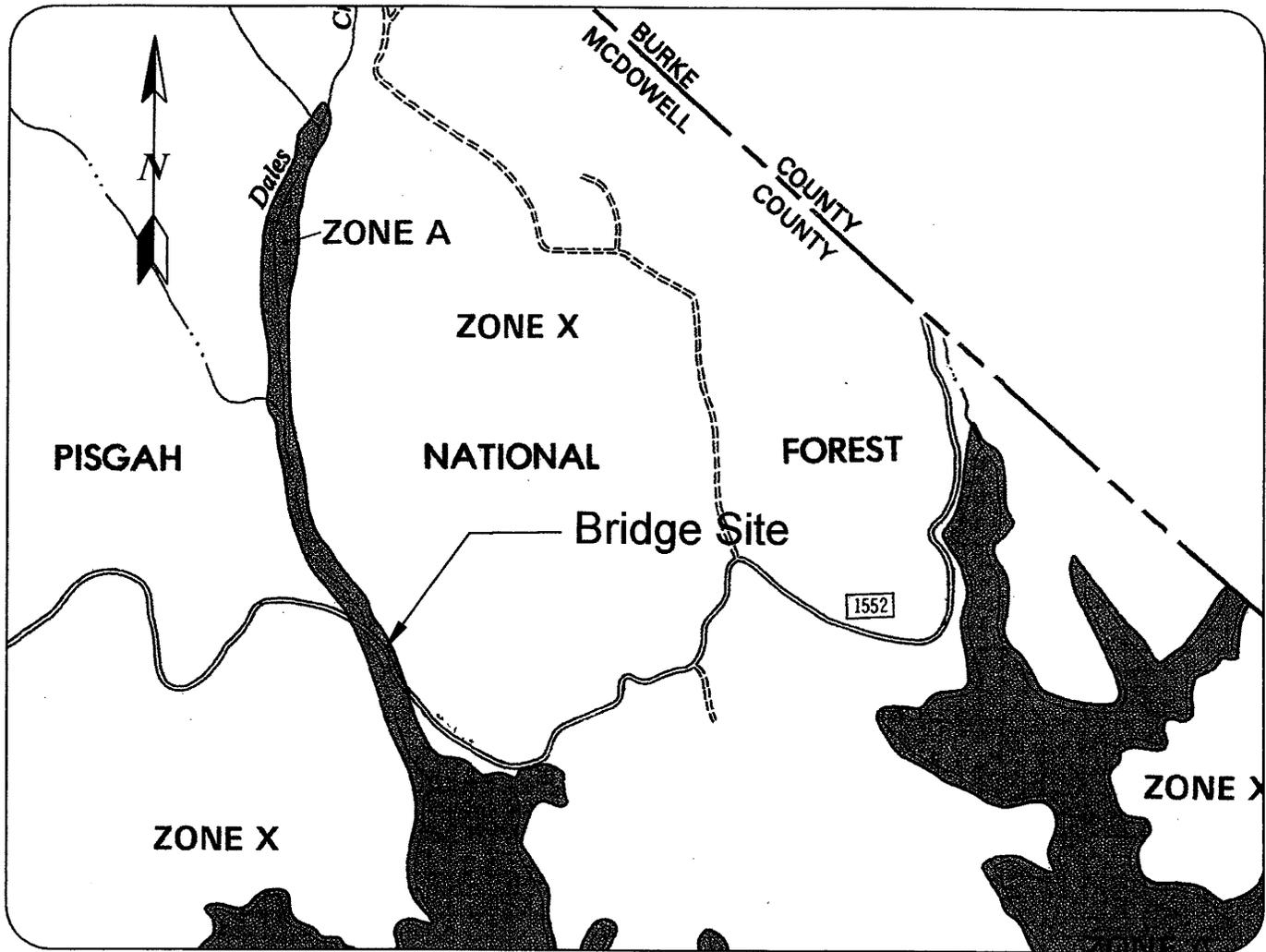


FIGURE 7



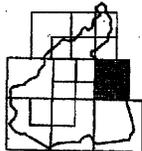
**MCDOWELL COUNTY,
NORTH CAROLINA AND
INCORPORATED AREAS**

PANEL 125 OF 200
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:
COMMUNITY **NUMBER** **PANEL** **SUFFIX**

UNINCORPORATED AREAS 370148 0125 B

PANEL LOCATION



MAP NUMBER:
37111C0125 B

EFFECTIVE DATE:
JULY 15, 1988



Federal Emergency Management Agency



**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

SR 1552
Replace Bridge No. 73 over
Dales Creek
McDowell County, North Carolina

TIP NO. B-4197
FEMA 100-YEAR FLOOD PLAIN
MAP

Not to Scale

FIGURE 8

APPENDIX

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

Project Description: Replace Bridge No. 73 on SR 1552, McDowell County

On June 20, 2003 representatives of the

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

Reviewed the subject project at

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

All parties present agreed

- There are no properties over fifty years old within the project's area of potential effects.
- 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.
- 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 #1 (House) and #2- (Bridge No. 73) are considered not eligible for the National Register and no further evaluation of them is necessary.
- There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- 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.
- There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

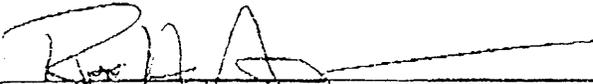
Signed:



Representative, NCDOT

6-20-2003

Date



FHWA, for the Division Administrator, or other Federal Agency

6/20/03

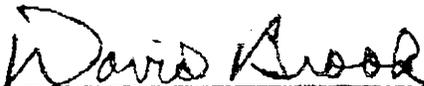
Date



Representative, HPO

6/20/03

Date



State Historic Preservation Officer

6-20-03

Date

BJS



active

North Carolina Department of Cultural Resources
State Historic Preservation Office

David L. S. Brook, Administrator

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

Division of Historical Resources
David J. Olson, Director

January 29, 2002

MEMORANDUM

TO: William D. Gilmore, Manager
NCDOT, Division of Highways

FROM: David Brook *David Brook*

SUBJECT: Replace Bridge 73 on ^{SR} 1552 over Dales Creek, TIP B-4197, McDowell County, ER 02-8528

Thank you for your letter of September 25, 2001, regarding the above project.

Because of the location and topography of the project area, it is unlikely that any archaeological sites which may be eligible for listing in the National Register of Historic Places will be affected by the proposed construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

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

Bridge No. 73 on SR 1552 over Dales Creek

An architectural historian for the Department of Transportation should inventory and evaluate this property and any others, that are fifty years old or older and located within the area of potential effect.

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

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

cc: Mary Pope Furr, NCDOT
Matt Wilkerson, NCDOT

	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

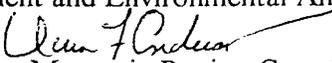


☒ North Carolina Wildlife Resources Commission ☒

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: William T. Goodwin, P.E., Unit Head
Bridge Replacement Planning Unit
Project Development and Environmental Analysis Branch, NCDOT

FROM: 
Owen F. Anderson, Mountain Region Coordinator
Habitat Conservation Program

DATE: July 12, 2002

SUBJECT: Scoping and Natural Resources Technical Report, Replace Bridge No 73 on SR
1552 Over Dales Creek McDowell County, TIP No. B-4197
Fish and Wildlife Project Status: GREEN

Biologists with the North Carolina Wildlife Resources Commission familiar with the project area have reviewed the technical report for the subject project to assess the potential for adverse impacts to fish and wildlife resources. 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).

The proposed work involves the replacement of bridge number 73 on SR 1552 over Dales Creek. Construction impacts on fish and wildlife resources will depend on the extent of disturbance in the streambed and surrounding floodplain areas. The riparian corridor is composed of piedmont/mountain bottomland forest (with discontinuous wetland fringe along river). This riparian corridor provides high quality wildlife habitat and a travel corridor for wildlife.

The Division of Water Quality classifies Dales Creek as C. This reach is not classified or designated as trout water. It is the opinion of biologists with the NCWRC that this project will not result in adverse impacts to trout.

We prefer bridge designs that do not alter the natural stream morphology or impede fish passage. Efforts should be made during design to place bridge supports outside of the bankfull channel. Bridge designs should also include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the subject surface waters. Correction of altered stream morphology at the road crossing should be considered during design. Waste rock and dirt from bridge construction and road realignments should be disposed of in upland areas that are outside of riparian area and above the 100-year floodplain.

Streams and riparian zones provide connectivity of the landscape; and thus, are natural movement corridors for terrestrial wildlife species. Bridge designs should consider leaving sufficient corridors under the bridge to encourage movement of wildlife under the bridge rather than across the highway. The movement of animals, especially larger animals (e.g., deer and bear), under the bridge may reduce automobile crashes involving wildlife. Where feasible, increasing the riparian corridor width under the bridge is recommended.

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 native herbaceous species 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.

Listed below are our standard recommendations on this project. Because the Corps of Engineers (COE) recognizes the project county as a "trout water county", the NCWRC will review any nationwide or general 404 permits for the proposed projects and will likely request the following as conditions of the 404 permit.

1. This bridge should be replaced with another spanning structure.
2. Bridge deck drains should not discharge directly into the stream.
3. Live concrete should not be allowed to contact the water in or entering into the stream. Water that has inadvertently come in contact with live concrete should not be discharged to surface waters but should be disposed in an upland area.
4. If possible, bridge supports (bents) should not be placed in the stream.
5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain

saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

6. A clear bank (riprap free) area of at least 10 feet should remain on each side of the stream underneath the bridge.
7. Sedimentation and erosion control measures sufficient to protect surface waters must be implemented prior to any ground disturbing activities. Structures should be maintained regularly, especially following rainfall events.
8. 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.
9. 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.
10. 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 surface waters.
11. 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.
12. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.
13. Wastewater from drilling operations should not be discharged to surface waters but should be pumped to upland areas.
14. Discharge of materials into surface waters from demolition of the old bridge should be avoided as much as practicable. Any materials that inadvertently reach surface waters should be removed.
15. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is strictly prohibited.

We prefer that bridges be replaced with another spanning structure. If corrugated metal pipe arches, reinforced concrete pipes, or concrete box culverts are used the following should be considered as these will likely be conditions of any 404 permit.

July 12, 2002

1. The culvert must be designed to allow for fish passage. Generally, this means that the culvert or pipe invert is buried at least 12 inches below the natural streambed. If multiple cells are required the second and/or third cells should be placed so that their bottoms are at stream bankfull stage (similar to Lyonsfield design). This could be accomplished by constructing a low sill on the upstream end of the other cells that will divert low flows to another cell. This will allow sufficient water depth in the culvert or pipe during normal flows to accommodate fish movements. If culverts are long, notched baffles should be placed in reinforced concrete box culverts at 15 foot intervals to allow for the collection of sediments in the culvert, to reduce flow velocities, and to provide resting places for fish and other aquatic organisms moving through the structure.
2. If multiple pipes or cells are used, at least one pipe or box should be designed to remain dry during normal flows to allow for wildlife passage.
3. Culverts or pipes should be situated so that no channel realignment or widening is required. Widening of the stream channel at the inlet or outlet of structures usually causes a decrease in water velocity causing sediment deposition that will require future maintenance.
4. Riprap should not be placed on the streambed.

Thank you for the opportunity to review and comment during the early stages of these projects. If you have any questions regarding these comments, please contact me at (828) 452-2546.

cc: Mr. Steve Lund, NCDOT Coordinator, COE, Asheville
Ms. Marella Buncick, Biologist, USFWS Asheville
Ms. Cynthia Van Der Wiele, Highway Coordinator, Division of Water Quality

US Fish and Wildlife Service

160 Zillicoa Street
Asheville, NC 28801

Phone 828-258-3939 Ext 237, Fax 828-258-5330

MEMO FOR: William T. Goodwin, P.E.

DATE: June 27, 2002

FROM: Marella Buncick

SUBJECT: Review of NCDOT 2005 Bridge Program

I have completed initial review of the approximately 70 proposed bridge replacements for NCDOT Divisions 9-14 for the year 2005. I would like to commend NCDOT for obtaining the natural resource information up front and allowing the agencies to review the proposals and provide comments so early in the process. It was a large volume of work for everyone involved but I feel that the input will be much more meaningful at this early planning stage.

Attached is a spreadsheet with specific comments for each project reviewed. All of the projects have been assigned a Green, Yellow, or Red ranking depending on the resources affected and the need for future consultation. As you will note, the majority of the projects received a Yellow ranking. This is due in large part to the fact that there are unresolved issues related to listed species. Many of these projects likely will become Green projects after further field review. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) actions are subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

I also have general comments regarding the process and reports. My general comments follow.

Report Content and Organization

1. The reports would be more easily handled if they were not spiral or otherwise bound.
2. Maps need to be much better. Without a significant landmark-- highway, larger town, other feature -- it sometimes took a long time to figure out the location of the project within a county.
3. The reports were organized somewhat similarly, but more consistency would aid in the review process. Perhaps a table that has the significant features ---stream width, depth, DWQ class, etc.--also would help.

4. For listed species, it often was difficult to tell whether field surveys had been conducted or whether the information was limited to a database search.
5. In the future, I would appreciate having the Rosgen stream classification included as part of the information.

Listed Species Surveys

Projects currently ranked as Yellow will need to be reviewed in the future after the stated issues are resolved. For those reports with unresolved issues related to listed species, I would recommend that NCDOT wait until closer to implementation time to conduct final surveys. In general, after three to five years we need updated information regarding the project and listed species. Additionally, when aquatic species are involved (particularly mussels) several surveys may be required to adequately determine presence or absence.

The three projects receiving a Red ranking will need to be followed very closely to determine future consultation requirements. These include B-4287 (actually 2 bridge replacements), B-4286, and B-4282. These projects were ranked as Red because of the significance of the number of listed resources potentially affected and the river (either main stem or tributary) involved.

I would encourage NCDOT to require consultants to at least assess habitat for the bog turtle. While the bog turtle technically does not require Section 7 consultation, it is a species of concern and NCDOT is actively managing mitigation sites or parts of sites for this species. Additionally, the Wildlife Resources Commission considers this animal rare in NC and participates actively in surveys and conservation efforts on its behalf.

Bridge Design and Construction Practices

I am assuming that FWS comments/recommendations in the past regarding bridge design, demolition, and construction practices will be folded into each of these projects. Since NCDOT is also working on a BMP manual that covers these practices, I think it would be redundant to state them again. However, if any questions arise, please let me know. I would like to emphasize that we prefer off-site detours wherever possible, to minimize effects to resources.

Each of these projects has been assigned a log number. Please refer to these numbers in future requests regarding the subject projects. Thank you again for the opportunity to provide these comments. If you have questions, please let me know.

PDE	TIP	County	Rank	Reason for Rank	FWS Log Number
SH	B-2988	Haywood	Y	unresolved for listed species, FWS requests review of bridge design	4-2-02-391
MD	B-4011	Ashe	Y	FWS requests resurvey for spiraea, assessment for bog turtle and green floater, review bridge plans	4-2-02-405
MD	B-4012	Ashe	Y	FWS requests resurvey for spiraea and habitat assessment for bog turtle	4-2-02-404
MD	B-4013	Ashe	Y	FWS requests resurvey for spiraea and habitat assessment for bog turtle, review bridge design	4-2-02-403
MD	B-4015	Ashe	Y	FWS requests resurvey for spiraea and habitat assessment for bog turtle, review bridge design	4-2-02-402
MD	B-4016	Ashe	Y	FWS requests resurvey for spiraea and habitat assessment for bog turtle, review bridge design	4-2-02-401
SH	B-4032	Buncombe	G	FWS requests review of bridge design	4-2-02-38
SH	B-4036	Buncombe	Y	unresolved for mussels, FWS requests review of bridge design	4-2-02-39
SH	B-4037	Buncombe	Y	unresolved for mussels, FWS requests review of bridge design	4-2-02-39
DW	B-4038	Burke	Y	unresolved for listed species, be careful of downstream effects	4-2-02-37
DW	B-4039	Burke	Y	unresolved for heartleaf	4-2-02-38
RY	B-4040	Burke	Y	FWS requests resurvey for heartleaf	4-2-02-38
DW	B-4041	Burke	Y	FWS requests mussel survey, requests bridge to bridge and review of bridge design	4-2-02-38
RY	B-4043	Burke	Y	FWS requests resurvey for heartleaf	4-2-02-38
RY	B-4044	Burke	Y	FWS requests resurvey for heartleaf	4-2-02-38
RY	B-4045	Burke	Y	FWS requests resurvey for heartleaf, requests bridge to bridge and review of bridge design	4-2-02-38
RY	B-4046	Burke	Y	FWS requests resurvey for heartleaf and pogonia, bridge to bridge	4-2-02-38
RY	B-4047	Burke	Y	unresolved for pogonia, FWS requests resurvey for heartleaf, request bridge for high quality stream	4-2-02-40
MD	B-4052	Caldwell	Y	unresolved for heartleaf	4-2-02-38
JJ	B-4059	Catawba	Y	unresolved for heartleaf, be careful of the USGS gaging station at this location	4-2-02-40
DW	B-4060	Catawba	Y	Need survey for heartleaf--habitat assessment inadequate	4-2-02-40
RY	B-4067	Cherokee	Y	Need survey for heartleaf--habitat assessment inadequate	4-2-02-4
DW	B-4070	Cherokee	Y	unresolved for listed species, close coordination w/USFS, high quality stream	4-2-02-39
JJ	B-4076	Cleveland	Y	all listed species unresolved, FWS requests special consideration here for sicklefin redbhorse	4-2-02-37
SH	B-4103	Davidson	Y	Need survey for heartleaf--habitat assessment inadequate	4-2-02-4
JJ	B-4116	Gaston	Y	FWS requests mussel survey, requests bridge to bridge because of stream quality	4-2-02-3
DW	B-4123	Graham	Y	Need resurvey for heartleaf	4-2-02-4
SH	B-4144	Haywood	Y	unresolved for listed species, Indiana Bat, close coordination w/USFS, high quality stream	4-2-02-3
DP	B-4155	Iredell	G	unresolved for listed species, FWS requests review of bridge design	4-2-02-3
DP	B-4158	Iredell	G	FWS requests survey for bog turtle	4-2-02-4
DW	B-4161	Jackson	Y	FWS requests survey for bog turtle, contractor suggested survey for heartleaf, FWS requests bridge	4-2-02-4
JJ	B-4177	Lincoln	Y	unresolved for listed species, FWS requests review of bridge design	4-2-02-3
DW	B-4178	Lincoln	Y	Need resurvey for heartleaf	4-2-02-4
DW	B-4179	Macon	Y	unresolved for listed species, FWS requests review of bridge design	4-2-02-4
RY	B-4180	Macon	Y	unresolved for listed species, FWS requests bridge to bridge, consideration for green salamander	4-2-02-3
RY	B-4183	Madison	Y	unresolved for listed species, FWS requests bridge to bridge, consideration for green salamander	4-2-02-3
				These 2 bridge replacements are part of R-2518 and 2519 merger process, review by merger team	4-2-02-3

PDE	TIP	County	Rank	Reason for Rank	FWS Log Number
DW	B-4192	McDowell	Y	Need to assess pogonia	4-2-02-418
JJ	B-4194	McDowell	Y	Need to assess pogonia	4-2-02-419
JJ	B-4195	McDowell	Y	Need to assess pogonia	4-2-02-420
JJ	B-4196	McDowell	Y	Need to assess pogonia	4-2-02-421
DW	B-4197	McDowell	Y	Need to assess pogonia. FWS requests mussel surveys, bridge to bridge for high quality stream	4-2-02-422
JJ	B-4198	McDowell	Y	Need to assess pogonia	4-2-02-423
DW	B-4199	McDowell	Y	Need to assess pogonia	4-2-02-424
DW	B-4202	Mitchell	Y	Unresolved for Eiktoe, FWS requests bridge to bridge, NO SURVEY NEEDED FOR INDIANA BAT	4-2-02-417
DW	B-4239	Polk	Y	unresolved for small-whorled pogonia and heartleaf	4-2-02-369
DW	B-4240	Polk	Y	unresolved for small-whorled pogonia and heartleaf	4-2-02-361
SH	B-4255	Rowan	G	may need resurvey for Schweinitz's sunflower	4-2-02-375
SH	B-4258	Rutherford	Y	unresolved for small-whorled pogonia	4-2-02-362
RY	B-4259	Rutherford	Y	unresolved for small-whorled pogonia, FWS requests another heartleaf survey	4-2-02-363
RY	B-4260	Rutherford	Y	unresolved for small-whorled pogonia	4-2-02-364
SH	B-4261	Rutherford	Y	unresolved for small-whorled pogonia and heartleaf	4-2-02-365
RY	B-4264	Rutherford	Y	unresolved for small-whorled pogonia, FWS requests another survey for heartleaf	4-2-02-368
RY	B-4265	Rutherford	Y	unresolved for small-whorled pogonia, FWS requests another survey for heartleaf and irisette	4-2-02-366
RY	B-4266	Rutherford	Y	unresolved for small-whorled pogonia, FWS requests another survey for heartleaf	4-2-02-367
				note for Rutherford Co projects--No survey is required for Indiana bat because the record is a winter record.	
SH	B-4282	Stokes	R	unresolved for cardamine and James spiny mussel, FWS concerned about bridge design	4-2-02-376
DP	B-4284	Surry	Y	unresolved for pogonia, FWS requests assessment for bog turtle and brook floater, bridge to bridge	4-2-02-426
DP	B-4285	Surry	Y	unresolved for pogonia, FWS requests assessment for bog turtle and brook floater	4-2-02-425
RY	B-4286	Swain	R	unresolved for listed species, esp. Indiana bat, FWS concerned with bridge design	4-2-02-378
DW	B-4287	Swain	R	unresolved for listed species, esp. Indiana bat, FWS concerned with bridge design	4-2-02-377
RY	B-4288	Transylvania	Y	unresolved for listed species, FWS requests survey for bunched arrowhead	4-2-02-374
SH	B-4290	Transylvania	Y	unresolved for listed species	4-2-02-373
SH	B-4291	Transylvania	Y	need mussel surveys	4-2-02-372
MD	B-4316	Watauga	Y	FWS requests bridge to bridge for high quality stream, FWS requests survey for green floater	4-2-02-398
JJ	B-4317	Watauga	G	FWS requests bridge to bridge for high quality stream	4-2-02-399
MD	B-4318	Watauga	G	FWS requests bridge to bridge for high quality stream, FWS requests survey for green floater	4-2-02-400
MD	B-4322	Wilkes	G	FWS requests bridge to bridge for high quality stream, assessment for bog turtle	4-2-02-406
DW	B-4330	Yancey	Y	unresolved for eiktoe, FWS requests resurvey for Spiraea, be careful of downstream effects	4-2-02-397

State of North Carolina
Department of Environment
and Natural Resources
Division of Water Quality



Michael Easley, Governor
Bill Ross, Secretary
Gregory Thorpe, Director

June 18, 2002

Memorandum To: William T. Goodwin, Jr., PE, Unit Head
Bridge Replacement Planning Unit
Project Development and Environmental Analysis Branch

Through: John Dorney *John Dorney*
NC Division of Water Quality

From: Robert Ridings *Robert Ridings*
NC Division of Water Quality

Subject: Review of Natural Systems Technical Reports for bridge
replacement projects scheduled for construction in CFY 2005:
"Green Light" Projects: B-4077, B-4082, B-4090, B-4152, B-4248,
B-4036, B-4059, B-4060, B-4155, B-4158, B-4177, B-4178,
B-4198, B-4197, B-4194, & B-4192.

On all projects, use of proper sediment and erosion control will be needed. Sediment and erosion control measures should not be placed in wetlands. Sediment should be removed from any water pumped from behind a cofferdam before the water is returned to the stream.

This office would prefer bridges to be replaced with new bridges. However if the bridge must be replaced by a culvert and 150 linear feet or more of stream is impacted, a stream mitigation plan will be needed prior to the issuance of a 401 Water Quality Certification. While the NCDWQ realizes that this may not always be practical, it should be noted that for projects requiring mitigation, appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification

For permitting, any project that falls under the Corps of Engineers' Nationwide Permits 23 or 33 do not require written concurrence by the NC Division of Water Quality. Notification and courtesy copies of materials sent to the Corps, including mitigation plans, are required. For projects that fall under the Corps of Engineers Nationwide Permit 14 or Regional General Bridge Permit 31, the formal 401 application process will be required including appropriate fees and mitigation plans.

Any proposed culverts shall be installed in such a manner that the original stream profile is not altered (i.e. the depth of the channel must not be reduced by a widening of the streambed). Existing stream dimensions are to be maintained above and below locations of culvert extensions.

Do not use any machinery in the stream channels unless absolutely necessary. Additionally, vegetation should not be removed from the stream bank unless it is absolutely necessary. NCDOT should especially avoid removing large trees and undercut banks. If large, undercut trees must be removed, then the trunks should be cut and the stumps and root systems left in place to minimize damage to stream banks.

Special Note on projects B-4077 and B-4090: these waters are classified as 303(d) waters. Special measures for sediment control will be needed

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 27, 2004

Memorandum to: Vincent Rhea, P.E., Project Planning Engineer
Consultant Project Planning Unit

From: Karen M. Lynch, ^{KML} Environmental Supervisor
Office of the Natural Environment

Subject: Freshwater mussel survey report for proposed replacement of
Bridge No. 289 on SR 1158 over Colbert Creek, Yancey County;
TIP No. **B-4330**.

The proposed project involves replacing Bridge No. 289 over Colbert Creek on SR 1158 (Colbert's Creek Road) in Yancey County. A site assessment was conducted on July 7, 2004 by NCDOT biologists, K. M. Lynch and Logan Williams along with Environmental Consultant, Tim Savidge (The Catena Group), and USFWS Biologist, John Fridell. Colbert Creek is a high gradient stream, approximately 15 to 20 ft wide with a water depth of up to 1.5 ft.

One federally endangered mussel, the Appalachian elktoe (*Alasmidonta raveneliana*) is listed by the U.S. Fish and Wildlife Service (January 29, 2003) as occurring in Yancey County. Appalachian elktoe has been reported from relatively shallow, medium-sized creeks and rivers with cool, clean, well-oxygenated, moderate or swift waters. The species is most often found in riffles, runs, and shallow flowing pools with stable, relatively silt-free substrate. Shifting sands or shifting substrates do not provide suitable habitat for the Appalachian elktoe.

During the site visit, Colbert Creek was observed to have a very high gradient. High gradient, upper reaches of streams (such as Colbert Creek) do not provide adequate habitat for mussel fauna. Therefore the replacement of bridge No. 289 will have No Effect on the Appalachian elktoe.

Biological Conclusion for Appalachian elktoe: No Effect



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

March 10, 2005

Mr. Vincent J. Rhea, P.E.
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Rhea:

Subject: Endangered Species Concurrence for the Proposed Replacement of Bridge No. 73 over Dales Creek in McDowell County, North Carolina (TIP No. B-4197)

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

Given the information provided, including the habitat assessment and field surveys, we concur with your conclusion of "not likely to adversely affect" for the small whorled pogonia (*Isotria medeoloides*) for the subject project. We believe the requirements under section 7(c) of the Act are fulfilled regarding listed species for the project. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log No. 4-2-02-422.

Sincerely,

Brian P. Cole
Field Supervisor

RECEIVED

AUG 7 2007

DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

North Carolina Department of Transportation
PROJECT ENVIRONMENTAL CONSULTATION FORM
I.D. No. B-4197

I. GENERAL INFORMATION

- a. Consultation Phase: Construction
- b. Project Description: McDowell County, Bridge Number 73 on SR 1552 (Lake James Road) over Dales Creek
- c. State Project: 8. 33544.1.1
Federal Project: BRZ-1552 (9)
- d. Document Type: CE
Date: April 13, 2005

II. CONCLUSIONS

The above environmental document has been reevaluated as required by 23 CFR 771. It was determined that the current proposed action is essentially the same as the original proposed action. Proposed changes, if any, are noted below in Section III. It has been determined that anticipated social, economic, and environmental impacts were accurately described in the above referenced document(s) unless noted otherwise herein. Therefore, the original Administration Action remains valid.

III. CHANGES IN PROPOSED ACTION AND ENVIRONMENTAL CONSEQUENCES

WATER RESOURCES

This project will cross Dales Creek, DWQ index number 11-27, and has been assigned a best usage classification of Class C. Class C waters are protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture and other uses suitable for Class C. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner.

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. As of May 10, 2007 the U.S. Fish and Wildlife Service (USFWS) lists 5 federally protected species in McDowell County (Table 1). The Carolina northern flying squirrel has been added to the list of federally protected species known to occur within McDowell County. A species description and a biological conclusion are included below.

Table 1. Federally Protected Species for McDowell County

Scientific Name	Common Name	Status	Biological Conclusion	Habitat
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Threatened	No Effect	No
<i>Clemmys muhlenbergii</i>	Bog turtle	Threatened(S/A)	N/A	N/A
<i>Glaucomys sabrinus coloratus</i>	Carolina northern flying squirrel	Endangered	No Effect	N/A
<i>Hudsonia montana</i>	Mountain golden heather	Threatened	No Effect	No
<i>Isotria medeoloides</i>	Small whorled pogonia	Threatened	No Effect	Yes

Carolina northern flying squirrel - The Carolina northern flying squirrel is an isolated, endangered subspecies of the more wide-ranging northern flying squirrel. Flying squirrels are nocturnal and have a loose, fully furred fold of skin on each side of the body between the wrists and the ankles that enables the squirrels to glide from tree to tree or to the ground for foraging. The Carolina northern flying squirrel can be distinguished from the similar southern flying squirrel (*Glaucomys volans*) by larger size ranging from 10 to 12 inches total length and by having gray rather than white bases of the ventral hairs (Weigl 1987).

The Carolina northern flying squirrel typically occurs in spruce-fir forests and mature hardwood forest adjacent to spruce-fir forests at elevations above 4000 feet (Weigl 1987). Endemic to the Appalachians of western North Carolina and eastern Tennessee, this subspecies is known from the Great Smoky Mountains, Roan Mountain, and Mount Mitchell.

Biological Conclusion:

No Effect

Project elevation is approximately 1,200 feet. No habitat in the form of spruce-fir forests and mature hardwood forest adjacent to spruce-fir forests at elevations above 4,000 feet is present in the project area. This project will have no effect on the Carolina northern flying squirrel. Additionally a search of the NHP database on August 15, 2006 found no occurrence of the Carolina northern flying squirrel within 1 mile of the project

In the CE, the small whorled pogonia was given a biological conclusion of “May affect, not likely to adversely affect,” however the biological conclusion can be changed to “No effect.” The bog turtle is listed as threatened due to similarity of appearance and is not subject to Section 7 consultation and a biological conclusion is not required. The biological conclusion remains valid for all other species addressed in the CE.

IV. LIST OF ENVIRONMENTAL COMMITMENTS

A list of the special project commitments for this project is attached.

V. COORDINATION

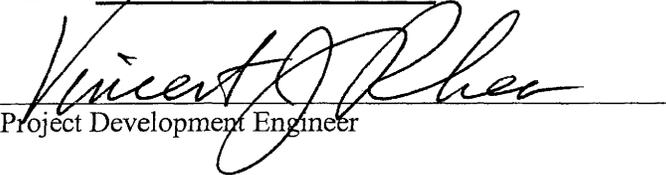
Project Development and Environmental Analysis Branch personnel have discussed current project proposals with others as follows:

Design Engineer: David Scheffel 8/2//07
Date

Permits Section: Brett Feulner 8/2/07
Date

FHWA Donnie Brew 8/2/07
Date

VI. NCBOT CONCURRENCE


Project Development Engineer 8/2/07
Date

PROJECT COMMITMENTS

McDowell County
Bridge No. 73 on SR 1552 (Lake James Road)
Over Dales Creek
Federal Aid Project No. BRZ-1552 (9)
State Project No. 8.2872501
T.I.P Project No. B-4197

No commitments have been agreed to by NCDOT except the standard Nationwide Permit #23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification.