



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 16, 2004

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1000
Washington, NC 27889-1000

Attn: Mr. Michael Bell
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 & 33 Permit Application and Buffer Certification.**
Replacement of Bridge No. 73 on SR 1603 (Carriage Road) over Stony Creek, Nash County. Federal Aid Project No. BRZ-1603(2), State Project No. 8.2322301, TIP Project No. B-3879.

The North Carolina Department of Transportation (NCDOT) proposes to replace existing Bridge No. 73 on SR 1603 (Carriage Road) over Stony Creek (DWQ Index # 28-68, Class "C; NSW") in Nash County. The project involves replacing Bridge No. 73 approximately on the existing alignment. Traffic, during construction, will be maintained with an onsite detour using a 185-foot temporary bridge downstream (east) of the existing bridge.

BRIDGE DEMOLITION

Bridge No. 73 is currently a 182-foot, 6 span structure, that consists of a reinforced concrete deck on steel I-beams. The end bents and interior bents are composed of reinforced concrete caps on timber piles. Removal of the bridge superstructure and timber piles should occur without dropping any of the components into Waters of the United States, however there is potential for components of the concrete caps of Bridge No. 73 to be dropped into Waters of the United States during demolition. The potential temporary fill is calculated to be approximately 19 cubic yards.

The NCDOT will adhere to appropriate guidelines for bridge demolition and removal including those presented in "Pre-Construction Guidelines for Bridge Demolition and Removal", "Policy: Bridge Demolition and Removal in Waters of the United States", "Best Management Practices for Bridge Demolition and Removal", and "Best Management Practices for the Protection of Surface Waters".

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

BRIDGE CONSTRUCTION

Bridge No. 73, a 192-foot long structure, will include four 48-foot spans with a cored slab as superstructure. The substructure will consist of pile end bents and steel pile bents.

IMPACTS TO WATERS OF THE UNITED STATES

Permanent Impacts: Stony Creek will not be directly impacted by the proposed project. However, construction of the proposed project will result in a total of 0.0023 acre (102 square feet) of permanent impacts to jurisdictional wetland, in the form of mechanized clearing.

TEMPORARY DETOUR BRIDGE

A 185-foot long temporary bridge will be constructed downstream (east) of the existing Bridge No. 73. This bridge will be required to provide a detour during bridge construction. Temporary work bridge pile types and driving methods will be determined during construction by the contractor. The detour bridge will be constructed at the elevation and location as shown in the permit drawings. Non-mechanized clearing will occur prior to temporary detour bridge construction. It is assumed that the contractor will begin construction of the proposed detour bridge shortly after the date of availability for the project. The Let date is September 21, 2004 with a date of availability of October 18, 2004.

TAR-PAMLICO BASIN BUFFER RULES

This project is located in the Tar-Pamlico River Basin (subbasin 03-03-04, TAR4 03020102), therefore the regulations pertaining to the Tar-Pamlico River Buffer Rules (15A NCAC 2B.0259) apply. Buffer impacts associated with this project total 9,767 sq. ft (0.22 acre) for Zone 1 and 10,883 sq. ft (0.25 acre) for Zone 2. All practicable measures to minimize impacts within buffer zones were followed. Measures used to minimize impacts to the buffer zone include using the current alignment. According to the buffer rules, bridges are ALLOWABLE. Uses designated as allowable may proceed within the riparian buffer provided that there are no practical alternatives to the requested use pursuant to Item (8) of this Rule. These uses require written authorization from the Division or the delegated local authority. Therefore, NCDOT requests written authorization for a Buffer Certification from the Division of Water Quality.

FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003, the U.S. Fish and Wildlife Service (USFWS) lists three federally protected species for Nash County, however the NC Natural Heritage Program database indicates a record for bald eagle in Nash County during 2003 (Table 1). Following endangered species surveys of the project site, Biological Conclusions of "May Affect, Not Likely to Adversely Affect" were rendered for the bald eagle, dwarf wedgemussel, and Tar River spinymussel due to the presence of suitable habitat within the project area. Concurrence was received from the USFWS for the two mussel species in October 2002 and for the bald eagle in April 2004. The Biological Conclusion remains "No Effect" for the red-cockaded woodpecker due to lack of habitat.

Table 1. Federally-protected species of Nash County.

Scientific Name	Common Name	Federal Status	Biological Conclusion
<i>Haliaeetus leucocephalus</i>	Bald eagle	T(Proposed for delisting)	MANLTAA
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	No Effect
<i>Alasmidonta heterodon</i>	Dward wedgemussel	E	MANLTAA
<i>Elliptio steinstansana</i>	Tar River spiny mussel	E	MANLTAA

Endangered (E) – is defined as a taxon that is threatened with extinction throughout all or a significant portion of its range.

Threatened (T) – A taxon “likely to become endangered within the foreseeable future throughout all or a significant portion of it’s range.”

MANLTAA – indicate a Biological Conclusion of May Affect, Not Likely to Adversely Affect

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the temporary detour bridge across Stony Creek will be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33 authorizing a temporary detour bridge across Stony Creek. All other aspects of this project are being processed by the Federal Highway Administration as a “Categorical Exclusion” in accordance with 23 CFR § 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certifications numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their records.

In accordance with 15A NCAC 2H .0501(a), NCDOT is providing two copies of this application to the NC Department of Environment and Natural Resources (NCDENR), Division of Water Quality (DWQ) for review and issuance of a Tar-Pamlico Buffer Certification for impacts to Tar-Pamlico Buffers in compliance with the Tar-Pamlico Buffer Rules.

A copy of this permit application will be posted on the NCDOT website at: <http://www.ncdot.org/planning/pe/naturalunit/Permit.html>. If you have any questions or need additional information, please contact Tyler Stanton at tstanton@dot.state.nc.us or (919) 715-1439.

Sincerely,



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

cc: w/attachment

Mr. John Hennessy, Division of Water Quality (7 copies)
Mr. Travis Wilson, NCWRC
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics

Mr. Joel Johnson, P.E., Project Development
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Jim Trogdon, P.E., Division Engineer
Mr. Jamie Shern, DEO
Mr. David Franklin, USACE, Wilmington (Cover Letter Only)

USACE Action ID No. _____ DWQ No. _____

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

I. Processing

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

- Section 404 Permit
- Section 10 Permit
- 401 Water Quality Certification
- Riparian or Watershed Buffer Rules
- Isolated Wetland Permit from DWQ

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

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

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

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

II. Applicant Information

1. Owner/Applicant Information

Name: North Carolina Department of Transportation
Mailing Address: 1548 Mail Service Center, Raleigh, NC 27699

Telephone Number: 919-733-7844 Fax Number: 919-715-1501
E-mail Address: _____

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

Name: N/A
Company Affiliation: _____
Mailing Address: _____

Telephone Number: _____ Fax Number: _____
E-mail Address: _____

III. Project Information

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

1. Name of project: Replacement of Bridge No. 73 on SR 1603 (Carriage Road) over Stony Creek, Nash County

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3879

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

4. Location
County: Nash Nearest Town: Nashville
Subdivision name (include phase/lot number): _____
Directions to site (include road numbers, landmarks, etc.): Located on SR 1603 between intersections with US-64 and SR 1609, northeast of Nashville over Stony Creek

5. Site coordinates, if available (UTM or Lat/Long): N35° 59.32' , W77° 54.08'
(Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
6. Property size (acres): N/A

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

8. River Basin: Tar-Pamlico River
(Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at <http://h2o.enr.state.nc.us/admin/maps/>.)
9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application Rural minor collector, with low density residential and agricultural land dominant.

10. Describe the overall project in detail, including the type of equipment to be used: Four span, 192-foot long bridge replacement using mechanical highway construction equipment.

11. Explain the purpose of the proposed work: Investigations by the Bridge Maintenance Unit indicate that rehabilitation of the existing structures is not feasible due to age and deteriorated conditions. Bridge No. 73 carries a sufficiency rating of 25.4 out of a possible 100. This structure is considered functionally obsolete. Replacement of the bridge will result in safer and more efficient traffic operations.

IV. Prior Project History

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

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

Provide a written description of the proposed impacts: There will be 0.0023 acres of permanent impacts to jurisdictional wetlands due to mechanized clearing from the replacement of Bridge No. 73.

1. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***
1 (21+65 to 23+57)	Mechanized Clearing	0.0023	Yes	45.0	Freshwater Marsh

- * List each impact separately and identify temporary impacts. Impacts include, but are not limited to: mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.
- ** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at <http://www.fema.gov>.
- *** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: 0.05
 Total area of wetland impact proposed: 0.0023

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

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)

- * List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included.
- ** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site, _____

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

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

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

4. 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.): N/A

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

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

VII. Impact Justification (Avoidance and Minimization)

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

It has the lowest construction cost, and it will create comparatively lower environmental impacts. Bridge No. 73 will be replaced with a new bridge at the existing location.

VIII. Mitigation

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

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on March 9, 2000, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

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

N/A

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

Amount of stream mitigation requested (linear feet): N/A

Amount of buffer mitigation requested (square feet): _____

Amount of Riparian wetland mitigation requested (acres): _____

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

Amount of Coastal wetland mitigation requested (acres): _____

Environmental Documentation (required by DWQ)

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

Yes No

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

Yes No

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

Yes No

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

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

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

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

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

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1	7,242.0		
2	5,020.0		
Total	12,262.0		

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

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

N/A

X. Stormwater (required by DWQ)

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

N/A

XI. 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

XII. Violations (required by DWQ)

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

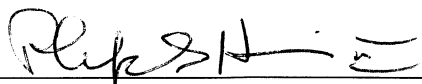
Yes No

Is this an after-the-fact permit application?

Yes No

XIII. 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).



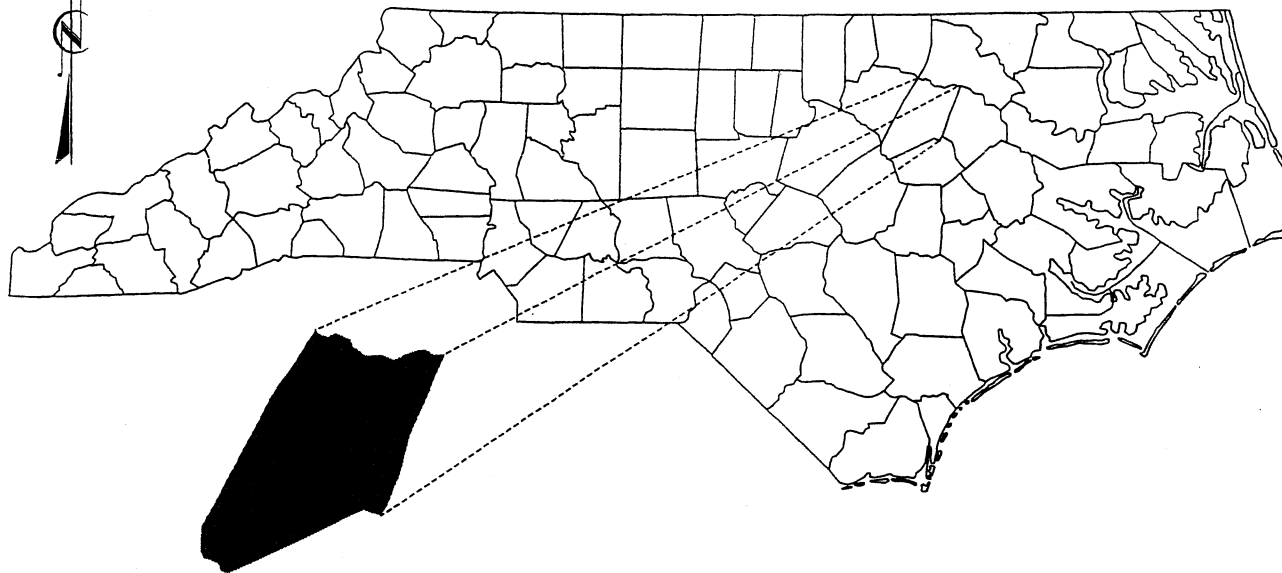
Applicant/Agent's Signature

6/1/04

Date

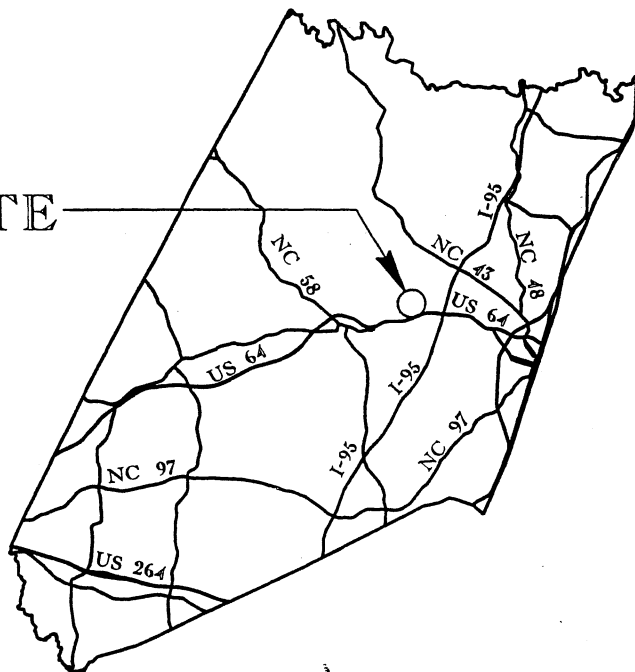
(Agent's signature is valid only if an authorization letter from the applicant is provided.)

NORTH CAROLINA



NASH COUNTY

SITE

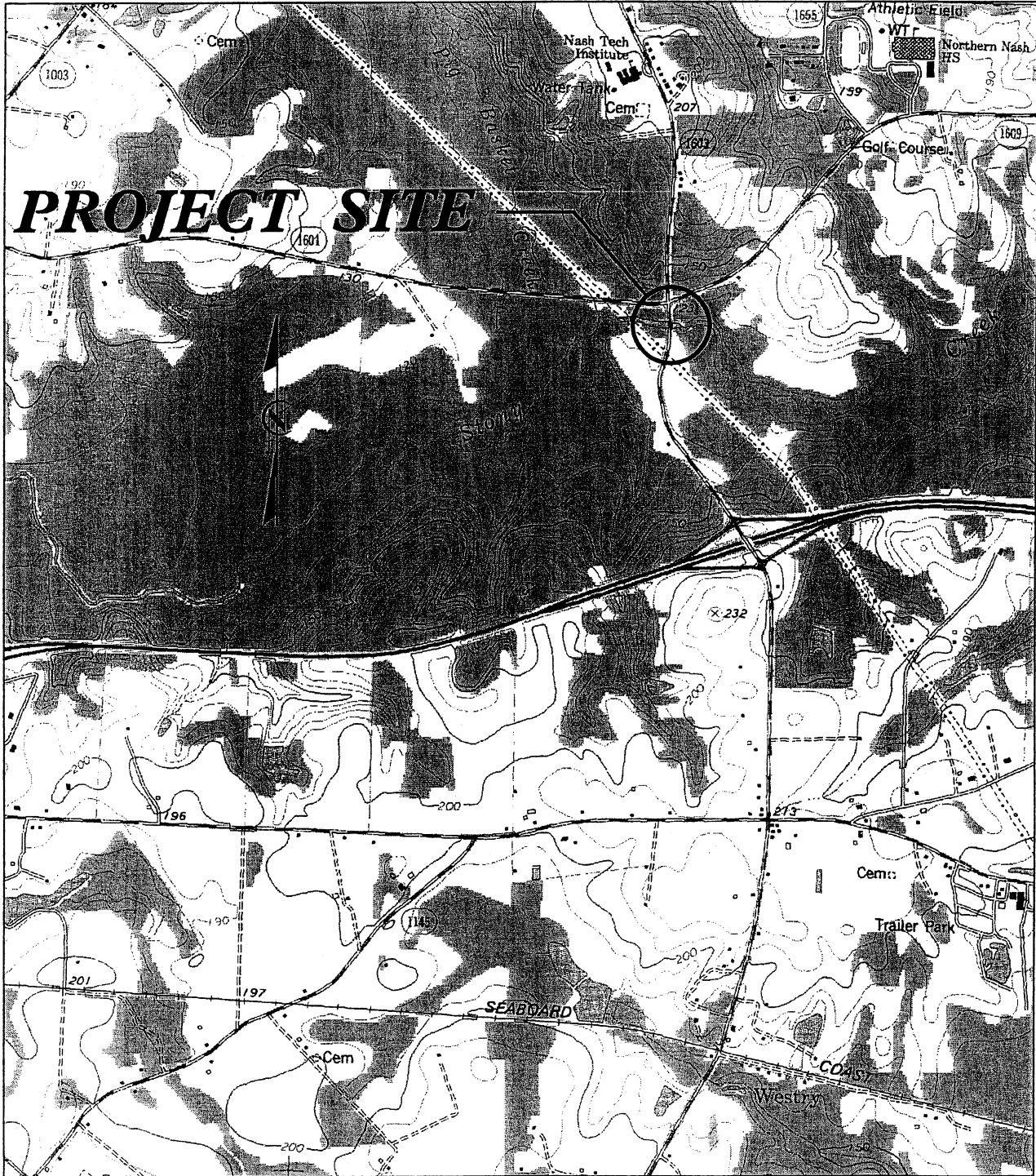


VICINITY MAP

WETLAND & SURFACE WATER
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

 NASH COUNTY
PROJECT: 8.2322301 (B-3879)
SR 1603
BETWEEN US 64 AND SR 1609

SHEET 1 OF 11 DATE _____



PROJECT SITE

SITE MAP

WETLAND AND SURFACE WATER
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: 8.2322501 (B-3879)
SR 1603
BETWEEN US-64 AND SR 1609

SHEET 2 OF 11 **DATE** _____

B-3879 4

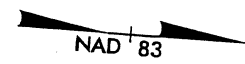
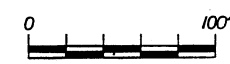
R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TRANSYSTEMS CORPORATION 4917 Waters Edge Drive, Suite 235
Raleigh, NC 27606 1991 233-8125



15' OUTLET
L- STA 24-30 LT
DA - 0.35 AC
Q2 - 0.55 CFS
V2 - 0.60 FT/SEC
Q10 - 0.80 CFS
V10 - 1.33 FT/SEC

EXIST. DITCH
L- STA 24-75 RT
DA - 25.83 AC
Q2 - 6.05 CFS
V2 - 2.82 FT/SEC
Q10 - 10.47 CFS
V10 - 3.37 FT/SEC

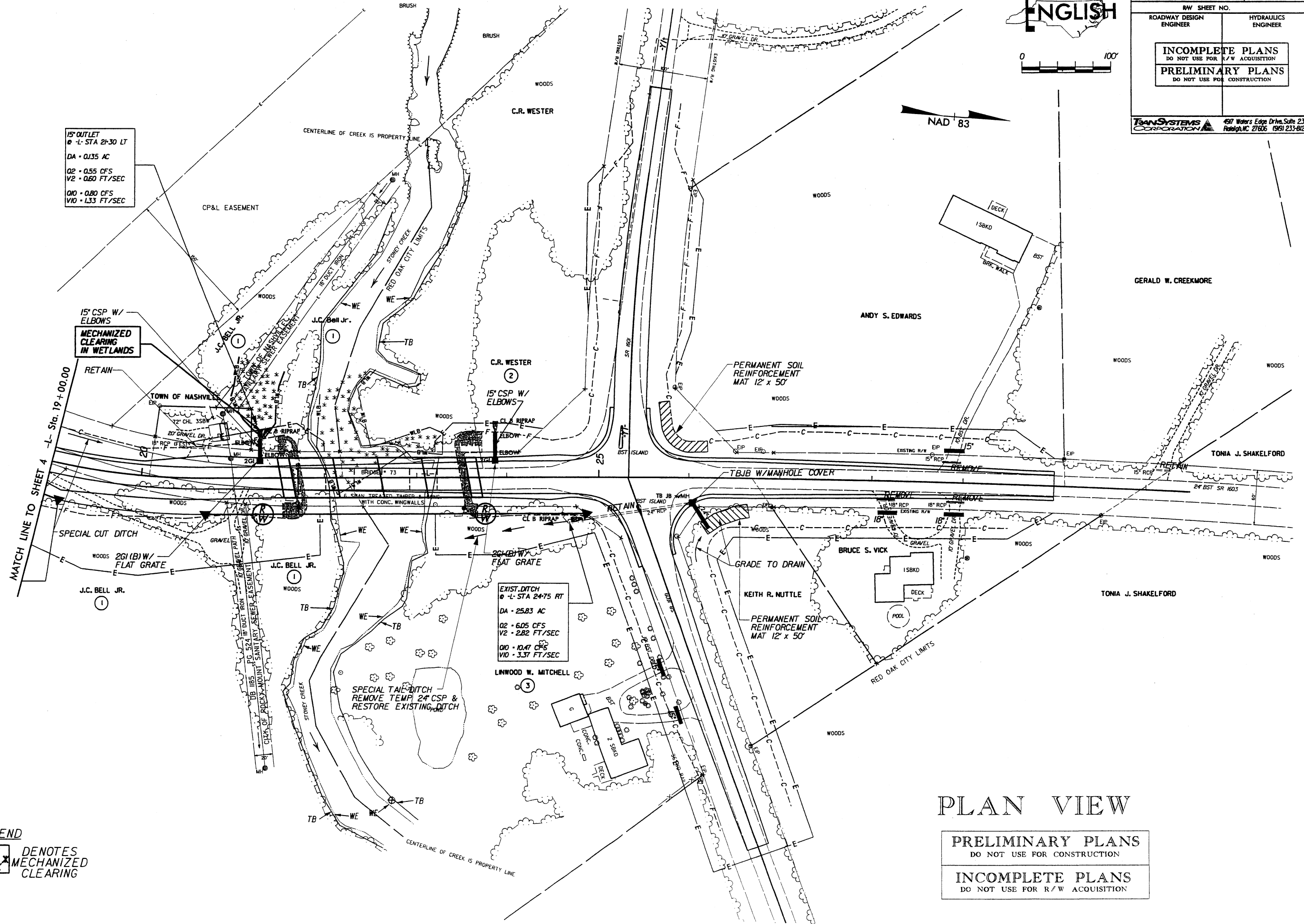
LEGEND

DENOTES MECHANIZED CLEARING

PLAN VIEW

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

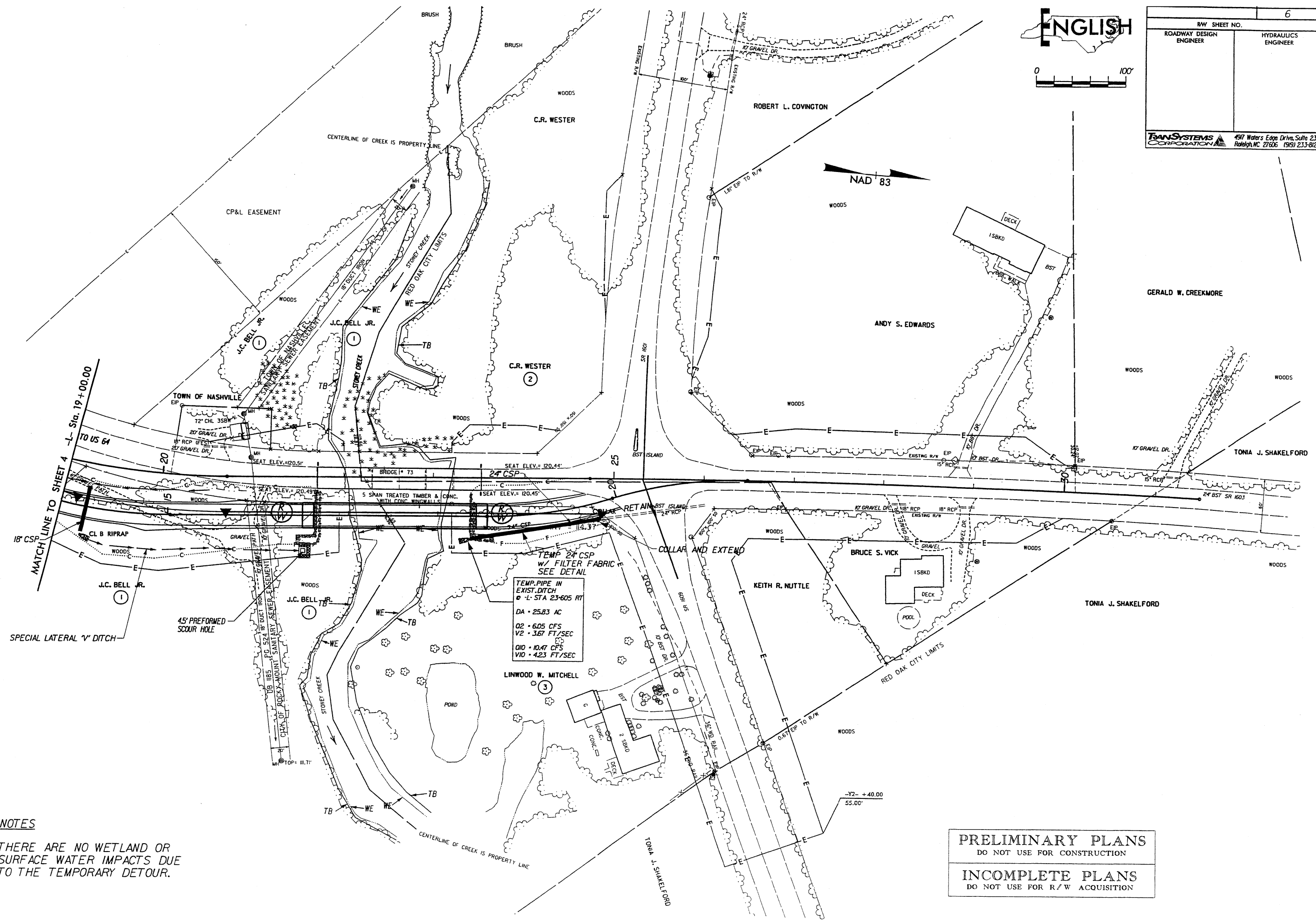


DATE: 08/17/00
TIME: 10:00 AM
DRAWN BY: J. W. WILSON
CHECKED BY: J. W. WILSON
SCALE: AS SHOWN
PROJECT: STONE CREEK WETLANDS RESTORATION
SHEET: 4 OF 4

ENGLISH



RWY SHEET NO. 6	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
TRANSYSTEMS CORPORATION 4917 Waters Edge Drive, Suite 235 Raleigh, NC 27606 (919) 233-8125	



NOTES
 THERE ARE NO WETLAND OR SURFACE WATER IMPACTS DUE TO THE TEMPORARY DETOUR.

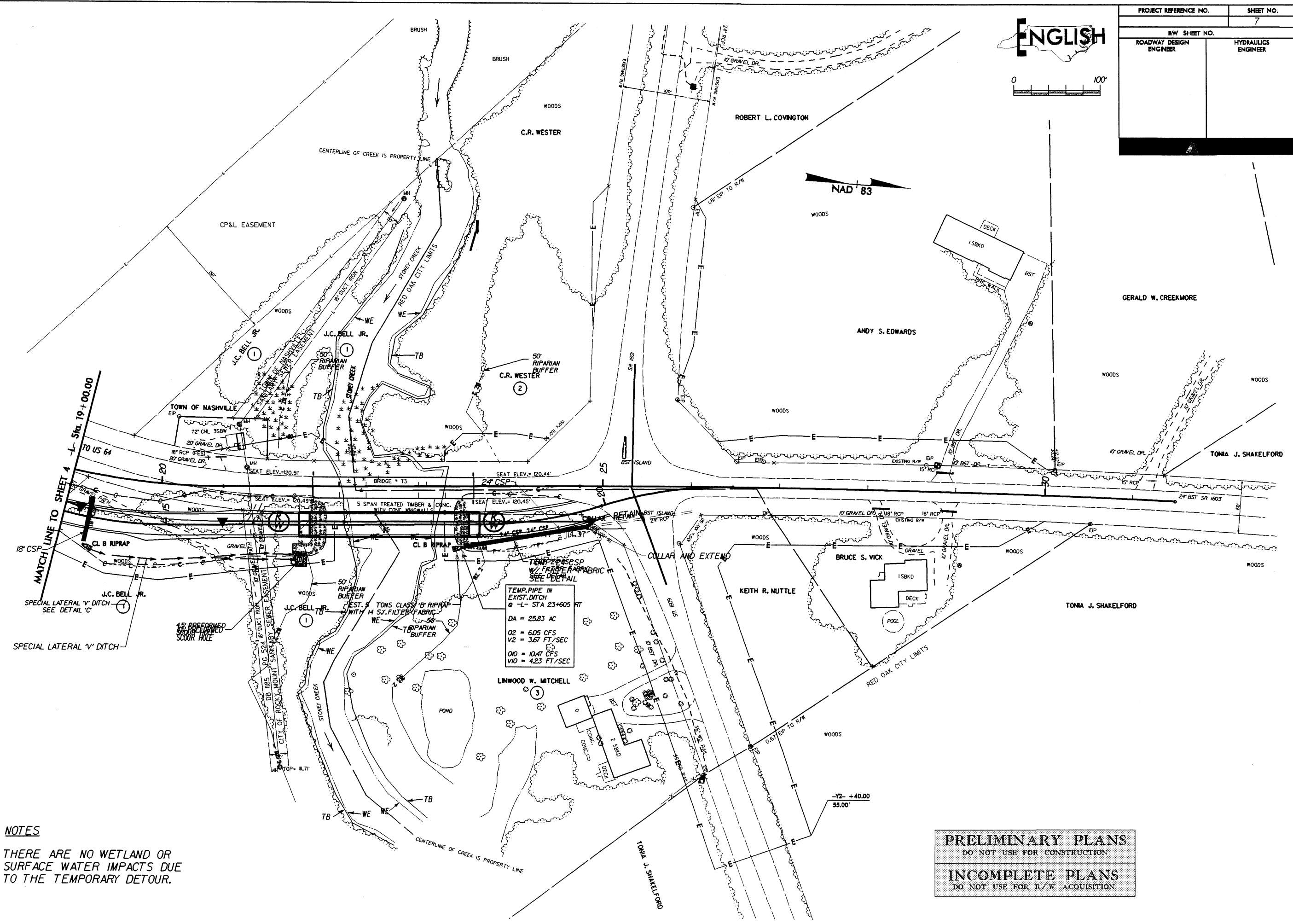
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

08/13/2004
 02:15:24 PM
 C:\R02\0024\Road\N3875DETD\IR-watland_permi.dwg

8/17/99
 12 JUL 2004 16:22
 M:\PROJECTS\Valme's\B projects\B3879\TranSystems Permits\B3879 DETOUR wetland permit v contours.dgn
 12/17/99

PROJECT REFERENCE NO.	SHEET NO.
	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH



NOTES
 THERE ARE NO WETLAND OR SURFACE WATER IMPACTS DUE TO THE TEMPORARY DETOUR.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

5/14/99

PROJECT REFERENCE NO. B3879	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS <small>DO NOT USE FOR R/W ACQUISITION</small>	
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

DETOUR

-DET-

BEGIN GRADE
 DET STA: 11+35.12
 EL = 119.75
 L = STA 16+39.82
 OFFSET = 12' RT

PI = 13+90.00
 EL = 117.20
 VC = 92'
 K = 45
 V_o = 40 MPH

PI = 19+20.00
 EL = 119.40
 VC = 121'
 K = 55
 V_o = 40 MPH

END GRADE
 DET STA: 19+91.20
 EL = 123.62
 L = 24+94.29
 OFFSET = 23.45' RT

130
120
110
100
90
80
70
60
50

NOTE:
 THERE ARE NO SURFACE WATER
 IMPACTS DUE TO THIS PROJECT

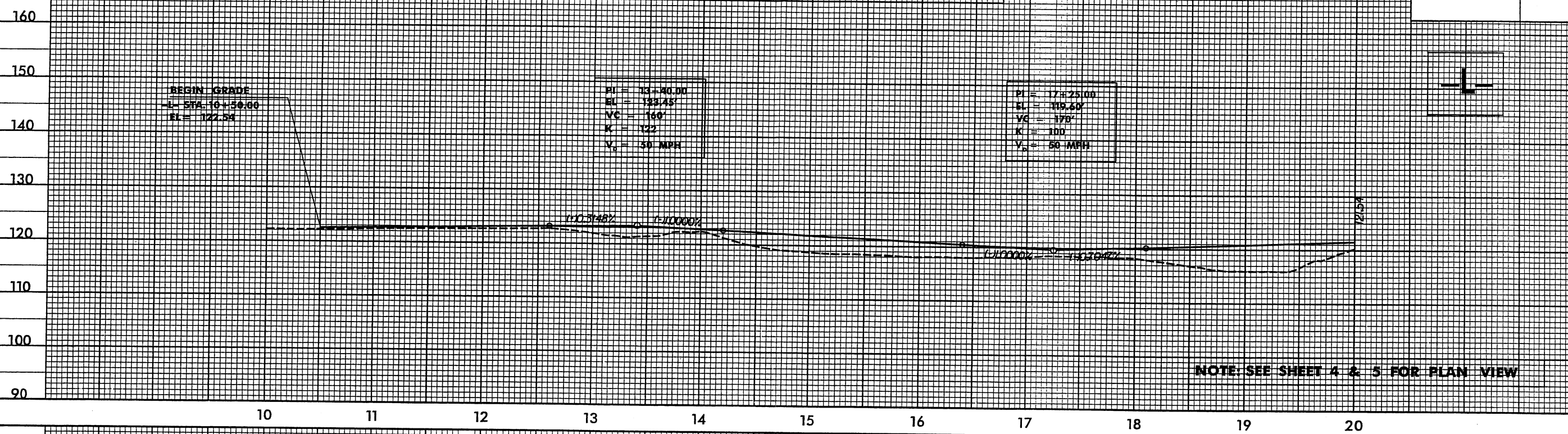
NOTE: SEE SHEET 6 FOR PLAN VIEW

4.2.003
 16.00
 302-0024-Broadway-Permit PEI

5/28/99

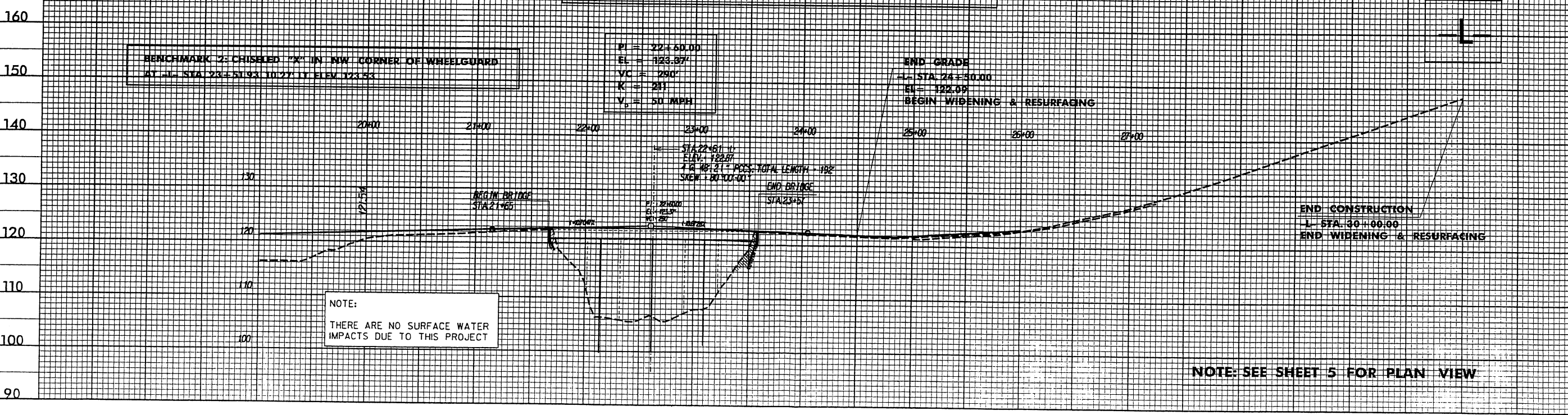
PROJECT REFERENCE NO. B-3879	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

SR 1603 CARRIAGE RD.



NOTE: SEE SHEET 4 & 5 FOR PLAN VIEW

SR 1603 CARRIAGE RD.



NOTE:
THERE ARE NO SURFACE WATER
IMPACTS DUE TO THIS PROJECT

NOTE: SEE SHEET 5 FOR PLAN VIEW

4/20/03 3:36 PM 302\0024\Road\AR3879-PRM11.PE

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS			SURFACE WATER IMPACTS				Natural Stream Design (ft.)		
			Fill In Wetlands (sq. ft.)	Temp. Fill In Wetlands (acres)	Excavation In Wetlands (acres)	Mechanized Clearing (Method III) (sq. ft.)	Fill In SW (Natural) (acres)	Fill In SW (Pond) (acres)	Temp. Fill In SW (acres)		Existing Channel Impacted (ft.)	
1	21+65 to 23+57	4 Span Bridge				102						
TOTALS:						102						

WETLAND & SURFACE WATER

NCDOT
 DIVISION OF HIGHWAYS
 NASH COUNTY
 PROJECT: 8.2322301 (B-3879)
 SR 1603
 BETWEEN US-64 AND SR 1609

PROPERTY OWNER

NAME AND ADDRESS

	OWNER'S NAME	ADDRESS
①	J. C. BELL, JR.	438 SOUTH OLD CARRIAGE ROAD ROCKY MOUNT, NC 27804
②	C.R. WESTER	2400 HORSESHOE DR. ROCKY MOUNT NC 27804
③	LINWOOD W. MITCHELL	3523 GREEN HILLS RD. ROCKY MOUNT NC 27804

WETLAND & SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY

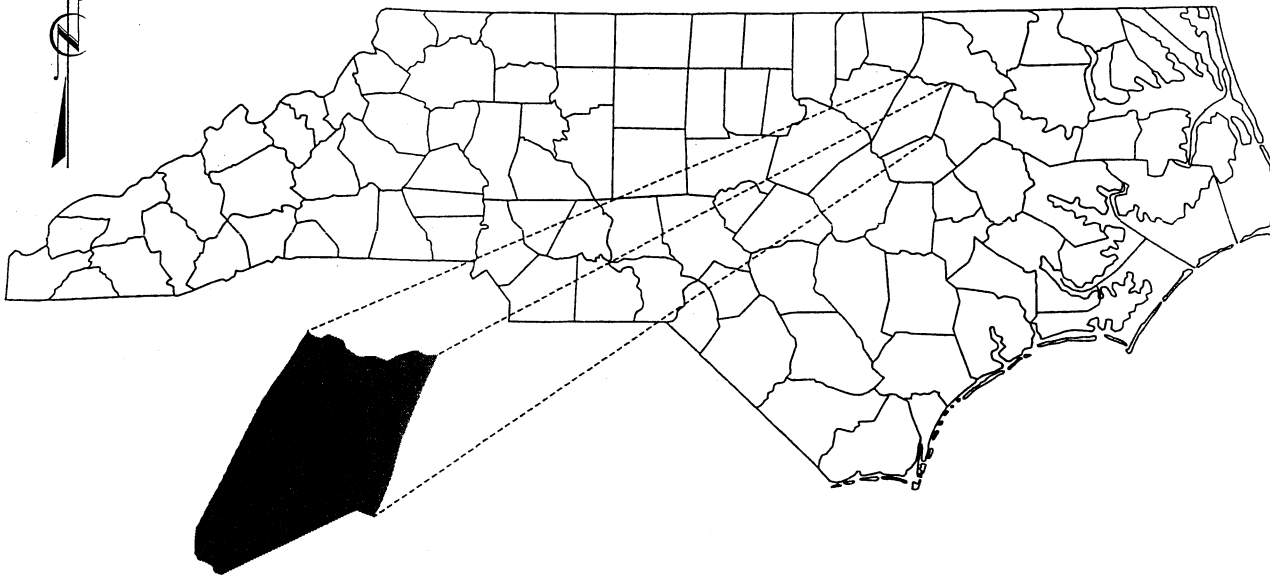
PROJECT: 8.2322301 (B-3879)

SR 1603

BETWEEN US-64 AND SR 1609

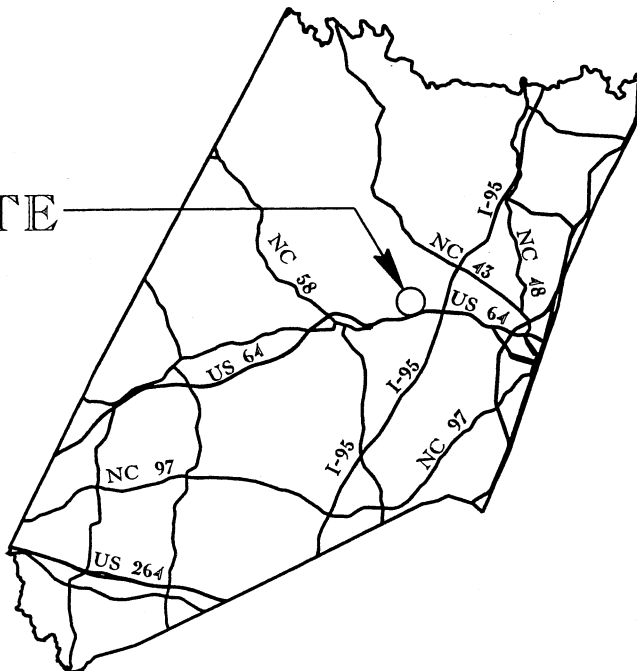
SHEET 11 OF 11 DATE _____

NORTH CAROLINA



NASH COUNTY

SITE



VICINITY MAP

BUFFER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

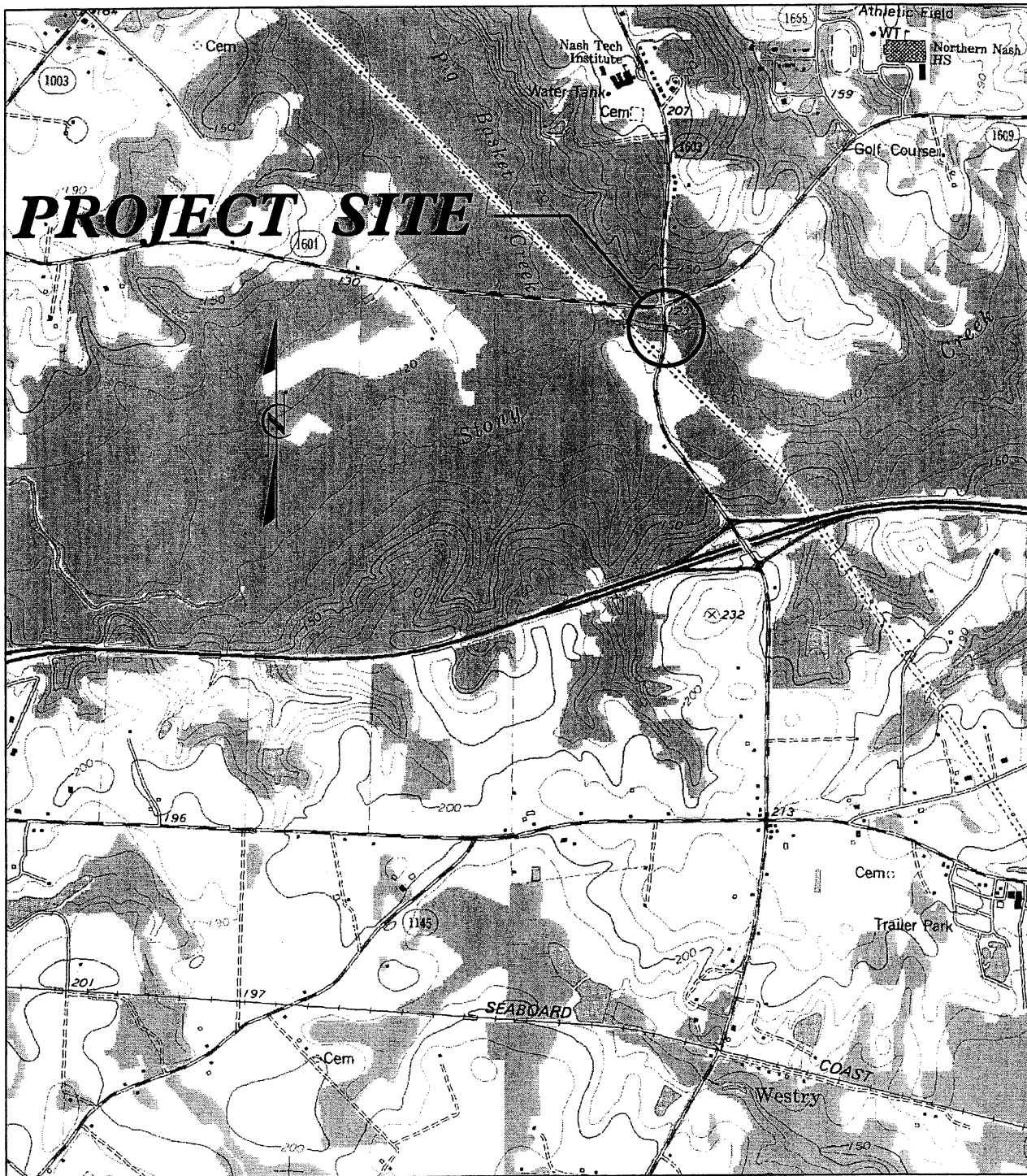
NASH COUNTY

PROJECT: 8.2322301 (B-3879)

SR 1603

BETWEEN US 64 AND SR 1609

SHEET 1 OF 11 DATE _____



PROJECT SITE

SITE MAP

BUFFER
 N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 NASH COUNTY
 PROJECT: 8.2322501 (B-3879)
 SR 1603
 BETWEEN US-64 AND SR 1609

 SHEET 2 OF 11 DATE _____

8/17/99

PROJECT REFERENCE NO. B-3879		SHEET NO. 5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER			HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
TRANSYSTEMS CORPORATION <small>4917 Waters Edge Drive, Suite 235 Raleigh, NC 27606 1991 233-8225</small>			



15' OUTLET
 @ -L STA 2+30 LT
 DA - 0.135 AC
 Q2 - 0.55 CFS
 V2 - 0.60 FT/SEC
 Q10 - 0.80 CFS
 V10 - 1.33 FT/SEC

EXIST. DITCH
 @ -L STA 24+75 RT
 DA - 25.83 AC
 Q2 - 6.05 CFS
 V2 - 2.82 FT/SEC
 Q10 - 10.47 CFS
 V10 - 3.37 FT/SEC

LEGEND

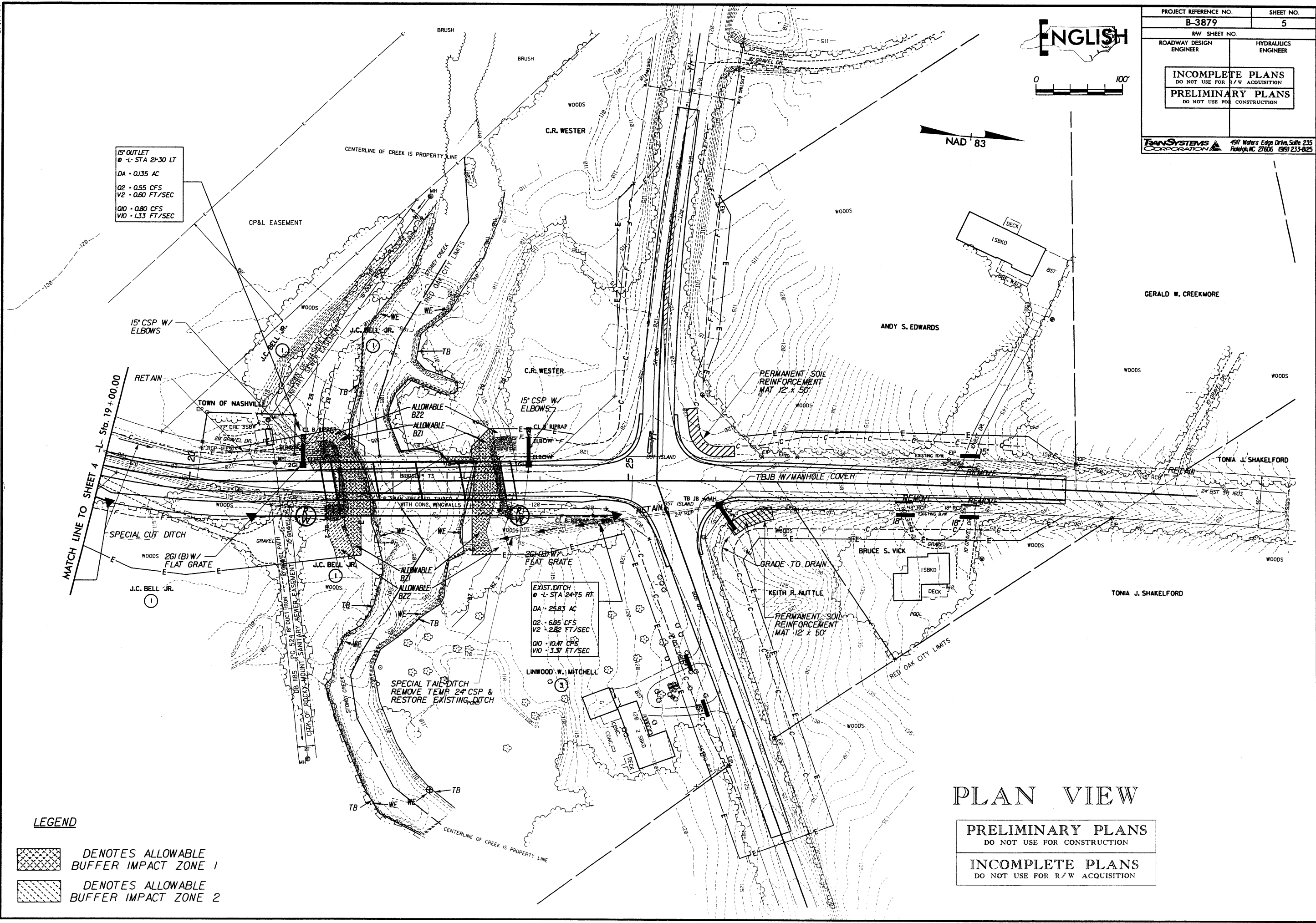
DENOTES ALLOWABLE BUFFER IMPACT ZONE 1

DENOTES ALLOWABLE BUFFER IMPACT ZONE 2

PLAN VIEW

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



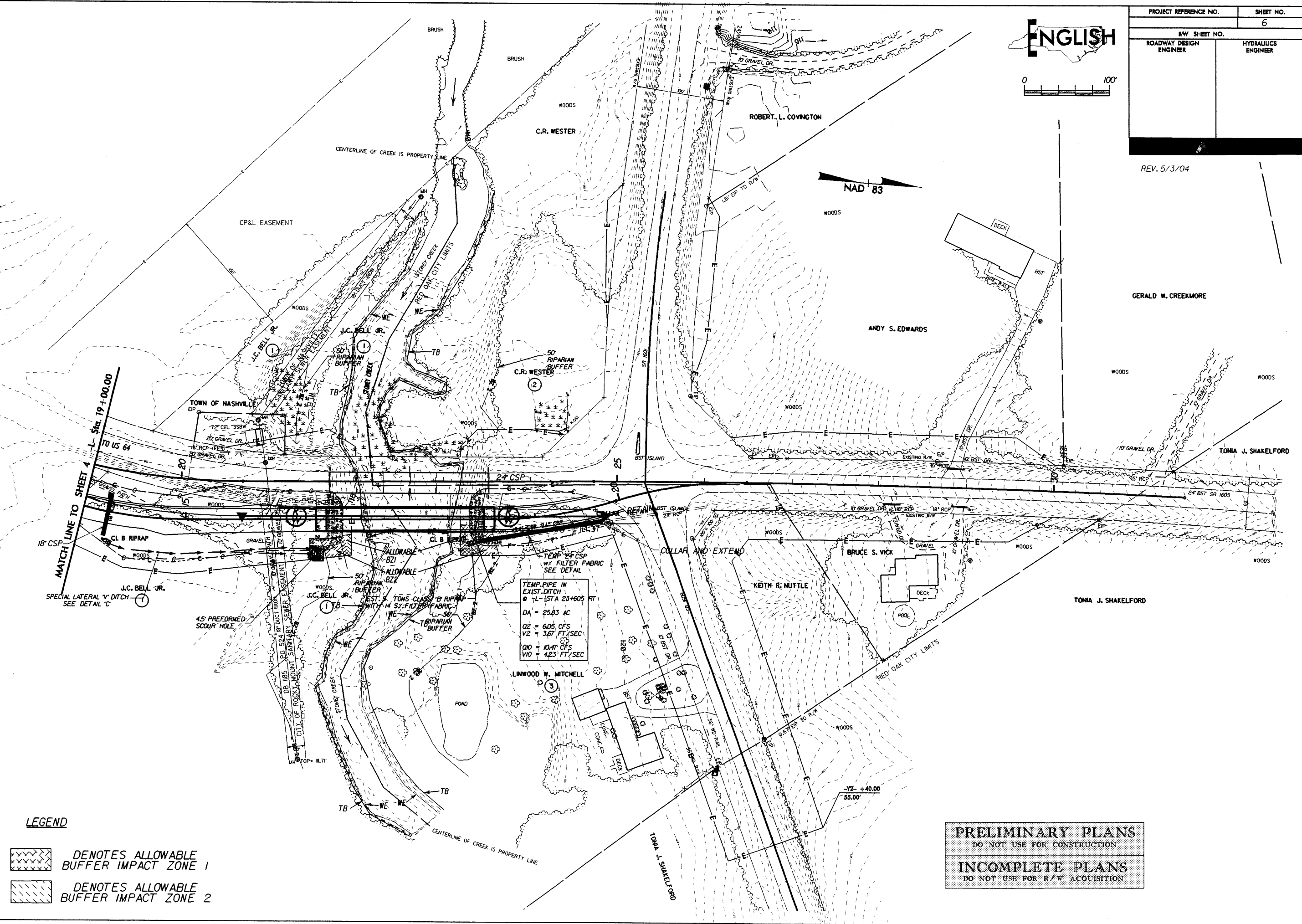
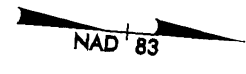
8/17/99

12-JUL-2004 16:18
M:\PROJECTS\Anne's\B\projects\B3879\TranSystems Permits\B3879 DETOUR buffer permit Rev.dgn
December 01

PROJECT REFERENCE NO.		SHEET NO.	
		6	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

REV. 5/3/04

ENGLISH



LEGEND

- DENOTES ALLOWABLE BUFFER IMPACT ZONE 1
- DENOTES ALLOWABLE BUFFER IMPACT ZONE 2

TEMP. PIPE IN EXIST. DITCH
 @ L-STA 23+60.5 FT
 DA = 25.83 AC
 Q2 = 6.05 CFS
 V2 = 3.67 FT/SEC
 Q10 = 10.47 CFS
 V10 = 4.23 FT/SEC

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

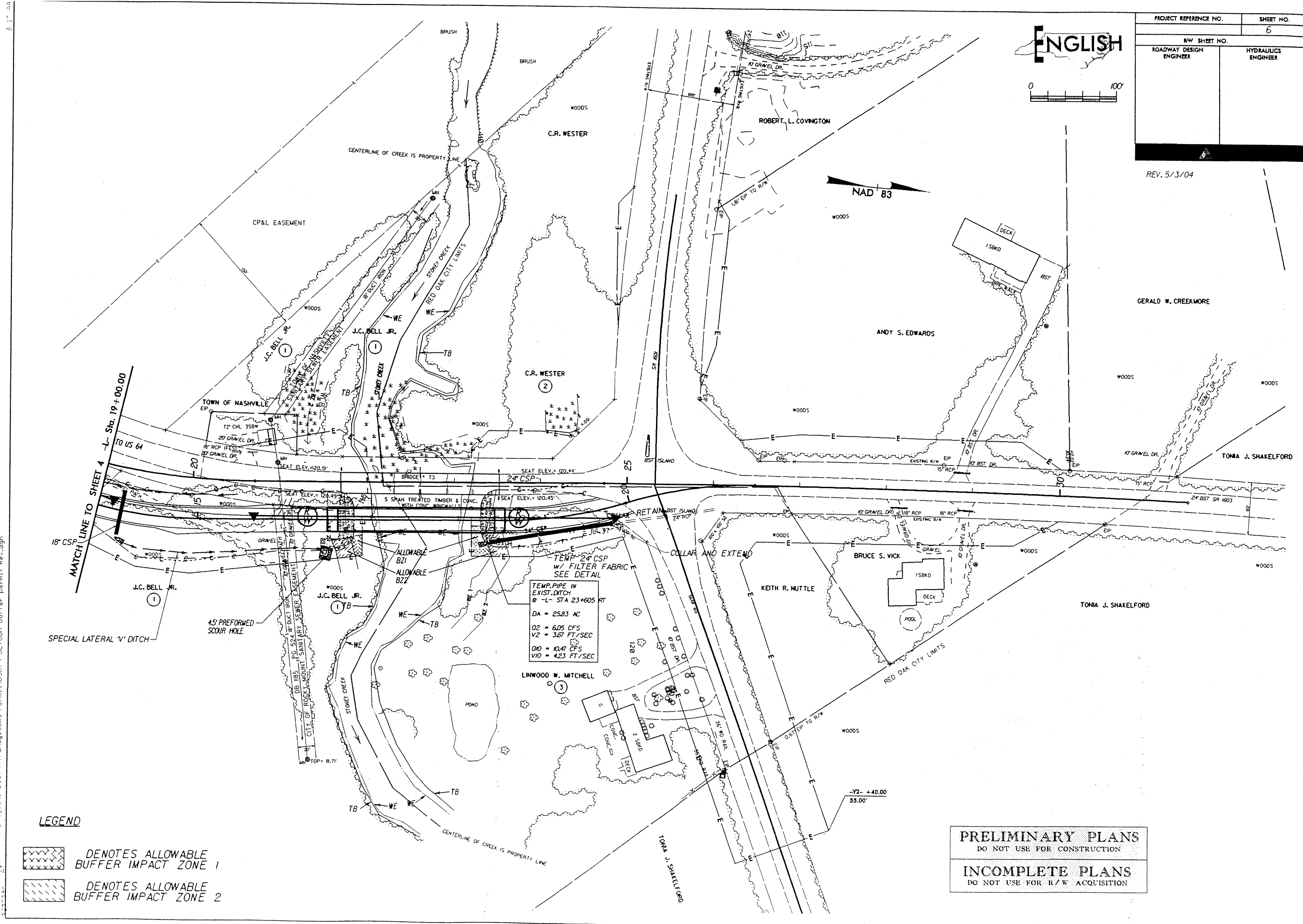
PROJECT REFERENCE NO.		SHEET NO.
		6
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

ENGLISH

0 100'

NAD 83

REV. 5/3/04



LEGEND

- DENOTES ALLOWABLE BUFFER IMPACT ZONE 1
- DENOTES ALLOWABLE BUFFER IMPACT ZONE 2

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

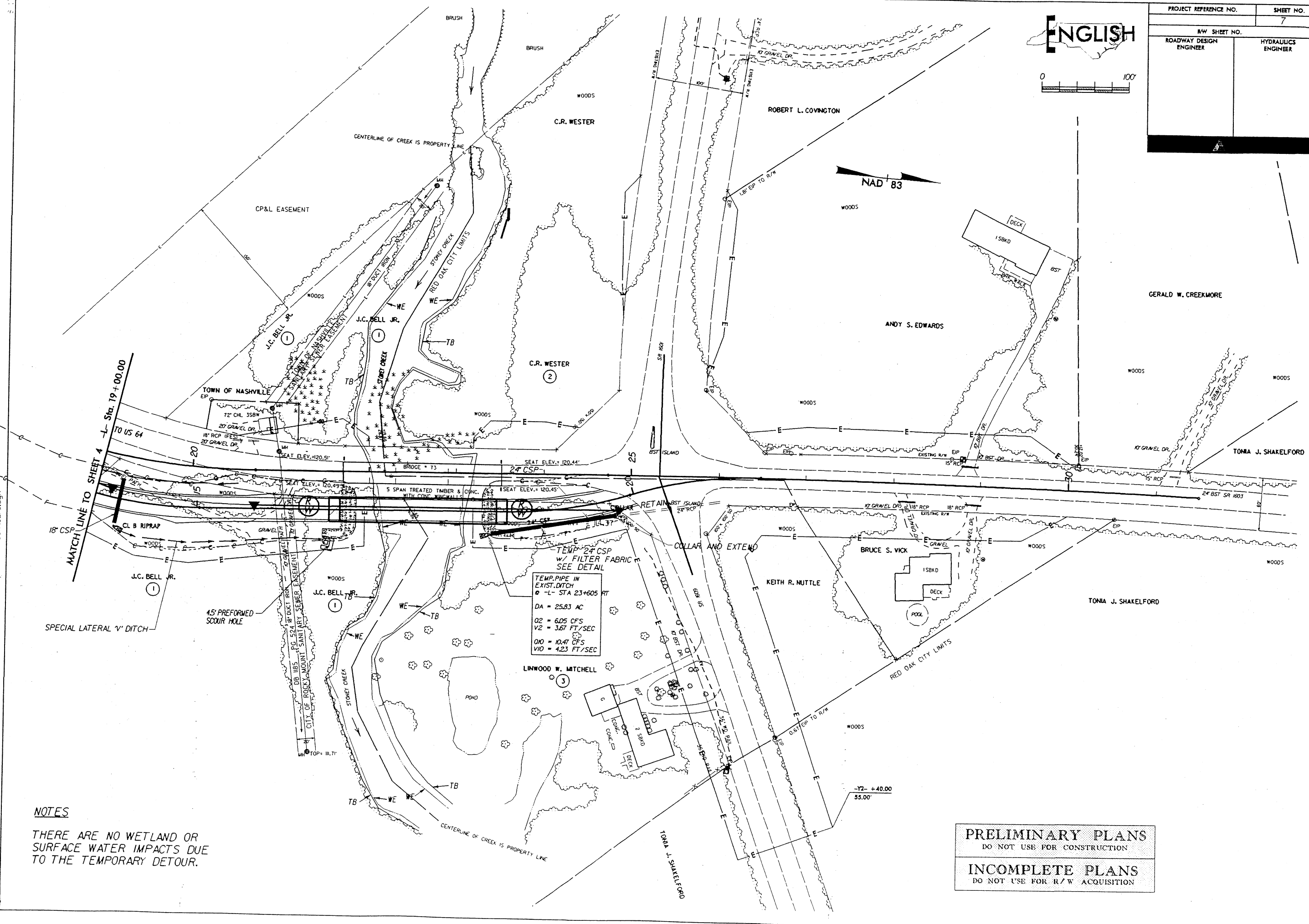
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Projects: B33279, IronSystems Permits: B33279 DETOUR buffer permit Rev.dgn
 Date: 12/15/03

PROJECT REFERENCE NO.		SHEET NO.	
		7	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

ENGLISH

NAD '83



TEMP. PIPE IN EXIST. DITCH
 @ -L- STA 23+60.5 FT
 DA = 25.83 AC
 Q2 = 6.05 CFS
 V2 = 3.67 FT/SEC
 Q10 = 10.47 CFS
 V10 = 4.23 FT/SEC

NOTES
 THERE ARE NO WETLAND OR SURFACE WATER IMPACTS DUE TO THE TEMPORARY DETOUR.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

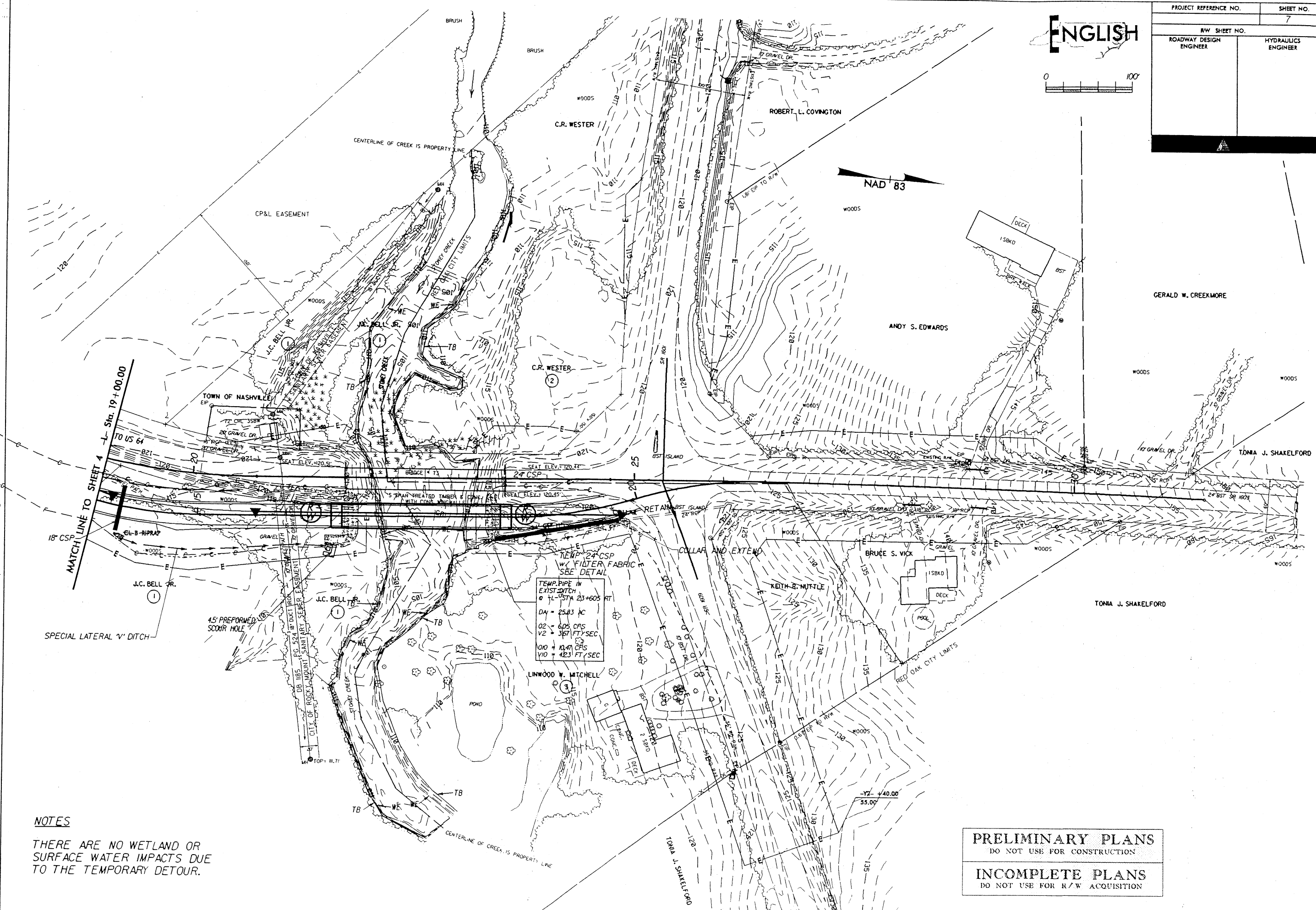
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 2:15:2024, EIG
 1:15:2024, EIG
 0:15:2024, EIG
 Projects B3979, TranSystems Permit.b3979 DETOUR wetland permit - contours.dgn

PROJECT REFERENCE NO.		SHEET NO.	
		7	
RAW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

ENGLISH

0 100'

NAD 83



TEMP. PIPE IN EXIST. DITCH
 @ L-STA 23+60.5 FT
 D₁ = 25.83 KC
 D₂ = 6.05 CFS
 V₂ = 3.67 FT/SEC
 Q₁₀ = 11.41 CFS
 V₁₀ = 4.23 FT/SEC

NOTES
 THERE ARE NO WETLAND OR SURFACE WATER IMPACTS DUE TO THE TEMPORARY DETOUR.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

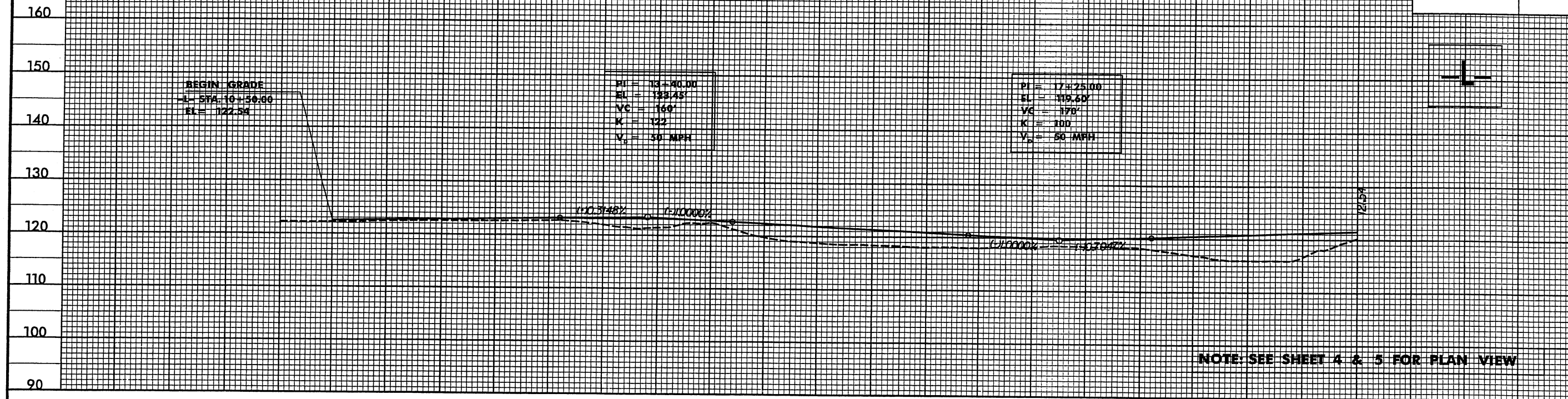
INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

Projects B3379 TransSystems Permit 162674 DETOUR wetland permit contours.dgn

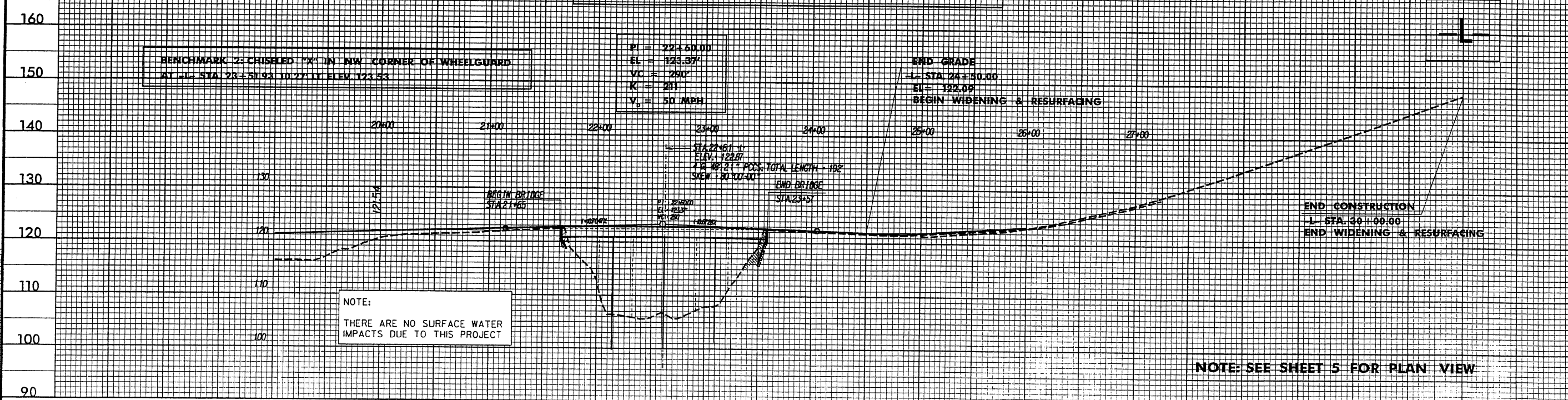
5/28/99

PROJECT REFERENCE NO. B-3879	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

SR 1603 CARRIAGE RD.



SR 1603 CARRIAGE RD.



4/2003 3:36 PM 3024024 RoadNBSB75=PERMIT.PE1

BUFFER PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACT			MITIGABLE			BUFFER REPLACEMENT		
			ROAD CROSSING	PARALLEL IMPACT	ALLOWABLE	ZONE 1	ZONE 2	Total	ZONE 1	ZONE 2	ZONE 1
					(ft ²)	(ft ²)	(ft ²)	(ft ²)	(ft ²)	(ft ²)	(ft ²)
1	21+65 to 23+57	4 Span Bridge	X		6,092	4,087	10,179				
2		Detour Bridge	X		1,150	933	2,083				
TOTALS:					7,242	5,020	12,262				

acres: 0.17 0.12 0.28

BUFFER

NCDOT
 DIVISION OF HIGHWAYS
 NASH COUNTY
 PROJECT: 8.2322301 (B-3879)
 SR 1603
 BETWEEN US-64 AND SR 1609

PROPERTY OWNER

NAME AND ADDRESS

	OWNER'S NAME	ADDRESS
①	J. C. BELL, JR.	438 SOUTH OLD CARRIAGE ROAD ROCKY MOUNT, NC 27804
②	C.R. WESTER	2400 HORSESHOE DR. ROCKY MOUNT NC 27804
③	LINWOOD W. MITCHELL	3523 GREEN HILLS RD. ROCKY MOUNT NC 27804

BUFFER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY

PROJECT: 8.2322301 (B-3879)

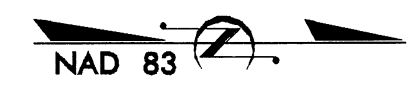
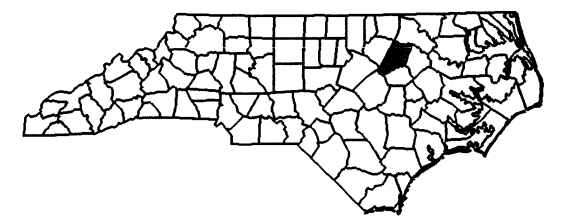
SR 1603

BETWEEN US-64 AND SR 1609

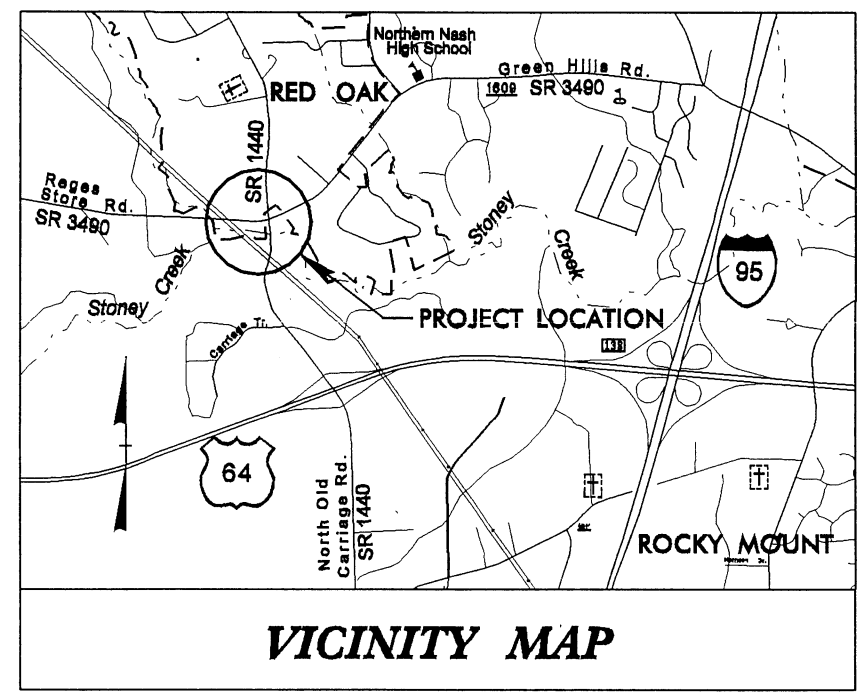
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3879	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
33322.1.1	BRZ-1603(2)	PE	
33322.2.1	BRZ-1603(2)	ROW, UTL	
33322.3.2	BRZ-1603(3)	CONST.	

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
NASH COUNTY

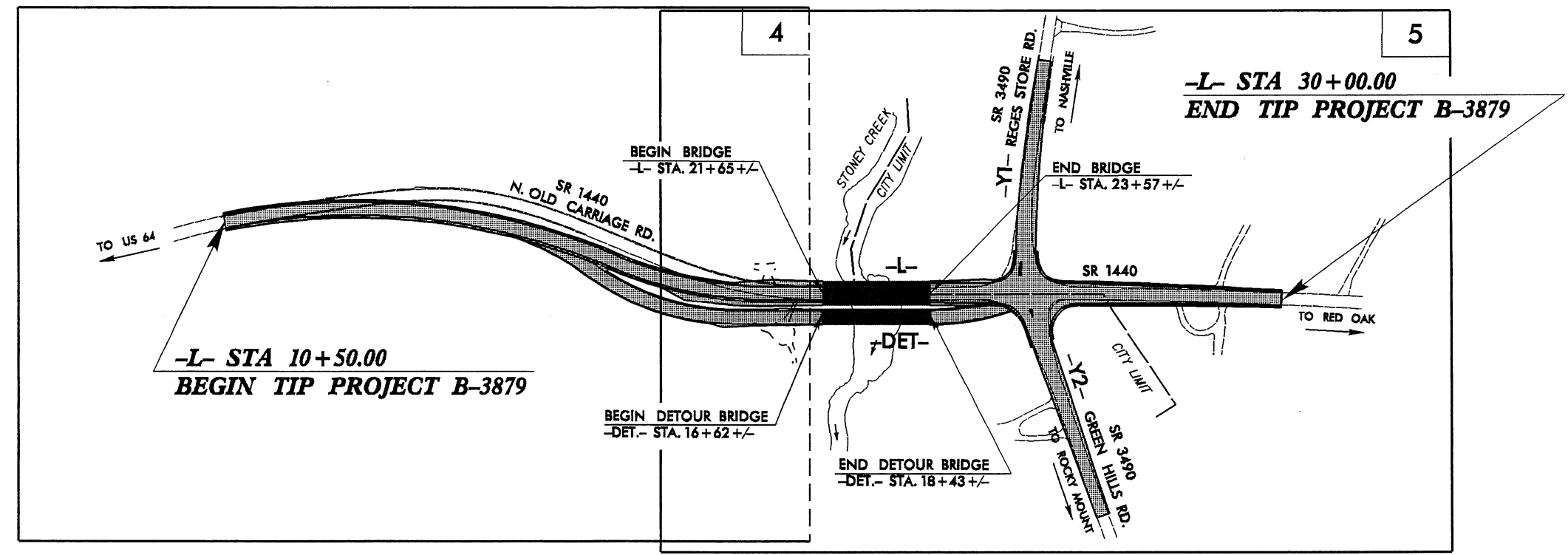
LOCATION: BRIDGE NO. 73 OVER STONEY CREEK ON SR 1440
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE AND SIGNAL



See Sheet 1-A For Index of Sheets

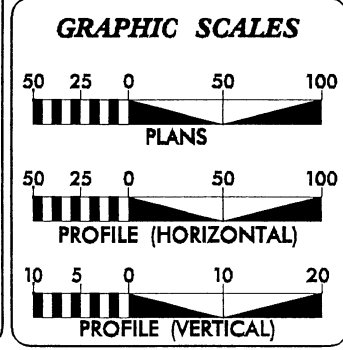


VICINITY MAP



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDRIES OF RED OAK.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2004 =	5,764
ADT 2025 =	10,300
DHV =	10 %
D =	60 %
T =	3 % *
V =	50 MPH
* TTST 1%	DUAL 2%
FUNC CLASS =	RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT =	MI
LENGTH STRUCTURE TIP PROJECT B-3879 =	MI
TOTAL LENGTH TIP PROJECT B-3879 =	0.369 MI

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

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 SEPTEMBER 30, 2003

LETTING DATE:
 SEPTEMBER 21, 2004

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER _____ P.E.

DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ P.E.

DIVISION ADMINISTRATOR _____ DATE _____

CONTRACT: C200964 TIP PROJECT: B-3879
 23-APR-2004 08:45
 R:\Proj\183879\1st\st on for AT PDEA206356

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

ROADS & RELATED ITEMS

Edge of Pavement	-----
Curb	-----
Prop. Slope Stakes Cut	----- ^C
Prop. Slope Stakes Fill	----- ^F
Prop. Woven Wire Fence	○-----○
Prop. Chain Link Fence	□-----□
Prop. Barbed Wire Fence	◇-----◇
Prop. Wheelchair Ramp	○-----○ <small>WCR</small>
Curb Cut for Future Wheelchair Ramp	○-----○ <small>CCFR</small>
Exist. Guardrail	-----
Prop. Guardrail	-----
Equality Symbol	⊕
Pavement Removal	⊗

RIGHT OF WAY

Baseline Control Point	◆
Existing Right of Way Marker	△
Exist. Right of Way Line w/Marker	-----△-----
Prop. Right of Way Line with Proposed	-----▲-----
R/W Marker (Iron Pin & Cap)	▲
Prop. Right of Way Line with Proposed	-----▲-----
(Concrete or Granite) R/W Marker	⊙
Exist. Control of Access Line	⊙
Prop. Control of Access Line	⊙
Exist. Easement Line	----- ^E -----
Prop. Temp. Construction Easement Line	----- ^E -----
Prop. Temp. Drainage Easement Line	----- ^{TDE} -----
Prop. Perm. Drainage Easement Line	----- ^{PDE} -----

HYDROLOGY

Stream or Body of Water	-----
River Basin Buffer	----- ^{RBB} -----
Flow Arrow	→
Disappearing Stream	-----
Spring	○
Swamp Marsh	-----
Shoreline	-----
Falls, Rapids	-----
Prop Lateral, Tail, Head Ditches	----- ^{FDM} -----

STRUCTURES

MAJOR	
Bridge, Tunnel, or Box Culvert	----- ^{CONC} -----
Bridge Wing Wall, Head Wall and End Wall	----- ^{CONC WW} -----

MINOR	
Head & End Wall	----- ^{CONC HW} -----
Pipe Culvert	=====
Footbridge	-----
Drainage Boxes	□ ^{CB}
Paved Ditch Gutter	-----

UTILITIES

Exist. Pole	•
Exist. Power Pole	•
Prop. Power Pole	○
Exist. Telephone Pole	•
Prop. Telephone Pole	○
Exist. Joint Use Pole	•
Prop. Joint Use Pole	○
Telephone Pedestal	⊕
UG Telephone Cable Hand Hold	⊕
Cable TV Pedestal	⊕
UG TV Cable Hand Hold	⊕
UG Power Cable Hand Hold	⊕
Hydrant	⊕
Satellite Dish	⊕
Exist. Water Valve	⊕
Sewer Clean Out	⊕
Power Manhole	⊕
Telephone Booth	⊕
Cellular Telephone Tower	⊕
Water Manhole	⊕
Light Pole	⊕
H-Frame Pole	⊕
Power Line Tower	⊕
Pole with Base	⊕
Gas Valve	⊕
Gas Meter	⊕
Telephone Manhole	⊕
Power Transformer	⊕
Sanitary Sewer Manhole	⊕
Storm Sewer Manhole	⊕
Tank; Water, Gas, Oil	⊕
Water Tank With Legs	⊕
Traffic Signal Junction Box	⊕
Fiber Optic Splice Box	⊕
Television or Radio Tower	⊕
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement	----- ^{TS} -----

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

BOUNDARIES & PROPERTIES

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Property Line Symbol	⊕
Exist. Iron Pin	⊕
Property Corner	⊕
Property Monument	⊕
Property Number	⊕
Parcel Number	⊕
Fence Line	----- ^X -----
Existing Wetland Boundaries	----- ^{WW & ISBW} -----
High Quality Wetland Boundary	----- ^{HLB} -----
Medium Quality Wetland Boundaries	----- ^{MQ WLB} -----
Low Quality Wetland Boundaries	----- ^{LQ WLB} -----
Proposed Wetland Boundaries	----- ^{WLB} -----
Existing Endangered Animal Boundaries	----- ^{EAB} -----
Existing Endangered Plant Boundaries	----- ^{EPB} -----

BUILDINGS & OTHER CULTURE

Buildings	-----
Foundations	-----
Area Outline	-----
Gate	-----
Gas Pump Vent or UG Tank Cap	-----
Church	-----
School	-----
Park	-----
Cemetery	-----
Dam	-----
Sign	-----
Well	-----
Small Mine	-----
Swimming Pool	-----

TOPOGRAPHY

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

VEGETATION

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

RAILROADS

Standard Gauge	-----
RR Signal Milepost	-----
Switch	-----

5/28/99
23-APR-2004 09:00
B:\PROJ\B3879.tsh
AT 11:26:56

SURVEY CONTROL SHEET B3879

CONTROL DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	2	GPS B3879-2	814946.1320	2325319.3970	126.97	OUTSIDE PROJECT LIMITS	
	101	BL-101	815384.7690	2325012.6690	122.10	13+21.98	18.98 LT
	102	BL-102	815964.6670	2324939.5760	120.40	19+05.18	18.13 LT
	103	BL-103	816474.5570	2325030.8000	121.37	24+31.81	16.54 LT
	3	GPS B3879-3	816865.3020	2324903.8410	119.75	28+33.92	101.95 LT
	104	BL-104	817026.8050	2324971.7380	127.63	29+87.37	17.56 LT
	105	BL-105	817543.7790	2324974.2910	160.99	35+03.24	18.55 RT

T1	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	201	T1-201	816598.3260	2324811.7540	111.89	25+78.05	221.49 LT
	202	T1-202	816541.6020	2324939.1450	110.92	25+08.30	100.73 LT
	A103	BL-103	816474.5570	2325030.8000	121.37	24+31.81	16.54 LT
	203	T1-203	816648.6120	2325075.6890	113.47	26+00.43	46.26 RT
	204	T1-204	816608.5590	2325180.0110	111.61	25+49.67	145.82 RT
	205	T1-205	816623.5110	2325385.9390	111.61	25+42.98	352.18 RT

BY	POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
	4	GPS B3879-4	816822.6050	2324382.6870	119.78	OUTSIDE PROJECT LIMITS	
	A3	GPS B3879-3	816865.3020	2324903.8410	119.75	15+14.06	29.01 LT

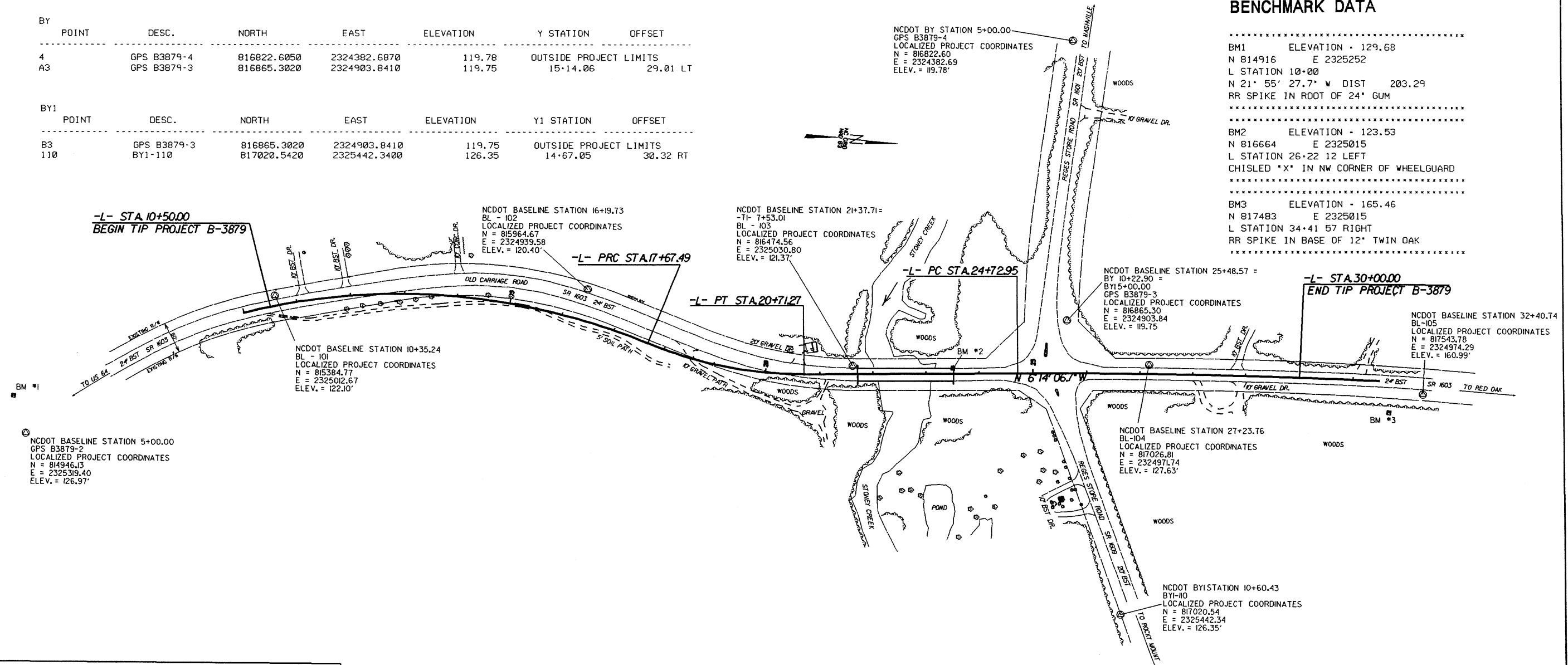
BY1	POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
	B3	GPS B3879-3	816865.3020	2324903.8410	119.75	OUTSIDE PROJECT LIMITS	
	110	BY1-110	817020.5420	2325442.3400	126.35	14+67.05	30.32 RT

BENCHMARK DATA

 BM1 ELEVATION - 129.68
 N 814916 E 2325252
 L STATION 10+00
 N 21° 55' 27.7" W DIST 203.29
 RR SPIKE IN ROOT OF 24" GUM

 BM2 ELEVATION - 123.53
 N 816664 E 2325015
 L STATION 26+22 12 LEFT
 CHISLED "X" IN NW CORNER OF WHEELGUARD

 BM3 ELEVATION - 165.46
 N 817483 E 2325015
 L STATION 34+41 57 RIGHT
 RR SPIKE IN BASE OF 12" TWIN OAK



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS B3879-3"
 WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 816865.302(11) EASTING: 2324903.841(11)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995431
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS B3879-3" TO L- 10+50.00 IS
 S05°01'06.34"E 1,492.35 FT
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

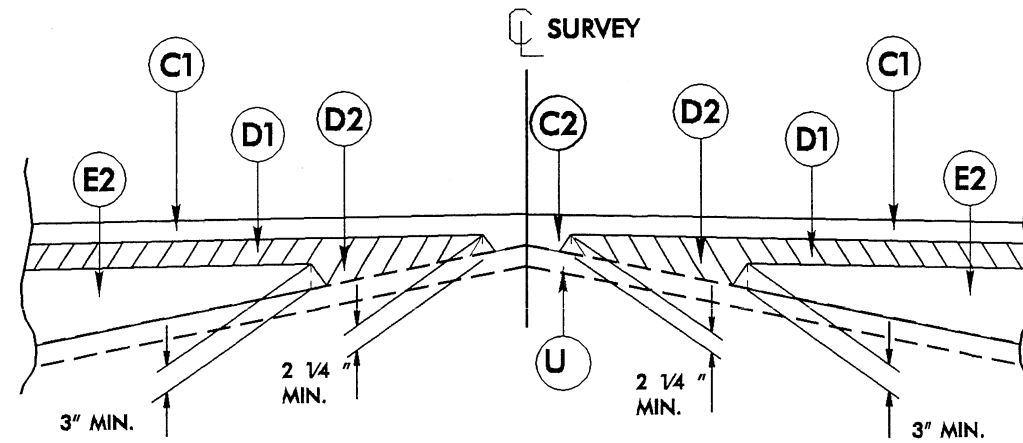
NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.DOI.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT FILE : B3879_LS_CONTROL_040123.TXT](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/file/B3879_LS_CONTROL_040123.TXT)
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.
 IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
 @ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 CONTROL NETWORK FOR B3879 ESTABLISHED USING STATIC GPS FROM NCGS HARN MONUMENTATION.

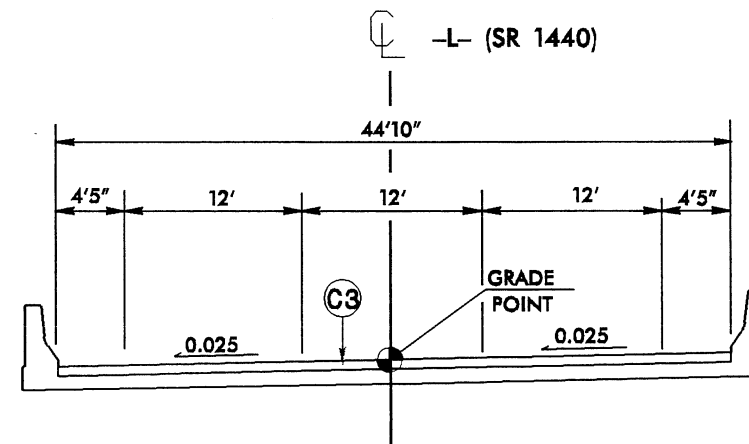
NOTE: DRAWING NOT TO SCALE

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
C3	PROP. APPROX. 2 3/4" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 154 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 2 1/2" 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 I19.0X, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0, 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 5 1/2" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE.
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET NO. 2)

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

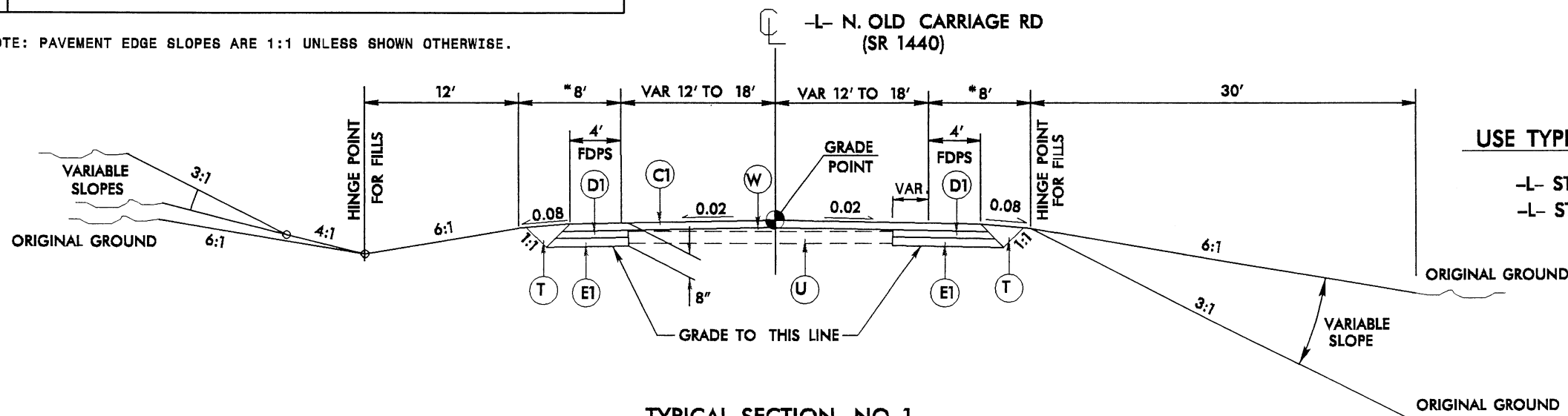


C2 DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION ON STRUCTURE

-L- STA. 21+63.67 +/- TO -L- STA. 23+58.33 +/-



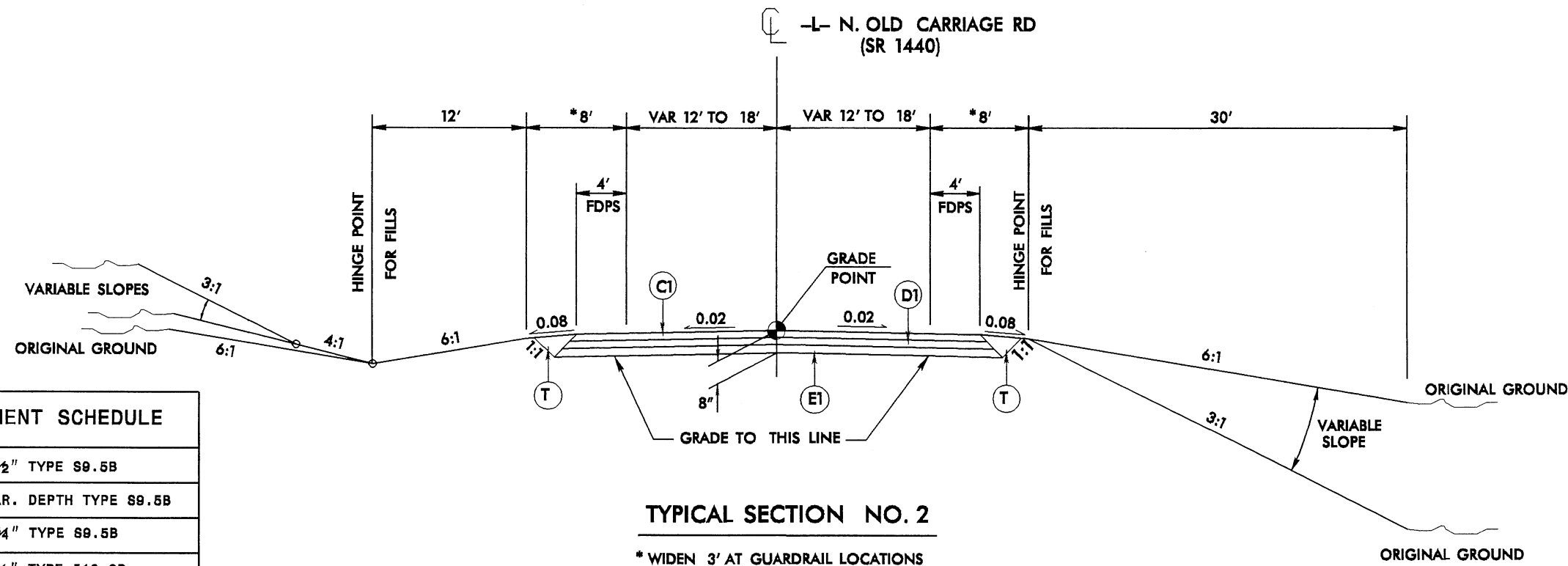
TYPICAL SECTION NO. 1

* WIDEN 3' AT GUARDRAIL LOCATIONS

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

- L- STA. 10+50.00 TO STA. 13+50.00
- L- STA. 24+00.00 TO STA. 24+50.00

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station AT PDEA206356



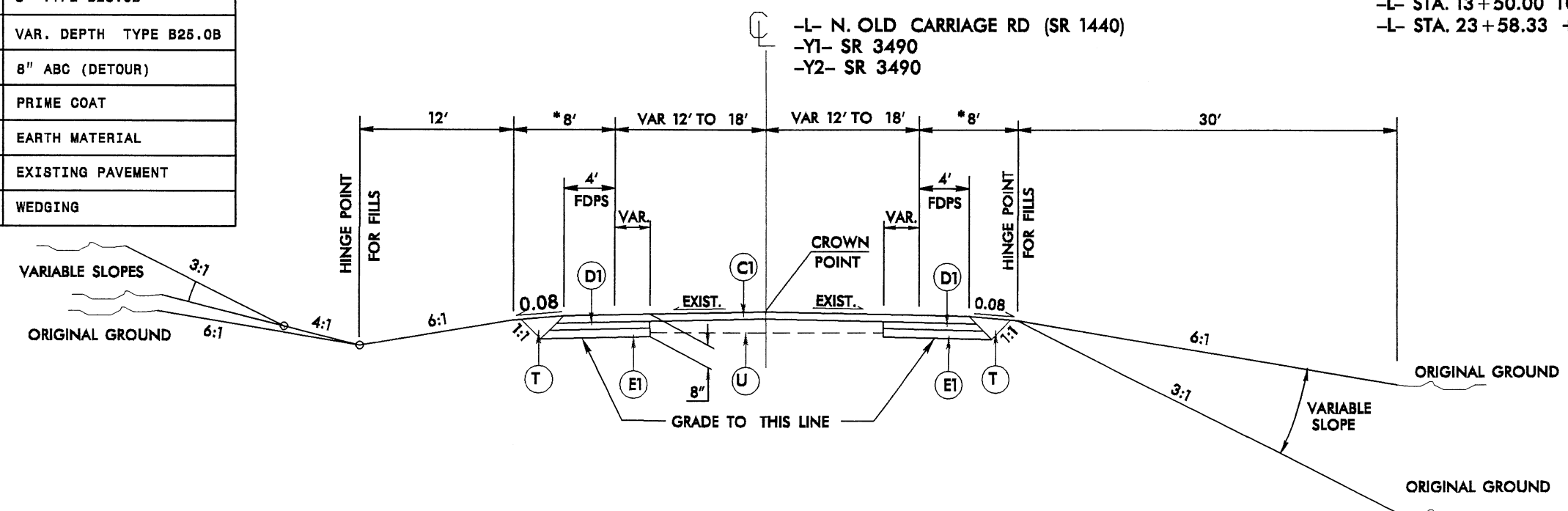
TYPICAL SECTION NO. 2

* WIDEN 3' AT GUARDRAIL LOCATIONS

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

- L- STA. 13+50.00 TO STA. 21+63.67 (BEGIN BRIDGE)
- L- STA. 23+58.33 +/- (END BRIDGE) TO STA. 24+00.00

PAVEMENT SCHEDULE	
C1	2 1/2" TYPE S9.5B
C2	VAR. DEPTH TYPE S9.5B
C3	2 3/4" TYPE S9.5B
D1	2 1/2" TYPE I19.0B
D2	VAR. DEPTH TYPE I19.0B
E1	3" TYPE B25.0B
E2	VAR. DEPTH TYPE B25.0B
J1	8" ABC (DETOUR)
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 3

* WIDEN 3' AT GUARDRAIL LOCATIONS

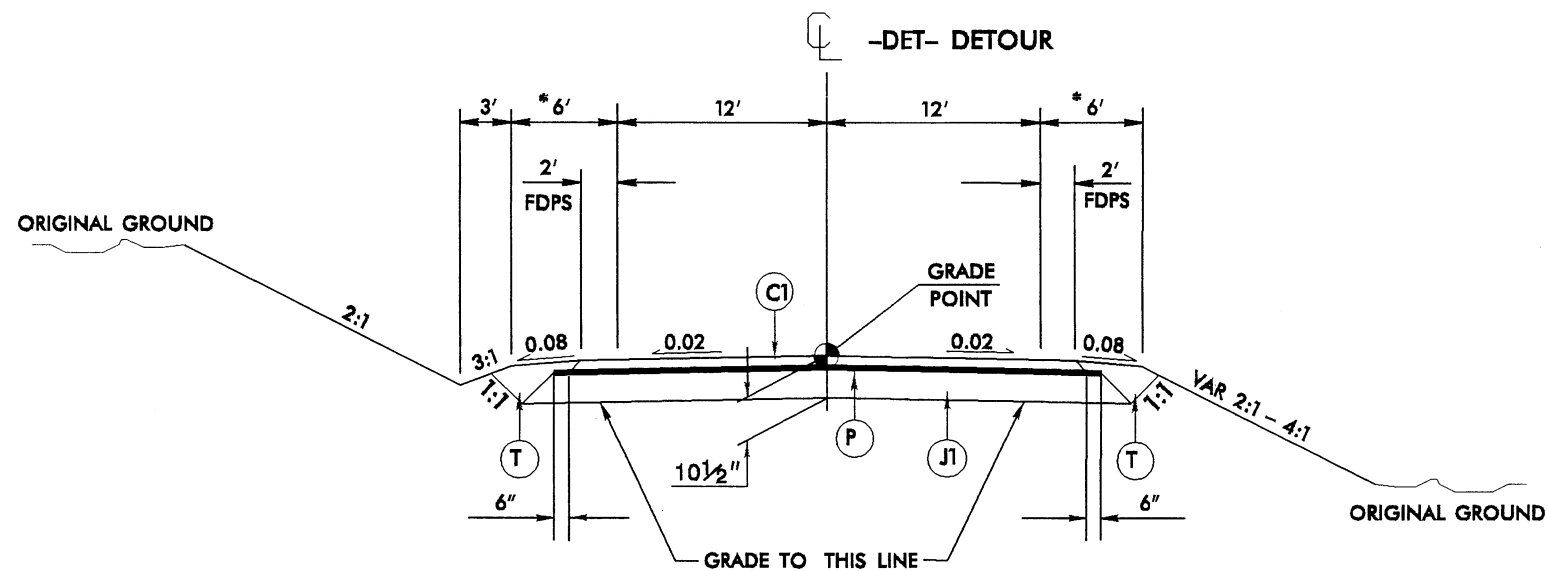
USE TYPICAL SECTION NO. 3 AS FOLLOWS:

- L- STA. 24+50.00 TO STA. 30+00.00
- Y1- STA. 11+86.61 TO STA. 15+96.38
- Y2- STA. 10+19.13 TO STA. 14+30.04

6/2/95

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station AT EDE206356

PROJECT REFERENCE NO. B-3879	SHEET NO. 2-B
ROADWAY DESIGN ENGINEER	PAYEMENT DESIGN ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	



TYPICAL SECTION NO. 4

* WIDEN 2' AT GUARDRAIL LOCATIONS

TRANSITION FROM TYPICAL SECTION NO. 2 TO TYPICAL SECTION NO. 4 AS FOLLOWS:

-DET- STA. 10+00.00 TO STA. 12+05.15

USE TYPICAL SECTION NO. 4 AS FOLLOWS:

-DET- STA. 12+05.15 TO STA. 16+62+/- (BEGIN BRIDGE)

-DET- STA. 18+43+/- (END BRIDGE) TO STA. 19+90.80

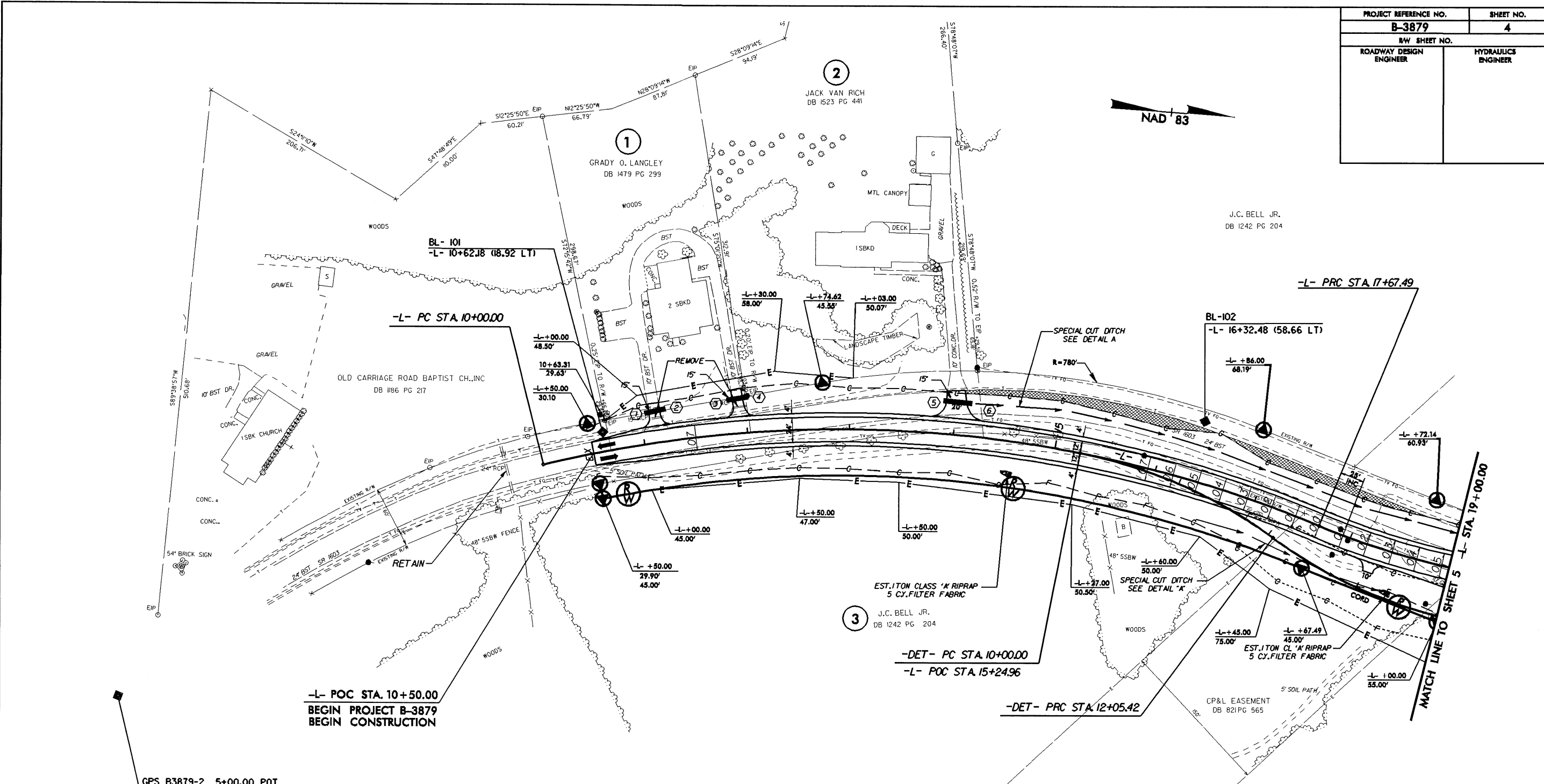
PAVEMENT SCHEDULE	
C1	2 1/2" TYPE S9.5B
C2	VAR. DEPTH TYPE S9.5B
C3	2 3/4" TYPE S9.5B
D1	2 1/2" TYPE I19.0B
D2	VAR. DEPTH TYPE I19.0B
E1	3" TYPE B25.0B
E2	VAR. DEPTH TYPE B25.0B
J1	8" ABC (DETOUR)
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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 Station AT BDEA286356

PROJECT REFERENCE NO. B-3879	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

8/17/99



GPS B3879-2 5+00.00 POT

-L-	
PI Sta 13+97.38	PI Sta 19+21.43
$\Delta = 36^{\circ} 38' 41.8"$ (RT)	$\Delta = 22^{\circ} 54' 05.2"$ (LT)
D = 4' 46" 28.7"	D = 7' 32" 20.1"
L = 767.49'	L = 303.78'
T = 397.38'	T = 153.94'
R = 1,200.00'	R = 760.00'
SE = 0.07	SE = 0.08
RO = SEE PLANS	RO = SEE PLANS
V _{DES} = 50mph	V _{DES} = 50mph

-DET-	
PI Sta 11+04.41	PI Sta 13+59.35
$\Delta = 25^{\circ} 18' 39.3"$ (RT)	$\Delta = 36^{\circ} 37' 56.7"$ (LT)
D = 12' 19" 18.0"	D = 12' 19" 18.0"
L = 205.42'	L = 297.30'
T = 104.41'	T = 153.93'
R = 465.00'	R = 465.00'
V _{DES} = 40 mph	V _{DES} = 40 mph

LEGEND	
---	-L- SLOPE STAKE
----	-DET- SLOPE STAKE
▨	PAVEMENT REMOVAL

NOTE: SEE SHEET 2-C FOR SPECIAL DITCH DETAILS
SEE SHEET 6 FOR DETOUR.
SEE SHEET 7 FOR -L- PROFILE.

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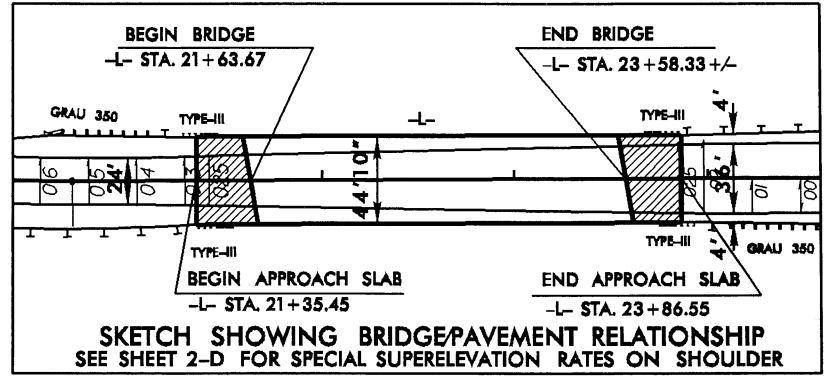
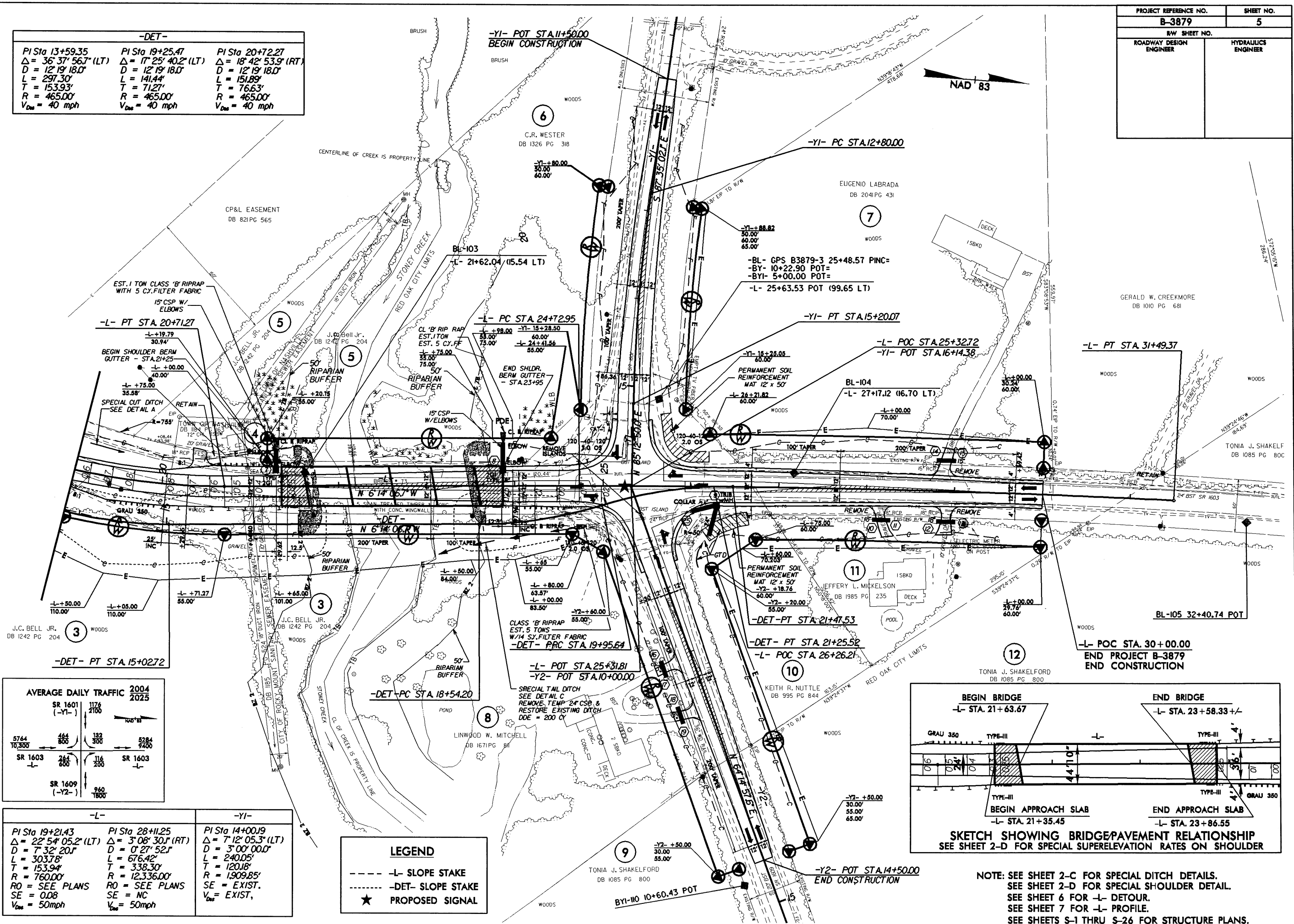
PROJECT REFERENCE NO.		SHEET NO.	
B-3879		5	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			

-DET-		
PI Sta 13+59.35 Δ = 36° 37' 56.7" (LT) D = 12' 19' 18.0" L = 297.30' T = 153.93' R = 465.00' V _{Des} = 40 mph	PI Sta 19+25.47 Δ = 17° 25' 40.2" (LT) D = 12' 19' 18.0" L = 141.44' T = 71.27' R = 465.00' V _{Des} = 40 mph	PI Sta 20+72.27 Δ = 18° 42' 53.9" (RT) D = 12' 19' 18.0" L = 151.89' T = 76.63' R = 465.00' V _{Des} = 40 mph

AVERAGE DAILY TRAFFIC 2004 2025			
SR 1601 (-Y1-) 1176 2100	SR 1603 264 600	SR 1603 116 200	SR 1603 5284 9400
SR 1609 (-Y2-) 960 1800			

-L-		-Y1-	
PI Sta 19+21.43 Δ = 22° 54' 05.2" (LT) D = 7' 32' 20.7" L = 303.78' T = 153.94' R = 760.00' RO = SEE PLANS SE = 0.08 V _{Des} = 50 mph	PI Sta 28+11.25 Δ = 3° 08' 30.7" (RT) D = 0' 27' 52.7" L = 676.42' T = 338.30' R = 12,336.00' RO = SEE PLANS SE = NC V _{Des} = 50 mph	PI Sta 14+00.19 Δ = 7° 12' 05.3" (LT) D = 3' 00' 00.0" L = 240.05' T = 120.18' R = 1,909.85' RO = SEE PLANS SE = EXIST. V _{Des} = EXIST.	

LEGEND	
---	-L- SLOPE STAKE
---	-DET- SLOPE STAKE
★	PROPOSED SIGNAL



NOTE: SEE SHEET 2-C FOR SPECIAL DITCH DETAILS.
SEE SHEET 2-D FOR SPECIAL SHOULDER DETAIL.
SEE SHEET 6 FOR -L- DETOUR.
SEE SHEET 7 FOR -L- PROFILE.
SEE SHEETS S-1 THRU S-26 FOR STRUCTURE PLANS.

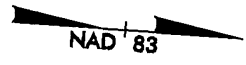
B/17.09

PROJECT REFERENCE NO.		SHEET NO.	
B-3879		6	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

-DET-			
PI Sta 11+04.41 Δ = 25° 18' 39.3" (RT) D = 12' 19' 18.0" L = 205.42' T = 104.41' R = 465.00' SE = 0.07 RO = SEE PLANS V _{DES} = 40mph	PI Sta 13+59.35 Δ = 36° 37' 56.7" (LT) D = 12' 19' 18.0" L = 297.30' T = 153.93' R = 465.00' SE = 0.08 RO = SEE PLANS V _{DES} = 40mph	PI Sta 19+25.47 Δ = 17° 25' 40.2" (LT) D = 12' 19' 18.0" L = 141.44' T = 71.27' R = 465.00' SE = 0.02 RO = SEE PLANS V _{DES} = 40mph	PI Sta 20+72.27 Δ = 18° 42' 53.9" (RT) D = 12' 19' 18.0" L = 151.89' T = 76.63' R = 465.00' SE = 0.02 RO = SEE PLANS V _{DES} = 40mph

J.C. BELL JR.
DB 1242 PG 204

NOTE: CONSTRUCT -L- PAVEMENT FROM STA. 10+00.00 TO 17+67.51 PRIOR TO CONSTRUCTION OF DETOUR



EUGENIO LABRADA
DB 2041 PG 431

-BL- GPS B3879-3 25+48.57 PINC=
-BY- 10+22.90 POT=
-BYI- 5+00.00 POT=
-L- 25+63.53 POT (199.65 LT)

BL-104
-L- 27+17.12 (16.70 LT)

-DET- PT Sta. 21+47.53

-DET POC Sta. 21+25.52

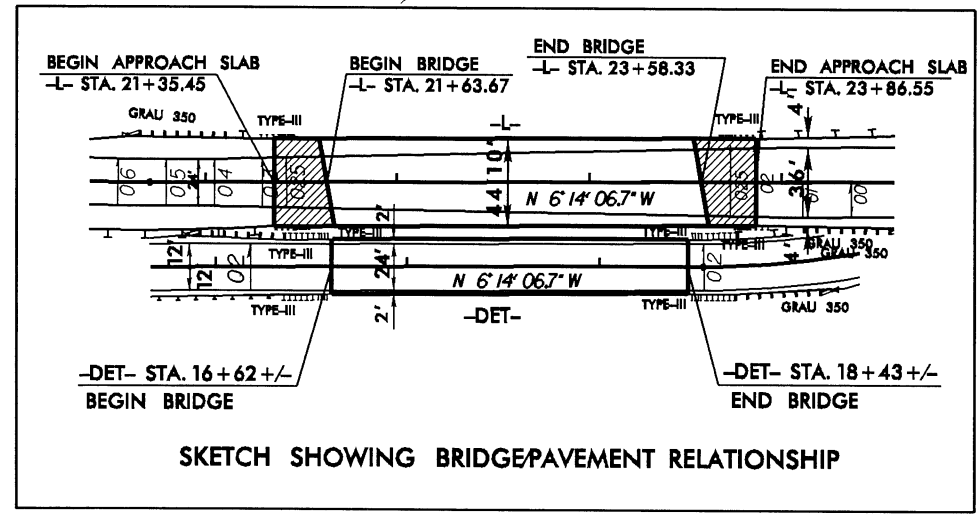
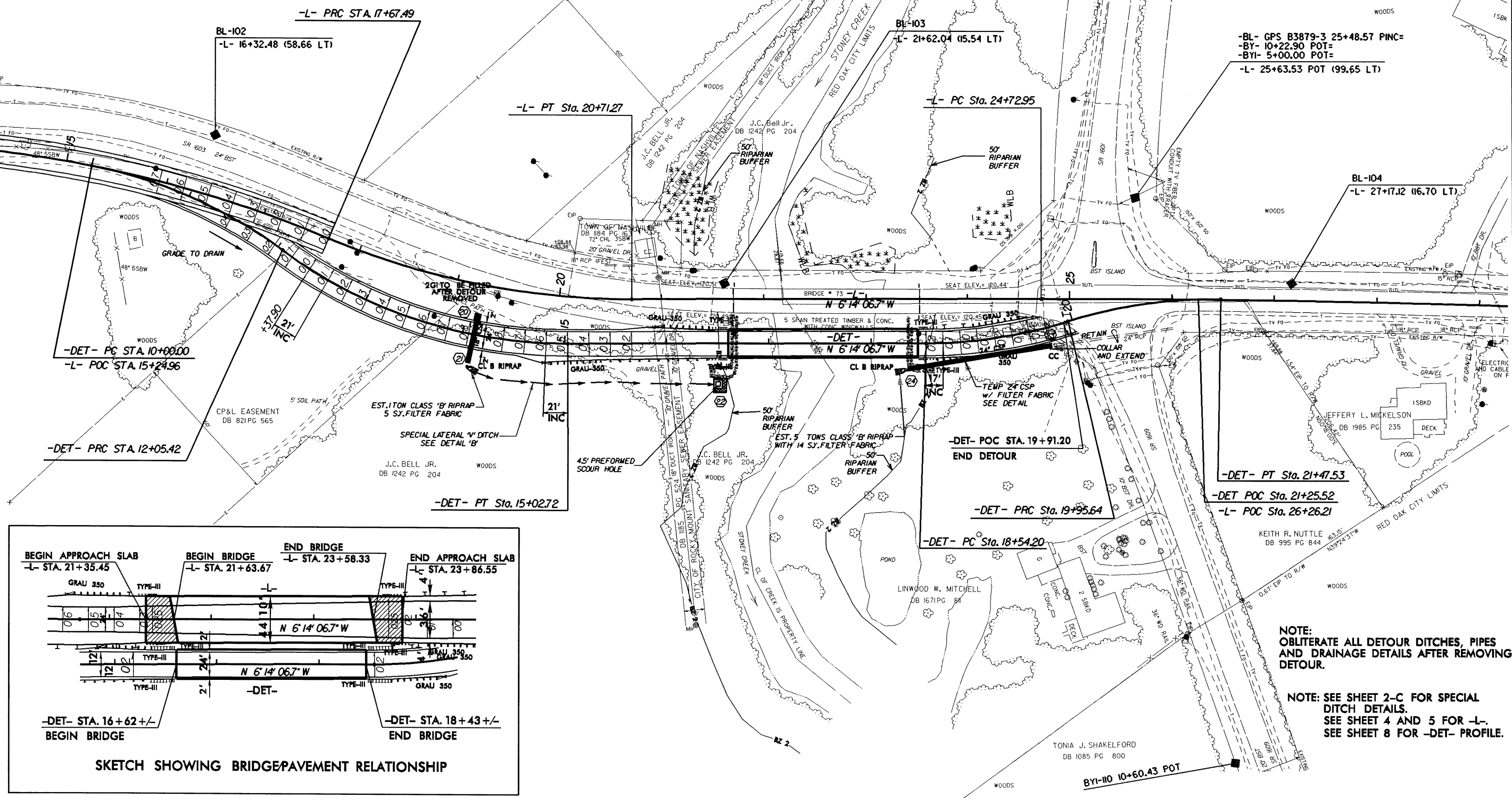
-L- POC Sta. 26+26.21

NOTE: OBLITERATE ALL DETOUR DITCHES, PIPES AND DRAINAGE DETAILS AFTER REMOVING DETOUR.

NOTE: SEE SHEET 2-C FOR SPECIAL DITCH DETAILS. SEE SHEET 4 AND 5 FOR -L-. SEE SHEET 8 FOR -DET- PROFILE.

TONIA J. SHAKELFORD
DB 1085 PG 800

BYI-10 10+60.43 POT



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station at PDE214781

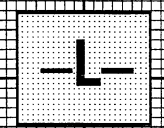
SR 1603 CARRIAGE RD.

BENCHMARK 1: RR SPIKE IN ROOT OF 24" GUM
AT -BL- STA. 5+14.09 - 72.74' LT ELEV. 129.68'

BEGIN GRADE
-L- STA. 10+50.00
ELEV. 122.54

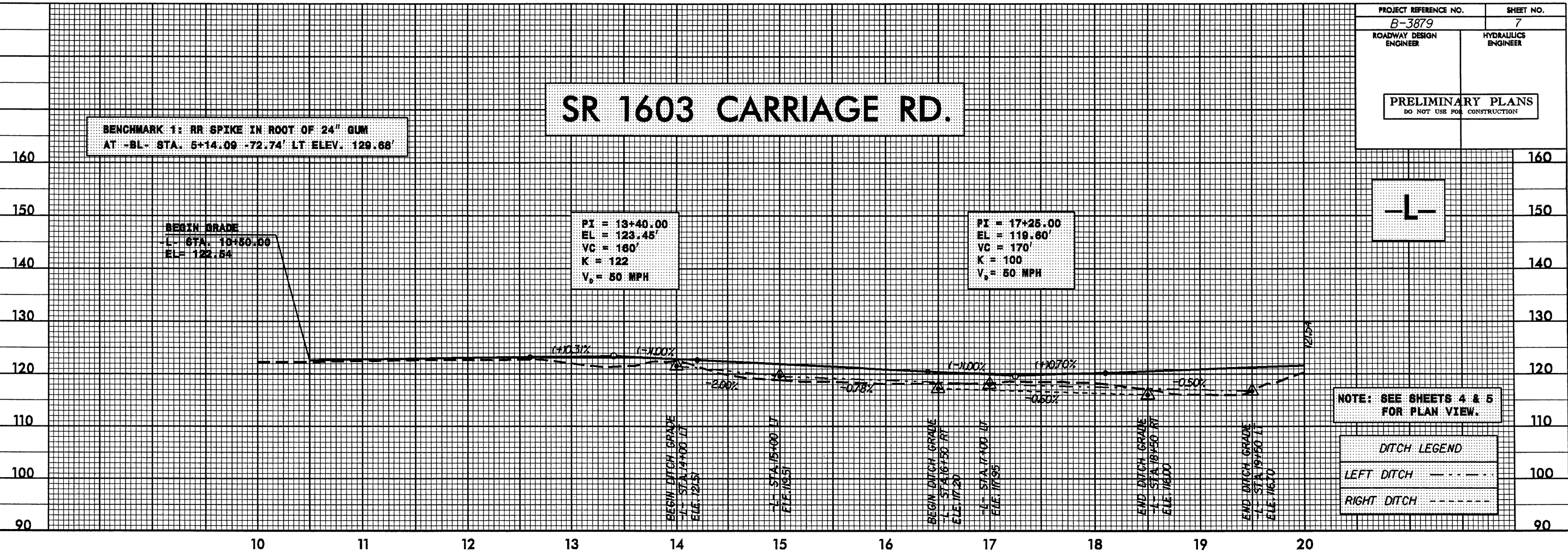
PI = 13+40.00
EL = 123.45'
VC = 180'
K = 122
V_p = 50 MPH

PI = 17+25.00
EL = 119.60'
VC = 170'
K = 100
V_p = 50 MPH



NOTE: SEE SHEETS 4 & 5 FOR PLAN VIEW.

DITCH LEGEND
LEFT DITCH - - - - -
RIGHT DITCH - - - - -

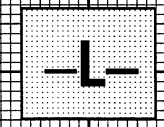


SR 1603 CARRIAGE RD.

BENCHMARK 2: CHISELED "X" IN NW CORNER OF WHEELGUARD
AT -L- STA. 23+51.92 - 10.27' LT - ELEV. 123.53

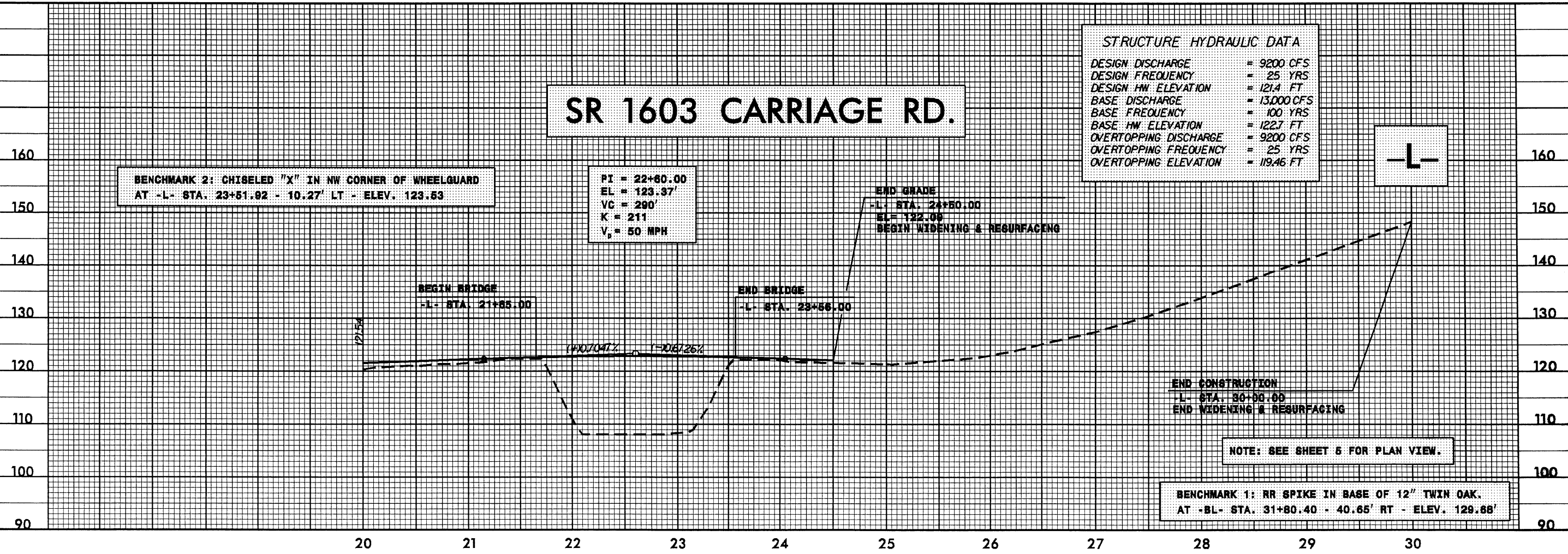
PI = 22+80.00
EL = 123.37'
VC = 290'
K = 211
V_p = 50 MPH

STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 9200 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 121.4 FT
BASE DISCHARGE = 13,000 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 122.7 FT
OVERTOPPING DISCHARGE = 9200 CFS
OVERTOPPING FREQUENCY = 25 YRS
OVERTOPPING ELEVATION = 119.46 FT



NOTE: SEE SHEET 5 FOR PLAN VIEW.

BENCHMARK 1: RR SPIKE IN BASE OF 12" TWIN OAK.
AT -BL- STA. 31+80.40 - 40.65' RT - ELEV. 129.68'



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DETOUR

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 9200 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 121.4 FT
BASE DISCHARGE	= 13,000 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 122.7 FT
OVERTOPPING DISCHARGE	= 9200 CFS
OVERTOPPING FREQUENCY	= 25 YRS
OVERTOPPING ELEVATION	= 119.46 FT

-DET-

BEGIN GRADE
 -DET- STA. 11+35.12
 EL = 119.75
 -L- STA. 16+58.82
 OFFSET = 12' RT

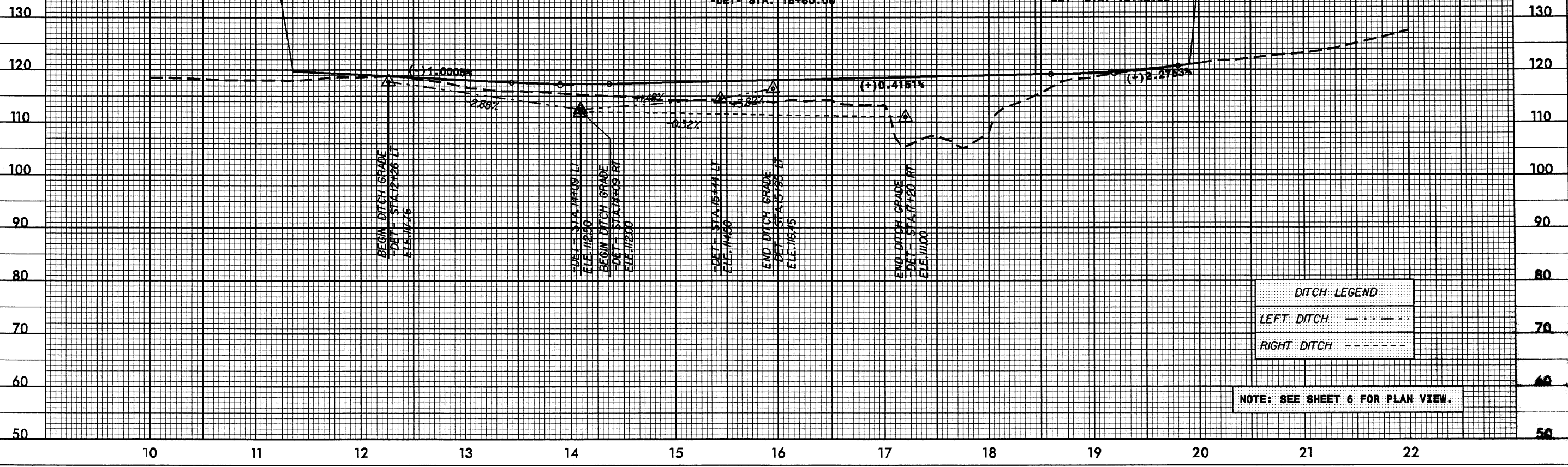
PI = 13+90.00
 EL = 117.20
 VC = 92'
 K = 85
 V_o = 40 MPH

PI = 18+20.00
 EL = 118.40
 VC = 121'
 K = 65
 V_o = 40 MPH

END GRADE
 -DET- STA. 19+01.20
 EL = 121.00
 -L- STA. 24+04.28
 OFFSET = 23.45' RT

BEGIN BRIDGE
 -DET- STA. 18+60.00

END BRIDGE
 -DET- STA. 18+45.00



DITCH LEGEND

LEFT DITCH	---
RIGHT DITCH	---

NOTE: SEE SHEET 6 FOR PLAN VIEW.

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station AT PDEA206355

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PROJECT REFERENCE NO. B-3879	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

SR 1601

-Y1-

BEGIN WIDENING & RESURFACING
 +Y1- STA. 11+50
 EL= 119.99

END WIDENING & RESURFACING
 +Y1- STA. 16+14.38
 EL= 121.80

NOTE: SEE SHEET 5 FOR PLAN VIEW.

10 11 12 13 14 15 16 17 18 19 20

SR 1609

-Y2-

BEGIN WIDENING & RESURFACING
 +Y2- STA. 10+00
 EL= 121.88

END WIDENING & RESURFACING
 +Y2- STA. 14+60.00
 EL= 128.57

NOTE: SEE SHEET 5 FOR PLAN VIEW.

10 11 12 13 14 15 16 17

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13:53:10 A:\P\EA206355

Nash County
Bridge No. 73 on SR 1603
over Stoney Creek
Federal Aid Project No. BRZ-1603(2)
State Project No. 8.2322301
T.I.P. No. B-3879

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

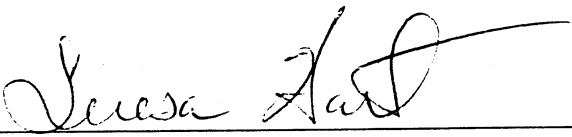
AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

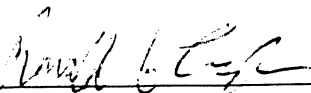
APPROVED:

7/2/03
DATE



for Gregory J. Thorp, PhD
Environmental Management Director, PDEA

7/14/03
DATE



John F. Sullivan, III
Division Administrator, FHWA

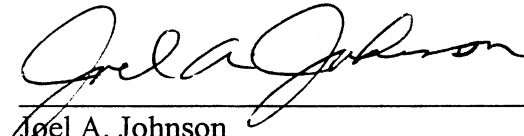
Nash County
Bridge No. 73 on SR 1603
over Stoney Creek
Federal Aid Project No. BRZ-1603(2)
State Project No. 8.2322301
T.I.P. No. B-3879

CATEGORICAL EXCLUSION

Documentation Prepared in
Project Development and Environmental Analysis Branch By:

7-2-03

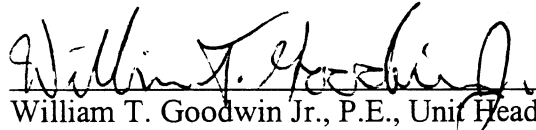
DATE



Joel A. Johnson
Project Development Engineer

7-2-03

DATE



William T. Goodwin Jr., P.E., Unit Head
Bridge Replacement Planning Unit

PROJECT COMMITMENTS

**Replacement of Bridge No. 73
On SR 1603 over the Stoney Creek
Nash County
Federal-Aid No. BRZ-1603(2)
State Project No. 8.2322301
T.I.P. No. B-3879**

Commitments Developed Through Project Development and Design

Roadway Design Unit, Roadside Environmental Unit, Division Four Construction, Structure Design

NCDOT will adhere to the Best Management Practices (BMPs) for "Bridge Demolition and Removal" during the removal of Bridge No. 73.

Roadway Design Unit, Structure Design Unit, Roadside Environmental Unit, Hydraulic Design Unit, Division Four Construction Unit, Project Development and Environmental Analysis Branch

The U. S. Fish and Wildlife Service (USFWS) was consulted in regard to the effect of project construction on the Tar spiny mussel and the Dwarf wedge mussel. The USFWS concurred in the biological conclusion that project construction is "Not Likely to Adversely Affect" the Tar spiny mussel and the Dwarf wedge mussel if the following environmental commitments are implemented:

- 1) The replacement Bridge No. 73 and the construction of a detour structure will use "top down" construction to eliminate in stream activity as much as possible.
- 2) As part of the removal process for the existing bridge, wood pilings will be cut off at the substrate level.
- 3) The existing fill material at the south end bent will be removed, to the extent practicable, to natural ground elevation to allow for a more natural stream flow. The replacement bridge will be lengthened as necessary to accommodate this.
- 4) During construction, turbidity curtains will be placed around the work area on the south bank to protect the stream in a "horseshoe" configuration. The turbidity curtains will not be installed perpendicular to stream flow.
- 5) A hardware cloth fence faced with small clean gravel will be placed along the footprint of the construction area bordering the stream. A silt fence will be used for the side slopes.
- 6) Equipment will be maintained such that hydraulic fluids, oil, gasoline, or other chemicals will not enter the stream. If chemicals are stored on site, they will be stored a sufficient distance from the stream and under secure conditions to prevent accidental contact with the stream. If chemicals are spilled on the site they will be cleaned up immediately and not allowed to filter down into the soil.
- 7) Slurry will be removed from the project construction site. No slurry will enter the stream.
- 8) The erosion control plans for Protected Aquatic Species will be used during project construction. These plans include the following requirements:
 - Sediment and Erosion controls will be in place prior to land clearing activities. No sediment from either bridge demolition or construction activities will be allowed to enter the flowing stream.
 - "Environmentally Sensitive Areas" will be defined on the plans, which consist of a 50-foot buffer zone on both sides of the stream.

PROJECT COMMITMENTS

- The Contractor may perform clearing operations, but not grubbing operations in the “Environmentally Sensitive Areas” until immediately prior to beginning grading operations.
- Once grading operations being in “Environmentally Sensitive Areas” as specified on the plans, work will progress in a continuous manner until complete.
- Seeding and mulching will be performed immediately following final grade establishment.
- Stage seeding will be performed on cut and fill slopes as grading progresses.

Roadway Design Unit, Structure Design Unit

Final design plans will be mailed to the N. C. Wildlife Resources Commission upon completion.

Project Development and Environmental Analysis Branch

The NCDOT Project Development and Environmental Analysis Branch will conduct an in-stream survey for the Dwarf-wedge mussel and the Tar spiny-mussel just prior to the construction let date.

Division Four Construction

The NCDOT resident engineer will be responsible for alerting the Natural Environment Biological Surveys Unit Head of the Project Development and Environmental Analysis Branch two months prior to the project being awarded so that the in-stream survey may be scheduled.

The NCDOT resident engineer will be responsible for providing a written invitation to the N. C. Wildlife Resources Commission, Non-game and Protected Species Branch, and the U. S. Fish and Wildlife Service for the construction field meeting for this project.

Nash County
Bridge No. 73 on SR 1603
over Stoney Creek
Federal Aid Project No. BRZ-1603(2)
State Project No. 8.2322301
T.I.P. No. B-3879

INTRODUCTION: The replacement of Bridge No. 73 is included in the current North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and is eligible for the Federal-Aid Bridge Replacement and Rehabilitation Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 24.2 out of a possible 100 for a new structure. The bridge is posted for load limits of 22 tons for single vehicles and 27 tons for truck-tractor semi-trailers and is structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located on SR 1603 (Carriage Rd.) over Stoney Creek just north of US 64 between Nashville and Rocky Mount in Nash County (see Figure 1). Development in the area is agricultural and residential in nature.

SR 1603 is classified as a rural minor collector in the Statewide Functional Classification System. This route is not a designated bicycle route and there is no indication that an unusual number of bicyclists use this roadway.

In the vicinity of the bridge, SR 1603 has a 23-foot (7.0-meter) pavement width with 6-foot (1.8-meter) grass shoulders (see Figures 3 and 4). The roadway grade is flat in the area of the bridge. There is a horizontal curve on the south end of the project and a road intersection on the north end of the project. The existing bridge is on a tangent. The roadway is situated approximately 17.0 feet (5.2 meters) above the creek bed.

Bridge No. 73 is a six-span structure that consists of reinforced concrete deck on steel I-beams. The end bents and interior bents consist of reinforced concrete caps on timber piles. The existing bridge (see Figure 3) was constructed in 1957. The overall length of the structure is 182 feet (55.5 meters). The clear roadway width is 24.0 feet (7.3 meters). The bridge is posted 22 tons for single vehicle and 27 tons for truck-tractor semi-trailer.

There are no utilities attached to the existing structure. Underground telephone lines are aerial at the bridge on the east side, power aerial lines are on the west side, a sanitary sewer line on the south side of Stoney Creek, and a pump station is located in the south-east quadrant. There is a power transmission line crossing SR 1603 just south of the bridge. A telephone pedestal and fiber optic delineator post indicate other underground utilities in the project area. Utility impacts are anticipated to be heavy.

The current traffic volume of 4,900 vehicles per day (VPD) is expected to increase to 10,300 VPD by the year 2025. The projected volume includes one-percent truck-tractor semi-trailer (TTST) and two-percent dual-tired (DT) vehicles. The posted speed limit is 45 miles (72 kilometers) per hour in the project area.

The NCDOT Traffic Engineering Branch indicates 12 crashes have been reported in a recent 3-year period. Only one sideswipe accident (no injuries) was located at the bridge. The other accidents were at the intersection just north of the bridge.

School buses cross this bridge 17 times per day. However, since an on-site detour is being provided, school bus routing should not be affected.

III. ALTERNATIVES

A. Project Description

The replacement structure will consist of a 192-foot (58.5-meter) long bridge. The bridge will be 44 feet (13.4 meters) in width to provide for three 12-foot (3.6-meter) lanes with a 4-foot (1.2-meter) offset on each side.

The roadway grade of the new structure will be approximately the same as the existing grade at this location.

The new roadway cross section would be two 12-foot (3.7-meter) lanes that will transition to three 12-foot (3.7-meter) lanes. The shoulders will be 8 feet (2.4 meters) wide on both sides, including 4 feet (1.2 meters) of paved shoulder and 4 feet (1.2 meters) of grassed shoulder. This roadway will be designed as a rural minor collector.

B. Reasonable and Feasible Alternatives

The one alternative for replacing Bridge No. 73 that was studied is described below.

Alternative 1 Replace Bridge No. 73 with a new 192-foot (58.5-meter) long bridge at approximately the same location and roadway elevation as the existing bridge. Traffic will be maintained using a temporary on-site detour located to the east (downstream) of the existing bridge during construction. The temporary bridge will be approximately 185 feet (56.4 meters) in length.

C. Alternatives Eliminated From Further Consideration

Due to the large volumes of traffic and the lack of a suitable off-site detour, road closure and replace in-place was not an option.

The “do-nothing” alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 1603.

“Rehabilitation” of the old bridge is not practical due to its age, deteriorated condition and design. The substructure is in poor condition. It is not practical to rehabilitate timber bents.

Replace in place with an on-site detour just west of the existing bridge was eliminated from consideration due to the wetlands and utility conflicts.

Replace on new alignment just west of the existing bridge using the existing bridge to maintain traffic was eliminated from consideration due to the wetlands and utility conflicts.

D. Recommended Alternative and Reasons for Recommendations

Bridge No. 73 will be replaced at approximately the same location and elevation as the existing bridge. The new bridge will be 10 feet (3.0 meters) longer than the existing bridge. This will allow for the removal of approximately ten feet of the existing fill material at the south end of the bridge. This will improve the opening under the bridge and allow a more natural stream flow. Traffic will be maintained using a temporary on-site detour located just east of the existing location as shown by Alternative 1 in Figure 2. Alternative 1 is recommended because there is no suitable off-site detour. An offsite detour located west of its existing location was eliminated from consideration due to increased wetland impacts and cost. Also adding to the utility cost, a sewer pump station would have to be relocated.

IV. ESTIMATED COSTS

The estimated cost for the one alternative is as follows:

	Alternative 1 Recommended
Structure	\$ 600,600
Roadway Approaches	\$ 570,000
Detour Structure and Approaches	\$ 368,000
Structure Removal	\$ 36,400
Misc. & Mob.	\$ 340,000
Eng. & Contingencies	\$ 285,000
Total Construction Cost	\$ 2,200,000
Right-of-way and Utility Costs	\$ 300,000
Total Project Cost	\$ 2,500,000

V. NATURAL RESOURCES

A. PHYSICAL RESOURCES

Soil and water resources that occur in the study area are discussed below. Soils and availability of water directly influence composition and distribution of flora and fauna in any biotic community.

The project study area lies within the eastern Piedmont Physiographic Province. The topography in this section of Nash County is broad and flat to long slopes and is drained directly by Stoney Creek. Project elevation is approximately 115.0 ft (35.1 m) above mean sea level (msl).

A.1 Soils

Three soil phases occur within the study area: Meggett loam, Altavista sandy loam, and Georgeville loam soils. They are as follows:

- Meggett loam is a frequently flooded, poorly drained, nearly level soil that occurs on flood plains. Permeability is slow, surface runoff is very slow, the seasonal high water table is at or near the surface most of the year, and this soil type is subject to flooding after prolonged rains. (USDA 1989)
- Altavista sandy loam with 0 to 3 percent slopes, rarely flooded, moderately well drained, nearly level to gently sloping soil that occurs on low terraces along the large

streams in Nash County. Permeability is moderate, surface runoff is slow, and the seasonal high water table is located between 18 and 30 inches below the surface during the winter. The seasonal high water table and the hazard of flooding are the major limitations for this soil type. (USDA 1989)

- Georgeville loam with 6 to 10 percent slopes, well drained, moderately sloping soil that occurs on upland side slopes and slopes breaking to streams throughout Nash County. Permeability is moderate, surface runoff is rapid, and erosion is a severe hazard if soil is not protected. Slopes and moderate permeability in the subsoil are limitations of this soil type. (USDA 1989)

A.2 Water Resources

This section contains information concerning those water resources likely to be impacted by the project. Water resource information encompasses physical aspects of the resource, its relationship to major water systems, Best Usage Standards, and water quality of the resources. Probable impacts to surface water resources and minimization methods are also discussed.

A.2.1 Waters Impacted and Characteristics

Stoney Creek will be the only surface water resource directly impacted by the proposed project (Figure 2). Stoney Creek is located in subbasin 03-03-02 of the Tar-Pamlico River Basin. The average baseflow width is approximately 35.0 ft (10.7 m). The average depth is approximately 7.0 ft (2.1 m). Stoney Creek has a loamy sand substrate.

A.2.2 Best Usage Classification

Streams have been assigned a best usage classification by the NCDWQ. The classification of the Stoney Creek (DEM Index No. 28-68) is **C NSW** (NCDWQ 1999). Class C refers to waters suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The supplemental classification of NSW denotes Nutrient Sensitive Waters that require limitations on nutrient inputs.

Neither High Quality Waters (HQW), Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds), nor Outstanding Resource Waters (ORW) occur within 1.0 mi (1.6 km) of the project study area.

A.2.3 Water Quality

The DWQ has initiated a basin-wide approach to water quality management for each of the 17 river basins within the state. To accomplish this goal, the DWQ collects biological, chemical, and physical data that can be used in basinwide assessment and planning. All basins are reassessed every five years. Prior to the implementation of the basinwide approach to water quality management, the Benthic Macroinvertebrate

Ambient Network (BMAN) assessed water quality by sampling for benthic macroinvertebrate organisms at fixed monitoring sites throughout the state. **There is one BMAN station located on Stoney Creek within 1.0 mi (1.6 km) of the project study area. The station (DEM No. T2-7, DEM Index No. 28-68) is located on Stoney Creek at SR 1603 in Nash County and was assigned a biological classification of fair in July 1992.**

Many benthic macroinvertebrates have stages in their life cycle that can last from six months to one year, therefore, the adverse effects of a toxic spill will not be overcome until the next generation. Different taxa of macroinvertebrates have different tolerances to pollution, thereby, long-term changes in water quality conditions can be identified by population shifts from pollution sensitive to pollution tolerant organisms (and vice versa). Overall, the species present, the population diversity, and the biomass are reflections of long-term water quality conditions.

Point source dischargers located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) Program. Any discharger is required to register for a permit. **No point source dischargers are located on Stoney Creek within 1.0 mi (1.6 km) of the project study area.**

A.2.4 Summary of Anticipated Impacts

Replacing an existing structure in the same location with a road closure during construction is almost always preferred. It poses the least risk to aquatic organisms and other natural resources. Bridge replacement on a new location usually results in more impacts. Utilizing the full right-of-way width of 80.0 ft (24.4 m), anticipated impacts to Stoney Creek due to the bridge replacement will be 80.0 ft (24.4 m). Project impacts, both aquatic and terrestrial total 1.6 ac (0.6 ha). The area of aquatic and terrestrial environment's impacted is 0.06 ac (0.03 ha) and 1.5 ac (0.6 ha) respectively. Usually, project construction does not require the entire ROW, therefore, actual impacts may be considerably less.

Project construction may result in the following impacts to surface waters:

1. Increased sedimentation and siltation from demolition, construction and/or erosion
2. Changes in light incidence and water clarity due to increased sedimentation and vegetation removal
3. Alteration of water levels and flows due to interruptions and/or additions to surface and ground water flow from construction
4. Changes in water temperature due to streamside vegetation removal

5. Increased nutrient loading during construction via runoff from exposed areas
6. Increased concentration of toxic compounds from highway runoff, demolition, construction, and toxic spills.

Precautions must be taken to minimize impacts to water resources in the study area. NCDOT's Best Management Practices (BMP) for the Protection of Sensitive Waters must be strictly enforced during the construction stage of the project. Guidelines for these BMPs include, but are not limited to minimizing built upon area and diverting stormwater away from surface water supply waters as much as possible. Provisions to preclude contamination by toxic substances during the construction interval must also be strictly enforced.

B. BIOTIC RESOURCES

Biotic resources include aquatic and terrestrial ecosystems. This section describes those ecosystems encountered in the study area as well as the relationships between flora and fauna within these ecosystems. Composition and distribution of biotic communities throughout the project area are reflective of topography, hydrologic influences, and past and present land uses in the study area. Descriptions of the terrestrial systems are presented in the context of plant community classifications and follow descriptions presented by Schafale and Weakley (1990) in *Classification of Natural Communities of North Carolina* where possible. Dominant flora and fauna observed, or likely to occur, in each community are described and discussed.

Scientific nomenclature and common names (when applicable) are provided for each plant and animal species described. Plant taxonomy generally follows Radford *et al.* (1968). Animal taxonomy follows Martof *et al.* (1980), Potter *et al.* (1980) and Webster *et al.* (1985). Subsequent references to the same organism will include the common name only. Fauna observed during the site visits are denoted with an asterisk (*). Published range distributions and habitat analysis are used in estimating fauna expected to be present within the project area.

B.1 Terrestrial Communities

Six distinct terrestrial communities are identified in the project study area: successional community, riparian community, Fresh Water Marsh Community community, maintained yard, cleared lot, and maintained/disturbed roadside. Community boundaries within the study area are well defined without a significant transition zone between them. Faunal species likely to occur within the study area will exploit all communities for shelter and foraging opportunities or as movement corridors.

B.1.1 Successional Community

The successional community is present to the east of SR 1603 and south of Stoney Creek. It borders the maintained/disturbed roadside community to the east and is adjacent to the riparian community. This area is vegetated in the canopy with sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), and loblolly pine (*Pinus taeda*). The understory consists of high bush blackberry (*Rubus argutus*), smooth sumac (*Rhus glabra*), American holly (*Ilex opaca*), and Japanese honeysuckle (*Lonicera japonica*).

Wildlife associated with the successional community include: white-tailed deer* (*Odocoileus virginianus*) evidenced by tracks, eastern chipmunk (*Tamias striatus*), opossum (*Didelphis marsupialis*), deer mouse (*Peromyscus maniculatus*), gray squirrel (*Sciurus carolinensis*), raccoon* (*Procyon lotor*), and snakes* (*Ophidia*).

Avian species utilizing the successional community likely include: pigeons* (*Columba livia*), blue jay (*Cyanocitta cristata*), American robin (*Turdus migratorius*), red-tailed hawk (*Buteo jamaicensis*), and mallards (*Anas platyrhynchos*).

B.1.2 Riparian Community

The riparian community is present along the Stoney Creek corridor. The canopy is composed of river birch (*Betula nigra*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), sweetgum, and swamp tupelo (*Nyssa biflora*). Vegetation of the understory includes cherry (*Prunus* sp.), black haw (*Viburnum prunifolium*), green brier (*Smilax rotundifolia*), American holly, ironwood (*Carpinus caroliniana*), and lizard's tail (*Saururus cernuus*).

Faunal species frequenting the riparian community will be largely those species inhabiting the successional community.

B.1.3 Fresh Water Marsh Community

The Fresh Water Marsh Community occurs on both sides of Stoney Creek. Vegetation within this area includes lizard's tail, soft rush (*Juncus effuses*), black willow (*Salix nigra*), and arrow arum (*Peltandra* sp.).

Faunal species frequenting the Fresh Water Marsh Community will be largely those species inhabiting the successional community.

B.1.4 Maintained Yard

The maintained yard is present east of SR 1603 and north of Stoney Creek. Grasses (*Festuca* sp.) are the predominant vegetation occurring within this area.

Faunal species frequenting the maintained yard will be largely those species inhabiting the successional community.

B.1.5 Cleared Lot

The cleared lots are present to the south of Stoney Creek and the Fresh Water Marsh Community communities. Grasses (*Festuca* sp.) is the dominate vegetation type inhabiting this area.

Faunal species frequenting the cleared lots will be largely those species inhabiting the successional community.

B.1.6 Maintained/Disturbed Roadside

The maintained/disturbed roadside community includes road shoulders along SR 1603 that are present along the entire length of the project. This area is vegetated by fescue (*Festuca* sp.), Japanese honeysuckle, plantain (*Plantago* sp.), ragweed (*Ambrosia* sp.), Indian strawberry (*Duchesnea indica*), trumpet creeper (*Campsis radicans*), high bush blackberry, goldenrod (*Solidago* sp.), Virginia creeper (*Parthenocissus quinquefolia*), ash, sweetgum, red maple, poison ivy (*Toxicodendron radicans*), and wild onion (*Allium canadense*).

Faunal species frequenting the maintained/disturbed roadside community will be largely those species inhabiting the successional community.

B.2 Aquatic Communities

One aquatic community, Stoney Creek, will be impacted by the proposed project. Physical characteristics of a water body and the condition of the water resource influence faunal composition of aquatic communities. Terrestrial communities adjacent to a water resource also greatly influence aquatic communities. No submersed or emergent aquatic vegetation was observed within this section of Stoney Creek. Vegetation along the bank of Stoney Creek includes river birch, water oak (*Quercus nigra*), cherry, black haw, willow oak, green brier, American holly, ironwood, sweetgum, swamp tupelo, and lizard's tail.

Fauna associated with these aquatic communities includes various invertebrate and vertebrate species. Fish species likely to occur in Stoney Creek include minnows* (Family Cyprinidae). Invertebrates that would be present include various species of caddisflies (Trichoptera), mayflies (Ephemeroptera), dragonflies (Odonata), damselflies (Odonata), amphipods* (Amphipoda), bivalves* (Bivalva), and water striders* (Gerridae).

B.3 Summary of Anticipated Impacts

Construction of the proposed project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies impacts to the natural resources in terms of area impacted and ecosystems affected. Temporary and permanent impacts are considered here as well.

Calculated impacts to terrestrial resources reflect the relative abundance of each community present within the study area. Project construction will result in clearing and degradation of portions of these communities. Table 1 summarizes potential quantitative losses to these biotic communities resulting from project construction. Estimated impacts are derived using the entire proposed ROW width of 24.4 m (80.0 ft). Usually, project construction does not require the entire ROW, therefore, actual impacts may be considerably less.

Table 1. Anticipated impacts from the proposed project to biotic communities.

Community Types	Permanent Project Impacts		
	Wetland	Upland	Totals
Successional Community	--	0.10 (0.04)	0.10 (0.04)
Riparian Community	--	0.17 (0.07)	0.17 (0.07)
Fresh Water Marsh Community	0.05 (0.02)	--	0.05 (0.02)
Cleared Area	--	0.84 (0.34)	0.84 (0.34)
Maintained Yard	--	0.05 (0.02)	0.05 (0.02)
Maintained/Disturbed Roadside	--	0.32 (0.13)	0.32 (0.13)
Stoney Creek	0.06 (0.03)--	--	0.06 (0.03)
Total	0.11 (0.05)	1.48 (0.60)	1.59(0.65)

Note: Values cited are in acres (hectares).

Plant communities found within the proposed project area serve as nesting and sheltering habitat for various wildlife species. Replacing Bridge No. 73 and its associated improvements may reduce habitat for some faunal species. However, due to the size and scope of this project, it is anticipated that impacts to fauna will be minimal.

Areas modified by construction (but not paved) will become road shoulders and early succession habitat. Reduced habitat will displace some wildlife further from the roadway while attracting other wildlife by the creation of an early succession habitat. Animals temporarily displaced by construction activities may repopulate areas suitable for the species.

Aquatic communities are sensitive to even small changes in their environment. Stream channelization, scouring, siltation, sedimentation, and erosion from project-related work would affect water quality and biological constituents. Although direct impacts may be

temporary, environmental impacts from these construction processes may result in long term or irreversible effects.

Impacts often associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the stream substrate and may remove streamside vegetation at the site. Disturbances to the substrate will produce siltation, which in excessive amounts may clog the gills and/or feeding mechanisms of benthic organisms (sessile filter-feeders and deposit-feeders), fish and amphibian species. Benthic organisms could also be covered by excessive amounts of sediment. These organisms are slow to recover or repopulate a stream. Due to the negative effects of siltation, it is recommended that silt curtains be used during construction.

The removal of streamside vegetation and placement of fill material at the construction site alters the terrain. Alterations of the streambank can enhance the likelihood of erosion and sedimentation. Revegetation stabilizes and holds the soil thus mitigating these processes. Erosion and sedimentation carry soils, toxic compounds, and other materials into aquatic communities at the construction site. These processes increase turbidity and can cause the formation of sandbars at the site and downstream, thereby altering water flow and the growth of vegetation. Streamside clearing also leads to more direct sunlight penetration and to elevations of water temperatures that may impact some species.

C. JURISDICTIONAL TOPICS

This section provides descriptions, inventories, and impact analysis pertinent to two important issues; "waters of the United States" and rare and protected species.

C.1 Waters of the United States

Surface waters and jurisdictional wetlands fall under the broader category of "waters of the United States" as defined in 22 CFR Part 328.3. Any action that proposes to dredge or place fill material into surface waters or adjacent wetlands falls under the jurisdiction of the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act (33 USC 1344). Surface waters include all standing or flowing waters that have commercial or recreational value to the public. Wetlands are identified based on the presence of hydric soils, hydrophytic vegetation, and saturated or flooded conditions during all or part of the growing season.

C.1.1 Characteristics of Wetlands and Surface Waters

Potential wetland communities were investigated pursuant to the 1987 Corps of Engineers *Wetlands Delineation Manual*. The three-parameter approach is used where hydric soils, hydrophytic vegetation, and prescribed hydrologic characteristics must **all** be present for an area to be considered a wetland.

There are wetlands in the project area on both sides of Stoney Creek. According to Cowardin's classification system, the Fresh Water Marsh Community is a PEM1C wetland type (palustrine, emergent, persistent, seasonally flooded) (Cowardin *et al*, 1979). The wetlands are of medium quality. Vegetation within the area includes lizard's tail, soft rush, black willow, and arrow arum. Soils within these communities are as follows:

Data Point 1:

0 to 13 cm (0 to 5 in) – matrix color of 10YR 3/2 with 2.5YR 3/6 redoximorphic features

13 to 30 cm (5 to 12 in) – matrix color of 10YR 5/2 with 2.5YR 3/6 redoximorphic features

Soil saturated within the upper 30 cm (12 in)

Hydrological characteristics for this area include waterstained leaves and drift lines.

Data Point 2:

0 to 10 cm (0 to 4 in) – matrix color of 10YR 5/4 with 2.5YR 3/6 gleying features

10 to 15 cm (4 to 6 in) – matrix color 10YR 6/8, no apparent redoximorphic features

15 to 23 cm (6 to 9 in) – matrix color 10YR 6/6, no apparent redoximorphic features

Below 23 cm (9 in) – matrix color 10YR 5/2, no apparent redoximorphic features

Soil saturated in the upper 30 cm (12 in)

Hydrological characteristics within this area includes drift lines, drainage patterns, water stained leaves, and water marks on trees.

Stoney Creek is a jurisdictional surface water under Section 404 of the Clean Water Act (33 USC 1344). Discussion of the biological, physical, and water quality aspects of all surface waters in the project area are presented in previous sections of this report.

C.1.2 Summary of Anticipated Impacts

Anticipated impacts to surface waters are determined by using the entire project ROW width of 80.0 ft (24.4 m). Considering the proposed project, impacts to Stoney Creek will consist of an 80 linear foot width and a 35.0 ft (10.7 m) long crossing of Stoney Creek, for an area of 0.06 ac (0.03 ha). Usually, project construction does not require the entire ROW, therefore actual surface water impacts may be considerably less. The total area of wetlands impacted within the project area is 0.05 ac (0.02 ha).

C.1.3 Permits

As described above, impacts to jurisdictional surface waters are anticipated from the proposed project. As a result, construction activities will require permits and certifications from various regulatory agencies charged with protecting the water quality of public water resources.

Nationwide Permit 23 (33 CFR 330.5(a) (23)) is likely to be applicable for all impacts to “waters of the United States” resulting from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded, or financed in whole or part by another federal agency or department where that agency or department has determined that pursuant to the Council on Environmental Quality regulation for implementing the procedural provisions of the National Environmental Policy Act

- the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and
- the office of the Chief of Engineers has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination.

This project will also require a 401 Water Quality Certification from the DWQ prior to the issuance of the Nationwide Permit. Section 401 of the Clean Water Act requires that the state issue or deny water certification for any federally permitted or licensed activity that may result in a discharge to “waters of the United States.” Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. The issuance of a 401 permit from the DWQ is a prerequisite to issuance of a Section 404 permit.

Projects located within the Tar-Pamlico River Basin are subject to the recently-developed Tar-Pamlico Buffer Rule, administered by the DWQ. These rules address loss of stream channel buffers for field verified streams appearing on the USGS Topographic Quad and/or the NRCS Soil Survey. Bridge construction is allowable provided that there are “no practical alternatives”. **As this bridge replacement project is currently proposed, it is allowable under the Tar-Pamlico Buffer Rule.** However, a written authorization is required from the DWQ. A request to the DWQ for the authorization should be included in the cover letter of the permit application package.

C.1.4 Bridge Demolition

Bridge No. 73 on SR 1603 is located over Stoney Creek in Nash County. The superstructure is composed of reinforced concrete deck and rails on steel beams. The substructure is composed of concrete caps on timber piles. Removal of the bridge superstructure and timber piles should occur without dropping any of the components into the Waters of the United States. However, there is the potential for components of the concrete caps to drop into the Waters of the United States during construction. The resulting temporary fill associated with the concrete caps is approximately 19 yd³ (14.2 m³).

C.1.5 Mitigation

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

C.1.5.1 Avoidance

Avoidance mitigation examines all appropriate and practicable possibilities of averting impacts to "waters of the United States." According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the COE, in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes. Due to the fact that this is a bridge replacement project, avoidance is not possible.

C.1.5.2 Minimization

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to "waters of the United States." Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, ROW widths, fill slopes and/or road shoulder widths. Other practical mechanisms to minimize impacts to "waters of the United States" crossed by the proposed project include: strict enforcement of sedimentation control BMP's for the protection of surface waters during the entire life of the project; reduction of clearing and grubbing activity; reduction/elimination of direct discharge into streams; reduction of runoff velocity; re-establishment of vegetation on exposed areas; judicious pesticide and herbicide usage; minimization of "in-stream" activity; and litter/debris control. Wetland impacts are minimized in this project by not building the replacement bridge or the temporary detour bridge on the west side of the existing bridge.

C.1.5.3 Compensatory Mitigation

Compensatory mitigation is not normally considered until anticipated impacts to "waters of the United States" have been avoided **and** minimized to the maximum extent practicable. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory

mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been performed. Compensatory actions often include restoration, creation, and enhancement of “waters of the United States.” Such actions should be undertaken in areas adjacent to or contiguous to the discharge site whenever possible. Compensatory mitigation is not usually necessary with a Nationwide Permit No. 23.

C.2 Rare and Protected Species

Some populations of flora and fauna have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. Federal law (under the provisions of the Endangered Species Act of 1973, as amended) requires that any action, likely to adversely affect a species classified as federally protected, be subject to review by the U.S. Fish and Wildlife Service (FWS). Other species may receive additional protection under separate state laws.

C.2.1 Federally-Protected Species

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of 25 February 2003, the FWS lists the following federally protected species for Nash County. A brief description of the characteristics and habitat requirements for these species along with a conclusion regarding potential project impacts follows Table 2.

Table 2. Federally Protected Species for Nash County.

Scientific Name	Common Name	Federal Status
<i>Picoides borealis</i>	Red-cockaded woodpecker	Endangered
<i>Alasmidonta heterodon</i>	Dwarf wedgemussel	Endangered
<i>Elliptio steinstansana</i>	Tar River spinymussel	Endangered

Endangered is defined as a species that is threatened with extinction throughout all or a significant portion of its range.

***Picoides borealis* (red-cockaded woodpecker) Endangered**

Animal Family: Picidae

Date Listed: 13 October 1970

The red-cockaded woodpecker (RCW) once occurred from New Jersey to southern Florida and west to eastern Texas. It occurred inland in Kentucky, Tennessee, Arkansas, Oklahoma, and Missouri. The RCW is now found only in coastal states of its historic range and inland in southeastern Oklahoma and southern Arkansas. In North Carolina moderate populations occur in the sandhills and southern coastal plain. The few populations found in the Piedmont and northern coastal plain are believed to be relics of former populations.

The adult RCW has a plumage that is entirely black and white except for small red streaks on the sides of the nape in the male. The back of the RCW is black and white with horizontal stripes. The breast and underside of this woodpecker are white with streaked flanks. The RCW has a large white cheek patch surrounded by the black cap, nape, and throat.

The RCW uses open old growth stands of southern pines, particularly longleaf pine (*Pinus palustris*), for foraging and nesting habitat. A forested stand must contain at least 50% pine, lack a thick understory, and be contiguous with other stands to be appropriate habitat for the RCW. These birds nest exclusively in trees that are greater than 60 years old and are contiguous with pine stands at least 30 years of age. The foraging range of the RCW is up to 500 ac (200 ha). This acreage must be contiguous with suitable nesting sites.

These woodpeckers nest exclusively in living pine trees and usually in trees that are infected with the fungus that causes red-heart disease. Cavities are located in colonies from 12-100 ft (3.6-30.3 m) above the ground and average 30-50 ft (9.1-15.7 m) high. They can be identified by a large incrustation of running sap that surrounds the tree. The incrustation of sap is believed to be used as a defense by the RCW against possible predators. A colony of woodpeckers usually consists of one breeding pair and the offspring from previous years. The RCW lays its eggs in April, May, and June; the eggs hatch approximately 38 days later. Clutch size ranges in number from three to five eggs. All members of the colony share the raising of the young. Red-cockaded woodpeckers feed mainly on insects but may feed on seasonal wild fruits.

BIOLOGICAL CONCLUSION:

NO EFFECT

The mature, open pine stands that the RCW needs are not present in the project area. The pines that exist in the project area are not mature enough and do not contain the large open tracts of foraging habitat required by the RCW. The North Carolina Natural Heritage Program database was checked on March 29, 2001 and there were no records of existing populations of RCW in the project area. No habitat for RCW exists in the project area. Thus, no impacts to RCW will occur from project construction.

***Alasmidonta heterodon* (Dwarf wedge mussel) Endangered**

Animal Family: Unionidae

Date Listed: 14 March 1990

The dwarf wedge mussel is a small mussel having a distinguishable shell noted by two lateral teeth on the right half and one on the left half. The periostracum (outer shell) is olive green to dark brown in color and the nacre (inner shell) is bluish to silvery white.

Known populations of the dwarf wedge mussel in North Carolina are found in Middle Creek and the Little River of the Neuse River Basin and in the upper Tar River and

Cedar, Crooked, and Stoney Creeks of the Tar River system. The dwarf wedge mussel inhabits creek and river areas with a slow to moderate current and a sand, gravel, or muddy bottom. This mussel is sensitive to agricultural, domestic, and industrial pollutants and requires a stable silt free stream bed with well oxygenated water to survive.

BIOLOGICAL CONCLUSION: NOT LIKELY TO ADVERSLY AFFECT

The North Carolina Natural Heritage Program (NHP) database was checked on March 29, 2001 and there were no records of existing populations of the Dwarf wedge mussel in the project area. A mussel survey was made on September 12, 2002 by NC DOT Technical Specialist, John Alderman. No federally listed species were found and habitat quality for the listed species was poor throughout most of the surveyed area.

***Elliptio steinstansana* (Tar River spiny mussel) Endangered**

Animal Family: Unionidae

Date Listed: 29 July 1985

The Tar River spiny mussel is endemic to the Tar River drainage basin, from Falkland in Pitt County to Spring Hope in Nash County. Populations of the Tar River spiny mussel can be found in streams of the Tar River Drainage Basin and of the Swift Creek Drainage Sub-Basin.

This mussel requires a stream with fast flowing, well oxygenated, relatively silt free, circumneutral pH water, and a stream bottom composed of uncompacted gravel and coarse sand. This mussel is known to rely on some species of freshwater fish as intermediate hosts for its larvae.

The Tar River spiny mussel is a very small mussel named for spines which project perpendicularly from its surface and curve slightly ventrally. As many as 12 spines can be found on the shell which is generally smooth in texture. The nacre is pinkish (anterior) and bluish-white (posterior).

BIOLOGICAL CONCLUSION: NOT LIKELY TO ADVERSLY AFFECT

The North Carolina Natural Heritage Program (NHP) database was checked on March 29, 2001 and there were no records of existing populations of the Tar River spiny mussel in the project area. A mussel survey was made on September 12, 2002 by NC DOT Technical Specialist, John Alderman. No federally listed species were found and habitat quality for the listed species was poor throughout most of the surveyed area.

C.2.2 Federal Species of Concern and State Listed Species

There are eight Federal Species of Concern listed by the FWS for Nash County. Federal Species of Concern are not afforded federal protection under the Endangered Species Act

and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. However, the status of these species is subject to change, and so should be included for consideration. Federal Species of Concern (FSC) are defined as a species that is under consideration for listing but for which there is insufficient information to support listing. In addition, organisms, which are listed as Endangered (E), Threatened (T), or Special Concern (SC) by the North Carolina Natural Heritage Program list of Rare Plant and Animal Species, are afforded state protection under the NC State Endangered Species Act and the NC Plant Protection and Conservation Act of 1979.

Table 3 lists federal species of concern, the state status of these species (if afforded state protection), and the potential for suitable habitat in the project area for each species. This species list is provided for information purposes as the protection status of these species may be upgraded in the future. Surveys for these species were not conducted during the site visit, nor were any of these species observed. A review of the NCNHP database on March 29, 2001 of rare species and unique habitats revealed no records of endangered, threatened, or federal species of concern within 1.0 mi (1.6 km) project study area.

Table 3. Federal Species of Concern for Nash County.

Scientific Name	Common Name	State Status	Habitat Present
<i>Lythrurus matutinus</i>	Pinewoods shiner	SR**	yes
<i>Elliptio lanceolata</i>	Yellow lance	T	yes
<i>Fusconaia masoni</i>	Atlantic pigtoe	T	yes
<i>Lampsilis cariosa</i>	Yellow lampmussel	T	yes
<i>Lasmigona subviridis</i>	Green floater	E	yes
<i>Speyeria diana</i>	Diana fritillary butterfly	SR**	yes
<i>Lilium iridollae</i>	Sandhills bog lily	T*	no
<i>Trillium pusillum var. pusillum</i>	Carolina least trillium	E	no

"E"--An Endangered species is one whose continued existence as a viable component of the State's flora is determined to be in jeopardy.

"T"--A Threatened species is one which is likely to become endangered species within the foreseeable future throughout all or a significant portion of its range.

"SR"--A Significantly Rare species is one which is very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction, direct exploitation or disease. The species is generally more common elsewhere in its range, occurring peripherally in North Carolina.

* -- Historic record - the species was last observed in the county more than 20 years ago.

**--Obscure record - the date the species was last observed is uncertain.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at Title 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 afford the Advisory Council a reasonable opportunity to comment on such undertakings.

B. Historic Architecture

On December 5, 2000, the State Historic Preservation Office (SHPO) reviewed the subject project. Subsequently, the SHPO recommended no architectural surveys be conducted in connection with this project (see attachment).

C. Archaeology

On December 5, 2000, the State Historic Preservation Office (SHPO) reviewed the subject project. Subsequently, the SHPO recommended no archaeological surveys be conducted in connection with this project (see attachment).

VII. GENERAL ENVIRONMENTAL EFFECTS

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

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

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

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

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

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

This project has been coordinated with the United States Natural Resources Conservation Service. The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

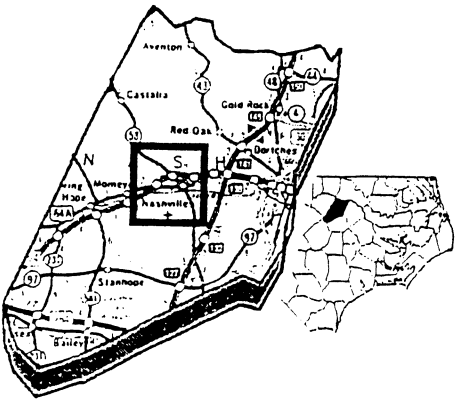
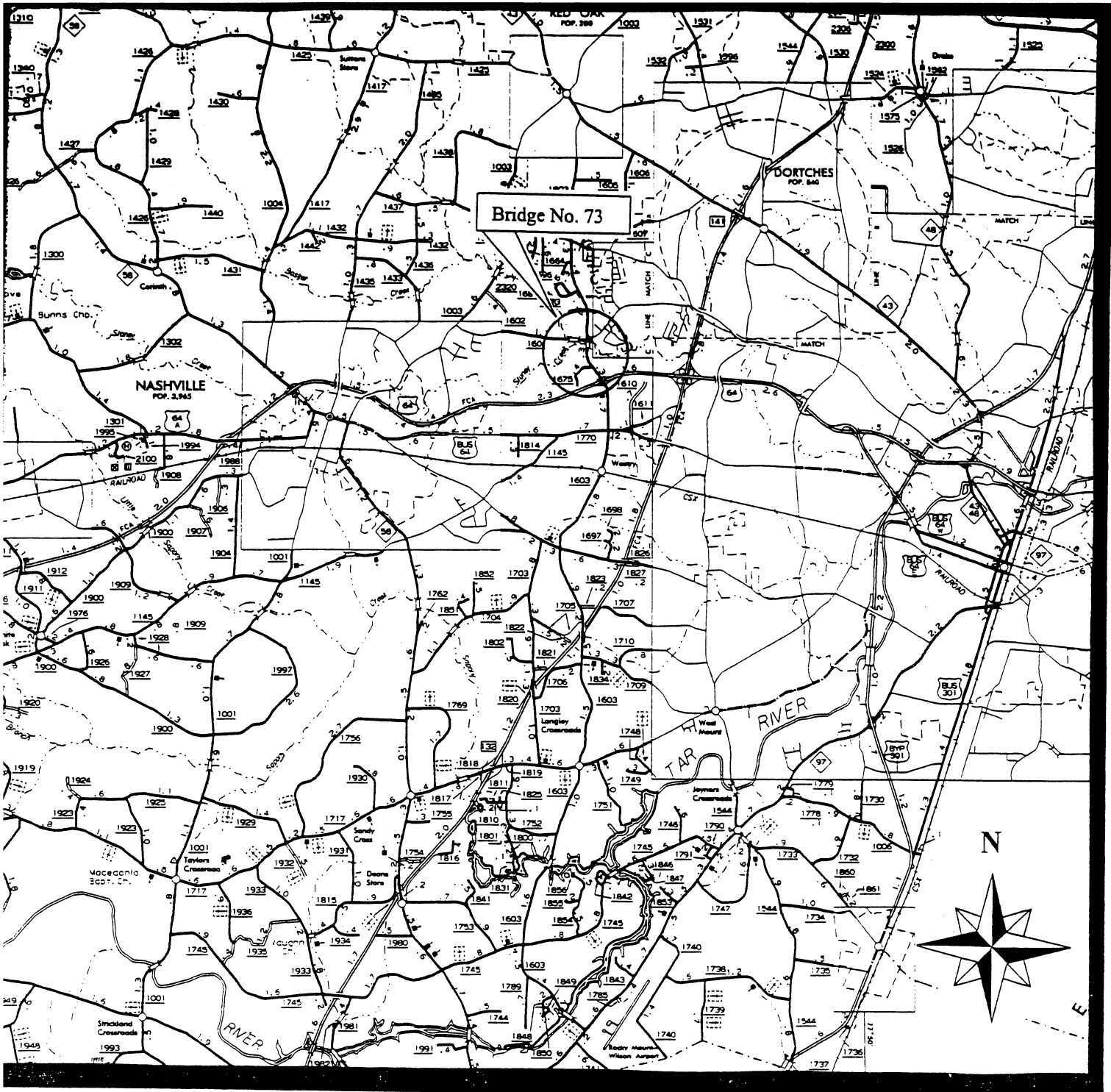
This project is an air quality “neutral” project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act) and no additional reports are required.

The project will not substantially increase traffic volumes. Therefore, it will not have substantial impact on noise levels. Temporary noise increases may occur during construction. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulation (CFR), Part 772 and no additional reports are required.

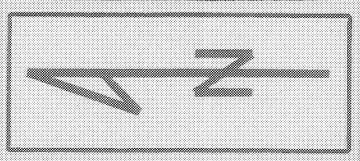
An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Environmental Management, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no underground storage tanks or hazardous waste sites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

Nash County is a participant in the National Flood Insurance Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in an impact area of about the same magnitude. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

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



	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH</p>
<p>NASH COUNTY REPLACE BRIDGE 73 ON SR 1603 OVER STONEY CREEK B-3879</p>	
<p>Figure One</p>	



SR 1609

Bridge No. 73

Detour for Alternative No. 1

Pump Station

SR 1603

Alternative No. 1

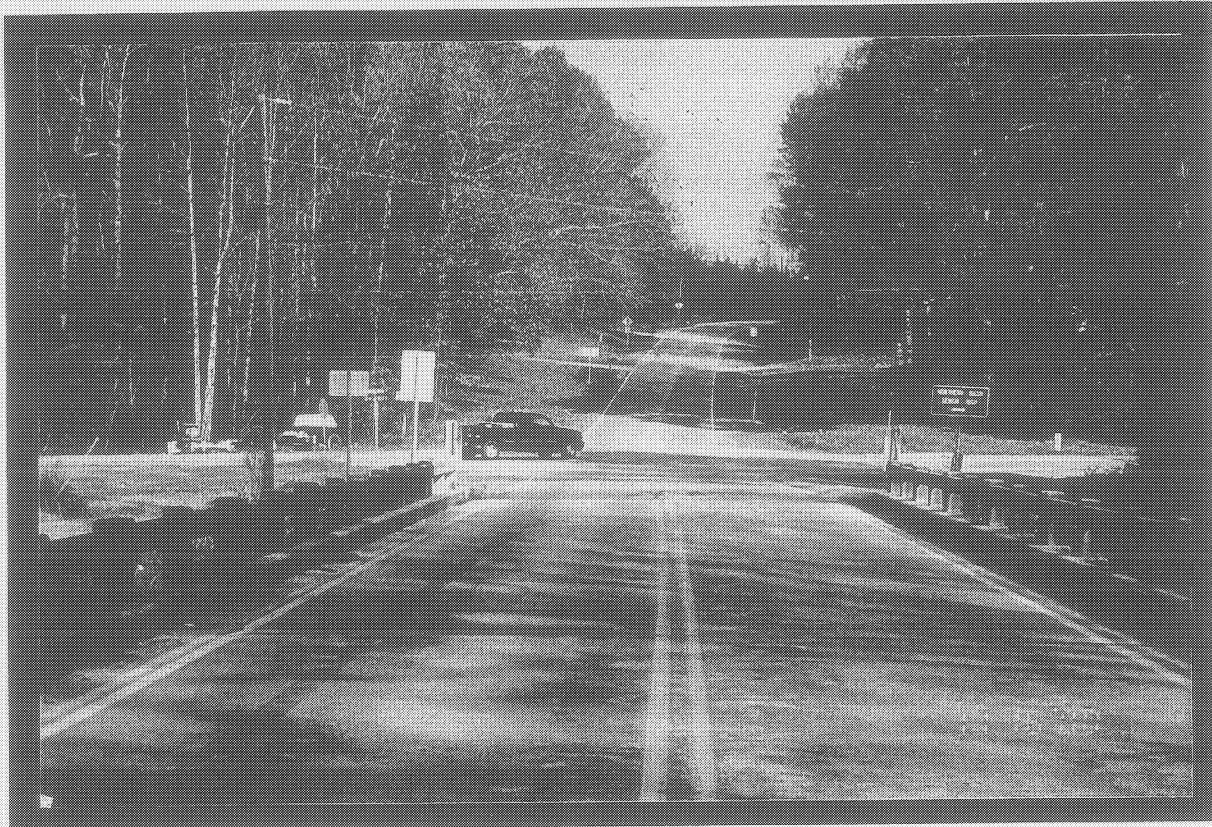
SR 1601

Stoney Creek

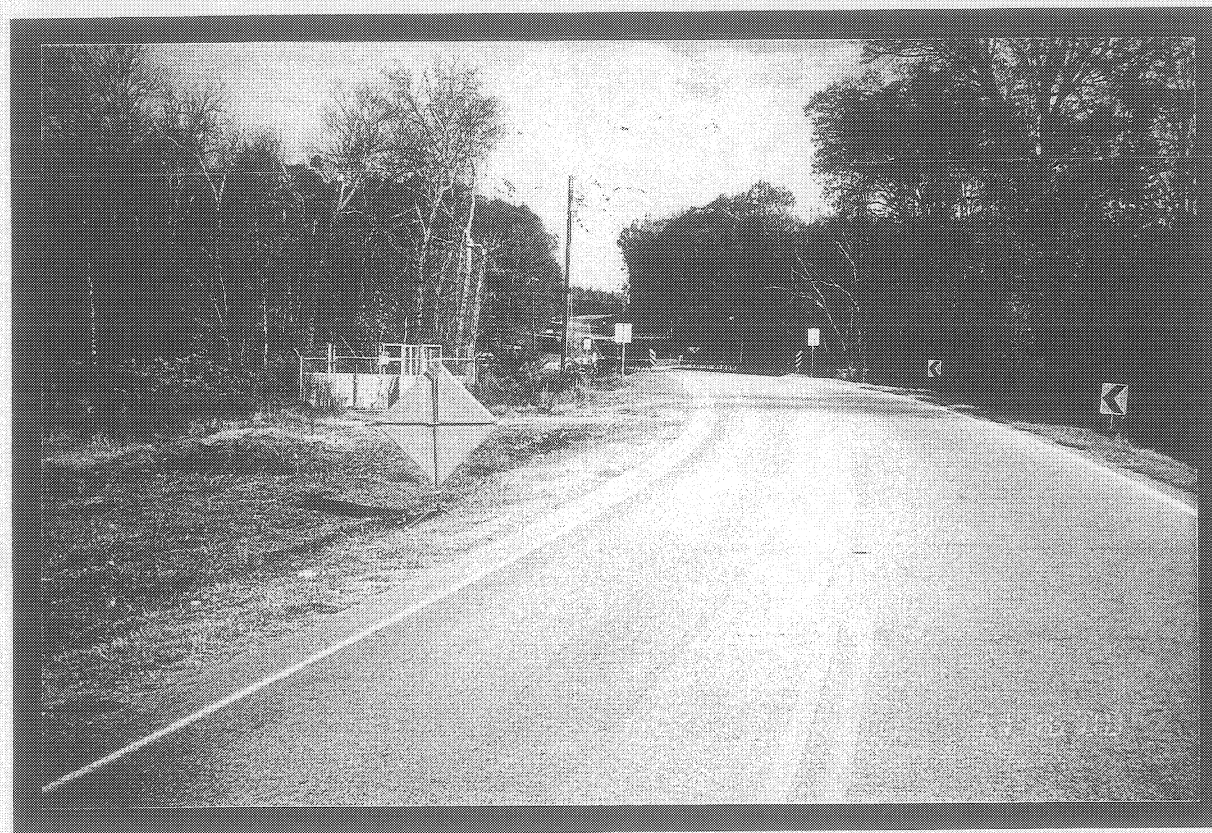
	North Carolina Department of Transportation
	Division of Highways Planning & Environmental Branch

Nash County
 Replace Bridge No. 73 on SR 1603
 Over Stoney Creek
 B-3879

Scale 1:1200 Figure 2



Looking North from the Bridge



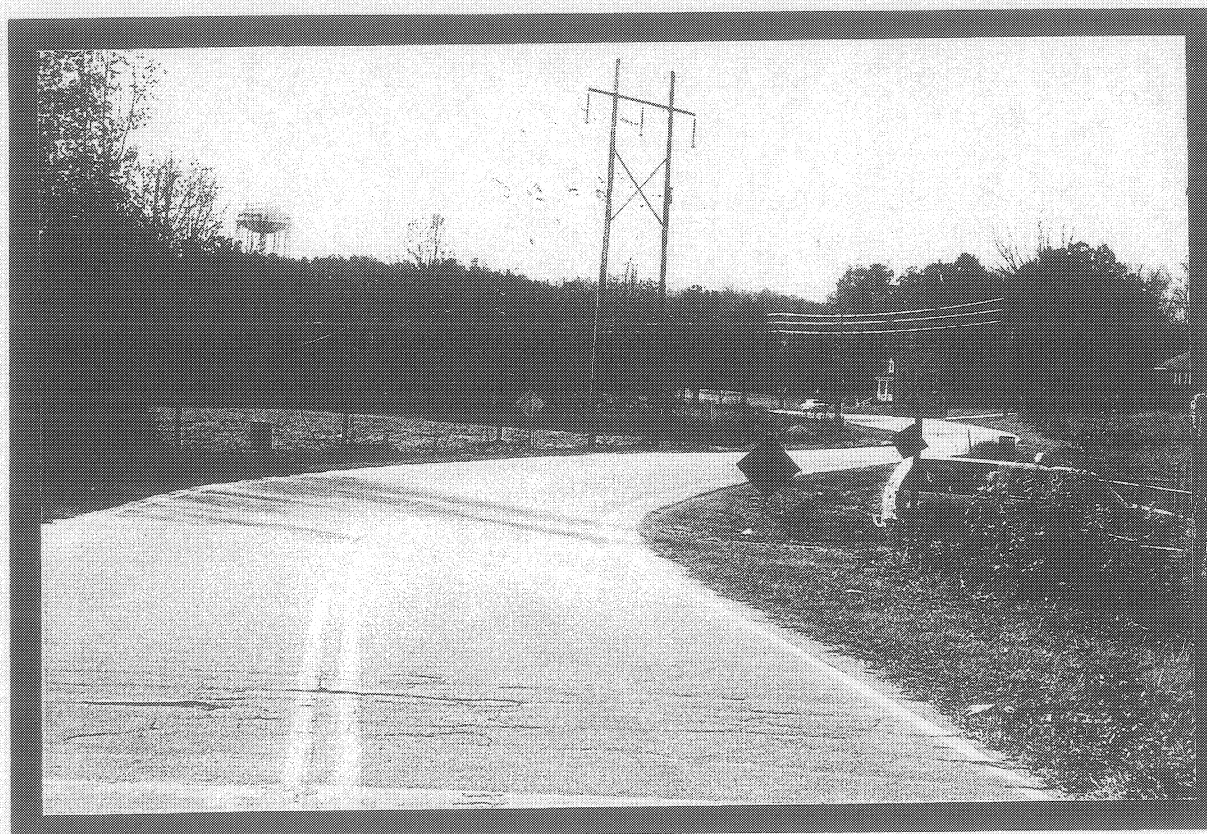
Looking North toward the Bridge

B-3879

FIGURE 3A



Looking at Downstream side of the Bridge



Looking South from the Bridge

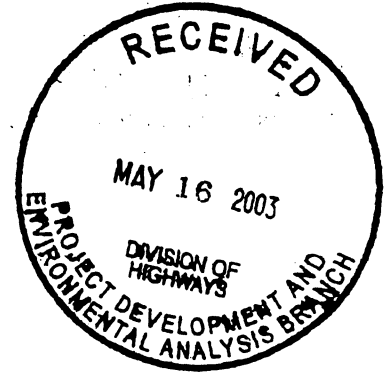


United States Department of the Interior

FISH AND WILDLIFE SERVICE

Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

May 14, 2003



Dr. Gregory J. Thorpe
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

This letter is in response to your letter of April 29, 2003 providing the U.S. Fish and Wildlife Service (Service) with notification of a design change for the replacement of Bridge No. 73 on SR 1603 over Stoney Creek in Nash County (TIP No. B-3879). The design change has occurred since the Service provided its October 9, 2002 letter concurring that the project is not likely to adversely affect the federally-endangered dwarf wedge mussel (*Alasmodonta heterodon*) and the Tar spiny mussel (*Elliptio steinstansana*). The Service finds that the design changes are minimal and will not change our initial concurrence. These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: Mike Bell, USACE, Washington, NC
David Franklin, USACE, Wilmington, NC
John Hennessy, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmore, NC
Chris Militscher, USEPA, Raleigh, NC

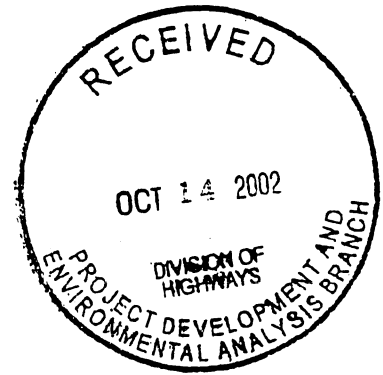


United States Department of the Interior

FISH AND WILDLIFE SERVICE

Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

October 9, 2002



Dr. Gregory J. Thorpe
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

This letter is in response to your letter of October 3, 2002 providing the U.S. Fish and Wildlife Service (Service) with the biological conclusion of the North Carolina Department of Transportation (NCDOT) that the replacement of Bridge No. 73 on SR 1603 over Stoney Creek in Nash County (TIP No. B-3879) is not likely to adversely affect the federally-endangered dwarf wedge mussel (*Alasmodonta heterodon*) and the Tar spiny mussel (*Elliptio steinstansana*). These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to the information you submitted, a mussel survey was conducted at the project site on September 12, 2002. The survey was conducted 100 meters upstream and 300 meters downstream of SR 1603. Neither of the federally listed species was found, and habitat quality for the two species was poor throughout much of the surveyed area. However, the dwarf wedge mussel has been found in Stoney Creek several miles upstream near SR 1302.

During an informal on-site meeting held on September 24, 2002, several environmental commitments were discussed and agreed upon by all parties. These environmental commitments are listed in Joel Johnson's September 24, 2002 memo to the NCDOT B-3879 Project File, which was included as an attachment to your October 3, 2002 letter to us.

Based on the mussel survey results, and provided that NCDOT adheres to the stated environmental commitments, the Service concurs with your conclusion that the proposed bridge replacement is not likely to adversely affect the dwarf wedge mussel and Tar spiny mussel. We believe that the requirements of section 7 (a)(2) of the ESA have been satisfied. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

A handwritten signature in cursive script that reads "Garland B. Pardue".

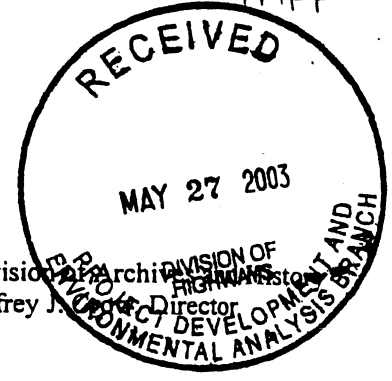
Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: Eric Alsmeyer, USACE, Raleigh, NC
John Hennessy, NCDWQ, Raleigh, NC
David Cox, NCWRC, Northside, NC
Chris Militscher, USEPA, Raleigh, NC



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

J. Johnson
MPF



Division of Highways and Transportation
 Jeffrey J. [unclear] Director

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

March 26, 2001

MEMORANDUM

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

From: David Brook *David Brook*
 Deputy State Historic Preservation Officer

Re: Replacement of Bridge No. 73 on SR 1603 over tributary of
 Stoney Creek, TIP No. B-3879, Nash County, ER 01-7936

On December 5, 2000, April Montgomery of our staff met with the North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above project. She reported our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project area and aerial photographs at the meeting. Based upon our review of the photographs and the information discussed at the meeting, we offer our preliminary comments regarding this project.

In terms of historic architectural resources we are aware of two historic structures located within the area of potential effect. We recommend that no historic architectural survey be conducted for this project.

There are no known archaeological sites within the project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which maybe eligible for inclusion in the National Register of Historic Places, will be affected by the project construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

Having provided this information, we look forward to the receipt of either a Categorical Exclusion or Environmental Assessment, which indicates how NCDOT addressed our comments.

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

Page 2
William Gilmore
March 26, 2001

Thank you for your cooperation and consideration. If you have any questions concerning the above comment, contact Renee Gledhill-Earley, Environmental Review Coordinator, at 919 733-4763.

DB:kgc

cc: Mary Pope Furr

