



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

February 4, 2009

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Mr. David Baker
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 23 and 33** for the proposed replacement of Bridge No. 98 over Brasstown Creek Overrun on SR 1564 (Brasstown Road) in Cherokee County, Federal Aid Project No. BRZ-1564(3); Division 14; WBS Element 33435.1.1; TIP No. B-4072.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 98 over Brasstown Creek Overrun on SR 1564. There will be 0.04 acre of permanent wetland impacts and 0.05 acre of temporary wetland impacts.

Please see enclosed copies of the Pre-Construction Notification (PCN), permit drawings and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed in December 2007 and was distributed shortly thereafter. Additional copies are available upon request. The Approved Jurisdictional Determination Form was sent to the U.S. Army Corps of Engineers on February 7, 2008.

This project calls for a letting date of August 18, 2009 and a review date of June 30, 2009.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

A copy of this permit application will be posted on the NCDOT Website at: <http://www.ncdot.org/doh/preconstruct/pe/>. If you have any questions or need additional information, please e-mail Erin Cheely at ekcheely@ncdot.gov.

Sincerely,



for

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

W/attachment:

Mr. Brian Wrenn, NCDWQ (2 Copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Mr. Harold Draper, TVA

W/o attachment (see website for attachments):

Dr. David Chang, P.E., Hydraulics
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. J. B. Setzer, P.E., Division Engineer
Mr. Mark Davis, DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Christy Wright, P.E., PDEA Planning Engineer

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: Bridge No. 98 over Brasstown Creek Overrun on SR 1564 (Brasstown Road)
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4072
3. Property Identification Number (Tax PIN): N/A
4. Location
County: Cherokee Nearest Town: Brasstown
Subdivision name (include phase/lot number): N/A
Directions to site (include road numbers/names, landmarks, etc.): _____
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°02'24" °N -83°57'39" °W
6. Property size (acres): N/A
7. Name of nearest receiving body of water: Brasstown Creek receives the water from Brasstown Creek overrun. Brasstown Creek has a DWQ classification of "WS-IV" and the Hydrological Cataloguing Unit is 06020002.
8. River Basin: Hiwassee River Basin
(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: 60% wooded, 40% agriculture/residential

10. Describe the overall project in detail, including the type of equipment to be used: Standard construction equipment will be used (backhoes, bulldozers, cranes and/or other heavy machinery)
11. Explain the purpose of the proposed work: The purpose of the project is to replace a functionally deficient and structurally obsolete structure (sufficiency rating 32.5 out of 100). The replacement will result in a wider and potentially safer bridge.

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. N/A

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.
N/A

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: Permanent: 0.04 acre of wetland impacts due to mechanized clearing in wetlands in order to remove the existing bridge. Temporary: 0.04 acre of wetland impacts due to a 72" corrugated steel pipe for the temporary on-site detour and 0.01 acre of temporary wetland impacts due to the removal of the existing bridge abutments.

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)
1	Permanent	Linear herbaceous	Yes	Directly abutting stream	0.04
1	Temporary	Linear herbaceous	Yes	Directly abutting stream	0.01
2	Temporary	Linear herbaceous	Yes	Directly abutting stream	0.04
Total Permanent Wetland Impact (acres)					0.04

3. List the total acreage (estimated) of all existing wetlands on the property: 0.40 acre

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)
No stream impacts						
Total Permanent Stream Impact (by length and acreage)					0	0

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)
No open water impacts				
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
Wetland Impact (acres):	Permanent: 0.04 Temporary: 0.05
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.04 (permanent) 0.05 (temporary)
Total Stream Impact (linear feet):	0

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.

N/A

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. No deck drains will be used and NCDOT's Best Management Practices will be followed. The temporary bridge and roadway approaches for the onsite detour will be removed upon completion of the permanent bridge and roadway.

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/newetlands/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.

No mitigation is proposed for this project because the 0.04 acre of impacts to wetlands from mechanized clearing will not cause an adverse effect or significant loss of waters of the United States.

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): 0
Amount of buffer mitigation requested (square feet): 0
Amount of Riparian wetland mitigation requested (acres): 0
Amount of Non-riparian wetland mitigation requested (acres): 0
Amount of Coastal wetland mitigation requested (acres): 0

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. N/A
-

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. Impervious surfaces will not significantly increase as a result of this project. The bridge will be replaced in place. There will be no deck drains installed.

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/nwetlands>. If no, please provide a short narrative description: _____

The new bridge will be constructed in the same location as the old bridge.

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).

As of January 31, 2008, the US Fish and Wildlife Service (USFWS) lists six species for Cherokee County. A habitat assessment for four of the six species was conducted in 2005. Habitat assessments for the Indiana bat and bog turtle were conducted on June 21, 2007 and April 4, 2007, respectively. The biological conclusion for all six species remains "No Effect" due to lack of habitat.

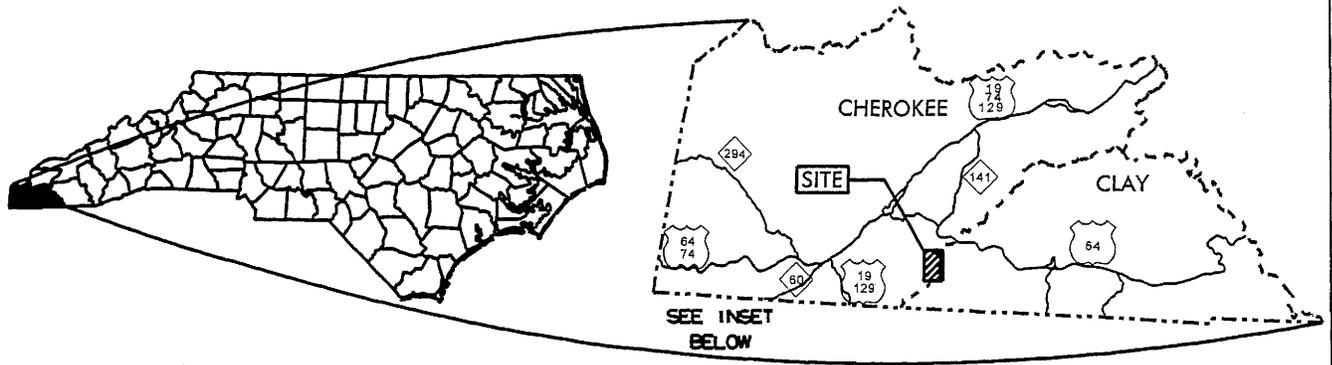
E. L. Lusk

2.3.09

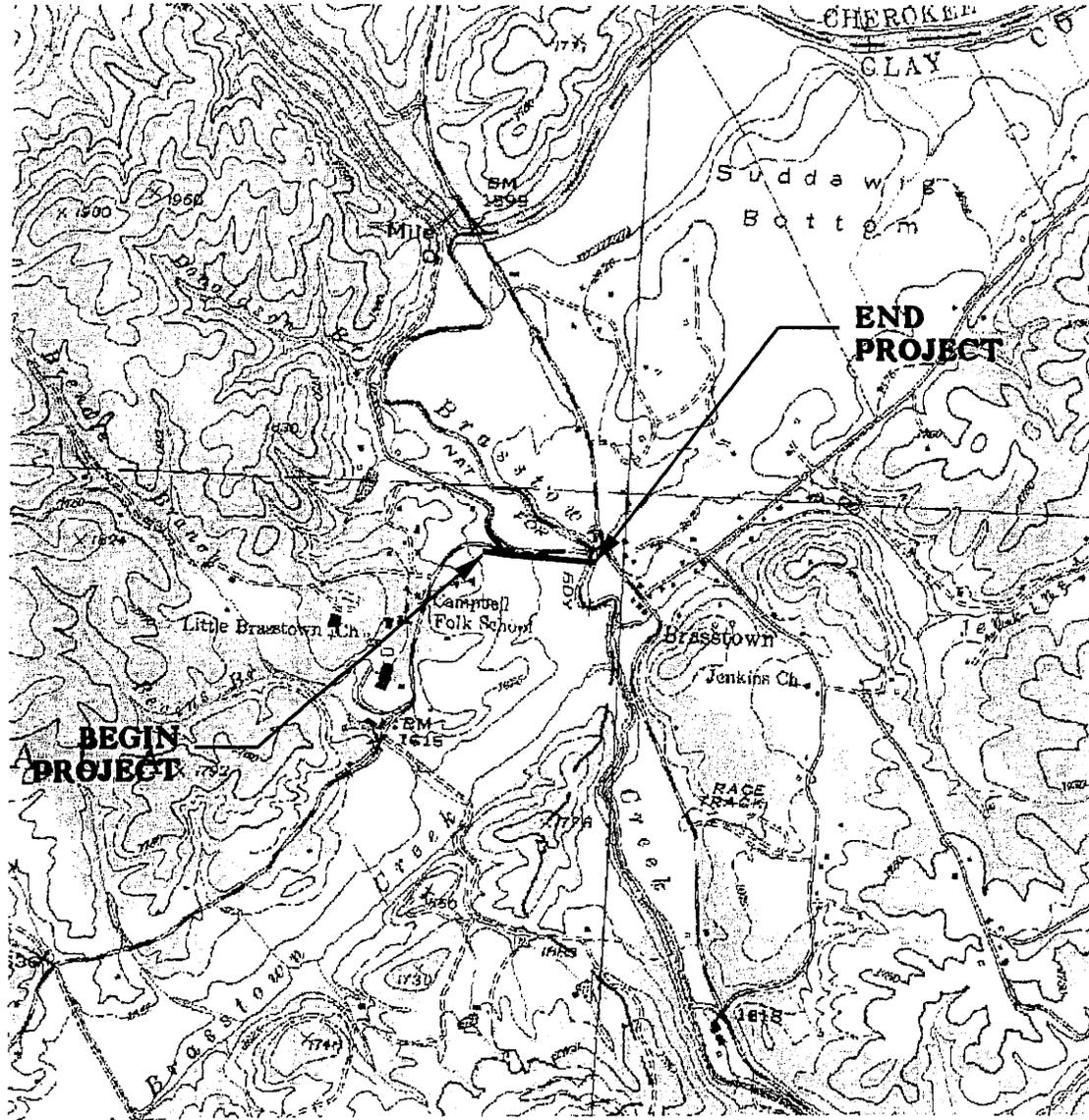
Applicant/Agent's Signature

Date

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



CHEROKEE/CLAY COUNTIES



WETLAND/STREAM IMPACTS
VICINITY MAP

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
CHEROKEE COUNTY

PROJECT: 33435.1.1 (B-4072)
BRIDGE NO. 98 OVER BRASSTOWN
CREEK OVERRUN ON
SR 1564 (BRASSTOWN RD)

Permit Drawing
Sheet 1 of 12

SHEET OF 9/25/08

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS						SURFACE WATER IMPACTS								
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)					
1	14+93/15+21 -L-	BRIDGE ABUTMENT REMOVAL		0.01		0.04											
2	15+22/15+39 -DETOUR-	72" CSP		0.04													
TOTALS:			0.00	0.05	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0

Permit Drawing
Sheet 2 of 12

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CHEROKEE COUNTY
PROJECT: 33435.1.1 (B-4072)

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	JOHN C. CAMPBELL FOLK SCHOOL	BRASSTOWN, NC 28902

Permit Drawing
Sheet 3 of 12

NCDOT

DIVISION OF HIGHWAYS

CHEROKEE COUNTY

PROJECT: 33435.1.1 (B-4072)
BRIDGE NO. 98 OVER BRASSTOWN
CREEK OVERRUN ON
SR 1564 (BRASSTOWN RD)

SHEET

OF

9/25/08

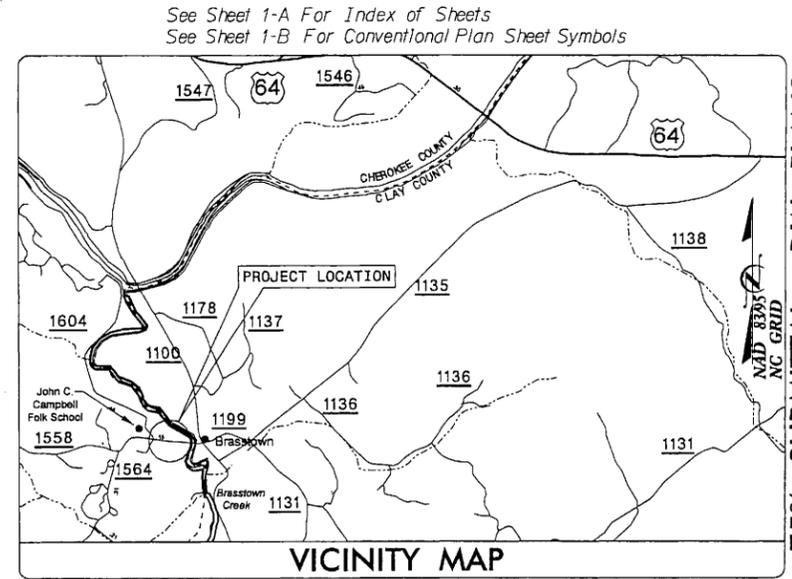
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4072	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33435.1.1	BRZ-1564(3)	PE	
33435.2.1	BRZ-1564(3)	R/W & UTIL.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

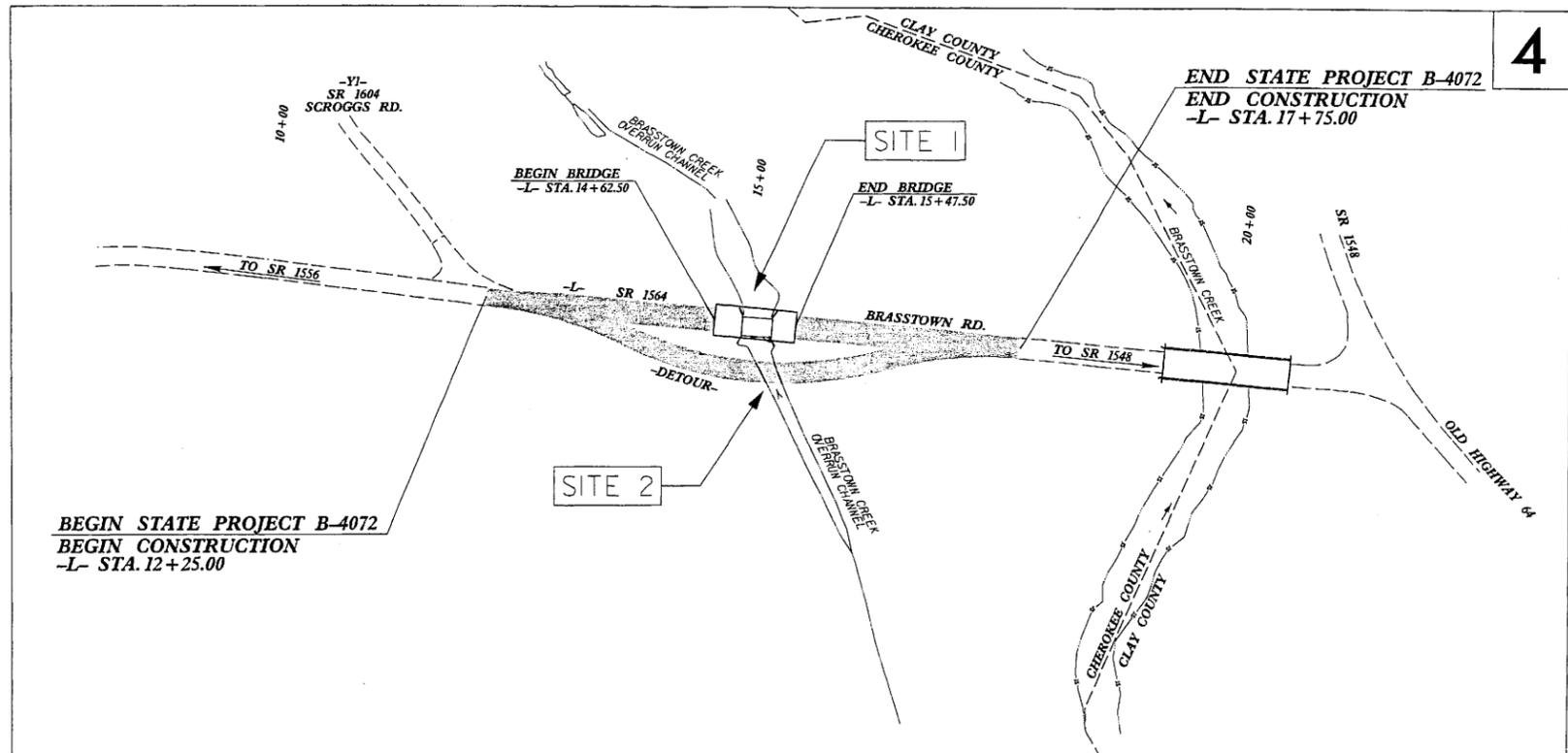
CHEROKEE COUNTY

LOCATION: BRIDGE NO. 98 OVER BRASSTOWN CREEK OVERRUN
ON SR 1564 (BRASSTOWN RD.)

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE



75% SUBMITTAL - RW PLANS



4



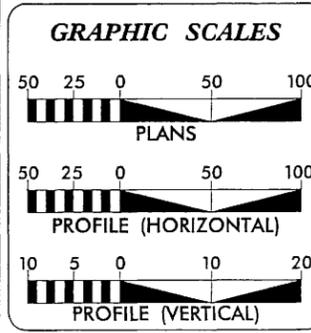
WETLAND/ STREAM IMPACTS

Permit Drawing
Sheet 4 of 12

"THIS PROJECT NOT WITHIN ANY MUNICIPAL BOUNDARIES."
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27605
TEL. (919) 893-2243 FAX (919) 893-9238

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2009 =	2590
ADT 2029 =	3980
DHV =	10 %
D =	60 %
T =	5 % *
V =	45 MPH
* TTST 1% DUAL 4%	
CLASS. =	RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4072	=	0.088 MILES
LENGTH STRUCTURE TIP PROJECT B-4072	=	0.016 MILES
TOTAL LENGTH TIP PROJECT B-4072	=	0.104 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 154
RALEIGH, N.C. 27604
BUS: 919 851 8077
FAX: 919 851 8107

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **EDWARD G. WETHERILL, PE**
MAY 20, 2008
PROJECT ENGINEER

LETTING DATE: **BOB A. MAY, PE**
AUGUST 18, 2009
PROJECT DESIGN ENGINEER

NCDOT CONTACT: **DOUG TAYLOR, PE**
ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

CONTRACT: 09/08/09 09/08/09

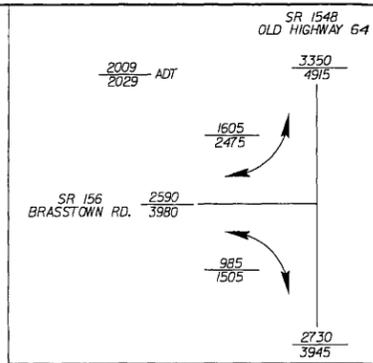
8/17/99

NC GRID
NAD 83/95

- DB 97 PG 37
- DB 102 PG 449
- DB 96 PG 554
- DB III PG 483
- DB 89 PG 17
- DB 304 PG 67
- DB 97 PG 249
- DB 775 PG 144

DIAGONAL HATCHING DENOTES TEMPORARY FILL IN WETLAND

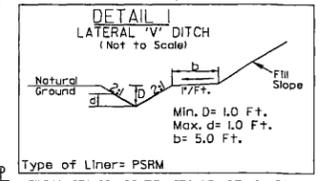
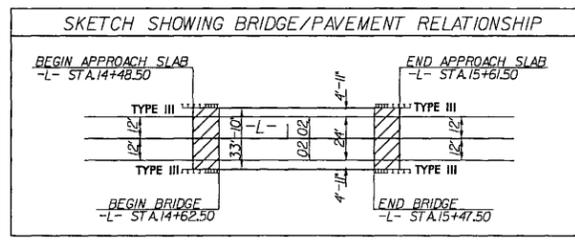
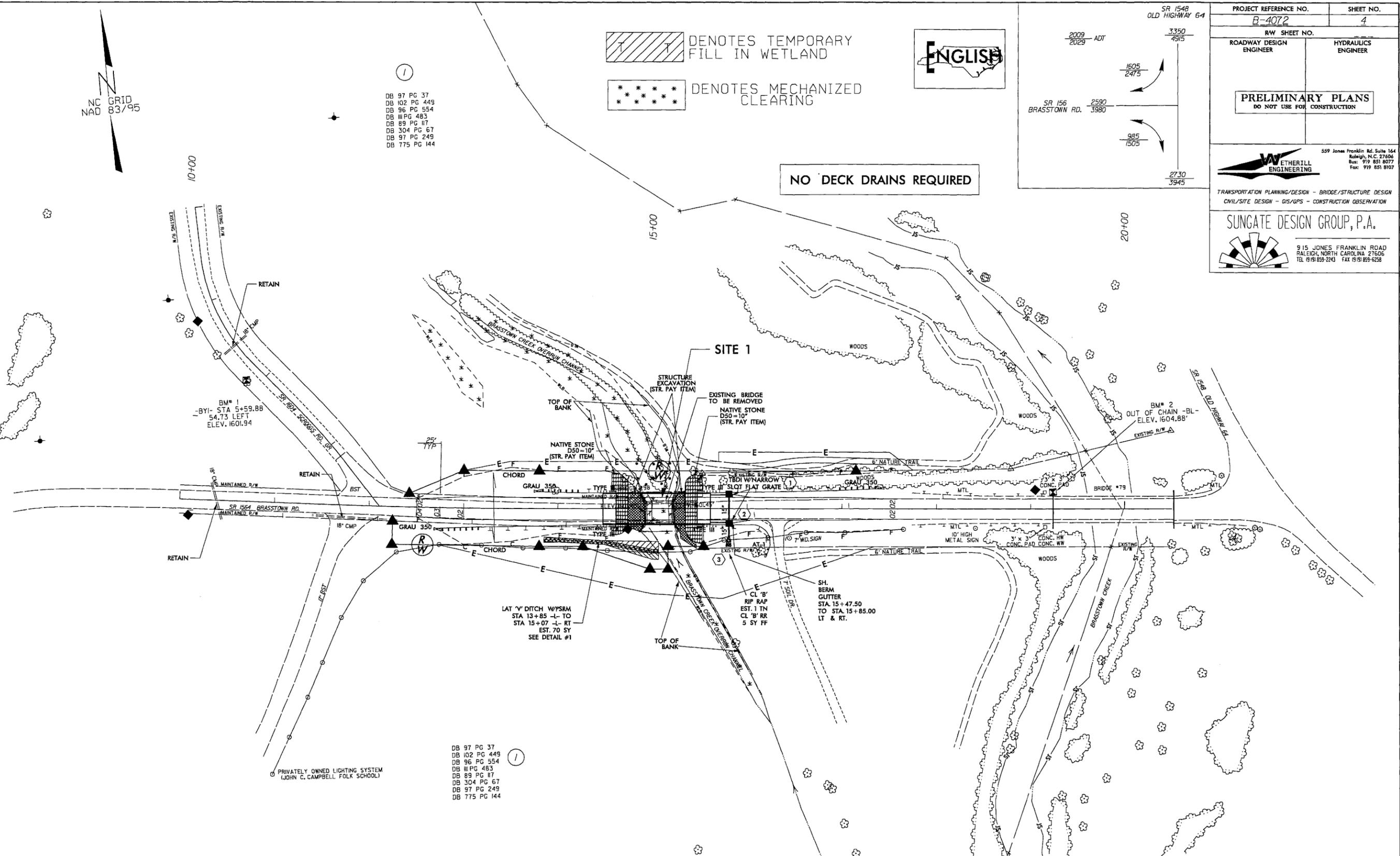
STAR PATTERNS DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. B-4072	SHEET NO. 4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	ROADWAY DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27604 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	
SUNGATE DESIGN GROUP, P.A.	
915 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27606 TEL. (919) 859-2243 FAX (919) 859-6258	

NO DECK DRAINS REQUIRED

REVISIONS
R/W REVISION - REVISED DISTANCES FOR PROPOSED RIGHT OF WAY ELARGING. B.A.M.



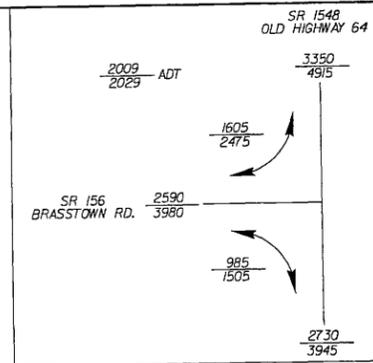
Permit Drawing
Sheet 7 of 12

Type of Liner: PSRM
FROM STA. 13+85 TO STA. 15+07 -L- RT.
DDE = 70 Cy
SEE SHEET 2-A FOR DETOUR ALIGNMENT
SEE SHEET 5 FOR PROFILE

8/17/99

NC GRID
NAD 83/95

DIAGONAL HATCHING DENOTES TEMPORARY FILL IN WETLAND
***** DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. B-4072	SHEET NO. 4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	ENGINEER

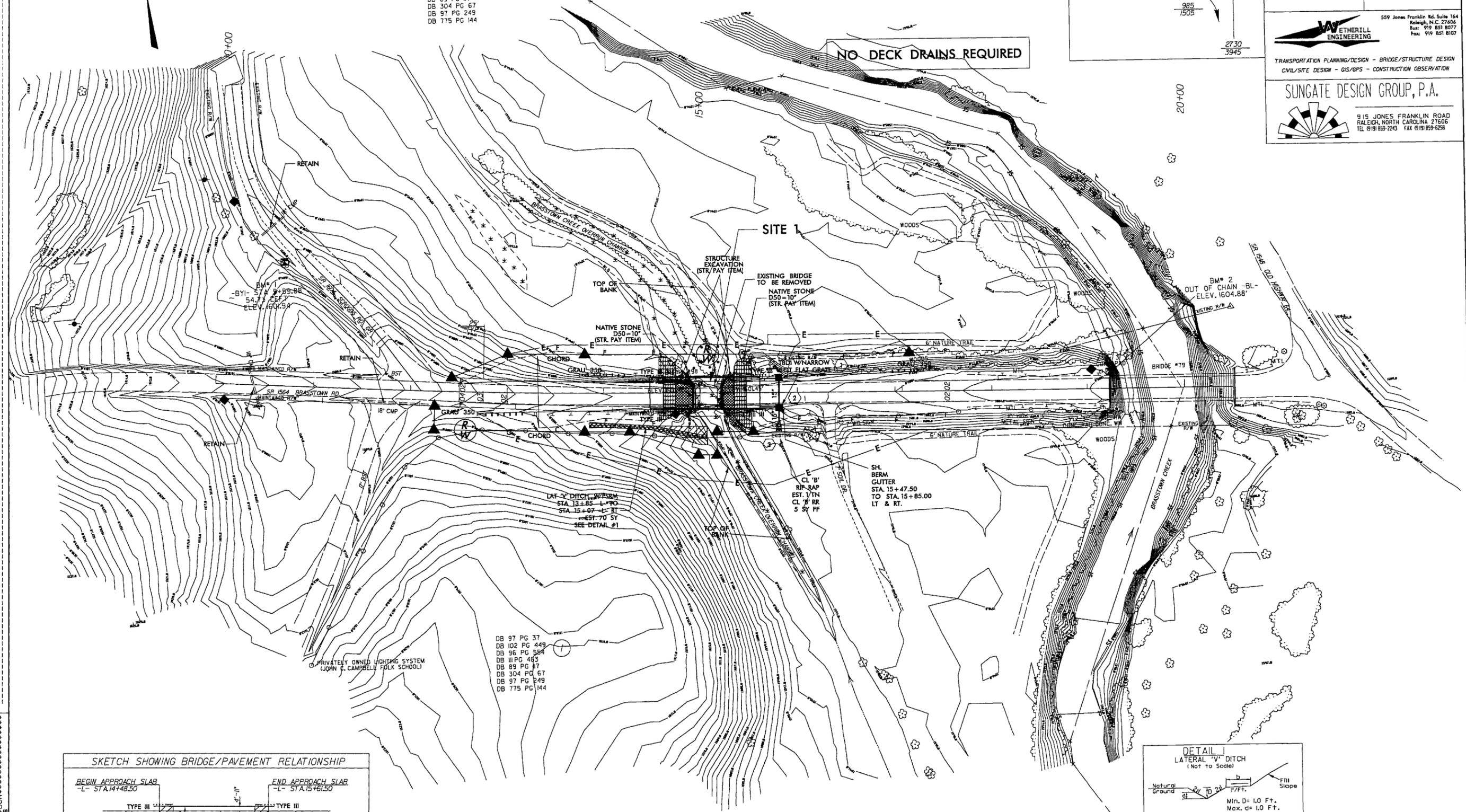
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
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Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

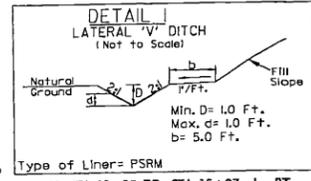
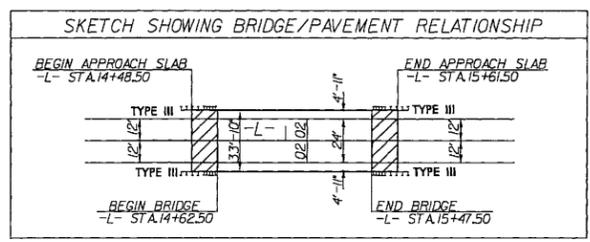
SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: (919) 853-2243 FAX: (919) 853-6258

REVISIONS
R/W REVISION - REVISED DISTANCES FOR PROPOSED RIGHT OF WAY FLAGGING



DB 97 PG 37
DB 102 PG 449
DB 96 PG 554
DB III PG 483
DB 89 PG II
DB 304 PG 67
DB 97 PG 249
DB 775 PG 144

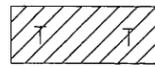
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DB 97 PG 249
DB 775 PG 144



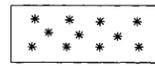
Permit Drawing
Sheet 9 of 12

FROM STA. 13+85 TO STA. 15+07 -L- RT.
DDE = 70 CY
SEE SHEET 2-A FOR DETOUR ALIGNMENT
SEE SHEET 5 FOR PROFILE

8/17/99



DENOTES TEMPORARY FILL IN WETLAND



DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO. B-4072	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL: 919 859-2243 FAX: 919 859-6258



SITE 1

STRUCTURE EXCAVATION (STR. PAY ITEM)

EXISTING BRIDGE TO BE REMOVED
NATIVE STONE D50=10" (STR. PAY ITEM)

NATIVE STONE D50=10" (STR. PAY ITEM)

GRAU 350

TYPE III TBDI W/NARROW SLOT FLAT GRATE

GRAU 350

GRAU 350

CHORD

CL 'B' RIP RAP EST. 1 TN
CL 'B' RR 5 SY FF

SH. BERM GUTTER STA. 15+47.50 TO STA. 15+85.00 LT & RT.

LAT 'V' DITCH W/PSRM STA 13+85 -L- TO STA 15+07 -L- RT EST. 70 SY SEE DETAIL #1

TOP OF BANK

BRASSTOWN CREEK OVERRUN CHANNEL

Permit Drawing Sheet 9 of 12

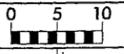
DB 97 PG 37
DB 102 PG 449

REVISIONS
RAW REVISION. --- REVISED DISTANCES FOR PROPOSED RIGHT-OF-WAY FLAGGING. B.A.M.

*****SYSTEM TIME*****
*****8/17/99 10:00 AM*****
*****CADD/DESIGN*****
*****SUNGATE*****

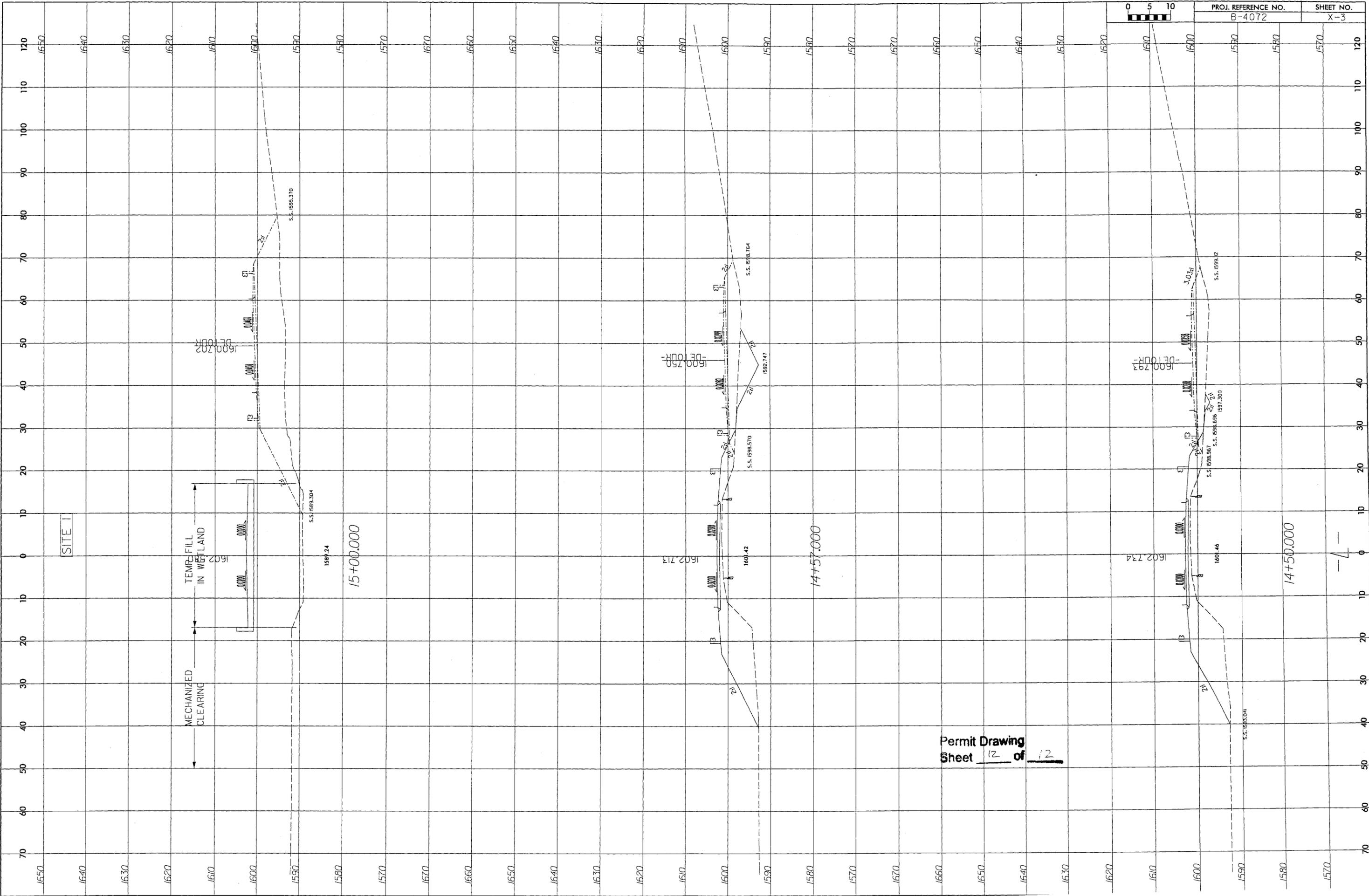
B/23/99

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USER: J...
DRAWING: B-4072.X-3



PROJ. REFERENCE NO.
B-4072

SHEET NO.
X-3



Permit Drawing
Sheet 12 of 12

15+00.000

14+57.000

14+50.000

Cherokee County
Bridge No. 98 on SR 1564 (Brasstown Road)
Over Brasstown Creek Overrun
Federal-Aid Project BRZ-1564 (3)
WBS 33435.1.1
State Project 8.2911701
TIP Project B-4072

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

11/30/07

DATE

William J. Thorpe

for

Gregory J. Thorpe, PhD
Environmental Management Director, PDEA

12/3/07

DATE

John F. Sullivan, III

for

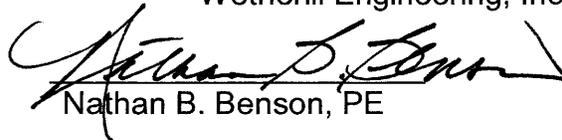
John F. Sullivan, III, PE, Division Administrator
Federal Highway Administration

Cherokee County
Bridge No. 98 on SR 1564 (Brasstown Road)
Over Brasstown Creek Overrun
Federal-Aid Project BRZ-1564 (3)
WBS 33435.1.1
State Project 8.2911701
TIP Project B-4072

CATEGORICAL EXCLUSION

Document Prepared
by
Wetherill Engineering, Inc.

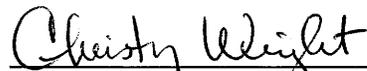
11-19-07
DATE


Nathan B. Benson, PE



In coordination with
North Carolina Department of Transportation
Project Development and Environmental Analysis Branch

11-29-07
DATE


Christy M. Wright, PE
Project Planning Engineer
Bridge Project Development Unit

11/29/07
DATE


John L. Williams, PE
Project Engineer
Bridge Project Development Unit

PROJECT COMMITMENTS

Cherokee County
Bridge No. 98 on SR 1564 (Brasstown Road)
Over Brasstown Creek Overrun
Federal-Aid Project BRZ-1564 (3)
WBS 33435.1.1
State Project 8.2911701
TIP Project B-4072

COMMITMENTS DEVELOPED THROUGH PROJECT DEVELOPMENT AND DESIGN

Structure Design / Permits

The proposed project is located in the Tennessee Valley Authority's (TVA) Land Management District. If the bridge is replaced along the existing alignment, as proposed, approval under Section 26a of the TVA Act will not be needed. However, TVA will review the final bridge design plans to confirm this determination.

Roadway Design, Structure Design & Division 14

The following items will be done to minimize the effects to the John C. Campbell Folk School Historic District caused by the proposed bridge replacement:

- The permanent bridge and roadway will be designed and constructed at its existing location. The proposed cross section will require minimal right of way acquisition.
- The temporary onsite detour will be constructed utilizing a 35 mph design speed and located within the temporary construction easements on the south (upstream) side of the existing bridge. Pedestrian traffic will be allowed along the shoulder of the temporary on-site detour.
- The temporary bridge and roadway approaches for the onsite detour will be removed upon completion of the permanent bridge and roadway.
- The proposed bridge rail will be a standard or latest standard one-bar metal rail painted black.
- Landscape restoration will occur within the area of the temporary construction easement needed for the temporary bridge and roadway approaches and areas where disturbed by construction.
- The guard rail associated with the proposed project will be painted black.
- The John C. Campbell Folk School will coordinate with Division 14 on the placement of four iron lamp posts within NCDOT right of way. These lamps will not be attached to the bridge.
- Native stone will be used in lieu of standard rip rap in the slope protection of the bridge. The native stone will be a rock similar to rock found in the creek bed or used in the foundation of buildings at the John C. Campbell Folk School.

**Cherokee County
Bridge No. 98 on SR 1564 (Brasstown Road)
Over Brasstown Creek Overrun
Federal-Aid Project BRZ-1564 (3)
WBS 33435.1.1
State Project 8.2911701
TIP Project B-4072**

INTRODUCTION: The replacement of Bridge No. 98 is included in the 2007-2013 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and on the Federal Aid Bridge Replacement Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED

The existing bridge, built in 1950, is structurally deficient and also qualifies as functionally obsolete. According to the Bridge Maintenance Unit at NCDOT, at the time the bridge was inspected on February 11, 2003, the sufficiency rating of the bridge was 32.5 out of a possible 100 (both structural and deck geometry evaluation rating:2). The bridge is posted with a weight limit of 12 tons for a single vehicle and 16 tons for truck tractor semi-trailer. The replacement of this inadequate structure will allow the restrictive posted limits to be removed. The replacement will result in a wider and potentially safer bridge.

II. EXISTING CONDITIONS

SR 1564 (Brasstown Road) is a two-lane highway. SR 1564 is posted for a 25 MPH speed limit. The project vicinity is primarily rural. The John C. Campbell Folk School is located just west of the existing bridge and the community of Brasstown is located just east of the existing bridge. In addition to the arts and crafts taught to students at the school, there are regularly held music concerts, craft exhibits and folk dancing events scheduled throughout the year. The school is a major tourist attraction. There is pedestrian traffic between the school and the community of Brasstown, which has several stores and commercial development. Pedestrian traffic ordinarily uses a lighted walking trail adjacent to SR 1564 and the bridge. Pedestrians use the bridge when the area under the bridge is occasionally flooded. The school and property is in the National Register of Historic Places. Brasstown Baptist Church is located just north of the school.

The functional classification of SR 1564 is "Rural Local".

The horizontal alignment of SR 1564 in the vicinity of the bridge consists of a slight curve approaching the bridge from the west. The bridge over the main channel of Brasstown Creek, Bridge No. 79, is located approximately 380 feet east of Bridge No. 98. Bridge No. 79 was replaced in 1981 with an estimated remaining life of 20 years. Approximately 600 feet from Bridge No. 98, SR 1564 intersects with SR 1100 in Brasstown. This intersection is stop sign controlled. The pavement width on SR 1564 is 20 feet on the approaches to Bridge No. 98. The grass shoulders are approximately 2-4 feet wide. The claimed existing right of way width is 60 feet and is symmetrical about the centerline of the roadway.

The existing bridge was completed in 1950. The superstructure consists of a timber floor on steel

I-Beams. The substructure consists of concrete (Yount Masonry) abutments. The bridge is 31 feet long and 19.3 feet wide. This width provides for two nine-foot travel lanes (about one foot less than the travel lane width on the roadway approaches) with only minimum lateral clearance to the bridge rail. The bridge is posted as a narrow bridge. The bridge crosses Brasstown Creek Overrun at an approximate 90-degree angle. Photographs of the existing bridge sites are included on Figures 3A and 3B.

The Average Annual Daily Traffic (AADT) volume for the year 2007 is estimated to be 2400 vehicles per day (VPD) and is projected to increase to 3700 VPD in the year 2025. The percent of tractor-truck-semi-trailer (TTST) and dual tired trucks (DTT) are estimated to be 1 percent and 4 percent, respectively.

No accident was recorded in the vicinity of the bridge during the last three years.

There are no utilities in the vicinity of bridge. The John C. Campbell Folk School has installed lighting along a walking trail located on the edge of the shoulders of the road.

Research of public records and an onsite inspection did not indicate any evidence of the presence of hazardous/toxic material in the immediate project area.

III. ALTERNATIVES

A. Project Description

Bridge No. 98 will be replaced with a new bridge at the existing location. The new bridge will be approximately 85 feet in length with a 32-foot clear roadway width. The new bridge will provide two 12-foot traffic lanes with a 4-foot offset from the edge of pavement to the bridge rail.

The proposed width conforms to the NCDOT's bridge policy for a rural local highway with 3700 VPD traffic volumes and a 35 mph design speed.

The proposed roadway approaches to the bridge will consist of a 24-foot wide pavement and 8-foot wide shoulder widths.

B. Reasonable and Feasible Alternatives

Bridge No. 98 is located in the John C. Campbell Folk School Historic District and subject to Section 106 of the National Historic Preservation Act and Section 4(f) of the National Highway Transportation Act (See Section VII). There is a no feasible and prudent alternative to meet the project's need for replacement, provide continued traffic service to the school and avoid the Section 4 (f) property. Attached to this report is documentation from the Federal Highway Administration intent to make a *de minimis* impact finding for this Section 4 (f) property.

Two alternatives for B-4072 and are described below. A cost comparison for the two alternatives is provided in Section V. Estimated Cost (Table 1).

Alternate 1A (See Figure 2A)

Alternate 1A would replace the bridge with a permanent bridge at the existing location. Traffic would be maintained on a temporary onsite detour during construction. The temporary onsite detour would be located on the downstream side (north side) of the existing

bridge and include two 72-inch Corrugated Metal Pipes for the crossing of Brasstown Creek Overrun. Upon completion of the permanent bridge at the existing site, the temporary structure (pipes) and roadway approaches on the onsite detour would be removed.

Alternate 2A (Preferred) (See Figure 2B)

Alternate 2A will replace the bridge with a permanent bridge at the existing location. Traffic will be maintained on a temporary onsite detour during construction. The temporary onsite detour would be located on the upstream side (south side) of the existing bridge and include two 72-inch Corrugated Metal Pipes for the crossing of Brasstown Creek Overrun. Upon completion of the permanent bridge at the existing location, the temporary structure (pipes) and roadway approaches on the onsite detour will be removed.

C. Alternatives Eliminated from Further Study

The following alternatives were eliminated from further study.

- **New Alignment:** Alternatives that would locate the permanent bridge on new alignment on either side of the bridge are not practical due the existing tangent alignment and the proximity of Bridge No. 98 to the adjacent structure over Brasstown Creek. These alternatives would result in curved alignments for SR 1564 and more extensive roadway construction. In addition, a permanent relocation on the south side of SR 1564 would require more permanent right of way from a National Register Historic property. In accordance with Section 4 (f) regulations, since, there are other alternatives that would meet the project needs and would minimize the taking of permanent right of way from an historic district, then that alternative requiring less right of way is not a feasible and prudent alternative.
- **Culverts:** Consideration was given to replacing the bridge with a bottomless culvert instead of a bridge. Based upon geotechnical studies by NCDOT, it was determined bedrock is 30 to 40 feet below the existing ground line. This significant depth to bedrock requires piles for the bottomless culvert foundation. The pile foundation significantly increases the cost of the bottomless culvert. The bottomless culvert was eliminated from further consideration due to the effects on the wetlands and the significantly increased costs due to the pile foundation. A box culvert was also deemed not feasible due to the above reasons and also due to the large drainage opening required.
- **Offsite Detour:** Closing SR 1564 and detouring traffic to an offsite detour would require a detour in excess of 15 miles and cause considerable hardships on the Brasstown community including the John C. Campbell School (a Section 4(f) property) and the Brasstown Baptist Church. The offsite detour would utilize SR 1558. Because of the Hiwassee River, there is no existing crossing of the river without going to the town of Murphy. This portion of the available offsite detour along SR 1558 has very poor horizontal and vertical alignment involving mountainous terrain. The additional travel time per vehicle is estimated be over 30 minutes involving 2400 vehicles per day. According to the NCDOT guidelines, with duration of road closure more than 6 months expected, the delay would be unacceptable. Therefore in view of the poor roadway conditions of the offsite detour (for the 2400 vehicles per day) and the cost of providing a temporary detour is relatively low, the offsite detour is not a practical alternative.
- **Do-nothing:** A “do-nothing” alternative considered for the improvement of Bridge No. 98 on SR 1564. The “do-nothing” alternative is not feasible. This will require the closing of the road as the existing bridge deteriorates to a point where it is unsafe at any posted weight limits. The traffic served warrants a bridge at this location.

- **Rehabilitation:** Rehabilitation of the existing narrow and structurally deteriorating bridge is neither practical nor economically feasible. It would require significant repairs to the substructure and superstructure because of their overall poor condition.

D. Preferred Alternative

Alternate 2A is the preferred alternative and consists of replacing the existing bridge with a bridge at its existing location on the existing alignment of SR 1564 over Brasstown Creek Overrun (see Figure 2B). Traffic would be maintained on a temporary onsite detour during construction. The temporary onsite detour will be located on the upstream side (south side) of the existing bridge. This is the preferred location for the temporary detour by the Director of the School. This alternative responds to the primary concerns of the Director of the School, which were: safety of pedestrian traffic and the aesthetics of the proposed structure. Alternative 2A will allow the pedestrian traffic to continue using the south side shoulder both during construction and after the project is complete.

The NCDOT Division 14 Engineer has reviewed the proposed project and concurs with the recommended alternative.

IV. DESIGN EXCEPTIONS ANTICIPATED

A design exception is not anticipated.

V. ESTIMATED COST

Table 1

Item	Alternate 1A	Alternate 2A (Preferred)
Permanent Structure	\$360,000	\$360,000
Temporary Structure	\$30,000	\$35,000
Temporary Roadway Work	\$162,000	\$138,000
Mobilization and clearing and grubbing	\$170,000	\$175,000
Removal of existing bridge	\$12,000	\$12,000
Roadway and Miscellaneous Costs	\$119,000	\$102,000
Engineering & Contingencies	\$133,000	\$108,000
Total Construction Costs	\$986,000	\$930,000
Right of way	\$5,000	\$5,000
Total Cost	\$991,000	\$935,000

VI. NATURAL RESOURCES

A. Introduction

The project study area is approximately 400 feet wide, centered on SR 1564, and approximately 600 feet long, centered on the existing bridge. The project study area encompasses approximately 5.8 acres.

The project study area is located within the Broad Basins ecoregion within the Blue Ridge Mountain physiographic province of North Carolina. Elevations within the project study area range from a high of approximately 1625 feet National Geodetic Vertical Datum (NGVD) to a low of approximately 1600 feet NGVD (Peachtree, NC 7.5-minute quadrangle [Photo revised 1973]) within the overrun.

B. Physical Characteristics

1. Water Resources

The project study area is located within sub-basin 04-05-01 of the Hiwassee River Basin (NCDWQ 2002). This area is part of USGS Hydrologic Unit 06020002 (Seaber et al. 1987) of the Tennessee Region. The structure targeted for replacement spans Brasstown Creek overrun, a linear wetland within the Brasstown Creek floodplain that only transports surface

water following large rainfall events. The project study area contains no stream. The portion of Brasstown Creek that lies within the project vicinity has been assigned Stream Index Number 1-42 by the North Carolina Division of Water Quality (NCDWQ) (NCDWQ 2005).

Classifications are assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. All streams occurring within 1.0 mile of the project study area are designated as Water Supply IV (**WS-IV**) (NCDWQ 2005). A **WS-IV** classification is considered waters used as sources of potable water where a more protective **WS-I**, **WS-II**, or **WS-III** classification is not feasible. These waters are also protected for Class **C** uses. **WS-IV** waters are generally in moderately to highly developed watersheds or Protected Areas, and involve no categorical restrictions on discharges. This includes Hiwassee River, Brasstown Creek, Little Brasstown Creek, Bevins Branch, Brendle Branch, Donaldson Branch, and Jenkins Branch. No supplemental classifications occur within 1.0 mile of the project study area.

2. Biotic Resources

Only one distinct plant community was identified within the project study area: disturbed/maintained land. A summary of plant community areas and the potential impacts for each alternative are presented in Table 2.

Table 2: Plant Community Areas within Alternate Cut-Fill Limits (areas given in acres)

Alternative	Disturbed/Maintained Land	
	Permanent	Temporary
Alternate 1A	0.57	0.51
Alternate 2A (Preferred)	0.57	0.54

C. Jurisdictional Topics

1. Surface Waters and Wetlands

The project study area contains no surface waters. The project study area contains two wetland areas: a linear wetland and a depressional wetland. A low-quality, herb-dominated, regularly maintained linear wetland, 0.37 acre in size, occurs from the southeastern to northwestern portion of the project study area. A low-quality, herb-dominated, regularly maintained depressional wetland, 0.03 acre in size, occurs in the northwestern portion of the project study area. The low-quality designation is based on North Carolina Division of Environmental Management (NCDEM) ratings guidelines [rating of 22 out of 100 (NCDEM 1995)]. The primary source of hydrology is groundwater seepage from the adjacent slope to the west. The linear wetland collects surface water runoff from the adjacent fields during heavy rains and overbank flow from Brasstown Creek. These wetlands can be classified as a palustrine, intermittently flooded, emergent wetland supporting persistent deciduous vegetation (PEM1J). Soils exhibit hydric characteristics and hydrology as indicated by surface inundation. Jurisdictional areas located within alternate cut-fill limits are summarized in Table 3.

Table 3: Jurisdictional Areas Within Alternate Cut-Fill Limits (area given in acres)

	Jurisdictional Wetlands	
	Permanent	Temporary
Alternate 1A	0.01	0.09
Alternate 2A (Preferred)	0.01	0.03

2. Permits

Impacts to jurisdictional wetlands are minimal and no surface waters are involved. Therefore no permits will be required from the US Corps of Engineers or the North Carolina Department of Water Quality.

The proposed project is located in the Tennessee Valley Authority’s (TVA) Land Management District. If the bridge is replaced along the existing alignment, as proposed, approval under Section 26a of the TVA Act will not be needed. However, TVA will review the final bridge design plans to confirm this determination.

3. Federally Protected Species

Species with the federal classification of Endangered, Threatened, or officially proposed for such listing are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). The term “Endangered Species” is defined as “any species which is in danger of extinction throughout all or a significant portion of its range,” and the term “Threatened Species” is defined as “any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range” (16 U.S.C. 1532).

The most current list provided by the USFWS (May 2007, USFWS 2007) includes six federally protected species with ranges that extend into Cherokee County (Table 4).

**Table 4. Federally Protected Species Listed for Cherokee County
as of May 2007 (USFWS 2007)**

Common Name	Scientific Name	Status*
Bog turtle	<i>Glyptemys (Clemmys) muhlenbergii</i>	T (S/A)
Indiana bat	<i>Myotis sodalis</i>	E
Cumberland bean	<i>Villosa trabalis</i>	E
Little-wing pearl mussel	<i>Pegias fibula</i>	E
Tan riffleshell	<i>Epioblasma florestina walkeri</i>	E
Small-whorled pogonia	<i>Isotria medeoloides</i>	T

*Federal Status: E--Endangered; a taxon “in danger of extinction throughout all or a significant portion of its range;” T--a taxon “likely to become endangered within the foreseeable future throughout all or a significant portion of its range;” T (S/A) – Threatened, due to similarity of appearance.

***Glyptemys (Clemmys) muhlenbergii* (Bog turtle)**

**Threatened due to
Similarity of Appearance**

Family: Emydidae

Date Listed: November 4, 1997

In North Carolina, bog turtles have a discontinuous distribution in the mountains and western Piedmont. Recently the genus name for the bog turtle has changed, from *Clemmys* to *Glyptemys*. T (S/A) species are not subject to Section 7 consultation and a biological conclusion is not required. NCNHP records (reviewed February 2005) document no occurrence of the bog turtle within 2.0 miles of the project study area. Wet pastures with aquatic vegetation were observed within the project area.

***Myotis sodalis* (Indiana bat)**

Endangered

Family: Vespertilionidae

Date Listed: March 11, 1967

A habitat assessment was conducted on June 21, 2007 by NCDOT biologists. The surrounding area is open agricultural land with minimal canopy cover. The bridge spans a linear wetland, the Brasstown Creek overrun. The bridge consists of a timber deck on steel I-beams; it did not have crevices in the deck or in the guardrail that would be suitable for bat roosts. No staining or guano was found. Roosting habitat for Indiana bats does not occur in the project area, as the bridge itself is unsuitable and there were no visible trees with sloughing bark. No caves, mines or rock outcrops occur in the project area. Based upon the above information, this project has a biological conclusion of No Effect on federally endangered Indiana bats.

BIOLOGICAL CONCLUSION

NO EFFECT

***Villosa trabalis* (Cumberland bean)**

Endangered

Family: Unionidae

Date Listed: June 14, 1976

No small rivers or streams with fast riffles were observed within the project study area. NCNHP records (reviewed February 2005) document no occurrence of Cumberland bean within 2.0 miles of the project study area. This project is anticipated to have No Effect on Cumberland bean.

BIOLOGICAL CONCLUSION

NO EFFECT

***Pegias fabula* (Littlewing pearlymussel)**

Endangered

Family: Unionidae

Date Listed: November 14, 1988

No slow to medium-sized streams, with flowing water were observed within the project study area. NCNHP records (reviewed February 2005) document no occurrence of this species within 2.0 miles of the project study area. This project is anticipated to have No Effect on littlewing pearlymussel.

BIOLOGICAL CONCLUSION

NO EFFECT

***Isotria medeoloides* (Small-whorled pogonia)**

Threatened

Family: Orchidaceae

Date Listed: September 10, 1982

No open forest was observed within the project study area. NCNHP records (reviewed February 2005) document no occurrence of the small-whorled pogonia within 2.0 miles of the project study area. This project is anticipated to have No Effect on the small-whorled pogonia.

BIOLOGICAL CONCLUSION

NO EFFECT

***Epioblasma florentina walkeri* (Tan riffleshell)**

Endangered

Family: Unionidae

Date Listed: August 23, 1977

Brasstown Creek Overrun has only occasional stream flow during flooding. NCNHP records (reviewed February 2005) document no occurrence of this species within 2.0 miles of the project study area. This project is anticipated to have No Effect on the tan riffleshell.

BIOLOGICAL CONCLUSION:

NO EFFECT

VII. HUMAN ENVIRONMENT

A. Cultural Resources

1. Compliance Guidelines

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

2. Historic Architecture

The State Historic Preservation Office (HPO) identified the John C. Campbell Folk School Historic District, bounded by SR 1564, SR 1558, SR1604 and SR 1565, Brasstown vicinity and requested surveys for historic structures in their memo dated March 30, 2005. A field survey of the Area of Potential Effects (APE) was conducted by an NCDOT architectural historian and one structure (Bridge No. 98) over 50 years of age within the APE was recorded. The photograph of this structure along with an evaluation was shown at a meeting on November 14, 2005. At that meeting HPO staff concurred that this structure was not eligible for the National Register and a form was signed that reflects this finding. A copy of the concurrence form is attached. HPO staff advised that effects consultation is required because Bridge No. 98 is inside the John C. Campbell Folk School Historic District. An Effects meeting

was held on March 23, 2007. Attendees at this meeting included the Director of school, FHWA, NCDOT and HPO staff. At this meeting, it was determined that the project could be constructed with no adverse effects with environmental commitments. Copies of correspondence are attached.

3. Archaeology

In a memorandum dated March 30, 2005, the State Historic Preservation Office (HPO) staff reported the following: Two previously recorded sites; 31CY14 and 31CE14 are located in very close to the proposed project. The two sites are recorded on both sides of the creek and were likely the location of a Cherokee village. Neither site has been evaluated for National Register eligibility. SHPO staff recommended an archaeological survey be performed prior to any construction activity. An archaeological survey was performed by NCDOT archeologists. The survey was provided to the HPO. The survey identified one site located within the project area and recommended no further archaeological investigations be conducted for this project. SHPO concurred with this recommendation since the project will not involve significant archaeological resources. Copies of the correspondence are attached.

B. Community Impacts

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. The design of the new bridge will not change the visual character of the area and should be acceptable to those located near the bridge. It is anticipated that the proposed project can be constructed within the claimed right of way width with minimal additional right of way needed. Temporary easements are needed for the onsite detour. No residences are located near the bridge. No structures of the John C. Campbell Folk School are located within 1000 feet of the proposed bridge.

An onsite detour will be provided and therefore no unreasonable traffic delays are anticipated to occur during the construction period.

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

The proposed project will not affect utilities.

C. Noise and Air Quality

This project is an air quality neutral project in accordance with 40 CFR 93.126. It is not required to be included in the regional emissions analysis (if applicable) and project level CO or PM2.5 analyses are not required. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. Therefore, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs. Any burning of vegetation shall be performed in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality compliance with 15 NCAC 2D.0520.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise

and the limitation of construction to daytime hours. The transmission loss characteristics of nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

D. Farmland

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impacts to prime and important farmland soils by all land acquisition and construction projects. Since the bridge will be replaced at the existing location, the Farmland Protection Policy Act does not apply.

VIII. GENERAL ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of the inadequate bridge and construction of safety improvements will result in safer and overall more efficient traffic operations.

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

Cherokee County is a participant in the Federal Flood Insurance Program. The bridge is located within an Approximate Study Area. Since the proposed replacement would be a structure similar in waterway opening size, it is not anticipated that it will have any adverse impact on the existing floodplain.

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

IX. AGENCY COMMENTS

Scoping letters were sent to the following agencies. Agencies that responded are marked with an asterisk. The US Fish and Wildlife Service response recommended that habitat surveys be performed for the Small-whorled pogonia and the Indiana bat and identified the bog turtle as a species of concern. These concerns have been adequately addressed in the document. Correspondence from the NC Division of Archives and History are attached. The other agency responses had no unique concerns.

Federal Agencies

US Fish and Wildlife Service-Asheville*
US Army Corps of Engineers-Asheville
US Army Corps of Engineers-Wilmington
Environmental Protection Agency-Raleigh

State Agencies

NC Wildlife Resources Commission*
NC Department of Environment and Natural Resources
NC Division of Water Quality/Wetlands*

NC Division of Archives and History*
The Eastern Band of Cherokee Indians, Tribal Historic Preservation Office
State Clearinghouse
NC Department of Public Instruction*

Regional and Local Agencies

Region A Council of Government
Cherokee County Commissioner, chairperson
Cherokee County /Emergency Management Coordinator*
Cherokee County Board of Education*

X. SECTION 4 (f) RESOURCES

Section 4(f) of the Department of Transportation Act of 1966, as amended, states in part “The Secretary may approve a transportation project or program requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge, or land of a historic site of national, state, or local significance (as determined by the Federal, State or local officials having jurisdiction over the park, recreation area, refuge, or site) only if:

- (1) there is no prudent and feasible alternative to using that land; and
- (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use.”

The John C. Campbell Folk School Historic District is in the National Register of Historic Places and protected by Section 4(f). A map showing the historic district is attached. The preferred Alternative 2A is anticipated to be constructed within the claimed right of way width of 60 feet. The proposed cross section will require minimal right of way acquisition. A temporary construction easement will be required for the onsite detour. An Effects meeting was held on March 23, 2007. Attendees at this meeting included the Director of school, FHWA, NCDOT and HPO staff. At this meeting, it was determined that the project could be constructed with no adverse effects with environmental commitments. Measures to minimize harm have been agreed to, in accordance with 36 CFR Part 800, by the FHWA, the SHPO and the NCDOT and a Concurrence Form is attached. As indicated on the Concurrence Form, the Federal Highway Administration will make a *de minimus* finding for this Section 4 (f) property.

These specific measures to minimize harm are described as follows and have been incorporated into the environmental commitments for this project:

- 1) The permanent bridge and roadway will be designed and constructed at its existing location. The proposed cross section will require minimal right of way acquisition.
- 2) The temporary onsite detour will be constructed utilizing a 35 mph design speed and located within the temporary construction easements on the south (upstream) side of the existing bridge. Pedestrian traffic will be allowed along the shoulder of the temporary on-site detour.
- 3) The temporary bridge and roadway approaches for the onsite detour will be removed upon completion of the permanent bridge and roadway.
- 4) The proposed bridge rail will be a standard or latest standard one-bar metal rail painted black.
- 5) Landscape restoration will occur within the area of the temporary construction easement needed for the temporary bridge and roadway approaches and areas where disturbed by construction.
- 6) The guard rail associated with the proposed project will be painted black.

- 7) The John C. Campbell Folk School will coordinate with Division 14 on the placement of four iron lamp posts within NCDOT right of way. These lamps will not be attached to the bridge.
- 8) Native stone will be used in lieu of standard rip rap in the slope protection of the bridge. The native stone will be a rock similar to rock found in the creek bed or used in the foundation of buildings at the John C. Campbell Folk School.

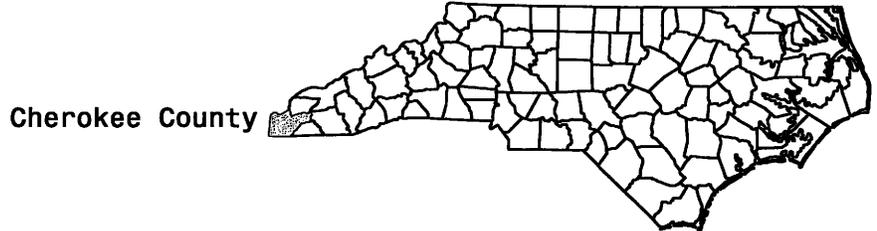
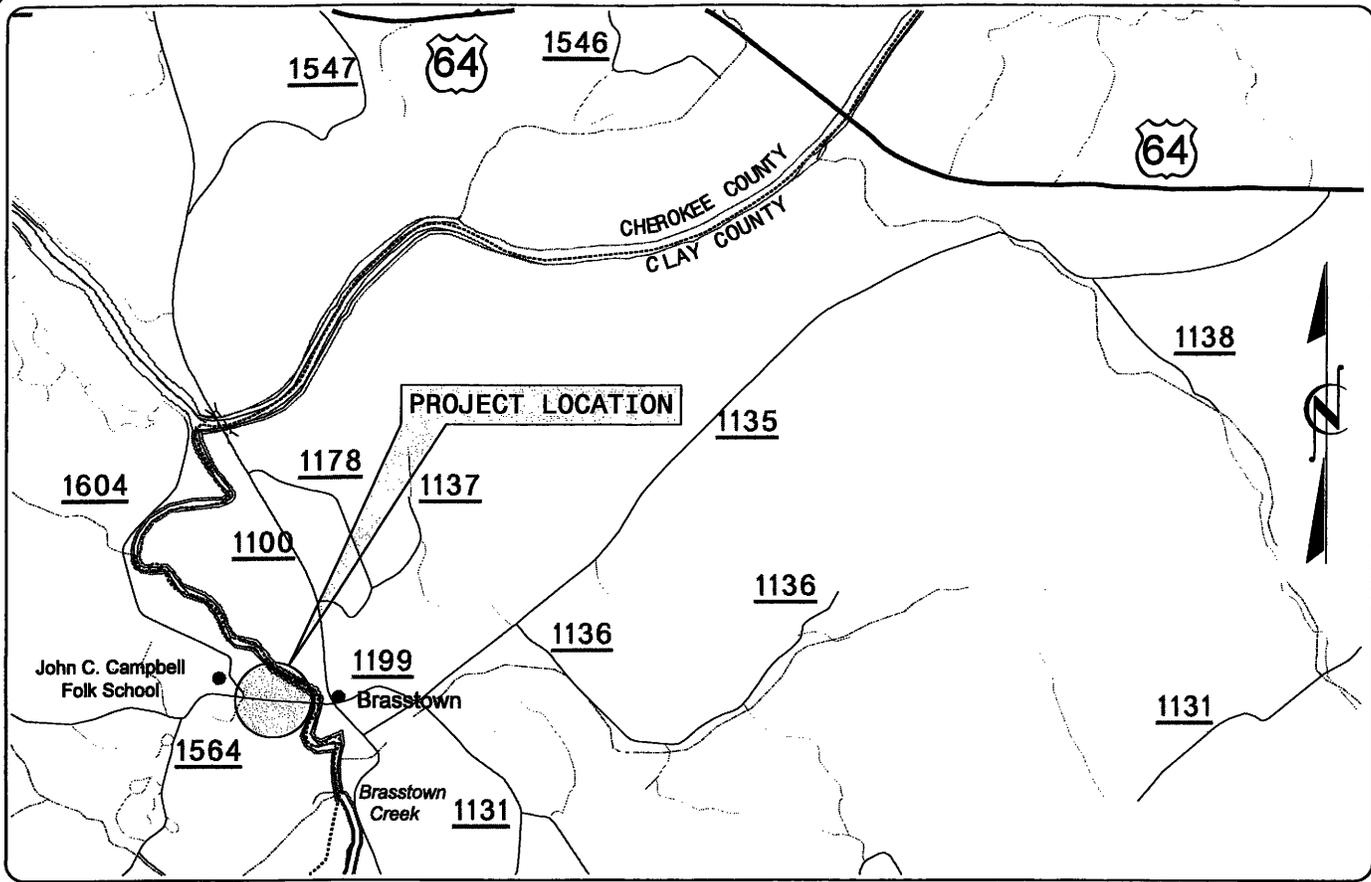
XI. PUBLIC INVOLVEMENT

A mailing list was developed for property owners living near the bridge. The mailing list had approximately 18 names including local officials and news media. A newsletter was mailed to those on the list. The newsletter included pertinent information concerning the bridge replacement. A second newsletter was sent to those on the mailing list and announced a Citizens Informational Workshop. The workshop was held on December 6, 2005 from 5 pm to 7 pm in the Brasstown Community Civic Center, 255 Setawig Road, Brasstown. The meeting consisted of an open house format. Four alternatives, Alternative 1 (Bottom-Less Culvert) & 1A (Bridge) and Alternative 2 (Bottom-Less Culvert) & 2A (Bridge), were displayed and included in handouts provided at the workshop. Four citizens attended the workshop. One comment pertinent to the proposed project was received as follows:

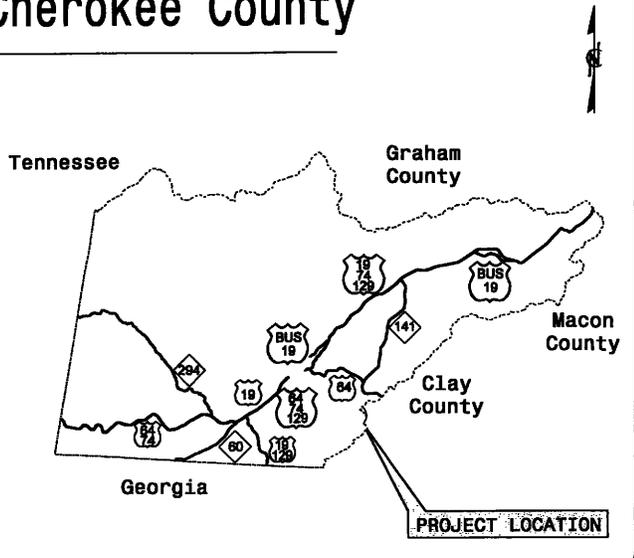
The Director of the John C. Campbell Folk School commented that he preferred the alternative that would locate the temporary detour on the south side of the existing bridge and preference for replacement of the existing bridge at the same location with a bottom-less culvert. The Director also requested that the structure be provided with a simulated stone facing and minimum guard protection at the headwall. The Director voiced concern about safety of pedestrian traffic and requested that lighting for pedestrian traffic be maintained. It was discussed that if the permanent structure is ultimately decided to be a bottom-less culvert then the lighting can continue along the shoulder as it presently does. If a bridge is selected as the permanent structure (the preferred alternate), then the Director requested that the lighting be designed integral with the bridge railings, the lighting fixtures be coordinated with the School and the bridge width and bridge rail be designed to accommodate pedestrian traffic. The Director also requested the bridge, if selected, should also be provided with the simulated rock-facing. (The concerns of the Director were discussed at the Effects meeting held on March 23, 2007 and resulted in the project commitments included in this report.)

XI. CONCLUSION

On the basis of the above discussion, it is concluded that no significant adverse environmental effects will result from the implementation of this project. The project is therefore considered to be a federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.



Cherokee County

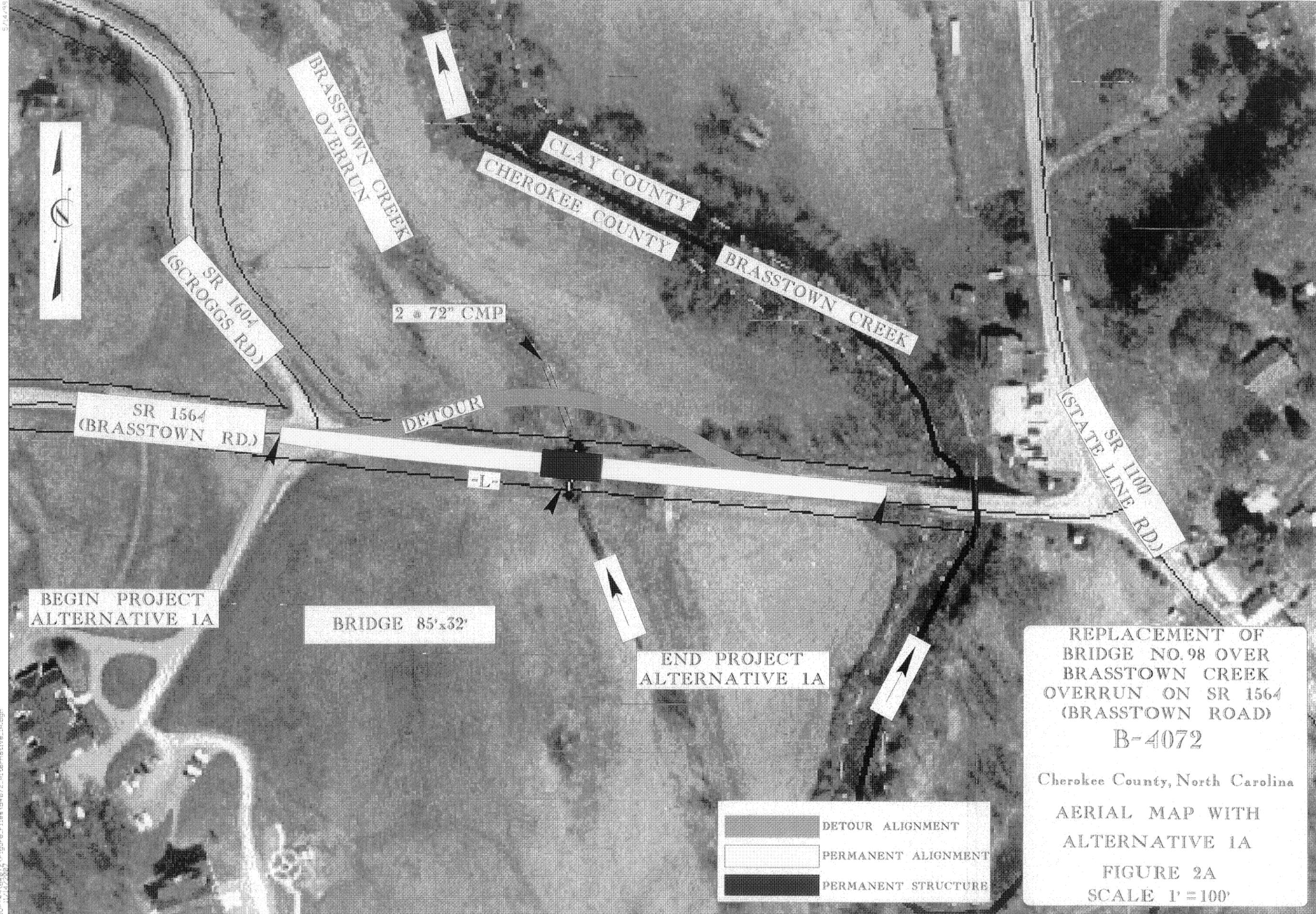


SR 1564
 (BRASSTOWN ROAD)
 REPLACE BRIDGE NO. 98 over
 BRASSTOWN CREEK OVERRUN

B-4072

Cherokee County, North Carolina
PROJECT VICINITY

Figure 1



BEGIN PROJECT ALTERNATIVE 1A

BRIDGE 85' x 32'

END PROJECT ALTERNATIVE 1A

DETOUR

2 @ 72" CMP

SR 1564 (BRASSTOWN RD.)

SR 1604 (SCROGGS RD.)

SR 1100 (STATE LINE RD.)

BRASSTOWN CREEK
OVERRUN

CLAY COUNTY
CHEROKEE COUNTY

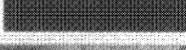
BRASSTOWN CREEK

REPLACEMENT OF
BRIDGE NO.98 OVER
BRASSTOWN CREEK
OVERRUN ON SR 1564
(BRASSTOWN ROAD)
B-4072

Cherokee County, North Carolina

AERIAL MAP WITH
ALTERNATIVE 1A

FIGURE 2A
SCALE 1" = 100'

-  DETOUR ALIGNMENT
-  PERMANENT ALIGNMENT
-  PERMANENT STRUCTURE



VIEW OF BRIDGE NO. 98 LOOKING EAST TOWARDS BRASSTOWN



**VIEW BENEATH BRIDGE NO. 98
FIGURE 3A**



VIEW OF JOHN C. CAMPBELL FOLK SCHOOL WEST OF BRIDGE NO. 98



**VIEW FROM BRIDGE NO. 98 LOOKING WEST TOWARDS SCHOOL
FIGURE 3B**



North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

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

March 30, 2005

MEMORANDUM

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

FROM: Peter B. Sandbeck *PBS for PBS*

SUBJECT: SR 1564, Bridge 98 over Brasstown Creek Overrun, B-4072, Cherokee County, ER 04-3222

Thank you for your letter concerning the above project.

Two previously recorded archaeological sites, 31CY2 and 31CE14, are located within or in very close proximity, to the proposed project. These two sites, recorded on both sides of the creek and assigned numbers within the respective counties, were likely the location of a Cherokee village. Neither site has been evaluated for National Register eligibility.

We recommend that a comprehensive survey be conducted by an experienced archaeologist to identify and evaluate the significance of archaeological remains that may be damaged or destroyed by the proposed project. Potential effects on unknown resources must be assessed prior to the initiation of construction activities.

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

- John C. Campbell Folk School Historic District, SR 1564, SR 1558, SR 1604, and SR 1565, Brasstown vicinity

We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty years of age within the project area, and report the findings to us.

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.

ADMINISTRATION
RESTORATION
SURVEY & PLANNING

Location
507 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh, NC

Mailing Address
4617 Mail Service Center, Raleigh NC 27699-4617
4617 Mail Service Center, Raleigh NC 27699-4617
4617 Mail Service Center, Raleigh NC 27699-4617

Telephone/Fax
(919)733-4763/733-8653
(919)733-6547/715-4801
(919)733-6545/715-4801

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

cc: Mary Pope Furr, NCDOT
Matt Wilkerson, NCDOT



North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

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

August 10, 2006

MEMORANDUM

TO: Matt Wilkerson
Division of Highways
North Carolina Department of Transportation

FROM: Peter Sandbeck *ASB for Peter Sandbeck*

SUBJECT: SR 1564, Bridge 98 over Brasstown Creek Overrun, B-4072, Cherokee County, ER 04-3222

Thank you for your letter transmitting the archaeological survey report by Gerold Glover for the above project. We apologize for the delay in our response.

During the course of the survey, one site was located within the project area. Dr. Glover has recommended that no further archaeological investigation be conducted in connection with this project. We concur with this recommendation since the project will not involve significant archaeological resources.

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

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 ext. 246. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Gerold Glover, NCDOT

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

Federal Aid # BRZ-1564(3)

TIP # B-4072

County: Cherokee

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Bridge No. 98 over Brasstown Creek Overrun

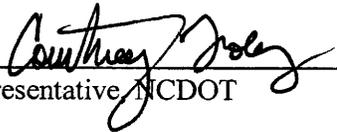
On **23 March 2007** representatives of

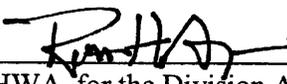
- North Carolina Department of Transportation (NCDOT)
- Federal Highway Administration (FHWA)
- North Carolina State Historic Preservation Office (HPO)
- Other

Reviewed the subject project and agreed

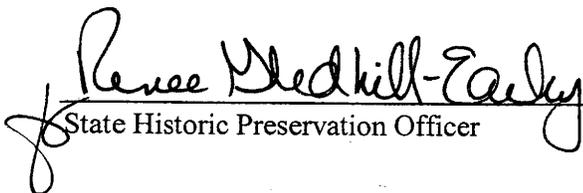
- There are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.
- There are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.
- There is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.
- There is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:


 Representative, NCDOT 23 MARCH 2007
Date


 FHWA, for the Division Administrator, or other Federal Agency 3.23.07
Date


 Representative, HPO 3-23-07
Date


 State Historic Preservation Officer 3.23.07
Date

Federal Aid # BRZ-1564(3)

TIP # B-4072

County: Cherokee

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

John C. Campbell Folk School (NR): NO ADVERSE EFFECT WITH ATTACHED ENVIRONMENTAL COMMITMENTS

11/27/2007

THE EFFECTS CALL REMAINS THE SAME; THE BRIDGE LENGTH IS NOW 85 FEET; THE COMMITMENT REMAIN THE SAME

CPR

Reason(s) why the effect is not adverse (if applicable).

DSSO 11/27/07
RL 11-27-07

SEE ATTACHED COMMITMENTS

Initialed:

NCDOT

CPR

FHWA

RHA

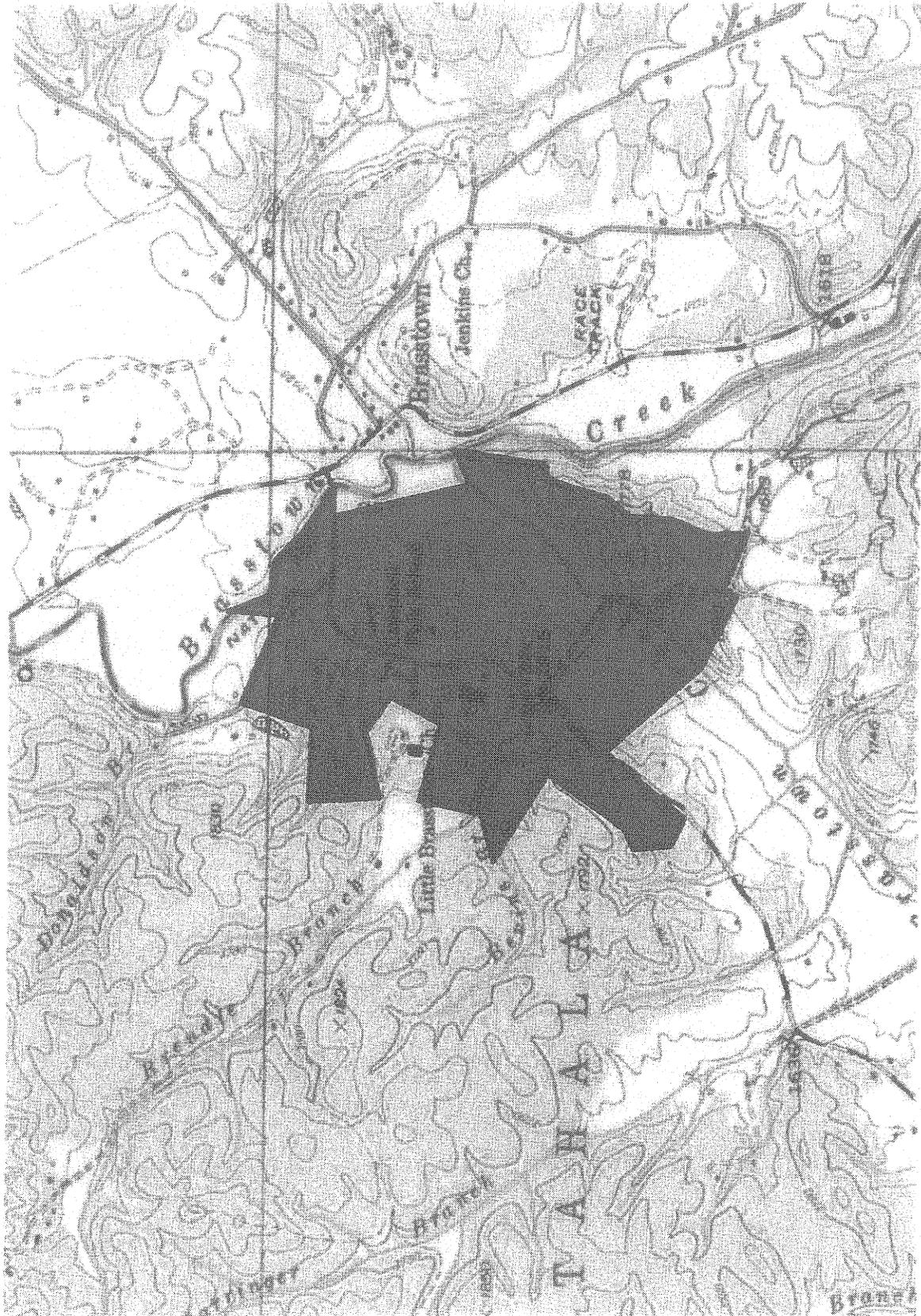
HPO

SDM

FHWA intends to use this "no adverse effect" determination as a basis for a "de minimus" finding pursuant to Section 4(f) of the NHPA 101

PROJECT COMMITMENTS

- *The permanent bridge and roadway will be designed and constructed at its existing location within the 60-foot right-of-way.*
 - *The temporary on-site detour will be constructed utilizing a 35 mph design speed and located within the temporary construction easements on the south (upstream) side of the existing bridge. Pedestrian traffic will be allowed along the shoulder of the temporary on-site detour.*
 - *The temporary bridge and roadway approaches for the on-site detour will be removed upon completion of the permanent bridge and roadway.*
 - *The proposed bridge rail will be a standard one-bar metal rail painted black.*
-
- *Landscape restoration will occur within the area of the temporary construction easement. The existing footpath and lighting on the south side of SR 1564 will be restored if disturbed during construction.*
 - *The guardrail associated with the proposed bridge will be painted black.*
 - *The John C. Campbell Folk School will coordinate with Division 14 on the placement of four iron lamp posts within NCDOT right-of-way. These lamps will not be attached to the bridge.*
 - *Native stone will be used in lieu of standard rip rap in the slope protection of the bridge. The native stone will be a rock similar to rock found in the creek bed or used in the foundation of buildings at the John C. Campbell Folk School.*



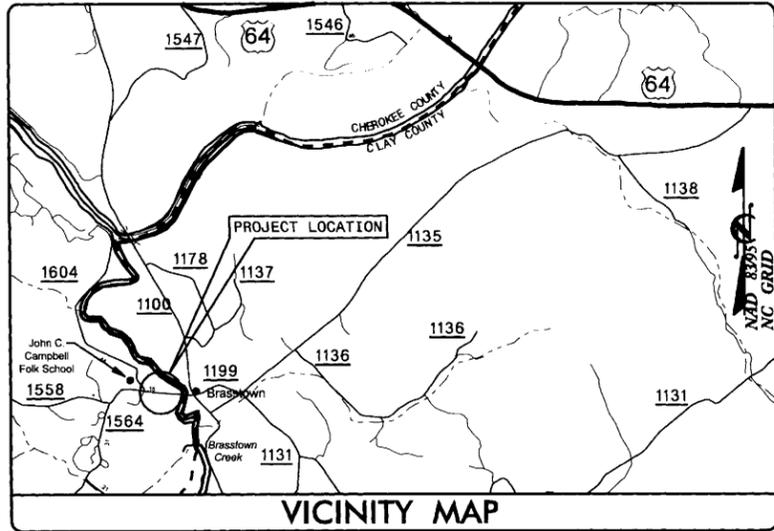
John C. Campbell Folk School Historic District -- approximate boundaries based on National Register nomination map -- USGS Peachtree quad

09/08/09
5:36 PM
B-4072-Roadway\Proj\B4072-Rdy-1.sh.dgn
20/2008

TIP PROJECT: B-4072

CONTRACT:

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



VICINITY MAP

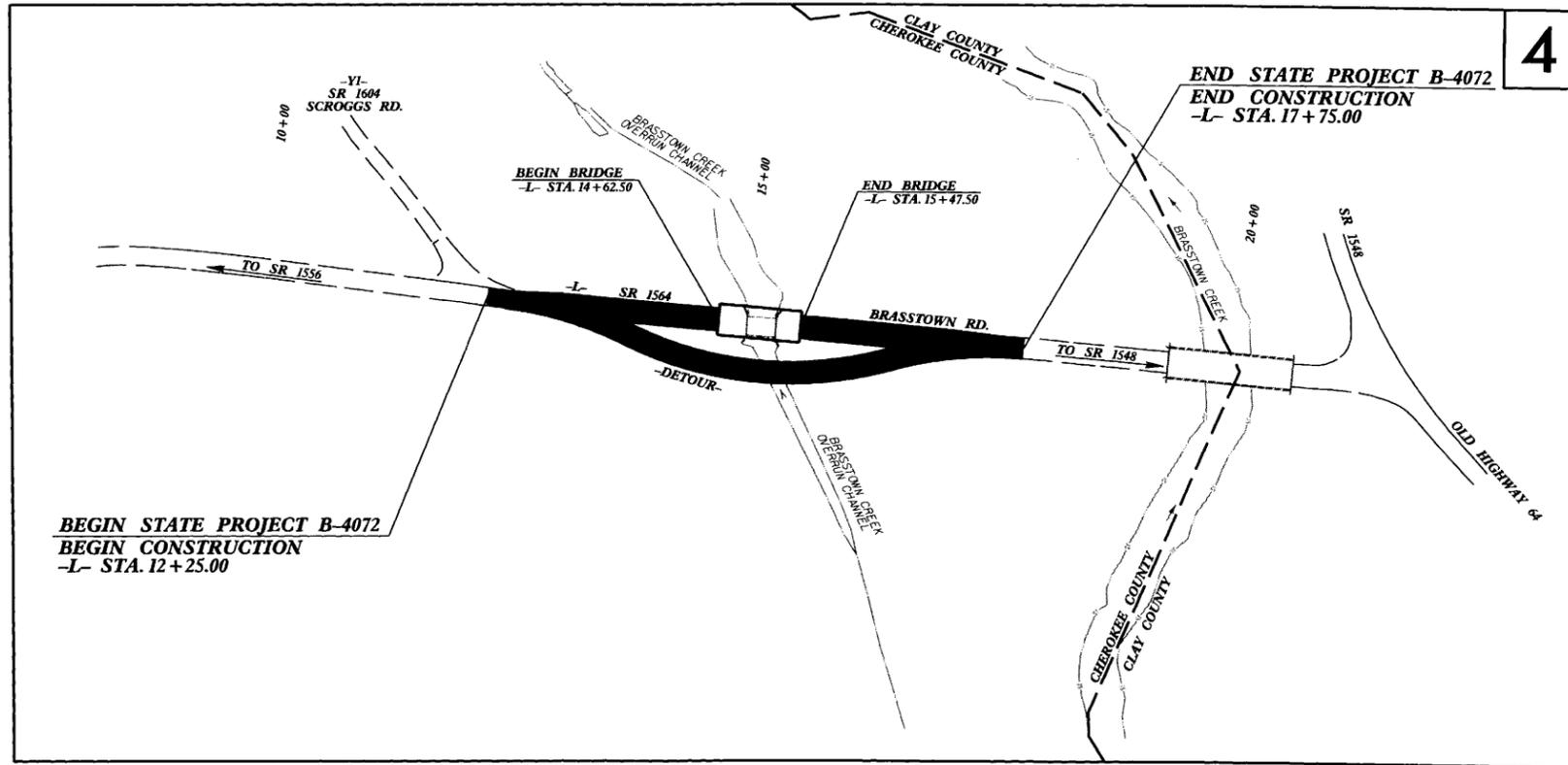
75% SUBMITTAL - RW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CHEROKEE COUNTY

LOCATION: BRIDGE NO. 98 OVER BRASSTOWN CREEK OVERRUN ON SR 1564 (BRASSTOWN RD.)

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4072	I	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33435.1.1	BRZ-1564(3)	PE	
33435.2.1	BRZ-1564(3)	RW & UTIL.	



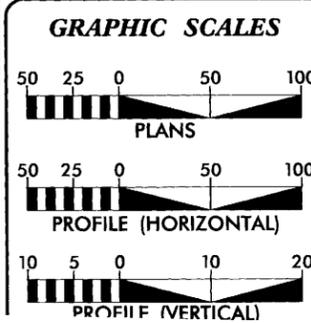
4

NAD 83/95
NC GRID

"THIS PROJECT NOT WITHIN ANY MUNICIPAL BOUNDARIES."
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL. (919) 859-2243 FAX (919) 859-6238

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2009 =	2590
ADT 2029 =	3980
DHV =	10 %
D =	60 %
T =	5 % *
V =	45 MPH
* TTST 1% DUAL 4%	
CLASS. =	RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4072	=	0.088 MILES
LENGTH STRUCTURE TIP PROJECT B-4072	=	0.016 MILES
TOTAL LENGTH TIP PROJECT B-4072	=	0.104 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 154
RALEIGH, N.C. 27606
BOX 919 851 8077
FAX 919 851 8107

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **MAY 20, 2008**

LETTING DATE: **AUGUST 18, 2009**

NCDOT CONTACT: **DOUG TAYLOR, PE**
ROADWAY DESIGN PROJECT ENGINEER

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

10/25/05

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	Ⓜ
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	-W.B.-
Proposed Wetland Boundary	-W.B.-
Existing Endangered Animal Boundary	-E.A.B.-
Existing Endangered Plant Boundary	-E.P.B.-

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG 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	Ⓜ
Curb Cut for Future Wheel Chair Ramp	Ⓜ
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	▭
Bridge Wing Wall, Head Wall and End Wall	⌋ CONC WW ⌋
MINOR:	
Head and End Wall	▭
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	▭
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	⊕
UG Power Cable Hand Hole	⊕
H-Frame Pole	⊕
Recorded UG Power Line	-----
Designated UG Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	⊕
Proposed Telephone Pole	⊕
Telephone Manhole	⊕
Telephone Booth	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
UG Telephone Cable Hand Hole	⊕
Recorded UG Telephone Cable	-----
Designated UG Telephone Cable (S.U.E.*)	-----
Recorded UG Telephone Conduit	-----
Designated UG Telephone Conduit (S.U.E.*)	-----
Recorded UG Fiber Optics Cable	-----
Designated UG Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	⊕
Water Meter	⊕
Water Valve	⊕
Water Hydrant	⊕
Recorded UG Water Line	-----
Designated UG Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊕
UG TV Cable Hand Hole	⊕
Recorded UG TV Cable	-----
Designated UG TV Cable (S.U.E.*)	-----
Recorded UG Fiber Optic Cable	-----
Designated UG Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	⊕
Gas Meter	⊕
Recorded UG Gas Line	-----
Designated UG Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

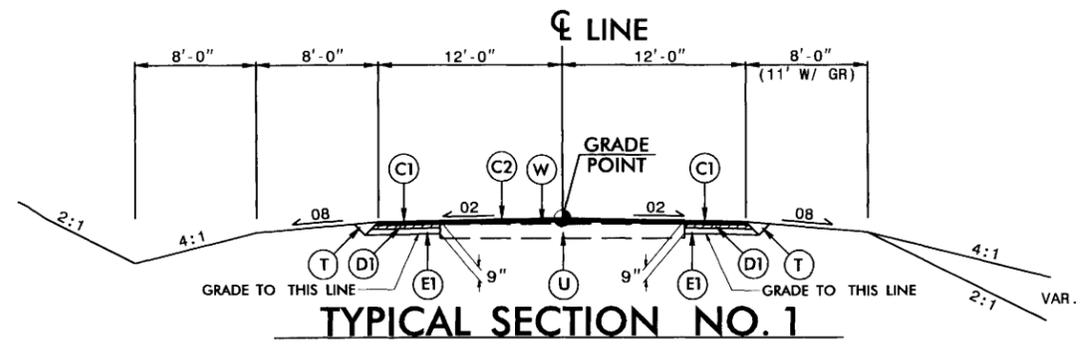
SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
UG Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	⊕
Utility Pole with Base	⊕
Utility Located Object	⊕
Utility Traffic Signal Box	⊕
Utility Unknown UG Line	-----
UG Tank; Water, Gas, Oil	▭
AG Tank; Water, Gas, Oil	▭
UG Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

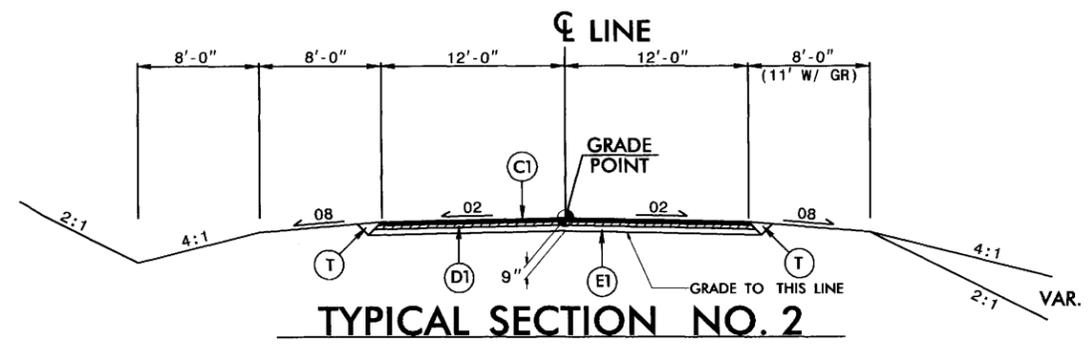
6/2/99



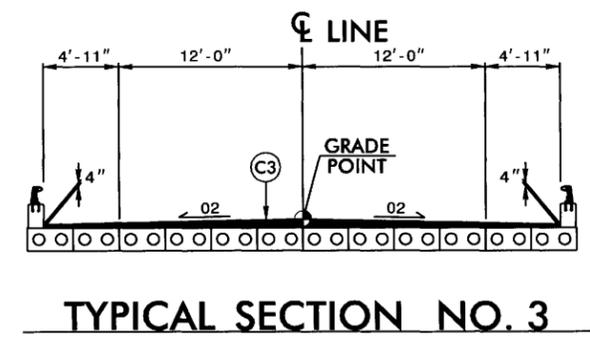
NOTE: TRANSITION FROM EXIST. PAVEMENT TO TYPICAL SECTION NO. 1
 -L- STA. 12+25.00 TO -L- STA. 12+50.00

NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO EXIST. PAVEMENT
 -L- STA. 17+50.00 TO -L- STA. 17+75.00

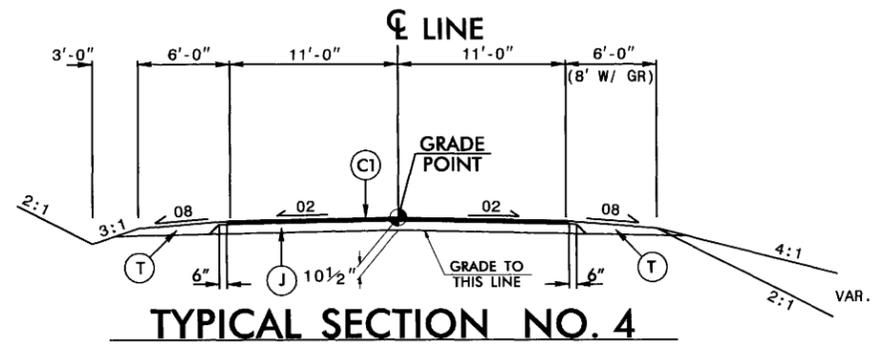
USE TYPICAL SECTION NO. 1
 -L- STA. 12+50.00 TO -L- STA. 14+35.00
 -L- STA. 15+75.00 TO -L- STA. 17+50.00



USE TYPICAL SECTION NO. 2
 -L- STA. 14+35.00 TO -L- STA. 14+62.50 (BEG. BRIDGE)
 -L- STA. 15+47.50 (END BRIDGE) TO -L- STA. 15+75.00



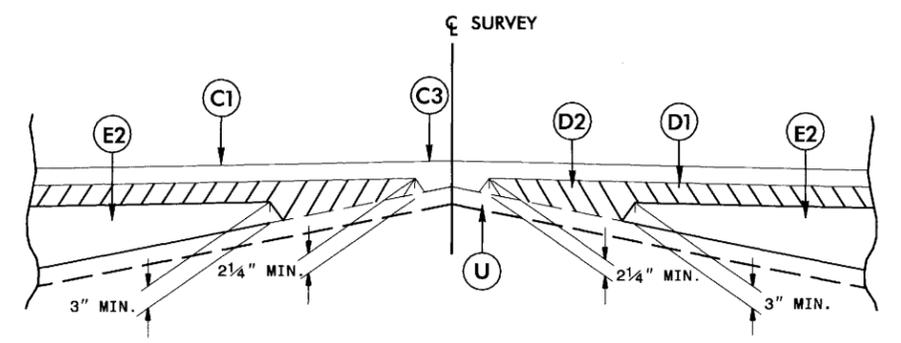
USE TYPICAL SECTION NO. 3
 -L- STA. 14+62.50 TO -L- STA. 15+47.50



USE TYPICAL SECTION NO. 4
 -DETOUR- STA. 12+43.66 TO -DETOUR- STA. 17+86.88

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" 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 BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

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



Detail Showing Method of Wedging

I:\2712\PM\51-15-4072\Roadway\Proj\B4072_RDY_TYP.DGN
 10/20/2008

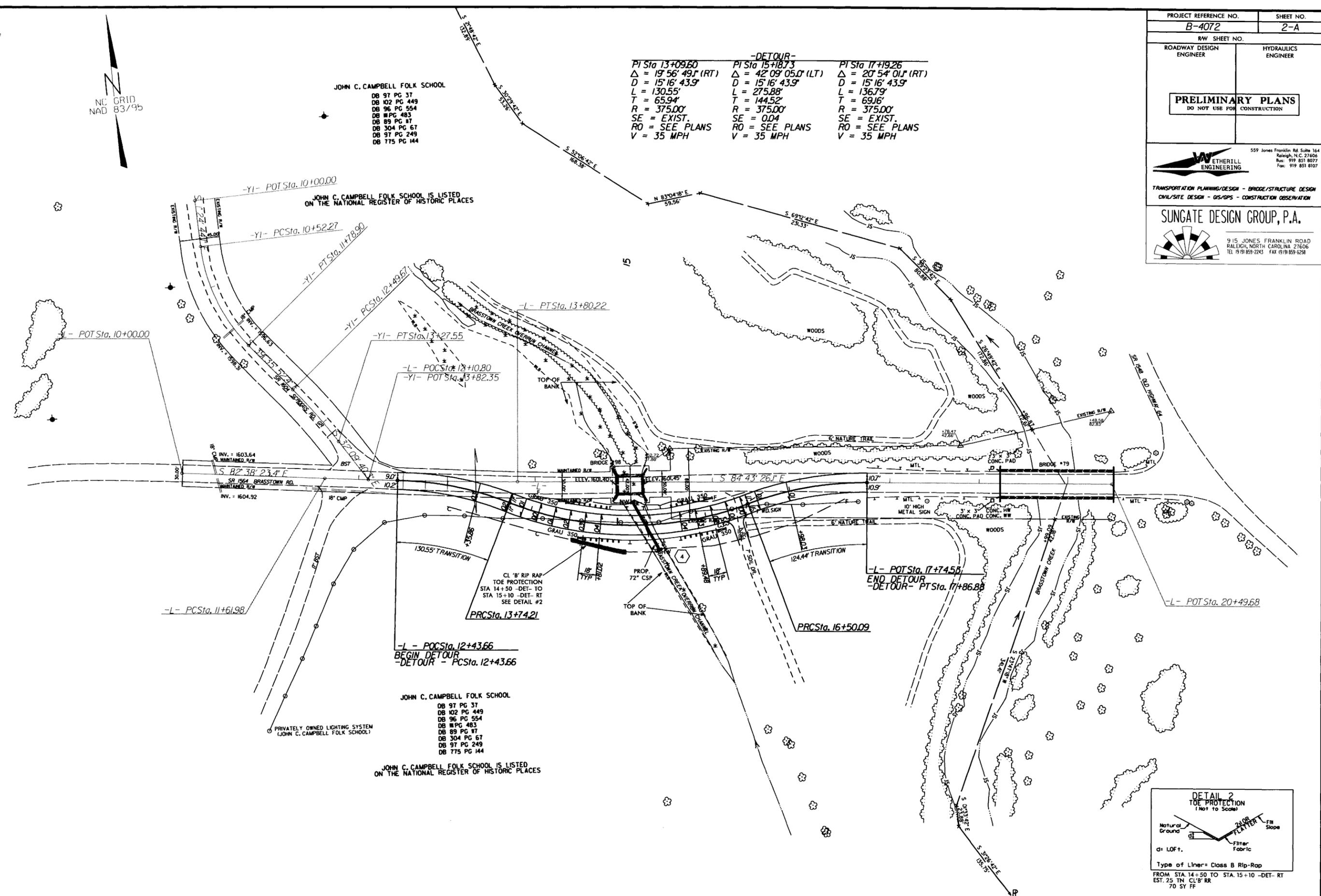
8/17/99



JOHN C. CAMPBELL FOLK SCHOOL
 DB 97 PG 37
 DB 102 PG 449
 DB 96 PG 554
 DB 88 PG 483
 DB 89 PG 47
 DB 304 PG 67
 DB 97 PG 249
 DB 775 PG 144

-DETOUR-		
PI Sta 13+09.60	PI Sta 15+18.73	PI Sta 17+19.26
$\Delta = 19^{\circ} 56' 49.1''$ (RT)	$\Delta = 42^{\circ} 09' 05.0''$ (LT)	$\Delta = 20^{\circ} 54' 01.1''$ (RT)
D = 15' 16' 43.9"	D = 15' 16' 43.9"	D = 15' 16' 43.9"
L = 130.55'	L = 275.88'	L = 136.79'
T = 65.94'	T = 144.52'	T = 69.16'
R = 375.00'	R = 375.00'	R = 375.00'
SE = EXIST.	SE = 0.04	SE = EXIST.
RO = SEE PLANS	RO = SEE PLANS	RO = SEE PLANS
V = 35 MPH	V = 35 MPH	V = 35 MPH

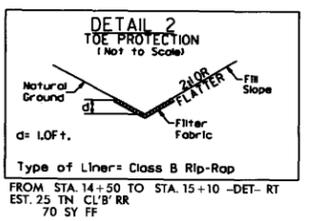
PROJECT REFERENCE NO. B-4072	SHEET NO. 2-A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
<small>559 Jones Franklin Rd. Suite 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107</small>	
<small>TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GS/GPS - CONSTRUCTION OBSERVATION</small>	
SUNGATE DESIGN GROUP, P.A.	
<small>915 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27606 TEL 919 859-2243 FAX 919 859-5298</small>	



JOHN C. CAMPBELL FOLK SCHOOL IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES

JOHN C. CAMPBELL FOLK SCHOOL
 DB 97 PG 37
 DB 102 PG 449
 DB 96 PG 554
 DB 88 PG 483
 DB 89 PG 47
 DB 304 PG 67
 DB 97 PG 249
 DB 775 PG 144

JOHN C. CAMPBELL FOLK SCHOOL IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES



SEE SHEET 4 FOR -L- ALIGNMENT
 SEE SHEET 5 FOR PROFILE

3:27:50 PM Roadway\Proj\B4072_Rdy_detour_psh.dgn
 8/20/2008

5/28/99

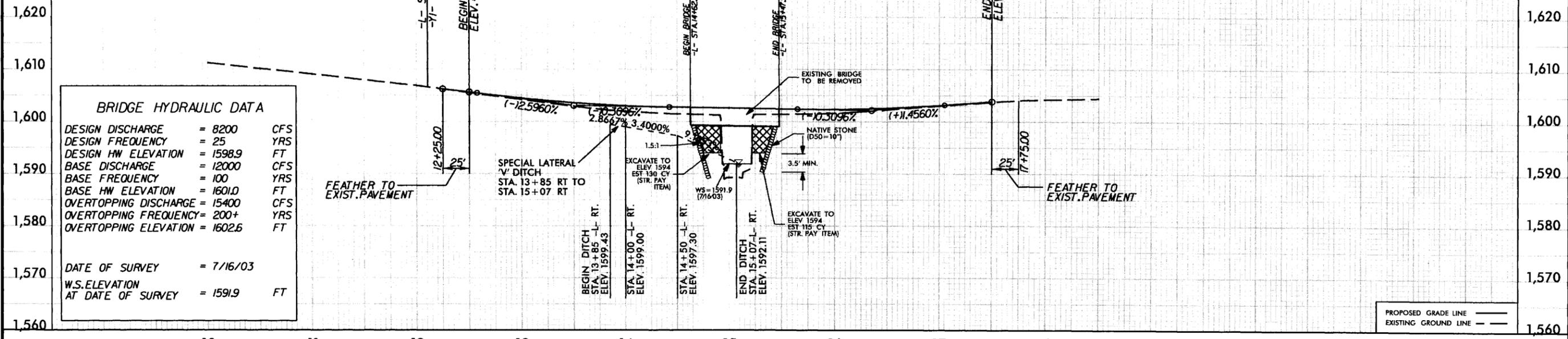
BM #1
8" SPIKE SET IN BASE OF 14" WALNUT TREE
BY1- STA. 5+60.00, 55' LT.
ELEV. = 1601.94
N 506757 E 515314

BM #2
CHISELED 'X' ON NW WINGWALL OF BRIDGE #79
ELEV. = 1604.88'
N 506562 E 516152

ETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL 919 859-2243 FAX 919 859-6258

PROJECT REFERENCE NO. B-4072	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



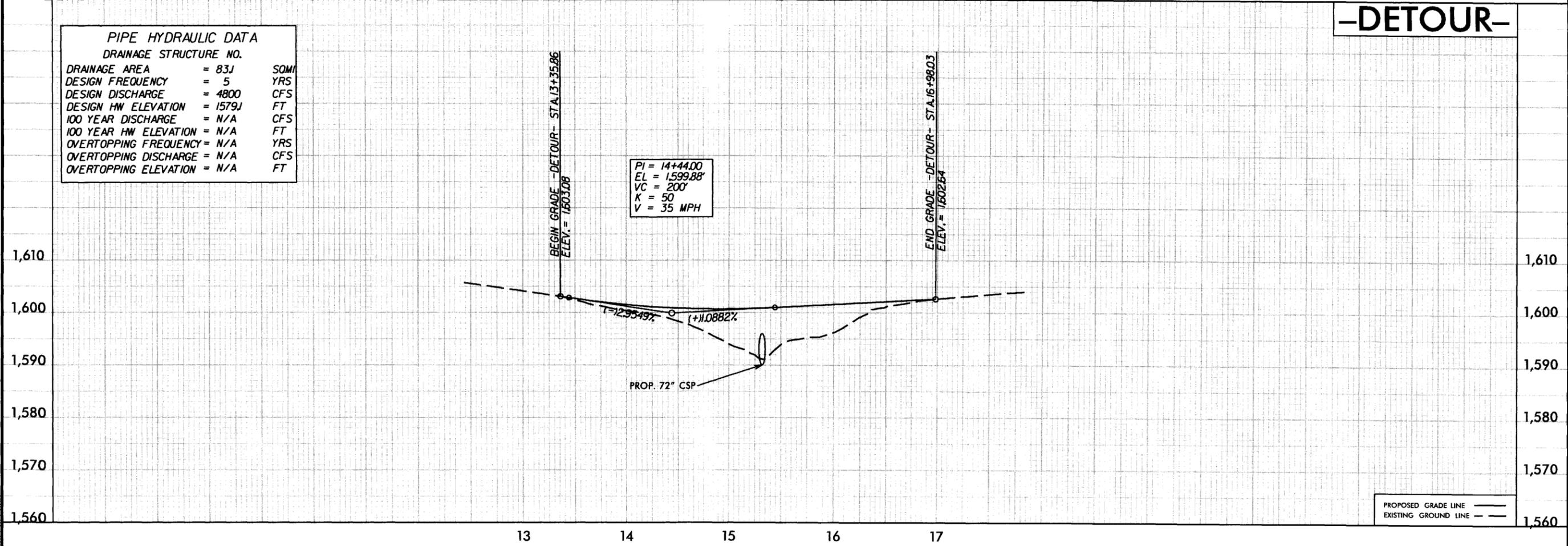
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 8200	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1598.9	FT
BASE DISCHARGE	= 12000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1601.0	FT
OVERTOPPING DISCHARGE	= 15400	CFS
OVERTOPPING FREQUENCY	= 200+	YRS
OVERTOPPING ELEVATION	= 1602.6	FT
DATE OF SURVEY	= 7/16/03	
W.S. ELEVATION AT DATE OF SURVEY	= 1591.9	FT

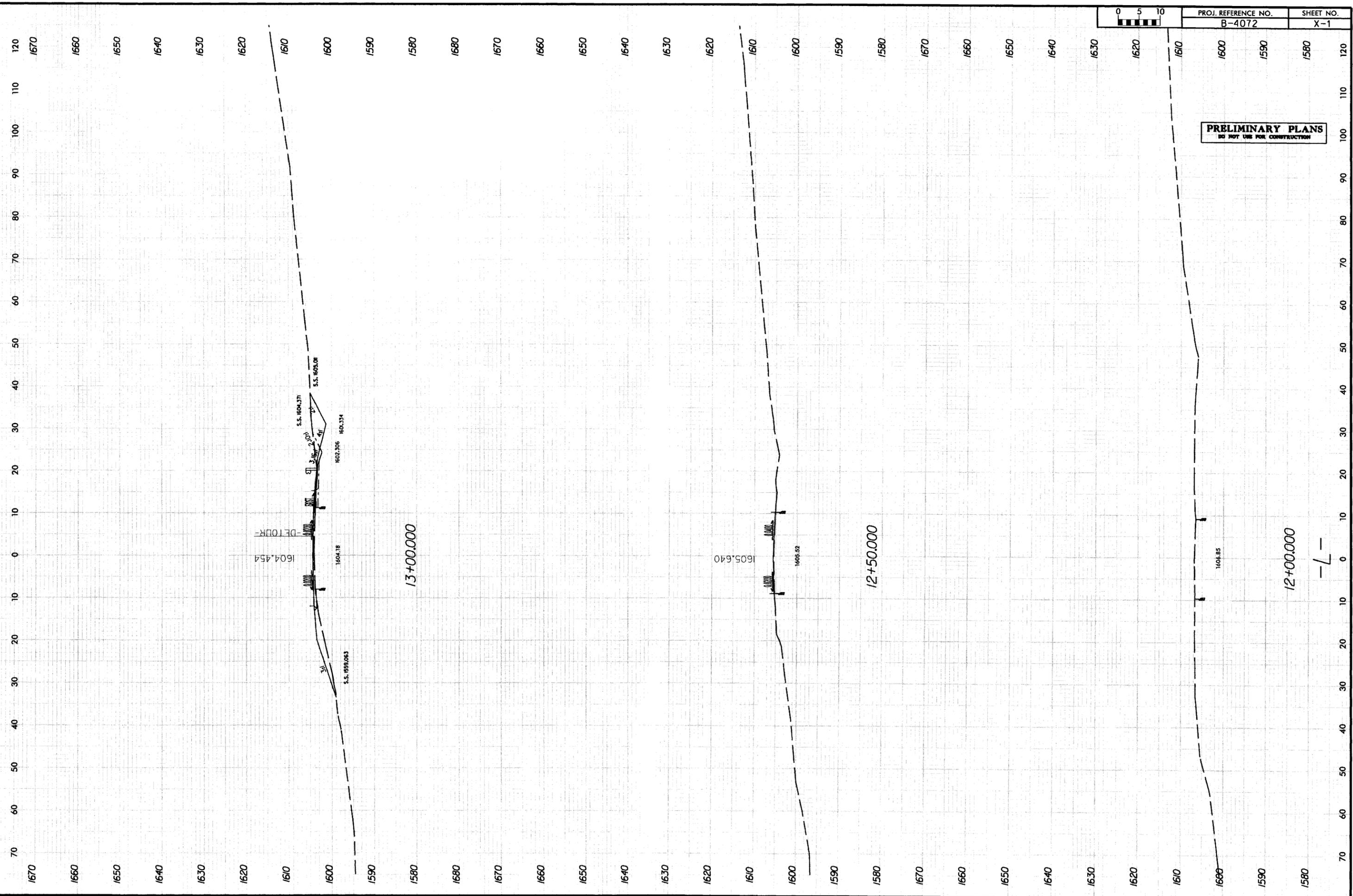
PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 83.1	SQMI
DESIGN FREQUENCY	= 5	YRS
DESIGN DISCHARGE	= 4800	CFS
DESIGN HW ELEVATION	= 1579.1	FT
100 YEAR DISCHARGE	= N/A	CFS
100 YEAR HW ELEVATION	= N/A	FT
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= N/A	FT

-DETOUR-



14:29:01 PM
P:\15-4072\Roadway\Proj\B4072_Rdy_P1.dgn
10/20/2008



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

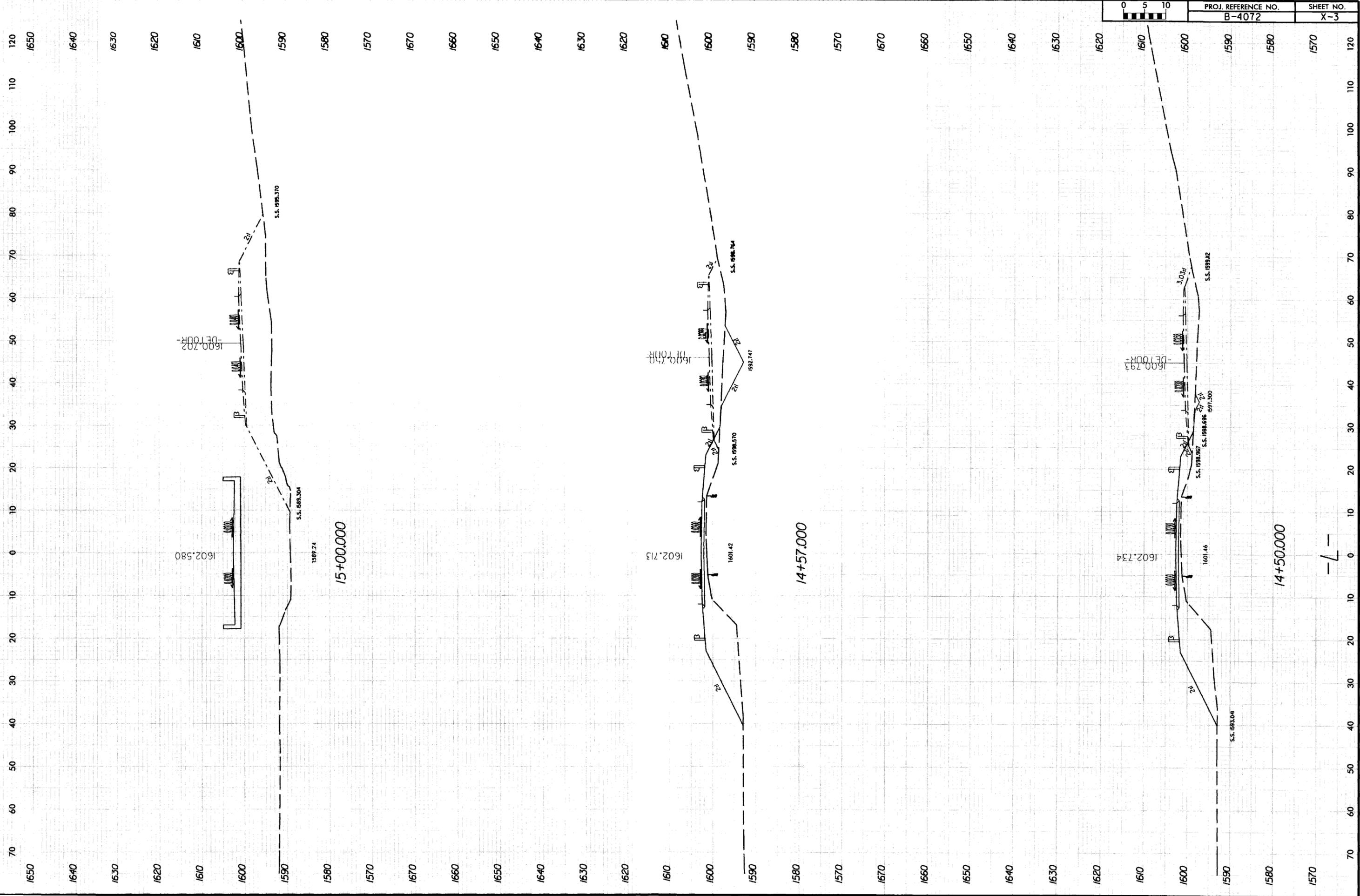
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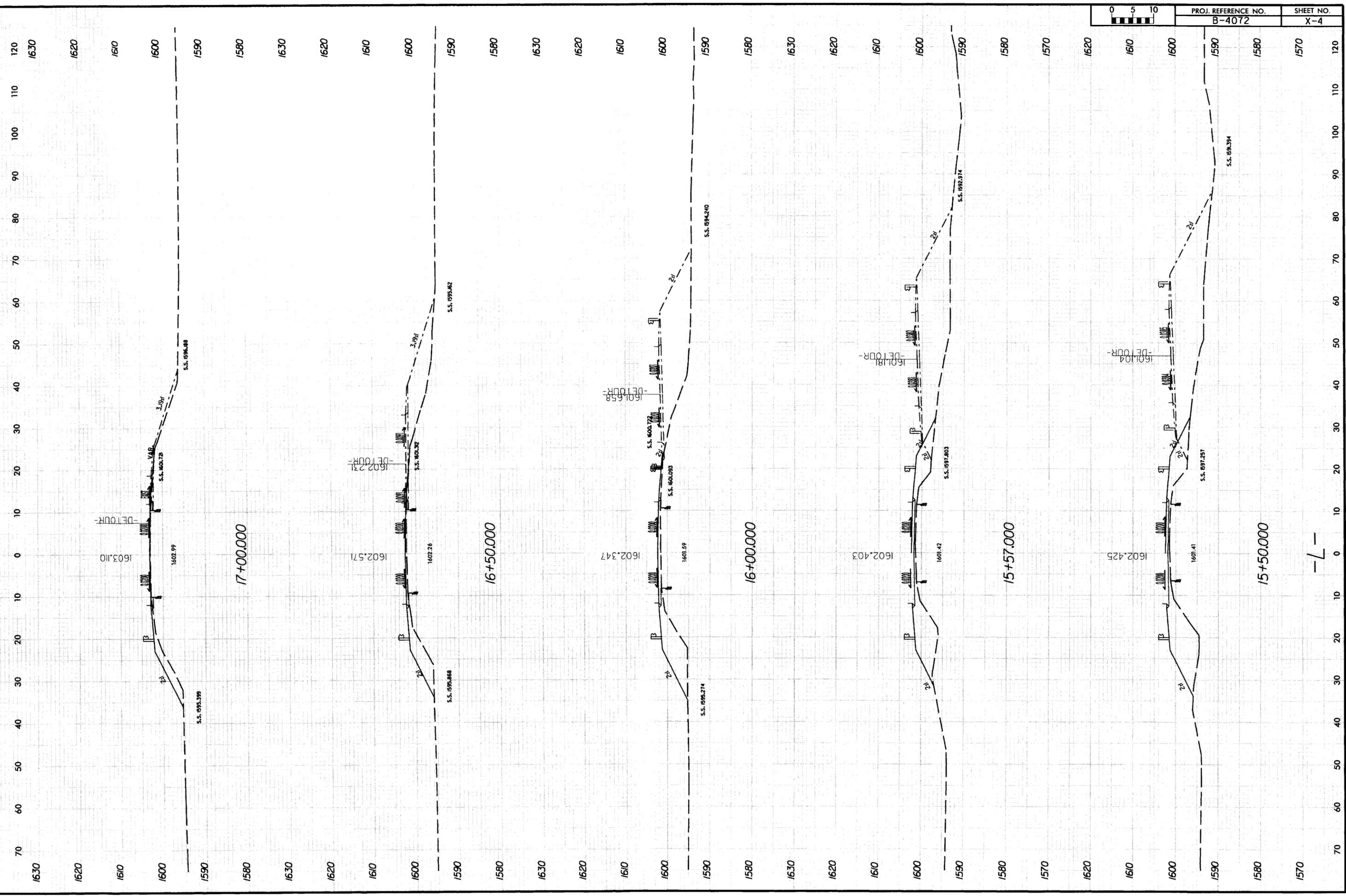
13+00.000

12+50.000

12+00.000

--L--

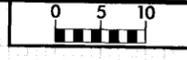




70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120

1640 1630 1620 1610 1600 1590 1580 1630 1620 1610 1600 1590 1580

1620 1610 1600 1590 1580

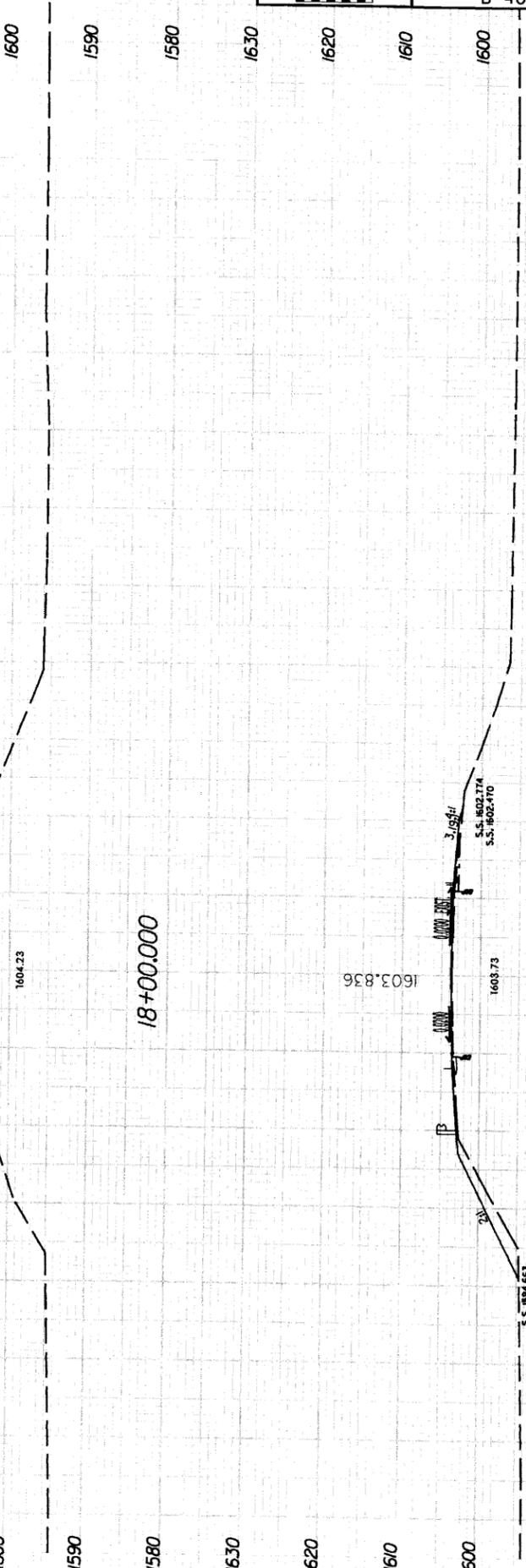


PROJ. REFERENCE NO.
B-4072

SHEET NO.
X-5

18+00.000

17+50.000



--L--