STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 2, 2005

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

Attn: Mr. Bill Biddlecome
NCDOT Coordinator

Dear Sir:

Subject: **Nationwide 23 & 33 Permit Application and Neuse Buffer Certification.** Replacement of Bridge No. 52 on SR 1101 (Claude Lewis Road) over Turkey Creek, Nash County. Federal Aid Project No. BRZ-1101(7), State Project No. 8.2322201, TIP Project No. B-3877.

The North Carolina Department of Transportation (NCDOT) proposes to replace existing Bridge No. 52 on SR 1101 (Claude Lewis Road) over Turkey Creek (DWQ Index # 27-86-3-(1), Class "C; NSW") in Nash County. The project involves replacing Bridge No. 52 approximately on the existing alignment. Traffic, during construction, will be maintained with an offsite detour using existing roads.

BRIDGE DEMOLITION

Bridge No. 52 is currently a 121-foot structure that consists of a superstructure composed of a timber floor on I-beams, timber piles with concrete caps, and a steel crutch. Bridge No. 52 will be removed without dropping any of the components into Waters of the United States. Approximately 0.001 acres of temporary impacts are anticipated due to temporary fill in wetlands for the bents supporting the temporary work bridge. No permanent fill impacts are anticipated to occur in jurisdictional waters due to bridge demolition and construction activities.

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 Demotion 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. 52, a 121-foot long structure, will be replaced with a new structure approximately 180 feet in length consisting of a 36-inch prestressed concrete girder superstructure with two 65-foot spans and one 50-foot span. The substructure will consist of end bents on piles with the interior portion on drill piers. The Let Date is November 15, 2005 with a review date of September 27, 2005.

IMPACTS TO WATERS OF THE UNITED STATES

Permanent Impacts: Permanent fill impacts are not anticipated to occur in Turkey Creek, or jurisdictional waters, due to bridge demolition and construction activities. As part of the construction process, a directional bore will be made underneath Turkey Creek for placement of a utility line.

Temporary Impacts: 0.001 acres of temporary impacts are anticipated to due to temporary fill in wetlands for the bents supporting the temporary work bridge. Temporary fill impacts are not anticipated to occur in Turkey Creek due to bridge demolition and construction activities. A temporary work bridge will be constructed prior to demolition of the existing bridge and removed when construction of the new bridge is completed.

TEMPORARY WORK BRIDGE

A temporary work bridge will be constructed to the south of the existing Bridge No. 52. This bridge will be required to minimize impacts to jurisdictional waters during bridge construction. Temporary work bridge pile types and driving methods will be determined during construction by the contractor. The work bridge will be constructed at the elevation and location as shown on the permit drawings. Non-mechanized clearing will occur prior to temporary work bridge construction. It is assumed that the contractor will begin construction of the proposed work bridge shortly after the date of availability for the project.

NEUSE RIPARIAN BUFFER RULES

This project is located in the Neuse River Basin (subbasin 03-04-07, NEU7 03020203), therefore the Neuse River Buffer Rules (15A NCAC 2B.0233) apply. Buffer impacts associated with this project total 1,678 sq. ft (0.039 acre) for Zone 1 and 1,927 sq. ft (0.044 acre) for Zone 2. All practicable measures to minimize impacts within buffer zones were followed in the bridge design. Measures used to minimize impacts to the buffer zone include using the current alignment. In addition, NCDOT proposes to remove the existing bridge abutment that was part of a previous bridge, along with existing fill, and plant native riparian vegetation. Buffer replacement associated with this project totals 2,974 sq. ft (0.068 acre) for Zone 1 and 358 sq. ft (0.008 acre) for Zone 2. 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 of Water Quality, 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 1952, as amended. As of February 25, 2003, the U.S. Fish and

Wildlife Service (USFWS) lists three federally protected species for Nash County (Table 1). Biological Conclusions of "No Effect" were previously rendered for the red-cockaded woodpecker, dwarf wedgemussel and Tar River spinymussel. These biological conclusions remain valid.

Table 1. Federally-protected species of Nash County.

Scientific Name	Common Name	Federal Status	Biological Conclusion
Picoides borealis	Red-cockaded woodpecker	Endangered	No Effect
Alasmidonta heterodon	Dwarf wedgemussel	Endangered	No Effect
Elliptio steinstansana	Tar River spinymussel	Endangered	No Effect

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

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the temporary work bridge extending across a small portion of Turkey 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 work bridge extending across a small portion of Turkey 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 (67FR, 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 02H .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.

Neuse Riparian Buffer Rules: In accordance with 15A NCAC 02H .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 Neuse Buffer Certification for impacts to Neuse Buffers in compliance with the Neuse Buffer Rules.

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html. If you have any questions or need additional information, please contact Chris Rivenbark at crivenbark@dot.state.nc.us or (919) 715-1460.

Sincerely,

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

cc: w/attachment
Mr. John Hennessy, NCDWQ (7 copies)
Mr. Travis Wilson, NCWRC
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Jim Trogdon, PE, Division 4 Engineer
Mr. Jamie Shern, DEO, Division 4

w/o attachment
Mr. David Franklin, USACE, Wilmington
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington
Mr. Bill Goodwin, P.E., PDEA

Office Use Only: Form Version May 2002

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

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

I. Processing

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

2. Nationwide, Regional or General Permit Number(s) Requested: 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: 919-523-7844 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. 52 on SR 1101 (Claude Lewis Road) over Turkey Creek, Nash County

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3877

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

4. Location
   County: Nash Nearest Town: Bailey
   Subdivision name (include phase/lot number):
   Directions to site (include road numbers, landmarks, etc.): Located on SR 1101 approximately ½ mile north of Nash/Wilson County line, southwest of Bailey over Turkey Creek

5. Site coordinates, if available (UTM or Lat/Long): N35° 45.10' , W78° 09.59'
   (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): Turkey Creek

8. River Basin: Neuse 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 SR 1101 is classified as a Rural Local Route, with agricultural land dominant and scattered low density residential development.

10. Describe the overall project in detail, including the type of equipment to be used: Three span, 180-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 current deterioration and costs. Bridge No. 52 carries a sufficiency rating of 38.7 out of a possible 100. The bridge deck is only 19.1 feet wide. 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: 0.001 acres of temporary impacts are anticipated to occur due to temporary fill in wetlands for the bends supporting the temporary work bridge with this project. Permanent fill impacts are not anticipated to occur in Turkey Creek, or jurisdictional waters, due to bridge demolition and construction activities.

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 (24+84.38 to 25+00)	Temporary Fill	0.001	Yes	65	Coastal Plain Bottomland Hardwood

* 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: N/A
Total area of wetland impact proposed: 0.001 acres (temporary)

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)
N/A					

* 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. 0

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.)
N/A				

* 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.
Best Management Practices for Bridge Demolition and Removal will be implemented. Bridge No. 52 will be removed without dropping any components into Waters of the United States. During removal, old fill and abutment will be removed and the area will be replanted with native vegetation.

VIII. Mitigation

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

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

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

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   The temporary work bridge will be removed when construction of the new bridge is completed. The existing bridge abutment and existing fill will be removed and native riparian vegetation will be planted to serve as buffer replacement.

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) 523-5208 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): N/A
   Amount of Riparian wetland mitigation requested (acres): N/A
   Amount of Non-riparian wetland mitigation requested (acres): N/A
   Amount of Coastal wetland mitigation requested (acres): N/A

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) 523-5083 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	2,046		
2	1,927		
Total	3,973		

* 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?

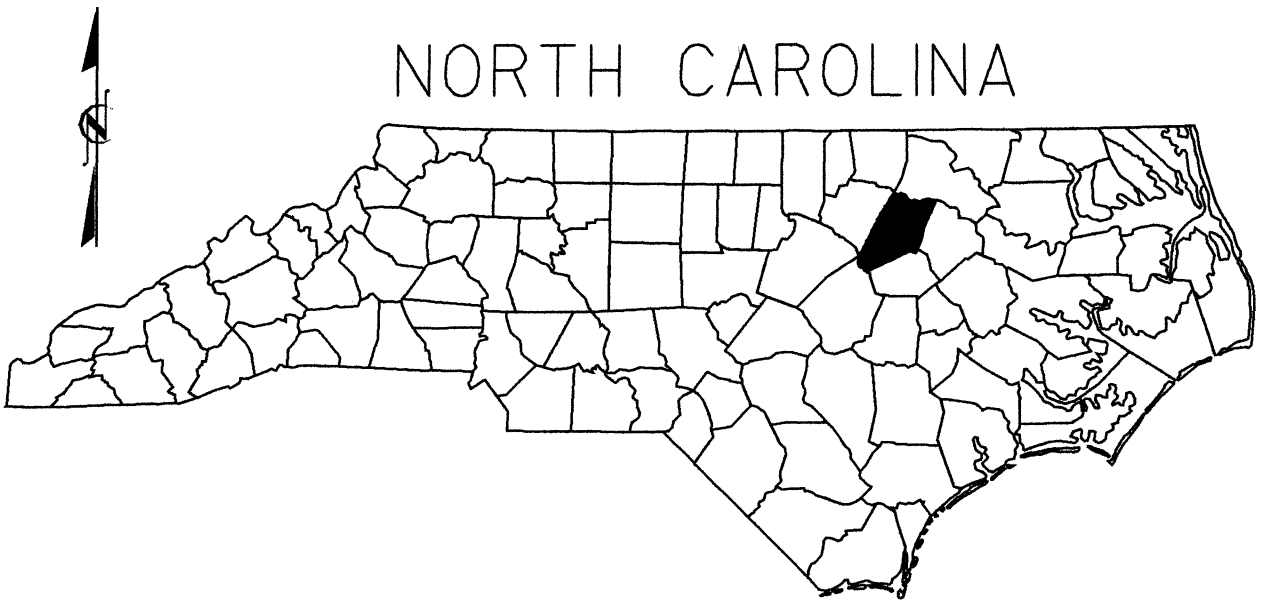
Yes ☐ No ☒

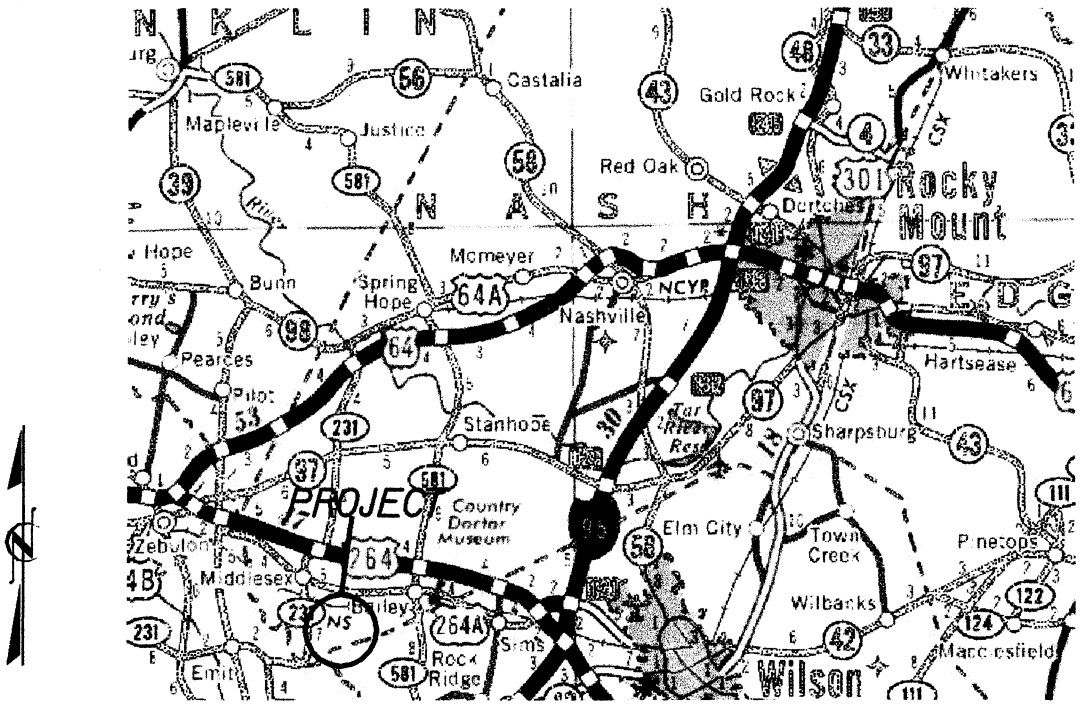
XIII. Other Circumstances (Optional):

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 5/2/05 **Date**

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



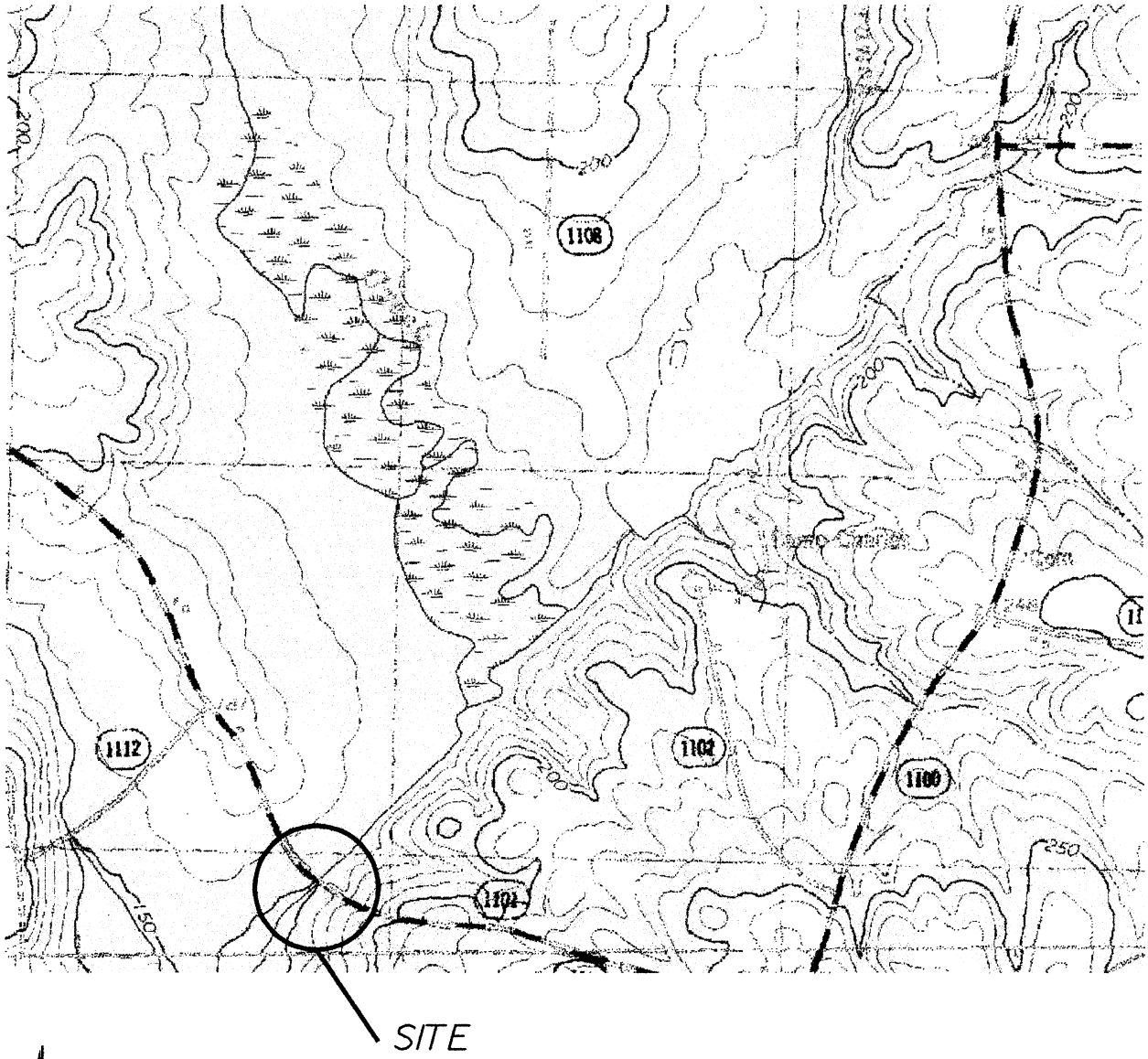


VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 8.2322201 (B-3877)
REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALONG SR 1101
(CLAUDE LEWIS RD.)

SHEET **OF** **11/18/04**

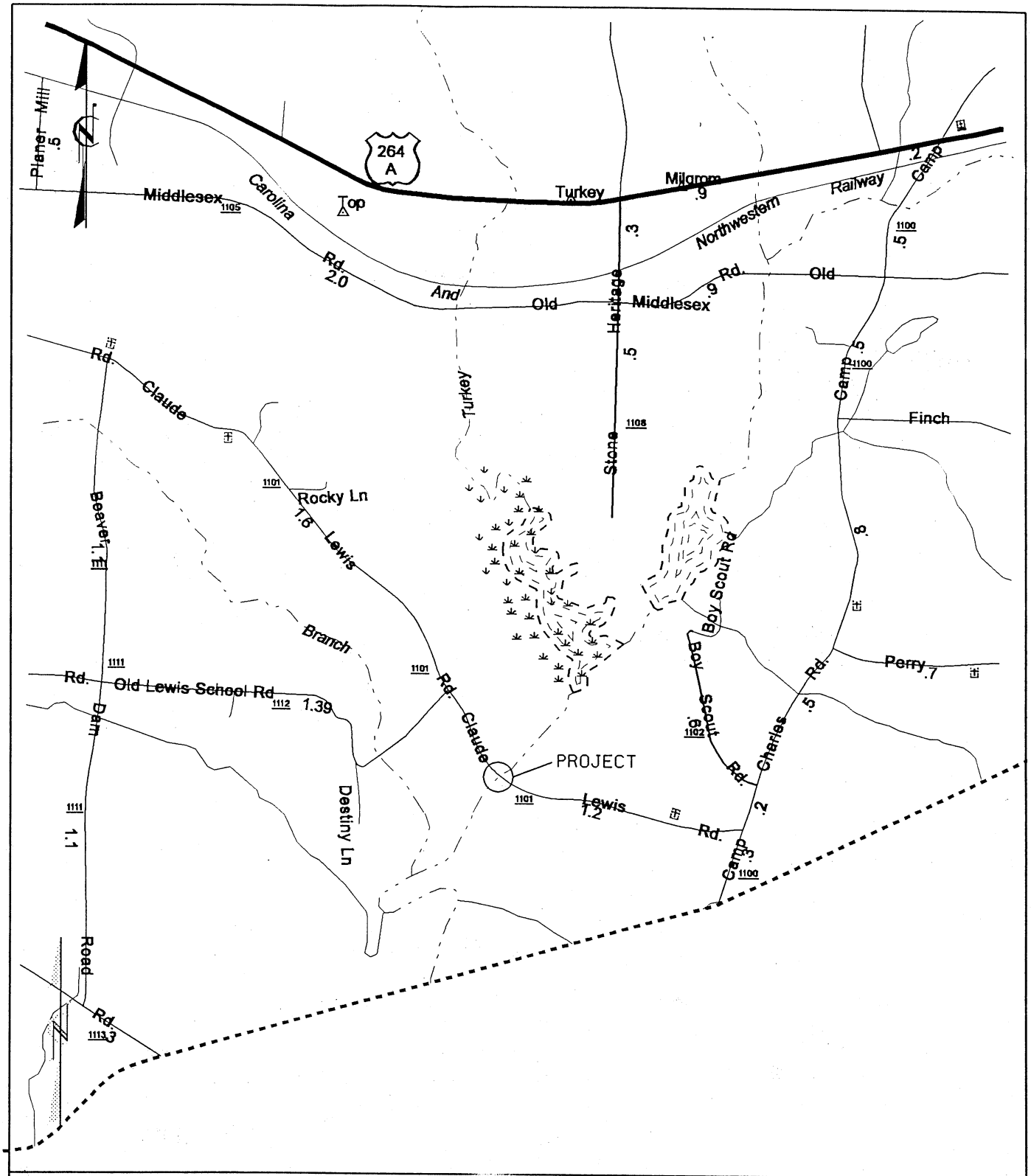


TOPOGRAPHIC MAP

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 8.2322201 (B-3877)
REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALONG SR 1101
(CLAUDE LEWIS RD.)

SHEET **OF** **11/18/04**



LOCATION MAPS

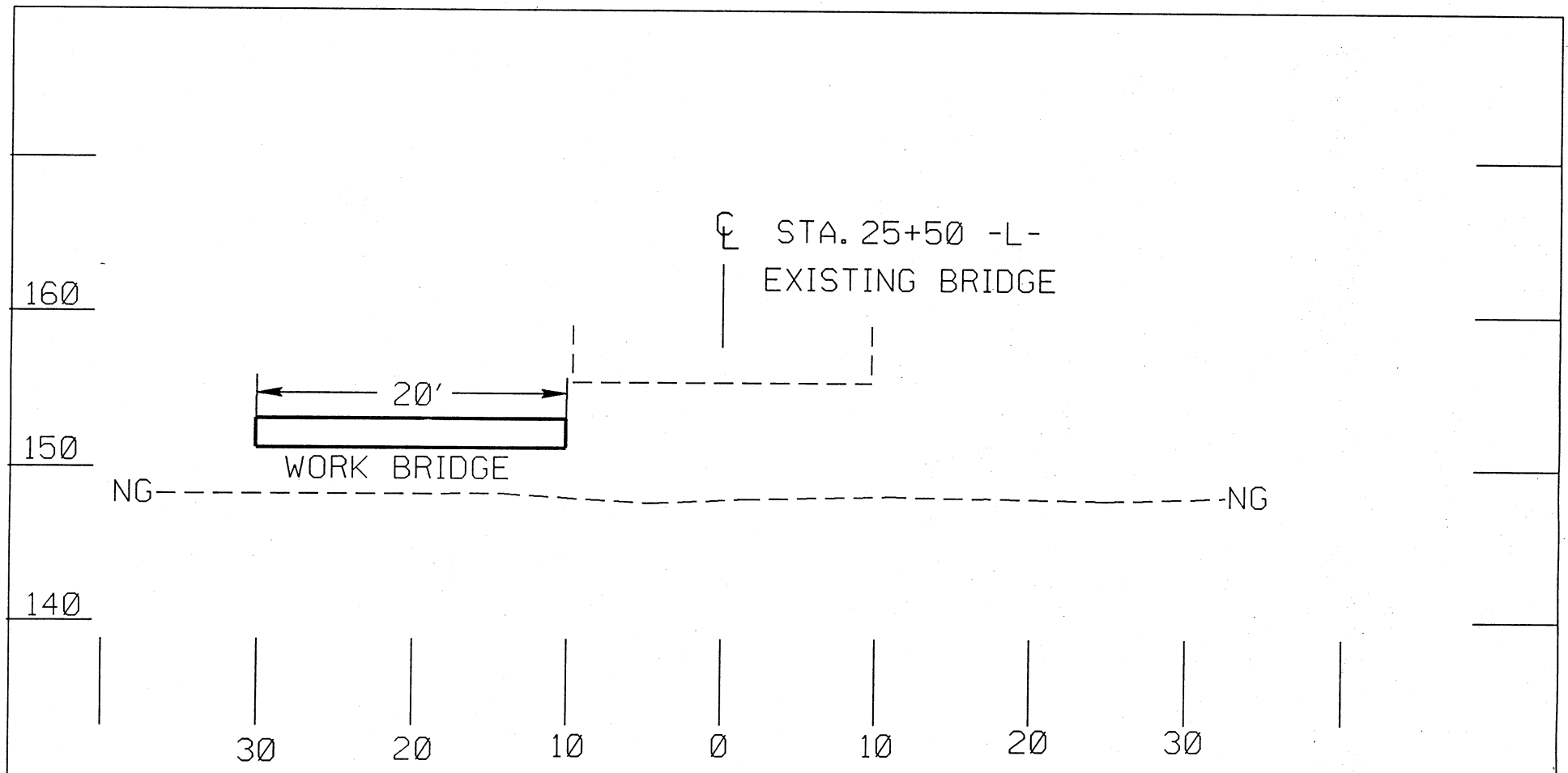
NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY

PROJECT: 8.2322201 (B-3877)

REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALOND SR 11901
(CLAUDE LEWIS RD.)

SHEET OF **11 / 18 / 04**



PROFILE

NEUSE RIVER
BUFFER ZONE

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 8.232220101 (B-3877)
REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALONG SR 1101
(CLAUDE LEWIS RD.

SHEET OF 11/18/04

Prope Owner Contact Report

TIP # L 77

Owner Last Name/ Business	wner t Name	Address	City/Town	State	Zip Code	Contact/ Relationship		Home Phone	Contacted By	Contact Date	How Contacted	Comments
(3) Boston	iane S.	1109 Windemere Dr.	Wilson	NC	27896	Diane S. Boston	Self	(252) 291-2269	R.T.Poythress, Jr.	06-12-02	Phone/Letter	
Lewis	h Isaac	9309 Wakefield Oak Grove	Zebulon	NC	27597	Joseph Lewis	Self	(919) 404-2114	K.E.Honeycutt	6-18-02	Letter	
(4) Willoughby	ie Melvin	P.O.Box 191	Middlesex	NC	27557	Jonnie	Self	(252) 235-3618	R.T.Poythress, Jr.	06-12-02	Phone/Letter	Glad bridge being replaced. Mad at City of Wilson for taking some of his land.
(1) Wilson (2)	ity of	P.O.Box 10	Wilson	NC	27894	City of Wilson	Self		K.E.Honeycutt	06-14-02	Letter	

WETLAND PERMIT IMPACT SUMMARY

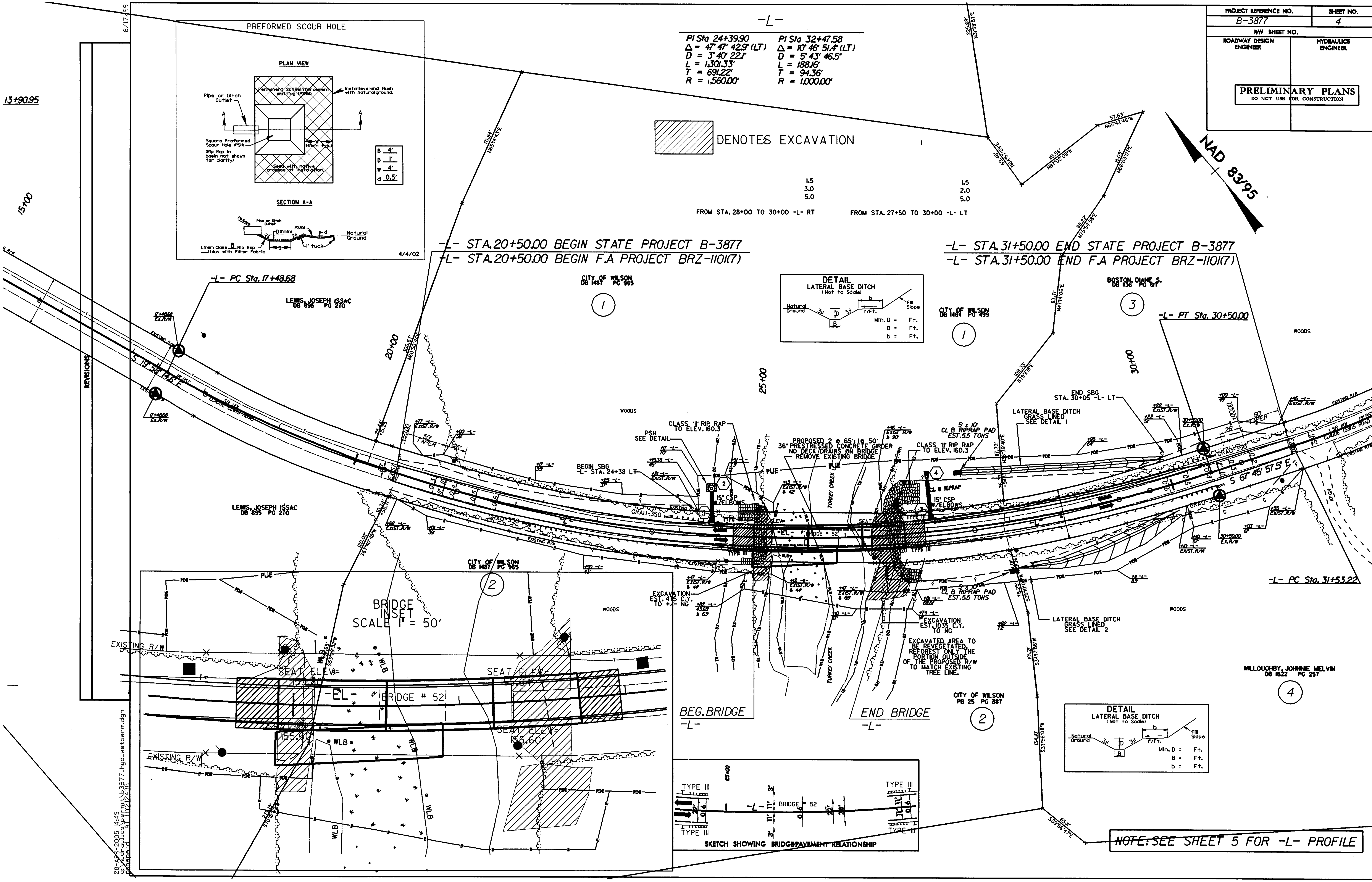
			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	24+80 TO	WORK PAD	0	0	0	0	0	0	0	0	0
	29+80 -L- RT										
TOTALS:			0	0	0	0	0	0	0	0	0

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: 8.2322201 (B-3877)

SHEET OF 11/18/2004

Form Revised 3/22/01


PROJECT REFERENCE NO. | SHEET NO.
B-3877 | 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PI Sta 24+39.90
Δ = 47° 47' 42.9" (LT)
D = 3° 40' 22.1"
L = 1,301.33'
T = 691.22'
R = 1,560.00'
PI Sta 32+47.58
Δ = 10° 46' 51.4" (LT)
D = 5° 43' 46.5"
L = 188.16'
T = 94.36'
R = 1,000.00'
DENOTES EXCAVATION
1.5
3.0
5.0
FROM STA. 28+00 TO 30+00 -L- RT
1.5
2.0
5.0
FROM STA. 27+50 TO 30+00 -L- LT
NAD 83/95
-L- STA. 20+50.00 BEGIN STATE PROJECT B-3877
-L- STA. 20+50.00 BEGIN F.A PROJECT BRZ-1101(7)
-L- STA. 31+50.00 END STATE PROJECT B-3877
-L- STA. 31+50.00 END F.A PROJECT BRZ-1101(7)
PREFORMED SCOUR HOLE
PLAN VIEW
Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation.
B 4'
D 1'
W 4'
d 0.5'
SECTION A-A
Natural Ground
Liner: Class B Rip Rap thick with Filter Fabric
1' tuck
4/4/02
8/17/99
DETAIL
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = Ft.
B = Ft.
b = Ft.
CITY OF WILSON
DB 1481 PG 965
CITY OF WILSON
DB 1484 PG 499
BOSTON, DIANE S.
DB 1136 PG 617
LEWIS, JOSEPH ISSAC
DB 895 PG 210
WILLOUGHBY, JOHNNIE MELVIN
DB 1622 PG 257
CITY OF WILSON
PB 25 PG 387
-L- PC Sta. 17+48.68
-L- PT Sta. 30+50.00
-L- PC Sta. 31+53.22
13+90.95
15+00
20+00
25+00
30+00
S 19° 58' 14.6" E
S 67° 45' 57.5" E
WOODS
REVISIONS
CLASS 'II' RIP RAP TO ELEV. 160.3
PSH SEE DETAIL
PROPOSED 2 @ 65' 10 50' 36" PRESTRESSED CONCRETE GIRDER
NO DECK DRAINS ON BRIDGE
REMOVE EXISTING BRIDGE
CLASS 'II' RIP RAP TO ELEV. 160.3
5' x 10' CL B RIPRAP PAD EST. 5.5 TONS
BEGIN SBG -L- STA. 24+38 LT
END SBG STA. 30+05 -L- LT
LATERAL BASE DITCH GRASS LINED SEE DETAIL 1
LATERAL BASE DITCH GRASS LINED SEE DETAIL 2
15" CSP W/ELBOWS
CL B RIPRAP
EXCAVATION EST. 475 C.Y. TO +/- NG
EXCAVATION EST. 1035 C.Y. TO NG
EXCAVATED AREA TO BE REVEGETATED. REFOREST ONLY THE PORTION OUTSIDE OF THE PROPOSED R/W TO MATCH EXISTING TREE LINE.
TURKEY CREEK
BEG. BRIDGE -L-
END BRIDGE -L-
BRIDGE # 52
BRIDGE INSET SCALE 1" = 50'
EXISTING R/W
SEAT ELEV= 155.60
SEAT ELEV= 155.60
WLB
PUE
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
TYPE III
NOTE: SEE SHEET 5 FOR -L- PROFILE
28-APR-2005 14:49
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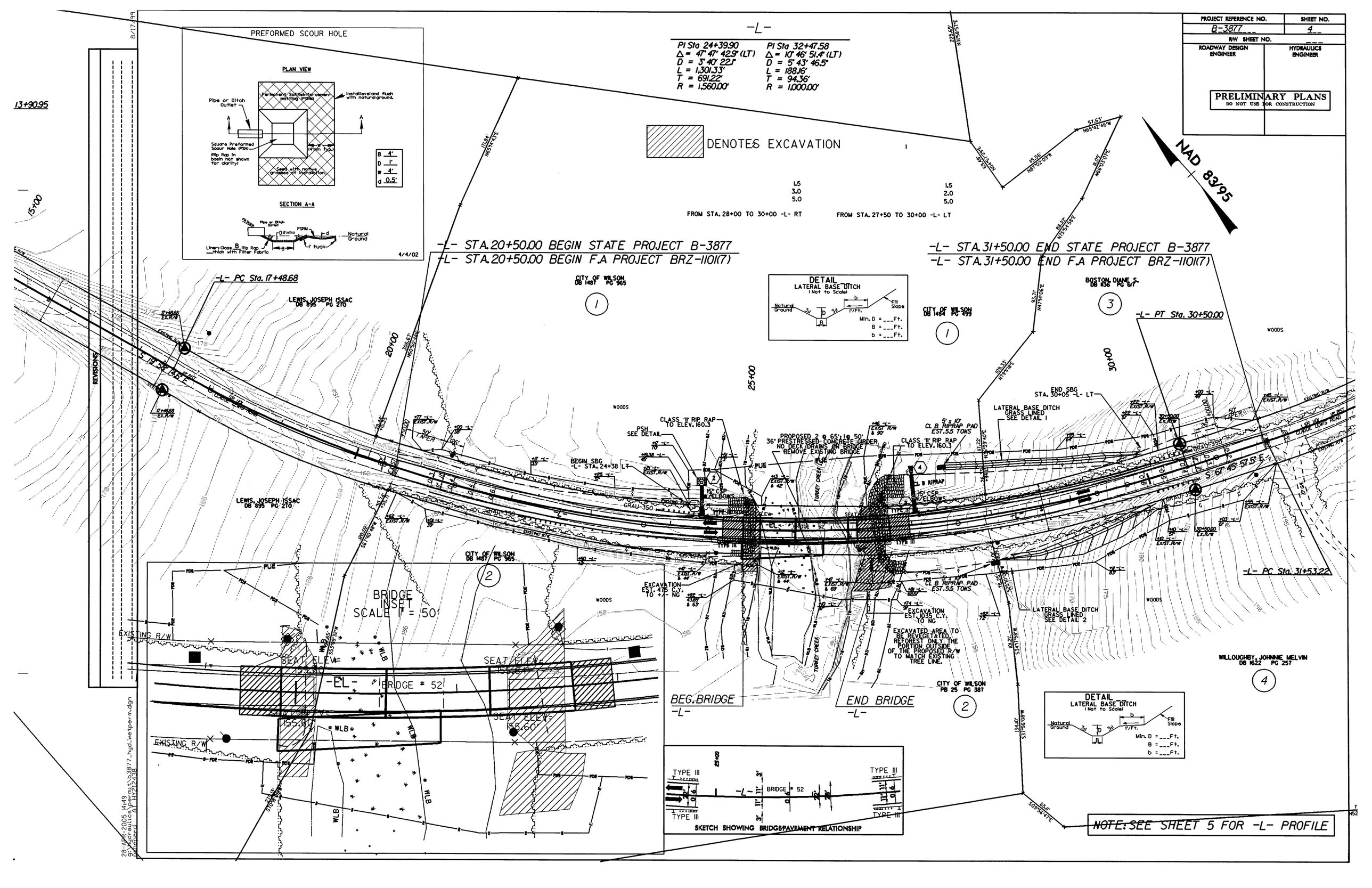

PREFORMED SCOUR HOLE
PLAN VIEW
Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
Rip Rap in basin (not shown for clarity)
Seed with native grasses at installation.
B 4'
D 1'
W 4'
d 0.5'
SECTION A-A
Pipe or Ditch Outlet
Ditch Line
PSRM
d
Natural Ground
1' tuck
Liner: Class B Rip Rap thick with Filter Fabric
4/4/02
-L-
PI Sta 24+39.90
Δ = 47° 47' 42.9" (LT)
D = 3° 40' 22"
L = 1,301.33'
T = 691.22'
R = 1,560.00'
PI Sta 32+47.58
Δ = 10° 46' 51.4" (LT)
D = 5° 43' 46.5"
L = 188.16'
T = 94.36'
R = 1,000.00'
DENOTES EXCAVATION
L 5
3.0
5.0
FROM STA. 28+00 TO 30+00 -L- RT
L 5
2.0
5.0
FROM STA. 27+50 TO 30+00 -L- LT
NAD 83/95
PROJECT REFERENCE NO.
B-3877
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L- STA. 20+50.00 BEGIN STATE PROJECT B-3877
-L- STA. 20+50.00 BEGIN F.A PROJECT BRZ-1101(7)
-L- STA. 31+50.00 END STATE PROJECT B-3877
-L- STA. 31+50.00 END F.A PROJECT BRZ-1101(7)
-L- PC Sta. 17+48.68
-L- PT Sta. 30+50.00
-L- PC Sta. 31+53.22
DETAIL
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = ___Ft.
B = ___Ft.
b = ___Ft.
CITY OF WILSON DB 1481 PG 965
CITY OF WILSON DB 1484 PG 499
BOSTON, DIANE S. DB 636 PG 617
LEWIS, JOSEPH ISSAC DB 895 PG 270
WILLOUGHBY, JOHNNIE MELVIN DB 1622 PG 257
CITY OF WILSON PB 25 PG 387
WOODS
BEGIN SBG -L- STA. 24+38 LT
END SBG STA. 30+05 -L- LT
LATERAL BASE DITCH GRASS LINED SEE DETAIL 1
LATERAL BASE DITCH GRASS LINED SEE DETAIL 2
CLASS "I" RIP RAP TO ELEV. 160.3
PSH SEE DETAIL
PROPOSED 2 @ 65'-1.0" - 50' 36" PRESTRESSED CONCRETE GIRDER NO DECK DRAINS ON BRIDGE REMOVE EXISTING BRIDGE
CL B RIPRAP PAD EST. 5.5 TONS
15" CSP W/ELBOWS
TURKEY CREEK
EXCAVATION EST. 475 C.Y. TO +/- NC
EXCAVATION EST. 1035 C.Y. TO NC
EXCAVATED AREA TO BE REVEGETATED. REFOREST ONLY THE PORTION OUTSIDE OF THE PROPOSED R/W TO MATCH EXISTING TREE LINE.
BRIDGE INSET SCALE 1" = 50'
-L- BRIDGE # 52
SEAT ELEV. 155.80
SEAT ELEV. 156.60
EXISTING R/W
WLB
PUE
PDE
BEG. BRIDGE -L-
END BRIDGE -L-
TYPE III
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
NOTE: SEE SHEET 5 FOR -L- PROFILE
REVISIONS
8/17/99
28-APR-2005 (4:49)
c:\projects\b3877_hyd_wetperm.dgn
Projects\B-3877\mxl\b3877_hyd_wetperm.dgn
13+90.95
15+00
20+00
25+00
30+00

PROJECT REFERENCE NO.	SHEET NO.
B-3877	5

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

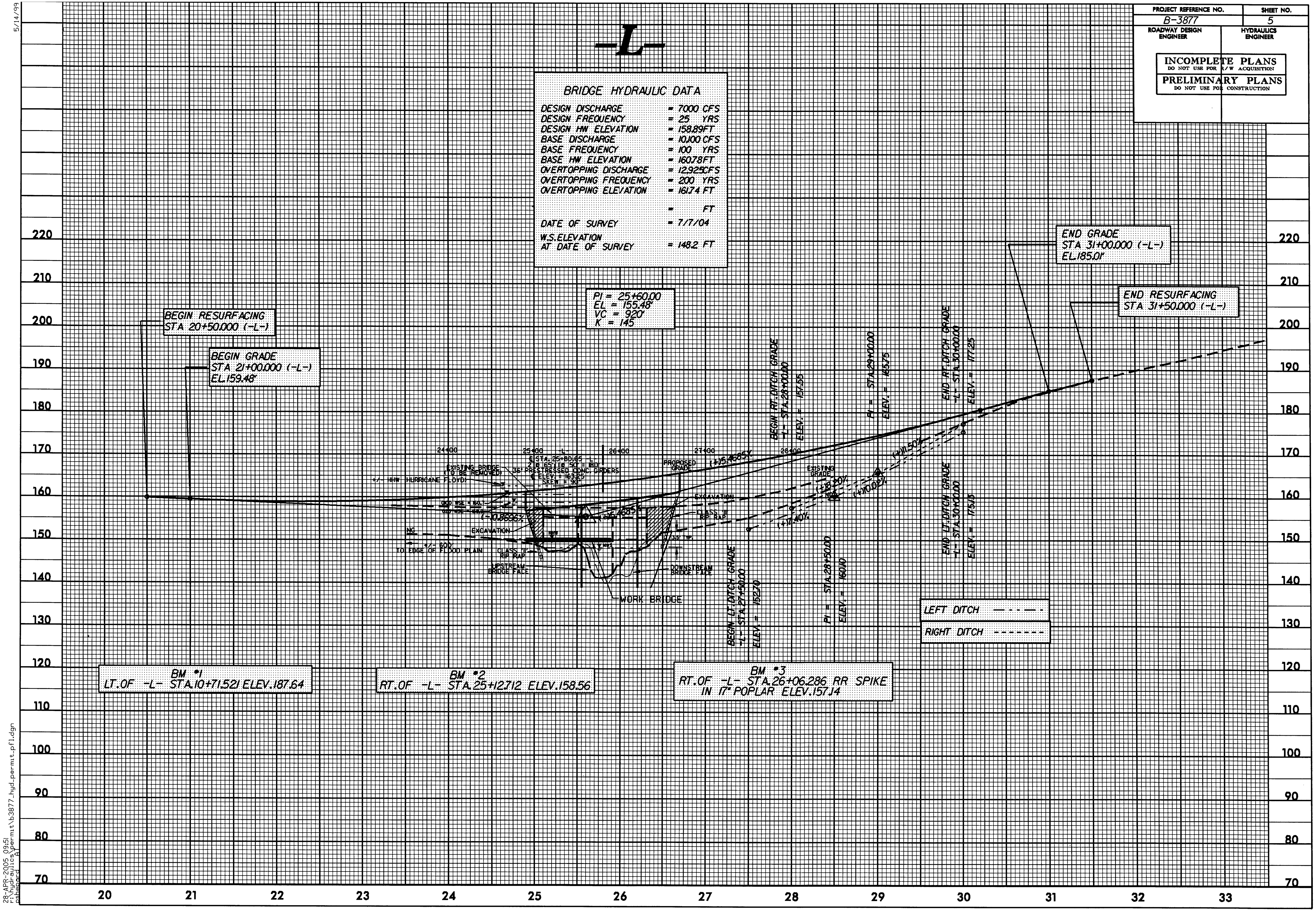
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 7000 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 158.89FT
BASE DISCHARGE	= 10,100 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 160.78FT
OVERTOPPING DISCHARGE	= 12,925CFS
OVERTOPPING FREQUENCY	= 200 YRS
OVERTOPPING ELEVATION	= 161.74 FT
	= FT
DATE OF SURVEY	= 7/7/04
W.S.ELEVATION AT DATE OF SURVEY	= 148.2 FT



PI = 25+60.00
EL = 155.48'
VC = 920'
K = 145
BEGIN RESURFACING STA 20+50.000 (-L-)
BEGIN GRADE STA 21+00.000 (-L-) EL.159.48'
END GRADE STA 31+00.000 (-L-) EL.185.01'
END RESURFACING STA 31+50.000 (-L-)
BEGIN RT. DITCH GRADE -L- STA.28+00.00 ELEV. = 157.55
PI = STA.29+00.00 ELEV. = 165.75
END RT. DITCH GRADE -L- STA.30+00.00 ELEV. = 177.25
BEGIN LT. DITCH GRADE -L- STA.27+50.00 ELEV. = 152.70
PI = STA.28+50.00 ELEV. = 160.10
END LT. DITCH GRADE -L- STA.30+00.00 ELEV. = 175.13
LEFT DITCH
RIGHT DITCH
BM #1 LT. OF -L- STA.10+71.521 ELEV.187.64
BM #2 RT. OF -L- STA.25+12.712 ELEV.158.56
BM #3 RT. OF -L- STA.26+06.286 RR SPIKE IN 17" POPLAR ELEV.157.14
EXISTING BRIDGE (TO BE REMOVED)
+/- HHW HURRICANE FLOYD
PROPOSED GRADE
EXISTING GRADE
EXCAVATION
CLASS II RIP RAP
UPSTREAM BRIDGE FACE
DOWNSTREAM BRIDGE FACE
WORK BRIDGE
TO EDGE OF FLOOD PLAIN
(+1.5465%)
(-0.8696%)
(+11.50%)
(+10.02%)
(+11.40%)

5/14/99

28-APR-2005 09:51
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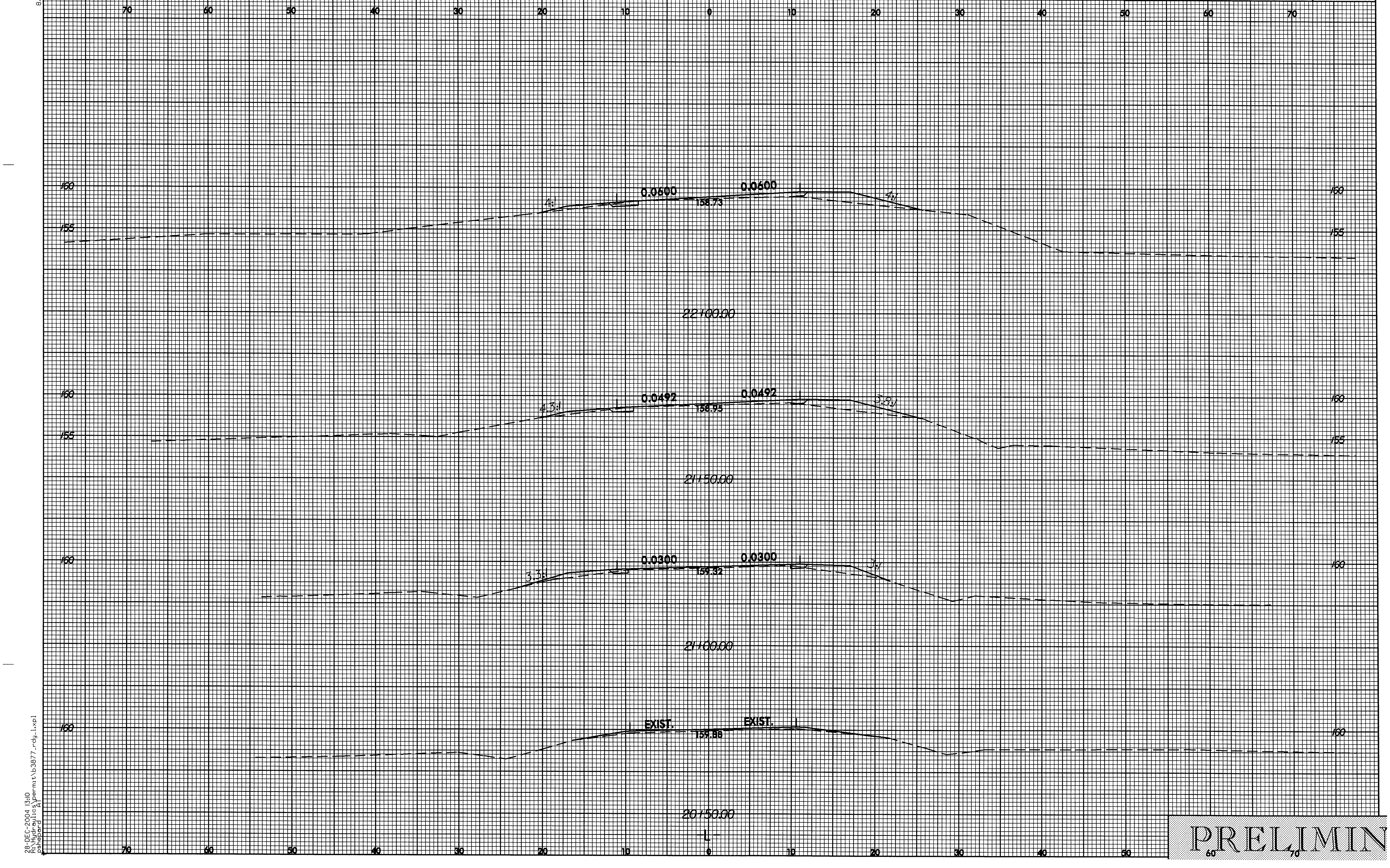
PROJ. REFERENCE NO.	SHEET NO.
B-3877	X-1



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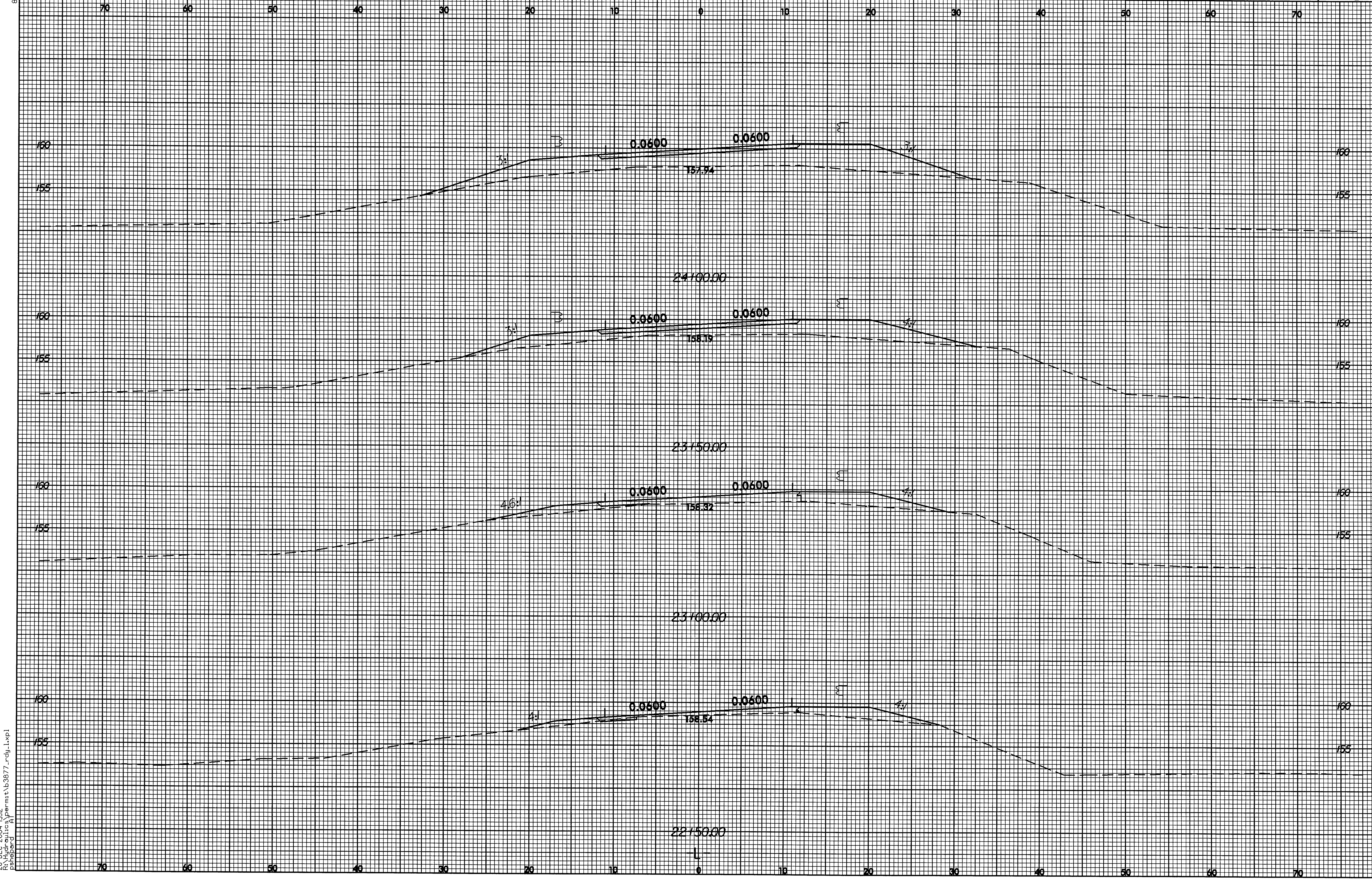
B-3877	X-2



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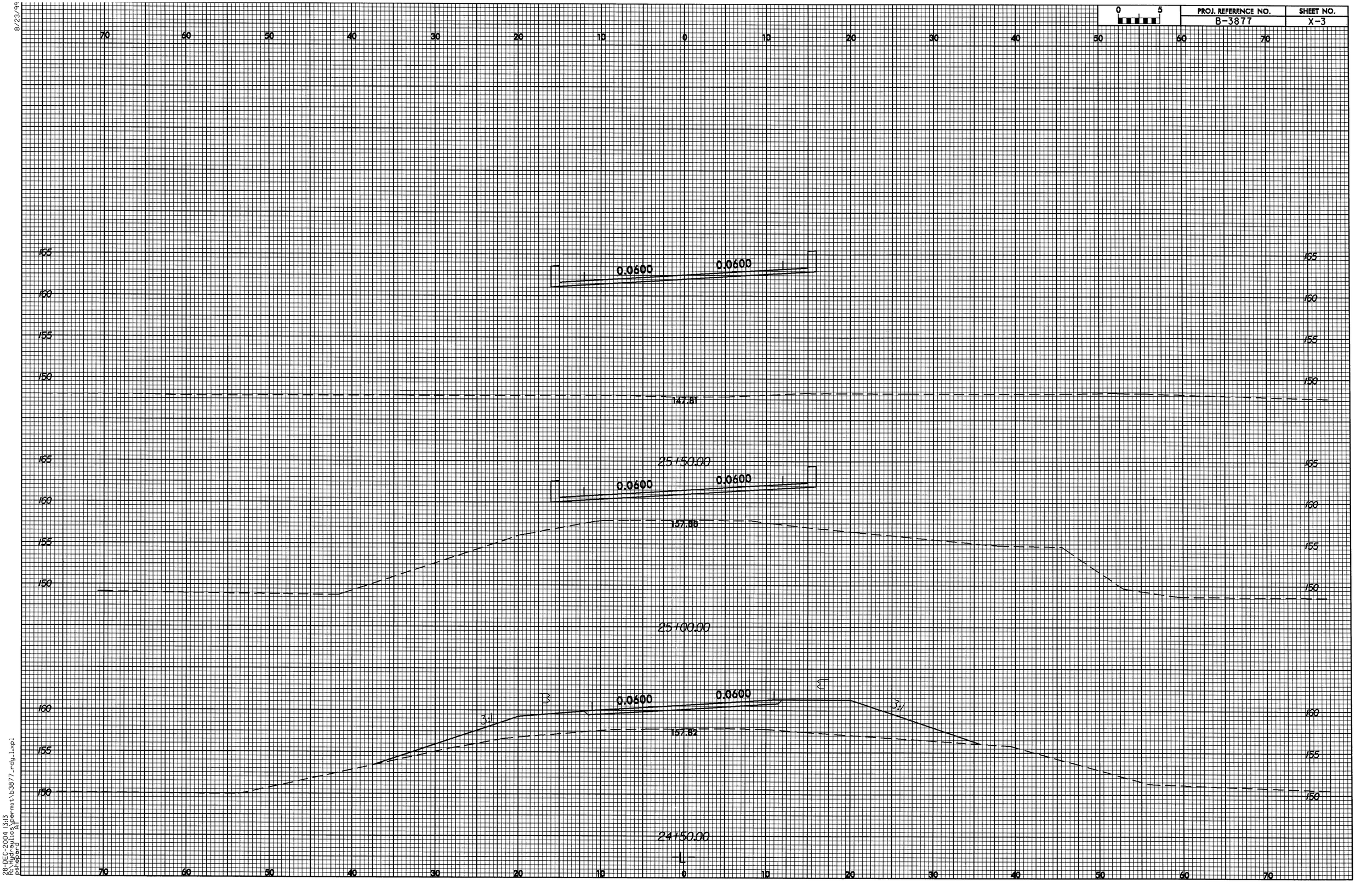
pshepard AT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PROJ. REFERENCE NO.
B-3877
SHEET NO.
X-3
8/23/99
70 60 50 40 30 20 10 0 10 20 30 40 50 60 70
165
160
155
150
0.0600
0.0600
147.81
25+50.00
0.0600
0.0600
157.88
25+00.00
3:1
3
0.0600
0.0600
3:1
157.82
24+50.00
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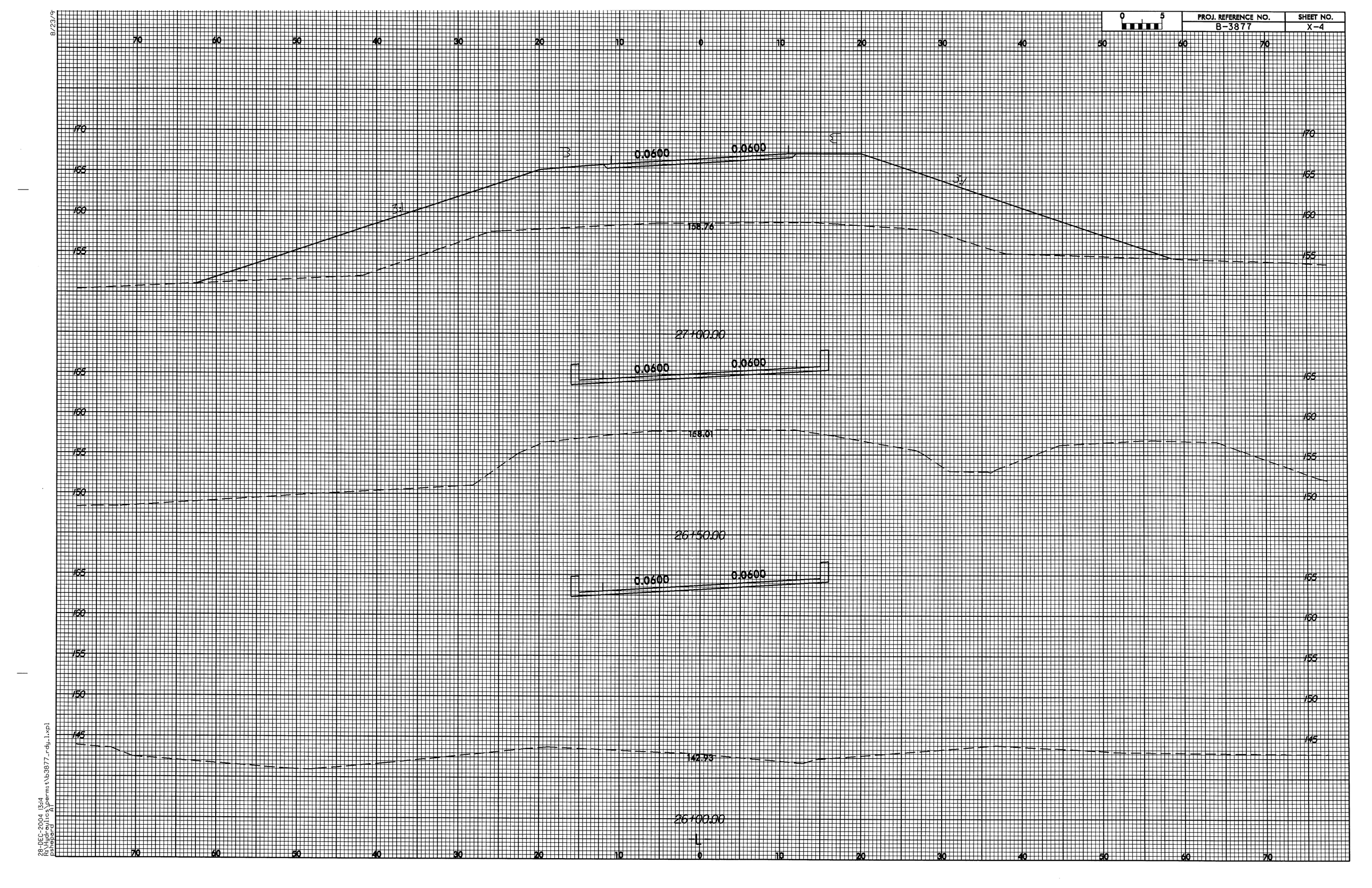
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B-3877
SHEET NO.
X-4
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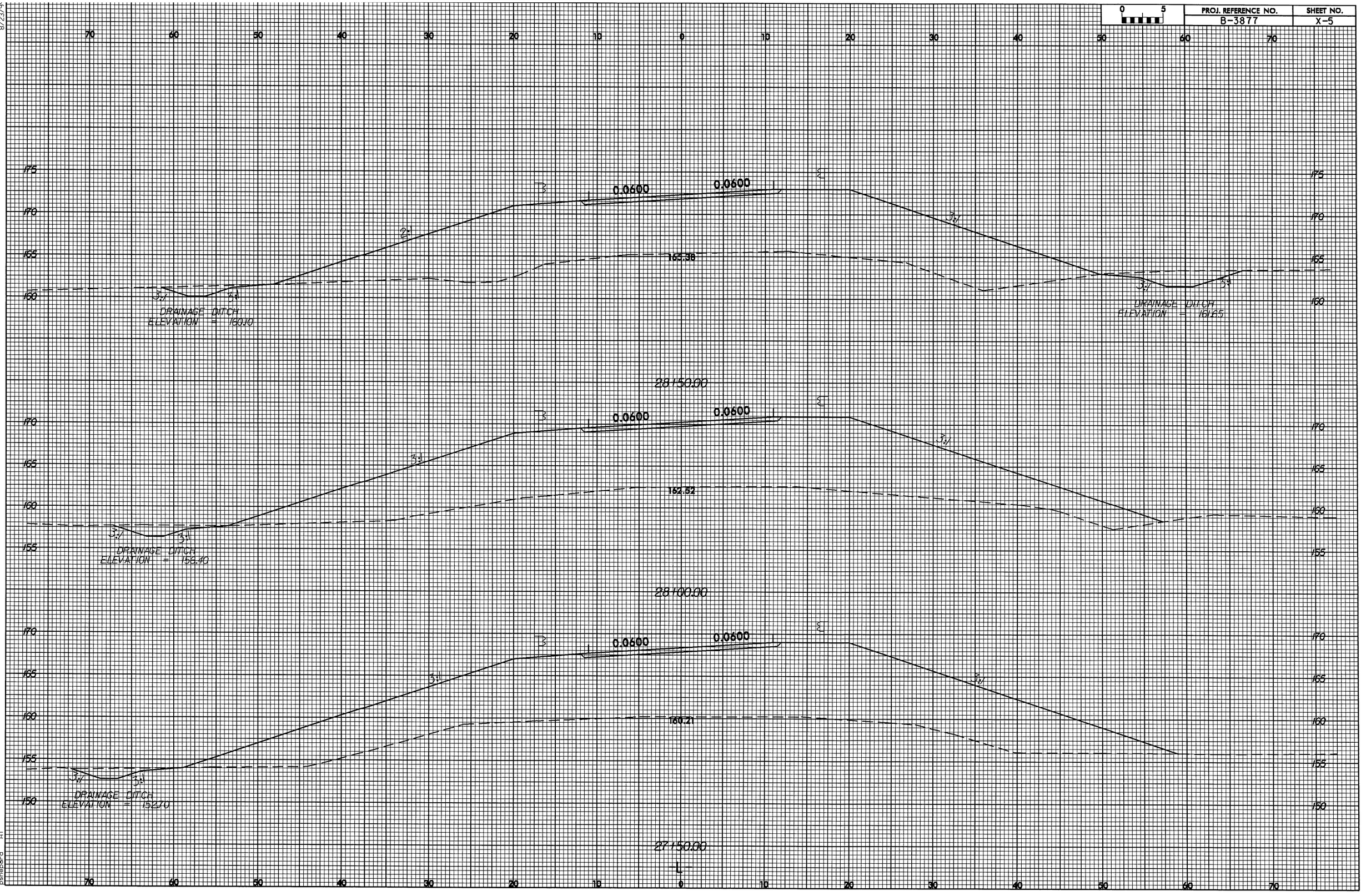
psheppard
A1
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
170
165
160
155
150
145
0.0600
0.0600
158.76
27+00.00
158.01
26+50.00
142.93
26+00.00

0 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3877	X-5



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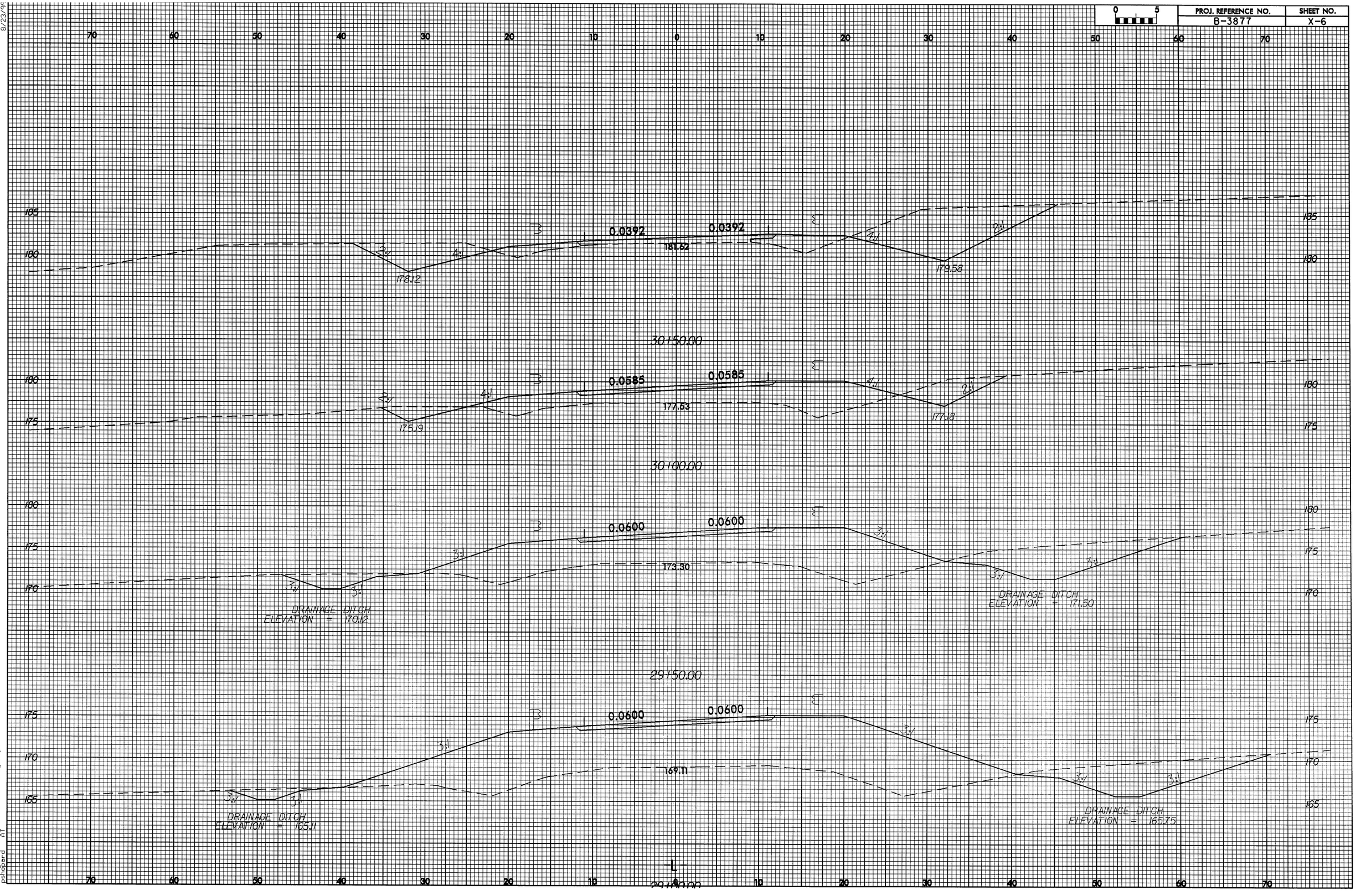
	B-3877	X-6



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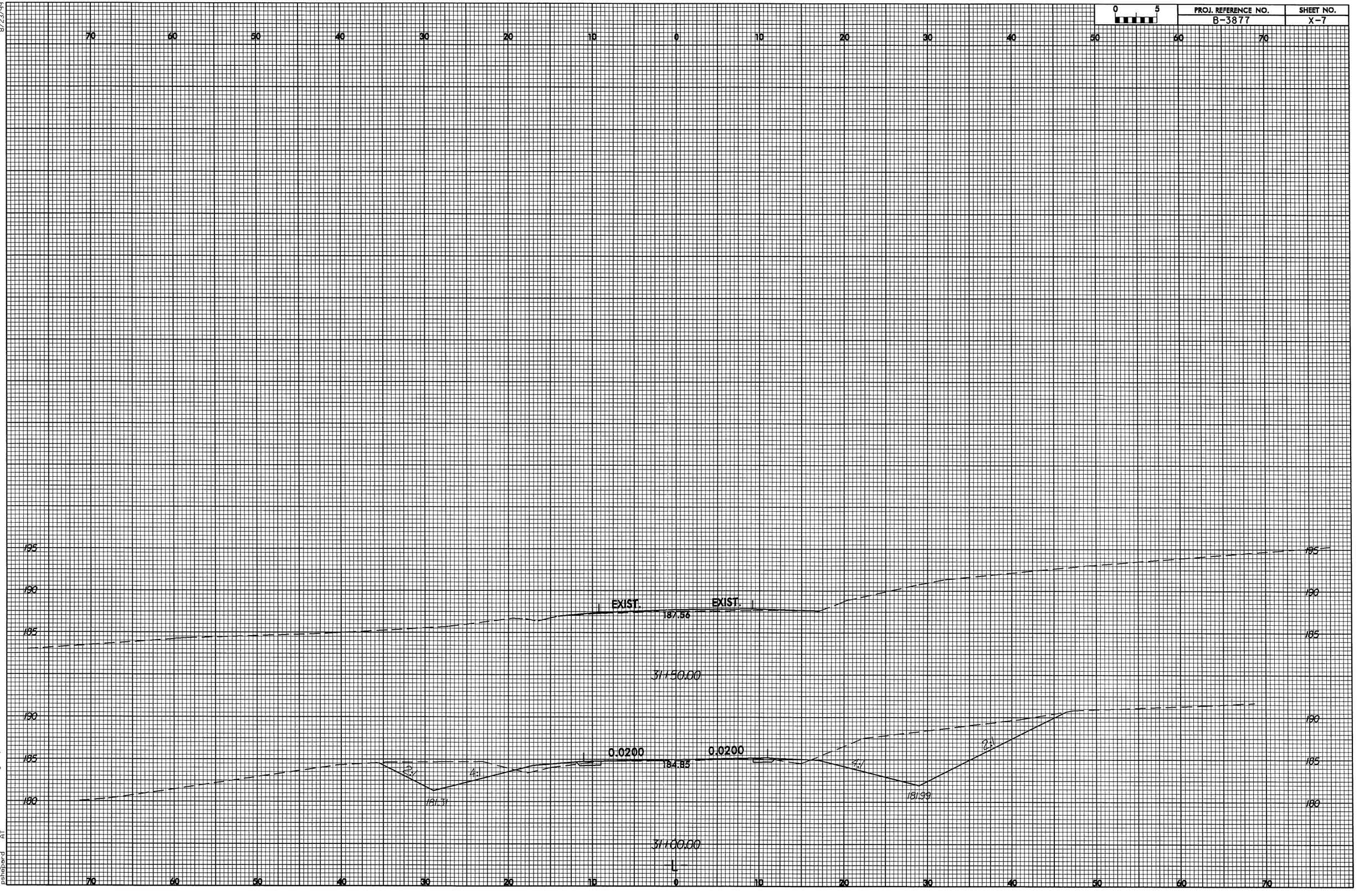
8/23/99

0 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3877	X-7



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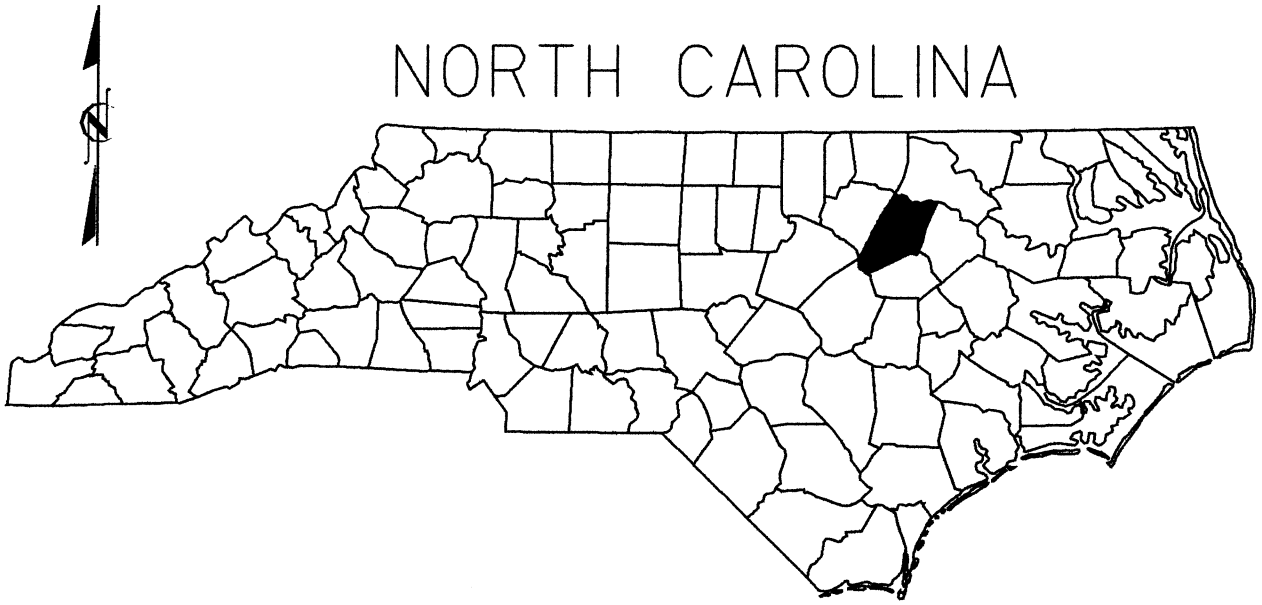
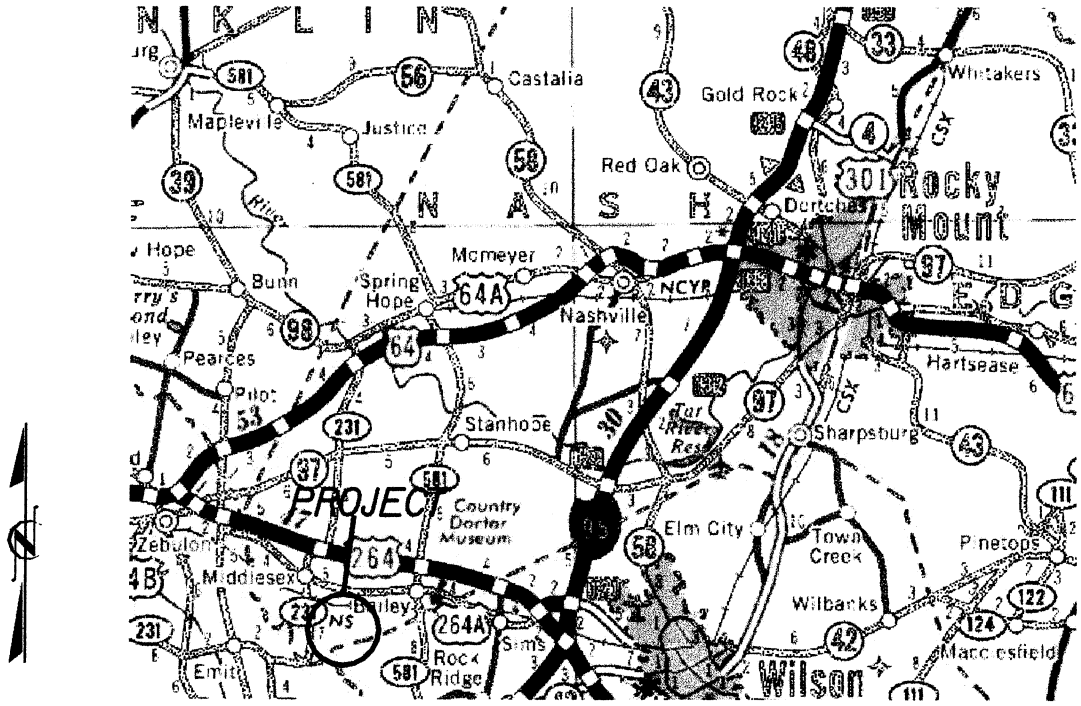
A1





VICINITY MAPS NEUSE RIVER BUFFER ZONE

NCDOT

DIVISION OF HIGHWAYS

NASH COUNTY

PROJECT: 8.2322201 (B-3877)

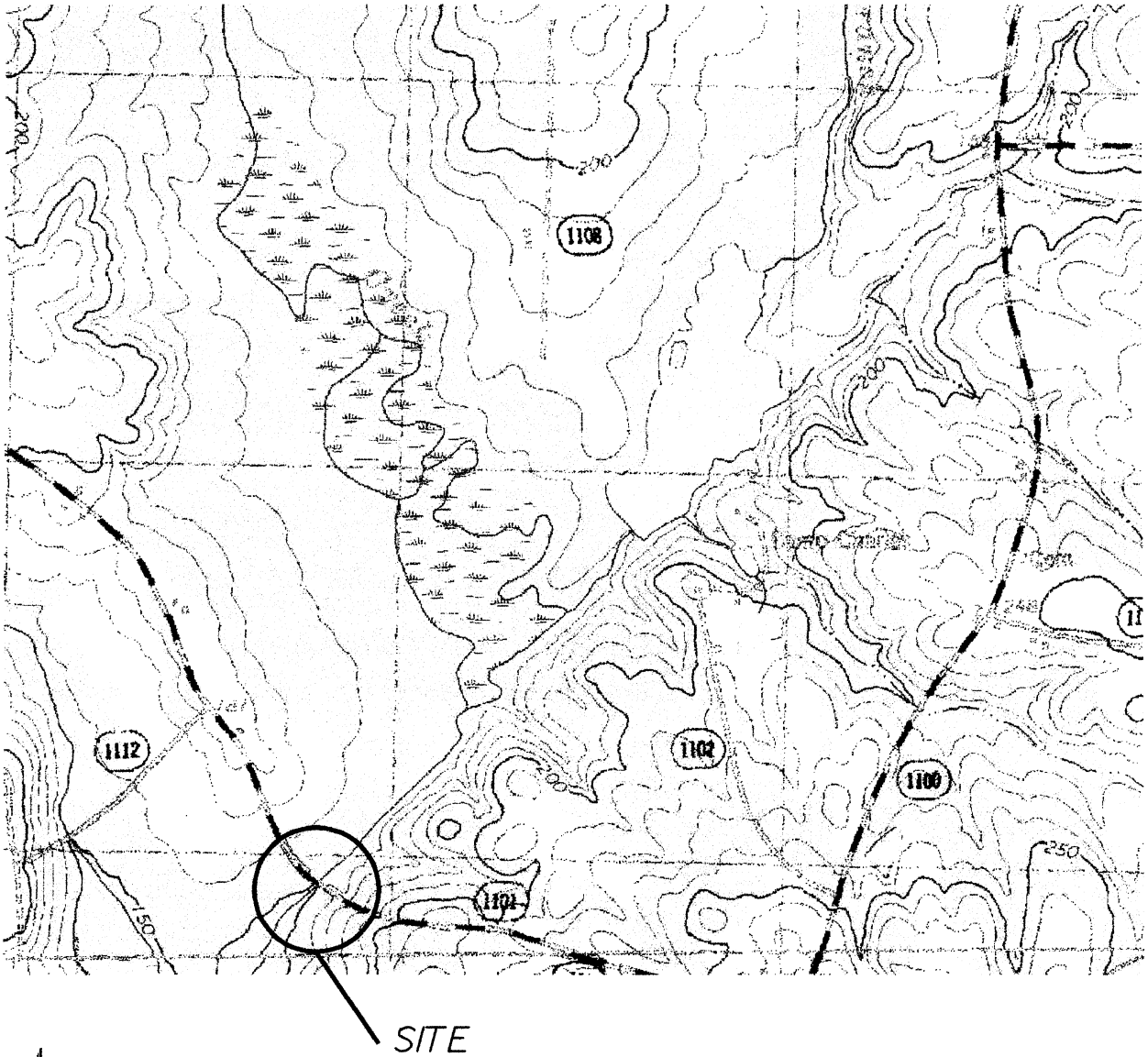
REPLACE BRIDGE NO. 52

OVER TURKEY CREEK

ALONG SR 1101

(CLAUDE LEWIS RD.)

SHEET **OF** **11/18/04**

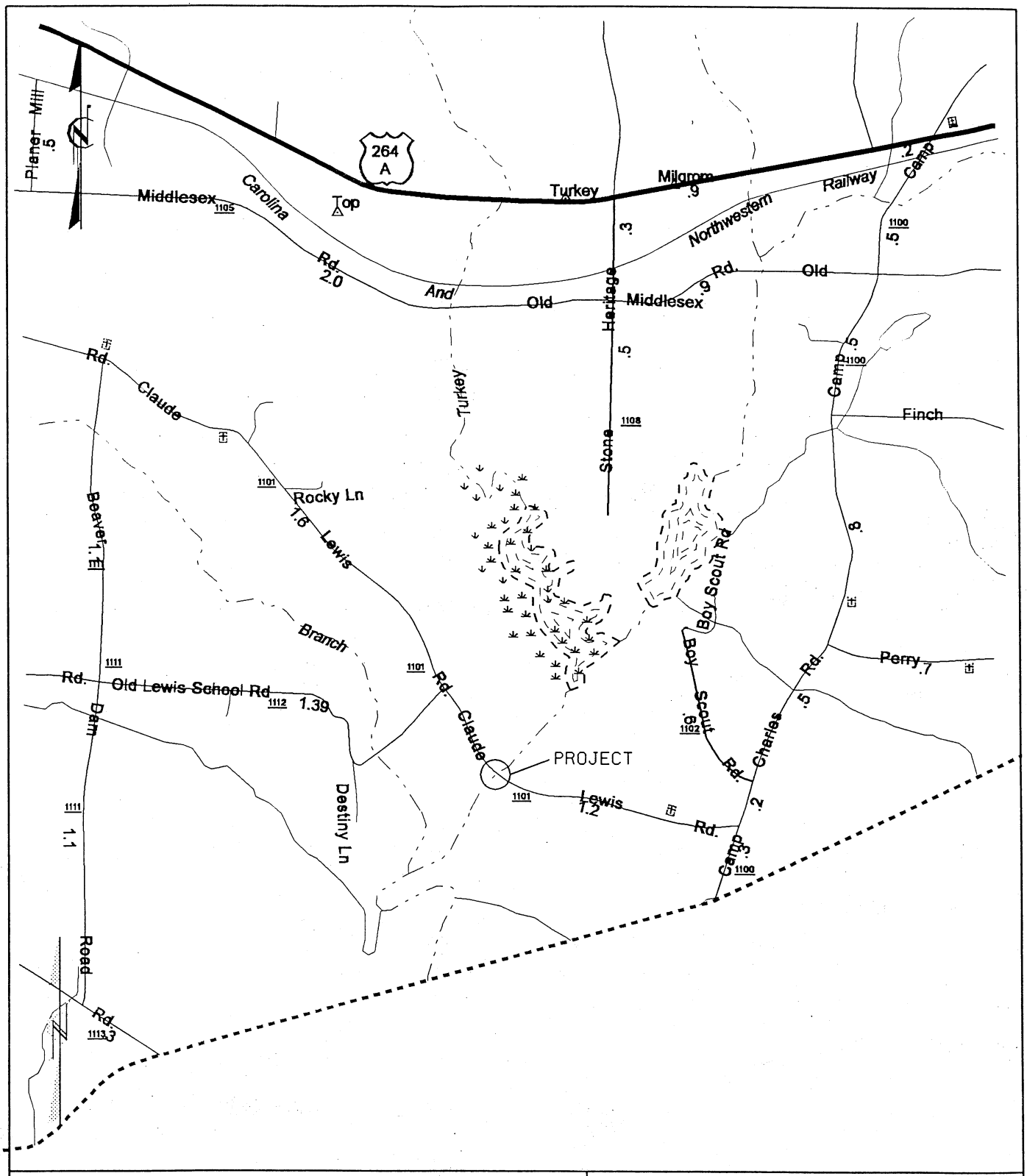


TOPOGRAPHIC MAP NEUSE RIVER BUFFER ZONE

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 8.2322201 (B-3877)
REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALONG SR 1101
(CLAUDE LEWIS RD.)

SHEET **OF** **11/18/04**



LOCATION MAP

NCDOT

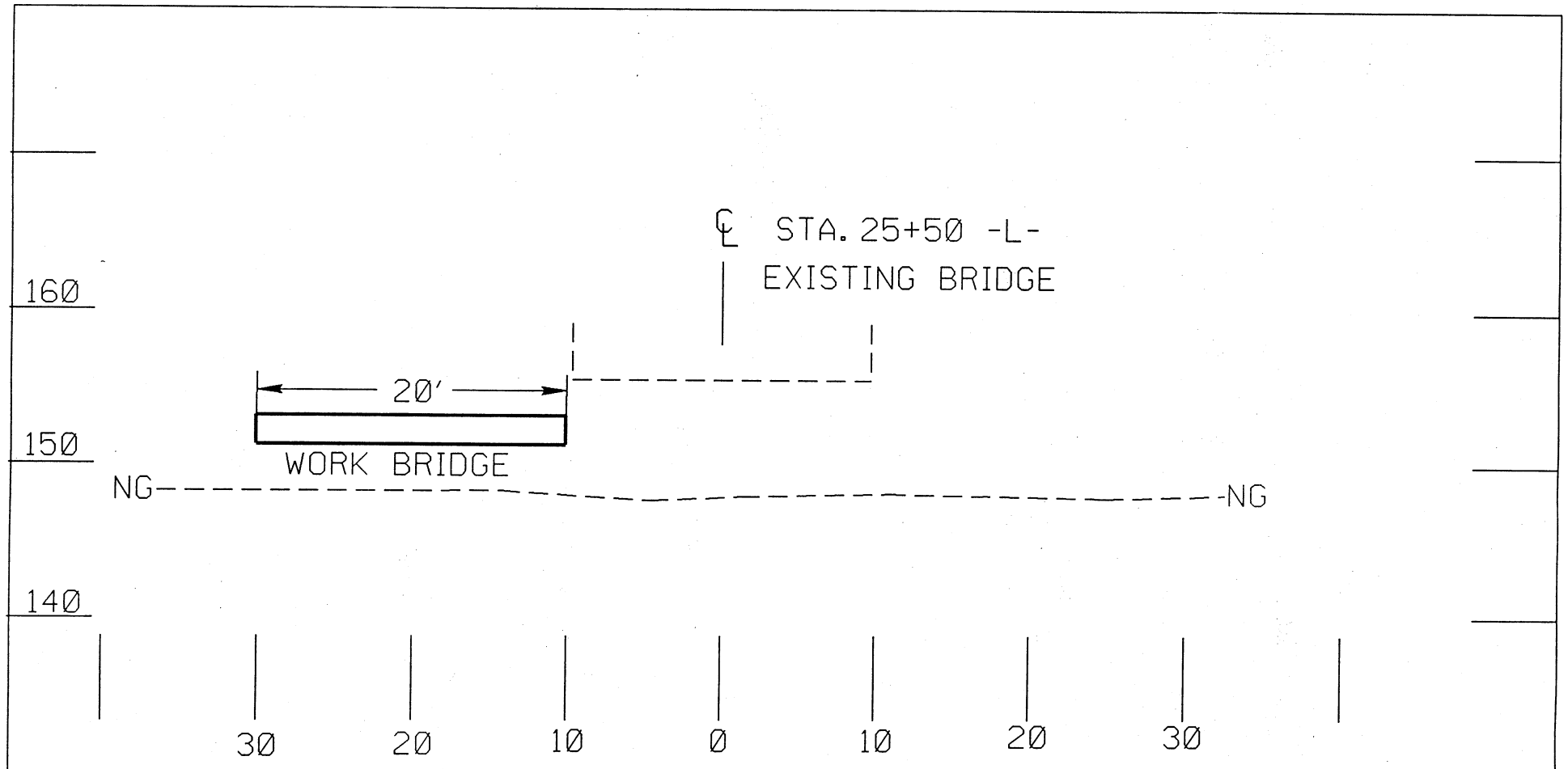
DIVISION OF HIGHWAYS
NASH COUNTY

PROJECT: 8.2322201 (B-3877)

REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALOND SR 11901
(CLAUDE LEWIS RD.)

SHEET OF

11/18/04



PROFILE

NEUSE RIVER
BUFFER ZONE

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 8.232220101 (B-3877)
REPLACE BRIDGE NO. 52
OVER TURKEY CREEK
ALONG SR 1101
(CLAUDE LEWIS RD.

SHEET OF 11/18/04

Property Owner Contact Report

TIP # B-3877

Owner Last Name/ Business	Owner First Name	Address	City/Town	State	Zip Code	Contact/ Relationship		Home Phone	Contacted By	Contact Date	How Contacted	Comments
3 Bos	Diane S.	1109 Windemere Dr.	Wilson	NC	27896	Diane S. Boston	Self	(252) 291-2269	R.T.Poythress, Jr.	06-12-02	Phone/Letter	
Le	Joseph Isaac	9309 Wakefield Oak Grove	Zebulon	NC	27597	Joseph Lewis	Self	(919) 404-2114	K.E.Honeycutt	6-18-02	Letter	
4 Will	Jonnie Melvin	P.O.Box 191	Middlesex	NC	27557	Jonnie	Self	(252) 235-3618	R.T.Poythress, Jr.	06-12-02	Phone/Letter	Glad bridge being replaced. Mad at City of Wilson for taking some of his land.
1 W	City of	P.O.Box 10	Wilson	NC	27894	City of Wilson	Self		K.E.Honeycutt	06-14-02	Letter	
2												

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
			ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	Bridge	24+62 TO	X		368	0	368	0	0	0	583	0
		25+10 -L-										
		26+23 TO	X		1678	1927	3605	0	0	0	2391	358
		26+93 -L-										
TOTAL:					2046	1927	3973	0	0	0	2974	358

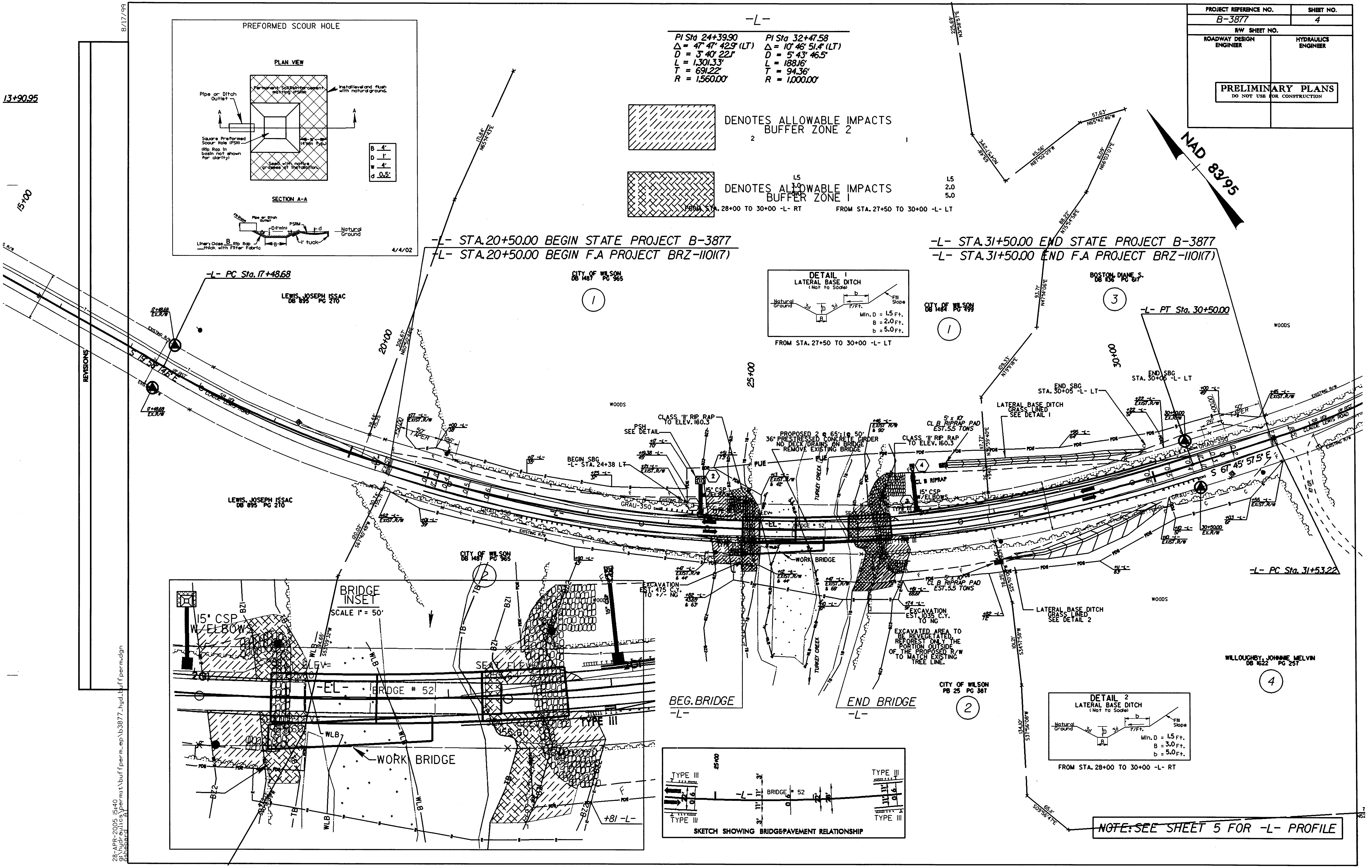
NOTE: AREAS OF BUFFER REPLACEMENT INCLUDE EXISTING BRIDGE ABUTMENT REMOVAL AND EXCAVATION OF EXISTING FILL.

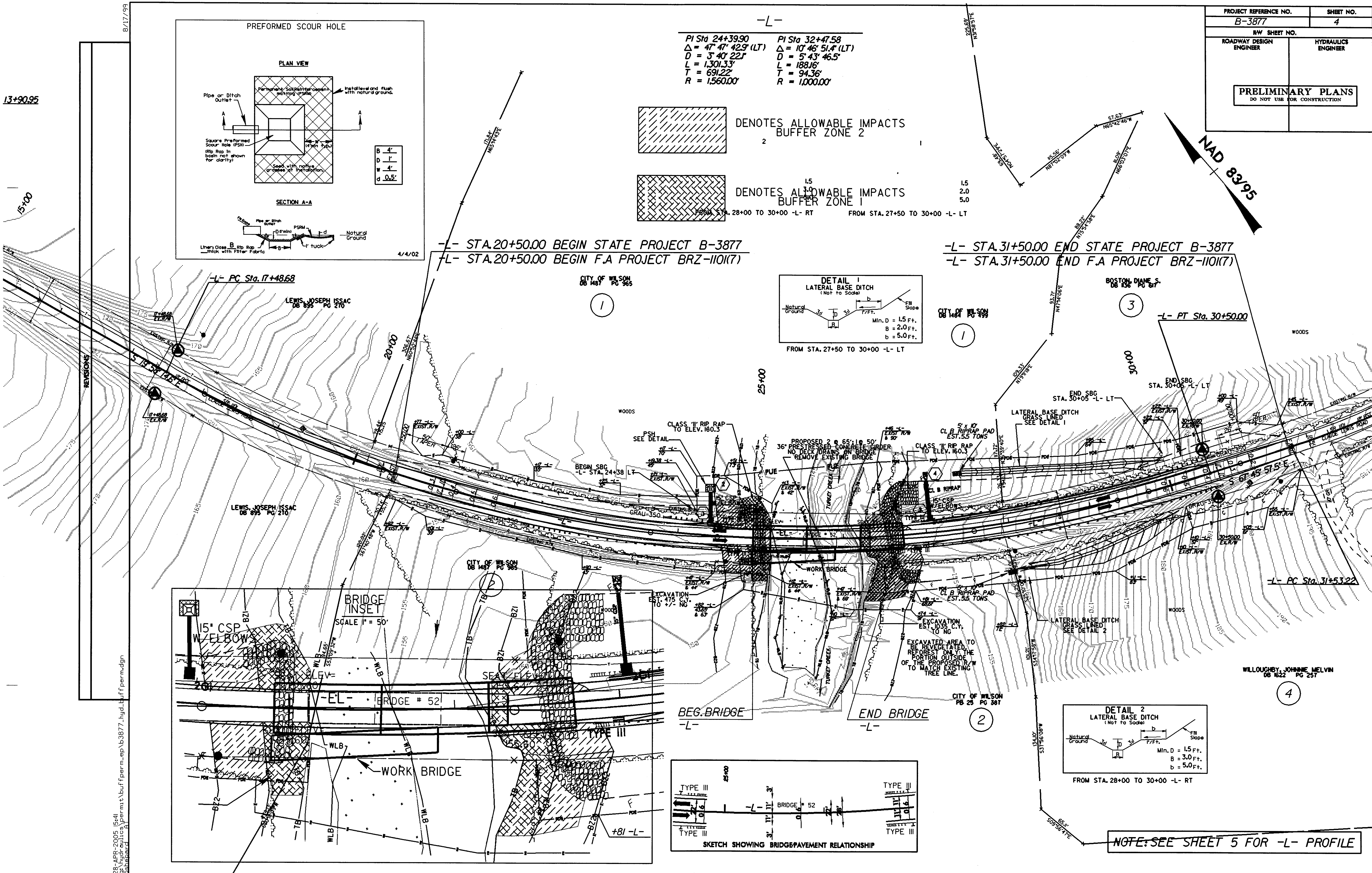
SEE PROFILE SHEET

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: 8.2232201 (B-3877)

11/18/2004
SHEET OF


PROJECT REFERENCE NO. B-3877
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/95
-L-
PI Sta 24+39.90
Δ = 47° 47' 42.9" (LT)
D = 3° 40' 22.1"
L = 1,301.33'
T = 691.22'
R = 1,560.00'
PI Sta 32+47.58
Δ = 10° 46' 51.4" (LT)
D = 5° 43' 46.5"
L = 188.16'
T = 94.36'
R = 1,000.00'
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
FROM STA. 28+00 TO 30+00 -L- RT
FROM STA. 27+50 TO 30+00 -L- LT
-L- STA. 20+50.00 BEGIN STATE PROJECT B-3877
-L- STA. 20+50.00 BEGIN F.A PROJECT BRZ-1101(7)
-L- STA. 31+50.00 END STATE PROJECT B-3877
-L- STA. 31+50.00 END F.A PROJECT BRZ-1101(7)
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
4/4/02
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 2.0 Ft.
b = 5.0 Ft.
FROM STA. 27+50 TO 30+00 -L- LT
DETAIL 2
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 3.0 Ft.
b = 5.0 Ft.
FROM STA. 28+00 TO 30+00 -L- RT
-L- PC Sta. 17+48.68
-L- PT Sta. 30+50.00
-L- PC Sta. 31+53.22
LEWIS, JOSEPH ISSAC DB 895 PG 210
CITY OF WILSON DB 1487 PG 965
CITY OF WILSON DB 1484 PG 499
BOSTON, DIANE S. DB 1136 PG 617
CITY OF WILSON PB 25 PG 387
WILLOUGHBY, JOHNNIE MELVIN DB 1622 PG 257
S 19° 58' 14.8" E
S 67° 45' 57.5" E
BEGIN SBG -L- STA. 24+38 LT
END SBG STA. 30+05 -L- LT
PSH SEE DETAIL
CLASS 'II' RIP RAP TO ELEV. 160.3
PROPOSED 2 @ 65' 1@ 50' 36" PRESTRESSED CONCRETE GIRDER NO DECK DRAINS ON BRIDGE
REMOVE EXISTING BRIDGE
5' x 10' CL B RIPRAP PAD EST. 5.5 TONS
LATERAL BASE DITCH GRASS LINED SEE DETAIL 1
LATERAL BASE DITCH GRASS LINED SEE DETAIL 2
EXCAVATION EST. 475 C.Y. TO +/- NG
EXCAVATION EST. 1035 C.Y. TO NG
EXCAVATED AREA TO BE REVEGETATED. REFOREST ONLY THE PORTION OUTSIDE OF THE PROPOSED R/W TO MATCH EXISTING TREE LINE.
BEG. BRIDGE -L-
END BRIDGE -L-
TURKEY CREEK
WORK BRIDGE
BRIDGE INSET
SCALE 1" = 50'
15" CSP W/ELBOWS
BRIDGE # 52
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
TYPE III
WOODS
REVISIONS
NOTE: SEE SHEET 5 FOR -L- PROFILE
13+90.95
15+00
20+00
25+00
30+00
8/17/99
28-APR-2005 15:40


PROJECT REFERENCE NO.
B-3877
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PI Sta 24+39.90
Δ = 47° 47' 42.9" (LT)
D = 3° 40' 22.1"
L = 1,301.33'
T = 691.22'
R = 1,560.00'
PI Sta 32+47.58
Δ = 10° 46' 51.4" (LT)
D = 5° 43' 46.5"
L = 188.16'
T = 94.36'
R = 1,000.00'
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 2
DENOTES ALLOWABLE IMPACTS BUFFER ZONE 1
FROM STA. 28+00 TO 30+00 -L- RT
FROM STA. 27+50 TO 30+00 -L- LT
NAD 83/95
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
4/4/02
-L- STA.20+50.00 BEGIN STATE PROJECT B-3877
-L- STA.20+50.00 BEGIN F.A PROJECT BRZ-1101(7)
-L- STA.31+50.00 END STATE PROJECT B-3877
-L- STA.31+50.00 END F.A PROJECT BRZ-1101(7)
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 2.0 Ft.
b = 5.0 Ft.
FROM STA. 27+50 TO 30+00 -L- LT
DETAIL 2
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 3.0 Ft.
b = 5.0 Ft.
FROM STA. 28+00 TO 30+00 -L- RT
-L- PC Sta. 17+48.68
-L- PT Sta. 30+50.00
-L- PC Sta. 31+53.22
LEWIS, JOSEPH ISSAC DB 895 PG 210
CITY OF WILSON DB 1487 PG 965
CITY OF WILSON DB 1464 PG 499
BOSTON, DIANE S. DB 836 PG 617
WILLOUGHBY, JOHNNIE MELVIN DB 1622 PG 257
CITY OF WILSON PB 25 PG 387
CLASS 'II' RIP RAP TO ELEV. 160.3
PSH SEE DETAIL
PROPOSED 2 @ 65'; 1 @ 50' 36" PRESTRESSED CONCRETE GIRDER NO DECK DRAINS ON BRIDGE REMOVE EXISTING BRIDGE
5' x 10' CL B RIPRAP PAD EST. 5.5 TONS
BEGIN SBG -L- STA. 24+38 LT
END SBG STA. 30+05 -L- LT
LATERAL BASE DITCH GRASS LINED SEE DETAIL 1
LATERAL BASE DITCH GRASS LINED SEE DETAIL 2
EXCAVATION EST. 475 C.Y. TO +/- NG
EXCAVATION EST. 1035 C.Y. TO NG
EXCAVATED AREA TO BE REVEGETATED; REFOREST ONLY THE PORTION OUTSIDE OF THE PROPOSED R/W TO MATCH EXISTING TREE LINE.
BEG. BRIDGE -L-
END BRIDGE -L-
WORK BRIDGE
BRIDGE INSET
SCALE 1" = 50'
15" CSP W/ELBOW
BRIDGE # 52
TYPE III
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
NOTE: SEE SHEET 5 FOR -L- PROFILE
REVISIONS
WOODS
20+00
25+00
30+00
15+00
13+90.95
28-APR-2005 15:41
8/17/99

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-3877	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 7000 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 158.89FT
BASE DISCHARGE	= 10,100 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 160.78FT
OVERTOPPING DISCHARGE	= 12,925CFS
OVERTOPPING FREQUENCY	= 200 YRS
OVERTOPPING ELEVATION	= 161.74 FT
	= FT
DATE OF SURVEY	= 7/7/04
W.S. ELEVATION AT DATE OF SURVEY	= 148.2 FT

PI = 25+60.00
EL = 155.48'
VC = 920'
K = 145

BEGIN RESURFACING
STA 20+50.000 (-L-)

BEGIN GRADE
STA 21+00.000 (-L-)
EL.159.48'

END GRADE
STA 31+00.000 (-L-)
EL.185.01'

END RESURFACING
STA 31+50.000 (-L-)

BEGIN RT. DITCH GRADE
-L- STA.28+00.00
ELEV. = 167.55

PI = STA.29+60.00
ELEV. = 165.75

END RT. DITCH GRADE
-L- STA.30+00.00
ELEV. = 177.25

BEGIN LT. DITCH GRADE
-L- STA.27+50.00
ELEV. = 152.70

PI = STA.28+50.00
ELEV. = 160.10

END LT. DITCH GRADE
-L- STA.30+00.00
ELEV. = 175.15

LEFT DITCH — - — - —
RIGHT DITCH - - - - - - -

BM #1
LT. OF -L- STA. 10+71.52 ELEV. 187.64

BM #2
RT. OF -L- STA. 25+12.712 ELEV. 158.56

BM #3
RT. OF -L- STA. 26+06.286 RR SPIKE
IN 17" POPLAR ELEV. 157.14

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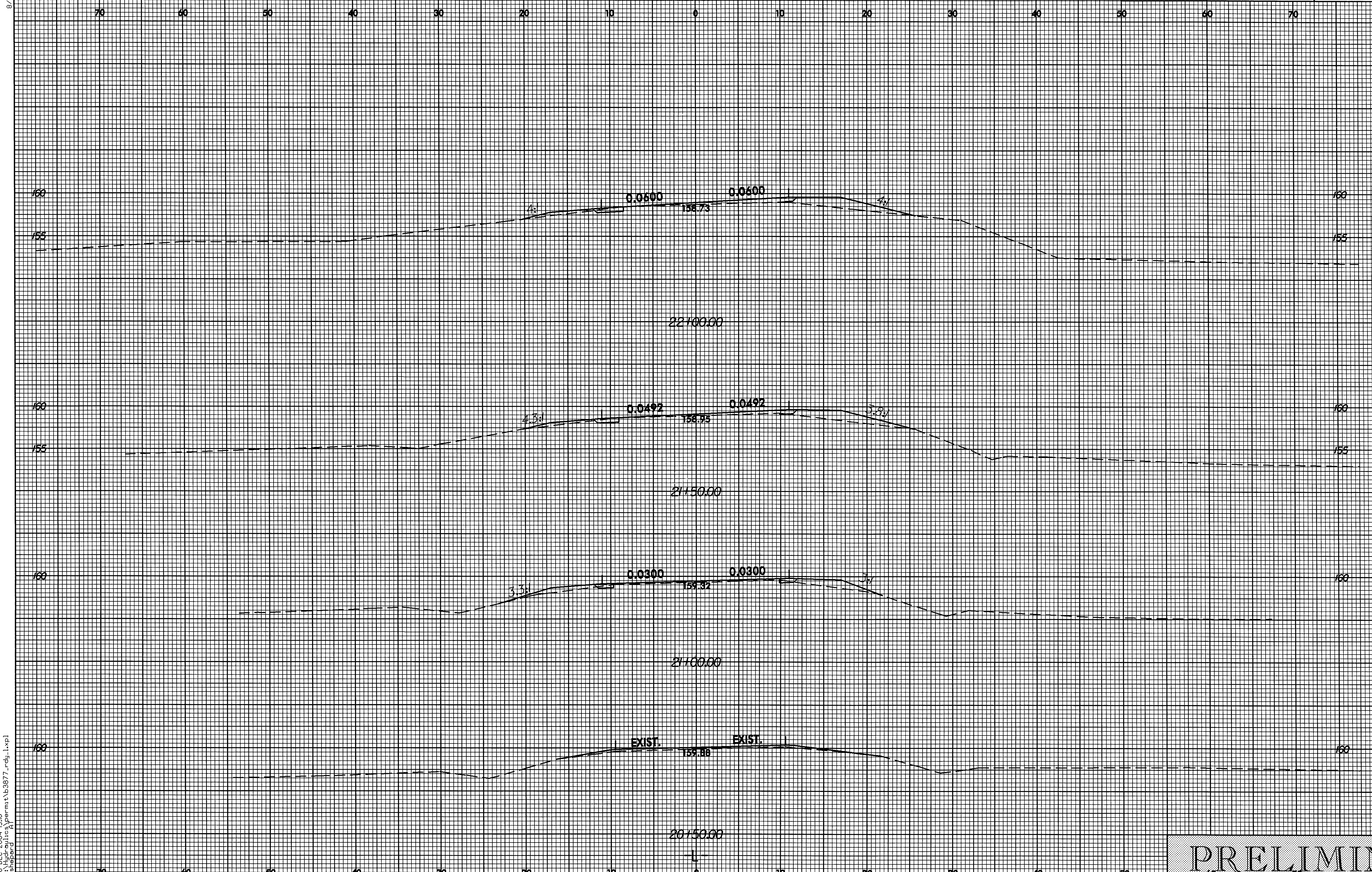
pshupard

20 21 22 23 24 25 26 27 28 29 30 31 32 33

PROJ. REFERENCE NO.	SHEET NO.
B-3877	X-1



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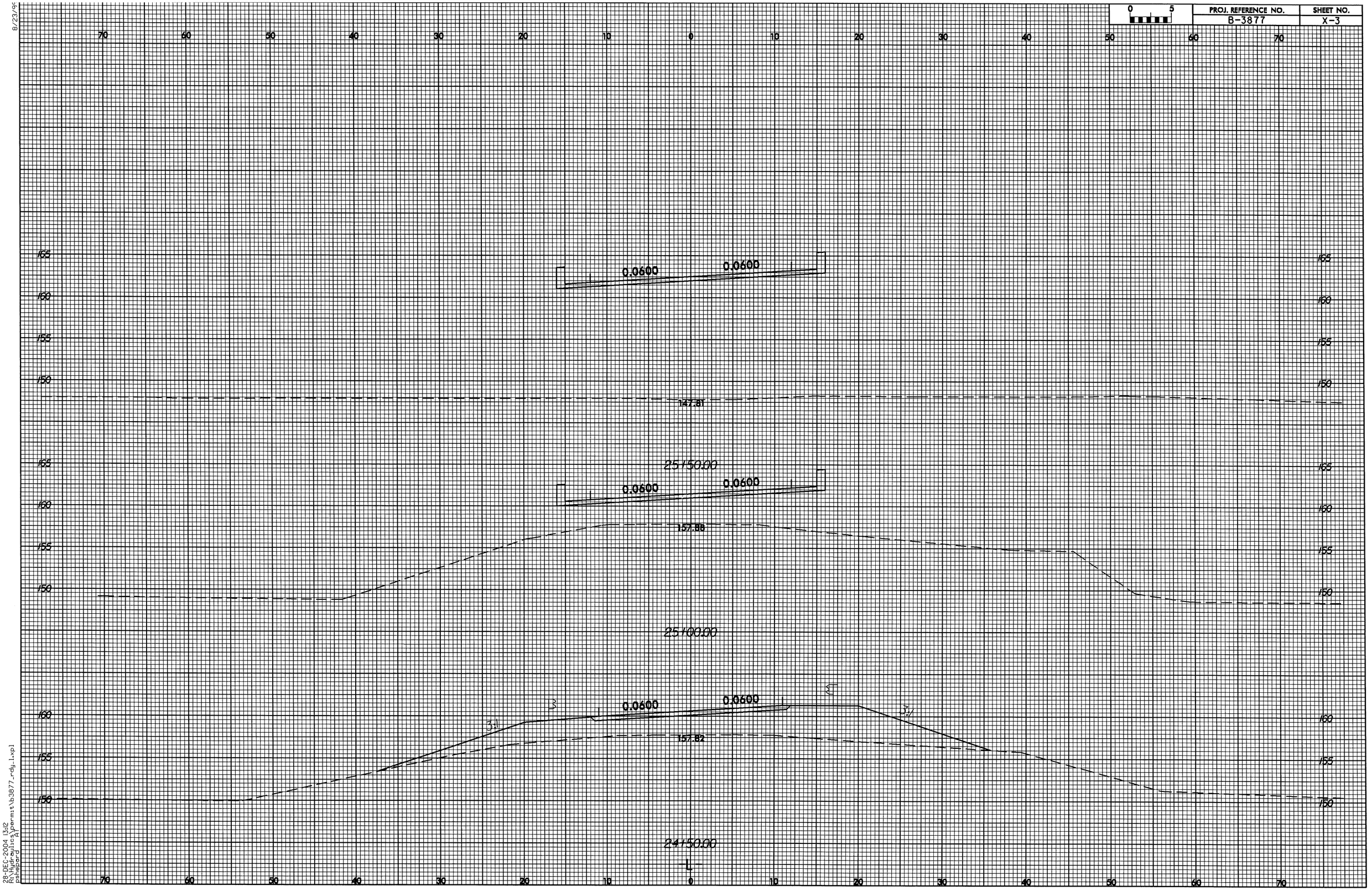
PROJ. REFERENCE NO.	SHEET NO.
B-3877	X-2

0 5

8/23/96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PROJ. REFERENCE NO.
B-3877
SHEET NO.
X-3
70 60 50 40 30 20 10 0 10 20 30 40 50 60 70
165
160
155
150
0.0600
0.0600
147.81
25+50.00
0.0600
0.0600
157.88
25+00.00
3
3:1
0.0600
0.0600
5
3:1
157.82
24+50.00
9/23/05
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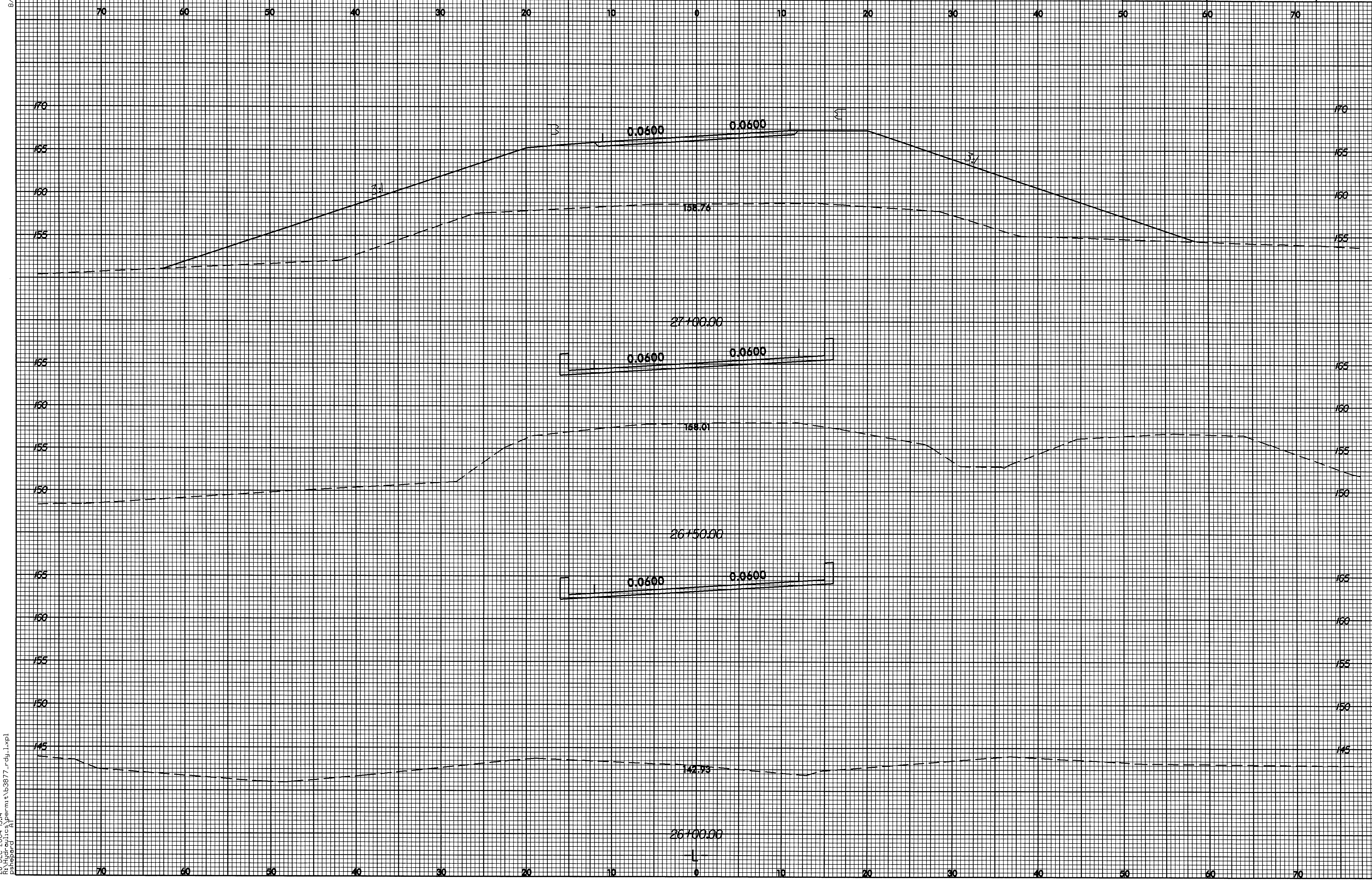
pshepard
A1

PROJ. REFERENCE NO.	SHEET NO.
B-3877	X-4



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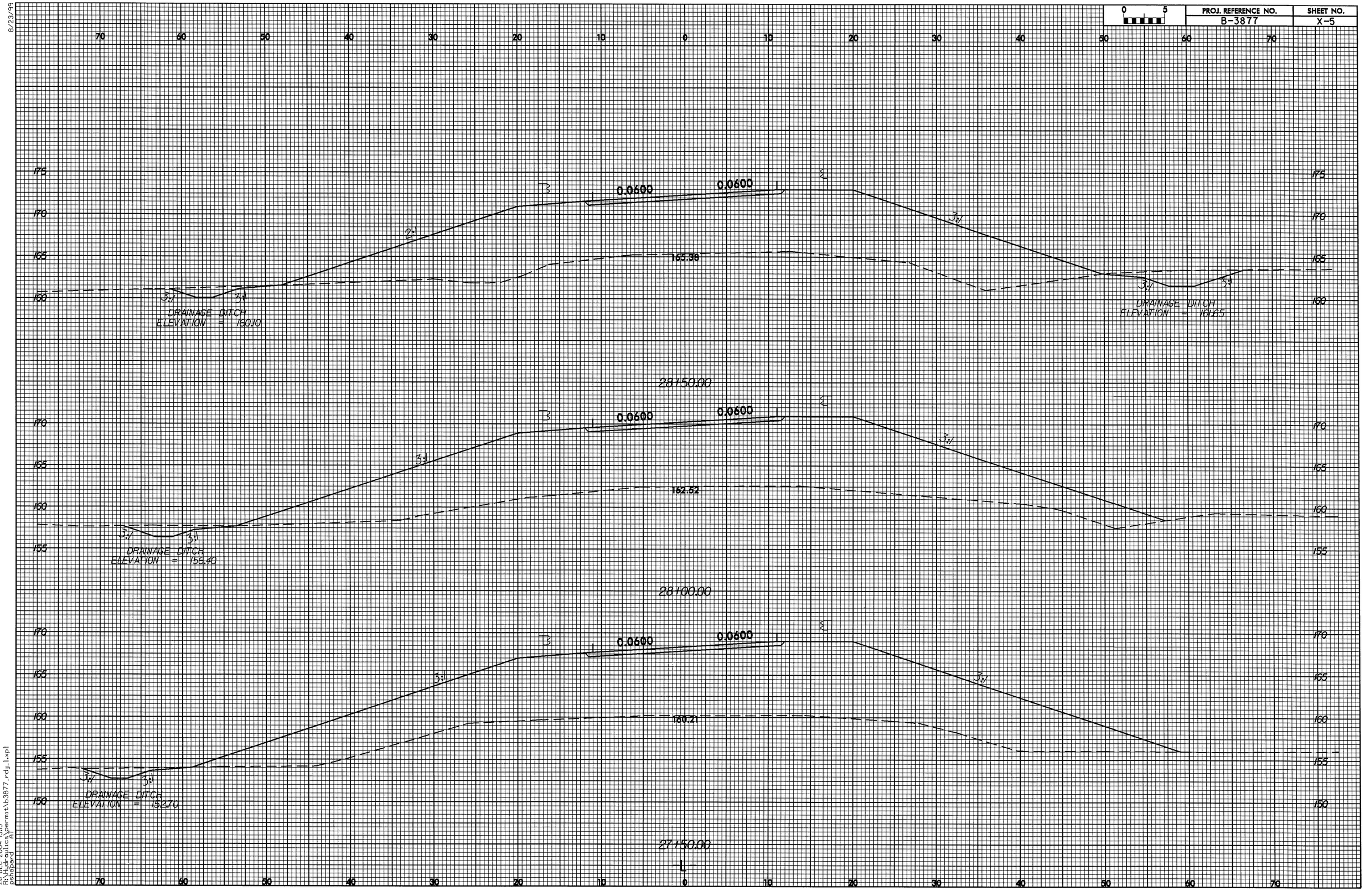
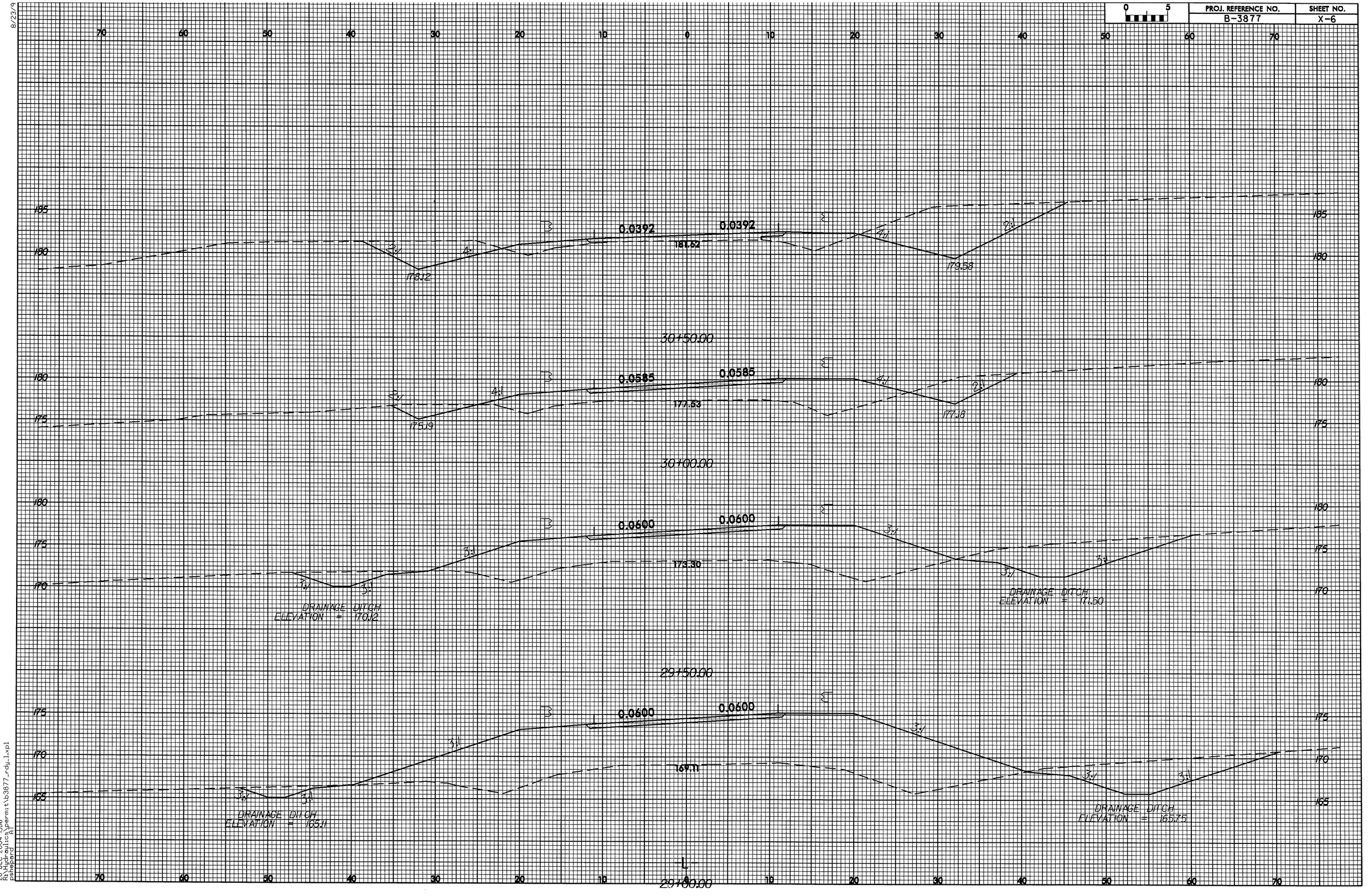
psheppard AT

8/23/99

0 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3877	X-5





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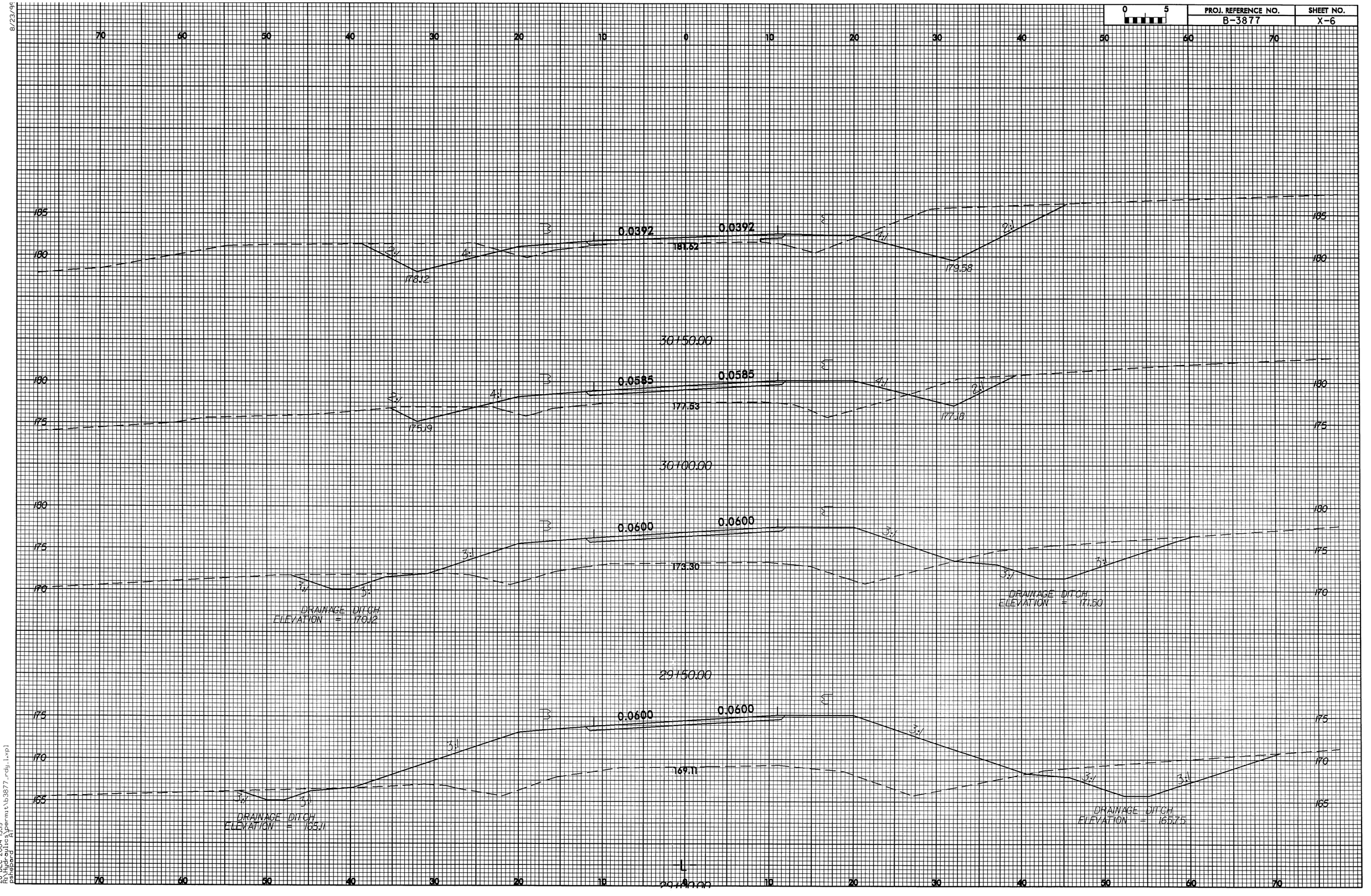
pshepard A1

0 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3877	X-6



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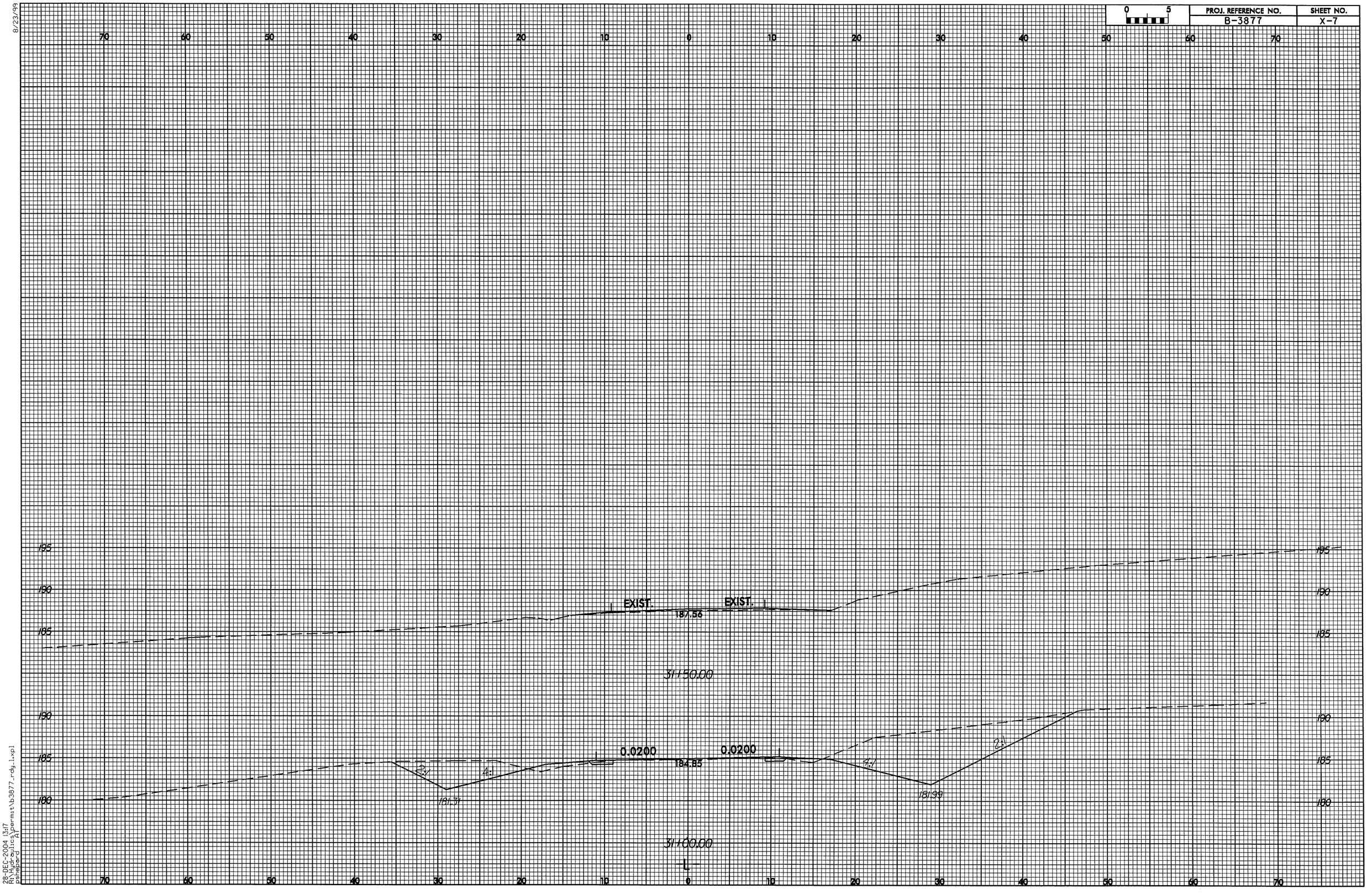
A1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PROJ. REFERENCE NO.
B-3877
SHEET NO.
X-7
8/23/99
70 60 50 40 30 20 10 0 10 20 30 40 50 60 70
195
190
185
180
EXIST.
187.56
EXIST.
311+50.00
0.0200
184.85
0.0200
2:1
4:1
181.31
4:1
181.99
2:1
311+00.00
L
28-DEC-2004 13:17
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A1

CONTRACT: C201364 TIP: B-3877

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3877	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33321.1.1	BRZ-1101(7)	PE
33321.2.1	BRZ-1101(7)	R/W, UTIL.

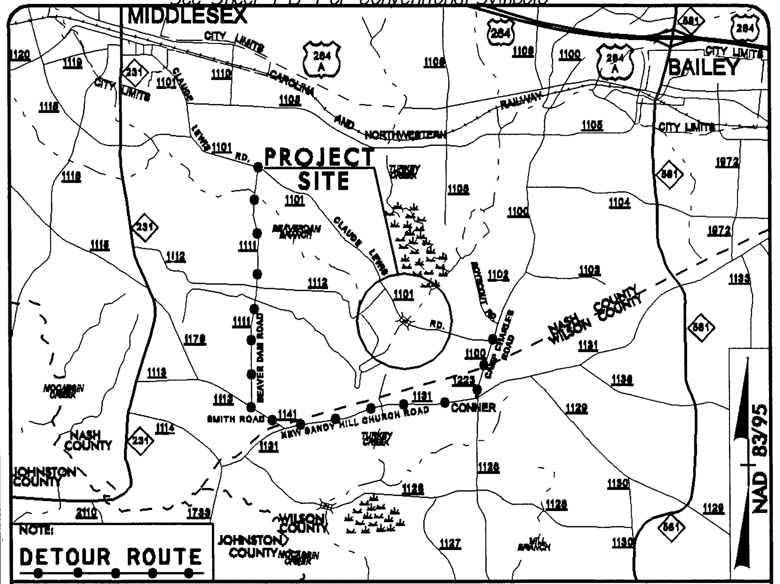
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH COUNTY

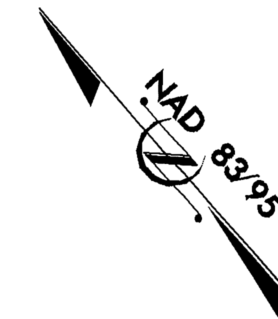
LOCATION: REPLACEMENT OF BRIDGE NO. 52 ON SR 1101 (CLAUDE LEWIS RD.) OVER TURKEY CREEK

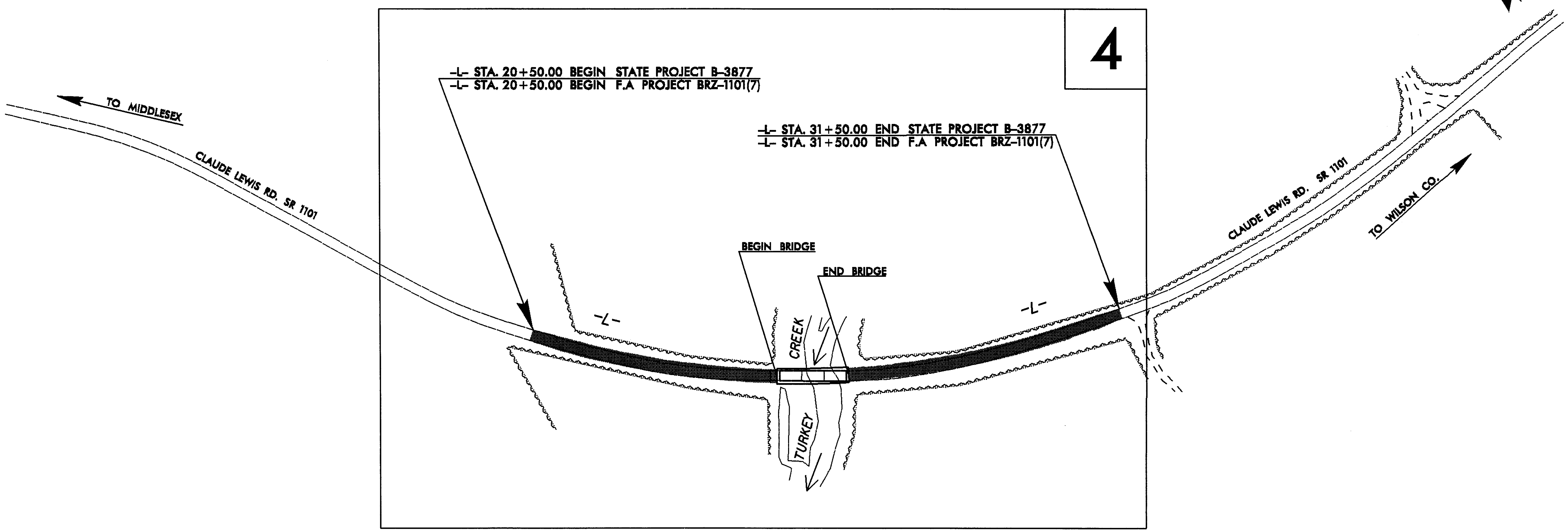
TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

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



VICINITY MAP





PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE: THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

GRAPHIC SCALES

50 25 0 50 100
PLANS
50 25 0 50 100
PROFILE (HORIZONTAL)
10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2004 = 364
ADT 2025 = 700
DHV = 10 %
DIR = 60 %
T = 3 % *
V = 60 MPH
* TTST 1% DUAL 2%
FUNC CLASS = LOCAL

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT BRZ-1101(7) = 0.174 mi.
LENGTH STRUCTURE F.A PROJECT BRZ-1101(7) = 0.034 mi.
TOTAL LENGTH OF STATE PROJECT 33321.1.1 = 0.208 mi.

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

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 30, 2004

LETTING DATE:
NOVEMBER 21, 2005

JIMMY GOODNIGHT
PROJECT ENGINEER

MARK HUSSEY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

18-FEB-2005 14:23
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MrHussey AT RD223179

09/08/99

PROJECT REFERENCE NO.	SHEET NO.
b-3877	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-3877	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

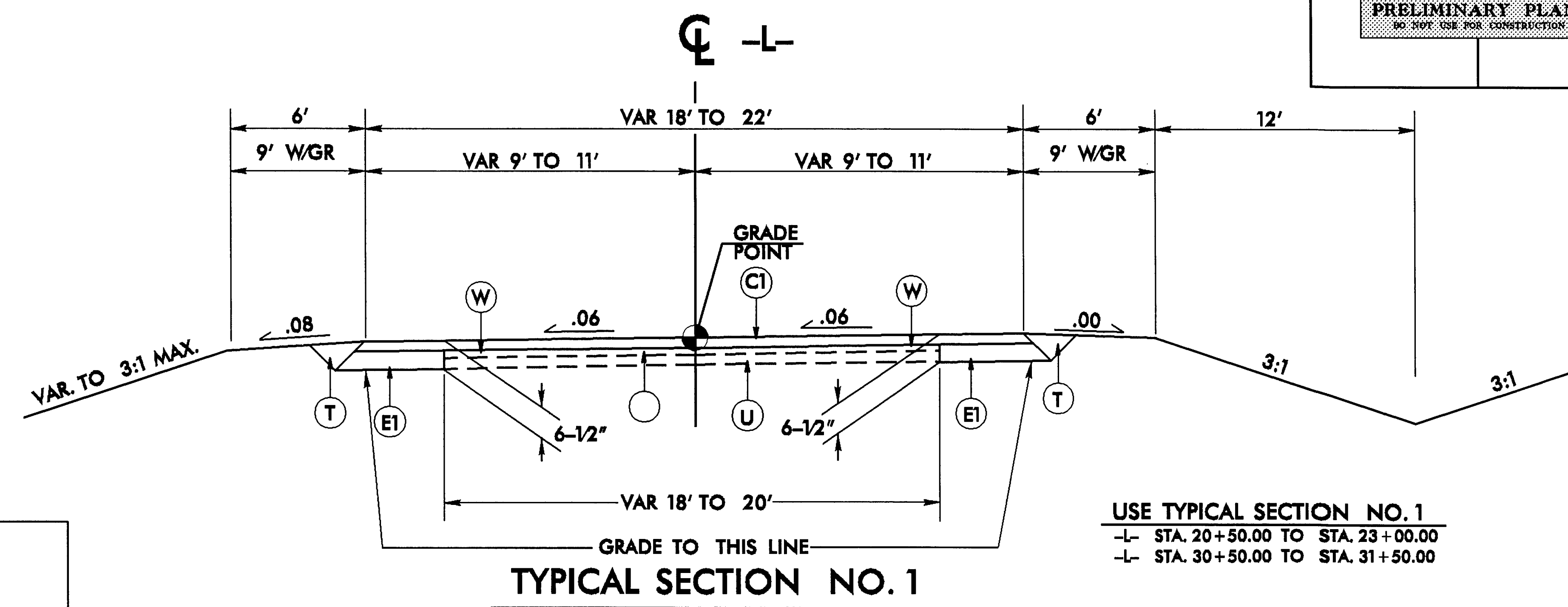
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

PAVEMENT SCHEDULE

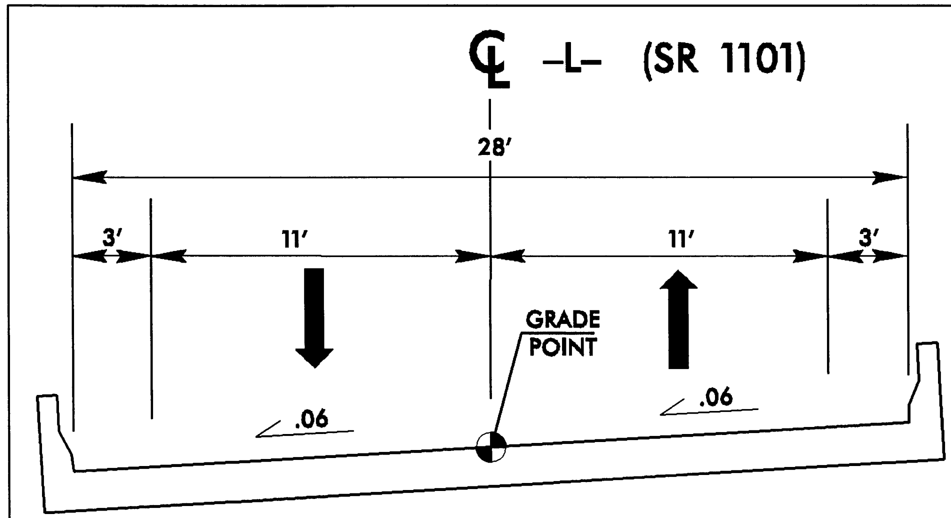
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 140 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
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



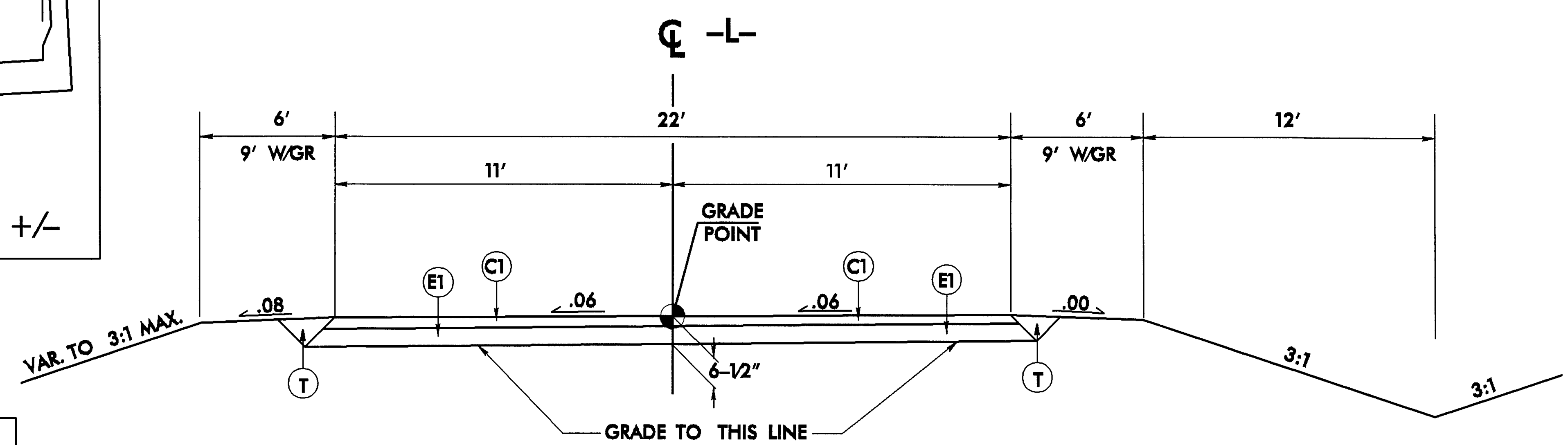
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 20+50.00 TO STA. 23+00.00
-L- STA. 30+50.00 TO STA. 31+50.00



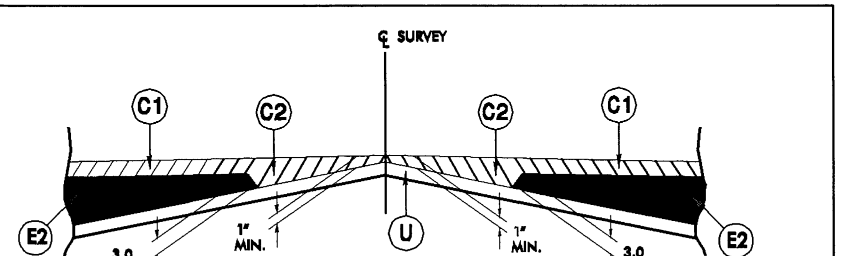
TYPICAL SECTION ON STRUCTURE

-L- STA. 25+07.00 +/- TO 26+37.00 +/-



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 23+00 TO -L- (BEG. BRIDGE)
-L- (END BRIDGE) TO -L- STA. 30+50



Detail Showing Method of Wedging

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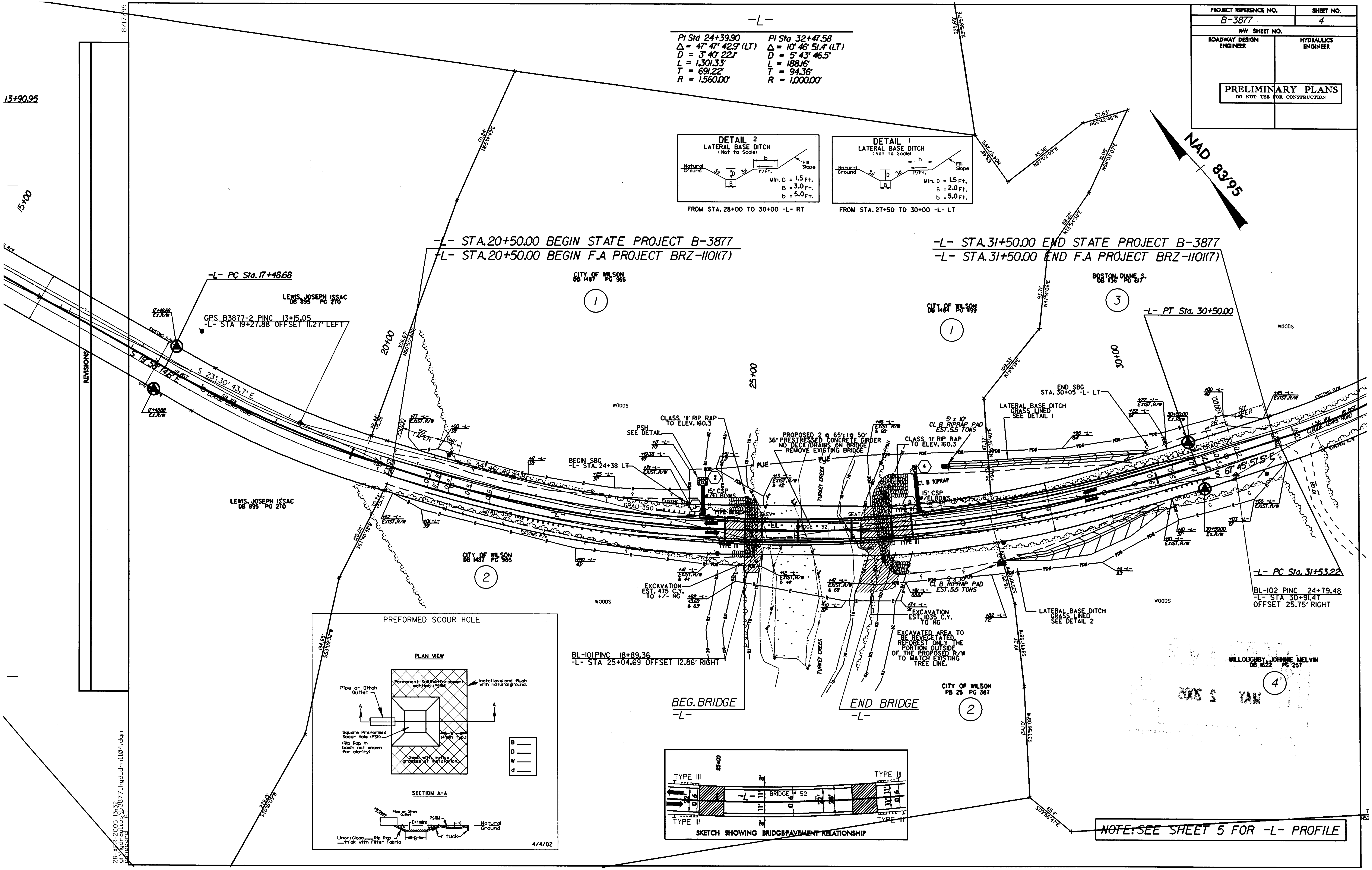
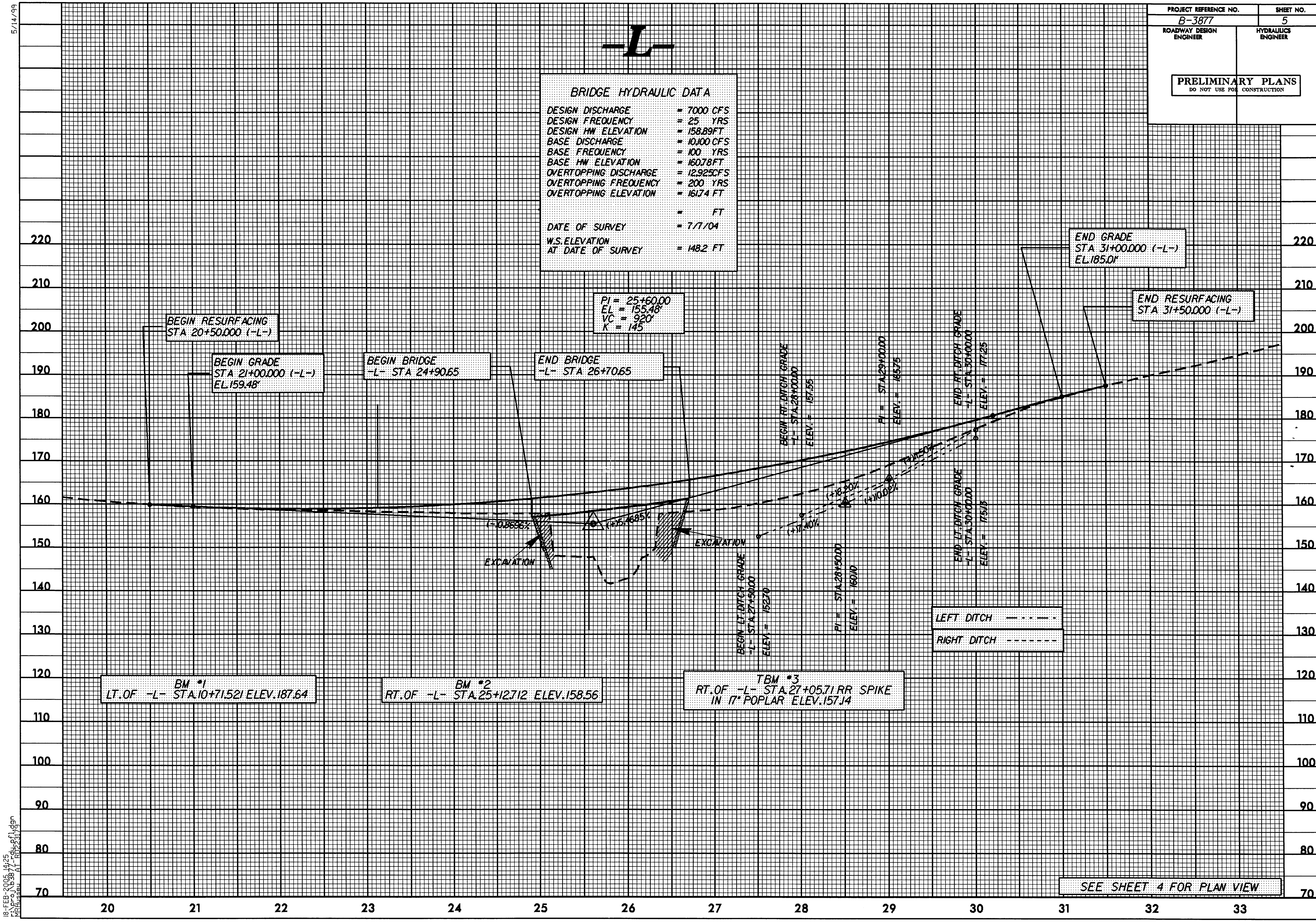


PROJECT REFERENCE NO. B-3877
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PI Sta 24+39.90
Δ = 47° 47' 42.9" (LT)
D = 3° 40' 22.1"
L = 1,301.33'
T = 691.22'
R = 1,560.00'
PI Sta 32+47.58
Δ = 10° 46' 51.4" (LT)
D = 5° 43' 46.5"
L = 188.16'
T = 94.36'
R = 1,000.00'
DETAIL 2
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 3.0 Ft.
b = 5.0 Ft.
FROM STA. 28+00 TO 30+00 -L- RT
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.5 Ft.
B = 2.0 Ft.
b = 5.0 Ft.
FROM STA. 27+50 TO 30+00 -L- LT
NAD 83/95
-L- STA. 20+50.00 BEGIN STATE PROJECT B-3877
-L- STA. 20+50.00 BEGIN F.A PROJECT BRZ-1101(7)
-L- STA. 31+50.00 END STATE PROJECT B-3877
-L- STA. 31+50.00 END F.A PROJECT BRZ-1101(7)
-L- PC Sta. 17+48.68
LEWIS, JOSEPH ISSAC DB 895 PG 210
GPS B3877-2 PINC 13+15.05
-L- STA 19+27.88 OFFSET 11.27' LEFT
CITY OF WILSON DB 1487 PG 965
BOSTON, DIANE S. DB 1136 PG 617
CITY OF WILSON DB 1484 PG 499
-L- PT Sta. 30+50.00
S 23°30' 43.7" E
S 67° 45' 57.5" E
BEGIN SBC -L- STA. 24+38 LT
END SBC STA. 30+05 -L- LT
CLASS 'II' RIP RAP TO ELEV. 160.3
PSH SEE DETAIL
PROPOSED 2 @ 65'; 1 @ 50' 36" PRESTRESSED CONCRETE GIRDER NO DECK DRAINS ON BRIDGE
REMOVE EXISTING BRIDGE
5' x 10' CL B RIPRAP PAD EST. 5.5 TONS
LATERAL BASE DITCH GRASS LINED SEE DETAIL 1
LATERAL BASE DITCH GRASS LINED SEE DETAIL 2
15" CSP W/ELBOWS
CL B RIPRAP
TURKEY CREEK
WOODS
EXCAVATION EST. 475 C.Y. TO +/- NG
EXCAVATION EST. 1035 C.Y. TO NG
EXCAVATED AREA TO BE REVEGETATED. REFOREST ONLY THE PORTION OUTSIDE OF THE PROPOSED R/W TO MATCH EXISTING TREE LINE.
-L- PC Sta. 31+53.22
BL-102 PINC 24+79.48
-L- STA 30+91.47 OFFSET 25.75' RIGHT
BL-101 PINC 18+89.36
-L- STA 25+04.69 OFFSET 12.86' RIGHT
BEG. BRIDGE -L-
END BRIDGE -L-
CITY OF WILSON PB 25 PG 387
WILLOUGHBY, JOHNNIE MELVIN DB 1622 PG 257
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
4/4/02
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
TYPE III
BRIDGE = 52
NOTE: SEE SHEET 5 FOR -L- PROFILE
13+90.95
15+00
20+00
25+00
30+00
REVISIONS
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-3877	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 7000 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 158.89FT
BASE DISCHARGE = 10,100 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 160.78FT
OVERTOPPING DISCHARGE = 12,925CFS
OVERTOPPING FREQUENCY = 200 YRS
OVERTOPPING ELEVATION = 161.74 FT
= FT
DATE OF SURVEY = 7/7/04
W.S. ELEVATION AT DATE OF SURVEY = 148.2 FT
PI = 25+60.00
EL = 155.48'
VC = 920'
K = 145
BEGIN RESURFACING STA 20+50.000 (-L-)
BEGIN GRADE STA 21+00.000 (-L-) EL.159.48'
BEGIN BRIDGE -L- STA 24+90.65
END BRIDGE -L- STA 26+70.65
END GRADE STA 31+00.000 (-L-) EL.185.01'
END RESURFACING STA 31+50.000 (-L-)
BEGIN RT. DITCH GRADE -L- STA.28+00.00 ELEV. = 157.55
PI = STA.29+00.00 ELEV. = 165.75
END RT. DITCH GRADE -L- STA.30+00.00 ELEV. = 177.25
BEGIN LT. DITCH GRADE -L- STA.27+50.00 ELEV. = 152.70
PI = STA.28+50.00 ELEV. = 160.10
END LT. DITCH GRADE -L- STA.30+00.00 ELEV. = 175.15
(-0.8696%)
(+15.4685%)
(+17.40%)
(+18.20%)
(+10.00%)
EXCAVATION
EXCAVATION
LEFT DITCH
RIGHT DITCH
BM #1 LT. OF -L- STA.10+71.521 ELEV.187.64
BM #2 RT. OF -L- STA.25+12.712 ELEV.158.56
TBM #3 RT. OF -L- STA.27+05.71 RR SPIKE IN 17" POPLAR ELEV.157.14
SEE SHEET 4 FOR PLAN VIEW
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5/14/99

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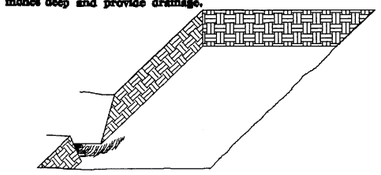
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3877	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

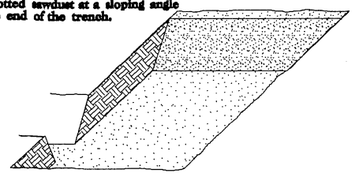
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

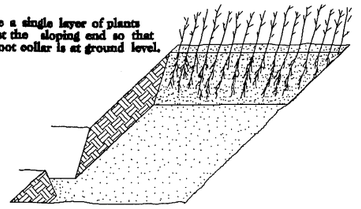
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



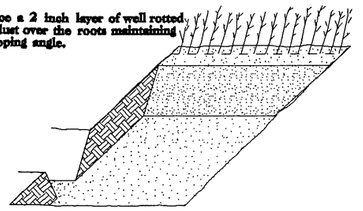
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

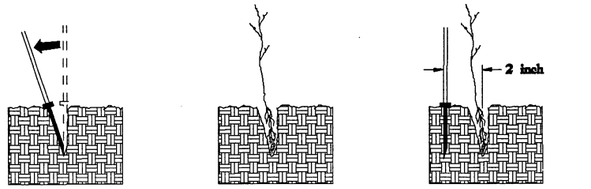


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

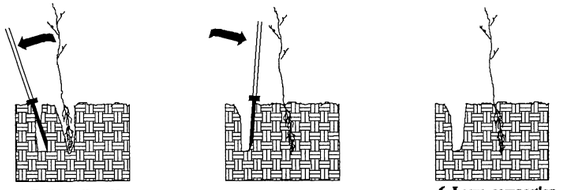


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% QUERCUS NIGRA	WATER OAK	12 in – 18 in BR
25% QUERCUS PHELLOS	WILLOW OAK	12 in – 18 in BR
25% SALIX NIGRA	BLACK WILLOW	12 in – 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

CATEGORICAL EXCLUSION ACTION CLASSIFICATION FORM

TIP Project No.	**B-3877**
WBS No.	**33321.1.1**
State Project No.	**8.2322201**
Federal Project No.	**BRZ-1101 (7)**

A. Project Description:

NCDOT will replace Bridge No. 52 on SR 1101 (Claude Lewis Road) over Turkey Creek in Nash County. The bridge will be replaced with a new bridge approximately 130 feet in length. The bridge will be 28 feet wide. This width will provide for a 22-foot travelway and 3 foot offsets on each side of the bridge. The new approach roadway will have a 22-foot travelway with 4-foot shoulders on each side of the roadway. Shoulder width will be increased at least 3 feet where guardrail is warranted. Traffic will be detoured along surrounding roads during construction. Total project length is approximately 2200 feet.

B. Purpose and Need:

Bridge No. 52 has a sufficiency rating of 38.7 out of 100. The deck is only 19.1 feet wide and the bridge is composed mainly of timber. For these reasons, Bridge No. 52 needs to be replaced.

C. Proposed Improvements:

The following Type II improvements which apply to the project are circled:

1. Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes (e.g., parking, weaving, turning, climbing).

    a. Restoring, Resurfacing, Rehabilitating, and Reconstructing pavement (3R and 4R improvements)
    b. Widening roadway and shoulders without adding through lanes
    c. Modernizing gore treatments
    d. Constructing lane improvements (merges, auxiliary, and turn lanes)
    e. Adding shoulder drains
    f. Replacing and rehabilitating culverts, inlets, and drainage pipes, including safety treatments
    g. Providing driveway pipes
    h. Performing minor bridge widening (less than one through lane)
    i. Slide Stabilization
    j. Structural BMP's for water quality improvement

2. Highway safety or traffic operations improvement projects including the installation of ramp metering control devices and lighting.

    a. Installing ramp metering devices
    b. Installing lights
    c. Adding or upgrading guardrail

d. Installing safety barriers including Jersey type barriers and pier protection
e. Installing or replacing impact attenuators
f. Upgrading medians including adding or upgrading median barriers
g. Improving intersections including relocation and/or realignment
h. Making minor roadway realignment
i. Channelizing traffic
j. Performing clear zone safety improvements including removing hazards and flattening slopes
k. Implementing traffic aid systems, signals, and motorist aid
l. Installing bridge safety hardware including bridge rail retrofit

3. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.

a. Rehabilitating, reconstructing, or replacing bridge approach slabs
b. Rehabilitating or replacing bridge decks
c. Rehabilitating bridges including painting (no red lead paint) scour repair, fender systems, and minor structural improvements
d. Replacing a bridge (structure and/or fill)

4. Transportation corridor fringe parking facilities.

5. Construction of new truck weigh stations or rest areas.

6. Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.

7. Approvals for changes in access control.

8. Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and located on or near a street with adequate capacity to handle anticipated bus and support vehicle traffic.

9. Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.

10. Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks, and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.

11. Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.

12. Acquisition of land for hardship or protective purposes, advance land acquisition loans under section 3(b) of the UMT Act. Hardship and protective buying will be permitted only for a particular parcel or a limited number of parcels. These types of land acquisition qualify for a CE only where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction

projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed.

13. Acquisition and construction of wetland, stream and endangered species mitigation sites.

14. Remedial activities involving the removal, treatment or monitoring of soil or groundwater contamination pursuant to state or federal remediation guidelines.

D. Special Project Information:

Estimated Costs:

Total Construction	$ 975,000
Right of Way	$ 30,000
Total	**$ 1,005,000**

Estimated Traffic:

Current	-	300 vpd
Year 2025	-	700 vpd
TTST	-	1%
Dual	-	2%

Proposed Typical Cross Section:

The new approach roadway will have a 22-foot travelway with 4-foot shoulders on each side of the roadway. Shoulder width will be increased at least 3 feet where guardrail is warranted.

Design Speed:

60 mph

Design Exceptions:

None

Functional Classification:

SR 1101 is classified as a Rural Local Route in the Statewide Functional Classification system.

Division Office Comments:

The Division 4 Construction Engineer supports the chosen alternate and proposed method for detouring traffic during construction.

Bridge Demolition:

Bridge No. 52 is located on SR 1101 over Turkey Creek in Nash County. The Bridge deck is composed of a timber floor on I-beams, timber piles with concrete caps, and a

steel crutch. Therefore, Bridge No. 52 will be removed without dropping any components into Waters of the United States.

Alternatives Discussion: (including Studied Offsite Detour Evaluation)

According to the Nash-Rocky Mount School System, this road has 5 school bus trips per day.

According to Nash County 911 Supervisor, a volunteer fire department in Middlesex and an ambulance from Bailey are the responders in this area.

The detour route will utilize SR 1111, SR 1113, SR 1131, and SR 1100. There will be 2.3 miles of additional travel.

One other alternative was studied. It included an onsite detour to the south. The onsite detour was eliminated from further study due to their increased costs and increased impacts on the surrounding environment.

"Do-nothing" is not practical; requiring the eventual closing of the road as the existing bridge completely deteriorates. Rehabilitation of the existing deteriorating bridge is neither practical nor economical.

E. Threshold Criteria

The following evaluation of threshold criteria must be completed for Type II actions

ECOLOGICAL		YES	NO
(1)	Will the project have a substantial impact on any unique or important natural resource?		X
(2)	Does the project involve habitat where federally listed endangered or threatened species may occur?		X
(3)	Will the project affect anadromous fish?		X
(4)	If the project involves wetlands, is the amount of permanent and/or temporary wetland taking less than one-tenth (1/10) of an acre and have all practicable measures to avoid and minimize wetland takings been evaluated?	X	
(5)	Will the project require the use of U. S. Forest Service lands?		X
(6)	Will the quality of adjacent water resources be adversely impacted by proposed construction activities?		X
(7)	Does the project involve waters classified as Outstanding Water Resources (OWR) and/or High Quality Waters (HQW)?		X
(8)	Will the project require fill in waters of the United States in any of the designated mountain trout counties?		X
(9)	Does the project involve any known underground storage tanks (UST's) or hazardous material sites?		X

PERMITS AND COORDINATION		YES	NO
(10)	If the project is located within a CAMA county, will the project significantly affect the coastal zone and/or any "Area of Environmental Concern" (AEC)?		X
(11)	Does the project involve Coastal Barrier Resources Act resources?		X
(12)	Will a U. S. Coast Guard permit be required?		X

		YES	NO
(13)	Will the project result in the modification of any existing regulatory floodway?		X
(14)	Will the project require any stream relocations or channel changes?		X
	SOCIAL, ECONOMIC, AND CULTURAL RESOURCES	**YES**	**NO**
(15)	Will the project induce substantial impacts to planned growth or land use for the area?		X
(16)	Will the project require the relocation of any family or business?		X
(17)	Will the project have a disproportionately high and adverse human health and environmental effect on any minority or low-income population?		X
(18)	If the project involves the acquisition of right of way, is the amount of right of way acquisition considered minor?	X	
(19)	Will the project involve any changes in access control?		X
(20)	Will the project substantially alter the usefulness and/or land use of adjacent property?		X
(21)	Will the project have an adverse effect on permanent local traffic patterns or community cohesiveness?		X
(22)	Is the project included in an approved thoroughfare plan and/or Transportation Improvement Program (and is, therefore, in conformance with the Clean Air Act of 1990)?	X	
(23)	Is the project anticipated to cause an increase in traffic volumes?		X
(24)	Will traffic be maintained during construction using existing roads, staged construction, or on-site detours?	X	
(25)	If the project is a bridge replacement project, will the bridge be replaced at its existing location (along the existing facility) and will all construction proposed in association with the bridge replacement project be contained on the existing facility?	X	
(26)	Is there substantial controversy on social, economic, or environmental grounds concerning the project?		X

(27)	Is the project consistent with all Federal, State, and local laws relating to the environmental aspects of the project?	X	
(28)	Will the project have an "effect" on structures/properties eligible for or listed on the National Register of Historic Places?		X
(29)	Will the project affect any archaeological remains, which are important to history or pre-history?		X
(30)	Will the project require the use of Section 4(f) resources (public parks, recreation lands, wildlife and waterfowl refuges, historic sites, or historic bridges, as defined in Section 4(f) of the U. S. Department of Transportation Act of 1966)?		X
(31)	Will the project result in any conversion of assisted public recreation sites or facilities to non-recreation uses, as defined by Section 6(f) of the Land and Water Conservation Act of 1965, as amended?		X
(32)	Will the project involve construction in, across, or adjacent to a river designated as a component of or proposed for inclusion in the Natural System of Wild and Scenic Rivers?		X

F. **<u>Additional Documentation Required for Unfavorable Responses in Part E</u>**
(Discussion regarding all unfavorable responses in Part E should be provided below. Additional supporting documentation may be attached, as necessary.)

G. CE Approval

TIP Project No.	**B-3877**
WBS No.	**33321.1.1**
State Project No.	**8.2322201**
Federal Project No.	**BRZ-1101 (7)**

Project Description:

NCDOT will replace Bridge No. 52 on SR 1101 (Claude Lewis Road) over Turkey Creek in Nash County. The bridge will be replaced with a new bridge approximately 130 feet in length. The bridge will be 28 feet wide. This width will provide for a 22-foot travelway and 3 foot offsets on each side of the bridge. The new approach roadway will have a 22-foot travelway with 4-foot shoulders on each side of the roadway. Shoulder width will be increased at least 3 feet where guardrail is warranted. Traffic will be detoured along surrounding roads during construction. Total project length is approximately 2200 feet.

Categorical Exclusion Action Classification:

__X__ TYPE II(A)
_____ TYPE II(B)

Approved:

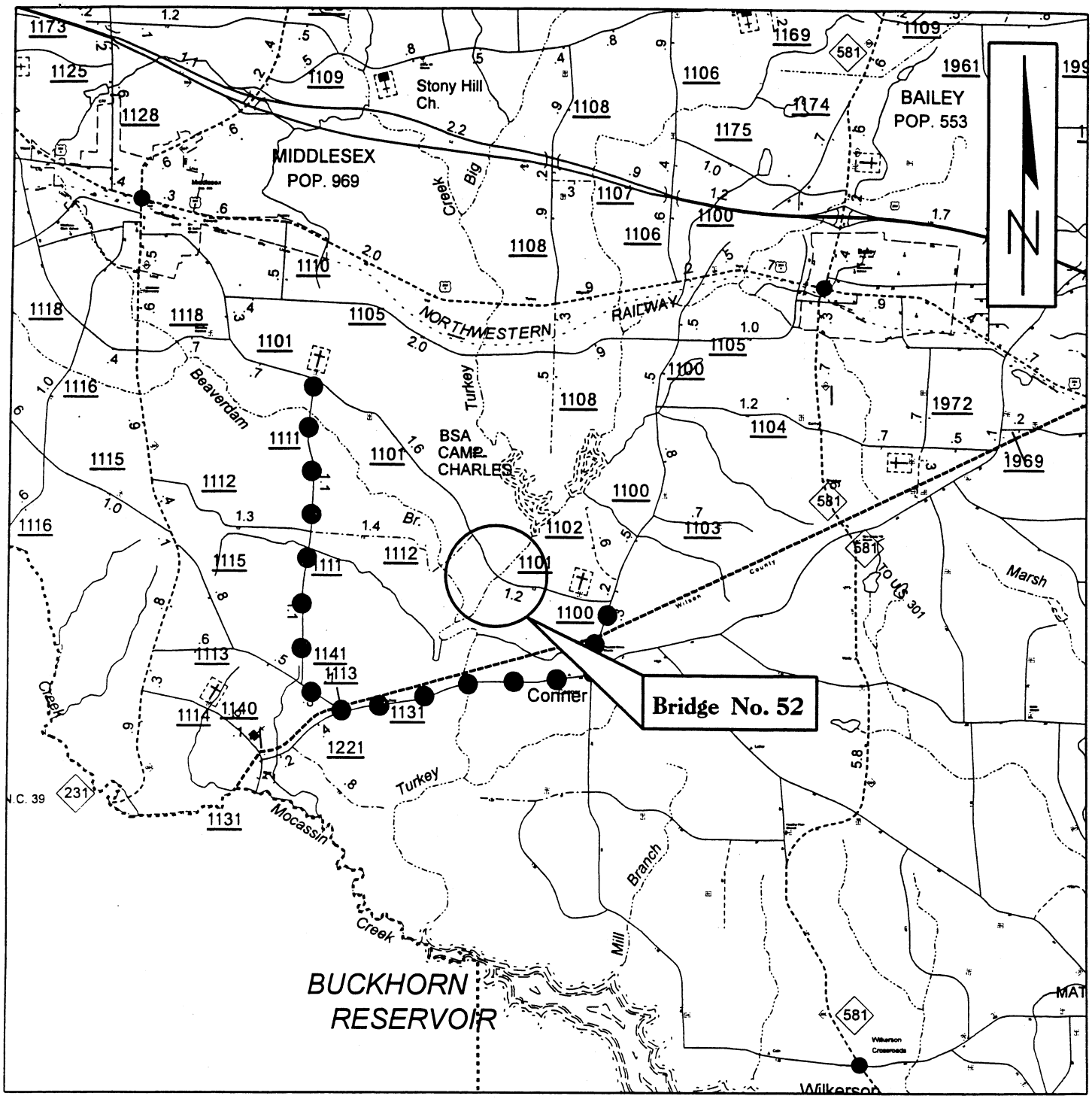
12-12-03 — Teresa Hart
Date — Teresa Hart, PE, CPM, Assistant Manager
Project Development & Environmental Analysis Branch

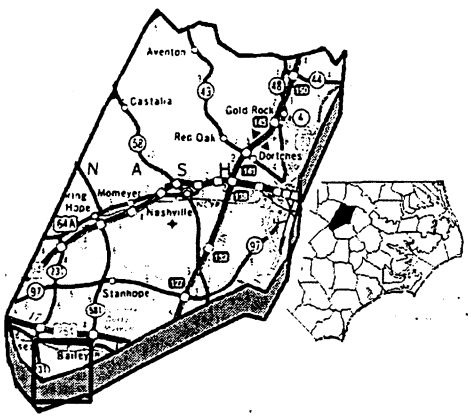
12-15-03 — William T. Goodwin, Jr.
Date — William T. Goodwin, Jr., PE, Project Planning Unit Head,
Project Development & Environmental Analysis Branch

12-15-03 — Robin Y. Hancock
Date — Robin Y. Hancock, Project Development Engineer,
Project Development & Environmental Analysis Branch

For Type II(B) projects only:

_____ — Not Required
Date — John F. Sullivan, III, Division Administrator
Federal Highway Administration





North Carolina Department of Transportation
Division of Highways
Project Development & Environmental Analysis

Nash County
Replace Bridge No. 52 on SR 1101 Over Turkey Creek
B-3877

SCALE: 1 in = 1 mi

Figure 1

Kerin Young

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor

Division of Archives and History
Jeffrey J. Crow, Director

January 16, 2001

MEMORANDUM

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

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

Re: Replacement of Bridge No. 52 on SR 1101 over Turkey Creek,
TIP No. B-3877, Nash County, ER 01-7929

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 photographs 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 no 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 may be 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.

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.

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

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Robin Y. Hancock
Project Development and Environmental Analysis Branch, NCDOT

FROM: Travis Wilson, Highway Project Coordinator
Habitat Conservation Program

DATE: September 15, 2003

SUBJECT: NCDOT Bridge Replacements in Warren, Nash, and Johnston counties. TIP Nos. B-3863, B-3876, B-3877, B-3921, and B-4312.

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

Our standard recommendations for bridge replacement projects of this scope are as follows:

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

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

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

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

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

5. If temporary access roads or detours are constructed, they should be removed back to original ground elevations immediately upon the completion of the project. Disturbed areas should be seeded or mulched to stabilize the soil and native tree species should be planted with a spacing of not more than 10'x10'. If possible, when using temporary structures the area should be cleared but not grubbed. Clearing the area with chain saws, mowers, bush-hogs, or other mechanized equipment and leaving the stumps and root mat intact, allows the area to revegetate naturally and minimizes disturbed soil.

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

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

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

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

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

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

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

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

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

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

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

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

1. The culvert must be designed to allow for aquatic life and fish passage. Generally, the culvert or pipe invert should be buried at least 1 foot below the natural streambed (measured from the natural thalweg depth). If multiple barrels are required, barrels other than the base flow barrel(s) should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). These should be reconnected to floodplain benches as appropriate. This may be accomplished by utilizing sills on the upstream and downstream ends to restrict or divert flow to the base flow barrel(s). Silled barrels should be filled with sediment so as not to cause noxious or mosquito breeding conditions. Sufficient water depth should be provided in the base flow barrel(s) during low flows to accommodate fish movement. If culverts are longer than 40-50 linear feet, alternating or notched baffles should be installed in a manner that mimics existing stream pattern. This should enhance aquatic life passage: 1) by depositing sediments in the barrel, 2) by maintaining channel depth and flow regimes, and 3) by providing resting places for fish and other aquatic organisms. In essence, base flow barrel(s) should provide a continuum of water depth and channel width without substantial modifications of velocity.

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

3. Culverts or pipes should be situated along the existing channel alignment whenever possible to avoid channel realignment. Widening the stream channel must be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage.

4. Riprap should not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be professionally designed, sized, and installed.

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

Project specific comments:

1. B-3863, Johnston County, Bridge No. 151 over Little River on SR 1722. We recommend replacing this bridge with a bridge. Our records indicate a known population of Dwarf wedge mussel (*Alasmidonta heterodon*) and Atlantic Pigtoe (*Fusconaia masoni*) in close proximity to the project. NCDOT should conduct a mussel survey to determine the presence or absence of these species. Anadromous species are found in this portion of the Little River. NCDOT should follow all stream crossing guidelines for anadromous fish passage, including an in-water work moratorium from February 15 to June 15. Standard recommendations apply.

2. B-3876, Nash County, Bridge No. 34 over Pig Basket Creek on SR 1004. We recommend replacing this bridge with a bridge. Standard recommendations apply.

3. B-3877, Nash County, Bridge No. 52 over Turkey Creek on SR 1101. We recommend replacing this bridge with a bridge. Our records indicate a known population of Dwarf wedge mussel (*Alasmidonta heterodon*) and Atlantic Pigtoe (*Fusconaia masoni*) in close proximity to the project. NCDOT should conduct a mussel survey to determine the presence or absence of these species. Standard recommendations apply.

4. B-3921, Warren County, Bridge No. 45 over Fishing Creek on SR 1600. We recommend replacing this bridge with a bridge. Our records indicate a known population of Yellow Lance (*Elliptio lanceolata*) in close proximity to the project. NCDOT should conduct a mussel survey to determine the presence or absence of this species. Standard recommendations apply.

5. B-4312, Warren County, Bridge No. 42 over Shocco Creek on SR 1613. We recommend replacing this bridge with a bridge. Our records indicate a known population of Dwarf wedge mussel (*Alasmidonta heterodon*) in close proximity to the project. NCDOT should conduct a mussel survey to determine the presence or absence of this species. Standard recommendations apply.

NCDOT should routinely minimize adverse impacts to fish and wildlife resources in the vicinity of bridge replacements. Restoring previously disturbed floodplain benches should narrow and deepen streams previously widened and shallowed during initial bridge installation. NCDOT should install and maintain sedimentation control measures throughout the life of the project and prevent wet concrete from contacting water in or entering into these streams. Replacement of bridges with spanning structures of some type, as opposed to pipe or box culverts, is recommended in most cases. Spanning structures allow wildlife passage along streambanks and reduce habitat fragmentation.

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

Cc: Gary Jordan, U.S. Fish and Wildlife Service, Raleigh

PROJECT COMMITMENTS

Nash County
Bridge No. 52 on SR 1101
Over Turkey Creek
Federal Project BRZ-1101 (7)
WBS 33321.1.1
State Project 8.2322201
TIP No. B-3877

Commitments Developed Through Project Development and Design

Roadside Environmental Unit, Division 4 Construction, Structure Design Unit
Bridge Demolition: Best Management Practices for Bridge Demolition & Removal will be implemented. The bridge deck is composed of a timber floor on I-beams, timber piles with concrete caps, and a steel crutch. Therefore, Bridge No. 52 will be removed without dropping any components into Waters of the United States.

Division 4 Construction, Roadside Environmental Unit, Hydraulics Unit
Due to the potential sedimentation concerns resulting from demolition of the bridges, where it is possible to do so, turbidity curtains will be used to minimize sedimentation in the stream.

Division 4 Construction
In order to allow Emergency Management Services (EMS) time to prepare for road closure, the NCDOT Resident Engineer will notify the Coordinator of Nash County EMS at (252) 459-9805 of the bridge removal 30 days prior to road closure.

Program Development, Design Services Contracting, Division 4 Construction
Construction of B-4327 in Wilson County must be completed before starting B-3877 because it will serve part of the offsite detour for B-3877.

NATURAL RESOURCES TECHNICAL REPORT

for the

REPLACEMENT OF BRIDGE NO. 52 ON SR 1101
OVER TURKEY CREEK
NASH COUNTY, NORTH CAROLINA

TIP No. B-3877
State Project No. 8.2322201
NCDOT Consulting Project No. 00-LM-07
LandMark Design Group Number 1960024-307.00

Prepared for the

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Project Development and Environmental Analysis Branch
Natural Resources, Permits and Mitigation Unit
One South Wilmington Street, Post Office Box 25201
Raleigh, North Carolina 27611
Attn: Elizabeth Lusk

Issued: June 2001

LANDMARK DESIGN GROUP

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LIST OF TABLES

1.0 INTRODUCTION

The following Natural Resources Technical Report is submitted to assist in preparation of a Categorical Exclusion (CE) for the proposed project. The project is situated in the southern portion of Nash County.

1.1 Project Description

The proposed project calls for the replacement of Bridge No. 52 on State Road 1101 over Turkey Creek . The existing right-of-way (ROW) width is assumed from ditch line to ditch line. The proposed ROW width is 80.00 ft (24.38 m) for alternate 1 and 2. The assumed ROW for the on-site detour bridge for alternate 2 is 60.00 ft (18.29 m). A ROW width was not given for the temporary on-site detour bridge in the project description, therefore, the assumed width was based on past project descriptions. The existing bridge is 121.00 ft (36.88 m) long. The proposed project length is approximately 1,200.00 ft (365.76 m).

Alternative 1 – Replace the existing bridge with a new 130.00 ft (39.62 m) long bridge at approximately the same location and roadway elevation as the existing bridge. Traffic will be maintained off-site.

Alternative 2 – Replace the existing bridge with a new 130.00 ft (39.62 m) long bridge at approximately the same location and roadway elevation as the existing bridge. Traffic will be maintained using a temporary on-site detour bridge, approximately 100.00 ft (30.48 m) in length, located to the south of the existing bridge during construction.

1.2 Purpose

The purpose of this technical report is to inventory, catalog, and describe the various natural resources likely to be impacted by the proposed action. This report also attempts to identify and estimate the probable consequences of the anticipated impacts to these resources. Recommendations are made for measures that will minimize resource impacts. **These descriptions and estimates are relevant only in the context of existing preliminary design concepts. If design parameters and criteria change, additional field investigations may need to be conducted.**

1.3 Methodology

Research was conducted prior to field investigations. Information sources used in this pre-field investigation of the study area include: Middlesex (1978) U.S. Geological Survey (USGS) quadrangle map, Middlesex (1994) U.S. Fish and Wildlife Service (FWS) National Wetland Inventory Map, USDA Natural Resources Conservation Service (NRCS) *Soil Survey of Nash County, North Carolina* (1989), and NCDOT aerial photographs of the project area (1:100 ft). Water resource information was obtained from publications of the North Carolina Division of Water Quality (NCDWQ), Water Quality Section *Tar-Pamlico Basinwide Management Plan* (DENR, 1999). Information concerning the occurrence of federal and state protected species in the study area was gathered from the U.S. Fish and Wildlife Service (FWS) list of protected species and species of concern, and the N.C. Natural Heritage Program (NHP) database of rare species and unique habitats.

LandMark Design Group environmental scientists Ryan Smith, Wendee Smith, and Corri Wolfe conducted field surveys along the proposed alignment on 19 April 2001. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved using one or more of the following observation techniques: active search and capture, visual observations, and identification of characteristic signs of wildlife (sounds, scat, tracks, and burrows). Jurisdictional wetland determinations were performed utilizing delineation criteria prescribed in the Corps of Engineers *Wetlands Delineation Manual* (Environmental Laboratory, 1987). Jurisdictional surface water determinations were performed using guidance provided by N.C. Division of Water Quality (DWQ) *Field Location of Streams, Ditches, and Ponding* (Environmental Laboratory, 1997).

1.4 Qualifications of Investigators

1) Investigator:	Ryan Smith, Environmental Scientist, LandMark Design Group Inc., September 1999 to Present
Education:	B.S. Natural Resources: Ecosystem Assessment, Minor in Environmental Science, North Carolina State University, 1999
Experience:	Project Coordinator, Environmental Impact, Inc. Aberdeen, NC, May 1999 to August 1999 Forestry Technician, N.C. Forest Service, Summer 1998
2) Investigator:	Wendee B. Smith, Environmental Scientist, LandMark Design Group Inc., September 1999 to Present
Education:	B.S. Natural Resources: Ecosystem Assessment, Minor in Environmental Science, North Carolina State University, 1999
Experience:	Natural Systems Specialist, N.C. Department of Transportation/Project Development and Environmental Analysis Branch, May 1999 to August 1999 Forestry Technician, N.C. Forest Service, Summer 1998
3) Investigator:	Corri Wolfe, Environmental Scientist, LandMark Design Group Inc., April 2001 to Present
Education:	B.S. Natural Resources: Ecosystem Assessment, Minor in Environmental Science, North Carolina State University, 2000 B.S. Biological Science, North Carolina State University, 2001
Experience:	Associate Scientist, Biolex, Inc. Pittsboro, NC, January 2000 to March 2001 Laboratory Technician, Department of Forestry, North Carolina State University, January 1999 to May 2000

1.5 Definitions

Definitions for area descriptions used in this report are as follows: **Project Study Area** denotes the area bounded by proposed construction limits; **Project Vicinity** describes an area extending 0.50 mi (0.80 km) on all sides of the project study area; and **Project Region** is equivalent to an area represented by a 7.5 minute USGS quadrangle map with the project occupying the central position.

2.0 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 with long slopes and is drained directly by Turkey Creek. Project elevation is approximately 160.00 ft (48.77 m) above mean sea level (msl).

2.1 Soils

Three soil phases occur within the study area: Wehadkee loam, Wedowee coarse sandy loam, and Wickham fine sandy loam. Soil description information was obtained from the *Soil Survey of Nash County, North Carolina*, 1989. They are as follows:

- Wehadkee loam is a frequently flooded, poorly drained, nearly level soil that occurs on low flood plains along most of the streams in Nash County. Permeability is moderate and the seasonal high water table is located at or near the surface during all but the driest months. Frequent flooding for a brief duration is a characteristic of this soil type.

- Wedowee coarse sandy loam with 6 to 10 percent slopes, is a well-drained, moderately sloping soil that occurs on side slopes draining toward streams. Permeability is moderate, surface runoff is rapid, and erosion is rapid in unprotected areas of this soil. Moderate permeability and moderate shrink-swell potential are the main limitations of this soil type.

- Wickham fine sandy loam with 0 to 3 percent slopes, is a infrequently flooded, well drained, nearly level to gently sloping soil that occurs on high stream terraces. Permeability is moderate, surface runoff is moderate, and the soil is susceptible to infrequent flooding.

2.2 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.

2.2.1 Waters Impacted and Characteristics

Turkey Creek will be the only surface water resource directly impacted by the proposed project. Turkey Creek is located in subbasin 03-03-02 of the Tar-Pamlico River Basin. The average baseflow width is approximately 110.00 (33.53 m). The average depth is approximately 6.00 ft (1.83 m). Turkey Creek is a brownwater creek with low turbidity. Turkey Creek has a loamy sand substrate and flows northeast to southwest.

2.2.2 Best Usage Classification

Streams have been assigned a best usage classification by the NC Division of Water Quality. The classification of Turkey Creek (DEM Index No. 28-33) 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 1.00 mile (1.61 km) of the project study area.

2.2.3 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 not a BMAN station located on Turkey Creek within 1.00 mi (1.61 km) of the project study area.**

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 Turkey Creek within 1.00 mi (1.61 km) of the project study area.**

2.2.4 Ecological 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. 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 and/or erosion resulting from vegetation and land disturbance during construction,

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 the increase of sun and wind exposure resulting from streamside vegetation removal,

5. Increased nutrient loading during construction via runoff from exposed areas, and/or

6. Increased input of toxic compounds from demolition, construction, toxic spills, and highway runoff.

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 waters as much as possible. Provisions to preclude contamination by toxic substances during the construction interval must also be strictly enforced.

3.0 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.

3.1 Terrestrial Communities

Five distinct terrestrial communities are identified in the project study area: Coastal Plain Bottomland Hardwoods, slope successional, riparian, maintained/disturbed roadside, and Fresh Water Marsh. 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, foraging opportunities, and/or as movement corridors.

3.1.1 Coastal Plain Bottomland Hardwoods (Brownwater Subtype)

The Coastal Plain Bottomland Hardwoods are present southwest of State Road 1101 northwest of Turkey Creek.

The canopy is composed of red maple (*Acer rubrum*), sweet-gum (*Liquidambar styraciflua*), hickory (*Carya* sp.), river birch (*Betula nigra*), white oak (*Quercus alba*), tulip poplar (*Liriodendron tulipifera*), and chinkapin oak (*Quercus muehlenbergii*). The understory consists of America holly (*Ilex opaca*), dogwood (*Cornus florida*), ironwood (*Carpinus caroliniana*), blueberry (*Vaccinium* sp.), muscadine (*Vitis rotundifolia*), and red chokeberry (*Aronia arbutifolia*).

Wildlife associated with the Coastal Plain Bottomland Hardwoods include: white-tailed deer* (*Odocoileus virginianus*), eastern chipmunk (*Tamias striatus*), opossum (*Didelphis virginiana*), deer mouse (*Peromyscus maniculatus*), gray squirrel* (*Sciurus carolinensis*), striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*).

Avian species utilizing the Coastal Plain Bottomland Hardwoods likely include: blue jay* (*Cyanocitta cristata*), American robin (*Turdus migratorius*), red-tailed hawk (*Buteo jamaicensis*), and mallard (*Anas platyrhynchos*).

3.1.2 Slope Successional Community

The slope successional community is present on both sides of State Road 1101 northwest of Turkey Creek and north of State Road 1101 southeast of Turkey Creek. This area is composed of poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), blackberry (*Rubus argutus*), Indian strawberry (*Duchesnea indica*), American holly, and Chinese privet (*Ligustrum sinense*). Faunal species frequenting the slope successional community will be largely those species inhabiting the Coastal Plain Bottomland Hardwoods.

3.1.3 Riparian Community

The riparian community is present on both sides of State Road 1101 southeast of Turkey Creek and on the southwest side of State Road 1101 northwest of Turkey Creek. This area is composed of river birch, saw greenbrier (*Smilax bona-nox*), red maple, sweet-gum, white oak, willow oak (*Q. phellos*), black willow (*Salix nigra*), and lizard's tail (*Saururus cernuus*). Faunal species frequenting the riparian community will be largely those species inhabiting the Coastal Plain Bottomland Hardwoods.

3.1.4 Maintained/Disturbed Roadside

The maintained/disturbed roadside community includes road shoulders along State Road 1101 that are present along the majority of the length of the project. This is vegetated by Indian strawberry, plantain (*Plantago* sp.), Japanese honeysuckle, red maple, ragweed (*Ambrosia artemisiifolia*), sweet-gum, greenbrier (*S. rotundifolia*), dog-fennel (*Eupatorium capillifolium*), and daylily (*Hemerocallis fulva*).

Faunal species frequenting the maintained community will be largely those species inhabiting the Coastal Plain Bottomland Hardwoods.

3.1.5 Fresh Water Marsh

The Fresh Water Marsh is an island located within Turkey Creek. This area is vegetated by river birch, ash, red maple, lizard's tail, black willow, chain-fern (*Woodwardia* sp.), and microstegium (*Microstegium vimineum*). Faunal species likely to frequent the Fresh Water Marsh include snakes (Squamata), turtles (Chelonia), frogs (Salientia), and salamanders (Caudata).

3.2 Aquatic Communities

One aquatic community, Turkey 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 Turkey Creek. Vegetation along the bank of Turkey Creek includes river birch, saw greenbrier, red maple, sweet-gum, white oak, willow oak, black willow, and lizard's tail.

Fauna associated with these aquatic communities includes various invertebrate and vertebrate species. Vertebrate species likely to occur near Turkey Creek would include great blue heron* (*Ardea herodias*) and beavers* (*Castor canadensis*). Invertebrates likely to be present include various species of caddisflies (Trichoptera), mayflies (Ephemeroptera), dragonflies (Odonata), damselflies (Odonata), amphipods* (Amphipoda), and bivalves* (Bivalva).

3.3 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 natural 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. Tables 1 and 2 summarize potential quantitative losses to these communities resulting from project construction for alternatives 1 and 2. Estimated impacts are derived using the entire proposed ROW width of 80.00 ft (24.38 m) and an assumed ROW width of 60.00 ft (18.29 m) for the on-site detour bridge. Usually, project construction does not require the entire ROW, therefore, actual impacts may be considerably less.

Table 1. Anticipated impacts for Alternate 1.

Community	Permanent Impacts for Alternate 1 Wetlands	Uplands	Totals
Coastal Plain Bottomland Hardwoods	--	--	--
Slope Successional	--	0.20 (0.08)	0.20 (0.08)
Riparian	--	0.01 (0.00)	0.01 (0.00)
Maintained/Disturbed Roadside	--	1.30 (0.53)	1.29 (0.52)
Fresh Water Marsh	0.08 (0.03)		0.08 (0.03)
Turkey Creek	--	--	0.12 (0.05)
Total	**0.08 (0.03)**	**1.51 (0.61)**	**1.70 (0.68)**

Note: Values cited are in acres (hectares).

Table 2. Anticipated impacts for Alternate 2.

Community	Temporary Impacts for Alternate 2 (on-site detour) Wetlands	Uplands	Totals	Permanent Impacts for Alternate 2 Wetlands	Uplands	Totals
Coastal Plain Bottomland Hardwoods	--	0.27 (0.11)	0.27 (0.11)	--	--	--
Slope Successional	--	0.15 (0.06)	0.15 (0.06)	--	0.20 (0.08)	0.20 (0.08)
Riparian	--	0.01 (0.00)	0.01 (0.00)	--	0.01 (0.00)	0.01 (0.00)
Maintained/ Disturbed Roadside	--	0.82 (0.33)	0.82 (0.33)	--	1.30 (0.53)	1.30 (0.53)
Fresh Water Marsh	0.06 (0.02)	--	0.06 (0.02)	0.08 (0.03)		0.08 (0.03)
Turkey Creek	--	--	0.10 (0.04)	--	--	0.12 (0.05)
Total	**0.06 (0.02)**	**1.25 (0.50)**	**1.41 (0.56)**	**0.08 (0.03)**	**1.51 (0.61)**	**1.71 (0.69)**

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. 52 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 cleared 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 can 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. **Based on the potential for increased sedimentation, it is recommended that silt curtains be used during construction.**

4.0 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.

4.1 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.

4.1.1 Impacts to 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 Fresh Water Marsh wetlands in the project area located on an island within Turkey Creek. The total area of wetlands permanently impacted is 0.08 ac (0.03 ha) for alternate 1 and 2. Temporary wetland impacts occur only in alternate 2. These temporary impacts total 0.06 ac (0.02 ha).

Turkey 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. The total area of surface water impacts to Turkey Creek from alternates 1 and 2 are 0.12 ac (0.05 ha). Temporary area impacts to Turkey Creek from the on-site detour of alternate 2 are 0.10 ac (0.04 ha). Additionally, 80.00 linear ft (24.39 linear m) of Turkey Creek will be impacted in alternates 1 and 2.

Usually, project construction does not require the entire ROW, therefore actual surface water impacts may be considerably less.

4.1.2 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.

A Nationwide Permit 33 may be required if the construction plans require a temporary causeway.

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 Tar-Pamlico Buffer Rules, 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 Rules.** 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.

4.1.3 Bridge Demolition

Bridge No. 52 is located on State Road 1101 over Turkey Creek in Nash County. The superstructure is composed of a timber floor on I-beams, timber piles with concrete caps, and a steel crutch. The bridge is proposed to be removed without dropping any of the components into "Waters of the United States." **As demolition and construction activities may temporarily raise turbidity levels, a silt curtain is recommended during the associated periods of disturbance within or adjacent to Turkey Creek.**

4.1.4 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.

4.1.4.1 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.

4.1.4.2 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.

4.1.4.3 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 required for those projects authorized under Nationwide Permits that result in the fill or alteration of:

- More than 1.00 ac (0.40 ha) of wetlands;
- And/or more than 150.00 linear ft (45.72 m) of streams.

The impacts from this project do not meet the minimum mitigation thresholds. Therefore, no mitigation requirement is anticipated. However, final permit/mitigation decisions rest with the COE.

4.2 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.

4.2.1 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 12 April 2001, 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 3.

Table 3. Federally Protected Species for Nash County.

Scientific Name	Common Name	Federal Status
Picoides borealis	Red-cockaded woodpecker	Endangered
Alasmidonta heterodon	Dwarf wedge mussel	Endangered
Elliptio steinstansana	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 500.00 ac (202.34 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 12.00 to 100.00 ft (3.66 to 30.48 m) above the ground and average 30.00 to 50.00 ft (9.14 to 15.24 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**

Open pine stands do not exist within the project area, therefore, the habitat requirements for RCWs are not met. The North Carolina Natural Heritage Program database was reviewed on 29 March 2001 and there were no records of existing populations of RCW in the project area. No habitat for RCWs exists in the project area. Thus, no impacts to RCWs 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: **UNRESOLVED**

The North Carolina Natural Heritage Program (NHP) database reviewed on 29 March 2001 contains records of existing populations of the Dwarf wedge mussel in the vicinity of the project area. Surveys for mussels will be conducted by the North Carolina Department of Transportation.

Elliptio steinstansana (Tar River spinymussel) **Endangered**
Animal Family: Unionidae
Date Listed: 29 July 1985

The Tar River spinymussel is endemic to the Tar River drainage basin, from Falkland in Pitt County to Spring Hope in Nash County. Populations of the Tar River spinymussel 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 a intermediate hosts for its larvae.

The Tar River spinymussel 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: **UNRESOLVED**

The North Carolina National Heritage Program (NHP) database on 29 March 2001 contains no records of existing populations of the Tar River spinymussel in the project area. Surveys for mussel populations will be conducted by the North Carolina Department of Transportation.

4.2.2 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 4 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 29 March 2001 of rare species and unique habitats revealed records of Carolina least trillium (*Trillium Pusillium var. pusillium),* a federal species of concern, and Atlantic pigtoe (*Fusconaia masoni*), a federal species of concern, within 1.00 mi (1.61 km) of the project study area.

Table 4. Federal Species of Concern for Nash County.

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

"E"--An Endangered species is one whose continued existence as a viable component of the State's flora and fauna 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.

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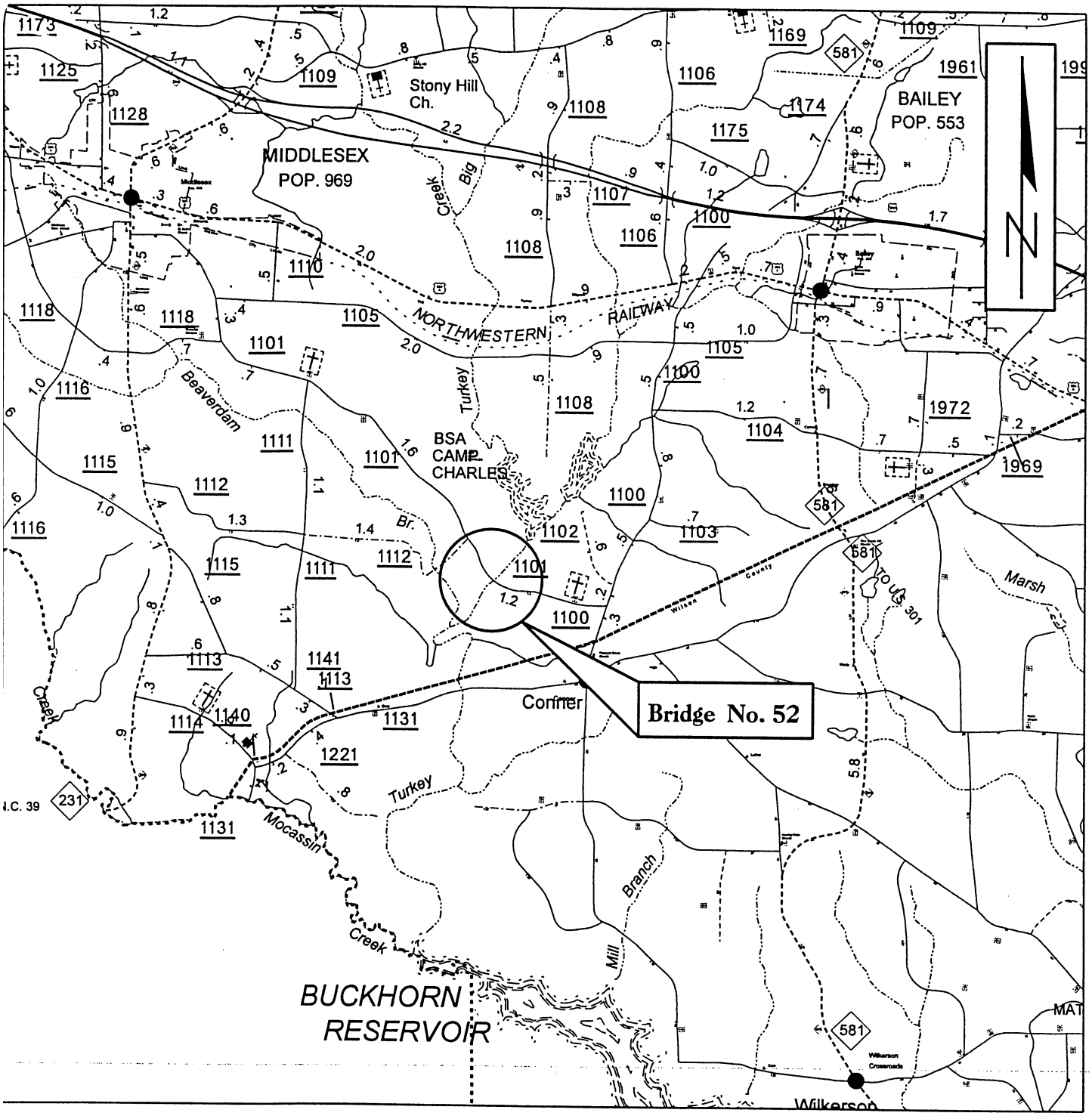
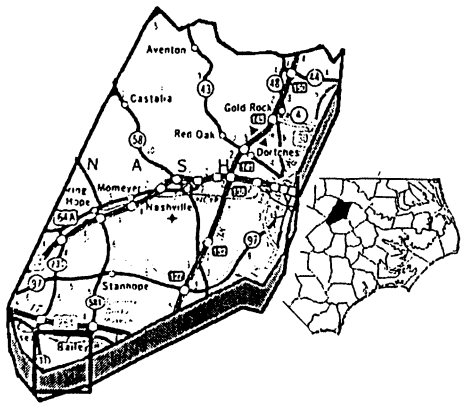




North Carolina Department of Transportation
Division of Highways
Project Development & Environmental Analysis

Nash County
Replace Bridge No. 52 on SR 1101 Over Turkey Creek
B-3877

SCALE: 1 in = 1 mi

Figure 1

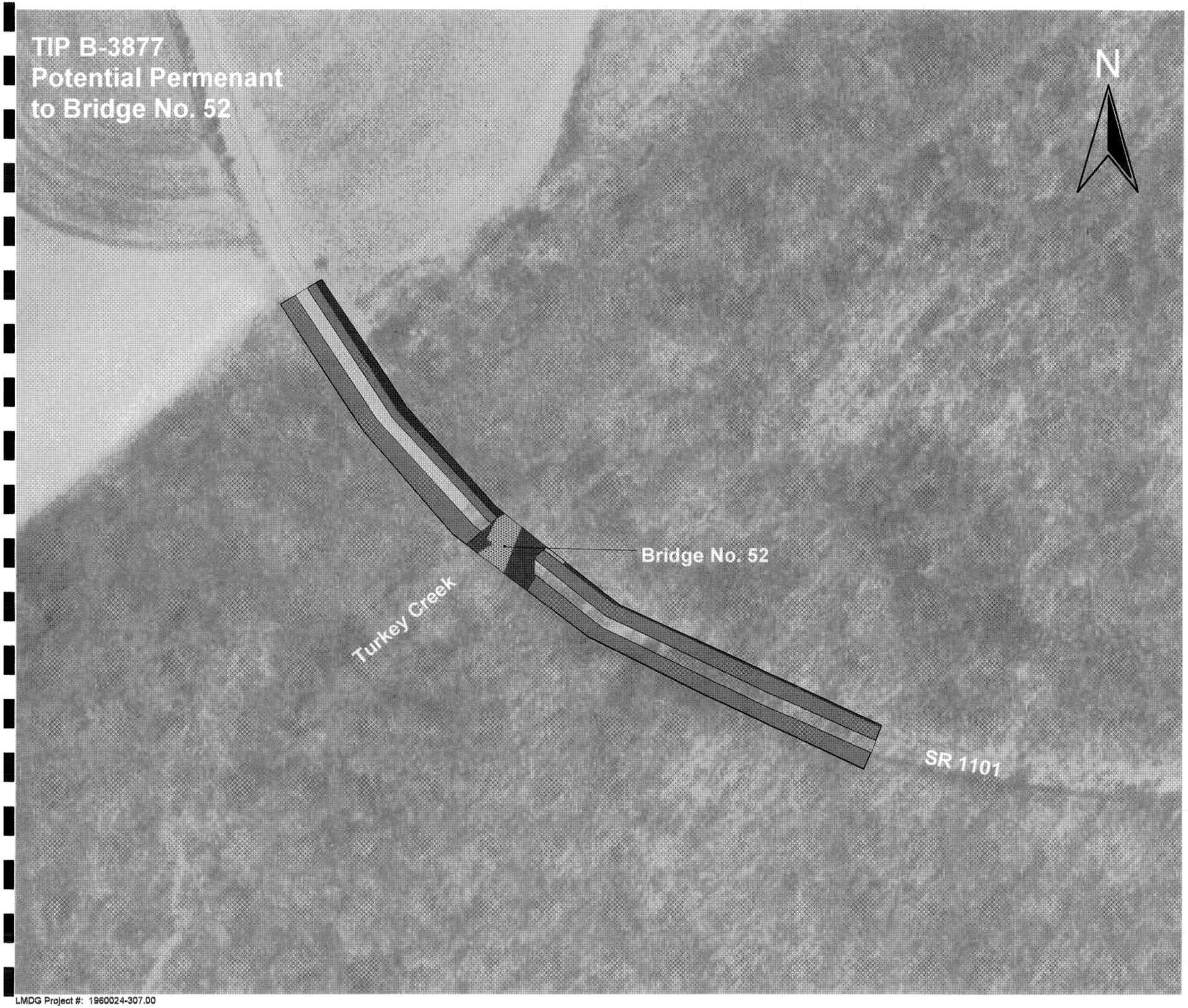
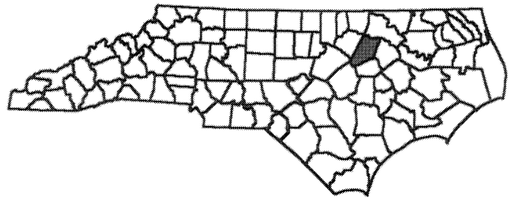


Figure 2 TIP B-3877 Alternate 1 & 2 Potential Permenant Impacts To Bridge No. 52



Legend

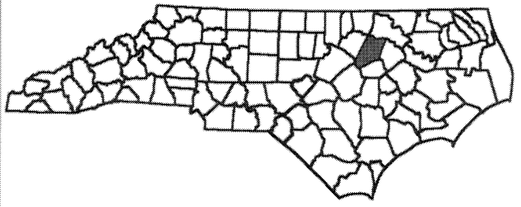
- Project Boundary
- Slope Successional
- Maintained/Disturbed Roadside
- Fresh Water Marsh
- Riparian
- Turkey Creek

90 0 90 180

Scale (ft)

LMDG Project #: 1960024-307.00

Figure 3 TIP B-3877 Potential Temporary Impacts To Bridge No. 52



Legend

- Project Boundary
- Successional Slope
- Coastal Plain Bottomland Hardwood
- Maintained/Disturbed Roadside
- Riparian
- Fresh Water Marsh
- Turkey Creek

100 0 100 200

Scale (ft)

LANDMARK DESIGN GROUP

LMDG Project #: 1960024-307.00

FIGURE 4: SITE PHOTOGRAPHS

PHOTOGRAPH #1: Bridge Number 52 on SR 1101 over Turkey Creek.

PHOTOGRAPH #2: Turkey Creek in Nash County.

December 4, 2000

MEMORANDUM

TO: Robin Young
Project Development and Environmental Analysis Branch, DOT

FROM: Stephen Hall

SUBJECT: Review of Scoping Sheets – Replace Bridge No. 52 over Turkey Creek

REFERENCE: **B-3877**

The Natural Heritage Program database contains records for the following species from the reach of Turkey Creek in the vicinity of the proposed bridge replacement:

- √ Dwarf wedgemussel (*Alasmidonta heterodon*), federally and state listed as Endangered
- √ Atlantic pigtoe (*Fusconaia masoni*), state listed as Threatened (proposed as Endangered) and a federal Species of Concern
- ~~Squawfoot (*Strophitus undulatus*),~~ state listed as Threatened
- ~~Triangle floater (*Alasmidonta undulata*)~~, state listed as Threatened
- ~~Eastern pondmussel (*Ligumia nasuta*)~~, state listed as Special Concern (proposed as Threatened)
- ~~Neuse River waterdog (*Necturus lewisi*)~~, state listed as Special Concern
- ~~Notched rainbow (*Villosa constricta*),~~ proposed for state listing as Special Concern
- North Carolina spiny crayfish ~~(*Orconectes carolinensis*)~~, proposed for state listing as Special Concern and a federal Species of Concern

During the construction phase of this project, these species may be adversely affected by both siltation and toxicity resulting from wet concrete coming into contact with the water. Following completion of the project, they will remain vulnerable to spills of hazardous materials and to pollutant laden runoff for the lifetime of the crossing.

Due to the potential for impacts to a federally listed species, the US Fish and Wildlife Service should be consulted. We also recommend that the NC Nongame and Endangered Wildlife Program be consulted about the possibilities for avoidance or minimization of impacts to the state listed species.

(Division of Parks & Rec)

Nash County

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor

Division of Archives and History
Jeffrey J. Crow, Director

January 16, 2001

MEMORANDUM

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

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

Re: Replacement of Bridge No. 52 on SR 1101 over Turkey Creek,
TIP No. B-3877, Nash County, ER 01-7929

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 photographs 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 no 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 may be 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.

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.

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

DAVID MCCOY
SECRETARY

January 16, 2001

MEMORANDUM TO: Project File

FROM: Robin C. Young
Project Planning Engineer

SUBJECT: **B-3877**, Nash County, Replacement of Bridge No. 52 on SR 1101 over Turkey Creek, State Project 8.2322201, FA Project BRZ-1101 (7)

A scoping meeting for the subject bridge was held in the Roadway Design Unit Conference Room in the Century Center on December 5, 2000. The following people were in attendance:

Ben Brown	Hydraulics
Jerome Nix	Hydraulics
D. Andre Davenport	Structure Design
Mack Bailey	Structure Design
Jason Moore	Roadway Design
Raymond Goodman, III	Right of Way
Jessica Kuse	Traffic Control
Derek Bradner	Location & Surveys
April Montgomery	State Historic Preservation Office (SHPO)
Elizabeth Lusk	Project Development & Environmental Analysis-Natural Systems
Robin Young	Project Development & Environmental Analysis

The following comments were either given at the meeting or received:

Hydraulics recommended the existing bridge be replaced with a new 130 foot (39.6 meter) long bridge at approximately the same location and elevation as the existing bridge. To facilitate deck drainage, at least a 0.3% roadway gradient should be used on the new bridge. If an on-site detour is considered, it would require a 100 foot (30 meter) bridge located downstream (south) of the existing bridge. The elevation of the temporary detour bridge can be approximately 3 feet (1 meter) lower than the existing bridge.

State Historic Preservation Office, April Montgomery, commented there is no need for either an Architectural or Archaeology survey.

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

Location & Surveys commented there is an overhead utility line along the south side of SR 1101. There is an underground telephone line along the north side of SR 1101 which goes aerial to cross the creek. The horizontal alignment and vertical alignments are good. It is recommended to place a new structure on the existing location and utilize an off-site detour.

Division 4 Construction Engineer, Wendy Oglesby, recommends an off-site detour based on the low traffic volume and good condition of the proposed detour route. The proposed detour route utilizes SR 1100, SR 1131, SR 1113, and SR 1111. SR 1131 has one structure that is posted 17 tons for single vehicles and 24 tons for truck-tractor semi-trailers. The existing alignment has a sharp curve and grade drop in the alignment on the east approach. It is recommended this be modified in the new design, if possible.

The Natural Systems Specialist of PDEA stated there are wetlands on each side of the bridge. This project is located in the Neuse River Basin and the Buffer Rules will apply. An off-site detour is recommended.

Comments from the Wildlife Resource Commission will be available in the near future.

PROJECT INFORMATION

Existing Bridge

Bridge No. 52, built in 1950 is 121 feet (36.8 meters) long with a clear deck width of 19.1 feet (5.8 meters). According to Bridge Maintenance Unit records, the sufficiency rating of the bridge is 38.7 out of a possible 100 with an estimated 5 years of useful remaining life. Presently the bridge is posted with weight restrictions of 16 tons for single vehicles and 20 tons for truck-tractor semi-trailers.

Traffic Information

SR 1101 is a Rural Local Route with a speed limit of 55 mph (90 kmh) in the vicinity of the bridge. The current ADT is 230 vph (vehicles per day) and the projected 2025 ADT is 700 vph. Approximately 2% of the traffic are dual trucks and 1% of the traffic are truck-tractor semi-trailers.

The Traffic Engineering Branch indicates that no accidents have been reported during a recent 3-year period in the vicinity of the project.

This section of SR 1101 is not a designated bicycle route nor is it listed in the TIP as needing incidental bicycle accommodations.

Bus Information

According to the Nash-Rocky Mount School System, this road has 5 school bus trips per day.

Emergency Management Services (EMS)

According to Nash County 911 Supervisor, a volunteer fire department in Middlesex and an ambulance from Bailey are the responders in this area.

New Cross Section

Due to some inconsistencies between the 1994 Green Book and the Roadway Design Unit Design Manual, Roadway Design will be responsible for choosing the appropriate reference and indicating their choice in their cost estimate.

Project Information

Categorical Exclusion document is due January 2002.
Right of Way is scheduled for January 2003.
Construction Let Date is scheduled for January 2004.

DESCRIPTION OF ALTERNATES

We anticipate the completion of the preliminary design and cost estimates by June 2001.

Alternate 1: Replace Bridge No. 52 with a new 130 foot (39.6 meter) long bridge at approximately the same location and roadway elevation as the existing bridge. Traffic will be maintained off-site, along surrounding roads during construction

Alternate 2: Replace Bridge No. 52 with a new 130 foot (39.6 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 south of the existing bridge during construction. The temporary detour bridge will be approximately 100 feet (30 meters) in length.

WETLAND RATING WORKSHEET (4th VERSION)

Project Name: B-3877
Nearest Road: SR1101
Wetland Area (ac): 0.08 ac
Name of Evaluator(s): Wendee Smith, Ryan Smith, Corri Wolfe
County: Nash
Date: 4/19/01
Wetland Width (ft): 10-15 ft

Wetland Location:
- ___ on sound or estuary
- ___ pond or lake
- ✓ on perennial stream
- ___ on intermittent stream
- ___ within interstream divide
- ___ other

Adjacent Land Use:
(Within 1/2 mi upstream, upslope, or radius)
- ✓ forested/natural veg. 10 %
- ✓ agriculture/urbanized 76 %
- ✓ impervious surface 14 %

Adjacent Special Natural Areas

Soils
Soil Series: Wehadkee, Wedowee, Wickham
- ___ predominantly organic (humus, muck or peat)
- ___ predominantly mineral (non-sandy)
- ✓ predominantly sandy

Dominant Vegetation
(1) river birch
(2) ash
(3) red-maple

Hydraulic Factors
- ✓ freshwater
- ___ brackish
- ___ steep topography
- ___ ditched or channelized
- ___ total wetland width ≥ 100 feet.

Flooding and Wetness
- ___ semipermanently to permanently flooded or inundated
- ___ seasonally flooded or inundated
- ✓ intermittently flooded or temporary surface water
- ___ no evidence of flooding or surface water

Wetland Type (select one)*
- ___ Bottomland Hardwood Forest
- ___ Swamp Forest
- ___ Carolina Bay
- ___ Pocosin
- ___ Pine Savannah
- ✓ Freshwater Marsh
- ___ Bog/Fen
- ___ Headwater Forest
- ___ Bog Forest
- ___ Ephemeral Wetland
- ___ Other:

*The rating system cannot be applied to salt or brackish marshes or stream channels.

	DEM RATING		
WATER STORAGE	1	x 4.00 =	4.00
BANK/SHORELINE STABILIZATION	5	x 4.00 =	20.00
POLLUTANT REMOVAL	4 *	x 5.00 =	20.00
WILDLIFE HABITAT	1	x 2.00 =	2.00
AQUATIC LIFE VALUE	2	x 4.00 =	8.00
RECREATION/EDUCATION	2	x 1.00 =	2.00

WETLAND SCORE = 56.00 (TOTAL)

* Add 1 point if in sensitive watershed and >10% nonpoint distu-bance within 1/2 mile upstream, upslope, or radius.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: B-3877 - Date: 4/19/01

Applicant/Owner: County: Nash

Investigator: Wendee Smith, Ryan Smith, Corri Wolfe State: NC

Do Normal Circumstances exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse.)

Community ID:
Transect ID:
Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. red maple	tree	FAC	9. black haw	shrub	FACU
2. river birch	tree	FACW	10.		
3. japanese honeysuckle	shrub	FAC-	11.		
4. blackberry	shrub	FAC	12.		
5. chinese privet	shrub	FAC	13.		
6. muscadine	shrub	FAC	14.		
7. ash	tree	FACW	15.		
8. lizard's tail	herb	OBL	16.		

Percent of Dominant Species that are OBL, FACW and/or FAC: (excluding FAC-): 77.8 %

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
___ No Recorded Data Available

Field Observations:
Depth of Surface Water: _____ (in.)
Depth to Free Water in Pit: _____ (in.)
Depth to Saturated Soil: <12 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
___ Inundated
✓ Saturated in Upper 12 Inches
___ Water Marks
✓ Drift Lines
✓ Sediment Deposits
✓ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12 Inches
✓ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
✓ Other (Explain in Remarks)

Remarks: shallow roots

SOILS

Map Unit Name (Series and Phase): Wehadkee loam

Drainage Class: Poorly drained

Taxonomy (Subgroup): Typic Fluvaquents

Field Observations Confirm Mapped Type? Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3		10YR 5/3	—		sandy silt loam
3-7		7.5YR 5/8	—		loamy sand
7-		10YR 5/4	10YR 5/8		loamy clay

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)

Wetland Hydrology Present? (Yes) No

Hydric Soils Present? (Yes) No

(Circle)

Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HOUSACE 3/92