STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 15, 2008

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

ATTN: Mr. William J. Biddlecome
NCDOT Coordinator

N. C. Dept. of Environment and Natural Resources
Division of Coastal Management
1367 U. S. Highway 17
Elizabeth City, NC 27909

ATTN: Mr. Jim Hoadley
NCDOT Coordinator

Dear Sirs:

Subject: **Application for an Individual Section 404, Section 401 Water Quality Certification, and a CAMA Major Development Permit** for the widening of US 158/NC 34 from East of Pasquotank River to the US 158/ NC 34 split in Camden County. Federal Aid Project No. STP-158(2), Division 1, TIP Nos. R-2414 A&B. Debit $570 from WBS 34430.1.1.

Please see the enclosed ENG 4345, Ecosystem Enhancement Program (EEP) mitigation acceptance letter, CAMA-MP forms, permit drawings, design plans, State Stormwater Management Plan, copy of State Stormwater Permit, Indirect and Cumulative Effects Analysis, and 4B & 4C merger meeting minutes for the above referenced project. An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) have been completed and distributed for this project. Additional copies are available upon request. The North Carolina Department of Transportation (NCDOT) proposes to widen the existing 2 lane facility to a 4 lane facility. The total length of the project is 5.3 miles.

Purpose and Need:
The purpose of the proposed project is to provide a continuous multi-lane facility between Elizabeth City and Belcross to meet future travel demands by improving the traffic capacity and efficiency on US 158/NC 34. Widening the existing facility will also improve safety along the subject section of US 158/NC 34. The purpose of this facility is to improve safety, increase economic benefits, and improve the Level of Service of US 158/ NC 34.

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

TELEPHONE: 919-733-3141
FAX: 919-715-1501
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Summary of Impacts:
The project will permanently impact 4.35 acres of riparian wetlands, 247 linear feet of streams, and temporarily impact 174 feet of streams.

Summary of Mitigation: The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the NEPA and design processes. Compensatory mitigation for proposed impacts to jurisdictional streams and wetlands will be provided by the NC EEP.

NEPA DOCUMENT STATUS

An EA was prepared for this project in August 1997. A FONSI was prepared in July 1998. Due to the amount of time that had passed since the completion of the FONSI, this project was reevaluated in June 2006 to ensure the FONSI is still valid. Copies of the EA and FONSI have been provided to regulatory review agencies involved in the approval process. A Right of Way Consultation was completed in 2007. Additional copies will be provided upon request.

MERGER PROCESS SUMMARY

The 4B meeting was held for this "A" section of this project on February 16, 2005, and the 4C meeting was held on April 11, 2007. For the "B" section of this project, both the 4B and 4C meetings were held on October 23, 2003.

INDEPENDENT UTILITY

The subject 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:

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

RESOURCE STATUS

Wetland delineations:
Potential wetland communities were investigated pursuant to the 1987 Corps of Engineers Wetland Delineation Manual. Mr. Bill Biddlecome of the U.S. Army Corps of Engineers verified the wetlands and surface waters on January 15, 2004. Mr. Jim Hoadley of the Division of Coastal Management identified the Coastal Area Management Act (CAMA) jurisdiction of the project on January 15, 2008. Each impact is described in detail below. Site and station numbers correspond with the permit (hydraulic) drawings included in this application.

R-2414 Stream Classifications

Section	Permit Site No.	Stream Name	Sub-basin	Stream Index No.	Best Usage Classification
A	11	UT to Pasquotank River	03-01-50	30-3-(7)	SC
B	3	UT to Pasquotank River	03-01-50	30-3-(7)	SC
B	6	UT to Sawyers Creek	03-01-50	30-3-6	C; Sw
B	7	UT to Sawyers Creek	03-01-50	30-3-6	C; Sw

All streams in the project area are perennial

Impacts to Waters of the United States

Wetland Impacts & Descriptions

Section	Permit Site No.	Permanent (ac)	Temporary (ac)	Mitigation Required
A	1	<0.01	--	Yes
A	3	0.01	--	Yes
A	4	0.03	--	Yes
A	5	<0.01	--	Yes
A	6	0.02	--	Yes
A	7	0.12	--	Yes
A	8	1.46	--	Yes
A	9	0.01	--	Yes
A	10	0.18	--	Yes
Total Section A		1.83	--	--
B	2	0.09	--	Yes
B	3	1.04	--	Yes
B	4	0.06	--	Yes
B	5	0.08	--	Yes
B	6	0.86	--	Yes
B	7	0.38	--	Yes
Total Section B		2.52	--	--
Total For A & B		4.35	--	--

All wetlands impacted are riparian wetlands.

Surface Water Impacts & Descriptions

Section	Permit Site No.	Stream Name	Permanent (ft)	Permanent (ac)	Temporary (ft)	Temporary (ac)
A	11	UT to Pasquotank River	--	--	105	0.08
B	3		121	0.04	29	0.01
B	6		92	0.05	21	0.01
B	7		83	0.02	83	0.01
Total For Section B			297	0.11	133	0.03
Total For A & B			297*	0.11	238	0.11

*Only 247 feet of mitigation has been required due to the bridge replacing the 50' culvert at Site 11. All remaining sites listed above required mitigation.

Hand Clearing
A total of 10.41 acres of riparian wetland will be hand cleared (i.e. not grubbed) for this project. Of this amount, 6.61 acres of hand clearing is due to utility relocations for this project.

Utility Impacts
No temporary or permanent jurisdictional impacts will occur to wetlands and streams for utilities for this project. A total of 6.61 acres of riparian wetlands will be hand cleared due to utility relocations.

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 January 31, 2008, the U.S. Fish and Wildlife Service (FWS) lists three federally protected species for Camden County (Table 1).

The bald eagle was delisted as of August 8, 2007 and is no longer protected by the Endangered Species Act. It is, however, protected under the Bald and Golden Eagle Protection Act. Surveys were conducted August 10, 2006 and no nests or individuals were observed within 660 feet of the project area. Prior to the delisting, concurrence was received from the USFWS dated January 24, 2007, concurring with the biological conclusion of "May Affect, but is Not Likely to Adversely Affect the bald eagle.

Per conversation with Fritz Rohde on August 29, 2006, this project will have "No Effect" on the shortnose sturgeon.

Table 1. Federally Protected Species for Camden County.

Common Name	Scientific Name	Status	Habitat Present	Biological Conclusion
American Alligator	*Alligator mississippiensis*	Threatened (S/A)	Yes	N/A
Red-cockaded woodpecker	*Picoides borealis*	Endangered	No	No Effect
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered	No	No Effect

INDIRECT CUMULATIVE IMPACT ANALYSIS

Existing rules for the 401 Water Quality Certification Program (15A NCAC 2H .0506(b)(4) require that the DWQ determine that a project "does not result in cumulative impacts, based on past or reasonably anticipated future impacts, that cause or will cause a violation of downstream water quality standards."

An Indirect and Cumulative Effects Report (ICE) was completed for this project in 2007, and is included in this application.

MORATORIUM

The North Carolina Wildlife Resources Commission (NCWRC) requests a moratorium on in-water work between February 15 and June 15 for anadromous fish. Because a moratorium applies, this project falls under Case 2 (allowing no-in water work during moratorium periods) of the Best Management Practices for Bridge Demolition and Removal.

CULTURAL RESOURCES

Historical Structures & Archaeology:
Archaeological resource survey work was conducted to determine if significant archaeological resources might be disturbed. Two properties, the Creekmore Store and the Sawyer Graveyard were found to be eligible for the National Register. The Creekmore Store property was ruled eligible under Criterion A for commerce and Criterion C for architecture. The Sawyer Graveyard was ruled eligible under Criterion B for literature and Criterion C for graves. All other properties that were studied were ruled not eligible for the National Register. The State Historic Preservation Officer concurred with these findings in a letter dated November 16, 1994 found in Appendix C of the EA.

No significant archaeological resources were found within the Area of Potential Effect (APE). Most of the project area was either under cultivation or had been severely disturbed by the construction of water lines, telephone lines, and residential and/or commercial structures. Although all available areas, both within and immediately adjacent to the APE were subjected to a systematic cultural resources survey, no archaeological resources were recorded during the investigations. Therefore, additional archaeological investigations are not warranted or recommended. The State Historic Preservation Officer concurred with these findings in a letter dated August 8, 1994 found in Appendix C of the EA.

FEMA COMPLIANCE

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

WILD AND SCENIC RIVER SYSTEM

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).

MITIGATION OPTIONS

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

Avoidance and Minimization:
This project has been designed using asymmetrical widening. Using this method, the NCDOT has avoided impacting many wetlands and reduced impacts to wetlands to the greatest extent practicable. Other specific examples of avoidance and minimization measures include:

- The removal of a culvert carrying the UT to Pasquotank River and replacing the structure with a bridge.
- R-2414 has been designed using the smallest possible cross section (4' separating the travel lanes) and a minimal amount of clearing for sight distance.
- Method II Clearing will be used for the project. Method II minimizes the amount of clearing for a project. Method II clears vegetation only to the slope stake line or construction limits.
- Utility impacts are limited to hand clearing only.
- All slopes adjacent to jurisdictional resources will be at 3:1.

Compensation:
The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. The unavoidable impacts to 4.35 acres of jurisdictional wetlands and 247 feet of streams will be offset by compensatory mitigation provided by the EEP.
The remaining 50 feet of impacts will be mitigated by the 50 foot culvert being replaced by a bridge at Site 11. A copy of the EEP acceptance letter is included with this application.

PROJECT SCHEDULE

The A section of this project calls for a March 17, 2009 let date, and a review date of January 27, 2009. The B section of this project calls for a November 17, 2009 let date.
This application provides final design and impacts for both sections of the project.

REGULATORY APPROVALS

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

Section 401: We are hereby requesting a 401 Water Quality Certification from the N. C. Division of Water Quality. In compliance with Section 143 215.3D(e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit application previously noted in

this application (see Subject line). We are providing five (5) copies of this application to the NCDWQ for their review and approval.
Coastal Area Management Act: Application is hereby made for a Division of Coastal Management Major Development Permit for the above described activities.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Mr. Michael Turchy at maturchy@ncdot.gov or (919) 715-1468. A copy of this application will also be posted at http://www.ncdot.org/planning/pe/naturalunit/Permit.html.

Sincerely,

E. L. Lusk

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

W/attachment
- Mr. Brian Wrenn, NCDWQ (5 Copies)
- Ms. Kathy Matthews, USEPA
- Ms. Cathy Brittingham, NCDCM

W/o attachment (see website for attachments)
- Mr. Scott McLendon, USACE, Wilmington
- Mr. Travis Wilson, NCWRC
- Mr. Gary Jordan, USFWS
- Mr. Ron Sechler, NMFS
- Ms. Anne Deaton, NCDMF
- Dr. David Chang, P.E., Hydraulics
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Mark Staley, Roadside Environmental
- Mr. Victor Barbour, P.E., Project Services Unit
- Mr. Anthony Roper, P.E., Division 1 Engineer
- Mr. Clay Willis, Division 1 Environmental Officer
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Majed Alghandour, P. E., Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Ms. Beth Harmon, EEP
- Mr. Todd Jones, NCDOT External Audit Branch
- Mr. Charles Cox, P.E., PDEA
- Mr. Drew Joyner, PE, Human Environment Unit Head
- Mr. Clarence W. Coleman, P.E., FHWA

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

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

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

PRIVACY ACT STATEMENT

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

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

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME
North Carolina Department of Transportation
Project Development & Environmental Analysis

8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)

6. APPLICANT'S ADDRESS
1598 Mail Service Center
Raleigh, NC 27699-1548

9. AGENT'S ADDRESS

7. APPLICANT'S PHONE NOs. W/AREA CODE
a. Residence
b. Business 919-733-3141

10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence
b. Business

11. **STATEMENT OF AUTHORIZATION**

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

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
R-2414

13. NAME OF WATERBODY, IF KNOWN (if applicable)
Pasquotank River and associated UT's.

14. PROJECT STREET ADDRESS (if applicable)

15. LOCATION OF PROJECT
Pasquotank (COUNTY) NC (STATE)

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

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

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

Widening the current US 158/ NC 34 from a two lane, to a 4 lane facility on existing location.

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

The purpose of this facility is to improve safety, increase economic benefits, and improve the Level of Service of US 158/ NC 34.

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

20. Reason(s) for Discharge

Impacts will result from widening the shoulders, and lengthening/ replacing hydraulic structures.

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

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

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

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

Please see adjacent property landowners page attached to the permit drawing package.

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

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
N/A					

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

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

E.R. Lupke 10.14.08

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

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

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

Ecosystem Enhancement PROGRAM

July 14, 2008

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

R-2414, US 158/NC 34 Widening from East of the Pasquotank River in Elizabeth City to East of NC 34 in Belcross, Camden County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory wetland and stream mitigation for the subject project. Based on the information supplied by you on July 7, 2008, the impacts are located in CU 03010205 of the Pasquotank River Basin in the Northern Outer Coastal Plain (NICP) Eco-Region, and are as follows:

Stream:	247 feet
Riparian Wetland:	4.35 acres

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

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

Sincerely,

James B. Stanfill for

William D. Gilmore, P.E.
EEP Director

cc: Mr. Bill Biddlecome, USACE – Washington Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: R-2414

Ecosystem Enhancement PROGRAM

July 14, 2008

Mr. Bill Biddlecome
U. S. Army Corps of Engineers
Washington Regulatory Field Office
Post Office Box 1000
Washington, North Carolina 27889-1000

Dear Mr. Biddlecome:

Subject: EEP Mitigation Acceptance Letter:

R-2414, US 158/NC 34 Widening from East of Pasquotank River in Elizabeth City to East of NC 34 in Belcross, Camden County; Pasquotank River Basin (Cataloging Unit 03010205); Northern Outer Coastal Plain (NOCP) Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and wetland mitigation for the unavoidable impact associated with the above referenced project. As indicated in the NCDOT's mitigation request dated July 7, 2008, compensatory mitigation from EEP is required for approximately 247 feet of stream impact and 4.35 acres of riparian wetland impact.

Stream and wetland mitigation associated with this project will be provided in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers fully executed on March 8, 2007 (Tri-Party MOA). EEP commits to implement sufficient compensatory stream mitigation up to 494 warm stream credits and 8.70 riparian wetland credits to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill for

William D. Gilmore, P.E.
EEP Director

cc: Mr. Gregory J. Thorpe, Ph.D., NCDOT-PDEA
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: R-2414

DCM MP-1

APPLICATION for Major Development Permit

(last revised 12/27/06)

North Carolina DIVISION OF COASTAL MANAGEMENT

1. Primary Applicant/ Landowner Information

Business Name N.C. D.O.T.		Project Name (if applicable) R-2414 The Widening of US 158 From Elizabeth City to the US 158/ NC 34 split. WBS element 34430.1.1		
Applicant 1: First Name Gregory	MI	Last Name Thorpe		
Applicant 2: First Name	MI	Last Name		
If additional applicants, please attach an additional page(s) with names listed.				
Mailing Address 1598 Mail Service Center		PO Box	City Raleigh	State NC
ZIP 27699	Country US	Phone No. 919 - 733 - 7844 ext.		FAX No. 919 - 715 - 5501
Street Address *(if different from above)*		City	State	ZIP -
Email				

2. Agent/Contractor Information

Business Name				
Agent/ Contractor 1: First Name	MI	Last Name		
Agent/ Contractor 2: First Name	MI	Last Name		
Mailing Address		PO Box	City	State
ZIP		Phone No. 1 - - ext.	Phone No. 2 - - ext.	
FAX No.	Contractor #			
Street Address *(if different from above)*		City	State	ZIP -
Email				

<Form continues on back>

3. Project Location

County (can be multiple)	Street Address		State Rd. #
Camden			US 158/ NC 34
Subdivision Name	**City**	**State**	**Zip**
		NC	-

Phone No.	Lot No.(s) *(if many, attach additional page with list)*
- - ext.	, , , ,
a. In which NC river basin is the project located? Pasquotank	b. Name of body of water nearest to proposed project Albemarle Sound
c. Is the water body identified in (b) above, natural or manmade? ☒Natural ☐Manmade ☐Unknown	d. Name the closest major water body to the proposed project site. Pasquotank River
e. Is proposed work within city limits or planning jurisdiction? ☒Yes ☐No	f. If applicable, list the planning jurisdiction or city limit the proposed work falls within. Beginning of Project within Elizabeth City limits.

4. Site Description

a. Total length of shoreline on the tract (ft.) 656	b. Size of entire tract (sq.ft.) Project Length = 5.3 miles
c. Size of individual lot(s) , , , *(If many lot sizes, please attach additional page with a list)*	d. Approximate elevation of tract above NHW *(normal high water)* or NWL *(normal water level)* 4.0' ☒NHW or ☐NWL

e. Vegetation on tract
Asphalt, Grass, woods

f. Man-made features and uses now on tract
Residential and commercial buildings and roadway

g. Identify and describe the existing land uses adjacent to the proposed project site.
Residential and commercial

h. How does local government zone the tract? MC (Marine Commercial)	i. Is the proposed project consistent with the applicable zoning? (Attach zoning compliance certificate, if applicable) ☒Yes ☐No ☐NA

j. Is the proposed activity part of an urban waterfront redevelopment proposal?	☐Yes ☒No
k. Has a professional archaeological assessment been done for the tract? If yes, attach a copy.	☒Yes ☐No ☐NA
If yes, by whom?	NCDOT
l. Is the proposed project located in a National Registered Historic District or does it involve a National Register listed or eligible property?	☒Yes ☐No ☐NA

<Form continues on next page>

m. (i) Are there wetlands on the site?	☒Yes ☐No
(ii) Are there coastal wetlands on the site?	☒Yes ☐No
(iii) If yes to either (i) or (ii) above, has a delineation been conducted? *(Attach documentation, if available)*	☒Yes ☐No

n. Describe existing wastewater treatment facilities.
none

o. Describe existing drinking water supply source.
city water

p. Describe existing storm water management or treatment systems.
Existing storm exits the roadway directly onto the grassed shoulders.

5. Activities and Impacts

a. Will the project be for commercial, public, or private use? ☐Commercial ☒Public/Government ☐Private/Community

b. Give a brief description of purpose, use, and daily operations of the project when complete.
Widening Existing US 158/NC 34 Roadway Facility.

c. Describe the proposed construction methodology, types of construction equipment to be used during construction, the number of each type of equipment and where it is to be stored.
Widen US 158 with fill or excavation using motor graders, dump trucks, bulldozers, backhoes. Construction bridge at UT to Pasquotank River using crane..

d. List all development activities you propose.
Widening US 158

e. Are the proposed activities maintenance of an existing project, new work, or both? Widen existing US 158

f. What is the approximate total disturbed land area resulting from the proposed project? 38 ☐Sq.Ft or ☒Acres

g. Will the proposed project encroach on any public easement, public accessway or other area that the public has established use of? ☒Yes ☐No ☐NA

h. Describe location and type of existing and proposed discharges to waters of the state.
Discharge of one drop inlet in wetland out from the top of bank at UT to Pasquatank River bridge.

i. Will wastewater or stormwater be discharged into a wetland? ☒Yes ☐No ☐NA

If yes, will this discharged water be of the same salinity as the receiving water? ☐Yes ☐No ☐NA

j. Is there any mitigation proposed? ☒Yes ☐No ☐NA
If yes, attach a mitigation proposal.

<Form continues on back>

6. Additional Information

In addition to this completed application form, (MP-1) the following items below, if applicable, must be submitted in order for the application package to be complete. Items (a) – (f) are always applicable to any major development application. Please consult the application instruction booklet on how to properly prepare the required items below.

a. A project narrative.

b. An accurate, dated work plat (including plan view and cross-sectional drawings) drawn to scale. Please give the present status of the proposed project. Is any portion already complete? If previously authorized work, clearly indicate on maps, plats, drawings to distinguish between work completed and proposed.

c. A site or location map that is sufficiently detailed to guide agency personnel unfamiliar with the area to the site.

d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.

e. The appropriate application fee. Check or money order made payable to DENR.

f. A list of the names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail. Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management.

Name see landowner tables found in the attaced permit drawings
Phone No.

Address

Name
Phone No.

Address

Name
Phone No.

Address

g. A list of previous state or federal permits issued for work on the project tract. Include permit numbers, permittee, and issuing dates.
State of NC Stormwater Permit (for R-2414 A). Issued by the NC Div of Water Quality, Permit No. SW7080616. Issued 8/27/2008
State of NC Stormwater Permit (for R-2414 B). Issued by the NC Div of Water Quality, Permit No. SW7040701, issued 8/11/2004

h. Signed consultant or agent authorization form, if applicable.

i. Wetland delineation, if necessary.

j. A signed AEC hazard notice for projects in oceanfront and inlet areas. *(Must be signed by property owner)*

k. A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A 1-10), if necessary. If the project involves expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

7. Certification and Permission to Enter on Land

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit.

I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project.

I further certify that the information provided in this application is truthful to the best of my knowledge.

Date 10-14-08 Print Name E.L. Lusk

Signature E.L. Lusk

Please indicate application attachments pertaining to your proposed project.

☒DCM MP-2 Excavation and Fill Information ☒DCM MP-5 Bridges and Culverts

☐DCM MP-3 Upland Development

☐DCM MP-4 Structures Information

Form DCM MP-2

EXCAVATION and FILL

(Except for bridges and culverts)

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

Describe below the purpose of proposed excavation and/or fill activities. **All values should be given in feet.**

	Access Channel (NLW or NWL)	Canal	Boat Basin	Boat Ramp	Rock Groin	Rock Breakwater	Other (excluding shoreline stabilization)
Length							
Width							
Avg. Existing Depth					NA	NA	
Final Project Depth					NA	NA	

1. EXCAVATION

☐ *This section not applicable*

a. Amount of material to be excavated from below NHW or NWL in cubic yards.

b. Type of material to be excavated.

c. (i) Does the area to be excavated include coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB _____

☐WL _____ ☒None

(ii) Describe the purpose of the excavation in these areas:

d. High-ground excavation in cubic yards.

1200

2. DISPOSAL OF EXCAVATED MATERIAL

☐ *This section not applicable*

a. Location of disposal area.

b. Dimensions of disposal area.

c. (i) Do you claim title to disposal area?

☐Yes ☐No ☐NA

(ii) If no, attach a letter granting permission from the owner.

d. (i) Will a disposal area be available for future maintenance?

☐Yes ☐No ☐NA

(ii) If yes, where?

e. (i) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB _____

☐WL _____ ☐None

(ii) Describe the purpose of disposal in these areas:

f. (i) Does the disposal include any area in the water?

☐Yes ☐No ☐NA

(ii) If yes, how much water area is affected?

3. SHORELINE STABILIZATION

☒ *This section not applicable*

(If development is a wood groin, use MP-4 – Structures)

a. Type of shoreline stabilization:
☐Bulkhead ☐Riprap ☐Breakwater/Sill ☐Other: _____

b. Length: _____
Width: _____

c. Average distance waterward of NHW or NWL:

d. Maximum distance waterward of NHW or NWL:

e. Type of stabilization material:

f. (i) Has there been shoreline erosion during preceding 12 months?
☐Yes ☐No ☐NA
(ii) If yes, state amount of erosion and source of erosion amount information.

g. Number of square feet of fill to be placed below water level.
Bulkhead backfill _____ Riprap _____
Breakwater/Sill _____ Other _____

h. Type of fill material.

i. Source of fill material.

4. OTHER FILL ACTIVITIES
(Excluding Shoreline Stabilization)

☐*This section not applicable*

a. (i) Will fill material be brought to the site? ☒Yes ☐No ☐NA
If yes,
(ii) Amount of material to be placed in the water _____
(iii) Dimensions of fill area _____
(iv) Purpose of fill
Fill will be used to widen existing US 158.

b. (i) Will fill material be placed in coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
☐CW _____ ☐SAV _____ ☐SB _____
☒WL 105000 ☐None
(ii) Describe the purpose of the fill in these areas:
Fill will be used to widen existing US 158.

5. GENERAL

a. How will excavated or fill material be kept on site and erosion controlled?
Approved NCDOT erosion control devices.

b. What type of construction equipment will be used (e.g., dragline, backhoe, or hydraulic dredge)?
Bulldozer, motor grader, backhoe, dump truck, excavator

c. (i) Will navigational aids be required as a result of the project?
☐Yes ☒No ☐NA
(ii) If yes, explain what type and how they will be implemented.

d. (i) Will wetlands be crossed in transporting equipment to project site? ☐Yes ☒No ☐NA
(ii) If yes, explain steps that will be taken to avoid or minimize environmental impacts.

10.14.08
Date

R-2414 A+B
Project Name

NCDOT
Applicant Name

E. L. Lusk
Applicant Signature

Form DCM MP-5

BRIDGES and CULVERTS

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

1. BRIDGES

☒ *This section not applicable*

a. Is the proposed bridge:
☐Commercial ☐Public/Government ☐Private/Community

b. Water body to be crossed by bridge: _____

c. Type of bridge (construction material): _____

d. Water depth at the proposed crossing at NLW or NWL: _____

e. (i) Will proposed bridge replace an existing bridge? ☐Yes ☐No
If yes,
(ii) Length of existing bridge: _____
(iii) Width of existing bridge: _____
(iv) Navigation clearance underneath existing bridge: _____
(v) Will all, or a part of, the existing bridge be removed? (Explain)
_____
_____

f. (i) Will proposed bridge replace an existing culvert? ☐Yes ☐No
If yes,
(ii) Length of existing culvert: _____
(iii) Width of existing culvert: _____
(iv) Height of the top of the existing culvert above the NHW or NWL: _____
(v) Will all, or a part of, the existing culvert be removed? (Explain)
_____
_____

g. Length of proposed bridge: _____

h. Width of proposed bridge: _____

i. Will the proposed bridge affect existing water flow? ☐Yes ☐No
If yes, explain:
_____
_____

j. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? ☐Yes ☐No
If yes, explain:
_____
_____

k. Navigation clearance underneath proposed bridge: _____

l. Have you contacted the U.S. Coast Guard concerning their approval? ☐Yes ☐No
If yes, explain:
_____
_____

m. Will the proposed bridge cross wetlands containing no navigable waters? ☐Yes ☐No
If yes, explain:
_____
_____

n. Height of proposed bridge above wetlands: _____

2. CULVERTS

☐ *This section not applicable*

a. Number of culverts proposed: 3

b. Water body in which the culvert is to be placed:
Tributaries to Sawyers Creek.

< Form continues on back>

c. Type of culvert (construction material):
Reinforced concrete box culvert

d. (i) Will proposed culvert replace an existing bridge? ☐Yes ☒No

If yes,

(ii) Length of existing bridge: _____

(iii) Width of existing bridge: _____

(iv) Navigation clearance underneath existing bridge: _____

(v) Will all, or a part of, the existing bridge be removed? (Explain)

e. (i) Will proposed culvert replace an existing culvert? ☒Yes ☐No

If yes,

(ii) Length of existing culvert(s): 1-38', 2-38', 3-38'

(iii) Width of existing culvert(s): 1-8', 2-12', 3-10'

(iv) Height of the top of the existing culvert above the NHW or NWL: 1-4', 2-4', 3-5'

(v) Will all, or a part of, the existing culvert be removed? (Explain) All existing RCBC's will be replaced.

f. Length of proposed culvert: 1-108', 2-105', 3-118'

g. Width of proposed culvert: 1-8', 2-12', 3-10'

h. Height of the top of the proposed culvert above the NHW or NWL. 1-6', 2-5', 3-5'

i. Depth of culvert to be buried below existing bottom contour. All proposed RCBC's to be buried 1'.

j. Will the proposed culvert affect navigation by reducing or increasing the existing navigable opening? ☐Yes ☒No

If yes, explain:

k. Will the proposed culvert affect existing water flow? ☐Yes ☒No

If yes, explain:

3. EXCAVATION and FILL

☐*This section not applicable*

a. (i) Will the placement of the proposed bridge or culvert require any excavation below the NHW or NWL? ☒Yes ☐No

If yes,

(ii) Avg. length of area to be excavated: 70'

(iii) Avg. width of area to be excavated: 12'

(iv) Avg. depth of area to be excavated: 1.3'

(v) Amount of material to be excavated in cubic yards: 40

b. (i) Will the placement of the proposed bridge or culvert require any excavation within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB _____

☒WL 3920 ☐None

(ii) Describe the purpose of the excavation in these areas:

Excavation is required to install 3 new RCBC's in conjuction with the widening of US 158.

c. (i) Will the placement of the proposed bridge or culvert require any high-ground excavation? ☒Yes ☐No

If yes,

(ii) Avg. length of area to be excavated: 40'

(iii) Avg. width of area to be excavated: 10'

(iv) Avg. depth of area to be excavated: 2'

(v) Amount of material to be excavated in cubic yards: 30

d. If the placement of the bridge or culvert involves any excavation, please complete the following:

(i) Location of the spoil disposal area: _____

(ii) Dimensions of the spoil disposal area: _____

(iii) Do you claim title to the disposal area? ☐Yes ☐No *(If no, attach a letter granting permission from the owner.)*

(iv) Will the disposal area be available for future maintenance? ☐Yes ☐No

(v) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAVs), other wetlands (WL), or shell bottom (SB)?

☐CW ☐SAV ☐WL ☐SB ☐None

If any boxes are checked, give dimensions if different from (ii) above.

_____

(vi) Does the disposal area include any area below the NHW or NWL? ? ☐Yes ☐No

If yes, give dimensions if different from (ii) above.

_____

e. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed below NHW or NWL? ☐Yes ☐No

If yes,

(ii) Avg. length of area to be filled: _____

(iii) Avg. width of area to be filled: _____

(iv) Purpose of fill:

_____

_____

_____

f. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☐CW _____ ☐SAV _____ ☐SB _____

☐WL _____ ☐None

(ii) Describe the purpose of the excavation in these areas:

_____

_____

_____

g. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed on high-ground? ☐Yes ☐No

If yes,

(ii) Avg. length of area to be filled: _____

(iii) Avg. width of area to be filled: _____

(iv) Purpose of fill:

_____

_____

_____

4. GENERAL

a. Will the proposed project require the relocation of any existing utility lines? ☒Yes ☐No

If yes, explain: Telephone conduit and some waterlines may need to be relocated.

_____

_____

_____

If this portion of the proposed project has already received approval from local authorities, please attach a copy of the approval or certification.

b. Will the proposed project require the construction of any temporary detour structures? ☐Yes ☒No

If yes, explain:

_____

_____

_____

< Form continues on back>

c. Will the proposed project require any work channels? ☐Yes ☒No

If yes, complete Form DCM-MP-2.

d. How will excavated or fill material be kept on site and erosion controlled?

Approved NCDOT erosion control devices.

_____

_____

e. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?

Excavator, backhoe, dredge

f. Will wetlands be crossed in transporting equipment to project site? ☐Yes ☒No

If yes, explain steps that will be taken to avoid or minimize environmental impacts.

g. Will the placement of the proposed bridge or culvert require any shoreline stabilization? ☐Yes ☒No

If yes, complete form MP-2, Section 3 for Shoreline Stabilization only.

10.14.08

Date

R-2414 A+B

Project Name

NCDOT

Applicant Name

E. L. Lusk

Applicant Signature

Public Involvement and Community Studies Unit

INDIRECT AND CUMULATIVE EFFECTS ANALYSIS
U.S. 158/NC 34

TIP R-2414

CAMDEN COUNTY, NORTH CAROLINA

PREPARED BY:
KEVIN A. JENKINS, MPA

THE NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
OFFICE OF THE HUMAN ENVIRONMENT

APRIL, 2007

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I. EXECUTIVE SUMMARY

Project and Community Summary

R-2414 proposes to widen US-158 from a two-lane roadway to a four and five lane roadway from the Pasquotank County line to the US-158/NC-34 split in the community of Belcross, in Camden County North Carolina. The length of this project is about 5.5 miles. Along the project corridor are residential properties, businesses, a marina and wetlands. Camden County is one of 20 CAMA (Coastal Area Management Plan – mandates land use plans - see page 17) counties in North Carolina. Camden's vision, according to the 2004 Advance CAMA Land Use Plan is to be an area of controlled growth designed to maintain its rural and cultural heritage that will also preserve its quality of life and natural resources while maintaining a quality school system, with no overcrowding, and protect the areas of Camden, Shiloh and South Mills.

R-2414 may also provide new access for small boats over Pinch Gut to a possible future commercial development, or new residences near Country Club Road.

The Indirect and Cumulative Effects Study Area includes the Camden core area, extends west to the township of South Mills, northeast to the Currituck County line, five miles east along NC-343, and south to the Pasquotank County line.

Residential homes, small businesses, wetlands and vast expanses of open space characterize the area. As of July 2005, the population of Camden County was 8,881 persons according to the NC Census. Up from 6,885 in July 2003, this reveals that Camden has grown by 29% between 2000-2005. Camden's growth rate is the third fastest in North Carolina; however, it is ranked 97th out of 100 counties in population in the state. New residential developments in the county have been proposed.

Commercial developments are being planned throughout the county, and four areas of growth have been identified adjacent to the project corridor. Zoning for parcels located along the project corridor include Highway Commercial, General Use, Marine Commercial, Residential, and Industrial. In at least one development area, at US 158 and Country Club Road, the zoning and proposed development is inconsistent with the current and planned land use of the site. However, local officials have stated support for the development.

Camden officials have recognized the rapid population growth and have acknowledged that without proper infrastructure, accommodating the foreseeable growth will be difficult.

Key Community Characteristics, Trends, and Notable Features

- Camden County Board Of Commissioners passed a resolution to support replacing a culvert and raising the bridge over Pinch Gut waterway to 10 feet as part of the US 158 widening project (R-2414). This may allow for development of an adjacent parcel of land for possible boat accessible development.
- Between 2000-2005, Camden County grew by 29% and became the third fastest growing county by rate of growth in North Carolina.

- Camden has four areas of planned growth. These areas include an 80-acre mixed-use development site just south of Country Club Road on US-158 (adjacent to the proposed raised bridge – see Figure 2). Further north on US-158 a retail plaza that will be anchored by a Food Lion supermarket at US-158 and NC-343 is being planned. A business park is being proposed at the north end of the project at US-158 and the NC-34 split. Lastly, east of US-158 an Industrial Park adjacent to Gumberry Road behind Albermarle Propane Company is being planned. None of these projects are dependent on the proposed widening.
- Camden's vision, according to the 2004 Advance CAMA Land Use Plan is to be an area of controlled growth designed to maintain its rural and cultural heritage that will also preserve its quality of life and natural resources while maintaining a quality school system, with no overcrowding, and protect the areas of Camden, Shiloh and South Mills. TIP R-2414 may likely result in modest to moderate increases in property values and population growth to this fast growing, but sparsely populated area.
- Several changes to the zoning maps have taken place in the last two years. Part of one parcel, a 40.81-acre parcel of empty land adjacent to the project at Belcross Road was recently re-zoned to Highway Commercial.
- The Camden County Code describes the Highway Commercial district as; designed to provide for and encourage the proper grouping and development of roadside uses which will best accommodate the needs of the motoring public along US-17, US-158, and NC-343.
- Camden uses as its guide the 2004-Advanced Core CAMA Land Use Plan that was prepared by Holland Consulting Planners.
- There is a WS-IV Watershed in Camden. The ICE study area includes part of the WS-IV Watershed, which is however, outside of the planned growth area.
- Camden County has extended a moratorium on new residential subdivisions for at least one year until June 2007. The overcrowding of schools due to a population increase has limited expansion of school capacity because of failing septic systems in the county.
- The South Camden Water and Sewer District Reverse Osmosis Plant processes about 200,000 gallons of water per day and has a capacity of 576,000 gallons per day. Plans are underway to expand to twice that size.
- There are no sewer lines in Camden County. Camden will add a sewer system to the county in the next year. Bids for that contract were opened in June 2006. Camden residents currently rely on individual septic tanks for sewage disposal.
- NC Census statistics reveal that most residents that commute are commuting to Pasquotank County (likely Elizabeth City) for work followed by Currituck County and the state of Virginia.
- According to the 2004-Advanced Core CAMA Land Use Plan, most residents rely on retail centers and services in Elizabeth City. New commercial development in the Camden area will result in fewer trips for some residents.
- There are no 303(d) waters in the vicinity of the proposed project.

Activities, Effects and Impacts

Impact Causing Activities

The alteration of access at the bridge over Pinch Gut has been proposed by the Camden Board Of Commissioners to allow boaters access to a creek that is part of a plan by a developer to develop an 80-acre site.

The increased carrying capacity as a result of widening US-158 will result in a slight reduction in travel time in the area.

Indirect and Cumulative Effects

New growth is rapidly expanding this small rural community. The new growth is forcing Camden to install a water and sewage treatment plant in the county and along with the sewer lines that will be able to support the changes in land use. Zoning and re-zoning of commercial property along US-158 will allow developers to build facilities that will enhance the tax revenue for the county, provide jobs and reduce the number of commutes into Elizabeth City. The addition of Water and Sewer, rapid growth and new residential subdivisions are factors that show that the market for development in Camden is trending upward.

However, the absence of an economic development plan is a limiting factor in the growth of Camden. Camden officials support the future plans outlined in the 2004-Advanced CAMA Land Use Plan and have made zoning changes within the county to be consistent with that plan. Also limiting project growth in Camden is an abundance of land that far exceeds the supply.

Project Consistency and Conflict with Local Plans and Goals

This project is consistent with the plans and goals of Camden County government.

Conclusions and Recommendations

Project Conflicts with Locals Plans and Goals

Camden County will need to rezone the parcel at US 158 and Country Club Drive in the Growth Impact Study Area from Residential 3-2 to accommodate planned future commercial and mixed-use development at that location.

Water Quality Findings

The R-2414 US-158 widening project may result in a moderate stimulus for development in the Growth Impact Study Areas. The exception will be the Growth Impact Study Area associated with the raising of a bridge over Pinch Gut (an 80-acre mixed-use development) to accommodate small motor boat traffic. Overall, there may be a moderate to strong potential for change in land use in the vicinity of the project. The widening project is on existing location.

TIP R-2414 may likely result in modest to moderate increases in property values and population growth to this fast growing, but sparsely populated area. The addition of multiple lanes will allow for modest travel time-savings for motorists traveling through Camden County and will modestly improve accessibility. The eventual construction of water and

sewer lines along the project corridor, and planned economic development activity in the county, support growth in the area.

Development is already planned or underway in the Growth Impact area associated with a 10-acre retail plaza including a Food Lion grocery store. Another developer has proposed a 50+ acre business park on US-158 just north of the US-158 and NC-34 split. Last is the 143-acre proposed industrial park behind Albemarle Propane. The project is not changing access to any of these developments. Numerous industrial parks exist in eastern North Carolina and most have large vacancy rates or are undeveloped.

Access may be altered as part of the R-2414 US-158 widening project in that a bridge over Pinch Gut, near the intersection of US-158 and Country Club Road, will be raised in order to accommodate a proposal by a developer for a proposed commercial development of an 80 acre parcel adjacent to the pond-like body of water.

The proposal to raise the bridge several feet may allow some existing boat traffic to access some land that is currently inaccessible. However, as the bridge is currently very low, and the proposed bridge will only be raised a few feet, the ability of even small watercraft to pass under the highway to access areas up river will be limited. Nevertheless, the possibility exists that raising the bridge slightly may allow some water access to areas where it did not previously exist, potentially altering the nature of future development at some locations. No illumination is proposed under the bridge.

The developer has unspecified hopes of constructing a water-accessible restaurant with a docking area to attract small craft river traffic on the Pasquotank River. Camden County officials are in favor of this project, and have cited an absence of retail and service establishments as a reason to support development at this location.

This specific development at Pinch Gut is currently inconsistent with the 2004 Advance Core CAMA Land Use Plan for Camden County, county zoning and the Environmental Composite Map in the CAMA Land Use Plan. This parcel is currently zoned as low-density residential/agricultural, which is contrary to the proposed use for this parcel. According to the 2004 Advance Core CAMA Land Use Plan, the addition of the planned water and sewer lines (shown to extend to this area), and rezoning of parcels in the area, will make the parcel consistent with the land use plan and address CAMA plan environmental constraints. However, water quality regulations are less stringent in this community.

Conclusions and Recommendations

A 30-foot buffer rule exists to all Public Trust waters under CAMA regulations. Absent additional development regulations, depending on the type of development and amount of impervious surfaces, water quality may be affected and additional study may be required.

However, If additional water quality regulations such as buffers, controlled/engineered stormwater, and other Best Management Practices such as on-site stormwater treatment are implemented, impacts to downstream water quality should be minimized.

Cumulative Effects

Cumulatively, considering the currently developing market in this region, the moderate growth stimulus provided by the additional capacity of the road, as well as the relatively limited footprint of the project at Pinch Gut that may be developed as a result of slightly raising the bridge, no further study is recommended.

II. PROJECT DESCRIPTION

Proposed Project and Purpose and Need

The R-2414 project proposes to widen existing US-158/NC-34 from a two-lane roadway to a four- and five- lane facility. The project is planned as a five-lane section from the existing four lanes in Elizabeth City to the undeveloped causeway area east of the marina. A four-lane shoulder section with grass shoulder is planned through the undeveloped causeway area – which is mostly wetlands – to Havenwood Drive (SR-1257). From Havenwood Drive to the US-158/NC-34 intersection in Belcross, a five-lane section with curb and gutter is proposed. Bicycle accommodations will be included in the design. The project length is approximately 5.5 miles.

The purpose and need of the proposed project is to construct a highway that will serve the growing transportation needs of Camden County. US-158 is a major east-west route in northeastern North Carolina that serves as a radial route into Elizabeth City from smaller towns and rural areas located to the east. It also serves as a connector between the recreation areas of the northern Outer Banks and the large population centers in northeastern Virginia served by US-17. The eastern portion of the project provides direct access to homes, schools, churches and businesses of Camden and Belcross. The North Carolina Department of Transportation categorizes US-158 as a Strategic Highway Corridor, meaning a critical highway facility.

The replacement of a culvert and raising of a bridge on US-158 just south of Country Club Road has been proposed by a developer who is planning to develop an 80-acre site adjacent to a creek. The county Board of Commissioners supports the development.

Alternates and Schedule

No alternates were evaluated for this report, however alternate widening scenarios were considered according to the Environmental Assessment prepared by the North Carolina Department of Transportation.

According to the 2007 – 2013 State Transportation Improvement Plan (STIP), Right of Way (ROW) acquisition is in progress. Construction is scheduled to begin in the 2009 and 2010 Fiscal Years.

III. METHODOLOGY

This report outlines the existing conditions and trends of the area around the project, and analyzes the likely Indirect and Cumulative Effects of the project on the area and on the inhabitants of the area.

The report includes data gathered from the US Census merged with data from local plans and maps, observations from field visits and interviews with the local planners, leaders, and citizens; all of which were utilized to determine the study area.

Resources, including NCDOT project staff, local staff, additional interviews and specific research information were used to reasonably assess the most likely impacts. Additionally, the Community Impact Assessment (CIA) for this project written by Kevin A. Jenkins and

Steve Gurganus was reviewed as well. In compliance with the guidelines on indirect and cumulative effects, this report includes, where applicable, possible solutions for avoidance, minimization, and mitigation of the expected and predicted effects.

The report is aimed at providing the best possible information to decision-makers and the public regarding the potential effects of the project.

IV. STUDY AREA

The project is in Camden County, located in the northeastern part of North Carolina. It is a relatively small county with approximately 8,881 residents (NC Department of Commerce, 1st quarter 2005). It is east of Elizabeth City and Pasquotank County. Elizabeth City, population 17,285 (2000 US Census), sits just across the Pasquotank-Camden County line. Camden County does not have an incorporated municipality within its boundaries and the only two traffic signals in the county are along this stretch of US-158.

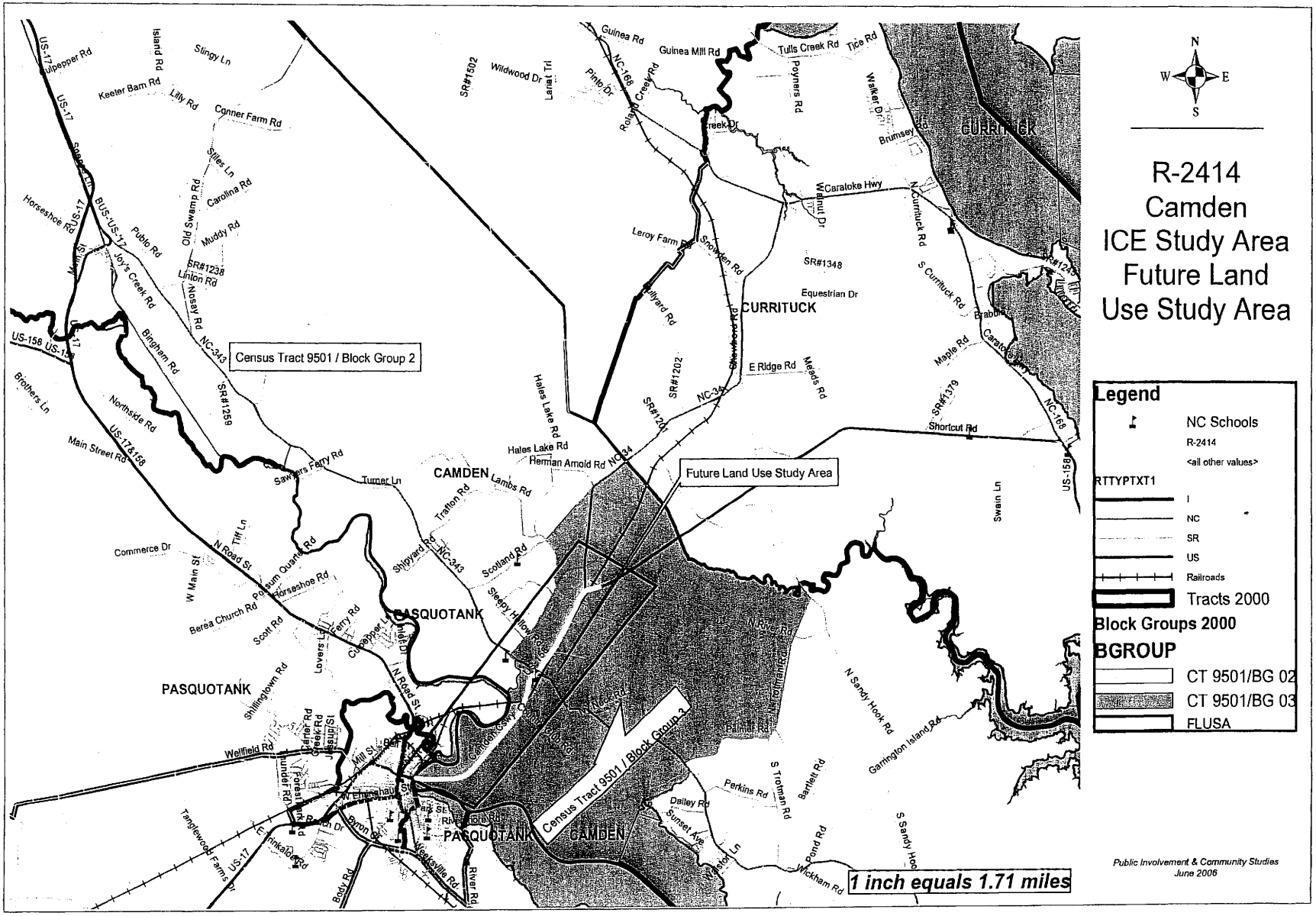
The study areas were devised by a study of demographic and census data, project maps, aerial photos, interviews with local planners and field visits.

A field trip by NCDOT Planners to discuss ICE analysis was conducted on May 9, 2006. Planners Kevin A. Jenkins and Steve Gurganus met with Camden County Planning Director Dan Porter. A meeting was also held with Wanda Gooden, the DOT liaison in the local CAMA office.

Demographic Study Area

The data for the Demographic Study Area provides a demographic overview of residents in the area. The Demographic Study Area for the Indirect and Cumulative Effects analysis of R-2414 is Census Tract 9501 Block Groups 2 and 3.

Figure 1. R-2414 ICE Study Area



Study Area

The Indirect and Cumulative Effects Study Area (ICE) is an area that is bounded approximately 10 miles to the northwest by the township of South Mills, the Currituck County line to the northeast, the Pasquotank County line to the southwest, and an area approximately 5 miles east of the project along NC-343.

Within the study areas are the two townships in Camden County, South Mills and Shiloh. The Camden area or "Camden Core" is the area around US-158 and NC-343.

The Camden Courthouse and Government offices are in this area as well. South Mills is the only township in block group 2 and is approximately 10 miles northwest of Camden and has a substantial residential population within block group 2. This block group grew by 17% between 1990-2000. Shiloh is about 6 miles east of Camden and is in block group 3, along with Camden. This block group grew by 19% between 1990-2000. Between 2000 – 2005, Camden County grew by 29%.

Future Land Use Study Area

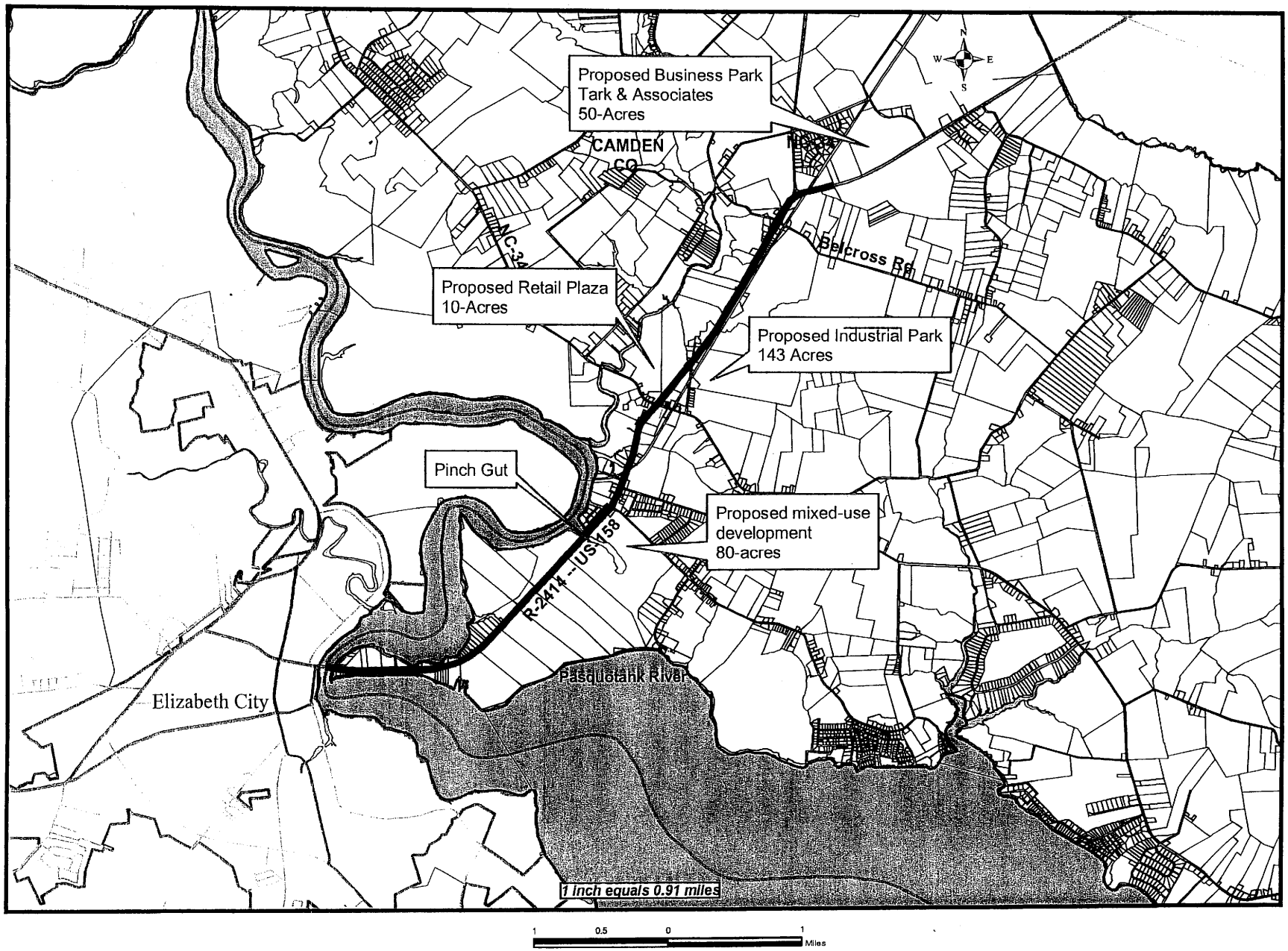
The Future Land Use Study Area is a smaller area where most growth and change in land use impacts are likely to occur. This is determined by reviewing zoning plans and in discussions with the local planner who assisted in identifying potential areas that may be affected by this project. For this project, the Future Land Use Study Area is the area around US-158 and NC-34 split (at the project's end) to the north, the Pasquotank County line to the south, to an area about 5 miles east along NC-343, and about 2 miles west of the project along NC-343.

GISA (see figure 2)

The Growth Impact Study Area are areas of potential growth and development along the project corridor that county officials have accepted plans for, or are in discussions with developers for. These growth areas are primarily business and not residential areas for this project. There are however, a few residential developments being built or planned but they are outside of the ICE Study Area. These residential developments are closer to the North Carolina/Virginia border.

The areas of planned growth are along US-158. One area of growth is in the area of Gumberry Road between US 158 and NC 343. The owner of a parcel of land behind the Albemarle Propane Company is planning to develop the land into an Industrial Park. Another growth impact area is at the intersection of US-158 and Country Club Road. A developer is in the early stages of planning a mixed-use project that will incorporate the use of a nearby creek (Pinch Gut) to allow access by boaters to the development. In support of this project, the Camden County Board of Commissioners has proposed that NCDOT raise the bridge on US 158 just south of Country Club Road to 10 feet, but no lower than 6 ½ feet in order to accommodate plans by the developer to utilize the creek on the east side of US 158 to allow boaters to have access to the planned development at that site. At the end of the project at US 158 and the NC 34 split, a local businessman is planning a 36-space business park. A retail plaza that will be anchored by a Food Lion supermarket is also being planned near US 158 and NC 343

Figure 2. R-2414 Camden Growth Impact Areas



Timeframe (Time Horizon)

The study timeline is 10-15 years and was determined in congruence with the 2004-Advance Core CAMA Land Use Plan.

V. COMMUNITY CONTEXT, DIRECTION, AND NOTABLE FEATURES INVENTORY

Community Direction and Goals

Overview and Geo-Political Description

Camden is a small county in northeastern North Carolina. Pasquotank County, Currituck County, the Albemarle Sound, and the State of Virginia border it. Due to its location, travelers passing through North Carolina on their way to Virginia, the port town of Elizabeth City, and the northern Outer Banks frequent Camden. Camden County is home of several historical sites and the Great Dismal Swamp National Wildlife Refuge.

Policies, Guidelines, and Goals

County and Regional Growth Patterns and Policies

According to the North Carolina Department of Commerce, as of July 2005 Camden County became the third fastest growing county in North Carolina (rate of growth) and ranks 97 out of the 100 counties in population in the state. Much of the growth is spilling over from the Suffolk, Virginia area. There are two townships in Camden County, Shiloh Township and South Mills Township.

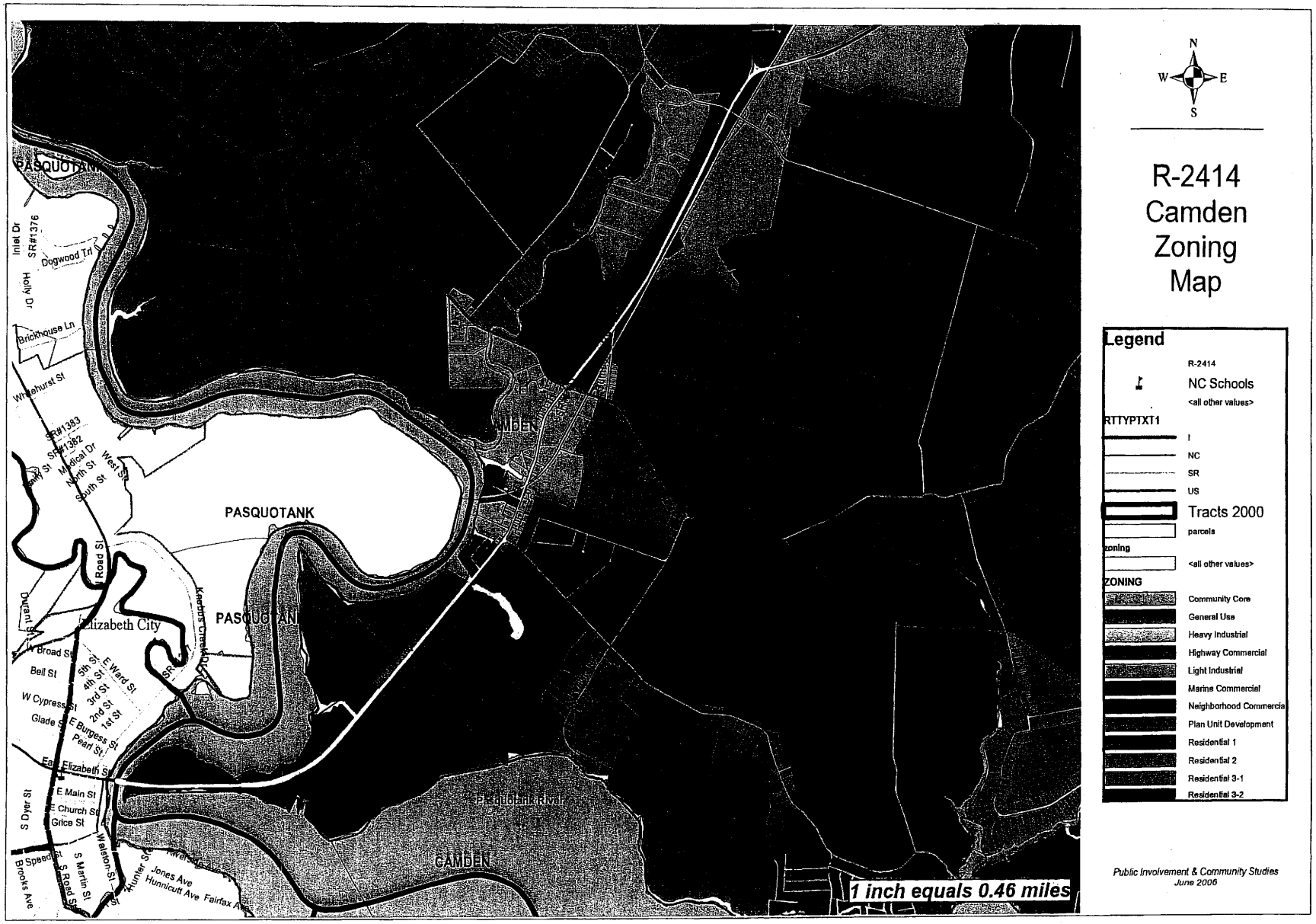
According to the 2004-Advanced Core CAMA Land Use Plan, Camden's vision is to be an area of controlled growth designed to maintain its rural and cultural heritage that will also preserve its quality of life and natural resources while maintaining a quality school system with no overcrowding. The county will improve and protect the areas of Camden, South Mills and Shiloh. However, specific and existing programs are very limited.

Land Use, Plans, and Development Regulations

Zoning Map (figure 3)

Camden has 12 zoning classifications within the county. While most of the county is zoned for General Use, there are classifications for Heavy Industrial, Highway Commercial, Light Industrial, Marine Commercial, Neighborhood Commercial, Planned Unit Development, Residential 1, Residential 2, Residential 3-1, and Residential 3-2.

Figure 3. R-2414 - Zoning



Several changes to the zoning maps have taken place over the years to accommodate requests by individual landowners, or to accommodate the county's plans. The most recent changes to the zoning maps occurred in September of 2005.

Much of the ICE study area and land throughout the county is zoned for General Use. General Use can be described as land that is not specifically zoned for a particular use. This class was established to allow for very low residential development along with a variety of agricultural uses. Currently, most of the land zoned "General Use" is agriculture and farmland. Land zoned for a specific use is outlined in this report and on the map (See Figure 1). At the southern end of the ICE Study Area, along the causeway, the land is zoned Marine Commercial (MC). This area is in close proximity to the Pasquotank River and, according to the Advanced CAMA Land Use Plan, is designed to provide for the development of businesses that depend upon, or are significantly related to waterfront and tourist locations. Other areas along the project corridor and the ICE study area are zoned Highway Commercial, Community Core, Residential-2, and Light Industrial.

The Camden County Code describes the Highway Commercial district as; designed to provide for and encourage the proper grouping and development of roadside uses which will best accommodate the needs of the motoring public along US 17, US 158, and NC 343.

A mixed-use retail area is planned for the 80-acre site at US-158 and Country Club Road (at Pinch Gut). A local developer is planning for a restaurant and other retail shops on that parcel that may allow access for small boats to dock in the creek adjacent to the property. In order to accommodate this development plan, the bridge over the creek on US 158 would have to be raised. This parcel is currently zoned Residential 3-2 and will have to be re-zoned in order to accommodate the developers' plans. A resolution was passed on October 3, 2005 by the Camden County Board of Commissioners requesting NCDOT to raise the bridge on US 158 over Pinch Gut waterway to 6.5 feet above the average water level. Current plans are to raise the bridge from a six-foot clearance to ten-foot clearance.

Along US 158 just south of Belcross Road, one 40.81-acre parcel is partially zoned Highway Commercial while the remaining majority of the parcel is zoned I-1 (Industrial-1). The majority area of that parcel was later re-zoned to Highway Commercial in July 2005.

Land Use/Comprehensive Plans

Camden uses as its guide the 2004-Advanced Core CAMA Land Use Plan that was prepared as a draft in December 2004 by Holland Consulting Planners. It serves as a comprehensive plan and encompasses Camden's Zoning Plans, Land Use plans, Development Regulations, Economic development plans, Water Supply Watershed rules, and CAMA rules and regulations, as well as many other categories, and sub-categories.

The existing land use in Camden is designated primarily Agriculture. Open Space, Low-Density Residential (A/OS/LDR). In the ICE Study area, especially along the project corridor, the land use designations consist mostly of Office & Industrial (O&I) areas, Commercial (C), and some Residential (R) around US 158 and Upton Road.

Zoning in the area where planned development is scheduled at US 158 and Country Club Road is inconsistent with the future land use outlined in the 2004-Advanced Core CAMA Land Use Plan. The 80 acres to be developed as part of the proposal is currently zoned R-3-2. The future land use for the development, according to the CAMA Land Use Plan is Low-Density Residential/Agricultural. A zoning inconsistency exists at the site of the planned Business Park at the US 158/NC 34 split, the zoning map and the Future Land Use map both have the area designated as Industrial.

Development Regulations
Camden's development regulations are outlined in the Camden County Code of Ordinances. It outlines and sets regulations for various types of development in Camden County.

Regional Plans
There are no regional plans for this area.

Local Adherence to Plans
Camden officials have adopted the Advanced CAMA Land Use Plan prepared in December 2004 by Holland Consulting Planners. They are in support of the recommendations outlined in the land use plan.

Economic Development Plans
There are no economic development plans for this area.

Water Supply Watershed Rules
Camden is part of the Pasquotank River Basin and there is a WS-IV Watershed in the western part of the ICE study area towards South Mills however, it is outside of the Growth Impact Areas.

CAMA
Camden is one of the twenty CAMA counties in North Carolina. As a designated CAMA county, Camden is subject to the rules and policies of the Coastal Resources Commission. As such, a development project in the county may be required to obtain a permit if the development is in, or affects an Area of Environmental Concern established by the Coastal Resources Commission.

Public and Private Development Patterns and Trends - Planned or Underway

Transportation
There is no public transportation network in Camden County. There are however, other NCDOT road projects occurring in, and around Camden County. TIP project number R-2574 is the extension of US-158 widening from NC 34 east of Belcross in Camden County to NC 168 in Currituck County. Expected completion date of this project is outside of the TIP planning period of 2010. Other projects in the ICE study

area bridge replacements and only one of them, B-4452 is in Camden. The others are in the South Mills township, B-4451, B-3426, and B-4453 respectively.

Governmental

Natural Gas is available by Eastern NC Natural Gas and is primarily available along NC 343. According to the 2004 Draft CAMA plan, there are plans to extend natural gas to the entire county. Albemarle Rural Electric Co-op and North Carolina Dominion Power provide electric Service. Telephone service is provided to the entire county through Sprint Telecommunications. Internet access is not yet available to the entire county however; some homes and businesses have access via a dial-up network.

The South Mills Water Association Water Department, the South Mills Water Treatment Plant are in the South Mills area. The South Camden Water Plant is in the Camden area just off Country Club Rd. adjacent to the Pasquotank River, east of the project site.

Private Sector

A mega-landfill is planned to be built in Camden County in the future. Currently, it is only a proposal but some facts have been detailed about the site. According to the "fact sheet" obtained in the Camden County Planning Department, It is being called the "Black Bear" landfill. It is 2,000 feet south of the NC/VA state line. It will cover approximately 1,037 acres and be approximately 280 feet high. It will collect waste from 21 states east of I 75.

Blackwater USA is headquartered in Camden County. According to its website, Blackwater is a "professional military, law enforcement, security, peacekeeping, and stability operations firm who provides turnkey solutions. We assist with the development of national and global security policies and military transformation plans". It is located in Moyock, NC near the NC/VA border in the South Mills area of Camden County.

There are also other residential subdivisions in the process of being developed as well. Along NC 343, about 5 miles east of US 158 is a residential subdivision being constructed where homes are selling beginning at $300,000.

Commercial developments are being planned elsewhere in the county, particularly along the project corridor. According to the Planning Director Dan Porter, private developers are planning at least four commercial developments along US 158 between Country Club Road and the NC 34 split in Belcross. These developments include some mixed-use projects, a Food Lion retail plaza, an industrial park and a business park.

Community Characteristics and Notable Features

Site Observations and Project Scoping Field Trip

A site visit on February 2, 2005 by Community Planners Steve Gurganus, Kevin A. Jenkins, and Project Engineer Stephanie Caudill was taken to view the project area. The

site visit revealed that there have been a few new major developments along the project route over the last four years. Specifically, on the north side of Gumberry Road there is a daycare operated by the Northeastern Community Development Corporation where road realignment was previously proposed. Additionally, there is a new church, New Mt. Zion Church of God in Christ at Gumberry Road and NC-343, and a new sub-division of homes called Camden Crossing at the NC-34 and US-158 split.

A follow up site visit on March 16, 2005 by Community Planners Steve Gurganus, Kevin A. Jenkins, and Public Involvement supervisor Ed Lewis was conducted in order to view the project area.

Community Planners Steve Gurganus and Kevin A. Jenkins conducted one more visit to the project area on May 9, 2006. During this visit, they again met with Camden Planner Dan Porter and discussed various zoning and development plans. Mr. Porter stated that property values along US 158 are increasing, possibly as a result of this project. He also stated that the county commission approved a re-zoning of some parcels that are adjacent to the project corridor, and some other parcels would need to be re-zoned in order to meet development ordinances.

One parcel to the northwest of Belcross/Lambs Rd. and US 158 was re-zoned on July 18, 2005 from Light Industrial (I-1) to Highway Commercial (HC). It covers about 40.81 acres of land owned by Doris Harris. Highway Commercial zoning is designed to provide for and encourage the proper grouping and development or roadside uses which will best accommodate the needs of motoring public along US-17, US 158 and NC 343, according to the 2004 Advance Core CAMA Land Use Plan.

A few planned developments in the area are in various stages of consideration by local officials and developers. These projects will total up to 280 acres of land use in Camden. These proposed developments include:

- the development of industrial park using some of about 143 acres of land behind the Albemarle Propane Company east of Gumberry Road just off NC 343
- A retail plaza encompassing about 10 acres at NC 343 and US 158 will include a Food Lion grocery store and other retail outlets.
- A mixed-use development of 80 acres of land at the intersection of US-158 and Country Club Road that may include a restaurant which can be accessed by small boats along a creek that is adjacent to the project corridor.
- The development of about 50 acres by Tark and Associates which is proposing a commercial park at the end of the project corridor on US 158. This development is presently zoned Light Industrial and is comprised of 36 lots of various sizes.

Community Input and Public Meetings

Public Hearings were held on April 21, 1994 at the Camden County High School and on March 26, 1998 at the Camden County Courthouse. Approximately forty-five (45) stakeholders attended both meetings from the community including residents, business owners, and community and government officials.

A review of the comments, concerns and requests returned to NCDOT show that many of the residents support the project, however they are concerned about the impacts to the community and businesses along the project route.

An informal and formal Public Hearing was held at the Camden County High School Monday, July 11, 2005.

Community Demographics

According to the 2000 Census, Camden County has a population of 6,885. As of July 2005, the North Carolina Department of Commerce and other agencies tracking population statistics estimates that the population has grown to approximately 8,881. This represents a change of 29% from 2000, though the increase in residents only totaled 1,996. Camden County grew by 17% percent from 1990-2000 *(see Table 1)*. This rapid rate of growth such in this small community has overburdened existing infrastructure and is one of the main reasons why Camden County has extended previous one year old "moratorium" on new development in the county for another year, until June 2007. According to Planning Director Dan Porter, the overcrowding of schools brought on by the population increase has limited expansion of school capacity because of failing septic systems serving the county.

The Race and Ethnicity distribution statistics reveals that there appears to be a slightly higher percentage of African-Americans in Block Group 2 (22.7%), than in Block Group 3 (18.7%). Camden County has a 15.1% African-American population *(see Table 3)*.

The median income in the Demographic Study Area was similar to that of both Camden County and North Carolina; the poverty rate for the Study Areas (8.4% and 7.3%) trails both the county (10.0%) and the state (11.9%).

Economic and Business Characteristics and Resources

Macro Characteristics and Features

In 2000, Camden County had a 3.7% unemployment rate, compared to 5.3% for the state of North Carolina. The leading employment industries in Camden County are education, health, and social services, employing 669 people, or 21.6%. Retail trade (14.3%) and manufacturing (10.2%) industries rank second and third respectively.

Businesses, Business Centers, and Districts

Camden does not have any formal business districts or business centers. There are businesses along the project corridor. Marine related businesses are along the Causeway. Other businesses are clustered around intersections along US-158 between Country Club Rd. and NC-343.

A 1,037-acre landfill scheduled for opening in the northeast corner of Camden County is expected to provide employment to area residents in the future.

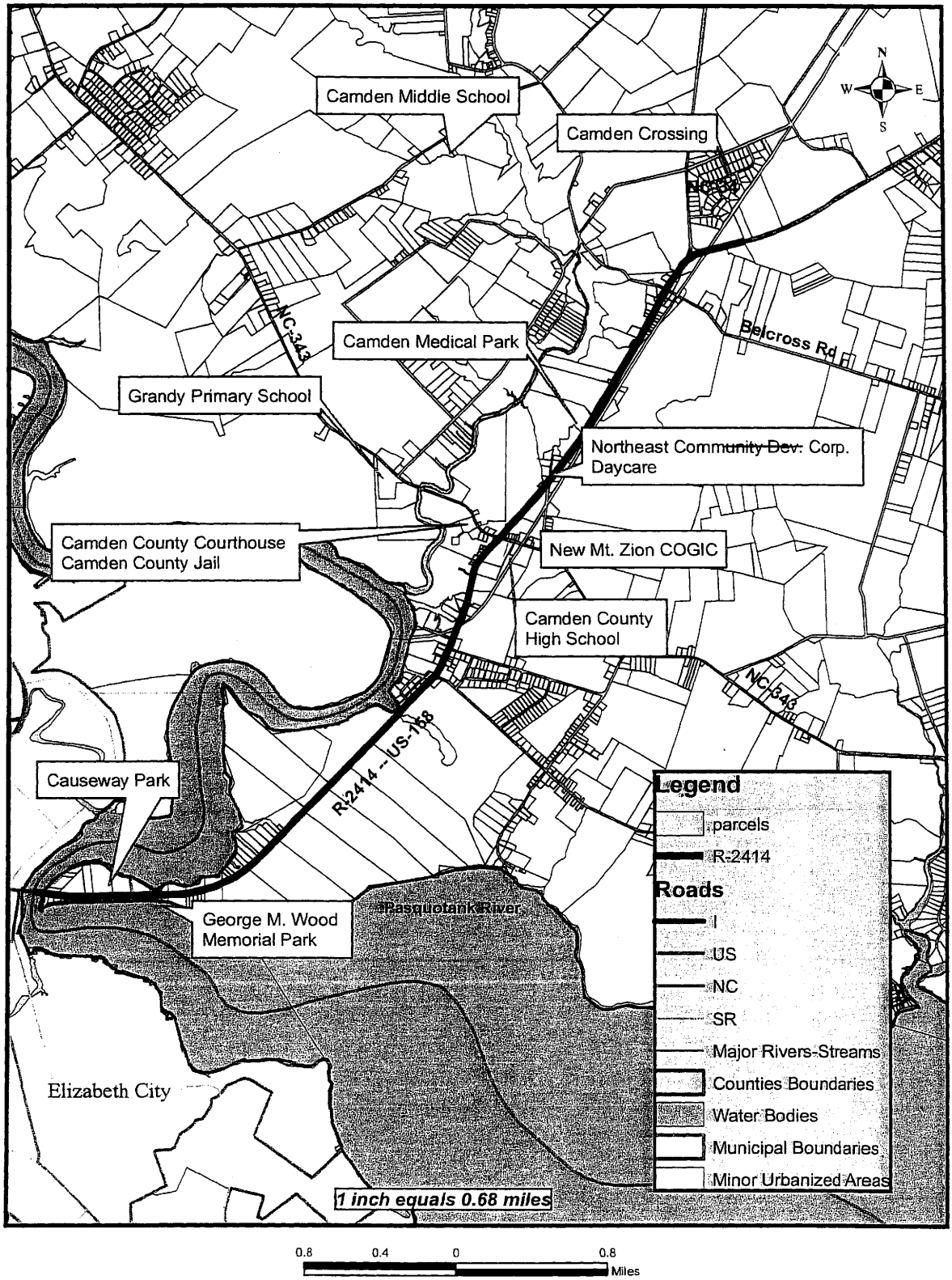
Community Resources & Facilities

Camden's residential areas are centered around the three townships in the county. Notable growth in the county since 2000 has required new housing areas such as Camden Crossing to be developed.

Three schools serve the entire county however; the rapid growth of the county has forced the construction of another elementary school adjacent to the current elementary (Grandy Primary) school. School officials are planning to divide the grades and both schools will have separate buildings and facilities but will share a gymnasium. The Northeast Community Development Corporation operates the only daycare facility in the county and is the only 4-star rated daycare in the region.

Other resources include churches, a post office, parks, recreation facilities, National and Local historic sites, health centers as well as fire, police and EMT services.

Figure 4 R-2414 Camden Community Resources



Community Infrastructure Resources

Camden has solid, sustainable infrastructure resources. The South Camden Water and Sewer District Reverse Osmosis Plant, located in the South Mills township has a capacity of 576,000 GPD and plans are underway to expand it to twice its size.

Camden residents rely on individual septic tanks for sewage disposal. A sewage system is being installed as part of the county's plan to provide sewer service to residents. Sewer lines will run along US-158 between Country Club Road and the Belcross area of Camden County. Construction began in November 2006, and it should take approximately 12-15 months to complete according to Camden County Planning Director Dan Porter.

Camden County does not have commercial or residential pick up for solid waste. The proposed Black Bear landfill will allow for the dumping of solid waste in Camden County. *(See Private Sector heading in this document).*

Mobility & Access

Commuting statistics from the 2000 NC Census reveal that most residents work in neighboring Pasquotank County, where Elizabeth City is the largest municipality. Currituck County follows Camden County, which is second, as the work destination for residents of Camden County.

Community Natural and Aesthetic Resources

Water Source
According to the 2004-Advanced Core CAMA Land Use Plan, many Camden residents rely on wells for their water supply. Three stratified aquifers cover much of the region.

Water Supply Watershed
There is a WS-IV Protected Area Watershed designation in Camden County along NC-343 that is part of the Pasquotank River basin and is also in the western part of the ICE study area but it is outside of the Growth Impact Area.

Wild and Scenic Rivers/River Systems and Gamelands
Camden County has over 125,000 acres of protected wetlands. There are no Wild and Scenic River Systems in Camden County. The Pasqoutank River, part of the Albemarle Sound in subbasin 03-01-50, is the largest river system in the County. Sawyers Creek is in the ICE Study Area and runs in a northeast/southeast direction just west of the project corridor.

The North River Gameland is located in the coastal plain area of North Carolina and is stretches across the Camden and Currituck County border. According to the Nature Conservancy website, the "North River Game Land contains Indiantown Creek Cypress Forest, a natural area with nearly 2,000 acres of relatively mature

swamp forest and some areas of bottomland forest. The game land also contains about 90 acres of apparently virgin bald cypress. While bald cypress is a common tree in North Carolina's Coastal Plain swamps, virgin stands are rare".

303(d) Waters
There are no 303(d) water designations in the ICE Study Area.

LAND RESOURCES

National and State Parks
There are no National Parks or Forests in Camden County however, Camden County is home to the Great Dismal Swamp National Wildlife Refuge, Dismal Swamp State Park, and Dismal Swamp Canal.

Prime Soils
As a rural and agricultural county, Camden's prime soils are in abundance throughout the county and along the project corridor.

VI. INDIRECT AND CUMULATIVE EFFECTS ANALYSIS

Identify Transportation Impact Causing Activities

Transportation Impact Causing Activities

Changes in traffic patterns
There will be no changes in traffic patterns as a result of this project.

Access alteration
Access for boating traffic will be altered at the bridge over a Pinch Gut on US-158 just south of Country Club Road. The bridge currently has a 4-foot clearance underneath it and there is a proposal to raise it to 6.5 feet above the average water table in order to accommodate a request by a developer and the county commissioners so the developer can develop a site adjacent to the creek. The developer hopes to build a mixed-use project that will allow boaters to have access to a possible future restaurant on the site.

The proposed highway project will be on existing location. Some new right of way will be required. The widening of US-158 will allow for increased carrying capacity throughout the project and there will be slight reductions in travel time in the area. By adding lanes to this road, drivers will no longer be forced to wait behind cars making left turns into homes, driveways, businesses and schools. During peak hours around schools and businesses is when the changes will be recognized.

Analysis of New Growth and Change in Land Use

Identifying Potential New Growth or Change in Land Use Effects

Types of New Growth
The proposed mixed-use development project at US-158 and Country Club Road (Pinch Gut), and the raising of the bridge to accommodate that development project

indicates that this project will serve that specific development. Other development along, or near US-158 includes a Business Park at the US-158/NC-34 split, and an Industrial Park at US-158/Gumberry Road as well as a Food Lion near US-158 and NC 343. However, much of that development is already planned or occurring.

While there are no residential growth areas along the project corridor, an existing development just northeast of the project terminus continues to attract more new residents to the county. An extension of a one-year moratorium for new subdivisions was renewed in April 2006 and continues to be in effect throughout Camden County and limiting new development.

Potential new growth along the water bodies in Camden County can possibly occur. Sawyer Creek parallels the project about ¼ mile east from NC 343 to just south of Lambs Road and has several parcels that may be developed in the future.

Analyzing New Growth or Change in Land Use

Factors Favoring or Limiting Unrestricted Growth or Land Use Change

Several factors will contribute to a change in land use. The substantial population growth of Camden County over the last 10 years and the projected growth of the county over the next 15 –20 years indicate that this project will favor the continued growth of the county and will be able to accommodate future traffic in Camden. Change of access at the bridge just south of US-158/Country Club Road will favor the proposed development there as boaters will be allowed to navigate their watercraft under the bridge in order to patronize the establishments in the future development.

Water supply is abundant in Camden to support the changes in land use in the county. Camden is undertaking a project to install a water and sewage treatment plant in the county and will also install sewer lines along US-158 and it should be completed by the time construction begins on TIP R-2414. The installation of Water and Sewer lines will support growth and development in the county.

Zoning and re-zoning will focus development of commercial property along US-158. Commutes into the Elizabeth City for supplies and provisions may reduce as a result of planned retail development. As Camden continues to grow and adds more infrastructure throughout the county, county commissioners and planners are supportive of changes in land use that could maximize the benefits to the county and citizens. Specific developments that are planned will fill a need for services for county residents, as well as provide revenue to the county.

Special river buffer rules do not apply to this project as they are reserved for the Neuse, Tar-Pamlico and Catawba rivers. The absence of river buffer rules for the Pasquotank river favor continued development along the river and other water bodies along the Pasquotank River. Coastal Area Management Act, or CAMA rules do apply as Camden is one of twenty counties that are designated as a CAMA County and impairs a 30-foot buffer on all waters in the county.

Factors Limiting Unrestricted Growth or Land Use Change

The absence of an economic development plan is a factor that limits growth in Camden. Camden officials are in support of the future zoning plans outlined in the Advanced Core CAMA Land Use Plan, according to the Director of Planning Dan Porter.

Land Supply versus Demand
Conversations with Camden's Director of Planning Dan Porter have indicated that the abundance of land in Camden County far exceeds demand, as Camden is still a fairly small, but growing county with no incorporated jurisdiction.

Market for Development
With the addition of Water and Sewer lines being added, the rapid population growth, and the building of new subdivisions occurring in Camden County, the market for development in Camden is trending upward, however the volume of new growth remains relatively modest.

CAMA
As one of twenty CAMA counties in North Carolina, Camden is subject to development regulations outlined by the North Carolina Department of Coastal Management. A 30-foot buffer rule exists for all waters in Camden County. The planned mixed-use development project in Camden near US158 and Country Club road will require a permit as the planned development is adjacent to large wetland and a bridge is being raised in order to accommodate developers' plans.

Other Rules and Regulations
The adopted 2004 Advanced Core CAMA Land Use Plan outlines tools for managing development in Camden and suggests that all rules and zoning changes be in accordance with CAMA regulations.

Growth Impact Areas
The areas subject to new growth for Camden County are mostly along the project corridor. The four areas that are planned for development will provide mostly a commercial impact and will provide resources for Camden residents that did not previously exist.

No new residential areas or neighborhoods are expected to grow as the moratorium on new subdivisions remains in effect until the sewer line is installed.

Indirect and Cumulative Effects Matrix

Potential For New Growth or Land Use Change, 2000-2020

Rating	Change in Accessibility	Change in Property Values	Forecasted Growth	Land Supply vs. Land Demand	Water/ Sewer Availability	Market For Development	Public Policy
Strong	> 10 min. travel time savings	> 50% increase in property values	> 3% annual pop. growth	< 10-year supply of land	Existing service available	Development activity abundant	Less stringent; no growth management
"			X		X		
"		X		X			X
"	X					X	
"							
"							
Weak	< 2 min. travel time savings	No property value increase	0-1% annual pop. Growth	> 20-year supply of land	No service available now or in future	Development activity lacking	More stringent; growth management

Project Consistency and Conflict with Local Plans and Goals

Explicit Economic Development Purpose

There is no explicit economic development purpose and need associated with this project. However, raising the bridge may accommodate growth on the parcel adjacent to Pinch Gut.

Consistency with Local or Agency Policies, Goals or Plans

R-2414 is generally consistent with the local plans and goals of the county and region. Camden County officials acknowledge that the continued growth of the county requires additional lanes to accommodate the amount of traffic traveling through the county.

Summary of New Growth, Change in Land Use, and Consistency with Local Plans

Potential Impacts on Natural Resources

Natural Resources

Camden County follows NC Department of Environment and Natural Resources (NC DENR), Department of Water Quality and CAMA stormwater regulation guidelines to protect water quality in wetlands, rivers, streams and estuaries. There is no water supply watershed in any of the growth areas and as such, no impacts to water supply watersheds will occur.

The implementation of the Pasquotank River Basin Management Strategy by county officials will help to protect water quality and aquatic habitat throughout the county.

VII. CONCLUSIONS, FINDINGS AND RECOMMENDATIONS - ICE

Summary of New Growth, Change in Land Use, and Consistency with Local Plans

R-2414, the widening of US 158 from Pasquotank County to Belcross will result in moderate growth to the Camden County and specifically at the parcel on US 158 between Country

Club Road and Pinch Gut. While not presently consistent with the adopted CAMA Land Use Plan, it is consistent with positions taken by the Camden County Board of Commissioners. R-2414 is consistent with plans for the county by local officials with only minor changes to zoning needed to comply with the adopted 2004 CAMA Land Use Plan.

Recommendations to Address Project Conflicts

- Camden County to consider re-zoning of parcel at southeast quadrant of US 158 and Country Club Road from Residential 3-2, to a more appropriate category that will reflect the mixed-use economic development proposed on that site.

Water Quality Findings

The R-2414 US-158 widening project may result in a moderate stimulus for development in the Growth Impact Study Areas. The exception will be the Growth Impact Study Area associated with the raising of a bridge over Pinch Gut (an 80-acre mixed-use development) to accommodate small motor boat traffic. Overall, there may be a moderate to strong potential for change in land use in the vicinity of the project. The widening project is on existing location.

TIP R-2414 may likely result in modest to moderate increases in property values and population growth to this fast growing, but sparsely populated area. The addition of multiple lanes will allow for modest travel time-savings for motorists traveling through Camden County and will modestly improve accessibility. The eventual construction of water and sewer lines along the project corridor, and planned economic development activity in the county, support growth in the area.

Development is already planned or underway in the Growth Impact area associated with a 10-acre retail plaza including a Food Lion grocery store. Another developer has proposed a 50+ acre business park on US-158 just north of the US-158 and NC-34 split. Last is the 143-acre proposed industrial park behind Albemarle Propane. The project is not changing access to any of these developments. Numerous industrial parks exist in eastern North Carolina and most have large vacancy rates or are undeveloped.

Access may be altered as part of the R-2414 US-158 widening project in that a bridge over Pinch Gut, near the intersection of US-158 and Country Club Road, will be raised in order to accommodate a proposal by a developer for a proposed commercial development of an 80 acre parcel adjacent to the pond-like body of water.

The proposal to raise the bridge several feet may allow some existing boat traffic to access some land that is currently inaccessible. However, as the bridge is currently very low, and the proposed bridge will only be raised a few feet, the ability of even small watercraft to pass under the highway to access areas up river will be limited. Nevertheless, the possibility exists that raising the bridge slightly may allow some water access to areas where it did not previously exist, potentially altering the nature of future development at some locations. No illumination is proposed under the bridge.

The developer has unspecified hopes of constructing a water-accessible restaurant with a docking area to attract small craft river traffic on the Pasquotank River. Camden County

officials are in favor of this project, and have cited an absence of retail and service establishments as a reason to support development at this location.

This specific development at Pinch Gut is currently inconsistent with the 2004 Advance Core CAMA Land Use Plan for Camden County, county zoning and the Environmental Composite Map in the CAMA Land Use Plan. This parcel is currently zoned as low-density residential/agricultural, which is contrary to the planned use for this parcel. According to the 2004 Advance Core CAMA Land Use Plan, the addition of the planned water and sewer lines (shown to extend to this area), and rezoning of parcels in the area, will make the parcel consistent with the land use plan and address CAMA plan environmental constraints. However, water quality regulations are less stringent in this community.

Conclusions and Recommendations

A 30-foot buffer rule exists to all Public Trust waters under CAMA regulations. Absent additional development regulations, depending on the type of development and amount of impervious surfaces, water quality may be affected and additional study may be required.

However, If additional water quality regulations such as buffers, controlled/engineered stormwater, and other Best Management Practices such as on-site stormwater treatment are implemented, impacts to downstream water quality should be minimized.

Cumulative Effects

Cumulatively, considering the currently developing market in this region, the moderate growth stimulus provided by the additional capacity of the road, as well as the relatively limited footprint of the project at Pinch Gut that may be developed as a result of slightly raising the bridge. The cumulative effect of the proposed project is this area should be moderate. No further study is recommended.

IX. PHOTOS

Photo 1. Creek adjacent to proposed development at US-158/Country Club Road

Photo 2. Culvert at under bridge on US-158 south of Country Club Rd.

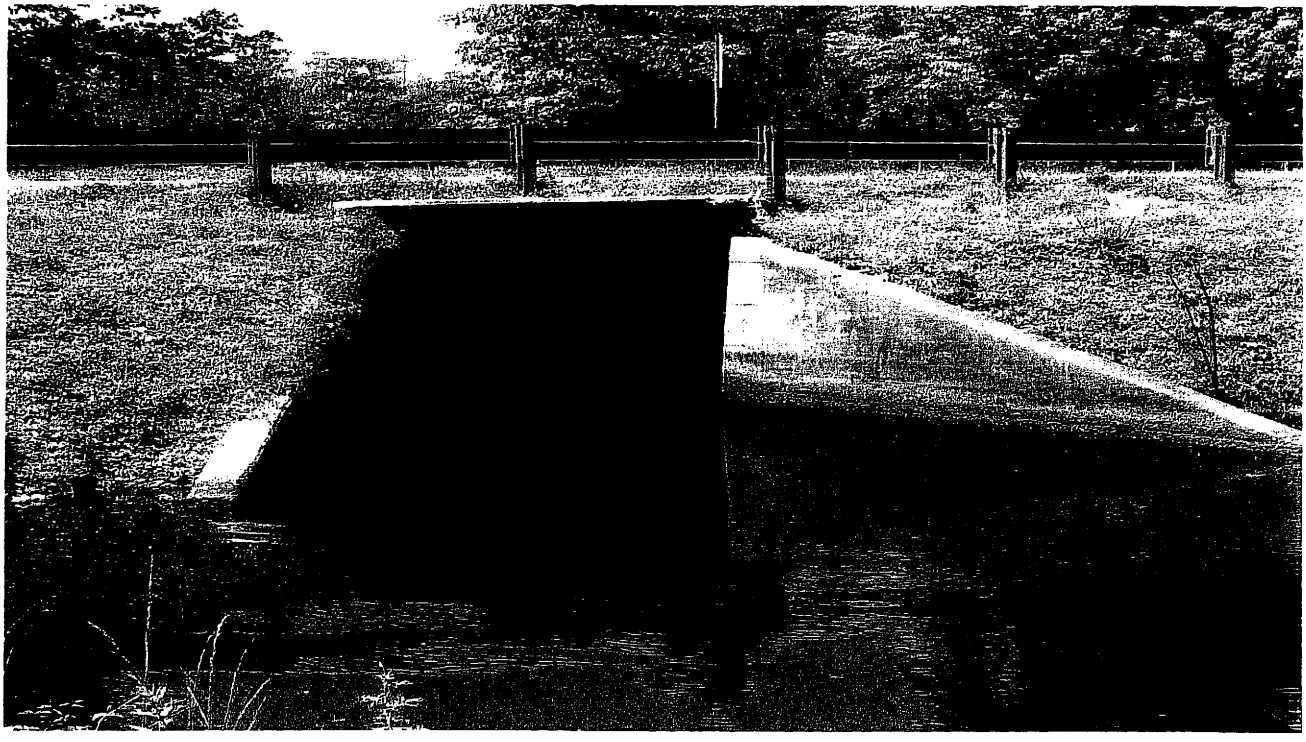


Photo 3. Open space at proposed Food Lion retail plaza on US-158

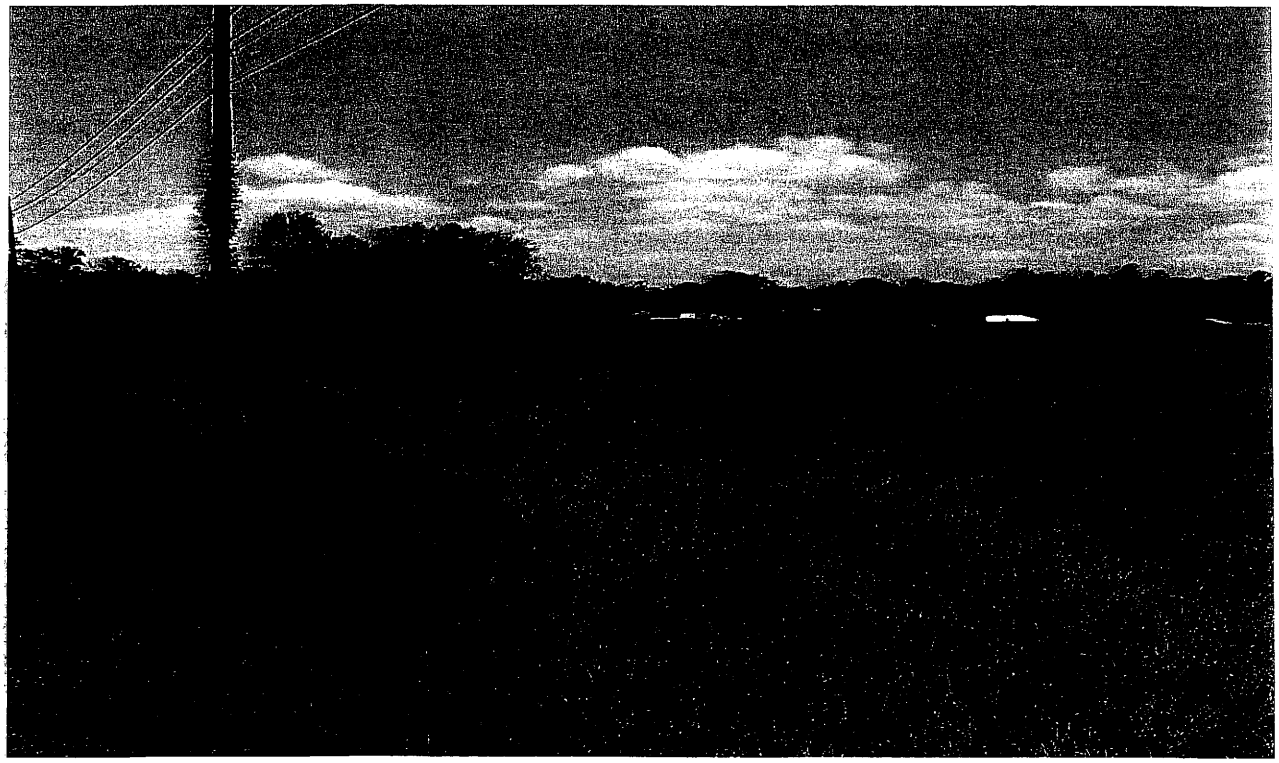


Photo 4. Open space between Gumberry Rd. and US-158

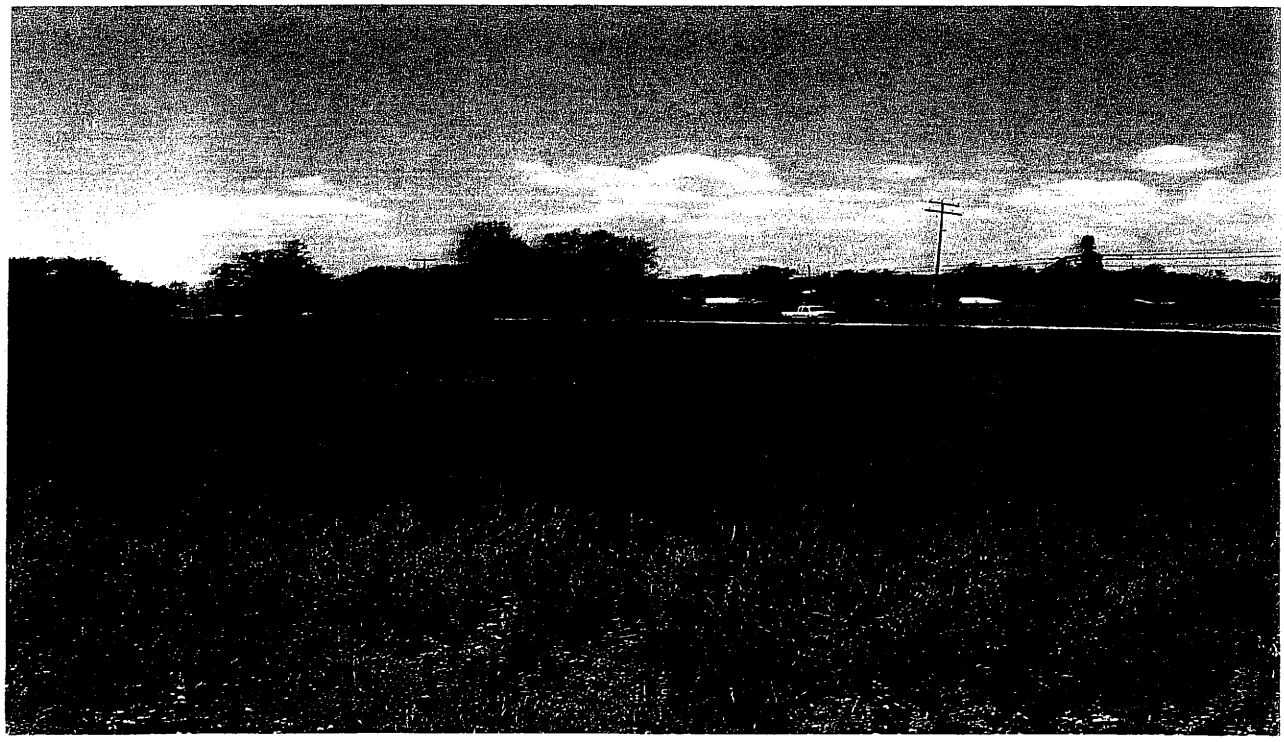


Photo 5. Tark & Associates - Proposed Business Park

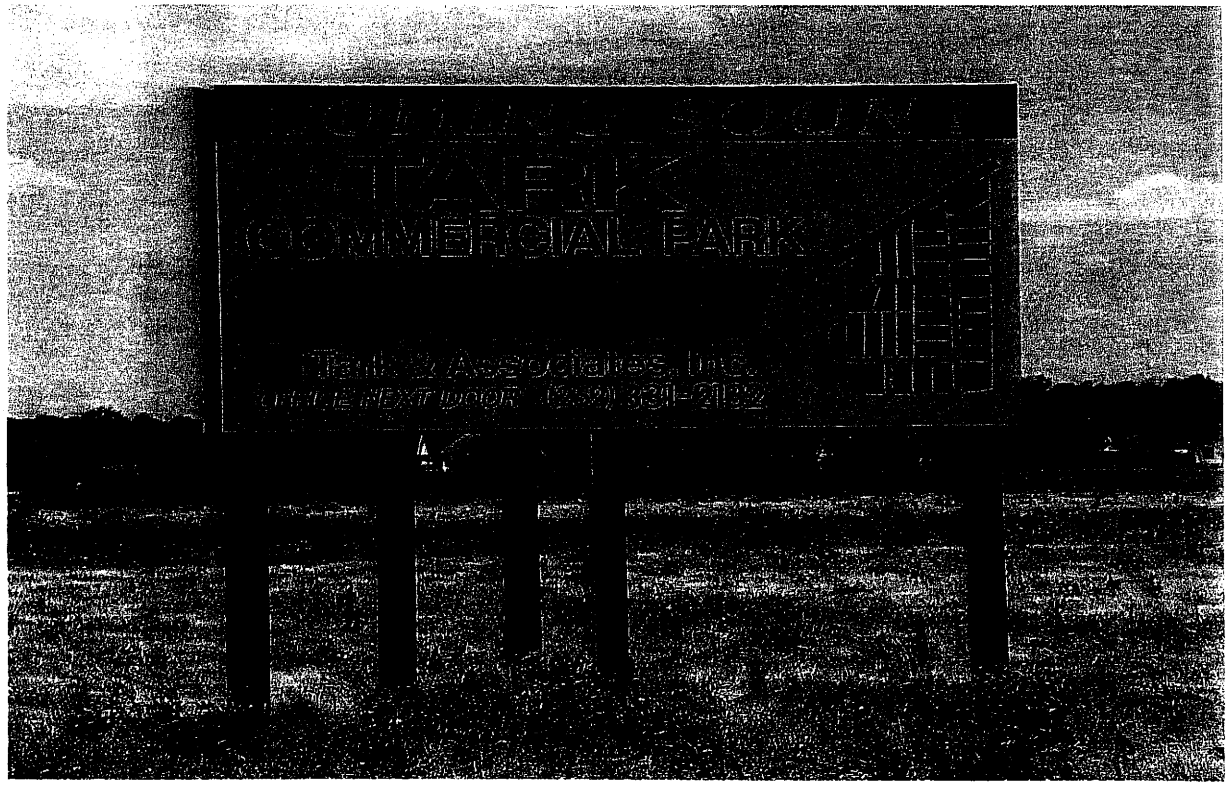


Photo 6. George M. Wood Memorial Park entrance

X. APPENDIX
Demographic Study Area Tables

Table 1. Population and Growth

Population	BG3, CT 9501	Camden County	North Carolina
2000	1,775	6,885	8,049,313
1990	1,496	5,904	6,628,637
# of growth 1990-2000	279	981	1,420,676
% change 1990-2000	19%	17%	21%
# of growth 2000-2005	Unknown	8,881	8,683,242
% change 2000-2005	unknown	29%	8%

Table 2. Age Distribution

	BG 3, CT 9501		Camden County		North Carolina	
Age	**Pop.**	**%**	**Pop.**	**%**	**Pop.**	**%**
19 years and under	457	25.7%	1,870	27.2%	2,187,079	27.2%
20-44 years	580	32.7%	2,411	35.0%	3,089,585	38.4%
45-54 years	288	16.2%	911	13.2%	1,082,089	13.4%
55-64 years	181	10.2%	769	11.2%	720,738	9.0%
65 years and over	269	15.2%	924	13.4%	969,822	12.0%
Total in List	**1,775**	**100.0%**	**6,885**	**100.0%**	**8,049,313**	**100.0%**

Table 3. Race and Ethnicity

	BG 3, CT 9501		Camden County		North Carolina	
	Total	**%**	**Total**	**%**	**Total**	**%**
White	1,382	77.9%	5,673	82.4%	5,802,165.00	72.1%
Black or African American	332	18.7%	1,043	15.1%	1,734,154	21.5%
American Indian and Alaska Native	0	0.0%	22	0.3%	100,956	1.3%
Asian	0	0.0%	0	0.0%	111,292	1.4%
Native Hawaiian and Other Pacific Islander	0	0.0%	22	0.3%	3,699	0.0%
Some other race	0	0.0%	0	0.0%	185,138	2.3%
Two or more races	61	3.4%	125	1.8%	111,909	1.4%
Total	**1,775**	**100.0%**	**6,885**	**100.0%**	**8,049,313**	**100.0%**
Total in Sample	**1,775**		**6,885**		**8,049,313**	
Hispanic or Latino:	0	0.0%	108	1.6%	372,964	4.6%

Table 4. Income and Poverty Status

Income Status / Poverty	BG 3, CT 9501	Camden County	North Carolina
	Total	Total	Total
Income below Poverty level	7.3%	10.0%	11.9%
Median Income	$38,438	$39,493	$39,184

Table 5. Educational Status

	BG 3, CT 9501		Camden County		North Carolina	
Educ. Attainment	Total	Percent	Total	Percent	Total	Percent
< High School	158	12.2%	856	17.9%	1,154,724	21.9%
High School	403	31.1%	1,621	34.0%	1,502,978	28.4%
Some College	301	23.2%	1,144	24.0%	1,080,504	20.5%
Associates Degree	92	7.1%	376	7.9%	358,075	6.8%
Bachelors Degree	199	15.4%	522	10.9%	808,070	15.3%
Graduate Professional Degree	143	11.0%	251	5.3%	378,643	7.2%
Total in List	1,296	100.0%	4,770	100.0%	5,282,994	100.0%
Total in Sample	1,296	100.0%	4,770	100.0%	5,282,994	100.0%

Table 6. Housing Characteristics and Occupancy Status

Area	BG 3, CT 9501		Camden County		North Carolina	
	Total	%	Total	%	Total	%
Owned	621	86.1%	2,222	83.5%	2,172,270	69.4%
Rented	100	13.9%	440	16.5%	959,743	30.6%
Total Occupied	721	92%	2,662	89.5%	3,132,013	88.9%
Total Vacant	63	8%	311	10.5%	391,931	11.1%
Median Home Value	$118,600	N/A	$103,100	N/A	$108,300	N/A

Sources

Advanced Core CAMA Land Use Plan DRAFT, prepared by Holland Consulting Planners, Inc., Wilmington, North Carolina, December 2004

North Carolina Department of Transportation, Community Impact Assessment, TIP-2414, Steve Gurganus, AICP and Kevin A. Jenkins, August 2005

American Factfinder website. www.census.gov

Camden County website. www.camdencountync.org

Dismal Swamp Canal website, http://icw.net/DSCwelcome

North Carolina Department of Commerce website, www.commerce.state.nc.us

North Carolina Department of Environmental and Natural Resources website, www.dcm2.env.state.nc.us

North Carolina State Demographics website, www.demog.state.nc.us

North Carolina Department of Environmental and Natural Resources, Division of Water Quality website, www. http://h2o.enr.state.nc.us

North Carolina Department of Environmental and Natural Resources, Division of Coastal Management website, www. http://dcm2.enr.state.nc.us/

North Carolina Census website, http://census.osbm.state.nc.us/lookup/commute_menu.html

Porter, Dan. Director of Planning. Camden County, North Carolina

Michael F. Easley, Governor

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

DIVISION OF WATER QUALITY
August 27, 2008

Dr. Gregory J. Thorpe
NC Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Subject: Stormwater Permit No. SW7080616
US 158 Widening Project
TIP No. R-2414A
Camden County

Dear Dr. Thorpe:

The Washington Regional Office received a completed Stormwater Application for the subject project on June 24, 2008. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7080616 dated August 27, 2008 to the NC Department of Transportation for the proposed widening of US 158 highway project located near Camden, NC.

This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact Mr. Bill Moore at (252) 948-3919.

Sincerely,

Al Hodge, Regional Supervisor
Surface Water Protection Section
Washington Regional Office

cc: Washington Regional Office
Central Files

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

STATE STORMWATER MANAGEMENT PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

NC Department of Transportation

Camden County

FOR THE

construction of a public road/bridge in compliance with the provisions of 15A NCAC 2H.1000 (hereafter referred to as the *"stormwater rules"*) and the approved stormwater management plans and specifications and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit for the US158 Highway widening project located near Camden, NC.

This permit shall be effective from the date of issuance until rescinded and shall be subject to the following specified conditions and limitations:

I. DESIGN STANDARDS

1. The runoff from the impervious surfaces has been directed away from surface waters as much as possible.
2. The Amount of built-upon area has been minimized as much as possible.
3. Best management Practices are employed which minimizes water quality impacts.
4. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of the permit.
5. Vegetated roadside ditches are 3:1 slopes or flatter.

II. SCHEDULE OF COMPLIANCE

1. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.

2. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.

3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

4. The permittee shall submit to the Director and shall have received approval for revised plans, specifications, and calculations prior to construction for the following items:

   a. Major revisions to the approved plans, such as road realignment, deletion of any proposed BMP, changes to the drainage area or scope of the project, etc.
   b. Project name change.
   c. Redesign of, addition to, or deletion of the approved amount of built-upon area, regardless of size.
   d. Alteration of the proposed drainage.

5. The Director may determine that other revisions to the project should require a modification to the permit.

III. GENERAL CONDITIONS

1. This permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from the parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits and may or may not be approved. The permittee is responsible for compliance with the terms and conditions of this permit until such time as the Director approves the transfer.

2. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to enforcement action by the Division of Water Quality, in accordance with North Carolina General Statute 143-215.6(A) to 143-215.6(C).

3. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state, and federal) which have jurisdiction.

4. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H .1000; and North Carolina General Statute 143-215.1 et. al.

5. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance or termination does not stay any permit condition.

6. The permit issued shall continue in force and effect until revoked or terminated.

7. The permittee shall notify the Division of any name, ownership or mailing address changes within 30 days.

Permit issued this the 27 th day of August, 2008.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

for Coleen H. Sullins, Director
Division of Water Quality
By Authority of the Environmental Management Commission

Permit Number SW7080616

Subject: Minutes from Interagency 4B Hydraulic Design Review Meeting on February 16, 2005 for R-2414A in Camden County

Team Members:

Bill Biddlecome-USACE	(present)
Nikki Thomson-NCDWQ	(present)
Travis Wilson-NCWRC	(present)
Gary Jordan-USFWS	(present)
Chris Militscher-EPA	(present)
Cathy Brittingham-DCM	(present)
Lynn Mathis-DCM	(present)
Tyler Stanton-ONE	(present)
Karen B. Taylor-PDEA	(present)
Eric Midkiff-PDEA	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Galen Cail, NCDOT Hydraulics
Jeff Reck, KCI Associates
Zak Hamidi, NCDOT Roadway
Todd Murray, NCDOT Roadway

There was a handout and discussion over the minimization measures that have been incorporated.

There was discussion over the scheduling and permitting of the A and B sections. Since the B section was done previously, the drainage design needs to be reassessed to make sure it is consistent with present design/environmental standards.

ONE will need to review the wetland file. Check "breaks" in the wetland boundary and use correct wetland symbology. Also, portions of wetland boundaries go through parking lots, buildings, etc.

It was requested to have the Division consider using 5', or less, mechanized clearing. This will be discussed with the Division at the Preliminary Field Inspection.

There is expressway/curb and gutter on the first and last plan sheets. Otherwise, a shoulder section was used throughout and sheet flow is attained.

Sheet 14:

A bridge crossing is proposed to replace the existing box culvert. Due to structural deficiencies, the box culvert has to be replaced. NCDOT anticipates requesting mitigation credit at this site.

Make sure ditch velocities to creek are non-erosive. Show calcs on permit.

Subject: Minutes from Interagency 4C Permit Review Meeting on April 11, 2007 for R-2414A in Camden County

Team Members:

Bill Biddlecome-USACE	(present)
David Wainwright-NCDWQ	(present)
Travis Wilson-NCWRC	(present)
Gary Jordan-USFWS	(present)
Chris Militscher-EPA	(present)
Kathy Matthews-EPA	(present)
Cathy Brittingham-DCM	(present)
Donnie Brew-FHWA	(present)
Michael Turchy-NEU	(present)
Chris Rivenbark-NEU	(present)
Elizabeth Lusk-NEU	(present)
Marissa Rodman-NEU	(present)
Drew Joyner-PDEA	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Galen Cail, NCDOT Hydraulics
Audrey Burnette, KCI Associates
Bob Capehart, NCDOT Construction
Zak Hamidi, NCDOT Roadway
Todd Murray, NCDOT Roadway
Mark Staley, NCDOT Roadside Env.
Mark Laugisch, NCDOT Roadside Env.
Neb Bullock, NCDOT Structures
Doug Calhoun, NCDOT Structures

PROJECT GENERAL COMMENTS:

- Cathy Brittingham questioned if CAMA wetlands exist on the project. NEU will investigate but did not anticipate that any existed on this project.
- There was discussion on the Temporary Wetland Impacts that go 5' beyond the proposed toe of fill. The temporary impacts provide area for erosion control measures including temporary silt fence and check dams. Cathy Brittingham said these sites will need to be monitored for 3-years. Pending the wetland recovery success, the impacts may need to be re-classified as permanent impacts.
- Cathy Brittingham mentioned that if project stream(s) are classified as inland waters they are subject to NCWRC review/comment. If they are not inland waters they are subject to NCDMF review/comment.
- Marissa Rodman stated that approximately 81 acres of potential on-site preservation will be negotiated with the land owner of parcel 3.
- The length of channel provided by removing the existing box culvert (78 ft) will be shown at the bottom of the Impact Summary Sheet versus under the "Natural Stream Design" column. Also, the structure type and span arrangement will be provided on the summary.
- NEU will revise wetland delineation file to remove wetland symbology out of surface waters.

The plans were reviewed on a sheet by sheet basis with comments and recommendations made as follows:

SHEET NO. 5

Area of rip rap in ditch outlet will be changed to permanent impacts. The Impact Summary Sheet will be revised accordingly.

SHEET NO. 14

It was stated that temporary sheetpile or impervious dikes may be needed for the bridge construction. It was stated the placement and/or removal of these would need to take place outside of the moratorium. Also, it was stated a pipe is proposed during the bridge construction to provide conveyance up and downstream of the sheetpile or dikes. The bridge provides additional opening/conveyance area versus the existing 2.13m x 2.44m (7' x 8') box culvert. The opening increases from 5.2 sm (56 sq ft) to 69.9 sm (750 sq ft). See Stormwater Mgmt Plan.

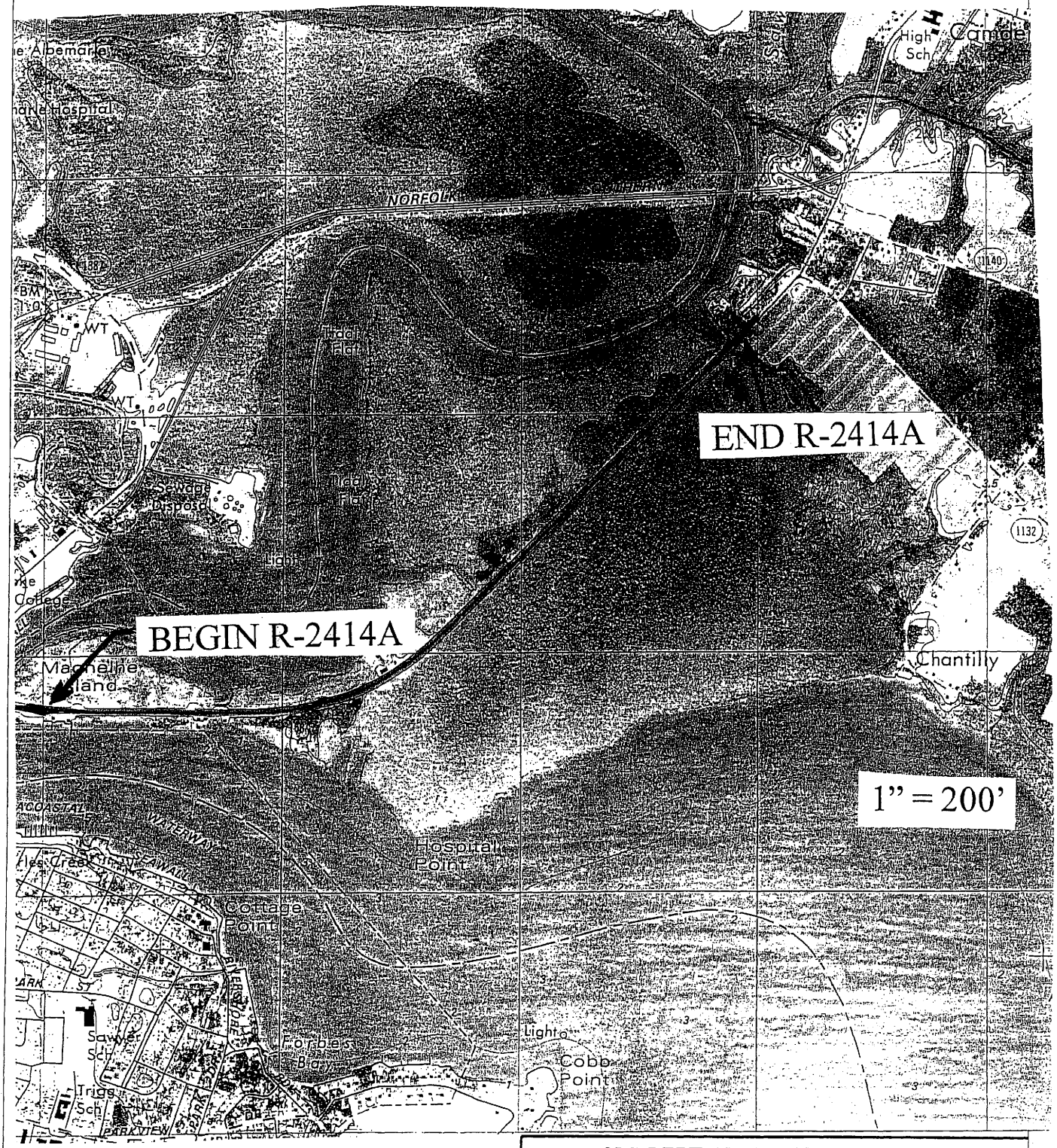
Chris Militscher questioned why the wetland impacts increase so much in this area. It was stated the fill slope is going out because the roadway grade is going up. The grade goes up because of the bridge. Also, the alignment through the area has more of the widening going to the East in order to avoid the cemetery and to avoid having a much longer bridge due to the proximity of the surface water LT.

Structure Design has constructability issues with staging box beams; therefore, the bridge will change to a 3 span cored slab. In addition, the grade will be lowered to reduce wetland impacts.

SHEET NO. 21

Add the span, bridge type and length to the profile.

VICINITY MAP



N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY
34430.1.1 (R-2414A)
US 158 WIDENING

SHEET OF

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	SITE NO.	NAMES	ADDRESSES
1	1	City of Elizabeth City	P.O. Box 347 Elizabeth City, NC 27909
	2, 3, 4, 5, 6, 7, 8, 9, 10, 11	NCDOT	
3	8	C.O. Robinson Trust	201 E. Main Street Elizabeth City, NC 27909

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY
34430.1.1 (R-2414A)
US 158 WIDENING

SHEET OF

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	7+00 -L-	18" RCP	<0.01				0.01					
2	10+75 -L- LT						<0.01					
3	12+30 -L- RT	Rip Rap	0.01									
4*	13+80 - 14+63 -L- LT		0.03									
5	15+60 - 15+75 -L- LT		<0.01									
6	16+62 - 18+17 -L- RT		0.02				0.10					
7*	16+79 - 23+30 -L- LT		0.12				0.31					
8*	20+16 - 43+00 -L- RT		1.46				1.51					
9	24+50 - 25+12 -L- LT		0.01				0.03					
10	25+90 - 42+90 -L- LT		0.18				0.89					
11**	43+10 -L-	3 span bridge (Length=100')							0.080		105	50
TOTALS:			1.83				2.85		0.080		105	50

* Portion of CAMA Wetland Impacts. Total Listed in Table.

Site 3 = 0.01 ac (Fill)
Site 4 = 0.03 ac (Fill)
Site 7 = 0.01 ac (Fill); 0.05 ac (Hand Clearing)
Site 8 = <0.01 ac (Fill); 0.02 ac (Hand Clearing)

** 50 ft of existing box culvert to be removed and replaced with open channel and bridged.

NOTE: 0.79 ac of Temp Impacts in Wetlands in the Hand Clearing areas due to erosion control measures. Includes 0.77 ac and 0.02 ac of impact to 404 and CAMA wetlands, respectively.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY
WBS - 34430.1.1 (R-2414A)

US 158 Widening

SHEET March-08

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS			
			Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Temporary (m)	Natural Stream Design (m)
1	7+00 -L-	450 RCP	0.001				0.002				
2	10+75 -L- LT						0.001				
3*	12+30 -L- RT	Rip Rap	0.002								
4*	13+80 - 14+63 -L- LT		0.010								
5	15+60 - 15+75 -L- LT		0.001				0.002				
6	16+62 - 18+17 -L- RT		0.009				0.041				
7*	16+79 - 23+30 -L- LT		0.049				0.127				
8*	20+16 - 43+00 -L- RT		0.590				0.611				
9	24+50 - 25+12 -L- LT		0.003				0.012				
10	25+90 - 42+90 -L- LT		0.072				0.361				
11**	43+10 -L-	3 span bridge (Length = 30.4m)							0.033	32	15.2
TOTALS:			0.737				1.157		0.033	32	15.2

* Portion of CAMA Wetland Impacts. Total Listed in Table.

Site 3 = 0.002 ha (Fill)
Site 4 = 0.010 ha (Fill)
Site 7 = 0.003 ha (Fill); 0.022 ha (Hand Clearing)
Site 8 = 0.001 ha (Fill); 0.006 ha (Hand Clearing)

** 15.2m of existing box culvert to be removed and replaced with open channel and bridged.

NOTE: 0.318 ha of Temp impacts in wetlands in the Hand Clearing areas due to erosion control measures. Includes 0.311 ha and 0.007 ha of impacts to 404 and CAMA wetlands, respectively.

JMD Revised 2/03/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY
WBS - 34430.1.1 (R-2414A)

US 158 Widening

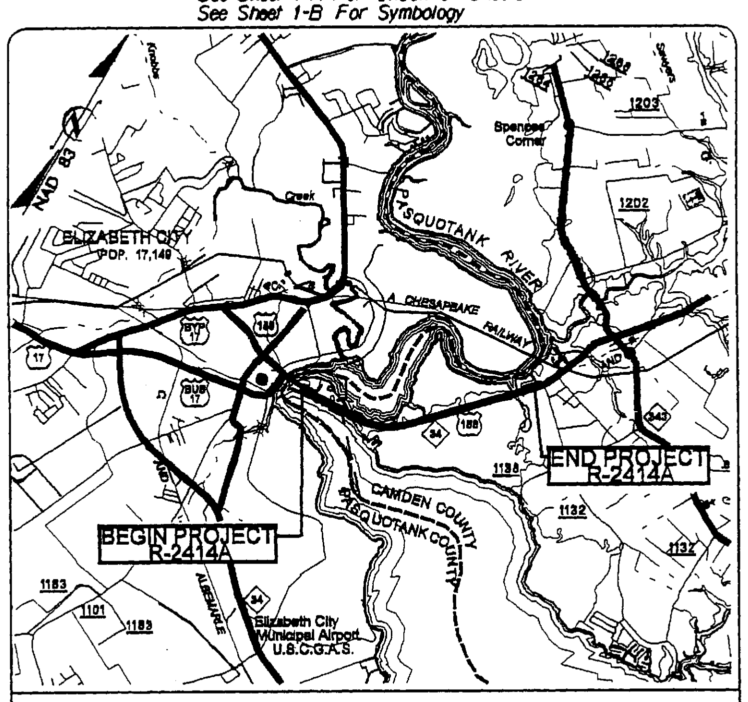
SHEET March-08

09/09/99

TIP PROJECT: R-2414A

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology



VICINITY MAP

PRE-PLFI

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

LOCATION: *US 158 / NC 34 FROM EAST OF PASQUOTANK RIVER TO NORTH OF SR 1257 (HAVENWOOD DR.) BETWEEN ELIZABETH CITY AND CAMDEN*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, AND STRUCTURE*

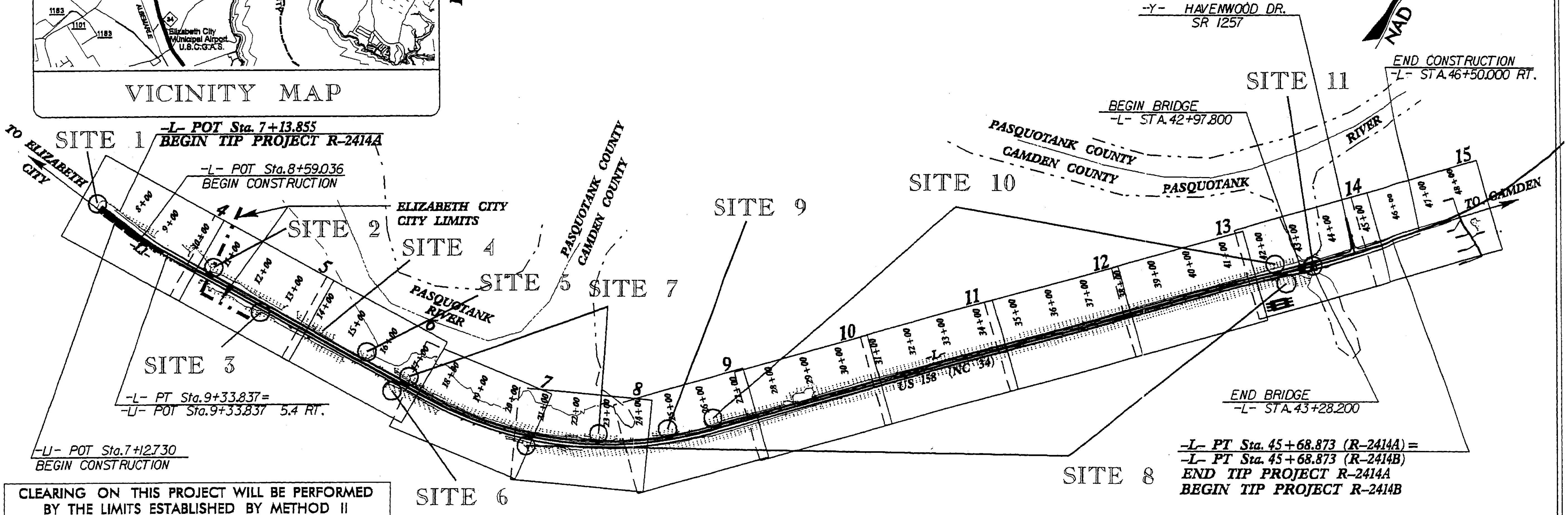
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2414A	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34430.1.1	STP-158(2)	PE
34430.2.4		ROW & UTILITIES
		CONST.

Permit Drawing
Sheet 5 of 36



CLEARING ON THIS PROJECT WILL BE PERFORMED BY THE LIMITS ESTABLISHED BY METHOD II

A PORTION OF THIS PROJECT IS WITHIN MUNICIPAL BOUNDARIES OF ELIZABETH CITY

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS

PROFILE (HORIZONTAL)

PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 25210
ADT 2028 = 40730
DHV = 12 %
D = 60 %
T = 6 % *
V = 80-100 KM/H
* (TTST 2 % + DUAL 4 %)
FUNC. CLASS. = ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414A	=	3.825 KM
LENGTH STRUCTURE TIP PROJECT R-2414A	=	0.030 KM
TOTAL LENGTH TIP PROJECT R-2414A	=	3.855 KM

KCI Associates of North Carolina, P.A.

Prepared in the Office of:
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
For The North Carolina Department Of Transportation
2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
November 15, 2006

LETTING DATE:
October 21, 2008

NCDOT CONTACT:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

DOUG TAYLOR, PE
ROADWAY DESIGN ENGINEERING

HYDRAULICS ENGINEER

SIGNATURE: P.E.

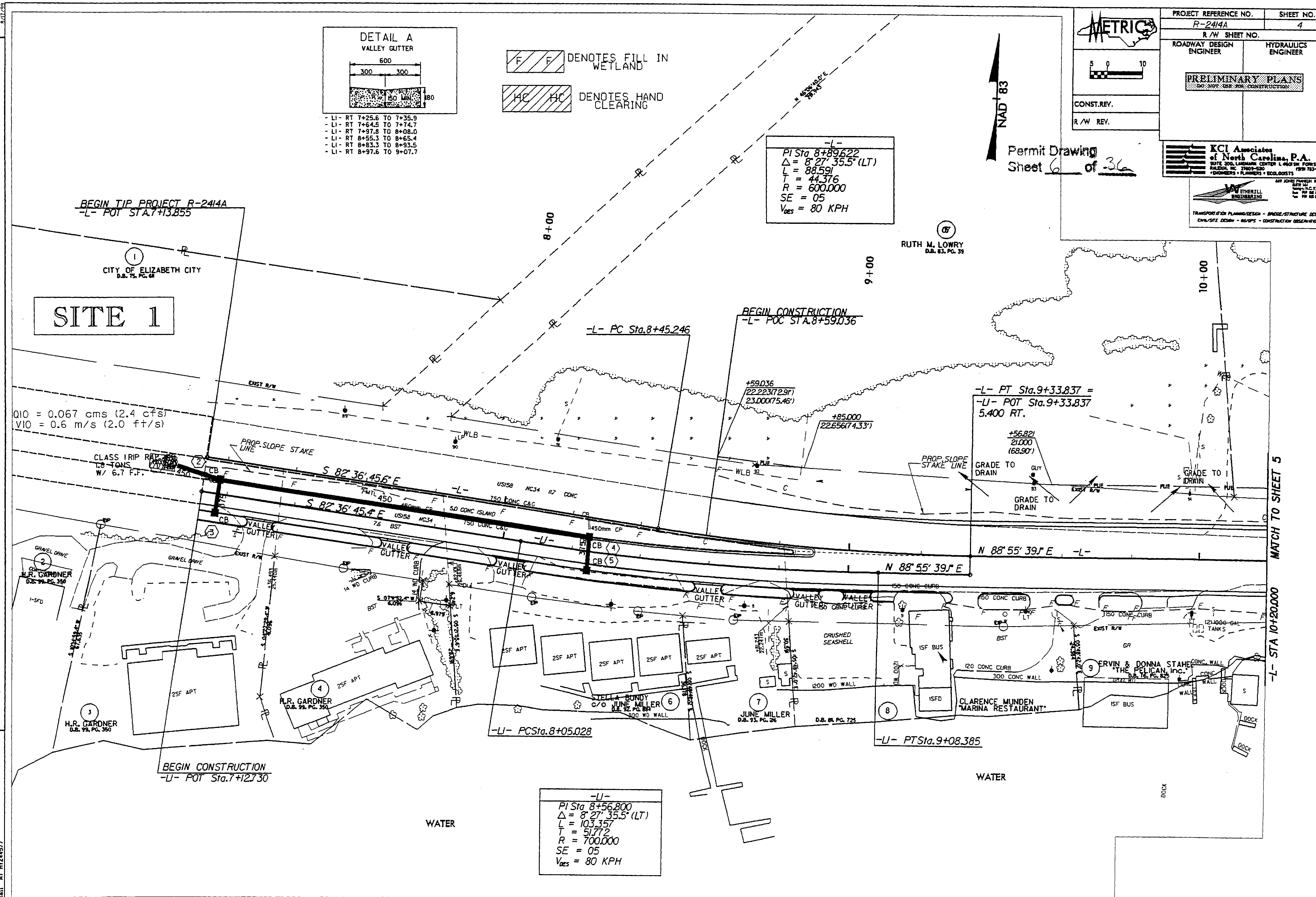
ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

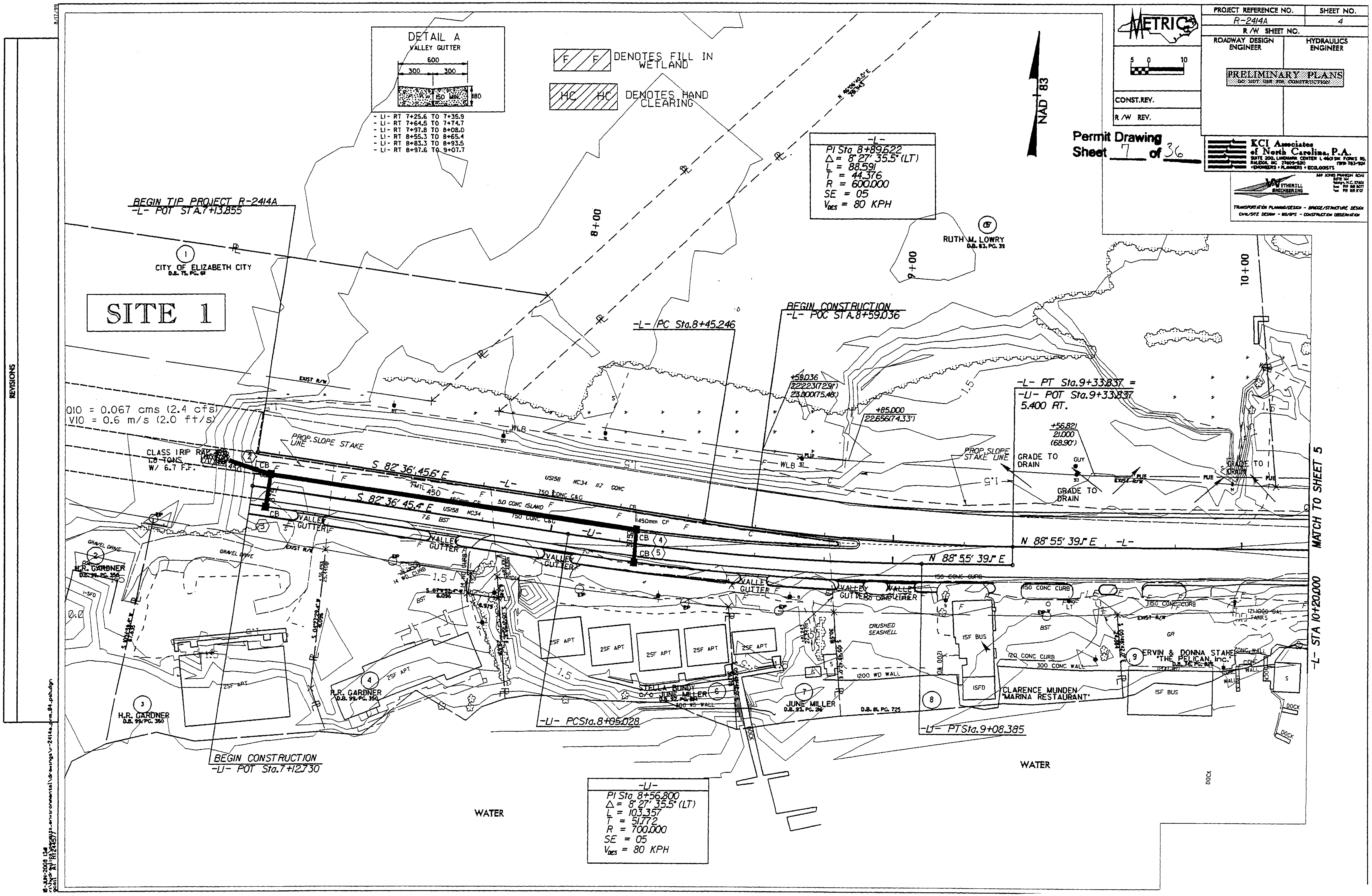
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

03-MAR-2008 13:23



DETAIL A
VALLEY GUTTER
600
300
300
150 MIN.
180
- LI - RT 7+25.6 TO 7+35.9
- LI - RT 7+64.5 TO 7+74.7
- LI - RT 7+97.8 TO 8+08.0
- LI - RT 8+55.3 TO 8+65.4
- LI - RT 8+83.3 TO 8+93.5
- LI - RT 8+97.6 TO 9+07.7
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
METRIC
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
SHEET NO.
R-2414A
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
Permit Drawing
Sheet 6 of 36
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
REVISIONS
-L-
PI Sta 8+89.622
Δ = 8° 27' 35.5" (LT)
L = 88.591
T = 44.376
R = 600.000
SE = 05
Vdes = 80 KPH
BEGIN TIP PROJECT R-2414A
-L- POT STA.7+13.855
CITY OF ELIZABETH CITY
RUTH M. LOWRY
SITE 1
8+00
9+00
10+00
-L- PC Sta.8+45.246
BEGIN CONSTRUCTION
-L- POC STA.8+59.036
Q10 = 0.067 cms (2.4 cfs)
V10 = 0.6 m/s (2.0 ft/s)
CLASS I RIP RAP
1.8 TONS
W/ 6.7 F.F.
PROP. SLOPE STAKE LINE
S 82° 36' 45.6" E
S 82° 36' 45.4" E
-L-
-LI-
N 88° 55' 39.1" E
-L- PT Sta.9+33.837 =
-LI- POT Sta.9+33.837
5.400 RT.
GRADE TO DRAIN
VALLEY GUTTER
MATCH TO SHEET 5
-L- STA 10+20.000
H.R. GARDNER
2SF APT
ISF BUS
ISFD
STELLA BUNDY
c/o JUNE MILLER
JUNE MILLER
CLARENCE MUNDEN
"MARINA RESTAURANT"
ERVIN & DONNA STAHEL
"THE PELICAN, Inc."
CRUSHED SEASHELL
DOCK
-LI- PC Sta.8+05.028
-LI- PT Sta.9+08.385
BEGIN CONSTRUCTION
-LI- POT Sta.7+12.730
-LI-
PI Sta 8+56.800
Δ = 8° 27' 35.5" (LT)
L = 103.357
T = 51.772
R = 700.000
SE = 05
Vdes = 80 KPH
WATER


METRIC
PROJECT REFERENCE NO. R-2414A
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
Permit Drawing Sheet 7 of 36
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
NAD 83
DETAIL A
VALLEY GUTTER
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
SITE 1
BEGIN TIP PROJECT R-2414A
-L- POT STA.7+13.855
CITY OF ELIZABETH CITY
-L- PC Sta.8+45.246
BEGIN CONSTRUCTION
-L- POC STA.8+59.036
PI Sta 8+89.622
Δ = 8° 27' 35.5" (LT)
L = 88.591
T = 44.376
R = 600.000
SE = 05
V = 80 KPH
RUTH M. LOWRY
-L- PT Sta.9+33.837 =
-U- POT Sta.9+33.837
5.400 RT.
Q10 = 0.067 cms (2.4 cfs)
V10 = 0.6 m/s (2.0 ft/s)
CLASS I RIP RAP
1.8 TONS
W/ 6.7 F.F.
S 82° 36' 45.6" E
S 82° 36' 45.4" E
N 88° 55' 39.5" E
MATCH TO SHEET 5
-L- STA 10+20.000
H.R. GARDNER
STELLA BUNDY
JUNE MILLER
CLARENCE MUNDEN
"MARINA RESTAURANT"
ERVIN & DONNA STAHL
"THE PELICAN, Inc."
-U- PCSta.8+05.028
-U- PTSta.9+08.385
BEGIN CONSTRUCTION
-U- POT Sta.7+12.730
PI Sta 8+56.800
Δ = 8° 27' 35.5" (LT)
L = 103.357
T = 51.772
R = 700.000
SE = 05
V = 80 KPH
WATER
WATER
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

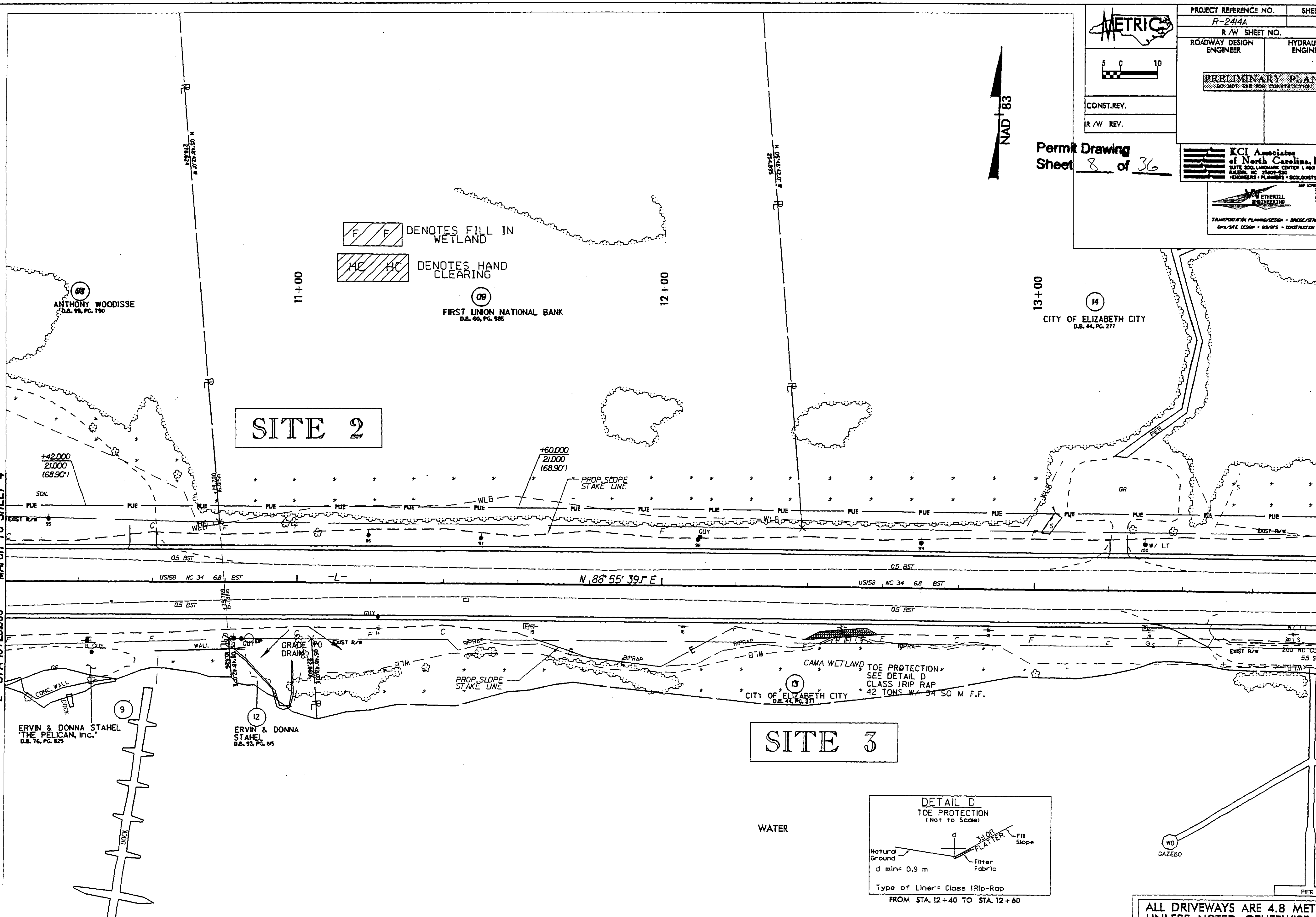
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

Permit Drawing Sheet 8 of 36

KCI Associates of North Carolina, P.A.



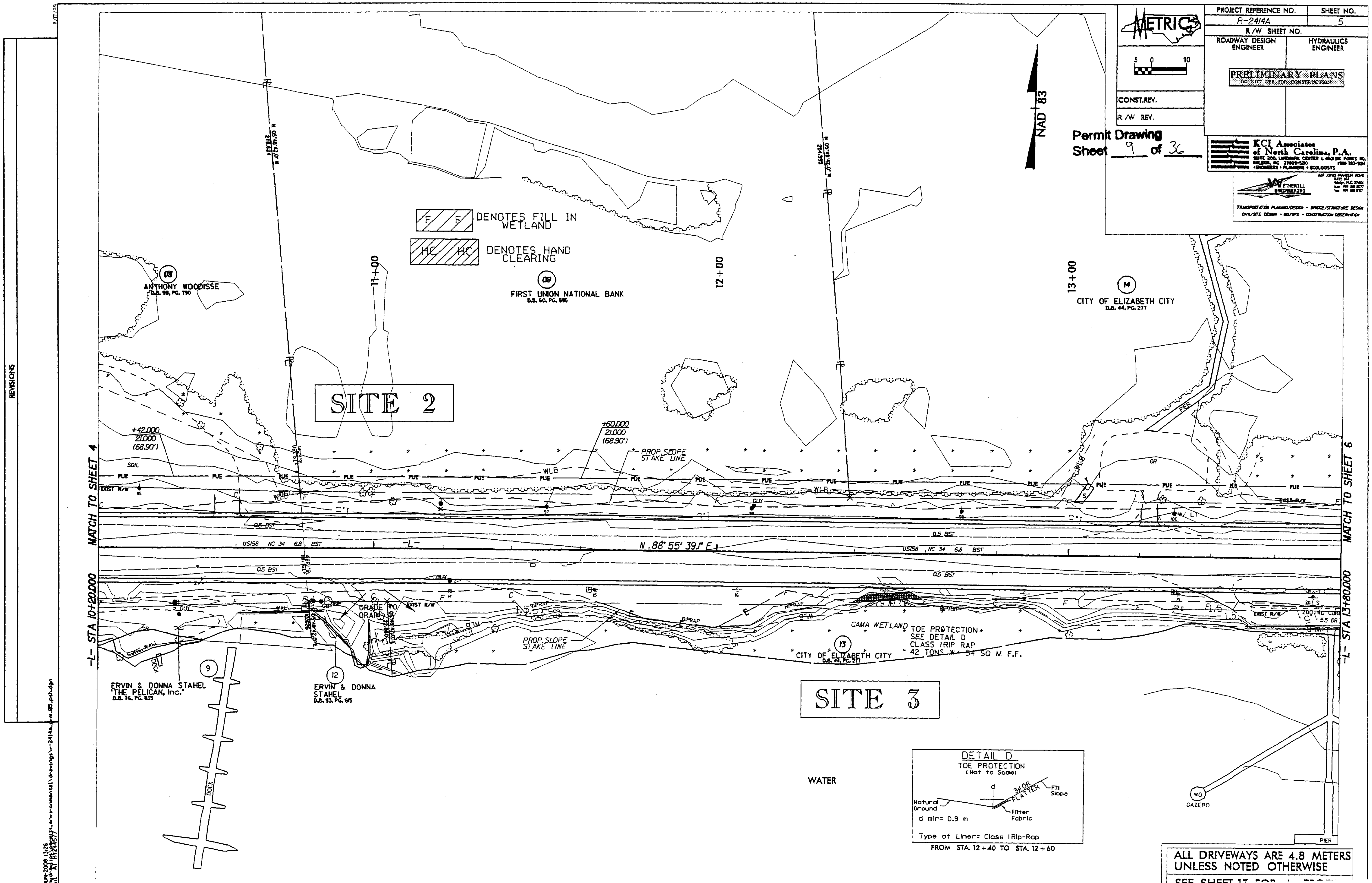
DETAIL D
TOE PROTECTION
(Not to Scale)

Natural Ground
d min= 0.9 m
3:1 OR FLATTER
Fill Slope
Filter Fabric
Type of Liner= Class I Rip-Rap

FROM STA. 12+40 TO STA. 12+60

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 17 FOR -L- PROFILE


METRIC
PROJECT REFERENCE NO. R-2414A
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
Permit Drawing
Sheet 9 of 36
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
NAD 83
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
SITE 2
SITE 3
ANTHONY WOODISSE
FIRST UNION NATIONAL BANK
CITY OF ELIZABETH CITY
11+00
12+00
13+00
+42.000
21.000
(68.90')
+60.000
21.000
(68.90')
PROP. SLOPE STAKE LINE
MATCH TO SHEET 4
MATCH TO SHEET 6
-L- STA 10+20.000
-L- STA 13+80.000
N 88° 55' 39.1" E
US158 NC 34 6.8 BST
0.5 BST
GRADE TO DRAIN
CAMA WETLAND
TOE PROTECTION
SEE DETAIL D
CLASS I RIP RAP
42 TONS W/ 54 SQ M F.F.
PROP. SLOPE STAKE LINE
CITY OF ELIZABETH CITY
ERVIN & DONNA STAHEL
"THE PELICAN, Inc."
ERVIN & DONNA STAHEL
DOCK
CONC. WALL
PIER
WATER
GAZEBO
DETAIL D
TOE PROTECTION
(Not to Scale)
3:1 OR FLATTER
Fill Slope
Natural Ground
Filter Fabric
d min= 0.9 m
Type of Liner= Class I Rip-Rap
FROM STA. 12+40 TO STA. 12+60
ALL DRIVEWAYS ARE 4.8 METERS
UNLESS NOTED OTHERWISE
REVISIONS

Permit Drawing
Sheet 10 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	X-10

2.5 0 2.5 5

METRIC

SITE 2

Wetland

HC

R/W

0.025G

0.025G

5:1

3:1

S.S. 1423

2.76

SS. 1401

10+80.000

SS. 1540

6:1

0.025G

0.025G

3:1

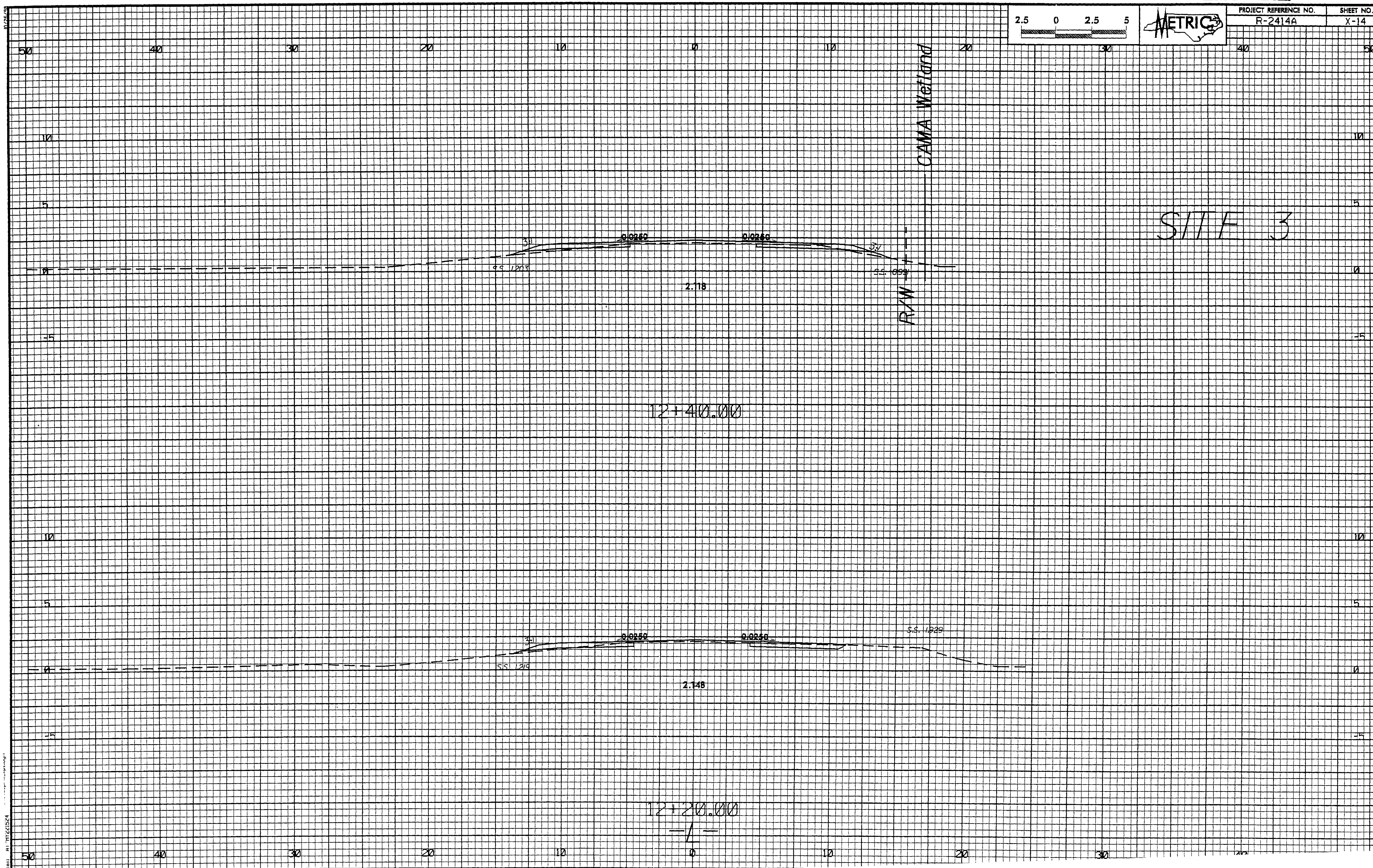
2.81

S.S. 1418

10+60.000

—1—

Permit Drawing
Sheet 11 of 36



Permit Drawing
Sheet 12 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I, 4601 M. FORKS RD.
RALEIGH, NC 27609-5210
ENGINEERS • PLANNERS • ECOLOGISTS

ETHERIDGE ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - RR/DPS - CONSTRUCTION OBSERVATION

REVISIONS
R/W REVISION - REVISED PROPOSED STATION AND OFFSETS FOR TEMPORARY CONST. EASEMENT LEFT. BAW

8/17/99

NAD 83

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

WATER

SITE 4

SITE 5

SITE 7

SITE 6

14+00

15+00

16+00

17+00

-L- STA 13+80.000 MATCH TO SHEET 5

-L- STA 17+20.000 MATCH TO SHEET 7

-L- TS Sta 17+28.33

N 88° 55' 39.1" E

WILLIAM PEFLEY
D.B. 62, PG. 89

CAMDEN COUNTY "PASQUOTANK RIVER YACHT CLUB"
D.B. 65, PG. 4

W.F. THOMPSON
D.B. 102, PG. 282

BILL & LINDA TAYLOR
D.B. 82, PG. 4

CAMDEN COUNTY ABC BOARD
D.B. 71, PG. 399

MARKHAM ENTERPRISES, Inc. "CAUSEWAY MARINA"
D.B. 72, PG. 85
D.B. 93, PG. 14

LLOYD D. GRIFFIN
D.B. 38, PG. 45

LLOYD D. GRIFFIN
D.B. 38, PG. 45

CAMA WETLAND

EXIST R/W

PROP. SLOPE STAKE LINE

1200 WD WALL (68.90')

WD GUARD POSTS

WD DECK

ISF BUS

1800 CMP W/ 3 SB

900 WD

1200 WALL

WALL

DOCK

RIPRAP

GAZEBO

2SFD

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 17 FOR ... PROFILE

Permit Drawing
Sheet 13 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

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RALEIGH, NC 27609-5230 (919) 783-9214
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WITHERILL ENGINEERING
849 JONES FRANKLIN ROAD SUITE 104 Raleigh, N.C. 27606 Phone 919 851 8077 Fax 919 851 8170
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - RR/WPS - CONSTRUCTION OBSERVATION

REVISIONS
R/W REVISION - REVISED PROPOSED STATION AND OFFSETS FOR TEMPORARY CONST. EASEMENT LEFT. BAM

8/17/99

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83

WATER

SITE 4

SITE 5

SITE 6

SITE 7

-L- STA 13+80.000 MATCH TO SHEET 5

MATCH TO SHEET 7 -L- STA 17+40.000

-L- TS Sta 17+28.33

N 88° 55' 39" E

WILLIAM PEFLEY D.B. 62, PG. 89

CAMDEN COUNTY "PASQUOTANK RIVER YACHT CLUB" D.B. 65, PG. 69

LLOYD D. GRIFFIN D.B. 38, PG. 45

W.F. THOMPSON D.B. 102, PG. 32

BILL & LINDA TAYLOR D.B. 82, PG. 4

CAMDEN COUNTY ABC BOARD D.B. 7, PG. 399

MARKHAM ENTERPRISES, Inc. "CAUSEWAY MARINA" D.B. 72, PG. 85 D.B. 23, PG. 114

LLOYD D. GRIFFIN D.B. 38, PG. 45

CANAL/WETLAND

PROP. SLOPE STAKE LINE

EXIST R/W

EXIST. EXIST R/W

PUE

WD DECK

WD GUARD POSTS

1800 CHL W/ 3 SB

1200 WALL

900 WD

ISF BUS

DOCK

RIPRAP

WALL

25FD

GAZEBO

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 17 FOR -L- PROFILE

Permit Drawing
Sheet 14 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	X-19

2.5 0 2.5 5

METRIC

SITE 4

FW in Wetlands

CAMA Wetland

Wetland

R/W

3:1

0.0250

0.0286

3:1

SS 1.709

SS 0.496

2.202

14+40.000

SITE 4

FW in Wetlands

CAMA Wetland

Wetland

R/W

3:1

0.0250

0.0286

3:1

SS 1.786

SS 0.582

2.219

14+20.000

Permit Drawing
Sheet 15 of 36

2.5 0 2.5 5	METRIC	PROJECT REFERENCE NO.	SHEET NO.
		R-2414A	X-22

SITE 5

Fill in Wetlands

HC

Wetland

R/W

3:1

S.S. 1.118

0.025Q

0.025Q

3:1

S.S. 1.567

2.227

15+60.000

S.S. 1.537

3:1

0.025Q

0.025Q

3:1

S.S. 1.580

2.214

15+40.000

Permit Drawing
Sheet 16 of 36

2.5 0 2.5 5	METRIC	PROJECT REFERENCE NO.	SHEET NO.
		R-2414A	X-26

SITE 7

CAMA Wetland

Wetland

Fill in Wetlands

HC

R/W

0.0259

0.0246

3:1

S.S. 0.487

2.155

Wetland

SITE 6

Fill in Wetlands

HC

R/W

3:1

S.S. 0.868

1"=20.000

SITE 7

CAMA Wetland

Wetland

Fill In Wetlands

HC

R/W

0.0259

0.0112

3:1

S.S. 0.488

2.199

Wetland

Fill In Wetlands

HC

R/W

3:1

S.S. 0.888

SITE 6

1"=100.000

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

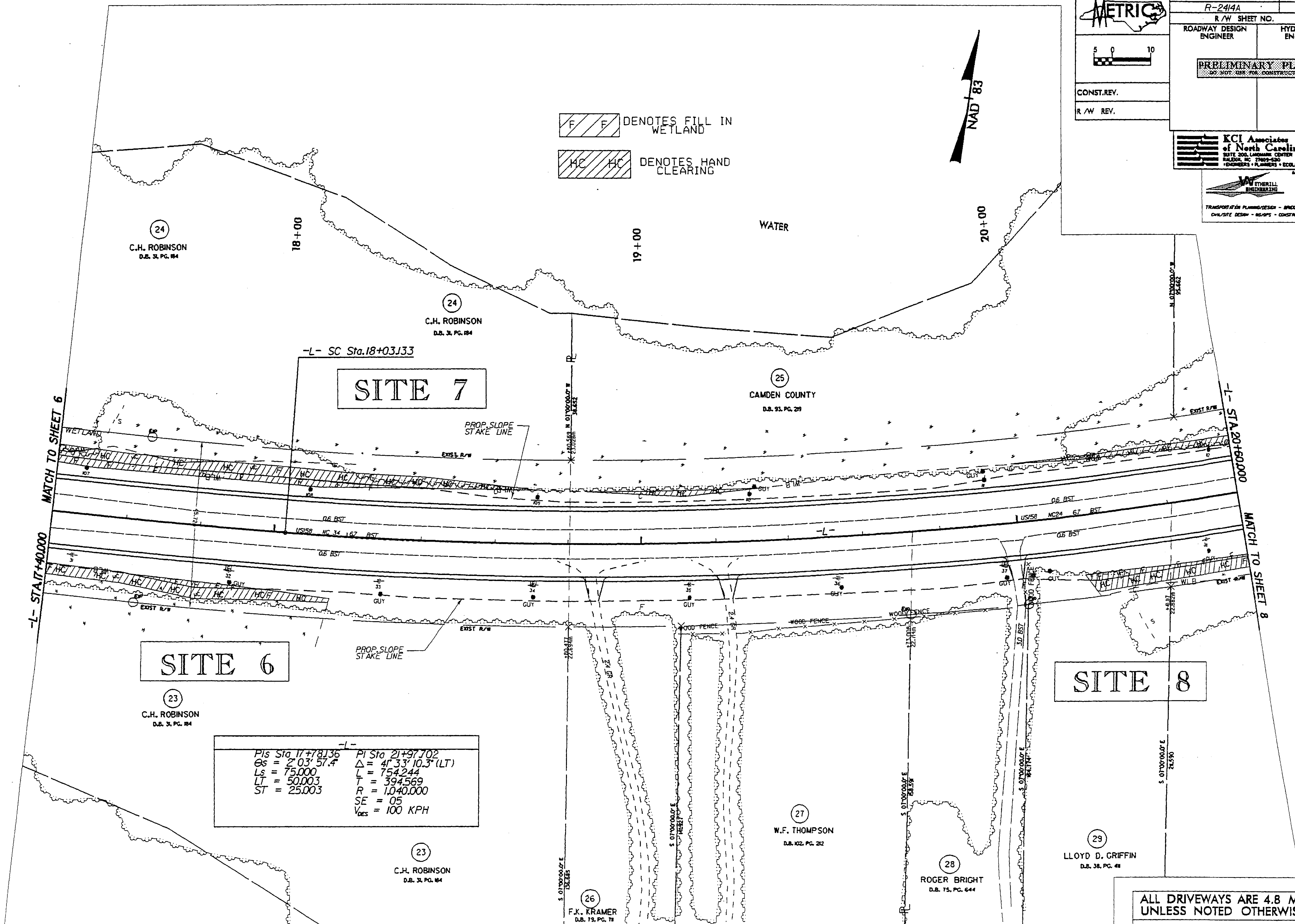
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

KCI Associates of North Carolina, P.A.

WETHERILL ENGINEERING



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 18 FOR -L- PROFILE

REVISIONS

Permit Drawing
Sheet 18 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

REVISIONS

8/17/93

F/F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83

1.5

18+00

19+00

20+00

WATER

24 C.H. ROBINSON D.B. 31, PG. 184

24 C.H. ROBINSON D.B. 31, PG. 184

-L- SC Sta.18+03.33

SITE 7

25 CAMDEN COUNTY D.B. 93, PG. 219

PROP. SLOPE STAKE LINE

MATCH TO SHEET 6

MATCH TO SHEET 8

-L- STA.17+40.000

-L- STA.20+60.000

WET LAND

EXIST R/W

US158 NC 34 67 BST

GR BST

WOOD FENCE

SITE 6

SITE 8

23 C.H. ROBINSON D.B. 31, PG. 184

Pls Sta 17+78.136
θs = 2°03'57.4"
Ls = 75.000
LT = 50.003
ST = 25.003

PI Sta 21+97.702
Δ = 41°33'10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = 05
V_{DES} = 100 KPH

23 C.H. ROBINSON D.B. 31, PG. 184

26 F.K. KRAMER D.B. 75, PG. 79

27 W.F. THOMPSON D.B. 102, PG. 212

28 ROGER BRIGHT D.B. 75, PG. 644

29 LLOYD D. GRIFFIN D.B. 35, PG. 48

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 18 FOR -L- PROFILE

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I, 4601 Six FORKS RD.
RALEIGH, NC 27609-5280 (919) 783-9214
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ETHERIDGE ENGINEERING
849 JONES FRANKLIN ROAD SUITE 144 Raleigh, N.C. 27606 Ph: 919 851 2077 Fax: 919 851 8712
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - RECAPS - CONSTRUCTION OBSERVATION

5-JUN-2008 13:28
C:\Projects\R-2414a_environmental\drawings\r-2414a_prm_87_phdgn

Permit Drawing
Sheet 19 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	X-39

2.5 0 2.5 5 METRIC

SITE 7

FIll in Wetlands
HC

CAMA Wetland
Wetland

R/W

3:1

0.0500

S.S. 0425

2.078

0.0500

3:1

S.S. 0698

Wetland

R/W

FIll In Wetlands
HC

SITE 8

22+40.00

SITE 7

HC

CAMA Wetland
Wetland

R/W

3:1

0.0500

S.S. 0593

2.086

0.0500

3:1

S.S. 0785

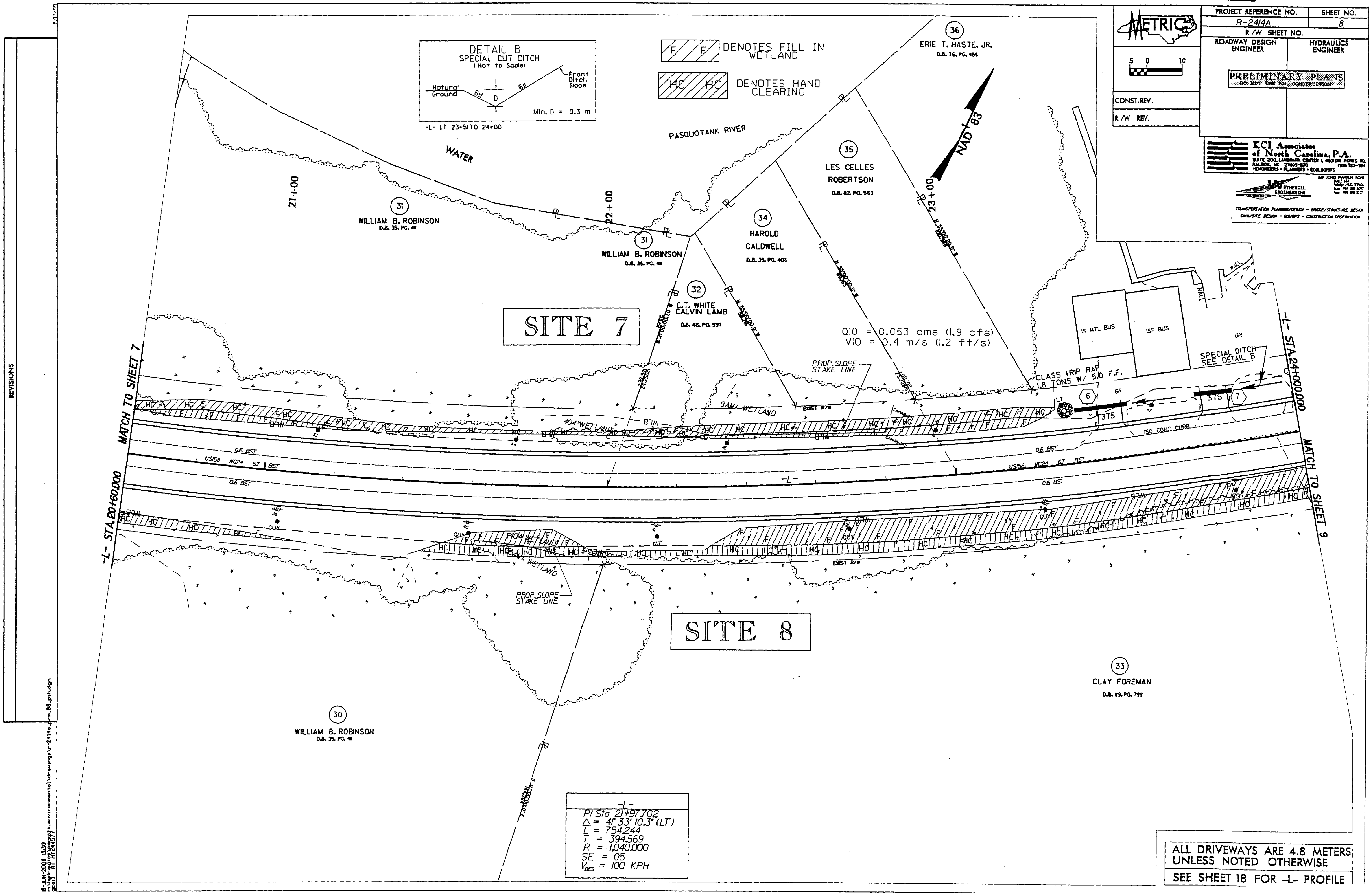
Wetland

R/W

HC

SITE 8

22+20.00


PROJECT REFERENCE NO.
R-2414A
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
METRIC
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D = 0.3 m
-L- LT 23+51 TO 24+00
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
PASQUOTANK RIVER
WATER
NAD 83
ERIE T. HASTE, JR.
D.B. 76, PG. 456
LES CELLES ROBERTSON
D.B. 82, PG. 563
HAROLD CALDWELL
D.B. 35, PG. 403
WILLIAM B. ROBINSON
D.B. 35, PG. 48
C.T. WHITE
CALVIN LAMB
D.B. 48, PG. 597
SITE 7
SITE 8
Q10 = 0.053 cms (1.9 cfs)
V10 = 0.4 m/s (1.2 ft/s)
PROP. SLOPE STAKE LINE
CLASS I RIP RAP
1.8 TONS W/ 5.0 F.F.
SPECIAL DITCH
SEE DETAIL B
IS MTL BUS
ISF BUS
404 WETLAND
CAMA WETLAND
MATCH TO SHEET 7
MATCH TO SHEET 9
-L- STA 20+60.000
-L- STA 24+000.000
21+00
22+00
23+00
0.6 BST
US158 NC24 6.7 BST
150 CONC CURB
EXIST R/W
CLAY FOREMAN
D.B. 83, PG. 799
WILLIAM B. ROBINSON
D.B. 35, PG. 48
-L-
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = .05
V_DES = 100 KPH
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 18 FOR -L- PROFILE
REVISIONS

Permit Drawing
Sheet 21 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC
5 0 10
CONST.REV.
R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I, 4601 SIX FORKS RD.
RALEIGH, NC 27609-5310
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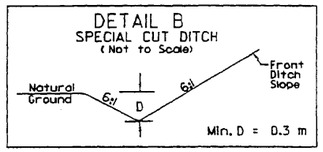
ETHERIDGE ENGINEERING
309 JONES FRANKLIN ROAD
SUITE 110
RALEIGH, N.C. 27606
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - MS/EPS - CONSTRUCTION OBSERVATION

REVISIONS

8/01/03

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



-L- LT 23+51 TO 24+00

F/F DENOTES FILL IN WETLAND

HC/HC DENOTES HAND CLEARING

SITE 7

SITE 8

Q10 = 0.053 cms (1.9 cfs)
V10 = 0.4 m/s (1.2 ft/s)

PASQUOTANK RIVER

WATER

21+00

22+00

23+00

NAD 83

31 WILLIAM B. ROBINSON D.B. 35, PG. 48

31 WILLIAM B. ROBINSON D.B. 35, PG. 48

32 C.T. WHITE CALVIN LAMB D.B. 48, PG. 597

34 HAROLD CALDWELL D.B. 35, PG. 403

35 LES CELLES ROBERTSON D.B. 82, PG. 543

36 ERIE T. HASTE, JR. D.B. 76, PG. 456

30 WILLIAM B. ROBINSON D.B. 35, PG. 48

33 CLAY FOREMAN D.B. 89, PG. 799

-L- STA. 20+60.000 MATCH TO SHEET 7

-L- STA. 24+00.000 MATCH TO SHEET 9

PROP SLOPE STAKE LINE

404' WETLAND

OAMA WETLAND

EXIST R/W

SPECIAL DITCH SEE DETAIL B

CLASS I RIP RAP 18 TONS W/ 5.0 F.F.

IS MTL BUS

ISF BUS

GR

HALL

150 CONC CURB

USI58 NC24 6.7 BST

0.6 BST

-L-
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = 05
V_{des} = 100 KPH

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 18 FOR -L- PROFILE

Permit Drawing
Sheet 22 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

CONST.REV.

R/W REV.

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I, 4601 SIX FORKS RD.
RALEIGH, NC 27609-5291
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ETHERIDGE ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS

38 CYRUS AYDLETT
D.B. 33, PG. 699

39 ROBLEY PERRY
D.B. 35, PG. 121

40 GEORGE RAPER
D.B. 75, PG. 893

41 THEODORE WOOD
D.B. 75, PG. 69

42 UNDINE PERRY LONGO
D.B. 35, PG. 220

43 UNDINE PERRY LONGO
D.B. 35, PG. 220

37 CLAY FOREMAN
D.B. 89, PG. 199

37 CLAY FOREMAN
D.B. 89, PG. 199

NAD 83

F/F DENOTES FILL IN WETLAND

HC/HC DENOTES HAND CLEARING

SITE 9

SITE 10

SITE 8

-L- ST Sta. 26+32.377

-L- CS Sta. 25+57.377

-L- STA. 24+00.000

-L- STA. 27+20.000

MATCH TO SHEET 8

MATCH TO SHEET 10

24+00

25+00

26+00

27+00

PROP. SLOPE STAKE LINE

EXIST R/W

0.6 BST

US158 NC34 67 BST N 43°14' 33.9" E

CONC

1SF BUS

2400 WD

24001 CHL

GUY

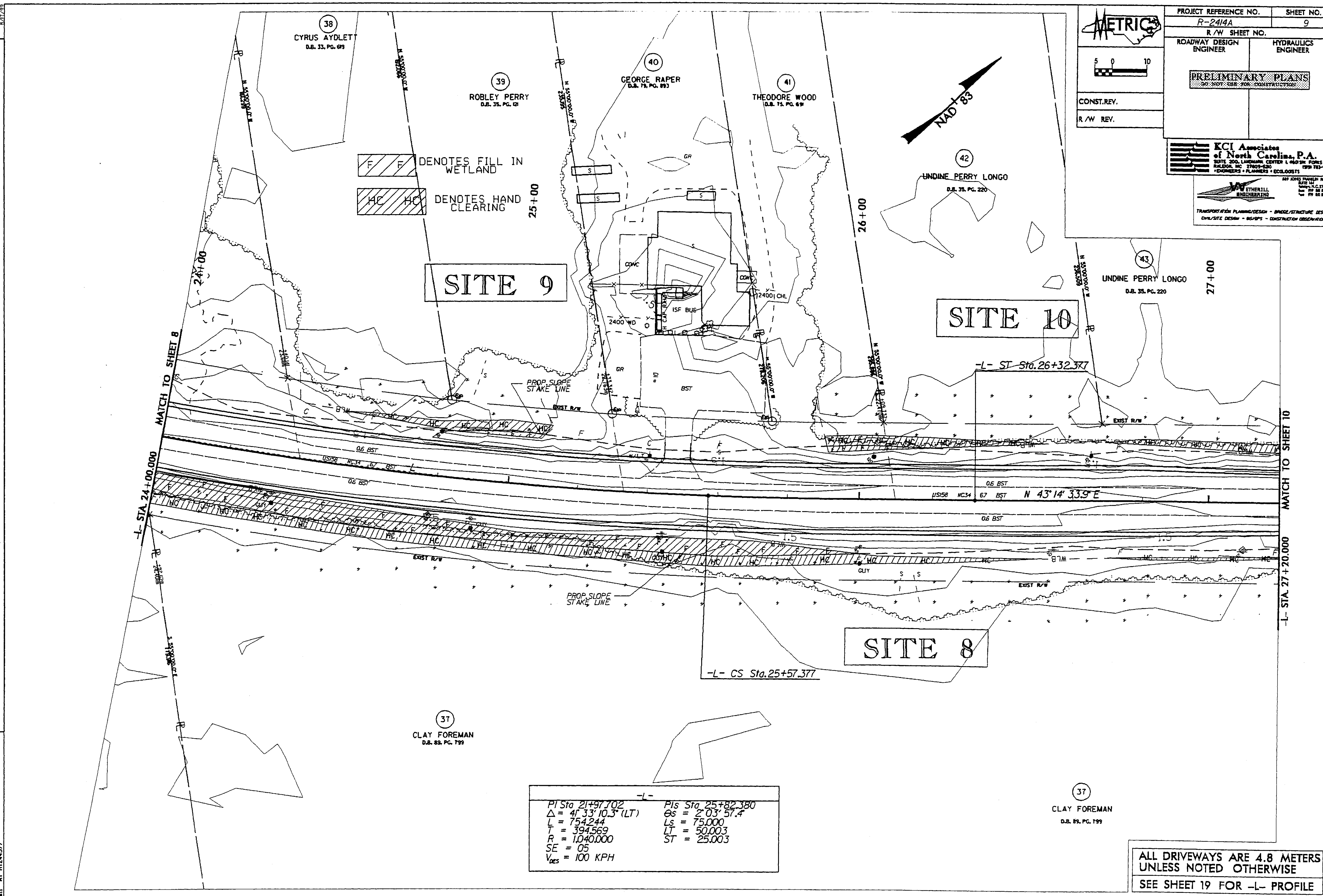
-L-	
PI Sta. 21+97.702	PIs Sta. 25+82.380
Δ = 41° 33' 10.3" (LT)	θs = 2° 03' 57.4"
L = 754.244	Ls = 75.000
T = 394.569	LT = 50.003
R = 1,040.000	ST = 25.003
SE = 05	
V_{DES} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

15-JAN-2008 15:25
R:\Proj\R-2414A\07-environmental\drawings\V-2414a-dm_09.pshdgn
Default R/W R/2414A07-environmental\drawings\V-2414a-dm_09.pshdgn

Permit Drawing
Sheet 23 of 36



METRIC
PROJECT REFERENCE NO. R-2414A
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST. REV.
R/W REV.
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WETHERILL ENGINEERING
NAD 83
F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING
SITE 9
SITE 10
SITE 8
38 CYRUS AYDLETT D.B. 33, PG. 619
39 ROBLEY PERRY D.B. 35, PG. 121
40 GEORGE RAPER D.B. 75, PG. 893
41 THEODORE WOOD D.B. 75, PG. 691
42 UNDINE PERRY LONGO D.B. 35, PG. 220
43 UNDINE PERRY LONGO D.B. 35, PG. 220
37 CLAY FOREMAN D.B. 89, PG. 799
24+00
25+00
26+00
27+00
MATCH TO SHEET 8
MATCH TO SHEET 10
-L- STA. 24+00.000
-L- STA. 27+20.000
-L- ST Sta. 26+32.377
-L- CS Sta. 25+57.377
N 43°14' 33.9" E
PROP. SLOPE STAKE LINE
EXIST R/W
REVISIONS

-L-	
PI Sta 21+97.702	PIs Sta 25+82.380
Δ = 41° 33' 10.3" (LT)	θs = 2° 03' 57.4"
L = 754.244	Ls = 75.000
T = 394.569	LT = 50.003
R = 1,040.000	ST = 25.003
SE = .05	
V_{DES} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

Permit Drawing
Sheet 24 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	X-46

2.5 0 2.5 5 METRIC

SITE 8

Fill in Wetlands
HC

Wetland

0.0500

0.0500

3:1

3:1

S.S. 0.897

S.S. 1.073

2.156

R/W

25+20.00

SITE 9

Fill in Wetlands
HC

Wetland

0.0500

0.0500

3:1

3:1

S.S. 0.506

S.S. 0.975

2.204

R/W

25+00.00

Permit Drawing
Sheet 25 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

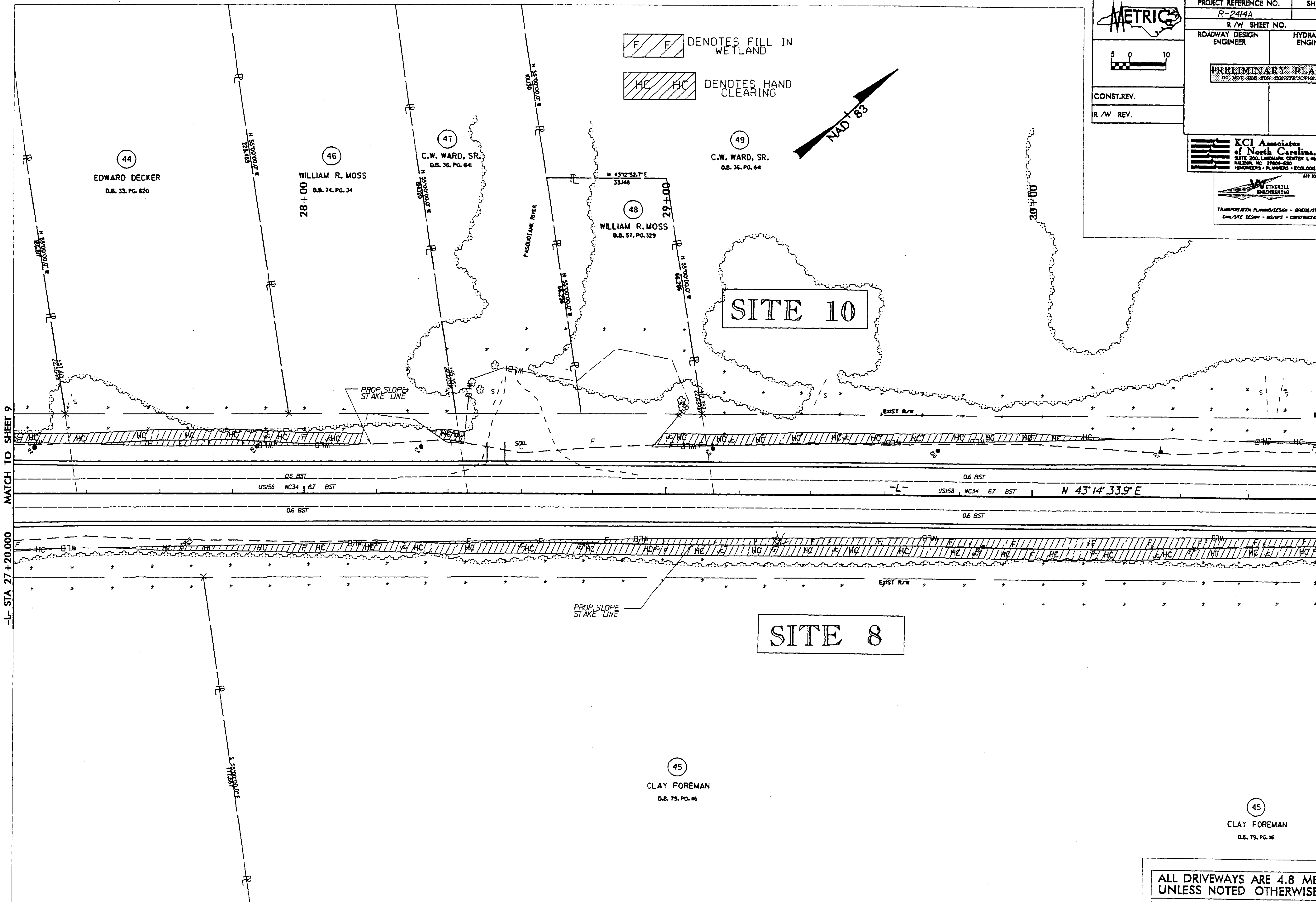
CONST.REV.
R/W REV.

REVISIONS

KCI Associates of North Carolina, P.A.

WETHERILL ENGINEERING

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



DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
NAD 83
SITE 10
SITE 8
EDWARD DECKER
D.B. 33, PG. 620
WILLIAM R. MOSS
D.B. 74, PG. 34
C.W. WARD, SR.
D.B. 36, PG. 641
WILLIAM R. MOSS
D.B. 57, PG. 329
C.W. WARD, SR.
D.B. 36, PG. 641
CLAY FOREMAN
D.B. 79, PG. 86
PASQUOTANK RIVER
28+00
29+00
30+00
PROP. SLOPE STAKE LINE
EXIST R/W
US158 NC34 6.7 BST
0.6 BST
-L-
N 43° 14' 33.9" E
MATCH TO SHEET 9
MATCH TO SHEET 11
-L- STA 27+20.000
-L- STA. 30+80.000

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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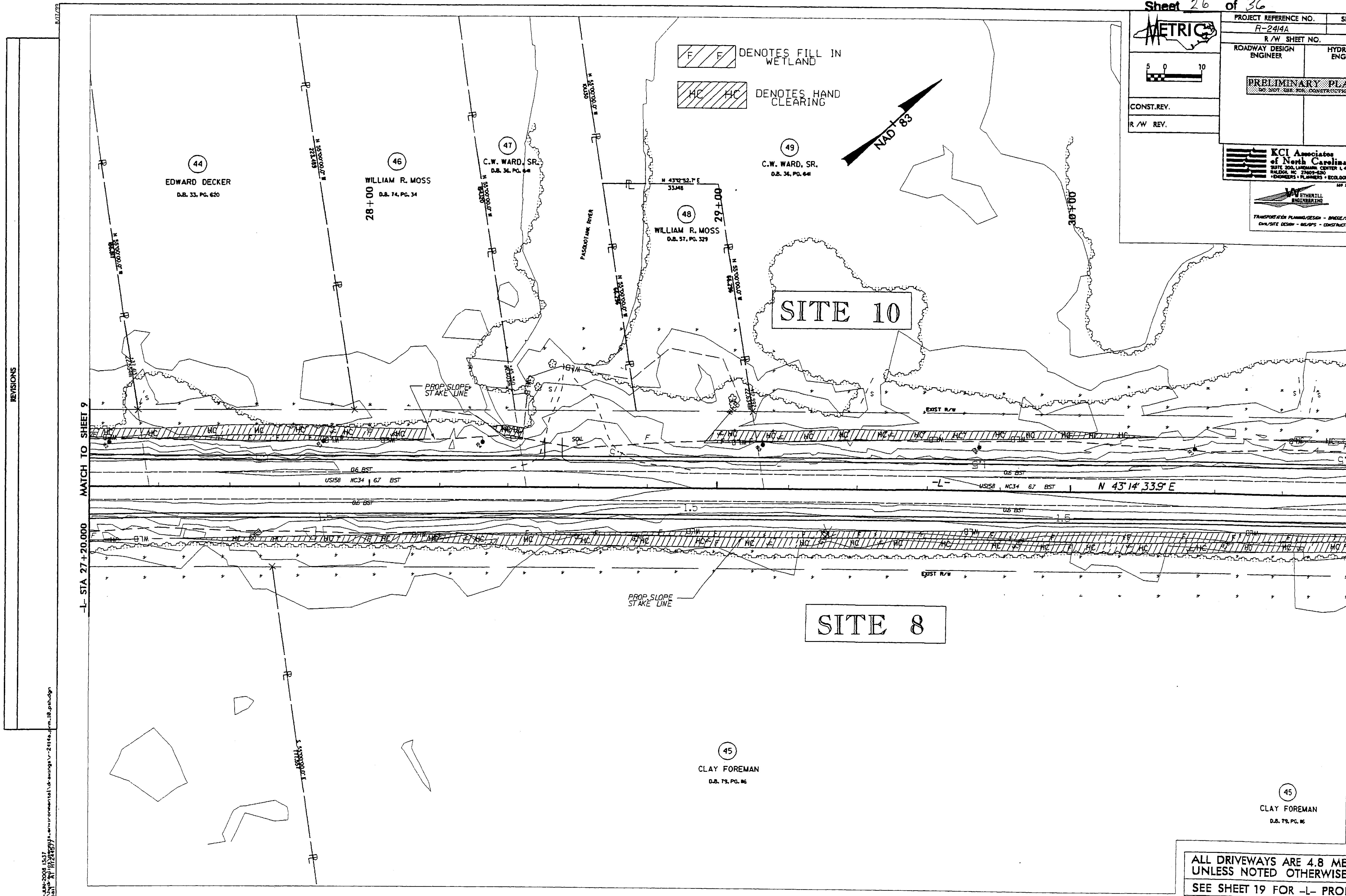

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

Permit Drawing
Sheet 27 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	X-70

2.5 0 2.5 5 METRIC

SITE 10

Wetland

Wetland

SITE 8

HC

SS 1432

3:1

0.0250

0.0250

3:1

SS 1188

Excavation In Wetlands

HC

1.887

R/W

R/W

34+80.00

SITE 10

Wetland

Wetland

SITE 8

HC

SS 1261

3:1

0.0250

0.0250

3:1

SS 1338

Excavation In Wetlands

HC

1.871

R/W

R/W

34+60.00

Permit Drawing
Sheet 28 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

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

REVISIONS

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83

(49) C.W. WARD, SR.
D.B. 36, PG. 641

(51) COLLEGE OF THE ALBEMARLE
D.B. 89, PG. 778

(51) COLLEGE OF THE ALBEMARLE
D.B. 89, PG. 778

31+00 32+00 33+00 34+00

SITE 10

PROP. SLOPE STAKE LINE

EXIST R/W

MATCH TO SHEET 10

MATCH TO SHEET 12

0.6 BST

US158 NC34 67 BST

N 43°14'33.9" E

-L-

-L- STA. 30+80.000

-L- STA. 34+40.000

PROP. SLOPE STAKE LINE

SITE 8

(50) CLAY FOREMAN
D.B. 73, PG. 85

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 20 FOR -L- PROFILE

15-JAN-2008 13:40
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Permit Drawing
Sheet 29 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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RALEIGH, NC 27609-6296 FAX 783-9004
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WETHERILL ENGINEERING
869 JONES FRANKLIN ROAD SUITE 164 Raleigh, N.C. 27606 Phone 919 851 8077 Fax 919 851 8710
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

(49) C.W. WARD, SR.
D.B. 36, PG. 641

(51) COLLEGE OF THE ALBEMARLE
D.B. 89, PG. 778

NAD 83

31+00 32+00 33+00 34+00

SITE 10

SITE 8

PROP. SLOPE STAKE LINE

EXIST R/W

-L- STA. 30+80.000

-L- STA. 34+40.000

MATCH TO SHEET 10

MATCH TO SHEET 12

N 43°14'33.9" E

-L-

(50) CLAY FOREMAN
D.B. 73, PG. 88

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 20 FOR -L- PROFILE

REVISIONS

8/21/09

8-JAN-2009 13:40
c:\projects\environmental\designs\r-2414a_pm_11_pshdgn

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

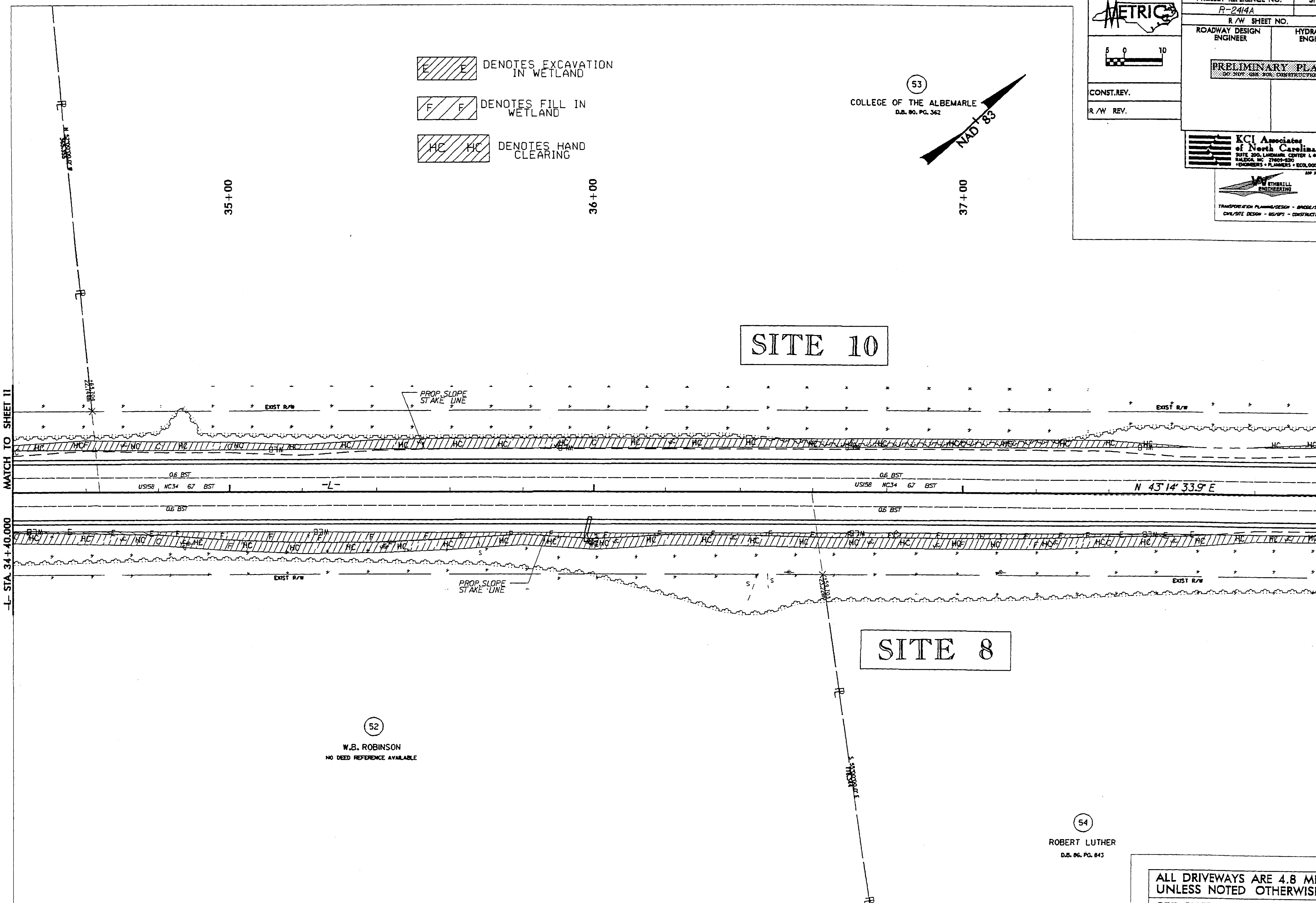
METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.
R/W REV.

KCI Associates of North Carolina, P.A.

WETHERILL ENGINEERING


DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
53
COLLEGE OF THE ALBEMARLE
D.B. 80, PG. 362
NAD 83
35+00
36+00
37+00
38+00
SITE 10
SITE 8
PROP. SLOPE STAKE LINE
EXIST R/W
MATCH TO SHEET 11
MATCH TO SHEET 13
-L- STA. 34+40.000
-L- STA. 38+00.000
US158 NC34 6.7 BST
0.6 BST
-L-
N 43° 14' 33.9" E
52
W.B. ROBINSON
NO DEED REFERENCE AVAILABLE
54
ROBERT LUTHER
D.B. 86, PG. 843
REVISIONS

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 20 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	12

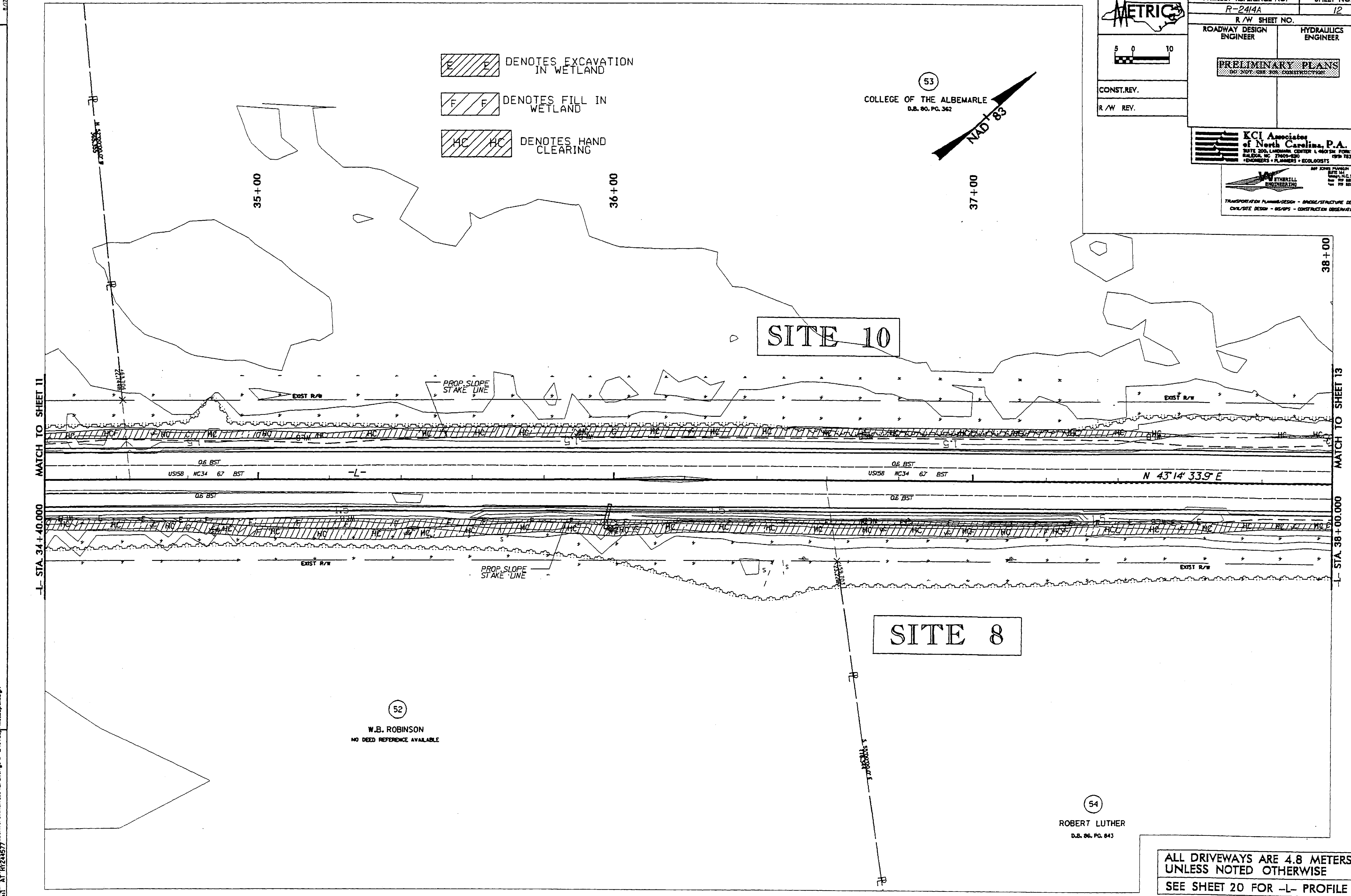
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

KCI Associates of North Carolina, P.A.



ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 20 FOR -L- PROFILE

Permit Drawing
Sheet 32 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

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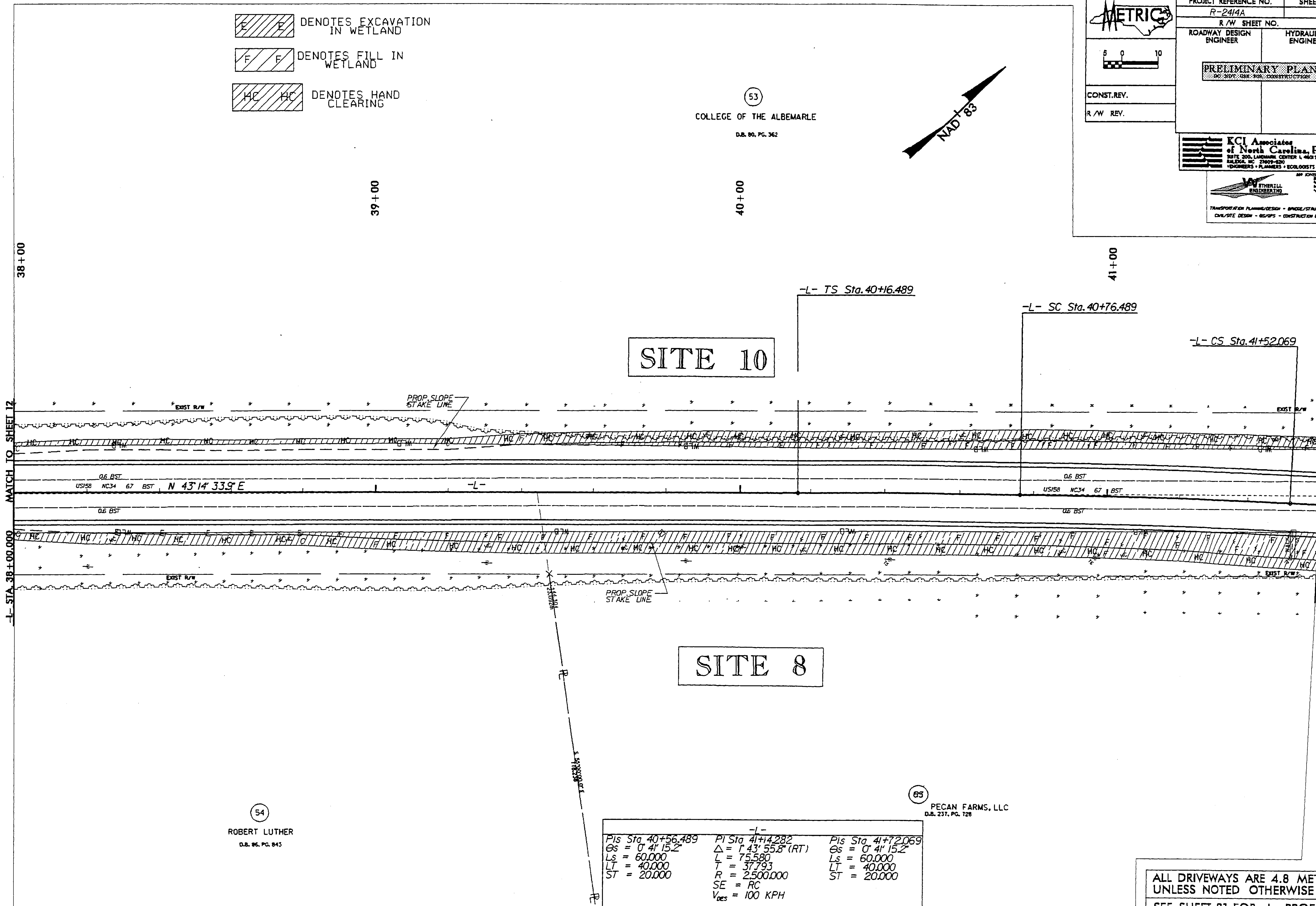
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING



-L-

PIs Sta 40+56.489	PI Sta 41+14.282	PIs Sta 41+72.069
Θs = 0° 41' 15.2"	Δ = 1° 43' 55.8" (RT)	Θs = 0° 41' 15.2"
Ls = 60.000	L = 75.580	Ls = 60.000
LT = 40.000	T = 37.793	LT = 40.000
ST = 20.000	R = 2,500.000	ST = 20.000
	SE = RC	
	V_{des} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 21 FOR -L- PROFILE

Permit Drawing
Sheet 33 of 36

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	13
R/W SHEET NO.	

METRIC

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.

R/W REV.

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WETHERILL ENGINEERING

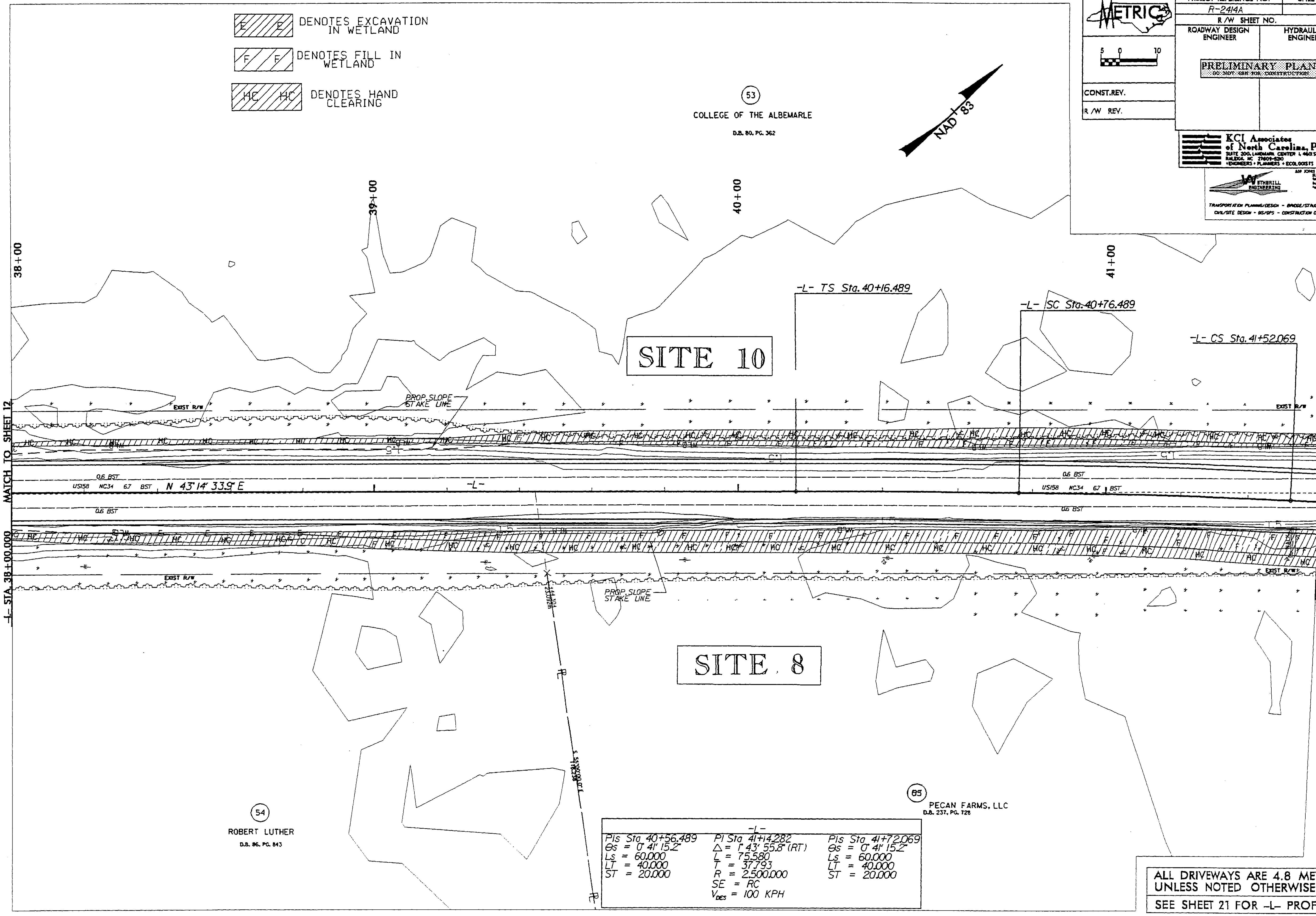
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS

E — DENOTES EXCAVATION IN WETLAND

F — DENOTES FILL IN WETLAND

HC — DENOTES HAND CLEARING



-L-

PIs Sta 40+56.489	PI Sta 41+14.282	PIs Sta 41+72.069
θs = 0° 41' 15.2"	Δ = 1° 43' 55.8" (RT)	θs = 0° 41' 15.2"
Ls = 60.000	L = 75.580	Ls = 60.000
LT = 40.000	T = 37.793	LT = 40.000
ST = 20.000	R = 2,500.000	ST = 20.000
	SE = RC	
	V_{DES} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 21 FOR -L- PROFILE

Permit Drawing
Sheet 34 of 36

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RALEIGH, NC 27609-6210 (919) 783-9214
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ETHERIDGE ENGINEERING
169 JONES FRANKLIN ROAD
SUITE 100
RALEIGH, NC 27606
Phone 919 828 0577
Fax 919 828 8017
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
DRIVESITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

REVISIONS

8/27/08

HAVENWOOD DR.
132/220 ADT 2008/2028
66/110 66/110
US158 / NC 34
25.20/40.30 25.20/40.30

-L-
PIs Sta. 41+72.069
Δs = 0° 41' 15.2"
Ls = 60.000
LT = 40.000
ST = 20.000

PIs Sta. 42+52.069
Δs = 0° 41' 15.2"
Ls = 60.000
LT = 40.000
ST = 20.000

PI Sta. 44+20.646
Δ = 6° 48' 08.1" (LT)
L = 296.804
T = 148.577
R = 2,500.000
SE = RC
V_{des} = 100 KPH

NAD 83

DETAIL C
EXCAVATE CHANNEL
(Not to Scale)
BRIDGE SPILL THRU SLOPE
3.0m
3%
COIR MAT
D
CHANNEL WIDTH (varies)
VAR TO APPROX BED ELEV -4.3m
D = 2.4m MIN
TYPE OF LINER: COIR FIBER MAT

F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L- 43+10
53
COLLEGE OF THE ALBEMARLE
D.B. 80, PG. 362

-L- SRS Sta. 42+12.069
WATER

SITE 10

-L- SC Sta. 42+72.069
Q10 = 0.040 cms (1.5 cfs)
OUTLET V10 = 2.7 m/s (9.0 ft/s)
RIP RAP PAD V10 = 0.12 m/s (0.4 ft/s)

42+00
43+00
RL

SITE 11

-Y- POT Sta. 10+00.000
EIP
BOBBY F. & ELEANOR F. MATNEY
D.B. 132, PG. 193
2S BK D
(under construction)
44+00
PAD
5
WINIFRED WOOD
D.B. 44, PG. 207
2S BK D
WOODEN BULKHEAD
GRADE TO DRAIN
4.3 CONC
900 CONC
HAVENWOOD LAGOON
50.000 N44°19'17"E
-Y- +50.000 9052 (2970)
WILLIAM WEEKS
D.B. 48, PG. 37
2S BK D
6
CURB CUT 10+79
GRADE TO DRAIN
-L- +65.000 25.395 (83.32')
EXISTING R/W
2GI TYPE-O
CB
12
10
315
S 43° 37' 42.20" E
5.2 BST
HAVENWOOD DR.
EXISTING R/W
45+00
MATCH TO SHEET 15
-L- STA. 45+00.000

MATCH TO SHEET 13
-L- STA. 41+60.000
PROP SLOPE STAKE LINE
EXIST R/W
BEGIN SHOULDER BERM GUTTER
CLASS I RIP RAP 1.8 TONS W/ 5.0 F.F.
CLASS II RIP RAP (STRUCTURE ITEM)
WALL
CEM
121 GRAVES
GRADE TO DRAIN TO EX. 375 CMP
TYPE-III
GRAU 350
USI58 NC34 6.7 BST
2GI
0.6 BST
-L-
GUY
EXCAVATE CHANNEL SEE DETAIL C
PUE
-L- POC Sta. 44+48.281
-Y- POT Sta. 10+98.622

SITE 8

43+00
TYPE-III
90
-L-
90
TYPE-III
TYPE-III

65
PECAN FARMS, LLC
D.B. 237, PG. 728

66
PECAN FARMS, LLC
D.B. 237, PG. 728

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 22 FOR -Y- PROFILE
SEE SHEET S-1 THRU S-__ FOR STRUCTURE PLANS

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Permit Drawing
Sheet 35 of 36

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ETHERIDGE ENGINEERING
649 JOHNS FRANKLIN ROAD, SUITE 101, Franklin, NC 28734
Tel: 828 524 8077 Fax: 828 524 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST. REV.
R/W REV.

REVISIONS

6/17/08

HAVENWOOD DR.
132/220 ADT 2008/2028
66/110 66/110
US158 / NC 34
25.20/407.30 25.20/407.30

-L-
PI's Sta. 41+72.069 Es = 0' 41" 15.2 Ls = 60.000 LT = 40.000 ST = 20.000
PI's Sta. 42+52.069 Es = 0' 41" 15.2 Ls = 60.000 LT = 40.000 ST = 20.000
PI Sta. 44+20.646 Δ = 6° 48' 08.1" (LT) L = 296.804 T = 148.577 R = 2,500.000 SE = RC V_{des} = 100 KPH

DETAIL C
EXCAVATE CHANNEL (Not to Scale)
BRIDGE SPILL THRU SLOPE
3.0m 2% 2% 3.0m
COIR MAT
CHANNEL WIDTH (variable)
VAR TO APPROX BED ELEV -0.5m
TYPE OF LINER: COIR FIBER MAT
D = 2.4m MIN

NAD 83

F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L- 43+10
53 COLLEGE OF THE ALBEMARLE D.B. 80, PG. 362
WATER
-L- SRS Sta. 42+12.069
-L- SC Sta. 42+72.069
Q10 = 0.040 cms (1.5 cfs)
OUTLET V10 = 2.7 m/s (9.0 ft/s)
RIP RAP PAD V10 = 0.12 m/s (0.4 ft/s)

SITE 10
SITE 11
SITE 8

42+00 43+00 44+00 45+00
-L- STA. 41+60.000
-L- STA. 45+00.000
MATCH TO SHEET 13
MATCH TO SHEET 15

CLASS I RIP RAP L.8 TONS W/ 5.0 F.F.
CLASS II RIP RAP (STRUCTURE ITEM)
BEGIN SHOULDER BERM GUTTER
PROP SLOPE STAKE LINE
EXIST R/W
EXCAVATE CHANNEL SEE DETAIL C
GRADE TO DRAIN TO EX. 175 CMP
GRADE TO DRAIN
WOODEN BULKHEAD
TYPE-III
GRAU 350
US158 NC34 67 BST
06 BST
08 BST
2GI
1.5
PUE
GUY

-Y- POT Sta. 10+00.000
BOBBY F. & ELEANOR F. MATNEY D.B. 132, PG. 193
25 BK D (under construction)
5 WINIFRED WOOD D.B. 44, PG. 207 25 BK D
HAVENWOOD LAGOON
-Y- +50.000 9052 (29.70')
WILLIAM WEEKS D.B. 48, PG. 37 25 BK D
6
CURB CUT 10+79
-Y- +65.000 25.395 (83.32')
EXISTING R/W
2GI TYPE-III
CB
12
10
11
S 43° 37' 42.0" E
5.2 BST
4.3 CONC
900 CONC
EXISTING DRIVE
-L- POC Sta. 44+48.281
-Y- POT Sta. 10+98.522

88 PECAN FARMS, LLC D.B. 237, PG. 728
89 PECAN FARMS, LLC D.B. 237, PG. 728

43+00
TYPE-III
90
-L-
90
TYPE-III TYPE-III

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 22 FOR -Y- PROFILE
SEE SHEET S-1 THRU S-__ FOR STRUCTURE PLANS

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USER: mjhall

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 3.3	CMS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 1.71	M
BASE DISCHARGE	= 4.0	CMS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1.86	M
OVERTOPPING DISCHARGE	= 5.9	CMS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 2.07	M

533 mm CORED SLAB
THREE SPAN - 1 @ 9.1m,
1 @ 12.2, 1 @ 9.1m
LENGTH 30.4m

BEGIN BRIDGE
-L- STA. 42+97.800
EL = 3.492 m

END BRIDGE
-L- STA. 43+28.200
EL = 3.717 m

PI = 43+80.000
EL = 4.102 m
VC = 75 m
K = 54.2
V_{DES} = 100 KPH

+0.7420%

-0.6430%

EX. CENTERLINE & GROUNDLINE

NATURAL GROUND

AREAS TO BE EXCAVATED
EST. 1600 C.M.

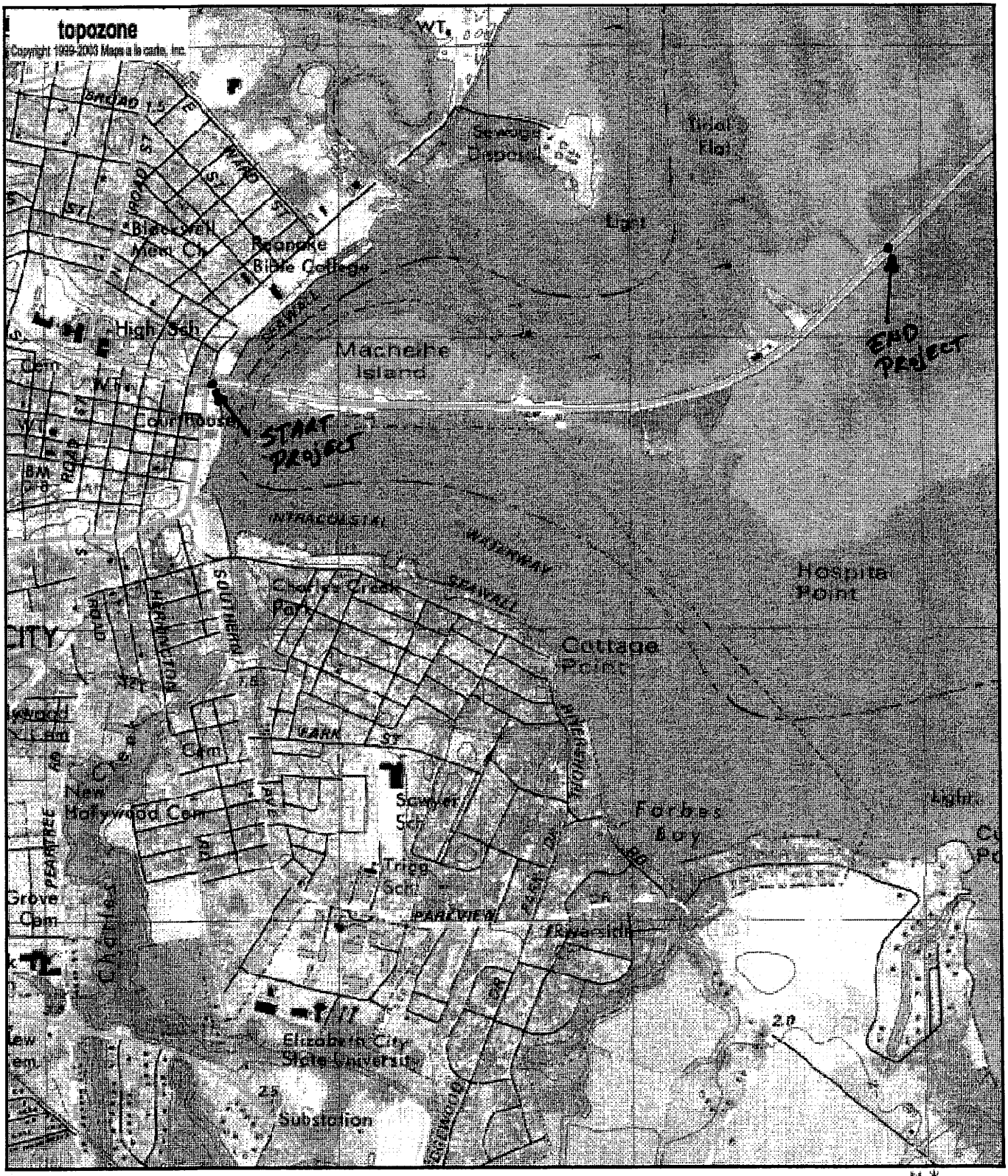
EXCAVATION

NWS = 0.470

REMOVE EXISTING
2.13m X 2.44m RCBC

VAR. TO APPROX.
BED ELEV. = (-)1.13m

+20 +40 +60 +80 43 +20 +40



UTM 18 391596E 4017366N (NAD83/WGS84)

Cottage Point, USGS Elizabeth City (NC) Quadrangle

Projection is UTM Zone 18 NAD83 Datum

Utility Permit Drawing Sheet 1 of 16

R-2414A Utilities

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To) -L- LINE	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	SURFACE WATER IMPACTS: Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Temp (m)	Natural Stream Design (m)
1	8+11 TO										
	8+83						0.072				
2	10+70 TO										
	11+07						0.024				
3	11+83 TO										
	13+00						0.074				
4	13+48 TO										
	14+64						0.136				
5	15+51 TO										
	15+79						0.030				
6	16+57 TO										
	23+30						0.767				
7	24+36 TO										
	25+11						0.092				
8	25+89 TO										
	28+17						0.184				
9	28+31 TO										
	28+45						0.006				
10	28+99 TO										
	41+64						1.291				
11	42+80 TO										
	43+00										
							0.004				
TOTALS:							2.679		0.000	0	0.0

Temporary fill in wetlands for erosion and sediment control measures.

Temporary Stream Impact.
Existing RCBC and Roadway Fill Removed.
Replaced w/ 23.9m of Open Channel.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY
WBS - 34430.1.1 (R-2414A)

SHEET 2 OF 16 10/13/2008

JMD Revised 2/03/05

TIP PROJECT: R-2414A

See Sheet 1-A For Index of Sheets

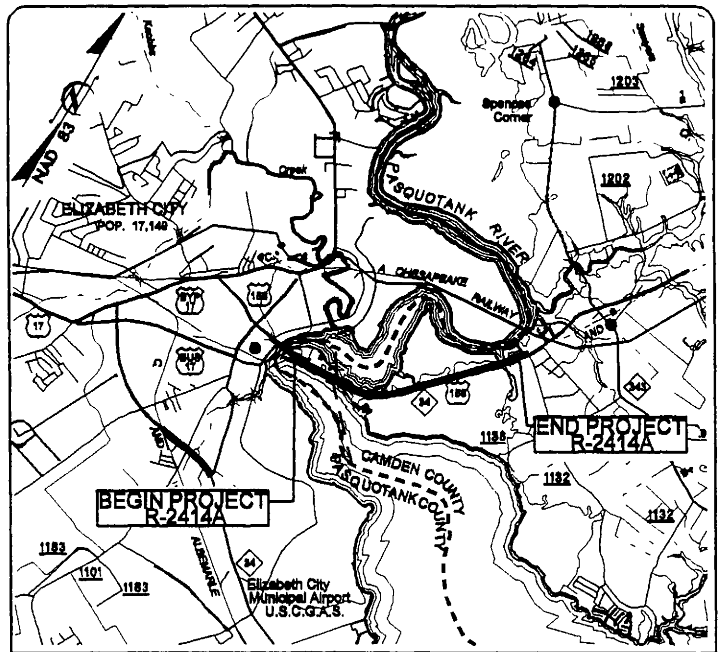
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC — ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

T.I.P. NO.	SHEET NO.
R-2414A	UO-1

Permit Drawing Sheet 3 of 16
Utility

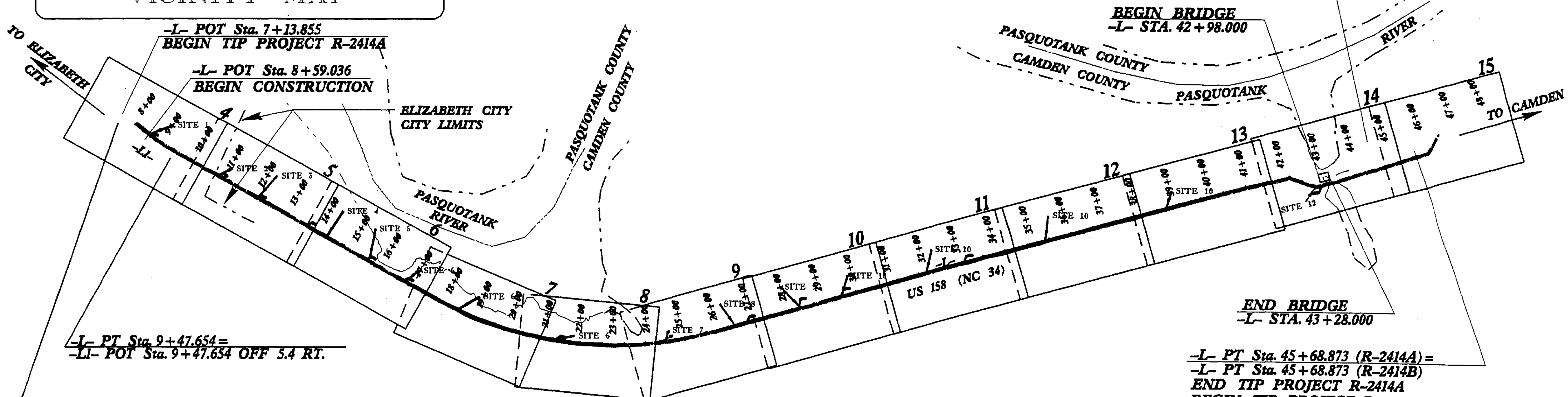
UTILITY BY OTHERS PLANS
CAMDEN COUNTY



VICINITY MAP

LOCATION: US 158/NC 34 FORM EAST OF PASQUOTANK RIVER TO SOUTH OF SR 1257 (HAVENWOOD DR.) BETWEEN ELIZABETH CITY AND CAMDEN

TYPE OF WORK: POWER, TELEPHONE AND CABLE RELOCATION



CLEARING TO BE PERFORMED BY METHOD II

THIS PROJECT IS WITHIN MUNICIPAL BOUNDARIES OF ELIZABETH CITY

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

GRAPHIC SCALES

5 0 10 — PLANS

5 0 10 — PROFILE (HORIZONTAL)

1 0 2 — PROFILE (VERTICAL)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414A	=	3.825 KM
LENGTH STRUCTURE TIP PROJECT R-2414A	=	0.030 KM
TOTAL LENGTH TIP PROJECT R-2414A	=	3.855 KM

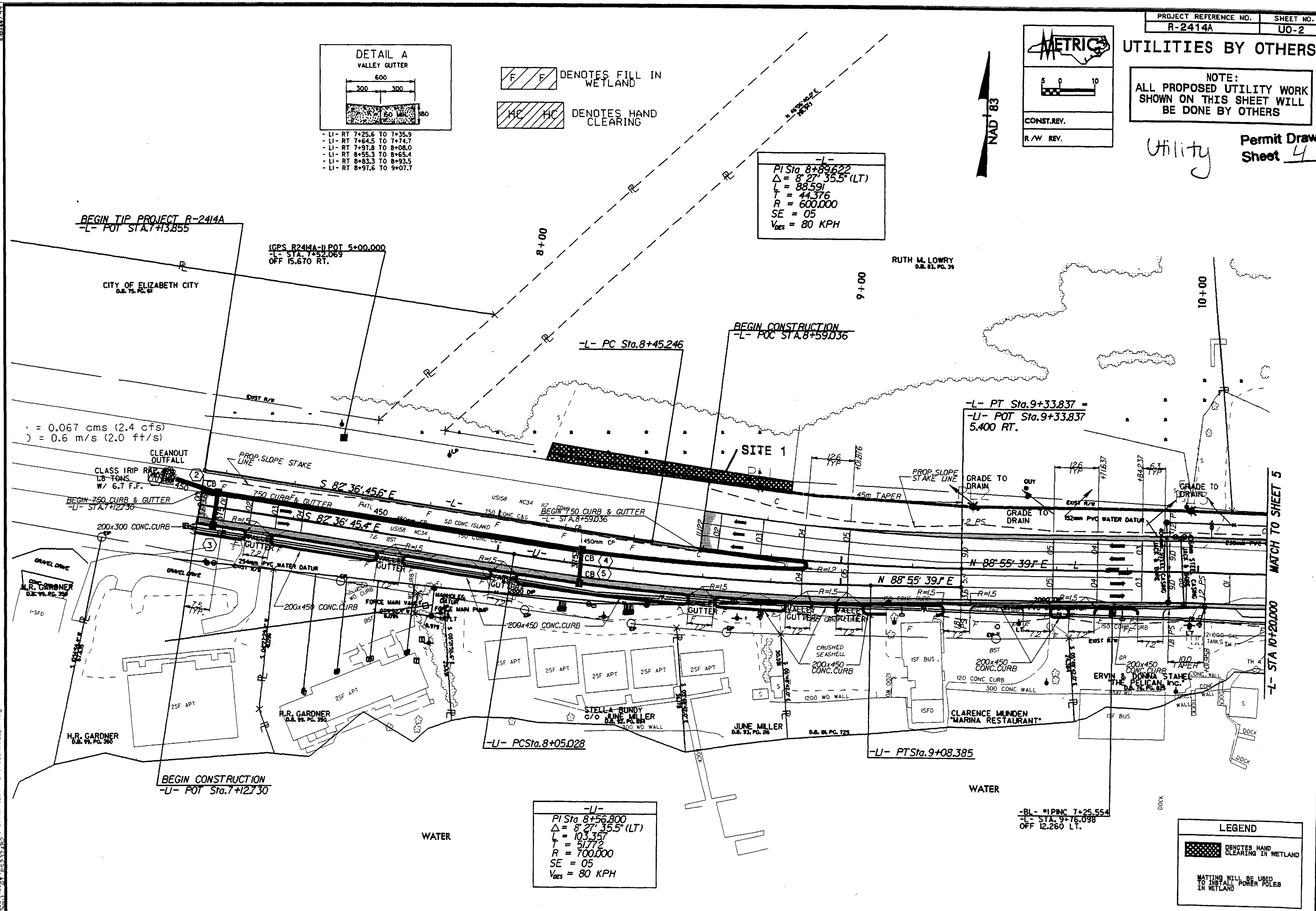
KCI Associates of North Carolina, P.A.
ENGINEERS • PLANNERS • ECOLOGISTS

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
DESIGN SERVICES
UTILITY SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Corey Bousquet, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Britt McCurry — UTILITIES PROJECT DESIGNER

9/09/99

07-APR-2008 14:14



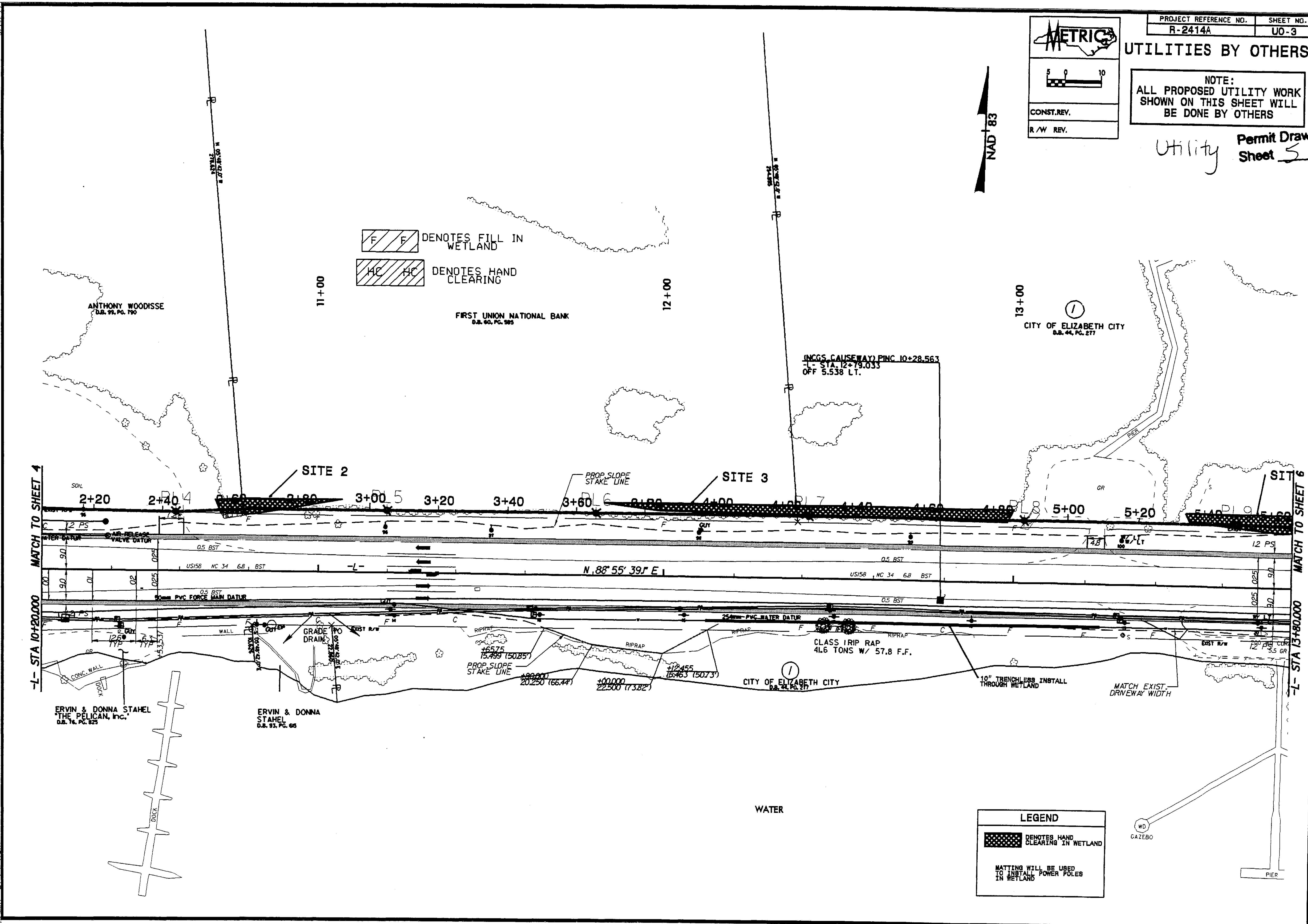
PROJECT REFERENCE NO.
R-2414A
SHEET NO.
UO-2
METRIC
CONST.REV.
R/W REV.
UTILITIES BY OTHERS
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS
Utility
Permit Drawing Sheet 4 of 16
NAD 83
DETAIL A
VALLEY GUTTER
600
300
300
180
- LI- RT 7+25.6 TO 7+35.9
- LI- RT 7+64.5 TO 7+74.7
- LI- RT 7+97.8 TO 8+08.0
- LI- RT 8+55.3 TO 8+65.4
- LI- RT 8+83.3 TO 8+93.5
- LI- RT 8+97.6 TO 9+07.7
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
-L-
PI Sta 8+89.622
Δ = 8° 27' 35.5" (LT)
L = 88.591
T = 44.376
R = 600.000
SE = 05
Vdes = 80 KPH
BEGIN TIP PROJECT R-2414A
-L- POT STA.7+13.855
(GPS R2414A-1) POT 5+00.000
-L- STA. 7+52.069
OFF 15.670 RT.
CITY OF ELIZABETH CITY
RUTH M. LOWRY
8+00
9+00
10+00
BEGIN CONSTRUCTION
-L- POC STA.8+59.036
-L- PC Sta.8+45.246
-L- PT Sta.9+33.837 =
-U- POT Sta.9+33.837
5.400 RT.
= 0.067 cms (2.4 cfs)
= 0.6 m/s (2.0 ft/s)
CLEANOUT OUTFALL
CLASS I RIP RAP
W/ 6.7 F.F.
BEGIN 750 CURB & GUTTER
-U- STA.7+12.730
200x300 CONC.CURB
PROP. SLOPE STAKE LINE
SITE 1
S 82° 36' 45.6" E
S 82° 36' 45.4" E
BEGIN 750 CURB & GUTTER
-L- STA.8+59.036
N 88° 55' 39.1" E
N 88° 55' 39.1" E
45m TAPER
GRADE TO DRAIN
152mm PVC WATER DATUM
254mm PVC WATER DATUM
MATCH TO SHEET 5
-L- STA 10+20.000
H.R. GARDNER
GRAVEL DRIVE
200x450 CONC.CURB
FORCE MAIN PUMP
200x450 CONC.CURB
2SF APT
STELLA BUNDY
C/O JUNE MILLER
JUNE MILLER
CRUSHED SEASHELL
1SF BUS
CLARENCE MUNDEN
"MARINA RESTAURANT"
ERVIN & DONNA STAHL
"THE PELICAN, Inc."
1200 WD WALL
300 CONC WALL
300 WD WALL
-U- PCSta.8+05.028
-U- PTSta.9+08.385
BEGIN CONSTRUCTION
-U- POT Sta.7+12.730
WATER
WATER
DOCK
-BL- #1PINC 7+25.554
-L- STA. 9+76.098
OFF 12.260 LT.
-U-
PI Sta 8+56.800
Δ = 8° 27' 35.5" (LT)
L = 103.357
T = 51.772
R = 700.000
SE = 05
Vdes = 80 KPH
LEGEND
DENOTES HAND CLEARING IN WETLAND
MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND
07-APR-2008 14:10

PROJECT REFERENCE NO. R-2414A | SHEET NO. U0-3

UTILITIES BY OTHERS

NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Utility Permit Drawing Sheet 5 of 16



METRIC
CONST.REV.
R/W REV.
NAD 83
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
ANTHONY WOODISSE
FIRST UNION NATIONAL BANK
CITY OF ELIZABETH CITY
(NCGS CAUSEWAY) PINC 10+28.563 -L- STA. 12+79.033 OFF 5.538 LT.
11+00
12+00
13+00
SITE 2
SITE 3
PROP. SLOPE STAKE LINE
MATCH TO SHEET 4
MATCH TO SHEET 6
-L- STA 10+20.000
-L- STA 13+80.000
2+20
2+40
2+60
2+80
3+00
3+20
3+40
3+60
3+80
4+00
4+20
4+40
4+60
4+80
5+00
5+20
5+40
5+60
N 88° 55' 39.1" E
US158 NC 34 6.8 BST
0.5 BST
1.2 PS
50mm PVC FORCE MAIN DATUM
254mm PVC WATER DATUM
AIR RELEASE VALVE DATUM
GRADE TO DRAIN
CLASS I RIP RAP 41.6 TONS W/ 57.8 F.F.
RIPRAP
CONC. WALL
DOCK
ERVIN & DONNA STAHEL "THE PELICAN, Inc."
ERVIN & DONNA STAHEL
10" TRENCHLESS INSTALL THROUGH WETLAND
MATCH EXIST. DRIVEWAY WIDTH
WATER
PIER
GAZEBO
LEGEND
DENOTES HAND CLEARING IN WETLAND
MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

REVISIONS

5/14/99

07-APR-2008 14:08

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-4

METRIC

5 0 10

CONST.REV.

R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Utility Permit Drawing
Sheet 6 of 16

REVISIONS

F/F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83

WATER

14+00 15+00 16+00 17+00

MATCH TO SHEET 5

MATCH TO SHEET 7

-L- STA 13+80.000

-L- STA 17+40.000

-L- TS Sta 17+28.33

WILLIAM PEFLEY
D.B. 62, PG. 89

WILLIAM PEFLEY
D.B. 62, PG. 89

LLOYD D. GRIFFIN
D.B. 38, PG. 45

-BL- ℄ 2 PINC 12+85.880
-L- STA. 15+36.339
OFF 7.893 LT.

+00.000 15.973 (52.40')
+20.000 15.989 (52.46')
+40.000 16.015 (52.54')
+53.253 15.787 (51.80')
+84.877 15.928 (52.26')

PROP. SLOPE STAKE LINE

SITE 5

SITE 6

1200 WD WALL

WD DECK

WD GUARD POSTS

ISF BUS

CURB

EXIST R/W

-L-

N 88° 55' 39" E

50mm PVC FORCE MAIN DATUM

200mm PVC WATER DATUM

1800 CHL. W.L. 3 SB

US158 NC 34 6.8 BST

US158 NC 34 6.7 BST

06 BST

08 BST

11 BST

GR

SOIL

BST

MATCH EXIST. DRIVEWAY WIDTH

W.F. THOMPSON
D.B. 102, PG. 252

CAMDEN COUNTY ABC BOARD

FORCE MAIN PUMP

BILL & LINDA TAYLOR
D.B. 82, PG. 4
D.B. 11, PG. 399

MARKHAM ENTERPRISES, Inc.
"CAUSEWAY MARINA"
D.B. 76, PG. 85
D.B. 94, PG. 148

LLOYD D. GRIFFIN
D.B. 38, PG. 45

RIPRAP

1200 WALL

DOCK

2SFD

GAZEBO

WD

LEGEND

DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

SEE SHEET 17 FOR -L- PROFILE

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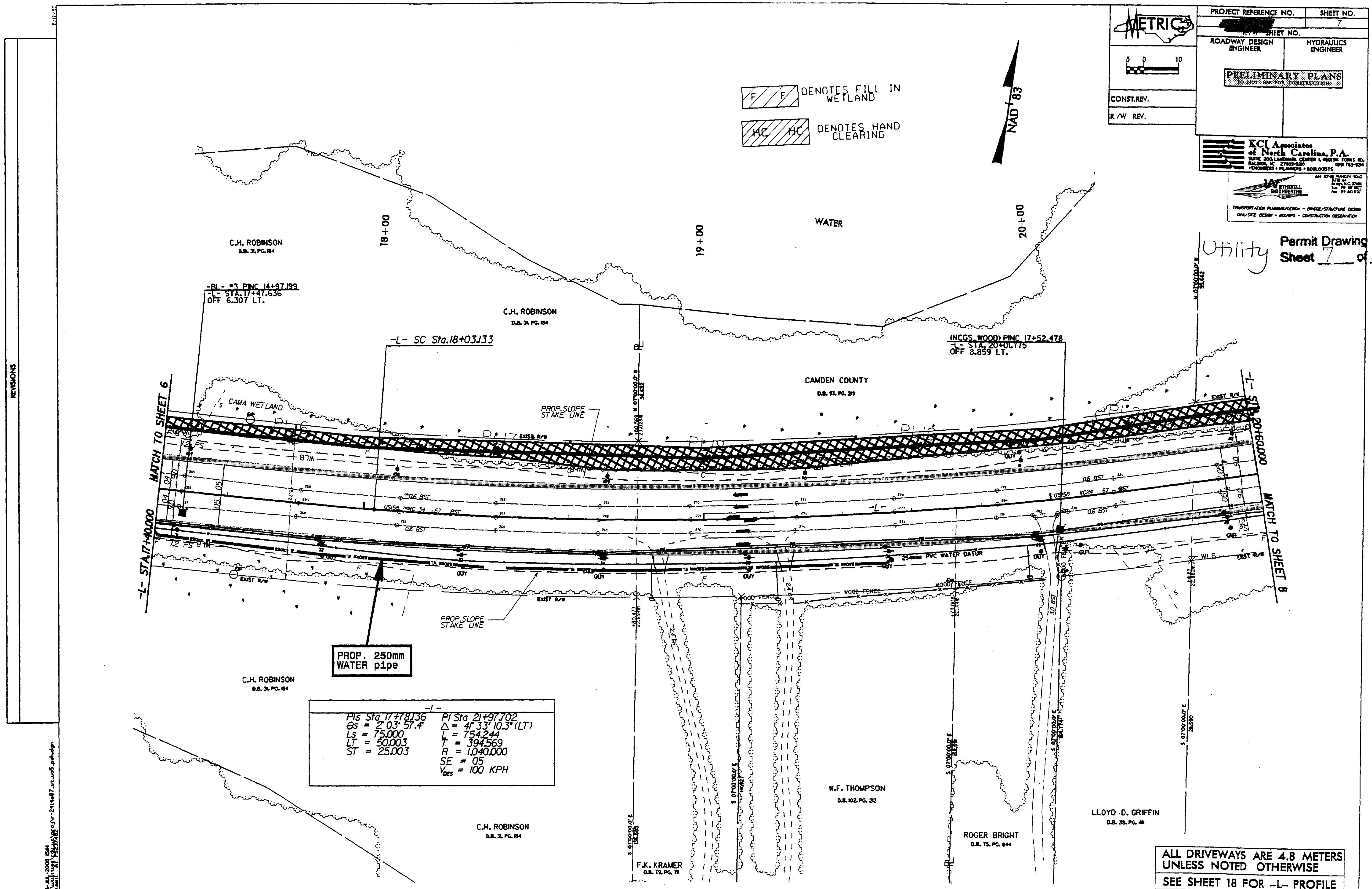


METRIC
PROJECT REFERENCE NO. [redacted]
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
Utility Permit Drawing Sheet 7 of 16
REVISIONS
NAD 83
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
WATER
C.H. ROBINSON
D.B. 31, PG. 184
18+00
19+00
20+00
-BL- #3 PINC 14+97.199
-L- STA.17+47.636
OFF 6.307 LT.
-L- SC Sta.18+03.133
(NCGS WOOD) PINC 17+52.478
-L- STA. 20+01.775
OFF 8.859 LT.
CAMDEN COUNTY
D.B. 93, PG. 219
CAMA WETLAND
PROP. SLOPE STAKE LINE
MATCH TO SHEET 6
-L- STA.17+40.000
-L- STA. 20+60.000
MATCH TO SHEET 8
254mm PVC WATER DATUR
WOOD FENCE
EXIST R/W
PROP. 250mm WATER pipe
F.K. KRAMER
D.B. 73, PG. 78
W.F. THOMPSON
D.B. 102, PG. 212
ROGER BRIGHT
D.B. 75, PG. 644
LLOYD D. GRIFFIN
D.B. 38, PG. 48
-L-
PIs Sta 17+78.136
Θs = 2° 03' 57.4"
Ls = 75.000
LT = 50.003
ST = 25.003
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = .05
Vdes = 100 KPH
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 18 FOR -L- PROFILE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-6

UTILITIES BY OTHERS

METRIC

5 0 10

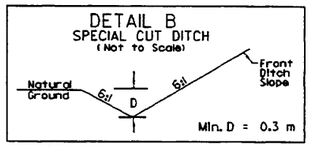
CONST. REV.

R/W REV.

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Utility Permit Drawing
Sheet 5 of 16

DETAIL B
SPECIAL CUT DITCH
(NOT to Scale)



-L- LT 23+51 TO 24+00

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

PASQUOTANK RIVER

WATER

WILLIAM B. ROBINSON
D.B. 35, PG. 48

WILLIAM B. ROBINSON
D.B. 35, PG. 48

HAROLD CALDWELL
D.B. 36, PG. 400

LES CELLES ROBERTSON
D.B. 82, PG. 563

ERIE T. HASTE, JR.
D.B. 76, PG. 456

C.T. WHITE
CALVIN LAMB
D.B. 48, PG. 597

NAD 83

21+00

22+00

23+00

24+00

Q10 = 0.053 cms (1.9 cfs)
V10 = 0.4 m/s (1.2 ft/s)

SITE 6

PROP. SLOPE STAKE LINE

PROP. SLOPE STAKE LINE

CLASS I RIP RAP 8 TONS W/ 5.0 F.F.

SPECIAL DITCH SEE DETAIL B

MATCH TO SHEET 7

MATCH TO SHEET 9

-L- STA 20+60.000

-L- STA 24+00.000

-L-

12+80 13+00 13+20 13+40 13+60 13+80 14+00 14+20 14+40 14+60 14+80 15+00 15+20 15+40 15+60 15+80

0.6 BST

US158 NC24 67 BST

1.2 PS

150 CONC CURB

EXIST R/W

IS MTL BUS

ISF BUS

WALL

GR

-L-
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = 05
V_{DES} = 100 KPH

WILLIAM B. ROBINSON
D.B. 35, PG. 48

CLAY FOREMAN
D.B. 83, PG. 739

LEGEND

DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE UBED TO INSTALL POWER POLES IN WETLAND

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-7

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

METRIC

3 0 10

CONST.REV.

R/W REV.

Utility Permit Drawing
Sheet 9 of 16

NAD 83

CYRUS AYDLETT
D.B. 33, PG. 699

ROBLEY PERRY
D.B. 35, PG. 151

GEORGE RAPER
D.B. 75, PG. 693

THEODORE WOOD
D.B. 75, PG. 691

UNDINE PERRY LONGO
D.B. 35, PG. 220

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

MATCH TO SHEET 8

-L- STA. 24+00.000

-L- STA. 27+20.000

MATCH TO SHEET 10

SITE 7

SITE 8

-L- ST Sta. 26+32.377

-L- CS Sta. 25+57.377

N 43°14'33.9" E

60.000 TAPER LT & RT

PROP. SLOPE STAKE LINE

EXIST R/W

254mm PVC WATER DATUM

PAINTED ISLAND

CLAY FOREMAN
D.B. 83, PG. 799

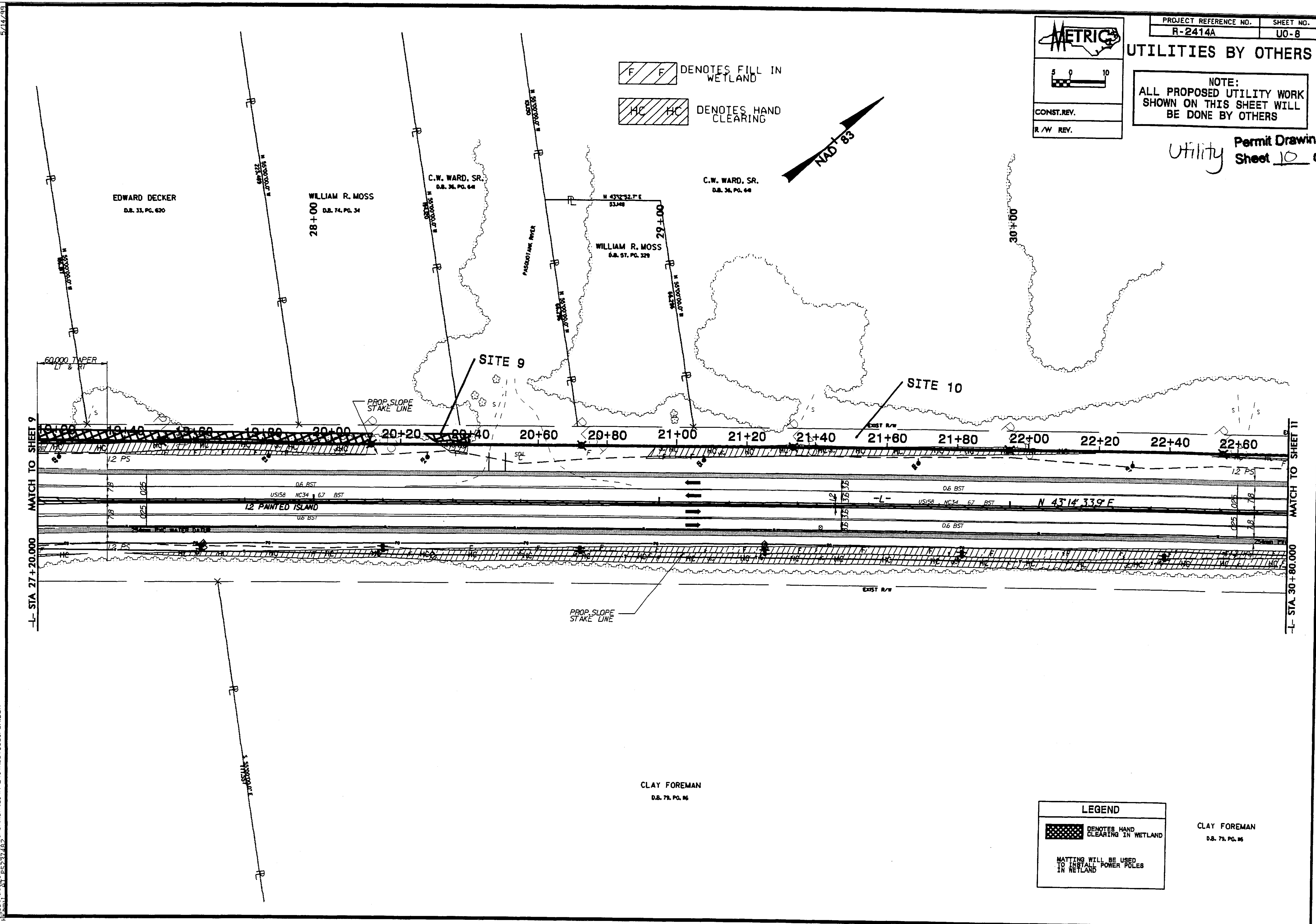
-L-	
PI Sta 21+97.702	PIs Sta 25+82.380
Δ = 41° 33' 10.3" (LT)	θs = 2° 03' 57.4"
L = 754.244	Ls = 75.000
T = 394.569	LT = 50.003
R = 1040.000	ST = 25.003
SE = 05	
V_{DES} = 100 KPH	

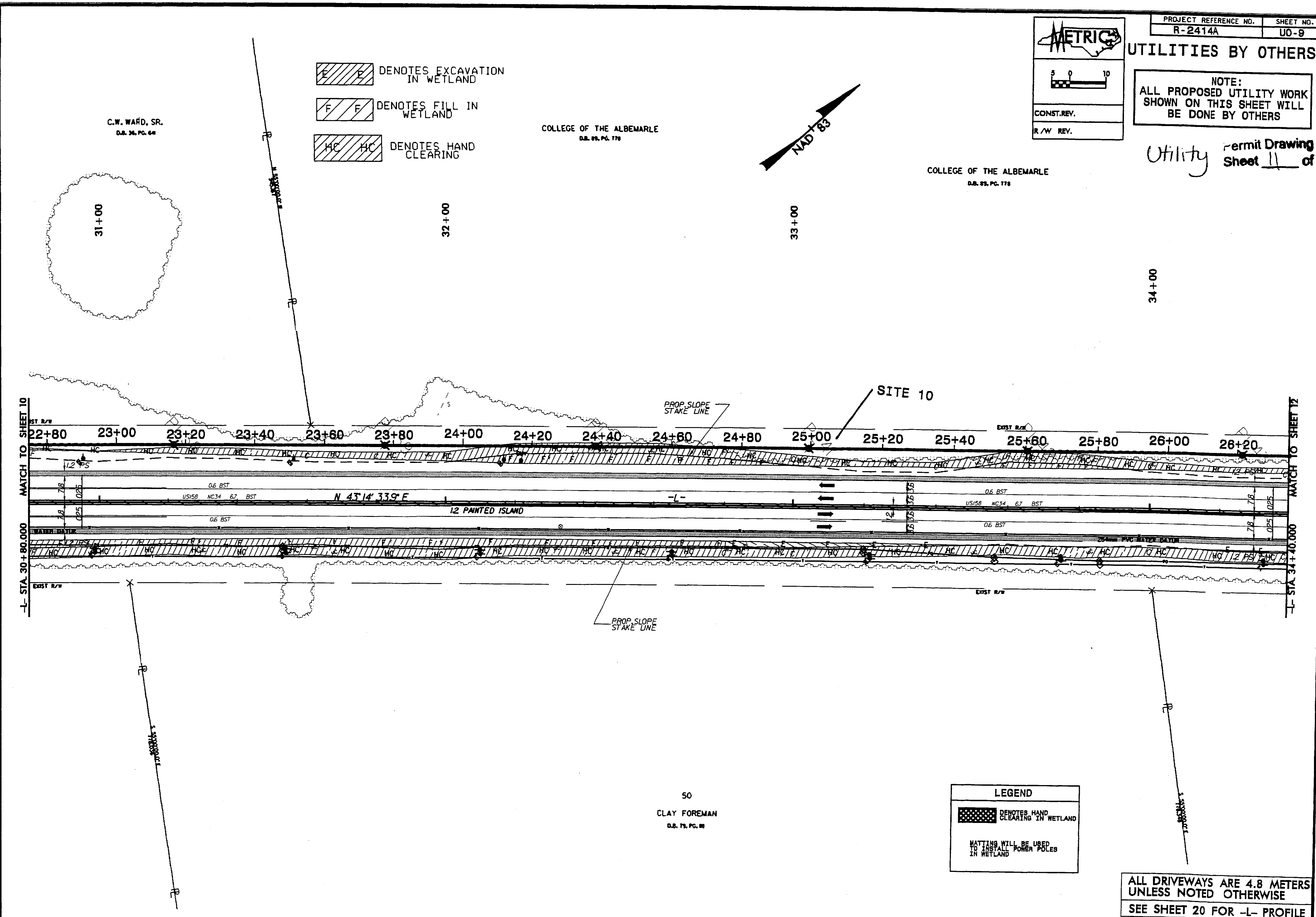
LEGEND

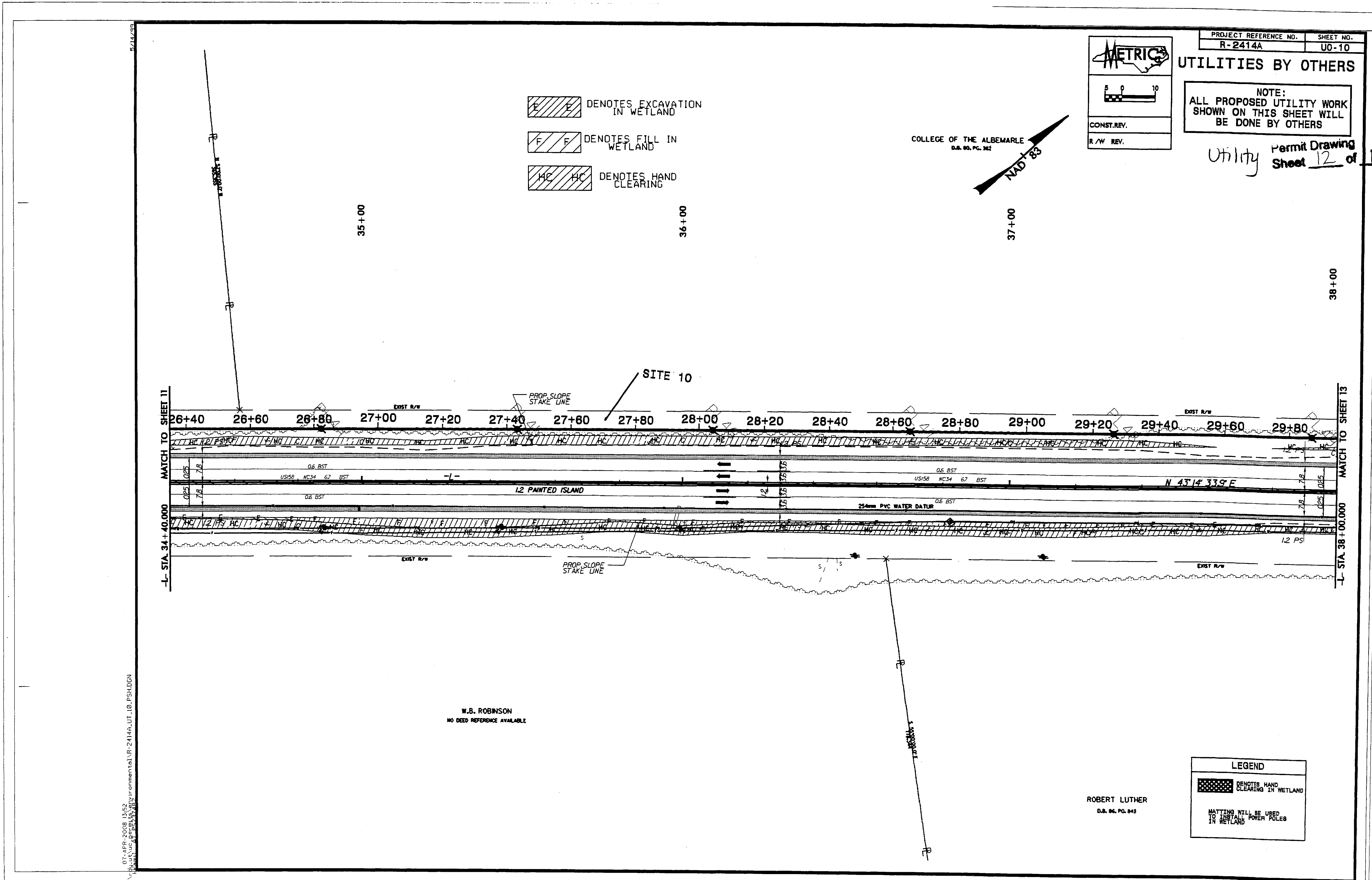
DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

07-APR-2008 14:03
\projects\roadway\environmental\R-2414A_UT_07_PSH.DGN


PROJECT REFERENCE NO. R-2414A
SHEET NO. UO-8
METRIC
CONST. REV.
R/W REV.
UTILITIES BY OTHERS
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS
Utility Permit Drawing Sheet 10 of 16
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
NAD 83
EDWARD DECKER
WILLIAM R. MOSS
C.W. WARD, SR.
WILLIAM R. MOSS
C.W. WARD, SR.
28+00
29+00
30+00
SITE 9
SITE 10
60.000 TAPER LT & RT
PROP. SLOPE STAKE LINE
MATCH TO SHEET 9
MATCH TO SHEET 11
-L- STA. 27+20.000
-L- STA. 30+80.000
19+20
19+40
19+60
19+80
20+00
20+20
20+40
20+60
20+80
21+00
21+20
21+40
21+60
21+80
22+00
22+20
22+40
22+60
1.2 PAINTED ISLAND
N 43°14' 33.9" E
EXIST R/W
CLAY FOREMAN
LEGEND
DENOTES HAND CLEARING IN WETLAND
MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND
CLAY FOREMAN


PROJECT REFERENCE NO. R-2414A
SHEET NO. U0-9
METRIC
CONST. REV.
R/W REV.
UTILITIES BY OTHERS
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS
Utility Permit Drawing Sheet 11 of 16
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
C.W. WARD, SR.
COLLEGE OF THE ALBEMARLE
NAD 83
31+00
32+00
33+00
34+00
SITE 10
PROP. SLOPE STAKE LINE
MATCH TO SHEET 10
MATCH TO SHEET 12
-L- STA. 30+80.000
-L- STA. 34+40.000
22+80
23+00
23+20
23+40
23+60
23+80
24+00
24+20
24+40
24+60
24+80
25+00
25+20
25+40
25+60
25+80
26+00
26+20
N 43° 14' 33.9" E
-L-
1.2 PAINTED ISLAND
EXIST R/W
50
CLAY FOREMAN
LEGEND
DENOTES HAND CLEARING IN WETLAND
MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 20 FOR -L- PROFILE



PROJECT REFERENCE NO.
R-2414A
SHEET NO.
U0-10
METRIC
CONST. REV.
R/W REV.
UTILITIES BY OTHERS
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS
Utility Permit Drawing Sheet 12 of 16
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
COLLEGE OF THE ALBEMARLE
NAD 83
35+00
36+00
37+00
38+00
SITE 10
PROP. SLOPE STAKE LINE
EXIST R/W
MATCH TO SHEET 11
MATCH TO SHEET 13
-L- STA. 34+40.000
-L- STA. 38+00.000
1.2 PAINTED ISLAND
254mm PVC WATER DATUR
US158 NC34 6.7 BST
0.6 BST
N 43°14' 33.9" E
W.B. ROBINSON
NO DEED REFERENCE AVAILABLE
ROBERT LUTHER
LEGEND
DENOTES HAND CLEARING IN WETLAND
MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-11

METRIC

5 0 10

CONST.REV.

R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Utility Permit Drawing Sheet 13 of 16

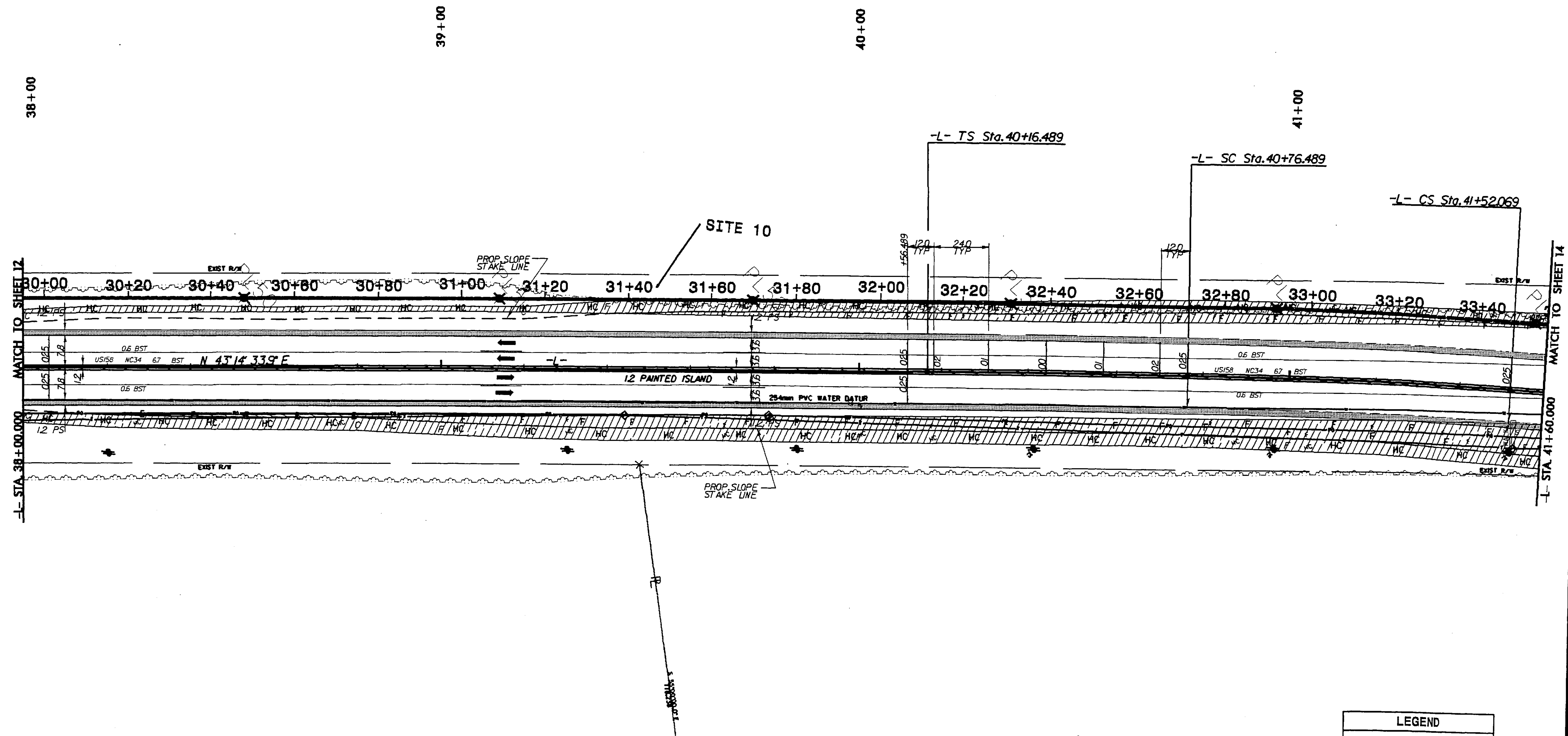
E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

COLLEGE OF THE ALBEMARLE
D.B. 80, PG. 362

NAD 83



ROBERT LUTHER
D.B. 86, PG. 845

C.O. ROBINSON TRUST
D.B. 105, PG. 293

-L-		
PIs Sta 40+56.489	PI Sta 41+14.282	PIs Sta 41+72.069
θs = 0° 41' 15.2"	Δ = 1° 43' 55.8" (RT)	θs = 0° 41' 15.2"
Ls = 60.000	L = 75.580	Ls = 60.000
LT = 40.000	T = 37.793	LT = 40.000
ST = 20.000	R = 2,500.000	ST = 20.000
	SE = RC	
	V_{DES} = 100 KPH	

LEGEND

DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

5/14/99

07-APR-2008 13:52 R-2414A_UT_11_PSH.DGN

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-11

METRIC

5 0 10

CONST.REV.

R /W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Utility Permit Drawing Sheet 14 of 16

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

COLLEGE OF THE ALBEMARLE
D.B. 80, PG. 362

NAD 83

38+00 39+00 40+00 41+00

-L- TS Sta. 40+16.489

-L- SC Sta. 40+76.489

-L- CS Sta. 41+52.069

SITE 10

+56.489

120 TYP 240 TYP 120 TYP

30+00 30+20 30+40 30+60 30+80 31+00 31+20 31+40 31+60 31+80 32+00 32+20 32+40 32+60 32+80 33+00 33+20 33+40

EXIST R/W

PROP SLOPE STAKE LINE

MATCH TO SHEET 12

MATCH TO SHEET 14

0.6 BST

US158 NC34 6.7 BST

N 43°14'33.9"E

12 PAINTED ISLAND

254mm PVC WATER DATUM

12 PS

-L- STA. 38+00.000

-L- STA. 41+60.000

ROBERT LUTHER
D.B. 96, PG. 843

C.O. ROBINSON TRUST
D.B. 105, PG. 293

-L-

PIs Sta 40+56.489	PI Sta 41+14.282	PIs Sta 41+72.069
θs = 0° 41' 15.2"	Δ = 1° 43' 55.8" (RT)	θs = 0° 41' 15.2"
Ls = 60.000	L = 75.580	Ls = 60.000
LT = 40.000	T = 37.793	LT = 40.000
ST = 20.000	R = 2,500.000	ST = 20.000
	SE = RC	
	V_{DES} = 100 KPH	

LEGEND

HC DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

07-APR-2008 13:50
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-12

METRIC

5 0 10

CONST.REV.

R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

Utility **Permit Drawing Sheet 15 of 162**

-L-

PIs Sta. 41+72.069	PIs Sta. 42+52.069	PI Sta. 44+20.646
θs = 0° 4' 15.2"	θs = 0° 4' 15.2"	Δ = 6° 48' 08.8" (LT)
Ls = 60.000	Ls = 60.000	L = 296.804
LT = 40.000	LT = 40.000	T = 148.577
ST = 20.000	ST = 20.000	R = 2,500.000
		SE = RC
		V_{DES} = 100 KPH

NAD 83

F / F DENOTES FILL IN WETLAND

HC / HC DENOTES HAND CLEARING

TS / TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

COLLEGE OF THE ALBEMARLE
D.B. 80, PG. 362

42+00

43+00

44+00

45+00

-L- SRS Sta.42+12.069

-L- SC Sta.42+72.069

Q10 = 0.040 cms (1.5 cfs)
OUTLET V10 = 2.7 m/s (9.0 ft/s)
RIP RAP PAD V10 = 0.12 m/s (0.4 ft/s)

CLASS I RIP RAP
1.8 TONS W/ 5.0 F.F.
3.4 m EXPRESSWAY GUTTER

CLASS II RIP RAP (STRUCTURE ITEM)

REMOVE EXISTING STRUCTURE

PROP SLOPE STAKE LINE

EXIST R/W

MATCH TO SHEET 13

-L- STA. 41+60.000

PAINTED ISLAND

GRAU 350

60.0 TRANSITION LT & RT

+88.000
18.759 (61.55')

+72.069
23.000 (75.46')

SITE 11

COIR FIBER MATTING

60.0 TRANSITION

90.000 FULL LANE

TRIB TO PASQUOTANK RIVER

+40.000
23.000 (75.46')

DO NOT DISTURB CEMETERY

WOODEN BULKHEAD

CEM (2) GRAVES

GRADE TO DRAIN TO EX. 375 CMP

WINIFRED WOOD
D.B. 44, PG. 207

-Y- POT Sta.10+00.000

-Y- POT STA.10+40.000
BEGIN CONSTRUCTION

25 BK D
(under construction)

S 43° 34' 20" E

HAVENWOOD LAGOON

-Y- +50.000
9052 (29.70')

+40.000

+51.000
9259 (30.38')

WILLIAM WEEKS
D.B. 48, PG. 37
25 BK D

BEGIN C&G
CURB
CUT 10+79

GRADE TO DRAIN

-L- +38.000
25.290 (82.91')

-L- +65.000
25.833 (84.75')

360 TRANSITION LT & RT

EXISTING R/W

R=15.0

50mm GAS DATUM

750 CURB & GUTTER

CB

294mm PVC

+88.987

MATCH TO SHEET 15

-L- STA. 45+00.000

+30.000
15.000 (49.21')
18.500 (60.70')

+50.000
18.500 (60.70')

+38.247

+30.000

BEGIN C&G

12 PS

GRADE TO DRAIN

900 CONC

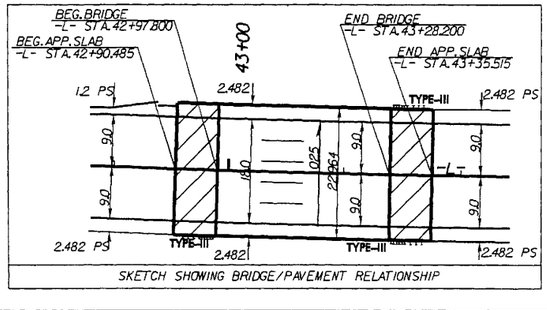
4.3 CONC

52 BST

SCRUB PINE WITH HEAVY UNDERBRUSH

EXISTING R/W

PAD



SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

(3) C.O. ROBINSON TRUST
D.B. 105, PG. 293

(4) C.O. ROBINSON TRUST
D.B. 105, PG. 293

-L- POC Sta. 44+48.281
-Y- POT Sta.10+98.622

LEGEND

DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

07-APR-2008 13:49
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Permit Drawing
Utility Sheet 16 of 16

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	U0-13

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

METRIC
5 0 10

CONST.REV.

R/W REV.

NAD 83

ROBERT F. MASSIELLO, ET UX
DB 111, PG 705
DB 46, PG 260 (MAP)

ROSALYN J. FAIRCLOTH
DB 80, PG 392
DB 46, PG 260 (MAP)

(1) JAME H. WOOTON, ET AL
DB 106, PG 689
DB 46, PG 260 (MAP)

HAVENWOOD LAGOON

(3) GEORGE T. GRIFFIN, ET UX
DB 52, PG 687
DB 46, PG 260 (MAP)

(4) O.C. ABBOTT
DB 54, PG 429

RANDY ANSON CULPEPPER AND WIFE LISA NIX CULPEPPER
IS BK D
D.B. 147, PG. 639
D.B. 46, PG 260 (MAP)

ROSALYN J. FAIRCLOTH
IS BK D
D.B. 80, PG. 392
D.B. 46, PG 260 (MAP)

JAMES H. WOOTEN, ET AL
D.B. 106, PG. 689
D.B. 46, PG 260 (MAP)

-L- PC Sta. 47+13.146
-Y1- POC 47+73.037
-Y1- POT 10+00.000

PROP SLOPE STAKE LINE

REMOVE

(13) CB

750 CURB & GUTTER

MATCH TO SHEET 14

-L- STA. 45+00.000

+31.000
17.400 (57.09')

+32.873

240 TYP.

120 TYP.

+68.873
EP R/W
15.000 (49.21')

PECAN FARMS, LLC
DB 237, PG 728

(4)

END CONSTRUCTION
-L- STA. 46+50.000

+75.000 -L-
14.970 (49.12')
17.500 (57.41')

+79.805 -L-
17.500 (57.41')

+79.936 -L-
14.969 (49.11')

(2) QUALITY OIL COMPANY
DB 54, PG 546

-L- PT STA. 45+68.873 (R-2414A) L.B. =
-L- POT STA. 45+68.873 (R-2414B) L.A.
N 288,267.5799 E 862835.4768
BEGIN STATE PROJECT R-2414B
END STATE PROJECT R-2414A

R-2414B
PI Sta 48+39.173
Δ = 16° 23' 31.2" (LT)
L = 250.333
T = 126.027
R = 875.000

-L-
PI Sta 44+20.646
Δ = 6° 48' 08.1" (LT)
L = 296.804
T = 148.577
R = 2,500.000
SE = RC
V_{des} = 100 KPH

-Y1-

PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 44.373	L = 21.313	L = 38.429
T = 22.245	T = 10.658	T = 19.274
R = 250.000	R = 480.000	R = 200.000

LEGEND

DENOTES HAND CLEARING IN WETLAND

MATTING WILL BE USED TO INSTALL POWER POLES IN WETLAND

PROP 200'x45' VACUUM CANOPY

3-ISL'S 6 GAS PUMPS U/MTL CANOPY

8 FILLER CAPS

ISBKBUS

LP TANK

1800 mm CMP

PCSta. 10+15.277

PTSta. 10+59.649

PCSta. 10+75.082

PCCSta. 10+96.395

PTSta. 11+34.824

+63.120 -Y1-
20.000 (65.62')

+64.053 -Y1-
17.000 (55.77')

+20.000 -Y1-
19.000 (62.34')

+30.000 -Y1-
9.144 (30.00')
12.000 (39.37')

(5) C. E. HURDLE, HEIRS
DB 23, PG 425 (MAP)
DB 26, PG 517
DB 28, PG 224
DB 105, PG 761

(5A) PECAN FARMS, LLC
DB 237, PG 728
PC-5 SL 16A (PLAT)

PECAN FARMS, LLC
DB 237, PG 728

(4)

S 65°13'51.4" E

S 55°03'41.4" E

US 158 7.9 BST

750 mm CONC

375 mm CMP

400 mm C&G

EXIST R/W

WATER ESMT

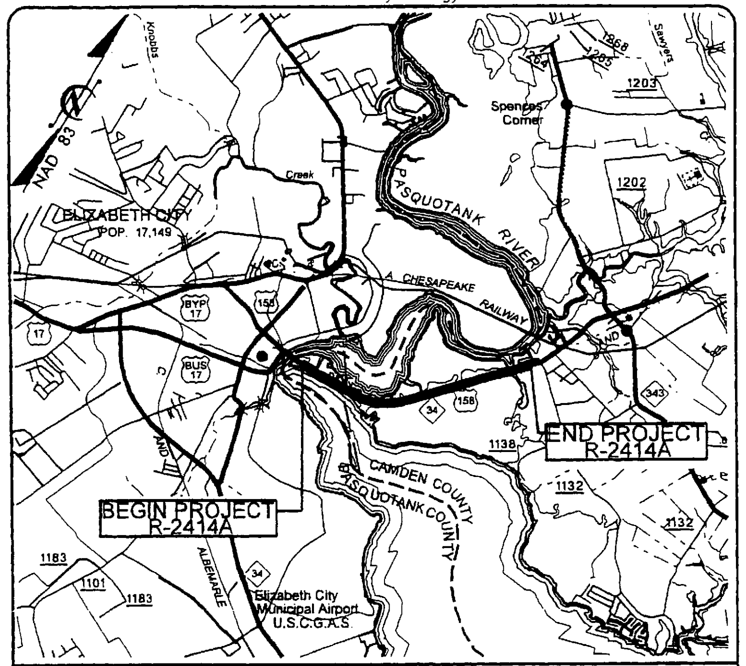
07-APR-2008 13:46
...\roadway\environmental\r-2414a_ut_13_psh.dgn

TIP PROJECT: R-2414A

CONTRACT:

09/09/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology



VICINITY MAP

PRE-PLFI

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

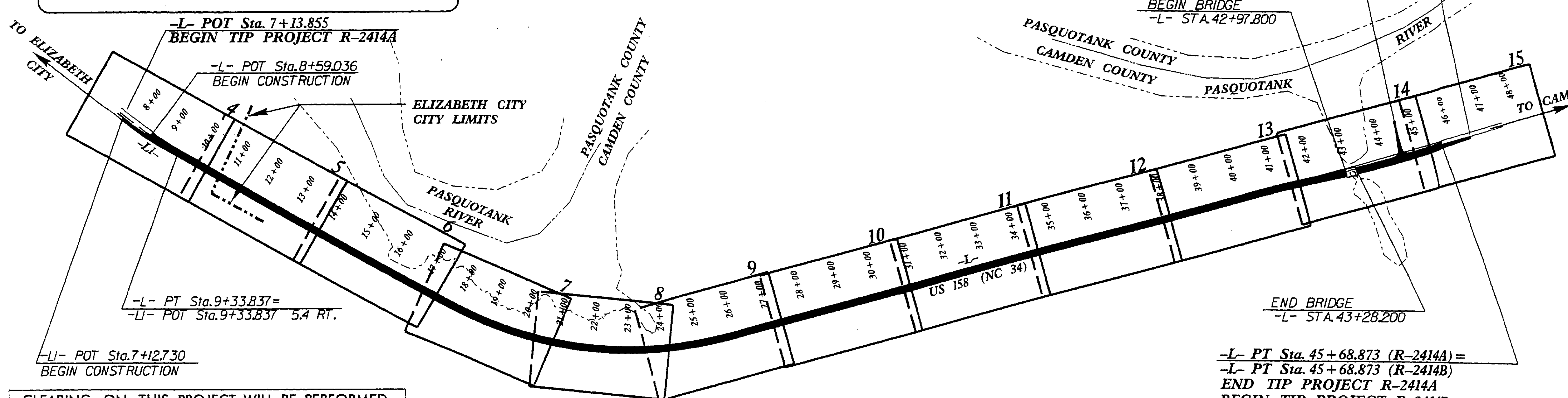
LOCATION: US 158 / NC 34 FROM EAST OF PASQUOTANK RIVER TO NORTH OF SR 1257 (HAVENWOOD DR.) BETWEEN ELIZABETH CITY AND CAMDEN

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2414A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34430.1.1	STP-158(2)	PE	
34430.2.4		ROW & UTILITIES	
		CONST.	



CLEARING ON THIS PROJECT WILL BE PERFORMED BY THE LIMITS ESTABLISHED BY METHOD II

A PORTION OF THIS PROJECT IS WITHIN MUNICIPAL BOUNDARIES OF ELIZABETH CITY

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 25210
ADT 2028 = 40730
DHV = 12 %
D = 60 %
T = 6 % *
V = 80-100 KM/H
* (TTST 2 % + DUAL 4 %)
FUNC. CLASS. = ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414A	=	3.825 KM
LENGTH STRUCTURE TIP PROJECT R-2414A	=	0.030 KM
TOTAL LENGTH TIP PROJECT R-2414A	=	3.855 KM

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I, 4601 SIX FORKS RD. RALEIGH, NC 27609-5210
ENGINEERS • PLANNERS • ECOLOGISTS

Prepared In the Office of:
WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD SUITE 164 Raleigh, N.C. 27606
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
For The North Carolina Department Of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
November 15, 2006

LETTING DATE:
October 21, 2008

NCDOT CONTACT:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

DOUG TAYLOR, PE
ROADWAY DESIGN - ENGINEERING COORD. SECTION ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY DESIGN ENGINEER P.E.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJ. REFERENCE NO.	SHEET NO.
R-2414A	1-B

*S.U.E = SUBSURFACE UTILITY ENGINEER

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

Edge of Pavement
Curb
Prop. Slope Stakes Cut
Prop. Slope Stakes Fill
Prop. Woven Wire Fence
Prop. Chain Link Fence
Prop. Barbed Wire Fence
Prop. Wheelchair Ramp — WCR
Curb Cut For Future Wheelchair Ramp — CCFR
Exist. Guardrail
Prop. Guardrail
Exist. Cable Guiderail
Prop. Cable Guiderail
Equality Symbol
Pavement Removal

RIGHT OF WAY

Baseline Control Point
Existing Right of Way Marker
Exist. Right of Way Line w/Marker
Prop. Right of Way Line with Proposed R/W marker (Iron Pin & Cap)
Prop. Right of Way Line with Proposed (Concrete or Granite) R/w Marker
Exist. Control of Access Line
Prop. Control of Access Line
Exist. Easement Line
Prop. Temp. Construction Easement Line
Prop. Temp. Drainage Easement Line — TDE
Prop. Perm. Drainage Easement Line — PDE

HYDROLOGY

Stream or Body of Water
Flow Arrow
Disappearing Stream
Spring
Swamp Marsh
Shoreline
Falls, Rapids
Prop Lateral, Tail, Head Ditches — FLOW

STRUCTURES

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

MINOR
Head & End Wall — CONC HW
Pipe Culvert
Footbridge
Drainage Boxes — CB
Paved Ditch Gutter

UTILITIES

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

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

BOUNDARIES & PROPERTIES

State Line
County Line
Township Line
City Line
Reservation Line
Property Line
Property Line Symbol
Exist. Iron Pin — EIP
Property Corner
Property Monument — ECM
Property Number — 123
Parcel Number — 6
Fence Line — WW & ISBW
Existing Wetland Boundaries — WLB
Proposed Wetland Boundaries — WLB
Existing Endangered Animal Boundaries — EAB
Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

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

TOPOGRAPHY

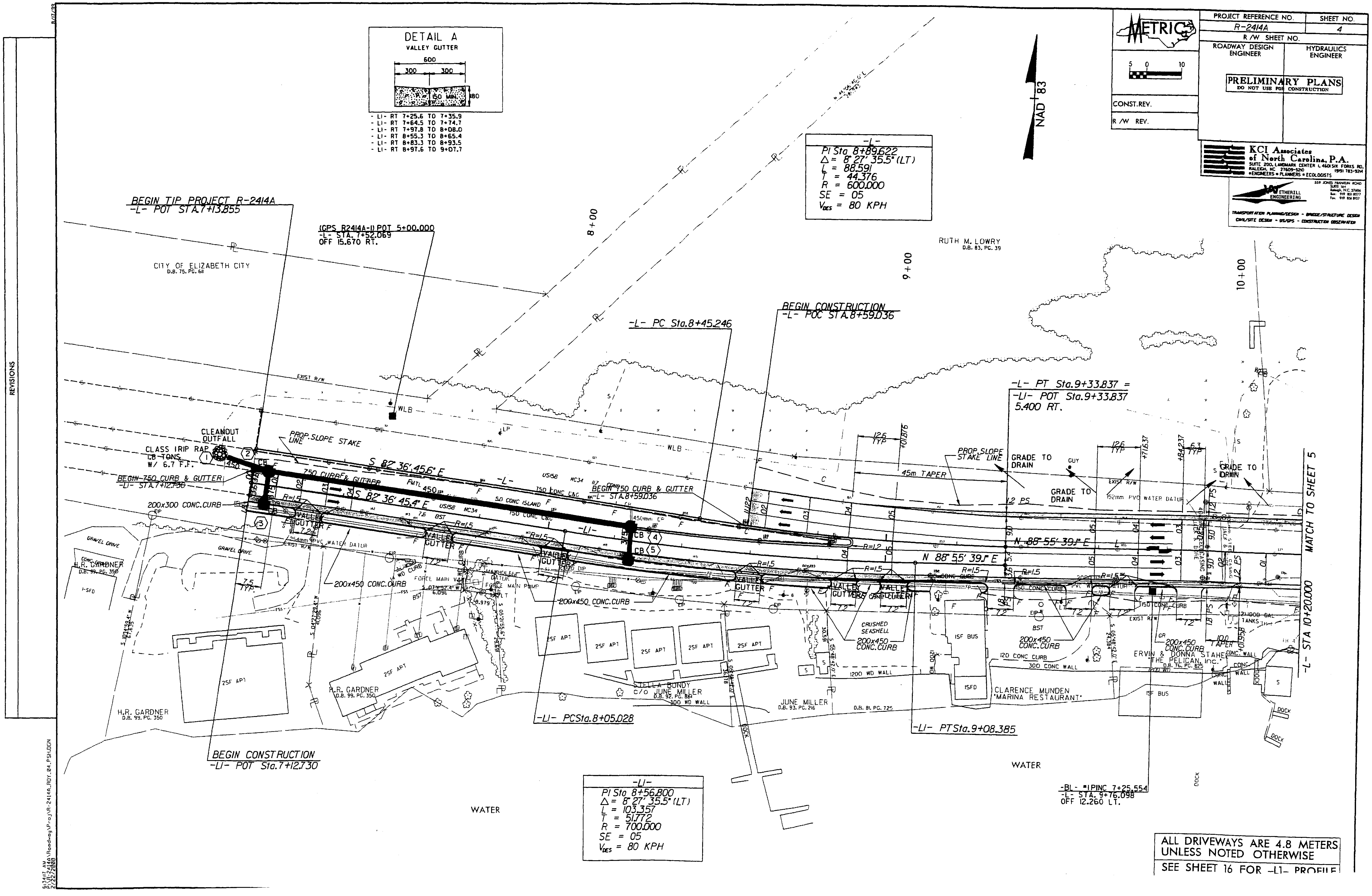
Loose Surface
Hard Surface
Change in Road Surface
Curb
Right of Way Symbol — R/W
Guard Post — GP
Paved Walk
Bridge
Box Culvert or Tunnel
Ferry
Culvert
Footbridge
Trail, Footpath
Light House

VEGETATION

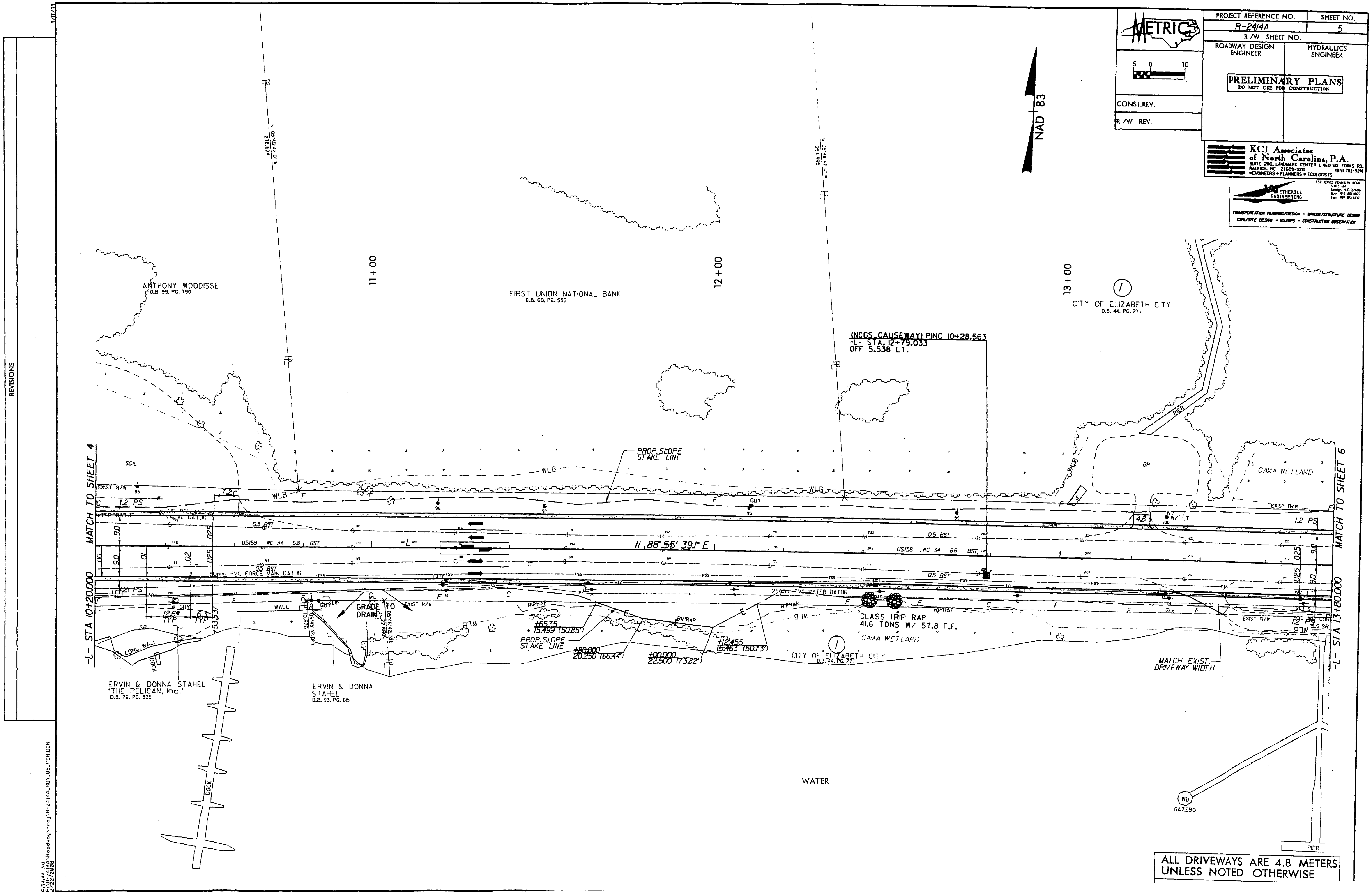
Single Tree
Single Shrub
Hedge
Woods Line
Orchard
Vineyard — VINEYARD

RAILROADS

Standard Gauge — CSX TRANSPORTATION
RR Signal Milepost — MILEPOST 35
Switch



PROJECT REFERENCE NO.
SHEET NO.
R-2414A
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST.REV.
R/W REV.
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
NAD 83
REVISIONS
DETAIL A
VALLEY GUTTER
600
300
300
150 MIN.
180
- L1- RT 7+25.6 TO 7+35.9
- L1- RT 7+64.5 TO 7+74.7
- L1- RT 7+97.8 TO 8+08.0
- L1- RT 8+55.3 TO 8+65.4
- L1- RT 8+83.3 TO 8+93.5
- L1- RT 8+97.6 TO 9+07.7
-L-
PI Sta 8+89.622
△ = 8° 27' 35.5" (LT)
L = 88.591
T = 44.376
R = 600.000
SE = 05
V DES = 80 KPH
BEGIN TIP PROJECT R-2414A
-L- POT STA.7+13.855
(GPS R2414A-1) POT 5+00.000
-L- STA. 7+52.069
OFF 15.670 RT.
CITY OF ELIZABETH CITY
D.B. 75, PG. 611
RUTH M. LOWRY
D.B. 83, PG. 39
8+00
9+00
10+00
BEGIN CONSTRUCTION
-L- POC STA.8+59.036
-L- PC Sta.8+45.246
-L- PT Sta.9+33.837 =
-L1- POT Sta.9+33.837
5.400 RT.
CLEANOUT
OUTFALL
CLASS I RIP RAP
1.8 TONS
W/ 6.7 F.F.
PROP. SLOPE STAKE LINE
S 82° 36' 45.6" E
S 82° 36' 45.4" E
750 CURB & GUTTER
BEGIN 750 CURB & GUTTER
-L1- STA.7+12.730
BEGIN 750 CURB & GUTTER
-L- STA.8+59.036
200x300 CONC.CURB
200x450 CONC.CURB
VALLEY GUTTER
45m TAPER
GRADE TO DRAIN
N 88° 55' 39.1" E
N 88° 55' 39.1" E
MATCH TO SHEET 5
-L- STA 10+20.000
H.R. GARDNER
D.B. 99, PG. 350
2SF APT
STELLA BUNDY
C/O JUNE MILLER
JUNE MILLER
D.B. 93, PG. 216
CLARENCE MUNDEN
"MARINA RESTAURANT"
ERVIN & DONNA STAHEL
THE PELICAN, Inc.
CRUSHED SEASHELL
1SF BUS
BEGIN CONSTRUCTION
-L1- POT Sta.7+12.730
-L1- PCSta.8+05.028
-L1- PTSta.9+08.385
WATER
-L1-
PI Sta 8+56.800
△ = 8° 27' 35.5" (LT)
L = 103.357
T = 51.772
R = 700.000
SE = 05
V DES = 80 KPH
-BL- #1PINC 7+25.554
-L- STA. 9+76.098
OFF 12.260 LT.
ALL DRIVEWAYS ARE 4.8 METERS
UNLESS NOTED OTHERWISE
SEE SHEET 16 FOR -L1- PROFILE



METRIC
PROJECT REFERENCE NO.
SHEET NO.
R-2414A
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
NAD 83
REVISIONS
ANTHONY WOODISSE
D.B. 99, PG. 790
FIRST UNION NATIONAL BANK
D.B. 60, PG. 585
CITY OF ELIZABETH CITY
D.B. 44, PG. 277
11+00
12+00
13+00
(NCGS CAUSEWAY) PINC 10+28.563
-L- STA. 12+79.033
OFF 5.538 LT.
PROP. SLOPE STAKE LINE
MATCH TO SHEET 4
MATCH TO SHEET 6
-L- STA 10+20.000
-L- STA 13+80.000
N 88° 55' 39.1" E
US158 NC 34 6.8 BST
0.5 BST
1.2 PS
PIER
GR
CAMA WETLAND
GRADE TO DRAIN
CLASS I RIP RAP
41.6 TONS W/ 57.8 F.F.
RIPRAP
WALL
CONC. WALL
DOCK
ERVIN & DONNA STAHEL
"THE PELICAN, Inc."
D.B. 76, PG. 825
ERVIN & DONNA STAHEL
D.B. 93, PG. 615
MATCH EXIST. DRIVEWAY WIDTH
WATER
GAZEBO
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

8/17/99

REVISIONS

R/W REVISION - REVISED PROPOSED STATION AND OFFSETS FOR TEMPORARY CONST. EASEMENT LEFT, BAM

METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2414A	6
	R/W SHEET NO.	
CONST. REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

KCI Associates of North Carolina, P.A.
SUITE 200, LANDMARK CENTER I 4601 SIX FORKS RD.
RALEIGH, NC 27609-5310 (919) 783-9241
•ENGINEERS • PLANNERS • ECOLOGISTS

W. ETHERILL ENGINEERING
859 JONES FRANKLIN ROAD SUITE 164 Raleigh, N.C. 27606 Tel: 919 851 8077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - PS&PS - CONSTRUCTION OBSERVATION

NAD 83

WATER

14+00 | 15+00 | 16+00 | 17+00

N 05°45'42.7" W 85.802'

-BL- • 2 PINC 12+85.880
-L- STA. 15+36.339
OFF 7.893 LT.

N 7.8 90°00'00" E

+00.000 15.973 (52.40')
+20.000 15.989 (52.46')
+40.000 16.015 (52.54')
+53.253 15.787 (51.80')
+84.877 15.928 (52.26')

PROP. SLOPE STAKE LINE

CAMA WETLAND

WILLIAM PEFLEY
D.B. 62, PG. 89

WILLIAM PEFLEY
D.B. 62, PG. 89

LLOYD D. GRIFFIN
D.B. 38, PG. 45

-L- TS Sta 17+28.133

ISF BUS

WD GUARD POSTS

1200 WD WALL

WD DECK

EXIST R/W

CAMA WETLAND

MATCH TO SHEET 5

-L- STA 13+80.000

N 88°55'39" E

-L-

US158 NC 34 6.8 BST

0.6 BST

1.1 BST

1.2 PS

50MM PVC FORCE MAIN DATUM

900 WD

MATCH EXIST. DRIVEWAY WIDTH

PROP. SLOPE STAKE LINE

W.F. THOMPSON
D.B. 102, PG. 212

CAMDEN COUNTY ABC BOARD

FORCE MAIN PUMP

BILL & LINDA TAYLOR
D.B. 82, PG. 41

D.B. 71, PG. 399

1200 WALL

FORCE MAIN PUMP

WALL

DOCK

2SFD

GAZEBO

MARKHAM ENTERPRISES, Inc.
"CAUSEWAY MARINA"
D.B. 72, 115
D.B. 59, PG. 141

SOIL

RIPRAP

1800 CHI W/ 3 SB

85MM PVC WATER LINE

LLOYD D. GRIFFIN
D.B. 38, PG. 45

MATCH TO SHEET 7

-L- STA 17+40.000

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

WATER

8/17/99 AM
R:\Scoping\Projects\R-2414A_RDY_86_PSH.DGN
27222/2888

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

KCI Associates of North Carolina, P.A.
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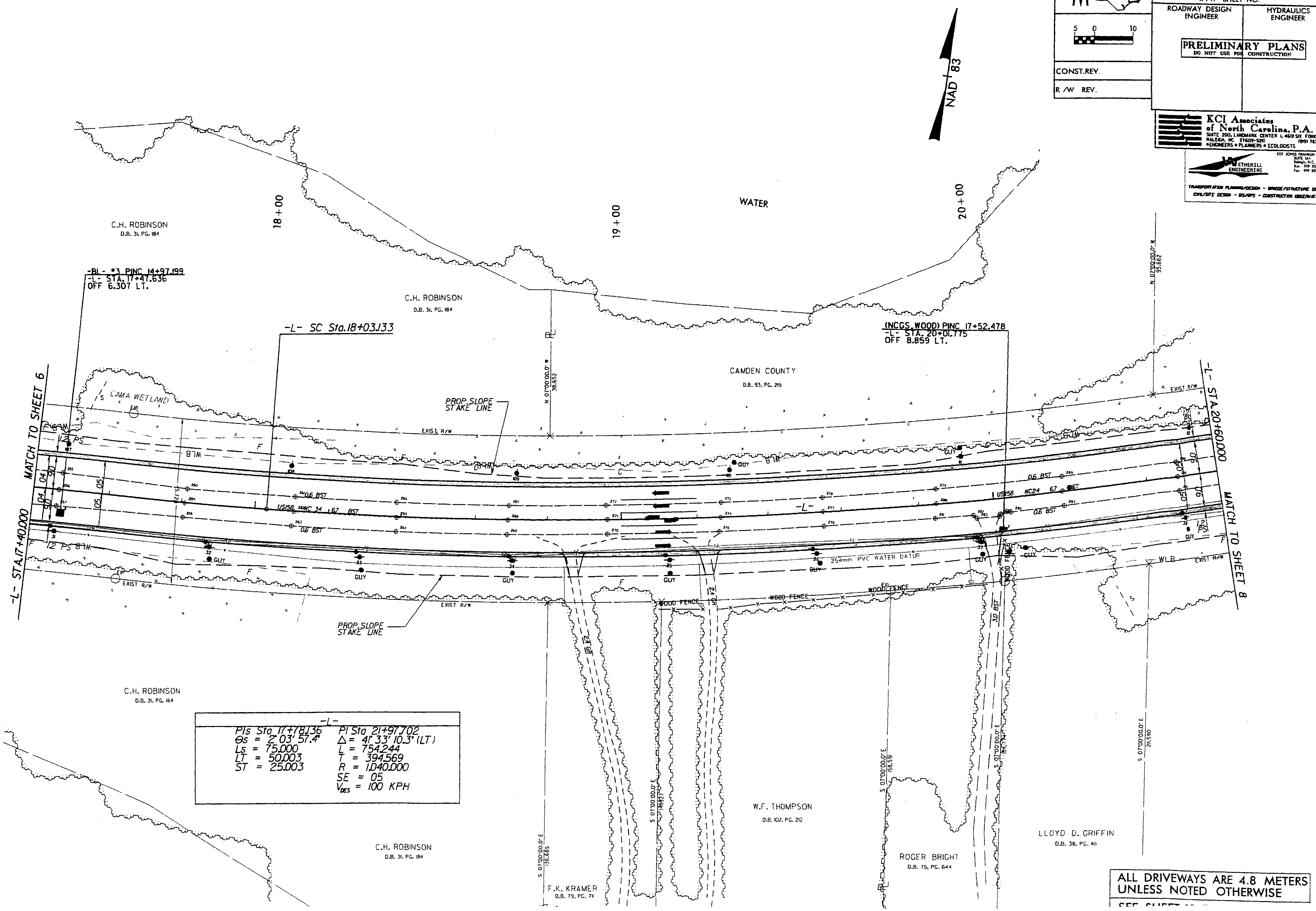
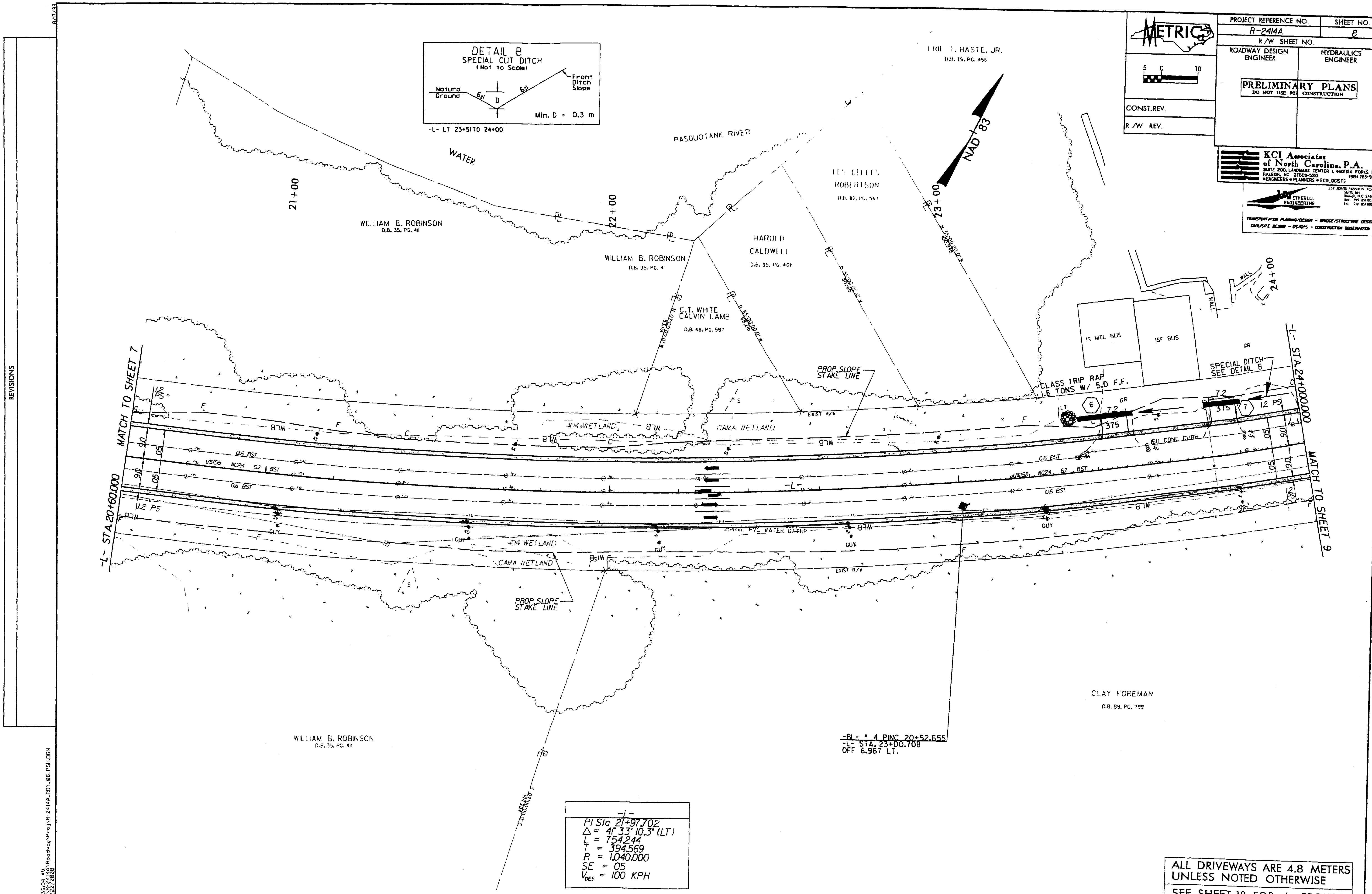
ENGINEERS • PLANNERS • ECOLOGISTS

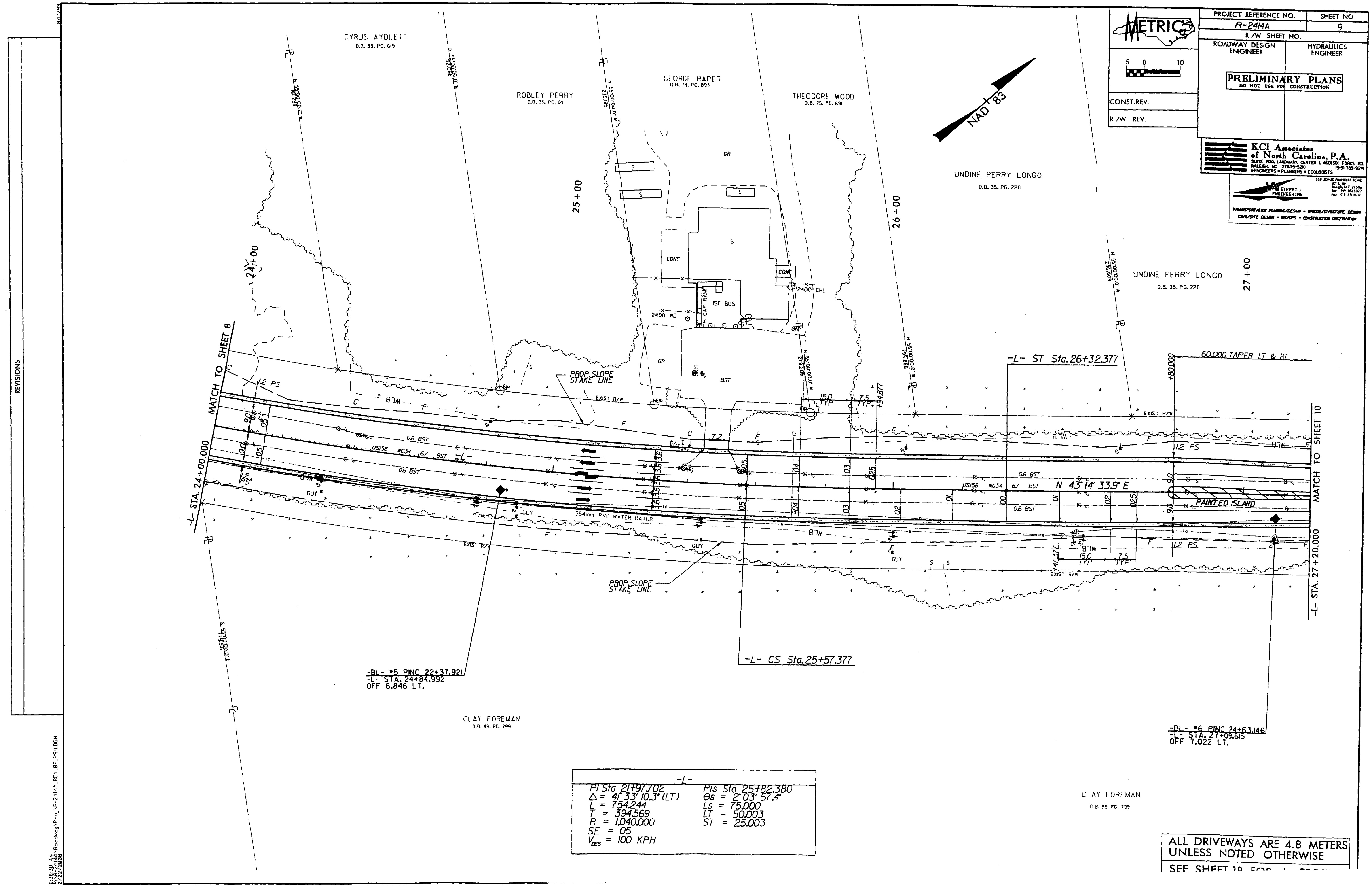
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS



NAD 83
WATER
18+00
19+00
20+00
C.H. ROBINSON
D.B. 31, PG. 184
-BL- #3 PINC 14+97.199
-L- STA. 17+47.636
OFF 6.307 LT.
-L- SC Sta.18+03.133
CAMDEN COUNTY
D.B. 93, PG. 219
(NCGS WOOD) PINC 17+52.478
-L- STA. 20+01.775
OFF 8.859 LT.
CAMA WETLAND
PROP. SLOPE STAKE LINE
EXIST R/W
MATCH TO SHEET 6
-L- STA.17+40.000
-L- STA.20+60.000
MATCH TO SHEET 8
US158 NC 34 6.7 BST
US158 NC24 6.7 BST
0.6 BST
254mm PVC WATER DATUM
WOOD FENCE
GUY
F.K. KRAMER
D.B. 79, PG. 78
W.F. THOMPSON
D.B. 102, PG. 212
ROGER BRIGHT
D.B. 75, PG. 644
LLOYD D. GRIFFIN
D.B. 38, PG. 41
-L-
PIs Sta 17+78.136
θs = 2° 03' 57.4"
Ls = 75.000
LT = 50.003
ST = 25.003
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = .05
VDES = 100 KPH
ALL DRIVEWAYS ARE 4.8 METERS
UNLESS NOTED OTHERWISE


PROJECT REFERENCE NO.
R-2414A
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST. REV.
R/W REV.
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D = 0.3 m
-L- LT 23+51 TO 24+00
PASQUOTANK RIVER
WATER
NAD 83
WILLIAM B. ROBINSON
D.B. 35, PG. 411
HAROLD CALDWELL
D.B. 35, PG. 406
C.T. WHITE
CALVIN LAMB
D.B. 48, PG. 597
ROBERTSON
15 MTL BUS
1SF BUS
CLASS I RIP RAP
1.8 TONS W/ 5.0 F.F.
SPECIAL DITCH
SEE DETAIL B
PROP. SLOPE STAKE LINE
404 WETLAND
CAMA WETLAND
EXIST R/W
MATCH TO SHEET 7
MATCH TO SHEET 9
-L- STA.20+60.000
-L- STA.24+000.000
US158 NC24
-L-
GUY
WALL
CLAY FOREMAN
D.B. 89, PG. 799
WILLIAM B. ROBINSON
D.B. 35, PG. 411
-BL- # 4 PINC 20+52.655
-L- STA. 23+00.708
OFF 6.967 LT.
-L-
PI Sta 21+97.702
Δ = 41° 33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = 05
V_{DES} = 100 KPH
ALL DRIVEWAYS ARE 4.8 METERS
UNLESS NOTED OTHERWISE
SEE SHEET 18 FOR -L- PROFILE
REVISIONS


PROJECT REFERENCE NO.
R-2414A
SHEET NO.
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST.REV.
R/W REV.
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WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NAD 83
REVISIONS
CYRUS AYDLETT
D.B. 33, PG. 619
ROBLEY PERRY
D.B. 35, PG. 121
GEORGE RAPER
D.B. 79, PG. 893
THEODORE WOOD
D.B. 75, PG. 69
UNDINE PERRY LONGO
D.B. 35, PG. 220
UNDINE PERRY LONGO
D.B. 35, PG. 220
CLAY FOREMAN
D.B. 89, PG. 799
CLAY FOREMAN
D.B. 89, PG. 799
24+00
25+00
26+00
27+00
MATCH TO SHEET 8
MATCH TO SHEET 10
-L- STA. 24+00.000
-L- STA. 27+20.000
PROP. SLOPE STAKE LINE
PROP. SLOPE STAKE LINE
EXIST R/W
US158 NC34 6.7 BST
N 43°14' 33.9" E
PAINTED ISLAND
254mm PVC WATER DATUM
-L- ST Sta. 26+32.377
60.000 TAPER LT & RT
-L- CS Sta. 25+57.377
-BL- #5 PINC 22+37.921
-L- STA. 24+84.992
OFF 6.846 LT.
-BL- #6 PINC 24+63.146
-L- STA. 27+09.615
OFF 7.022 LT.
ISF BUS
CONC
BST
GR
-L-
PI Sta 21+97.702
Δ = 41°33' 10.3" (LT)
L = 754.244
T = 394.569
R = 1,040.000
SE = 05
V DES = 100 KPH
PIs Sta 25+82.380
θs = 2°03' 57.4"
Ls = 75.000
LT = 50.003
ST = 25.003
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 19 FOR ...

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	10
R/W SHEET NO.	

METRIC

5 0 10

CONST.REV.

R/W REV.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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SUITE 200, LANDMARK CENTER I, 4601 SIX FORKS RD.
RALEIGH, NC 27609-5210
(919) 783-9214
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ETHERIDGE ENGINEERING
869 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
Tel: 919 834 8077
Fax: 919 834 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CPM/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NAD 83

EDWARD DECKER
D.B. 33, PG. 620

WILLIAM R. MOSS
D.B. 74, PG. 34

C.W. WARD, SR.
D.B. 36, PG. 641

WILLIAM R. MOSS
D.B. 57, PG. 329

C.W. WARD, SR.
D.B. 36, PG. 641

28+00

29+00

30+00

N 55°00'00.0" W 2231.48

N 55°00'00.0" W 1861.98

N 55°00'00.0" W 1842.20

N 55°00'00.0" W 1810.00

N 55°00'00.0" W 1785.98

N 43°12'52.7" E 33.148

N 43°14'33.9" E

PASQUOTANK RIVER

60.000 TAPER LT & RT

PROP. SLOPE STAKE LINE

PROP. SLOPE STAKE LINE

-L- STA 27+20.000 MATCH TO SHEET 9

-L- STA. 30+80.000 MATCH TO SHEET 11

12 PS

06 BST

US158 NC34 67 BST

12 PAINTED ISLAND

SOIL

EXIST R/W

-BL- #7 PINC 27+00.249
-L- STA. 29+46.718
OFF 6.449 LT.

CLAY FOREMAN
D.B. 79, PG. 86

CLAY FOREMAN
D.B. 79, PG. 86

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 19 FOR -L- PROFILE

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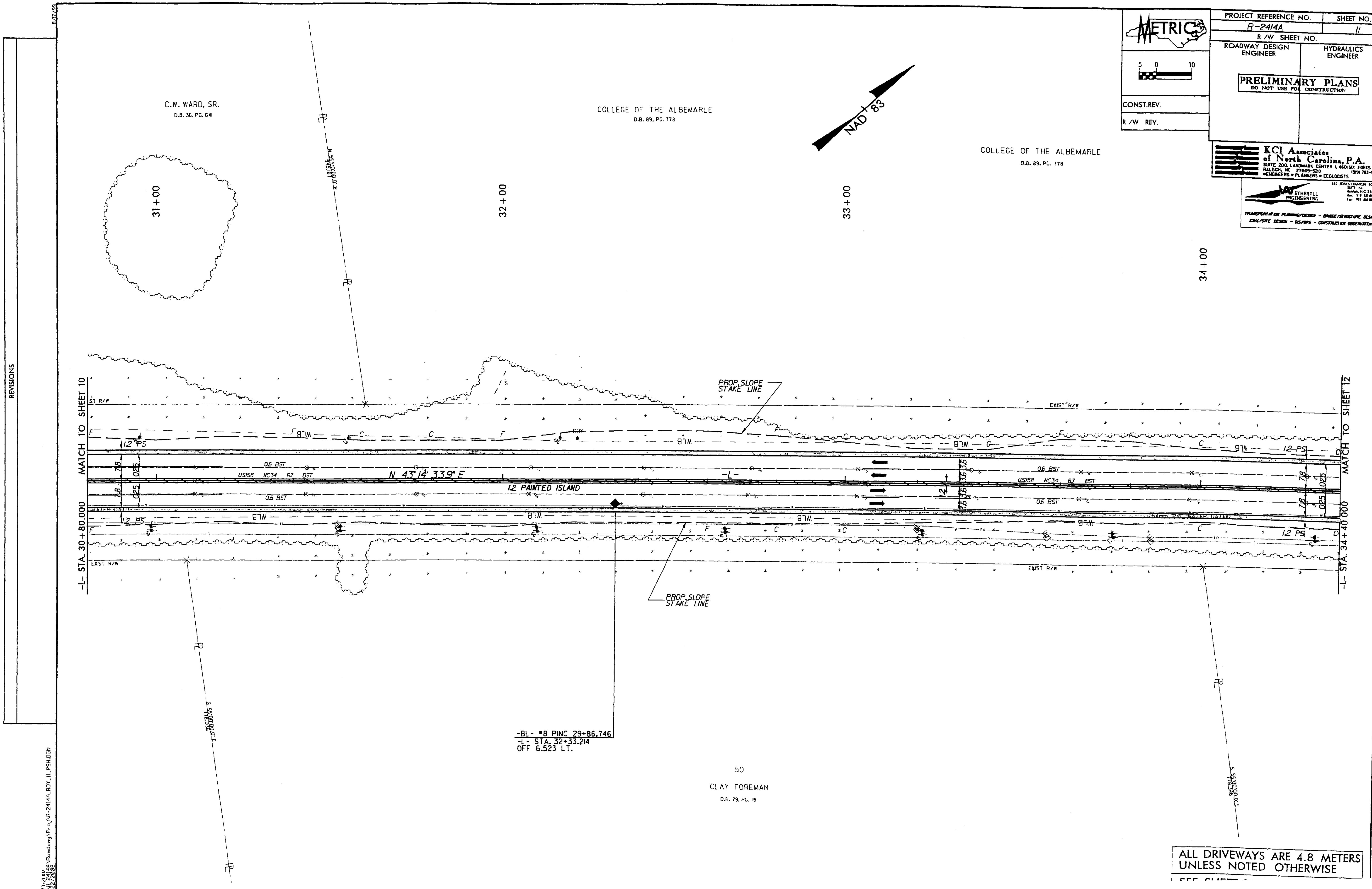
R-2414A\Roadway\Proj\R-2414A_RDY_10_PSH.DGN
2/22/2008


METRIC
5 0 10
PROJECT REFERENCE NO. R-2414A
SHEET NO. 11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
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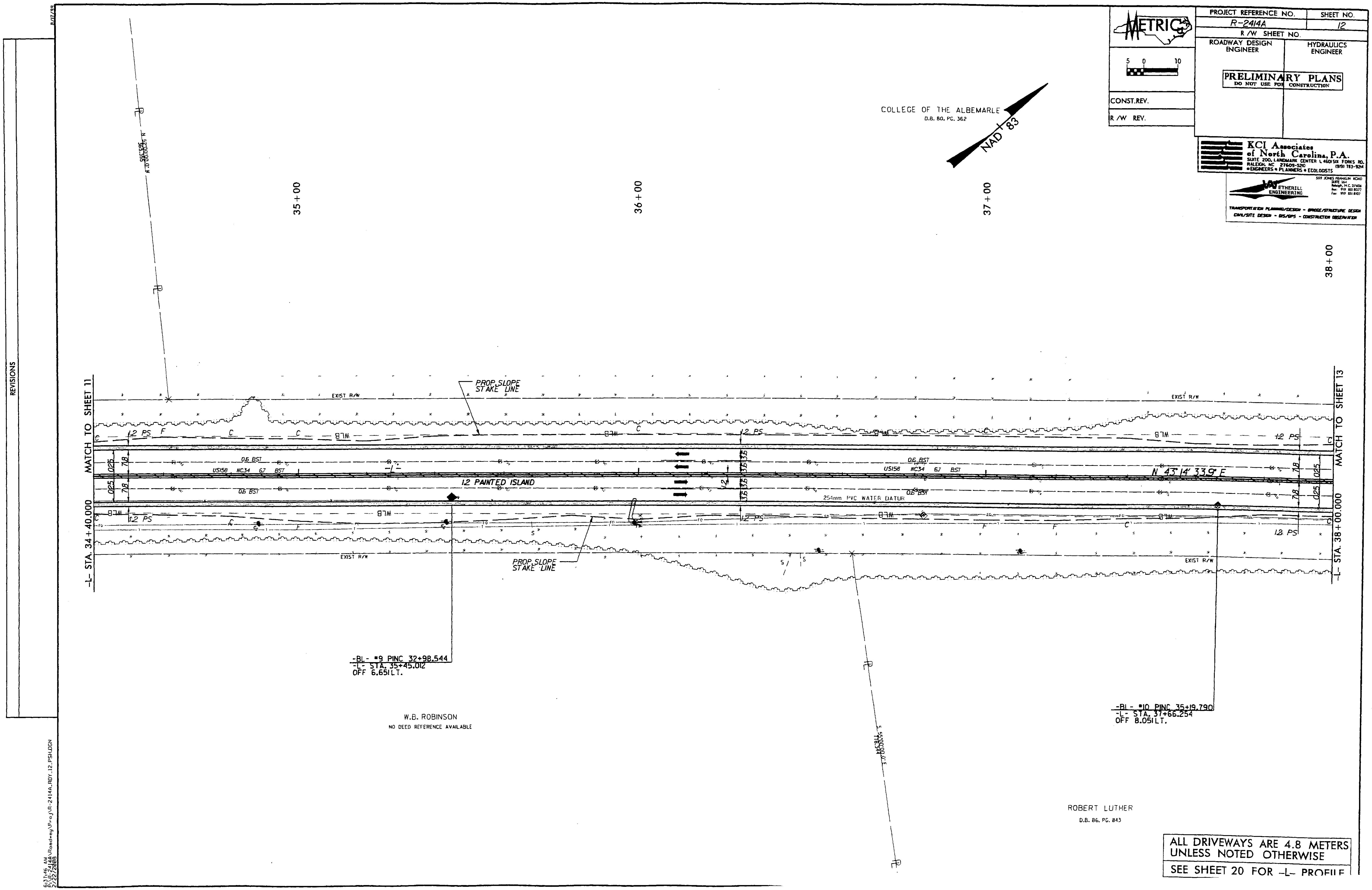
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NAD 83
REVISIONS
C.W. WARD, SR.
D.B. 36, PG. 641
COLLEGE OF THE ALBEMARLE
D.B. 89, PG. 778
COLLEGE OF THE ALBEMARLE
D.B. 89, PG. 778
31+00
32+00
33+00
34+00
MATCH TO SHEET 10
-L- STA. 30+80.000
MATCH TO SHEET 12
-L- STA. 34+40.000
EXIST R/W
PROP. SLOPE STAKE LINE
1.2 PS
0.6 BST
US158 NC34 6.7 BST
N 43° 14' 33.9" E
-L-
1.2 PAINTED ISLAND
PROP. SLOPE STAKE LINE
-BL- #8 PINC 29+86.746
-L- STA. 32+33.214
OFF 6.523 LT.
50
CLAY FOREMAN
D.B. 79, PG. 18
ALL DRIVEWAYS ARE 4.8 METERS
UNLESS NOTED OTHERWISE


METRIC
PROJECT REFERENCE NO.
SHEET NO.
R-2414A
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
KCI Associates of North Carolina, P.A.
WETHERILL ENGINEERING
COLLEGE OF THE ALBEMARLE
D.B. 80, PG. 362
NAD 83
35+00
36+00
37+00
38+00
MATCH TO SHEET 11
MATCH TO SHEET 13
-L- STA. 34+40.000
-L- STA. 38+00.000
PROP SLOPE STAKE LINE
EXIST R/W
1.2 PAINTED ISLAND
US158 NC34 6.7 BST
0.6 BST
N 43°14' 33.9" E
254mm PVC WATER DATUM
-BL- #9 PINC 32+98.544
-L- STA. 35+45.012
OFF 6.651LT.
-BL- #10 PINC 35+19.790
-L- STA. 37+66.254
OFF 8.051LT.
W.B. ROBINSON
NO DEED REFERENCE AVAILABLE
ROBERT LUTHER
D.B. 86, PG. 843
REVISIONS
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 20 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

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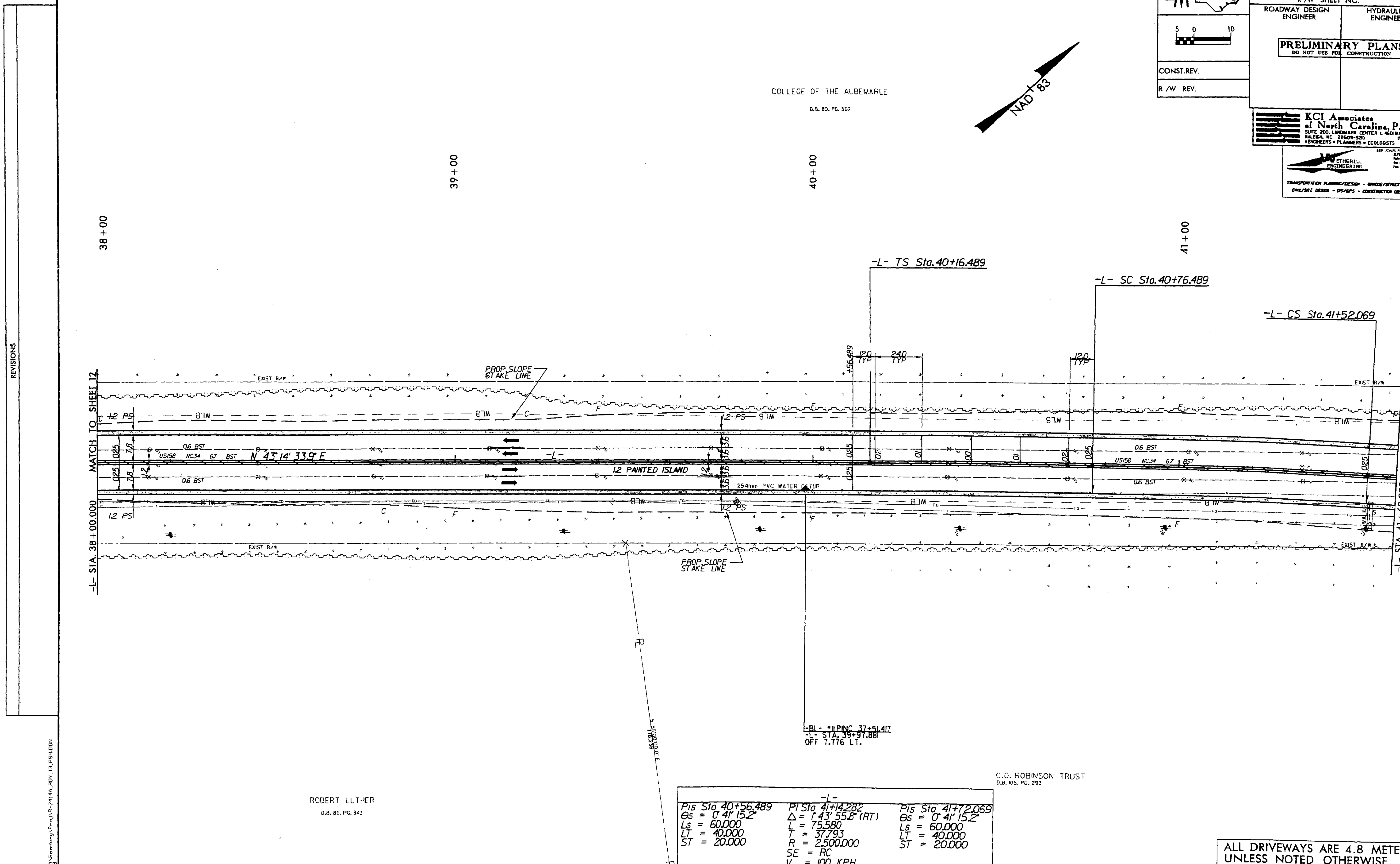
WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

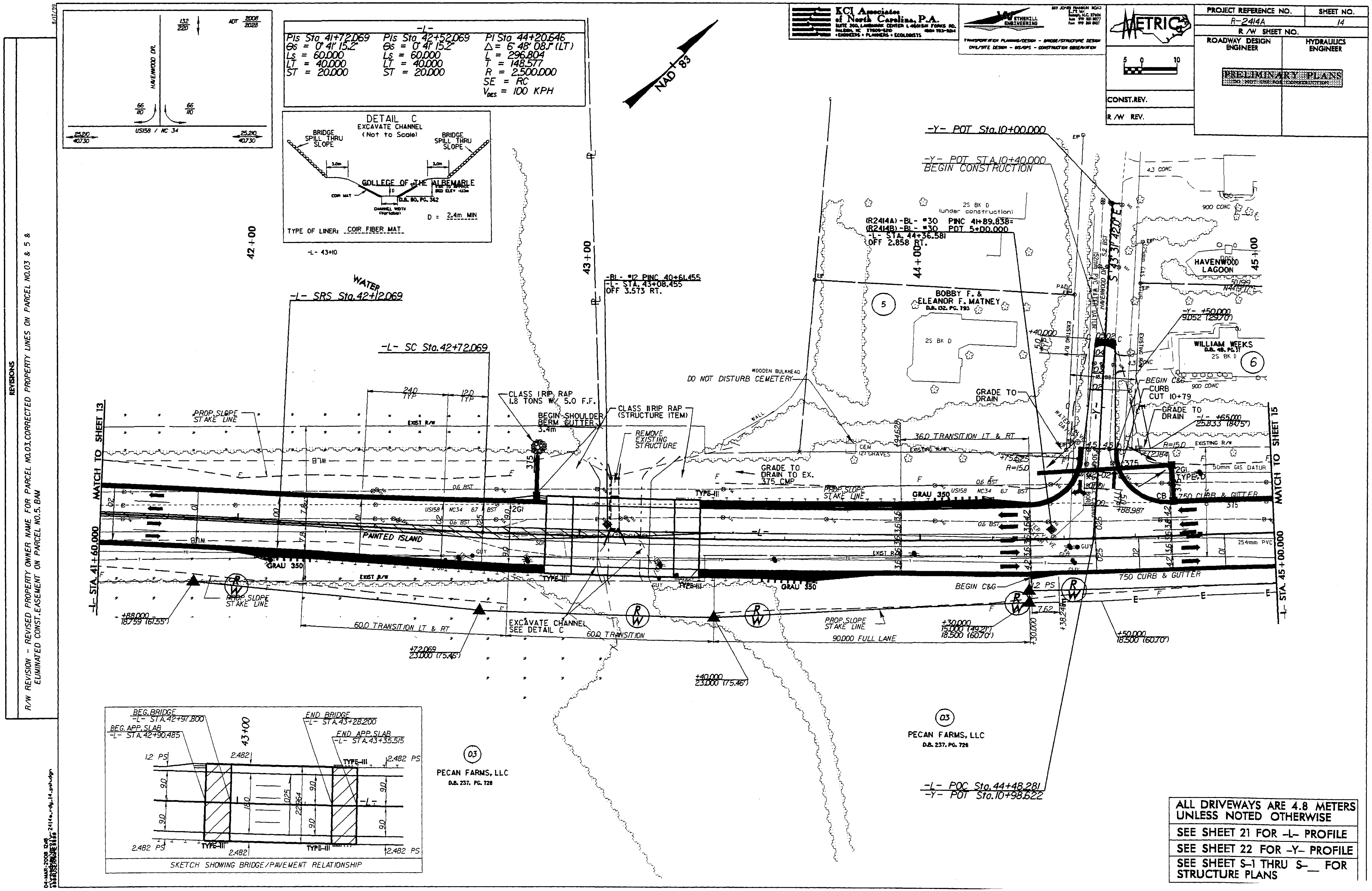


-L-

Pls Sta 40+56.489	PI Sta 41+14.282	Pls Sta 41+72.069
θs = 0° 41' 15.2"	Δ = 1° 43' 55.8" (RT)	θs = 0° 41' 15.2"
Ls = 60.000	L = 75.580	Ls = 60.000
LT = 40.000	T = 37.793	LT = 40.000
ST = 20.000	R = 2,500.000	ST = 20.000
	SE = RC	
	V_{DES} = 100 KPH	

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 21 FOR -L- PROFILE



PROJECT REFERENCE NO. R-2414A
SHEET NO. 14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
METRIC
CONST. REV.
R/W REV.
KCI Associates of North Carolina, P.A.
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WETHERILL ENGINEERING
REVISIONS
R/W REVISION - REVISED PROPERTY OWNER NAME FOR PARCEL NO.03, CORRECTED PROPERTY LINES ON PARCEL NO.03 & 5 & ELIMINATED CONST. EASEMENT ON PARCEL NO.5. BAH
-L-
PIs Sta 41+72.069 θs = 0° 41' 15.2" Ls = 60.000 LT = 40.000 ST = 20.000
PIs Sta 42+52.069 θs = 0° 41' 15.2" Ls = 60.000 LT = 40.000 ST = 20.000
PI Sta 44+20.646 Δ = 6° 48' 08.1" (LT) L = 296.804 T = 148.577 R = 2,500.000 SE = RC VDES = 100 KPH
NAD 83
HAVENWOOD DR.
US158 / NC 34
ADT 2008 / 2028
DETAIL C
EXCAVATE CHANNEL (Not to Scale)
BRIDGE SPILL THRU SLOPE
COLLEGE OF THE ALBEMARLE
D = 2.4m MIN
TYPE OF LINER: COIR FIBER MAT
-L- SRS Sta. 42+12.069
-L- SC Sta. 42+72.069
-BL- #12 PINC 40+61.455 -L- STA. 43+08.455 OFF 3.573 RT.
(R2414A) -BL- #30 PINC 41+89.838= (R2414B) -BL- #30 POT 5+00.000 -L- STA. 44+36.581 OFF 2.858 RT.
-Y- POT Sta. 10+00.000
-Y- POT STA. 10+40.000 BEGIN CONSTRUCTION
BOBBY F. & ELEANOR F. MATNEY
WILLIAM WEEKS
HAVENWOOD LAGOON
PECAN FARMS, LLC
DO NOT DISTURB CEMETERY
WOODEN BULKHEAD
CLASS I RIP RAP 1.8 TONS W/ 5.0 F.F.
CLASS II RIP RAP (STRUCTURE ITEM)
BEGIN SHOULDER BERM GUTTER 3.4m
REMOVE EXISTING STRUCTURE
GRADE TO DRAIN TO EX. 375 CMP
GRADE TO DRAIN
PAINTED ISLAND
EXCAVATE CHANNEL SEE DETAIL C
60.0 TRANSITION LT & RT
60.0 TRANSITION
90.000 FULL LANE
36.0 TRANSITION LT & RT
750 CURB & GUTTER
BEGIN C&G
MATCH TO SHEET 13
MATCH TO SHEET 15
-L- STA. 41+60.000
-L- STA. 45+00.000
-L- POC Sta. 44+48.281 -Y- POT Sta. 10+98.622
BEG. BRIDGE -L- STA. 42+97.800
BEG. APP. SLAB -L- STA. 42+90.485
END BRIDGE -L- STA. 43+28.200
END APP. SLAB -L- STA. 43+35.515
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE
SEE SHEET 21 FOR -L- PROFILE
SEE SHEET 22 FOR -Y- PROFILE
SEE SHEET S-1 THRU S-__ FOR STRUCTURE PLANS

REVISIONS

R/W REVISION - REVISED PROPOSED RIGHT OF WAY ALONG PARCEL NO. 4.BAM

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST. REV.
R/W REV.

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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
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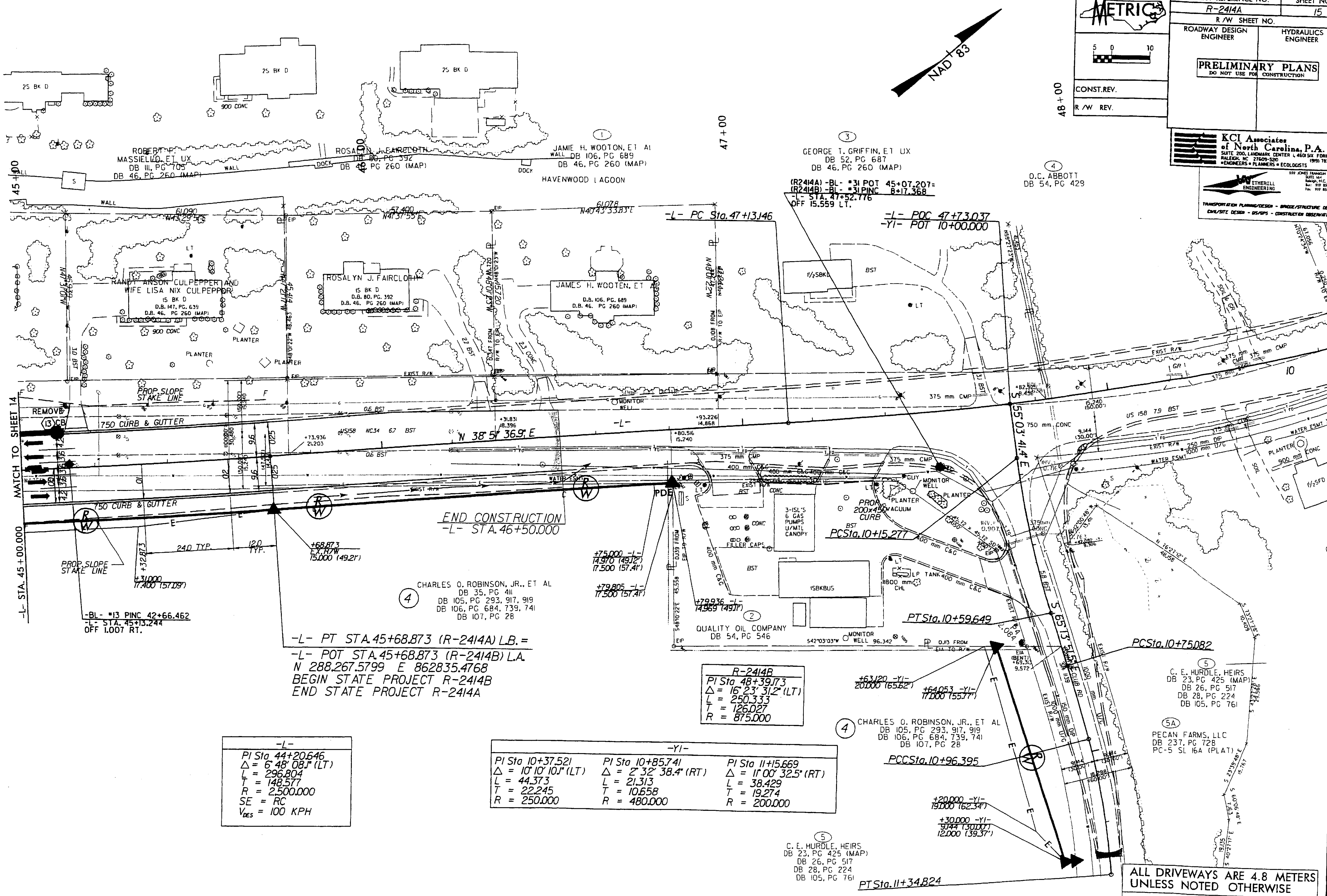

NAD 83
MATCH TO SHEET 14
-L- STA. 45+00.000
45+00
47+00
48+00
ROBERT F. MASSIELLO, ET UX
DB III, PG 705
DB 46, PG 260 (MAP)
ROSALYN J. FAIRCLOTH
DB 80, PG 392
DB 46, PG 260 (MAP)
JAMIE H. WOOTON, ET AL
DB 106, PG 689
DB 46, PG 260 (MAP)
HAVENWOOD LAGOON
GEORGE T. GRIFFIN, ET UX
DB 52, PG 687
DB 46, PG 260 (MAP)
O.C. ABBOTT
DB 54, PG 429
RANDY ANSON CULPEPPER AND WIFE LISA NIX CULPEPPER
ROSALYN J. FAIRCLOTH
JAMES H. WOOTEN, ET AL
(R2414A) -BL- #31 POT 45+07.207=
(R2414B) -BL- #31 PINC 8+17.368
-L- STA. 47+52.776
OFF 15.559 LT.
-L- PC Sta. 47+13.146
-L- POC 47+73.037
-Y1- POT 10+00.000
N 38°51' 36.9" E
S 55°03' 41.4" E
S 65°13' 51.5" E
750 CURB & GUTTER
PROP. SLOPE STAKE LINE
REMOVE
END CONSTRUCTION
-L- STA. 46+50.000
-BL- #13 PINC 42+66.462
-L- STA. 45+13.244
OFF 1.007 RT.
-L- PT STA. 45+68.873 (R-2414A) L.B. =
-L- POT STA. 45+68.873 (R-2414B) L.A.
N 288,267.5799 E 862835.4768
BEGIN STATE PROJECT R-2414B
END STATE PROJECT R-2414A
CHARLES O. ROBINSON, JR., ET AL
DB 35, PG 411
DB 105, PG 293, 917, 919
DB 106, PG 684, 739, 741
DB 107, PG 28
QUALITY OIL COMPANY
DB 54, PG 546
3-ISL'S 6 GAS PUMPS W/MTL CANOPY
PCSta. 10+15.277
PT Sta. 10+59.649
PCSta. 10+75.082
PCCSta. 10+96.395
PT Sta. 11+34.824
C. E. HURDLE, HEIRS
DB 23, PG 425 (MAP)
DB 26, PG 517
DB 28, PG 224
DB 105, PG 761
PECAN FARMS, LLC
DB 237, PG 728
PC-5 SL 16A (PLAT)

R-2414B
PI Sta 48+39.173
Δ = 16° 23' 31.2" (LT)
L = 250.333
T = 126.027
R = 875.000

-L-
PI Sta 44+20.646
Δ = 6° 48' 08.1" (LT)
L = 296.804
T = 148.577
R = 2,500.000
SE = RC
V_{DES} = 100 KPH

-Y1-		
PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 44.373	L = 21.313	L = 38.429
T = 22.245	T = 10.658	T = 19.274
R = 250.000	R = 480.000	R = 200.000

ALL DRIVEWAYS ARE 4.8 METERS UNLESS NOTED OTHERWISE

SEE SHEET 22 FOR -L- PROFILE

5/09/08

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METRIC
5 0 10

CONST.REV.
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BEGIN GRADE -L- STA. 8+89.126
EL= 2.548

PI = 8+31.000
EL = 2.505 m
VC = 55 m
K = 48.2
V_{DES} = 90 KPH

PI = 9+89.000
EL = 2.162 m
VC = 55 m
K = 67.7
V_{DES} = 100 KPH

+0.5489%
-0.5918%
-0.5814%
+0.2208%
2.230

-L- STA. 8+89.126 EL = 2.548 (OFF 6.792 RT.)
-L- STA. 8+89.276 EL = 2.276

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 4 PLAN VIEW

-L1-

BEGIN GRADE -L1- STA. 7+12.730
EL= 1.887

END GRADE
-L1- STA. 8+59.126 EL = 2.548
-L- STA. 8+89.276 EL = 2.276 (OFF 6.792 LT.)

PI = 7+65.000
EL = 2.138 m
VC = 55 m
K = 195.7
V_{DES} = 100 KPH

PI = 8+42.000
EL = 2.291 m
VC = 60 m
K = 170.7
V_{DES} = 100 KPH

+0.4794%
+0.1987%
-0.1987%
-0.5490%

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 4 PLAN VIEW

6:40:43 AM
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2/22/2008

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METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R /W REV.

—L—

PI = 10+75.000
EL = 2.352 m
VC = 100 m
K = 269.9
V_{DES} = 100 KPH

PI = 11+88.000
EL = 2.183 m
VC = 75 m
K = 186.9
V_{DES} = 100 KPH

PI = 13+10.000
EL = 2.490 m
VC = 150 m
K = 372.6
V_{DES} = 100 KPH

2.230 2.384

+0.2209% -0.1495% -0.1495% +0.2518% +0.2518% -0.1510%

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 5 PLAN VIEW

+20 +40 +60 +80 11 +20 +40 +60 +80 12 +20 +40 +60 +80 13 +20 +40 +60 +80

—L—

PI = 14+65.000
EL = 2.256 m
VC = 120 m
K = 399.2
V_{DES} = 100 KPH

PI = 16+12.000
EL = 2.476 m
VC = 160 m
K = 462.0
V_{DES} = 100 KPH

2.384 2.241

-0.1510% +0.1497% +0.1497% -0.1967%

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 6 PLAN VIEW

+80 14 +20 +40 +60 +80 15 +20 +40 +60

5/09/08
6:41:00 AM
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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

METRIC

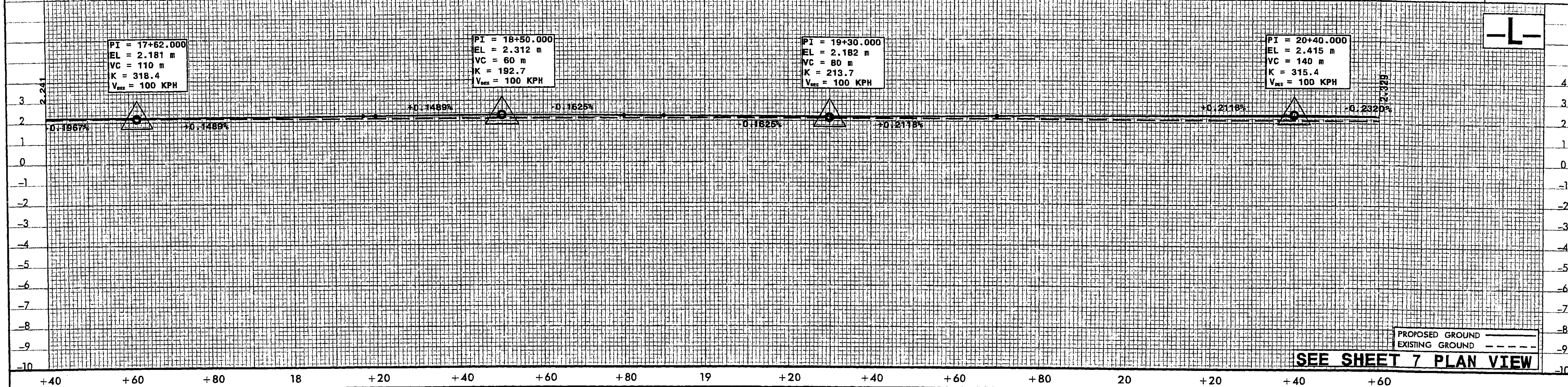
5 0 10

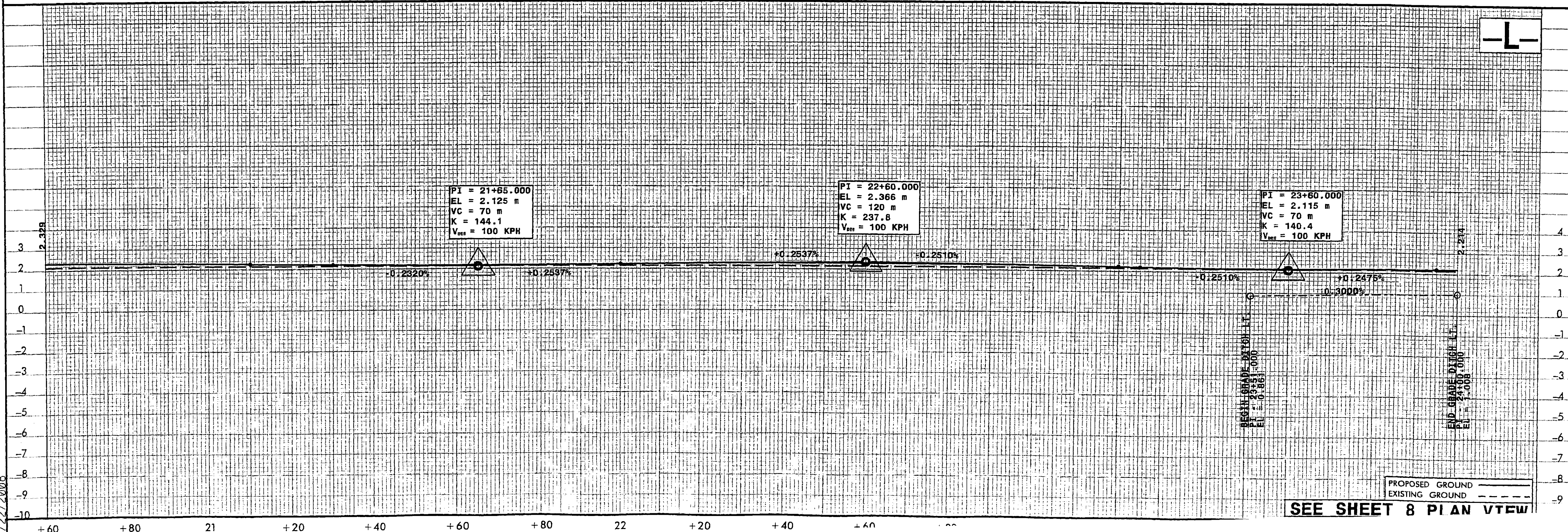
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





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5/03/99

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METRIC
5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	19

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 25+13.529
EL = 2.495 m
VC = 210 m
K = 508.8
V_{DES} = 100 KPH

PI = 26+80.000
EL = 2.220 m
VC = 60 m
K = 174.4
V_{DES} = 100 KPH

2.214

2.292

+0.2476% -0.1852% -0.1852% +0.1789%

24 +20 +40 +60 +80 25 +20 +40 +60 +80 26 +20 +40 +60 +80 27 +20

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 9 PLAN VIEW

-L-

PI = 27+70.000
EL = 2.381 m
VC = 80 m
K = 242.9
V_{DES} = 100 KPH

PI = 28+75.000
EL = 2.223 m
VC = 120 m
K = 398.6
V_{DES} = 100 KPH

PI = 30+39.000
EL = 2.470 m
VC = 70 m
K = 140.6
V_{DES} = 100 KPH

2.292

2.328

+0.1789% -0.1505% -0.1505% +0.1505% +0.1506% -0.0472%

+20 +40 +60 +80 28 +20 +40 +60 +80

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 10 PLAN VIEW

6:41:30 AM
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METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414A	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

—L—

PI = 31+45.000
EL = 2.102 m
VC = 130 m
K = 260.8
V_{DES} = 100 KPH

PI = 32+64.000
EL = 2.282 m
VC = 100 m
K = 238.4
V_{DES} = 100 KPH

PI = 33+99.000
EL = 1.920 m
VC = 120 m
K = 274.4
V_{DES} = 100 KPH

2.328

-0.8472%

+0.1513%

-0.2681%

1.996

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 11 PLAN VIEW

+80 31 +20 +40 +60 +80 32 +20 +40 +60 +80 33 +20 +40 +60 +80 34 +20 +40

—L—

PI = 36+00.000
EL = 2.260 m
VC = 110 m
K = 357.9
V_{DES} = 100 KPH

PI = 37+10.000
EL = 2.108 m
VC = 80 m
K = 271.1
V_{DES} = 100 KPH

1.996

+0.1692%

-0.1382%

-0.1382%

+0.1569%

2.248

PROPOSED GROUND
EXISTING GROUND

SEE SHEET 12 PLAN VIEW

+40 +60 +80 35 +20 +40 +60 +80 36 +20

6:41:42 AM
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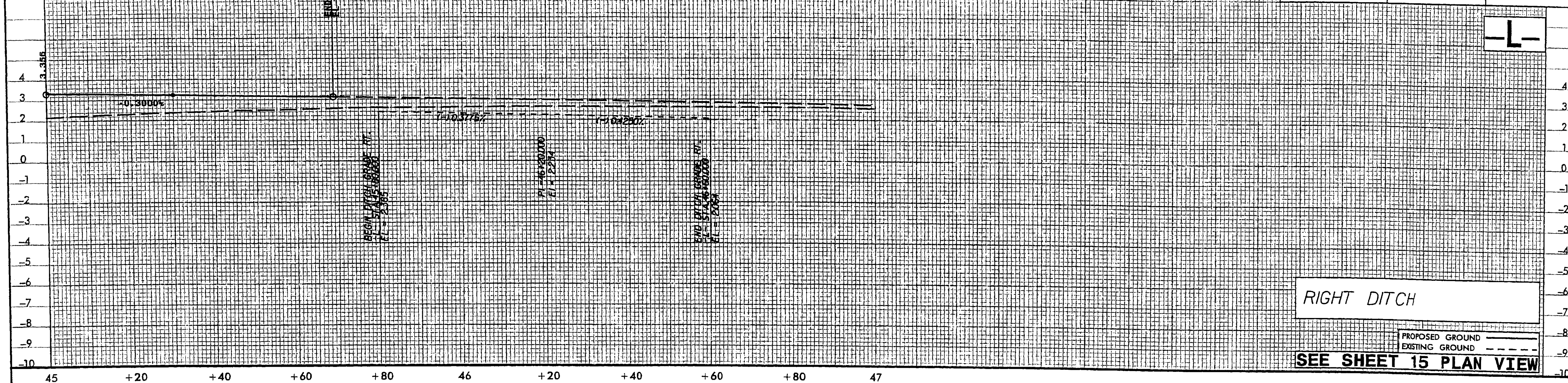
METRIC

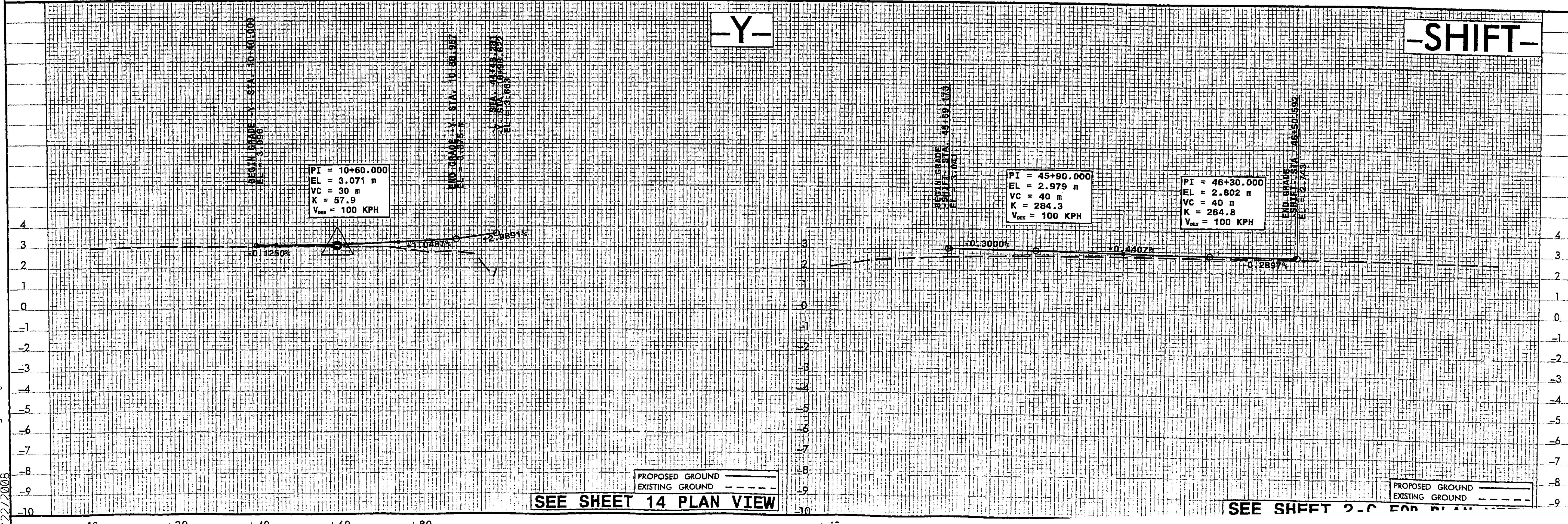
PROJECT REFERENCE NO.	SHEET NO.
R-2414A	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION


-L-
PI = 45+00.000
EL = 3.330 m
VC = 60 m
K = 174.9
V_{DES} = 100 KPH
END GRADE -L- STA. 45+68.876
PROPOSED GRADE TO BE CONSTRUCTED UNDER NCDOT PROJECT R-2414B
-0.3000%
BEGIN DITCH GRADE RT.
PI = 46+20.000
END DITCH GRADE RT.
RIGHT DITCH
PROPOSED GROUND
EXISTING GROUND
SEE SHEET 15 PLAN VIEW
45
+20
+40
+60
+80
46
+20
+40
+60
+80
47


-Y-
BEGIN GRADE -Y- STA. 10+40.000
EL = 3.096
PI = 10+60.000
EL = 3.071 m
VC = 30 m
K = 57.9
V_{DES} = 100 KPH
END GRADE -Y- STA. 10+88.987
-0.1250%
+1.0487%
+2.8891%
PROPOSED GROUND
EXISTING GROUND
SEE SHEET 14 PLAN VIEW
10
+20
+40
+60
+80
-SHIFT-
BEGIN GRADE -SHIFT- STA. 45+69.173
PI = 45+90.000
EL = 2.979 m
VC = 40 m
K = 284.3
V_{DES} = 100 KPH
PI = 46+30.000
EL = 2.802 m
VC = 40 m
K = 264.8
V_{DES} = 100 KPH
END GRADE -SHIFT- STA. 46+50.592
-0.3000%
-0.4407%
-0.2897%
PROPOSED GROUND
EXISTING GROUND

6:42:10 AM
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2/22/2008

State Project No. 8.T020401

TIP Project No. R-2414B

Camden County, NC

US 158 – NC 34 from South of SR 1257

to East of NC 34 in Belcross

STORMWATER MANAGEMENT PLAN

Prepared by:

TranSite Consulting Engineers, Inc.

3516 Bush Street, Suite 101

Raleigh, NC 27609

PROJECT INVOLVEMENT

The proposed project is 4.82 km (2.99 miles) in length and will widen existing US 158/NC 34 from a mostly two lane section with roadside ditches to a five lane facility with curb & gutter.

The proposed project contains three crossings of jurisdictional tributaries to Sawyers Creek. The three crossings are concrete box culverts that are to be removed and replaced. See Table 1 for a detailed list of the streams and proposed crossings.

Table 1. Stream Crossings

Stream Name	Drainage Area	Best Use Classification	Proposed Structure
Trib. 3	1.40 mi^2	C Sw	1 @ 8' x 6' RCBC
Trib. 2	1.57 mi^2	C Sw	2 @ 6' x 5' RCBC
Trib. 1	0.76 mi^2	C Sw	1 @ 10' x 5' RCBC

A review of the Environmental Assessment and Environmental Sensitivity Maps indicates that there are no High Quality Waters (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) within 1 mile of the project study area.

Based on the Best Use Classifications of the impacted streams and the absence of river basin buffer regulations, none of the sites listed in Table 1 require "Special Consideration".

POTENTIAL IMPACTS

While there are no river basin buffer regulations currently in place, the storm drainage systems are designed so that point source discharges are located a minimum of 50' from any jurisdictional stream or wetland where project constraints allow.

BEST MANAGEMENT PRACTICES (BMPs)

Grass swales are the primary BMP used to filter runoff and dissipate velocities in the drainage outfalls. If the swales end at a wetland boundary as opposed to at a stream, a "Ditch End" will be placed at their terminus. This detail specifies that the swale will have a minimum depth of 1', side slopes of 3:1, and a 3:1 rip rap slope up to natural ground.

Where project constraints do not allow for construction of a grass swale, runoff will be discharged into a preformed scour hole.

The stormwater impacts of this project have been minimized to the greatest extent possible through the use of grass swales and preformed scour holes.

See Table 2 for a list of the BMP types and locations.

DESIGN DETAILS

Design details for the grass swales and preformed scour holes are shown on the Roadway Design plans.

Table 2. BMP Locations

BMP	Location	Plan Sheet
Grass Swale	-L- Sta. 51+05 to 51+85 (Rt.)	5
	-L- Sta. 54+67 to 55+32 (Rt.)	6
	-L- Sta. 57+24 to 57+47 (Rt.)	7
	-L- Sta. 57+52 to 59+20 (Rt.)	7, 8
	-L- Sta. 62+75 to 62+88 (Rt.)	9
	-L- Sta. 62+84 to 63+50 (Lt.)	9
	-L- Sta. 64+94 to 65+73 (Rt.)	9
	-L- Sta. 67+80 to 68+60 (Rt.)	10
	-L- Sta. 71+65 to 72+10 (Lt.)	11
	-L- Sta. 72+25 to 72+60 (Rt.)	11
	-L- Sta. 74+40 to 75+70 (Rt.)	12
	-L- Sta. 80+60 to 81+37 (Rt.)	14
	-L- Sta. 82+17 to 82+70 (Lt.)	14
	-L- Sta. 88+25 to 88+89 (Rt.)	16
	-L- Sta. 89+35 to 89+80 (Rt.)	16
Preformed Scour Hole	-L- Sta. 51+45 (Lt.)	5

Memorandum of Meeting

Date: July 17, 2002

Location: On-Site (US 158 - NC 34, Camden Co.)

Subject: Field Meeting to Review Drainage Designs
State Project 8.T020401 (R-2414B)
F.A. Project No. STP-158(2)
US 158 – NC 34 from South of SR 1257 to East of NC 34 in Belcross

Present: Bill Moore – NC DWQ
Marshall Clawson – NCDOT Hydraulics Unit
Jamie Byrd – TranSite Consulting Engineers, Inc.

On July 16, 2002 Marshall Clawson and Jamie Byrd met Bill Moore in the field to review the project drainage designs. Also reviewed and evaluated were proposed Best Management Practice (BMP), measures and locations. The following items were discussed and conclusions reached:

General Comments

- Jamie advised that there are (8) sites with stream and/or wetland impacts that require permit drawings.

- Jamie added that each site has been evaluated and BMPs designed where site constraints permit.

Site 1

-L- Sta. 47+84L – Jamie advised that due to existing single family dwellings left of -L- and a large portion of the roadway in cut, BMP installation is not applicable at this site. After investigating the area, Bill agreed that this site is not suitable for a BMP.

Site 2

-L- Stå. 51+60L – Jamie advised that this location has been discussed as a potential mitigation site. Marshall added that PD & EA had been contacted but that they have not provided direction on this issue. Bill reviewed the proposed Stormwater Plans and was in agreement with the following proposed design revisions:

- Grass swale right of -L- from Sta. 51+05 to 51+85.
- PSH at -L- Sta. 51+45L.

Site 3

-L- Sta. 55+29R – Bill reviewed the proposed Stormwater Plans and was in agreement with the following proposed design revisions:

- Reroute drainage system outfall left of -L- Sta. 55+29.
- Grass swale right of -L- from Sta. 54+68 to 55+32.
- PSHs at -L- Sta. 55+29L, 56+00L and 59+20R.

-L- Sta. 57+52R to 59+20R – Jamie advised that if a swale could be constructed through the low quality wetland, 548' of grass swale could be created. Jamie added that this is 612' less than the length required by "DA" but that there is significant offsite drainage. Bill reviewed the proposed swale location site and was in agreement with the proposed design revision.

Site 4

-L- Sta. 63+00R to 63+50R – Jamie advised that additional grass swales right of -L- from Sta. 63+00 to Sta. 63+50 are to be evaluated. After reviewing the proposed Stormwater Plans, Bill added that additional grass swale length might be obtained by rerouting the drainage designs from -L- Sta. 64+30 to 65+73. Marshall directed Jamie to review Bill's suggestion and incorporate if feasible.

Site 5

-L- Sta. 67+00L – Jamie advised that due to existing development, grass swales could be installed. After investigating the area, Bill agreed that this location is not suitable for a BMP.

-L- Sta. 67+37L – Jamie advised that approximately 250' of grass swale could be installed if the drainage system was rerouted to outlet right of -L- Sta. 68+60 and outlet into the existing pond. Bill concurred with drainage design revision but added that the swale should be picked up and placed back in the system in stead of outletting into the pond. Marshall directed Jamie to revise the plans incorporating Bill's comments.

Site 6

-L- Sta. 72+00L – Bill reviewed the proposed Stormwater Plans and was in agreement with the following proposed design revisions:

- Parallel drainage systems left and right of -L-.
- Grass swale left of -L- from Sta. 71+65 to 72+09.
- PSHs at -L- Sta. 73+00L, 73+70L, 73+70R and 74+38R.

Site 7

-L- Sta. 82+60R – Jamie advised that this site is fill in wetlands only. After reviewing the proposed Stormwater Plans, Bill recommended that that the drainage systems right of -L- Sta. 80+60 and left of -L- Sta. 82+20 be reworked so that grass swales can be added. Marshall directed Jamie to review Bill's recommendation and incorporate if feasible.

Site 8

Jamie advised that this site was designated as a high quality (do not disturb) site early in the design process. Bill reviewed the proposed Stormwater Plans and was in agreement with the following proposed design revisions:

- Grass swale right of -L- from Sta. 88+25 to 88+89.
- Grass swale right of -L- from Sta. 89+23 to 89+80.

Subject: Minutes of the Interagency Permit Drawing Review Meeting held on October 23, 2003 for R-2414B, Camden County

Team Members:

Bill Biddlecome	USACE(PRESENT)	
John Hennessy	NCDWQ (ABSENT)	
Travis Wilson	NCDWQ (ABSENT) commented by email.	
Gary Jordan	USFWS (ABSENT)	
Chris Militscher	EPA (PRESENT)	
Michael Turchy	DOT-PD&EA (PRESENT)	
Ron Sechler	NMF (ABSENT)	
Cathy Brittingham	DCM CAMA (PRESENT)	
Bill Arrington	CAMA (ABSENT)	

Participants:			
	Jerry Beard	DOT-Hydraulics	919-250-4100
	Marshall Clawson	DOT-Hydraulics	919-250-4100
	Karen Taylor	DOT-PDEA	919-733-7844 ext 223
	Tyler Stanton	DOT-PDEA	919-715-1439
	Lindsey Riddick	DOT-PDEA	919-715-1459
	Jamie Byrd	TranSite	919-873-2401
	Anne Gamber	DOT-Hydraulics	919-250-4100

The meeting started at 11:00 am. The question of a valid concurrency for point 4A was addressed. Af the meeting Mr. Bill Biddlecome sent the following email:

For those not in attendance at the October 23, 2003, permit drawing review, and those that were, the question was brought up whether or not a Concurrence Point 4A (avoidance and minimization) meeting was held regarding this project. It was decided one hadn't but Karen Taylor advised that she had discussed these issues with Mike Bell. Since I was unfamiliar with the past history of the project except for a wetland delineation confirmation, we decided I would discuss it with Mike and decide at that point the direction we needed to take concerning the matter. I was familiar through discussions with Lindsey Riddick on site that minimization and avoidance issues had been addressed for the "B" portion of this project. I talked with Mike and also found another file that contained information for R-2414. Mike agreed that avoidance and minimization efforts had been made for this widening project. I also discussed the matter with Karen by telephone today and she advised me that she thought the Permit Drawing Review meeting was a bit premature. She also advised me of the problems they were having with the project because the A and B sections of the project were being handled by different consultants and the firm doing section A is no longer working on the project. As a result, section B of this project is way ahead of section A. She is waiting on design to come up with a plan for A so she can present it to the public again because of changes that were made to alignments. We agreed that once it goes out to the public for review, she'll write up a letter outlining the avoidance and minimization for the project. At that point, we'll (the team) decide whether a 4A meeting is needed or if we can do it by e-mail etc. Karen: If this isn't the way you tried explaining it to me,

please comment. Team: If anyone has a better idea how to handle this, please call me and we can discuss. Thanks!

Issues to consider if we are to proceed from this point:

Site 1: No impacts

Site 2 Plan Sheet 5: Both sides of the proposed road will result in impacts to the wetlands. Consider mitigation. The velocity at the outlet of the 750mm pipe should be investigated.

Site 3 Plan Sheet 6: The construction sequence has not been finalized. The proposed swale is similar to the existing swale.

Site 4 Plan Sheet 9: no comment

Site 5 Plan Sheet 10: The wetlands area is a breached man-made pond.

Site 6 Plan Sheets 11 and 12: Nearby old borrow pit is now being developed as a mitigation site.

Site 7 Plan Sheet 14: no comment

Site 8 Plan Sheet 16: Upstream invert is not buried, but is below normal water surface.

It was noted that minimization for high quality wetlands was accomplished with roadway realignment.

Meeting adjourned at 11:30am.

Subject: Minutes of the Interagency Permit Drawing Review Meeting held on December 1, 2003 for R-2414B, Camden County

Team Members:

	John Hennessy	NCDWQ (Present)	
Participants:	David Chang	DOT-Hydraulics	919-250-4100
	Marshall Clawson	DOT-Hydraulics	919-250-4100
	Galen Cail	DOT-Hydraulics	919-250-4100

John questioned the use of preformed scour holes (psh) in wetlands versus just using the standard rip rap outlet pad. The outlet pad may be less intrusive to the wetlands. John

requested we contact Bill Biddlecome for his opinion. Go with rip rap pad if Bill is not opposed.

Bill was contacted and said he was OK using an rip rap outlet pad.

Site 2:

John wanted to know if outlet velocity into the wetlands is non-erosive. Marshall stated the area between the roadway and railroad is a gore area. The pipe outlets onto a rip rap pad and spreads out in the gore area. OK.

Site 5:

John wanted to know if outlet velocity into the wetlands is non-erosive. Marshall stated the pipe outlets onto a rip rap pad and spreads out. OK.

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS			
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp (ft)
1	-L- 47+83 LT / 47+94 RT	1 @ 30" RCP					0.01				
2	-L- 51+60 LT / 51+95 RT	1 @ 30" RCP	0.09				0.05				
3	-L- 55+12 LT / 56+49 RT	1 @ 8' x 6' RCBC	0.65				0.26	0.04	0.01	121	29
	-L- 57+44 / 59+45 RT	-	0.30		0.09						
4	-L- 62+65 LT / 62+94 RT	1 @ 24"RCP	0.06				0.04				
5	-L- 67+19 LT / 67+70 RT	1 @ 30"RCP	0.08				0.06				
6	-L- 72+48 LT / 74+48 RT	2 @ 6' x 5' RCBC	0.85		0.01		0.37	0.05	0.01	92	21
Old SITE 7	-L- 82+23 / 82+43 RT	SITE DELETED									
7	-L- 88+60 / 89+28 LT	1 @ 10' x 5' RCBC	0.38				0.16	0.02	0.01	83	19
TOTALS:			2.42		0.10		0.95	0.11	0.03	297	69

0.22 Ac of Temporary Fill in Wetlands in the Hand Clearing areas for erosion control measures.

Permit Drawing
Sheet 1 of 38

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT 8.T020401 (R-2414B)
US 158 - NC 34 WIDENING

SHEET June-08

JMD Revised 2/03/05

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ha)	Temp. Fill In Wetlands (ha)	Excavation in Wetlands (ha)	Mechanized Clearing in Wetlands (ha)	Hand Clearing in Wetlands (ha)	Permanent SW impacts (ha)	Temp. SW impacts (ha)	Existing Channel Impacts Permanent (m)	Existing Channel Impacts Temp. (m)	Natural Stream Design (m)
1	-L- 47+83 LT / 47+94 RT	1 @ 750 RCP					0.003					
2	-L- 51+60 LT / 51+95 RT	1 @ 750 RCP	0.036				0.020					
3	-L- 55+12 LT / 56+49 RT	1 @ 2.4m x 1.8m RCBC	0.265				0.106	0.016	0.003	37.0	8.8	
	-L- 57+44 RT / 59+45 RT	-	0.120		0.038							
4	-L- 62+65 LT / 62+94 RT	1 @ 600 RCP	0.026				0.017					
5	-L- 67+19 LT / 67+70 RT	1 @ 750 RCP	0.032				0.024					
6	-L- 72+48 LT / 74+48 RT	2 @ 1.8m x 1.5m RCBC	0.345		0.003		0.151	0.022	0.004	28.0	6.5	
Old Site 7	-L- 82+43 / 82+83 RT	SITE DELETED										
7	-L- 88+60L / 89+28L	1 @ 3.0m x 1.5m RCBC	0.154				0.064	0.008	0.004	25.4	5.7	
TOTALS:			0.978		0.041		0.385	0.046	0.011	90.4	21.0	

0.087 Ha of Temporary Fill in Wetlands in the Hand Clearing areas for erosion control measures.

Permit Drawing
Sheet 2 of 38

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY
PROJECT 8.T020401 (R-2414B)
US 158 - NC 34 WIDENING

SHEET June-08

JMD Revised 2/03/05

Project No. 8.T020401 (R-2414B)

Property Owner List

Site NO.	Property NO.	Name DB and Pg	Address
1	(5)	Pecan Farms LLC DB 237 PG 728	203 Dogwood Tr. Elizabeth City NC 27909
2	(16)	Linda Sue Lamb Hinton WB 99E, PG 22	135 Cottonwood Dr Hertford NC 27944
	(14)	Fred E. Upton, Jr., ET UX DB 42, Pg 615 DB 111, Pg 278	165 US 158 West Camden NC 27921
	(13)	Fred E. Upton, Heirs DB 22, Pg 468 DB 111, Pg 401	165 US 158 West Camden NC 27921
3	(23)	A & S Properties, LLC DB 157, Pg 769	913 Business Park Drive Chesapeake VA 23320
	(24)	Blue Sky Developments DB 138, Pg 109 PC-3, CL 77-B (PLAT)	300 Bridge Court #101 Camden NC 27921
	(22)	Ricky and Sheila Edwards DB 142, Pg 536	PO BOX 336 Shiloh NC 27974
	(25)	Camden County Board of Education DB 31, Pg 419 MB 18, Pg 551A DB 35, Pg 511 DB 62, Pg 15 DB 83, Pg 451	174 North 343 Camden NC 27921

(continued)

Permit Drawing
Sheet 3 of 38

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY

PROJECT: 8.T020401 (R-2414B)
US 158 - NC 34 WIDENING

Project No. 8.T020401 (R-2414B)

Property Owner List

Site NO.	Property NO.	Name DB and Pg	Address
4	(32)	Mary M. Gordon DB 95, Pg 491 DB 116, Pg 890	104 North 343 Camden NC 27921
	(34)	Glen D. Gordon, ET UX DB 94, Pg 280 DB 83, Pg 679 DB 128, Pg 504 DB 87, Pg 181 (Post Office Lease) DB 132, Pg 160 (Store Leased)	128 Billet S. Bridge Rd Camden NC 27921
5	(32)	Mary M. Gordon DB 46, Pg 316A	104 North 343 Camden NC 27921
	(39)	TIDEWATER Agronomics	1601 N. Road St. Elizabeth City NC 27909
	(38)	Everything Real Estate LLC	PO Box 310 Camden NC 27921
	(36)	George Wood Farms, Inc. DB 115, Pg 607 DB 115, Pg 621	PO Box 159 Camden NC 29721
6	(36)	George Wood Farms, Inc. DB 115, Pg 607 DB 115, Pg 621	PO BOX 159 Camden NC 29721
	(43)	Albemarle Hospital, ET AL DB 120, Pg 372 DB 113, Pg 670 (MAP)	1144 North Road St. Elizabeth City NC 27909
	(42)	James Roebuck + Elliot W. Jacobs	PO BOX 1554 Elizabeth City NC 27906

(continued)

Permit Drawing
Sheet 4 of 38

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY

PROJECT: 8.T020401 (R-2414B)
US 158 - NC 34 WIDENING

SHEET ___ OF ___ **9/15/05**

REVISED 2/20/08

Project No. 8.T020401 (R-2414B)

Property Owner List

Site NO.	Property NO.	Name DB and Pg	Address
6 (Cont.)	16A	Norfolk Southern Railway Co. (Leased to Chesapeake & Albemarle R/R Co)	3 Commercial Place Norfolk VA 23510
	44	Brown Farms, Inc. DB 64, Pg 191 DB 54, Pg 175 (MAP)	343 North 34 Camden NC 27921
	45	Belcross Properties LLC	PO BOX 26 Camden NC 27921
8	73	Doris H. Harris DB 33, Pg 604 PC 1, SL 15A	265 East US 158 Camden NC 27921
	74	W. W. Owens + Sons Moving + Storage, Inc	PO BOX 503 Elizabeth City NC 27909
	71	Joesph O. Sawyer, ET UX DB 95, Pg 360 PC 1, Pg 12A	640 North 343 Camden NC 29721
	75	Linda S. Demuth, ET AL DB 119, Pg 930	Wilhelmshoch 27A Forchheim GR 91301
	72	W.W. Owens & Sons Moving & Storage, Inc. DB 81, Pg 700	PO Box 503 Elizabeth City NC 27909
	76	Horace Melville Cuthrell, Jr., ET UX DB 78, Pg 809 PC 1, 163A	109 North 343 Camden NC 27921
	77	Wallace G. Cahoon DB 79, Pg 413 PC 1, SL 1A	1540 Cedar Road Chesapeake VA 23320

Permit Drawing
Sheet 5 of 38

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CAMDEN COUNTY

PROJECT: 8.T020401 (R-2414B)
US 158 - NC 34 WIDENING

SHEET ___ OF ___ 9/15/08

TIP PROJECT: R-2414B

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

LOCATION: US 158–NC 34 FROM NORTH OF SR 1257
TO EAST OF NC 34 IN BELCROSS

TYPE OF WORK: GRADING, DRAINAGE, PAVING,
CURB & GUTTER, CULVERTS & SIGNALS

METRIC

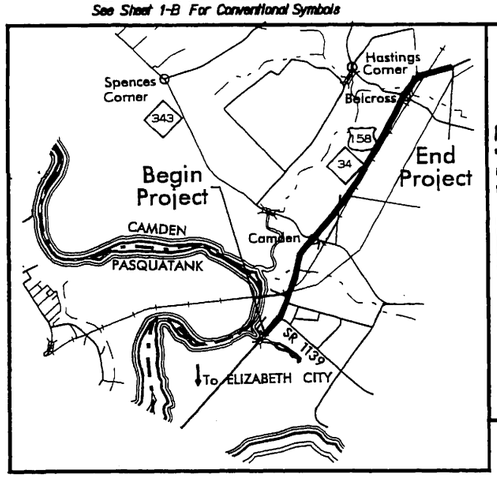
ALL DIMENSIONS IN THESE PLANS ARE IN METERS UNLESS OTHERWISE SHOWN

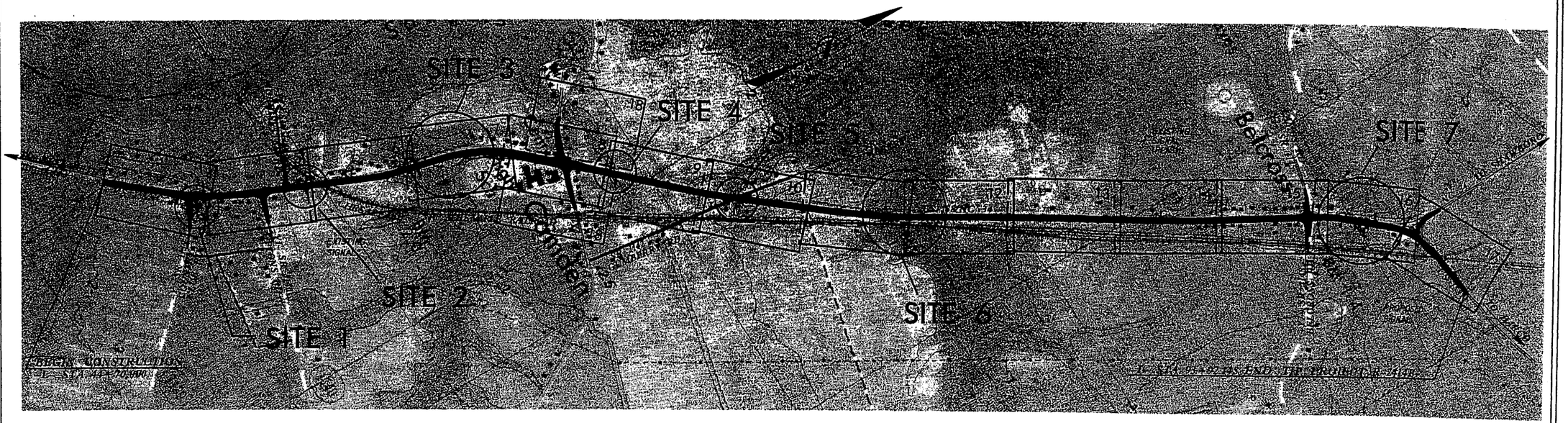
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2414B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34430.1.1	STP-158(2)	PE
34430.2.5		ROW & UTILITIES

Permit Drawing
Sheet 6 of 38

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





THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT (2009) = 26,000
ADT (2029) = 41,500
DHV = 12%
D = 60%
T = 6% *
V = 80 km/h
* (TTST 2% + DUAL 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414B =	4.823 Km
TOTAL LENGTH TIP PROJECT R-2414B =	4.823 Km

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 15, 2006
LETTING DATE:
NOVEMBER 17, 2009

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: B. DOUG TAYLOR, PE
ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: ____________ *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: ____________ *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

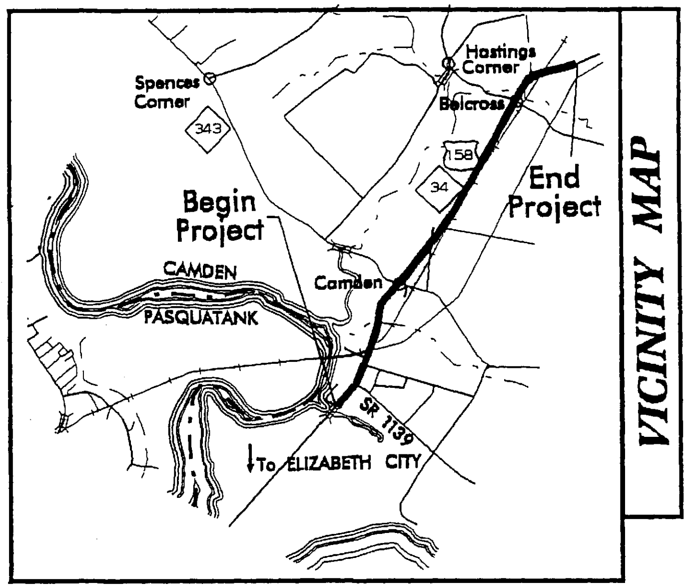
____________ *P.E.*
STATE HIGHWAY DESIGN ENGINEER

16-JUN-2008 15:27
r:\drainage\permit\r-2414b_prm_tsh.dgn

TIP PROJECT: R-2414B

CONTRACT:

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

LOCATION: *US 158–NC 34 FROM NORTH OF SR 1257 TO EAST OF NC 34 IN BELCROSS*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, CURB & GUTTER, CULVERTS & SIGNALS*

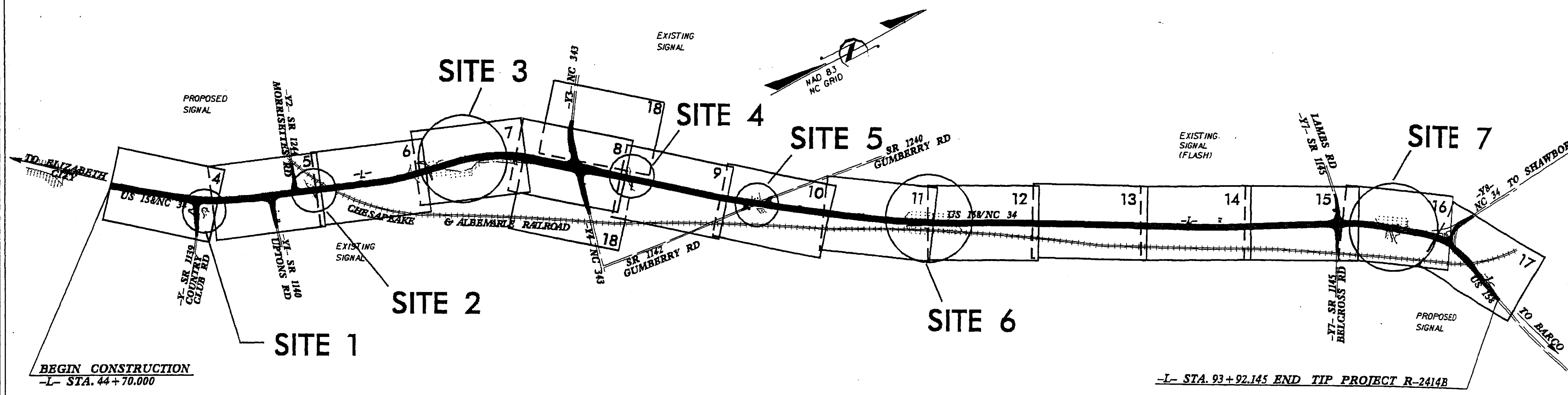
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2414B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34430.1.1	STP-158(2)	PE
34430.2.5		ROW & UTILITIES

Permit Drawing
Sheet 7 of 38.



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT (2009) = 26,000
ADT (2029) = 41,500
DHV = 12%
D = 60%
T = 6% *
V = 80 km/h
* (TTST 2% + DUAL 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2414B = 4.823 Km
TOTAL LENGTH TIP PROJECT R-2414B = 4.823 Km

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 15, 2006

LETTING DATE:
NOVEMBER 17, 2009

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: B. DOUG TAYLOR, PE
ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY DESIGN ENGINEER P.E.

16-JUN-2008 11:03
r:\drainage\permits\r2414b_prm_tsh.dgn

REVISIONS

R/W REVISION - REVISED R/W ALONG -L- & -Y- TO SHOW BEING ACQUIRED UNDER NCDOT PROJECT R-2414A. BAM
R/W REVISION - ADDED PARCEL NO.5A & REVISED THE PROPERTY OWNER NAME ON PARCEL NO.5.BAM

Wetherill Engineering — Transportation Planning/Design - Bridge/Structure Design - Civil/Site Design - GIS/GPS - Construction Observation

TranSite Consulting Engineers, Incorporated, 3300 Pencock Drive, Suite G-10, Raleigh, N.C. 27609

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

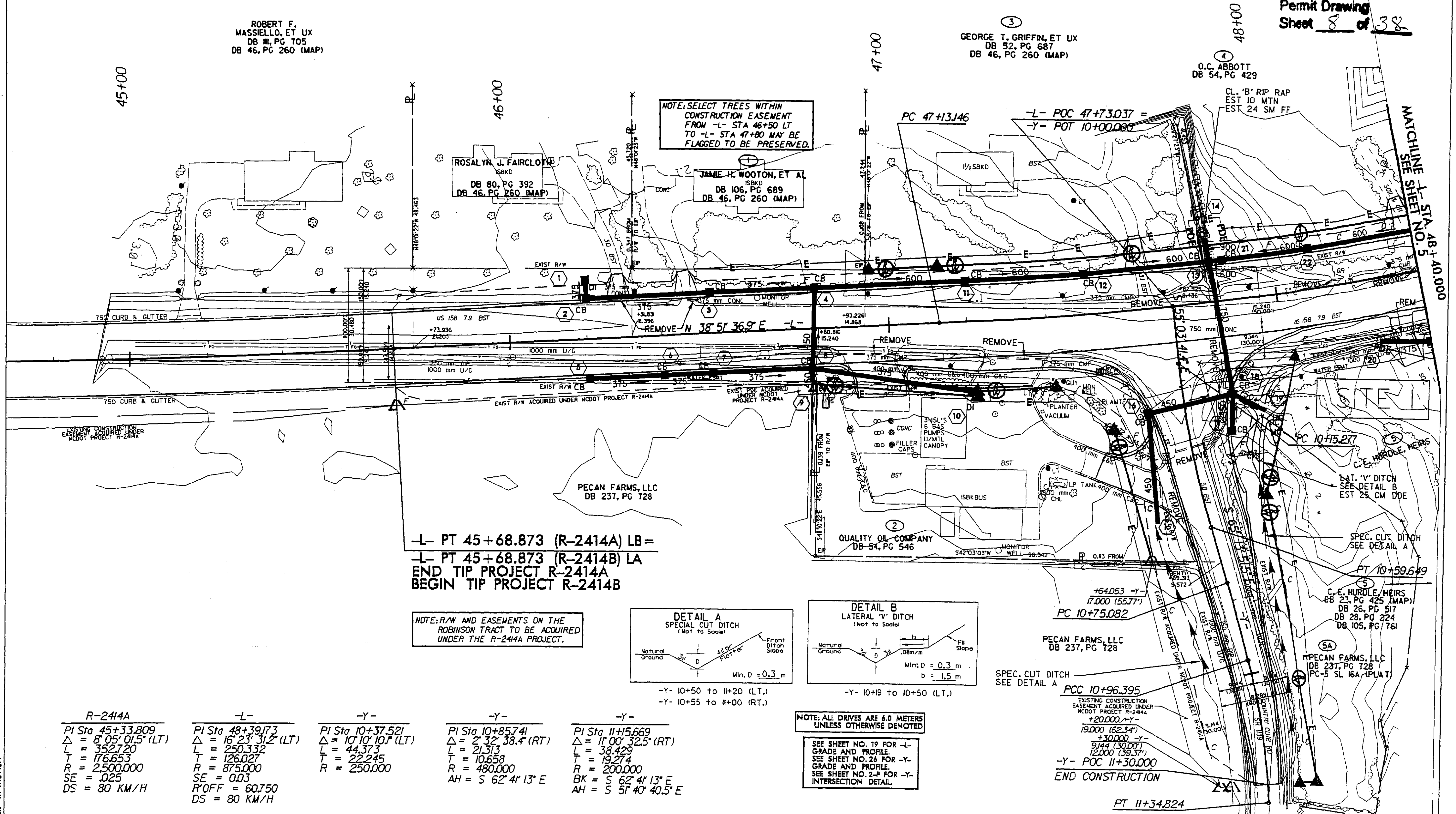
CONST.REV.

R/W REV.

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

Permit Drawing Sheet 8 of 38

HC HC DENOTES HAND CLEARING



-L- PT 45+68.873 (R-2414A) LB=
-L- PT 45+68.873 (R-2414B) LA
END TIP PROJECT R-2414A
BEGIN TIP PROJECT R-2414B

NOTE: R/W AND EASEMENTS ON THE ROBINSON TRACT TO BE ACQUIRED UNDER THE R-2414A PROJECT.

DETAIL A
SPECIAL CUT DITCH (Not to Scale)

Natural Ground — 3:1 — D — 6:1 or Flatter — Front Ditch Slope

Min. D = 0.3 m

-Y- 10+50 to 11+20 (LT.)
-Y- 10+55 to 11+00 (RT.)

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

Natural Ground — 3:1 — D — 3:1 — b — .08m/m — Fill Slope

Min. D = 0.3 m
b = 1.5 m

-Y- 10+19 to 10+50 (LT.)

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y- GRADE AND PROFILE.
SEE SHEET NO. 2-F FOR -Y- INTERSECTION DETAIL.

R-2414A	-L-	-Y-	-Y-	-Y-
PI Sta 45+33.809	PI Sta 48+39.173	PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 8° 05' 01.5" (LT)	Δ = 16° 23' 31.2" (LT)	Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 352.720	L = 250.332	L = 44.373	L = 21.313	L = 38.429
T = 176.653	T = 126.027	T = 22.245	T = 10.658	T = 19.274
R = 2,500.000	R = 875.000	R = 250.000	R = 480.000	R = 200.000
SE = .025	SE = 0.03		AH = S 62° 41' 13" E	BK = S 62° 41' 13" E
DS = 80 KM/H	R'OFF = 60.750			AH = S 51° 40' 40.5" E
	DS = 80 KM/H			

REVISIONS

R/W REVISION - REVISED R/W ALONG -L- & -Y- TO SHOW BEING ACQUIRED UNDER NCDOT PROJECT R-2414A. BAM

R/W REVISION - ADDED PARCEL NO.5A & REVISED THE PROPERTY OWNER NAME ON PARCEL NO.5. BAM

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING

TRANSITE CONSULTING ENGINEERS, INCORPORATED

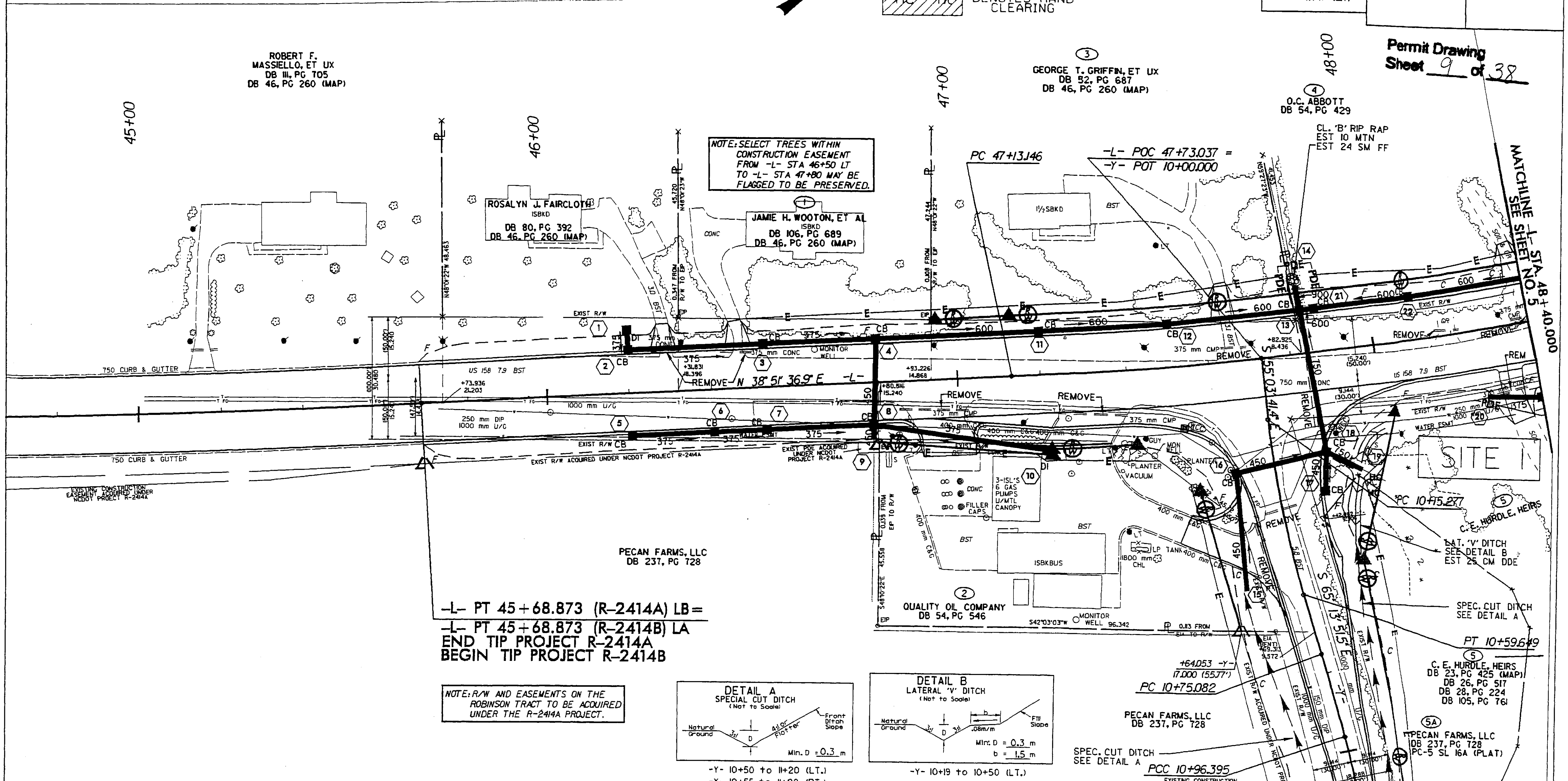
METRIC

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 9 of 38



HC HC DENOTES HAND CLEARING
ROBERT F. MASSIELLO, ET UX
DB 111, PG 705
DB 46, PG 260 (MAP)
45+00
46+00
47+00
48+00
ROSALYN J. FAIRCLOTH
DB 80, PG 392
DB 46, PG 260 (MAP)
JAMIE H. WOOTON, ET AL
DB 106, PG 689
DB 46, PG 260 (MAP)
NOTE: SELECT TREES WITHIN CONSTRUCTION EASEMENT FROM -L- STA 46+50 LT TO -L- STA 47+80 MAY BE FLAGGED TO BE PRESERVED.
GEORGE T. GRIFFIN, ET UX
DB 52, PG 687
DB 46, PG 260 (MAP)
O.C. ABBOTT
DB 54, PG 429
CL. 'B' RIP RAP
EST 10 MTN
EST 24 SM FF
PC 47+13.146
-L- POC 47+73.037 =
-Y- POT 10+00.000
MATCHLINE -L- STA. 48+40.000
SEE SHEET NO. 5
N 38° 51' 36.9" E
US 158 7.9 BST
750 CURB & GUTTER
1000 mm U/G
250 mm DIP
EXIST R/W ACQUIRED UNDER NCDOT PROJECT R-2414A
EXISTING CONSTRUCTION EASEMENT ACQUIRED UNDER NCDOT PROJECT R-2414A
SITE 1
PC 10+15.277
C. E. HURDLE, HEIRS
LAT. 'V' DITCH
SEE DETAIL B
EST 25 CM DDE
SPEC. CUT DITCH
SEE DETAIL A
PT 10+59.649
PECAN FARMS, LLC
DB 237, PG 728
QUALITY OIL COMPANY
DB 54, PG 546
-L- PT 45+68.873 (R-2414A) LB=
-L- PT 45+68.873 (R-2414B) LA
END TIP PROJECT R-2414A
BEGIN TIP PROJECT R-2414B
NOTE: R/W AND EASEMENTS ON THE ROBINSON TRACT TO BE ACQUIRED UNDER THE R-2414A PROJECT.
DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 0.3 m
-Y- 10+50 to 11+20 (LT.)
-Y- 10+55 to 11+00 (RT.)
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 0.3 m
b = 1.5 m
-Y- 10+19 to 10+50 (LT.)
+64.053 -Y-
17.000 (55.77')
PC 10+75.082
C. E. HURDLE, HEIRS
DB 23, PG 425 (MAP)
DB 26, PG 517
DB 28, PG 224
DB 105, PG 761
PECAN FARMS, LLC
DB 237, PG 728
PC-5 SL 16A (PLAT)
SPEC. CUT DITCH
SEE DETAIL A
PCC 10+96.395
EXISTING CONSTRUCTION EASEMENT ACQUIRED UNDER NCDOT PROJECT R-2414A
+20.000 -Y-
19.000 (62.34')
+30.000 -Y-
9.144 (30.00')
12.000 (39.37')
-Y- POC 11+30.000
END CONSTRUCTION
PT 11+34.824
COUNTRY CLUB RD
SR 1139

R-2414A	-L-	-Y-	-Y-	-Y-
PI Sta 45+33.809	PI Sta 48+39.173	PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 8° 05' 01.5" (LT)	Δ = 16° 23' 31.2" (LT)	Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 352.720	L = 250.332	L = 44.373	L = 21.313	L = 38.429
T = 176.653	T = 126.027	T = 22.245	T = 10.658	T = 19.274
R = 2,500.000	R = 875.000	R = 250.000	R = 480.000	R = 200.000
SE = .025	SE = 0.03		AH = S 62° 41' 13" E	BK = S 62° 41' 13" E
DS = 80 KM/H	R'OFF = 60.750			AH = S 51° 40' 40.5" E
	DS = 80 KM/H			

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y- GRADE AND PROFILE.
SEE SHEET NO. 2-F FOR -Y- INTERSECTION DETAIL.

20-JUN-2008 14:06

Permit Drawing
Sheet 10 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-124

2.5 0 2.5 5 METRIC

50 40 30 20 10 0 10 20 30 40 50

0.006 0.010 2.00% 2.00%

3:1 1.502 2.02 0.867 3:1

10+60.00

SITE 1

R/W

WETLAND

HE

0.025 0.025 2.00% 2.00%

3:1 +10% +3% 3:1

1.248 2.04

10+40.00

0.016 0.006 2.00% 2.00%

3:1 3:1

1.204 2.25 2.31

10+20.00

2.25

10+00.00

—Y—

Permit Drawing
Sheet 11 of 38

REVISIONS
R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.5,7,8,9,13,15 & 17. ADDED PARCEL NO.16A. BAM
R/W REVISION - ADDED PARCEL NO.7B & PROPERTY OWNER NAME. BAM

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING

STEVENS MILL ENGINEERING — TRANSPORTATION PLANNING/DESIGN - GRADE/STRUCTURE DESIGN - ON/SITE DESIGN - SURVEYS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING ENGINEERS, INCORPORATED, 1300 Paddock Drive, Suite G-10, Raleigh, N.C. 27609

METRIC 5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

NAD 83 NC GRID

SEE SHEET NO. 4

MATCHLINE -L- STA. 48+40.000

SEE SHEET NO. 6

MATCHLINE -L- STA. 52+00.000

-L- POT 50+30.377 = -Y1- POT 10+00.000

PT 49+63.478

-Y2- PC 10+12.000 BEGIN CONSTRUCTION

-Y2- POT 10+00.000

PT 10+34.866

-L- POT 51+24.328 = -Y2- POT 11+14.842

-Y1- PT 11+15.000 END CONSTRUCTION

-L- PI Sta 48+39.173
△ = 16° 23' 31.2" (LT)
L = 250.332
T = 126.027
R = 875.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

-Y2- PI Sta 10+23.435
△ = 2° 37' 12.8" (LT)
L = 22.866
T = 11.435
R = 500.000
SE = EX.

(4) O.C. ABBOTT, DB 54, PG 429

(5) C. E. HURDLE, HEIRS, DB 26, PG 517; DB 28, PG 224; DB 23, PG 425 (MAP); DB 105, PG 761

(6) THE BANK OF CURRITUCK, DB 66, PG 105

(7) TERRY CHAMBERLAIN, DB 239, PG 578; DB 161, PG 402 (PLAT)

DORIS R. RODGERS, ET AL, DB 111, PG 659

(7A) ROBERT & BRENDA ALBURY, DB 161, PG 396; DB 161, PG 398 (PLAT)

(8) BONNEY, OWNES, & TWIFORD, LLC, DB 229, PG 22

(9) DORIS RODGERS & HILDA GARRETT, DB 130, PG 317; DB 130, PG 319 (PLAT)

(9A) ANNIE B. WRIGHT, HEIRS, DB 35, PG 230; DB 28, PG 549

(10) KEITH DANIEL WARD, ET UX, DB 111, PG 385; DB 23, PG 425 (MAP)

(11) ROBERT F. ALBURY, ET UX, DB 87, PG 003

(12) ANTHONY WOODDISSE, ET UX, DB 91, PG 928; DB 92, PG 223; DB 89, PG 239 (MAP)

(13) FRED E. UPTON, HEIRS, DB 22, PG 468; DB 111, PG 401

(14) FRED E. UPTON, JR., ET UX, DB 42, PG 615; DB 111, PG 278

(15) CAMDEN SALES & SERVICE, DB 85, PG 520

(16) LINDA SUE LAMB HINTON, WB 99E, PG 22

(16A) NORFOLK SOUTHERN RAILWAY CO (LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

(17) LARRY LAMB, WB 99E, PG 22

POWER LINE EASEMENT NORTH CAROLINA POWER (VEPCO) DB 31, PG 439 DB 59, PG 677

DETAIL A — SPECIAL CUT DITCH (Not to Scale): Natural Ground, 3:1, D, 4:1 or flatter, Front grain Slope; Min. D = 0.3m

DETAIL B — LATERAL 'V' DITCH (Not to Scale): Natural Ground, 3:1, D, 3:1, b, .08m/m, Fill Slope; Min. D = 0.3 m, b = 1.5 m

DETAIL C — BASE DITCH (Not to Scale): Natural Ground, 3:1, D, 3:1, Natural Ground, B; Min. D = 0.3m, B = .45m

DETAIL N — LATERAL BASE DITCH (Not to Scale): Natural Ground, 3:1, D, 3:1, b, .08m/m, Fill Slope, B; Min. D = 0.3m, B = 0.6m, b = 0.9m

DETAIL F — 'V' DITCH (Not to Scale): Natural Ground, 3:1, D, 3:1, Natural Ground; Min. D = 0.3 m

-Y1- 10+60 to 11+00 (LT.)
-Y1- 10+60 to 11+00 (RT.)
-Y2- 10+40 to 10+80 (RT.)
-L- 49+71 (RT.)
-L- 51+05 to 51+85 (RT.)
-Y2- 10+26 (LT.)

'Y' DITCH SEE DETAIL F So=0.300% CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF

LAT. 'V' DITCH SEE DETAIL B EST 65 CM DDE

CL. 'A' RIP RAP EST 6 MTN EST 14.2 SM FF Q10=0.65 cms (23cfs) V10=2.4m/s (7.9fps)

0.45m BASE DITCH SEE DETAIL C EST 5 CM DDE So = 4.31%

0.6m LAT. BASE DITCH SEE DETAIL N EST 10 CM DDE

CL. 'B' RIP RAP EST 5 MTN EST 12 SM FF

GRASS SWALE
DA= 2.62ac
Lsw= 263'
Se= 0.0020
Ss= 3.3
Q2= 5.07cfs
V2= 0.89fps
Q10= 7.70cfs
V10= 0.94fps

SITE 2

SPEC. CUT DITCH SEE DETAIL A

TIE TO EXISTING

NOTE: EXISTING SEPTIC SYSTEM "DO NOT DISTURB"

ISBKBUS — ISMTLBUS — 1/2SBK BUS — 1/2SFD — ISFD — 2SFD

375x375x375 TEE

REMOVE — REMOVE H.W.

PLUG

GRADE TO DRAIN

8.5 CONC REMOVE

SOIL & GR

ARBOR

MONITOR WELL

WATER ESMT

EXIST R/W

US 158 7.9 BST

US 158 11.3 BST

SR 1244 MORRISETTES RD

SR 1140 UPTONS RD

N 22°28'05.7" E

S 73° 01' 44.2" E

S 22° 30' 31.3" E

S 67° 29' 10.4" E

Y2- 9.586 (31.78')
21.000 (68.88')
Y2+30.000 12.000 (39.37')
29.000 (95.14')
Y2+123.000

Permit Drawing
Sheet 12 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST.REV.

R/W REV.

6/10/99

REVISIONS

R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.5,7,8,9,13,15 & 17. ADDED PARCEL NO.16A. BAM

R/W REVISION - ADDED PARCEL NO.7B & PROPERTY OWNER NAME. BAM

F / F DENOTES FILL IN WETLAND

HC / HC DENOTES HAND CLEARING

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
4:1 or Flatter
Front Ditch Slope
Min. D = 0.3 m

-Y1- 10+60 to 11+00 (LT.)
-Y1- 10+60 to 11+00 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
b
.08m/m
Fill Slope
Min. D = 0.3 m
b = 1.5 m

-Y2- 10+40 to 10+80 (RT.)

DETAIL C
BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
B
Natural Ground
Min. D = 0.3 m
B = .45 m

-L- 49+71 (RT.)

DETAIL N
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
B
b
.08m/m
Fill Slope
Min. D = 0.3 m
B = 0.6 m
b = 0.9 m

-L- 51+05 to 51+85 (RT.)

DETAIL F
'V' DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
Natural Ground
Min. D = 0.3 m

-Y2- 10+26 (LT.)

GRASS SWALE
DA= 2.62ac
Lsw= 263'
Se= 0.0020
SS= 3.3
Q2= 6.07cfs
V2= 0.89fps
Q10= 7.70cfs
V10= 0.94fps

-L-
PI Sta 48+39.173
Δ = 16°23' 31.2" (LT)
L = 250.332
T = 126.027
R = 875.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

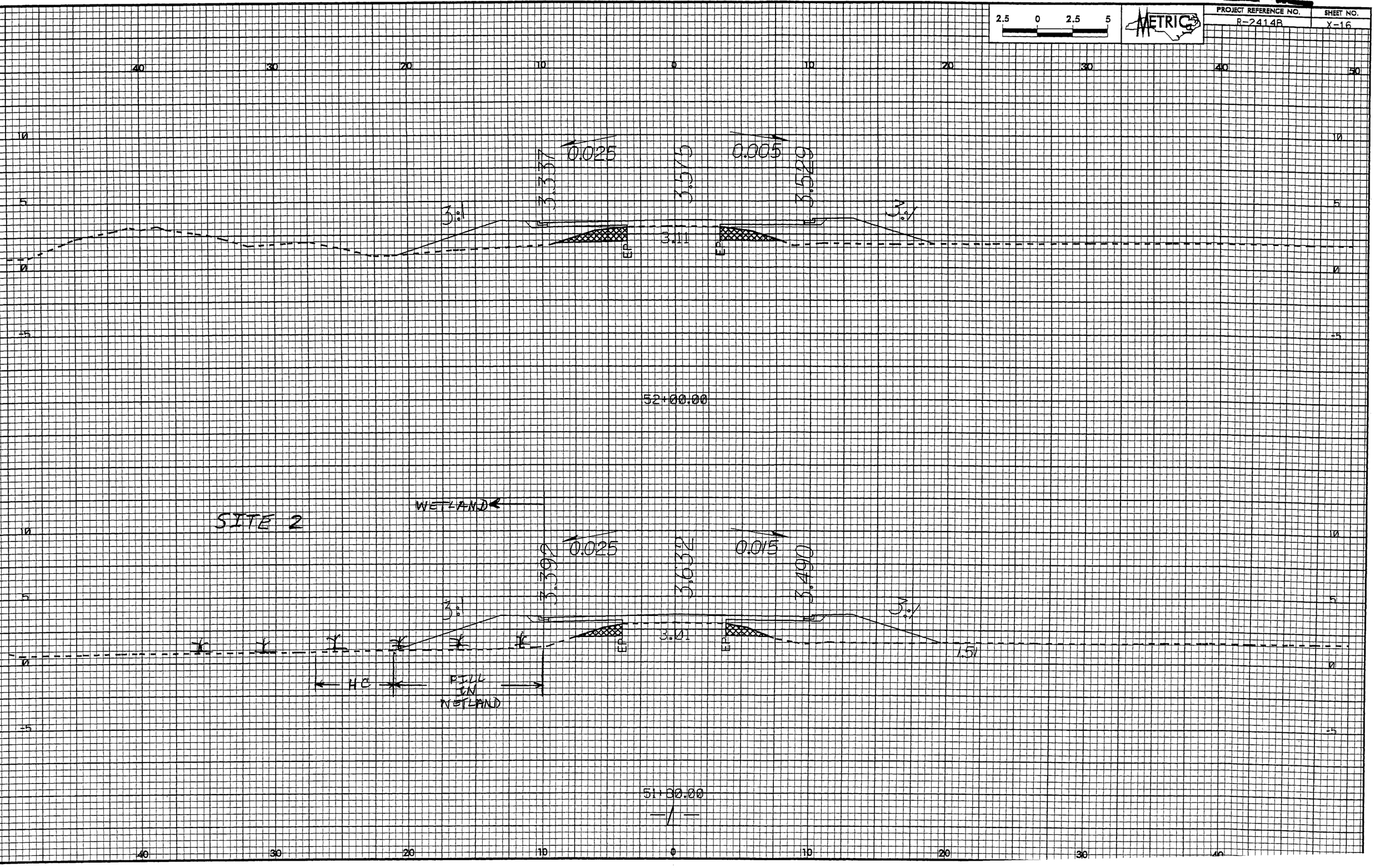
-Y2-
PI Sta 10+23.435
Δ = 2°37' 12.8" (LT)
L = 22.866
T = 11.435
R = 500.000
SE = EX.

18-JUN-2008 09:43

Permit Drawing
Sheet 13 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-16

2.5 0 2.5 5 METRIC



Permit Drawing
Sheet 14 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

METRIC

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609

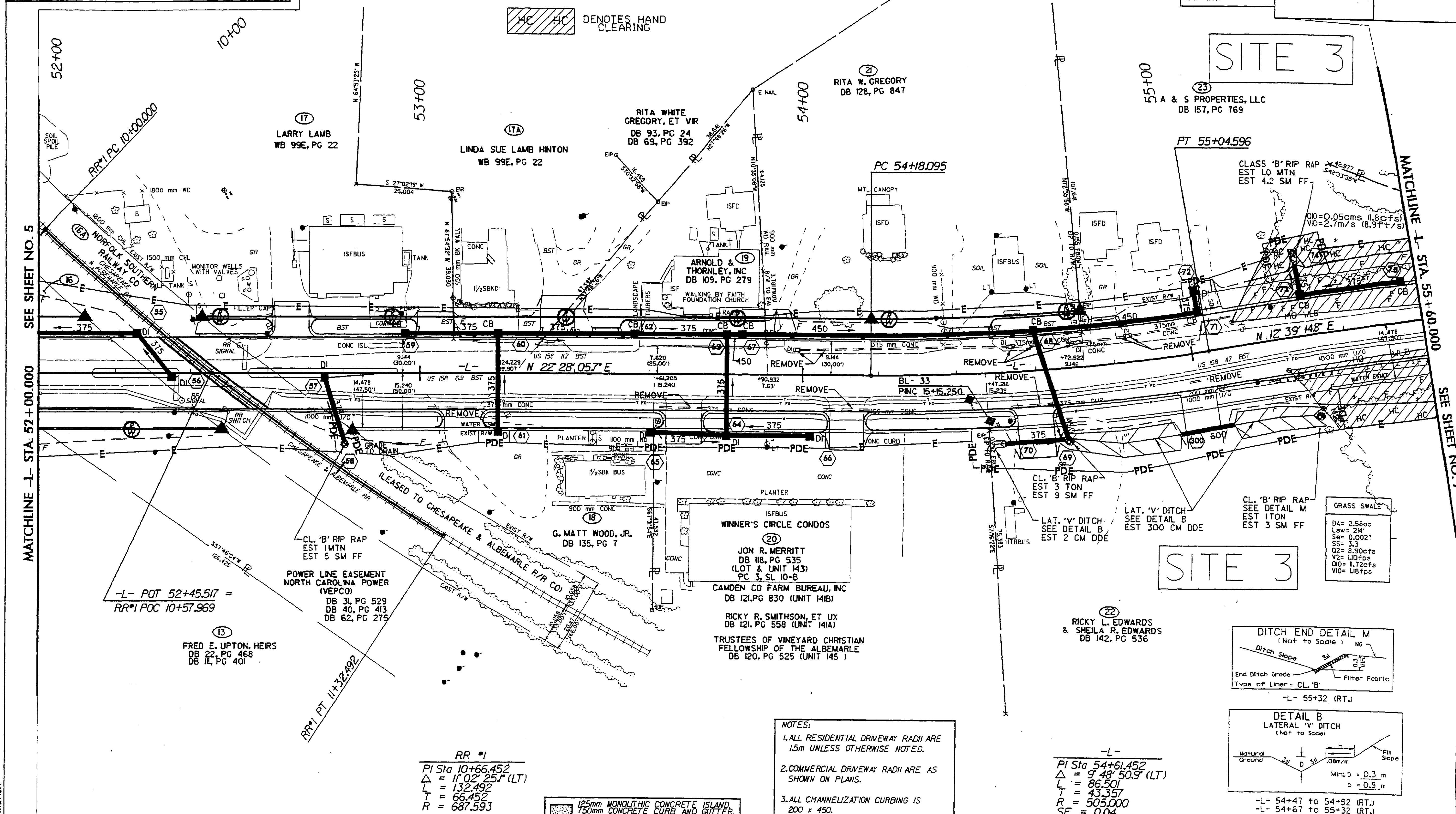
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

REVISIONS

11/07/06 – REVISED ROW AND TCE ON PARCEL 22.(ABP)
R/W REVISION – REVISED PROPERTY OWNER NAMES ON PARCEL NO.13,17,18,19,20,21 & 23. ADDED PARCEL NO.16A & 17A. BAM
R/W REVISION – REVISED PROPERTY OWNER NAME ON PARCEL NO.22. BAM

F / F DENOTES FILL IN WETLAND

HC / HC DENOTES HAND CLEARING



SITE 3
MATCHLINE -L- STA. 52+00.000
SEE SHEET NO. 5
MATCHLINE -L- STA. 55+60.000
SEE SHEET NO. 7
LARRY LAMB
WB 99E, PG 22
LINDA SUE LAMB HINTON
WB 99E, PG 22
RITA WHITE GREGORY, ET VIR
DB 93, PG 24
DB 69, PG 392
RITA W. GREGORY
DB 128, PG 847
A & S PROPERTIES, LLC
DB 157, PG 769
ARNOLD & THORNLEY, INC
DB 109, PG 279
WALKING BY FAITH FOUNDATION CHURCH
NORFOLK SOUTHERN RAILWAY CO & CHESAPEAKE & ALBEMARLE
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
PC 54+18.095
PT 55+04.596
N 22° 28' 05.7" E
N 12° 39' 14.8" E
BL-33 PINC 15+15.250
RR*1 PC 10+00.000
-L- POT 52+45.517 = RR*1 POC 10+57.969
RR*1 PT 11+32.492
CLASS 'B' RIP RAP
EST LO MTN
EST 4.2 SM FF
Q10=0.05cms (1.8cfs)
V10=2.7m/s (8.9ft/s)
CL. 'B' RIP RAP
EST 1MTN
EST 5 SM FF
CL. 'B' RIP RAP
EST 3 TON
EST 9 SM FF
LAT. 'V' DITCH
SEE DETAIL B
EST 2 CM DDE
LAT. 'V' DITCH
SEE DETAIL B
EST 300 CM DDE
CL. 'B' RIP RAP
SEE DETAIL M
EST 1TON
EST 3 SM FF
GRASS SWALE
DA= 2.58ac
Lsw= 214'
Se= 0.0027
SS= 3.3
Q2= 8.90cfs
V2= 1.10fps
Q10= 1.72cfs
V10= 1.18fps
POWER LINE EASEMENT
NORTH CAROLINA POWER (VEPCO)
DB 31, PG 529
DB 40, PG 413
DB 62, PG 275
FRED E. UPTON, HEIRS
DB 22, PG 468
DB 11, PG 401
G. MATT WOOD, JR.
DB 135, PG 7
WINNER'S CIRCLE CONDOS
JON R. MERRITT
DB 118, PG 535
(LOT & UNIT 143)
PC 3, SL 10-B
CAMDEN CO FARM BUREAU, INC
DB 121, PG 830 (UNIT 141B)
RICKY R. SMITHSON, ET UX
DB 121, PG 558 (UNIT 141A)
TRUSTEES OF VINEYARD CHRISTIAN FELLOWSHIP OF THE ALBEMARLE
DB 120, PG 525 (UNIT 145)
RICKY L. EDWARDS & SHEILA R. EDWARDS
DB 142, PG 536
DITCH END DETAIL M
(Not to Scale)
Ditch Slope
End Ditch Grade
Filter Fabric
Type of Liner = CL. 'B'
-L- 55+32 (RT.)
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 54+47 to 54+52 (RT.)
-L- 54+67 to 55+32 (RT.)

NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

RR *1
PI Sta 10+66.452
Δ = 11° 02' 25.1" (LT)
L = 132.492
T = 66.452
R = 687.593

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

-L-
PI Sta 54+61.452
Δ = 9° 48' 50.9" (LT)
L = 86.501
T = 43.357
R = 505.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

Permit Drawing
Sheet 15 of 38

REVISIONS
11/07/06 - REVISED ROW AND TCE ON PARCEL 22.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.13,17,18,19,20,21 & 23. ADDED PARCEL NO.16A & 17A. BAM
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.22. BAM

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27601

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

METRIC

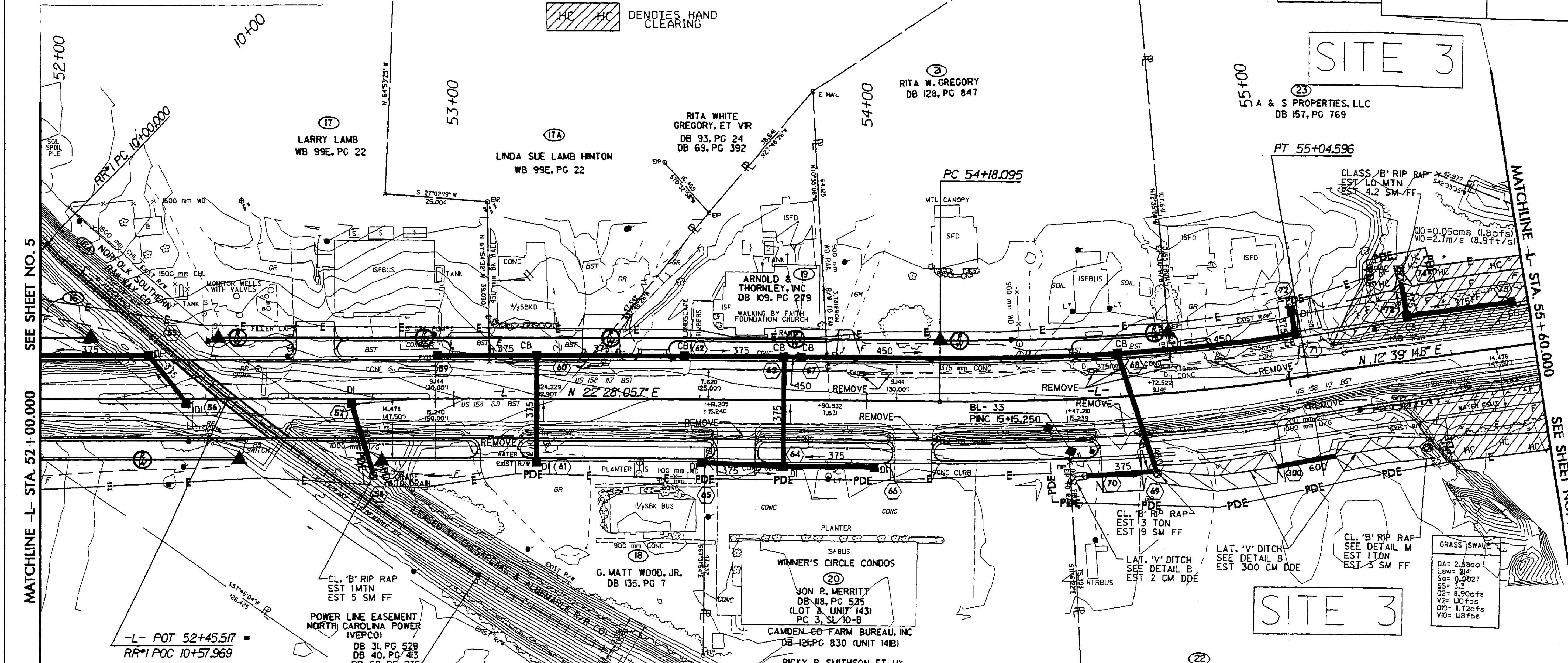
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST. REV.
R/W REV.

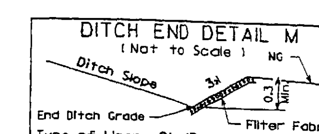
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

F F DENOTES FILL IN WETLAND

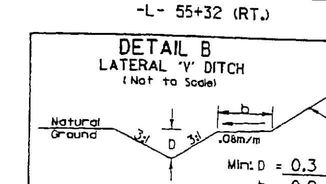
HC HC DENOTES HAND CLEARING



SITE 3
MATCHLINE -L- STA. 52+00.000
SEE SHEET NO. 5
MATCHLINE -L- STA. 55+60.000
SEE SHEET NO. 7
LARRY LAMB
WB 99E, PG 22
LINDA SUE LAMB HINTON
WB 99E, PG 22
RITA WHITE GREGORY, ET VIR
DB 93, PG 24
DB 69, PG 392
RITA W. GREGORY
DB 128, PG 847
A & S PROPERTIES, LLC
DB 157, PG 769
ARNOLD & THORNLEY, INC
DB 109, PG 279
WALKING BY FAITH FOUNDATION CHURCH
NORFOLK SOUTHERN RAILWAY CO.
LEASED TO CHESAPEAKE & ALBEMARLE R/R CO.
N 22° 28' 05.7" E
N 12° 39' 14.8" E
PC 54+18.095
PT 55+04.596
BL-33 PINC 15+15.250
RR*1 PC 10+00.000
RR*1 PT 11+32.492
-L- POT 52+45.517 = RR*1 POC 10+57.969
CL. 'B' RIP RAP
EST 1 MTN
EST 5 SM FF
POWER LINE EASEMENT
NORTH CAROLINA POWER (VEPCO)
DB 31, PG 529
DB 40, PG 413
DB 62, PG 275
FRED E. UPTON, HEIRS
DB 22, PG 468
DB 111, PG 401
G. MATT WOOD, JR.
DB 135, PG 7
WINNER'S CIRCLE CONDOS
JON R. MERRITT
DB 118, PG 535
(LOT & UNIT 143)
PC 3, SL 10-B
CAMDEN CO FARM BUREAU, INC
DB 121, PG 830 (UNIT 141B)
RICKY R. SMITHSON, ET UX
DB 121, PG 558 (UNIT 141A)
TRUSTEES OF VINEYARD CHRISTIAN FELLOWSHIP OF THE ALBEMARLE
DB 120, PG 525 (UNIT 145)
RICKY L. EDWARDS
& SHEILA R. EDWARDS
DB 142, PG 536
CLASS 'B' RIP RAP
EST 10 MTN
EST 4.2 SM FF
Q10=0.05cms (1.8cfs)
V10=2.7m/s (8.9ft/s)
CL. 'B' RIP RAP
EST 3 TON
EST 9 SM FF
LAT. 'V' DITCH
SEE DETAIL B
EST 2 CM DDE
LAT. 'V' DITCH
SEE DETAIL B
EST 300 CM DDE
CL. 'B' RIP RAP
SEE DETAIL M
EST 1 TON
EST 3 SM FF
GRASS SWALE
DA= 2.68ac
Lsw= 214'
Se= 0.0027
SS= 3.3
Q2= 8.90cfs
V2= 1.10fps
Q10= 11.72cfs
V10= 1.18fps



-L- 55+32 (RT.)



-L- 54+47 to 54+52 (RT.)
-L- 54+67 to 55+32 (RT.)

RR *1
PI Sta 10+66.452
Δ = 11° 02' 25.1" (LT)
L = 132.492
T = 66.452
R = 687.593

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

-L-
PI Sta 54+61.452
Δ = 9° 48' 50.9" (LT)
L = 86.501
T = 43.357
R = 505.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	7

R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

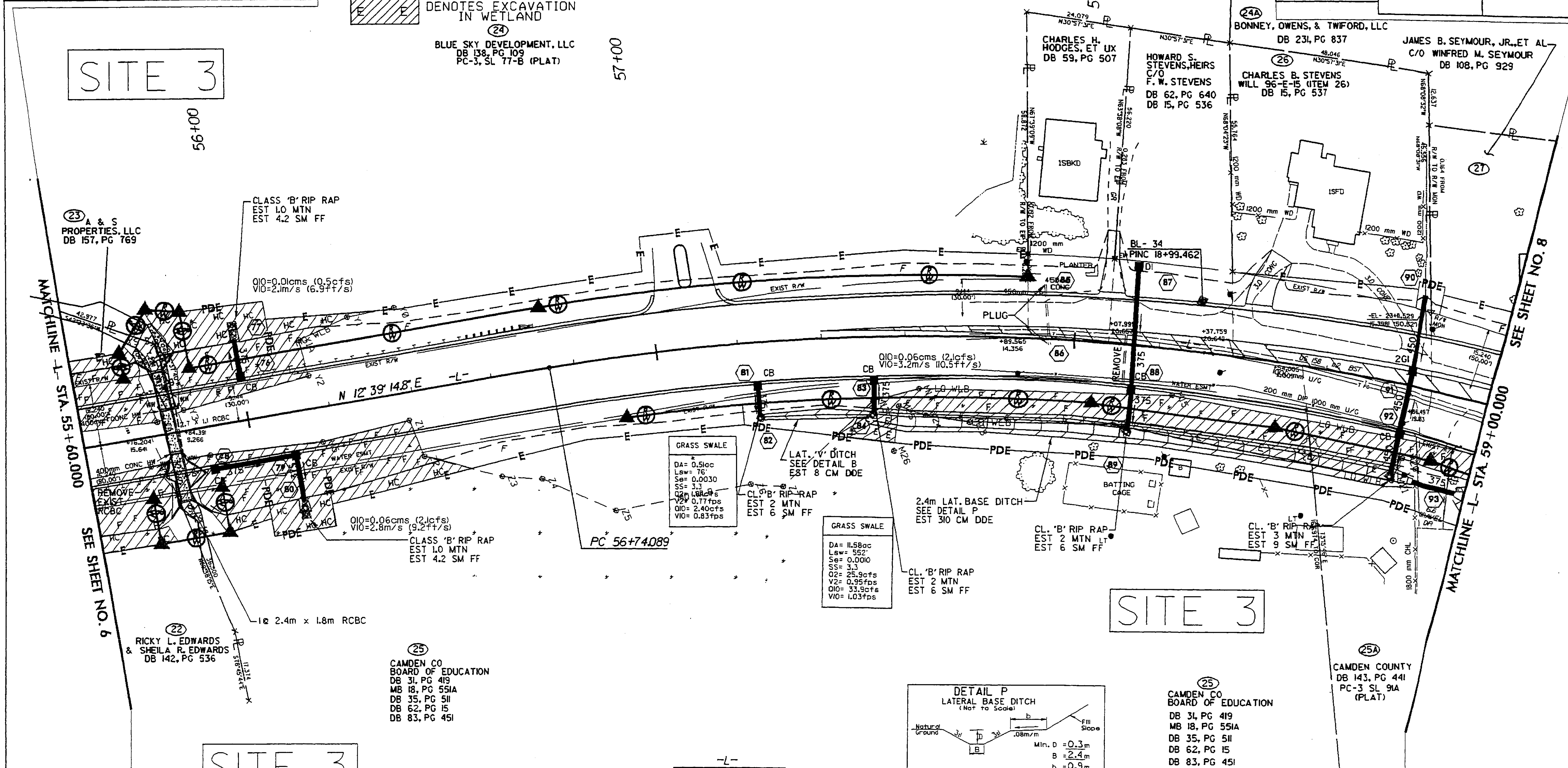
TRANSITE CONSULTING ENGINEERS, INCORPORATED

CONST.REV.
R/W REV.

REVISIONS

11/07/06 - REVISED ROW,TCE & PDE ON PARCEL 25.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.23 & 24. ADDED PARCEL NO.24A & 25A. CORRECTED PROPERTY OWNER NAMES CHARLES H.HODGES & HOWARD S.STEVENS.HEIRS. BAM
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.22. BAM

F — DENOTES FILL IN WETLAND
HC — DENOTES HAND CLEARING
S — DENOTES IMPACTS IN SURFACE WATER
TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
E — DENOTES EXCAVATION IN WETLAND


SITE 3
56+00
57+00
58+00
NAD 83 NC GRID
(24) BLUE SKY DEVELOPMENT, LLC DB 138, PG 109 PC-3, SL 77-B (PLAT)
CHARLES H. HODGES, ET UX DB 59, PG 507
HOWARD S. STEVENS,HEIRS C/O F. W. STEVENS DB 62, PG 640 DB 15, PG 536
(24A) BONNEY, OWENS, & TWIFORD, LLC DB 231, PG 837
(26) CHARLES B. STEVENS WILL 96-E-15 (ITEM 26) DB 15, PG 537
JAMES B. SEYMOUR, JR.,ET AL C/O WINFRED M. SEYMOUR DB 108, PG 929
(27)
(23) A & S PROPERTIES, LLC DB 157, PG 769
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
Q10=0.01cms (0.5cfs) V10=2.1m/s (6.9ft/s)
N 12°39'14.8" E
-L-
BL- 34 PINC 18+99.462
PLUG
PLANTER
Q10=0.06cms (2.1cfs) V10=3.2m/s (10.5ft/s)
SEE SHEET NO. 8
MATCHLINE -L- STA. 59+00.000
MATCHLINE -L- STA. 55+60.000
SEE SHEET NO. 6
REMOVE EXIST RCBC
GRASS SWALE DA= 0.51ac Lsw= 76' Se= 0.0030 SS= 3.1 Q10= 1.86cfs V2= 0.77fps Q10= 2.40cfs V10= 0.83fps
LAT. 'V' DITCH SEE DETAIL B EST 8 CM DDE
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
2.4m LAT. BASE DITCH SEE DETAIL P EST 310 CM DDE
Q10=0.06cms (2.1cfs) V10=2.8m/s (9.2ft/s)
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
PC 56+74.089
GRASS SWALE DA= 11.58ac Lsw= 552' Se= 0.0010 SS= 3.3 Q2= 25.9cfs V2= 0.95fps Q10= 33.9cfs V10= 1.03fps
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
CL. 'B' RIP RAP EST 3 MTN EST 9 SM FF
BATTING CAGE
1@ 2.4m x 1.8m RCBC
(22) RICKY L. EDWARDS & SHEILA R. EDWARDS DB 142, PG 536
(25) CAMDEN CO BOARD OF EDUCATION DB 31, PG 419 MB 18, PG 551A DB 35, PG 511 DB 62, PG 15 DB 83, PG 451
SITE 3
(25A) CAMDEN COUNTY DB 143, PG 441 PC-3 SL 91A (PLAT)
(25) CAMDEN CO BOARD OF EDUCATION DB 31, PG 419 MB 18, PG 551A DB 35, PG 511 DB 62, PG 15 DB 83, PG 451
SITE 3

DETAIL B
LATERAL 'V' DITCH (Not to Scale)
Min. D = 0.3 m
b = 0.9 m
-L- 57+24 to 57+47 (RT.)

DETAIL P
LATERAL BASE DITCH (Not to Scale)
Min. D = 0.3 m
B = 2.4 m
b = 0.9 m
-L- 57+52 to 59+20 (RT.)

-L-
PI Sta 58+15.159
Δ = 28° 46' 17.6" (RT)
L = 276.187
T = 141.071
R = 550.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 20 FOR -L- FOR GRADE AND PROFILE.

REVISIONS

11/07/06 - REVISED ROW,TCE & PDE ON PARCEL 25.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.23 & 24. ADDED PARCEL NO.24A & 25A. CORRECTED PROPERTY OWNER NAMES CHARLES H.HODGES & HOWARD S.STEVENS,HEIRS. BAM
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.22. BAM

Symbol	Description
F	DENOTES FILL IN WETLAND
HC	DENOTES HAND CLEARING
S	DENOTES IMPACTS IN SURFACE WATER
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	7

R/W SHEET NO.

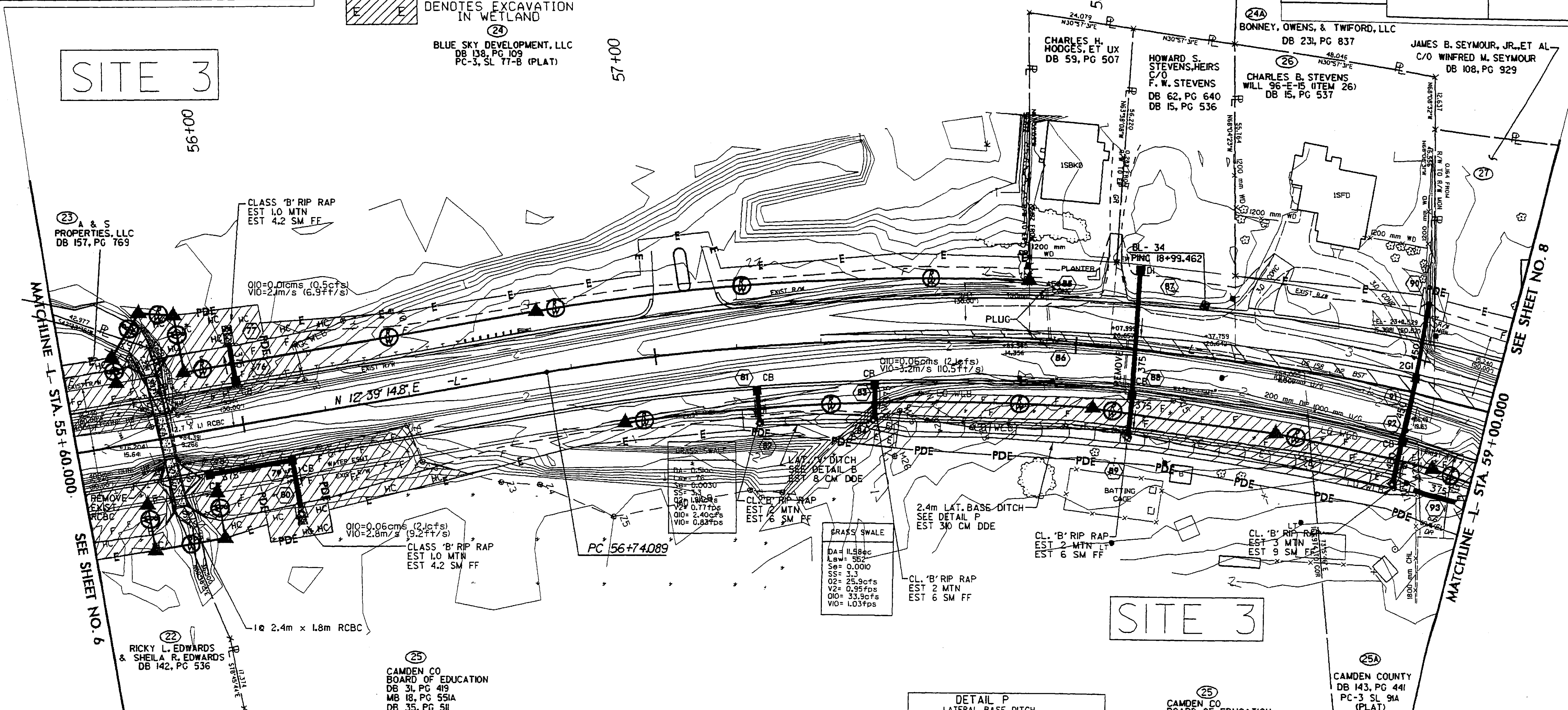
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

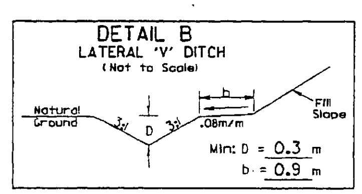
METRIC

TRANSITE CONSULTING ENGINEERS, INCORPORATED

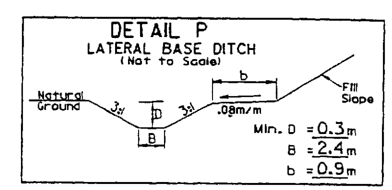
CONST.REV.
R/W REV.


SITE 3
SITE 3
SITE 3
56+00
57+00
58+00
NAD 83 NC GRID
(24) BLUE SKY DEVELOPMENT, LLC DB 138, PG 109 PC-3, SL 77-B (PLAT)
CHARLES H. HODGES, ET UX DB 59, PG 507
HOWARD S. STEVENS,HEIRS C/O F. W. STEVENS DB 62, PG 640 DB 15, PG 536
(24A) BONNEY, OWENS, & TWIFORD, LLC DB 231, PG 837
(26) CHARLES B. STEVENS WILL 96-E-15 (ITEM 26) DB 15, PG 537
JAMES B. SEYMOUR, JR.,ET AL C/O WINFRED M. SEYMOUR DB 108, PG 929
(23) A & S PROPERTIES, LLC DB 157, PG 769
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
Q10=0.01cms (0.5cfs) V10=2.1m/s (6.9ft/s)
MATCHLINE -L- STA. 55+60.000 SEE SHEET NO. 6
N 12°39'14.8" E -L-
Q10=0.06cms (2.1cfs) V10=3.2m/s (10.5ft/s)
PLUG
BL- 34 PINC 18+99.462
Q10=0.06cms (2.1cfs) V10=2.8m/s (9.2ft/s)
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
PC 56+74.089
LAT. 'V' DITCH SEE DETAIL B EST 8 CM DDE
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
2.4m LAT. BASE DITCH SEE DETAIL P EST 310 CM DDE
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
CL. 'B' RIP RAP EST 3 MTN EST 9 SM FF
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
GRASS SWALE DA= 11.98ac Lsw= 552' Se= 0.0010 SS= 3.3 Q2= 25.9cfs V2= 0.95fps Q10= 33.9cfs V10= 1.03fps
1@ 2.4m x 1.8m RCBC
REMOVE EXIST RCBC
BATTING CAGE
MATCHLINE -L- STA. 59+00.000 SEE SHEET NO. 8
(22) RICKY L. EDWARDS & SHEILA R. EDWARDS DB 142, PG 536
(25) CAMDEN CO BOARD OF EDUCATION DB 31, PG 419 MB 18, PG 551A DB 35, PG 511 DB 62, PG 15 DB 83, PG 451
(25A) CAMDEN COUNTY DB 143, PG 441 PC-3 SL 91A (PLAT)

-L-
PI Sta 58+15.159
Δ = 28°46'17.6" (RT)
L = 276.187
T = 141.071
R = 550.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H



-L- 57+24 to 67+47 (RT.)



-L- 57+52 to 59+20 (RT.)

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

(25) CAMDEN CO BOARD OF EDUCATION
DB 31, PG 419
MB 18, PG 551A
DB 35, PG 511
DB 62, PG 15
DB 83, PG 451

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 20 FOR -L- FOR GRADE AND PROFILE.

Permit Drawing
Sheet 18 of 38

REVISIONS
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.30. ADDED PARCEL NO.24A & 25A. BAM

6/10/22

ETHERIDGE ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - ROW/PS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING ENGINEERS, INCORPORATED
3800 Possum Drive, Bldg G-10
Raleigh, N.C. 27609

METRIC
5 0 10

CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE -Y3- STA. 10+40.000 SEE SHEET NO. 18

JAMES B. SEYMOUR, JR., ET AL
C/O WINFRED M. SEYMOUR
DB 108, PG 929

(28) C. RUSSELL HASTINGS, ET UX
DB 93, PG 745
DB 56, PG 406
DB 56, PG 408
DB 35, PG 292
DB 35, PG 293

(30) CAMDEN REALTY GROUP, LLC
DB 255, PG 855
SPEC. CUT DITCH SEE DETAIL A

(24A) BONNEY, OWENS, & TWIFORD, LLC
DB 231, PG 837

(29) CHARLES H. HODGES, SR., ET AL
DB 91, PG 43
DB 25, PG 423

(25A) CAMDEN COUNTY
DB 143, PG 441
PC-3 SL 91A (PLAT)

(32) MARY M. GORDON
DB 95, PG 491
DB 116, PG 890

(35) MARY M. GORDON
DB 89, PG 275
DB 116, PG 890

(34) GLEN D. GORDON, ET UX
DB 94, PG 280
DB 83, PG 679
DB 128, PG 504
DB 87, PG 181
(POST OFFICE LEASE)
DB 132, PG 160 (STORE LEASE)

MINNIE ROUSE SIVILLS
DB 89, PG 475

LENNON A. GODFREY
BESSIE E. SANDERS
DB 94, PG 528
DB 93, PG 767 (MAP)

MARY M. GORDON
DB 57, PG 381

WOOW'S SON LODGE #75 A.A. PG 288

MATCHLINE -L- STA. 59+00.000 SEE SHEET NO. 7

MATCHLINE -L- STA. 62+60.000 SEE SHEET NO. 9

MATCHLINE -Y4- STA. 11+10.000 SEE SHEET NO. 18

PT 10+77.299

PT 59+50.276

SITE 3

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
-Y3- 10+43 to 10+60 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
-L- 59+88 to 60+42 (LT.)
-Y3- 11+25 to 11+36 (LT.)

DETAIL P
LATERAL BASE DITCH
(Not to Scale)
-L- 57+52 to 59+20 (RT.)

F/F DENOTES FILL IN WETLAND

-L- POT 61+13.481 = -Y4- POT 10+00.000

-L- POT 61+12.821 = -Y3- POT 11+69.785

-L-	-Y3-
PI Sta 58+15.159	PI Sta 10+39.147
Δ = 28° 46' 17.6" (RT)	Δ = 22° 21' 27.9" (LT)
L = 276.187	L = 77.299
T = 141.071	T = 39.147
R = 550.000	R = 198.093
SE = 0.04	R'OFF = 48.000
R'OFF = 81.000	SE = 0.06
DS = 80 KM/H	

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

8-JAN-2008 10:34

REVISIONS
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.30. ADDED PARCEL NO.24A & 25A. BAM

ETHERTILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SIGNALS - CONSTRUCTION OBSERVATION
TRANSITE CONSULTING ENGINEERS, INCORPORATED
3200 Beechcroft Drive, Suite G-10
Raleigh, N.C. 27609

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

MATCHLINE -Y3- STA. 10+40.000 SEE SHEET NO. 18

MATCHLINE -L- STA. 59+00.000 SEE SHEET NO. 7

MATCHLINE -L- STA. 62+60.000 SEE SHEET NO. 9

MATCHLINE -Y4- STA. 11+10.000

JAMES B. SEYMOUR, JR., ET AL
C/O WINFRED M. SEYMOUR
DB 108, PG 929

(28) C. RUSSELL HASTINGS, ET UX
DB 93, PG 745
DB 56, PG 406
DB 56, PG 408
DB 35, PG 292
DB 35, PG 293

(30) CAMDEN REALTY GROUP, LLC
DB 255, PG 855

(24A) BONNEY, OWENS, & TWIFORD, LLC
DB 231, PG 837

(29) CHARLES H. HODGES, SR., ET AL
DB 91, PG 43
DB 25, PG 423

(254) CAMDEN COUNTY
DB 143, PG 441
PC-3 SL 91A (PLAT)

(32) MARY M. GORDON
DB 95, PG 491
DB 16, PG 890

(35) MARY M. GORDON
DB 89, PG 275
DB 16, PG 890

(34) GLEN D. GORDON, ET UX
DB 94, PG 280
DB 83, PG 679
DB 128, PG 504
DB 87, PG 181
(POST OFFICE LEASE)
DB 132, PG 160 (STORE LEASE)

LENNON & GODFREY
BESSIE E. SANDERS
DB 94, PG 528
DB 93, PG 767 (MAP)
MINNIE ROUSE SIVILLS
DB 89, PG 475

WOOW'S SON LODGE #76
DB 44, PG 266

MARY M. GORDON
DB 97, PG 381

SPEC. CUT DITCH
SEE DETAIL A

LAT. 'V' DITCH
SEE DETAIL B
EST 60 CM DDE

SPEC. LAT. 'V' DITCH
SEE DETAIL B
EST 7 CM DDE

CL. 'B' RIP RAP
EST 8 MTN
EST 18 SM FF

CL. 'B' RIP RAP
EST 9 MTN
EST 9 SM FF

2.4m LAT. BASE DITCH
SEE DETAIL P
EST 310 CM DDE

PT 10+77.299

PT 59+50.276

-L- POT 61+13.481 =
-Y4- POT 10+00.000

-L- POT 61+12.821 =
-Y3- POT 11+69.785

N 41° 25' 32.4" E

S 72° 36' 55.0" E

S 72° 54' 56.2" E

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 0.3m

-Y3- 10+43 to 10+60 (RT.)

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

Natural Ground, 3:1, D, 3:1, .08m/m, b, Fill Slope
Min. D = 0.3 m
b = 1.5 m

-L- 59+88 to 60+42 (LT.)
-Y3- 11+25 to 11+36 (LT.)

DETAIL F
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, .08m/m, B, b, Fill Slope
Min. D = 0.3m
B = 2.4m
b = 0.9m

-L- 57+52 to 59+20 (RT.)

SITE 3

F/F DENOTES FILL IN WETLAND

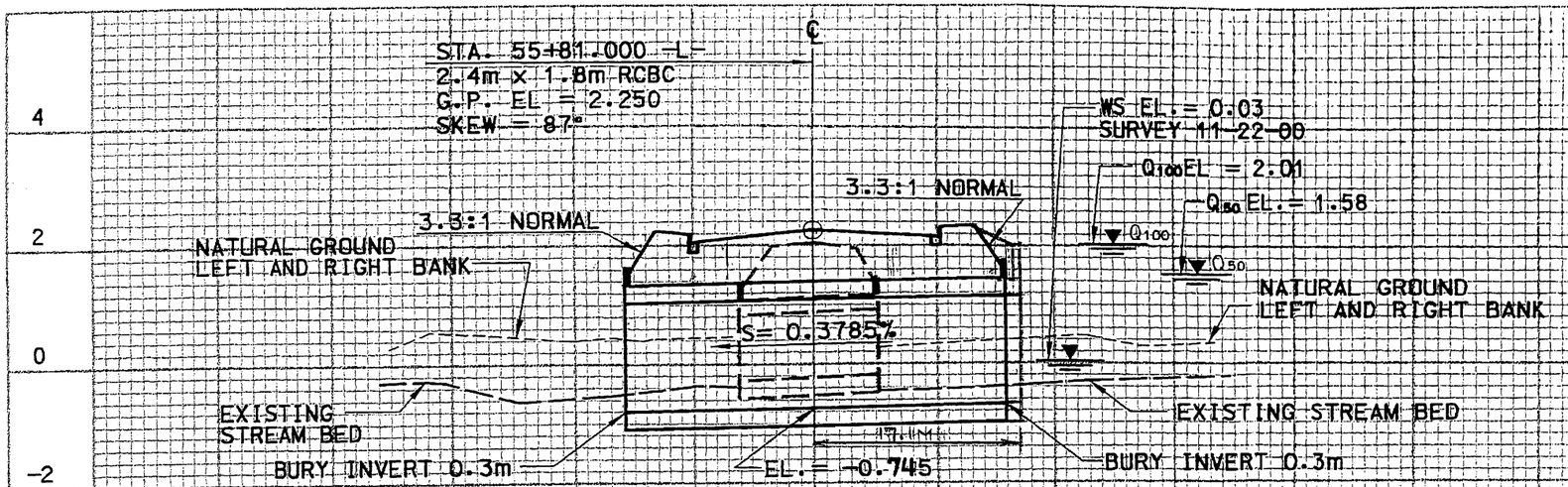
-L-	-Y3-
PI Sta 58+15.159	PI Sta 10+39.147
Δ = 28° 46' 17.6" (RT)	Δ = 22° 21' 27.9" (LT)
L = 276.187	L = 77.299
T = 141.071	T = 39.147
R = 550.000	R = 198.093
SE = 0.04	R'OFF = 48.000
R'OFF = 81.000	SE = 0.06
DS = 80 KM/H	

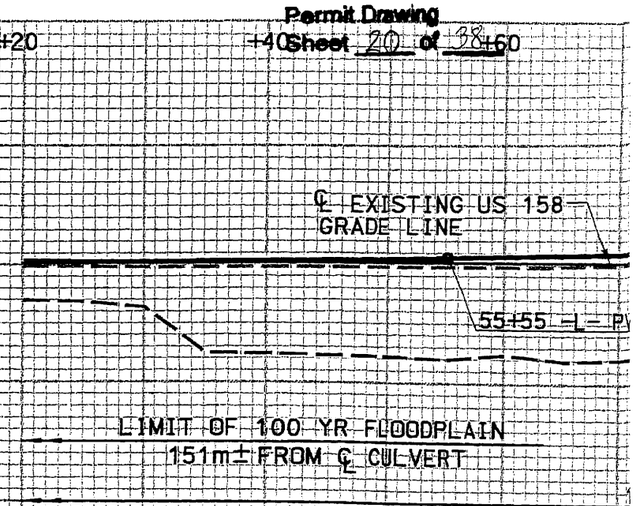
SPEC. LAT. 'V' DITCH SEE DETAIL B EST 7 CM DDE

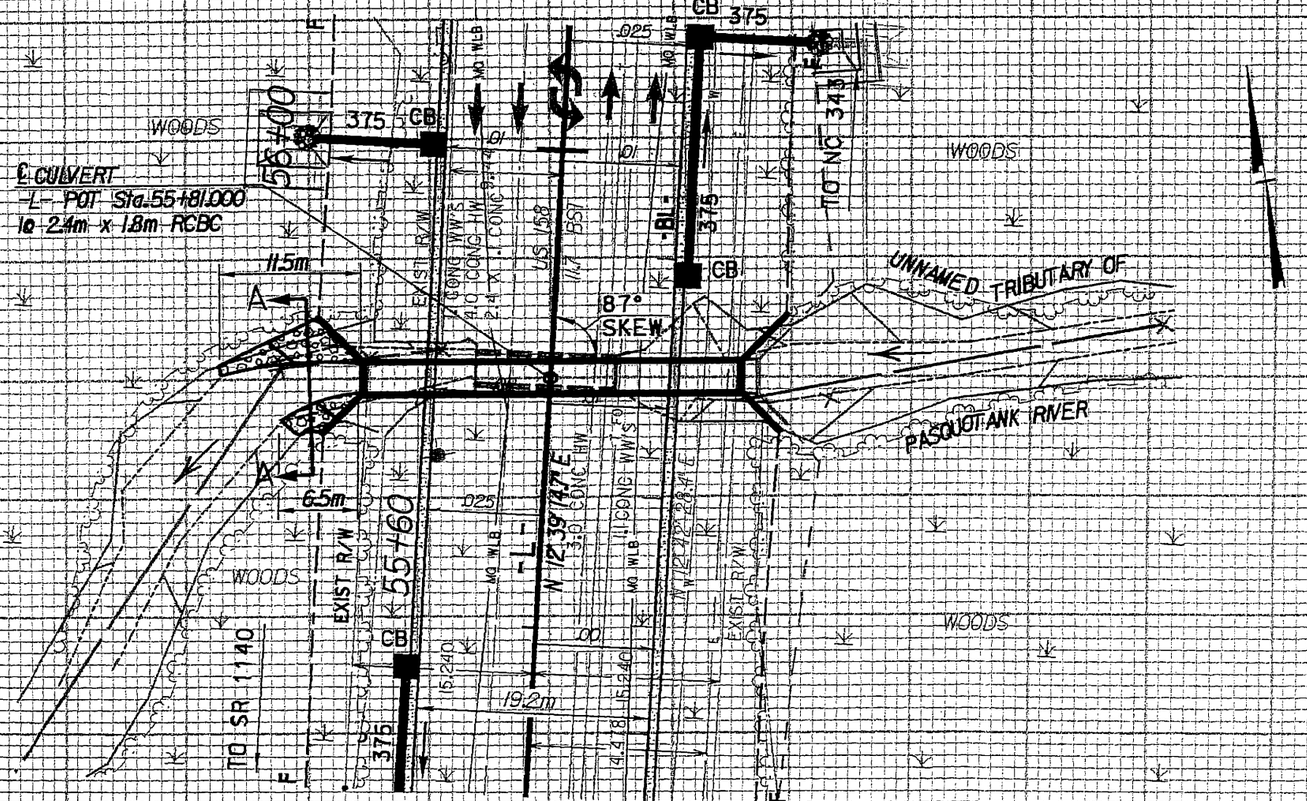
NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

6/10/08
8-SEP-2008 10:51
\\ces\Raleigh\projects\2414b\final\drawings\v2414b-pra-pp08.dgn







PROFILE

FLOODPLAIN

HORIZ. SCALE 1:500
VERT. SCALE 1:200

PLAN

L = 11.5m (RT) & 6.5m (LT) MEASURED FROM END OF CULVERT
EST. EXCAVATION = 4m²
EST. CLASS I RIP RAP = 23 TONS
EST. FILTER FABRIC = 30m²

SECTION A-A

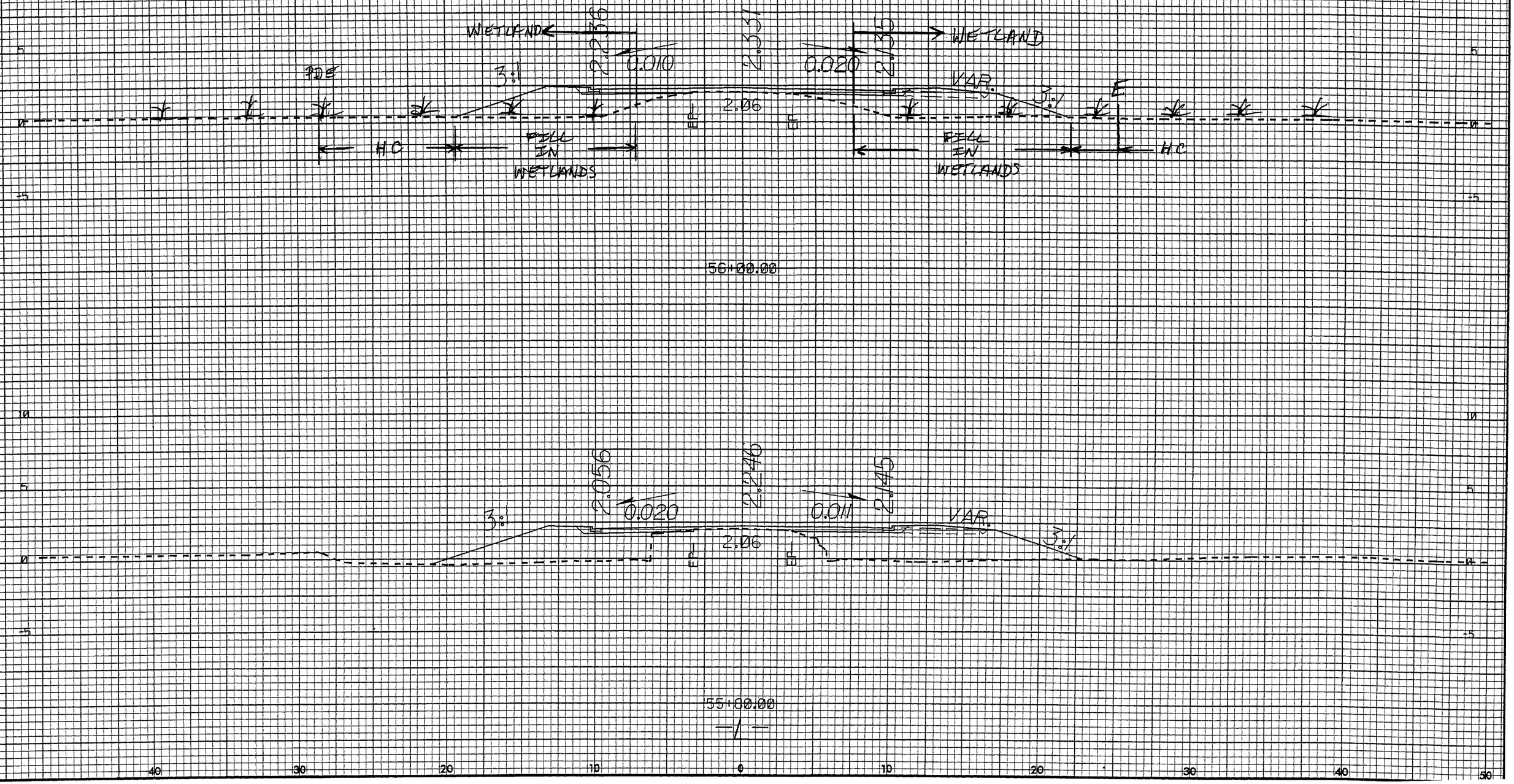
▨ CHANNEL EXCAVATION
* SIDE SLOPES VARY FROM 2:1 TO EXISTING

Permit Drawing
Sheet 21 of 38

2.5 0 2.5 5 METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-26

SITE 3

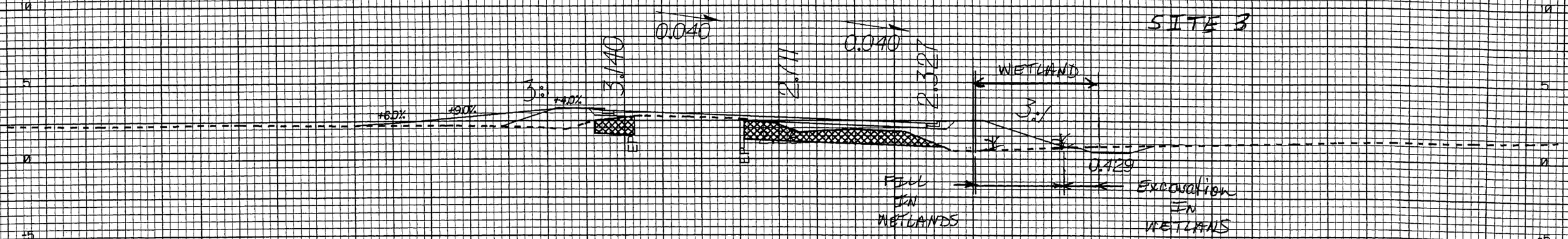


10/25/01

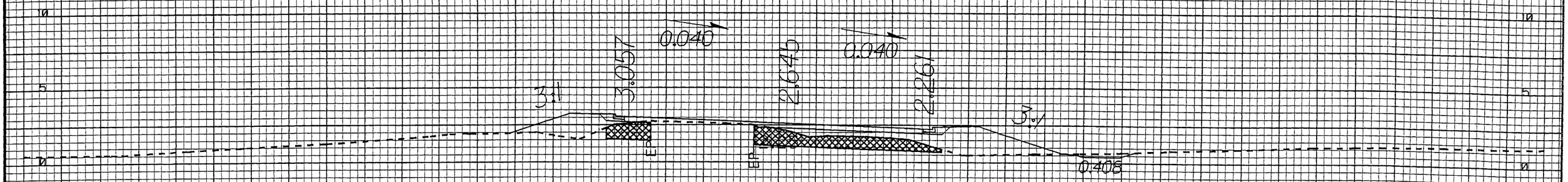
2.5 0 2.5 5 METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-31

SITE 3



58+00.00



57+80.00

Permit Drawing
Sheet 23 of 38

REVISIONS

R/W REVISION - REVISED THE PROPERTY OWNER NAME AND PARCEL NO.ON PARCEL NO.34. REVISED PROPERTY OWNER NAME FROM CHARLIE S.BARLETT TO JARED & STEPHANIE DALTON (NO CLAIM). BAM

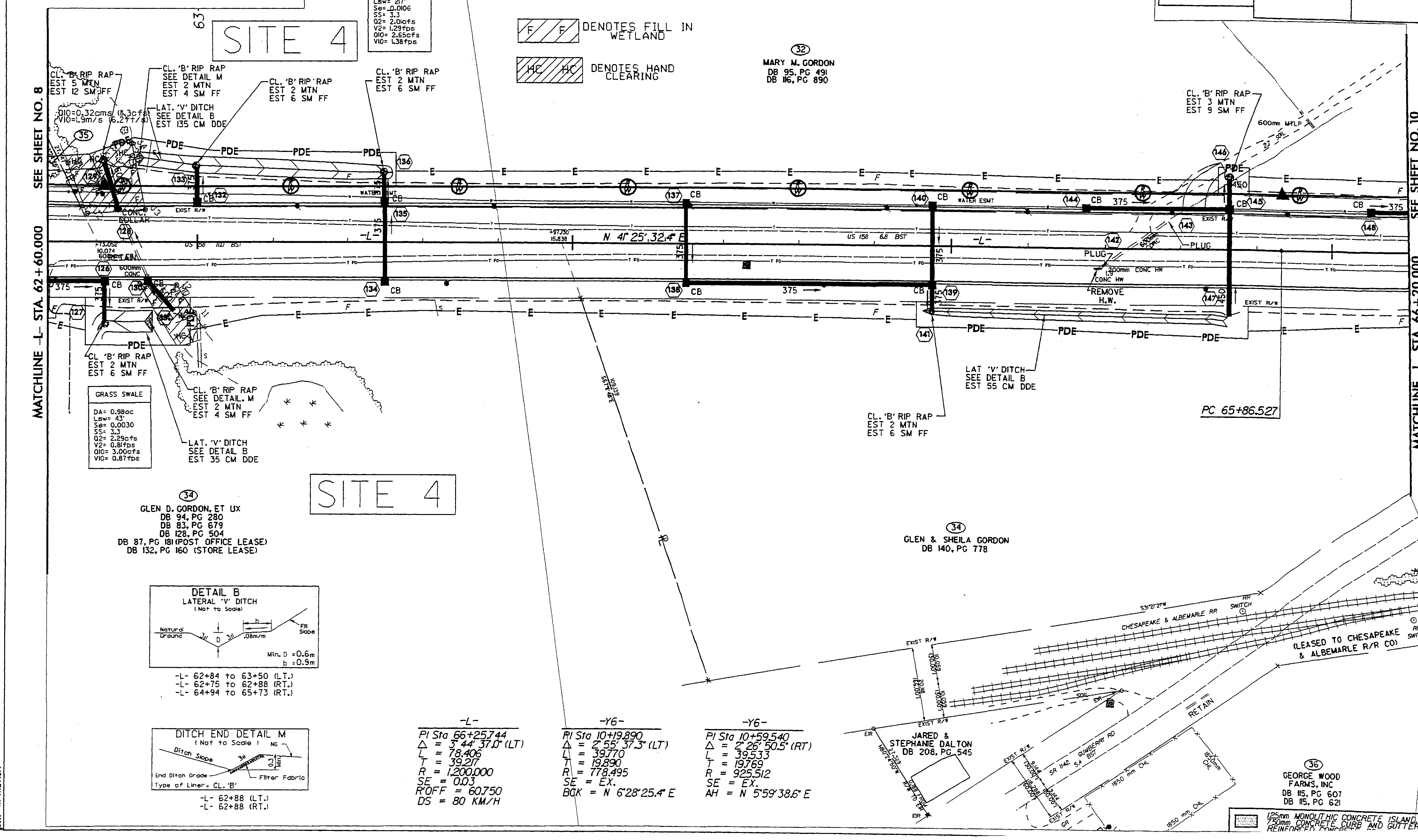
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TRANSITE CONSULTING ENGINEERS, INCORPORATED
Raleigh, N.C. 27601

METRIC

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.



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

Natural Ground; Fill Slope; .08m/m
Min. D = 0.6m
b = 0.9m

-L- 62+84 to 63+50 (LT.)
-L- 62+75 to 62+88 (RT.)
-L- 64+94 to 65+73 (RT.)

DITCH END DETAIL M
(Not to Scale)

Ditch Slope; End Ditch Grade; Filter Fabric
Type of Liner= CL. 'B'

-L- 62+88 (LT.)
-L- 62+88 (RT.)

-L-	-Y6-	-Y6-
PI Sta 66+25.744	PI Sta 10+19.890	PI Sta 10+59.540
Δ = 3° 44' 37.0" (LT)	Δ = 2° 55' 37.3" (LT)	Δ = 2° 26' 50.5" (RT)
L = 78.406	L = 39.770	L = 39.533
T = 39.217	T = 19.890	T = 19.769
R = 1,200.000	R = 778.495	R = 925.512
SE = 0.03	SE = EX.	SE = EX.
R'OFF = 60.750	BCK = N 6°28'25.4" E	AH = N 5°59'38.6" E
DS = 80 KM/H		

Permit Drawing
Sheet 24 of 38

REVISIONS
R/W REVISION - REVISED THE PROPERTY OWNER NAME AND PARCEL NO.ON PARCEL NO.34. REVISED PROPERTY OWNER NAME FROM CHARLIE S.BARLETT TO JARED & STEPHANIE DALTON (NO CLAIM). BAM

WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - ROADWAYS - CONSTRUCTION OBSERVATION
TRANSITE CONSULTING ENGINEERS, INCORPORATED
3300 Poseidon Drive, Suite G-10
Raleigh, N.C. 27609

METRIC
5 0 10
CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 4

SEE SHEET NO. 8

MATCHLINE -L- STA. 62+60.000

MATCHLINE -L- STA. 66+20.000

SEE SHEET NO. 10

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

NOTES NC 540

64+00

65+00

63

GRASS SWALE
DA= 0.57ac
Lsw= 217
Sw= 0.0106
SS= 3.3
Q2= 2.01cfs
V2= 1.29fps
Q10= 2.65cfs
V10= 1.38fps

GRASS SWALE
DA= 0.98ac
Lsw= 43'
Sw= 0.0030
SS= 3.3
Q2= 2.29cfs
V2= 0.81fps
Q10= 3.00cfs
V10= 0.87fps

CL. 'B' RIP RAP
EST 5 MTN
EST 12 SM FF

CL. 'B' RIP RAP
SEE DETAIL M
EST 2 MTN
EST 4 SM FF

LAT. 'V' DITCH
SEE DETAIL B
EST 135 CM DDE
Q10=0.32cms (11.3cfs)
V10=1.9m/s (6.2 FT/S)

CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF

CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF

CL. 'B' RIP RAP
EST 3 MTN
EST 9 SM FF

600mm HPLP

CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF

CL. 'B' RIP RAP
SEE DETAIL M
EST 2 MTN
EST 4 SM FF

LAT. 'V' DITCH
SEE DETAIL B
EST 35 CM DDE

LAT. 'V' DITCH
SEE DETAIL B
EST 55 CM DDE

CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF

PC 65+86.527

N 41° 25' 32.4" E

S 39° 14' 49" E

US 158 6.8 BST

US 158 11.1 BST

PDE

CB

EXIST R/W

WATER ESMT

PLUG

REMOVE H.W.

CONC HW

375

(32) MARY M. GORDON
DB 95, PG 491
DB 116, PG 890

(34) GLEN D. GORDON, ET UX
DB 94, PG 280
DB 83, PG 679
DB 128, PG 504
DB 87, PG 181 (POST OFFICE LEASE)
DB 132, PG 160 (STORE LEASE)

(34) GLEN & SHEILA GORDON
DB 140, PG 778

(35) JARED & STEPHANIE DALTON
DB 208, PG 545

(36) GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621

(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

CHESAPEAKE & ALBEMARLE RR

SWITCH

S31°21'21"W

SOIL

RETAIN

GUNDERAN RD

SR 1142 S.R. 65'

1850 mm CML

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE

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

Natural Ground — 3:1 — D — 2:1 — .08m/m — Fill Slope — b — Min. D =0.6m, b =0.9m

-L- 62+84 to 63+50 (LT.)
-L- 62+75 to 62+88 (RT.)
-L- 64+94 to 65+73 (RT.)

DITCH END DETAIL M
(Not to Scale)

Ditch Slope — 3M — NG — 0.3 min — End Ditch Grade — Filter Fabric

Type of Liner = CL. 'B'

-L- 62+88 (LT.)
-L- 62+88 (RT.)

-L-
PI Sta 66+257.44
Δ = 3° 44' 37.0" (LT)
L = 78.406
T = 39.217
R = 1,200.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

-Y6-
PI Sta 10+19.890
Δ = 2° 55' 37.3" (LT)
L = 39.770
T = 19.890
R = 778.495
SE = EX.
BCK = N 6° 28' 25.4" E

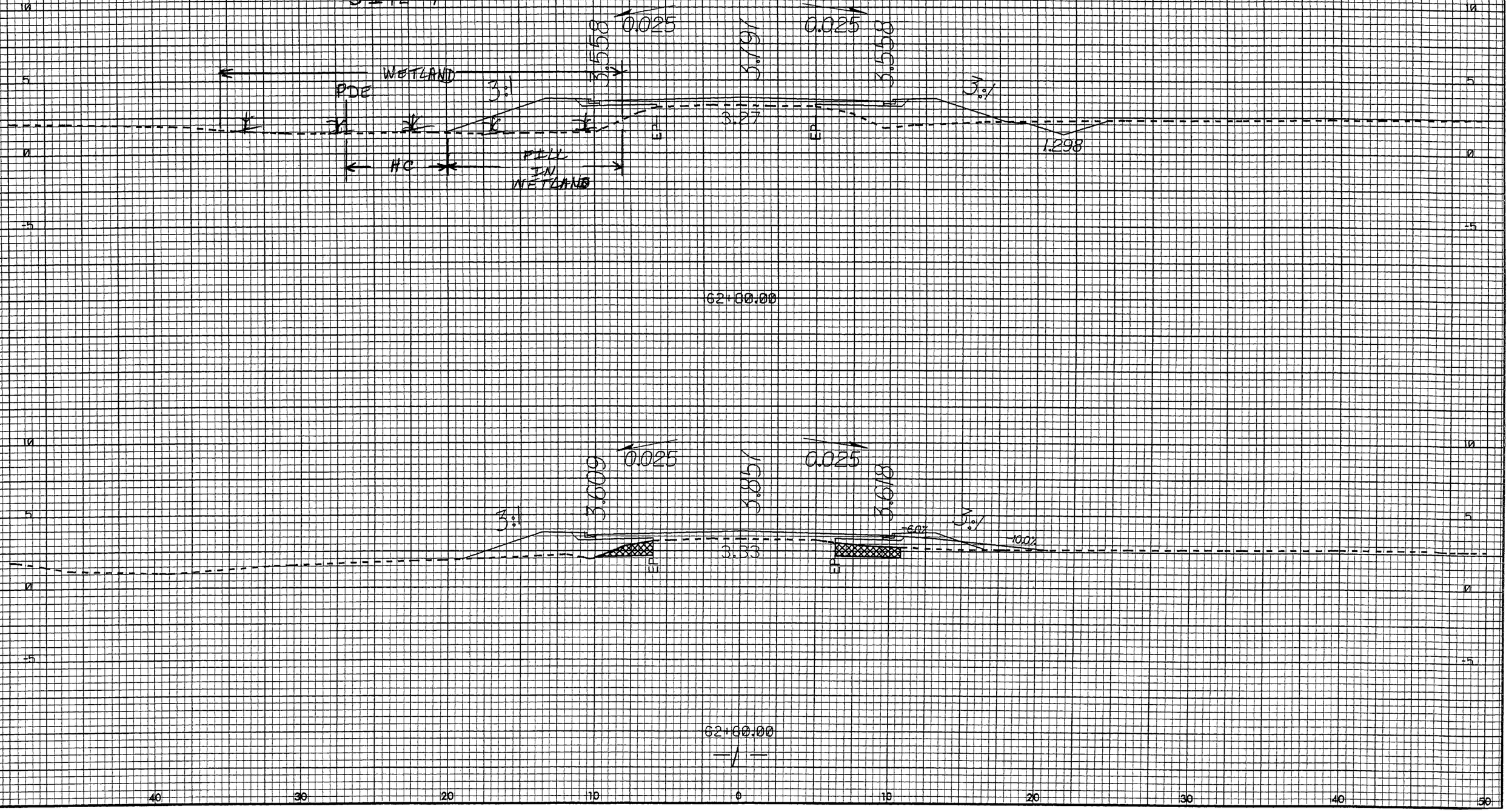
-Y6-
PI Sta 10+59.540
Δ = 2° 26' 50.5" (RT)
L = 39.533
T = 19.769
R = 925.512
SE = EX.
AH = N 5° 59' 38.6" E

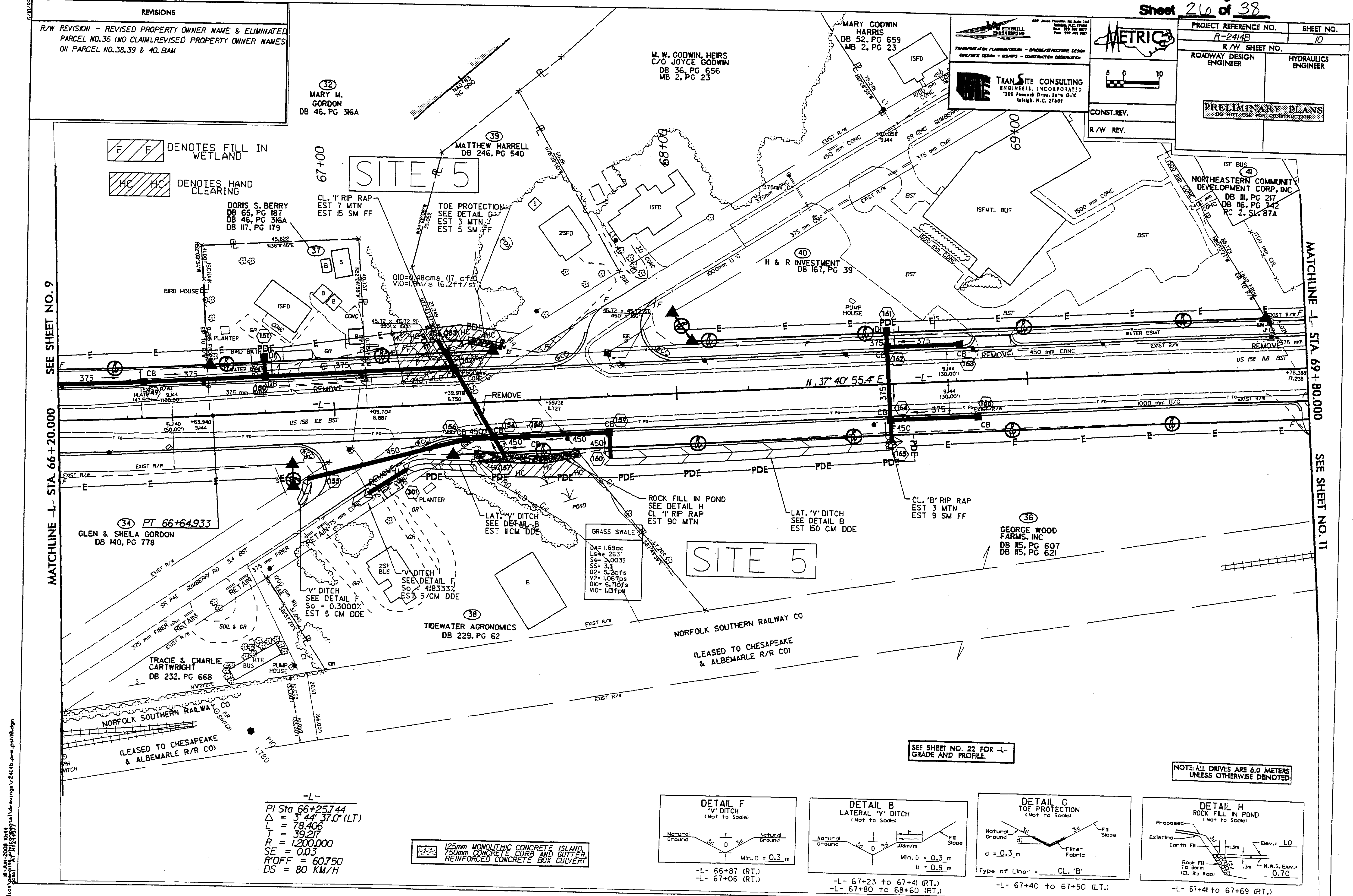
Permit Drawing
Sheet 25 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-43

2.5 0 2.5 5 METRIC

SITE 4




REVISIONS
R/W REVISION - REVISED PROPERTY OWNER NAME & ELIMINATED PARCEL NO.36 (NO CLAIM). REVISED PROPERTY OWNER NAMES ON PARCEL NO.38,39 & 40. BAM
PROJECT REFERENCE NO. R-2414B
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
METRIC
TRANSITE CONSULTING ENGINEERS, INCORPORATED
CONST.REV.
R/W REV.
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
SITE 5
MARY M. GORDON DB 46, PG 316A
MATTHEW HARRELL DB 246, PG 540
M. W. GODWIN, HEIRS C/O JOYCE GODWIN DB 36, PG 656 MB 2, PG 23
MARY GODWIN HARRIS DB 52, PG 659 MB 2, PG 23
DORIS S. BERRY DB 65, PG 187 DB 46, PG 316A DB 117, PG 179
CL. 'I' RIP RAP EST 7 MTN EST 15 SM FF
TOE PROTECTION SEE DETAIL G EST 3 MTN EST 5 SM FF
Q10=0.48cms (17 cfs) V10=1.9m/s (6.2ft/s)
H & R INVESTMENT DB 167, PG 39
NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC DB 111, PG 217 DB 116, PG 742 PC 2, SL 87A
MATCHLINE -L- STA. 66+20.000 SEE SHEET NO. 9
MATCHLINE -L- STA. 69+80.000 SEE SHEET NO. 11
N 37° 40' 55.4" E
US 158
REMOVE
ROCK FILL IN POND SEE DETAIL H CL 'I' RIP RAP EST 90 MTN
LAT. 'V' DITCH SEE DETAIL B EST 11CM DDE
LAT. 'V' DITCH SEE DETAIL B EST 150 CM DDE
CL. 'B' RIP RAP EST 3 MTN EST 9 SM FF
GEORGE WOOD FARMS, INC DB 115, PG 607 DB 115, PG 621
GLEN & SHEILA GORDON DB 140, PG 778
PT 66+64.933
'V' DITCH SEE DETAIL F So = 0.3000% EST 5 CM DDE
'V' DITCH SEE DETAIL F EST 5 CM DDE
GRASS SWALE
TIDEWATER AGRONOMICS DB 229, PG 62
NORFOLK SOUTHERN RAILWAY CO (LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
TRACIE & CHARLIE CARTWRIGHT DB 232, PG 668
SEE SHEET NO. 22 FOR -L- GRADE AND PROFILE.
NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED
-L-
PI Sta 66+25.744
Δ = 3° 44' 37.0" (LT)
L = 78.406
T = 39.217
R = 1,200.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H
125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT
DETAIL F 'V' DITCH (Not to Scale) Min. D = 0.3 m -L- 66+87 (RT.) -L- 67+06 (RT.)
DETAIL B LATERAL 'V' DITCH (Not to Scale) Min. D = 0.3 m b = 0.9 m -L- 67+23 to 67+41 (RT.) -L- 67+80 to 68+60 (RT.)
DETAIL G TOE PROTECTION (Not to Scale) d = 0.3 m Type of Liner = CL. 'B' -L- 67+40 to 67+50 (LT.)
DETAIL H ROCK FILL IN POND (Not to Scale) Elev.= 1.0 N.W.S. Elev.= 0.70 -L- 67+41 to 67+69 (RT.)

Permit Drawing
Sheet 27 of 38

REVISIONS
R/W REVISION - REVISED PROPERTY OWNER NAME & ELIMINATED PARCEL NO.36 (NO CLAIM).REVISED PROPERTY OWNER NAMES ON PARCEL NO.38,39 & 40. BAM

ETHERIDGE ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - SURVEYS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING ENGINEERS, INCORPORATED
300 Peasack Drive, Suite G-10
Raleigh, N.C. 27609

METRIC
5 0 10

CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

F/F DENOTES FILL IN WETLAND

HC/HC DENOTES HAND CLEARING

SITE # 5

SEE SHEET NO. 9

MATCHLINE -L- STA. 66+20.000

MATCHLINE -L- STA. 69+80.000

SEE SHEET NO. 11

(32) MARY M. GORDON
DB 46, PG 316A

(39) MATTHEW HARRELL
DB 246, PG 540

M. W. GODWIN, HEIRS
C/O JOYCE GODWIN
DB 36, PG 656
MB 2, PG 23

MARY GODWIN HARRIS
DB 521, PG 659
MB 2, PG 23

(41) NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC
DB 111, PG 217
DB 116, PG 742
PC 2, SL. 187A

(40) H & R INVESTMENT
DB 187, PG 39

DORIS S. BERRY
DB 65, PG 187
DB 46, PG 316A
DB 117, PG 179

CL. 'I' RIP RAP
EST 7 MTN
EST 15 SM FF

TOE PROTECTION
SEE DETAIL G
EST 3 MTN
EST 5 SM FF

Q10=0.48cms (17 cfs)
V10=1.4m/s (4.27 ft/s)

N 37° 40' 55.4" E

REMOVE

ROCK FILL IN POND
SEE DETAIL H
CL 'I' RIP RAP
EST 90 MTN

LAT. 'V' DITCH
SEE DETAIL B
EST 110M DDE

LAT. 'V' DITCH
SEE DETAIL B
EST 150 CM DDE

CL. 'B' RIP RAP
EST 3 MTN
EST 9 SM FF

GRASS SWALE
n=.088cc
L=8.26'
S=.05035
S=.11
Q2=.512cfs
V2=1.05fps
Q10=6.91cfs
V10=1.19fps

'V' DITCH
SEE DETAIL F
So = 0.3000%
EST 5 CM DDE

'V' DITCH
SEE DETAIL F
So = 4.8333%
EST 5 CM/DDE

(34) PT 66+64933
GLEN & SHEILA GORDON
DB 140, PG 778

(38) TIDEWATER AGRONOMICS
DB 229, PG 62

(36) GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621

TRACIE & CHARLIE CARTWRIGHT
DB 232, PG 668

NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

PI Q 1,180

-L-
PI Sta 66+25.744
Δ = 3°44' 37.0" (LT)
L = 78.406
T = 39.217
R = 1,200.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

125mm MONOLITHIC CONCRETE ISLAND
750mm CONCRETE CURB AND GUTTER
REINFORCED CONCRETE BOX CULVERT

SEE SHEET NO. 22 FOR -L- GRADE AND PROFILE.

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

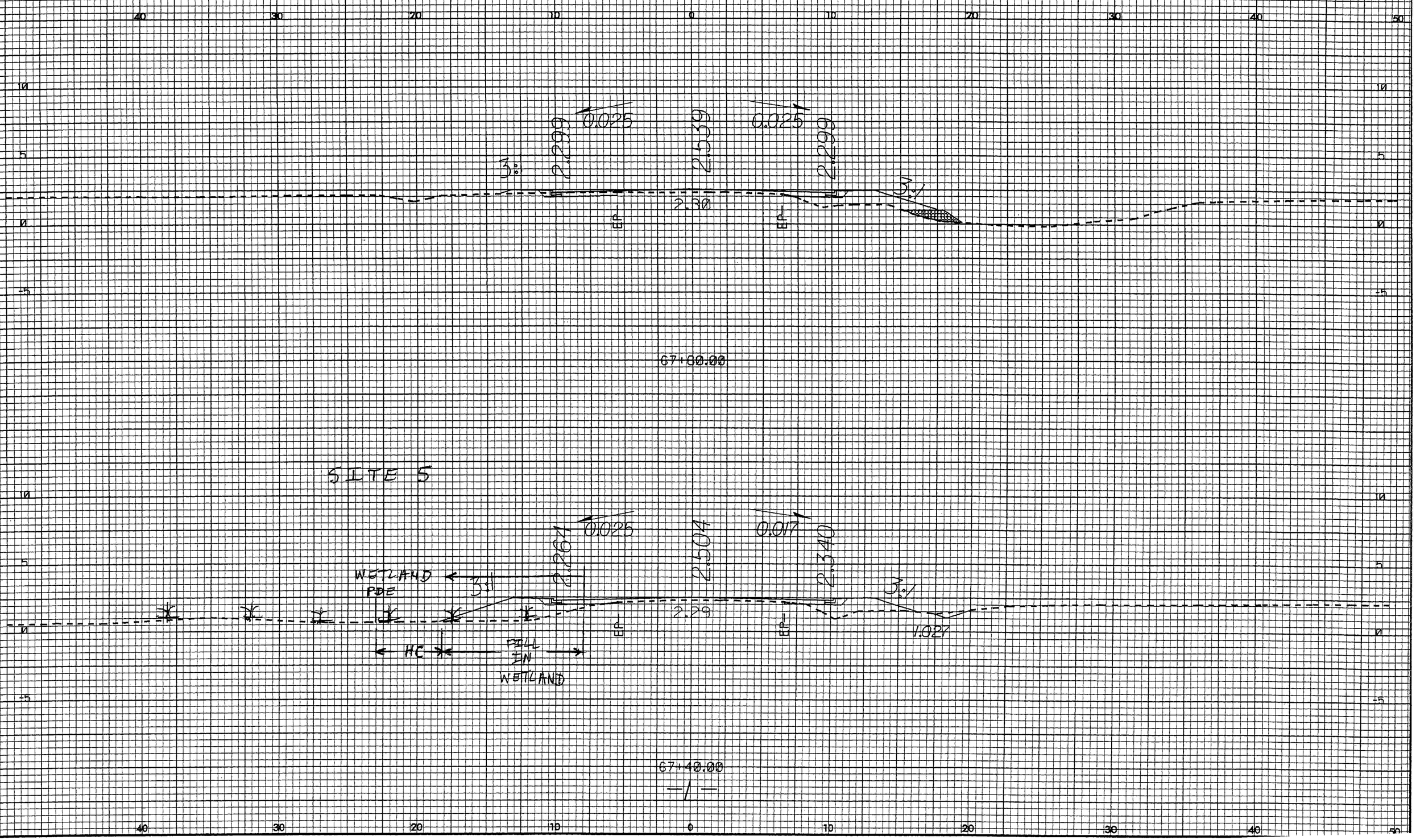
DETAIL F
'V' DITCH
(Not to Scale)
Natural Ground 3:1 D 3:1 Natural Ground
Min. D = 0.3 m
-L- 66+87 (RT.)
-L- 67+06 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground 3:1 D 3:1 b .08m/m Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 67+23 to 67+41 (RT.)
-L- 67+80 to 68+60 (RT.)

DETAIL G
TOE PROTECTION
(Not to Scale)
Natural Ground 3:1 d 3:1 Fill Slope
d = 0.3 m
Filter Fabric
Type of Liner = CL. 'B'
-L- 67+40 to 67+50 (LT.)

DETAIL H
ROCK FILL IN POND
(Not to Scale)
Proposed
Existing
Earth Fill
1:1
.3m
Elev.= 1.0
Rock Fill To Berm (CL.1Rip Rap)
.3m
N.W.S. Elev.= 0.70
-L- 67+41 to 67+69 (RT.)

2.5 0 2.5 5	METRIC	PROJECT REFERENCE NO.	SHEET NO.
		R-2414B	X-55



-Permit Drawing
Sheet 29 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST. REV.
R/W REV.

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

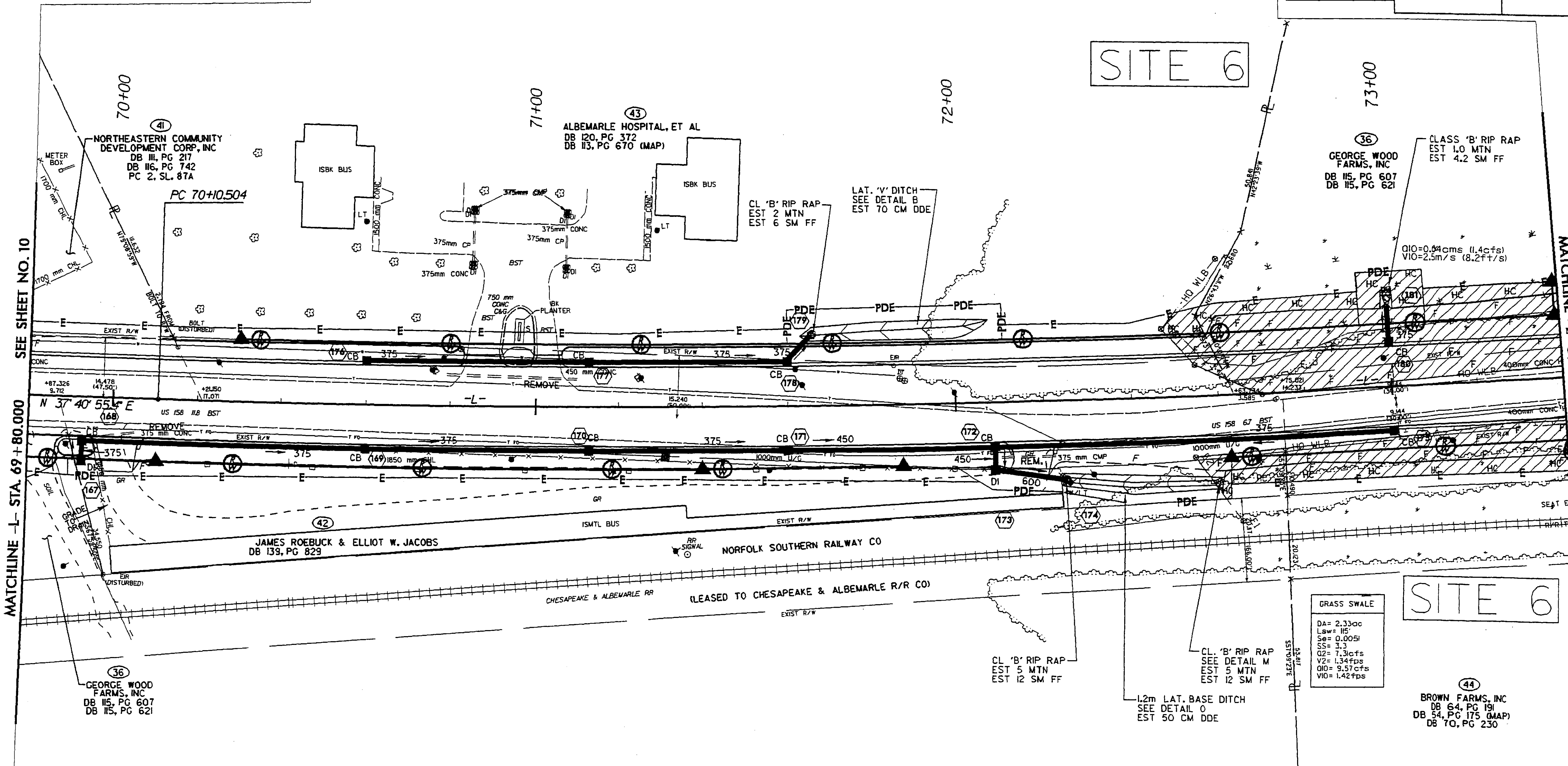
TRANSITE CONSULTING ENGINEERS, INCORPORATED
3300 Peacock Drive, Ste G-10
Raleigh, N.C. 27607

REVISIONS

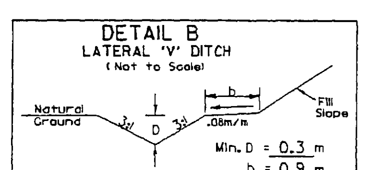
11/07/06 - REVISED ROW, TCE & PDE ON PARCEL 36.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.42 & ADDED DEED BOOK DESCRIPTION TO PARCEL NO.44. BAM

F / F DENOTES FILL IN WETLAND

HC / HC DENOTES HAND CLEARING

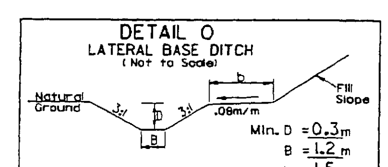


SITE 6
70+00
71+00
72+00
73+00
(41) NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC
DB 111, PG 217
DB 116, PG 742
PC 2, SL. 87A
(43) ALBEMARLE HOSPITAL, ET AL
DB 120, PG 372
DB 113, PG 670 (MAP)
(36) GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621
CLASS 'B' RIP RAP
EST 1.0 MTN
EST 4.2 SM FF
CL 'B' RIP RAP
EST 2 MTN
EST 6 SM FF
LAT. 'V' DITCH
SEE DETAIL B
EST 70 CM DDE
PC 70+10.504
Q10=0.04cms (1.4cfs)
V10=2.5m/s (8.2ft/s)
MATCHLINE -L- STA. 73+40.000
SEE SHEET NO. 12
MATCHLINE -L- STA. 69+80.000
SEE SHEET NO. 10
N 37° 40' 55.4" E
US 158
(42) JAMES ROEBUCK & ELLIOT W. JACOBS
DB 139, PG 829
NORFOLK SOUTHERN RAILWAY CO
CHESAPEAKE & ALBEMARLE RR
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
EXIST R/W
REMOVE
PDE
CB
CL 'B' RIP RAP
EST 5 MTN
EST 12 SM FF
CL. 'B' RIP RAP
SEE DETAIL M
EST 5 MTN
EST 12 SM FF
1.2m LAT. BASE DITCH
SEE DETAIL O
EST 50 CM DDE
(36) GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621
(44) BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
DB 70, PG 230
GRASS SWALE
DA= 2.33ac
Lsw= 115'
Se= 0.0051
SS= 3.3
Q2= 7.31cfs
V2= 1.34fps
Q10= 9.57cfs
V10= 1.42fps
SITE 6

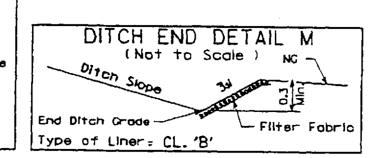


-L- 71+65 to 72+10 (LT.)

-L-
PI Sta 72+27.319
Δ = 8° 51' 20.1" (LT)
L = 432.766
T = 216.815
R = 2,800.000
SE = NC
DS = 80 KM/H



-L- 72+25 to 72+60 (RT.)



-L- 72+60 (RT.)

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 22 FOR -L- GRADE AND PROFILE.

6/10/03

REVISIONS

11/07/06 - REVISED ROW,TCE & PDE ON PARCEL 36.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.42 & ADDED DEED BOOK DESCRIPTION TO PARCEL NO.44. BAM

WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - RR/APS - CONSTRUCTION OBSERVATION
TRANSITE CONSULTING ENGINEERS, INCORPORATED
3300 Poinsett Drive, Suite G-10
Raleigh, N.C. 27609

METRIC
5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

F / F DENOTES FILL IN WETLAND
HC / HC DENOTES HAND CLEARING

NAD 83 NC GRID

SITE 6

SEE SHEET NO. 10

MATCHLINE -L- STA. 69+80.000

MATCHLINE -L- STA. 73+40.000

SEE SHEET NO. 12

70+00 71+00 72+00 73+00

(41) NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC
DB 111, PG 217
DB 116, PG 742
PC 2, SL. 87A

(43) ALBEMARLE HOSPITAL, ET AL
DB 120, PG 372
DB 113, PG 670 (MAP)

(36) GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621

(42) JAMES ROEBUCK & ELLIOT W. JACOBS
DB 139, PG 829

(44) BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
DB 70, PG 230

NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
CHESAPEAKE & ALBEMARLE RR

PC 70+10.504

ISBK BUS

CL 'B' RIP RAP
EST 2 MTN
EST 6 SM FF

LAT. 'V' DITCH
SEE DETAIL B
EST 70 CM DDE

CLASS 'B' RIP RAP
EST 1.0 MTN
EST 4.2 SM FF

Q10=0.84cms (11.4cfs)
V10=2.5m/s (8.2ft/s)

CL 'B' RIP RAP
EST 6 MTN
EST 12 SM FF

CL. 'B' RIP RAP
SEE DETAIL M
EST 5 MTN
EST 12 SM FF

1.2m LAT. BASE DITCH
SEE DETAIL O
EST 50 CM DDE

GRASS SWALE
DA= 2.33ac
Lsw= 115'
Se= 0.005
SS= 3.3
Q2= 7.3cfs
V2= 1.34fps
Q10= 9.57cfs
V10= 1.42fps

SITE 6

N 37° 40' 55" E

-L-
PI Sta 72+27.319
Δ = 8°51' 20" (LT)
L = 432.766
T = 216.815
R = 2,800.000
SE = NC
DS = 80 KM/H

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, .08m/m, Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 71+65 to 72+10 (LT.)

DETAIL O
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, b, .08m/m, Fill Slope
Min. D = 0.3m
B = 1.2 m
b = 1.5 m
-L- 72+25 to 72+60 (RT.)

DITCH END DETAIL M
(Not to Scale)
Ditch Slope, 3:1, 0.3 Min., End Ditch Grade, Filter Fabric
Type of Liner: CL. 'B'
-L- 72+60 (RT.)

125mm MONOLITHIC CONCRETE ISLAND, 150mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 22 FOR -L- GRADE AND PROFILE.

R-2414B 2008 10x9
c:\projects\r2414b\roadway\civil\dgn\r2414b_prm_phil.dgn
phil "AY" 01/23/2007

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

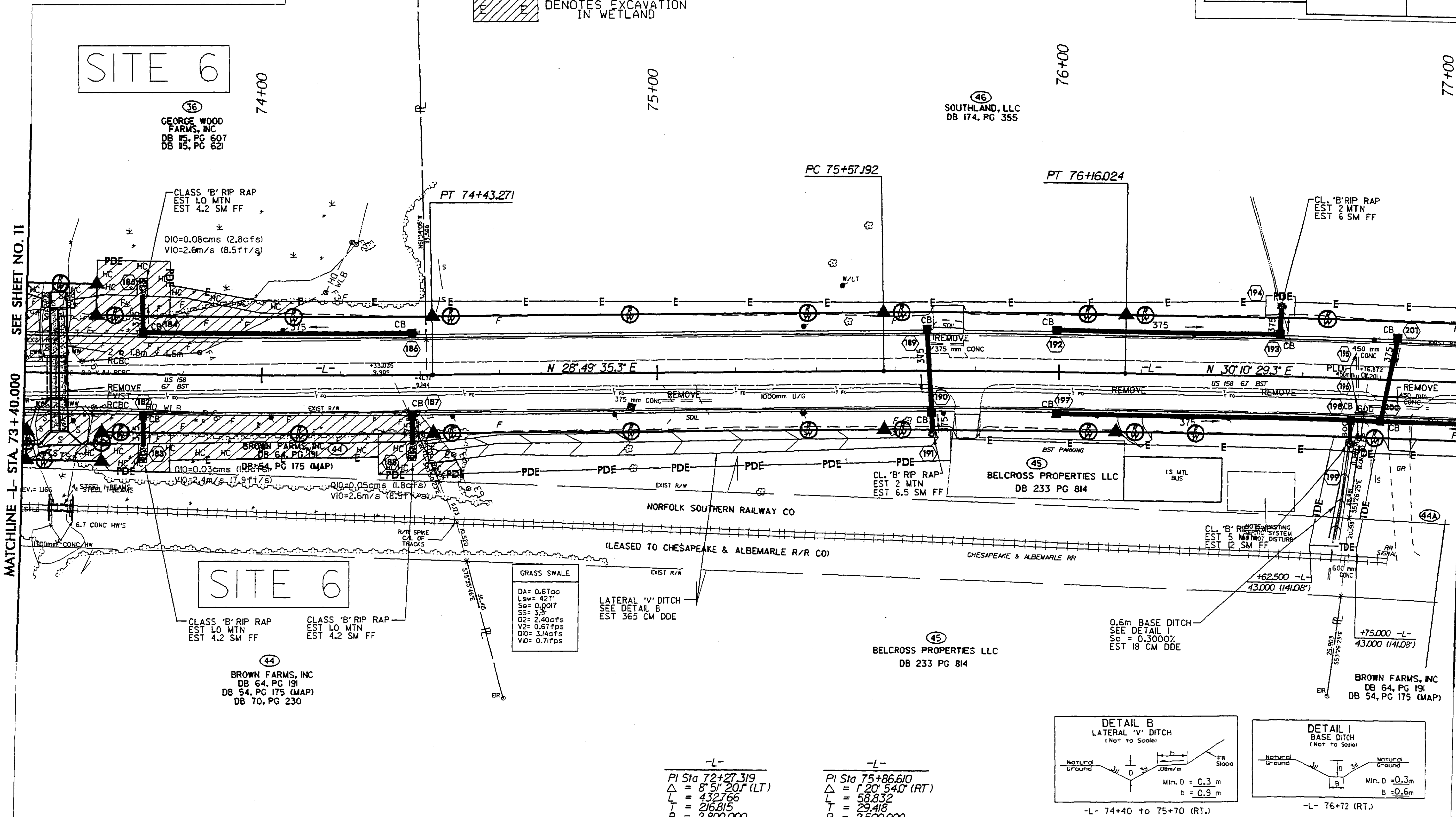
METRIC

CONST. REV.
R/W REV.

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

TRANSITE CONSULTING ENGINEERS, INCORPORATED
Raleigh, N.C.

REVISIONS
R/W REVISION - REVISED PDE & TCE ON PARCEL NO.36.(BAM)
R/W REVISION - ADDED DEED BOOK DESCRIPTION TO PARCEL NO.44. BAM


DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES EXCAVATION IN WETLAND
NAD 83 NC GRID
SITE 6
36 GEORGE WOOD FARMS, INC DB 115, PG 607 DB 115, PG 621
46 SOUTHLAND, LLC DB 174, PG 355
74+00
75+00
76+00
77+00
PT 74+43.271
PC 75+57.192
PT 76+16.024
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
Q10=0.08cms (2.8cfs) V10=2.6m/s (8.5ft/s)
CL. 'B' RIP RAP EST 2 MTN EST 6 SM FF
SEE SHEET NO. 11
MATCHLINE -L- STA. 73+40.000
SEE SHEET NO. 13
MATCHLINE -L- STA. 77+00.000
N 28°49' 35.3" E
N 30°10' 29.3" E
US 158
REMOVE
1000mm U/G
375 mm CONC
Q10=0.03cms V10=2.4m/s (7.9ft/s)
Q10=0.05cms (1.8cfs) V10=2.6m/s (8.5ft/s)
BROWN FARMS, INC DB 64, PG 191 DB 54, PG 175 (MAP)
CL. 'B' RIP RAP EST 2 MTN EST 6.5 SM FF
45 BELCROSS PROPERTIES LLC DB 233 PG 814
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
CHESAPEAKE & ALBEMARLE RR
CL. 'B' RIP RAP EST 5 MTN EST 12 SM FF
NOTE: EXISTING SEPTIC SYSTEM DO NOT DISTURB
+62.500 -L- 43.000 (141.08')
+75.000 -L- 43.000 (141.08')
SITE 6
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
GRASS SWALE
DA= 0.67ac Lsw= 427' Se= 0.0017 SS= 3.5 Q2= 2.40cfs V2= 0.67fps Q10= 3.14cfs V10= 0.71fps
LATERAL 'V' DITCH SEE DETAIL B EST 365 CM DDE
0.6m BASE DITCH SEE DETAIL I So = 0.3000% EST 18 CM DDE
44 BROWN FARMS, INC DB 64, PG 191 DB 54, PG 175 (MAP) DB 70, PG 230
45 BELCROSS PROPERTIES LLC DB 233 PG 814
BROWN FARMS, INC DB 64, PG 191 DB 54, PG 175 (MAP)
-L- PI Sta 72+27.319 Δ = 8°51' 20.1" (LT) L = 432.766 T = 216.815 R = 2,800.000 SE = NC DS = 80 KM/H
-L- PI Sta 75+86.610 Δ = 1°20' 54.0" (RT) L = 58.832 T = 29.418 R = 2,500.000 SE = NC DS = 80 KM/H
DETAIL B LATERAL 'V' DITCH (Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 74+40 to 75+70 (RT.)
DETAIL I BASE DITCH (Not to Scale)
Natural Ground
Min. D = 0.3 m
B = 0.6m
-L- 76+72 (RT.)

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 23 FOR -L- GRADE AND PROFILE.

Permit Drawing
Sheet 32 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.
R/W REV.

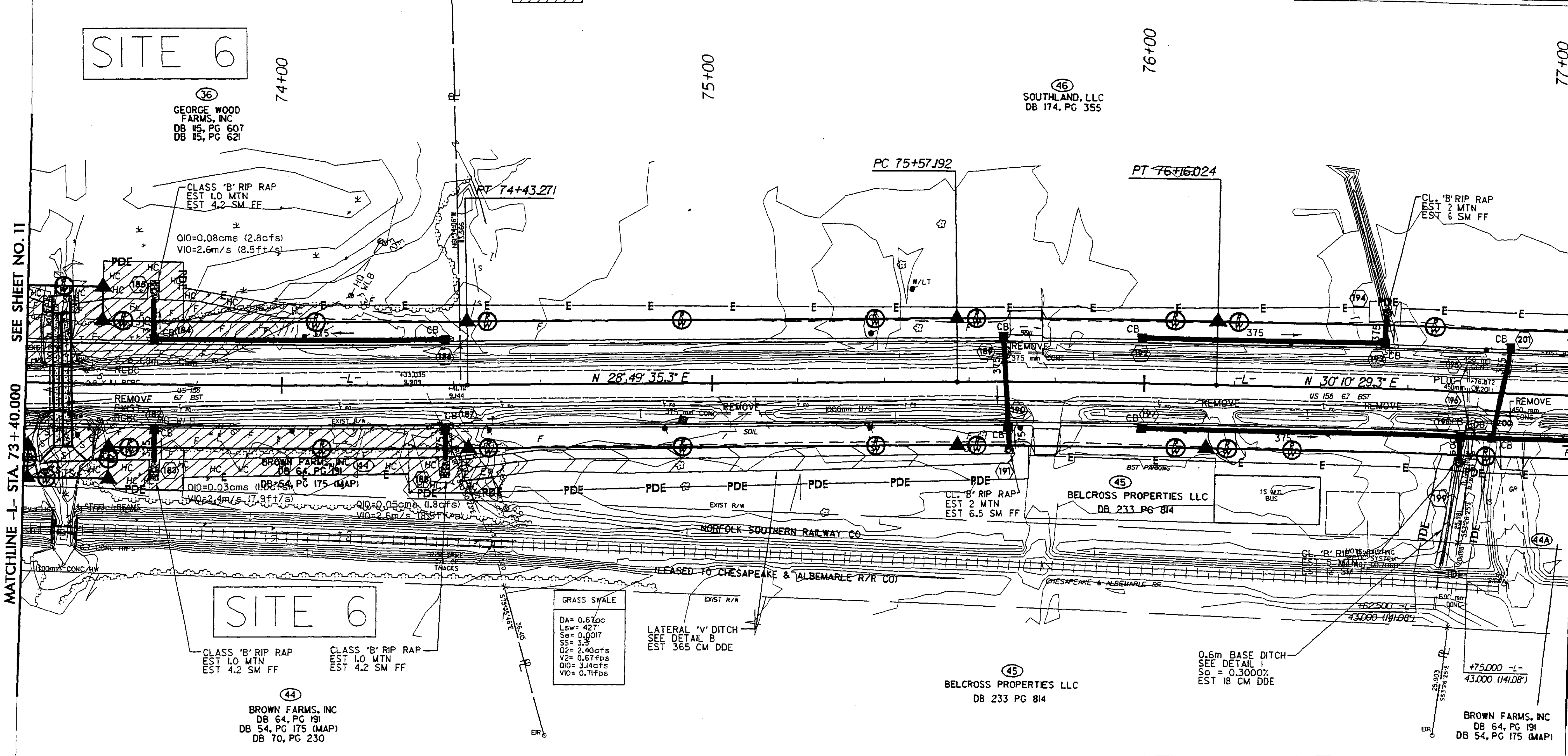
METRIC

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

TRANSITE CONSULTING ENGINEERS, INCORPORATED
300 Peacock Drive, Suite G-10
Raleigh, N.C. 27609

REVISIONS
R/W REVISION - REVISED PDE & TCE ON PARCEL NO.36.(BAM)
R/W REVISION - ADDED DEED BOOK DESCRIPTION TO PARCEL NO.44. BAM

F / F DENOTES FILL IN WETLAND
HC / HC DENOTES HAND CLEARING
E / E DENOTES EXCAVATION IN WETLAND



SITE 6
SITE 6
74+00
75+00
76+00
77+00
36
GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621
46
SOUTHLAND, LLC
DB 174, PG 355
PC 75+57.192
PT 76+16.024
PT 74+43.271
CLASS 'B' RIP RAP
EST 1.0 MTN
EST 4.2 SM FF
Q10=0.08cms (2.8cfs)
V10=2.6m/s (8.5ft/s)
CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF
SEE SHEET NO. 11
SEE SHEET NO. 13
MATCHLINE -L- STA. 73+40.000
MATCHLINE -L- STA. 77+00.000
N 28°49' 35.3" E
N 30°10' 29.3" E
-L-
US 158 67 BST
REMOVE
Q10=0.03cms
V10=2.4m/s (7.9ft/s)
Q10=0.05cms (1.8cfs)
V10=2.6m/s (8.5ft/s)
BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
CL. 'B' RIP RAP
EST 2 MTN
EST 6.5 SM FF
45
BELCROSS PROPERTIES LLC
DB 233 PG 814
NORFOLK SOUTHERN RAILWAY CO
LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
EXIST R/W
GRASS SWALE
DA= 0.67ac
Lsw= 427'
Se= 0.0017
SS= 3.3
Q2= 2.40cfs
V2= 0.67fps
Q10= 3.14cfs
V10= 0.71fps
LATERAL 'V' DITCH
SEE DETAIL B
EST 365 CM DDE
CLASS 'B' RIP RAP
EST 1.0 MTN
EST 4.2 SM FF
CLASS 'B' RIP RAP
EST 1.0 MTN
EST 4.2 SM FF
44
BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
DB 70, PG 230
45
BELCROSS PROPERTIES LLC
DB 233 PG 814
0.6m BASE DITCH
SEE DETAIL I
So = 0.3000%
EST 18 CM DDE
+62.500 -L-
43.000 (141.08')
+75.000 -L-
43.000 (141.08')
BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
44A
NAD 83 NC GRID

-L-	-L-
PI Sta 72+27.319	PI Sta 75+86.610
Δ = 8°51' 20.1" (LT)	Δ = 1°20' 54.0" (RT)
L = 432.766	L = 58.832
T = 216.815	T = 29.418
R = 2,800.000	R = 2,500.000
SE = NC	SE = NC
DS = 80 KM/H	DS = 80 KM/H

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Min. D = 0.3 m
b = 0.9 m
-L- 74+40 to 75+70 (RT.)

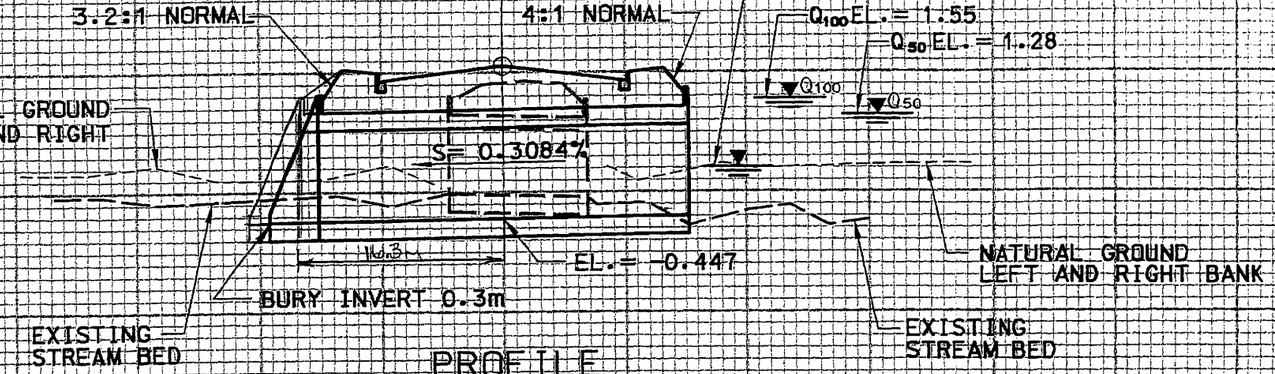
DETAIL I
BASE DITCH
(Not to Scale)
Natural Ground
Min. D = 0.3m
B = 0.6m
-L- 76+72 (RT.)

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

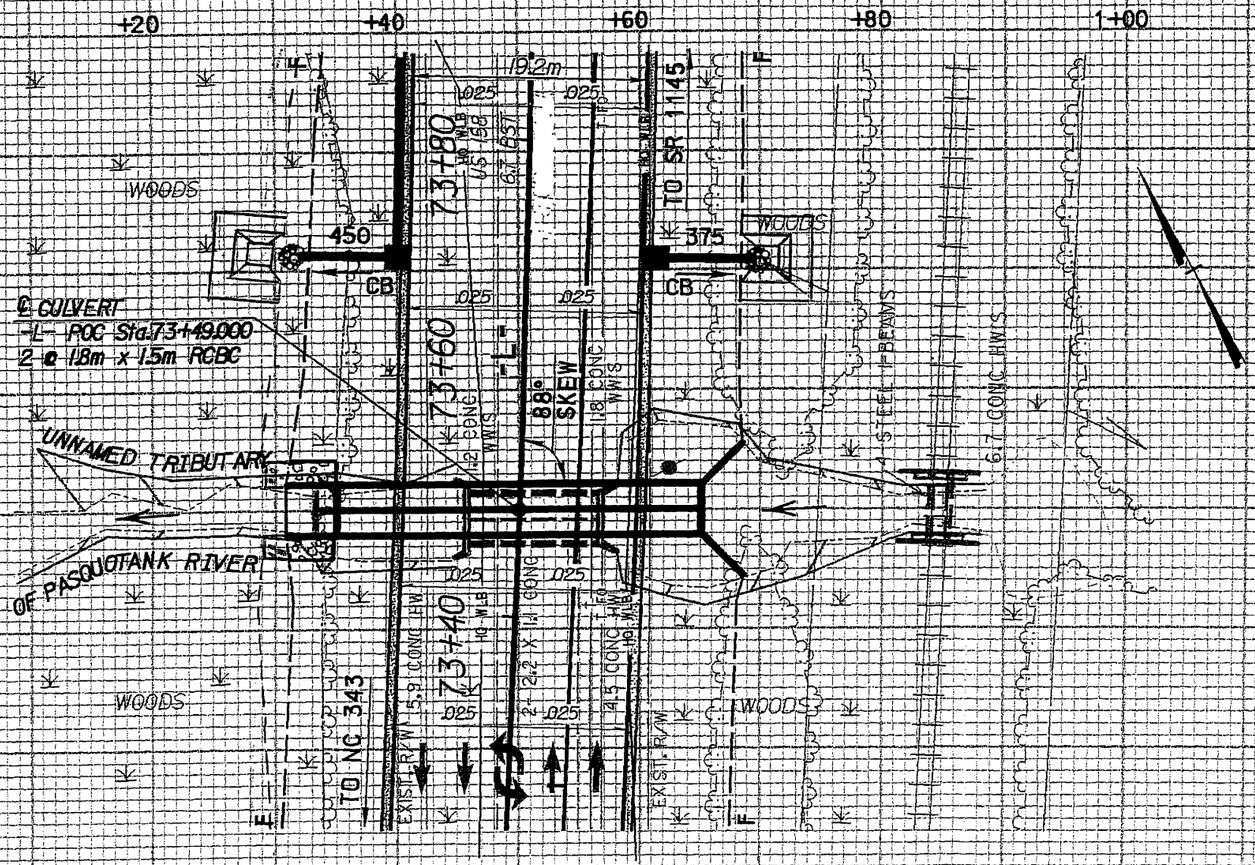
SEE SHEET NO. 23 FOR -L- GRADE AND PROFILE.

Permit Drawing
Sheet 33 of 38

STA. 73+49.000 -L-
2 @ 1.8 x 1.5m RCBC
G.P. EL = 2.103
SKEW = 88°

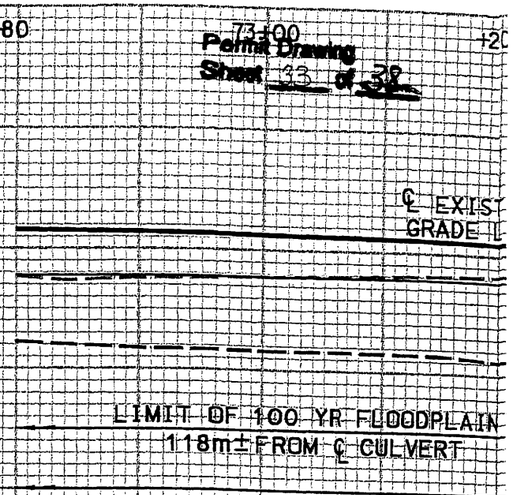


PROFILE



PLAN

HORIZ. SCALE 1:500
VERT. SCALE 1:200

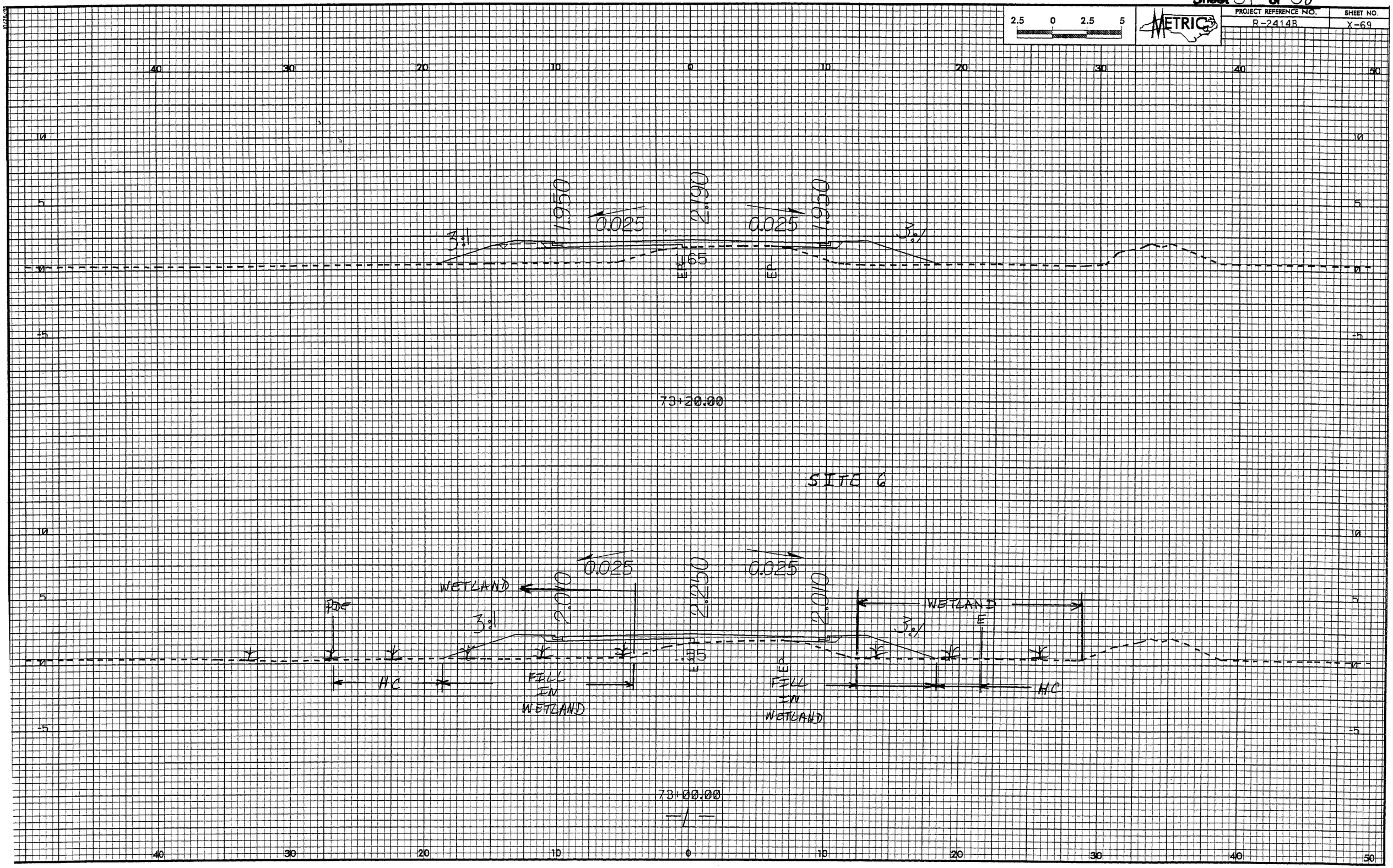


Permit Drawing
Sheet 34 of 38

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-69

2.5 0 2.5 5

METRIC



REVISIONS
R/W REVISION- REVISED ROW,PDE & TCE ON PARCEL NOS. 71,74,75,76 & 77. REVISED FLAGGING DUE TO THE ELIMINATION OF EQUATLITY.(BAM)
R/W REVISION - ADDED PARCEL NO.71A & REVISED THE PROPERTY OWNER NAMES ON PARCEL NO.71A & 74. BAM

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

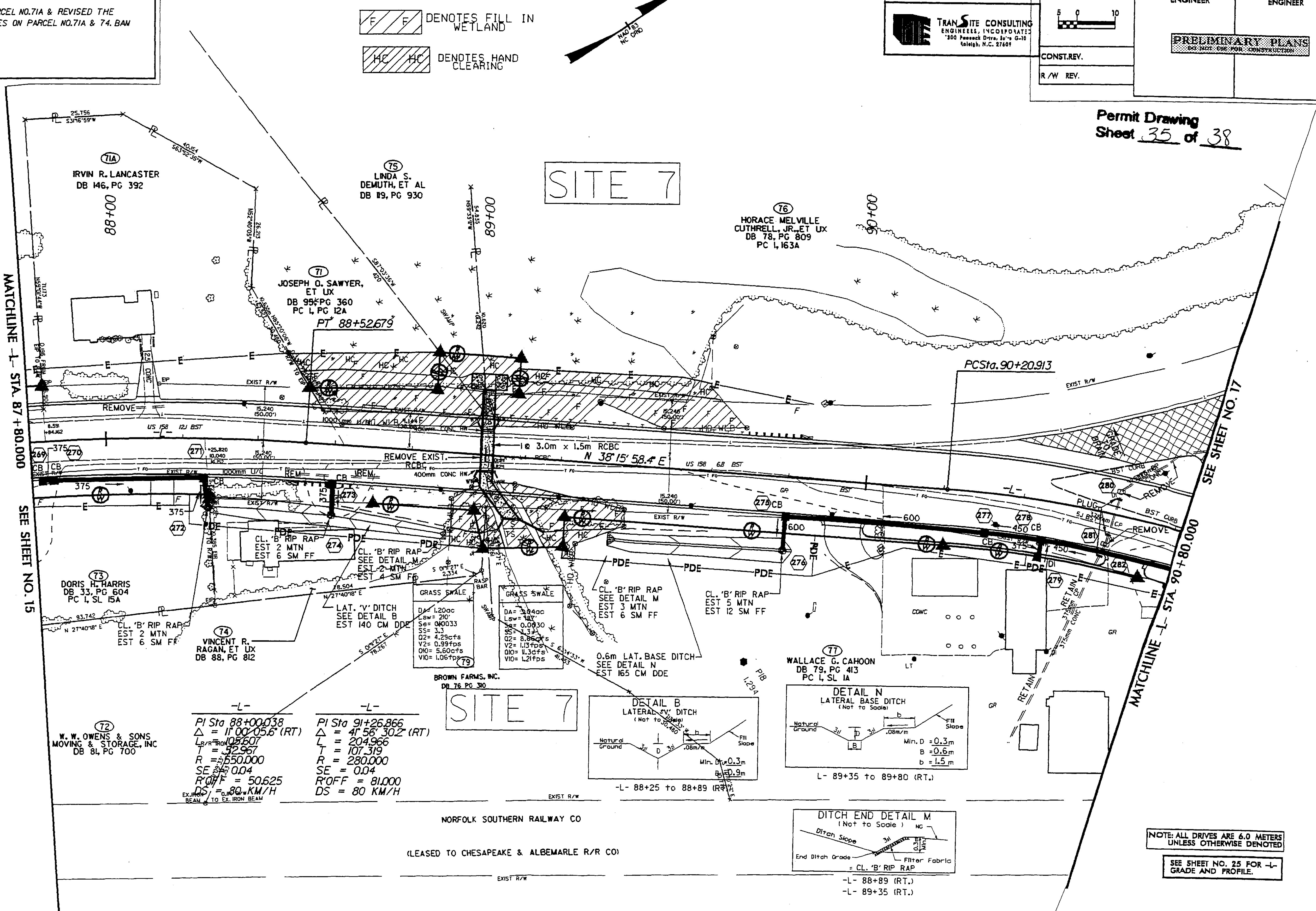
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONST.REV.

R/W REV.

TRANSITE CONSULTING ENGINEERS, INCORPORATED
Raleigh, N.C. 27609

Permit Drawing
Sheet 35 of 38



F / F DENOTES FILL IN WETLAND
HC / HC DENOTES HAND CLEARING
NAD 83 NC GRID
SITE 7
IRVIN R. LANCASTER
DB 146, PG 392
LINDA S. DEMUTH, ET AL
DB 119, PG 930
HORACE MELVILLE CUTHRELL, JR., ET UX
DB 78, PG 809
PC 1, 163A
JOSEPH O. SAWYER, ET UX
DB 95, PG 360
PC 1, PG 12A
PT 88+52.679
PCSta. 90+20.913
MATCHLINE -L- STA. 87+80.000
SEE SHEET NO. 15
MATCHLINE -L- STA. 90+80.000
SEE SHEET NO. 17
1@ 3.0m x 1.5m RCBC
N 38°15' 58.4" E
REMOVE EXIST. RCBC
US 158 12J BST
US 158 6.8 BST
CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF
CL. 'B' RIP RAP
SEE DETAIL M
EST 2 MTN
EST 4 SM FF
LAT. 'V' DITCH
SEE DETAIL B
EST 140 CM DDE
CL. 'B' RIP RAP
SEE DETAIL M
EST 3 MTN
EST 6 SM FF
CL. 'B' RIP RAP
EST 5 MTN
EST 12 SM FF
0.6m LAT. BASE DITCH
SEE DETAIL N
EST 165 CM DDE
DORIS H. HARRIS
DB 33, PG 604
PC 1, SL 15A
VINCENT R. RAGAN, ET UX
DB 88, PG 812
BROWN FARMS, INC.
DB 76 PG 310
WALLACE G. CAHOON
DB 79, PG 413
PC 1, SL 1A
W. W. OWENS & SONS MOVING & STORAGE, INC
DB 81, PG 700
GRASS SWALE
DA= 1.20ac
Lsw= 210'
Se= 0.0033
SS= 3.3
Q2= 4.29cfs
V2= 0.99fps
Q10= 5.60cfs
V10= 1.06fps
GRASS SWALE
DA= 3.04ac
Lsw= 187'
Se= 0.0030
SS= 3.3
Q2= 8.86cfs
V2= 1.13fps
Q10= 11.3cfs
V10= 1.21fps
-L-
PI Sta 88+00.038
Δ = 11° 00' 05.6" (RT)
L = 105.607
T = 52.967
R = 550.000
SE = 0.04
R'OFF = 50.625
DS = 80 KM/H
-L-
PI Sta 91+26.866
Δ = 41° 56' 30.2" (RT)
L = 204.966
T = 107.319
R = 280.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3m
B = 0.9m
-L- 88+25 to 88+89 (RT.)
DETAIL N
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3m
B = 0.6m
b = 1.5m
-L- 89+35 to 89+80 (RT.)
DITCH END DETAIL M
(Not to Scale)
Ditch Slope
End Ditch Grade
Filter Fabric
= CL. 'B' RIP RAP
-L- 88+89 (RT.)
-L- 89+35 (RT.)
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
EXIST R/W

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 25 FOR -L- GRADE AND PROFILE.

REVISIONS
R/W REVISION- REVISED ROW, PDE & TCE ON PARCEL NOS. 71,74,75,76 & 77. REVISED FLAGGING DUE TO THE ELIMINATION OF EQUATLITY.(BAM)
R/W REVISION - ADDED PARCEL NO.71A & REVISED THE PROPERTY OWNER NAMES ON PARCEL NO.71A & 74. BAM

WETHERILL ENGINEERING

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

TRANSITE CONSULTING ENGINEERS, INCORPORATED
3300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609

METRIC

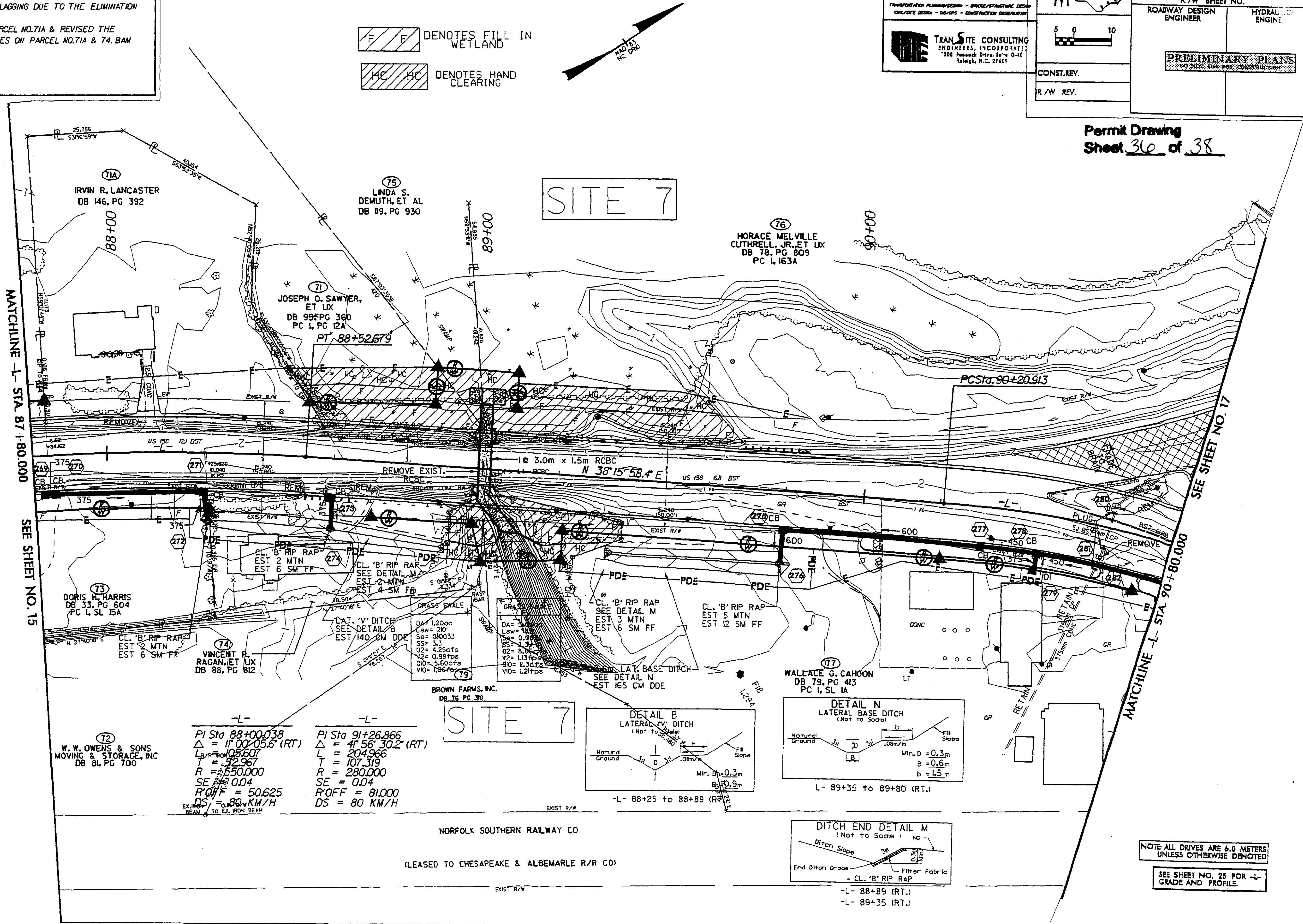
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 36 of 38



DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
NAD 83 NC GRID
SITE 7
IRVIN R. LANCASTER
DB 146, PG 392
LINDA S. DEMUTH, ET AL
DB 119, PG 930
HORACE MELVILLE CUTHRELL, JR., ET UX
DB 78, PG 809
PC 1, 163A
JOSEPH O. SAWYER, ET UX
DB 99, PG 360
PC 1, PG 12A
PT 88+52.679
PC Sta. 90+20.913
MATCHLINE -L- STA. 87+80.000
SEE SHEET NO. 15
MATCHLINE -L- STA. 90+80.000
SEE SHEET NO. 17
1@ 3.0m x 1.5m RCBC
REMOVE EXIST. RCBC
N 38°15'58.4" E
US 158
CL. 'B' RIP RAP
EST 2 MTN
EST 6 SM FF
CL. 'B' RIP RAP
SEE DETAIL M
EST 2 MTN
EST 4 SM FF
LAT. 'V' DITCH
SEE DETAIL B
EST 140 CM DDE
CL. 'B' RIP RAP
SEE DETAIL M
EST 3 MTN
EST 6 SM FF
CL. 'B' RIP RAP
EST 5 MTN
EST 12 SM FF
LAT. BASE DITCH
SEE DETAIL N
EST 165 CM DDE
DORIS H. HARRIS
DB 33, PG 604
PC 1, SL 15A
VINCENT R. RAGAN, ET UX
DB 88, PG 812
BROWN FARMS, INC.
DB 76 PG 310
WALLACE G. CAHOON
DB 79, PG 413
PC 1, SL 1A
W. W. OWENS & SONS MOVING & STORAGE, INC
DB 81, PG 700
GRASS SWALE
-L-
PI Sta 88+00.038
Δ = 11°00'05.6" (RT)
L = 105.607
T = 52.967
R = 550.000
SE = 0.04
R'OFF = 50.625
DS = 80 KM/H
-L-
PI Sta 91+26.866
Δ = 41°56'30.2" (RT)
L = 204.966
T = 107.319
R = 280.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3m
B = 0.9m
-L- 88+25 to 88+89 (RT.)
DETAIL N
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3m
B = 0.6m
b = 1.5m
-L- 89+35 to 89+80 (RT.)
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
DITCH END DETAIL M
(Not to Scale)
Ditch Slope
End Ditch Grade
Filter Fabric
= CL. 'B' RIP RAP
-L- 88+89 (RT.)
-L- 89+35 (RT.)
NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED
SEE SHEET NO. 25 FOR -L- GRADE AND PROFILE

Permit Drawing
Sheet 37 of 38

STA. 89+00.50 -L-
1 @ 3.0m x 1.5m RCBC
G.P. EL = 2.286
SKEW = 88°

3:1 NORMAL

3:1 NORMAL

EXISTING STREAM BED

S= 0.30%

EL.= -0.282

BACKFILL WITH SELECT MATERIAL

EXTENDED TOE WALL

Q_{100} EL = 1.59

Q_{50} EL.= 1.31

WS EL.= 0.427
SURVEY 11-21-00

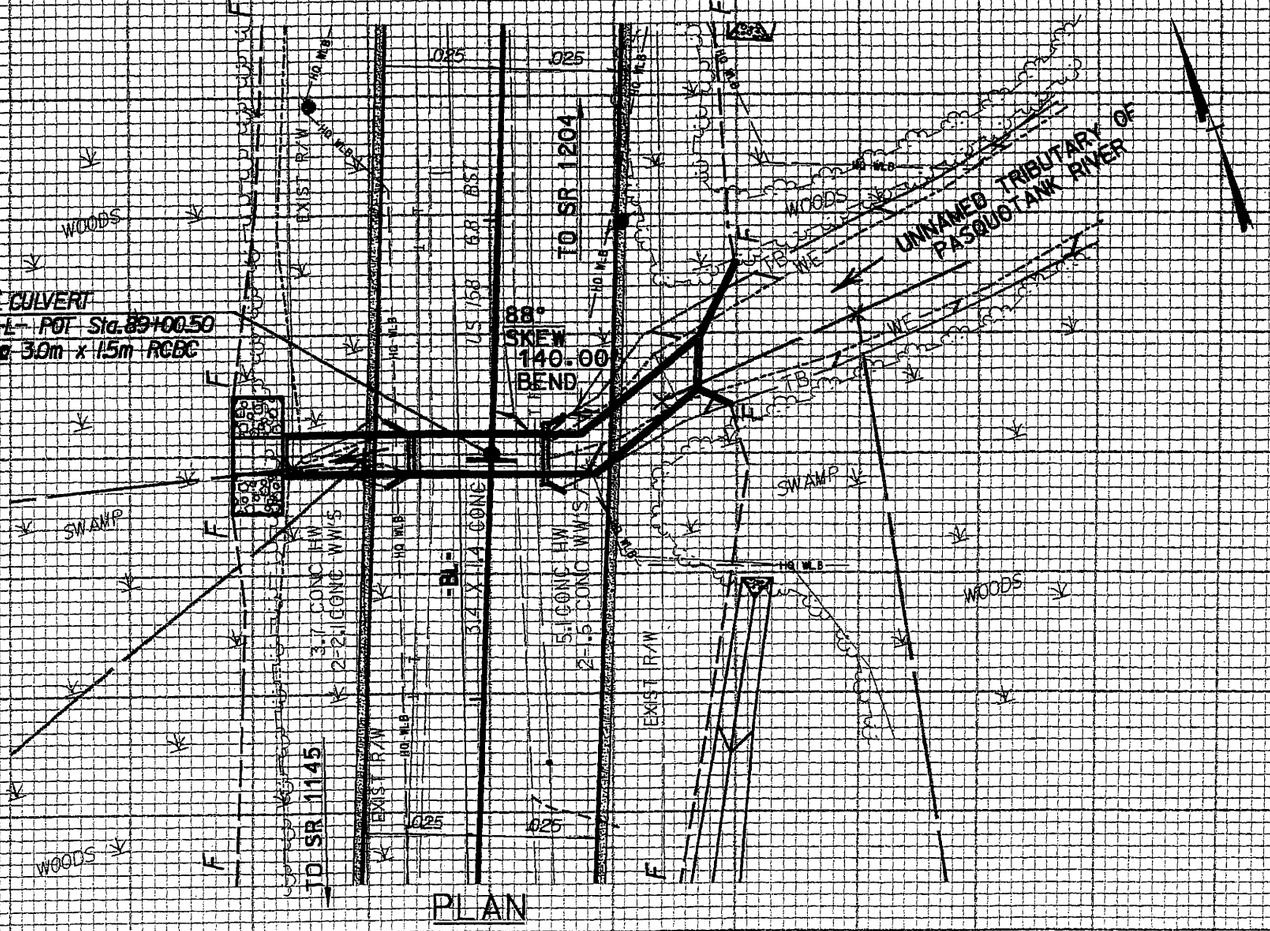
NATURAL GROUND LEFT BANK

NATURAL GROUND RIGHT BANK

EXISTING STREAM BED

BURY INVERT 0.3m (MIN)

PROFILE



℄ CULVERT
-L- POT Sta.89+00.50
1@ 3.0m x 1.5m RCBC

PLAN

+40 +60 +80

VPC -L- 88+40.965

℄ EXISTING US 158 GRADE LINE

(+)0.3000%

Q_{100}

PROPOSED PROFILE
PI = 87+80.000 -L-
ELEV = 2.031
VC = 46m
G1 = (-) 0.5000%
G2 = (+) 0.3000%
LOW POINT STA = 87+85.750
LOW POINT SHOULDER ELEV.= 1.849

FLOODPLA

PERFORMANCE CURVE DATA

FREQUENCY (YR)	Q (cms)	W.S. EL. (m) NATURAL	EXISTING	PRO
10	4.16	0.86	0.90	
50	8.18	1.06	1.26	
100	10.50	1.16	1.49	
DIT	12.60	1.23	1.70	

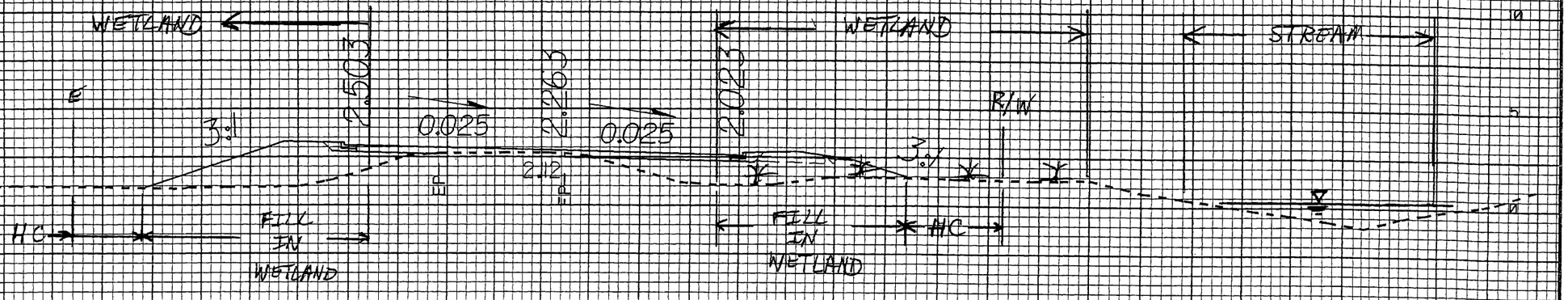
2.5 0 2.5 5

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	X-111

Permit Drawing
Sheet 38 of 38

SITE 7

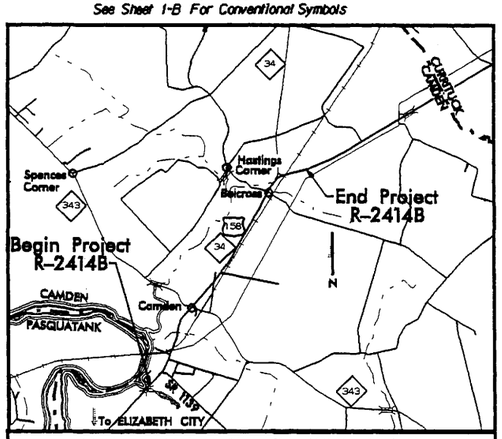


89+20.00

—/—

TIP PROJECT: R-2414B

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



VICINITY MAP SHOWING LOCATION OF STATE PROJECT R-2414B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY BY OTHERS PLANS
CAMDEN COUNTY

LOCATION: US 158–NC 34 FROM SOUTH OF SR 1257 TO EAST OF NC 34 IN BELCROSS

TYPE OF WORK: UTILITIES RELOCATION

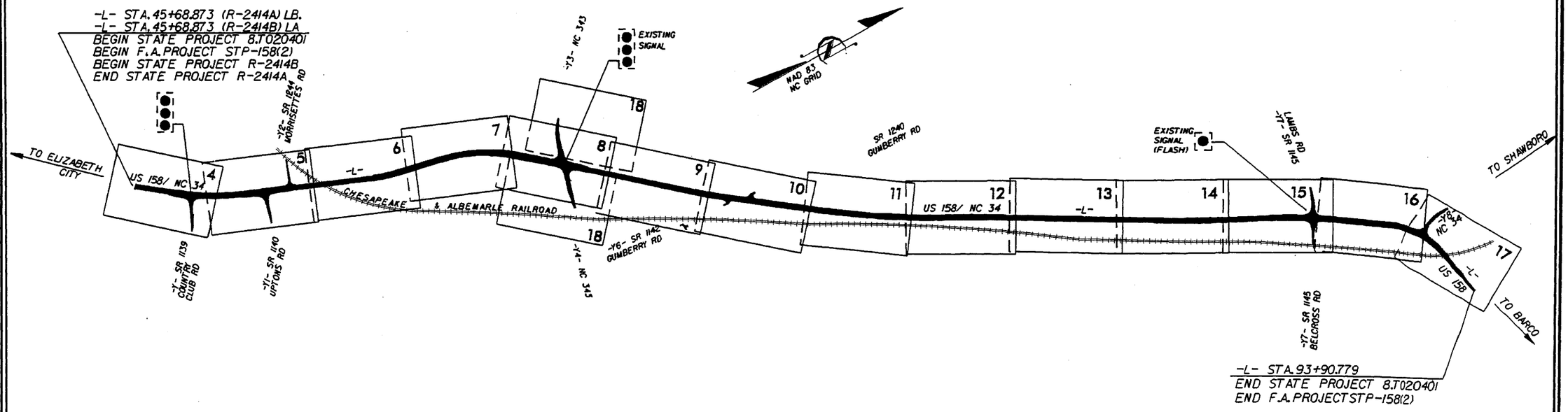
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS UNLESS OTHERWISE SHOWN

T.I.P. NO.	SHEET NO.
R-2414B	1

Utility Permit Drawing Sheet 1 of 15

-L- STA. 45+68.873 (R-2414A) LB.
-L- STA. 45+68.873 (R-2414B) LA
BEGIN STATE PROJECT 8.T020401
BEGIN F.A. PROJECT STP-158(2)
BEGIN STATE PROJECT R-2414B
END STATE PROJECT R-2414A



-L- STA. 93+90.779
END STATE PROJECT 8.T020401
END F.A. PROJECT STP-158(2)

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS 0
PROFILE (HORIZONTAL) 0
PROFILE (VERTICAL) 0

INDEX OF SHEETS

SHEET NO.	*DESCRIPTION*
[illegible]	[illegible]

UTILITY OWNERS ON PROJECT

[illegible]

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
DESIGN SERVICES
UTILITY SECTION
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Corey Bousquet, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Britt McCurry — UTILITIES PROJECT DESIGNER

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	4

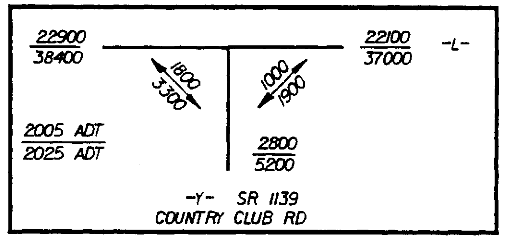
METRIC

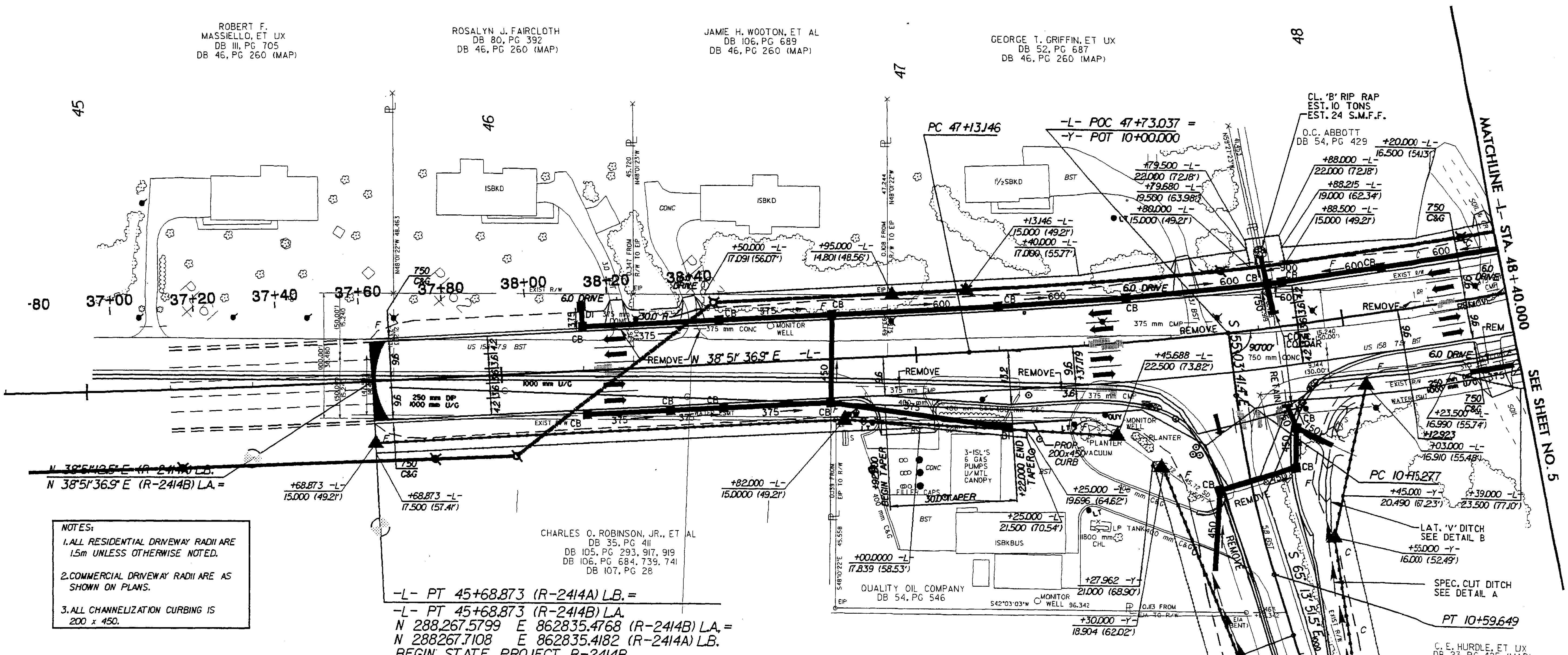
CONST.REV.

R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



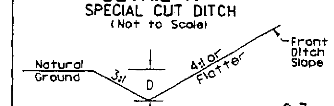


NOTES:

1. *ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.*
2. *COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.*
3. *ALL CHANNELIZATION CURBING IS 200 x 450.*

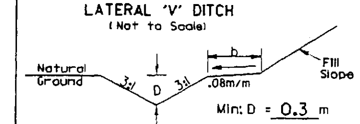
-L- PT 45+68.873 (R-2414A) LB.=
-L- PT 45+68.873 (R-2414B) LA.
N 288.267.5799 E 862835.4768 (R-2414B) LA.=
N 288267.7108 E 862835.4182 (R-2414A) LB.
BEGIN STATE PROJECT R-2414B
END STATE PROJECT R-2414A

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



-Y- 10+50 to 11+20 (LT.)
-Y- 10+55 to 11+00 (RT.)

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



-Y- 10+19 to 10+50 (LT.)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2414-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 286521.540(m) EASTING: 859732.336(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0000523
THE NC. LAMBERT GRID BEARING LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2414-1" TO -L- PT STATION 45+68.873 IS
N 60°38'05.7" E 3,560.637(m)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

R-2414A	-L-	-Y-	-Y-	-Y-
PI Sta 43+92.806	PI Sta 48+39.173	PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 8°05' 01.5" (LT)	Δ = 16°23' 31.2" (LT)	Δ = 10°10' 10.1" (LT)	Δ = 2°32' 38.4" (RT)	Δ = 11°00' 32.5" (RT)
L = 352.720	L = 250.332	L = 44.373	L = 21.313	L = 38.429
T = 176.653	T = 126.027	T = 22.245	T = 10.658	T = 19.274
R = 2,500.000	R = 875.000	R = 250.000	R = 480.000	R = 200.000
SE = NC	SE = 0.03		AH = S 62° 41' 13" E	BK = S 62° 41' 13" E
DS = 80 KM/H	R'OFF = 60.750			AH = S 51° 40' 40.5" E
	DS = 80 KM/H			

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y- GRADE AND PROFILE.
SEE SHEET NO. 2-E FOR -Y- INTERSECTION DETAIL

Permit Drawing
Utility Sheet 3 of 15

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	U0-3

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

-Y2- SR 1244
MORRISETTES RD
2005 ADT
2025 ADT
20000 / 33500
100 / 300
100 / 200
100 / 200
20000 / 33400
-L-

MATCHLINE -L- STA. 48+40.000

SEE SHEET NO. 4

SEE SHEET NO. 6

MATCHLINE -L- STA. 52+00.000

Q.C. ABBOTT
DB 54, PG 429

THE BANK OF CURRITUCK
DB 66, PG 105

CAROLINA CONSTRUCTION CORP
DB 118, PG 20

ANTHONY WOODDISSE, ET UX
DB 92, PG 223
DB 89, PG 239 (MAP)

POWER LINE EASEMENT
NORTH CAROLINA POWER
(VEPCO)
DB 31, PG 439
DB 59, PG 677

HARVEY F. GREGORY, JR., ET UX
DB 85, PG 520

HORACE LAMB, ET L
C/O LARRY LAMB
DB 66, PG 239

HORACE LAMB, ET UX
C/O LARRY LAMB
DB 66, PG 239

POWER LINE EASEMENT
NORTH CAROLINA POWER
(VEPCO)
DB 31, PG 439
DB 59, PG 677

NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

LENA W. STALLINGS
DB 74, PG 190
DB 20, PG 425 (MAP)
DB 52, PG 27
DB 54, PG 29
DB 106, PG 21

C. E. HURDLE, ET UX
DB 26, PG 517
DB 28, PG 224
DB 23, PG 425 (MAP)
DB 105, PG 761

DORIS R. RODGERS, ET AL
DB 111, PG 659

DOROTHY L. HERTEL
DB 60, PG 618
DB 106, PG 213
DB 23, PG 425 (MAP)

DANIEL WARD, ET UX
DB 111, PG 385
DB 23, PG 425 (MAP)

ROBERT F. ALBURY, ET UX
DB 87, PG 003

FRED E. UPTON, JR., ET AL
DB 22, PG 468
DB 111, PG 401

FRED E. UPTON, JR.
DB 42, PG 615
DB 111, PG 278

FRED E. UPTON, JR., ET AL
DB 22, PG 468
DB 111, PG 401

-L- POT 50+30.377 =
-Y1- POT 10+00.000

PT 49+63.478

-Y2- POT 10+00.000

-Y2- PC 10+12.000
BEGIN CONSTRUCTION

PT 10+34.866

-L- POT 51+24.328 =
-Y2- POT 11+14.842

-Y1- POT 11+15.000
END CONSTRUCTION

PROP. 250mm WATER PIPE

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1
.08m.
Min

-L- 48+40 to 48
-L- 49+71 to 50+(
-Y1- 10+20 to 10+40 (RT.)
-Y2- 10+40 to 10+80 (RT.)

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
4:1 or Flatter
Front Ditch Slope
Min. D = 0.3m

-L- 49+71 (RT.)

-Y1- 10+60 to 11+00 (LT.)
-Y1- 10+40 to 11+00 (RT.)

-L-
PI Sta 48+39.173
Δ = 16° 23' 31.2" (LT)
L = 250.332
T = 126.027
R = 875.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

-Y2-
PI Sta 10+23.435
Δ = 2° 37' 12.8" (LT)
L = 22.866
T = 11.435
R = 500.000
SE = EX.

METRIC
5 0 10
CONST.REV.
R/W REV.

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

22100 / 37000
2800 / 4700
700 / 1400
20000 / 33500
-L-
2005 ADT
2025 ADT
3500 / 5900
-Y1- SR 1140
UPTONS RD

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y1- & -Y2- GRADE AND PROFILE.
SEE SHEET NO. 2-E FOR -Y1- INTERSECTION DETAIL.
SEE SHEET NO. 2-F FOR -Y2- INTERSECTION DETAIL.

5/14/99

03-JUL-2008 14:46
\\Utilities\Projects\Proj\r-2414b_UT_U03.psh
$DESIGN

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	6

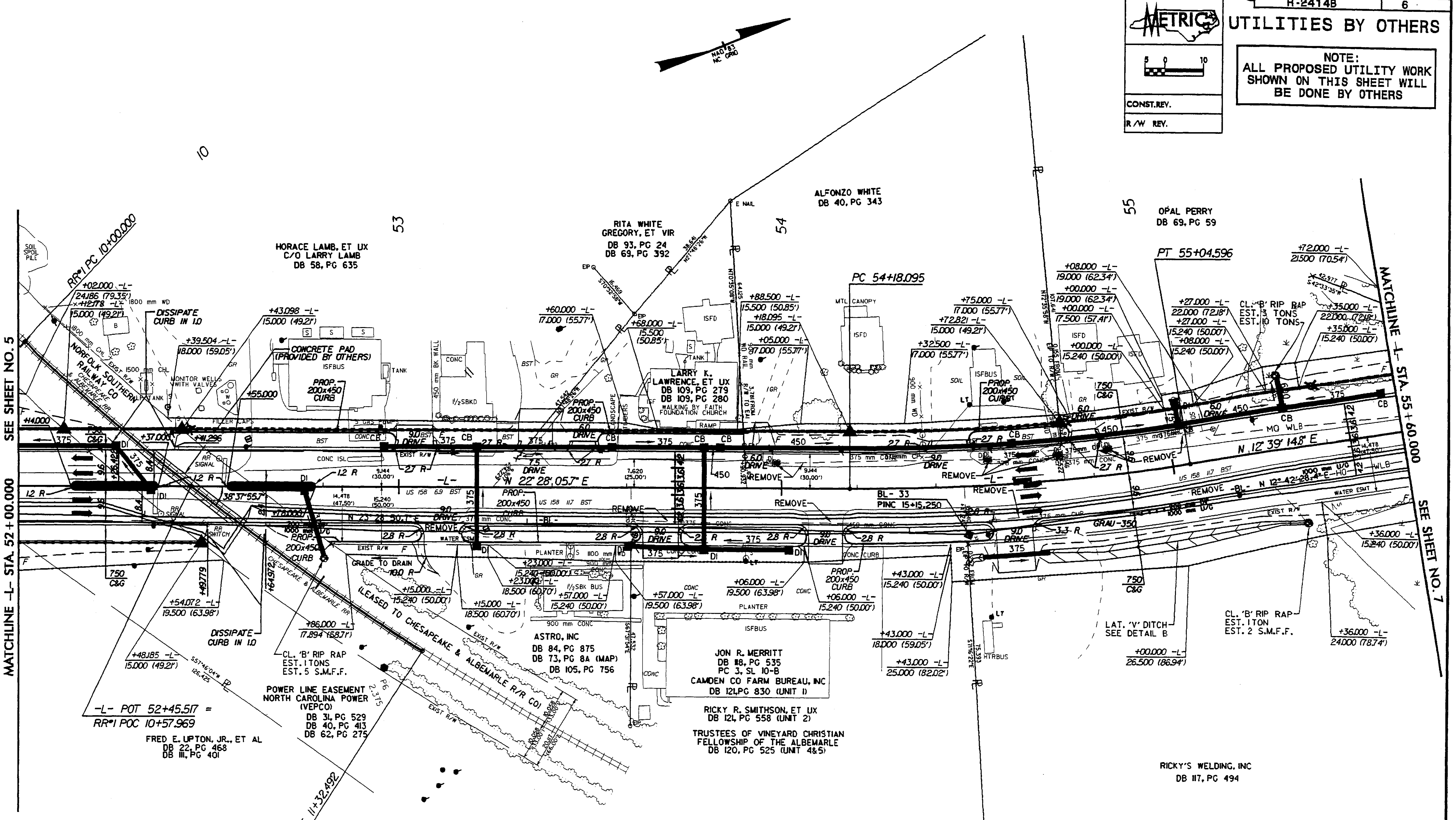
METRIC

CONST. REV.

R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS


SEE SHEET NO. 5
MATCHLINE -L- STA. 52+00.000
MATCHLINE -L- STA. 55+60.000
SEE SHEET NO. 7
HORACE LAMB, ET UX
C/O LARRY LAMB
DB 58, PG 635
RITA WHITE
GREGORY, ET VIR
DB 93, PG 24
DB 69, PG 392
ALFONZO WHITE
DB 40, PG 343
OPAL PERRY
DB 69, PG 59
LARRY K. LAWRENCE, ET UX
DB 109, PG 279
DB 109, PG 280
WALKING BY FAITH FOUNDATION CHURCH
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
ASTRO, INC
DB 84, PG 875
DB 73, PG 8A (MAP)
DB 105, PG 756
JON R. MERRITT
DB 118, PG 535
PC 3, SL 10-B
CAMDEN CO FARM BUREAU, INC
DB 121, PG 830 (UNIT 1)
RICKY R. SMITHSON, ET UX
DB 121, PG 558 (UNIT 2)
TRUSTEES OF VINEYARD CHRISTIAN FELLOWSHIP OF THE ALBEMARLE
DB 120, PG 525 (UNIT 4&5)
POWER LINE EASEMENT
NORTH CAROLINA POWER (VEPCO)
DB 31, PG 529
DB 40, PG 413
DB 62, PG 275
FRED E. UPTON, JR., ET AL
DB 22, PG 468
DB 111, PG 401
RICKY'S WELDING, INC
DB 117, PG 494
RR*1 PC 10+00.000
RR*1 PT 11+32.492
-L- POT 52+45.517 =
RR*1 POC 10+57.969
PC 54+18.095
PT 55+04.596
N 22° 28' 05.7" E
N 12° 39' 14.8" E
BL- 33
PINC 15+15.250
CONCRETE PAD (PROVIDED BY OTHERS)
DISSIPATE CURB IN 1.0
CL. 'B' RIP RAP
EST. 1 TONS
EST. 5 S.M.F.F.
LAT. 'V' DITCH SEE DETAIL B
GRADE TO DRAIN
REMOVE
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3 m
b = 1.5 m
-L- 54+47 to 55+32 (RT.)

RR *1
PI Sta 10+66.452
Δ = 11° 02' 25.1" (LT)
L = 132.492
T = 66.452
R = 687.593

■ = 125 MONOLITHIC CONCRETE ISLAND

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

-L-
PI Sta 54+61.452
Δ = 9° 48' 50.9" (LT)
L = 86.501
T = 43.357
R = 505.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	7

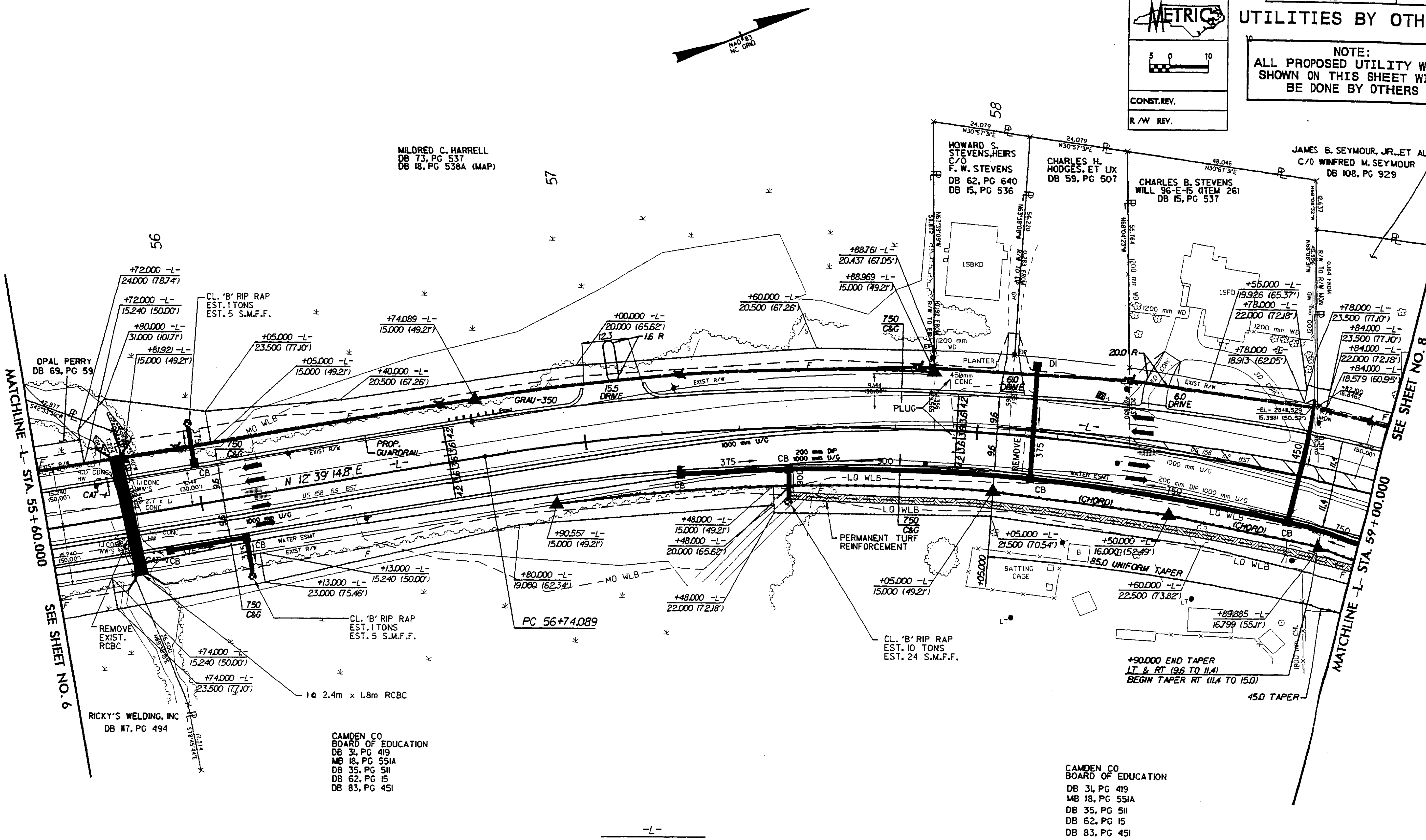
METRIC

CONST. REV.

R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



NAD 83 NC GRID
MILDRED C. HARRELL
DB 73, PG 537
DB 18, PG 538A (MAP)
HOWARD S. STEVENS, HEIRS
C/O F. W. STEVENS
DB 62, PG 640
DB 15, PG 536
CHARLES H. HODGES, ET UX
DB 59, PG 507
CHARLES B. STEVENS
WILL 96-E-15 (ITEM 26)
DB 15, PG 537
JAMES B. SEYMOUR, JR., ET AL
C/O WINFRED M. SEYMOUR
DB 108, PG 929
OPAL PERRY
DB 69, PG 59
MATCHLINE -L- STA. 55+60.000
SEE SHEET NO. 6
MATCHLINE -L- STA. 59+00.000
SEE SHEET NO. 8
CL. 'B' RIP RAP
EST. 1 TONS
EST. 5 S.M.F.F.
CL. 'B' RIP RAP
EST. 10 TONS
EST. 24 S.M.F.F.
N 12° 39' 14.8" E
US 158 6.9 BST
PROP. GUARDRAIL
GRAU-350
PLUG
PERMANENT TURF REINFORCEMENT
REMOVE EXIST. RCBC
1 @ 2.4m x 1.8m RCBC
PC 56+74.089
BATTING CAGE
85.0 UNIFORM TAPER
+90.000 END TAPER
LT & RT (9.6 TO 11.4)
BEGIN TAPER RT (11.4 TO 15.0)
45.0 TAPER
RICKY'S WELDING, INC
DB 117, PG 494
CAMDEN CO
BOARD OF EDUCATION
DB 31, PG 419
MB 18, PG 551A
DB 35, PG 511
DB 62, PG 15
DB 83, PG 451

-L-

PI Sta 58+15.159
Δ = 28° 46' 17.6" (RT)
L = 276.187
T = 141.071
R = 550.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

PERMANENT SOIL REINFORCEMENT MATTING

NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

5/14/99

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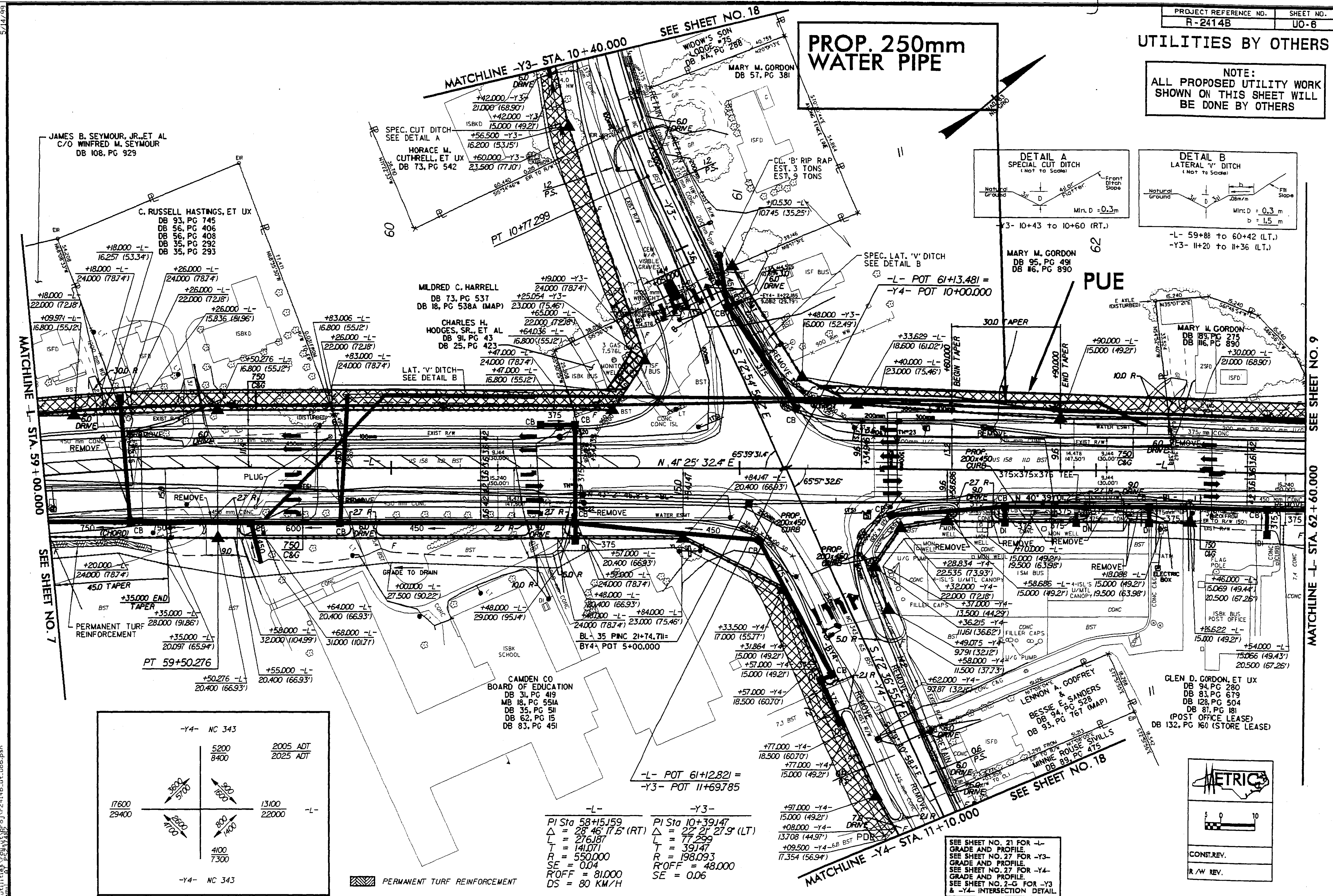
PROJECT REFERENCE NO. R-2414B
SHEET NO. UO-6
UTILITIES BY OTHERS
NOTE: ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS
PROP. 250mm WATER PIPE
PUE
DETAIL A SPECIAL CUT DITCH (Not to Scale)
Min. D = 0.3m
-Y3- 10+43 to 10+60 (RT.)
DETAIL B LATERAL 'V' DITCH (Not to Scale)
Min. D = 0.3 m
b = 1.5 m
-L- 59+88 to 60+42 (LT.)
-Y3- 11+20 to 11+36 (LT.)
MATCHLINE -Y3- STA. 10+40.000
SEE SHEET NO. 18
MATCHLINE -L- STA. 59+00.000
SEE SHEET NO. 7
MATCHLINE -L- STA. 62+60.000
SEE SHEET NO. 9
MATCHLINE -Y4- STA. 11+10.000
SEE SHEET NO. 18
-L- POT 61+13.481 = -Y4- POT 10+00.000
-L- POT 61+12.821 = -Y3- POT 11+69.785
BL- 35 PINC 21+74.711= BY4- POT 5+00.000
PT 59+50.276
PT 10+77.299
N 41° 25' 32.4" E
JAMES B. SEYMOUR, JR., ET AL C/O WINFRED M. SEYMOUR DB 108, PG 929
C. RUSSELL HASTINGS, ET UX DB 93, PG 745 DB 56, PG 406 DB 56, PG 408 DB 35, PG 292 DB 35, PG 293
HORACE M. CUTHRELL, ET UX DB 73, PG 542
MILDRED C. HARRELL DB 73, PG 537 DB 18, PG 538A (MAP)
CHARLES H. HODGES, SR., ET AL DB 91, PG 43 DB 25, PG 423
WIDOW'S SON LODGE #75 DB AA, PG 288
MARY M. GORDON DB 57, PG 381
MARY M. GORDON DB 95, PG 491 DB 116, PG 890
MARY M. GORDON DB 89, PG 275 DB 116, PG 890
CAMDEN CO BOARD OF EDUCATION DB 31, PG 419 MB 18, PG 551A DB 35, PG 511 DB 62, PG 15 DB 83, PG 451
LENNON A. GODFREY & BESSIE E. SANDERS DB 94, PG 528 DB 93, PG 767 (MAP)
MINNIE ROUSE SIVILLS DB 89, PG 475
GLEN D. GORDON, ET UX DB 94, PG 280 DB 83, PG 679 DB 128, PG 504 DB 87, PG 181 (POST OFFICE LEASE) DB 132, PG 160 (STORE LEASE)
SPEC. CUT DITCH SEE DETAIL A
SPEC. LAT. 'V' DITCH SEE DETAIL B
LAT. 'V' DITCH SEE DETAIL B
PERMANENT TURF REINFORCEMENT
-L-
PI Sta 58+15.159
Δ = 28° 46' 17.6" (RT)
L = 276.187
T = 141.071
R = 550.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H
-Y3-
PI Sta 10+39.147
Δ = 22° 21' 27.9" (LT)
L = 77.299
T = 39.147
R = 198.093
R'OFF = 48.000
SE = 0.06
-Y4- NC 343
2005 ADT
2025 ADT
SEE SHEET NO. 21 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y3- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y4- GRADE AND PROFILE.
SEE SHEET NO. 2-G FOR -Y3 & -Y4- INTERSECTION DETAIL.
METRIC
CONST. REV.
R/W REV.

Utility

Permit Drawing
Sheet 7 of 15

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	9

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

METRIC 5 0 10

CONST.REV.

R/W REV.

5/14/99

SEE SHEET NO. 8

MATCHLINE -L- STA. 62+60.000

MATCHLINE -L- STA. 66+20.000

SEE SHEET NO. 10

64

65

NAD 83 NC GRID

CL. 'B' RIP RAP EST. 5 TONS EST. 12 S.M.F.F.
+74.000 -L- 15.000 (49.21')
+71.090 -L- 23.500 (77.10')

CL. 'B' RIP RAP EST. 2 TONS EST. 6 S.M.F.F. SEE DETAIL M
+83.000 -L- 28.000 (91.86')

LAT. 'V' DITCH SEE DETAIL B

CL. 'B' RIP RAP EST. 2 TONS EST. 4 S.M.F.F.
+04.500 -L- 24.500 (80.38')
+03.868 -L- 20.500 (67.25')
+03.000 -L- 15.000 (49.21')

+38.000 -L- 19.000 (62.34')

MARY M. GORDON
DB 95, PG 491
DB 116, PG 890

+80.000 -L- 19.500 (63.98')

+40.000 -L- 18.500 (60.70')

+70.000 -L- 15.000 (49.21') 22.000 (72.18')

+70.000 -L- 18.500 (60.70')

CL. 'B' RIP RAP EST. 3 TONS EST. 9 S.M.F.F.

+78.000 -L- 15.000 (49.21') 22.000 (72.18')

600mm MTLP

+78.000 -L- 19.500 (63.98')

+20.000 -L- +86.527 -L- +49.000 (62.34') 15.000 (49.21')

CONC. COLLAR CB

EXIST R/W

WATER ESMT

US 158 6.8 BST

N 41° 25' 32.4" E

PLUG

600mm CONC

200mm CONC HW

REMOVE H.W.

EXIST R/W

+98.000 -L- 15.049 (49.37')

+17.000 -L- 20.000 (65.62')

+60.000 -L- 18.500 (60.70')

CL. 'B' RIP RAP EST. 2 TONS EST. 6 S.M.F.F.
+70.000 -L- 24.000 (78.74')

+98.000 -L- 24.000 (78.74')

CL. 'B' RIP RAP EST. 2 TONS EST. 4 TONS

LAT. 'V' DITCH SEE DETAIL B

+70.000 -L- 15.060 (49.41')

+70.000 -L- 20.000 (65.62')

+70.000 -L- 15.177 (49.79') 21.000 (68.90')

+78.000 -L- 15.186 (49.82') 21.000 (68.90')

+18.000 -L- 20.000 (65.62')

PC 65+86.527

160.139 S61°48'E

GLEN D. GORDON, ET UX
DB 94, PG 280
DB 83, PG 679
DB 128, PG 504
DB 87, PG 181 (POST OFFICE LEASE)
DB 132, PG 160 (STORE LEASE)

MARY M. GORDON
DB 95, PG 491
DB 116, PG 890
DB 83, PG 680 (MAP)

-Y6- PT 10+79.303
-L- POC 66+11.449
81.504 RT.

PRC 10+39.770
-L- POT 65+81.427
104.827 RT.

-Y6- PC 10+00.000
-L- POT 65+49.426
128.434 RT.

CHESAPEAKE & ALBEMARLE RR

SWITCH

N 53°27'48" E

(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

+34.000 -Y6- 9.254 (30.36')

+34.000 -Y6- 21.000 (68.90')

CHARLIE S. BARTLETT, ET UX
DB 62, PG 715

REMOVE

+13.000 -Y6- 9.240 (30.31')

GEORGE WOOD FARMS, INC
DB 115, PG 607
DB 115, PG 621

+13.500 -Y6- 28.500 (93.50')

+22.000 -Y6- 29.000 (95.14')

SEE SHEET NO. 21 FOR -L- GRADE AND PROFILE.

GRADE

DRAIN

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

Natural Ground — 3:1 — D — 3:1 — .08m/m — Fill Slope

Min: D = 0.6 m
b = 1.5 m

-L- 62+84 to 63+00 (LT.)
-L- 62+75 to 62+88 (RT.)

DITCH END DETAIL M
(Not to Scale)

Ditch Slope — 3:1 — 0.3 Min — NC

End Ditch Grade — Filter Fabric

Type of Liner: CL. 'B'

-L- 62+88 (LT.)
-L- 63+00 (RT.)

-L-	-Y6-	-Y6-
PI Sta 66+25.744	PI Sta 10+19.890	PI Sta 10+59.540
Δ = 3° 44' 37.0" (LT)	Δ = 2° 55' 37.3" (LT)	Δ = 2° 26' 50.5" (RT)
L = 78.406	L = 39.770	L = 39.533
T = 39.217	T = 19.890	T = 19.769
R = 1,200.000	R = 778.495	R = 925.512
SE = 0.03	SE = EX.	SE = EX.
R'OFF = 60.750	BCK = N 6°28'25.4" E	AH = N 5°59'38.6" E
DS = 80 KM/H		

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c:\projects\r-2414b\end_permit\r-2414b_UT_U07.psh

Utility Permit Drawing Sheet 8 of 15

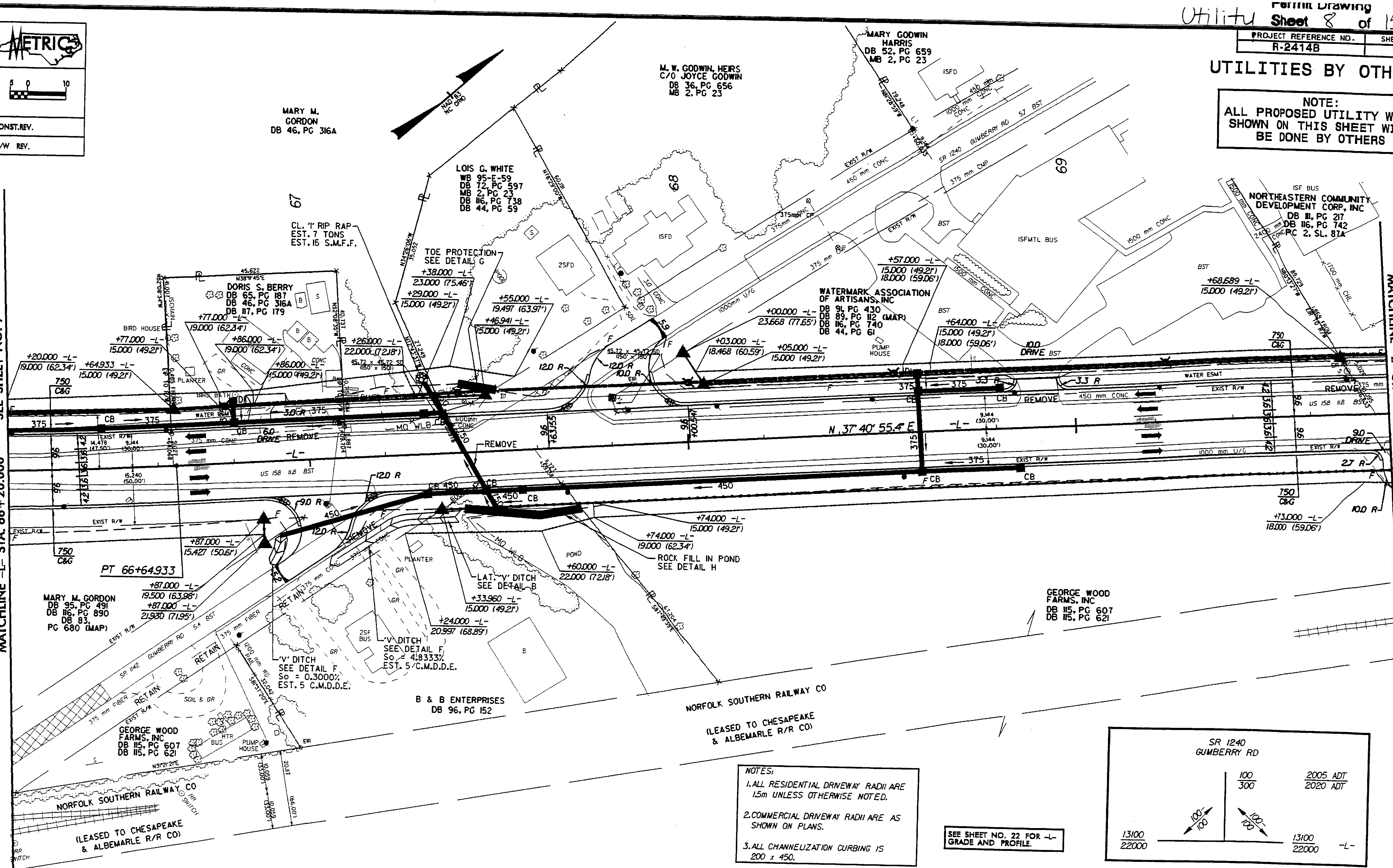
PROJECT REFERENCE NO.	SHEET NO.
R-2414B	10

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

CONST. REV.

R/W REV.



METRIC
MATCHLINE -L- STA. 66+20.000
SEE SHEET NO. 9
MATCHLINE -L- STA. 69+80.000
SEE SHEET NO. 11
NAD 83 NC GRID
MARY M. GORDON DB 46, PG 316A
LOIS G. WHITE WB 95-E-59 DB 72, PG 597 MB 2, PG 23 DB 116, PG 738 DB 44, PG 59
M. W. GODWIN, HEIRS C/O JOYCE GODWIN DB 36, PG 656 MB 2, PG 23
MARY GODWIN HARRIS DB 52, PG 659 MB 2, PG 23
DORIS S. BERRY DB 65, PG 187 DB 46, PG 316A DB 117, PG 179
WATERMARK ASSOCIATION OF ARTISANS, INC DB 91, PG 430 DB 89, PG 112 (MAP) DB 116, PG 740 DB 44, PG 61
NORTHEASTERN COMMUNITY DEVELOPMENT CORP, INC DB 111, PG 217 DB 116, PG 742 PC 2, SL. 87A
MARY M. GORDON DB 95, PG 491 DB 116, PG 890 DB 83, PG 680 (MAP)
GEORGE WOOD FARMS, INC DB 115, PG 607 DB 115, PG 621
B & B ENTERPRISES DB 96, PG 152
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
CL. 'I' RIP RAP EST. 7 TONS EST. 15 S.M.F.F.
TOE PROTECTION SEE DETAIL G
ROCK FILL IN POND SEE DETAIL H
LAT. 'V' DITCH SEE DETAIL B
'V' DITCH SEE DETAIL F So = 4.8333% EST. 5 C.M.D.D.E.
'V' DITCH SEE DETAIL F So = 0.3000% EST. 5 C.M.D.D.E.
PT 66+64.933
N 37° 40' 55.4" E
US 158
SR 1240 GUMBERRY RD
SR 1142 GUMBERRY RD
REMOVE
RETAIN
SR 1240 GUMBERRY RD
100 / 300
2005 ADT / 2020 ADT
13100 / 22000
13100 / 22000
-L-

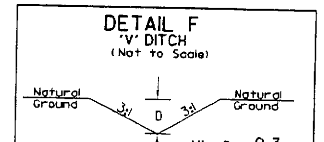
NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

SEE SHEET NO. 22 FOR -L- GRADE AND PROFILE.

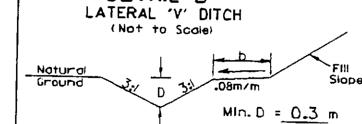
-L-
PI Sta 66+25.744
Δ = 3° 44' 37.0" (LT)
L = 78.406
T = 39.217
R = 1,200.000
SE = 0.03
R'OFF = 60.750
DS = 80 KM/H

DETAIL F
'V' DITCH
(Not to Scale)



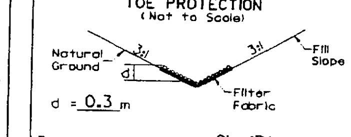
-L- 66+87 (RT.)
-L- 67+06 (RT.)

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



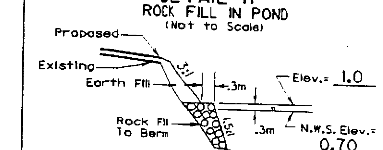
-L- 67+23 to 67+41 (RT.)

DETAIL G
TOE PROTECTION
(Not to Scale)



-L- 67+40 to 67+60 (LT.)

DETAIL H
ROCK FILL IN POND
(Not to Scale)



-L- 67+41 to 67+69 (RT.)

Utility Permit Drawing Sheet 9 of 15

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	11

METRIC

CONST.REV.

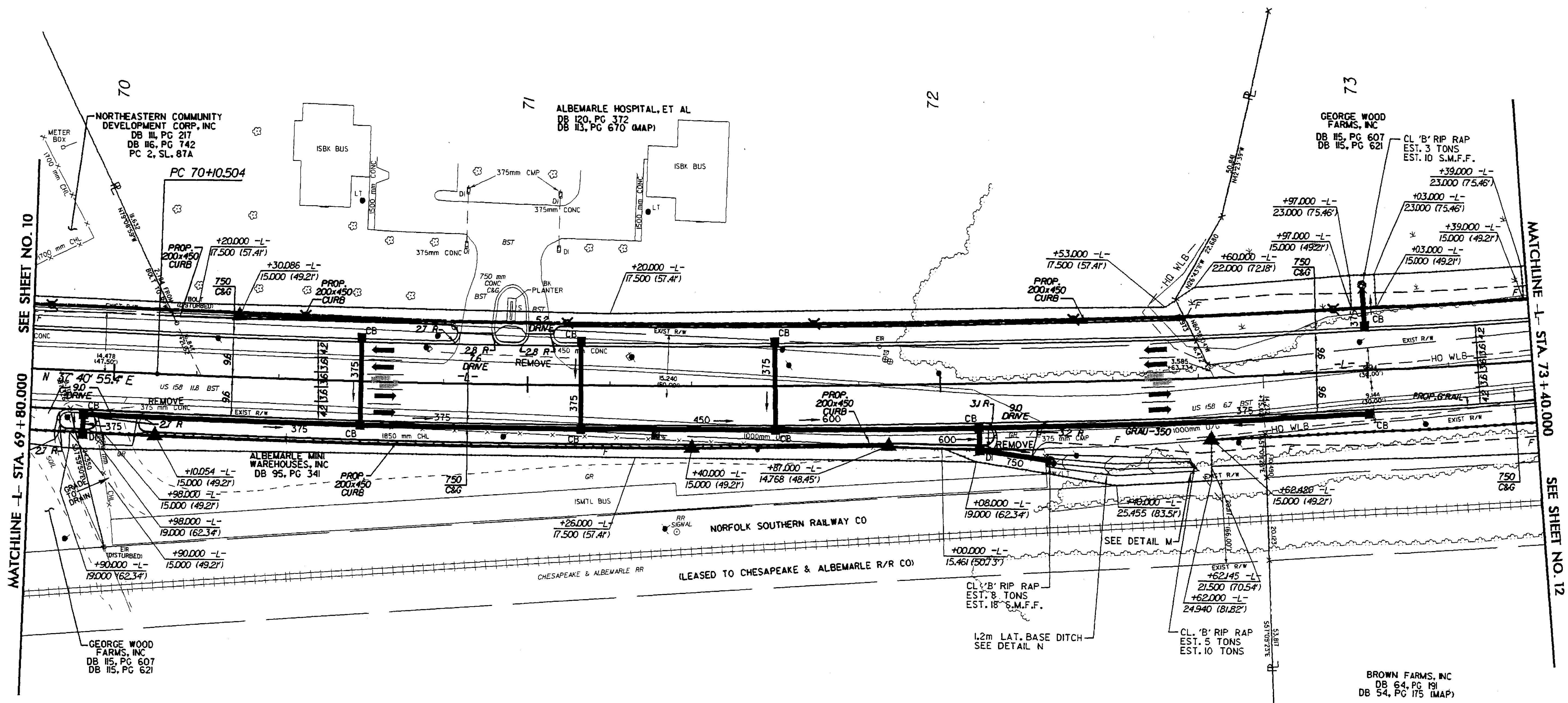
R/W REV.

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

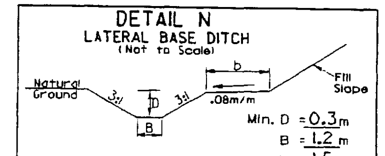
NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.



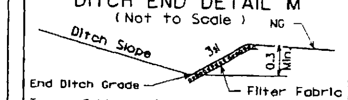
-L-
PI Sta 72+27.319
Δ = 8° 51' 20.1" (LT)
L = 432.766
T = 216.815
R = 2,800.000
SE = NC
DS = 80 KM/H

DETAIL N
LATERAL BASE DITCH
(Not to Scale)



-L- 72+25 to 72+60 (RT.)

DITCH END DETAIL M
(Not to Scale)



-L- 72+60 (RT.)

5/14/99

Utility

Permit Drawing
Sheet 10 of 15

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	12

METRIC

CONST. REV.

R/W REV.

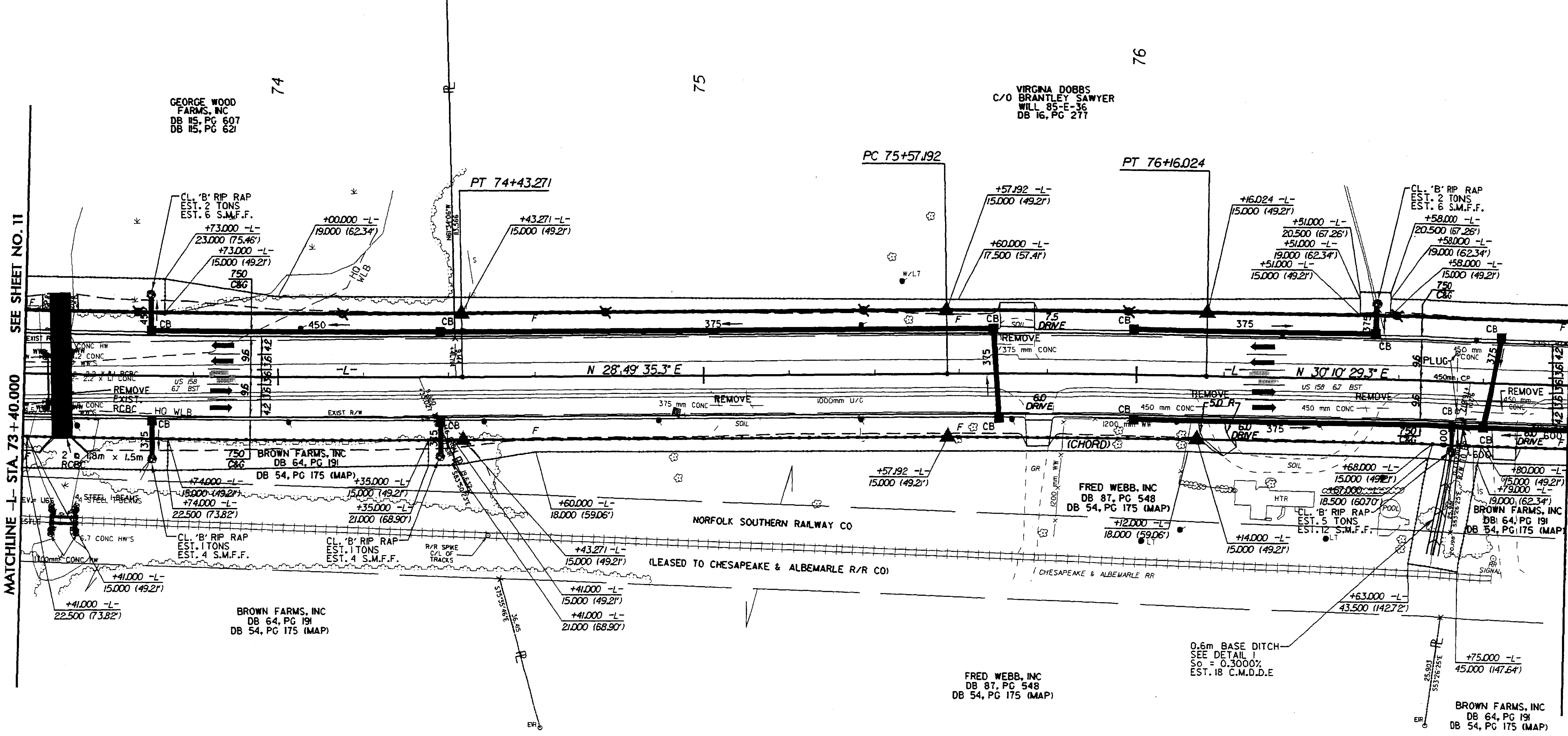
UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

NOTES:

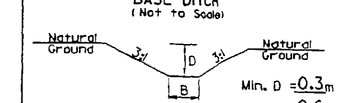
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

5/14/99



-L-	-L-
PI Sta 72+27.319	PI Sta 75+86.610
Δ = 8°51' 20.1" (LT)	Δ = 1°20' 54.0" (RT)
L = 432.766	L = 58.832
T = 216.815	T = 29.418
R = 2,800.000	R = 2,500.000
SE = NC	SE = NC
DS = 80 KM/H	DS = 80 KM/H

DETAIL 1
BASE DITCH
(Not to Scale)



-L- 76+72 (RT.)

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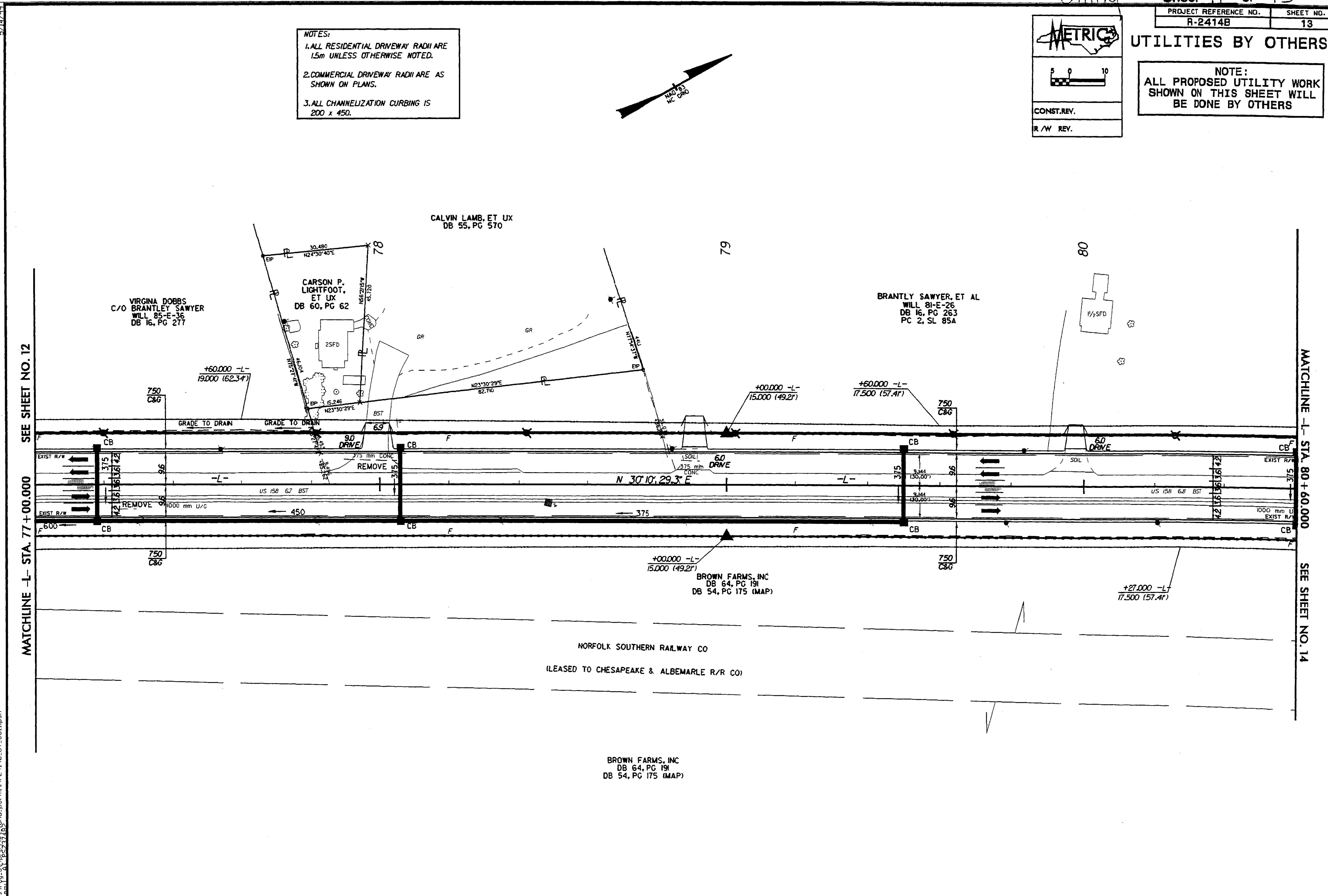

PROJECT REFERENCE NO. R-2414B
SHEET NO. 13
METRIC
UTILITIES BY OTHERS
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS
CONST.REV.
R/W REV.
NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.
NAD 83 NC GRID
CALVIN LAMB, ET UX
DB 55, PG 570
CARSON P. LIGHTFOOT, ET UX
DB 60, PG 62
VIRGINA DOBBS
C/O BRANTLEY SAWYER
WILL 85-E-36
DB 16, PG 277
BRANTLY SAWYER, ET AL
WILL 81-E-26
DB 16, PG 263
PC 2, SL 85A
BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
NORFOLK SOUTHERN RAILWAY CO
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
BROWN FARMS, INC
DB 64, PG 191
DB 54, PG 175 (MAP)
SEE SHEET NO. 12
MATCHLINE -L- STA. 77+00.000
MATCHLINE -L- STA. 80+60.000
SEE SHEET NO. 14
N 30°10'29.3" E
-L-
US 158 6.7 BST
US 158 6.8 BST
GRADE TO DRAIN
REMOVE
9.0 DRIVE
6.0 DRIVE
375 mm CONC
1000 mm U/G
+60.000 -L- 19.000 (62.34')
+00.000 -L- 15.000 (49.2')
+60.000 -L- 17.500 (57.4')
+27.000 -L- 17.500 (57.4')
750 C&G
CB
EXIST R/W
2SFD
1½SFD
78
79
80

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	14

NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

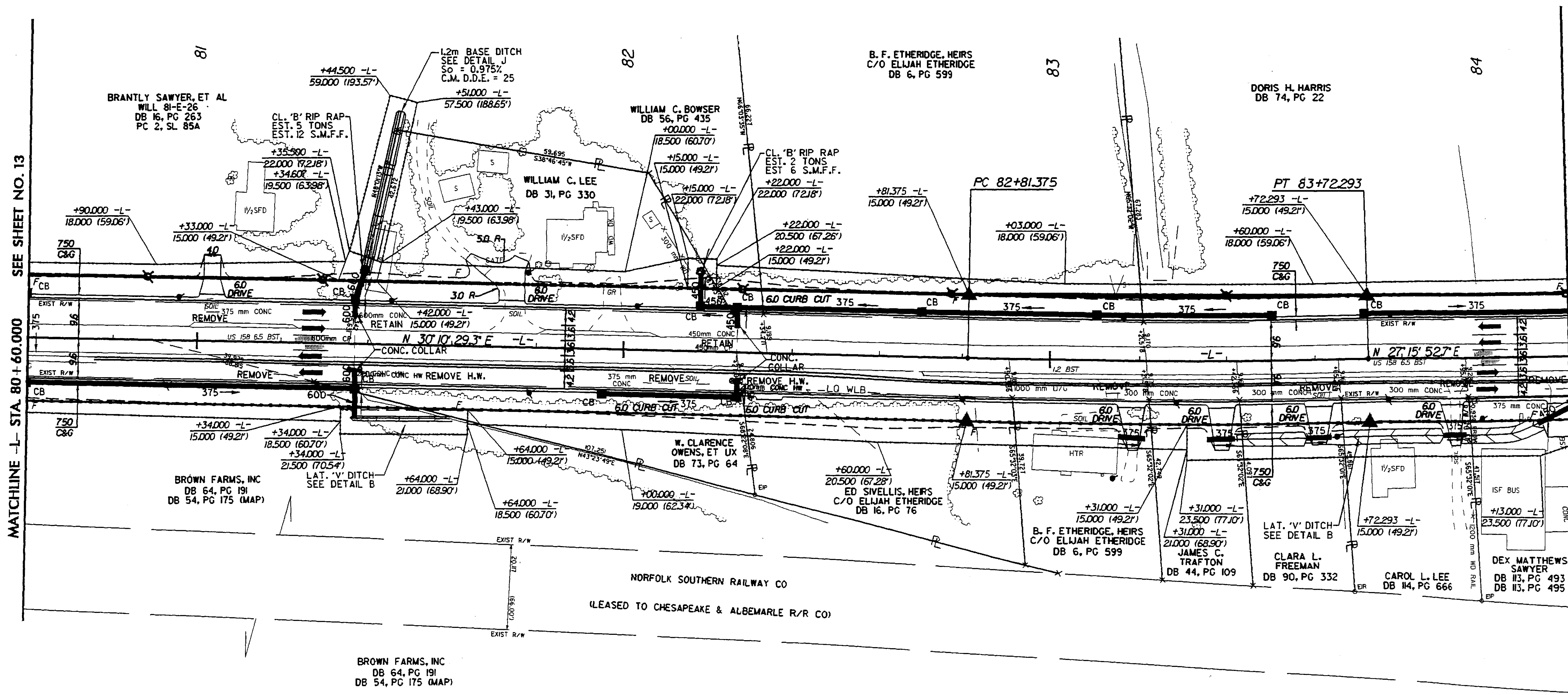
METRIC

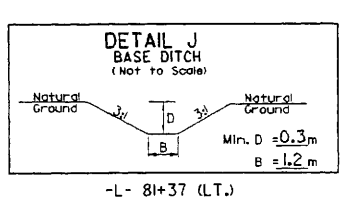
CONST.REV.

R/W REV.

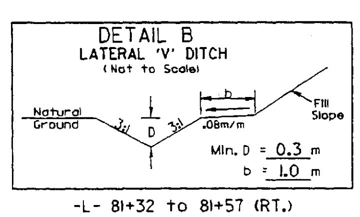
UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS





-L- 81+37 (LT.)



-L- 81+32 to 81+57 (RT.)
-L- 83+22 to 84+12 (RT.)

-L-
PI Sta 83+26.844
Δ = 2°54'36.6" (LT)
L = 90.918
T = 45.469
R = 1,790.000
SE = 0.025
R'OFF = 50.625
DS = 80 KM/H

Permit Drawing
Sheet 13 of 15

Utility

5/14/99

METRIC
5 0 10

CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	15

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

DETAIL K
BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground
Min. D = 0.3 m
B = .75 m
-Y7- 11+63 (LT.)

DETAIL F
'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, Natural Ground
Min. D = 0.3 m
-L- 84+62 (LT.)

DETAIL L
SPECIAL CUT BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 0.3 m
B = * m
-Y7- 10+20 to 10+60 (RT.)
* (VARIES 3m to 0m)

DITCH CLEANOUT
So = 0.15%
D.D.E. = 5 C.M.
MAINTAIN EXIST. CHANNEL X-SECTION

SPEC. CUT BASE DITCH
SEE DETAIL L

'V' DITCH SEE DETAIL F
So = 0.14%
C.M. D.D.E. = 5

BASE DITCH
SEE DETAIL K
So = 0.27%
C.M. D.D.E. = 3 C.M.

-Y7- PC 10+00.000
-Y7- POC 10+10.000
BEGIN CONSTRUCTION
0.086 FROM R/W TO EIR

-L- POC 87+21.942 =
-Y7- POC 11+20.257

-Y7- POT 12+12.000
END CONSTRUCTION

-Y7- POT 12+40.000

PC 85+70.066

PT 10+72.758

PC 11+00.151

PT 11+38.126

MATCHLINE -L- STA. 84+20.000
SEE SHEET NO. 14

MATCHLINE -L- STA. 87+80.000
SEE SHEET NO. 16

ROBERT E. CLIFTON, ET UX
DB 64, PG 129

PHYLLIS G. MINTON
DB 67, PG 673

DORIS H. HARRIS
DB 74, PG 22

THOMAS M. NOBLITT
DB 38, PG 12
DB 38, PG 11 (MAP)

EFFIE L. CREEKMORE
DB 14, PG 526

W.C. HOLLOWELL, JR., ET UX
DB 72, PG 001

GARY D. FILARECKI AND ARRON O. WHITLEY
DB 84, PG 645

GAYLE C. NELSON
DB 127, PG 417
PC 1, SL 15A

JOSEPH O. SAWYER, ET UX
DB 95, PG 360
PC 1, PG 12A

MARGARET LOUISE GODFREY
DB 29, PG 580

DEX MATTHEWS SAWYER
DB 113, PG 493
DB 113, PG 495

MICHAEL L. MATTERA
DB 104, PG 668
DB 95, PG 164 (MAP)

DANIEL R. McDOUGALD
DB 92, PG 505

W. W. OWENS & SONS MOVING & STORAGE, INC
DB 82, PG 238

HISTORIC PROPERTY

EFFIE L. CREEKMORE
DB 15, PG 180
DB 28, PG 376
DB 38, PG 133

DORIS H. HARRIS
DB 50, PG 115
DB 56, PG 682

W. W. OWENS & SONS MOVING & STORAGE, INC
DB 81, PG 700

NORFOLK SOUTHERN RAILWAY CO (LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)
CHESAPEAKE & ALBEMARLE RR

-Y7- SR 1145 BELCROSS RD
2005 ADT
2025 ADT
1100 / 1700
600 / 1000
300 / 500
13100 / 22000
12200 / 20500
900 / 1500
300 / 500
1300 / 2200
-L-

-L-
PI Sta 86+83.427
Δ = 7° 24' 45.5" (RT)
L = 226.406
T = 113.361
R = 1750.000
SE = 0.025
R'OFF = 50.625
DS = 80 KM/H

-Y7-
PI Sta 10+36.638
Δ = 16° 40' 29.6" (RT)
L = 72.758
T = 36.638
R = 250.000

-Y7-
PI Sta 11+19.581
Δ = 2° 07' 31.3" (RT)
L = 37.094
T = 18.549
R = 1,000.000

SEE SHEET NO. 24 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 28 FOR -Y7- GRADE AND PROFILE.
SEE SHEET NO. 2-H FOR -Y7- INTERSECTION DETAIL.

14-MAY-2009 12:24
\\ps\roadway\projects\grand_permit\r2414b_UT_U013.psh

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	16

UTILITIES BY OTHERS

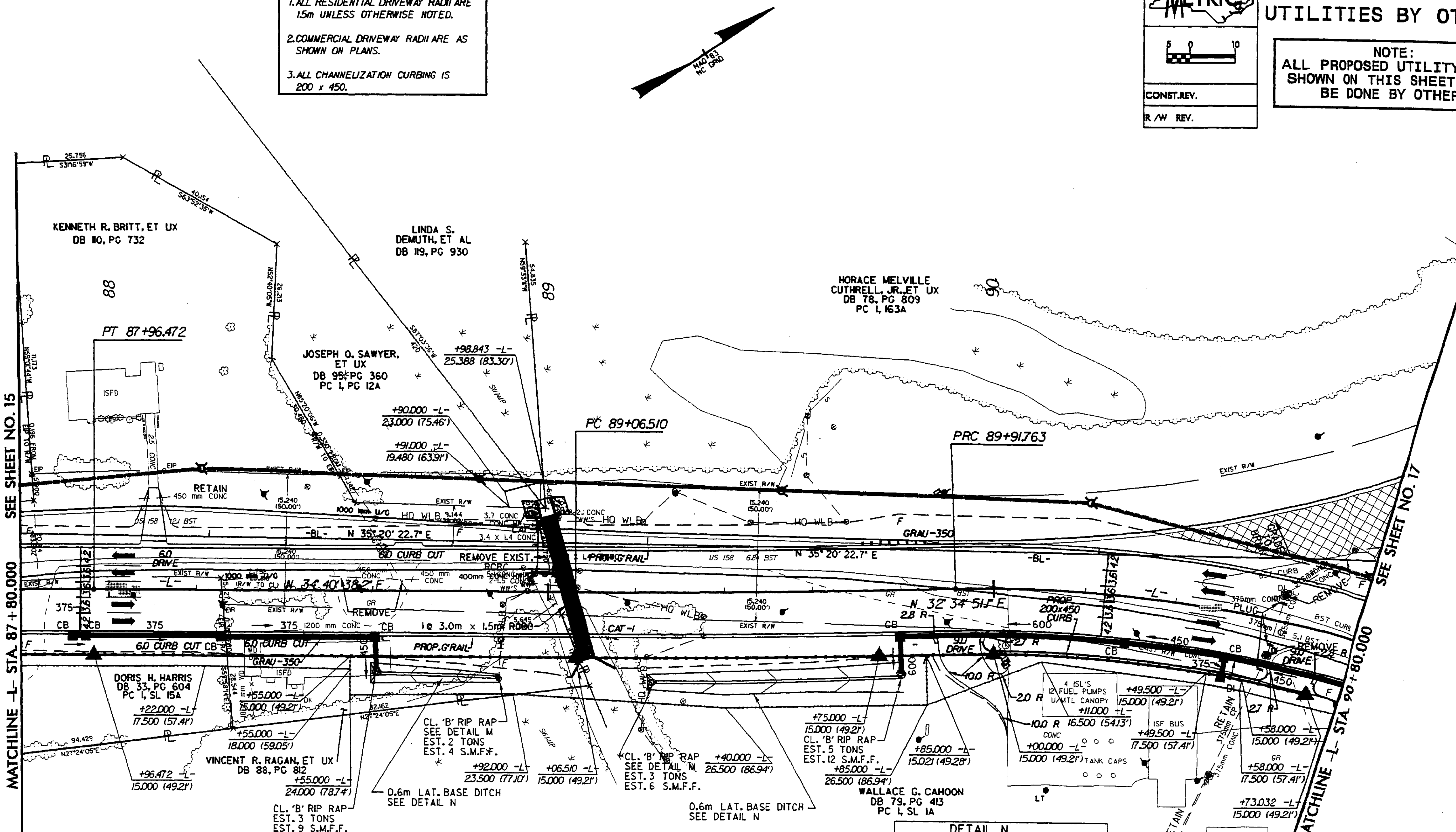
METRIC

CONST.REV.

R/W REV.

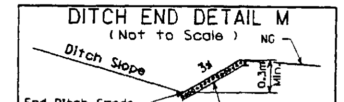
NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.



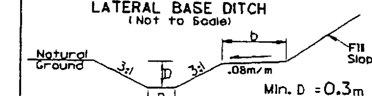
-L-	-L-	-L-
PI Sta 86+83.427	PI Sta 89+49.141	PI Sta 91+15.337
Δ = 7° 24' 45.5" (RT)	Δ = 2° 05' 47.1" (LT)	Δ = 47° 37' 37.6" (RT)
L = 226.406	L = 85.253	L = 232.750
T = 113.361	T = 42.631	T = 123.574
R = 1,750.000	R = 2,330.000	R = 280.000
SE = 0.025	SE = 0.025	SE = 0.04
R'OFF = 50.625	R'OFF = 50.625	R'OFF = 81.000
DS = 80 KM/H	DS = 100 KM/H	DS = 80 KM/H

DITCH END DETAIL M
(Not to Scale)



-L- 88+89 (RT.)
-L- 89+23 (RT.)

DETAIL N
LATERAL BASE DITCH
(Not to Scale)



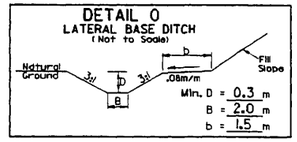
-L- 88+60 to 88+89 (RT.)
-L- 89+23 to 89+80 (RT.)

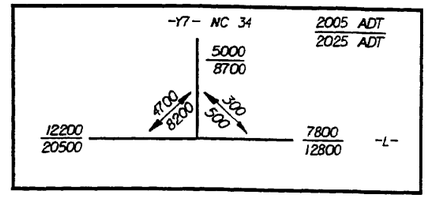
NORFOLK SOUTHERN RAILWAY CO

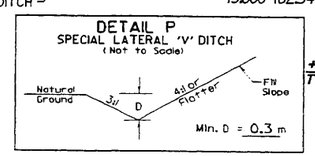
(LEASED TO CHESAPEAKE & ALBEMARLE R/R CO)

5/14/99

14-MAR-2008 12:25







Utility Sheet 15 of 15

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	17

UTILITIES BY OTHERS

METRIC

CONST.REV.

R/W REV.

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS

-L-
PI Sta 91+15.337
Δ = 47° 37' 37.6" (RT)
L = 232.750
T = 123.574
R = 280.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

-L-
PI Sta 93+07.681
Δ = 4° 05' 18.8" (LT)
L = 166.266
T = 83.168
R = 2,330.000
SE = NC
DS = 80 KM/H

-Y8-
PI Sta 11+74.655
Δ = 28° 49' 10.8" (LT)
L = 88.025
T = 44.964
R = 175.000

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

■ - 125 MONOLITHIC CONCRETE ISLAND

SEE SHEET NO. 25 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 28 FOR -Y8- GRADE AND PROFILE.
SEE SHEET NO. 2-F FOR -Y8- INTERSECTION DETAIL.

-L- PT 93+90.779
END STATE PROJECT R-2414B

5/14/99

14-MAY-2008 12:26
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TIP PROJECT: R-2414B

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CAMDEN COUNTY

LOCATION: US 158–NC 34 FROM NORTH OF SR 1257 TO EAST OF NC 34 IN BELCROSS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, CURB & GUTTER, CULVERTS & SIGNALS

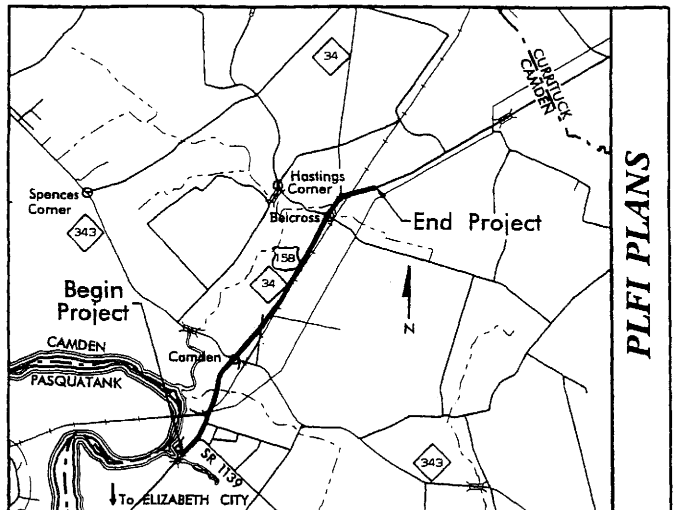
METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS UNLESS OTHERWISE SHOWN

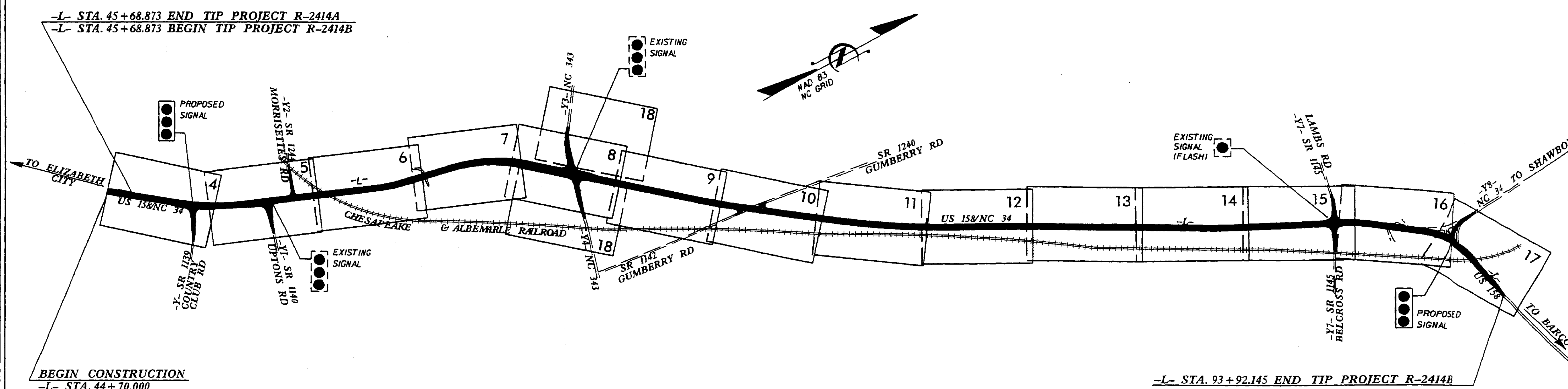
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2414B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34430.1.1	STP–158(2)	PE
34430.2.5		ROW & UTILITIES

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



VICINITY MAP



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT (2009) = 26,000
ADT (2029) = 41,500
DHV = 12%
D = 60%
T = 6% *
V = 80 km/h

* (TTST 2% + DUAL 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2414B = 4.823 Km
TOTAL LENGTH TIP PROJECT R–2414B = 4.823 Km

Prepared In the Office of:
WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD SUITE 164 Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
For The North Carolina Department Of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 15, 2006

LETTING DATE: NOVEMBER 17, 2009

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: B. DOUG TAYLOR, PE
ROADWAY DESIGN PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

1:36:23 PM
r2414B\Roadway\Proj\r2414b_rdy_tsh.dgn
5/13/2008

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
R-2414B	1 - B

METRIC

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Wheel Chair Ramp (WCR)
- Proposed Wheel Chair Ramp Curb Cut (WCC)
- Curb Cut for Future Wheel Chair Ramp (CCFR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

REVISIONS
R/W REVISION - REVISED R/W ALONG -L- & -Y- TO SHOW BEING ACQUIRED UNDER NCDOT PROJECT R-2414A. BAM
R/W REVISION - ADDED PARCEL NO.5A & REVISED THE PROPERTY OWNER NAME ON PARCEL NO.5. BAM
R/W REVISION - REVISED PROPERTY OWNER NAME TO PECAN FARMS, LLC. BAM

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

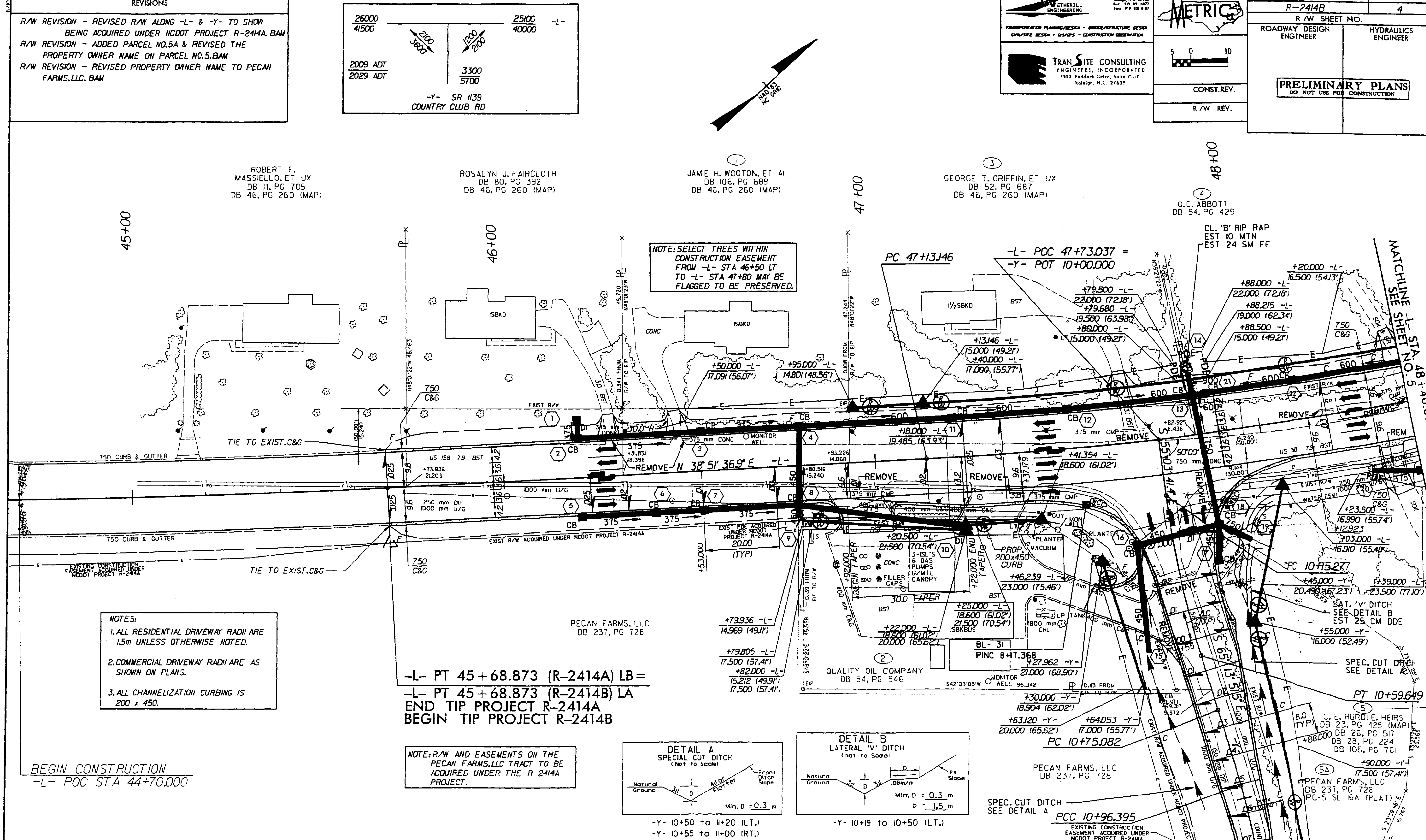
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST. REV.
R/W REV.

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

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609



NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

-L- PT 45+68.873 (R-2414A) LB =
-L- PT 45+68.873 (R-2414B) LA
END TIP PROJECT R-2414A
BEGIN TIP PROJECT R-2414B

BEGIN CONSTRUCTION
-L- POC STA 44+70.000

NOTE: R/W AND EASEMENTS ON THE PECAN FARMS, LLC TRACT TO BE ACQUIRED UNDER THE R-2414A PROJECT.

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 0.3 m
-Y- 10+50 to 11+20 (LT.)
-Y- 10+55 to 11+00 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 0.3 m
b = 1.5 m
-Y- 10+19 to 10+50 (LT.)

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE NOTED

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y- GRADE AND PROFILE.
SEE SHEET NO. 2-F FOR -Y- INTERSECTION DETAIL.

R-2414A	-L-	-Y-	-Y-	-Y-
PI Sta 45+33.809	PI Sta 48+39.173	PI Sta 10+37.521	PI Sta 10+85.741	PI Sta 11+15.669
Δ = 8° 05' 01.5" (LT)	Δ = 16° 23' 31.2" (LT)	Δ = 10° 10' 10.1" (LT)	Δ = 2° 32' 38.4" (RT)	Δ = 11° 00' 32.5" (RT)
L = 352.720	L = 250.332	L = 44.373	L = 21.313	L = 38.429
T = 176.653	T = 126.027	T = 22.245	T = 10.658	T = 19.274
R = 2,500.000	R = 875.000	R = 250.000	R = 480.000	R = 200.000
SE = .025	SE = 0.03		AH = S 62° 41' 13" E	BK = S 62° 41' 13" E
DS = 80 KM/H	R'OFF = 60.750			AH = S 51° 40' 40.5" E
	DS = 80 KM/H			

125mm MONOLITHIC CONCRETE ISLAND
750mm CONCRETE CURB AND GUTTER
REINFORCED CONCRETE BOX CULVERT

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

METRIC

CONST.REV.

R/W REV.

WETHERILL ENGINEERING
859 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

TRANSITE CONSULTING
ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C 27609

REVISIONS

R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.5,7,8,9,13,15,&17. ADDED PARCEL NO.16A. BAM
R/W REVISION - ADDED PARCEL NO.7B & PROPERTY OWNER NAME. BAM
R/W REVISION - ADDED NOTE TO PARCEL NO.14,CORRECTED PROP.OWNER NAME ON PARCEL NO.9,CORRECTED PARCEL NO.9A,REVISED DRAINAGE & PDE ON PARCEL NO.14,ADDED DRIVEWAY ON PARCEL NO.13,REVISED TDE ON PARCELS 9 & 10,ELIMINATED TCE ON PARCEL NOS.13 & 14. BAM
R/W REVISION - ADDED PROPERTY LINE BETWEEN PARCEL NOS.6 & 8. BAM

-L-	-Y2-
PI Sta 48+39.173	PI Sta 10+23.435
Δ = 16°23' 31.2" (LT)	Δ = 2°37' 12.8" (LT)
L = 250.332	L = 22.866
T = 126.027	T = 11.435
R = 875.000	R = 500.000
SE = 0.03	SE = EX.
R'OFF = 60.750	
DS = 80 KM/H	

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 19 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 26 FOR -Y1- & -Y2- GRADE AND PROFILE.
SEE SHEET NO. 2-F FOR -Y1- INTERSECTION DETAIL.
SEE SHEET NO. 2-G FOR -Y2- INTERSECTION DETAIL.

NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.

2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.

3. ALL CHANNELIZATION CURBING IS 200 x 450.

3:02:17 PM
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5/14/2008

REVISIONS
11/07/06 - REVISED ROW AND TCE ON PARCEL 22.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.13,17,18,19,20,21 & 23. ADDED PARCEL NO.16A & 17A. BAM
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.22. BAM

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609

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

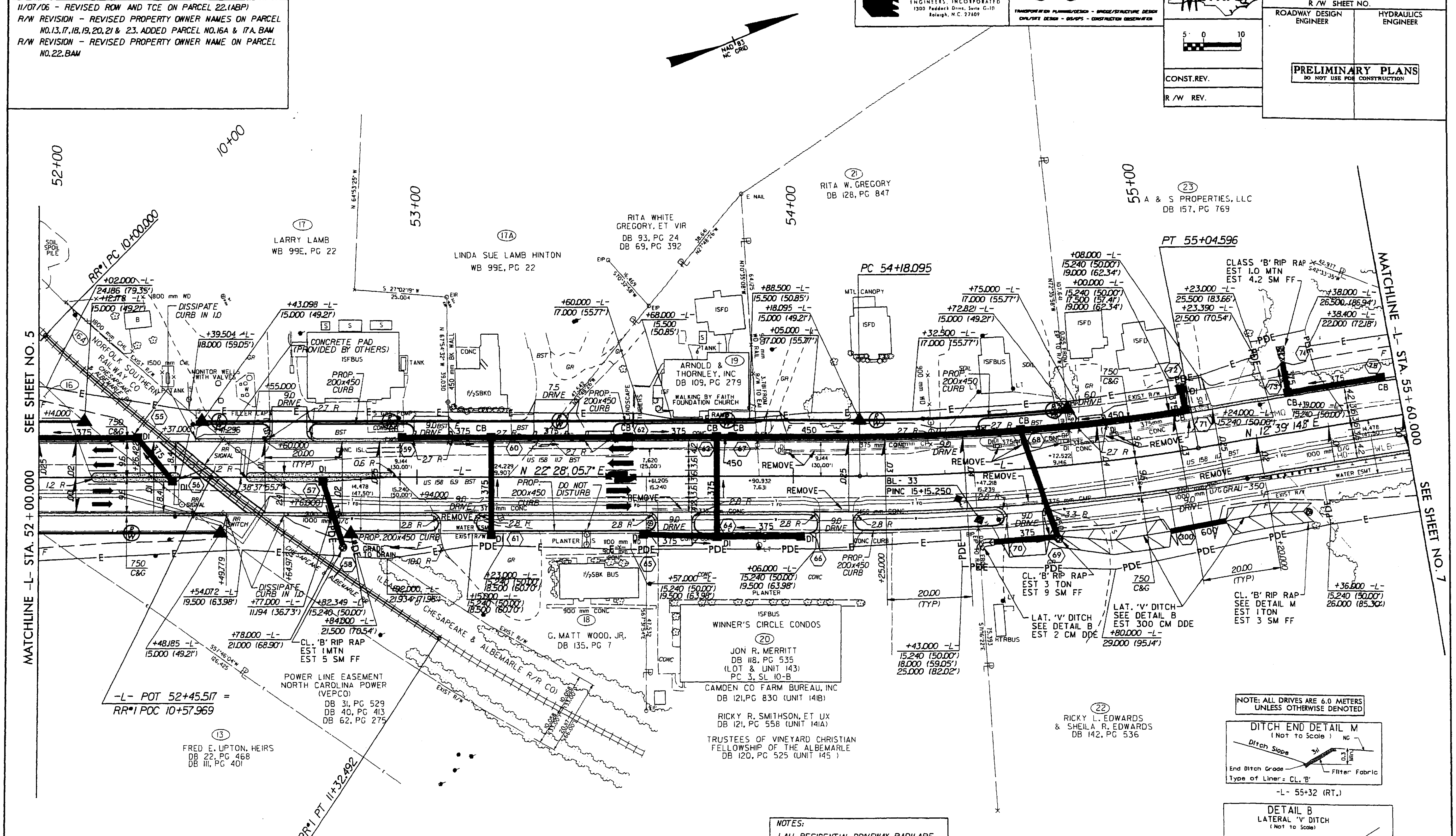
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST. REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83 NC GRID
52+00
10+00
53+00
54+00
55+00
SEE SHEET NO. 5
MATCHLINE -L- STA. 52+00.000
MATCHLINE -L- STA. 55+60.000
SEE SHEET NO. 7
RR*1 PC 10+00.000
RR*1 PT 11+32.492
-L- POT 52+45.517 = RR*1 POC 10+57.969
PC 54+18.095
PT 55+04.596
N 22° 28' 05.7" E
N 12° 39' 14.8" E
LARRY LAMB WB 99E, PG 22
LINDA SUE LAMB HINTON WB 99E, PG 22
RITA WHITE GREGORY, ET VIR DB 93, PG 24 DB 69, PG 392
RITA W. GREGORY DB 128, PG 847
A & S PROPERTIES, LLC DB 157, PG 769
ARNOLD & THORNLEY, INC DB 109, PG 279
WALKING BY FAITH FOUNDATION CHURCH
NORFOLK SOUTHERN RAILWAY CO
CHESAPEAKE & ALBEMARLE R/R CO
G. MATT WOOD, JR. DB 135, PG 7
FRED E. UPTON, HEIRS DB 22, PG 468 DB 111, PG 401
POWER LINE EASEMENT NORTH CAROLINA POWER (VEPCO) DB 31, PG 529 DB 40, PG 413 DB 62, PG 275
WINNER'S CIRCLE CONDOS
JON R. MERRITT DB 118, PG 535 (LOT & UNIT 143) PC 3, SL 10-B
CAMDEN CO FARM BUREAU, INC DB 121, PG 830 (UNIT 141B)
RICKY R. SMITHSON, ET UX DB 121, PG 558 (UNIT 141A)
TRUSTEES OF VINEYARD CHRISTIAN FELLOWSHIP OF THE ALBEMARLE DB 120, PG 525 (UNIT 145)
RICKY L. EDWARDS & SHEILA R. EDWARDS DB 142, PG 536
CONCRETE PAD (PROVIDED BY OTHERS)
DISSIPATE CURB IN 1.0
CL. 'B' RIP RAP EST 1 MTN EST 5 SM FF
CL. 'B' RIP RAP EST 3 TON EST 9 SM FF
CL. 'B' RIP RAP SEE DETAIL M EST 1 TON EST 3 SM FF
CLASS 'B' RIP RAP EST 1.0 MTN EST 4.2 SM FF
LAT. 'V' DITCH SEE DETAIL B EST 2 CM DDE
LAT. 'V' DITCH SEE DETAIL B EST 300 CM DDE
BL-33 PINC 15+15.250

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

DITCH END DETAIL M
(Not to Scale)
Ditch Slope
End Ditch Grade
Filter Fabric
Type of Liner: CL. 'B'
-L- 55+32 (RT.)

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D = 0.3 m
b = 0.9 m
-L- 54+47 to 54+52 (RT.)
-L- 54+67 to 55+32 (RT.)

SEE SHEET NO. 20 FOR -L- GRADE AND PROFILE.

NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

RR *1
PI Sta 10+66.452
Δ = 11° 02' 25.1" (LT)
L = 132.492
T = 66.452
R = 687.593

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

-L-
PI Sta 54+61.452
Δ = 9° 48' 50.9" (LT)
L = 86.501
T = 43.357
R = 505.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

REVISIONS
11/07/06 - REVISED ROW,TCE & PDE ON PARCEL 25.(ABP)
R/W REVISION - REVISED PROPERTY OWNER NAMES ON PARCEL NO.23 & 24. ADDED PARCEL NO.24A & 25A. CORRECTED PROPERTY OWNER NAMES CHARLES H.HODGES & HOWARD S.STEVENS,HEIRS. BAM
R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.22. BAM

WETHERILL ENGINEERING

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

TRANSITE CONSULTING ENGINEERS, INCORPORATED
1300 Paddock Drive, Suite G-10
Raleigh, N.C. 27609

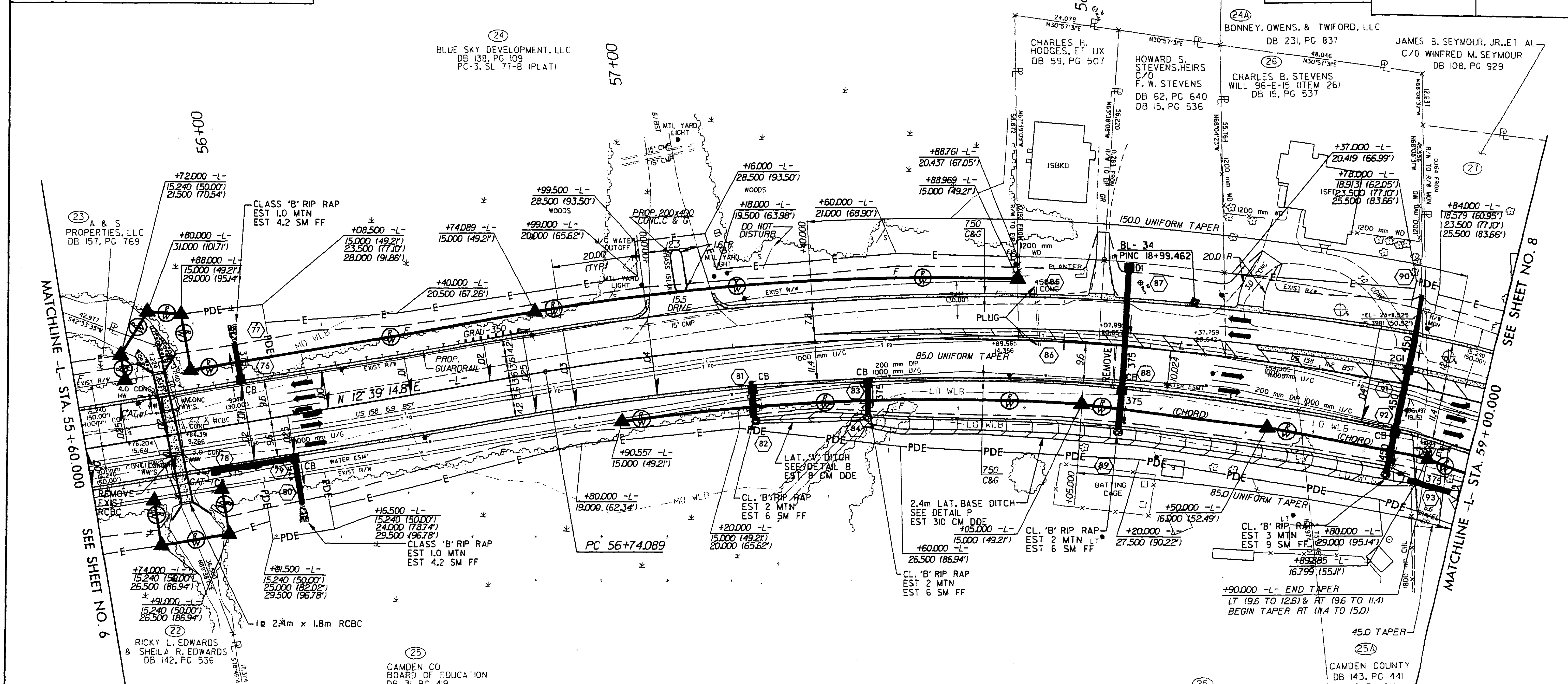
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CONST.REV.

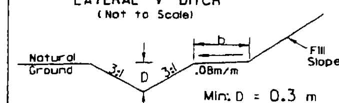
R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



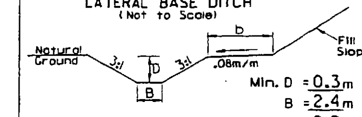
-L-
PI Sta 58+15.159
Δ = 28° 46' 17.6" (RT)
L = 276.187
T = 141.071
R = 550.000
SE = 0.04
R'OFF = 81.000
DS = 80 KM/H

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



-L- 57+24 to 57+47 (RT.)

DETAIL P
LATERAL BASE DITCH
(Not to Scale)



-L- 57+52 to 59+20 (RT.)

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT

NOTES:
1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 20 FOR -L- FOR GRADE AND PROFILE.

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5/13/2008

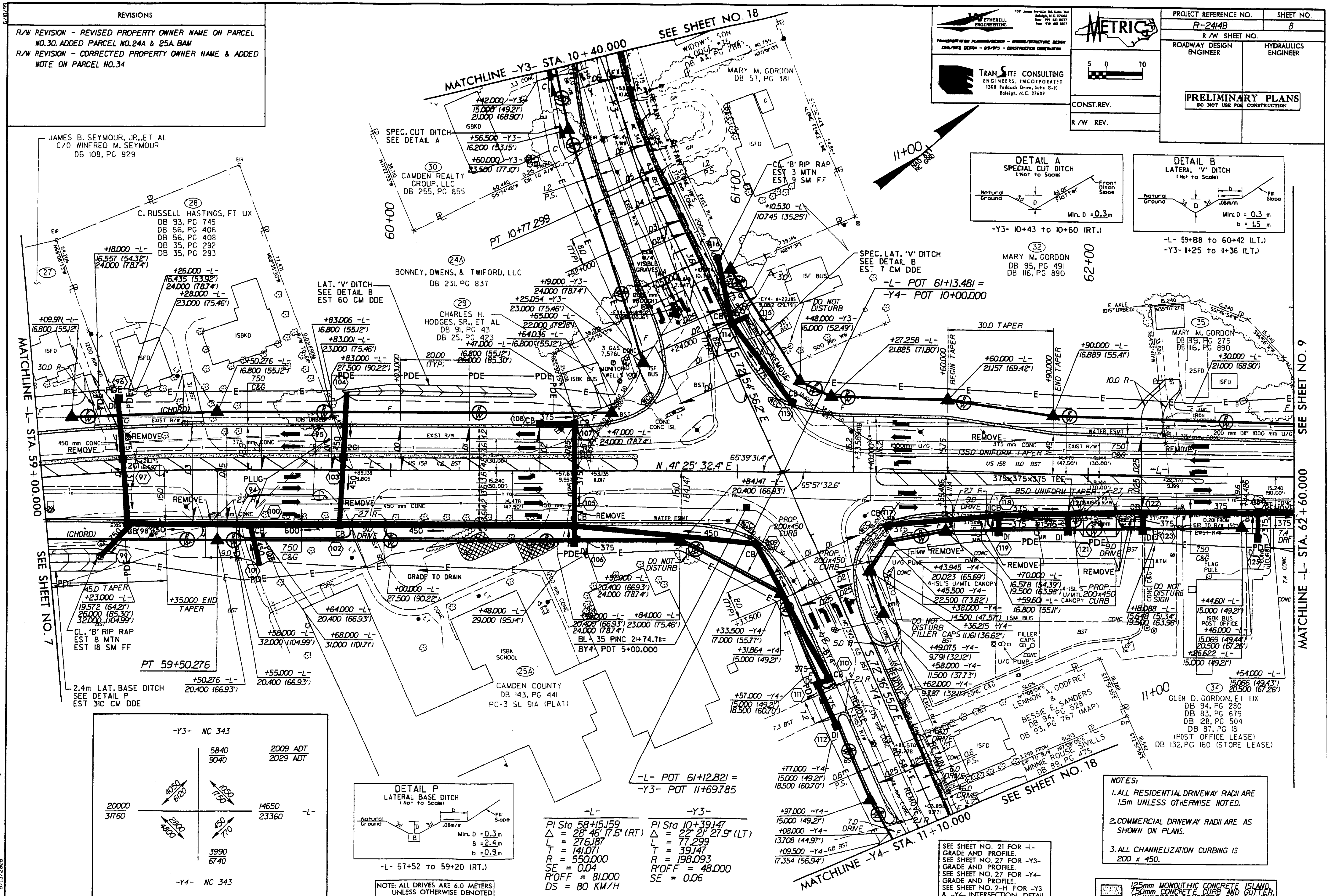
REVISIONS

R/W REVISION - REVISED PROPERTY OWNER NAME ON PARCEL NO.30. ADDED PARCEL NO.24A & 25A. BAM

R/W REVISION - CORRECTED PROPERTY OWNER NAME & ADDED NOTE ON PARCEL NO.34

PROJECT REFERENCE NO.	SHEET NO.
R-2414B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y3- NC 343		
5840 / 9040	2009 ADT / 2029 ADT	
20000 / 31760	14650 / 23360	-L-
3990 / 6740	-Y4- NC 343	

-L-	-Y3-
PI Sta 58+15.159	PI Sta 10+39.147
Δ = 28° 46' 17.6" (RT)	Δ = 22° 21' 27.9" (LT)
L = 276.187	L = 77.299
T = 141.071	T = 39.147
R = 550.000	R = 198.093
SE = 0.04	R'OFF = 48.000
R'OFF = 81.000	SE = 0.06
DS = 80 KM/H	

NOTE: ALL DRIVES ARE 6.0 METERS UNLESS OTHERWISE DENOTED

SEE SHEET NO. 21 FOR -L- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y3- GRADE AND PROFILE.
SEE SHEET NO. 27 FOR -Y4- GRADE AND PROFILE.
SEE SHEET NO. 2-H FOR -Y3 & -Y4- INTERSECTION DETAIL.

NOTES:

1. ALL RESIDENTIAL DRIVEWAY RADII ARE 1.5m UNLESS OTHERWISE NOTED.
2. COMMERCIAL DRIVEWAY RADII ARE AS SHOWN ON PLANS.
3. ALL CHANNELIZATION CURBING IS 200 x 450.

125mm MONOLITHIC CONCRETE ISLAND, 750mm CONCRETE CURB AND GUTTER, REINFORCED CONCRETE BOX CULVERT