STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

October 21, 2009

Ms. Kim Garvey
U.S. Army Corps of Engineers
Wilmington Field Office
P.O. Box 1890
Wilmington, NC 28402-1890

Subject: **Application for a Section 404 Individual Permit and Section 401 Water Quality Certification,** for the proposed conversion of the existing at-grade intersection to a grade-separation at the intersection of US 74/NC 130 and NC 242 in Columbus County, TIP R-4900, Debit $570 from WBS 40224.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to convert the existing at-grade intersection to a grade-separation at the intersection of US 74/NC 130 and NC 242 in Columbus County. This application package consists of the cover letter, ENG Form 4345, half size plan sheets, permit drawings, U.S. Fish and Wildlife Service (USFWS) Concurrence letter, EEP acceptance letter, and the Hydraulic Design Concurrence meeting (4B, 4C) minutes for R-4900.

Purpose and Need

The purpose and need of the project is to increase the safety of this intersection and to allow for the future upgrade of US 74 to interstate standards.

Summary of Impacts

Construction of the proposed project will necessitate impacts to Jurisdictional Waters of the U.S. There will be a total of 7.71 acres of permanent riparian wetland impacts.

Summary of Mitigation

The proposed construction of R-4900 will impact 7.71 acres of jurisdictional riparian wetlands that will require compensatory mitigation within the Lumber River Basin. NCDOT will utilize the NC Ecosystem Enhancement Program (EEP) for satisfying the federal Clean Water Act compensatory mitigation requirements for the unavoidable impacts to 7.71 acres of wetlands (see attached EEP letter).

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

TELEPHONE: 919-431-2000
FAX: 919-431-2002

WEBSITE: WWW.NCDOT.ORG

LOCATION:
4701 ATLANTIC AVENUE
SUITE 116
RALEIGH NC 27604

Project Schedule

Currently, R-4900 has a review date of June 1, 2010 and is scheduled to let July 20, 2010; it will be available for construction shortly thereafter. The let date, however, may advance as additional funds become available.

NEPA Document Status

An Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) for R-4900 were approved by the Federal Highway Administration (FHWA) on March 13, 2008 and September 30, 2008 respectively and circulated to the appropriate agencies.

Independent Utility

The subject project complies with 23 CFR Part 771.111(f), which lists the FHWA characteristics of independent utility of a project:

1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope;
2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;
3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Resource Status

Wetlands and surface waters within the R-4900 Preferred Alternative corridor were originally delineated in July 2007 using the field delineation method outlined in the 1987 Corps of Engineers Wetland Delineation Manual. The North Carolina Division of Water Quality's (DWQ) Identification Methods for the Origins of Intermittent and Perennial Streams was used to make stream determinations. Jurisdictional features were verified with Richard Spencer of the US Army Corps of Engineers (USACE) on July 23, 2008.

Three jurisdictional streams have been identified within the project area of R-4900, Cow Branch and two Unnamed Tributaries to Cow Branch. A description of these streams is in Table 1. No stream or surface water impacts will result from the construction of R-4900.

Table 1. Jurisdictional Streams

Stream Name	Sub-basin	Stream Index Number	Best Usage Classification
Cow Branch	03-07-51	14-27-6	C; SW
UT-1	03-07-51	14-27-6	C; SW
UT-2	03-07-51	14-27-6	C; SW

Impacts to Jurisdictional Resources

Impacts to jurisdictional wetlands for R-4900 are summarized below in Table 2.

Table 2. Wetland Impacts

Permit Site	Station	Permanent (ac.)	Temporary (ac.)
1	31+35/38+65-Y-	3.70	0
2	19+83/23+68 -Y- RT	0.17	0
3	10+30/17+85-SR-	1.92	0
4	18+02/22+40-SR-	0.35	0
5	10+63/21+96-RPA-	1.57	0
	Total:	**7.71**	**0**

Impacts to Waters of the U.S.

Permanent Impacts: Proposed permanent impacts include 7.71 acres of riparian wetlands resulting from fill, excavation, and mechanized clearing.

Utility Impacts: There will be no impacts due to utilities for R-4900.

Protected Species

The USFWS list eight federally protected species for Columbus County as of the January 31, 2008 listing (Table 3).

Table 3. Federally protected species of Columbus County.

Common Name	Scientific Name	Federal Status	Habitat	Biological Conclusion
American alligator	*Alligator mississippiensis*	T (S/A)	Yes	N/A
Bald eagle	*Haliaeetus leucocephalus*	T	No	No Effect
Red-cockaded woodpecker	*Picoides borealis*	E	Yes	No Effect
Shortnose sturgeon	*Acipenser brevirostrum*	E	No	No Effect
Waccamaw silverside	*Menidia extensa*	T	No	No Effect
Wood stork	*Mycteria americana*	E	No	MANLAA
Cooley's meadowrue	*Thalictrum cooleyi*	E	No	No Effect
Rough-leaved loosestrife*	*Lysimachia asperulaefolia*	E	No	No Effect

Key: E = Endangered, T = Threatened, T S/A = Similarity of Appearance, MANLAA = May Affect, Not Likely to Adversely Affect, * Historic Record

A Concurrence Request providing Biological Conclusions for each species was submitted to the USFWS in July 29, 2008. The USFWS responded with concurrence on August 11, 2008 (copy attached).

Cultural Resources

Archaeology

The Historic Preservation Office (HPO) reviewed the project and determined that no archaeological studies were required due to the limited footprint; therefore, no archaeological investigations were conducted.

Historic Architecture

The HPO reviewed the project and determined that no historic architecture surveys were required.

FEMA Compliance

The project has been coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state, and local floodway regulations.

Mitigation Options

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

Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the corridor for R-4900. Using these surveyed features, preliminary designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas in all of its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization items are as follows:

- The project was designed to avoid or minimize disturbance to aquatic life movements.
- Crossings of jurisdictional areas were angled to cross as perpendicular as possible to minimize impacts.
- The use of 3:1 fill slopes in jurisdictional areas.
- Mechanized clearing was reduced from 10-ft beyond the fill slope to 5-ft beyond the fill slope.

Compensation

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The unavoidable impacts to jurisdictional wetlands will be offset by compensatory mitigation provided by the NC Ecosystem Enhancement Program (EEP). A copy of the EEP acceptance letter is included with this application.

Indirect and Cumulative Effects

Due to the minimal transportation impact resulting from this grade conversion, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study is not necessary.

Regulatory Approvals

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: Application is hereby made for a Section 401 Water Quality Certification from the N.C. Division of Water Quality.

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

If you have any questions or need additional information, please contact Tyler Stanton at tstanton@ncdot.gov or (919) 431-6748.

Sincerely,

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

Cc:
w/attachment
Mr. Brian Wrenn, NCDWQ (5 copies)
Ms. Kathy Matthews, USEPA

W/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Mark Staley, Roadside Environmental
Mr. Terry Gibson, P.E, Division 6 Engineer
Mr. Jim Rerko, Division 6 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Ms. Anne Deaton, NCDMF
Mr. Ron Sechler, NMFS
Ms. Kristine O'Connor, P.E.
Ms. Beth Harmon, EEP
Mr. Phillip Ayscue, NCDOT External Audit Branch
Mr. Drew Joyner, PE, Human Environment Unit Head
Mr. Clarence W. Coleman, P.E., FHWA

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
(33 CFR 325)

OMB APPROVAL NO. 0710-003
Expires December 31, 2004

Public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: Rivers and Harbors Act, Section 10, 33 USC 403: Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
North Carolina Department of Transportation Project Development & Environmental Analysis	
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
1548 Mail Service Center Raleigh, NC 27699-1548	
7. APPLICANT'S PHONE NOs. W/AREA CODE	**10. AGENT'S PHONE NOs. W/AREA CODE**
a. Residence b. Business 919-733-3141	a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
R-4900

13. NAME OF WATERBODY, IF KNOWN (if applicable)
Cow Branch

14. PROJECT STREET ADDRESS (if applicable)

15. LOCATION OF PROJECT
Columbus NC
COUNTY STATE

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) **Section, Township, Range, Lat/Lon, and/or Accessors's Parcel Number, for example.**

17. DIRECTIONS TO THE SITE
Please see attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)

Conversion of the existing at-grade intersection to a grade-separation at the intersection of US 74/NC 130 and NC 242

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Increase the safety of this intersection and to allow for the future upgrade of US 74 to interstate standards.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Construction of roadway and bridge.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Earthen fill

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

There will be a total of 7.71 acres of permanent riparian wetland impacts.

23. Is Any Portion of the Work Already Complete? Yes ___ No _X___ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Please see sheet attached list in the permit drawing package.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

E. K. Lusk 10-21-09

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Ecosystem Enhancement PROGRAM

August 25, 2009

Mr. Richard Spencer
U. S. Army Corps of Engineers
Wilmington Regulatory Field Office
Post Office Box 1890
Wilmington, North Carolina 28401-189

Dear Mr. Spencer:

Subject: EEP Mitigation Acceptance Letter:

R-4900, US 74 at NC 242, Columbus County; Lumber River Basin (Cataloging Unit 03040203); Southern Inner Coastal Plain (SICP) Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the unavoidable impact associated with the above referenced project. Based on the information supplied by the NCDOT on August 19, 2009, the impacts are located in CU 03040203 of the Lumber River Basin in the Southern Inner Coastal Plain (SICP) Eco-Region, and the anticipated mitigation credits needed to offset the impacts are as follows:

Lumber 03040203 SICP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	7.71	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	0	15.42	0	0	0	0

Mitigation associated with this project will be provided in accordance with Section X of Amendment No. 2 to the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers fully executed on March 8, 2007 (Tri-Party MOA). EEP commits to implement sufficient compensatory riparian wetland mitigation in the appropriate cataloging unit in the amount listed in the above table to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B Stanfill for

William D. Gilmore, P.E.
EEP Director

cc: Mr. Gregory J. Thorpe, Ph.D., NCDOT-PDEA
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: R-4900

Ecosystem Enhancement PROGRAM

August 25, 2009

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

R-4900, US 74 at NC 242, Columbus County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory riparian wetland mitigation for the subject project. Based on the information supplied by you on August 19, 2009, the impacts are located in CU 03040203 of the Lumber River Basin in the Southern Inner Coastal Plain (SICP) Eco-Region, and are as follows:

Lumber 03040203 SICP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	7.71	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	0	15.42	0	0	0	0

EEP commits to implementing sufficient compensatory riparian wetland mitigation credits to offset the impacts associated with this project by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, fully executed on March 8, 2007. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

William D. Gilmore, P.E.
EEP Director

cc: Mr. Richard Spencer, USACE – Wilmington Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: R-4900

Restoring... Enhancing... Protecting Our State

NCDENR

Subject: Minutes from the Interagency 4B Hydraulic Design Review Meeting on June 18, 2008 for R-4900 in Columbus County

Team Members:

Richard Spencer-USACE	(present)
Gary Jordan-USFWS	(present)
Travis Wilson-NCWRC	(present)
Rob Ridings-NCDWQ	(present)
Chris Militscher-EPA	(present)
Kathy Matthews-EPA	(present)
Ron Lucas-FHWA	present)
Charles Cox-PDEA	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Tracey Pittman, NCDOT DIV 6
Mike Little, NCDOT Roadway Design
Henry Wells, Sungate Design
Omar Azizi-Structures
Chris Rivenbark, NEU
Tyler Stanton, NEU

General Introduction was iniatated by Marshall Clawson. Introductions were made by all in attendance.

Chris M. began the meeting with items of concern which were sent to PDEA in a letter dated May 16, 2008. The items addressed Purpose and Need, alternatives, and the Merger Process.

Richard S. suggested the project go through the Merger Process so that these issues can be addressed before Public Notice. It was agreed that EPA and PDEA would have a pre-meeting before a formal merger meeting is held as soon as possible. Hopefully several CP can be achieved together. Therefore, the 4B meeting has been delayed

Meeting Adjourned

Subject: Minutes from Interagency 4C Hydraulic Design Review Meeting
On February 25, 2009 for R-4900 in Columbus County

Team Members:

Richard Spencer-USACOE	(absent)
Travis Wilson-NCWRC	(present)
Rob Ridings-NCDWQ	(present)
Gary Jordan-USFWS	(absent)
Kathy Matthews- EPA	(present)
Donnie Brew-FHWA	(absent)
Mark Staley-REU	(present)
Chris Rivenbark-NEU	(present)
Tyler Stanton-NEU	(present)
Kristine Graham- PDEA	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Henry Wells, Sungate Design Group
Jim Rerko, NCDOT Construction
Tracey Pittman, NCDOT Construction
Mike Little, NCDOT Roadway
Tim Coggins, NCDOT Structures
Omar Azizi, NCDOT Structures

General Comments:

Marshall Clawson started the meeting by introducing the project and stating that the purpose of the meeting was to review the permit drawings.

Mr. Clawson then handed the meeting over to Henry Wells. Mr. Wells proceeded through the project sheet by sheet explaining the proposed drainage design and fielding questions.

Site1(Sheet 5): Ms. Pittman stated that the impact at Site 1 could be avoided.

Site 2 (Sheet 5): No comments.

Site 3 and 4 (Sheets 5 and 8): Mr. Wells stated that Sites 3 and 4 showed the actual impacts due to fill and mechanized clearing, but the commitment at the 4B meeting was that the remaining wetlands within Loop C would be considered a total take. Mr. Rivenbark stated that the permit drawings could be left as they were shown and that the Wetland Permit Impact Summary sheet be revised to include the remaining wetland area as a take.

Site 5 (Sheets 5 and 7): No comments.

Site 6 (Sheets 5 and 7): No comments.

Site 7 (Sheet 5): No comments.

Site 8 (Sheets 5 and 6): No comments.

Site 9 (Sheet 6): Ms. Pittman stated that the impact at Site 9 could be avoided.

Additional Discussion

Ms. Pittman stated that she felt that the mechanized clearing limit could be reduced from 10 to 5 feet except around culverts and energy dissipaters. Mr. Rivenbark concurred.

No other sites were discussed.

Meeting Adjourned

CK. 8-11-08
CC: L. Williams

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

August 11, 2008

Stanton
RECEIVED
AUG 14 2008
OFFICE OF NATURAL ENVIRONMENT

Gregory J. Thorpe, Ph.D.
North Carolina Department of Transportation
Project Development and Environmental Analysis
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

This letter is in response to your letter of July 29, 2008 which provided the U.S. Fish and Wildlife Service (Service) with the biological determination of the North Carolina Department of Transportation (NCDOT) that the proposed conversion of the existing at-grade intersection to a grade-separation at the intersection of US 74/NC 130 (Andrew Jackson Highway) and NC 242 (Hanes Lennon Highway) in Columbus County (TIP No. R-4900) may affect, but is not likely to adversely affect the federally endangered wood stork (*Mycteria americana*). NCDOT has also determined that the project will have no effect on all other listed species. These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to information provided, a May 29, 2007 survey did not reveal any wood storks or wood stork nests. However, during a subsequent site visit in August 2007, a wood stork was observed flying through the project area. No foraging behavior was observed. Based on available information, the Service concurs with your determination that the proposed project may affect, but is not likely to adversely affect the wood stork. In addition, we concur that the project will have no effect on all other federally listed species. We believe that the requirements of section 7(a)(2) of the ESA have been satisfied. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

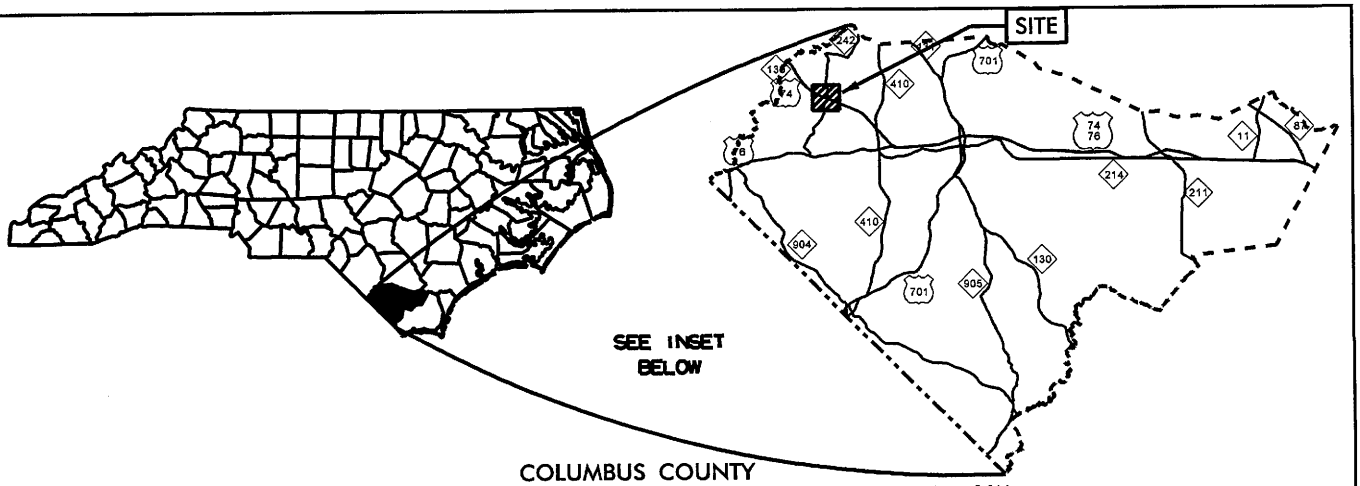
The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

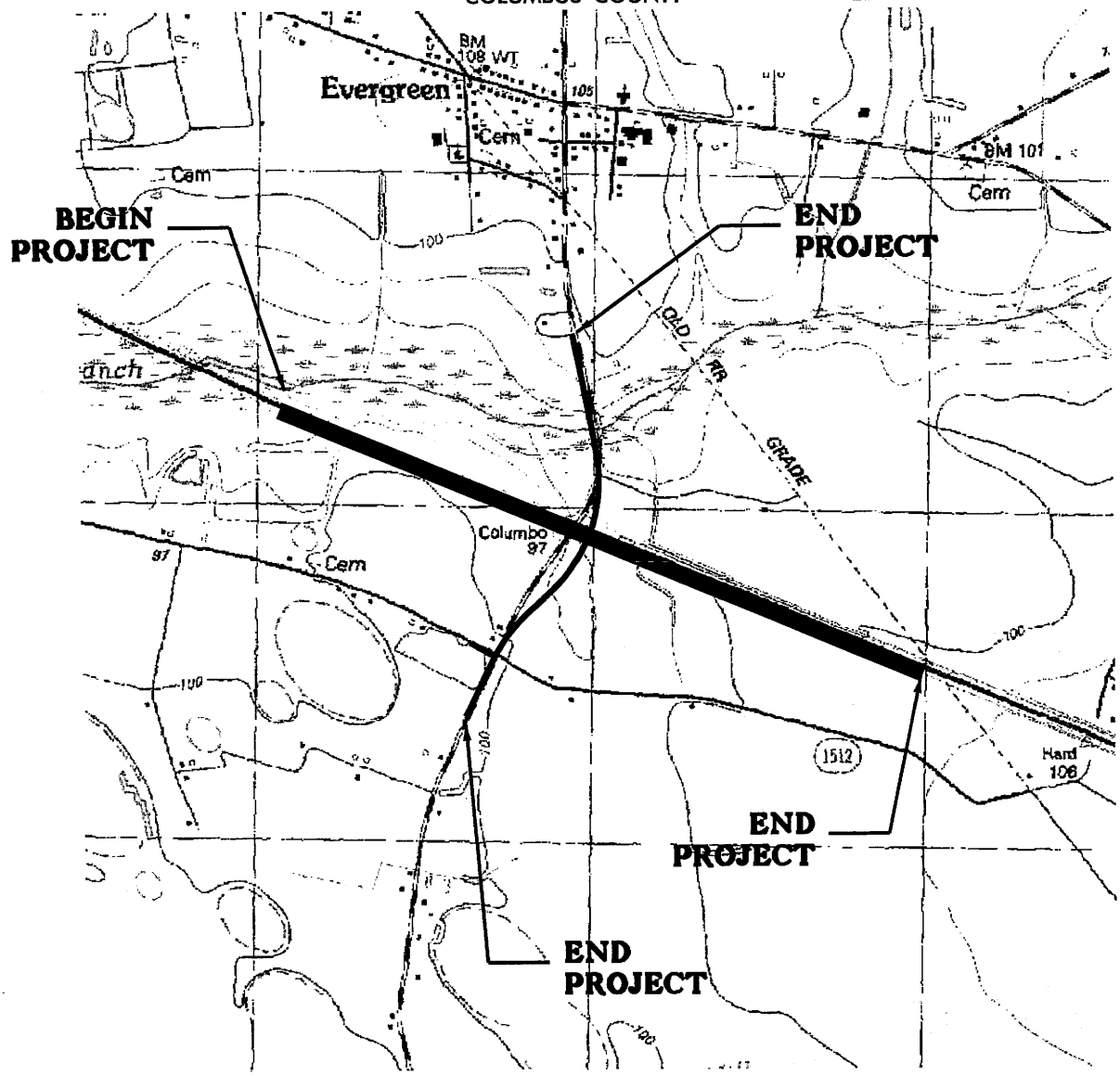
Sincerely,

Gary Jordan

for Pete Benjamin
Field Supervisor

cc: Richard Spencer, USACE, Wilmington, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC
John Sullivan, FHWA, Raleigh, NC
David Harris, NCDOT, Raleigh, NC





WETLAND/STREAM IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

COLUMBUS COUNTY
PROJECT:40224.1.1 (R-4900)
NEW INTERCHANGE
US 74-NC 130/NC 242
Permit Drawing
Sheet 1 of 35
SHEET ___ OF ___ 8-5-09

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	EDWARD WILLIAMSON JR.	111 MILLER CIRCLE WHITEVILLE NC 28472
2	EDWARD WILLIAMSON JR.	111 MILLER CIRCLE WHITEVILLE NC 28472
3	MARGARET JACKSON	3412 CURTIS DR. #403 SUITLAND MD 20746
4	L.P. STEPHENS FARMS	PO BOX 3217 N. MYRTLE BEACH SC 29582
5	PHILIP DEES	660 GRISTS ROAD CHADBOURN NC 28431

NCDOT

DIVISION OF HIGHWAYS

COLUMBUS COUNTY

PROJECT: 40224.1.1 (R-4900)

NEW INTERCHANGE

US 74-NC 130 / NC 242

Permit Drawing

Sheet 2 of 35

SHEET **OF** **8/5/09**

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	31+35/38+65-Y-	ROADWAY FILL	3.61		0.02	0.07						
2	19+83/23+68 -Y- RT	ROADWAY FILL	0.12			0.05						
3	10+30/17+85-SR-	ROADWAY FILL	1.84			0.08						
4	18+02/22+40-SR-	ROADWAY FILL	0.27			0.08						
5	10+63/21+96-RPA-	ROADWAY FILL	1.40			0.17						
TOTALS:			7.24		0.02	0.45						

Permit Drawing
Sheet 3 of 35

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

COLUMBUS COUNTY
WBS - 40224.1.1 (R-4900)

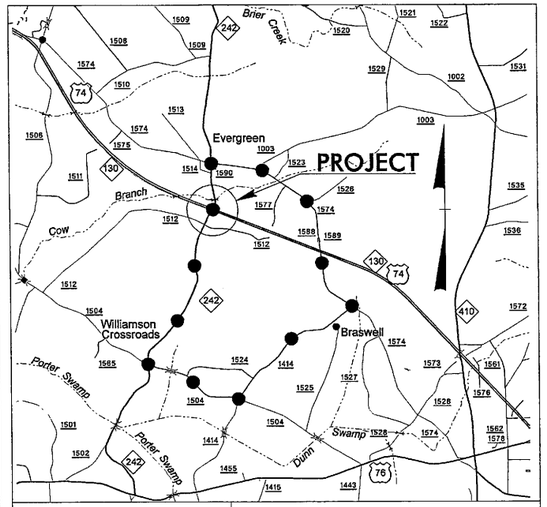
SHEET 8/5/2009

ATN Revised 3/31/05

TIP PROJECT: R-4900

CONTRACT: C202441

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

COLUMBUS COUNTY

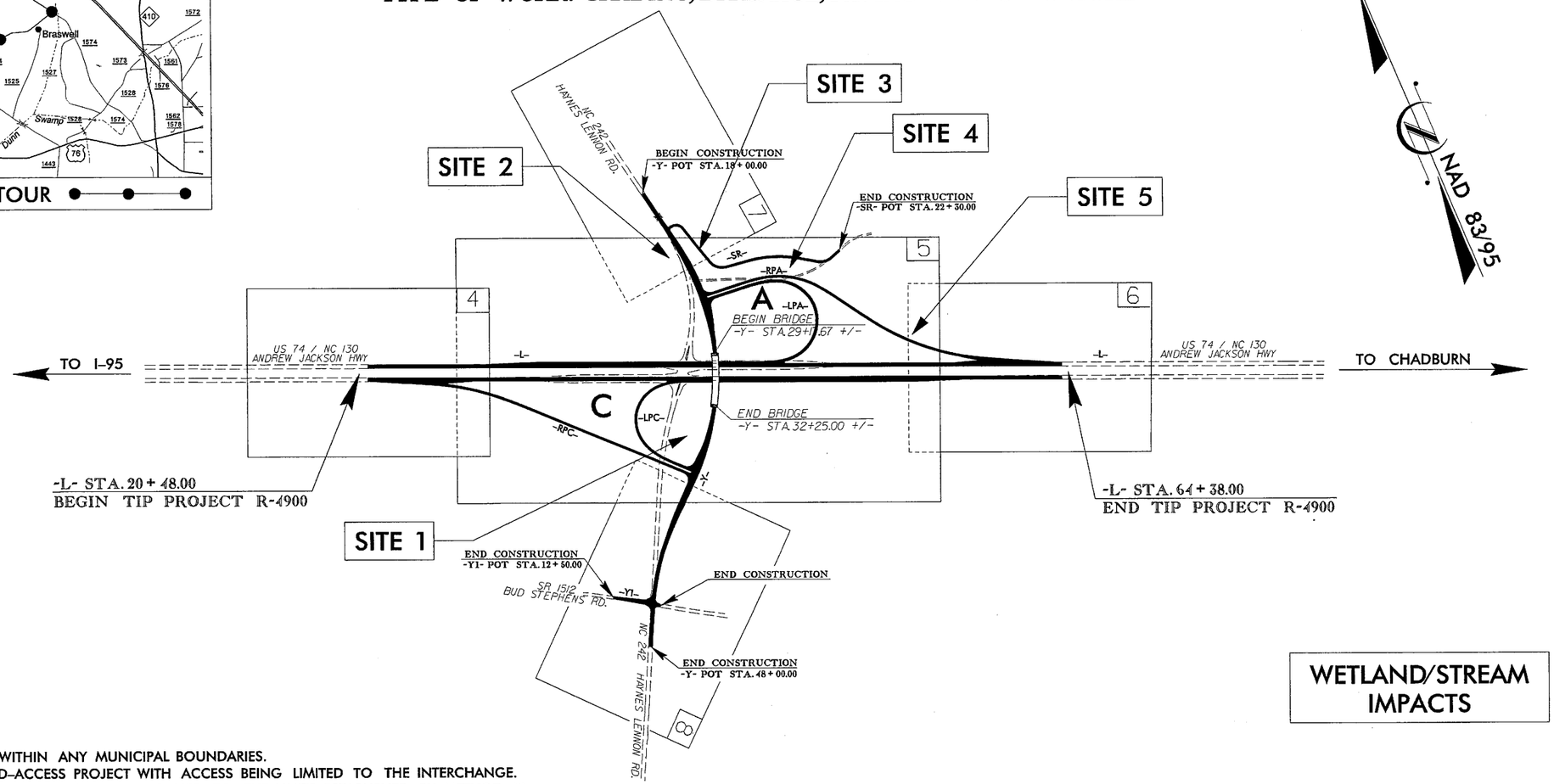
LOCATION: NEW INTERCHANGE US 74 - NC 130 / NC 242

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4900	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
40224.1.1	HPPNHF-74(78)	PE
40224.2.1	HPPNHF-74(78)	R/W & UTIL

Permit Drawing
Sheet 4 of 35



WETLAND/STREAM IMPACTS

NOTES: (1) THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
(2) THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGE.
(3) 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 2010 = 12,600
ADT 2030 = 19,000
DHV = 10 %
D = 55 %
T = 15 % *
V = 70 MPH
FUNC. CLASS. = INTERSTATE
* TTST 10% DUAL 5 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4900 = 0.831 MI.

TOTAL LENGTH OF TIP PROJECT R-4900 = 0.831 MI.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 12, 2009

LETTING DATE:
JULY 20, 2010

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

Permit Drawing
Sheet 5 of 35

REVISIONS

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO. A-4000 — SHEET NO. 5
BW SHEET NO.
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER
PRELIMINARY PLANS
NOT VALID FOR CONSTRUCTION

ENGLISH
NAD 83/95

DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND

SKETCH SHOWING PAVEMENT IN RELATION TO BRIDGE
NOT TO SCALE
BEGIN BRIDGE -Y- STA.29+17.67 +/-
END BRIDGE -Y- STA.32+25.00 +/-
BEGIN APPROACH SLAB -Y- STA.29+02.45 +/-
END APPROACH SLAB -Y- STA.32+40.22 +/-

SEE SHEET NO.7
MATCH LINE -Y- STA.23+00.00
MATCH LINE -SR- STA.13+00.00

-SR- CURVE DATA

PI Sta 14+44.84
Δ = 67° 10' 49.8" (LT)
D = 57° 17' 44.8"
L = 117.25'
T = 66.42'
R = 100.00'
SE = SEE PLANS

PI Sta 17+97.19
Δ = 25° 52' 30.9" (RT)
D = 6° 11' 06.4"
L = 316.13'
T = 160.81'
R = 700.00'
SE = SEE PLANS

PI Sta 21+18.82
Δ = 52° 07' 13.0" (LT)
D = 57° 17' 44.8"
L = 90.97'
T = 48.90'
R = 100.00'
SE = SEE PLANS

-RPC- CURVE DATA

PIs Sta 12+35.52
Θs = 5° 43' 46.5"
Ls = 300.00'
LT = 200.10'
ST = 100.10'

PI Sta 14+34.26
Δ = 7° 32' 27.0" (RT)
D = 3° 49' 11.0"
L = 197.42'
T = 98.85'
R = 1,500.00'
SE = .06

PIs Sta 16+32.92
Θs = 5° 43' 46.5"
Ls = 300.00'
LT = 200.10'
ST = 100.10'

-LPC- CURVE DATA

PIs Sta 12+04.65
Θs = 37° 22' 00.5"
Ls = 300.00'
LT = 204.65'
ST = 104.24'

PI Sta 15+02.96
Δ = 82° 51' 06.9" (LT)
D = 24° 54' 40.4"
L = 332.59'
T = 202.96'
R = 230.00'
SE = .08

PIs Sta 17+36.83
Θs = 37° 22' 00.5"
Ls = 300.00'
LT = 204.65'
ST = 104.24'

-Y- CURVE DATA

PIs Sta 22+07.84
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PI Sta 29+83.32
Δ = 50° 35' 13.7" (RT)
D = 3° 49' 11.0"
L = 1,324.37'
T = 708.84'
R = 1,500.00'
SE = .06

PIs Sta 36+65.54
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

-LPA- CURVE DATA

PIs Sta 12+03.91
Θs = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'

PI Sta 18+30.64
Δ = 129° 32' 50.2" (LT)
D = 22° 55' 05.9"
L = 565.26'
T = 530.64'
R = 250.00'
SE = .08

PIs Sta 19+68.82
Θs = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'

-RPA- CURVE DATA

PIs Sta 13+14.97
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PI Sta 16+79.23
Δ = 22° 26' 43.7" (RT)
D = 3° 49' 11.0"
L = 587.82'
T = 297.63'
R = 1,500.00'
SE = .06

PIs Sta 20+35.92
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PIs Sta 24+29.65
Θs = 11° 27' 33.0"
Ls = 200.00'
LT = 133.61'
ST = 66.92'

PI Sta 26+27.13
Δ = 29° 22' 59.7" (LT)
D = 11° 27' 33.0"
L = 256.42'
T = 131.03'
R = 500.00'
SE = .06

PIs Sta 28+19.37
Θs = 11° 27' 33.0"
Ls = 200.00'
LT = 133.61'
ST = 66.92'

SITE 1
SITE 2
SITE 3
SITE 4
SITE 5

L.P. STEPHENS FARMS
EDWARD WILLIAMSON JR.
PHILIP DEES
MARGARET JACKSON

-LLT- S 67° 24' 52.0" E
-L- S 67° 24' 52.0" E
-LRT- S 67° 24' 52.0" E

-RPC- CS Sta.15+32.83
-RPC- ST Sta.18+32.83
-RPA- POT Sta.3+80.45 =
-RPA- CS Sta.19+69.22
-RPA- ST Sta.21+69.22
-RPA- CS Sta.22+96.04
-RPA- ST Sta.24+96.04
-RPA- POT Sta.29+15.85 =
-LPA- ST Sta.21+65.26
-LPA- CS Sta.18+65.26
-LPA- ST Sta.10+00.00 =
-LPA- SC Sta.13+00.00
-LPA- POT Sta.20+47.37 =
-LPC- SC Sta.13+00.00
-LPC- CS Sta.16+32.59
-LPC- ST Sta.19+32.59
-LPC- POT Sta.20+47.37 =
-SR- PC Sta.13+78.43
-SR- PC Sta.16+36.38
-SR- PT Sta.19+52.51
-SR- PC Sta.20+69.91
-SR- POT Sta.23+39.98
-SR- PT Sta.24+60.88

MATCH LINE -L- STA.28+00.00 SEE SHEET NO.4
MATCH LINE -RPC- STA.15+00.00 SEE SHEET NO.6
MATCH LINE -RPA- STA.17+00.00 SEE SHEET NO.6
MATCH LINE -Y- STA.35+00.00 SEE SHEET NO.8
MATCH LINE -L- STA.55+00.00 SEE SHEET NO.6

CLASS 'B' RIP RAP EST. 1 TON 5 SY FILTER FABRIC
CLASS 'B' RIP RAP EST. 3 TONS 16 SY FILTER FABRIC
CLASS 'B' RIP RAP EST. 7 TONS 22 SY FILTER FABRIC
CLASS 'B' RIP RAP EST. 2 TONS 7 SY FILTER FABRIC
CLASS 'B' RIP RAP EST. 3 TONS 11 SY FILTER FABRIC
CLASS 'B' RIP RAP EST. 2 TONS 8 SY FILTER FABRIC
CLASS 'B' RIP RAP EST. 4 TONS 16 SY FILTER FABRIC
SPECIAL LAT 'V' DITCH SEE DETAIL #1 SHEET 2-D
SPECIAL DITCH GRADE SEE PROFILE
SPECIAL DITCH GRADE SEE CROSS SECTIONS
GRADE TO DRAIN
EXCAVATE TO ELEVATION 91.8
2' LAT BASE DITCH SEE DETAIL #3 SHEET 2-D EST. 55 CY DOE
2' LAT BASE DITCH SEE DETAIL #3 SHEET 2-D EST. 9 CY DOE
STD 3' BASE TAILDITCH SEE DETAIL #2 SHEET 2-D EST. 105 CY DOE
TOE PROTECTION SEE DETAIL #2 SHEET 2-D
TOE PROTECTION SEE DETAIL #3 SHEET A-43
2GI W/NARROW SLOTS FLAT GRATE
15" CAP W/BOWS ROD & LUG CONNECTORS W/SLEEVE GASKETS
30" CL 'IV' WALTHOD 'B' INSTALLATION
FALSE CUT AREA
REMOVE HEADWALL COLLAR & EXTEND
REMOVE DI
REMOVE 18"
CONVERT DI TO 2GI
COLLAR & EXTEND 18" PIPE
RETAIN & EXTEND
RETAIN
PLUG
TIE TO EXISTING FENCE
BEGIN FENCE REMOVAL
EXISTING R/W

Permit Drawing
Sheet 6 of 35

REVISIONS

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES EXCAVATION IN WETLAND

SKETCH SHOWING PAVEMENT IN RELATION TO BRIDGE
NOT TO SCALE

BEGIN BRIDGE -Y- STA.29+17.67 +/-
END BRIDGE -Y- STA.32+25.00 +/-
BEGIN APPROACH SLAB -Y- STA.29+02.45 +/-
END APPROACH SLAB -Y- STA.32+40.22 +/-

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO. B-4900
SHEET NO. 5
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

PRELIMINARY PLANS
NO RW OR CONSTRUCTION

ENGLISH

NAD 83/95

SEE SHEET NO.7
MATCH LINE -Y- STA.23+00.00
MATCH LINE -SR- STA.13+00.00

-SR- PC Sta.16+36.38
-SR- PT Sta.19+52.51
-SR- PC Sta.13+78.43
-SR- PC Sta.20+69.91
-SR- POT Sta.21+39.98
-SR- PT Sta.21+60.85
-RPA- TS Sta.22+96.04
-RPA- ST Sta.24+96.04
-RPA- ST Sta.21+69.22
-RPA- CS Sta.19+69.22

-SR- CURVE DATA
PI Sta 14+44.84
Δ = 67° 10' 49.8" (LT)
D = 57° 17' 44.8"
L = 117.25'
T = 66.42'
R = 100.00'
SE = SEE PLANS

PI Sta 17+97.19
Δ = 29° 52' 30.9" (RT)
D = 8° 11' 06.7"
L = 316.13'
T = 160.81'
R = 700.00'
SE = SEE PLANS

PI Sta 21+18.82
Δ = 52° 07' 13.0" (LT)
D = 57° 17' 44.8"
L = 90.97'
T = 48.90'
R = 100.00'
SE = SEE PLANS

-LPA- ST Sta.21+65.26
-LPA- CS Sta.18+65.26
-LPA- POT Sta.24+07.23 =
-LPA- SC Sta.13+00.00
-LPA- ST Sta.10+00.00 =

-LPC- POT Sta.24+60.45 =
-LPC- CS Sta.16+32.39
-LPC- ST Sta.13+32.39
-LPC- SC Sta.13+00.00

-RPC- CS Sta.15+32.83
-RPC- ST Sta.18+32.83

-RPC- CURVE DATA
PIs Sta 12+35.52
Θs = 5° 43' 46.5"
Ls = 300.00'
LT = 200.00'
ST = 100.10'

PI Sta 14+34.26
Δ = 1° 32' 27.0" (RT)
D = 3° 49' 11.0"
L = 197.42'
T = 98.85'
R = 1,500.00'
SE = .06

PIs Sta 16+32.92
Θs = 5° 43' 46.5"
Ls = 300.00'
LT = 200.00'
ST = 100.10'

-LPC- CURVE DATA
PIs Sta 12+04.65
Θs = 37° 22' 00.5"
Ls = 300.00'
LT = 204.65'
ST = 104.24'

PI Sta 15+02.96
Δ = 82° 51' 06.9" (LT)
D = 24° 54' 40.4"
L = 332.59'
T = 202.96'
R = 230.00'
SE = .08

PIs Sta 17+36.83
Θs = 37° 22' 00.5"
Ls = 300.00'
LT = 204.65'
ST = 104.24'

-Y- CURVE DATA
PIs Sta 23+03.54
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PI Sta 29+83.32
Δ = 50° 35' 13.1" (RT)
D = 3° 49' 11.0"
L = 1,324.37'
T = 708.84'
R = 1,500.00'
SE = .06

PIs Sta 36+65.54
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

-LPA- CURVE DATA
PIs Sta 12+03.91
Θs = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'

PI Sta 18+30.64
Δ = 129° 32' 50.2" (LT)
D = 22° 55' 05.9"
L = 565.26'
T = 530.64'
R = 250.00'
SE = .98

PIs Sta 19+68.82
Θs = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'

-RPA- CURVE DATA
PIs Sta 13+14.97
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PI Sta 16+79.23
Δ = 82° 26' 43.7" (RT)
D = 3° 49' 11.0"
L = 538.22'
T = 297.65'
R = 1,500.00'
SE = .06

PIs Sta 20+35.92
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PIs Sta 24+29.65
Θs = 11° 27' 33.0"
Ls = 200.00'
LT = 133.61'
ST = 66.92'

PI Sta 26+27.13
Δ = 29° 22' 59.3" (LT)
D = 11° 27' 33.0"
L = 256.42'
T = 131.09'
R = 500.00'
SE = .06

PIs Sta 28+19.37
Θs = 11° 27' 33.0"
Ls = 200.00'
LT = 133.61'
ST = 66.92'

SITE 1
SITE 2
SITE 3
SITE 4
SITE 5

L.P. STEPHENS FARMS
EDWARD WILLIAMSON JR.
PHILIP DEES
MARGARET JACKSON

MATCH LINE -L- STA.28+00.00 SEE SHEET NO.4
MATCH LINE -L- STA.55+00.00 MATCH LINE -RPA- STA.17+00.00 SEE SHEET NO.6
MATCH LINE -Y- STA.38+00.00 SEE SHEET NO.8

-LLT- S 67° 24' 52.0" E
-L- S 67° 24' 52.0" E
-LRT- S 67° 24' 52.0" E

CLASS 'B' RIP RAP
EST. 1 TON
3 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 2 TONS
15 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 4 TONS
31 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 5 TONS
39 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 7 TONS
52 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 3 TONS
11 SY FILTER FABRIC

2' LAT BASE DITCH
SEE DETAIL #2
SHEET 2-D
EST. 9 CY DOE

STD. 2' BASE TAILDITCH
SEE DETAIL #9
SHEET 2-D
EST. 155 SY DOE

SPECIAL LAT 'V' DITCH
SEE DETAIL #1
SHEET 2-D

SPECIAL DITCH GRADE
SEE PROFILE

SPECIAL DITCH GRADE
SEE CROSS SECTIONS

GRADE TO DRAIN

TOE PROTECTION
SEE DETAIL #2
SHEET 2-D

EXCAVATE TO ELEVATION 91.0

REMOVE HEADWALL COLLAR & EXTEND

COLLAR AND EXTEND 18" PIPE

RETAIN & EXTEND

CONVERT DI TO 2GI

REMOVE DI

REMOVE

RETAIN

2GI W/NARROW SLOTS FLAT GRATE

2GI W/HOOD GRATE

15" CAP W/ELBOWS ROD & LUG CONNECTORS W/SLEEVE GASKETS

30" CL "II" W/METHOD "B" INSTALLATION

TIE TO EXISTING FENCE BEGIN FENCE REMOVAL

SPECIAL DITCH GRADE SEE PROFILE

SPECIAL LAT 'V' DITCH SEE DETAIL #1 SHEET 2-D

LATERAL 'V' DITCH SEE DETAIL #4 SHEET 2-D EST. 17 CY DOE

EXISTING R/W

RLB

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 7 of 35

F/F DENOTES FILL IN WETLAND

CLASS 'B' RIP RAP
EST. 8 TONS
21 SY FILTER FABRIC

STD 2' BASE TAIL DITCH
SEE DETAIL #6
SHEET 2-D
EST. 155 CY DDE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

REMOVE

RETAIN & EXTEND

REMOVE DI

COLLAR & EXTEND

REMOVE 18"

FS 2GI

PLUG

SITE 1

REMOVE HEADWALL
COLLAR & EXTEND

18" JB w/Slab Lid

GRADE TO DRAIN

2GI W/NARROW

-L- +45 200

-L- 00+00

-LLT-

-L-

-LRT-

-Y1-

JS NEU

WLB

CONC HW

CONC ISL

36" RCP INV=90.15'

INV=88.71'

18" RCP

60" RCP

15" RCP

60"

60"

15"

25 12.5 0 25 50
PLANS

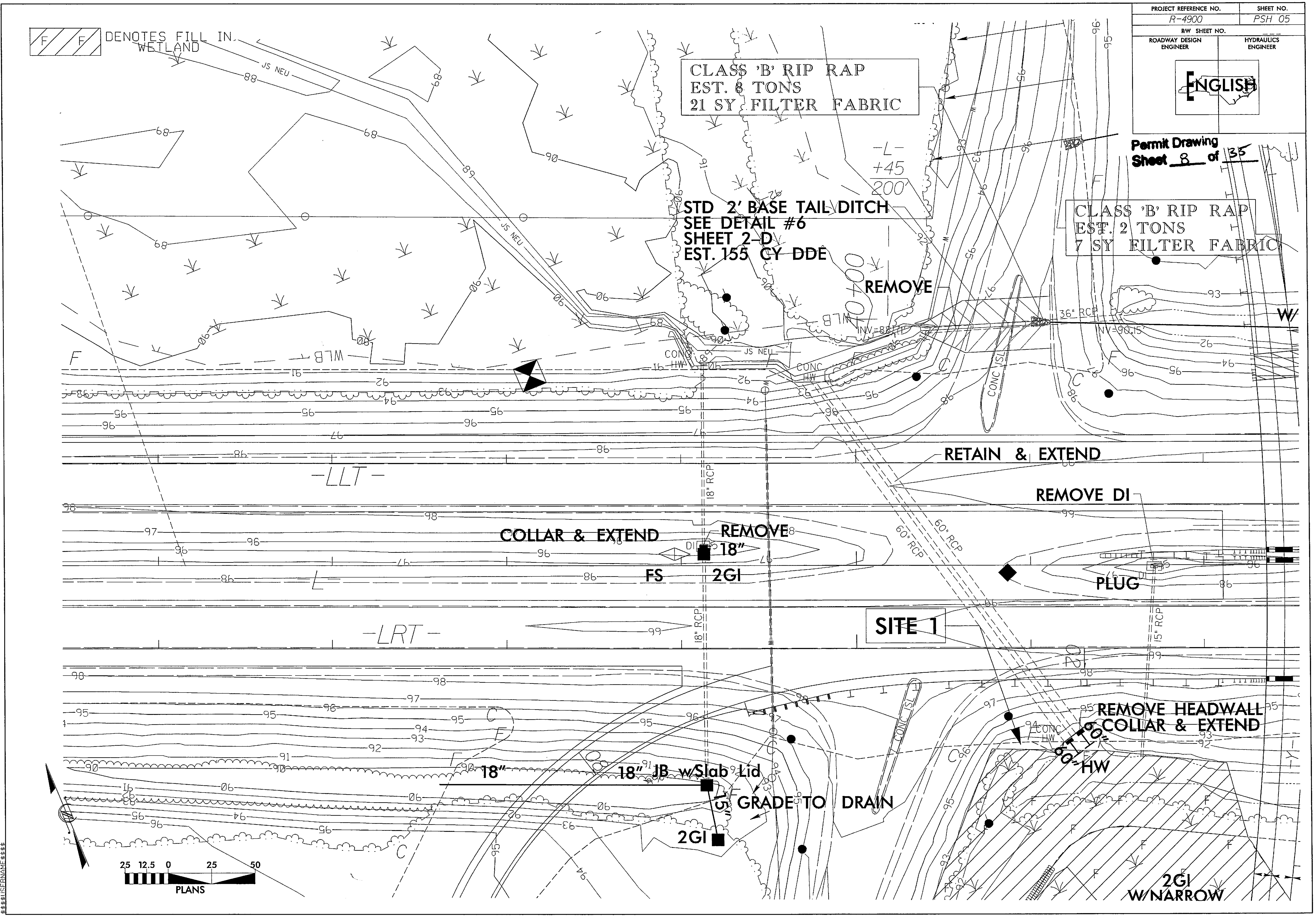
$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

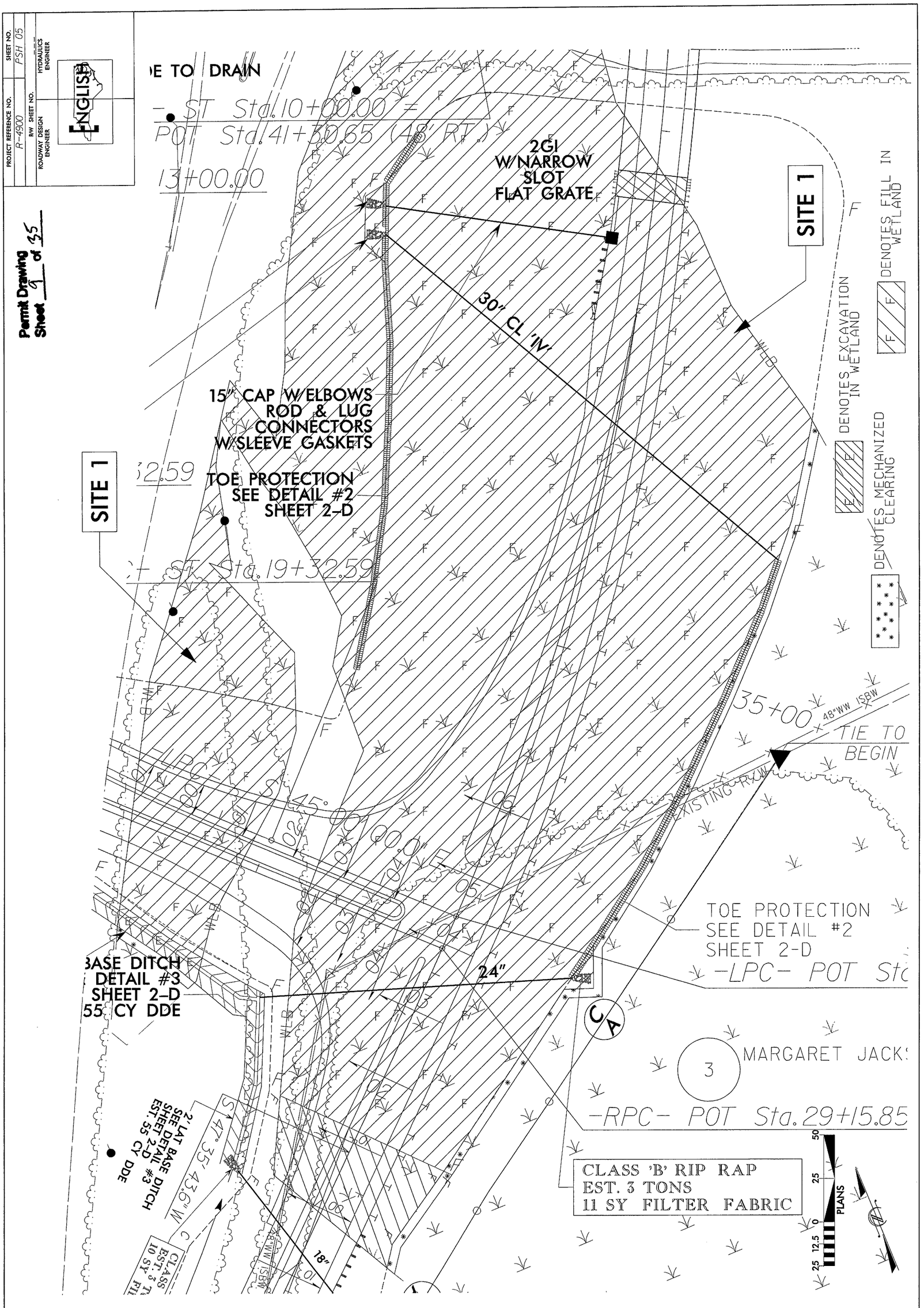
5/14/99

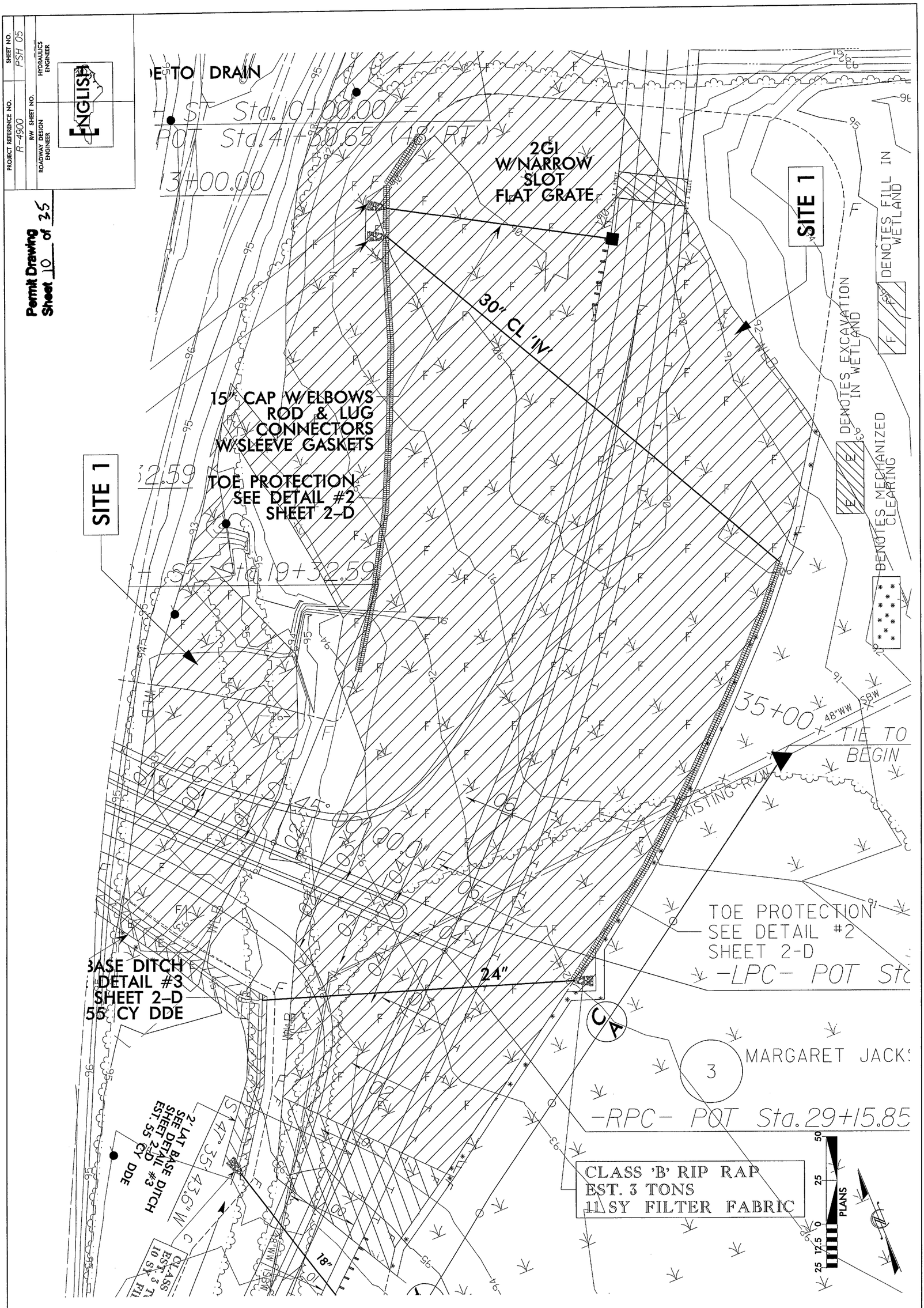
PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 8 of 35




PROJECT REFERENCE NO.
R-4900
SHEET NO.
PSH 05
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
ENGLISH
Permit Drawing
Sheet 4 of 15
E TO DRAIN
- SL Sta. 10+00.00 =
POT Sta. 41+30.65 (48' RT.)
13+00.00
2GI
W/NARROW
SLOT
FLAT GRATE
30" CL 'N'
SITE 1
15" CAP W/ELBOWS
ROD & LUG
CONNECTORS
W/SLEEVE GASKETS
TOE PROTECTION
SEE DETAIL #2
SHEET 2-D
SITE 1
32.59
- SL Sta. 19+32.59
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
35+00
48"WW
ISBW
TIE TO
BEGIN
EXISTING R/W
TOE PROTECTION
SEE DETAIL #2
SHEET 2-D
-LPC- POT Sta
BASE DITCH
DETAIL #3
SHEET 2-D
55 CY DDE
24"
MARGARET JACK
-RPC- POT Sta. 29+15.85
2" LAT
SEE BASE DETAIL
SHEET DITCH #3
EST. 55 2-D
CY DDE
CLASS
EST. 3
10 SY FILTER
18"
CLASS 'B' RIP RAP
EST. 3 TONS
11 SY FILTER FABRIC
50
25
0
PLANS
25 12.5 0
5/14/99


PROJECT REFERENCE NO. R-4900
SHEET NO. PSH 05
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
ENGLISH
Permit Drawing Sheet 10 of 35
TO DRAIN
-SL- Sta. 10+00.00
POT Sta. 41+30.65 (45° RT.)
13+00.00
2GI W/NARROW SLOT FLAT GRATE
30" CL IV
15" CAP W/ELBOWS ROD & LUG CONNECTORS W/SLEEVE GASKETS
TOE PROTECTION SEE DETAIL #2 SHEET 2-D
SITE 1
-SL- Sta. 19+32.59
SITE 1
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
35+00
48"WW
SBW
TIE TO BEGIN
EXISTING R/W
TOE PROTECTION SEE DETAIL #2 SHEET 2-D
-LPC- POT Sta
BASE DITCH DETAIL #3 SHEET 2-D 55 CY DDE
24"
MARGARET JACK
-RPC- POT Sta. 29+15.85
2' LAT SEE BASE SHEET DETAIL DITCH EST. 55 CY DDE
CLASS 'B' RIP RAP EST. 3 TONS 11 SY FILTER FABRIC
18"
PLANS
50
25
0
12.5
25

5/14/99

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 11 of 35

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 2

SITE 3

SEE SHEET NO.7
MATCH LINE
-Y- STA.23+00.00

-SR- MATCH LINE STA.13+00.00

-SR- PC Sta.13+78.43

SPEC DITCH GRADE
SEE PROFILE

-SR- PC

SPECIAL DITCH GRADE

-SR-

-RPA- CS Sta.27+52.45

-SR- PT Sta.14+95.68

-RPA- ST Sta.29+52.45

2GI W/NARROW SLOTS FLAT GRATE

15" CAP W/ELBOWS ROD & LUG CONNECTORS W/SLEEVE GASKETS

CLASS 'B' RIP RAP
EST. 1 TON
SSY FILTER FABRIC

POT Sta.31+80.45 =

-Y-
+40
110'

POT Sta.24+07.23 =

BEGIN FENCE REMOVAL

EXISTING R/W

JEMEG TR.

EDWARD WILLIAMSON JR. 2

RUINS

EXISTING R/W

S 85° 58' 58.6" E 1005.08'

N 85° 43' 00.0" W 1082.04'

N 85° 43' 00.0" W

-LPA- ST Sta.21+65.26

-LPA- CS Sta.

SPECIAL LAT 'V' DITCH
SEE DETAIL #1
SHEET 2-D

R/W VARIES

25 12.5 0 25 50
PLANS

$$$$$$SYSTIME$$$$$$
$$$$$$SYSNAME$$$$$$
$$$$$$SCREAMS$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 12 of 35

F/F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET NO.7
MATCH LINE
-Y- STA.23+00.00

MATCH LINE
-SR- STA.13+00.00

-SR- PC Sta.13+78.43

SPEC DITCH GRADE
SEE PROFILE

SITE 3

SPECIAL DITCH GRADE

-SR- PC

SITE 2

2GI W/NARROW SLOTS FLAT GRATE

15" CAP W/ELBOWS ROD & LUG CONNECTORS W/SLEEVE GASKETS

CLASS 'B' RIP RAP
EST. 1 TON
SY FILTER FABRIC

-Y- POT Sta.31+80.45 =

-Y- +40 110'

-Y- POT Sta.24+07.23 =

EXISTING BEGIN FENCE REMOVAL

SOIL

EDWARD WILLIAMSON JR.

JEMEG T.R.

RUINS

N 85° 43' 00.0" W

-LPA- ST Sta.21+65.26

-LPA- CS Sta.

-RPA- CS Sta. 27+52.45

-SR- PT Sta.14+95.68

RPA- ST Sta.29+52.45

S 85° 58' 58.6" E

SPECIAL LAT 'V' DITCH
SEE DETAIL #1
SHEET 2-D

R/W VARIES

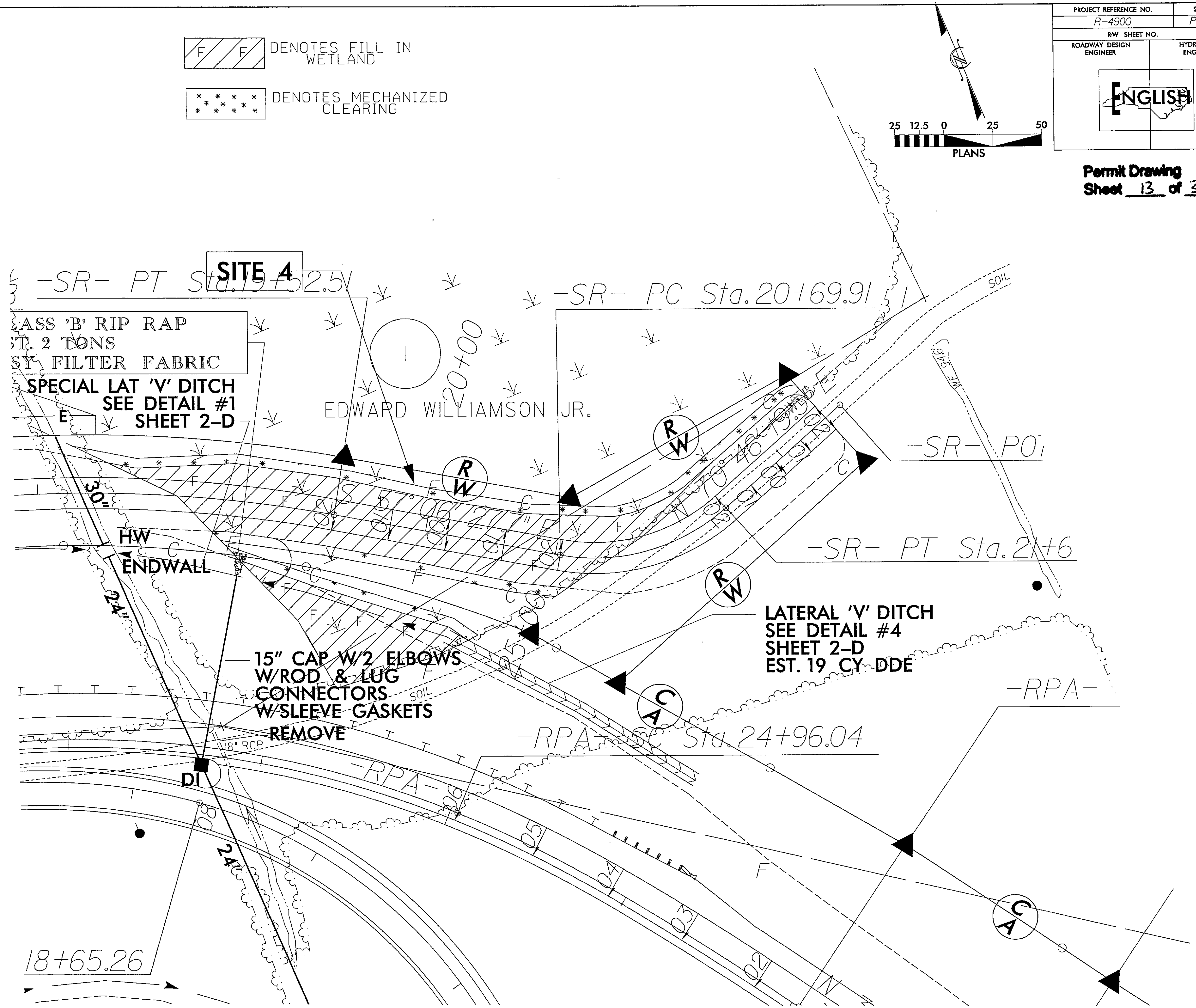
25 12.5 0 25 50
PLANS

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 13 of 35



5/14/99

5/14/99

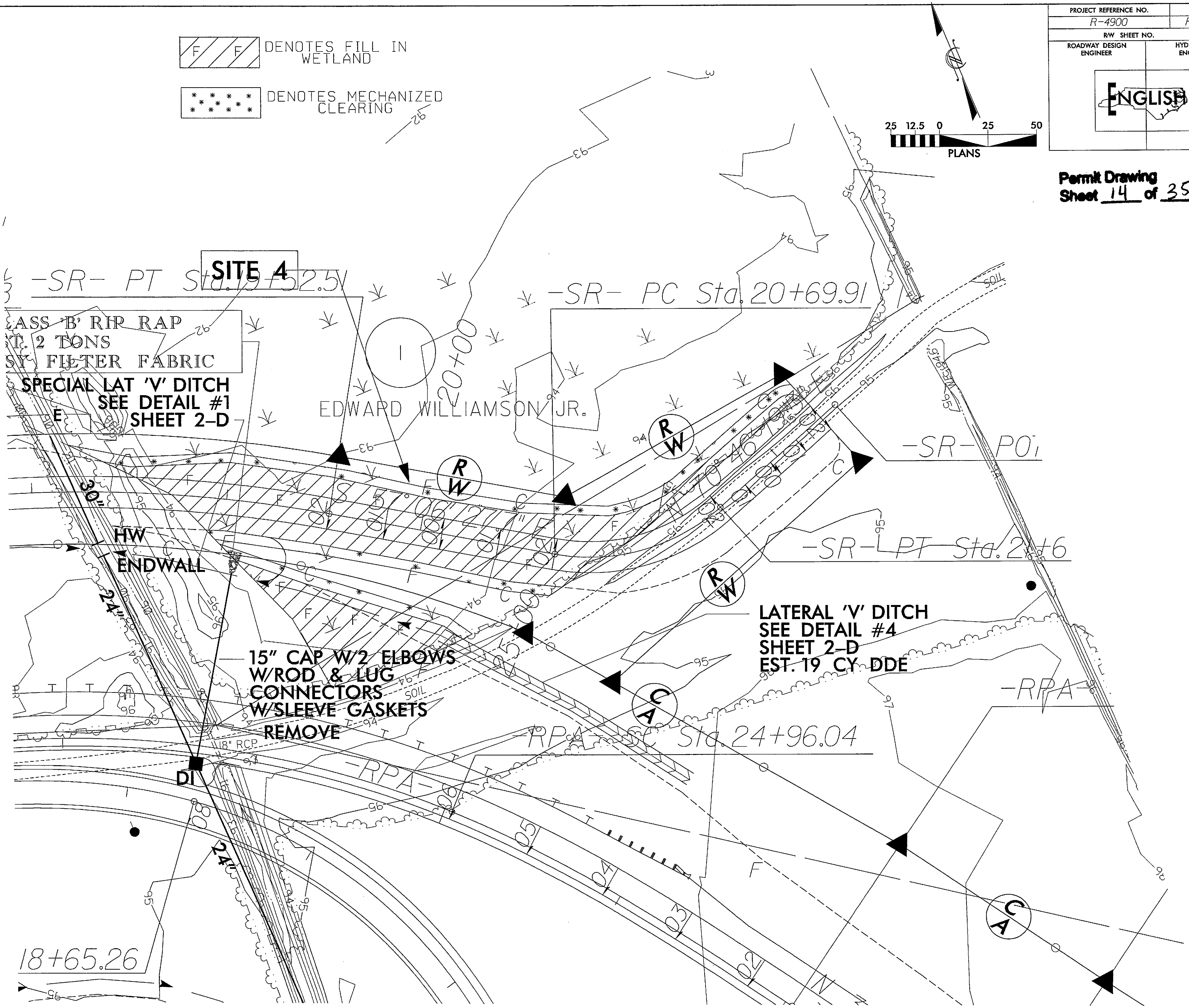
PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 14 of 35

▨ F F DENOTES FILL IN WETLAND

* * * DENOTES MECHANIZED CLEARING



$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 15 of 35

25 12.5 0 25 50
PLANS

EIP

WLB

-RPA- CS Sta.19+69.22

20+00

33° 24' 54.1" W
60.00'

SITE 5

18"

WSON JR.

48"WW ISBW

WLB

WLB

EXISTING R/W

CLASS 'B' RIP RAP
EST. 5 TONS
16 SY FILTER FABRIC

30"

WLB

MATCH LINE -RPA- STA.17+00.00

-LLT-

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	PSH 05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

Permit Drawing
Sheet 16 of 35

25 12.5 0 25 50
PLANS

EIP

33° 24' 54.4" W
80.01'

WLB

-RPA- CS Sta.19+69.22

20+00

SITE 5

MSON JR.

18"

48"WW ISBW

WLB

EXISTING R/W

CLASS 'B' RIP RAP
EST. 5 TONS
16 SY FILTER FABRIC

30

MATCH LINE -RPA- STA.17+00.00

-LLT-

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

$$$$$$$SYSTIME$$$$
$$$$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900__	6__
R/W SHEET NO.	___
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 17 of 35

ENGLISH

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/95

-RPA- CURVE DATA

Pls Sta 13+14.97	Pl Sta 16+79.23	Pls Sta 20+35.92
Θs = 3° 49' 11.0"	△ = 22° 26' 43.7" (RT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 587.62'	LT = 133.36'
ST = 66.69'	T = 297.63'	ST = 66.69'
	R = 1,500.00'	
	SE = .06	

5
PHILIP DEES

SITE 5

-RPA- POT Sta.10+00.00 =
-L- POT Sta.62+15.50 (59' LT)
△ = 3° 54' 52"

TIE TO EXISTING FENCE
END FENCE REMOVAL

-RPA- SC Sta.13+81.60

-RPA- TS Sta.11+81.60

MATCH LINE -RPA- STA.17+00.00

MATCH LINE -L- STA.55+00.00 SEE SHEET NO.5

ROCK PLATING ON 2:1 SLOPE
W/CL 'I' RIP RAP
STA 60+50 TO
STA 61+50 -L- LT

48"WW ISBW

R/W VARIES

-RPA-

N 63° 30' 00.0" W

-LLT-

S 67° 24' 52.0" E

-L-

-LRT-

CONVERT DI TO 2GI

FS

DI

2GI

RETAIN

45 LRFP

WLB

EXISTING R/W

R/W MON

60+00

65+00

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

5
PHILIP DEES

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

▨ DENOTES FILL IN WETLAND

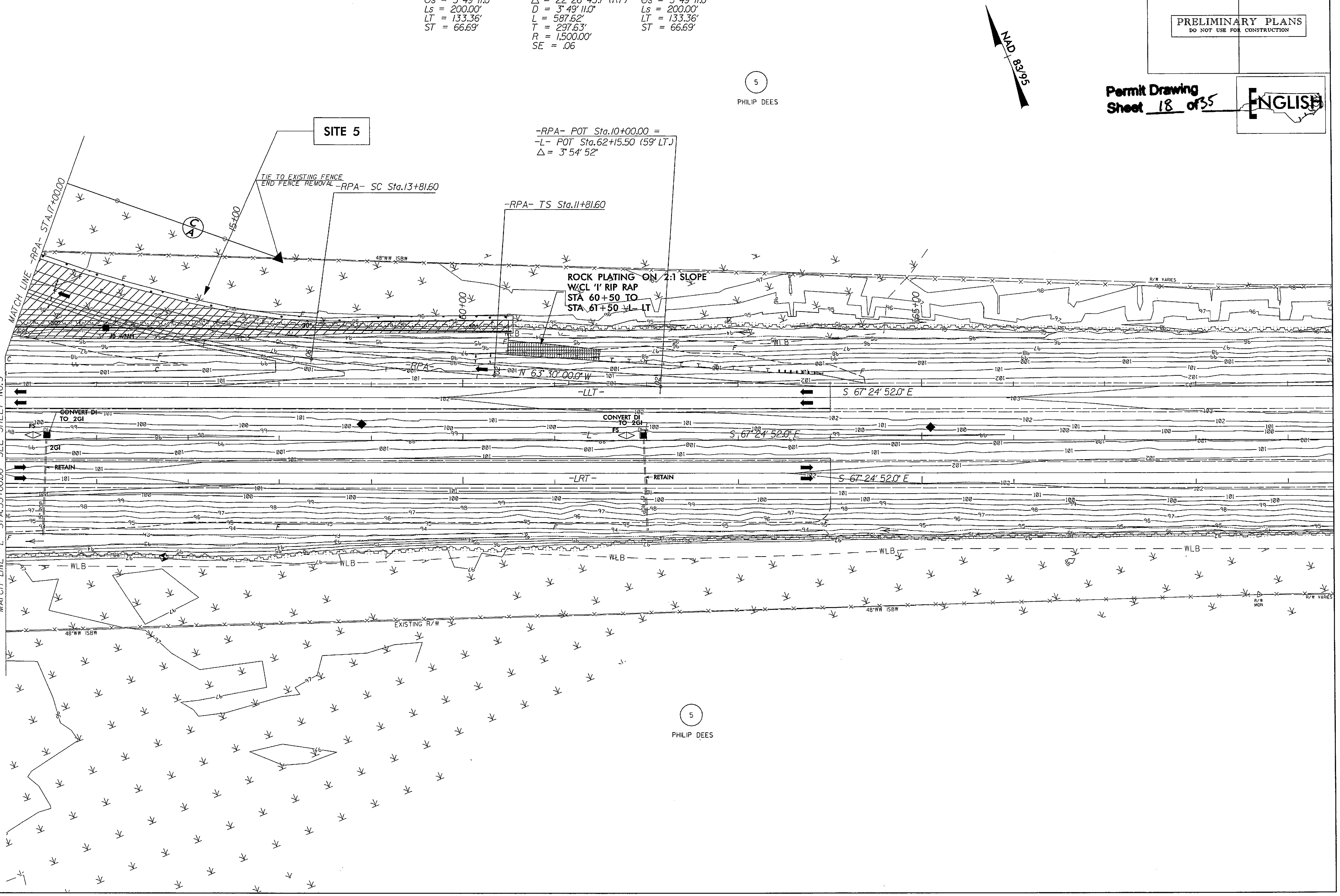
⁘ DENOTES MECHANIZED CLEARING

Permit Drawing
Sheet 18 of 35

ENGLISH

-RPA- CURVE DATA

PIs Sta 13+14.97	PI Sta 16+79.23	PIs Sta 20+35.92
θs = 3° 49' 11.0"	△ = 22° 26' 43.7" (RT)	θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 587.62'	LT = 133.36'
ST = 66.69'	T = 297.63'	ST = 66.69'
	R = 1,500.00'	
	SE = .06	



$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

F DENOTES FILL IN WETLAND
⁙ DENOTES MECHANIZED CLEARING

Permit Drawing
Sheet 19 of 35

ENGLISH

-Y- CURVE DATA

PIs Sta 22+07.84
Θs = 3° 49′ 11.0″
Ls = 200.00′
LT = 133.36′
ST = 66.69′

PI Sta 29+83.32
△ = 50° 35′ 13.7″ (RT)
D = 3° 49′ 11.0″
L = 1,324.37′
T = 708.84′
R = 1,500.00′
SE = .06

-SR- CURVE DATA

PI Sta 10+85.00
△ = 84° 49′ 43.2″ (RT)
D = 114° 35′ 29.6″
L = 74.03′
T = 45.68′
R = 50.00′
SE = SEE PLANS

$$$$SYSTIME$$$$
$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/95

Permit Drawing Sheet 20 of 35

ENGLISH

-Y- CURVE DATA

Pls Sta 22+07.84
Θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PI Sta 29+83.32
△ = 50° 35' 13.7" (RT)
D = 3° 49' 11.0"
L = 1,324.37'
T = 708.84'
R = 1,500.00'
SE = .06

-SR- CURVE DATA

PI Sta 10+85.00
△ = 84° 49' 43.2" (RT)
D = 114° 35' 29.6"
L = 74.03'
T = 45.68'
R = 50.00'
SE = SEE PLANS

SITE 3

-SR- PT Sta.11+13.35

CLASS 'B' RIP RAP EST. 2 TONS/ 7 SY FILTER FABRIC

-SR- PC Sta.10+39.32

TOE PROTECTION SEE DETAIL #2 SHEET 2-D

-SR- STA.13+00.00 MATCH LINE -Y- STA.23+00.00 SEE SHEET NO.5

SEE DITCH GRADE & PROFILE

18" RCP

DI-3

TRDI W/NARROW SLOTS FLAT GRATE

-Y- S 10° 37' 52.0" E

SHOULDER BERM GUTTER -SR- STA 21+15 TP BEGIN OF BRIDGE (RT.)

15" CAP WELDOWS ROD & LUG CONNECTORS W/SLEEVE GASKETS

CLASS 'B' RIP RAP EST. 1 TON & SY FILTER FABRIC

N 79° 22' 08.0" E

BEGIN WOVEN WIRE FENCE

EXISTING R/W

SITE 2

-SR- POT Sta.10+00.00 =

EDWARD WILLIAMSON JR.

WLB

EXISTING R/W

NC 242 HAYNES LENNON RD.

15" RCP

EDWARD WILLIAMSON JR.

EXISTING R/W

R/W VARIES

48"WW ISBW

WILLIAM BARNHILL

EXISTING R/W

WD RAIL

SOIL

ISBKD

WILLIAM BARNHILL

48"WW ISBW

EXISTING R/W

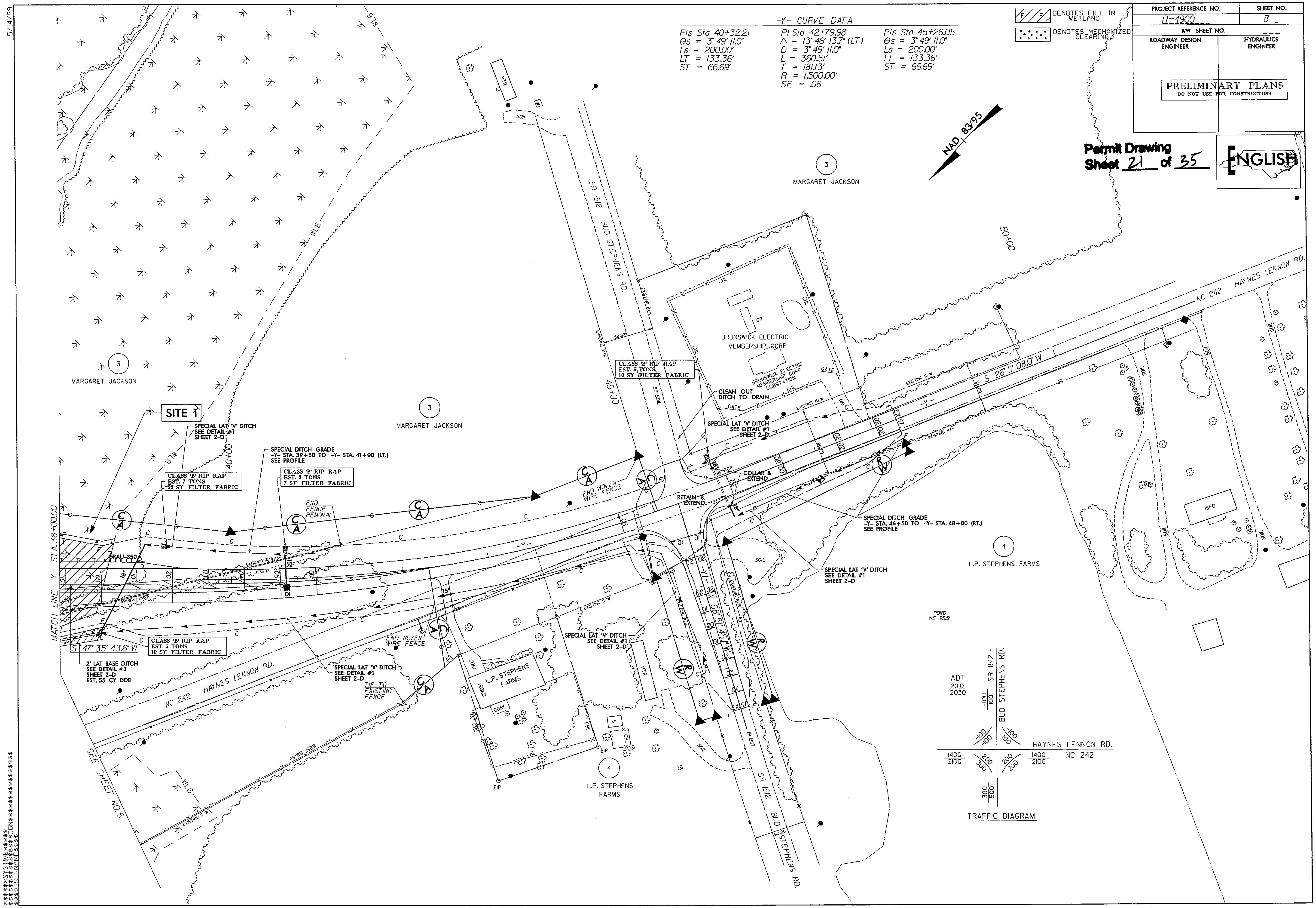
R/W VARIES

10+00

15+00

20+00

5/14/99



PROJECT REFERENCE NO.	SHEET NO.
R-4900	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 21 of 35

ENGLISH

F F DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING

-Y- CURVE DATA

PIs Sta 40+32.21	PI Sta 42+79.98	PIs Sta 45+26.05
θs = 3° 49′ 11.0″	Δ = 13° 46′ 13.7″ (LT)	θs = 3° 49′ 11.0″
Ls = 200.00′	D = 3° 49′ 11.0″	Ls = 200.00′
LT = 133.36′	L = 360.51′	LT = 133.36′
ST = 66.69′	T = 181.13′	ST = 66.69′
	R = 1,500.00′	
	SE = .06	

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

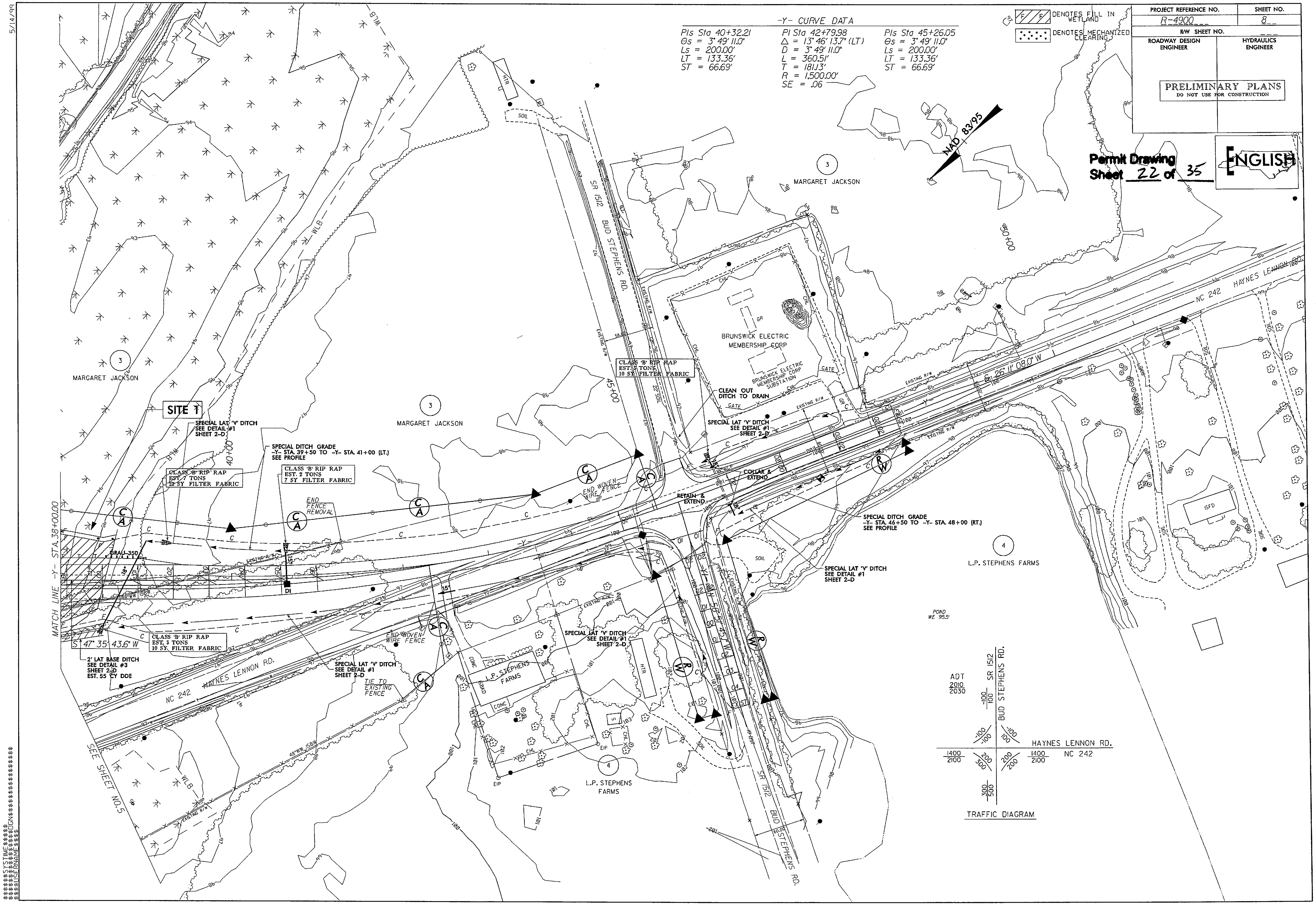
Permit Drawing
Sheet 22 of 35

ENGLISH

-Y- CURVE DATA

PIs Sta 40+32.21	PI Sta 42+79.98	PIs Sta 45+26.05
Θs = 3° 49' 11.0"	Δ = 13° 46' 13.7" (LT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 360.51'	LT = 133.36'
ST = 66.69'	T = 181.13'	ST = 66.69'
	R = 1,500.00'	
	SE = .06	

DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING



ADT
2010
2030

	SR 1512 BUD STEPHENS RD.
	-100 / 100
	-100 / -100
	-100 / 100

HAYNES LENNON RD. NC 242
1400/2100 — 200/300 — 200/200 — 1400/2100
300/500

TRAFFIC DIAGRAM

$$$$SYSTIME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 23 of 35

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 25

DRAINAGE AREA	= 31	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 92.2	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 92.6	FT
OVERTOPPING FREQUENCY	= >25	YRS
OVERTOPPING DISCHARGE	= >500	CFS
OVERTOPPING ELEVATION	= 95.0	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 26

DRAINAGE AREA	= 20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 94.5	FT
100 YEAR DISCHARGE	= 11	CFS
100 YEAR HW ELEVATION	= 94.8	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >16	CFS
OVERTOPPING ELEVATION	= 98.31	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 27

DRAINAGE AREA	= 1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 4.1	CFS
DESIGN HW ELEVATION	= 97.4	FT
100 YEAR DISCHARGE	= 4.4	CFS
100 YEAR HW ELEVATION	= 97.5	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >5.1	CFS
OVERTOPPING ELEVATION	= 98.31	FT

-Y-

SITE 1

PI = 30+00.00
EL = 136.00'
VC = 900'
K = 104
SSD = 474'

(-)4.3333%

126.26

END BRIDGE
-Y- STA. 32+25.00+/-

FILL IN WETLAND

-LPC- STA. 20+47.37
-Y- STA. 36+65.00

-RPC- STA. 29+15.85
-Y- STA. 36+85.00

-Y- POC STA. 30+25.79
-L- POT STA. 42+58.19

PI = 39+00.00
EL = 97.00'
VC = 450'
K = 90

99.05

BEGIN SPECIAL DITCH GRADE -Y- STA. 37+43.00
ELEV. = 93.00

30"

24"

RT. DITCH (+) 0.4673%

PI = 38+50.00
ELEV. = 93.50

(-)4.3333%

(+)1.2000%

18"

(+)0.6833%

LT. DITCH

(+)0.5500%

(+) 0.709% RT. DITCH

END SPECIAL DITCH GRADE -Y- STA. 41+00.00
ELEV. = 94.90

PI = 39+00.00
ELEV. = 94.10

BEGIN SPECIAL DITCH GRADE -Y- STA. 39+00.00
ELEV. = 93.80

130 120 110 100 90 80

30 31 32 33 34 35 36 37 38 39 40 41 42

BM 85 EL. 98.48
RAILROAD SPIKE IN BASE OF 15 INCH PINE TREE
-BY- STA. 39+77 (14' RT.)
-Y- STA. 46+93 (33' RT.)

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 31

DRAINAGE AREA	= .085	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.5	CFS
DESIGN HW ELEVATION	= 97.7	FT
100 YEAR DISCHARGE	= 3.8	CFS
100 YEAR HW ELEVATION	= 97.8	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >4.3	CFS
OVERTOPPING ELEVATION	= 100.3	FT

END GRADE -Y- STA. 48+00.00
ELEV. = 100.30

99.05

PI = 45+00.00
EL = 101.10'
VC = 200'
K = 211
SSD = 1236'

(+)0.6833%

(-)0.2667%

END SPECIAL DITCH GRADE -Y- STA. 48+00.00
ELEV. = 97.10

RT. DITCH (+) 0.709%

END SPECIAL DITCH GRADE -Y- STA. 44+50.00
ELEV. = 98.00

18"

(+) 0.2294% RT. DITCH

(+) 0.0000% LT. DITCH

(+) 0.2294%

BEGIN SPECIAL DITCH GRADE -Y- STA. 45+80.00
ELEV. = 96.00

END SPECIAL DITCH GRADE -Y- STA. 47+30.00
ELEV. = 96.00

110 100 90 80

42 43 44 45 46 47 48 49

FOR -Y- PLAN VIEW
SEE SHEETS 5 & 8

$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 24 of 35

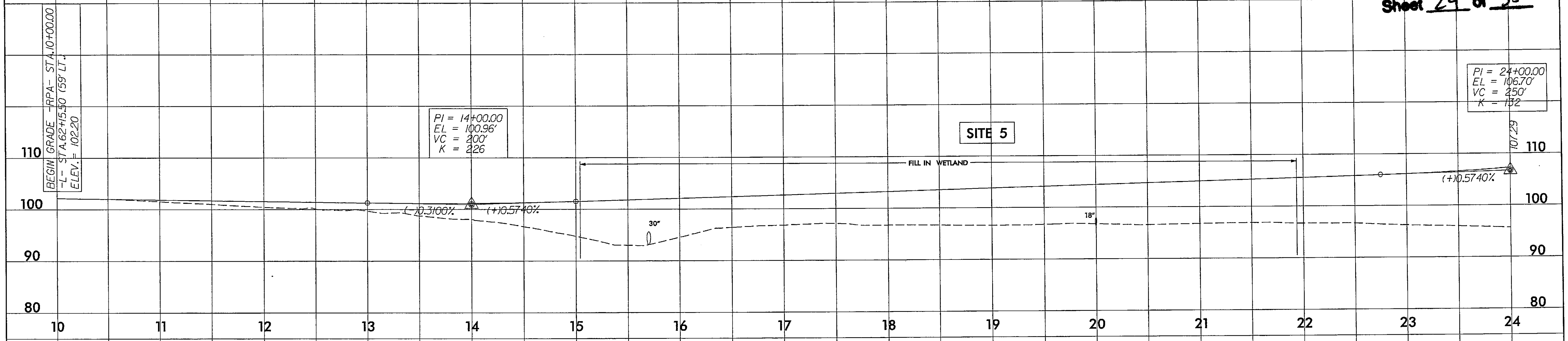
-RPA-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.53

DRAINAGE AREA	= 55	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 95.2	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 95.7	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >23	CFS
OVERTOPPING ELEVATION	= 101.2	FT

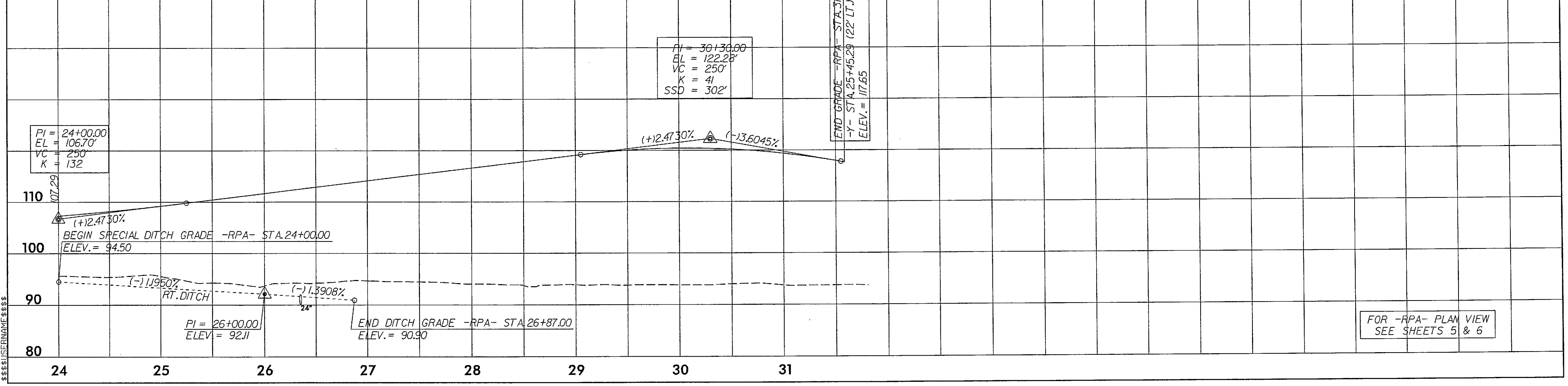
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.49

DRAINAGE AREA	= 2.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.6	CFS
DESIGN HW ELEVATION	= 92.2	FT
100 YEAR DISCHARGE	= 9.2	CFS
100 YEAR HW ELEVATION	= 92.5	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >10.7	CFS
OVERTOPPING ELEVATION	= 102.6	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.45

DRAINAGE AREA	= 4.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 92.7	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 93.0	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >18	CFS
OVERTOPPING ELEVATION	= 99.43	FT



FOR -RPA- PLAN VIEW
SEE SHEETS 5 & 6

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	14

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

Permit Drawing
Sheet 25 **of** 35

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

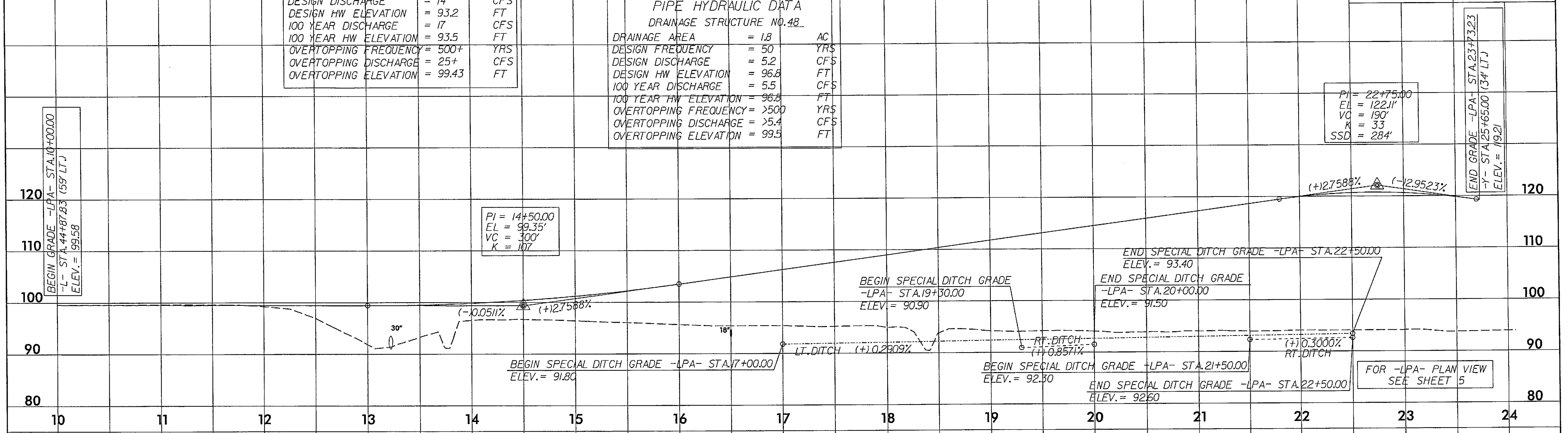
-LPA-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.39

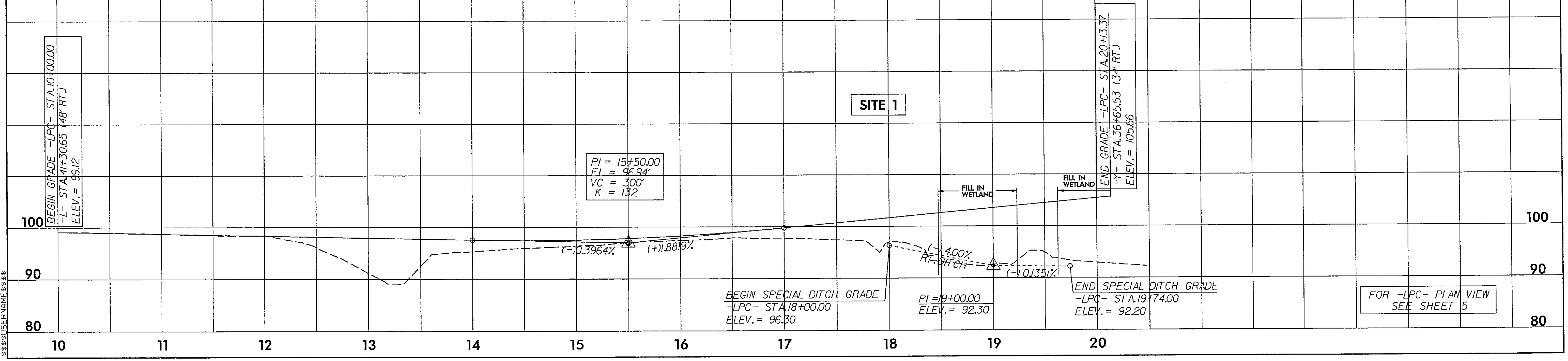
DRAINAGE AREA	= 57	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 93.2	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 93.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 25+	CFS
OVERTOPPING ELEVATION	= 99.43	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.48

DRAINAGE AREA	= 1.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5.2	CFS
DESIGN HW ELEVATION	= 96.8	FT
100 YEAR DISCHARGE	= 5.5	CFS
100 YEAR HW ELEVATION	= 96.8	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >5.4	CFS
OVERTOPPING ELEVATION	= 99.5	FT



-LPC-

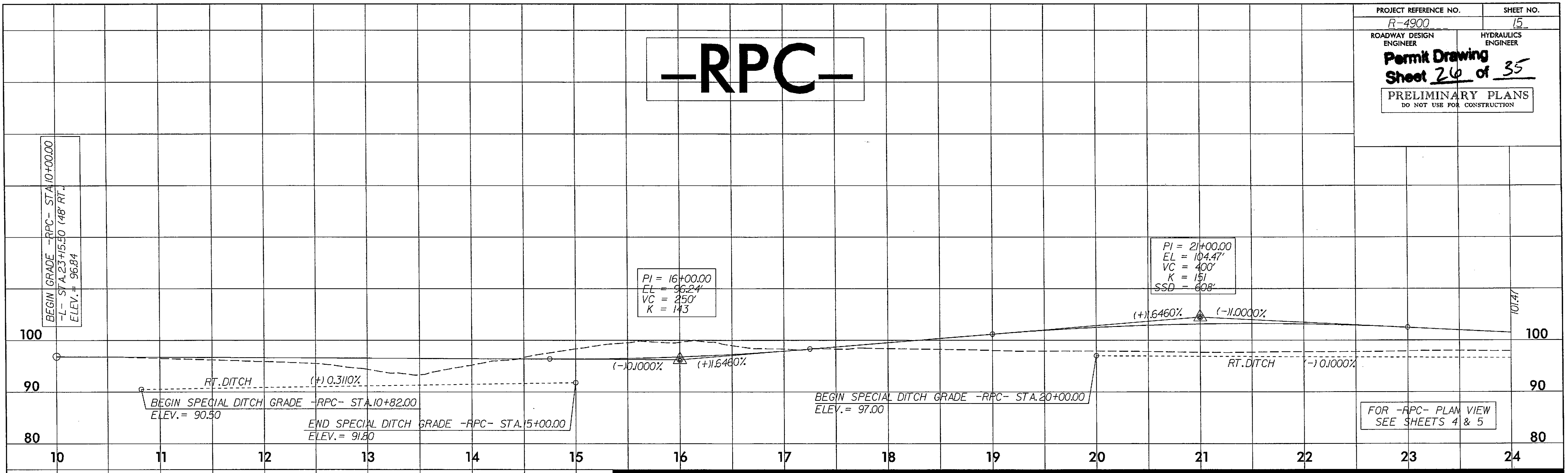


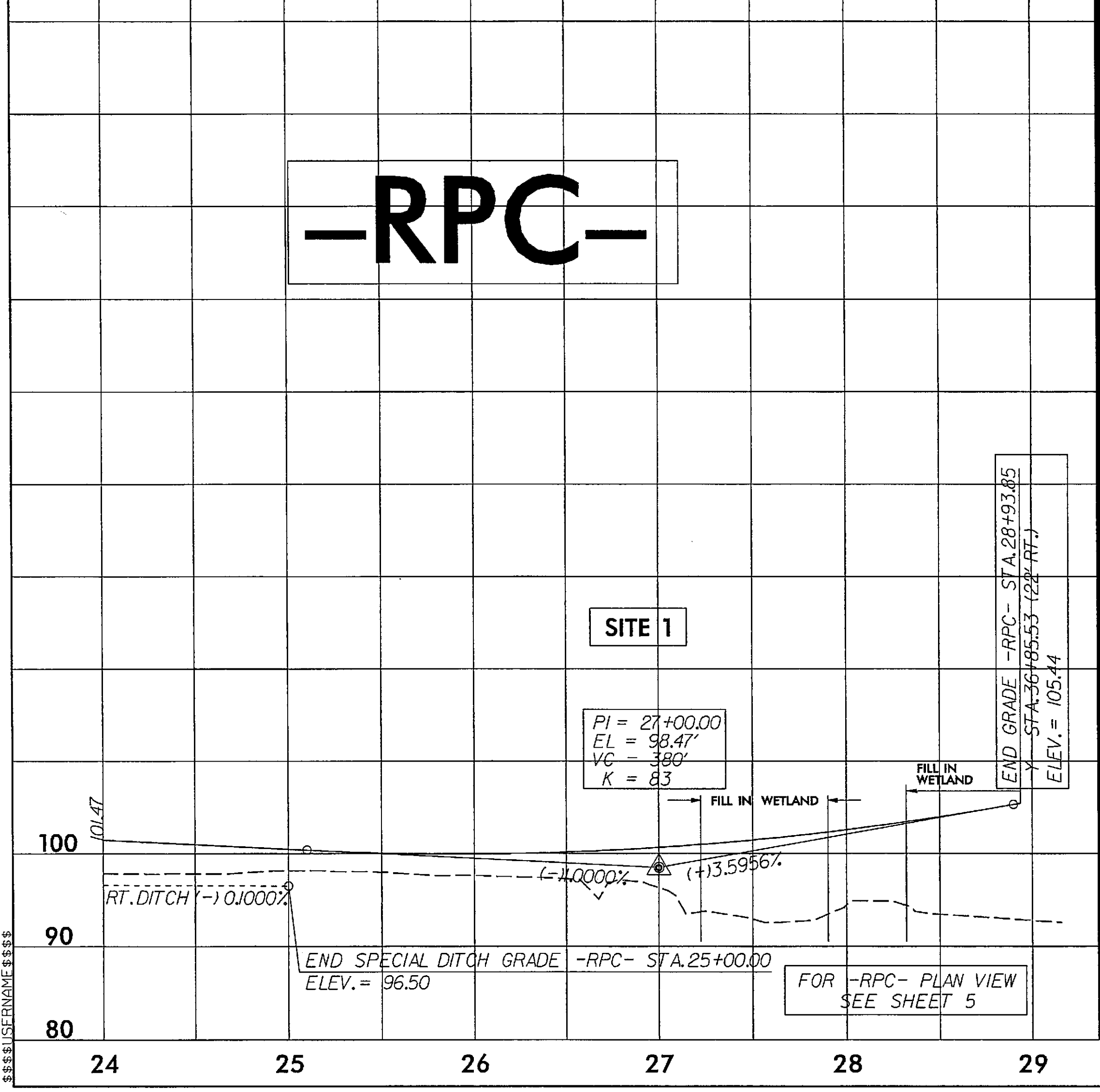
5/14/99

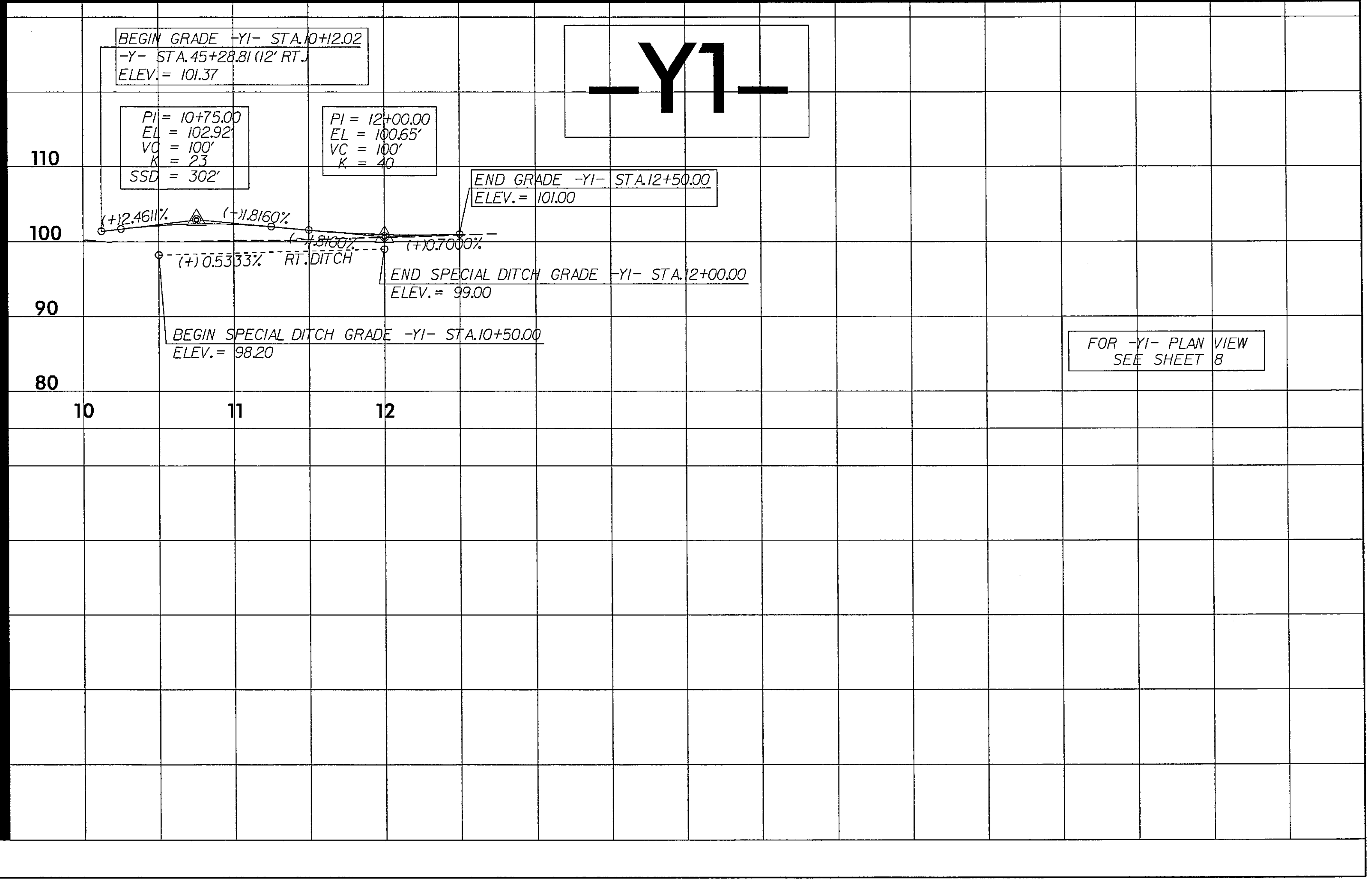
PROJECT REFERENCE NO.	SHEET NO.
R-4900	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 26 of 35

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION







$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	16

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

Permit Drawing
Sheet 27 **of** 35

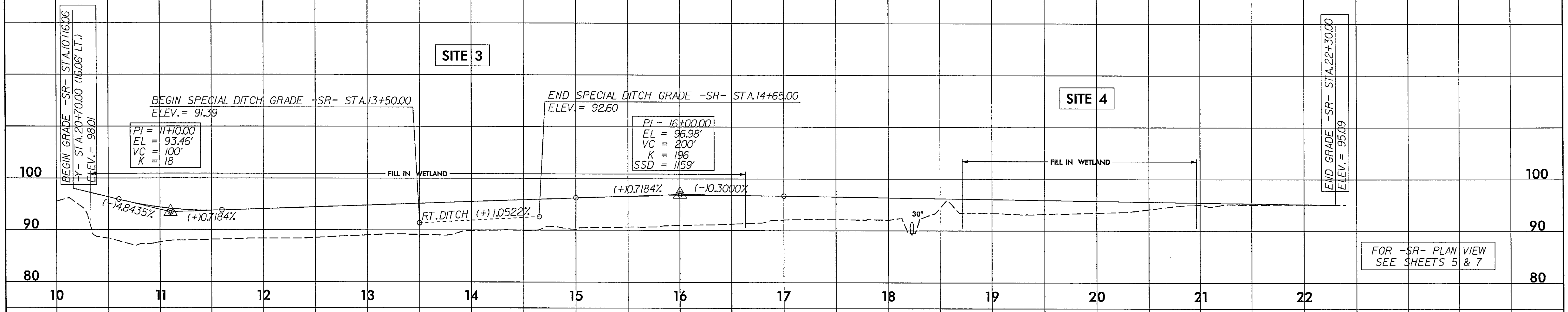
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 42

DRAINAGE AREA = 7.4 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 24 CFS
DESIGN HW ELEVATION = 91.9 FT
100 YEAR DISCHARGE = 26 CFS
100 YEAR HW ELEVATION = 92.1 FT
OVERTOPPING FREQUENCY = >500 YRS
OVERTOPPING DISCHARGE = >29 CFS
OVERTOPPING ELEVATION = 94.0 FT

-SR-



FOR -SR- PLAN VIEW
SEE SHEETS 5 & 7

$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

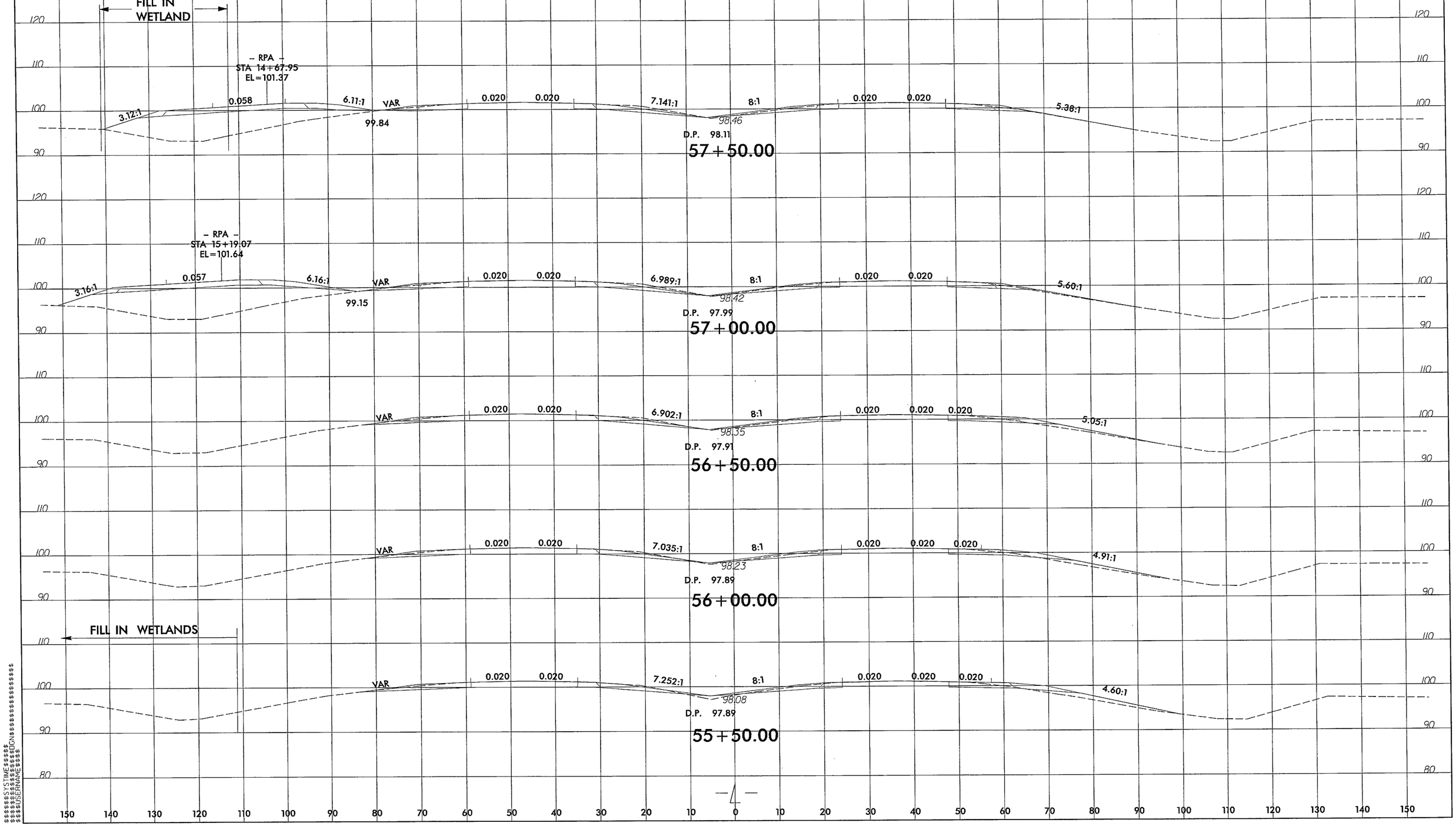
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-4900	X-14

Permit Drawing
Sheet 28 of 35

SITE 5

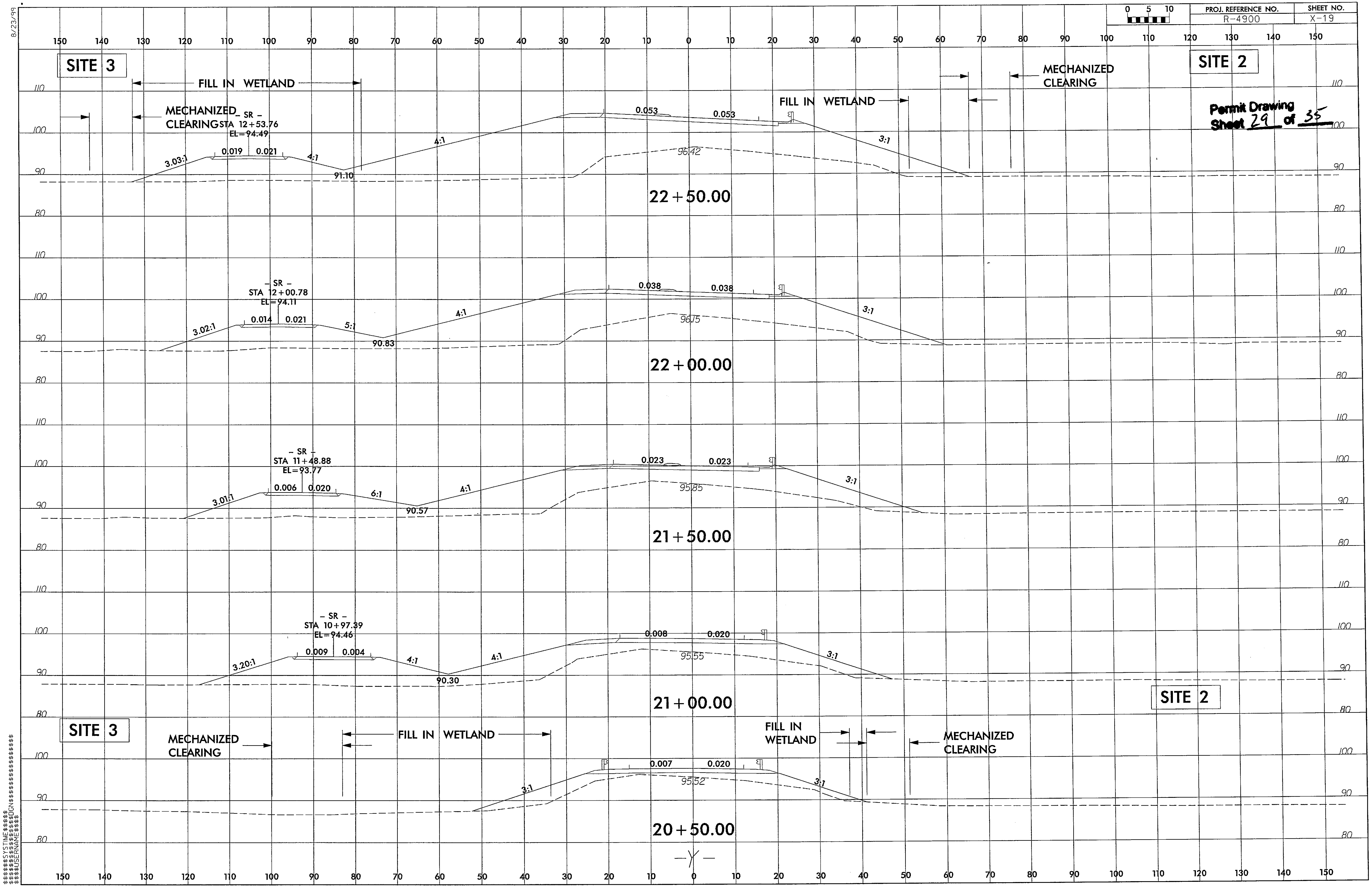
MECHANIZED CLEARING

FILL IN WETLAND



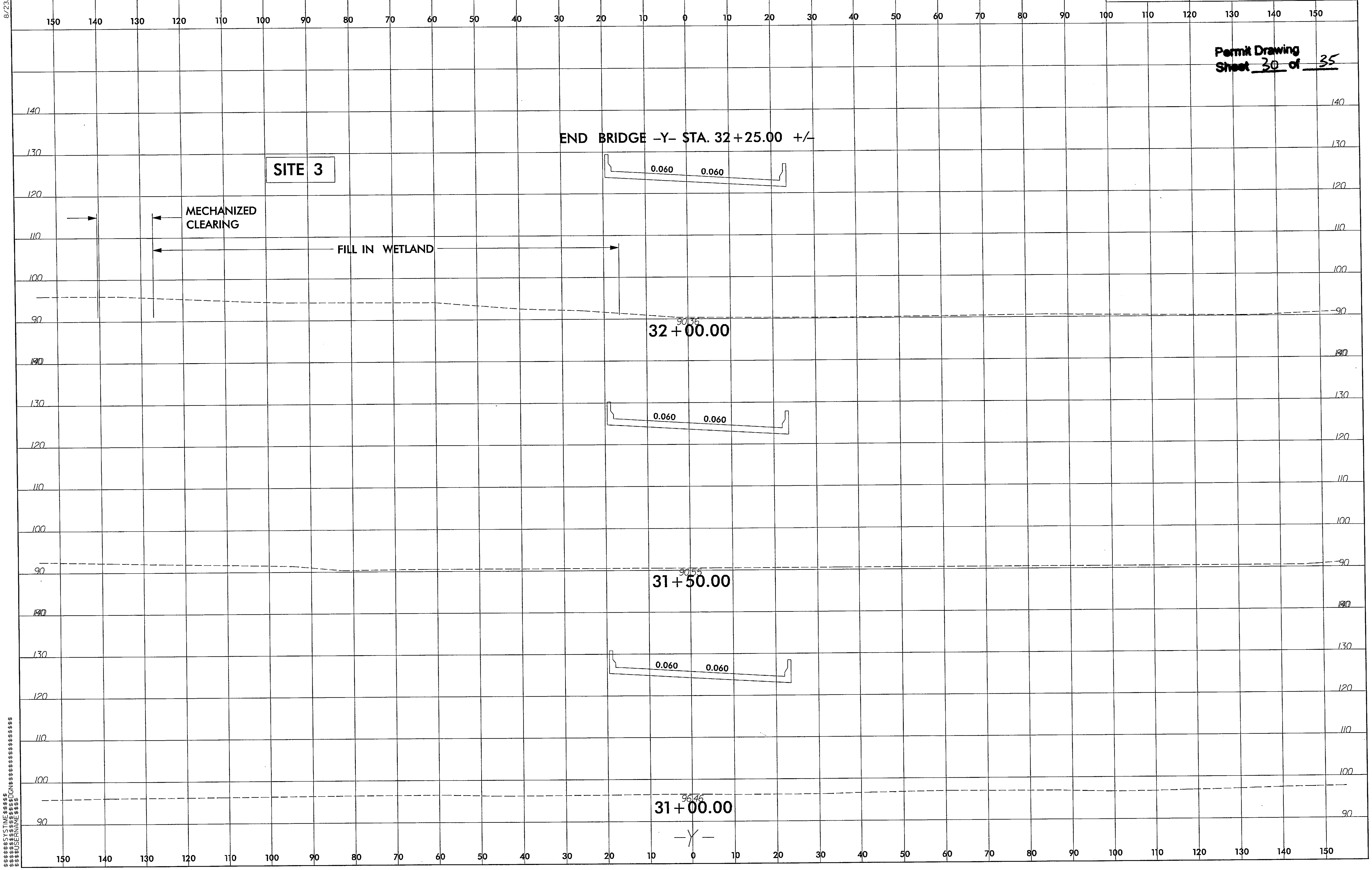
PROJ. REFERENCE NO.	SHEET NO.
R-4900	X-19

Permit Drawing
Sheet 29 of 35



PROJ. REFERENCE NO.	SHEET NO.
R-4900	X-25

Permit Drawing
Sheet 30 of 35



8/23/99
$$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$USERNAME$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-4900	X-27

Permit Drawing
Sheet 31 of 35

SITE 1

35 + 50.00

90.80

0.060 0.060 0.060

3:1

4:1

FILL IN WETLAND

MECHANIZED CLEARING

MECHANIZED CLEARING

35 + 00.00

90.49

0.060 0.060

3:1

4:1

34 + 50.00

90.01

0.060 0.060

3:1

4:1

34 + 00.00

89.86

0.060 0.060

3:1

4:1

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-4900	X-34

Permit Drawing
Sheet 32 of 35

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

100
90
IBID

3:1 3:1 0.020 0.003 3:1 3:1
95.09
92.86 93.03
22+00.00

3:1 3:1 0.020 0.020 3:1 3:1
95.05
93.01 93.41
21+50.00

3:1 3:1 0.020 0.020 3:1 3:1
95.07
93.16 93.56
21+00.00

3:1 3:1 0.013 0.013 3:1 3:1
94.16
93.38 93.64
20+50.00

MECHANIZED CLEARING
FILL IN WETLAND
MECHANIZED CLEARING
MECHANIZED CLEARING

SITE 4

3:1 0.004 0.004 3:1
93.48
20+00.00

3:1 0.020 0.020 3:1
93.26
19+50.00

3:1 0.020 0.020 3:1
93.40
19+00.00

VAR 0.020 0.020 3:1
94.31
18+50.00

-SR-

80

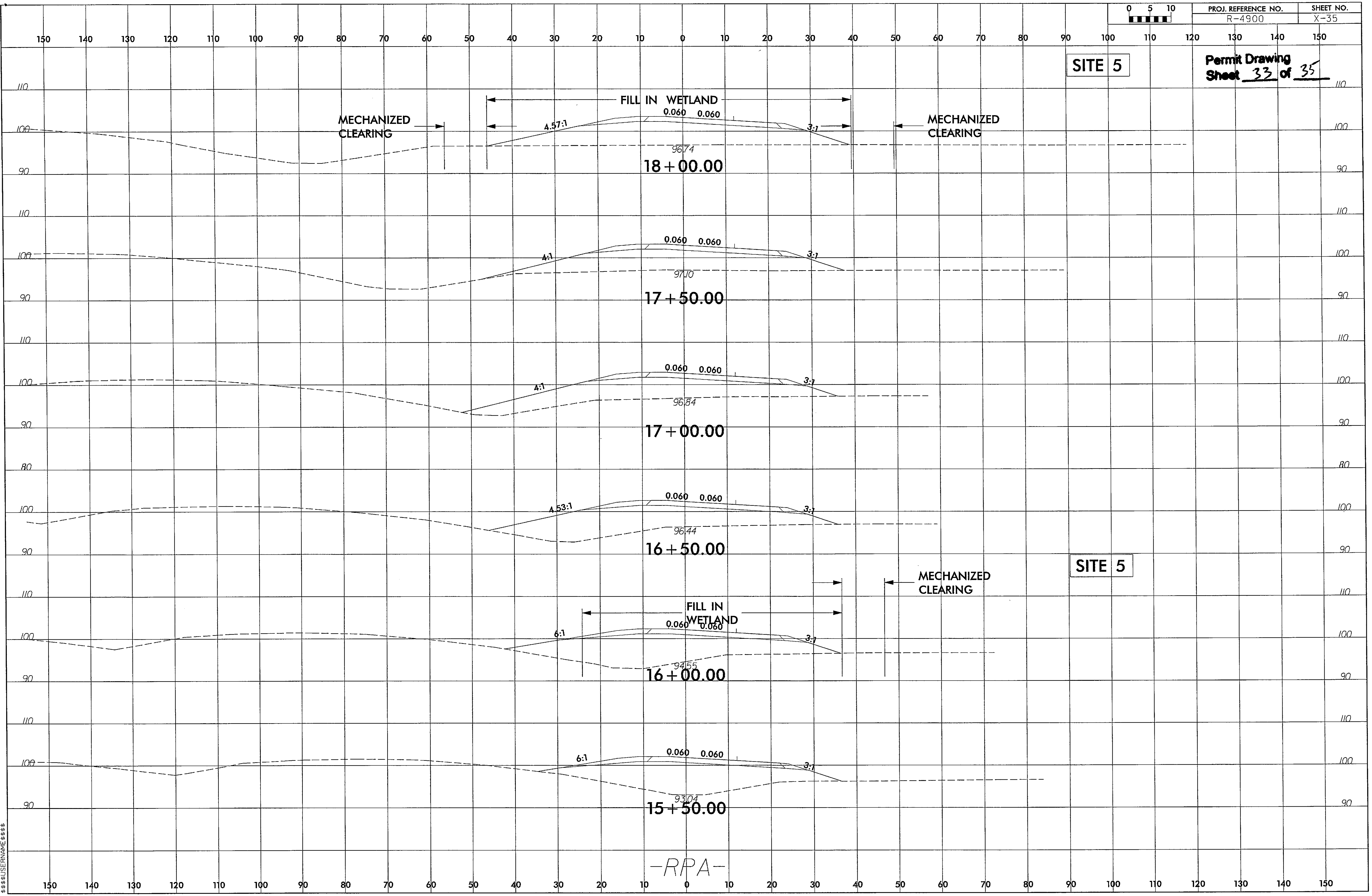
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/23/99

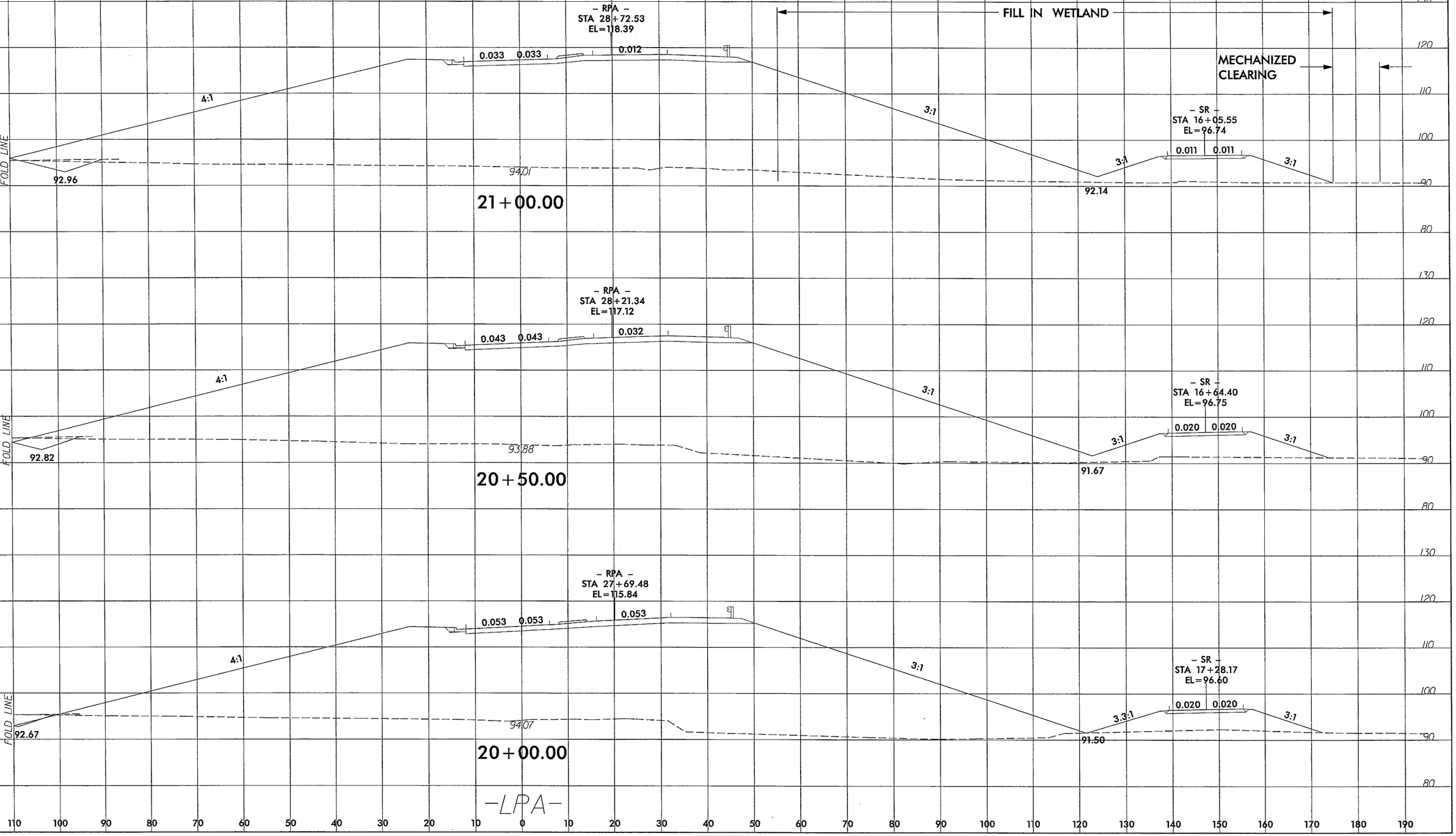
PROJ. REFERENCE NO.	SHEET NO.
R-4900	X-35

Permit Drawing
Sheet 33 of 35



8/23/99

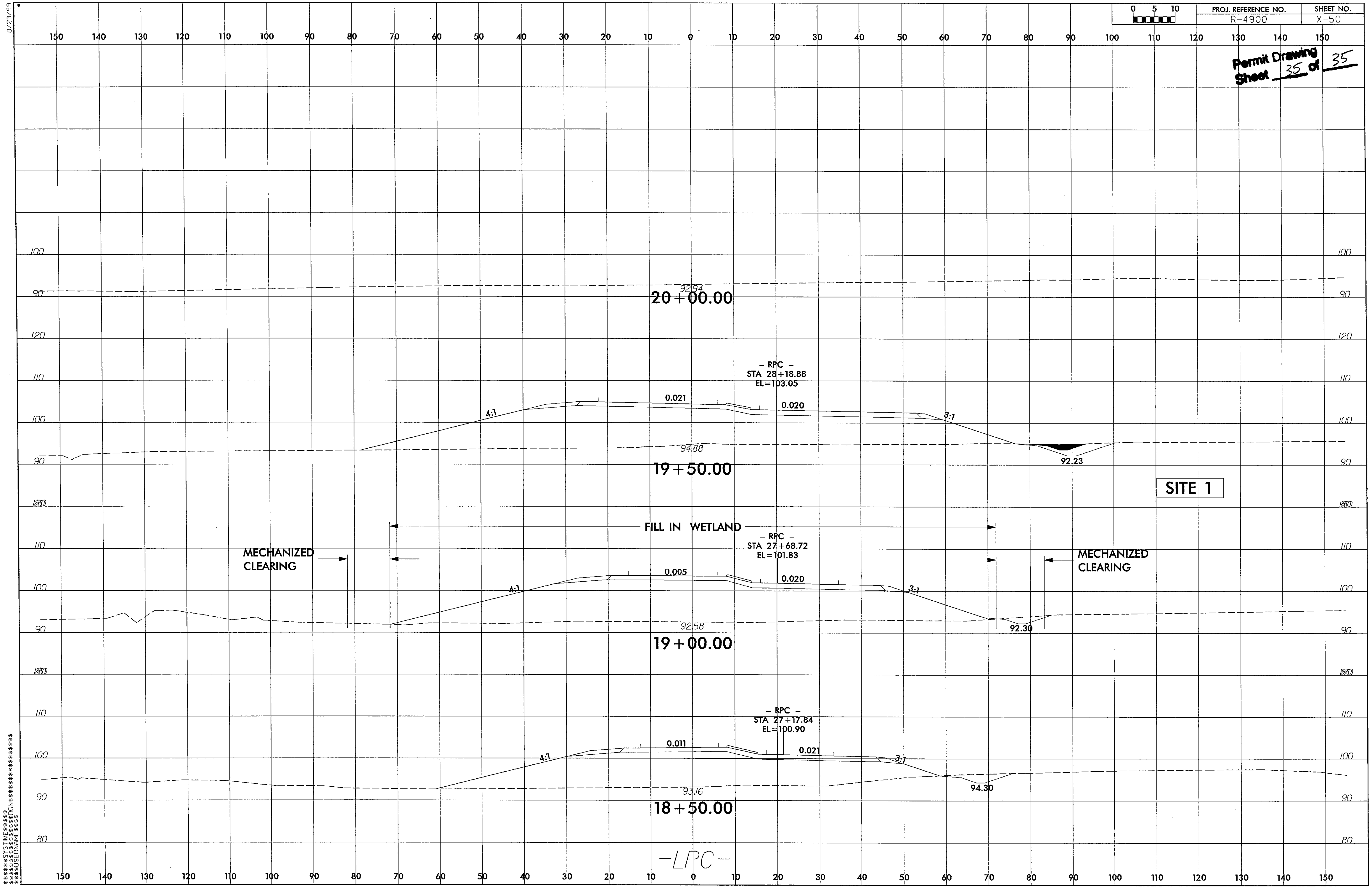
PROJ. REFERENCE NO.	SHEET NO.
R-4900	X-41



PROJ. REFERENCE NO.	SHEET NO.
R-4900	X-50

Permit Drawing
Sheet 35 of 35

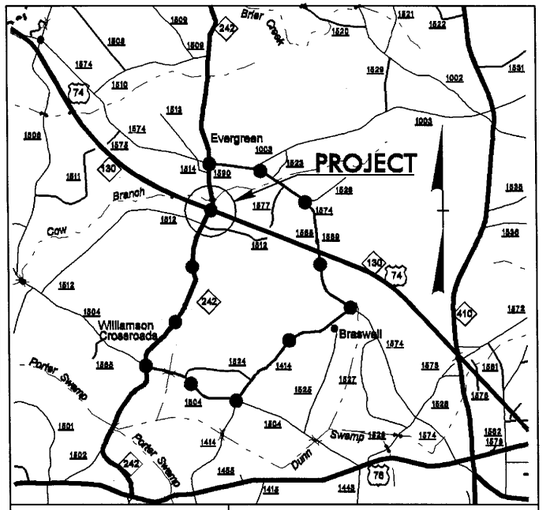
8/23/99



TIP PROJECT: R-4900

CONTRACT: C202441

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



VICINITY MAP | DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

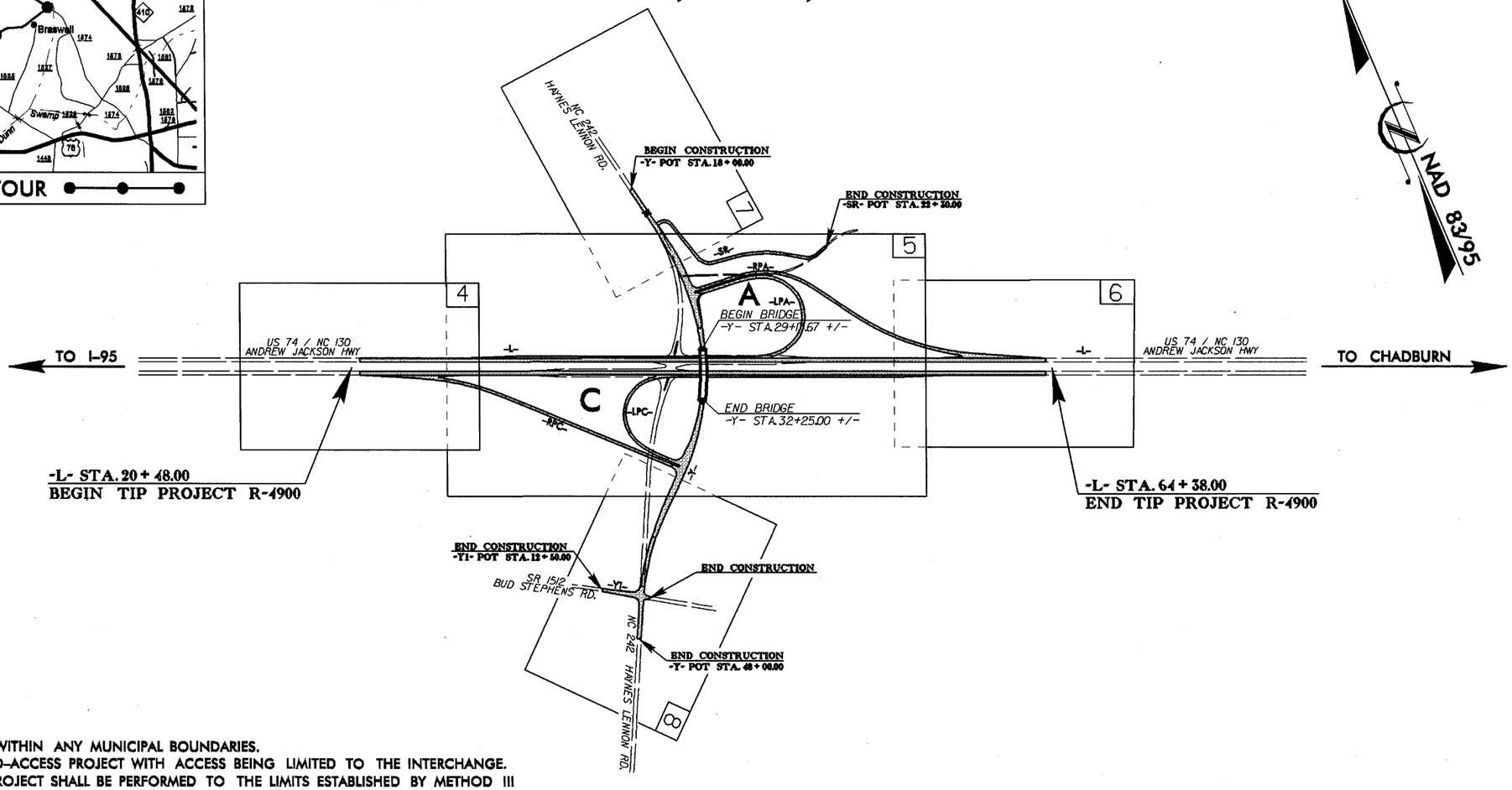
COLUMBUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4900	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40224.1.1	HPPNHF-74(78)	PE
40224.2.1	HPPNHF-74(78)	R/W & UTIL

LOCATION: NEW INTERCHANGE US 74 – NC 130 / NC 242

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



NAD 83/95

NOTES: (1) THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
(2) THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGE.
(3) 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 2010 =	12,600
ADT 2030 =	19,000
DHV =	10 %
D =	55 %
T =	15 % *
V =	70 MPH
FUNC. CLASS. =	INTERSTATE
* TTST 10%	DUAL 5 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4900 = 0.831 MI.

TOTAL LENGTH OF TIP PROJECT R-4900 = 0.831 MI.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 12, 2009

LETTING DATE: JULY 20, 2010

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

07-AUG-2009 07:46
C:\Projects\R-4900\R-4900_dy_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-4900	1-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
R-4900	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 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
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — Ditch
- False Sump

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

- TV Satellite Dish
- TV Pedestal — C
- 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
- 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.

6/2/99

SURVEY CONTROL SHEET R-4900

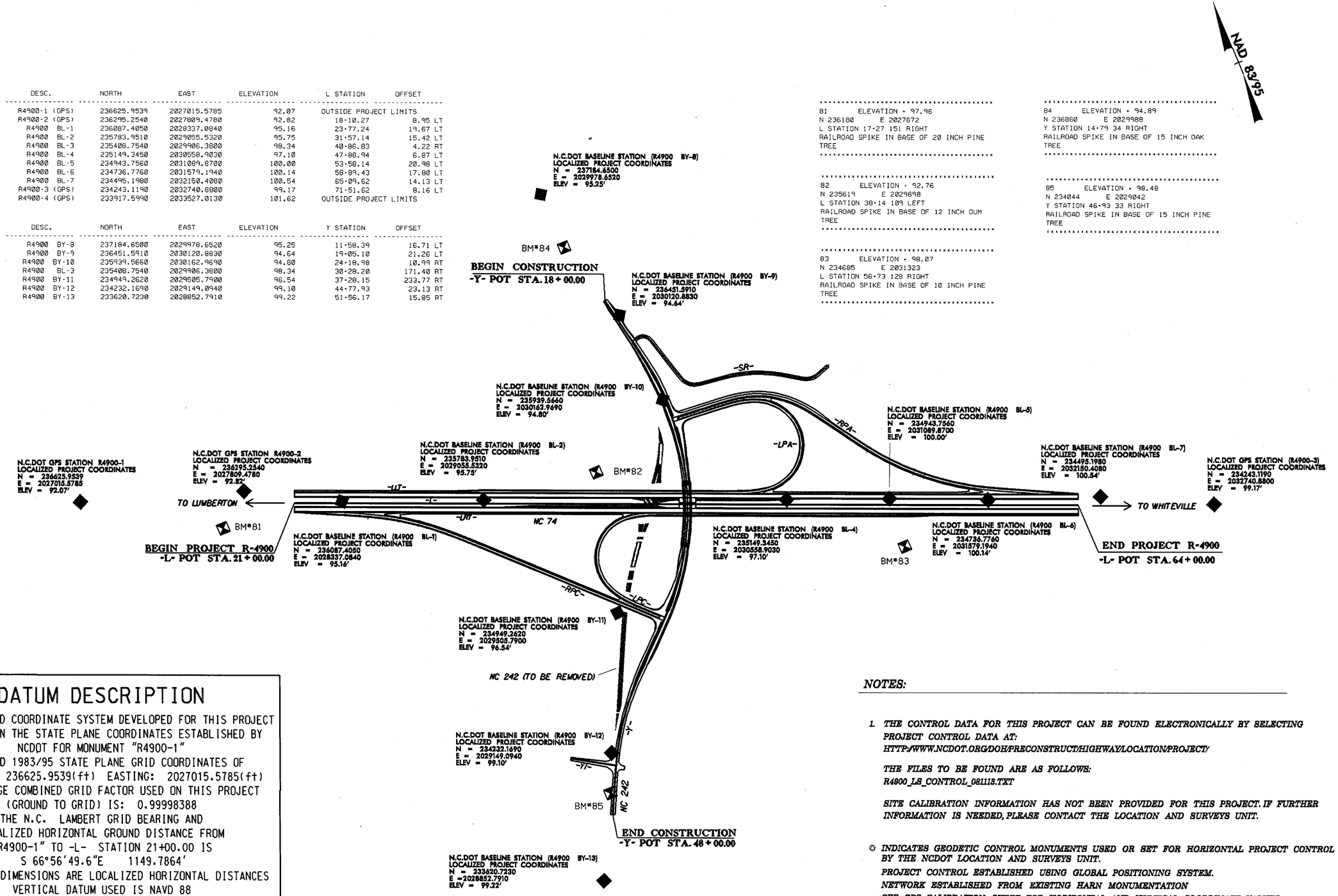
PROJECT REFERENCE NO.	SHEET NO.
R-4900	1-C
Location and Surveys	

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
101	R4900-1 (GPS)	236625.9539	2027015.5785	92.07	OUTSIDE PROJECT LIMITS	
102	R4900-2 (GPS)	236295.2540	2027809.4780	92.82	18+10.27	8.95 LT
1	R4900 BL-1	236087.4050	2028337.0840	95.16	23+77.24	19.67 LT
2	R4900 BL-2	235783.9510	2029055.5320	95.75	31+57.14	15.42 LT
3	R4900 BL-3	235408.7540	2029906.3800	98.34	40+86.83	4.22 RT
4	R4900 BL-4	235149.3450	2030558.9030	97.10	47+88.94	6.87 LT
5	R4900 BL-5	234943.7560	2031089.8700	100.00	53+58.14	20.98 LT
6	R4900 BL-6	234736.7760	2031579.1940	100.14	58+83.43	17.80 LT
7	R4900 BL-7	234495.1980	2032150.4080	100.54	65+09.62	14.13 LT
103	R4900-3 (GPS)	234243.1190	2032740.8800	99.17	71+51.62	8.16 LT
104	R4900-4 (GPS)	233917.5990	2033527.0130	101.62	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
8	R4900 BY-8	237184.6500	2029978.6520	95.25	11+58.39	16.71 LT
9	R4900 BY-9	236451.5910	2030120.8830	94.64	19+05.10	21.26 LT
10	R4900 BY-10	235939.5660	2030162.9690	94.80	24+18.98	10.99 RT
30	R4900 BL-3	235408.7540	2029906.3800	98.34	30+28.20	171.40 RT
11	R4900 BY-11	234949.2620	2029505.7900	96.54	37+28.15	233.77 RT
12	R4900 BY-12	234232.1690	2029149.0940	99.10	44+77.93	23.13 RT
13	R4900 BY-13	233620.7230	2028852.7910	99.22	51+56.17	15.85 RT



NAD 83/95

81 ELEVATION = 97.96
N 236180 E 2027672
L STATION 17+27 151 RIGHT
RAILROAD SPIKE IN BASE OF 20 INCH PINE TREE

82 ELEVATION = 92.76
N 235619 E 2029698
L STATION 38+14 109 LEFT
RAILROAD SPIKE IN BASE OF 12 INCH GUM TREE

83 ELEVATION = 98.07
N 234685 E 2031323
L STATION 56+73 128 RIGHT
RAILROAD SPIKE IN BASE OF 10 INCH PINE TREE

84 ELEVATION = 94.89
N 236860 E 2029988
Y STATION 14+79 34 RIGHT
RAILROAD SPIKE IN BASE OF 15 INCH OAK TREE

85 ELEVATION = 98.48
N 234044 E 2029042
Y STATION 46+93 33 RIGHT
RAILROAD SPIKE IN BASE OF 15 INCH PINE TREE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R4900-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 236625.9539(ft) EASTING: 2027015.5785(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99998388
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R4900-1" TO -L- STATION 21+00.00 IS
S 66°56'49.6"E 1149.7864'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R4900_LS_CONTROL_081118.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

◎ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

07-AUG-2009 07:46
r:\roadway\projects\r4900_rdy_1c.dgn
$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

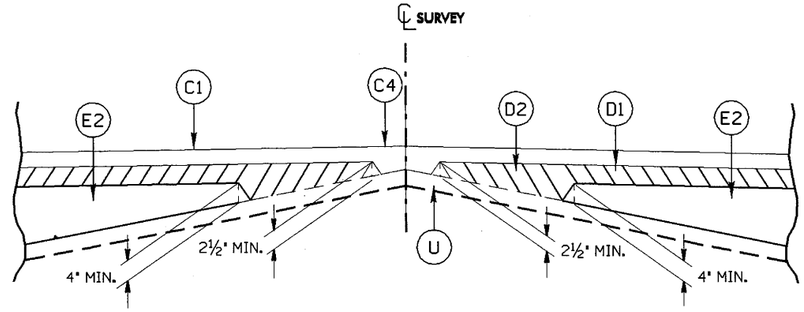
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

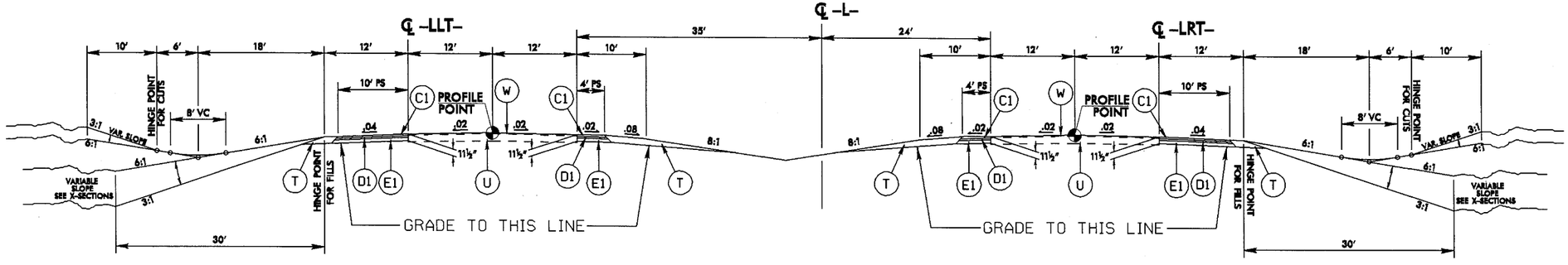
(PRELIMINARY PAVEMENT DESIGN)

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	J1	PROP. 10" AGGREGATE BASE COURSE, PRIME COAT OVER
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	J2	PROP. 8" AGGREGATE BASE COURSE, PRIME COAT OVER
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH	R1	2'-6" CONCRETE CURB AND GUTTER
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	T	EARTH MATERIAL
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH	U	EXISTING PAVEMENT
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



Detail Showing Method of Wedging



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 FOR:

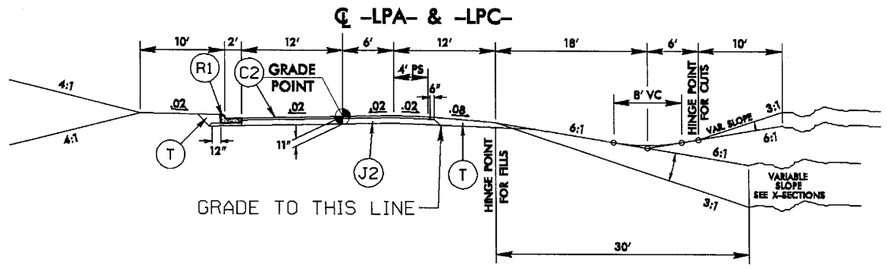
-L- STA. 21+00.00 TO -L- STA. 64+00.00

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	2-A
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

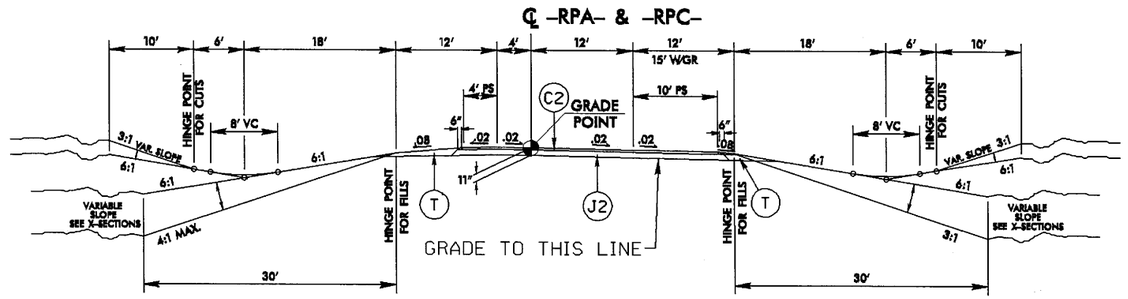
PAVEMENT SCHEDULE	
C2	3" S9.5B
J1	10" ABC
J2	8" ABC
R1	2'-6" CONC. C&G
T	EARTH MATERIAL



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FOR:

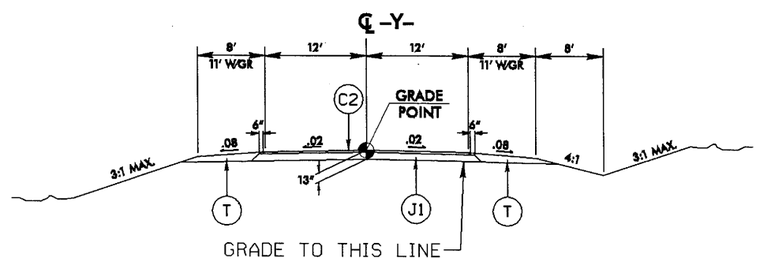
-LPA- STA. 12+37.42 TO -LPA- STA. 23+73.23
-LPC- STA. 12+30.88 TO -LPC- STA. 20+13.37



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FOR:

-RPA- STA. 14+19.59 TO -RPA- STA. 31+58.45
-RPC- STA. 13+64.97 TO -RPC- STA. 28+93.85



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR:

-Y- STA. 20+00.00 TO -Y- STA. 29+17.67 +/- (BEGIN BRIDGE)
-Y- STA. 32+25.00 +/- (END BRIDGE) TO -Y- STA. 46+59.36

NOTES:
TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 4
-Y- STA. 18+00.00 TO -Y- STA. 20+00.00

TRANSITON FROM TYPICAL SECTION NO. 4 TO EXISTING
-Y- STA. 46+59.36 TO -Y- STA. 48+00.00

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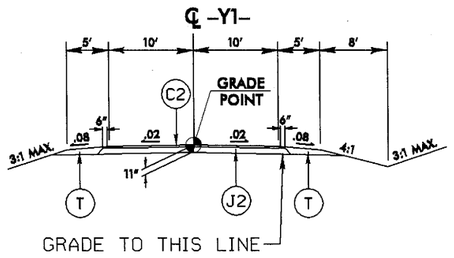
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	2-B
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE	
C2	3" S9.5B
C3	2" S9.5B
J2	8" ABC
T	EARTH MATERIAL

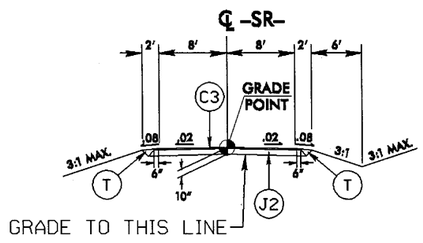


TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FOR:

-Y1- STA. 10+12.02 TO -Y1- STA. 12+00.00

NOTE:
TRANSITION FROM TYPICAL SECTION NO. 5 TO EXISTING
-Y1- STA. 12+00.00 TO -Y1- STA. 12+50.00



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 FOR:

-SR- STA. 10+16.06 TO -SR- STA. 22+30.00

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	2-C
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–Y– DESIGN DATA

ADT 2010 = 1,400
ADT 2030 = 2,100
D = 60 %
DHV = 10 %
TTST = 2 %
DUAL = 5 %
V = 50 MPH

MINIMUM VERTICAL CLEARANCE = 17'–0"

@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT

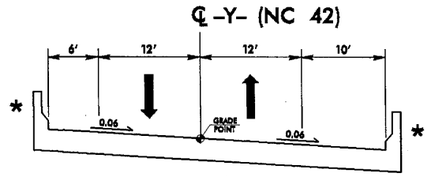
* BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT

** STRUCTURE DESIGN UNIT TO DETERMINE IF PIER IS NECESSARY

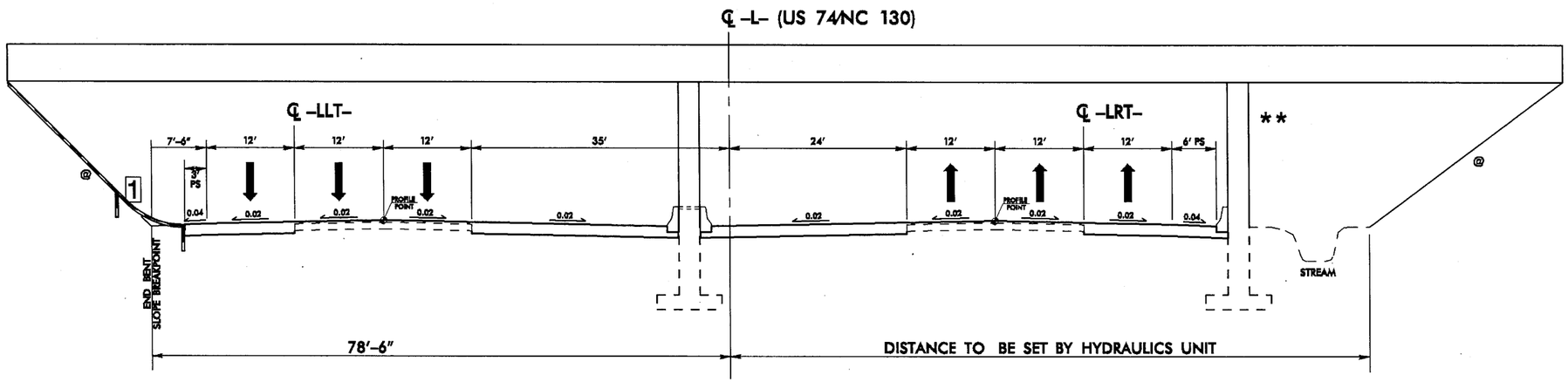
[1] SEE STD. 610.03

–Y– STRUCTURE

NC 242 (HAYNES LENNON RD.)



TYPICAL SECTION ON STRUCTURE



TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

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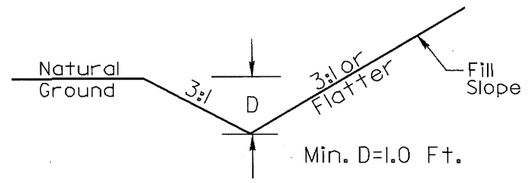
DRAINAGE DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-4900	2-D
ROADWAY DESIGN ENGINEER	

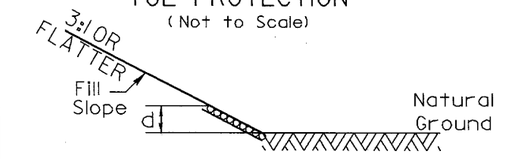
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



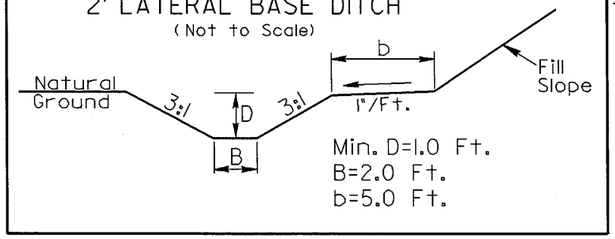
-LRT- STA. 21+50 TO -LRT- STA. 24+00 (RT.)
-LLT- STA. 44+00 TO -LLT- STA. 47+00 (LT.)
-LPA- STA. 17+00 TO -LPA- STA. 22+50 (LT.)
-RPA- STA. 26+00 TO -RPA- STA. 26+87 (RT.)
-RPC- STA. 20+00 TO -RPC- STA. 24+00 (RT.)
-Y- STA. 27+00 TO -Y- STA. 28+00 (LT.)
-Y- STA. 38+50 TO -Y- STA. 44+50 (RT.)
-Y- STA. 39+00 TO -Y- STA. 39+50 (LT.)
-Y- STA. 45+82 TO -Y- STA 46+50 (RT.)
-Y- STA. 45+80 TO -Y- STA. 47+30 (LT.)
-Y1- STA. 10+50 TO -Y1- STA. 12+00 (RT.)

DETAIL 2
TOE PROTECTION
(Not to Scale)



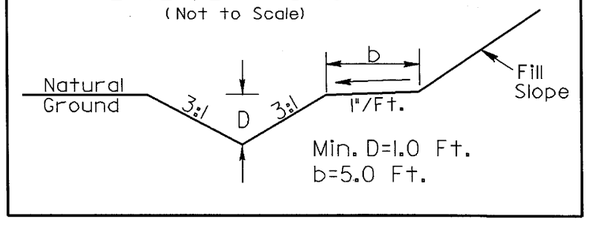
-Y- STA. 20+00 TO -Y- STA. 20+35 (LT.)
-Y- STA. 32+40 TO -Y- STA. 35+50 (RT.)
-Y- STA. 34+20 TO -Y- STA. 36+72 (LT.)

DETAIL 3
2' LATERAL BASE DITCH
(Not to Scale)



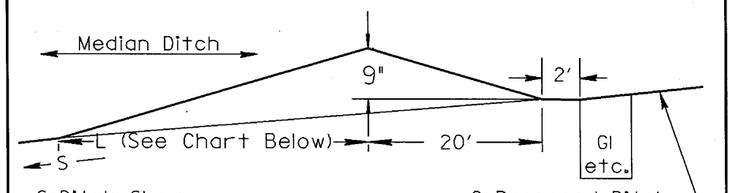
-LPC- STA. 18+50 TO -LPC- STA. 19+74 (RT.)
-Y- STA. 37+43 TO -Y- STA. 38+50 (RT.)

DETAIL 4
LATERAL 'V' DITCH
(Not to Scale)



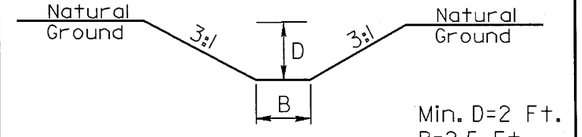
-RPA- STA. 24+00 TO -RPA- STA. 26+00 (RT.)

DETAIL 5
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

DETAIL 6
STANDARD BASE DITCH
(Not to Scale)



-LLT- STA. 40+38 TO -LLT- STA. 41+12 (LT.)

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

4
L.P. STEPHENS FARMS
DB 251PG 277

NAD 83/95

WLB
EXISTING R/W
48"WW ISBW
R/W VARES
R/W MON
+67.78
200.01'
+60.23
208.05'
-L-
+60
BEGIN WOVEN WIRE FENCE
TIE TO EXISTING FENCE

15+00
20+00
25+00

R4900-2 (GPS)
-BL- PINC 13+60.02
-L- STA. 18+10.27 (8.95' LT.)

R4900 BL-1
-BL- PINC 19+27.09
-L- STA. 23+77.24 (19.67' LT.)

4' BST
US 74 / NC 130 ANDREW JACKSON HWY WBL 25' BST
-LLT- S 67° 24' 52.0" E
12' 12' 10'
3' BST
S 67° 23' 08.7" E -BL-
-BL- S 68° 29' 53.4" E
-BL- S 67° 06' 07.4" E
4'
35'
DI
TOP=92.85'
INV=89.47'
-L- S 67° 24' 52.0" E
CONVERT DI
TOP=90.20'
INV=90.91'
2GI
3' BST
US 74 / NC 130 ANDREW JACKSON HWY EBL 24' BST
-LRT- S 67° 24' 52.0" E
15" RCP
4' BST
1' 1' 1' MTL 4'
24'
12' 12'
INV=89.17'
S 64° 00' 00.0" E
-RPC-
INV=90.57'
COLLAR & EXTEND
SPECIAL LAT 'V' DITCH
SEE DETAIL #1
SHEET 2-D
CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC
-RPC- TS Sta.10+35.41
-RPC- SC Sta.13+35.41
+67.62
168.53'
R/W VARIES
R/W MON
48"WW ISBW
BMBI
-BL- STA 12+77
RAILROAD SPIKE IN BASE OF 20 INCH PINE TREE
ELEV. 97.96
+41.46
202.33'
-RPC- POT Sta.10+00.00 =
-L- POT Sta.23+15.50 (48' RT)
Δ = 3°24' 52"
-LRT- STA 24+00 TO -LRT- STA 28+00 (RT.)
SPECIAL DITCH GRADE
SEE PROFILE (0.33%)
MATCH LINE -RPC- STA.15+00.00
MATCH LINE -L- STA 28+00.00 SEE SHEET NO.5

BEGIN PROJECT R-4900
-L- POT STA. 21 + 00.00

WE 90.0'

4
L.P. STEPHENS FARMS
DB 251PG 277

-RPC- CURVE DATA

PIs Sta 12+35.52	PI Sta 14+34.26	PIs Sta 16+32.92
Θs = 5° 43' 46.5"	Δ = 7° 32' 27.0" (RT)	Θs = 5° 43' 46.5"
Ls = 300.00'	D = 3° 49' 11.0"	Ls = 300.00'
LT = 200.10'	L = 197.42'	LT = 200.10'
ST = 100.10'	T = 98.85'	ST = 100.10'
	R = 1,500.00'	
	SE = .06	

NOTES: (1) SEE SHEET 2-D FOR DRAINAGE DETAILS
(2) SEE SHEET 9 FOR -LLT- PROFILE
(3) SEE SHEET 10 FOR -LRT- PROFILE
(4) SEE SHEET 15 FOR -RPC- PROFILE

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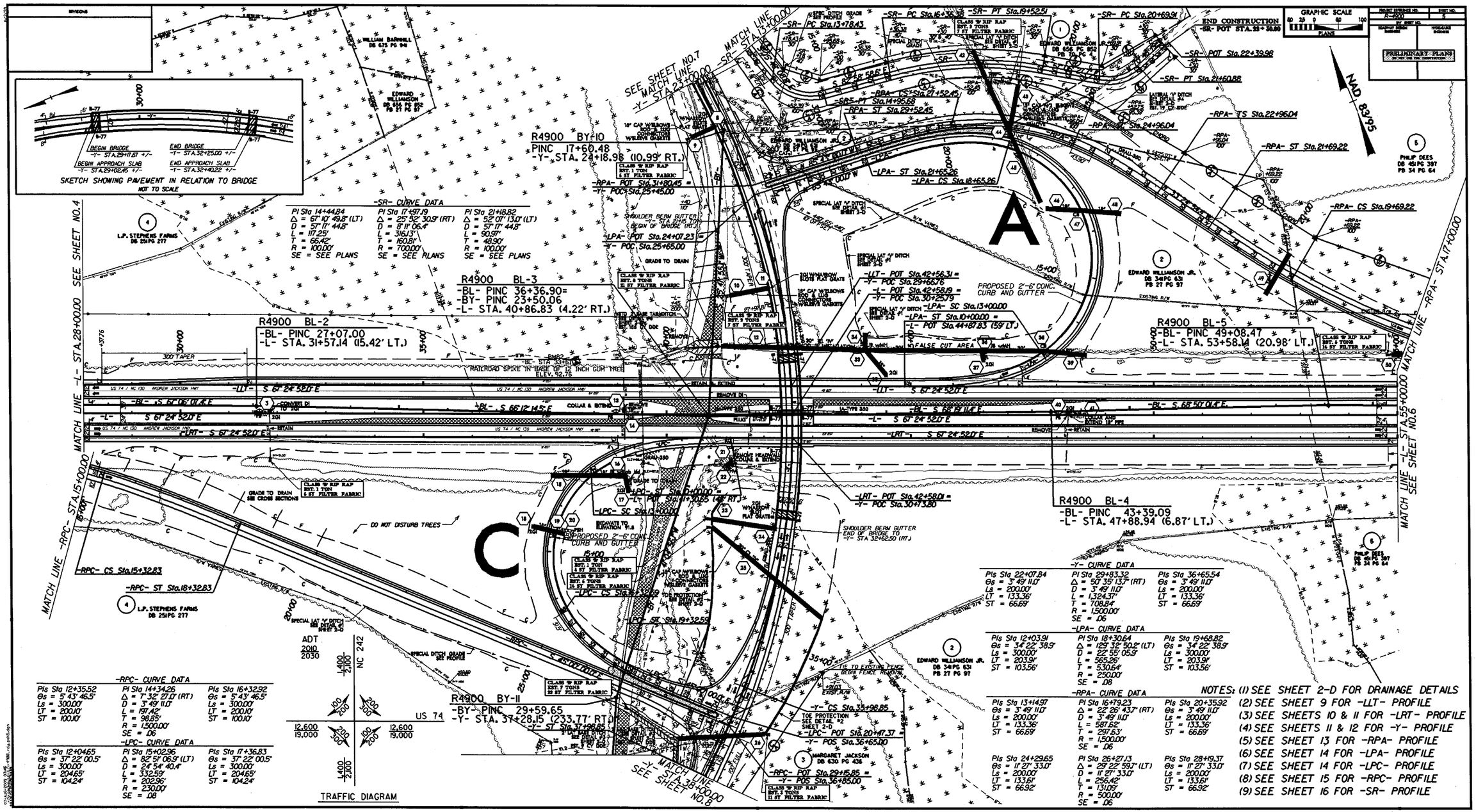
SKETCH SHOWING PAVEMENT IN RELATION TO BRIDGE
NOT TO SCALE
BEGIN BRIDGE -Y- STA.29+17.67 +/-
END BRIDGE -Y- STA.32+25.00 +/-
BEGIN APPROACH SLAB -Y- STA.29+02.45 +/-
END APPROACH SLAB -Y- STA.32+40.22 +/-
GRAPHIC SCALE
PLANS
PRELIMINARY PLANS
NAD 83/95
R4900 BY-10
PINC 17+60.48
-Y- STA. 24+18.98 (10.99' RT.)
R4900 BL-3
-BL- PINC 36+36.90=
-BY- PINC 23+50.06
-L- STA. 40+86.83 (4.22' RT.)
R4900 BL-2
-BL- PINC 27+07.00
-L- STA. 31+57.14 (15.42' LT.)
R4900 BL-5
8-BL- PINC 49+08.47
-L- STA. 53+58.14 (20.98' LT.)
R4900 BL-4
-BL- PINC 43+39.09
-L- STA. 47+88.94 (6.87' LT.)
R4900 BY-11
-BY- PINC 29+59.65
-Y- STA. 37+28.15 (233.77' RT.)
-SR- CURVE DATA
PI Sta 14+44.84
Δ = 67° 10' 49.8" (LT)
D = 57° 17' 44.8"
L = 117.25'
T = 66.42'
R = 100.00'
SE = SEE PLANS
PI Sta 17+97.19
Δ = 25° 52' 30.9" (RT)
D = 8° 11' 06.4"
L = 316.13'
T = 160.81'
R = 700.00'
SE = SEE PLANS
PI Sta 21+18.82
Δ = 52° 01' 13.0" (LT)
D = 57° 17' 44.8"
L = 90.97'
T = 48.90'
R = 100.00'
SE = SEE PLANS
-RPC- CURVE DATA
PI Sta 12+35.52
Es = 5° 43' 46.5"
Ls = 300.00'
LT = 200.10'
ST = 100.10'
PI Sta 14+34.26
Δ = 7° 32' 27.0" (RT)
D = 3° 49' 11.0"
L = 197.42'
T = 98.85'
R = 1,500.00'
SE = .06
PI Sta 16+32.92
Es = 5° 43' 46.5"
Ls = 300.00'
LT = 200.10'
ST = 100.10'
-LPC- CURVE DATA
PI Sta 12+04.65
Es = 37° 22' 00.5"
Ls = 300.00'
LT = 204.65'
ST = 104.24'
PI Sta 15+02.96
Δ = 82° 51' 06.9" (LT)
D = 24° 54' 40.4"
L = 332.59'
T = 202.96'
R = 230.00'
SE = .08
PI Sta 17+36.83
Es = 37° 22' 00.5"
Ls = 300.00'
LT = 204.65'
ST = 104.24'
-Y- CURVE DATA
PI Sta 22+07.84
Es = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'
PI Sta 29+83.32
Δ = 90° 35' 13.7" (RT)
D = 3° 49' 11.0"
L = 1,324.37'
T = 708.84'
R = 1,500.00'
SE = .06
PI Sta 36+65.54
Es = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'
-LPA- CURVE DATA
PI Sta 12+03.91
Es = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'
PI Sta 18+30.64
Δ = 129° 32' 50.2" (LT)
D = 22° 55' 05.9"
L = 565.26'
T = 530.64'
R = 250.00'
SE = .08
PI Sta 19+68.82
Es = 34° 22' 38.9"
Ls = 300.00'
LT = 203.91'
ST = 103.56'
-RPA- CURVE DATA
PI Sta 13+14.97
Es = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'
PI Sta 16+79.23
Δ = 22° 26' 43.7" (RT)
D = 3° 49' 11.0"
L = 587.62'
T = 297.63'
R = 1,500.00'
SE = .06
PI Sta 20+35.92
Es = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'
PI Sta 24+29.65
Es = 11° 27' 33.0"
Ls = 200.00'
LT = 133.61'
ST = 66.92'
PI Sta 26+27.13
Δ = 29° 22' 59.7" (LT)
D = 11° 27' 33.0"
L = 256.42'
T = 131.09'
R = 500.00'
SE = .06
PI Sta 28+19.37
Es = 11° 27' 33.0"
Ls = 200.00'
LT = 133.61'
ST = 66.92'
ADT
2010
2030
NC 242
TRAFFIC DIAGRAM
US 74 / NC 130 ANDREW JACKSON HWY
MATCH LINE -L- STA.28+00.00 SEE SHEET NO.4
MATCH LINE -RPC- STA.15+00.00
MATCH LINE -RPA- STA.17+00.00
MATCH LINE -L- STA.55+00.00 SEE SHEET NO.6
MATCH LINE -Y- STA.38+00.00 SEE SHEET NO.8
SEE SHEET NO.7 MATCH LINE -Y- STA.23+00.00
EDWARD WILLIAMSON DB 656 PG 852 PB 10 PG 4
EDWARD WILLIAMSON JR. DB 34 PG 63 PB 27 PG 97
L.P. STEPHENS FARMS DB 25 PG 277
PHILIP DEES DB 45 PG 397 PB 34 PG 64
MARGARET JACKSON DB 630 PG 436
WILLIAM BARNELL DB 675 PG 340
PROPOSED 2'-6" CONC. CURB AND GUTTER
DO NOT DISTURB TREES
RAILROAD SPIKE IN BASE OF 12 INCH GUM TREE ELEV. 92.76
NOTES:
(1) SEE SHEET 2-D FOR DRAINAGE DETAILS
(2) SEE SHEET 9 FOR -LLT- PROFILE
(3) SEE SHEETS 10 & 11 FOR -LRT- PROFILE
(4) SEE SHEETS 11 & 12 FOR -Y- PROFILE
(5) SEE SHEET 13 FOR -RPA- PROFILE
(6) SEE SHEET 14 FOR -LPA- PROFILE
(7) SEE SHEET 14 FOR -LPC- PROFILE
(8) SEE SHEET 15 FOR -RPC- PROFILE
(9) SEE SHEET 16 FOR -SR- PROFILE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

-RPA- CURVE DATA

PIs Sta 13+14.97	PI Sta 16+79.23	PIs Sta 20+35.92
Θs = 3° 49' 11.0"	Δ = 22° 26' 43.7" (RT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 587.62'	LT = 133.36'
ST = 66.69'	T = 297.63'	ST = 66.69'
	R = 1,500.00'	
	SE = .06	

5
PHILIP DEES
DB 451 PG 397
PB 34 PG 64

-RPA- POT Sta.10+00.00 =
-L- POT Sta.62+15.50 (59' LT.)
Δ = 3° 54' 52"

TIE TO EXISTING FENCE
END FENCE REMOVAL

-RPA- SC Sta.13+81.60

-RPA- TS Sta.11+81.60

MATCH LINE -RPA- STA.17+00.00

15+00

60+00

65+00

ROCK PLATING ON 2:1 SLOPE
W/CL 'I' RIP RAP
STA 60+50 TO
STA 61+50 -L- LT

48"WW ISBW

R/W VARIES

WLB

-RPA-

N 63° 30' 00.0" W

-LLT-

S 67° 24' 52.0" E

US 74 / NC 130 ANDREW JACKSON HWY WBL

R4900 BL-7
-BL- PINC 60+59.97
-L- STA. 65+09.62 (14.13' LT.)

-BL- S 67° 04' 19.3" E

-BL- S 67° 04' 31.8" E

-L- S 67° 24' 52.0" E

-BL- S 66° 52' 54.6" E

CONVERT DI TO 2GI

RETAIN

US 74 / NC 130 ANDREW JACKSON HWY EBL

-LRT-

300' TAPER

BM83
-BL- STA 52+24
RAILROAD SPIKE IN BASE OF 10 INCH PINE TREE
ELEV. 98.07

R4900 BL-6
-BL- PINC 54+39.77
-L- STA. 58+89.43 (17.80' LT.)

EXISTING R/W

END PROJECT R-4900
-L- POT STA. 64+38.00

5
PHILIP DEES
DB 451 PG 397
PB 34 PG 64

MATCH LINE -L- STA.55+00.00 SEE SHEET NO.5

NOTES: (1) SEE SHEET 2-D FOR DRAINAGE DETAILS
(2) SEE SHEETS 9 & 10 FOR -LLT- PROFILE
(3) SEE SHEETS 10 & 11 FOR -LRT- PROFILE
(4) SEE SHEET 13 FOR -RPA- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y- CURVE DATA

PIs Sta 22+07.84
θs = 3° 49' 11.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

PI Sta 29+83.32
Δ = 50° 35' 13.7" (RT)
D = 3° 49' 11.0"
L = 1,324.37'
T = 708.84'
R = 1,500.00'
SE = .06

-SR- CURVE DATA

PI Sta 10+85.00
Δ = 84° 49' 43.2" (RT)
D = 114° 35' 29.6"
L = 74.03'
T = 45.68'
R = 50.00'
SE = SEE PLANS

NAD 83/95

R4900 BY-9
-BY- PINC 12+46.73
-Y- STA. 19+05.10 (21.26' LT.)

BEGIN CONSTRUCTION
-Y- POT STA. 18+00.00

R4900 BY-8
-BY- POT 5+00.00
-Y- STA. 11+58.39 (16.71' LT.)

EDWARD WILLIAMSON JR.
DB 656 PG 852
PB 70 PG 4

EDWARD WILLIAMSON JR.
DB 656 PG 852
PB 70 PG 4

WILLIAM BARNHILL
DB 274 PG 471

WILLIAM BARNHILL
DB 675 PG 941
PB 70 PG 4

BM84
-BY- STA 8+21
RAILROAD SPIKE IN BASE OF 15 INCH OAK TREE
ELEV. 94.89

NC 242 HAYNES LENNON RD.

S 10° 58' 29.2" E -BY-

S 10° 31' 52.0" E

S 4° 41' 36.0" E

S 15° 48' 08.8" E

N 79° 22' 08.0" E

-SR- PT Sta.11+13.35

-SR- PC Sta.10+39.32

-SR- POT Sta.10+00.00 =
-Y- POT Sta.20+70.00

-Y- TS Sta.20+74.48

-Y- SC Sta.22+74.48

-SR- STA.13+00.00 MATCH LINE -Y- STA.23+00.00 SEE SHEET NO.5

CLASS 'B' RIP RAP
WGT. 2 TONS
7 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 1 TON
5 SY FILTER FABRIC

TOE PROTECTION
SEE DETAIL #2
SHEET 2-D

SHOULDER BERM GUTTER
-Y- STA 21+15.10
BEGIN OF BRIDGE (RT)

SPEC DITCH GRADE
SEE PROFILE

BEGIN WOVEN WIRE FENCE

-Y- +00 65' BEGIN WOVEN WIRE FENCE

-15" CAP WELDOWS
ROD & LUG
CONNECTORS
W/SLEEVE GASKETS

-Y- +00 EXIST.R/W & 50'

-Y- +00 50'

-Y- +00 60'

-Y- +50 115'

-SR- +13 40'

-Y- +00 EXIST.R/W & 50'

-Y- +00 50'

-Y- +00 65'

-Y- +45 EXIST.R/W

-Y- +01.36 269.50

-Y- +01.41 205.47

-Y- +34.28 113.14

-Y- 314.15 104.04

EXISTING R/W

WLB

R/W VARIES

48"WW ISBW

EXISTING R/W

R/W MON

R/W SPIKES

ECM

WD RAIL

N 88°40'58" W 735.07'

ISBKD

SOIL

NOTES: (1) SEE SHEET 2-D FOR DRAINAGE DETAILS
(2) SEE SHEET 11 FOR -Y- PROFILE
(3) SEE SHEET 16 FOR -SR- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y- CURVE DATA

PI Sta 40+32.21	PI Sta 42+79.98	PI Sta 45+26.05
Θs = 3° 49' 11.0"	Δ = 13° 46' 13.7" (LT)	Θs = 3° 49' 11.0"
Ls = 200.00'	D = 3° 49' 11.0"	Ls = 200.00'
LT = 133.36'	L = 360.51'	LT = 133.36'
ST = 66.69'	T = 181.13'	ST = 66.69'
	R = 1,500.00'	
	SE = .06	

NAD 83/95

R4900 BY-13
-BY- POT 44+40.02
-Y- STA. 51+56.17 (15.85' RT.)
-Y- POT Sta. 51+75.49

END CONSTRUCTION
-Y- POT STA. 48 + 00.00

END CONSTRUCTION
-Y1- POT STA. 12 + 50.00

-Y1- POT Sta. 10+00.00 =
-Y- POS Sta. 45+29.51

-Y- ST Sta. 46+59.36

-Y- CS Sta. 44+59.36

-Y- SC Sta. 40+98.85

-Y- TS Sta. 38+98.85

-Y1- POT Sta. 12+74.29

MATCH LINE -Y- STA. 38+00.00

SEE SHEET NO. 5

SR 1512 BUD STEPHENS RD.

HAYNES LENNON RD.

NC 242

MARGARET JACKSON
DB 630 PG 436

BRUNSWICK ELECTRIC MEMBERSHIP CORP
DB 327 PG 245

L.P. STEPHENS FARMS
DB 251 PG 277

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 7 TONS
22 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

SPECIAL LAT 'V' DITCH
SEE DETAIL #1
SHEET 2-D

SPECIAL DITCH GRADE
-Y- STA. 39+50 TO -Y- STA. 41+00 (LT.)
SEE PROFILE

SPECIAL DITCH GRADE
-Y- STA. 46+50 TO -Y- STA. 48+00 (RT.)
SEE PROFILE

2' LAT BASE DITCH
SEE DETAIL #3
SHEET 2-D
EST. 55 CY DDE

CLEAN OUT DITCH TO DRAIN

END WOVEN WIRE FENCE

END FENCE REMOVAL

TIE TO EXISTING FENCE

COLLAR & EXTEND

RETAIN & EXTEND

BHBS "ST" STA. 38+77 RAIL ROAD SPIKE IN BASE OF 15 INCH PINE TREE ELEV. 98.48

POND WE 95.5'

ADT
2010 2030

100 / 100	100 / 100	100 / 100
1400 / 2100	200 / 300	1400 / 2100
	300 / 500	

TRAFFIC DIAGRAM

NOTES: (1) SEE SHEET 2-D FOR DRAINAGE DETAILS
(2) SEE SHEET 12 FOR -Y- PROFILE
(3) SEE SHEET 15 FOR -Y1- PROFILE

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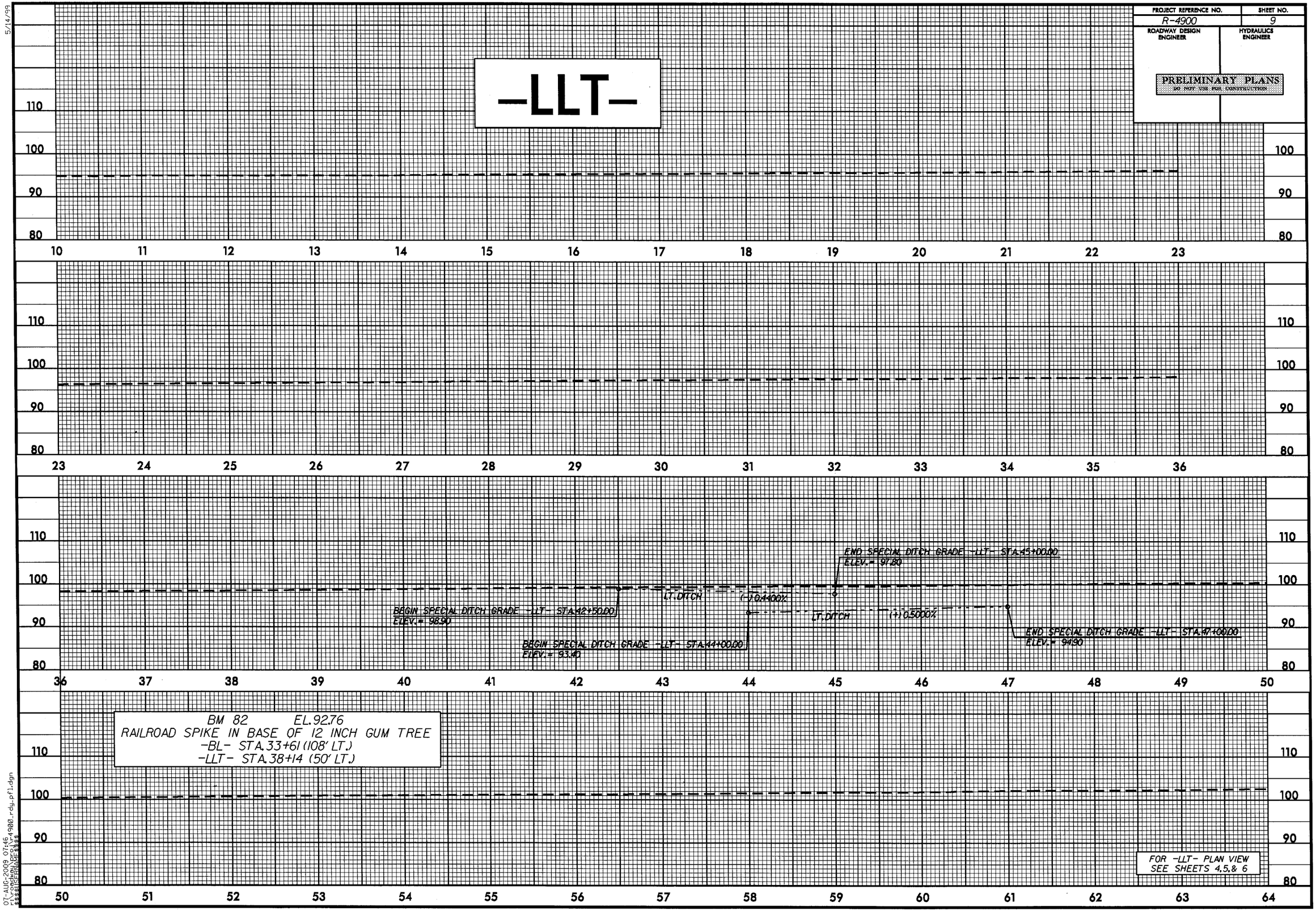
PROJECT REFERENCE NO.	SHEET NO.
R-4900	9

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LLT-



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PROJECT REFERENCE NO.	SHEET NO.
R-4900	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LLT-

FOR -LLT- PLAN VIEW
SEE SHEET 6

-LRT-

BM 81 EL.97.96
RAILROAD SPIKE IN BASE OF 20 INCH PINE TREE
-BL- STA.12+77 (160' RT.)
-LRT- STA.17+27 (103' RT.)

RT. DITCH
(+)0.200%

BEGIN SPECIAL DITCH GRADE -LRT- STA.21+50.00
ELEV.= 90.28

RT. DITCH
(+)0.200%

(+)0.250%

PI = 24+00.00
ELEV.= 90.50

END SPECIAL DITCH GRADE -LRT- STA.28+00.00
ELEV.= 91.80

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURES NO.21 & 22

DRAINAGE AREA	= 578	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 350	CFS
DESIGN HW ELEVATION	= 99.2	FT
100 YEAR DISCHARGE	= 440	CFS
100 YEAR HW ELEVATION	= 99.4	FT
OVERTOPPING FREQUENCY	= <50	YRS
OVERTOPPING DISCHARGE	= <350	CFS
OVERTOPPING ELEVATION	= 98.9	FT

EXIST 2@48" RCP

FOR -LRT- PLAN VIEW
SEE SHEETS 4 & 5

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM 83 EL. 98.07
RAILROAD SPIKE IN BASE OF 10 INCH PINE TREE
-BL- STA. 52+24 (148' RT.)
-LRT- STA. 56+73 (80' RT.)

-LRT-

FOR -LRT- PLAN VIEW
SEE SHEETS 5 & 6

-Y-

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 12

DRAINAGE AREA	= 58	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 92.6	FT
100 YEAR DISCHARGE	= 18	CFS
100 YEAR HW ELEVATION	= 93.0	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >27	CFS
OVERTOPPING ELEVATION	= 99.7	FT

BEGIN GRADE -Y- STA. 18+00.00
ELEV. = 95.60

PI = 20+80.00
EL = 96.20'
VC = 400'
K = 97

-RPA- STA. 31+80.45
-Y- STA. 24+45.00

-LPA- STA. 24+07.23
-Y- STA. 25+65.00

PI = 30+00.00
EL = 136.00'
VC = 900'
K = 104
SSD = 417'

BEGIN BRIDGE
-Y- STA. 29+17.67+/-

(+14.326)%

(+0.214)%

(+0.533)%

(+10.000)%

126.26

BEGIN SPECIAL DITCH GRADE -Y- STA. 21+00.00
ELEV. = 90.30

LT. DITCH

END SPECIAL DITCH GRADE -Y- STA. 22+50.00
ELEV. = 91.10

BEGIN SPECIAL DITCH GRADE -Y- STA. 27+00.00
ELEV. = 93.40

LT. DITCH

END SPECIAL DITCH GRADE -Y- STA. 28+00.00
ELEV. = 94.50

FOR -Y- PLAN VIEW
SEE SHEETS 5 & 7

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.25

DRAINAGE AREA	= 31	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 92.2	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 92.5	FT
OVERTOPPING FREQUENCY	= >25	YRS
OVERTOPPING DISCHARGE	= >500	CFS
OVERTOPPING ELEVATION	= 95.0	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.26

DRAINAGE AREA	= 20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 94.5	FT
100 YEAR DISCHARGE	= 11	CFS
100 YEAR HW ELEVATION	= 94.8	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >16	CFS
OVERTOPPING ELEVATION	= 98.31	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.27

DRAINAGE AREA	= 1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 4.1	CFS
DESIGN HW ELEVATION	= 97.4	FT
100 YEAR DISCHARGE	= 4.4	CFS
100 YEAR HW ELEVATION	= 97.5	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >5.1	CFS
OVERTOPPING ELEVATION	= 98.31	FT

PI = 30+00.00
EL = 136.00'
VC = 900'
K = 104
SSD = 474'

-Y- POC STA. 30+25.79
-L- POT STA. 42+58.19

END BRIDGE
-Y- STA. 32+25.00+/-

-LPC- STA. 20+47.37
-Y- STA. 36+65.00

-RPC- STA. 29+15.85
-Y- STA. 36+85.00

PI = 39+00.00
EL = 97.00'
VC = 450'
K = 90

BEGIN SPECIAL DITCH GRADE -Y- STA. 37+43.00
ELEV. = 93.00

PI = 38+50.00
ELEV. = 93.50

PI = 39+00.00
ELEV. = 94.00

BEGIN SPECIAL DITCH GRADE -Y- STA. 39+00.00
ELEV. = 93.80

END SPECIAL DITCH GRADE -Y- STA. 41+00.00
ELEV. = 94.90

RT. DITCH (+) 0.467%
LT. DITCH (+) 0.683%
RT. DITCH (+) 0.709%
LT. DITCH (+) 0.550%

99.05

BM 85 EL. 98.48
RAILROAD SPIKE IN BASE OF 15 INCH PINE TREE
-BY- STA. 39+77 (14' RT.)
-Y- STA. 46+93 (33' RT.)

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.31

DRAINAGE AREA	= .085	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.5	CFS
DESIGN HW ELEVATION	= 97.7	FT
100 YEAR DISCHARGE	= 3.8	CFS
100 YEAR HW ELEVATION	= 97.8	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >4.3	CFS
OVERTOPPING ELEVATION	= 100.3	FT

BEGIN SPECIAL DITCH GRADE -Y- STA. 45+82.00
ELEV. = 96.60

PI = 45+00.00
EL = 101.10'
VC = 200'
K = 211
SSD = 123.6'

END GRADE -Y- STA. 48+00.00
ELEV. = 100.30

END SPECIAL DITCH GRADE -Y- STA. 48+00.00
ELEV. = 97.10

(+) 0.683% RT. DITCH
(+) 0.709% RT. DITCH
(+) 0.000% LT. DITCH
(+) 0.229% RT. DITCH
(+) 0.229%

END SPECIAL DITCH GRADE -Y- STA. 44+50.00
ELEV. = 98.00

BEGIN SPECIAL DITCH GRADE -Y- STA. 45+80.00
ELEV. = 96.00

END SPECIAL DITCH GRADE -Y- STA. 47+30.00
ELEV. = 96.00

FOR -Y- PLAN VIEW
SEE SHEETS 5 & 8

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RPA-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.53

DRAINAGE AREA	= 55	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 95.2	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 95.7	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >23	CFS
OVERTOPPING ELEVATION	= 101.2	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.49

DRAINAGE AREA	= 2.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.6	CFS
DESIGN HW ELEVATION	= 92.2	FT
100 YEAR DISCHARGE	= 9.2	CFS
100 YEAR HW ELEVATION	= 92.5	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >10.7	CFS
OVERTOPPING ELEVATION	= 102.6	FT

BEGIN GRADE -RPA- STA.10+00.00
-L- STA.62+15.50 (59' LT.)
ELEV.= 102.20

PI = 14+00.00
EL = 100.96'
VC = 200'
K = 226

PI = 24+00.00
EL = 106.70'
VC = 250'
K = 132

(-)0.31 00%
(+)0.57 40%
30"
18"
(+)0.57 40%
107.29

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.45

DRAINAGE AREA	= 4.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 92.7	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 93.0	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >18	CFS
OVERTOPPING ELEVATION	= 99.43	FT

PI = 30+30.00
EL = 122.28'
VC = 250'
K = 41
SSD = 302'

END GRADE -RPA- STA.31+58.45
-Y- STA.25+45.29 (22' LT.)
ELEV.= 117.65

PI = 24+00.00
EL = 106.70'
VC = 250'
K = 132

107.29
(+)2.47 30%
(-)3.60 45%
(+)2.47 30%
BEGIN SPECIAL DITCH GRADE -RPA- STA.24+00.00
ELEV.= 94.50
(-)0.39 06%
(-)0.39 06%
RT. DITCH
PI = 26+00.00
ELEV.= 92.11
END DITCH GRADE -RPA- STA.26+67.00
ELEV.= 90.90

FOR -RPA- PLAN VIEW
SEE SHEETS 5 & 6

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LPA-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 39

DRAINAGE AREA	= 57	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 93.2	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 93.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 25+	CFS
OVERTOPPING ELEVATION	= 99.43	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 48

DRAINAGE AREA	= 1.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5.2	CFS
DESIGN HW ELEVATION	= 96.8	FT
100 YEAR DISCHARGE	= 5.5	CFS
100 YEAR HW ELEVATION	= 96.8	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >5.4	CFS
OVERTOPPING ELEVATION	= 99.5	FT

BEGIN GRADE -LPA- STA.10+00.00
-L- STA.44+87.83 (59' LT.)
ELEV.= 99.58

PI = 14+50.00
EL = 99.35'
VC = 300'
K = 107

(-)0.85% (+)2.75586%

BEGIN SPECIAL DITCH GRADE -LPA- STA.17+00.00
ELEV.= 91.80

(+)0.2969%

BEGIN SPECIAL DITCH GRADE
-LPA- STA.19+50.00
ELEV.= 90.90

RT. DITCH (+)0.885%

BEGIN SPECIAL DITCH GRADE -LPA- STA.21+50.00
ELEV.= 92.30

END SPECIAL DITCH GRADE -LPA- STA.22+50.00
ELEV.= 92.50

END SPECIAL DITCH GRADE
-LPA- STA.20+00.00
ELEV.= 91.50

END SPECIAL DITCH GRADE -LPA- STA.22+50.00
ELEV.= 93.40

(+)0.500%
RT. DITCH

PI = 22+75.00
EL = 122.11'
VC = 190'
K = 33
SSD = 284'

(+)2.75586% (-)2.95523%

END GRADE -LPA- STA.23+73.23
-Y- STA.25+65.00 (34' LT.)
ELEV.= 119.21

FOR -LPA- PLAN VIEW
SEE SHEET 5

-LPC-

BEGIN GRADE -LPC- STA.10+00.00
-L- STA.41+30.65 (48' RT.)
ELEV.= 99.12

PI = 15+50.00
EL = 96.94'
VC = 300'
K = 132

(-)1.51356% (+)1.88167%

BEGIN SPECIAL DITCH GRADE
-LPC- STA.18+00.00
ELEV.= 96.30

PI=18+00.00
ELEV.= 92.30

(+)4.900%
RT. DITCH

(-)0.136%

END SPECIAL DITCH GRADE
-LPC- STA.19+74.00
ELEV.= 92.20

END GRADE -LPC- STA.20+13.37
-Y- STA.36+65.53 (34' RT.)
ELEV.= 105.66

FOR -LPC- PLAN VIEW
SEE SHEET 5

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-4900	15

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RPC-

BEGIN GRADE -RPC- STA.10+00.00
-L- STA.23+15.50 (48' RT.)
ELEV.= 96.84

PI = 16+00.00
EL = 96.24'
VC = 250'
K = 143

PI = 21+00.00
EL = 104.47'
VC = 400'
K = 151
SSD = 608'

(+)0.310%
(-)0.600%
(+)0.640%
(+)5.460%
(-)1.000%
(-)0.000%

RT. DITCH
RT. DITCH

BEGIN SPECIAL DITCH GRADE -RPC- STA.10+82.00
ELEV.= 90.50

END SPECIAL DITCH GRADE -RPC- STA.15+00.00
ELEV.= 91.80

BEGIN SPECIAL DITCH GRADE -RPC- STA.20+00.00
ELEV.= 97.00

FOR -RPC- PLAN VIEW
SEE SHEETS 4 & 5

-Y1-

BEGIN GRADE -Y1- STA.10+12.02
-Y- STA.45+28.81 (12' RT.)
ELEV.= 101.37

PI = 10+75.00
EL = 102.92'
VC = 100'
K = 23
SSD = 302'

PI = 12+00.00
EL = 100.65'
VC = 100'
K = 40

END GRADE -Y1- STA.12+50.00
ELEV.= 101.00

(+)2.461%
(-)1.816%
(+)0.538%
(+)0.768%
(+)0.700%
RT. DITCH

END SPECIAL DITCH GRADE -Y1- STA.12+00.00
ELEV.= 99.00

BEGIN SPECIAL DITCH GRADE -Y1- STA.10+50.00
ELEV.= 98.20

FOR -Y1- PLAN VIEW
SEE SHEET 8

-RPC-

PI = 27+00.00
EL = 98.47'
VC = 380'
K = 83

END GRADE -RPC- STA.28+93.85
-Y- STA.36+85.53 (22' RT.)
ELEV.= 105.44

(-)0.000%
(+)0.000%
(+)3.595%
RT. DITCH

END SPECIAL DITCH GRADE -RPC- STA.25+00.00
ELEV.= 96.50

FOR -RPC- PLAN VIEW
SEE SHEET 5

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PROJECT REFERENCE NO.	SHEET NO.
R-4900	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.42

DRAINAGE AREA	= 7.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 24	CFS
DESIGN HW ELEVATION	= 91.9	FT
100 YEAR DISCHARGE	= 26	CFS
100 YEAR HW ELEVATION	= 92.1	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >29	CFS
OVERTOPPING ELEVATION	= 94.0	FT

-SR-

BEGIN GRADE -SR- STA.10+16.06
-Y- STA.20+70.00 (16.06' LT.)
ELEV.= 98.01

(-)4.84352%

BEGIN SPECIAL DITCH GRADE -SR- STA.13+50.00
ELEV.= 91.59

PI = 11+10.00
EL = 93.46'
VC = 100'
K = 18

(+)0.7184%

RT. DITCH (+)1.0522%

END SPECIAL DITCH GRADE -SR- STA.14+65.00
ELEV.= 92.50

PI = 16+00.00
EL = 96.98'
VC = 200'
K = 196
SSD = 115.9'

(+)0.7184%

(-)1.03000%

END GRADE -SR- STA.22+30.00
ELEV.= 95.09

FOR -SR- PLAN VIEW
SEE SHEETS 5 & 7

100
90
80

10 11 12 13 14 15 16 17 18 19 20 21 22

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