STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 20, 2004

U. S. Army Corps of Engineers
6508 Falls of the Neuse Road, Suite 120
Raleigh, North Carolina 27615

ATTN: Mr. Eric Alsemeyer
NCDOT Coordinator

Dear Sir:

Subject: **Application for Section 404 and 401 Permits for Improvements to I-85 from North of SR 1002 to North of SR 2120 Near the Town of Spencer in Rowan County**, Federal Aid No. IR-IM-85-3(132)74, State Project No. 8.1631503, TIP No. I-2511CB, $475.00 Debit work order 8.1631503, WBS Element 34163.1.7

The North Carolina Department of Transportation (NCDOT) proposes to make improvements to I-85 from north of SR 1002 (Bringle Ferry Road) to north of SR 2120 (Long Ferry Road, Exit 81) near the town of Spencer in Rowan County. The project length is approximately 3.4 miles. Proposed improvements involve widening of the existing highway to eight lanes. This project lies in the Piedmont Physiographic Province in Rowan County in the Yadkin-Pee Dee River Basin (Hydrologic Catalog Unit 03040103). Work is scheduled to commence on Section I-2511CB of I-85 in July 2004. The application consists of this cover letter, an ENG Form 4345, 8.5- x 11-inch permit drawings, 11- x 17-inch half-size plan sheets, and interagency meeting minutes.

Purpose and Need: The purpose of the proposed project is to make improvements to I-85 including widening to an eight-lane facility. The proposed improvements will provide needed pavement rehabilitation as well as subgrade improvements which will increase the life of the surface pavement. The proposed improvements will also provide additional travel lanes which will alleviate current and future capacity deficiencies along the studied portion of I-85. In addition, interchange and service road revisions will provide safer access to businesses and neighborhoods in the project area.

Summary of Impacts: Impacts to areas that are jurisdictional under the Federal Clean Water Act due to the proposed project footprint include the following.

- 0.05 acre of permanent impacts to riverine wetlands (fill and mechanized clearing)
- 0.47 acre of permanent impacts to non-riverine wetlands (fill and mechanized clearing)
- 2218 linear feet of stream (1642 linear feet requiring mitigation)

- No temporary wetland impacts
- No permanent impacts to ponds (filling or draining)

Summary of Mitigation: The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the NEPA and design processes. Detailed descriptions of these actions are presented elsewhere in this application. Compensatory mitigation for the remaining impacts includes the following.

- 1375 linear feet of on-site stream relocation using natural channel design techniques
- 0.05 acre of on-site wetland restoration from the adjacent TIP Project I-2304AA
- 267 linear feet of stream will be mitigated through the use of the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP)
- 0.47 acre of impacts to non-riverine wetlands will be mitigated through the use of EEP

NEPA DOCUMENT STATUS

The Environmental Assessment (EA) for this project was approved on December 12, 1994 and the Finding of no Significant Impact (FONSI) was signed on August 30, 1995. Subsequently, the approved documents were circulated to federal, state, and local agencies. Additional copies will be provided upon request.

INDEPENDENT UTILITY

The project is in compliance with 23 CFR Part 771.111(f) which lists the Federal Highway Administration (FHWA) characteristics of independent utility of a project including the following.

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.

The proposed project is needed to connect projects along I-85 that are recently completed or to be completed in the near future. The southwestern terminus will tie into another section of TIP Project I-2511 to SR 1002 (Bringle Ferry Road), and the northeastern terminus will tie into TIP Project I-2304AA near the town of Spencer north of SR 2120 (Long Ferry Road, Exit 81 of I-85). The locations of the proposed project's termini have been coordinated with other programmed TIP projects in the area. The locations of the termini do not preclude the development and assessment of multiple alternates for other programmed TIP projects in the area. In this regard, the proposed project demonstrates logical termini and independent utility.

This project can stand alone as a functioning project and is designed to be compatible with other TIP projects in the area. The environmental impacts of the other projects will be fully evaluated in separate environmental documents. NCDOT has determined this project meets the criteria set forth in 23 CFR 771.111(f).

RESOURCE STATUS

Delineations: Delineations of jurisdictional streams and wetlands were completed by NCDOT biologists in April and May 2002. Guidance provided in the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) was used for determining wetland boundaries. Jurisdictional area delineations were verified on May 30, 2003 by U.S. Army Corps of Engineers (USACE) field personnel. The N.C. Division of Water Quality (DWQ) deferred verification.

As previously mentioned, this project will result in 0.05 acre of permanent impacts to riverine wetlands, 0.47 acre of permanent impacts to non-riverine wetlands, 2218 linear feet of stream impacts, no temporary wetland impacts, and no permanent impacts to ponds. The following tables summarize jurisdictional impacts. These tables refer to the impact summary table on Sheet 29 of the permit drawings.

Table 1. Jurisdictional Impacts for I-2511CB

Site	Permanent Wetland Impacts (acres)*		Stream Impacts (linear feet)	Stream Impacts Requiring Mitigation (linear feet)	Natural Channel Design (linear feet)
	Riverine	Non-Riverine			
1	0	0	66	66	0
2	0	0	180	180	0
3	0	0	93	0	0
4	0.004	0	114	114	0
5	0	0	864	864	1375
6	0.047	0	200	37	0
7	0	0	481	251	0
8	0	0.47	90	0	0
9	**0**	**0**	130	130	**0**
Total	**0.05**	**0.47**	**2218**	**1642**	**1375**

* -- Includes fill, excavation, and mechanized clearing.

Wetlands: Impacts to jurisdictional wetlands occur at three sites within the project area in the Yadkin-Pee Dee River Basin (Hydrologic Catalog Unit 03040103, Subbasin 03-07-04). Table 2 summarizes information for each wetland impact site associated with I-2511CB. A description of each site is as follows.

Table 2. Jurisdictional Wetland Information for I-2511CB

Site	Cowardin Classification*	Quality	Community Name	Impact Type **	Total Impact (acres)
4	PFO	Medium	Bottomland Hardwood Forest	F, M	0.004
6	PFO	Low	Bottomland Hardwood Forest	F, M	0.047
8	PEM	Medium	Bottomland Hardwood Forest	F, M	0.470
Total					**0.52**

*--P = palustrine; FO = forested; EM = emergent
**--F = fill; E = excavation; M = mechanized clearing (method III)

Site 4: This wetland site is located southeast of I-85 at Station RPIC 16+00. Vegetation within the wetland includes tag alder (*Alnus serrulata*), sweet-gum (*Liquidambar styraciflua*), American elm (*Ulmus americana*), poison ivy (*Toxicodendron radicans*), microstegium (*Microstegium vimineum*), Virginia creeper (*Parthenocissus quinquefolia*), and false nettle (*Boehmeria cylindrica*).

Site 6: This wetland site is located just east of I-85 at Station SRC 31+40. Vegetation within this wetland consists primarily of black willow (*Salix nigra*), sweet-gum, red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), tulip poplar (*Liriodendron tulipifera*), microstegium, ironwood (*Carpinus caroliniana*), Japanese honeysuckle (*Lonicera japonica*), false nettle, and poison ivy.

Site 8: This wetland site is located northwest of I-85 at Station SR1 72+00. Vegetation within this wetland includes red maple, green ash, slippery elm (*Ulmus rubra*), false nettle, jewelweed (*Impatiens capensis*), and lizard's tail (*Saururus cernuus*).

Streams: Impacts to eight jurisdictional stream sites occur on Town Creek and tributaries to Town Creek within the Yadkin-Pee Dee River Basin (Hydrologic Catalog Unit 03040103, Subbasin 03-07-04). Table 3 summarizes the information for each of the stream impact sites associated with I-2511CB.

Table 3. Jurisdictional Stream Information for I-2511CB

Site	Station No.	Structure	Stream	DWQ Index No./ Classification	Impact (linear feet)	Mitigation Required (linear feet)
1	647+50 – L- (LT/RT)	30" RCP	UT to Town Creek	12-115-3 C	66	66
2	680+00 – L- (LT/RT)	30" RCP	UT to Town Creek	12-115-3 C	180	180
3	49+27 –SR1- (LT)	18" RCP	UT to Town Creek	12-115-3 C	93	0
4	RPIC 16+00	18" RCP	UT to Town Creek	12-115-3 C	114	114
5	708+00-717+00 – L-	SPANS: 3@60'; 1@45'	UT to Town Creek	12-115-3 C	864	864
6	SRC 31+40 (LT)	None	UT to Town Creek	12-115-3 C	200	37
7	808+00-812+00	18"/30" RCP/8x7 RCBC	UT to Town Creek	12-115-3 C	481	251
8	SR1-72+00	None	UT to Town Creek	12-115-3 C	90	0
9	752+65.85 –L-	4@11'x13' RCBC	Town Creek	12-115-3 C	130	130
Total					**2218**	**1642**

Town Creek: Impacts to Town Creek will occur at Site 9. Town Creek is approximately 30 feet in width with a depth ranging from 1 to 4 feet. The substrate is composed of silt, sand, and gravel.

Unnamed Tributaries to Town Creek: Impacts to unnamed tributaries to Town Creek will occur at Sites 1 through 8. The tributaries range from 1 to 3 feet in width and average less than 1 foot in depth. The substrates are composed of silt, sand, and gravel.

Water Quality Information: The portions of tributaries to Town Creek within the project have been assigned DWQ Index No. 12-115-3 and a best usage classification of C. The designation C refers to waters protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development or types of discharges.

Town Creek and its tributaries, from SR 1526 to Crane Creek, are listed in the North Carolina 2002 Section 303(d) list as impaired due to biological data.

PROTECTED SPECIES

Plants and animals with federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of February 25, 2003, the U.S. Fish and Wildlife Service (FWS) lists two federally protected species for Rowan County (Table 3).

Table 4. Federally Protected Species for Rowan County

Scientific Name	Common Name	Status
Haliaeetus leucocephalus	bald eagle	Threatened *
Helianthus schweinitzii	Schweinitz's sunflower	Endangered

Endangered -- a species that is in danger of extinction throughout all or a significant portion of its range.
Threatened -- a species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
*-- denotes a species proposed for delisting.

Bald eagle: Bald eagles typically nest in tall, living trees in conspicuous locations near open water. Suitable habitat for bald eagle does not occur within the project study area; therefore, this project will have no effect on bald eagle.

Schweinitz's sunflower: Schweinitz's sunflower is typically found in full sunlight or light shade in clearings and along the edges of open stands of upland woods. Habitat in the form of disturbed woodland edges with sandy clay soil is present within the boundaries of the project study area. Plant-by-plant surveys were conducted in areas of suitable habitat by NCDOT biologists on October 6, 2003 and no Schweinitz's sunflower plants were found. Based on surveys for Schweinitz's sunflower, N.C. Natural Heritage Program (NHP) records search, and professional judgment, this project may affect, but is not likely to adversely affect Schweinitz's sunflower.

CULTURAL RESOURCES

Architectural Resources: This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires that if a federally-funded, licensed, or permitted project has an effect on a property listed on or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation will be given an opportunity to comment.

Photographs, maps, and information about the area of potential effect were provided by NCDOT and reviewed with the State Historic Preservation Office (SHPO). The site was surveyed on July 2, 1992 by an NCDOT staff architectural historian, and no structures were found to be over 50 years old.

Since there are no properties either listed in or eligible for the National Register in the area of potential effect, no further compliance with Section 106 is required. SHPO will be afforded the opportunity to comment through the document review process.

Archaeological Resources: The SHPO Officer has reviewed the proposed project regarding the identification of archaeological sites. The SHPO stated in a letter dated August 26, 1992: "Given

the extent of development, prior construction activities, and the nature of topography within areas adjacent to the existing right-of-way, we consider the proposed project unlikely to affect archaeological resources that might be eligible for inclusion in the National Register of Historic Places. We, therefore, recommend no further archaeological investigation be conducted in connection with this project."

UTILITY IMPACTS

In addition to impacts from the construction of the road, impacts often result from the need to move existing utilities. These impacts to jurisdictional areas result from activities that "but for" the construction of the road would not have occurred. The following paragraphs describe and quantify the "but for" impacts. Occasionally a utility company will decide to upgrade a line or construct a new line near the proposed highway right-of-way. The impacts from these activities would have occurred whether or not the road project was constructed. Therefore, they do not fall under the "but for" scenario. In those cases, the utility company is responsible for obtaining any permits and the impacts are not addressed in the highway project application. However, if the information is available to us, we will attempt to identify these non-"but for" actions so that you are kept informed about the actions that may occur near our right-of-way.

According to the NCDOT, no utility relocations will result in additional impacts to jurisdictional areas.

FEMA COMPLIANCE

According to the NCDOT hydraulics engineers, a Federal Emergency Management Agency (FEMA) detailed study has been performed on Town Creek, and a Floodway revision (CLOMR) has been submitted to FEMA. Approval is expected in January 2004. The Town Creek channel will be moved to accommodate new ramps associated with interchange upgrades.

ICE INFORMATION

An Indirect and Cumulative Effects (ICE) study is not proposed for this project due to the low probability of indirect and cumulative effects.

WILD AND SCENIC RIVERS

The project will not impact any Designated Wild and Scenic Rivers or any rivers included in the list of study rivers (Public Law 90-542, as amended).

ESSENTIAL FISH HABITAT

The project will not impact any Essential Fish Habitat (EFH) afforded protection under the Magnuson-Stevens Act of 1996 (16 U.S.C. 1801 *et seq.*).

MITIGATION OPTIONS

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

of the waters of the United States. Mitigation of wetland and surface water impacts has been defined by the CEQ to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR 1508.20). Executive Order 11990 (Protection of Wetlands) and Department of Transportation Order 5660.1A (Preservation of the Nations Wetlands), emphasize protection of the functions and values provided by wetlands. These directives require that new construction in wetlands be avoided as much as possible and that all practicable measures are taken to minimize or mitigate impacts to wetlands.

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

AVOIDANCE: All wetland areas not affected by the project will be protected from unnecessary encroachment.

1. No staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.
2. Aquatic Life Movement: The project was designed to avoid disturbance to aquatic life movements.

MINIMIZATION: Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts. Minimization techniques implemented include the following.

1. High Quality Waters BMP: NCDOT has committed that "construction related impacts associated with the proposed action will be minimized through the use of High Quality Waters erosion and sediment control measures. All practical measures have been taken to minimize environmental harm."
2. Protection of Surface Waters BMP: In order to minimize potential impacts to water resources in the project area, NCDOT BMPs for the Protection of Surface Waters will be strictly enforced during the construction phase of the project.
3. Slopes: Fill slopes in wetlands are at a 2:1 ratio.
4. Ditching: It is the policy of the NCDOT to eliminate lateral ditching in wetlands as much as possible, thus preserving the hydrology of adjacent wetlands.
5. Median Width: The project was designed using a 46-foot median width.

COMPENSATION: The primary emphasis of the compensatory mitigation is to reestablish a condition similar to what would have existed if the project was not built. As previously stated, mitigation is limited to reasonable expenditures and practicable considerations related to highway operation. Mitigation is generally accomplished through a combination of methods designed to replace wetland functions and values lost as a result of construction of the project. These methods consist of creation of new wetlands from uplands, borrow pits, and other non-wetland areas; restoration of wetlands; and enhancement of existing wetlands. Where such options may not be available, or when existing wetlands and wetland-surface water complexes are considered to be important resources worthy of preservation, consideration is given to preservation as at least one component of a compensatory mitigation proposal.

FHWA Step-Down Compliance: All compensatory mitigation must be in compliance with 23 CFR Part 777.9, "Mitigation of Impacts," that describes the actions that should be followed to

qualify for federal-aid highway funding. This process known as the FHWA "Step Down" procedures includes the following.

1. Consideration must be given to mitigation within the right-of-way and should include the enhancement of existing wetlands and the creation of new wetlands in the highway median, borrow pit areas, interchange areas, and along the roadside.
2. Where mitigation within the right-of-way does not fully offset wetland losses, compensatory mitigation may be conducted outside the right-of-way including enhancement, creation, and preservation.

Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the United States Army Corps of Engineers, Wilmington District" (MOA), it is understood that EEP will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for NCDOT projects that are listed in Exhibit 1 of the subject MOA during the EEP transition period which ends on June 30, 2005.

Although the subject project is not listed in Exhibit 1, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act is anticipated to be provided by the EEP. The offsetting mitigation will derive from an inventory of assets already in existence within the same 8-digit cataloguing unit. NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The remaining, unavoidable impacts to 0.47 acre of non-riverine wetlands and 267 linear feet of jurisdictional streams will be offset by compensatory mitigation provided by the EEP program.

Compensatory mitigation for this project consists of the following.

Wetland Mitigation: Wetland impacts total 0.05 acres of riverine wetland impacts and 0.47 acre of non-riverine wetland impacts. The following combination of compensatory mitigation is proposed.

1. 0.05 acres of riverine wetland restoration within Site 2 of I-2304AA.
2. 0.47 acres of non-riverine wetland will be mitigated through the use of EEP.

Stream Mitigation: Stream impacts requiring mitigation total 1642 linear feet of intermittent and perennial streams. The following combination of compensatory mitigation is proposed.

1. Natural channel design and relocation of 1375 linear feet of stream impacted within Site 5 of I-2511CB.
2. 267 linear feet of stream will be mitigated through the use of EEP.

REGULATORY APPROVALS

Application is hereby made for a USACE Individual 404 Permit and a 401 Water Quality Certification from DWQ as required for the activities described above. In compliance with Section 143-215.3D(e) of the NCAC, we will provide $475.00 to act as payment for processing the Section 401 Water Quality Certification previously noted in this application (see Subject line). Seven copies of this application are provided to DWQ for review.

If you have any questions or need additional information please call Matt Haney at (919) 715-1428.

Sincerely,

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

cc: Mr. David Franklin, USACE, Wilmington
Mr. John Dorney, NCDWQ (7 copies)
Ms. Marla Chambers, NCWRC
Ms. Becky Fox, USEPA
Ms. Marella Buncick, USFWS
Mr. John F. Sullivan III, FHWA
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. S.P. Ivey, P.E. (Div. 9), Division Engineer
Ms. Diane Hampton, P.E. (Div. 9), Division Environmental Officer

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)	OMB APPROVAL NO. 071-0003 Expires December 31, 2004

The 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 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

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. 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 processed 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)
Gregory J. Thorpe, Ph.D., Environmental Management Director Project Development and Environmental Analysis North Carolina Department of Transportation	Not Applicable
6.APPLICANT=S ADDRESS	9. AGENT=S ADDRESS
1548 Mail Service Center Raleigh, North Carolina 27699-1548	
7. APPLICANT=S PHONE NOS. WITH AREA CODE	10. AGENTS PHONE NOS. WITH 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 OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE(*see instructions*)
Improvements to I-85 from north of SR 1002 (Bringle Ferry Road) to north of SR 2120 (Long Ferry Road) near the town of Spencer in Rowan County. Proposed improvements involve widening the existing highway to eight lanes. Federal Aid No. IR-IM-85-3(132)74, State Project No. 8.1631503, TIP No. I-2511CB

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)	14. PROJECT STREET ADDRESS (*if applicable*)
Town Creek and it's tributaries	Not Applicable
LOCATION OF PROJECT **Rowan** COUNTY **NC** STATE	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)
See the December 1994 Environmental Assessment (EA) and August 1995 Finding of No Significant Impact (FONSI).

17. DIRECTIONS TO THE SITE
See the attached permit drawings and half size plan sheets.

18. Nature of Activity (*Description of project, include all features*)
The North Carolina Department of Transportation proposes to improve and widen I-85 near the town of Spencer in Rowan County from north of SR 1002 (Bringle Ferry Road) to north of SR 2120 (Long Ferry Road). Improvements involve the widening of the existing I-85 to an 8-lane facility, 4 lanes in each direction separated by a 46-foot median.

19. Project Purpose (*Describe the reason or purpose of the project, see instructions*)
To make improvements to I-85, a public highway facility, for public safety and transportation. The purpose and need are briefly explained in the permit application cover letter and are explained in detail in the December 1994 Environmental Assessment (EA) and the August 1995 Finding of no Significant Impact (FONSI).

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

20. Reason(s) for Discharge
Proposed improvements and widening of I-85 near the town of Spencer in Rowan County from north of SR 1002 (Bringle Ferry Road) to north of SR 2120 (Long Ferry Road). Improvements involve the widening of the existing I-85 to an 8-lane facility, 4 lanes in each direction separated by a 46-foot median.

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

22. Surface Area in Acres of Wetlands or Other Waters Filled (*see instructions*)
See sheet 29 of the attached permit drawings.

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).
See sheets 30 and 31 of the attached permit drawings.

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**
Not Applicable					

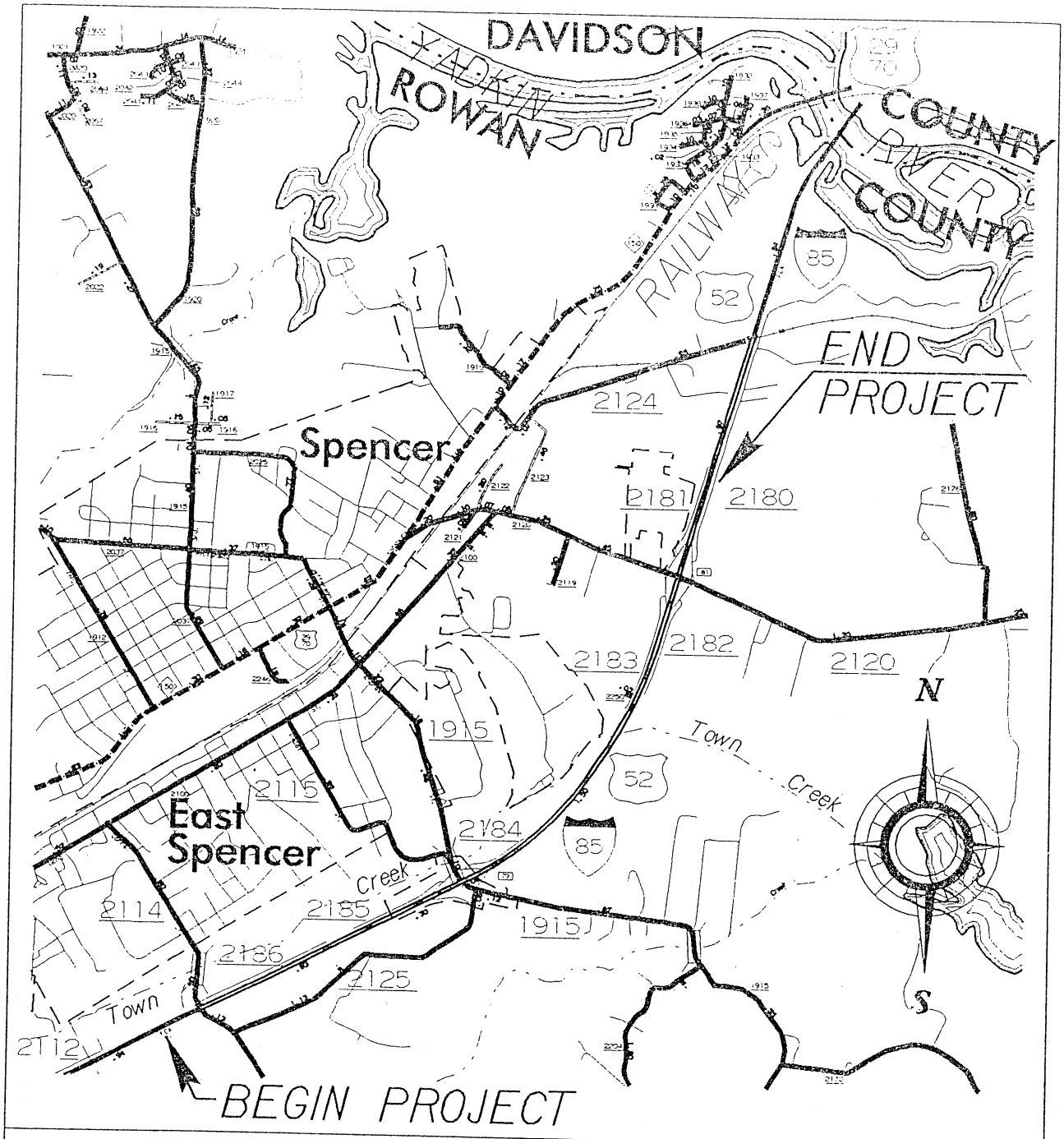
*Would include but is not restricted to zoning, building, and flood plain permits.

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information is 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.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
[signature]	2/16/04		

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 manor 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 of entry, shall be fines not more than $10,000 or imprisoned not more than five years or both.



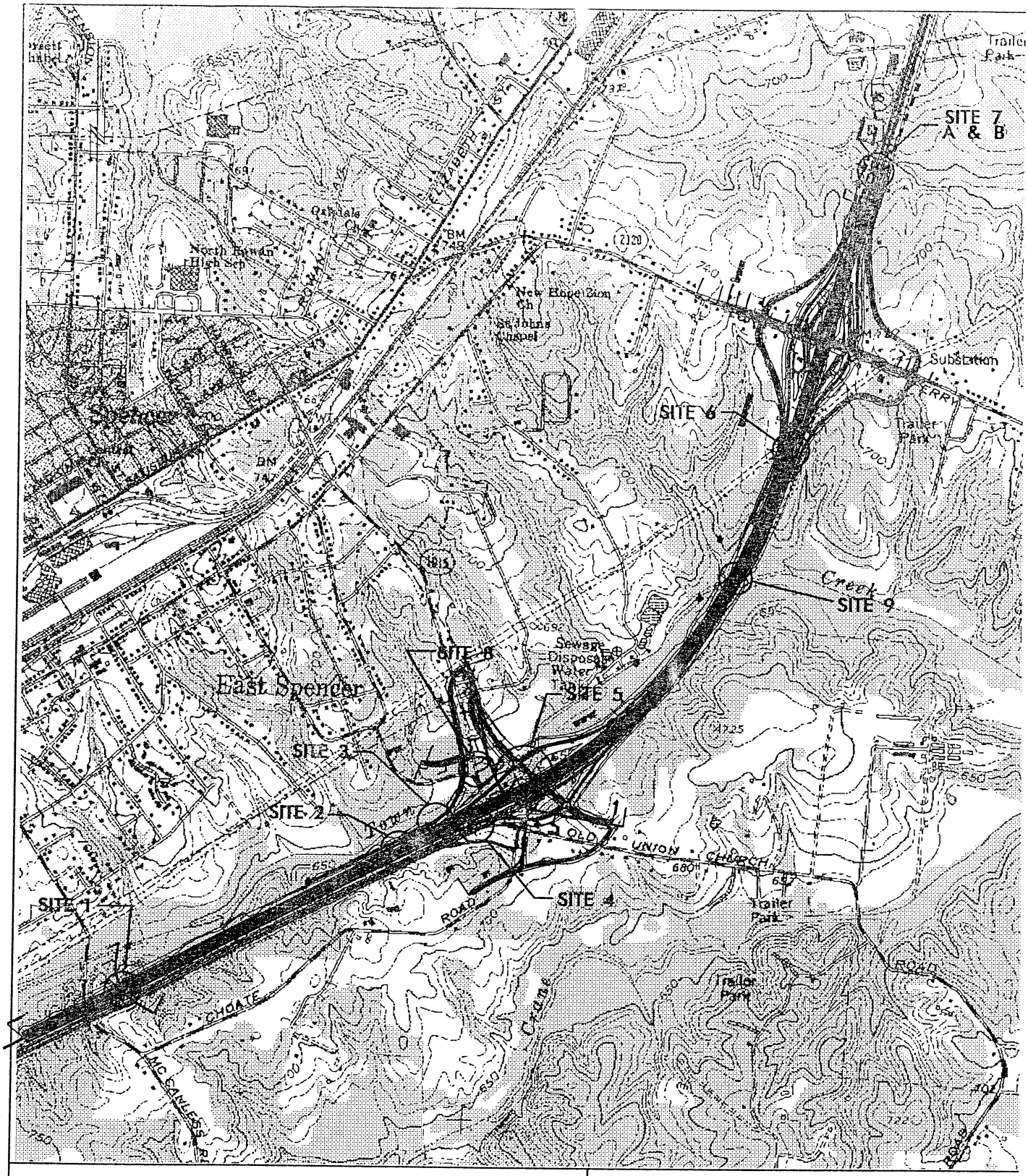
VICINITY MAP

NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)
I-85 FROM N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET OF

07 / 01 / 02



SITE MAP

NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET OF

02 / 20 / 03

WETLAND LEGEND

WLB —— WETLAND BOUNDARY

WLB / WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG — NATURAL GROUND

PL — PROPERTY LINE

TDE — TEMP. DRAINAGE EASEMENT

PDE — PERMANENT DRAINAGE EASEMENT

EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

EPB — EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT

(DASHED LINES DENOTE EXISTNG STRUCTURES)

12"-48" PIPES

54" PIPES & ABOVE

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

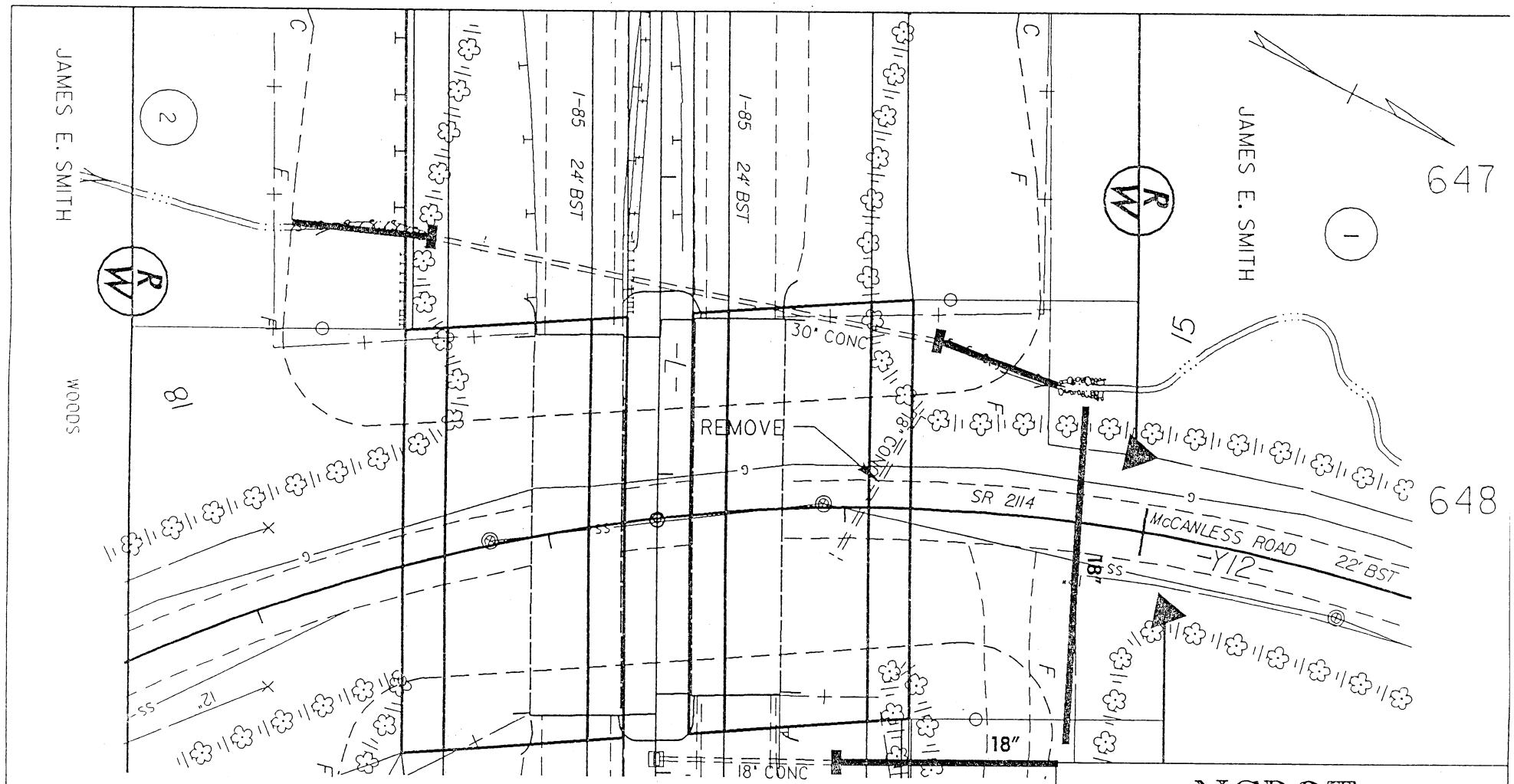
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET OF

07 / 01 / 02



DENOTES FILL IN SURFACE WATER

50 0 25 50

SCALE: 1"= 50' HORIZ.

PLAN VIEW
SITE 1

NCDOT

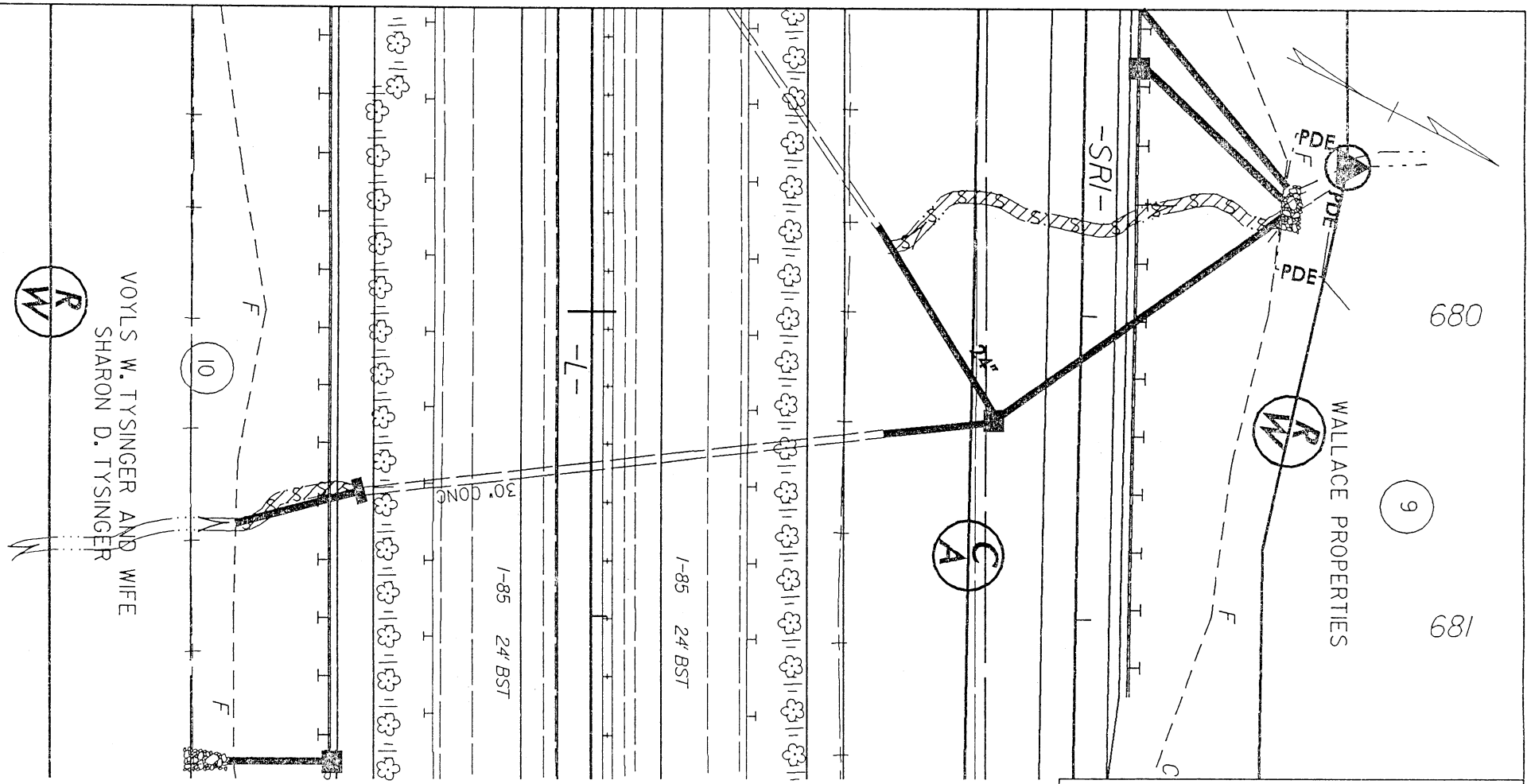
DIVISION OF HIGHWAYS
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET OF

07 / 01 / 02



DENOTES FILL IN SURFACE WATER

50 0 25 50

SCALE: 1"= 50' HORIZ.

PLAN VIEW

SITE 2

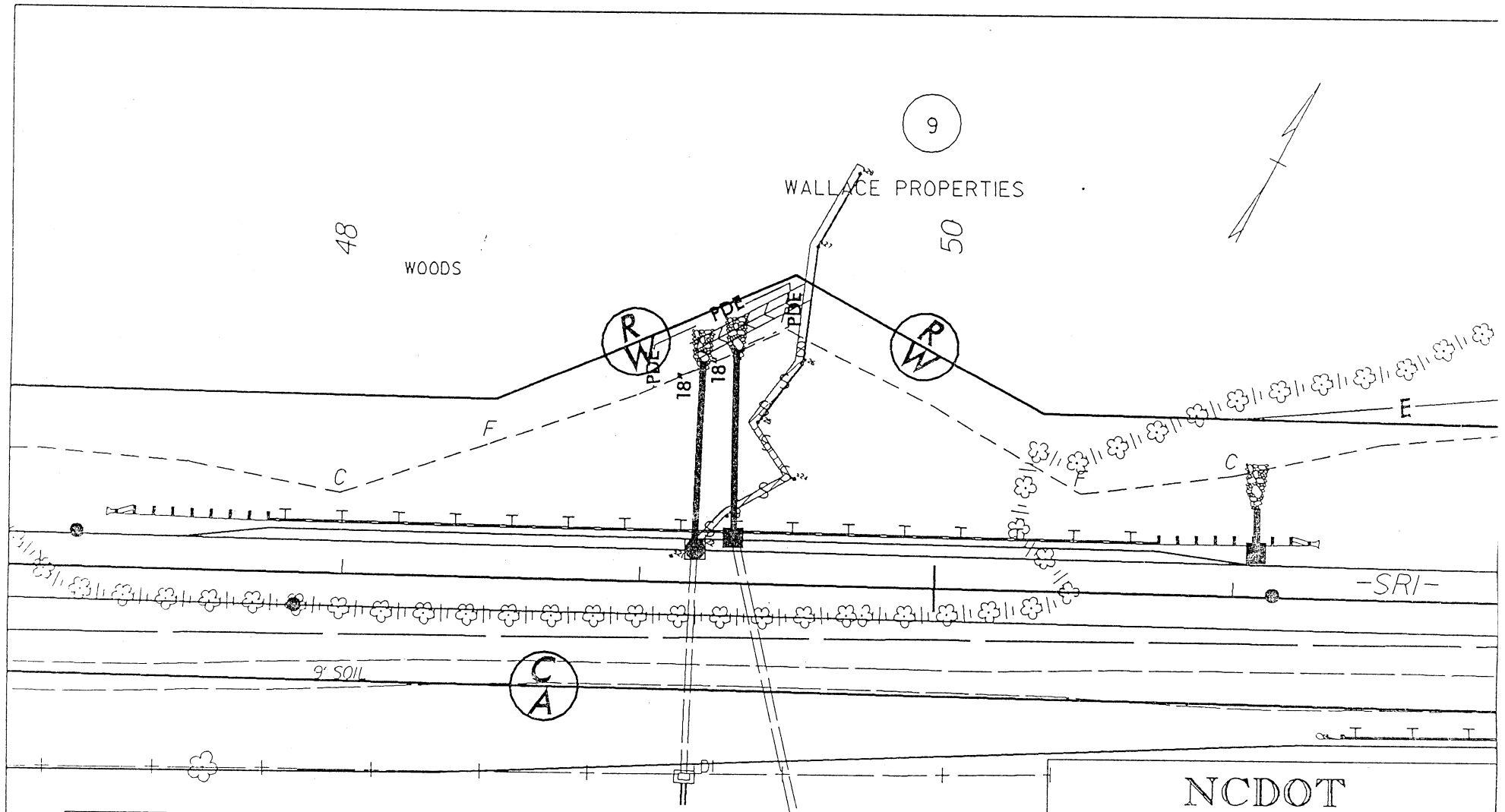
NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 5 **OF** 31 **07 / 01 / 02**



DENOTES FILL IN SURFACE WATER

50 0 25 50

SCALE: 1"= 50' HORIZ.

PLAN VIEW

SITE 3

NCDOT

DIVISION OF HIGHWAYS

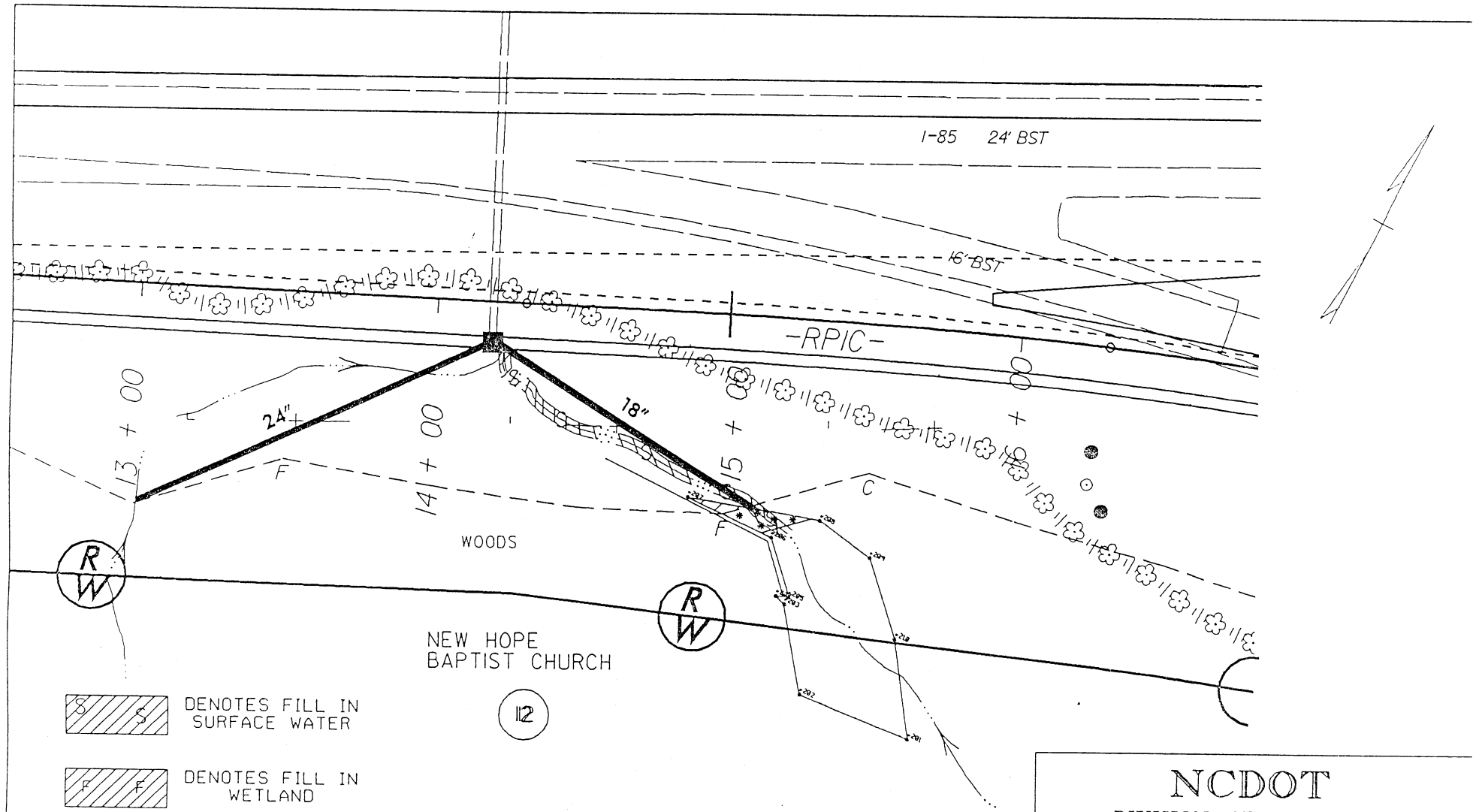
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED 03/07/03

SHEET OF



PLAN VIEW

SITE 4

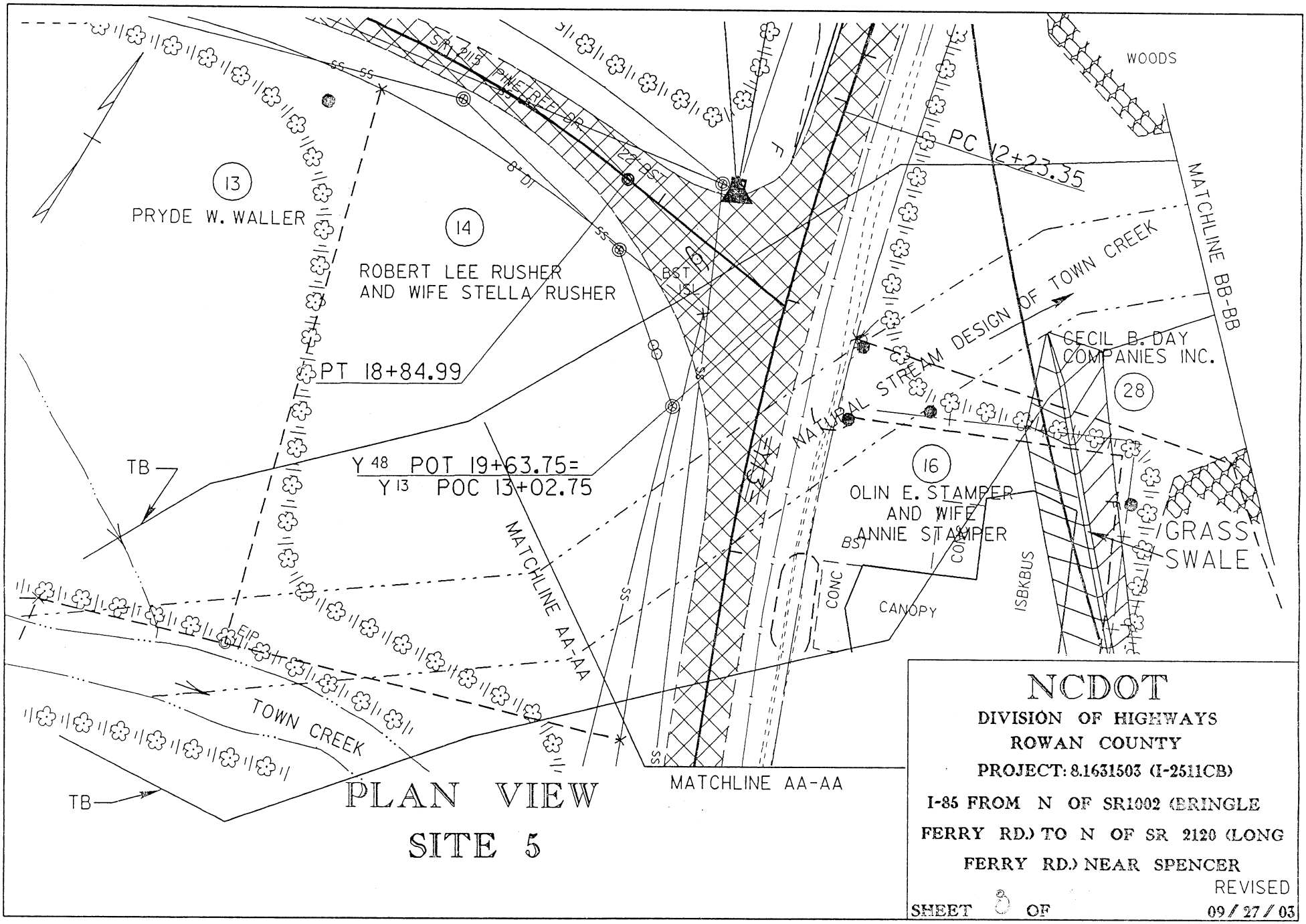
NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 1 OF 3

REVISED
03/07/03



PLAN VIEW

SITE 5

NCDOT

DIVISION OF HIGHWAYS

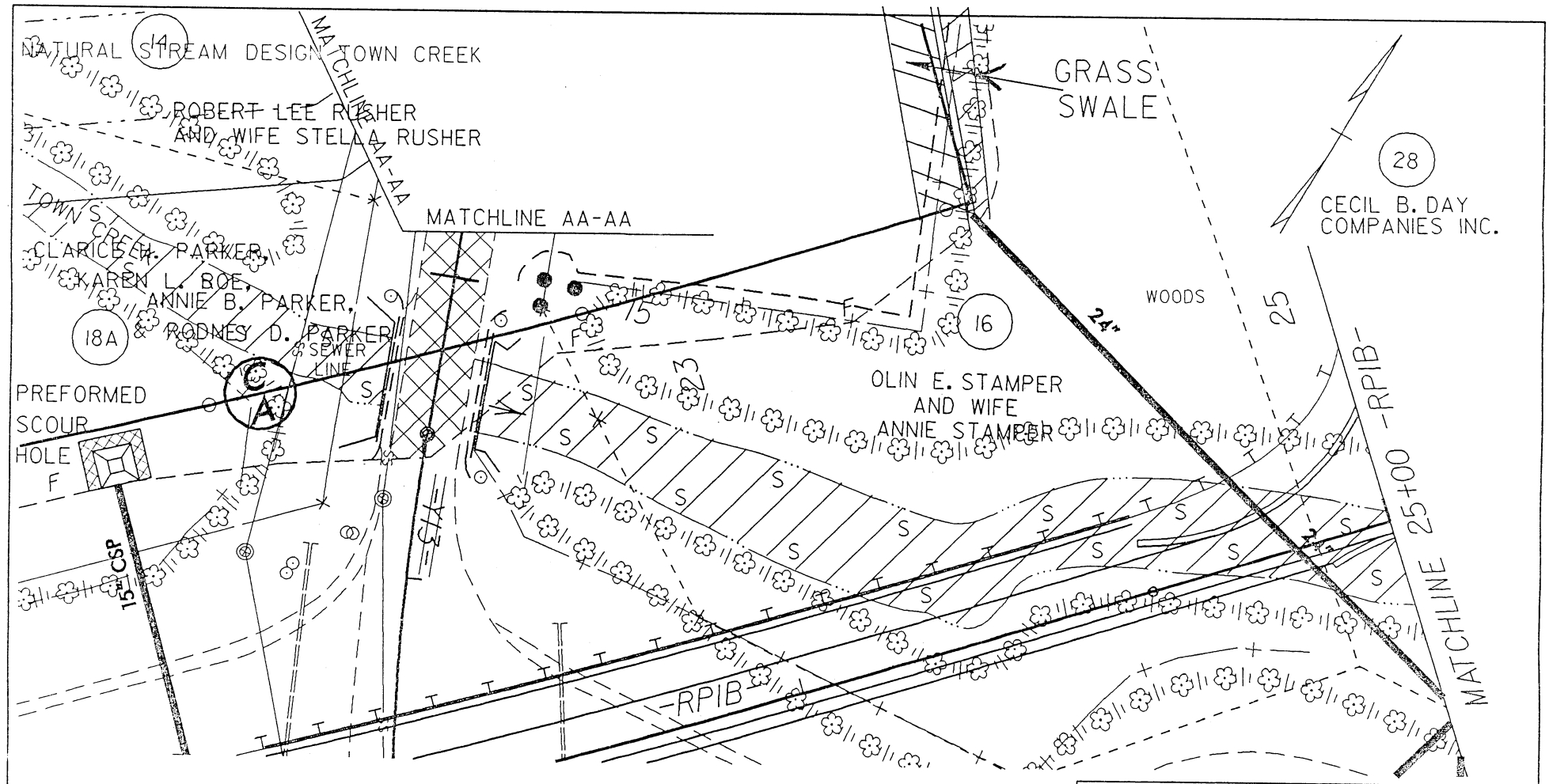
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED

SHEET 3 OF 09/27/03



S S DENOTES FILL IN SURFACE WATER

50 0 25 50

SCALE: 1"= 50' HORIZ.

PLAN VIEW

SITE 5

NCDOT

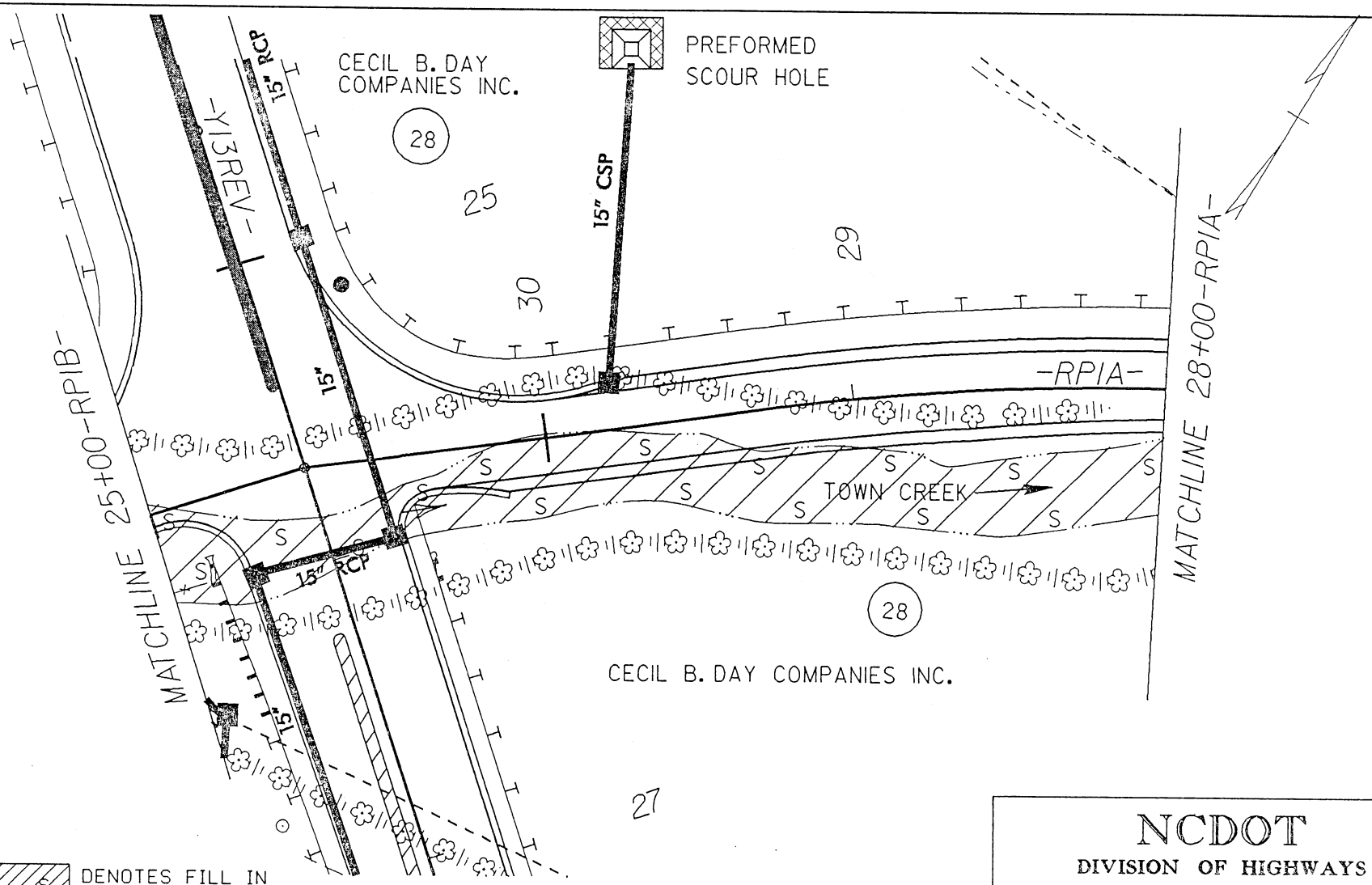
DIVISION OF HIGHWAYS
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED
09/27/03

SHEET OF



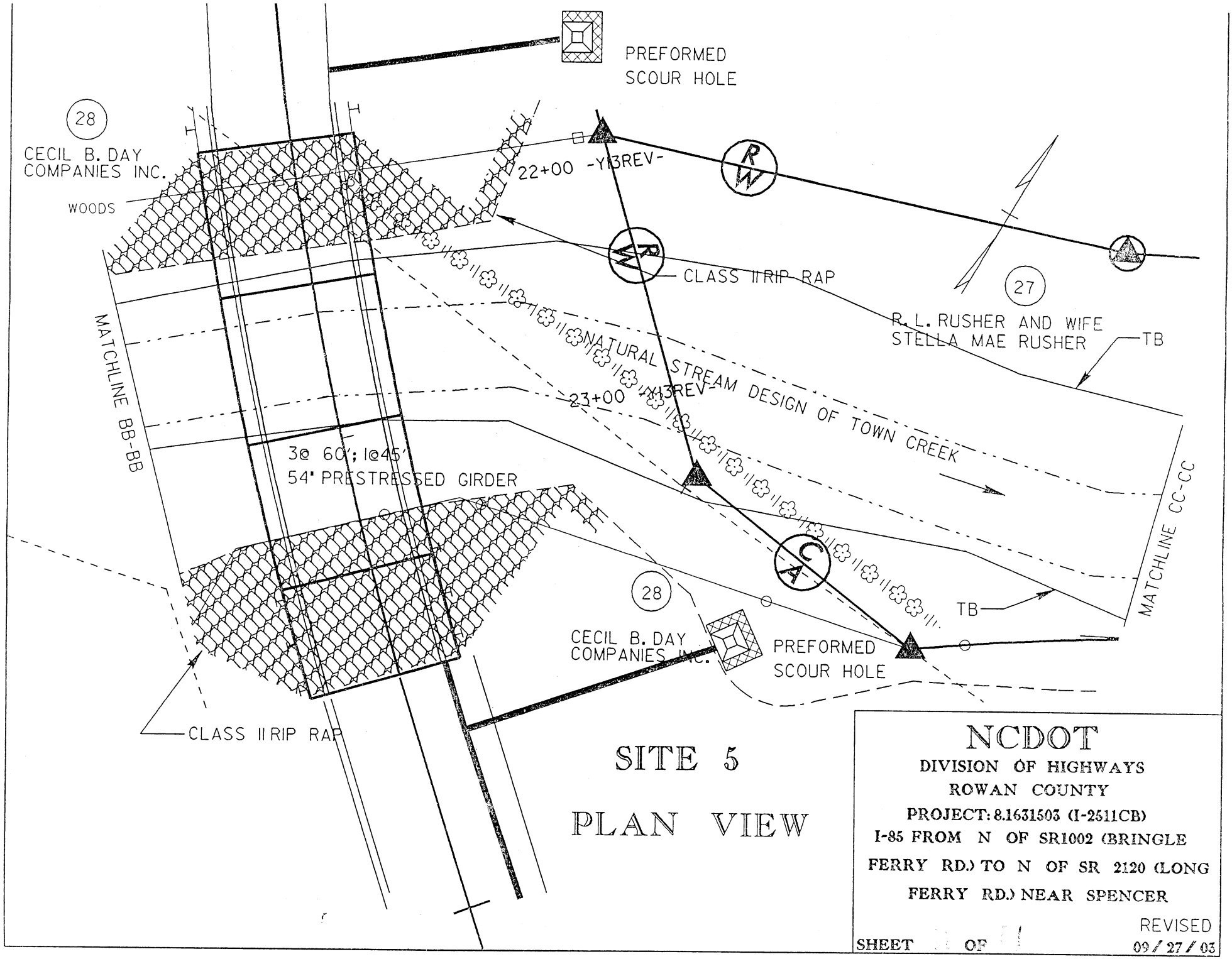
PLAN VIEW
SITE 5

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 10 OF 31

REVISED
09/27/03



SITE 5

PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS

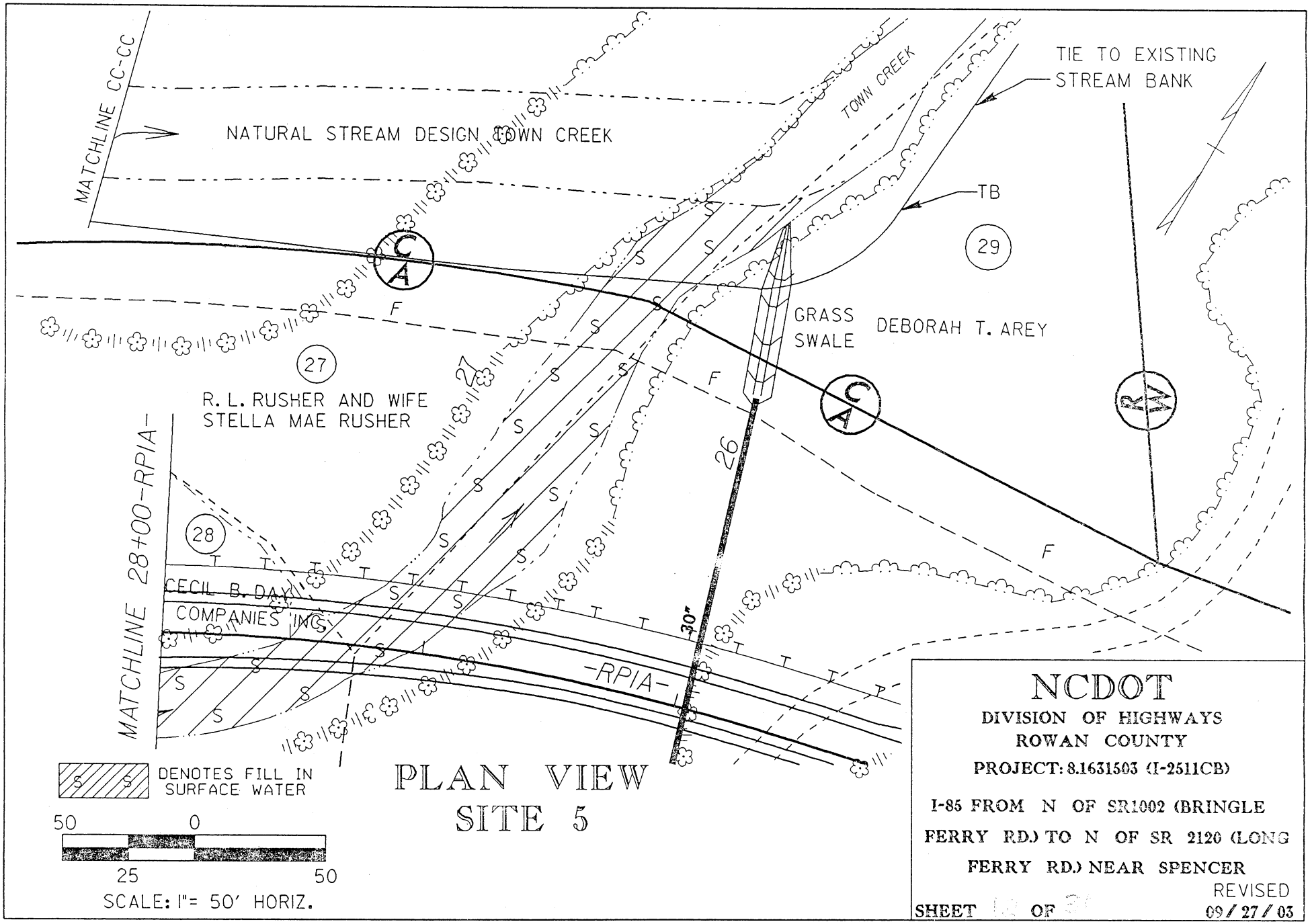
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED

SHEET OF **09 / 27 / 03**



PLAN VIEW
SITE 5

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED
09/27/03

SHEET [illegible] OF [illegible]

Stream Mitigation Plan
I-2511CB Rowan County
January 21, 2003

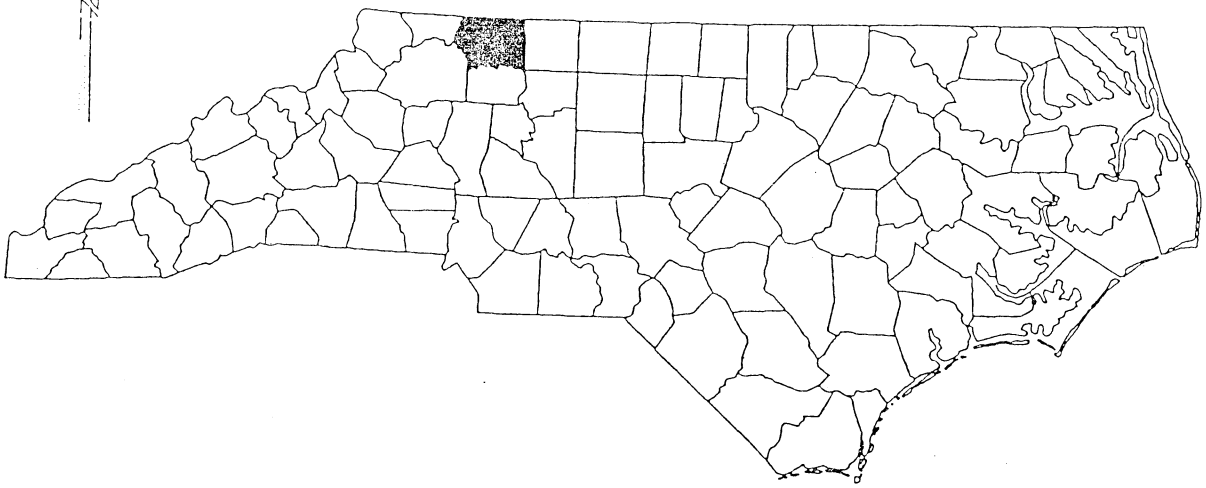
This project involves relocation and restoration of approximately 1375ft. of Town Creek. Town Creek is unavoidably being impacted by the proposed I-85 widening from north of SR 1002(Bringle Ferry Rd.) to north of SR 2110(Long Ferry Rd.) near Spencer. Upstream of the site Town Creek flows through Salisbury where it passes through several road culverts and an 800ft. bottomless culvert as it leaves the city limits. Downstream Town Creek flows through a 4-barrel culvert under I-85 before reaching High Rock Lake. The existing stream has been channelized and relocated over the years and is apparent from the trapezoidal shape of the stream and earth berm adjacent to the stream bank. The stream has very little riffle/ pool sequence and sinuosity. The side slopes are 1:1 and are relatively stable in wooded areas. The existing stream reach is entrenched and most nearly fits the geomorphic characteristics of a G4 stream type (see Morphological Measurement Table).

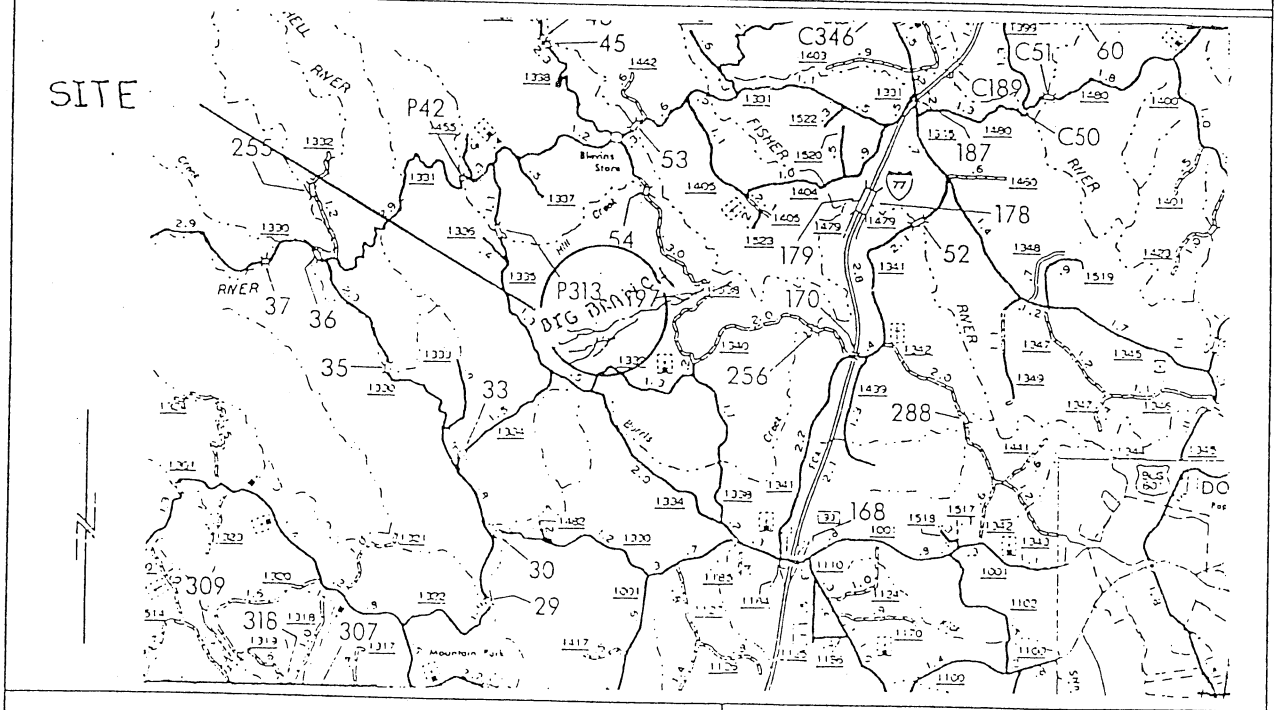
The drainage area contributing to this project site is 16.3sq.mi. Town Creek for the most part lies between I-85 and the Southern Railroad and is predominately wooded and agrarian in the upper half and heavily developed from Salisbury to Spencer. Development in the basin is estimated to be between 10 and 15% and is expected to increase. The stream extends approximately 12mi. upstream of the site.

As stated above the existing stream is entrenched. Morphological data was difficult to collect on the existing stream but was attempted and is shown on the Morphological Measurement Table. Pebble counts were conducted at two locations and the D50 size material was approximately 0.16ft. (52mm). The bankfull depth and width were determined for the existing stream so that a bankfull discharge could be developed for design purposes.

The reference stream for the proposed project is Big Branch in Surry County (see attached location map). The drainage area for Big Branch is 1.9sq.mi. Morphological ratios from the reference stream were used in conjunction with the bankfull depth from the existing stream to extrapolate pertinent data to the proposed stream. Big Branch best fits the geomorphic characteristics of an E4 stream type (see Morphological Measurement Table).

The proposed stream reach has a drainage area of 16.3sq.mi. and will be 1375ft. long. The width/depth ratio was adjusted to 14.5 so that the stream could be constructed as a C4 stream type. Bed material from the existing stream will be removed, stockpiled and placed on the riffles of the proposed stream (see plan for location.).





VICINITY MAPS

NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

VICINITY MAP OF REFERENCE STREAM IN SURRY COUNTY FOR TOWN CREEK NATURAL STREAM DESIGN.

SHEET H OF 2

9/19/02

Sediment Transport:

The following is the comparison for shear stress and stream power for the existing and proposed Town Creek.
The shear calculations come from the HYCHL program in the FHWA Integrated Drainage Design Computer System, Version 6.0 (HYDRAIN). HYCHL can analyze channels for stability through application of tractive force theory. The program compares shear exerted on the lining with the permissible shear stress of the lining. HYCHL can analyze composite linings (i.e. a bed lining and a side slope lining). Attached are the results calculated by HYCHL for the proposed stream having a natural cobble bed liner (d50=0.16ft.) and vegetative side slope lining. The results were determined for the existing bankfull elevation, the proposed bankfull elevation, and the proposed Q2 elevation. The results indicate a stable composite lining for the proposed stream.
Stream power in lb/ft-s is given by the equation $\omega = \tau V$, where: τ is the average channel shear stress in lb/ft^2 given by HYCHL.

	STREAM POWER	BED SHEAR	SIDE SHEAR	PERMISSIBLE SHEAR	
				Bed	Side
EXISTING STREAM (bkf)	3.1	1.12	0.86	1.5	2.0
PROPOSED STREAM (bkf)	2.9	1.03	0.80	1.5	2.0
PROPOSED Q2	2.6	1.43	1.39	1.5	2.0

Commands Read From File: i-2511tl.chl

```
      JOB -TOWN CREEK NATURAL STREAM DESIGN(I-2511CB)
      UNI
** UNITS PARAMETER = 0 (ENGLISH)
      CHL .0043,500
      TRP 25 2
** LEFT SIDE SLOPE    2.0 AND RIGHT SIDE SLOPE    2.0
** THE BASE WIDTH OF THE TRAPEZOID (ft)   25.00
      N   .04,.09
** LOW  FLOW N VALUE=  .040
** SIDE SLOPE N VALUE=  .090
      LRR 0.16,3
** D50 (ft)    .16
      CPS 1
      LVG C
      PSS 1.5,2
** USER SUPPLIED -  LOW PERMIS. SHEAR = (lb/ft^2)   1.50
** USER SUPPLIED - HIGH PERMIS. SHEAR = (lb/ft^2)   2.00
      END
***************END OF COMMAND FILE************
```

EXISTING BANKFULL

-TOWN CREEK NATURAL STREAM DESIGN(I-2511CB)

INPUT REVIEW

DEFAULT ANGLE OF REPOSE (degrees): 35.71

DESIGN PARAMETERS:

DESIGN DISCHARGE (ft^3/s):	500.00
CHANNEL SHAPE:	TRAPEZOIDAL
CHANNEL SLOPE (ft/ft):	.004
LINING TRANSITION HEIGHT (ft):	1.00

HYDRAULIC CALCULATIONS USING NORMAL DEPTH

	DESIGN	MAXIMUM
FLOW (cfs)	500.00	794.65
DEPTH (ft)	4.17	5.59
AREA (ft^2)	138.89	202.26
WETTED PERIMETER (ft)	43.63	50.00
HYDRAULIC RADIUS (ft)	3.18	4.05
VELOCITY (ft/s)	3.60	3.93
MANNINGS N (LOW FLOW)	.040	.040
MANNINGS N (SIDE SLOPE)	.090	.090
EFFECTIVE MANNINGS N	.059	.063
REYNOLDS NUMBER (10^5)	.11	

STABILITY ANALYSIS

CONDITION	LINING TYPE	PERMIS SHR (lb/ft^2)	CALC. SHR (lb/ft^2)	STAB. FACTOR	REMARKS
LOW FLOW LINING					
BOTTOM; STRAIGHT	RIPRAP	1.50	1.12	1.34	STABLE
SIDE SLOPE LINING					
SIDE; STRAIGHT	VEGETATIVE C	2.00	.86	2.33	STABLE

RATIO OF SIDE SHEAR TO BOTTOM SHEAR = .77

*** NORMAL END OF HYCHL ***

Commands Read From File: i-2511t.chl

```
      JOB -TOWN CREEK NATURAL STREAM DESIGN(I-2511CB)
      UNI
** UNITS PARAMETER = 0 (ENGLISH)
      CHL .0043,500
      TRP 30 2
** LEFT SIDE SLOPE    2.0 AND RIGHT SIDE SLOPE    2.0
** THE BASE WIDTH OF THE TRAPEZOID (ft)   30.00
      N   .04,.1
** LOW  FLOW N VALUE=  .040
** SIDE SLOPE N VALUE=  .100
      LRR 0.16,3
** D50 (ft)    .16
      CPS 1
      LVG B
      PSS 1.5,2
** USER SUPPLIED -  LOW PERMIS. SHEAR = (lb/ft^2)   1.50
** USER SUPPLIED - HIGH PERMIS. SHEAR = (lb/ft^2)   2.00
      END
**********END OF COMMAND FILE**********
```

PROPOSED BANKFULL

-TOWN CREEK NATURAL STREAM DESIGN(I-2511CB)

INPUT REVIEW

DEFAULT ANGLE OF REPOSE (degrees): 35.71

DESIGN PARAMETERS:

DESIGN DISCHARGE (ft^3/s):	500.00
CHANNEL SHAPE:	TRAPEZOIDAL
CHANNEL SLOPE (ft/ft):	.004
LINING TRANSITION HEIGHT (ft):	1.00

HYDRAULIC CALCULATIONS USING NORMAL DEPTH

	DESIGN	MAXIMUM
FLOW (cfs)	500.00	887.62
DEPTH (ft)	3.82	5.59
AREA (ft^2)	143.84	230.21
WETTED PERIMETER (ft)	47.09	55.00
HYDRAULIC RADIUS (ft)	3.05	4.19
VELOCITY (ft/s)	3.48	3.86
MANNINGS N (LOW FLOW)	.040	.040
MANNINGS N (SIDE SLOPE)	.100	.100
EFFECTIVE MANNINGS N	.059	.066
REYNOLDS NUMBER (10^5)	.11	

STABILITY ANALYSIS

CONDITION	LINING TYPE	PERMIS SHR (lb/ft^2)	CALC. SHR (lb/ft^2)	STAB. FACTOR	REMARKS
LOW FLOW LINING					
BOTTOM; STRAIGHT	RIPRAP	1.50	1.03	1.46	STABLE
SIDE SLOPE LINING					
SIDE; STRAIGHT	VEGETATIVE B	2.00	.80	2.51	STABLE

RATIO OF SIDE SHEAR TO BOTTOM SHEAR = .78

*** NORMAL END OF HYCHL ***

Commands Read From File: i-2511co.chl

```
      JOB -TOWN CREEK NATURAL STREAM DESIGN(I-2511CB)
      UNI
** UNITS PARAMETER = 0 (ENGLISH)
      CHL .0043 1000
      TRP  30 6.7
** LEFT SIDE SLOPE    6.7 AND RIGHT SIDE SLOPE    6.7
** THE BASE WIDTH OF THE TRAPEZOID (ft)   30.00
      N   .04 .1
** LOW  FLOW N VALUE=  .040
** SIDE SLOPE N VALUE=  .100
      LRR 0.16 3
** D50 (ft)    .16
      CPS 1.0
      LVG B
      PSS 1.5 2
** USER SUPPLIED -  LOW PERMIS. SHEAR = (lb/ft^2)   1.50
** USER SUPPLIED - HIGH PERMIS. SHEAR = (lb/ft^2)   2.00
      END
**********END OF COMMAND FILE**********
```

PROPOSED Q2

-TOWN CREEK NATURAL STREAM DESIGN(I-2511CB)

INPUT REVIEW

DEFAULT ANGLE OF REPOSE (degrees): 35.71

DESIGN PARAMETERS:

DESIGN DISCHARGE (ft^3/s):	1000.00
CHANNEL SHAPE:	TRAPEZOIDAL
CHANNEL SLOPE (ft/ft):	.004
LINING TRANSITION HEIGHT (ft):	1.00

HYDRAULIC CALCULATIONS USING NORMAL DEPTH

	DESIGN	MAXIMUM
FLOW (cfs)	1000.00	1095.98
DEPTH (ft)	5.33	5.59
AREA (ft^2)	349.91	377.10
WETTED PERIMETER (ft)	102.17	105.74
HYDRAULIC RADIUS (ft)	3.42	3.57
VELOCITY (ft/s)	2.86	2.91
MANNINGS N (LOW FLOW)	.040	.040
MANNINGS N (SIDE SLOPE)	.100	.100
EFFECTIVE MANNINGS N	.077	.078
REYNOLDS NUMBER (10^5)	.11	

STABILITY ANALYSIS

CONDITION	LINING TYPE	PERMIS SHR (lb/ft^2)	CALC. SHR (lb/ft^2)	STAB. FACTOR	REMARKS
LOW FLOW LINING					
BOTTOM; STRAIGHT	RIPRAP	1.50	1.43	1.05	STABLE
SIDE SLOPE LINING					
SIDE; STRAIGHT	VEGETATIVE B	2.00	1.39	1.44	STABLE

RATIO OF SIDE SHEAR TO BOTTOM SHEAR = .97

*** NORMAL END OF HYCHL ***

Variables	Existing Channel	Proposed Reach	USGS Station	Reference Reach
1. Stream type	G4	C4	NONE	E4
2. Drainage area (D.A.)	16.3sq.mi.	16.3sq.mi.		1.9sq.mi.
3. Bankfull width (W_{bkf})	40ft.	45ft.		21.5ft.
4. Bankfull mean depth (d_{bkf})	3.6ft.	3.1ft.		2.0ft.
5. Width/depth ratio (W_{bkf}/d_{bkf})	11	14.5		10.8
6. Bankfull cross-sectional area (A_{bkf})	138sq.ft.	139sq.ft.		42.8ft.
7. Bankfull mean velocity (V_{bkf})	3.6fps	3.5fps		
8. Bankfull discharge (Q_{bkf})	450cfs	500cfs		
9. Bankfull max depth (d_{mbkf})	4.0ft.	3.7.		2.6ft.
10. Width of floodprone area (W_{fpa})	54ft.	130ft.		70ft.
11. Entrenchment ratio (W_{fpa}/W_{bkf})	1.35	2.9		3.26
12. Meander length (L_m)	N/A	715ft.		54ft.
13. Ratio of meander length to bankfull width (L_m/W_{bkf})	N/A	16		2.58
14. Radius of curvature (R_c)	N/A	353ft.		223ft.
15. Ratio of radius of curvature to bankfull width (R_c/W_{bkf})	N/A	7.8		10.4
16. Belt width (W_{blt})	N/A	190ft.		37ft.
17. Meander width ratio (W_{blt}/W_{bkf})	N/A	4.2		1.8
18. Sinuosity (stream length/valley length) (K)	1.1	1.16		1.1
19. Valley Slope (VS)	0.0044	0.005		0.0087
20. Average slope (CS)	0.0041	0.0043		0.0087
21. Pool slope	N/A	0.0001		0.0001
22. Ratio of pool slope to average slope	N/A	0.02		0.02
23. Maximum pool depth (dp_{max})	N/A	7.2ft.		4.0ft.
24. Ratio of pool depth to average bankfull depth (dp/d_{bkf})	N/A	2.3		2
25. Pool width (Wp)	N/A	37ft.		17.8ft.
26. Ratio of pool width to bankfull width	N/A	0.82		0.83
27. Pool to pool spacing	N/A	353ft.		138.7ft.
28. Ratio of pool to pool spacing to bankfull width	N/A	7.8		6.68
29. Ratio of lowest bank height to bankfull height (or max bankfull depth) (BH_{low}/d_{mbkf})	1.8	1		1

Note: See sheet 9C of 18 for vicinity map of reference stream

NATURAL CHANNEL DESIGN DATA

MORPHOLOGICAL MEASUREMENT TABLE

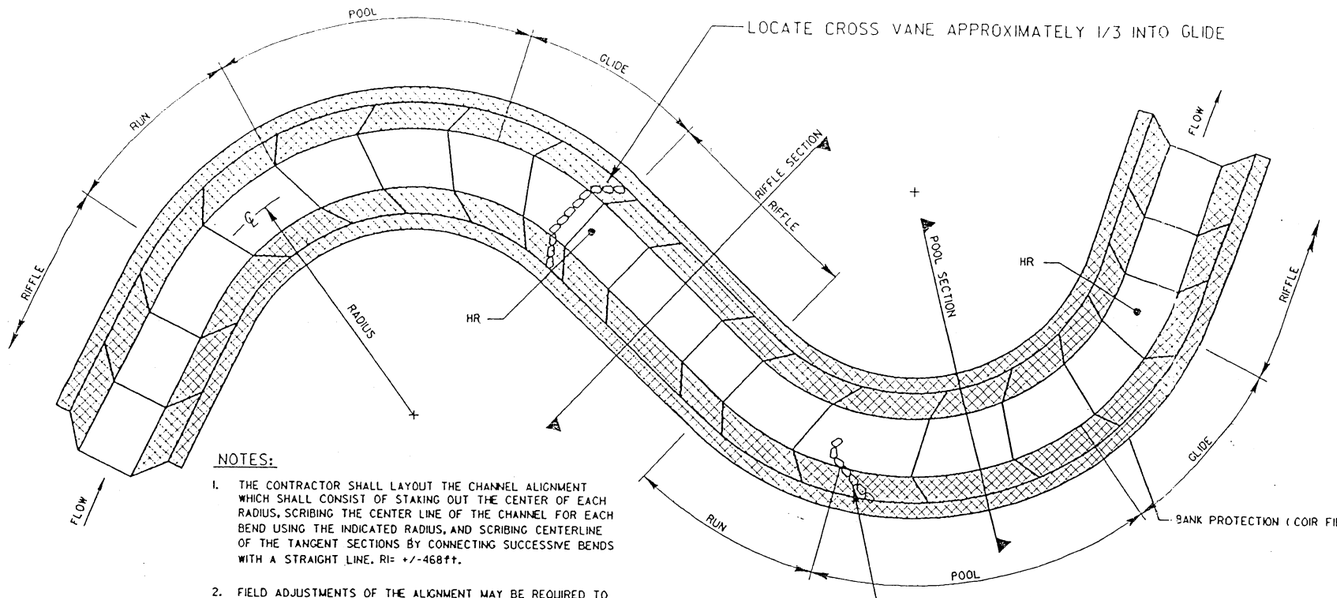
Reference Reach Name: Big Branch

SITE _5_

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT:8.1631503(I-2511CB)
I-85 FROM N OF SR1002(BRINGLE FERRY ROAD TO N OF SR2120(LONG FERRY ROAD) NEAR SPENCER
DATE: SEPTEMBER 2001
SHEET 9 OF

02/03/09

PROJECT REFERENCE NO.	SHEET NO.
I-2511CB	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

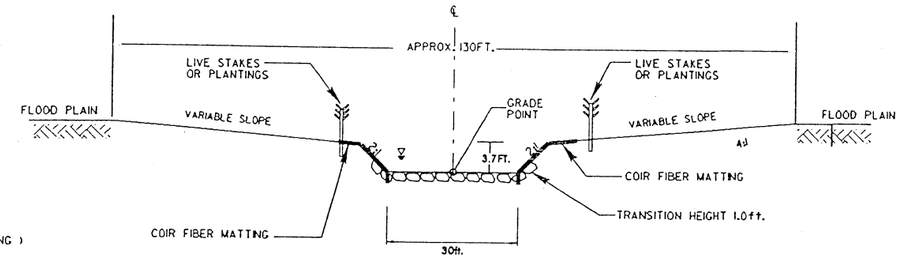


NOTES:

1. THE CONTRACTOR SHALL LAYOUT THE CHANNEL ALIGNMENT WHICH SHALL CONSIST OF STAKING OUT THE CENTER OF EACH RADIUS, SCRIBING THE CENTER LINE OF THE CHANNEL FOR EACH BEND USING THE INDICATED RADIUS, AND SCRIBING CENTERLINE OF THE TANGENT SECTIONS BY CONNECTING SUCCESSIVE BENDS WITH A STRAIGHT LINE. RI= +/-468ft.
2. FIELD ADJUSTMENTS OF THE ALIGNMENT MAY BE REQUIRED TO AVOID CERTAIN OBSTACLES. APPROVAL BY THE ENGINEER OF THE STAKE-OUT ALIGNMENT SHALL BE REQUIRED PRIOR TO INITIATION OF THE CONSTRUCTION OF THE CHANNEL.
3. LOCATE ROCK VANES ACCORDING TO PLAN SHEET.

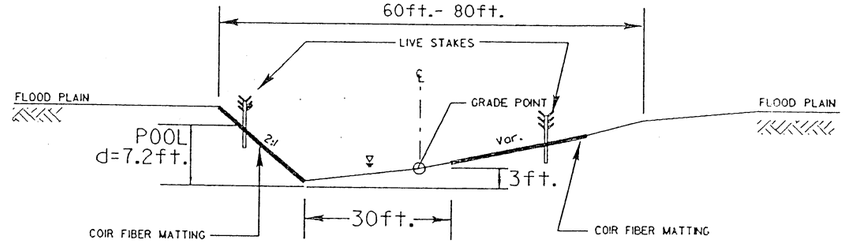
TYPICAL PLAN

NOT TO SCALE



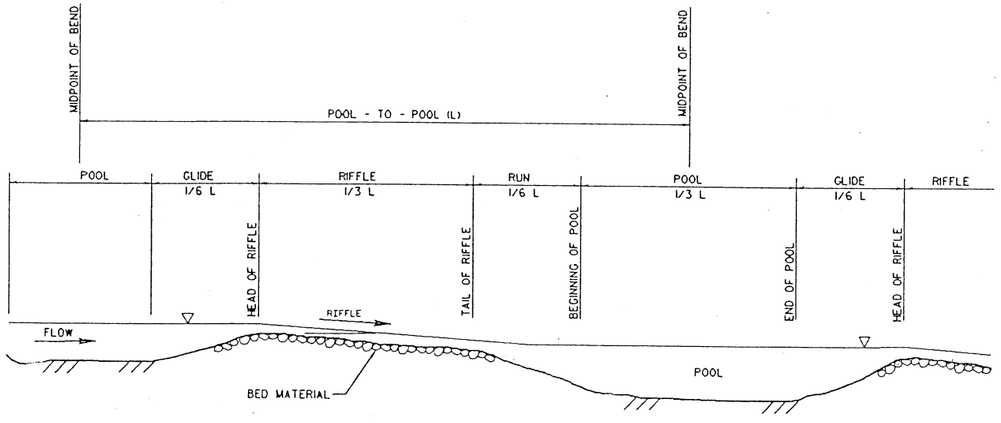
TYPICAL RIFFLE SECTION

NOT TO SCALE



TYPICAL POOL SECTION

NOT TO SCALE



NOTES:

1. THE POOL TO POOL SPACING (L) SHALL BE MEASURED AS THE DISTANCE FROM THE MIDPOINT OF THE UPSTREAM BEND TO THE MIDPOINT OF THE DOWNSTREAM BEND.
2. REFER TO MORPHOLOGICAL MEASUREMENT TABLE AND PLAN SHEET FOR DIMENSIONS. NOTE THAT POOL TO POOL SPACING VARIES.

TYPICAL PROFILE

NOT TO SCALE

MORPHOLOGICAL MEASUREMENT TABLE

VARIABLES	EXISTING CHANNEL	PROPOSED REACH 1	PROPOSED REACH 2	PROPOSED REACH 3
(1) STREAM TYPE	C4	C4	NONE	E4
(2) DRAINAGE AREA	16.3sq.mi	16.3sq.mi		1.9sq.mi
(3) BANKFULL WIDTH	40ft	45ft		21.5ft
(4) BANKFULL MEAN DEPTH	3.6ft	3.1ft		2.0ft
(5) WIDTH/DEPTH RATIO	11	14.5		10.8
(6) BANKFULL CROSS-SECTIONAL AREA	138sq.ft	139sq.ft		42.8sq.ft
(7) BANKFULL MEAN VELOCITY	3.1fps	3.5fps		
(8) BANKFULL DISCHARGE, cfs	450cfs	500cfs		
(9) BANKFULL MAX DEPTH	4.0ft	3.7ft		2.6ft
(10) WIDTH OF FLOODPRONE AREA	54ft	130ft		70ft
(11) ENTRENCHMENT RATIO	1.35	2.9		3.26
(12) MEANDER LENGTH	N/A	715ft		54ft
(13) RATIO OF MEANDER LENGTH TO BANKFULL WIDTH	N/A	16		2.58
(14) RADIUS OF CURVATURE	N/A	353ft		223ft
(15) RATIO OF RADIUS OF CURVATURE TO BANKFULL WIDTH	N/A	7.8		10.4
(16) BELT WIDTH	N/A	190ft		37ft
(17) MEANDER WIDTH RATIO	N/A	4.2		1.8
(18) SINUOSITY (STREAM LENGTH/VALLEY LENGTH)	1.1	1.16		1.1
(19) VALLEY SLOPE	0.0044	0.005		0.0087
(20) AVERAGE SLOPE	0.0041	0.0043		0.0087
(21) POOL SLOPE	N/A	0.0001		0.0001
(22) RATIO OF POOL SLOPE TO AVERAGE SLOPE	N/A	0.02		0.02
(23) MAXIMUM POOL DEPTH	N/A	7.2ft		4.0ft
(24) RATIO OF POOL DEPTH TO AVERAGE BANKFULL DEPTH	N/A	2.3		2
(25) POOL WIDTH	N/A	37ft		17.8ft
(26) RATIO OF POOL WIDTH TO BANKFULL WIDTH	N/A	0.82		0.83
(27) POOL TO POOL SPACING	N/A	353ft		138.7ft
(28) RATIO OF POOL TO POOL SPACING TO BANKFULL WIDTH	N/A	7.8		6.68
(29) RATIO OF LOWEST BANK HEIGHT TO BANKFULL HEIGHT	1.8	1.0		1.0

SITE 5

NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

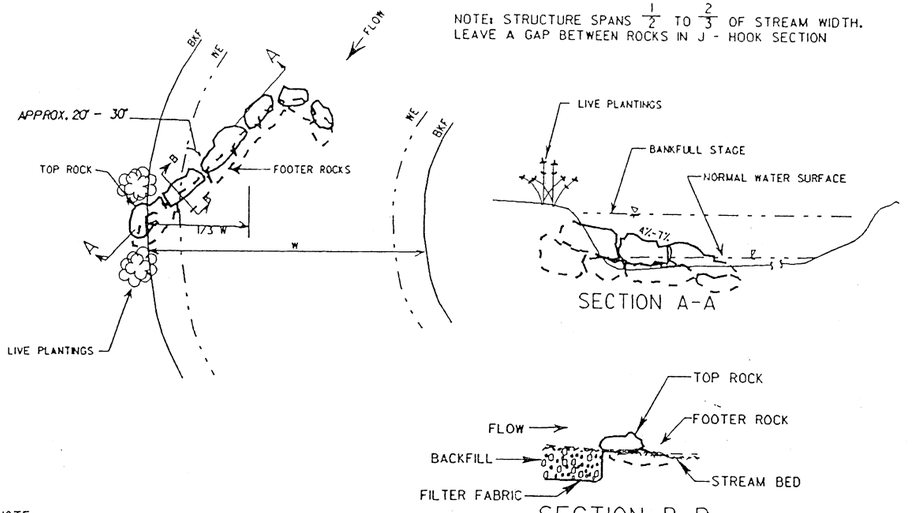
I-85 FROM N OF SR1002(BRINGLE FERRY ROAD TO N OF SR2120 (LONG FERRY ROAD) NEAR SPENCER

SHEET OF

09 / 18 / 09

J - HOOK ROCK VANE

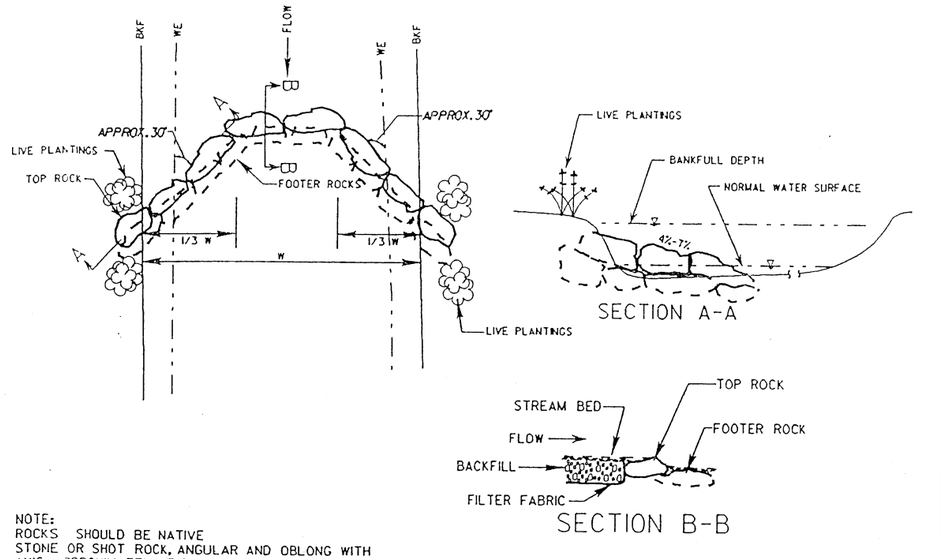
(NOT TO SCALE)



NOTE:
ROCKS SHOULD BE NATIVE
STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH
AXIS APPROXIMATELY 5.0 FT. IN LENGTH

ROCK CROSS VANE

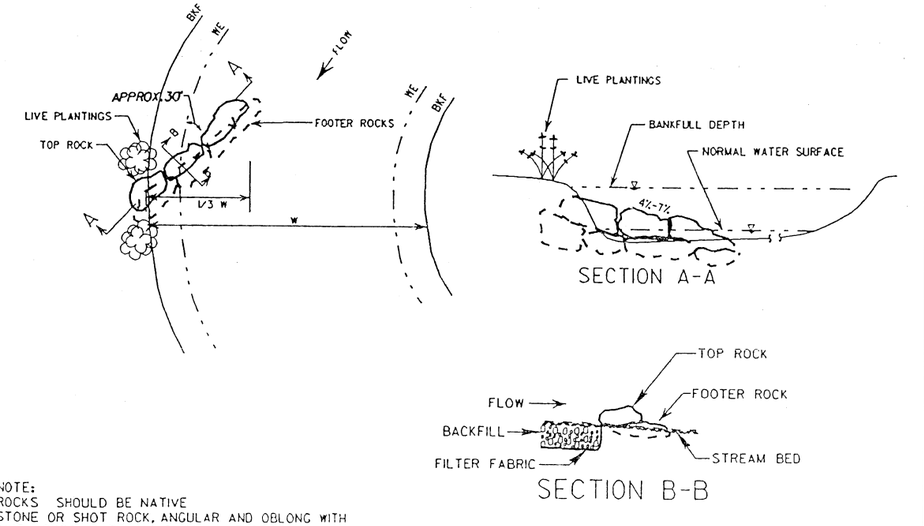
(NOT TO SCALE)



NOTE:
ROCKS SHOULD BE NATIVE
STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH
AXIS APPROXIMATELY 5.0 ft. IN LENGTH

ROCK VANE

(NOT TO SCALE)



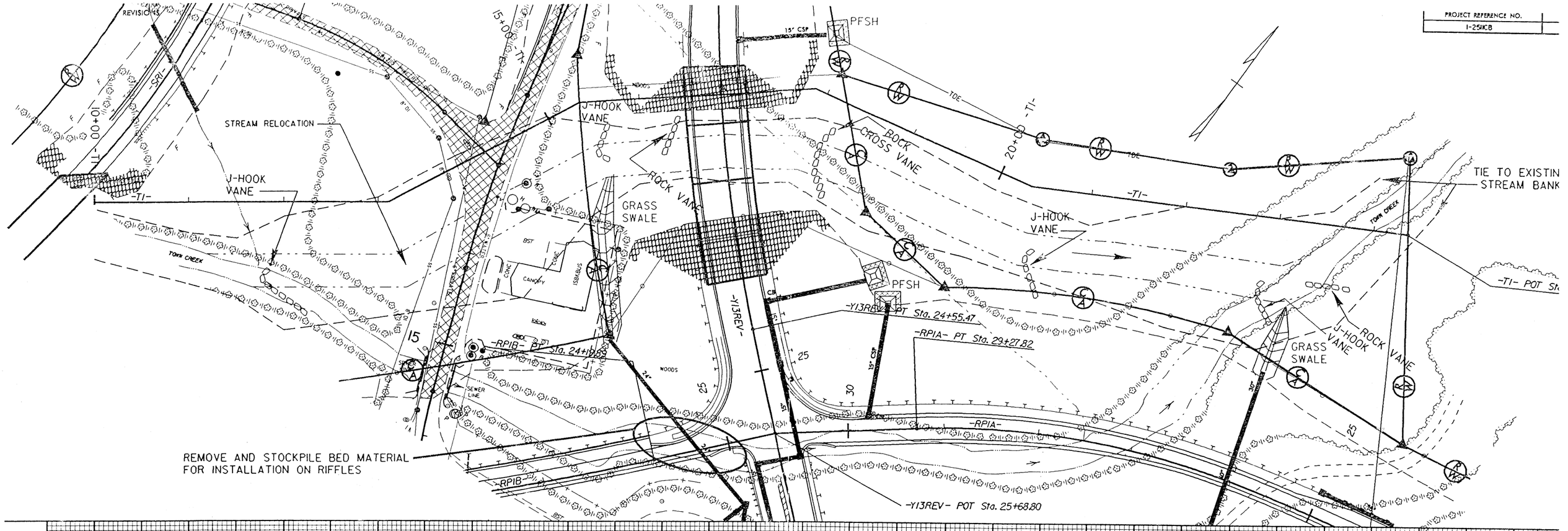
NOTE:
ROCKS SHOULD BE NATIVE
STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH
AXIS APPROXIMATELY 5.0 ft. IN LENGTH

SITE 5

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)
I-85 FROM N OF SR1002(BRINGLE FERRY
ROAD TO N OF SR2120 (LONG FERRY ROAD)
NEAR SPENCER

SHEET OF

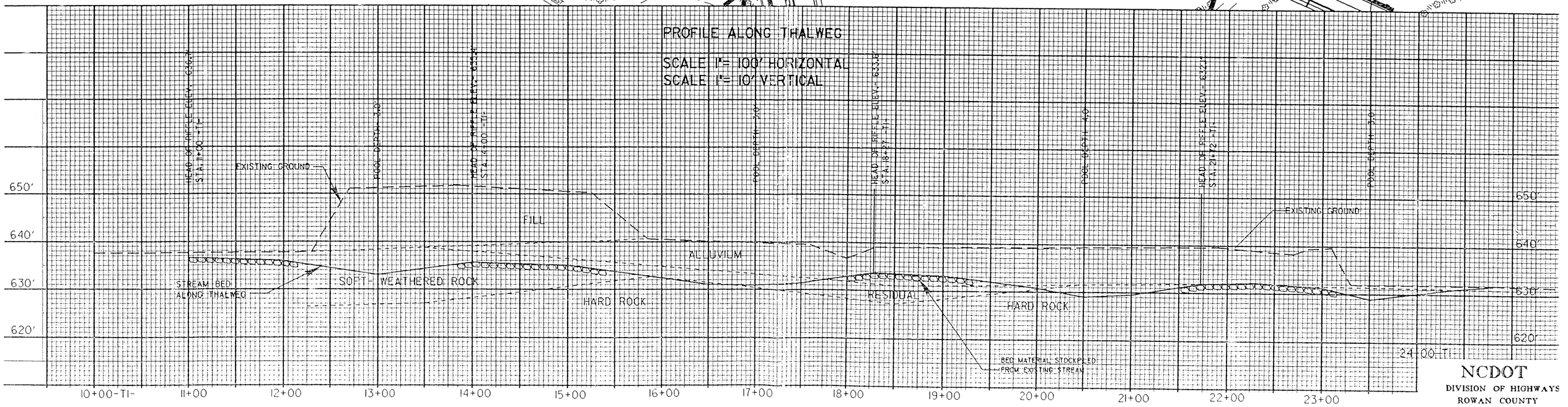
09/18/02



PROJECT REFERENCE NO.
I-2511CB

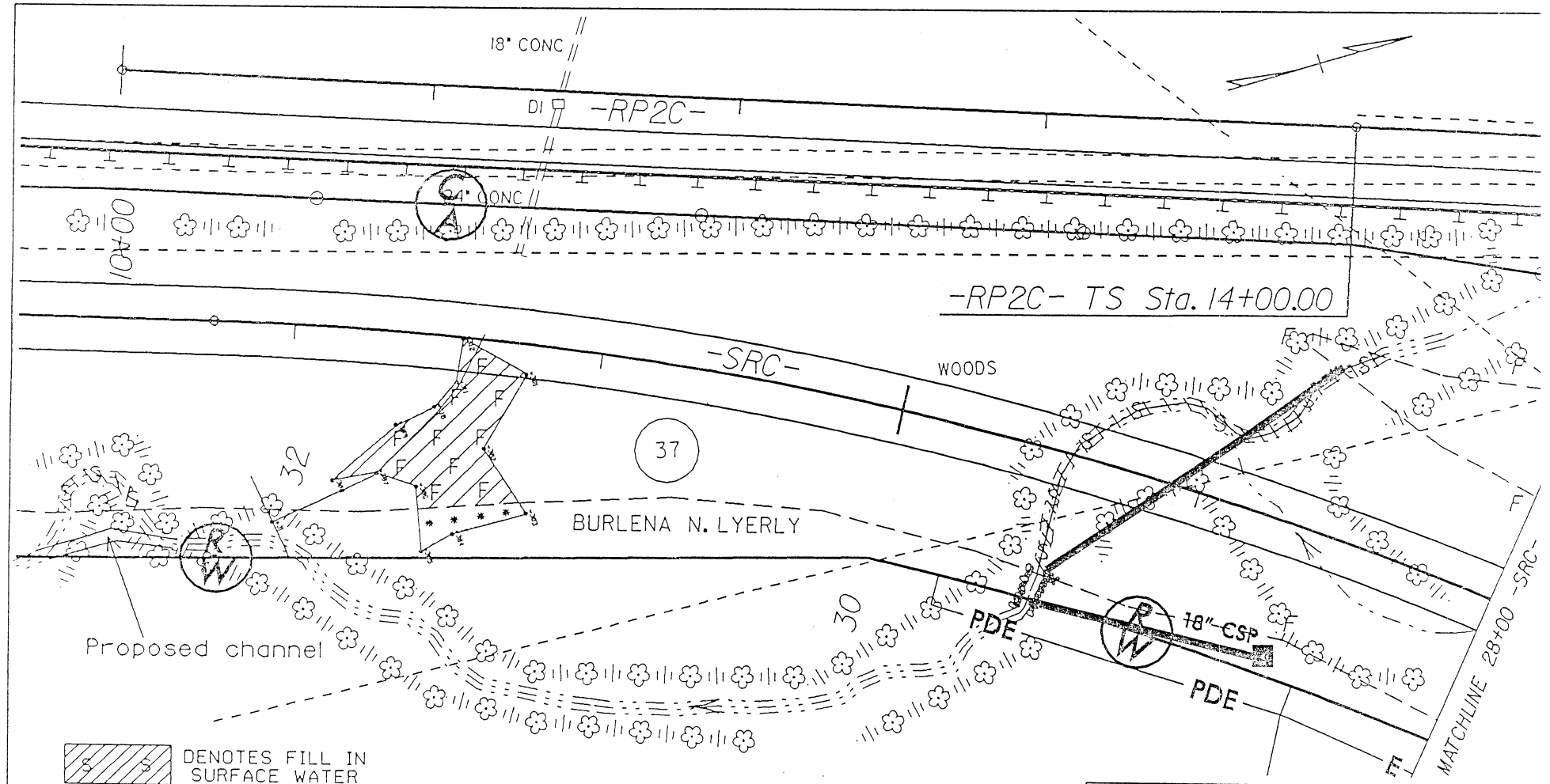
PROFILE ALONG THALWEG

SCALE 1"= 100' HORIZONTAL
SCALE 1"= 10' VERTICAL



SITE 5

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB
I-85 FROM N OF SR 1002 (BRINGL
FERRY RDJ TO N OF SR 2120 (LOI
FERRY RDJ NEAR SPENCER

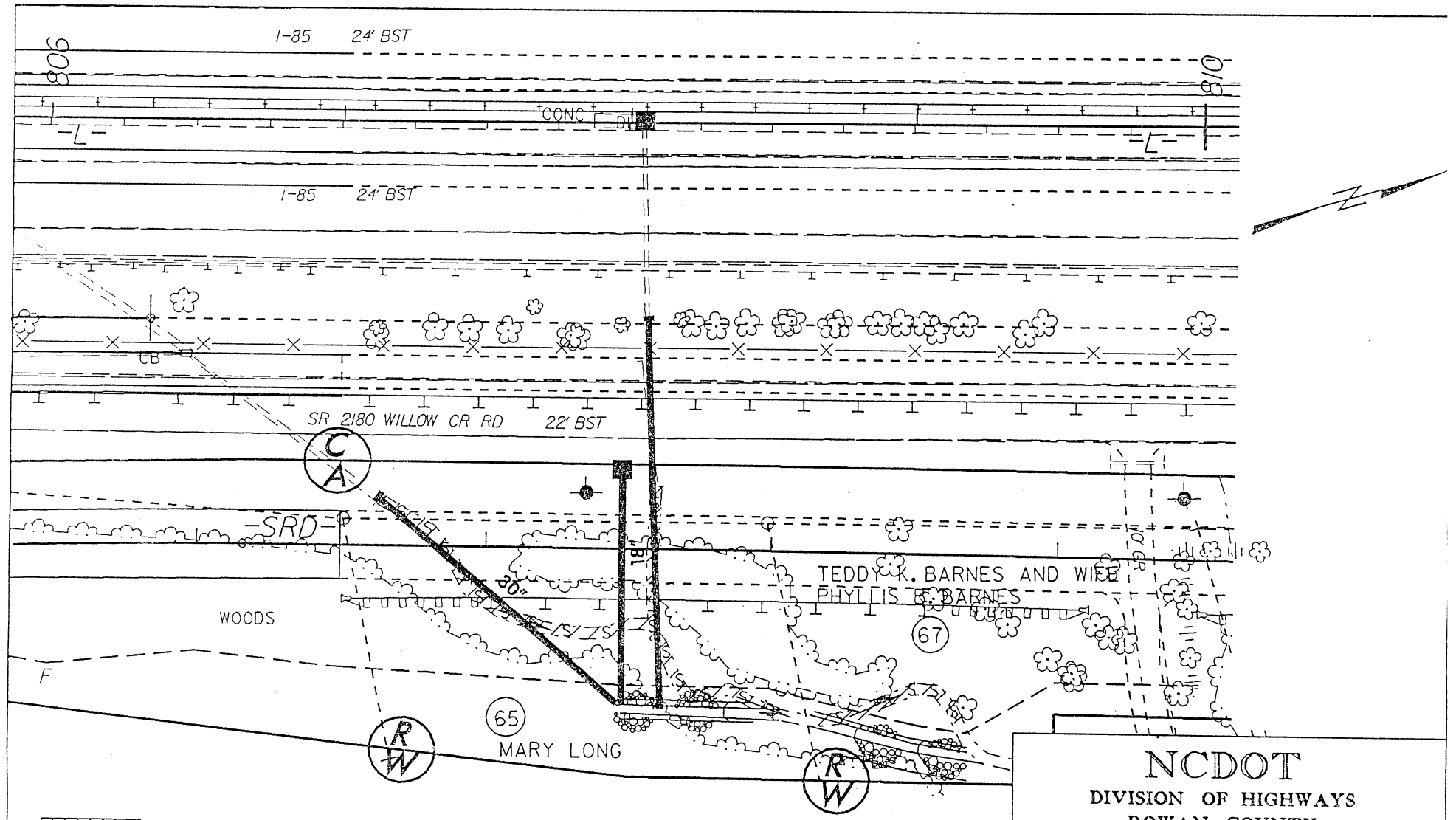


PLAN VIEW
SITE 6

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)
I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 22 OF 31

REVISED
09/12/03



PLAN VIEW

SITE 7A

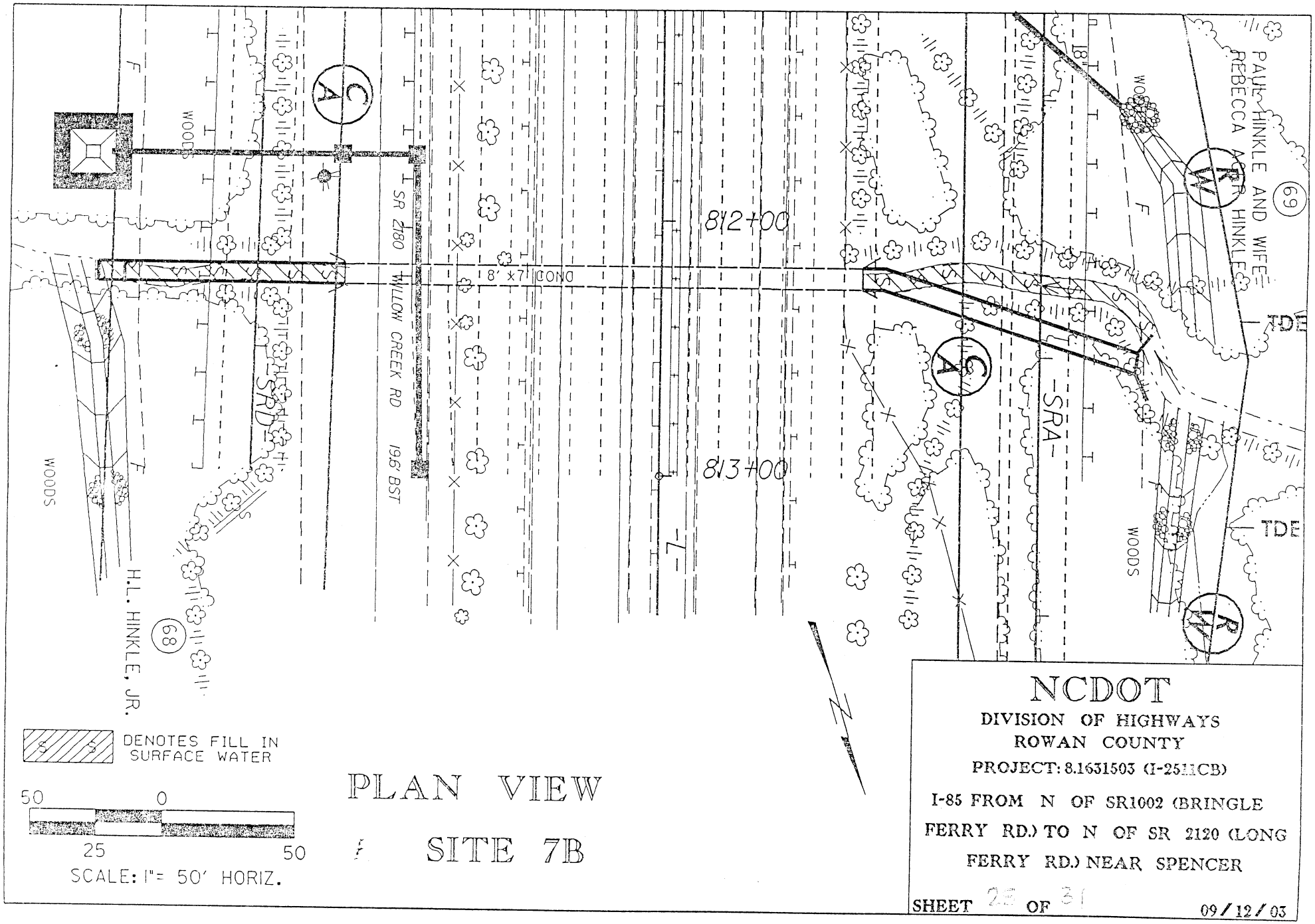
NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 24 OF 51

REVISED
09/12/03



PLAN VIEW

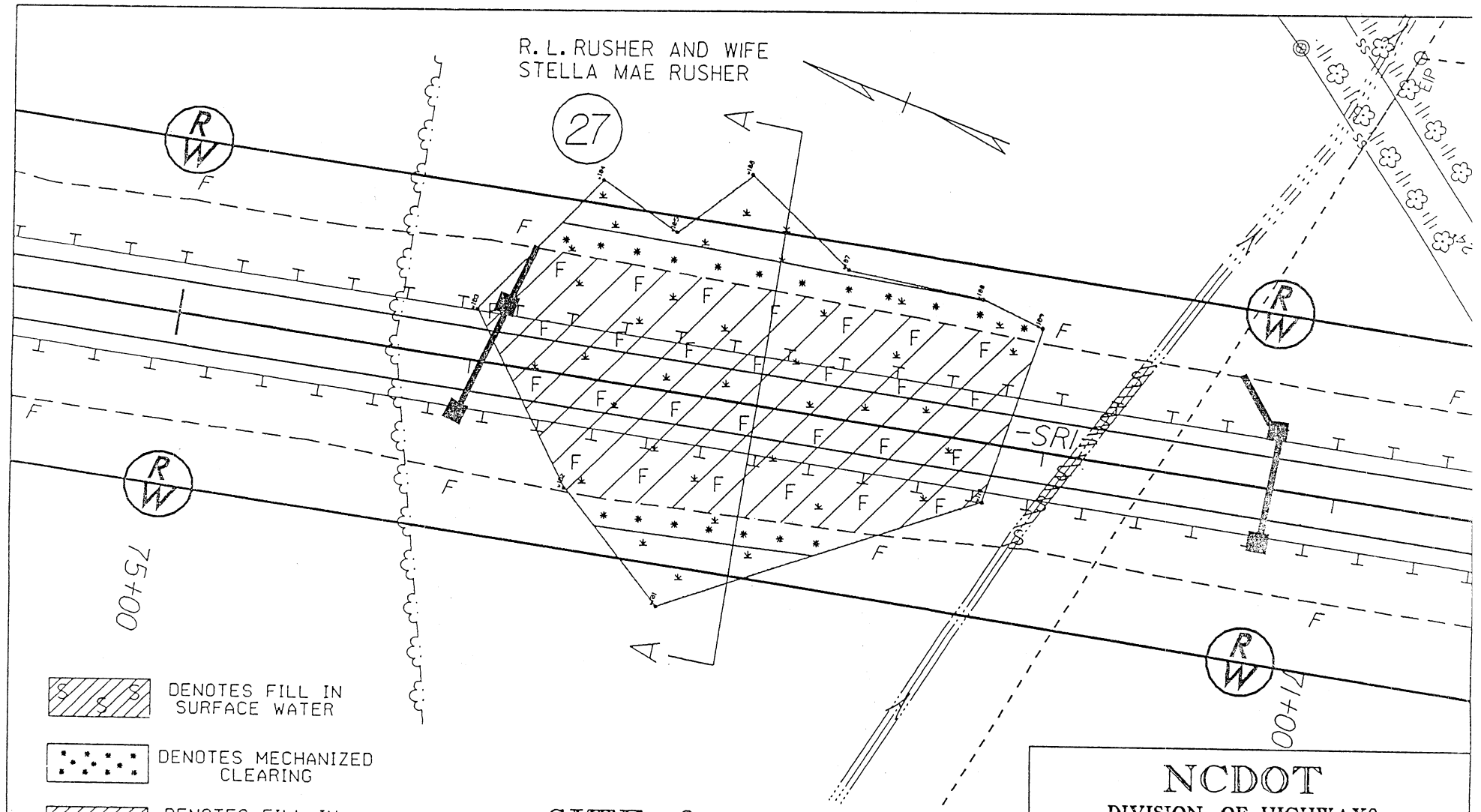
SITE 7B

NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)
I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 25 OF 31

09/12/03



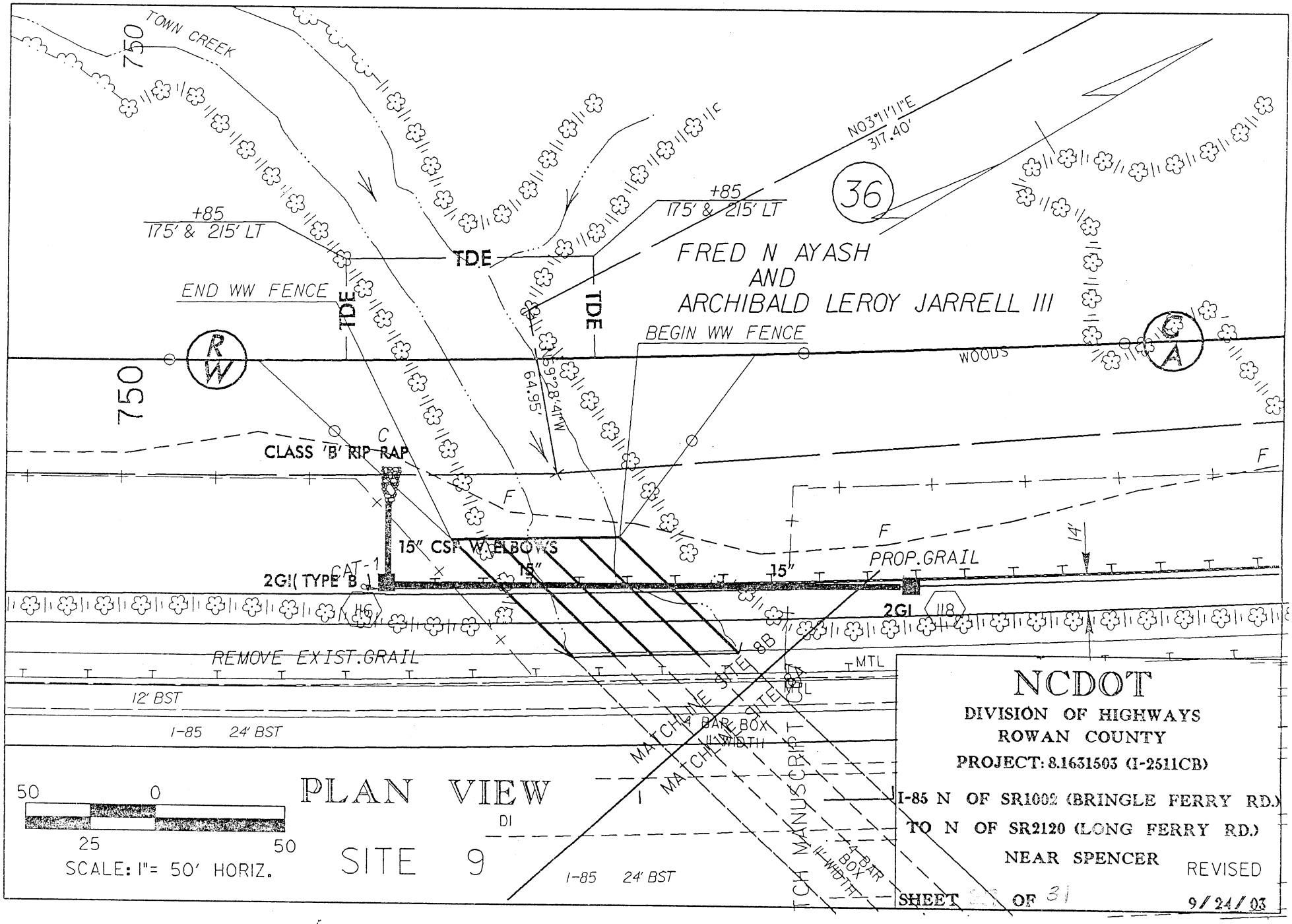
SITE 8

PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)
I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED
09/12/03

SHEET 28 OF 31



NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 N OF SR1002 (BRINGLE FERRY RD.)

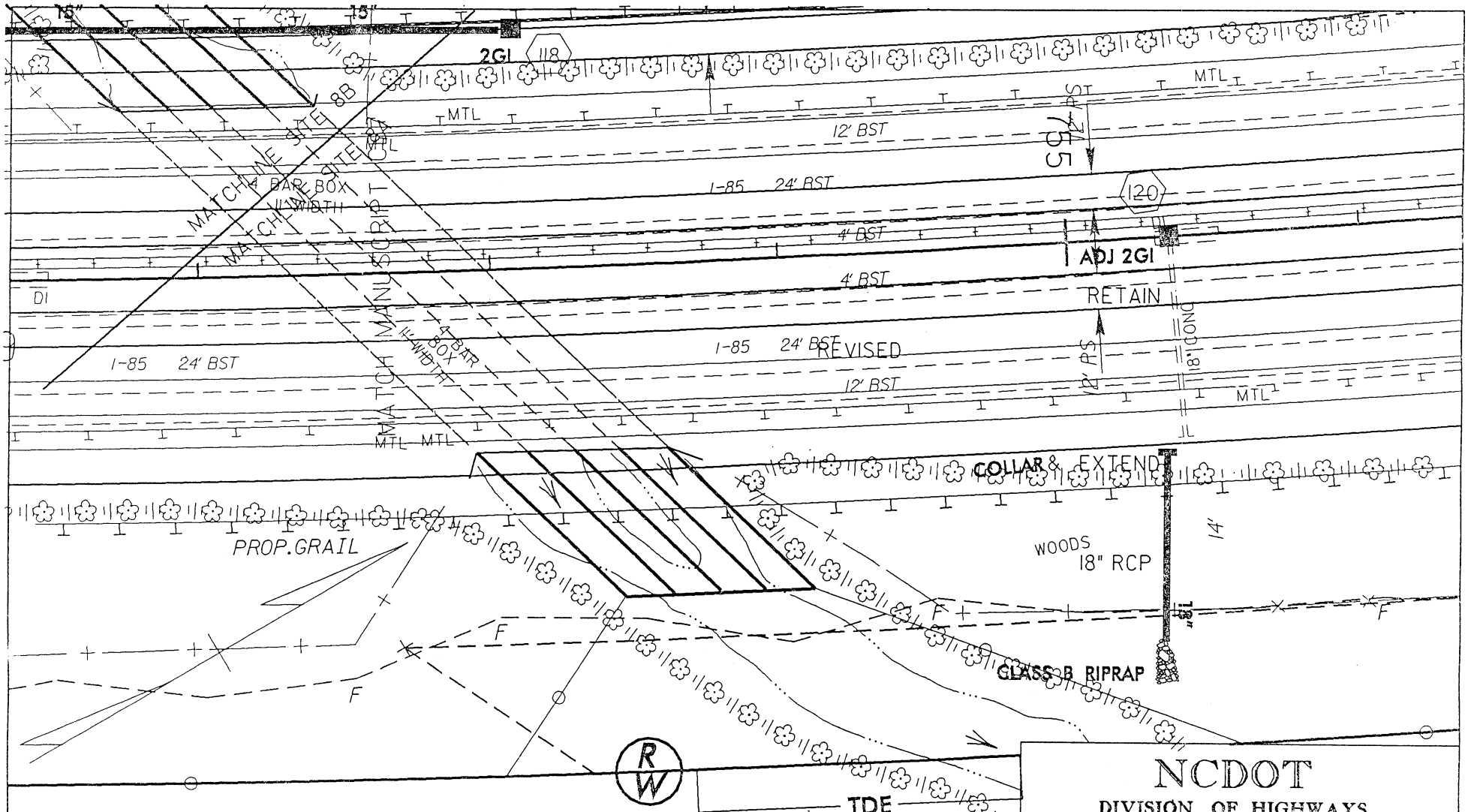
TO N OF SR2120 (LONG FERRY RD.)

NEAR SPENCER

REVISED

SHEET 31 OF 31

9/24/03



SITE 9
PLAN VIEW

NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 28 OF 31 **9/24/03**

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To) (-L-)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	647+50 -L- (LT/RT)	30" RCP	0	0	0	0	0.003	0	0	66	0
2	680+00 -L- (LT/RT)	30" RCP	0	0	0	0	0.01	0	0	180	0
3	49+27 -SR1- (LT.)	18" RCP	0	0	0	0	0.01	0	0	93	0
4	RPIC 16+00	18" RCP	0.001	0	0	0.003	0.008	0	0	114	0
5	708+00-717+00 -L-	SPANS:3@60';1@45'	0	0	0	0	0.64	0	0	864	1375
	LT.	BRIDGE	0	0	0	0	0	0	0	0	0
6	SRC 31+40 (LT.)	NONE	0.041	0	0	0.006	0.009	0	0	200	0
7A & 7B	808+00-812+00	18"/30"RCP/8x7 RCBC	0	0	0	0	0.06	0	0	481	0
8	SR1- 72+00	NONE	0.41	0	0	0.06	0	0	0	90	0
9	752+65.85-L-	4@11' x 13' RCBC	0	0	0	0	0.1	0	0	130	0
TOTALS:			0.452	0	0	0.069	0.84	0	0	2218	1375

SITE 3: 93ft. Does not require mitigation

SITE 6: 163ft. Does not require mitigation
37ft. Does require mitigation

SITE 7A: 230ft. Does not require mitigation

22ft. Does require mitigation

Site8: 90ft. Does not require mitigation

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

REVISED

SHEET OF (9/12/03)

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	JAMES E. SMITH	453 STEEPLECHASE TRAIL SALISBURY N.C. 28144
2	JAMES E. SMITH	453 STEEPLECHASE TRAIL SALISBURY N.C. 28144
9	WALLACE PROPERTIES	301 N. MAIN ST. SALISBURY N.C. 28145-0102
10	VOYLS W. & SHARON TYSINGER	740 CHOATE RD. SALISBURY N.C. 28146
12	NEW HOPE BAPTIST CHURCH	830 CHOATE RD. SALISBURY N.C. 28146
16	OLIN E. STAMPER & WIFE	308 HENDERSON ST. SALISBURY N.C. 28144
27	ROBERT LEE & STELLA RUSHER	721 ANDREWS ST. SALISBURY N.C. 28144-8714
28	CECIL B. DAY COMPANIES, INC.	7000 CENTRAL PARKWAY NE STE. 850 ATLANTA GA. 30328
29	DEBORAH T. AREY	2685 PROVIDENCE CHURCH RD. SALISBURY N.C. 28146

NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

7/02/02

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
37	BURLENA N. LYERLY	1031 OLD MOCKSVILLE RD. SALISBURY N.C. 28144
65	MARY LONG	OVERHILL DR. SALISBURY N.C. 28144
67	TEDDY BARNES & WIFE	405 WILLOW CREEK DR. SALISBURY, N.C. 28146- 2469
18A	CLARICE H. & KAREN L. ROE	2 LAUREL BROOK CT. GREENSBORO, N.C. 27407- 5037

NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

07 / 02 / 02

HYDRAULIC DESIGN MEETING FOR I-2511CB, ROWAN COUNTY, ON 6-20-02

Team Members: Randy Henegar, NCDOT Hydraulics
Elizabeth Lusk, NCDOT PDEA(PRESENT)
Cynthia Van Der Wiele, NCDWQ(PRESENT)
Eric Alsmeyer, COE (PRESENT)
David Cox, NCWRC (ABSENT)
Marella Buncick, USFWS (ABSENT)

Participants: David Chang,NCDOT Hydraulics
Greg Crosby, NCDOT Hydraulics
Diane Hampton, NCDOT Div. 9
Roger Thomas, NCDOT Roadway
Sam St. Clair, NCDOT Roadway

Randy Henegar opened the meeting discussing comments from David Cox (NCWRC) who could not attend the meeting, but had earlier posed questions and marked some half size plans for Randy Henegar to take to the meeting. David Cox was mainly concerned with the burying of cross-pipes and culverts. Randy Henegar stated that all pipes and culverts on jurisdictional streams would be buried a certain depth according to the pipe size. There was a general discussion of rip-rap at the outlet of pipes in live streams. Rip-rap should only be shown on the banks and not in the bed of live streams and that a new detail would be needed to show specifics at each site. Randy Henegar then went through the plans and discussed each of the wetland/surface water sites with the team members.

Site UT1: Symbol denoting rip-rap at the outlet of cross-pipes needs to be revised to show no rip-rap in bed of stream.

Action Taken: This will be done at outlets to all pipes in jurisdictional streams.

Site UT2: Elizabeth Lusk stated it was jurisdictional and mitigatable.

Site UT3: No comments.

Site UT4: Talked about small stream relocation at Sta.772 + 00-L- Rt. Because of the limited length of the relocation no action needs to be taken.

Wetland2: Elizabeth Lusk pointed out where wetlands was located. Sta.16 + 00-rp1c-

Town Creek relocation: Question was asked why stream was relocated and the reason was stated by Roger Thomas that because of the proposed location of the ramp, -Y- line, and SR1915 (Old Union Church Road). Randy Henegar discussed the reference stream he had surveyed. Randy Henegar said the reference stream was smaller than Town Creek, but a lot of the characteristics were similar. Elizabeth Lusk mentioned the possibility of

another reference site in Rowan County she found. Randy Henegar said he would investigate this reference stream to see if it would better represent Town Creek. Eric Alsmeyer mentioned the possibility of alternatives, but no suggestions other than the channel relocation were put forth.

Site UT5: It was discussed at Sta.71 + 60-SR1- whether a cross-pipe should be at this site, Randy Henegar said he would look into the possibility of designing a cross-pipe at this site.

Wetland 1: Is located at Sta.72 + 00-SR1- and the question of an alternate alignment of *SR1* to minimize the impact to the wetlands. Roger Thomas of Roadway Design said he would look at the idea of moving –SR1- if it is feasible.

Wetland3: The only thing said was in regard to the location of the wetland at Sta.31 + 50-SRC- .

Site UT6:Elizabeth Lusk and Eric Alsmeyer discussed the fact that upstream is classified as intermittent and downstream is classified as perennial.

Site UT7: No comments.

Site UT8: No comments.

Site UT11: Elizabeth Lusk said this site is classified as intermittent located at Sta.733 + 00-L- Right and Left.

HYDRAULICS DESIGN & PERMIT DRAWINGS REVIEW MEETING, ROWAN COUNTY I-2511CB
9-19-02

Team Members: Randy Henegar, NCDOT Hydraulics
Elizabeth Lusk, NCDOT PDEA(PRESENT)
Cynthia Van Der Wiele, NCDWQ(PRESENT)
Eric Alsmeyer, USACE(PRESENT)
Marla Chambers, NCWRC, (PRESENT)
Marella Buncick, USFWS, (ABSENT)
Chris Militscher,EPA, (ABSENT)

Particpants: David Chang, NCDOT Hydraulics
Roger Thomas, NCDOT Roadway
Diane Hampton, NCDOT Div. 9
Jerry Parker, NCDOT PDEA
Greg Crosby, NCDOT Hydraulics

Subject: 4C Meeting

Randy Henegar opened the meeting going over the general outline of the permit, and pointed out some of the points made from the meeting on June 20, 2002. Randy Henegar stated that the Natural Stream Design still had some work left to be done. Elizabeth Lusk and Randy Henegar then proceeded to go over each permit site.

Site 1: Marla Chambers brought up the question about diversion channels being used when installing small pipes and the impact that these diversion channels may cause. Randy Henegar and David Chang said that it depended on the site and that in some cases the pipes could be laid in the wet, but in some cases depending on the location of the stream a diversion channel may be necessary to keep the channel on a good alignment.

Site 2: Elizabeth Lusk said it was intermittent with mitigation ,and along with Eric Alsmeyer said the sight should be rechecked by PDEA and Hydraulics for additional impacts.Make adjustment in permit drawings if needed.

Site 3:Elizabeth Lusk pointed out the non-jurisdictional and the jurisdictional part of the stream. Make adjustments in permit drawings if needed.

Site 4: No mitigation at this site.

Site 5: Randy Henegar handed out additional information on the channel change and natural stream design.Randy Henegar discussed the Morphological Table and the characteristics of the existing creek and how they compared to the reference stream(Big Branch, Surry County) and the differences between them. A question was asked about

why stream relocation was put at its current location and about the placement of ramps, service roads and bridges because of the impact these locations will have on Town Creek. Roger Thomas explained why ramps and service roads have been revised due to right of way constraints and design standards. The stream relocation was put in the center of the floodplain and meets the criteria for natural stream design. Randy Henegar talked about the borings that were taken on natural ground along the stream relocation , and how close bedrock would be to the proposed bed of stream relocation.
Also discussed was the stockpiling of bed material from the existing creek so it may be used in the bed of the proposed stream relocation.

Site 6: Elizabeth Lusk says there will be fill in wetlands. Perennial stream and that there should be an impact. Site should be looked at again by PDEA and Hydraulics.

Site 7: No comments

Note: Address Design Build (July contract) and submitting Floodway Modification.
Some sites where the wetlands extend just outside the fill slopes will be considered a total impacted area.

Site 8: Question of why service road was located where it was. Roger Thomas said he would look into it; and report back to team members.

D. R. Henderson, PE
Hydraulics

RECEIVED
DEC 19 2002
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

2 (H

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEMO TO: Mr. David R. Henderson, PE
State Hydraulics Engineer

ATTN: Mr. Randy Henegar, PE

FROM: Roger Thomas, PE
Project Engineer

DATE: December 18, 2002

SUBJECT: Project 8.1631503(I-2511CB) Rowan County
F. A. Project IR-IM-85-3(132)74
Reconstruction of I-85 from North of SR 1002 (Bringle Ferry Rd) to North of SR 2120 (Long Ferry Rd)

Merger 4C Meeting - Wetland Site 8

This letter is in response to the Merger 4C meeting held September 19, 2002. During the meeting, Mr. Eric Alsmeyer, with the US Army Corps of Engineers, requested additional information documenting why adjustments could not be made to the preliminary design to avoid/minimize impacts to wetland site 8.

Wetland site 8 is impacted by a relocated service road in the southwest quadrant of the reconstructed Old Union Church Road interchange. The purpose of the service road is to provide access to the properties along I-85 and Old Union Church Road. Without the service road, these properties would not have access because the project requires full control of access along I-85 and Old Union Church Road. The control of access extends along Old Union Church Road approximately 900 feet from the proposed ramp terminal. This control of access will prohibit any future driveway connections that could effect the operation of the at grade intersection with the proposed interchange ramps and Old Union Church Road.

The service road ties into Old Union Church Road approximately 600 feet west beyond the proposed control of access. It was relocated beyond the control of access help maintain traffic during construction and avoid conflicting with a temporary detour. The temporary detour is required while earth embankment is placed to raise the grade along Old Union Church Road.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN UNIT
1582 MAIL SERVICE CENTER
RALEIGH NC 27699-1582

TELEPHONE: 919-250-4016
FAX: 919-250-4036

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

LOCATION:
CENTURY CENTER COMPLEX
BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC

The construction limits required for the service road is approximately 100 feet. The approximate width of the wetland site 8 is 150 feet. To shift the horizontal alignment to avoid the wetland site would require the horizontal alignment to shift approximately 130 feet to the north or a shift of 120 feet to the south.

Because of the relatively short distance from wetland site 8 to the proposed intersection between the service road and Old Union Church Road, shifting the horizontal alignment northward would be unacceptable from a design standpoint. The alignment would not meet our current design guidelines for the design speed of the service road. Shifting the horizontal alignment southward would require the relocation of a cell tower. Based upon coordination with our Right of Way Branch, the approximate costs to relocate the cell tower is $250,000.

In summary, I regret that wetland site 8 is impacted by the service road; however, due to the existing constraints as noted above, it appears that impacts to the wetland site 8 are unavoidable.

If you have any questions, please contact me at (919) 250-4016.

RDT

cc: Jay A. Bennett, PE
Wayne Patterson - Div. 9 Right of Way

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

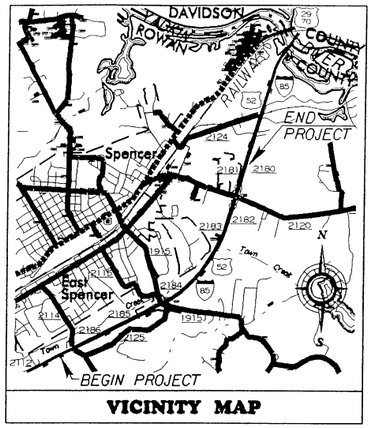
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROWAN COUNTY

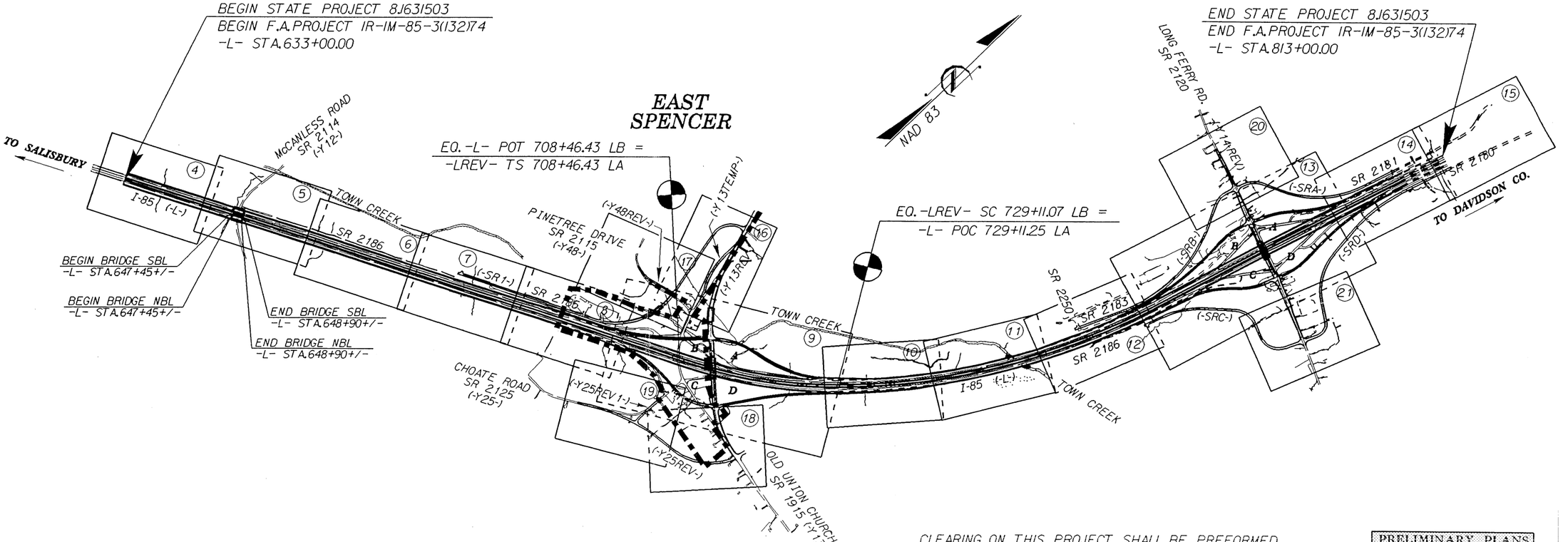
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2511CB	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
8.1631503	IR-IM-85-3(132)74	PE	

LOCATION: RECONSTRUCTION OF I-85 FROM NORTH OF SR 1002 (BRINGLE FERRY ROAD) TO NORTH OF SR 2120 (LONG FERRY ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING, GUARDRAIL, STRUCTURES, CULVERT EXTENSIONS & INTELLIGENT TRANSPORTATION SYSTEMS



VICINITY MAP



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT: 8.1631503 I-2511CB

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 1995	=	47600
ADT 2020	=	85100
DHV	=	9 %
D	=	55 %
T	=	27 % *
V	=	70 MPH

* TTST = 21% DUAL = 6%

PROJECT LENGTH

LENGTH ROADWAY F.A.PROJECT IR-IM-85-3(132)74 = 3.382 MI.
LENGTH ROADWAY F.A.PROJECT IR-IM-85-3(132)74 = 0.027 MI.
TOTAL LENGTH STATE PROJECT 8J631503 = 3.409 MI.

0.36 MILES OF THIS PROJECT ARE WITHIN THE MUNICIPAL BOUNDRIES OF EAST SPENCER

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 BIRCHRIDGE DRIVE
RALEIGH, NORTH CAROLINA 27610

1995 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOT AUTHORIZED

LETTING DATE: AUGUST 19, 2003

ROGER D. THOMAS, PE
PROJECT ENGINEER

SAMUEL L. ST. CLAIR
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

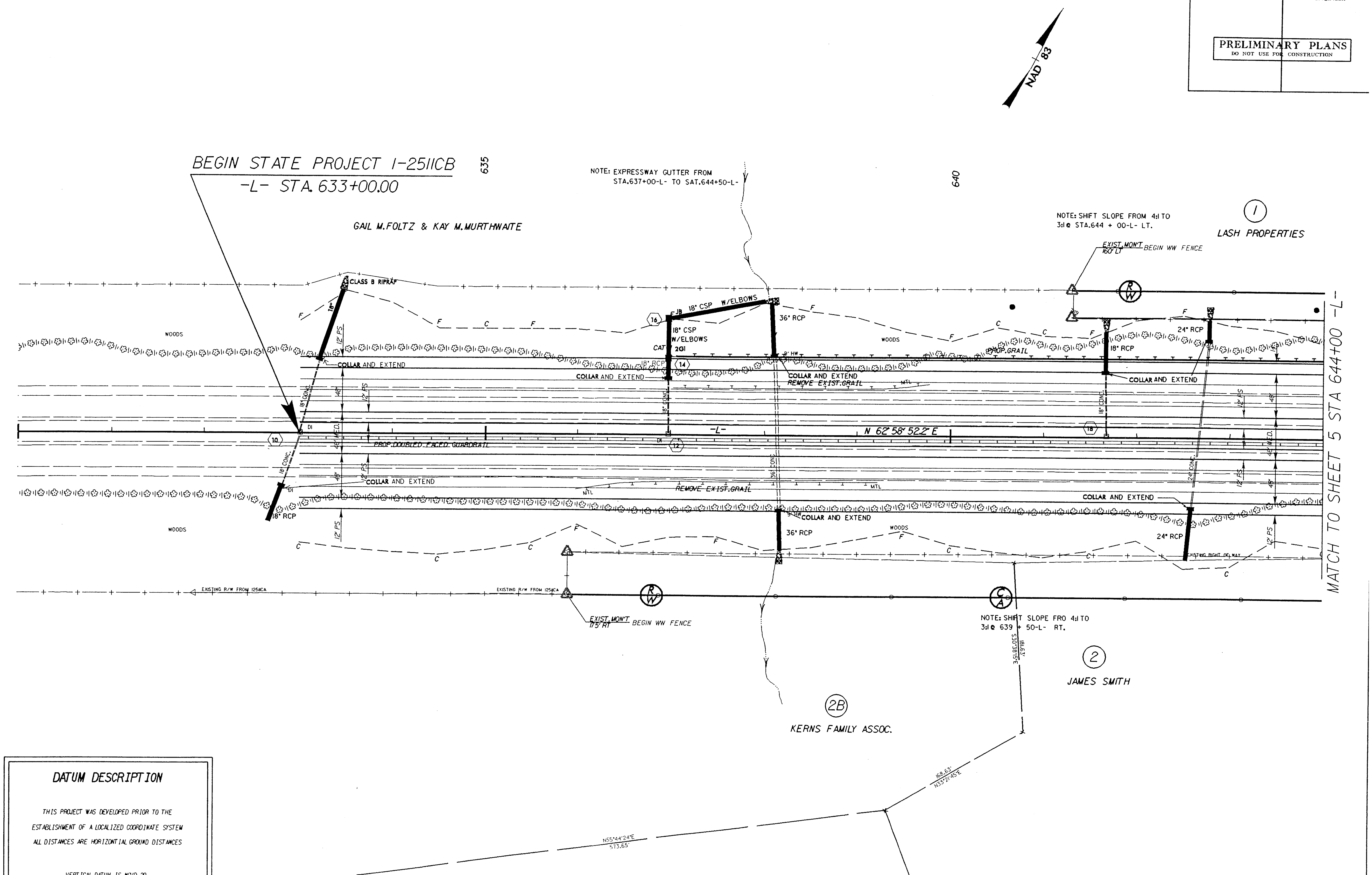
APPROVED

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	4
R/W SHEET NO.	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

01-30-03 R/W REVISION CFW:
1. UPDATED PROPERTY LINE INFO. CREATED PARCEL 2B.
2. REV. EX. R/W PARCEL 2B.



NAD 83
BEGIN STATE PROJECT I-2511CB
-L- STA. 633+00.00
635
640
GAIL M.FOLTZ & KAY M.MURTHWAITE
NOTE: EXPRESSWAY GUTTER FROM STA.637+00-L- TO SAT.644+50-L-
NOTE: SHIFT SLOPE FROM 4:1 TO 3:1 @ STA.644 + 00-L- LT.
1
LASH PROPERTIES
EXIST. MON'T 160' LT BEGIN WW FENCE
CLASS B RIPRAP
WOODS
18" CSP W/ELBOWS
36" RCP
18" CSP W/ELBOWS
CAT 2GI
COLLAR AND EXTEND
REMOVE EXIST. GRAIL
PROP. GRAIL
18" RCP
24" RCP
18" CONC.
36" CONC.
24" CONC.
-L-
N 62° 58' 52.2" E
PROP. DOUBLED FACED GUARDRAIL
12' PS
48'
46' MED.
MATCH TO SHEET 5 STA 644+00 -L-
EXISTING R/W FROM 1254CA
EXISTING RIGHT OF WAY
EXIST. MON'T 175' RT BEGIN WW FENCE
NOTE: SHIFT SLOPE FRO 4:1 TO 3:1 @ 639 + 50-L- RT.
2
JAMES SMITH
2B
KERNS FAMILY ASSOC.
S10°38'19"E 181.63'
158.63' N33°21'45"E
N55°44'24"E 573.65'

DATUM DESCRIPTION

THIS PROJECT WAS DEVELOPED PRIOR TO THE ESTABLISHMENT OF A LOCALIZED COORDINATE SYSTEM
ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES

VERTICAL DATUM IS NGVD 29

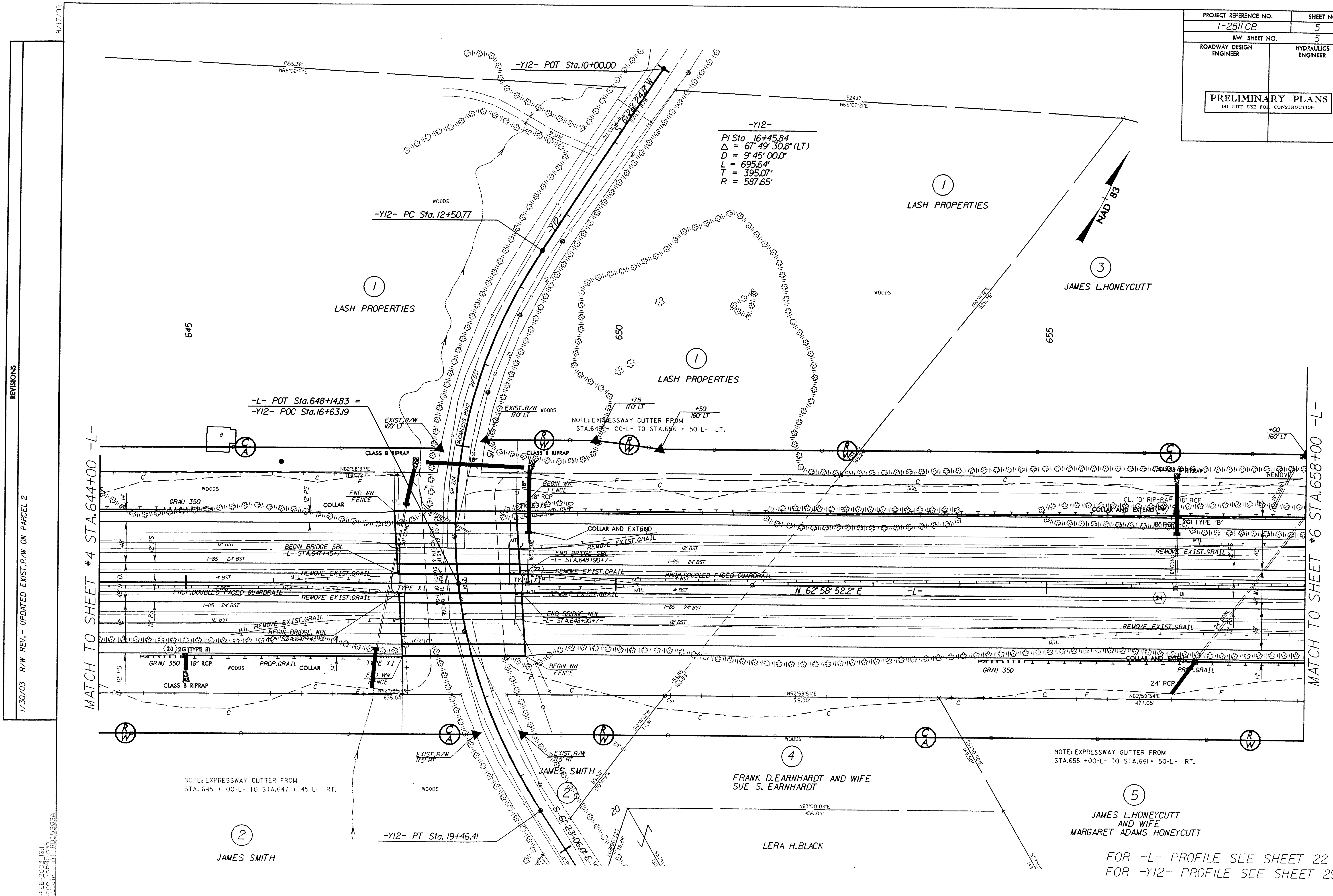
FOR -L- PROFILE SEE SHEET 22

8/17/99

20-FEB-2003 16:11

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	5
R/W SHEET NO.	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

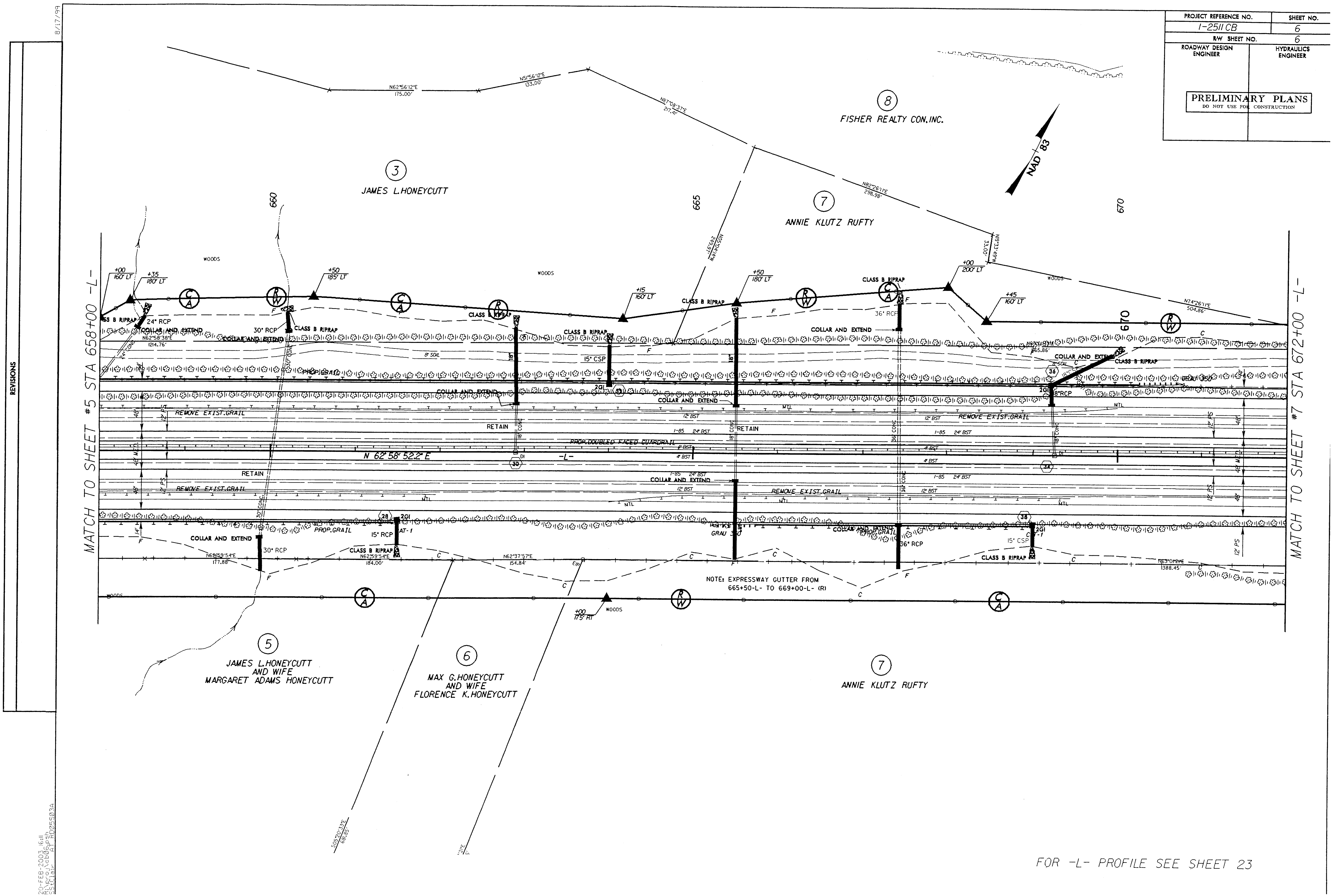
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS
1/30/03 R/W REV.- UPDATED EXIST.R/W ON PARCEL 2
8/17/99
MATCH TO SHEET #4 STA.644+00 -L-
MATCH TO SHEET #6 STA.658+00 -L-
-Y12- POT Sta.10+00.00
-Y12- PC Sta. 12+50.77
-Y12- PT Sta. 19+46.41
-L- POT Sta.648+14.83 =
-Y12- POC Sta.16+63.19
-Y12-
PI Sta 16+45.84
Δ = 67° 49' 30.8" (LT)
D = 9° 45' 00.0"
L = 695.64'
T = 395.07'
R = 587.65'
NAD 83
LASH PROPERTIES
JAMES L.HONEYCUTT
JAMES SMITH
FRANK D.EARNHARDT AND WIFE
SUE S. EARNHARDT
JAMES L.HONEYCUTT
AND WIFE
MARGARET ADAMS HONEYCUTT
LERA H.BLACK
NOTE: EXPRESSWAY GUTTER FROM
STA.645 + 00-L- TO STA.647 + 45-L- RT.
NOTE: EXPRESSWAY GUTTER FROM
STA.649 + 00-L- TO STA.656 + 50-L- LT.
NOTE: EXPRESSWAY GUTTER FROM
STA.655 +00-L- TO STA.661+ 50-L- RT.
N 62° 58' 52.2" E
BEGIN BRIDGE SBL
-L- STA.647+45+/-
END BRIDGE SBL
-L- STA.648+90+/-
BEGIN BRIDGE NBL
END BRIDGE NBL
-L- STA.648+90+/-
REMOVE EXIST.GRAIL
PROP.DOUBLED FACED GUARDRAIL
COLLAR AND EXTEND
CLASS B RIPRAP
GRAU 350
WOODS
EXIST.R/W
MCCANLESS ROAD
SR 2114
FOR -L- PROFILE SEE SHEET 22
FOR -Y12- PROFILE SEE SHEET 29

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	6
R/W SHEET NO.	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

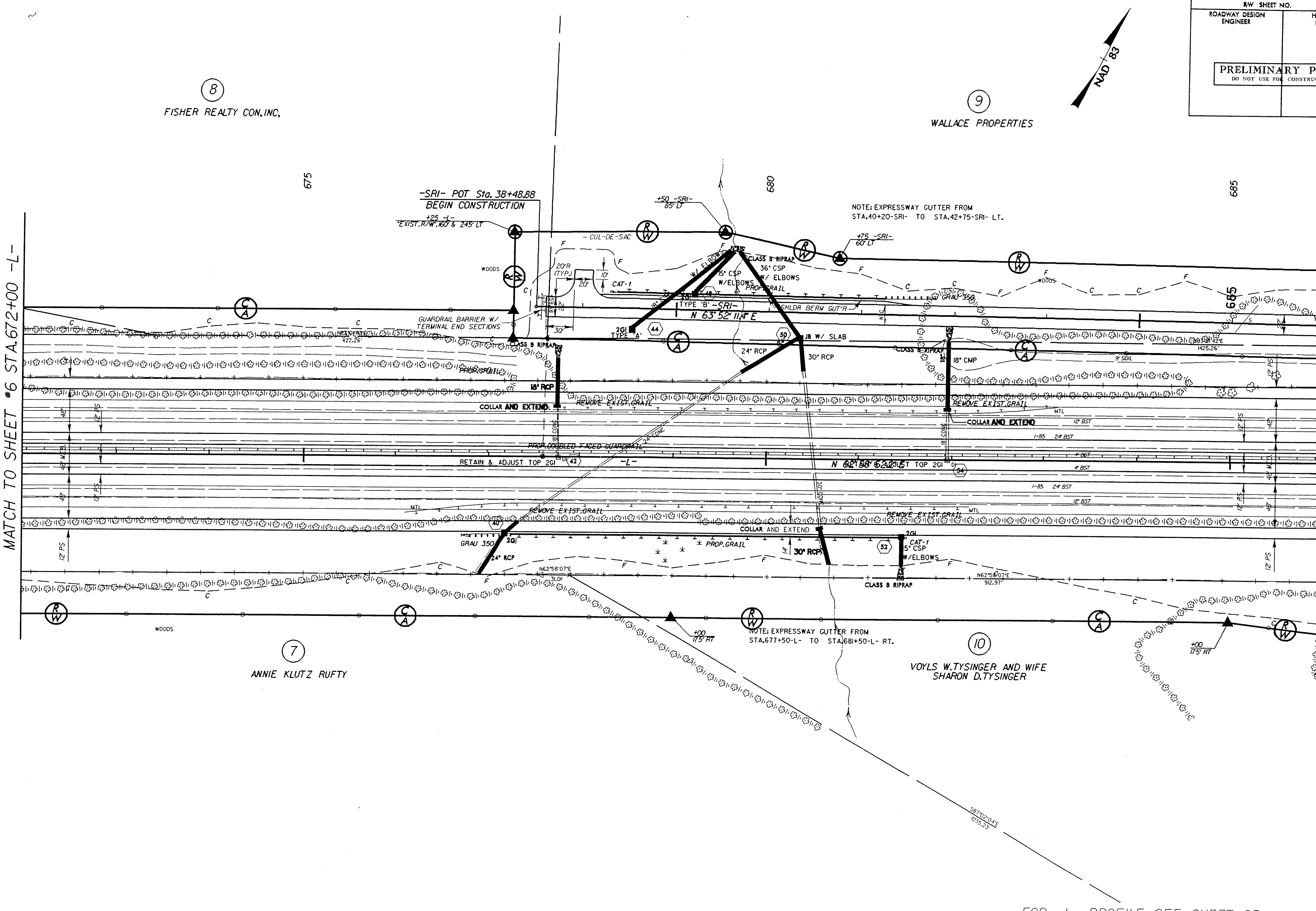
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



8/17/99
REVISIONS
MATCH TO SHEET #5 STA 658+00 -L-
MATCH TO SHEET #7 STA 672+00 -L-
8
FISHER REALTY CON.INC.
NAD 83
3
JAMES L.HONEYCUTT
7
ANNIE KLUTZ RUFTY
5
JAMES L.HONEYCUTT
AND WIFE
MARGARET ADAMS HONEYCUTT
6
MAX G.HONEYCUTT
AND WIFE
FLORENCE K.HONEYCUTT
660
665
670
WOODS
N62°56'12"E
175.00'
N51°56'12"E
133.00'
N87°08'37"E
217.41'
N82°26'11"E
298.98'
N74°26'11"E
504.86'
N62°58'38"E
1214.76'
N62°59'54"E
177.88'
N62°59'54"E
184.00'
N62°37'57"E
154.84'
N63°01'24"E
1388.45'
N 62°58'52.2" E
-L-
COLLAR AND EXTEND
CLASS B RIPRAP
24" RCP
30" RCP
15" RCP
15" CSP
18" RCP
36" RCP
PROP.GRAIL
REMOVE EXIST.GRAIL
RETAIN
PROP.DOUBLED FACED GUARDRAIL
I-85 24' BST
12' BST
4' BST
12' PS
48'
NOTE: EXPRESSWAY GUTTER FROM
665+50-L- TO 669+00-L- (R)
+00
160' LT
+35
180' LT
+50
185' LT
+15
160' LT
+50
180' LT
+00
200' LT
+45
160' LT
+00
175' RT
FOR -L- PROFILE SEE SHEET 23

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	7
RW SHEET NO.	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83
8
FISHER REALTY CON, INC.
9
WALLACE PROPERTIES
7
ANNIE KLUTZ RUFTY
10
VOYLS W. TYSINGER AND WIFE SHARON D. TYSINGER
MATCH TO SHEET #6 STA. 672+00 -L-
MATCH TO SHEET #8 STA. 686+00 -L-
-SRI- POT Sta. 38+48.88
BEGIN CONSTRUCTION
NOTE: EXPRESSWAY GUTTER FROM STA. 40+20-SRI- TO STA. 42+75-SRI- LT.
NOTE: EXPRESSWAY GUTTER FROM STA. 677+50-L- TO STA. 681+50-L- RT.
GUARDRAIL BARRIER W/ TERMINAL END SECTIONS
RETAIN & ADJUST TOP 2GI
PROP. DOUBLED FACED GUARDRAIL
REMOVE EXIST. GRAIL
COLLAR AND EXTEND
CLASS B RIPRAP
TYPE 'B' -SRI-
N 63°52' 11.4" E
JB W/ SLAB
24" RCP
30" RCP
18" RCP
18" CMP
15" CSP W/ELBOWS
36" CSP W/ ELBOWS
CAT-1
PROP. GRAIL
SHLDR BERM GUT'R
GRAU 350
CUL-DE-SAC
WOODS
675
680
685

FOR -L- PROFILE SEE SHEET 23
FOR -SRI- PROFILE SEE SHEETS 29 & 30

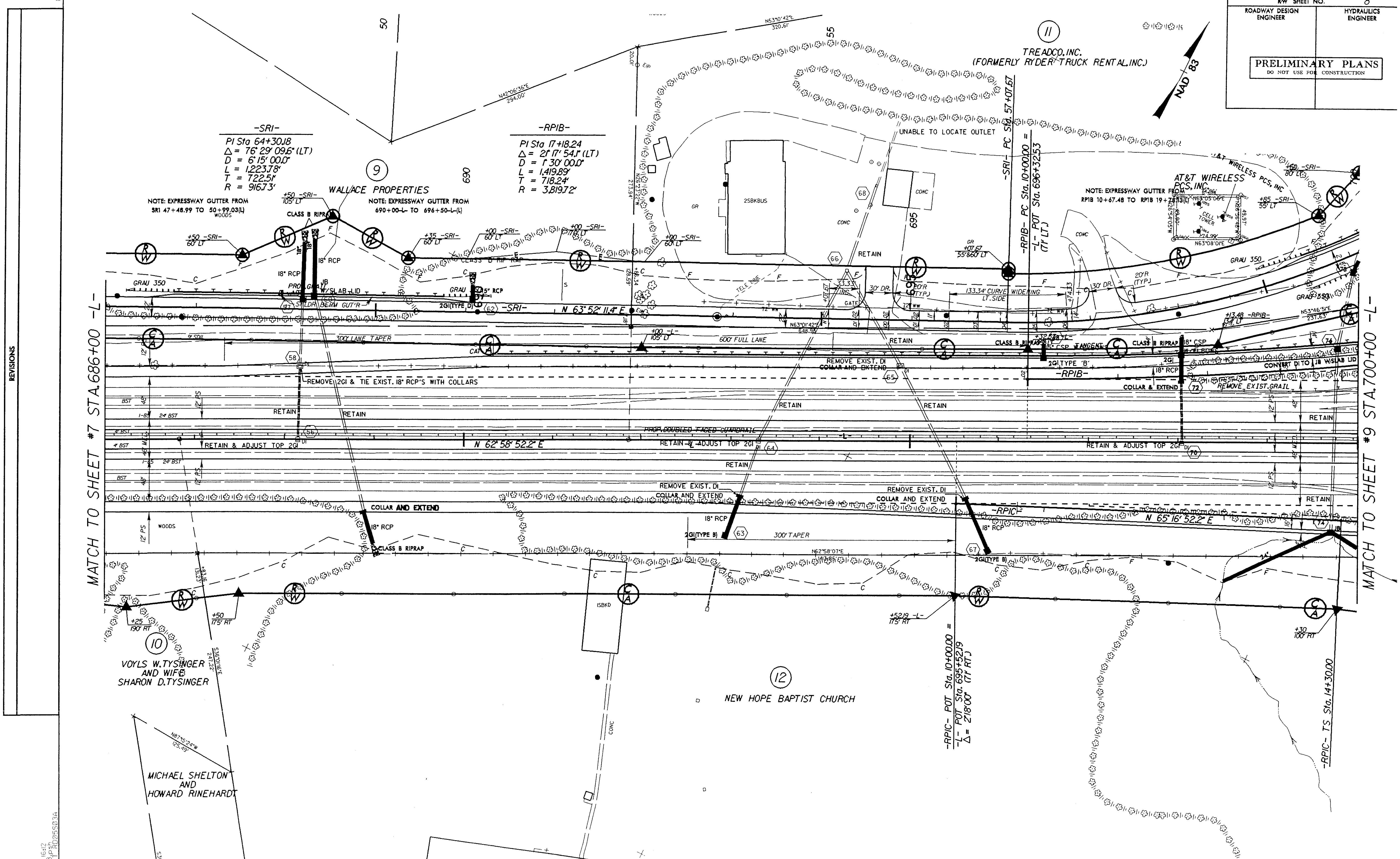
REVISIONS

8/17/99

20-FEB-2003 16:11

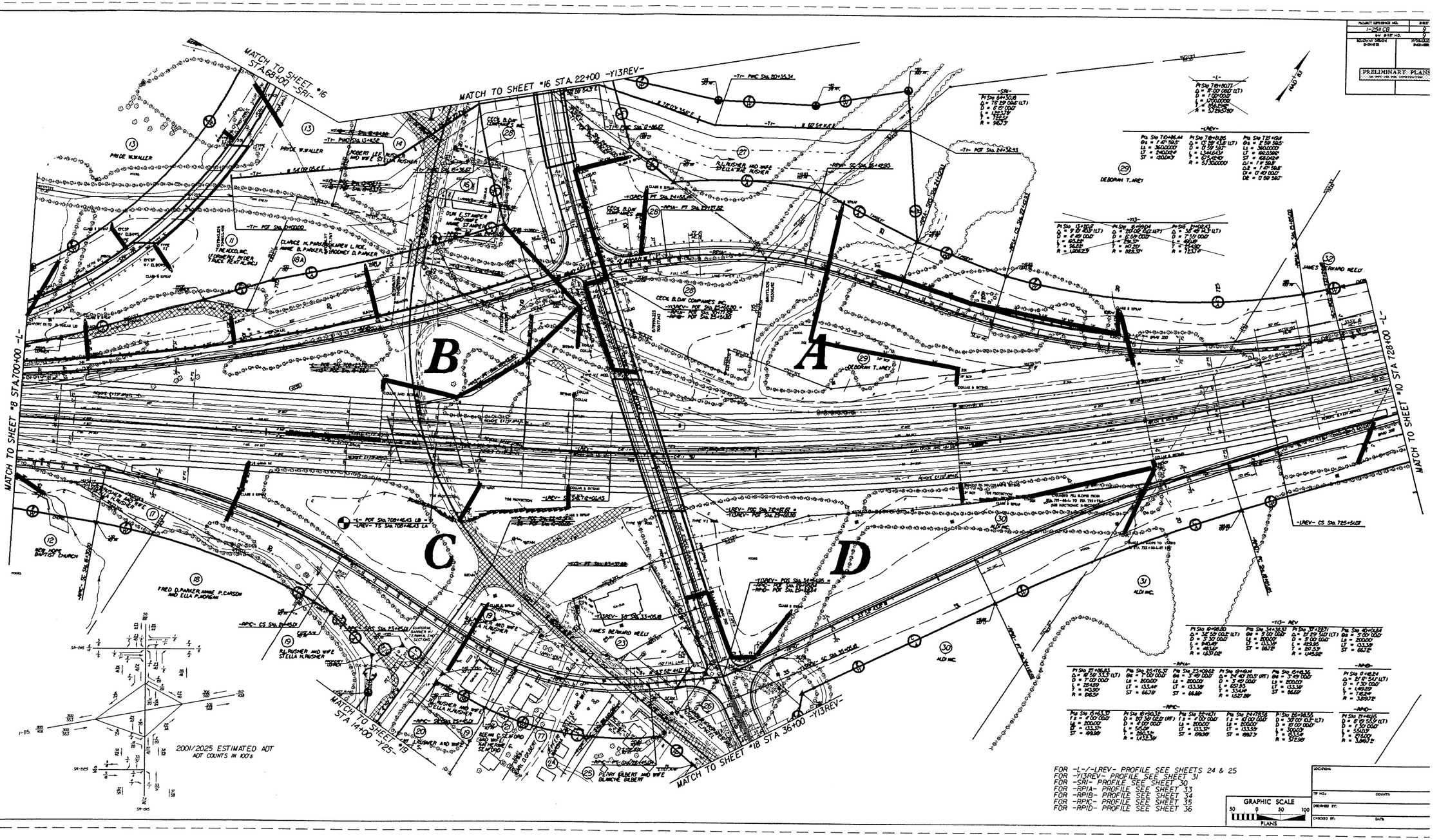
PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	8
R/W SHEET NO.	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



MATCH TO SHEET #7 STA.686+00 -L-
MATCH TO SHEET #9 STA.700+00 -L-
NAD 83
TREADCO, INC.
(FORMERLY RYDER TRUCK RENTAL, INC.)
WALLACE PROPERTIES
NEW HOPE BAPTIST CHURCH
VOYLS W.TYSINGER AND WIFE SHARON D.TYSINGER
MICHAEL SHELTON AND HOWARD RINEHARDT
AT&T WIRELESS PCS, INC.
-SRI-
PI Sta 64+30.18
Δ = 76° 29' 09.6" (LT)
D = 6° 15' 00.0"
L = 1,223.78'
T = 722.51'
R = 916.73'
-RPIB-
PI Sta 17+18.24
Δ = 21° 17' 54.1" (LT)
D = 1° 30' 00.0"
L = 1,419.89'
T = 718.24'
R = 3,819.72'
NOTE: EXPRESSWAY GUTTER FROM SRI 47+48.99 TO 50+99.03(L)
NOTE: EXPRESSWAY GUTTER FROM 690+00-L- TO 696+50-L-(L)
NOTE: EXPRESSWAY GUTTER FROM RPIB 10+67.48 TO RPIB 19+74.13(L)
-SRI- PC Sta. 57+07.67
-RPIB- PC Sta. 10+00.00 = -L- POT Sta. 696+32.53 (71' LT.)
-RPIC- POT Sta. 10+00.00 = -L- POT Sta. 695+52.19 Δ = 2°18'00" (71' RT.)
-RPIC- TS Sta. 14+30.00
N 62° 58' 52.2" E
N 63° 52' 11.4" E
N 65° 16' 52.2" E
UNABLE TO LOCATE OUTLET
REMOVE 2GI & TIE EXIST. 18" RCP'S WITH COLLARS
PROP. DOUBLED FACED GUARDRAIL
300' LANE TAPER
600' FULL LANE
300' TAPER
133.34' CURVE WIDENING LT. SIDE

FOR -L- PROFILE SEE SHEET 24
FOR -SRI- PROFILE SEE SHEETS 29 & 30
FOR -RPIB- PROFILE SEE SHEET 34
FOR -RPIC- PROFILE SEE SHEET 35



3/6/02 R/W REVISION : ASSIGNED NEW PARCEL NO. 18A WITH PROPERTY LINES AND OWNER NAMES SKR

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	10
R/W SHEET NO.	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

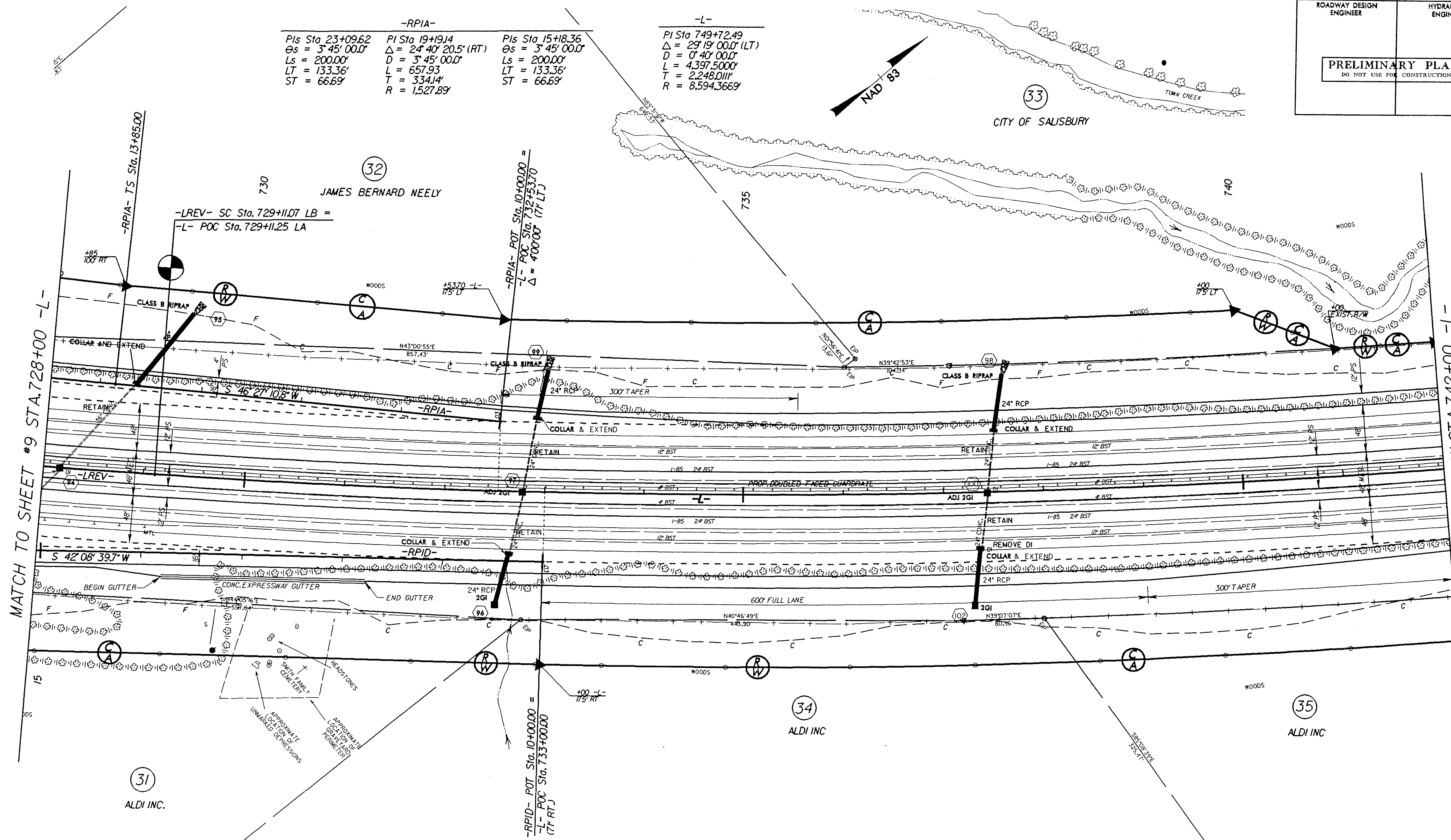
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RPIA-

PIs Sta 23+09.62	PI Sta 19+19.14	PIs Sta 15+18.36
θs = 3° 45' 00.0"	Δ = 24° 40' 20.5" (RT)	θs = 3° 45' 00.0"
Ls = 200.00'	D = 3° 45' 00.0"	Ls = 200.00'
LT = 133.36'	L = 657.93	LT = 133.36'
ST = 66.69'	T = 334.14'	ST = 66.69'
	R = 1,527.89'	

-L-

PI Sta 749+72.49
Δ = 29° 19' 00.0" (LT)
D = 0° 40' 00.0"
L = 4,397.5000'
T = 2,248.0111'
R = 8,594.3669'



NAD 83
33
CITY OF SALISBURY
TOWN CREEK
32
JAMES BERNARD NEELY
730
735
740
-RPIA- TS Sta. 13+85.00
-LREV- SC Sta. 729+11.07 LB =
-L- POC Sta. 729+11.25 LA
-RPIA- POT Sta. 10+00.00 =
-L- POC Sta. 732+53.70
Δ = 4°00'00" (11' LT)
MATCH TO SHEET #9 STA. 728+00 -L-
MATCH TO SHEET #11 STA. 742+00 -L-
CLASS B RIPRAP
COLLAR AND EXTEND
COLLAR & EXTEND
S 46° 27' 10.8" W
-RPIA-
-RPID-
-LREV-
-L-
RETAIN
REMOVE DI
ADJ 2GI
24" RCP
2GI
300' TAPER
600' FULL LANE
PROP. DOUBLED FACED GUARDRAIL
I-85 24' BST
12' BST
S 42° 08' 39.7" W
BEGIN GUTTER
CONC. EXPRESSWAY GUTTER
END GUTTER
WOODS
HEADSTONES
SMITH FAMILY CEMETERY
APPROXIMATE LOCATION OF UNMARKED DEPRESSIONS
APPROXIMATE LOCATION OF GRAVEYARD PERIMETER
-RPID- POT Sta. 10+00.00 =
-L- POC Sta. 733+00.00
(7' RT)
34
ALDI INC
35
ALDI INC
31
ALDI INC.
EXIST. R/W
15

-LREV-

PIs Sta 710+86.44	PI Sta 718+81.85	PIs Sta 727+19.11
θs = 1° 47' 59.5"	Δ = 13° 26' 43.6" (LT)	θs = 2° 59' 59.5"
Ls = 360.0000'	D = 0° 59' 59.7"	Ls = 360.0000'
LT = 240.0124'	L = 1,344.6431'	LT = 192.0392'
ST = 120.0113'	T = 675.4240'	ST = 168.0424'
	R = 5,730.0000'	Δ1 = 1° 11' 59.8"
		Δ2 = 1° 47' 59.8"
		D1 = 0° 40' 00.0"
		D2 = 0° 59' 59.7"

FOR -LREV-/-L- PROFILE SEE SHEET 25
FOR -RPIA- PROFILE SEE SHEET 33
FOR -RPID- PROFILE SEE SHEET 36

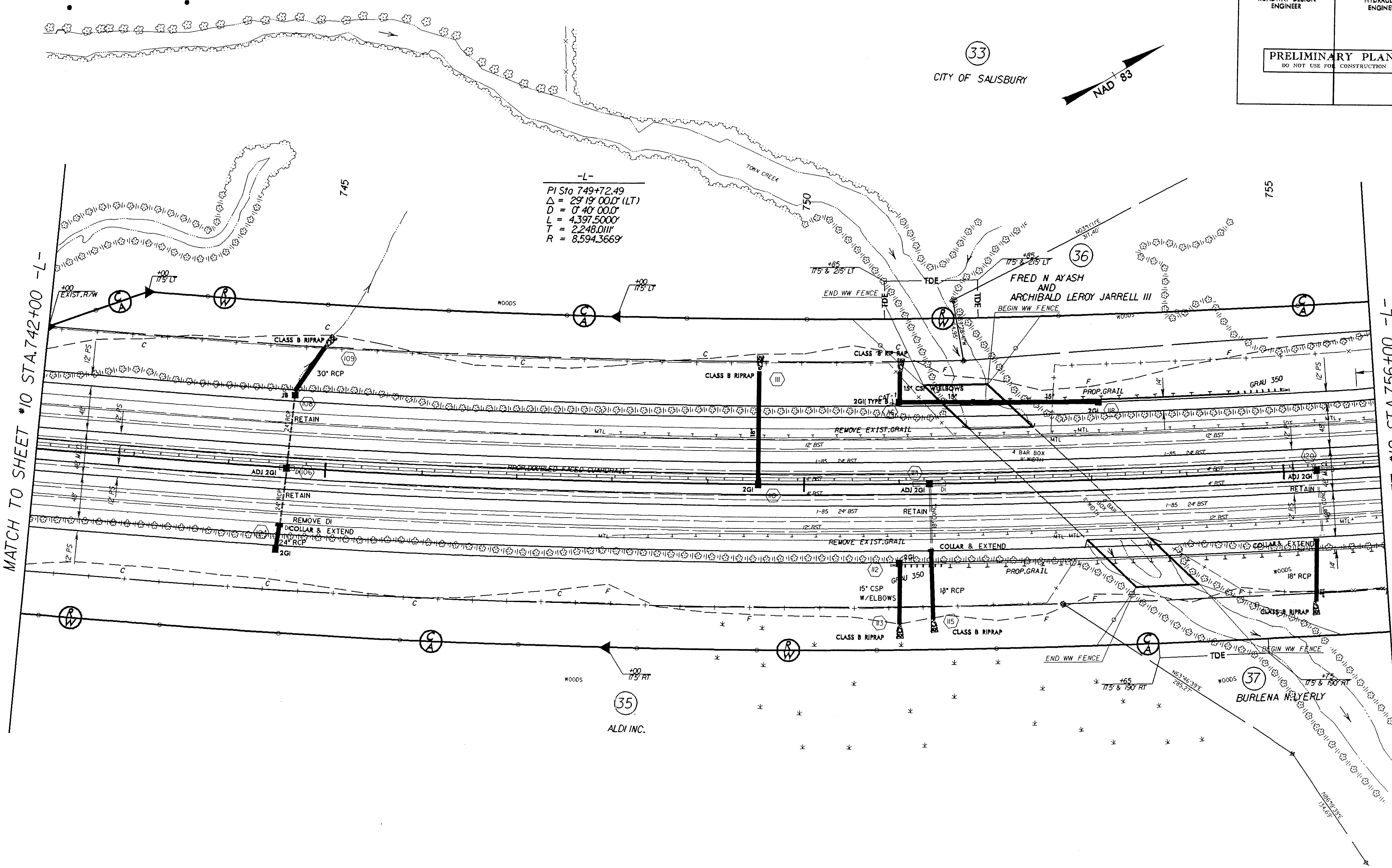
REVISIONS

8/17/99

20-FEB-2003 16:12

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	11
R/W SHEET NO.	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



CITY OF SALISBURY
NAD 83
-L-
PI Sta 749+72.49
Δ = 29° 19' 00.0" (LT)
D = 0° 40' 00.0"
L = 4,397.5000'
T = 2,248.0111'
R = 8,594.3669'
MATCH TO SHEET #10 STA.742+00 -L-
MATCH TO SHEET #12 STA.756+00 -L-
FRED N AYASH
AND
ARCHIBALD LEROY JARRELL III
BURLENA N. LYERLY
ALDI INC.
TOWN CREEK
END WW FENCE
BEGIN WW FENCE
CLASS B RIPRAP
30" RCP
18" RCP
24" RCP
15" CSP
W/ELBOWS
REMOVE EXIST. GRAIL
PROP. GRAIL
PROP. DOUBLED FACED GUARDRAIL
COLLAR & EXTEND
REMOVE DI
RETAIN
ADJ 2GI
2GI
GRAU 350
4' BAR BOX
WOODS

FOR -L- PROFILE SEE SHEET 26

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	12
R/W SHEET NO.	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

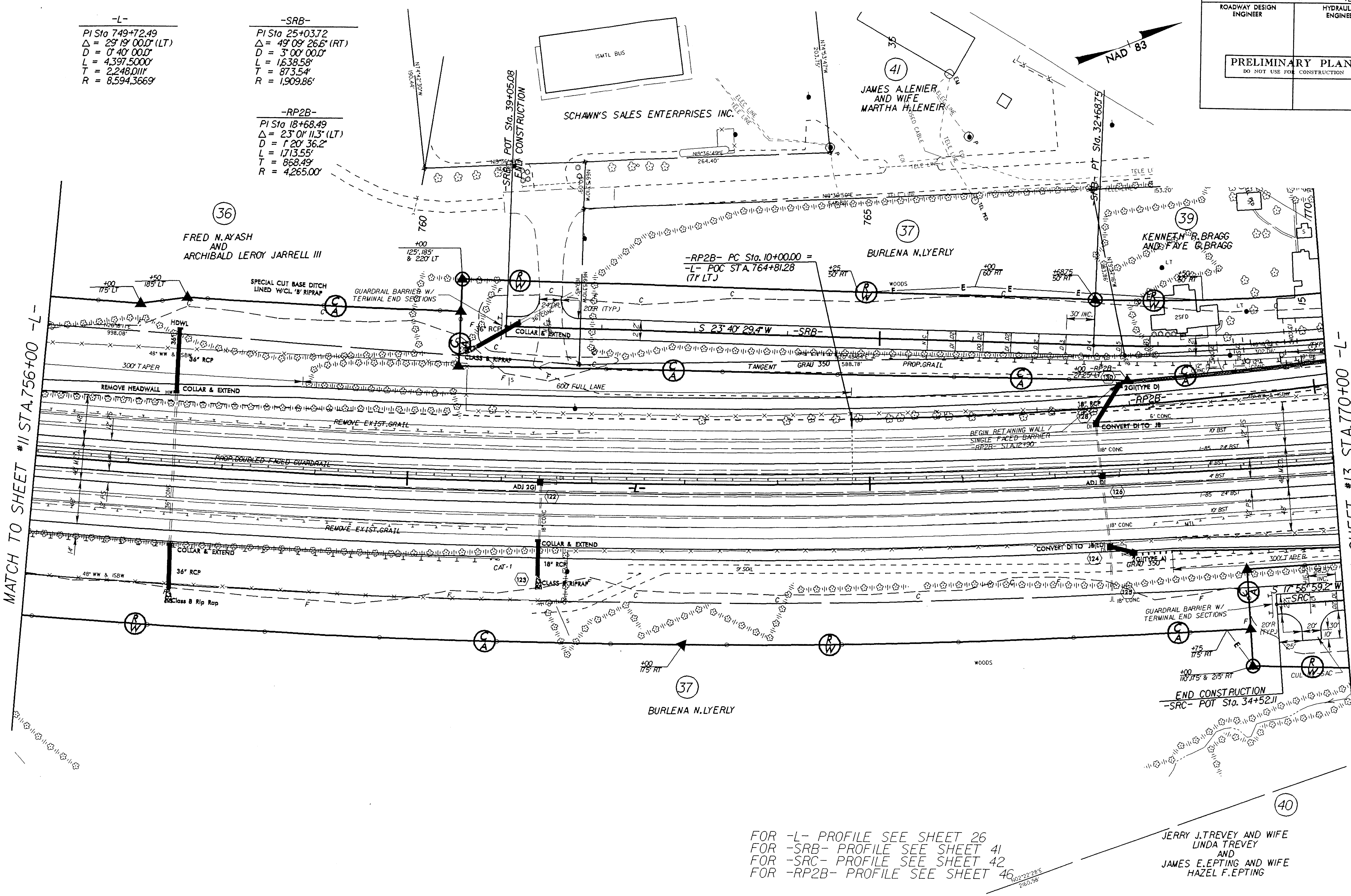
11/20/01 R/W REV. PARCEL 36 - ADDED ADDITIONAL R/W.SLS

8/17/99

-L-
PI Sta 749+72.49
Δ = 29° 19' 00.0" (LT)
D = 0° 40' 00.0"
L = 4,397.5000'
T = 2,248.0111'
R = 8,594.3669'

-SRB-
PI Sta 25+03.72
Δ = 49° 09' 26.6" (RT)
D = 3° 00' 00.0"
L = 1,638.58'
T = 873.54'
R = 1,909.86'

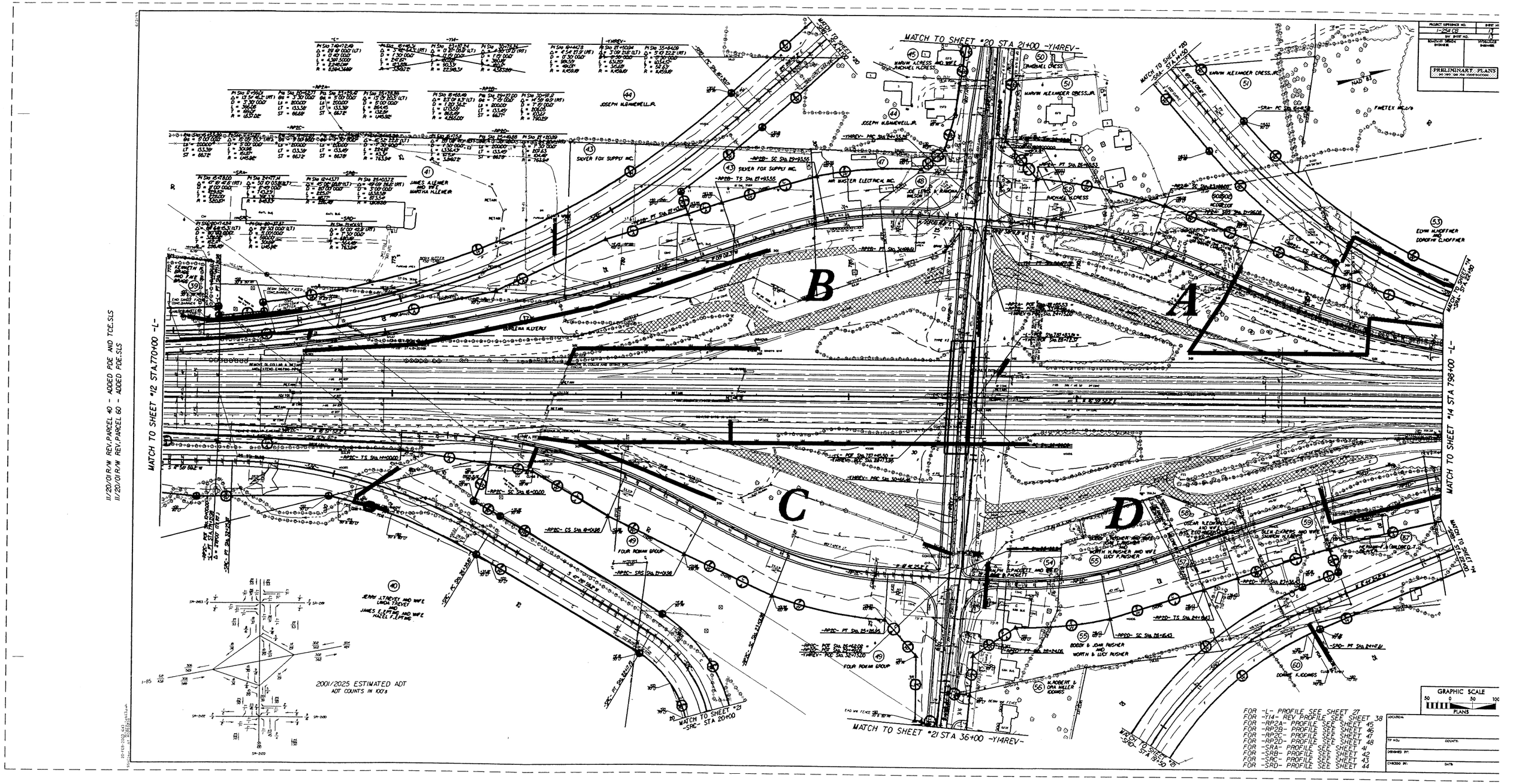
-RP2B-
PI Sta 18+68.49
Δ = 23° 01' 11.3" (LT)
D = 1° 20' 36.2"
L = 1,713.55'
T = 868.49'
R = 4,265.00'

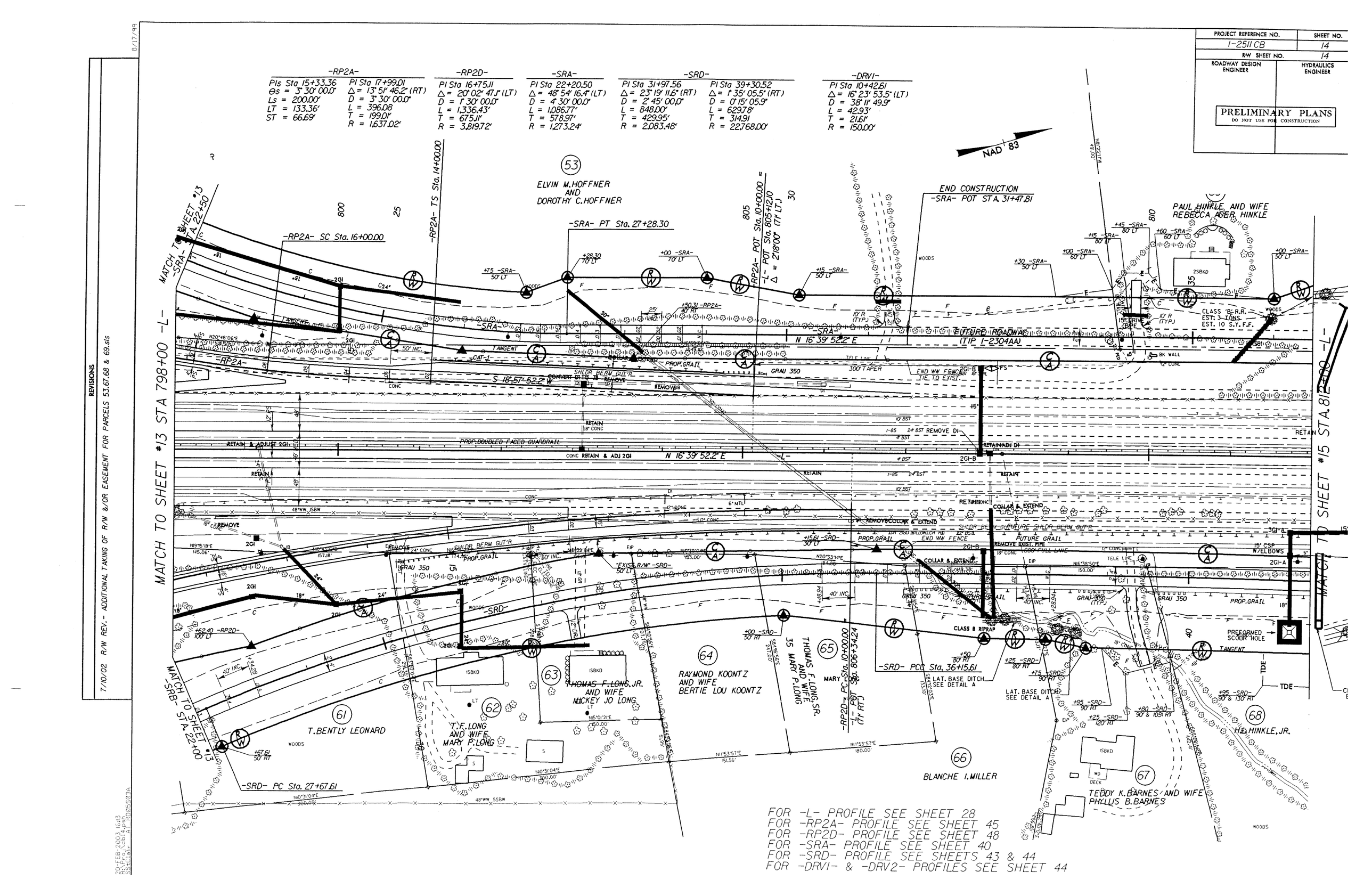


MATCH TO SHEET #11 STA.756+00 -L-
MATCH TO SHEET #13 STA.770+00 -L-
NAD 83
SCHAWN'S SALES ENTERPRISES INC.
JAMES A.LENIER AND WIFE MARTHA H.LENEIR
FRED N.AYASH AND ARCHIBALD LEROY JARRELL III
BURLENA N.LYERLY
KENNETH B.BRAGG AND FAYE G.BRAGG
-SRB- POT Sta. 39+05.08 END CONSTRUCTION
-SRB- PT Sta. 32+68.75
-RP2B- PC Sta. 10+00.00 = -L- POC STA.764+81.28 (71' LT.)
S 23° 40' 29.4" W -SRB-
S 17° 56' 59.2" W -SRC-
END CONSTRUCTION -SRC- POT Sta. 34+52.11
SPECIAL CUT BASE DITCH LINED W/CL 'B' RIPRAP
GUARDRAIL BARRIER W/ TERMINAL END SECTIONS
BEGIN RETAINING WALL / SINGLE FACED BARRIER -RP2B- STA.12+90
REMOVE HEADWALL
COLLAR & EXTEND
REMOVE EXIST.GRAIL
PROP.DOUBLED FACED GUARDRAIL
PROP.GRAIL
TANGENT GRAU 350
600' FULL LANE
300' TAPER
CONVERT DI TO JB
CLASS B RIPRAP
WOODS
JERRY J.TREVEY AND WIFE LINDA TREVEY AND JAMES E.EPTING AND WIFE HAZEL F.EPTING

FOR -L- PROFILE SEE SHEET 26
FOR -SRB- PROFILE SEE SHEET 41
FOR -SRC- PROFILE SEE SHEET 42
FOR -RP2B- PROFILE SEE SHEET 46

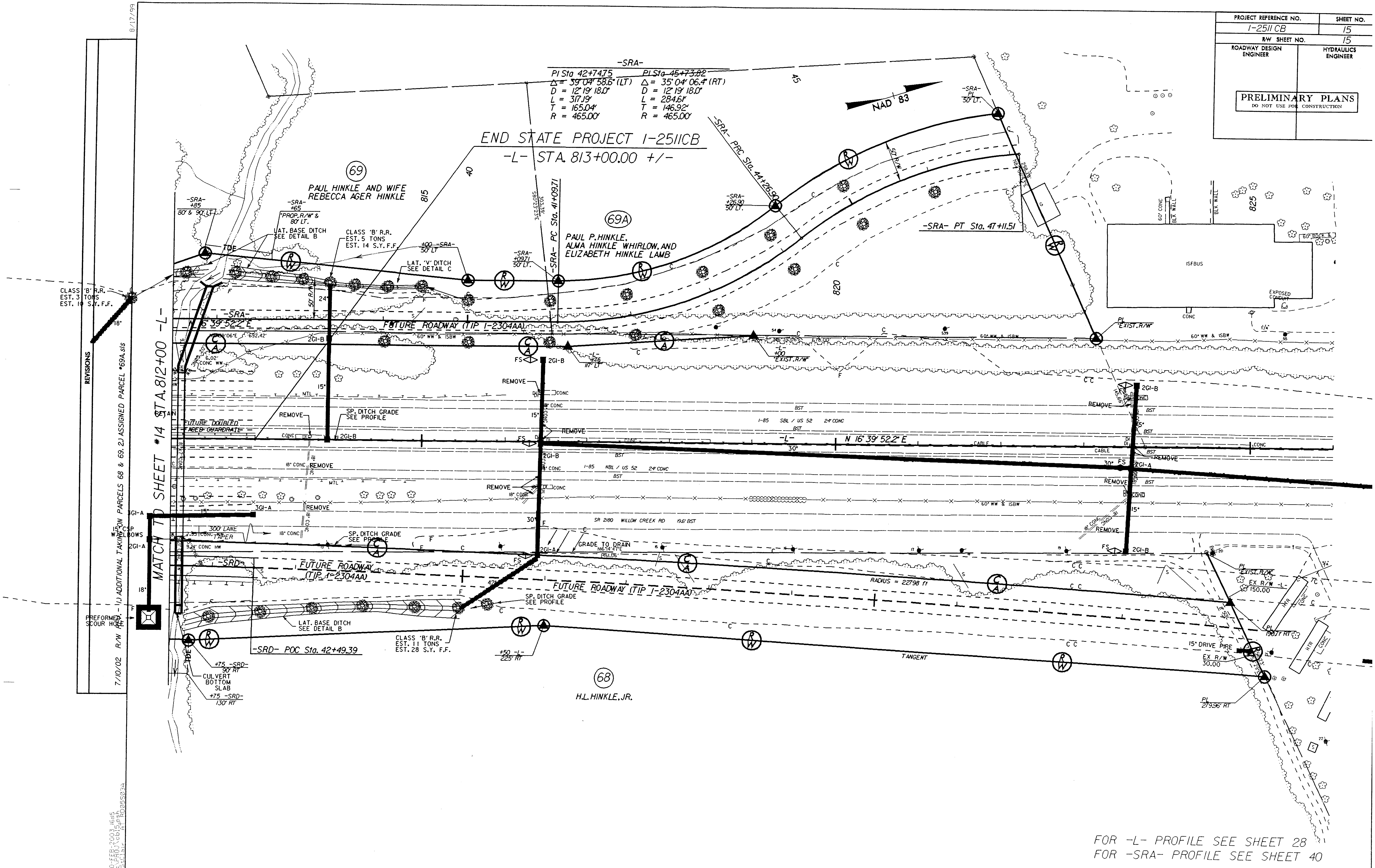
20-FEB-2003 16:13


MATCH TO SHEET #12 STA 770+00 -L-
MATCH TO SHEET #20 STA 21+00 -Y14REV-
MATCH TO SHEET #14 STA 796+00 -L-
MATCH TO SHEET #21 STA 36+00 -Y14REV-
MATCH TO SHEET #19 -SRC- STA 20+00
MATCH TO SHEET #19 -SRD- STA 8+50
A
B
C
D
PRELIMINARY PLANS
NOT FOR CONSTRUCTION
GRAPHIC SCALE
PLANS
2001/2025 ESTIMATED ADT
ADT COUNTS IN 100's
FOR -L- PROFILE SEE SHEET 27
FOR -Y14- REV PROFILE SEE SHEET 38
FOR -RP2A- PROFILE SEE SHEET 45
FOR -RP2B- PROFILE SEE SHEET 46
FOR -RP2C- PROFILE SEE SHEET 47
FOR -RP2D- PROFILE SEE SHEET 48
FOR -SRA- PROFILE SEE SHEET 41
FOR -SRB- PROFILE SEE SHEET 43
FOR -SRC- PROFILE SEE SHEET 43
FOR -SRD- PROFILE SEE SHEET 44
11/20/01 R/W REV. PARCEL 40 - ADDED POE AND TCE.SLS
11/20/01 R/W REV. PARCEL 60 - ADDED POE.SLS


-RP2A-
Pls Sta 15+33.36
Es = 3° 30' 00.0"
Ls = 200.00'
LT = 133.36'
ST = 66.69'
PI Sta 17+99.01
Δ = 13° 51' 46.2" (RT)
D = 3° 30' 00.0"
L = 396.08
T = 199.01'
R = 1,637.02'
-RP2D-
PI Sta 16+75.11
Δ = 20° 02' 47.1" (LT)
D = 1° 30' 00.0"
L = 1,336.43'
T = 675.11'
R = 3,819.72'
-SRA-
PI Sta 22+20.50
Δ = 48° 54' 16.4" (LT)
D = 4° 30' 00.0"
L = 1,086.77'
T = 578.97'
R = 1,273.24'
-SRD-
PI Sta 31+97.56
Δ = 23° 19' 11.6" (RT)
D = 2° 45' 00.0"
L = 848.00'
T = 429.95'
R = 2,083.48'
PI Sta 39+30.52
Δ = 1° 35' 05.5" (RT)
D = 0° 15' 05.9"
L = 629.78'
T = 314.91
R = 22,768.00'
-DRV1-
PI Sta 10+42.61
Δ = 16° 23' 53.5" (LT)
D = 38° 11' 49.9"
L = 42.93'
T = 21.61'
R = 150.00'
PROJECT REFERENCE NO.
I-2511 CB
SHEET NO.
14
R/W SHEET NO.
14
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
REVISIONS
7/10/02 R/W REV. - ADDITIONAL TAKING OF R/W &/OR EASEMENT FOR PARCELS 53,67,68 & 69.sls
8/17/99
MATCH TO SHEET #13 STA 798+00 -L-
MATCH TO SHEET #15 STA. 812+80 -L-
MATCH TO SHEET #13 -SRA- STA. 22+50
MATCH TO SHEET #13 -SRB- STA. 22+00
NAD 83
-RP2A- SC Sta. 16+00.00
-RP2A- TS Sta. 14+00.00
-SRA- PT Sta. 27+28.30
-RP2A- POT Sta. 10+00.00 = -L- POT Sta. 805+12.10 Δ = 218°00' (TT LT.)
END CONSTRUCTION -SRA- POT STA. 31+47.81
-SRD- PC Sta. 27+67.61
-SRD- PC Sta. 36+15.61
-RP2D- PC Sta. 10+00.00 = -L- POT Sta. 806+33.24 (TT RT)
53 ELVIN M. HOFFNER AND DOROTHY C. HOFFNER
61 T. BENTLY LEONARD
62 T.F. LONG AND WIFE MARY P. LONG
63 THOMAS F. LONG, JR. AND WIFE HICKEY JO LONG
64 RAYMOND KOONTZ AND WIFE BERTIE LOU KOONTZ
65 THOMAS F. LONG, SR. AND WIFE MARY P. LONG
66 BLANCHE I. MILLER
67 TEDDY K. BARNES AND WIFE PHYLLIS B. BARNES
68 H.E. HINKLE, JR.
PAUL HINKLE AND WIFE REBECCA ABER HINKLE
CLASS 'B' R.R. EST: 3 LONS. EST. 10 S.Y. F.F.
FUTURE ROADWAY (TIP I-2304AA)
N 16° 39' 52.2" E
S 18° 57' 52.2" W
PROP. GRAIL
PROP. DOUBLED FACED GUARDRAIL
CLASS B RIPRAP
PREFORMED SCOUR HOLE
LAT. BASE DITCH SEE DETAIL A
FOR -L- PROFILE SEE SHEET 28
FOR -RP2A- PROFILE SEE SHEET 45
FOR -RP2D- PROFILE SEE SHEET 48
FOR -SRA- PROFILE SEE SHEET 40
FOR -SRD- PROFILE SEE SHEETS 43 & 44
FOR -DRV1- & -DRV2- PROFILES SEE SHEET 44

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	15
R/W SHEET NO.	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



END STATE PROJECT I-2511CB
-L- STA. 813+00.00 +/-
-SRA-
PI Sta 42+74.75
Δ = 39° 04' 58.6" (LT)
D = 12° 19' 18.0"
L = 317.19'
T = 165.04'
R = 465.00'
PI Sta 45+73.82
Δ = 35° 04' 06.4" (RT)
D = 12° 19' 18.0"
L = 284.61'
T = 146.92'
R = 465.00'
NAD 83
PAUL HINKLE AND WIFE REBECCA AGER HINKLE
PAUL P. HINKLE, ALMA HINKLE WHIRLOW, AND ELIZABETH HINKLE LAMB
H.L. HINKLE, JR.
-SRA- PC Sta. 41+09.71
-SRA- PRC Sta. 44+26.90
-SRA- PT Sta. 47+11.51
-SRD- POC Sta. 42+49.39
MATCH TO SHEET #14 STA. 812+00 -L-
N 16° 39' 52.2" E
FUTURE ROADWAY (TIP I-2304AA)
SR 2180 WILLOW CREEK RD
I-85 SBL / US 52
I-85 NBL / US 52
RADIUS = 22798 ft
TANGENT
PREFORMED SCOUR HOLE
LAT. BASE DITCH SEE DETAIL B
LAT. 'V' DITCH SEE DETAIL C
SP. DITCH GRADE SEE PROFILE
CLASS 'B' R.R. EST. 5 TONS EST. 14 S.Y. F.F.
CLASS 'B' R.R. EST. 11 TONS EST. 28 S.Y. F.F.
CLASS 'B' R.R. EST. 3 TONS EST. 10 S.Y. F.F.
GRADE TO DRAIN
REMOVE
ISFBUS
REVISIONS
7/10/02 R/W -L-) ADDITIONAL TAKING ON PARCELS 68 & 69. 2) ASSIGNED PARCEL #69A.sis

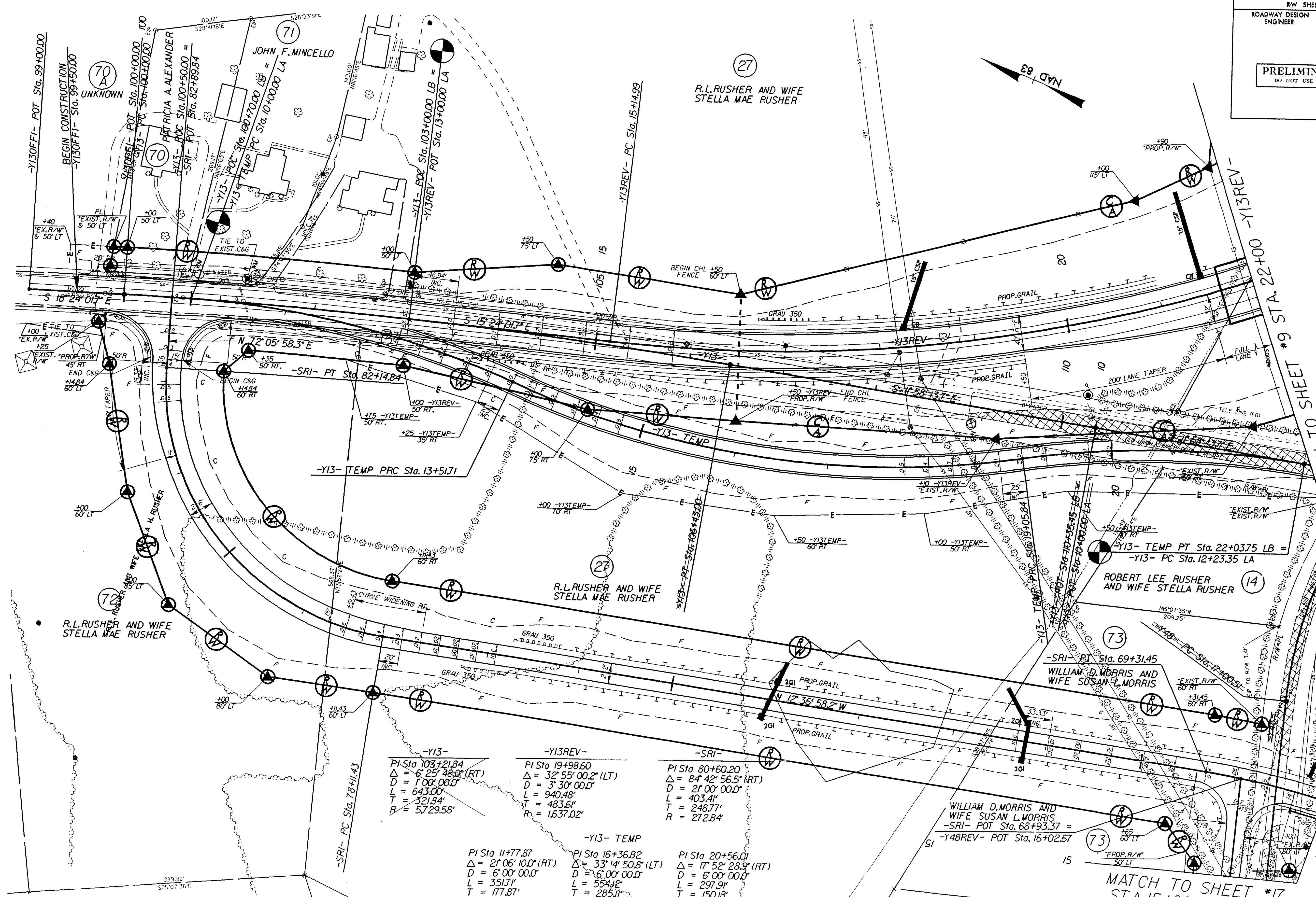
FOR -L- PROFILE SEE SHEET 28
FOR -SRA- PROFILE SEE SHEET 40

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	16
R/W SHEET NO.	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

R/W REVISION: ADJUSTED PROPERTY LINES AND CHANGED PROPERTY OWNER NAMES ON PARCELS NO.70 & NO.71; RELOCATED R/W MONUMENTS ON PARCEL NO.70 TO PROPERTY LINE. 3-6-02 SKR



NAD 83
R.L.RUSHER AND WIFE STELLA MAE RUSHER
JOHN F.MINCELLO
UNKNOWN
PATRICIA A.ALEXANDER
ROBERT LEE RUSHER AND WIFE STELLA RUSHER
WILLIAM D.MORRIS AND WIFE SUSAN L.MORRIS
BEGIN CONSTRUCTION -Y13OFF1- Sta. 99+50.00
-Y13OFF1- POT Sta. 99+00.00
-Y13- TEMP PRC Sta. 13+51.71
-SRI- PT Sta. 82+14.84
-Y13- TEMP PT Sta. 22+03.75 LB = -Y13- PC Sta. 12+23.35 LA
-SRI- PI Sta. 69+31.45
-SRI- POT Sta. 68+93.37 = -Y48REV- POT Sta. 16+02.67
-SRI- PC Sta. 78+11.43
-Y13REV- PC Sta. 15+14.99
-Y13- POC Sta. 103+00.00 LB = -Y13REV- POT Sta. 13+00.00 LA
S 18° 24' 01.7" E
S 15° 24' 01.7" E
N 72° 05' 58.3" E
N 12° 36' 58.2" W
CURVE WIDENING RT.
200' LANE TAPER
BEGIN CHL FENCE
PROP.GRAIL
GRAU 350
MATCH TO SHEET #9 STA. 22+00 -Y13REV-
MATCH TO SHEET #9 STA.68+00 -SRI-
MATCH TO SHEET #17 STA.15+00 -Y48REV-
-Y13-
PI Sta 103+21.84
Δ = 6° 25' 48.0" (RT)
D = 1° 00' 00.0"
L = 643.00'
T = 321.84'
R = 5729.58'
-Y13REV-
PI Sta 19+98.60
Δ = 32° 55' 00.2" (LT)
D = 3° 30' 00.0"
L = 940.48'
T = 483.61'
R = 1,637.02'
-SRI-
PI Sta 80+60.20
Δ = 84° 42' 56.5" (RT)
D = 21° 00' 00.0"
L = 403.41'
T = 248.77'
R = 272.84'
-Y13- TEMP
PI Sta 11+77.87
Δ = 21° 06' 10.0" (RT)
D = 6° 00' 00.0"
L = 351.71'
T = 177.87'
R = 954.93'
PI Sta 16+36.82
Δ = 33° 14' 50.8" (LT)
D = 6° 00' 00.0"
L = 554.12'
T = 285.11'
R = 954.93'
PI Sta 20+56.01
Δ = 17° 52' 28.9" (RT)
D = 6° 00' 00.0"
L = 297.91'
T = 150.18'
R = 954.93'

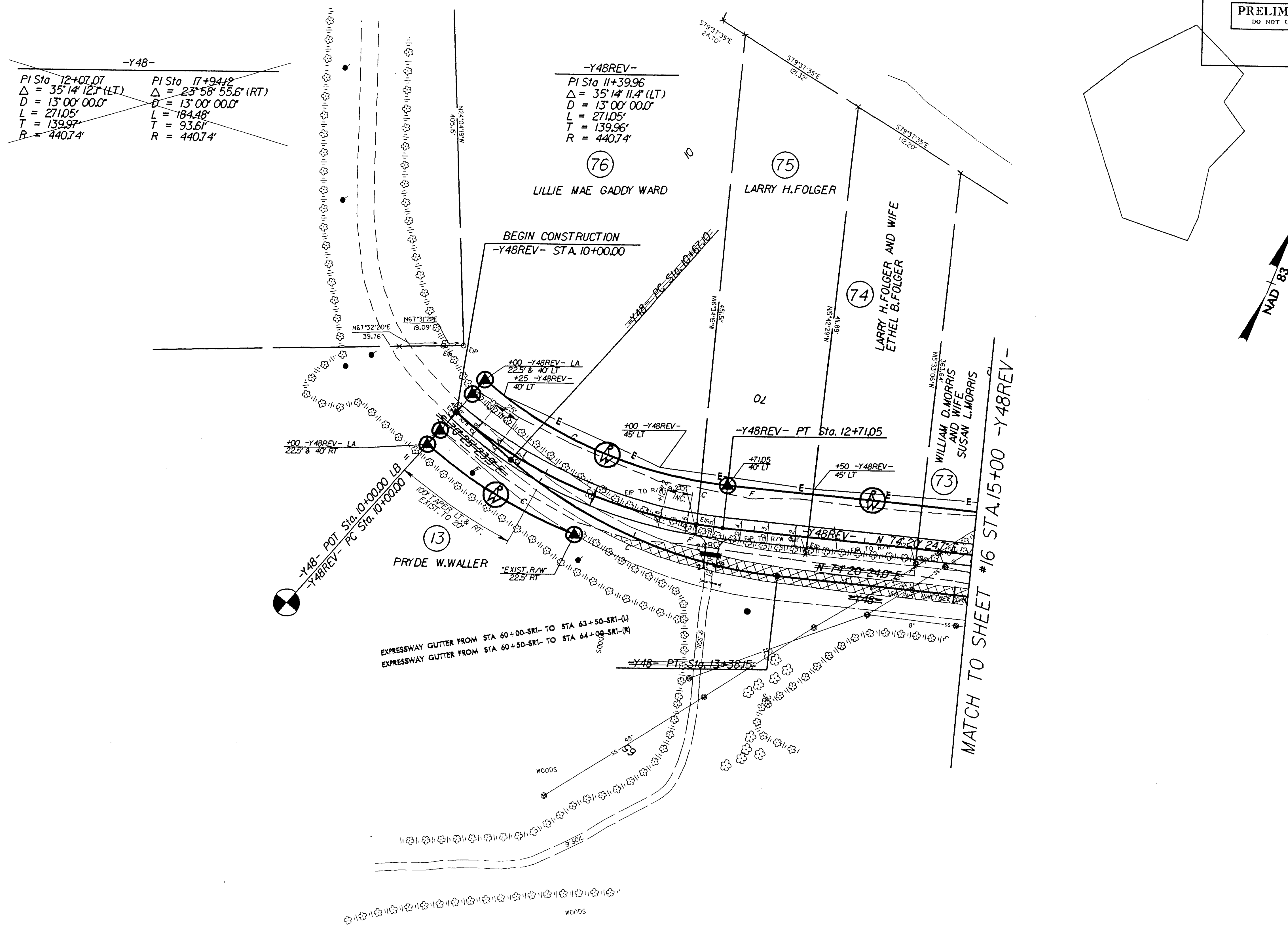
FOR -Y13REV- PROFILE SEE SHEET 31
FOR -Y13- TEMP PROFILE SEE SHEET 32
FOR -SRI- PROFILE SEE SHEET 30
FOR -Y48REV- PROFILE SEE SHEET 39

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	17
R/W SHEET NO.	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

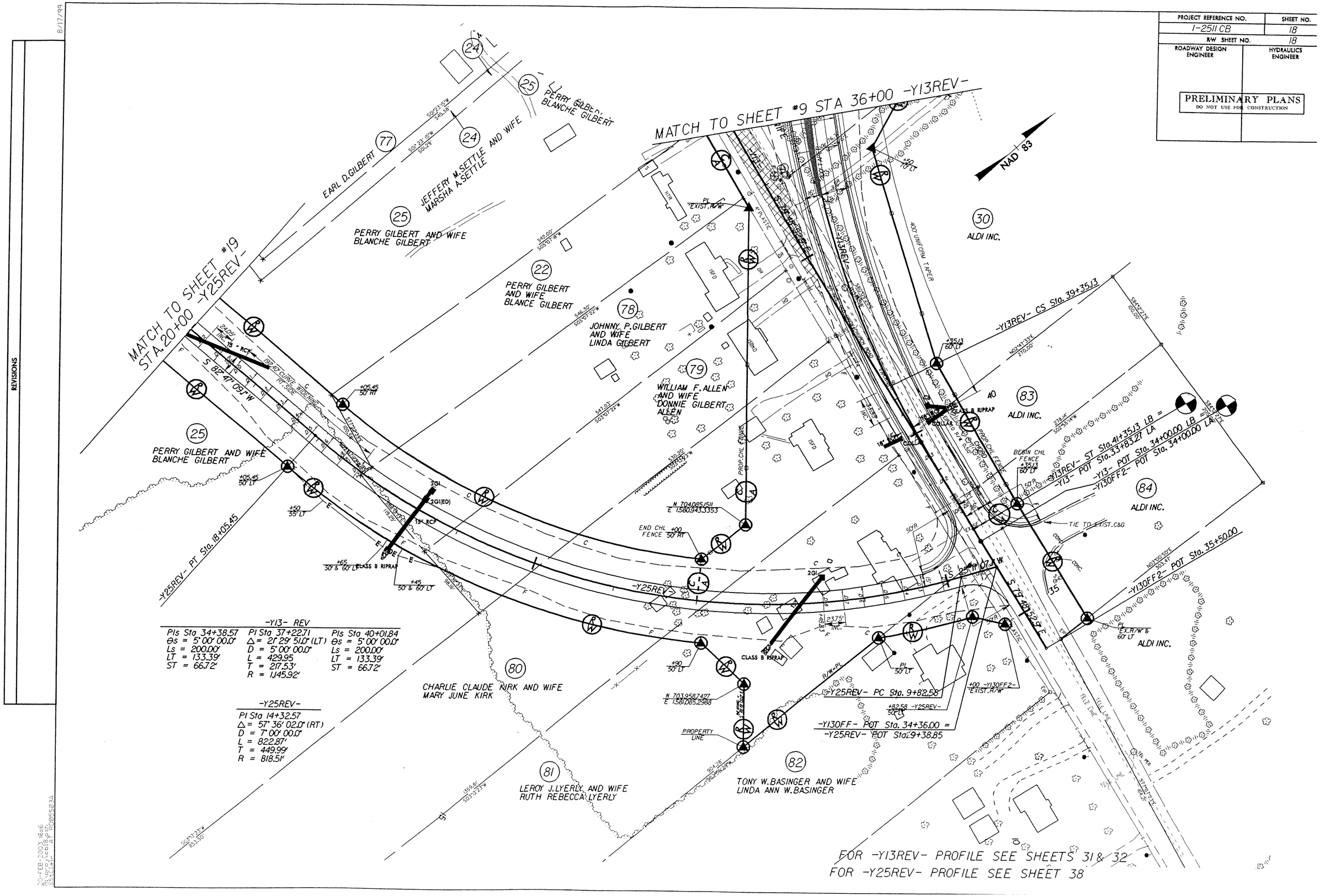


-Y48-
PI Sta 12+07.07
Δ = 35° 14' 12.3" (LT)
D = 13° 00' 00.0"
L = 271.05'
T = 139.97'
R = 440.74'
PI Sta 17+94.12
Δ = 23° 58' 55.6" (RT)
D = 13° 00' 00.0"
L = 184.48'
T = 93.61'
R = 440.74'
-Y48REV-
PI Sta 11+39.96
Δ = 35° 14' 11.4" (LT)
D = 13° 00' 00.0"
L = 271.05'
T = 139.96'
R = 440.74'
76
LILLIE MAE GADDY WARD
75
LARRY H.FOLGER
74
LARRY H.FOLGER AND WIFE
ETHEL B.FOLGER
73
WILLIAM D.MORRIS
AND WIFE
SUSAN L.MORRIS
13
PRYDE W.WALLER
BEGIN CONSTRUCTION
-Y48REV- STA. 10+00.00
-Y48- PC Sta. 10+67.10
-Y48REV- PT Sta. 12+71.05
-Y48- POT Sta. 10+00.00 LB
-Y48REV- PC Sta. 10+00.00
-Y48- PT Sta. 13+38.15
-Y48REV-
N 74°20' 24.7" E
N 74°20' 24.0" E
-Y48-
+00 -Y48REV- LA
22.5' & 40' LT
+25 -Y48REV-
40' LT
+00 -Y48REV-
45' LT
+71.05
40' LT
+50 -Y48REV-
45' LT
+00 -Y48REV- LA
22.5' & 40' RT
EXIST. R/W
22.5' RT
100' TAPER LT & RT.
EXIST. TO 20'
EXPRESSWAY GUTTER FROM STA 60+00-SR1- TO STA 63+50-SR1-(L)
EXPRESSWAY GUTTER FROM STA 60+50-SR1- TO STA 64+00-SR1-(R)
N67°32'20"E
39.76'
N67°31'29"E
19.09'
S79°37'35"E
24.70'
S79°37'35"E
121.32'
S79°37'35"E
112.20'
WOODS
WOODS
MATCH TO SHEET #16 STA.15+00 -Y48REV-
NAD 83

FOR -Y48REV- PROFILE SEE SHEET 39

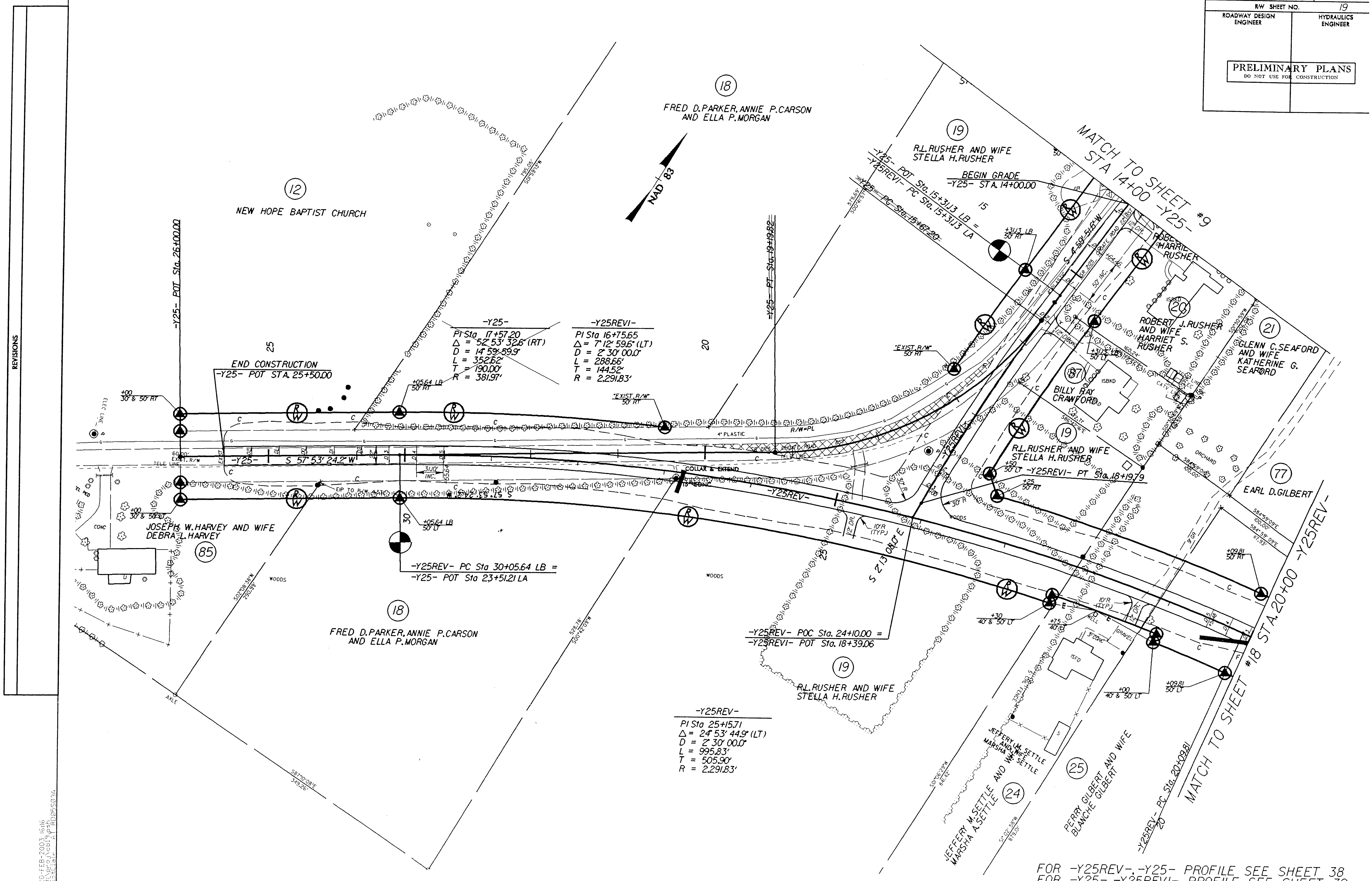
8/17/99

20-FEB-2003 16:46


PROJECT REFERENCE NO.
1-2511 CB
SHEET NO.
18
R/W SHEET NO.
18
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
REVISIONS
8/17/99
NAD 83
MATCH TO SHEET #9 STA. 20+00 -Y25REV-
MATCH TO SHEET #9 STA 36+00 -Y13REV-
EARL D.GILBERT
JEFFERY M.SETTLE AND WIFE MARSHA A.SETTLE
PERRY GILBERT AND WIFE BLANCHE GILBERT
PERRY GILBERT AND WIFE BLANCE GILBERT
JOHNNY P.GILBERT AND WIFE LINDA GILBERT
WILLIAM F.ALLEN AND WIFE DONNIE GILBERT ALLEN
ALDI INC.
CHARLIE CLAUDE KIRK AND WIFE MARY JUNE KIRK
LEROY J.LYERLY AND WIFE RUTH REBECCA LYERLY
TONY W.BASINGER AND WIFE LINDA ANN W.BASINGER
-Y13- REV
PI Sta 34+38.57
θs = 5° 00' 00.0"
Ls = 200.00'
LT = 133.39'
ST = 66.72'
PI Sta 37+22.71
Δ = 21° 29' 51.0" (LT)
D = 5° 00' 00.0"
L = 429.95
T = 217.53'
R = 1,145.92'
PI Sta 40+01.84
θs = 5° 00' 00.0"
Ls = 200.00'
LT = 133.39'
ST = 66.72'
-Y25REV-
PI Sta 14+32.57
Δ = 51° 36' 02.0" (RT)
D = 7° 00' 00.0"
L = 822.87'
T = 449.99'
R = 818.51'
-Y13REV- CS Sta. 39+35.13
-Y13- ST Sta. 41+35.13 LB = -Y13- POT Sta. 33+85.27 LA
-Y13- POT Sta. 34+00.00 LB = -Y13OFF2- POT Sta. 34+00.00 LA
-Y13- POT Sta. 34+00.00 LB = -Y13OFF2- POT Sta. 35+50.00
-Y25REV- PT Sta. 18+05.45
-Y25REV- PC Sta. 9+82.58
-Y13OFF- POT Sta. 34+36.00 = -Y25REV- POT Sta. 9+38.85
FOR -Y13REV- PROFILE SEE SHEETS 31 & 32
FOR -Y25REV- PROFILE SEE SHEET 38

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	19
R/W SHEET NO.	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

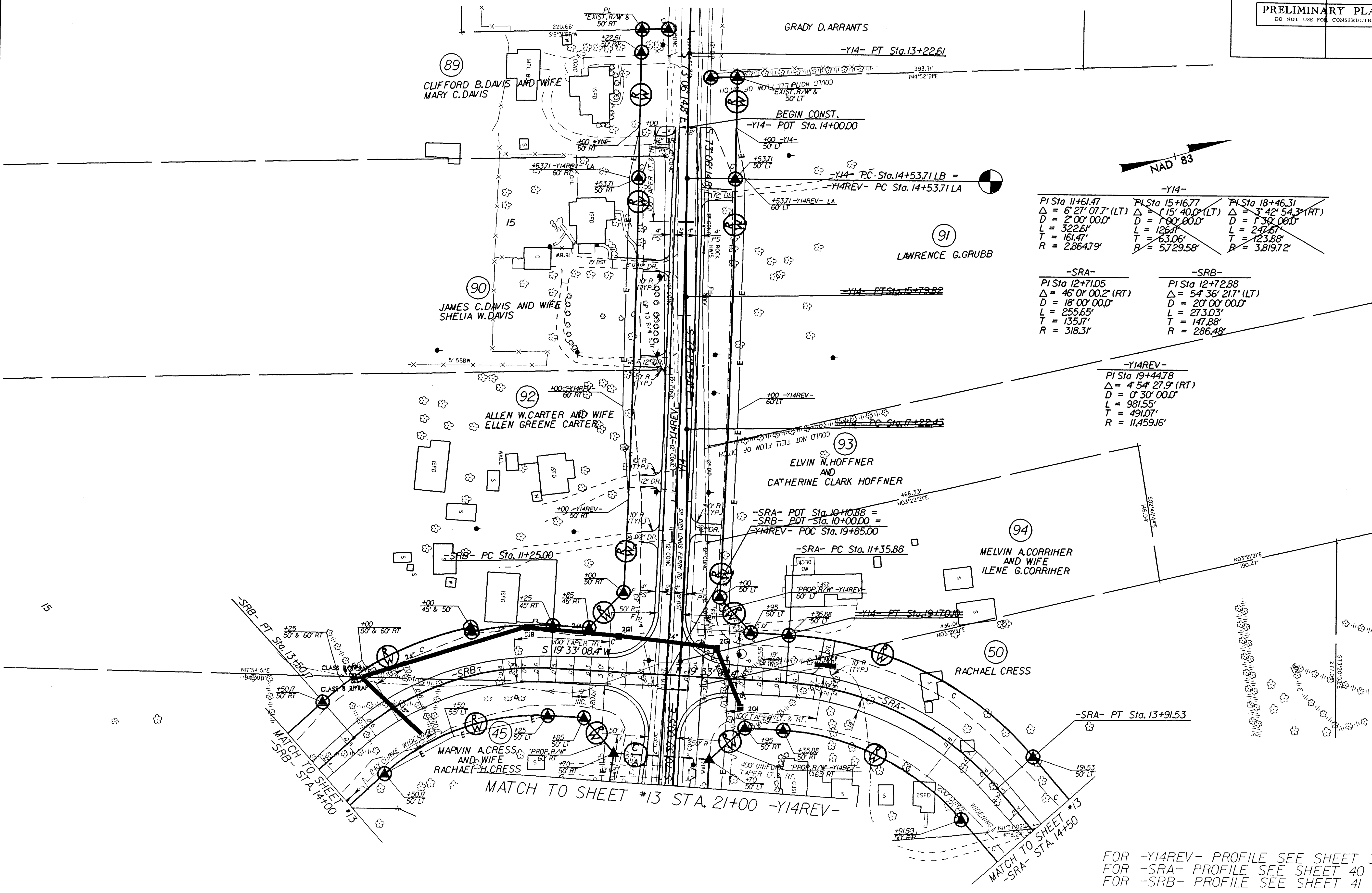
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



MATCH TO SHEET #9
STA 14+00 -Y25-
MATCH TO SHEET #18 STA 20+00 -Y25REV-
BEGIN GRADE
-Y25- STA 14+00.00
-Y25- POT Sta 15+31.13 LB =
-Y25REVI- PC Sta 15+31.13 LA
-Y25- PC Sta 15+67.20
-Y25- PT Sta 19+19.82
END CONSTRUCTION
-Y25- POT STA 25+50.00
-Y25- POT Sta 26+00.00
-Y25-
PI Sta 17+57.20
Δ = 52° 53' 32.6" (RT)
D = 14° 59' 59.9"
L = 352.62'
T = 190.00'
R = 381.97'
-Y25REVI-
PI Sta 16+75.65
Δ = 7° 12' 59.6" (LT)
D = 2° 30' 00.0"
L = 288.66'
T = 144.52'
R = 2,291.83'
-Y25REV-
PI Sta 25+15.71
Δ = 24° 53' 44.9" (LT)
D = 2° 30' 00.0"
L = 995.83'
T = 505.90'
R = 2,291.83'
-Y25REV- PC Sta 30+05.64 LB =
-Y25- POT Sta 23+51.21 LA
-Y25REV- POC Sta. 24+10.00 =
-Y25REVI- POT Sta. 18+39.06
-Y25REVI- PT Sta 18+19.79
-Y25REV- PC Sta 20+09.81
S 57° 53' 24.2" W
S 4° 59' 51.6" W
S 2° 13' 08.0" E
NAD 83
NEW HOPE BAPTIST CHURCH
FRED D.PARKER, ANNIE P.CARSON AND ELLA P.MORGAN
R.L.RUSHER AND WIFE STELLA H.RUSHER
ROBERT J.RUSHER AND WIFE HARRIET S. RUSHER
GLENN C.SEAFORD AND WIFE KATHERINE G. SEAFORD
BILLY RAY CRAWFORD
EARL D.GILBERT
JOSEPH W.HARVEY AND WIFE DEBRA L.HARVEY
JEFFERY M.SETTLE AND WIFE MARSHA A.SETTLE
PERRY GILBERT AND WIFE BLANCHE GILBERT
COLLAR & EXTEND
WOODS
ORCHARD
4" PLASTIC
R/W=PL
REVISIONS
FOR -Y25REV-,-Y25- PROFILE SEE SHEET 38
FOR -Y25-,-Y25REVI- PROFILE SEE SHEET 39
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-2511 CB	20
R/W SHEET NO.	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

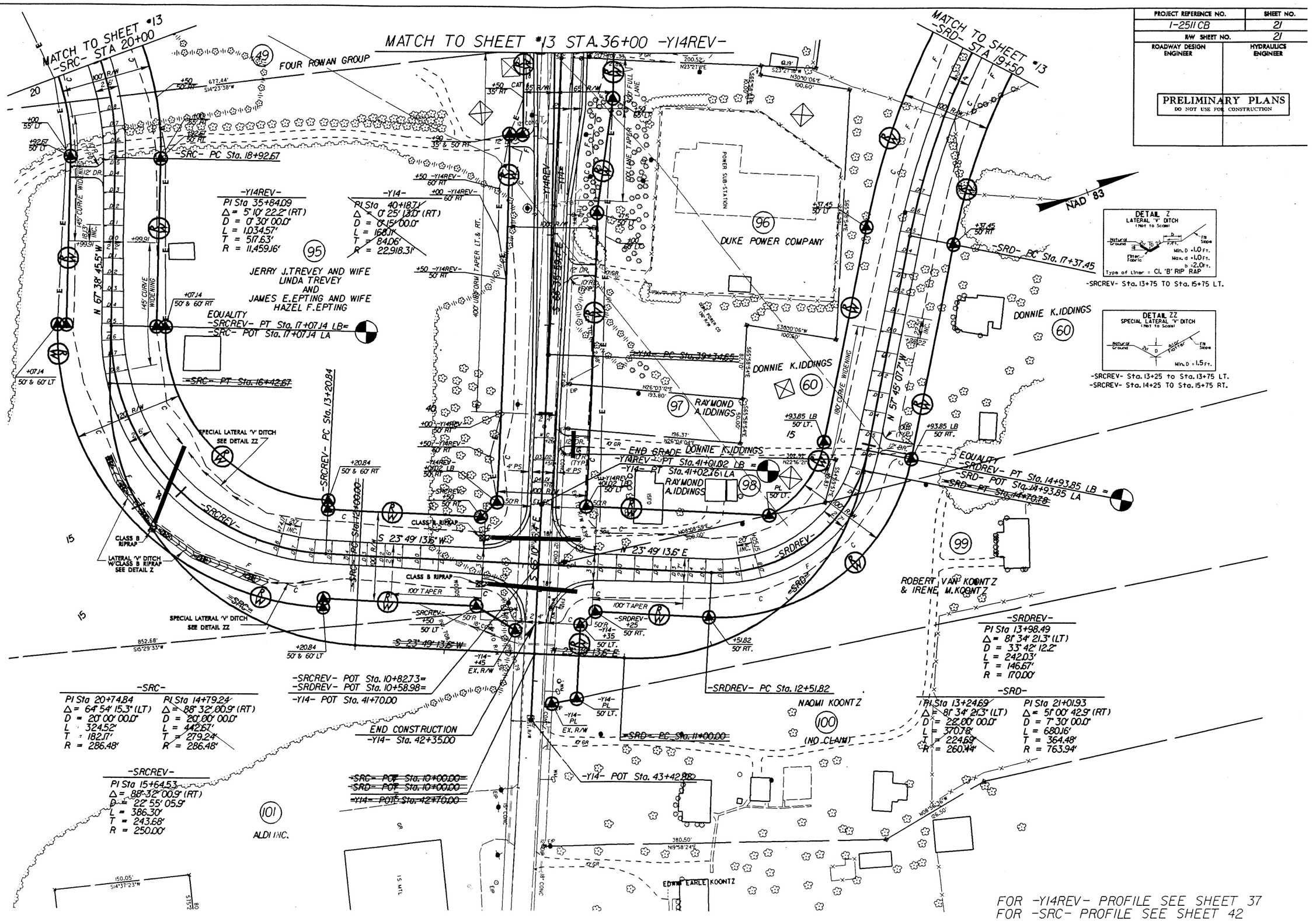


GRADY D.ARRANTS
-Y14- PT Sta.13+22.61
CLIFFORD B.DAVIS AND WIFE
MARY C.DAVIS
BEGIN CONST.
-Y14- POT Sta. 14+00.00
-Y14- PC Sta.14+53.71 LB =
-Y14REV- PC Sta. 14+53.71 LA
NAD 83
LAWRENCE G.GRUBB
JAMES C.DAVIS AND WIFE
SHELIA W.DAVIS
ALLEN W.CARTER AND WIFE
ELLEN GREENE CARTER
COULD NOT TELL FLOW OF DITCH
ELVIN N.HOFFNER
AND
CATHERINE CLARK HOFFNER
-SRA- POT Sta. 10+10.88 =
-SRB- POT Sta. 10+00.00 =
-Y14REV- POC Sta. 19+85.00
-SRA- PC Sta. 11+35.88
-SRB- PC Sta. 11+25.00
MELVIN A.CORRIHER
AND WIFE
ILENE G.CORRIHER
RACHAEL CRESS
-SRB- PT Sta. 13+50.17
-SRA- PT Sta. 13+91.53
MARVIN A.CRESS
AND WIFE
RACHAEL H.CRESS
MATCH TO SHEET #13 ST A. 21+00 -Y14REV-
MATCH TO SHEET #13 -SRB- STA. 14+00
MATCH TO SHEET #13 -SRA- STA. 14+50
SR 2120 LONGS FERRY RD
-Y14-
PI Sta 11+61.47
Δ = 6° 27' 07.7" (LT)
D = 2° 00' 00.0"
L = 322.61'
T = 161.47'
R = 2,864.79'
PI Sta 15+16.77
Δ = 1° 15' 40.0" (LT)
D = 1° 00' 00.0"
L = 126.11'
T = 63.06'
R = 5,729.58'
PI Sta 18+46.31
Δ = 3° 42' 54.3" (RT)
D = 1° 30' 00.0"
L = 247.67'
T = 123.88'
R = 3,819.72'
-SRA-
PI Sta 12+71.05
Δ = 46° 01' 00.2" (RT)
D = 18° 00' 00.0"
L = 255.65'
T = 135.17'
R = 318.31'
-SRB-
PI Sta 12+72.88
Δ = 54° 36' 21.7" (LT)
D = 20° 00' 00.0"
L = 273.03'
T = 147.88'
R = 286.48'
-Y14REV-
PI Sta 19+44.78
Δ = 4° 54' 27.9" (RT)
D = 0° 30' 00.0"
L = 981.55'
T = 491.07'
R = 11,459.16'

REVISIONS
11/20/01 R/W REV. PARCEL 45 - ADDED PDE AND ADDITIONAL TCE.SLS
11/20/01 R/W REV. PARCEL 92 - ADDED PDE.SLS

FOR -Y14REV- PROFILE SEE SHEET 37
FOR -SRA- PROFILE SEE SHEET 40
FOR -SRB- PROFILE SEE SHEET 41

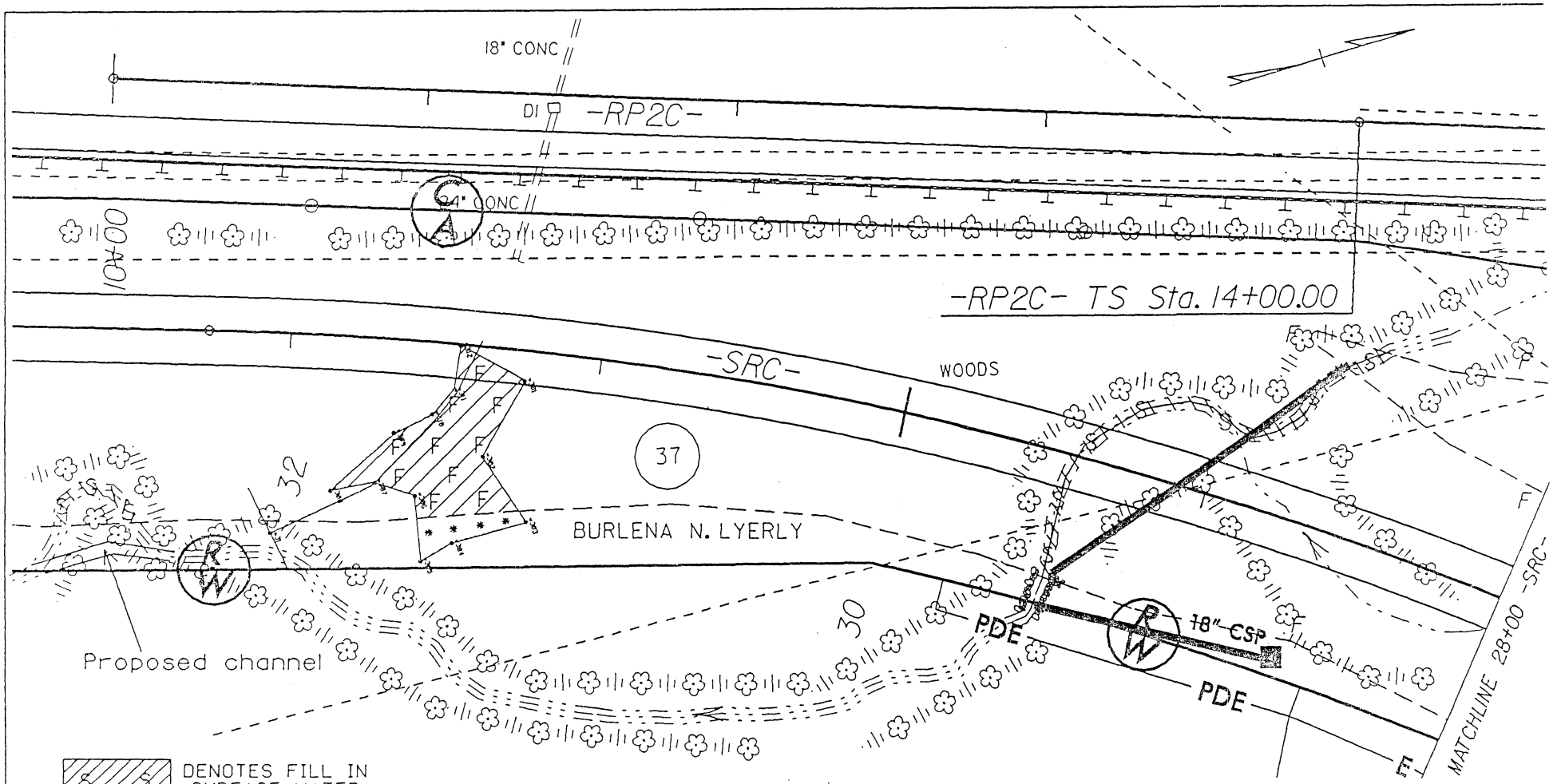
8/17/99



REVISIONS

11/21/02 R/W REV. PARCEL 99 - ADJUSTED PROPOSED R/W TO ELIMINATE REMNANT PROPERTY. SLS

8/17/99



PLAN VIEW

SITE 6

NCDOT

DIVISION OF HIGHWAYS

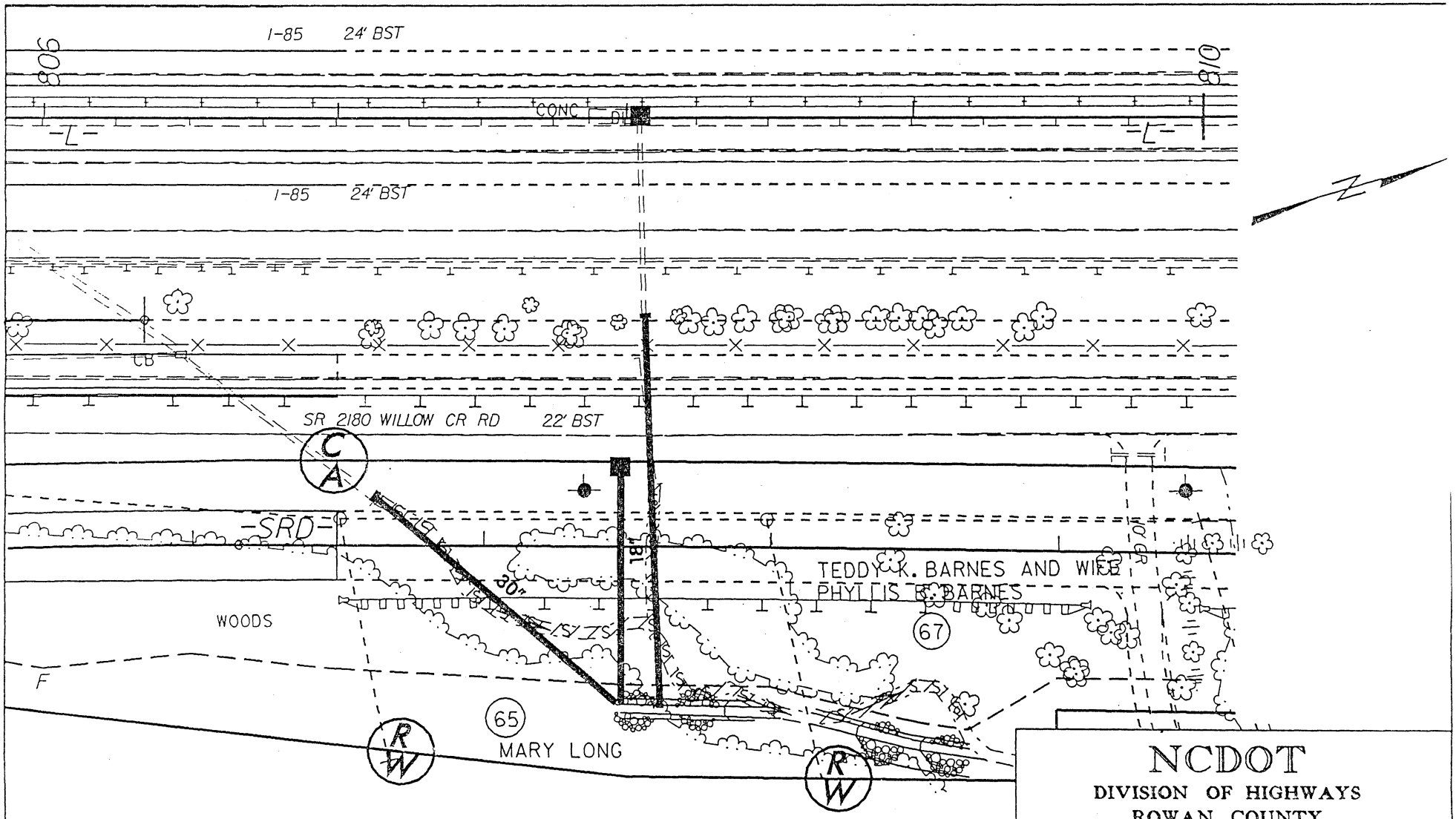
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED 09/12/03

SHEET 23 OF 5



PLAN VIEW

SITE 7A

NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

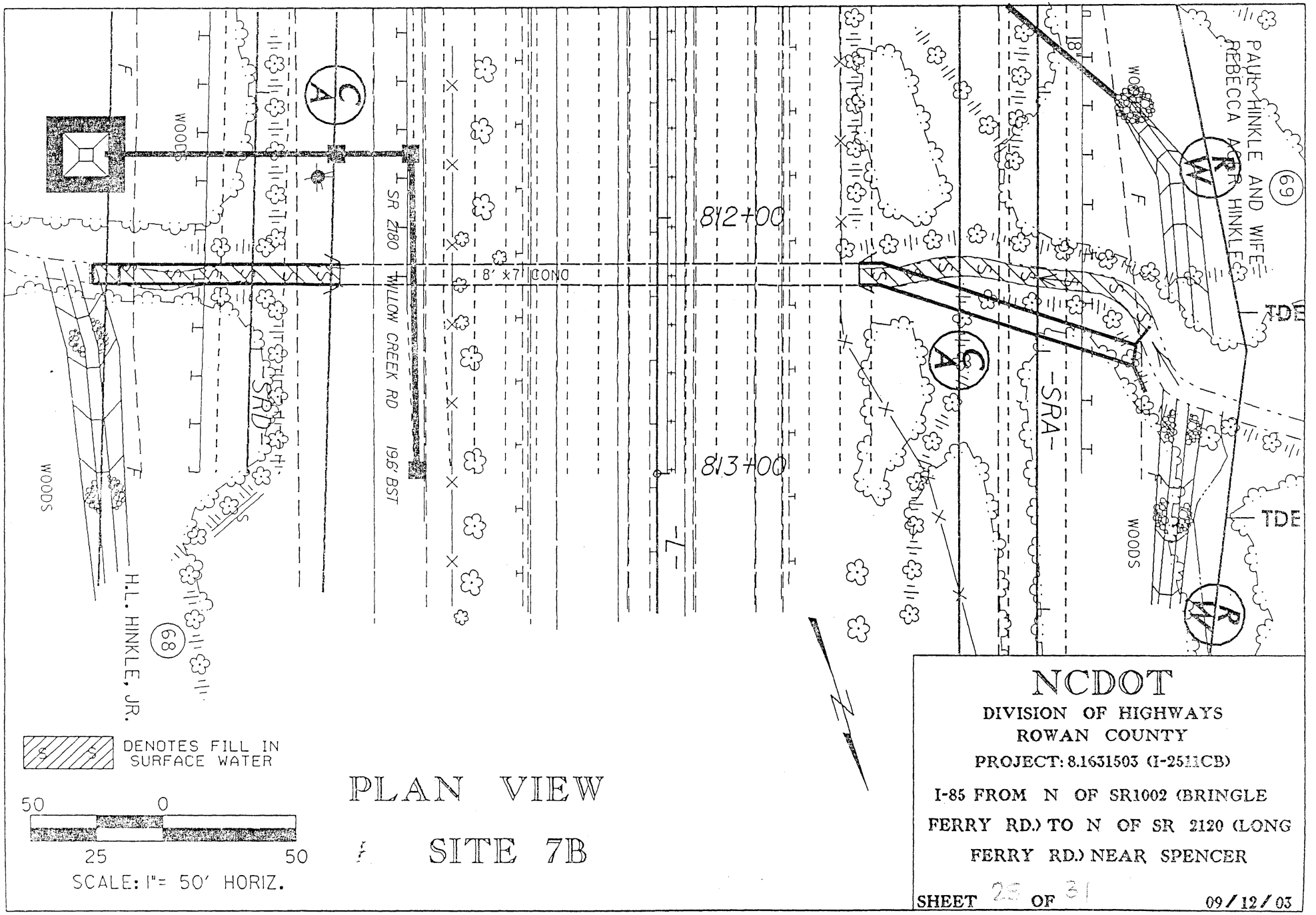
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED

09/12/03

SHEET 24 OF 51



PLAN VIEW

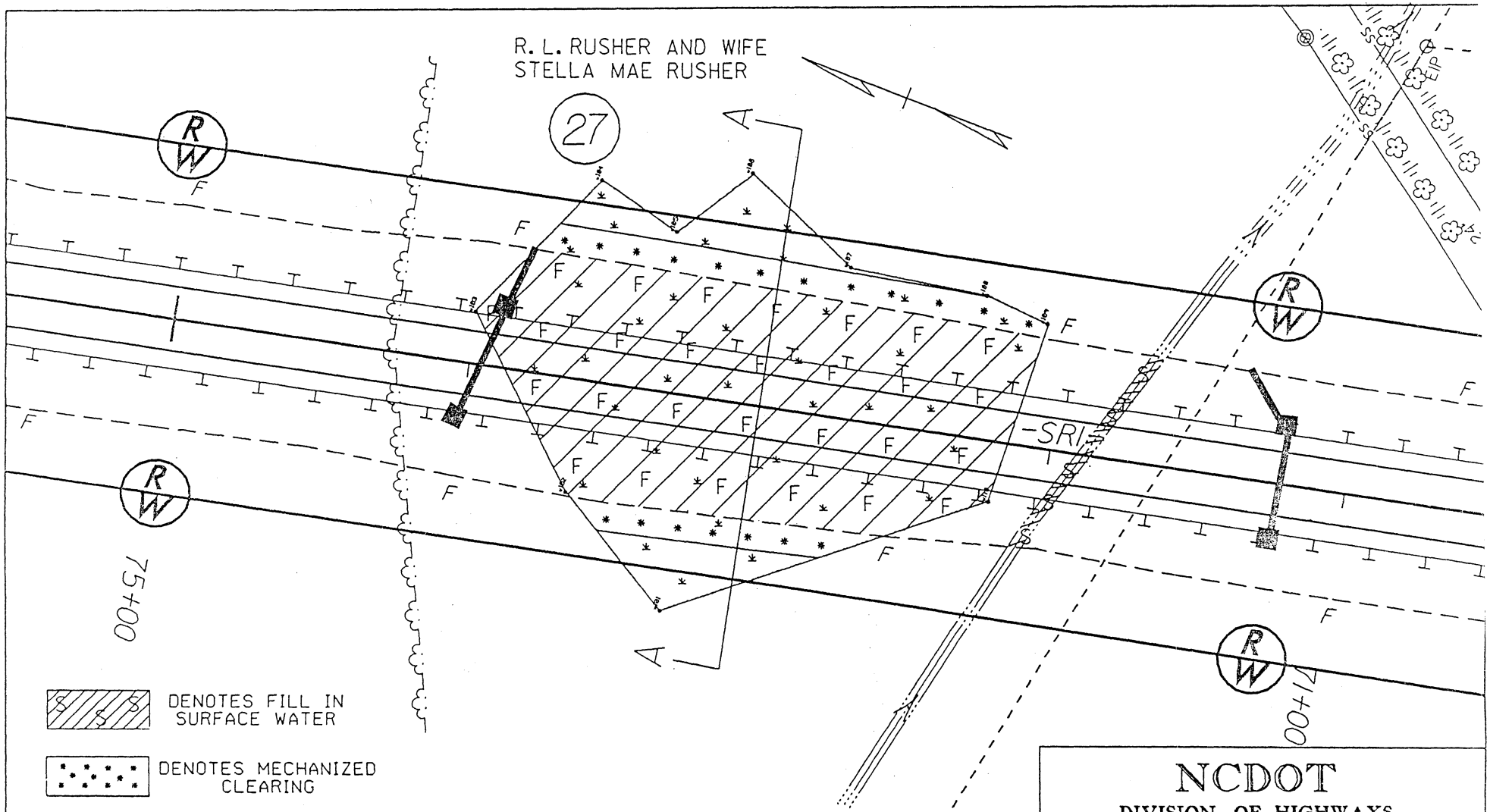
SITE 7B

NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 25 OF 31 09/12/03



SITE 8

PLAN VIEW

NCDOT

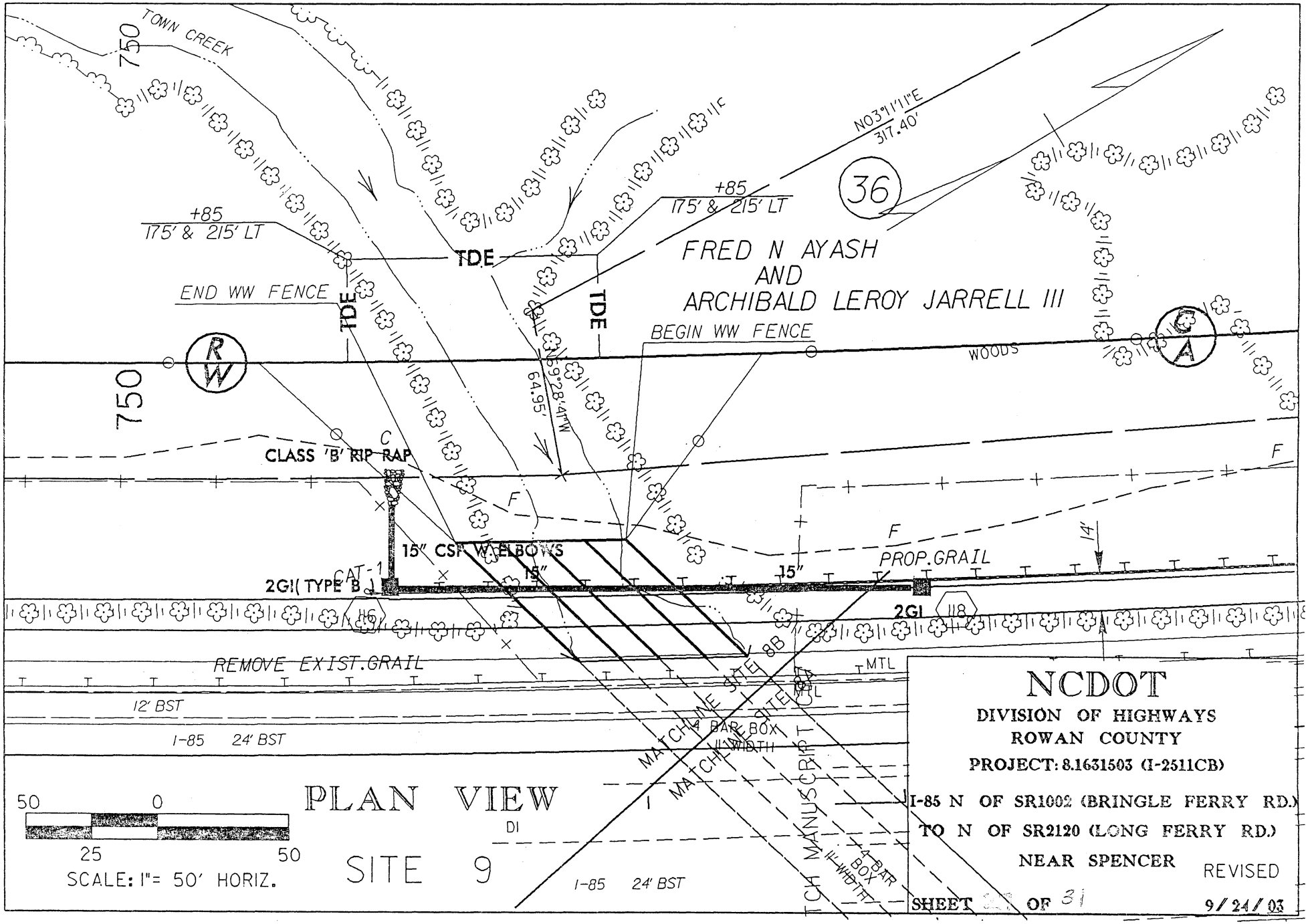
DIVISION OF HIGHWAYS
ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

REVISED
09/12/03

SHEET 2b OF 31



NCDOT

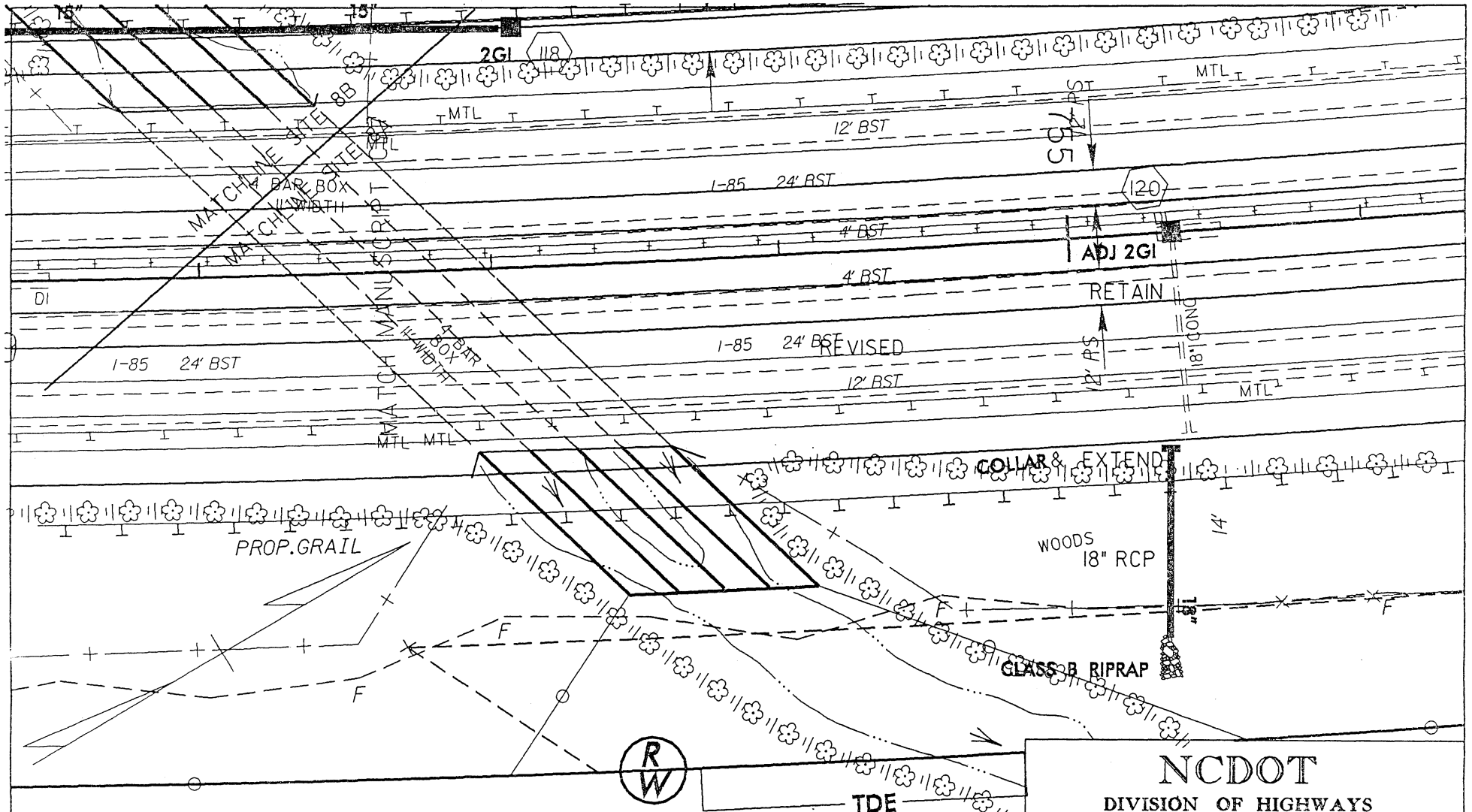
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 N OF SR1002 (BRINGLE FERRY RD.)
TO N OF SR2120 (LONG FERRY RD.)
NEAR SPENCER

REVISED

SHEET 25 OF 31

9/24/03



SITE 9
PLAN VIEW

NCDOT
DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR1002 (BRINGLE FERRY RD.) TO N OF SR2120 (LONG FERRY RD.) NEAR SPENCER

SHEET 29 OF 31 **9/24/03**

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To) (-L-)	Structure Size / Type	WETLAND IMPACTS				SURFACE WATER IMPACTS				
			Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	647+50 -L- (LT/RT)	30" RCP	0	0	0	0	0.003	0	0	66	0
2	680+00 -L- (LT/RT)	30" RCP	0	0	0	0	0.01	0	0	180	0
3	49+27 -SR1- (LT.)	18" RCP	0	0	0	0	0.01	0	0	93	0
4	RPIC 16+00	18" RCP	0.001	0	0	0.003	0.008	0	0	114	0
5	708+00-717+00 -L-	SPANS:3@60';1@45'	0	0	0	0	0.64	0	0	864	1375
	LT.	BRIDGE	0	0	0	0	0	0	0	0	0
6	SRC 31+40 (LT.)	NONE	0.041	0	0	0.006	0.009	0	0	200	0
7A & 7B	808+00-812+00	18"/30"RCP/8x7 RCBC	0	0	0	0	0.06	0	0	481	0
8	SR1- 72+00	NONE	0.41	0	0	0.06	0	0	0	90	0
9	752+65.85-L-	4@11' x 13' RCBC	0	0	0	0	0.1	0	0	130	0
TOTALS:			0.452	0	0	0.069	0.84	0	0	2218	1375

SITE 3: 93ft. Does not require mitigation

SITE 6: 163ft. Does not require mitigation
37ft. Does require mitigation

SITE 7A: 230ft. Does not require mitigation

22ft. Does require mitigation

Site8: 90ft. Does not require mitigation

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

REVISED

SHEET OF (9/12/03)

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	JAMES E. SMITH	453 STEEPLECHASE TRAIL SALISBURY N.C. 28144
2	JAMES E. SMITH	453 STEEPLECHASE TRAIL SALISBURY N.C. 28144
9	WALLACE PROPERTIES	301 N. MAIN ST. SALISBURY N.C. 28145-0102
10	VOYLS W. & SHARON TYSINGER	740 CHOATE RD. SALISBURY N.C. 28146
12	NEW HOPE BAPTIST CHURCH	830 CHOATE RD. SALISBURY N.C. 28146
16	OLIN E. STAMPER & WIFE	308 HENDERSON ST. SALISBURY N.C. 28144
27	ROBERT LEE & STELLA RUSHER	721 ANDREWS ST. SALISBURY N.C. 28144-8714
28	CECIL B. DAY COMPANIES, INC.	7000 CENTRAL PARKWAY NE STE. 850 ATLANTA GA. 30328
29	DEBORAH T. AREY	2685 PROVIDENCE CHURCH RD. SALISBURY N.C. 28146

NCDOT

DIVISION OF HIGHWAYS
ROWAN COUNTY
PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
37	BURLENA N. LYERLY	1031 OLD MOCKSVILLE RD. SALISBURY N.C. 28144
65	MARY LONG	OVERHILL DR. SALISBURY N.C. 28144
67	TEDDY BARNES & WIFE	405 WILLOW CREEK DR. SALISBURY, N.C. 28146- 2469
18A	CLARICE H. & KAREN L. ROE	2 LAUREL BROOK CT. GREENSBORO, N.C. 27407- 5037

NCDOT

DIVISION OF HIGHWAYS

ROWAN COUNTY

PROJECT: 8.1631503 (I-2511CB)

I-85 FROM N OF SR 1002 (BRINGLE FERRY RD.) TO N OF SR 2120 (LONG FERRY RD.) NEAR SPENCER

HYDRAULIC DESIGN MEETING FOR I-2511CB, ROWAN COUNTY, ON 6-20-02

Team Members: Randy Henegar, NCDOT Hydraulics
Elizabeth Lusk, NCDOT PDEA(PRESENT)
Cynthia Van Der Wiele, NCDWQ(PRESENT)
Eric Alsmeyer, COE (PRESENT)
David Cox, NCWRC (ABSENT)
Marella Buncick, USFWS (ABSENT)

Participants: David Chang,NCDOT Hydraulics
Greg Crosby, NCDOT Hydraulics
Diane Hampton, NCDOT Div. 9
Roger Thomas, NCDOT Roadway
Sam St. Clair, NCDOT Roadway

Randy Henegar opened the meeting discussing comments from David Cox (NCWRC) who could not attend the meeting, but had earlier posed questions and marked some half size plans for Randy Henegar to take to the meeting. David Cox was mainly concerned with the burying of cross-pipes and culverts. Randy Henegar stated that all pipes and culverts on jurisdictional streams would be buried a certain depth according to the pipe size. There was a general discussion of rip-rap at the outlet of pipes in live streams. Rip-rap should only be shown on the banks and not in the bed of live streams and that a new detail would be needed to show specifics at each site. Randy Henegar then went through the plans and discussed each of the wetland/surface water sites with the team members.

Site UT1: Symbol denoting rip-rap at the outlet of cross-pipes needs to be revised to show no rip-rap in bed of stream.

Action Taken: This will be done at outlets to all pipes in jurisdictional streams.

Site UT2: Elizabeth Lusk stated it was jurisdictional and mitigatable.

Site UT3: No comments.

Site UT4: Talked about small stream relocation at Sta.772 + 00-L- Rt. Because of the limited length of the relocation no action needs to be taken.

Wetland2: Elizabeth Lusk pointed out where wetlands was located. Sta.16 + 00-rp1c-

Town Creek relocation: Question was asked why stream was relocated and the reason was stated by Roger Thomas that because of the proposed location of the ramp, -Y- line, and SR1915 (Old Union Church Road). Randy Henegar discussed the reference stream he had surveyed. Randy Henegar said the reference stream was smaller than Town Creek, but a lot of the characteristics were similar. Elizabeth Lusk mentioned the possibility of

another reference site in Rowan County she found. Randy Henegar said he would investigate this reference stream to see if it would better represent Town Creek. Eric Alsmeyer mentioned the possibility of alternatives, but no suggestions other than the channel relocation were put forth.

Site UT5: It was discussed at Sta.71 + 60-SR1- whether a cross-pipe should be at this site, Randy Henegar said he would look into the possibility of designing a cross-pipe at this site.

Wetland 1: Is located at Sta.72 + 00-SR1- and the question of an alternate alignment of *SR1* to minimize the impact to the wetlands. Roger Thomas of Roadway Design said he would look at the idea of moving –SR1- if it is feasible.

Wetland3: The only thing said was in regard to the location of the wetland at Sta.31 + 50-SRC- .

Site UT6:Elizabeth Lusk and Eric Alsmeyer discussed the fact that upstream is classified as intermittent and downstream is classified as perennial.

Site UT7: No comments.

Site UT8: No comments.

Site UT11: Elizabeth Lusk said this site is classified as intermittent located at Sta.733 + 00-L- Right and Left.

HYDRAULICS DESIGN & PERMIT DRAWINGS REVIEW MEETING, ROWAN COUNTY I-2511CB
9-19-02

Team Members: Randy Henegar, NCDOT Hydraulics
Elizabeth Lusk, NCDOT PDEA(PRESENT)
Cynthia Van Der Wiele, NCDWQ(PRESENT)
Eric Alsmeyer, USACE(PRESENT)
Marla Chambers, NCWRC, (PRESENT)
Marella Buncick, USFWS, (ABSENT)
Chris Militscher,EPA, (ABSENT)

Particpants: David Chang, NCDOT Hydraulics
Roger Thomas, NCDOT Roadway
Diane Hampton, NCDOT Div. 9
Jerry Parker, NCDOT PDEA
Greg Crosby, NCDOT Hydraulics

Subject: 4C Meeting

Randy Henegar opened the meeting going over the general outline of the permit, and pointed out some of the points made from the meeting on June 20, 2002. Randy Henegar stated that the Natural Stream Design still had some work left to be done. Elizabeth Lusk and Randy Henegar then proceeded to go over each permit site.

Site 1: Marla Chambers brought up the question about diversion channels being used when installing small pipes and the impact that these diversion channels may cause. Randy Henegar and David Chang said that it depended on the site and that in some cases the pipes could be laid in the wet, but in some cases depending on the location of the stream a diversion channel may be necessary to keep the channel on a good alignment.

Site 2: Elizabeth Lusk said it was intermittent with mitigation ,and along with Eric Alsmeyer said the sight should be rechecked by PDEA and Hydraulics for additional impacts.Make adjustment in permit drawings if needed.

Site 3:Elizabeth Lusk pointed out the non-jurisdictional and the jurisdictional part of the stream. Make adjustments in permit drawings if needed.

Site 4: No mitigation at this site.

Site 5: Randy Henegar handed out additional information on the channel change and natural stream design.Randy Henegar discussed the Morphological Table and the characteristics of the existing creek and how they compared to the reference stream(Big Branch, Surry County) and the differences between them. A question was asked about

why stream relocation was put at its current location and about the placement of ramps, service roads and bridges because of the impact these locations will have on Town Creek. Roger Thomas explained why ramps and service roads have been revised due to right of way constraints and design standards. The stream relocation was put in the center of the floodplain and meets the criteria for natural stream design. Randy Henegar talked about the borings that were taken on natural ground along the stream relocation , and how close bedrock would be to the proposed bed of stream relocation.
Also discussed was the stockpiling of bed material from the existing creek so it may be used in the bed of the proposed stream relocation.

Site 6: Elizabeth Lusk says there will be fill in wetlands. Perennial stream and that there should be an impact. Site should be looked at again by PDEA and Hydraulics.

Site 7: No comments

Note: Address Design Build (July contract) and submitting Floodway Modification.
Some sites where the wetlands extend just outside the fill slopes will be considered a total impacted area.

Site 8: Question of why service road was located where it was. Roger Thomas said he would look into it; and report back to team members.

D. R. Henderson, PE
Hydraulics

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DEC 19 2002
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

2CH

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEMO TO: Mr. David R. Henderson, PE
State Hydraulics Engineer

ATTN: Mr. Randy Henegar, PE

FROM: Roger Thomas, PE
Project Engineer

DATE: December 18, 2002

SUBJECT: Project 8.1631503(I-2511CB) Rowan County
F. A. Project IR-IM-85-3(132)74
Reconstruction of I-85 from North of SR 1002 (Bringle Ferry Rd) to North of SR 2120 (Long Ferry Rd)

Merger 4C Meeting - Wetland Site 8

This letter is in response to the Merger 4C meeting held September 19, 2002. During the meeting, Mr. Eric Alsmeyer, with the US Army Corps of Engineers, requested additional information documenting why adjustments could not be made to the preliminary design to avoid/minimize impacts to wetland site 8.

Wetland site 8 is impacted by a relocated service road in the southwest quadrant of the reconstructed Old Union Church Road interchange. The purpose of the service road is to provide access to the properties along I-85 and Old Union Church Road. Without the service road, these properties would not have access because the project requires full control of access along I-85 and Old Union Church Road. The control of access extends along Old Union Church Road approximately 900 feet from the proposed ramp terminal. This control of access will prohibit any future driveway connections that could effect the operation of the at grade intersection with the proposed interchange ramps and Old Union Church Road.

The service road ties into Old Union Church Road approximately 600 feet west beyond the proposed control of access. It was relocated beyond the control of access help maintain traffic during construction and avoid conflicting with a temporary detour. The temporary detour is required while earth embankment is placed to raise the grade along Old Union Church Road.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN UNIT
1582 MAIL SERVICE CENTER
RALEIGH NC 27699-1582

TELEPHONE: 919-250-4016
FAX: 919-250-4036
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC

The construction limits required for the service road is approximately 100 feet. The approximate width of the wetland site 8 is 150 feet. To shift the horizontal alignment to avoid the wetland site would require the horizontal alignment to shift approximately 130 feet to the north or a shift of 120 feet to the south.

Because of the relatively short distance from wetland site 8 to the proposed intersection between the service road and Old Union Church Road, shifting the horizontal alignment northward would be unacceptable from a design standpoint. The alignment would not meet our current design guidelines for the design speed of the service road. Shifting the horizontal alignment southward would require the relocation of a cell tower. Based upon coordination with our Right of Way Branch, the approximate costs to relocate the cell tower is $250,000.

In summary, I regret that wetland site 8 is impacted by the service road; however, due to the existing constraints as noted above, it appears that impacts to the wetland site 8 are unavoidable.

If you have any questions, please contact me at (919) 250-4016.

RDT

cc: Jay A. Bennett, PE
Wayne Patterson - Div. 9 Right of Way