



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE  
GOVERNOR

EUGENE A. CONTI, JR.  
SECRETARY

August 23, 2012

U. S. Army Corps of Engineers  
Regulatory Field Office  
151 Patton Avenue, Room 208  
Asheville, NC 28801

ATTN: Ms. Lori Beckwith  
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 14 and 401 Water Quality Certification** for the proposed widening of SR 1184 (Howell Mill Road) from US 276 to US 23 Business in Haywood County, Federal Aid Project No. STP-1184(1); Division 14; TIP No. U-4412; Debit \$570.00 WBS 35022.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to widen Howell Mill Road (SR 1184) from US 276 to US 23 Business. The proposed project is approximately 1.65 miles in length. There will be 263 feet (24 feet due to bank stabilization) of permanent stream impacts and 0.02 acre of temporary stream impacts due to culvert installations and a culvert extension (24 feet due to bank stabilization). In addition there will be 0.07 acre of permanent fill impacts in wetlands and 0.02 acre of hand clearing in wetlands.

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, Stormwater Management Plan, Jurisdictional Determination, Permit Drawings and Design Plans. The Finding of No Significant Impact (FONSI) was completed in August 2008 and a Right-of-way Consultation was completed in June 2010, both were distributed shortly thereafter. Additional copies are available upon request.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachments, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

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

TELEPHONE: 919-707-6100  
FAX: 919-212-5785  
**WEBSITE:** [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

**LOCATION:**  
1020 BIRCH RIDGE DRIVE  
RALEIGH NC 27610-4328

This project calls for a letting date of January 15, 2013 and a review date of November 27, 2012; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html>. If you have any questions or need additional information, please contact Carla Dagnino at (919) 707-6110 or [cdagnino@ncdot.gov](mailto:cdagnino@ncdot.gov).

Sincerely,



*for*

Gregory J. Thorpe, Ph.D., Manager  
Project Development and Environmental Analysis Unit

cc:  
NCDOT Permit Application Standard Distribution List



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 type="checkbox"/> Yes <input checked="" 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 checked="" type="checkbox"/> Yes <input 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:	Widening of Howell Mill Road (SR 1184) from US-276 to US-23 Business.
2b. County:	Haywood
2c. Nearest municipality / town:	Waynesville
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	U-4412

#### 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) 707-6124
3g. Fax no.:	(919) 212-5785
3h. Email address:	jwharrod@ncdot.gov

<b>4. Applicant Information (if different from owner)</b>	
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:	
<b>5. Agent/Consultant Information (if applicable)</b>	
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>B. Project Information and Prior Project History</b>	
<b>1. Property Identification</b>	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.506483 (DD.DDDDDD) Longitude: - 82.97905 (-DD.DDDDDD)
1c. Property size:	15.80 acres
<b>2. Surface Waters</b>	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Richland Creek and Raccoon Creek
2b. Water Quality Classification of nearest receiving water:	B
2c. River basin:	French Broad
<b>3. Project Description</b>	
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: Residential and commercial development along roads; semi-forested along portions of some streams	
3b. List the total estimated acreage of all existing wetlands on the property: 0.6	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 2,679 linear feet	
3d. Explain the purpose of the proposed project: To correct roadway deficiencies by upgrading the roadway to meet current design standards and to construct a railroad grade separation with an improved alignment to eliminate train-car conflicts ( 2008 FONSI).	
3e. Describe the overall project in detail, including the type of equipment to be used: The proposed project consists of upgrading a 1.5-mile, two-lane roadway and constructing a railroad grade-separation over the Norfolk-Southern Railway on SR 1184 (Howell Mill Road) from US 276 (Russ Avenue) to US 23 Business (Asheville Road).	
<b>4. Jurisdictional Determinations</b>	
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:	<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): Kris Dramby	Agency/Consultant Company: NCDOT Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. February 6, 2009	
<b>5. Project History</b>	
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.	
<b>6. Future Project Plans</b>	
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 checked="" type="checkbox"/> P <input type="checkbox"/> T	Fill	PSS1A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	0.01
Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Fill	PSS1A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	0.02
Site 3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Fill	PEM1A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	0.04
<b>2g. Total wetland impacts</b>					0.07 Permanent

2h. Comments: There will be <0.01 acre of hand clearing in the wetland at site 2 and 0.02 acre of hand clearing in the wetland at site 3. There will be <0.01 ac of Temporary Fill in Wetlands in the Hand Clearing areas for Erosion Control measures.

#### 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	RCBC	UT-1 to Richland Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	4.5	130 ft
Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	RCBC	UT-1 to Richland Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	4.5	0.01 ac
Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	RCBC	UT-2 to Richland Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	2.0	90 ft
Site 2 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	RCBC	UT-2 to Richland Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	2.0	<0.01 ac
Site 2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bank Stabilization (rip rap)	UT-2 to Richland Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	2.0	17 ft
Site 3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	RCBC	Raccoon Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	17.0	19 ft
Site 3 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bank Stabilization (rip rap)	Raccoon Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	17.0	7 ft
Site 3 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	RCBC	Raccoon Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	17.0	0.10 ac
<b>3h. Total stream and tributary impacts</b>						263 ft Perm 0.02 ac Temp

3i. Comments:

**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				
<b>4f. Total open water impacts</b>				X Permanent X 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								
<b>5f. Total</b>								

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 type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Other: <input type="checkbox"/> Catawba <input type="checkbox"/> Randleman			
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 type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
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		
<b>6h. Total buffer impacts</b>					
6i. Comments:					


<b>D. Impact Justification and Mitigation</b>		
<b>1. Avoidance and Minimization</b>		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. The proposed bridge over Richland Creek will have a deck drain system, eliminating direct discharge into the stream, and the storm drainage is being discharged as far away from the stream as practicable. The bridge replacement at Richland Creek will span the feature. The inverts of the new box culverts will be buried one foot below the stream bed and will maintain normal stream flow and channel characteristics. Storm drainage is being discharged as far away from the streams and conveyed as much through grass lined ditches as practicable. Erosion Control measures will adhere to Design Standards in Sensitive Watersheds.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. NCDOT Best Management Practices will be implemented during all phases of construction as well as Design Standards in Sensitive Watersheds. Rip rap for bank stabilization was kept to a minimum and only used to protect the culverts. A trout moratorium will prohibit in-stream work and land disturbance within the 25-foot trout buffer from October 15 to April 15.		
<b>2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State</b>		
2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, explain:	
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input checked="" type="checkbox"/> Corps	
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input checked="" type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation	
<b>3. Complete if Using a Mitigation Bank</b>		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
<b>4. Complete if Making a Payment to In-lieu Fee Program</b>		
4a. Approval letter from in-lieu fee program is attached.	<input checked="" type="checkbox"/> Yes	
4b. Stream mitigation requested:	239 linear feet	
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input checked="" type="checkbox"/> cold	
4d. Buffer mitigation requested (DWQ only):	0 square feet	
4e. Riparian wetland mitigation requested:	0.07 acre	
4f. Non-riparian wetland mitigation requested:	0 acres	
4g. Coastal (tidal) wetland mitigation requested:	0 acres	
4h. Comments: There are a total of 263 linear feet of permanent impacts, 24 linear feet of which are due to bank stabilization, thus EEP Mitigation Request is for 239 linear feet.		
<b>5. Complete if Using a Permittee Responsible Mitigation Plan</b>		
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.		

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 type="checkbox"/> Yes <input checked="" 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			3 (2 for Catawba)	
Zone 2			1.5	
<b>6f. Total buffer mitigation required:</b>				
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).				
6h. Comments:				

<b>E. Stormwater Management and Diffuse Flow Plan (required by DWQ)</b>	
<b>1. Diffuse Flow Plan</b>	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments:	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2. Stormwater Management Plan</b>	
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 permit drawings.	
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 checked="" type="checkbox"/> DWQ 401 Unit
<b>3. Certified Local Government Stormwater Review</b>	
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
<b>4. DWQ Stormwater Program Review</b>	
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 type="checkbox"/> Yes <input type="checkbox"/> No
<b>5. DWQ 401 Unit Stormwater Review</b>	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A



<b>F. Supplementary Information</b>	
<b>1. Environmental Documentation (DWQ Requirement)</b>	
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
<b>2. Violations (DWQ Requirement)</b>	
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):	
<b>3. Cumulative Impacts (DWQ Requirement)</b>	
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.  A qualitative Indirect and Cumulative Effects analysis was completed in January 2007 for the project and presented in the Environmental Assessment. This analysis concluded that the project will not induce much growth, alter land uses, or affect overall water quality. Haywood County has ordinances in place to help protect and manage growth, prevent flood damage, and preserve farmland. Local officials are committed to maintaining existing land uses in this area. Any development that does take place in the future will most likely involve redevelopment and will not include a change in land use. These ordinances should adequately protect water resources from land clearing activities associated with induced development. For these reasons, a quantitative analysis is not required. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
<b>4. Sewage Disposal (DWQ Requirement)</b>	
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	

<b>5. Endangered Species and Designated Critical Habitat (Corps Requirement)</b>		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input checked="" type="checkbox"/> Yes	<input 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?  USFWS web page of T/E species for Haywood County lists nine species and was last updated on March 21, 2011. Habitat is present within the study area for the following species: Appalachian elktoe and Small whorled pogonia, these species all have a biological conclusion of No Effect; All remaining species are No Effect (No Habitat); NHP database of element occurrences		
<b>6. Essential Fish Habitat (Corps Requirement)</b>		
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		
<b>7. Historic or Prehistoric Cultural Resources (Corps Requirement)</b>		
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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources?  August 2008 FONSI - as stated in the EA, the project will have an affect on one property that is eligible for the National Register of Historic Places. The preferred alternative requires right of way along the southern boundary of the Liner-Leatherwood Farm. However, it will have No Adverse Effect on this property since no landscape features will be taken or damaged by the right of way, construction easements, or road width. An archaeological study was conducted by NCDOT in March 2005 for this project. No cultural remains were found during this study. Archaeological surveys were also completed for an area of potential effect surrounding the Waynesville Recreation Center and no cultural resources were found.		
<b>8. Flood Zone Designation (Corps Requirement)</b>		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input 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.)	8-23-12 _____ Date



April 26, 2012

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

U-4412, SR 1184 (Howell Mill Road) Widening from US 276 to US 23 Business,  
Haywood County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on April 10, 2012, the impacts are located in CU 06010106 of the French Broad River basin in the Southern Mountains (SM) Eco-Region, and are as follows:

French Broad 06010106 SM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	239	0	0	0.07	0	0	0	0

NCEEP does not currently have riparian restoration available in this cataloging unit. **Per the *Small Impacts Policy***, NCEEP would like to propose to provide riparian restoration equivalent credits currently available in the cataloging unit or riparian restoration credits currently available in French Broad 06010108. There is sufficient stream mitigation in the cataloging unit to meet the needs associated with this project. EEP commits to implementing sufficient compensatory riparian wetland mitigation credits as determined by the regulatory agencies to offset the impacts associated with this project in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. 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,

Michael Ellison  
EEP Deputy Director

cc: Ms. Lori Beckwith, USACE – Asheville Regulatory Field Office  
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit  
File: U-4412

*Restoring... Enhancing... Protecting Our State*

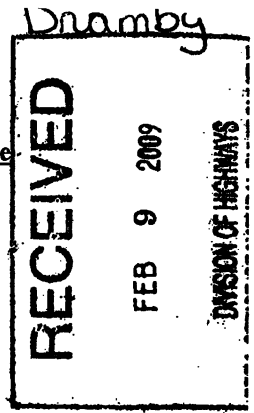


**U.S. ARMY CORPS OF ENGINEERS  
WILMINGTON DISTRICT**

Action Id. SAW-2008-1389

County: Haywood

U.S.G.S. Quad: Clyde



**NOTIFICATION OF JURISDICTIONAL DETERMINATION**

Property Owner/Agent: North Carolina Department of Transportation, Attn: Kris Dramby  
Address: 1598 Mail Service Center  
Raleigh, NC 27699-1598  
Telephone No.: 919-715-5526

Property description:  
Size (acres) project study corridor and adjacent parcels Nearest Town Waynesville  
Nearest Waterway Richland Creek River Basin French Broad, HUC 06010106  
USGS HUC 06010106 Coordinates 35.4988/82.9845

Location description Alternates 1 and 2 adjacent to Russ Avenue bordered by Richland Creek and the Norfolk Southern Railroad tracks in Waynesville, NC, TIP U-4412

**Indicate Which of the Following Apply:**

**A. Preliminary Determination**

- Based on preliminary information, there may be stream channels and wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process ( Reference 33 CFR Part 331).

**B. Approved Determination**

- There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

- There are stream channels and wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

- We strongly suggest you have the stream channels and wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

- The stream channels and wetlands on your property have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

X The stream channel (Richland Creek) has been delineated and surveyed and is accurately depicted on the GPS map submitted. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

- There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Action Id. SAW-2008-1389

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **David Baker** at **828-271-7980, extension 225**

**C. Basis For Determination**

The stream channel on the property is Richland Creek which flows into the French Broad River, HUC 06010106, a navigable-in-fact waterway (TNW).

**D. Remarks**

**E. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)**

Attached to this verification is an approved jurisdictional determination. If you are not in agreement with that approved jurisdictional determination, you can make an administrative appeal under 33 CFR 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

District Engineer, Wilmington Regulatory Program  
Attn: David Baker, Project Manager  
151 Patton Avenue, Room 208  
Asheville, North Carolina 28801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by July 1, 2008.

**\*\*It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.\*\***

Corps Regulatory Official: David Baker *DKB*

Issue Date: February 6, 2009 Expiration Date: February 6, 2014

**SURVEY PLATS, FIELD SKETCH, WETLAND DELINEATION FORMS, PROJECT PLANS, ETC., MUST BE ATTACHED TO THE FILE COPY OF THIS FORM, IF REQUIRED OR AVAILABLE.**

Copy furnished:  
Adam Efird, EcoScience: a Division of PBS&J

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL**

Applicant: North Carolina Department of Transportation, Attn: Kris Dramby		File Number: SAW-2008-1389	Date: February 6, 2009
Attached is:			See Section below
<input type="checkbox"/>	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
<input type="checkbox"/>	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
<input type="checkbox"/>	PERMIT DENIAL		C
<input checked="" type="checkbox"/>	APPROVED JURISDICTIONAL DETERMINATION		D
<input type="checkbox"/>	PRELIMINARY JURISDICTIONAL DETERMINATION		E

**SECTION I** - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/cccewo/reg/or> Corps regulations at 33 CFR Part 331.

**A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.**

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT: You may accept or appeal the permit**

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.**

**D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.**

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

If you have questions regarding this decision and/or the appeal process you may contact:  
David Baker, Project Manager  
USACE, Asheville Regulatory Field Office  
151 Patton Ave  
RM 208  
Asheville, NC 28806  
828-271-7980

If you only have questions regarding the appeal process you may also contact:  
Mr. Michael F. Bell, Administrative Appeal Review Officer  
CESAD-ET-CO-R  
U.S. Army Corps of Engineers, South Atlantic Division  
60 Forsyth Street, Room 9M15  
Atlanta, Georgia 30303-8801

**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:
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**For appeals on Initial Proffered Permits and approved Jurisdictional Determinations send this form to:**

District Engineer, Wilmington Regulatory Division, Attn: David Baker, Project Manager, Asheville Regulatory Field Office, 151 Patton Avenue, Room 208, Asheville, NC 28801.

# STORMWATER MANAGEMENT PLAN

U-4412, State Project 35022.1.1  
Haywood County  
Hydraulics Project Engineer: R.C. Henegar, PE

Date:5/1/09

## ***ROADWAY DESCRIPTION***

This project is to upgrade a two- lane facility with minimal shoulders to a three lane facility with curb and gutter on existing location from US 276 (Russ Avenue) to US 23 Business (Asheville Highway), in Haywood County. The total project length is approximately 1.43 miles.

## ***ENVIRONMENTAL DESCRIPTION***

This project is located in the French Broad River Basin. There are two primary stream crossings on this project. Richland and Raccoon Creeks have a DWQ classification of B. These streams are on the 303(d) list. Wetlands will be impacted by the proposed project.

## ***BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES***

The proposed bridge over Richland creek will have a deck drainage system, eliminating direct discharge into the stream, and the storm drainage is being discharged as far away from the stream as practicable. The inverts of the new box culverts will be buried one foot below the stream bed and will maintain normal stream flow and channel characteristics. Storm drainage is being discharged as far away from the streams and conveyed as much through grass lined ditches as practicable.

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

- Pre-formed scour holes: 25+15 -L-  
63+40 -L-

## ***CULVERTS***

Station 14+25 -L- (Unnamed Tributary to Richland Creek) the existing 81" x 59" corrugated metal pipe arch will be replaced with a 2@ 6' x 6' reinforced box culvert buried one foot below the stream bed with sills to maintain the normal stream flow and channel characteristics. There is 225' +/- of channel change associated with this culvert

Station 24+21.5 -L- (Unnamed Tributary to Richland Creek) the existing 30" corrugated metal pipe (CMP) will be replaced with a 1@ 6' x 6' reinforced box culvert buried one foot below the stream bed.



Station 84+01.6 –L- (Raccoon Creek) the existing 2@ 10' x 12' reinforced box culvert will be extended 20' +/- on the upstream end.

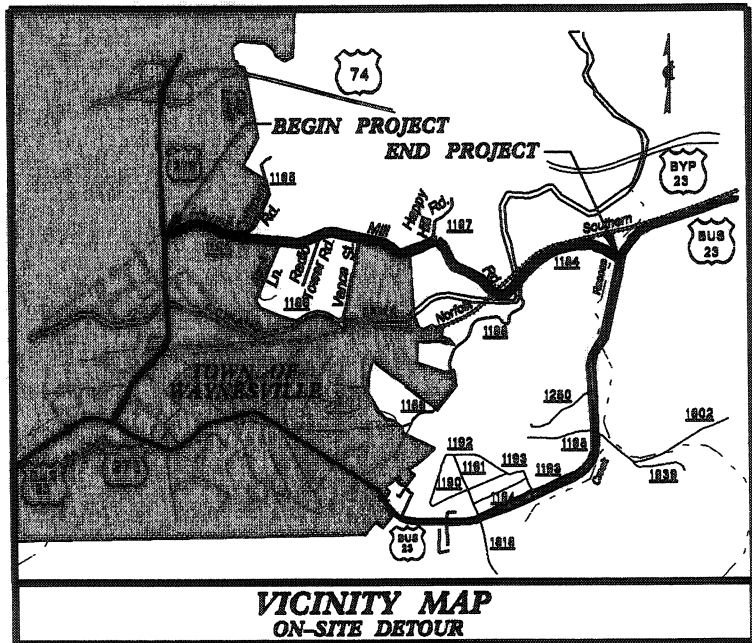
See Sheet 1A For Index of Sheets  
 See Sheet 1B For Symbology Sheet  
 See Sheets 1C thru 1D For Control Sheets

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4412	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35022.1.1	STP-1184(1)	P.E.	
35022.2.1	STP-1184(1)	R/W	

**HAYWOOD COUNTY**

**LOCATION:** WAYNESVILLE - SR 1184 (HOWELL MILL ROAD)  
 FROM US 276 (RUSS AVENUE) TO  
 US 23 BUSINESS (ASHEVILLE HWY)  
**TYPE OF WORK:** GRADING, DRAINAGE, PAVING,  
 CULVERT AND STRUCTURE



VICINITY MAP  
 ON-SITE DETOUR

TIP PROJECT: U-4412

BEGIN TIP PROJECT U-4412  
 -L- STA 10+00.00

END TIP PROJECT U-4412  
 -L- STA 85+59.83

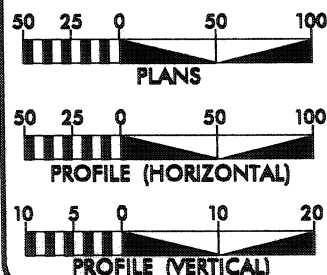


**WETLAND &  
 STREAM  
 IMPACTS**

- NOTE:
- CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
  - A PORTION OF THE PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF WAYNESVILLE.

PRELIMINARY PLANS  
 DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2012 = 6334  
 ADT 2032 = 9297  
 DHV = 10 %  
 D = 55 %  
 T = 5 % \*  
 V = 40 MPH  
 FUNC. CLASS. = URBAN  
 COLLECTOR  
 \* TTST 2% DUAL 3%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-4412 = 1.331 MI  
 LENGTH OF STRUCTURE TIP PROJECT U-4412 = 0.101 MI  
 TOTAL LENGTH OF TIP PROJECT U-4412 = 1.432 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
 OCTOBER 13, 2010

LETTING DATE:  
 JANUARY 18, 2013

GARY LOVERING, PE  
 PROJECT ENGINEER

ANTHONY C. WEST  
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

ROADWAY DESIGN ENGINEER

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA



Permit Drawing  
 Sheet 1 of 22  
 STATE HIGHWAY DESIGN ENGINEER

\$\$\$\$\$SYTIME\$\$\$\$\$  
 \$\$\$SERNAME\$\$\$



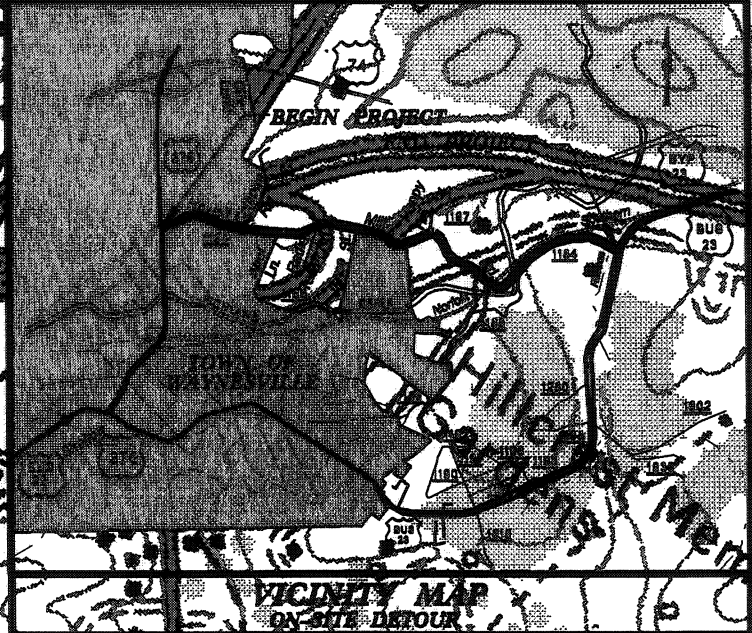
See Sheet 1A For Index of Sheets  
See Sheet 1B For Symbols of Objects  
See Sheets 1C thru 1D For Profile Sheets

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**HAYWOOD COUNTY**

LOCATION: WAYNESVILLE SR 104 (HOWELL MILL ROAD)  
FROM US 276 (RUSS AVENUE) TO  
US BUSINESS (ASHEVILLE HWY)  
TYPE OF WORK: GRADING, DRAINAGE, PAVING,  
CULVERT AND STRUCTURE

DATE	NOV 12 2010	SCALE	AS SHOWN
PROJECT NO.	6022.1.1	DATE	11-18-10
DISTRICT	3502.2.1	PROJECT NO.	6022.1.1
DESIGNER		ENGINEER	AW

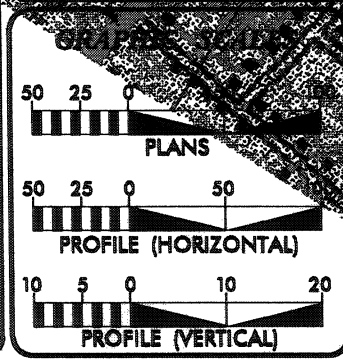


VICINITY MAP  
ON-SITE DETOUR  
BEGIN TIP PROJECT STA 10+00.00

**CONTRACT NO. 6022.1.1**



THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III  
IN SECTION 104-102.03 OF THE NORTH CAROLINA CONSTRUCTION CODE. THE LOCATION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF WAYNESVILLE.



DESIGN DATA  
PROJECT LENGTH: 1.00 MI  
LENGTH OF ROADWAY: 1.00 MI  
LENGTH OF STRUCTURE: 1.00 MI  
TOTAL LENGTH OF STRUCTURE: 1.00 MI

Prepared in the Office of  
**DIVISION OF HIGHWAYS**  
1000 Arch Bridge Dr., Raleigh, NC 27619  
FOR TRANSMISSION TO:  
RIGHT OF WAY DATE: OCTOBER 13, 2010  
LETTING DATE: JUNE 18, 2013

**GARY LOVERING PE**  
PROJECT ENGINEER  
**ANTHONY C. WEST**  
PROJECT DESIGN ENGINEER

**HYDRAULIC ENGINEER**  
SIGNATURE: \_\_\_\_\_  
**ROADWAY DESIGN ENGINEER**

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

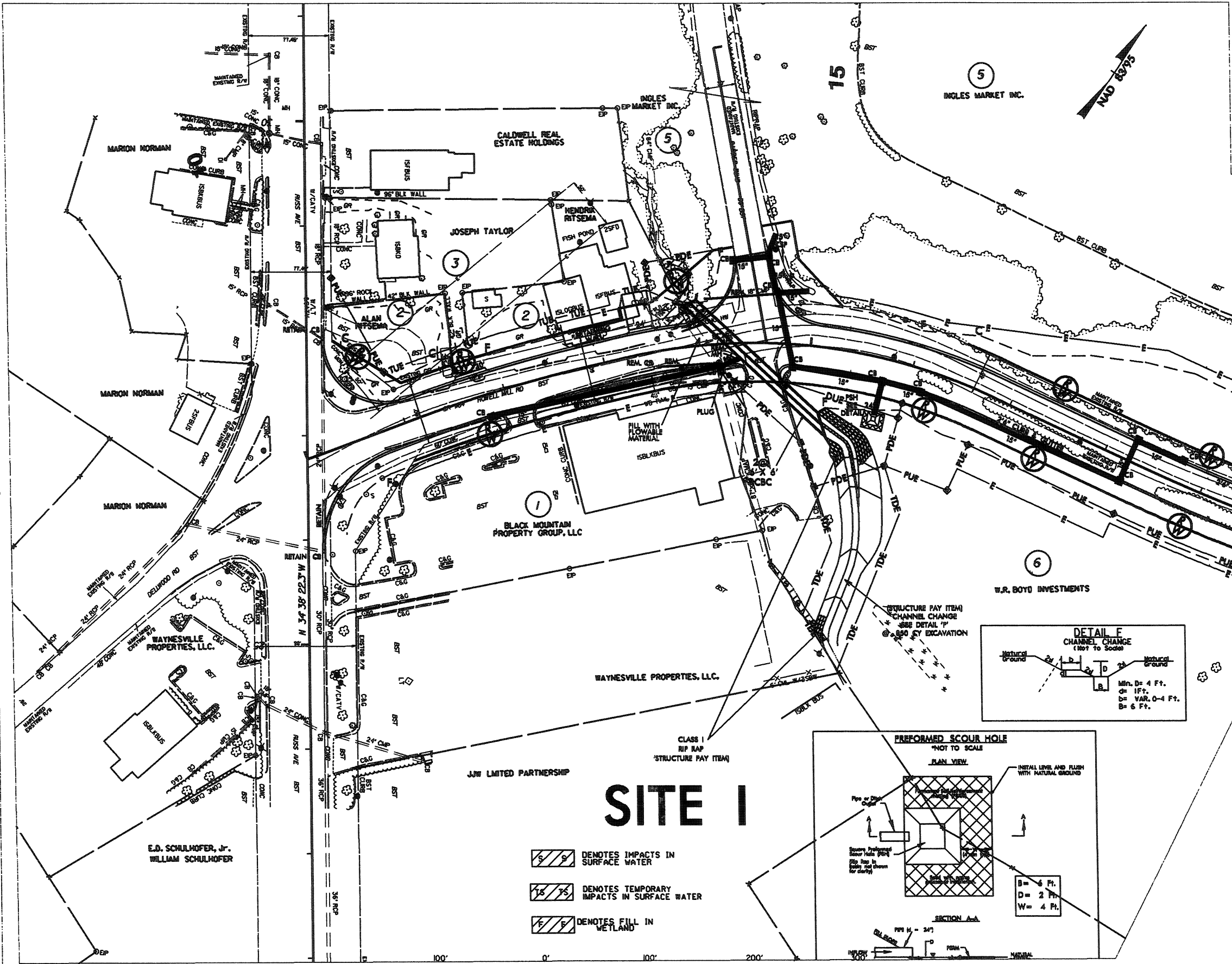
**DIVISION OF HIGHWAYS**  
STATE OF NORTH CAROLINA

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\$\$\$\$\$DUN\$\$\$\$\$  
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8/17/99

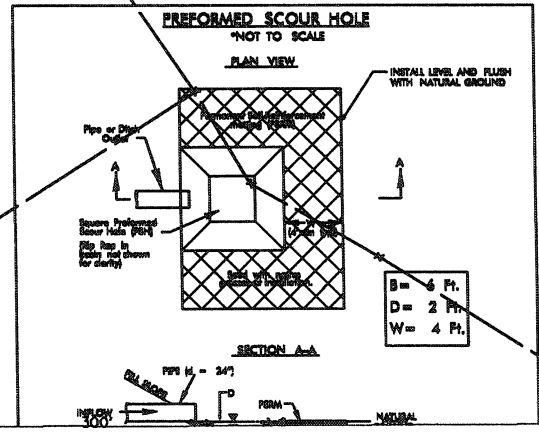
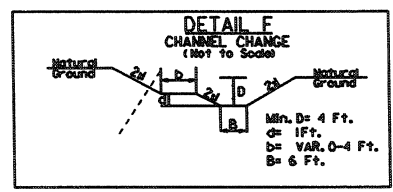
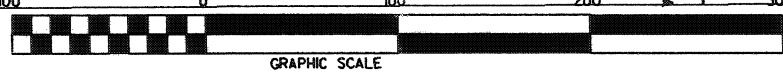
PROJECT REFERENCE NO. U-4412	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



MATCH LINE STA 20+00.00  
SEE SHEET 5

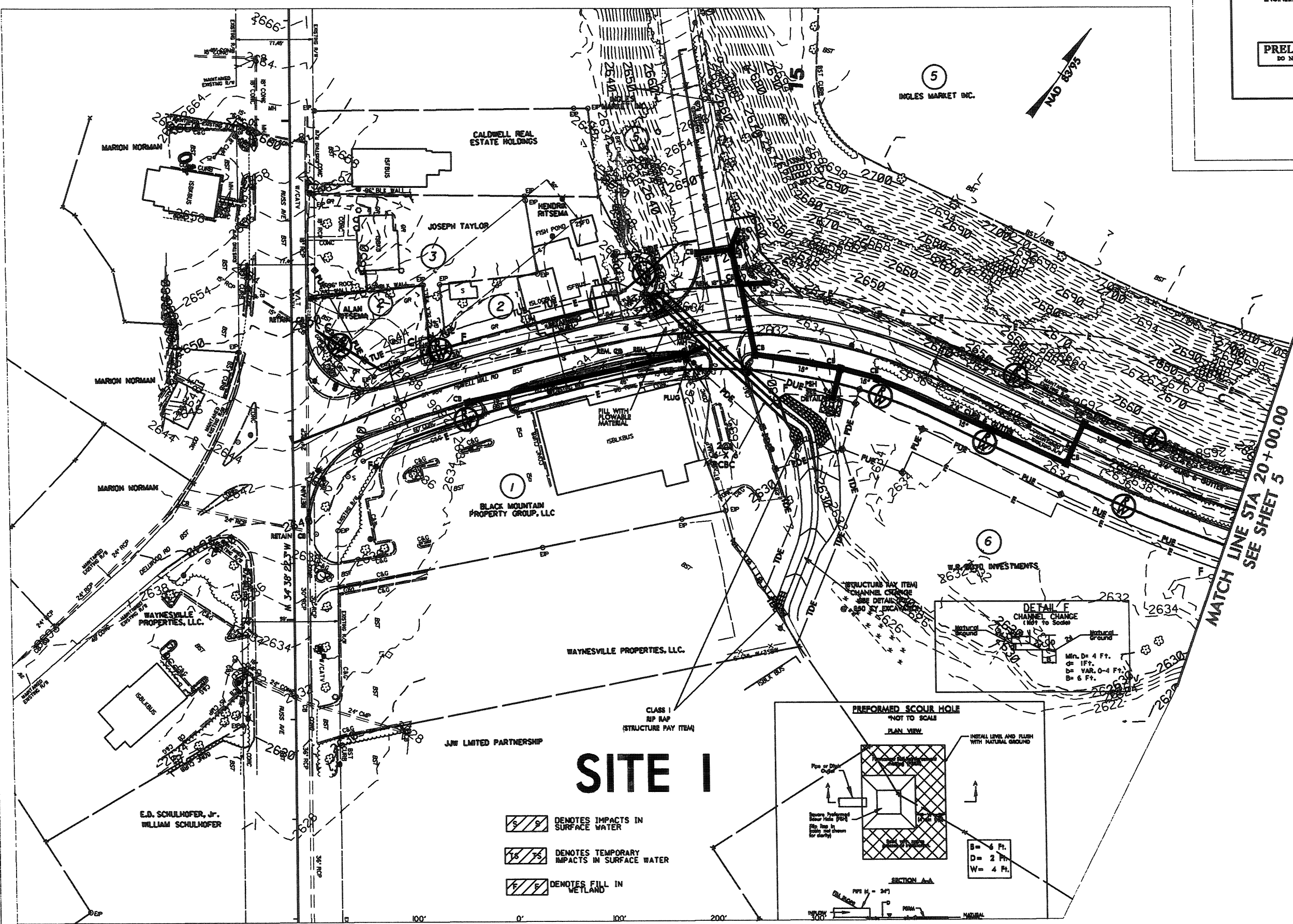
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- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND



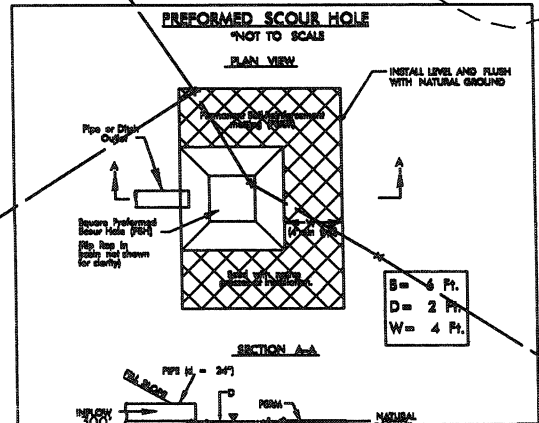
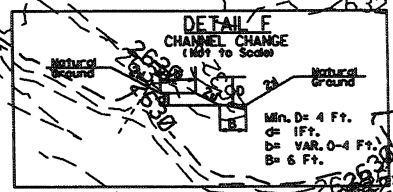
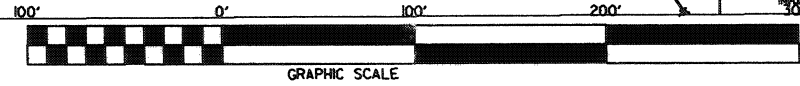
FOR -L- PROFILE, SEE SHEET 11  
FOR -Y2- PROFILE, SEE SHEET 15  
FOR CULVERT DESIGN, SEE SHEETS C-1 TO C-

PROJECT REFERENCE NO. U-4412	SHEET NO. 4
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



# SITE I

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND



MATCH LINE STA 20+00.00  
SEE SHEET 5

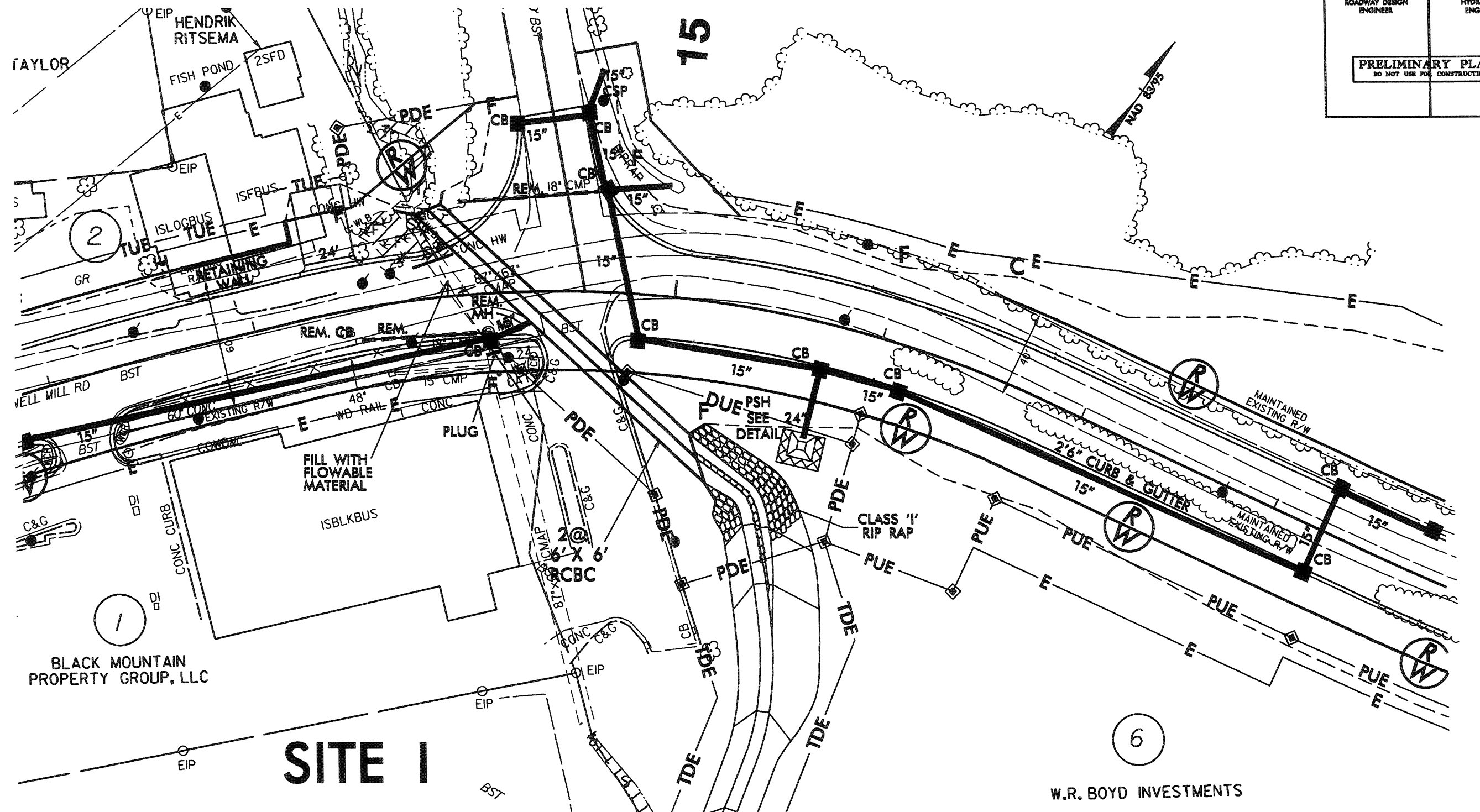
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FOR -Y2- PROFILE, SEE SHEET 15  
FOR CULVERT DESIGN, SEE SHEETS C-1 TO C-

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U-4412	4
BW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

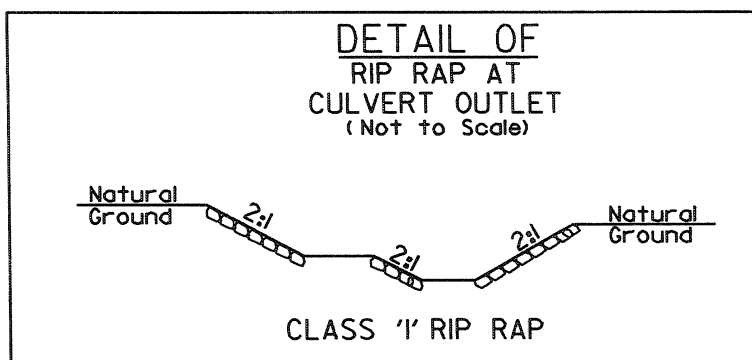
**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

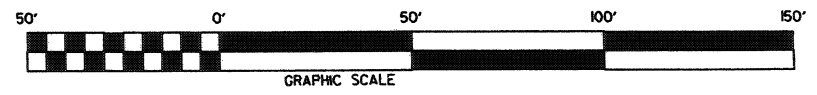


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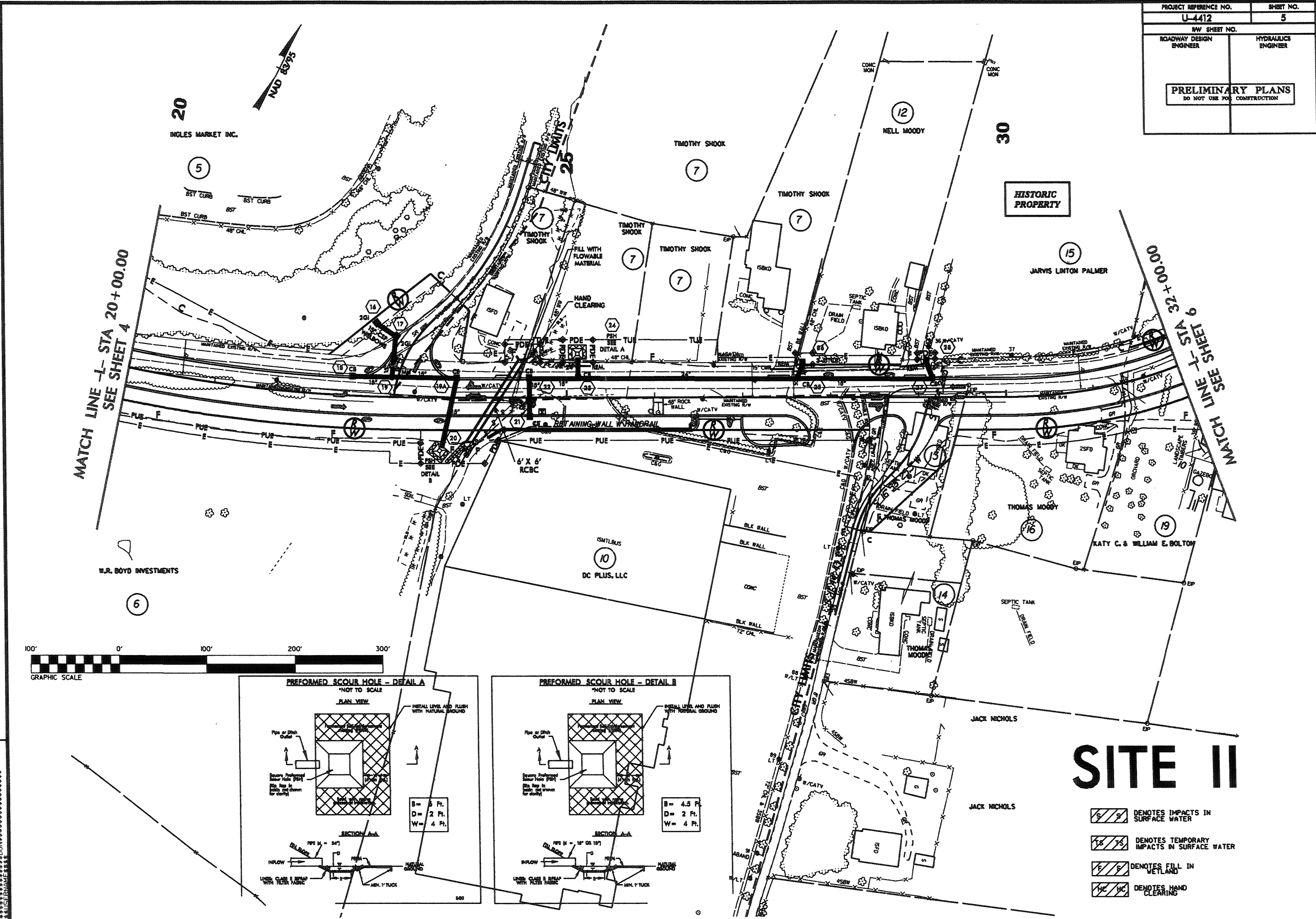
**CLASS I RIP RAP  
@ 13 TONS**

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND



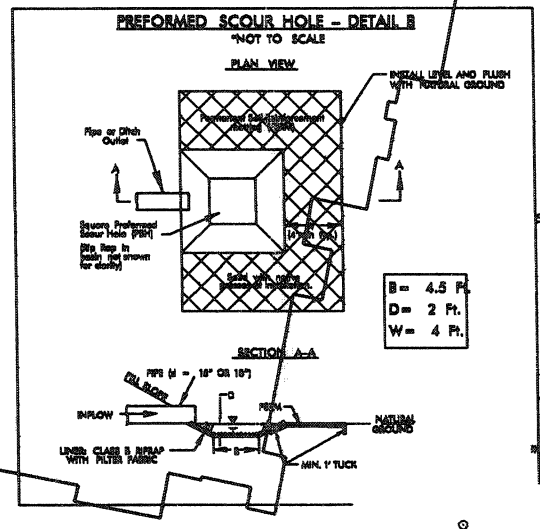
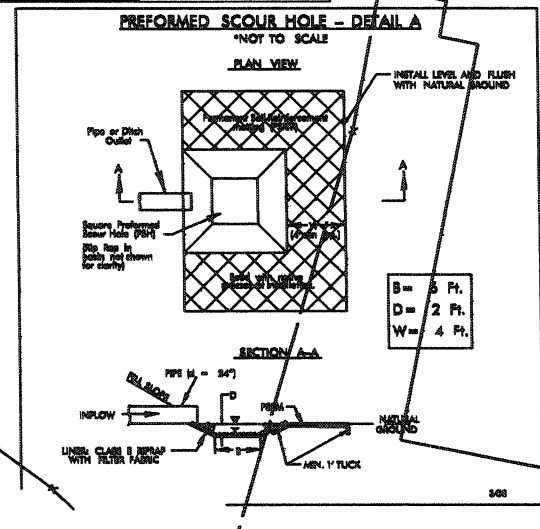
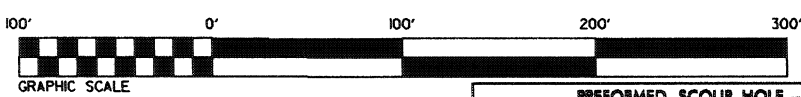
PROJECT REFERENCE NO. U-4412	SHEET NO. 5
HW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

8/17/99



MATCH LINE -L- STA 20+00.00  
SEE SHEET 4

MATCH LINE -L- STA 23+00.00  
SEE SHEET 9



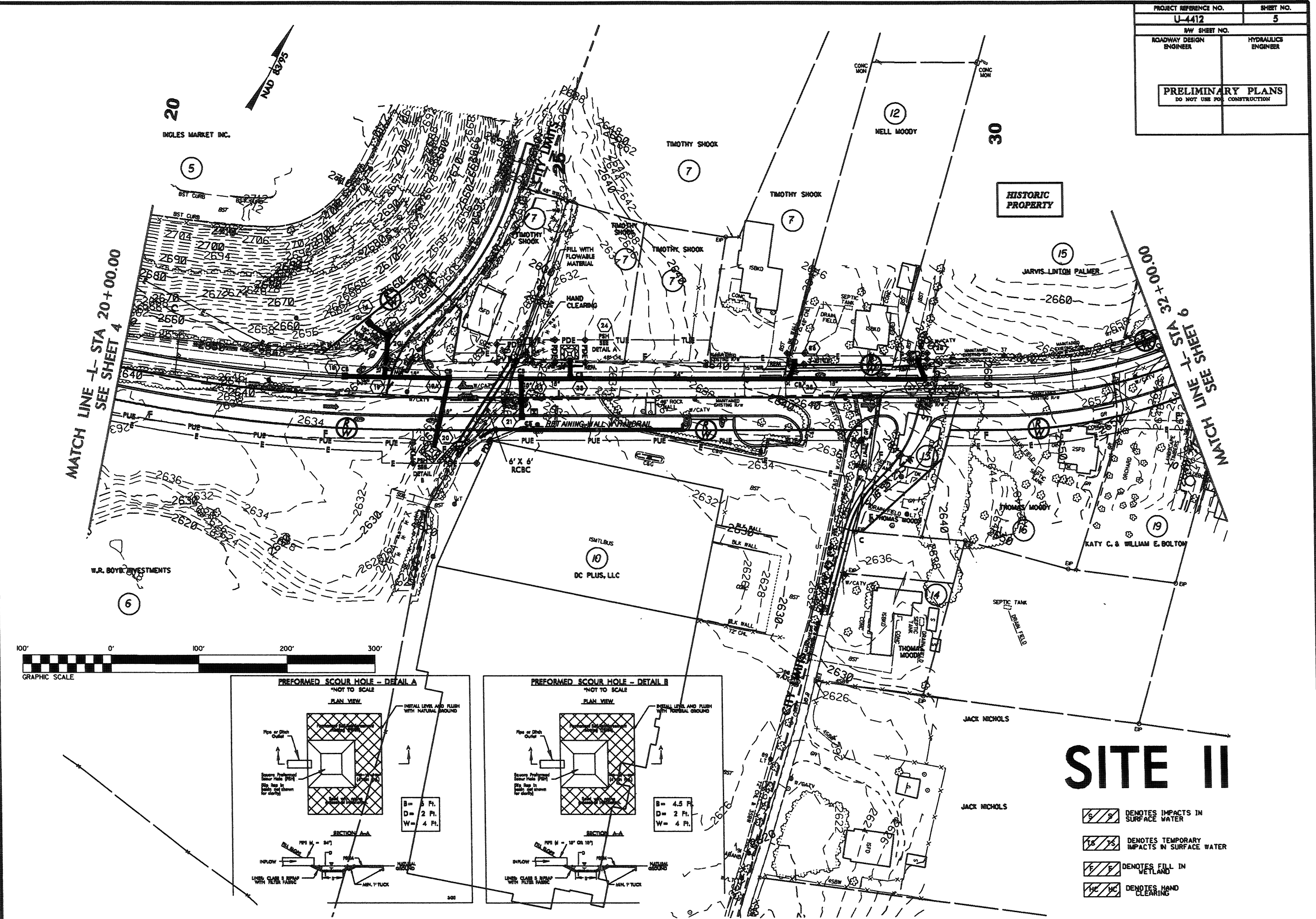
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- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING



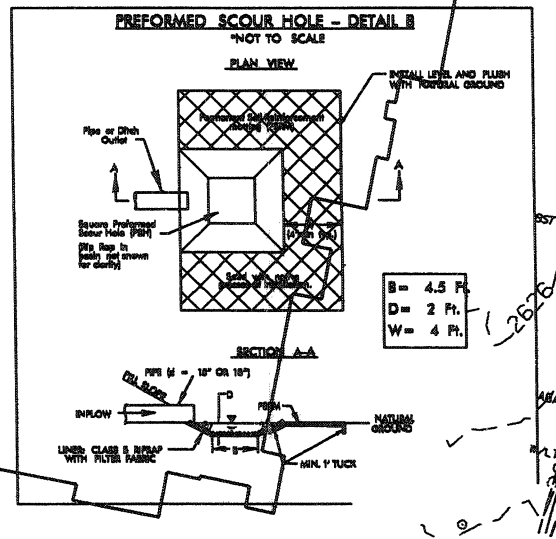
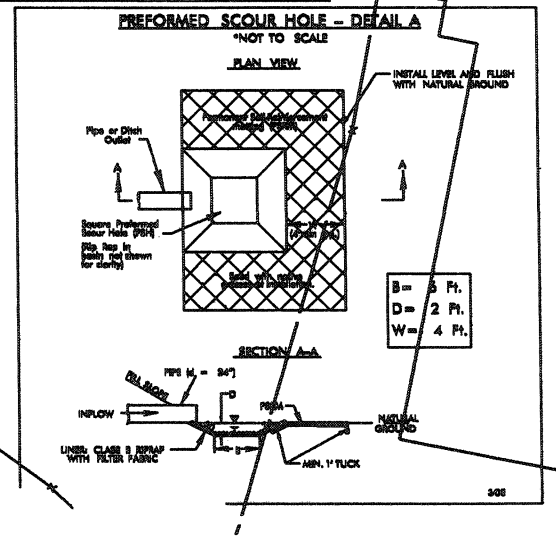
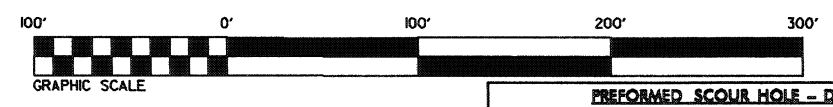
PROJECT REFERENCE NO.	SHEET NO.
U-4412	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

8/17/99



MATCH LINE -L- STA 20+00.00  
SEE SHEET 4

MATCH LINE -L- STA 23+00.00  
SEE SHEET 9



# SITE II

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING

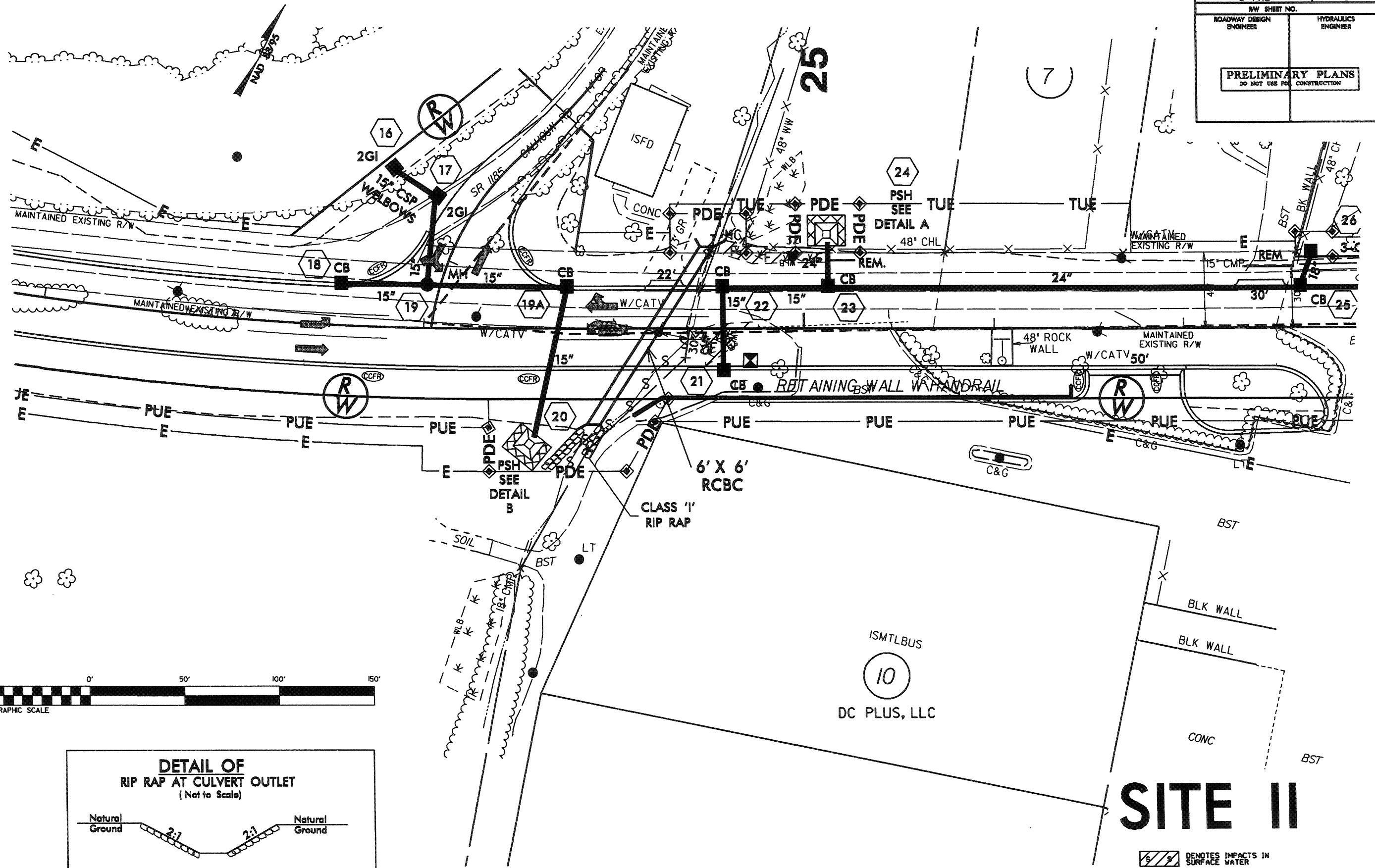
REVISIONS

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$USERS\$\$\$\$\$

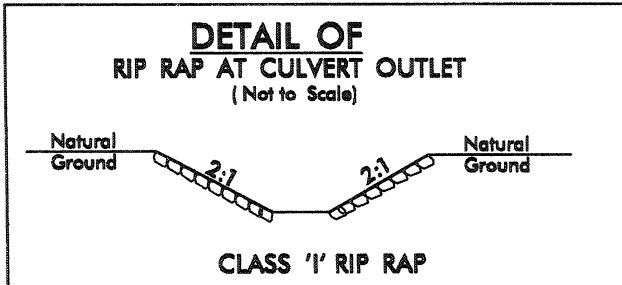
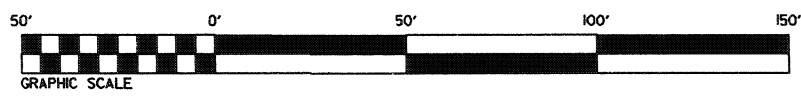


8/17/99

PROJECT REFERENCE NO. U-4412	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



REVISIONS

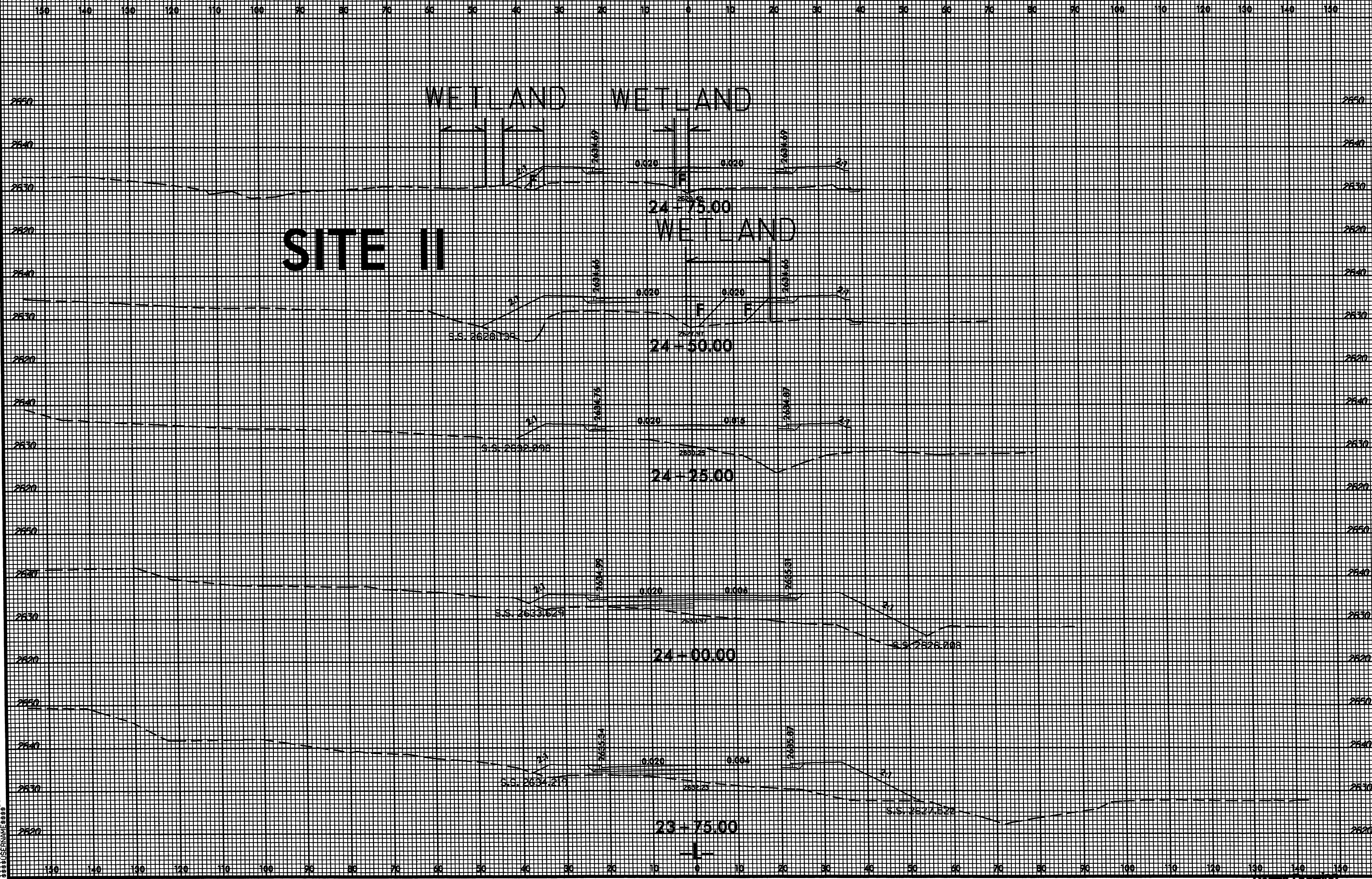


# SITE II

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING

8/23/99

0 5 10	PROJ. REFERENCE NO. U-4412	SHEET NO. X-12
--------	-------------------------------	-------------------

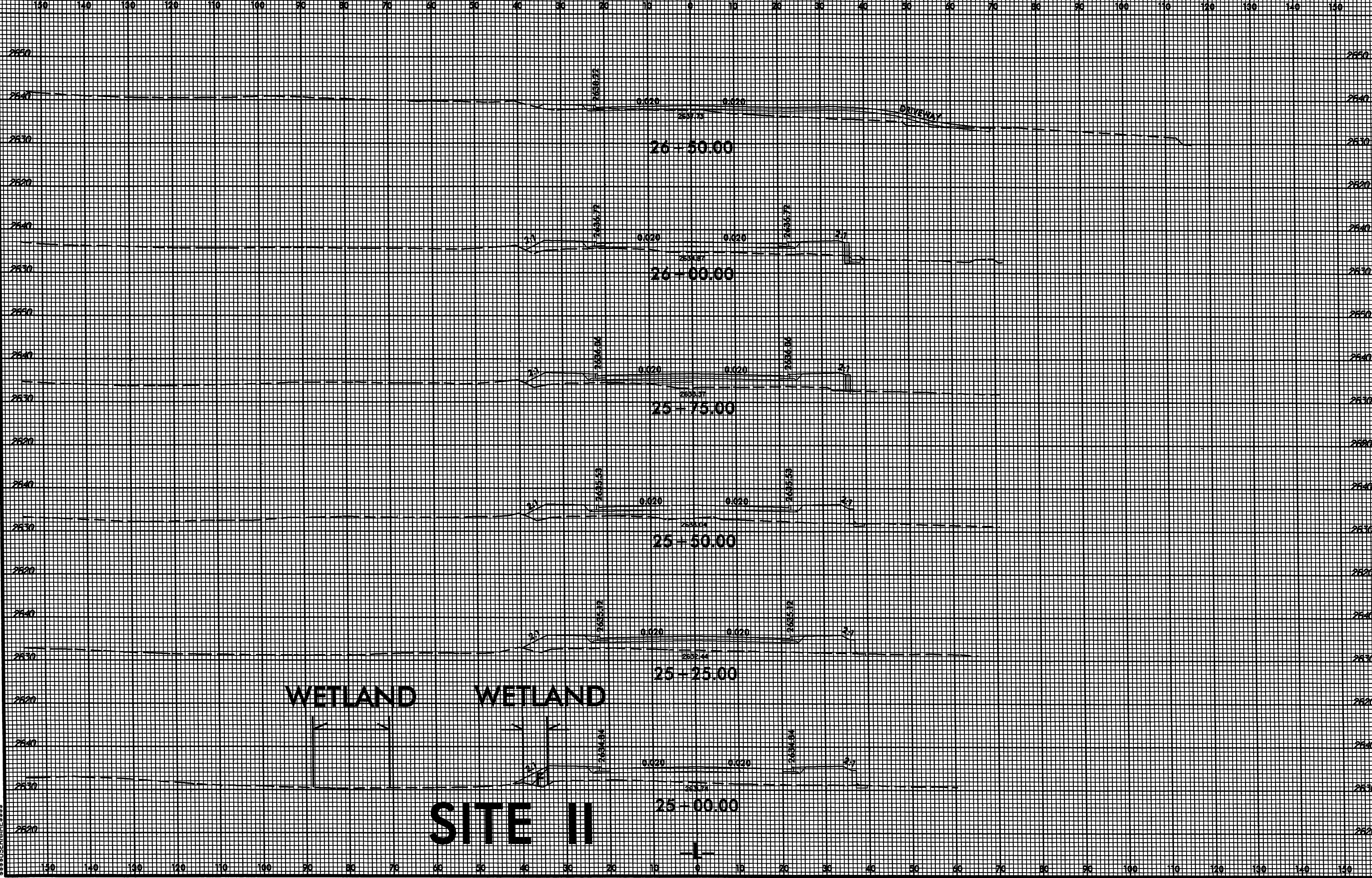


\*\*\*\*\*SYTIME\*\*\*\*\*  
 \*\*\*\*\*USER\*\*\*\*\*



8/23/99

0 5 10	PROJ. REFERENCE NO. U-4412	SHEET NO. X-13
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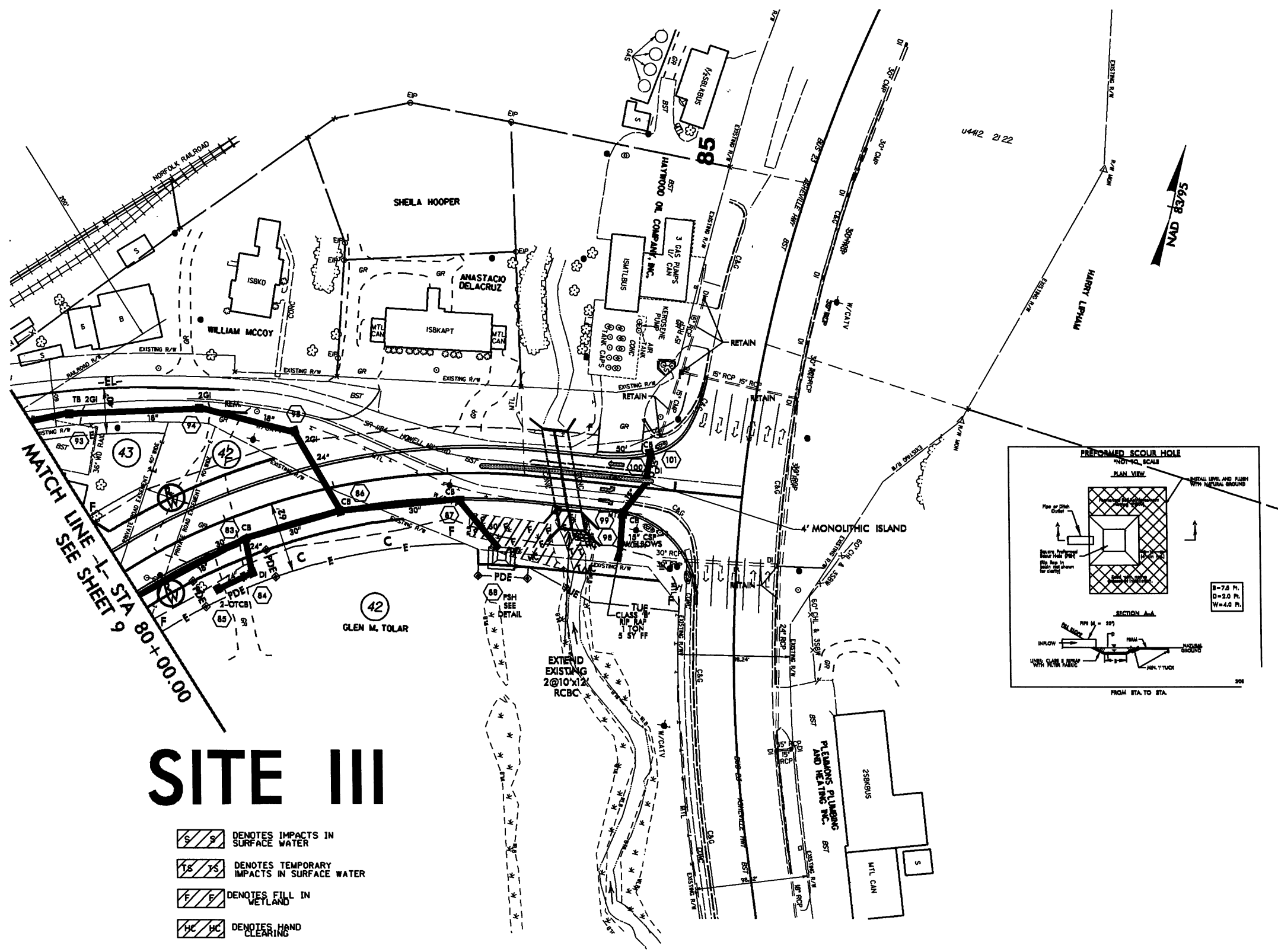


\*\*\*\*\*  
SYNOPSIS  
\*\*\*\*\*

PROJECT REFERENCE NO. U-4412	SHEET NO. 10
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

8/17/99

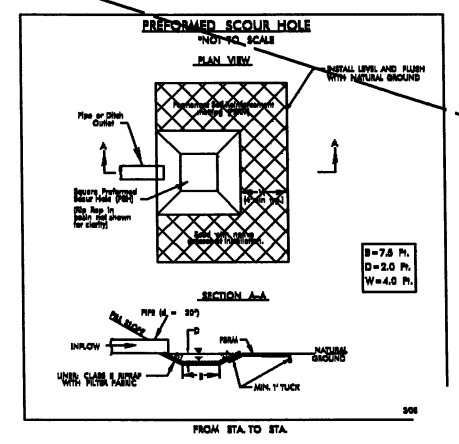
REVISIONS



MATCH LINE - L- STA 80+00.00  
SEE SHEET 9

# SITE III

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING

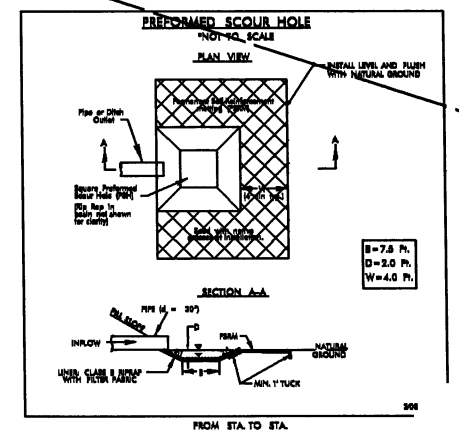
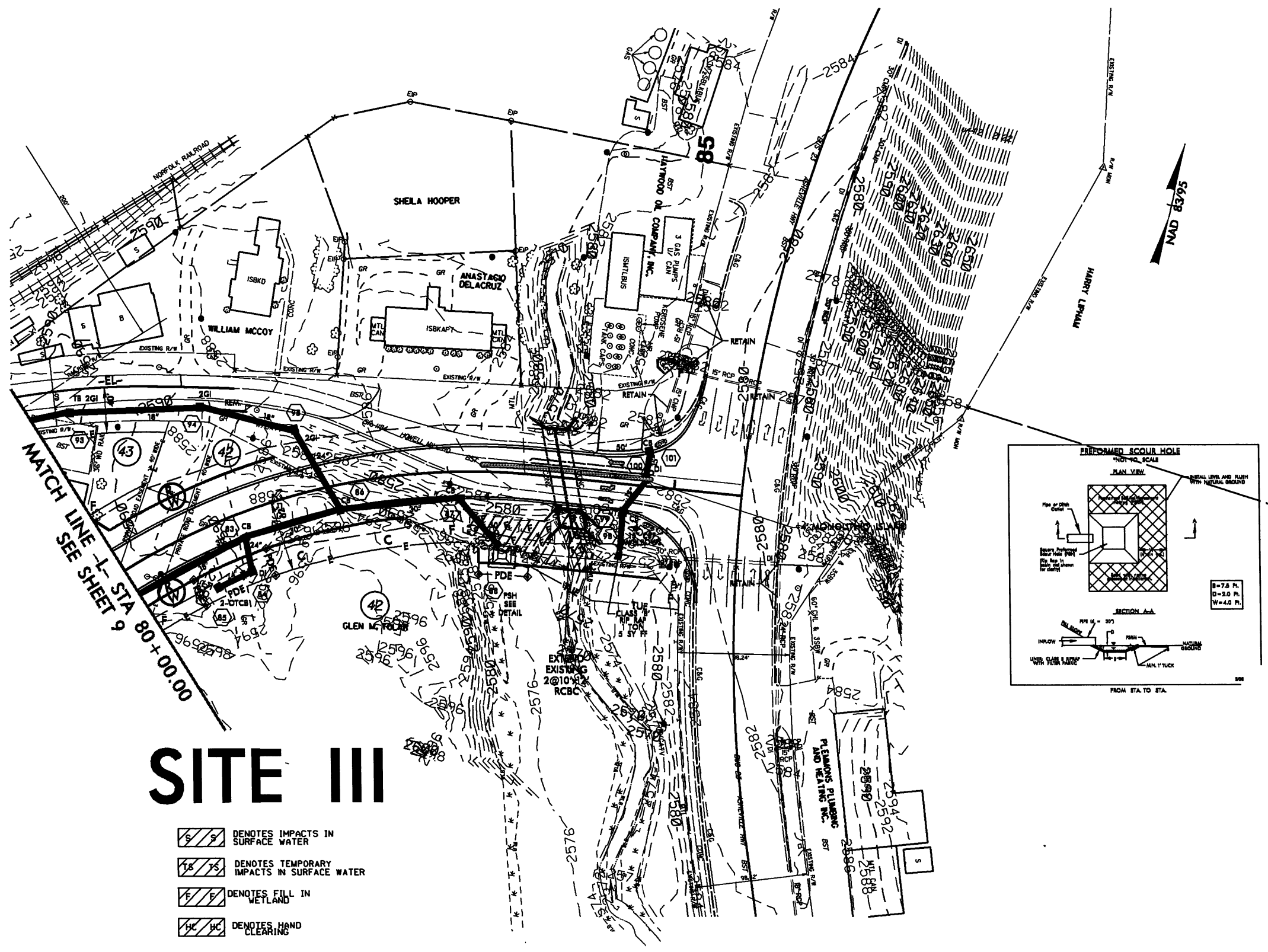


SR 1184 (HOWELL MILL ROAD) AT US 23 (ASHEVILLE HWY)

2012 ADT	20800
2032 ADT	32800
4434 6730	
SR 1184	
6334	1900
9297	2567
18266 28636	

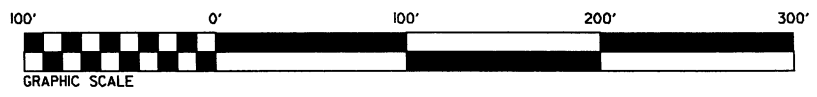
FOR -L- PROFILE, SEE SHEET 14 and 15  
FOR CULVERT PLANS, SEE C- TO C-

PROJECT REFERENCE NO. U-4412	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



# SITE III

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING

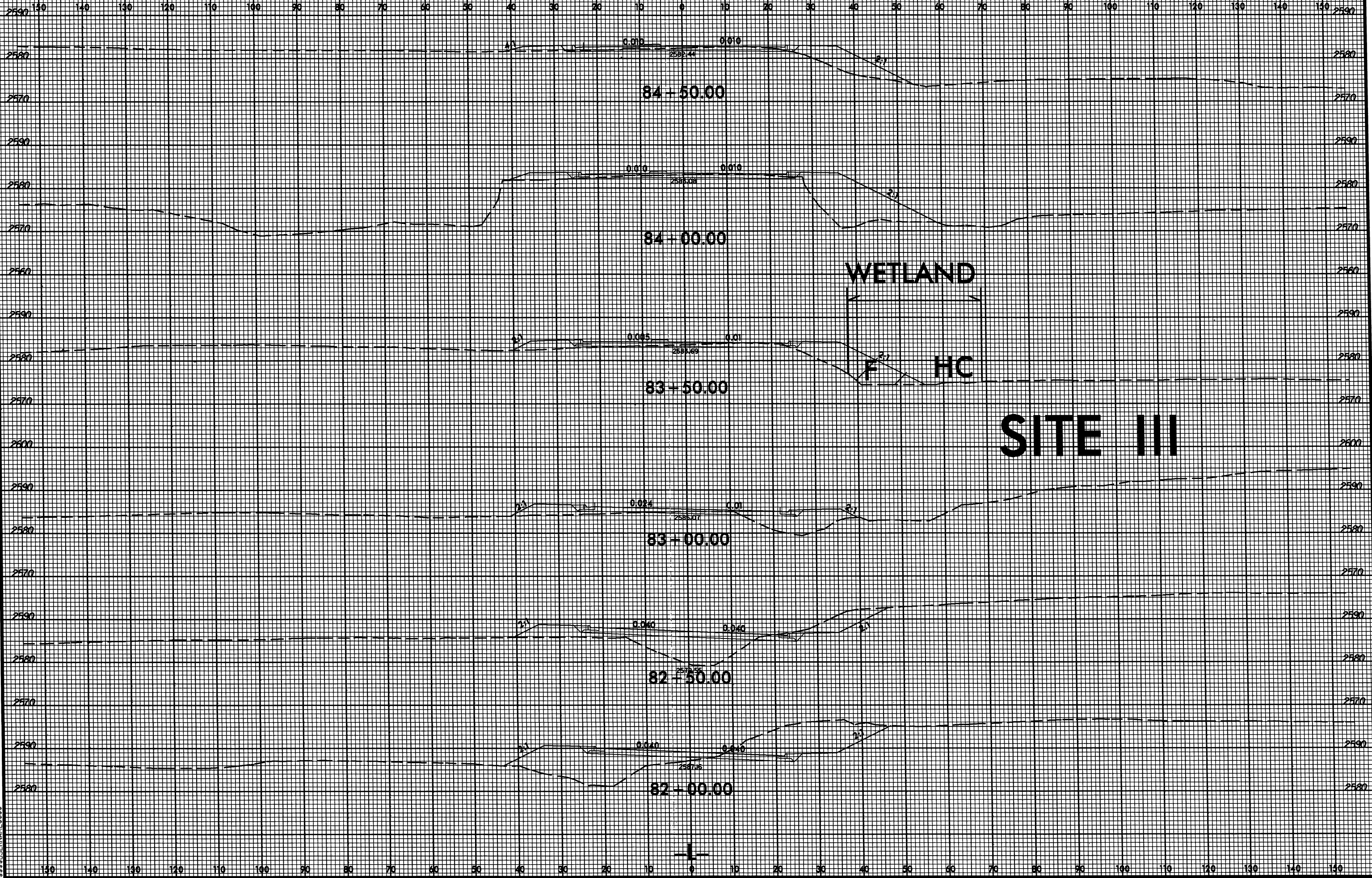


SR 1184 (HOWELL MILL ROAD) AT US 23 (ASHEVILLE HWY)	
2012 ADT	20800
2032 ADT	32800
6334	1900
9297	2567
18266	
28636	

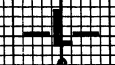
FOR -L- PROFILE, SEE SHEET 14 and 15  
FOR CULVERT PLANS, SEE C- TO C-



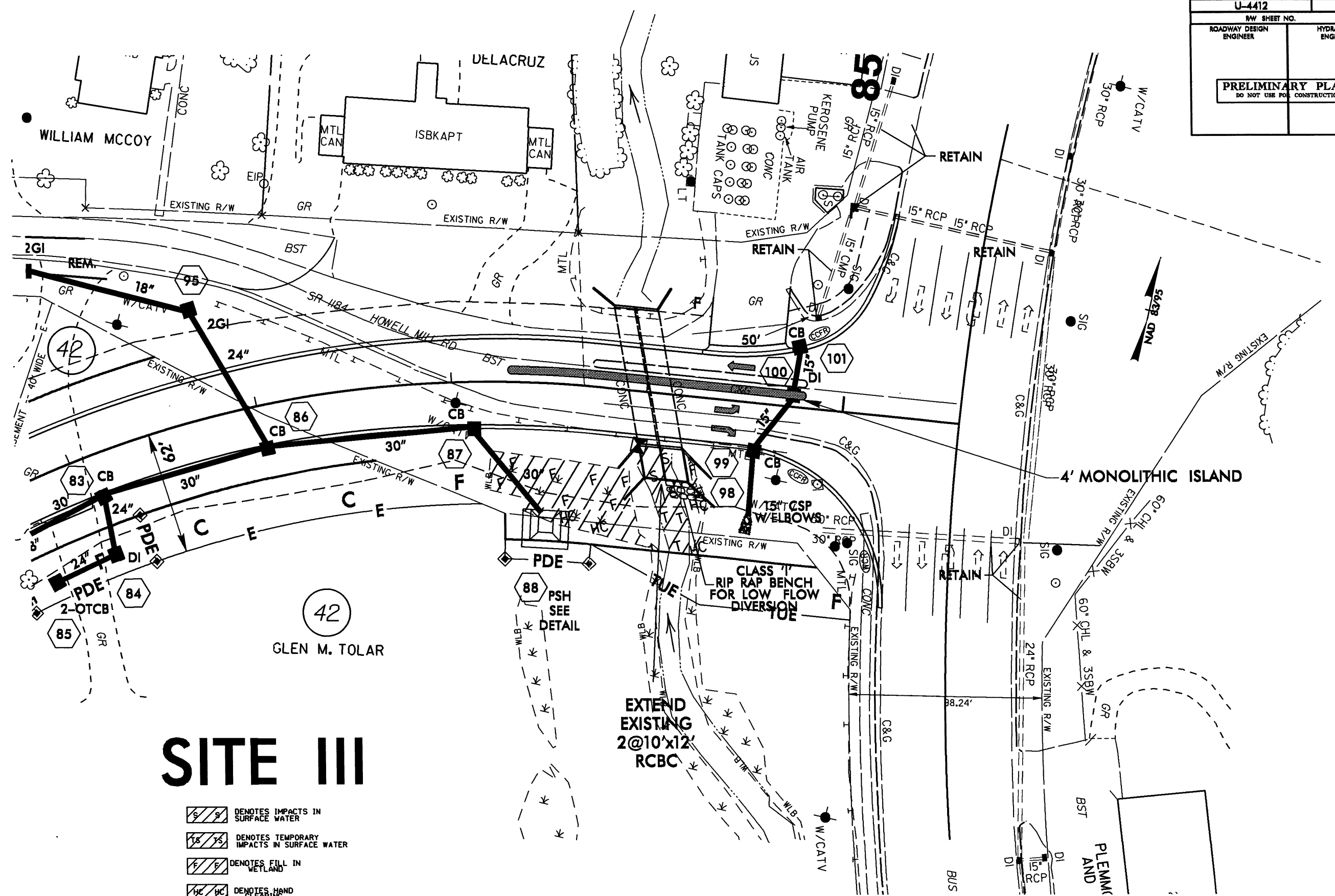
B.23/93



Vertical text on the left margin, likely a scale or reference note.

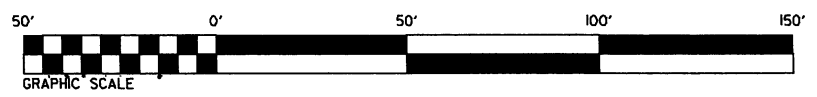


PROJECT REFERENCE NO. U-4412	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



# SITE III

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES HAND CLEARING



REVISIONS

8/17/99

\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*LIGN\*\*\*\*\*  
\*\*\*\*\*CUB\*\*\*\*\*

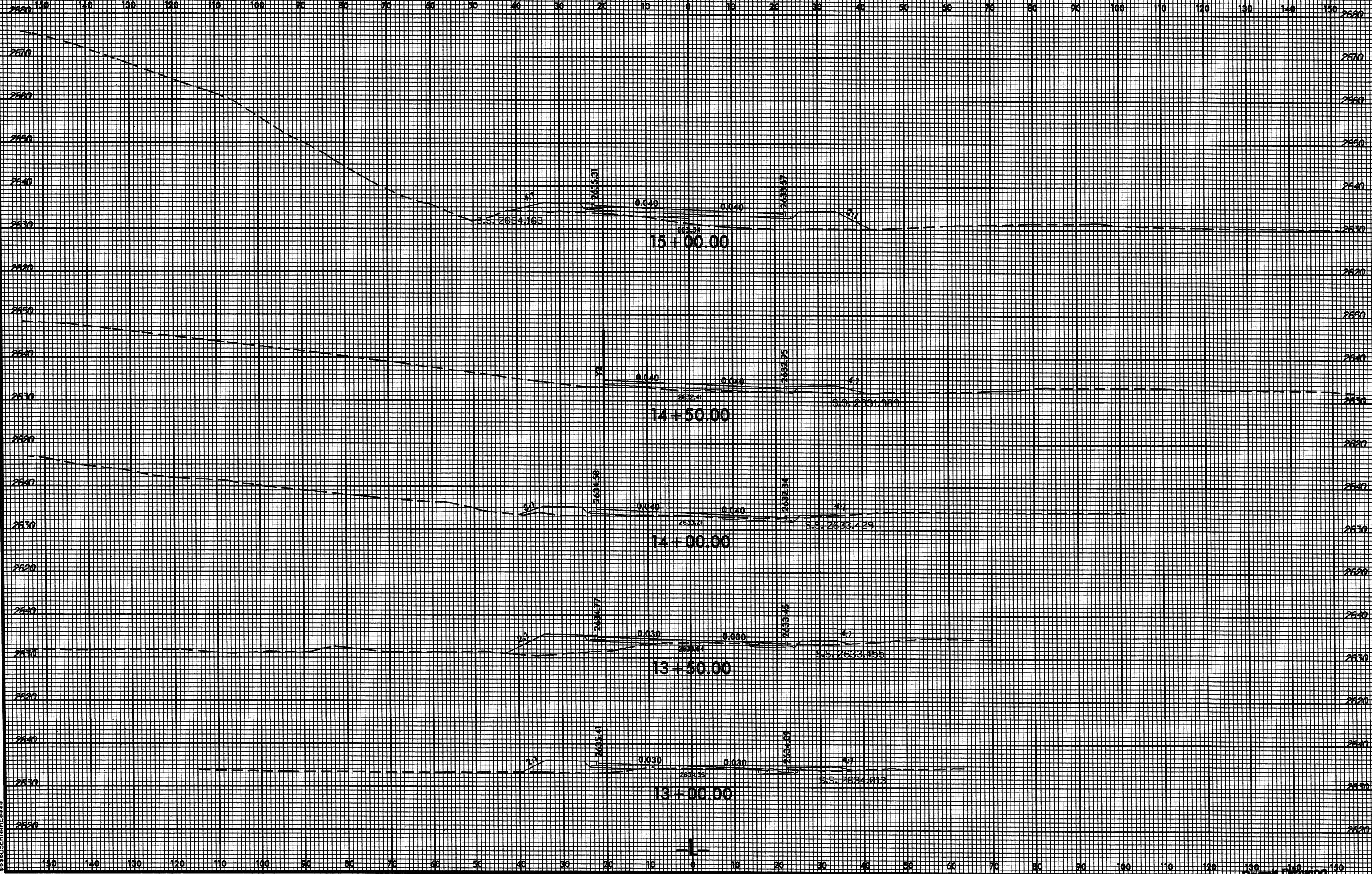


8/23/99



PROJ. REFERENCE NO.  
U-4412

SHEET NO.  
X-2



\*\*\*\*\*  
SYNTHESIS  
ENGINEERING  
\*\*\*\*\*



**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)	Natural Stream Design (ft)	
I	14+25 -L-	2 @ 6' X 6' RCBC	0.01					0.010	0.01			59	
II	24+21.5 -L-	1 @ 6' X 6' RCBC	0.02				<0.01	0.01	<0.01		90	19	
		Bank Stabilization									17		
III	84+01.6 -L-	EXTEND 2 @ 10' X 12' RCBC	0.040				0.020	0.010	0.010		19	29	
		Bank Stabilization									7		
<b>TOTALS:</b>			<b>0.07</b>				<b>0.02</b>	<b>0.03</b>	<b>0.02</b>		<b>263</b>	<b>107</b>	

NOTE: <0.01 ac. Temporary Fill in Wetlands in the Hand Clearing areas for erosion control measures

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

HAYWOOD COUNTY  
WBS - 35022.1.1 (U-4412)

2640

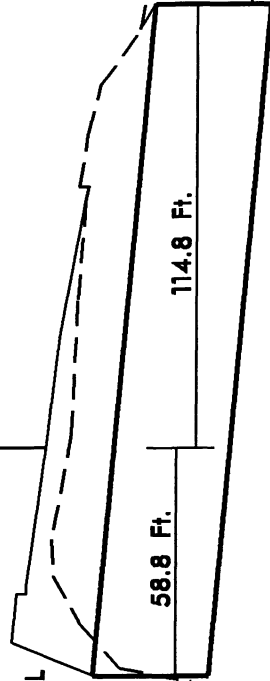
2 @ 6 FT. X 6 FT. RCBC  
¢ STA. 14+25 -L-  
GRADE FT. ELEV. 2633.80 FT.  
SKEW 45°

▽ 100 YR WSEL 2633.3'    2:1 NORMAL  
▽ 50 YR WSEL 2632.4'

2630

▽ NWS 2627.2'  
EXISTING BED

NATURAL GROUND



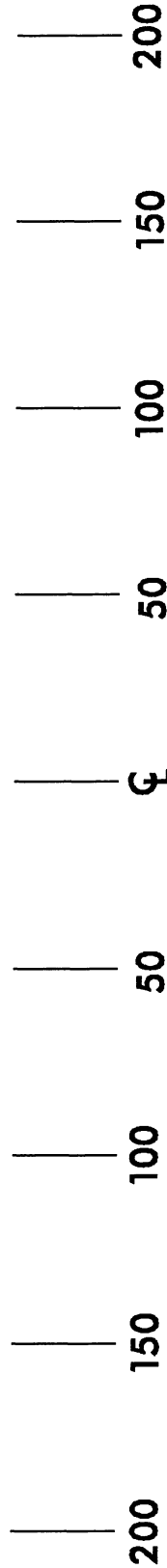
2620

PROPOSED BED

NOTE: INVERTS BURIED ONE FOOT  
WITH TWO FOOT SILLS IN THE  
LEFTHAND BARREL AND ONE FOOT  
SILLS IN THE RIGHTHAND BARREL  
AT THE INLET AND OUTLET.

¢ INV - 2624.28 FT.  
SLOPE - 0.018 FT./FT.

2610



PROFILE

**SITE I**

**NCDOT**

DIVISION OF HIGHWAYS

HAYWOOD COUNTY

PROJECT: 55022.1.1 (U-4412)

SR 1184 (HOWELL MILL ROAD)

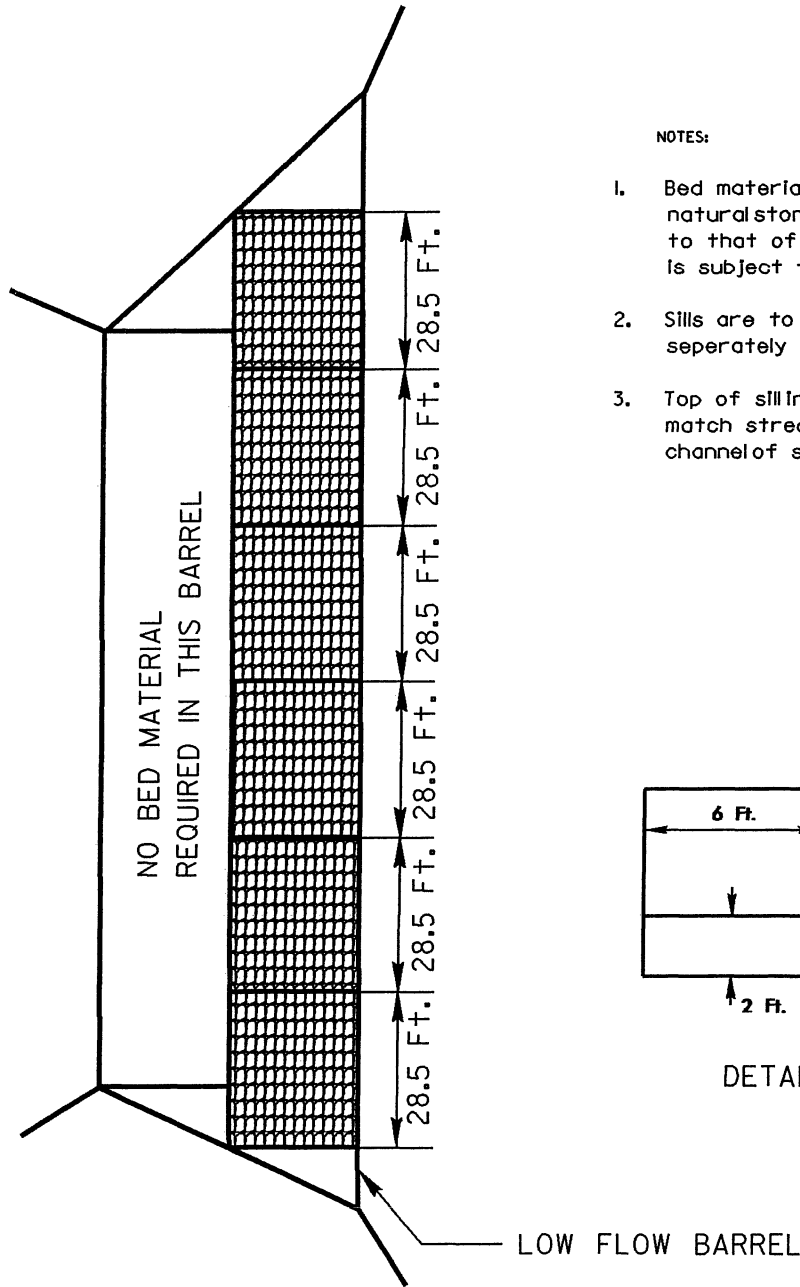
FROM US 276 (RUSS AVENUE) TO

US 23 BUSINESS (ASHEVILLE HWY)

SHEET

OF

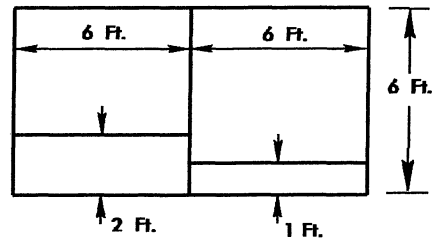
12/01/10



DETAIL OF LOW FLOW  
BAFFLES AND SILLS  
-L- STA. 14 +25  
2 @ 6 Ft. X 6 Ft. RCBC  
UT TO RICHLAND CREEK  
(not to scale)

NOTES:

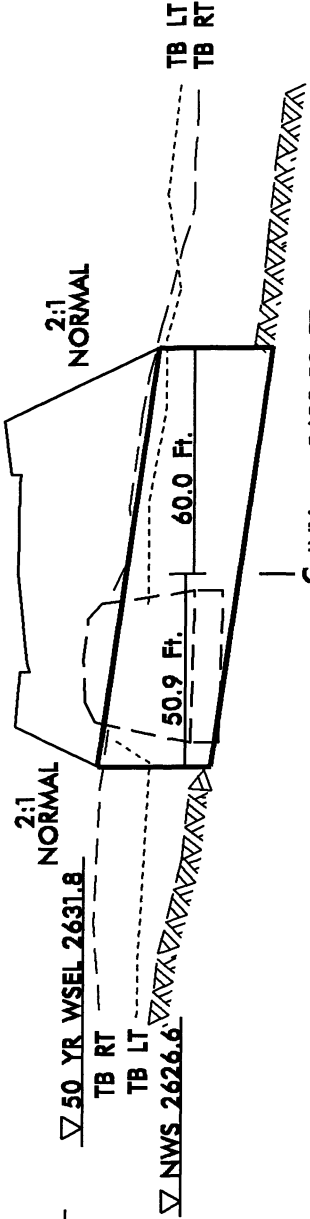
1. Bed material placed in the culvert shall be natural stone with a gradation size similar to that of Class 'B' riprap. Bed material is subject to approval by the Engineer.
2. Sills are to be 1.0 Ft. wide and cast separately and attached by dowels.
3. Top of sill in low flow barrel should match stream bed elevation in low flow channel of stream.



DETAIL OF SILLS AT INLET  
AND OUTLET  
(not to scale)

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**HAYWOOD COUNTY**  
**PROJECT: 35022.1.1 (U-4412)**  
**SR 1184 (HOWELL MILL ROAD)**  
**FROM US 276 (RUSS AVENUE) TO**  
**US 23 BUSINESS (ASHEVILLE HIGHWAY)**  
**SHEET OF 3/3/11**

6 FT. X 6 FT. RCBC  
 -L- STA. 24+21.5  
 GRADE PT. ELEV. 2635.31  
 SKEW 123°



INVERT = 2623.59 FT.  
 SLOPE = 0.029 FT./FT.

NOTE: INVERTS BURIED ONE FOOT  
 WITH A ONE FOOT SILL AT THE INLET  
 AND THE OUTLET

▽ 100 YR WSEL 2632.7

▽ 50 YR WSEL 2631.8

TB RT  
 TB LT

▽ NWS 2626.6

2630

2620

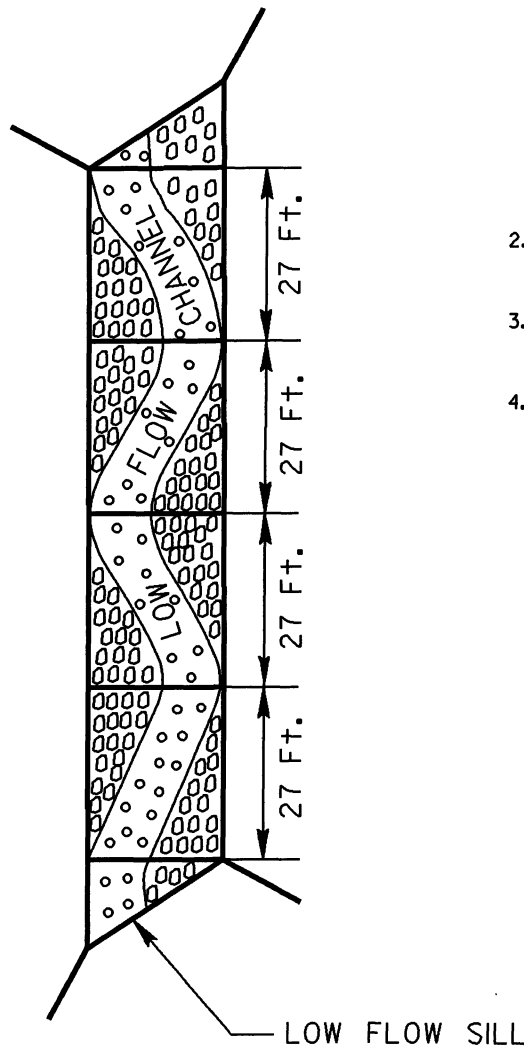


PROFILE

# SITE II

**NCDOT**  
 DIVISION OF HIGHWAYS  
 HAYWOOD COUNTY  
 PROJECT: 35022.1.1 (U-412)  
 SR 1184 (HOWELL MILL ROAD)  
 FROM US 276 (RUSS AVENUE) TO  
 US 23 BUSINESS (ASHEVILLE HWY)

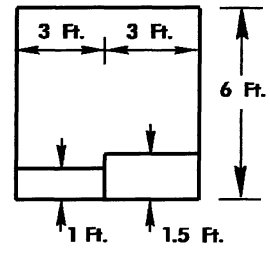
SHEET OF 12/01/10



DETAIL OF LOW FLOW CHANNEL AND SILLS  
 -L- STA. 24 +21.5  
 1 @ 6 Ft. X 6 Ft. RCBC  
 UT TO RICHLAND CREEK  
 (not to scale)

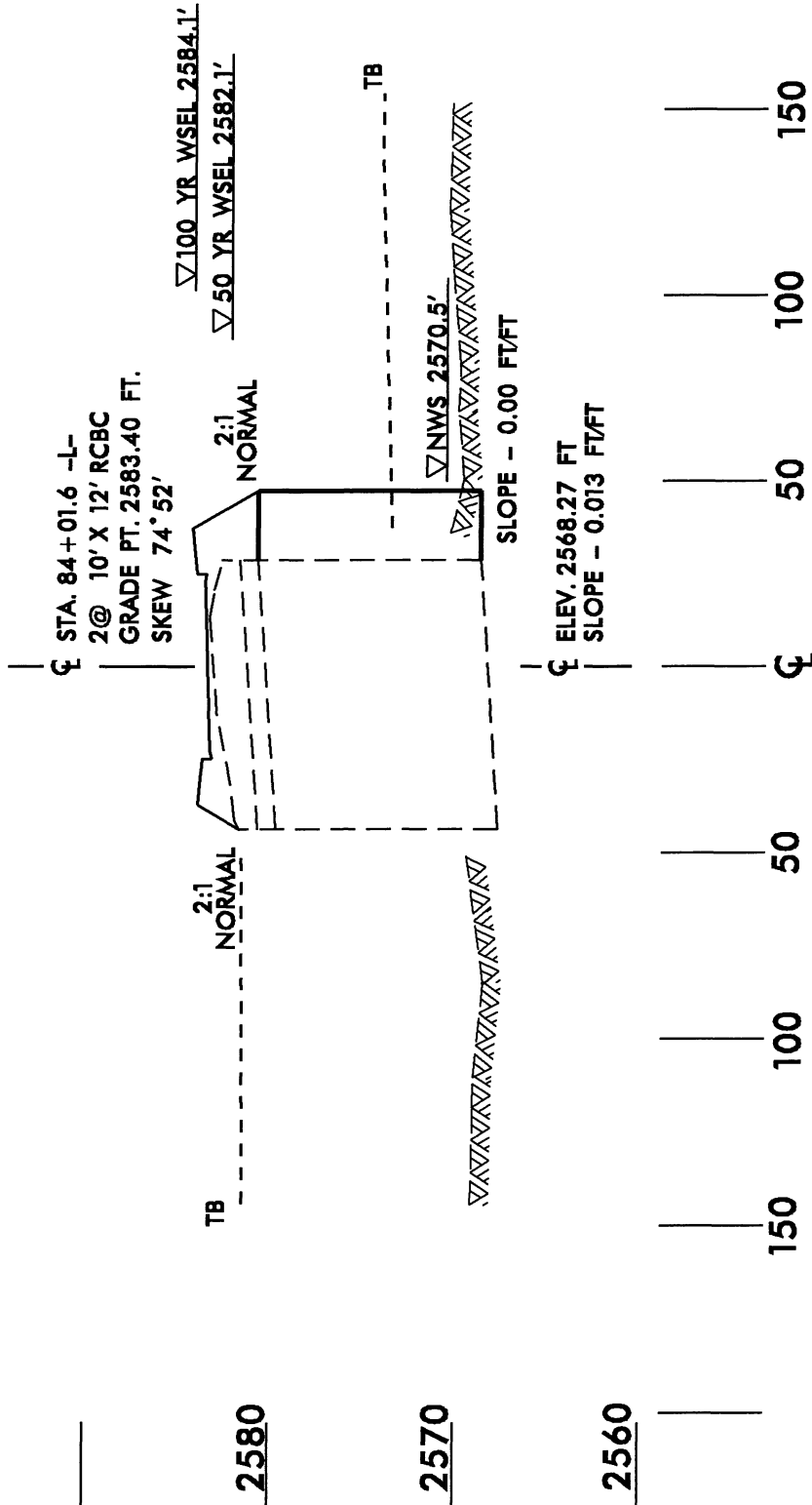
NOTES:

1. Bed material placed between sills in the culvert shall provide a continuous low flow channel between the lower sills. The material shall be natural stone with a gradation size similar to that of Class B riprap. Stones larger than 6 inches shall not be placed within the low flow channel. Bed material is subject to approval by the Engineer.
2. Sills are to be 1.0 Ft. wide and cast separately and attached by dowels.
3. The 1 Ft. high and 1 Ft. 6 Inch high sills are to be separate units.
4. Top of low sill should match stream bed elevation in low flow channel of stream.



DETAIL OF SILLS AT INLET AND OUTLET  
 (not to scale)

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**HAYWOOD COUNTY**  
**PROJECT: 35022.1.1 (U-4412)**  
**SR 1184 (HOWELL MILL ROAD)**  
**FROM US 276 (RUSS AVENUE) TO**  
**US 23 BUSINESS (ASHEVILLE HIGHWAY)**  
**SHEET OF 2/18/11**



PROFILE

# SITE III

**NCDOT**  
 DIVISION OF HIGHWAYS  
 HAYWOOD COUNTY  
 PROJECT: 35022.1.1 (U-412)  
 SR 1184 (HOWELL MILL ROAD)  
 FROM US 276 (RUSS AVENUE) TO  
 US 25 BUSINESS (ASHEVILLE HWY)

SHEET OF 12/01/10

**PROPERTY OWNERS**  
**NAMES AND ADDRESSES**

<b>PARCEL NO.</b>	<b>NAMES</b>	<b>ADDRESSES</b>
4	Hendrik Ritsema	512 Bayshore Rd. Osprey, FL 34229
5	Ingles Markets Inc.	P.O. Box 98309 Atlanta, GA 30359
6	W. R. Boyd Investments	44 Academy Street Waynesville, NC 28786
7,8	Timothy Shook	P.O. Box 600 Clyde, NC 28721
10	David Caudle	34 Glen Cove Drive Arden, NC 28704
44	Jeffrey Norris	177 North Main Street Waynesville, NC 28786

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**HAYWOOD COUNTY**  
**PROJECT: 35022.11 (U-4412)**  
**SR 1184 (HOWELL MILL ROAD)**  
**FROM US 276 (RUSS AVENUE) TO**  
**US 23 BUSINESS (ASHEVILLE HWY)**

SHEET                      OF                      12 / 01 / 10

09/08/99

See Sheet 1A For Index of Sheets  
 See Sheet 1B For Symbology Sheet  
 See Sheets 1C thru 1D For Control Sheets

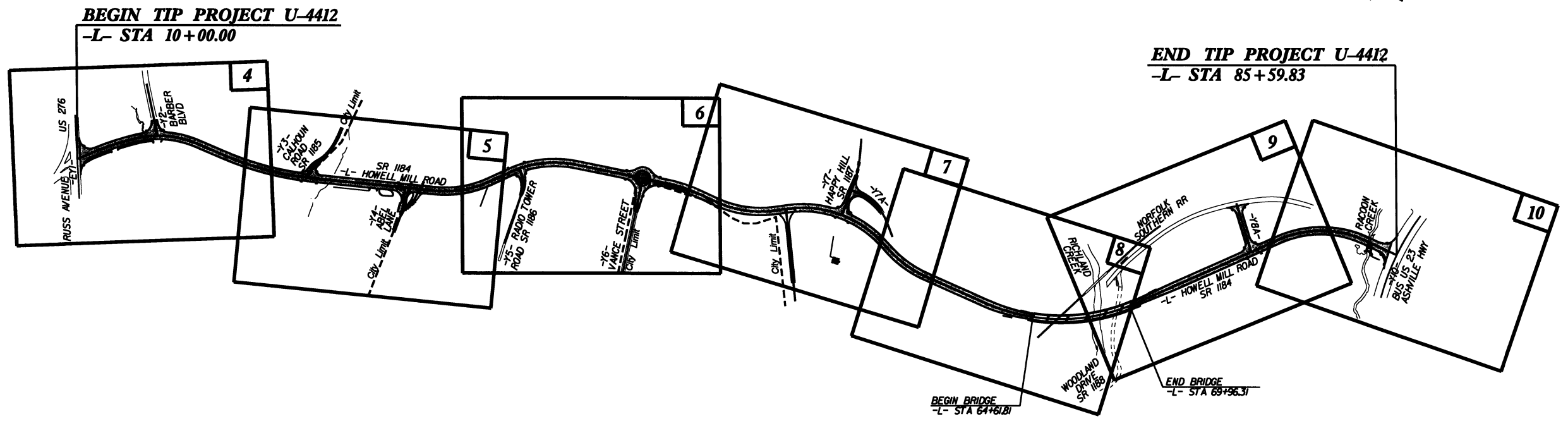
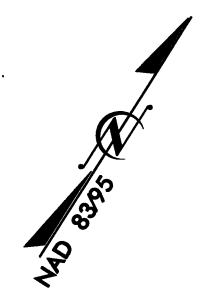
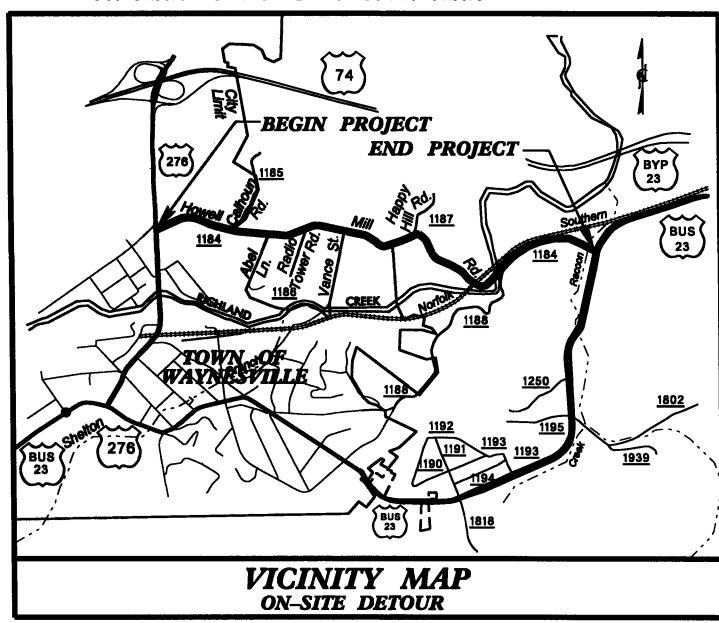
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4412	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35022.1.1	STP-1184(1)	P.E.	
35022.2.1	STP-1184(1)	RW	

**HAYWOOD COUNTY**

**LOCATION:** WAYNESVILLE - SR 1184 (HOWELL MILL ROAD)  
 FROM US 276 (RUSS AVENUE) TO  
 US 23 BUSINESS (ASHEVILLE HWY)  
**TYPE OF WORK:** GRADING, DRAINAGE, PAVING,  
 CULVERT AND STRUCTURE

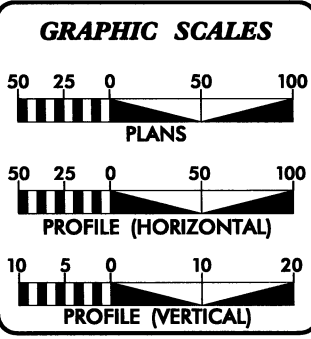
**TIP PROJECT: U-4412**



- NOTE:**
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
  2. A PORTION OF THE PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF WAYNESVILLE.

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**CONTRACT:**



**DESIGN DATA**

ADT 2012 =	6334
ADT 2032 =	9297
DHV =	10 %
D =	55 %
T =	5 % *
V =	40 MPH
FUNC. CLASS. =	URBAN
COLLECTOR	
* TTST 2%	DUAL 3%

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT U-4412	=	1.331 MI
LENGTH OF STRUCTURE TIP PROJECT U-4412	=	0.101 MI
TOTAL LENGTH OF TIP PROJECT U-4412	=	1.432 MI

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

2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
OCTOBER 13, 2010

**LETTING DATE:**  
OCTOBER 16, 2012

**GARY LOVERING, PE**  
PROJECT ENGINEER

**ANTHONY C. WEST**  
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

25-JAN-2012 12:05  
 R:\ROG\GWA\PROJ\U4412\_rdy\_tsh.dgn  
 \$\$\$USERNAME\$\$\$



04/16/11

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	⊙
Property Corner	⊠
Property Monument	⊠
Parcel/Sequence Number	①②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	-w-w-w-
Proposed Wetland Boundary	-w-w-w-
Existing Endangered Animal Boundary	-u-u-u-
Existing Endangered Plant Boundary	-p-p-p-
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ☠

## 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	⊙
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 RW Marker	_____
Proposed Control of Access Line with Concrete CA Marker	_____
Existing Control of Access	_____
Proposed Control of Access	_____
Existing Easement Line	_____
Proposed Temporary Construction Easement	_____
Proposed Temporary Drainage Easement	_____
Proposed Permanent Drainage Easement	_____
Proposed Permanent Drainage / Utility Easement	_____
Proposed Permanent Utility Easement	_____
Proposed Temporary Utility Easement	_____
Proposed Aerial Utility Easement	_____
Proposed Permanent Easement with Iron Pin and Cap Marker	_____

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	_____
Proposed Slope Stakes Fill	_____
Proposed Curb Ramp	_____
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	_____

## EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____
Bridge Wing Wall, Head Wall and End Wall	_____
MINOR:	
Head and End Wall	_____
Pipe Culvert	_____
Footbridge	_____
Drainage Box: Catch Basin, DI or JB	_____
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	_____
Designated UG Telephone Conduit (S.U.E.*)	_____
Recorded UG Fiber Optics Cable	_____
Designated UG Fiber Optics Cable (S.U.E.*)	_____

## WATER:

Water Manhole	_____
Water Meter	_____
Water Valve	_____
Water Hydrant	_____
Recorded UG Water Line	_____
Designated UG Water Line (S.U.E.*)	_____
Above Ground Water Line	_____

## TV:

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

## GAS:

Gas Valve	_____
Gas Meter	_____
Recorded UG Gas Line	_____
Designated UG Gas Line (S.U.E.*)	_____
Above Ground Gas Line	_____

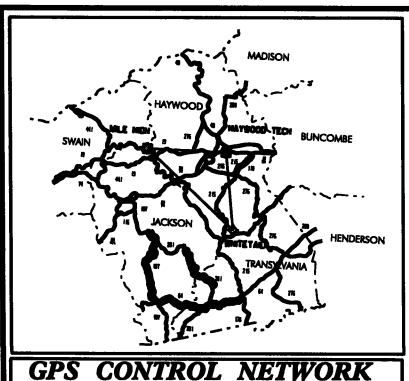
## SANITARY SEWER:

Sanitary Sewer Manhole	_____
Sanitary Sewer Cleanout	_____
UG Sanitary Sewer Line	_____
Above Ground Sanitary Sewer	_____
Recorded SS Forced Main Line	_____
Designated SS Forced Main Line (S.U.E.*)	_____

## MISCELLANEOUS:

Utility Pole	_____
Utility Pole with Base	_____
Utility Located Object	_____
Utility Traffic Signal Box	_____
Utility Unknown UG Line	_____
UG Tank; Water, Gas, Oil	_____
Underground Storage Tank, Approx. Loc.	_____
AG Tank; Water, Gas, Oil	_____
Geoenvironmental Boring	_____
UG Test Hole (S.U.E.*)	_____
Abandoned According to Utility Records	_____
End of Information	_____

6/2/99

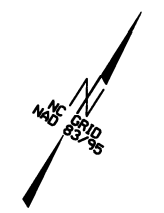


GPS CONTROL NETWORK

# SURVEY CONTROL SHEET U-4412

PROJECT REFERENCE NO.	SHEET NO.
35022.1.1	1C
Location and Surveys	

<p>.....</p> <p>BM1 ELEVATION = 2642.85 N 661322 E 813253 Y01 STATION 15+16 29 RIGHT CHISLED SQUARE IN BASE OF TRANSFORMER BOX.</p> <p>.....</p> <p>BM2 ELEVATION = 2638.66 N 661983 E 814471 L STATION 24+72 17 RIGHT CHISLED SQUARE IN NW CORNER OF CONC SLAB.</p> <p>.....</p> <p>BM3 ELEVATION = 2637.98 N 662941 E 816018 L STATION 43+28 18 RIGHT CHISLED SQUARE IN EAST WINGWALL OF 36 INCH CMP</p>	<p>.....</p> <p>BM4 ELEVATION = 2598.78 N 663593 E 818269 L STATION 67+74 32 LEFT CHISLED SQUARE ON WINGWALL OF SW CORNER OF BRIDGE</p> <p>.....</p> <p>BM5 ELEVATION = 2582.54 N 664782 E 819362 L STATION 83+98 28 RIGHT CHISLED SQUARE IN HEAVHALL</p> <p>.....</p> <p>BM6 ELEVATION = 2587.25 N 665589 E 819568 Y10 STATION 34+98 82 LEFT DISC L-38 SET HEADWALL BEHIND HAYWOOD OIL</p>
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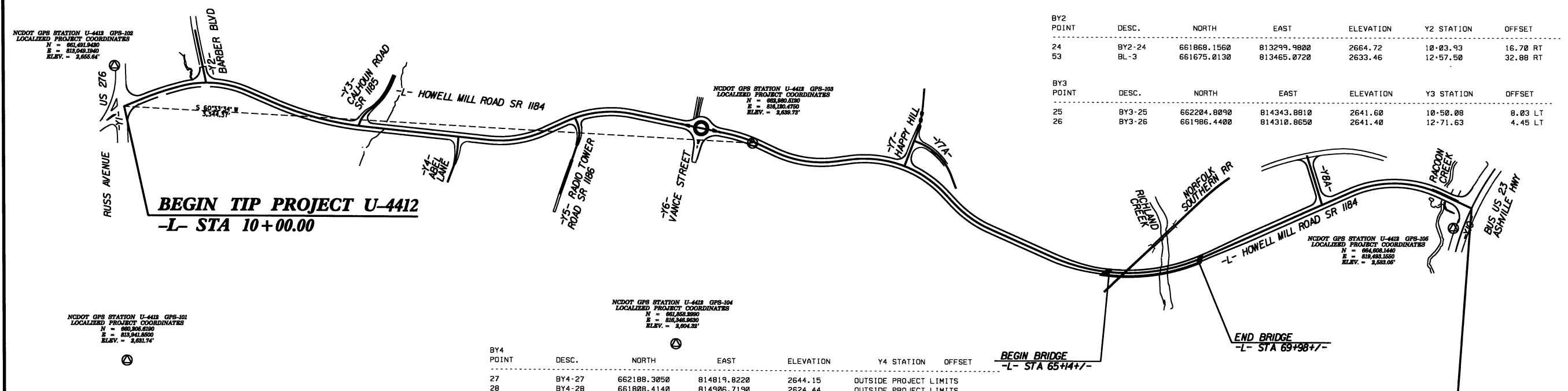


BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	660750.9990	813057.9830	2641.36	OUTSIDE PROJECT LIMITS	
2	BL-2	661397.8850	813200.5030	2645.85	10+45.76	41.31 LT
3	BL-3	661675.0130	813465.0720	2633.46	14+20.98	22.46 LT
4	BL-4	661868.5440	814154.0030	2645.43	21+36.12	11.07 LT
5	BL-5	662084.7660	814624.0460	2637.72	26+54.28	4.85 LT
6	BL-6	662297.0870	815019.6470	2653.30	31+04.95	6.81 LT
7	BL-7	662733.7160	815352.2430	2637.70	36+47.85	42.63 LT
8	BL-8	662877.2560	815820.4880	2648.89	41+27.40	10.45 RT
9	BL-9	663024.1880	816469.1450	2649.57	47+84.89	51.57 RT
10	BL-10	663494.7650	816846.1510	2636.28	52+09.19	181.34 LT
11	BL-11	663434.7830	817086.4920	2641.51	54+75.43	117.93 LT
12	BL-12	663288.1880	817277.8450	2642.49	56+93.90	15.85 LT
13	BL-13	663332.7680	817762.7800	2638.66	61+05.49	6.84 LT
14	BL-14	663296.8820	818135.2500	2681.05	65+10.40	140.05 RT
15	BL-15	663583.2110	818266.9440	2598.02	67+65.55	25.63 LT
16	BL-16	663925.3570	818284.3600	2688.82	70+69.57	234.64 LT
17	BL-17	664371.7380	818473.4600	2683.82	75+45.86	325.02 LT
18	BL-18	664653.0220	818754.6890	2595.61	79+21.13	248.68 LT
19	BL-19	664809.9430	819443.1710	2581.79	84+93.14	69.62 LT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
21	BY1-21	661722.6860	812967.2450	2667.79	20+07.84	21.34 RT
52	BL-2	661397.8850	813200.5030	2645.85	16+08.03	28.63 RT
22	BY1-22	660925.9740	813524.3090	2626.65	10+35.71	26.80 RT

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
24	BY2-24	661868.1560	813299.9800	2664.72	10+03.93	16.70 RT
53	BL-3	661675.0130	813465.0720	2633.46	12+57.50	32.88 RT

BY3 POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
25	BY3-25	662204.8090	814343.8810	2641.60	10+50.08	8.03 LT
26	BY3-26	661986.4400	814310.8650	2641.40	12+71.63	4.45 LT



NCDOT GPS STATION U-4412 GPS-102  
LOCALIZED PROJECT COORDINATES  
N = 861,491.9480  
E = 813,043.1940  
ELEV. = 3,666.64'

NCDOT GPS STATION U-4412 GPS-103  
LOCALIZED PROJECT COORDINATES  
N = 862,980.8380  
E = 813,120.4750  
ELEV. = 3,688.73'

NCDOT GPS STATION U-4412 GPS-104  
LOCALIZED PROJECT COORDINATES  
N = 864,808.1640  
E = 813,403.1660  
ELEV. = 3,688.66'

NCDOT GPS STATION U-4412 GPS-101  
LOCALIZED PROJECT COORDINATES  
N = 860,306.6190  
E = 813,941.8020  
ELEV. = 3,631.74'

NCDOT GPS STATION U-4412 GPS-104  
LOCALIZED PROJECT COORDINATES  
N = 864,808.1640  
E = 813,403.1660  
ELEV. = 3,688.66'

BY4 POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
27	BY4-27	662188.3050	814819.8220	2644.15	OUTSIDE PROJECT LIMITS	
28	BY4-28	661888.4140	814906.7190	2624.44	OUTSIDE PROJECT LIMITS	
29	BY4-29	661462.8910	814947.0810	2617.59	OUTSIDE PROJECT LIMITS	

BY5 POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
30	BY5-30	662679.5660	815287.9690	2637.25	OUTSIDE PROJECT LIMITS	
31	BY5-31	662131.1680	815415.1950	2615.58	OUTSIDE PROJECT LIMITS	

BY6 POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
32	BY6-32	662868.0920	815874.7300	2645.85	10+38.24	15.26 LT
33	BY6-33	662218.7730	816112.3400	2685.37	17+29.67	15.85 LT

BY7 POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
34	BY7-34	663726.7210	816716.0560	2661.48	OUTSIDE PROJECT LIMITS	
110	BL-10	663494.7650	816846.1510	2636.28	12+47.17	19.26 LT

BY9 POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
116	BL-16	663925.3570	818284.3600	2688.82	OUTSIDE PROJECT LIMITS	
35	BY9-35	663574.0240	818419.7970	2617.98	13+09.10	18.35 RT
38	BY9-38	663377.2090	818595.5820	2683.91	OUTSIDE PROJECT LIMITS	

BY10 POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
36	BY10-36	665066.2840	819477.5460	2582.81	30+65.41	42.27 LT
59	BL-19	664809.9430	819443.1710	2581.79	28+18.29	69.26 LT
37	BY10-37	664485.6340	819536.5340	2584.38	24+94.61	38.00 LT

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4412 "GPS-103"

WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
NORTHING: 662980.512(ft) EASTING: 816120.475(ft)  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978604

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4412 "GPS-103" TO -L- STATION 10+00.00 IS  
S 60°33'34" W 3,344.37'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

**NOTES:**

- THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS OR BIASES.
  - THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)  
THE FILES TO BE FOUND ARE AS FOLLOWS:  
U4412\_IS\_GPS\_CALIB\_081811.TXT  
U4412\_IS\_WGS84\_081811.TXT  
U4412\_IS\_LOCAL\_081811.TXT  
U4412\_IS\_CONTROL\_081811.TXT
- THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- 0 INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION  
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

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\$\$\$\$\$USERNAME\$\$\$\$\$

6/2/99  
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# SURVEY CONTROL SHEET U-4412

PROJECT REFERENCE NO.	SHEET NO.
35022.1.1	1D
Location and Surveys	

## GPS Calibration Report

Project : U4412Calibrate081209

TIP Number U-4412  
 User name rmcDonald Date & Time 10:36:39 AM  
 12/9/2008  
 Coordinate System US State Plane Zone North Carolina  
 1983(at ground) 3200  
 Horizontal Datum NAD 1983 (Conus)  
 Vertical Datum NAVD88 Geoid Model Geoid99 (Conus) NC  
 Sub Grid  
 Coordinate Units US survey feet  
 Distance Units US survey feet  
 Height Units US survey feet

LOCAL SITE INFORMATION  
 Localized around GPS103  
 Latitude 35°30'23.22434"N  
 Longitude 82°58'44.51517"W  
 Site Scale Factor 1.0002140060  
 Height 2545.023sft

The North Carolina Department of Transportation uses a Localized  
 Coordinate System which is very similar to North Carolina Zone 3200  
 from which it is derived. Please take care in utilizing these  
 coordinates to eliminate confusion of the two systems. This file  
 is to aid in the use of Real Time Kinematic (RTK) GPS during  
 construction layout.

Datum Transformation Parameters  
 Datum Transformation computation not requested

Updated Default Projection (Transverse Mercator) Definition  
 Updated default projection not requested

Horizontal Adjustment Parameters  
 Northing coordinate of rotation center 656738.678sft  
 Easting coordinate of rotation center 814549.370sft  
 Rotation about the center point 0°00'00"  
 Translation north 0.004sft  
 Translation east -0.004sft  
 Scale factor 1.00000012

Vertical Adjustment Parameters  
 Northing coordinate of origin point 660205.617sft  
 Easting coordinate of origin point 813941.851sft  
 Vertical separation at origin -0.472sft  
 Slope north -11.230ppm  
 Slope east -5.716ppm

Geoid Model Definition  
 Geoid99 (Conus) NC Sub Grid

### Residual Differences Between GPS (WGS84) And Local Coordinates

Summary			
	Maximum error	Root Mean Square error	Point
Horizontal	0.002sft	0.001	GPS105_WGS84
Vertical	0.693sft	0.089	HAYWOOD TECH_WGS
Three-dimensional	0.693sft	0.089	HAYWOOD TECH_WGS

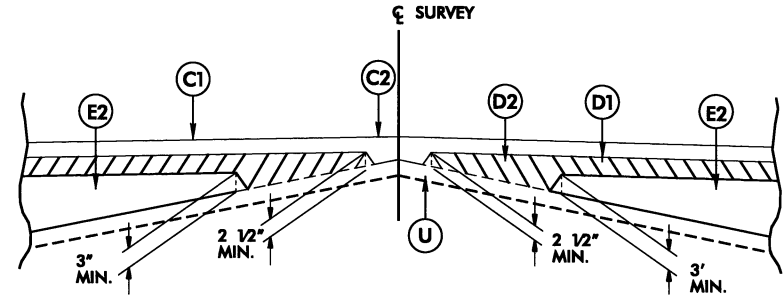
Point Residuals					
WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	GPS101_WGS84	Northing	660205.617sft	Point	GPS101_Local
Latitude	35°29'54.94151"N	Easting	813941.851sft	Northing	660205.619sft
Longitude	82°59'09.49464"W	Elevation	2632.009sft	Easting	813941.850sft
Height	2537.892sft	Horz error	0.002sft	Elevation	2631.744sft
		Vert error	0.265sft	Utilized	Horz and Vert
		3D error	0.265sft	Survey	Quality
Point	GPS102_WGS84	Northing	661491.943sft	Point	GPS102_Local
Latitude	35°30'07.29717"N	Easting	813049.194sft	Northing	661491.942sft
Longitude	82°59'20.90541"W	Elevation	2655.866sft	Easting	813049.194sft
Height	2561.753sft	Horz error	0.001sft	Elevation	2655.642sft
		Vert error	0.224sft	Utilized	Horz and Vert
		3D error	0.224sft	Survey	Quality
Point	GPS103_WGS84	Northing	662980.513sft	Point	GPS103_Local
Latitude	35°30'23.22431"N	Easting	816120.476sft	Northing	662980.512sft
Longitude	82°58'44.51513"W	Elevation	2639.898sft	Easting	816120.475sft
Height	2545.707sft	Horz error	0.001sft	Elevation	2639.729sft
		Vert error	0.169sft	Utilized	Horz and Vert
		3D error	0.169sft	Survey	Quality
Point	GPS104_WGS84	Northing	661858.297sft	Point	GPS104_Local
Latitude	35°30'12.22543"N	Easting	816346.963sft	Northing	661858.299sft
Longitude	82°58'41.23450"W	Elevation	2604.522sft	Easting	816346.963sft
Height	2510.339sft	Horz error	0.002sft	Elevation	2604.323sft
		Vert error	0.199sft	Utilized	Horz and Vert
		3D error	0.199sft	Survey	Quality
Point	GPS105_WGS84	Northing	664608.144sft	Point	GPS105_Local
Latitude	35°30'40.64158"N	Easting	819493.153sft	Northing	664608.144sft
Longitude	82°58'04.54579"W	Elevation	2583.133sft	Easting	819493.155sft
Height	2488.863sft	Horz error	0.002sft	Elevation	2583.050sft
		Vert error	0.083sft	Utilized	Horz and Vert
		3D error	0.083sft	Survey	Quality
Point	HAYWOOD TECH_WGS	Northing	670302.730sft	Point	HAYWOOD TECH_Loc
Latitude	35°31'42.03001"N	Easting	832519.515sft	Northing	670302.730sft
Longitude	82°55'29.84359"W	Elevation	2691.376sft	Easting	832519.515sft
Height	2596.845sft	Horz error	0.000sft	Elevation	2692.069sft
		Vert error	0.693sft	Utilized	Horz and Vert
		3D error	0.693sft	Survey	Quality
Point	MILE HIGH_WGS84	Northing	670082.620sft	Point	MILE HIGH_Local
Latitude	35°31'09.38669"N	Easting	757009.633sft	Northing	670082.618sft
Longitude	83°10'42.37198"W	Elevation	5229.740sft	Easting	757009.632sft
Height	5136.236sft	Horz error	0.002sft	Elevation	5229.993sft
		Vert error	0.253sft	Utilized	Horz and Vert
		3D error	0.120sft	Survey	Quality
Point	WHITETAIL_WGS84	Northing	595993.232sft	Point	WHITETAIL_Local
Latitude	35°19'31.59962"N	Easting	842440.022sft	Northing	595993.232sft
Longitude	82°52'54.78322"W	Elevation	5810.820sft	Easting	842440.020sft
Height	5715.874sft	Horz error	0.002sft	Elevation	5810.940sft
		Vert error	0.120sft	Utilized	Horz and Vert
		3D error	0.253sft	Survey	Quality

NOTE: DRAWING NOT TO SCALE

5/14/99

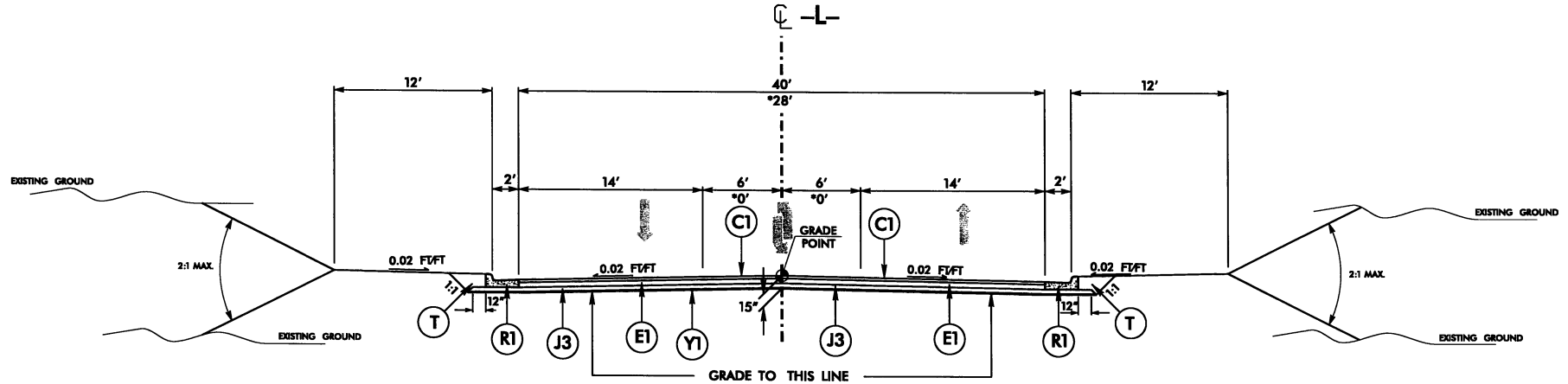
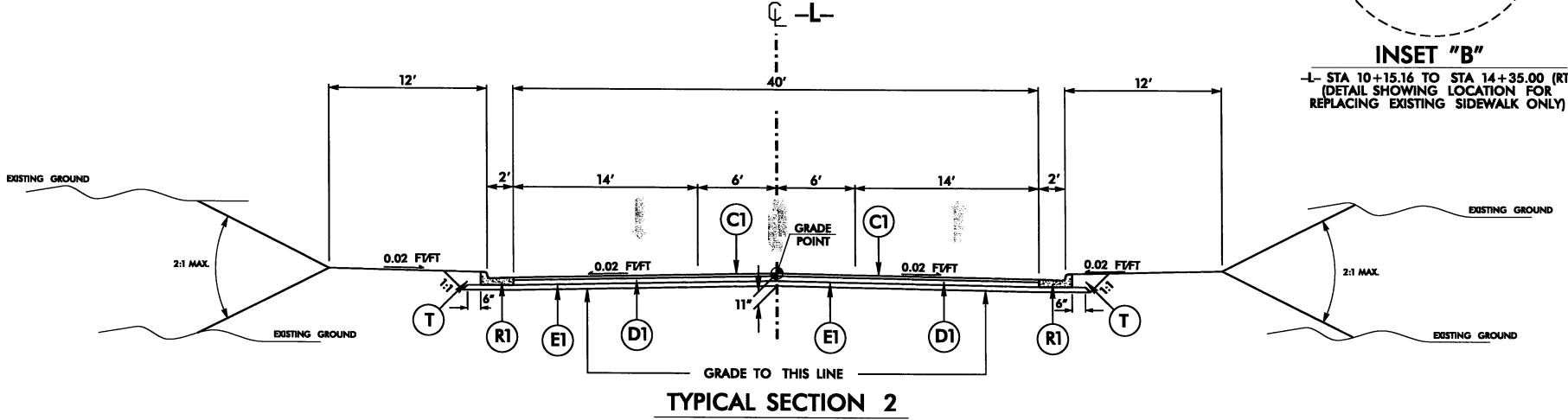
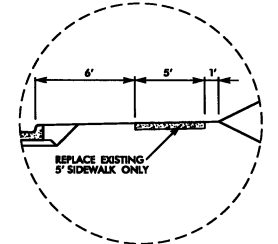
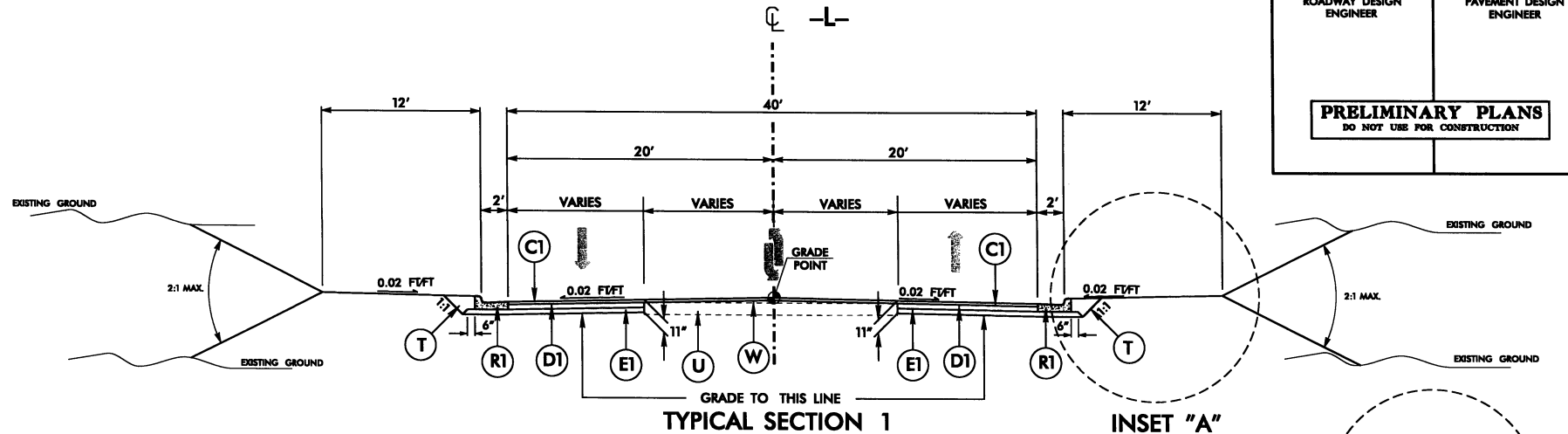
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 99.5B, TO BE PLACED IN TWO LAYERS AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE 99.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J1	8" AGGREGATE BASE COURSE.
J2	4" AGGREGATE BASE COURSE.
J3	8" CLASS IV SELECT MATERIAL
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	8"x18" CONCRETE CURB.
R3	9"x18" CONCRETE CURB.
R4	8" CONCRETE APRON.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2)
Y1	STABILIZATION FABRIC

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



Detail Showing Method of Wedging

PROJECT REFERENCE NO.	SHEET NO.
U-4412	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



NOTE: TRANSITION -L- FROM 40' TO 28'  
-L- STA 62+38.00 TO STA 64+38.00  
-L- STA 70+72.37 TO STA 72+72.37

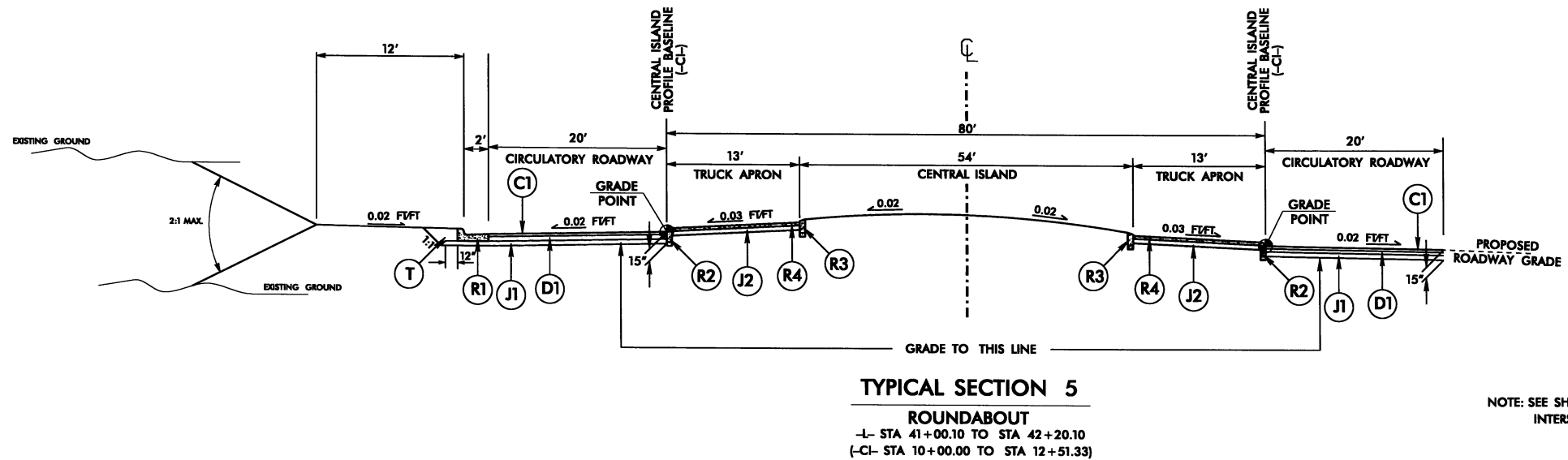
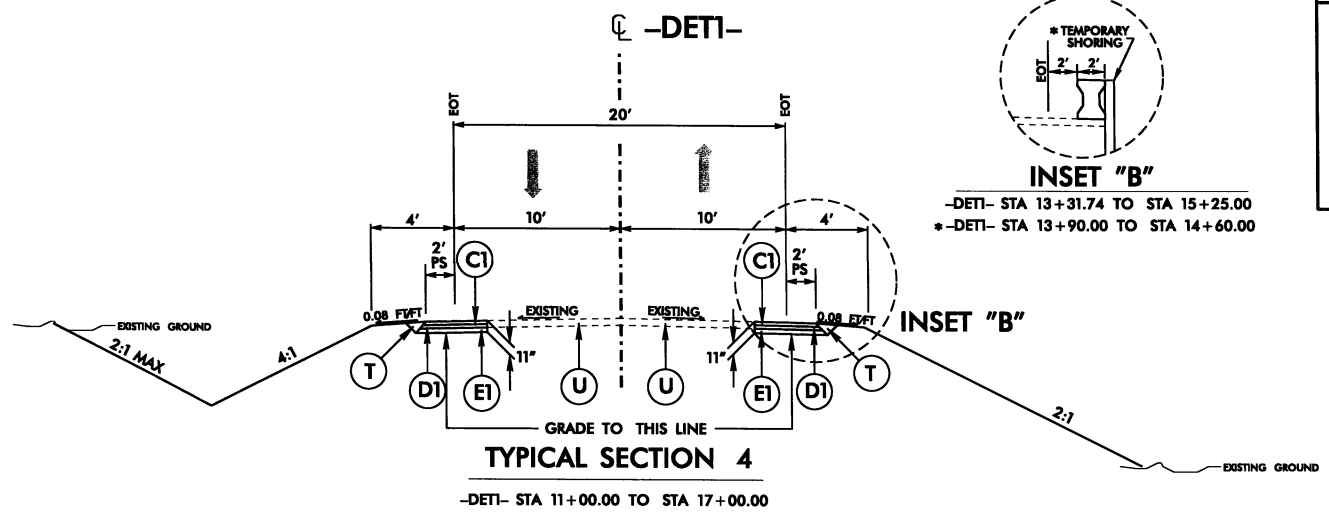
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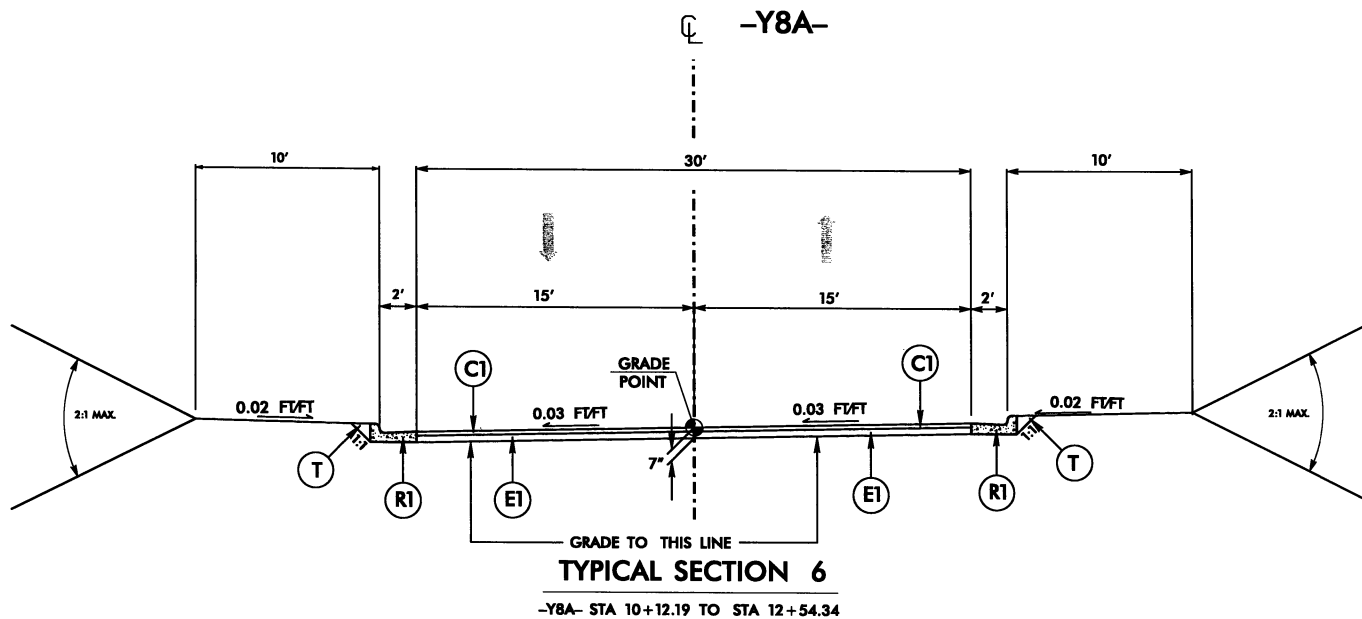
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3" ACSC, TYPE S9.5B
C2	PROP. VAR. DEPTH ACSC, TYPE S9.5B
D1	PROP. APPROX. 4" ACIC, I19.0B
D2	PROP. VAR. DEPTH ACIC, I19.0B
E1	PROP. APPROX. 4" ACBC, TYPE B25.0B
E2	PROP. VAR. DEPTH ACBC, TYPE B25.0B
J1	8" ABC
J2	4" ABC
J3	8" CLASS IV SELECT MATERIAL
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	8"x18" CONCRETE CURB.
R3	9"x18" CONCRETE CURB.
R4	8" CONCRETE APRON.
T	EARTH MATERIAL.

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

PROJECT REFERENCE NO. <b>U-4412</b>	SHEET NO. <b>2A</b>
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



NOTE: SEE SHEET 2D FOR ROUNDBOUT INTERSECTION DETAIL



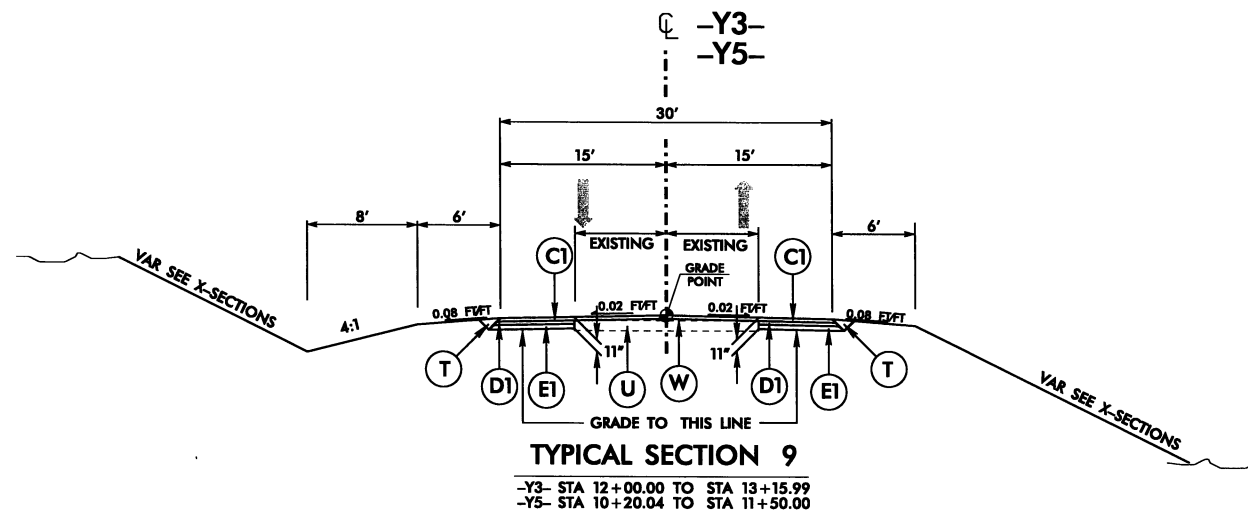
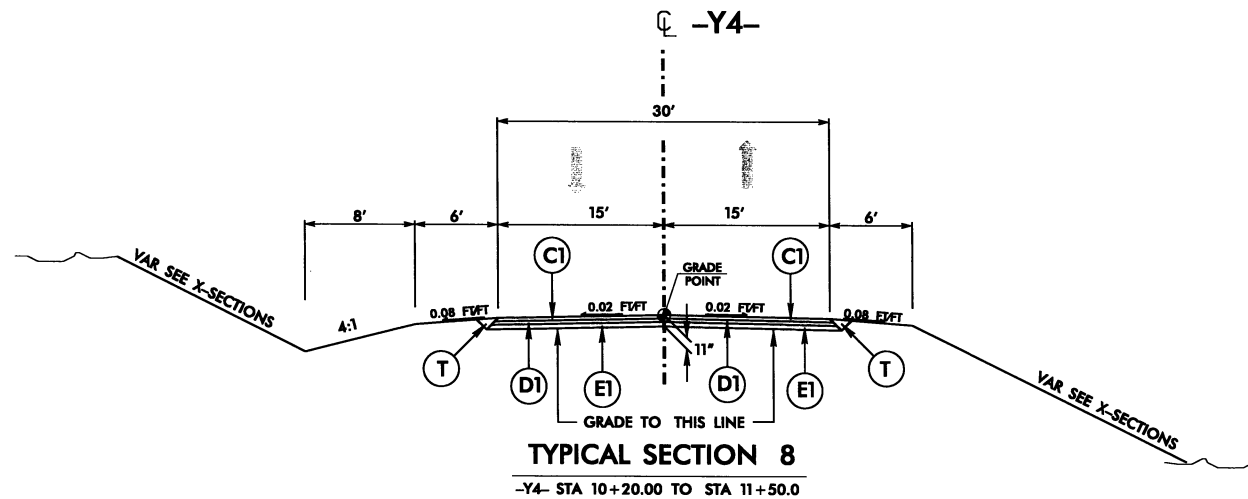
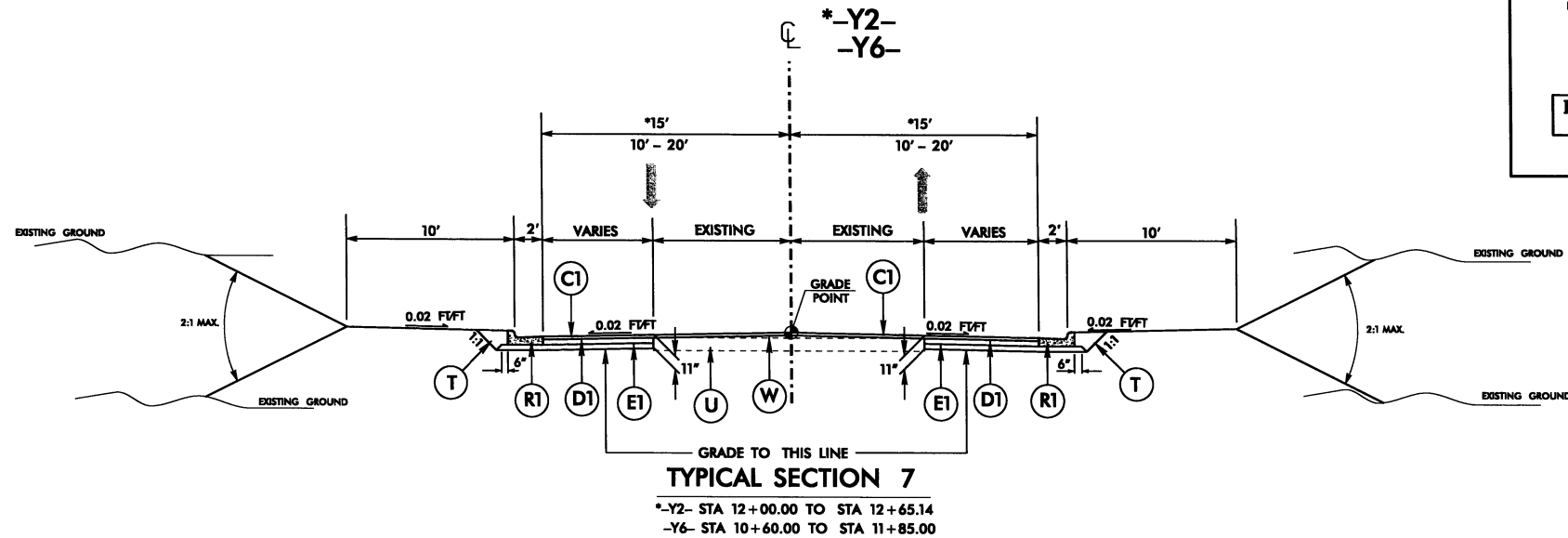
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5/14/99

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3" ACSC, TYPE S9.5B
C2	PROP. VAR. DEPTH ACSC, TYPE S9.5B
D1	PROP. APPROX. 4" ACIC, I19.0B
D2	PROP. VAR. DEPTH ACIC, I19.0B
E1	PROP. APPROX. 4" ACBC, TYPE B25.0B
E2	PROP. VAR. DEPTH ACBC, TYPE B25.0B
J1	8" ABC
J2	4" ABC
J3	8" CLASS IV SELECT MATERIAL
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	8"x18" CONCRETE CURB.
R3	9"x18" CONCRETE CURB.
R4	8" CONCRETE APRON.
T	EARTH MATERIAL.

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

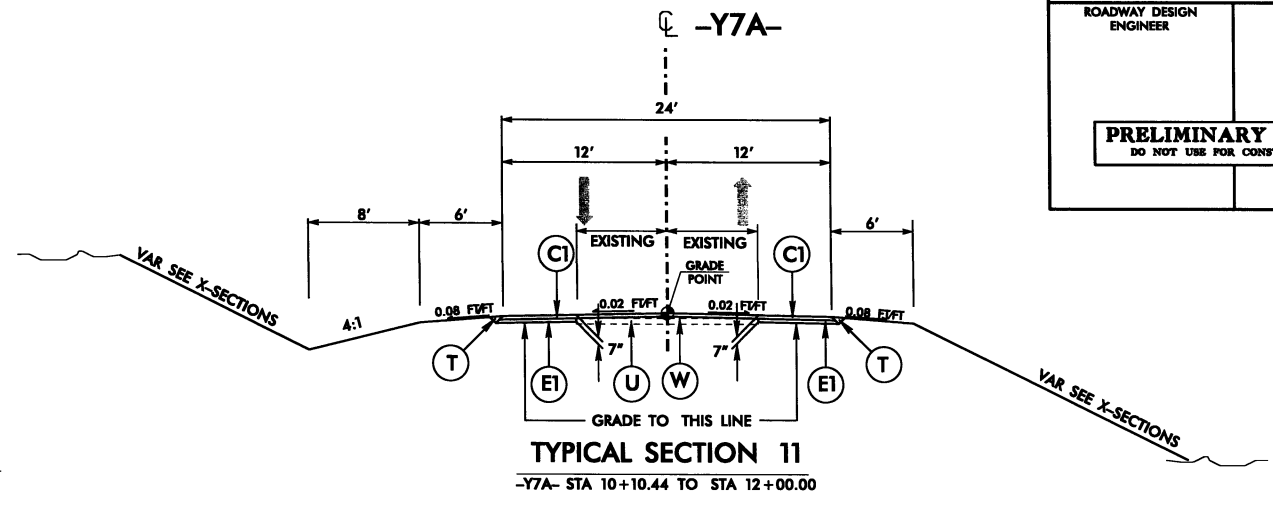
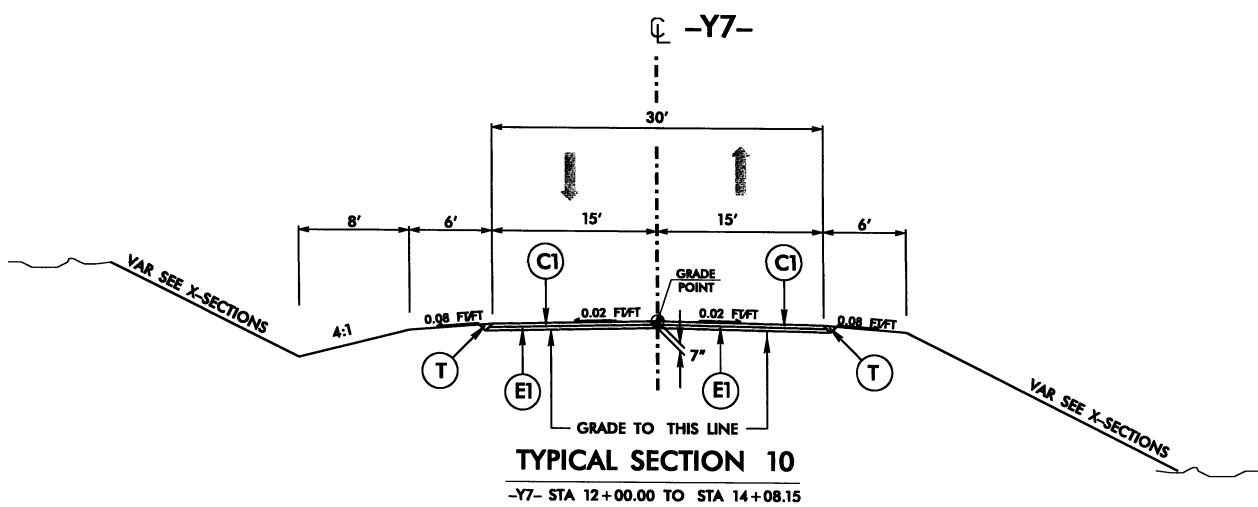
PROJECT REFERENCE NO. <b>U-4412</b>	SHEET NO. <b>2B</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



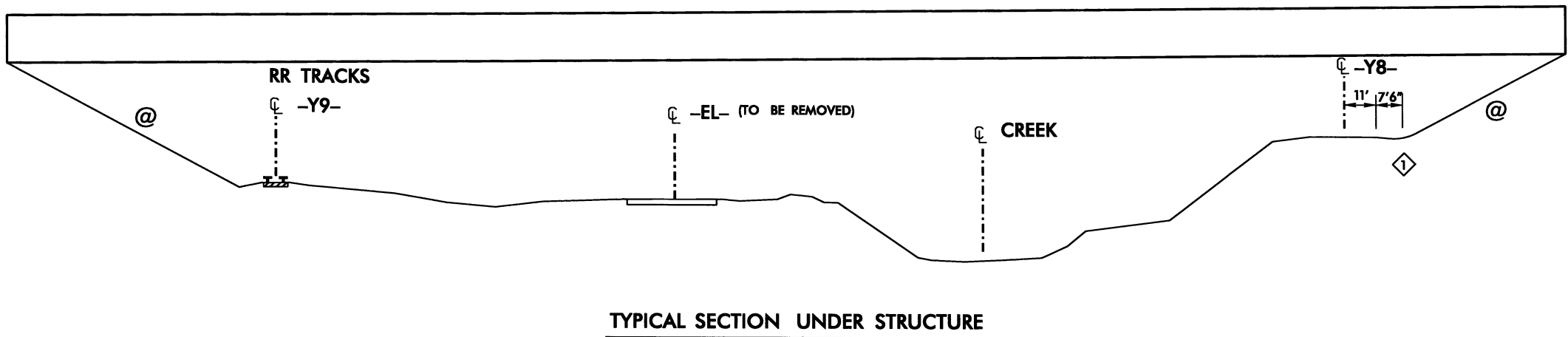
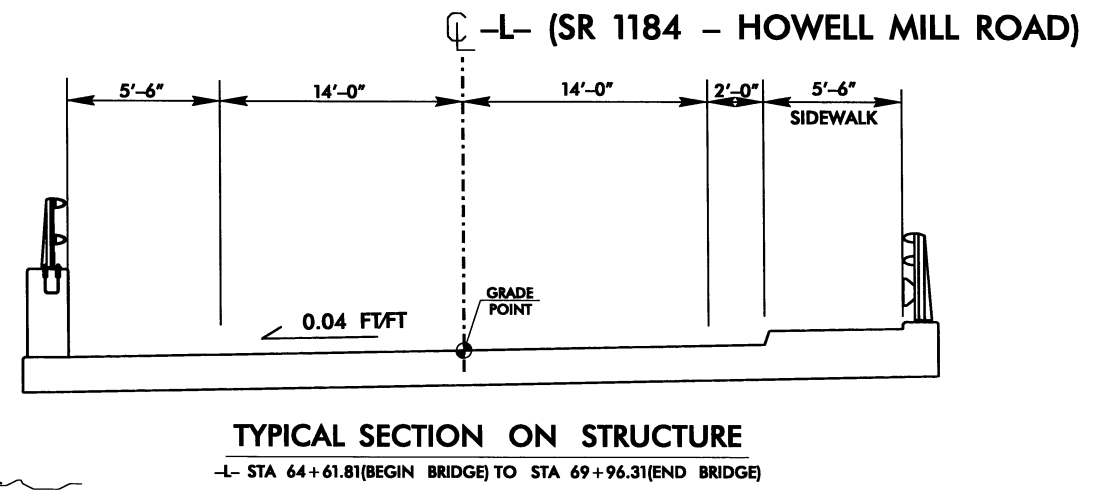
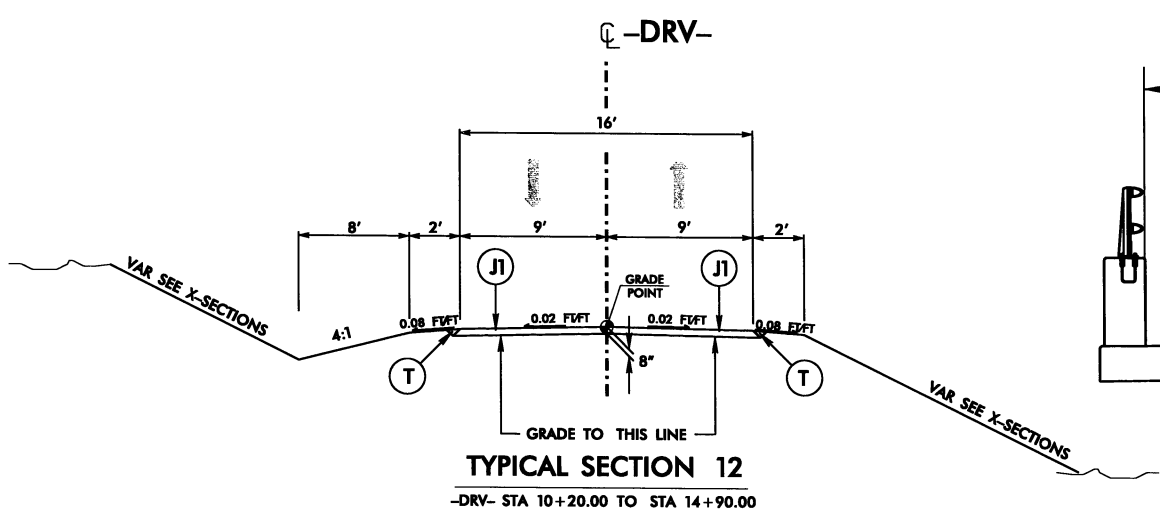
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PROJECT REFERENCE NO. <b>U-4412</b>	SHEET NO. <b>2C</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3" ACSC, TYPE S9.5B
C2	PROP. VAR. DEPTH ACSC, TYPE S9.5B
D1	PROP. APPROX. 4" ACIC, I19.0B
D2	PROP. VAR. DEPTH ACIC, I19.0B
E1	PROP. APPROX. 4" ACBC, TYPE B25.0B
E2	PROP. VAR. DEPTH ACBC, TYPE B25.0B
J1	8" ABC
J2	4" ABC
J3	8" CLASS IV SELECT MATERIAL
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	8"x18" CONCRETE CURB.
R3	9"x18" CONCRETE CURB.
R4	8" CONCRETE APRON.
T	EARTH MATERIAL.



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

MINIMUM VERTICAL CLEARANCE OVER RR TRACKS = 23'6"  
MINIMUM VERTICAL CLEARANCE OVER ROAD (-Y8-) = 15'6"

@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT

◇ SEE STANDARD DETAIL 610.03

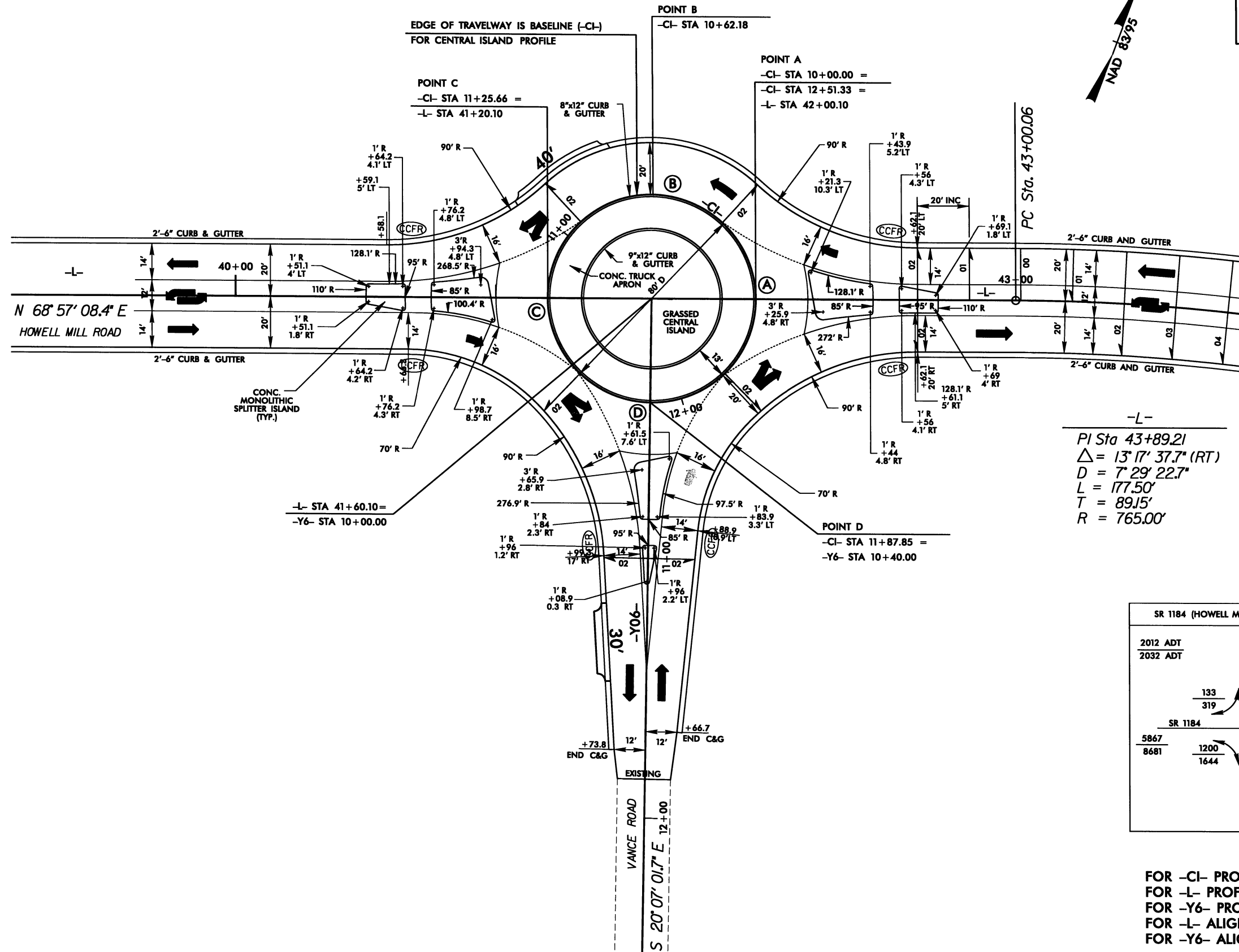
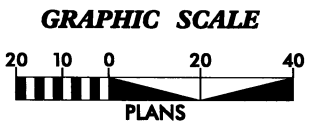
REVISIONS: 1/20/2011 Added -DRV- Typical  
DESIGN REVISION: 4/25/2011 Revised Bridge Width

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# INTERSECTION DETAIL -Y6- AND ROUNDABOUT

PROJECT REFERENCE NO. <b>U-4412</b>	SHEET NO. <b>2D</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



-L-  
 PI Sta 43+89.21  
 $\Delta = 13' 17' 37.7''$  (RT)  
 $D = 7' 29' 22.7''$   
 $L = 177.50'$   
 $T = 89.15'$   
 $R = 765.00'$

SR 1184 (HOWELL MILL ROAD) AT VANCE STREET			
2012 ADT		167	
2032 ADT		426	
	133 319	67 104	
	SR 1184	BLACK GUM DR	SR 1184
5867 8681	1200 1644	733 1030	5333 7852
		VANCE STREET	
		1933 2674	

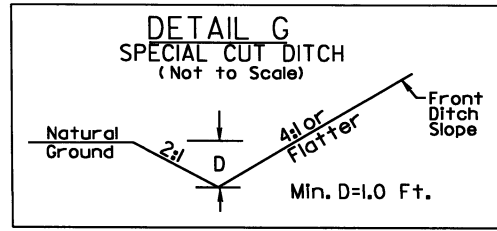
FOR -CI- PROFILE, SEE SHEET 15  
 FOR -L- PROFILE, SEE SHEET 12  
 FOR -Y6- PROFILE, SEE SHEET 16  
 FOR -L- ALIGNMENT, SEE SHEET 6  
 FOR -Y6- ALIGNMENT, SEE SHEET 6

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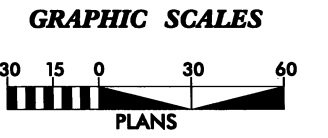


# DETAIL OF CULVERT CONSTRUCTION DETOUR STAGE I

PROJECT REFERENCE NO. <b>U-4412</b>	SHEET NO. <b>2E</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	



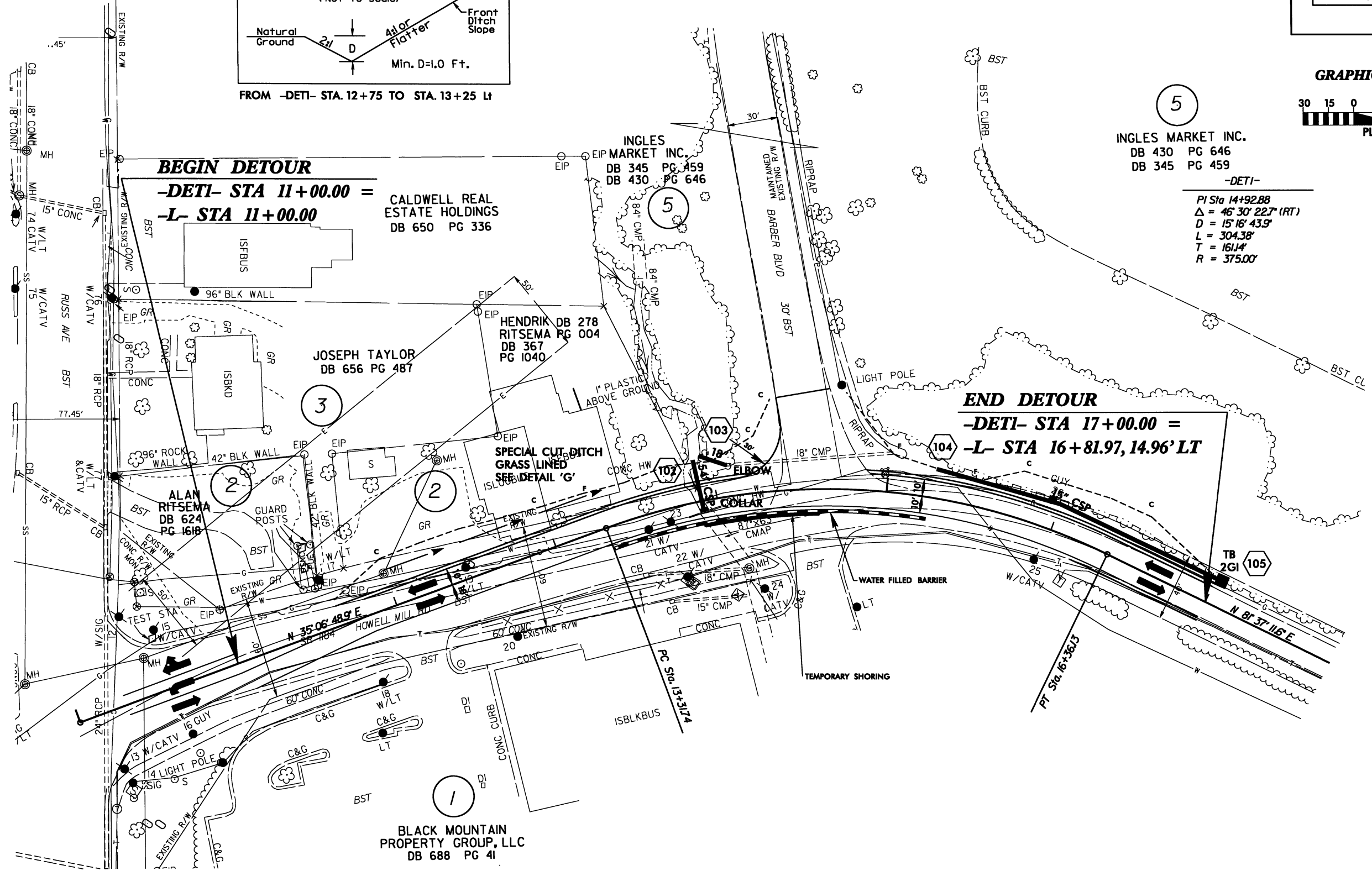
FROM -DETI- STA. 12+75 TO STA. 13+25 LT



5

INGLES MARKET INC.  
DB 430 PG 646  
DB 345 PG 459

-DETI-  
PI Sta 14+92.88  
Δ = 46° 30' 22.7" (RT)  
D = 15' 16" 43.9"  
L = 304.38'  
T = 161.14'  
R = 375.00'



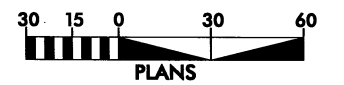
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# DETAIL OF CULVERT CONSTRUCTION DETOUR STAGE II

PROJECT REFERENCE NO. <b>U-4412</b>	SHEET NO. <b>2F</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

### GRAPHIC SCALES

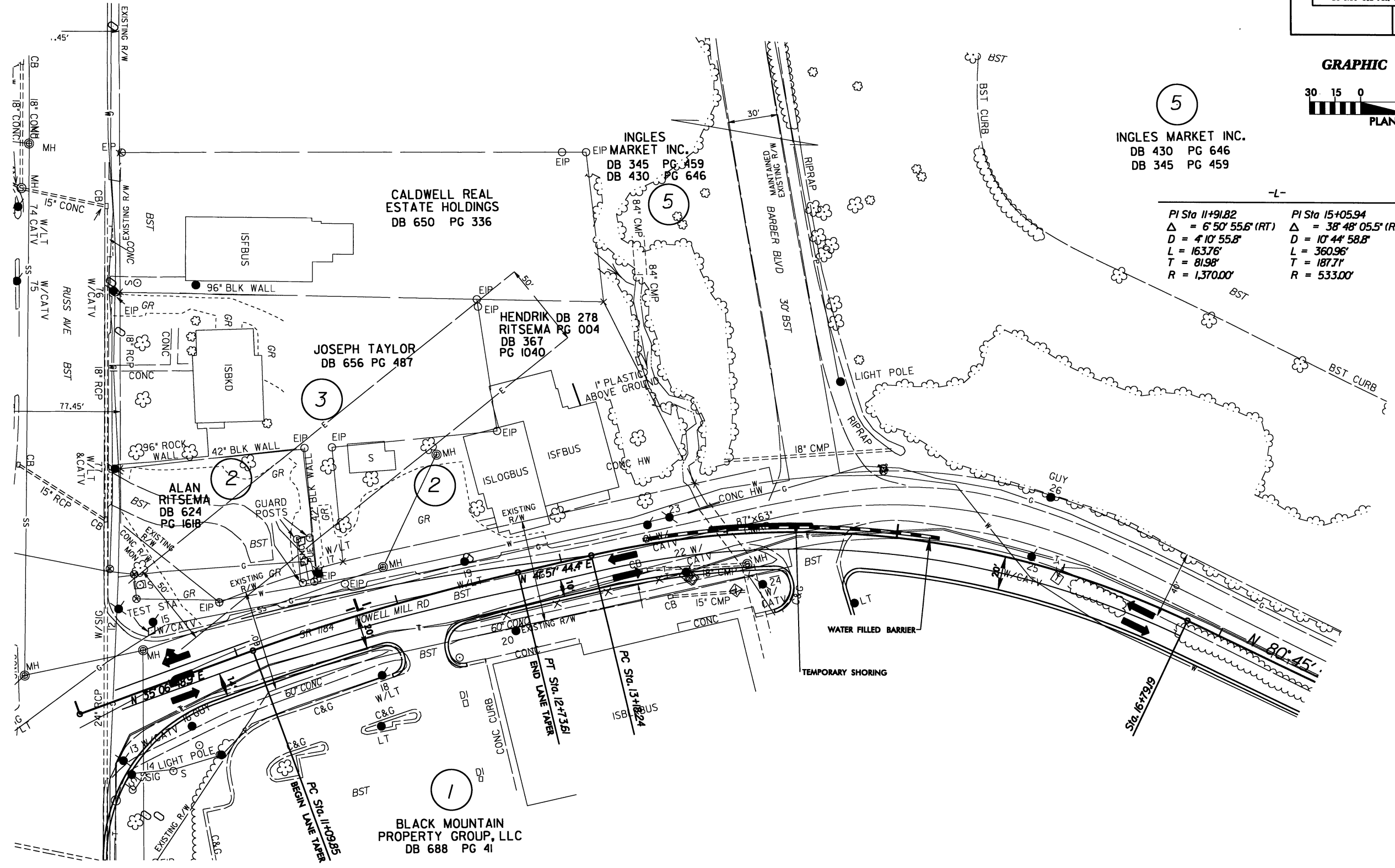


5

INGLES MARKET INC.  
DB 430 PG 646  
DB 345 PG 459

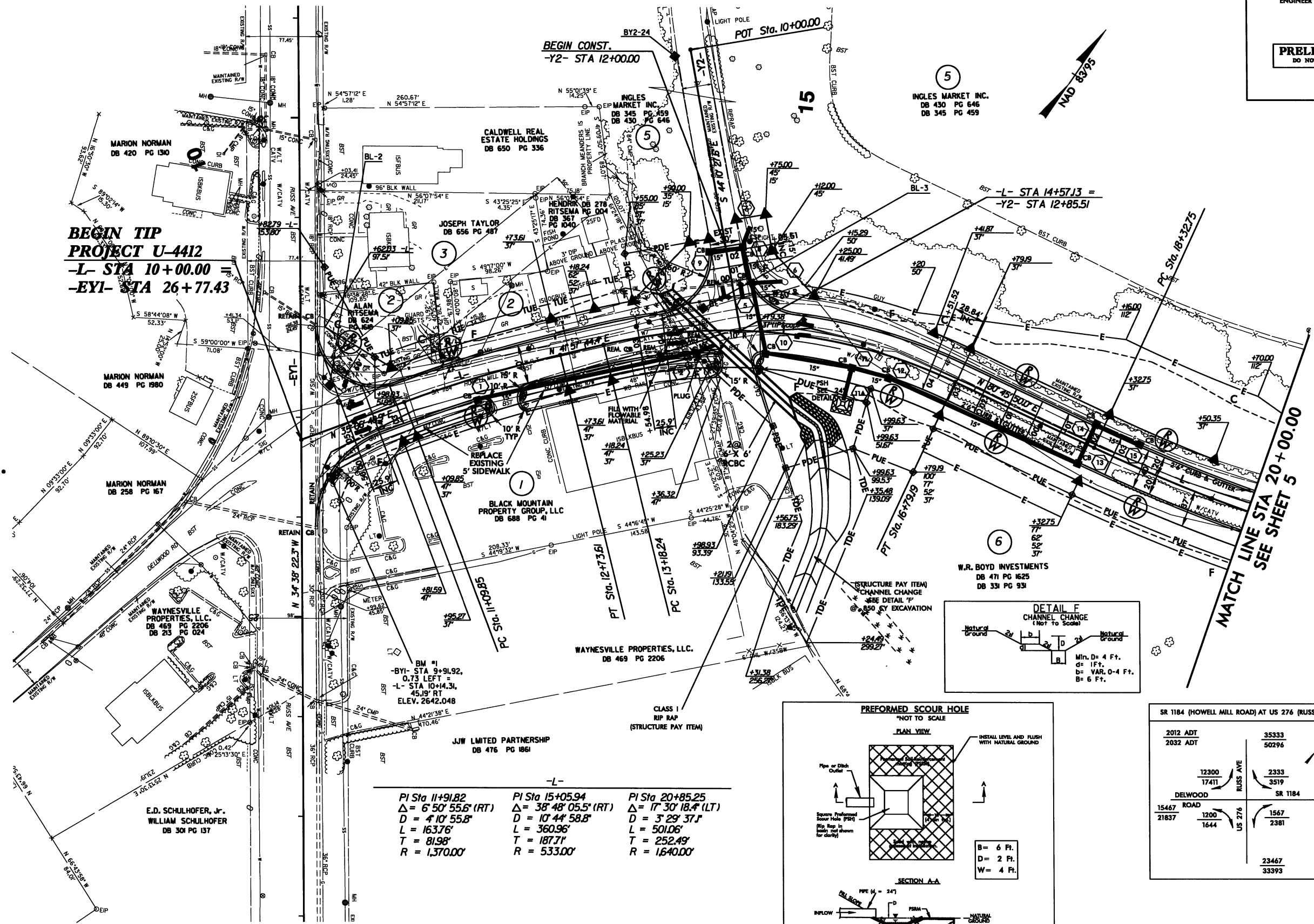
-L-

PI Sta 11+91.82	PI Sta 15+05.94
$\Delta = 6' 50' 55.6''$ (RT)	$\Delta = 38' 48' 05.5''$ (RT)
$D = 4' 10' 55.8''$	$D = 10' 44' 58.8''$
$L = 163.76'$	$L = 360.96'$
$T = 81.98'$	$T = 187.71'$
$R = 1,370.00'$	$R = 533.00'$



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PROJECT REFERENCE NO.	SHEET NO.
U-4412	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

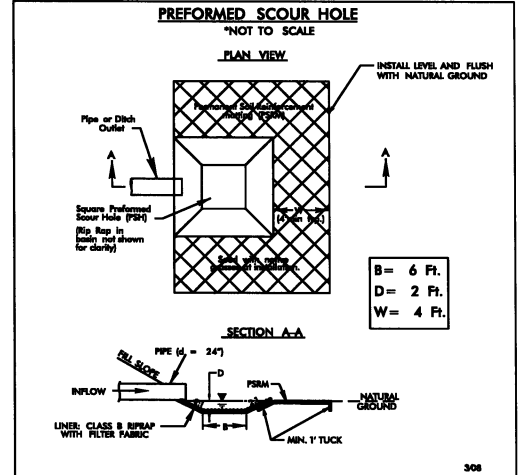
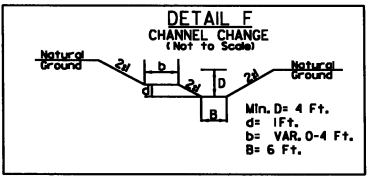


**BEGIN TIP  
PROJECT U-4412**  
-L- STA 10+00.00 =  
-EY1- STA 26+77.43

- RW REVISIONS (03/10/11):**
1. ADDED FISH POND AND 25FD TO PARCEL 4.
  2. REVISED EXISTING UTILITY EASEMENT TO PARCELS 2, 3 AND 4.
  3. REVISED PARCEL OWNERSHIP ON PARCELS 2, 3, AND 4 TO -TUE-
  4. CHANGE PROPOSED -PUE- ON PARCELS 2, 3, AND 4 TO -TUE-
  5. ADDED PROPOSED -DUE- ON PARCEL 6
  6. ADDED PROPOSED -DUE- ON PARCELS 2 and 3
  7. ADDED PROPOSED -PUE- ON PARCEL 6
  8. REVISED PROPOSED -PDE- ON PARCEL 6
  9. REVISED PARCEL NUMBER FROM PARCEL 4 TO PARCEL 2 WITH NAME CHANGE.
  10. REVISED RW TIES PER LOCATION AND SURVEY'S STAKING PLAN.
- RW REVISION (06/29/11):**
1. REVISED RW TIES PER LOCATION AND SURVEY'S STAKING PLAN.

-L-

PI Sta 11+91.82 Δ = 6' 50" 55.6" (RT) D = 4' 10" 55.8" L = 163.76' T = 81.98' R = 1,370.00'	PI Sta 15+05.94 Δ = 38' 48" 05.5" (RT) D = 10' 44" 58.8" L = 360.96' T = 187.71' R = 533.00'	PI Sta 20+85.25 Δ = 17' 30" 18.4" (LT) D = 3' 29" 37.1" L = 501.06' T = 252.49' R = 1,640.00'
--	---	--



SR 1184 (HOWELL MILL ROAD) AT US 276 (RUSS AVE)

2012 ADT	35333		
2032 ADT	50296		
	12300	2333	
	17411	3519	
	DELWOOD	SR 1184	
15467 ROAD	1200	1567	5867
21837	1644	2381	8681
		23467	
		33393	

FOR -L- PROFILE, SEE SHEET 11  
FOR -Y2- PROFILE, SEE SHEET 15  
FOR CULVERT DESIGN, SEE SHEETS C-1 TO C-

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8/17/99

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 10/18/11 11:38 AM

- RAW REVISION (03/10/11): 1. REVISED PARCEL OWNERSHIP ON PARCEL 10
- 2. ELIMINATED CLAIM ON PARCEL 14
- 3. REVISED PROPOSED PDE ON PARCEL 6
- RAW REVISION (04/20/11): 4. COMBINED PARCELS 8, 9 AND 11 INTO PARCEL 7
- 5. REVISED THE LOCATION AND RW OF -Y4REV- (ABEL LANE)
- 6. REVISED PARCEL 17 TO PARCEL 19
- RAW REVISION (06/29/11): 7. ADDED PARCEL 7 TO NAME SHOWING OWNERSHIP
- RAW REVISION (10/18/11): 8. REVISED PDE ON PARCEL 10

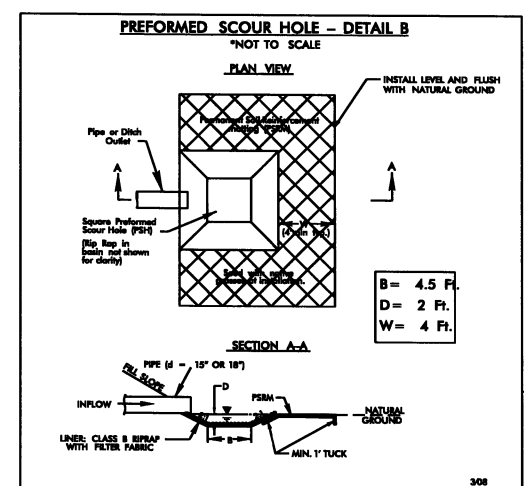
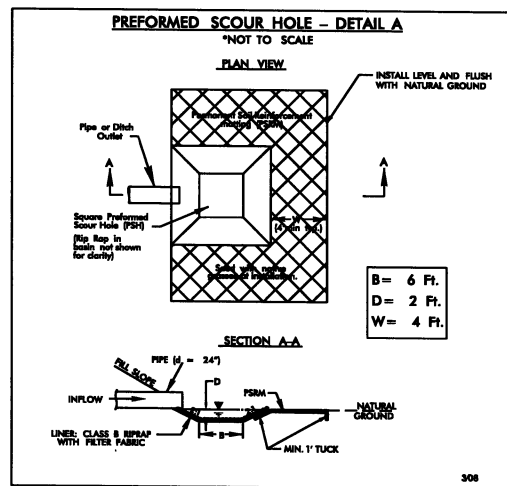
MATCH LINE -L- STA 20+00.00  
SEE SHEET 4

MATCH LINE -L- STA 23+00.00  
SEE SHEET 6

PI Sta 20+85.25 Δ = 17° 30' 18.4" (LT) D = 3° 29' 37.1" L = 501.06' T = 252.49' R = 1640.00'	PI Sta 31+54.87 Δ = 30° 21' 32.6" (LT) D = 9° 57' 52.1" L = 304.67' T = 156.00' R = 575.00'
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PI Sta 11+44.89 Δ = 31° 54' 50.1" (RT) D = 18° 28' 57.0" L = 172.67' T = 88.64' R = 310.00'	PI Sta 12+81.80 Δ = 38° 50' 06.8" (LT) D = 38° 11' 49.9" L = 101.67' T = 52.88' R = 150.00'
--	--

PI Sta 10+58.70 Δ = 28° 37' 53.6" (RT) D = 45° 50' 11.8" L = 62.46' T = 31.90' R = 125.00'	PI Sta 11+46.30 Δ = 28° 38' 08.6" (LT) D = 45° 50' 11.8" L = 62.47' T = 31.90' R = 125.00'
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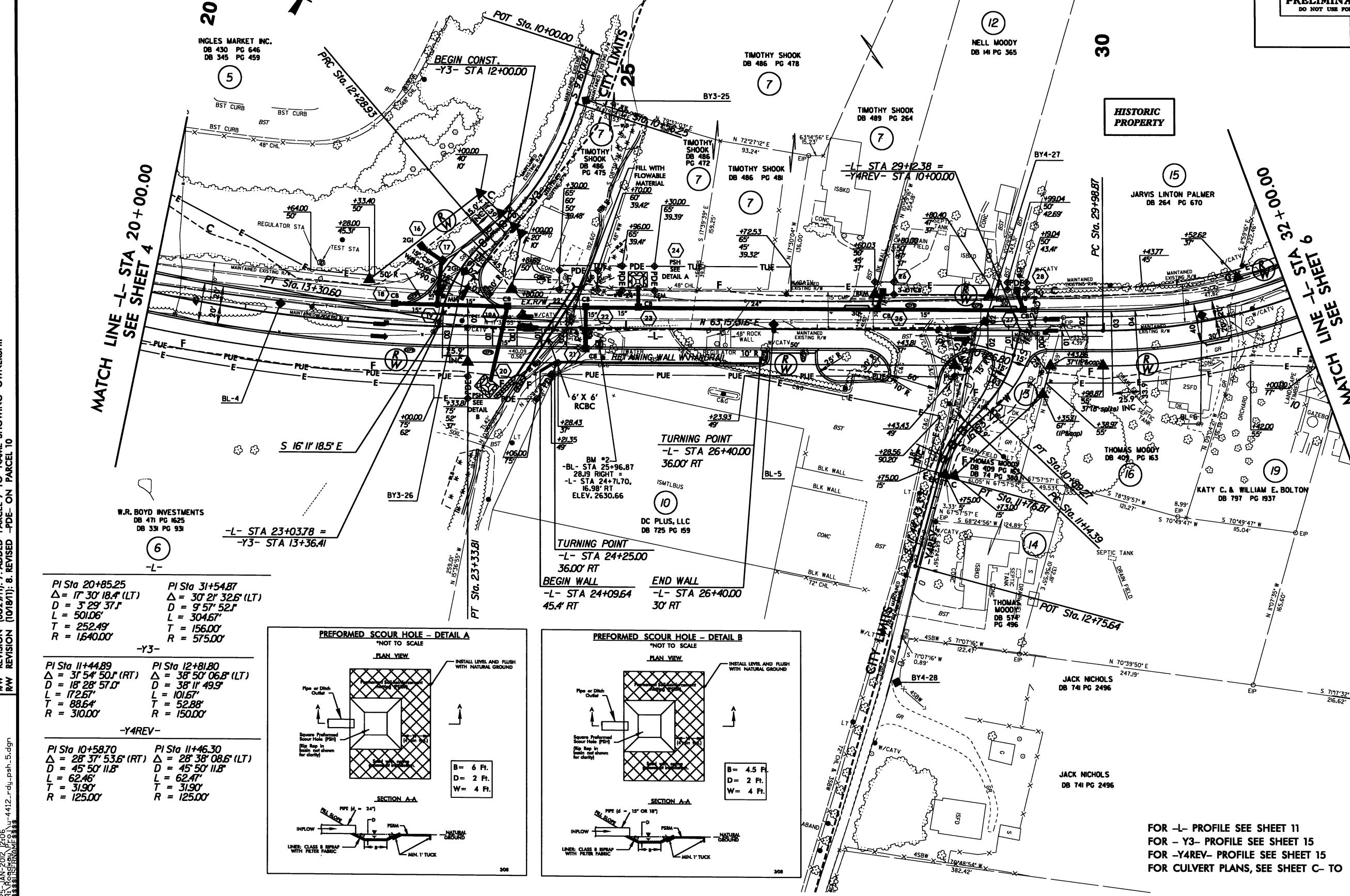


**TURNING POINT**  
 -L- STA 26+40.00  
 360.0' RT

**TURNING POINT**  
 -L- STA 24+25.00  
 360.0' RT

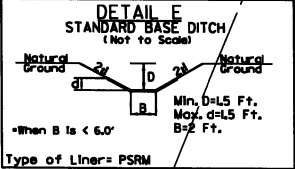
**BEGIN WALL**  
 -L- STA 24+09.64  
 45.4' RT

**END WALL**  
 -L- STA 26+40.00  
 30' RT



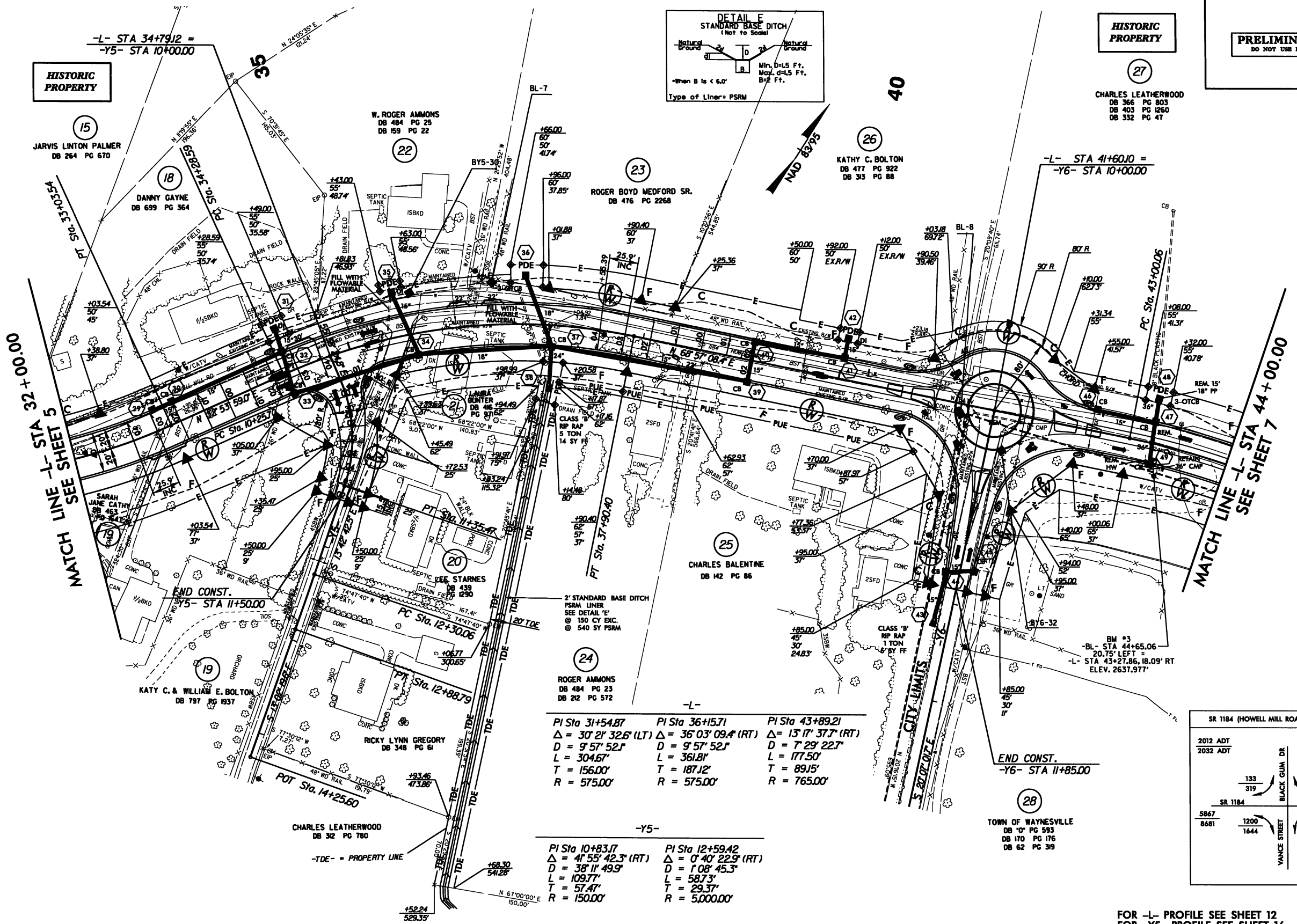
**HISTORIC PROPERTY**

(27)  
**HISTORIC PROPERTY**  
 CHARLES LEATHERWOOD  
 DB 386 PG 803  
 DB 403 PG 1260  
 DB 332 PG 47



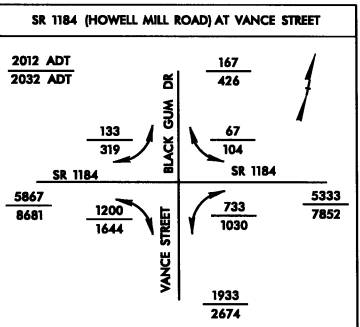
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1. REVISED PARCEL OWNERSHIP ON PARCEL 18  
 2. REVISED PARCEL 17 TO PARCEL 19.  
 3. NAME CHANGE TO PARCEL 25  
 4. DEED BOOK AND PAGE CORRECTION TO PARCEL 27  
 5. REVISED RW TIES PER LOCATION AND SURVEY'S STAKING PLAN  
 6. REVISED THE EXISTING RW FOR PARCEL 26 FROM 20' TO 30'.



PI Sta 31+54.87 Δ = 30° 21' 32.6" (LT) D = 9° 57' 52.1" L = 304.67' T = 156.00' R = 575.00'	PI Sta 36+15.71 Δ = 36° 03' 09.4" (RT) D = 9° 57' 52.1" L = 361.81' T = 187.12' R = 575.00'	PI Sta 43+89.21 Δ = 13° 17' 37.7" (RT) D = 7° 29' 22.7" L = 177.50' T = 89.15' R = 765.00'
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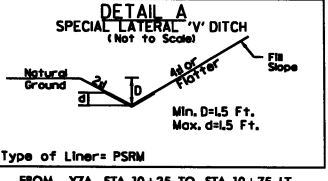
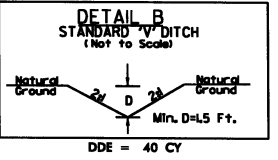
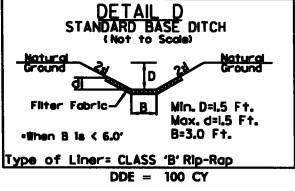
PI Sta 10+83.17 Δ = 41° 55' 42.3" (RT) D = 38° 11' 49.3" L = 109.77' T = 57.47' R = 150.00'	PI Sta 12+59.42 Δ = 0° 40' 22.9" (RT) D = 1° 08' 45.3" L = 58.73' T = 29.37' R = 5,000.00'
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FOR -L- PROFILE SEE SHEET 12  
 FOR -Y5- PROFILE SEE SHEET 16  
 FOR -Y6- PROFILE SEE SHEET 16  
 FOR ROUNDABOUT DETAIL, SEE SHEET 2G



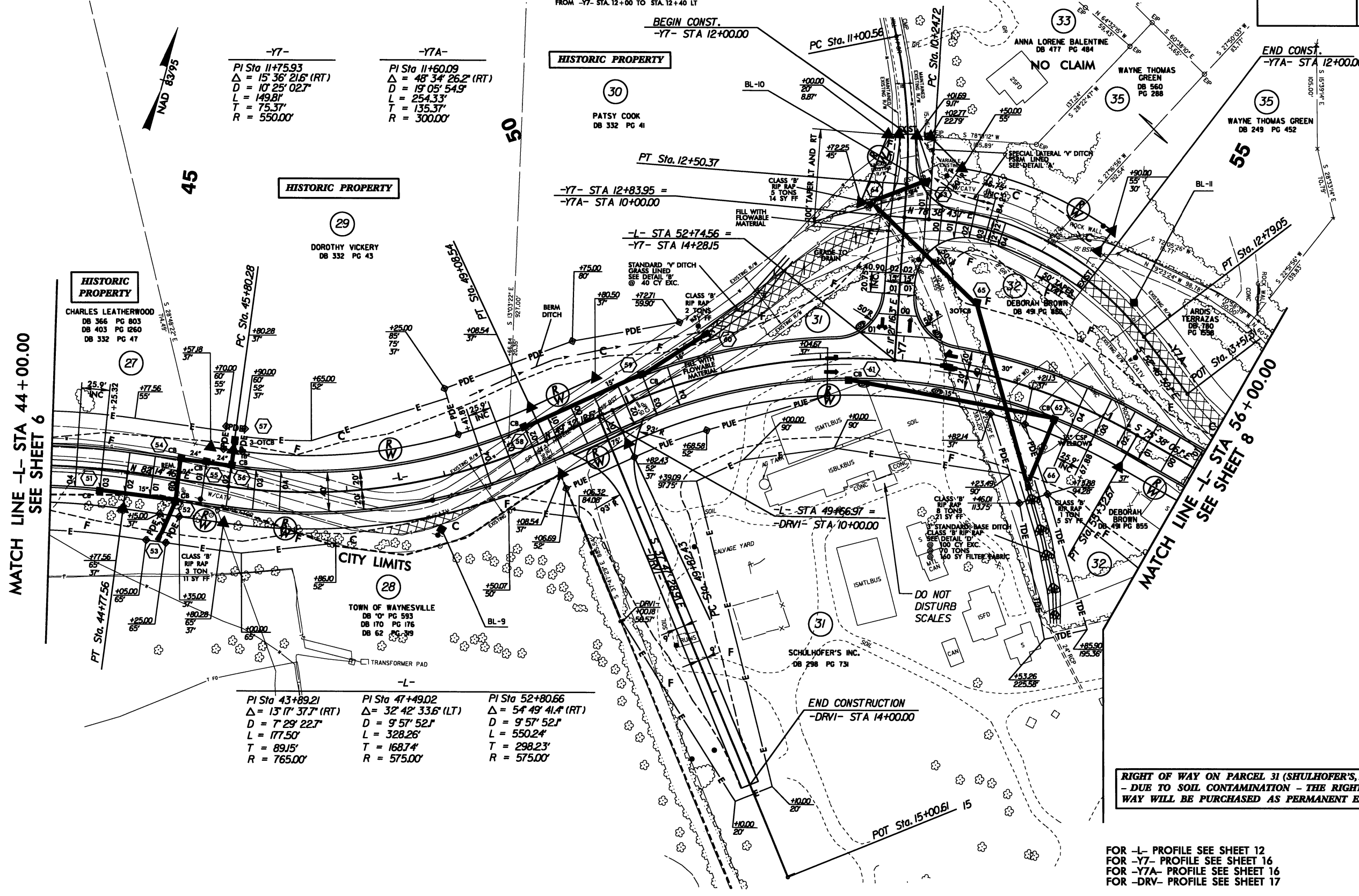
PROJECT REFERENCE NO.	SHEET NO.
U-4412	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



- RAW REVISION (01/20/11): 1. DELETED PERMANENT DRAINAGE EASEMENT AT -L- STA 52+30.00 (RT) AND REVISED TEMPORARY CONSTRUCTION EASEMENT FROM -L- STA 51+00.00 TO 53+55.00 (RT).
- RAW REVISION (03/10/11): 1. REVISED TEMPORARY CONSTRUCTION EASEMENT FROM -L- STA 55+67.00 TO 59+50.00 (RT) TO ACCOMMODATE PROPOSED DRIVEWAY.
- RAW REVISION (03/10/11): 1. ADDED PROPOSED -PUE- FROM -L- STA. 49+06.69 TO 52+04.67 (RT)
- RAW REVISION (06/10/11): 1. REVISED TEMPORARY CONSTRUCTION EASEMENT FROM -L- STA 55+67.00 TO 59+50.00 (RT) DELETED PROPOSED DRIVEWAY.
- RAW REVISION (06/10/11): 1. DELETED CLAIM ON PARCEL 33.
- RAW REVISION (06/29/11): 1. DEED BOOK AND PAGE CORRECTIONS TO PARCEL 27.
- RAW REVISION (10/31/11): 1. REMOVED DRIVEWAY FROM PARCEL 31
- RAW REVISION (01/11/12): 1. ADDED DRIVEWAY TO PARCEL 31

MATCH LINE -L- STA 44+00.00  
SEE SHEET 6

MATCH LINE -L- STA 56+00.00  
SEE SHEET 8



-Y7-	-Y7A-
PI Sta 11+75.93	PI Sta 11+60.09
$\Delta = 15^\circ 36' 21.6" (RT)$	$\Delta = 48^\circ 34' 26.2" (RT)$
$D = 10^\circ 25' 02.7"$	$D = 19^\circ 05' 54.9"$
$L = 149.81'$	$L = 254.33'$
$T = 75.37'$	$T = 135.37'$
$R = 550.00'$	$R = 300.00'$

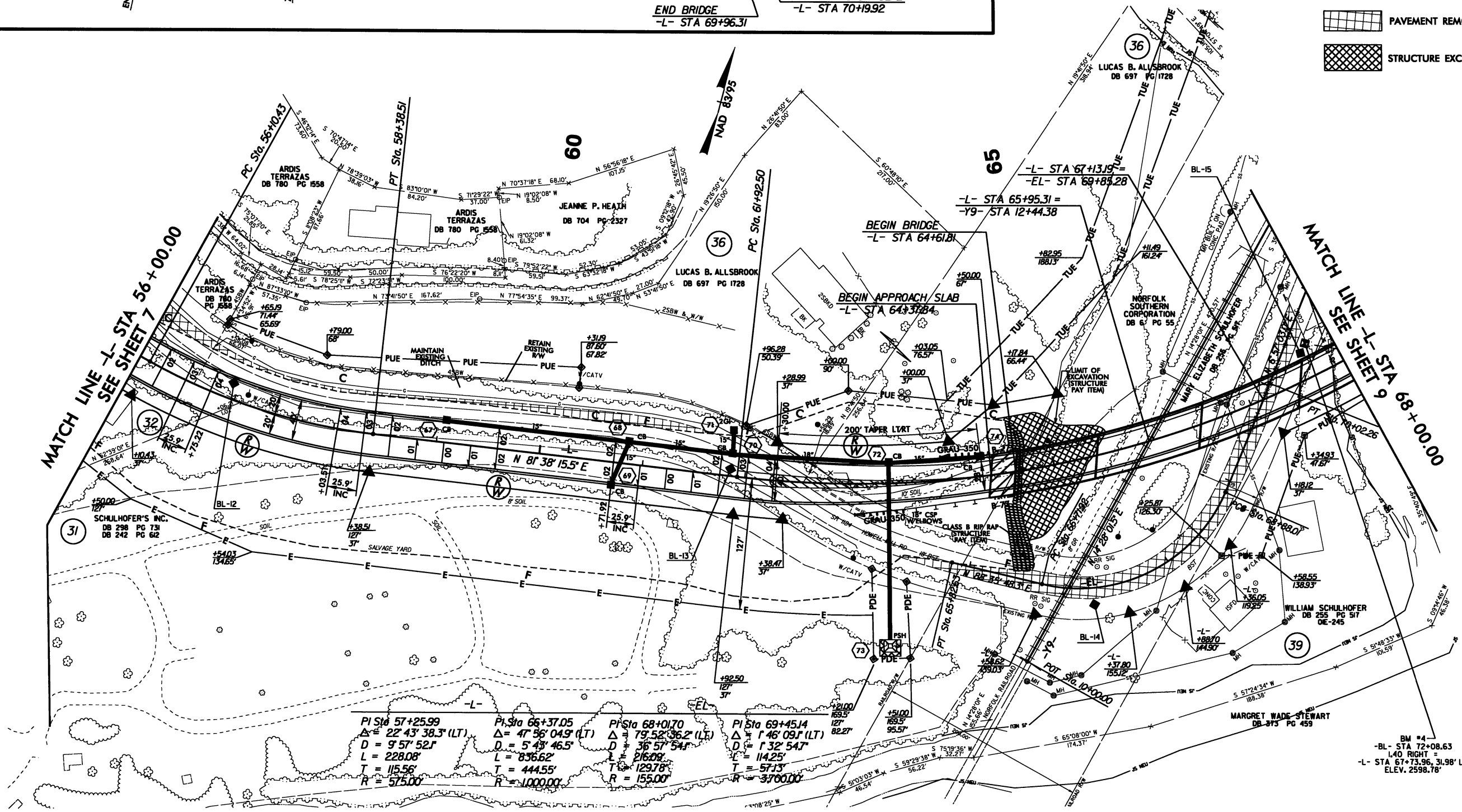
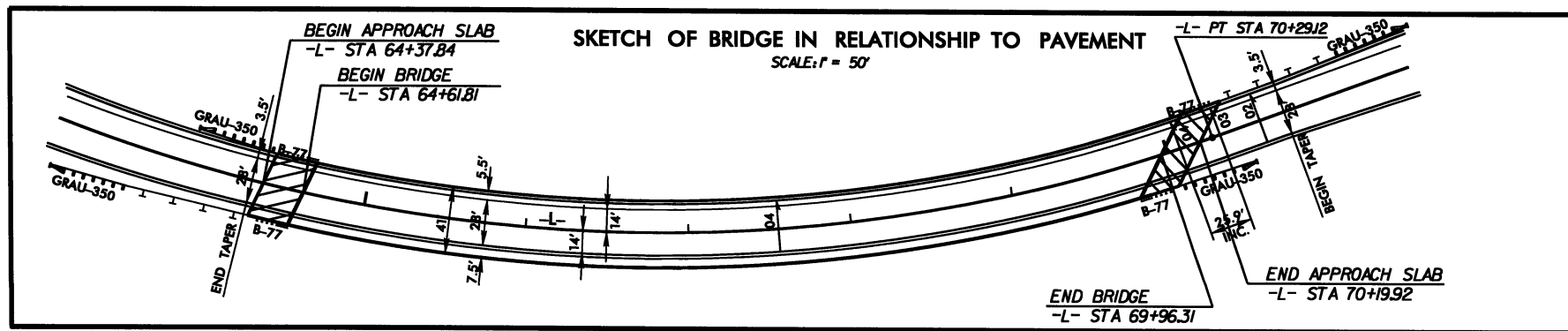
-L-	PI Sta 43+89.21	PI Sta 47+49.02	PI Sta 52+80.66
	$\Delta = 13^\circ 17' 37.7" (RT)$	$\Delta = 32^\circ 42' 33.6" (LT)$	$\Delta = 54^\circ 49' 41.4" (RT)$
	$D = 7^\circ 29' 22.7"$	$D = 9^\circ 57' 52.1"$	$D = 9^\circ 57' 52.1"$
	$L = 177.50'$	$L = 328.26'$	$L = 550.24'$
	$T = 89.15'$	$T = 168.74'$	$T = 298.23'$
	$R = 765.00'$	$R = 575.00'$	$R = 575.00'$

RIGHT OF WAY ON PARCEL 31 (SHULHOFER'S, INC.)  
- DUE TO SOIL CONTAMINATION - THE RIGHT OF WAY WILL BE PURCHASED AS PERMANENT EASEMENT

FOR -L- PROFILE SEE SHEET 12  
FOR -Y7- PROFILE SEE SHEET 16  
FOR -Y7A- PROFILE SEE SHEET 16  
FOR -DRV- PROFILE SEE SHEET 17

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PROJECT REFERENCE NO. U-4412	SHEET NO. 8
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



PI Sta 57+25.99 Δ = 22° 43' 38.3" (LT) D = 9' 57" 52" L = 228.08' T = 115.56' R = 575.00'	PI Sta 66+37.05 Δ = 47° 56' 04.9" (LT) D = 5' 43" 46.5" L = 836.62' T = 444.55' R = 1000.00'	PI Sta 68+01.70 Δ = 79° 52' 36.2" (LT) D = 36° 57' 54" L = 216.08' T = 129.78' R = 155.00'	PI Sta 69+45.14 Δ = 1° 46' 09.1" (LT) D = 1' 32" 54" L = 114.25' T = 57.13' R = 3760.00'
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**RIGHT OF WAY ON PARCEL 31 (SHULHOFER'S, INC.)  
- DUE TO SOIL CONTAMINATION - THE RIGHT OF  
WAY WILL BE PURCHASED AS PERMANENT EASEMENT**

FOR -L- PROFILE, SEE SHEET 13  
FOR -DRV- PROFILE, SEE SHEET 17  
FOR STRUCTURE PLANS, SEE SHEETS S1-S

R/W REVISION (12/10/10): 1. REVISED CONSTRUCTION EASEMENT TO PROP. PERMANENT UTILITY EASEMENT FROM -L- STA 61+96.28 (LT) TO -L- STA 65+00.00 (LT) (03/20/11); 2. REVISED TEMPORARY CONSTRUCTION EASEMENT FROM -L- STA 55+67.00 TO 59+50.00 (RT) TO ACCOMMODATE PROPOSED DRIVEWAY (03/20/11); 1. ADDED PROPOSED PUE FROM -L- STA 56+65.19 TO STA 60+31.18 (LT); 2. ADDED PROPOSED PUE FROM -L- STA 66+25.87 TO 68+68.68 (RT); 3. ADDED PROPOSED PUE FROM -L- STA 66+25.87 TO 68+68.68 (RT); 4. REVISED TEMPORARY CONSTRUCTION EASEMENT FROM -L- STA 55+67.00 TO 59+50.00 (RT) DELETED PROPOSED DRIVEWAY; 5. REMOVED PARCEL 38(NORFOLK SOUTHERN CORP.) ACCESS ACQUIRED THROUGH STATE-RAILROAD AGREEMENT.  
DESIGN REVISION (04/25/11): REVISED BRIDGE WIDTH.  
R/W REVISION (06/10/11): 1. COMBINED PARCELS 36 AND 37 TO MAKE ONE PARCEL 36  
R/W REVISION (06/29/11): 1. REVISED RW TIES PER LOCATION AND SURVEY'S STAKING PLAN.

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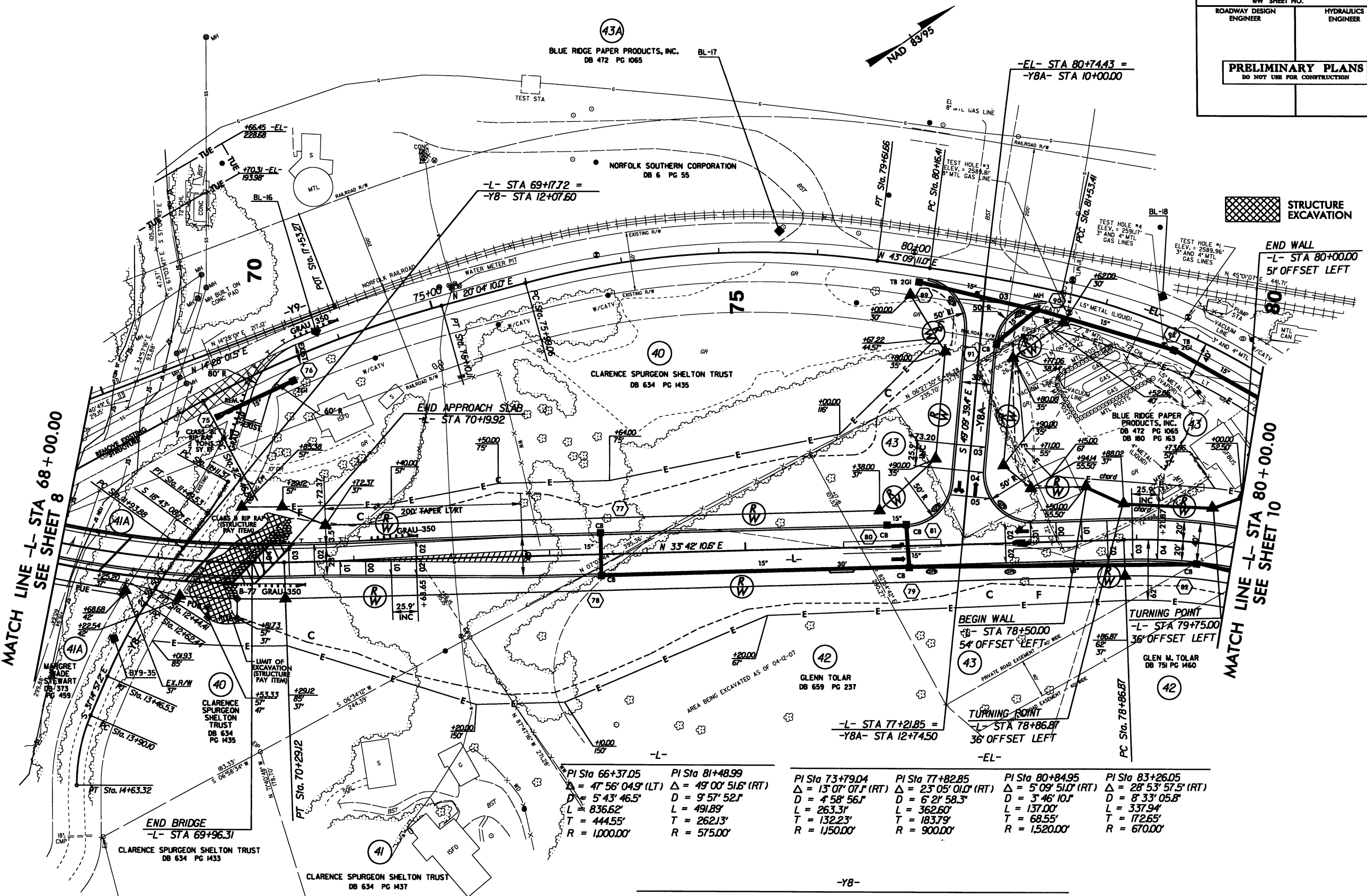
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RAW REVISION (03/10/11): 1. ADDED PARCELS 41A AND 43A.  
 2. ADDED PROPOSED TIE-ON PARCEL 43A AT -EL- STA. 72+70.31 (LT)  
 3. ADDED PROPOSED TIE-ON PARCELS 40 & 41A  
 4. REVISED PARCEL OWNERSHIP ON PARCELS 40, 41 AND 42  
 5. REMOVED PARCEL 38(NORFOLK SOUTHERN CORP.); ACCESS ACQUIRED THROUGH STATE-RAILROAD AGREEMENT.  
 6. REVISED RIGHT OF WAY ON PARCEL 41A  
 7. REVISED BRIDGE WIDTH  
 8. REVISED RW TIES PER LOCATION AND SURVEY'S STAKING PLAN  
 DESIGN REVISION (04/25/11): REVISED BRIDGE WIDTH  
 RAW REVISION (04/20/11): 7. REVISED THE RIGHT OF WAY FOR PARCEL 43.  
 RAW REVISION (04/29/11): 8. REVISED RW TIES PER LOCATION AND SURVEY'S STAKING PLAN

25 JAN 2012 10:06 AM  
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 11:58 AM

MATCH LINE -L- STA 68+00.00  
 SEE SHEET 8

MATCH LINE -L- STA 80+00.00  
 SEE SHEET 10



PI Sta 66+37.05 Δ = 47° 56' 04.9" (LT) D = 5' 43' 46.5" L = 836.62' T = 444.55' R = 1,000.00'	PI Sta 81+48.99 Δ = 49° 00' 51.6" (RT) D = 9' 57' 52.1" L = 491.89' T = 262.13' R = 575.00'	PI Sta 73+79.04 Δ = 13° 07' 07.1" (RT) D = 4' 58' 56.1" L = 263.31' T = 132.23' R = 1,150.00'	PI Sta 77+82.85 Δ = 23° 05' 01.0" (RT) D = 6' 21' 58.3" L = 362.60' T = 183.79' R = 900.00'	PI Sta 80+84.95 Δ = 5° 09' 51.0" (RT) D = 3' 46' 10.1" L = 137.00' T = 68.55' R = 1,520.00'	PI Sta 83+26.05 Δ = 28° 53' 57.5" (RT) D = 8' 33' 05.8" L = 337.94' T = 172.65' R = 670.00'
-Y8-					
PI Sta 11+30.48 Δ = 7° 17' 13.1" (RT) D = 19' 05' 54.9" L = 381.5' T = 19.0' R = 300.00'	PI Sta 12+19.15 Δ = 2° 53' 41.4" (LT) D = 5' 43' 46.5" L = 50.52' T = 25.27' R = 1,000.00'	PI Sta 13+04.59 Δ = 9° 38' 07.1" (LT) D = 11' 27' 33.0" L = 84.08' T = 42.14' R = 500.00'	PI Sta 14+27.22 Δ = 23° 18' 23.4" (LT) D = 31' 49' 51.6" L = 73.22' T = 37.12' R = 180.00'		

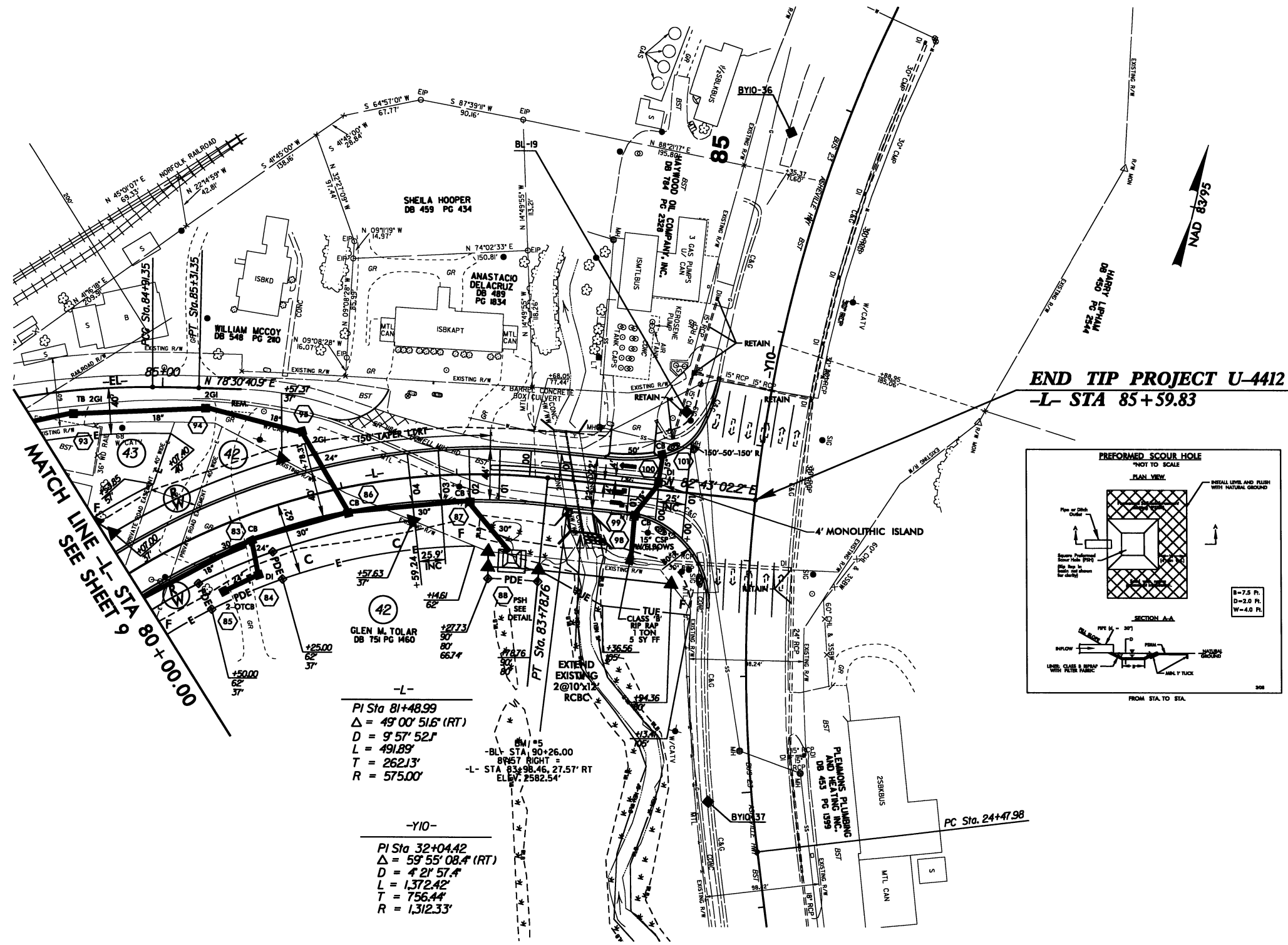
FOR -L- PROFILE, SEE SHEET 14  
 FOR -Y8A- PROFILE, SEE SHEET 16  
 FOR STRUCTURE PLANS, SEE SHEET S-1 TO S-



PROJECT REFERENCE NO.	SHEET NO.
U-4412	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

R/W REVISION (03/10/11): 1. CHANGED PARCEL 44 TO 42  
 2. ADDED ADDITIONAL PROPOSED -TUE- TO PARCEL 42  
 3. ADDED PROPOSED -PDE- ON PARCEL 42  
 R/W REVISION (06/29/11): 4. REVISED R/W TIES PER LOCATION AND SURVEYS STAKING PLAN

8/17/99  
 25 JAN 2010 P106  
 8:58 AM  
 U-4412-rdw\_psh\_10.dgn



**-L-**

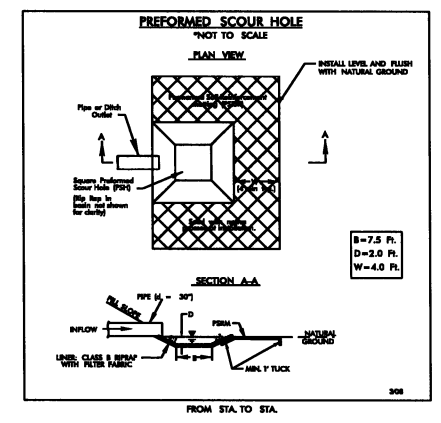
PI Sta 81+48.99  
 $\Delta = 49^{\circ} 00' 51.6''$  (RT)  
 $D = 9^{\circ} 57' 52.1''$   
 $L = 491.89'$   
 $T = 262.13'$   
 $R = 575.00'$

BL- STA, 90+26.00  
 8457 RIGHT =  
 -L- STA 83+98.46, 27.57' RT  
 EL. = 2582.54'

**-Y10-**

PI Sta 32+04.42  
 $\Delta = 59^{\circ} 55' 08.4''$  (RT)  
 $D = 4^{\circ} 21' 57.4''$   
 $L = 1,372.42'$   
 $T = 756.44'$   
 $R = 1,312.33'$

**END TIP PROJECT U-4412**  
**-L- STA 85+59.83**



SR 1184 (HOWELL MILL ROAD) AT US 23 (ASHEVILLE HWY)

2012 ADT	20800
2032 ADT	32800
4434 6730	
SR 1184	
US 23	
6334 9297	
1900 2567	
18266 28656	

FOR -L- PROFILE, SEE SHEET 14 and 15  
 FOR CULVERT PLANS, SEE C- TO C-