



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

September 18, 2009

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive Suite 105
Wake Forest, NC 27587

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Dear Sir,

Subject: **Application for Section 404 Nationwide Permit 14 and Section 401 Water Quality Certification** for widening of Hillandale Road (SR 1321) from I-85 to North of Carver Street (SR 1407) in Durham County, Federal Aid Project Number STP 0505(14), State Project No. 8.2353601, Division 5, T.I.P No. U-3804.

Debit \$570.00 from WBS No. 34972.1.1

The North Carolina Department of Transportation (NCDOT) proposes to widen 0.8 miles of Hillandale Road (SR 1321) from I-85 to 900 feet north of Carver Street (SR 1407) in Durham County. There will be 1796 feet of permanent surface water impacts and 38,855 square feet of buffer impacts. These impacts occur as a result of the installation of a 48-inch reinforced concrete pipe.

Please see the enclosed copies of the Pre-Construction Notification (PCN), Stormwater Management Plan, permit drawings, and design plans for the above-referenced project. The Environmental Assessment (EA) was completed for this project in August 2007, and the Finding of No Significant Impact (FONSI) was completed in September 2008. Additional copies are available upon request.

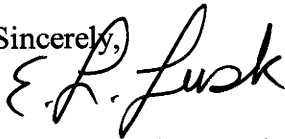
This project calls for a letting date of April 20, 2010 and a review date of March 9, 2010. However, the let date may advance as additional funds become available.

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

TELEPHONE: 919-431-2000
FAX: 919-431-2001
WEBSITE: WWW.NCDOT.ORG

LOCATION:
4701 Atlantic Ave.,
Suite 116
Raleigh, NC 27604

A copy of this permit application will be posted on the NCDOT Website at:
<http://www.ncdot.org/doh/preconstruct/pe/>. If you have any questions or need additional information, please call Sara Easterly at (919) 431-1605.

Sincerely,


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

W/attachment

Mr. Brian Wrenn, NCDWQ (5 Copies)
Mr. J. Wally Bowman, P.E., Division Engineer
Mr. Chris Murray, DEO

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Ma'ad Hassan, P.E., PDEA Project Planning Engineer
Ms. LeiLani Paugh, NEU
Mr. Randy Griffin, NEU



Office Use Only:
 Corps action ID no. _____
 DWQ project no. _____
 Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 14 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input type="checkbox"/> Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

2. Project Information

2a. Name of project:	Improvements to Hillandale Road (SR 1321) from 1_85 to North of Carver Street (SR 1407)
2b. County:	Durham
2c. Nearest municipality / town:	Durham
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no.:	U-3804

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 431-1605
3g. Fax no.:	(919) 431-2002
3h. Email address:	seeasterly@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	<input type="checkbox"/> Agent <input type="checkbox"/> Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 36.332 (DD.DDDDDD) Longitude: - 78.9357 (-DD.DDDDDD)
1c. Property size:	50 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Jumping Run Creek
2b. Water Quality Classification of nearest receiving water:	WS-IV, NSW
2c. River basin:	Neuse
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Urban and Developed Land	
3b. List the total estimated acreage of all existing wetlands on the property: 0	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 1796	
3d. Explain the purpose of the proposed project: Improvements to Hillandale Road to relieve traffic congestion along the studied portions of Hillandale Road.	
3e. Describe the overall project in detail, including the type of equipment to be used: The existing roadway will be widened to a four-lane, median divided facility with 12-foot inside and 14-foot outside lanes to accommodate bicycles. The proposed facility will have curb and gutter, a 17.5 foot raised median and 5-foot sidewalks to accommodate pedestrians. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: During a field meeting on 12/5/08 with the Eric Alsmeyer of the USACE and Rob Ridings of DWQ it was determined that mitigation would only be for buffer impacts, not stream impacts. The stream has little if any aquatic function.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known): Sara Easterly	Agency/Consultant Company: Other: NCDOT
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. The initial verification was on November 15, 2005 with a second site visit on December 5, 2008. The NC Department of Transportation does not request the Corps to evaluate our site using the Rapanos Guidance. Instead, I am satisfied with the delineation as reviewed and approved in the field by the Corps prior to 6/5/2007, and ask that you approve the delineation submitted to you based on that field review by your staff.	

5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

- Wetlands Streams - tributaries Buffers
 Open Waters Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ	
2g. Total wetland impacts					0 Permanent 0 Temporary

2h. Comments: This project will have no impact on wetlands.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Fill	UT to Jumping Run Creek	<input type="checkbox"/> PER <input checked="" type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	4	1,796
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
3h. Total stream and tributary impacts						1,796 Perm 0 Temp

3i. Comments: Stream impacts increased from 170-feet in the NEPA documents to 1880 in the permit application because it became necessary during hydraulic design to relocate the stream to more effectively handle the runoff from the drainage basin

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 <input type="checkbox"/> P <input type="checkbox"/> T				
O2 <input type="checkbox"/> P <input type="checkbox"/> T				
O3 <input type="checkbox"/> P <input type="checkbox"/> T				
O4 <input type="checkbox"/> P <input type="checkbox"/> T				
4f. Total open water impacts				0 Permanent 0 Temporary

4g. Comments:

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
5f. Total								

5g. Comments:

5h. Is a dam high hazard permit required?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?		<input checked="" type="checkbox"/> Neuse <input type="checkbox"/> Catawba		<input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Randleman	<input type="checkbox"/> Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Road impacts other than road crossings of streams	UT to Jumping Run Creek	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3,7584	1,271
B2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
6h. Total buffer impacts				3,7584	1,271
6i. Comments:					

D. Impact Justification and Mitigation**1. Avoidance and Minimization**

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

The existing UT on the west side of Hillandale Rd. has been channelized adjacent to the sidewalk. The cross section of that channel is too small to effectively handle the runoff from the drainage basin. Ever since the channelization occurred the channel has been degrading in the bed and along the stream banks allowing this material to wash downstream. This has been steadily increasing as the drainage basin develops. Additionally, water overflows its banks into Hillandale around station 65+00 during a storm event less than the 2-year event. NCDOT's proposed channel relocation will improve water quality by handling present and future runoff from the drainage basin, increasing the level of service for Hillandale, and reducing the amount of sediment flowing downstream.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.

2:1 slopes are to be used in jurisdictional areas, Best Management Practices for Surface Waters. Design Standards in Sensitive Watersheds will also be used.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No No stream mitigation required per USACE 12/5/2008
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input type="checkbox"/> Corps
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes
4b. Stream mitigation requested:	0 linear feet
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres
4h. Comments:	

5. Complete if Using a Permittee Responsible Mitigation Plan

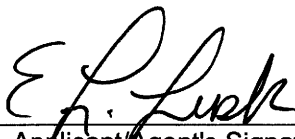
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

See Attached

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1	Road impacts other than road crossings of streams	37,584	3 (2 for Catawba)	112,752
Zone 2	Road impacts other than road crossings of streams	1271	1.5	1,907
6f. Total buffer mitigation required:				114,659
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund). See attached buffer mitigation plan for debiting Marks Creek Mitigation Site.				
6h. Comments:				

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: See permit drawings (in Stormwater Management Plan)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input type="checkbox"/> DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5b. Have all of the 401 Unit submittal requirements been met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Violations (DWQ Requirement)	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
3. Cumulative Impacts (DWQ Requirement)	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. See NEPA Document.	
4. Sewage Disposal (DWQ Requirement)	
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable	

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input type="checkbox"/> Raleigh <input type="checkbox"/> Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NHP, USFWS website, and the NCDOT field surveys conducted in 2005 and 2007. No species were found. The Biological Conclusion in the EA and FONSI Remains valid.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
<u>Dr. Gregory J. Thorpe, Ph D</u> Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	9.18.09 Date

Buffer Mitigation

To offset buffer impacts associated with U-3804, Widening of Hillendale Road in Durham County, NCDOT proposed debiting 114,659 square feet of buffer credit from the Marks Creek Mitigation site, as shown on the debit ledger below.

The Marks Creek site is situated immediately adjacent to the right-of-way of the Knightdale Bypass, R-2547, in the eastern portion of Wake County approximately 8.0 miles east of Raleigh. The Marks Creek Site was constructed as an on-site stream mitigation project associated with R-2547. The stream mitigation project involved the restoration of an unnamed tributary to Marks Creek (the Main Tributary to Marks Creek) and four of its tributaries (the North, West, Southwest, and South Tributaries). Design and construction was implemented during 2002 by NCDOT. Stream restoration involved the construction of new channels and the installation of rootwads, rock vanes, rock cross vanes, log vanes to control grade and stabilize the channel. The plan also included the restoration of the wooded buffers of all the restored channels by planting of native vegetation along the streambanks and in the floodplain.

Based on the overall monitoring assessment, the Marks Creek Site has met the required monitoring protocols for the fifth formal year of monitoring. All of the tributaries remain stable. There is extensive growth of vegetation throughout the stream corridor, both within and outside of the bankfull limits associated with the channel. The NCDOT proposes to close out Marks Creek Mitigation Site for 2008.

NCDOT Debit Ledger

Site name	HUC	River Basin	Mitigation Type	As Built Quantity	Available	Debit	Debit	Debit	Debit
Marks Creek	3020201	Neuse				R-2000F&G	R-2547/R-2641	R-2814A&B	U-3804
			Stream Restoration	3,247	106			3,141	
			Buffer (S.F.)	324,700	210,042				114,659
			Riverine Wetland Restoration	12.66	8.26		4.4		
			Riverine Wetland Enhancement	13	2.1	10.9			
			Riverine Wetland Preservation	11	11				

STORMWATER MANAGEMENT PLAN

U-3804, State Project 34972.1.1

Date:7/7/09

Durham County

Hydraulics Project Engineer: R.C. Henegar, PE

ROADWAY DESCRIPTION

This project proposes to widen SR 1321 (Hillandale Rd.) from I-85 to 900 feet north of SR 1407 (Carver St.). The existing roadway will be widened to a four-lane, median divided facility with 12-foot inside and 14-foot outside lanes to accommodate bicycles. The proposed facility will have curb and gutter, a 17.5-foot raised median and 5-foot sidewalks to accommodate pedestrians. The total project length is 0.836 miles.

ENVIRONMENTAL DESCRIPTION

This project is located in the Neuse River Basin. There is one primary stream crossing on this project. Jumping Run Creek has a DWQ classification WS IV; NSW. This stream is not on the 303(d) list. No wetlands will be impacted by the proposed project.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

There are no major structures on this project.

The following summarizes where the BMP's will be used on the project:

- Lateral Grassed Swale from 35+90 -L- to 39+46 -L- left.
- Lateral Grassed Swale from 15+00 -Y- left to 42+12 -L- left.
- Storm drainage collected between 40+00 -L- and 54+00 -L- left is being discharged in a five foot lateral base PSRM lined ditch.

05/08/99

See Sheet 1-A For Index of Sheets

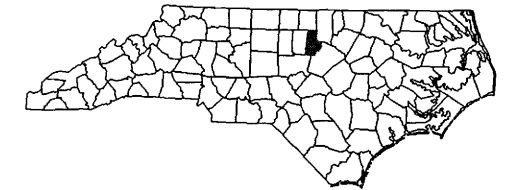
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

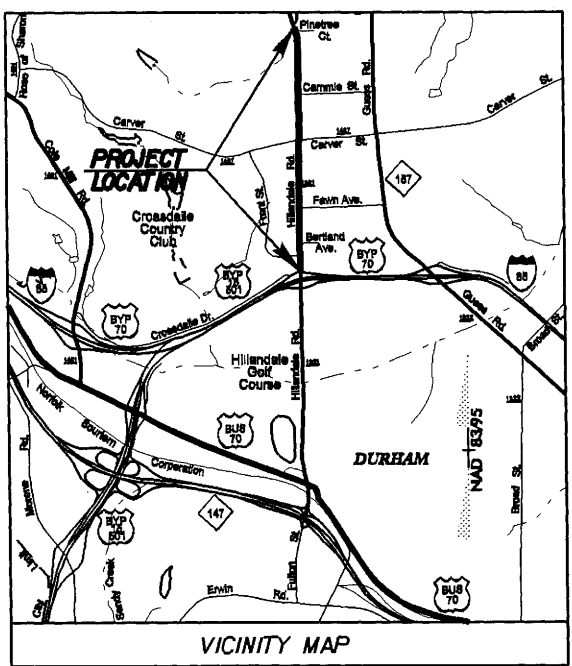
LOCATION: HILLDALE ROAD (SR 1321) FROM I-85 TO
NORTH OF SR 1407 (CARVER STREET)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING,
SIGNALS AND PAVEMENT MARKINGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3804	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34972.1.1	STP-0505(14)	P.E.	
Permit Drawing Sheet 1 of 10			

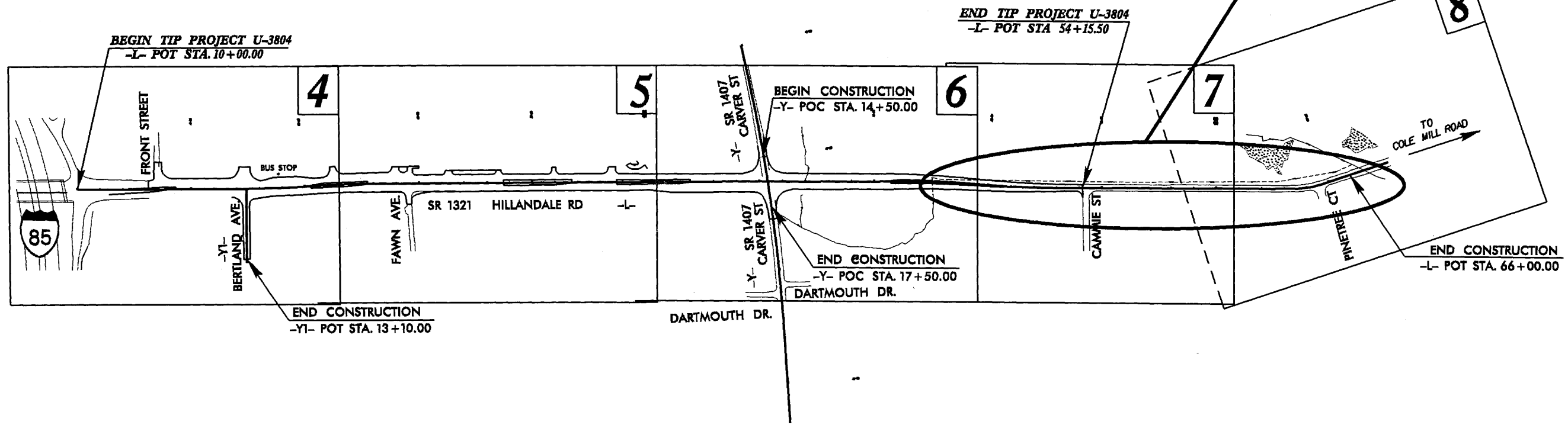


TIP PROJECT: U-3804



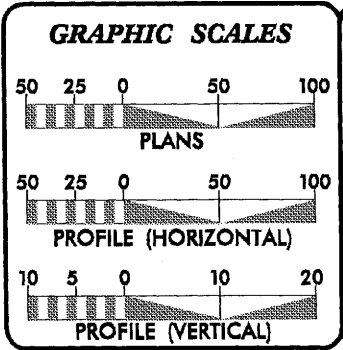
NAD 83/95

SITE 1



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

CONTRACT:



WETLAND PERMIT

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 17, 2009

LETTING DATE:
FEBRUARY 16, 2010

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

05/08/09

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

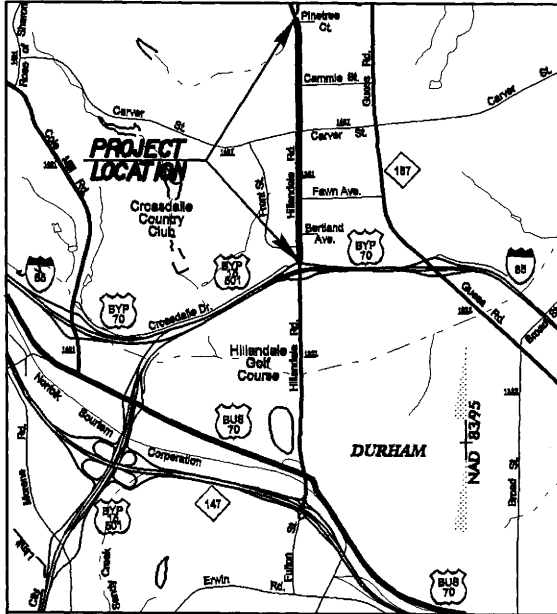
DURHAM COUNTY

LOCATION: HILLDALE ROAD (SR 1321) FROM 1485 TO NORTH OF SR 1407 (CARVER STREET)

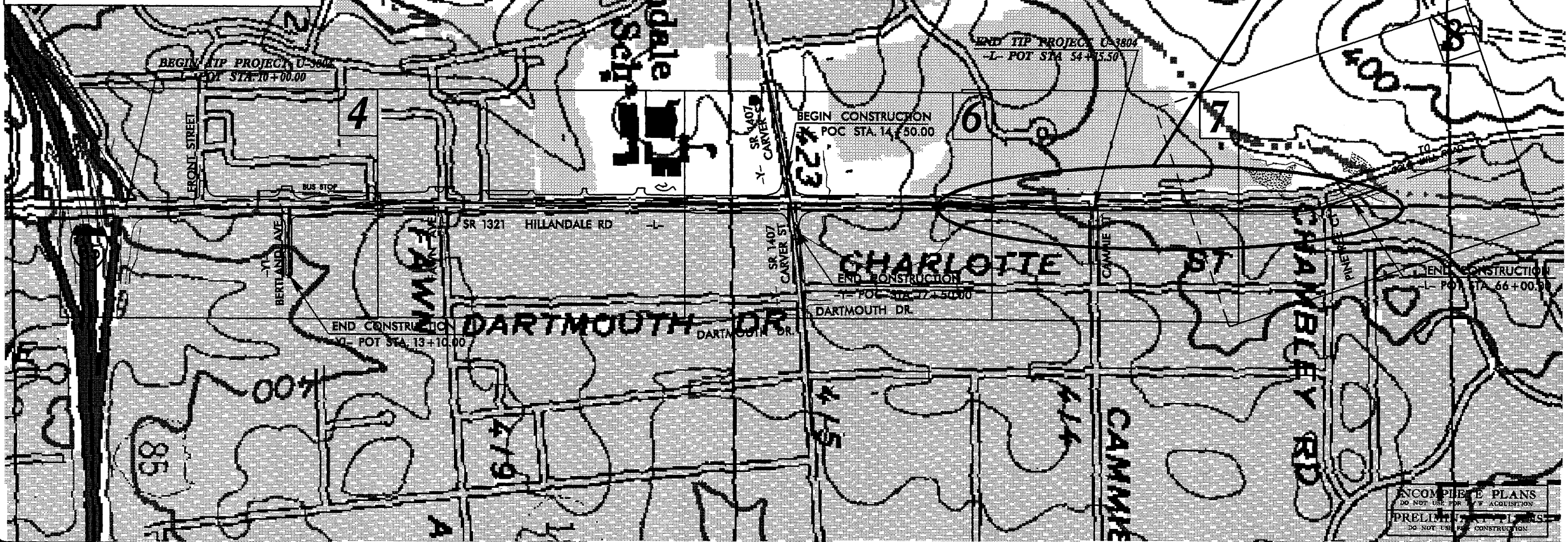
TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING, SIGNALS AND PAVEMENT MARKINGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3804	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34972.1.1	STP-0505(14)	P.E.	
Permit Drawing Sheet 2 of 10			

TIP PROJECT: U-3804

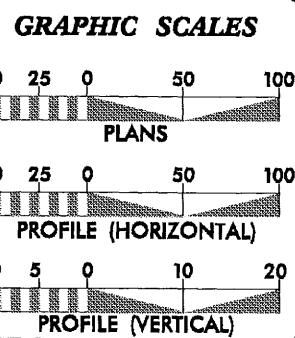


VICINITY MAP



INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:



WETLAND PERMIT

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 17, 2009

LETTING DATE:
FEBRUARY 16, 2010

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

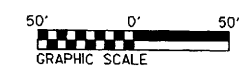
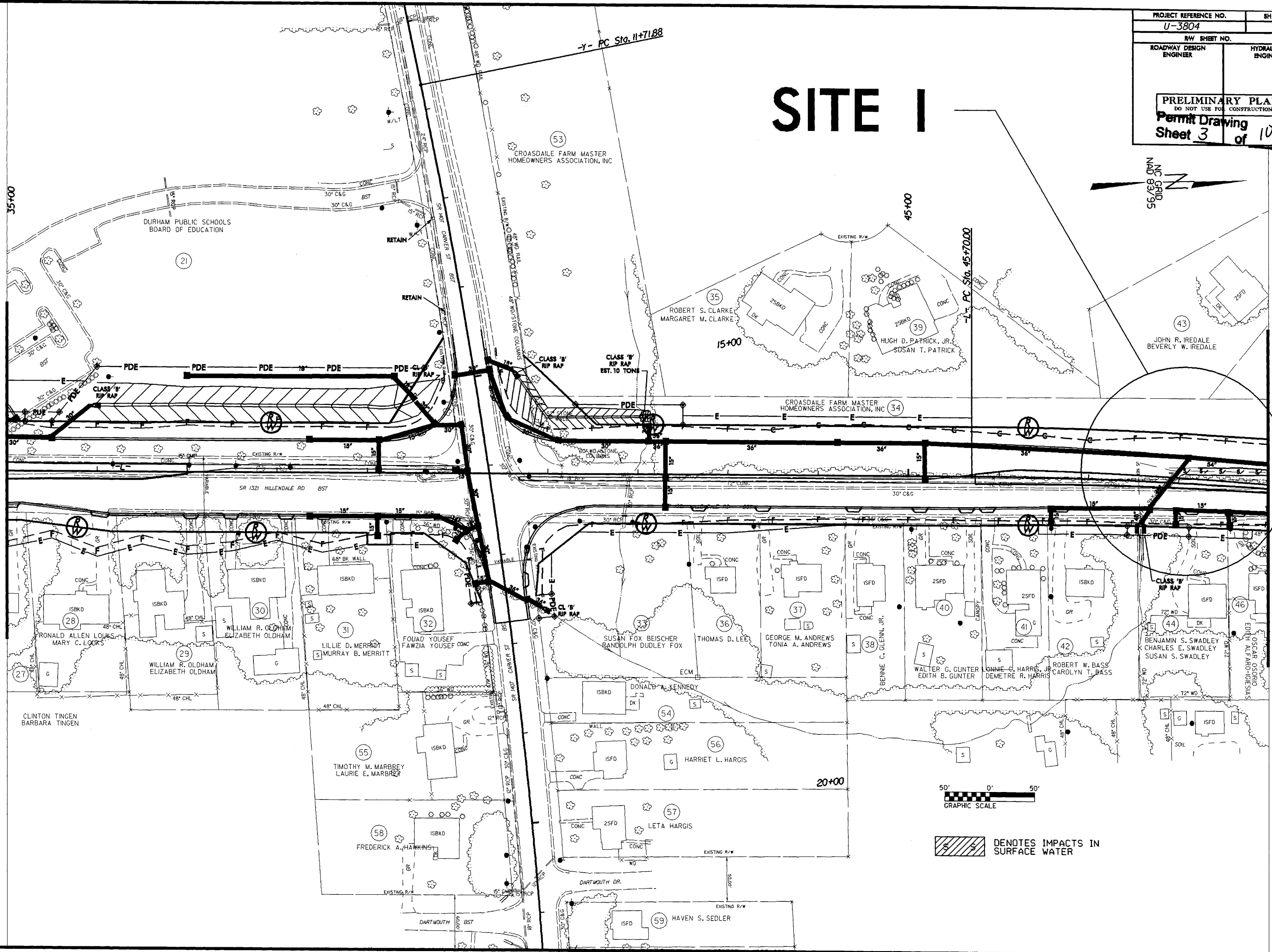
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8/17/99

PROJECT REFERENCE NO. U-3804	SHEET NO. 6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet 3 of 10	

SITE I

MATCHLINE -L- STA 35+00.00 SEE SHEET NO. 5

MATCHLINE -L- STA 49+13.26 SEE SHEET NO. 7



Denotes impacts in surface water

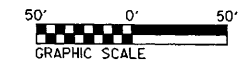
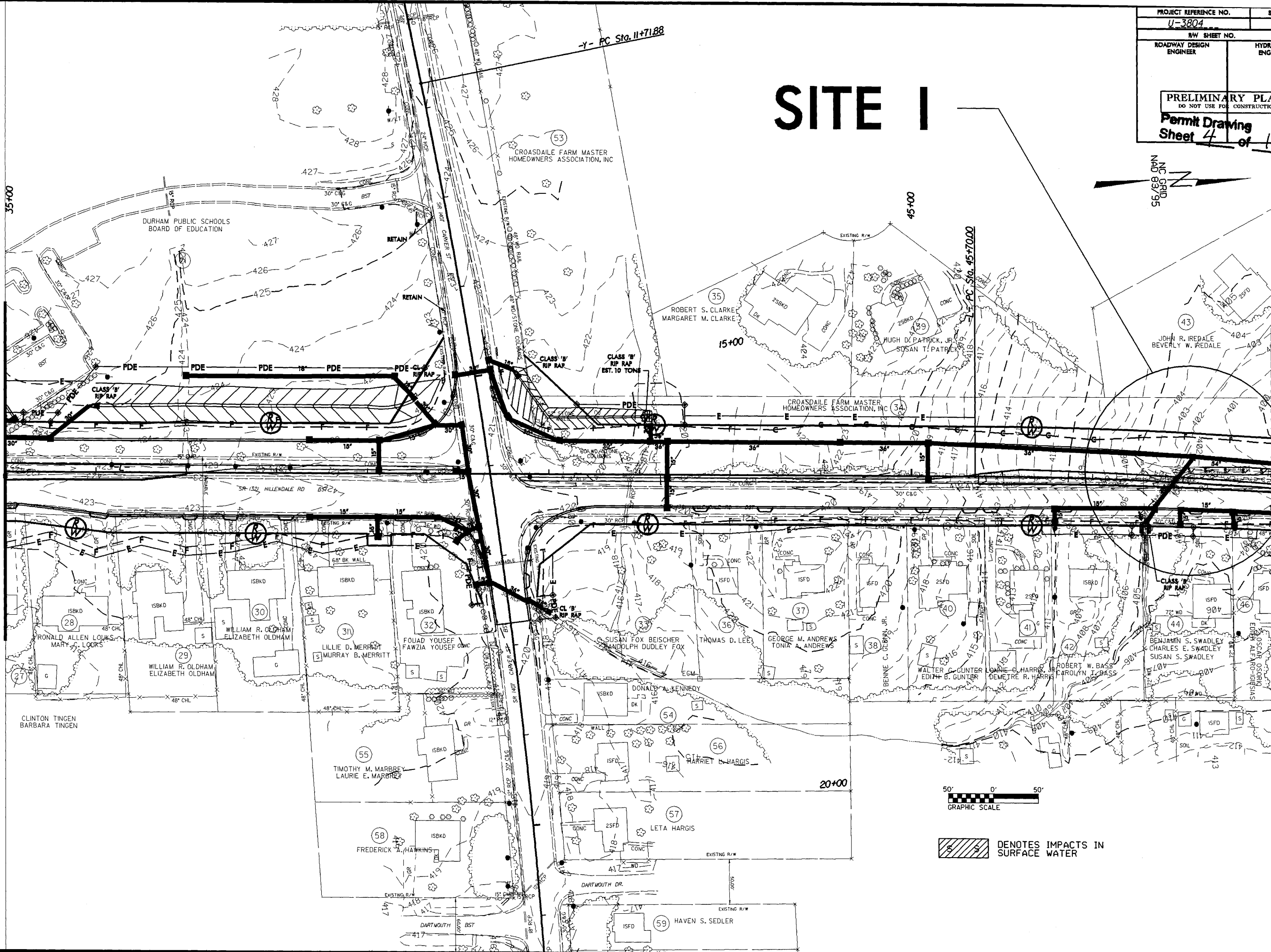
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U-3804	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet 4 of 10	

SITE I



MATCHLINE -L- STA 35+00.00 SEE SHEET NO. 5

MATCHLINE -L- STA 49+13.26 SEE SHEET NO. 7



DENOTES IMPACTS IN SURFACE WATER

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 8/17/99

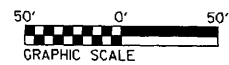
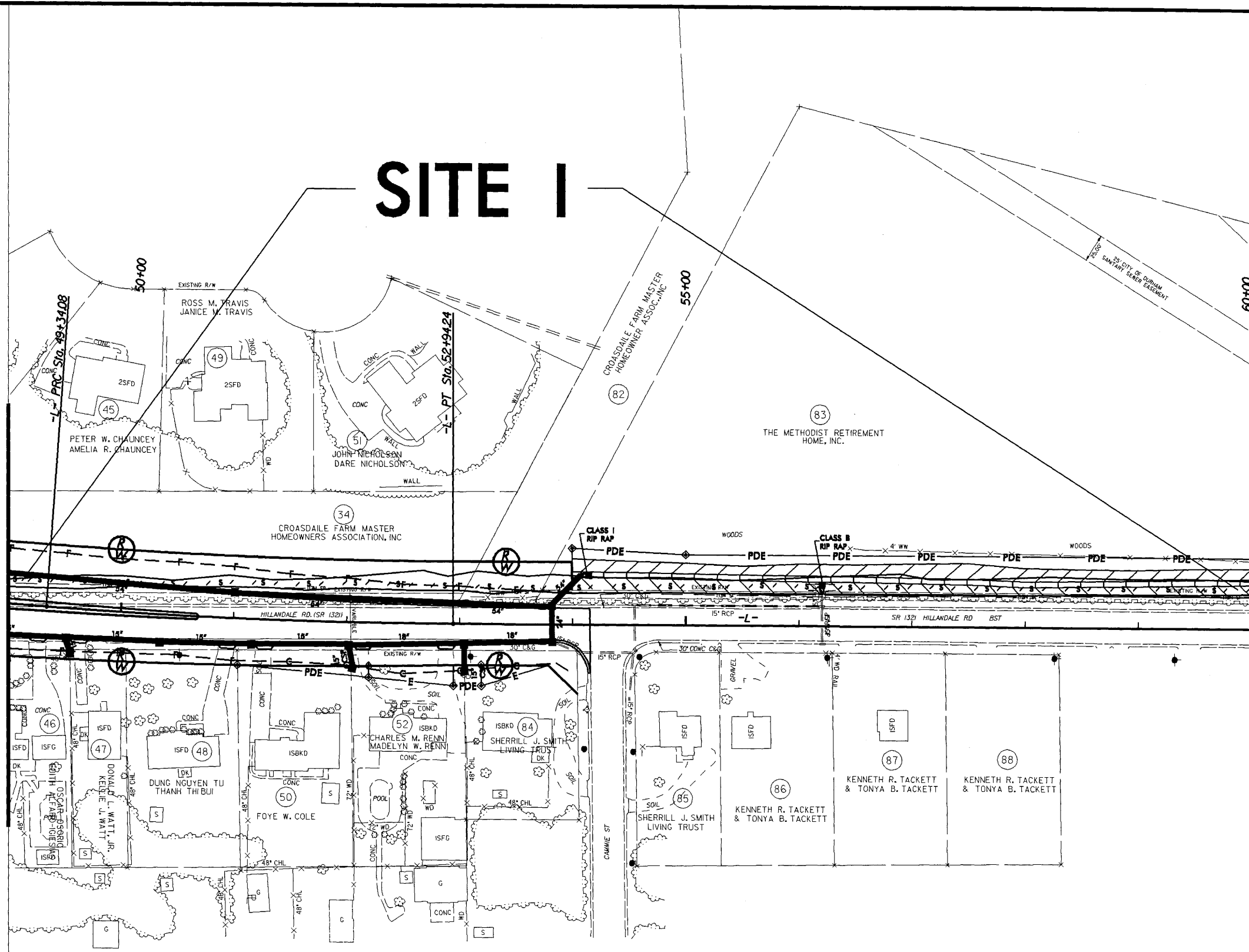
PROJECT REFERENCE NO. U-3804	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet 5 of 10	



SITE I

MATCHLINE -L- STA 49+14.03 SEE SHEET NO. 6

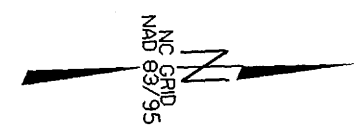
MATCHLINE -L- STA 60+00.00 SEE SHEET NO. 8



DENOTES IMPACTS IN SURFACE WATER

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 8/17/99

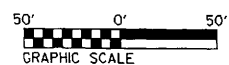
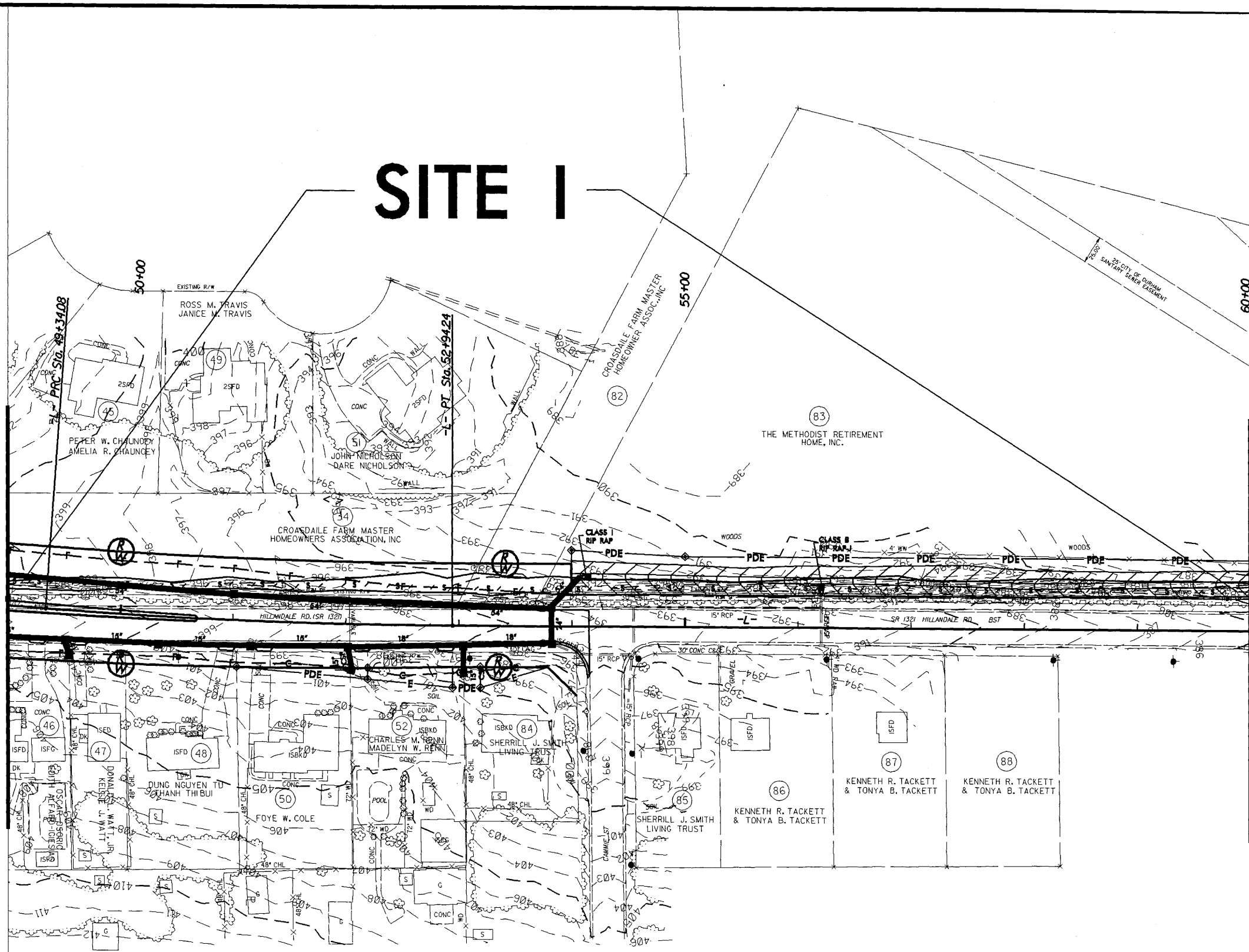
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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Permit Drawing	
Sheet 6 of 10	



SITE I

MATCHLINE -L- STA 49 + 14.03 SEE SHEET NO. 6

MATCHLINE -L- STA 60 + 00.00 SEE SHEET NO. 8



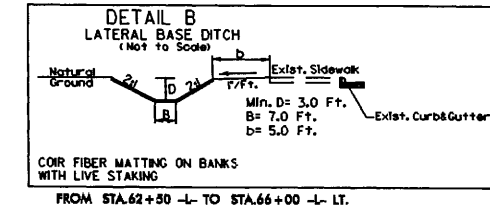
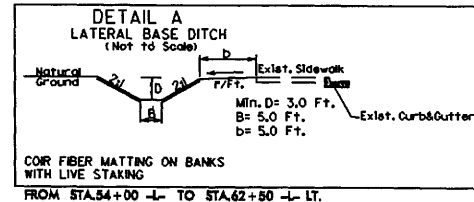
DENOTES IMPACTS IN SURFACE WATER

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8/17/99

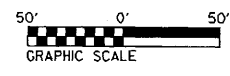
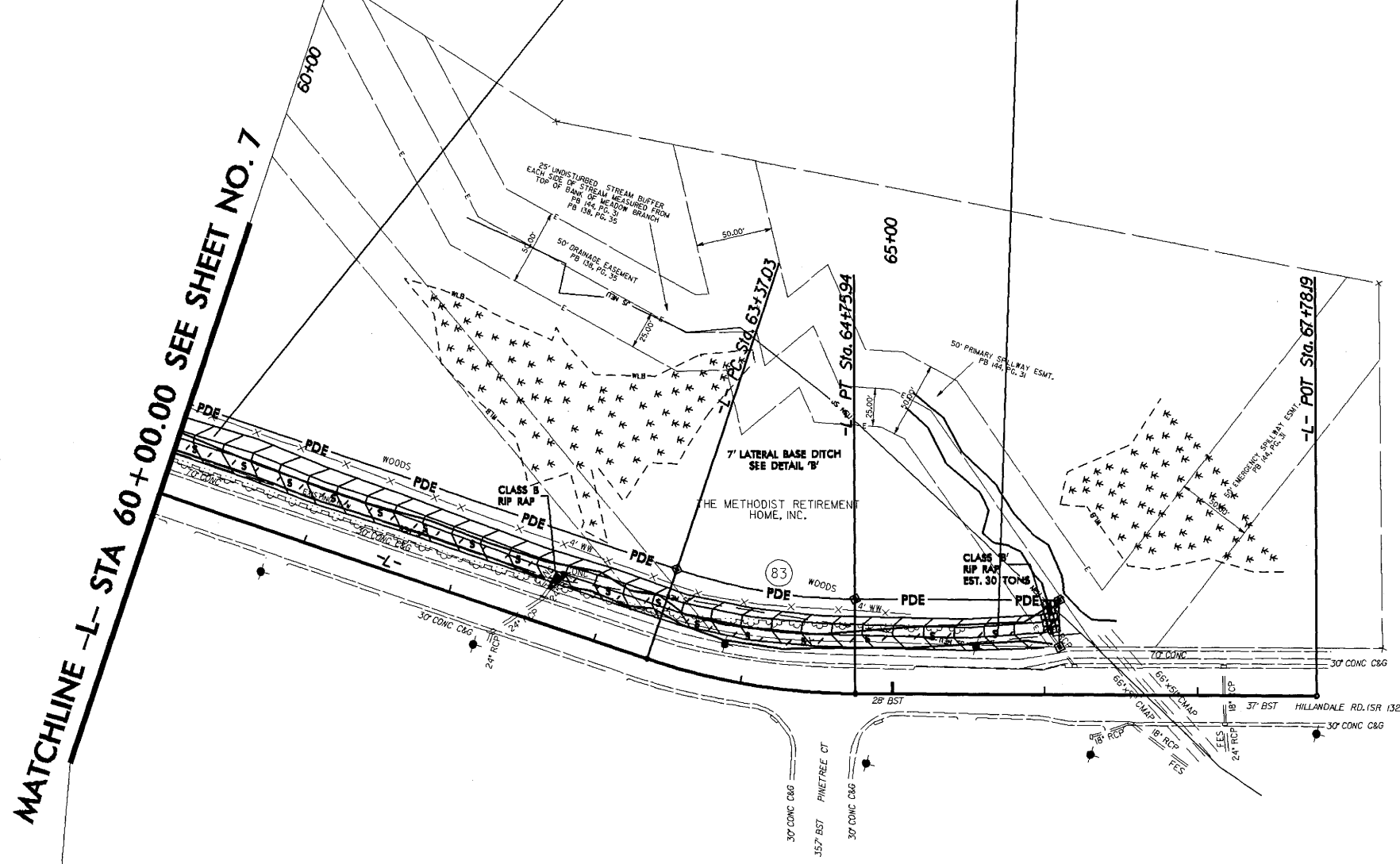
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PROJECT REFERENCE NO. U-3804		SHEET NO. 8	
RWY SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Permit Drawing Sheet 7 of 10			



SITE I

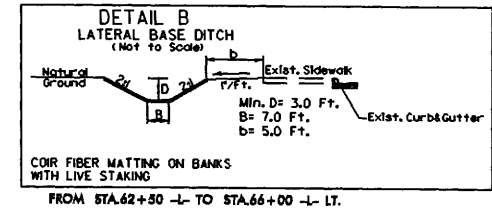
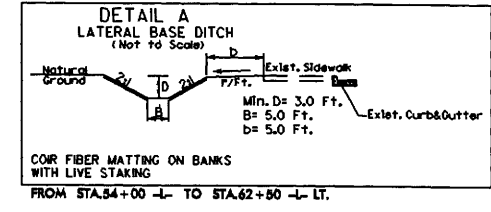
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 DENOTES IMPACTS IN SURFACE WATER

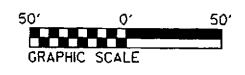
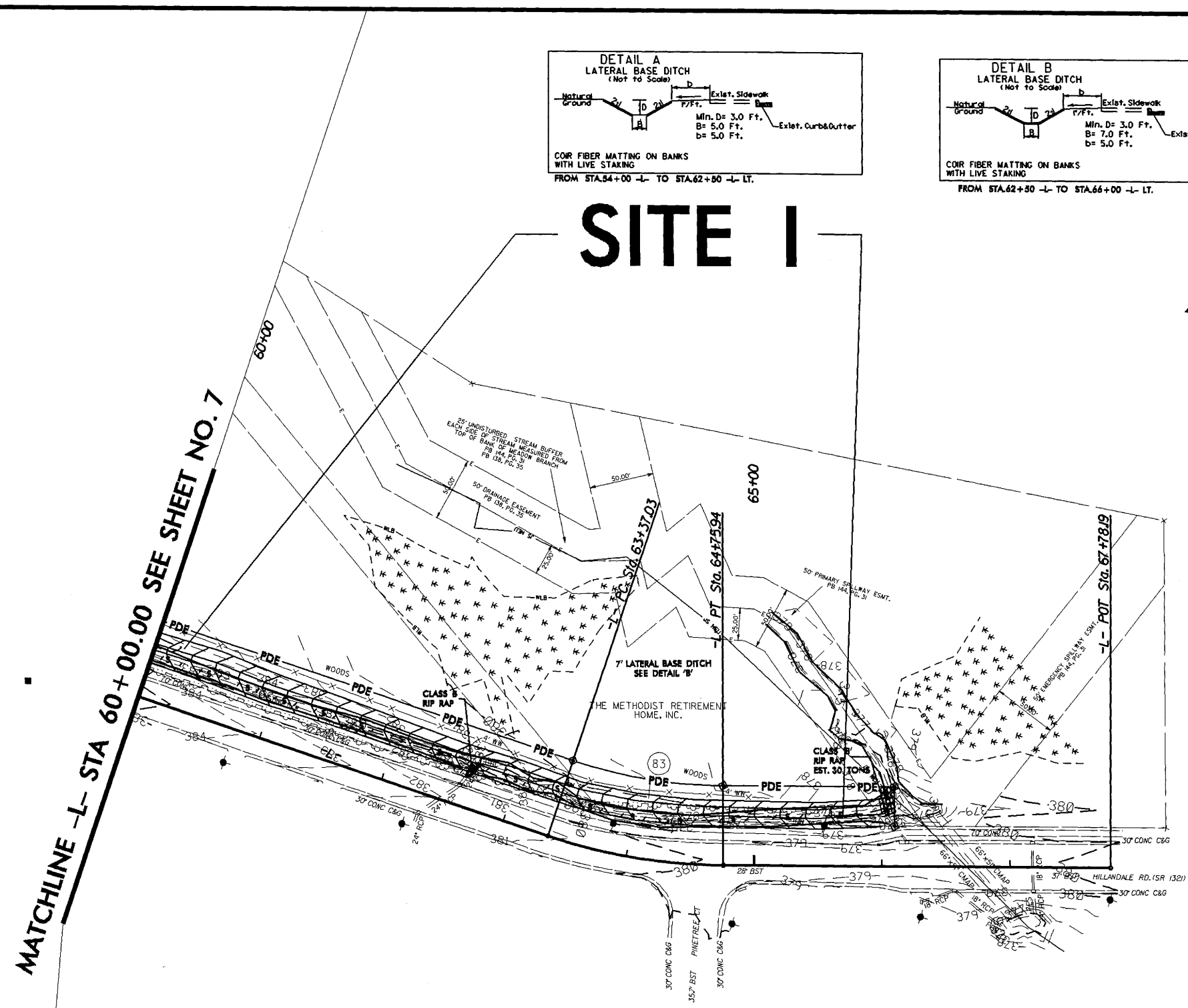
8/17/99

PROJECT REFERENCE NO. U-3804	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION Permit Drawing Sheet 8 of 10	



SITE I

MATCHLINE -L- STA 60+00.00 SEE SHEET NO. 7



DENOTES IMPACTS IN SURFACE WATER

21-AUG-2009 14:03
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 jpratt

PROPERTY OWNERS
NAMES AND ADDRESSES

PARCEL NO.

NAMES

ADDRESSES

44

BENJAMIN S. SWADLEY

2230 HILLANDALE RD.
DURHAM, N.C. 27705

NCDOT

DIVISION OF HIGHWAYS
DURHAM COUNTY

PROJECT: 34972.1.1 (U-3804)

HILLANDALE ROAD (SR 1321) FROM
I-85 TO NORTH OF
SR 1407 (CARVER ST.)

SHEET

9

OF 10

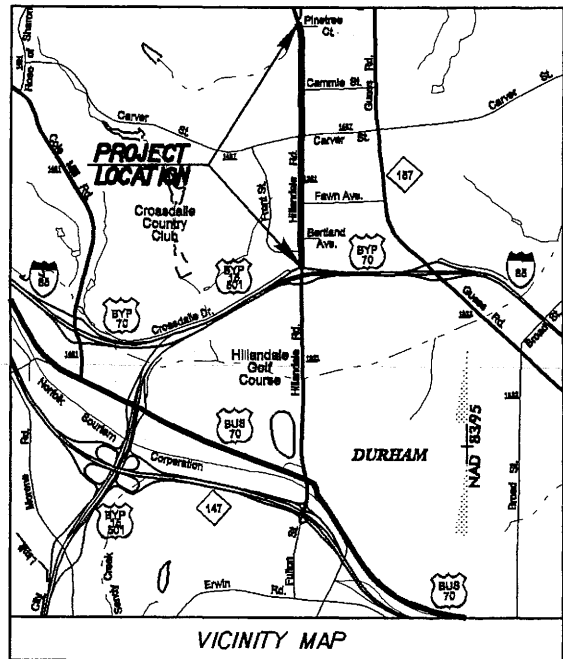
05 / 27 / 09

03/08/99

TIP PROJECT: U-3804

CONTRACT:

See Sheet 1-A For Index of Sheets



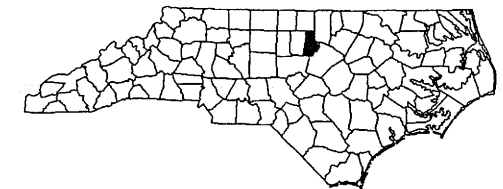
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

LOCATION: HILLANDALE ROAD (SR. 1321) FROM I-85 TO NORTH OF SR 1407 (CARVER STREET)

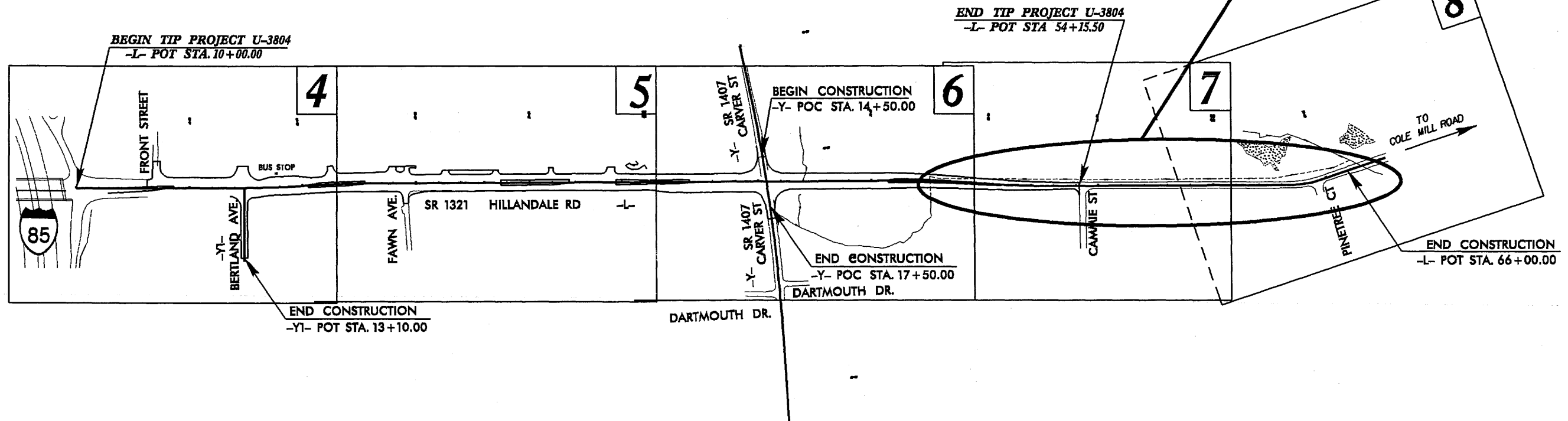
TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING, SIGNALS AND PAVEMENT MARKINGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3804	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
34972.1.1	STP-0505(14)	P.E.	
Buffer Drawing Sheet 1 of 10			

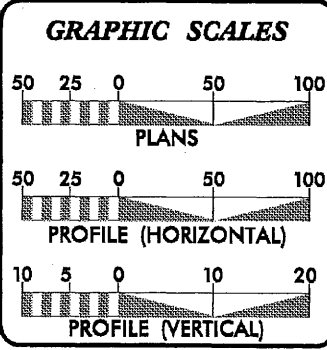


NAD 83/95

SITE 1



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



BUFFER PERMIT

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 17, 2009

LETTING DATE:
FEBRUARY 16, 2010

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

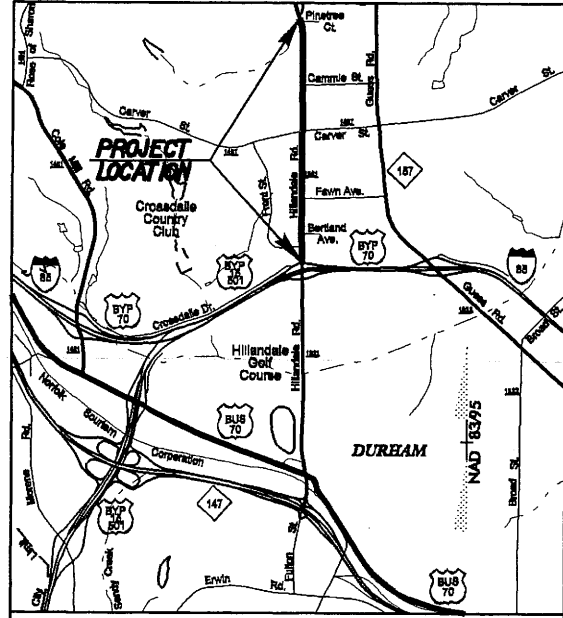
SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

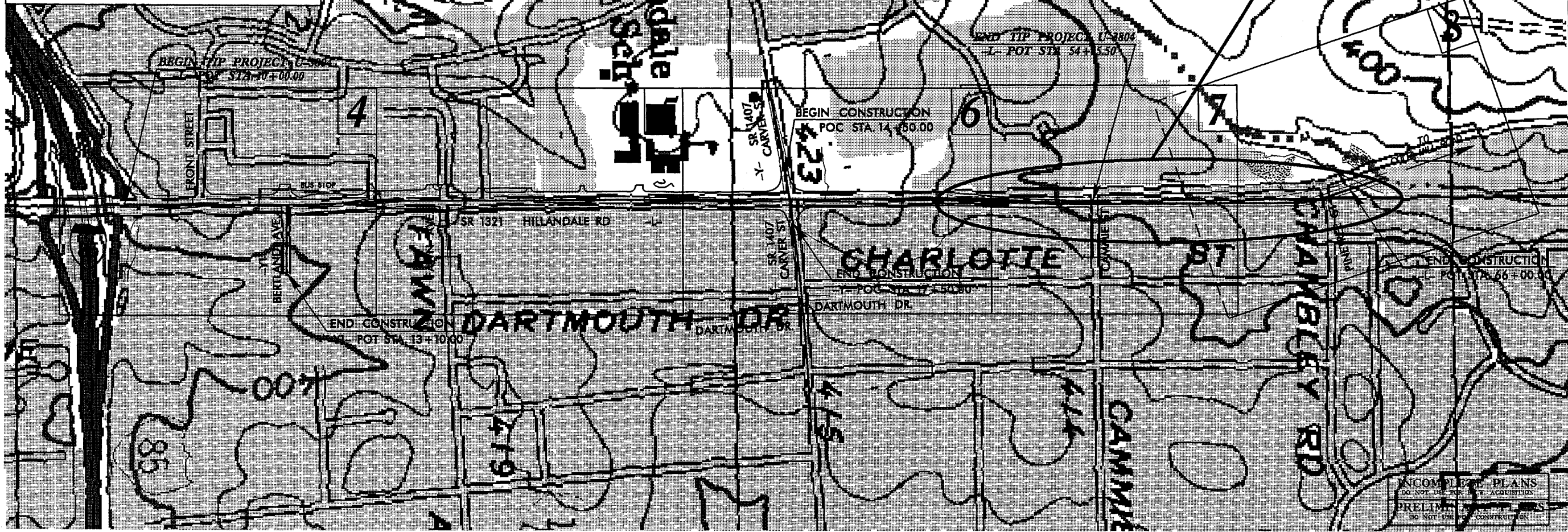
STATE HIGHWAY DESIGN ENGINEER

CONTRACT: TIP PROJECT: U-3804

See Sheet 1-A For Index of Sheets



VICINITY MAP



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

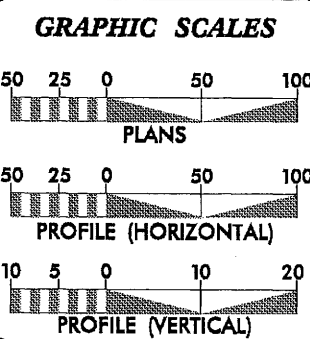
LOCATION: HILLDALE ROAD (SR 1321) FROM I-85 TO NORTH OF SR 1407 (CARVER STREET)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING, SIGNALS AND PAVEMENT MARKINGS

SITE 1

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3804	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34972.1.1	STP-0505(14)	P.E.	
		Buffer Drawing	of 10
		Sheet 2	

CONTRACT:



BUFFER PERMIT

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 17, 2009

LETTING DATE:
FEBRUARY 16, 2010

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE P.E.

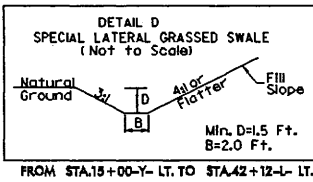
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

PROJECT REFERENCE NO. U-3804		SHEET NO. 6	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Buffer Drawing Sheet 3 of 10			



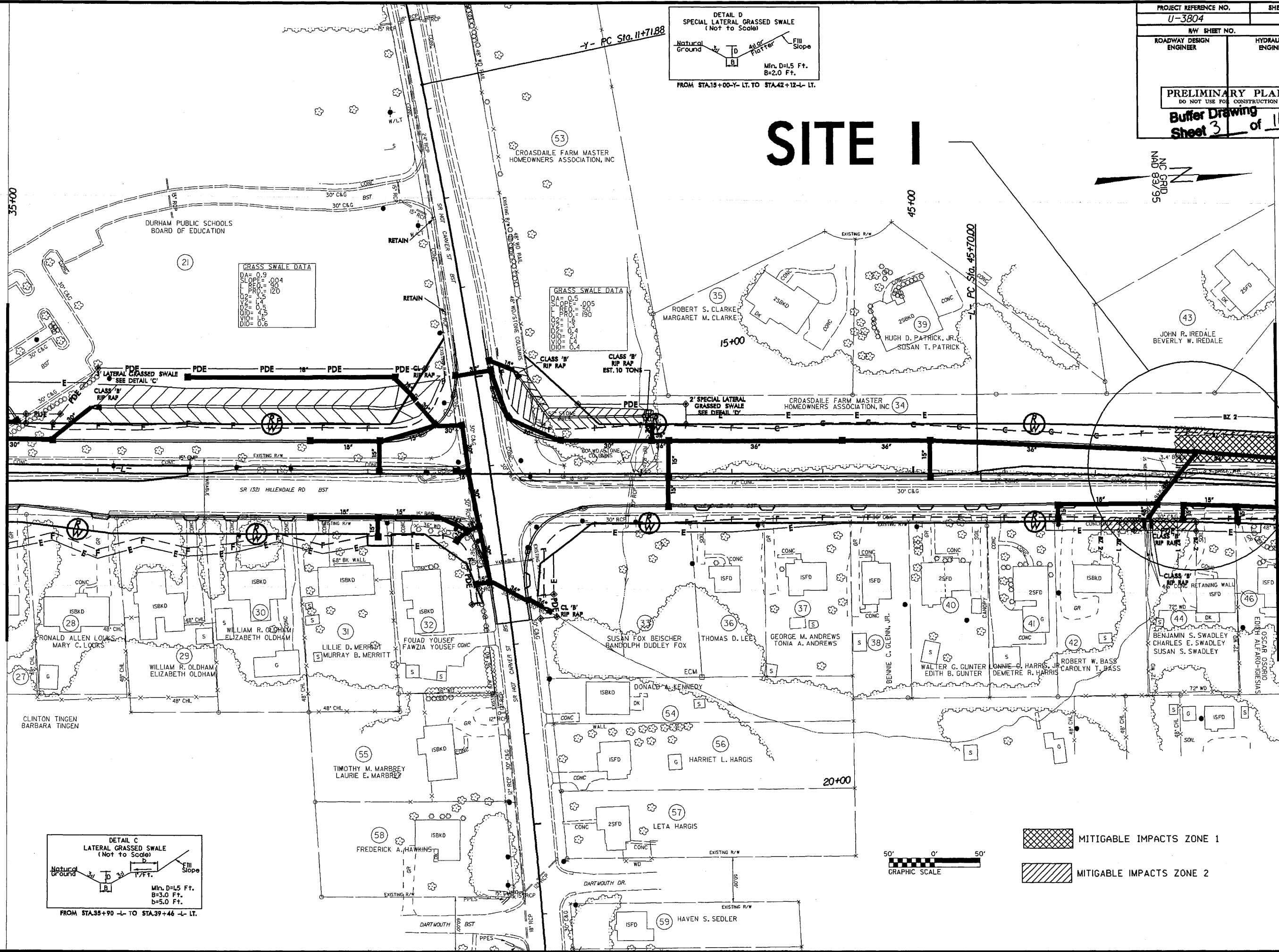
SITE I



HEET NO. 5

MATCHLINE

MATCHLINE -L- STA 49+13.26 SEE SHEET NO. 7

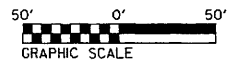
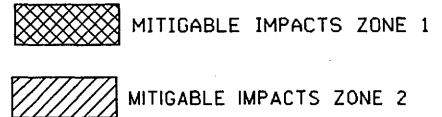
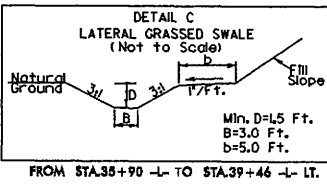


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GRASS SWALE DATA

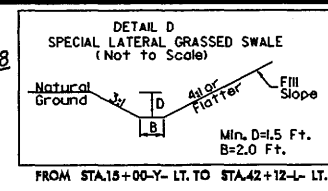
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8/17/99

PROJECT REFERENCE NO. U-3804	SHEET NO. 6
HW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Buffer Drawing Sheet 4 of 10	



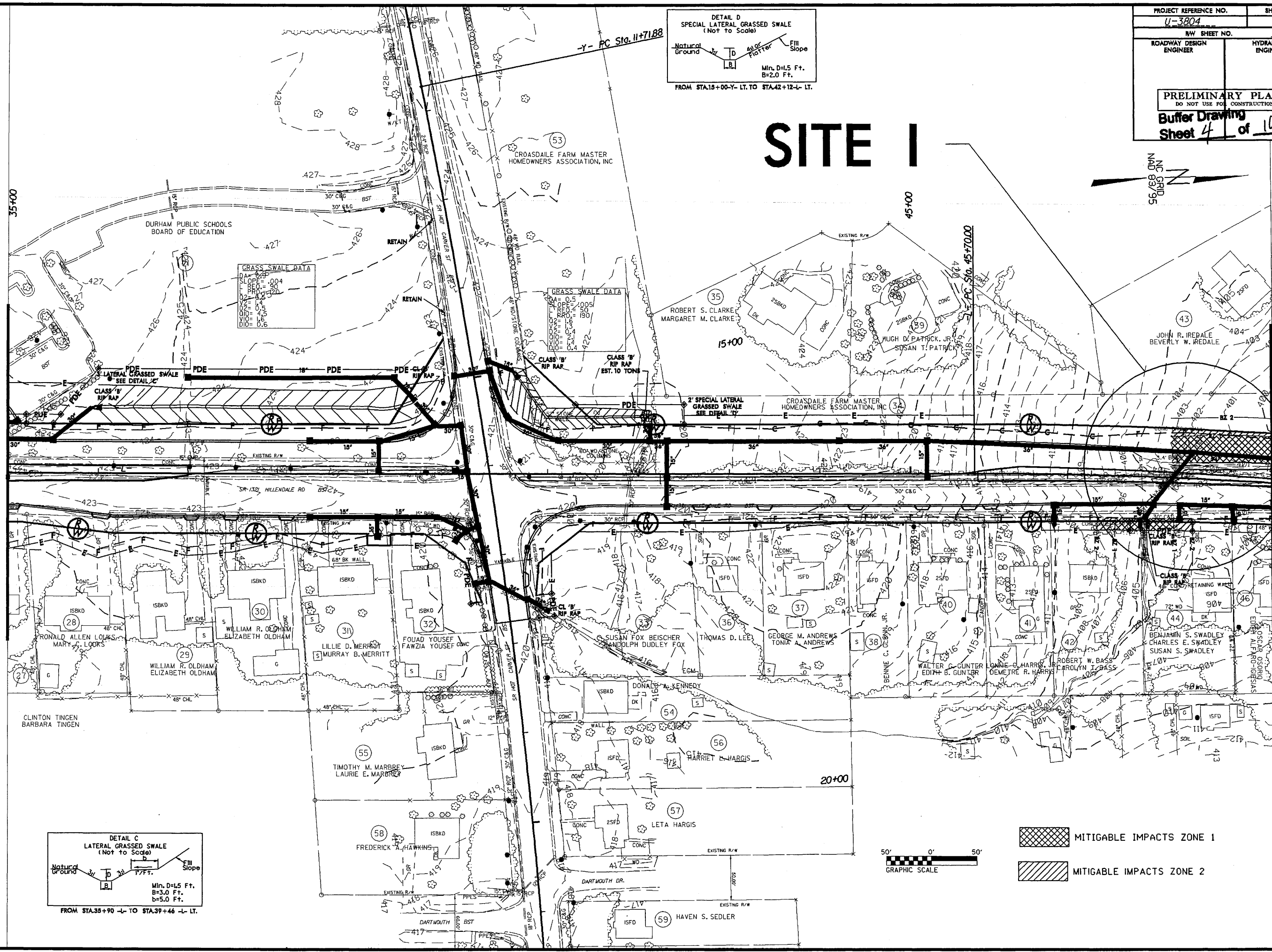
SITE I



SET NO. 5

MATCHLINE

MATCHLINE -L- STA 49+13.26 SEE SHEET NO. 7

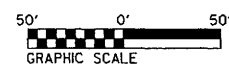
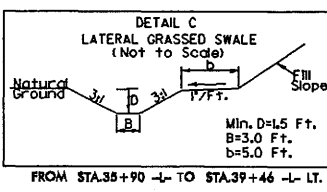


GRASS SWALE DATA

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MIN. D	1.5
MIN. B	2.0
MIN. SLOPE	0.004
MIN. D	1.5
MIN. B	2.0
MIN. SLOPE	0.004

GRASS SWALE DATA

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MIN. D	1.5
MIN. B	2.0
MIN. SLOPE	0.005
MIN. D	1.5
MIN. B	2.0
MIN. SLOPE	0.005
MIN. D	1.5
MIN. B	2.0
MIN. SLOPE	0.005



- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

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8/17/99

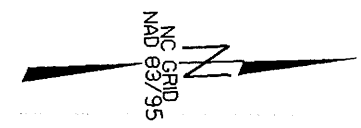
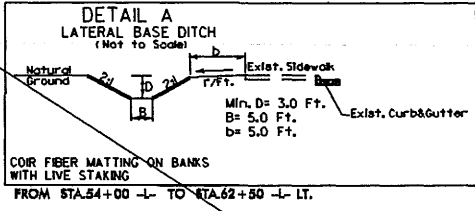
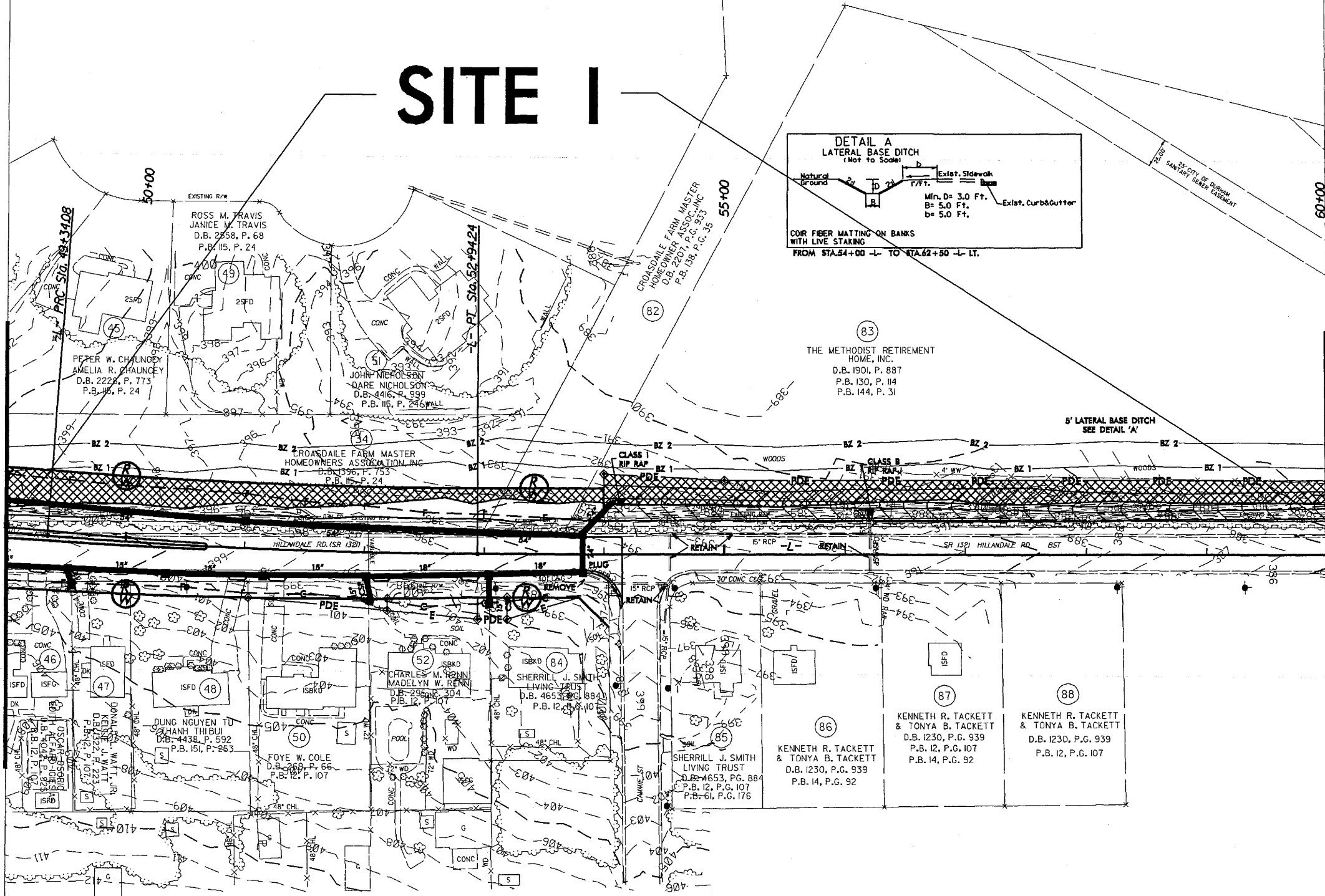
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PROJECT REFERENCE NO. U-3804		SHEET NO. 7	
RW SHEET NO.			
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Buffer Drawing		Sheet 6 of 10	

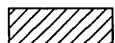
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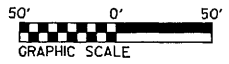
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MATCHLINE -L- STA 60+00.00 SEE SHEET NO. 8



 MITIGABLE IMPACTS ZONE 1

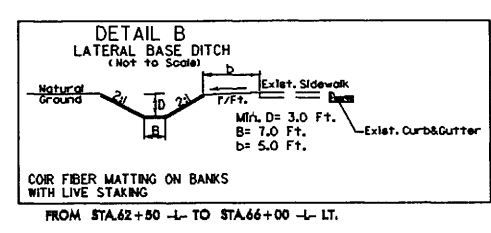
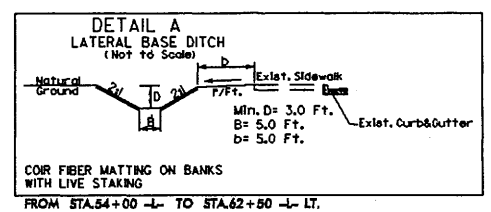
 MITIGABLE IMPACTS ZONE 2



B/17/99

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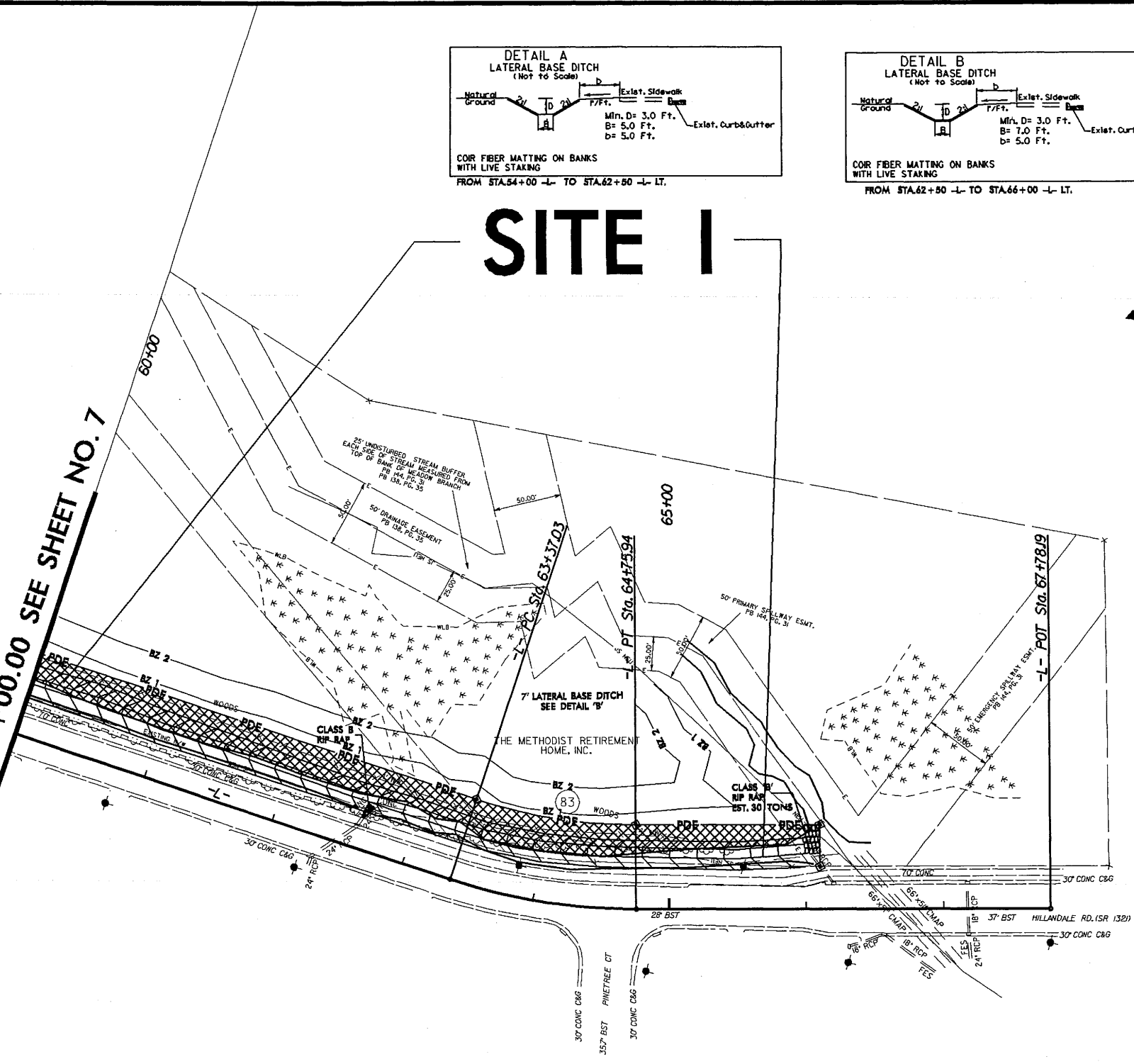
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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION Buffer Drawing Sheet 7 of 10	



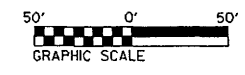
SITE I



MATCHLINE -L- STA 60+00.00 SEE SHEET NO. 7



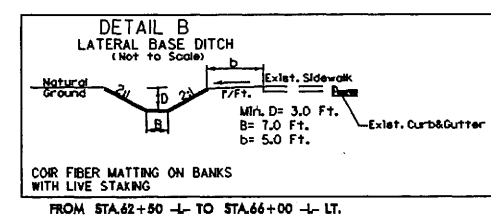
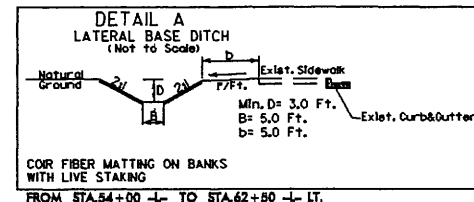
MITIGABLE IMPACTS ZONE 1



B.17/99

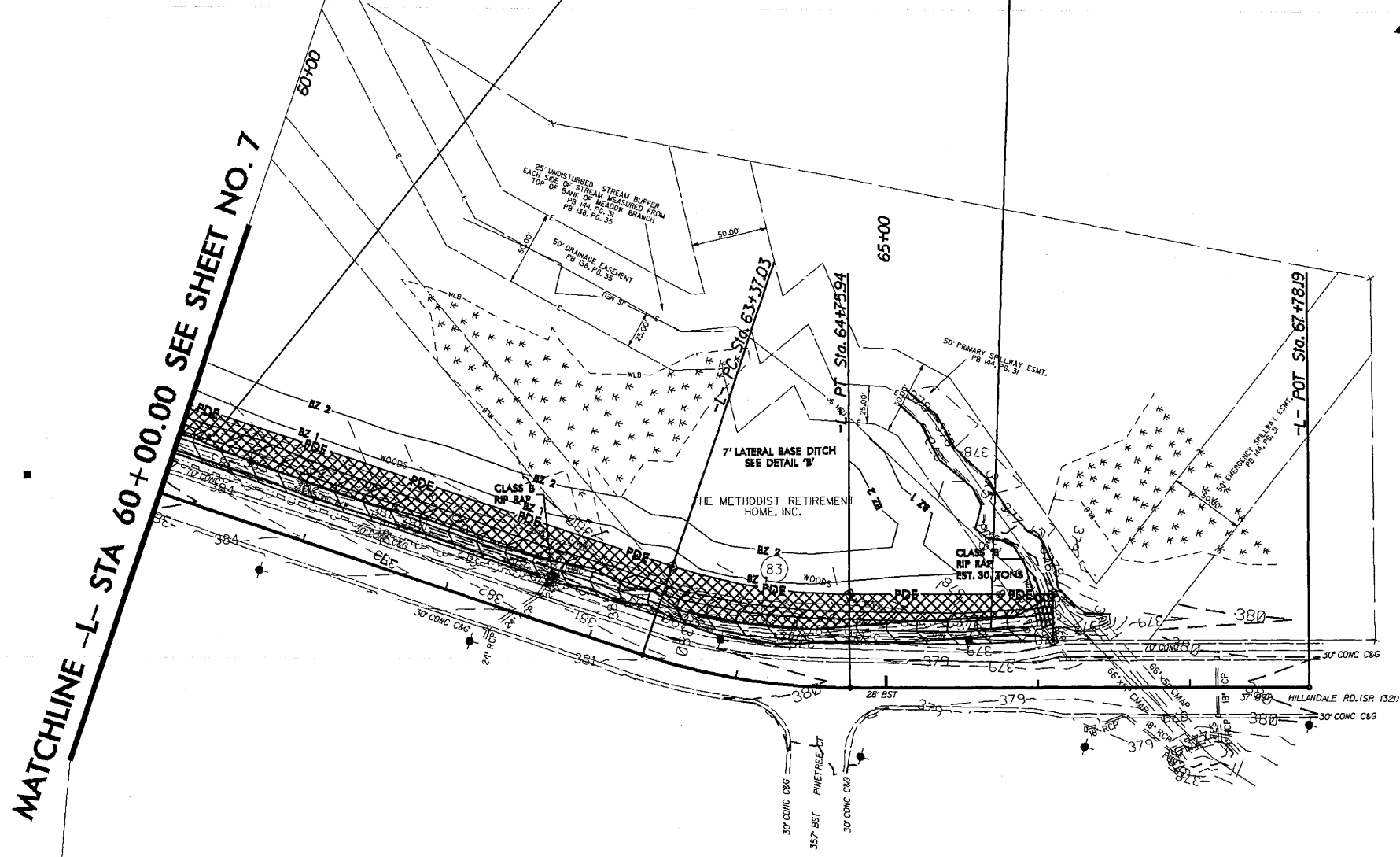
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PROJECT REFERENCE NO. U-3804	SHEET NO. 8
NW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Buffer Drawing Sheet 8 of 10	

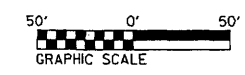


SITE I

MATCHLINE -L- STA 60+00.00 SEE SHEET NO.7



MITIGABLE IMPACTS ZONE 1



PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
42	ROBERT W. BASS	312 COBBLECREEK CT. DURHAM, N.C. 27712
44	BENJAMIN S. SWADLEY	2230 HILLANDALE RD. DURHAM, N.C. 27705
34,82	CROASDAILE FARM MASTER HOMEOWNER ASSOC., INC.	SUITE 101, 2726 CROASDAILE DR. DURHAM, N.C. 27705
83	THE METHODIST RETIREMENT HOME, INC.	SUITE 400, 505 S. DUKE ST. DURHAM, N.C. 27701

NCDOT

DIVISION OF HIGHWAYS

DURHAM COUNTY

PROJECT: 34972.1.1 (U-3804)

HILLANDALE ROAD (SR 1321) FROM
I-85 TO NORTH OF
SR 1407 (CARVER ST.)

SHEET

9 OF 10

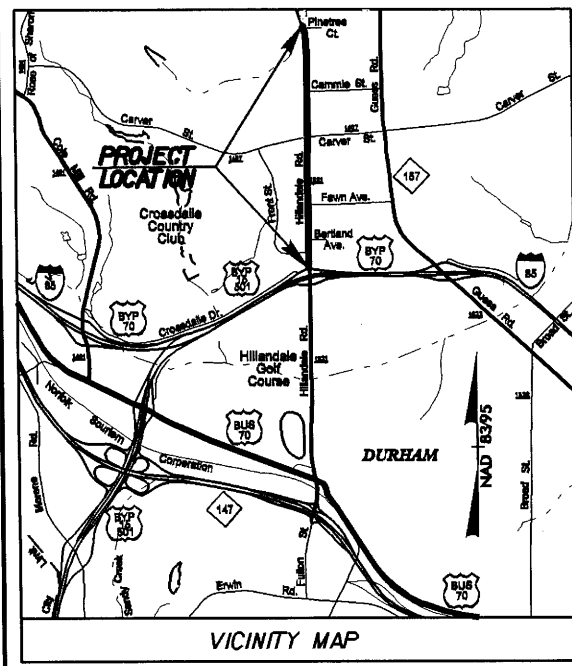
05 / 27 / 09

09/08/09
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TIP PROJECT: U-3804

CONTRACT: C202340

See Sheet 1-A For Index of Sheets



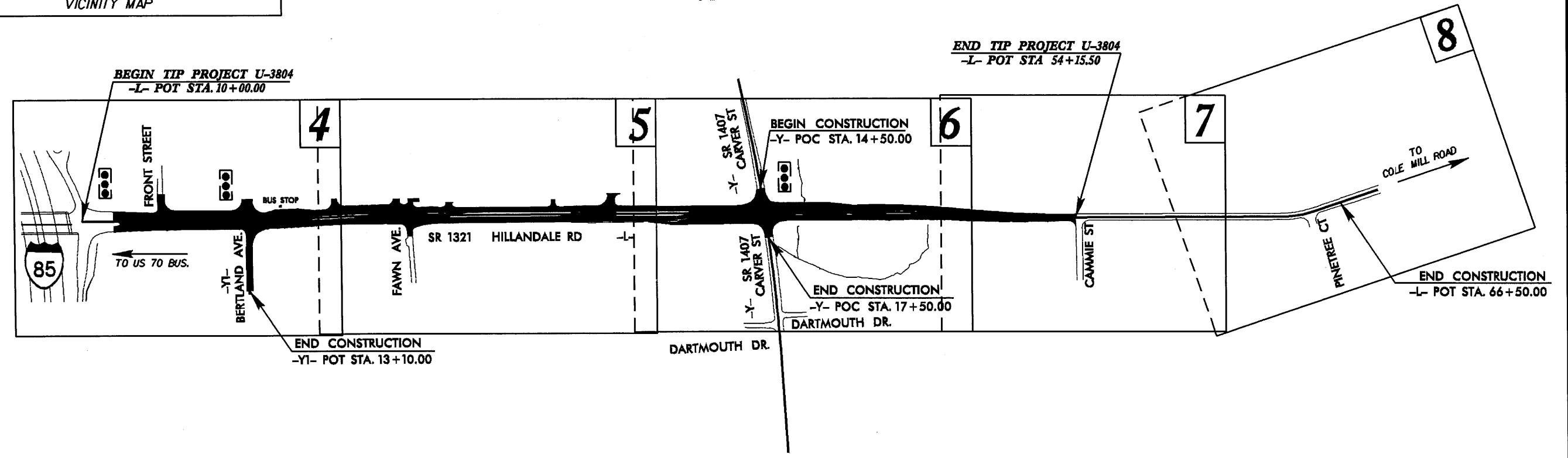
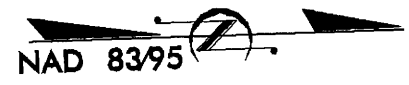
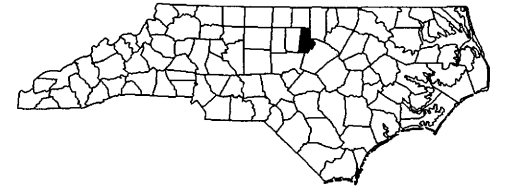
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

DURHAM COUNTY

**LOCATION: HILLANDALE ROAD (SR 1321) FROM I-85 TO
 NORTH OF SR 1407 (CARVER STREET)**

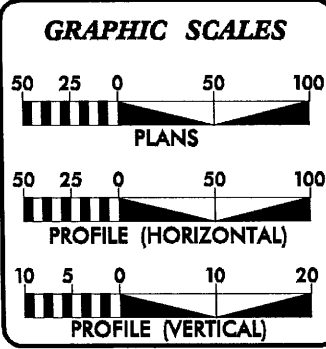
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING,
 SIGNALS AND PAVEMENT MARKINGS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3804	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34972.1.1	STP-0505(14)	P.E.	
34972.3.1	STP-0505(32)	RW & UTIL	
34972.2.2	STP-0505(33)	CONST.	



NOTES:
 THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF DURHAM.
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION



DESIGN DATA

ADT 2007 =	29,600
ADT 2030 =	37,800
DHV =	10 %
D =	70 %
T =	3 % *
V =	40 MPH
FUNC. CLASS =	URB. ARTERIAL
* TTST 1	DUAL 2

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3804 = 0.836 MILES
 TOTAL LENGTH OF TIP PROJECT U-3804 = 0.836 MILES

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

2006 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
 MARCH 20, 2009

LETTING DATE:
 APRIL 20, 2010

JASON MOORE, P.E.
 PROJECT ENGINEER

BRYAN KEY, P.E.
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

3/15/06

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG 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	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ CSX TRANSPORTATION 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
Proposed Temporary Utility Easement	----- TUE
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	----- CONC
Bridge Wing Wall, Head Wall and End Wall	-----) CONC HW (
MINOR:	
Head and End Wall	----- CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊙
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊠
Power Transformer	⊠
UG Power Cable Hand Hole	⊠
H-Frame Pole	●
Recorded UG Power Line	-----
Designated UG Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Booth	⊠
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
UG Telephone Cable Hand Hole	⊠
Recorded UG Telephone Cable	-----
Designated UG Telephone Cable (S.U.E.*)	-----
Recorded UG Telephone Conduit	----- TC
Designated UG Telephone Conduit (S.U.E.*)	----- TC
Recorded UG Fiber Optics Cable	----- T FO
Designated UG Fiber Optics Cable (S.U.E.*)	----- T FO

WATER:

Water Manhole	⊙
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded UG Water Line	-----
Designated UG Water Line (S.U.E.*)	-----
Above Ground Water Line	----- A/G Water

TV:

TV Satellite Dish	⊠
TV Pedestal	⊠
TV Tower	⊗
UG TV Cable Hand Hole	⊠
Recorded UG TV Cable	----- TV
Designated UG TV Cable (S.U.E.*)	----- TV
Recorded UG Fiber Optic Cable	----- TV FO
Designated UG Fiber Optic Cable (S.U.E.*)	----- TV FO

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded UG Gas Line	-----
Designated UG Gas Line (S.U.E.*)	-----
Above Ground Gas Line	----- A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	⊙
Sanitary Sewer Cleanout	⊕
UG 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 UG Line	----- UUL
UG Tank; Water, Gas, Oil	□
A/G Tank; Water, Gas, Oil	□
UG Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

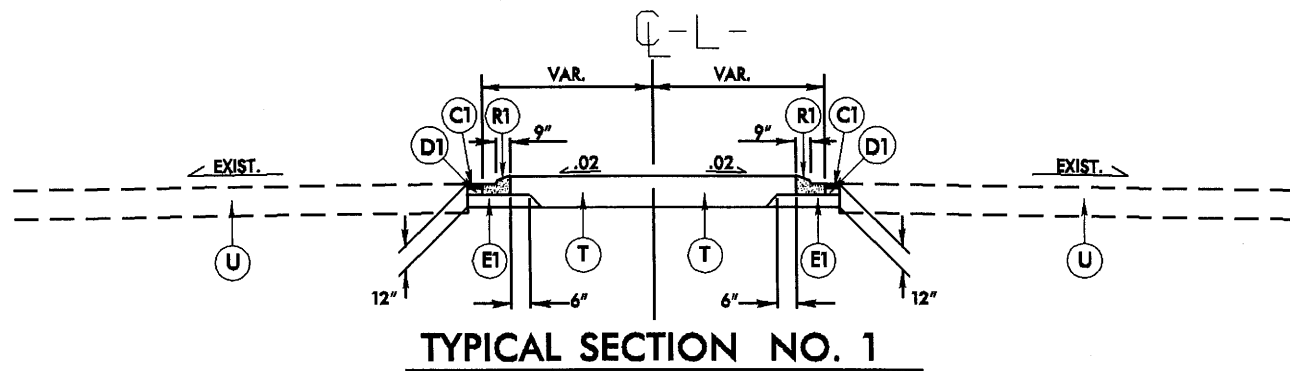
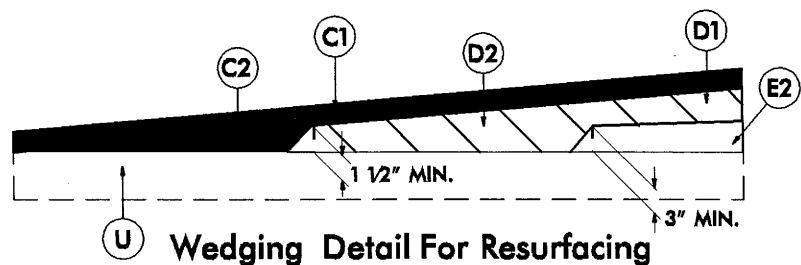
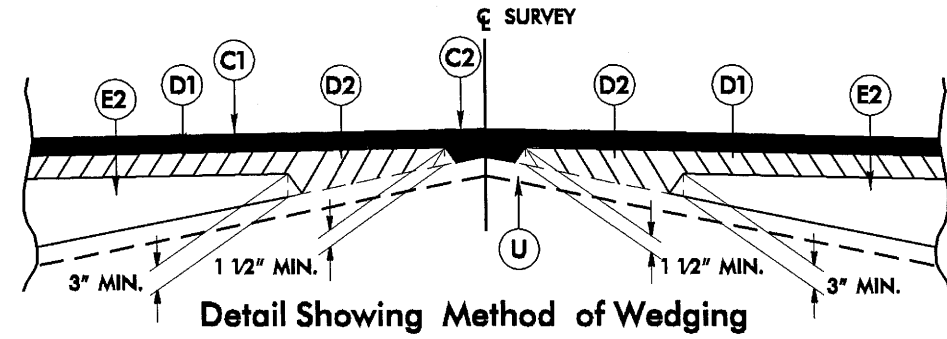
6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 158 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	1'-6" CONCRETE CURB.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.	R2	2'-6" CONCRETE CURB AND GUTTER.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 466 LBS. PER SQ. YD.	R3	5" MONOLITHIC CONCRETE ISLAND
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/4" IN DEPTH OR GREATER THAN 4" IN DEPTH.	S	4" CONCRETE SIDEWALK.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.	U	EXISTING PAVEMENT.
J	PROP. 10" AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)

PROJECT REFERENCE NO. U-3804	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAYEMENT DESIGN ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

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



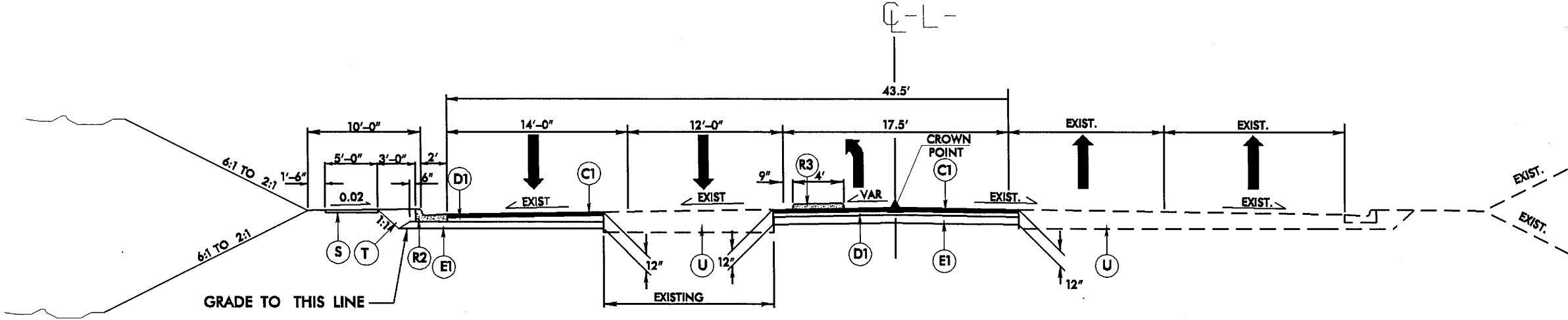
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-L- STA. 11+40.00 TO 13+13.00

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6/2/99

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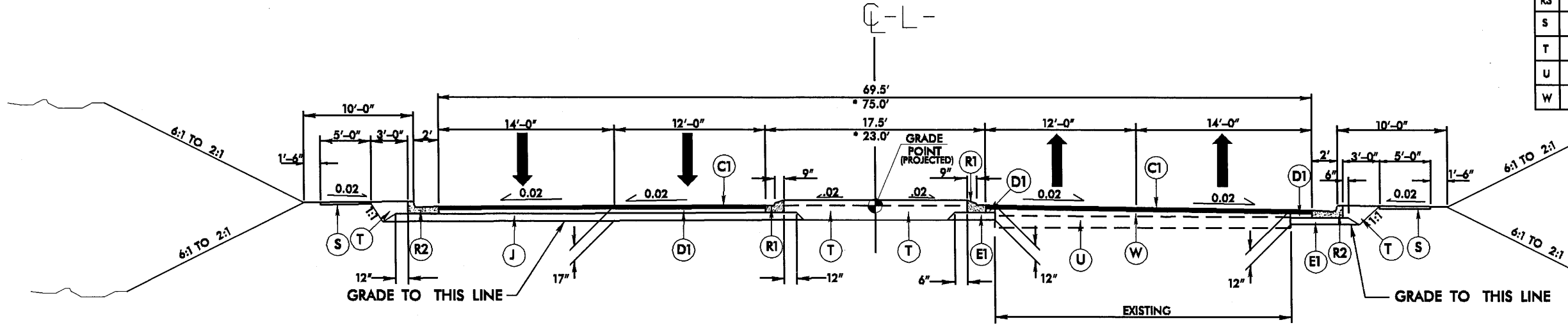
PROJECT REFERENCE NO. U-3804	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
C1	3" ACSC, TYPE S9.5B
C2	VAR DEPTH ACSC, TYPE S9.5B
D1	4" ACIC, TYPE I19.0B
D2	VAR DEPTH ACIC, TYPE I19.0B
E1	5" ACBC, TYPE B25.0B
E2	VAR DEPTH ACBC, TYPE B25.0B
J	PROP. 10" ABC
R1	1'-6" CONCRETE CURB
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 2

NOTE: TRANSITION FROM TYPICAL NO. 1 TO TYPICAL NO. 2
 -L- STA. 13+13+00 TO -L- STA. 13+70.00

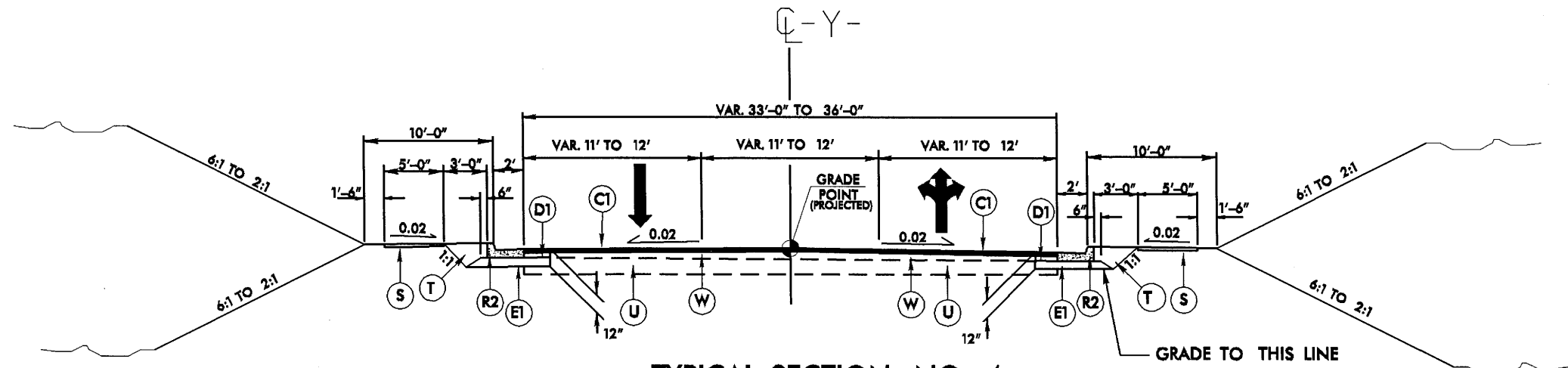
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 -L- STA. 13+70.00 TO 16+77.70



TYPICAL SECTION NO. 3

NOTE: TRANSITION FROM TYPICAL NO. 2 TO TYPICAL NO. 3
 -L- STA. 16+77.70 TO -L- STA. 17+00.00
 NOTE: TRANSITION FROM TYPICAL NO. 3 TO EXISTING
 -L- STA. 45+70.00 TO -L- STA. 54+15.50

USE TYPICAL SECTION NO. 3
 -L- STA. 17+00.00 TO 53+50.00
 * -L- STA. 23+50.89 TO 34+00.00



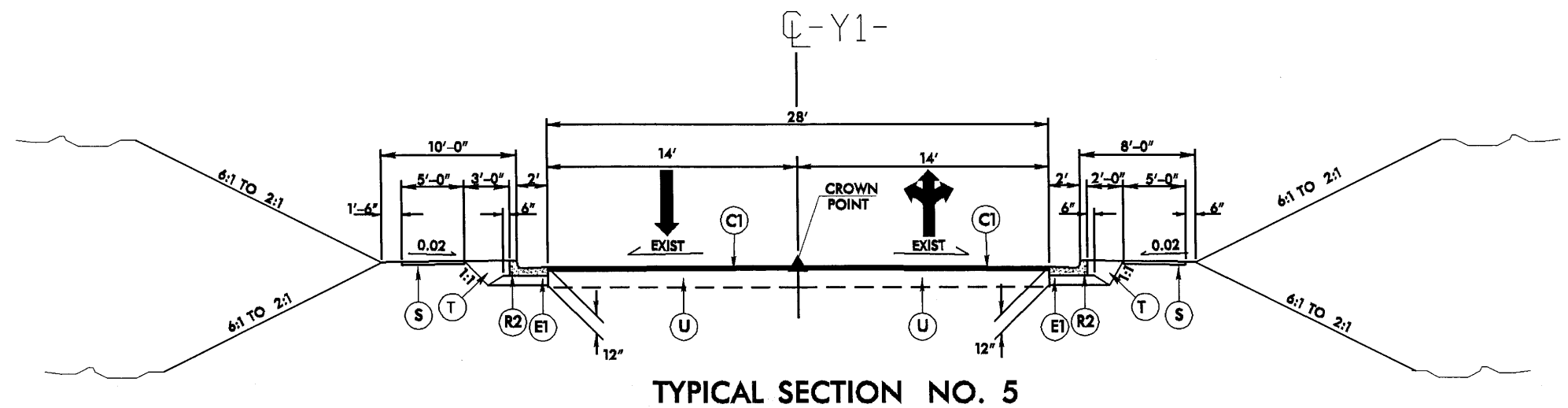
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
 -Y- STA. 14+50.00 TO 15+61.30
 -Y- STA. 16+55.79 TO 17+50.00

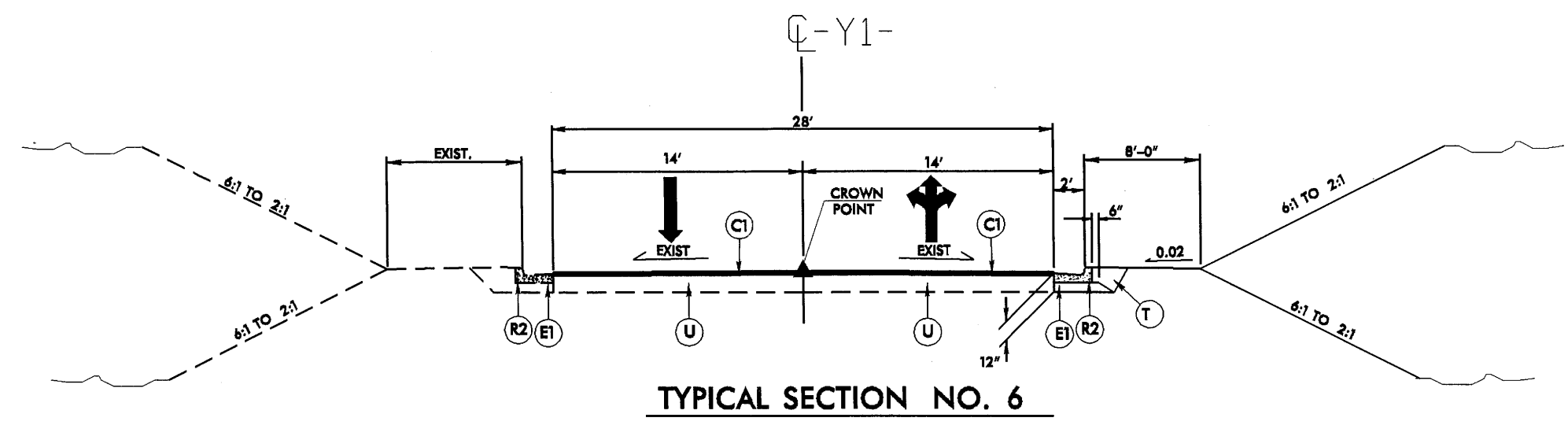
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PROJECT REFERENCE NO. U-3804	SHEET NO. 2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



USE TYPICAL SECTION NO. 5
 -Y1- STA. 10+34.75 TO 11+21.97



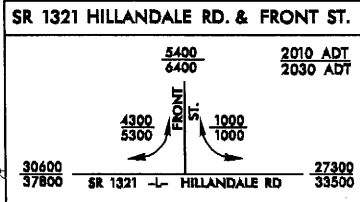
USE TYPICAL SECTION NO. 6
 -Y1- STA. 11+21.97 TO 13+10.00

C1	3" ACSC, TYPE S9.5B
C2	VAR DEPTH ACSC, TYPE S9.5B
D1	4" ACIC, TYPE I19.0B
D2	VAR DEPTH ACIC, TYPE I19.0B
E1	5" ACBC, TYPE B25.0B
E2	VAR DEPTH ACBC, TYPE B25.0B
J	PROP. 10" ABC
R1	1'-6" CONCRETE CURB
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

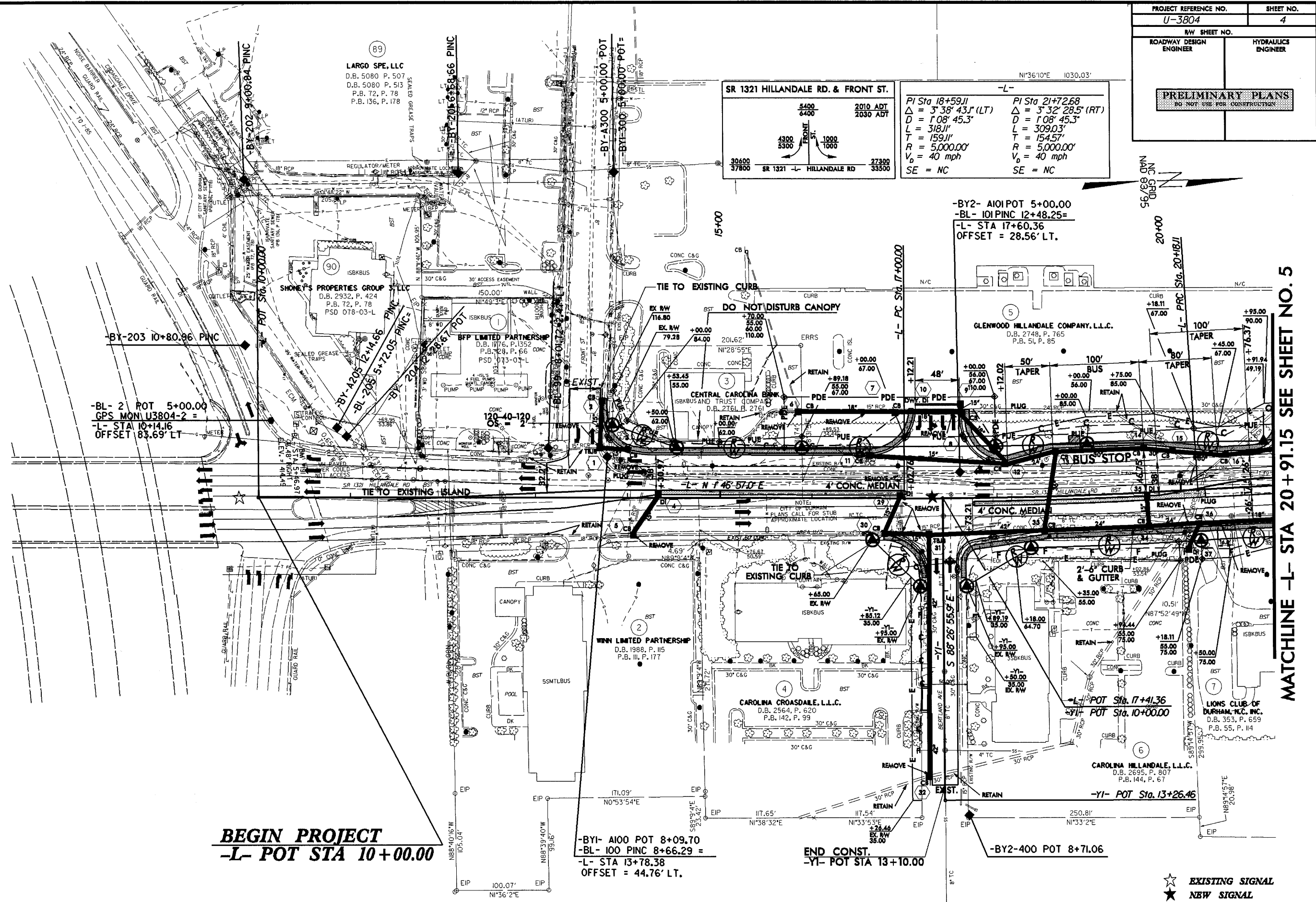
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PROJECT REFERENCE NO. U-3804		SHEET NO. 4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



$PI\ Sta\ 18+59.11$ $\Delta = 3^\circ 38' 43.1'' (LT)$ $D = 1^\circ 08' 45.3''$ $L = 318.11'$ $T = 159.11'$ $R = 5,000.00'$ $V_o = 40\ mph$ $SE = NC$	$PI\ Sta\ 21+72.68$ $\Delta = 3^\circ 32' 28.5'' (RT)$ $D = 1^\circ 08' 45.3''$ $L = 309.03'$ $T = 154.57'$ $R = 5,000.00'$ $V_o = 40\ mph$ $SE = NC$
--	--



-BL- 2 POT 5+00.00
GPS MON U3804-2 =
-L- STA 10+14.16
OFFSET = 83.69' LT

-BY2- A101 POT 5+00.00
-BL- 101 PINC 12+48.25 =
-L- STA 17+60.36
OFFSET = 28.56' LT.

BEGIN PROJECT
-L- POT STA 10+00.00

-BY1- A100 POT 8+09.70
-BL- 100 PINC 8+66.29 =
-L- STA 13+78.38
OFFSET = 44.76' LT.

END CONST.
-YI- POT STA 13+10.00

-BY2-400 POT 8+71.06

MATCHLINE -L- STA 20+91.15 SEE SHEET NO. 5

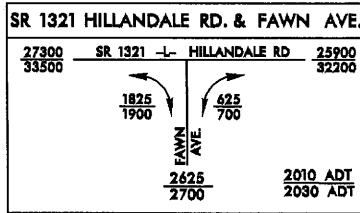
- ★ EXISTING SIGNAL
- ★ NEW SIGNAL
- SEE SHEET 2-C FOR DETAILS OF ISLAND
- SEE SHEET 9 FOR -L- PROFILE
- SEE TRAFFIC CONTROL PLANS FOR WCR LOCATIONS

- MONOLITHIC ISLAND
- SIDEWALK
- BUS STOP SHELTER PAD

8/17/99

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USER:RDM

PROJECT REFERENCE NO. U-3804		SHEET NO. 5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

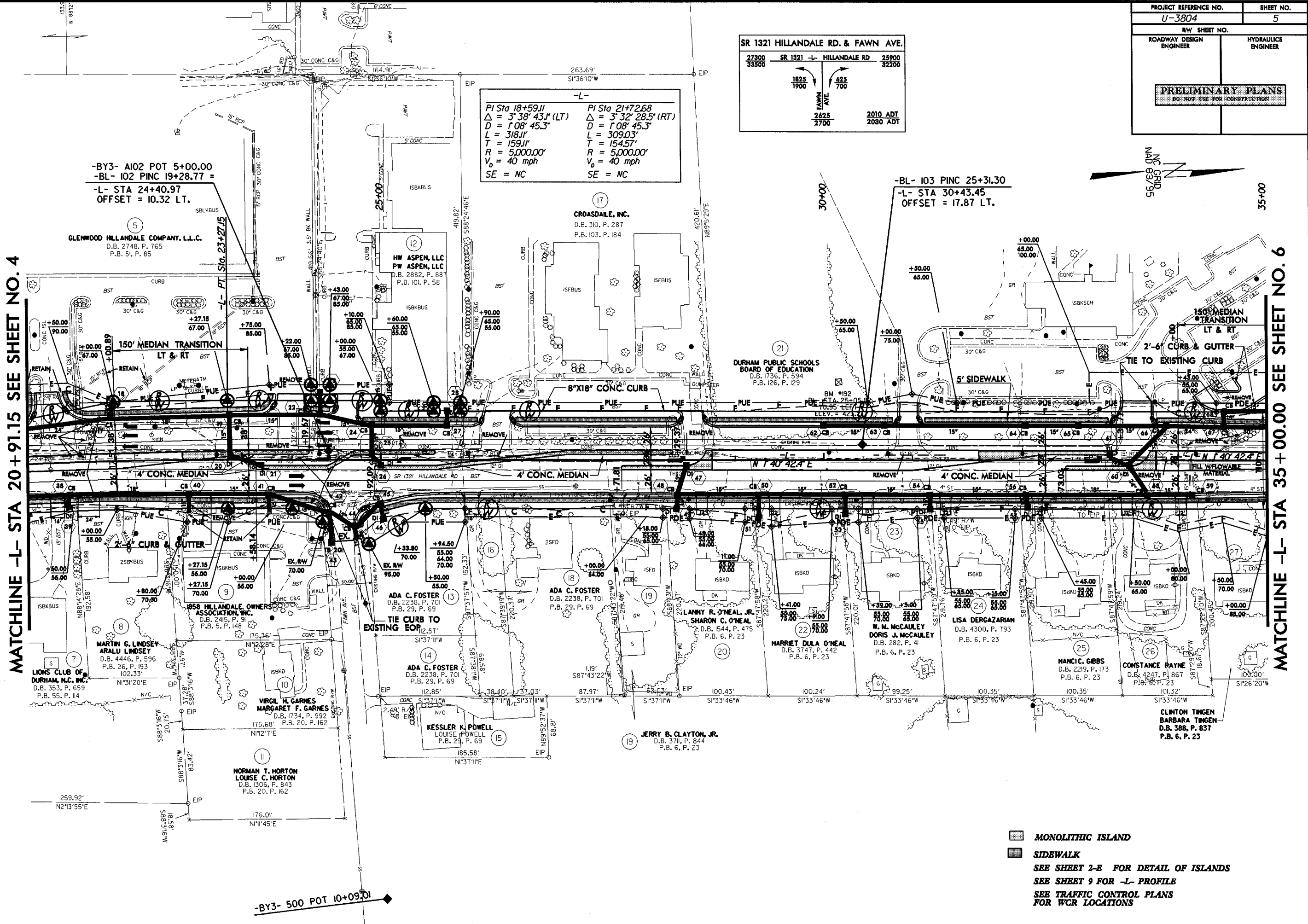


-L-

PI Sta 18+59.11	PI Sta 21+72.68
$\Delta = 3' 38' 43.1''$ (LT)	$\Delta = 3' 32' 28.5''$ (RT)
$D = 1' 08' 45.3''$	$D = 1' 08' 45.3''$
$L = 318.1'$	$L = 309.03'$
$T = 159.1'$	$T = 154.57'$
$R = 5,000.00'$	$R = 5,000.00'$
$V_d = 40$ mph	$V_d = 40$ mph
SE = NC	SE = NC

MATCHLINE -L- STA 20+91.15 SEE SHEET NO. 4

MATCHLINE -L- STA 35+00.00 SEE SHEET NO. 6



-BY3- A102 POT 5+00.00
 -BL- 102 PINC 19+28.77 =
 -L- STA 24+40.97
 OFFSET = 10.32 LT.

-BL- 103 PINC 25+31.30
 -L- STA 30+43.45
 OFFSET = 17.87 LT.

-BY3- 500 POT 10+09.01

- MONOLITHIC ISLAND
- SIDEWALK
- SEE SHEET 2-E FOR DETAIL OF ISLANDS
- SEE SHEET 9 FOR -L- PROFILE
- SEE TRAFFIC CONTROL PLANS FOR WCR LOCATIONS

GLENWOOD HILLDALE COMPANY, L.L.C.
 D.B. 2748, P. 765
 P.B. 51, P. 85

HW ASPEN, LLC
 P.W. ASPEN, LLC
 D.B. 2882, P. 887
 P.B. 101, P. 58

CROSSDALE, INC.
 D.B. 310, P. 287
 P.B. 103, P. 184

DURHAM PUBLIC SCHOOLS
 BOARD OF EDUCATION
 D.B. 1736, P. 594
 P.B. 126, P. 129

LIONS CLUB OF
 DURHAM, N.C., INC.
 D.B. 353, P. 659
 P.B. 55, P. 114

MARTIN G. LINDSEY
 ARALU LINDSEY
 D.B. 4446, P. 596
 P.B. 26, P. 193

VIRGIL H. GARNES
 MARGARET F. GARNES
 D.B. 1734, P. 992
 P.B. 20, P. 162

NORMAN T. HORTON
 LOUISE C. HORTON
 D.B. 1306, P. 843
 P.B. 20, P. 162

ADA C. FOSTER
 D.B. 2238, P. 701
 P.B. 29, P. 69

ADA C. FOSTER
 D.B. 2238, P. 701
 P.B. 29, P. 69

KESSLER K. POWELL
 LOUISE POWELL
 P.B. 29, P. 69

ADA C. FOSTER
 D.B. 2238, P. 701
 P.B. 29, P. 69

JERRY B. CLAYTON, JR.
 D.B. 3711, P. 844
 P.B. 6, P. 23

LANNY R. O'NEAL, JR.
 SHARON C. O'NEAL
 D.B. 1544, P. 475
 P.B. 6, P. 23

HARRIET DULA O'NEAL
 D.B. 3747, P. 442
 P.B. 6, P. 23

W. M. McCAULEY
 DORIS J. McCAULEY
 D.B. 282, P. 41
 P.B. 6, P. 23

LISA DERGAZARIAN
 D.B. 4300, P. 793
 P.B. 6, P. 23

HANCIC GIBBS
 D.B. 2219, P. 173
 P.B. 6, P. 23

CONSTANCE RAYNE
 D.B. 4247, P. 867
 P.B. 6, P. 23

CLINTON TINGEN
 BARBARA TINGEN
 D.B. 388, P. 837
 P.B. 6, P. 23

8/17/99

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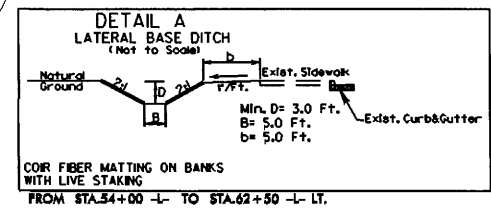
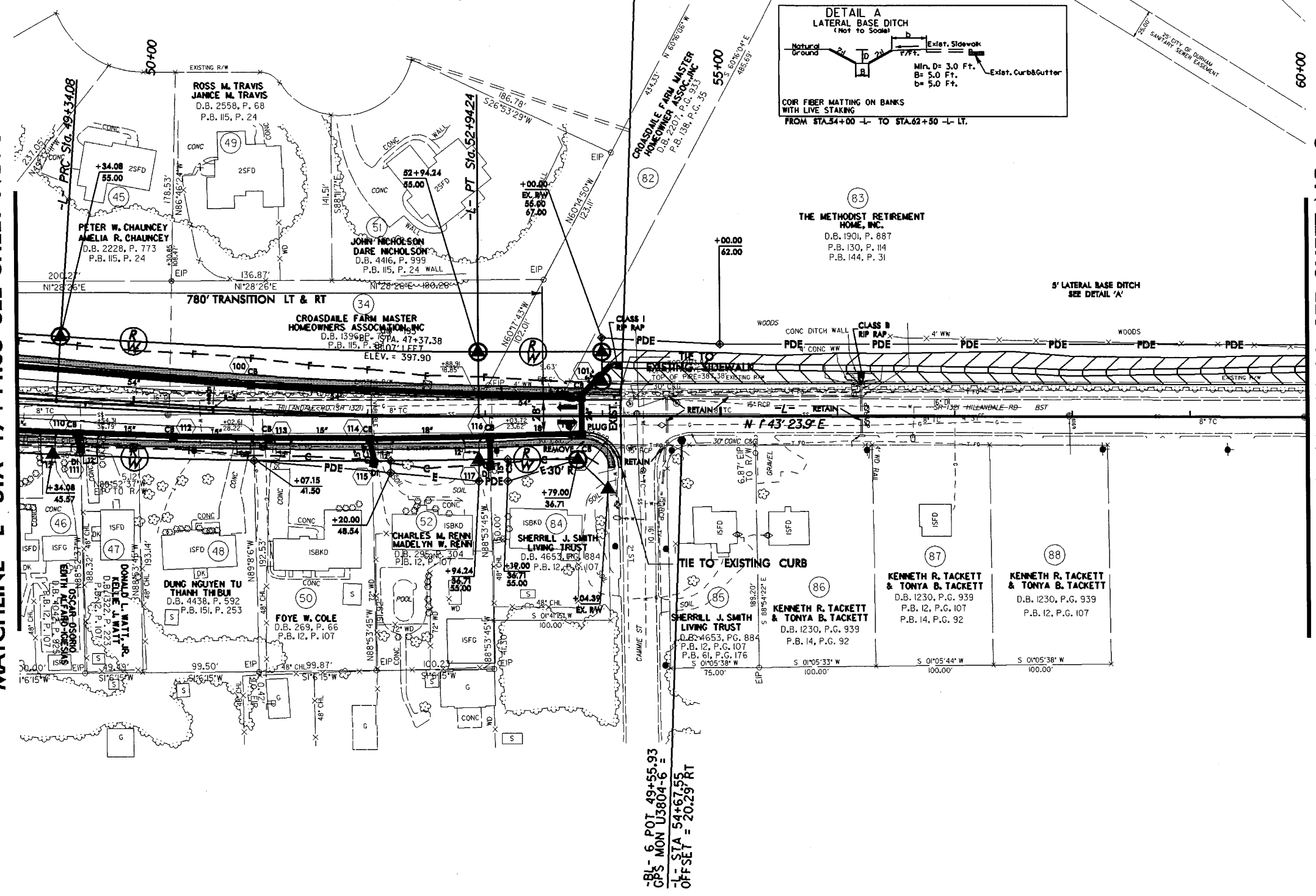
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RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-L-	
PI Sta 47+52.12	PI Sta 51+14.24
$\Delta = 4' 10" 19.1' (RT)$	$\Delta = 4' 07" 37.5' (LT)$
$D = 1' 08" 45.3'$	$D = 1' 08" 45.3'$
$L = 364.07'$	$L = 360.16'$
$T = 182.12'$	$T = 180.16'$
$R = 5,000.00'$	$R = 5,000.00'$
$V_0 = 40 \text{ mph}$	$V_0 = 40 \text{ mph}$
SE = NC	SE = NC

END PROJECT
-L- POT STA 54+15.50

MATCHLINE -L- STA 49 + 14.03 SEE SHEET NO. 6

MATCHLINE -L- STA 60 + 00.00 SEE SHEET NO. 8



-BL- 6 POT 49+55.93
GPS MON U3804-6 =
-L- STA 54+67.55
OFFSET = 20.29 RT

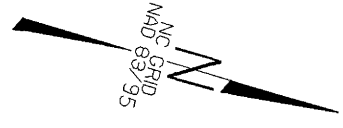
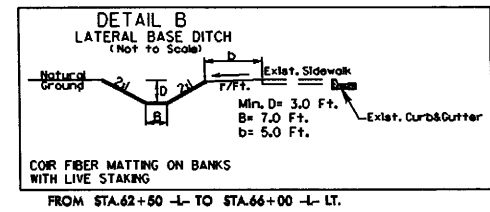
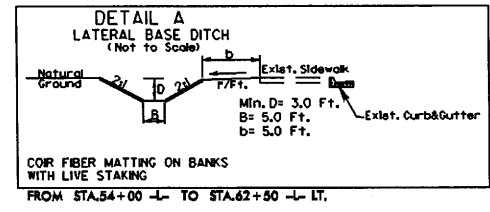
SIDEWALK
SEE SHEET 10 FOR -L- PROFILE
SEE TRAFFIC CONTROL PLANS
FOR WCR LOCATIONS

8/17/99

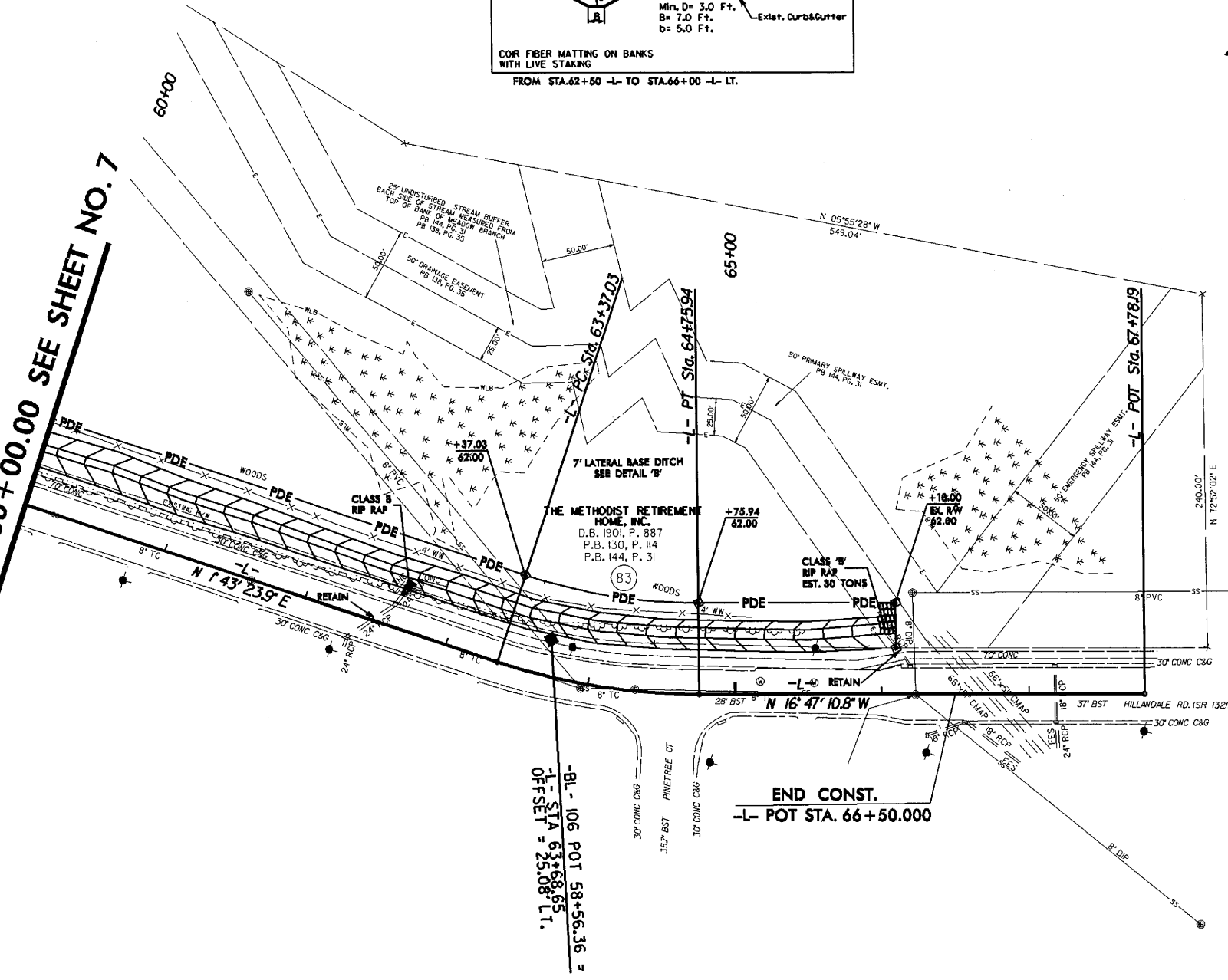
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PROJECT REFERENCE NO. U-3804	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-
 PI Sta 64+07.09
 $\Delta = 18^{\circ} 30' 34.8" (LT)$
 $D = 13^{\circ} 19' 28.6"$
 $L = 138.91'$
 $T = 70.07'$
 $R = 430.00'$
 $V_0 = N/A$
 SE = EXIST.



MATCHLINE -L- STA 60+00.00 SEE SHEET NO. 7



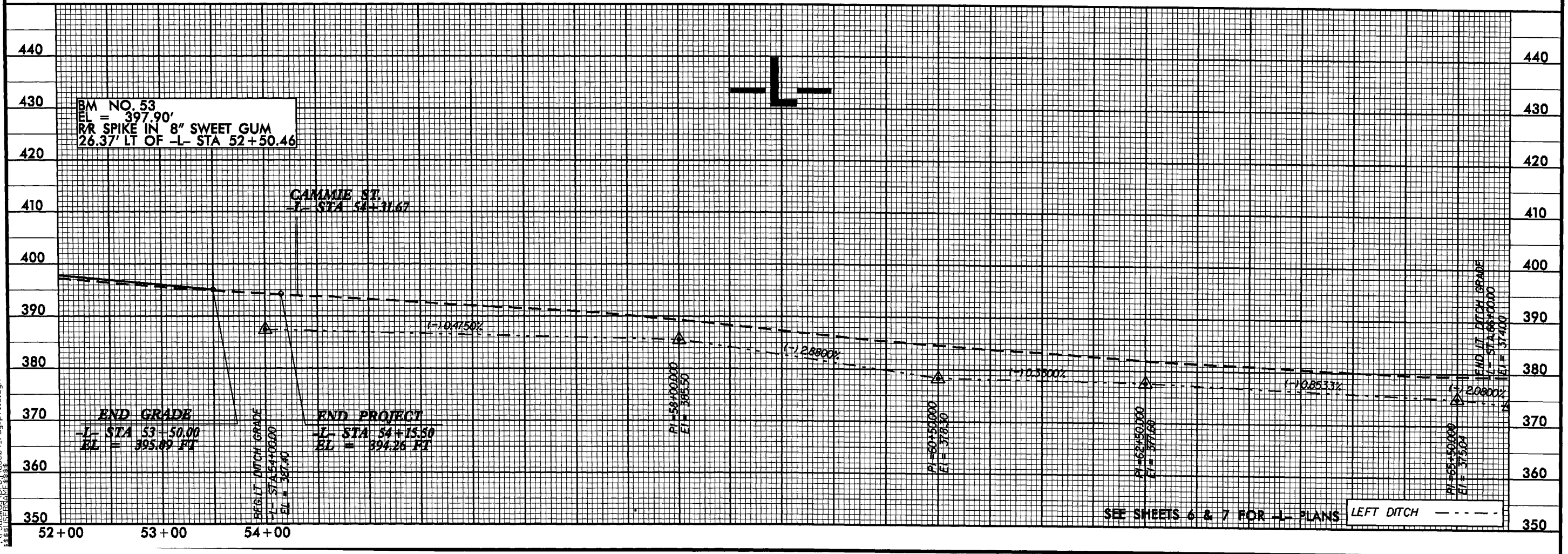
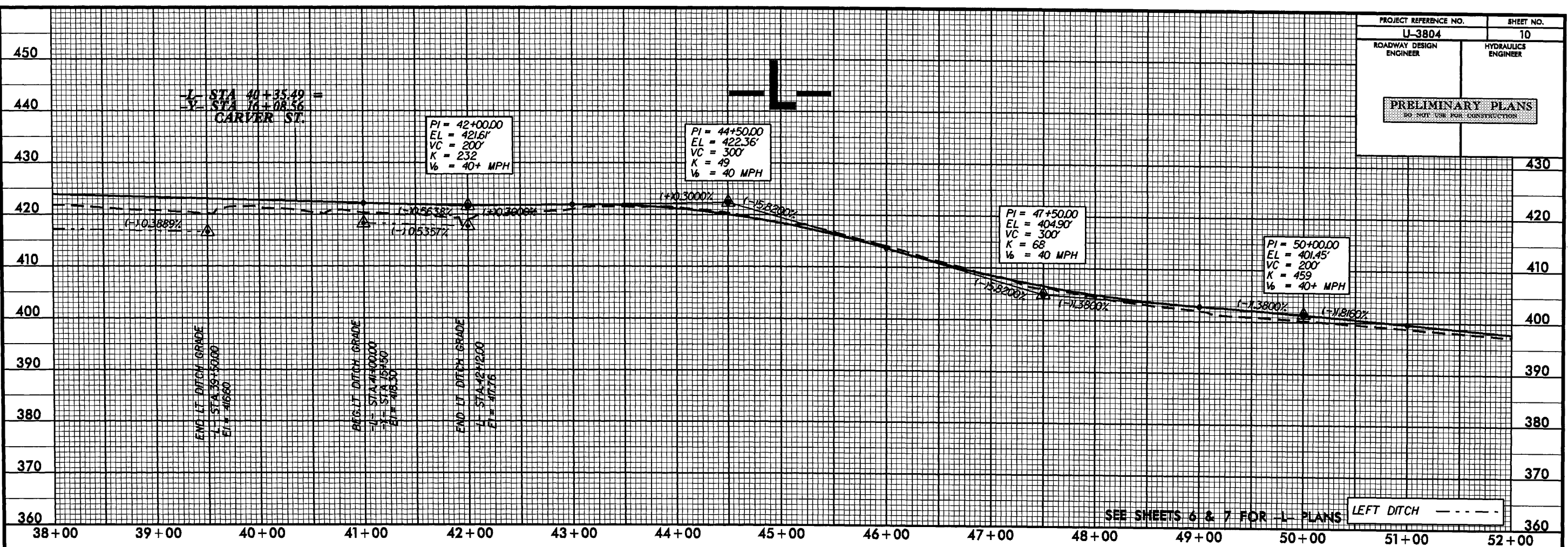
END CONST.
 -L- POT STA. 66+50.000

-BL- 106 POT 58+56.36 =
 -L- STA 63+68.65
 OFFSET = 25.08' LT.

SEE SHEET 10 FOR -L- PROFILE

5/28/99

PROJECT REFERENCE NO. U-3804	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	



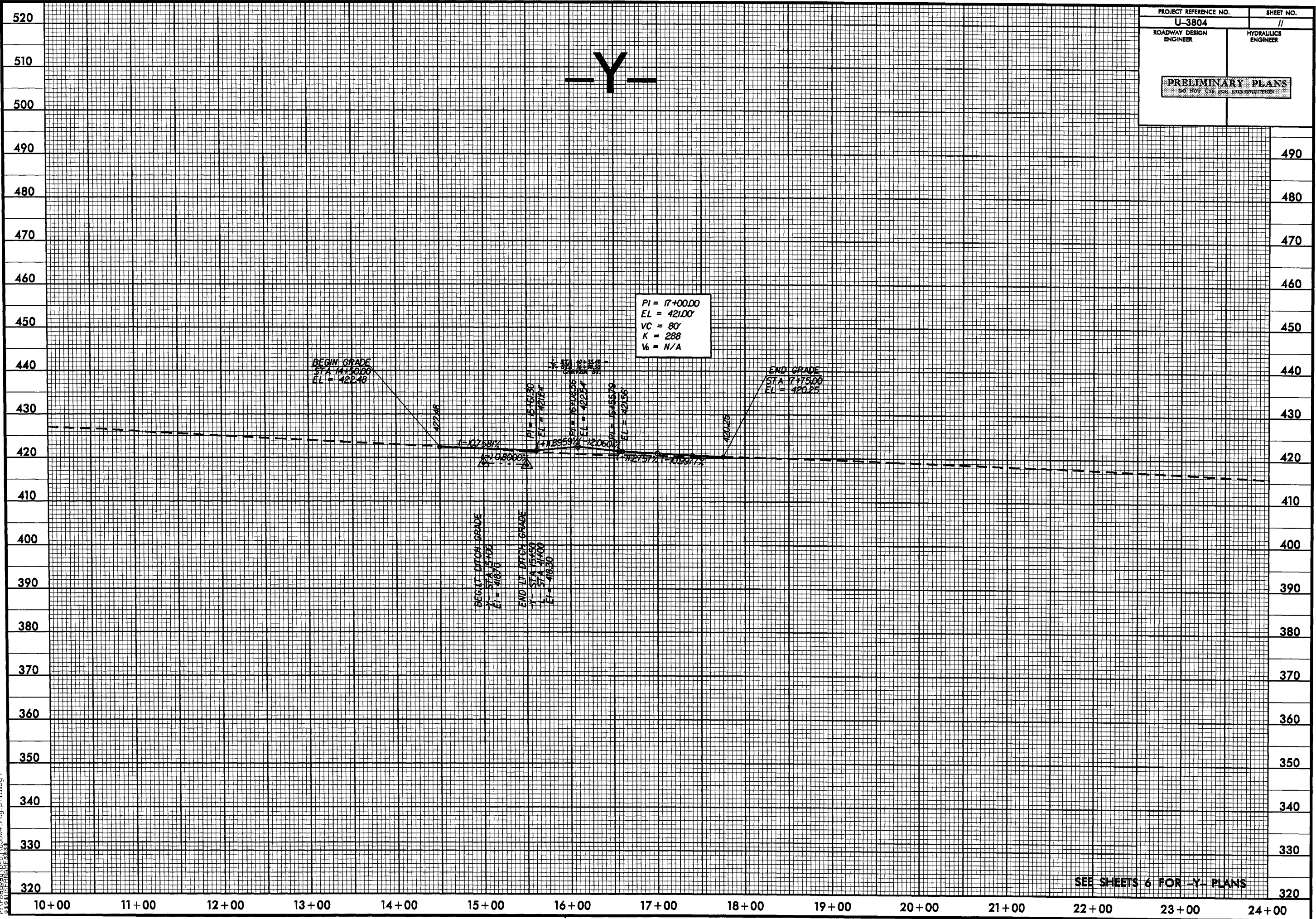
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5/14/99

31-AUG-2009 10:47
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PROJECT REFERENCE NO. U-3804	SHEET NO. //
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y-



PI = 17+00.00
 EL = 421.00'
 VC = 80'
 K = 288
 V6 = N/A

BEGIN GRADE
 STA 14+50.00
 EL = 422.48

END GRADE
 STA 17+75.00
 EL = 420.25

LEFT DITCH GRADE
 STA 15+00
 EL = 418.75

RIGHT DITCH GRADE
 STA 15+50
 EL = 418.30

SEE SHEETS 6 FOR -Y- PLANS